

# M-230

## High-Resolution Closed-Loop DC-Mike & Stepper Actuators

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- 10 & 25 mm Travel Range
- 0.05  $\mu\text{m}$  Minimum Incremental Motion
- Non-Rotating Tip
- Velocity to 2 mm/sec.
- Closed-Loop DC Motors and Stepper Motors
- Compatible with Leading Industrial Motion Controllers
- Integrated Hall-Effect Origin and Limit Switches
- Front Mount or Clamp Mount
- >5,000 Hours MTBF

M-230 are ultra-high-resolution linear actuators providing linear motion up to 25 mm with sub-micron resolution in a compact package. They consist of a micrometer with non-rotating tip driven by a 2-phase stepper motor or 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:

- 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-230 actuators provide a cost-effective solution for heavier-duty industrial and OEM environments. They feature extremely low-stiction, low-friction construction, allowing for minimum incremental motion as low as 50 nanometers and speeds up to 2 mm/sec.

### Non-Contact Limit and Origin Switches

Integrated, non-contact, high-precision Hall-effect origin and limit switches protect your equipment and increase versatility in automation applications.

### Integrated Line Drivers

M-230 actuators include an integral 0.5 m cable with 15-pin sub-D connector and a 3 m extension cable. On the DC-servo versions, the connector

### Ordering Information

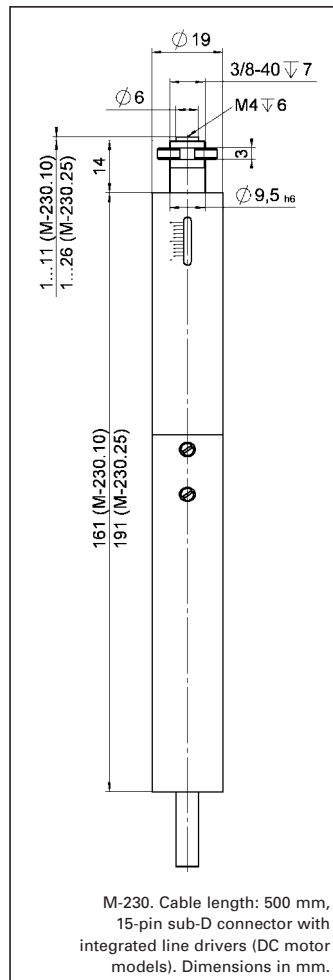
- M-230.10**  
DC-Mike Actuator, 10 mm, Limit Switches
- M-230.25**  
DC-Mike Actuator, 25 mm, Limit Switches
- M-230.10S**  
Stepper-Mike Actuator, 10 mm, Limit Switches
- M-230.25S**  
Stepper-Actuator, 25 mm, Limit Switches

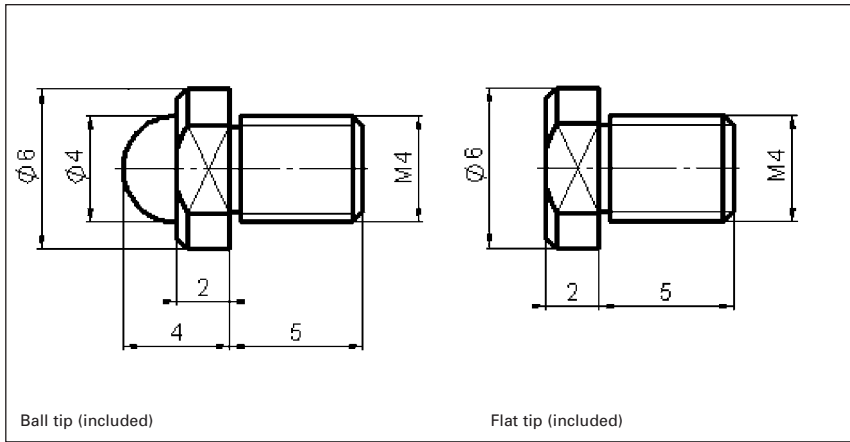
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features integrated line drivers for cable lengths up to 10 meters between actuator and controller.

A screw-in ball tip and a flat tip are included.

For higher loads and travel ranges refer to the M-235 on page 7-82.





### Technical Data

Models	M-230.10	M-230.25	M-230.10S	M-230.25S	Units	Notes see page 7-106
Travel range	10	25	10	25	mm	
Design resolution	0.0046	0.0046	0.0012	0.0012	$\mu\text{m}$	A3
Min. incremental motion	0.05	0.05	0.05	0.05	$\mu\text{m}$	A4
Unidirectional repeatability	0.1	0.1	0.1	0.1	$\mu\text{m}$	
Backlash	2	2	2	2	$\mu\text{m}$	
Max. velocity	1.5	1.5	2	2	mm/s	
Max. push/pull force	70	70	45**	45**	N	
Max. lateral force	30	20	30	20	N (at tip)	
Encoder resolution	2048	2048	-	-	counts/rev.	
Motor resolution	-	-	1200*	1200*	steps/rev.	
Drivescrew pitch	0.4	0.4	0.4	0.4	mm/rev.	
Gear ratio	42.92:1	42.92:1	28.44444:1	28.44444:1		
Nominal motor power	2	2	*	*	W	
Motor voltage	12	12	24*	24*	V	
Origin and limit switches	Hall-Effect	Hall-Effect	Hall-Effect	Hall-Effect		
Weight	0.30	0.35	0.30	0.35	kg	
Recommended motor controllers	C-843, C-848, C-862	C-843, C-848, C-862	C-600, C-630	C-600, C-630		D2

C-815.38 motor cable included: 3 m, sub-D, 15/15 pin (m/f).  
 \* 2-phase stepper, 24 V chopper voltage, max. 250 mA / phase, 1,200 microsteps with C-600, C-630 controllers  
 \*\* at up to 1 mm/sec.

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