

# Elevation Stage | ES-50PM

The ES-50PM piezo elevation stage is designed for applications with limited space conditions. The ES-50PM stage is driven by a patented multi-phase piezo motor. Crossed roller bearings assure smooth motion and high stiffness. The ES-50PM allows for a highly rigid XZ or XYZ setup without the need for adapter brackets when combined with the PPS-60, VT-50, and PPX-50 series of linear stages. Versions capable of operation in vacuum ( $10^{-9}$  mbar) are available. The ES-50PM is compatible with the MMC-100 and MMC-110 controller.

## KEY FEATURES

- Travel range of 10 mm
- 2 nm closed loop encoder resolution
- Load capacity up to 1 kg
- Crossed roller bearings
- Mechanical limit switch option
- Vacuum versions available

## TECHNICAL DATA

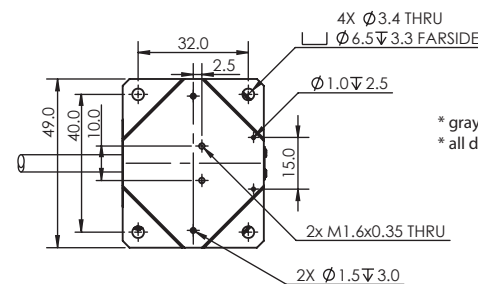
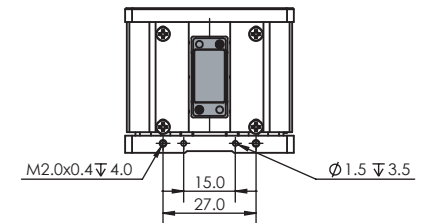
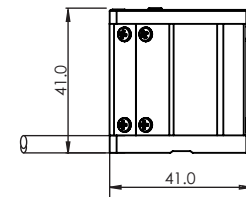
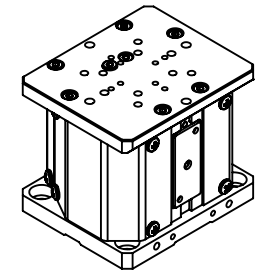
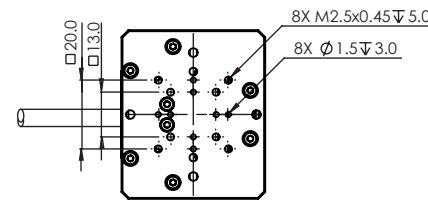
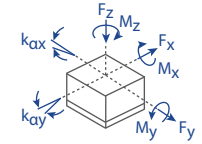
Travel range [mm]	10		
Straightness / Flatness [ $\mu\text{m}$ ]	$\pm 4$		
Pitch [ $\mu\text{rad}$ ]	$\pm 300$		
Yaw [ $\mu\text{rad}$ ]	$\pm 300$		
Weight [g]	110		
Motor option	Piezo Motor		
Speed, max [mm/s]	$> 1$ (MMC-100), $> 5$ (MMC-110)		
Encoder option	None (open loop)	Analog (1 $V_{pp}$ )	Digital (RS-422)
Resolution, typical [nm]	1	10	2
Repeatability, bi-directional [nm]	n/a	$\pm 50$	$\pm 50$
Repeatability, uni-directional [nm]	n/a	50	50
Materials	aluminum body, steel bearing (other materials i.e. stainless steel, titanium, etc. available upon request)		

## ORDERING INFORMATION

ES-50PM- 1 1

<b>DRIVE</b>	Piezo Motor, PM-003 .....	1
<b>TRAVEL</b>	10 mm .....	1
<b>ENCODER</b>	None .....	0
	Analog (1 $V_{pp}$ ) .....	2
	Digital (RS-422) .....	3
<b>LIMIT SWITCH</b>	None .....	0
	Mechanical .....	1
<b>ENVIRONMENT</b>	Atmospheric .....	0
	High Vacuum, $10^{-6}$ mbar .....	6
	Ultra-High Vacuum, $10^{-9}$ mbar .....	9

Load, max	$F_x$ [N]	$F_y$ [N]	$F_z$ [N]	$M_x$ [N-m]	$M_y$ [N-m]	$M_z$ [N-m]	$k_{ax}$ [ $\mu\text{rad/N-m}$ ]	$k_{ay}$ [ $\mu\text{rad/N-m}$ ]
PM-003	5	5	10	1	1	1	-	-



\* gray parts for closed loop versions only  
\* all dimensions are in millimeters

Specifications are subject to change without notice.