

CXYZ05/M - March 3, 2022

Item # CXYZ05/M was discontinued on March 3, 2022. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

POST-MOUNTABLE XYZ TRANSLATION MOUNTS

- Provide XYZ Translation for $\varnothing 1/2"$, $\varnothing 1"$, or $\varnothing 2"$ Optics
- XY Travel Ranges up to ± 2.5 mm Available



[Hide Overview](#)

OVERVIEW

Features

- XYZ Translation Mounts for $\varnothing 1/2"$, $\varnothing 1"$, or $\varnothing 2"$ Optical Components
- XY Travel Ranges from ± 1 mm to ± 2.5 mm
- Z Travel Ranges from ± 1.5 mm to ± 3.2 mm
- Compatible with Our SM-Threaded Lens Tubes
- Post Mountable via Tapped Hole or Counterbore (Model Dependent)

Thorlabs offers several XYZ translation mounts that provide coarse or precise XYZ translation when positioning optical components. These mounts can accept optics directly or optics

mounted inside lens tubes with SM threading. Five of these mounts are equipped with both XYZ translation and tip-tilt adjustment (K5X1, K6X05, K6XS, K6X2, and KC1-S). Our 5- and 6-Axis mounts enable precision kinematic alignment of the optic cell along their respective axes. For alignment applications in a 30 mm

General Specifications

Item #	Optic Size Accommodated	SM Thread Compatibility	XY Travel	Z Travel	Post Mounting	Cage Compatibility
K5X1	$\varnothing 1"$	SM1 (1.035"-40)	± 1.0 mm	± 3.2 mm	Two #8 (M4) Counterbores	N/A
K6X05	$\varnothing 1/2"$	SM05 (0.535"-40)	± 1.5 mm	± 3.2 mm	Two #8 (M4) Counterbores	N/A
K6XS	$\varnothing 1"$	SM1 (1.035"-40)	± 2.0 mm	± 3.2 mm	Six #8 (M4) Counterbores	N/A
K6X2	$\varnothing 2"$	SM2 (2.035"-40)	± 2.0 mm	± 3.2 mm	Six #8 (M4) Counterbores	N/A
KC1-S(/M)	$\varnothing 1"$	SM1 (1.035"-40)	± 1.0 mm	± 3.0 mm	8-32 (M4) Tapped Hole	30 mm
CXYZ05(/M)	$\varnothing 1/2"$	SM05 (0.535"-40)	± 1.5 mm	± 1.5 mm	Two 8-32 (M4) Tapped Holes	30 mm
CXYZ1(/M)	$\varnothing 1"$	SM1 (1.035"-40)	± 2.5 mm	± 1.5 mm	Two 1/4"-20 (M6) Tapped Holes	60 mm

or 60 mm Cage System, we recommend our cage-compatible, non-rotating, XYZ translation mounts for $\varnothing 1/2$ " and $\varnothing 1$ " optics. In particular, our KC1-S(M) 30 mm cage-compatible kinematic mount with slip plate combines coarse XY translation with kinematic Z-axis and tip-tilt adjustment. All translation mounts sold here can be post mounted using bottom- or side-located tapped holes or counterbores.

[Hide 5-Axis Kinematic Optic Mount](#)

5-Axis Kinematic Optic Mount

- Five Axes of Lockable Adjustment
 - Pitch/Yaw: $\pm 4^\circ$ at 8 mrad/rev
 - X and Y Translation: ± 0.04 " (± 1.0 mm) at 254.0 $\mu\text{m}/\text{rev}$
 - Z Translation^a: ± 0.13 " (± 3.2 mm)
- SM1-Threaded (1.035"-40) Bore for $\varnothing 1$ " ($\varnothing 25$ mm) Optics up to 0.38" (9.5 mm) Thick
- Two #8 (M4) Counterbores for Post Mounting
- Compact Size: 2.54" x 2.54" x 2.10" (64.4 mm x 64.4 mm x 53.3 mm)



Click to Enlarge
K5X1 Kinematic Mount Shown
with a $\varnothing 1$ " Lens Tube and a
 $\varnothing 1/2$ " Post

The K5X1 5-Axis Kinematic Optic Mount offers an optic cell that can be adjusted along 5 axes (pitch, yaw, and XYZ), each with a locking screw for stability. The translating cell has SM1 threading (1.035"-40) for attaching $\varnothing 1$ " mounted optics. The cell can also be used to mount $\varnothing 1$ " ($\varnothing 25$ mm) unmounted optics up to 0.38" (9.5 mm) thick using the included SM1RR Retaining Ring, which can be tightened using an SPW602 or SPW606 Spanner Wrench (sold separately). The mount features engraved vertical and horizontal tick marks to use as an alignment aid for the mounting cell. For post mounting the K5X1 kinematic mount in a right- or left-handed configuration, two orthogonal #8 (M4) counterbores are provided. For information on the hex key sizes needed to adjust and lock the kinematic mount, please click on the *Docs* icon () below and select a drawing format.

For adjustment on all of the axes available with the K5X1 plus rotational adjustment, we offer the K6XS 6-Axis Kinematic Mount (sold below).

- Z-axis translation is accomplished by turning all three tip/tilt adjusters equally in the same direction.

Part Number	Description	Price	Availability
K5X1	Customer Inspired! 5-Axis Locking Kinematic Mount for $\varnothing 1$ " Optics	\$262.87	7-10 Days

[Hide 6-Axis Kinematic Optic Mounts](#)

6-Axis Kinematic Optic Mounts

- Six Adjustment Axes with Locks (See Table to the Lower Right)
- Independent X, Y, and Continuous 360° Roll Adjustment
- Mounts Available for $\varnothing 1/2$ ", $\varnothing 1$ ", or $\varnothing 2$ " Optics
- #8 (M4) Counterbores for Post Mounting



Click to Enlarge
K6X2 Mount

These 6-axis kinematic optic mounts are designed as general-purpose, high-precision positioners. The optic cell can be translated along or rotated about 6 axes, and each axis has a locking screw for stability. All three mounts use 1/4"-80 adjuster screws for pitch, yaw, and z-axis adjustment, and 3/16"-100 adjuster screws for x- and y-axis adjustment. The rotating optic housing is engraved with a graduated scale. Refer to the table below for detailed specifications.

The rotating dial of the K6XS mount has tapped 4-40 holes for attaching the K6A1 prism mounting attachment (sold separately below). In testing, the K6XS was shown to drift less than 15 μrad in 48 hours at typical environmental conditions, with a 2 °C temperature fluctuation. The X and Y axes on the K6XS cause less than ± 50 μm of crosstalk when translated over their full range, while the X and Y axes of the K6X05 and K6X2 cause less than ± 35 μm of crosstalk.

If higher adjustment resolution is desired for pitch, yaw, or z-translation, the three 1/4"-80 adjusters can be switched with DAS110 or DM22 Differential Adjusters.

Item #	Optic Cell Threading	Optic Size	Max Optic Thickness	Pitch/Yaw Adjust (Resolution)	X/Y Adjust (Resolution)	Z Adjust ^a (Resolution)	Rotation Scale Graduations	Included Retaining Ring	Mounting Counterbores
K6X05	SM05 (0.535"-40)	$\varnothing 1/2$ "	0.57" (14.4 mm)	$\pm 4^\circ$ (4.2 mrad/rev)	± 1.5 mm (254 $\mu\text{m}/\text{rev}$)	± 3.2 mm (318 $\mu\text{m}/\text{rev}$)	Every 2°	SM05RR ^b	Two #8 (M4)
K6XS	SM1 (1.035"-40)	$\varnothing 1$ "	0.57" (14.6 mm)	$\pm 4^\circ$ (5 mrad/rev)	± 2 mm (254 $\mu\text{m}/\text{rev}$)		Every 1°	SM1RR ^c	Six #8 (M4)
K6X2	SM2 (2.035"-40)	$\varnothing 2$ "	0.53" (13.4 mm)	$\pm 4^\circ$ (3.6 mrad/rev)			SM2RR ^d		

a. Z-axis translation is accomplished by turning all three tip/tilt adjusters equally in the same direction.

- b. Recommended Spanner Wrench (Sold Separately): SPW603 or SPW603L
- c. Recommended Spanner Wrench (Sold Separately): SPW602 or SPW606
- d. Recommended Spanner Wrench (Sold Separately): SPW604

Part Number	Description	Price	Availability
K6X05	6-Axis Locking Kinematic Mount for Ø1/2" Optics	\$314.57	7-10 Days
K6XS	Customer Inspired! 6-Axis Locking Kinematic Mount for Ø1" Optics	\$286.16	Today
K6X2	6-Axis Locking Kinematic Mount for Ø2" Optics	\$510.45	Today

[Hide Prism Mounting Attachment](#)

Prism Mounting Attachment

- Mounts on the Face of the K6XS Translating Cell
- 0.5" x 1.68" (12.7 mm x 42.7 mm) Platform
- 1/4" (6 mm) Adjustment Range

The K6A1(/M) platform accessory is designed to be mounted on the rotation ring on the K6XS 6-axis kinematic mount and our 30 mm cage-compatible rotation mounts using the included 4-40 screws and hex key. The platform has a height adjustment range of 1/4" (6.3 mm) so that the mounted optic can be positioned on the axis of rotation. Four 6-32 (M4 x 0.7) tapped holes at the corners of the platform surface can be used to mount the included PM3 (PM3/M) prism clamping arm or other optomechanics.



Click to Enlarge
[APPLIST]
[APPLIST]
K6A1 Prism Accessory Mounted onto a K6XS 6-Axis Mount

Part Number	Description	Price	Availability
K6A1/M	Prism Mount Accessory for K6XS 6-Axis Mount, Metric	\$48.53	Today
K6A1	Prism Mount Accessory for K6XS 6-Axis Mount, Imperial	\$48.53	Today

[Hide 30 mm Cage-Compatible SM1-Threaded Kinematic Mount with Slip Plate](#)

30 mm Cage-Compatible SM1-Threaded Kinematic Mount with Slip Plate

- Slip Plate Provides ± 1 mm of Coarse X and Y Adjustment
- $\pm 4^\circ$ Tip / Tilt, ± 3 mm Linear Translation Along the Optical Axis
- Accepts Ø1" Optics
- Maximum Optic Thickness: 0.23" (5.8 mm)
- Compatible with Our 30 mm Cage Systems
- 8-32 (M4) Tapped Hole for Post Mounting



Click to Enlarge
KC1-S Back View

The KC1-S Kinematic Mount is designed with a SM1 (1.035"-40) threaded mounting hole with a front slip plate that enables direct mounting of optics up to 5.8 mm (0.23") thick using the included SM1RR Retaining Rings. Thicker optics can be accommodated by housing the optic in one of our SM1-Series Lens Tubes and then threading the lens tube into the front plate of the mount. Alternatively, since the back plate of the KC1-S Kinematic Mount features an oversized Ø1.32" bore, SM1 lens tubes can also be attached to the front plate from the rear of the mount without sacrificing angular adjustment. This threaded, kinematic mount comes with three adjusters with independently locking setscrews.

Both the front and rear plates have been machined with four clearance holes designed for direct compatibility with our 30 mm cage system standard. The cage rod holes in the front plate are sufficiently oversized to allow $\pm 4^\circ$ tip and tilt adjustment without cage rod interference. Once the desired position is achieved, locking setscrews on the rear plate can be used to secure the rods in place. In addition to 30 mm cage compatibility, the KC1-S Kinematic Mount is post mountable via an 8-32 (M4) tapped hole.

Specifications	
Angular Drivers	1/4"-80 TPI Adjusters ^a
XY Travel	± 1.0 mm (± 0.04 ") per Axis with Lockable Slip Plate
Angular Resolution	0.4°/rev
Angular Displacement	$\pm 4^\circ$
Z Travel	± 3.0 mm (± 0.12 ")
Inner Slip Plate XY Travel	± 0.04 " (1 mm) per Axis
Optic Thickness (Max)	0.23" (5.8 mm)
Optic Mounting	Internal SM1 (1.035"-40) Thread
Post Mounting	8-32 (M4) Tapped Hole

- a. Can be Locked Using the Provided Setscrew and 0.035" Hex Key

The KC1-S Kinematic Mount slip plate feature incorporated into this mount provides ± 1 mm of coarse travel in X and Y with respect to the front plate, which enables additional freedom when setting an optic's position within a cage system. Three locking screws allow the user to lock the slip plate down once the desired location has been reached. The user should note, however, that loosening the locking screws may result in excessive coarse movement (slop) in the slip plate. For best performance, tighten the locking screws, and then release them only enough to allow for smooth operation of the slip plate.

Part Number	Description	Price	Availability
KC1-S/M	Kinematic, SM1-Threaded, 30 mm-Cage-Compatible Mount with Slip Plate for $\varnothing 1$ " Optic, Metric	\$179.69	Today
KC1-S	Kinematic, SM1-Threaded, 30 mm-Cage-Compatible Mount with Slip Plate for $\varnothing 1$ " Optic	\$179.69	Lead Time

[Hide XYZ Translator for \$\varnothing 1/2\$ " and \$\varnothing 1\$ " Optics](#)

XYZ Translator for $\varnothing 1/2$ " and $\varnothing 1$ " Optics



- Non-Rotating Translation in X, Y, and Z Axes for $\varnothing 1/2$ " or $\varnothing 1$ " Optics
- Internal SM Threading for Compatibility with Our Extensive Line of SM-Threaded Lens Tubes
- Compatible with Our 30 mm or 60 mm Cage Systems
- Two Tapped Holes for Right- and Left-Handed Post Mounting Orientations

Thorlabs' precise XYZ translation mounts offer non-rotating X-, Y-, and Z-axis travel. The CXYZ05(M) mount holds $\varnothing 1/2$ " ($\varnothing 12.7$ mm) optics up to 0.31" (8.0 mm) thick against the back lip of the mount using the included SM05RR retaining ring. The CXYZ1(M) translator holds $\varnothing 1$ " ($\varnothing 25.4$ mm), up to 0.39" (10.0 mm) thick in a similar manner using the included SM1RR retaining ring. XY functionality allows travel perpendicular to the optical axis, while the Z-axis functionality allows for compensation of focusing errors in applications such as fiber alignment or lens mounting. The optic cell has been designed to offer pure X, Y, and Z translation.

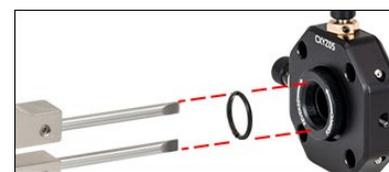
The optic cell is internally SM05-threaded (CXYZ05) or SM1-threaded (CXYZ1), and is translated along the Z-axis by rotating the zoom adjustment dial on the back of the mount. The optic cell does not rotate during translation. An engraving is included on the knurled dial, indicating the direction that it must be turned for translating the optic cell forward and backwards. Laser-engraved tick marks spaced 0.25 mm apart are included on the optic cell for indicating the Z-axis position. The position can be locked using an SM15RR or SM30RR Retaining Ring (sold separately); see the image to the right for more details.

X and Y translation of the carriage on the CXYZ05(M) and CXYZ1(M) mounts is accomplished using the two 3/16"-100 fine adjusters or 1/4"-100 fine adjusters, respectively. The 3/16"-100 adjusters can be locked using the provided nylon-tipped setscrew and 0.035" Hex Key, while the 1/4"-100 adjusters are locked using LN25100 Locking Nuts (sold separately). For both sets of adjusters, horizontal and vertical witness lines provide a reference for the XY alignment.

Both mounts have four through holes for use with our $\varnothing 6$ mm ER cage rods, making the CXYZ05(M) compatible with 30 mm Cage Systems and the CXYZ1(M) compatible with 60 mm Cage Assemblies. Each cage rod mounting hole has a side-located 4-40 locking setscrew, which uses a 0.05" hex key. The mounts can easily be adapted to different size cage systems by using the SP05 or LCP02 Cage System Size Adapter. Tapped holes are also provided on opposite sides of the XY adjusters for post mounting in right- or left-handed orientations.

Specifications		
Item #	CXYZ05(M)	CXYZ1(M)
XY-Axes Drivers	3/16"-100 Adjusters ^a	1/4"-100 Adjusters ^b
XY Travel	± 0.06 " (± 1.5 mm) per Axis	± 0.10 " (± 2.5 mm) per axis
XY Adjustment Resolution	254 μ m/rev	
Z-Axis Driver	500 μ m/rev Adjustment Dial ^c	
Z Travel	± 0.06 " (± 1.5 mm) (Alignment Tick Marks at 0.25 mm Intervals)	
Clear Aperture ^d	$\varnothing 0.42$ " ($\varnothing 10.7$ mm)	$\varnothing 0.90$ " ($\varnothing 22.9$ mm)
Optic Thickness (Max)	0.31" (8.0 mm)	0.39" (10.0 mm)
Optic Mounting	Internal SM05 (0.535"-40) Thread	Internal SM1 (1.035"-40) Thread
Post Mounting ^e	Two 8-32 (M4) Tapped Holes	Two 1/4"-20 (M6) Tapped Holes

- Can be Locked Using the Provided Setscrew and 0.035" Hex Key
- Can be Locked Using the LN25100 Locking Nuts
- Can be Locked Using an SM15RR or SM30RR Retaining Ring (Not Included)
- When Using the Included SM05RR or SM1RR Retaining Ring
- Allows Right- and Left-Handed Configurations



Click to Enlarge
The Z-axis position of the CXYZ05(M) can be locked by threading an SM15RR retaining ring (sold separately) onto the internal threads of the rear knurled knob. This can be done using the SPW801 Spanner Wrench.

Part Number	Description	Price	Availability
CXYZ05/M	Customer Inspired! XYZ Translation Mount for $\varnothing 12.7$ mm Optics, M4 Taps	\$362.71	Today
CXYZ1/M	Customer Inspired! XYZ Translation Mount for $\varnothing 1$ " Optics, M6 Taps	\$475.84	Lead Time

CXYZ05	Customer Inspired! XYZ Translation Mount for Ø1/2" Optics, 8-32 Taps	\$362.71	Today
CXYZ1	Customer Inspired! XYZ Translation Mount for Ø1" Optics, 1/4"-20 Taps	\$475.84	Lead Time