



2CM1 & 2CM2 Two-Camera Mounts

User Guide



Table of Contents

Chapter 1	Description.....	1
Chapter 2	Alignment and Adjustment.....	3
	<i>2.1. 2CM1 Mount Installation</i>	<i>3</i>
	<i>2.2. 2CM2 Mount Installation</i>	<i>3</i>
	<i>2.3. Filter Installation</i>	<i>3</i>
	<i>2.4. Alignment.....</i>	<i>4</i>
	<i>2.5. Running ThorCam Software with the Overlay Feature....</i>	<i>4</i>
Chapter 3	Mechanical Drawings.....	5
	<i>3.1. 2CM1 Mount Drawings.....</i>	<i>5</i>
	<i>3.2. 2CM2 Mount Drawings.....</i>	<i>6</i>
Chapter 4	Regulatory.....	7
Chapter 5	Thorlabs Worldwide Contacts.....	8

Chapter 1 Description

The 2CM1 and 2CM2 Two-Way Camera Microscope Mounts are designed for simultaneously imaging the output of a microscope split by a dichroic mirror to two of our Scientific Cameras. When used with selected filters (sold separately), these mounts allow users to configure solutions that are specific to their application.

Typical applications include multispectral imaging using a dichroic beamsplitter, as shown in Figure 2. 1/4"-80 fine pitch adjustment screws allow for 360° of rotational adjustment (8° fine adjustment) for the reflected camera and 4 mm XY adjustment of the transmitted camera; both camera ports have coarse focus adjustment, allowing for parfocalization of both images. The 2CM1 and 2CM2 mounts have up to 15 mm and 11 mm of adjustment, respectively, using the cage rods, although this adjustment range may be limited by the geometry of the camera's front face.



Figure 1 Camera Mounting Ports of 2CM1 Mount

Features

- Mount Two Cameras to Image a Single Optical Input
- Accepts 25 mm x 36 mm Dichroic Filters or Plate Beamsplitters
- Accepts Standard 25 mm Diameter Filters on Input and Outputs
- Fine Pitch Rotation and XY Adjustment for Image Registration
- Coarse Focus Adjustment for Parfocalization
- Adapts to Most Standard Microscopes Using Thorlabs' SM1 Interface
- Ideal for Use with ThorCam Image Overlay Plugin

- Microscope Camera Port Adapters Sold Separately

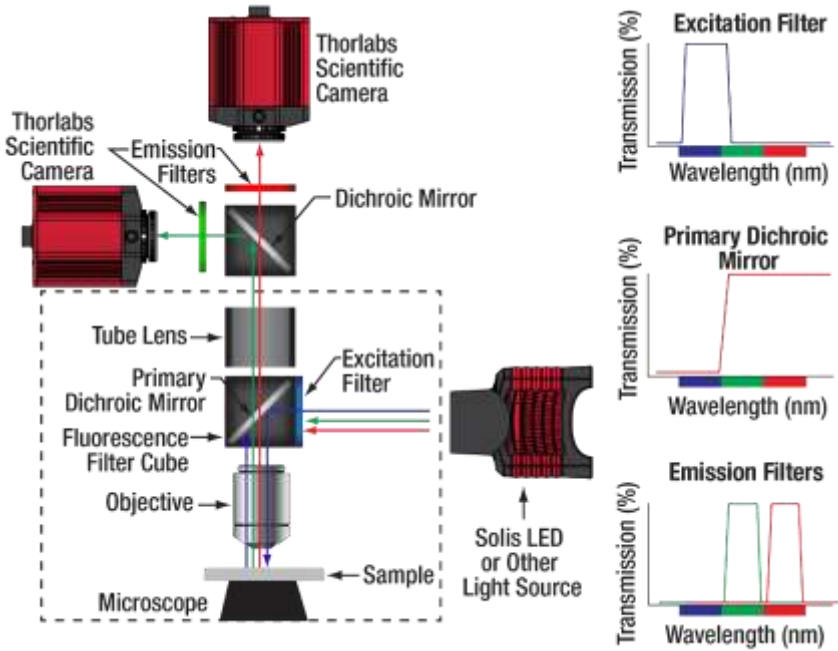


Figure 2 *Sample configuration for using a two-way camera mount*

Chapter 2 Alignment and Adjustment

2.1. 2CM1 Mount Installation

The 2CM1 mount is compatible with Thorlabs' scientific cameras with 4-40 taps on 60 mm spacings. Install the mount on your microscope using an appropriate camera port adapter (sold separately). Loosen the screws securing the ER1 cage rods to the CXY2 and LCP16R1 mounts. Remove the cage rods and screw them into the 4-40 tapped holes on the front face of each camera. Mount the cameras to the CXY2 and LCP16R1 mounts by inserting the ER1 cage rods back into the through holes on the mounts and tightening the locking screws on each cage rod.

2.2. 2CM2 Mount Installation

The 2CM2 mount is comprised of a 2CM1 mount with two LCP4S adapter plates for compatibility with Thorlabs' scientific cameras with 4-40 taps on 30 mm spacings. Install the mount on your microscope using an appropriate camera port adapter (sold separately). Loosen the screws securing the LCP4S adapter plates to the ER1 cage rods in the CXY2 and LCP16R1 mounts. Remove the adapter plates and attach them to the cameras using 4-40 x 3/16" cap screws. Reattach the adapter plates to the CXY2 and LCP16R1 mounts by inserting the ER1 cage rods back into the through holes on the mounts and tightening the locking screws on each cage rod.

2.3. Filter Installation

The DFM dichroic filter cube has a removable insert that is designed to hold a 25 mm x 36 mm dichroic mirror or plate beamsplitter and two Ø25 mm filters (excitation and emission). The dichroic mirror is clamped in place using a design that provides uniform pressure without causing deformation to the mirror, and is locked in place using a 3/32" hex key. Only light force is required to mount the mirror; we recommend screwing in both screws most of the way before final tightening. Excitation and emission filters are held in the insert using the included SM1RR retaining rings, which can be tightened with SPW606 or SPW602 Spanner Wrenches (available separately). Thorlabs sells the removable insert separately if you need to swap in different filter sets (Item # DFMT1).



Figure 3 *Installing a filter set in the removable holder*

2.4. Alignment

Find and focus the desired image using the eyepiece of the microscope, then start the ThorCam Software. A small window will pop up telling you how many cameras you have connected. It should register two available cameras; if they are not both showing up, hit the refresh button. Make a note of the serial number assigned to the two cameras so you can identify which is capturing the transmitted image and which is capturing the reflected image. Click on each of the two available cameras to open their image view windows. Hit the “Play” button in the upper left corner of each window to start live image capture. Depending on the light level used for excitation and the filter/mirror configuration used for your application, the exposure time and contrast levels may need to be adjusted on each camera to properly capture the desired image.

NOTE

Setting the exposure time too long will greatly decrease the frame rate capture of the camera and make the output image choppy in real-time during alignment and adjustment.

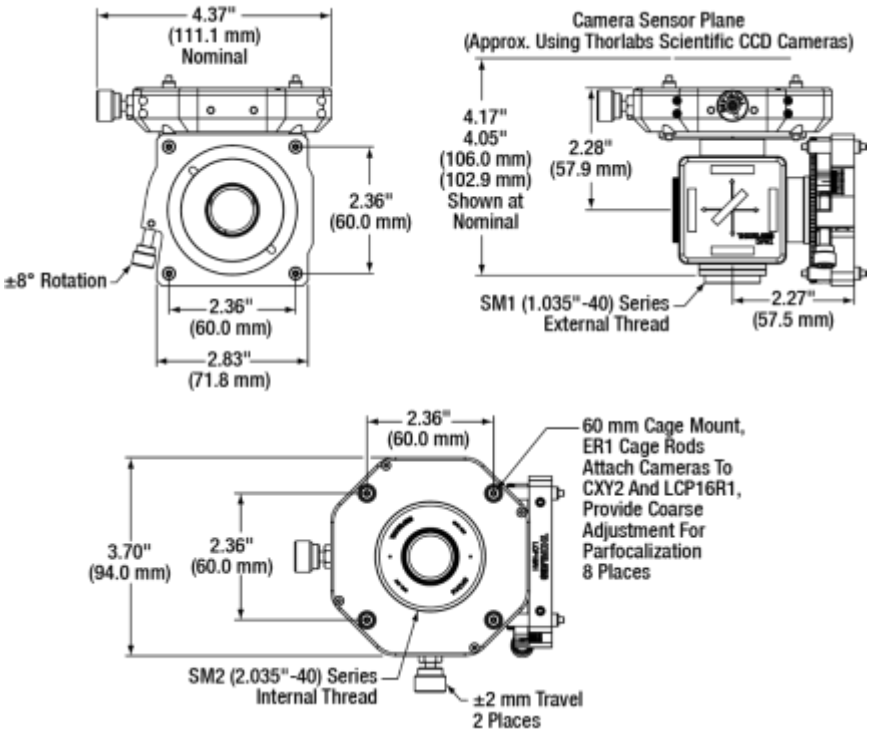
Now you will adjust each camera individually to properly focus the image onto the image sensor. This is accomplished by making slight adjustments to the depth that the ER1 cage rods are inserted into the CXY2 and LCP16R1 mounts. Start with the cameras flush against their respective mounts (e.g. with the ER1 cage rods fully inserted). Apply a light amount of pressure to the cage rods with the setscrews, just enough that there is a slight resistance to changing the inserted rod depth. By using the embedded line profile tool in the toolbar of the ThorCam Software in conjunction with visual inspection of the output image on the screen you can fine tune the focus of each camera’s output image. Bring the image into focus by incrementally sliding the camera away from its mount. When the image is in focus, the peaks of the line profile histogram will be at their tallest and narrowest readings, meaning the greatest amplitude and smallest variance. At this point the output image should appear in its crispest form on the screen. Once this is done for both cameras, you are now ready to align the transmitted and reflected images in overlay.

2.5. Running ThorCam Software with the Overlay Feature

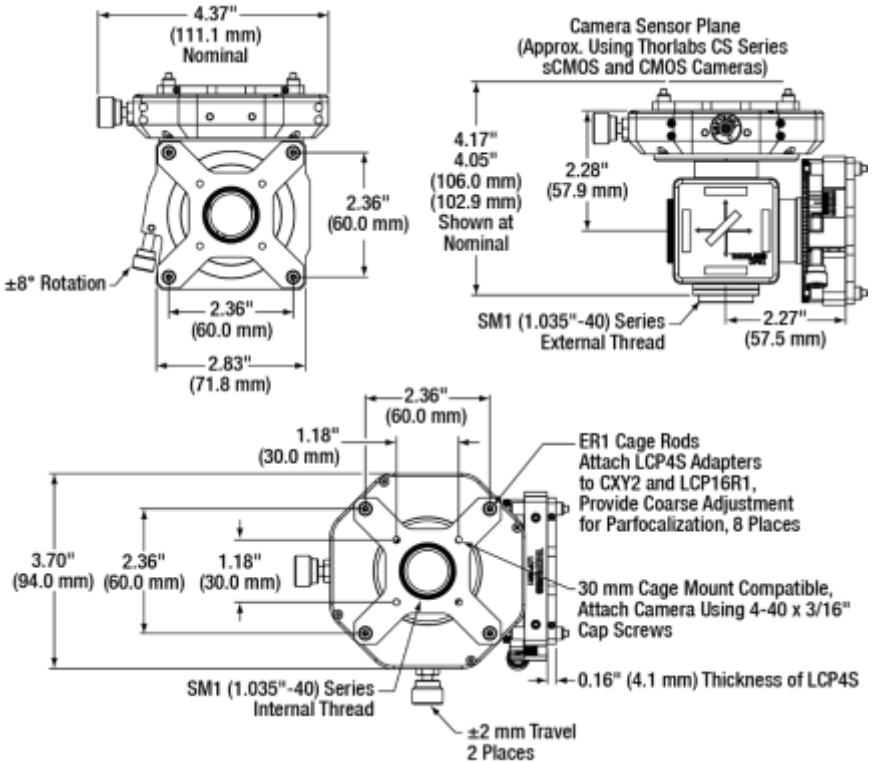
Please refer to the **ThorCam Software User Guide** for details on using the Overlay Plug-In for alignment and operation of two cameras attached to a microscope using our two-camera mounts. The manual is accessible by searching for the camera part number at <https://www.thorlabs.com/manuals.cfm> .

Chapter 3 Mechanical Drawings

3.1. 2CM1 Mount Drawings



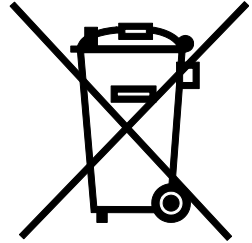
3.2. 2CM2 Mount Drawings



Chapter 4 Regulatory

As required by the WEEE (Waste Electrical and Electronic Equipment Directive) of the European Community and the corresponding national laws, Thorlabs offers all end users in the EC the possibility to return “end of life” units without incurring disposal charges.

- This offer is valid for Thorlabs electrical and electronic equipment:
- Sold after August 13, 2005
- Marked correspondingly with the crossed out “wheelie bin” logo (see right)
- Sold to a company or institute within the EC
- Currently owned by a company or institute within the EC
- Still complete, not disassembled and not contaminated



As the WEEE directive applies to self contained operational electrical and electronic products, this end of life take back service does not refer to other Thorlabs products, such as:

- Pure OEM products, that means assemblies to be built into a unit by the user (e.g. OEM laser driver cards)
- Components
- Mechanics and optics
- Left over parts of units disassembled by the user (PCB's, housings etc.).

If you wish to return a Thorlabs unit for waste recovery, please contact Thorlabs or your nearest dealer for further information.

Waste Treatment is Your Own Responsibility

If you do not return an “end of life” unit to Thorlabs, you must hand it to a company specialized in waste recovery. Do not dispose of the unit in a litter bin or at a public waste disposal site.

Ecological Background

It is well known that WEEE pollutes the environment by releasing toxic products during decomposition. The aim of the European RoHS directive is to reduce the content of toxic substances in electronic products in the future.

The intent of the WEEE directive is to enforce the recycling of WEEE. A controlled recycling of end of life products will thereby avoid negative impacts on the environment.

Chapter 5 Thorlabs Worldwide Contacts

For technical support or sales inquiries, please visit us at www.thorlabs.com/contact for our most up-to-date contact information.



USA, Canada, and South America

Thorlabs, Inc.
sales@thorlabs.com
techsupport@thorlabs.com

Europe

Thorlabs GmbH
europe@thorlabs.com

France

Thorlabs SAS
sales.fr@thorlabs.com

Japan

Thorlabs Japan, Inc.
sales@thorlabs.jp

UK and Ireland

Thorlabs Ltd.
sales.uk@thorlabs.com
techsupport.uk@thorlabs.com

Scandinavia

Thorlabs Sweden AB
scandinavia@thorlabs.com

Brazil

Thorlabs Vendas de Fotônicos Ltda.
brasil@thorlabs.com

China

Thorlabs China
chinasales@thorlabs.com



THORLABS

www.thorlabs.com
