

# Fiji/ImageJ Timestamp Reader for Bio-Formats Metadata



**Caution:** open images with Bio-Formats and call the plugin as the first step in an analysis. The plugin expects the original image title, dimensions (number of channels, slices and frames) and original Bio-Formats metadata, and fails if one of these requirements is not met. Visitron VisiView files from multiposition experiments must be kept together in one directory.

## 1. Requirements

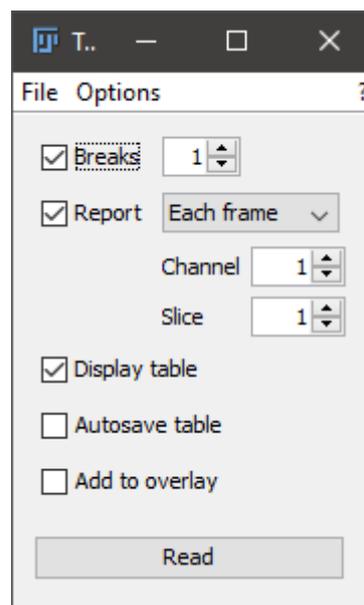
- ImageJ with Bio-Formats plugin (version 6.3.0 or later) or Fiji (with Bio-Formats preinstalled)
- Images acquired with Visitron VisiView, Olympus cellSens (version 2.0 or later), Acquire Ultra (Deltavision Ultra) or Zeiss ZEN Blue (version 3.0 or later)

## 2. Installation

Copy Timestamp\_Reader-x.xx.jar into the plugin subdirectory of ImageJ or Fiji

## 3. Basic Usage

- Open an image with Bio-Formats, using either the menu command Plugins > Bio-Formats > Bio-Formats Importer, or by dragging a file onto the Bio-Formats shortcut window (Plugins > Bio-Formats > Bio-Formats Plugins Shortcut Window)
- Call Plugins > Utilities > Timestamp Reader
- Select options and click the Read button



## 4. Options

### Average frame interval

This is always computed and used to calibrate the image. If no specific channel or slice is given (see the Report option below), the first slice of the first channel is used for computation. The value and its unit can be retrieved with the menu command Image > Properties

### Breaks

Runs a simple outlier test (based on interquartile ranges) and eliminates the specified number of breaks in the computation of the average frame interval. Use this option in FRAP experiments or thelike to get an average frame interval unaffected by a few long pauses during acquisition.

### Report

Check this option to retrieve timestamps of individual frames, channels, or slices

- Each frame: reports one timestamp per frame (i.e., time point). The channel or slice number can be chosen with the spinners below the Report selection
- Each channel: reports on timestamp for each channel. The slice number can be selected
- Each slice: reports one timestamp for each slice. The channel can be selected.
- All images: reports timestamps of all channels, slices, and frames

### Output

- Display table: shows an ImageJ results table. Column headers contain channel names followed by an underscore and the symbol of the time unit of the values
- Autosave table: automatically saves results tables to disk (in the directory from which the image was loaded). Useful when running the plugin within an ImageJ macro
- Add to overlay: displays non-destructive timestamp overlays on the image, formatted as HH:MM:SS.sss (i.e., including fractional seconds down to 1 ms)

## 5. Miscellaneous features

A few general options can be set using the menu command "Options":

- Always on top: keeps the plugin always above other windows on the desktop
- Exit when done: closes the plugin dialog after "Read" has been clicked
- Logging: "Interactive" displays dialogs for errors and warnings, "Silent" redirects errors and warnings to ImageJ's log window (use when running the plugin within an ImageJ macro without user interaction), "System" is intended for debugging within an IDE

## 6. Macros/Scripting

The plugin is macro-recordable and can be used in ImageJ macros. Open ImageJ's macro recorder (menu command Plugins > Macros > Record...) and run the plugin to get the syntax.

## 7. Editing timestamp overlays

Overlay elements can be moved to the ROI manager with Image > Overlay > To ROI Manager. Use Ctrl+A to select all. The ROI manager command "Properties" can be used to change the font size and stroke color. More > Translate..." moves the positions in x and/or y by offsets.

