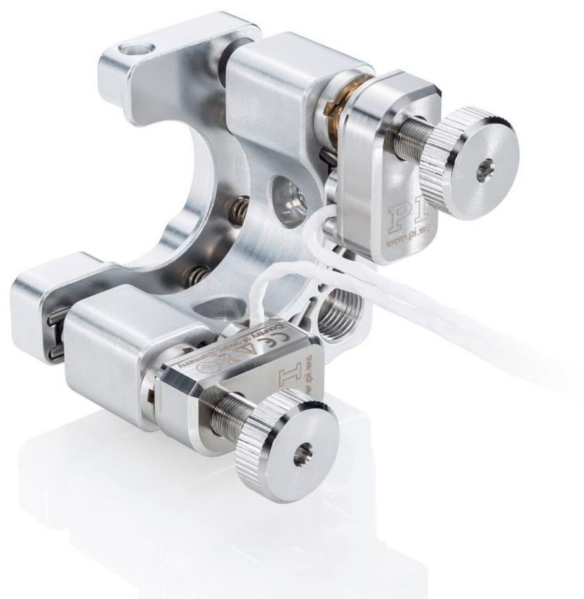


High-Precision Kinematic Mirror Mount

With N-470 PiezoMike Linear Actuators



N-480

- High stability
- For optics with 0.5", 1" or 2" diameter
- Step size 0.3 or 0.5 μ rad
- Lifetime >1,000,000,000 steps at ambient conditions and >50,000,000 steps under vacuum conditions
- Vacuum-compatible to 10^{-6} hPa

Kinematic mirror mounts with piezo motors

N-480 series miniature motorized kinematic optical mirror mounts are equipped with PI's high precision PiezoMike motors for ultra-high resolution angular adjustments in two tilt axes (θ_x and θ_y) down to 0.3 μ rad steps. They are available for mirror and optics sizes of 0.5", 1" and 2" diameter. The high precision PiezoMike motors can be computer-controlled and will hold a position with high stability, even when not energized. Manual adjustment of the N-480 two-axis optical kinematic mounts is also possible. These types of tip/tilt mirror mounts are often used in optics research and for laser beam control and beam delivery systems. For high-speed laser beam steering, PI offers piezo flexure steering mirrors and voice-coil steering mirrors.

Piezo motors

Compact, inexpensive inertia drive principle (stick-slip). At rest, the drive is self-locking, requires no current, and does not generate any heat. It holds the position with maximum force.

Alignment of optical components

Stable alignment of optical paths. Long-term positioning stability: High stability at target position, reliable startup even after longer downtimes. High holding force and resolution by combining piezo actuators with mechanical thread translation. Vacuum-compatible to 10^{-6} hPa.

Motion	Unit		N-480.205CV	N-480.210CV	N-480.210LV	N-480.210RV	N-480.220CV	N-480.220LV	N-480.220RV
Active axes			θ_x, θ_y	θ_x, θ_y	θ_x, θ_y	θ_x, θ_y	θ_x, θ_y	θ_x, θ_y	θ_x, θ_y
Rotation range in θ_x	°		16	16	16	16	8	8	8
Rotation range in θ_y	°		16	16	16	16	8	8	8

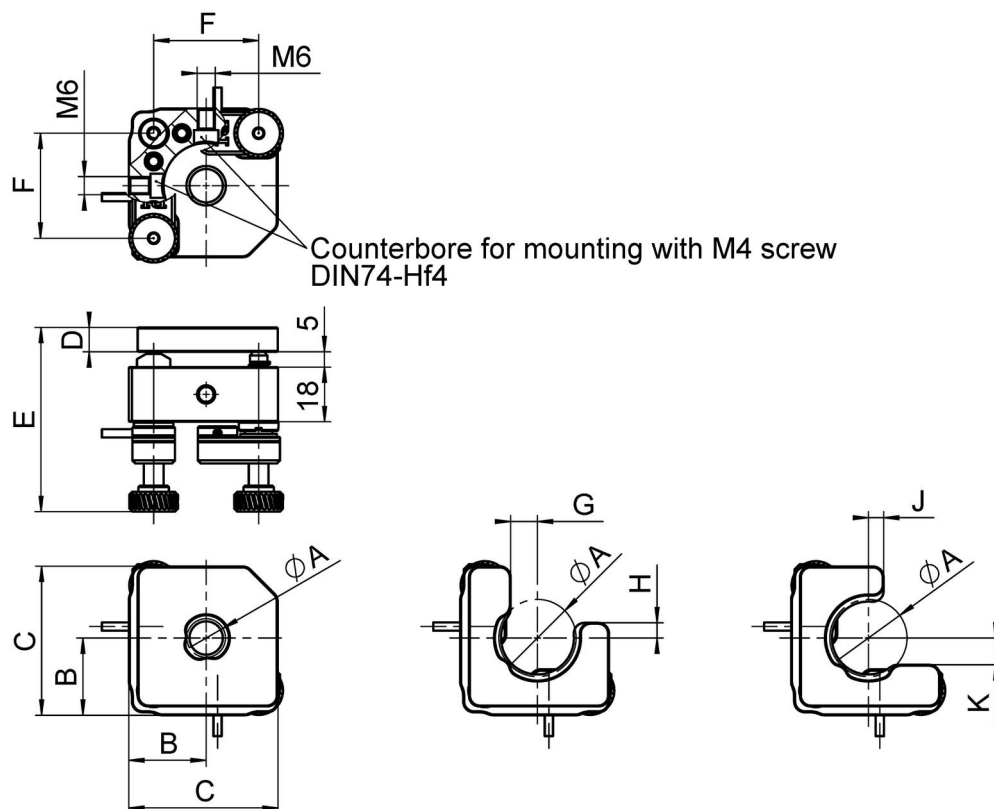
Positioning	Unit		N-480.205CV	N-480.210CV	N-480.210LV	N-480.210RV	N-480.220CV	N-480.220LV	N-480.220RV
Nominal incremental motion in θ_x	μ rad		0.5	0.5	0.5	0.5	0.3	0.3	0.3
Nominal incremental motion in θ_y	μ rad		0.5	0.5	0.5	0.5	0.3	0.3	0.3

Drive Properties	Unit	Tolerance	N-480.205CV	N-480.210CV	N-480.210LV	N-480.210RV	N-480.220CV	N-480.220LV	N-480.220RV
Drive type			Piezoelectric inertia drive	Piezoelectric inertia drive	Piezoelectric inertia drive	Piezoelectric inertia drive	Piezoelectric inertia drive	Piezoelectric inertia drive	Piezoelectric inertia drive
Operating voltage, peak-to-peak	V		80	80	80	80	80	80	80
Drive force in positive direction of motion in Z	N	Typ.	22	22	22	22	22	22	22

Mechanical Properties	Unit	Tolerance	N-480.205CV	N-480.210CV	N-480.210LV	N-480.210RV	N-480.220CV	N-480.220LV	N-480.220RV
Holding force in Z, passive	N	Min.	100	100	100	100	100	100	100
Overall mass	g		220	220	220	220	300	300	300
Material			Screw: Stainless steel. Mount: Aluminum.	Screw: Stainless steel. Mount: Aluminum.	Screw: Stainless steel. Mount: Aluminum.	Screw: Stainless steel. Mount: Aluminum.	Screw: Stainless steel. Mount: Aluminum.	Screw: Stainless steel. Mount: Aluminum.	Screw: Stainless steel. Mount: Aluminum.
Platform version			Closed frame	Closed frame	Open frame left	Open frame right	Closed frame	Open frame left	Open frame right

Miscellaneous	Unit		N-480.205CV	N-480.210CV	N-480.210LV	N-480.210RV	N-480.220CV	N-480.220LV	N-480.220RV
Operating temperature range	°C		10 to 40	10 to 40	10 to 40	10 to 40	10 to 40	10 to 40	10 to 40
Connector			LEMO FFA.0S.303.CLAC27	LEMO FFA.0S.303.CLAC27	LEMO FFA.0S.303.CLAC27	LEMO FFA.0S.303.CLAC27	LEMO FFA.0S.303.CLAC27	LEMO FFA.0S.303.CLAC27	LEMO FFA.0S.303.CLAC27
Cable length	m		1	1	1	1	1	1	1
Recommended controllers / drivers			E-872.401	E-872.401	E-872.401	E-872.401	E-872.401	E-872.401	E-872.401
Vacuum class	hPa		10 ⁻⁶	10 ⁻⁶	10 ⁻⁶	10 ⁻⁶	10 ⁻⁶	10 ⁻⁶	10 ⁻⁶

Drawings / Images



N-480.2xxCV

N-480.2xxLV

N-480.2xxRV

	A	B	C	D	E	F	G	H	J	K
N-480.205CV	12.7 (1/2")	25.4	49	8	61	34.5	-	-	-	-
N-480.210CV	25.4 (1")	25.4	49	8	61	34.5	-	-	-	-
N-480.220CV	50.8 (2")	38.1	76	11	64	59	-	-	-	-
N-480.210LV	25.4 (1")	25.4	49	8	61	34.5	8.8	5	-	-
N-480.220LV	50.8 (2")	38.1	76	11	64	59	11	6	-	-
N-480.210RV	25.4 (1")	25.4	49	8	61	34.5	-	-	5	8.8
N-480.220RV	50.8 (2")	38.1	76	11	64	59	-	-	6	11

N-480.2xxxx, dimensions in mm

Order Information

N-480.205CV

Kinematic mirror mount with PiezoMike linear actuators; piezoelectric inertia drive; $16^\circ \times 16^\circ$ rotational angle ($\theta_X \times \theta_Y$); closed frame; for 1/2" optics; vacuum-compatible to 10^{-6} hPa; 1 m cable length

N-480.210CV

Kinematic mirror mount with PiezoMike linear actuators; piezoelectric inertia drive; $16^\circ \times 16^\circ$ rotational angle ($\theta_X \times \theta_Y$); closed frame; for 1" optics; vacuum-compatible to 10^{-6} hPa; 1 m cable length

N-480.210LV

Kinematic mirror mount with PiezoMike linear actuators; piezoelectric inertia drive; $16^\circ \times 16^\circ$ rotational angle ($\theta_X \times \theta_Y$); frame with opening to the left; for 1" optics; vacuum-compatible to 10^{-6} hPa; 1 m cable length

N-480.210RV

Kinematic mirror mount with PiezoMike linear actuators; piezoelectric inertia drive; $16^\circ \times 16^\circ$ rotational angle ($\theta_X \times \theta_Y$); frame with opening to the right; for 1" optics; vacuum-compatible to 10^{-6} hPa; 1 m cable length

N-480.220CV

Kinematic mirror mount with PiezoMike linear actuators; piezoelectric inertia drive; $8^\circ \times 8^\circ$ rotational angle ($\theta_X \times \theta_Y$); closed frame; for 2" optics; vacuum-compatible to 10^{-6} hPa; 1 m cable length

N-480.220LV

Kinematic mirror mount with PiezoMike linear actuators; piezoelectric inertia drive; $8^\circ \times 8^\circ$ rotational angle ($\theta_X \times \theta_Y$); frame with opening to the left; for 2" optics; vacuum-compatible to 10^{-6} hPa; 1 m cable length

N-480.220RV

Kinematic mirror mount with PiezoMike linear actuators; piezoelectric inertia drive; $8^\circ \times 8^\circ$ rotational angle ($\theta_X \times \theta_Y$); frame with opening to the right; for 2" optics; vacuum-compatible to 10^{-6} hPa; 1 m cable length