

M-227

High-Resolution DC-Mike Actuators

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M-227.10 (w/ piezo tip), M-227.25, M-227.50 (w/ ball tip), high-resolution DC-Mike actuators and several tip options

Ordering Information

- M-227.10**
DC-Mike Actuator, 10 mm
- M-227.25**
DC-Mike Actuator, 25 mm
- M-227.50**
DC-Mike Actuator, 50 mm
- M-219.10**
Ball Tip
- M-250.20**
Piezo Translator

Ask about custom designs!

- 10, 25 & 50 mm Travel Ranges
- 0.05 μm Minimum Incremental Motion
- Non-Rotating Tip
- Closed-Loop DC Motor
- Compatible with Leading Industrial Motion Controllers
- Sub-nm Resolution with Optional PZT Drive
- >5,000 Hours MTBF

M-227 are ultra-high-resolution linear actuators providing linear motion up to 50 mm with sub-micron resolution in a compact package. They consist of a micrometer with non-rotating tip, driven by a closed-loop DC-motor/gearhead combination with motor-shaft-mounted high-resolution encoder (2048 counts/rev.).

Non-Rotating Tip

Compared to conventional rotating-tip micrometer drives the non-rotating-tip design offers several advantages; it eliminates:

- Torque-induced stage platform tilt
- Sinusoidal motion errors
- Wear at the contact point
- Tip-angle-dependent wobble

M-227 actuators provide a cost-effective solution for industrial and OEM environments. Based on the successful M-222/M-226 series which they replace, M-227 DC Mikes offer both improved specs and reduced costs. The combination of an extremely low stiction/friction construction and high-resolution encoder allows for a minimum incremental motion of 50 nanometers at speeds up to 1 mm/sec.

Integrated Line Drivers

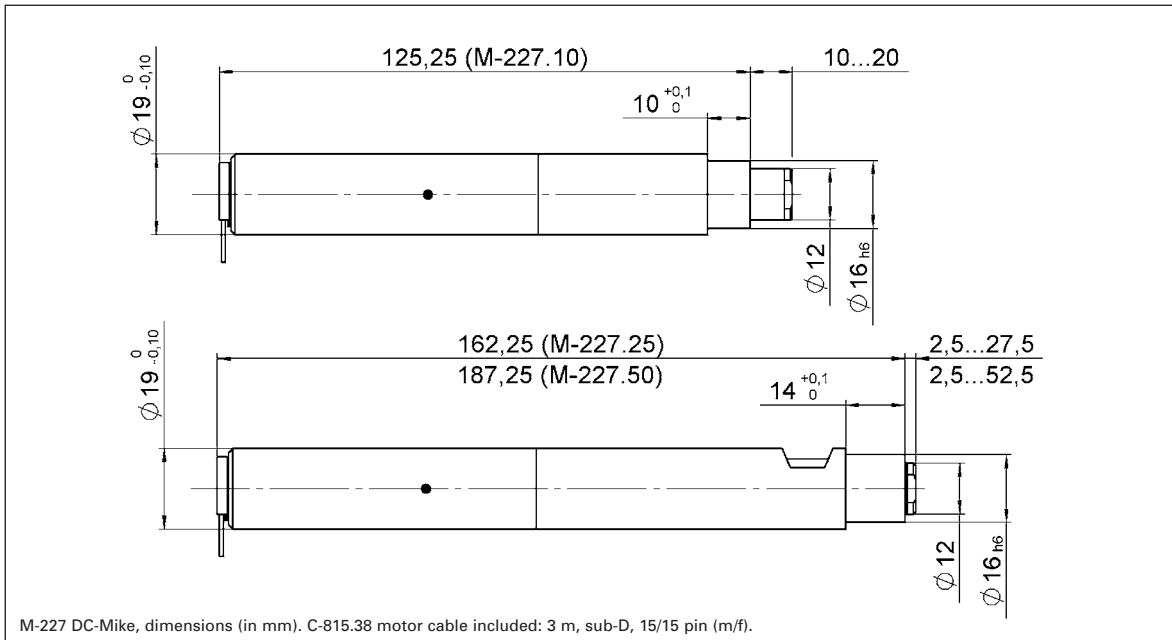
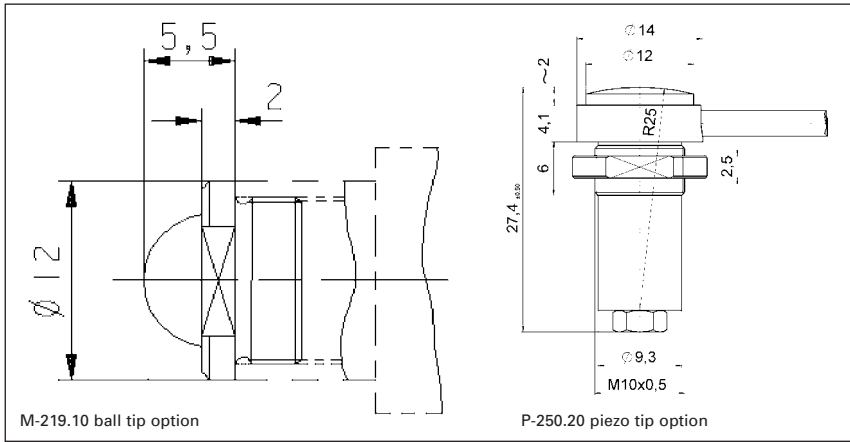
Each actuator includes an integrated 0.1 m cable with 15-pin sub-D connector and a 3 m extension cable. The connector features integrated line drivers for cable lengths up to 10 meters between actuator and controller.

High-Resolution Piezo Option

All models come with standard flat tips. A variety of other tips are also available, such as a piezoelectric tip featuring 20 μm travel with sub-nanometer resolution for dynamic scanning and tracking (see page 7-85).

For mounting, the DC-Mikes are clamped around the 19 mm diameter section. High forces around the 16 mm diameter section must be avoided, as must be lateral forces on the tip.

Stepper-motor-driven versions of the M-227 are available on request. For higher loads and integrated limit switches refer to the M-230 and M-235 (see pages 7-78 and 7-82).



Technical Data

Models	M-227.10	M-227.25	M-227.50	Units	Notes see page 7-106
Travel range	10	25	50	mm	
Design resolution	0.0035	0.0035	0.0035	μm	A3
Min. incremental motion	0.05	0.05	0.05	μm	A4
Unidirectional repeatability	0.1	0.1	0.1	μm	
Backlash	2	2	2	μm	
Max. velocity	1	1	1	mm/s	
Max. push/pull force*	40	40	40	N	
Max. lateral force	0.1	0.1	0.1	N (at tip)	
Encoder resolution	2048	2048	2048	counts/rev.	
Drivescrew pitch	0.5	0.5	0.5	mm/rev.	
Gear ratio	69.12:1	69.12:1	69.12:1		
Nominal motor power	2	2	2	W	
Motor voltage	12	12	12	V	
Weight	0.16	0.22	0.26	kg	

Recommended motor controllers C-842, C-844, C-860 C-842, C-844, C-860 C-842, C-844, C-860

D2

* Higher forces on request

Piezo Actuators

Nanopositioning & Scanning Systems

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Tutorial: Piezo-electrics in Positioning

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Piezo Drivers & Nanopositioning Controllers

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Index