

High- Resolution Linear Actuator with DC and Stepper Motor

PRECISE AND COST-EFFICIENT, SLIM DESIGN



M-231

- + Travel range 17 mm
- + Min. incremental motion 0.1 µm
- + Velocity to 1.5 mm/ s
- + Closed- loop DC servo and stepper motor versions
- + MTBF >5,000 h
- + Noncontact limit switches
- + Fits to the [M-105 micropositioning stage](#)

Compact precision- class linear drive

Cost- efficient, high- resolution linear actuator, DC mike and stepper mike Rotating end piece, rotating pusher. Fits to the [M-105 micropositioning stage](#)

High- quality components

Extremely low- friction and backlash- free construction. Noncontact limit switches protect the mechanical system. Closed- loop variants with differential encoder driver for a safe position signal transmission at distances up to 10 mm

Motor variants

- Position- controlled DC motors with a gearhead and high- resolution rotary encoders allow for incremental motion and repeatability of just 100 nm
- Low- vibration 2- phase stepper motors with gearhead allow for smooth and accurate open- loop positioning

Specifications

	M-231.17	M-231.17S	Unit	Tolerance
	High resolution, closed- loop	High resolution, with stepper motor		
Motion and positioning				
Travel range	17	17	mm	
Integrated sensor	Rotary encoder	–		
Sensor resolution	2,048	–	cts./ rev.	
Design resolution	0.007	0.037	µm	typ.
Min. incremental motion	0.1	0.1	µm	typ.
Backlash	2	2	µm	typ.
Unidirectional repeatability	0.2	0.2	µm	typ.
Velocity	1.5	1	mm/ s	max.
Mechanical properties				
Drive screw	Leadscrew	Leadscrew		
Thread pitch	0.4	0.4	mm	
Gear ratio	28.44444:1	28.44444:1		
Motor resolution	–	384*	steps/ rev.	
Push / pull force	40	40	N	max.
Drive properties				
Motor type	DC motor, gearhead	2- phase stepper motor*		
Operating voltage	0 to ±12	24	V	
Electrical power	2	–	W	nominal
Limit switches	Hall- effect	Hall- effect		
Miscellaneous				

Operating temperature range	-20 to 65	-20 to 65	°C	
Material	Aluminum anodized, chrome steel, brass	Aluminum anodized, chrome steel, brass		
Mass	0.17	0.17	kg	±5 %
Cable length	0.5 + 3 m extension cable (included)	0.5 + 3 m extension cable (included)	m	±10 mm
Connector	15- pin sub- D, incl. encoder driver	Sub- D, 15- pin		
Recommended controller / driver	C-863 single- axis C-843 PCI board, for up to 4 axes	C-663 single- axis		

Avoid lateral forces on the pusher!
Ask about custom designs!

* Max. 0.25 A/ phase; 24 full steps/ rev., motor resolution with C-663 stepper motor controller.

Order Information

M-231.17

High- Resolution Linear Actuator with DC Motor, 17 mm, Limit Switches

M-231.17S

High- Resolution Linear Actuator with Stepper Motor, 17 mm, Limit Switches

Ask about custom designs!

Controllers / Drivers / Amplifiers

[C-863 Mercury Servo Controller](#)

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

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

[C-663 Mercury Step Controller](#)

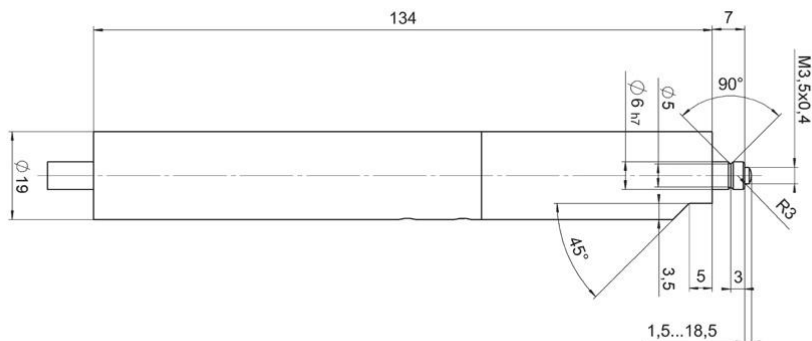
Related Products

[M-228 • M-229 High- Resolution Linear Actuator with Stepper Motor](#)

[M-232 High- Resolution Linear Actuator with DC and Stepper Motor](#)

[M-235 High- Resolution Linear Actuator with DC Motor](#)

Drawings / Images



M-231, dimensions in mm



M-231 fitted to an XYZ micropositioning system with M-105 stages