invitrogen

EVOS™ M3000 Imaging System

USER GUIDE

Catalog Number AMF3000

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Revision A

For Research Use Only. Not for use in diagnostic procedures.

ThermoFisher SCIENTIFIC

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For descriptions of symbols on product labels or product documents, go to thermofisher.com/symbols-definition.

Revision history: MAN0030066 A (English)

Revision	Date	Description
A	21 May 2024	New document for EVOS™ M3000 Imaging System.

The information in this guide is subject to change without notice.

Contents

About this guide

CAUTION! ABBREVIATED SAFETY ALERTS. Hazard symbols and hazard types specified in procedures may be abbreviated in this document. For the complete safety information, see the "Safety" appendix in this document.

IMPORTANT! Before using this product, read and understand the information in the "Safety" appendix in this document.

Audience

This user guide is for laboratory staff operating, maintaining, and analyzing data using the Invitrogen™ EVOS™ M3000 Imaging System.

User attention words

Two user attention words appear in this document. Each word implies a specific level of observation or action as described below.

Note: Provides information that may be of interest or help but is not critical to the use of the product.

IMPORTANT! Provides information that is necessary for proper instrument operation, accurate installation, or safe use of a chemical.

Safety alert words

Three safety alert words appear in this document at points where you need to be aware of relevant hazards. Each alert word—**CAUTION, WARNING, DANGER**—implies a particular level of observation or action, as defined below:

CAUTION! Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

WARNING! Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.

DANGER! Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.

1 Product information

Product description

EVOS™ M3000 Imaging System

The Invitrogen™ EVOS™ M3000 Imaging System (Cat. No. AMF3000) is a fully integrated bench-top imaging system for two-color fluorescence and transmitted-light applications.

The EVOS™ M3000 Imaging System combines precision optics, a four-objective turret, a high-sensitivity color CMOS camera with 3.45-µm pixel resolution, and a 10.1-inch high-resolution LCD touchscreen to acquire images seamlessly through the intuitive user interface.

For the detailed technical specifications of the EVOS™ M3000 Imaging System, see “Instrument specifications” on page 51.

EVOS™ M3000 Software

The EVOS™ M3000 Imaging System is controlled by the integrated Invitrogen™ EVOS™ M3000 Software through a graphical user interface (GUI), which is accessed through the LCD display. The software is preinstalled on the instrument and starts automatically when the instrument is powered on.

Key features of the EVOS™ M3000 software include:

- **Capture:** Enables control over every aspect of the system for image capture, including light source selection, image adjustment, and focus. All images acquired can be saved and exported in 8-bit per RGB channel TIFF, PNG, or JPG formats. Videos can be saved and exported in MP4 format.
- **Gallery:** Enables reviewing and export of captured images.
- **Network connectivity:** Wireless connection to the network using the supplied Wi-Fi adaptor enables access to your Connect account as part of the Thermo Fisher Scientific cloud-based platform to store and access data files.

Standard items included

EVOS™ M3000 Imaging System

- EVOS™ M3000 Imaging System includes the following components and preinstalled accessories:
  - 10.1-inch high-resolution LCD touchscreen (1,920 x 1,200 pixel resolution)
  - Light cube shipping restraint (remove before use)
  - Light cube tool (remove before use)
  - Blank light cube (remove before use)

Note: The light cube tool is threaded into the blank light cube (or LED light cube) and holds the light cube shipping restraint block in place.

Note: EVOS™ LED light cubes and objectives for the EVOS™ M3000 Imaging System are not included with the system and must be ordered separately from Thermo Fisher Scientific.

EVOS™ M3000 accessories

- EVOS™ M3000 Accessories Kit (in the instrument box), contains:
  - USB Wi-Fi adapter (for wireless network connection to Connect applications)
  - USB 3.0 flash drive (for image storage, and preloaded with user documentation)
  - Condenser light shield and UV light shield kit
  - Polycarbonate plastic stage plate
  - Condenser slider, Block (Cat. No. AMEP4688)
  - Condenser slider, for 4X objectives (Cat. No. AMEP4738)
  - Condenser slider, Diffusion, for brightfield applications (Cat. No. AMEPDFS1)
  - Universal power supply (12 V, 5 A) and power cord (Type B, North America)
  - EVOS™ Dust Cover
  - Technical Support card, 3 × 5 in.

EVOS™ M3000 Imaging System user documentation

- EVOS™ M3000 Imaging System Quick Start Guide, printed (Pub. No. TBD)
- EVOS™ M3000 Imaging System Installation Guide, printed (Pub. No. MAN0030065)
- USB 3.0 flash drive (located in the accessories box) contains:
  - EVOS™ M3000 Imaging System User Guide (Pub. No. MAN0030066)
  - EVOS™ M3000 Imaging System Quick Start Guide (Pub. No. TBD)
  - EVOS™ M3000 Imaging System Installation Guide (Pub. No. MAN0030065)

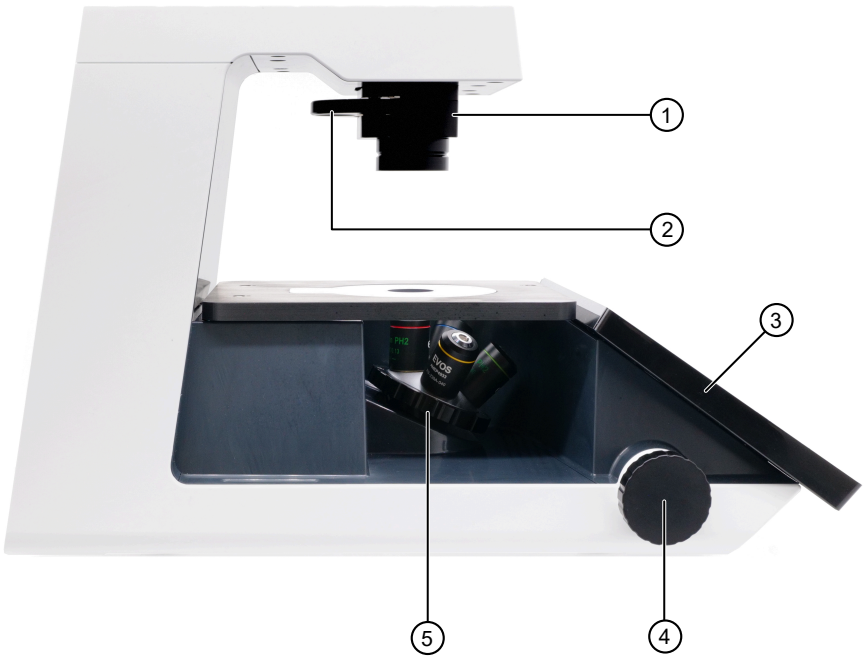
Note: Contact the distributor if anything is missing. If you do not have the distributor information, contact Technical Support. Damage claims must be filed with the carrier; the warranty does not cover in-transit damage.

Instrument components and mechanical controls

Front view

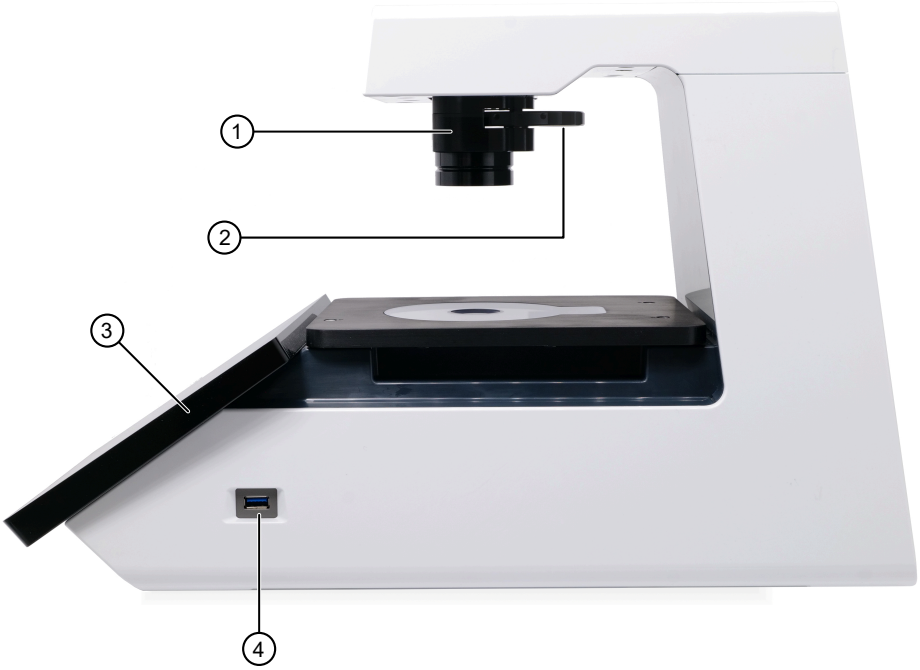
1. Condenser
2. Fixed stage
3. LCD display
4. Fine focus knob
5. Objective turret
6. Polycarbonate plastic stage insert

Left view



1. Condenser
2. Phase ring selector
3. LCD display
4. Fine focus knob
5. Objective turret

Right view



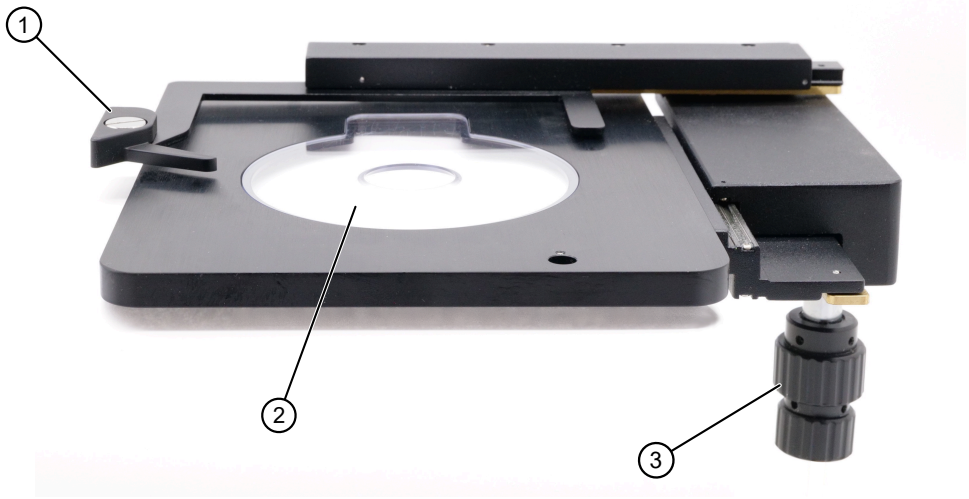
1. Condenser
2. Phase ring selector
3. LCD display
4. USB 3.0 port

Rear view

1. Power switch
2. Single-pin power input port (12 VDC, 5 A)
3. Display port (video output)
4. USB 2.0 port (2×)

(Optional) Mechanical X-Y Stage

The attachable mechanical stage is an optional feature. Go to **Settings ▸ Instrument settings ▸ Hardware configuration ▸ Mechanical stage** for instructions on installing the Mechanical X-Y Stage (Cat. No. AMEP-5011).



1. Vessel retention lever
2. Polycarbonate plastic stage insert
3. X-Y stage axis knobs

Graphical user interface (GUI)

GUI layout

The GUI of the system consists of the **Viewing area** on the left and instrument controls on the right and at the bottom. **Capture** and **Gallery** tabs, **Settings** button, and **User** and **OneDrive Sign In** buttons are at the top. Each tab and button opens the controls necessary to execute the selected function.

Figure 1 GUI of the system with the Capture tab selected.

1. Image pane
2. Sign In/User
3. Wireless connection
4. Capture tab
5. Gallery tab
6. Settings
7. Objective and phase indicator
8. Light source (channel) and image thumbnails
9. Adjust image display
10. Confluence
11. Save to
12. Export
13. Toggle pseudocolor
14. Display scale bar
15. Display grid

2 Install and set up the instrument

Precautions for use

CAUTION! PHYSICAL INJURY HAZARD. Do not remove the instrument cover. There are no components inside the instrument that you can safely service yourself. If you suspect a problem, contact technical support.

CAUTION! Before using a cleaning or decontamination method other than those recommended by Thermo Fisher Scientific, confirm with Thermo Fisher Scientific that the proposed method will not damage the instrument.

Upon receiving the instrument

- Check the enclosed packing list against the order.
- Visually inspect the transport package, the instrument and the accessories for any damage incurred during transit.
- If the carton has been damaged in transit, it is particularly important that you retain it for inspection by the carrier in case there has also been damage to the instrument.
- Any damage claims must be filed with the carrier. Neither the manufacturer nor its agents can be held responsible for any damage incurred in transit, but the manufacturer will make every effort to help obtain restitution from the carrier. Upon receipt of the carrier's inspection report, arrangements will be made for repair or replacement.
- To register the instrument, activate your warranty, and be notified of important updates, go to **thermofisher.com**.

Installation

Operating environment and site requirements

- The dimensions of the EVOS™ M3000 Imaging System are 11.74 × 12.71 × 19.34 in (W × H × D) (29.8 × 32.3 × 49.1 cm). The system requires a benchtop of approximately 16 x 20 in (40.04 x 50.80 cm) for best operating conditions.
- Place the EVOS™ M3000 Imaging System on a level surface away from vibrations from other pieces of equipment. Tabletop centrifuges, vortex mixers, and other laboratory equipment can vibrate the instrument during a run and cause a decrease in instrument performance.
- Install the EVOS™ M3000 Imaging System away from direct light sources such as windows. Ambient light can enter the imaging path and affect the image quality.
- Operating temperature range: 4°C to 32°C (40°F to 90°F)
- Operating humidity: <90%, non-condensing
- Operating power: 100–240 VAC, 1.8 A
- Frequency: 50–60 Hz
- Electrical input: 12 VDC, 5 A

IMPORTANT! Do not position the instrument so that it is difficult to reach the main power switch on the back of the instrument to power it off. If there is an instrument malfunction, turn the main power switch to the OFF position and disconnect the instrument from the wall outlet.

Hood set up

The EVOS™ M3000 Imaging System fits in cell culture hoods that are at least 24 in (61 cm) deep and 36 in (92 cm) high with a 30 in (76 cm) opening.

Prepare for installation

Move the instrument to the installation site

1. Clear the installation site of all unnecessary materials.
2. If possible, move the crated instrument and other shipping containers to the installation site.

CAUTION! PHYSICAL INJURY HAZARD. Lift or move the instrument using proper lifting techniques. We recommend that you lift or move the crated instrument with the assistance of others and the use of appropriate moving equipment. Improper lifting can cause painful and permanent back injury. Depending on the weight, moving or lifting an instrument may require two or more persons.

Install the instrument

Unpack the instrument

1. Open the shipping box and remove the accessory box.
2. Carefully lift the instrument out of the box by grasping it firmly with both hands under the instrument.

   IMPORTANT! Do not subject the instrument to sudden impact or excessive vibration. Handle the instrument with care to prevent damage.

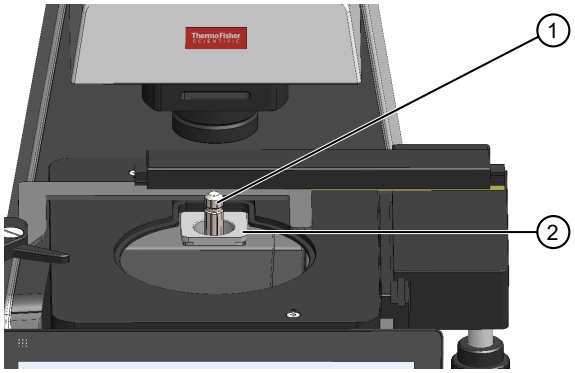
3. Place the instrument on a flat, level surface that is free from vibration. If installed, leave enough room for the X-Y stage to move freely.
4. Examine the instrument carefully for damage incurred during transit.
5. Unpack the accessories box and verify that all parts are present. See “EVOS™ M3000 Imaging System” on page 9 and “EVOS™ M3000 accessories” on page 10 for the list of standard items included in the shipment.

Note: Contact the distributor if anything is missing. If you do not have the distributor information, contact Technical Support. Damage claims must be filed with the carrier; the warranty does not cover in-transit damage.

Note: Set aside the packaging and foam for future transport and storage. Reinstall the light cube shipping restraint before moving or transporting the instrument. Always ensure that the instrument is properly cushioned and braced to prevent damage.

Remove shipping restraints

The EVOS™ M3000 Imaging System is equipped with a light cube shipping restraint to protect the instrument from shock and vibration during shipment. You must remove the shipping restraint before powering on the instrument.



1 Light cube tool
2 Light cube shipping restraint

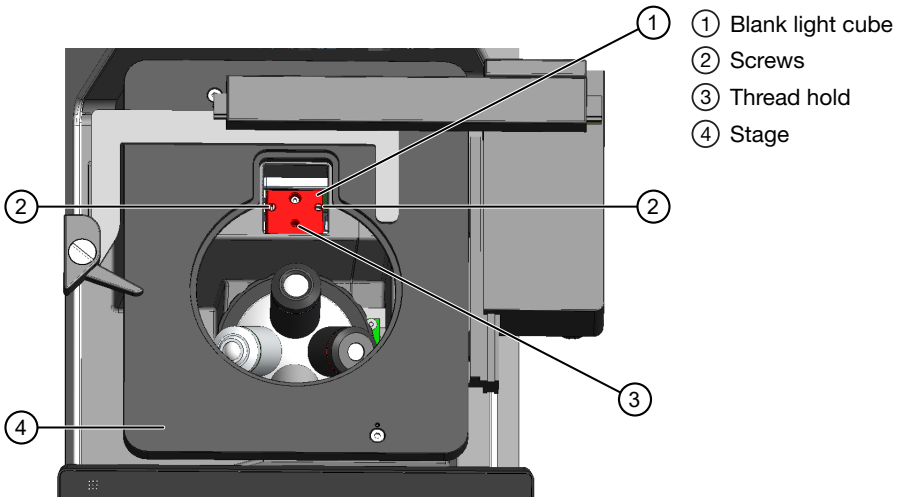
1. If installed, using the X-axis and Y-axis stage positioning knobs, move the mechanical stage back to obtain access to the light cube shipping restraint, which is centered under the back of the stage.

   Note: The light cube shipping restraint is secured with the light cube tool to the blank light cube installed in the light cube turret. Used together, they immobilize the light cube turret to protect it during shipment.

2. Unscrew and remove the light cube tool, which secures the shipping restraint block to the blank light cube.

3. Remove the shipping restraint block and store it in the accessories box. Removal of the restraint block provides access to the blank light cube in the light cube turret.

   Note: The blank light cube is red and lacks the grooved copper top of the LED light cubes.



4. Using the light cube tool, loosen the two screws that attach the blank light cube to the instrument. You do not have to remove the screws.

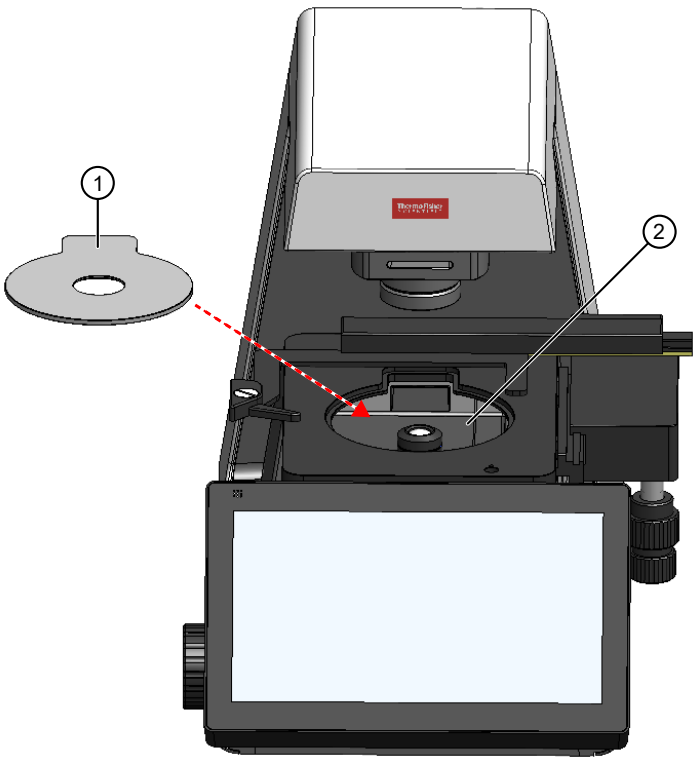
5. Screw the light cube tool to the thread hold on the light cube, then lift the blank light cube up and out of the light cube turret. Store the blank light cube and the light cube tool in the accessories box.

6. Store the shipping restraints and the light cube tool for future use in the accessories box provided with the system. Always reinstall the light cube restraint before moving the instrument.

   IMPORTANT! Before changing light channels, ALWAYS verify that the light cube restraint has been removed. Attempting to change the light channels when the restraint is in place can seriously damage the mechanism. This type of damage is not covered by manufacturer's warranty.

Install the stage plate

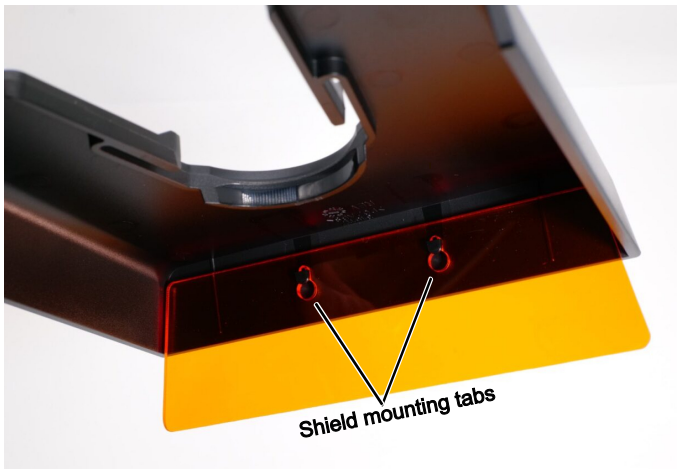
1. If installed, move the X-Y stage all the way back to expose the stage opening.
2. Unpack the stage plate and insert it into the stage opening.



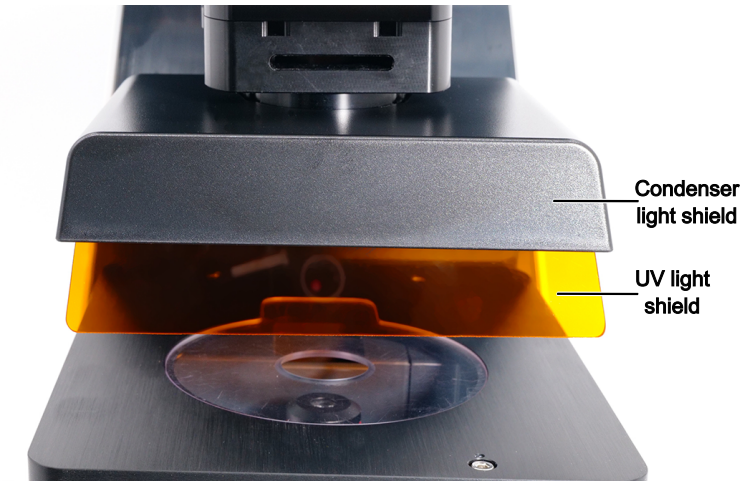
① Polycarbonate plastic stage plate
② Stage opening

Install the UV and Condenser light shields

1. Attach the orange UV shield to the two tabs inside the front of the condenser light shield. Gently pull down to lock in place.



2. Attach the Condenser light shield to the Condenser using the groove in the Condenser barrel to clip it in place.



Note: The Condenser light shield can be easily rotated 180 degrees to make the open side accessible from the front, improving access to the sample.

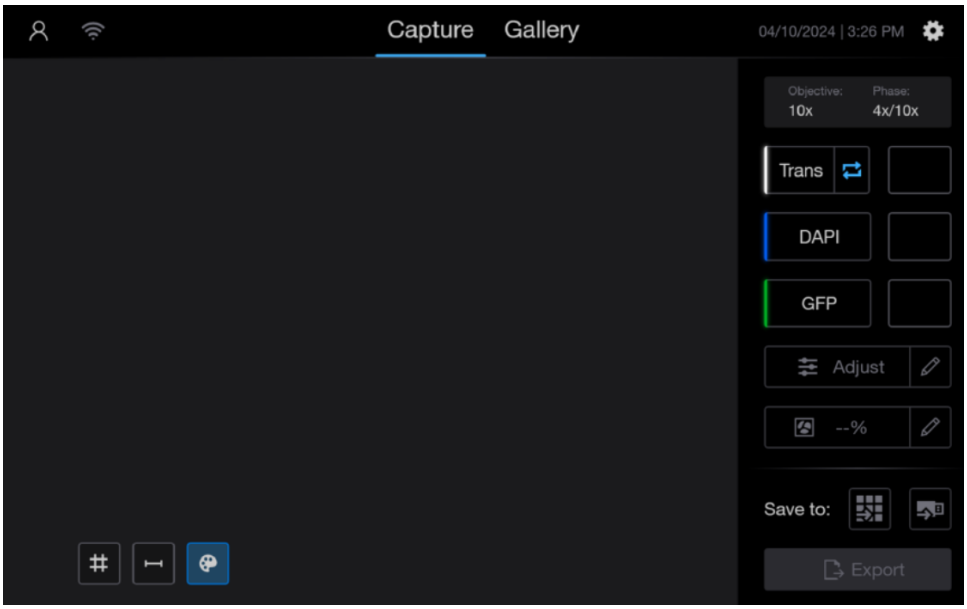
Connect the instrument

1. Ensure that the power switch is OFF (on the back; see “Rear view” on page 12).
2. Connect the power adapter and power cord. Ensure a tight connection
3. Plug the power adapter into the power input port on the instrument (see “Rear view” on page 12).
4. Plug the power cord into a power outlet.

Instrument set up

Power ON the EVOS™ M3000 Imaging System

1. Turn the instrument power switch (on the back; see “Rear view” on page 12) to the ON position.
2. When the **Capture** tab is displayed, the EVOS™ M3000 Imaging System is ready to use.



IMPORTANT! You must remove all shipping restraints before you power on the EVOS™ M3000 Imaging System to prevent damage (see “Remove shipping restraints” on page 17).

Connect the instrument to the internet

You can connect the EVOS™ M3000 Imaging System to a network using Wi-Fi and save captured images directly to shared folders on the network. You can also connect to your Connect account, the Thermo Fisher Scientific cloud-based platform, to store the image files and analyze them with the EVOS™ Image Analysis application.

For instructions about how to connect to a Wi-Fi network and how to map a network drive to save your images, see “Configure network settings” on page 39.

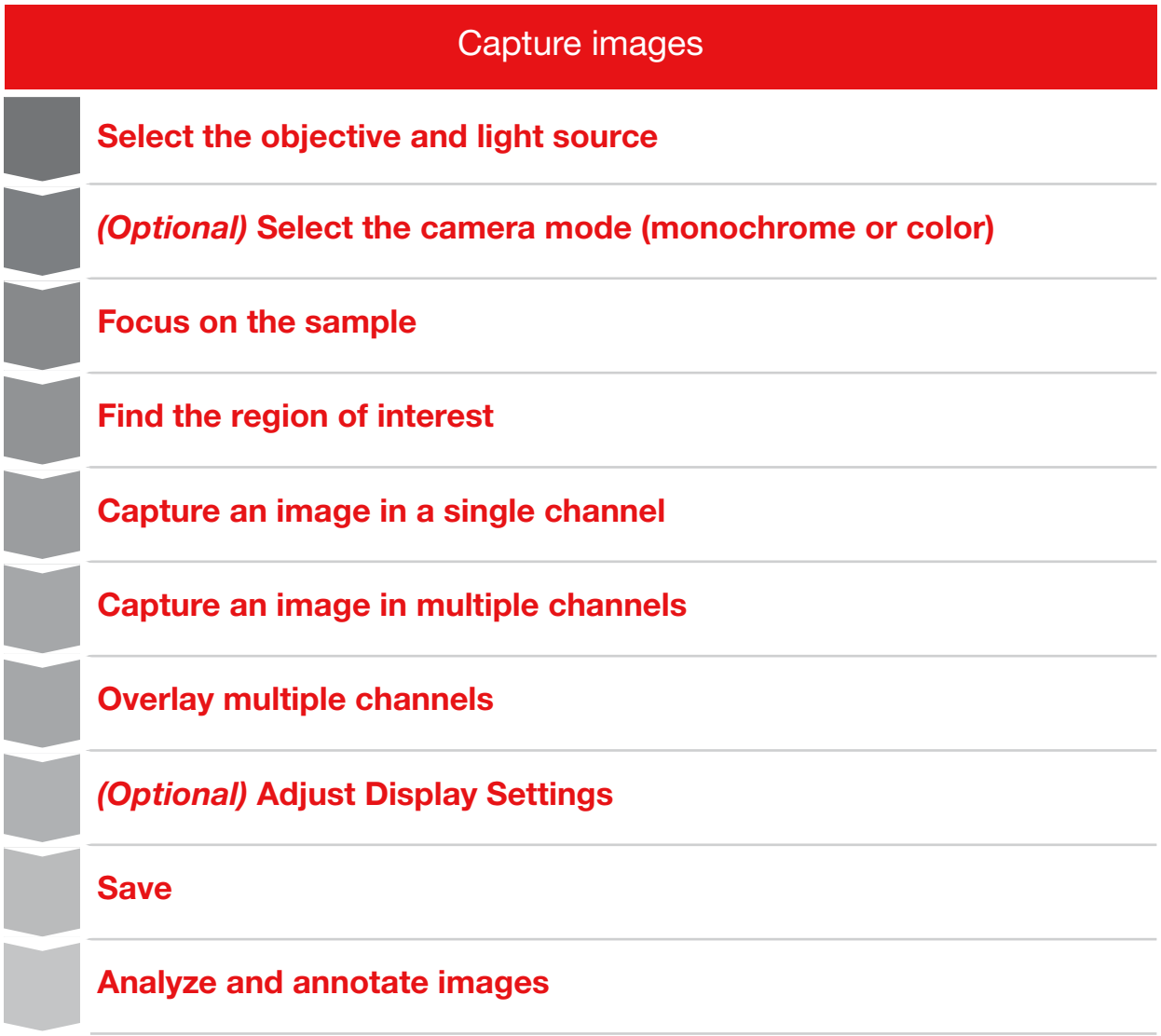
Set date and time

For instructions about how to set up the date and time to the local time, see “Set date and time” on page 37.

3 Capture images

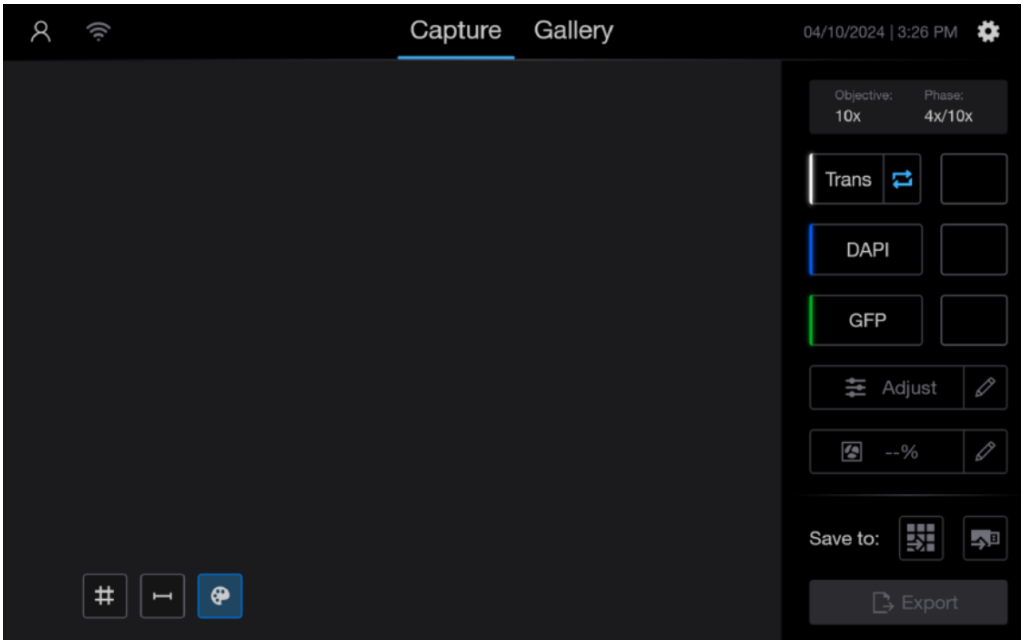
Overview

Workflow



Capture tab

The basic functions of the EVOS™ M3000 Imaging System, such as viewing the sample, setting optimal focus, and capturing and saving images are performed in the **Capture** tab, which is the first screen after start-up.



Capture images in a single channel

Select objective and light source

1. Place the vessel containing your sample on the stage.

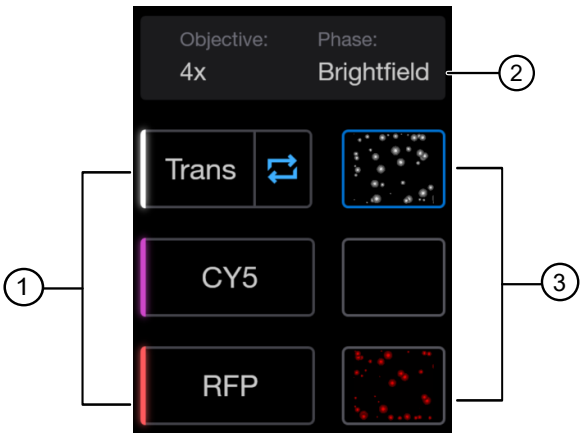
   Note: When capturing images in fluorescence channels, insert the block slider in the condenser and install the light shield on the condenser to help block room light. This is important for optimal fluorescence image quality.

2. Set the magnification using the objective turret (“Left view” on page 11). Rotate the objective turret with your left hand until the desired objective magnification is in the optical path. The active objective information is displayed above the Channel and thumbnail buttons.

   Note: When the objective turret position is between objectives, the objective information displays a warning symbol.

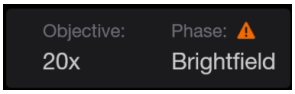
3. Select the desired **Phase** option by turning the phase ring selector (“Front view” on page 11). Available options include:
   - **Oly 4x**: Used for Olympus™ 4x phase contrast objectives (Olympus™ 4x PH)
   - **4x/10x:** Used for EVOS™ 4x or 10x phase contrast objectives (EVOS™ 4x/10x PH) and capturing images in fluorescence channels
   - **20x/40x:** Used for EVOS™ 20x or 40x phase contrast objectives (EVOS™ 20x/40x PH)
   - **Brightfield** (phase contrast off)

   The active objective and phase ring information is displayed above the **Channel** buttons.



① Channel selection/light activation buttons
② Condenser position
③ Memory buffer thumbnail images

Note: If the phase ring does not match the objective, an orange warning symbol appears next to **Phase**.



4. Select a **Channel** to turn on the excitation light and set the instrument in **Live** mode.
   In the **Live** mode, you can adjust the brightness and focus for the sample.

Note: Remove the block slider from the Condenser when viewing in transmitted light mode. Insert the block slider again when viewing in fluorescence mode for optimal fluorescence imaging.

Adjust brightness

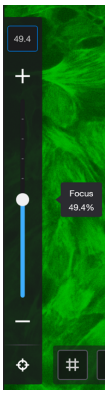
Brightness is controlled during illumination using the ☼ **(Light)** slider in the **Capture** control panel. **Live** mode must be active for the **Light** slider to be visible.

- Turn on the illumination by tapping a **Channel** button. Tap **(Light)** to open the slider, then move the slider up to increase the light intensity or down to decrease the light intensity.

Focus on the sample

Focus is controlled during illumination using the **Focus** slider in the **Capture** tab. **Live** mode must be active (illumination turned on) for the **Focus** slider to be visible.

- Turn on the illumination by tapping a **Channel** button. Tap **(Focus)** to open the slider, then move the slider up to move the objective closer to the sample or down to move the objective away from the sample. Focus can also be adjusted in small steps using the + or − buttons on the top and bottom of the focus slider, respectively.



Note: For fine focusing you can use the fine focus knob on the left side of the instrument.

Note: To aid in focusing you can pinch-zoom the viewing area to expand fine details. The % zoom factor will be displayed at the bottom of the viewing area. You can pinch-zoom to expand and contract the view and use one finger to drag the expanded view and see different areas. Tapping the % zoom factor returns the view to 100% (that is, no zoom). See the “Left view” on page 11 and the “Front view” on page 11 for knob locations.

Capture an image

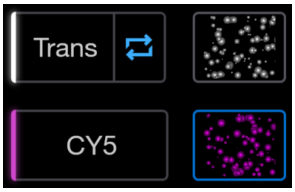
1. Tap a channel to illuminate the sample.
2. Adjust the brightness and focus using each slider.
3. Tap **(Capture)**. The illumination will turn off and the captured image will display. The thumbnail image for the channel is updated and given a blue border to indicate it is displayed in the viewing area. The thumbnail image is just a temporary image that changes with each capture.

To delete the selected thumbnail image, swipe left on the image, then tap **Delete**. Tap **Undo** to undo the deletion.

Capture another channel

Repeat the steps above for illuminating, focusing, and capturing another channel. Up to 2 fluorescence channels and one transmitted light channel can be captured on the instrument.

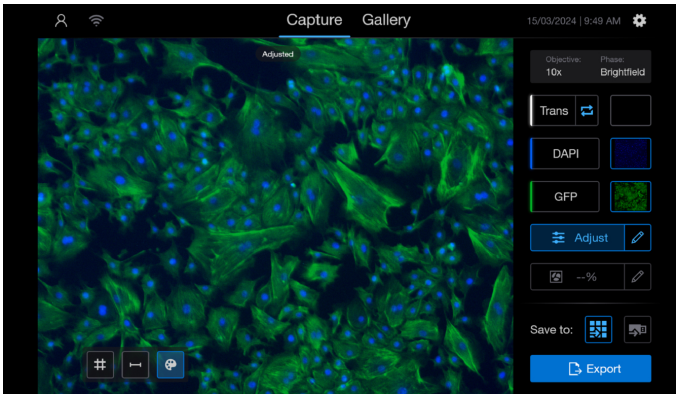
1. Tap another channel.
2. Adjust the brightness and focus using each slider.
3. Tap **(Capture)** to get the new channel image.
   The resulting thumbnail image will appear next to the selected channel thumbnail will update and be given a blue border to indicate it's being displayed in the viewing area.



Overlay multiple channels

After acquiring multiple channel images from the same location you can overlay them by selecting their thumbnail buttons.

- Tap a channel thumbnail image. The thumbnail image will highlight with a blue border to indicate it's being displayed in the viewing area. Tapping a currently selected thumbnail again deselects the channel for display and turns off the blue border to indicate it is no longer being displayed in the viewing area. You can overlay up to 3 channels (two fluorescence and one transmitted light) depending on the number of installed light cubes.
- Tap the transmitted (**Trans**) light thumbnail or the other fluorescence channel or both to overlay the images.

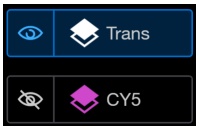


Note: Only images captured with the same objective can be overlayed.

(Optional) Adjust display settings

The **Brightness** and **Contrast** of each channel can be adjusted to optimize the image before saving.

1. Select the channels you want to adjust by tapping the channel thumbnails as described above.
2. Tap **(Adjust)** for the Adjust control
3. In the **Adjust** screen, tap the name of the channel (for example, Trans, GFP, DAPI) you want to adjust. This will reveal the **Min/Max** slider for brightness and contrast at the bottom of the viewing area.
4. Adjust brightness and contrast using the right and left sliders. The left slider adjusts dark intensities (background of fluorescence images), whereas the right slider adjusts bright intensities. Moving each slider toward the middle increases image contrast, whereas moving them apart decreases image contrast. Tapping ^ on the right side of the slider expands the control to show a histogram of the channel's intensity distribution.
5. Select each channel to be adjusted, then use the sliders as described above. To focus on each channel, the channel display can be turned on or off by tapping **(View)** or **(Hide)**.



6. Tap **Close** to return to the **Capture** tab. If needed, tap **(Adjust)** to ensure the changes are active and the image in the viewing area is using your settings. When active, **(Adjust)** is highlighted in light blue and the message "Adjusted" appears at the top of the image.

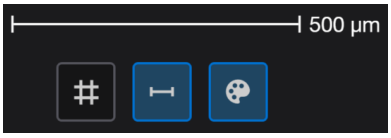
Toggle fluorescence channel pseudocolor on or off

By default fluorescence channels are displayed using their appropriate pseudocolor (for example, blue for DAPI, green for GFP). However, it can sometimes be useful to display channels in monochrome. For example, the DAPI channel can benefit from being shown in monochrome because blue against a black background can be difficult to distinguish. To switch to monochrome, simply tap the pseudocolor button:

- To switch to a monochrome image, tap **(Pseudocolor)** in the lower toolbar. To return to the color image, tap **(Pseudocolor)** again.

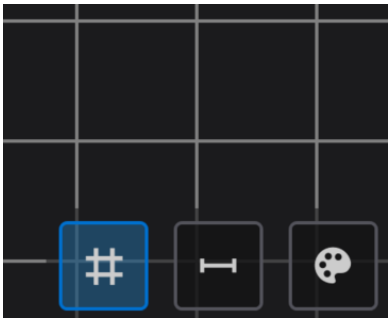
Note: If two channels are displayed in pseudocolor, then toggling pseudocolor off will show both channels as monochrome. To show monochrome for only one channel, then deselect the extra channel.

Display scale bar



- Tap **(Scale bar)** to superimpose a scale bar over the Viewing area.
  - The scale bar default value is based on the magnification of the objective in use.
  - The scale bar can be relocated by tapping any section of the bar and dragging it across the screen. When toggled on, this bar will be included in any images or video captured.
  - When switching between objectives of different magnification, the scale bar will remain the same length and the value next to the bar will update to reflect the new length of the bar.
- To change the size of the scale bar, press and hold the number next to the bar and drag to the left or right to decrease or increase the bar value. When adjusting the length of the bar by touching the screen, the finger can move off the number to help see the value shown next to the bar.

Display grid

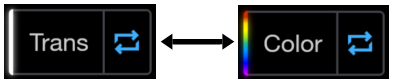


- Tap **(Grid)** to superimpose a grid bar over the Viewing area.
  - With a 4x objective, the grid size is 200 x 200 µm. When the objective is changed to 10x, the grid will remain at 200 x 200 µm. At 20x, the grid updates to 100 x 100 µm. The grid updates as objectives with different magnification are used.
  - The grid color can be adjusted under **Settings ▸ Instrument settings ▸ Screen settings ▸ Grid color**.

(Optional) Select the camera mode

The camera can be set to a **Monochrome** or **Color** mode. **Monochrome** is used for transmitted light images of live cells or any fluorescence imaging (that is, either live or fixed cells). Alternatively, **Color** mode is used for imaging stained tissue slices, IHC, or other colorimetric samples requiring color images taken via transmitted light.

- Tap **(Reverse color)** next to the **Trans**/**Color** channel button to switch between monochrome or color camera mode.



View and adjust captured images and videos from the Gallery tab

Capturing multiple images and videos over time can result in a large number of captures being stored in the **Gallery** tab.

1. To view a single image/video from the Gallery tab, select the thumbnail.

   The selected capture will display ✓ in the corner of the thumbnail. If needed, tap **(Delete)** to delete the selected file.

2. To view the image/video, tap **View** at the bottom of the screen.

   When viewing images from the **Gallery**, the user will have the ability to adjust each channel included in the image, as you would from the **Capture** tab after acquisition and before saving to the **Gallery**. The user may also enable or edit the Confluence tool on the image (if **Trans** is the only channel captured). When done viewing or making changes to the file, the file can be exported directly from the **View** window.

4 Save captured images

Save captured images

The instrument allows you to save captured images to the **Gallery** or an external USB drive.

- To save to the **Gallery**:
  a. Tap on all of the image channels to be captured.
  b. Tap **(Save to Gallery)**. A notification will appear at the top of the screen when the file is saved. This stores the images under the **Gallery** tab.

  The image name defaults to the date and time the image was taken, but this can be changed by selecting **Name** and using the keyboard to update the Name. Metadata, such as **Date/time** the image was captured (*not* the time it was saved), the **Channel(s)** included in the image, the **Objective** used, the **Confluence** of the sample (can be enabled at time of image acquisition or after capture), and the **Phase** ring in use at the time of image acquisition are also shown when the image is selected in the **Gallery** tab.

- To save to the external USB drive:

  Note: If no USB drive is connected to the instrument, the **(USB)** option will be inactive and grayed out. When connected, the USB icon will turn blue.

  a. Tap on all of the image channels to be saved.
  b. Tap **(USB)**. A notification will appear at the top of the screen when the file is saved. When saved to the USB drive, the file name and metadata cannot be edited or viewed on the instrument.

     Note: Images saved to the USB drive will appear in a new folder titled "EVOS M3000_[*instrument serial number*]. Each saved image will have its own folder with the default **Name** assigned by the instrument. This default name is the date and time of image capture. Within the image folder, the Channels and Overlay used on the capture will be saved as separate TIFF files. If applicable, a **Confluence_export** file in CSV format will also be saved. This CSV file contains the **Confluence Percentage** and the **Sensitivity** set in the **Confluence Tool** (see Chapter 5, “Cell confluency”).

5 Cell confluency

Measure real-time confluency

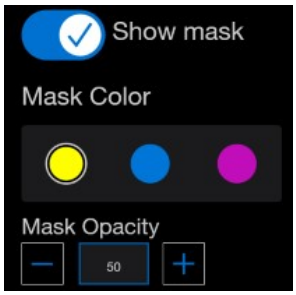
Measure the confluency of cells in real time using the **Confluence** tool.

To enable the **Confluence** tool, view a sample in the **Trans** channel.

- Tap **(Confluence)**. When enabled, the tool will display the percentage of the field of view that contains cells.

As the vessel is moved, the confluency percentage will update in real time to display the new value seen in the different field of view.

- *(Optional)* Tap **(Confluency mask edit)** next to the **(Confluence)** button to display the mask editing tools. This allows for turning on and off the mask, changing the mask color, and changing the mask opacity.

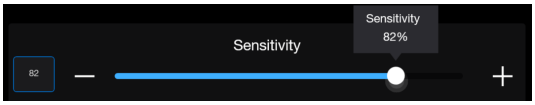


a. Tap the **Show mask** toggle switch to display or hide the area containing cells.

b. Tap a color under **Mask Color** to change the mask color.

c. Tap + or — in **Mask Opacity** to change the opacity of the mask shown in the **Capture** tab.

d. At the bottom of the screen, adjust the slider or tap + or — to increase or decrease the **Sensitivity**. To tighten the mask and report lower confluency, move the slider to the left. To loosen the mask and report greater confluency, move the slider to the right.



Note: The sensitivity adjustment can be disabled to ensure the same sensitivity across multiple sessions and users by going to **Settings ▸ Instrument settings ▸ Screen settings ▸ Confluency sensitivity** and tapping **Enabled**. Tapping **Disabled** enables the feature again.

---

6 Capture videos

Capture video

Video capture under transmitted light can be useful if you need to capture dynamic cellular events such as cardiac myocyte beating or procedures such as splitting cell colonies for purposes of documentation or training.

To enable **Video** capture, view the sample in **Live** mode (with illumination on). The **(Video)** tool appears to the right of the **(Capture)** button.

1. Tap **(Video)**. This changes the **(Capture)** button to red **(Capture video)**.
2. With your sample ready to record, tap **(Capture video)**. A Live **(Live)** and an 00:12 **(Elapsed time)** icon display as the video records.
3. Tap **(Stop recording)** at the desired time. Video can be captured for up to 5 minutes, which yields a 2 GB video file. Tapping **(Stop recording)** automatically switches the display to **Playback** mode.

   In **Playback** mode you can play the full recording, pause, or drag the slider to specific times. Videos can be saved to the **Gallery**, **USB drive**, or by using **Export** like single image captures. Videos are exported in MP4 format. Note that videos not saved are lost when the channel used for capture is activated again or if the instrument is powered off. For **Playback** mode, tap any channel thumbnail or channel selection button.

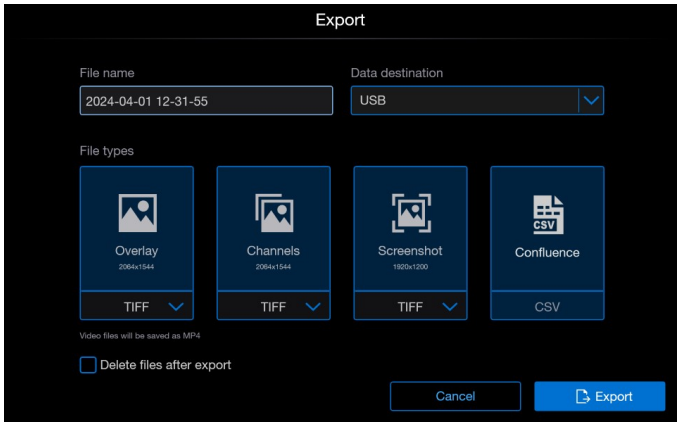
7 Export files

Export files

Image and video files can be exported from the **Capture** or **Gallery** tabs.

- To export:
  a. From the **Capture** tab, select the channels to be included in the export. Tap **Export**.

  b. From the **Gallery** tab, the previously saved capture file is exported without changes. Select the file, then tap **Export**.



When **Export** is selected, the **File name** can be edited and the **Data destination** selected. The **Data destination** can be any connected destination (that is, **Thermo Fisher™ Connect Platform**, **Microsoft™ OneDrive™**, an external device connected via **USB**, or a **Network drive**).

- Following selection of the **Data destination**, select the files to include in the export and their associated file format.

  By default, all image files export as TIFF files, but this can be changed to PNG or JPG files by selecting the dropdown underneath each **File type** (that is, **Overlay**, **Channels**, **Screenshot**, and **Confluence**). **Confluence** files are exported as CSV files and **Video** files are exported as MP4 files. When selected for export, the **File type** panel is highlighted blue. When not selected for export, the **File type** panel is gray.

- *(Optional)* Delete the files from the instrument after being exported.

Exported files are found in their **Data destination** in a folder named **EVOS M3000_[*instrument serial number*]**. Within this folder every file (image or video) exported has its own folder titled by the name of the file. Exported file may contain files titled **[*File name*]_Overlay**, **[*File name*]_Channels**, **[*File name*]_Screenshot**, or **[*File name*]_Confluence_export**, depending on which were selected for the export.

Select multiple files to export or delete

1. To select multiple files within the **Gallery** tab, tap **Select** at the top of the screen. To select all of the images/videos in the **Gallery**, tap **All**.

   This will enable selection of multiple or all images with the file name of each one displaying in the side panel.

2. *(Optional)* To export the selected files, tap **Export**.

3. *(Optional)* To delete the selected files, tap **(Delete)**.

8 Configure instrument settings

Overview

Settings

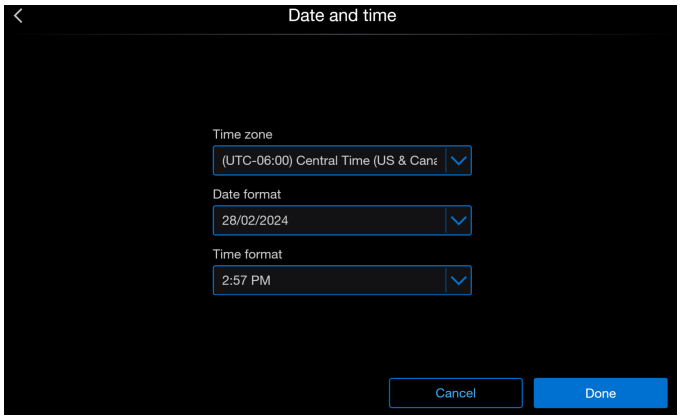
Settings (⚙) allows you to assign objectives to the objective turret, to calibrate objective magnification, to set image and general instrument options, add and remove light cubes, and to connect to a Wi-Fi network and to map network drives.

- **Instrument settings**
  - **Date and time** (see “Set date and time” on page 37).
  - **Hardware configuration**
    - **Light cubes** (see “Change EVOS™ LED light cubes” on page 43)
    - **Mechanical stage**: Displays steps and images for installation of the mechanical stage.
    - **Objectives** (see “Change the objectives” on page 44)
  - **White balance** (see “Calibrate white balance” on page 38)
  - **Screen settings**: Allows for changing the **Grid color**, enabling/disabling **Confluence Sensitivity**, and setting a **Sleep timer**.
  - **Network configuration**: Sets up a local wired or wireless network (see “Configure network settings” on page 39).
    - **Wireless**: Displays the **Status**, available **Networks**, **IP address**, and **MAC address** for a wireless connection.
    - **Wired**: Displays the **Status**, **IP address**, and **MAC address** for a wired connection.
  - **Cloud settings**: Allows for on/off selection of **Upload telemetry data**.
  - **Network drive**: Allows selection of **Drive location**, **Username**, and **Password** for a local network drive (see “Map a network drive” on page 40).
  - **Reset instrument**: Resets instrument configuration to default settings.

    Note: Resetting the instrument cannot be undone.
- **About instrument**: Displays details for the **Product name**, **Instrument software release**, **Instrument firmware release**, **EPI firmware release**, **Camera firmware release**, and the **Instrument serial number**. It also displays a **EULA** button that opens up the End License User Agreement for review.
- **Export error logs**: Displays a **File Name** and asks for the **Data destination** (that is, **Thermo Fisher Connect cloud**, **OneDrive cloud**, **USB**, or **Network drive**) (see “Export error logs” on page 40).

Set date and time

1. From **Instrument settings**, click **Date and time**.



2. Enter the **Time zone**, **Date format**, and **Time format**.

   After each of the 3 selections, click the ✕ in the upper corner to return to the **Date and time** screen.

3. Click **Done** when finished.

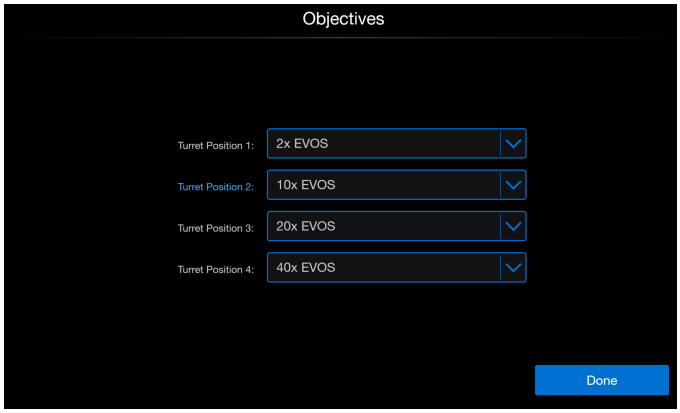
Note: You cannot set the time more than 24 hours in the past.

Hardware configuration

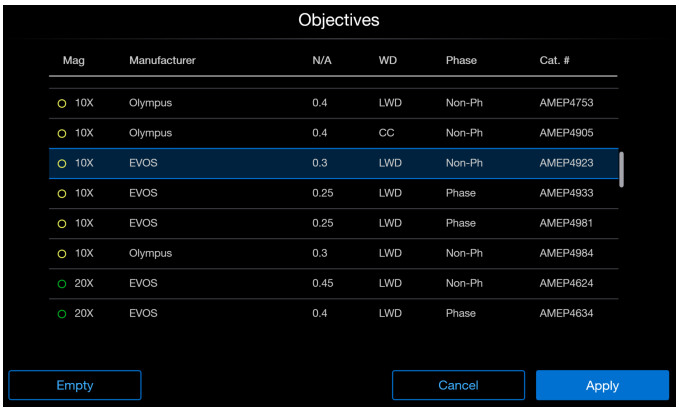
Assign objectives

After adding a new objective to the objective turret or replacing an older objective, assign the new objective to the appropriate turret position. For instructions on how to remove an objective, see “Change the objectives” on page 44.

1. Click ⚙ **(Settings)**, then tap **Instrument settings** ▸ **Hardware configuration** ▸ **Objectives**.



2. Click the ⌄ icon at the end of the specific turret position selection (1, 2, 3, or 4). Find the objective in the **Objectives** list for the corresponding turret position.

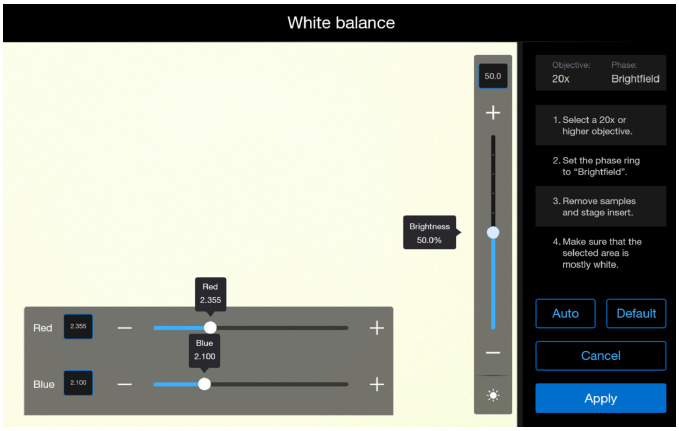


3. Click **Apply** for the correct objective or **Empty** if the turret position no longer holds an objective.

Calibrate white balance

The setting **White balance** calibrates color channel lighting.

1. Click ⚙ **(Settings)**, then click **Instrument settings ▸ White balance**.



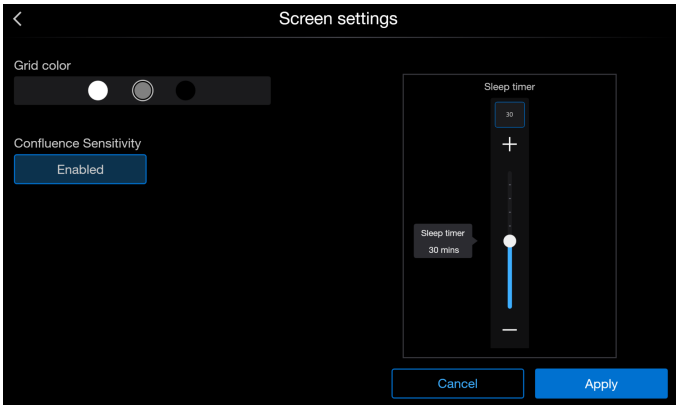
2. Follow the screen instructions. Select a 20x or higher objective, then set the phase ring to **Brightfield** using the Phase ring selector (“Left view” on page 11).

3. Remove any samples and ensure the image is blank with medium brightness (not saturated).

4. Click **Apply** to begin white balance calibration or **Default** to return settings to the original default values.

Screen settings

- **Grid color**: Choose the **Capture** screen image grid between white, gray, and black. The active color displays a white ring around the color circle.
- **Confluence Sensitivity**: Enables or disables confluence sensitivity.
- **Sleep timer**: Drag the slider bar up or down or click + or — to increase or decrease the length of time to engage the **Sleep timer**. The maximum inactivity time is 60 minutes.

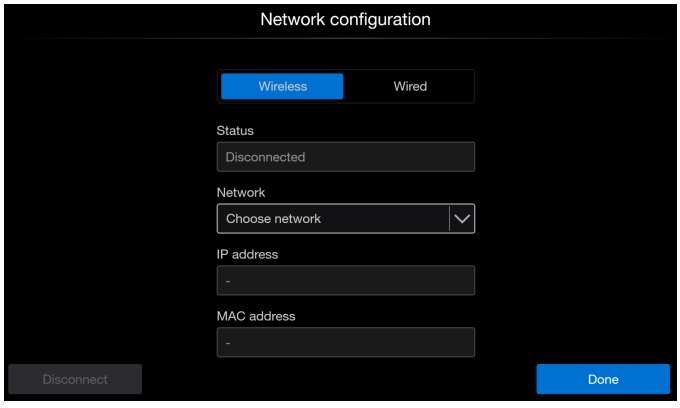


Configure network settings

You can connect the EVOS™ M3000 Imaging System to a network using a Wi-Fi adapter and save captured images directly to shared folders on the network. You can also connect to your Connect account, the Thermo Fisher Scientificcloud-based platform, to store your image files and analyze them with the EVOS™ Image Analysis application.

Connect to a Wi-Fi network

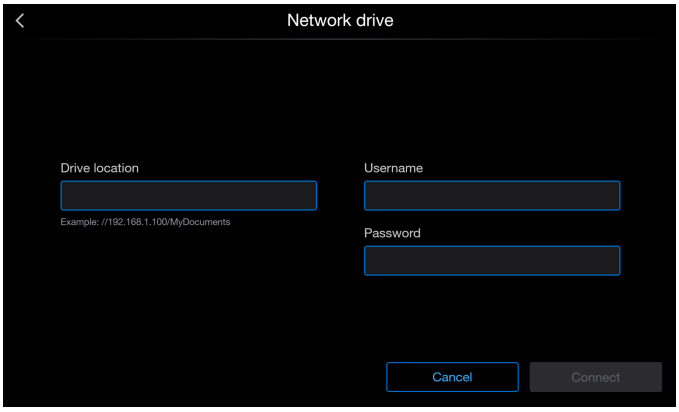
1. Tap ⚙ **(Settings)**, then click **Instrument settings** ▸ **Network configuration**.
2. Tap **Wireless**. The **Status** will show as **Connected** or **Disconnected**.



3. Tap ⌄ in **Network** and select the listed network to join.
4. The required **IP** and **MAC** addresses should auto-populate. Click **Done**.

Map a network drive

1. Tap **(Settings)**, then click **Instrument settings** ▸ **Network drive**.



2. Enter the required **Drive location** (for example, //192.168.1.100/MyDocuments) with a **Username** and **Password**.
3. Tap **Connect**.

Export error logs

1. Tap **Settings** ▸ **Export error logs**.
   The **Export troubleshooting** screen will display with the **File Name** and **Data destination** dropdown menu.
2. Select the data destination by clicking on one of the connected choices (shown as blue).
   - Cloud – Thermo Fisher Connect
   - Cloud – OneDrive
   - USB
   - Network drive
3. Tap **Done**.
4. Tap **Export**.

Update from USB

1. Download the latest software version from the Thermo Fisher website to the root of a USB flash drive.
2. Plug the USB flash drive into the side USB 3.0 port.
   An update prompt will display on the instrument.
3. Confirm the update prompt shows the current version as well as the updated version.

4. Start the update by tapping **Yes**.

Note: During the update process the instrument may restart multiple times. The update process is complete when the **Capture** tab is displayed.

9 Instrument care and maintenance

General care

- When cleaning optical elements, use only optical-grade materials to avoid scratching soft lens coatings.
- Clean the stage as needed with paper towels or Kimwipes™ tissues dampened with 70% ethanol.
- Use the appropriate cleaning solutions for each component, as indicated in the Decontamination Procedures below.
- If liquid spills on the instrument, turn off the power immediately and wipe dry.
- Do not exchange objectives between instruments unless you know that the components have been approved and recommended by Thermo Fisher Scientific.
- After using, cover the instrument with the supplied dust cover.

Note: Always use the correct power supply. The power adaptor specifications appear on the serial number label (above ports and plugs on the rear of the instrument) and in the Specifications. Damage due to an incompatible power adaptor is not covered by warranty.

CAUTION! Never disassemble or service the instrument yourself. Do not remove any covers or parts that require the use of a tool to obtain access to moving parts. Operators must be trained before being allowed to perform any hazardous operation. Unauthorized repairs may damage the instrument or alter its functionality, which may void your warranty. Contact your local EVOS™ distributor to arrange for service.

IMPORTANT! If you have any doubt about the compatibility of decontamination or cleaning agents with parts of the equipment or with material contained in it, contact Technical Support or your local EVOS™ distributor for information.

Objective lens care

Clean each objective periodically or when necessary with an optical-grade swab and a pre-moistened lens wipe (or lens paper moistened with lens cleaning solution). To avoid scratching the soft lens coatings, use only optical-grade cleaning materials and do not rub the lens.

Note: To protect all optical components of the instrument, use the dust cover when the instrument is not in use.

Decontamination procedures

In case hazardous material is spilt onto or into the components of the EVOS™ M3000 Imaging System, follow the decontamination procedure as described below.

1. Turn power OFF.
2. Clean the LCD display.
   a. Use a soft, dry, lint-free cloth to wipe off any dust from the screen.
   b. Clean the LCD display with a non-alcohol based cleaner made for flat-panel displays.

   IMPORTANT! Do not spray cleaning fluid directly onto the screen, as it may drip into the display.
3. Lightly wipe working surfaces of the EVOS™ M3000 Imaging System (stage top, objective turret, housing, etc.) with paper towels or Kimwipes™ tissues dampened with 70% ethanol or 4,000 ppm hydrogen peroxide (H_2O_2).

   IMPORTANT! Do not allow decontamination solution to get into lubricated areas or any points of rotation.

   Do not soak any surface in decontamination solution.
   NEVER spray liquid anywhere on the EVOS™ M3000 Imaging System.
   Always wipe surfaces with dampened paper towels instead.

Change EVOS™ LED light cubes

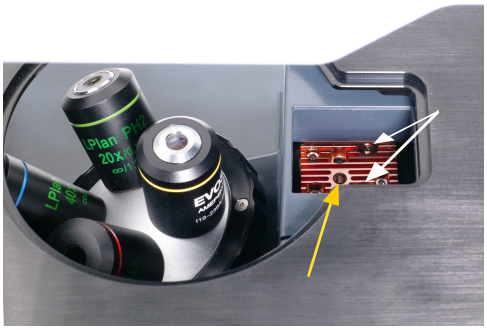
LED light cubes can be added or changed to fit the instrument's functionality to your specific research needs. Each LED light cube is coded to allow the imaging system to automatically recognize and configure the user interface.

For a complete list of available light cubes and to inquire about custom light cubes, go to **thermofisher.com/evos** or contact Technical Support.

WARNING! UV LIGHT HAZARD! The EVOS™ M3000 Imaging System uses a Class 3B ultraviolet LED for the DAPI channel. **Before changing the LED light cubes, ensure that the excitation light is turned OFF** (the instrument is **not** in **Live** mode).

Change LED light cube

1. Go to **Settings** ▸ **Instrument settings** ▸ **Light cubes**.
2. Select the position of the **Light cube** you want to change.
3. Move the stage (if mechanical stage is installed) back to allow access to the light cube, which is centered under the back of the stage.



4. Use the light cube tool to loosen the two slotted screws (white arrows) that are flush with the ridges on the light cube.
5. Screw the threaded end of the light cube tool into the hole in the center of the light cube (yellow arrow).
6. Use the tool to tilt the light cube slightly toward you and lift out gently, and then remove tool from cube.
7. Attach the tool to the new light cube and lower the cube into position so that the electronic connection aligns properly (facing the back of the microscope) and the cube sits squarely in place with the label facing toward the front.
8. Unscrew the light cube tool from the cube, then use it to gently tighten the two slotted screws flush with the ridges on the light cube.

Change the objectives

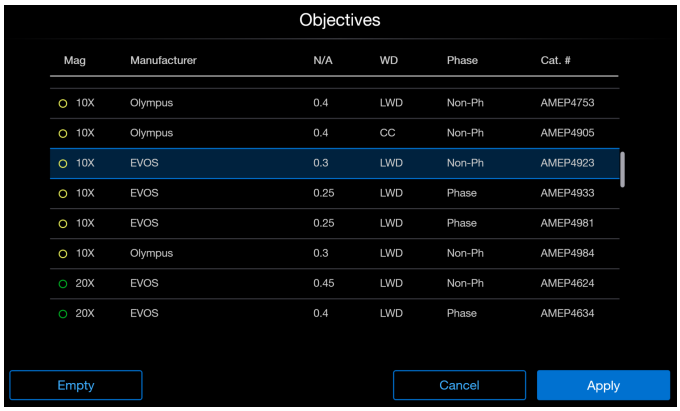
Objectives can be added or changed to fit the instrument's functionality to your specific research needs.

Procedure for objective change

1. Remove the clear polycarbonate stage plate, then unscrew the objective to be replaced from the objective turret. The mechanical stage (if installed) may need to move to ensure the objectives are accessible.
2. Note the part number of the objective.

3. Screw the new objective into the available position in the objective turret. Note the part number of the objective and the turret position.

4. Go to **Instrument settings** ▸ **Hardware configuration** ▸ **Objectives**, select the active turrent position with the new objective, then find the appropriate objective in the **Objectives** list.



5. Click **Apply** to confirm the correct objective for the selected turret.

6. Click **Done** to return to the main screen.

A Troubleshooting

Note: For additional technical support, contact your local EVOS™ distributor. If you do not have your distributor information, visit **thermofisher.com/evos** or contact Technical Support.

Image quality issues

Observation	Recommended action
Transmitted light image is too dim (at higher magnifications)	Remove the condenser slider, if one is in place.
Specks, dots, or blurs on image	Follow the instructions under "Objective lens care" ("Objective lens care" on page 43) to clean the objectives.
Uneven focus across screen	• Position the sample so that it lies flat on the stage and check the sample for even thickness. • Ensure that the vessel holder is mounted flat on the stage.
Difficulty focusing on coverslipped sample on standard slide	With a 20x or greater objective, place the slide so the coverslip is facing down (short working-distance objectives require a thin optical substrate and cannot focus through 1.0–1.5 mm of glass or plastic).
Image display is black	• Tap the desired onscreen light button and check the slider to make sure it is bright enough to see the sample. • Center the sample over the objective. • Verify that the power supply is connected and the power switch is on. • If using transmitted light illumination, confirm the block slider is removed from the condenser.

Software interface issues

Note: We recommend keeping the EVOS™ M3000 Imaging System up to date with the latest software.

Observations	Recommended actions
Some of the software controls are not available	The controls available on the EVOS™ M3000 Imaging System are contextual; only the controls relevant for the chosen task will be available.
Save button does not respond when clicked	Click the ◯ **(Capture)** button first. It is only possible to save an image that is captured.
Unable to connect to network	• Verify that the USB Wi-Fi adaptor for wireless network connection is installed into one of the USB ports in the back (for wireless connection). • Contact your network administrator to resolve any network issues.

Mechanical issues

Observations	Recommended actions
Vessel does not sit securely on moving stage	Use the correct vessel holder (visit **thermofisher.com/evos**).

B Graphical user interface (GUI)

Capture screen

Figure 2 EVOS™ M3000 Imaging System Capture screen at start up (with no channel selected)

1. Image pane
2. Sign In/User
3. Wireless connection status
4. Capture tab
5. Gallery tab
6. Settings
7. Objective and phase indicator
8. Light source (channel) and image thumbnails
9. Adjust image display
10. Confluence tool
11. Save to
12. Export
13. Toggle pseudocolor
14. Display scale bar
15. Display grid

Figure 3 EVOS™ M3000 Imaging System Capture screen with Live camera feed from fluorescence light channel (GFP channel selected)

1. Image page (showing live camera display from the selected channel)
2. Live camera display indicator
3. Transmitted light channel
4. Fluorescent light channels (GFP selected with blue border)
5. Brightness with control slider open (available after capture)
6. Capture movie control
7. Capture control
8. Toggle pseudocolor
9. Display scale bar
10. Display grid
11. Focus with control slider open (available after capture)

Gallery screen

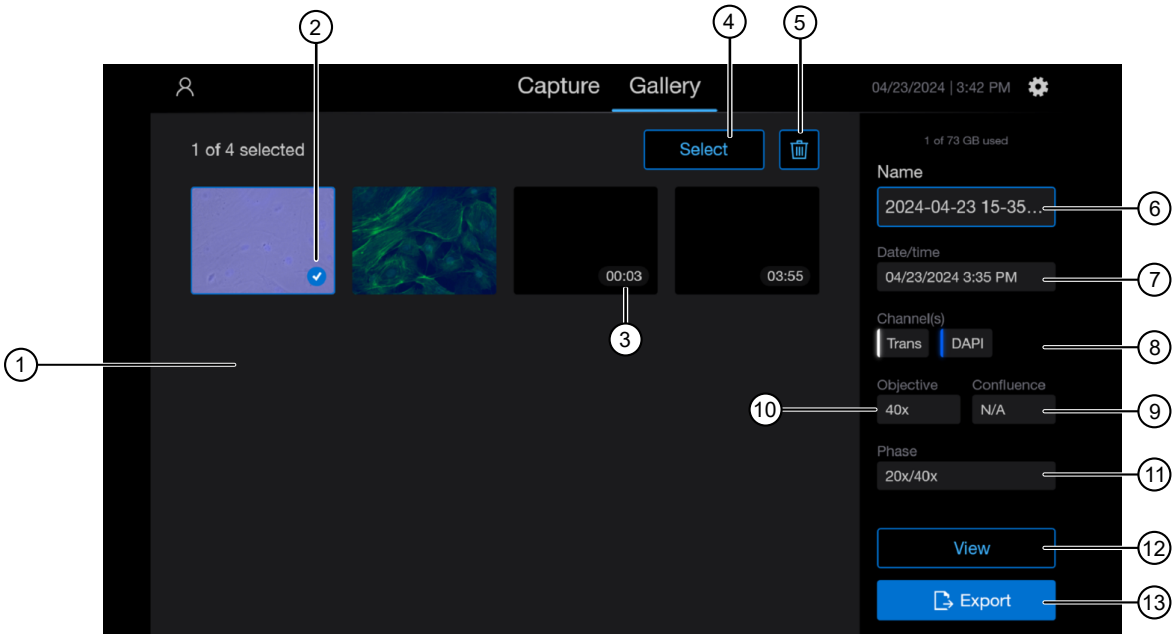


Figure 4 EVOS™ M3000 Imaging System Gallery screen (with captured images)

1. Gallery pane
2. Selected image
3. Video image (displays time length)
4. Select
5. Delete
6. Image name
7. Date/time
8. Channel(s)
9. Confluence
10. Objective
11. Phase
12. View
13. Export

C

Specifications

Instrument specifications

Technical specifications	
Operating conditions	Indoor use only
Operating temperature	4°–32°C (40°–90°F)
Operating humidity	<90%, non-condensing
Operating power	100–240 VAC, 1.5 A
Frequency	50–60 Hz
Electrical input	12 VDC, 5 A
Optics	Infinity-corrected optical system; RMS-threaded objectives with 45 mm parfocal distance
Illumination	Adjustable intensity LED (>50,000-hour life per light cube)
Light cubes (not included)	2-position chamber for up to 2 fluorescent LED cubes Broad selection of standard and specialty light cubes
Contrast method	Epifluorescence and transmitted light (for brightfield and phase-contrast applications)
Objective turret	4-position manual turret
Objectives (not included)	Selection from more than 35 high-quality, long working distance (LWD) and coverslip-corrected (CC) objectives; magnification from 1.25x to 60x
Condenser	4-position turret with a clear aperture and 3-phase annuli
Stage	Mechanical stage (optional) with travel range of 180 mm x 222 mm
Focus	Manual and touchscreen-driven focus with submicron (0.15 µm) resolution
LCD display	10.1 inch high-resolution LCD display (1,920 x 1,200 pixels)
Camera	High-sensitivity color CMOS camera (2,064 x 1,536 pixels, 3.2 Megapixels) with 3.45 µm pixels
Captured images	8-bit monochrome: TIFF, PNG, JPG 8-bit color: TIFF, PNG, JPG Movies: MP4
Output ports	1 USB 3.0 port, 2 USB 2.0 ports

(continued)

Technical specifications	
Networking capability	Connection through Microsoft™ Windows™ Server Message Block (SMB) network wirelessly using the supplied Wi-Fi adaptor
Cloud connectivity	Use the Thermo Fisher™ Connect Platform or Microsoft™ OneDrive™ database for remote access to images and data via the internet
Power supply	AC adaptor with country-specific power cords.

Physical dimensions

Parameter	Instrument	Transport package
Width	29.8 cm (11.7 in)	63.5 cm (25 in)
Depth	49.1 cm (19.3 in)	43.2 cm (17 in)
Height	32.3 cm (12.7 in)	45.5 cm (17.9 in)
Weight	8.3 kg (18.4 lb)	13.6 kg (29.8 lb) [1]

[1] Weight including instrument.

D

Safety

WARNING! GENERAL SAFETY. Using this product in a manner not specified in the user documentation may result in personal injury or damage to the instrument or device. Ensure that anyone using this product has received instructions in general safety practices for laboratories and the safety information provided in this document.

- Before using an instrument or device, read and understand the safety information provided in the user documentation provided by the manufacturer of the instrument or device.
- Before handling chemicals, read and understand all applicable Safety Data Sheets (SDSs) and use appropriate personal protective equipment (gloves, gowns, eye protection, and so on). To obtain SDSs, visit **thermofisher.com/support**.

Symbols on this instrument

Symbols may be found on the instrument to warn against potential hazards or convey important safety information. In this document, the hazard symbol is used along with one of the following user attention words.

- **CAUTION!**—Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.
- **WARNING!**—Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.
- **DANGER!**—Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.

Standard safety symbols

Symbol and description
CAUTION! Risk of danger. Consult the manual for further safety information.
CAUTION! Risk of electrical shock.
CAUTION! Potential biohazard.
CAUTION! Ultraviolet light.

Symbole et description
MISE EN GARDE ! Risque de danger. Consulter le manuel pour d'autres renseignements de sécurité.
MISE EN GARDE ! Risque de choc électrique.
MISE EN GARDE ! Danger biologique potentiel.
MISE EN GARDE ! Rayonnement ultraviolet.

Location of labels

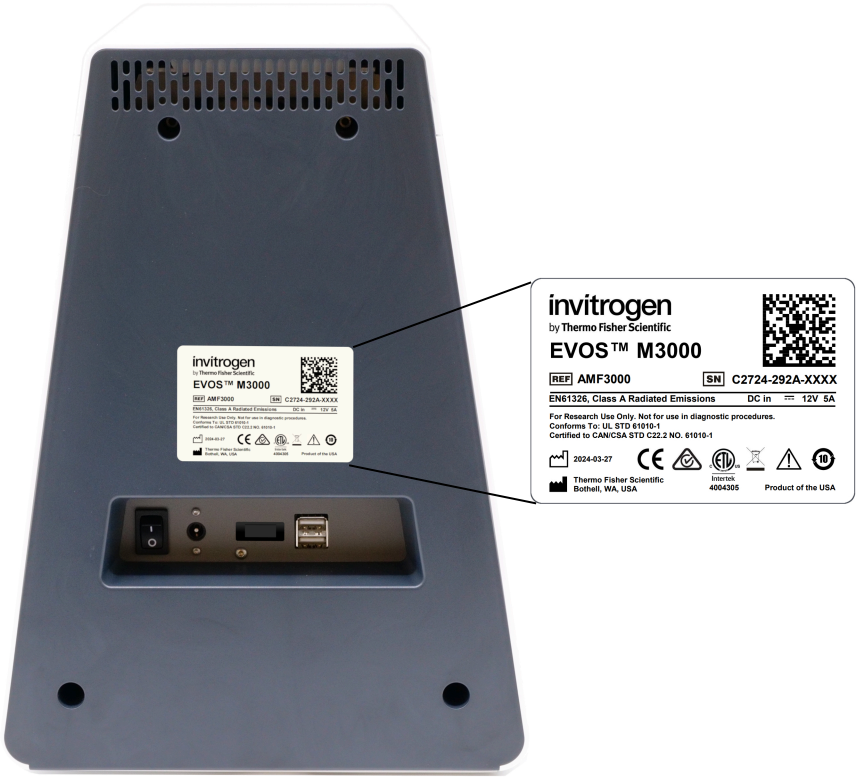
Label and location


Figure 5 Instrument information label (back panel)

Control and connection symbols

Symbols and descriptions	
	On (Power)
	Off (Power)
	Protective conductor terminal (main ground)
	Alternating current

Conformity symbols

Conformity mark	Description
	Indicates conformity with safety requirements for Canada and U.S.A.
	Indicates conformity with China RoHS requirements.
	Indicates conformity with European Union requirements.
	Indicates conformity with Australian standards for electromagnetic compatibility.
	Indicates conformity with the WEEE Directive 2012/19/EU. **CAUTION!** To minimize negative environmental impact from disposal of electronic waste, do not dispose of electronic waste in unsorted municipal waste. Follow local municipal waste ordinances for proper disposal provision and contact customer service for information about responsible disposal options.

Safety information for instruments not manufactured by Thermo Fisher Scientific

Some of the accessories provided as part of the instrument system are not designed or built by Thermo Fisher Scientific. Consult the manufacturer's documentation for the information needed for the safe use of these products.

Instrument safety

General

CAUTION! Do not remove instrument protective covers. If you remove the protective instrument panels or disable interlock devices, you may be exposed to serious hazards including, but not limited to, severe electrical shock, laser exposure, crushing, or chemical exposure.

If covers are removed, do not use the instrument. Contact Technical Support.

Physical injury

CAUTION! Moving and Lifting Injury. Improper lifting can cause painful and permanent back injury.

Things to consider before lifting or moving the instrument or accessories:

- Depending on the weight, moving or lifting may require two or more persons.
- If you decide to lift or move the instrument after it has been installed, do not attempt to do so without the assistance of others, the use of appropriate moving equipment, and proper lifting techniques.
- Ensure you have a secure, comfortable grip on the instrument or accessory.
- Make sure that the path from where the object is to where it is being moved is clear of obstructions.
- Do not lift an object and twist your torso at the same time. Keep your spine in a good neutral position while lifting with your legs.
- Participants should coordinate lift and move intentions with each other before lifting and carrying.
- For smaller packages, rather than lifting the object from the packing box, carefully tilt the box on its side and hold it stationary while someone else slides the contents out of the box.

CAUTION! Moving Parts. Moving parts can crush, pinch and cut. Keep hands clear of moving parts while operating the instrument. Disconnect power before servicing.

Electrical safety

WARNING! Ensure appropriate electrical supply. For safe operation of the instrument:

- Plug the system into a properly grounded receptacle with adequate current capacity.
- Ensure the electrical supply is of suitable voltage.
- Never operate the instrument with the ground disconnected. Grounding continuity is required for safe operation of the instrument.

AVERTISSEMENT ! Veiller à utiliser une alimentation électrique appropriée. Pour garantir le fonctionnement de l'instrument en toute sécurité :

- Brancher le système sur une prise électrique correctement mise à la terre et de puissance adéquate.
- S'assurer que la tension électrique est convenable.
- Ne jamais utiliser l'instrument alors que le dispositif de mise à la terre est déconnecté. La continuité de la mise à la terre est impérative pour le fonctionnement de l'instrument en toute sécurité.

WARNING! Power Supply Line Cords. Use properly configured and approved line cords for the power supply in your facility. If the line cord is damaged, contact Technical Support.

AVERTISSEMENT ! Cordons d'alimentation électrique. Utiliser des cordons d'alimentation adaptés et approuvés pour raccorder l'instrument au circuit électrique du site.

WARNING! Disconnecting Power. To fully disconnect power either detach or unplug the power cord, positioning the instrument such that the power cord is accessible.

AVERTISSEMENT ! Déconnecter l'alimentation. Pour déconnecter entièrement l'alimentation, détacher ou débrancher le cordon d'alimentation. Placer l'instrument de manière à ce que le cordon d'alimentation soit accessible.

Overvoltage rating

The EVOS™ M3000 Imaging System has an installation (overvoltage) category of II, and is classified as portable equipment.

Cleaning and decontamination

CAUTION! Cleaning and Decontamination. Use only the cleaning and decontamination methods that are specified in the manufacturer user documentation. It is the responsibility of the operator (or other responsible person) to ensure that the following requirements are met:

- No decontamination or cleaning agents are used that can react with parts of the equipment or with material that is contained in the equipment. Use of such agents could cause a HAZARD condition.
- The instrument is properly decontaminated a) if hazardous material is spilled onto or into the equipment, and/or b) before the instrument is serviced at your facility or is sent for repair, maintenance, trade-in, disposal, or termination of a loan. Request decontamination forms from customer service.
- Before using any cleaning or decontamination methods (except methods that are recommended by the manufacturer), confirm with the manufacturer that the proposed method will not damage the equipment.

MISE EN GARDE ! Nettoyage et décontamination. Utiliser uniquement les méthodes de nettoyage et de décontamination indiquées dans la documentation du fabricant destinée aux utilisateurs. L'opérateur (ou toute autre personne responsable) est tenu d'assurer le respect des exigences suivantes:

- Ne pas utiliser d'agents de nettoyage ou de décontamination susceptibles de réagir avec certaines parties de l'appareil ou avec les matières qu'il contient et de constituer, de ce fait, un DANGER.
- L'instrument doit être correctement décontaminé a) si des substances dangereuses sont renversées sur ou à l'intérieur de l'équipement, et/ou b) avant de le faire réviser sur site ou de l'envoyer à des fins de réparation, de maintenance, de revente, d'élimination ou à l'expiration d'une période de prêt (des informations sur les formes de décontamination peuvent être demandées auprès du Service clientèle).
- Avant d'utiliser une méthode de nettoyage ou de décontamination (autre que celles recommandées par le fabricant), les utilisateurs doivent vérifier auprès de celui-ci qu'elle ne risque pas d'endommager l'appareil.

Instrument component and accessory disposal

To minimize negative environmental impact from disposal of electronic waste, do not dispose of electronic waste in unsorted municipal waste. Follow local municipal waste ordinances for proper disposal provision and contact customer service for information about responsible disposal options.

Safety and electromagnetic compatibility (EMC) standards

The instrument design and manufacture complies with the following standards and requirements for safety and electromagnetic compatibility.

Safety standards

Reference	Description
EU Directive 2014/35/EU	European Union “Low Voltage Directive”
EN 61010-1 UL 61010-1 CAN/CSA C22.2 No. 61010-1	*Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements*
EN 61010-2-081 UL 61010-2-081 CAN/CSA C22.2 No. 61010-2-081	*Safety requirements for electrical equipment for measurement, control and laboratory use – Part 2-081: Particular requirements for automatic and semi-automatic laboratory equipment for analysis and other purposes*
EN 62471	*Photobiological safety of lamps and lamp systems*
21 CFR 1040.10 and 1040.11 as applicable	U.S. FDA Health and Human Services (HHS) “Radiological health performance standards for laser products” and “Radiological health performance standards for specific purpose laser products”

EMC standards

Reference	Description
EU Directive 2014/30/EU	European Union “EMC Directive”
EN 61326-1	*Electrical Equipment for Measurement, Control and Laboratory Use – EMC Requirements – Part 1: General Requirements*
FCC Part 18 (47 CFR)	U.S. Standard “Industrial, Scientific, and Medical Equipment”
AS/NZS CISPR 11	*Limits and Methods of Measurement of Electromagnetic Disturbance Characteristics of Industrial, Scientific, and Medical (ISM) Radiofrequency Equipment*

(continued)

Reference	Description
ICES-001, Issue 4	*Industrial, Scientific and Medical (ISM) Radio Frequency Generators*
FCC Part 15 Subpart B (47 CFR)	*U.S. Standard Radio Frequency Devices* This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. This equipment has been designed and tested to CISPR 11 Class A. In a domestic environment it may cause radio interference, in which case, you may need to take measures to mitigate the interference. Do not use this device in close proximity to sources of strong electromagnetic radiation (e.g. unshielded intentional RF sources), as these can interfere with the proper operation.

Environmental design standards

Reference	Description
Directive 2012/19/EU	European Union “WEEE Directive”—Waste electrical and electronic equipment
Directive 2011/65/EU	European Union “RoHS Directive”—Restriction of hazardous substances in electrical and electronic equipment
SJ/T 11364-2014	“China RoHS” Standard—Marking for the Restricted Use of Hazardous Substances in Electronic and Electrical Products For instrument specific certificates, visit our customer resource page at **www.thermofisher.com/us/en/home/technical-resources/rohs-certificates.html**.

Chemical safety

WARNING! GENERAL CHEMICAL HANDLING. To minimize hazards, ensure laboratory personnel read and practice the general safety guidelines for chemical usage, storage, and waste provided below. Consult the relevant SDS for specific precautions and instructions:

- Read and understand the Safety Data Sheets (SDSs) provided by the chemical manufacturer before you store, handle, or work with any chemicals or hazardous materials. To obtain SDSs, see the "Documentation and Support" section in this document.
- Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (for example, safety glasses, gloves, or protective clothing).
- Minimize the inhalation of chemicals. Do not leave chemical containers open. Use only with sufficient ventilation (for example, fume hood).
- Check regularly for chemical leaks or spills. If a leak or spill occurs, follow the manufacturer cleanup procedures as recommended in the SDS.
- Handle chemical wastes in a fume hood.
- Ensure use of primary and secondary waste containers. (A primary waste container holds the immediate waste. A secondary container contains spills or leaks from the primary container. Both containers must be compatible with the waste material and meet federal, state, and local requirements for container storage.)
- After emptying a waste container, seal it with the cap provided.
- Characterize (by analysis if needed) the waste generated by the particular applications, reagents, and substrates used in your laboratory.
- Ensure that the waste is stored, transferred, transported, and disposed of according to all local, state/provincial, and/or national regulations.
- **IMPORTANT!** Radioactive or biohazardous materials may require special handling, and disposal limitations may apply.

AVERTISSEMENT ! **PRÉCAUTIONS GÉNÉRALES EN CAS DE MANIPULATION DE PRODUITS CHIMIQUES.** Pour minimiser les risques, veiller à ce que le personnel du laboratoire lise attentivement et mette en œuvre les consignes de sécurité générales relatives à l'utilisation et au stockage des produits chimiques et à la gestion des déchets qui en découlent, décrites ci-dessous. Consulter également la FDS appropriée pour connaître les précautions et instructions particulières à respecter :

- Lire et comprendre les fiches de données de sécurité (FDS) fournies par le fabricant avant de stocker, de manipuler ou d'utiliser les matériaux dangereux ou les produits chimiques. Pour obtenir les FDS, se reporter à la section « Documentation et support » du présent document.
- Limiter les contacts avec les produits chimiques. Porter des équipements de protection appropriés lors de la manipulation des produits chimiques (par exemple : lunettes de sûreté, gants ou vêtements de protection).
- Limiter l'inhalation des produits chimiques. Ne pas laisser les récipients de produits chimiques ouverts. Ils ne doivent être utilisés qu'avec une ventilation adéquate (par exemple, sorbonne).
- Vérifier régulièrement l'absence de fuite ou d'écoulement des produits chimiques. En cas de fuite ou d'écoulement d'un produit, respecter les directives de nettoyage du fabricant recommandées dans la FDS.
- Manipuler les déchets chimiques dans une sorbonne.

- Veiller à utiliser des récipients à déchets primaire et secondaire. (Le récipient primaire contient les déchets immédiats, le récipient secondaire contient les fuites et les écoulements du récipient primaire. Les deux récipients doivent être compatibles avec les matériaux mis au rebut et conformes aux exigences locales, nationales et communautaires en matière de confinement des récipients.)
- Une fois le récipient à déchets vidé, il doit être refermé hermétiquement avec le couvercle fourni.
- Caractériser (par une analyse si nécessaire) les déchets générés par les applications, les réactifs et les substrats particuliers utilisés dans le laboratoire.
- Vérifier que les déchets sont convenablement stockés, transférés, transportés et éliminés en respectant toutes les réglementations locales, nationales et/ou communautaires en vigueur.
- **IMPORTANT !** Les matériaux représentant un danger biologique ou radioactif exigent parfois une manipulation spéciale, et des limitations peuvent s'appliquer à leur élimination.

Biological hazard safety

WARNING! Potential Biohazard. Depending on the samples used on this instrument, the surface may be considered a biohazard. Use appropriate decontamination methods when working with biohazards.

WARNING! BIOHAZARD. Biological samples such as tissues, body fluids, infectious agents, and blood of humans and other animals have the potential to transmit infectious diseases. Conduct all work in properly equipped facilities with the appropriate safety equipment (for example, physical containment devices). Safety equipment can also include items for personal protection, such as gloves, coats, gowns, shoe covers, boots, respirators, face shields, safety glasses, or goggles. Individuals should be trained according to applicable regulatory and company/ institution requirements before working with potentially biohazardous materials. Follow all applicable local, state/provincial, and/or national regulations. The following references provide general guidelines when handling biological samples in laboratory environment.

- U.S. Department of Health and Human Services, *Biosafety in Microbiological and Biomedical Laboratories (BMBL)*, 6th Edition, HHS Publication No. (CDC) 300859, Revised June 2020
  www.cdc.gov/labs/pdf/CDC-BiosafetymicrobiologicalBiomedicalLaboratories-2020-P.pdf
- Laboratory biosafety manual, fourth edition. Geneva: World Health Organization; 2020 (Laboratory biosafety manual, fourth edition and associated monographs)
  www.who.int/publications/i/item/9789240011311

Documentation and support

Customer and technical support

Visit **thermofisher.com/support** for the latest service and support information.

- Worldwide contact telephone numbers
- Product support information
  - Product FAQs
  - Software, patches, and updates
  - Training for many applications and instruments
- Order and web support
- Product documentation
  - User guides, manuals, and protocols
  - Certificates of Analysis
  - Safety Data Sheets (SDSs; also known as MSDSs)

Note: For SDSs for reagents and chemicals from other manufacturers, contact the manufacturer.

Limited product warranty

Life Technologies Corporation and its affiliates warrant their products as set forth in the Life Technologies' General Terms and Conditions of Sale at **www.thermofisher.com/us/en/home/global/terms-and-conditions.html**. If you have questions, contact Life Technologies at **www.thermofisher.com/support**.