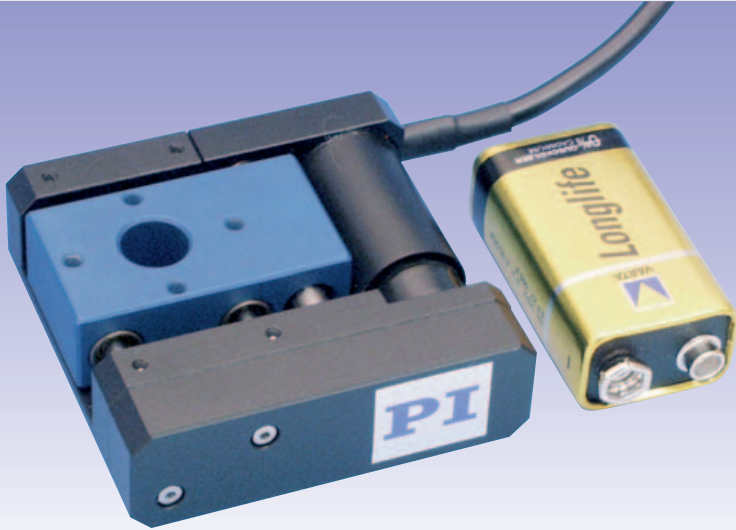


**M-110.1
M-111.1
M-112.1**

High-Resolution Micro-Translation Stages

>> Click <http://www.pi.ws/fwd/Micropositioning> for the Latest Specs on these Products



M-110.1DG micro-translation stage (battery for size comparison).

Application Examples

- Photonics packaging automation
- Fiber optic instrumentation
- Fiber alignment
- Metrology
- Quality control
- Test equipment
- Micromachining

Ordering Information

M-110.1DG
Micro-Translation Stage, 5 mm,
Closed-Loop DC Motor

M-111.1DG
Micro-Translation Stage, 15 mm,
Closed-Loop DC Motor

M-112.1DG
Micro-Translation Stage, 25 mm,
Closed-Loop DC Motor

M-110.12S
Micro-Translation Stage, 5 mm,
2-Phase Stepper Motor

M-111.12S
Micro-Translation Stage, 15 mm,
2-Phase Stepper Motor

M-112.12S
Micro-Translation Stage, 25 mm,
2-Phase Stepper Motor

**Custom Designs
for Volume Buyers**

- **0.05 μm Minimum Incremental Motion**
- **5, 15 and 25 mm Travel Ranges**
- **Velocity to 1.5 mm/sec.**
- **Closed-Loop DC Motors and Stepper Motors**
- **Integrated Hall-Effect Limit and Reference Switches**

M-110, M-111 and M-112 are ultra-high resolution motorized translation stages providing linear motion of 5 to 25 mm in an extremely compact package. They feature a precision leadscrew with sub-micron resolution and precision linear ball bearings guaranteeing < 0.5 μm straightness of travel.

Stepper and Servo Motors

Both drive options provide a cost effective solution for industrial and OEM environments. A miniature DC or stepper motor actuates motion via a backlash-compensated leadscrew / nut system and gearhead. To meet the most critical positioning demands, the DC motor is equipped with a high resolution encoder featuring resolution of 0.007 μm per count. The combination of the extremely low stiction / friction construction and high-resolution encoder allows for minimum incremental motion of 50 nanometers at speeds up to 1.5 mm/sec.

Non-Contact Limit and Reference Switches

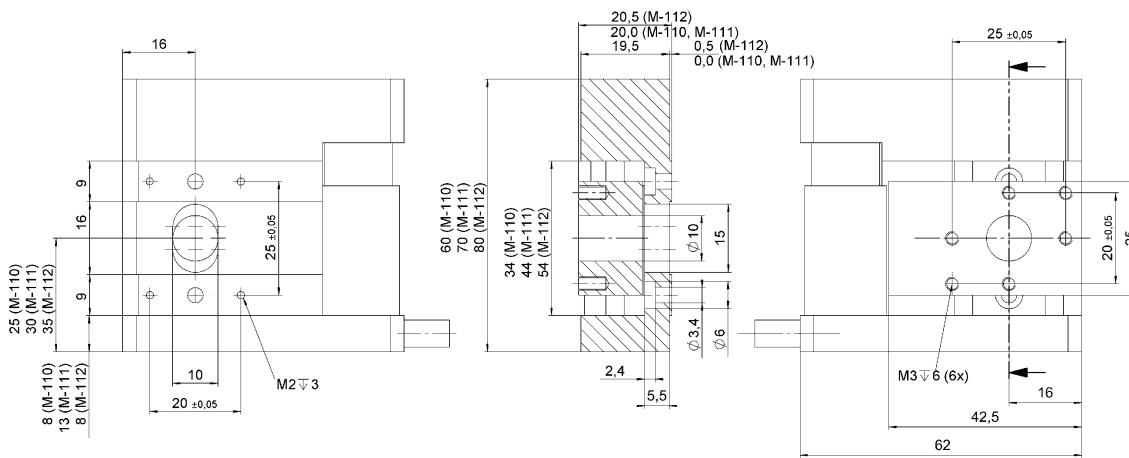
To protect your investment, non-contacting Hall-effect limit and reference switches are installed. Each stage includes a 0.5 m cable with 15-pin sub-D connector and a 3 m extension cable. The connector on the DC-servo versions features **integrated line drivers** for cable lengths up to 10 meters between actuator and controller.

M-110, M-111 and M-112 can be combined to XY and XYZ systems for multi-axis alignment applications. A variety of add-on PiezoNanoAlignment units are also available see the „Photonics“ section.

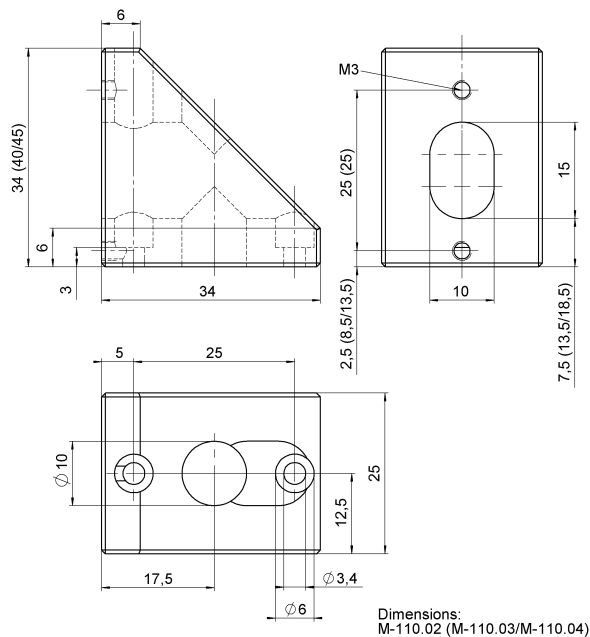
Technical Data

Models	M-110.1DG	M-111.1DG	M-112.1DG	M-110.12S	M-111.12S	M-112.12S	Units
Travel range	5	15	25	5	15	25	mm
Design resolution	0.007	0.007	0.007	0.012	0.012	0.012	μm
Min. incremental motion	0.05	0.05	0.05	0.05	0.05	0.05	μm
Unidirectional repeatability	0.1	0.1	0.1	0.1	0.1	0.1	μm
Backlash	2	2	2	2	2	2	μm
Max. velocity	1	1.5	1.5	1	1	1	mm/sec
Max. normal load capacity	3	3	2	3	3	2	kg
Max. push/pull force	10	10	10	10	10	10	N
Max. lateral force	10	10	10	10	10	10	N
Encoder resolution	2048	2048	2048	-	-	-	counts/rev.
Motor resolution	-	-	-	1200*	1200*	1200*	steps/rev.
Drive screw pitch	0.4	0.4	0.4	0.4	0.4	0.4	mm/rev.
Gear ratio	28.44444:1	28.44444:1	28.44444:1	28.44444:1	28.44444:1	28.44444:1	
Nominal motor power	0.6	2	2	*	*	*	W
Motor voltage range	0 to ± 12	0 to ± 12	0 to ± 12	24*	24*	24*	V
Weight	0.3	0.4	0.5	0.3	0.4	0.5	kg
Recommended motor controllers	C-843, C-848, C-862	C-843, C-848, C-862	C-843, C-848, C-862	C-600, C-630	C-600, C-630	C-600, C-630	

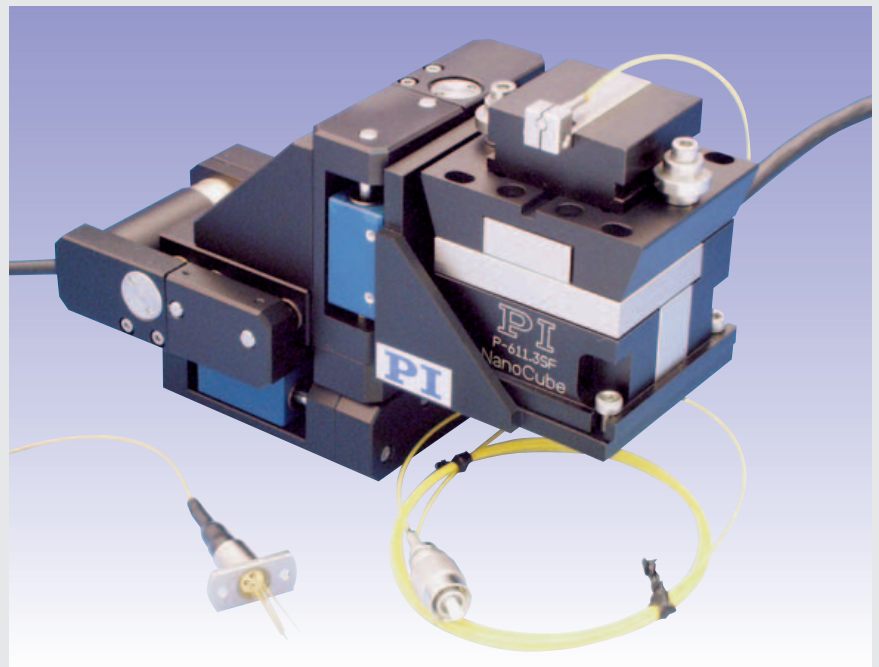
* 2-phase stepper, 24 V chopper voltage, max. 250 mA / phase, 1,200 microsteps with C-600, C-630 controllers



M-110, M-111 and M-112. Cable length: 500 mm, 15-pin sub-D connector with integrated encoder line drivers.



M-110, M-111, M-112 Z-mounting bracket, dimensions (in mm).



F-130 fiber alignment system consisting of an M-110 XYZ positioning system and a P-611 XYZ Piezo-NanoPositioning system. This combination can be operated by the C-880 controller or NI controllers (request our technote!)