# Bio-Formats Documentation

## *Release 5.2.0*

**The Open Microscopy Environment**

August 17, 2016

The following documentation is split into four parts. *About Bio-Formats* explains the goal of the software, discusses how it processes metadata, and provides other useful information such as version history and how to report bugs. *User Information* focuses on how to use Bio-Formats as a plugin for ImageJ and Fiji, and also gives details of other software packages which can use Bio-Formats to read and write microscopy formats. *Developer Documentation* covers more indepth information on using Bio-Formats as a Java library and how to interface from non-Java codes. Finally, *Formats* is a guide to all the file formats currently supported by Bio-Formats.

# Part I

# About Bio-Formats

Bio-Formats is a standalone Java library for reading and writing life sciences image file formats. It is capable of parsing both pixels and metadata for a large number of formats, as well as writing to several formats.

The primary goal of Bio-Formats is to facilitate the exchange of microscopy data between different software packages and organizations. It achieves this by converting proprietary microscopy data into an open standard called the OME data model[1], particularly into the OME-TIFF[2] file format.

We believe the standardization of microscopy metadata to a common structure is of vital importance to the community. You may find LOCI's article on open source software in science[3] of interest.

---

[1] http://genomebiology.com/2005/6/5/R47

[2] http://www.openmicroscopy.org/site/support/ome-model/ome-tiff

[3] http://loci.wisc.edu/software/oss

## CHAPTER

## ONE

# HELP

There is a *guide for reporting bugs here*.

For help relating to opening images in ImageJ or FIJI or when using the command line tools, refer to the *users documentation*. You can also find tips on common issues with specific formats on the pages linked from the *supported formats table*.

Please contact us[1] if you have any questions or problems with Bio-Formats not addressed by referring to the documentation.

Other places where questions are commonly asked and/or bugs are reported include:

- OME Trac[2]
- ome-devel mailing list[3] (searchable using google with 'site:lists.openmicroscopy.org.uk')
- ome-users mailing list[4] (searchable using google with 'site:lists.openmicroscopy.org.uk')
- ImageJ forum[5] (for ImageJ/Fiji issues)
- ImageJ mailing list[6] (and archive[7])
- Fiji GitHub Issues[8]
- Confocal microscopy mailing list[9]

---

[1] http://www.openmicroscopy.org/site/community/mailing-lists

[2] https://trac.openmicroscopy.org/ome

[3] http://lists.openmicroscopy.org.uk/pipermail/ome-devel

[4] http://lists.openmicroscopy.org.uk/pipermail/ome-users

[5] http://forum.imagej.net

[6] http://imagej.nih.gov/ij/list.html

[7] http://imagej.1557.n6.nabble.com/

[8] https://github.com/fiji/fiji/issues

[9] http://lists.umn.edu/cgi-bin/wa?A0=confocalmicroscopy

## CHAPTER

## TWO

# BIO-FORMATS VERSIONS

Bio-Formats is now decoupled from OMERO with its own release schedule rather than being updated whenever a new version of OMERO[1] is released. We expect this to result in more frequent releases to get fixes out to the community faster.

The version number is three numbers separated by dots e.g. 4.0.0. See the *version history* for a list of major changes in each release.

---

[1] http://www.openmicroscopy.org/site/support/omero5.1/

CHAPTER

THREE

# WHY JAVA?

From a practical perspective, Bio-Formats is written in Java because it is cross-platform and widely used, with a vast array of libraries for handling common programming tasks. Java is one of the easiest languages from which to deploy cross-platform software. In contrast to C++, which has a large number of complex platform issues to consider, and Python, which leans heavily on C and C++ for many of its components (e.g., NumPy and SciPy), Java code is compiled one time into platform-independent byte code, which can be deployed as is to all supported platforms. And despite this enormous flexibility, Java manages to provide time performance nearly equal to C++, often better in the case of I/O operations (see further discussion on the comparative speed of Java on the LOCI site[1]).

There are also historical reasons associated with the fact that the project grew out of work on the VisAD Java component library[2]. You can read more about the origins of Bio-Formats on the LOCI Bio-Formats homepage[3].

---

[1] http://loci.wisc.edu/faq/isnt-java-too-slow

[2] http://visad.ssec.wisc.edu

[3] http://loci.wisc.edu/software/bio-formats

CHAPTER

FOUR

# BIO-FORMATS METADATA PROCESSING

Pixels in microscopy are almost always very straightforward, stored on evenly spaced rectangular grids. It is the metadata (details about the acquisition, experiment, user, and other information) that can be complex. Using the OME data model enables applications to support a single metadata format, rather than the multitude of proprietary formats available today.

Every file format has a distinct set of metadata, stored differently. Bio-Formats processes and converts each format's metadata structures into a standard form called the OME data model[1], according to the OME-XML[2] specification. We have defined an open exchange format called OME-TIFF[3] that stores its metadata as OME-XML. Any software package that supports OME-TIFF is also compatible with the dozens of formats listed on the Bio-Formats page, because Bio-Formats can convert your files to OME-TIFF format.

To facilitate support of OME-XML, we have created a library in Java[4] for reading and writing OME-XML[5] metadata.

There are three types of metadata in Bio-Formats, which we call core metadata, original metadata, and OME metadata.

1. **Core metadata** only includes things necessary to understand the basic structure of the pixels: image resolution; number of focal planes, time points, channels, and other dimensional axes; byte order; dimension order; color arrangement (RGB, indexed color or separate channels); and thumbnail resolution.
2. **Original metadata** is information specific to a particular file format. These fields are key/value pairs in the original format, with no guarantee of cross-format naming consistency or compatibility. Nomenclature often differs between formats, as each vendor is free to use their own terminology.
3. **OME metadata** is information from #1 and #2 converted by Bio-Formats into the OME data model. **Performing this conversion is the primary purpose of Bio-Formats.** Bio-Formats uses its ability to convert proprietary metadata into OME-XML as part of its integration with the OME and OMERO servers— essentially, they are able to populate their databases in a structured way because Bio-Formats sorts the metadata into the proper places. This conversion is nowhere near complete or bug free, but we are constantly working to improve it. We would greatly appreciate any and all input from users concerning missing or improperly converted metadata fields.

## 4.1 Reporting a bug

### 4.1.1 Before filing a bug report

If you think you have found a bug in Bio-Formats, the first thing to do is update your version of Bio-Formats to the latest version to check if the problem has already been addressed. The Fiji updater will automatically do this for you, while in ImageJ you can select *Plugins → Bio-Formats → Update Bio-Formats Plugins*.

You can also download the latest version of Bio-Formats[6]. If you are not sure which version you need, select the latest build of the Bio-Formats package bundle from the components table.

---

[1] http://genomebiology.com/2005/6/5/R47

[2] http://www.openmicroscopy.org/site/support/ome-model/ome-xml

[3] http://www.openmicroscopy.org/site/support/ome-model/ome-tiff

[4] http://www.openmicroscopy.org/site/support/ome-model/ome-xml/java-library.html

[5] http://www.openmicroscopy.org/site/support/ome-model/ome-xml

[6] http://downloads.openmicroscopy.org/latest/bio-formats5.2/

### 4.1.2 Common issues to check

- If your 12, 14 or 16-bit images look all black when you open them, typically the problem is that the pixel values are very, very small relative to the maximum possible pixel value (4095, 16383, and 65535, respectively), so when displayed the pixels are effectively black. In ImageJ/Fiji, this is fixable by checking the "Autoscale" option; with the command line tools, the "-autoscale -fast" options should work.
- If the file is very, very small (4096 bytes) and any exception is generated when reading the file, then make sure it is not a Mac OS X resource fork[7]. The 'file' command should tell you:

  ```
  $ file /path/to/suspicious-file
  suspicious-file: AppleDouble encoded Macintosh file
  ```

- If you get an `OutOfMemory` or `NegativeArraySize` error message when attempting to open an SVS or JPEG-2000 file then the amount of pixel data in a single image plane exceeds the amount of memory allocated to the JVM (Java Virtual Machine) or 2 GB, respectively. For the former, you can increase the amount of memory allocated; in the latter case, you will need to open the image in sections. If you are using Bio-Formats as a library, this means using the `openBytes(int, int, int, int, int)` method in loci.formats.IFormatReader. If you are using Bio-Formats within ImageJ, you can use the *Crop on import* option.

  Note that JPEG-2000 is a very efficient compression algorithm - thus the size of the file on disk will be substantially smaller than the amount of memory required to store the uncompressed pixel data. It is not uncommon for a JPEG-2000 or SVS file to occupy less than 200 MB on disk, and yet have over 2 GB of uncompressed pixel data.

### 4.1.3 Sending a bug report

If you can still reproduce the bug after updating to the latest version of Bio-Formats, and your issue does not relate to anything listed above or noted on the relevant file format page, please send a bug report to the OME Users mailing list[8]. You can upload files to our QA system[9] or for large files (>2 GB), we can provide you with an FTP server address if you write to the mailing list.

To ensure that any inquiries you make are resolved promptly, please include the following information:

- **Exact error message**. Copy and paste any error messages into the text of your email. Alternatively, attach a screenshot of the relevant windows.
- **Version information**. Indicate which release of Bio-Formats, which operating system, and which version of Java you are using.
- **Non-working data**. If possible, please send a non-working file. This helps us ensure that the problem is fixed for next release and will not reappear in later releases. Note that any data provided is used for internal testing only; we do not make images publicly available unless given explicit permission to do so.
- **Metadata and screenshots**. If possible, include any additional information about your data. We are especially interested in the expected dimensions (width, height, number of channels, Z slices, and timepoints). Screenshots of the image being successfully opened in other software are also useful.
- **Format details**. If you are requesting support for a new format, we ask that you send as much data as you have regarding this format (sample files, specifications, vendor/manufacturer information, etc.). This helps us to better support the format and ensures future versions of the format are also supported.

**Please be patient** - it may be a few days until you receive a response, but we reply to *every* email inquiry we receive.

## 4.2 Version history

### 4.2.1 5.2.0 (2016 August 18)

Java format support improvements are listed below.

---

[7] http://en.wikipedia.org/wiki/Resource_fork#The_Macintosh_file_system

[8] http://lists.openmicroscopy.org.uk/mailman/listinfo/ome-users

[9] http://qa.openmicroscopy.org.uk/qa/upload/

†Denotes a major breaking change to the reader (typically modification of core metadata). Code changes or re-import may be necessary in ImageJ/FIJI and OMERO.

- added support (and public sample files) for *Becker & Hickl .spc FIFO* data
- added support for *Princeton Instruments .spe* data
- **bug fixes for many formats including:**
  - **CellSens VSI†**
    - fixes for correctly reading dimensions
  - **FlowSight**
    - fixes to infer channel count from channel names (thanks to Lee Kamentsky)
  - **Hamamatsu VMS†**
    - fixed dimensions of full-resolution images
  - **ICS writing**
    - fixed dimension population for split files
  - **Kodak BIP**
    - fixed handling of CCD temperature stored in hexadecimal
  - **Leica LIF**
    - fixed incorrect plane offsets for large multi-tile files
  - **LiFlim**
    - fixed `ExposureTime` check and units usage
  - **Micro-Manager**
    - fixed handling of large datasets saved as image stacks and split over multiple files
    - added user documentation for file saving options
  - **MRC and Spider**
    - fixed format type checking
  - **Nifti**
    - fixed `planeSize` to prevent crashes when loading large files (thanks to Christian Niedworok)
    - added support for gzipped compressed .nii.gz files (thanks to Eric Barnhill)
    - added public samples and updated documented supported file extensions
  - **OME-TIFF**
    - fixed `Plane` population errors
    - fixed `NullPointerException` when closing reader for partial multi-file filesets
    - reduced buffer size for `RandomAccessInputStreams` to improve performance
    - deprecated `getMetadataStoreForConversion` and `getMetadataStoreForDisplay` methods
  - **OME-XML**
    - fixed metadata store
  - **PicoQuant**
    - updated reader to always buffer data
  - PNG writing
  - **SDT**
    - performance improvements for loading of large files

- **Slidebook**
    - Slidebook6Reader is now completely external and fully maintained by 3i (see http://www.openmicroscopy.org/info/slidebook) and is specified as such in the `readers.txt` configuration file
- **SVS**
    - fixed `NumberFormatException`
- **Tiff**
    - fixed integer overflow to read resolutions correctly
    - fixed handling of tiled images with tile width less than 64
- **Zeiss CZI**
    - fixed timestamp indexing when multiple separate channels are present
    - improved slide support - slides are now detected as a complete full-resolution image (instead of each tile being a separate series) and pyramid sub-resolutions and label/overview images are also detected
- **Zeiss LSM**
    - fixed `Plane` population errors
- **Zeiss ZVI†**
    - reworked image ordering calculation to allow for tiles

Top-level Bio-Formats API changes:

- Java 1.7 is now the minimum supported version
- the native-lib-loader dependency has been bumped to version 2.1.4
- the xalan dependency has been bumped to version 2.7.2
- all the ome.jxr classes have been deprecated to make clear that there is no JPEG-XR support implemented in Bio-Formats as yet
- **the DataTools API has been extended to add a number of utility functions to:**
    - account for decimal separators in different locales
    - parse a `String` into `Double`, `Float`, `Integer` etc
    - handle `NumberFormatException` thrown when parsing Unit tests
- the Logging API has been updated to respect logging frameworks (log4j/logback) initialized via a binding-specific configuration file and to prevent `DebugTools.enableLogging(String)` from overriding initialized logger levels (see *Logging* for more information)
- helper methods have been added to FormatTools allowing a stage position to be formatted from an input `Double` and an input unit
- the Formats API has also been updated to add a new validate property to `MetadataOptions` and support for `MetadataOptions` has been moved to FormatHandler level to allow it to be used by both Readers and Writers
- initial work on Reader discoverability[10] extended the ClassList API to allow the `readers.txt` configuration file to be annotated using key/value pairs to mark optional Readers and specify additional per-Reader options

Other general improvements include:

- improved performance of `getUsedFiles`
- fixes for `FilePatternBlock`, `AxisGuesser`, `FilePattern`
- fixes for the detection of CSV pattern blocks by `FilePatternBlock`
- `bioformats_package.jar` now includes bio-formats-tools as a dependency so `ImageConverter`, `ImageFaker` and `ImageInfo` classes are included in the bundle

---

[10] https://github.com/openmicroscopy/design/issues/42

- the JACE C++ implementation has been decoupled as it does not function with Java 1.8 (see legacy repo[11])
- **ImageJ fixes**
    - to allow reader delegation when a legacy reader is enabled but not working
    - to allow ROIs to be imported to the ImageJ ROI manager or added to a new overlay
- **MATLAB fixes**
    - improved integration with Octave (thanks to Carnë Draug)
    - added logging initialization
- **Command-line tools fixes**
    - upgrade check no longer run when passing -version
    - common methods refactoring
    - showinf improvements to preload format
    - tiffcomment now warns that it requires an ImageDescription tag to be present in the TIFF file
- added many automated tests and improved FakeReader testing framework
- **documentation improvements include:**
    - clarifying status of legacy Quicktime and ND2 readers
    - noting that the Gatan reader does not currently support stacks
    - more Java examples added to the developer documentation
    - new units page for developers

The Data Model version 2016-06 has been released to introduce Folders[12], and to simplify both the graphical aspects of the model and code generation. Full details are available in the OME Model and Formats Documentation[13]. OME-XML changes include:

- *Map* is now a complexType rather than an element and *MapPairs* has been dropped
- extended enum metadata has been introduced to better support units
- *Shape* and *LightSource* are now complexTypes rather than elements
- BinData has been added to code generation to handle raw binary data
- **various code generation improvements to:**
    - simplify and standardize the generation process
    - remove a number of hard-coded exceptional cases allowing for easier maintenance and growth
    - allow for genuine abstract model types and enable C++ model implementation
- updated OME-XML and OME-TIFF public sample files

The Bio-Formats C++ native implementation has been decoupled from the Java codebase and will be released as OME-Files C++[14] from now on, with the exception of OME-XML which is still within Bio-Formats at present (there is a plan to decouple both the Java and the C++ versions of OME-XML in future).

The following components have had their licensing updated to Simplified (2-clause) BSD:

- XSL transforms
- specification code
- xsd-fu Python code

---

[11] https://github.com/ome/bio-formats-jace

[12] http://blog.openmicroscopy.org/data-model/future-plans/2016/05/23/folders-upcoming/

[13] http://www.openmicroscopy.org/site/support/ome-model/schemas/june-2016.html

[14] http://downloads.openmicroscopy.org/ome-files-cpp/

### 4.2.2 5.1.10 (2016 May 9)

Java bug fixes:

- fixed warnings being thrown for ImageJ and other non-FIJI users on Windows (these warnings were triggered by the removal of the 3i Slidebook DLLs from the source code repository in Bio-Formats 5.1.9 and should now only be triggered when opening Slidebook files without the update site enabled - http://www.openmicroscopy.org/info/slidebook)
- a fix in the ImageJ plugin for files grouped using the "Dimensions" option
- a fix for writing TIFF files in tiles

### 4.2.3 5.1.9 (2016 April 14)

- **Java bug fixes, including:**
  - **SDT**
    - fixed width padding calculation for single-pixel image
  - **Deltavision**
    - fixed the parsing of the new date format
    - added support for parsing and storing the working distance in native units
  - **Micromanager**
    - cleaned up JSON metadata parsing
  - **Olympus Fluoview**
    - fixed null pointer exceptions while parsing metadata
  - **Leica LIF**
    - fixed large multi-tiled files from having incorrect plane offsets after the 2GB mark
  - **EM formats (MRC and Spider)**
    - added native length support for EM readers
  - **Gatan**
    - fixed erroneous metadata parsing
    - added support for parsing and storing the physical sizes in native units
  - **OME-TIFF**
    - improved handling of OME-TIFF multi-file fileset's with partial metadata blocks
  - **Nikon ND2**
    - fixed the parsing of emission wavelength
  - **Olympus CellR (APL)**
    - fixed multiple parsing issues with the mtb file
  - **SlideBook**
    - removed slidebook dlls from Bio-Formats repository
    - http://www.openmicroscopy.org/info/slidebook
  - **Zeiss CZI**
    - fixed parsing of files with multiple mosaics and positions
- **Documentation updates, including:**
  - improved documentation for the export of BigTIFFs in ImageJ
- **C++:**
  - no changes.

### 4.2.4 5.1.8 (2016 February 15)

- **Java bug fixes, including:**
  - **FEI TIFF**
    - fixed stage position parsing and whitespace handling (thanks to Antoine Vandecreme)
  - **Pyramid TIFF**
    - fixed tile reading when a cache (.bfmemo) file is present
  - **MicroManager**
    - updated to parse JSON data from tags 50839 and 51123
    - fixed to detect `*_metadata.txt` files in addition to `metadata.txt` files
    - fixed to handle datasets with each stack in a single file
  - **OME-XML**
    - updated to make .ome.xml an official extension
  - **OME-TIFF**
    - fixed to ignore invalid BinaryOnly elements
  - **TIFF**
    - fixed caching of BigTIFF files
  - **Slidebook**
    - fixed handling of montages in Slidebook6Reader (thanks to Richard Myers)
  - Performance improvement for writing files to disk (thanks to Stephane Dallongeville)
  - **Build system**
    - fixed Maven POMs to reduce calls to artifacts.openmicroscopy.org
    - fixed bioformats_package.jar to include the loci.formats.tools package
- **Documentation updates, including:**
  - updated format pages to include links to example data
  - clarified description of Qu for MATLAB (thanks to Carnë Draug)
  - added installation instructions for Octave (thanks to Carnë Draug)
- **C++:**
  - Bugfixes to the OME-TIFF writer to correct use of the metadata store with multiple series
  - Ensure file and writer state consistency upon close failure

### 4.2.5 5.1.7 (2015 December 7)

- **Java bug fixes, including:**
  - Prevent physical pixel sizes from being rounded to 0, for all formats
  - **Metamorph**
    - fixed calculation of Z step size
    - fixed detection of post-processed dual camera acquisitions (thanks to Mark Kittisopikul)
  - **OME-XML**
    - fixed XML validation when an ‘xmlns’ value is not present (thanks to Bjoern Thiel)
  - **MINC**
    - fixed endianness of image data

  - **Andor/Fluoview TIFF**
    - fixed calculation of Z step size
  - **MATLAB**
    - improved performance by reducing static classpath checks (thanks to Mark Kittisopikul)
  - **Gatan**
    - fixed physical size parsing in non-English locales
  - **Automated testing**
    - fixed handling of non-default physical size and plane position units
- **Documentation updates, including:**
  - updated MapAnnotation example to show linkage of annotations to images
- **C++:**
  - no changes, released to keep version numbers in sync with Bio-Formats Java

### 4.2.6 5.1.6 (2015 November 16)

- **Java bug fixes, including:**
  - **Updated to use native units for following formats:**
    - IMOD
    - Analyze
    - Unisoku
    - Olympus CellR (APL)
  - **Metamorph TIFF**
    - fixed handling of multi-line descriptions
    - added support for dual camera acquisitions
  - **Zeiss LMS**
    - fixed exception in type detection
  - **Zeiss CZI**
    - fixed detection of line scan Airyscan data
  - **Slidebook**
    - fixed calculation of physical Z size
  - **ImageJ plugins**
    - fixed handling of non-default units
    - fixed setting of preferences via macros
  - **Automated testing**
    - fixed handling of non-default units for physical sizes and timings
- **C++ changes, including:**
  - allow relocatable installation on Windows
  - reduce time required for debug builds
- **Documentation updates, including:**
  - addition of “Multiple Images” column to the supported formats table
  - addition of a MapAnnotation example

### 4.2.7 5.1.5 (2015 October 12)

- **Java bug fixes, including:**
  - **ImageJ plugins**
    - fixed use of "Group files..." and "Open files individually" options
    - fixed placement of ROIs
    - fixed size of the "About Plugins > Bio-Formats Plugins" window
  - **xsd-fu (code generation)**
    - removed OMERO-specific logic
  - **Metamorph**
    - fixed physical Z size calculation
  - **Gatan DM3/DM4**
    - fixed physical pixel size parsing
  - **BMP**
    - added support for RLE compression
  - **DICOM**
    - updated to respect the WINDOW_CENTER tag
    - fixed image dimensions when multiple sets of width and height values are present
  - **Fluoview and Andor TIFF**
    - fixed physical Z size calculation
  - **Imspector OBF**
    - updated to parse OME-XML metadata (thanks to Bjoern Thiel)
- **C++ changes:**
  - TIFF strip/tile row and column calulations corrected to compute the correct row and column count
  - Several compiler warnings removed (false positive warnings in third-party headers disabled, and additional warnings fixed)
  - It is now possible to build with Boost 1.59 and compile with a C++14 compiler
- The source release is now provided in both tar.xz and zip formats
- **Documentation updates, including:**
  - **substantial updates to the format pages**
    - improved linking of reader/writer classes to each format page
    - improved supported metadata pages for each format
    - updated format page formatting for clarity
    - added developer documentation for adding and modifying format pages

### 4.2.8 5.1.4 (2015 September 7)

- **Bug fixes, including:**
  - **Command line tools**
    - fixed display of usage information
  - **Automated testing**
    - fixed problems with symlinked data on Windows

    - added unit tests for checking physical pixel size creation
  - **Cellomics**
    - fixed reading of sparse plates
  - **SlideBook**
    - fixed a few lingering issues with native library packaging
  - **SimplePCI/HCImage TIFF**
    - fixed bit depth parsing for files from newer versions of HCImage
  - **SimplePCI/HCImage .cxd**
    - fixed image dimensions to allow for extra padding bytes
  - **Leica LIF**
    - improved reading of image descriptions
  - **ICS**
    - fixed to use correct units for timestamps and physical pixel sizes
  - **MicroManager**
    - fixed to use correct units for timestamps
  - **Gatan .dm3/.dm4**
    - fixed problems with reading double-precision metadata values
  - **Hamamatsu NDPI**
    - fixed reading of mask images
  - **Leica .lei**
    - fixed reading of bit depth and endianness for datasets that were modified after acquisition
  - **FEI TIFF**
    - updated to read metadata from files produced by FEI Titan systems
  - **QuickTime**
    - fixed to handle planes with no stored pixels
  - **Leica .scn**
    - fixed reading of files that contain fewer images than expected
  - **Zeiss .czi**
    - fixed channel colors when an alpha value is not recorded
    - fixed handling of pre-stitched image tiles
  - **SDT**
    - added support for Zip-compressed images
  - **Nikon .nd2**
    - fixed to read image dimensions from new non-XML metadata
  - **OME-XML**
    - fixed writing of integer metadata values
- **Native C++ updates:**
  - completed support for building on Windows
- **Documentation updates, including:**
  - updated instructions for running automated data tests
  - clarified JVM versions currently supported

### 4.2.9 5.1.3 (2015 July 21)

- **Native C++ updates:**
    - Added cmake superbuild to build core dependencies (zlib, bzip2, png, icu, xerces, boost)
    - Progress on support for Windows
- **Bug fixes, including:**
    - Fixed segfault in the *showinf* tool used with the C++ bindings
    - Allow reading from https URLs
    - **ImageJ**
        * improved performance of displaying ROIs
    - **Command line tools**
        * fixed bfconvert to correctly create datasets with multiple files
    - **Metamorph**
        * improved detection of time series
        * fixed .nd datasets with variable Z and T counts in each channel
        * fixed .nd datasets that contain invalid TIFF/STK files
        * fixed dimensions when the number of planes does not match the recorded Z, C, and T sizes
    - **SlideBook**
        * improved native library detection (thanks to Richard Myers)
    - **JPEG**
        * fixed decompression of lossless files with multiple channels (thanks to Aaron Avery)
    - **Imspector OBF**
        * updated to support version 2 files (thanks to Bjoern Thiel)
    - **Imspector MSR**
        * improved detection of Z stacks
    - **PerkinElmer Opera Flex**
        * improved handling of multiple acquisitions of the same plate
    - **Zeiss CZI**
        * fixed error when opening single-file datasets whose names contained "(" and ")"
    - **TIFF**
        * improved speed of reading files with many tiles
    - **AVI**
        * updated to read frame index (idx1) tables
    - **Nikon ND2**
        * fixed channel counts for files with more than 3 channels
    - **PNG**
        * fixed decoding of interlaced images with a width or height that is not a multiple of 8
    - **PSD**
        * improved reading of compressed images
- **Documentation improvements, including:**
    - updated instructions for writing a new file format reader

    - updated usage information for command line tools
    - new Javadocs for the *MetadataStore* and *MetadataRetrieve* interfaces

### 4.2.10 5.1.2 (2015 May 28)

- Added OME-TIFF writing support to the native C++ implementation
- OME-TIFF export: switch to BigTIFF if .ome.tf2, .ome.tf8, or .ome.btf extensions are used
- Improved MATLAB developer documentation
- Added SlideBook reader that uses the SDK from 3I (thanks to Richard Myers and 3I - Intelligent Imaging Innovations[15])
- Preliminary work to make MATLAB toolbox work with Octave
- **Many bug fixes, including:**
    - **ImageJ**
        - fixed regression in getPlanePosition* macro extension methods
        - fixed display of composite color virtual stacks
    - **Nikon ND2**
        - improved parsing of plane position and timestamp data
    - **TIFF**
        - reduced memory required to read color lookup tables
    - **Zeiss LSM**
        - improved parsing of 16-bit color lookup tables
    - **Zeiss CZI**
        - fixed ordering of original metadata table
        - fixed reading of large pre-stitched tiled images
    - **AIM**
        - fixed handling of truncated files
    - **Metamorph/MetaXpress TIFF**
        - improved UIC1 metadata tag parsing

### 4.2.11 5.1.1 (2015 April 28)

- Add TIFF writing support to the native C++ implementation
- Fixed remaining functional differences between Windows and Mac/Linux
- Improved performance of ImageJ plugin when working with ROIs
- TIFF export: switch to BigTIFF if .tf2, .tf8, or .btf extensions are used
- **Many bug fixes, including:**
    - fixed upgrade checking to more accurately report when a new version is available
    - **Zeiss CZI**
        - fixed ordering of multiposition data
        - improved support for RGB and fused images
    - **Nikon ND2**
        - improved ordering of multiposition data

---

[15] https://www.intelligent-imaging.com

  - **Leica LIF**
    - improved metadata validity checks
    - improved excitation wavelength detection
  - **Metamorph STK/TIFF**
    - record lens numerical aperture
    - fixed millisecond values in timestamps
  - **Gatan DM3**
    - correctly detect signed pixel data
  - **Imaris HDF**
    - fix channel count detection
  - **ICS export**
    - fix writing of files larger than 2GB

### 4.2.12 5.1.0 (2015 April 2)

- Improvements to performance with network file systems
- Improvements to developer documentation
- Initial version of native C++ implementation[16]
- Improved support for opening and saving ROI data with ImageJ
- Added support for *CellH5* data (thanks to Christoph Sommer)
- Added support for *Perkin Elmer Nuance* data (thanks to Lee Kamentsky)
- Added support for *Amnis FlowSight* data (thanks to Lee Kamentsky and Sebastien Simard)
- Added support for *Veeco AFM* data
- Added support for *Zeiss .lms* data (not to be confused with .lsm)
- Added support for *I2I* data
- Added support for writing Vaa3D data (thanks to Brian Long)
- Updated to OME schema 2015-01[17]
- Update RandomAccessInputStream and RandomAccessOutputStream to read and write bits
- **Many bug fixes, including:**
  - **Leica SCN**
    - fix pixel data decompression
    - fix handling of files with multiple channels
    - parse magnification and physical pixel size data
  - **Olympus/CellSens .vsi**
    - more thorough parsing of metadata
    - improved reading of thumbnails and multi-resolution images
  - **NDPI**
    - fix reading of files larger than 4GB
    - parse magnification data
  - **Zeiss CZI**

---

[16] http://www.openmicroscopy.org/site/support/bio-formats5.1/developers/cpp/overview.html

[17] http://www.openmicroscopy.org/site/support/ome-model//schemas/january-2015.html

    - improve parsing of plane position coordinates
  - **Inveon**
    - fix reading of files larger than 2 GB
  - **Nikon ND2**
    - many improvements to dimension detection
    - many improvements to metadata parsing accuracy
    - update original metadata table to include PFS data
  - **Gatan DM3**
    - fix encoding when parsing metadata
    - fix physical pixel size parsing
  - **Metamorph**
    - fix off-by-one in metadata parsing
    - fix number parsing to be independent of the system locale
  - **JPEG**
    - parse EXIF data, if present (thanks to Paul Van Schayck)
  - **OME-XML/OME-TIFF**
    - fix handling of missing image data
  - **PrairieView**
    - improved support for version 5.2 data (thanks to Curtis Rueden)
  - **DICOM**
    - fix dimensions for multi-file datasets
    - fix pixel data decoding for files with multiple images
  - **PNG**
    - reduce memory required to read large images
  - **Imspector OBF**
    - fix support for version 5 data (thanks to Bjoern Thiel)
  - **PCORAW**
    - fix reading of files larger than 4 GB
  - **AIM**
    - fix reading of files larger than 4 GB
  - **MRC**
    - add support for signed 8-bit data
  - Fix build errors in MIPAV plugin
  - **ImageJ**
    - fix export from a script/macro
    - fix windowless export
    - allow exporting from any open image window
    - allow the "Group files with similar names" and "Swap dimensions" options to be used from a script/macro
  - **bfconvert**
    - fix writing each channel, Z section, and/or timepoint to a separate file
    - add options for configuring the tile size to be used when saving images

### 4.2.13 5.0.8 (2015 February 10)

- No changes - release to keep version numbers in sync with OMERO

### 4.2.14 5.0.7 (2015 February 5)

- **Several bug fixes, including:**
    - ND filter parsing for DeltaVision
    - Timepoint count and original metadata parsing for Metamorph
    - Build issues when Genshi or Git are missing
    - LZW image decoding

### 4.2.15 5.0.6 (2014 November 11)

- **Several bug fixes, including:**
    - Pixel sign for DICOM images
    - Image dimensions for Zeiss CZI and Nikon ND2
    - Support for Leica LIF files produced by LAS AF 4.0 and later

### 4.2.16 5.0.5 (2014 September 23)

- Documentation improvements
- Support for non-spectral Prairie 5.2 datasets

### 4.2.17 5.0.4 (2014 September 3)

- Fix compile and runtime errors under Java 1.8
- Improvements to Nikon .nd2 metadata parsing
- Added support for PicoQuant .bin files (thanks to Ian Munro)

### 4.2.18 5.0.3 (2014 August 7)

- Many bug fixes for Nikon .nd2 files
- **Several other bug fixes, including:**
    - LZW image decoding
    - Stage position parsing for Zeiss CZI
    - Exposure time units for ScanR
    - Physical pixel size units for DICOM
    - NDPI and Zeiss LSM files larger than 4GB
    - Z and T dimensions for InCell 6000 plates
    - Export of RGB images in ImageJ
- Improved metadata saving in MATLAB functions

### 4.2.19 5.0.2 (2014 May 28)

- Many bug fixes for Zeiss .czi files
- **Several other bug fixes, including:**
    - Gatan .dm3 units and step count parsing
    - Imspector .msr 5D image support
    - DICOM reading of nested tags
- Update native-lib-loader version (to 2.0.1)
- Updates and improvements to user documentation

### 4.2.20 5.0.1 (2014 Apr 7)

- Added image pyramid support for CellSens .vsi data
- **Several bug fixes, including:**
    - Woolz import into OMERO
    - Cellomics file name parsing (thanks to Lee Kamentsky)
    - Olympus FV1000 timestamp support (thanks to Lewis Kraft and Patrick Riley)
    - (A)PNG large image support
    - Zeiss .czi dimension detection for SPIM datasets
- Performance improvements for Becker & Hickl .sdt file reading (thanks to Ian Munro)
- Performance improvements to directory listing over NFS
- Update slf4j and logback versions (to 1.7.6 and 1.1.1 respectively)
- Update jgoodies-forms version (to 1.7.2)

### 4.2.21 5.0.0 (2014 Feb 25)

- New bundled ‘bioformats_package.jar’ for ImageJ
- Now uses logback as the slf4j binding by default
- Updated component names, .jar file names, and Maven artifact names
- Fixed support for Becker & Hickl .sdt files with multiple blocks
- Fixed tiling support for TIFF, Hamamatsu .ndpi, JPEG, and Zeiss .czi files
- Improved continuous integration testing
- Updated *command line documentation*

### 4.2.22 5.0.0-RC1 (2013 Dec 19)

- Updated Maven build system and launched new Artifactory repository (http://artifacts.openmicroscopy.org)
- **Added support for:**
    - *Bio-Rad SCN*
    - *Yokogawa CellVoyager* (thanks to Jean-Yves Tinevez)
    - *LaVision Imspector*
    - *PCORAW*
    - *Woolz* (thanks to Bill Hill)
- Added support for populating and parsing ModuloAlong{Z, C, T} annotations for FLIM/SPIM data

- Updated netCDF and slf4j version requirements - netCDF 4.3.19 and slf4j 1.7.2 are now required
- Updated and improved *MATLAB users* and *developers* documentation
- Many bug fixes including for Nikon ND2, Zeiss CZI, and CellWorX formats

### 4.2.23 5.0.0-beta1 (2013 June 20)

- Updated to 2013-06 OME-XML schema[18]
- Improved the performance in tiled formats
- Added caching of Reader metadata using http://code.google.com/p/kryo/
- **Added support for:**
  - *Aperio AFI*
  - *Inveon*
  - *MPI-BPC Imspector*
- **Many bug fixes, including:**
  - Add ZEN 2012/Lightsheet support to Zeiss CZI
  - Improved testing of autogenerated code
  - Moved OME-XML specification into Bio-Formats repository

### 4.2.24 4.4.10 (2014 Jan 15)

- Bug fixes including CellWorx, Metamorph and Zeiss CZI
- Updates to MATLAB documentation

### 4.2.25 4.4.9 (2013 Oct 16)

- Many bug fixes including improvements to support for ND2 format
- Java 1.6 is now the minimum supported version; Java 1.5 is no longer supported

### 4.2.26 4.4.8 (2013 May 2)

- No changes - release to keep version numbers in sync with OMERO

### 4.2.27 4.4.7 (2013 April 25)

- Many bug fixes to improve support for more than 20 formats
- Improved export to multi-file datasets
- Now uses slf4j for logging rather than using log4j directly, enabling other logging implementations to be used, for example when Bio-Formats is used as a component in other software using a different logging system.

### 4.2.28 4.4.6 (2013 February 11)

- Many bug fixes
- Further documentation improvements

---

[18] http://www.openmicroscopy.org/site/support/ome-model/

### 4.2.29 4.4.5 (2012 November 13)

- Restructured and improved documentation
- **Many bug fixes, including:**
    - File grouping in many multi-file formats
    - Maven build fixes
    - ITK plugin fixes

### 4.2.30 4.4.4 (2012 September 24)

- Many bug fixes

### 4.2.31 4.4.2 (2012 August 22)

- Security fix for OMERO plugins for ImageJ

### 4.2.32 4.4.1 (2012 July 20)

- Fix a bug that prevented BigTIFF files from being read
- Fix a bug that prevented PerkinElmer .flex files from importing into OMERO

### 4.2.33 4.4.0 (2012 July 13)

- Many, many bug fixes
- **Added support for:**
    - .nd2 files from Nikon Elements version 4
    - PerkinElmer Operetta data
    - MJPEG-compressed AVIs
    - MicroManager datasets with multiple positions
    - Zeiss CZI data
    - IMOD data

### 4.2.34 4.3.3 (2011 October 18)

- **Many bug fixes, including:**
    - Speed improvements to HCImage/SimplePCI and Zeiss ZVI files
    - Reduce memory required by Leica LIF reader
    - More accurately populate metadata for Prairie TIFF datasets
    - Various fixes to improve the security of the OMERO plugin for ImageJ
    - Better dimension detection for Bruker MRI datasets
    - Better thumbnail generation for histology (SVS, NDPI) datasets
    - Fix stage position parsing for Metamorph TIFF datasets
    - Correctly populate the channel name for PerkinElmer Flex files

### 4.2.35 4.3.2 (2011 September 15)

- **Many bug fixes, including:**
    - Better support for Volocity datasets that contain compressed data
    - More accurate parsing of ICS metadata
    - More accurate parsing of cellSens .vsi files
- **Added support for a few new formats**
    - .inr
    - Canon DNG
    - Hitachi S-4800
    - Kodak .bip
    - JPX
    - Volocity Library Clipping (.acff)
    - Bruker MRI
- Updated Zeiss LSM reader to parse application tags
- Various performance improvements, particularly for reading/writing TIFFs
- Updated OMERO ImageJ plugin to work with OMERO 4.3.x

### 4.2.36 4.3.1 (2011 July 8)

- **Several bug fixes, including:**
    - Fixes for multi-position DeltaVision files
    - Fixes for MicroManager 1.4 data
    - Fixes for 12 and 14-bit JPEG-2000 data
    - Various fixes for reading Volocity .mvd2 datasets
- Added various options to the ‘showinf’ and ‘bfconvert’ command line tools
- Added better tests for OME-XML backwards compatibility
- Added the ability to roughly stitch tiles in a multi-position dataset

### 4.2.37 4.3.0 (2011 June 14)

- **Many bug fixes, including:**
    - Many fixes for reading and writing sub-images
    - Fixes for stage position parsing in the Zeiss formats
    - File type detection fixes
- Updated JPEG-2000 reading and writing support to be more flexible
- **Added support for 9 new formats:**
    - InCell 3000
    - Trestle
    - Hamamatsu .ndpi
    - Hamamatsu VMS
    - SPIDER
    - Volocity .mvd2

  - Olympus SIS TIFF
  - IMAGIC
  - cellSens VSI
- Updated to 2011-06 OME-XML schema
- Minor speed improvements in many formats
- Switched version control system from SVN to Git
- Moved all Trac tickets into the OME Trac: https://trac.openmicroscopy.org
- Improvements to testing frameworks
- Added Maven build system as an alternative to the existing Ant build system
- Added pre-compiled C++ bindings to the download page

### 4.2.38 4.2.2 (2010 December 6)

- **Several bug fixes, notably:**
  - Metadata parsing fixes for Zeiss LSM, Metamorph STK, and FV1000
  - Prevented leaked file handles when exporting to TIFF/OME-TIFF
  - Fixed how BufferedImages are converted to byte arrays
- Proper support for OME-XML XML annotations
- Added support for SCANCO Medical .aim files
- Minor improvements to ImageJ plugins
- Added support for reading JPEG-compressed AVI files

### 4.2.39 4.2.1 (2010 November 12)

- Many, many bug fixes
- **Added support for 7 new formats:**
  - CellWorX .pnl
  - ECAT7
  - Varian FDF
  - Perkin Elmer Densitometer
  - FEI TIFF
  - Compix/SimplePCI TIFF
  - Nikon Elements TIFF
- Updated Zeiss LSM metadata parsing, with generous assistance from Zeiss, FMI, and MPI-CBG
- Lots of work to ensure that converted OME-XML validates
- Improved file stitching functionality; non-numerical file patterns and limited regular expression-style patterns are now supported

### 4.2.40 4.2.0 (2010 July 9)

- Fixed many, many bugs in all aspects of Bio-Formats
- Reworked ImageJ plugins to be more user- and developer-friendly
- Added many new unit tests

- Added support for approximately 25 new file formats, primarily in the SPM domain
- Rewrote underlying I/O infrastructure to be thread-safe and based on Java NIO
- Rewrote OME-XML parsing/generation layer; OME-XML 2010-06 is now supported
- Improved support for exporting large images
- Improved support for exporting to multiple files
- Updated logging infrastructure to use slf4j and log4j

### 4.2.41 4.1.1 (2009 December 3)

- Fixed many bugs in popular file format readers

4.1 (2009 October 21):

- Fixed many bugs in most file format readers
- Significantly improved confocal and HCS metadata parsing
- Improved C++ bindings
- Eliminated references to Java AWT classes in core Bio-Formats packages
- Added support for reading Flex datasets from multiple servers
- Improved OME-XML generation; generated OME-XML is now valid
- Added support for Olympus ScanR data
- Added OSGi information to JARs
- Added support for Amira Mesh files
- Added support for LI-FLIM files
- Added more informative exceptions
- Added support for various types of ICS lifetime data
- Added support for Nikon EZ-C1 TIFFs
- Added support for Maia Scientific MIAS data

### 4.2.42 4.0.1 (2009 June 1)

- Lots of bug fixes in most format readers and writers
- Added support for Analyze 7.1 files
- Added support for Nifti files
- Added support for Cellomics .c01 files
- Refactored ImageJ plugins
- Bio-Formats, the common package, and the ImageJ plugins now require Java 1.5
- Eliminated native library dependency for reading lossless JPEGs
- Changed license from GPL v3 or later to GPL v2 or later
- Updated Olympus FV1000, Zeiss LSM, Zeiss ZVI and Nikon ND2 readers to parse ROI data
- Added option to ImageJ plugin for displaying ROIs parsed from the chosen dataset
- Fixed BufferedImage construction for signed data and unsigned int data

### 4.2.43 4.0.0 (2009 March 3)

- Improved OME data model population for Olympus FV1000, Nikon ND2, Metamorph STK, Leica LEI, Leica LIF, InCell 1000 and MicroManager
- Added TestNG tests for format writers
- Added option to ImageJ plugin to specify custom colors when customizing channels
- Added ability to upgrade the ImageJ plugin from within ImageJ
- Fixed bugs in Nikon ND2, Leica LIF, BioRad PIC, TIFF, PSD, and OME-TIFF
- Fixed bugs in Data Browser and Exporter plugins
- Added support for Axon Raw Format (ARF), courtesy of Johannes Schindelin
- Added preliminary support for IPLab-Mac file format

### 4.2.44 2008 December 29

- Improved metadata support for DeltaVision, Zeiss LSM, MicroManager, and Leica LEI
- Restructured code base/build system to be component-driven
- Added support for JPEG and JPEG-2000 codecs within TIFF, OME-TIFF and OME-XML
- Added support for 16-bit compressed Flex files
- Added support for writing JPEG-2000 files
- Added support for Minolta MRW format
- Added support for the 2008-09 release of OME-XML
- Removed dependency on JMagick
- Re-added caching support to data browser plugin
- Updated loci.formats.Codec API to be more user-friendly
- Expanded loci.formats.MetadataStore API to better represent the OME-XML model
- Improved support for Nikon NEF
- Improved support for TillVision files
- Improved ImageJ import options dialog
- Fixed bugs with Zeiss LSM files larger than 4 GB
- Fixed minor bugs in most readers
- Fixed bugs with exporting from an Image5D window
- Fixed several problems with virtual stacks in ImageJ

### 4.2.45 2008 August 30

- Fixed bugs in many file format readers
- Fixed several bugs with swapping dimensions
- Added support for Olympus CellR/APL files
- Added support for MINC MRI files
- Added support for Aperio SVS files compressed with JPEG 2000
- Added support for writing OME-XML files
- Added support for writing APNG files
- Added faster LZW codec

- Added drag and drop support to ImageJ shortcut window
- Re-integrated caching into the data browser plugin

### 4.2.46 2008 July 1

- Fixed bugs in most file format readers
- Fixed bugs in OME and OMERO download functionality
- Fixed bugs in OME server-side import
- Improved metadata storage/retrieval when uploading to and downloading from the OME Perl server
- Improved Bio-Formats ImageJ macro extensions
- Major updates to MetadataStore API
- Updated OME-XML generation to use 2008-02 schema by default
- Addressed time and memory performance issues in many readers
- Changed license from LGPL to GPL
- Added support for the FEI file format
- Added support for uncompressed Hamamatsu Aquacosmos NAF files
- Added support for Animated PNG files
- Added several new options to Bio-Formats ImageJ plugin
- Added support for writing ICS files

### 4.2.47 2008 April 17

- Fixed bugs in Slidebook, ND2, FV1000 OIB/OIF, Perkin Elmer, TIFF, Prairie, Openlab, Zeiss LSM, MNG, Molecular Dynamics GEL, and OME-TIFF
- Fixed bugs in OME and OMERO download functionality
- Fixed bugs in OME server-side import
- Fixed bugs in Data Browser
- Added support for downloading from OMERO 2.3 servers
- Added configuration plugin
- Updates to MetadataStore API
- Updates to OME-XML generation - 2007-06 schema used by default
- Added support for Li-Cor L2D format
- Major updates to TestNG testing framework
- Added support for writing multi-series OME-TIFF files
- Added support for writing BigTIFF files

### 4.2.48 2008 Feb 12

- Fixed bugs in QuickTime, SimplePCI and DICOM
- Fixed a bug in channel splitting logic

### 4.2.49 2008 Feb 8

- Many critical bugfixes in format readers and ImageJ plugins
- **Newly reborn Data Browser for 5D image visualization**
    - some combinations of import options do not work yet

### 4.2.50 2008 Feb 1

- Fixed bugs in Zeiss LSM, Metamorph STK, FV1000 OIB/OIF, Leica LEI, TIFF, Zeiss ZVI, ICS, Prairie, Openlab LIFF, Gatan, DICOM, QuickTime
- Fixed bug in OME-TIFF writer
- Major changes to MetadataStore API
- Added support for JPEG-compressed TIFF files
- **Added basic support for Aperio SVS files**
    - JPEG2000 compression is still not supported
- Improved “crop on import” functionality
- Improvements to bfconvert and bfview
- Improved OME-XML population for several formats
- Added support for JPEG2000-compressed DICOM files
- EXIF data is now parsed from TIFF files

### 4.2.51 2007 Dec 28

- Fixed bugs in Leica LEI, Leica TCS, SDT, Leica LIF, Visitech, DICOM, Imaris 5.5 (HDF), and Slidebook readers
- Better parsing of comments in TIFF files exported from ImageJ
- Fixed problem with exporting 48-bit RGB data
- Added logic to read multi-series datasets spread across multiple files
- Improved channel merging in ImageJ - requires ImageJ 1.39l
- Support for hyperstacks and virtual stacks in ImageJ - requires ImageJ 1.39l
- Added API for reading directly from a byte array or InputStream
- Metadata key/value pairs are now stored in ImageJ’s “Info” property
- Improved OMERO download plugin - it is now much faster
- Added “open all series” option to ImageJ importer
- ND2 reader based on Nikon’s SDK now uses our own native bindings
- Fixed metadata saving bug in ImageJ
- Added sub-channel labels to ImageJ windows
- Major updates to 4D Data Browser
- Minor updates to automated testing suite

### 4.2.52 2007 Dec 1

- Updated OME plugin for ImageJ to support downloading from OMERO
- Fixed bug with floating point TIFFs
- Fixed bugs in Visitech, Zeiss LSM, Imaris 5.5 (HDF)
- Added alternate ND2 reader that uses Nikon's native libraries
- Fixed calibration and series name settings in importer
- Added basic support for InCell 1000 datasets

### 4.2.53 2007 Nov 21

- Fixed bugs in ND2, Leica LIF, DICOM, Zeiss ZVI, Zeiss LSM, FV1000 OIB, FV1000 OIF, BMP, Evotec Flex, BioRad PIC, Slidebook, TIFF
- Added new ImageJ plugins to slice stacks and do "smart" RGB merging
- **Added "windowless" importer plugin**
  - uses import parameters from IJ_Prefs.txt, without prompting the user
- Improved stack slicing and colorizing logic in importer plugin
- **Added support for DICOM files compressed with lossless JPEG**
  - requires native libraries
- Fixed bugs with signed pixel data
- Added support for Imaris 5.5 (HDF) files
- Added 4 channel merging to importer plugin
- Added API methods for reading subimages
- Major updates to the 4D Data Browser

### 4.2.54 2007 Oct 17

- Critical OME-TIFF bugfixes
- Fixed bugs in Leica LIF, Zeiss ZVI, TIFF, DICOM, and AVI readers
- Added support for JPEG-compressed ZVI images
- Added support for BigTIFF
- Added importer plugin option to open each plane in a new window
- Added MS Video 1 codec for AVI

### 4.2.55 2007 Oct 1

- Added support for compressed DICOM images
- Added support for uncompressed LIM files
- Added support for Adobe Photoshop PSD files
- Fixed bugs in DICOM, OME-TIFF, Leica LIF, Zeiss ZVI, Visitech, PerkinElmer and Metamorph
- Improved indexed color support
- Addressed several efficiency issues
- Fixed how multiple series are handled in 4D data browser
- Added option to reorder stacks in importer plugin

- Added option to turn off autoscaling in importer plugin
- Additional metadata convenience methods

### 4.2.56 2007 Sept 11

- Major improvements to ND2 support; lossless compression now supported
- Support for indexed color images
- Added support for Simple-PCI .cxd files
- Command-line OME-XML validation
- Bugfixes in most readers, especially Zeiss ZVI, Metamorph, PerkinElmer and Leica LEI
- Initial version of Bio-Formats macro extensions for ImageJ

### 4.2.57 2007 Aug 1

- Added support for latest version of Leica LIF
- Fixed several issues with Leica LIF, Zeiss ZVI
- Better metadata mapping for Zeiss ZVI
- Added OME-TIFF writer
- Added MetadataRetrieve API for retrieving data from a MetadataStore
- Miscellaneous bugfixes

### 4.2.58 2007 July 16

- Fixed several issues with ImageJ plugins
- Better support for Improvision and Leica TCS TIFF files
- Minor improvements to Leica LIF, ICS, QuickTime and Zeiss ZVI readers
- Added searchable metadata window to ImageJ importer

### 4.2.59 2007 July 2

- Fixed issues with ND2, Openlab LIFF and Slidebook
- Added support for Visitech XYS
- Added composite stack support to ImageJ importer

### 4.2.60 2007 June 18

- Fixed issues with ICS, ND2, MicroManager, Leica LEI, and FV1000 OIF
- Added support for large (> 2 GB) ND2 files
- Added support for new version of ND2
- Minor enhancements to ImageJ importer
- Implemented more flexible logging
- Updated automated testing framework to use TestNG
- Added package for caching images produced by Bio-Formats

### 4.2.61 2007 June 6

- Fixed OME upload/download bugs
- Fixed issues with ND2, EPS, Leica LIF, and OIF
- Added support for Khoros XV
- Minor improvements to the importer

### 4.2.62 2007 May 24

- Better Slidebook support
- Added support for Quicktime RPZA
- Better Leica LIF metadata parsing
- Added support for BioRad PIC companion files
- Added support for bzip2-compressed files
- Improved ImageJ plugins
- Native support for FITS and PGM

### 4.2.63 2007 May 2

- Added support for NRRD
- Added support for Evotec Flex (requires LuraWave Java SDK with license code)
- Added support for gzip-compressed files
- Added support for compressed QuickTime headers
- Fixed QuickTime Motion JPEG-B support
- Fixed some memory issues (repeated small array allocations)
- Fixed issues reading large (> 2 GB) files
- Removed "ignore color table" logic, and replaced with Leica-specific solution
- Added status event reporting to readers
- Added API to toggle metadata collection
- Support for multiple dimensions rasterized into channels
- Deprecated reader and writer methods that accept the 'id' parameter
- Deprecated IFormatWriter.save in favor of saveImage and saveBytes
- Moved dimension swapping and min/max calculation logic to delegates
- Separate GUI logic into isolated loci.formats.gui package
- Miscellaneous bugfixes and tweaks in most readers and writers
- Many other bugfixes and improvements

### 4.2.64 2007 Mar 16

- Fixed calibration bugs in importer plugin
- Enhanced metadata support for additional formats
- Fixed LSM bug

### 4.2.65 2007 Mar 7

- Added support for Micro-Manager file format
- Fixed several bugs – Leica LIF, Leica LEI, ICS, ND2, and others
- Enhanced metadata support for several formats
- Load series preview thumbnails in the background
- Better implementation of openBytes(String, int, byte[]) for most readers
- Expanded unit testing framework

### 4.2.66 2007 Feb 28

- Better series preview thumbnails
- Fixed bugs with multi-channel Leica LEI
- Fixed bugs with "ignore color tables" option in ImageJ plugin

### 4.2.67 2007 Feb 26

- Many bugfixes: Leica LEI, ICS, FV1000 OIB, OME-XML and others
- Better metadata parsing for BioRad PIC files
- Enhanced API for calculating channel minimum and maximum values
- Expanded MetadataStore API to include more semantic types
- Added thumbnails to series chooser in ImageJ plugin
- Fixed plugins that upload and download from an OME server

### 4.2.68 2007 Feb 7

- Added plugin for downloading images from OME server
- Improved HTTP import functionality
- Added metadata filtering – unreadable metadata is no longer shown
- Better metadata table for multi-series datasets
- Added support for calibration information in Gatan DM3
- Eliminated need to install JAI Image I/O Tools to read ND2 files
- Fixed ZVI bugs: metadata truncation, and other problems
- Fixed bugs in Leica LIF: incorrect calibration, first series labeling
- Fixed memory bug in Zeiss LSM
- Many bugfixes: PerkinElmer, DeltaVision, Leica LEI, LSM, ND2, and others
- IFormatReader.close(boolean) method to close files temporarily
- Replaced Compression utility class with extensible Compressor interface
- Improved testing framework to use .bioformats configuration files

### 4.2.69 2007 Jan 5

- Added support for Prairie TIFF
- Fixed bugs in Zeiss LSM, OIB, OIF, and ND2
- Improved API for writing files
- Added feature to read files over HTTP
- Fixed bugs in automated testing framework
- Miscellaneous bugfixes

### 4.2.70 2006 Dec 22

- Expanded ImageJ plugin to optionally use Image5D or View5D
- Improved support for ND2 and JPEG-2000 files
- Added automated testing framework
- Fixed bugs in Zeiss ZVI reader
- Miscellaneous bugfixes

### 4.2.71 2006 Nov 30

- Added support for ND2/JPEG-2000
- Added support for MRC
- Added support for MNG
- Improved support for floating-point images
- Fixed problem with 2-channel Leica LIF data
- Minor tweaks and bugfixes in many readers
- Improved file stitching logic
- Allow ImageJ plugin to be called from a macro

### 4.2.72 2006 Nov 2

- Bugfixes and improvements for Leica LIF, Zeiss LSM, OIF and OIB
- Colorize channels when they are split into separate windows
- Fixed a bug with 4-channel datasets

### 4.2.73 2006 Oct 31

- Added support for Imaris 5 files
- Added support for RGB ICS images

### 4.2.74 2006 Oct 30

- Added support for tiled TIFFs
- Fixed bugs in ICS reader
- Fixed importer plugin deadlock on some systems

### 4.2.75 2006 Oct 27

- Multi-series support for Slidebook
- Added support for Alicona AL3D
- Fixed plane ordering issue with FV1000 OIB
- Enhanced dimension detection in FV1000 OIF
- Added preliminary support for reading NEF images
- Added option to ignore color tables
- Fixed ImageJ GUI problems
- Fixed spatial calibration problem in ImageJ
- Fixed some lingering bugs in Zeiss ZVI support
- Fixed bugs in OME-XML reader
- Tweaked ICS floating-point logic
- Fixed memory leaks in all readers
- Better file stitching logic

### 4.2.76 2006 Oct 6

- Support for 3i SlideBook format (single series only for now)
- Support for 16-bit RGB palette TIFF
- Fixed bug preventing import of certain Metamorph STK files
- Fixed some bugs in PerkinElmer UltraView support
- Fixed some bugs in Leica LEI support
- Fixed a bug in Zeiss ZVI support
- Fixed bugs in Zeiss LSM support
- Fixed a bug causing slow identification of Leica datasets
- Fixed bugs in the channel merging logic
- Fixed memory leak for OIB format
- Better scaling of 48-bit RGB data to 24-bit RGB
- Fixed duplicate channels bug in “open each channel in a separate window”
- Fixed a bug preventing PICT import into ImageJ
- Better integration with HandleExtraFileTypes
- Better virtual stack support in Data Browser plugin
- Fixed bug in native QuickTime random access
- Keep aspect ratio for computed thumbnails
- Much faster file stitching logic

### 4.2.77 2006 Sep 27

- PerkinElmer: support for PE UltraView
- Openlab LIFF: support for Openlab v5
- Leica LEI: bugfixes, and support for multiple series
- ZVI, OIB, IPW: more robust handling of these formats (eliminated custom OLE parsing logic in favor of Apache POI)

- OIB: better metadata parsing (but maybe still not perfect?)
- LSM: fixed a bug preventing import of certain LSMs
- Metamorph STK: fixed a bug resulting in duplicate image planes
- User interface: use of system look & feel for file chooser dialog when available
- Better notification when JAR libraries are missing

### 4.2.78 2006 Sep 6

- Leica LIF: multiple distinct image series within a single file
- Zeiss ZVI: fixes and improvements contributed by Michel Boudinot
- Zeiss LSM: fixed bugs preventing the import of certain LSM files
- TIFF: fixed a bug preventing import of TIFFs created with Bio-Rad software

### 4.2.79 2006 Mar 31

- First release

# Part II

# User Information

CHAPTER

FIVE

# USING BIO-FORMATS WITH IMAGEJ AND FIJI

The following sections explain the features of Bio-Formats and how to use it within ImageJ and Fiji:

## 5.1 ImageJ overview

ImageJ[1] is an image processing and analysis application written in Java, widely used in the life sciences fields, with an extensible plugin infrastructure. You can use Bio-Formats as a plugin for ImageJ to read and write images in the formats it supports.

### 5.1.1 Installation

Download bioformats_package.jar[2] and drop it into your **ImageJ/plugins** folder. Next time you run ImageJ, a new Bio-Formats submenu with several plugins will appear in the Plugins menu, including the Bio-Formats Importer and Bio-Formats Exporter.

### 5.1.2 Usage

The Bio-Formats Importer plugin can display image stacks in several ways:

- In a standard ImageJ window (including as a hyperstack)
- Using the LOCI Data Browser[3] plugin (included)
- With Joachim Walter's Image5D[4] plugin (if installed)
- With Rainer Heintzmann's View5D[5] plugin (if installed)

ImageJ v1.37 and later automatically (via `HandleExtraFileTypes`) calls the Bio-Formats logic, if installed, as needed when a file is opened within ImageJ, i.e. when using *File* → *Open* instead of explicitly choosing *Plugins* → *Bio-Formats* → *Bio-Formats Importer* from the menu.

For a more detailed description of each plugin, see the Bio-Formats page[6] of the ImageJ wiki.

### 5.1.3 Upgrading

To upgrade, just overwrite the old **bioformats_package.jar** with the latest one[7].

You can also upgrade the Bio-Formats plugin directly from ImageJ. Select *Plugins* → *Bio-Formats* → *Update Bio-Formats Plugins* from the ImageJ menu, then select which release you would like to use. You will then need to restart ImageJ to complete the upgrade process.

---

[1] https://imagej.nih.gov/ij/index.html

[2] http://downloads.openmicroscopy.org/latest/bio-formats5.2/artifacts/bioformats_package.jar

[3] http://loci.wisc.edu/software/data-browser

[4] http://developer.imagej.net/plugins/image5d

[5] http://www.nanoimaging.de/View5D

[6] http://imagej.net/Bio-Formats

[7] http://downloads.openmicroscopy.org/latest/bio-formats5.2/

### 5.1.4 Macros and plugins

Bio-Formats is fully scriptable in a macro, and callable from a plugin. To use in a macro, use the Macro Recorder to record a call to the Bio-Formats Importer with the desired options. You can also perform more targeted metadata queries using the Bio-Formats macro extensions.

Here are some example ImageJ macros and plugins that use Bio-Formats to get you started:

basicMetadata.txt[8] - A macro that uses the Bio-Formats macro extensions to print the chosen file's basic dimensional parameters to the Log.

planeTimings.txt[9] - A macro that uses the Bio-Formats macro extensions to print the chosen file's plane timings to the Log.

recursiveTiffConvert.txt[10] - A macro for recursively converting files to TIFF using Bio-Formats.

bfOpenAsHyperstack.txt[11] - This macro from Wayne Rasband opens a file as a hyperstack using only the Bio-Formats macro extensions (without calling the Bio-Formats Importer plugin).

zvi2HyperStack.txt[12] - This macro from Sebastien Huart reads in a ZVI file using Bio-Formats, synthesizes the LUT using emission wavelength metadata, and displays the result as a hyperstack.

dvSplitTimePoints.txt[13] - This macro from Sebastien Huart splits timepoints/channels on all DV files in a folder.

batchTiffConvert.txt[14] - This macro converts all files in a directory to TIFF using the Bio-Formats macro extensions.

Read_Image[15] - A simple plugin that demonstrates how to use Bio-Formats to read files into ImageJ.

Mass_Importer[16] - A simple plugin that demonstrates how to open all image files in a directory using Bio-Formats, grouping files with similar names to avoiding opening the same dataset more than once.

### 5.1.5 Usage tips

- "How do I make the options window go away?" is a common question. There are a few ways to do this:
  - To disable the options window only for files in a specific format, select *Plugins* > *Bio-Formats* > *Bio-Formats Plugins Configuration*, then pick the format from the list and make sure the "Windowless" option is checked.
  - To avoid the options window entirely, use the *Plugins* > *Bio-Formats* > *Bio-Formats Windowless Importer* menu item to import files.
  - Open files by calling the Bio-Formats importer plugin from a macro.
- A common cause of problems having multiple copies of `bioformats_package.jar` in you ImageJ plugins folder, or a copy of `bioformats_package.jar` and a copy of `formats-gpl.jar`. It is often difficult to determine for sure that this is the problem - the only error message that pretty much guarantees it is a `NoSuchMethodException`. If you downloaded the latest version and whatever error message or odd behavior you are seeing has been reported as fixed, it is worth removing all copies of `bioformats_package.jar` (and `loci_tools.jar` or any other Bio-Formats jars) and download a fresh version.
- The Bio-Formats Exporter plugin's file chooser will automatically add the first listed file extension to the file name if a specific file format is selected in the `Files of Type` box (e.g. `.ome.tif` for OME-TIFF). This can prevent BigTIFF and OME BigTIFF files from being created, as the `.btf` or `.ome.btf` file extension will be overwritten. To ensure that the desired extension is used, select *All files* or *All supported file types* in the `Files of type` box, as an extension will not be automatically added in those cases.

---

[8] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/bio-formats-plugins/utils/macros/basicMetadata.txt

[9] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/bio-formats-plugins/utils/macros/planeTimings.txt

[10] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/bio-formats-plugins/utils/macros/recursiveTiffConvert.txt

[11] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/bio-formats-plugins/utils/macros/bfOpenAsHyperstack.txt

[12] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/bio-formats-plugins/utils/macros/zvi2HyperStack.txt

[13] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/bio-formats-plugins/utils/macros/dvSplitTimePoints.txt

[14] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/bio-formats-plugins/utils/macros/batchTiffConvert.txt

[15] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/bio-formats-plugins/utils/Read_Image.java

[16] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/bio-formats-plugins/utils/Mass_Importer.java

## 5.2 Fiji overview

Fiji[17] is an image processing package. It can be described as a distribution of *ImageJ* together with Java, Java 3D and a lot of plugins organized into a coherent menu structure. Fiji compares to ImageJ as Ubuntu compares to Linux.

Fiji works with Bio-Formats out of the box, because it comes bundled with the *Bio-Formats ImageJ plugins*.

The Fiji documentation has been combined with the ImageJ wiki; for further details on Bio-Formats in Fiji, see the Bio-Formats ImageJ page[18].

### 5.2.1 Upgrading

Upgrading Bio-Formats within Fiji is as simple as invoking the "Update Fiji" command from the Help menu. By default, Fiji even automatically checks for updates every time it is launched, so you will always be notified when new versions of Bio-Formats (or any other bundled plugin) are available.

#### Manual upgrade

Manually updating your Fiji installation should not be necessary but if you need to do so, the steps are detailed below. Note that although we assume you will be upgrading to the latest release version, all previous versions of Bio-Formats are available from http://downloads.openmicroscopy.org/bio-formats/ so you can revert to an earlier version using this guide if you need to.

1. Fiji must first be fully updated
2. Close Fiji
3. Open the Fiji installation folder (typically named 'Fiji.app')
4. Remove bio-formats_plugins.jar from the 'plugins' sub-folder
5. Remove all of the .jars from the 'jars/bio-formats' sub-folder:
    - jai_imageio.jar
    - formats-gpl.jar
    - formats-common.jar
    - turbojpeg.jar
    - ome-xml.jar
    - formats-bsd.jar
    - ome-poi.jar
    - specification.jar
    - mdbtools-java.jar
    - metakit.jar
    - formats-api.jar
6. Download bio-formats_plugins.jar (from the latest release http://downloads.openmicroscopy.org/bio-formats/) and place it in the 'plugins' sub-folder
7. Download each of the following (from the latest release http://downloads.openmicroscopy.org/bio-formats/) and place them in the 'jars/bio-formats' sub-folder:
    - jai_imageio.jar
    - formats-gpl.jar
    - formats-common.jar
    - turbojpeg.jar

---

[17] http://fiji.sc/

[18] http://imagej.net/Bio-Formats

  - ome-xml.jar
  - formats-bsd.jar
  - ome-poi.jar
  - specification.jar
  - mdbtools-java.jar
  - metakit.jar
  - formats-api.jar

8. To Check Version of Bio-Formats *Select Help > About Plugins > Bio-Formats Plugins...* Check that the version of Bio-Formats matches the freshly downloaded version.
9. Start Fiji and open any Image file using *Plugins > Bio-Formats > Bio-Formats Importer*

**Note:** It is vital to perform all of those steps in order; omitting even one will cause a problem. In particular, make sure that the old files are fully removed; it is not sufficient to add the new files to any sub-directory without removing the old files first.

## 5.3 Bio-Formats features in ImageJ and Fiji

When you select Bio-Formats under the Plugin menu, you will see the following features:

- The **Bio-Formats Importer** is a plugin for *loading images* into ImageJ or Fiji. It can read over 140 proprietary life sciences formats and standardizes their acquisition metadata into the common *OME data model*. It will also extract and set basic metadata values such as spatial calibration[19] if they are available in the file.
- The **Bio-Formats Exporter** is a plugin for exporting data to disk. It can save to the open OME-TIFF[20] file format, as well as several movie formats (e.g. QuickTime, AVI) and graphics formats (e.g. PNG, JPEG).
- The **Bio-Formats Remote Importer** is a plugin for importing data from a remote URL. It is likely to be less robust than working with files on disk, so we recommend downloading your data to disk and using the regular Bio-Formats Importer whenever possible.
- The **Bio-Formats Windowless Importer** is a version of the Bio-Formats Importer plugin that runs with the last used settings to avoid any additional dialogs beyond the file chooser. If you always use the same import settings, you may wish to use the windowless importer to save time (Learn more *here*).
- The **Bio-Formats Macro Extensions** plugin prints out the set of commands that can be used to create macro extensions. The commands and the instructions for using them are printed to the ImageJ log window.
- The **Stack Slicer** plugin is a helper plugin used by the Bio-Formats Importer. It can also be used to split a stack across channels, focal planes or time points.
- The **Bio-Formats Plugins Configuration** dialog is a useful way to configure the behavior of each file format. The Formats tab lists supported file formats and toggles each format on or off, which is useful if your file is detected as the wrong format. It also toggles whether each format bypasses the importer options dialog through the “Windowless” checkbox. You can also configure any specific option for each format. The Libraries tab provides a list of available helper libraries used by Bio-Formats.
- The **Bio-Formats Plugins Shortcut Window** opens a small window with a quick-launch button for each plugin. Dragging and dropping files onto the shortcut window opens them quickly using the **Bio-Formats Importer** plugin.
- The **Update Bio-Formats Plugins** command will check for updates to the plugins. We recommend you update to the newest Trunk build as soon as you think you may have *discovered a bug.*

## 5.4 Installing Bio-Formats in ImageJ

**Note:** Since FIJI is essentially ImageJ with plugins like Bio-Formats already built in, people who install Fiji can skip this section.

---

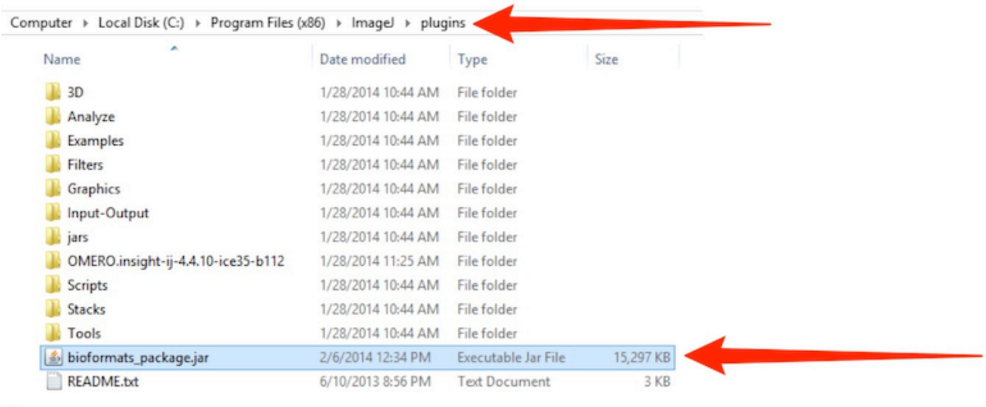
[19] http://fiji.sc/SpatialCalibration

[20] http://www.openmicroscopy.org/site/support/ome-model/ome-tiff

If you are also using the OMERO plugin for ImageJ, you may find the set-up guide on the new user help site[21] useful for getting you started with both plugins at the same time.

---

Once you download[22] and install ImageJ, you can install the Bio-Formats plugin by going to the Bio-Formats download page[23] and saving the **bioformats_package.jar** to the Plugins directory within ImageJ.

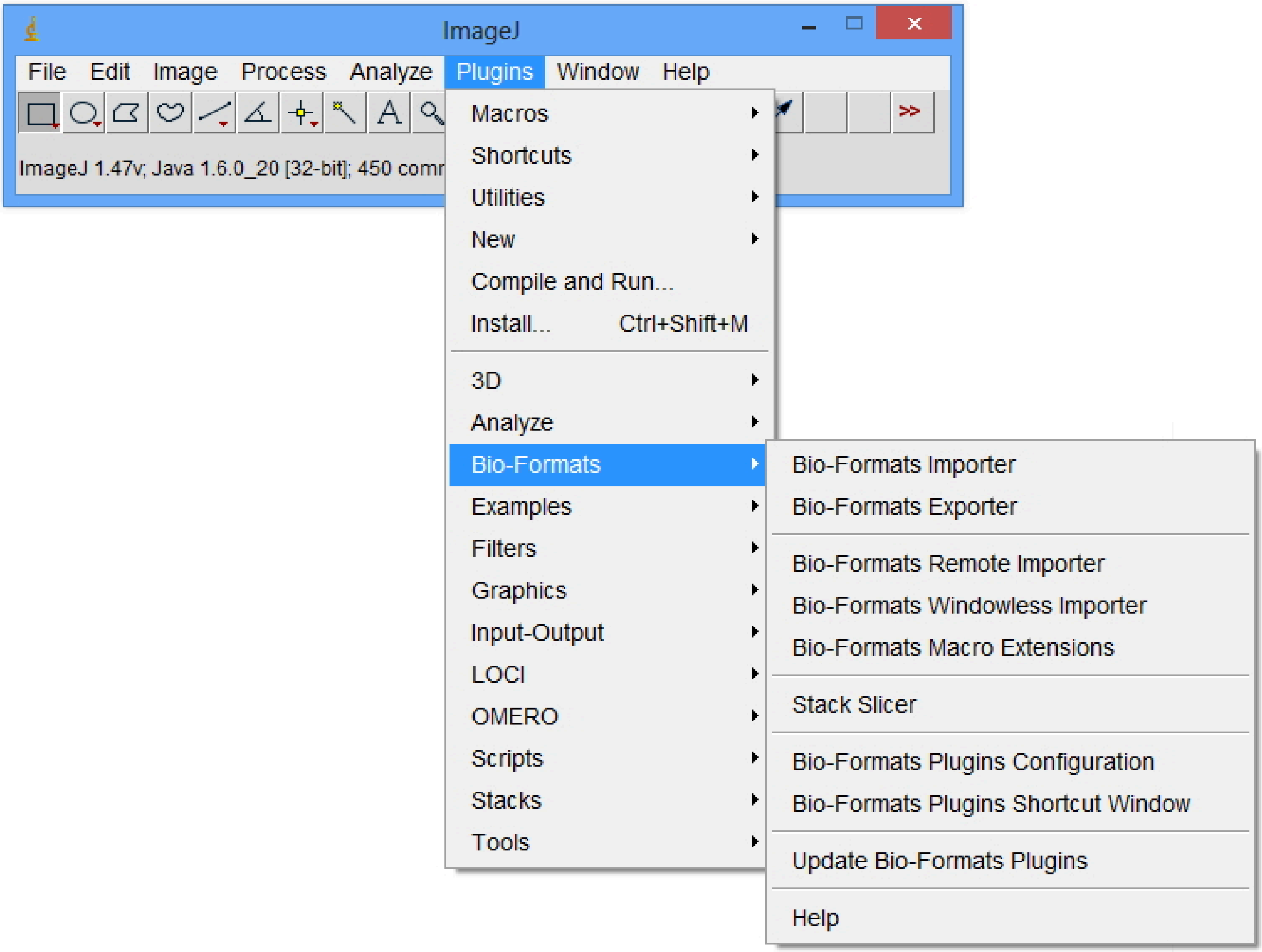


Computer ▸ Local Disk (C:) ▸ Program Files (x86) ▸ ImageJ ▸ plugins

| Name | Date modified | Type | Size |
|---|---|---|---|
| 3D | 1/28/2014 10:44 AM | File folder | |
| Analyze | 1/28/2014 10:44 AM | File folder | |
| Examples | 1/28/2014 10:44 AM | File folder | |
| Filters | 1/28/2014 10:44 AM | File folder | |
| Graphics | 1/28/2014 10:44 AM | File folder | |
| Input-Output | 1/28/2014 10:44 AM | File folder | |
| jars | 1/28/2014 10:44 AM | File folder | |
| OMERO.insight-ij-4.4.10-ice35-b112 | 1/28/2014 11:25 AM | File folder | |
| Scripts | 1/28/2014 10:44 AM | File folder | |
| Stacks | 1/28/2014 10:44 AM | File folder | |
| Tools | 1/28/2014 10:44 AM | File folder | |
| bioformats_package.jar | 2/6/2014 12:34 PM | Executable Jar File | 15,297 KB |
| README.txt | 6/10/2013 8:56 PM | Text Document | 3 KB |

Figure 5.1: Plugin Directory for ImageJ: Where in ImageJ's file structure you should place the file once you downloaded it.

You may have to quit and restart ImageJ. Once you restart it, you will find Bio-Formats in the Bio-Formats option under the Plugins menu:



ImageJ 1.47v; Java 1.6.0_20 [32-bit]; 450 comr

---

[21] http://help.openmicroscopy.org/imagej.html
[22] http://rsbweb.nih.gov/ij/download.html
[23] http://downloads.openmicroscopy.org/latest/bio-formats5.2/

You are now ready to start using Bio-Formats.

## 5.5 Using Bio-Formats to load images into ImageJ

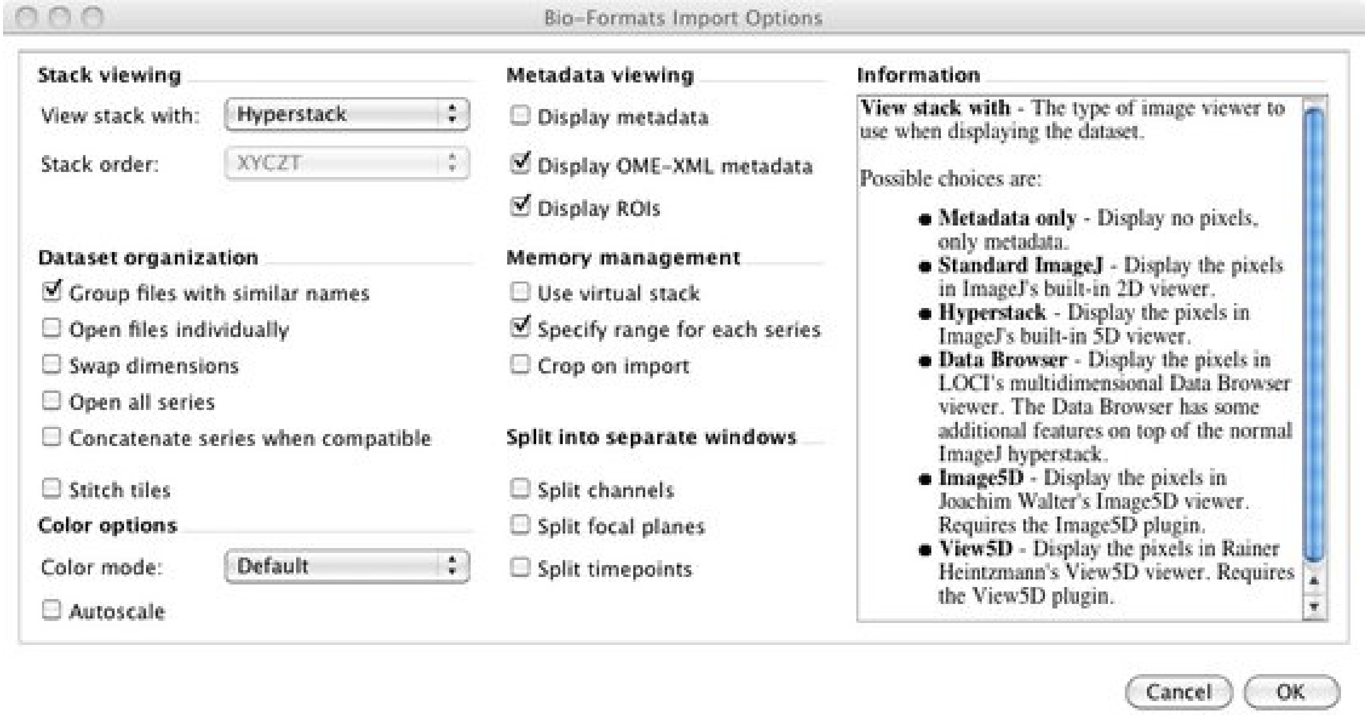
This section will explain how to use Bio-Formats to import files into ImageJ and how to use the settings on the Bio-Formats Import Options screen.

### 5.5.1 Opening files

There are three ways you can open a file using Bio-Formats:

1. Select the Bio-Formats Importer under the Bio-Formats plugins menu.
2. Drag and drop it onto the Bio-Formats Plugins Shortcut window.
3. Use the Open command in the File menu.

Unless you used the Bio-Formats Plugins Configuration dialog to open the file type windowlessly, you know you used Bio-Formats to open a file when you see a screen like this:



**Stack viewing**

View stack with: Hyperstack

Stack order: XYCZT

**Dataset organization**

☑ Group files with similar names
☐ Open files individually
☐ Swap dimensions
☐ Open all series
☐ Concatenate series when compatible

☐ Stitch tiles

**Color options**

Color mode: Default

☐ Autoscale

**Metadata viewing**

☐ Display metadata
☑ Display OME-XML metadata
☑ Display ROIs

**Memory management**

☐ Use virtual stack
☑ Specify range for each series
☐ Crop on import

**Split into separate windows**

☐ Split channels
☐ Split focal planes
☐ Split timepoints

**Information**

**View stack with** - The type of image viewer to use when displaying the dataset.

Possible choices are:

- **Metadata only** - Display no pixels, only metadata.
- **Standard ImageJ** - Display the pixels in ImageJ's built-in 2D viewer.
- **Hyperstack** - Display the pixels in ImageJ's built-in 5D viewer.
- **Data Browser** - Display the pixels in LOCI's multidimensional Data Browser viewer. The Data Browser has some additional features on top of the normal ImageJ hyperstack.
- **Image5D** - Display the pixels in Joachim Walter's Image5D viewer. Requires the Image5D plugin.
- **View5D** - Display the pixels in Rainer Heintzmann's View5D viewer. Requires the View5D plugin.

If you used the File > Open command and did not see the Bio-Formats Import Options screen, ImageJ/Fiji probably used another plugin instead of Bio-Formats to open the file. If this happens and you want to open a file using Bio-Formats, use one of the other two methods instead.

### 5.5.2 Opening files windowlessly

When you open a file with Bio-Formats, the Import Options Screen automatically recalls the settings you last used to open a file with that specific format (e.g. JPG, TIF, LSM, etc.). If you always choose the same options whenever you open files in a specific file format, you can save yourself time by bypassing the Bio-Formats Import Options screen. You can accomplish this two ways:

1. You can select the **Bio-Formats Windowless Importer**, located in the Bio-Formats menu under ImageJ's Plugin menu. When you select this option, Bio-Formats will import the file using the same settings you used the last time you imported a file with the same format.

2. If you invariably use the same settings when you open files in a specific format, you can always bypass the Import Options Screen by changing the settings in the **Bio-Formats Plugins Configuration** option, which is also located in the Bio-Formats menu under ImageJ's Plugin menu.

Once you select this option, select the file format you are interested in from the list on the left side of the screen. Check both the **Enabled** and **Windowless** boxes. Once you do this, whenever you open a file using the **Bio-Formats Windowless Importer,**the **Bio-Formats Importer**, or the drag-and-drop method described in the previous section, the file will always open the same way using the last setting used.

Please note that if you want to change any of the import settings once you enable this windowless option, you will have to go back to the **Bio-Formats Plugins Configuration** screen, unselect the windowless option, open a file using the regular **Bio-Formats Importer**, select your settings, and re-select the windowless option.

### 5.5.3 Group files with similar names

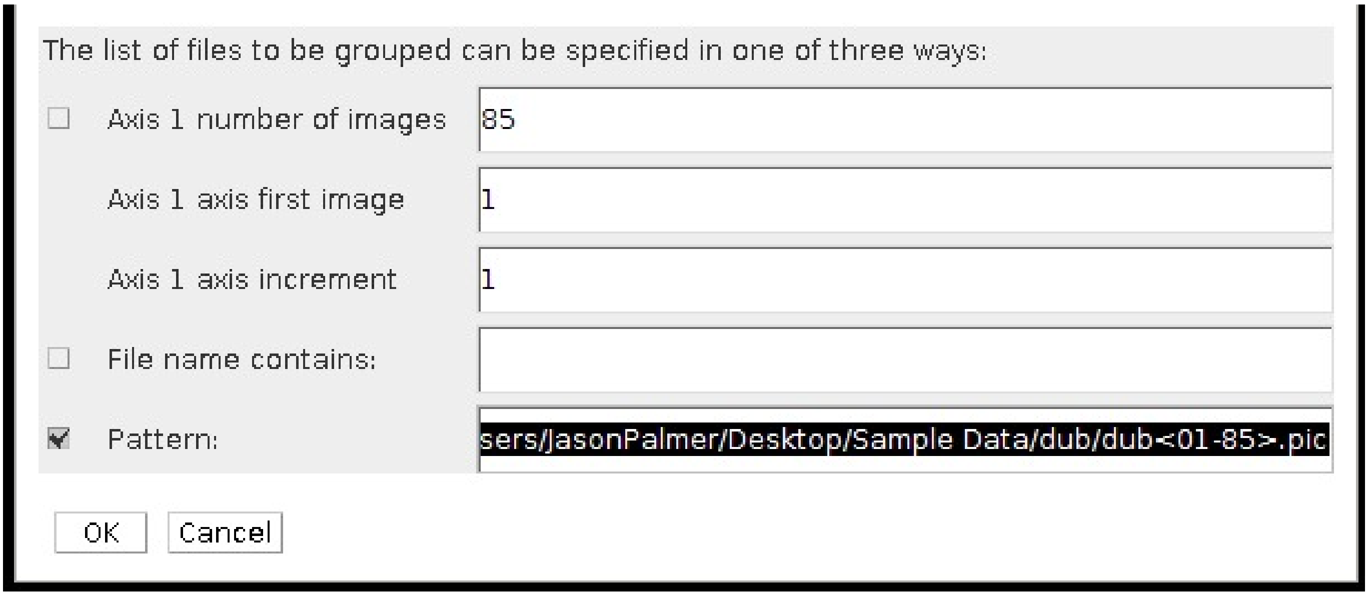
**Note:** The functionality described below is also available outside ImageJ, by using a pattern file to tell Bio-Formats how to group the files. See *Grouping files using a pattern file* for more information.

One of the most important features of Bio-Formats is to combine multiple files from a data set into one coherent, multi-dimensional image.

To demonstrate how to use the **Group files with similar names** feature, you can use the dub[24] data set available under LOCI's Sample Data[25] page. You will notice that it is a large dataset: each of the 85 files shows the specimen at 33 optical sections along the z-plane at a specific time.

If you open just one file in ImageJ/Fiji using the **Bio-Formats Importer**, you will get an image incorporating three dimensions (x, y, z). However, if you select **Group files with similar names** from the Bio-Formats Import Options screen, you will be able to create a 4-D image (x, y, z, and t) incorporating the 85 files.

After clicking OK, you will see a screen like this:



The list of files to be grouped can be specified in one of three ways:

☐ Axis 1 number of images: 85

Axis 1 axis first image: 1

Axis 1 axis increment: 1

☐ File name contains:

☑ Pattern: sers/JasonPalmer/Desktop/Sample Data/dub/dub<01-85>.pic

This screen allows you to select which files within the 85-file cluster to use to create that 4-D image. Some information will be pre-populated in the fields. Unless you want to change the settings in that field, there is no need to change or delete it. If you click OK at this point, you will load all 85 files.

However, you can specify which files you want to open by adjusting the "axis information", the file "name contains", or the "pattern" sections. Even though there are three options, you only need to need to make changes to one of them. Since Bio-Format's precedence for processing data is from top to bottom, only the uppermost section that you made changes to will be used. If you change multiple boxes, any information you enter into lower boxes will be ignored.

To return to the example involving the dub data set, suppose you want to open the first image and only every fifth image afterwards (i.e. dub01, dub06, dub11 . . . dub81). This would give you 17 images. There are different ways to accomplish this:

You can use the **Axis Settings** only when your files are numbered in sequential order and you want to open only a subset of the files that have similar names. Since the dub data set is numbered sequentially, you can use this feature.

---

[24] http://loci.wisc.edu/sample-data/dub
[25] http://loci.wisc.edu/software/sample-data

**Axis 1 number of images** refers to the total number of images you want to open. Since you want to view 17 images, enter 17. **Axis 1 axis first image** specifies which image in the set you want to be the first. Since you want to start with dub01, enter 1 in that box. You also want to view only every fifth image, so enter 5 in the **Axis 1 axis increment** box.

The **File name contains** box should be used if all of the files that you want to open have common text. This is especially useful when the files are not numbered. For example, if you have “Image_Red.tif”, “Image_Green.tif”, and “Image_Blue.tif” you could enter “Image_” in the box to group them all.

To continue the example involving the dub data set, you cannot use the **file name contains** box to open every fifth image. However, if you only wanted to open dub10 thorough dub19, you could enter “dub1” in the **file name contains** box.

The **pattern** box can be used to do either of the options listed above or much more. This box can accept a single file name like “dub01.pic”. It can also contain a pattern that use “<” and “>” to specify what numbers or text the file names contain.

There are three basic forms to the “< >” blocks:

- Text enumeration - “Image_<Red,Green,Blue>.tif” is the pattern for Image_Red.tif, Image_Green.tif, Image_Blue.tif. (Note that the order you in which you enter the file names is the order in which they will be loaded.)
- Number range - “dub<1-85>.pic” is the pattern for “dub1.pic”, “dub2.pic”, “dub3.pic” . . . “dub85.pic”.
- Number range with step - “dub<1-85:5>.pic” is the pattern for “dub1.pic”, “dub6.pic”, “dub11.pic”, “dub11.pic” . . . “dub85.pic”.

It can also accept a Java regular expression[26].

### 5.5.4 Autoscale

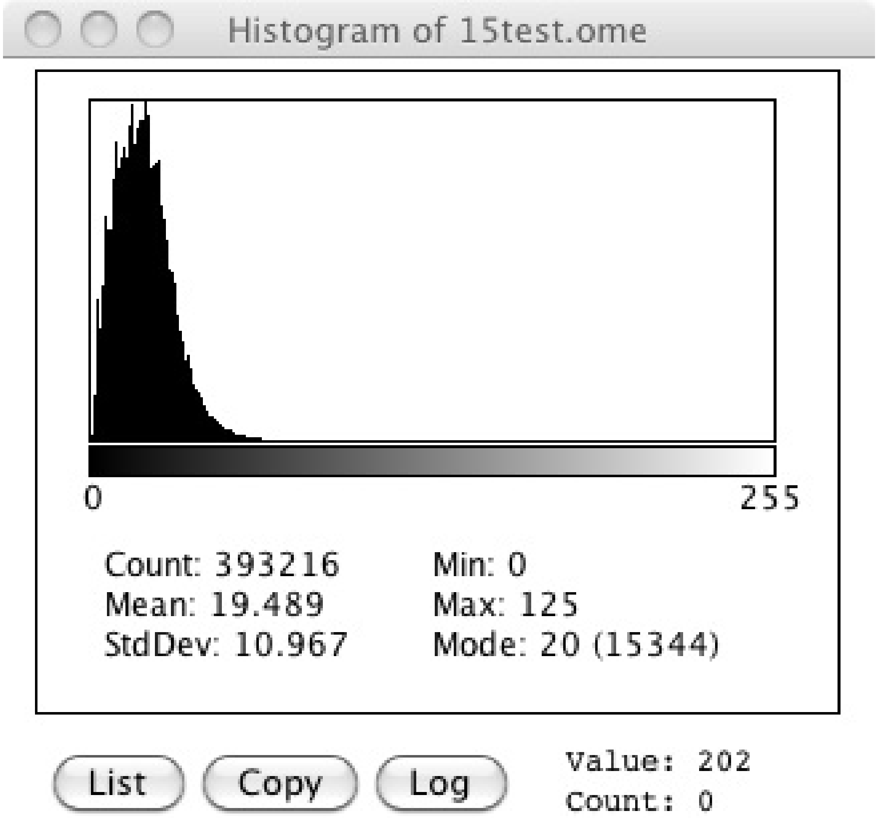
**Autoscale** helps increase the brightness and contrast of an image by adjusting the range of light intensity within an image to match the range of possible display values. Note that Autoscale does not change your data. It just changes how it is displayed.

Each pixel in an image has a numerical value ascribed to it to describe its intensity. The bit depth—the number of possible values– depends on the number of bits used in the image. Eight bits, for example, gives 256 values to express intensity where 0 is completely black, 255 is completely white, and 1 through 254 display increasingly lighter shades of grey.

ImageJ can collect the intensity information about each pixel from an image or stack and create a histogram (you can see it by selecting Histogram under the Analyze menu). Here is the histogram of a one particular image:

---

[26] http://download.oracle.com/javase/1.5.0/docs/api/java/util/regex/Pattern.html



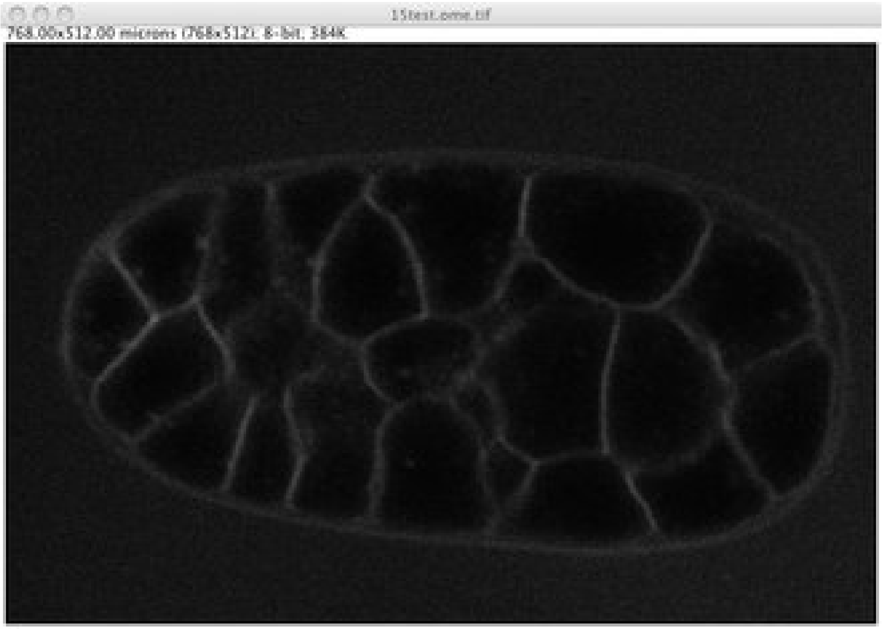
```
Count: 393216      Min: 0
Mean: 19.489       Max: 125
StdDev: 10.967     Mode: 20 (15344)
```

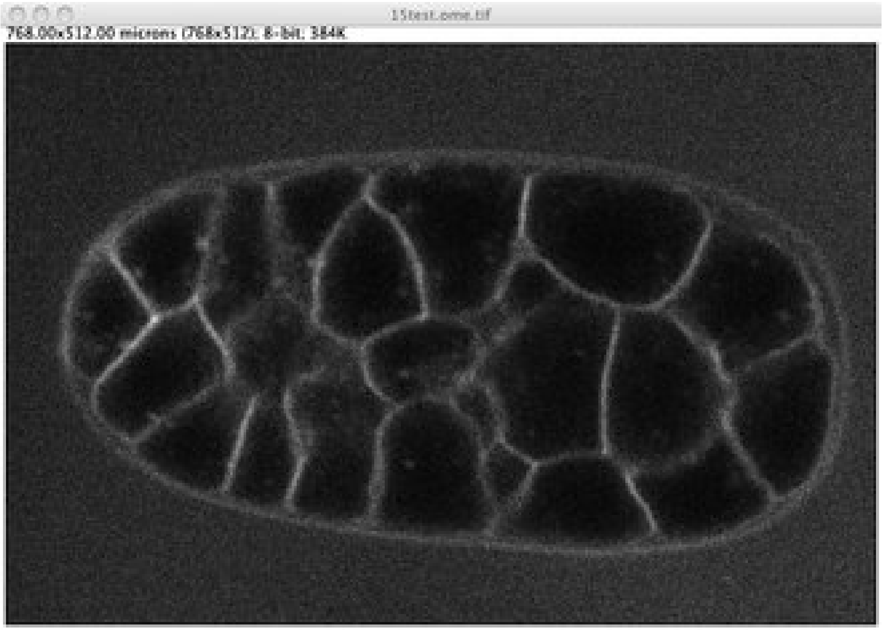
```
Value: 202
Count: 0
```

Notice that the histogram heavily skews left. Even though there are 256 possible values, only 0 thorough 125 are being used.

Autoscale adjusts the image so the smallest and largest number in that image or stack's histogram become the darkest and brightest settings. For this image, pixels with the intensity of 125 will be displayed in pure white. The other values will be adjusted too to help show contrast between values that were too insignificant to see before.

Here is one image Bio-Formats imported with and without using Autoscale:



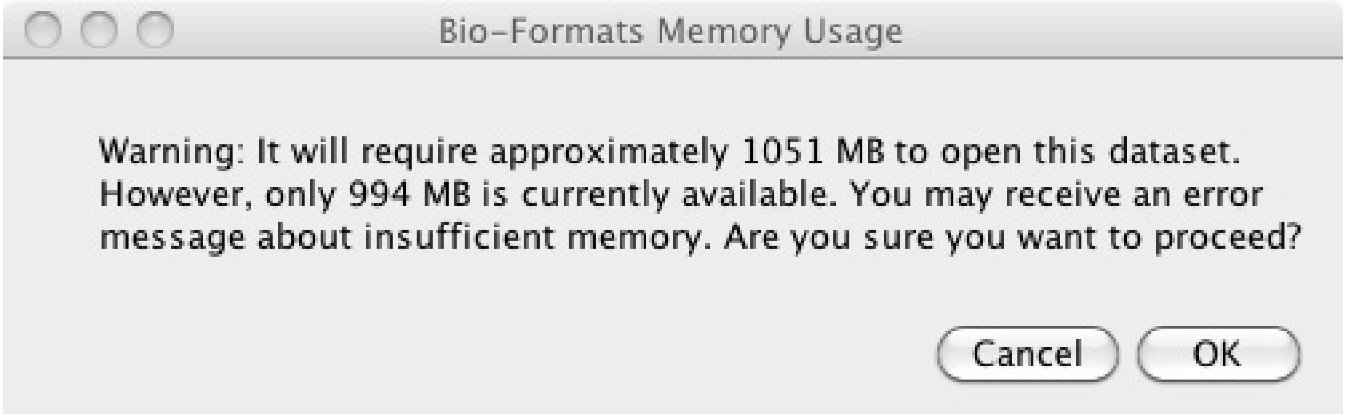


Autoscale readjusts the image based on the highest value in the entire data set. This means if the highest value in your dataset is close to maximum display value, Autoscale's adjusting may be undetectable to the eye.

ImageJ/Fiji also has its own tools for adjusting the image, which are available by selecting Brightness/Contrast, which is under the Adjust option in the Image menu.

## 5.6 Managing memory in ImageJ/Fiji using Bio-Formats

When dealing with a large stack of images, you may receive a warning like this:



Warning: It will require approximately 1051 MB to open this dataset. However, only 994 MB is currently available. You may receive an error message about insufficient memory. Are you sure you want to proceed?

This means the allotted memory is less than what Bio-Formats needs to load all the images. If you have a very large data set, you may have to:

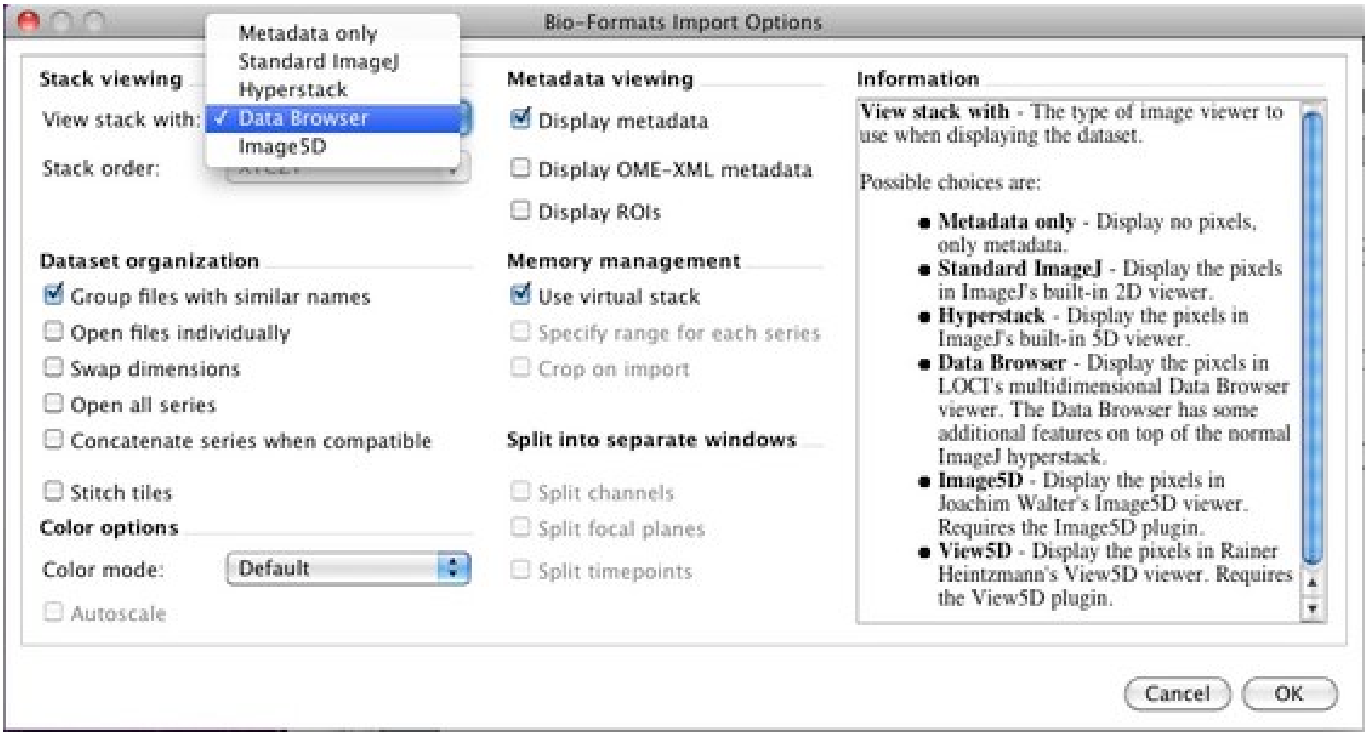
- View your stack with Data Browser
- Crop the view area
- Open only a subset of images
- Use Virtual Stack
- Increase ImageJ/Fiji's memory.

If your files contain JPEG or JPEG-2000 images, you may see this memory warning even if your file size is smaller than the amount of allocated memory. This is because compressed images like JPEG need to be decompressed into memory before being displayed and require more memory than their file size suggests. If you are having this issue, try utilizing one of the memory management tools below.

### 5.6.1 View your stack with Data Browser

**Data Browser** is another part of Bio-Formats that enables users to view large 3, 4, or 5-D datasets by caching a subset of all the images available. This enables users to view a stack that is bigger than the computer's memory.

You can select Data Browser as an option for **View stack with,** the leftmost, uppermost option in the **Bio-Formats Import Options** screen.



Stack viewing

View stack with: Data Browser

Stack order:

Dataset organization

☑ Group files with similar names
☐ Open files individually
☐ Swap dimensions
☐ Open all series
☐ Concatenate series when compatible
☐ Stitch tiles

Color options

Color mode: Default

☐ Autoscale

Metadata viewing

☑ Display metadata
☐ Display OME-XML metadata
☐ Display ROIs

Memory management

☑ Use virtual stack
☐ Specify range for each series
☐ Crop on import

Split into separate windows

☐ Split channels
☐ Split focal planes
☐ Split timepoints

Information

**View stack with** - The type of image viewer to use when displaying the dataset.

Possible choices are:

- **Metadata only** - Display no pixels, only metadata.
- **Standard ImageJ** - Display the pixels in ImageJ's built-in 2D viewer.
- **Hyperstack** - Display the pixels in ImageJ's built-in 5D viewer.
- **Data Browser** - Display the pixels in LOCI's multidimensional Data Browser viewer. The Data Browser has some additional features on top of the normal ImageJ hyperstack.
- **Image5D** - Display the pixels in Joachim Walter's Image5D viewer. Requires the Image5D plugin.
- **View5D** - Display the pixels in Rainer Heintzmann's View5D viewer. Requires the View5D plugin.

Note that when you use Data Browser, other features like cropping and specifying range are not available. You can, however, adjust the size of the image cache in the Data Browser after you open the files. You can read more about it on LOCI's Data Browser page[27].

### 5.6.2 Cropping the view area

**Crop on Import** is useful if your images are very large and you are only interested in one specific section of the stack you are importing. If you select this feature, you will see a screen where you can enter the height and width (in pixels) of the part of image you want to see. Note that these measurements are from the top left corner of the image.

### 5.6.3 Opening only a subset of images

The **Specify Range for Each Series** option is useful for viewing a portion of a data set where all the plane images are encapsulated into one file (e.g. the Zeiss LSM format). If your file has a large quantity of images, you can specify which channels, Z-planes, and times you want to load.

### 5.6.4 Use Virtual Stack

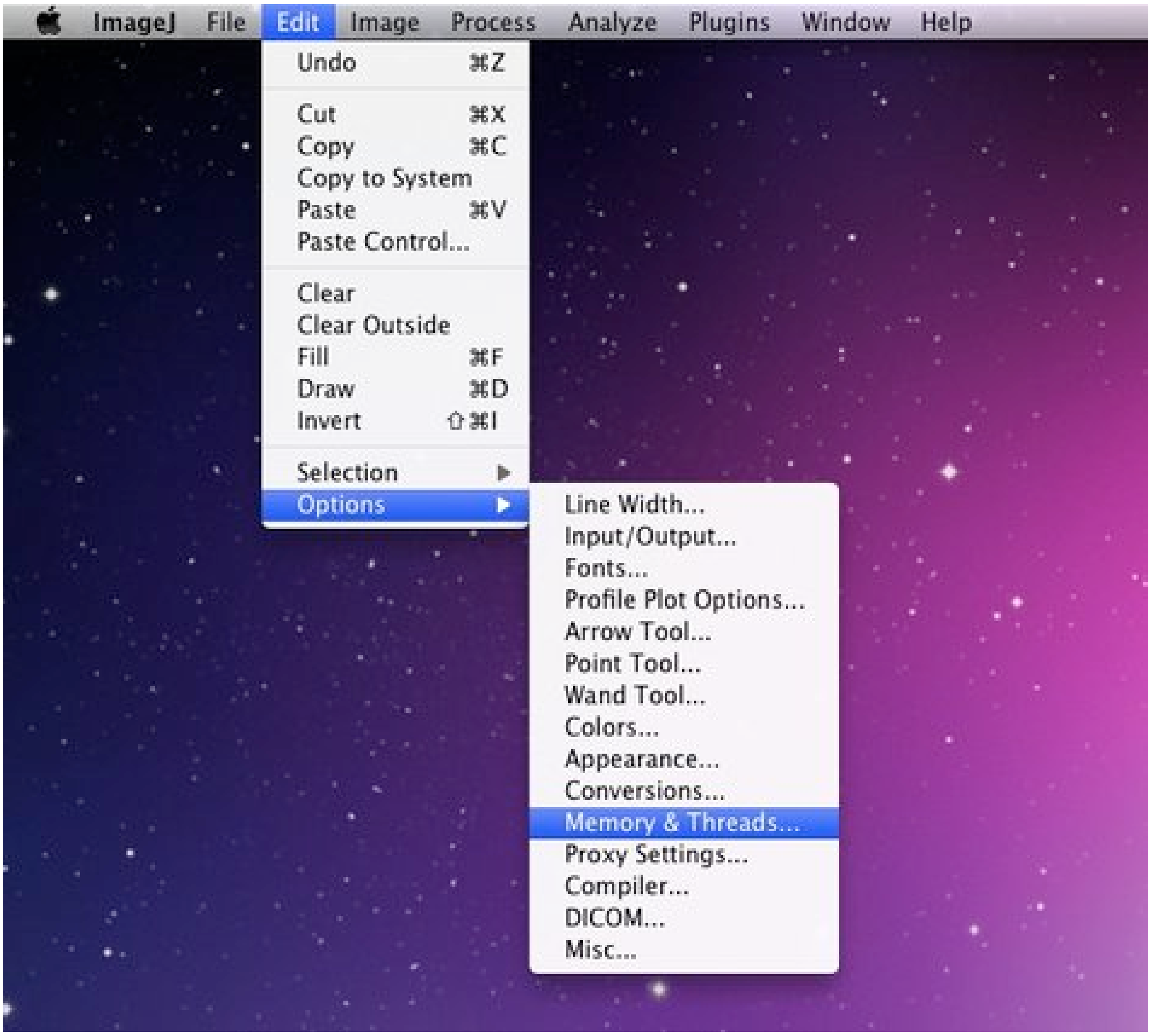
**Virtual Stack** conserves memory by not loading specific images until necessary. Note that unlike Data Browser, Virtual Stack does not contain a buffer and may produce choppy animations.

### 5.6.5 Increasing ImageJ/Fiji's memory

Finally, you can also increase the amount of the computer memory devoted to ImageJ/Fiji by selecting **Memory & Threads** under the **Edit** menu.

---

[27] http://loci.wisc.edu/software/data-browser



Generally, allocating more than 75% of the computer's total memory will cause ImageJ/Fiji to become slow and unstable.

**Please note** that unlike the other three features, ImageJ/Fiji itself provides this feature and not Bio-Formats. You can find out more about this feature by looking at ImageJ's documentation[28].

---

[28] http://rsbweb.nih.gov/ij/docs/menus/edit.html#options

CHAPTER

SIX

# COMMAND LINE TOOLS

The Bio-Formats Command line tools (bftools.zip) provide a complete package for carrying out a variety of tasks:

## 6.1 Command line tools introduction

There are several scripts for using Bio-Formats on the command line.

### 6.1.1 Installation

Download bftools.zip[1], unzip it into a new folder.

**Note:** As of Bio-Formats 5.0.0, this zip now contains the bundled jar and you no longer need to download `loci_tools.jar` or the new `bioformats_package.jar` separately.

The zip file contains both Unix scripts and Windows batch files.

### 6.1.2 Tools available

Currently available tools include:

**showinf** Prints information about a given image file to the console, and displays the image itself in the Bio-Formats image viewer (see *Displaying images and metadata* for more information).

**ijview** Displays the given image file in ImageJ using the Bio-Formats Importer plugin. See *Display file in ImageJ* for details.

**bfconvert** Converts an image file from one format to another. Bio-Formats must support writing to the output file (see *Converting a file to different format* for more information).

**formatlist** Displays a list of supported file formats in HTML, plaintext or XML. See *List supported file formats* for details.

**xmlindent** A simple XML prettifier similar to **xmllint –format** but more robust in that it attempts to produce output regardless of syntax errors in the XML. See *Format XML data* for details.

**xmlvalid** A command-line XML validation tool, useful for checking an OME-XML document for compliance with the OME-XML schema.

**tiffcomment** Dumps the comment from the given TIFF file's first IFD entry; useful for examining the OME-XML block in an OME-TIFF file (also see *Editing XML in an OME-TIFF*).

**domainlist** Displays a list of imaging domains and the supported formats associated with each domain. See *List formats by domain* for more information.

**mkfake** Creates a "fake" high-content screen with configurable dimensions. This is useful for testing how HCS metadata is handled, without requiring real image data from an acquired screen. See *Create a high-content screen for testing* for more information.

---

[1] http://downloads.openmicroscopy.org/latest/bio-formats5.2/artifacts/bftools.zip

Some of these tools also work in combination, for example *Validating XML in an OME-TIFF* uses both **tiffcomment** and **xmlvalid**.

Running any of these commands without any arguments will print usage information to help you. When run with the `-version` argument, **showinf** and **bfconvert** will display the version of Bio-Formats that is being used (version number, build date, and Git commit reference).

### 6.1.3 Using the tools directly from source

Firstly, obtain a copy of the sources and build them (see *Obtaining and building Bio-Formats*). You can configure the scripts to use your source tree instead of **bioformats_package.jar** in the same directory by following these steps:

1. Point your CLASSPATH to the checked-out directory and the JAR files in the **jar** folder.
    - E.g. on Windows with Java 1.7 or later, if you have checked out the source at `C:\code\bio-formats`, set your CLASSPATH environment variable to the value `C:\code\bio-formats\jar\*;C:\code\bio-formats`. You can access the environment variable configuration area by right-clicking on My Computer, choosing Properties, Advanced tab, Environment Variables button.
2. Compile the source with `ant compile`.
3. Set the `BF_DEVEL` environment variable to any value (the variable just needs to be defined).

### 6.1.4 Version checker

If you run bftools outside of the OMERO environment, you may encounter an issue with the automatic version checker causing a tool to crash when trying to connect to `upgrade.openmicroscopy.org.uk`. The error message will look something like this:

```
Failed to compare version numbers
java.io.IOException: Server returned HTTP response code: 400 for URL:
http://upgrade.openmicroscopy.org.uk?version=4.4.8;os.name=Linux;os.
version=2.6.32-358.6.2.el6.x86_64;os.arch=amd64;java.runtime.version=
1.6.0_24-b24;java.vm.vendor=Sun+Microsystems+Inc.;bioformats.caller=
Bio-Formats+utilities
```

To avoid this issue, call the tool with the *`-no-upgrade`* parameter.

### 6.1.5 Profiling

For debugging errors or investigating performance issues, it can be useful to use profiling tools while running Bio-Formats. The command-line tools can invoke the HPROF[2] agent library to profile Heap and CPU usage. Setting the `BF_PROFILE` environment variable allows to turn profiling on, e.g.:

```
BF_PROFILE=true showinf -nopix -no-upgrade myfile
```

## 6.2 Displaying images and metadata

The **showinf** *command line tool* can be used to show the images and metadata contained in a file.

If no options are specified, **showinf** displays a summary of available options.

To simply display images:

```
showinf /path/to/file
```

---

[2] http://docs.oracle.com/javase/7/docs/technotes/samples/hprof.html

All of the images in the first 'series' (or 5 dimensional stack) will be opened and displayed in a simple image viewer. The number of series, image dimensions, and other basic metadata will be printed to the console.

**-series** SERIES

Displays a different series, for example the second one:

```
showinf -series 1 /path/to/file
```

Note that series numbers begin with 0.

**-omexml**

Displays the OME-XML metadata for a file on the console:

```
showinf -omexml /path/to/file
```

**-nopix**

Image reading can be suppressed if only the metadata is needed:

```
showinf -nopix /path/to/file
```

**-range** START END

A subset of images can also be opened instead of the entire stack, by specifying the start and end plane indices (inclusive):

```
showinf -range 0 0 /path/to/file
```

That opens only the first image in first series in the file.

**-crop** X,Y,WIDTH,HEIGHT

For very large images, it may also be useful to open a small tile from the image instead of reading everything into memory. To open the upper-left-most 512x512 tile from the images:

```
showinf -crop 0,0,512,512 /path/to/file
```

The parameter to *-crop* is of the format `x,y,width,height`. The (x, y) coordinate (0, 0) is the upper-left corner of the image; `x + width` must be less than or equal to the image width and `y + height` must be less than or equal to the image height.

**-no-upgrade**

By default, **showinf** will check for a new version of Bio-Formats. This can take several seconds (especially on a slow internet connection); to save time, the update check can be disabled:

```
showinf -no-upgrade /path/to/file
```

**-no-valid**

Similarly, if OME-XML is displayed then it will automatically be validated. On slow or missing internet connections, this can take some time, and so can be disabled:

```
showinf -novalid /path/to/file
```

**-no-core**

Most output can be suppressed:

```
showinf -nocore /path/to/file
```

**-omexml-only**

Displays the OME-XML alone:

```
showinf -omexml-only /path/to/file
```

This is particularly helpful when there are hundreds or thousands of series.

**-debug**

Enables debugging output if more information is needed:

```
showinf -debug /path/to/file
```

**-fast**

Displays an image as quickly as possible. This is achieved by converting the raw data into a 8 bit RGB image:

```
showinf -fast /path/to/file
```

**Note:** Due to the data conversion to a RGB image, using this option results in a loss of precision.

**-autoscale**

Adjusts the display range to the minimum and maximum pixel values:

```
showinf -autoscale /path/to/file
```

**Note:** This option automatically sets the *`-fast`* option and suffers from the same limitations.

**-cache**

Caches the reader under the same directory as the input file after initialization:

```
showinf -cache /path/to/file
```

**-cache-dir** `DIR`

Specifies the base directory under which the reader should be cached:

```
showinf -cache-dir /tmp/cachedir /path/to/file
```

## 6.3 Converting a file to different format

The **bfconvert** *command line tool* can be used to convert files between *supported formats*.

**bfconvert** with no options displays a summary of available options.

To convert a file to single output file (e.g. TIFF):

```
bfconvert /path/to/input output.tiff
```

The output file format is determined by the extension of the output file, e.g. .tiff for TIFF files, .ome.tiff for OME-TIFF, .png for PNG.

**-series** `SERIES`

All images in the input file are converted by default. To convert only one series:

```
bfconvert -series 0 /path/to/input output-first-series.tiff
```

**-timepoint** `TIMEPOINT`
To convert only one timepoint:

```
bfconvert -timepoint 0 /path/to/input output-first-timepoint.tiff
```

**-channel** `CHANNEL`
To convert only one channel:

```
bfconvert -channel 0 /path/to/input output-first-channel.tiff
```

**-z** `Z`
To convert only one Z section:

```
bfconvert -z 0 /path/to/input output-first-z.tiff
```

**-range** `START END`
To convert images between certain indices (inclusive):

```
bfconvert -range 0 2 /path/to/input output-first-3-images.tiff
```

**-tilex** `TILEX`, **-tiley** `TILEY`
All images larger than 4096x4096 will be saved as a set of tiles if the output format supports doing so. The default tile size is determined by the input format, and can be overridden like this:

```
bfconvert -tilex 512 -tiley 512 /path/to/input output-512x512-tiles.tiff
```

`-tilex` is the width in pixels of each tile; `-tiley` is the height in pixels of each tile. The last row and column of tiles may be slightly smaller if the image width and height are not multiples of the specified tile width and height. Note that specifying `-tilex` and `-tiley` will cause tiles to be written even if the image is smaller than 4096x4096.

Also note that the specified tile size will affect performance. If large amounts of data are being processed, it is a good idea to try converting a single tile with a few different tile sizes using the `-crop` option. This gives an idea of what the most performant size will be.

Images can also be written to multiple files by specifying a pattern string in the output file. For example, to write one series, timepoint, channel, and Z section per file:

```
bfconvert /path/to/input output_series_%s_Z%z_C%c_T%t.tiff
```

`%s` is the series index, `%z` is the Z section index, `%c` is the channel index, and `%t` is the timepoint index (all indices begin at 0).

For large images in particular, it can also be useful to write each tile to a separate file:

```
bfconvert -tilex 512 -tiley 512 /path/to/input output_tile_%x_%y_%m.jpg
```

`%x` is the row index of the tile, `%y` is the column index of the tile, and `%m` is the overall tile index. As above, all indices begin at 0. Note that if `%x` or `%y` is included in the file name pattern, then the other must be included too. The only exception is if `%m` was also included in the pattern.

**-compression** `COMPRESSION`
By default, all images will be written uncompressed. Supported compression modes vary based upon the output format, but when multiple modes are available the compression can be changed using the `-compression` option. For example, to use LZW compression in a TIFF file:

```
bfconvert -compression LZW /path/to/input output-lzw.tiff
```

**-overwrite**

If the specified output file already exists, **bfconvert** will prompt to overwrite the file. When running **bfconvert** non-interactively, it may be useful to always allow **bfconvert** to overwrite the output file:

```
bfconvert -overwrite /path/to/input /path/to/output
```

**-nooverwrite**

To always exit without overwriting:

```
bfconvert -nooverwrite /path/to/input /path/to/output
```

**-bigtiff**

This option forces the writing of a BigTiff file:

```
bfconvert -bigtiff /path/to/input output.ome.tiff
```

New in version 5.1.2: The *-bigtiff* option is not necessary if a BigTiff extension is used for the output file, e.g.:

```
bfconvert /path/to/input output.ome.btf
```

## 6.4 Validating XML in an OME-TIFF

The XML stored in an OME-TIFF file can be validated using the *command line tools*.

Both the **tiffcomment** and **xmlvalid** commands are used; **tiffcomment** extracts the XML from the file and **xmlvalid** validates the XML and prints any errors to the console.

For example:

```
tiffcomment /path/to/file.ome.tiff | xmlvalid -
```

will perform the extraction and validation all at once.

Typical successful output is:

```
[~/Work/bftools]$ ./xmlvalid sample.ome
Parsing schema path
http://www.openmicroscopy.org/Schemas/OME/2010-06/ome.xsd
Validating sample.ome
No validation errors found.
[~/Work/bftools]$
```

If any errors are found they are reported. When correcting errors it is usually best to work from the top of the file as errors higher up can cause extra errors further down. In this example the output shows 3 errors but there are only 2 mistakes in the file:

```
[~/Work/bftools]$ ./xmlvalid broken.ome
Parsing schema path
http://www.openmicroscopy.org/Schemas/OME/2010-06/ome.xsd
Validating broken.ome
cvc-complex-type.4: Attribute 'SizeY' must appear on element 'Pixels'.
```

```
cvc-enumeration-valid: Value 'Non Zero' is not facet-valid with respect
   to enumeration '[EvenOdd, NonZero]'. It must be a value from the enumeration.
cvc-attribute.3: The value 'Non Zero' of attribute 'FillRule' on element
   'ROI:Shape' is not valid with respect to its type, 'null'.
Error validating document: 3 errors found
[~/Work/bftools]$
```

If the XML is found to have validation errors, the **tiffcomment** command can be used to overwrite the XML in the OME-TIFF file with corrected XML. The XML can be displayed in an editor window:

```
tiffcomment -edit /path/to/file.ome.tiff
```

or the new XML can be read from a file:

```
tiffcomment -set new-comment.xml /path/to/file.ome.tiff
```

## 6.5 Editing XML in an OME-TIFF

To edit the XML in an OME-TIFF file you can use **tiffcomment**, one of the Bio-Formats tools.

**Note:** The **tiffcomment** tool requires that the *ImageDescription* tag is present in the TIFF file and will error otherwise.

To use the built in editor run:

```
tiffcomment -edit sample.ome.tif
```

To extract or view the XML run:

```
tiffcomment sample.ome.tif
```

To inject replacement XML into a file run:

```
tiffcomment -set 'newmetadata.xml' sample.ome.tif
```

## 6.6 List formats by domain

Each supported file format has one or more imaging domains associated with it. To print the list of formats associated with each imaging domain:

```
domainlist
```

The command does not accept any arguments. The known image domains are defined by:

- ASTRONOMY_DOMAIN[3]
- EM_DOMAIN[4]
- FLIM_DOMAIN[5]

---

[3] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatTools.html#ASTRONOMY_DOMAIN

[4] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatTools.html#EM_DOMAIN

[5] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatTools.html#FLIM_DOMAIN

- GEL_DOMAIN[6]
- GRAPHICS_DOMAIN[7]
- HCS_DOMAIN[8]
- HISTOLOGY_DOMAIN[9]
- LM_DOMAIN[10]
- MEDICAL_DOMAIN[11]
- SEM_DOMAIN[12]
- SPM_DOMAIN[13]
- UNKNOWN_DOMAIN[14]

## 6.7 List supported file formats

A detailed list of supported formats can be displayed using the **formatlist** command.

The default behavior is to print a plain-text list of formats:

```
formatlist
```

**-txt**

Prints the list of formats as plain-text:

```
formatlist -txt
```

**-html**

Prints the list of formats as HTML:

```
formatlist -html
```

**-xml**

Prints the list of formats as XML:

```
formatlist -xml
```

**-help**

Displays the usage information:

```
formatlist -help
```

## 6.8 Display file in ImageJ

Files can be displayed from the command line in ImageJ. The Bio-Formats importer plugin for ImageJ is used to open the file.

---

[6] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatTools.html#GEL_DOMAIN
[7] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatTools.html#GRAPHICS_DOMAIN
[8] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatTools.html#HCS_DOMAIN
[9] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatTools.html#HISTOLOGY_DOMAIN
[10] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatTools.html#LM_DOMAIN
[11] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatTools.html#MEDICAL_DOMAIN
[12] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatTools.html#SEM_DOMAIN
[13] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatTools.html#SPM_DOMAIN
[14] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatTools.html#UNKNOWN_DOMAIN

The command takes a single argument:

```
ijview /file/to/open
```

If the input file is not specified, ImageJ will show a file chooser window.

The Bio-Formats import options window will then appear, after which the image(s) will be displayed.

If the *BF_DEVEL* environment variable is set, the `ImageJ jar <jars/ij.jar>` must be included in the classpath.

## 6.9 Format XML data

The **xmlindent** command formats and adds indenting to XML so that it is easier to read. Indenting is currently set to 3 spaces.

If an XML file name is not specified, the XML to indent will be read from standard output. Otherwise, one or more file names can be specified:

```
xmlindent /path/to/xml
xmlindent /path/to/first-xml /path/to/second-xml
```

The formatted XML from each file will be printed in the order in which the files were specified.

By default, extra whitespace may be added to CDATA elements. To preserve the contents of CDATA elements:

```
xmlindent -valid /path/to/xml
```

## 6.10 Create a high-content screen for testing

The **mkfake** command creates a high-content screen for testing. The image data will be meaningless, but it allows testing of screen, plate, and well metadata without having to find appropriately-sized screens from real acquisitions.

If no arguments are specified, **mkfake** prints usage information.

To create a single screen with default plate dimensions:

```
mkfake default-screen.fake
```

This will create a directory that represents one screen with a single plate containing one well, one field, and one acquisition of the plate (see PlateAcquisition[15]).

**-plates** `PLATES`
To change the number of plates in the screen:

```
mkfake -plates 3 three-plates.fake
```

**-runs** `RUNS`
To change the number of acquisitions for each plate:

```
mkfake -runs 4 four-plate-acquisitions.fake
```

**-rows** `ROWS`
To change the number of rows of wells in each plate:

---

[15] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2015-01/SPW_xsd.html#PlateAcquisition_ID

```
mkfake -rows 8 eight-row-plate.fake
```

**-columns** `COLUMNS`
To change the number of columns of wells in each plate:

```
mkfake -columns 12 twelve-column-plate.fake
```

**-fields** `FIELDS`
To change the number of fields per well:

```
mkfake -fields 2 two-field-plate.fake
```

It is often most useful to use the arguments together to create a realistic screen, for example:

```
mkfake -rows 16 -columns 24 -plates 2 -fields 3 two-384-well-plates.fake
```

**-debug** `DEBUG`
As with other command line tools, debugging output can be enabled if necessary:

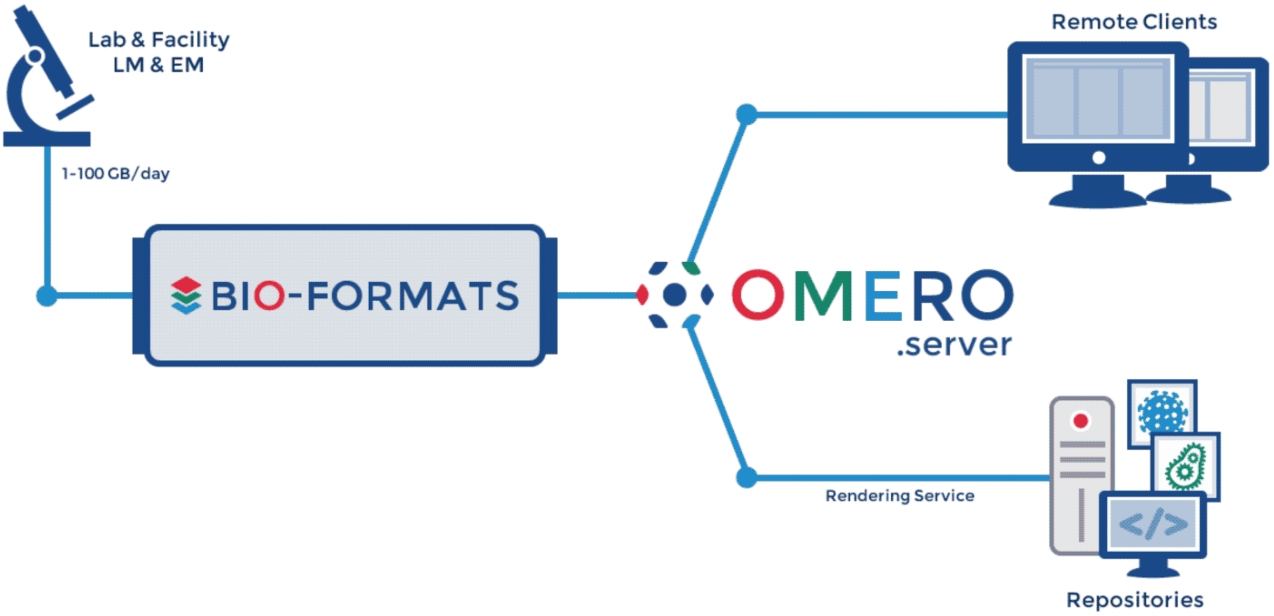
```
mkfake -debug debug-screen.fake
```

CHAPTER

SEVEN

# OMERO

OMERO 5 uses Bio-Formats to read original files from over 140 file formats. Please refer to the OMERO documentation[1] for further information.



---

[1] http://www.openmicroscopy.org/site/support/omero5.1/

CHAPTER

EIGHT

# IMAGE SERVER APPLICATIONS

## 8.1 BISQUE

The BISQUE[1] (Bio-Image Semantic Query User Environment) Database, developed at the Center for Bio-Image Informatics at UCSB, was developed for the exchange and exploration of biological images. The Bisque system supports several areas useful for imaging researchers from image capture to image analysis and querying. The bisque system is centered around a database of images and metadata. Search and comparison of datasets by image data and content is supported. Novel semantic analyses are integrated into the system allowing high level semantic queries and comparison of image content.

Bisque integrates with Bio-Formats by calling the *showinf command line tool*.

## 8.2 OME Server

OME[2] is a set of software that interacts with a database to manage images, image metadata, image analysis and analysis results. The OME system is capable of leveraging Bio-Formats to import files.

**Please note** - the OME server is no longer maintained and has now been superseded by the OMERO server[3]. Support for the OME server has been entirely removed in the 5.0.0 version of Bio-Formats; the following instructions can still be used with the 4.4.x versions.

### 8.2.1 Installation

For OME Perl v2.6.1[4] and later, the command line installer automatically downloads the latest **loci_tools.jar** and places it in the proper location. This location is configurable, but is **/OME/java/loci_tools.jar** by default.

For a list of what was recognized for a particular import into the OME server, go to the Image details page in the web interface, and click the “Image import” link in the upper right hand box.

Bio-Formats is capable of parsing original metadata for supported formats, and standardizes what it can into the OME data model. For the rest, it expresses the metadata in OME terms as key/value pairs using an OriginalMetadata custom semantic type. However, this latter method of metadata representation is of limited utility, as it is not a full conversion into the OME data model.

Bio-Formats is enabled in OME v2.6.1 for all formats except:

- OME-TIFF
- Metamorph HTD
- Deltavision DV
- Metamorph STK
- Bio-Rad PIC
- Zeiss LSM
- TIFF

---

[1] http://www.bioimage.ucsb.edu/bisque

[2] http://openmicroscopy.org/site/support/legacy/ome-server

[3] http://www.openmicroscopy.org/site/support/omero5.1/

[4] http://downloads.openmicroscopy.org/ome/2.6.1/

- BMP
- DICOM
- OME-XML

The above formats have their own Perl importers that override Bio-Formats, meaning that Bio-Formats is not used to process them by default. However, you can override this behavior (except for Metamorph HTD, which Bio-Formats does not support) by editing an OME database configuration value:

```
% psql ome
```

To see the current file format reader list:

```
ome=# select value from configuration where name='import_formats';
 value
-----------------------------------------------------------------------------
['OME::ImportEngine::OMETIFFreader','OME::ImportEngine::MetamorphHTDFormat',
'OME::ImportEngine::DVreader','OME::ImportEngine::STKreader',
'OME::ImportEngine::BioradReader','OME::ImportEngine::LSMreader',
'OME::ImportEngine::TIFFreader','OME::ImportEngine::BMPreader',
'OME::ImportEngine::DICOMreader','OME::ImportEngine::XMLreader',
'OME::ImportEngine::BioFormats']
 (1 row)
```

To remove extraneous readers from the list:

```
ome=# update configuration set value='[\'OME::ImportEngine::MetamorphHTDFormat\',
\'OME::ImportEngine::XMLreader\',\'OME::ImportEngine::BioFormats\']' where
name='import_formats';
UPDATE 1
ome=# select value from configuration where name='import_formats';
 value
-----------------------------------------------------------------------------
['OME::ImportEngine::MetamorphHTDFormat','OME::ImportEngine::XMLreader',
'OME::ImportEngine::BioFormats']
 (1 row)
```

To reset things back to how they were:

```
ome=# update configuration set value='[\'OME::ImportEngine::OMETIFFreader\',
\'OME::ImportEngine::MetamorphHTDFormat\',\'OME::ImportEngine::DVreader\',
\'OME::ImportEngine::STKreader\',\'OME::ImportEngine::BioradReader\',
\'OME::ImportEngine::LSMreader\',\'OME::ImportEngine::TIFFreader\',
\'OME::ImportEngine::BMPreader\',\'OME::ImportEngine::DICOMreader\',
\'OME::ImportEngine::XMLreader\',\'OME::ImportEngine::BioFormats\']' where
name='import_formats';
```

Lastly, please note that Li-Cor L2D files cannot be imported into an OME server. Since the OME perl server has been discontinued, we have no plans to fix this limitation.

### 8.2.2 Upgrading

OME server is not supported by Bio-Formats versions 5.0.0 and above. To take advantage of more recent improvements to Bio-Formats, you must switch to OMERO server[5].

### 8.2.3 Source Code

The source code for the Bio-Formats integration with OME server spans three languages, using piped system calls in both directions to communicate, with imported pixels written to OMEIS pixels files. The relevant source files are:

---

[5] http://www.openmicroscopy.org/site/support/omero5.1/

- OmeisImporter.java[6] – omebf Java command line tool
- BioFormats.pm[7] – Perl module for OME Bio-Formats importer
- omeis.c[8] – OMEIS C functions for Bio-Formats (search for “bioformats” case insensitively to find relevant sections)

---

[6] http://github.com/openmicroscopy/bioformats/tree/v4.4.10/components/scifio/src/loci/formats/ome/OmeisImporter.java

[7] http://downloads.openmicroscopy.org/ome/code/BioFormats.pm

[8] http://downloads.openmicroscopy.org/ome/code/omeis.c

CHAPTER

NINE

# LIBRARIES AND SCRIPTING APPLICATIONS

## 9.1 FARSIGHT

FARSIGHT[1] is a collection of modules for image analysis created by LOCI's collaborators at the University of Houston[2]. These open source modules are built on the *ITK* library and thus can take advantage of ITK's support for Bio-Formats to process otherwise unsupported image formats.

The principal FARSIGHT module that benefits from Bio-Formats is the Nucleus Editor[3], though in principle any FARSIGHT-based code that reads image formats via the standard ITK mechanism will be able to leverage Bio-Formats.

**See also:**

FARSIGHT Downloads page[4]

FARSIGHT HowToBuild tutorial[5]

## 9.2 i3dcore

i3dcore[6], also known as the CBIA 3D image representation library, is a 3D image processing library developed at the Centre for Biomedical Image Analysis[7]. Together with i3dalgo[8] and i4dcore[9], i3dcore forms a continuously developed templated cross-platform C++ suite of libraries for multidimensional image processing and analysis.

i3dcore is capable of reading images with Bio-Formats using Java for C++[10] (java4cpp).

**See also:**

Download i3dcore[11]

CBIA Software Development[12]

## 9.3 ImgLib

ImgLib2[13] is a multidimensional image processing library. It provides a general mechanism for writing image analysis algorithms, without writing case logic for bit depth[14], or worrying about the source of the pixel data (arrays in memory, files on disk, etc.).

---

[1] http://www.farsight-toolkit.org/

[2] http://www.uh.edu/

[3] http://www.farsight-toolkit.org/wiki/NucleusEditor

[4] http://www.farsight-toolkit.org/wiki/Special:FarsightDownloads

[5] http://www.farsight-toolkit.org/wiki/FARSIGHT_HowToBuild

[6] http://cbia.fi.muni.cz/user_dirs/i3dlib_doc/i3dcore/index.html

[7] http://cbia.fi.muni.cz/software-development.html

[8] http://cbia.fi.muni.cz/user_dirs/i3dlib_doc/i3dalgo/index.html

[9] http://cbia.fi.muni.cz/user_dirs/of_doc/libi4d.html

[10] http://java4cpp.kapott.org/

[11] http://cbia.fi.muni.cz/user_dirs/i3dlib_doc/i3dcore/index.html#download

[12] http://cbia.fi.muni.cz/software-development.html

[13] http://imglib2.net/

[14] http://en.wikipedia.org/wiki/Color_depth

The SCIFIO[15] project provides an ImgOpener[16] utility class for reading data into ImgLib2 data structures using Bio-Formats.

## 9.4 ITK

The Insight Toolkit[17] (ITK) is an open-source, cross-platform system that provides developers with an extensive suite of software tools for image analysis. Developed through extreme programming methodologies, ITK employs leading-edge algorithms for registering and segmenting multidimensional data.

ITK provides an ImageIO plug-in structure that works via discovery through a dependency injection scheme. This allows a program built on ITK to load plug-ins for reading and writing different image types without actually linking to the ImageIO libraries required for those types. Such encapsulation automatically grants two major boons: firstly, programs can be easily extended just by virtue of using ITK (developers do not have to specifically accommodate or anticipate what plug-ins may be used). Secondly, the architecture provides a distribution method for open source software, like Bio-Formats, which have licenses that might otherwise exclude them from being used with other software suites.

The SCIFIO ImageIO[18] plugin provides an ITK imageIO base that uses Bio-Formats to read and write supported life sciences file formats. This plugin allows any program built on ITK to read any of the image types supported by Bio-Formats.

## 9.5 Qu for MATLAB

Qu for MATLAB[19] is a MATLAB toolbox for the visualization and analysis of multi-channel 4-dimensional datasets targeted to the field of biomedical imaging, developed by Aaron Ponti.

- Uses Bio-Formats to read files
- Open source software available under the Mozilla Public License

**See also:**

Qu for MATLAB download page[20]

---

[15] http://scif.io/

[16] https://github.com/scifio/scifio/blob/master/src/main/java/io/scif/img/ImgOpener.java

[17] http://itk.org/

[18] https://github.com/scifio/scifio-imageio

[19] http://www.scs2.net/home/index.php?option=com_content&view=article&id=46%3Aqu-for-matlab&catid=34%3Aqu&Itemid=55

[20] http://www.scs2.net/home/index.php?option=com_content&view=article&id=46%3Aqu-for-matlab&catid=34%3Aqu&Itemid=55&limitstart=3

CHAPTER

# TEN

# NUMERICAL DATA PROCESSING APPLICATIONS

## 10.1 GNU Octave

GNU Octave[1] is a high-level interpreted language, primarily intended for numerical computations. Being an array programming language, it is naturally suited for image processing and handling of N dimensional datasets. Octave is distributed under the terms of the GNU General Public License.

The Octave language is Matlab compatible so that programs are easily portable. Indeed, the Octave bioformats package is exactly the same as Matlab's, the only difference being the installation steps.

### 10.1.1 Requirements

The bioformats package requires Octave version 4.0.0 or later with support for java:

```
$ octave
>> OCTAVE_VERSION
ans = 4.0.0
>> octave_config_info ("features").JAVA
ans =  1
```

### 10.1.2 Installation

1. Download bioformats_package.jar[2] and place it somewhere sensible for your system (in Linux, this will probably be */usr/local/share/java* or *~/.local/share/java* for a system-wide or user installation respectively).
2. Add *bioformats_package.jar* to Octave's *static* javaclasspath (see Octave's documentation[3]).
3. Download the Octave package from the downloads page[4].
4. Start octave and install the package with:

   ```
   >> pkg install path-to-bioformats-octave-version.tar.gz
   ```

### 10.1.3 Usage

Usage instructions are the same as Matlab. The only difference is that you need to explicitly load the package. This is done by running at the Octave prompt:

```
>> pkg load bioformats
```

---

[1] http://www.octave.org

[2] http://downloads.openmicroscopy.org/latest/bio-formats5.2/artifacts/bioformats_package.jar

[3] https://www.gnu.org/software/octave/doc/interpreter/How-to-make-Java-classes-available_003f.html

[4] http://downloads.openmicroscopy.org/latest/bio-formats5.2/

### 10.1.4 Upgrading

To use a newer version of Bio-Formats, repeat the install instructions. Do not follow the Matlab instructions.

## 10.2 IDL

IDL[5] (Interactive Data Language) is a popular data visualization and analysis platform used for interactive processing of large amounts of data including images.

IDL possesses the ability to interact with Java applications via its IDL-Java bridge. Karsten Rodenacker has written a script that uses Bio-Formats to read in image files to IDL.

### 10.2.1 Installation

Download the ij_read_bio_formats.pro[6] script from Karsten Rodenacker's IDL goodies (?)[7] web site. See the comments at the top of the script for installation instructions and caveats.

### 10.2.2 Upgrading

To use a newer version of Bio-Formats, overwrite the requisite JAR files with the newer version[8] and restart IDL.

## 10.3 KNIME

KNIME[9] (Konstanz Information Miner) is a user-friendly and comprehensive open-source data integration, processing, analysis, and exploration platform. KNIME supports image import using Bio-Formats using the KNIME Image Processing[10] (a.k.a. KNIP) plugin.

## 10.4 MATLAB

MATLAB[11] is a high-level language and interactive environment that facilitates rapid development of algorithms for performing computationally intensive tasks.

Calling Bio-Formats from MATLAB is fairly straightforward, since MATLAB has built-in interoperability with Java. We have created a set of scripts[12] for reading image files. Note the minimum supported MATLAB version is R2007b (7.5).

### 10.4.1 Installation

Download the MATLAB toolbox from the Bio-Formats downloads page[13]. Unzip `bfmatlab.zip` and add the unzipped `bfmatlab` folder to your MATLAB path.

**Note:** As of Bio-Formats 5.0.0, this zip now contains the bundled jar and you no longer need to download `loci_tools.jar` or the new `bioformats_package.jar` separately.

---

[5] http://www.exelisvis.com/ProductsServices/IDL.aspx

[6] http://karo03.bplaced.net/karo/IDL/_pro/ij_read_bio_formats.pro

[7] http://karo03.bplaced.net/karo/ro_embed.php?file=IDL/index.html

[8] http://downloads.openmicroscopy.org/latest/bio-formats5.2/

[9] http://www.knime.org/

[10] http://tech.knime.org/community/image-processing

[11] http://www.mathworks.com/products/matlab/

[12] https://github.com/openmicroscopy/bioformats/tree/v5.2.0/components/formats-gpl/matlab

[13] http://downloads.openmicroscopy.org/latest/bio-formats5.2/

### 10.4.2 Usage

Please see *Using Bio-Formats in MATLAB* for usage instructions. If you intend to extend the existing .m files, please also see the *developer page* for more information on how to use Bio-Formats in general.

### 10.4.3 Performance

In our tests (MATLAB R14 vs. java 1.6.0_20), the script executes at approximately half the speed of our *showinf command line tool*, due to overhead from copying arrays.

### 10.4.4 Upgrading

To use a newer version of Bio-Formats, overwrite the content of the `bfmatlab` folder with the newer version[14] of the toolbox and restart MATLAB.

### 10.4.5 Alternative scripts

Several other groups have developed their own MATLAB scripts that use Bio-Formats, including the following:

- https://github.com/prakatmac/bf-tools/
- imread for multiple life science image file formats[15]

## 10.5 VisAD

The VisAD[16] visualization toolkit is a Java component library for interactive and collaborative visualization and analysis of numerical data. VisAD uses Bio-Formats to read many image formats, notably TIFF.

### 10.5.1 Installation

The **visad.jar** file has Bio-Formats bundled inside, so no further installation is necessary.

### 10.5.2 Upgrading

It should be possible to use a newer version of Bio-Formats by putting the latest bioformats_package.jar[17] or formats-gpl.jar[18] before **visad.jar** in the class path. Alternately, you can create a "VisAD Lite" using the `make lite` command from VisAD source, and use the resultant **visad-lite.jar**, which is a stripped down version of VisAD without sample applications or Bio-Formats bundled in.

---

[14] http://downloads.openmicroscopy.org/latest/bio-formats5.2/

[15] http://www.mathworks.com/matlabcentral/fileexchange/32920-imread-for-multiple-life-science-image-file-formats

[16] http://www.ssec.wisc.edu/%7Ebillh/visad.html

[17] http://downloads.openmicroscopy.org/latest/bio-formats5.2/artifacts/bioformats_package.jar

[18] http://downloads.openmicroscopy.org/latest/bio-formats5.2/artifacts/formats-gpl.jar

CHAPTER

ELEVEN

# VISUALIZATION AND ANALYSIS APPLICATIONS

## 11.1 Bitplane Imaris

Imaris[1] is Bitplane's core scientific software module that delivers all the necessary functionality for data visualization, analysis, segmentation and interpretation of 3D and 4D microscopy datasets. Combining speed, precision and ease-of-use, Imaris provides a complete set of features for working with three- and four-dimensional multi-channel images of any size, from a few megabytes to multiple gigabytes in size.

As of version 7.2[2], Imaris integrates with *Fiji overview*, which includes Bio-Formats. See this page[3] for a detailed list of Imaris' features.

## 11.2 CellProfiler

CellProfiler[4]—developed by the Broad Institute Imaging Platform[5]—is free open-source software designed to enable biologists without training in computer vision or programming to quantitatively measure phenotypes from thousands of images automatically. CellProfiler uses Bio-Formats to read images from disk, as well as write movies.

### 11.2.1 Installation

The CellProfiler distribution comes with Bio-Formats included, so no further installation is necessary.

### 11.2.2 Upgrading

It should be possible to use a newer version of Bio-Formats by replacing the bundled **loci_tools.jar** with a newer version.

- For example, on Mac OS X, Ctrl+click the CellProfiler icon, choose *Show Package Contents*, and replace the following files:
    - `Contents/Resources/bioformats/loci_tools.jar`
    - `Contents/Resources/lib/python2.5/bioformats/loci_tools.jar`

**See also:**

**CellProfiler**[6] Website of the CellProfiler software

***Using Bio-Formats in Python*** Section of the developer documentation describing the Python wrapper for Bio-Formats used by CellProfiler

---

[1] http://www.bitplane.com/

[2] http://www.bitplane.com/releasenotes.aspx?product=Imaris&version=7.2&patch=0

[3] http://www.bitplane.com/imaris/imaris

[4] http://www.cellprofiler.org

[5] http://www.broadinstitute.org/science/platforms/imaging/imaging-platform

## 11.3 Comstat2

Comstat2 is a Java-based computer program for the analysis and treatment of biofilm images in 3D. It is the Master's project of Martin Vorregaard[7].

Comstat2 uses the *Bio-Formats Importer plugin for ImageJ* to read files in TIFF and Leica LIF formats.

## 11.4 Endrov

Endrov[8] (or http://www.endrov.net) (EV) is a multi-purpose image analysis program developed by the Thomas Burglin group[9] at Karolinska Institute[10], Department of Biosciences and Nutrition.

### 11.4.1 Installation

The EV distribution comes bundled with the core Bio-Formats library (**bio-formats.jar**), so no further installation is necessary.

### 11.4.2 Upgrading

It should be possible to use a newer version of Bio-Formats by downloading the latest formats-gpl.jar[11] and putting it into the `libs` folder of the EV distribution, overwriting the old file.

You could also include some *optional libraries*, to add support for additional formats, if desired.

## 11.5 FocalPoint

FocalPoint[12] is an image browser, similar to Windows Explorer[13] or other file manager[14] application, specifically designed to work with more complex image types. FocalPoint uses Bio-Formats to generate thumbnails for some formats.

### 11.5.1 Installation

FocalPoint is bundled with Bio-Formats, so no further installation is necessary.

### 11.5.2 Upgrading

It should be possible to use a newer version of Bio-Formats[15] by overwriting the old **loci_tools.jar** within the FocalPoint distribution. For Mac OS X, you will have to control click the FocalPoint program icon, choose "Show Package Contents" and navigate into Contents/Resources/Java to find the **loci_tools.jar** file.

## 11.6 Graphic Converter

Graphic Converter[16] is a Mac OS application for opening, editing, and organizing photos. Versions 6.4.1 and later use Bio-Formats to open all file formats supported by Bio-Formats.

---

[7] http://www.comstat.dk/

[8] https://github.com/mahogny/Endrov

[9] http://www.biosci.ki.se/groups/tbu

[10] http://www.ki.se/

[11] http://downloads.openmicroscopy.org/latest/bio-formats5.2/artifacts/formats-gpl.jar

[12] http://www.bioinformatics.bbsrc.ac.uk/projects/focalpoint/

[13] http://en.wikipedia.org/wiki/Windows_Explorer

[14] http://en.wikipedia.org/wiki/File_manager

[15] http://downloads.openmicroscopy.org/latest/bio-formats5.2/

[16] http://www.lemkesoft.com

## 11.7 Icy

Icy[17] is an open-source image analysis and visualization software package that combines a user-friendly graphical interface with the ability to write scripts and plugins that can be uploaded to a centralized website. It uses Bio-Formats internally to read images and acquisition metadata, so no further installation is necessary.

## 11.8 imago

Mayachitra imago[18] is an advanced desktop image management package that enables scientists to easily store, manage, search, and analyze 5D biological images and their analysis results. imago integrates flexible annotation and metadata management with advanced image analysis tools.

imago uses Bio-Formats to read files in some formats, including Bio-Rad PIC, Image-Pro Workspace, Metamorph TIFF, Leica LCS LEI, Olympus FluoView FV1000, Nikon NIS-Elements ND2, and Zeiss LSM.

A free 30-day trial version of imago is available here[19].

## 11.9 Iqm

Iqm[20] is an image processing application written in Java. It is mainly constructed around the Java JAI library and furthermore it incorporates the functionality of the popular ImageJ image processing software.

Because iqm integrates with ImageJ, it can take advantage of the *Bio-Formats ImageJ plugin* to read image data.

## 11.10 Macnification

Macnification[21] is a Mac OS X application for organizing, editing, analyzing and annotating microscopic images, designed for ease of use. It is being developed by Orbicule[22].

Macnification uses Bio-Formats to read files in some formats, including Gatan DM3, ICS, ImagePro SEQ, ImagePro IPW, Metamorph STK, OME-TIFF and Zeiss LSM.

**See also:**

Free trial download[23]

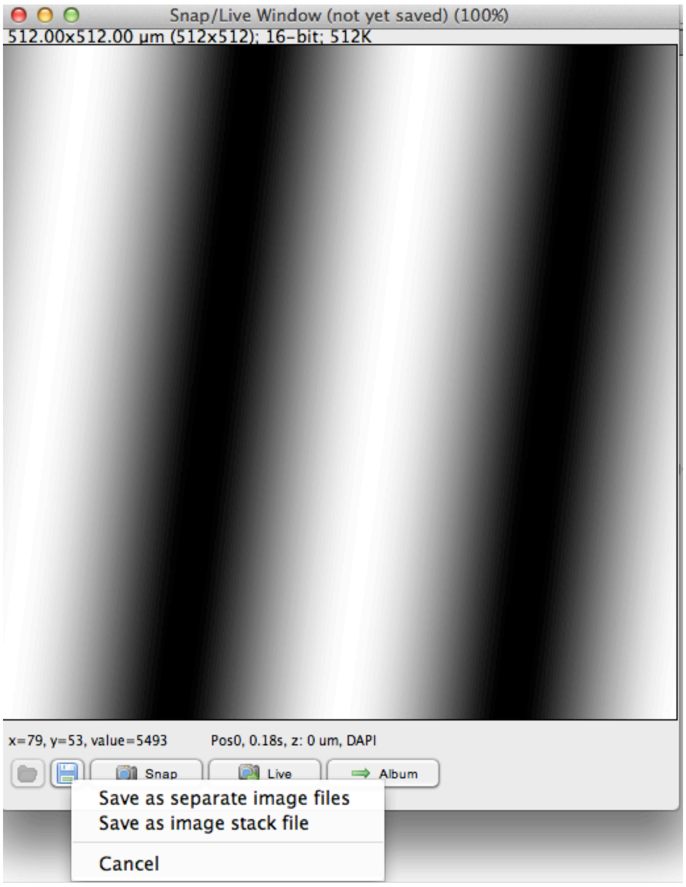
## 11.11 Micro-Manager

Micro-Manager[24] is a software framework for implementing advanced and novel imaging procedures, extending functionality, customization and rapid development of specialized imaging applications.

Micro-Manager offers the functionality for saving the acquired images in TIFF/OME-TIFF format. Based on the mode of saving and the configuration settings, the acquired image can be saved with or without a companion file (`*metadata.txt`):

---

[17] http://icy.bioimageanalysis.org/
[18] http://mayachitra.com/imago/index.html
[19] http://mayachitra.com/imago/download-trial.php
[20] http://code.google.com/p/iqm/
[21] http://www.orbicule.com/macnification/
[22] http://www.orbicule.com
[23] http://www.orbicule.com/macnification/download
[24] https://www.micro-manager.org/wiki/Micro-Manager



| Saving Options within Micro-Manager | Format | Companion File | Bio-Formats Reading | Reader Used |
|---|---|---|---|---|
| Save as separate image files | TIFF | Yes | Full Support | Micromanager-Reader |
| Save as image stack file | OME-TIFF | No | Pixel data plus minimal metadata* | OMETiffReader |
| | OME-TIFF | Yes** | Full Support | Micromanager-Reader |

* Not all acquisition metadata is converted to OME-XML.

** A small change in the acquisition side facilitates better handling of the metadata from the Bio-Formats side: *Tools → Options...* and then select "Create metadata.txt file with Image Stack Files" in the text box.

**See also:**

Micro-Manager User's Guide - Files on Disk[25]

## 11.12 MIPAV

The MIPAV[26] (Medical Image Processing, Analysis, and Visualization) application—developed at the Center for Information Technology[27] at the National Institutes of Health[28]—enables quantitative analysis and visualization of medical images of numerous modalities such as PET, MRI, CT, or microscopy. You can use Bio-Formats as a plugin for MIPAV to read images in the formats it supports.

---

[25] https://micro-manager.org/wiki/Micro-Manager_User%27s_Guide#Files_on_Disk
[26] http://mipav.cit.nih.gov/
[27] http://cit.nih.gov/
[28] http://nih.gov/

### 11.12.1 Installation

Follow these steps to install the Bio-Formats plugin for MIPAV:

1. Download bioformats_package.jar[29] and drop it into your MIPAV folder.
2. Download the plugin source code[30] into your user `mipav/plugins` folder.
3. From the command line, compile the plugin with:

```
cd mipav/plugins
javac -cp $MIPAV:$MIPAV/bioformats\_package.jar \\
  PlugInBioFormatsImporter.java
```

4. where $MIPAV is the location of your MIPAV installation.
5. Add **bioformats_package.jar** to MIPAV's class path:
    - How to do so depends on your platform.
    - E.g., in Mac OS X, edit the `mipav.app/Contents/Info.plist` file.
6. Run MIPAV and a new "BioFormatsImporter - read image" menu item will appear in the Plugins > File submenu.

See the readme file[31] for more information.

To upgrade, just overwrite the old **bioformats_package.jar** with the latest one[32]. You may want to download the latest version of MIPAV first, to take advantage of new features and bug-fixes.

## 11.13 Vaa3D

Vaa3D[33], developed by the Peng Lab[34] at the HHMI Janelia Farm Research Campus[35], is a handy, fast, and versatile 3D/4D/5D Image Visualization & Analysis System for Bioimages & Surface Objects.

Vaa3D can use Bio-Formats via the Bio-Formats C++ bindings[36] to read images.

## 11.14 VisBio

VisBio[37] is a biological visualization tool designed for easy visualization and analysis of multidimensional image data. VisBio uses Bio-Formats to import files as the Bio-Formats library originally grew out of our efforts to continually expand the file format support within VisBio.

### 11.14.1 Installation

VisBio is bundled with Bio-Formats, so no further installation is necessary.

### 11.14.2 Upgrading

It should be possible to use a newer version of Bio-Formats[38] by overwriting the old **bio-formats.jar** and optional libraries within the VisBio distribution. For Mac OS X, you'll have to control click the VisBio program icon, choose "Show Package Contents" and navigate into Contents/Resources/Java to find the JAR files.

---

[29] http://downloads.openmicroscopy.org/latest/bio-formats5.2/artifacts/bioformats_package.jar

[30] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/utils/mipav/PlugInBioFormatsImporter.java

[31] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/utils/mipav/readme.txt

[32] http://downloads.openmicroscopy.org/latest/bio-formats5.2/

[33] http://vaa3d.org

[34] http://penglab.janelia.org/

[35] http://www.hhmi.org/janelia/

[36] http://www.farsight-toolkit.org/wiki/FARSIGHT_Tutorials/Building_Software/Bio-Formats/Building_C%2B%2B_Bindings

[37] http://loci.wisc.edu/software/visbio

[38] http://downloads.openmicroscopy.org/latest/bio-formats5.2/

## 11.15 XuvTools

XuvTools[39] is automated 3D stitching software for biomedical image data. As of release 1.8.0, XuvTools uses Bio-Formats to read image data.

---

[39] http://www.xuvtools.org

# Part III

# Developer Documentation

The following sections describe various things that are useful to know when working with Bio-Formats. It is recommended that you obtain the Bio-Formats source by following the directions in the *Source code* section. Referring to the Javadocs[40] as you read over these pages should help, as the notes will make more sense when you see the API.

For a complete list of supported formats, see the Bio-Formats *supported formats table*.

For a few working examples of how to use Bio-Formats, see these Github pages[41].

---

[40] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/

[41] https://github.com/openmicroscopy/bioformats/tree/v5.2.0/components/formats-gpl/utils

CHAPTER

TWELVE

# INTRODUCTION TO BIO-FORMATS

## 12.1 Overview for developers

From the rest of the Bio-Formats developer documentation one may piece together a correct and useful understanding of what Bio-Formats does and how it does it. This section gives a high-level tour of these technical details, for those new to working on Bio-Formats itself, making it easier to understand how the information from the other sections fits into the big picture.

### 12.1.1 Terms and concepts

Bio-Formats can read image data from files for many formats, and can write image data to files for some formats. An image may have many two-dimensional "planes" of pixel intensity values. Each pixel on a plane is identified by its $x$, $y$ values. Planes within an image may be identified by various dimensions including $z$ (third spatial dimension), $c$ (channel, e.g. wavelength) or $t$ (time). Planes may be divided into tiles, which are rectangular subsections of a plane; this is helpful in handling very large planes. A file (or set of related files) on disk may contain multiple images: each image is identified by a unique *series* number.

An image is more than a set of planes: it also has metadata. Bio-Formats distinguishes *core metadata*, such as the x, y, z, c, t dimensions of the image, from format-specific *original metadata*, e.g. information about the microscope and its settings, which is represented as a dictionary of values indexed by unique keys. Metadata apply to the image data as a whole, or separately to specific series within it.

Bio-Formats is able to translate the above metadata into a further form, *OME metadata*. The translation may be partial or incomplete, but remains very useful for allowing the metadata of images from different file formats to be used and compared in a common format defined by the OME data model.

### 12.1.2 Implementation

Bio-Formats is primarily a Java project. It can be used from MATLAB, and there are C++ bindings and an ongoing C++ implementation effort. The source code is available for download and sometimes the user community contributes code back into Bio-Formats by opening a pull request on GitHub. Bio-Formats is built from source with Ant or Maven and some of the Bio-Formats source code is generated from other files during the build process. The resulting JARs corresponding to official Bio-Formats releases are available for download.

Readers and writers for different image file formats are implemented in separate Java classes. Readers for related formats may reflect that relationship in the Java class hierarchy. Simple standalone command-line tools are provided with Bio-Formats, but it is more commonly used as a third-party library by other applications. Various examples show how one may use Bio-Formats in different ways in writing a new application that reads or writes image data. A common pattern is to initialize a reader based on the image data's primary file, then query that reader for the metadata and planes of interest.

The set of readers is easily modified. The readers.txt[1] file lists the readers to try in determining an image file's format, and there are many useful classes and methods among the Bio-Formats Java code to assist in writing new readers and writers.

---

[1] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-api/src/loci/formats/readers.txt

## 12.2 Obtaining and building Bio-Formats

### 12.2.1 Source code

The source code for this Bio-Formats release is available from the download page[2]. This release and the latest Bio-Formats source code are also available from the Git repository. This may be accessed using the repository path:

```
git@github.com:openmicroscopy/bioformats.git
```

More information about Git and client downloads are available from the Git project website[3]. You can also browse the Bio-Formats source on GitHub[4]

**Note:** Windows users must set git to use `core.autocrlf=input` to ensure that Bio-Formats uses LF rather than CRLF line endings, otherwise the build will fail (Genshi can't process code templates with CRLF line endings, leading to broken sources being generated). This can be set globally in the registry when installing **msysgit** or by editing `etc/gitconfig` in the git installation directory. Annoyingly, these settings appear to override per-user and per-repository configuration values, requiring these to be set globally.

Lastly, you can browse the Bio-Formats Javadocs online[5], or generate them yourself using the "docs" Ant target.

### 12.2.2 Source code structure

The Bio-Formats code is divided into several projects. Core components are located in subfolders of the components[6] folder, with some components further classified into components/forks[7] or components/stubs[8], depending on the nature of the project. See the *Component overview* for more information, including associated build targets for each component.

Each project has a corresponding Maven POM file, which can be used to work with the project in your favorite IDE, or from the command line, once you have cloned the source.

### 12.2.3 Building from source

Instructions for several popular options follow. In all cases, make sure that the prerequisites are installed before you begin.

If you are interested in working on the Bio-Formats source code itself, you can load it into your favorite IDE, or develop with your favorite text editor.

#### Prerequisites

In addition to the Bio-Formats source code, the following programs and packages are also required:

- Python 2[9], version 2.6 or later (note: not version 3)
- Genshi[10] 0.5 or later (0.7 recommended)

**Note:** Genshi may be installed (in order of decreasing preference) with some Linux distributions' package managers, **pip** (`pip install genshi`), by downloading a compatible `.egg` for your system from the Genshi download page[11], or from source. If using a `.egg`, make sure it is added to your `PYTHONPATH` environment variable.

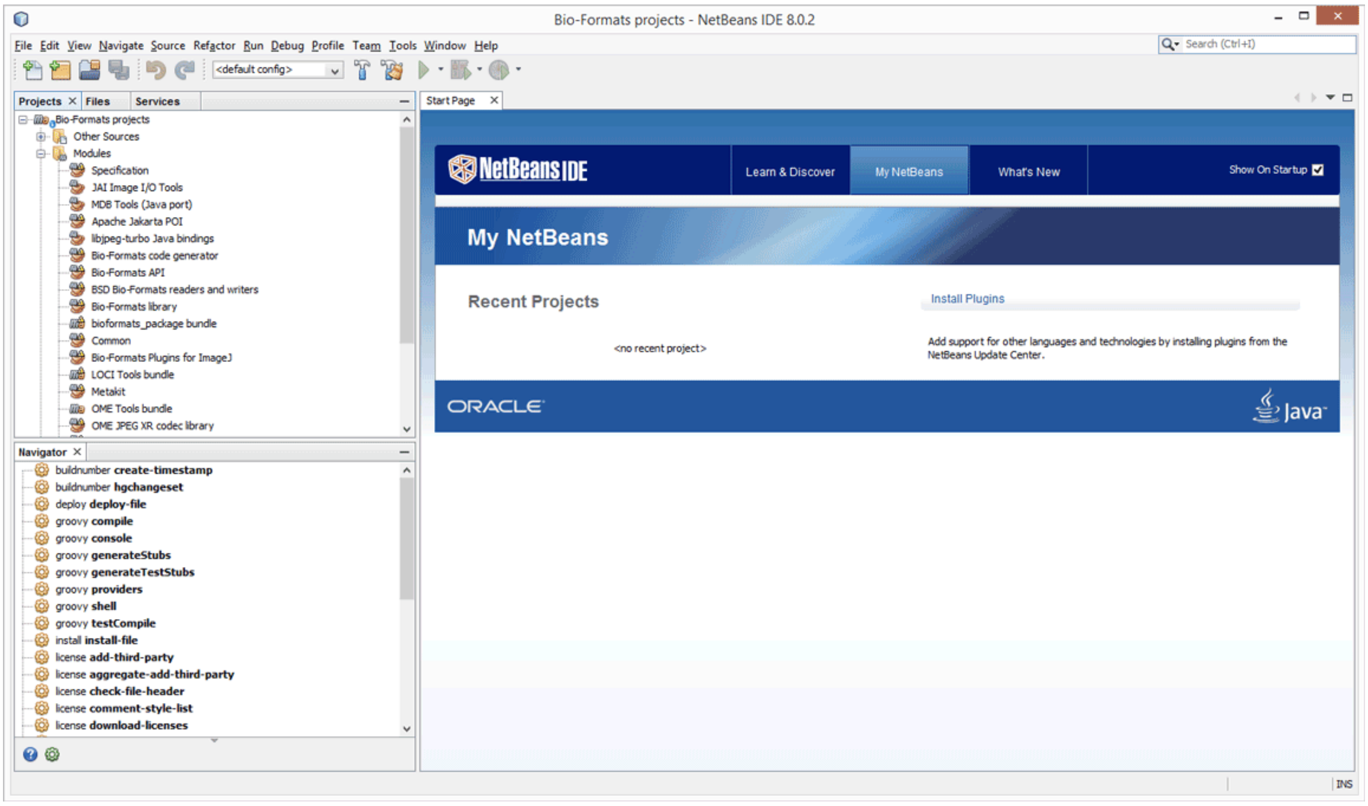
---

[2] http://downloads.openmicroscopy.org/latest/bio-formats5.2/
[3] http://git-scm.com/
[4] https://github.com/openmicroscopy/bioformats
[5] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/
[6] https://github.com/openmicroscopy/bioformats/tree/v5.2.0/components/
[7] https://github.com/openmicroscopy/bioformats/tree/v5.2.0/components/forks/
[8] https://github.com/openmicroscopy/bioformats/tree/v5.2.0/components/stubs/
[9] http://python.org
[10] http://genshi.edgewall.org
[11] http://genshi.edgewall.org/wiki/Download

### NetBeans

NetBeans comes with Maven support built in. To import the Bio-Formats source, perform the following steps:

1. Select *File* → *Open Project* from the menu - choose the top-level path to bioformats.git and click *Open Project*
2. In the 'Projects' tab on the left-hand side, expand the 'Bio-Formats projects' entry - you should now have a series of folders including 'Other Sources', 'Modules' and 'Dependencies'.
3. Expand the 'Modules' folder to give a list of components and then double-click the desired project(s) to work with them.



Alternately, you can clone the source directly from NetBeans into a project by selecting *Team* → *Git* → *Clone Other...* from the menu.

### Eclipse

Eclipse uses the "Maven Integration for Eclipse" (m2e) plugin to work with Maven projects. It is more flexible than Eclipse's built-in project management because m2e transparently converts between project dependencies and JAR dependencies (stored in the Maven repository in `~/.m2/repository`) on the build path, depending on which projects are currently open.

We recommend using Eclipse 4.3 (Kepler) or later, specifically - "Eclipse IDE for Java developers". It comes with m2e installed (http://eclipse.org/downloads/compare.php?release=kepler).

You can import the Bio-Formats source by choosing *File* → *Import* → *Existing Maven Projects* from the menu and browsing to the top-level folder of your Bio-Formats working copy. Alternatively, run the Eclipse Maven target with **mvn eclipse:eclipse** to create the Eclipse project files, then use *File* → *Import* → *Existing Projects into Workspace*.

To remove post-import errors, either close the `ome-xml` project or run:

```
ant jars && mvn generate-sources
```

**See also:**

[ome-devel] Importing source into eclipse[12]

---

[12] http://lists.openmicroscopy.org.uk/pipermail/ome-devel/2014-March/002719.html

### Command line

If you prefer developing code with a text editor such as vim or emacs, you can use the Ant or Maven command line tools to compile Bio-Formats. The Bio-Formats source tree provides parallel build systems for both Ant and Maven, so you can use either one to build the code.

For a list of Ant targets, run:

```
ant -p
```

In general, `ant jars` or `ant tools` is the correct command.

When using Maven, Bio-Formats is configured to run the "install" target by default, so all JARs will be copied into your local Maven repository in ~/.m2/repository. Simply run:

```
mvn
```

With either Ant or Maven, you can use similar commands in any subproject folder to build just that component.

### 12.2.4 Using Gradle, Maven or Ivy

All released `.jar` artifacts may be obtained through the OME Artifactory server[13]. The "Client Settings" section of the Artifactory main page provides example code snippets for inclusion into your Gradle, Maven or Ivy project, which will enable the use of this repository.

Example snippets for using the Bio-Formats ${release.major}.${release.minor}-SNAPSHOT `formats-gpl` artifact are available for `Gradle` and for `Maven`. These may be copied into your project to enable the use of the Bio-Formats library components, and may be adjusted to use different components or different release or development versions of Bio-Formats.

## 12.3 Component overview

The Bio-Formats code repository is divided up into separate components.

The Ant targets to build each component from the repository root are noted in the component descriptions below. Unless otherwise noted, each component can also be built with Maven by running **mvn** in the component's subdirectory. The Maven module name for each component (as it is shown in most IDEs) is also noted in parenthesis.

### 12.3.1 Core components

The most commonly used and actively modified components.

- *formats-common*
- *formats-api*
- *formats-bsd*
- *formats-gpl*
- *specification*
- *ome-xml*

### 12.3.2 Internal testing components

These components are used heavily during continuous integration testing, but are less relevant for active development work.

- *autogen*
- *test-suite*

---

[13] http://artifacts.openmicroscopy.org/artifactory

### 12.3.3 Forks of existing projects

- *mdbtools*
- *jai*
- *turbojpeg*
- *poi*

### 12.3.4 All components

autogen (Bio-Formats code generator)[14]:

*Ant: jar-autogen*

Contains everything needed to automatically generate documentation for supported file formats. format-pages.txt[15] should be updated for each new file format reader or writer, but otherwise manual changes should be unnecessary. The following Ant targets are used to regenerate the documentation for all formats:

```
gen-format-pages
gen-meta-support
gen-original-meta-support
```

bio-formats-plugins (Bio-Formats Plugins for ImageJ)[16]:

*Ant: jar-bio-formats-plugins*

Everything pertaining to the Bio-Formats plugins for ImageJ lives in this component. Note that when built, this component produces `bio-formats_plugins.jar` (instead of `bio-formats-plugins.jar`) to be in keeping with ImageJ plugin naming conventions. bio-formats-tools (Bio-Formats command line tools)[17]:

*Ant: jar-bio-formats-tools*

The classes that implement the **showinf**, **bfconvert**, and **mkfake** *command line tools* are contained in this component. Note that this is built with the **jar-bio-formats-tools** Ant target, and not the **tools** target (which is the Ant equivalent of *bundles*). bundles (bioformats_package bundle, LOCI Tools bundle, OME Tools bundle)[18]:

*Ant: tools*

This is only needed by the Maven build system, and is used to aggregate all of the individual .jar files into `bioformats_package.jar`. There should not be any code here, just build system files. forks/jai (JAI Image I/O Tools)[19]:

*Ant: jar-jai*

This is a fork of JAI ImageIO[20] which adds support for decoding YCbCr JPEG-2000 data. This is primarily needed for reading images from histology/pathology formats in *formats-gpl*. There are no dependencies on other components. forks/mdbtools (MDB Tools (Java port))[21]:

*Ant: jar-mdbtools*

This is a fork of the mdbtools-java[22] project. There are numerous bug fixes, as well as changes to reduce the memory required for large files. There are no dependencies on other components. forks/poi (Apache Jakarta POI)[23]:

*Ant: jar-ome-poi*

---

[14] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/autogen
[15] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/autogen/src/format-pages.txt
[16] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/bio-formats-plugins
[17] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/bio-formats-tools
[18] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/bundles
[19] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/forks/jai
[20] http://java.net/projects/jai-imageio-core
[21] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/forks/mdbtools
[22] http://mdbtools.cvs.sourceforge.net/viewvc/mdbtools/mdbtools-java
[23] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/forks/poi

This is a fork of Apache POI[24], which allows reading of Microsoft OLE document files. We have made substantial changes to support files larger than 2GB and reduce the amount of memory required to open a file. I/O is also handled by classes from *formats-common*, which allows OLE files to be read from memory. forks/turbojpeg (libjpeg-turbo Java bindings)[25]:

*Ant: jar-turbojpeg*

This is a fork of libjpeg-turbo[26]. There are not any real code changes, but having this as a separate component allows us to package the libjpeg-turbo Java API together with all of the required binaries into a single .jar file using native-lib-loader[27]. There are no dependencies on other components. formats-api (Bio-Formats API)[28]:

*Ant: jar-formats-api*

This defines all of the high level interfaces and abstract classes for reading and writing files. There are no file format readers or writers actually implemented in this component, but it does contain the majority of the API that defines Bio-Formats. *formats-bsd* and *formats-gpl* implement this API to provide file format readers and writers. *formats-common* and *ome-xml* are both required as part of the interface definitions. formats-common (Common)[29]:

*Ant: jar-formats-common*

Provides I/O classes that unify reading from files on disk, streams or files in memory, compressed streams, and non-file URLs. The primary entry points are Location[30], RandomAccessInputStream[31] (for reading), and RandomAccessOutputStream[32] (for writing).

In addition to I/O, there are several classes to assist in working with XML (XMLTools[33]), date/timestamps (DateTools[34]), logging configuration (DebugTools[35]), and byte arithmetic (DataTools[36]).

This does not depend on any other components, so can be used anywhere independent of the rest of the Bio-Formats API. formats-bsd (BSD Bio-Formats readers and writers)[37]:

*Ant: jar-formats-bsd, jar-formats-bsd-tests*

This contains readers and writers for formats which have a publicly available specification, e.g. TIFF. Everything in the component is BSD-licensed. formats-gpl (Bio-Formats library)[38]:

*Ant: jar-formats-gpl*

The majority of the file format readers and some file format writers are contained in this component. Everything in the component is GPL-licensed (in contrast with *formats-bsd*). Most file formats represented in this component do not have a publicly available specification. metakit (Metakit)[39]:

*Ant: jar-metakit*

Java implementation of the Metakit database specification[40]. This uses classes from *formats-common* and is used by *formats-gpl*, but is otherwise independent of the main Bio-Formats API. ome-xml (OME-XML Java library)[41]:

*Ant: jar-ome-xml*

This component contains classes that represent the OME-XML schema. Some classes are committed to the Git repository, but the majority are generated at build time by using *xsd-fu* to parse the *OME-XML schema files*. Classes from this component are used by Bio-Formats to read and write OME-XML, but they can also be used independently. specification (Specification)[42]:

*Ant: jar-specification*

---

[24] http://poi.apache.org

[25] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/forks/turbojpeg

[26] http://libjpeg-turbo.virtualgl.org/

[27] http://github.com/scijava/native-lib-loader

[28] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-api

[29] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-common

[30] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/common/Location.html

[31] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/common/RandomAccessInputStream.html

[32] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/common/RandomAccessOutputStream.html

[33] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/common/xml/XMLTools.html

[34] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/common/DateTools.html

[35] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/common/DebugTools.html

[36] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/common/DataTools.html

[37] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd

[38] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl

[39] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/metakit

[40] http://equi4.com/metakit/

[41] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/ome-xml

[42] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/specification

All released and in-progress OME-XML schema files are contained in this component. The specification component is also the location of all XSLT stylesheets for converting between OME-XML schema versions, as well as example OME-XML files in each of the released schema versions. stubs (Luratech LuraWave stubs, MIPAV stubs)[43]:

*Ant: jar-lwf-stubs, jar-mipav-stubs*

This component provides empty classes that mirror third-party dependencies which are required at compile time but cannot be included in the build system (usually due to licensing issues). The build succeeds since required class names are present with the correct method signatures; the end user is then expected to replace the stub .jar files at runtime. test-suite (Bio-Formats testing framework)[44]:

*Ant: jar-tests*

All tests that operate on files from our data repository (i.e. integration tests) are included in this component. These tests are primarily run by the continuous integration jobs[45], and verify that there are no regressions in reading images or metadata. xsd-fu (XSD-FU)[46]:

*Ant: no target*

xsd-fu is a Python framework for turning the schema files in the *specification* component into the classes that represent the OME-XML schema in the *ome-xml* component.

## 12.4 Reading files

### 12.4.1 Basic file reading

Bio-Formats provides several methods for retrieving data from files in an arbitrary (supported) format. These methods fall into three categories: raw pixels, core metadata, and format-specific metadata. All methods described here are present and documented in loci.formats.IFormatReader[47]. In general, it is recommended that you read files using an instance of loci.formats.ImageReader[48]. While it is possible to work with readers for a specific format, ImageReader contains additional logic to automatically detect the format of a file and delegate subsequent calls to the appropriate reader.

Prior to retrieving pixels or metadata, it is necessary to call setId(java.lang.String)[49] on the reader instance, passing in the name of the file to read. Some formats allow multiple series (5D image stacks) per file; in this case you may wish to call setSeries(int)[50] to change which series is being read.

Raw pixels are always retrieved one plane at a time. Planes are returned as raw byte arrays, using one of the openBytes methods.

Core metadata is the general term for anything that might be needed to work with the planes in a file. A list of core metadata fields is given in the table below together with the appropriate accessor method:

| Core metadata field | API method |
|---|---|
| image width | getSizeX()[51] |
| image height | getSizeY()[52] |
| number of series per file | getSeriesCount()[53] |
| total number of images per series | getImageCount()[54] |
| number of slices in the current series | getSizeZ()[55] |
| number of timepoints in the current series | getSizeT()[56] |
| number of actual channels in the current series | getSizeC()[57] |
| number of channels per image | getRGBChannelCount()[58] |
| the ordering of the images within the current series | getDimensionOrder()[59] |
| whether each image is RGB | isRGB()[60] |
| whether the pixel bytes are in little-endian order | isLittleEndian()[61] |
| whether the channels in an image are interleaved | isInterleaved()[62] |
| the type of pixel data in this file | getPixelType()[63] |

---

[43] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/stubs

[44] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/test-suite

[45] http://www.openmicroscopy.org/site/support/contributing/ci-bio-formats.html

[46] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/xsd-fu

[47] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatReader.html

[48] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/ImageReader.html

[49] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatHandler.html#setId(java.lang.String)

[50] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatReader.html#setSeries(int)

[51] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatReader.html#getSizeX()

[52] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatReader.html#getSizeY()

All file formats are guaranteed to accurately report core metadata.

Bio-Formats also converts and stores additional information which can be stored and retrieved from the OME-XML Metadata. These fields can be accessed in a similar way to the core metadata above. An example of such values would be the physical size of dimensions X, Y and Z. The accessor methods for these properties return a Length[64] object which contains both the value and unit of the dimension. These lengths can also be converted to other units using value(ome.units.unit.Unit)[65] An example of reading and converting these physical sizes values can be found in `ReadPhysicalSize.java`

Format-specific metadata refers to any other data specified in the file - this includes acquisition and hardware parameters, among other things. This data is stored internally in a **java.util.Hashtable**, and can be accessed in one of two ways: individual values can be retrieved by calling getMetadataValue(java.lang.String)[66], which gets the value of the specified key. Note that the keys in this Hashtable are different for each format, hence the name "format-specific metadata".

See *Bio-Formats metadata processing* for more information on the metadata capabilities that Bio-Formats provides.

**See also:**

**IFormatReader**[67] Source code of the `loci.formats.IFormatReader` interface

### 12.4.2 File reading extras

The previous section described how to read pixels as they are stored in the file. However, the native format is not necessarily convenient, so Bio-Formats provides a few extras to make file reading more flexible.

- The loci.formats.ReaderWrapper[68] API that implements `loci.formats.IFormatReader` allows to define "wrapper" readers that take a reader in the constructor, and manipulate the results somehow, for convenience. Using them is similar to the java.io InputStream/OutputStream model: just layer whichever functionality you need by nesting the wrappers.

  The table below summarizes a few wrapper readers of interest:

| Wrapper reader | Functionality |
|---|---|
| loci.formats.BufferedImageReader[69] | Allows pixel data to be returned as BufferedImages instead of raw byte arrays |
| loci.formats.FileStitcher[70] | Uses advanced pattern matching heuristics to group files that belong to the same dataset |
| loci.formats.ChannelSeparator[71] | Makes sure that all planes are grayscale - RGB images are split into 3 separate grayscale im |
| loci.formats.ChannelMerger[72] | Merges grayscale images to RGB if the number of channels is greater than 1 |
| loci.formats.ChannelFiller[73] | Converts indexed color images to RGB images |
| loci.formats.MinMaxCalculator[74] | Provides an API for retrieving the minimum and maximum pixel values for each channe |
| loci.formats.DimensionSwapper[75] | Provides an API for changing the dimension order of a file |
| loci.formats.Memoizer[76] | Caches the state of the reader into a memoization file |

- loci.formats.ImageTools[77] and loci.formats.gui.AWTImageTools[78] provide a number of methods for manipulating BufferedImages and primitive type arrays. In particular, there are methods to split and merge channels in a BufferedImage/array, as well as converting to a specific data type (e.g. convert short data to byte data).

---

[53] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatReader.html#getSeriesCount()
[54] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatReader.html#getImageCount()
[55] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatReader.html#getSizeZ()
[56] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatReader.html#getSizeT()
[57] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatReader.html#getSizeC()
[58] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatReader.html#getRGBChannelCount()
[59] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatReader.html#getDimensionOrder()
[60] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatReader.html#isRGB()
[61] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatReader.html#isLittleEndian()
[62] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatReader.html#isInterleaved()
[63] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatReader.html#getPixelType()
[64] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/ome/units/quantity/Length.html
[65] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/ome/units/quantity/Length.html#value(ome.units.unit.Unit)
[66] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatReader.html#getMetadataValue(java.lang.String)
[67] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/ReaderWrapper.html
[69] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/gui/BufferedImageReader.html
[70] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FileStitcher.html
[71] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/ChannelSeparator.html
[72] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/ChannelMerger.html
[73] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/ChannelFiller.html
[74] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/MinMaxCalculator.html
[75] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/DimensionSwapper.html
[76] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/Memoizer.html
[77] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/ImageTools.html
[78] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/gui/AWTImageTools.html

### 12.4.3 Troubleshooting

- Importing multi-file formats (Leica LEI, PerkinElmer, FV1000 OIF, ICS, and Prairie TIFF, to name a few) can fail if any of the files are renamed. There are "best guess" heuristics in these readers, but they are not guaranteed to work in general. So please do not rename files in these formats.
- If you are working on a Macintosh, make sure that the data and resource forks of your image files are stored together. Bio-Formats does not handle separated forks (the native QuickTime reader tries, but usually fails).
- Bio-Formats file readers are not thread-safe. If files are read within a parallelized environment, a new reader must be fully initialized in each parallel session. See *Improving reading performance* about ways to improve file reading performance in multi-threaded mode.

## 12.5 Writing files

The loci.formats.IFormatWriter[79] API is very similar to the reader API, in that files are written one plane at time (rather than all at once).

The file formats which can be written using Bio-Formats are marked in the *supported formats table* with a green tick in the 'export' column. These include, but are not limited to:

- TIFF (uncompressed, LZW, JPEG, or JPEG-2000)
- OME-TIFF (uncompressed, LZW, JPEG, or JPEG-2000)
- JPEG
- PNG
- AVI (uncompressed)
- QuickTime (uncompressed is supported natively; additional codecs use QTJava)
- Encapsulated PostScript (EPS)
- OME-XML (not recommended)

All writers allow the output file to be changed before the last plane has been written. This allows you to write to any number of output files using the same writer and output settings (compression, frames per second, etc.), and is especially useful for formats that do not support multiple images per file.

**See also:**

**IFormatWriter**[80] Source code of the `loci.formats.IFormatWriter` interface

**loci.formats.tools.ImageConverter**[81] Source code of the `loci.formats.tools.ImageConverter` class

***Further details on exporting raw pixel data to OME-TIFF files*** Examples of OME-TIFF writing

---

[79] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatWriter.html

CHAPTER

THIRTEEN

# USING BIO-FORMATS AS A JAVA LIBRARY

## 13.1 Using Bio-Formats as a Java library

### 13.1.1 Bio-Formats as a Maven dependency

If you wish to make use of Bio-Formats within your own software it can be included as a dependency in any Maven project. The dependency can be added to the project pom file and should include the desired Bio-Formats version. Using *bioformats_package* as the artifactId will include the complete Bio-Formats package, or individual components can be chosen as desired.

```
<dependency>
  <groupId>ome</groupId>
  <artifactId>bioformats_package</artifactId>
  <version>5.2.0</version>
</dependency>
```

In order to include this Bio-Formats dependency a custom repository must also be added to the project pom or `$user.home/.m2/settings.xml`. The repositories element is inherited so for a group of projects the repositories element can be defined at the top of your inheritance chain.

```
<repositories>
  <repository>
    <id>ome</id>
    <name>Bio-Formats Repo</name>
    <url>http://artifacts.openmicroscopy.org/artifactory/maven</url>
  </repository>
</repositories>
```

### 13.1.2 Bio-Formats as a Java library

Alternatively Bio-Formats can be used by including its component jar files. You can download formats-gpl.jar[1] to use it as a library. Just add `formats-gpl.jar` to your CLASSPATH or build path. You will also need `common.jar` for common I/O functions, `ome-xml.jar` for metadata standardization, and SLF4J[2] for *Logging*.

See the list in the Bio-Formats toplevel build file[3] for a complete and up-to-date list of all optional libraries, which can all be found in our Git repository[4].

#### Dependencies

The complete list of current dependencies is as follows:

---

[1] http://downloads.openmicroscopy.org/latest/bio-formats5.2/artifacts/formats-gpl.jar

[2] http://slf4j.org/

[3] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/build.xml

[4] https://github.com/openmicroscopy/bioformats/tree/v5.2.0/jar

| Package | Maven name | License |
|---|---|---|
| Logback Classic v1.1.1[5] | ch.qos.logback:logback-classic:1.1.1 | Eclipse Public Licens |
| Logback Core v1.1.1[7] | ch.qos.logback:logback-core:1.1.1 | Eclipse Public Licens |
| JHDF5 v14.12.0[9] | ch.systems.cisd:jhdf5:14.12.0 | Apache License v2.0 |
| XMP Library for Java v5.1.2[11] | com.adobe.xmp:xmpcore:5.1.2 | BSD License[12] |
| JCommander v1.27[13] | com.beust:jcommander:1.27 | Apache License v2.0 |
| metadata-extractor v2.6.2[15] | com.drewnoakes:metadata-extractor:2.6.2 | Apache License v2.0 |
| Kryo v2.24.0[17] | com.esotericsoftware.kryo:kryo:2.24.0 | BSD License[18] |
| MinLog v1.2[19] | com.esotericsoftware.minlog:minlog:1.2 | BSD License[20] |
| Guava v17.0[21] | com.google.guava:guava:17.0 | Apache License v2.0 |
| JGoodies Common v1.7.0[23] | com.jgoodies:jgoodies-common:1.7.0 | BSD License[24] |
| JGoodies Forms v1.7.2[25] | com.jgoodies:jgoodies-forms:1.7.2 | BSD License[26] |
| Commons Collections v3.2.1[27] | commons-collections:commons-collections:3.2.1 | Apache License v2.0 |
| Commons Lang v2.4[29] | commons-lang:commons-lang:2.4 | Apache License v2.0 |
| Commons Logging v1.1.1[31] | commons-logging:commons-logging:1.1.1 | Apache License v2.0 |
| NetCDF-Java Library v4.3.19[33] | edu.ucar:netcdf:4.3.19 | MIT-Style License[34] |
| Joda time v2.2[35] | joda-time:joda-time:2.2 | Apache License v2.0 |
| JUnit v4.10[37] | junit:junit:4.10 | Common Public Lice |
| Apache Log4j v1.2.17[39] | log4j:log4j:1.2.17 | Apache License v2.0 |
| ImageJ v1.48s[41] | net.imagej:ij:1.48s | Public domain |
| Assume NG v1.2.4[42] | nl.javadude.assumeng:assumeng:1.2.4 | Apache License v2.0 |
| Apache Velocity v1.6.4[44] | org.apache.velocity:velocity:1.6.4 | Apache License v2.0 |
| BeanShell v2.0b4[46] | org.beanshell:bsh:2.0b4 | Sun Public License / |

Continued on

---

[5] http://logback.qos.ch
[6] http://opensource.org/licenses/EPL-1.0
[7] http://logback.qos.ch
[8] http://opensource.org/licenses/EPL-1.0
[9] https://wiki-bsse.ethz.ch/display/JHDF5
[10] http://www.apache.org/licenses/LICENSE-2.0.txt
[11] http://www.adobe.com/devnet/xmp.html
[12] http://opensource.org/licenses/BSD-2-Clause
[13] http://beust.com/jcommander
[14] http://www.apache.org/licenses/LICENSE-2.0.txt
[15] https://github.com/drewnoakes/metadata-extractor
[16] http://www.apache.org/licenses/LICENSE-2.0.txt
[17] http://github.com/EsotericSoftware/kryo
[18] http://opensource.org/licenses/BSD-2-Clause
[19] https://github.com/EsotericSoftware/minlog
[20] http://opensource.org/licenses/BSD-2-Clause
[21] http://github.com/google/guava
[22] http://www.apache.org/licenses/LICENSE-2.0.txt
[23] http://www.jgoodies.com/downloads/libraries/
[24] http://opensource.org/licenses/BSD-2-Clause
[25] http://www.jgoodies.com/downloads/libraries/
[26] http://opensource.org/licenses/BSD-2-Clause
[27] http://commons.apache.org/collections/
[28] http://www.apache.org/licenses/LICENSE-2.0.txt
[29] http://commons.apache.org/lang/
[30] http://www.apache.org/licenses/LICENSE-2.0.txt
[31] http://commons.apache.org/logging/
[32] http://www.apache.org/licenses/LICENSE-2.0.txt
[33] http://www.unidata.ucar.edu/software/netcdf-java/documentation.htm
[34] https://github.com/Unidata/thredds/blob/v4.3.19/cdm/license.txt
[35] http://github.com/JodaOrg/joda-time
[36] http://www.apache.org/licenses/LICENSE-2.0.txt
[37] http://www.junit.org
[38] http://www.opensource.org/licenses/cpl1.0.txt
[39] http://logging.apache.org/log4j/1.2
[40] http://www.apache.org/licenses/LICENSE-2.0.txt
[41] http://imagej.net
[42] http://github.com/hierynomus/assumeng
[43] http://www.apache.org/licenses/LICENSE-2.0.txt
[44] http://velocity.apache.org
[45] http://www.apache.org/licenses/LICENSE-2.0.txt
[46] http://www.beanshell.org
[47] http://www.beanshell.org/license.html

Table 13.1 – continued from previous page

| Package | Maven name | License |
|---|---|---|
| Hamcrest Core v1.1[48] | org.hamcrest:hamcrest-core:1.1 | BSD 3-Clause[49] |
| Objenesis v2.1[50] | org.objenesis:objenesis:2.1 | Apache License v2.0 |
| Perf4J v0.9.13[52] | org.perf4j:perf4j:0.9.13 | Apache License v2.0 |
| Native Library Loader v2.1.4[54] | org.scijava:native-lib-loader:2.1.4 | BSD License[55] |
| SLF4J API v1.7.4[56] | org.slf4j:slf4j-api:1.7.6 | MIT License[57] |
| SLF4J LOG4J-12 Binding v1.7.6[58] | org.slf4j:slf4j-log4j12:1.7.6 | MIT License[59] |
| TestNG v6.8[60] | org.testng:testng:6.8 | Apache License v2.0 |
| SnakeYAML v1.6[62] | org.yaml:snakeyaml:1.6 | Apache License v2.0 |
| Jakarta ORO v2.0.8[64] | oro:oro:2.0.8 | Apache License v2.0 |
| Woolz v1.4.0[66] | woolz:JWlz:1.4.0 | GPL v2[67] |
| Xalan Java Serializer v2.7.2[68] | xalan:serializer:2.7.2 | Apache License v2.0 |
| Xalan Java v2.7.2[70] | xalan:xalan:2.7.2 | Apache License v2.0 |
| Xerces2 Java Parser v2.8.1[72] | xerces:xercesImpl:2.8.1 | Apache License v2.0 |
| XML Commons External Components XML APIs v1.3.04[74] | xml-apis:xml-apis:1.3.04 | Apache License v2.0 |

### 13.1.3 Examples of usage

#### File reading and performance:

MultiFileExample[76] - Simple example of how to open multiple files simultaneously.

ParallelRead[77] - Reads all files in given directory in parallel, using a separate thread for each.

ReadWriteInMemory[78] - Tests the Bio-Formats I/O logic to and from byte arrays in memory.

#### File writing:

MinimumWriter[79] - A command line utility demonstrating the minimum amount of metadata needed to write a file.

TiledExport[80] - Shows how to convert a file one tile at a time, instead of one plane at a time (needed for very large images).

---

[48] http://hamcrest.org/JavaHamcrest
[49] http://opensource.org/licenses/BSD-3-Clause
[50] http://objenesis.org
[51] http://www.apache.org/licenses/LICENSE-2.0.txt
[52] http://www.perf4j.org
[53] http://www.apache.org/licenses/LICENSE-2.0.txt
[54] http://github.com/scijava/native-lib-loader
[55] http://opensource.org/licenses/BSD-2-Clause
[56] http://www.slf4j.org
[57] http://opensource.org/licenses/MIT
[58] http://www.slf4j.org
[59] http://opensource.org/licenses/MIT
[60] http://testng.org
[61] http://www.apache.org/licenses/LICENSE-2.0.txt
[62] https://bitbucket.org/asomov/snakeyaml
[63] http://www.apache.org/licenses/LICENSE-2.0.txt
[64] http://jakarta.apache.org/oro
[65] http://www.apache.org/licenses/LICENSE-2.0.txt
[66] http://www.emouseatlas.org/emap/analysis_tools_resources/software/woolz.html
[67] http://opensource.org/licenses/GPL-2.0
[68] http://xml.apache.org/xalan-j
[69] http://www.apache.org/licenses/LICENSE-2.0.txt
[70] http://xml.apache.org/xalan-j
[71] http://www.apache.org/licenses/LICENSE-2.0.txt
[72] http://xerces.apache.org/xerces2-j
[73] http://www.apache.org/licenses/LICENSE-2.0.txt
[74] http://xml.apache.org/commons/components/external
[75] http://www.apache.org/licenses/LICENSE-2.0.txt
[76] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/utils/MultiFileExample.java
[77] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/utils/ParallelRead.java
[78] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/utils/ReadWriteInMemory.java
[79] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/utils/MinimumWriter.java
[80] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/utils/TiledExportExample.java

### File compression:

makeLZW[81] - Converts the given image file to an LZW-compressed TIFF.

### Metadata extract/print:

GetPhysicalMetadata[82] - Uses Bio-Formats to extract some basic standardized (format-independent) metadata.

ImageInfo[83] - A more involved command line utility for thoroughly reading an input file, printing some information about it, and displaying the pixels onscreen using the Bio-Formats viewer.

PrintTimestamps[84] - A command line example demonstrating how to extract timestamps from a file.

PrintLensNA[85] - Uses Bio-Formats to extract lens numerical aperture in a format-independent manner from a dataset.

PrintROIs[86] - A simple example of how to retrieve ROI data parsed from a file.

SubResolutionExample[87] - Demonstration of the sub-resolution API.

### Metadata add/edit:

EditImageName[88] - Edits the given file's image name (but does not save back to disk).

EditTiffComment[89] - Allows raw user TIFF comment editing for the given TIFF files.

writeMapAnnotations[90] - Example method to write MapAnnotations to the ome-xml.

CommentSurgery[91] - Edits a TIFF ImageDescription comment, particularly the OME-XML comment found in OME-TIFF files.

### Image converters:

ImageConverter[92] - A simple command line tool for converting between formats.

ConvertToOmeTiff[93] - Converts the given files to OME-TIFF format.

WritePreCompressedPlanes[94] - Writes the pixels from a set of JPEG files to a single TIFF. The pixel data is used as-is, so no decompression or re-compression is performed.

### ImageJ plugins:

Simple_Read[95] - A simple ImageJ plugin demonstrating how to use Bio-Formats to read files into ImageJ (see *ImageJ overview*).

Read_Image[96] - An ImageJ plugin that uses Bio-Formats to build up an image stack, reading image planes one by one (see *ImageJ overview*).

Mass_Importer[97] - A simple plugin for ImageJ that demonstrates how to open all image files in a directory using Bio-Formats, grouping files with similar names to avoiding opening the same dataset more than once (see *ImageJ overview*).

---

[81] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/utils/MakeLZW.java
[82] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/utils/GetPhysicalMetadata.java
[83] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/bio-formats-tools/src/loci/formats/tools/ImageInfo.java
[84] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/utils/PrintTimestamps.java
[85] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/utils/PrintLensNA.java
[86] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/utils/PrintROIs.java
[87] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/utils/SubResolutionExample.java
[88] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/utils/EditImageName.java
[89] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/utils/EditTiffComment.java
[90] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/utils/writeMapAnnotationsExample.java
[91] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/utils/CommentSurgery.java
[92] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/bio-formats-tools/src/loci/formats/tools/ImageConverter.java
[93] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/utils/ConvertToOmeTiff.java
[94] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/utils/WritePrecompressedPlanes.java
[95] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/bio-formats-plugins/utils/Simple_Read.java
[96] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/bio-formats-plugins/utils/Read_Image.java
[97] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/bio-formats-plugins/utils/Mass_Importer.java

#### Image processing utilities:

SewTiffs[98] - Stitches the first plane from a collection of TIFFs into a single file.

SumPlanes[99] - Sums together the image planes from the given file,and saves the result to a 16-bit TIFF.

### 13.1.4 A Note on Java Web Start (bioformats_package.jar vs. formats-gpl.jar)

To use Bio-Formats with your Java Web Start application, we recommend using **formats-gpl.jar** rather than **bioformats_package.jar**—the latter is merely a bundle of **formats-gpl.jar** plus all its optional dependencies.

The **bioformats_package.jar** bundle is intended as a convenience (e.g. to simplify installation as an ImageJ plugin), but is by no means the only solution for developers. We recommend using **formats-gpl.jar** as a separate entity depending on your needs as a developer.

The bundle is quite large because we have added support for several formats that need large helper libraries (e.g. Imaris' HDF-based format). However, these additional libraries are optional; Bio-Formats has been coded using reflection so that it can both compile and run without them.

When deploying a JNLP-based application, using **bioformats_package.jar** directly is not the best approach, since every time Bio-Formats is updated, the server would need to feed another 15+ MB JAR file to the client. Rather, Web Start is a case where you should keep the JARs separate, since JNLP was designed to make management of JAR dependencies trivial for the end user. By keeping **formats-gpl.jar** and the optional dependencies separate, only a <1 MB JAR needs to be updated when **formats-gpl.jar** changes.

As a developer, you have the option of packaging **formats-gpl.jar** with as many or as few optional libraries as you wish, to cut down on file size as needed. You are free to make whatever kind of "stripped down" version you require. You could even build a custom **formats-gpl.jar** that excludes certain classes, if you like.

For an explicit enumeration of all the optional libraries included in **bioformats_package.jar**, see the `package.libraries` variable of the ant/toplevel.properties[100] file of the distribution. You can also read our notes about each in the source distribution's Ant build.xml[101] script.

## 13.2 Units of measurement

Since Bio-Formats 5.1 and the adoption of the 2015-01 OME Data Model, the data model and the corresponding Bio-Formats model and metadata APIs have added support for units of measurement. Previously, the units for various properties such as the physical size of an image, stage position, confocal pinhole size, light wavelengths etc. were fixed in the model. This was however somewhat inflexible, and not appropriate for imaging modalities at widely different scales. The solution to this was to add a unit of measurement to each of these properties. The image size, for example, was previously specified to be stored in micrometers but may now be specified in any SI length unit of choice, or one of the supported non-SI length units. This permits the preservation of the unit used by a proprietary file format or used at acquisition time, for example nanometers, millimeters, meters, or inches or thousandths of an inch could be used instead.

At the OME-XML level, the properties continue to use the old attribute names. They are supplemented by an additional attribute with a `Unit` suffix, for example the `PhysicalSizeX` attribute and its companion `PhysicalSizeXUnit` attribute.

At the API level, two classes are used:

**`Unit<T>`** represents a unit system for a given dimension such as length, pressure or time.

**`Quantity`** represents a value and unit in a given unit system; this is subclassed for each of the supported dimensions such as `Length`, `Pressure` etc. For example the `Length` class could represent the value and unit of 5.3 µm and the `Pressure` class 956 mbar.

All of the model and metadata APIs pass `Quantity` objects in place of raw numerical values. Updating your code will require replacing the use of raw values with quantities. Where your code needs to deal with the quantity in a specific unit, for example µm, you will need to perform an explicit unit conversion to transform the value to the required unit.

The three situations you will need to deal with are:

---

[98] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/utils/SewTiffs.java

[99] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/utils/SumPlanes.java

[100] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/ant/toplevel.properties

[101] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/build.xml#L240

- getting a quantity from a `get` method in the API
- converting a quantity to a desired unit
- setting a quantity with a `set` method in the API (possibly also requiring the creation of a quantity)

Examples of how to use units and quantities for these purposes are shown in the sections *Reading files* (`ReadPhysicalSize` example which uses `getPixelsPhysicalSize` and also demonstrates unit conversion) and *Further details on exporting raw pixel data to OME-TIFF files* (`setPixelsPhysicalSize`).

## 13.3 Exporting files using Bio-Formats

This guide pertains to version 4.2 and later.

### 13.3.1 Basic conversion

The first thing we need to do is set up a reader:

```
// create a reader that will automatically handle any supported format
IFormatReader reader = new ImageReader();
// tell the reader where to store the metadata from the dataset
MetadataStore metadata;

try {
  ServiceFactory factory = new ServiceFactory();
  OMEXMLService service = factory.getInstance(OMEXMLService.class);
  metadata = service.createOMEXMLMetadata();
}
catch (DependencyException exc) {
  throw new FormatException("Could not create OME-XML store.", exc);
}
catch (ServiceException exc) {
  throw new FormatException("Could not create OME-XML store.", exc);
}

reader.setMetadataStore(metadata);
// initialize the dataset
reader.setId("/path/to/file");
```

Now, we set up our writer:

```
// create a writer that will automatically handle any supported output format
IFormatWriter writer = new ImageWriter();
// give the writer a MetadataRetrieve object, which encapsulates all of the
// dimension information for the dataset (among many other things)
OMEXMLService service = factory.getInstance(OMEXMLService.class);
writer.setMetadataRetrieve(service.asRetrieve(reader.getMetadataStore()));
// initialize the writer
writer.setId("/path/to/output/file");
```

Note that the extension of the file name passed to 'writer.setId(…)' determines the file format of the exported file.

Now that everything is set up, we can start writing planes:

```
for (int series=0; series<reader.getSeriesCount(); series++) {
  reader.setSeries(series);
  writer.setSeries(series);

  for (int image=0; image<reader.getImageCount(); image++) {
    writer.saveBytes(image, reader.openBytes(image));
```

```
  }
}
```

Finally, make sure to close both the reader and the writer. Failure to do so can cause:

- file handle leaks
- memory leaks
- truncated output files

Fortunately, closing the files is very easy:

```
reader.close();
writer.close();
```

### 13.3.2 Converting to multiple files

The recommended method of converting to multiple files is to use a single IFormatWriter, like so:

```
// you should have set up a reader as in the first example
ImageWriter writer = new ImageWriter();
OMEXMLService service = factory.getInstance(OMEXMLService.class);
writer.setMetadataRetrieve(service.asRetrieve(reader.getMetadataStore()));
// replace this with your own filename definitions
// in this example, we're going to write half of the planes to one file
// and half of the planes to another file
String[] outputFiles =
  new String[] {"/path/to/file/1.tiff", "/path/to/file/2.tiff"};
writer.setId(outputFiles[0]);

int planesPerFile = reader.getImageCount() / outputFiles.length;
for (int file=0; file<outputFiles.length; file++) {
  writer.changeOutputFile(outputFiles[file]);
  for (int image=0; image<planesPerFile; image++) {
    int index = file * planesPerFile + image;
    writer.saveBytes(image, reader.openBytes(index));
  }
}

reader.close();
writer.close();
```

The advantage here is that the relationship between the files is preserved when converting to formats that support multi-file datasets internally (namely OME-TIFF). If you are only converting to graphics formats (e.g. JPEG, AVI, MOV), then you could also use a separate IFormatWriter for each file, like this:

```
OMEXMLService service = factory.getInstance(OMEXMLService.class);
// again, you should have set up a reader already
String[] outputFiles = new String[] {"/path/to/file/1.avi", "/path/to/file/2.avi"};
int planesPerFile = reader.getImageCount() / outputFiles.length;
for (int file=0; file<outputFiles.length; file++) {
  ImageWriter writer = new ImageWriter();
  writer.setMetadataRetrieve(service.asRetrieve(reader.getMetadataStore()));
  writer.setId(outputFiles[file]);
  for (int image=0; image<planesPerFile; image++) {
    int index = file * planesPerFile + image;
    writer.saveBytes(image, reader.openBytes(index));
  }
```

```
  writer.close();
}
```

### 13.3.3 Known issues

List of Trac tickets[102]

## 13.4 Further details on exporting raw pixel data to OME-TIFF files

This document explains how to export pixel data to OME-TIFF using Bio-Formats version 4.2 and later.

The first thing that must happen is we must create the object that stores OME-XML metadata. This is done as follows:

```
ServiceFactory factory = new ServiceFactory();
OMEXMLService service = factory.getInstance(OMEXMLService.class);
IMetadata omexml = service.createOMEXMLMetadata();
```

The 'omexml' object can now be used in our code to store OME-XML metadata, and by the file format writer to retrieve OME-XML metadata.

Now that we have somewhere to put metadata, we need to populate as much metadata as we can. The minimum amount of metadata required is:

- endianness of the pixel data
- the order in which dimensions are stored
- the bit depth of the pixel data
- the number of channels
- the number of timepoints
- the number of Z sections
- the width (in pixels) of an image
- the height (in pixels) of an image
- the number of samples per channel (3 for RGB images, 1 otherwise)

We populate that metadata as follows:

```
omexml.setImageID("Image:0", 0);
omexml.setPixelsID("Pixels:0", 0);

// specify that the pixel data is stored in big-endian order
// replace 'TRUE' with 'FALSE' to specify little-endian order
omexml.setPixelsBinDataBigEndian(Boolean.TRUE, 0, 0);

omexml.setPixelsDimensionOrder(DimensionOrder.XYCZT, 0);
omexml.setPixelsType(PixelType.UINT16, 0);
omexml.setPixelsSizeX(new PositiveInteger(width), 0);
omexml.setPixelsSizeY(new PositiveInteger(height), 0);
omexml.setPixelsSizeZ(new PositiveInteger(zSectionCount), 0);
omexml.setPixelsSizeC(new PositiveInteger(channelCount *
samplesPerChannel), 0);
omexml.setPixelsSizeT(new PositiveInteger(timepointCount), 0);
```

---

[102] https://trac.openmicroscopy.org/ome/query?status=accepted&status=new&status=reopened&keywords=export&component=Bio-Formats&col=id&col=summary&col=status&col=type&col=priority&col=milestone&col=component&order=priority

```
for (int channel=0; channel<channelCount; channel++) {
  omexml.setChannelID("Channel:0:" + channel, 0, channel);
  omexml.setChannelSamplesPerPixel(new PositiveInteger(samplesPerChannel),
    0, channel);
}

Unit<Length> unit = UNITS.MICROMETER;
Length physicalSizeX = new Length(1.0, unit);
Length physicalSizeY = new Length(1.5, unit);
Length physicalSizeZ = new Length(2, unit);
omexml.setPixelsPhysicalSizeX(physicalSizeX, 0);
omexml.setPixelsPhysicalSizeY(physicalSizeY, 0);
omexml.setPixelsPhysicalSizeZ(physicalSizeZ, 0);
```

There is much more metadata that can be stored; please see the Javadoc for loci.formats.meta.MetadataStore for a complete list.

Now that we have defined all of the metadata, we need to create a file writer:

```
ImageWriter writer = new ImageWriter();
```

Now we must associate the ‘omexml’ object with the file writer:

```
writer.setMetadataRetrieve(omexml);
```

The writer now knows to retrieve any metadata that it needs from ‘omexml’.

We now tell the writer which file it should write to:

```
writer.setId("output-file.ome.tiff");
```

It is critical that the file name given to the writer ends with ”.ome.tiff” or ”.ome.tif”, as it is the file name extension that determines which format will be written.

Now that everything is set up, we can save the image data. This is done plane by plane, and we assume that the pixel data is stored in a 2D byte array ‘pixelData’:

```
  int sizeC = omexml.getPixelsSizeC(0).getValue();
  int sizeZ = omexml.getPixelsSizeZ(0).getValue();
  int sizeT = omexml.getPixelsSizeT(0).getValue();
  int samplesPerChannel = omexml.getChannelSamplesPerPixel(0).getValue();
  sizeC /= samplesPerChannel;

  int imageCount = sizeC * sizeZ * sizeT;

  for (int image=0; image<imageCount; image++) {
    writer.saveBytes(image, pixelData[image]);
  }
}
```

Finally, we must tell the writer that we are finished, so that the output file can be properly closed:

```
writer.close();
```

There should now be a complete OME-TIFF file at whichever path was specified above.

## 13.5 Logging

### 13.5.1 Logging frameworks

Bio-Formats uses SLF4J[103] as a logging API. SLF4J is a facade and needs to be bound to a logging framework at deployment time. Two underlying logging frameworks are currently supported by Bio-Formats:

- logback[104] is the recommended framework and natively implements the SL4J API,
- log4j[105] is the other logging framework supported by Bio-Formats and is mainly used in the *MATLAB toolbox*.

### 13.5.2 Initialization

The DebugTools[106] class contains a series of framework-agnostic methods for the initialization and control of the logging system. This class uses reflection to detect the underlying logging framework and delegate the method calls to either Log4jTools[107] or LogbackTools[108].

The main methods are described below:

- `DebugTools.enableLogging()` will initialize the underlying logging framework. This call will result in a no-op if logging has been initialized either via a binding-specific configuration file (see logback configuration[109]) or via a prior call to `DebugTools.enableLogging()`.
- `DebugTools.enableLogging(level)` will initialize the logging framework under the same conditions as described above and set the root logger level if the initialization was succesful.
- `DebugTools.setRootLevel(level)` will override the level of the root logger independently of how the logging system was initialized.
- `DebugTools.enableIJLogging()` (logback-only) will add an ImageJ-specific appender to the root logger.

Changed in version 5.2.0: Prior to Bio-Formats 5.2.0, `DebugTools.enableLogging(level)` unconditionally set the logging and root logger level. Use `DebugTools.setRootLevel(level)` to restore this behavior.

## 13.6 Converting files from FV1000 OIB/OIF to OME-TIFF

This document explains how to convert a file from FV1000 OIB/OIF to OME-TIFF using Bio-Formats version 4.2 and later.

The first thing that must happen is we must create the object that stores OME-XML metadata. This is done as follows:

```
ServiceFactory factory = new ServiceFactory();
OMEXMLService service = factory.getInstance(OMEXMLService.class);
IMetadata omexml = service.createOMEXMLMetadata();
```

The 'omexml' object can now be used by both a file format reader and a file format writer for storing and retrieving OME-XML metadata.

Now that have somewhere to put metadata, we need to create a file reader and writer:

```
ImageReader reader = new ImageReader();
ImageWriter writer = new ImageWriter();
```

Now we must associate the 'omexml' object with the file reader and writer:

---

[103] http://www.slf4j.org
[104] http://logback.qos.ch/
[105] http://logging.apache.org/log4j
[106] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/common/DebugTools.html
[107] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/common/Log4jTools.html
[108] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/common/LogbackTools.html
[109] http://logback.qos.ch/manual/configuration.html

```
reader.setMetadataStore(omexml);
writer.setMetadataRetrieve(omexml);
```

The reader now knows to store all of the metadata that it parses into ‘omexml’, and the writer knows to retrieve any metadata that it needs from ‘omexml’.

We now tell the reader and writer which files will be read from and written to, respectively:

```
reader.setId("input-file.oib");
writer.setId("output-file.ome.tiff");
```

It is critical that the file name given to the writer ends with ".ome.tiff" or ".ome.tif", as it is the file name extension that determines which format will be written.

Now that everything is set up, we can convert the image data. This is done plane by plane:

```
for (int series=0; series<reader.getSeriesCount(); series++) {
  reader.setSeries(series);
  writer.setSeries(series);

  byte[] plane = new byte[FormatTools.getPlaneSize(reader)];
  for (int image=0; image<reader.getImageCount(); image++) {
    reader.openBytes(image, plane);
    writer.saveBytes(image, plane);
  }
}
```

The body of the outer ‘for’ loop may also be replaced with the following:

```
reader.setSeries(series);
writer.setSeries(series);

for (int image=0; image<reader.getImageCount(); image++) {
  byte[] plane = reader.openBytes(image);
  writer.saveBytes(image, plane);
}
```

But note that this will be a little slower.

Finally, we must tell the reader and writer that we are finished, so that the input and output files can be properly closed:

```
reader.close();
writer.close();
```

There should now be a complete OME-TIFF file at whichever path was specified above.

## 13.7 Using Bio-Formats in MATLAB

This section assumes that you have installed the MATLAB toolbox as instructed in the *MATLAB user information page*. Note the minimum supported MATLAB version is R2007b (7.5).

As described in Using Java Libraries[110], every installation of MATLAB includes a JVM allowing use of the Java API and third-party Java libraries. All the helper functions included in the MATLAB toolbox make use of the Bio-Formats Java API. Please refer to the Javadocs[111] for more information.

---

[110] http://uk.mathworks.com/help/matlab/matlab_external/product-overview.html

[111] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/

## 13.7.1 Increasing JVM memory settings

The default JVM settings in MATLAB can result in `java.lang.OutOfMemoryError: Java heap space` exceptions when opening large image files using Bio-Formats. Information about the Java heap space usage in MATLAB can be retrieved using:

```
java.lang.Runtime.getRuntime.maxMemory
```

Default JVM settings can be increased by creating a `java.opts` file in the startup directory and overriding the default memory settings. We recommend using `-Xmx512m` in your `java.opts` file. Calling:

```
bfCheckJavaMemory()
```

will also throw a warning if the runtime memory is lower than the recommended value.

If errors of type `java.lang.OutOfMemoryError: PermGen space` are thrown while using Bio-Formats with the Java bundled with MATLAB (Java 7), you may try to increase the default values of `-XX:MaxPermSize` and `-XX:PermSize` via the `java.opts` file.

**See also:**

**http://www.mathworks.com/matlabcentral/answers/92813** How do I increase the heap space for the Java VM in MATLAB 6.0 (R12) and later versions?

[ome-users] Release of OMERO & Bio-Formats 5.1.1[112]

## 13.7.2 Opening an image file

The first thing to do is initialize a file with the bfopen[113] function:

```
data = bfopen('/path/to/data/file');
```

This function returns an `n`-by-4 cell array, where `n` is the number of series in the dataset. If `s` is the series index between 1 and `n`:

- The `data{s, 1}` element is an `m`-by-2 cell array, where `m` is the number of planes in the `s`-th series. If `t` is the plane index between 1 and `m`:
  - The `data{s, 1}{t, 1}` element contains the pixel data for the `t`-th plane in the `s`-th series.
  - The `data{s, 1}{t, 2}` element contains the label for the `t`-th plane in the `s`-th series.
- The `data{s, 2}` element contains original metadata key/value pairs that apply to the `s`-th series.
- The `data{s, 3}` element contains color lookup tables for each plane in the `s`-th series.
- The `data{s, 4}` element contains a standardized OME metadata structure, which is the same regardless of the input file format, and contains common metadata values such as physical pixel sizes - see *OME metadata* below for examples.

### Accessing planes

Here is an example of how to unwrap specific image planes for easy access:

```
seriesCount = size(data, 1);
series1 = data{1, 1};
series2 = data{2, 1};
series3 = data{3, 1};
metadataList = data{1, 2};
% etc
```

---

[112] http://lists.openmicroscopy.org.uk/mailman/listinfo/ome-users/2015-April/005331.html

[113] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/matlab/bfopen.m

```
series1_planeCount = size(series1, 1);
series1_plane1 = series1{1, 1};
series1_label1 = series1{1, 2};
series1_plane2 = series1{2, 1};
series1_label2 = series1{2, 2};
series1_plane3 = series1{3, 1};
series1_label3 = series1{3, 2};
```

### Displaying images

If you want to display one of the images, you can do so as follows:

```
series1_colorMaps = data{1, 3};
figure('Name', series1_label1);
if (isempty(series1_colorMaps{1}))
  colormap(gray);
else
  colormap(series1_colorMaps{1}(1,:));
end
imagesc(series1_plane1);
```

This will display the first image of the first series with its associated color map (if present). If you would prefer not to apply the color maps associated with each image, simply comment out the calls to `colormap`.

If you have the image processing toolbox, you could instead use:

```
imshow(series1_plane1, []);
```

You can also create an animated movie (assumes 8-bit unsigned data):

```
cmap = gray(256);
for p = 1 : size(series1, 1)
  M(p) = im2frame(uint8(series1{p, 1}), cmap);
end
if feature('ShowFigureWindows')
  movie(M);
end
```

### Retrieving metadata

There are two kinds of metadata:

- **Original metadata** is a set of key/value pairs specific to the input format of the data. It is stored in the `data{s, 2}` element of the data structure returned by `bfopen`.
- **OME metadata** is a standardized metadata structure, which is the same regardless of input file format. It is stored in the `data{s, 4}` element of the data structure returned by `bfopen`, and contains common metadata values such as physical pixel sizes, instrument settings, and much more. See the OME Model and Formats[114] documentation for full details.

#### Original metadata

To retrieve the metadata value for specific keys:

---

[114] http://www.openmicroscopy.org/site/support/ome-model/

```
% Query some metadata fields (keys are format-dependent)
metadata = data{1, 2};
subject = metadata.get('Subject');
title = metadata.get('Title');
```

To print out all of the metadata key/value pairs for the first series:

```
metadataKeys = metadata.keySet().iterator();
for i=1:metadata.size()
  key = metadataKeys.nextElement();
  value = metadata.get(key);
  fprintf('%s = %s\n', key, value)
end
```

### OME metadata

Conversion of metadata to the OME standard is one of Bio-Formats' primary features. The OME metadata is always stored the same way, regardless of input file format.

To access physical voxel and stack sizes of the data:

```
omeMeta = data{1, 4};
stackSizeX = omeMeta.getPixelsSizeX(0).getValue(); % image width, pixels
stackSizeY = omeMeta.getPixelsSizeY(0).getValue(); % image height, pixels
stackSizeZ = omeMeta.getPixelsSizeZ(0).getValue(); % number of Z slices

voxelSizeXdefaultValue = omeMeta.getPixelsPhysicalSizeX(0).value();           % returns value in defaul
voxelSizeXdefaultUnit = omeMeta.getPixelsPhysicalSizeX(0).unit().getSymbol(); % returns the default uni
voxelSizeX = omeMeta.getPixelsPhysicalSizeX(0).value(ome.units.UNITS.MICROMETER); % in µm
voxelSizeXdouble = voxelSizeX.doubleValue();                                  % The numeric value repre
voxelSizeY = omeMeta.getPixelsPhysicalSizeY(0).value(ome.units.UNITS.MICROMETER); % in µm
voxelSizeYdouble = voxelSizeY.doubleValue();                                  % The numeric value repre
voxelSizeZ = omeMeta.getPixelsPhysicalSizeZ(0).value(ome.units.UNITS.MICROMETER); % in µm
voxelSizeZdouble = voxelSizeZ.doubleValue();                                  % The numeric value repre
```

For more information about the methods to retrieve the metadata, see the MetadataRetrieve[115] Javadoc page.

To convert the OME metadata into a string, use the `dumpXML()` method:

```
omeXML = char(omeMeta.dumpXML());
```

## 13.7.3 Changing the logging level

By default, `bfopen` uses `bfInitLogging` to initialize the logging system at the *WARN* level. To change the root logging level, use the DebugTools[116] methods as described in the *Logging* section.

```
% Set the logging level to DEBUG
loci.common.DebugTools.setRootLevel('DEBUG');
```

---

[115] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/meta/MetadataRetrieve.html

[116] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/common/DebugTools.html

### 13.7.4 Reading from an image file

The main inconvenience of the bfopen.m[117] function is that it loads all the content of an image regardless of its size.

To access the file reader without loading all the data, use the low-level bfGetReader.m[118] function:

```
reader = bfGetReader('path/to/data/file');
```

You can then access the OME metadata using the `getMetadataStore()` method:

```
omeMeta = reader.getMetadataStore();
```

Individual planes can be queried using the bfGetPlane.m[119] function:

```
series1_plane1 = bfGetPlane(reader, 1);
```

To switch between series in a multi-image file, use the setSeries(int)[120] method. To retrieve a plane given a set of *(z, c, t)* coordinates, these coordinates must be linearized first using getIndex(int, int, int)[121]

```
% Read plane from series iSeries at Z, C, T coordinates (iZ, iC, iT)
% All indices are expected to be 1-based
reader.setSeries(iSeries - 1);
iPlane = reader.getIndex(iZ - 1, iC -1, iT - 1) + 1;
I = bfGetPlane(reader, iPlane);
```

### 13.7.5 Saving files

The basic code for saving a 5D array into an OME-TIFF file is located in the bfsave.m[122] function.

For instance, the following code will save a single image of 64 pixels by 64 pixels with 8 unsigned bits per pixels:

```
plane = zeros(64, 64, 'uint8');
bfsave(plane, 'single-plane.ome.tiff');
```

And the following code snippet will produce an image of 64 pixels by 64 pixels with 2 channels and 2 timepoints:

```
plane = zeros(64, 64, 1, 2, 2, 'uint8');
bfsave(plane, 'multiple-planes.ome.tiff');
```

By default, `bfsave` will create a minimal OME-XML metadata object containing basic information such as the pixel dimensions, the dimension order and the pixel type. To customize the OME metadata, it is possible to create a metadata object from the input array using createMinimalOMEXMLMetadata.m[123], add custom metadata and pass this object directly to `bfsave`:

```
plane = zeros(64, 64, 1, 2, 2, 'uint8');
metadata = createMinimalOMEXMLMetadata(plane);
pixelSize = ome.units.quantity.Length(java.lang.Double(.05), ome.units.UNITS.MICROMETER);
metadata.setPixelsPhysicalSizeX(pixelSize, 0);
metadata.setPixelsPhysicalSizeY(pixelSize, 0);
```

---

[117] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/matlab/bfopen.m
[118] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/matlab/bfGetReader.m
[119] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/matlab/bfGetPlane.m
[120] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatReader.html#setSeries(int)
[121] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatReader.html#getIndex(int, int, int)
[122] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/matlab/bfsave.m
[123] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/matlab/createMinimalOMEXMLMetadata.m

```
pixelSizeZ = ome.units.quantity.Length(java.lang.Double(.2), ome.units.UNITS.MICROMETER);
metadata.setPixelsPhysicalSizeZ(pixelSizeZ, 0);
bfsave(plane, 'metadata.ome.tiff', 'metadata', metadata);
```

For more information about the methods to store the metadata, see the MetadataStore[124] Javadoc page.

### 13.7.6 Improving reading performance

Initializing a Bio-Formats reader can consume substantial time and memory. Most of the initialization time is spend in the setId(java.lang.String)[125] call. Various factors can impact the performance of this step including the file size, the amount of metadata in the image and also the file format itself.

One solution to improve reading performance is to use Bio-Formats memoization functionalities with the loci.formats.Memoizer[126] reader wrapper. By essence, the speedup gained from memoization will only happen after the first initialization of the reader for a particular file.

The simplest way to make use the `Memoizer` functionalities in MATLAB is illustrated by the following example:

```
% Construct an empty Bio-Formats reader
r = bfGetReader();
% Decorate the reader with the Memoizer wrapper
r = loci.formats.Memoizer(r);
% Initialize the reader with an input file
% If the call is longer than a minimal time, the initialized reader will
% be cached in a file under the same directory as the initial file
% name .large_file.bfmemo
r.setId(pathToFile);

% Perform work using the reader

% Close the reader
r.close()

% If the reader has been cached in the call above, re-initializing the
% reader will use the memo file and complete much faster especially for
% large data
r.setId(pathToFile);

% Perform additional work

% Close the reader
r.close()
```

If the time required to call setId(java.lang.String)[127] method is larger than DEFAULT_MINIMUM_ELAPSED[128] or the minimum value passed in the constructor, the initialized reader will be cached in a memo file under the same folder as the input file. Any subsequent call to `setId()` with a reader decorated by the `Memoizer` on the same input file will load the reader from the memo file instead of performing a full reader initialization.

More constructors are described in the Memoizer javadocs[129] allowing to control the minimal initialization time required before caching the reader and/or to define a root directory under which the reader should be cached.

As Bio-Formats is not thread-safe, reader memoization offers a new solution to increase reading performance when doing parallel work. For instance, the following example shows how to combine memoization and MATLAB parfor to do work on a single file in a parallel loop:

---

[124] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/meta/MetadataStore.html

[125] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatHandler.html#setId(java.lang.String)

[126] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/Memoizer.html

[127] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/Memoizer.html#setId(java.lang.String)

[128] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/Memoizer.html#DEFAULT_MINIMUM_ELAPSED

[129] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/Memoizer.html

```
% Construct a Bio-Formats reader decorated with the Memoizer wrapper
r = loci.formats.Memoizer(bfGetReader(), 0);
% Initialize the reader with an input file to cache the reader
r.setId(pathToFile);
% Close reader
r.close()

nWorkers = 4;

% Enter parallel loop
parfor i = 1 : nWorkers
    % Initialize logging at INFO level
    bfInitLogging('INFO');
    % Initialize a new reader per worker as Bio-Formats is not thread safe
    r2 = javaObject('loci.formats.Memoizer', bfGetReader(), 0);
    % Initialization should use the memo file cached before entering the
    % parallel loop
    r2.setId(pathToFile);

    % Perform work

    % Close the reader
    r2.close()
end
```

## 13.8 Using Bio-Formats in Python

OME does not currently provide a Python implementation for Bio-Formats.

The *CellProfiler* project has implemented a Python wrapper around Bio-Formats used by the CellProfiler software which can be installed using *pip*:

```
pip install python-bioformats
```

**See also:**

**https://pypi.python.org/pypi/python-bioformats** Source code of the CellProfiler Python wrapper for Bio-Formats

## 13.9 Interfacing with Bio-Formats from non-Java code

Bio-Formats is written in Java, and is easiest to use with other Java code. However, it is possible to call Bio-Formats from a program written in another language. But how to do so depends on your program's needs.

Technologically, there are two broad categories of solutions: **in-process** approaches, and **inter-process** communication.

For details, see LOCI's article Interfacing from non-Java code[130].

Example **in-process solution**: Bio-Formats JACE C++ bindings[131] (note that this is a legacy project and no longer actively maintained).

---

[130] http://loci.wisc.edu/software/interfacing-non-java-code

[131] https://github.com/ome/bio-formats-jace

## CHAPTER FOURTEEN

# USING BIO-FORMATS AS A NATIVE C++ LIBRARY

**Note:** See the OME-Files C++ downloads page[1] for more information.

---

[1] http://downloads.openmicroscopy.org/latest/ome-files-cpp/

CHAPTER

FIFTEEN

# CONTRIBUTING TO BIO-FORMATS

## 15.1 Code formatting

Note, these guidelines do not cover:

- third-party code imported into the source tree, which is covered by the guidelines for the upstream projects
- released schema files which would require re-releasing if changed by reindenting

### 15.1.1 All languages

- Use spaces to indent; do not ever use tabs

### 15.1.2 Java

All Java code is formatted with:

- an indentation size of two spaces
- braces use the Java variant of K&R style[1]

### 15.1.3 XML

All XML code is formatted with:

- an indentation size of two spaces
- attributes on multiple lines aligned vertically after the element name.

## 15.2 Testing code changes

### 15.2.1 Automated tests

The Bio-Formats testing framework[2] component contains most of the infrastructure to run automated tests against the data repository.

After checking out source code and building all the JAR files (see *Obtaining and building Bio-Formats*), switch to the `test-suite` component and run the tests using the **ant** `test-automated` target:

```
$ cd components/test-suite
$ ant -Dtestng.directory=$DATA/metamorph test-automated
```

---

[1] https://en.wikipedia.org/wiki/Indent_style#Variant:_Java

[2] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/test-suite

where `$DATA` is the path to the full data repository.

Multiple options can be passed to the **ant** `test-automated` target by setting the `testng.${option}` option via the command line. Useful options are described below.

**testng.directory** Mandatory option. Specifies the root of the data directory to be tested:

```
$ ant -Dtestng.directory=$DATA/metamorph test-automated
```

On Windows, the arguments to the test command must be quoted:

```
> ant "-Dtestng.directory=$DATA\metamorph" test-automated
```

**testng.configDirectory** Specifies the root of the directory containing the configuration files. This directory must have the same hierarchy as the one specified by `testng.directory` and contain `.bioformats` configuration files:

```
$ ant -Dtestng.directory=/path/to/data -Dtestng.configDirectory=/path/to/config test-automated
```

If no configuration directory is passed, the assumption is that it is the same as the data directory.

**testng.configSuffix** Specifies an optional suffix for the configuration files:

```
$ ant -Dtestng.directory=/path/to/data -Dtestng.configSuffix=win test-automated
```

**testng.memory** Specifies the amount of memory to be allocated to the JVM:

```
$ ant -Dtestng.directory=$DATA -Dtestng.memory=4g test-automated
```

Default: 512m.

**testng.threadCount** Specifies the number of threads to use for testing:

```
$ ant -Dtestng.directory=$DATA -Dtestng.threadCount=4 test-automated
```

Default: 1.

You should now see output similar to this:

```
Buildfile: build.xml

init-title:
     [echo] ---------------------- bio-formats-testing-framework ----------------------
...
test-automated:
   [testng] 17:05:28,713 |-INFO in ch.qos.logback.classic.LoggerContext[default] - Could NOT find resour
   [testng] 17:05:28,713 |-INFO in ch.qos.logback.classic.LoggerContext[default] - Could NOT find resour
   [testng] 17:05:28,713 |-INFO in ch.qos.logback.classic.LoggerContext[default] - Could NOT find resour
   [testng] 17:05:28,713 |-INFO in ch.qos.logback.classic.LoggerContext[default] - Found resource [logb
   [testng] 17:05:28,835 |-INFO in ch.qos.logback.core.joran.action.AppenderAction - About to instantia
   [testng] 17:05:28,837 |-INFO in ch.qos.logback.core.joran.action.AppenderAction - Naming appender as
   [testng] 17:05:28,876 |-INFO in ch.qos.logback.core.joran.action.AppenderAction - About to instantia
   [testng] 17:05:28,878 |-INFO in ch.qos.logback.core.joran.action.AppenderAction - Naming appender as
   [testng] 17:05:28,891 |-INFO in ch.qos.logback.classic.joran.action.LoggerAction - Setting level of
   [testng] 17:05:28,891 |-INFO in ch.qos.logback.classic.joran.action.RootLoggerAction - Setting level
   [testng] 17:05:28,891 |-INFO in ch.qos.logback.core.joran.action.AppenderRefAction - Attaching appen
   [testng] 17:05:28,892 |-INFO in ch.qos.logback.core.joran.action.AppenderRefAction - Attaching appen
   [testng] 17:05:28,892 |-INFO in ch.qos.logback.classic.joran.action.ConfigurationAction - End of conf
   [testng] 17:05:28,894 |-INFO in ch.qos.logback.classic.joran.JoranConfigurator@706a04ae - Registering
```

```
[testng] [2015-08-18 17:05:28,904] [main] testng.directory = /ome/data_repo/test_per_commit/
[testng] 17:05:28,908 |-INFO in ch.qos.logback.core.joran.action.AppenderAction - About to instantia
[testng] 17:05:28,909 |-INFO in ch.qos.logback.core.joran.action.AppenderAction - Naming appender as
[testng] 17:05:28,955 |-INFO in loci.tests.testng.TimestampedLogFileAppender[logfile-main] - File pro
[testng] [2015-08-18 17:05:28,963] [main] testng.multiplier = 1.0
[testng] [2015-08-18 17:05:28,964] [main] testng.in-memory = false
[testng] [2015-08-18 17:05:28,964] [main] user.language = en
[testng] [2015-08-18 17:05:28,964] [main] user.country = US
[testng] [2015-08-18 17:05:28,964] [main] Maximum heap size = 455 MB
[testng] Scanning for files...
[testng] [2015-08-18 17:05:32,258] [main] ---------------------------------------
[testng] [2015-08-18 17:05:32,258] [main] Total files: 480
[testng] [2015-08-18 17:05:32,258] [main] Scan time: 3.293 s (6 ms/file)
[testng] [2015-08-18 17:05:32,258] [main] ---------------------------------------
[testng] Building list of tests...
```

and then eventually:

```
   [testng] ===============================================
   [testng] Bio-Formats software test suite
   [testng] Total tests run: 19110, Failures: 0, Skips: 0
   [testng] ===============================================
   [testng]

BUILD SUCCESSFUL
Total time: 16 minutes 42 seconds
```

In most cases, test failures should be logged in the main console output as:

```
[testng] [2015-08-18 17:13:13,625] [pool-1-thread-1]     SizeZ: FAILED (Series 0 (expected 2, actual 1)
```

To identify the file, look for the initialization line preceding the test failures under the same thread:

```
[testng] [2015-08-18 17:13:12,376] [pool-1-thread-1] Initializing /ome/data_repo/test_per_commit/ome-ti
```

The console output is also recorded under `components/test-suite/target` as `bio-formats-software-test-main-$DATE.log` where "$DATE" is the date on which the tests started in "yyyy-MM-dd_hh-mm-ss" format. The detailed report of each thread is recorded under `bio-formats-software-pool-$POOL-thread-$THREAD-main-$DATE.log`

Configuration files can be generated for files or directories using the **ant** `gen-config` target. This generation target supports the same options as **ant** `test-automated`:

```
$ ant -Dtestng.directory=/path/to/data -Dtestng.configDirectory=/path/to/config -Dtestng.memory=4g -Dtest
```

### 15.2.2 MATLAB tests

Tests for the Bio-Formats MATLAB toolbox are written using the xunit framework and are located under components/formats-gpl/test/matlab[3].

To run these tests, you will need to download or clone matlab-xunit[4], a xUnit framework with JUnit-compatible XML output. Then add this package together with the Bio-Formats MATLAB to your MATLAB path:

---

[3] https://github.com/openmicroscopy/bioformats/tree/v5.2.0/components/formats-gpl/test/matlab

[4] https://github.com/psexton/matlab-xunit

```
% Add the matlab-xunit toolbox to the MATLAB path
addpath('/path/to/matlab-xunit');
% Add the Bio-Formats MATLAB source to the MATLAB path
% For developers working against the source code
addpath('/path/to/bioformats/components/formats-gpl/matlab');
addpath('/path/to/bioformats/artifacts');
% For developers working against a built artifact, e.g. a release
% addpath('/path/to/bfmatlab');
```

You can run all the MATLAB tests using **runxunit**:

```
cd /path/to/bioformats/components/formats-gpl/test/matlab
runxunit
```

Individual test classes can be run by passing the name of the class:

```
cd /path/to/bioformats/components/formats-gpl/test/matlab
runxunit TestBfsave
```

Individual test methods can be run by passing the name of the class and the name of the method:

```
cd /path/to/bioformats/components/formats-gpl/test/matlab
runxunit TestBfsave:testLZW
```

Finally to output the test results under XML format, you can use the *`-xmlfile`* option:

```
cd /path/to/bioformats/components/formats-gpl/test/matlab
runxunit -xmlfile test-output.xml
```

## 15.3 Generating test images

Sometimes it is nice to have a file of a specific size or pixel type for testing. To generate an image file (that contains a gradient image):

```
touch "my-special-test-file&pixelType=uint8&sizeX=8192&sizeY=8192.fake"
```

Whatever is before the first `&` is the image name; the remaining key-value pairs, each preceded with `&`, set the pixel type and image dimensions. Just replace the values with whatever you need for testing.

Additionally, you can put such values in a separate UTF-8 encoded `.ini` file:

```
touch my-special-test-file.fake
echo "pixelType=uint8" >> my-special-test-file.fake.ini
echo "sizeX=8192" >> my-special-test-file.fake.ini
echo "sizeY=8192" >> my-special-test-file.fake.ini
```

In fact, just the `.fake.ini` file alone suffices:

```
echo "pixelType=uint8" >> my-special-test-file.fake.ini
echo "sizeX=8192" >> my-special-test-file.fake.ini
echo "sizeY=8192" >> my-special-test-file.fake.ini
```

If you include a "[GlobalMetadata]" section to the ini file, then all the included values will be accessible from the global metadata map:

```
echo "[GlobalMetadata]" >> my-special-test-file.fake.ini
echo "my.key=some.value" >> my-special-test-file.fake.ini
```

Several keys have support for units and can be expressed as `KEY=VALUE UNIT` where `UNIT` is the symbol of the desired unit:

```
touch "physicalSizesUnits&physicalSizeX=1nm&physicalSizeY=1nm&physicalSizeZ=1.5km.fake"
echo "physicalSizeX=1 nm" >> physicalSizes.fake.ini
echo "physicalSizeY=10 pm" >> physicalSizes.fake.ini
echo "physicalSizeZ=.002 mm" >> physicalSizes.fake.ini
```

### 15.3.1 High-content screening

To generate a simple plate file:

```
touch "simple-plate&plates=1&plateAcqs=1&plateRows=1&plateCols=1&fields=1.fake"
touch "default-plate&plates=1.fake"
touch "default-plate&screens=0&plates=1.fake"
```

These will each create a single plate without a containing screen, by default in the first two cases. In the third case setting `screens` to zero is used to document the lack of a screen. As above a `.fake.ini` file can be used.

To generate a simple screen file:

```
touch "default-screen&screens=1.fake"
```

This will create a screen containing a single simple plate.

To generate a valid plate at least one of `screens`, `plates`, `plateAcqs`, `plateRows`, `plateCols` and `fields` must be greater than zero. If this condition is met then any other plate-specific values set to zero will be ignored and the defaults used. So, for example, the file:

```
one-key-set&screens=0&plates=0&plateRows=0&plateCols=0&plateAcqs=0&fields=1.fake
```

will create a simple plate with no screen.

### 15.3.2 Regions

To generate a fake file containing regions of interest:

```
touch "regions&points=10.fake"
touch "regions&ellipses=20.fake"
touch "regions&rectangles=5&lines=25.fake"
```

Replace `regions` in the above examples with the desired image or plate which will contain the regions, e.g.

```
touch "HCSanalysis&plates=1&plateRows=16&plateCols=24&rectangles=100.fake"
```

For each shape type, the value will specify the number of regions of interest to create where each region of interest contains a single shape of the input type. By convention, all generated regions of interests are not associated to any given Z, C or T plane.

### 15.3.3 Key-value pairs

There are several other keys that can be added, a complete list of these, with their default values, is shown below.

| Key | Value | Default |
|---|---|---|
| sizeX | number of pixels wide | 512 |
| sizeY | number of pixels tall | 512 |
| sizeZ | number of Z sections | 1 |
| sizeC | number of channels | 1 |
| sizeT | number of timepoints | 1 |
| thumbSizeX | number of pixels wide, for the thumbnail | 0 |
| thumbSizeY | number of pixels tall, for the thumbnail | 0 |
| pixelType | pixel type | uint8 |
| bitsPerPixel | number of valid bits (<= number of bits implied by pixel type) | 0 |
| rgb | number of channels that are merged together | 1 |
| dimOrder | dimension order (e.g. XYZCT) | XYZCT |
| orderCertain | whether or not the dimension order is certain | true |
| little | whether or not the pixel data should be little-endian | true |
| interleaved | whether or not merged channels are interleaved | false |
| indexed | whether or not a color lookup table is present | false |
| falseColor | whether or not the color lookup table is just for making the image look pretty | false |
| metadataComplete | whether or not the metadata is complete | true |
| thumbnail | whether or not `CoreMetadata.thumbnail` is set | false |
| series | number of series (Images) | 1 |
| lutLength | number of entries in the color lookup table | 3 |
| scaleFactor | the scaling factor for the pixel values on each plane | 1 |
| exposureTime | time of exposure | null |
| acquisitionDate | timestamp formatted as “yyyy-MM-dd_HH-mm-ss” | null |
| screens | number of screens | 0 |
| plates | number of plates to generate | 0 |
| plateAcqs | number of plate runs | 0 |
| plateRows | number of rows per plate | 0 |
| plateCols | number of rows per plate | 0 |
| fields | number of fields per well | 0 |
| withMicrobeam | whether or not a microbeam should be added to the experiment (HCS only) | false |
| annLong, annDouble, annMap, annComment, annBool, annTime, annTag, annTerm, annXml | number of annotations of the given type to generate | 0 |
| physicalSizeX | real width of the pixels, supports units defaulting to microns | |
| physicalSizeY | real height of the pixels, supports units defaulting to microns | |
| physicalSizeZ | real depth of the pixels, supports units defaulting to microns | |
| color | the default color for all channels | null |
| color_x | the color for channel x, overrides the default color for that channel | |
| ellipses, labels, lines, points, polygons, polylines, rectangles | the number of ROIs containing one shape of the given type to generate | |

For full details of these keys, how unset and default values are handled and further examples see loci.formats.in.FakeReader[5].

You can often work with the .fake file directly, but in some cases support for those files is disabled and so you will need to convert the file to something else. Make sure that you have Bio-Formats built and the JARs in your `CLASSPATH` (individual JARs or just `bioformats_package.jar`):

```
bfconvert test&pixelType=uint8&sizeX=8192&sizeY=8192.fake test.tiff
```

---

[5] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/FakeReader.java

If you do not have the command line tools installed, substitute loci.formats.tools.ImageConverter[6] for **bfconvert**.

## 15.4 Writing a new file format reader

This document is a brief guide to writing new Bio-Formats file format readers.

All format readers should extend either loci.formats.FormatReader[7] or an existing reader[8].

### 15.4.1 Methods to override

- isSingleFile(java.lang.String)[9] Whether or not the named file is expected to be the only file in the dataset. This only needs to be overridden for formats whose datasets can contain more than one file.
- isThisType(loci.common.RandomAccessInputStream)[10] Check the first few bytes of a file to determine if the file can be read by this reader. You can assume that index 0 in the stream corresponds to the index 0 in the file. Return true if the file can be read; false if not (or if there is no way of checking).
- fileGroupOption(java.lang.String)[11] Returns an indication of whether or not the files in a multi-file dataset can be handled individually. The return value should be one of the following:
  - FormatTools.MUST_GROUP[12]: the files cannot be handled separately
  - FormatTools.CAN_GROUP[13]: the files may be handled separately or as a single unit
  - FormatTools.CANNOT_GROUP[14]: the files must be handled separately

  This method only needs to be overridden for formats whose datasets can contain more than one file.
- getSeriesUsedFiles(boolean)[15] You only need to override this if your format uses multiple files in a single dataset. This method should return a list of all files associated with the given file name and the current series (i.e. every file needed to display the current series). If the `noPixels` flag is set, then none of the files returned should contain pixel data. For an example of how this works, see loci.formats.in.PerkinElmerReader[16]. It is recommended that the first line of this method be `FormatTools.assertId(currentId, true, 1)` - this ensures that the file name is non-null.
- openBytes(int, byte[], int, int, int, int)[17] Returns a byte array containing the pixel data for a specified subimage from the given file. The dimensions of the subimage (upper left X coordinate, upper left Y coordinate, width, and height) are specified in the final four int parameters. This should throw a FormatException[18] if the image number is invalid (less than 0 or >= the number of images). The ordering of the array returned by openBytes should correspond to the values returned by isLittleEndian[19] and isInterleaved[20]. Also, the length of the byte array should be [image width * image height * bytes per pixel]. Extra bytes will generally be truncated. It is recommended that the first line of this method be `FormatTools.checkPlaneParameters(this, no, buf.length, x, y, w, h)` - this ensures that all of the parameters are valid.
- initFile(java.lang.String)[21] The majority of the file parsing logic should be placed in this method. The idea is to call this method once (and only once!) when the file is first opened. Generally, you will want to start by calling `super.initFile(String)`. You will also need to set up the stream for reading the file, as well as initializing any dimension information and metadata. Most of this logic is up to you; however, you should populate the core[22] variable (see loci.formats.CoreMetadata[23]).

---

[6] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/bio-formats-tools/src/loci/formats/tools/ImageConverter.java

[7] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatReader.html

[8] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/in/package-summary.html

[9] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatReader.html#isSingleFile(java.lang.String)

[10] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatReader.html#isThisType(loci.common.RandomAccessInputStream)

[11] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatReader.html#fileGroupOption(java.lang.String)

[12] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatTools.html#MUST_GROUP

[13] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatTools.html#CAN_GROUP

[14] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatTools.html#CANNOT_GROUP

[15] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatReader.html#getSeriesUsedFiles(boolean)

[16] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/PerkinElmerReader.java

[17] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatReader.html#openBytes(int, byte[], int, int, int, int)

[18] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatException.html

[19] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatReader.html#isLittleEndian()

[20] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatReader.html#isInterleaved()

[21] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatReader.html#initFile(java.lang.String)

[22] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatReader.html#core

[23] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/CoreMetadata.html

Note that each variable is initialized to 0 or null when `super.initFile(String)` is called. Also, `super.initFile(String)` constructs a Hashtable called metadata[24] where you should store any relevant metadata.

The most common way to set up the OME-XML metadata for the reader is to initialize the MetadataStore using the makeFilterMetadata()[25] method and populate the Pixels elements of the metadata store from the `core` variable using the MetadataTools.populatePixels(MetadataStore, FormatReader)[26] method:

```
# Initialize the OME-XML metadata from the core variable
MetadataStore store = makeFilterMetadata();
MetadataTools.populatePixels(store, this);
```

If the reader includes metadata at the plane level, you can initialize the Plane elements under the Pixels using MetadataTools.populatePixels(MetadataStore, FormatReader, doPlane)[27]:

```
MetadataTools.populatePixels(store, this, true);
```

Once the metadatastore has been initialized with the core properties, additional metadata can be added to it using the setter methods. Note that for each of the model components, the `setObjectID()` method should be called before any of the `setObjectProperty()` methods, e.g.:

```
# Add an oil immersion objective with achromat
String objectiveID = MetadataTools.createLSID("Objective", 0, 0);
store.setObjectiveID(objectiveID, 0, 0);
store.setObjectiveImmersion(getImmersion("Oil"), 0, 0);
```

- close(boolean)[28] Cleans up any resources used by the reader. Global variables should be reset to their initial state, and any open files or delegate readers should be closed.

Note that if the new format is a variant of a format currently supported by Bio-Formats, it is more efficient to make the new reader a subclass of the existing reader (rather than subclassing loci.formats.FormatReader[29]). In this case, it is usually sufficient to override initFile(java.lang.String)[30] and isThisType(byte[])[31].

Every reader also has an instance of loci.formats.CoreMetadata[32]. All readers should populate the fields in CoreMetadata, which are essential to reading image planes.

If you read from a file using something other than loci.common.RandomAccessInputStream[33] or loci.common.Location[34], you *must* use the file name returned by `Location.getMappedId(String)`, not the file name passed to the reader. Thus, a stub for `initFile(String)` might look like this:

```
protected void initFile(String id) throws FormatException, IOException {
  super.initFile(id);

  RandomAccessInputStream in = new RandomAccessInputStream(id);
  // alternatively,
  //FileInputStream in = new FileInputStream(Location.getMappedId(id));

  // read basic file structure and metadata from stream
}
```

---

[24] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatReader.html#metadata

[25] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatReader.html#makeFilterMetadata()

[26] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/MetadataTools.html#populatePixels(loci.formats.meta.MetadataStore, loci.formats.IFormatReader)

[27] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/MetadataTools.html#populatePixels(loci.formats.meta.MetadataStore, loci.formats.IFormatReader, boolean)

[28] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/IFormatReader.html#close(boolean)

[29] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatReader.html

[30] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatReader.html#initFile(java.lang.String)

[31] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatReader.html#isThisType(byte[])

[32] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/CoreMetadata.html

[33] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/common/RandomAccessInputStream.html

[34] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/common/Location.html

For more details, see loci.common.Location.mapId(java.lang.String, java.lang.String)[35] and loci.common.Location.getMappedId(java.lang.String)[36].

### 15.4.2 Variables to populate

There are a number of global variables defined in loci.formats.FormatReader[37] that should be populated in the constructor of any implemented reader.

These variables are:

- suffixNecessary[38] Indicates whether or not a file name suffix is required; true by default
- suffixSufficient[39] Indicates whether or not a specific file name suffix guarantees that this reader can open a particular file; true by default
- hasCompanionFiles[40] Indicates whether or not there is at least one file in a dataset of this format that contains only metadata (no images); false by default
- datasetDescription[41] A brief description of the layout of files in datasets of this format; only necessary for multi-file datasets
- domains[42] An array of imaging domains for which this format is used. Domains are defined in loci.formats.FormatTools[43].

### 15.4.3 Other useful things

- loci.common.RandomAccessInputStream[44] is a hybrid RandomAccessFile/InputStream class that is generally more efficient than either RandomAccessFile or InputStream, and implements the DataInput interface. It is recommended that you use this for reading files.
- loci.common.Location[45] provides an API similar to java.io.File, and supports File-like operations on URLs. It is highly recommended that you use this instead of File. See the Javadocs[46] for additional information.
- loci.common.DataTools[47] provides a number of methods for converting bytes to shorts, ints, longs, etc. It also supports reading most primitive types directly from a RandomAccessInputStream (or other DataInput implementation).
- loci.formats.ImageTools[48] provides several methods for manipulating primitive type arrays that represent images. Consult the source or Javadocs for more information.
- If your reader relies on third-party code which may not be available to all users, it is strongly suggested that you make a corresponding service class that interfaces with the third-party code. Please see *Bio-Formats service and dependency infrastructure* for a description of the service infrastructure, as well as the loci.formats.services package[49].
- Several common image compression types are supported through subclasses of loci.formats.codec.BaseCodec[50]. These include JPEG, LZW, LZO, Base64, ZIP and RLE (PackBits).
- If you wish to convert a file's metadata to OME-XML (strongly encouraged), please see *Bio-Formats metadata processing* for further information.
- Once you have written your file format reader, add a line to the readers.txt[51] file with the fully qualified name of the reader, followed by a '#' and the file extensions associated with the file format. Note that loci.formats.ImageReader[52], the master

---

[35] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/common/Location.html#mapId(java.lang.String, java.lang.String)
[36] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/common/Location.html#getMappedId(java.lang.String)
[37] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatReader.html
[38] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatReader.html#suffixNecessary
[39] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatReader.html#suffixSufficient
[40] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatReader.html#hasCompanionFiles
[41] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatReader.html#datasetDescription
[42] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatReader.html#domains
[43] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/FormatTools.html
[44] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/common/RandomAccessInputStream.html
[45] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/common/Location.html
[46] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/
[47] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/common/DataTools.html
[48] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/ImageTools.html
[49] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/services/package-summary.html
[50] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/codec/BaseCodec.html
[51] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-api/src/loci/formats/readers.txt
[52] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/ImageReader.html

file format reader, tries to identify which format reader to use according to the order given in readers.txt[53], so be sure to place your reader in an appropriate position within the list.

- The easiest way to test your new reader is by calling "java loci.formats.tools.ImageInfo <file name>". If all goes well, you should see all of the metadata and dimension information, along with a window showing the images in the file. loci.formats.ImageReader[54] can take additional parameters; a brief listing is provided below for reference, but it is recommended that you take a look at the contents of loci.formats.tools.ImageInfo[55] to see exactly what each one does.

| Argument | Action |
|---|---|
| -version | print the library version and exit |
| file | the image file to read |
| -nopix | read metadata only, not pixels |
| -nocore | do not output core metadata |
| -nometa | do not parse format-specific metadata table |
| -nofilter | do not filter metadata fields |
| -thumbs | read thumbnails instead of normal pixels |
| -minmax | compute min/max statistics |
| -merge | combine separate channels into RGB image |
| -nogroup | force multi-file datasets to be read as individual files |
| -stitch | stitch files with similar names |
| -separate | split RGB image into separate channels |
| -expand | expand indexed color to RGB |
| -omexml | populate OME-XML metadata |
| -normalize | normalize floating point images* |
| -fast | paint RGB images as quickly as possible* |
| -debug | turn on debugging output |
| -range | specify range of planes to read (inclusive) |
| -series | specify which image series to read |
| -swap | override the default input dimension order |
| -shuffle | override the default output dimension order |
| -map | specify file on disk to which name should be mapped |
| -preload | pre-read entire file into a buffer; significantly reduces the time required to read the images, but requires more memory |
| -crop | crop images before displaying; argument is 'x,y,w,h' |
| -autoscale | used in combination with '-fast' to automatically adjust brightness and contrast |
| -novalid | do not perform validation of OME-XML |
| -omexml-only | only output the generated OME-XML |
| -format | read file with a particular reader (e.g., ZeissZVI) |

* = may result in loss of precision

- If you wish to test using TestNG, loci.tests.testng.FormatReaderTest[56] provides several basic tests that work with all Bio-Formats readers. See the FormatReaderTest source code for additional information.
- For more details, please look at the source code and Javadocs[57]. Studying existing readers is probably the best way to get a feel for the API; we would recommend first looking at loci.formats.in.ImarisReader[58] (this is the most straightforward one). loci.formats.in.LIFReader[59] and InCellReader[60] are also good references that show off some of the nicer features of Bio-Formats.

If you have questions about Bio-Formats, please contact the OME team[61].

---

[53] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-api/src/loci/formats/readers.txt
[54] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/formats/ImageReader.html
[55] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/bio-formats-tools/src/loci/formats/tools/ImageInfo.java
[56] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/tests/testng/FormatReaderTest.html
[57] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/
[58] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/ImarisReader.java
[59] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/LIFReader.java
[60] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/InCellReader.java
[61] http://www.openmicroscopy.org/site/community

## 15.5 Adding format/reader documentation pages

Most documentation pages for the supported formats and readers are auto-generated. These pages should not be modified directly. This page explains how to amend/extend this part of the Bio-Formats documentation.

The Bio-Formats testing framework[62] component contains most of the infrastructure to run automated tests against the data repository.

### 15.5.1 Formats

After checking out source code and building all the JAR files (see *Obtaining and building Bio-Formats*), the supported formats pages can be generated using the **ant** `gen-format-pages` target under the `autogen` component:

```
$ ant -f components/autogen/build.xml gen-format-pages
```

This target will read the metadata for each format stored under format-pages.txt[63] and generate a reStructuredText file for each format stored under `formats/<formatname>.txt` as well as an index page for all supported formats using Velocity[64].

The `format-pages.txt` is an INI file where each section corresponds to a particular format given by the section header. Multiple key/values should be defined for each section:

**pagename** The name of the output reStructuredText file. If unspecified, the section header will be used to generate the filename.

**extensions** The list of extensions supported for the format

**owner** The owner of the file format

**developer** The developer of the file format

**bsd** A *yes/no* flag specifying whether the format readers/writers are under the BSD license

**versions** A comma-separated list of all versions supported for this format

**weHave** A bullet-point list describing the supporting material we have for this format including specification and sample datasets

**weWant** A bullet-point list describing the supporting material we would like to have for this format

**pixelRating, metadataRating, opennessRating, presenceRating, utilityRating** See *Ratings legend and definitions*. Available choices are: *Poor*, *Fair*, *Good*, *Very Good*, *Outstanding*

**reader** A string or a comma-separated list of all readers for this format

**notes** Additional relevant information e.g. that we cannot distribute specification documents to third parties

### 15.5.2 Dataset structure table

After checking out source code and building all the JAR files (see *Obtaining and building Bio-Formats*), the summary table listing the extensions for each reader can be generated using the **ant** `gen-structure-table` target under the `autogen` component:

```
$ ant -f components/autogen/build.xml gen-structure-table
```

This target will loop through all Bio-Formats readers (BSD and GPL), read their extensions and descriptions and create a reStructuredText file with a table summary of all file extensions.

### 15.5.3 Readers

After checking out source code and building all the JAR files (see *Obtaining and building Bio-Formats*), the metadata pages for each reader can be generated using the **ant** `gen-meta-support` target under the `autogen` component:

---

[62] https://github.com/openmicroscopy/bioformats/tree/v5.2.0/components/autogen

[63] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/autogen/src/format-pages.txt

[64] http://velocity.apache.org/

```
$ ant -f components/autogen/build.xml gen-meta-support
```

This target will loop through all Bio-Formats readers (BSD and GPL), parse their metadata support and create an intermediate `meta-support.txt` file. In a second step, this `meta-support.txt` file is converted into one reStructuredText page for each reader stored under `metadata/<reader>.txt` as well as a metadata summary reStructuredText file using Velocity[65].

## 15.6 Bio-Formats service and dependency infrastructure

### 15.6.1 Description

The Bio-Formats service infrastructure is an interface driven pattern for dealing with external and internal dependencies. The design goal was mainly to avoid the cumbersome usage of `ReflectedUniverse` where possible and to clearly define both service dependency and interface between components. This is generally referred to as dependency injection[66], dependency inversion[67] or component based design[68].

It was decided, at this point, to forgo the usage of potentially more powerful but also more complicated solutions such as:

- Spring (http://spring.io)
- Guice (http://code.google.com/p/google-guice/)
- ...

The Wikipedia page for dependency injection[69] contains many other implementations in many languages.

An added benefit is the potential code reuse possibilities as a result of decoupling of dependency and usage in Bio-Formats readers. Implementations of the initial Bio-Formats services were completed as part of BioFormatsCleanup and tickets #463[70] and #464[71].

### 15.6.2 Writing a service

- **Interface** – The basic form of a service is an interface which inherits from loci.common.services.Service[72]. Here is a very basic example using the (now removed) `OMENotesService`

```
public interface OMENotesService extends Service {

  /**
   * Creates a new OME Notes instance.
   * @param filename Path to the file to create a Notes instance for.
   */
  public void newNotes(String filename);

}
```

- **Implementation** – This service then has an implementation, which is usually located in the Bio-Formats component or package which imports classes from an external, dynamic or other dependency. Again looking at the `OMENotesService`:

```
public class OMENotesServiceImpl extends AbstractService
  implements OMENotesService {

  /**
   * Default constructor.
```

---

[65] http://velocity.apache.org/
[66] http://en.wikipedia.org/wiki/Dependency_injection
[67] http://en.wikipedia.org/wiki/Dependency_inversion_principle
[68] http://en.wikipedia.org/wiki/Component-based_software_engineering
[69] http://en.wikipedia.org/wiki/Dependency_injection
[70] https://trac.openmicroscopy.org/ome/ticket/463
[71] https://trac.openmicroscopy.org/ome/ticket/464
[72] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/common/services/Service.html

```
   */
  public OMENotesServiceImpl() {
    checkClassDependency(Notes.class);
  }

  /* (non-Javadoc)
   * @see loci.formats.dependency.OMENotesService#newNotes()
   */
  public void newNotes(String filename) {
    new Notes(null, filename);
  }

}
```

- **Style**
  - Extension of `AbstractService` to enable uniform runtime dependency checking is recommended. Java does not check class dependencies until classes are first instantiated so if you do not do this, you may end up with `ClassNotFound` or the like exceptions being emitted from your service methods. This is to be **strongly** discouraged. If a service has unresolvable classes on its CLASSPATH instantiation should fail, not service method invocation.
  - Service methods should not burden the implementer with numerous checked exceptions. Also external dependency exception instances should not be allowed to directly leak from a service interface. Please wrap these using a `ServiceException`.
  - By convention both the interface and implementation are expected to be in a package named `loci.*.services`. This is not a hard requirement but should be followed where possible.
- **Registration** – A service's interface and implementation must finally be *registered* with the loci.common.services.ServiceFactory[73] via the `services.properties` file. Following the `OMENotesService` again, here is an example registration:

```
...
# OME notes service (implementation in legacy ome-notes component)
loci.common.services.OMENotesService=loci.ome.notes.services.OMENotesServiceImpl
...
```

**See also:**

**loci.common.services.Service[74].** Source code for `loci.common.services.Service` interface

**loci.common.services.ServiceFactory[75]** Source code for `loci.common.services.Service` interface

### 15.6.3 Using a service

```
OMENotesService service = null;
try {
  ServiceFactory factory = new ServiceFactory();
  service = factory.getInstance(OMENotesService.class);
}
catch (DependencyException de) {
  LOGGER.info("", de);
}
...
```

---

[73] http://downloads.openmicroscopy.org/latest/bio-formats5.2/api/loci/common/services/ServiceFactory.html

## 15.7 Code generation with xsd-fu

**xsd-fu** is a Python application designed to digest OME XML schema and produce an object-oriented Java infrastructure to ease work with an XML DOM tree. It is usually run automatically when building from source (see *Building from source*) and so running it by hand should not be needed. **xsd-fu** is primarily used to generate the OME-XML model objects, enums and enum handlers, plus the MetadataStore and MetadataRetrieve interfaces and implementations.

### 15.7.1 Available options

**`-d`**, **`--dry-run`**
Run all source generation processing, but don't write output files. In combination with `--print-depends` or `--print-generated`, this option may be used to dynamically introspect command dependencies and output to create build rules on the fly for e.g. **cmake**.

**`--debug`**
Enable xsd-fu debugging messages and template debugging. The code templates contain diagnostic messages to debug the template processing, which are normally suppressed in the code output; enabling debugging will add these diagnostic messages to the generated code.

**`-l`** `language`, **`--language`**`=language`
Generate code for the specified language. Currently supported options are *C++* and *Java*.

**`--metadata-package`**`=package`
Package or namespace for the metadata store and retrieve classes.

**`--ome-xml-metadata-package`**
Package or namespace for the OME-XML metadata classes.

**`--ome-xml-model-package`**`=package`
Package or namespace for the OME-XML model classes.

**`--ome-xml-model-enums-package`**`=package`
Package or namespace for the OME-XML model enum classes.

**`--ome-xml-model-enum-handlers-package`**`=package`
Package or namespace for the OME-XML model enum handler classes.

**`-o`** `dir`, **`--output-directory`**`=dir`
Output generated code into the specified directory. The directory will be created if it does not already exist. Note that the directory is the root of the source tree; generated classes will be placed into the appropriate module-specific locations under this root.

**`--print-depends`**
Print a list of the files required during template processing, including schema files, templates and custom template fragments. Particularly useful with `--dry-run` to introspect command dependencies.

**`--print-generated`**
Print a list of the files generated during template processing. Particularly useful with `--dry-run` to determine what a given command would generate.

**`-q`**, **`--quiet`**
Do not print names of generated files.

**`-t`** `path`, **`--template-path`**`=path`
Path to search for Genshi template files. Defaults to the language-specific template directory in *components/xsd-fu*.

**`-n`**, **`--xsd-namespace`**
XML schema namespace to use. Defaults to *xsd:*.

**`-v`**, **`--verbose`**
Print names of generated files as they are processed.

### 15.7.2 Available commands

- doc_gen

- metadata
- omero_metadata
- omero_model
- omexml_metadata
- omexml_metadata_all
- omexml_model
- omexml_model_all
- omexml_model_enums
- omexml_model_enum_handlers
- omexml_model_enum_includeall
- tab_gen

### 15.7.3 Running the code generator

Run xsd-fu script with no arguments to examine the syntax:

```
./components/xsd-fu/xsd-fu
Error: Missing subcommand

xsd-fu: Generate classes from an OME-XML schema definition
Usage: ./components/xsd-fu/xsd-fu command [options…] -o output_dir schema_files…

Options:
  -d, --dry-run                               Do not create output files
  --debug                                     Enable xsd-fu and template debugging
  -l, --language=lang                         Generated language
  --metadata-package=pkg                      Metadata package
  --ome-xml-metadata-package=pkg              OME-XML metadata class package
  --ome-xml-model-package=pkg                 OME-XML model package
  --ome-xml-model-enums-package=pkg           OME-XML model enum package
  --ome-xml-model-enum-handlers-package=pkg  OME-XML model enum handler package
  -o, --output-directory=dir                  Generated output directory
  -q, --quiet                                 Do not output file names
  -t, --template-path=path                    Genshi template path
  -v, --verbose                               Output generated file names
  -n, --xsd-namespace                         XML schema namespace

Available subcommands:
  debug
  doc_gen
  omexml_model_enum_handlers
  omexml_model_enums
  omexml_model
  metadata
  omero_metadata
  omero_model
  omexml_metadata
  tab_gen

Default XSD namespace: "xsd:"

Default Java OME-XML package: "ome.xml.model"
Default Java OME-XML enum package: "ome.xml.model.enums"
Default Java OME-XML enum handler package: "ome.xml.model.enums.handlers"
Default Java metadata package: "loci.formats.meta"
Default Java OME-XML metadata package: "loci.formats.ome"
```

```
Default C++ OME-XML package: "ome::xml::model"
Default C++ OME-XML enum package: "ome::xml::model::enums"
Default C++ metadata package: "ome::xml::meta"
Default C++ OME-XML metadata package: "ome::xml::meta"

Examples:
  ./components/xsd-fu/xsd-fu -l Java -n 'xsd:' --ome-xml-model-package=ome.xml.model -o omexml /path/tc
  ./components/xsd-fu/xsd-fu -l C++ -n 'xsd:' --ome-xml-model-package=ome::xml::model -o omexml /path/t

Report bugs to OME Devel <ome-devel@lists.openmicroscopy.org.uk>
```

**Note:** It should not be necessary to run it by hand for a normal Bio-Formats build. **xsd-fu** is run automatically as part of the main Bio-Formats build from version 5.0 when building the *ome-xml* and *scifio* components. It is still useful to run by hand when debugging, or using non-standard targets.

## 15.7.4 Generating the OME-XML Java model and metadata classes

The following sections outline how to generate parts of the OME-XML Java interfaces and implementations for the object model and metadata store, which are composed of:

- OME model objects
- enumerations for OME model properties
- enumeration handlers for regular expression matching of enumeration strings
- Metadata store and Metadata retrieve interfaces for all OME model properties
- various implementations of Metadata store and/or Metadata retrieve interfaces

All of the above can be generated by this Ant command:

```
$ cd components/ome-xml
$ ant generate-source
```

Run:

```
$ ant generate-source -v
```

to see the command-line options used.

## 15.7.5 Working with Enumerations and Enumeration Handlers

XsdFu code generates enumeration regular expressions using a flexible configuration file[76].

Each enumeration has a key-value listing of regular expression to exact enumeration value matches. For example:

```
[Correction]
".*Pl.*Apo.*" = "PlanApo"
".*Pl.*Flu.*" = "PlanFluor"
"^\\s*Vio.*Corr.*" = "VioletCorrected"
".*S.*Flu.*" = "SuperFluor"
".*Neo.*flu.*" = "Neofluar"
".*Flu.*tar.*" = "Fluotar"
".*Fluo.*" = "Fluor"
".*Flua.*" = "Fluar"
"^\\s*Apo.*" = "Apo"
```

---

[76] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/xsd-fu/cfg/enum_handler.cfg

### 15.7.6 Generate OMERO model specification files

Run **xsd-fu** with the `omero_model` subcommand.

### 15.7.7 Special thanks

A special thanks goes out to Dave Kuhlman[77] for his fabulous work on generateDS[78] which **xsd-fu** makes heavy use of internally.

## 15.8 Scripts for performing development tasks

The `tools` directory contains several scripts which are useful for building and performing routine updates to the code base.

### 15.8.1 bump_maven_version.py

This updates the Maven POM version numbers for all pom.xml files that set *groupId* to *ome*. The script takes a single argument, which is the new version. For example, to update the POM versions prior to release:

```
./tools/bump_maven_version.py 5.1.0
```

and to switch back to snapshot versions immediately after release:

```
./tools/bump_maven_version.py 5.1.1-SNAPSHOT
```

### 15.8.2 test-build

This is the script used by Travis to test each commit. It compiles and runs tests on each of the components in the Bio-Formats repository according to the arguments specified. Valid arguments are:

- *clean*: cleans the Maven build directories
- *maven*: builds all Java components using Maven and runs unit tests
- *cpp*: builds the native C++ code alone
- *sphinx*: builds the Sphinx documentation alone
- *ant*: builds all Java components using Ant and runs unit tests
- *all*: equivalent of *clean maven sphinx ant*

### 15.8.3 update_copyright

This updates the end year in the copyright blocks of all source code files. The command takes no arguments, and sets the end year to be the current year. As *update_copyright* is a Bash script, it is not intended to be run on Windows.

See open Trac tickets for Bio-Formats[79] for information on work currently planned or in progress.

For more general guidance about how to contribute to OME projects, see the Contributing developers documentation[80].

---

[77] http://www.davekuhlman.org/

[78] http://www.davekuhlman.org/generateDS.html

[79] https://trac.openmicroscopy.org/ome/report/44

[80] http://www.openmicroscopy.org/site/support/contributing/index.html

# Part IV

# Formats

Bio-Formats supports over 140 different file formats. The *Dataset Structure Table* explains the file extension you should choose to open/import a dataset in any of these formats, while the *Supported Formats* table lists all of the formats and gives an indication of how well they are supported and whether Bio-Formats can write, as well as read, each format. The *Summary of supported metadata fields* table shows an overview of the *OME data model* fields populated for each format.

**We are always looking for examples of files to help us provide better support for different formats.** If you would like to help, you can upload files using our QA system uploader[81]. If you have any questions, or would prefer not to use QA, please email the ome-users mailing list[82]. If your format is already supported, please refer to the 'we would like to have' section on the individual page for that format, to see if your dataset would be useful to us.

All the example files we have permission to share publicly are freely available from our sample image downloads site[83].

---

[81] http://qa.openmicroscopy.org.uk/qa/upload/

[82] http://www.openmicroscopy.org/site/community/mailing-lists

[83] http://downloads.openmicroscopy.org/images/

## CHAPTER

## SIXTEEN

# DATASET STRUCTURE TABLE

This table shows the extension of the file that you should choose if you want to open/import a dataset in a particular format.

| Format name | File to choose | Structure of files |
|---|---|---|
| AIM | .aim | Single file |
| ARF | .arf | Single file |
| Adobe Photoshop | .psd | Single file |
| Adobe Photoshop TIFF | .tif, .tiff | Single file |
| Alicona AL3D | .al3d | Single file |
| Amersham Biosciences GEL | .gel | Single file |
| Amira | .am, .amiramesh, .grey, .hx, .labels | Single file |
| Analyze 7.5 | .img, .hdr | One .img file and one similarly-named .hdr file |
| Andor SIF | .sif | Single file |
| Animated PNG | .png | Single file |
| Aperio AFI | .afi | One .afi file and several similarly-named .svs files |
| Aperio SVS | .svs | Single file |
| Audio Video Interleave | .avi | Single file |
| BD Pathway | .exp, .tif | Multiple files (.exp, .dye, .ltp, …) plus one or more directories containing .tif and .bmp files |
| Bio-Rad GEL | .1sc | Single file |
| Bio-Rad PIC | .pic, .xml, .raw | One or more .pic files and an optional lse.xml file |
| Bio-Rad SCN | .scn | Single file |
| Bitplane Imaris | .ims | Single file |
| Bitplane Imaris 3 (TIFF) | .ims | Single file |
| Bitplane Imaris 5.5 (HDF) | .ims | Single file |
| Bruker | (no extension) | One ‘fid’ and one ‘acqp’ plus several other metadata files and a ‘pdata’ directory |
| Burleigh | .img | Single file |
| Canon RAW | .cr2, .crw, .jpg, .thm, .wav | Single file |
| CellH5 (HDF) | .ch5 | Single file |
| CellSens VSI | .vsi, .ets | One .vsi file and an optional directory with a similar name that contains at least one subdirectory with .ets files |
| CellVoyager | .tif, .xml | Directory with 2 master files ‘MeasurementResult.xml’ and ‘MeasurementResult.ome.xml’, used to stitch together several TIF files. |
| CellWorx | .pnl, .htd, .log | One .htd file plus one or more .pnl or .tif files and optionally one or more .log files |
| Cellomics C01 | .c01, .dib | One or more .c01 files |
| Compix Simple-PCI | .cxd | Single file |
| DICOM | .dic, .dcm, .dicom, .jp2, .j2ki, .j2kr, .raw, .ima | One or more .dcm or .dicom files |
| DNG | .cr2, .crw, .jpg, .thm, .wav, .tif, .tiff | Single file |

Continued on next page

Table 16.1 – continued from previous page

| Format name | File to choose | Structure of files |
|---|---|---|
| Deltavision | .dv, .r3d, .r3d_d3d, .dv.log, .r3d.log | One .dv, .r3d, or .d3d file and up to two optional .log files |
| ECAT7 | .v | Single file |
| Encapsulated PostScript | .eps, .epsi, .ps | Single file |
| Evotec Flex | .flex, .mea, .res | One directory containing one or more .flex files, and an optional directory containing an .mea and .res file. The .mea and .res files may also be in the same directory as the .flex file(s). |
| FEI TIFF | .tif, .tiff | Single file |
| FEI/Philips | .img | Single file |
| Flexible Image Transport System | .fits, .fts | Single file |
| FlowSight | .cif | Single file |
| Fuji LAS 3000 | .img, .inf | Single file |
| Gatan DM2 | .dm2 | Single file |
| Gatan Digital Micrograph | .dm3, .dm4 | Single file |
| Graphics Interchange Format | .gif | Single file |
| Hamamatsu Aquacosmos | .naf | Single file |
| Hamamatsu HIS | .his | Single file |
| Hamamatsu NDPI | .ndpi | Single file |
| Hamamatsu NDPIS | .ndpis | One .ndpis file and at least one .ndpi file |
| Hamamatsu VMS | .vms | One .vms file plus several .jpg files |
| Hitachi | .txt | One .txt file plus one similarly-named .tif, .bmp, or .jpg file |
| I2I | .i2i | Single file |
| IMAGIC | .hed, .img | One .hed file plus one similarly-named .img file |
| IMOD | .mod | Single file |
| INR | .inr | Single file |
| IPLab | .ipl | Single file |
| IVision | .ipm | Single file |
| Imacon | .fff | Single file |
| Image Cytometry Standard | .ics, .ids | One .ics and possibly one .ids with a similar name |
| Image-Pro Sequence | .seq | Single file |
| Image-Pro Workspace | .ipw | Single file |
| Improvision TIFF | .tif, .tiff | Single file |
| InCell 1000/2000 | .xdce, .xml, .tiff, .tif, .xlog | One .xdce file with at least one .tif/.tiff or .im file |
| InCell 3000 | .frm | Single file |
| Inveon | .hdr | One .hdr file plus one similarly-named file |
| JEOL | .dat, .img, .par | A single .dat file or an .img file with a similarly-named .par file |
| JPEG | .jpg, .jpeg, .jpe | Single file |
| JPEG-2000 | .jp2, .j2k, .jpf | Single file |
| JPK Instruments | .jpk | Single file |
| JPX | .jpx | Single file |
| Khoros XV | .xv | Single file |
| Kodak Molecular Imaging | .bip | Single file |
| LEO | .sxm, .tif, .tiff | Single file |
| LI-FLIM | .fli | Single file |
| Laboratory Imaging | .lim | Single file |
| Lavision Imspector | .msr | Single file |
| Leica | .lei, .tif, .tiff, .raw | One .lei file with at least one .tif/.tiff file and an optional .txt file |
| Leica Image File Format | .lif | Single file |
| Leica SCN | .scn | Single file |
| Leica TCS TIFF | .tif, .tiff, .xml | Single file |

Continued on next page

Table 16.1 – continued from previous page

| Format name | File to choose | Structure of files |
|---|---|---|
| Li-Cor L2D | .l2d, .scn, .tif | One .l2d file with one or more directories containing .tif/.tiff files |
| MIAS | .tif, .tiff, .txt | One directory per plate containing one directory per well, each with one or more .tif/.tiff files |
| MINC MRI | .mnc | Single file |
| Medical Research Council | .mrc, .st, .ali, .map, .rec, .mrcs | Single file |
| Metamorph STK | .stk, .nd, .tif, .tiff | One or more .stk or .tif/.tiff files plus an optional .nd file |
| Metamorph TIFF | .tif, .tiff | One or more .tif/.tiff files |
| Micro-Manager | .tif, .tiff, .txt, .xml | A file ending in 'metadata.txt' plus one or more .tif files |
| Minolta MRW | .mrw | Single file |
| Molecular Imaging | .stp | Single file |
| Multiple-image Network Graphics | .mng | Single file |
| NIfTI | .nii, .img, .hdr, .nii.gz | A single .nii file or a single .nii.gz file or one .img file and a similarly-named .hdr file |
| NOAA-HRD Gridded Data Format | (no extension) | Single file |
| NRRD | .nrrd, .nhdr | A single .nrrd file or one .nhdr file and one other file containing the pixels |
| Nikon Elements TIFF | .tif, .tiff | Single file |
| Nikon ND2 | .nd2 | Single file |
| Nikon NEF | .nef, .tif, .tiff | Single file |
| Nikon TIFF | .tif, .tiff | Single file |
| OBF | .obf, .msr | OBF file |
| OME-TIFF | .ome.tif, .ome.tiff, .companion.ome | One or more .ome.tiff files |
| OME-XML | .ome, .ome.xml | Single file |
| Olympus APL | .apl, .tnb, .mtb, .tif | One .apl file, one .mtb file, one .tnb file, and a directory containing one or more .tif files |
| Olympus FV1000 | .oib, .oif, .pty, .lut | Single .oib file or one .oif file and a similarly-named directory containing .tif/.tiff files |
| Olympus Fluoview/ABD TIFF | .tif, .tiff | One or more .tif/.tiff files, and an optional .txt file |
| Olympus SIS TIFF | .tif, .tiff | Single file |
| Olympus ScanR | .dat, .xml, .tif | One .xml file, one 'data' directory containing .tif/.tiff files, and optionally two .dat files |
| Olympus Slidebook | .sld, .spl | Single file |
| Openlab LIFF | .liff | Single file |
| Openlab RAW | .raw | Single file |
| Oxford Instruments | .top | Single file |
| PCO-RAW | .pcoraw, .rec | A single .pcoraw file with a similarly-named .rec file |
| PCX | .pcx | Single file |
| PICT | .pict, .pct | Single file |
| POV-Ray | .df3 | Single file |
| Perkin Elmer Densitometer | .hdr, .img | One .hdr file and a similarly-named .img file |
| Perkin-Elmer Nuance IM3 | .im3 | Single file |
| PerkinElmer | .ano, .cfg, .csv, .htm, .rec, .tim, .zpo, .tif | One .htm file, several other metadata files (.tim, .ano, .csv, …) and either .tif files or .2, .3, .4, etc. files |
| PerkinElmer Operetta | .tif, .tiff, .xml | Directory with XML file and one .tif/.tiff file per plane |
| PicoQuant Bin | .bin | Single file |
| Portable Any Map | .pbm, .pgm, .ppm | Single file |
| Prairie TIFF | .tif, .tiff, .cfg, .env, .xml | One .xml file, one .cfg file, and one or more .tif/.tiff files |
| Princeton Instruments SPE | .spe | Single file |
| Pyramid TIFF | .tif, .tiff | Single file |
| Quesant AFM | .afm | Single file |
| QuickTime | .mov | Single file |

Continued on next page

Table 16.1 – continued from previous page

| Format name | File to choose | Structure of files |
|---|---|---|
| RHK Technologies | .sm2, .sm3 | Single file |
| SBIG | (no extension) | Single file |
| SM Camera | (no extension) | Single file |
| SPC FIFO Data | .spc, .set | One .spc file and similarly named .set file |
| SPCImage Data | .sdt | Single file |
| SPIDER | .spi | Single file |
| Seiko | .xqd, .xqf | Single file |
| SimplePCI TIFF | .tif, .tiff | Single file |
| Simulated data | .fake | Single file |
| Slidebook TIFF | .tif, .tiff | Single file |
| Tagged Image File Format | .tif, .tiff, .tf2, .tf8, .btf | Single file |
| Text | .txt, .csv | Single file |
| TillVision | .vws, .pst, .inf | One .vws file and possibly one similarly-named directory |
| TopoMetrix | .tfr, .ffr, .zfr, .zfp, .2fl | Single file |
| Trestle | .tif | One .tif file plus several other similarly-named files (e.g. *.FocalPlane*-, .sld, .slx, .ROI) |
| Truevision Targa | .tga | Single file |
| UBM | .pr3 | Single file |
| Unisoku STM | .hdr, .dat | One .HDR file plus one similarly-named .DAT file |
| VG SAM | .dti | Single file |
| Varian FDF | .fdf | Single file |
| Veeco | .hdf | Single file |
| Visitech XYS | .xys, .html | One .html file plus one or more .xys files |
| Volocity Library | .mvd2, .aisf, .aiix, .dat, .atsf | One .mvd2 file plus a ‘Data’ directory |
| Volocity Library Clipping | .acff | Single file |
| WA Technology TOP | .wat | Single file |
| Windows Bitmap | .bmp | Single file |
| Woolz | .wlz | Single file |
| Zeiss AxioVision TIFF | .tif, .xml | Single file |
| Zeiss CZI | .czi | Single file |
| Zeiss LMS | .lms | Single file |
| Zeiss Laser-Scanning Microscopy | .lsm, .mdb | One or more .lsm files; if multiple .lsm files are present, an .mdb file should also be present |
| Zeiss Vision Image (ZVI) | .zvi | Single file |
| Zip | .zip | Single file |

## 16.1 Flex Support

OMERO.importer supports importing analyzed Flex files from an Opera system.

Basic configuration is done via the `importer.ini`. Once the user has run the Importer once, this file will be in the following location:

- `C:\Documents and Settings\<username>\omero\importer.ini`

The user will need to modify or add the `[FlexReaderServerMaps]` section of the INI file as follows:

```
...
[FlexReaderServerMaps]
CIA-1 = \\\\hostname1\\mount;\\\\archivehost1\\mount
CIA-2 = \\\\hostname2\\mount;\\\\archivehost2\\mount
```

where the *key* of the INI file line is the value of the “Host” tag in the `.mea` measurement XML file (here: `<Host name="CIA-1">`) and the value is a semicolon-separated list of *escaped* UNC path names to the Opera workstations where the Flex files reside.

Once this resolution has been encoded in the configuration file **and** you have restarted the importer, you will be able to select the `.mea` measurement XML file from the Importer user interface as the import target.

CHAPTER

# SEVENTEEN

# SUPPORTED FORMATS

*Ratings legend and definitions*

| Format | Extensions | Pixels | Metadata | Openness | Presence | Utility | Export | BSD | Multiple Images | Pyramid |
|---|---|---|---|---|---|---|---|---|---|---|
| *3i SlideBook* | .sld | ▲ | ▼ | ▼ | ▲ | ▼ | ✗ | ✗ | ✓ | ✗ |
| *Andor Bio-Imaging Division (ABD) TIFF* | .tif | ▲ | ▲ | 🟨 | ▼ | 🟨 | ✗ | ✗ | ✓ | ✗ |
| *AIM* | .aim | 🟨 | ▲ | ▼ | ▼▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *Alicona 3D* | .al3d | ▲ | ▲ | ▲ | ▼▼ | 🟨 | ✗ | ✗ | ✗ | ✗ |
| *Amersham Biosciences Gel* | .gel | ▲ | ▲ | 🟨 | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *Amira Mesh* | .am, .amiramesh, .grey, .hx, .labels | ▲ | 🟨 | ▼ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *Amnis FlowSight* | .cif | 🟨 | ▼ | 🟨 | ▼▼ | ▼ | ✗ | ✓ | ✓ | ✗ |
| *Analyze 7.5* | .img, .hdr | ▲ | 🟨 | ▲ | 🟨 | ▼ | ✗ | ✗ | ✗ | ✗ |
| *Animated PNG* | .png | ▲ | ▲▲ | ▲▲ | 🟨 | ▼▼ | ✓ | ✓ | ✗ | ✗ |
| *Aperio AFI* | .afi, .svs | ▲ | ▲ | ▲ | 🟨 | 🟨 | ✗ | ✗ | ✓ | ✓ |
| *Aperio SVS TIFF* | .svs | ▲ | ▲ | ▲ | 🟨 | 🟨 | ✗ | ✗ | ✓ | ✓ |
| *Applied Precision CellWorX* | .htd, .pnl | ▲ | 🟨 | 🟨 | ▼ | ▼ | ✗ | ✗ | ✓ | ✗ |
| *AVI (Audio Video Interleave)* | .avi | 🟨 | ▲▲ | ▼ | ▲▲ | ▼▼ | ✓ | ✓ | ✗ | ✗ |
| *Axon Raw Format* | .arf | ▲ | ▼ | ▲ | ▼▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *BD Pathway* | .exp, .tif | ▲ | ▲ | 🟨 | ▼ | 🟨 | ✗ | ✗ | ✓ | ✗ |
| *Becker & Hickl SPC FIFO* | .spc | ▼▼ | ▼ | 🟨 | ▼▼ | ▼ | ✗ | ✗ | ✓ | ✗ |
| *Becker & Hickl SPCImage* | .sdt | ▲ | ▲ | 🟨 | ▼▼ | ▼ | ✗ | ✗ | ✓ | ✗ |
| *Bio-Rad Gel* | .1sc | 🟨 | ▼ | ▼ | ▼▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *Bio-Rad PIC* | .pic, .raw, .xml | ▲▲ | ▲ | ▲ | ▲ | ▲ | ✗ | ✗ | ✗ | ✗ |
| *Bio-Rad SCN* | .scn | ▲ | ▼ | ▼ | ▼▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *Bitplane Imaris* | .ims | ▲ | ▲ | ▲ | ▼ | ▼ | ✗ | ✗ | ✓ | ✓ |
| *Bruker MRI* | | 🟨 | ▲ | ▼ | 🟨 | ▼ | ✗ | ✗ | ✓ | ✗ |

Continued on next page

Table 17.1 – continued from previous page

| Format | Extensions | Pixels | Metadata | Openness | Presence | Utility | Export | BSD | Multiple Images | Pyramid |
|---|---|---|---|---|---|---|---|---|---|---|
| *Burleigh* | .img | ■ | ▼ | ▼ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *Canon DNG* | .cr2, .crw | ■ | ■ | ▼ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *CellH5* | .ch5 | ▲ | ■ | ⏫ | ▼ | ▲ | ✓ | ✗ | ✓ | ✗ |
| *Cellomics* | .c01, .dib | ▲ | ⏬ | ▼ | ⏬ | ⏬ | ✗ | ✗ | ✓ | ✗ |
| *cellSens VSI* | .vsi | ▼ | ■ | ▼ | ▼ | ▼ | ✗ | ✗ | ✓ | ✓ |
| *CellVoyager* | .xml, .tif | ▲ | ■ | ■ | ▼ | ■ | ✗ | ✗ | ✓ | ✗ |
| *DeltaVision* | .dv, .r3d | ⏫ | ■ | ■ | ■ | ■ | ✗ | ✗ | ✓ | ✗ |
| *DICOM* | .dcm, .dicom | ▲ | ▲ | ▲ | ■ | ▼ | ✗ | ✓ | ✓ | ✗ |
| *ECAT7* | .v | ■ | ■ | ▼ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *EPS (Encapsulated PostScript)* | .eps, .epsi, .ps | ■ | ■ | ■ | ▲ | ⏬ | ✓ | ✓ | ✗ | ✗ |
| *Evotec/PerkinElmer Opera Flex* | .flex, .mea, .res | ⏫ | ▲ | ⏬ | ⏬ | ⏬ | ✗ | ✗ | ✓ | ✗ |
| *FEI* | .img | ▼ | ⏬ | ⏬ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *FEI TIFF* | .tiff | ▲ | ■ | ■ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *FITS (Flexible Image Transport System)* | .fits | ▲ | ▼ | ▲ | ■ | ▼ | ✗ | ✓ | ✗ | ✗ |
| *Gatan Digital Micrograph* | .dm3, .dm4 | ▲ | ■ | ▼ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *Gatan Digital Micrograph 2* | .dm2 | ■ | ▼ | ▼ | ▼ | ■ | ✗ | ✗ | ✗ | ✗ |
| *GIF (Graphics Interchange Format)* | .gif | ▲ | ▲ | ▼ | ⏫ | ⏬ | ✗ | ✓ | ✗ | ✗ |
| *Hamamatsu Aquacosmos NAF* | .naf | ■ | ▼ | ⏬ | ▼ | ▼ | ✗ | ✗ | ✓ | ✗ |
| *Hamamatsu HIS* | .his | ■ | ▼ | ▼ | ▼ | ▼ | ✗ | ✗ | ✓ | ✗ |
| *Hamamatsu ndpi* | .ndpi, .ndpis | ▼ | ■ | ■ | ▼ | ▼ | ✗ | ✗ | ✓ | ✓ |
| *Hamamatsu VMS* | .vms | ■ | ■ | ▼ | ▼ | ▼ | ✗ | ✗ | ✓ | ✗ |
| *Hitachi S-4800* | .txt, .tif, .bmp, .jpg | ▲ | ▲ | ▲ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *I2I* | .i2i | ▲ | ■ | ▲ | ⏬ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *ICS (Image Cytometry Standard)* | .ics, .ids | ⏫ | ▲ | ⏫ | ▲ | ▲ | ✓ | ✓ | ✗ | ✗ |
| *Imacon* | .fff | ⏬ | ■ | ▼ | ⏬ | ■ | ✗ | ✗ | ✓ | ✗ |
| *ImagePro Sequence* | .seq | ▲ | ▲ | ▼ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *ImagePro Workspace* | .ipw | ▲ | ▲ | ⏬ | ⏬ | ⏬ | ✗ | ✗ | ✗ | ✗ |
| *IMAGIC* | .hed, .img | ▲ | ▲ | ▲ | ■ | ■ | ✗ | ✗ | ✗ | ✗ |
| *IMOD* | .mod | ■ | ■ | ⏫ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *Improvision Openlab LIFF* | .liff | ▲ | ■ | ▲ | ■ | ▼ | ✗ | ✗ | ✓ | ✗ |
| *Improvision Openlab Raw* | .raw | ⏫ | ▲ | ▲ | ⏬ | ▼ | ✗ | ✗ | ✗ | ✗ |

Continued on next page

Table 17.1 – continued from previous page

| Format | Extensions | Pixels | Metadata | Openness | Presence | Utility | Export | BSD | Multiple Images | Pyramid |
|---|---|---|---|---|---|---|---|---|---|---|
| *Improvision TIFF* | .tif | ▲ | ⏫ | ▲ | ▼ | ■ | ✗ | ✗ | ✗ | ✗ |
| *Imspector OBF* | .obf, .msr | ▲ | ■ | ▲ | ⏬ | ▼ | ✗ | ✓ | ✓ | ✗ |
| *InCell 1000/2000* | .xdce, .tif | ▲ | ▲ | ■ | ▼ | ■ | ✗ | ✗ | ✓ | ✗ |
| *InCell 3000* | .frm | ■ | ▼ | ▼ | ▼ | ⏬ | ✗ | ✗ | ✗ | ✗ |
| *INR* | .inr | ▲ | ■ | ▼ | ⏬ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *Inveon* | .hdr | ▲ | ▲ | ■ | ⏬ | ▼ | ✗ | ✗ | ✓ | ✗ |
| *IPLab* | .ipl | ⏫ | ▲ | ▲ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *IVision* | .ipm | ▲ | ■ | ▲ | ⏬ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *JEOL* | .dat, .img, .par | ■ | ▼ | ▼ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *JPEG* | .jpg | ▲ | ▼ | ⏫ | ⏫ | ⏬ | ✓ | ✓ | ✗ | ✗ |
| *JPEG 2000* | .jp2 | ▲ | ⏬ | ⏫ | ■ | ⏬ | ✓ | ✓ | ✓ | ✓ |
| *JPK* | .jpk | ■ | ▼ | ▼ | ▼ | ▼ | ✗ | ✗ | ✓ | ✗ |
| *JPX* | .jpx | ▲ | ▲ | ⏫ | ■ | ▼ | ✗ | ✗ | ✓ | ✗ |
| *Khoros VIFF (Visualization Image File Format) Bitmap* | .xv | ■ | ▼ | ⏬ | ⏬ | ⏬ | ✗ | ✗ | ✗ | ✗ |
| *Kodak BIP* | .bip | ▲ | ■ | ▼ | ⏬ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *Lambert Instruments FLIM* | .fli | ▲ | ▲ | ▲ | ▼ | ■ | ✗ | ✗ | ✓ | ✗ |
| *LaVision Imspector* | .msr | ▼ | ▼ | ⏬ | ⏬ | ▼ | ✗ | ✗ | ✓ | ✗ |
| *Leica LCS LEI* | .lei, .tif | ⏫ | ▲ | ▲ | ▲ | ▲ | ✗ | ✗ | ✓ | ✗ |
| *Leica LAS AF LIF (Leica Image File Format)* | .lif | ⏫ | ▲ | ▲ | ■ | ▲ | ✗ | ✗ | ✓ | ✗ |
| *Leica SCN* | .scn | ■ | ■ | ■ | ▼ | ■ | ✗ | ✗ | ✓ | ✓ |
| *LEO* | .sxm | ■ | ▼ | ■ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *Li-Cor L2D* | .l2d, .tif, .scn | ▲ | ▼ | ■ | ■ | ■ | ✗ | ✗ | ✓ | ✗ |
| *LIM (Laboratory Imaging/Nikon)* | .lim | ■ | ⏬ | ⏬ | ⏬ | ⏬ | ✗ | ✗ | ✗ | ✗ |
| *MetaMorph 7.5 TIFF* | .tiff | ▲ | ▲ | ▲ | ▼ | ■ | ✗ | ✗ | ✓ | ✗ |
| *MetaMorph Stack (STK)* | .stk, .nd | ▲ | ▲ | ▲ | ▲ | ■ | ✗ | ✗ | ✗ | ✗ |
| *MIAS (Maia Scientific)* | .tif | ▲ | ⏬ | ▼ | ⏬ | ⏬ | ✗ | ✗ | ✓ | ✗ |
| *Micro-Manager* | .tif, .txt, .xml | ⏫ | ▲ | ⏫ | ▼ | ■ | ✗ | ✓ | ✓ | ✗ |
| *MINC MRI* | .mnc | ▲ | ■ | ■ | ■ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *Minolta MRW* | .mrw | ▲ | ■ | ▼ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *MNG (Multiple-image Network Graphics)* | .mng | ■ | ■ | ⏫ | ▼ | ⏬ | ✗ | ✓ | ✓ | ✗ |
| *Molecular Imaging* | .stp | ■ | ▼ | ▼ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *MRC (Medical Research Council)* | .mrc | ⏫ | ▲ | ▲ | ■ | ■ | ✗ | ✗ | ✗ | ✗ |

Continued on next page

Table 17.1 – continued from previous page

| Format | Extensions | Pixels | Metadata | Openness | Presence | Utility | Export | BSD | Multiple Images | Pyramid |
|---|---|---|---|---|---|---|---|---|---|---|
| *NEF (Nikon Electronic Format)* | .nef, .tif | ▲ | ▲ | ⏬ | ⏬ | ⏬ | ✗ | ✗ | ✗ | ✗ |
| *NIfTI* | .img, .hdr, .nii, .nii.gz | ▲ | ■ | ▲ | ■ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *Nikon Elements TIFF* | .tiff | ■ | ■ | ▼ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *Nikon EZ-C1 TIFF* | .tiff | ▲ | ▲ | ■ | ⏬ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *Nikon NIS-Elements ND2* | .nd2 | ▲ | ▲ | ▼ | ▲ | ▲ | ✗ | ✗ | ✓ | ✗ |
| *NRRD (Nearly Raw Raster Data)* | .nrrd, .nhdr, .raw, .txt | ▲ | ▲ | ⏫ | ▼ | ▲ | ✗ | ✓ | ✗ | ✗ |
| *Olympus CellR/APL* | .apl, .mtb, .tnb, .tif, .obsep | ▲ | ▼ | ▼ | ⏬ | ▼ | ✗ | ✗ | ✓ | ✗ |
| *Olympus FluoView FV1000* | .oib, .oif | ▲ | ▲ | ■ | ■ | ▲ | ✗ | ✗ | ✓ | ✗ |
| *Olympus FluoView TIFF* | .tif | ▲ | ▲ | ▲ | ■ | ■ | ✗ | ✗ | ✓ | ✗ |
| *Olympus ScanR* | .xml, .dat, .tif | ▲ | ■ | ■ | ⏬ | ▼ | ✗ | ✗ | ✓ | ✗ |
| *Olympus SIS TIFF* | .tiff | ■ | ■ | ■ | ▼ | ■ | ✗ | ✗ | ✗ | ✗ |
| *OME-TIFF* | .ome.tiff[1] | ⏫ | ⏫ | ⏫ | ▼ | ⏫ | ✓ | ✓ | ✓ | ✗ |
| *OME-XML* | .ome, .ome.xml[2] | ⏫ | ⏫ | ⏫ | ▼ | ⏫ | ✓ | ✓ | ✓ | ✗ |
| *Oxford Instruments* | .top | ■ | ▼ | ▼ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *PCORAW* | .pcoraw, .rec | ▲ | ■ | ▲ | ▼ | ■ | ✗ | ✗ | ✗ | ✗ |
| *PCX (PC Paintbrush)* | .pcx | ▲ | ⏬ | ▼ | ⏬ | ▼ | ✗ | ✓ | ✗ | ✗ |
| *Perkin Elmer Densitometer* | .pds | ■ | ■ | ■ | ⏬ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *PerkinElmer Nuance* | .im3 | ■ | ▼ | ⏬ | ⏬ | ▼ | ✗ | ✓ | ✓ | ✗ |
| *PerkinElmer Operetta* | .tiff, .xml | ▲ | ■ | ■ | ▼ | ■ | ✗ | ✗ | ✓ | ✗ |
| *PerkinElmer UltraVIEW* | .tif, .2, .3, .4, etc. | ▲ | ■ | ▼ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *Portable Any Map* | .pbm, .pgm, .ppm | ▲ | ■ | ⏫ | ■ | ⏬ | ✗ | ✓ | ✗ | ✗ |
| *Adobe Photoshop PSD* | .psd | ■ | ■ | ■ | ■ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *Photoshop TIFF* | .tif, .tiff | ■ | ■ | ■ | ■ | ■ | ✗ | ✗ | ✓ | ✗ |
| *PicoQuant Bin* | .bin | ■ | ▼ | ▼ | ▼ | ⏬ | ✗ | ✗ | ✗ | ✗ |
| *PICT (Macintosh Picture)* | .pict | ▲ | ▼ | ▼ | ▲ | ⏬ | ✗ | ✓ | ✗ | ✗ |

Continued on next page

---

[1] http://www.openmicroscopy.org/site/support/ome-model/ome-tiff/index.html

[2] http://www.openmicroscopy.org/site/support/ome-model/ome-xml/index.html

Table 17.1 – continued from previous page

| Format | Extensions | Pixels | Metadata | Openness | Presence | Utility | Export | BSD | Multiple Images | Pyramid |
|---|---|---|---|---|---|---|---|---|---|---|
| *PNG (Portable Network Graphics)* | .png | ▲ | ■ | ⬆ | ⬆ | ⬇ | ✓ | ✓ | ✗ | ✗ |
| *Prairie Technologies TIFF* | .tif, .xml, .cfg | ▲ | ■ | ■ | ▼ | ■ | ✗ | ✗ | ✓ | ✗ |
| *Princeton Instruments SPE* | .spe | ■ | ▲ | ▲ | ▼ | ■ | ✗ | ✗ | ✓ | ✗ |
| *Quesant* | .afm | ■ | ▼ | ▼ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *QuickTime Movie* | .mov | ■ | ▲ | ▼ | ⬆ | ⬇ | ✓ | ✓ | ✗ | ✗ |
| *RHK* | .sm2, .sm3 | ■ | ▼ | ▼ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *SBIG* | | ▲ | ■ | ▲ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *Seiko* | .xqd, .xqf | ■ | ▼ | ▼ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *SimplePCI & HCImage* | .cxd | ⬆ | ■ | ▲ | ⬇ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *SimplePCI & HCImage TIFF* | .tiff | ▲ | ■ | ▲ | ▼ | ■ | ✗ | ✗ | ✗ | ✗ |
| *SM Camera* | | ■ | ▼ | ▼ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *SPIDER* | .spi, .stk | ▲ | ▲ | ⬆ | ■ | ■ | ✗ | ✗ | ✗ | ✗ |
| *Targa* | .tga | ▲ | ▲ | ▲ | ■ | ⬇ | ✗ | ✗ | ✗ | ✗ |
| *Text* | .txt | ■ | ⬇ | ▼ | ▼ | ⬇ | ✗ | ✓ | ✗ | ✗ |
| *TIFF (Tagged Image File Format)* | .tif | ▲ | ▲ | ⬆ | ⬆ | ▼ | ✓ | ✓ | ✓ | ✓ |
| *TillPhotonics TillVision* | .vws | ■ | ▼ | ⬇ | ⬇ | ▼ | ✗ | ✗ | ✓ | ✗ |
| *Topometrix* | .tfr, .ffr, .zfr, .zfp, .2fl | ■ | ▼ | ▼ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *Trestle* | .tif, .sld, .jpg | ■ | ■ | ■ | ▼ | ▼ | ✗ | ✗ | ✓ | ✓ |
| *UBM* | .pr3 | ■ | ▼ | ▼ | ⬇ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *Unisoku* | .dat, .hdr | ■ | ▼ | ▼ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *Varian FDF* | .fdf | ■ | ▼ | ▼ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *Veeco AFM* | .hdf | ■ | ▼ | ▲ | ▼ | ■ | ✗ | ✗ | ✗ | ✗ |
| *VG SAM* | .dti | ■ | ▼ | ▼ | ⬇ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *VisiTech XYS* | .xys, .html | ▲ | ■ | ▼ | ⬇ | ■ | ✗ | ✗ | ✓ | ✗ |
| *Volocity* | .mvd2 | ■ | ■ | ▼ | ⬇ | ▼ | ✗ | ✗ | ✓ | ✗ |
| *Volocity Library Clipping* | .acff | ■ | ■ | ▼ | ⬇ | ⬇ | ✗ | ✗ | ✗ | ✗ |
| *WA-TOP* | .wat | ■ | ▼ | ▼ | ▼ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *Windows Bitmap* | .bmp | ▲ | ⬆ | ▼ | ⬆ | ⬇ | ✗ | ✓ | ✗ | ✗ |
| *Woolz* | .wlz | ▲ | ▼ | ▲ | ⬇ | ▼ | ✓ | ✗ | ✗ | ✗ |
| *Zeiss Axio CSM* | .lms | ■ | ⬇ | ⬇ | ⬇ | ▼ | ✗ | ✗ | ✗ | ✗ |
| *Zeiss AxioVision TIFF* | .xml, .tiff | ▲ | ▲ | ■ | ▼ | ▼ | ✗ | ✗ | ✓ | ✗ |
| *Zeiss AxioVision ZVI (Zeiss Vision Image)* | .zvi | ⬆ | ▲ | ▲ | ■ | ■ | ✗ | ✗ | ✗ | ✗ |

Continued on next page

Table 17.1 – continued from previous page

| Format | Extensions | Pixels | Metadata | Openness | Presence | Utility | Export | BSD | Multiple Images | Pyramid |
|---|---|---|---|---|---|---|---|---|---|---|
| *Zeiss CZI* | .czi[3] | ⬆ | ⬆ | ▲ | ▼ | 🟨 | ✖ | ✖ | ✓ | ✓ |
| *Zeiss LSM (Laser Scanning Microscope) 510/710* | .lsm, .mdb | ⬆ | ▲ | 🟨 | ▲ | 🟨 | ✖ | ✖ | ✓ | ✖ |

Bio-Formats currently supports **144** formats

**Ratings legend and definitions**

| | |
|---|---|
| ⬆ | Outstanding |
| ▲ | Very good |
| 🟨 | Good |
| ▼ | Fair |
| ⬇ | Poor |

**Pixels** Our estimation of Bio-Formats' ability to reliably extract complete and accurate pixel values from files in that format. The better this score, the more confident we are that Bio-Formats will successfully read your file without displaying an error message or displaying an erroneous image.

**Metadata** Our certainty in the thoroughness and correctness of Bio-Formats' metadata extraction and conversion from files of that format into standard OME-XML. The better this score, the more confident we are that all meaningful metadata will be parsed and populated as OME-XML.

**Openness** This is not a direct expression of Bio-Formats' performance, but rather indicates the level of cooperation the format's controlling interest has demonstrated toward the scientific community with respect to the format. The better this score, the more tools (specification documents, source code, sample files, etc.) have been made available.

**Presence** This is also not directly related to Bio-Formats, but instead represents our understanding of the format's popularity, and is also as a measure of compatibility between applications. The better this score, the more common the format and the more software packages include support for it.

**Utility** Our opinion of the format's suitability for storing metadata-rich microscopy image data. The better this score, the wider the variety of information that can be effectively stored in the format.

**Export** This indicates whether Bio-Formats is capable of writing the format (Bio-Formats can read every format on this list).

**BSD** This indicates whether format is BSD-licensed. By default, format readers and writers are GPL-licensed.

**Multiple Images** This indicates whether the format can store multiple Images (in OME-XML terminology) or series (in Bio-Formats API terminology).

**Pyramid** This indicates whether the format can store a single image at multiple resolutions, typically referred to as an image pyramid.

## 17.1 3i SlideBook

Extensions: .sld

Developer: Intelligent Imaging Innovations[4]

Owner: Intelligent Imaging Innovations[5]

**Support**

---

[3] http://www.zeiss.com/czi

[4] http://www.intelligent-imaging.com/

[5] http://www.intelligent-imaging.com/

BSD-licensed: ✗

Export: ✗

Officially Supported Versions: 4.1, 4.2, 5.0, 5.5, 6.0

Reader: SlidebookReader (Source Code[6], *Supported Metadata Fields*)

We currently have:

- Numerous SlideBook datasets

We would like to have:

- A SlideBook specification document
- More SlideBook datasets (preferably acquired with the most recent SlideBook software)

**Ratings**

Pixels: ▲

Metadata: ▼

Openness: ▼

Presence: ▲

Utility: ▼

**Additional Information**

We strongly encourage users to export their .sld files to OME-TIFF using the SlideBook software. Bio-Formats is not likely to support the full range of metadata that is included in .sld files, and so exporting to OME-TIFF from SlideBook is the best way to ensure that all metadata is preserved. Free software from 3i can export the files to OME-TIFF post-acquisition, see https://www.slidebook.com/reader.php.

3i also develops a native SlideBook reader which works with Bio-Formats. See http://www.openmicroscopy.org/info/slidebook for details.

**See also:**

Slidebook software overview[7]

## 17.2 Andor Bio-Imaging Division (ABD) TIFF

Extensions: .tif

Developer: Andor Bioimaging Department

Owner: Andor Technology[8]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: FluoviewReader (Source Code[9], *Supported Metadata Fields*)

We currently have:

- an ABD-TIFF specification document (from 2005 November, in PDF)
- a few ABD-TIFF datasets

---

[6] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/SlidebookReader.java

[7] https://www.slidebook.com

[8] http://www.andor.com/

[9] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/FluoviewReader.java

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: 🟨

Presence: ▼

Utility: 🟨

**Additional Information**

**Please note that while we have specification documents for this format, we are not able to distribute them to third parties.**

With a few minor exceptions, the ABD-TIFF format is identical to the Fluoview TIFF format.

## 17.3 AIM

Extensions: .aim

Developer: SCANCO Medical AG[10]

**Support**

BSD-licensed: ❌

Export: ❌

Officially Supported Versions:

Reader: AIMReader (Source Code[11], *Supported Metadata Fields*)

We currently have:

- one .aim file

We would like to have:

- an .aim specification document
- more .aim files

**Ratings**

Pixels: 🟨

Metadata: ▲

Openness: ▼

Presence: ⬇

Utility: ▼

## 17.4 Alicona 3D

Extensions: .al3d

Owner: Alicona Imaging[12]

**Support**

---

[10] http://www.scanco.ch

[11] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/AIMReader.java

[12] http://www.alicona.com/

BSD-licensed: ✗

Export: ✗

Officially Supported Versions: 1.0

Reader: AliconaReader (Source Code[13], *Supported Metadata Fields*)

We currently have:

- an AL3D specification document (v1.0, from 2003, in PDF)
- a few AL3D datasets

We would like to have:

- more AL3D datasets (Z series, T series, 16-bit)

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: ▲

Presence: ▼

Utility: 🟨

**Additional Information**

Known deficiencies:

- Support for 16-bit AL3D images is present, but has never been tested.
- Texture data is currently ignored.

## 17.5 Amersham Biosciences Gel

Extensions: .gel

Developer: Molecular Dynamics

Owner: GE Healthcare Life Sciences[14]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: GelReader (Source Code[15], *Supported Metadata Fields*)

We currently have:

- a GEL specification document (Revision 2, from 2001 Mar 15, in PDF)
- a few GEL datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▲

---

[13] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/AliconaReader.java

[14] http://www.gelifesciences.com/

[15] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/GelReader.java

Openness: 🟨

Presence: ▼

Utility: ▼

**Additional Information**

**Please note that while we have specification documents for this format, we are not able to distribute them to third parties.**

**See also:**

GEL Technical Overview[16]

## 17.6 Amira Mesh

Extensions: .am, .amiramesh, .grey, .hx, .labels

Developer: Visage Imaging[17]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: AmiraReader (Source Code[18], *Supported Metadata Fields*)

We currently have:

- a few Amira Mesh datasets

We would like to have:

- more Amira Mesh datasets

**Ratings**

Pixels: ▲

Metadata: 🟨

Openness: ▼

Presence: ▼

Utility: ▼

## 17.7 Amnis FlowSight

Extensions: .cif

Owner: Amnis[19]

**Support**

BSD-licensed: ✓

Export: ✗

Officially Supported Versions:

Reader: FlowSightReader (Source Code[20], *Supported Metadata Fields*)

---

[16] http://www.awaresystems.be/imaging/tiff/tifftags/docs/gel.html

[17] http://www.amiravis.com/

[18] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/AmiraReader.java

[19] http://www.amnis.com/

[20] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/FlowSightReader.java

We currently have:

- a few sample datasets

We would like to have:

**Ratings**

Pixels: 🟨

Metadata: ▼

Openness: 🟨

Presence: ⏬

Utility: ▼

## 17.8 Analyze 7.5

Extensions: .img, .hdr

Developer: Mayo Foundation Biomedical Imaging Resource[21]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: AnalyzeReader (Source Code[22], *Supported Metadata Fields*)

We currently have:

- an Analyze 7.5 specification document[23]
- several Analyze 7.5 datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: 🟨

Openness: ▲

Presence: 🟨

Utility: ▼

## 17.9 Animated PNG

Extensions: .png

Developer: The Animated PNG Project[24]

**Support**

BSD-licensed: ✓

Export: ✓

---

[21] http://www.mayo.edu/bir

[22] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/AnalyzeReader.java

[23] http://web.archive.org/web/20070927191351/http://www.mayo.edu/bir/PDF/ANALYZE75.pdf

[24] http://www.animatedpng.com/

Officially Supported Versions:

Reader: APNGReader (Source Code[25], *Supported Metadata Fields*)

Writer: APNGWriter (Source Code[26])

Freely Available Software:

- Firefox 3+[27]
- Opera 9.5+[28]
- KSquirrel[29]

We currently have:

- a specification document[30]
- several APNG files

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ⬆

Openness: ⬆

Presence: 🟨

Utility: ⬇

## 17.10 Aperio AFI

Extensions: .afi, .svs

Owner: Aperio[31]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: AFIReader (Source Code[32], *Supported Metadata Fields*)

We currently have:

- several AFI datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: ▲

Presence: 🟨

---

[25] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/APNGReader.java

[26] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/out/APNGWriter.java

[27] http://www.mozilla.com/firefox

[28] http://www.opera.com/download

[29] http://ksquirrel.sourceforge.net/download.php

[30] http://wiki.mozilla.org/APNG_Specification

[31] http://www.aperio.com/

[32] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/AFIReader.java

Utility: 🟨

**Additional Information**

**See also:**

Aperio ImageScope[33]

## 17.11 Aperio SVS TIFF

Extensions: .svs

Owner: Aperio[34]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions: 8.0, 8.2, 9.0

Reader: SVSReader (Source Code[35], *Supported Metadata Fields*)

We currently have:

- many SVS datasets
- public sample images[36]
- an SVS specification document
- the ability to generate additional SVS datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: ▲

Presence: 🟨

Utility: 🟨

**Additional Information**

**Please note that while we have specification documents for this format, we are not able to distribute them to third parties.**

**See also:**

Aperio ImageScope[37]

## 17.12 Applied Precision CellWorX

Extensions: .htd, .pnl

Developer: Applied Precision[38]

**Support**

---

[33] http://www.leicabiosystems.com/index.php?id=8991

[34] http://www.aperio.com/

[35] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/SVSReader.java

[36] http://downloads.openmicroscopy.org/images/SVS/

[37] http://www.leicabiosystems.com/index.php?id=8991

[38] http://www.api.com

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: CellWorxReader (Source Code[39], *Supported Metadata Fields*)

We currently have:

- a few CellWorX datasets

We would like to have:

- a CellWorX specification document
- more CellWorX datasets

**Ratings**

Pixels: ▲

Metadata: □

Openness: □

Presence: ▼

Utility: ▼

## 17.13 AVI (Audio Video Interleave)

Extensions: .avi

Developer: Microsoft[40]

**Support**

BSD-licensed: ✓

Export: ✓

Officially Supported Versions:

Reader: AVIReader (Source Code[41], *Supported Metadata Fields*)

Writer: AVIWriter (Source Code[42])

Freely Available Software:

- AVI Reader plugin for ImageJ[43]
- AVI Writer plugin for ImageJ[44]

We currently have:

- several AVI datasets

We would like to have:

- more AVI datasets, including:
  - files with audio tracks and/or multiple video tracks
  - files compressed with a common unsupported codec
  - 2+ GB files

---

[39] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/CellWorxReader.java

[40] http://www.microsoft.com/

[41] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/AVIReader.java

[42] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/out/AVIWriter.java

[43] http://rsb.info.nih.gov/ij/plugins/avi-reader.html

[44] http://rsb.info.nih.gov/ij/plugins/avi.html

**Ratings**

Pixels: ■

Metadata: ⏫

Openness: ▼

Presence: ⏫

Utility: ⏬

**Additional Information**

- Bio-Formats can save image stacks as AVI (uncompressed).
- The following codecs are supported for reading:
  - Microsoft Run-Length Encoding (MSRLE)
  - Microsoft Video (MSV1)
  - Raw (uncompressed)
  - JPEG

**See also:**

AVI RIFF File Reference[45] AVI on Wikipedia[46]

## 17.14 Axon Raw Format

Extensions: .arf

Owner: INDEC BioSystems[47]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: ARFReader (Source Code[48], *Supported Metadata Fields*)

We currently have:

- one ARF dataset
- a specification document[49]

We would like to have:

- more ARF datasets

**Ratings**

Pixels: ▲

Metadata: ▼

Openness: ▲

Presence: ⏬

Utility: ▼

---

[45] http://msdn2.microsoft.com/en-us/library/ms779636.aspx

[46] http://en.wikipedia.org/wiki/Audio_Video_Interleave

[47] http://www.indecbiosystems.com/

[48] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/ARFReader.java

[49] http://www.indecbiosystems.com/imagingworkbench/ApplicationNotes/IWAppNote11-ARF_File_Format.pdf

## 17.15 BD Pathway

Extensions: .exp, .tif

Owner: BD Biosciences[50]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: BDReader (Source Code[51], *Supported Metadata Fields*)

We currently have:

- a few BD Pathway datasets

We would like to have:

- more BD Pathway datasets

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: 🟨

Presence: ▼

Utility: 🟨

## 17.16 Becker & Hickl SPC FIFO

Extensions: .spc

Owner: Becker-Hickl[52]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: SPCReader (Source Code[53], *Supported Metadata Fields*)

We currently have:

- an SPC specification document[54]
- public sample images[55]

We would like to have:

- more SPC sample files

---

[50] http://www.bdbiosciences.com

[51] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/BDReader.java

[52] http://www.becker-hickl.de/

[53] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/SPCReader.java

[54] http://www.becker-hickl.com/handbookphp.htm

[55] http://downloads.openmicroscopy.org/images/SPC-FIFO/

**Ratings**

Pixels: ⏬

Metadata: ▼

Openness: 🟨

Presence: ⏬

Utility: ▼

**Additional Information**

- Only files containing frame, line and pixel clock information are currently supported

## 17.17 Becker & Hickl SPCImage

Extensions: .sdt

Owner: Becker-Hickl[56]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: SDTReader (Source Code[57], *Supported Metadata Fields*)

We currently have:

- an SDT specification document (from 2008 April, in PDF)
- an SDT specification document (from 2006 June, in PDF)
- Becker & Hickl's SPCImage[58] software
- a large number of SDT datasets
- the ability to produce new datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: 🟨

Presence: ⏬

Utility: ▼

**Additional Information**

**Please note that while we have specification documents for this format, we are not able to distribute them to third parties.**

---

[56] http://www.becker-hickl.de/

[57] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/SDTReader.java

[58] http://www.becker-hickl.de/software/tcspc/softwaretcspcspecial.htm

## 17.18 Bio-Rad Gel

Extensions: .1sc

Owner: Bio-Rad[59]

**Support**

BSD-licensed: ✘

Export: ✘

Officially Supported Versions:

Reader: BioRadGelReader (Source Code[60], *Supported Metadata Fields*)

We currently have:

- software that can read Bio-Rad Gel files
- several Bio-Rad Gel files

We would like to have:

- a Bio-Rad Gel specification
- more Bio-Rad Gel files

**Ratings**

Pixels: 🟨

Metadata: ▼

Openness: ▼

Presence: ⏬

Utility: ▼

## 17.19 Bio-Rad PIC

Extensions: .pic, .raw, .xml

Developer: Bio-Rad

Owner: Carl Zeiss, Inc.[61]

**Support**

BSD-licensed: ✘

Export: ✘

Officially Supported Versions:

Reader: BioRadReader (Source Code[62], *Supported Metadata Fields*)

Freely Available Software:

- Bio-Rad PIC reader plugin for ImageJ[63]

We currently have:

- a PIC specification document (v4.5, in PDF)
- an older PIC specification document (v4.2, from 1996 December 16, in DOC)

---

[59] http://www.bio-rad.com

[60] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/BioRadGelReader.java

[61] http://www.zeiss.com/

[62] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/BioRadReader.java

[63] http://rsb.info.nih.gov/ij/plugins/biorad.html

- a large number of PIC datasets
- the ability to produce new datasets

We would like to have:

**Ratings**

Pixels: ⏫

Metadata: ▲

Openness: ▲

Presence: ▲

Utility: ▲

**Additional Information**

**Please note that while we have specification documents for this format, we are not able to distribute them to third parties.**

- Commercial applications that support this format include:
    - Bitplane Imaris[64]
    - SVI Huygens[65]

## 17.20 Bio-Rad SCN

Extensions: .scn

Developer: Bio-Rad

Owner: Bio-Rad[66]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: BioRadSCNReader (Source Code[67], *Supported Metadata Fields*)

We currently have:

- a few Bio-Rad .scn files

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▼

Openness: ▼

Presence: ⏬

Utility: ▼

---

[64] http://www.bitplane.com/

[65] http://svi.nl/

[66] http://www.bio-rad.com

[67] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/BioRadSCNReader.java

## 17.21 Bitplane Imaris

Extensions: .ims

Owner: Bitplane[68]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions: 2.7, 3.0, 5.5

Readers:

- ImarisHDFReader (Source Code[69], *Supported Metadata Fields*)
- ImarisTiffReader (Source Code[70], *Supported Metadata Fields*)
- ImarisReader (Source Code[71], *Supported Metadata Fields*)

We currently have:

- an Imaris (RAW) specification document[72] (from no later than 1997 November 11, in HTML)
- an Imaris 5.5 (HDF) specification document[73]
- Bitplane's bfFileReaderImaris3N code (from no later than 2005, in C++)
- several older Imaris (RAW) datasets
- one Imaris 3 (TIFF) dataset
- several Imaris 5.5 (HDF) datasets

We would like to have:

- an Imaris 3 (TIFF) specification document
- more Imaris 3 (TIFF) datasets

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: ▲

Presence: ▼

Utility: ▼

**Additional Information**

- **There are three distinct Imaris formats:**
    1. the old binary format (introduced in Imaris version 2.7)
    2. Imaris 3, a TIFF variant (introduced in Imaris version 3.0)
    3. Imaris 5.5, an HDF variant (introduced in Imaris version 5.5)

---

[68] http://www.bitplane.com/

[69] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/ImarisHDFReader.java

[70] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/ImarisTiffReader.java

[71] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/ImarisReader.java

[72] http://flash.bitplane.com/wda/interfaces/public/faqs/faqsview.cfm?inCat=0&inQuestionID=104

[73] http://open.bitplane.com/Default.aspx?tabid=268

## 17.22 Bruker MRI

Developer: Bruker[74]

**Support**

BSD-licensed: ❌

Export: ❌

Officially Supported Versions:

Reader: BrukerReader (Source Code[75], *Supported Metadata Fields*)

Freely Available Software:

- Bruker plugin for ImageJ[76]

We currently have:

- a few Bruker MRI datasets

We would like to have:

- an official specification document

**Ratings**

Pixels: 🟨

Metadata: ▲

Openness: ▼

Presence: 🟨

Utility: ▼

## 17.23 Burleigh

Extensions: .img

Owner: Burleigh Instruments

**Support**

BSD-licensed: ❌

Export: ❌

Officially Supported Versions:

Reader: BurleighReader (Source Code[77], *Supported Metadata Fields*)

We currently have:

- Pascal code that can read Burleigh files (from ImageSXM)
- a few Burleigh files

We would like to have:

- a Burleigh file format specification
- more Burleigh files

---

[74] http://www.bruker.com/

[75] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/BrukerReader.java

[76] http://rsbweb.nih.gov/ij/plugins/bruker.html

[77] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/BurleighReader.java

**Ratings**

Pixels: 🟨

Metadata: ▼

Openness: ▼

Presence: ▼

Utility: ▼

## 17.24 Canon DNG

Extensions: .cr2, .crw

Developer: Canon[78]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: DNGReader (Source Code[79], *Supported Metadata Fields*)

Freely Available Software:

- IrfanView[80]

We currently have:

- a few example datasets

We would like to have:

- an official specification document

**Ratings**

Pixels: 🟨

Metadata: 🟨

Openness: ▼

Presence: ▼

Utility: ▼

## 17.25 CellH5

Extensions: .ch5

Developer: CellH5[81]

**Support**

BSD-licensed: ✗

Export: ✓

Officially Supported Versions:

---

[78] http://canon.com

[79] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/DNGReader.java

[80] http://www.irfanview.com/

[81] http://cellh5.org/

Reader: CellH5Reader (Source Code[82], *Supported Metadata Fields*)

Writer: CellH5Writer (Source Code[83])

Freely Available Software:

- CellH5[84]

We currently have:

- a few CellH5 datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ■

Openness: ⏫

Presence: ▼

Utility: ▲

## 17.26 Cellomics

Extensions: .c01, .dib

Developer: Thermo Fisher Scientific[85]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: CellomicsReader (Source Code[86], *Supported Metadata Fields*)

We currently have:

- a few Cellomics .c01 datasets
- public .dib sample images[87]

We would like to have:

- a Cellomics .c01 specification document
- more Cellomics .c01 datasets

**Ratings**

Pixels: ▲

Metadata: ⏬

Openness: ▼

Presence: ⏬

Utility: ⏬

---

[82] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/CellH5Reader.java

[83] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/out/CellH5Writer.java

[84] http://cellh5.org/

[85] http://www.thermofisher.com/

[86] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/CellomicsReader.java

[87] http://downloads.openmicroscopy.org/images/HCS/BBBC/

## 17.27 cellSens VSI

Extensions: .vsi

Developer: Olympus[88]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: CellSensReader (Source Code[89], *Supported Metadata Fields*)

We currently have:

- a few example datasets

We would like to have:

- an official specification document

**Ratings**

Pixels: ▼

Metadata: 🟨

Openness: ▼

Presence: ▼

Utility: ▼

## 17.28 CellVoyager

Extensions: .xml, .tif

Owner: Yokogawa[90]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: CellVoyagerReader (Source Code[91], *Supported Metadata Fields*)

We currently have:

- a few example datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: 🟨

Openness: 🟨

Presence: ▼

---

[88] http://www.olympus.com/

[89] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/CellSensReader.java

[90] http://www.yokogawa.com/

[91] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/CellVoyagerReader.java

Utility: 🟨

## 17.29 DeltaVision

Extensions: .dv, .r3d

Owner: GE Healthcare (formerly Applied Precision)[92]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: DeltavisionReader (Source Code[93], *Supported Metadata Fields*)

Freely Available Software:

- DeltaVision Opener plugin for ImageJ[94]

We currently have:

- a DV specification document (v2.10 or newer, in HTML)
- numerous DV datasets
- public sample images[95]

We would like to have:

**Ratings**

Pixels: ⬆

Metadata: 🟨

Openness: 🟨

Presence: 🟨

Utility: 🟨

**Additional Information**

**Please note that while we have specification documents for this format, we are not able to distribute them to third parties.**

- The Deltavision format is based on the Medical Research Council (MRC) file format.
- Commercial applications that support DeltaVision include:
  - Bitplane Imaris[96]
  - SVI Huygens[97]
  - Image-Pro Plus[98]

---

[92] http://www.gelifesciences.com/webapp/wcs/stores/servlet/catalog/en/GELifeSciences-UK/brands/deltavision/

[93] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/DeltavisionReader.java

[94] http://rsb.info.nih.gov/ij/plugins/track/delta.html

[95] http://downloads.openmicroscopy.org/images/DV/

[96] http://www.bitplane.com/

[97] http://svi.nl/

[98] http://www.mediacy.com/

## 17.30 DICOM

Extensions: .dcm, .dicom

Developer: National Electrical Manufacturers Association[99]

**Support**

BSD-licensed: ✓

Export: ✖

Officially Supported Versions:

Reader: DicomReader (Source Code[100], *Supported Metadata Fields*)

Freely Available Software:

- OsiriX Medical Imaging Software[101]
- ezDICOM[102]
- Wikipedia's list of freeware health software[103]

Sample Datasets:

- MRI Chest from FreeVol-3D web site[104]
- Medical Image Samples from Sebastien Barre's Medical Imaging page[105]
- DICOM sample image sets from OsiriX web site[106]

We currently have:

- DICOM specification documents[107] (PS 3 - 2007, from 2006 December 28, in DOC and PDF)
- numerous DICOM datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: ▲

Presence: 🟨

Utility: ▼

**Additional Information**

- DICOM stands for "Digital Imaging and Communication in Medicine".
- Bio-Formats supports both compressed and uncompressed DICOM files.

If you have a problematic DICOM file which you cannot send us for privacy reasons, please send us the exact error message and be aware that it may take several attempts to fix the problem blind.

**See also:**

DICOM homepage[108]

---

[99] http://www.nema.org/

[100] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/DicomReader.java

[101] http://www.osirix-viewer.com/

[102] http://www.sph.sc.edu/comd/rorden/ezdicom.html

[103] http://en.wikipedia.org/wiki/List_of_freeware_health_software

[104] http://members.tripod.com/%7Eclunis_immensus/free3d/hk-40.zip

[105] http://www.barre.nom.fr/medical/samples/

[106] http://osirix-viewer.com/datasets/

[107] http://medical.nema.org/dicom/2007/

[108] http://medical.nema.org/

## 17.31 ECAT7

Extensions: .v

Developer: Siemens[109]

**Support**

BSD-licensed: ✘

Export: ✘

Officially Supported Versions:

Reader: Ecat7Reader (Source Code[110], *Supported Metadata Fields*)

We currently have:

- a few ECAT7 files

We would like to have:

- an ECAT7 specification document
- more ECAT7 files

**Ratings**

Pixels: 🟨

Metadata: 🟨

Openness: 🔻

Presence: 🔻

Utility: 🔻

## 17.32 EPS (Encapsulated PostScript)

Extensions: .eps, .epsi, .ps

Developer: Adobe[111]

**Support**

BSD-licensed: ✓

Export: ✓

Officially Supported Versions:

Reader: EPSReader (Source Code[112], *Supported Metadata Fields*)

Writer: EPSWriter (Source Code[113])

Freely Available Software:

- EPS Writer plugin for ImageJ[114]

We currently have:

- a few EPS datasets
- the ability to produce new datasets

---

[109] http://www.siemens.com

[110] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/Ecat7Reader.java

[111] http://www.adobe.com/

[112] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/EPSReader.java

[113] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/out/EPSWriter.java

[114] http://rsb.info.nih.gov/ij/plugins/eps-writer.html

We would like to have:

**Ratings**

Pixels: 🟨

Metadata: 🟨

Openness: 🟨

Presence: ▲

Utility: ⬇

**Additional Information**

- Bio-Formats can save individual planes as EPS.
- Certain types of compressed EPS files are not supported.

## 17.33 Evotec/PerkinElmer Opera Flex

Extensions: .flex, .mea, .res

Developer: Evotec Technologies, now PerkinElmer[115]

**Support**

BSD-licensed: ❌

Export: ❌

Officially Supported Versions:

Reader: FlexReader (Source Code[116], *Supported Metadata Fields*)

We currently have:

- many Flex datasets

We would like to have:

- a freely redistributable LuraWave LWF decoder

**Ratings**

Pixels: ⬆

Metadata: ▲

Openness: ⬇

Presence: ⬇

Utility: ⬇

**Additional Information**

The LuraWave LWF decoder library (i.e. lwf_jsdk2.6.jar) with license code is required to decode wavelet-compressed Flex files.

**See also:**

LuraTech (developers of the proprietary LuraWave LWF compression used for Flex image planes)[117]

---

[115] http://www.perkinelmer.com/

[116] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/FlexReader.java

[117] http://www.luratech.com/

## 17.34 FEI

Extensions: .img

Developer: FEI[118]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: FEIReader (Source Code[119], *Supported Metadata Fields*)

We currently have:

- a few FEI files

We would like to have:

- a specification document
- more FEI files

**Ratings**

Pixels: ▼

Metadata: ⏬

Openness: ⏬

Presence: ▼

Utility: ▼

## 17.35 FEI TIFF

Extensions: .tiff

Developer: FEI[120]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: FEITiffReader (Source Code[121], *Supported Metadata Fields*)

We currently have:

- a few FEI TIFF datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: 🟨

Openness: 🟨

---

[118] http://www.fei.com/

[119] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/FEIReader.java

[120] http://www.fei.com

[121] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/FEITiffReader.java

Presence: ▼

Utility: ▼

## 17.36 FITS (Flexible Image Transport System)

Extensions: .fits

Developer: National Radio Astronomy Observatory[122]

**Support**

BSD-licensed: ✓

Export: ✗

Officially Supported Versions:

Reader: FitsReader (Source Code[123], *Supported Metadata Fields*)

We currently have:

- a FITS specification document[124] (NOST 100-2.0, from 1999 March 29, in HTML)
- several FITS datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▼

Openness: ▲

Presence: 🟨

Utility: ▼

**Additional Information**

**See also:**

MAST:FITS homepage[125] FITS Support Office[126]

## 17.37 Gatan Digital Micrograph

Extensions: .dm3, .dm4

Owner: Gatan[127]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions: 3, 4

Reader: GatanReader (Source Code[128], *Supported Metadata Fields*)

Freely Available Software:

---

[122] http://www.nrao.edu/

[123] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/FitsReader.java

[124] http://archive.stsci.edu/fits/fits_standard/

[125] http://archive.stsci.edu/fits/

[126] http://fits.gsfc.nasa.gov/

[127] http://www.gatan.com/

[128] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/GatanReader.java

- DM3 Reader plugin for ImageJ[129]
- EMAN[130]

We currently have:

- Gatan's ImageReader2003 code (from 2003, in C++)
- numerous DM3 datasets

We would like to have:

- a DM3 specification document

**Ratings**

Pixels: ▲

Metadata: 🟨

Openness: ▼

Presence: ▼

Utility: ▼

**Additional Information**

Commercial applications that support .dm3 files include Datasqueeze[131].

Note that the Gatan Reader does not currently support stacks.

## 17.38 Gatan Digital Micrograph 2

Extensions: .dm2

Developer: Gatan[132]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions: 2

Reader: GatanDM2Reader (Source Code[133], *Supported Metadata Fields*)

We currently have:

- Pascal code that can read DM2 files (from ImageSXM)
- a few DM2 files

We would like to have:

- an official DM2 specification document
- more DM2 files

**Ratings**

Pixels: 🟨

Metadata: ▼

Openness: ▼

---

[129] http://rsb.info.nih.gov/ij/plugins/DM3_Reader.html

[130] http://blake.bcm.edu/EMAN/

[131] http://www.datasqueezesoftware.com/

[132] http://www.gatan.com

[133] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/GatanDM2Reader.java

Presence: ▼

Utility: 🟨

## 17.39 GIF (Graphics Interchange Format)

Extensions: .gif

Developer: CompuServe[134]

Owner: Unisys[135]

**Support**

BSD-licensed: ✓

Export: ✗

Officially Supported Versions:

Reader: GIFReader (Source Code[136], *Supported Metadata Fields*)

Freely Available Software:

- Animated GIF Reader plugin for ImageJ[137]
- GIF Stack Writer plugin for ImageJ[138]

We currently have:

- a GIF specification document[139] (Version 89a, from 1990, in HTML)
- numerous GIF datasets
- the ability to produce new datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: ▼

Presence: ⏫

Utility: ⏬

## 17.40 Hamamatsu Aquacosmos NAF

Extensions: .naf

Developer: Hamamatsu[140]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

---

[134] http://www.compuserve.com/

[135] http://www.unisys.com/

[136] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/GIFReader.java

[137] http://rsb.info.nih.gov/ij/plugins/agr.html

[138] http://rsb.info.nih.gov/ij/plugins/gif-stack-writer.html

[139] http://tronche.com/computer-graphics/gif/

[140] http://www.hamamatsu.com/

Reader: NAFReader (Source Code[141], *Supported Metadata Fields*)

We currently have:

- a few NAF files

We would like to have:

- a specification document
- more NAF files

**Ratings**

Pixels: 🟨

Metadata: ▼

Openness: ⏬

Presence: ▼

Utility: ▼

## 17.41 Hamamatsu HIS

Extensions: .his

Owner: Hamamatsu[142]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: HISReader (Source Code[143], *Supported Metadata Fields*)

We currently have:

- Pascal code that can read HIS files (from ImageSXM)
- several HIS files

We would like to have:

- an HIS specification
- more HIS files

**Ratings**

Pixels: 🟨

Metadata: ▼

Openness: ▼

Presence: ▼

Utility: ▼

---

[141] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/NAFReader.java
[142] http://www.hamamatsu.com
[143] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/HISReader.java

## 17.42 Hamamatsu ndpi

Extensions: .ndpi, .ndpis

Developer: Hamamatsu[144]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Readers:

- NDPIReader (Source Code[145], *Supported Metadata Fields*)
- NDPISReader (Source Code[146], *Supported Metadata Fields*)

Freely Available Software:

- NDP.view[147]

Sample Datasets:

- OpenSlide[148]

We currently have:

- many example datasets

We would like to have:

- an official specification document

**Ratings**

Pixels: ▼

Metadata: 🟨

Openness: 🟨

Presence: ▼

Utility: ▼

## 17.43 Hamamatsu VMS

Extensions: .vms

Developer: Hamamatsu[149]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: HamamatsuVMSReader (Source Code[150], *Supported Metadata Fields*)

Sample Datasets:

---

[144] http://www.hamamatsu.com
[145] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/NDPIReader.java
[146] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/NDPISReader.java
[147] http://www.olympusamerica.com/seg_section/seg_vm_downloads.asp
[148] http://openslide.cs.cmu.edu/download/openslide-testdata/Hamamatsu/
[149] http://www.hamamatsu.com
[150] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/HamamatsuVMSReader.java

- OpenSlide[151]

We currently have:

- a few example datasets
- developer documentation from the OpenSlide project[152]

We would like to have:

- an official specification document
- more example datasets

**Ratings**

Pixels: 🟨

Metadata: 🟨

Openness: ▼

Presence: ▼

Utility: ▼

## 17.44 Hitachi S-4800

Extensions: .txt, .tif, .bmp, .jpg

Developer: Hitachi[153]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: HitachiReader (Source Code[154], *Supported Metadata Fields*)

We currently have:

- several Hitachi S-4800 datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: ▲

Presence: ▼

Utility: ▼

---

[151] http://openslide.cs.cmu.edu/download/openslide-testdata/Hamamatsu-vms/

[152] http://openslide.org/Hamamatsu%20format/

[153] http://www.hitachi-hta.com/sites/default/files/technotes/Hitachi_4800_STEM.pdf

[154] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/HitachiReader.java

## 17.45 I2I

Extensions: .i2i

Developer: Biomedical Imaging Group, UMass Medical School[155]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: I2IReader (Source Code[156], *Supported Metadata Fields*)

We currently have:

- several example datasets
- a specification document
- an ImageJ plugin that can read I2I data

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ■

Openness: ▲

Presence: ⬇

Utility: ▼

## 17.46 ICS (Image Cytometry Standard)

Extensions: .ics, .ids

Developer: P. Dean et al.

**Support**

BSD-licensed: ✓

Export: ✓

Officially Supported Versions: 1.0, 2.0

Reader: ICSReader (Source Code[157], *Supported Metadata Fields*)

Writer: ICSWriter (Source Code[158])

Freely Available Software:

- Libics (ICS reference library)[159]
- ICS Opener plugin for ImageJ[160]
- IrfanView[161]

We currently have:

---

[155] http://invitro.umassmed.edu/

[156] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/I2IReader.java

[157] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/ICSReader.java

[158] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/out/ICSWriter.java

[159] http://libics.sourceforge.net/

[160] http://valelab.ucsf.edu/%7Enstuurman/IJplugins/Ics_Opener.html

[161] http://www.irfanview.com/

- numerous ICS datasets

We would like to have:

**Ratings**

Pixels: ⏫

Metadata: ▲

Openness: ⏫

Presence: ▲

Utility: ▲

**Additional Information**

- ICS version 1.0 datasets have two files - an .ics file that contains all of the metadata in plain-text format, and an .ids file that contains all of the pixel data.
- ICS version 2.0 datasets are a single .ics file that contains both pixels and metadata.

Commercial applications that can support ICS include:

- Bitplane Imaris[162]
- SVI Huygens[163]

## 17.47 Imacon

Extensions: .fff

Owner: Hasselblad[164]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: ImaconReader (Source Code[165], *Supported Metadata Fields*)

We currently have:

- one Imacon file

We would like to have:

- more Imacon files

**Ratings**

Pixels: ⏬

Metadata: 🟨

Openness: ▼

Presence: ⏬

Utility: 🟨

---

[162] http://www.bitplane.com/
[163] http://svi.nl/
[164] http://www.hasselbladusa.com/
[165] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/ImaconReader.java

## 17.48 ImagePro Sequence

Extensions: .seq

Owner: Media Cybernetics[166]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: SEQReader (Source Code[167], *Supported Metadata Fields*)

We currently have:

- the Image-Pro Plus[168] software
- a few SEQ datasets
- the ability to produce more datasets

We would like to have:

- an official SEQ specification document

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: ▼

Presence: ▼

Utility: ▼

## 17.49 ImagePro Workspace

Extensions: .ipw

Owner: Media Cybernetics[169]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: IPWReader (Source Code[170], *Supported Metadata Fields*)

We currently have:

- the Image-Pro Plus[171] software
- a few IPW datasets
- the ability to produce more datasets

We would like to have:

---

[166] http://www.mediacy.com/

[167] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/SEQReader.java

[168] http://www.mediacy.com/index.aspx?page=IPP

[169] http://www.mediacy.com/

[170] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/IPWReader.java

[171] http://www.mediacy.com/index.aspx?page=IPP

- an official IPW specification document
- more IPW datasets:
  - multiple datasets in one file
  - 2+ GB files

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: ⏬

Presence: ⏬

Utility: ⏬

**Additional Information**

Bio-Formats uses a modified version of the Apache Jakarta POI[172] library to read IPW files.

## 17.50 IMAGIC

Extensions: .hed, .img

Developer: Image Science[173]

**Support**

BSD-licensed: ❌

Export: ❌

Officially Supported Versions:

Reader: ImagicReader (Source Code[174], *Supported Metadata Fields*)

Freely Available Software:

- em2em[175]

We currently have:

- one example dataset
- official file format documentation

We would like to have:

- more example datasets

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: ▲

Presence: 🟨

Utility: 🟨

**Additional Information**

**See also:**

---

[172] http://jakarta.apache.org/poi/

[173] http://www.imagescience.de

[174] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/ImagicReader.java

[175] http://www.imagescience.de/em2em.html

IMAGIC specification[176]

## 17.51 IMOD

Extensions: .mod

Developer: Boulder Laboratory for 3-Dimensional Electron Microscopy of Cells[177]

Owner: Boulder Laboratory for 3-Dimensional Electron Microscopy of Cells[178]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: IMODReader (Source Code[179], *Supported Metadata Fields*)

Freely Available Software:

- IMOD[180]

We currently have:

- a few sample datasets
- official documentation[181]

We would like to have:

**Ratings**

Pixels: 🟨

Metadata: 🟨

Openness: ▲

Presence: ▼

Utility: ▼

## 17.52 Improvision Openlab LIFF

Extensions: .liff

Developer: Improvision[182]

Owner: PerkinElmer[183]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions: 2.0, 5.0

Reader: OpenlabReader (Source Code[184], *Supported Metadata Fields*)

---

[176] http://www.imagescience.de/em2em.html
[177] http://bio3d.colorado.edu
[178] http://bio3d.colorado.edu
[179] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/IMODReader.java
[180] http://bio3d.colorado.edu/imod/
[181] http://bio3d.colorado.edu/imod/doc/binspec.html
[182] http://www.perkinelmer.com/cellular-imaging
[183] http://www.perkinelmer.com/
[184] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/OpenlabReader.java

We currently have:

- an Openlab specification document (from 2000 February 8, in DOC)
- Improvision's XLIFFFileImporter code for reading Openlab LIFF v5 files (from 2006, in C++)
- several Openlab datasets

We would like to have:

- more Openlab datasets (preferably with 32-bit integer data)

**Ratings**

Pixels: ▲

Metadata: 🟨

Openness: ▲

Presence: 🟨

Utility: ▼

**Additional Information**

**Please note that while we have specification documents for this format, we are not able to distribute them to third parties.**

## 17.53 Improvision Openlab Raw

Extensions: .raw

Developer: Improvision[185]

Owner: PerkinElmer[186]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: OpenlabRawReader (Source Code[187], *Supported Metadata Fields*)

We currently have:

- an Openlab Raw specification document[188] (from 2004 November 09, in HTML)
- a few Openlab Raw datasets

We would like to have:

**Ratings**

Pixels: ⏫

Metadata: ▲

Openness: ▲

Presence: ⏬

Utility: ▼

---

[185] http://www.perkinelmer.com/cellular-imaging

[186] http://www.perkinelmer.com/

[187] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/OpenlabRawReader.java

[188] http://cellularimaging.perkinelmer.com/support/technical_notes/detail.php?id=344

## 17.54 Improvision TIFF

Extensions: .tif

Developer: Improvision[189]

Owner: PerkinElmer[190]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: ImprovisionTiffReader (Source Code[191], *Supported Metadata Fields*)

We currently have:

- an Improvision TIFF specification document
- a few Improvision TIFF datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ⏫

Openness: ▲

Presence: ▼

Utility: □

**Additional Information**

**Please note that while we have specification documents for this format, we are not able to distribute them to third parties.**

## 17.55 Imspector OBF

Extensions: .obf, .msr

Developer: Department of NanoBiophotonics, MPI-BPC[192]

Owner: MPI-BPC[193]

**Support**

BSD-licensed: ✓

Export: ✗

Officially Supported Versions:

Reader: OBFReader (Source Code[194], *Supported Metadata Fields*)

We currently have:

- a few .msr datasets
- a specification document[195]

---

[189] http://www.perkinelmer.com/cellular-imaging

[190] http://www.perkinelmer.com/

[191] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/ImprovisionTiffReader.java

[192] https://imspector.mpibpc.mpg.de/index.html

[193] http://www.mpibpc.mpg.de/

[194] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/OBFReader.java

[195] https://imspector.mpibpc.mpg.de/documentation/fileformat.html

We would like to have:

**Ratings**

Pixels: ▲

Metadata: 🟨

Openness: ▲

Presence: ⏬

Utility: ▼

## 17.56 InCell 1000/2000

Extensions: .xdce, .tif

Developer: GE[196]

**Support**

BSD-licensed: ❌

Export: ❌

Officially Supported Versions:

Reader: InCellReader (Source Code[197], *Supported Metadata Fields*)

We currently have:

- a few InCell 1000 datasets
- public InCell 2000 sample images[198]

We would like to have:

- an InCell 1000 specification document
- more InCell 1000 datasets

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: 🟨

Presence: ▼

Utility: 🟨

## 17.57 InCell 3000

Extensions: .frm

Developer: GE[199]

**Support**

BSD-licensed: ❌

Export: ❌

---

[196] http://gelifesciences.com/

[197] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/InCellReader.java

[198] http://downloads.openmicroscopy.org/images/HCS/INCELL2000/

[199] http://gelifesciences.com/

Officially Supported Versions:

Reader: InCell3000Reader (Source Code[200], *Supported Metadata Fields*)

Sample Datasets:

- Broad Bioimage Benchmark Collection[201]

We currently have:

- a few example datasets

We would like to have:

- an official specification document

**Ratings**

Pixels: 🟨

Metadata: ▼

Openness: ▼

Presence: ▼

Utility: ⏬

## 17.58 INR

Extensions: .inr

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: INRReader (Source Code[202], *Supported Metadata Fields*)

We currently have:

- several sample .inr datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: 🟨

Openness: ▼

Presence: ⏬

Utility: ▼

## 17.59 Inveon

Extensions: .hdr

**Support**

---

[200] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/InCell3000Reader.java

[201] http://www.broadinstitute.org/bbbc/BBBC013/

[202] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/INRReader.java

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: InveonReader (Source Code[203], *Supported Metadata Fields*)

We currently have:

a few Inveon datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: 🟨

Presence: ▼

Utility: ▼

## 17.60 IPLab

Extensions: .ipl

Developer: Scanalytics

Owner: was BD Biosystems[204], now BioVision Technologies[205]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: IPLabReader (Source Code[206], *Supported Metadata Fields*)

Freely Available Software:

- IPLab Reader plugin for ImageJ[207]

We currently have:

- an IPLab specification document (v3.6.5, from 2004 December 1, in PDF)
- several IPLab datasets

We would like to have:

- more IPLab datasets (preferably with 32-bit integer or floating point data)

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: ▲

Presence: ▼

---

[203] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/InveonReader.java

[204] http://www.bdbiosciences.com/

[205] http://www.biovis.com/iplab.htm

[206] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/IPLabReader.java

[207] http://rsb.info.nih.gov/ij/plugins/iplab-reader.html

Utility: ▼

**Additional Information**

**Please note that while we have specification documents for this format, we are not able to distribute them to third parties.**

Commercial applications that support IPLab include:

- Bitplane Imaris[208]
- SVI Huygens[209]

**See also:**

IPLab software review[210]

## 17.61 IVision

Extensions: .ipm

Owner: BioVision Technologies[211]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: IvisionReader (Source Code[212], *Supported Metadata Fields*)

We currently have:

- a few iVision-Mac datasets
- a specification document

We would like to have:

- more iVision-Mac datasets

**Ratings**

Pixels: ▲

Metadata: ■

Openness: ▲

Presence: ⏬

Utility: ▼

**Additional Information**

**Please note that while we have specification documents for this format, we are not able to distribute them to third parties.**

iVision-Mac was formerly called IPLab for Macintosh.

---

[208] http://www.bitplane.com/

[209] http://svi.nl/

[210] http://www.biovis.com/iplab.htm

[211] http://biovis.com/

[212] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/IvisionReader.java

## 17.62 JEOL

Extensions: .dat, .img, .par

Owner: JEOL[213]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: JEOLReader (Source Code[214], *Supported Metadata Fields*)

We currently have:

- Pascal code that reads JEOL files (from ImageSXM)
- a few JEOL files

We would like to have:

- an official specification document
- more JEOL files

**Ratings**

Pixels: 🟨

Metadata: ▼

Openness: ▼

Presence: ▼

Utility: ▼

## 17.63 JPEG

Extensions: .jpg

Developer: Independent JPEG Group[215]

**Support**

BSD-licensed: ✓

Export: ✓

Officially Supported Versions:

Reader: JPEGReader (Source Code[216], *Supported Metadata Fields*)

Writer: JPEGWriter (Source Code[217])

We currently have:

- a JPEG specification document[218] (v1.04, from 1992 September 1, in PDF)
- numerous JPEG datasets
- the ability to produce more datasets

---

[213] http://www.jeol.com

[214] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/JEOLReader.java

[215] http://www.ijg.org/

[216] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/JPEGReader.java

[217] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/out/JPEGWriter.java

[218] http://www.w3.org/Graphics/JPEG/jfif3.pdf

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▼

Openness: ⏫

Presence: ⏫

Utility: ⏬

**Additional Information**

Bio-Formats can save individual planes as JPEG. Bio-Formats uses the Java Image I/O[219] API to read and write JPEG files. JPEG stands for "Joint Photographic Experts Group".

**See also:**

JPEG homepage[220]

## 17.64 JPEG 2000

Extensions: .jp2

Developer: Independent JPEG Group[221]

**Support**

BSD-licensed: ✓

Export: ✓

Officially Supported Versions:

Reader: JPEG2000Reader (Source Code[222], *Supported Metadata Fields*)

Writer: JPEG2000Writer (Source Code[223])

Freely Available Software:

- JJ2000 (JPEG 2000 library for Java)[224]

We currently have:

- a JPEG 2000 specification document (free draft from 2000, no longer available online)
- a few .jp2 files

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ⏬

Openness: ⏫

Presence: □

Utility: ⏬

**Additional Information**

---

[219] http://docs.oracle.com/javase/7/docs/technotes/guides/imageio/
[220] http://www.jpeg.org/jpeg/index.html
[221] http://www.ijg.org/
[222] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/JPEG2000Reader.java
[223] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/out/JPEG2000Writer.java
[224] http://code.google.com/p/jj2000/

Bio-Formats uses the JAI Image I/O Tools[225] library to read JP2 files. JPEG stands for "Joint Photographic Experts Group".

## 17.65 JPK

Extensions: .jpk

Developer: JPK Instruments[226]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: JPKReader (Source Code[227], *Supported Metadata Fields*)

We currently have:

- Pascal code that can read JPK files (from ImageSXM)
- a few JPK files

We would like to have:

- an official specification document
- more JPK files

**Ratings**

Pixels: 🟨

Metadata: 🔻

Openness: 🔻

Presence: 🔻

Utility: 🔻

## 17.66 JPX

Extensions: .jpx

Developer: JPEG Committee[228]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: JPXReader (Source Code[229], *Supported Metadata Fields*)

We currently have:

- a few .jpx files

---

[225] https://java.net/projects/jai-imageio

[226] http://www.jpk.com

[227] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/JPKReader.java

[228] http://www.jpeg.org/jpeg2000/

[229] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/JPXReader.java

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: ⏫

Presence: 🟨

Utility: ▼

## 17.67 Khoros VIFF (Visualization Image File Format) Bitmap

Extensions: .xv

Developer: Khoral[230]

Owner: AccuSoft[231]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: KhorosReader (Source Code[232], *Supported Metadata Fields*)

Sample Datasets:

- VIFF Images[233]

We currently have:

- several VIFF datasets

We would like to have:

**Ratings**

Pixels: 🟨

Metadata: ▼

Openness: ⏬

Presence: ⏬

Utility: ⏬

## 17.68 Kodak BIP

Extensions: .bip

Developer: Kodak/Carestream[234]

**Support**

BSD-licensed: ✖

---

[230] http://www.khoral.com/company/

[231] http://www.accusoft.com/company/

[232] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/KhorosReader.java

[233] http://netghost.narod.ru/gff/sample/images/viff/index.htm

[234] http://carestream.com

Export: ❌

Officially Supported Versions:

Reader: KodakReader (Source Code[235], *Supported Metadata Fields*)

We currently have:

- a few .bip datasets

We would like to have:

- an official specification document

**Ratings**

Pixels: ▲

Metadata: 🟨

Openness: ▼

Presence: ⏬

Utility: ▼

**Additional Information**

**See also:**

Information on Image Station systems[236]

## 17.69 Lambert Instruments FLIM

Extensions: .fli

Developer: Lambert Instruments[237]

**Support**

BSD-licensed: ❌

Export: ❌

Officially Supported Versions:

Reader: LiFlimReader (Source Code[238], *Supported Metadata Fields*)

We currently have:

- an LI-FLIM specification document
- several example LI-FLIM datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: ▲

Presence: ▼

Utility: 🟨

**Additional Information**

---

[235] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/KodakReader.java

[236] http://carestream.com/PublicContent.aspx?langType=1033&id=448953

[237] http://www.lambert-instruments.com

[238] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/LiFlimReader.java

**Please note that while we have specification documents for this format, we are not able to distribute them to third parties.**

## 17.70 LaVision Imspector

Extensions: .msr

Developer: LaVision BioTec[239]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions: 4.0, 4.1

Reader: ImspectorReader (Source Code[240], *Supported Metadata Fields*)

We currently have:

- a few .msr files

We would like to have:

**Ratings**

Pixels: ▼

Metadata: ▼

Openness: ⏬

Presence: ⏬

Utility: ▼

## 17.71 Leica LCS LEI

Extensions: .lei, .tif

Developer: Leica Microsystems CMS GmbH[241]

Owner: Leica[242]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: LeicaReader (Source Code[243], *Supported Metadata Fields*)

Freely Available Software:

- Leica LCS Lite[244]

We currently have:

- an LEI specification document (beta 2.000, from no later than 2004 February 17, in PDF)
- many LEI datasets

---

[239] http://www.lavisionbiotec.com/

[240] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/ImspectorReader.java

[241] http://www.leica-microsystems.com/

[242] http://www.leica.com/

[243] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/LeicaReader.java

[244] ftp://ftp.llt.de/softlib/LCSLite/LCSLite2611537.exe

We would like to have:

**Ratings**

Pixels: ⬆

Metadata: ▲

Openness: ▲

Presence: ▲

Utility: ▲

**Additional Information**

**Please note that while we have specification documents for this format, we are not able to distribute them to third parties.**

LCS stands for "Leica Confocal Software". LEI presumably stands for "Leica Experimental Information".

Commercial applications that support LEI include:

- Bitplane Imaris[245]
- SVI Huygens[246]
- Image-Pro Plus[247]

## 17.72 Leica LAS AF LIF (Leica Image File Format)

Extensions: .lif

Developer: Leica Microsystems CMS GmbH[248]

Owner: Leica[249]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions: 1.0, 2.0

Reader: LIFReader (Source Code[250], *Supported Metadata Fields*)

Freely Available Software:

- Leica LAS AF Lite[251] (links at bottom of page)

We currently have:

- a LIF specification document (version 2, from no later than 2007 July 26, in PDF)
- a LIF specification document (version 1, from no later than 206 April 3, in PDF)
- numerous LIF datasets

We would like to have:

**Ratings**

Pixels: ⬆

Metadata: ▲

---

[245] http://www.bitplane.com/

[246] http://svi.nl/

[247] http://www.mediacy.com/

[248] http://www.leica-microsystems.com/

[249] http://www.leica.com/

[250] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/LIFReader.java

[251] http://www.leica-microsystems.com/products/microscope-software/software-for-life-science-research/las-x/

Openness: ▲

Presence: 🟨

Utility: ▲

**Additional Information**

**Please note that while we have specification documents for this format, we are not able to distribute them to third parties.**

LAS stands for "Leica Application Suite". AF stands for "Advanced Fluorescence".

Commercial applications that support LIF include:

- Bitplane Imaris[252]
- SVI Huygens[253]
- Amira[254]

## 17.73 Leica SCN

Extensions: .scn

Developer: Leica Microsystems[255]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions: 2012-03-10

Reader: LeicaSCNReader (Source Code[256], *Supported Metadata Fields*)

We currently have:

- a few sample datasets

We would like to have:

- an official specification document
- sample datasets that cannot be opened

**Ratings**

Pixels: 🟨

Metadata: 🟨

Openness: 🟨

Presence: ▼

Utility: 🟨

## 17.74 LEO

Extensions: .sxm

Owner: Zeiss[257]

---

[252] http://www.bitplane.com/

[253] http://svi.nl/

[254] http://www.amira.com/

[255] http://www.leica-microsystems.com/

[256] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/LeicaSCNReader.java

[257] http://www.zeiss.de

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: LEOReader (Source Code[258], *Supported Metadata Fields*)

We currently have:

- Pascal code that can read LEO files (from ImageSXM)
- a few LEO files

We would like to have:

- an official specification document
- more LEO files

**Ratings**

Pixels: 🟨

Metadata: ▼

Openness: 🟨

Presence: ▼

Utility: ▼

## 17.75 Li-Cor L2D

Extensions: .l2d, .tif, .scn

Owner: LiCor Biosciences[259]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: L2DReader (Source Code[260], *Supported Metadata Fields*)

We currently have:

- a few L2D datasets

We would like to have:

- an official specification document
- more L2D datasets

**Ratings**

Pixels: ▲

Metadata: ▼

Openness: 🟨

Presence: 🟨

---

[258] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/LEOReader.java

[259] http://www.licor.com/

[260] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/L2DReader.java

Utility: 🟨

**Additional Information**

L2D datasets cannot be imported into OME using server-side import. They can, however, be imported from ImageJ, or using the omeul utility.

## 17.76 LIM (Laboratory Imaging/Nikon)

Extensions: .lim

Owner: Laboratory Imaging[261]

**Support**

BSD-licensed: ❌

Export: ❌

Officially Supported Versions:

Reader: LIMReader (Source Code[262], *Supported Metadata Fields*)

We currently have:

- several LIM files
- the ability to produce more LIM files

We would like to have:

- an official specification document

**Ratings**

Pixels: 🟨

Metadata: ⏬

Openness: ⏬

Presence: ⏬

Utility: ⏬

**Additional Information**

Bio-Formats only supports uncompressed LIM files.

Commercial applications that support LIM include:

- NIS Elements[263]

## 17.77 MetaMorph 7.5 TIFF

Extensions: .tiff

Owner: Molecular Devices[264]

**Support**

BSD-licensed: ❌

Export: ❌

Officially Supported Versions:

---

[261] http://www.lim.cz/

[262] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/LIMReader.java

[263] http://www.nis-elements.com/

[264] http://www.moleculardevices.com/

Reader: MetamorphTiffReader (Source Code[265], *Supported Metadata Fields*)

We currently have:

- a few Metamorph 7.5 TIFF datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: ▲

Presence: ▼

Utility: 🟨

## 17.78 MetaMorph Stack (STK)

Extensions: .stk, .nd

Owner: Molecular Devices[266]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: MetamorphReader (Source Code[267], *Supported Metadata Fields*)

We currently have:

- an STK specification document (from 2006 November 21, in DOC)
- an older STK specification document (from 2005 March 25, in DOC)
- an ND specification document (from 2002 January 24, in PDF)
- a large number of datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: ▲

Presence: ▲

Utility: 🟨

**Additional Information**

**Please note that while we have specification documents for this format, we are not able to distribute them to third parties.**

Commercial applications that support STK include:

- Bitplane Imaris[268]

---

[265] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/MetamorphTiffReader.java

[266] http://www.moleculardevices.com/

[267] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/MetamorphReader.java

[268] http://www.bitplane.com/

- SVI Huygens[269]
- DIMIN[270]

**See also:**

Metamorph imaging system overview[271]

## 17.79 MIAS (Maia Scientific)

Extensions: .tif

Developer: Maia Scientific[272]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: MIASReader (Source Code[273], *Supported Metadata Fields*)

We currently have:

- several MIAS datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▼

Openness: ▼

Presence: ▼

Utility: ▼

## 17.80 Micro-Manager

Extensions: .tif, .txt, .xml

Developer: Vale Lab[274]

**Support**

BSD-licensed: ✓

Export: ✗

Officially Supported Versions:

Reader: MicromanagerReader (Source Code[275], *Supported Metadata Fields*)

Freely Available Software:

- Micro-Manager[276]

---

[269] http://svi.nl/
[270] http://dimin.net/
[271] http://www.metamorph.com/
[272] http://www.selectscience.net/supplier/maia-scientific/?compID=6088
[273] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/MIASReader.java
[274] http://valelab.ucsf.edu/
[275] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/MicromanagerReader.java
[276] http://micro-manager.org/

We currently have:

- many Micro-manager datasets
- public sample images[277]

We would like to have:

**Ratings**

Pixels: ⇑

Metadata: ▲

Openness: ⇑

Presence: ▼

Utility: □

**Additional Information**

- Bio-Formats will recognize a `*metadata.txt` file as part of a Micro-Manager fileset if pointed at it and will load the fileset including the companion TIFF files.
- If pointed at a companion `.ome.tif` file, Bio-Formats will recognize an OME-TIFF format instead. This means it may load the fileset if there are multiple .ome.tif but it will not include `*metadata.txt` in this fileset and therefore the extended Micro-Manager metadata will be skipped.
- See *Micro-Manager* for more information.

## 17.81 MINC MRI

Extensions: .mnc

Developer: McGill University[278]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: MINCReader (Source Code[279], *Supported Metadata Fields*)

Freely Available Software:

- MINC[280]

We currently have:

- a few MINC files

We would like to have:

**Ratings**

Pixels: ▲

Metadata: □

Openness: □

Presence: □

Utility: ▼

---

[277] http://downloads.openmicroscopy.org/images/Micro-Manager/

[278] http://www.bic.mni.mcgill.ca/ServicesSoftware/MINC

[279] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/MINCReader.java

[280] http://www.bic.mni.mcgill.ca/ServicesSoftware/MINC

## 17.82 Minolta MRW

Extensions: .mrw

Developer: Minolta[281]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: MRWReader (Source Code[282], *Supported Metadata Fields*)

Freely Available Software:

- dcraw[283]

We currently have:

- several .mrw files

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ■

Openness: ▼

Presence: ▼

Utility: ▼

## 17.83 MNG (Multiple-image Network Graphics)

Extensions: .mng

Developer: MNG Development Group[284]

**Support**

BSD-licensed: ✓

Export: ✗

Officially Supported Versions:

Reader: MNGReader (Source Code[285], *Supported Metadata Fields*)

Freely Available Software:

- libmng (MNG reference library)[286]

Sample Datasets:

- MNG sample files[287]

We currently have:

---

[281] http://www.konicaminolta.com/

[282] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/MRWReader.java

[283] http://www.cybercom.net/%7Edcoffin/dcraw/

[284] http://www.libpng.org/pub/mng/mngnews.html

[285] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/MNGReader.java

[286] http://sourceforge.net/projects/libmng/

[287] http://sourceforge.net/projects/libmng/files/libmng-testsuites/MNGsuite-1.0/MNGsuite.zip/download

- the libmng-testsuites[288] package (from 2003 March 05, in C)
- a large number of MNG datasets

We would like to have:

**Ratings**

Pixels: 🟨

Metadata: 🟨

Openness: ⏫

Presence: 🔻

Utility: ⏬

**Additional Information**

**See also:**

MNG homepage[289] MNG specification[290]

## 17.84 Molecular Imaging

Extensions: .stp

Owner: Molecular Imaging Corp, San Diego CA (closed)

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: MolecularImagingReader (Source Code[291], *Supported Metadata Fields*)

We currently have:

- Pascal code that reads Molecular Imaging files (from ImageSXM)
- a few Molecular Imaging files

We would like to have:

- an official specification document
- more Molecular Imaging files

**Ratings**

Pixels: 🟨

Metadata: 🔻

Openness: 🔻

Presence: 🔻

Utility: 🔻

---

[288] http://downloads.sourceforge.net/libmng/MNGsuite-20030305.zip
[289] http://www.libpng.org/pub/mng/
[290] http://www.libpng.org/pub/mng/spec
[291] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/MolecularImagingReader.java

## 17.85 MRC (Medical Research Council)

Extensions: .mrc

Developer: MRC Laboratory of Molecular Biology[292]

**Support**

BSD-licensed: ❌

Export: ❌

Officially Supported Versions:

Reader: MRCReader (Source Code[293], *Supported Metadata Fields*)

Sample Datasets:

- golgi.mrc[294]

We currently have:

- an MRC specification document[295] (in TXT)
- a few MRC datasets

We would like to have:

**Ratings**

Pixels: ⏫

Metadata: ▲

Openness: ▲

Presence: 🟨

Utility: 🟨

**Additional Information**

Commercial applications that support MRC include:

- Bitplane Imaris[296]

**See also:**

MRC on Wikipedia[297]

## 17.86 NEF (Nikon Electronic Format)

Extensions: .nef, .tif

Developer: Nikon[298]

**Support**

BSD-licensed: ❌

Export: ❌

Officially Supported Versions:

---

[292] http://www2.mrc-lmb.cam.ac.uk/

[293] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/MRCReader.java

[294] http://bio3d.colorado.edu/imod/files/imod_data.tar.gz

[295] http://bio3d.colorado.edu/imod/doc/mrc_format.txt

[296] http://www.bitplane.com/

[297] http://en.wikipedia.org/wiki/MRC_%28file_format%29

[298] http://www.nikon.com/

Reader: NikonReader (Source Code[299], *Supported Metadata Fields*)

Sample Datasets:

- neffile1.zip[300]
- Sample NEF images[301]

We currently have:

- a NEF specification document (v0.1, from 2003, in PDF)
- several NEF datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: ⏬

Presence: ⏬

Utility: ⏬

**Additional Information**

**Please note that while we have specification documents for this format, we are not able to distribute them to third parties.**

**See also:**

NEF Conversion[302]

## 17.87 NIfTI

Extensions: .img, .hdr, .nii, .nii.gz

Developer: National Institutes of Health[303]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: NiftiReader (Source Code[304], *Supported Metadata Fields*)

Sample Datasets:

- Official test data[305]

We currently have:

- NIfTI specification documents[306]
- several NIfTI datasets
- public sample images[307]

---

[299] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/NikonReader.java
[300] http://www.outbackphoto.com/workshop/NEF_conversion/neffile1.zip
[301] http://www.nikondigital.org/articles/library/nikon_d2x_first_impressions.htm
[302] http://www.outbackphoto.com/workshop/NEF_conversion/nefconversion.html
[303] http://www.nih.gov/
[304] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/NiftiReader.java
[305] http://afni.nimh.nih.gov/pub/dist/data/
[306] http://afni.nimh.nih.gov/pub/dist/doc/nifti/nifti_revised.html
[307] http://downloads.openmicroscopy.org/images/NIfTI/

We would like to have:

**Ratings**

Pixels: ▲

Metadata: 🟨

Openness: ▲

Presence: 🟨

Utility: ▼

## 17.88 Nikon Elements TIFF

Extensions: .tiff

Developer: Nikon[308]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: NikonElementsTiffReader (Source Code[309], *Supported Metadata Fields*)

We currently have:

- a few Nikon Elements TIFF files

We would like to have:

- more Nikon Elements TIFF files

**Ratings**

Pixels: 🟨

Metadata: 🟨

Openness: ▼

Presence: ▼

Utility: ▼

## 17.89 Nikon EZ-C1 TIFF

Extensions: .tiff

Developer: Nikon[310]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: NikonTiffReader (Source Code[311], *Supported Metadata Fields*)

---

[308] http://www.nikon.com

[309] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/NikonElementsTiffReader.java

[310] http://www.nikon.com/

[311] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/NikonTiffReader.java

We currently have:

- a few Nikon EZ-C1 TIFF files

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: ■

Presence: ⏬

Utility: ▼

## 17.90 Nikon NIS-Elements ND2

Extensions: .nd2

Developer: Nikon USA[312]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Readers:

- NativeND2Reader (Source Code[313], *Supported Metadata Fields*)
- LegacyND2Reader (Source Code[314], *Supported Metadata Fields*)

Freely Available Software:

- NIS-Elements Viewer from Nikon[315]

We currently have:

- many ND2 datasets

We would like to have:

- an official specification document

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: ▼

Presence: ▲

Utility: ▲

**Additional Information**

There are two distinct versions of ND2: an old version, which uses JPEG-2000 compression, and a new version which is either uncompressed or Zip-compressed. We are not aware of the version number or release date for either format.

Bio-Formats uses the JAI Image I/O Tools[316] library to read ND2 files compressed with JPEG-2000.

---

[312] http://www.nikonusa.com/

[313] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/NativeND2Reader.java

[314] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/LegacyND2Reader.java

[315] http://www.nikoninstruments.com/Products/Software/NIS-Elements-Advanced-Research/NIS-Elements-Viewer

[316] http://java.net/projects/jai-imageio

There is also a **legacy** ND2 reader that uses Nikon's native libraries. To use it, you must be using Windows 32-bit and have Nikon's ND2 reader plugin for ImageJ[317] installed. Additionally, you will need to download LegacyND2Reader.dll[318] and place it in your ImageJ plugin folder. Note that this reader is **unmaintained** and no additional support effort will be made.

## 17.91 NRRD (Nearly Raw Raster Data)

Extensions: .nrrd, .nhdr, .raw, .txt

Developer: Teem developers[319]

**Support**

BSD-licensed: ✓

Export: ✗

Officially Supported Versions:

Reader: NRRDReader (Source Code[320], *Supported Metadata Fields*)

Freely Available Software:

- nrrd (NRRD reference library)[321]

Sample Datasets:

- Diffusion tensor MRI datasets[322]

We currently have:

- an nrrd specification document[323] (v1.9, from 2005 December 24, in HTML)
- a few nrrd datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: ⏫

Presence: ▼

Utility: ▲

## 17.92 Olympus CellR/APL

Extensions: .apl, .mtb, .tnb, .tif, .obsep

Owner: Olympus[324]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

---

[317] http://rsb.info.nih.gov/ij/plugins/nd2-reader.html

[318] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/lib/LegacyND2Reader.dll?raw=true

[319] http://teem.sourceforge.net/

[320] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/NRRDReader.java

[321] http://teem.sourceforge.net/nrrd/

[322] http://www.sci.utah.edu/%7Egk/DTI-data/

[323] http://teem.sourceforge.net/nrrd/format.html

[324] http://www.olympus.com/

Reader: APLReader (Source Code[325], *Supported Metadata Fields*)

We currently have:

- a few CellR datasets

We would like to have:

- more Cellr datasets
- an official specification document

**Ratings**

Pixels: ▲

Metadata: ▼

Openness: ▼

Presence: ⏬

Utility: ▼

## 17.93 Olympus FluoView FV1000

Extensions: .oib, .oif

Owner: Olympus[326]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions: 1.0, 2.0

Reader: FV1000Reader (Source Code[327], *Supported Metadata Fields*)

Freely Available Software:

- FV-Viewer from Olympus[328]

We currently have:

- an OIF specification document (v2.0.0.0, from 2008, in PDF)
- an FV1000 specification document (v1.0.0.0, from 2004 June 22, in PDF)
- older FV1000 specification documents (draft, in DOC and XLS)
- many FV1000 datasets

We would like to have:

- more OIB datasets (especially 2+ GB files)
- more FV1000 version 2 datasets

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: 🟨

Presence: 🟨

---

[325] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/APLReader.java

[326] http://www.olympus.com/

[327] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/FV1000Reader.java

[328] http://www.olympus.co.uk/microscopy/22_FluoView_FV1000__Confocal_Microscope.htm

Utility: ▲

**Additional Information**

**Please note that while we have specification documents for this format, we are not able to distribute them to third parties.**

Bio-Formats uses a modified version of the Apache Jakarta POI[329] library to read OIB files. OIF stands for “Original Imaging Format”. OIB stands for “Olympus Image Binary”. OIF is a multi-file format that includes an .oif file and a directory of .tif, .roi, .pty, .lut, and .bmp files. OIB is a single file format.

Commercial applications that support this format include:

- Bitplane Imaris[330]
- SVI Huygens[331]

**See also:**

Olympus FluoView Resource Center[332]

## 17.94 Olympus FluoView TIFF

Extensions: .tif

Owner: Olympus[333]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: FluoviewReader (Source Code[334], *Supported Metadata Fields*)

Freely Available Software:

- DIMIN[335]

We currently have:

- a FluoView specification document (from 2002 November 14, in DOC)
- Olympus’ FluoView Image File Reference Suite (from 2002 March 1, in DOC)
- several FluoView datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: ▲

Presence: 🟨

Utility: 🟨

**Additional Information**

**Please note that while we have specification documents for this format, we are not able to distribute them to third parties.**

---

[329] http://jakarta.apache.org/poi/
[330] http://www.bitplane.com/
[331] http://svi.nl/
[332] http://www.olympusfluoview.com
[333] http://www.olympus.com/
[334] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/FluoviewReader.java
[335] http://www.dimin.net/

Commercial applications that support this format include:

- Bitplane Imaris[336]
- SVI Huygens[337]

## 17.95 Olympus ScanR

Extensions: .xml, .dat, .tif

Developer: Olympus[338]

Owner: Olympus[339]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: ScanrReader (Source Code[340], *Supported Metadata Fields*)

We currently have:

- several ScanR datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: 🟨

Openness: 🟨

Presence: ▼

Utility: ▼

## 17.96 Olympus SIS TIFF

Extensions: .tiff

Developer: Olympus[341]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: SISReader (Source Code[342], *Supported Metadata Fields*)

We currently have:

- a few example SIS TIFF files

---

[336] http://www.bitplane.com/
[337] http://svi.nl/
[338] http://www.olympus.com/
[339] http://www.olympus.com/
[340] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/ScanrReader.java
[341] http://www.olympus-sis.com/
[342] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/SISReader.java

We would like to have:

**Ratings**

Pixels: 🟨

Metadata: 🟨

Openness: 🟨

Presence: ▼

Utility: 🟨

## 17.97 OME-TIFF

Extensions: .ome.tiff[343]

Developer: Open Microscopy Environment[344]

**Support**

BSD-licensed: ✓

Export: ✓

Officially Supported Versions: 2003FC, 2007-06, 2008-02, 2008-09, 2009-09, 2010-04, 2010-06, 2011-06, 2012-06, 2013-06, 2015-01

Reader: OMETiffReader (Source Code[345], *Supported Metadata Fields*)

Writer: OMETiffWriter (Source Code[346])

We currently have:

- an OME-TIFF specification document[347]
- many OME-TIFF datasets
- public sample images[348]
- the ability to produce additional datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: ▲

Presence: ▼

Utility: ▲

**Additional Information**

Bio-Formats can save image stacks as OME-TIFF.

Commercial applications that support OME-TIFF include:

- Bitplane Imaris[349]

---

[343] http://www.openmicroscopy.org/site/support/ome-model/ome-tiff/index.html

[344] http://www.openmicroscopy.org/

[345] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/OMETiffReader.java

[346] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/out/OMETiffWriter.java

[347] http://www.openmicroscopy.org/site/support/ome-model/ome-tiff/specification.html

[348] http://downloads.openmicroscopy.org/images/OME-TIFF/

[349] http://www.bitplane.com/

- SVI Huygens[350]

**See also:**

OME-TIFF technical overview[351]

## 17.98 OME-XML

Extensions: .ome, .ome.xml[352]

Developer: Open Microscopy Environment[353]

**Support**

BSD-licensed: ✓

Export: ✓

Officially Supported Versions: 2003FC, 2007-06, 2008-02, 2008-09, 2009-09, 2010-04, 2010-06, 2011-06, 2012-06, 2013-06, 2015-01

Reader: OMEXMLReader (Source Code[354], *Supported Metadata Fields*)

Writer: OMEXMLWriter (Source Code[355])

We currently have:

- OME-XML specification documents[356]
- many OME-XML datasets
- public sample images[357]
- the ability to produce more datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: ▲

Presence: ▼

Utility: ▲

**Additional Information**

Bio-Formats uses the OME-XML Java library[358] to read OME-XML files.

Commercial applications that support OME-XML include:

- Bitplane Imaris[359]
- SVI Huygens[360]

---

[350] http://svi.nl/

[351] http://www.openmicroscopy.org/site/support/ome-model/ome-tiff/index.html

[352] http://www.openmicroscopy.org/site/support/ome-model/ome-xml/index.html

[353] http://www.openmicroscopy.org/

[354] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/OMEXMLReader.java

[355] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/out/OMEXMLWriter.java

[356] http://www.openmicroscopy.org/Schemas/

[357] http://downloads.openmicroscopy.org/images/OME-XML/

[358] http://www.openmicroscopy.org/site/support/ome-model/ome-xml/java-library.html

[359] http://www.bitplane.com/

[360] http://svi.nl/

## 17.99 Oxford Instruments

Extensions: .top

Owner: Oxford Instruments[361]

**Support**

BSD-licensed: ❌

Export: ❌

Officially Supported Versions:

Reader: OxfordInstrumentsReader (Source Code[362], *Supported Metadata Fields*)

We currently have:

- Pascal code that can read Oxford Instruments files (from ImageSXM)
- a few Oxford Instruments files

We would like to have:

- an official specification document
- more Oxford Instruments files

**Ratings**

Pixels: 🟨

Metadata: ▼

Openness: ▼

Presence: ▼

Utility: ▼

## 17.100 PCORAW

Extensions: .pcoraw, .rec

Developer: PCO[363]

**Support**

BSD-licensed: ❌

Export: ❌

Officially Supported Versions:

Reader: PCORAWReader (Source Code[364], *Supported Metadata Fields*)

We currently have:

- a few example datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: 🟨

---

[361] http://www.oxinst.com

[362] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/OxfordInstrumentsReader.java

[363] http://www.pco.de/

[364] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/PCORAWReader.java

Openness: ▲

Presence: ▼

Utility: 🟨

## 17.101 PCX (PC Paintbrush)

Extensions: .pcx

Developer: ZSoft Corporation

**Support**

BSD-licensed: ✓

Export: ✗

Officially Supported Versions:

Reader: PCXReader (Source Code[365], *Supported Metadata Fields*)

We currently have:

- several .pcx files
- the ability to generate additional .pcx files

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ⏬

Openness: ▼

Presence: ⏬

Utility: ▼

**Additional Information**

Commercial applications that support PCX include Zeiss LSM Image Browser[366].

## 17.102 Perkin Elmer Densitometer

Extensions: .pds

Developer: Perkin Elmer[367]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: PDSReader (Source Code[368], *Supported Metadata Fields*)

We currently have:

- a few PDS datasets

---

[365] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/PCXReader.java

[366] http://www.zeiss.com/microscopy/en_de/downloads/lsm-5-series.html

[367] http://www.perkinelmer.com

[368] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/PDSReader.java

We would like to have:

- an official specification document
- more PDS datasets

**Ratings**

Pixels: 🟨

Metadata: 🟨

Openness: 🟨

Presence: ⏬

Utility: 🔽

## 17.103 PerkinElmer Nuance

Extensions: .im3

Developer: PerkinElmer[369]

**Support**

BSD-licensed: ✓

Export: ✗

Officially Supported Versions:

Reader: IM3Reader (Source Code[370], *Supported Metadata Fields*)

We currently have:

- a few sample datasets

We would like to have:

**Ratings**

Pixels: 🟨

Metadata: 🔽

Openness: ⏬

Presence: ⏬

Utility: 🔽

## 17.104 PerkinElmer Operetta

Extensions: .tiff, .xml

Developer: PerkinElmer[371]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

---

[369] http://www.perkinelmer.com/

[370] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/IM3Reader.java

[371] http://www.perkinelmer.com/

Reader: OperettaReader (Source Code[372], *Supported Metadata Fields*)

We currently have:

- a few sample datasets
- public sample images[373]

We would like to have:

- an official specification document
- more sample datasets

**Ratings**

Pixels: ▲

Metadata: 🟨

Openness: 🟨

Presence: ▼

Utility: 🟨

## 17.105 PerkinElmer UltraVIEW

Extensions: .tif, .2, .3, .4, etc.

Owner: PerkinElmer[374]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: PerkinElmerReader (Source Code[375], *Supported Metadata Fields*)

We currently have:

- several UltraVIEW datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: 🟨

Openness: ▼

Presence: ▼

Utility: ▼

**Additional Information**

Other associated extensions include: .tim, .zpo, .csv, .htm, .cfg, .ano, .rec

Commercial applications that support this format include:

- Bitplane Imaris[376]

---

[372] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/OperettaReader.java

[373] http://downloads.openmicroscopy.org/images/HCS/Operetta/

[374] http://www.perkinelmer.com/

[375] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/PerkinElmerReader.java

[376] http://www.bitplane.com/

- Image-Pro Plus[377]

**See also:**

PerkinElmer UltraVIEW system overview[378]

## 17.106 Portable Any Map

Extensions: .pbm, .pgm, .ppm

Developer: Netpbm developers

**Support**

BSD-licensed: ✓

Export: ✗

Officially Supported Versions:

Reader: PGMReader (Source Code[379], *Supported Metadata Fields*)

Freely Available Software:

- Netpbm graphics filter[380]

We currently have:

- a PGM specification document[381] (from 2003 October 3, in HTML)
- a few PBM, PPM and PGM files

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▨

Openness: ▲

Presence: ▨

Utility: ▼

## 17.107 Adobe Photoshop PSD

Extensions: .psd

Developer: Adobe[382]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions: 1.0

Reader: PSDReader (Source Code[383], *Supported Metadata Fields*)

We currently have:

---

[377] http://www.mediacy.com/

[378] http://www.perkinelmer.com/product/ultraview-vox-3d-live-cell-imaging-system-l7267000

[379] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/PGMReader.java

[380] http://netpbm.sourceforge.net/

[381] http://netpbm.sourceforge.net/doc/pgm.html

[382] http://www.adobe.com/

[383] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/PSDReader.java

- a PSD specification document (v3.0.4, 16 July 1995)
- a few PSD files

We would like to have:

- more PSD files

**Ratings**

Pixels: 🟨

Metadata: 🟨

Openness: 🟨

Presence: 🟨

Utility: ▼

## 17.108 Photoshop TIFF

Extensions: .tif, .tiff

Developer: Adobe[384]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: PhotoshopTiffReader (Source Code[385], *Supported Metadata Fields*)

We currently have:

- a Photoshop TIFF specification document
- a few Photoshop TIFF files

We would like to have:

**Ratings**

Pixels: 🟨

Metadata: 🟨

Openness: 🟨

Presence: 🟨

Utility: 🟨

## 17.109 PicoQuant Bin

Extensions: .bin

Developer: PicoQuant[386]

**Support**

BSD-licensed: ✖

---

[384] http://www.adobe.com

[385] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/PhotoshopTiffReader.java

[386] http://www.picoquant.com/

Export: ✗

Officially Supported Versions:

Reader: PQBinReader (Source Code[387], *Supported Metadata Fields*)

Freely Available Software:

- SymphoTime64[388]

We currently have:

- a few example datasets

We would like to have:

**Ratings**

Pixels: 🟨

Metadata: ▼

Openness: ▼

Presence: ▼

Utility: ⏬

## 17.110 PICT (Macintosh Picture)

Extensions: .pict

Developer: Apple Computer[389]

**Support**

BSD-licensed: ✓

Export: ✗

Officially Supported Versions:

Reader: PictReader (Source Code[390], *Supported Metadata Fields*)

We currently have:

- many PICT datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▼

Openness: ▼

Presence: ▲

Utility: ⏬

**Additional Information**

QuickTime for Java is required for reading vector files and some compressed files but note that this is no longer available from Apple.

**See also:**

---

[387] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/PQBinReader.java

[388] http://www.picoquant.com/products/category/software/symphotime-64-fluorescence-lifetime-imaging-and-correlation-software

[389] http://www.apple.com

[390] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/PictReader.java

PICT technical overview[391] Another PICT technical overview[392]

## 17.111 PNG (Portable Network Graphics)

Extensions: .png

Developer: PNG Development Group[393]

**Support**

BSD-licensed: ✓

Export: ✓

Officially Supported Versions:

Reader: APNGReader (Source Code[394], *Supported Metadata Fields*)

Writer: APNGWriter (Source Code[395])

Freely Available Software:

- PNG Writer plugin for ImageJ[396]

We currently have:

- a PNG specification document[397] (W3C/ISO/IEC version, from 2003 November 10, in HTML)
- several PNG datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ■

Openness: ⇑

Presence: ⇑

Utility: ⇓

**Additional Information**

Bio-Formats uses the Java Image I/O[398] API to read and write PNG files.

**See also:**

PNG technical overview[399]

## 17.112 Prairie Technologies TIFF

Extensions: .tif, .xml, .cfg

Developer: Prairie Technologies[400]

**Support**

---

[391] http://www.faqs.org/faqs/graphics/fileformats-faq/part3/section-107.html
[392] http://www.prepressure.com/formats/pict/fileformat.htm
[393] http://www.libpng.org/pub/png/pngnews.html
[394] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/APNGReader.java
[395] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/out/APNGWriter.java
[396] http://rsb.info.nih.gov/ij/plugins/png-writer.html
[397] http://www.libpng.org/pub/png/spec/iso/
[398] http://docs.oracle.com/javase/7/docs/technotes/guides/imageio/
[399] http://www.libpng.org/pub/png/
[400] http://www.prairie-technologies.com/

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: PrairieReader (Source Code[401], *Supported Metadata Fields*)

We currently have:

- many Prairie datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: 🟨

Openness: 🟨

Presence: ▼

Utility: 🟨

## 17.113 Princeton Instruments SPE

Extensions: .spe

Developer: Princeton Instruments[402]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions: 3.0

Reader: SPEReader (Source Code[403], *Supported Metadata Fields*)

We currently have:

- An official specification document[404]
- two SPE files

We would like to have:

- more SPE files

**Ratings**

Pixels: 🟨

Metadata: ▲

Openness: ▲

Presence: ▼

Utility: 🟨

---

[401] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/PrairieReader.java

[402] http://www.princetoninstruments.com

[403] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/SPEReader.java

[404] ftp://ftp.princetoninstruments.com/public/Manuals/Princeton%20Instruments/SPE%203.0%20File%20Format%20Specification.pdf

## 17.114 Quesant

Extensions: .afm

Developer: Quesant Instrument Corporation

Owner: KLA-Tencor Corporation[405]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: QuesantReader (Source Code[406], *Supported Metadata Fields*)

We currently have:

- Pascal code that can read Quesant files (from ImageSXM)
- several Quesant files

We would like to have:

- an official specification document
- more Quesant files

**Ratings**

Pixels: 🟨

Metadata: ▼

Openness: ▼

Presence: ▼

Utility: ▼

## 17.115 QuickTime Movie

Extensions: .mov

Owner: Apple Computer[407]

**Support**

BSD-licensed: ✓

Export: ✓

Officially Supported Versions:

Readers:

- NativeQTReader (Source Code[408], *Supported Metadata Fields*)
- LegacyQTReader (Source Code[409], *Supported Metadata Fields*)

Writer: QTWriter (Source Code[410])

Freely Available Software:

---

[405] http://www.kla-tencor.com/surface-profilometry-and-metrology.html

[406] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/QuesantReader.java

[407] http://www.apple.com/

[408] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/NativeQTReader.java

[409] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/LegacyQTReader.java

[410] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/out/QTWriter.java

- QuickTime Player[411]

We currently have:

- a QuickTime specification document[412] (from 2001 March 1, in HTML)
- several QuickTime datasets
- the ability to produce more datasets

We would like to have:

- more QuickTime datasets, including:
  - files compressed with a common, unsupported codec
  - files with audio tracks and/or multiple video tracks

**Ratings**

Pixels: 🟨

Metadata: ▲

Openness: ▼

Presence: ⏫

Utility: ⏬

**Additional Information**

Bio-Formats has two modes of operation for QuickTime:

- The legacy QTJava mode requires QuickTime for Java which will only run with a 32-bit JVM and is no longer available from Apple.
- Native mode works on systems with no QuickTime (e.g. Linux).

Bio-Formats can save image stacks as QuickTime movies. The following table shows supported codecs:

| Codec | Description | Native | LegacyQTJava |
|---|---|---|---|
| raw | Full Frames (Uncompressed) | read & write | read & write |
| iraw | Intel YUV Uncompressed | read only | read & write |
| rle | Animation (run length encoded RGB) | read only | read & write |
| jpeg | Still Image JPEG DIB | read only | read only |
| rpza | Apple Video 16 bit “road pizza” | read only (partial) | read only |
| mjpb | Motion JPEG codec | read only | read only |
| cvid | Cinepak | • | read & write |
| svq1 | Sorenson Video | • | read & write |
| svq3 | Sorenson Video 3 | • | read & write |
| mp4v | MPEG-4 | • | read & write |
| h263 | H.263 | • | read & write |

**See also:**

QuickTime software overview[413]

---

[411] https://support.apple.com/downloads/quicktime

[412] http://developer.apple.com/documentation/Quicktime/QTFF/

[413] http://www.apple.com/quicktime/

## 17.116 RHK

Extensions: .sm2, .sm3

Owner: RHK Technologies[414]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: RHKReader (Source Code[415], *Supported Metadata Fields*)

We currently have:

- Pascal code that can read RHK files (from ImageSXM)
- a few RHK files

We would like to have:

- an official specification document
- more RHK files

**Ratings**

Pixels: 🟨

Metadata: ▼

Openness: ▼

Presence: ▼

Utility: ▼

## 17.117 SBIG

Owner: Santa Barbara Instrument Group (SBIG)[416]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: SBIGReader (Source Code[417], *Supported Metadata Fields*)

We currently have:

- an official SBIG specification document[418]
- a few SBIG files

We would like to have:

- more SBIG files

---

[414] http://www.rhk-tech.com
[415] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/RHKReader.java
[416] http://www.sbig.com
[417] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/SBIGReader.java
[418] http://sbig.impulse.net/pdffiles/file.format.pdf

**Ratings**

Pixels: ▲

Metadata: ▨

Openness: ▲

Presence: ▼

Utility: ▼

## 17.118 Seiko

Extensions: .xqd, .xqf

Owner: Seiko[419]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: SeikoReader (Source Code[420], *Supported Metadata Fields*)

We currently have:

- Pascal code that can read Seiko files (from ImageSXM)
- a few Seiko files

We would like to have:

- an official specification document
- more Seiko files

**Ratings**

Pixels: ▨

Metadata: ▼

Openness: ▼

Presence: ▼

Utility: ▼

## 17.119 SimplePCI & HCImage

Extensions: .cxd

Developer: Compix[421]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

---

[419] http://www.seiko.co.jp/en/index.php

[420] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/SeikoReader.java

[421] http://hcimage.com

Reader: PCIReader (Source Code[422], *Supported Metadata Fields*)

We currently have:

- several SimplePCI files

We would like to have:

**Ratings**

Pixels: ⏫

Metadata: 🟨

Openness: ▲

Presence: ⏬

Utility: ▼

**Additional Information**

Bio-Formats uses a modified version of the Apache Jakarta POI library[423] to read CXD files.

**See also:**

SimplePCI software overview[424]

## 17.120 SimplePCI & HCImage TIFF

Extensions: .tiff

Developer: Hamamatsu[425]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: SimplePCITiffReader (Source Code[426], *Supported Metadata Fields*)

We currently have:

- a few SimplePCI TIFF datasets

We would like to have:

- more SimplePCI TIFF datasets

**Ratings**

Pixels: ▲

Metadata: 🟨

Openness: ▲

Presence: ▼

Utility: 🟨

---

[422] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/PCIReader.java

[423] http://jakarta.apache.org/poi/

[424] http://hcimage.com/simple-pci-legacy/

[425] http://hcimage.com/simple-pci-legacy/

[426] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/SimplePCITiffReader.java

## 17.121 SM Camera

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: SMCameraReader (Source Code[427], *Supported Metadata Fields*)

We currently have:

- Pascal code that can read SM-Camera files (from ImageSXM)
- a few SM-Camera files

We would like to have:

- an official specification document
- more SM-Camera files

**Ratings**

Pixels: 🟨

Metadata: ▼

Openness: ▼

Presence: ▼

Utility: ▼

## 17.122 SPIDER

Extensions: .spi, .stk

Developer: Wadsworth Center[428]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: SpiderReader (Source Code[429], *Supported Metadata Fields*)

Freely Available Software:

- SPIDER[430]

We currently have:

- a few example datasets
- official file format documentation[431]

We would like to have:

**Ratings**

Pixels: ▲

---

[427] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/SMCameraReader.java

[428] http://spider.wadsworth.org/spider_doc/spider/docs/spider.html

[429] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/SpiderReader.java

[430] http://spider.wadsworth.org/spider_doc/spider/docs/spider.html

[431] http://spider.wadsworth.org/spider_doc/spider/docs/image_doc.html

Metadata: ▲

Openness: ⏫

Presence: 🟨

Utility: 🟨

## 17.123 Targa

Extensions: .tga

Developer: Truevision[432]

**Support**

BSD-licensed: ❌

Export: ❌

Officially Supported Versions:

Reader: TargaReader (Source Code[433], *Supported Metadata Fields*)

We currently have:

- a Targa specification document
- a few Targa files

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: ▲

Presence: 🟨

Utility: ⏬

## 17.124 Text

Extensions: .txt

**Support**

BSD-licensed: ✓

Export: ❌

Officially Supported Versions:

Reader: TextReader (Source Code[434], *Supported Metadata Fields*)

We currently have:

We would like to have:

**Ratings**

Pixels: 🟨

---

[432] http://www.truevision.com

[433] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/TargaReader.java

[434] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/TextReader.java

Metadata: ⇊

Openness: ▼

Presence: ▼

Utility: ⇊

**Additional Information**

Reads tabular pixel data produced by a variety of software.

## 17.125 TIFF (Tagged Image File Format)

Extensions: .tif

Developer: Aldus and Microsoft

Owner: Adobe[435]

**Support**

BSD-licensed: ✓

Export: ✓

Officially Supported Versions:

Reader: TiffReader (Source Code[436], *Supported Metadata Fields*)

Writer: TiffWriter (Source Code[437])

Sample Datasets:

- LZW TIFF data gallery[438]
- Big TIFF[439]

We currently have:

- a TIFF specification document[440] (v6.0, from 1992 June 3, in PDF)
- many TIFF datasets
- a few BigTIFF datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: ⇈

Presence: ⇈

Utility: ▼

**Additional Information**

Bio-Formats can also read BigTIFF files (TIFF files larger than 4 GB). Bio-Formats can save image stacks as TIFF or BigTIFF.

**See also:**

---

[435] http://www.adobe.com

[436] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/TiffReader.java

[437] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/out/TiffWriter.java

[438] http://marlin.life.utsa.edu/Data_Gallery.html

[439] http://www.awaresystems.be/imaging/tiff/bigtiff.html#samples

[440] http://partners.adobe.com/asn/developer/PDFS/TN/TIFF6.pdf

TIFF technical overview[441] BigTIFF technical overview[442]

## 17.126 TillPhotonics TillVision

Extensions: .vws

Developer: TILL Photonics[443]

**Support**

BSD-licensed: ❌

Export: ❌

Officially Supported Versions:

Reader: TillVisionReader (Source Code[444], *Supported Metadata Fields*)

We currently have:

- several TillVision datasets

We would like to have:

- an official specification document

**Ratings**

Pixels: 🟨

Metadata: ▼

Openness: ⏬

Presence: ⏬

Utility: ▼

## 17.127 Topometrix

Extensions: .tfr, .ffr, .zfr, .zfp, .2fl

Owner: TopoMetrix (now Veeco)[445]

**Support**

BSD-licensed: ❌

Export: ❌

Officially Supported Versions:

Reader: TopometrixReader (Source Code[446], *Supported Metadata Fields*)

We currently have:

- Pascal code that reads Topometrix files (from ImageSXM)
- a few Topometrix files

We would like to have:

- an official specification document

---

[441] http://www.awaresystems.be/imaging/tiff/faq.html#q3

[442] http://www.awaresystems.be/imaging/tiff/bigtiff.html

[443] http://www.till-photonics.com/

[444] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/TillVisionReader.java

[445] http://www.veeco.com/

[446] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/TopometrixReader.java

- more Topometrix files

**Ratings**

Pixels: 🟨

Metadata: ▼

Openness: ▼

Presence: ▼

Utility: ▼

## 17.128 Trestle

Extensions: .tif, .sld, .jpg

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: TrestleReader (Source Code[447], *Supported Metadata Fields*)

Sample Datasets:

- OpenSlide[448]

We currently have:

- a few example datasets
- developer documentation from the OpenSlide project[449]

We would like to have:

**Ratings**

Pixels: 🟨

Metadata: 🟨

Openness: 🟨

Presence: ▼

Utility: ▼

## 17.129 UBM

Extensions: .pr3

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: UBMReader (Source Code[450], *Supported Metadata Fields*)

---

[447] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/TrestleReader.java

[448] http://openslide.cs.cmu.edu/download/openslide-testdata/Trestle/

[449] http://openslide.org/Trestle%20format/

[450] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/UBMReader.java

We currently have:

- Pascal code that can read UBM files (from ImageSXM)
- one UBM file

We would like to have:

- an official specification document
- more UBM files

**Ratings**

Pixels: 🟨

Metadata: ▼

Openness: ▼

Presence: ⏬

Utility: ▼

## 17.130 Unisoku

Extensions: .dat, .hdr

Owner: Unisoku[451]

**Support**

BSD-licensed: ❌

Export: ❌

Officially Supported Versions:

Reader: UnisokuReader (Source Code[452], *Supported Metadata Fields*)

We currently have:

- Pascal code that can read Unisoku files (from ImageSXM)
- a few Unisoku files

We would like to have:

- an official specification document
- more Unisoku files

**Ratings**

Pixels: 🟨

Metadata: ▼

Openness: ▼

Presence: ▼

Utility: ▼

---

[451] http://www.unisoku.com

[452] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/UnisokuReader.java

## 17.131 Varian FDF

Extensions: .fdf

Developer: Varian, Inc.

Owner: Agilent Technologies[453]

**Support**

BSD-licensed: ✘

Export: ✘

Officially Supported Versions:

Reader: VarianFDFReader (Source Code[454], *Supported Metadata Fields*)

We currently have:

- a few Varian FDF datasets

We would like to have:

- an official specification document
- more Varian FDF datasets

**Ratings**

Pixels: 🟨

Metadata: ▼

Openness: ▼

Presence: ▼

Utility: ▼

## 17.132 Veeco AFM

Extensions: .hdf

Developer: Veeco[455]

**Support**

BSD-licensed: ✘

Export: ✘

Officially Supported Versions:

Reader: VeecoReader (Source Code[456], *Supported Metadata Fields*)

We currently have:

- a few sample datasets

We would like to have:

**Ratings**

Pixels: 🟨

Metadata: ▼

---

[453] http://www.agilent.com/home

[454] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/VarianFDFReader.java

[455] http://www.veeco.com

[456] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/VeecoReader.java

Openness: ▲

Presence: ▼

Utility: 🟨

## 17.133 VG SAM

Extensions: .dti

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: VGSAMReader (Source Code[457], *Supported Metadata Fields*)

We currently have:

- a few VG-SAM files

We would like to have:

- an official specification document
- more VG-SAM files

**Ratings**

Pixels: 🟨

Metadata: ▼

Openness: ▼

Presence: ⏬

Utility: ▼

## 17.134 VisiTech XYS

Extensions: .xys, .html

Developer: VisiTech International[458]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: VisitechReader (Source Code[459], *Supported Metadata Fields*)

We currently have:

- several VisiTech datasets

We would like to have:

- an official specification document

---

[457] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/VGSAMReader.java

[458] http://www.visitech.co.uk/

[459] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/VisitechReader.java

**Ratings**

Pixels: ▲

Metadata: ■

Openness: ▼

Presence: ⏬

Utility: ■

## 17.135 Volocity

Extensions: .mvd2

Developer: PerkinElmer[460]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: VolocityReader (Source Code[461], *Supported Metadata Fields*)

Sample Datasets:

- PerkinElmer Downloads[462]

We currently have:

- many example Volocity datasets

We would like to have:

- an official specification document
- any Volocity datasets that do not open correctly

**Ratings**

Pixels: ■

Metadata: ■

Openness: ▼

Presence: ⏬

Utility: ▼

**Additional Information**

.mvd2 files are Metakit database files[463].

## 17.136 Volocity Library Clipping

Extensions: .acff

Developer: PerkinElmer[464]

**Support**

---

[460] http://www.perkinelmer.com/cellular-imaging/

[461] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/VolocityReader.java

[462] http://cellularimaging.perkinelmer.com/downloads/

[463] http://equi4.com/metakit/

[464] http://www.perkinelmer.com/cellular-imaging/

BSD-licensed: ❌

Export: ❌

Officially Supported Versions:

Reader: VolocityClippingReader (Source Code[465], *Supported Metadata Fields*)

We currently have:

- several Volocity library clipping datasets

We would like to have:

- any datasets that do not open correctly
- an official specification document

**Ratings**

Pixels: 🟨

Metadata: 🟨

Openness: ▼

Presence: ⏬

Utility: ⏬

**Additional Information**

RGB .acff files are not yet supported. See #6413[466].

## 17.137 WA-TOP

Extensions: .wat

Developer: WA Technology

Owner: Oxford Instruments[467]

**Support**

BSD-licensed: ❌

Export: ❌

Officially Supported Versions:

Reader: WATOPReader (Source Code[468], *Supported Metadata Fields*)

We currently have:

- Pascal code that can read WA-TOP files (from ImageSXM)
- a few WA-TOP files

We would like to have:

- an official specification document
- more WA-TOP files

**Ratings**

Pixels: 🟨

Metadata: ▼

---

[465] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/VolocityClippingReader.java

[466] https://trac.openmicroscopy.org/ome/ticket/6413

[467] http://www.oxinst.com

[468] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/WATOPReader.java

Openness: ▼

Presence: ▼

Utility: ▼

## 17.138 Windows Bitmap

Extensions: .bmp

Developer: Microsoft and IBM

**Support**

BSD-licensed: ✓

Export: ✗

Officially Supported Versions:

Reader: BMPReader (Source Code[469], *Supported Metadata Fields*)

Freely Available Software:

- BMP Writer plugin for ImageJ[470]

We currently have:

- many BMP datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ⏫

Openness: ▼

Presence: ⏫

Utility: ⏬

**Additional Information**

Compressed BMP files are currently not supported.

**See also:**

Technical Overview[471]

## 17.139 Woolz

Extensions: .wlz

Developer: MRC Human Genetics Unit[472]

**Support**

BSD-licensed: ✗

Export: ✓

Officially Supported Versions:

---

[469] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-bsd/src/loci/formats/in/BMPReader.java

[470] http://rsb.info.nih.gov/ij/plugins/bmp-writer.html

[471] http://www.faqs.org/faqs/graphics/fileformats-faq/part3/section-18.html

[472] http://www.emouseatlas.org/emap/analysis_tools_resources/software/woolz.html

Reader: WlzReader (Source Code[473], *Supported Metadata Fields*)

Writer: WlzWriter (Source Code[474])

Freely Available Software:

- Woolz[475]

We currently have:

- a few Woolz datasets

We would like to have:

**Ratings**

Pixels: ▲

Metadata: ▼

Openness: ▲

Presence: ⏬

Utility: ▼

## 17.140 Zeiss Axio CSM

Extensions: .lms

Developer: Carl Zeiss Microscopy GmbH[476]

Owner: Carl Zeiss Microscopy GmbH[477]

**Support**

BSD-licensed: ✖

Export: ✖

Officially Supported Versions:

Reader: ZeissLMSReader (Source Code[478], *Supported Metadata Fields*)

We currently have:

- one example dataset

We would like to have:

**Ratings**

Pixels: □

Metadata: ⏬

Openness: ⏬

Presence: ⏬

Utility: ▼

**Additional Information**

This should not be confused with the more common Zeiss LSM format, which has a similar extension. As far as we know, the Axio CSM 700 system is the only one which saves files in the .lms format.

---

[473] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/WlzReader.java

[474] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/out/WlzWriter.java

[475] http://www.emouseatlas.org/emap/analysis_tools_resources/software/woolz.html

[476] http://www.zeiss.com/microscopy/

[477] http://www.zeiss.com/microscopy/

[478] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/ZeissLMSReader.java

## 17.141 Zeiss AxioVision TIFF

Extensions: .xml, .tiff

Developer: Carl Zeiss Microscopy GmbH[479]

Owner: Carl Zeiss Microscopy GmbH[480]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: ZeissTIFFReader (Source Code[481], *Supported Metadata Fields*)

Freely Available Software:

- Zeiss ZEN Lite[482]

We currently have:

- many example datasets

We would like to have:

- an official specification document

**Ratings**

Pixels: ▲

Metadata: ▲

Openness: ■

Presence: ▼

Utility: ▼

## 17.142 Zeiss AxioVision ZVI (Zeiss Vision Image)

Extensions: .zvi

Developer: Carl Zeiss Microscopy GmbH (AxioVision)[483]

Owner: Carl Zeiss Microscopy GmbH[484]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions: 1.0, 2.0

Reader: ZeissZVIReader (Source Code[485], *Supported Metadata Fields*)

Freely Available Software:

- Zeiss Axiovision LE[486]

---

[479] http://www.zeiss.com/microscopy/

[480] http://www.zeiss.com/microscopy/

[481] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/ZeissTIFFReader.java

[482] http://www.zeiss.com/microscopy/en_de/products/microscope-software/zen-lite.html

[483] http://www.zeiss.com/microscopy/en_de/products/microscope-software/axiovision.html

[484] http://www.zeiss.com/microscopy/

[485] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/ZeissZVIReader.java

[486] http://www.zeiss.com/microscopy/en_de/downloads/axiovision.html

We currently have:

- a ZVI specification document (v2.0.5, from 2010 August, in PDF)
- an older ZVI specification document (v2.0.2, from 2006 August 23, in PDF)
- an older ZVI specification document (v2.0.1, from 2005 April 21, in PDF)
- an older ZVI specification document (v1.0.26.01.01, from 2001 January 29, in DOC)
- Zeiss' ZvImageReader code (v1.0, from 2001 January 25, in C++)
- many ZVI datasets

We would like to have:

**Ratings**

Pixels: ⏫

Metadata: ▲

Openness: ▲

Presence: 🟨

Utility: 🟨

**Additional Information**

**Please note that while we have specification documents for this format, we are not able to distribute them to third parties.**

Bio-Formats uses a modified version of the Apache Jakarta POI library[487] to read ZVI files. ImageJ/FIJI will use the ZVI reader plugin in preference to Bio-Formats if both are installed. If you have a problem which is solved by opening the file using the Bio-Formats Importer plugin, you can just remove the ZVI_Reader.class from the plugins folder.

Commercial applications that support ZVI include Bitplane Imaris[488].

## 17.143 Zeiss CZI

Extensions: .czi[489]

Developer: Carl Zeiss Microscopy GmbH[490]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: ZeissCZIReader (Source Code[491], *Supported Metadata Fields*)

Freely Available Software:

- Zeiss ZEN[492]

We currently have:

- many example datasets
- official specification documents

---

[487] http://jakarta.apache.org/poi/

[488] http://www.bitplane.com/

[489] http://www.zeiss.com/czi

[490] http://www.zeiss.com/czi

[491] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/ZeissCZIReader.java

[492] http://www.zeiss.com/microscopy/en_de/products/microscope-software/zen.html

We would like to have:

**Ratings**

Pixels: ⬆

Metadata: ⬆

Openness: ▲

Presence: ▼

Utility: ▨

**Additional Information**

**Please note that while we have specification documents for this format, we are not able to distribute them to third parties.**

Bio-Formats does not support CZI files generated using JPEG-XR compression.

## 17.144 Zeiss LSM (Laser Scanning Microscope) 510/710

Extensions: .lsm, .mdb

Owner: Carl Zeiss Microscopy GmbH[493]

**Support**

BSD-licensed: ✗

Export: ✗

Officially Supported Versions:

Reader: ZeissLSMReader (Source Code[494], *Supported Metadata Fields*)

Freely Available Software:

- Zeiss LSM Image Browser[495]
- LSM Toolbox plugin for ImageJ[496]
- LSM Reader plugin for ImageJ[497]
- DIMIN[498]

We currently have:

- LSM specification v3.2, from 2003 March 12, in PDF
- LSM specification v5.5, from 2009 November 23, in PDF
- LSM specification v6.0, from 2010 September 28, in PDF
- many LSM datasets

We would like to have:

**Ratings**

Pixels: ⬆

Metadata: ▲

Openness: ▨

Presence: ▲

---

[493] http://www.zeiss.com/microscopy/

[494] https://github.com/openmicroscopy/bioformats/blob/v5.2.0/components/formats-gpl/src/loci/formats/in/ZeissLSMReader.java

[495] http://www.zeiss.com/microscopy/en_de/downloads/lsm-5-series.html

[496] http://imagejdocu.tudor.lu/Members/ppirrotte/lsmtoolbox

[497] http://rsb.info.nih.gov/ij/plugins/lsm-reader.html

[498] http://www.dimin.net/

Utility: 🟨

**Additional Information**

**Please note that while we have specification documents for this format, we are not able to distribute them to third parties.**

Bio-Formats uses the MDB Tools Java port[499]

Commercial applications that support this format include:

- SVI Huygens[500]
- Bitplane Imaris[501]
- Amira[502]
- Image-Pro Plus[503]

---

[499] http://mdbtools.sourceforge.net/
[500] https://svi.nl/HomePage
[501] http://www.bitplane.com/
[502] http://www.amira.com/
[503] http://www.mediacy.com/

CHAPTER

# EIGHTEEN

# SUMMARY OF SUPPORTED METADATA FIELDS

## 18.1 Format readers

| Reader | Supported | Unsupported | Partial | Unknown/Missing |
|---|---|---|---|---|
| *AFIReader* | 30 | 0 | 0 | 446 |
| *AIMReader* | 22 | 0 | 0 | 454 |
| *APLReader* | 21 | 0 | 0 | 455 |
| *APNGReader* | 19 | 0 | 0 | 457 |
| *ARFReader* | 19 | 0 | 0 | 457 |
| *AVIReader* | 19 | 0 | 0 | 457 |
| *AliconaReader* | 33 | 0 | 0 | 443 |
| *AmiraReader* | 22 | 0 | 0 | 454 |
| *AnalyzeReader* | 24 | 0 | 0 | 452 |
| *BDReader* | 57 | 0 | 0 | 419 |
| *BIFormatReader* | 19 | 0 | 0 | 457 |
| *BMPReader* | 21 | 0 | 0 | 455 |
| *BaseTiffReader* | 28 | 0 | 0 | 448 |
| *BaseZeissReader* | 83 | 0 | 0 | 393 |
| *BioRadGelReader* | 21 | 0 | 0 | 455 |
| *BioRadReader* | 40 | 0 | 0 | 436 |
| *BioRadSCNReader* | 29 | 0 | 0 | 447 |
| *BrukerReader* | 23 | 0 | 0 | 453 |
| *BurleighReader* | 22 | 0 | 0 | 454 |
| *CanonRawReader* | 19 | 0 | 0 | 457 |
| *CellH5Reader* | 41 | 0 | 0 | 435 |
| *CellSensReader* | 46 | 0 | 0 | 430 |
| *CellVoyagerReader* | 34 | 0 | 0 | 442 |
| *CellWorxReader* | 45 | 0 | 0 | 431 |
| *CellomicsReader* | 31 | 0 | 0 | 445 |
| *DNGReader* | 19 | 0 | 0 | 457 |
| *DeltavisionReader* | 52 | 0 | 0 | 424 |
| *DicomReader* | 23 | 0 | 0 | 453 |
| *EPSReader* | 19 | 0 | 0 | 457 |
| *Ecat7Reader* | 23 | 0 | 0 | 453 |
| *FEIReader* | 19 | 0 | 0 | 457 |
| *FEITiffReader* | 39 | 0 | 0 | 437 |
| *FV1000Reader* | 113 | 0 | 0 | 363 |
| *FakeReader* | 84 | 0 | 0 | 392 |
| *FilePatternReader* | 19 | 0 | 0 | 457 |
| *FitsReader* | 19 | 0 | 0 | 457 |
| *FlexReader* | 69 | 0 | 0 | 407 |
| *FlowSightReader* | 20 | 0 | 0 | 456 |
| *FluoviewReader* | 49 | 0 | 0 | 427 |
| *FujiReader* | 23 | 0 | 0 | 453 |
| *GIFReader* | 19 | 0 | 0 | 457 |
| *GatanDM2Reader* | 30 | 0 | 0 | 446 |

Continued on next page

Table 18.1 – continued from previous page

| Reader | Supported | Unsupported | Partial | Unknown/Missing |
|---|---|---|---|---|
| *GatanReader* | 36 | 0 | 0 | 440 |
| *GelReader* | 21 | 0 | 0 | 455 |
| *HISReader* | 27 | 0 | 0 | 449 |
| *HRDGDFReader* | 21 | 0 | 0 | 455 |
| *HamamatsuVMSReader* | 26 | 0 | 0 | 450 |
| *HitachiReader* | 31 | 0 | 0 | 445 |
| *I2IReader* | 19 | 0 | 0 | 457 |
| *ICSReader* | 72 | 0 | 0 | 404 |
| *IM3Reader* | 19 | 0 | 0 | 457 |
| *IMODReader* | 44 | 0 | 0 | 432 |
| *INRReader* | 22 | 0 | 0 | 454 |
| *IPLabReader* | 31 | 0 | 0 | 445 |
| *IPWReader* | 20 | 0 | 0 | 456 |
| *ImaconReader* | 23 | 0 | 0 | 453 |
| *ImageIOReader* | 19 | 0 | 0 | 457 |
| *ImagicReader* | 22 | 0 | 0 | 454 |
| *ImarisHDFReader* | 23 | 0 | 0 | 453 |
| *ImarisReader* | 32 | 0 | 0 | 444 |
| *ImarisTiffReader* | 23 | 0 | 0 | 453 |
| *ImprovisionTiffReader* | 25 | 0 | 0 | 451 |
| *ImspectorReader* | 19 | 0 | 0 | 457 |
| *InCell3000Reader* | 19 | 0 | 0 | 457 |
| *InCellReader* | 67 | 0 | 0 | 409 |
| *InveonReader* | 30 | 0 | 0 | 446 |
| *IvisionReader* | 34 | 0 | 0 | 442 |
| *JEOLReader* | 19 | 0 | 0 | 457 |
| *JPEG2000Reader* | 19 | 0 | 0 | 457 |
| *JPEGReader* | 19 | 0 | 0 | 457 |
| *JPKReader* | 19 | 0 | 0 | 457 |
| *JPXReader* | 19 | 0 | 0 | 457 |
| *KhorosReader* | 19 | 0 | 0 | 457 |
| *KodakReader* | 26 | 0 | 0 | 450 |
| *L2DReader* | 29 | 0 | 0 | 447 |
| *LEOReader* | 27 | 0 | 0 | 449 |
| *LIFReader* | 85 | 0 | 0 | 391 |
| *LIMReader* | 19 | 0 | 0 | 457 |
| *LegacyND2Reader* | 19 | 0 | 0 | 457 |
| *LegacyQTReader* | 19 | 0 | 0 | 457 |
| *LeicaReader* | 56 | 0 | 0 | 420 |
| *LeicaSCNReader* | 33 | 0 | 0 | 443 |
| *LiFlimReader* | 25 | 0 | 0 | 451 |
| *MIASReader* | 65 | 0 | 0 | 411 |
| *MINCReader* | 23 | 0 | 0 | 453 |
| *MNGReader* | 19 | 0 | 0 | 457 |
| *MRCReader* | 22 | 0 | 0 | 454 |
| *MRWReader* | 19 | 0 | 0 | 457 |
| *MetamorphReader* | 46 | 0 | 0 | 430 |
| *MetamorphTiffReader* | 38 | 0 | 0 | 438 |
| *MicromanagerReader* | 41 | 0 | 0 | 435 |
| *MinimalTiffReader* | 19 | 0 | 0 | 457 |
| *MolecularImagingReader* | 21 | 0 | 0 | 455 |
| *NAFReader* | 19 | 0 | 0 | 457 |
| *ND2Reader* | 19 | 0 | 0 | 457 |
| *NDPIReader* | 28 | 0 | 0 | 448 |
| *NDPISReader* | 19 | 0 | 0 | 457 |
| *NRRDReader* | 22 | 0 | 0 | 454 |
| *NativeND2Reader* | 52 | 0 | 0 | 424 |
| *NativeQTReader* | 19 | 0 | 0 | 457 |

Continued on next page

Table 18.1 – continued from previous page

| Reader | Supported | Unsupported | Partial | Unknown/Missing |
|---|---|---|---|---|
| *NiftiReader* | 24 | 0 | 0 | 452 |
| *NikonElementsTiffReader* | 50 | 0 | 0 | 426 |
| *NikonReader* | 19 | 0 | 0 | 457 |
| *NikonTiffReader* | 47 | 0 | 0 | 429 |
| *OBFReader* | 19 | 0 | 0 | 457 |
| *OMETiffReader* | 19 | 0 | 0 | 457 |
| *OMEXMLReader* | 19 | 0 | 0 | 457 |
| *OpenlabRawReader* | 19 | 0 | 0 | 457 |
| *OpenlabReader* | 32 | 0 | 0 | 444 |
| *OperettaReader* | 43 | 0 | 0 | 433 |
| *OxfordInstrumentsReader* | 22 | 0 | 0 | 454 |
| *PCIReader* | 29 | 0 | 0 | 447 |
| *PCORAWReader* | 26 | 0 | 0 | 450 |
| *PCXReader* | 19 | 0 | 0 | 457 |
| *PDSReader* | 23 | 0 | 0 | 453 |
| *PGMReader* | 19 | 0 | 0 | 457 |
| *PQBinReader* | 21 | 0 | 0 | 455 |
| *PSDReader* | 19 | 0 | 0 | 457 |
| *PerkinElmerReader* | 30 | 0 | 0 | 446 |
| *PhotoshopTiffReader* | 19 | 0 | 0 | 457 |
| *PictReader* | 19 | 0 | 0 | 457 |
| *PovrayReader* | 19 | 0 | 0 | 457 |
| *PrairieReader* | 46 | 0 | 0 | 430 |
| *PyramidTiffReader* | 19 | 0 | 0 | 457 |
| *QTReader* | 19 | 0 | 0 | 457 |
| *QuesantReader* | 22 | 0 | 0 | 454 |
| *RHKReader* | 22 | 0 | 0 | 454 |
| *SBIGReader* | 22 | 0 | 0 | 454 |
| *SDTReader* | 19 | 0 | 0 | 457 |
| *SEQReader* | 19 | 0 | 0 | 457 |
| *SIFReader* | 20 | 0 | 0 | 456 |
| *SISReader* | 33 | 0 | 0 | 443 |
| *SMCameraReader* | 19 | 0 | 0 | 457 |
| *SPCReader* | 19 | 0 | 0 | 457 |
| *SPEReader* | 30 | 0 | 0 | 446 |
| *SVSReader* | 29 | 0 | 0 | 447 |
| *ScanrReader* | 43 | 0 | 0 | 433 |
| *ScreenReader* | 34 | 0 | 0 | 442 |
| *SeikoReader* | 22 | 0 | 0 | 454 |
| *SimplePCITiffReader* | 33 | 0 | 0 | 443 |
| *SlidebookReader* | 34 | 0 | 0 | 442 |
| *SlidebookTiffReader* | 30 | 0 | 0 | 446 |
| *SpiderReader* | 21 | 0 | 0 | 455 |
| *TCSReader* | 22 | 0 | 0 | 454 |
| *TargaReader* | 20 | 0 | 0 | 456 |
| *TextReader* | 19 | 0 | 0 | 457 |
| *TiffDelegateReader* | 19 | 0 | 0 | 457 |
| *TiffJAIReader* | 19 | 0 | 0 | 457 |
| *TiffReader* | 22 | 0 | 0 | 454 |
| *TileJPEGReader* | 19 | 0 | 0 | 457 |
| *TillVisionReader* | 22 | 0 | 0 | 454 |
| *TopometrixReader* | 22 | 0 | 0 | 454 |
| *TrestleReader* | 27 | 0 | 0 | 449 |
| *UBMReader* | 19 | 0 | 0 | 457 |
| *UnisokuReader* | 22 | 0 | 0 | 454 |
| *VGSAMReader* | 19 | 0 | 0 | 457 |
| *VarianFDFReader* | 25 | 0 | 0 | 451 |
| *VeecoReader* | 19 | 0 | 0 | 457 |

Continued on next page

Table 18.1 – continued from previous page

| Reader | Supported | Unsupported | Partial | Unknown/Missing |
|---|---|---|---|---|
| *VisitechReader* | 19 | 0 | 0 | 457 |
| *VolocityClippingReader* | 19 | 0 | 0 | 457 |
| *VolocityReader* | 38 | 0 | 0 | 438 |
| *WATOPReader* | 22 | 0 | 0 | 454 |
| *WlzReader* | 26 | 0 | 0 | 450 |
| *ZeissCZIReader* | 158 | 0 | 0 | 318 |
| *ZeissLMSReader* | 23 | 0 | 0 | 453 |
| *ZeissLSMReader* | 101 | 0 | 0 | 375 |
| *ZeissTIFFReader* | 19 | 0 | 0 | 457 |
| *ZeissZVIReader* | 19 | 0 | 0 | 457 |
| *ZipReader* | 19 | 0 | 0 | 457 |

## 18.2 Metadata fields

| Field | Supported | Unsupported | Partial | Unknown/Missing |
|---|---|---|---|---|
| Arc - ID[1] | 0 | 0 | 0 | 169 |
| Arc - LotNumber[2] | 1 | 0 | 0 | 168 |
| Arc - Manufacturer[3] | 1 | 0 | 0 | 168 |
| Arc - Model[4] | 1 | 0 | 0 | 168 |
| Arc - Power[5] | 1 | 0 | 0 | 168 |
| Arc - SerialNumber[6] | 1 | 0 | 0 | 168 |
| Arc - Type[7] | 0 | 0 | 0 | 169 |
| BooleanAnnotation - AnnotationRef[8] | 0 | 0 | 0 | 169 |
| BooleanAnnotation - Description[9] | 0 | 0 | 0 | 169 |
| BooleanAnnotation - ID[10] | 1 | 0 | 0 | 168 |
| BooleanAnnotation - Namespace[11] | 1 | 0 | 0 | 168 |
| BooleanAnnotation - Value[12] | 1 | 0 | 0 | 168 |
| Channel - AcquisitionMode[13] | 4 | 0 | 0 | 165 |
| Channel - AnnotationRef[14] | 0 | 0 | 0 | 169 |
| Channel - Color[15] | 8 | 0 | 0 | 161 |
| Channel - ContrastMethod[16] | 0 | 0 | 0 | 169 |
| Channel - EmissionWavelength[17] | 18 | 0 | 0 | 151 |

Continued on next page

---

[1] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSource_ID

[2] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_LotNumber

[3] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer

[4] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model

[5] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSource_Power

[6] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber

[7] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Arc_Type

[8] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID

[9] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Description

[10] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_ID

[11] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Namespace

[12] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#BooleanAnnotation_Value

[13] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_AcquisitionMode

[14] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID

[15] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Color

[16] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ContrastMethod

[17] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_EmissionWavelength

Table 18.2 – continued from previous page

| Field | Supported | Unsupported | Partial | Unknown/Missing |
|---|---|---|---|---|
| Channel - ExcitationWavelength[18] | 17 | 0 | 0 | 152 |
| Channel - FilterSetRef[19] | 1 | 0 | 0 | 168 |
| Channel - Fluor[20] | 1 | 0 | 0 | 168 |
| Channel - ID[21] | 169 | 0 | 0 | 0 |
| Channel - IlluminationType[22] | 3 | 0 | 0 | 166 |
| Channel - LightSourceSettingsAttenuation[23] | 1 | 0 | 0 | 168 |
| Channel - LightSourceSettingsID[24] | 5 | 0 | 0 | 164 |
| Channel - LightSourceSettingsWavelength[25] | 2 | 0 | 0 | 167 |
| Channel - NDFilter[26] | 2 | 0 | 0 | 167 |
| Channel - Name[27] | 33 | 0 | 0 | 136 |
| Channel - PinholeSize[28] | 10 | 0 | 0 | 159 |
| Channel - PockelCellSetting[29] | 0 | 0 | 0 | 169 |
| Channel - SamplesPerPixel[30] | 169 | 0 | 0 | 0 |
| CommentAnnotation - AnnotationRef[31] | 0 | 0 | 0 | 169 |
| CommentAnnotation - Description[32] | 0 | 0 | 0 | 169 |
| CommentAnnotation - ID[33] | 1 | 0 | 0 | 168 |
| CommentAnnotation - Namespace[34] | 1 | 0 | 0 | 168 |
| CommentAnnotation - Value[35] | 1 | 0 | 0 | 168 |
| Dataset - AnnotationRef[36] | 0 | 0 | 0 | 169 |
| Dataset - Description[37] | 0 | 0 | 0 | 169 |
| Dataset - ExperimenterGroupRef[38] | 0 | 0 | 0 | 169 |

Continued on next page

---

[18] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ExcitationWavelength
[19] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#FilterSetRef_ID
[20] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Fluor
[21] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[22] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_IlluminationType
[23] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSourceSettings_Attenuation
[24] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSourceSettings_ID
[25] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSourceSettings_Wavelength
[26] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_NDFilter
[27] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[28] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_PinholeSize
[29] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_PockelCellSetting
[30] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[31] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID
[32] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Description
[33] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_ID
[34] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Namespace
[35] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#CommentAnnotation_Value
[36] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID
[37] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Dataset_Description
[38] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ExperimenterGroupRef_ID

Table 18.2 – continued from previous page

| Field | Supported | Unsupported | Partial | Unknown/Missing |
|---|---|---|---|---|
| Dataset - ExperimenterRef[39] | 0 | 0 | 0 | 169 |
| Dataset - ID[40] | 0 | 0 | 0 | 169 |
| Dataset - ImageRef[41] | 0 | 0 | 0 | 169 |
| Dataset - Name[42] | 0 | 0 | 0 | 169 |
| Detector - AmplificationGain[43] | 2 | 0 | 0 | 167 |
| Detector - AnnotationRef[44] | 0 | 0 | 0 | 169 |
| Detector - Gain[45] | 6 | 0 | 0 | 163 |
| Detector - ID[46] | 35 | 0 | 0 | 134 |
| Detector - LotNumber[47] | 1 | 0 | 0 | 168 |
| Detector - Manufacturer[48] | 5 | 0 | 0 | 164 |
| Detector - Model[49] | 14 | 0 | 0 | 155 |
| Detector - Offset[50] | 6 | 0 | 0 | 163 |
| Detector - SerialNumber[51] | 4 | 0 | 0 | 165 |
| Detector - Type[52] | 28 | 0 | 0 | 141 |
| Detector - Voltage[53] | 2 | 0 | 0 | 167 |
| Detector - Zoom[54] | 4 | 0 | 0 | 165 |
| DetectorSettings - Binning[55] | 18 | 0 | 0 | 151 |
| DetectorSettings - Gain[56] | 20 | 0 | 0 | 149 |
| DetectorSettings - ID[57] | 33 | 0 | 0 | 136 |
| DetectorSettings - Offset[58] | 9 | 0 | 0 | 160 |
| DetectorSettings - ReadOutRate[59] | 5 | 0 | 0 | 164 |
| DetectorSettings - Voltage[60] | 6 | 0 | 0 | 163 |
| Dichroic - AnnotationRef[61] | 0 | 0 | 0 | 169 |
| Dichroic - ID[62] | 6 | 0 | 0 | 163 |

Continued on next page

---

[39] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ExperimenterRef_ID
[40] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Dataset_ID
[41] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImageRef_ID
[42] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Dataset_Name
[43] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_AmplificationGain
[44] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID
[45] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Gain
[46] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[47] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_LotNumber
[48] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer
[49] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[50] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Offset
[51] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber
[52] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type
[53] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Voltage
[54] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Zoom
[55] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Binning
[56] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Gain
[57] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[58] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Offset
[59] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ReadOutRate
[60] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Voltage
[61] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID
[62] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Dichroic_ID

Table 18.2 – continued from previous page

| Field | Supported | Unsupported | Partial | Unknown/Missing |
|---|---|---|---|---|
| Dichroic - LotNumber[63] | 1 | 0 | 0 | 168 |
| Dichroic - Manufacturer[64] | 1 | 0 | 0 | 168 |
| Dichroic - Model[65] | 6 | 0 | 0 | 163 |
| Dichroic - SerialNumber[66] | 1 | 0 | 0 | 168 |
| DoubleAnnotation - AnnotationRef[67] | 0 | 0 | 0 | 169 |
| DoubleAnnotation - Description[68] | 0 | 0 | 0 | 169 |
| DoubleAnnotation - ID[69] | 1 | 0 | 0 | 168 |
| DoubleAnnotation - Namespace[70] | 1 | 0 | 0 | 168 |
| DoubleAnnotation - Value[71] | 1 | 0 | 0 | 168 |
| Ellipse - FillColor[72] | 0 | 0 | 0 | 169 |
| Ellipse - FillRule[73] | 0 | 0 | 0 | 169 |
| Ellipse - FontFamily[74] | 0 | 0 | 0 | 169 |
| Ellipse - FontSize[75] | 2 | 0 | 0 | 167 |
| Ellipse - FontStyle[76] | 0 | 0 | 0 | 169 |
| Ellipse - ID[77] | 6 | 0 | 0 | 163 |
| Ellipse - Locked[78] | 0 | 0 | 0 | 169 |
| Ellipse - RadiusX[79] | 6 | 0 | 0 | 163 |
| Ellipse - RadiusY[80] | 6 | 0 | 0 | 163 |
| Ellipse - StrokeColor[81] | 0 | 0 | 0 | 169 |
| Ellipse - StrokeDashArray[82] | 0 | 0 | 0 | 169 |
| Ellipse - StrokeWidth[83] | 2 | 0 | 0 | 167 |
| Ellipse - Text[84] | 3 | 0 | 0 | 166 |
| Ellipse - TheC[85] | 0 | 0 | 0 | 169 |
| Ellipse - TheT[86] | 2 | 0 | 0 | 167 |
| Ellipse - TheZ[87] | 2 | 0 | 0 | 167 |

Continued on next page

---

[63] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_LotNumber
[64] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer
[65] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[66] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber
[67] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID
[68] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Description
[69] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_ID
[70] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Namespace
[71] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DoubleAnnotation_Value
[72] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FillColor
[73] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FillRule
[74] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontFamily
[75] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontSize
[76] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontStyle
[77] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[78] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Locked
[79] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_RadiusX
[80] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_RadiusY
[81] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeColor
[82] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeDashArray
[83] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeWidth
[84] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Text
[85] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheC
[86] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheT
[87] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheZ

Table 18.2 – continued from previous page

| Field | Supported | Unsupported | Partial | Unknown/Missing |
|---|---|---|---|---|
| Ellipse - Transform[88] | 2 | 0 | 0 | 167 |
| Ellipse - X[89] | 6 | 0 | 0 | 163 |
| Ellipse - Y[90] | 6 | 0 | 0 | 163 |
| Experiment - AnnotationRef[91] | 0 | 0 | 0 | 169 |
| Experiment - Description[92] | 1 | 0 | 0 | 168 |
| Experiment - ExperimenterRef[93] | 0 | 0 | 0 | 169 |
| Experiment - ID[94] | 5 | 0 | 0 | 164 |
| Experiment - Type[95] | 5 | 0 | 0 | 164 |
| Experimenter - AnnotationRef[96] | 0 | 0 | 0 | 169 |
| Experimenter - Email[97] | 2 | 0 | 0 | 167 |
| Experimenter - FirstName[98] | 5 | 0 | 0 | 164 |
| Experimenter - ID[99] | 11 | 0 | 0 | 158 |
| Experimenter - Institution[100] | 4 | 0 | 0 | 165 |
| Experimenter - LastName[101] | 9 | 0 | 0 | 160 |
| Experimenter - MiddleName[102] | 1 | 0 | 0 | 168 |
| Experimenter - UserName[103] | 3 | 0 | 0 | 166 |
| ExperimenterGroup - AnnotationRef[104] | 0 | 0 | 0 | 169 |
| ExperimenterGroup - Description[105] | 0 | 0 | 0 | 169 |
| ExperimenterGroup - ExperimenterRef[106] | 0 | 0 | 0 | 169 |
| ExperimenterGroup - ID[107] | 0 | 0 | 0 | 169 |
| ExperimenterGroup - Leader[108] | 0 | 0 | 0 | 169 |
| ExperimenterGroup - Name[109] | 0 | 0 | 0 | 169 |

Continued on next page

---

[88] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Transform
[89] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_X
[90] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_Y
[91] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID
[92] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experiment_Description
[93] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ExperimenterRef_ID
[94] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experiment_ID
[95] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experiment_Type
[96] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID
[97] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_Email
[98] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_FirstName
[99] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_ID
[100] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_Institution
[101] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_LastName
[102] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_MiddleName
[103] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_UserName
[104] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID
[105] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ExperimenterGroup_Description
[106] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ExperimenterRef_ID
[107] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ExperimenterGroup_ID
[108] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Leader_ID
[109] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ExperimenterGroup_Name

Table 18.2 – continued from previous page

| Field | Supported | Unsupported | Partial | Unknown/Missing |
|---|---|---|---|---|
| Filament - ID[110] | 0 | 0 | 0 | 169 |
| Filament - LotNumber[111] | 1 | 0 | 0 | 168 |
| Filament - Manufacturer[112] | 1 | 0 | 0 | 168 |
| Filament - Model[113] | 1 | 0 | 0 | 168 |
| Filament - Power[114] | 1 | 0 | 0 | 168 |
| Filament - SerialNumber[115] | 1 | 0 | 0 | 168 |
| Filament - Type[116] | 0 | 0 | 0 | 169 |
| FileAnnotation - AnnotationRef[117] | 0 | 0 | 0 | 169 |
| FileAnnotation - Description[118] | 0 | 0 | 0 | 169 |
| FileAnnotation - ID[119] | 0 | 0 | 0 | 169 |
| FileAnnotation - Namespace[120] | 0 | 0 | 0 | 169 |
| Filter - AnnotationRef[121] | 0 | 0 | 0 | 169 |
| Filter - FilterWheel[122] | 2 | 0 | 0 | 167 |
| Filter - ID[123] | 8 | 0 | 0 | 161 |
| Filter - LotNumber[124] | 1 | 0 | 0 | 168 |
| Filter - Manufacturer[125] | 1 | 0 | 0 | 168 |
| Filter - Model[126] | 8 | 0 | 0 | 161 |
| Filter - SerialNumber[127] | 1 | 0 | 0 | 168 |
| Filter - Type[128] | 2 | 0 | 0 | 167 |
| FilterSet - DichroicRef[129] | 2 | 0 | 0 | 167 |
| FilterSet - EmissionFilterRef[130] | 2 | 0 | 0 | 167 |
| FilterSet - ExcitationFilterRef[131] | 2 | 0 | 0 | 167 |
| FilterSet - ID[132] | 2 | 0 | 0 | 167 |

Continued on next page

---

[110] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSource_ID
[111] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_LotNumber
[112] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer
[113] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[114] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSource_Power
[115] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber
[116] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Filament_Type
[117] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID
[118] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Description
[119] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_ID
[120] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Namespace
[121] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID
[122] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Filter_FilterWheel
[123] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Filter_ID
[124] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_LotNumber
[125] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer
[126] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[127] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber
[128] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Filter_Type
[129] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DichroicRef_ID
[130] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#FilterRef_ID
[131] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#FilterRef_ID
[132] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#FilterSet_ID

Table 18.2 – continued from previous page

| Field | Supported | Unsupported | Partial | Unknown/Missing |
|---|---|---|---|---|
| FilterSet - LotNumber[133] | 1 | 0 | 0 | 168 |
| FilterSet - Manufacturer[134] | 1 | 0 | 0 | 168 |
| FilterSet - Model[135] | 2 | 0 | 0 | 167 |
| FilterSet - SerialNumber[136] | 1 | 0 | 0 | 168 |
| Folder - AnnotationRef[137] | 0 | 0 | 0 | 169 |
| Folder - Description[138] | 0 | 0 | 0 | 169 |
| Folder - FolderRef[139] | 0 | 0 | 0 | 169 |
| Folder - ID[140] | 0 | 0 | 0 | 169 |
| Folder - ImageRef[141] | 0 | 0 | 0 | 169 |
| Folder - Name[142] | 0 | 0 | 0 | 169 |
| Folder - ROIRef[143] | 0 | 0 | 0 | 169 |
| Image - AcquisitionDate[144] | 169 | 0 | 0 | 0 |
| Image - AnnotationRef[145] | 1 | 0 | 0 | 168 |
| Image - Description[146] | 44 | 0 | 0 | 125 |
| Image - ExperimentRef[147] | 2 | 0 | 0 | 167 |
| Image - ExperimenterGroupRef[148] | 0 | 0 | 0 | 169 |
| Image - ExperimenterRef[149] | 6 | 0 | 0 | 163 |
| Image - ID[150] | 169 | 0 | 0 | 0 |
| Image - InstrumentRef[151] | 45 | 0 | 0 | 124 |
| Image - MicrobeamManipulationRef[152] | 0 | 0 | 0 | 169 |
| Image - Name[153] | 169 | 0 | 0 | 0 |
| Image - ROIRef[154] | 14 | 0 | 0 | 155 |
| ImagingEnvironment - AirPressure[155] | 1 | 0 | 0 | 168 |

Continued on next page

---

[133] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_LotNumber
[134] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer
[135] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[136] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber
[137] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID
[138] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Folder_Description
[139] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#FolderRef_ID
[140] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Folder_ID
[141] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImageRef_ID
[142] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Folder_Name
[143] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROIRef_ID
[144] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[145] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID
[146] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[147] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ExperimentRef_ID
[148] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ExperimenterGroupRef_ID
[149] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ExperimenterRef_ID
[150] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[151] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[152] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#MicrobeamManipulationRef_ID
[153] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[154] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROIRef_ID
[155] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImagingEnvironment_AirPressure

Table 18.2 – continued from previous page

| Field | Supported | Unsupported | Partial | Unknown/Missing |
|---|---|---|---|---|
| ImagingEnvironment - CO2Percent[156] | 1 | 0 | 0 | 168 |
| ImagingEnvironment - Humidity[157] | 1 | 0 | 0 | 168 |
| ImagingEnvironment - Temperature[158] | 10 | 0 | 0 | 159 |
| Instrument - AnnotationRef[159] | 0 | 0 | 0 | 169 |
| Instrument - ID[160] | 51 | 0 | 0 | 118 |
| Label - FillColor[161] | 0 | 0 | 0 | 169 |
| Label - FillRule[162] | 0 | 0 | 0 | 169 |
| Label - FontFamily[163] | 0 | 0 | 0 | 169 |
| Label - FontSize[164] | 2 | 0 | 0 | 167 |
| Label - FontStyle[165] | 0 | 0 | 0 | 169 |
| Label - ID[166] | 5 | 0 | 0 | 164 |
| Label - Locked[167] | 0 | 0 | 0 | 169 |
| Label - StrokeColor[168] | 0 | 0 | 0 | 169 |
| Label - StrokeDashArray[169] | 0 | 0 | 0 | 169 |
| Label - StrokeWidth[170] | 2 | 0 | 0 | 167 |
| Label - Text[171] | 5 | 0 | 0 | 164 |
| Label - TheC[172] | 0 | 0 | 0 | 169 |
| Label - TheT[173] | 0 | 0 | 0 | 169 |
| Label - TheZ[174] | 0 | 0 | 0 | 169 |
| Label - Transform[175] | 0 | 0 | 0 | 169 |
| Label - X[176] | 5 | 0 | 0 | 164 |
| Label - Y[177] | 5 | 0 | 0 | 164 |
| Laser - FrequencyMultiplication[178] | 0 | 0 | 0 | 169 |
| Laser - ID[179] | 9 | 0 | 0 | 160 |
| Laser - LaserMedium[180] | 8 | 0 | 0 | 161 |

Continued on next page

---

[156] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImagingEnvironment_CO2Percent
[157] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImagingEnvironment_Humidity
[158] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImagingEnvironment_Temperature
[159] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID
[160] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[161] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FillColor
[162] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FillRule
[163] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontFamily
[164] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontSize
[165] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontStyle
[166] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[167] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Locked
[168] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeColor
[169] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeDashArray
[170] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeWidth
[171] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Text
[172] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheC
[173] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheT
[174] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheZ
[175] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Transform
[176] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Label_X
[177] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Label_Y
[178] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_FrequencyMultiplication
[179] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSource_ID
[180] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_LaserMedium

Table 18.2 – continued from previous page

| Field | Supported | Unsupported | Partial | Unknown/Missing |
|---|---|---|---|---|
| Laser - LotNumber[181] | 1 | 0 | 0 | 168 |
| Laser - Manufacturer[182] | 2 | 0 | 0 | 167 |
| Laser - Model[183] | 4 | 0 | 0 | 165 |
| Laser - PockelCell[184] | 0 | 0 | 0 | 169 |
| Laser - Power[185] | 3 | 0 | 0 | 166 |
| Laser - Pulse[186] | 0 | 0 | 0 | 169 |
| Laser - Pump[187] | 0 | 0 | 0 | 169 |
| Laser - RepetitionRate[188] | 1 | 0 | 0 | 168 |
| Laser - SerialNumber[189] | 1 | 0 | 0 | 168 |
| Laser - Tuneable[190] | 0 | 0 | 0 | 169 |
| Laser - Type[191] | 8 | 0 | 0 | 161 |
| Laser - Wavelength[192] | 7 | 0 | 0 | 162 |
| LightEmittingDiode - ID[193] | 0 | 0 | 0 | 169 |
| LightEmittingDiode - LotNumber[194] | 1 | 0 | 0 | 168 |
| LightEmittingDiode - Manufacturer[195] | 1 | 0 | 0 | 168 |
| LightEmittingDiode - Model[196] | 1 | 0 | 0 | 168 |
| LightEmittingDiode - Power[197] | 1 | 0 | 0 | 168 |
| LightEmittingDiode - SerialNumber[198] | 1 | 0 | 0 | 168 |
| LightPath - AnnotationRef[199] | 0 | 0 | 0 | 169 |
| LightPath - DichroicRef[200] | 3 | 0 | 0 | 166 |
| LightPath - EmissionFilterRef[201] | 5 | 0 | 0 | 164 |
| LightPath - ExcitationFilterRef[202] | 1 | 0 | 0 | 168 |
| Line - FillColor[203] | 0 | 0 | 0 | 169 |

Continued on next page

---

[181] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_LotNumber
[182] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer
[183] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[184] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_PockelCell
[185] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSource_Power
[186] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_Pulse
[187] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pump_ID
[188] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_RepetitionRate
[189] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber
[190] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_Tuneable
[191] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_Type
[192] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_Wavelength
[193] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSource_ID
[194] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_LotNumber
[195] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer
[196] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[197] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSource_Power
[198] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber
[199] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID
[200] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DichroicRef_ID
[201] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#FilterRef_ID
[202] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#FilterRef_ID
[203] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FillColor

Table 18.2 – continued from previous page

| Field | Supported | Unsupported | Partial | Unknown/Missing |
|---|---|---|---|---|
| Line - FillRule[204] | 0 | 0 | 0 | 169 |
| Line - FontFamily[205] | 0 | 0 | 0 | 169 |
| Line - FontSize[206] | 2 | 0 | 0 | 167 |
| Line - FontStyle[207] | 0 | 0 | 0 | 169 |
| Line - ID[208] | 6 | 0 | 0 | 163 |
| Line - Locked[209] | 0 | 0 | 0 | 169 |
| Line - MarkerEnd[210] | 0 | 0 | 0 | 169 |
| Line - MarkerStart[211] | 0 | 0 | 0 | 169 |
| Line - StrokeColor[212] | 0 | 0 | 0 | 169 |
| Line - StrokeDashArray[213] | 0 | 0 | 0 | 169 |
| Line - StrokeWidth[214] | 2 | 0 | 0 | 167 |
| Line - Text[215] | 2 | 0 | 0 | 167 |
| Line - TheC[216] | 0 | 0 | 0 | 169 |
| Line - TheT[217] | 1 | 0 | 0 | 168 |
| Line - TheZ[218] | 1 | 0 | 0 | 168 |
| Line - Transform[219] | 1 | 0 | 0 | 168 |
| Line - X1[220] | 6 | 0 | 0 | 163 |
| Line - X2[221] | 6 | 0 | 0 | 163 |
| Line - Y1[222] | 6 | 0 | 0 | 163 |
| Line - Y2[223] | 6 | 0 | 0 | 163 |
| ListAnnotation - AnnotationRef[224] | 0 | 0 | 0 | 169 |
| ListAnnotation - Description[225] | 0 | 0 | 0 | 169 |
| ListAnnotation - ID[226] | 0 | 0 | 0 | 169 |
| ListAnnotation - Namespace[227] | 0 | 0 | 0 | 169 |
| LongAnnotation - AnnotationRef[228] | 0 | 0 | 0 | 169 |
| LongAnnotation - Description[229] | 0 | 0 | 0 | 169 |

Continued on next page

---

[204] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FillRule
[205] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontFamily
[206] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontSize
[207] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontStyle
[208] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[209] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Locked
[210] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_MarkerEnd
[211] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_MarkerStart
[212] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeColor
[213] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeDashArray
[214] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeWidth
[215] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Text
[216] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheC
[217] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheT
[218] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheZ
[219] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Transform
[220] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_X1
[221] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_X2
[222] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_Y1
[223] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_Y2
[224] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID
[225] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Description
[226] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_ID
[227] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Namespace
[228] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID
[229] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Description

Table 18.2 – continued from previous page

| Field | Supported | Unsupported | Partial | Unknown/Missing |
|---|---|---|---|---|
| LongAnnotation - ID[230] | 1 | 0 | 0 | 168 |
| LongAnnotation - Namespace[231] | 1 | 0 | 0 | 168 |
| LongAnnotation - Value[232] | 1 | 0 | 0 | 168 |
| Mask - BinData[233] | 3 | 0 | 0 | 166 |
| Mask - BinDataBigEndian[234] | 1 | 0 | 0 | 168 |
| Mask - BinDataBigLength[235] | 0 | 0 | 0 | 169 |
| Mask - BinDataCompression[236] | 0 | 0 | 0 | 169 |
| Mask - FillColor[237] | 1 | 0 | 0 | 168 |
| Mask - FillRule[238] | 0 | 0 | 0 | 169 |
| Mask - FontFamily[239] | 0 | 0 | 0 | 169 |
| Mask - FontSize[240] | 0 | 0 | 0 | 169 |
| Mask - Height[241] | 3 | 0 | 0 | 166 |
| Mask - ID[242] | 3 | 0 | 0 | 166 |
| Mask - Locked[243] | 0 | 0 | 0 | 169 |
| Mask - StrokeColor[244] | 1 | 0 | 0 | 168 |
| Mask - StrokeDashArray[245] | 0 | 0 | 0 | 169 |
| Mask - StrokeWidth[246] | 0 | 0 | 0 | 169 |
| Mask - Text[247] | 0 | 0 | 0 | 169 |
| Mask - TheC[248] | 0 | 0 | 0 | 169 |
| Mask - TheT[249] | 0 | 0 | 0 | 169 |
| Mask - TheZ[250] | 0 | 0 | 0 | 169 |
| Mask - Transform[251] | 0 | 0 | 0 | 169 |
| Mask - Width[252] | 3 | 0 | 0 | 166 |
| Mask - X[253] | 3 | 0 | 0 | 166 |
| Mask - Y[254] | 3 | 0 | 0 | 166 |

Continued on next page

---

[230] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_ID
[231] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Namespace
[232] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LongAnnotation_Value
[233] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#BinData
[234] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#BinData_BigEndian
[235] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#BinData_Length
[236] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#BinData_Compression
[237] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FillColor
[238] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FillRule
[239] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontFamily
[240] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontSize
[241] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Mask_Height
[242] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[243] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Locked
[244] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeColor
[245] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeDashArray
[246] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeWidth
[247] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Text
[248] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheC
[249] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheT
[250] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheZ
[251] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Transform
[252] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Mask_Width
[253] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Mask_X
[254] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Mask_Y

Table 18.2 – continued from previous page

| Field | Supported | Unsupported | Partial | Unknown/Missing |
|---|---|---|---|---|
| MicrobeamManipulation - ExperimenterRef[255] | 0 | 0 | 0 | 169 |
| MicrobeamManipulation - ID[256] | 0 | 0 | 0 | 169 |
| MicrobeamManipulation - ROIRef[257] | 0 | 0 | 0 | 169 |
| MicrobeamManipulation - Type[258] | 0 | 0 | 0 | 169 |
| MicrobeamManipulationLightSourceSettings - Attenuation[259] | 0 | 0 | 0 | 169 |
| MicrobeamManipulationLightSourceSettings - ID[260] | 0 | 0 | 0 | 169 |
| MicrobeamManipulationLightSourceSettings - Wavelength[261] | 0 | 0 | 0 | 169 |
| Microscope - LotNumber[262] | 1 | 0 | 0 | 168 |
| Microscope - Manufacturer[263] | 2 | 0 | 0 | 167 |
| Microscope - Model[264] | 12 | 0 | 0 | 157 |
| Microscope - SerialNumber[265] | 4 | 0 | 0 | 165 |
| Microscope - Type[266] | 3 | 0 | 0 | 166 |
| Objective - AnnotationRef[267] | 0 | 0 | 0 | 169 |
| Objective - CalibratedMagnification[268] | 9 | 0 | 0 | 160 |
| Objective - Correction[269] | 25 | 0 | 0 | 144 |
| Objective - ID[270] | 37 | 0 | 0 | 132 |
| Objective - Immersion[271] | 26 | 0 | 0 | 143 |
| Objective - Iris[272] | 2 | 0 | 0 | 167 |
| Objective - LensNA[273] | 21 | 0 | 0 | 148 |
| Objective - LotNumber[274] | 1 | 0 | 0 | 168 |
| Objective - Manufacturer[275] | 5 | 0 | 0 | 164 |

Continued on next page

---

[255] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ExperimenterRef_ID

[256] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#MicrobeamManipulation_ID

[257] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROIRef_ID

[258] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#MicrobeamManipulation_Type

[259] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSourceSettings_Attenuation

[260] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSourceSettings_ID

[261] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSourceSettings_Wavelength

[262] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_LotNumber

[263] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer

[264] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model

[265] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber

[266] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Microscope_Type

[267] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID

[268] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_CalibratedMagnification

[269] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Correction

[270] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID

[271] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion

[272] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Iris

[273] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_LensNA

[274] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_LotNumber

[275] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer

Table 18.2 – continued from previous page

| Field | Supported | Unsupported | Partial | Unknown/Missing |
|---|---|---|---|---|
| Objective - Model[276] | 13 | 0 | 0 | 156 |
| Objective - NominalMagnification[277] | 28 | 0 | 0 | 141 |
| Objective - SerialNumber[278] | 3 | 0 | 0 | 166 |
| Objective - WorkingDistance[279] | 10 | 0 | 0 | 159 |
| ObjectiveSettings - CorrectionCollar[280] | 1 | 0 | 0 | 168 |
| ObjectiveSettings - ID[281] | 32 | 0 | 0 | 137 |
| ObjectiveSettings - Medium[282] | 1 | 0 | 0 | 168 |
| ObjectiveSettings - RefractiveIndex[283] | 8 | 0 | 0 | 161 |
| Pixels - AnnotationRef[284] | 0 | 0 | 0 | 169 |
| Pixels - BigEndian[285] | 169 | 0 | 0 | 0 |
| Pixels - DimensionOrder[286] | 169 | 0 | 0 | 0 |
| Pixels - ID[287] | 169 | 0 | 0 | 0 |
| Pixels - Interleaved[288] | 169 | 0 | 0 | 0 |
| Pixels - PhysicalSizeX[289] | 87 | 0 | 0 | 82 |
| Pixels - PhysicalSizeY[290] | 87 | 0 | 0 | 82 |
| Pixels - PhysicalSizeZ[291] | 43 | 0 | 0 | 126 |
| Pixels - SignificantBits[292] | 169 | 0 | 0 | 0 |
| Pixels - SizeC[293] | 169 | 0 | 0 | 0 |
| Pixels - SizeT[294] | 169 | 0 | 0 | 0 |
| Pixels - SizeX[295] | 169 | 0 | 0 | 0 |
| Pixels - SizeY[296] | 169 | 0 | 0 | 0 |
| Pixels - SizeZ[297] | 169 | 0 | 0 | 0 |
| Pixels - TimeIncrement[298] | 16 | 0 | 0 | 153 |

Continued on next page

---

[276] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model

[277] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification

[278] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber

[279] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_WorkingDistance

[280] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_CorrectionCollar

[281] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID

[282] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_Medium

[283] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_RefractiveIndex

[284] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID

[285] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian

[286] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder

[287] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID

[288] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved

[289] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX

[290] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY

[291] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ

[292] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits

[293] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC

[294] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT

[295] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX

[296] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY

[297] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ

[298] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_TimeIncrement

Table 18.2 – continued from previous page

| Field | Supported | Unsupported | Partial | Unknown/Missing |
|---|---|---|---|---|
| Pixels - Type[299] | 169 | 0 | 0 | 0 |
| Plane - AnnotationRef[300] | 0 | 0 | 0 | 169 |
| Plane - DeltaT[301] | 24 | 0 | 0 | 145 |
| Plane - ExposureTime[302] | 31 | 0 | 0 | 138 |
| Plane - HashSHA1[303] | 0 | 0 | 0 | 169 |
| Plane - PositionX[304] | 29 | 0 | 0 | 140 |
| Plane - PositionY[305] | 29 | 0 | 0 | 140 |
| Plane - PositionZ[306] | 22 | 0 | 0 | 147 |
| Plane - TheC[307] | 169 | 0 | 0 | 0 |
| Plane - TheT[308] | 169 | 0 | 0 | 0 |
| Plane - TheZ[309] | 169 | 0 | 0 | 0 |
| Plate - AnnotationRef[310] | 0 | 0 | 0 | 169 |
| Plate - ColumnNamingConvention[311] | 8 | 0 | 0 | 161 |
| Plate - Columns[312] | 4 | 0 | 0 | 165 |
| Plate - Description[313] | 2 | 0 | 0 | 167 |
| Plate - ExternalIdentifier[314] | 3 | 0 | 0 | 166 |
| Plate - ID[315] | 11 | 0 | 0 | 158 |
| Plate - Name[316] | 10 | 0 | 0 | 159 |
| Plate - RowNamingConvention[317] | 8 | 0 | 0 | 161 |
| Plate - Rows[318] | 4 | 0 | 0 | 165 |
| Plate - Status[319] | 0 | 0 | 0 | 169 |
| Plate - WellOriginX[320] | 1 | 0 | 0 | 168 |
| Plate - WellOriginY[321] | 1 | 0 | 0 | 168 |
| PlateAcquisition - AnnotationRef[322] | 0 | 0 | 0 | 169 |
| PlateAcquisition - Description[323] | 0 | 0 | 0 | 169 |

Continued on next page

---

[299] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[300] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID
[301] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_DeltaT
[302] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[303] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_HashSHA1
[304] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[305] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[306] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionZ
[307] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[308] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[309] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[310] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID
[311] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_ColumnNamingConvention
[312] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_Columns
[313] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_Description
[314] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_ExternalIdentifier
[315] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_ID
[316] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_Name
[317] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_RowNamingConvention
[318] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_Rows
[319] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_Status
[320] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_WellOriginX
[321] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_WellOriginY
[322] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID
[323] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_Description

Table 18.2 – continued from previous page

| Field | Supported | Unsupported | Partial | Unknown/Missing |
|---|---|---|---|---|
| PlateAcquisition - EndTime[324] | 2 | 0 | 0 | 167 |
| PlateAcquisition - ID[325] | 8 | 0 | 0 | 161 |
| PlateAcquisition - MaximumFieldCount[326] | 8 | 0 | 0 | 161 |
| PlateAcquisition - Name[327] | 0 | 0 | 0 | 169 |
| PlateAcquisition - StartTime[328] | 3 | 0 | 0 | 166 |
| PlateAcquisition - WellSampleRef[329] | 7 | 0 | 0 | 162 |
| Point - FillColor[330] | 0 | 0 | 0 | 169 |
| Point - FillRule[331] | 0 | 0 | 0 | 169 |
| Point - FontFamily[332] | 0 | 0 | 0 | 169 |
| Point - FontSize[333] | 1 | 0 | 0 | 168 |
| Point - FontStyle[334] | 0 | 0 | 0 | 169 |
| Point - ID[335] | 4 | 0 | 0 | 165 |
| Point - Locked[336] | 0 | 0 | 0 | 169 |
| Point - StrokeColor[337] | 1 | 0 | 0 | 168 |
| Point - StrokeDashArray[338] | 1 | 0 | 0 | 168 |
| Point - StrokeWidth[339] | 2 | 0 | 0 | 167 |
| Point - Text[340] | 1 | 0 | 0 | 168 |
| Point - TheC[341] | 0 | 0 | 0 | 169 |
| Point - TheT[342] | 1 | 0 | 0 | 168 |
| Point - TheZ[343] | 2 | 0 | 0 | 167 |
| Point - Transform[344] | 0 | 0 | 0 | 169 |
| Point - X[345] | 4 | 0 | 0 | 165 |
| Point - Y[346] | 4 | 0 | 0 | 165 |
| Polygon - FillColor[347] | 0 | 0 | 0 | 169 |
| Polygon - FillRule[348] | 0 | 0 | 0 | 169 |

Continued on next page

---

[324] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_EndTime
[325] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_ID
[326] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_MaximumFieldCount
[327] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_Name
[328] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_StartTime
[329] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSampleRef_ID
[330] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FillColor
[331] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FillRule
[332] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontFamily
[333] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontSize
[334] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontStyle
[335] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[336] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Locked
[337] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeColor
[338] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeDashArray
[339] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeWidth
[340] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Text
[341] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheC
[342] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheT
[343] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheZ
[344] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Transform
[345] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Point_X
[346] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Point_Y
[347] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FillColor
[348] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FillRule

Table 18.2 – continued from previous page

| Field | Supported | Unsupported | Partial | Unknown/Missing |
|---|---|---|---|---|
| Polygon - FontFamily[349] | 0 | 0 | 0 | 169 |
| Polygon - FontSize[350] | 2 | 0 | 0 | 167 |
| Polygon - FontStyle[351] | 0 | 0 | 0 | 169 |
| Polygon - ID[352] | 8 | 0 | 0 | 161 |
| Polygon - Locked[353] | 0 | 0 | 0 | 169 |
| Polygon - Points[354] | 8 | 0 | 0 | 161 |
| Polygon - StrokeColor[355] | 1 | 0 | 0 | 168 |
| Polygon - StrokeDashArray[356] | 1 | 0 | 0 | 168 |
| Polygon - StrokeWidth[357] | 3 | 0 | 0 | 166 |
| Polygon - Text[358] | 2 | 0 | 0 | 167 |
| Polygon - TheC[359] | 0 | 0 | 0 | 169 |
| Polygon - TheT[360] | 1 | 0 | 0 | 168 |
| Polygon - TheZ[361] | 2 | 0 | 0 | 167 |
| Polygon - Transform[362] | 1 | 0 | 0 | 168 |
| Polyline - FillColor[363] | 0 | 0 | 0 | 169 |
| Polyline - FillRule[364] | 0 | 0 | 0 | 169 |
| Polyline - FontFamily[365] | 0 | 0 | 0 | 169 |
| Polyline - FontSize[366] | 2 | 0 | 0 | 167 |
| Polyline - FontStyle[367] | 0 | 0 | 0 | 169 |
| Polyline - ID[368] | 6 | 0 | 0 | 163 |
| Polyline - Locked[369] | 0 | 0 | 0 | 169 |
| Polyline - MarkerEnd[370] | 0 | 0 | 0 | 169 |
| Polyline - MarkerStart[371] | 0 | 0 | 0 | 169 |
| Polyline - Points[372] | 6 | 0 | 0 | 163 |

Continued on next page

---

[349] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontFamily

[350] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontSize

[351] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontStyle

[352] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID

[353] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Locked

[354] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Polygon_Points

[355] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeColor

[356] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeDashArray

[357] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeWidth

[358] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Text

[359] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheC

[360] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheT

[361] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheZ

[362] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Transform

[363] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FillColor

[364] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FillRule

[365] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontFamily

[366] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontSize

[367] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontStyle

[368] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID

[369] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Locked

[370] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Polyline_MarkerEnd

[371] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Polyline_MarkerStart

[372] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Polyline_Points

Table 18.2 – continued from previous page

| Field | Supported | Unsupported | Partial | Unknown/Missing |
|---|---|---|---|---|
| Polyline - StrokeColor[373] | 1 | 0 | 0 | 168 |
| Polyline - StrokeDashArray[374] | 1 | 0 | 0 | 168 |
| Polyline - StrokeWidth[375] | 3 | 0 | 0 | 166 |
| Polyline - Text[376] | 2 | 0 | 0 | 167 |
| Polyline - TheC[377] | 0 | 0 | 0 | 169 |
| Polyline - TheT[378] | 1 | 0 | 0 | 168 |
| Polyline - TheZ[379] | 2 | 0 | 0 | 167 |
| Polyline - Transform[380] | 1 | 0 | 0 | 168 |
| Project - AnnotationRef[381] | 0 | 0 | 0 | 169 |
| Project - DatasetRef[382] | 0 | 0 | 0 | 169 |
| Project - Description[383] | 0 | 0 | 0 | 169 |
| Project - ExperimenterGroupRef[384] | 0 | 0 | 0 | 169 |
| Project - ExperimenterRef[385] | 0 | 0 | 0 | 169 |
| Project - ID[386] | 0 | 0 | 0 | 169 |
| Project - Name[387] | 0 | 0 | 0 | 169 |
| ROI - AnnotationRef[388] | 0 | 0 | 0 | 169 |
| ROI - Description[389] | 1 | 0 | 0 | 168 |
| ROI - ID[390] | 14 | 0 | 0 | 155 |
| ROI - Name[391] | 4 | 0 | 0 | 165 |
| Reagent - AnnotationRef[392] | 0 | 0 | 0 | 169 |
| Reagent - Description[393] | 0 | 0 | 0 | 169 |
| Reagent - ID[394] | 0 | 0 | 0 | 169 |
| Reagent - Name[395] | 0 | 0 | 0 | 169 |
| Reagent - ReagentIdentifier[396] | 0 | 0 | 0 | 169 |

Continued on next page

---

[373] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeColor

[374] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeDashArray

[375] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeWidth

[376] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Text

[377] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheC

[378] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheT

[379] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheZ

[380] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Transform

[381] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID

[382] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DatasetRef_ID

[383] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Project_Description

[384] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ExperimenterGroupRef_ID

[385] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ExperimenterRef_ID

[386] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Project_ID

[387] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Project_Name

[388] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID

[389] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROI_Description

[390] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROI_ID

[391] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROI_Name

[392] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID

[393] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Reagent_Description

[394] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Reagent_ID

[395] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Reagent_Name

[396] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Reagent_ReagentIdentifier

Table 18.2 – continued from previous page

| Field | Supported | Unsupported | Partial | Unknown/Missing |
|---|---|---|---|---|
| Rectangle - FillColor[397] | 0 | 0 | 0 | 169 |
| Rectangle - FillRule[398] | 0 | 0 | 0 | 169 |
| Rectangle - FontFamily[399] | 0 | 0 | 0 | 169 |
| Rectangle - FontSize[400] | 2 | 0 | 0 | 167 |
| Rectangle - FontStyle[401] | 0 | 0 | 0 | 169 |
| Rectangle - Height[402] | 10 | 0 | 0 | 159 |
| Rectangle - ID[403] | 10 | 0 | 0 | 159 |
| Rectangle - Locked[404] | 0 | 0 | 0 | 169 |
| Rectangle - StrokeColor[405] | 1 | 0 | 0 | 168 |
| Rectangle - StrokeDashArray[406] | 0 | 0 | 0 | 169 |
| Rectangle - StrokeWidth[407] | 2 | 0 | 0 | 167 |
| Rectangle - Text[408] | 3 | 0 | 0 | 166 |
| Rectangle - TheC[409] | 1 | 0 | 0 | 168 |
| Rectangle - TheT[410] | 2 | 0 | 0 | 167 |
| Rectangle - TheZ[411] | 2 | 0 | 0 | 167 |
| Rectangle - Transform[412] | 1 | 0 | 0 | 168 |
| Rectangle - Width[413] | 10 | 0 | 0 | 159 |
| Rectangle - X[414] | 10 | 0 | 0 | 159 |
| Rectangle - Y[415] | 10 | 0 | 0 | 159 |
| Screen - AnnotationRef[416] | 0 | 0 | 0 | 169 |
| Screen - Description[417] | 0 | 0 | 0 | 169 |
| Screen - ID[418] | 1 | 0 | 0 | 168 |
| Screen - Name[419] | 1 | 0 | 0 | 168 |
| Screen - PlateRef[420] | 1 | 0 | 0 | 168 |

Continued on next page

---

[397] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FillColor

[398] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FillRule

[399] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontFamily

[400] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontSize

[401] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontStyle

[402] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Height

[403] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID

[404] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Locked

[405] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeColor

[406] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeDashArray

[407] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeWidth

[408] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Text

[409] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheC

[410] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheT

[411] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheZ

[412] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Transform

[413] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Width

[414] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_X

[415] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Y

[416] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID

[417] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Screen_Description

[418] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Screen_ID

[419] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Screen_Name

[420] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Screen_Screen_PlateRef_ID

Table 18.2 – continued from previous page

| Field | Supported | Unsupported | Partial | Unknown/Missing |
|---|---|---|---|---|
| Screen - ProtocolDescription[421] | 0 | 0 | 0 | 169 |
| Screen - ProtocolIdentifier[422] | 0 | 0 | 0 | 169 |
| Screen - ReagentSetDescription[423] | 0 | 0 | 0 | 169 |
| Screen - ReagentSetIdentifier[424] | 0 | 0 | 0 | 169 |
| Screen - Type[425] | 0 | 0 | 0 | 169 |
| StageLabel - Name[426] | 3 | 0 | 0 | 166 |
| StageLabel - X[427] | 2 | 0 | 0 | 167 |
| StageLabel - Y[428] | 2 | 0 | 0 | 167 |
| StageLabel - Z[429] | 3 | 0 | 0 | 166 |
| TagAnnotation - AnnotationRef[430] | 0 | 0 | 0 | 169 |
| TagAnnotation - Description[431] | 0 | 0 | 0 | 169 |
| TagAnnotation - ID[432] | 1 | 0 | 0 | 168 |
| TagAnnotation - Namespace[433] | 1 | 0 | 0 | 168 |
| TagAnnotation - Value[434] | 1 | 0 | 0 | 168 |
| TermAnnotation - AnnotationRef[435] | 0 | 0 | 0 | 169 |
| TermAnnotation - Description[436] | 0 | 0 | 0 | 169 |
| TermAnnotation - ID[437] | 1 | 0 | 0 | 168 |
| TermAnnotation - Namespace[438] | 1 | 0 | 0 | 168 |
| TermAnnotation - Value[439] | 1 | 0 | 0 | 168 |
| TiffData - FirstC[440] | 0 | 0 | 0 | 169 |
| TiffData - FirstT[441] | 0 | 0 | 0 | 169 |
| TiffData - FirstZ[442] | 0 | 0 | 0 | 169 |
| TiffData - IFD[443] | 0 | 0 | 0 | 169 |

Continued on next page

---

[421] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Screen_ProtocolDescription
[422] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Screen_ProtocolIdentifier
[423] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Screen_ReagentSetDescription
[424] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Screen_ReagentSetIdentifier
[425] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Screen_Type
[426] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#StageLabel_Name
[427] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#StageLabel_X
[428] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#StageLabel_Y
[429] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#StageLabel_Z
[430] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID
[431] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Description
[432] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_ID
[433] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Namespace
[434] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TagAnnotation_Value
[435] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID
[436] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Description
[437] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_ID
[438] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Namespace
[439] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TermAnnotation_Value
[440] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TiffData_FirstC
[441] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TiffData_FirstT
[442] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TiffData_FirstZ
[443] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TiffData_IFD

Table 18.2 – continued from previous page

| Field | Supported | Unsupported | Partial | Unknown/Missing |
|---|---|---|---|---|
| TiffData - PlaneCount[444] | 0 | 0 | 0 | 169 |
| TimestampAnnotation - AnnotationRef[445] | 0 | 0 | 0 | 169 |
| TimestampAnnotation - Description[446] | 0 | 0 | 0 | 169 |
| TimestampAnnotation - ID[447] | 1 | 0 | 0 | 168 |
| TimestampAnnotation - Namespace[448] | 1 | 0 | 0 | 168 |
| TimestampAnnotation - Value[449] | 1 | 0 | 0 | 168 |
| TransmittanceRange - CutIn[450] | 5 | 0 | 0 | 164 |
| TransmittanceRange - CutInTolerance[451] | 1 | 0 | 0 | 168 |
| TransmittanceRange - CutOut[452] | 5 | 0 | 0 | 164 |
| TransmittanceRange - CutOutTolerance[453] | 1 | 0 | 0 | 168 |
| TransmittanceRange - Transmittance[454] | 1 | 0 | 0 | 168 |
| UUID - FileName[455] | 0 | 0 | 0 | 169 |
| UUID - Value[456] | 0 | 0 | 0 | 169 |
| Well - AnnotationRef[457] | 0 | 0 | 0 | 169 |
| Well - Color[458] | 0 | 0 | 0 | 169 |
| Well - Column[459] | 12 | 0 | 0 | 157 |
| Well - ExternalDescription[460] | 0 | 0 | 0 | 169 |
| Well - ExternalIdentifier[461] | 1 | 0 | 0 | 168 |
| Well - ID[462] | 12 | 0 | 0 | 157 |
| Well - ReagentRef[463] | 0 | 0 | 0 | 169 |
| Well - Row[464] | 12 | 0 | 0 | 157 |
| Well - Type[465] | 0 | 0 | 0 | 169 |
| WellSample - AnnotationRef[466] | 0 | 0 | 0 | 169 |

Continued on next page

---

[444] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TiffData_PlaneCount

[445] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID

[446] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Description

[447] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_ID

[448] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Namespace

[449] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TimestampAnnotation_Value

[450] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TransmittanceRange_CutIn

[451] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TransmittanceRange_CutInTolerance

[452] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TransmittanceRange_CutOut

[453] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TransmittanceRange_CutOutTolerance

[454] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TransmittanceRange_Transmittance

[455] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TiffData_TiffData_UUID_FileName

[456] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#UniversallyUniqueIdentifier

[457] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID

[458] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Color

[459] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Column

[460] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_ExternalDescription

[461] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_ExternalIdentifier

[462] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_ID

[463] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ReagentRef_ID

[464] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Row

[465] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Type

[466] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID

Table 18.2 – continued from previous page

| Field | Supported | Unsupported | Partial | Unknown/Missing |
|---|---|---|---|---|
| WellSample - ID[467] | 12 | 0 | 0 | 157 |
| WellSample - ImageRef[468] | 11 | 0 | 0 | 158 |
| WellSample - Index[469] | 12 | 0 | 0 | 157 |
| WellSample - PositionX[470] | 5 | 0 | 0 | 164 |
| WellSample - PositionY[471] | 5 | 0 | 0 | 164 |
| WellSample - Timepoint[472] | 0 | 0 | 0 | 169 |
| XMLAnnotation - AnnotationRef[473] | 0 | 0 | 0 | 169 |
| XMLAnnotation - ID[474] | 1 | 0 | 0 | 168 |
| XMLAnnotation - Namespace[475] | 1 | 0 | 0 | 168 |
| XMLAnnotation - Value[476] | 1 | 0 | 0 | 168 |

### 18.2.1 AFIReader

This page lists supported metadata fields for the Bio-Formats Aperio AFI format reader.

These fields are from the OME data model[477]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 30 of them (6%).
- Of those, Bio-Formats fully or partially converts 30 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Aperio AFI format reader:**

- Channel : EmissionWavelength[478]
- Channel : ExcitationWavelength[479]
- Channel : ID[480]
- Channel : Name[481]
- Channel : SamplesPerPixel[482]

---

[467] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_ID
[468] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImageRef_ID
[469] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_Index
[470] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_PositionX
[471] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_PositionY
[472] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_Timepoint
[473] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID
[474] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_ID
[475] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Namespace
[476] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#XMLAnnotation_Value
[477] http://www.openmicroscopy.org/site/support/ome-model/
[478] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_EmissionWavelength
[479] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ExcitationWavelength
[480] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[481] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[482] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel

- Image : AcquisitionDate[483]
- Image : ID[484]
- Image : InstrumentRef[485]
- Image : Name[486]
- Instrument : ID[487]
- Objective : ID[488]
- Objective : NominalMagnification[489]
- ObjectiveSettings : ID[490]
- Pixels : BigEndian[491]
- Pixels : DimensionOrder[492]
- Pixels : ID[493]
- Pixels : Interleaved[494]
- Pixels : PhysicalSizeX[495]
- Pixels : PhysicalSizeY[496]
- Pixels : SignificantBits[497]
- Pixels : SizeC[498]
- Pixels : SizeT[499]
- Pixels : SizeX[500]
- Pixels : SizeY[501]
- Pixels : SizeZ[502]
- Pixels : Type[503]
- Plane : ExposureTime[504]
- Plane : TheC[505]
- Plane : TheT[506]
- Plane : TheZ[507]

**Total supported: 30**

**Total unknown or missing: 446**

---

[483] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[484] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[485] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[486] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[487] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[488] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[489] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[490] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[491] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[492] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[493] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[494] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[495] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[496] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[497] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[498] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[499] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[500] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[501] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[502] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[503] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[504] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[505] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[506] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[507] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ

### 18.2.2 AIMReader

This page lists supported metadata fields for the Bio-Formats AIM format reader.

These fields are from the OME data model[508]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 22 of them (4%).
- Of those, Bio-Formats fully or partially converts 22 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats AIM format reader:**

- Channel : ID[509]
- Channel : SamplesPerPixel[510]
- Image : AcquisitionDate[511]
- Image : ID[512]
- Image : Name[513]
- Pixels : BigEndian[514]
- Pixels : DimensionOrder[515]
- Pixels : ID[516]
- Pixels : Interleaved[517]
- Pixels : PhysicalSizeX[518]
- Pixels : PhysicalSizeY[519]
- Pixels : PhysicalSizeZ[520]
- Pixels : SignificantBits[521]
- Pixels : SizeC[522]
- Pixels : SizeT[523]
- Pixels : SizeX[524]
- Pixels : SizeY[525]
- Pixels : SizeZ[526]
- Pixels : Type[527]

---

[508] http://www.openmicroscopy.org/site/support/ome-model/
[509] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[510] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[511] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[512] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[513] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[514] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[515] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[516] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[517] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[518] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[519] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[520] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[521] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[522] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[523] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[524] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[525] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[526] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[527] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type

- Plane : TheC[528]
- Plane : TheT[529]
- Plane : TheZ[530]

**Total supported: 22**

**Total unknown or missing: 454**

### 18.2.3 APLReader

This page lists supported metadata fields for the Bio-Formats Olympus APL format reader.

These fields are from the OME data model[531]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 21 of them (4%).
- Of those, Bio-Formats fully or partially converts 21 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Olympus APL format reader:**

- Channel : ID[532]
- Channel : SamplesPerPixel[533]
- Image : AcquisitionDate[534]
- Image : ID[535]
- Image : Name[536]
- Pixels : BigEndian[537]
- Pixels : DimensionOrder[538]
- Pixels : ID[539]
- Pixels : Interleaved[540]
- Pixels : PhysicalSizeX[541]
- Pixels : PhysicalSizeY[542]
- Pixels : SignificantBits[543]
- Pixels : SizeC[544]
- Pixels : SizeT[545]

---

[528] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[529] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[530] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[531] http://www.openmicroscopy.org/site/support/ome-model/
[532] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[533] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[534] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[535] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[536] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[537] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[538] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[539] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[540] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[541] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[542] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[543] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[544] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[545] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT

- Pixels : SizeX[546]
- Pixels : SizeY[547]
- Pixels : SizeZ[548]
- Pixels : Type[549]
- Plane : TheC[550]
- Plane : TheT[551]
- Plane : TheZ[552]

**Total supported: 21**

**Total unknown or missing: 455**

### 18.2.4 APNGReader

This page lists supported metadata fields for the Bio-Formats Animated PNG format reader.

These fields are from the OME data model[553]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Animated PNG format reader:**

- Channel : ID[554]
- Channel : SamplesPerPixel[555]
- Image : AcquisitionDate[556]
- Image : ID[557]
- Image : Name[558]
- Pixels : BigEndian[559]
- Pixels : DimensionOrder[560]
- Pixels : ID[561]
- Pixels : Interleaved[562]
- Pixels : SignificantBits[563]

---

[546] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[547] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[548] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[549] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[550] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[551] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[552] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[553] http://www.openmicroscopy.org/site/support/ome-model/
[554] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[555] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[556] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[557] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[558] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[559] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[560] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[561] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[562] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[563] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits

- Pixels : SizeC[564]
- Pixels : SizeT[565]
- Pixels : SizeX[566]
- Pixels : SizeY[567]
- Pixels : SizeZ[568]
- Pixels : Type[569]
- Plane : TheC[570]
- Plane : TheT[571]
- Plane : TheZ[572]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.5 ARFReader

This page lists supported metadata fields for the Bio-Formats ARF format reader.

These fields are from the OME data model[573]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats ARF format reader:**

- Channel : ID[574]
- Channel : SamplesPerPixel[575]
- Image : AcquisitionDate[576]
- Image : ID[577]
- Image : Name[578]
- Pixels : BigEndian[579]
- Pixels : DimensionOrder[580]
- Pixels : ID[581]

---

[564] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[565] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[566] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[567] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[568] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[569] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[570] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[571] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[572] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[573] http://www.openmicroscopy.org/site/support/ome-model/
[574] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[575] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[576] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[577] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[578] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[579] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[580] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[581] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID

- Pixels : Interleaved[582]
- Pixels : SignificantBits[583]
- Pixels : SizeC[584]
- Pixels : SizeT[585]
- Pixels : SizeX[586]
- Pixels : SizeY[587]
- Pixels : SizeZ[588]
- Pixels : Type[589]
- Plane : TheC[590]
- Plane : TheT[591]
- Plane : TheZ[592]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.6 AVIReader

This page lists supported metadata fields for the Bio-Formats Audio Video Interleave format reader.

These fields are from the OME data model[593]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Audio Video Interleave format reader:**

- Channel : ID[594]
- Channel : SamplesPerPixel[595]
- Image : AcquisitionDate[596]
- Image : ID[597]
- Image : Name[598]
- Pixels : BigEndian[599]

---

[582] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved

[583] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits

[584] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC

[585] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT

[586] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX

[587] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY

[588] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ

[589] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type

[590] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC

[591] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT

[592] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ

[593] http://www.openmicroscopy.org/site/support/ome-model/

[594] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID

[595] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel

[596] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate

[597] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID

[598] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name

[599] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian

- Pixels : DimensionOrder[600]
- Pixels : ID[601]
- Pixels : Interleaved[602]
- Pixels : SignificantBits[603]
- Pixels : SizeC[604]
- Pixels : SizeT[605]
- Pixels : SizeX[606]
- Pixels : SizeY[607]
- Pixels : SizeZ[608]
- Pixels : Type[609]
- Plane : TheC[610]
- Plane : TheT[611]
- Plane : TheZ[612]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.7 AliconaReader

This page lists supported metadata fields for the Bio-Formats Alicona AL3D format reader.

These fields are from the OME data model[613]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 33 of them (6%).
- Of those, Bio-Formats fully or partially converts 33 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Alicona AL3D format reader:**

- Channel : ID[614]
- Channel : SamplesPerPixel[615]
- Detector : ID[616]
- Detector : Type[617]

---

[600] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[601] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[602] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[603] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[604] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[605] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[606] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[607] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[608] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[609] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[610] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[611] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[612] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[613] http://www.openmicroscopy.org/site/support/ome-model/
[614] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[615] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[616] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[617] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type

- DetectorSettings : ID[618]
- DetectorSettings : Voltage[619]
- Image : AcquisitionDate[620]
- Image : ID[621]
- Image : InstrumentRef[622]
- Image : Name[623]
- Instrument : ID[624]
- Objective : CalibratedMagnification[625]
- Objective : Correction[626]
- Objective : ID[627]
- Objective : Immersion[628]
- Objective : WorkingDistance[629]
- ObjectiveSettings : ID[630]
- Pixels : BigEndian[631]
- Pixels : DimensionOrder[632]
- Pixels : ID[633]
- Pixels : Interleaved[634]
- Pixels : PhysicalSizeX[635]
- Pixels : PhysicalSizeY[636]
- Pixels : SignificantBits[637]
- Pixels : SizeC[638]
- Pixels : SizeT[639]
- Pixels : SizeX[640]
- Pixels : SizeY[641]
- Pixels : SizeZ[642]
- Pixels : Type[643]

---

[618] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[619] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Voltage
[620] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[621] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[622] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[623] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[624] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[625] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_CalibratedMagnification
[626] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Correction
[627] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[628] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion
[629] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_WorkingDistance
[630] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[631] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[632] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[633] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[634] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[635] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[636] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[637] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[638] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[639] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[640] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[641] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[642] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[643] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type

- Plane : TheC[644]
- Plane : TheT[645]
- Plane : TheZ[646]

**Total supported: 33**

**Total unknown or missing: 443**

### 18.2.8 AmiraReader

This page lists supported metadata fields for the Bio-Formats Amira format reader.

These fields are from the OME data model[647]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 22 of them (4%).
- Of those, Bio-Formats fully or partially converts 22 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Amira format reader:**

- Channel : ID[648]
- Channel : SamplesPerPixel[649]
- Image : AcquisitionDate[650]
- Image : ID[651]
- Image : Name[652]
- Pixels : BigEndian[653]
- Pixels : DimensionOrder[654]
- Pixels : ID[655]
- Pixels : Interleaved[656]
- Pixels : PhysicalSizeX[657]
- Pixels : PhysicalSizeY[658]
- Pixels : PhysicalSizeZ[659]
- Pixels : SignificantBits[660]
- Pixels : SizeC[661]

---

[644] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[645] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[646] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[647] http://www.openmicroscopy.org/site/support/ome-model/
[648] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[649] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[650] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[651] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[652] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[653] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[654] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[655] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[656] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[657] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[658] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[659] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[660] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[661] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC

- Pixels : SizeT[662]
- Pixels : SizeX[663]
- Pixels : SizeY[664]
- Pixels : SizeZ[665]
- Pixels : Type[666]
- Plane : TheC[667]
- Plane : TheT[668]
- Plane : TheZ[669]

**Total supported: 22**

**Total unknown or missing: 454**

### 18.2.9 AnalyzeReader

This page lists supported metadata fields for the Bio-Formats Analyze 7.5 format reader.

These fields are from the OME data model[670]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 24 of them (5%).
- Of those, Bio-Formats fully or partially converts 24 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Analyze 7.5 format reader:**

- Channel : ID[671]
- Channel : SamplesPerPixel[672]
- Image : AcquisitionDate[673]
- Image : Description[674]
- Image : ID[675]
- Image : Name[676]
- Pixels : BigEndian[677]
- Pixels : DimensionOrder[678]
- Pixels : ID[679]

---

[662] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT

[663] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX

[664] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY

[665] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ

[666] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type

[667] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC

[668] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT

[669] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ

[670] http://www.openmicroscopy.org/site/support/ome-model/

[671] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID

[672] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel

[673] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate

[674] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description

[675] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID

[676] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name

[677] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian

[678] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder

[679] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID

- Pixels : Interleaved[680]
- Pixels : PhysicalSizeX[681]
- Pixels : PhysicalSizeY[682]
- Pixels : PhysicalSizeZ[683]
- Pixels : SignificantBits[684]
- Pixels : SizeC[685]
- Pixels : SizeT[686]
- Pixels : SizeX[687]
- Pixels : SizeY[688]
- Pixels : SizeZ[689]
- Pixels : TimeIncrement[690]
- Pixels : Type[691]
- Plane : TheC[692]
- Plane : TheT[693]
- Plane : TheZ[694]

**Total supported: 24**

**Total unknown or missing: 452**

### 18.2.10 BDReader

This page lists supported metadata fields for the Bio-Formats BD Pathway format reader.

These fields are from the OME data model[695]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 57 of them (11%).
- Of those, Bio-Formats fully or partially converts 57 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats BD Pathway format reader:**

- Channel : EmissionWavelength[696]
- Channel : ExcitationWavelength[697]

---

[680] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[681] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[682] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[683] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[684] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[685] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[686] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[687] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[688] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[689] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[690] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_TimeIncrement
[691] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[692] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[693] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[694] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[695] http://www.openmicroscopy.org/site/support/ome-model/
[696] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_EmissionWavelength
[697] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ExcitationWavelength

- Channel : ID[698]
- Channel : Name[699]
- Channel : SamplesPerPixel[700]
- Detector : ID[701]
- DetectorSettings : Binning[702]
- DetectorSettings : Gain[703]
- DetectorSettings : ID[704]
- DetectorSettings : Offset[705]
- Image : AcquisitionDate[706]
- Image : ID[707]
- Image : InstrumentRef[708]
- Image : Name[709]
- Image : ROIRef[710]
- Instrument : ID[711]
- Objective : ID[712]
- Objective : LensNA[713]
- Objective : Manufacturer[714]
- Objective : NominalMagnification[715]
- ObjectiveSettings : ID[716]
- Pixels : BigEndian[717]
- Pixels : DimensionOrder[718]
- Pixels : ID[719]
- Pixels : Interleaved[720]
- Pixels : SignificantBits[721]
- Pixels : SizeC[722]
- Pixels : SizeT[723]

---

[698] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[699] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[700] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[701] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[702] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Binning
[703] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Gain
[704] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[705] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Offset
[706] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[707] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[708] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[709] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[710] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROIRef_ID
[711] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[712] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[713] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_LensNA
[714] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer
[715] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[716] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[717] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[718] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[719] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[720] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[721] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[722] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[723] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT

- Pixels : SizeX[724]
- Pixels : SizeY[725]
- Pixels : SizeZ[726]
- Pixels : Type[727]
- Plane : DeltaT[728]
- Plane : ExposureTime[729]
- Plane : TheC[730]
- Plane : TheT[731]
- Plane : TheZ[732]
- Plate : ColumnNamingConvention[733]
- Plate : Description[734]
- Plate : ID[735]
- Plate : Name[736]
- Plate : RowNamingConvention[737]
- PlateAcquisition : ID[738]
- PlateAcquisition : MaximumFieldCount[739]
- PlateAcquisition : WellSampleRef[740]
- ROI : ID[741]
- Rectangle : Height[742]
- Rectangle : ID[743]
- Rectangle : Width[744]
- Rectangle : X[745]
- Rectangle : Y[746]
- Well : Column[747]
- Well : ID[748]
- Well : Row[749]

---

[724] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[725] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[726] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[727] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[728] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_DeltaT
[729] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[730] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[731] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[732] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[733] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_ColumnNamingConvention
[734] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_Description
[735] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_ID
[736] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_Name
[737] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_RowNamingConvention
[738] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_ID
[739] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_MaximumFieldCount
[740] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSampleRef_ID
[741] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROI_ID
[742] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Height
[743] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[744] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Width
[745] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_X
[746] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Y
[747] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Column
[748] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_ID
[749] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Row

- WellSample : ID[750]
- WellSample : ImageRef[751]
- WellSample : Index[752]

**Total supported: 57**

**Total unknown or missing: 419**

### 18.2.11 BIFormatReader

This page lists supported metadata fields for the Bio-Formats BIFormatReader.

These fields are from the OME data model[753]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats BIFormatReader:**

- Channel : ID[754]
- Channel : SamplesPerPixel[755]
- Image : AcquisitionDate[756]
- Image : ID[757]
- Image : Name[758]
- Pixels : BigEndian[759]
- Pixels : DimensionOrder[760]
- Pixels : ID[761]
- Pixels : Interleaved[762]
- Pixels : SignificantBits[763]
- Pixels : SizeC[764]
- Pixels : SizeT[765]
- Pixels : SizeX[766]
- Pixels : SizeY[767]

---

[750] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_ID

[751] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImageRef_ID

[752] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_Index

[753] http://www.openmicroscopy.org/site/support/ome-model/

[754] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID

[755] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel

[756] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate

[757] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID

[758] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name

[759] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian

[760] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder

[761] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID

[762] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved

[763] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits

[764] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC

[765] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT

[766] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX

[767] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY

- Pixels : SizeZ[768]
- Pixels : Type[769]
- Plane : TheC[770]
- Plane : TheT[771]
- Plane : TheZ[772]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.12 BMPReader

This page lists supported metadata fields for the Bio-Formats Windows Bitmap format reader.

These fields are from the OME data model[773]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 21 of them (4%).
- Of those, Bio-Formats fully or partially converts 21 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Windows Bitmap format reader:**

- Channel : ID[774]
- Channel : SamplesPerPixel[775]
- Image : AcquisitionDate[776]
- Image : ID[777]
- Image : Name[778]
- Pixels : BigEndian[779]
- Pixels : DimensionOrder[780]
- Pixels : ID[781]
- Pixels : Interleaved[782]
- Pixels : PhysicalSizeX[783]
- Pixels : PhysicalSizeY[784]
- Pixels : SignificantBits[785]

---

[768] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[769] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[770] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[771] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[772] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[773] http://www.openmicroscopy.org/site/support/ome-model/
[774] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[775] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[776] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[777] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[778] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[779] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[780] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[781] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[782] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[783] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[784] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[785] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits

- Pixels : SizeC[786]
- Pixels : SizeT[787]
- Pixels : SizeX[788]
- Pixels : SizeY[789]
- Pixels : SizeZ[790]
- Pixels : Type[791]
- Plane : TheC[792]
- Plane : TheT[793]
- Plane : TheZ[794]

**Total supported: 21**

**Total unknown or missing: 455**

## 18.2.13 BaseTiffReader

This page lists supported metadata fields for the Bio-Formats BaseTiffReader.

These fields are from the OME data model[795]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 28 of them (5%).
- Of those, Bio-Formats fully or partially converts 28 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats BaseTiffReader:**

- Channel : ID[796]
- Channel : SamplesPerPixel[797]
- Experimenter : Email[798]
- Experimenter : FirstName[799]
- Experimenter : ID[800]
- Experimenter : LastName[801]
- Image : AcquisitionDate[802]
- Image : Description[803]

---

[786] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[787] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[788] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[789] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[790] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[791] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[792] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[793] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[794] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[795] http://www.openmicroscopy.org/site/support/ome-model/
[796] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[797] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[798] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_Email
[799] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_FirstName
[800] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_ID
[801] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_LastName
[802] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[803] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description

- Image : ID[804]
- Image : Name[805]
- Pixels : BigEndian[806]
- Pixels : DimensionOrder[807]
- Pixels : ID[808]
- Pixels : Interleaved[809]
- Pixels : PhysicalSizeX[810]
- Pixels : PhysicalSizeY[811]
- Pixels : PhysicalSizeZ[812]
- Pixels : SignificantBits[813]
- Pixels : SizeC[814]
- Pixels : SizeT[815]
- Pixels : SizeX[816]
- Pixels : SizeY[817]
- Pixels : SizeZ[818]
- Pixels : Type[819]
- Plane : ExposureTime[820]
- Plane : TheC[821]
- Plane : TheT[822]
- Plane : TheZ[823]

**Total supported: 28**

**Total unknown or missing: 448**

### 18.2.14 BaseZeissReader

This page lists supported metadata fields for the Bio-Formats BaseZeissReader.

These fields are from the OME data model[824]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

---

[804] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[805] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[806] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[807] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[808] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[809] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[810] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[811] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[812] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[813] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[814] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[815] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[816] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[817] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[818] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[819] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[820] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[821] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[822] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[823] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[824] http://www.openmicroscopy.org/site/support/ome-model/

- The file format itself supports 83 of them (17%).
- Of those, Bio-Formats fully or partially converts 83 (100%).

## Supported fields

**These fields are fully supported by the Bio-Formats BaseZeissReader:**

- Channel : EmissionWavelength[825]
- Channel : ExcitationWavelength[826]
- Channel : ID[827]
- Channel : Name[828]
- Channel : SamplesPerPixel[829]
- Detector : ID[830]
- Detector : Type[831]
- DetectorSettings : Gain[832]
- DetectorSettings : ID[833]
- DetectorSettings : Offset[834]
- Ellipse : ID[835]
- Ellipse : RadiusX[836]
- Ellipse : RadiusY[837]
- Ellipse : Text[838]
- Ellipse : X[839]
- Ellipse : Y[840]
- Experimenter : FirstName[841]
- Experimenter : ID[842]
- Experimenter : Institution[843]
- Experimenter : LastName[844]
- Image : AcquisitionDate[845]
- Image : Description[846]
- Image : ID[847]

---

[825] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_EmissionWavelength
[826] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ExcitationWavelength
[827] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[828] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[829] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[830] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[831] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type
[832] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Gain
[833] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[834] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Offset
[835] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[836] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_RadiusX
[837] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_RadiusY
[838] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Text
[839] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_X
[840] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_Y
[841] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_FirstName
[842] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_ID
[843] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_Institution
[844] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_LastName
[845] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[846] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[847] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID

- Image : InstrumentRef[848]
- Image : Name[849]
- Image : ROIRef[850]
- Instrument : ID[851]
- Label : ID[852]
- Label : Text[853]
- Label : X[854]
- Label : Y[855]
- Line : ID[856]
- Line : Text[857]
- Line : X1[858]
- Line : X2[859]
- Line : Y1[860]
- Line : Y2[861]
- Objective : Correction[862]
- Objective : ID[863]
- Objective : Immersion[864]
- Objective : LensNA[865]
- Objective : NominalMagnification[866]
- Objective : WorkingDistance[867]
- ObjectiveSettings : ID[868]
- Pixels : BigEndian[869]
- Pixels : DimensionOrder[870]
- Pixels : ID[871]
- Pixels : Interleaved[872]
- Pixels : PhysicalSizeX[873]

---

[848] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[849] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[850] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROIRef_ID
[851] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[852] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[853] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Text
[854] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Label_X
[855] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Label_Y
[856] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[857] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Text
[858] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_X1
[859] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_X2
[860] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_Y1
[861] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_Y2
[862] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Correction
[863] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[864] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion
[865] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_LensNA
[866] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[867] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_WorkingDistance
[868] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[869] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[870] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[871] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[872] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[873] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX

- Pixels : PhysicalSizeY[874]
- Pixels : PhysicalSizeZ[875]
- Pixels : SignificantBits[876]
- Pixels : SizeC[877]
- Pixels : SizeT[878]
- Pixels : SizeX[879]
- Pixels : SizeY[880]
- Pixels : SizeZ[881]
- Pixels : Type[882]
- Plane : DeltaT[883]
- Plane : ExposureTime[884]
- Plane : PositionX[885]
- Plane : PositionY[886]
- Plane : TheC[887]
- Plane : TheT[888]
- Plane : TheZ[889]
- Point : ID[890]
- Point : Text[891]
- Point : X[892]
- Point : Y[893]
- Polygon : ID[894]
- Polygon : Points[895]
- Polygon : Text[896]
- Polyline : ID[897]
- Polyline : Points[898]
- Polyline : Text[899]

---

[874] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[875] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[876] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[877] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[878] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[879] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[880] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[881] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[882] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[883] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_DeltaT
[884] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[885] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[886] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[887] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[888] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[889] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[890] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[891] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Text
[892] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Point_X
[893] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Point_Y
[894] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[895] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Polygon_Points
[896] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Text
[897] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[898] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Polyline_Points
[899] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Text

- ROI : ID[900]
- ROI : Name[901]
- Rectangle : Height[902]
- Rectangle : ID[903]
- Rectangle : Text[904]
- Rectangle : Width[905]
- Rectangle : X[906]
- Rectangle : Y[907]

**Total supported: 83**

**Total unknown or missing: 393**

## 18.2.15 BioRadGelReader

This page lists supported metadata fields for the Bio-Formats Bio-Rad GEL format reader.

These fields are from the OME data model[908]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 21 of them (4%).
- Of those, Bio-Formats fully or partially converts 21 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats Bio-Rad GEL format reader:**

- Channel : ID[909]
- Channel : SamplesPerPixel[910]
- Image : AcquisitionDate[911]
- Image : ID[912]
- Image : Name[913]
- Pixels : BigEndian[914]
- Pixels : DimensionOrder[915]
- Pixels : ID[916]
- Pixels : Interleaved[917]

---

[900] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROI_ID
[901] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROI_Name
[902] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Height
[903] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[904] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Text
[905] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Width
[906] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_X
[907] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Y
[908] http://www.openmicroscopy.org/site/support/ome-model/
[909] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[910] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[911] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[912] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[913] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[914] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[915] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[916] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[917] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved

- Pixels : PhysicalSizeX[918]
- Pixels : PhysicalSizeY[919]
- Pixels : SignificantBits[920]
- Pixels : SizeC[921]
- Pixels : SizeT[922]
- Pixels : SizeX[923]
- Pixels : SizeY[924]
- Pixels : SizeZ[925]
- Pixels : Type[926]
- Plane : TheC[927]
- Plane : TheT[928]
- Plane : TheZ[929]

**Total supported: 21**

**Total unknown or missing: 455**

### 18.2.16 BioRadReader

This page lists supported metadata fields for the Bio-Formats Bio-Rad PIC format reader.

These fields are from the OME data model[930]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 40 of them (8%).
- Of those, Bio-Formats fully or partially converts 40 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Bio-Rad PIC format reader:**

- Channel : ID[931]
- Channel : SamplesPerPixel[932]
- Detector : Gain[933]
- Detector : ID[934]
- Detector : Offset[935]

---

[918] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[919] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[920] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[921] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[922] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[923] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[924] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[925] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[926] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[927] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[928] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[929] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[930] http://www.openmicroscopy.org/site/support/ome-model/
[931] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[932] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[933] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Gain
[934] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[935] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Offset

- Detector : Type[936]
- DetectorSettings : Gain[937]
- DetectorSettings : ID[938]
- DetectorSettings : Offset[939]
- Experiment : ID[940]
- Experiment : Type[941]
- Image : AcquisitionDate[942]
- Image : ID[943]
- Image : InstrumentRef[944]
- Image : Name[945]
- Instrument : ID[946]
- Objective : Correction[947]
- Objective : ID[948]
- Objective : Immersion[949]
- Objective : LensNA[950]
- Objective : Model[951]
- Objective : NominalMagnification[952]
- ObjectiveSettings : ID[953]
- Pixels : BigEndian[954]
- Pixels : DimensionOrder[955]
- Pixels : ID[956]
- Pixels : Interleaved[957]
- Pixels : PhysicalSizeX[958]
- Pixels : PhysicalSizeY[959]
- Pixels : PhysicalSizeZ[960]
- Pixels : SignificantBits[961]

---

[936] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type
[937] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Gain
[938] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[939] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Offset
[940] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experiment_ID
[941] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experiment_Type
[942] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[943] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[944] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[945] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[946] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[947] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Correction
[948] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[949] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion
[950] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_LensNA
[951] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[952] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[953] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[954] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[955] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[956] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[957] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[958] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[959] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[960] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[961] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits

- Pixels : SizeC[962]
- Pixels : SizeT[963]
- Pixels : SizeX[964]
- Pixels : SizeY[965]
- Pixels : SizeZ[966]
- Pixels : Type[967]
- Plane : TheC[968]
- Plane : TheT[969]
- Plane : TheZ[970]

**Total supported: 40**

**Total unknown or missing: 436**

### 18.2.17 BioRadSCNReader

This page lists supported metadata fields for the Bio-Formats Bio-Rad SCN format reader.

These fields are from the OME data model[971]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 29 of them (6%).
- Of those, Bio-Formats fully or partially converts 29 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Bio-Rad SCN format reader:**

- Channel : ID[972]
- Channel : SamplesPerPixel[973]
- Detector : ID[974]
- DetectorSettings : Binning[975]
- DetectorSettings : Gain[976]
- DetectorSettings : ID[977]
- Image : AcquisitionDate[978]
- Image : ID[979]

---

[962] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[963] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[964] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[965] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[966] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[967] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[968] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[969] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[970] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[971] http://www.openmicroscopy.org/site/support/ome-model/
[972] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[973] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[974] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[975] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Binning
[976] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Gain
[977] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[978] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[979] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID

- Image : Name[980]
- Instrument : ID[981]
- Microscope : Model[982]
- Microscope : SerialNumber[983]
- Pixels : BigEndian[984]
- Pixels : DimensionOrder[985]
- Pixels : ID[986]
- Pixels : Interleaved[987]
- Pixels : PhysicalSizeX[988]
- Pixels : PhysicalSizeY[989]
- Pixels : SignificantBits[990]
- Pixels : SizeC[991]
- Pixels : SizeT[992]
- Pixels : SizeX[993]
- Pixels : SizeY[994]
- Pixels : SizeZ[995]
- Pixels : Type[996]
- Plane : ExposureTime[997]
- Plane : TheC[998]
- Plane : TheT[999]
- Plane : TheZ[1000]

**Total supported: 29**

**Total unknown or missing: 447**

### 18.2.18 BrukerReader

This page lists supported metadata fields for the Bio-Formats Bruker format reader.

These fields are from the OME data model[1001]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

---

[980] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[981] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[982] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[983] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber
[984] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[985] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[986] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[987] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[988] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[989] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[990] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[991] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[992] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[993] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[994] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[995] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[996] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[997] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[998] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[999] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[1000] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[1001] http://www.openmicroscopy.org/site/support/ome-model/

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 23 of them (4%).
- Of those, Bio-Formats fully or partially converts 23 (100%).

## Supported fields

**These fields are fully supported by the Bio-Formats Bruker format reader:**

- Channel : ID[1002]
- Channel : SamplesPerPixel[1003]
- Experimenter : ID[1004]
- Experimenter : Institution[1005]
- Experimenter : LastName[1006]
- Image : AcquisitionDate[1007]
- Image : ExperimenterRef[1008]
- Image : ID[1009]
- Image : Name[1010]
- Pixels : BigEndian[1011]
- Pixels : DimensionOrder[1012]
- Pixels : ID[1013]
- Pixels : Interleaved[1014]
- Pixels : SignificantBits[1015]
- Pixels : SizeC[1016]
- Pixels : SizeT[1017]
- Pixels : SizeX[1018]
- Pixels : SizeY[1019]
- Pixels : SizeZ[1020]
- Pixels : Type[1021]
- Plane : TheC[1022]
- Plane : TheT[1023]

---

[1002] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[1003] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1004] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_ID
[1005] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_Institution
[1006] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_LastName
[1007] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[1008] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ExperimenterRef_ID
[1009] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1010] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[1011] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[1012] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[1013] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[1014] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[1015] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[1016] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[1017] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[1018] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[1019] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[1020] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[1021] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[1022] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[1023] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT

- Plane : TheZ[1024]

**Total supported: 23**

**Total unknown or missing: 453**

## 18.2.19 BurleighReader

This page lists supported metadata fields for the Bio-Formats Burleigh format reader.

These fields are from the OME data model[1025]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 22 of them (4%).
- Of those, Bio-Formats fully or partially converts 22 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats Burleigh format reader:**

- Channel : ID[1026]
- Channel : SamplesPerPixel[1027]
- Image : AcquisitionDate[1028]
- Image : ID[1029]
- Image : Name[1030]
- Pixels : BigEndian[1031]
- Pixels : DimensionOrder[1032]
- Pixels : ID[1033]
- Pixels : Interleaved[1034]
- Pixels : PhysicalSizeX[1035]
- Pixels : PhysicalSizeY[1036]
- Pixels : PhysicalSizeZ[1037]
- Pixels : SignificantBits[1038]
- Pixels : SizeC[1039]
- Pixels : SizeT[1040]
- Pixels : SizeX[1041]

---

[1024] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[1025] http://www.openmicroscopy.org/site/support/ome-model/
[1026] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[1027] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1028] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[1029] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1030] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[1031] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[1032] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[1033] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[1034] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[1035] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[1036] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[1037] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[1038] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[1039] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[1040] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[1041] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX

- Pixels : SizeY[1042]
- Pixels : SizeZ[1043]
- Pixels : Type[1044]
- Plane : TheC[1045]
- Plane : TheT[1046]
- Plane : TheZ[1047]

**Total supported: 22**

**Total unknown or missing: 454**

### 18.2.20 CanonRawReader

This page lists supported metadata fields for the Bio-Formats Canon RAW format reader.

These fields are from the OME data model[1048]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Canon RAW format reader:**

- Channel : ID[1049]
- Channel : SamplesPerPixel[1050]
- Image : AcquisitionDate[1051]
- Image : ID[1052]
- Image : Name[1053]
- Pixels : BigEndian[1054]
- Pixels : DimensionOrder[1055]
- Pixels : ID[1056]
- Pixels : Interleaved[1057]
- Pixels : SignificantBits[1058]
- Pixels : SizeC[1059]

---

[1042] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[1043] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[1044] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[1045] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[1046] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[1047] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[1048] http://www.openmicroscopy.org/site/support/ome-model/
[1049] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[1050] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1051] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[1052] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1053] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[1054] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[1055] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[1056] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[1057] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[1058] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[1059] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC

- Pixels : SizeT[1060]
- Pixels : SizeX[1061]
- Pixels : SizeY[1062]
- Pixels : SizeZ[1063]
- Pixels : Type[1064]
- Plane : TheC[1065]
- Plane : TheT[1066]
- Plane : TheZ[1067]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.21 CellH5Reader

This page lists supported metadata fields for the Bio-Formats CellH5 (HDF) format reader.

These fields are from the OME data model[1068]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 41 of them (8%).
- Of those, Bio-Formats fully or partially converts 41 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats CellH5 (HDF) format reader:**

- Channel : ID[1069]
- Channel : SamplesPerPixel[1070]
- Image : AcquisitionDate[1071]
- Image : ID[1072]
- Image : Name[1073]
- Image : ROIRef[1074]
- Pixels : BigEndian[1075]
- Pixels : DimensionOrder[1076]
- Pixels : ID[1077]

---

[1060] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[1061] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[1062] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[1063] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[1064] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[1065] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[1066] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[1067] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[1068] http://www.openmicroscopy.org/site/support/ome-model/
[1069] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[1070] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1071] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[1072] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1073] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[1074] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROIRef_ID
[1075] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[1076] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[1077] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID

- Pixels : Interleaved[1078]
- Pixels : SignificantBits[1079]
- Pixels : SizeC[1080]
- Pixels : SizeT[1081]
- Pixels : SizeX[1082]
- Pixels : SizeY[1083]
- Pixels : SizeZ[1084]
- Pixels : Type[1085]
- Plane : TheC[1086]
- Plane : TheT[1087]
- Plane : TheZ[1088]
- Plate : ID[1089]
- Plate : Name[1090]
- ROI : ID[1091]
- ROI : Name[1092]
- Rectangle : Height[1093]
- Rectangle : ID[1094]
- Rectangle : StrokeColor[1095]
- Rectangle : Text[1096]
- Rectangle : TheC[1097]
- Rectangle : TheT[1098]
- Rectangle : TheZ[1099]
- Rectangle : Width[1100]
- Rectangle : X[1101]
- Rectangle : Y[1102]
- Well : Column[1103]

---

[1078] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved

[1079] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits

[1080] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC

[1081] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT

[1082] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX

[1083] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY

[1084] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ

[1085] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type

[1086] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC

[1087] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT

[1088] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ

[1089] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_ID

[1090] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_Name

[1091] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROI_ID

[1092] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROI_Name

[1093] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Height

[1094] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID

[1095] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeColor

[1096] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Text

[1097] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheC

[1098] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheT

[1099] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheZ

[1100] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Width

[1101] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_X

[1102] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Y

[1103] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Column

- Well : ExternalIdentifier[1104]
- Well : ID[1105]
- Well : Row[1106]
- WellSample : ID[1107]
- WellSample : ImageRef[1108]
- WellSample : Index[1109]

**Total supported: 41**

**Total unknown or missing: 435**

### 18.2.22 CellSensReader

This page lists supported metadata fields for the Bio-Formats CellSens VSI format reader.

These fields are from the OME data model[1110]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 46 of them (9%).
- Of those, Bio-Formats fully or partially converts 46 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats CellSens VSI format reader:**

- Channel : EmissionWavelength[1111]
- Channel : ID[1112]
- Channel : Name[1113]
- Channel : SamplesPerPixel[1114]
- Detector : Gain[1115]
- Detector : ID[1116]
- Detector : Manufacturer[1117]
- Detector : Model[1118]
- Detector : Offset[1119]
- Detector : SerialNumber[1120]
- Detector : Type[1121]

---

[1104] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_ExternalIdentifier
[1105] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_ID
[1106] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Row
[1107] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_ID
[1108] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImageRef_ID
[1109] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_Index
[1110] http://www.openmicroscopy.org/site/support/ome-model/
[1111] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_EmissionWavelength
[1112] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[1113] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[1114] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1115] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Gain
[1116] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[1117] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer
[1118] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[1119] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Offset
[1120] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber
[1121] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type

- DetectorSettings : Binning[1122]
- DetectorSettings : Gain[1123]
- DetectorSettings : ID[1124]
- DetectorSettings : Offset[1125]
- Image : AcquisitionDate[1126]
- Image : ID[1127]
- Image : InstrumentRef[1128]
- Image : Name[1129]
- Instrument : ID[1130]
- Objective : ID[1131]
- Objective : LensNA[1132]
- Objective : Model[1133]
- Objective : NominalMagnification[1134]
- Objective : WorkingDistance[1135]
- ObjectiveSettings : ID[1136]
- ObjectiveSettings : RefractiveIndex[1137]
- Pixels : BigEndian[1138]
- Pixels : DimensionOrder[1139]
- Pixels : ID[1140]
- Pixels : Interleaved[1141]
- Pixels : PhysicalSizeX[1142]
- Pixels : PhysicalSizeY[1143]
- Pixels : SignificantBits[1144]
- Pixels : SizeC[1145]
- Pixels : SizeT[1146]
- Pixels : SizeX[1147]

---

[1122] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Binning
[1123] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Gain
[1124] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[1125] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Offset
[1126] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[1127] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1128] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[1129] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[1130] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[1131] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[1132] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_LensNA
[1133] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[1134] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[1135] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_WorkingDistance
[1136] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[1137] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_RefractiveIndex
[1138] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[1139] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[1140] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[1141] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[1142] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[1143] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[1144] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[1145] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[1146] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[1147] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX

- Pixels : SizeY[1148]
- Pixels : SizeZ[1149]
- Pixels : Type[1150]
- Plane : ExposureTime[1151]
- Plane : PositionX[1152]
- Plane : PositionY[1153]
- Plane : TheC[1154]
- Plane : TheT[1155]
- Plane : TheZ[1156]

**Total supported: 46**

**Total unknown or missing: 430**

### 18.2.23 CellVoyagerReader

This page lists supported metadata fields for the Bio-Formats CellVoyager format reader.

These fields are from the OME data model[1157]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 34 of them (7%).
- Of those, Bio-Formats fully or partially converts 34 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats CellVoyager format reader:**

- Channel : ID[1158]
- Channel : Name[1159]
- Channel : PinholeSize[1160]
- Channel : SamplesPerPixel[1161]
- Image : AcquisitionDate[1162]
- Image : ID[1163]
- Image : Name[1164]
- Pixels : BigEndian[1165]

---

[1148] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[1149] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[1150] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[1151] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[1152] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[1153] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[1154] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[1155] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[1156] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[1157] http://www.openmicroscopy.org/site/support/ome-model/
[1158] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[1159] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[1160] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_PinholeSize
[1161] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1162] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[1163] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1164] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[1165] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian

- Pixels : DimensionOrder[1166]
- Pixels : ID[1167]
- Pixels : Interleaved[1168]
- Pixels : SignificantBits[1169]
- Pixels : SizeC[1170]
- Pixels : SizeT[1171]
- Pixels : SizeX[1172]
- Pixels : SizeY[1173]
- Pixels : SizeZ[1174]
- Pixels : Type[1175]
- Plane : TheC[1176]
- Plane : TheT[1177]
- Plane : TheZ[1178]
- Plate : Columns[1179]
- Plate : Rows[1180]
- PlateAcquisition : EndTime[1181]
- PlateAcquisition : ID[1182]
- PlateAcquisition : MaximumFieldCount[1183]
- PlateAcquisition : StartTime[1184]
- Well : Column[1185]
- Well : ID[1186]
- Well : Row[1187]
- WellSample : ID[1188]
- WellSample : Index[1189]
- WellSample : PositionX[1190]
- WellSample : PositionY[1191]

---

[1166] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[1167] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[1168] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[1169] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[1170] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[1171] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[1172] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[1173] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[1174] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[1175] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[1176] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[1177] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[1178] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[1179] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_Columns
[1180] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_Rows
[1181] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_EndTime
[1182] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_ID
[1183] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_MaximumFieldCount
[1184] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_StartTime
[1185] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Column
[1186] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_ID
[1187] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Row
[1188] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_ID
[1189] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_Index
[1190] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_PositionX
[1191] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_PositionY

**Total supported: 34**

**Total unknown or missing: 442**

### 18.2.24 CellWorxReader

This page lists supported metadata fields for the Bio-Formats CellWorx format reader.

These fields are from the OME data model[1192]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 45 of them (9%).
- Of those, Bio-Formats fully or partially converts 45 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats CellWorx format reader:**

- Channel : EmissionWavelength[1193]
- Channel : ExcitationWavelength[1194]
- Channel : ID[1195]
- Channel : Name[1196]
- Channel : SamplesPerPixel[1197]
- Detector : ID[1198]
- DetectorSettings : Gain[1199]
- DetectorSettings : ID[1200]
- Image : AcquisitionDate[1201]
- Image : ID[1202]
- Image : InstrumentRef[1203]
- Image : Name[1204]
- Instrument : ID[1205]
- Microscope : SerialNumber[1206]
- Pixels : BigEndian[1207]
- Pixels : DimensionOrder[1208]
- Pixels : ID[1209]

---

[1192] http://www.openmicroscopy.org/site/support/ome-model/
[1193] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_EmissionWavelength
[1194] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ExcitationWavelength
[1195] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[1196] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[1197] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1198] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[1199] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Gain
[1200] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[1201] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[1202] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1203] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[1204] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[1205] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[1206] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber
[1207] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[1208] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[1209] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID

- Pixels : Interleaved[1210]
- Pixels : PhysicalSizeX[1211]
- Pixels : PhysicalSizeY[1212]
- Pixels : SignificantBits[1213]
- Pixels : SizeC[1214]
- Pixels : SizeT[1215]
- Pixels : SizeX[1216]
- Pixels : SizeY[1217]
- Pixels : SizeZ[1218]
- Pixels : Type[1219]
- Plane : TheC[1220]
- Plane : TheT[1221]
- Plane : TheZ[1222]
- Plate : ID[1223]
- Plate : Name[1224]
- PlateAcquisition : EndTime[1225]
- PlateAcquisition : ID[1226]
- PlateAcquisition : MaximumFieldCount[1227]
- PlateAcquisition : StartTime[1228]
- PlateAcquisition : WellSampleRef[1229]
- Well : Column[1230]
- Well : ID[1231]
- Well : Row[1232]
- WellSample : ID[1233]
- WellSample : ImageRef[1234]
- WellSample : Index[1235]

---

[1210] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[1211] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[1212] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[1213] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[1214] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[1215] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[1216] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[1217] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[1218] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[1219] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[1220] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[1221] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[1222] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[1223] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_ID
[1224] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_Name
[1225] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_EndTime
[1226] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_ID
[1227] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_MaximumFieldCount
[1228] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_StartTime
[1229] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSampleRef_ID
[1230] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Column
[1231] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_ID
[1232] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Row
[1233] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_ID
[1234] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImageRef_ID
[1235] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_Index

- WellSample : PositionX[1236]
- WellSample : PositionY[1237]

**Total supported: 45**

**Total unknown or missing: 431**

### 18.2.25 CellomicsReader

This page lists supported metadata fields for the Bio-Formats Cellomics C01 format reader.

These fields are from the OME data model[1238]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 31 of them (6%).
- Of those, Bio-Formats fully or partially converts 31 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Cellomics C01 format reader:**

- Channel : ID[1239]
- Channel : SamplesPerPixel[1240]
- Image : AcquisitionDate[1241]
- Image : ID[1242]
- Image : Name[1243]
- Pixels : BigEndian[1244]
- Pixels : DimensionOrder[1245]
- Pixels : ID[1246]
- Pixels : Interleaved[1247]
- Pixels : PhysicalSizeX[1248]
- Pixels : PhysicalSizeY[1249]
- Pixels : SignificantBits[1250]
- Pixels : SizeC[1251]
- Pixels : SizeT[1252]
- Pixels : SizeX[1253]

---

[1236] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_PositionX
[1237] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_PositionY
[1238] http://www.openmicroscopy.org/site/support/ome-model/
[1239] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[1240] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1241] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[1242] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1243] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[1244] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[1245] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[1246] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[1247] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[1248] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[1249] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[1250] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[1251] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[1252] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[1253] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX

- Pixels : SizeY[1254]
- Pixels : SizeZ[1255]
- Pixels : Type[1256]
- Plane : TheC[1257]
- Plane : TheT[1258]
- Plane : TheZ[1259]
- Plate : ColumnNamingConvention[1260]
- Plate : ID[1261]
- Plate : Name[1262]
- Plate : RowNamingConvention[1263]
- Well : Column[1264]
- Well : ID[1265]
- Well : Row[1266]
- WellSample : ID[1267]
- WellSample : ImageRef[1268]
- WellSample : Index[1269]

**Total supported: 31**

**Total unknown or missing: 445**

### 18.2.26 DNGReader

This page lists supported metadata fields for the Bio-Formats DNG format reader.

These fields are from the OME data model[1270]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats DNG format reader:**

- Channel : ID[1271]

---

[1254] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[1255] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[1256] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[1257] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[1258] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[1259] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[1260] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_ColumnNamingConvention
[1261] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_ID
[1262] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_Name
[1263] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_RowNamingConvention
[1264] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Column
[1265] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_ID
[1266] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Row
[1267] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_ID
[1268] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImageRef_ID
[1269] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_Index
[1270] http://www.openmicroscopy.org/site/support/ome-model/
[1271] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID

- Channel : SamplesPerPixel[1272]
- Image : AcquisitionDate[1273]
- Image : ID[1274]
- Image : Name[1275]
- Pixels : BigEndian[1276]
- Pixels : DimensionOrder[1277]
- Pixels : ID[1278]
- Pixels : Interleaved[1279]
- Pixels : SignificantBits[1280]
- Pixels : SizeC[1281]
- Pixels : SizeT[1282]
- Pixels : SizeX[1283]
- Pixels : SizeY[1284]
- Pixels : SizeZ[1285]
- Pixels : Type[1286]
- Plane : TheC[1287]
- Plane : TheT[1288]
- Plane : TheZ[1289]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.27 DeltavisionReader

This page lists supported metadata fields for the Bio-Formats Deltavision format reader.

These fields are from the OME data model[1290]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 52 of them (10%).
- Of those, Bio-Formats fully or partially converts 52 (100%).

---

[1272] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1273] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[1274] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1275] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[1276] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[1277] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[1278] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[1279] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[1280] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[1281] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[1282] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[1283] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[1284] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[1285] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[1286] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[1287] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[1288] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[1289] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[1290] http://www.openmicroscopy.org/site/support/ome-model/

### Supported fields

**These fields are fully supported by the Bio-Formats Deltavision format reader:**

- Channel : EmissionWavelength[1291]
- Channel : ExcitationWavelength[1292]
- Channel : ID[1293]
- Channel : NDFilter[1294]
- Channel : Name[1295]
- Channel : SamplesPerPixel[1296]
- Detector : ID[1297]
- Detector : Model[1298]
- Detector : Type[1299]
- DetectorSettings : Binning[1300]
- DetectorSettings : Gain[1301]
- DetectorSettings : ID[1302]
- DetectorSettings : ReadOutRate[1303]
- Image : AcquisitionDate[1304]
- Image : Description[1305]
- Image : ID[1306]
- Image : InstrumentRef[1307]
- Image : Name[1308]
- ImagingEnvironment : Temperature[1309]
- Instrument : ID[1310]
- Objective : CalibratedMagnification[1311]
- Objective : Correction[1312]
- Objective : ID[1313]
- Objective : Immersion[1314]

---

[1291] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_EmissionWavelength
[1292] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ExcitationWavelength
[1293] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[1294] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_NDFilter
[1295] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[1296] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1297] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[1298] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[1299] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type
[1300] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Binning
[1301] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Gain
[1302] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[1303] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ReadOutRate
[1304] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[1305] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[1306] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1307] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[1308] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[1309] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImagingEnvironment_Temperature
[1310] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[1311] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_CalibratedMagnification
[1312] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Correction
[1313] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[1314] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion

- Objective : LensNA[1315]
- Objective : Manufacturer[1316]
- Objective : Model[1317]
- Objective : NominalMagnification[1318]
- Objective : WorkingDistance[1319]
- ObjectiveSettings : ID[1320]
- Pixels : BigEndian[1321]
- Pixels : DimensionOrder[1322]
- Pixels : ID[1323]
- Pixels : Interleaved[1324]
- Pixels : PhysicalSizeX[1325]
- Pixels : PhysicalSizeY[1326]
- Pixels : PhysicalSizeZ[1327]
- Pixels : SignificantBits[1328]
- Pixels : SizeC[1329]
- Pixels : SizeT[1330]
- Pixels : SizeX[1331]
- Pixels : SizeY[1332]
- Pixels : SizeZ[1333]
- Pixels : Type[1334]
- Plane : DeltaT[1335]
- Plane : ExposureTime[1336]
- Plane : PositionX[1337]
- Plane : PositionY[1338]
- Plane : PositionZ[1339]
- Plane : TheC[1340]

---

[1315] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_LensNA
[1316] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer
[1317] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[1318] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[1319] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_WorkingDistance
[1320] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[1321] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[1322] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[1323] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[1324] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[1325] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[1326] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[1327] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[1328] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[1329] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[1330] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[1331] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[1332] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[1333] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[1334] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[1335] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_DeltaT
[1336] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[1337] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[1338] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[1339] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionZ
[1340] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC

- Plane : TheT[1341]
- Plane : TheZ[1342]

**Total supported: 52**

**Total unknown or missing: 424**

## 18.2.28 DicomReader

This page lists supported metadata fields for the Bio-Formats DICOM format reader.

These fields are from the OME data model[1343]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 23 of them (4%).
- Of those, Bio-Formats fully or partially converts 23 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats DICOM format reader:**

- Channel : ID[1344]
- Channel : SamplesPerPixel[1345]
- Image : AcquisitionDate[1346]
- Image : Description[1347]
- Image : ID[1348]
- Image : Name[1349]
- Pixels : BigEndian[1350]
- Pixels : DimensionOrder[1351]
- Pixels : ID[1352]
- Pixels : Interleaved[1353]
- Pixels : PhysicalSizeX[1354]
- Pixels : PhysicalSizeY[1355]
- Pixels : PhysicalSizeZ[1356]
- Pixels : SignificantBits[1357]
- Pixels : SizeC[1358]

---

[1341] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[1342] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[1343] http://www.openmicroscopy.org/site/support/ome-model/
[1344] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[1345] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1346] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[1347] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[1348] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1349] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[1350] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[1351] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[1352] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[1353] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[1354] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[1355] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[1356] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[1357] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[1358] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC

- Pixels : SizeT[1359]
- Pixels : SizeX[1360]
- Pixels : SizeY[1361]
- Pixels : SizeZ[1362]
- Pixels : Type[1363]
- Plane : TheC[1364]
- Plane : TheT[1365]
- Plane : TheZ[1366]

**Total supported: 23**

**Total unknown or missing: 453**

### 18.2.29 EPSReader

This page lists supported metadata fields for the Bio-Formats Encapsulated PostScript format reader.

These fields are from the OME data model[1367]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Encapsulated PostScript format reader:**

- Channel : ID[1368]
- Channel : SamplesPerPixel[1369]
- Image : AcquisitionDate[1370]
- Image : ID[1371]
- Image : Name[1372]
- Pixels : BigEndian[1373]
- Pixels : DimensionOrder[1374]
- Pixels : ID[1375]
- Pixels : Interleaved[1376]

---

[1359] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[1360] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[1361] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[1362] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[1363] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[1364] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[1365] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[1366] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[1367] http://www.openmicroscopy.org/site/support/ome-model/
[1368] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[1369] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1370] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[1371] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1372] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[1373] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[1374] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[1375] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[1376] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved

- Pixels : SignificantBits[1377]
- Pixels : SizeC[1378]
- Pixels : SizeT[1379]
- Pixels : SizeX[1380]
- Pixels : SizeY[1381]
- Pixels : SizeZ[1382]
- Pixels : Type[1383]
- Plane : TheC[1384]
- Plane : TheT[1385]
- Plane : TheZ[1386]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.30 Ecat7Reader

This page lists supported metadata fields for the Bio-Formats ECAT7 format reader.

These fields are from the OME data model[1387]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 23 of them (4%).
- Of those, Bio-Formats fully or partially converts 23 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats ECAT7 format reader:**

- Channel : ID[1388]
- Channel : SamplesPerPixel[1389]
- Image : AcquisitionDate[1390]
- Image : Description[1391]
- Image : ID[1392]
- Image : Name[1393]
- Pixels : BigEndian[1394]

---

[1377] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[1378] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[1379] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[1380] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[1381] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[1382] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[1383] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[1384] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[1385] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[1386] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[1387] http://www.openmicroscopy.org/site/support/ome-model/
[1388] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[1389] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1390] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[1391] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[1392] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1393] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[1394] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian

- Pixels : DimensionOrder[1395]
- Pixels : ID[1396]
- Pixels : Interleaved[1397]
- Pixels : PhysicalSizeX[1398]
- Pixels : PhysicalSizeY[1399]
- Pixels : PhysicalSizeZ[1400]
- Pixels : SignificantBits[1401]
- Pixels : SizeC[1402]
- Pixels : SizeT[1403]
- Pixels : SizeX[1404]
- Pixels : SizeY[1405]
- Pixels : SizeZ[1406]
- Pixels : Type[1407]
- Plane : TheC[1408]
- Plane : TheT[1409]
- Plane : TheZ[1410]

**Total supported: 23**

**Total unknown or missing: 453**

### 18.2.31 FEIReader

This page lists supported metadata fields for the Bio-Formats FEI/Philips format reader.

These fields are from the OME data model[1411]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats FEI/Philips format reader:**

- Channel : ID[1412]

---

[1395] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[1396] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[1397] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[1398] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[1399] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[1400] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[1401] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[1402] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[1403] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[1404] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[1405] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[1406] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[1407] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[1408] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[1409] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[1410] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[1411] http://www.openmicroscopy.org/site/support/ome-model/
[1412] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID

- Channel : SamplesPerPixel[1413]
- Image : AcquisitionDate[1414]
- Image : ID[1415]
- Image : Name[1416]
- Pixels : BigEndian[1417]
- Pixels : DimensionOrder[1418]
- Pixels : ID[1419]
- Pixels : Interleaved[1420]
- Pixels : SignificantBits[1421]
- Pixels : SizeC[1422]
- Pixels : SizeT[1423]
- Pixels : SizeX[1424]
- Pixels : SizeY[1425]
- Pixels : SizeZ[1426]
- Pixels : Type[1427]
- Plane : TheC[1428]
- Plane : TheT[1429]
- Plane : TheZ[1430]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.32 FEITiffReader

This page lists supported metadata fields for the Bio-Formats FEI TIFF format reader.

These fields are from the OME data model[1431]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 39 of them (8%).
- Of those, Bio-Formats fully or partially converts 39 (100%).

---

[1413] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1414] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[1415] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1416] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[1417] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[1418] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[1419] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[1420] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[1421] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[1422] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[1423] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[1424] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[1425] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[1426] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[1427] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[1428] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[1429] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[1430] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[1431] http://www.openmicroscopy.org/site/support/ome-model/

### Supported fields

**These fields are fully supported by the Bio-Formats FEI TIFF format reader:**

- Channel : ID[1432]
- Channel : SamplesPerPixel[1433]
- Detector : ID[1434]
- Detector : Model[1435]
- Detector : Type[1436]
- Experimenter : ID[1437]
- Experimenter : LastName[1438]
- Image : AcquisitionDate[1439]
- Image : Description[1440]
- Image : ID[1441]
- Image : InstrumentRef[1442]
- Image : Name[1443]
- Instrument : ID[1444]
- Microscope : Model[1445]
- Objective : Correction[1446]
- Objective : ID[1447]
- Objective : Immersion[1448]
- Objective : NominalMagnification[1449]
- Pixels : BigEndian[1450]
- Pixels : DimensionOrder[1451]
- Pixels : ID[1452]
- Pixels : Interleaved[1453]
- Pixels : PhysicalSizeX[1454]
- Pixels : PhysicalSizeY[1455]

---

[1432] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[1433] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1434] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[1435] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[1436] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type
[1437] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_ID
[1438] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_LastName
[1439] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[1440] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[1441] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1442] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[1443] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[1444] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[1445] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[1446] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Correction
[1447] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[1448] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion
[1449] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[1450] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[1451] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[1452] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[1453] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[1454] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[1455] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY

- Pixels : SignificantBits[1456]
- Pixels : SizeC[1457]
- Pixels : SizeT[1458]
- Pixels : SizeX[1459]
- Pixels : SizeY[1460]
- Pixels : SizeZ[1461]
- Pixels : TimeIncrement[1462]
- Pixels : Type[1463]
- Plane : TheC[1464]
- Plane : TheT[1465]
- Plane : TheZ[1466]
- StageLabel : Name[1467]
- StageLabel : X[1468]
- StageLabel : Y[1469]
- StageLabel : Z[1470]

**Total supported: 39**

**Total unknown or missing: 437**

### 18.2.33 FV1000Reader

This page lists supported metadata fields for the Bio-Formats Olympus FV1000 format reader.

These fields are from the OME data model[1471]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 113 of them (23%).
- Of those, Bio-Formats fully or partially converts 113 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Olympus FV1000 format reader:**

- Channel : EmissionWavelength[1472]
- Channel : ExcitationWavelength[1473]

---

[1456] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[1457] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[1458] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[1459] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[1460] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[1461] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[1462] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_TimeIncrement
[1463] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[1464] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[1465] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[1466] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[1467] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#StageLabel_Name
[1468] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#StageLabel_X
[1469] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#StageLabel_Y
[1470] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#StageLabel_Z
[1471] http://www.openmicroscopy.org/site/support/ome-model/
[1472] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_EmissionWavelength
[1473] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ExcitationWavelength

- Channel : ID[1474]
- Channel : IlluminationType[1475]
- Channel : LightSourceSettingsID[1476]
- Channel : LightSourceSettingsWavelength[1477]
- Channel : Name[1478]
- Channel : SamplesPerPixel[1479]
- Detector : Gain[1480]
- Detector : ID[1481]
- Detector : Type[1482]
- Detector : Voltage[1483]
- DetectorSettings : ID[1484]
- Dichroic : ID[1485]
- Dichroic : Model[1486]
- Ellipse : FontSize[1487]
- Ellipse : ID[1488]
- Ellipse : RadiusX[1489]
- Ellipse : RadiusY[1490]
- Ellipse : StrokeWidth[1491]
- Ellipse : TheT[1492]
- Ellipse : TheZ[1493]
- Ellipse : Transform[1494]
- Ellipse : X[1495]
- Ellipse : Y[1496]
- Filter : ID[1497]
- Filter : Model[1498]
- Image : AcquisitionDate[1499]

---

[1474] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[1475] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_IlluminationType
[1476] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSourceSettings_ID
[1477] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSourceSettings_Wavelength
[1478] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[1479] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1480] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Gain
[1481] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[1482] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type
[1483] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Voltage
[1484] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[1485] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Dichroic_ID
[1486] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[1487] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontSize
[1488] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[1489] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_RadiusX
[1490] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_RadiusY
[1491] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeWidth
[1492] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheT
[1493] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheZ
[1494] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Transform
[1495] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_X
[1496] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_Y
[1497] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Filter_ID
[1498] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[1499] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate

- Image : ID[1500]
- Image : InstrumentRef[1501]
- Image : Name[1502]
- Image : ROIRef[1503]
- Instrument : ID[1504]
- Laser : ID[1505]
- Laser : LaserMedium[1506]
- Laser : Type[1507]
- Laser : Wavelength[1508]
- LightPath : DichroicRef[1509]
- LightPath : EmissionFilterRef[1510]
- Line : FontSize[1511]
- Line : ID[1512]
- Line : StrokeWidth[1513]
- Line : TheT[1514]
- Line : TheZ[1515]
- Line : Transform[1516]
- Line : X1[1517]
- Line : X2[1518]
- Line : Y1[1519]
- Line : Y2[1520]
- Objective : Correction[1521]
- Objective : ID[1522]
- Objective : Immersion[1523]
- Objective : LensNA[1524]
- Objective : Model[1525]

---

[1500] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1501] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[1502] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[1503] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROIRef_ID
[1504] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[1505] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSource_ID
[1506] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_LaserMedium
[1507] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_Type
[1508] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_Wavelength
[1509] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DichroicRef_ID
[1510] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#FilterRef_ID
[1511] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontSize
[1512] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[1513] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeWidth
[1514] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheT
[1515] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheZ
[1516] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Transform
[1517] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_X1
[1518] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_X2
[1519] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_Y1
[1520] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_Y2
[1521] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Correction
[1522] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[1523] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion
[1524] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_LensNA
[1525] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model

- Objective : NominalMagnification[1526]
- Objective : WorkingDistance[1527]
- ObjectiveSettings : ID[1528]
- Pixels : BigEndian[1529]
- Pixels : DimensionOrder[1530]
- Pixels : ID[1531]
- Pixels : Interleaved[1532]
- Pixels : PhysicalSizeX[1533]
- Pixels : PhysicalSizeY[1534]
- Pixels : PhysicalSizeZ[1535]
- Pixels : SignificantBits[1536]
- Pixels : SizeC[1537]
- Pixels : SizeT[1538]
- Pixels : SizeX[1539]
- Pixels : SizeY[1540]
- Pixels : SizeZ[1541]
- Pixels : TimeIncrement[1542]
- Pixels : Type[1543]
- Plane : DeltaT[1544]
- Plane : PositionX[1545]
- Plane : PositionY[1546]
- Plane : PositionZ[1547]
- Plane : TheC[1548]
- Plane : TheT[1549]
- Plane : TheZ[1550]
- Point : FontSize[1551]

---

[1526] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[1527] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_WorkingDistance
[1528] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[1529] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[1530] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[1531] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[1532] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[1533] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[1534] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[1535] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[1536] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[1537] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[1538] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[1539] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[1540] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[1541] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[1542] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_TimeIncrement
[1543] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[1544] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_DeltaT
[1545] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[1546] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[1547] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionZ
[1548] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[1549] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[1550] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[1551] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontSize

- Point : ID[1552]
- Point : StrokeWidth[1553]
- Point : TheT[1554]
- Point : TheZ[1555]
- Point : X[1556]
- Point : Y[1557]
- Polygon : FontSize[1558]
- Polygon : ID[1559]
- Polygon : Points[1560]
- Polygon : StrokeWidth[1561]
- Polygon : TheT[1562]
- Polygon : TheZ[1563]
- Polygon : Transform[1564]
- Polyline : FontSize[1565]
- Polyline : ID[1566]
- Polyline : Points[1567]
- Polyline : StrokeWidth[1568]
- Polyline : TheT[1569]
- Polyline : TheZ[1570]
- Polyline : Transform[1571]
- ROI : ID[1572]
- Rectangle : FontSize[1573]
- Rectangle : Height[1574]
- Rectangle : ID[1575]
- Rectangle : StrokeWidth[1576]
- Rectangle : TheT[1577]

---

[1552] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[1553] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeWidth
[1554] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheT
[1555] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheZ
[1556] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Point_X
[1557] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Point_Y
[1558] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontSize
[1559] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[1560] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Polygon_Points
[1561] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeWidth
[1562] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheT
[1563] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheZ
[1564] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Transform
[1565] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontSize
[1566] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[1567] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Polyline_Points
[1568] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeWidth
[1569] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheT
[1570] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheZ
[1571] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Transform
[1572] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROI_ID
[1573] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontSize
[1574] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Height
[1575] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[1576] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeWidth
[1577] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheT

- Rectangle : TheZ[1578]
- Rectangle : Transform[1579]
- Rectangle : Width[1580]
- Rectangle : X[1581]
- Rectangle : Y[1582]
- TransmittanceRange : CutIn[1583]
- TransmittanceRange : CutOut[1584]

**Total supported: 113**

**Total unknown or missing: 363**

## 18.2.34 FakeReader

This page lists supported metadata fields for the Bio-Formats Simulated data format reader.

These fields are from the OME data model[1585]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 84 of them (17%).
- Of those, Bio-Formats fully or partially converts 84 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats Simulated data format reader:**

- BooleanAnnotation : ID[1586]
- BooleanAnnotation : Namespace[1587]
- BooleanAnnotation : Value[1588]
- Channel : Color[1589]
- Channel : ID[1590]
- Channel : SamplesPerPixel[1591]
- CommentAnnotation : ID[1592]
- CommentAnnotation : Namespace[1593]
- CommentAnnotation : Value[1594]
- DoubleAnnotation : ID[1595]

---

[1578] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheZ
[1579] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Transform
[1580] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Width
[1581] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_X
[1582] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Y
[1583] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TransmittanceRange_CutIn
[1584] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TransmittanceRange_CutOut
[1585] http://www.openmicroscopy.org/site/support/ome-model/
[1586] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_ID
[1587] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Namespace
[1588] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#BooleanAnnotation_Value
[1589] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Color
[1590] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[1591] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1592] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_ID
[1593] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Namespace
[1594] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#CommentAnnotation_Value
[1595] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_ID

- DoubleAnnotation : Namespace[1596]
- DoubleAnnotation : Value[1597]
- Ellipse : ID[1598]
- Ellipse : RadiusX[1599]
- Ellipse : RadiusY[1600]
- Ellipse : X[1601]
- Ellipse : Y[1602]
- Image : AcquisitionDate[1603]
- Image : AnnotationRef[1604]
- Image : ID[1605]
- Image : Name[1606]
- Image : ROIRef[1607]
- Label : ID[1608]
- Label : Text[1609]
- Label : X[1610]
- Label : Y[1611]
- Line : ID[1612]
- Line : X1[1613]
- Line : X2[1614]
- Line : Y1[1615]
- Line : Y2[1616]
- LongAnnotation : ID[1617]
- LongAnnotation : Namespace[1618]
- LongAnnotation : Value[1619]
- Mask : BinData[1620]
- Mask : BinDataBigEndian[1621]

---

[1596] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Namespace
[1597] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DoubleAnnotation_Value
[1598] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[1599] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_RadiusX
[1600] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_RadiusY
[1601] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_X
[1602] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_Y
[1603] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[1604] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#AnnotationRef_ID
[1605] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1606] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[1607] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROIRef_ID
[1608] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[1609] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Text
[1610] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Label_X
[1611] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Label_Y
[1612] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[1613] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_X1
[1614] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_X2
[1615] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_Y1
[1616] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_Y2
[1617] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_ID
[1618] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Namespace
[1619] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LongAnnotation_Value
[1620] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#BinData
[1621] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#BinData_BigEndian

- Mask : Height[1622]
- Mask : ID[1623]
- Mask : Width[1624]
- Mask : X[1625]
- Mask : Y[1626]
- Pixels : BigEndian[1627]
- Pixels : DimensionOrder[1628]
- Pixels : ID[1629]
- Pixels : Interleaved[1630]
- Pixels : PhysicalSizeX[1631]
- Pixels : PhysicalSizeY[1632]
- Pixels : PhysicalSizeZ[1633]
- Pixels : SignificantBits[1634]
- Pixels : SizeC[1635]
- Pixels : SizeT[1636]
- Pixels : SizeX[1637]
- Pixels : SizeY[1638]
- Pixels : SizeZ[1639]
- Pixels : Type[1640]
- Plane : ExposureTime[1641]
- Plane : TheC[1642]
- Plane : TheT[1643]
- Plane : TheZ[1644]
- Point : ID[1645]
- Point : X[1646]
- Point : Y[1647]

---

[1622] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Mask_Height
[1623] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[1624] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Mask_Width
[1625] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Mask_X
[1626] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Mask_Y
[1627] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[1628] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[1629] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[1630] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[1631] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[1632] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[1633] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[1634] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[1635] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[1636] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[1637] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[1638] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[1639] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[1640] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[1641] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[1642] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[1643] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[1644] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[1645] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[1646] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Point_X
[1647] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Point_Y

- Polygon : ID[1648]
- Polygon : Points[1649]
- Polyline : ID[1650]
- Polyline : Points[1651]
- ROI : ID[1652]
- Rectangle : Height[1653]
- Rectangle : ID[1654]
- Rectangle : Width[1655]
- Rectangle : X[1656]
- Rectangle : Y[1657]
- TagAnnotation : ID[1658]
- TagAnnotation : Namespace[1659]
- TagAnnotation : Value[1660]
- TermAnnotation : ID[1661]
- TermAnnotation : Namespace[1662]
- TermAnnotation : Value[1663]
- TimestampAnnotation : ID[1664]
- TimestampAnnotation : Namespace[1665]
- TimestampAnnotation : Value[1666]
- XMLAnnotation : ID[1667]
- XMLAnnotation : Namespace[1668]
- XMLAnnotation : Value[1669]

**Total supported: 84**

**Total unknown or missing: 392**

### 18.2.35 FilePatternReader

This page lists supported metadata fields for the Bio-Formats File pattern format reader.

---

[1648] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[1649] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Polygon_Points
[1650] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[1651] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Polyline_Points
[1652] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROI_ID
[1653] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Height
[1654] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[1655] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Width
[1656] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_X
[1657] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Y
[1658] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_ID
[1659] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Namespace
[1660] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TagAnnotation_Value
[1661] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_ID
[1662] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Namespace
[1663] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TermAnnotation_Value
[1664] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_ID
[1665] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Namespace
[1666] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TimestampAnnotation_Value
[1667] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_ID
[1668] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Annotation_Namespace
[1669] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#XMLAnnotation_Value

These fields are from the OME data model[1670]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats File pattern format reader:**

- Channel : ID[1671]
- Channel : SamplesPerPixel[1672]
- Image : AcquisitionDate[1673]
- Image : ID[1674]
- Image : Name[1675]
- Pixels : BigEndian[1676]
- Pixels : DimensionOrder[1677]
- Pixels : ID[1678]
- Pixels : Interleaved[1679]
- Pixels : SignificantBits[1680]
- Pixels : SizeC[1681]
- Pixels : SizeT[1682]
- Pixels : SizeX[1683]
- Pixels : SizeY[1684]
- Pixels : SizeZ[1685]
- Pixels : Type[1686]
- Plane : TheC[1687]
- Plane : TheT[1688]
- Plane : TheZ[1689]

**Total supported: 19**

**Total unknown or missing: 457**

---

[1670] http://www.openmicroscopy.org/site/support/ome-model/
[1671] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[1672] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1673] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[1674] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1675] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[1676] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[1677] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[1678] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[1679] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[1680] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[1681] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[1682] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[1683] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[1684] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[1685] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[1686] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[1687] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[1688] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[1689] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ

### 18.2.36 FitsReader

This page lists supported metadata fields for the Bio-Formats Flexible Image Transport System format reader.

These fields are from the OME data model[1690]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Flexible Image Transport System format reader:**

- Channel : ID[1691]
- Channel : SamplesPerPixel[1692]
- Image : AcquisitionDate[1693]
- Image : ID[1694]
- Image : Name[1695]
- Pixels : BigEndian[1696]
- Pixels : DimensionOrder[1697]
- Pixels : ID[1698]
- Pixels : Interleaved[1699]
- Pixels : SignificantBits[1700]
- Pixels : SizeC[1701]
- Pixels : SizeT[1702]
- Pixels : SizeX[1703]
- Pixels : SizeY[1704]
- Pixels : SizeZ[1705]
- Pixels : Type[1706]
- Plane : TheC[1707]
- Plane : TheT[1708]

---

[1690] http://www.openmicroscopy.org/site/support/ome-model/
[1691] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[1692] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1693] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[1694] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1695] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[1696] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[1697] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[1698] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[1699] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[1700] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[1701] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[1702] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[1703] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[1704] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[1705] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[1706] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[1707] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[1708] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT

- Plane : TheZ[1709]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.37 FlexReader

This page lists supported metadata fields for the Bio-Formats Evotec Flex format reader.

These fields are from the OME data model[1710]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 69 of them (14%).
- Of those, Bio-Formats fully or partially converts 69 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Evotec Flex format reader:**

- Channel : ID[1711]
- Channel : LightSourceSettingsID[1712]
- Channel : Name[1713]
- Channel : SamplesPerPixel[1714]
- Detector : ID[1715]
- Detector : Type[1716]
- DetectorSettings : Binning[1717]
- DetectorSettings : ID[1718]
- Dichroic : ID[1719]
- Dichroic : Model[1720]
- Filter : FilterWheel[1721]
- Filter : ID[1722]
- Filter : Model[1723]
- Image : AcquisitionDate[1724]
- Image : ID[1725]
- Image : InstrumentRef[1726]

---

[1709] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[1710] http://www.openmicroscopy.org/site/support/ome-model/
[1711] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[1712] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSourceSettings_ID
[1713] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[1714] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1715] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[1716] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type
[1717] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Binning
[1718] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[1719] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Dichroic_ID
[1720] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[1721] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Filter_FilterWheel
[1722] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Filter_ID
[1723] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[1724] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[1725] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1726] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID

- Image : Name[1727]
- Instrument : ID[1728]
- Laser : ID[1729]
- Laser : LaserMedium[1730]
- Laser : Type[1731]
- Laser : Wavelength[1732]
- LightPath : DichroicRef[1733]
- LightPath : EmissionFilterRef[1734]
- LightPath : ExcitationFilterRef[1735]
- Objective : CalibratedMagnification[1736]
- Objective : Correction[1737]
- Objective : ID[1738]
- Objective : Immersion[1739]
- Objective : LensNA[1740]
- ObjectiveSettings : ID[1741]
- Pixels : BigEndian[1742]
- Pixels : DimensionOrder[1743]
- Pixels : ID[1744]
- Pixels : Interleaved[1745]
- Pixels : PhysicalSizeX[1746]
- Pixels : PhysicalSizeY[1747]
- Pixels : SignificantBits[1748]
- Pixels : SizeC[1749]
- Pixels : SizeT[1750]
- Pixels : SizeX[1751]
- Pixels : SizeY[1752]

---

[1727] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name

[1728] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID

[1729] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSource_ID

[1730] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_LaserMedium

[1731] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_Type

[1732] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_Wavelength

[1733] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DichroicRef_ID

[1734] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#FilterRef_ID

[1735] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#FilterRef_ID

[1736] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_CalibratedMagnification

[1737] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Correction

[1738] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID

[1739] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion

[1740] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_LensNA

[1741] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID

[1742] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian

[1743] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder

[1744] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID

[1745] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved

[1746] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX

[1747] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY

[1748] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits

[1749] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC

[1750] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT

[1751] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX

[1752] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY

- Pixels : SizeZ[1753]
- Pixels : Type[1754]
- Plane : DeltaT[1755]
- Plane : ExposureTime[1756]
- Plane : PositionX[1757]
- Plane : PositionY[1758]
- Plane : PositionZ[1759]
- Plane : TheC[1760]
- Plane : TheT[1761]
- Plane : TheZ[1762]
- Plate : ColumnNamingConvention[1763]
- Plate : ExternalIdentifier[1764]
- Plate : ID[1765]
- Plate : Name[1766]
- Plate : RowNamingConvention[1767]
- PlateAcquisition : ID[1768]
- PlateAcquisition : MaximumFieldCount[1769]
- PlateAcquisition : StartTime[1770]
- PlateAcquisition : WellSampleRef[1771]
- Well : Column[1772]
- Well : ID[1773]
- Well : Row[1774]
- WellSample : ID[1775]
- WellSample : ImageRef[1776]
- WellSample : Index[1777]
- WellSample : PositionX[1778]

---

[1753] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[1754] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[1755] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_DeltaT
[1756] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[1757] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[1758] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[1759] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionZ
[1760] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[1761] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[1762] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[1763] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_ColumnNamingConvention
[1764] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_ExternalIdentifier
[1765] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_ID
[1766] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_Name
[1767] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_RowNamingConvention
[1768] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_ID
[1769] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_MaximumFieldCount
[1770] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_StartTime
[1771] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSampleRef_ID
[1772] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Column
[1773] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_ID
[1774] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Row
[1775] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_ID
[1776] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImageRef_ID
[1777] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_Index
[1778] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_PositionX

- WellSample : PositionY[1779]

**Total supported: 69**

**Total unknown or missing: 407**

### 18.2.38 FlowSightReader

This page lists supported metadata fields for the Bio-Formats FlowSight format reader.

These fields are from the OME data model[1780]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 20 of them (4%).
- Of those, Bio-Formats fully or partially converts 20 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats FlowSight format reader:**

- Channel : ID[1781]
- Channel : Name[1782]
- Channel : SamplesPerPixel[1783]
- Image : AcquisitionDate[1784]
- Image : ID[1785]
- Image : Name[1786]
- Pixels : BigEndian[1787]
- Pixels : DimensionOrder[1788]
- Pixels : ID[1789]
- Pixels : Interleaved[1790]
- Pixels : SignificantBits[1791]
- Pixels : SizeC[1792]
- Pixels : SizeT[1793]
- Pixels : SizeX[1794]
- Pixels : SizeY[1795]
- Pixels : SizeZ[1796]

---

[1779] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_PositionY
[1780] http://www.openmicroscopy.org/site/support/ome-model/
[1781] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[1782] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[1783] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1784] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[1785] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1786] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[1787] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[1788] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[1789] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[1790] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[1791] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[1792] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[1793] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[1794] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[1795] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[1796] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ

- Pixels : Type[1797]
- Plane : TheC[1798]
- Plane : TheT[1799]
- Plane : TheZ[1800]

**Total supported: 20**

**Total unknown or missing: 456**

### 18.2.39 FluoviewReader

This page lists supported metadata fields for the Bio-Formats Olympus Fluoview/ABD TIFF format reader.

These fields are from the OME data model[1801]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 49 of them (10%).
- Of those, Bio-Formats fully or partially converts 49 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Olympus Fluoview/ABD TIFF format reader:**

- Channel : ID[1802]
- Channel : Name[1803]
- Channel : SamplesPerPixel[1804]
- Detector : ID[1805]
- Detector : Manufacturer[1806]
- Detector : Model[1807]
- Detector : Type[1808]
- DetectorSettings : Gain[1809]
- DetectorSettings : ID[1810]
- DetectorSettings : Offset[1811]
- DetectorSettings : ReadOutRate[1812]
- DetectorSettings : Voltage[1813]
- Image : AcquisitionDate[1814]

---

[1797] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[1798] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[1799] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[1800] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[1801] http://www.openmicroscopy.org/site/support/ome-model/
[1802] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[1803] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[1804] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1805] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[1806] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer
[1807] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[1808] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type
[1809] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Gain
[1810] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[1811] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Offset
[1812] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ReadOutRate
[1813] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Voltage
[1814] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate

- Image : Description[1815]
- Image : ID[1816]
- Image : InstrumentRef[1817]
- Image : Name[1818]
- ImagingEnvironment : Temperature[1819]
- Instrument : ID[1820]
- Objective : CalibratedMagnification[1821]
- Objective : Correction[1822]
- Objective : ID[1823]
- Objective : Immersion[1824]
- Objective : LensNA[1825]
- Objective : Model[1826]
- ObjectiveSettings : ID[1827]
- Pixels : BigEndian[1828]
- Pixels : DimensionOrder[1829]
- Pixels : ID[1830]
- Pixels : Interleaved[1831]
- Pixels : PhysicalSizeX[1832]
- Pixels : PhysicalSizeY[1833]
- Pixels : PhysicalSizeZ[1834]
- Pixels : SignificantBits[1835]
- Pixels : SizeC[1836]
- Pixels : SizeT[1837]
- Pixels : SizeX[1838]
- Pixels : SizeY[1839]
- Pixels : SizeZ[1840]

---

[1815] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[1816] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1817] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[1818] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[1819] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImagingEnvironment_Temperature
[1820] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[1821] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_CalibratedMagnification
[1822] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Correction
[1823] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[1824] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion
[1825] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_LensNA
[1826] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[1827] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[1828] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[1829] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[1830] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[1831] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[1832] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[1833] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[1834] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[1835] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[1836] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[1837] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[1838] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[1839] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[1840] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ

- Pixels : TimeIncrement[1841]
- Pixels : Type[1842]
- Plane : DeltaT[1843]
- Plane : ExposureTime[1844]
- Plane : PositionX[1845]
- Plane : PositionY[1846]
- Plane : PositionZ[1847]
- Plane : TheC[1848]
- Plane : TheT[1849]
- Plane : TheZ[1850]

**Total supported: 49**

**Total unknown or missing: 427**

## 18.2.40 FujiReader

This page lists supported metadata fields for the Bio-Formats Fuji LAS 3000 format reader.

These fields are from the OME data model[1851]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 23 of them (4%).
- Of those, Bio-Formats fully or partially converts 23 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats Fuji LAS 3000 format reader:**

- Channel : ID[1852]
- Channel : SamplesPerPixel[1853]
- Image : AcquisitionDate[1854]
- Image : ID[1855]
- Image : Name[1856]
- Instrument : ID[1857]
- Microscope : Model[1858]

---

[1841] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_TimeIncrement
[1842] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[1843] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_DeltaT
[1844] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[1845] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[1846] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[1847] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionZ
[1848] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[1849] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[1850] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[1851] http://www.openmicroscopy.org/site/support/ome-model/
[1852] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[1853] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1854] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[1855] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1856] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[1857] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[1858] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model

- Pixels : BigEndian[1859]
- Pixels : DimensionOrder[1860]
- Pixels : ID[1861]
- Pixels : Interleaved[1862]
- Pixels : PhysicalSizeX[1863]
- Pixels : PhysicalSizeY[1864]
- Pixels : SignificantBits[1865]
- Pixels : SizeC[1866]
- Pixels : SizeT[1867]
- Pixels : SizeX[1868]
- Pixels : SizeY[1869]
- Pixels : SizeZ[1870]
- Pixels : Type[1871]
- Plane : TheC[1872]
- Plane : TheT[1873]
- Plane : TheZ[1874]

**Total supported: 23**

**Total unknown or missing: 453**

### 18.2.41 GIFReader

This page lists supported metadata fields for the Bio-Formats Graphics Interchange Format format reader.

These fields are from the OME data model[1875]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Graphics Interchange Format format reader:**

- Channel : ID[1876]

---

[1859] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[1860] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[1861] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[1862] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[1863] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[1864] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[1865] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[1866] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[1867] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[1868] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[1869] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[1870] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[1871] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[1872] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[1873] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[1874] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[1875] http://www.openmicroscopy.org/site/support/ome-model/
[1876] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID

- Channel : SamplesPerPixel[1877]
- Image : AcquisitionDate[1878]
- Image : ID[1879]
- Image : Name[1880]
- Pixels : BigEndian[1881]
- Pixels : DimensionOrder[1882]
- Pixels : ID[1883]
- Pixels : Interleaved[1884]
- Pixels : SignificantBits[1885]
- Pixels : SizeC[1886]
- Pixels : SizeT[1887]
- Pixels : SizeX[1888]
- Pixels : SizeY[1889]
- Pixels : SizeZ[1890]
- Pixels : Type[1891]
- Plane : TheC[1892]
- Plane : TheT[1893]
- Plane : TheZ[1894]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.42 GatanDM2Reader

This page lists supported metadata fields for the Bio-Formats Gatan DM2 format reader.

These fields are from the OME data model[1895]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 30 of them (6%).
- Of those, Bio-Formats fully or partially converts 30 (100%).

---

[1877] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1878] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[1879] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1880] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[1881] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[1882] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[1883] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[1884] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[1885] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[1886] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[1887] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[1888] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[1889] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[1890] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[1891] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[1892] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[1893] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[1894] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[1895] http://www.openmicroscopy.org/site/support/ome-model/

### Supported fields

**These fields are fully supported by the Bio-Formats Gatan DM2 format reader:**

- Channel : ID[1896]
- Channel : SamplesPerPixel[1897]
- Detector : ID[1898]
- DetectorSettings : Binning[1899]
- DetectorSettings : ID[1900]
- Experimenter : FirstName[1901]
- Experimenter : ID[1902]
- Experimenter : LastName[1903]
- Image : AcquisitionDate[1904]
- Image : ExperimenterRef[1905]
- Image : ID[1906]
- Image : InstrumentRef[1907]
- Image : Name[1908]
- Instrument : ID[1909]
- Pixels : BigEndian[1910]
- Pixels : DimensionOrder[1911]
- Pixels : ID[1912]
- Pixels : Interleaved[1913]
- Pixels : PhysicalSizeX[1914]
- Pixels : PhysicalSizeY[1915]
- Pixels : SignificantBits[1916]
- Pixels : SizeC[1917]
- Pixels : SizeT[1918]
- Pixels : SizeX[1919]

---

[1896] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[1897] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1898] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[1899] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Binning
[1900] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[1901] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_FirstName
[1902] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_ID
[1903] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_LastName
[1904] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[1905] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ExperimenterRef_ID
[1906] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1907] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[1908] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[1909] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[1910] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[1911] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[1912] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[1913] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[1914] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[1915] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[1916] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[1917] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[1918] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[1919] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX

- Pixels : SizeY[1920]
- Pixels : SizeZ[1921]
- Pixels : Type[1922]
- Plane : TheC[1923]
- Plane : TheT[1924]
- Plane : TheZ[1925]

**Total supported: 30**

**Total unknown or missing: 446**

### 18.2.43 GatanReader

This page lists supported metadata fields for the Bio-Formats Gatan Digital Micrograph format reader.

These fields are from the OME data model[1926]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 36 of them (7%).
- Of those, Bio-Formats fully or partially converts 36 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Gatan Digital Micrograph format reader:**

- Channel : AcquisitionMode[1927]
- Channel : ID[1928]
- Channel : SamplesPerPixel[1929]
- Detector : ID[1930]
- DetectorSettings : ID[1931]
- DetectorSettings : Voltage[1932]
- Image : AcquisitionDate[1933]
- Image : ID[1934]
- Image : Name[1935]
- Instrument : ID[1936]
- Objective : Correction[1937]

---

[1920] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[1921] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[1922] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[1923] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[1924] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[1925] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[1926] http://www.openmicroscopy.org/site/support/ome-model/
[1927] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_AcquisitionMode
[1928] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[1929] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1930] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[1931] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[1932] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Voltage
[1933] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[1934] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1935] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[1936] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[1937] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Correction

- Objective : ID[1938]
- Objective : Immersion[1939]
- Objective : NominalMagnification[1940]
- ObjectiveSettings : ID[1941]
- Pixels : BigEndian[1942]
- Pixels : DimensionOrder[1943]
- Pixels : ID[1944]
- Pixels : Interleaved[1945]
- Pixels : PhysicalSizeX[1946]
- Pixels : PhysicalSizeY[1947]
- Pixels : PhysicalSizeZ[1948]
- Pixels : SignificantBits[1949]
- Pixels : SizeC[1950]
- Pixels : SizeT[1951]
- Pixels : SizeX[1952]
- Pixels : SizeY[1953]
- Pixels : SizeZ[1954]
- Pixels : Type[1955]
- Plane : ExposureTime[1956]
- Plane : PositionX[1957]
- Plane : PositionY[1958]
- Plane : PositionZ[1959]
- Plane : TheC[1960]
- Plane : TheT[1961]
- Plane : TheZ[1962]

**Total supported: 36**

**Total unknown or missing: 440**

---

[1938] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[1939] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion
[1940] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[1941] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[1942] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[1943] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[1944] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[1945] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[1946] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[1947] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[1948] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[1949] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[1950] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[1951] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[1952] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[1953] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[1954] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[1955] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[1956] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[1957] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[1958] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[1959] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionZ
[1960] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[1961] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[1962] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ

### 18.2.44 GelReader

This page lists supported metadata fields for the Bio-Formats Amersham Biosciences GEL format reader.

These fields are from the OME data model[1963]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 21 of them (4%).
- Of those, Bio-Formats fully or partially converts 21 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Amersham Biosciences GEL format reader:**

- Channel : ID[1964]
- Channel : SamplesPerPixel[1965]
- Image : AcquisitionDate[1966]
- Image : ID[1967]
- Image : Name[1968]
- Pixels : BigEndian[1969]
- Pixels : DimensionOrder[1970]
- Pixels : ID[1971]
- Pixels : Interleaved[1972]
- Pixels : PhysicalSizeX[1973]
- Pixels : PhysicalSizeY[1974]
- Pixels : SignificantBits[1975]
- Pixels : SizeC[1976]
- Pixels : SizeT[1977]
- Pixels : SizeX[1978]
- Pixels : SizeY[1979]
- Pixels : SizeZ[1980]
- Pixels : Type[1981]

---

[1963] http://www.openmicroscopy.org/site/support/ome-model/

[1964] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID

[1965] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel

[1966] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate

[1967] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID

[1968] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name

[1969] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian

[1970] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder

[1971] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID

[1972] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved

[1973] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX

[1974] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY

[1975] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits

[1976] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC

[1977] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT

[1978] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX

[1979] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY

[1980] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ

[1981] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type

- Plane : TheC[1982]
- Plane : TheT[1983]
- Plane : TheZ[1984]

**Total supported: 21**

**Total unknown or missing: 455**

### 18.2.45 HISReader

This page lists supported metadata fields for the Bio-Formats Hamamatsu HIS format reader.

These fields are from the OME data model[1985]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 27 of them (5%).
- Of those, Bio-Formats fully or partially converts 27 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Hamamatsu HIS format reader:**

- Channel : ID[1986]
- Channel : SamplesPerPixel[1987]
- Detector : ID[1988]
- Detector : Offset[1989]
- Detector : Type[1990]
- DetectorSettings : Binning[1991]
- DetectorSettings : ID[1992]
- Image : AcquisitionDate[1993]
- Image : ID[1994]
- Image : InstrumentRef[1995]
- Image : Name[1996]
- Instrument : ID[1997]
- Pixels : BigEndian[1998]
- Pixels : DimensionOrder[1999]

---

[1982] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[1983] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[1984] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[1985] http://www.openmicroscopy.org/site/support/ome-model/
[1986] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[1987] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[1988] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[1989] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Offset
[1990] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type
[1991] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Binning
[1992] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[1993] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[1994] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[1995] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[1996] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[1997] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[1998] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[1999] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder

- Pixels : ID[2000]
- Pixels : Interleaved[2001]
- Pixels : SignificantBits[2002]
- Pixels : SizeC[2003]
- Pixels : SizeT[2004]
- Pixels : SizeX[2005]
- Pixels : SizeY[2006]
- Pixels : SizeZ[2007]
- Pixels : Type[2008]
- Plane : ExposureTime[2009]
- Plane : TheC[2010]
- Plane : TheT[2011]
- Plane : TheZ[2012]

**Total supported: 27**

**Total unknown or missing: 449**

### 18.2.46 HRDGDFReader

This page lists supported metadata fields for the Bio-Formats NOAA-HRD Gridded Data Format format reader.

These fields are from the OME data model[2013]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 21 of them (4%).
- Of those, Bio-Formats fully or partially converts 21 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats NOAA-HRD Gridded Data Format format reader:**

- Channel : ID[2014]
- Channel : SamplesPerPixel[2015]
- Image : AcquisitionDate[2016]
- Image : ID[2017]

---

[2000] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2001] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2002] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2003] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2004] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2005] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2006] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2007] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2008] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2009] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[2010] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2011] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2012] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2013] http://www.openmicroscopy.org/site/support/ome-model/
[2014] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2015] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2016] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2017] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID

- Image : Name[2018]
- Pixels : BigEndian[2019]
- Pixels : DimensionOrder[2020]
- Pixels : ID[2021]
- Pixels : Interleaved[2022]
- Pixels : PhysicalSizeX[2023]
- Pixels : PhysicalSizeY[2024]
- Pixels : SignificantBits[2025]
- Pixels : SizeC[2026]
- Pixels : SizeT[2027]
- Pixels : SizeX[2028]
- Pixels : SizeY[2029]
- Pixels : SizeZ[2030]
- Pixels : Type[2031]
- Plane : TheC[2032]
- Plane : TheT[2033]
- Plane : TheZ[2034]

**Total supported: 21**

**Total unknown or missing: 455**

### 18.2.47 HamamatsuVMSReader

This page lists supported metadata fields for the Bio-Formats Hamamatsu VMS format reader.

These fields are from the OME data model[2035]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 26 of them (5%).
- Of those, Bio-Formats fully or partially converts 26 (100%).

---

[2018] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2019] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2020] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2021] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2022] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2023] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[2024] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[2025] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2026] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2027] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2028] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2029] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2030] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2031] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2032] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2033] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2034] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2035] http://www.openmicroscopy.org/site/support/ome-model/

### Supported fields

**These fields are fully supported by the Bio-Formats Hamamatsu VMS format reader:**

- Channel : ID[2036]
- Channel : SamplesPerPixel[2037]
- Image : AcquisitionDate[2038]
- Image : ID[2039]
- Image : InstrumentRef[2040]
- Image : Name[2041]
- Instrument : ID[2042]
- Objective : ID[2043]
- Objective : NominalMagnification[2044]
- ObjectiveSettings : ID[2045]
- Pixels : BigEndian[2046]
- Pixels : DimensionOrder[2047]
- Pixels : ID[2048]
- Pixels : Interleaved[2049]
- Pixels : PhysicalSizeX[2050]
- Pixels : PhysicalSizeY[2051]
- Pixels : SignificantBits[2052]
- Pixels : SizeC[2053]
- Pixels : SizeT[2054]
- Pixels : SizeX[2055]
- Pixels : SizeY[2056]
- Pixels : SizeZ[2057]
- Pixels : Type[2058]
- Plane : TheC[2059]

---

[2036] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2037] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2038] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2039] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2040] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[2041] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2042] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[2043] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[2044] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[2045] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[2046] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2047] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2048] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2049] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2050] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[2051] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[2052] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2053] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2054] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2055] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2056] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2057] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2058] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2059] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC

- Plane : TheT[2060]
- Plane : TheZ[2061]

**Total supported: 26**

**Total unknown or missing: 450**

### 18.2.48 HitachiReader

This page lists supported metadata fields for the Bio-Formats Hitachi format reader.

These fields are from the OME data model[2062]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 31 of them (6%).
- Of those, Bio-Formats fully or partially converts 31 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Hitachi format reader:**

- Channel : ID[2063]
- Channel : SamplesPerPixel[2064]
- Image : AcquisitionDate[2065]
- Image : ID[2066]
- Image : InstrumentRef[2067]
- Image : Name[2068]
- Instrument : ID[2069]
- Microscope : Model[2070]
- Microscope : SerialNumber[2071]
- Objective : ID[2072]
- Objective : WorkingDistance[2073]
- ObjectiveSettings : ID[2074]
- Pixels : BigEndian[2075]
- Pixels : DimensionOrder[2076]
- Pixels : ID[2077]

---

[2060] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2061] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2062] http://www.openmicroscopy.org/site/support/ome-model/
[2063] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2064] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2065] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2066] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2067] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[2068] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2069] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[2070] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[2071] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber
[2072] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[2073] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_WorkingDistance
[2074] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[2075] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2076] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2077] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID

- Pixels : Interleaved[2078]
- Pixels : PhysicalSizeX[2079]
- Pixels : PhysicalSizeY[2080]
- Pixels : SignificantBits[2081]
- Pixels : SizeC[2082]
- Pixels : SizeT[2083]
- Pixels : SizeX[2084]
- Pixels : SizeY[2085]
- Pixels : SizeZ[2086]
- Pixels : Type[2087]
- Plane : PositionX[2088]
- Plane : PositionY[2089]
- Plane : PositionZ[2090]
- Plane : TheC[2091]
- Plane : TheT[2092]
- Plane : TheZ[2093]

**Total supported: 31**

**Total unknown or missing: 445**

### 18.2.49 I2IReader

This page lists supported metadata fields for the Bio-Formats I2I format reader.

These fields are from the OME data model[2094]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats I2I format reader:**

- Channel : ID[2095]

---

[2078] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2079] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[2080] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[2081] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2082] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2083] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2084] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2085] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2086] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2087] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2088] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[2089] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[2090] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionZ
[2091] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2092] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2093] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2094] http://www.openmicroscopy.org/site/support/ome-model/
[2095] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID

- Channel : SamplesPerPixel[2096]
- Image : AcquisitionDate[2097]
- Image : ID[2098]
- Image : Name[2099]
- Pixels : BigEndian[2100]
- Pixels : DimensionOrder[2101]
- Pixels : ID[2102]
- Pixels : Interleaved[2103]
- Pixels : SignificantBits[2104]
- Pixels : SizeC[2105]
- Pixels : SizeT[2106]
- Pixels : SizeX[2107]
- Pixels : SizeY[2108]
- Pixels : SizeZ[2109]
- Pixels : Type[2110]
- Plane : TheC[2111]
- Plane : TheT[2112]
- Plane : TheZ[2113]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.50 ICSReader

This page lists supported metadata fields for the Bio-Formats Image Cytometry Standard format reader.

These fields are from the OME data model[2114]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 72 of them (15%).
- Of those, Bio-Formats fully or partially converts 72 (100%).

---

[2096] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2097] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2098] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2099] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2100] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2101] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2102] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2103] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2104] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2105] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2106] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2107] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2108] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2109] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2110] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2111] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2112] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2113] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2114] http://www.openmicroscopy.org/site/support/ome-model/

### Supported fields

**These fields are fully supported by the Bio-Formats Image Cytometry Standard format reader:**

- Channel : EmissionWavelength[2115]
- Channel : ExcitationWavelength[2116]
- Channel : ID[2117]
- Channel : Name[2118]
- Channel : PinholeSize[2119]
- Channel : SamplesPerPixel[2120]
- Detector : ID[2121]
- Detector : Manufacturer[2122]
- Detector : Model[2123]
- Detector : Type[2124]
- DetectorSettings : Gain[2125]
- DetectorSettings : ID[2126]
- Dichroic : ID[2127]
- Dichroic : Model[2128]
- Experiment : ID[2129]
- Experiment : Type[2130]
- Experimenter : ID[2131]
- Experimenter : LastName[2132]
- Filter : ID[2133]
- Filter : Model[2134]
- FilterSet : DichroicRef[2135]
- FilterSet : EmissionFilterRef[2136]
- FilterSet : ExcitationFilterRef[2137]
- FilterSet : ID[2138]

---

[2115] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_EmissionWavelength
[2116] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ExcitationWavelength
[2117] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2118] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[2119] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_PinholeSize
[2120] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2121] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[2122] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer
[2123] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[2124] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type
[2125] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Gain
[2126] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[2127] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Dichroic_ID
[2128] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[2129] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experiment_ID
[2130] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experiment_Type
[2131] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_ID
[2132] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_LastName
[2133] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Filter_ID
[2134] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[2135] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DichroicRef_ID
[2136] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#FilterRef_ID
[2137] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#FilterRef_ID
[2138] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#FilterSet_ID

- FilterSet : Model[2139]
- Image : AcquisitionDate[2140]
- Image : Description[2141]
- Image : ID[2142]
- Image : InstrumentRef[2143]
- Image : Name[2144]
- Instrument : ID[2145]
- Laser : ID[2146]
- Laser : LaserMedium[2147]
- Laser : Manufacturer[2148]
- Laser : Model[2149]
- Laser : Power[2150]
- Laser : RepetitionRate[2151]
- Laser : Type[2152]
- Laser : Wavelength[2153]
- Microscope : Manufacturer[2154]
- Microscope : Model[2155]
- Objective : CalibratedMagnification[2156]
- Objective : Correction[2157]
- Objective : ID[2158]
- Objective : Immersion[2159]
- Objective : LensNA[2160]
- Objective : Model[2161]
- Objective : WorkingDistance[2162]
- ObjectiveSettings : ID[2163]
- Pixels : BigEndian[2164]

---

[2139] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[2140] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2141] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[2142] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2143] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[2144] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2145] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[2146] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSource_ID
[2147] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_LaserMedium
[2148] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer
[2149] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[2150] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSource_Power
[2151] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_RepetitionRate
[2152] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_Type
[2153] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_Wavelength
[2154] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer
[2155] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[2156] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_CalibratedMagnification
[2157] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Correction
[2158] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[2159] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion
[2160] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_LensNA
[2161] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[2162] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_WorkingDistance
[2163] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[2164] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian

- Pixels : DimensionOrder[2165]
- Pixels : ID[2166]
- Pixels : Interleaved[2167]
- Pixels : PhysicalSizeX[2168]
- Pixels : PhysicalSizeY[2169]
- Pixels : PhysicalSizeZ[2170]
- Pixels : SignificantBits[2171]
- Pixels : SizeC[2172]
- Pixels : SizeT[2173]
- Pixels : SizeX[2174]
- Pixels : SizeY[2175]
- Pixels : SizeZ[2176]
- Pixels : TimeIncrement[2177]
- Pixels : Type[2178]
- Plane : DeltaT[2179]
- Plane : ExposureTime[2180]
- Plane : PositionX[2181]
- Plane : PositionY[2182]
- Plane : PositionZ[2183]
- Plane : TheC[2184]
- Plane : TheT[2185]
- Plane : TheZ[2186]

**Total supported: 72**

**Total unknown or missing: 404**

### 18.2.51 IM3Reader

This page lists supported metadata fields for the Bio-Formats Perkin-Elmer Nuance IM3 format reader.

These fields are from the OME data model[2187]. Bio-Formats standardizes each format's original metadata to and from the OME

---

[2165] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2166] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2167] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2168] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[2169] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[2170] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[2171] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2172] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2173] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2174] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2175] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2176] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2177] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_TimeIncrement
[2178] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2179] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_DeltaT
[2180] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[2181] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[2182] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[2183] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionZ
[2184] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2185] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2186] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2187] http://www.openmicroscopy.org/site/support/ome-model/

data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

## Supported fields

**These fields are fully supported by the Bio-Formats Perkin-Elmer Nuance IM3 format reader:**

- Channel : ID[2188]
- Channel : SamplesPerPixel[2189]
- Image : AcquisitionDate[2190]
- Image : ID[2191]
- Image : Name[2192]
- Pixels : BigEndian[2193]
- Pixels : DimensionOrder[2194]
- Pixels : ID[2195]
- Pixels : Interleaved[2196]
- Pixels : SignificantBits[2197]
- Pixels : SizeC[2198]
- Pixels : SizeT[2199]
- Pixels : SizeX[2200]
- Pixels : SizeY[2201]
- Pixels : SizeZ[2202]
- Pixels : Type[2203]
- Plane : TheC[2204]
- Plane : TheT[2205]
- Plane : TheZ[2206]

**Total supported: 19**

**Total unknown or missing: 457**

---

[2188] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2189] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2190] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2191] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2192] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2193] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2194] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2195] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2196] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2197] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2198] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2199] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2200] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2201] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2202] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2203] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2204] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2205] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2206] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ

### 18.2.52 IMODReader

This page lists supported metadata fields for the Bio-Formats IMOD format reader.

These fields are from the OME data model[2207]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 44 of them (9%).
- Of those, Bio-Formats fully or partially converts 44 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats IMOD format reader:**

- Channel : ID[2208]
- Channel : SamplesPerPixel[2209]
- Image : AcquisitionDate[2210]
- Image : ID[2211]
- Image : Name[2212]
- Image : ROIRef[2213]
- Pixels : BigEndian[2214]
- Pixels : DimensionOrder[2215]
- Pixels : ID[2216]
- Pixels : Interleaved[2217]
- Pixels : PhysicalSizeX[2218]
- Pixels : PhysicalSizeY[2219]
- Pixels : PhysicalSizeZ[2220]
- Pixels : SignificantBits[2221]
- Pixels : SizeC[2222]
- Pixels : SizeT[2223]
- Pixels : SizeX[2224]
- Pixels : SizeY[2225]

---

[2207] http://www.openmicroscopy.org/site/support/ome-model/
[2208] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2209] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2210] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2211] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2212] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2213] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROIRef_ID
[2214] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2215] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2216] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2217] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2218] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[2219] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[2220] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[2221] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2222] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2223] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2224] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2225] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY

- Pixels : SizeZ[2226]
- Pixels : Type[2227]
- Plane : TheC[2228]
- Plane : TheT[2229]
- Plane : TheZ[2230]
- Point : ID[2231]
- Point : StrokeColor[2232]
- Point : StrokeDashArray[2233]
- Point : StrokeWidth[2234]
- Point : TheZ[2235]
- Point : X[2236]
- Point : Y[2237]
- Polygon : ID[2238]
- Polygon : Points[2239]
- Polygon : StrokeColor[2240]
- Polygon : StrokeDashArray[2241]
- Polygon : StrokeWidth[2242]
- Polygon : TheZ[2243]
- Polyline : ID[2244]
- Polyline : Points[2245]
- Polyline : StrokeColor[2246]
- Polyline : StrokeDashArray[2247]
- Polyline : StrokeWidth[2248]
- Polyline : TheZ[2249]
- ROI : ID[2250]
- ROI : Name[2251]

---

[2226] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2227] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2228] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2229] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2230] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2231] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[2232] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeColor
[2233] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeDashArray
[2234] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeWidth
[2235] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheZ
[2236] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Point_X
[2237] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Point_Y
[2238] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[2239] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Polygon_Points
[2240] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeColor
[2241] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeDashArray
[2242] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeWidth
[2243] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheZ
[2244] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[2245] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Polyline_Points
[2246] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeColor
[2247] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeDashArray
[2248] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeWidth
[2249] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheZ
[2250] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROI_ID
[2251] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROI_Name

**Total supported: 44**

**Total unknown or missing: 432**

### 18.2.53 INRReader

This page lists supported metadata fields for the Bio-Formats INR format reader.

These fields are from the OME data model[2252]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 22 of them (4%).
- Of those, Bio-Formats fully or partially converts 22 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats INR format reader:**

- Channel : ID[2253]
- Channel : SamplesPerPixel[2254]
- Image : AcquisitionDate[2255]
- Image : ID[2256]
- Image : Name[2257]
- Pixels : BigEndian[2258]
- Pixels : DimensionOrder[2259]
- Pixels : ID[2260]
- Pixels : Interleaved[2261]
- Pixels : PhysicalSizeX[2262]
- Pixels : PhysicalSizeY[2263]
- Pixels : PhysicalSizeZ[2264]
- Pixels : SignificantBits[2265]
- Pixels : SizeC[2266]
- Pixels : SizeT[2267]
- Pixels : SizeX[2268]
- Pixels : SizeY[2269]

---

[2252] http://www.openmicroscopy.org/site/support/ome-model/

[2253] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID

[2254] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel

[2255] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate

[2256] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID

[2257] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name

[2258] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian

[2259] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder

[2260] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID

[2261] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved

[2262] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX

[2263] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY

[2264] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ

[2265] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits

[2266] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC

[2267] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT

[2268] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX

[2269] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY

- Pixels : SizeZ[2270]
- Pixels : Type[2271]
- Plane : TheC[2272]
- Plane : TheT[2273]
- Plane : TheZ[2274]

**Total supported: 22**

**Total unknown or missing: 454**

### 18.2.54 IPLabReader

This page lists supported metadata fields for the Bio-Formats IPLab format reader.

These fields are from the OME data model[2275]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 31 of them (6%).
- Of those, Bio-Formats fully or partially converts 31 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats IPLab format reader:**

- Channel : ID[2276]
- Channel : SamplesPerPixel[2277]
- Image : AcquisitionDate[2278]
- Image : Description[2279]
- Image : ID[2280]
- Image : Name[2281]
- Image : ROIRef[2282]
- Pixels : BigEndian[2283]
- Pixels : DimensionOrder[2284]
- Pixels : ID[2285]
- Pixels : Interleaved[2286]
- Pixels : PhysicalSizeX[2287]

---

[2270] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2271] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2272] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2273] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2274] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2275] http://www.openmicroscopy.org/site/support/ome-model/
[2276] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2277] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2278] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2279] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[2280] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2281] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2282] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROIRef_ID
[2283] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2284] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2285] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2286] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2287] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX

- Pixels : PhysicalSizeY[2288]
- Pixels : SignificantBits[2289]
- Pixels : SizeC[2290]
- Pixels : SizeT[2291]
- Pixels : SizeX[2292]
- Pixels : SizeY[2293]
- Pixels : SizeZ[2294]
- Pixels : TimeIncrement[2295]
- Pixels : Type[2296]
- Plane : DeltaT[2297]
- Plane : TheC[2298]
- Plane : TheT[2299]
- Plane : TheZ[2300]
- ROI : ID[2301]
- Rectangle : Height[2302]
- Rectangle : ID[2303]
- Rectangle : Width[2304]
- Rectangle : X[2305]
- Rectangle : Y[2306]

**Total supported: 31**

**Total unknown or missing: 445**

### 18.2.55 IPWReader

This page lists supported metadata fields for the Bio-Formats Image-Pro Workspace format reader.

These fields are from the OME data model[2307]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 20 of them (4%).
- Of those, Bio-Formats fully or partially converts 20 (100%).

---

[2288] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[2289] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2290] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2291] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2292] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2293] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2294] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2295] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_TimeIncrement
[2296] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2297] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_DeltaT
[2298] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2299] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2300] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2301] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROI_ID
[2302] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Height
[2303] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[2304] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Width
[2305] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_X
[2306] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Y
[2307] http://www.openmicroscopy.org/site/support/ome-model/

### Supported fields

**These fields are fully supported by the Bio-Formats Image-Pro Workspace format reader:**

- Channel : ID[2308]
- Channel : SamplesPerPixel[2309]
- Image : AcquisitionDate[2310]
- Image : Description[2311]
- Image : ID[2312]
- Image : Name[2313]
- Pixels : BigEndian[2314]
- Pixels : DimensionOrder[2315]
- Pixels : ID[2316]
- Pixels : Interleaved[2317]
- Pixels : SignificantBits[2318]
- Pixels : SizeC[2319]
- Pixels : SizeT[2320]
- Pixels : SizeX[2321]
- Pixels : SizeY[2322]
- Pixels : SizeZ[2323]
- Pixels : Type[2324]
- Plane : TheC[2325]
- Plane : TheT[2326]
- Plane : TheZ[2327]

**Total supported: 20**

**Total unknown or missing: 456**

## 18.2.56 ImaconReader

This page lists supported metadata fields for the Bio-Formats Imacon format reader.

---

[2308] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2309] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2310] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2311] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[2312] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2313] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2314] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2315] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2316] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2317] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2318] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2319] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2320] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2321] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2322] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2323] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2324] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2325] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2326] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2327] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ

These fields are from the OME data model[2328]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 23 of them (4%).
- Of those, Bio-Formats fully or partially converts 23 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats Imacon format reader:**

- Channel : ID[2329]
- Channel : SamplesPerPixel[2330]
- Experimenter : FirstName[2331]
- Experimenter : ID[2332]
- Experimenter : LastName[2333]
- Image : AcquisitionDate[2334]
- Image : ExperimenterRef[2335]
- Image : ID[2336]
- Image : Name[2337]
- Pixels : BigEndian[2338]
- Pixels : DimensionOrder[2339]
- Pixels : ID[2340]
- Pixels : Interleaved[2341]
- Pixels : SignificantBits[2342]
- Pixels : SizeC[2343]
- Pixels : SizeT[2344]
- Pixels : SizeX[2345]
- Pixels : SizeY[2346]
- Pixels : SizeZ[2347]
- Pixels : Type[2348]

---

[2328] http://www.openmicroscopy.org/site/support/ome-model/
[2329] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2330] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2331] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_FirstName
[2332] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_ID
[2333] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_LastName
[2334] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2335] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ExperimenterRef_ID
[2336] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2337] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2338] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2339] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2340] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2341] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2342] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2343] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2344] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2345] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2346] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2347] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2348] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type

- Plane : TheC[2349]
- Plane : TheT[2350]
- Plane : TheZ[2351]

**Total supported: 23**

**Total unknown or missing: 453**

### 18.2.57 ImageIOReader

This page lists supported metadata fields for the Bio-Formats ImageIOReader.

These fields are from the OME data model[2352]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats ImageIOReader:**

- Channel : ID[2353]
- Channel : SamplesPerPixel[2354]
- Image : AcquisitionDate[2355]
- Image : ID[2356]
- Image : Name[2357]
- Pixels : BigEndian[2358]
- Pixels : DimensionOrder[2359]
- Pixels : ID[2360]
- Pixels : Interleaved[2361]
- Pixels : SignificantBits[2362]
- Pixels : SizeC[2363]
- Pixels : SizeT[2364]
- Pixels : SizeX[2365]
- Pixels : SizeY[2366]

---

[2349] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2350] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2351] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2352] http://www.openmicroscopy.org/site/support/ome-model/
[2353] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2354] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2355] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2356] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2357] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2358] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2359] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2360] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2361] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2362] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2363] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2364] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2365] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2366] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY

- Pixels : SizeZ[2367]
- Pixels : Type[2368]
- Plane : TheC[2369]
- Plane : TheT[2370]
- Plane : TheZ[2371]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.58 ImagicReader

This page lists supported metadata fields for the Bio-Formats IMAGIC format reader.

These fields are from the OME data model[2372]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 22 of them (4%).
- Of those, Bio-Formats fully or partially converts 22 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats IMAGIC format reader:**

- Channel : ID[2373]
- Channel : SamplesPerPixel[2374]
- Image : AcquisitionDate[2375]
- Image : ID[2376]
- Image : Name[2377]
- Pixels : BigEndian[2378]
- Pixels : DimensionOrder[2379]
- Pixels : ID[2380]
- Pixels : Interleaved[2381]
- Pixels : PhysicalSizeX[2382]
- Pixels : PhysicalSizeY[2383]
- Pixels : PhysicalSizeZ[2384]

---

[2367] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ

[2368] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type

[2369] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC

[2370] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT

[2371] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ

[2372] http://www.openmicroscopy.org/site/support/ome-model/

[2373] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID

[2374] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel

[2375] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate

[2376] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID

[2377] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name

[2378] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian

[2379] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder

[2380] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID

[2381] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved

[2382] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX

[2383] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY

[2384] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ

- Pixels : SignificantBits[2385]
- Pixels : SizeC[2386]
- Pixels : SizeT[2387]
- Pixels : SizeX[2388]
- Pixels : SizeY[2389]
- Pixels : SizeZ[2390]
- Pixels : Type[2391]
- Plane : TheC[2392]
- Plane : TheT[2393]
- Plane : TheZ[2394]

**Total supported: 22**

**Total unknown or missing: 454**

### 18.2.59 ImarisHDFReader

This page lists supported metadata fields for the Bio-Formats Bitplane Imaris 5.5 (HDF) format reader.

These fields are from the OME data model[2395]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 23 of them (4%).
- Of those, Bio-Formats fully or partially converts 23 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Bitplane Imaris 5.5 (HDF) format reader:**

- Channel : Color[2396]
- Channel : ID[2397]
- Channel : SamplesPerPixel[2398]
- Image : AcquisitionDate[2399]
- Image : ID[2400]
- Image : Name[2401]
- Pixels : BigEndian[2402]

---

[2385] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2386] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2387] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2388] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2389] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2390] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2391] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2392] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2393] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2394] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2395] http://www.openmicroscopy.org/site/support/ome-model/
[2396] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Color
[2397] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2398] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2399] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2400] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2401] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2402] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian

- Pixels : DimensionOrder[2403]
- Pixels : ID[2404]
- Pixels : Interleaved[2405]
- Pixels : PhysicalSizeX[2406]
- Pixels : PhysicalSizeY[2407]
- Pixels : PhysicalSizeZ[2408]
- Pixels : SignificantBits[2409]
- Pixels : SizeC[2410]
- Pixels : SizeT[2411]
- Pixels : SizeX[2412]
- Pixels : SizeY[2413]
- Pixels : SizeZ[2414]
- Pixels : Type[2415]
- Plane : TheC[2416]
- Plane : TheT[2417]
- Plane : TheZ[2418]

**Total supported: 23**

**Total unknown or missing: 453**

### 18.2.60 ImarisReader

This page lists supported metadata fields for the Bio-Formats Bitplane Imaris format reader.

These fields are from the OME data model[2419]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 32 of them (6%).
- Of those, Bio-Formats fully or partially converts 32 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Bitplane Imaris format reader:**

- Channel : ID[2420]

---

[2403] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2404] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2405] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2406] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[2407] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[2408] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[2409] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2410] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2411] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2412] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2413] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2414] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2415] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2416] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2417] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2418] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2419] http://www.openmicroscopy.org/site/support/ome-model/
[2420] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID

- Channel : PinholeSize[2421]
- Channel : SamplesPerPixel[2422]
- Detector : ID[2423]
- Detector : Type[2424]
- DetectorSettings : Gain[2425]
- DetectorSettings : ID[2426]
- DetectorSettings : Offset[2427]
- Image : AcquisitionDate[2428]
- Image : Description[2429]
- Image : ID[2430]
- Image : InstrumentRef[2431]
- Image : Name[2432]
- Instrument : ID[2433]
- Pixels : BigEndian[2434]
- Pixels : DimensionOrder[2435]
- Pixels : ID[2436]
- Pixels : Interleaved[2437]
- Pixels : PhysicalSizeX[2438]
- Pixels : PhysicalSizeY[2439]
- Pixels : PhysicalSizeZ[2440]
- Pixels : SignificantBits[2441]
- Pixels : SizeC[2442]
- Pixels : SizeT[2443]
- Pixels : SizeX[2444]
- Pixels : SizeY[2445]
- Pixels : SizeZ[2446]

---

[2421] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_PinholeSize
[2422] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2423] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[2424] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type
[2425] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Gain
[2426] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[2427] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Offset
[2428] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2429] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[2430] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2431] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[2432] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2433] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[2434] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2435] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2436] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2437] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2438] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[2439] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[2440] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[2441] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2442] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2443] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2444] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2445] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2446] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ

- Pixels : TimeIncrement[2447]
- Pixels : Type[2448]
- Plane : TheC[2449]
- Plane : TheT[2450]
- Plane : TheZ[2451]

**Total supported: 32**

**Total unknown or missing: 444**

### 18.2.61 ImarisTiffReader

This page lists supported metadata fields for the Bio-Formats Bitplane Imaris 3 (TIFF) format reader.

These fields are from the OME data model[2452]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 23 of them (4%).
- Of those, Bio-Formats fully or partially converts 23 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Bitplane Imaris 3 (TIFF) format reader:**

- Channel : EmissionWavelength[2453]
- Channel : ExcitationWavelength[2454]
- Channel : ID[2455]
- Channel : Name[2456]
- Channel : SamplesPerPixel[2457]
- Image : AcquisitionDate[2458]
- Image : Description[2459]
- Image : ID[2460]
- Image : Name[2461]
- Pixels : BigEndian[2462]
- Pixels : DimensionOrder[2463]
- Pixels : ID[2464]

---

[2447] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_TimeIncrement
[2448] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2449] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2450] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2451] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2452] http://www.openmicroscopy.org/site/support/ome-model/
[2453] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_EmissionWavelength
[2454] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ExcitationWavelength
[2455] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2456] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[2457] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2458] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2459] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[2460] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2461] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2462] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2463] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2464] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID

- Pixels : Interleaved[2465]
- Pixels : SignificantBits[2466]
- Pixels : SizeC[2467]
- Pixels : SizeT[2468]
- Pixels : SizeX[2469]
- Pixels : SizeY[2470]
- Pixels : SizeZ[2471]
- Pixels : Type[2472]
- Plane : TheC[2473]
- Plane : TheT[2474]
- Plane : TheZ[2475]

**Total supported: 23**

**Total unknown or missing: 453**

### 18.2.62 ImprovisionTiffReader

This page lists supported metadata fields for the Bio-Formats Improvision TIFF format reader.

These fields are from the OME data model[2476]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 25 of them (5%).
- Of those, Bio-Formats fully or partially converts 25 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Improvision TIFF format reader:**

- Channel : ID[2477]
- Channel : Name[2478]
- Channel : SamplesPerPixel[2479]
- Image : AcquisitionDate[2480]
- Image : Description[2481]
- Image : ID[2482]

---

[2465] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2466] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2467] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2468] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2469] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2470] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2471] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2472] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2473] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2474] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2475] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2476] http://www.openmicroscopy.org/site/support/ome-model/
[2477] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2478] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[2479] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2480] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2481] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[2482] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID

- Image : Name[2483]
- Pixels : BigEndian[2484]
- Pixels : DimensionOrder[2485]
- Pixels : ID[2486]
- Pixels : Interleaved[2487]
- Pixels : PhysicalSizeX[2488]
- Pixels : PhysicalSizeY[2489]
- Pixels : PhysicalSizeZ[2490]
- Pixels : SignificantBits[2491]
- Pixels : SizeC[2492]
- Pixels : SizeT[2493]
- Pixels : SizeX[2494]
- Pixels : SizeY[2495]
- Pixels : SizeZ[2496]
- Pixels : TimeIncrement[2497]
- Pixels : Type[2498]
- Plane : TheC[2499]
- Plane : TheT[2500]
- Plane : TheZ[2501]

**Total supported: 25**

**Total unknown or missing: 451**

### 18.2.63 ImspectorReader

This page lists supported metadata fields for the Bio-Formats Lavision Imspector format reader.

These fields are from the OME data model[2502]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

---

[2483] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2484] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2485] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2486] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2487] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2488] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[2489] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[2490] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[2491] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2492] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2493] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2494] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2495] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2496] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2497] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_TimeIncrement
[2498] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2499] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2500] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2501] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2502] http://www.openmicroscopy.org/site/support/ome-model/

### Supported fields

**These fields are fully supported by the Bio-Formats Lavision Imspector format reader:**

- Channel : ID[2503]
- Channel : SamplesPerPixel[2504]
- Image : AcquisitionDate[2505]
- Image : ID[2506]
- Image : Name[2507]
- Pixels : BigEndian[2508]
- Pixels : DimensionOrder[2509]
- Pixels : ID[2510]
- Pixels : Interleaved[2511]
- Pixels : SignificantBits[2512]
- Pixels : SizeC[2513]
- Pixels : SizeT[2514]
- Pixels : SizeX[2515]
- Pixels : SizeY[2516]
- Pixels : SizeZ[2517]
- Pixels : Type[2518]
- Plane : TheC[2519]
- Plane : TheT[2520]
- Plane : TheZ[2521]

**Total supported: 19**

**Total unknown or missing: 457**

## 18.2.64 InCell3000Reader

This page lists supported metadata fields for the Bio-Formats InCell 3000 format reader.

These fields are from the OME data model[2522]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

---

[2503] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2504] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2505] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2506] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2507] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2508] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2509] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2510] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2511] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2512] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2513] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2514] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2515] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2516] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2517] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2518] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2519] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2520] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2521] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2522] http://www.openmicroscopy.org/site/support/ome-model/

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

## Supported fields

**These fields are fully supported by the Bio-Formats InCell 3000 format reader:**

- Channel : ID[2523]
- Channel : SamplesPerPixel[2524]
- Image : AcquisitionDate[2525]
- Image : ID[2526]
- Image : Name[2527]
- Pixels : BigEndian[2528]
- Pixels : DimensionOrder[2529]
- Pixels : ID[2530]
- Pixels : Interleaved[2531]
- Pixels : SignificantBits[2532]
- Pixels : SizeC[2533]
- Pixels : SizeT[2534]
- Pixels : SizeX[2535]
- Pixels : SizeY[2536]
- Pixels : SizeZ[2537]
- Pixels : Type[2538]
- Plane : TheC[2539]
- Plane : TheT[2540]
- Plane : TheZ[2541]

**Total supported: 19**

**Total unknown or missing: 457**

---

[2523] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID

[2524] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel

[2525] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate

[2526] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID

[2527] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name

[2528] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian

[2529] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder

[2530] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID

[2531] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved

[2532] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits

[2533] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC

[2534] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT

[2535] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX

[2536] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY

[2537] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ

[2538] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type

[2539] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC

[2540] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT

[2541] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ

### 18.2.65 InCellReader

This page lists supported metadata fields for the Bio-Formats InCell 1000/2000 format reader.

These fields are from the OME data model[2542]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 67 of them (14%).
- Of those, Bio-Formats fully or partially converts 67 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats InCell 1000/2000 format reader:**

- Channel : EmissionWavelength[2543]
- Channel : ExcitationWavelength[2544]
- Channel : ID[2545]
- Channel : Name[2546]
- Channel : SamplesPerPixel[2547]
- Detector : ID[2548]
- Detector : Model[2549]
- Detector : Type[2550]
- DetectorSettings : Binning[2551]
- DetectorSettings : Gain[2552]
- DetectorSettings : ID[2553]
- Experiment : ID[2554]
- Experiment : Type[2555]
- Image : AcquisitionDate[2556]
- Image : Description[2557]
- Image : ExperimentRef[2558]
- Image : ID[2559]
- Image : InstrumentRef[2560]
- Image : Name[2561]

---

[2542] http://www.openmicroscopy.org/site/support/ome-model/
[2543] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_EmissionWavelength
[2544] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ExcitationWavelength
[2545] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2546] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[2547] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2548] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[2549] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[2550] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type
[2551] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Binning
[2552] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Gain
[2553] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[2554] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experiment_ID
[2555] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experiment_Type
[2556] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2557] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[2558] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ExperimentRef_ID
[2559] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2560] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[2561] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name

- ImagingEnvironment : Temperature[2562]
- Instrument : ID[2563]
- Objective : Correction[2564]
- Objective : ID[2565]
- Objective : Immersion[2566]
- Objective : LensNA[2567]
- Objective : Manufacturer[2568]
- Objective : NominalMagnification[2569]
- ObjectiveSettings : ID[2570]
- ObjectiveSettings : RefractiveIndex[2571]
- Pixels : BigEndian[2572]
- Pixels : DimensionOrder[2573]
- Pixels : ID[2574]
- Pixels : Interleaved[2575]
- Pixels : PhysicalSizeX[2576]
- Pixels : PhysicalSizeY[2577]
- Pixels : SignificantBits[2578]
- Pixels : SizeC[2579]
- Pixels : SizeT[2580]
- Pixels : SizeX[2581]
- Pixels : SizeY[2582]
- Pixels : SizeZ[2583]
- Pixels : Type[2584]
- Plane : DeltaT[2585]
- Plane : ExposureTime[2586]
- Plane : PositionX[2587]

---

[2562] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImagingEnvironment_Temperature
[2563] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[2564] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Correction
[2565] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[2566] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion
[2567] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_LensNA
[2568] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer
[2569] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[2570] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[2571] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_RefractiveIndex
[2572] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2573] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2574] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2575] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2576] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[2577] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[2578] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2579] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2580] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2581] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2582] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2583] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2584] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2585] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_DeltaT
[2586] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[2587] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX

- Plane : PositionY[2588]
- Plane : PositionZ[2589]
- Plane : TheC[2590]
- Plane : TheT[2591]
- Plane : TheZ[2592]
- Plate : ColumnNamingConvention[2593]
- Plate : ID[2594]
- Plate : Name[2595]
- Plate : RowNamingConvention[2596]
- Plate : WellOriginX[2597]
- Plate : WellOriginY[2598]
- PlateAcquisition : ID[2599]
- PlateAcquisition : MaximumFieldCount[2600]
- PlateAcquisition : WellSampleRef[2601]
- Well : Column[2602]
- Well : ID[2603]
- Well : Row[2604]
- WellSample : ID[2605]
- WellSample : ImageRef[2606]
- WellSample : Index[2607]
- WellSample : PositionX[2608]
- WellSample : PositionY[2609]

**Total supported: 67**

**Total unknown or missing: 409**

### 18.2.66 InveonReader

This page lists supported metadata fields for the Bio-Formats Inveon format reader.

---

[2588] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[2589] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionZ
[2590] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2591] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2592] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2593] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_ColumnNamingConvention
[2594] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_ID
[2595] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_Name
[2596] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_RowNamingConvention
[2597] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_WellOriginX
[2598] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_WellOriginY
[2599] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_ID
[2600] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_MaximumFieldCount
[2601] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSampleRef_ID
[2602] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Column
[2603] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_ID
[2604] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Row
[2605] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_ID
[2606] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImageRef_ID
[2607] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_Index
[2608] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_PositionX
[2609] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_PositionY

These fields are from the OME data model[2610]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 30 of them (6%).
- Of those, Bio-Formats fully or partially converts 30 (100%).

## Supported fields

**These fields are fully supported by the Bio-Formats Inveon format reader:**

- Channel : ID[2611]
- Channel : SamplesPerPixel[2612]
- Experimenter : ID[2613]
- Experimenter : Institution[2614]
- Experimenter : UserName[2615]
- Image : AcquisitionDate[2616]
- Image : Description[2617]
- Image : ExperimenterRef[2618]
- Image : ID[2619]
- Image : InstrumentRef[2620]
- Image : Name[2621]
- Instrument : ID[2622]
- Microscope : Model[2623]
- Pixels : BigEndian[2624]
- Pixels : DimensionOrder[2625]
- Pixels : ID[2626]
- Pixels : Interleaved[2627]
- Pixels : PhysicalSizeX[2628]
- Pixels : PhysicalSizeY[2629]
- Pixels : PhysicalSizeZ[2630]

---

[2610] http://www.openmicroscopy.org/site/support/ome-model/
[2611] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2612] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2613] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_ID
[2614] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_Institution
[2615] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_UserName
[2616] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2617] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[2618] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ExperimenterRef_ID
[2619] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2620] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[2621] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2622] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[2623] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[2624] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2625] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2626] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2627] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2628] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[2629] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[2630] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ

- Pixels : SignificantBits[2631]
- Pixels : SizeC[2632]
- Pixels : SizeT[2633]
- Pixels : SizeX[2634]
- Pixels : SizeY[2635]
- Pixels : SizeZ[2636]
- Pixels : Type[2637]
- Plane : TheC[2638]
- Plane : TheT[2639]
- Plane : TheZ[2640]

**Total supported: 30**

**Total unknown or missing: 446**

### 18.2.67 IvisionReader

This page lists supported metadata fields for the Bio-Formats IVision format reader.

These fields are from the OME data model[2641]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 34 of them (7%).
- Of those, Bio-Formats fully or partially converts 34 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats IVision format reader:**

- Channel : ID[2642]
- Channel : SamplesPerPixel[2643]
- Detector : ID[2644]
- Detector : Type[2645]
- DetectorSettings : Binning[2646]
- DetectorSettings : Gain[2647]
- DetectorSettings : ID[2648]

---

[2631] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2632] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2633] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2634] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2635] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2636] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2637] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2638] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2639] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2640] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2641] http://www.openmicroscopy.org/site/support/ome-model/
[2642] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2643] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2644] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[2645] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type
[2646] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Binning
[2647] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Gain
[2648] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID

- Image : AcquisitionDate[2649]
- Image : ID[2650]
- Image : InstrumentRef[2651]
- Image : Name[2652]
- Instrument : ID[2653]
- Objective : Correction[2654]
- Objective : ID[2655]
- Objective : Immersion[2656]
- Objective : LensNA[2657]
- Objective : NominalMagnification[2658]
- ObjectiveSettings : ID[2659]
- ObjectiveSettings : RefractiveIndex[2660]
- Pixels : BigEndian[2661]
- Pixels : DimensionOrder[2662]
- Pixels : ID[2663]
- Pixels : Interleaved[2664]
- Pixels : SignificantBits[2665]
- Pixels : SizeC[2666]
- Pixels : SizeT[2667]
- Pixels : SizeX[2668]
- Pixels : SizeY[2669]
- Pixels : SizeZ[2670]
- Pixels : TimeIncrement[2671]
- Pixels : Type[2672]
- Plane : TheC[2673]
- Plane : TheT[2674]

---

[2649] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2650] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2651] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[2652] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2653] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[2654] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Correction
[2655] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[2656] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion
[2657] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_LensNA
[2658] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[2659] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[2660] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_RefractiveIndex
[2661] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2662] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2663] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2664] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2665] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2666] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2667] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2668] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2669] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2670] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2671] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_TimeIncrement
[2672] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2673] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2674] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT

- Plane : TheZ[2675]

**Total supported: 34**

**Total unknown or missing: 442**

### 18.2.68 JEOLReader

This page lists supported metadata fields for the Bio-Formats JEOL format reader.

These fields are from the OME data model[2676]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats JEOL format reader:**

- Channel : ID[2677]
- Channel : SamplesPerPixel[2678]
- Image : AcquisitionDate[2679]
- Image : ID[2680]
- Image : Name[2681]
- Pixels : BigEndian[2682]
- Pixels : DimensionOrder[2683]
- Pixels : ID[2684]
- Pixels : Interleaved[2685]
- Pixels : SignificantBits[2686]
- Pixels : SizeC[2687]
- Pixels : SizeT[2688]
- Pixels : SizeX[2689]
- Pixels : SizeY[2690]
- Pixels : SizeZ[2691]
- Pixels : Type[2692]

---

[2675] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2676] http://www.openmicroscopy.org/site/support/ome-model/
[2677] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2678] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2679] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2680] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2681] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2682] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2683] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2684] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2685] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2686] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2687] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2688] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2689] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2690] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2691] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2692] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type

- Plane : TheC[2693]
- Plane : TheT[2694]
- Plane : TheZ[2695]

**Total supported: 19**

**Total unknown or missing: 457**

## 18.2.69 JPEG2000Reader

This page lists supported metadata fields for the Bio-Formats JPEG-2000 format reader.

These fields are from the OME data model[2696]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats JPEG-2000 format reader:**

- Channel : ID[2697]
- Channel : SamplesPerPixel[2698]
- Image : AcquisitionDate[2699]
- Image : ID[2700]
- Image : Name[2701]
- Pixels : BigEndian[2702]
- Pixels : DimensionOrder[2703]
- Pixels : ID[2704]
- Pixels : Interleaved[2705]
- Pixels : SignificantBits[2706]
- Pixels : SizeC[2707]
- Pixels : SizeT[2708]
- Pixels : SizeX[2709]
- Pixels : SizeY[2710]

---

[2693] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2694] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2695] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2696] http://www.openmicroscopy.org/site/support/ome-model/
[2697] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2698] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2699] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2700] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2701] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2702] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2703] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2704] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2705] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2706] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2707] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2708] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2709] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2710] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY

- Pixels : SizeZ[2711]
- Pixels : Type[2712]
- Plane : TheC[2713]
- Plane : TheT[2714]
- Plane : TheZ[2715]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.70 JPEGReader

This page lists supported metadata fields for the Bio-Formats JPEG format reader.

These fields are from the OME data model[2716]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats JPEG format reader:**

- Channel : ID[2717]
- Channel : SamplesPerPixel[2718]
- Image : AcquisitionDate[2719]
- Image : ID[2720]
- Image : Name[2721]
- Pixels : BigEndian[2722]
- Pixels : DimensionOrder[2723]
- Pixels : ID[2724]
- Pixels : Interleaved[2725]
- Pixels : SignificantBits[2726]
- Pixels : SizeC[2727]
- Pixels : SizeT[2728]

---

[2711] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2712] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2713] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2714] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2715] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2716] http://www.openmicroscopy.org/site/support/ome-model/
[2717] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2718] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2719] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2720] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2721] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2722] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2723] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2724] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2725] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2726] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2727] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2728] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT

- Pixels : SizeX[2729]
- Pixels : SizeY[2730]
- Pixels : SizeZ[2731]
- Pixels : Type[2732]
- Plane : TheC[2733]
- Plane : TheT[2734]
- Plane : TheZ[2735]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.71 JPKReader

This page lists supported metadata fields for the Bio-Formats JPK Instruments format reader.

These fields are from the OME data model[2736]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats JPK Instruments format reader:**

- Channel : ID[2737]
- Channel : SamplesPerPixel[2738]
- Image : AcquisitionDate[2739]
- Image : ID[2740]
- Image : Name[2741]
- Pixels : BigEndian[2742]
- Pixels : DimensionOrder[2743]
- Pixels : ID[2744]
- Pixels : Interleaved[2745]
- Pixels : SignificantBits[2746]

---

[2729] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2730] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2731] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2732] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2733] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2734] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2735] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2736] http://www.openmicroscopy.org/site/support/ome-model/
[2737] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2738] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2739] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2740] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2741] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2742] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2743] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2744] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2745] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2746] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits

- Pixels : SizeC[2747]
- Pixels : SizeT[2748]
- Pixels : SizeX[2749]
- Pixels : SizeY[2750]
- Pixels : SizeZ[2751]
- Pixels : Type[2752]
- Plane : TheC[2753]
- Plane : TheT[2754]
- Plane : TheZ[2755]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.72 JPXReader

This page lists supported metadata fields for the Bio-Formats JPX format reader.

These fields are from the OME data model[2756]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats JPX format reader:**

- Channel : ID[2757]
- Channel : SamplesPerPixel[2758]
- Image : AcquisitionDate[2759]
- Image : ID[2760]
- Image : Name[2761]
- Pixels : BigEndian[2762]
- Pixels : DimensionOrder[2763]
- Pixels : ID[2764]

---

[2747] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2748] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2749] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2750] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2751] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2752] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2753] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2754] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2755] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2756] http://www.openmicroscopy.org/site/support/ome-model/
[2757] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2758] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2759] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2760] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2761] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2762] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2763] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2764] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID

- Pixels : Interleaved[2765]
- Pixels : SignificantBits[2766]
- Pixels : SizeC[2767]
- Pixels : SizeT[2768]
- Pixels : SizeX[2769]
- Pixels : SizeY[2770]
- Pixels : SizeZ[2771]
- Pixels : Type[2772]
- Plane : TheC[2773]
- Plane : TheT[2774]
- Plane : TheZ[2775]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.73 KhorosReader

This page lists supported metadata fields for the Bio-Formats Khoros XV format reader.

These fields are from the OME data model[2776]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Khoros XV format reader:**

- Channel : ID[2777]
- Channel : SamplesPerPixel[2778]
- Image : AcquisitionDate[2779]
- Image : ID[2780]
- Image : Name[2781]
- Pixels : BigEndian[2782]

---

[2765] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2766] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2767] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2768] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2769] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2770] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2771] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2772] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2773] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2774] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2775] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2776] http://www.openmicroscopy.org/site/support/ome-model/
[2777] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2778] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2779] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2780] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2781] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2782] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian

- Pixels : DimensionOrder[2783]
- Pixels : ID[2784]
- Pixels : Interleaved[2785]
- Pixels : SignificantBits[2786]
- Pixels : SizeC[2787]
- Pixels : SizeT[2788]
- Pixels : SizeX[2789]
- Pixels : SizeY[2790]
- Pixels : SizeZ[2791]
- Pixels : Type[2792]
- Plane : TheC[2793]
- Plane : TheT[2794]
- Plane : TheZ[2795]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.74 KodakReader

This page lists supported metadata fields for the Bio-Formats Kodak Molecular Imaging format reader.

These fields are from the OME data model[2796]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 26 of them (5%).
- Of those, Bio-Formats fully or partially converts 26 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Kodak Molecular Imaging format reader:**

- Channel : ID[2797]
- Channel : SamplesPerPixel[2798]
- Image : AcquisitionDate[2799]
- Image : ID[2800]

---

[2783] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2784] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2785] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2786] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2787] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2788] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2789] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2790] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2791] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2792] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2793] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2794] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2795] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2796] http://www.openmicroscopy.org/site/support/ome-model/
[2797] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2798] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2799] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2800] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID

- Image : InstrumentRef[2801]
- Image : Name[2802]
- ImagingEnvironment : Temperature[2803]
- Instrument : ID[2804]
- Microscope : Model[2805]
- Pixels : BigEndian[2806]
- Pixels : DimensionOrder[2807]
- Pixels : ID[2808]
- Pixels : Interleaved[2809]
- Pixels : PhysicalSizeX[2810]
- Pixels : PhysicalSizeY[2811]
- Pixels : SignificantBits[2812]
- Pixels : SizeC[2813]
- Pixels : SizeT[2814]
- Pixels : SizeX[2815]
- Pixels : SizeY[2816]
- Pixels : SizeZ[2817]
- Pixels : Type[2818]
- Plane : ExposureTime[2819]
- Plane : TheC[2820]
- Plane : TheT[2821]
- Plane : TheZ[2822]

**Total supported: 26**

**Total unknown or missing: 450**

### 18.2.75 L2DReader

This page lists supported metadata fields for the Bio-Formats Li-Cor L2D format reader.

These fields are from the OME data model[2823]. Bio-Formats standardizes each format's original metadata to and from the OME

---

[2801] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[2802] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2803] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImagingEnvironment_Temperature
[2804] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[2805] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[2806] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2807] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2808] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2809] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2810] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[2811] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[2812] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2813] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2814] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2815] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2816] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2817] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2818] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2819] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[2820] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2821] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2822] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2823] http://www.openmicroscopy.org/site/support/ome-model/

data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 29 of them (6%).
- Of those, Bio-Formats fully or partially converts 29 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats Li-Cor L2D format reader:**

- Channel : ID[2824]
- Channel : LightSourceSettingsID[2825]
- Channel : SamplesPerPixel[2826]
- Image : AcquisitionDate[2827]
- Image : Description[2828]
- Image : ID[2829]
- Image : InstrumentRef[2830]
- Image : Name[2831]
- Instrument : ID[2832]
- Laser : ID[2833]
- Laser : LaserMedium[2834]
- Laser : Type[2835]
- Laser : Wavelength[2836]
- Microscope : Model[2837]
- Microscope : Type[2838]
- Pixels : BigEndian[2839]
- Pixels : DimensionOrder[2840]
- Pixels : ID[2841]
- Pixels : Interleaved[2842]
- Pixels : SignificantBits[2843]
- Pixels : SizeC[2844]

---

[2824] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2825] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSourceSettings_ID
[2826] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2827] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2828] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[2829] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2830] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[2831] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2832] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[2833] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSource_ID
[2834] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_LaserMedium
[2835] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_Type
[2836] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_Wavelength
[2837] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[2838] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Microscope_Type
[2839] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2840] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2841] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2842] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2843] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2844] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC

- Pixels : SizeT[2845]
- Pixels : SizeX[2846]
- Pixels : SizeY[2847]
- Pixels : SizeZ[2848]
- Pixels : Type[2849]
- Plane : TheC[2850]
- Plane : TheT[2851]
- Plane : TheZ[2852]

**Total supported: 29**

**Total unknown or missing: 447**

### 18.2.76 LEOReader

This page lists supported metadata fields for the Bio-Formats LEO format reader.

These fields are from the OME data model[2853]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 27 of them (5%).
- Of those, Bio-Formats fully or partially converts 27 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats LEO format reader:**

- Channel : ID[2854]
- Channel : SamplesPerPixel[2855]
- Image : AcquisitionDate[2856]
- Image : ID[2857]
- Image : InstrumentRef[2858]
- Image : Name[2859]
- Instrument : ID[2860]
- Objective : Correction[2861]
- Objective : ID[2862]

---

[2845] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2846] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2847] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2848] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2849] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2850] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2851] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2852] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2853] http://www.openmicroscopy.org/site/support/ome-model/
[2854] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2855] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2856] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2857] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2858] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[2859] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2860] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[2861] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Correction
[2862] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID

- Objective : Immersion[2863]
- Objective : WorkingDistance[2864]
- Pixels : BigEndian[2865]
- Pixels : DimensionOrder[2866]
- Pixels : ID[2867]
- Pixels : Interleaved[2868]
- Pixels : PhysicalSizeX[2869]
- Pixels : PhysicalSizeY[2870]
- Pixels : SignificantBits[2871]
- Pixels : SizeC[2872]
- Pixels : SizeT[2873]
- Pixels : SizeX[2874]
- Pixels : SizeY[2875]
- Pixels : SizeZ[2876]
- Pixels : Type[2877]
- Plane : TheC[2878]
- Plane : TheT[2879]
- Plane : TheZ[2880]

**Total supported: 27**

**Total unknown or missing: 449**

### 18.2.77 LIFReader

This page lists supported metadata fields for the Bio-Formats Leica Image File Format format reader.

These fields are from the OME data model[2881]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 85 of them (17%).
- Of those, Bio-Formats fully or partially converts 85 (100%).

---

[2863] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion
[2864] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_WorkingDistance
[2865] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2866] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2867] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2868] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2869] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[2870] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[2871] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2872] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2873] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2874] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2875] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2876] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2877] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2878] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2879] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2880] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2881] http://www.openmicroscopy.org/site/support/ome-model/

### Supported fields

**These fields are fully supported by the Bio-Formats Leica Image File Format format reader:**

- Channel : Color[2882]
- Channel : ExcitationWavelength[2883]
- Channel : ID[2884]
- Channel : LightSourceSettingsAttenuation[2885]
- Channel : LightSourceSettingsID[2886]
- Channel : Name[2887]
- Channel : PinholeSize[2888]
- Channel : SamplesPerPixel[2889]
- Detector : ID[2890]
- Detector : Model[2891]
- Detector : Offset[2892]
- Detector : Type[2893]
- Detector : Zoom[2894]
- DetectorSettings : Gain[2895]
- DetectorSettings : ID[2896]
- DetectorSettings : Offset[2897]
- Filter : ID[2898]
- Filter : Model[2899]
- Image : AcquisitionDate[2900]
- Image : Description[2901]
- Image : ID[2902]
- Image : InstrumentRef[2903]
- Image : Name[2904]
- Image : ROIRef[2905]

---

[2882] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Color
[2883] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ExcitationWavelength
[2884] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2885] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSourceSettings_Attenuation
[2886] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSourceSettings_ID
[2887] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[2888] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_PinholeSize
[2889] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2890] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[2891] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[2892] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Offset
[2893] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type
[2894] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Zoom
[2895] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Gain
[2896] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[2897] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Offset
[2898] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Filter_ID
[2899] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[2900] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2901] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[2902] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2903] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[2904] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2905] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROIRef_ID

- Instrument : ID[2906]
- Label : FontSize[2907]
- Label : ID[2908]
- Label : StrokeWidth[2909]
- Label : Text[2910]
- Label : X[2911]
- Label : Y[2912]
- Laser : ID[2913]
- Laser : LaserMedium[2914]
- Laser : Type[2915]
- Laser : Wavelength[2916]
- LightPath : EmissionFilterRef[2917]
- Line : ID[2918]
- Line : X1[2919]
- Line : X2[2920]
- Line : Y1[2921]
- Line : Y2[2922]
- Microscope : Model[2923]
- Microscope : Type[2924]
- Objective : Correction[2925]
- Objective : ID[2926]
- Objective : Immersion[2927]
- Objective : LensNA[2928]
- Objective : Model[2929]
- Objective : NominalMagnification[2930]
- Objective : SerialNumber[2931]

---

[2906] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[2907] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontSize
[2908] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[2909] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeWidth
[2910] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Text
[2911] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Label_X
[2912] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Label_Y
[2913] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSource_ID
[2914] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_LaserMedium
[2915] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_Type
[2916] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_Wavelength
[2917] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#FilterRef_ID
[2918] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[2919] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_X1
[2920] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_X2
[2921] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_Y1
[2922] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_Y2
[2923] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[2924] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Microscope_Type
[2925] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Correction
[2926] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[2927] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion
[2928] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_LensNA
[2929] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[2930] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[2931] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber

- ObjectiveSettings : ID[2932]
- ObjectiveSettings : RefractiveIndex[2933]
- Pixels : BigEndian[2934]
- Pixels : DimensionOrder[2935]
- Pixels : ID[2936]
- Pixels : Interleaved[2937]
- Pixels : PhysicalSizeX[2938]
- Pixels : PhysicalSizeY[2939]
- Pixels : PhysicalSizeZ[2940]
- Pixels : SignificantBits[2941]
- Pixels : SizeC[2942]
- Pixels : SizeT[2943]
- Pixels : SizeX[2944]
- Pixels : SizeY[2945]
- Pixels : SizeZ[2946]
- Pixels : TimeIncrement[2947]
- Pixels : Type[2948]
- Plane : DeltaT[2949]
- Plane : ExposureTime[2950]
- Plane : PositionX[2951]
- Plane : PositionY[2952]
- Plane : PositionZ[2953]
- Plane : TheC[2954]
- Plane : TheT[2955]
- Plane : TheZ[2956]
- Polygon : ID[2957]

---

[2932] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[2933] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_RefractiveIndex
[2934] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2935] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2936] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2937] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2938] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[2939] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[2940] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[2941] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2942] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2943] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2944] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2945] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2946] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2947] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_TimeIncrement
[2948] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2949] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_DeltaT
[2950] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[2951] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[2952] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[2953] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionZ
[2954] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2955] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2956] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2957] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID

- Polygon : Points[2958]
- ROI : ID[2959]
- Rectangle : Height[2960]
- Rectangle : ID[2961]
- Rectangle : Width[2962]
- Rectangle : X[2963]
- Rectangle : Y[2964]
- TransmittanceRange : CutIn[2965]
- TransmittanceRange : CutOut[2966]

**Total supported: 85**

**Total unknown or missing: 391**

## 18.2.78 LIMReader

This page lists supported metadata fields for the Bio-Formats Laboratory Imaging format reader.

These fields are from the OME data model[2967]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats Laboratory Imaging format reader:**

- Channel : ID[2968]
- Channel : SamplesPerPixel[2969]
- Image : AcquisitionDate[2970]
- Image : ID[2971]
- Image : Name[2972]
- Pixels : BigEndian[2973]
- Pixels : DimensionOrder[2974]
- Pixels : ID[2975]

---

[2958] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Polygon_Points
[2959] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROI_ID
[2960] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Height
[2961] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[2962] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Width
[2963] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_X
[2964] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Y
[2965] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TransmittanceRange_CutIn
[2966] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TransmittanceRange_CutOut
[2967] http://www.openmicroscopy.org/site/support/ome-model/
[2968] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2969] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2970] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2971] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2972] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2973] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[2974] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2975] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID

- Pixels : Interleaved[2976]
- Pixels : SignificantBits[2977]
- Pixels : SizeC[2978]
- Pixels : SizeT[2979]
- Pixels : SizeX[2980]
- Pixels : SizeY[2981]
- Pixels : SizeZ[2982]
- Pixels : Type[2983]
- Plane : TheC[2984]
- Plane : TheT[2985]
- Plane : TheZ[2986]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.79 LegacyND2Reader

This page lists supported metadata fields for the Bio-Formats Nikon ND2 (Legacy) format reader.

These fields are from the OME data model[2987]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Nikon ND2 (Legacy) format reader:**

- Channel : ID[2988]
- Channel : SamplesPerPixel[2989]
- Image : AcquisitionDate[2990]
- Image : ID[2991]
- Image : Name[2992]
- Pixels : BigEndian[2993]

---

[2976] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2977] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2978] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2979] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[2980] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[2981] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[2982] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[2983] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[2984] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[2985] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[2986] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[2987] http://www.openmicroscopy.org/site/support/ome-model/
[2988] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[2989] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[2990] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[2991] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[2992] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[2993] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian

- Pixels : DimensionOrder[2994]
- Pixels : ID[2995]
- Pixels : Interleaved[2996]
- Pixels : SignificantBits[2997]
- Pixels : SizeC[2998]
- Pixels : SizeT[2999]
- Pixels : SizeX[3000]
- Pixels : SizeY[3001]
- Pixels : SizeZ[3002]
- Pixels : Type[3003]
- Plane : TheC[3004]
- Plane : TheT[3005]
- Plane : TheZ[3006]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.80 LegacyQTReader

This page lists supported metadata fields for the Bio-Formats QuickTime format reader.

These fields are from the OME data model[3007]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats QuickTime format reader:**

- Channel : ID[3008]
- Channel : SamplesPerPixel[3009]
- Image : AcquisitionDate[3010]
- Image : ID[3011]

---

[2994] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[2995] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[2996] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[2997] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[2998] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[2999] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3000] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3001] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3002] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3003] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3004] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3005] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3006] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3007] http://www.openmicroscopy.org/site/support/ome-model/
[3008] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3009] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3010] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3011] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID

- Image : Name[3012]
- Pixels : BigEndian[3013]
- Pixels : DimensionOrder[3014]
- Pixels : ID[3015]
- Pixels : Interleaved[3016]
- Pixels : SignificantBits[3017]
- Pixels : SizeC[3018]
- Pixels : SizeT[3019]
- Pixels : SizeX[3020]
- Pixels : SizeY[3021]
- Pixels : SizeZ[3022]
- Pixels : Type[3023]
- Plane : TheC[3024]
- Plane : TheT[3025]
- Plane : TheZ[3026]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.81 LeicaReader

This page lists supported metadata fields for the Bio-Formats Leica format reader.

These fields are from the OME data model[3027]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 56 of them (11%).
- Of those, Bio-Formats fully or partially converts 56 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Leica format reader:**

- Channel : Color[3028]
- Channel : EmissionWavelength[3029]

---

[3012] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3013] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3014] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3015] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3016] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3017] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3018] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3019] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3020] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3021] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3022] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3023] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3024] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3025] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3026] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3027] http://www.openmicroscopy.org/site/support/ome-model/
[3028] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Color
[3029] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_EmissionWavelength

- Channel : ExcitationWavelength[3030]
- Channel : ID[3031]
- Channel : Name[3032]
- Channel : PinholeSize[3033]
- Channel : SamplesPerPixel[3034]
- Detector : ID[3035]
- Detector : Offset[3036]
- Detector : Type[3037]
- Detector : Voltage[3038]
- DetectorSettings : ID[3039]
- Filter : ID[3040]
- Filter : Model[3041]
- Image : AcquisitionDate[3042]
- Image : Description[3043]
- Image : ID[3044]
- Image : InstrumentRef[3045]
- Image : Name[3046]
- Instrument : ID[3047]
- LightPath : EmissionFilterRef[3048]
- Objective : Correction[3049]
- Objective : ID[3050]
- Objective : Immersion[3051]
- Objective : LensNA[3052]
- Objective : Model[3053]
- Objective : NominalMagnification[3054]
- Objective : SerialNumber[3055]

---

[3030] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ExcitationWavelength
[3031] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3032] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[3033] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_PinholeSize
[3034] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3035] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[3036] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Offset
[3037] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type
[3038] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Voltage
[3039] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[3040] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Filter_ID
[3041] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[3042] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3043] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[3044] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3045] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[3046] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3047] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[3048] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#FilterRef_ID
[3049] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Correction
[3050] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[3051] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion
[3052] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_LensNA
[3053] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[3054] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[3055] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber

- ObjectiveSettings : ID[3056]
- ObjectiveSettings : RefractiveIndex[3057]
- Pixels : BigEndian[3058]
- Pixels : DimensionOrder[3059]
- Pixels : ID[3060]
- Pixels : Interleaved[3061]
- Pixels : PhysicalSizeX[3062]
- Pixels : PhysicalSizeY[3063]
- Pixels : PhysicalSizeZ[3064]
- Pixels : SignificantBits[3065]
- Pixels : SizeC[3066]
- Pixels : SizeT[3067]
- Pixels : SizeX[3068]
- Pixels : SizeY[3069]
- Pixels : SizeZ[3070]
- Pixels : TimeIncrement[3071]
- Pixels : Type[3072]
- Plane : DeltaT[3073]
- Plane : ExposureTime[3074]
- Plane : PositionX[3075]
- Plane : PositionY[3076]
- Plane : TheC[3077]
- Plane : TheT[3078]
- Plane : TheZ[3079]
- StageLabel : Name[3080]
- StageLabel : Z[3081]

---

[3056] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[3057] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_RefractiveIndex
[3058] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3059] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3060] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3061] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3062] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[3063] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[3064] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[3065] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3066] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3067] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3068] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3069] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3070] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3071] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_TimeIncrement
[3072] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3073] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_DeltaT
[3074] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[3075] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[3076] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[3077] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3078] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3079] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3080] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#StageLabel_Name
[3081] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#StageLabel_Z

- TransmittanceRange : CutIn[3082]
- TransmittanceRange : CutOut[3083]

**Total supported: 56**

**Total unknown or missing: 420**

## 18.2.82 LeicaSCNReader

This page lists supported metadata fields for the Bio-Formats Leica SCN format reader.

These fields are from the OME data model[3084]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 33 of them (6%).
- Of those, Bio-Formats fully or partially converts 33 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats Leica SCN format reader:**

- Channel : ID[3085]
- Channel : IlluminationType[3086]
- Channel : SamplesPerPixel[3087]
- Image : AcquisitionDate[3088]
- Image : Description[3089]
- Image : ID[3090]
- Image : InstrumentRef[3091]
- Image : Name[3092]
- Instrument : ID[3093]
- Objective : CalibratedMagnification[3094]
- Objective : ID[3095]
- Objective : LensNA[3096]
- Objective : NominalMagnification[3097]
- ObjectiveSettings : ID[3098]
- Pixels : BigEndian[3099]

---

[3082] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TransmittanceRange_CutIn
[3083] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TransmittanceRange_CutOut
[3084] http://www.openmicroscopy.org/site/support/ome-model/
[3085] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3086] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_IlluminationType
[3087] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3088] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3089] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[3090] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3091] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[3092] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3093] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[3094] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_CalibratedMagnification
[3095] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[3096] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_LensNA
[3097] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[3098] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[3099] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian

- Pixels : DimensionOrder[3100]
- Pixels : ID[3101]
- Pixels : Interleaved[3102]
- Pixels : PhysicalSizeX[3103]
- Pixels : PhysicalSizeY[3104]
- Pixels : PhysicalSizeZ[3105]
- Pixels : SignificantBits[3106]
- Pixels : SizeC[3107]
- Pixels : SizeT[3108]
- Pixels : SizeX[3109]
- Pixels : SizeY[3110]
- Pixels : SizeZ[3111]
- Pixels : Type[3112]
- Plane : PositionX[3113]
- Plane : PositionY[3114]
- Plane : TheC[3115]
- Plane : TheT[3116]
- Plane : TheZ[3117]

**Total supported: 33**

**Total unknown or missing: 443**

### 18.2.83 LiFlimReader

This page lists supported metadata fields for the Bio-Formats LI-FLIM format reader.

These fields are from the OME data model[3118]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 25 of them (5%).
- Of those, Bio-Formats fully or partially converts 25 (100%).

---

[3100] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3101] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3102] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3103] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[3104] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[3105] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[3106] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3107] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3108] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3109] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3110] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3111] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3112] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3113] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[3114] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[3115] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3116] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3117] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3118] http://www.openmicroscopy.org/site/support/ome-model/

### Supported fields

**These fields are fully supported by the Bio-Formats LI-FLIM format reader:**

- Channel : ID[3119]
- Channel : SamplesPerPixel[3120]
- Image : AcquisitionDate[3121]
- Image : ID[3122]
- Image : Name[3123]
- Image : ROIRef[3124]
- Pixels : BigEndian[3125]
- Pixels : DimensionOrder[3126]
- Pixels : ID[3127]
- Pixels : Interleaved[3128]
- Pixels : SignificantBits[3129]
- Pixels : SizeC[3130]
- Pixels : SizeT[3131]
- Pixels : SizeX[3132]
- Pixels : SizeY[3133]
- Pixels : SizeZ[3134]
- Pixels : Type[3135]
- Plane : DeltaT[3136]
- Plane : ExposureTime[3137]
- Plane : TheC[3138]
- Plane : TheT[3139]
- Plane : TheZ[3140]
- Polygon : ID[3141]
- Polygon : Points[3142]

---

[3119] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3120] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3121] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3122] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3123] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3124] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROIRef_ID
[3125] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3126] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3127] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3128] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3129] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3130] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3131] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3132] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3133] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3134] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3135] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3136] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_DeltaT
[3137] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[3138] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3139] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3140] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3141] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[3142] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Polygon_Points

- ROI : ID[3143]

**Total supported: 25**

**Total unknown or missing: 451**

### 18.2.84 MIASReader

This page lists supported metadata fields for the Bio-Formats MIAS format reader.

These fields are from the OME data model[3144]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 65 of them (13%).
- Of those, Bio-Formats fully or partially converts 65 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats MIAS format reader:**

- Channel : Color[3145]
- Channel : ID[3146]
- Channel : Name[3147]
- Channel : SamplesPerPixel[3148]
- Ellipse : ID[3149]
- Ellipse : RadiusX[3150]
- Ellipse : RadiusY[3151]
- Ellipse : Text[3152]
- Ellipse : TheT[3153]
- Ellipse : TheZ[3154]
- Ellipse : X[3155]
- Ellipse : Y[3156]
- Experiment : Description[3157]
- Experiment : ID[3158]
- Experiment : Type[3159]
- Image : AcquisitionDate[3160]

---

[3143] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROI_ID
[3144] http://www.openmicroscopy.org/site/support/ome-model/
[3145] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Color
[3146] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3147] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[3148] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3149] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[3150] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_RadiusX
[3151] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_RadiusY
[3152] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Text
[3153] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheT
[3154] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_TheZ
[3155] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_X
[3156] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_Y
[3157] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experiment_Description
[3158] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experiment_ID
[3159] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experiment_Type
[3160] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate

- Image : ExperimentRef[3161]
- Image : ID[3162]
- Image : InstrumentRef[3163]
- Image : Name[3164]
- Image : ROIRef[3165]
- Instrument : ID[3166]
- Mask : BinData[3167]
- Mask : FillColor[3168]
- Mask : Height[3169]
- Mask : ID[3170]
- Mask : StrokeColor[3171]
- Mask : Width[3172]
- Mask : X[3173]
- Mask : Y[3174]
- Objective : ID[3175]
- Objective : Model[3176]
- Objective : NominalMagnification[3177]
- Pixels : BigEndian[3178]
- Pixels : DimensionOrder[3179]
- Pixels : ID[3180]
- Pixels : Interleaved[3181]
- Pixels : PhysicalSizeX[3182]
- Pixels : PhysicalSizeY[3183]
- Pixels : SignificantBits[3184]
- Pixels : SizeC[3185]
- Pixels : SizeT[3186]

---

[3161] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ExperimentRef_ID
[3162] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3163] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[3164] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3165] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROIRef_ID
[3166] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[3167] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#BinData
[3168] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FillColor
[3169] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Mask_Height
[3170] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[3171] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeColor
[3172] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Mask_Width
[3173] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Mask_X
[3174] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Mask_Y
[3175] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[3176] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[3177] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[3178] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3179] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3180] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3181] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3182] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[3183] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[3184] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3185] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3186] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT

- Pixels : SizeX[3187]
- Pixels : SizeY[3188]
- Pixels : SizeZ[3189]
- Pixels : Type[3190]
- Plane : ExposureTime[3191]
- Plane : TheC[3192]
- Plane : TheT[3193]
- Plane : TheZ[3194]
- Plate : ColumnNamingConvention[3195]
- Plate : ExternalIdentifier[3196]
- Plate : ID[3197]
- Plate : Name[3198]
- Plate : RowNamingConvention[3199]
- PlateAcquisition : ID[3200]
- PlateAcquisition : MaximumFieldCount[3201]
- PlateAcquisition : WellSampleRef[3202]
- ROI : ID[3203]
- Well : Column[3204]
- Well : ID[3205]
- Well : Row[3206]
- WellSample : ID[3207]
- WellSample : ImageRef[3208]
- WellSample : Index[3209]

**Total supported: 65**

**Total unknown or missing: 411**

---

[3187] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3188] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3189] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3190] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3191] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[3192] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3193] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3194] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3195] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_ColumnNamingConvention
[3196] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_ExternalIdentifier
[3197] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_ID
[3198] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_Name
[3199] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_RowNamingConvention
[3200] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_ID
[3201] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_MaximumFieldCount
[3202] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSampleRef_ID
[3203] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROI_ID
[3204] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Column
[3205] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_ID
[3206] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Row
[3207] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_ID
[3208] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImageRef_ID
[3209] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_Index

### 18.2.85 MINCReader

This page lists supported metadata fields for the Bio-Formats MINC MRI format reader.

These fields are from the OME data model[3210]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 23 of them (4%).
- Of those, Bio-Formats fully or partially converts 23 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats MINC MRI format reader:**

- Channel : ID[3211]
- Channel : SamplesPerPixel[3212]
- Image : AcquisitionDate[3213]
- Image : Description[3214]
- Image : ID[3215]
- Image : Name[3216]
- Pixels : BigEndian[3217]
- Pixels : DimensionOrder[3218]
- Pixels : ID[3219]
- Pixels : Interleaved[3220]
- Pixels : PhysicalSizeX[3221]
- Pixels : PhysicalSizeY[3222]
- Pixels : PhysicalSizeZ[3223]
- Pixels : SignificantBits[3224]
- Pixels : SizeC[3225]
- Pixels : SizeT[3226]
- Pixels : SizeX[3227]
- Pixels : SizeY[3228]

---

[3210] http://www.openmicroscopy.org/site/support/ome-model/
[3211] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3212] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3213] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3214] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[3215] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3216] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3217] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3218] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3219] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3220] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3221] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[3222] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[3223] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[3224] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3225] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3226] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3227] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3228] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY

- Pixels : SizeZ[3229]
- Pixels : Type[3230]
- Plane : TheC[3231]
- Plane : TheT[3232]
- Plane : TheZ[3233]

**Total supported: 23**

**Total unknown or missing: 453**

### 18.2.86 MNGReader

This page lists supported metadata fields for the Bio-Formats Multiple-image Network Graphics format reader.

These fields are from the OME data model[3234]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Multiple-image Network Graphics format reader:**

- Channel : ID[3235]
- Channel : SamplesPerPixel[3236]
- Image : AcquisitionDate[3237]
- Image : ID[3238]
- Image : Name[3239]
- Pixels : BigEndian[3240]
- Pixels : DimensionOrder[3241]
- Pixels : ID[3242]
- Pixels : Interleaved[3243]
- Pixels : SignificantBits[3244]
- Pixels : SizeC[3245]
- Pixels : SizeT[3246]

---

[3229] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3230] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3231] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3232] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3233] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3234] http://www.openmicroscopy.org/site/support/ome-model/
[3235] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3236] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3237] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3238] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3239] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3240] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3241] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3242] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3243] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3244] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3245] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3246] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT

- Pixels : SizeX[3247]
- Pixels : SizeY[3248]
- Pixels : SizeZ[3249]
- Pixels : Type[3250]
- Plane : TheC[3251]
- Plane : TheT[3252]
- Plane : TheZ[3253]

**Total supported: 19**

**Total unknown or missing: 457**

## 18.2.87 MRCReader

This page lists supported metadata fields for the Bio-Formats Medical Research Council format reader.

These fields are from the OME data model[3254]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 22 of them (4%).
- Of those, Bio-Formats fully or partially converts 22 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats Medical Research Council format reader:**

- Channel : ID[3255]
- Channel : SamplesPerPixel[3256]
- Image : AcquisitionDate[3257]
- Image : ID[3258]
- Image : Name[3259]
- Pixels : BigEndian[3260]
- Pixels : DimensionOrder[3261]
- Pixels : ID[3262]
- Pixels : Interleaved[3263]
- Pixels : PhysicalSizeX[3264]

---

[3247] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3248] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3249] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3250] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3251] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3252] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3253] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3254] http://www.openmicroscopy.org/site/support/ome-model/
[3255] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3256] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3257] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3258] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3259] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3260] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3261] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3262] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3263] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3264] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX

- Pixels : PhysicalSizeY[3265]
- Pixels : PhysicalSizeZ[3266]
- Pixels : SignificantBits[3267]
- Pixels : SizeC[3268]
- Pixels : SizeT[3269]
- Pixels : SizeX[3270]
- Pixels : SizeY[3271]
- Pixels : SizeZ[3272]
- Pixels : Type[3273]
- Plane : TheC[3274]
- Plane : TheT[3275]
- Plane : TheZ[3276]

**Total supported: 22**

**Total unknown or missing: 454**

### 18.2.88 MRWReader

This page lists supported metadata fields for the Bio-Formats Minolta MRW format reader.

These fields are from the OME data model[3277]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Minolta MRW format reader:**

- Channel : ID[3278]
- Channel : SamplesPerPixel[3279]
- Image : AcquisitionDate[3280]
- Image : ID[3281]
- Image : Name[3282]

---

[3265] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[3266] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[3267] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3268] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3269] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3270] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3271] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3272] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3273] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3274] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3275] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3276] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3277] http://www.openmicroscopy.org/site/support/ome-model/
[3278] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3279] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3280] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3281] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3282] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name

- Pixels : BigEndian[3283]
- Pixels : DimensionOrder[3284]
- Pixels : ID[3285]
- Pixels : Interleaved[3286]
- Pixels : SignificantBits[3287]
- Pixels : SizeC[3288]
- Pixels : SizeT[3289]
- Pixels : SizeX[3290]
- Pixels : SizeY[3291]
- Pixels : SizeZ[3292]
- Pixels : Type[3293]
- Plane : TheC[3294]
- Plane : TheT[3295]
- Plane : TheZ[3296]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.89 MetamorphReader

This page lists supported metadata fields for the Bio-Formats Metamorph STK format reader.

These fields are from the OME data model[3297]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 46 of them (9%).
- Of those, Bio-Formats fully or partially converts 46 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Metamorph STK format reader:**

- Channel : ID[3298]
- Channel : LightSourceSettingsID[3299]
- Channel : LightSourceSettingsWavelength[3300]

---

[3283] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3284] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3285] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3286] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3287] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3288] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3289] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3290] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3291] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3292] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3293] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3294] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3295] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3296] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3297] http://www.openmicroscopy.org/site/support/ome-model/
[3298] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3299] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSourceSettings_ID
[3300] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSourceSettings_Wavelength

- Channel : Name[3301]
- Channel : SamplesPerPixel[3302]
- Detector : ID[3303]
- Detector : Type[3304]
- DetectorSettings : Binning[3305]
- DetectorSettings : Gain[3306]
- DetectorSettings : ID[3307]
- DetectorSettings : ReadOutRate[3308]
- Image : AcquisitionDate[3309]
- Image : Description[3310]
- Image : ID[3311]
- Image : InstrumentRef[3312]
- Image : Name[3313]
- ImagingEnvironment : Temperature[3314]
- Instrument : ID[3315]
- Laser : ID[3316]
- Laser : LaserMedium[3317]
- Laser : Type[3318]
- Objective : ID[3319]
- Objective : LensNA[3320]
- ObjectiveSettings : ID[3321]
- Pixels : BigEndian[3322]
- Pixels : DimensionOrder[3323]
- Pixels : ID[3324]
- Pixels : Interleaved[3325]
- Pixels : PhysicalSizeX[3326]

---

[3301] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[3302] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3303] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[3304] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type
[3305] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Binning
[3306] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Gain
[3307] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[3308] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ReadOutRate
[3309] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3310] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[3311] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3312] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[3313] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3314] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImagingEnvironment_Temperature
[3315] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[3316] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSource_ID
[3317] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_LaserMedium
[3318] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_Type
[3319] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[3320] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_LensNA
[3321] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[3322] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3323] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3324] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3325] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3326] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX

- Pixels : PhysicalSizeY[3327]
- Pixels : PhysicalSizeZ[3328]
- Pixels : SignificantBits[3329]
- Pixels : SizeC[3330]
- Pixels : SizeT[3331]
- Pixels : SizeX[3332]
- Pixels : SizeY[3333]
- Pixels : SizeZ[3334]
- Pixels : Type[3335]
- Plane : DeltaT[3336]
- Plane : ExposureTime[3337]
- Plane : PositionX[3338]
- Plane : PositionY[3339]
- Plane : PositionZ[3340]
- Plane : TheC[3341]
- Plane : TheT[3342]
- Plane : TheZ[3343]

**Total supported: 46**

**Total unknown or missing: 430**

### 18.2.90 MetamorphTiffReader

This page lists supported metadata fields for the Bio-Formats Metamorph TIFF format reader.

These fields are from the OME data model[3344]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 38 of them (7%).
- Of those, Bio-Formats fully or partially converts 38 (100%).

---

[3327] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[3328] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[3329] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3330] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3331] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3332] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3333] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3334] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3335] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3336] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_DeltaT
[3337] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[3338] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[3339] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[3340] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionZ
[3341] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3342] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3343] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3344] http://www.openmicroscopy.org/site/support/ome-model/

### Supported fields

**These fields are fully supported by the Bio-Formats Metamorph TIFF format reader:**

- Channel : ID[3345]
- Channel : Name[3346]
- Channel : SamplesPerPixel[3347]
- Image : AcquisitionDate[3348]
- Image : Description[3349]
- Image : ID[3350]
- Image : Name[3351]
- ImagingEnvironment : Temperature[3352]
- Pixels : BigEndian[3353]
- Pixels : DimensionOrder[3354]
- Pixels : ID[3355]
- Pixels : Interleaved[3356]
- Pixels : PhysicalSizeX[3357]
- Pixels : PhysicalSizeY[3358]
- Pixels : PhysicalSizeZ[3359]
- Pixels : SignificantBits[3360]
- Pixels : SizeC[3361]
- Pixels : SizeT[3362]
- Pixels : SizeX[3363]
- Pixels : SizeY[3364]
- Pixels : SizeZ[3365]
- Pixels : Type[3366]
- Plane : DeltaT[3367]
- Plane : ExposureTime[3368]

---

[3345] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3346] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[3347] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3348] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3349] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[3350] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3351] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3352] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImagingEnvironment_Temperature
[3353] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3354] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3355] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3356] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3357] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[3358] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[3359] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[3360] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3361] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3362] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3363] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3364] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3365] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3366] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3367] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_DeltaT
[3368] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime

- Plane : PositionX[3369]
- Plane : PositionY[3370]
- Plane : TheC[3371]
- Plane : TheT[3372]
- Plane : TheZ[3373]
- Plate : ColumnNamingConvention[3374]
- Plate : ID[3375]
- Plate : RowNamingConvention[3376]
- Well : Column[3377]
- Well : ID[3378]
- Well : Row[3379]
- WellSample : ID[3380]
- WellSample : ImageRef[3381]
- WellSample : Index[3382]

**Total supported: 38**

**Total unknown or missing: 438**

### 18.2.91 MicromanagerReader

This page lists supported metadata fields for the Bio-Formats Micro-Manager format reader.

These fields are from the OME data model[3383]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 41 of them (8%).
- Of those, Bio-Formats fully or partially converts 41 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Micro-Manager format reader:**

- Channel : ID[3384]
- Channel : Name[3385]
- Channel : SamplesPerPixel[3386]

---

[3369] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[3370] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[3371] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3372] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3373] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3374] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_ColumnNamingConvention
[3375] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_ID
[3376] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_RowNamingConvention
[3377] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Column
[3378] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_ID
[3379] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Row
[3380] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_ID
[3381] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImageRef_ID
[3382] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_Index
[3383] http://www.openmicroscopy.org/site/support/ome-model/
[3384] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3385] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[3386] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel

- Detector : ID[3387]
- Detector : Manufacturer[3388]
- Detector : Model[3389]
- Detector : SerialNumber[3390]
- Detector : Type[3391]
- DetectorSettings : Binning[3392]
- DetectorSettings : Gain[3393]
- DetectorSettings : ID[3394]
- DetectorSettings : Voltage[3395]
- Image : AcquisitionDate[3396]
- Image : Description[3397]
- Image : ID[3398]
- Image : InstrumentRef[3399]
- Image : Name[3400]
- ImagingEnvironment : Temperature[3401]
- Instrument : ID[3402]
- Pixels : BigEndian[3403]
- Pixels : DimensionOrder[3404]
- Pixels : ID[3405]
- Pixels : Interleaved[3406]
- Pixels : PhysicalSizeX[3407]
- Pixels : PhysicalSizeY[3408]
- Pixels : PhysicalSizeZ[3409]
- Pixels : SignificantBits[3410]
- Pixels : SizeC[3411]
- Pixels : SizeT[3412]

---

[3387] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[3388] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer
[3389] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[3390] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber
[3391] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type
[3392] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Binning
[3393] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Gain
[3394] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[3395] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Voltage
[3396] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3397] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[3398] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3399] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[3400] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3401] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImagingEnvironment_Temperature
[3402] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[3403] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3404] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3405] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3406] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3407] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[3408] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[3409] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[3410] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3411] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3412] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT

- Pixels : SizeX[3413]
- Pixels : SizeY[3414]
- Pixels : SizeZ[3415]
- Pixels : Type[3416]
- Plane : DeltaT[3417]
- Plane : ExposureTime[3418]
- Plane : PositionX[3419]
- Plane : PositionY[3420]
- Plane : PositionZ[3421]
- Plane : TheC[3422]
- Plane : TheT[3423]
- Plane : TheZ[3424]

**Total supported: 41**

**Total unknown or missing: 435**

### 18.2.92 MinimalTiffReader

This page lists supported metadata fields for the Bio-Formats Minimal TIFF format reader.

These fields are from the OME data model[3425]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Minimal TIFF format reader:**

- Channel : ID[3426]
- Channel : SamplesPerPixel[3427]
- Image : AcquisitionDate[3428]
- Image : ID[3429]
- Image : Name[3430]

---

[3413] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3414] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3415] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3416] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3417] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_DeltaT
[3418] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[3419] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[3420] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[3421] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionZ
[3422] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3423] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3424] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3425] http://www.openmicroscopy.org/site/support/ome-model/
[3426] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3427] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3428] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3429] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3430] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name

- Pixels : BigEndian[3431]
- Pixels : DimensionOrder[3432]
- Pixels : ID[3433]
- Pixels : Interleaved[3434]
- Pixels : SignificantBits[3435]
- Pixels : SizeC[3436]
- Pixels : SizeT[3437]
- Pixels : SizeX[3438]
- Pixels : SizeY[3439]
- Pixels : SizeZ[3440]
- Pixels : Type[3441]
- Plane : TheC[3442]
- Plane : TheT[3443]
- Plane : TheZ[3444]

**Total supported: 19**

**Total unknown or missing: 457**

## 18.2.93 MolecularImagingReader

This page lists supported metadata fields for the Bio-Formats Molecular Imaging format reader.

These fields are from the OME data model[3445]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 21 of them (4%).
- Of those, Bio-Formats fully or partially converts 21 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats Molecular Imaging format reader:**

- Channel : ID[3446]
- Channel : SamplesPerPixel[3447]
- Image : AcquisitionDate[3448]

---

[3431] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3432] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3433] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3434] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3435] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3436] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3437] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3438] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3439] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3440] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3441] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3442] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3443] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3444] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3445] http://www.openmicroscopy.org/site/support/ome-model/
[3446] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3447] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3448] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate

- Image : ID[3449]
- Image : Name[3450]
- Pixels : BigEndian[3451]
- Pixels : DimensionOrder[3452]
- Pixels : ID[3453]
- Pixels : Interleaved[3454]
- Pixels : PhysicalSizeX[3455]
- Pixels : PhysicalSizeY[3456]
- Pixels : SignificantBits[3457]
- Pixels : SizeC[3458]
- Pixels : SizeT[3459]
- Pixels : SizeX[3460]
- Pixels : SizeY[3461]
- Pixels : SizeZ[3462]
- Pixels : Type[3463]
- Plane : TheC[3464]
- Plane : TheT[3465]
- Plane : TheZ[3466]

**Total supported: 21**

**Total unknown or missing: 455**

### 18.2.94 NAFReader

This page lists supported metadata fields for the Bio-Formats Hamamatsu Aquacosmos format reader.

These fields are from the OME data model[3467]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

---

[3449] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3450] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3451] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3452] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3453] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3454] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3455] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[3456] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[3457] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3458] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3459] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3460] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3461] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3462] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3463] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3464] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3465] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3466] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3467] http://www.openmicroscopy.org/site/support/ome-model/

### Supported fields

**These fields are fully supported by the Bio-Formats Hamamatsu Aquacosmos format reader:**

- Channel : ID[3468]
- Channel : SamplesPerPixel[3469]
- Image : AcquisitionDate[3470]
- Image : ID[3471]
- Image : Name[3472]
- Pixels : BigEndian[3473]
- Pixels : DimensionOrder[3474]
- Pixels : ID[3475]
- Pixels : Interleaved[3476]
- Pixels : SignificantBits[3477]
- Pixels : SizeC[3478]
- Pixels : SizeT[3479]
- Pixels : SizeX[3480]
- Pixels : SizeY[3481]
- Pixels : SizeZ[3482]
- Pixels : Type[3483]
- Plane : TheC[3484]
- Plane : TheT[3485]
- Plane : TheZ[3486]

**Total supported: 19**

**Total unknown or missing: 457**

## 18.2.95 ND2Reader

This page lists supported metadata fields for the Bio-Formats Nikon ND2 format reader.

These fields are from the OME data model[3487]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

---

[3468] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3469] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3470] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3471] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3472] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3473] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3474] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3475] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3476] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3477] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3478] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3479] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3480] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3481] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3482] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3483] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3484] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3485] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3486] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3487] http://www.openmicroscopy.org/site/support/ome-model/

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats Nikon ND2 format reader:**

- Channel : ID[3488]
- Channel : SamplesPerPixel[3489]
- Image : AcquisitionDate[3490]
- Image : ID[3491]
- Image : Name[3492]
- Pixels : BigEndian[3493]
- Pixels : DimensionOrder[3494]
- Pixels : ID[3495]
- Pixels : Interleaved[3496]
- Pixels : SignificantBits[3497]
- Pixels : SizeC[3498]
- Pixels : SizeT[3499]
- Pixels : SizeX[3500]
- Pixels : SizeY[3501]
- Pixels : SizeZ[3502]
- Pixels : Type[3503]
- Plane : TheC[3504]
- Plane : TheT[3505]
- Plane : TheZ[3506]

**Total supported: 19**

**Total unknown or missing: 457**

---

[3488] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3489] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3490] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3491] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3492] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3493] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3494] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3495] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3496] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3497] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3498] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3499] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3500] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3501] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3502] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3503] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3504] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3505] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3506] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ

### 18.2.96 NDPIReader

This page lists supported metadata fields for the Bio-Formats Hamamatsu NDPI format reader.

These fields are from the OME data model[3507]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 28 of them (5%).
- Of those, Bio-Formats fully or partially converts 28 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Hamamatsu NDPI format reader:**

- Channel : ID[3508]
- Channel : SamplesPerPixel[3509]
- Image : AcquisitionDate[3510]
- Image : Description[3511]
- Image : ID[3512]
- Image : InstrumentRef[3513]
- Image : Name[3514]
- Instrument : ID[3515]
- Microscope : Model[3516]
- Objective : ID[3517]
- Objective : NominalMagnification[3518]
- ObjectiveSettings : ID[3519]
- Pixels : BigEndian[3520]
- Pixels : DimensionOrder[3521]
- Pixels : ID[3522]
- Pixels : Interleaved[3523]
- Pixels : PhysicalSizeX[3524]
- Pixels : PhysicalSizeY[3525]
- Pixels : SignificantBits[3526]

---

[3507] http://www.openmicroscopy.org/site/support/ome-model/

[3508] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID

[3509] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel

[3510] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate

[3511] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description

[3512] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID

[3513] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID

[3514] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name

[3515] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID

[3516] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model

[3517] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID

[3518] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification

[3519] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID

[3520] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian

[3521] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder

[3522] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID

[3523] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved

[3524] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX

[3525] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY

[3526] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits

- Pixels : SizeC[3527]
- Pixels : SizeT[3528]
- Pixels : SizeX[3529]
- Pixels : SizeY[3530]
- Pixels : SizeZ[3531]
- Pixels : Type[3532]
- Plane : TheC[3533]
- Plane : TheT[3534]
- Plane : TheZ[3535]

**Total supported: 28**

**Total unknown or missing: 448**

### 18.2.97 NDPISReader

This page lists supported metadata fields for the Bio-Formats Hamamatsu NDPIS format reader.

These fields are from the OME data model[3536]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Hamamatsu NDPIS format reader:**

- Channel : ID[3537]
- Channel : SamplesPerPixel[3538]
- Image : AcquisitionDate[3539]
- Image : ID[3540]
- Image : Name[3541]
- Pixels : BigEndian[3542]
- Pixels : DimensionOrder[3543]
- Pixels : ID[3544]

---

[3527] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3528] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3529] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3530] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3531] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3532] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3533] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3534] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3535] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3536] http://www.openmicroscopy.org/site/support/ome-model/
[3537] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3538] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3539] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3540] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3541] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3542] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3543] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3544] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID

- Pixels : Interleaved[3545]
- Pixels : SignificantBits[3546]
- Pixels : SizeC[3547]
- Pixels : SizeT[3548]
- Pixels : SizeX[3549]
- Pixels : SizeY[3550]
- Pixels : SizeZ[3551]
- Pixels : Type[3552]
- Plane : TheC[3553]
- Plane : TheT[3554]
- Plane : TheZ[3555]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.98 NRRDReader

This page lists supported metadata fields for the Bio-Formats NRRD format reader.

These fields are from the OME data model[3556]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 22 of them (4%).
- Of those, Bio-Formats fully or partially converts 22 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats NRRD format reader:**

- Channel : ID[3557]
- Channel : SamplesPerPixel[3558]
- Image : AcquisitionDate[3559]
- Image : ID[3560]
- Image : Name[3561]
- Pixels : BigEndian[3562]

---

[3545] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3546] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3547] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3548] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3549] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3550] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3551] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3552] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3553] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3554] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3555] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3556] http://www.openmicroscopy.org/site/support/ome-model/
[3557] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3558] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3559] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3560] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3561] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3562] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian

- Pixels : DimensionOrder[3563]
- Pixels : ID[3564]
- Pixels : Interleaved[3565]
- Pixels : PhysicalSizeX[3566]
- Pixels : PhysicalSizeY[3567]
- Pixels : PhysicalSizeZ[3568]
- Pixels : SignificantBits[3569]
- Pixels : SizeC[3570]
- Pixels : SizeT[3571]
- Pixels : SizeX[3572]
- Pixels : SizeY[3573]
- Pixels : SizeZ[3574]
- Pixels : Type[3575]
- Plane : TheC[3576]
- Plane : TheT[3577]
- Plane : TheZ[3578]

**Total supported: 22**

**Total unknown or missing: 454**

### 18.2.99 NativeND2Reader

This page lists supported metadata fields for the Bio-Formats Nikon ND2 format reader.

These fields are from the OME data model[3579]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 52 of them (10%).
- Of those, Bio-Formats fully or partially converts 52 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Nikon ND2 format reader:**

- Channel : AcquisitionMode[3580]

---

[3563] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3564] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3565] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3566] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[3567] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[3568] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[3569] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3570] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3571] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3572] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3573] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3574] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3575] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3576] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3577] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3578] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3579] http://www.openmicroscopy.org/site/support/ome-model/
[3580] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_AcquisitionMode

- Channel : Color[3581]
- Channel : EmissionWavelength[3582]
- Channel : ExcitationWavelength[3583]
- Channel : ID[3584]
- Channel : Name[3585]
- Channel : PinholeSize[3586]
- Channel : SamplesPerPixel[3587]
- Detector : ID[3588]
- Detector : Model[3589]
- Detector : Type[3590]
- DetectorSettings : Binning[3591]
- DetectorSettings : Gain[3592]
- DetectorSettings : ID[3593]
- DetectorSettings : ReadOutRate[3594]
- DetectorSettings : Voltage[3595]
- Image : AcquisitionDate[3596]
- Image : ID[3597]
- Image : InstrumentRef[3598]
- Image : Name[3599]
- ImagingEnvironment : Temperature[3600]
- Instrument : ID[3601]
- Objective : CalibratedMagnification[3602]
- Objective : Correction[3603]
- Objective : ID[3604]
- Objective : Immersion[3605]
- Objective : LensNA[3606]

---

[3581] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Color
[3582] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_EmissionWavelength
[3583] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ExcitationWavelength
[3584] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3585] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[3586] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_PinholeSize
[3587] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3588] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[3589] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[3590] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type
[3591] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Binning
[3592] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Gain
[3593] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[3594] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ReadOutRate
[3595] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Voltage
[3596] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3597] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3598] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[3599] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3600] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImagingEnvironment_Temperature
[3601] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[3602] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_CalibratedMagnification
[3603] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Correction
[3604] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[3605] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion
[3606] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_LensNA

- Objective : Model[3607]
- ObjectiveSettings : ID[3608]
- ObjectiveSettings : RefractiveIndex[3609]
- Pixels : BigEndian[3610]
- Pixels : DimensionOrder[3611]
- Pixels : ID[3612]
- Pixels : Interleaved[3613]
- Pixels : PhysicalSizeX[3614]
- Pixels : PhysicalSizeY[3615]
- Pixels : PhysicalSizeZ[3616]
- Pixels : SignificantBits[3617]
- Pixels : SizeC[3618]
- Pixels : SizeT[3619]
- Pixels : SizeX[3620]
- Pixels : SizeY[3621]
- Pixels : SizeZ[3622]
- Pixels : Type[3623]
- Plane : DeltaT[3624]
- Plane : ExposureTime[3625]
- Plane : PositionX[3626]
- Plane : PositionY[3627]
- Plane : PositionZ[3628]
- Plane : TheC[3629]
- Plane : TheT[3630]
- Plane : TheZ[3631]

**Total supported: 52**

**Total unknown or missing: 424**

---

[3607] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[3608] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[3609] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_RefractiveIndex
[3610] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3611] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3612] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3613] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3614] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[3615] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[3616] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[3617] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3618] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3619] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3620] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3621] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3622] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3623] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3624] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_DeltaT
[3625] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[3626] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[3627] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[3628] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionZ
[3629] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3630] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3631] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ

### 18.2.100 NativeQTReader

This page lists supported metadata fields for the Bio-Formats QuickTime format reader.

These fields are from the OME data model[3632]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats QuickTime format reader:**

- Channel : ID[3633]
- Channel : SamplesPerPixel[3634]
- Image : AcquisitionDate[3635]
- Image : ID[3636]
- Image : Name[3637]
- Pixels : BigEndian[3638]
- Pixels : DimensionOrder[3639]
- Pixels : ID[3640]
- Pixels : Interleaved[3641]
- Pixels : SignificantBits[3642]
- Pixels : SizeC[3643]
- Pixels : SizeT[3644]
- Pixels : SizeX[3645]
- Pixels : SizeY[3646]
- Pixels : SizeZ[3647]
- Pixels : Type[3648]
- Plane : TheC[3649]
- Plane : TheT[3650]

---

[3632] http://www.openmicroscopy.org/site/support/ome-model/
[3633] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3634] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3635] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3636] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3637] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3638] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3639] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3640] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3641] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3642] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3643] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3644] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3645] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3646] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3647] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3648] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3649] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3650] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT

- Plane : TheZ[3651]

**Total supported: 19**

**Total unknown or missing: 457**

## 18.2.101 NiftiReader

This page lists supported metadata fields for the Bio-Formats NIfTI format reader.

These fields are from the OME data model[3652]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 24 of them (5%).
- Of those, Bio-Formats fully or partially converts 24 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats NIfTI format reader:**

- Channel : ID[3653]
- Channel : SamplesPerPixel[3654]
- Image : AcquisitionDate[3655]
- Image : Description[3656]
- Image : ID[3657]
- Image : Name[3658]
- Pixels : BigEndian[3659]
- Pixels : DimensionOrder[3660]
- Pixels : ID[3661]
- Pixels : Interleaved[3662]
- Pixels : PhysicalSizeX[3663]
- Pixels : PhysicalSizeY[3664]
- Pixels : PhysicalSizeZ[3665]
- Pixels : SignificantBits[3666]
- Pixels : SizeC[3667]
- Pixels : SizeT[3668]

---

[3651] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3652] http://www.openmicroscopy.org/site/support/ome-model/
[3653] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3654] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3655] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3656] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[3657] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3658] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3659] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3660] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3661] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3662] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3663] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[3664] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[3665] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[3666] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3667] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3668] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT

- Pixels : SizeX[3669]
- Pixels : SizeY[3670]
- Pixels : SizeZ[3671]
- Pixels : TimeIncrement[3672]
- Pixels : Type[3673]
- Plane : TheC[3674]
- Plane : TheT[3675]
- Plane : TheZ[3676]

**Total supported: 24**

**Total unknown or missing: 452**

### 18.2.102 NikonElementsTiffReader

This page lists supported metadata fields for the Bio-Formats Nikon Elements TIFF format reader.

These fields are from the OME data model[3677]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 50 of them (10%).
- Of those, Bio-Formats fully or partially converts 50 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Nikon Elements TIFF format reader:**

- Channel : AcquisitionMode[3678]
- Channel : EmissionWavelength[3679]
- Channel : ExcitationWavelength[3680]
- Channel : ID[3681]
- Channel : Name[3682]
- Channel : PinholeSize[3683]
- Channel : SamplesPerPixel[3684]
- Detector : ID[3685]
- Detector : Model[3686]

---

[3669] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3670] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3671] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3672] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_TimeIncrement
[3673] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3674] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3675] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3676] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3677] http://www.openmicroscopy.org/site/support/ome-model/
[3678] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_AcquisitionMode
[3679] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_EmissionWavelength
[3680] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ExcitationWavelength
[3681] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3682] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[3683] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_PinholeSize
[3684] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3685] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[3686] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model

- Detector : Type[3687]
- DetectorSettings : Binning[3688]
- DetectorSettings : Gain[3689]
- DetectorSettings : ID[3690]
- DetectorSettings : ReadOutRate[3691]
- DetectorSettings : Voltage[3692]
- Image : AcquisitionDate[3693]
- Image : ID[3694]
- Image : InstrumentRef[3695]
- Image : Name[3696]
- ImagingEnvironment : Temperature[3697]
- Instrument : ID[3698]
- Objective : CalibratedMagnification[3699]
- Objective : Correction[3700]
- Objective : ID[3701]
- Objective : Immersion[3702]
- Objective : LensNA[3703]
- Objective : Model[3704]
- ObjectiveSettings : ID[3705]
- ObjectiveSettings : RefractiveIndex[3706]
- Pixels : BigEndian[3707]
- Pixels : DimensionOrder[3708]
- Pixels : ID[3709]
- Pixels : Interleaved[3710]
- Pixels : PhysicalSizeX[3711]
- Pixels : PhysicalSizeY[3712]

---

[3687] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type
[3688] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Binning
[3689] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Gain
[3690] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[3691] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ReadOutRate
[3692] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Voltage
[3693] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3694] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3695] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[3696] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3697] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImagingEnvironment_Temperature
[3698] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[3699] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_CalibratedMagnification
[3700] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Correction
[3701] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[3702] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion
[3703] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_LensNA
[3704] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[3705] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[3706] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_RefractiveIndex
[3707] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3708] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3709] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3710] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3711] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[3712] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY

- Pixels : PhysicalSizeZ[3713]
- Pixels : SignificantBits[3714]
- Pixels : SizeC[3715]
- Pixels : SizeT[3716]
- Pixels : SizeX[3717]
- Pixels : SizeY[3718]
- Pixels : SizeZ[3719]
- Pixels : Type[3720]
- Plane : ExposureTime[3721]
- Plane : PositionX[3722]
- Plane : PositionY[3723]
- Plane : PositionZ[3724]
- Plane : TheC[3725]
- Plane : TheT[3726]
- Plane : TheZ[3727]

**Total supported: 50**

**Total unknown or missing: 426**

### 18.2.103 NikonReader

This page lists supported metadata fields for the Bio-Formats Nikon NEF format reader.

These fields are from the OME data model[3728]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Nikon NEF format reader:**

- Channel : ID[3729]
- Channel : SamplesPerPixel[3730]

---

[3713] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[3714] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3715] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3716] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3717] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3718] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3719] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3720] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3721] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[3722] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[3723] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[3724] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionZ
[3725] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3726] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3727] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3728] http://www.openmicroscopy.org/site/support/ome-model/
[3729] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3730] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel

- Image : AcquisitionDate[3731]
- Image : ID[3732]
- Image : Name[3733]
- Pixels : BigEndian[3734]
- Pixels : DimensionOrder[3735]
- Pixels : ID[3736]
- Pixels : Interleaved[3737]
- Pixels : SignificantBits[3738]
- Pixels : SizeC[3739]
- Pixels : SizeT[3740]
- Pixels : SizeX[3741]
- Pixels : SizeY[3742]
- Pixels : SizeZ[3743]
- Pixels : Type[3744]
- Plane : TheC[3745]
- Plane : TheT[3746]
- Plane : TheZ[3747]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.104 NikonTiffReader

This page lists supported metadata fields for the Bio-Formats Nikon TIFF format reader.

These fields are from the OME data model[3748]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 47 of them (9%).
- Of those, Bio-Formats fully or partially converts 47 (100%).

---

[3731] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3732] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3733] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3734] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3735] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3736] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3737] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3738] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3739] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3740] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3741] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3742] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3743] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3744] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3745] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3746] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3747] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3748] http://www.openmicroscopy.org/site/support/ome-model/

### Supported fields

**These fields are fully supported by the Bio-Formats Nikon TIFF format reader:**

- Channel : EmissionWavelength[3749]
- Channel : ExcitationWavelength[3750]
- Channel : ID[3751]
- Channel : PinholeSize[3752]
- Channel : SamplesPerPixel[3753]
- Detector : Gain[3754]
- Detector : ID[3755]
- Detector : Type[3756]
- Dichroic : ID[3757]
- Dichroic : Model[3758]
- Filter : ID[3759]
- Filter : Model[3760]
- Image : AcquisitionDate[3761]
- Image : Description[3762]
- Image : ID[3763]
- Image : InstrumentRef[3764]
- Image : Name[3765]
- Instrument : ID[3766]
- Laser : ID[3767]
- Laser : LaserMedium[3768]
- Laser : Model[3769]
- Laser : Type[3770]
- Laser : Wavelength[3771]
- Objective : Correction[3772]

---

[3749] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_EmissionWavelength
[3750] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ExcitationWavelength
[3751] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3752] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_PinholeSize
[3753] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3754] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Gain
[3755] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[3756] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type
[3757] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Dichroic_ID
[3758] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[3759] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Filter_ID
[3760] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[3761] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3762] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[3763] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3764] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[3765] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3766] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[3767] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSource_ID
[3768] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_LaserMedium
[3769] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[3770] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_Type
[3771] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_Wavelength
[3772] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Correction

- Objective : ID[3773]
- Objective : Immersion[3774]
- Objective : LensNA[3775]
- Objective : NominalMagnification[3776]
- Objective : WorkingDistance[3777]
- ObjectiveSettings : ID[3778]
- Pixels : BigEndian[3779]
- Pixels : DimensionOrder[3780]
- Pixels : ID[3781]
- Pixels : Interleaved[3782]
- Pixels : PhysicalSizeX[3783]
- Pixels : PhysicalSizeY[3784]
- Pixels : PhysicalSizeZ[3785]
- Pixels : SignificantBits[3786]
- Pixels : SizeC[3787]
- Pixels : SizeT[3788]
- Pixels : SizeX[3789]
- Pixels : SizeY[3790]
- Pixels : SizeZ[3791]
- Pixels : Type[3792]
- Plane : TheC[3793]
- Plane : TheT[3794]
- Plane : TheZ[3795]

**Total supported: 47**

**Total unknown or missing: 429**

---

[3773] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[3774] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion
[3775] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_LensNA
[3776] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[3777] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_WorkingDistance
[3778] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[3779] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3780] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3781] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3782] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3783] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[3784] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[3785] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[3786] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3787] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3788] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3789] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3790] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3791] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3792] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3793] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3794] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3795] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ

### 18.2.105 OBFReader

This page lists supported metadata fields for the Bio-Formats OBF format reader.

These fields are from the OME data model[3796]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats OBF format reader:**

- Channel : ID[3797]
- Channel : SamplesPerPixel[3798]
- Image : AcquisitionDate[3799]
- Image : ID[3800]
- Image : Name[3801]
- Pixels : BigEndian[3802]
- Pixels : DimensionOrder[3803]
- Pixels : ID[3804]
- Pixels : Interleaved[3805]
- Pixels : SignificantBits[3806]
- Pixels : SizeC[3807]
- Pixels : SizeT[3808]
- Pixels : SizeX[3809]
- Pixels : SizeY[3810]
- Pixels : SizeZ[3811]
- Pixels : Type[3812]
- Plane : TheC[3813]
- Plane : TheT[3814]

---

[3796] http://www.openmicroscopy.org/site/support/ome-model/
[3797] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3798] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3799] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3800] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3801] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3802] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3803] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3804] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3805] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3806] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3807] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3808] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3809] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3810] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3811] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3812] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3813] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3814] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT

- Plane : TheZ[3815]

**Total supported: 19**

**Total unknown or missing: 457**

## 18.2.106 OMETiffReader

This page lists supported metadata fields for the Bio-Formats OME-TIFF format reader.

These fields are from the OME data model[3816]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats OME-TIFF format reader:**

- Channel : ID[3817]
- Channel : SamplesPerPixel[3818]
- Image : AcquisitionDate[3819]
- Image : ID[3820]
- Image : Name[3821]
- Pixels : BigEndian[3822]
- Pixels : DimensionOrder[3823]
- Pixels : ID[3824]
- Pixels : Interleaved[3825]
- Pixels : SignificantBits[3826]
- Pixels : SizeC[3827]
- Pixels : SizeT[3828]
- Pixels : SizeX[3829]
- Pixels : SizeY[3830]
- Pixels : SizeZ[3831]
- Pixels : Type[3832]

---

[3815] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3816] http://www.openmicroscopy.org/site/support/ome-model/
[3817] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3818] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3819] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3820] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3821] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3822] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3823] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3824] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3825] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3826] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3827] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3828] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3829] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3830] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3831] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3832] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type

- Plane : TheC[3833]
- Plane : TheT[3834]
- Plane : TheZ[3835]

**Total supported: 19**

**Total unknown or missing: 457**

## 18.2.107 OMEXMLReader

This page lists supported metadata fields for the Bio-Formats OME-XML format reader.

These fields are from the OME data model[3836]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats OME-XML format reader:**

- Channel : ID[3837]
- Channel : SamplesPerPixel[3838]
- Image : AcquisitionDate[3839]
- Image : ID[3840]
- Image : Name[3841]
- Pixels : BigEndian[3842]
- Pixels : DimensionOrder[3843]
- Pixels : ID[3844]
- Pixels : Interleaved[3845]
- Pixels : SignificantBits[3846]
- Pixels : SizeC[3847]
- Pixels : SizeT[3848]
- Pixels : SizeX[3849]
- Pixels : SizeY[3850]

---

[3833] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3834] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3835] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3836] http://www.openmicroscopy.org/site/support/ome-model/
[3837] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3838] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3839] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3840] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3841] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3842] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3843] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3844] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3845] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3846] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3847] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3848] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3849] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3850] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY

- Pixels : SizeZ[3851]
- Pixels : Type[3852]
- Plane : TheC[3853]
- Plane : TheT[3854]
- Plane : TheZ[3855]

**Total supported: 19**

**Total unknown or missing: 457**

## 18.2.108 OpenlabRawReader

This page lists supported metadata fields for the Bio-Formats Openlab RAW format reader.

These fields are from the OME data model[3856]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats Openlab RAW format reader:**

- Channel : ID[3857]
- Channel : SamplesPerPixel[3858]
- Image : AcquisitionDate[3859]
- Image : ID[3860]
- Image : Name[3861]
- Pixels : BigEndian[3862]
- Pixels : DimensionOrder[3863]
- Pixels : ID[3864]
- Pixels : Interleaved[3865]
- Pixels : SignificantBits[3866]
- Pixels : SizeC[3867]
- Pixels : SizeT[3868]

---

[3851] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3852] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3853] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3854] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3855] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3856] http://www.openmicroscopy.org/site/support/ome-model/
[3857] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3858] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3859] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3860] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3861] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3862] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3863] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3864] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3865] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3866] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3867] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3868] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT

- Pixels : SizeX[3869]
- Pixels : SizeY[3870]
- Pixels : SizeZ[3871]
- Pixels : Type[3872]
- Plane : TheC[3873]
- Plane : TheT[3874]
- Plane : TheZ[3875]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.109 OpenlabReader

This page lists supported metadata fields for the Bio-Formats Openlab LIFF format reader.

These fields are from the OME data model[3876]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 32 of them (6%).
- Of those, Bio-Formats fully or partially converts 32 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Openlab LIFF format reader:**

- Channel : ID[3877]
- Channel : Name[3878]
- Channel : SamplesPerPixel[3879]
- Detector : ID[3880]
- Detector : Type[3881]
- DetectorSettings : Gain[3882]
- DetectorSettings : ID[3883]
- DetectorSettings : Offset[3884]
- Image : AcquisitionDate[3885]
- Image : ID[3886]

---

[3869] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3870] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3871] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3872] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3873] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3874] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3875] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3876] http://www.openmicroscopy.org/site/support/ome-model/
[3877] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3878] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[3879] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3880] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[3881] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type
[3882] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Gain
[3883] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[3884] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Offset
[3885] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3886] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID

- Image : InstrumentRef[3887]
- Image : Name[3888]
- Instrument : ID[3889]
- Pixels : BigEndian[3890]
- Pixels : DimensionOrder[3891]
- Pixels : ID[3892]
- Pixels : Interleaved[3893]
- Pixels : PhysicalSizeX[3894]
- Pixels : PhysicalSizeY[3895]
- Pixels : SignificantBits[3896]
- Pixels : SizeC[3897]
- Pixels : SizeT[3898]
- Pixels : SizeX[3899]
- Pixels : SizeY[3900]
- Pixels : SizeZ[3901]
- Pixels : Type[3902]
- Plane : PositionX[3903]
- Plane : PositionY[3904]
- Plane : PositionZ[3905]
- Plane : TheC[3906]
- Plane : TheT[3907]
- Plane : TheZ[3908]

**Total supported: 32**

**Total unknown or missing: 444**

### 18.2.110 OperettaReader

This page lists supported metadata fields for the Bio-Formats PerkinElmer Operetta format reader.

These fields are from the OME data model[3909]. Bio-Formats standardizes each format's original metadata to and from the OME

---

[3887] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[3888] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3889] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[3890] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3891] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3892] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3893] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3894] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[3895] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[3896] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3897] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3898] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3899] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3900] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3901] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3902] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3903] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[3904] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[3905] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionZ
[3906] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3907] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3908] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3909] http://www.openmicroscopy.org/site/support/ome-model/

data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 43 of them (9%).
- Of those, Bio-Formats fully or partially converts 43 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats PerkinElmer Operetta format reader:**

- Channel : ID[3910]
- Channel : Name[3911]
- Channel : SamplesPerPixel[3912]
- Experimenter : ID[3913]
- Experimenter : LastName[3914]
- Image : AcquisitionDate[3915]
- Image : ExperimenterRef[3916]
- Image : ID[3917]
- Image : Name[3918]
- Pixels : BigEndian[3919]
- Pixels : DimensionOrder[3920]
- Pixels : ID[3921]
- Pixels : Interleaved[3922]
- Pixels : PhysicalSizeX[3923]
- Pixels : PhysicalSizeY[3924]
- Pixels : SignificantBits[3925]
- Pixels : SizeC[3926]
- Pixels : SizeT[3927]
- Pixels : SizeX[3928]
- Pixels : SizeY[3929]
- Pixels : SizeZ[3930]

---

[3910] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3911] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[3912] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3913] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_ID
[3914] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_LastName
[3915] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3916] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ExperimenterRef_ID
[3917] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3918] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3919] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3920] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3921] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3922] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3923] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[3924] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[3925] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3926] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3927] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3928] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3929] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3930] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ

- Pixels : Type[3931]
- Plane : PositionX[3932]
- Plane : PositionY[3933]
- Plane : PositionZ[3934]
- Plane : TheC[3935]
- Plane : TheT[3936]
- Plane : TheZ[3937]
- Plate : Columns[3938]
- Plate : Description[3939]
- Plate : ExternalIdentifier[3940]
- Plate : ID[3941]
- Plate : Name[3942]
- Plate : Rows[3943]
- PlateAcquisition : ID[3944]
- PlateAcquisition : MaximumFieldCount[3945]
- PlateAcquisition : WellSampleRef[3946]
- Well : Column[3947]
- Well : ID[3948]
- Well : Row[3949]
- WellSample : ID[3950]
- WellSample : ImageRef[3951]
- WellSample : Index[3952]

**Total supported: 43**

**Total unknown or missing: 433**

### 18.2.111 OxfordInstrumentsReader

This page lists supported metadata fields for the Bio-Formats Oxford Instruments format reader.

These fields are from the OME data model[3953]. Bio-Formats standardizes each format's original metadata to and from the OME

---

[3931] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3932] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[3933] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[3934] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionZ
[3935] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3936] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[3937] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3938] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_Columns
[3939] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_Description
[3940] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_ExternalIdentifier
[3941] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_ID
[3942] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_Name
[3943] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_Rows
[3944] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_ID
[3945] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_MaximumFieldCount
[3946] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSampleRef_ID
[3947] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Column
[3948] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_ID
[3949] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Row
[3950] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_ID
[3951] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImageRef_ID
[3952] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_Index
[3953] http://www.openmicroscopy.org/site/support/ome-model/

data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 22 of them (4%).
- Of those, Bio-Formats fully or partially converts 22 (100%).

## Supported fields

**These fields are fully supported by the Bio-Formats Oxford Instruments format reader:**

- Channel : ID[3954]
- Channel : SamplesPerPixel[3955]
- Image : AcquisitionDate[3956]
- Image : Description[3957]
- Image : ID[3958]
- Image : Name[3959]
- Pixels : BigEndian[3960]
- Pixels : DimensionOrder[3961]
- Pixels : ID[3962]
- Pixels : Interleaved[3963]
- Pixels : PhysicalSizeX[3964]
- Pixels : PhysicalSizeY[3965]
- Pixels : SignificantBits[3966]
- Pixels : SizeC[3967]
- Pixels : SizeT[3968]
- Pixels : SizeX[3969]
- Pixels : SizeY[3970]
- Pixels : SizeZ[3971]
- Pixels : Type[3972]
- Plane : TheC[3973]
- Plane : TheT[3974]

---

[3954] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3955] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3956] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3957] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[3958] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3959] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3960] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3961] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3962] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3963] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3964] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[3965] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[3966] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3967] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3968] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3969] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3970] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3971] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[3972] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[3973] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[3974] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT

- Plane : TheZ[3975]

**Total supported: 22**

**Total unknown or missing: 454**

## 18.2.112 PCIReader

This page lists supported metadata fields for the Bio-Formats Compix Simple-PCI format reader.

These fields are from the OME data model[3976]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 29 of them (6%).
- Of those, Bio-Formats fully or partially converts 29 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats Compix Simple-PCI format reader:**

- Channel : ID[3977]
- Channel : SamplesPerPixel[3978]
- Detector : ID[3979]
- Detector : Type[3980]
- DetectorSettings : Binning[3981]
- DetectorSettings : ID[3982]
- Image : AcquisitionDate[3983]
- Image : ID[3984]
- Image : InstrumentRef[3985]
- Image : Name[3986]
- Instrument : ID[3987]
- Pixels : BigEndian[3988]
- Pixels : DimensionOrder[3989]
- Pixels : ID[3990]
- Pixels : Interleaved[3991]
- Pixels : PhysicalSizeX[3992]

---

[3975] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[3976] http://www.openmicroscopy.org/site/support/ome-model/
[3977] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[3978] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[3979] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[3980] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type
[3981] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Binning
[3982] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[3983] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[3984] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[3985] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[3986] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[3987] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[3988] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[3989] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[3990] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[3991] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[3992] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX

- Pixels : PhysicalSizeY[3993]
- Pixels : SignificantBits[3994]
- Pixels : SizeC[3995]
- Pixels : SizeT[3996]
- Pixels : SizeX[3997]
- Pixels : SizeY[3998]
- Pixels : SizeZ[3999]
- Pixels : TimeIncrement[4000]
- Pixels : Type[4001]
- Plane : DeltaT[4002]
- Plane : TheC[4003]
- Plane : TheT[4004]
- Plane : TheZ[4005]

**Total supported: 29**

**Total unknown or missing: 447**

## 18.2.113 PCORAWReader

This page lists supported metadata fields for the Bio-Formats PCO-RAW format reader.

These fields are from the OME data model[4006]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 26 of them (5%).
- Of those, Bio-Formats fully or partially converts 26 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats PCO-RAW format reader:**

- Channel : ID[4007]
- Channel : SamplesPerPixel[4008]
- Detector : ID[4009]
- Detector : SerialNumber[4010]

---

[3993] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[3994] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[3995] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[3996] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[3997] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[3998] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[3999] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4000] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_TimeIncrement
[4001] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4002] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_DeltaT
[4003] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4004] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4005] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4006] http://www.openmicroscopy.org/site/support/ome-model/
[4007] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4008] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4009] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[4010] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber

- DetectorSettings : Binning[4011]
- DetectorSettings : ID[4012]
- Image : AcquisitionDate[4013]
- Image : Description[4014]
- Image : ID[4015]
- Image : Name[4016]
- Instrument : ID[4017]
- Pixels : BigEndian[4018]
- Pixels : DimensionOrder[4019]
- Pixels : ID[4020]
- Pixels : Interleaved[4021]
- Pixels : SignificantBits[4022]
- Pixels : SizeC[4023]
- Pixels : SizeT[4024]
- Pixels : SizeX[4025]
- Pixels : SizeY[4026]
- Pixels : SizeZ[4027]
- Pixels : Type[4028]
- Plane : ExposureTime[4029]
- Plane : TheC[4030]
- Plane : TheT[4031]
- Plane : TheZ[4032]

**Total supported: 26**

**Total unknown or missing: 450**

### 18.2.114 PCXReader

This page lists supported metadata fields for the Bio-Formats PCX format reader.

These fields are from the OME data model[4033]. Bio-Formats standardizes each format's original metadata to and from the OME

---

[4011] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Binning
[4012] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[4013] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4014] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[4015] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4016] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4017] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[4018] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4019] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4020] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4021] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4022] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4023] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4024] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4025] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4026] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4027] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4028] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4029] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[4030] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4031] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4032] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4033] http://www.openmicroscopy.org/site/support/ome-model/

data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

## Supported fields

**These fields are fully supported by the Bio-Formats PCX format reader:**

- Channel : ID[4034]
- Channel : SamplesPerPixel[4035]
- Image : AcquisitionDate[4036]
- Image : ID[4037]
- Image : Name[4038]
- Pixels : BigEndian[4039]
- Pixels : DimensionOrder[4040]
- Pixels : ID[4041]
- Pixels : Interleaved[4042]
- Pixels : SignificantBits[4043]
- Pixels : SizeC[4044]
- Pixels : SizeT[4045]
- Pixels : SizeX[4046]
- Pixels : SizeY[4047]
- Pixels : SizeZ[4048]
- Pixels : Type[4049]
- Plane : TheC[4050]
- Plane : TheT[4051]
- Plane : TheZ[4052]

**Total supported: 19**

**Total unknown or missing: 457**

---

[4034] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4035] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4036] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4037] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4038] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4039] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4040] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4041] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4042] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4043] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4044] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4045] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4046] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4047] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4048] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4049] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4050] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4051] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4052] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ

### 18.2.115 PDSReader

This page lists supported metadata fields for the Bio-Formats Perkin Elmer Densitometer format reader.

These fields are from the OME data model[4053]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 23 of them (4%).
- Of those, Bio-Formats fully or partially converts 23 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Perkin Elmer Densitometer format reader:**

- Channel : ID[4054]
- Channel : SamplesPerPixel[4055]
- Image : AcquisitionDate[4056]
- Image : ID[4057]
- Image : Name[4058]
- Pixels : BigEndian[4059]
- Pixels : DimensionOrder[4060]
- Pixels : ID[4061]
- Pixels : Interleaved[4062]
- Pixels : PhysicalSizeX[4063]
- Pixels : PhysicalSizeY[4064]
- Pixels : SignificantBits[4065]
- Pixels : SizeC[4066]
- Pixels : SizeT[4067]
- Pixels : SizeX[4068]
- Pixels : SizeY[4069]
- Pixels : SizeZ[4070]
- Pixels : Type[4071]

---

[4053] http://www.openmicroscopy.org/site/support/ome-model/
[4054] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4055] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4056] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4057] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4058] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4059] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4060] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4061] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4062] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4063] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[4064] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[4065] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4066] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4067] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4068] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4069] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4070] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4071] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type

- Plane : PositionX[4072]
- Plane : PositionY[4073]
- Plane : TheC[4074]
- Plane : TheT[4075]
- Plane : TheZ[4076]

**Total supported: 23**

**Total unknown or missing: 453**

### 18.2.116 PGMReader

This page lists supported metadata fields for the Bio-Formats Portable Any Map format reader.

These fields are from the OME data model[4077]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Portable Any Map format reader:**

- Channel : ID[4078]
- Channel : SamplesPerPixel[4079]
- Image : AcquisitionDate[4080]
- Image : ID[4081]
- Image : Name[4082]
- Pixels : BigEndian[4083]
- Pixels : DimensionOrder[4084]
- Pixels : ID[4085]
- Pixels : Interleaved[4086]
- Pixels : SignificantBits[4087]
- Pixels : SizeC[4088]
- Pixels : SizeT[4089]

---

[4072] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[4073] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[4074] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4075] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4076] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4077] http://www.openmicroscopy.org/site/support/ome-model/
[4078] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4079] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4080] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4081] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4082] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4083] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4084] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4085] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4086] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4087] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4088] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4089] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT

- Pixels : SizeX[4090]
- Pixels : SizeY[4091]
- Pixels : SizeZ[4092]
- Pixels : Type[4093]
- Plane : TheC[4094]
- Plane : TheT[4095]
- Plane : TheZ[4096]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.117 PQBinReader

This page lists supported metadata fields for the Bio-Formats PicoQuant Bin format reader.

These fields are from the OME data model[4097]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 21 of them (4%).
- Of those, Bio-Formats fully or partially converts 21 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats PicoQuant Bin format reader:**

- Channel : ID[4098]
- Channel : SamplesPerPixel[4099]
- Image : AcquisitionDate[4100]
- Image : ID[4101]
- Image : Name[4102]
- Pixels : BigEndian[4103]
- Pixels : DimensionOrder[4104]
- Pixels : ID[4105]
- Pixels : Interleaved[4106]
- Pixels : PhysicalSizeX[4107]

---

[4090] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4091] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4092] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4093] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4094] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4095] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4096] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4097] http://www.openmicroscopy.org/site/support/ome-model/
[4098] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4099] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4100] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4101] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4102] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4103] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4104] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4105] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4106] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4107] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX

- Pixels : PhysicalSizeY[4108]
- Pixels : SignificantBits[4109]
- Pixels : SizeC[4110]
- Pixels : SizeT[4111]
- Pixels : SizeX[4112]
- Pixels : SizeY[4113]
- Pixels : SizeZ[4114]
- Pixels : Type[4115]
- Plane : TheC[4116]
- Plane : TheT[4117]
- Plane : TheZ[4118]

**Total supported: 21**

**Total unknown or missing: 455**

### 18.2.118 PSDReader

This page lists supported metadata fields for the Bio-Formats Adobe Photoshop format reader.

These fields are from the OME data model[4119]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Adobe Photoshop format reader:**

- Channel : ID[4120]
- Channel : SamplesPerPixel[4121]
- Image : AcquisitionDate[4122]
- Image : ID[4123]
- Image : Name[4124]
- Pixels : BigEndian[4125]

---

[4108] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[4109] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4110] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4111] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4112] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4113] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4114] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4115] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4116] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4117] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4118] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4119] http://www.openmicroscopy.org/site/support/ome-model/
[4120] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4121] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4122] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4123] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4124] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4125] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian

- Pixels : DimensionOrder[4126]
- Pixels : ID[4127]
- Pixels : Interleaved[4128]
- Pixels : SignificantBits[4129]
- Pixels : SizeC[4130]
- Pixels : SizeT[4131]
- Pixels : SizeX[4132]
- Pixels : SizeY[4133]
- Pixels : SizeZ[4134]
- Pixels : Type[4135]
- Plane : TheC[4136]
- Plane : TheT[4137]
- Plane : TheZ[4138]

**Total supported: 19**

**Total unknown or missing: 457**

## 18.2.119 PerkinElmerReader

This page lists supported metadata fields for the Bio-Formats PerkinElmer format reader.

These fields are from the OME data model[4139]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 30 of them (6%).
- Of those, Bio-Formats fully or partially converts 30 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats PerkinElmer format reader:**

- Channel : EmissionWavelength[4140]
- Channel : ExcitationWavelength[4141]
- Channel : ID[4142]
- Channel : SamplesPerPixel[4143]

---

[4126] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4127] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4128] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4129] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4130] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4131] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4132] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4133] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4134] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4135] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4136] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4137] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4138] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4139] http://www.openmicroscopy.org/site/support/ome-model/
[4140] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_EmissionWavelength
[4141] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ExcitationWavelength
[4142] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4143] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel

- Image : AcquisitionDate[4144]
- Image : ID[4145]
- Image : InstrumentRef[4146]
- Image : Name[4147]
- Instrument : ID[4148]
- Pixels : BigEndian[4149]
- Pixels : DimensionOrder[4150]
- Pixels : ID[4151]
- Pixels : Interleaved[4152]
- Pixels : PhysicalSizeX[4153]
- Pixels : PhysicalSizeY[4154]
- Pixels : SignificantBits[4155]
- Pixels : SizeC[4156]
- Pixels : SizeT[4157]
- Pixels : SizeX[4158]
- Pixels : SizeY[4159]
- Pixels : SizeZ[4160]
- Pixels : Type[4161]
- Plane : DeltaT[4162]
- Plane : ExposureTime[4163]
- Plane : PositionX[4164]
- Plane : PositionY[4165]
- Plane : PositionZ[4166]
- Plane : TheC[4167]
- Plane : TheT[4168]
- Plane : TheZ[4169]

---

[4144] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4145] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4146] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[4147] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4148] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[4149] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4150] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4151] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4152] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4153] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[4154] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[4155] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4156] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4157] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4158] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4159] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4160] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4161] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4162] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_DeltaT
[4163] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[4164] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[4165] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[4166] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionZ
[4167] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4168] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4169] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ

**Total supported: 30**

**Total unknown or missing: 446**

### 18.2.120 PhotoshopTiffReader

This page lists supported metadata fields for the Bio-Formats Adobe Photoshop TIFF format reader.

These fields are from the OME data model[4170]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Adobe Photoshop TIFF format reader:**

- Channel : ID[4171]
- Channel : SamplesPerPixel[4172]
- Image : AcquisitionDate[4173]
- Image : ID[4174]
- Image : Name[4175]
- Pixels : BigEndian[4176]
- Pixels : DimensionOrder[4177]
- Pixels : ID[4178]
- Pixels : Interleaved[4179]
- Pixels : SignificantBits[4180]
- Pixels : SizeC[4181]
- Pixels : SizeT[4182]
- Pixels : SizeX[4183]
- Pixels : SizeY[4184]
- Pixels : SizeZ[4185]
- Pixels : Type[4186]
- Plane : TheC[4187]

---

[4170] http://www.openmicroscopy.org/site/support/ome-model/
[4171] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4172] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4173] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4174] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4175] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4176] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4177] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4178] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4179] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4180] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4181] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4182] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4183] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4184] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4185] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4186] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4187] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC

- Plane : TheT[4188]
- Plane : TheZ[4189]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.121 PictReader

This page lists supported metadata fields for the Bio-Formats PICT format reader.

These fields are from the OME data model[4190]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats PICT format reader:**

- Channel : ID[4191]
- Channel : SamplesPerPixel[4192]
- Image : AcquisitionDate[4193]
- Image : ID[4194]
- Image : Name[4195]
- Pixels : BigEndian[4196]
- Pixels : DimensionOrder[4197]
- Pixels : ID[4198]
- Pixels : Interleaved[4199]
- Pixels : SignificantBits[4200]
- Pixels : SizeC[4201]
- Pixels : SizeT[4202]
- Pixels : SizeX[4203]
- Pixels : SizeY[4204]
- Pixels : SizeZ[4205]

---

[4188] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4189] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4190] http://www.openmicroscopy.org/site/support/ome-model/
[4191] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4192] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4193] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4194] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4195] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4196] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4197] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4198] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4199] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4200] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4201] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4202] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4203] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4204] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4205] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ

- Pixels : Type[4206]
- Plane : TheC[4207]
- Plane : TheT[4208]
- Plane : TheZ[4209]

**Total supported: 19**

**Total unknown or missing: 457**

## 18.2.122 PovrayReader

This page lists supported metadata fields for the Bio-Formats POV-Ray format reader.

These fields are from the OME data model[4210]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats POV-Ray format reader:**

- Channel : ID[4211]
- Channel : SamplesPerPixel[4212]
- Image : AcquisitionDate[4213]
- Image : ID[4214]
- Image : Name[4215]
- Pixels : BigEndian[4216]
- Pixels : DimensionOrder[4217]
- Pixels : ID[4218]
- Pixels : Interleaved[4219]
- Pixels : SignificantBits[4220]
- Pixels : SizeC[4221]
- Pixels : SizeT[4222]
- Pixels : SizeX[4223]

---

[4206] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4207] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4208] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4209] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4210] http://www.openmicroscopy.org/site/support/ome-model/
[4211] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4212] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4213] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4214] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4215] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4216] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4217] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4218] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4219] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4220] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4221] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4222] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4223] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX

- Pixels : SizeY[4224]
- Pixels : SizeZ[4225]
- Pixels : Type[4226]
- Plane : TheC[4227]
- Plane : TheT[4228]
- Plane : TheZ[4229]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.123 PrairieReader

This page lists supported metadata fields for the Bio-Formats Prairie TIFF format reader.

These fields are from the OME data model[4230]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 46 of them (9%).
- Of those, Bio-Formats fully or partially converts 46 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Prairie TIFF format reader:**

- Channel : EmissionWavelength[4231]
- Channel : ID[4232]
- Channel : Name[4233]
- Channel : SamplesPerPixel[4234]
- Detector : ID[4235]
- Detector : Type[4236]
- Detector : Zoom[4237]
- DetectorSettings : Gain[4238]
- DetectorSettings : ID[4239]
- DetectorSettings : Offset[4240]
- Image : AcquisitionDate[4241]

---

[4224] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY

[4225] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ

[4226] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type

[4227] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC

[4228] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT

[4229] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ

[4230] http://www.openmicroscopy.org/site/support/ome-model/

[4231] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_EmissionWavelength

[4232] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID

[4233] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name

[4234] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel

[4235] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID

[4236] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type

[4237] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Zoom

[4238] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Gain

[4239] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID

[4240] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Offset

[4241] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate

- Image : ID[4242]
- Image : InstrumentRef[4243]
- Image : Name[4244]
- Instrument : ID[4245]
- Laser : ID[4246]
- Laser : Power[4247]
- Microscope : Model[4248]
- Objective : Correction[4249]
- Objective : ID[4250]
- Objective : Immersion[4251]
- Objective : LensNA[4252]
- Objective : Manufacturer[4253]
- Objective : NominalMagnification[4254]
- ObjectiveSettings : ID[4255]
- Pixels : BigEndian[4256]
- Pixels : DimensionOrder[4257]
- Pixels : ID[4258]
- Pixels : Interleaved[4259]
- Pixels : PhysicalSizeX[4260]
- Pixels : PhysicalSizeY[4261]
- Pixels : SignificantBits[4262]
- Pixels : SizeC[4263]
- Pixels : SizeT[4264]
- Pixels : SizeX[4265]
- Pixels : SizeY[4266]
- Pixels : SizeZ[4267]

---

[4242] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4243] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[4244] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4245] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[4246] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSource_ID
[4247] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSource_Power
[4248] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[4249] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Correction
[4250] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[4251] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion
[4252] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_LensNA
[4253] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer
[4254] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[4255] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[4256] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4257] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4258] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4259] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4260] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[4261] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[4262] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4263] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4264] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4265] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4266] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4267] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ

- Pixels : TimeIncrement[4268]
- Pixels : Type[4269]
- Plane : DeltaT[4270]
- Plane : PositionX[4271]
- Plane : PositionY[4272]
- Plane : PositionZ[4273]
- Plane : TheC[4274]
- Plane : TheT[4275]
- Plane : TheZ[4276]

**Total supported: 46**

**Total unknown or missing: 430**

### 18.2.124 PyramidTiffReader

This page lists supported metadata fields for the Bio-Formats Pyramid TIFF format reader.

These fields are from the OME data model[4277]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Pyramid TIFF format reader:**

- Channel : ID[4278]
- Channel : SamplesPerPixel[4279]
- Image : AcquisitionDate[4280]
- Image : ID[4281]
- Image : Name[4282]
- Pixels : BigEndian[4283]
- Pixels : DimensionOrder[4284]
- Pixels : ID[4285]

---

[4268] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_TimeIncrement
[4269] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4270] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_DeltaT
[4271] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[4272] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[4273] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionZ
[4274] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4275] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4276] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4277] http://www.openmicroscopy.org/site/support/ome-model/
[4278] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4279] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4280] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4281] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4282] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4283] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4284] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4285] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID

- Pixels : Interleaved[4286]
- Pixels : SignificantBits[4287]
- Pixels : SizeC[4288]
- Pixels : SizeT[4289]
- Pixels : SizeX[4290]
- Pixels : SizeY[4291]
- Pixels : SizeZ[4292]
- Pixels : Type[4293]
- Plane : TheC[4294]
- Plane : TheT[4295]
- Plane : TheZ[4296]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.125 QTReader

This page lists supported metadata fields for the Bio-Formats QuickTime format reader.

These fields are from the OME data model[4297]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats QuickTime format reader:**

- Channel : ID[4298]
- Channel : SamplesPerPixel[4299]
- Image : AcquisitionDate[4300]
- Image : ID[4301]
- Image : Name[4302]
- Pixels : BigEndian[4303]

---

[4286] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4287] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4288] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4289] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4290] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4291] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4292] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4293] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4294] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4295] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4296] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4297] http://www.openmicroscopy.org/site/support/ome-model/
[4298] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4299] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4300] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4301] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4302] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4303] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian

- Pixels : DimensionOrder[4304]
- Pixels : ID[4305]
- Pixels : Interleaved[4306]
- Pixels : SignificantBits[4307]
- Pixels : SizeC[4308]
- Pixels : SizeT[4309]
- Pixels : SizeX[4310]
- Pixels : SizeY[4311]
- Pixels : SizeZ[4312]
- Pixels : Type[4313]
- Plane : TheC[4314]
- Plane : TheT[4315]
- Plane : TheZ[4316]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.126 QuesantReader

This page lists supported metadata fields for the Bio-Formats Quesant AFM format reader.

These fields are from the OME data model[4317]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 22 of them (4%).
- Of those, Bio-Formats fully or partially converts 22 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Quesant AFM format reader:**

- Channel : ID[4318]
- Channel : SamplesPerPixel[4319]
- Image : AcquisitionDate[4320]
- Image : Description[4321]

---

[4304] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4305] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4306] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4307] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4308] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4309] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4310] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4311] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4312] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4313] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4314] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4315] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4316] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4317] http://www.openmicroscopy.org/site/support/ome-model/
[4318] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4319] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4320] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4321] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description

- Image : ID[4322]
- Image : Name[4323]
- Pixels : BigEndian[4324]
- Pixels : DimensionOrder[4325]
- Pixels : ID[4326]
- Pixels : Interleaved[4327]
- Pixels : PhysicalSizeX[4328]
- Pixels : PhysicalSizeY[4329]
- Pixels : SignificantBits[4330]
- Pixels : SizeC[4331]
- Pixels : SizeT[4332]
- Pixels : SizeX[4333]
- Pixels : SizeY[4334]
- Pixels : SizeZ[4335]
- Pixels : Type[4336]
- Plane : TheC[4337]
- Plane : TheT[4338]
- Plane : TheZ[4339]

**Total supported: 22**

**Total unknown or missing: 454**

### 18.2.127 RHKReader

This page lists supported metadata fields for the Bio-Formats RHK Technologies format reader.

These fields are from the OME data model[4340]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 22 of them (4%).
- Of those, Bio-Formats fully or partially converts 22 (100%).

---

[4322] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4323] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4324] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4325] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4326] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4327] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4328] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[4329] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[4330] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4331] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4332] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4333] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4334] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4335] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4336] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4337] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4338] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4339] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4340] http://www.openmicroscopy.org/site/support/ome-model/

## Supported fields

**These fields are fully supported by the Bio-Formats RHK Technologies format reader:**

- Channel : ID[4341]
- Channel : SamplesPerPixel[4342]
- Image : AcquisitionDate[4343]
- Image : Description[4344]
- Image : ID[4345]
- Image : Name[4346]
- Pixels : BigEndian[4347]
- Pixels : DimensionOrder[4348]
- Pixels : ID[4349]
- Pixels : Interleaved[4350]
- Pixels : PhysicalSizeX[4351]
- Pixels : PhysicalSizeY[4352]
- Pixels : SignificantBits[4353]
- Pixels : SizeC[4354]
- Pixels : SizeT[4355]
- Pixels : SizeX[4356]
- Pixels : SizeY[4357]
- Pixels : SizeZ[4358]
- Pixels : Type[4359]
- Plane : TheC[4360]
- Plane : TheT[4361]
- Plane : TheZ[4362]

**Total supported: 22**

**Total unknown or missing: 454**

---

[4341] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4342] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4343] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4344] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[4345] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4346] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4347] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4348] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4349] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4350] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4351] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[4352] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[4353] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4354] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4355] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4356] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4357] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4358] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4359] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4360] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4361] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4362] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ

### 18.2.128 SBIGReader

This page lists supported metadata fields for the Bio-Formats SBIG format reader.

These fields are from the OME data model[4363]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 22 of them (4%).
- Of those, Bio-Formats fully or partially converts 22 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats SBIG format reader:**

- Channel : ID[4364]
- Channel : SamplesPerPixel[4365]
- Image : AcquisitionDate[4366]
- Image : Description[4367]
- Image : ID[4368]
- Image : Name[4369]
- Pixels : BigEndian[4370]
- Pixels : DimensionOrder[4371]
- Pixels : ID[4372]
- Pixels : Interleaved[4373]
- Pixels : PhysicalSizeX[4374]
- Pixels : PhysicalSizeY[4375]
- Pixels : SignificantBits[4376]
- Pixels : SizeC[4377]
- Pixels : SizeT[4378]
- Pixels : SizeX[4379]
- Pixels : SizeY[4380]
- Pixels : SizeZ[4381]
- Pixels : Type[4382]

---

[4363] http://www.openmicroscopy.org/site/support/ome-model/
[4364] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4365] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4366] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4367] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[4368] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4369] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4370] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4371] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4372] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4373] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4374] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[4375] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[4376] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4377] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4378] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4379] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4380] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4381] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4382] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type

- Plane : TheC[4383]
- Plane : TheT[4384]
- Plane : TheZ[4385]

**Total supported: 22**

**Total unknown or missing: 454**

### 18.2.129 SDTReader

This page lists supported metadata fields for the Bio-Formats SPCImage Data format reader.

These fields are from the OME data model[4386]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats SPCImage Data format reader:**

- Channel : ID[4387]
- Channel : SamplesPerPixel[4388]
- Image : AcquisitionDate[4389]
- Image : ID[4390]
- Image : Name[4391]
- Pixels : BigEndian[4392]
- Pixels : DimensionOrder[4393]
- Pixels : ID[4394]
- Pixels : Interleaved[4395]
- Pixels : SignificantBits[4396]
- Pixels : SizeC[4397]
- Pixels : SizeT[4398]
- Pixels : SizeX[4399]
- Pixels : SizeY[4400]

---

[4383] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4384] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4385] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4386] http://www.openmicroscopy.org/site/support/ome-model/
[4387] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4388] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4389] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4390] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4391] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4392] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4393] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4394] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4395] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4396] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4397] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4398] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4399] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4400] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY

- Pixels : SizeZ[4401]
- Pixels : Type[4402]
- Plane : TheC[4403]
- Plane : TheT[4404]
- Plane : TheZ[4405]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.130 SEQReader

This page lists supported metadata fields for the Bio-Formats Image-Pro Sequence format reader.

These fields are from the OME data model[4406]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Image-Pro Sequence format reader:**

- Channel : ID[4407]
- Channel : SamplesPerPixel[4408]
- Image : AcquisitionDate[4409]
- Image : ID[4410]
- Image : Name[4411]
- Pixels : BigEndian[4412]
- Pixels : DimensionOrder[4413]
- Pixels : ID[4414]
- Pixels : Interleaved[4415]
- Pixels : SignificantBits[4416]
- Pixels : SizeC[4417]
- Pixels : SizeT[4418]

---

[4401] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4402] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4403] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4404] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4405] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4406] http://www.openmicroscopy.org/site/support/ome-model/
[4407] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4408] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4409] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4410] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4411] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4412] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4413] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4414] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4415] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4416] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4417] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4418] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT

- Pixels : SizeX[4419]
- Pixels : SizeY[4420]
- Pixels : SizeZ[4421]
- Pixels : Type[4422]
- Plane : TheC[4423]
- Plane : TheT[4424]
- Plane : TheZ[4425]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.131 SIFReader

This page lists supported metadata fields for the Bio-Formats Andor SIF format reader.

These fields are from the OME data model[4426]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 20 of them (4%).
- Of those, Bio-Formats fully or partially converts 20 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Andor SIF format reader:**

- Channel : ID[4427]
- Channel : SamplesPerPixel[4428]
- Image : AcquisitionDate[4429]
- Image : ID[4430]
- Image : Name[4431]
- Pixels : BigEndian[4432]
- Pixels : DimensionOrder[4433]
- Pixels : ID[4434]
- Pixels : Interleaved[4435]
- Pixels : SignificantBits[4436]

---

[4419] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4420] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4421] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4422] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4423] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4424] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4425] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4426] http://www.openmicroscopy.org/site/support/ome-model/
[4427] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4428] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4429] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4430] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4431] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4432] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4433] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4434] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4435] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4436] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits

- Pixels : SizeC[4437]
- Pixels : SizeT[4438]
- Pixels : SizeX[4439]
- Pixels : SizeY[4440]
- Pixels : SizeZ[4441]
- Pixels : Type[4442]
- Plane : DeltaT[4443]
- Plane : TheC[4444]
- Plane : TheT[4445]
- Plane : TheZ[4446]

**Total supported: 20**

**Total unknown or missing: 456**

### 18.2.132 SISReader

This page lists supported metadata fields for the Bio-Formats Olympus SIS TIFF format reader.

These fields are from the OME data model[4447]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 33 of them (6%).
- Of those, Bio-Formats fully or partially converts 33 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Olympus SIS TIFF format reader:**

- Channel : ID[4448]
- Channel : Name[4449]
- Channel : SamplesPerPixel[4450]
- Detector : ID[4451]
- Detector : Model[4452]
- Detector : Type[4453]
- DetectorSettings : ID[4454]

---

[4437] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4438] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4439] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4440] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4441] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4442] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4443] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_DeltaT
[4444] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4445] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4446] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4447] http://www.openmicroscopy.org/site/support/ome-model/
[4448] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4449] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[4450] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4451] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[4452] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[4453] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type
[4454] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID

- Image : AcquisitionDate[4455]
- Image : ID[4456]
- Image : InstrumentRef[4457]
- Image : Name[4458]
- Instrument : ID[4459]
- Objective : Correction[4460]
- Objective : ID[4461]
- Objective : Immersion[4462]
- Objective : NominalMagnification[4463]
- ObjectiveSettings : ID[4464]
- Pixels : BigEndian[4465]
- Pixels : DimensionOrder[4466]
- Pixels : ID[4467]
- Pixels : Interleaved[4468]
- Pixels : PhysicalSizeX[4469]
- Pixels : PhysicalSizeY[4470]
- Pixels : SignificantBits[4471]
- Pixels : SizeC[4472]
- Pixels : SizeT[4473]
- Pixels : SizeX[4474]
- Pixels : SizeY[4475]
- Pixels : SizeZ[4476]
- Pixels : Type[4477]
- Plane : TheC[4478]
- Plane : TheT[4479]
- Plane : TheZ[4480]

---

[4455] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4456] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4457] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[4458] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4459] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[4460] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Correction
[4461] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[4462] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion
[4463] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[4464] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[4465] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4466] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4467] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4468] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4469] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[4470] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[4471] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4472] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4473] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4474] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4475] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4476] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4477] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4478] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4479] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4480] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ

**Total supported: 33**

**Total unknown or missing: 443**

### 18.2.133 SMCameraReader

This page lists supported metadata fields for the Bio-Formats SM Camera format reader.

These fields are from the OME data model[4481]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats SM Camera format reader:**

- Channel : ID[4482]
- Channel : SamplesPerPixel[4483]
- Image : AcquisitionDate[4484]
- Image : ID[4485]
- Image : Name[4486]
- Pixels : BigEndian[4487]
- Pixels : DimensionOrder[4488]
- Pixels : ID[4489]
- Pixels : Interleaved[4490]
- Pixels : SignificantBits[4491]
- Pixels : SizeC[4492]
- Pixels : SizeT[4493]
- Pixels : SizeX[4494]
- Pixels : SizeY[4495]
- Pixels : SizeZ[4496]
- Pixels : Type[4497]
- Plane : TheC[4498]

---

[4481] http://www.openmicroscopy.org/site/support/ome-model/
[4482] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4483] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4484] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4485] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4486] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4487] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4488] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4489] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4490] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4491] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4492] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4493] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4494] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4495] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4496] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4497] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4498] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC

- Plane : TheT[4499]
- Plane : TheZ[4500]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.134 SPCReader

This page lists supported metadata fields for the Bio-Formats SPC FIFO Data format reader.

These fields are from the OME data model[4501]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats SPC FIFO Data format reader:**

- Channel : ID[4502]
- Channel : SamplesPerPixel[4503]
- Image : AcquisitionDate[4504]
- Image : ID[4505]
- Image : Name[4506]
- Pixels : BigEndian[4507]
- Pixels : DimensionOrder[4508]
- Pixels : ID[4509]
- Pixels : Interleaved[4510]
- Pixels : SignificantBits[4511]
- Pixels : SizeC[4512]
- Pixels : SizeT[4513]
- Pixels : SizeX[4514]
- Pixels : SizeY[4515]
- Pixels : SizeZ[4516]

---

[4499] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT

[4500] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ

[4501] http://www.openmicroscopy.org/site/support/ome-model/

[4502] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID

[4503] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel

[4504] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate

[4505] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID

[4506] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name

[4507] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian

[4508] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder

[4509] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID

[4510] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved

[4511] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits

[4512] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC

[4513] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT

[4514] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX

[4515] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY

[4516] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ

- Pixels : Type[4517]
- Plane : TheC[4518]
- Plane : TheT[4519]
- Plane : TheZ[4520]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.135 SPEReader

This page lists supported metadata fields for the Bio-Formats Princeton Instruments SPE format reader.

These fields are from the OME data model[4521]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 30 of them (6%).
- Of those, Bio-Formats fully or partially converts 30 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Princeton Instruments SPE format reader:**

- Channel : ID[4522]
- Channel : SamplesPerPixel[4523]
- Image : AcquisitionDate[4524]
- Image : ID[4525]
- Image : Name[4526]
- Image : ROIRef[4527]
- Label : ID[4528]
- Label : Text[4529]
- Label : X[4530]
- Label : Y[4531]
- Pixels : BigEndian[4532]
- Pixels : DimensionOrder[4533]
- Pixels : ID[4534]

---

[4517] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4518] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4519] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4520] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4521] http://www.openmicroscopy.org/site/support/ome-model/
[4522] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4523] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4524] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4525] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4526] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4527] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROIRef_ID
[4528] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[4529] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Text
[4530] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Label_X
[4531] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Label_Y
[4532] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4533] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4534] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID

- Pixels : Interleaved[4535]
- Pixels : SignificantBits[4536]
- Pixels : SizeC[4537]
- Pixels : SizeT[4538]
- Pixels : SizeX[4539]
- Pixels : SizeY[4540]
- Pixels : SizeZ[4541]
- Pixels : Type[4542]
- Plane : TheC[4543]
- Plane : TheT[4544]
- Plane : TheZ[4545]
- ROI : ID[4546]
- Rectangle : Height[4547]
- Rectangle : ID[4548]
- Rectangle : Width[4549]
- Rectangle : X[4550]
- Rectangle : Y[4551]

**Total supported: 30**

**Total unknown or missing: 446**

### 18.2.136 SVSReader

This page lists supported metadata fields for the Bio-Formats Aperio SVS format reader.

These fields are from the OME data model[4552]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 29 of them (6%).
- Of those, Bio-Formats fully or partially converts 29 (100%).

---

[4535] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4536] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4537] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4538] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4539] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4540] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4541] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4542] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4543] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4544] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4545] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4546] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROI_ID
[4547] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Height
[4548] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[4549] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Width
[4550] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_X
[4551] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Y
[4552] http://www.openmicroscopy.org/site/support/ome-model/

### Supported fields

**These fields are fully supported by the Bio-Formats Aperio SVS format reader:**

- Channel : EmissionWavelength[4553]
- Channel : ExcitationWavelength[4554]
- Channel : ID[4555]
- Channel : SamplesPerPixel[4556]
- Image : AcquisitionDate[4557]
- Image : Description[4558]
- Image : ID[4559]
- Image : InstrumentRef[4560]
- Image : Name[4561]
- Instrument : ID[4562]
- Objective : ID[4563]
- Objective : NominalMagnification[4564]
- ObjectiveSettings : ID[4565]
- Pixels : BigEndian[4566]
- Pixels : DimensionOrder[4567]
- Pixels : ID[4568]
- Pixels : Interleaved[4569]
- Pixels : PhysicalSizeX[4570]
- Pixels : PhysicalSizeY[4571]
- Pixels : SignificantBits[4572]
- Pixels : SizeC[4573]
- Pixels : SizeT[4574]
- Pixels : SizeX[4575]
- Pixels : SizeY[4576]

---

[4553] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_EmissionWavelength
[4554] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ExcitationWavelength
[4555] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4556] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4557] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4558] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[4559] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4560] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[4561] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4562] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[4563] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[4564] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[4565] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[4566] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4567] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4568] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4569] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4570] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[4571] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[4572] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4573] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4574] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4575] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4576] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY

- Pixels : SizeZ[4577]
- Pixels : Type[4578]
- Plane : TheC[4579]
- Plane : TheT[4580]
- Plane : TheZ[4581]

**Total supported: 29**

**Total unknown or missing: 447**

### 18.2.137 ScanrReader

This page lists supported metadata fields for the Bio-Formats Olympus ScanR format reader.

These fields are from the OME data model[4582]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 43 of them (9%).
- Of those, Bio-Formats fully or partially converts 43 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Olympus ScanR format reader:**

- Channel : ID[4583]
- Channel : Name[4584]
- Channel : SamplesPerPixel[4585]
- Image : AcquisitionDate[4586]
- Image : ID[4587]
- Image : Name[4588]
- Pixels : BigEndian[4589]
- Pixels : DimensionOrder[4590]
- Pixels : ID[4591]
- Pixels : Interleaved[4592]
- Pixels : PhysicalSizeX[4593]
- Pixels : PhysicalSizeY[4594]

---

[4577] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4578] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4579] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4580] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4581] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4582] http://www.openmicroscopy.org/site/support/ome-model/
[4583] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4584] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[4585] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4586] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4587] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4588] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4589] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4590] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4591] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4592] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4593] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[4594] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY

- Pixels : SignificantBits[4595]
- Pixels : SizeC[4596]
- Pixels : SizeT[4597]
- Pixels : SizeX[4598]
- Pixels : SizeY[4599]
- Pixels : SizeZ[4600]
- Pixels : Type[4601]
- Plane : DeltaT[4602]
- Plane : ExposureTime[4603]
- Plane : PositionX[4604]
- Plane : PositionY[4605]
- Plane : TheC[4606]
- Plane : TheT[4607]
- Plane : TheZ[4608]
- Plate : ColumnNamingConvention[4609]
- Plate : Columns[4610]
- Plate : ID[4611]
- Plate : Name[4612]
- Plate : RowNamingConvention[4613]
- Plate : Rows[4614]
- PlateAcquisition : ID[4615]
- PlateAcquisition : MaximumFieldCount[4616]
- PlateAcquisition : WellSampleRef[4617]
- Well : Column[4618]
- Well : ID[4619]
- Well : Row[4620]

---

[4595] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4596] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4597] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4598] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4599] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4600] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4601] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4602] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_DeltaT
[4603] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[4604] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[4605] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[4606] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4607] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4608] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4609] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_ColumnNamingConvention
[4610] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_Columns
[4611] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_ID
[4612] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_Name
[4613] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_RowNamingConvention
[4614] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_Rows
[4615] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_ID
[4616] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#PlateAcquisition_MaximumFieldCount
[4617] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSampleRef_ID
[4618] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Column
[4619] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_ID
[4620] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Row

- WellSample : ID[4621]
- WellSample : ImageRef[4622]
- WellSample : Index[4623]
- WellSample : PositionX[4624]
- WellSample : PositionY[4625]

**Total supported: 43**

**Total unknown or missing: 433**

### 18.2.138 ScreenReader

This page lists supported metadata fields for the Bio-Formats Screen format reader.

These fields are from the OME data model[4626]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 34 of them (7%).
- Of those, Bio-Formats fully or partially converts 34 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Screen format reader:**

- Channel : ID[4627]
- Channel : SamplesPerPixel[4628]
- Image : AcquisitionDate[4629]
- Image : ID[4630]
- Image : Name[4631]
- Pixels : BigEndian[4632]
- Pixels : DimensionOrder[4633]
- Pixels : ID[4634]
- Pixels : Interleaved[4635]
- Pixels : SignificantBits[4636]
- Pixels : SizeC[4637]
- Pixels : SizeT[4638]

---

[4621] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_ID
[4622] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImageRef_ID
[4623] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_Index
[4624] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_PositionX
[4625] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_PositionY
[4626] http://www.openmicroscopy.org/site/support/ome-model/
[4627] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4628] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4629] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4630] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4631] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4632] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4633] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4634] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4635] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4636] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4637] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4638] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT

- Pixels : SizeX[4639]
- Pixels : SizeY[4640]
- Pixels : SizeZ[4641]
- Pixels : Type[4642]
- Plane : TheC[4643]
- Plane : TheT[4644]
- Plane : TheZ[4645]
- Plate : ColumnNamingConvention[4646]
- Plate : Columns[4647]
- Plate : ID[4648]
- Plate : Name[4649]
- Plate : RowNamingConvention[4650]
- Plate : Rows[4651]
- Screen : ID[4652]
- Screen : Name[4653]
- Screen : PlateRef[4654]
- Well : Column[4655]
- Well : ID[4656]
- Well : Row[4657]
- WellSample : ID[4658]
- WellSample : ImageRef[4659]
- WellSample : Index[4660]

**Total supported: 34**

**Total unknown or missing: 442**

### 18.2.139 SeikoReader

This page lists supported metadata fields for the Bio-Formats Seiko format reader.

---

[4639] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4640] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4641] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4642] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4643] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4644] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4645] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4646] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_ColumnNamingConvention
[4647] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_Columns
[4648] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_ID
[4649] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_Name
[4650] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_RowNamingConvention
[4651] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plate_Rows
[4652] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Screen_ID
[4653] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Screen_Name
[4654] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Screen_Screen_PlateRef_ID
[4655] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Column
[4656] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_ID
[4657] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Well_Row
[4658] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_ID
[4659] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImageRef_ID
[4660] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#WellSample_Index

These fields are from the OME data model[4661]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 22 of them (4%).
- Of those, Bio-Formats fully or partially converts 22 (100%).

## Supported fields

**These fields are fully supported by the Bio-Formats Seiko format reader:**

- Channel : ID[4662]
- Channel : SamplesPerPixel[4663]
- Image : AcquisitionDate[4664]
- Image : Description[4665]
- Image : ID[4666]
- Image : Name[4667]
- Pixels : BigEndian[4668]
- Pixels : DimensionOrder[4669]
- Pixels : ID[4670]
- Pixels : Interleaved[4671]
- Pixels : PhysicalSizeX[4672]
- Pixels : PhysicalSizeY[4673]
- Pixels : SignificantBits[4674]
- Pixels : SizeC[4675]
- Pixels : SizeT[4676]
- Pixels : SizeX[4677]
- Pixels : SizeY[4678]
- Pixels : SizeZ[4679]
- Pixels : Type[4680]
- Plane : TheC[4681]

---

[4661] http://www.openmicroscopy.org/site/support/ome-model/
[4662] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4663] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4664] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4665] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[4666] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4667] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4668] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4669] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4670] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4671] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4672] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[4673] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[4674] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4675] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4676] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4677] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4678] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4679] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4680] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4681] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC

- Plane : TheT[4682]
- Plane : TheZ[4683]

**Total supported: 22**

**Total unknown or missing: 454**

### 18.2.140 SimplePCITiffReader

This page lists supported metadata fields for the Bio-Formats SimplePCI TIFF format reader.

These fields are from the OME data model[4684]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 33 of them (6%).
- Of those, Bio-Formats fully or partially converts 33 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats SimplePCI TIFF format reader:**

- Channel : ID[4685]
- Channel : SamplesPerPixel[4686]
- Detector : ID[4687]
- Detector : Model[4688]
- Detector : Type[4689]
- DetectorSettings : Binning[4690]
- DetectorSettings : ID[4691]
- Image : AcquisitionDate[4692]
- Image : Description[4693]
- Image : ID[4694]
- Image : InstrumentRef[4695]
- Image : Name[4696]
- Instrument : ID[4697]
- Objective : ID[4698]
- Objective : Immersion[4699]

---

[4682] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4683] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4684] http://www.openmicroscopy.org/site/support/ome-model/
[4685] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4686] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4687] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[4688] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[4689] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type
[4690] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Binning
[4691] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[4692] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4693] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[4694] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4695] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[4696] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4697] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[4698] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[4699] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion

- Objective : NominalMagnification[4700]
- Pixels : BigEndian[4701]
- Pixels : DimensionOrder[4702]
- Pixels : ID[4703]
- Pixels : Interleaved[4704]
- Pixels : PhysicalSizeX[4705]
- Pixels : PhysicalSizeY[4706]
- Pixels : SignificantBits[4707]
- Pixels : SizeC[4708]
- Pixels : SizeT[4709]
- Pixels : SizeX[4710]
- Pixels : SizeY[4711]
- Pixels : SizeZ[4712]
- Pixels : Type[4713]
- Plane : ExposureTime[4714]
- Plane : TheC[4715]
- Plane : TheT[4716]
- Plane : TheZ[4717]

**Total supported: 33**

**Total unknown or missing: 443**

### 18.2.141 SlidebookReader

This page lists supported metadata fields for the Bio-Formats Olympus Slidebook format reader.

These fields are from the OME data model[4718]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 34 of them (7%).
- Of those, Bio-Formats fully or partially converts 34 (100%).

---

[4700] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[4701] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4702] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4703] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4704] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4705] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[4706] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[4707] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4708] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4709] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4710] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4711] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4712] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4713] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4714] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[4715] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4716] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4717] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4718] http://www.openmicroscopy.org/site/support/ome-model/

### Supported fields

**These fields are fully supported by the Bio-Formats Olympus Slidebook format reader:**

- Channel : ID[4719]
- Channel : NDFilter[4720]
- Channel : Name[4721]
- Channel : SamplesPerPixel[4722]
- Image : AcquisitionDate[4723]
- Image : Description[4724]
- Image : ID[4725]
- Image : InstrumentRef[4726]
- Image : Name[4727]
- Instrument : ID[4728]
- Objective : Correction[4729]
- Objective : ID[4730]
- Objective : Immersion[4731]
- Objective : Model[4732]
- Objective : NominalMagnification[4733]
- ObjectiveSettings : ID[4734]
- Pixels : BigEndian[4735]
- Pixels : DimensionOrder[4736]
- Pixels : ID[4737]
- Pixels : Interleaved[4738]
- Pixels : PhysicalSizeX[4739]
- Pixels : PhysicalSizeY[4740]
- Pixels : PhysicalSizeZ[4741]
- Pixels : SignificantBits[4742]

---

[4719] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4720] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_NDFilter
[4721] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[4722] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4723] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4724] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[4725] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4726] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[4727] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4728] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[4729] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Correction
[4730] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[4731] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion
[4732] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[4733] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[4734] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[4735] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4736] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4737] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4738] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4739] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[4740] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[4741] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[4742] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits

- Pixels : SizeC[4743]
- Pixels : SizeT[4744]
- Pixels : SizeX[4745]
- Pixels : SizeY[4746]
- Pixels : SizeZ[4747]
- Pixels : Type[4748]
- Plane : ExposureTime[4749]
- Plane : TheC[4750]
- Plane : TheT[4751]
- Plane : TheZ[4752]

**Total supported: 34**

**Total unknown or missing: 442**

### 18.2.142 SlidebookTiffReader

This page lists supported metadata fields for the Bio-Formats Slidebook TIFF format reader.

These fields are from the OME data model[4753]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 30 of them (6%).
- Of those, Bio-Formats fully or partially converts 30 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Slidebook TIFF format reader:**

- Channel : ID[4754]
- Channel : Name[4755]
- Channel : SamplesPerPixel[4756]
- Image : AcquisitionDate[4757]
- Image : ID[4758]
- Image : Name[4759]
- Instrument : ID[4760]

---

[4743] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4744] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4745] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4746] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4747] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4748] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4749] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[4750] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4751] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4752] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4753] http://www.openmicroscopy.org/site/support/ome-model/
[4754] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4755] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[4756] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4757] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4758] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4759] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4760] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID

- Objective : Correction[4761]
- Objective : ID[4762]
- Objective : Immersion[4763]
- Objective : NominalMagnification[4764]
- Pixels : BigEndian[4765]
- Pixels : DimensionOrder[4766]
- Pixels : ID[4767]
- Pixels : Interleaved[4768]
- Pixels : PhysicalSizeX[4769]
- Pixels : PhysicalSizeY[4770]
- Pixels : SignificantBits[4771]
- Pixels : SizeC[4772]
- Pixels : SizeT[4773]
- Pixels : SizeX[4774]
- Pixels : SizeY[4775]
- Pixels : SizeZ[4776]
- Pixels : Type[4777]
- Plane : PositionX[4778]
- Plane : PositionY[4779]
- Plane : PositionZ[4780]
- Plane : TheC[4781]
- Plane : TheT[4782]
- Plane : TheZ[4783]

**Total supported: 30**

**Total unknown or missing: 446**

---

[4761] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Correction
[4762] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[4763] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion
[4764] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[4765] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4766] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4767] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4768] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4769] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[4770] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[4771] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4772] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4773] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4774] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4775] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4776] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4777] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4778] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[4779] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[4780] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionZ
[4781] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4782] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4783] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ

### 18.2.143 SpiderReader

This page lists supported metadata fields for the Bio-Formats SPIDER format reader.

These fields are from the OME data model[4784]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 21 of them (4%).
- Of those, Bio-Formats fully or partially converts 21 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats SPIDER format reader:**

- Channel : ID[4785]
- Channel : SamplesPerPixel[4786]
- Image : AcquisitionDate[4787]
- Image : ID[4788]
- Image : Name[4789]
- Pixels : BigEndian[4790]
- Pixels : DimensionOrder[4791]
- Pixels : ID[4792]
- Pixels : Interleaved[4793]
- Pixels : PhysicalSizeX[4794]
- Pixels : PhysicalSizeY[4795]
- Pixels : SignificantBits[4796]
- Pixels : SizeC[4797]
- Pixels : SizeT[4798]
- Pixels : SizeX[4799]
- Pixels : SizeY[4800]
- Pixels : SizeZ[4801]
- Pixels : Type[4802]

---

[4784] http://www.openmicroscopy.org/site/support/ome-model/
[4785] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4786] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4787] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4788] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4789] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4790] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4791] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4792] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4793] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4794] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[4795] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[4796] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4797] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4798] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4799] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4800] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4801] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4802] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type

- Plane : TheC[4803]
- Plane : TheT[4804]
- Plane : TheZ[4805]

**Total supported: 21**

**Total unknown or missing: 455**

### 18.2.144 TCSReader

This page lists supported metadata fields for the Bio-Formats Leica TCS TIFF format reader.

These fields are from the OME data model[4806]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 22 of them (4%).
- Of those, Bio-Formats fully or partially converts 22 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Leica TCS TIFF format reader:**

- Channel : ID[4807]
- Channel : SamplesPerPixel[4808]
- Image : AcquisitionDate[4809]
- Image : ID[4810]
- Image : Name[4811]
- Pixels : BigEndian[4812]
- Pixels : DimensionOrder[4813]
- Pixels : ID[4814]
- Pixels : Interleaved[4815]
- Pixels : PhysicalSizeX[4816]
- Pixels : PhysicalSizeY[4817]
- Pixels : PhysicalSizeZ[4818]
- Pixels : SignificantBits[4819]
- Pixels : SizeC[4820]

---

[4803] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4804] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4805] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4806] http://www.openmicroscopy.org/site/support/ome-model/
[4807] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4808] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4809] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4810] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4811] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4812] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4813] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4814] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4815] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4816] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[4817] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[4818] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[4819] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4820] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC

- Pixels : SizeT[4821]
- Pixels : SizeX[4822]
- Pixels : SizeY[4823]
- Pixels : SizeZ[4824]
- Pixels : Type[4825]
- Plane : TheC[4826]
- Plane : TheT[4827]
- Plane : TheZ[4828]

**Total supported: 22**

**Total unknown or missing: 454**

### 18.2.145 TargaReader

This page lists supported metadata fields for the Bio-Formats Truevision Targa format reader.

These fields are from the OME data model[4829]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 20 of them (4%).
- Of those, Bio-Formats fully or partially converts 20 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Truevision Targa format reader:**

- Channel : ID[4830]
- Channel : SamplesPerPixel[4831]
- Image : AcquisitionDate[4832]
- Image : Description[4833]
- Image : ID[4834]
- Image : Name[4835]
- Pixels : BigEndian[4836]
- Pixels : DimensionOrder[4837]
- Pixels : ID[4838]

---

[4821] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4822] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4823] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4824] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4825] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4826] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4827] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4828] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4829] http://www.openmicroscopy.org/site/support/ome-model/
[4830] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4831] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4832] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4833] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[4834] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4835] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4836] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4837] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4838] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID

- Pixels : Interleaved[4839]
- Pixels : SignificantBits[4840]
- Pixels : SizeC[4841]
- Pixels : SizeT[4842]
- Pixels : SizeX[4843]
- Pixels : SizeY[4844]
- Pixels : SizeZ[4845]
- Pixels : Type[4846]
- Plane : TheC[4847]
- Plane : TheT[4848]
- Plane : TheZ[4849]

**Total supported: 20**

**Total unknown or missing: 456**

### 18.2.146 TextReader

This page lists supported metadata fields for the Bio-Formats Text format reader.

These fields are from the OME data model[4850]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Text format reader:**

- Channel : ID[4851]
- Channel : SamplesPerPixel[4852]
- Image : AcquisitionDate[4853]
- Image : ID[4854]
- Image : Name[4855]
- Pixels : BigEndian[4856]

---

[4839] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4840] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4841] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4842] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4843] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4844] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4845] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4846] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4847] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4848] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4849] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4850] http://www.openmicroscopy.org/site/support/ome-model/
[4851] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4852] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4853] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4854] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4855] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4856] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian

- Pixels : DimensionOrder[4857]
- Pixels : ID[4858]
- Pixels : Interleaved[4859]
- Pixels : SignificantBits[4860]
- Pixels : SizeC[4861]
- Pixels : SizeT[4862]
- Pixels : SizeX[4863]
- Pixels : SizeY[4864]
- Pixels : SizeZ[4865]
- Pixels : Type[4866]
- Plane : TheC[4867]
- Plane : TheT[4868]
- Plane : TheZ[4869]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.147 TiffDelegateReader

This page lists supported metadata fields for the Bio-Formats Tagged Image File Format format reader.

These fields are from the OME data model[4870]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Tagged Image File Format format reader:**

- Channel : ID[4871]
- Channel : SamplesPerPixel[4872]
- Image : AcquisitionDate[4873]
- Image : ID[4874]

---

[4857] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4858] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4859] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4860] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4861] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4862] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4863] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4864] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4865] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4866] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4867] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4868] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4869] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4870] http://www.openmicroscopy.org/site/support/ome-model/
[4871] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4872] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4873] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4874] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID

- Image : Name[4875]
- Pixels : BigEndian[4876]
- Pixels : DimensionOrder[4877]
- Pixels : ID[4878]
- Pixels : Interleaved[4879]
- Pixels : SignificantBits[4880]
- Pixels : SizeC[4881]
- Pixels : SizeT[4882]
- Pixels : SizeX[4883]
- Pixels : SizeY[4884]
- Pixels : SizeZ[4885]
- Pixels : Type[4886]
- Plane : TheC[4887]
- Plane : TheT[4888]
- Plane : TheZ[4889]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.148 TiffJAIReader

This page lists supported metadata fields for the Bio-Formats Tagged Image File Format format reader.

These fields are from the OME data model[4890]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Tagged Image File Format format reader:**

- Channel : ID[4891]
- Channel : SamplesPerPixel[4892]

---

[4875] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4876] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4877] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4878] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4879] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4880] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4881] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4882] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4883] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4884] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4885] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4886] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4887] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4888] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4889] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4890] http://www.openmicroscopy.org/site/support/ome-model/
[4891] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4892] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel

- Image : AcquisitionDate[4893]
- Image : ID[4894]
- Image : Name[4895]
- Pixels : BigEndian[4896]
- Pixels : DimensionOrder[4897]
- Pixels : ID[4898]
- Pixels : Interleaved[4899]
- Pixels : SignificantBits[4900]
- Pixels : SizeC[4901]
- Pixels : SizeT[4902]
- Pixels : SizeX[4903]
- Pixels : SizeY[4904]
- Pixels : SizeZ[4905]
- Pixels : Type[4906]
- Plane : TheC[4907]
- Plane : TheT[4908]
- Plane : TheZ[4909]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.149 TiffReader

This page lists supported metadata fields for the Bio-Formats Tagged Image File Format format reader.

These fields are from the OME data model[4910]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 22 of them (4%).
- Of those, Bio-Formats fully or partially converts 22 (100%).

---

[4893] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4894] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4895] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4896] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4897] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4898] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4899] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4900] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4901] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4902] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4903] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4904] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4905] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4906] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4907] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4908] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4909] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4910] http://www.openmicroscopy.org/site/support/ome-model/

### Supported fields

**These fields are fully supported by the Bio-Formats Tagged Image File Format format reader:**

- Channel : ID[4911]
- Channel : SamplesPerPixel[4912]
- Image : AcquisitionDate[4913]
- Image : Description[4914]
- Image : ID[4915]
- Image : Name[4916]
- Pixels : BigEndian[4917]
- Pixels : DimensionOrder[4918]
- Pixels : ID[4919]
- Pixels : Interleaved[4920]
- Pixels : PhysicalSizeZ[4921]
- Pixels : SignificantBits[4922]
- Pixels : SizeC[4923]
- Pixels : SizeT[4924]
- Pixels : SizeX[4925]
- Pixels : SizeY[4926]
- Pixels : SizeZ[4927]
- Pixels : TimeIncrement[4928]
- Pixels : Type[4929]
- Plane : TheC[4930]
- Plane : TheT[4931]
- Plane : TheZ[4932]

**Total supported: 22**

**Total unknown or missing: 454**

---

[4911] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4912] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4913] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4914] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[4915] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4916] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4917] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4918] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4919] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4920] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4921] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[4922] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4923] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4924] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4925] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4926] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4927] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4928] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_TimeIncrement
[4929] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4930] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4931] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4932] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ

### 18.2.150 TileJPEGReader

This page lists supported metadata fields for the Bio-Formats Tile JPEG format reader.

These fields are from the OME data model[4933]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Tile JPEG format reader:**

- Channel : ID[4934]
- Channel : SamplesPerPixel[4935]
- Image : AcquisitionDate[4936]
- Image : ID[4937]
- Image : Name[4938]
- Pixels : BigEndian[4939]
- Pixels : DimensionOrder[4940]
- Pixels : ID[4941]
- Pixels : Interleaved[4942]
- Pixels : SignificantBits[4943]
- Pixels : SizeC[4944]
- Pixels : SizeT[4945]
- Pixels : SizeX[4946]
- Pixels : SizeY[4947]
- Pixels : SizeZ[4948]
- Pixels : Type[4949]
- Plane : TheC[4950]
- Plane : TheT[4951]

---

[4933] http://www.openmicroscopy.org/site/support/ome-model/
[4934] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4935] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4936] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4937] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4938] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4939] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4940] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4941] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4942] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4943] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4944] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4945] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4946] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4947] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4948] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4949] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4950] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4951] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT

- Plane : TheZ[4952]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.151 TillVisionReader

This page lists supported metadata fields for the Bio-Formats TillVision format reader.

These fields are from the OME data model[4953]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 22 of them (4%).
- Of those, Bio-Formats fully or partially converts 22 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats TillVision format reader:**

- Channel : ID[4954]
- Channel : SamplesPerPixel[4955]
- Experiment : ID[4956]
- Experiment : Type[4957]
- Image : AcquisitionDate[4958]
- Image : ID[4959]
- Image : Name[4960]
- Pixels : BigEndian[4961]
- Pixels : DimensionOrder[4962]
- Pixels : ID[4963]
- Pixels : Interleaved[4964]
- Pixels : SignificantBits[4965]
- Pixels : SizeC[4966]
- Pixels : SizeT[4967]
- Pixels : SizeX[4968]
- Pixels : SizeY[4969]

---

[4952] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4953] http://www.openmicroscopy.org/site/support/ome-model/
[4954] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4955] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4956] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experiment_ID
[4957] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experiment_Type
[4958] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4959] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4960] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4961] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4962] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4963] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4964] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4965] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4966] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4967] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4968] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4969] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY

- Pixels : SizeZ[4970]
- Pixels : Type[4971]
- Plane : ExposureTime[4972]
- Plane : TheC[4973]
- Plane : TheT[4974]
- Plane : TheZ[4975]

**Total supported: 22**

**Total unknown or missing: 454**

## 18.2.152 TopometrixReader

This page lists supported metadata fields for the Bio-Formats TopoMetrix format reader.

These fields are from the OME data model[4976]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 22 of them (4%).
- Of those, Bio-Formats fully or partially converts 22 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats TopoMetrix format reader:**

- Channel : ID[4977]
- Channel : SamplesPerPixel[4978]
- Image : AcquisitionDate[4979]
- Image : Description[4980]
- Image : ID[4981]
- Image : Name[4982]
- Pixels : BigEndian[4983]
- Pixels : DimensionOrder[4984]
- Pixels : ID[4985]
- Pixels : Interleaved[4986]
- Pixels : PhysicalSizeX[4987]

---

[4970] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4971] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4972] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[4973] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4974] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4975] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4976] http://www.openmicroscopy.org/site/support/ome-model/
[4977] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[4978] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[4979] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[4980] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[4981] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[4982] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[4983] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[4984] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[4985] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[4986] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[4987] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX

- Pixels : PhysicalSizeY[4988]
- Pixels : SignificantBits[4989]
- Pixels : SizeC[4990]
- Pixels : SizeT[4991]
- Pixels : SizeX[4992]
- Pixels : SizeY[4993]
- Pixels : SizeZ[4994]
- Pixels : Type[4995]
- Plane : TheC[4996]
- Plane : TheT[4997]
- Plane : TheZ[4998]

**Total supported: 22**

**Total unknown or missing: 454**

### 18.2.153 TrestleReader

This page lists supported metadata fields for the Bio-Formats Trestle format reader.

These fields are from the OME data model[4999]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 27 of them (5%).
- Of those, Bio-Formats fully or partially converts 27 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Trestle format reader:**

- Channel : ID[5000]
- Channel : SamplesPerPixel[5001]
- Image : AcquisitionDate[5002]
- Image : ID[5003]
- Image : Name[5004]
- Image : ROIRef[5005]

---

[4988] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[4989] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[4990] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[4991] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[4992] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[4993] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[4994] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[4995] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[4996] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[4997] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[4998] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[4999] http://www.openmicroscopy.org/site/support/ome-model/
[5000] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[5001] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[5002] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[5003] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[5004] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[5005] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROIRef_ID

- Mask : BinData[5006]
- Mask : Height[5007]
- Mask : ID[5008]
- Mask : Width[5009]
- Mask : X[5010]
- Mask : Y[5011]
- Pixels : BigEndian[5012]
- Pixels : DimensionOrder[5013]
- Pixels : ID[5014]
- Pixels : Interleaved[5015]
- Pixels : SignificantBits[5016]
- Pixels : SizeC[5017]
- Pixels : SizeT[5018]
- Pixels : SizeX[5019]
- Pixels : SizeY[5020]
- Pixels : SizeZ[5021]
- Pixels : Type[5022]
- Plane : TheC[5023]
- Plane : TheT[5024]
- Plane : TheZ[5025]
- ROI : ID[5026]

**Total supported: 27**

**Total unknown or missing: 449**

### 18.2.154 UBMReader

This page lists supported metadata fields for the Bio-Formats UBM format reader.

These fields are from the OME data model[5027]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

---

[5006] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#BinData
[5007] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Mask_Height
[5008] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[5009] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Mask_Width
[5010] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Mask_X
[5011] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Mask_Y
[5012] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[5013] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[5014] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[5015] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[5016] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[5017] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[5018] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[5019] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[5020] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[5021] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[5022] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[5023] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[5024] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[5025] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[5026] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROI_ID
[5027] http://www.openmicroscopy.org/site/support/ome-model/

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats UBM format reader:**

- Channel : ID[5028]
- Channel : SamplesPerPixel[5029]
- Image : AcquisitionDate[5030]
- Image : ID[5031]
- Image : Name[5032]
- Pixels : BigEndian[5033]
- Pixels : DimensionOrder[5034]
- Pixels : ID[5035]
- Pixels : Interleaved[5036]
- Pixels : SignificantBits[5037]
- Pixels : SizeC[5038]
- Pixels : SizeT[5039]
- Pixels : SizeX[5040]
- Pixels : SizeY[5041]
- Pixels : SizeZ[5042]
- Pixels : Type[5043]
- Plane : TheC[5044]
- Plane : TheT[5045]
- Plane : TheZ[5046]

**Total supported: 19**

**Total unknown or missing: 457**

---

[5028] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[5029] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[5030] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[5031] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[5032] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[5033] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[5034] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[5035] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[5036] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[5037] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[5038] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[5039] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[5040] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[5041] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[5042] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[5043] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[5044] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[5045] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[5046] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ

### 18.2.155 UnisokuReader

This page lists supported metadata fields for the Bio-Formats Unisoku STM format reader.

These fields are from the OME data model[5047]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 22 of them (4%).
- Of those, Bio-Formats fully or partially converts 22 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Unisoku STM format reader:**

- Channel : ID[5048]
- Channel : SamplesPerPixel[5049]
- Image : AcquisitionDate[5050]
- Image : Description[5051]
- Image : ID[5052]
- Image : Name[5053]
- Pixels : BigEndian[5054]
- Pixels : DimensionOrder[5055]
- Pixels : ID[5056]
- Pixels : Interleaved[5057]
- Pixels : PhysicalSizeX[5058]
- Pixels : PhysicalSizeY[5059]
- Pixels : SignificantBits[5060]
- Pixels : SizeC[5061]
- Pixels : SizeT[5062]
- Pixels : SizeX[5063]
- Pixels : SizeY[5064]
- Pixels : SizeZ[5065]
- Pixels : Type[5066]

---

[5047] http://www.openmicroscopy.org/site/support/ome-model/
[5048] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[5049] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[5050] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[5051] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[5052] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[5053] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[5054] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[5055] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[5056] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[5057] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[5058] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[5059] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[5060] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[5061] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[5062] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[5063] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[5064] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[5065] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[5066] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type

- Plane : TheC[5067]
- Plane : TheT[5068]
- Plane : TheZ[5069]

**Total supported: 22**

**Total unknown or missing: 454**

### 18.2.156 VGSAMReader

This page lists supported metadata fields for the Bio-Formats VG SAM format reader.

These fields are from the OME data model[5070]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats VG SAM format reader:**

- Channel : ID[5071]
- Channel : SamplesPerPixel[5072]
- Image : AcquisitionDate[5073]
- Image : ID[5074]
- Image : Name[5075]
- Pixels : BigEndian[5076]
- Pixels : DimensionOrder[5077]
- Pixels : ID[5078]
- Pixels : Interleaved[5079]
- Pixels : SignificantBits[5080]
- Pixels : SizeC[5081]
- Pixels : SizeT[5082]
- Pixels : SizeX[5083]
- Pixels : SizeY[5084]

---

[5067] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[5068] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[5069] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[5070] http://www.openmicroscopy.org/site/support/ome-model/
[5071] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[5072] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[5073] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[5074] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[5075] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[5076] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[5077] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[5078] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[5079] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[5080] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[5081] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[5082] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[5083] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[5084] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY

- Pixels : SizeZ[5085]
- Pixels : Type[5086]
- Plane : TheC[5087]
- Plane : TheT[5088]
- Plane : TheZ[5089]

**Total supported: 19**

**Total unknown or missing: 457**

## 18.2.157 VarianFDFReader

This page lists supported metadata fields for the Bio-Formats Varian FDF format reader.

These fields are from the OME data model[5090]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 25 of them (5%).
- Of those, Bio-Formats fully or partially converts 25 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats Varian FDF format reader:**

- Channel : ID[5091]
- Channel : SamplesPerPixel[5092]
- Image : AcquisitionDate[5093]
- Image : ID[5094]
- Image : Name[5095]
- Pixels : BigEndian[5096]
- Pixels : DimensionOrder[5097]
- Pixels : ID[5098]
- Pixels : Interleaved[5099]
- Pixels : PhysicalSizeX[5100]
- Pixels : PhysicalSizeY[5101]
- Pixels : PhysicalSizeZ[5102]

---

[5085] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[5086] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[5087] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[5088] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[5089] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[5090] http://www.openmicroscopy.org/site/support/ome-model/
[5091] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[5092] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[5093] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[5094] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[5095] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[5096] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[5097] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[5098] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[5099] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[5100] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[5101] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[5102] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ

- Pixels : SignificantBits[5103]
- Pixels : SizeC[5104]
- Pixels : SizeT[5105]
- Pixels : SizeX[5106]
- Pixels : SizeY[5107]
- Pixels : SizeZ[5108]
- Pixels : Type[5109]
- Plane : PositionX[5110]
- Plane : PositionY[5111]
- Plane : PositionZ[5112]
- Plane : TheC[5113]
- Plane : TheT[5114]
- Plane : TheZ[5115]

**Total supported: 25**

**Total unknown or missing: 451**

### 18.2.158 VeecoReader

This page lists supported metadata fields for the Bio-Formats Veeco format reader.

These fields are from the OME data model[5116]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Veeco format reader:**

- Channel : ID[5117]
- Channel : SamplesPerPixel[5118]
- Image : AcquisitionDate[5119]
- Image : ID[5120]

---

[5103] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[5104] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[5105] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[5106] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[5107] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[5108] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[5109] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[5110] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[5111] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[5112] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionZ
[5113] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[5114] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[5115] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[5116] http://www.openmicroscopy.org/site/support/ome-model/
[5117] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[5118] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[5119] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[5120] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID

- Image : Name[5121]
- Pixels : BigEndian[5122]
- Pixels : DimensionOrder[5123]
- Pixels : ID[5124]
- Pixels : Interleaved[5125]
- Pixels : SignificantBits[5126]
- Pixels : SizeC[5127]
- Pixels : SizeT[5128]
- Pixels : SizeX[5129]
- Pixels : SizeY[5130]
- Pixels : SizeZ[5131]
- Pixels : Type[5132]
- Plane : TheC[5133]
- Plane : TheT[5134]
- Plane : TheZ[5135]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.159 VisitechReader

This page lists supported metadata fields for the Bio-Formats Visitech XYS format reader.

These fields are from the OME data model[5136]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Visitech XYS format reader:**

- Channel : ID[5137]
- Channel : SamplesPerPixel[5138]

---

[5121] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[5122] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[5123] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[5124] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[5125] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[5126] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[5127] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[5128] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[5129] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[5130] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[5131] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[5132] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[5133] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[5134] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[5135] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[5136] http://www.openmicroscopy.org/site/support/ome-model/
[5137] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[5138] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel

- Image : AcquisitionDate[5139]
- Image : ID[5140]
- Image : Name[5141]
- Pixels : BigEndian[5142]
- Pixels : DimensionOrder[5143]
- Pixels : ID[5144]
- Pixels : Interleaved[5145]
- Pixels : SignificantBits[5146]
- Pixels : SizeC[5147]
- Pixels : SizeT[5148]
- Pixels : SizeX[5149]
- Pixels : SizeY[5150]
- Pixels : SizeZ[5151]
- Pixels : Type[5152]
- Plane : TheC[5153]
- Plane : TheT[5154]
- Plane : TheZ[5155]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.160 VolocityClippingReader

This page lists supported metadata fields for the Bio-Formats Volocity Library Clipping format reader.

These fields are from the OME data model[5156]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

---

[5139] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[5140] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[5141] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[5142] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[5143] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[5144] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[5145] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[5146] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[5147] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[5148] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[5149] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[5150] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[5151] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[5152] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[5153] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[5154] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[5155] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[5156] http://www.openmicroscopy.org/site/support/ome-model/

### Supported fields

**These fields are fully supported by the Bio-Formats Volocity Library Clipping format reader:**

- Channel : ID[5157]
- Channel : SamplesPerPixel[5158]
- Image : AcquisitionDate[5159]
- Image : ID[5160]
- Image : Name[5161]
- Pixels : BigEndian[5162]
- Pixels : DimensionOrder[5163]
- Pixels : ID[5164]
- Pixels : Interleaved[5165]
- Pixels : SignificantBits[5166]
- Pixels : SizeC[5167]
- Pixels : SizeT[5168]
- Pixels : SizeX[5169]
- Pixels : SizeY[5170]
- Pixels : SizeZ[5171]
- Pixels : Type[5172]
- Plane : TheC[5173]
- Plane : TheT[5174]
- Plane : TheZ[5175]

**Total supported: 19**

**Total unknown or missing: 457**

## 18.2.161 VolocityReader

This page lists supported metadata fields for the Bio-Formats Volocity Library format reader.

These fields are from the OME data model[5176]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

---

[5157] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[5158] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[5159] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[5160] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[5161] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[5162] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[5163] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[5164] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[5165] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[5166] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[5167] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[5168] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[5169] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[5170] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[5171] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[5172] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[5173] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[5174] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[5175] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[5176] http://www.openmicroscopy.org/site/support/ome-model/

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 38 of them (7%).
- Of those, Bio-Formats fully or partially converts 38 (100%).

## Supported fields

**These fields are fully supported by the Bio-Formats Volocity Library format reader:**

- Channel : ID[5177]
- Channel : Name[5178]
- Channel : SamplesPerPixel[5179]
- Detector : ID[5180]
- Detector : Model[5181]
- DetectorSettings : ID[5182]
- Image : AcquisitionDate[5183]
- Image : Description[5184]
- Image : ID[5185]
- Image : InstrumentRef[5186]
- Image : Name[5187]
- Instrument : ID[5188]
- Objective : Correction[5189]
- Objective : ID[5190]
- Objective : Immersion[5191]
- Objective : NominalMagnification[5192]
- ObjectiveSettings : ID[5193]
- Pixels : BigEndian[5194]
- Pixels : DimensionOrder[5195]
- Pixels : ID[5196]
- Pixels : Interleaved[5197]
- Pixels : PhysicalSizeX[5198]

---

[5177] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[5178] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[5179] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[5180] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[5181] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[5182] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[5183] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[5184] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[5185] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[5186] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[5187] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[5188] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[5189] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Correction
[5190] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[5191] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion
[5192] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[5193] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[5194] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[5195] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[5196] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[5197] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[5198] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX

- Pixels : PhysicalSizeY[5199]
- Pixels : PhysicalSizeZ[5200]
- Pixels : SignificantBits[5201]
- Pixels : SizeC[5202]
- Pixels : SizeT[5203]
- Pixels : SizeX[5204]
- Pixels : SizeY[5205]
- Pixels : SizeZ[5206]
- Pixels : Type[5207]
- Plane : DeltaT[5208]
- Plane : PositionX[5209]
- Plane : PositionY[5210]
- Plane : PositionZ[5211]
- Plane : TheC[5212]
- Plane : TheT[5213]
- Plane : TheZ[5214]

**Total supported: 38**

**Total unknown or missing: 438**

## 18.2.162 WATOPReader

This page lists supported metadata fields for the Bio-Formats WA Technology TOP format reader.

These fields are from the OME data model[5215]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 22 of them (4%).
- Of those, Bio-Formats fully or partially converts 22 (100%).

### Supported fields

**These fields are fully supported by the Bio-Formats WA Technology TOP format reader:**

- Channel : ID[5216]

---

[5199] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[5200] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[5201] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[5202] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[5203] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[5204] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[5205] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[5206] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[5207] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[5208] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_DeltaT
[5209] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[5210] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[5211] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionZ
[5212] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[5213] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[5214] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[5215] http://www.openmicroscopy.org/site/support/ome-model/
[5216] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID

- Channel : SamplesPerPixel[5217]
- Image : AcquisitionDate[5218]
- Image : Description[5219]
- Image : ID[5220]
- Image : Name[5221]
- Pixels : BigEndian[5222]
- Pixels : DimensionOrder[5223]
- Pixels : ID[5224]
- Pixels : Interleaved[5225]
- Pixels : PhysicalSizeX[5226]
- Pixels : PhysicalSizeY[5227]
- Pixels : SignificantBits[5228]
- Pixels : SizeC[5229]
- Pixels : SizeT[5230]
- Pixels : SizeX[5231]
- Pixels : SizeY[5232]
- Pixels : SizeZ[5233]
- Pixels : Type[5234]
- Plane : TheC[5235]
- Plane : TheT[5236]
- Plane : TheZ[5237]

**Total supported: 22**

**Total unknown or missing: 454**

### 18.2.163 WlzReader

This page lists supported metadata fields for the Bio-Formats Woolz format reader.

These fields are from the OME data model[5238]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

---

[5217] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[5218] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[5219] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[5220] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[5221] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[5222] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[5223] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[5224] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[5225] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[5226] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[5227] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[5228] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[5229] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[5230] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[5231] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[5232] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[5233] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[5234] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[5235] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[5236] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[5237] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[5238] http://www.openmicroscopy.org/site/support/ome-model/

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 26 of them (5%).
- Of those, Bio-Formats fully or partially converts 26 (100%).

## Supported fields

**These fields are fully supported by the Bio-Formats Woolz format reader:**

- Channel : ID[5239]
- Channel : SamplesPerPixel[5240]
- Image : AcquisitionDate[5241]
- Image : ID[5242]
- Image : Name[5243]
- Pixels : BigEndian[5244]
- Pixels : DimensionOrder[5245]
- Pixels : ID[5246]
- Pixels : Interleaved[5247]
- Pixels : PhysicalSizeX[5248]
- Pixels : PhysicalSizeY[5249]
- Pixels : PhysicalSizeZ[5250]
- Pixels : SignificantBits[5251]
- Pixels : SizeC[5252]
- Pixels : SizeT[5253]
- Pixels : SizeX[5254]
- Pixels : SizeY[5255]
- Pixels : SizeZ[5256]
- Pixels : Type[5257]
- Plane : TheC[5258]
- Plane : TheT[5259]
- Plane : TheZ[5260]

---

[5239] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID

[5240] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel

[5241] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate

[5242] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID

[5243] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name

[5244] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian

[5245] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder

[5246] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID

[5247] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved

[5248] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX

[5249] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY

[5250] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ

[5251] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits

[5252] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC

[5253] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT

[5254] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX

[5255] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY

[5256] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ

[5257] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type

[5258] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC

[5259] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT

[5260] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ

- StageLabel : Name[5261]
- StageLabel : X[5262]
- StageLabel : Y[5263]
- StageLabel : Z[5264]

**Total supported: 26**

**Total unknown or missing: 450**

### 18.2.164 ZeissCZIReader

This page lists supported metadata fields for the Bio-Formats Zeiss CZI format reader.

These fields are from the OME data model[5265]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 158 of them (33%).
- Of those, Bio-Formats fully or partially converts 158 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Zeiss CZI format reader:**

- Arc : LotNumber[5266]
- Arc : Manufacturer[5267]
- Arc : Model[5268]
- Arc : Power[5269]
- Arc : SerialNumber[5270]
- Channel : AcquisitionMode[5271]
- Channel : Color[5272]
- Channel : EmissionWavelength[5273]
- Channel : ExcitationWavelength[5274]
- Channel : FilterSetRef[5275]
- Channel : Fluor[5276]
- Channel : ID[5277]
- Channel : IlluminationType[5278]

---

[5261] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#StageLabel_Name
[5262] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#StageLabel_X
[5263] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#StageLabel_Y
[5264] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#StageLabel_Z
[5265] http://www.openmicroscopy.org/site/support/ome-model/
[5266] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_LotNumber
[5267] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer
[5268] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[5269] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSource_Power
[5270] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber
[5271] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_AcquisitionMode
[5272] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Color
[5273] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_EmissionWavelength
[5274] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ExcitationWavelength
[5275] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#FilterSetRef_ID
[5276] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Fluor
[5277] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[5278] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_IlluminationType

- Channel : Name[5279]
- Channel : PinholeSize[5280]
- Channel : SamplesPerPixel[5281]
- Detector : AmplificationGain[5282]
- Detector : Gain[5283]
- Detector : ID[5284]
- Detector : LotNumber[5285]
- Detector : Manufacturer[5286]
- Detector : Model[5287]
- Detector : Offset[5288]
- Detector : SerialNumber[5289]
- Detector : Type[5290]
- Detector : Zoom[5291]
- DetectorSettings : Binning[5292]
- DetectorSettings : Gain[5293]
- DetectorSettings : ID[5294]
- Dichroic : ID[5295]
- Dichroic : LotNumber[5296]
- Dichroic : Manufacturer[5297]
- Dichroic : Model[5298]
- Dichroic : SerialNumber[5299]
- Ellipse : ID[5300]
- Ellipse : RadiusX[5301]
- Ellipse : RadiusY[5302]
- Ellipse : Text[5303]
- Ellipse : X[5304]

---

[5279] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name
[5280] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_PinholeSize
[5281] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[5282] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_AmplificationGain
[5283] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Gain
[5284] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID
[5285] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_LotNumber
[5286] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer
[5287] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[5288] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Offset
[5289] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber
[5290] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type
[5291] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Zoom
[5292] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Binning
[5293] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Gain
[5294] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID
[5295] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Dichroic_ID
[5296] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_LotNumber
[5297] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer
[5298] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[5299] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber
[5300] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[5301] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_RadiusX
[5302] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_RadiusY
[5303] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Text
[5304] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_X

- Ellipse : Y[5305]
- Experimenter : Email[5306]
- Experimenter : FirstName[5307]
- Experimenter : ID[5308]
- Experimenter : Institution[5309]
- Experimenter : LastName[5310]
- Experimenter : MiddleName[5311]
- Experimenter : UserName[5312]
- Filament : LotNumber[5313]
- Filament : Manufacturer[5314]
- Filament : Model[5315]
- Filament : Power[5316]
- Filament : SerialNumber[5317]
- Filter : FilterWheel[5318]
- Filter : ID[5319]
- Filter : LotNumber[5320]
- Filter : Manufacturer[5321]
- Filter : Model[5322]
- Filter : SerialNumber[5323]
- Filter : Type[5324]
- FilterSet : DichroicRef[5325]
- FilterSet : EmissionFilterRef[5326]
- FilterSet : ExcitationFilterRef[5327]
- FilterSet : ID[5328]
- FilterSet : LotNumber[5329]
- FilterSet : Manufacturer[5330]

---

[5305] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_Y
[5306] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_Email
[5307] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_FirstName
[5308] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_ID
[5309] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_Institution
[5310] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_LastName
[5311] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_MiddleName
[5312] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_UserName
[5313] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_LotNumber
[5314] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer
[5315] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[5316] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSource_Power
[5317] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber
[5318] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Filter_FilterWheel
[5319] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Filter_ID
[5320] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_LotNumber
[5321] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer
[5322] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[5323] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber
[5324] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Filter_Type
[5325] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DichroicRef_ID
[5326] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#FilterRef_ID
[5327] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#FilterRef_ID
[5328] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#FilterSet_ID
[5329] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_LotNumber
[5330] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer

- FilterSet : Model[5331]
- FilterSet : SerialNumber[5332]
- Image : AcquisitionDate[5333]
- Image : Description[5334]
- Image : ExperimenterRef[5335]
- Image : ID[5336]
- Image : InstrumentRef[5337]
- Image : Name[5338]
- Image : ROIRef[5339]
- ImagingEnvironment : AirPressure[5340]
- ImagingEnvironment : CO2Percent[5341]
- ImagingEnvironment : Humidity[5342]
- ImagingEnvironment : Temperature[5343]
- Instrument : ID[5344]
- Laser : LotNumber[5345]
- Laser : Manufacturer[5346]
- Laser : Model[5347]
- Laser : Power[5348]
- Laser : SerialNumber[5349]
- LightEmittingDiode : LotNumber[5350]
- LightEmittingDiode : Manufacturer[5351]
- LightEmittingDiode : Model[5352]
- LightEmittingDiode : Power[5353]
- LightEmittingDiode : SerialNumber[5354]
- Line : ID[5355]
- Line : Text[5356]

---

[5331] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[5332] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber
[5333] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[5334] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[5335] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ExperimenterRef_ID
[5336] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[5337] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[5338] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[5339] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROIRef_ID
[5340] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImagingEnvironment_AirPressure
[5341] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImagingEnvironment_CO2Percent
[5342] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImagingEnvironment_Humidity
[5343] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ImagingEnvironment_Temperature
[5344] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[5345] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_LotNumber
[5346] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer
[5347] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[5348] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSource_Power
[5349] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber
[5350] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_LotNumber
[5351] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer
[5352] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[5353] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSource_Power
[5354] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber
[5355] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[5356] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Text

- Line : X1[5357]
- Line : X2[5358]
- Line : Y1[5359]
- Line : Y2[5360]
- Microscope : LotNumber[5361]
- Microscope : Manufacturer[5362]
- Microscope : Model[5363]
- Microscope : SerialNumber[5364]
- Microscope : Type[5365]
- Objective : CalibratedMagnification[5366]
- Objective : Correction[5367]
- Objective : ID[5368]
- Objective : Immersion[5369]
- Objective : Iris[5370]
- Objective : LensNA[5371]
- Objective : LotNumber[5372]
- Objective : Manufacturer[5373]
- Objective : Model[5374]
- Objective : NominalMagnification[5375]
- Objective : SerialNumber[5376]
- Objective : WorkingDistance[5377]
- ObjectiveSettings : CorrectionCollar[5378]
- ObjectiveSettings : ID[5379]
- ObjectiveSettings : Medium[5380]
- ObjectiveSettings : RefractiveIndex[5381]
- Pixels : BigEndian[5382]

---

[5357] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_X1
[5358] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_X2
[5359] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_Y1
[5360] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_Y2
[5361] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_LotNumber
[5362] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer
[5363] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[5364] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber
[5365] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Microscope_Type
[5366] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_CalibratedMagnification
[5367] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Correction
[5368] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[5369] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion
[5370] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Iris
[5371] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_LensNA
[5372] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_LotNumber
[5373] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Manufacturer
[5374] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[5375] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[5376] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_SerialNumber
[5377] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_WorkingDistance
[5378] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_CorrectionCollar
[5379] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[5380] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_Medium
[5381] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_RefractiveIndex
[5382] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian

- Pixels : DimensionOrder[5383]
- Pixels : ID[5384]
- Pixels : Interleaved[5385]
- Pixels : PhysicalSizeX[5386]
- Pixels : PhysicalSizeY[5387]
- Pixels : PhysicalSizeZ[5388]
- Pixels : SignificantBits[5389]
- Pixels : SizeC[5390]
- Pixels : SizeT[5391]
- Pixels : SizeX[5392]
- Pixels : SizeY[5393]
- Pixels : SizeZ[5394]
- Pixels : Type[5395]
- Plane : DeltaT[5396]
- Plane : ExposureTime[5397]
- Plane : PositionX[5398]
- Plane : PositionY[5399]
- Plane : PositionZ[5400]
- Plane : TheC[5401]
- Plane : TheT[5402]
- Plane : TheZ[5403]
- Polygon : ID[5404]
- Polygon : Points[5405]
- Polygon : Text[5406]
- Polyline : ID[5407]
- Polyline : Points[5408]

---

[5383] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[5384] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[5385] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[5386] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[5387] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[5388] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[5389] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[5390] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[5391] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[5392] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[5393] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[5394] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[5395] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[5396] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_DeltaT
[5397] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_ExposureTime
[5398] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[5399] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[5400] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionZ
[5401] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[5402] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[5403] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[5404] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[5405] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Polygon_Points
[5406] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Text
[5407] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[5408] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Polyline_Points

- Polyline : Text[5409]
- ROI : Description[5410]
- ROI : ID[5411]
- ROI : Name[5412]
- Rectangle : Height[5413]
- Rectangle : ID[5414]
- Rectangle : Text[5415]
- Rectangle : Width[5416]
- Rectangle : X[5417]
- Rectangle : Y[5418]
- TransmittanceRange : CutIn[5419]
- TransmittanceRange : CutInTolerance[5420]
- TransmittanceRange : CutOut[5421]
- TransmittanceRange : CutOutTolerance[5422]
- TransmittanceRange : Transmittance[5423]

**Total supported: 158**

**Total unknown or missing: 318**

### 18.2.165 ZeissLMSReader

This page lists supported metadata fields for the Bio-Formats Zeiss LMS format reader.

These fields are from the OME data model[5424]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 23 of them (4%).
- Of those, Bio-Formats fully or partially converts 23 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Zeiss LMS format reader:**

- Channel : ID[5425]
- Channel : SamplesPerPixel[5426]

---

[5409] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Text
[5410] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROI_Description
[5411] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROI_ID
[5412] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROI_Name
[5413] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Height
[5414] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[5415] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Text
[5416] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Width
[5417] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_X
[5418] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Y
[5419] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TransmittanceRange_CutIn
[5420] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TransmittanceRange_CutInTolerance
[5421] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TransmittanceRange_CutOut
[5422] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TransmittanceRange_CutOutTolerance
[5423] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TransmittanceRange_Transmittance
[5424] http://www.openmicroscopy.org/site/support/ome-model/
[5425] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[5426] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel

- Image : AcquisitionDate[5427]
- Image : ID[5428]
- Image : Name[5429]
- Instrument : ID[5430]
- Objective : ID[5431]
- Objective : NominalMagnification[5432]
- ObjectiveSettings : ID[5433]
- Pixels : BigEndian[5434]
- Pixels : DimensionOrder[5435]
- Pixels : ID[5436]
- Pixels : Interleaved[5437]
- Pixels : SignificantBits[5438]
- Pixels : SizeC[5439]
- Pixels : SizeT[5440]
- Pixels : SizeX[5441]
- Pixels : SizeY[5442]
- Pixels : SizeZ[5443]
- Pixels : Type[5444]
- Plane : TheC[5445]
- Plane : TheT[5446]
- Plane : TheZ[5447]

**Total supported: 23**

**Total unknown or missing: 453**

### 18.2.166 ZeissLSMReader

This page lists supported metadata fields for the Bio-Formats Zeiss Laser-Scanning Microscopy format reader.

These fields are from the OME data model[5448]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

---

[5427] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[5428] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[5429] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[5430] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[5431] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[5432] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[5433] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[5434] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[5435] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[5436] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[5437] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[5438] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[5439] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[5440] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[5441] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[5442] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[5443] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[5444] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[5445] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[5446] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[5447] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[5448] http://www.openmicroscopy.org/site/support/ome-model/

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 101 of them (21%).
- Of those, Bio-Formats fully or partially converts 101 (100%).

## Supported fields

**These fields are fully supported by the Bio-Formats Zeiss Laser-Scanning Microscopy format reader:**

- Channel : Color[5449]
- Channel : ID[5450]
- Channel : Name[5451]
- Channel : PinholeSize[5452]
- Channel : SamplesPerPixel[5453]
- Detector : AmplificationGain[5454]
- Detector : Gain[5455]
- Detector : ID[5456]
- Detector : Type[5457]
- Detector : Zoom[5458]
- DetectorSettings : Binning[5459]
- DetectorSettings : ID[5460]
- Dichroic : ID[5461]
- Dichroic : Model[5462]
- Ellipse : FontSize[5463]
- Ellipse : ID[5464]
- Ellipse : RadiusX[5465]
- Ellipse : RadiusY[5466]
- Ellipse : StrokeWidth[5467]
- Ellipse : Transform[5468]
- Ellipse : X[5469]
- Ellipse : Y[5470]

---

[5449] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Color

[5450] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID

[5451] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_Name

[5452] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_PinholeSize

[5453] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel

[5454] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_AmplificationGain

[5455] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Gain

[5456] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_ID

[5457] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Type

[5458] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Detector_Zoom

[5459] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_Binning

[5460] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DetectorSettings_ID

[5461] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Dichroic_ID

[5462] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model

[5463] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontSize

[5464] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID

[5465] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_RadiusX

[5466] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_RadiusY

[5467] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeWidth

[5468] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Transform

[5469] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_X

[5470] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Ellipse_Y

- Experimenter : ID[5471]
- Experimenter : UserName[5472]
- Filter : ID[5473]
- Filter : Model[5474]
- Filter : Type[5475]
- Image : AcquisitionDate[5476]
- Image : Description[5477]
- Image : ID[5478]
- Image : InstrumentRef[5479]
- Image : Name[5480]
- Image : ROIRef[5481]
- Instrument : ID[5482]
- Label : FontSize[5483]
- Label : ID[5484]
- Label : StrokeWidth[5485]
- Label : Text[5486]
- Label : X[5487]
- Label : Y[5488]
- Laser : ID[5489]
- Laser : LaserMedium[5490]
- Laser : Model[5491]
- Laser : Type[5492]
- Laser : Wavelength[5493]
- LightPath : DichroicRef[5494]
- LightPath : EmissionFilterRef[5495]
- Line : FontSize[5496]

---

[5471] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_ID
[5472] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Experimenter_UserName
[5473] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Filter_ID
[5474] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[5475] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Filter_Type
[5476] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[5477] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Description
[5478] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[5479] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#InstrumentRef_ID
[5480] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[5481] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROIRef_ID
[5482] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Instrument_ID
[5483] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontSize
[5484] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[5485] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeWidth
[5486] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_Text
[5487] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Label_X
[5488] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Label_Y
[5489] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#LightSource_ID
[5490] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_LaserMedium
[5491] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ManufacturerSpec_Model
[5492] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_Type
[5493] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Laser_Wavelength
[5494] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#DichroicRef_ID
[5495] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#FilterRef_ID
[5496] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontSize

- Line : ID[5497]
- Line : StrokeWidth[5498]
- Line : X1[5499]
- Line : X2[5500]
- Line : Y1[5501]
- Line : Y2[5502]
- Objective : Correction[5503]
- Objective : ID[5504]
- Objective : Immersion[5505]
- Objective : Iris[5506]
- Objective : LensNA[5507]
- Objective : NominalMagnification[5508]
- ObjectiveSettings : ID[5509]
- Pixels : BigEndian[5510]
- Pixels : DimensionOrder[5511]
- Pixels : ID[5512]
- Pixels : Interleaved[5513]
- Pixels : PhysicalSizeX[5514]
- Pixels : PhysicalSizeY[5515]
- Pixels : PhysicalSizeZ[5516]
- Pixels : SignificantBits[5517]
- Pixels : SizeC[5518]
- Pixels : SizeT[5519]
- Pixels : SizeX[5520]
- Pixels : SizeY[5521]
- Pixels : SizeZ[5522]

---

[5497] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[5498] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeWidth
[5499] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_X1
[5500] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_X2
[5501] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_Y1
[5502] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Line_Y2
[5503] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Correction
[5504] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_ID
[5505] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Immersion
[5506] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_Iris
[5507] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_LensNA
[5508] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Objective_NominalMagnification
[5509] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ObjectiveSettings_ID
[5510] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[5511] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[5512] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[5513] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[5514] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeX
[5515] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeY
[5516] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_PhysicalSizeZ
[5517] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[5518] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[5519] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[5520] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[5521] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[5522] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ

- Pixels : TimeIncrement[5523]
- Pixels : Type[5524]
- Plane : DeltaT[5525]
- Plane : PositionX[5526]
- Plane : PositionY[5527]
- Plane : PositionZ[5528]
- Plane : TheC[5529]
- Plane : TheT[5530]
- Plane : TheZ[5531]
- Polygon : FontSize[5532]
- Polygon : ID[5533]
- Polygon : Points[5534]
- Polygon : StrokeWidth[5535]
- Polyline : FontSize[5536]
- Polyline : ID[5537]
- Polyline : Points[5538]
- Polyline : StrokeWidth[5539]
- ROI : ID[5540]
- Rectangle : FontSize[5541]
- Rectangle : Height[5542]
- Rectangle : ID[5543]
- Rectangle : StrokeWidth[5544]
- Rectangle : Width[5545]
- Rectangle : X[5546]
- Rectangle : Y[5547]
- TransmittanceRange : CutIn[5548]

---

[5523] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_TimeIncrement
[5524] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[5525] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_DeltaT
[5526] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionX
[5527] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionY
[5528] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_PositionZ
[5529] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[5530] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[5531] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[5532] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontSize
[5533] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[5534] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Polygon_Points
[5535] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeWidth
[5536] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontSize
[5537] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[5538] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Polyline_Points
[5539] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeWidth
[5540] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#ROI_ID
[5541] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_FontSize
[5542] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Height
[5543] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_ID
[5544] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Shape_StrokeWidth
[5545] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Width
[5546] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_X
[5547] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Rectangle_Y
[5548] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TransmittanceRange_CutIn

- TransmittanceRange : CutOut[5549]

**Total supported: 101**

**Total unknown or missing: 375**

### 18.2.167 ZeissTIFFReader

This page lists supported metadata fields for the Bio-Formats Zeiss AxioVision TIFF format reader.

These fields are from the OME data model[5550]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Zeiss AxioVision TIFF format reader:**

- Channel : ID[5551]
- Channel : SamplesPerPixel[5552]
- Image : AcquisitionDate[5553]
- Image : ID[5554]
- Image : Name[5555]
- Pixels : BigEndian[5556]
- Pixels : DimensionOrder[5557]
- Pixels : ID[5558]
- Pixels : Interleaved[5559]
- Pixels : SignificantBits[5560]
- Pixels : SizeC[5561]
- Pixels : SizeT[5562]
- Pixels : SizeX[5563]
- Pixels : SizeY[5564]
- Pixels : SizeZ[5565]
- Pixels : Type[5566]

---

[5549] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#TransmittanceRange_CutOut
[5550] http://www.openmicroscopy.org/site/support/ome-model/
[5551] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[5552] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[5553] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[5554] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[5555] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[5556] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[5557] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[5558] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[5559] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[5560] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[5561] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[5562] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[5563] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[5564] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[5565] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[5566] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type

- Plane : TheC[5567]
- Plane : TheT[5568]
- Plane : TheZ[5569]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.168 ZeissZVIReader

This page lists supported metadata fields for the Bio-Formats Zeiss Vision Image (ZVI) format reader.

These fields are from the OME data model[5570]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Zeiss Vision Image (ZVI) format reader:**

- Channel : ID[5571]
- Channel : SamplesPerPixel[5572]
- Image : AcquisitionDate[5573]
- Image : ID[5574]
- Image : Name[5575]
- Pixels : BigEndian[5576]
- Pixels : DimensionOrder[5577]
- Pixels : ID[5578]
- Pixels : Interleaved[5579]
- Pixels : SignificantBits[5580]
- Pixels : SizeC[5581]
- Pixels : SizeT[5582]
- Pixels : SizeX[5583]
- Pixels : SizeY[5584]

---

[5567] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[5568] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[5569] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[5570] http://www.openmicroscopy.org/site/support/ome-model/
[5571] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[5572] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[5573] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[5574] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[5575] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[5576] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[5577] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[5578] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[5579] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[5580] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[5581] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[5582] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT
[5583] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[5584] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY

- Pixels : SizeZ[5585]
- Pixels : Type[5586]
- Plane : TheC[5587]
- Plane : TheT[5588]
- Plane : TheZ[5589]

**Total supported: 19**

**Total unknown or missing: 457**

### 18.2.169 ZipReader

This page lists supported metadata fields for the Bio-Formats Zip format reader.

These fields are from the OME data model[5590]. Bio-Formats standardizes each format's original metadata to and from the OME data model so that you can work with a particular piece of metadata (e.g. physical width of the image in microns) in a format-independent way.

**Of the 476 fields documented in the *metadata summary table*:**

- The file format itself supports 19 of them (3%).
- Of those, Bio-Formats fully or partially converts 19 (100%).

#### Supported fields

**These fields are fully supported by the Bio-Formats Zip format reader:**

- Channel : ID[5591]
- Channel : SamplesPerPixel[5592]
- Image : AcquisitionDate[5593]
- Image : ID[5594]
- Image : Name[5595]
- Pixels : BigEndian[5596]
- Pixels : DimensionOrder[5597]
- Pixels : ID[5598]
- Pixels : Interleaved[5599]
- Pixels : SignificantBits[5600]
- Pixels : SizeC[5601]
- Pixels : SizeT[5602]

---

[5585] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[5586] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[5587] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[5588] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[5589] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ
[5590] http://www.openmicroscopy.org/site/support/ome-model/
[5591] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_ID
[5592] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Channel_SamplesPerPixel
[5593] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_AcquisitionDate
[5594] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_ID
[5595] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Image_Name
[5596] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_BigEndian
[5597] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_DimensionOrder
[5598] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_ID
[5599] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Interleaved
[5600] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SignificantBits
[5601] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeC
[5602] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeT

- Pixels : SizeX[5603]
- Pixels : SizeY[5604]
- Pixels : SizeZ[5605]
- Pixels : Type[5606]
- Plane : TheC[5607]
- Plane : TheT[5608]
- Plane : TheZ[5609]

**Total supported: 19**

**Total unknown or missing: 457**

---

[5603] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeX
[5604] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeY
[5605] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_SizeZ
[5606] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Pixels_Type
[5607] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheC
[5608] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheT
[5609] http://www.openmicroscopy.org/Schemas/Documentation/Generated/OME-2016-06/ome_xsd.html#Plane_TheZ

CHAPTER

NINETEEN

# GROUPING FILES USING A PATTERN FILE

Individual files can be grouped together into a single fileset using a pattern file. This works for any single-file format that Bio-Formats supports, as long as all files are in the same format. It is most useful for sets of TIFF, JPEG, PNG, etc. files that do not have any associated metadata.

All files to be grouped together should be in the same folder. The pattern file should be in the same folder as the other files; it can have any name, but must have the `.pattern` extension. The pattern file is what must be opened or imported, so it may be helpful to give it a descriptive or easily-recognizable name.

The pattern file contains a single line of text that is specially formatted to describe how the files should be grouped. The file can be created in any text editor.

The text in the pattern file can take one of several forms. To illustrate, consider a folder with the following file names:

```
red.tiff
green.tiff
blue.tiff
test_Z0_C0.png
test_Z1_C0.png
test_Z0_C1.png
test_Z1_C1.png
test_Z0_C2.png
test_Z1_C2.png
test_Z00.tiff
test_Z01.tiff
```

A pattern file that groups `red.tiff`, `green.tiff`, and `blue.tiff` in that order would look like:

```
<red,green,blue>.tiff
```

A pattern that groups `test_Z0_C0.png`, `test_Z1_C0.png`, `test_Z0_C2.png`, and `test_Z1_C2.png`:

```
test_Z<0-1>_C<0-2:2>.png
```

The <> notation in general can accept a single literal value, a comma-separated list of literal values, a range of integer values, or a range of integer values with a step value greater than 1 (the range and step are separated by `:`). Note that inverting the values in a range (e.g. `<2-0>`) is not supported and will cause an exception to be thrown.

The characters immediately preceding the < can affect which dimension is assigned to the specified values. The values will be interpreted as:

- channels, if `c`, `ch`, `w`, or `wavelength` precede <
- timepoints, if `t`, `tl`, `tp`, or `timepoint` precede <
- Z sections, if `z`, `zs`, `sec`, `fp`, `focal`, or `focalplane` precede <
- series, if `s`, `sp`, or `series` precede <

Note that the listed dimension specifier characters are case insensitive. A separator character (underscore or space) must precede the dimension specifier if it is not at the beginning of the filename. In the above example, 2 Z sections and 2 out of 3 channels would be detected according to the dimension specifiers.

Leading zeros in the integer values must be specified. To group `test_Z00.tiff` and `test_Z01.tiff`:

```
test_Z<00-01>.tiff
```

or:

```
test_Z0<0-1>.tiff
```

Note that this pattern would not group the files correctly:

```
test_Z<0-1>.tiff
```

A pattern file that groups all PNG files beginning with `test_` would look like:

```
test_.*.png
```

This and most other Java-style regular expressions can be used in place of the `<>` notation above. See the java.util.regex.Pattern Javadoc[1] for more information on constructing regular expressions.

---

[1] http://docs.oracle.com/javase/7/docs/api/java/util/regex/Pattern.html