

SM1A14 - August 31, 2020

Item # SM1A14 was discontinued on August 31, 2020. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

ADAPTERS FOR OLYMPUS BX AND IX MICROSCOPES

- ▶ Epi-Fluorescence, Transmitted Illumination, Camera, Trinocular, Eyepiece, and Condenser Port Adapters
- ▶ Modify Olympus BX and IX Microscopes Using Thorlabs' Optomechanical Components



SM2A13
Transmitted Illumination Port Adapter



SM2Y3
Condenser Port Adapter



SM2Y2
Eyepiece Adapter



SM2Y1
Epi-Fluorescence Port Adapter



LCPY2
Trinocular Port Adapter



The SM1A51 Camera Port Adapter Used to Mount a Thorlabs Scientific-Grade CCD Camera on an Olympus IX Microscope

[Hide Overview](#)

OVERVIEW

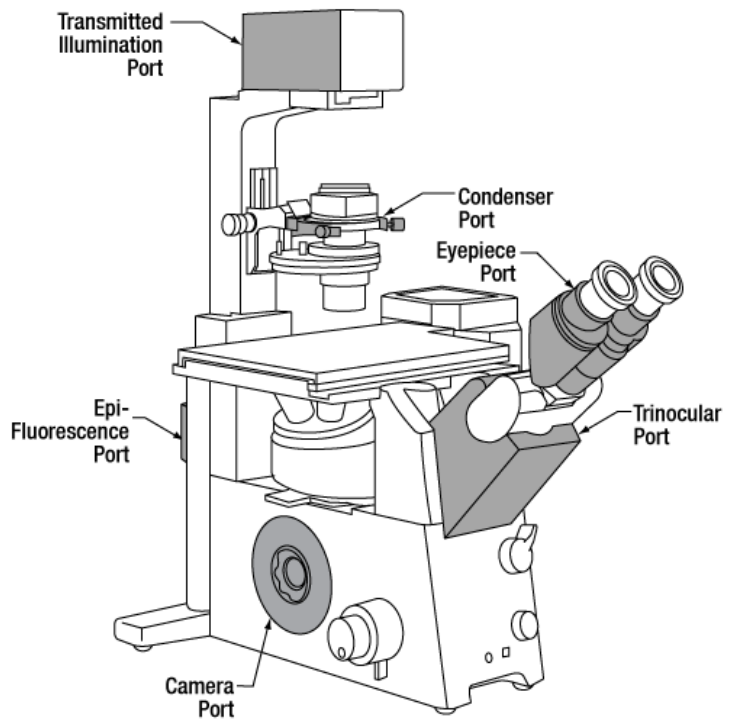
Features

- Extends Versatility of Thorlabs' Construction Systems to Olympus BX and IX Microscopes
- Provides Compatibility with SM1 Lens Tubes, SM2 Lens Tubes, and 30 mm and 60 mm Cage Systems
- Available for Epi-Fluorescence, Transmitted Illumination, Camera, Trinocular, Eyepiece, and Condenser Ports
- Contact Tech Support About Custom Adapters, Including Other Microscopes

Illumination Adapters

The SM2Y1 adapter allows Ø2" and Ø30 mm optics to be mounted inside an Olympus IX71 epi-fluorescence port, as well as externally SM2-threaded components. When used along with the LCP11(M) adapter, the epi-fluorescence port also becomes 60 mm cage compatible, enabling the connection of various illumination sources, such as infrared (IR) and white LEDs, as well as complex light conditioning

Click on Each Port to View Available Adapters



Olympus IX71 Microscope

assemblies.

Thorlabs also offers multiple adapters for Olympus BX41, IX71, or IX73 transmitted illumination ports.

These adapters provide rigid coupling to maintain long-term,

stable alignment for the connection of laser beam combiners, LED light sources, and other mechanical and optical components.

Camera Port Adapter

The SM1A51 adapter is designed to allow SM1 and 30 mm cage system components to be mounted to the camera port on an Olympus BX or IX microscope. These adapters are ideal for inserting custom optics, as well as our CCD and CMOS cameras, into a microscope system.

Trinocular Adapters

The LCPY2 adapter is designed to connect custom widefield viewing and image detection setups to the trinocular port of an Olympus BX or IX microscope.

The SM2Y2 adapter replaces the lens element on an eyepiece of the microscope trinoculars, allowing custom image detection or viewing setups to be attached to the microscope.

Condenser Adapter

The SM2Y3 adapter connects a custom light conditioning assembly to the condenser holder of an Olympus BX or IX microscope.

Note: Thorlabs does not guarantee compatibility with other industry-standard microscopes not mentioned on this webpage.

Adapters for Industry Standard Microscopes
Olympus BX and IX
Nikon Eclipse Ti (Inverted)
Upright Nikon Eclipse
Leica DMI
Zeiss Axioskop and Examiner

[Hide Microscope Dovetails](#)

MICROSCOPE DOVETAILS

Introduction to Microscope Dovetails

Dovetails are used for mechanical mating and optical port alignment of microscope



Thorlabs Dovetail Reference ^a			
Type	Shape	Outer Dimension	Angle
95 mm	Linear	95 mm	45°




Click to Enlarge
This photo shows the male D1N dovetail on the trinoculars next to the female D1N dovetail on the epi-illumination arm.

components. Components are connected by inserting one dovetail into another, then tightening one or more locking setscrews on the female dovetail. Dovetails come in two shapes: linear and circular. Linear dovetails allow the mating components to slide before being locked down, providing flexible positioning options while limiting unneeded degrees of freedom. Circular dovetails align optical ports on different components, maintaining a single optical axis with minimal user intervention.

Click to Enlarge
This photo shows the male 95 mm dovetail on the microscope body and the female 95 mm dovetail on the CSA1002 Fixed Arm.

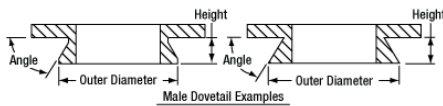
Thorlabs manufactures many components which use dovetails to mate with our own components or those of other manufacturers. To make it easier to identify dovetail compatibility, we have developed a set of dovetail designations. The naming convention of these designations is used only by Thorlabs and not other microscope manufacturers. The table to the right lists all the dovetails Thorlabs makes, along with their key dimensions.

In the case of Thorlabs' Cerna[®] microscopes, different dovetail types are used on different sections of the microscope to ensure that only compatible components can be mated. For example, our WFA2002 Epi-Illuminator Module has a male D1N dovetail that mates with the female D1N dovetail on the microscope body's epi-illumination arm, while the CSS2001 XY Microscopy Stage has a female D1Y dovetail that mates with the male D1Y dovetail on the CSA1051 Mounting Arm.

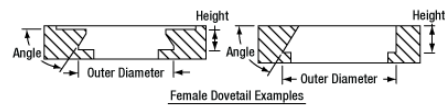
To learn which dovetail type(s) are on a particular component, consult its mechanical drawing, available by clicking on the red Docs icon () below. For adapters with a female dovetail, the drawing also indicates the size of the hex key needed for the locking setscrew(s). It is important to note that mechanical compatibility does not ensure optical compatibility. Information on optical compatibility is available from Thorlabs' web presentations.

For customers interested in machining their own dovetails, the table to the right gives the outer diameter and angle (as defined by the drawings below) of each Thorlabs dovetail designation. However, the dovetail's height must be determined by the user, and for circular dovetails, the user must also determine the inner diameter and bore diameter. These quantities can vary for dovetails of the same type. One can use the intended mating part to verify compatibility.

In order to reduce wear and simplify connections, dovetails are often machined with chamfers, recesses, and other mechanical features. Some examples of these variations are shown by the drawings below.



Male Dovetail Examples
Click to Enlarge
Two examples of how circular male dovetails can be manufactured.



Female Dovetail Examples
Click to Enlarge
Two examples of how circular female dovetails can be manufactured.

D1N	Circular	Ø2.018"	60°
D2N ^b	Circular	Ø1.50"	90°
D2NB ^b	Circular	Ø1.50"	90°
D3N	Circular	Ø45 mm	70°
D5N	Circular	Ø1.58"	90°
D6N	Circular	Ø1.90"	90°
D7N	Circular	Ø2.05"	90°
D1T	Circular	Ø1.50"	60°
D3T	Circular	Ø1.65"	90°
D1Y	Circular	Ø107 mm	60°
D2Y	Circular	Ø2.32"	50°
D3Y	Circular	Ø1.75"	90°
D4Y	Circular	Ø56 mm	60°
D5Y	Circular	Ø46 mm	60°
D6Y	Circular	Ø41.9 mm	45°
D1Z	Circular	Ø54 mm	60°
D2Z	Circular	Ø57 mm	60°
D3Z	Circular	Ø54 mm	45°

- These dovetail designations are specific to Thorlabs products and are not used by other microscope manufacturers.
- D2N and D2NB dovetails have the same outer diameter and angle, as defined by the drawings below. The D2N designation does not specify a height. The D2NB designation specifies a dovetail height of 0.40" (10.2 mm).

[Hide Epi-Fluorescence Port Adapter for Olympus IX71 Microscope](#)

Epi-Fluorescence Port Adapter for Olympus IX71 Microscope

Item #	SM2Y1
Click Image to Enlarge	
Microscope	a

The SM2Y1 port adapter connects to the epi-fluorescence port on certain Olympus IX71 microscopes. The image to the right shows what an epi-fluorescence port of an Olympus IX71 microscope should look like for the SM2Y1 to be compatible. If the microscope does not appear as pictured, then the port adapter will not work. If you are unsure about compatibility, please contact Tech Support.



Click to Enlarge
Use the SM2Y1 epi-fluorescence port adapter

The SM2Y1 features internal SM2 threading on one side and internal SM30

Connection	Male D3Y Dovetail
SM Threading	Internal SM2 (2.035"-40) Internal SM30 (M30.5 x 0.5)
Cage Compatibility	._b

- a. This dovetail designation is specific to Thorlabs products; see the *Microscope Dovetails* tab for details.
- b. For 60 mm cage compatibility, add the LCP11(/M) cage plate (sold separately). The CP07T can be used for 30 mm cage compatibility, but will reduce the clear aperture.

threading on the other, allowing it be integrated into an externally SM2-threaded illumination source or Ø30 mm optic. One SM2RR retaining ring is provided with the SM2Y1 and can be used to secure a Ø2" optic up to 1.10" (28.0 mm) thick against the internal lip of the adapter; thicker retaining rings (Item # SM2RRC) are available for high-curvature lenses, though the curvature will limit the usable mounting depth. Please contact Tech Support to ensure a proper fit. The other side of the adapter can be used for Ø30 mm optics up to 1.09" (27.7 mm) thick using two SM30RR retaining rings, which are available for purchase separately.

Please note that the SM2Y1 adapter can be paired with the LCP11(/M) cage plate for 60 mm cage system compatibility. First attach the LCP11(/M) to the SM2 threads of the SM2Y1, then secure the connected adapters to the epi-fluorescence port by way of the circular dovetail on the SM2Y1 (see image to the right for alignment details). For 30 mm cage compatibility, consider using the CP07T cage plate; note that the cage plate will reduce the clear aperture.

Part Number	Description	Price	Availability
SM2Y1	Customer Inspired! Olympus IX71 Microscope Epi-Illumination Port Adapter, Internal SM2 and SM30 Threads (One SM2RR Retaining Ring Included)	\$100.79	Today

[Hide Transmitted Illumination Port Adapters for Olympus BX41, IX71, or IX73 Microscopes](#)

Transmitted Illumination Port Adapters for Olympus BX41, IX71, or IX73 Microscopes

These transmitted illumination port adapters provide compatibility for the Olympus BX41, IX71, and IX73 series microscopes with a range of Thorlabs' optomechanical products. The SM1A14, SM2A7, LED4A1, and SM2A13 adapters fit inside the trans-illumination port, while the LCPY1(/M) sits flush against the port. Two SM2RR retaining rings are provided with the LCPY1(/M) and can be used to secure Ø2" optics up to 1.24" (31.6 mm) thick within the optical path; other retaining rings are available for purchase separately, including thicker retaining rings for high-curvature lenses. The LCPY1/M features a small dimple indicating it is a metric part.



Click to Enlarge
Connecting the
LCPY1(/M) to the
Transmitted
Illumination Port

Item #	SM1A14	SM2A7	LED4A1	SM2A13	LCPY1(/M)
Click Image to Enlarge					
Microscope Connection	Male D2Y Dovetail ^a				
SM Threading	Internal SM1 (1.035"-40)	Internal SM2 (2.035"-40)	External SM2 (2.035"-40)	External SM2 (2.035"-40)	Internal SM2 (2.035"-40)
Cage Compatibility	30 mm Cage (4-40 Tap, 4 Places)	-	-	-	60 mm Cage (Ø6 mm Bore, 4 Places)
Anodization	Black	Black	Silver	Black	Black
Post Mounting Hole	-	-	-	-	8-32 (M4)


- a. This dovetail designation is specific to Thorlabs products; see the *Microscope Dovetails* tab for details.

Part Number	Description	Price	Availability
LCPY1/M	Customer Inspired! Olympus BX41, IX71, or IX73 Microscope Trans-Illumination Port Adapter, Internal SM2 Threads, 60 mm Cage Compatibility, M4 Tap	\$173.99	Today
SM1A14	Olympus BX41, IX71, or IX73 Microscope Trans-Illumination Port Adapter, Internal SM1 Threads, 30 mm Cage Compatibility	\$100.10	Today
SM2A7	Olympus BX41, IX71, or IX73 Microscope Trans-Illumination Port Adapter, Internal SM2 Threads	\$100.10	5-8 Days

LED4A1	Olympus BX41, IX71, or IX73 Microscope Trans-Illumination Port Adapter, External SM2 Threads, Silver Anodized	\$68.45	Today
SM2A13	Olympus BX41, IX71, or IX73 Microscope Trans-Illumination Port Adapter, External SM2 Threads, Black Anodized	\$100.10	Today
LCPY1	Customer Inspired! Olympus BX41, IX71, or IX73 Microscope Trans-Illumination Port Adapter, Internal SM2 Threads, 60 mm Cage Compatibility, 8-32 Tap	\$173.99	Today

[Hide Camera Port Adapter for Olympus BX or IX Microscopes](#)

Camera Port Adapter for Olympus BX or IX Microscopes

Item #	SM1A51
Click Image to Enlarge	
Microscope Connection	Male D6Y
SM Threading	Internal SM1 (1.035"-40)
Cage Compatibility	30 mm Cage (4-40 Through Tap, 4 Places)

The SM1A51 is designed so that custom-built optical systems or detectors based on Thorlabs' components may be attached to the camera port of Olympus BX or IX Microscopes.

The SM1A51 features internal SM1 threading for Ø1" Lens Tubes and 4-40 tapped through holes on 30 mm centers for attaching cage rods. Since Thorlabs' USB CCD and CMOS cameras are provided with a C-Mount to SM1 adapter, our cameras can also be easily integrated into microscope systems for general imaging applications. For demanding imaging applications, our Scientific CCD Cameras can be adapted to SM1 threading using a C-Mount to SM1 adapter (Item # SM1A39), available separately. To achieve proper parfocality, we recommend using a Ø1" lens tube with 3" thread depth (Item # SM1L30) with the Olympus BX or IX microscopes and camera port adapters. In addition, an SM1-threaded dust cover (Item # SM1CP2) is included to keep the port closed when not in use.

Part Number	Description	Price	Availability
SM1A51	Olympus BX or IX Microscope Camera Port Adapter, Internal SM1 Threads, Black Anodized, 30 mm Cage Compatibility	\$87.65	Today

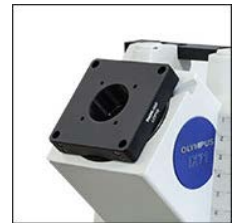
[Hide Trinocular Port Adapter for Olympus BX or IX Microscopes](#)

Trinocular Port Adapter for Olympus BX or IX Microscopes

Item #	LCPY2
Click Image to Enlarge	
Microscope Connection	Male D5Y Dovetail ^a
SM Threading	Internal SM30 (M30.5 x 0.5)
Cage Compatibility	30 mm Cage (4-40 Tap, 4 Places) 60 mm Cage (Ø6 mm Bore, 4 Places)

The LCPY2 Trinocular Port Adapter allows custom widefield viewing setups to attach to an Olympus IX or BX Microscope. This adapter utilizes a male D5Y dovetail adapter to connect to the trinocular port of the microscope; see the *Microscope Dovetails* tab for details. This adapter can only be attached by first removing the microscope's trinoculars (see image to the right).

This adapter features internal SM30 threading for Ø30 mm lens tubes; two SM30RR retaining rings are included to secure an optic inside the adapter. Through holes with side-located locking 8-32 setscrews (5/64" [2 mm] hex) can be used to attach Ø6 mm cage rods for 60 mm cage systems. The side opposite the dovetail has 4-40 tapped holes on 30 mm centers for compatibility with 30 mm cage systems.



Click to Enlarge
LCPY2 Adapter Attached to Exposed Trinocular Port

- a. This dovetail designation is specific to Thorlabs products; see the *Microscope Dovetails* tab for details.

Part Number	Description	Price	Availability
LCPY2	Olympus BX or IX Microscope Trinocular Adapter, Internal SM30 Threads, 30 mm Cage Compatibility	\$102.38	Today

[Hide Eyepiece Port Adapter for Olympus BX or IX Microscopes](#)

Eyepiece Port Adapter for Olympus BX or IX Microscopes

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Item #	SM2Y2
Click Image to Enlarge	
Microscope Connection	Ø1.18" Eyepiece Tube
SM Threading	Internal SM1 (1.035"-40) External SM2 (2.035"-40)
Cage Compatibility	30 mm Cage (4-40 Through Tap, 4 Places)

The SM2Y2 Eyepiece Port Adapter allows custom-built optical detection systems to attach to the eyepieces on the trinoculars of an Olympus IX or BX Microscope. This adapter replaces the lens element on the eyepiece that sets the image plane focus at the the back of the eyes (see image to the right). Because of the drop-in nature of the adapter, take care the attached system does not overbalance the 40 g eyepiece adapter when it is inside the trinoculars. Thorlabs recommends no more than 0.5 lbs at a distance of 5" from the adapter; the maximum torque to avoid rotation is 16.96 N•mm.



Click to Enlarge
Two SM2Y2 adapters replace the lens elements of the trinocular eyepieces.

This adapter features 1.19" (30.2 mm) of internal SM1 threading for Ø1" lens tubes or optics, external SM2 threading for Ø2" lens tubes, and 4-40 tapped through holes on 30 mm centers for compatibility with a 30 mm cage system. The adapter includes two 0.08" thick SM1RR retaining rings to secure an optic inside the adapter.

Part Number	Description	Price	Availability
SM2Y2	Olympus BX or IX Microscope Eyepiece Adapter, Internal SM1 and External SM2 Threads, 30 mm Cage Compatibility	\$95.48	Today

[Hide Condenser Port Adapter for Olympus BX or IX Microscopes](#)

Condenser Port Adapter for Olympus BX or IX Microscopes

Item #	SM2Y3
Click Image to Enlarge	
Microscope Connection	Male D4Y Dovetail ^a
SM Threading	Internal SM2 (2.035"-40) External SM2 (2.035"-40)
Cage Compatibility	30 mm Cage (4-40 Through Tap, 4 Places)

The SM2Y3 Condenser Port Adapter allows custom condenser configurations to attach to an Olympus IX or BX Microscope. The adapter utilizes a male D4Y dovetail to connect to the condenser holder of the microscope; see the *Microscope Dovetails* tab for details.

This adapter features internal and external SM2 threads for Ø2" lens tubes, achromatic doublets, or other optics as well as 4-40 tapped through holes on 30 mm centers for compatibility with a 30 mm cage system. One SM2RR retaining ring is included to secure a flat or mounted optic against the internal lip of the adapter, such as a filter or iris. The adapter lip limits the clear aperture to Ø1.5".



Click to Enlarge
The back of the SM2Y3 adapter has internal SM2 threads and 4-40 taps for 30 mm cage compatibility.



Click to Enlarge
SM2Y3 Adapter Attached to Condenser Holder of Olympus IX71

- a. This dovetail designation is specific to Thorlabs products; see the *Microscope Dovetails* tab for details.

Part Number	Description	Price	Availability
SM2Y3	Olympus BX or IX Microscope Condenser Adapter, Internal and External SM2 Threads, 30 mm Cage Compatibility	\$89.91	Today



THORLABS

SM1A14