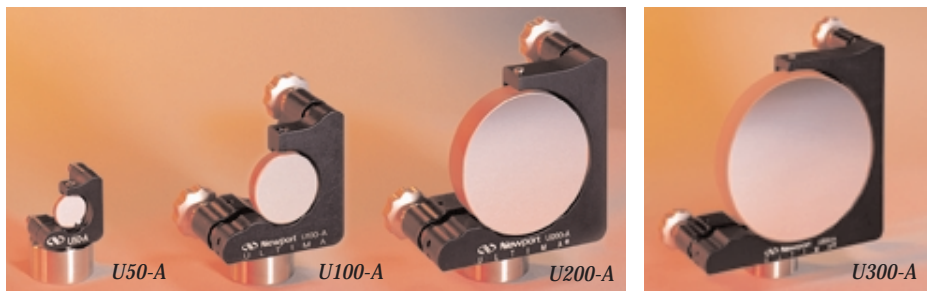


## ULTIMA® Series

## Kinematic Optical Mounts



**ULTIMA® Kinematic Optical Mounts** are designed for demanding research, development, and industrial OEM applications requiring a stable optical positioner. They are available in aperture versions for 0.5, 1, 1.18, 2, and 3 in. (12.7, 25.4, 30, 50.8, and 76.2 mm) diameter optics, as well as platform versions in 0.5, 1, and 2 in. (12.7, 25.4, and 50.8 mm) sizes for holding mounted mirrors, prisms, or cube beamsplitters. Various adaptors allow smaller diameter optics to be securely held in these mounts.

**The standard in the industry, ULTIMA mounts** offer unsurpassed functionality. Thick front and rear plates and optimized, stiff springs improve the long-term stability and provide greater protection against vibrations. The patented clear quadrant design exposes the edge of the optic, allowing beams to pass close to the edge of a mounted optic. The actuators can be quickly changed to accommodate a broad selection of adjustment screws, micrometers, and motorized or electrostrictive actuators. Hard carbide pads enable smooth, repeatable motion. A large array of optical mounting accessories is available for these mounts (see ULTIMA Accessories) making ULTIMA a basic building block for many optical systems.

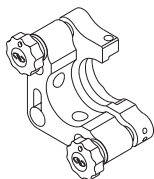
**Precision, 100 TPI adjustment screws** (AIS100 series) are provided for 1, 2, and 3 in. (25.4, 50.8, and 76.2 mm) mounts, or you can use the base model and select the actuators of your choice separately (see ULTIMA Actuators). The U50 optical mounts for 0.5 in. (12.7 mm) diameter optics have integral, hex head adjustment screws with optional patented locking mechanisms. The optional KD.37 knobs have two slots for an Allen wrench to increase the adjustment sensitivity.

**A choice of two or three actuators** allows either standard tip/tilt or tip/tilt and translation, respectively. Translation of the optic is accomplished by turning all three actuators.

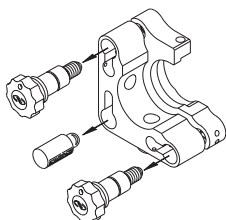
**Convenient clearance mounting holes** on each of two sides are compatible with either 8-32 or M4 screws providing quicker, more precise, and more secure mounting. ULTIMA mounts can be mounted to posts for adjustable height or pedestal posts for a stable fixed height. An adaptor converts an ULTIMA platform mount to a post-mounted horizontal platform for mounting prisms, cube beamsplitters, or other components.

Actuator change in less than one minute!

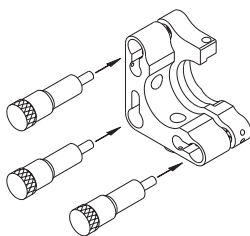
### Step 1



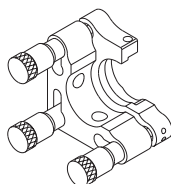
### Step 2



### Step 3



### Step 4



\*U100, U200 and U300 Series

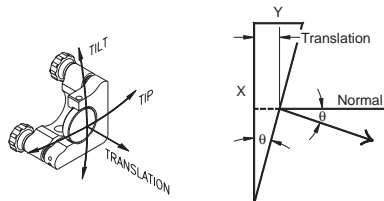
## ULTIMA® Kinematic Optical Mounts

**U50-A, U100-A, U200-A, U300-A:** The -A versions offer a versatile positioning system for mounting 0.5 to 3 in. (12.7 to 76.2 mm) diameter mirrors, beamsplitters, and other optics. All incorporate our patented clear quadrant design, allowing beams to pass close to the edge of a mounted optic. These mounts provide high precision adjustment with an optical axis that is centered relative to the mounting hole(s). Adaptors UPA1-.5, UPA1-.75, and UPA2-1 allow smaller diameter 0.5, 0.75, and 1 in. (12.7, 19.05, and 25.4 mm) optics to be mounted in the U100-A and U200-A. A large array of accessories is available for ULTIMA optical mounts (see ULTIMA Accessories) making these mounts a basic building block for many optical systems.

**U50-P, U100-P, U200-P:** When -P versions are used with the optional Adaptors UPA-PA.5, UPA-PA1, or UPA-PA2 these mounts can be converted to a horizontal tip/tilt or tip/tilt and translation post-mounted platform for prisms, cube beamsplitters, and other components. When used with the optional Mirror Holders UPA.5, UPA.75, UPA1, or UPA2, these mounts provide a stable mounting platform for 0.5 to 2 in. (12.7 to 50.8 mm) diameter mirrors.

### Tilt vs. Translation

*Tilt is the translation of the center of an optic subjected to a 1° tilt of the frontplate. For the U100 Series 0.33 mm of translation is observed while the U200 Series is 0.49 mm of translation.*

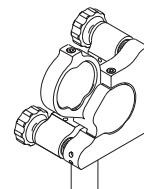


### 1° tilt of the frontplate

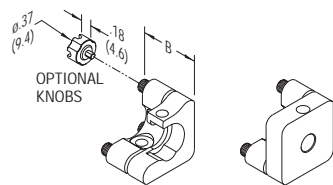
*Results from 2-3 complete turns of the actuator for the U100, while the U200 requires 3-4 turns. The number of turns depends primarily on the number of threads per inch and the pivot arm length. Higher TPI increases the resolution.*

### Gimbal

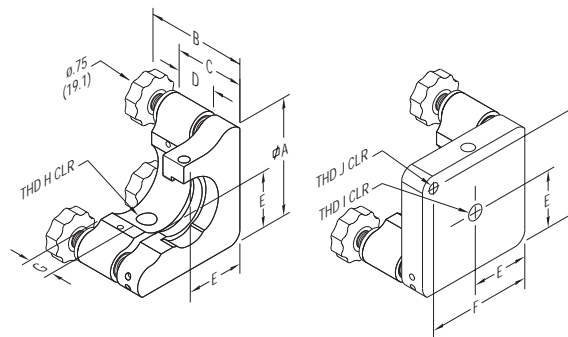
*Tilt without translation—our unique offset gimbal adaptor (UPA-PUZ.5 or UPA-PUZ1), when used with a U50-A or U100-A, respectively, provides less than 0.01 mm of travel (optic center) for 1° tilt of the frontplate.*



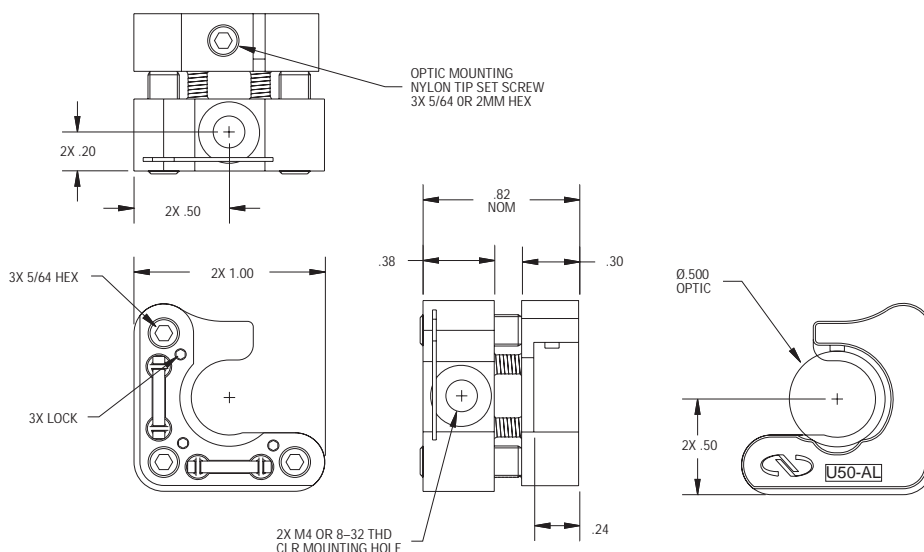
## Model U50-A and Model U50-P



## Models U100/200/300-A and Models U100/200-P



## Model U50-AL



\*Nominal Mount Width  
With Actuator

| Dimension [in. (mm)] |                |
|----------------------|----------------|
| Actuator             | Nominal Width  |
| AJS100-0.5H          | C+.493 (12.52) |
| AJS100-0.5H-NL       | C+.353 (8.97)  |
| AJS100-0.5K          | C+.778 (19.76) |

| Dimension [in. (mm)] |             |                |             |             |             |             |            |           |             | Thread    |  |
|----------------------|-------------|----------------|-------------|-------------|-------------|-------------|------------|-----------|-------------|-----------|--|
| Model                | A           | B <sup>1</sup> | C Nominal   | D           | E           | F           | G          | H         | I           | J         |  |
| U50A                 | 1.00 (25.4) | 0.82 (20.8)    | 0.70 (17.8) | 0.375 (9.5) | 0.50 (12.7) |             | 0.18 (4.6) | 8-32 (M4) |             |           |  |
| U100-A2*             | 2.00 (50.8) | 1.79 (45.5)    | 1.14 (29.0) | 0.63 (15.9) | 1.00 (25.4) |             | 0.31 (7.9) | 8-32 (M4) |             |           |  |
| U100-A3*             | 2.00 (50.8) | 1.79 (45.5)    | 1.14 (29.0) | 0.63 (15.9) | 1.00 (25.4) |             | 0.31 (7.9) | 8-32 (M4) |             |           |  |
| U200-A2*             | 2.75 (69.9) | 1.95 (49.5)    | 1.31 (33.3) | 0.63 (15.9) | 1.38 (35.1) |             | 0.31 (7.9) | 8-32 (M4) |             |           |  |
| U200-A3*             | 2.75 (69.9) | 1.95 (49.5)    | 1.31 (33.3) | 0.63 (15.9) | 1.38 (35.1) |             | 0.31 (7.9) | 8-32 (M4) |             |           |  |
| U300-A2*             | 3.75 (95.3) | 1.95 (49.5)    | 1.31 (33.3) | 0.63 (15.9) | 1.88 (47.8) |             | 0.31 (7.9) | 8-32 (M4) |             |           |  |
| U300-A3*             | 3.75 (95.3) | 1.95 (49.5)    | 1.31 (33.3) | 0.63 (15.9) | 1.88 (47.8) |             | 0.31 (7.9) | 8-32 (M4) |             |           |  |
| U50-P                | 1.00 (25.4) | 0.82 (20.8)    | 0.70 (17.8) | 0.375 (9.5) | 0.50 (12.7) |             | 0.18 (4.6) | 8-32 (M4) | 1/4-20 (M6) |           |  |
| U100-P2*             | 2.00 (50.8) | 1.79 (45.5)    | 1.14 (29.0) | 0.63 (15.9) | 1.00 (25.4) | 1.79 (45.5) | 0.31 (7.9) | 8-32 (M4) | 1/4-20 (M6) | 8-32 (M4) |  |
| U100-P3*             | 2.00 (50.8) | 1.79 (45.5)    | 1.14 (29.0) | 0.63 (15.9) | 1.00 (25.4) | 1.79 (45.5) | 0.31 (7.9) | 8-32 (M4) | 1/4-20 (M6) | 8-32 (M4) |  |
| U200-P2*             | 2.75 (69.9) | 1.95 (49.5)    | 1.31 (33.3) | 0.63 (15.9) | 1.38 (35.1) | 2.17 (55.1) | 0.31 (7.9) | 8-32 (M4) | 1/4-20 (M6) | 8-32 (M4) |  |
| U200-P3*             | 2.75 (69.9) | 1.95 (49.5)    | 1.31 (33.3) | 0.63 (15.9) | 1.38 (35.1) | 2.17 (55.1) | 0.31 (7.9) | 8-32 (M4) | 1/4-20 (M6) | 8-32 (M4) |  |

Note: U50 models are supplied with precision 8-100 (TPI) hex adjustment screws.

Note: U300-A has 3 clearance holes with 0.50 in. (12.7 mm) spacing—see Dimension H callout.

1) Nominal width based on AJS100-0.5K-NL adjustment screw. For width with other AJS100 models see Nominal Mount Width With Actuator table.

**CAD** See our website  
for CAD files

## Ordering Information

| Model                                   | Description  | Optic Diameter<br>[in. (mm)] | Adjustment<br>Screw Thread | Drive Type | Angular Range<br>(°) | Sensitivity <sup>(1)</sup><br>(arc sec) | Translation <sup>(2)</sup><br>[in. (mm)] |
|---|--|------------------------------|----------------------------|------------|----------------------|---|--|
| <b>0.5 in. (12.7 mm) Optical Mounts</b> |  |                              |                            |            |                      |   |  |
| U50-A                                   | 0.5 in. Aperture with (3) Actuators                    | 0.5 (12.7)                   | 80 TPI                     | Hex        | ±5                   | 10.4                                    | 0.15 (3.8)                               |
| U50-A1                                  | 0.5 in. Aperture with (3) Actuators, 100 TPI           | 0.5 (12.7)                   | 100 TPI                    | Hex        | ±5                   | 8.3                                     | 0.15 (3.8)                               |
| U50-AL                                  | 0.5 in. Aperture with (3) Actuators, Lockable          | 0.5 (12.7)                   | 80 TPI                     | Hex        | ±5                   | 10.4                                    | 0.15 (3.8)                               |
| U50-AL1                                 | 0.5 in. Aperture with (3) Actuators, 100 TPI, Lockable | 0.5 (12.7)                   | 100 TPI                    | Hex        | ±5                   | 8.3                                     | 0.15 (3.8)                               |
| U50-P                                   | 0.5 in. Platform with (3) Actuators                    | See adaptors                 | 80 TPI                     | Hex        | ±5                   | 10.4                                    | 0.15 (3.8)                               |
| U50-P1                                  | 0.5 in. Platform with (3) Actuators, 100 TPI           | See adaptors                 | 100 TPI                    | Hex        | ±5                   | 8.3                                     | 0.15 (3.8)                               |
| U50-PL                                  | 0.5 in. Platform with (3) Actuators, Lockable          | See adaptors                 | 80 TPI                     | Hex        | ±5                   | 10.4                                    | 0.15 (3.8)                               |
| U50-PL1                                 | 0.5 in. Platform with (3) Actuators, 100 TPI, Lockable | See adaptors                 | 100 TPI                    | Hex        | ±5                   | 8.3                                     | 0.15 (3.8)                               |
| <b>1 in. (25.4 mm) Optical Mounts</b>   |  |                              |                            |            |                      |   |  |
| U100-A <sup>(3)</sup>                   | 1 in. Aperture Base                                    | 1.0 (25.4)                   |                            |            |                      |   |  |
| U100-A-LH                               | 1 in. Aperture Base, Left Handed                       | 1.0 (25.4)                   |                            |            |                      |   |  |
| U100-A2K                                | 1 in. Aperture with (2) AJS100-0.5K Actuators          | 1.0 (25.4)                   | 100 TPI                    | Knob       | ±7                   | 3.8                                     |  |
| U100-A-LH-2K                            | 1 in. Aperture with (2) AJS100-0.5K Actuators          | 1.0 (25.4)                   | 100 TPI                    | Knob       | ±7                   | 3.8                                     |  |
| U100-A2K-NL                             | 1 in. Aperture with (2) AJS100-0.5K-NL Actuators       | 1.0 (25.4)                   | 100 TPI                    | Knob       | ±7                   | 3.8                                     |  |
| U100-A2H                                | 1 in. Aperture with (2) AJS100-0.5H Actuators          | 1.0 (25.4)                   | 100 TPI                    | Hex        | ±7                   | 3.8                                     |  |
| U100-A-LH-2H                            | 1 in. Aperture with (2) AJS100-0.5H Actuators          | 1.0 (25.4)                   | 100 TPI                    | Hex        | ±7                   | 3.8                                     |  |
| U100-A2H-NL                             | 1 in. Aperture with (2) AJS100-0.5H-NL Actuators       | 1.0 (25.4)                   | 100 TPI                    | Hex        | ±7                   | 3.8                                     |  |
| U100-A3K                                | 1 in. Aperture with (3) AJS100-0.5K Actuators          | 1.0 (25.4)                   | 100 TPI                    | Knob       | ±7                   | 3.8                                     | 0.38 (9.7)                               |
| U100-A-LH-3K                            | 1 in. Aperture with (3) AJS100-0.5K Actuators          | 1.0 (25.4)                   | 100 TPI                    | Knob       | ±7                   | 3.8                                     | 0.38 (9.7)                               |
| U100-A3K-NL                             | 1 in. Aperture with (3) AJS100-0.5K-NL Actuators       | 1.0 (25.4)                   | 100 TPI                    | Knob       | ±7                   | 3.8                                     | 0.38 (9.7)                               |
| U100-A3H                                | 1 in. Aperture with (3) AJS100-0.5H Actuators          | 1.0 (25.4)                   | 100 TPI                    | Hex        | ±7                   | 3.8                                     | 0.38 (9.7)                               |
| U100-A-LH-3H                            | 1 in. Aperture with (3) AJS100-0.5H Actuators          | 1.0 (25.4)                   | 100 TPI                    | Hex        | ±7                   | 3.8                                     | 0.38 (9.7)                               |
| U100-A3H-NL                             | 1 in. Aperture with (3) AJS100-0.5H-NL Actuators       | 1.0 (25.4)                   | 100 TPI                    | Hex        | ±7                   | 3.8                                     | 0.38 (9.7)                               |
| U100-P <sup>(3)</sup>                   | 1 in. Platform Base                                    | See adaptors                 |                            |            |                      |   |  |
| U100-P2K                                | 1 in. Platform with (2) AJS100-0.5K Actuators          | 0                            | 100 TPI                    | Knob       | ±7                   | 3.8                                     |  |
| U100-P2K-NL                             | 1 in. Platform with (2) AJS100-0.5K-NL Actuators       | 0                            | 100 TPI                    | Knob       | ±7                   | 3.8                                     |  |
| U100-P2H                                | 1 in. Platform with (2) AJS100-0.5H Actuators          | 0                            | 100 TPI                    | Hex        | ±7                   | 3.8                                     |  |
| U100-P3K                                | 1 in. Platform with (3) AJS100-0.5K Actuators          | See adaptors                 | 100 TPI                    | Knob       | ±7                   | 3.8                                     | 0.38 (9.7)                               |
| U100-P3K-NL                             | 1 in. Platform with (3) AJS100-0.5K-NL Actuators       | See adaptors                 | 100 TPI                    | Knob       | ±7                   | 3.8                                     | 0.38 (9.7)                               |
| U100-P3H                                | 1 in. Platform with (3) AJS100-0.5H Actuators          | See adaptors                 | 100 TPI                    | Hex        | ±7                   | 3.8                                     | 0.38 (9.7)                               |
| <b>1.18 in. (30 mm) Optical Mounts</b>  |  |                              |                            |            |                      |   |  |
| U100-A-30                               | 30 mm Aperture Base                                    | 1.18 (30)                    |                            |            |                      |   |  |
| <b>2 in. (50.8 mm) Optical Mounts</b>   |  |                              |                            |            |                      |   |  |
| U200-A <sup>(3)</sup>                   | 2 in. Aperture Base                                    | 2.0 (50.8)                   |                            |            |                      |   |  |
| U200-A-LH                               | 2 in. Aperture Base, Left Handed                       | 2.0 (50.8)                   |                            |            |                      |   |  |
| U200-A2K                                | 2 in. Aperture with (2) AJS100-0.5K Actuators          | 2.0 (50.8)                   | 100 TPI                    | Knob       | ±5                   | 2.4                                     |  |
| U200-A2K-NL                             | 2 in. Platform with (2) AJS100-0.5K-NL Actuators       | 2.0 (50.8)                   | 100 TPI                    | Knob       | ±5                   | 2.4                                     |  |
| U200-A2H                                | 2 in. Aperture with (2) AJS100-0.5H Actuator           | 2.0 (50.8)                   | 100 TPI                    | Hex        | ±5                   | 2.4                                     |  |
| U200-A3K                                | 2 in. Aperture with (3) AJS100-0.5K Actuators          | 2.0 (50.8)                   | 100 TPI                    | Knob       | ±5                   | 2.4                                     | 0.38 (9.7)                               |
| U200-A3K-NL                             | 2 in. Platform with (3) AJS100-0.5K-NL Actuators       | 2.0 (50.8)                   | 100 TPI                    | Knob       | ±5                   | 2.4                                     | 0.38 (9.7)                               |
| U200-A3H                                | 2 in. Aperture with (3) AJS100-0.5H Actuators          | 2.0 (50.8)                   | 100 TPI                    | Hex        | ±5                   | 2.4                                     | 0.38 (9.7)                               |
| U200-P <sup>(3)</sup>                   | 2 in. Platform Base                                    | See adaptors                 |                            |            |                      |   |  |
| U200-P2K                                | 2 in. Platform with (2) AJS100-0.5K Actuators          | See adaptors                 | 100 TPI                    | Knob       | ±5                   | 2.4                                     |  |
| U200-P2H                                | 2 in. Platform with (2) AJS100-0.5H Actuators          | See adaptors                 | 100 TPI                    | Hex        | ±5                   | 2.4                                     |  |
| U200-P3K                                | 2 in. Platform with (3) AJS100-0.5K Actuators          | See adaptors                 | 100 TPI                    | Knob       | ±5                   | 2.4                                     | 0.38 (9.7)                               |
| U200-P3H                                | 2 in. Platform with (3) AJS100-0.5H Actuators          | See adaptors                 | 100 TPI                    | Hex        | ±5                   | 2.4                                     | 0.38 (9.7)                               |
| <b>3 in. (76.2 mm) Optical Mounts</b>   |  |                              |                            |            |                      |   |  |
| U300-A <sup>(3)</sup>                   | 3 in. Aperture Base                                    | 3.0 (76.2)                   |                            |            |                      |   |  |
| U300-A2K                                | 3 in. Aperture with (2) AJS100-0.5K Actuators          | 3.0 (76.2)                   | 100 TPI                    | Knob       | ±3.5                 | 1.8                                     |  |
| U300-A3K                                | 3 in. Aperture with (3) AJS100-0.5K Actuators          | 3.0 (76.2)                   | 100 TPI                    | Knob       | ±3.5                 | 1.8                                     | 0.38 (9.7)                               |

1) Typical, based on 1° rotation of actuator screw.

2) Translation of the optic occurs by turning all 3 actuators.

3) For **Vacuum Compatible** versions, append 'V6' to the Model number, e.g., U100-AV6. Please call for price and delivery.

U.S. Patents 6,304,393; 5,930,057; and 6,016,230