

# High- Load Precision Z Stage

COMBINATIONS WITH PIEZO NANOPOSITIONING STAGES POSSIBLE



## M-451

- + Encoder resolution 3 nm
- + Min. incremental motion 100 nm
- + Travel range 12.5 mm (1/2")
- + Load capacity to 12 kg
- + High stiffness for combination with piezo systems
- + ActiveDrive motor
- + Noncontact limit and reference point switches
- + Compatible with P-500 and PIMars piezo systems
- + Self- locking

## Specifications

	M-451.1PD	M-451.1DG	M-451.12S	Unit	Tolerance
Active axes	Z	Z	Z		
<b>Motion and positioning</b>					
Travel range	12.5	12.5	12.5	mm	
Integrated sensor	Rotary encoder	Rotary encoder	–		
Sensor resolution	4000	2000	–	Cts./ rev.	
Design resolution	0.042	0.0028	0.026	µm	
Incremental motion	0.2	0.1	0.2	µm	min.
Backlash	1	1	1	µm	
Unidirectional repeatability	0.3	0.3	0.3	µm	
Pitch / yaw	±75	±75	±75	µrad	
Straightness	1	1	1	µm	
Flatness	1	1	1	µm	
Velocity	3	0.5	0.8	mm/ s	max.
Reference point switch repeatability	1	1	1	µm	
<b>Mechanical properties</b>					
Drive screw	Leadscrew	Leadscrew	Leadscrew		
Thread pitch	0.5	0.5	0.5	mm	
Gear ratio	–	29.6:1	–		
Motor resolution*	–	–	6400*	steps/ rev.	
Load capacity (self- locking)	120	120	120	N	max.
<b>Drive properties</b>					
Motor type	DC motor, ActiveDrive	DC gear motor	2- phase stepper motor*		
Operating voltage	24	0 to ±12	24	V	
Motor power	25	4	4.8	W	
Limit and reference point switches	Hall effect	Hall effect	Hall effect		
<b>Miscellaneous</b>					
Operating temperature range	-20 to 50	-20 to 50	-20 to 50	°C	
Material	Al (black anodized)	Al (black anodized)	Al (black anodized)		
Mass	5	5	5	kg	

Recommended controller / driver	C-863 (single- axis) C-843 PCI board, for up to 4 axes	C-863 (single- axis) C-843 PCI board, for up to 4 axes	C-663 (single- axis)
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\* Max. 0.85 A/ phase; 400 full steps/ rev., motor resolution with C-663 stepper motor controller.

Ask about custom designs!

## Order Information

### **M-451.1PD**

Vertical Stage, 12.5 mm, ActiveDrive DC Motor (Includes 24 V Power Supply)

### **M-451.1DG**

Vertical Stage, 12.5 mm, DC Gear Motor

### **M-451.12S**

Vertical Stage, 12.5 mm, 2- Phase Stepper Motor

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## Controllers / Drivers / Amplifiers

[C-863 Mercury Servo Controller](#)

[C-884 Four Axis Motion Controller](#)

[C-663 Mercury Step Controller](#)

[C-843 DC- Servo- Motor Controller](#)

## Related Products

[P-561 • P-562 • P-563 PIMars Nanopositioning Stage](#)

[M-511.HD Nano- Precision Heavy- Duty Stage](#)

[M-501 Precision Z Stage](#)



