

# Precision Piezo Stage | PPS-20

The PPS-20 is a high-precision, long travel linear piezo stage. Miniature crossed roller bearings assure high stiffness and guiding accuracy for loads up to 20 N (horizontal orientation). It utilizes our patent-pending multi-phase piezo motor resulting in high speed (> 2 mm/s) and high blocking force (> 2 N). The PPS-20 is available in open loop or with an external encoder. Closed loop resolution of 2 nm is achievable. Versions capable of operation in vacuum ( $10^{-9}$  mbar) and/or cryo (4 Kelvin) are available. The PPS-20 is compatible with the MMC-100 and MMC-110 controllers.

## KEY FEATURES

- Travel range of up to 51 mm
- 2 nm closed loop resolution
- Load capacity up to 2 kg
- Steel crossed roller bearing
- Low profile, 13 mm height
- Vacuum, cryo, and non-magnetic versions available

## TECHNICAL DATA

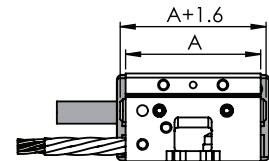
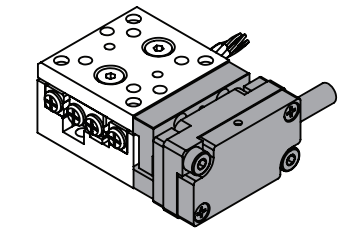
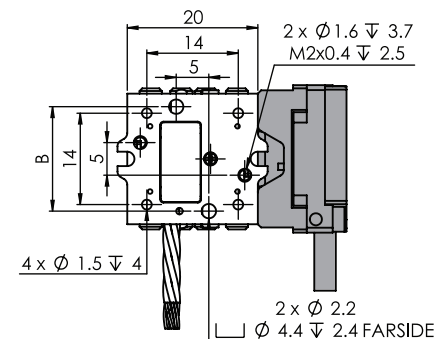
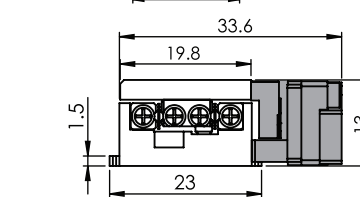
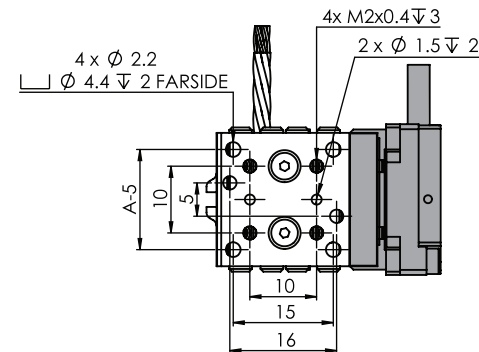
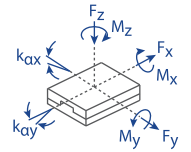
Travel range [mm]	12	18	26	51
Straightness / Flatness [ $\mu\text{m}$ ]	$\pm 1$	$\pm 1.5$	$\pm 1.5$	$\pm 2.5$
Pitch [ $\mu\text{rad}$ ]	$\pm 60$	$\pm 80$	$\pm 80$	$\pm 100$
Yaw [ $\mu\text{rad}$ ]	$\pm 70$	$\pm 90$	$\pm 90$	$\pm 100$
Weight [g]	17	24	34	68
Motor option	Piezo Motor			
Speed, max [mm/s]	2 (MMC-100), 10 (MMC-110)			
Encoder option	None (open loop)	Analog (1 V <sub>pp</sub> )	Digital (RS-422)	
Resolution, typical [nm]	1	10	2	
Repeatability, bi-directional [nm]	n/a	$\pm 50$	$\pm 20$	
Repeatability, uni-directional [nm]	n/a	50	20	
Accuracy [ $\mu\text{m}$ ]	-	$\pm 1$	$\pm 1$	
Materials	aluminum body, steel bearing (other materials i.e. stainless steel, titanium, etc. available upon request)			

## ORDERING INFORMATION

PPS-20- 1

<b>DRIVE</b>	Piezo Motor, PM-002 .....	1
<b>TRAVEL</b>	12 mm .....	1
	18 mm .....	2
	26 mm .....	3
	51 mm .....	5
<b>ENCODER</b>	None .....	0
	Analog (1 V <sub>pp</sub> ) .....	2
	Digital (RS-422) .....	3
<b>LIMIT SWITCH</b>	None .....	0
	Magnetic .....	1
<b>ENVIRONMENT</b>	Atmospheric .....	0
	High Vacuum, $10^{-6}$ mbar .....	6
	Ultra High Vacuum, $10^{-9}$ mbar .....	9

Load, max	F <sub>x</sub> [N]	F <sub>y</sub> [N]	F <sub>z</sub> [N]	M <sub>x</sub> [N·m]	M <sub>y</sub> [N·m]	M <sub>z</sub> [N·m]	k <sub>ax</sub> [ $\mu\text{rad}/\text{N}\cdot\text{m}$ ]	k <sub>ay</sub> [ $\mu\text{rad}/\text{N}\cdot\text{m}$ ]
PM-002	2	20	20	0.7	0.7	0.7	-	-



Travel	A	B
12	20	16
18	30	16
26	40	36
51	80	50

\* 12 mm travel version shown  
\* all dimensions are in millimeters

Specifications are subject to change without notice.