INSCOPER

User Guide

Viewer

v1.0

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1. Viewer

1.1 Viewer

The Inscoper Viewer is a standalone Windows application for reviewing, analyzing, and exporting datasets acquired with Inscoper I.S. It opens a full acquisition project, navigates every dimension it contains (time, channel, Z, position, and tile), and renders the result as 2D images, volumetric views, or quantitative charts.

The Viewer runs on any workstation. It is free, and requires no Inscoper hardware and no license, so data can be examined away from the microscope by anyone on the team. The installer is available on the download page.

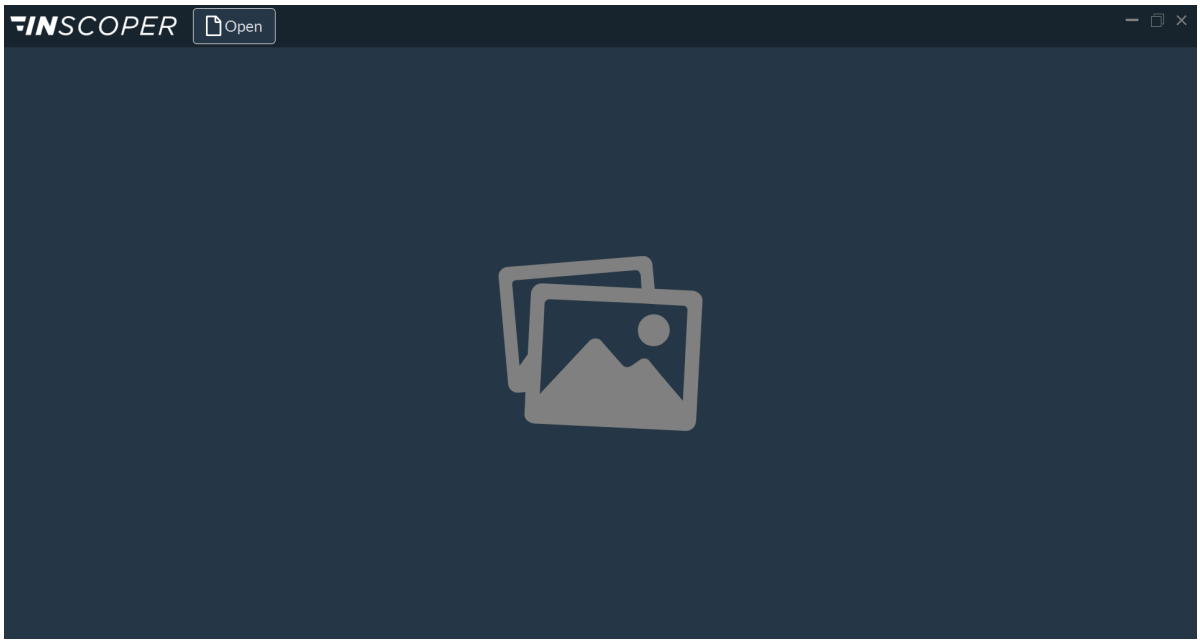
1.1.1 What the Viewer is for

Use the Viewer to:

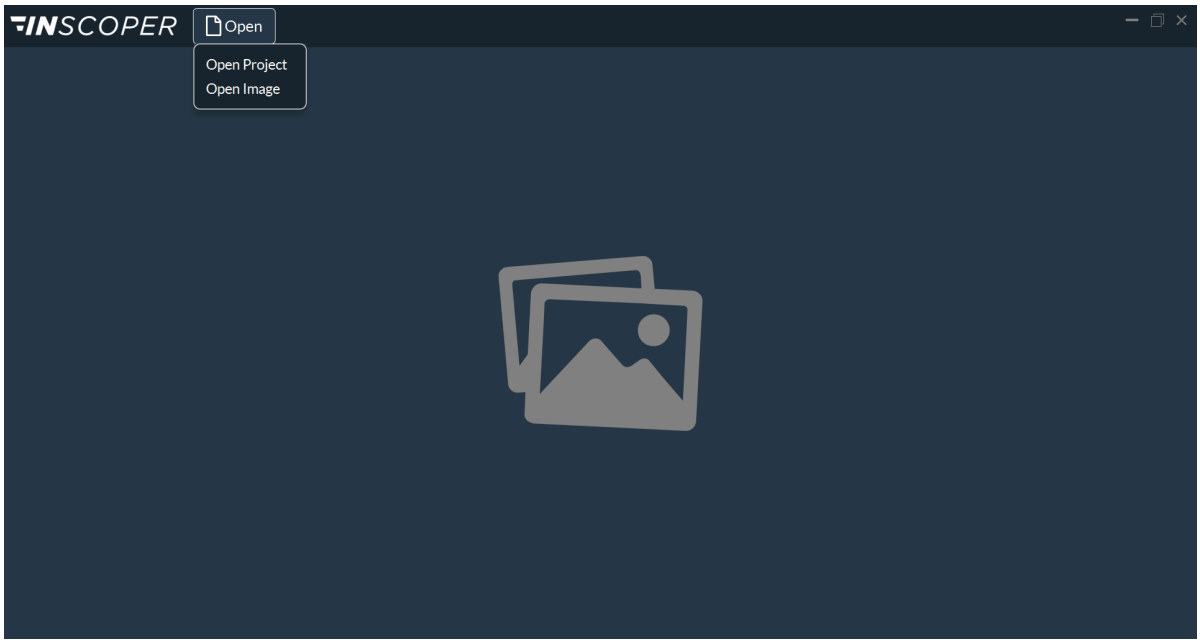
- **Inspect an acquisition** without occupying the microscope workstation.
- **Navigate multidimensional datasets** with per-dimension filters, and animate any dimension as a sequence.
- **Examine volumes in 3D** with maximum-intensity projection or iso-surface rendering, including per-channel voxel size, gamma, and quality settings.
- **Read quantitative data** produced during the acquisition, and annotate the timeline with experimental markers.
- **Apply post-acquisition processing**, such as tile stitching, from the Visualization tab.
- **Export results** as MP4 videos, multidimensional TIFF stacks, `.csv` graph data, or Bio-Formats compatible metadata.

The Viewer does not control hardware and does not run acquisitions. Those tasks belong to Inscoper I.S.

1.1.2 Interface overview



1.1.3 Open images

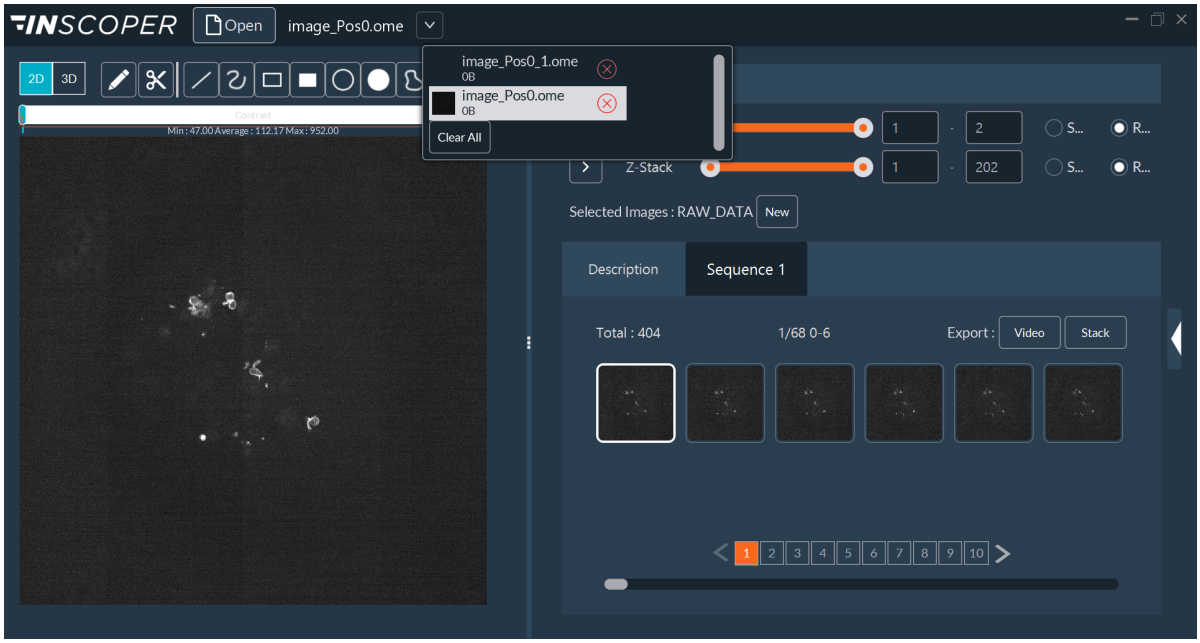


Two ways to open your images:

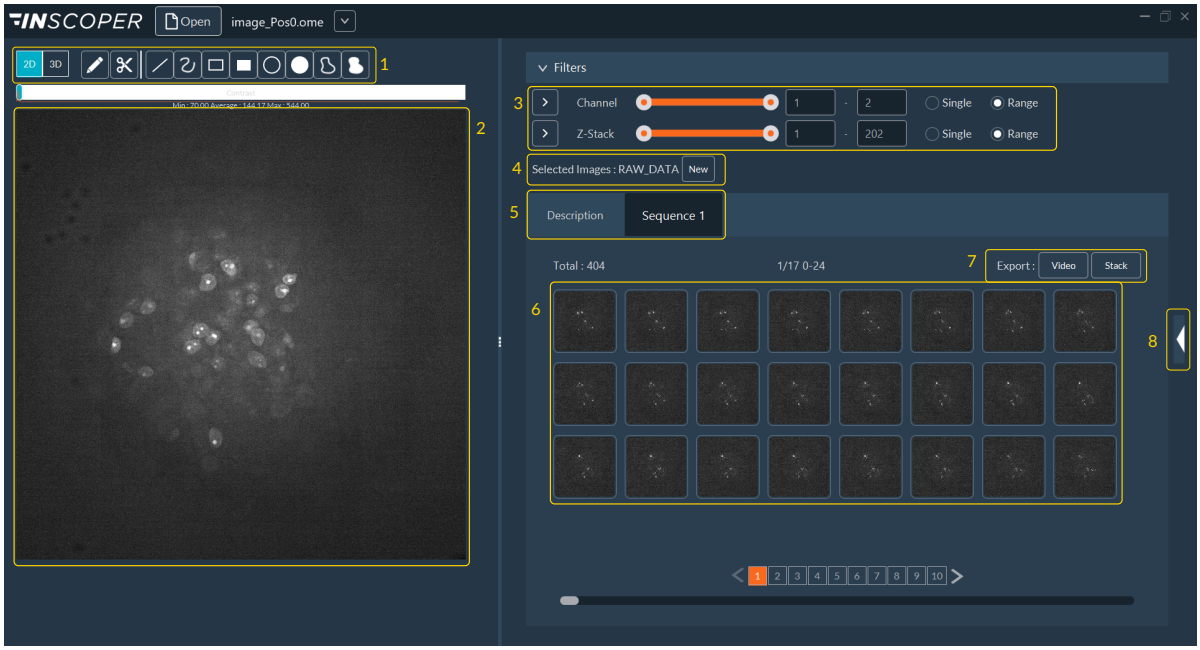
- **Open Project**: Select the directory where your project is saved.
- **Open Image**: Select the directory where your images are saved.

You can open multiple images and find them in the drop-down menu.

Open a project rather than its individual TIFF files whenever the full set of dimensions and processors is required. Refer to How far does TIFF compatibility extend? for the metadata each route recovers.

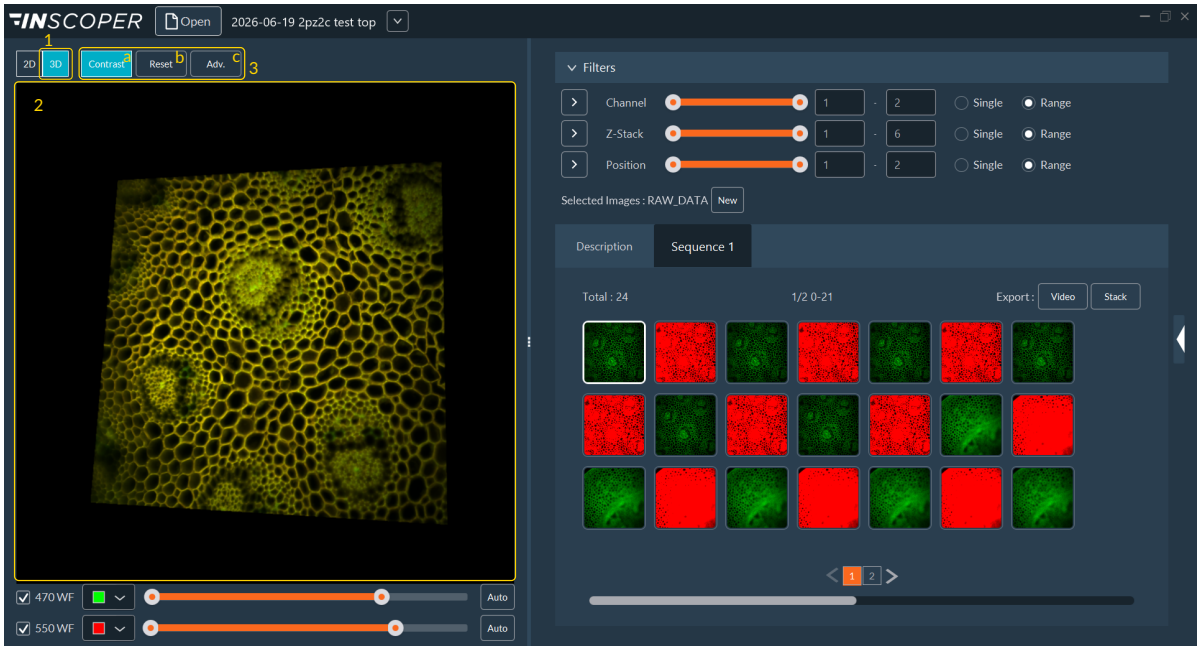


1.1.4 Interaction with Images

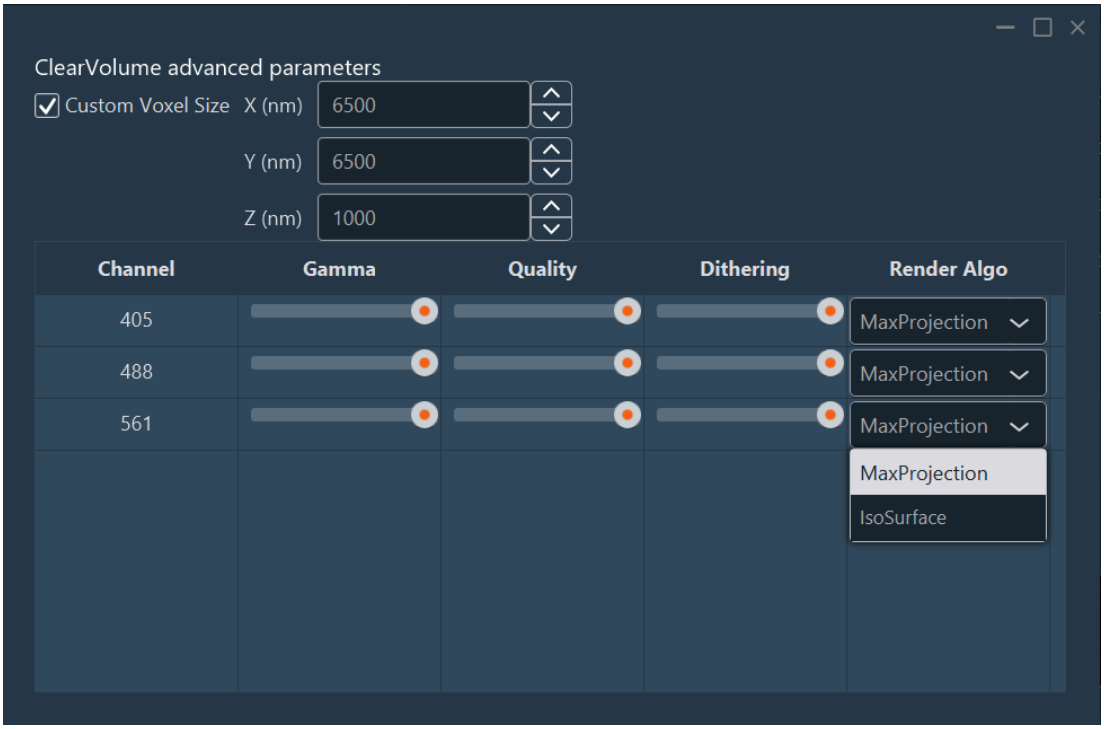


1. **ROI tool and 3D Viewer**
2. **Image Canvas**: View images in the viewer.
3. **Filters**: Use dimension-based filters to search your dataset. Select individual images or full groups. Click the **Play** button adjacent to a dimension name to animate the sequence.
4. **Data Processing**: Select output images for post-acquisition processing.
5. **Graphics Mode**: Switch viewing modes to visualize quantitative data charts.
6. **Thumbnail Gallery**: Browse miniature representations of all acquired images.
7. **Export Options**: Save the currently viewed sequence as an MP4 **Video** or a TIFF **Stack**.
8. **Metadata Access**: Reveal the hardware and experimental parameters tagged to the images.

3D Viewer



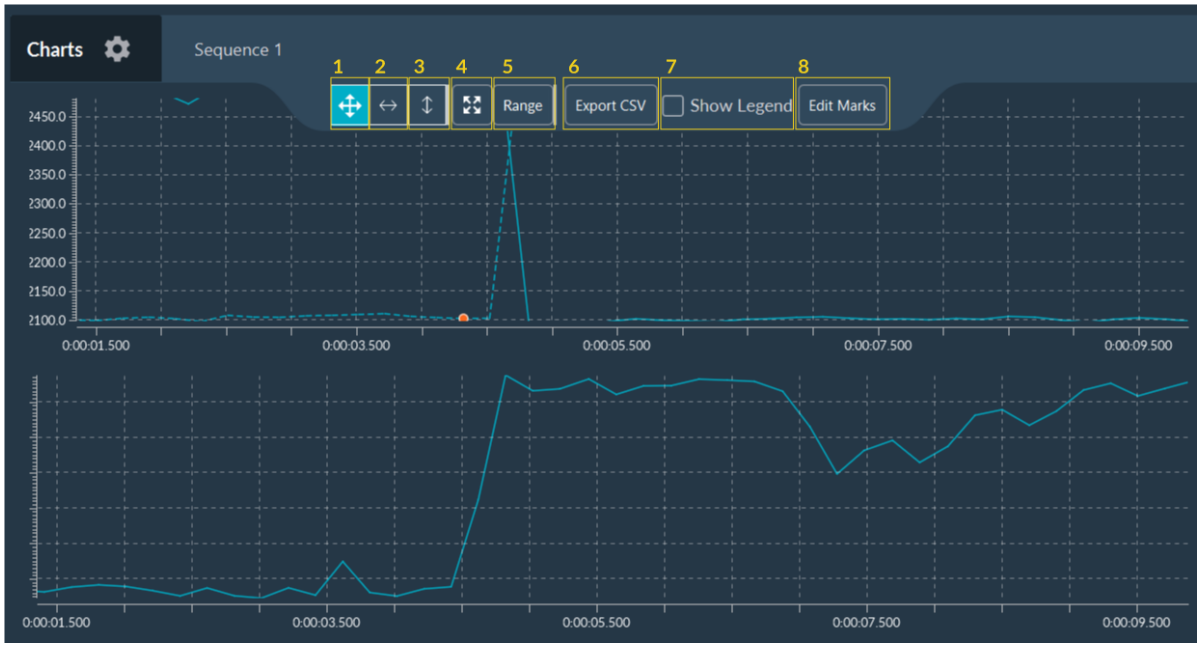
1. Click the **3D** button to launch the volumetric viewer.
2. 3D visualization canvas.
3. Adjust rendering options and parameters:
    1. **Contrast**: Display the LUT and adjust the contrast bar below the 3D view.
    2. **Reset**: Restore the default 3D camera view.
    3. **Advanced**: Access detailed rendering parameters per channel:
        - **Voxel Size** (nm).
        - **Gamma**: Apply a non-linear gamma curve to adjust contrast.
        - **Quality**: Adjust rendering quality for navigation.
        - **Dithering**: Reduce banding/aliasing artifacts.
        - **Render Algorithms**:
            - **MaxProjection**: Displays only the voxels with the maximum intensity encountered along the viewing ray.
            - **IsoSurface**: Renders a 3D surface connecting points of equal intensity value.



Interacting with Graphics

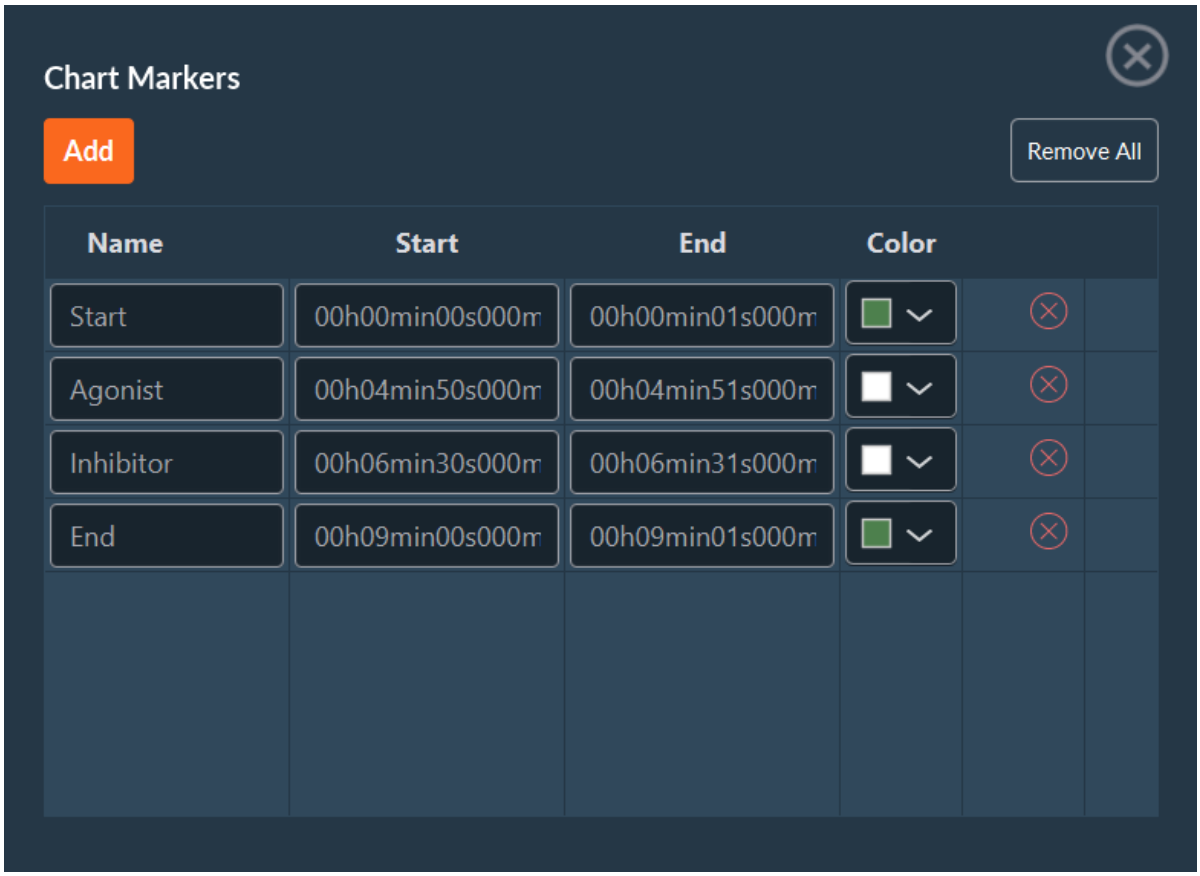
Interact with charts by adjusting their appearance, adding time markers, or exporting raw data. Hover over a graph to access its toolbars.

- **Pan**: Click and drag the mouse wheel (middle click) to pan across the graph.
- **Zoom**: Scroll the mouse wheel to zoom in and out. Click and drag to select a region to magnify.
- **Jump to Image**: Left-click a data point on the graph to view the corresponding image.
- **Reset View**: Right-click within the graph to restore the default axis scaling.



GRAPH TOOLS

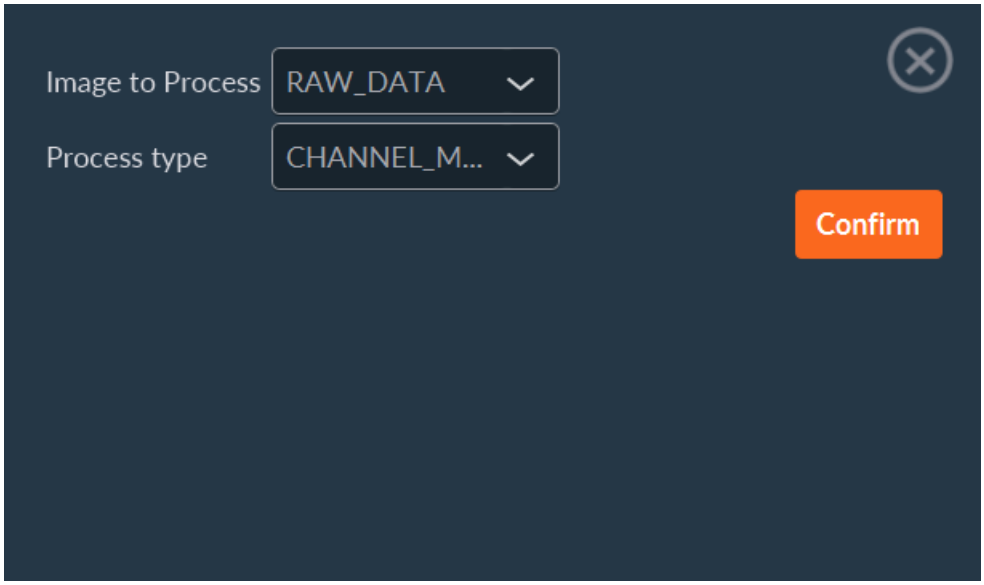
1. Enable the XY zoom mode
2. Enable the X zoom mode
3. Enable the Y zoom mode
4. Reset zoom or enable auto-ranging.
5. Manually override the axis ranges.
6. Export the raw graph data to a `.csv` file.
7. Toggle curve legends.
8. **Add Markers**: Annotate the timeline with event markers. Markers can be exported to a `.csv` file.



Use this window to add information about your experiment as markers. These fully customizable events can relate to the acquisition itself (start, pause, end), external events (addition of an inhibitor, medium supplementation), or others. Save these markers to a `.csv` file and reuse them at any time.

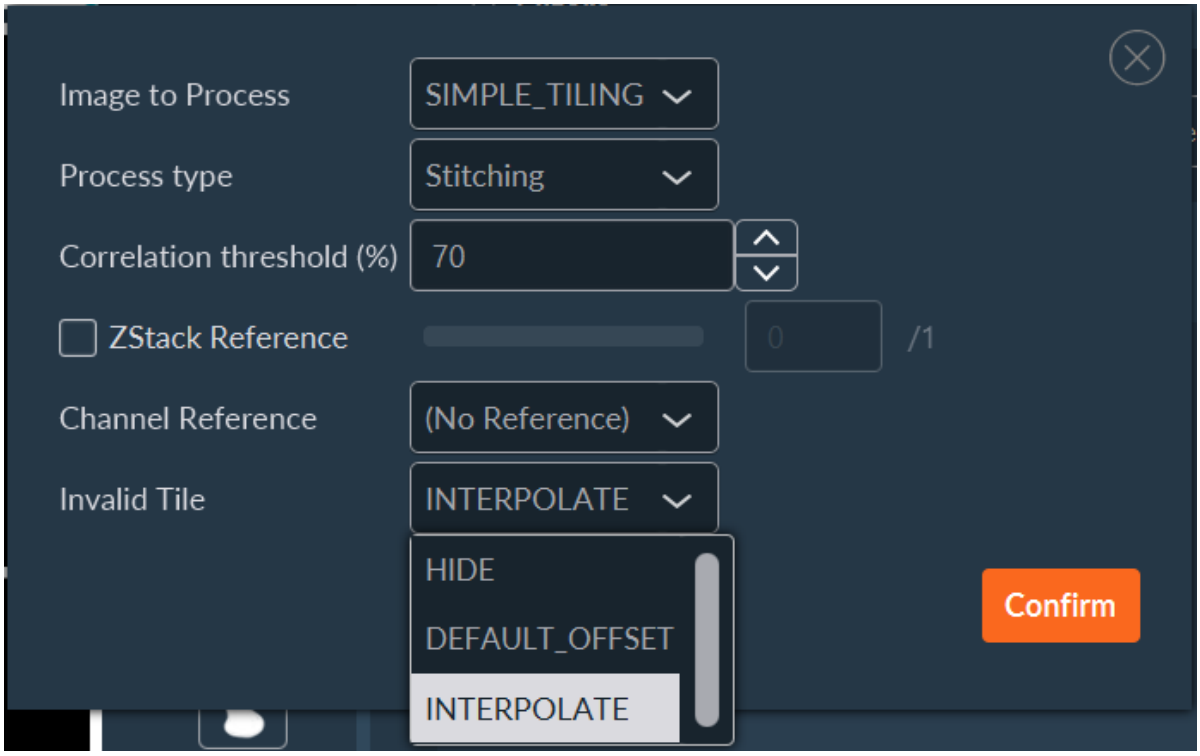
Image Processing

Apply post-acquisition data processing from the Visualization tab. The **Process type** list is rebuilt for each dataset, and lists only the processors the dataset can feed. Refer to Why don't I see all processing options? if an expected processor is absent.



1. Select the target sequence from the image drop-down list.
2. Choose the desired data processor.
3. Click **Confirm** to execute.

EXAMPLE: TILING STITCHING



1. Select the **image to process**.
2. Select the `Stitching` **process type** (refer to the stitching algorithm for details on the registration and blending calculations).
3. Set the **correlation threshold (%)** for image stitching (the minimum correlation score, T_{corr}, required to validate the alignment between adjacent tiles; boundaries scoring below this threshold are flagged as invalid, triggering the configured fallback behavior).
4. Optional: Select a **Z-stack reference**, i.e. the focus plane used to calculate the stitching coordinates.
5. Optional: Select a **channel reference**, i.e. the channel used to calculate the stitching coordinates.
6. Define the fallback behavior for **invalid tiles** (uncorrelated):
    - `HIDE` : Discard the tile from the final image.
    - `DEFAULT_OFFSET` : Place the tile based solely on its recorded mechanical stage coordinates.
    - `INTERPOLATE` : Interpolate the tile's position based on the calculated offsets of surrounding valid tiles.
7. Click **Confirm**.

Data Export

Export sequences as MP4 videos or multidimensional TIFF stacks via the Export menu (Toolbar Item 7).

VIDEO EXPORT

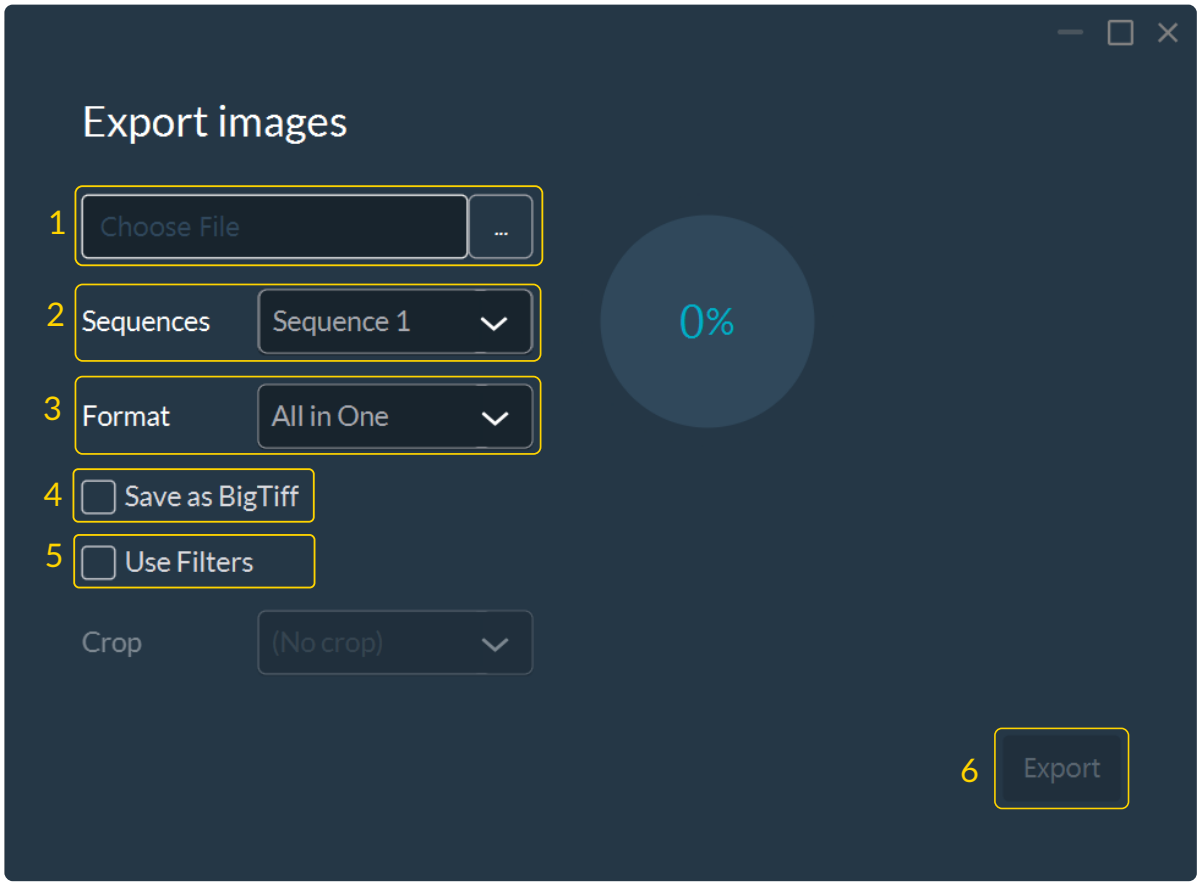
Use dimension filters to isolate the image sequence, then click **Video** from the Export drop-down menu.

To export a video:

1. Select the destination file path.
2. Verify the sequence to export.
3. Select the video format/codec.
4. Click **Export**.

STACK EXPORT

Use dimension filters to isolate images, then click **Stack** from the Export drop-down menu to generate a multidimensional TIFF.

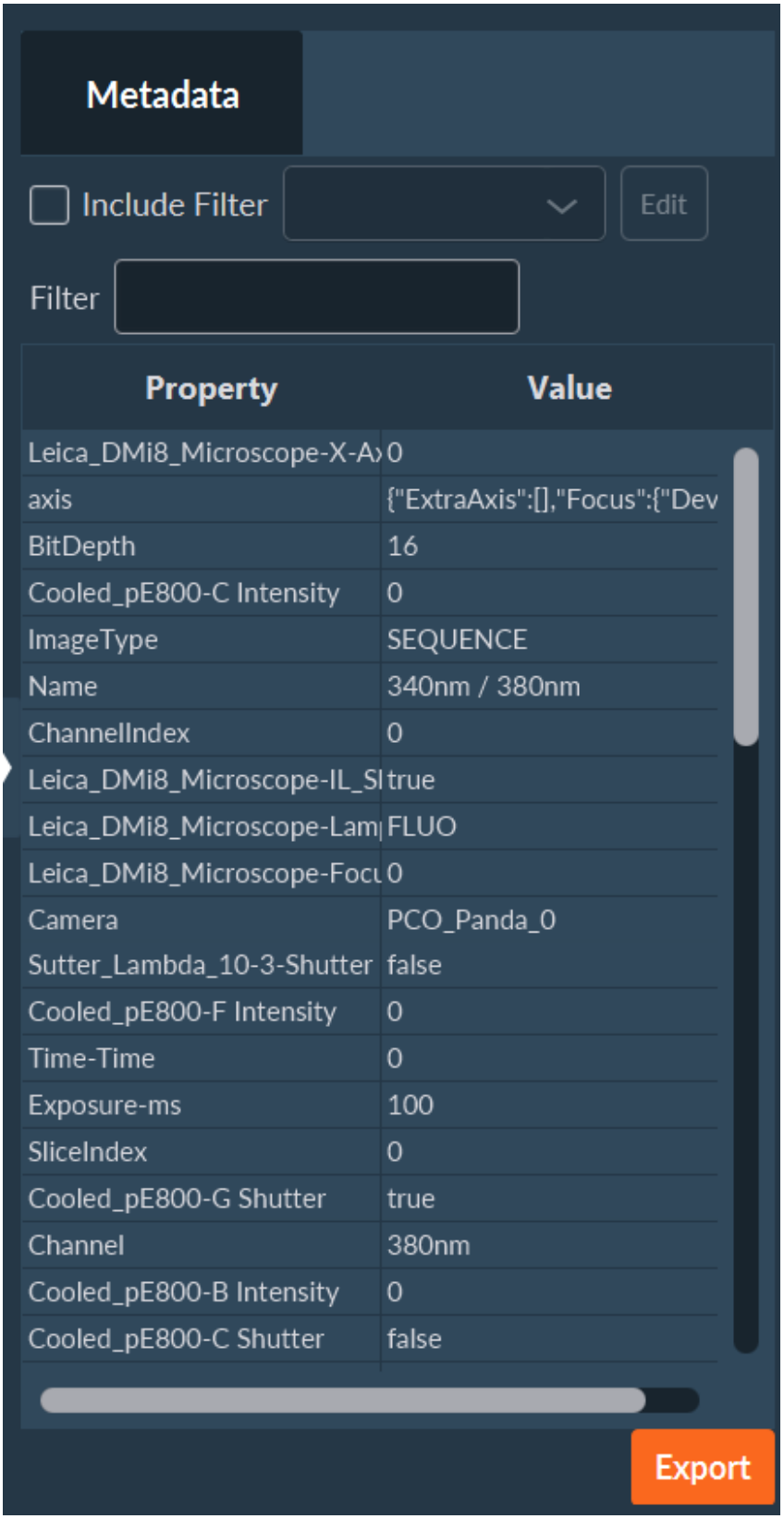


To export a stack:

1. Select the destination file path.
2. Verify the sequence to export.
3. Select the data format.
4. (Optional) Check **Save as BigTiff** if the expected file size exceeds 4 GB.
5. (Optional) Check **Use Filters** to apply your visualization filters to the export.
6. Click **Export**.

Metadata Access

A white triangle appears on the right side of the window. Click it to access all metadata, including the camera, light source, and microscope settings. Use the search bar and filters to locate specific parameters. To export the list, click Export at the bottom right of the screen. All metadata are Bio-Formats compatible.

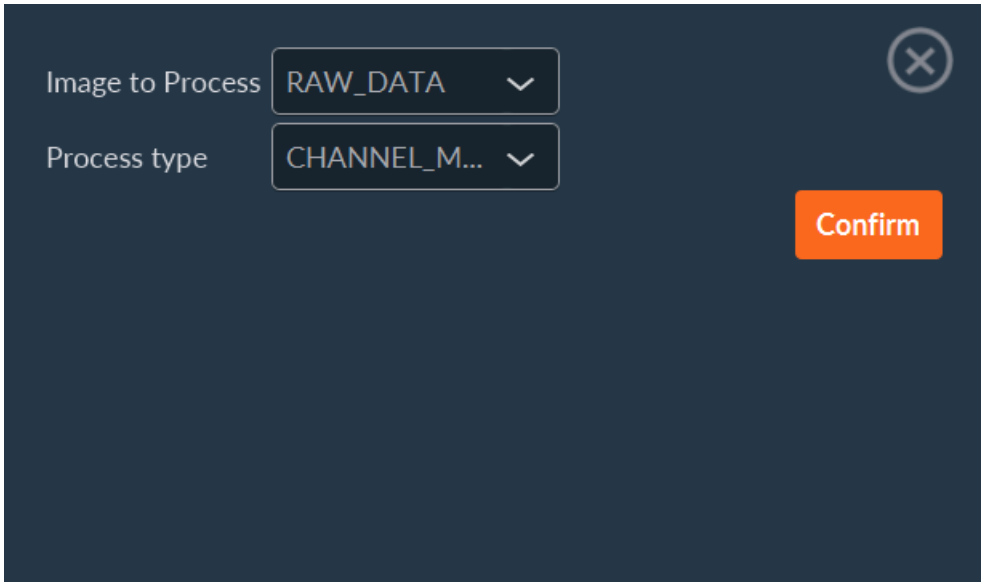


2026-09-04

1.2 Frequently Asked Questions

1.2.1 Why don't I see all processing options?

The **Process type** list in the Data Processing panel is not a fixed menu. The Viewer rebuilds it for each dataset, and lists only the processors that the loaded dataset can actually feed. An option that is absent is an option that has no valid input in the current data.



Three conditions govern the list.

The dimension must be present, and must hold more than one image

Every projection and combination processor consumes one dimension, and requires at least two images along it. A dataset with a single time point offers no time projection, and a dataset acquired on one focus plane offers no Z-stack projection.

Process type	Condition on the dataset
`Time Average`, `Time Max`, `Time Standard Deviation`	The time dimension is used, and holds more than one image.
`Focus Average`, `Focus Max`, `Focus Standard Deviation`	The Z-stack dimension is used, and holds more than one focus plane.
`Channel Multicolor`	The channel dimension is used, and holds more than one channel.
`Stitching`	The dataset declares a tiling (mosaic) acquisition.
`Phasor Plot Split`	Always listed.

Chart-derived processors appear in addition to this list, and only for the quantitative charts the dataset actually contains.

Stitching requires a tiling acquisition, not merely adjacent images

`Stitching` appears only when the loaded project declares a tiling acquisition. That declaration carries the tile grid and the stage coordinates of each tile, which the registration step requires. The Viewer does not infer a grid from image content, from file names, or from an arbitrary series of positions.

A dataset opened with **Open Image**, that is, opened as a TIFF file rather than as a project, never offers `Stitching`, even when the file contains every tile of a mosaic.

> **Note**
>
> To stitch a mosaic acquisition, open the project through **Open** > **Open Project**, and select its `.cbf` file. Do not open the individual TIFF files of the `images` directory.

Licensed options are read from the Inscoper hardware

A small number of processors are add-ons, and their availability is read from the license held by the Inscoper hardware. On a standalone workstation, with no hardware reachable, these processors are treated as unlicensed, and are omitted. Tiling, ratiometric, PCO FLIM, Jetraw, Microvolution, RIM, and SPARQ processing all fall in this category.

Diagnostic sequence

If an expected processor is missing, check the following, in order:

1. Confirm that the dataset was opened as a project, not as a single TIFF file. Compare the dimension filters displayed in the Visualization tab against the dimensions of the acquisition.
2. Confirm that the dimension the processor consumes holds more than one image.
3. Confirm that the correct sequence is selected in the **Image to Process** list. The list is rebuilt for the selected sequence, and sequences of one project may differ in the dimensions they use.
4. For a licensed add-on, confirm the license on the acquisition workstation.

1.2.2 How far does TIFF compatibility extend?

The Viewer reads the pixels of a broad range of TIFF files, but recovers the dimensions of a dataset only from Inscoper metadata. The distinction matters, because the dimensions govern navigation, filtering, and the processing list described above.

Pixels

Open Image reads TIFF and BigTIFF files, in the following formats:

- 8-bit and 16-bit grayscale, 32-bit integer grayscale, and 32-bit and 64-bit floating-point grayscale.
- 24-bit and 48-bit RGB.
- Uncompressed data, Deflate (zlib) compressed data, and Jetraw compressed data.

Outside this range, the file opens without displaying usable images. In particular, LZW, PackBits, and JPEG compressed TIFF files are not decoded, and files that split a single image across several strips or tiles are not reassembled.

Dimensions

The Viewer places each image in the dataset (channel, Z, time, and position) from the per-image metadata that Inscoper I.S. writes. Two cases arise.

The file carries Inscoper metadata. Every dimension is recovered. Channels, Z-stack, time, and positions are navigable, and the full processing list is offered. This applies to TIFF files written by Inscoper I.S., including stacks exported from the Viewer itself.

The file does not. Dimensions are not recovered. Each page of the file is presented as one time point of a single-channel time series. This is the case for TIFF files written by third-party software, whatever internal metadata they carry: OME-XML is not read, neither from the `ImageDescription` tag of an `ome.tif` file nor from a `metadata.companion.ome` file. Inscoper I.S. writes OME metadata for interoperability with Bio-Formats readers, and the Viewer itself does not consume it.

Without recovered dimensions:

- Only the time dimension is offered in the filters, so only the time projections appear in the **Process type** list.
- Channels, focus planes, and positions of the original acquisition are not separable, and appear as consecutive time points.
- `Stitching` is unavailable, since no tiling declaration and no stage coordinates are present.
- The metadata panel reports only what the TIFF tags provide, namely image width, image height, bit depth, and pixel type. Hardware and experimental parameters are absent.

Recommended practice

Objective	Action
Review an Inscoper acquisition, with every dimension and processor available.	Open the project through **Open** > **Open Project**, and select its `.cbf` file.
Inspect the pixels of an isolated TIFF file, whatever its origin.	Open the file through **Open** > **Open Image**. Expect a single-channel time series unless the file was written by Inscoper I.S.
Reopen an exported result later, with its dimensions preserved.	Export it from the Viewer as a **Stack**. Exported stacks carry Inscoper metadata, and reopen with every dimension available.
Read a third-party dataset with its own dimensions.	Use a Bio-Formats based application. The Viewer does not convert foreign metadata.

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1.3 Download

The Viewer is a standalone application: it opens data acquired with Inscoper I.S. on any Windows workstation, with no Inscoper hardware and no Java installation required.

Click the package, leave your e-mail address, and the download link is sent to your inbox.

Package	Version	Download	Size
Windows x64	1.0.3	ImageViewer-1.0.3-windows-x64.zip	156 MB

1.3.2 Install

The package is a folder, not an installer: nothing is written outside the folder you unpack it into, and removing that folder removes the application.

1. Unzip `ImageViewer-<version>-windows-x64.zip` anywhere you can write, for example `C:\Inscoper\`.
2. Launch `ImageViewer-<version>.exe` from the unpacked folder.
3. Optionally, right-click that executable and pick **Send to → Desktop (create shortcut)**.

Windows blocks the first launch

The application is not signed with a commercial certificate, so Windows shows **Windows protected your PC**. Click **More info**, then **Run anyway**. The warning appears once per unpacked copy.

Keep the folder together

`ImageViewer-<version>.exe` is only the launcher: it needs the `app` and `runtime` folders beside it. Move or copy the whole folder, never the executable alone.

1.3.3 Requirements

Operating system	Windows 10 or 11, x64
Disk	about 400 MB unpacked
Java	none, the package embeds its own runtime
Graphics	the 3D Viewer needs an OpenCL-capable GPU driver

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1.4 Legal

1.4.1 Legal Information

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- US Patent No. US10330911
- European Patent No. EP3123149
- French Patent No. FR3019324

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