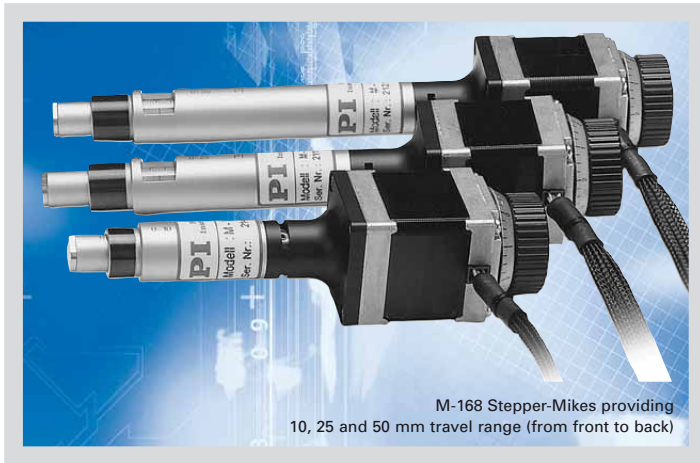


# M-168 Stepper-Mike Precision Linear Actuator

## Non-Rotating Tip, Strokes to 50 mm



- 10, 25 and 50 mm Travel Range
- Resolution <math><0.1 \mu\text{m}</math>
- 2-Phase Stepper Motor
- Manual Positioning Knob
- Sub-nm-Resolution with Optional PZT Actuator
- >5,000 h MTBF

M-168 are compact, high-resolution linear actuators providing linear motion up to 50 mm with sub-micron resolution. They consist of a micrometer drive with non-rotating tip driven by a 6400 microstep/rev and 2-phase stepper motor.

### Non-Rotating Tip

Compared to conventional rotating-tip micrometer drives, the non-rotating-tip design offers several advantages:

- Elimination of torque-induced positioning errors
- Elimination of sinusoidal motion errors
- Elimination of wear at the contact point
- Elimination of tip-angle-dependent wobble

M-168 Stepper-Mikes feature an extremely low-stiction, low-friction construction allowing for high resolution and repeatability. A manual positioning knob provides coarse resolution of  $5 \mu\text{m}$ . All models come with standard flat tips (see

p. 1-58 for spherical tips and other options).

### High-Resolution Piezo Option

The optional piezo tip provides  $20 \mu\text{m}$  travel with sub-nanometer resolution for dynamic scanning and tracking (see p. 1-73).

### Technical Data

Model	M-168.12S	M-168.22S	M-168.52S	Unit
Travel range	10	25	50	mm
Design resolution	0.025	0.025	0.025	$\mu\text{m}$
Min. incremental motion	0.05	0.05	0.05	$\mu\text{m}$
Unidirectional repeatability	0.1	0.1	0.1	$\mu\text{m}$
Backlash	2	2	2	$\mu\text{m}$
Max. velocity	5	5	5	mm/s
Max. push/pull force	50	50	50	N
Max. lateral force	0.02	0.02	0.02	N (at tip)
Motor resolution*	6400*	6400*	6400*	steps/rev.
Drive screw pitch	0.5	0.5	0.5	mm/rev.
Weight	0.4	0.45	0.5	kg
Recommended motor controllers	C-663 single-axis	C-663 single-axis	C-663 single-axis (p. 4-112)	

\*2-phase stepper motor, 24 V chopper voltage, max. 0.8 A/phase, 400 full steps/rev., motor resolution with C-663 stepper motor controller

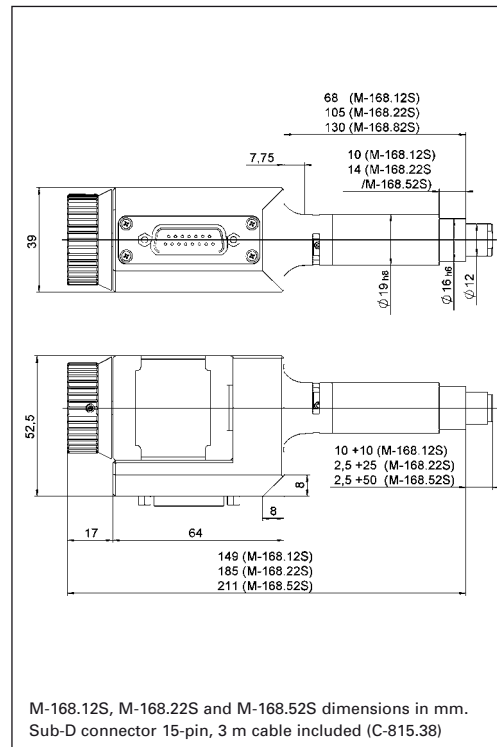
### Ordering Information

**M-168.12S**  
High-Resolution Stepper-Mike Linear Actuator, 10 mm

**M-168.22S**  
High-Resolution Stepper-Mike Linear Actuator, 25 mm

**M-168.52S**  
High-Resolution Stepper-Mike Linear Actuator, 50 mm

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