

# High-Resolution Linear Actuator with Stepper Motor

Compact and Particularly Inexpensive

## M-228 • M-229



- Travel ranges 10 and 25 mm
- High load capacity 80 N
- Resolution 0.36 nm with gearhead version
- Velocity to 4 mm/s
- Direct drive versions include handwheel
- Noncontact limit and reference switches

### Compact standard-class linear drive

Stepper mike with 2-phase stepper motor as powerful direct drive, or slim design version with gearhead motors.

### High-quality components

Nonrotating tip for uniform motion prevents wobble, torque, and wear at the point of contact. Noncontact limit switches protect the mechanics. A direction-sensing reference switch supports automation applications. Integrated position indicator. Versions with direct drive include handwheel for manual adjustment.

### Inexpensive system solution

In conjunction with the networkable C-663.12 Mercury Step single-channel controller, the linear actuators offer good performance at an economically attractive system price for single-axis and multi-axis configurations.

Motion	Unit		M-228.10S	M-228.11S	M-229.25S	M-229.26S
Active axes			X	X	X	X
Travel range in X	mm		10	10	25	25
Maximum velocity in X, unloaded	mm/s		1.5	4	1.5	4

Positioning	Unit	Tolerance	M-228.10S	M-228.11S	M-229.25S	M-229.26S
Minimum incremental motion in X	μm	Typ.	1	1	1	1
Unidirectional repeatability in X	μm	Typ.	±2	±2	±2	±2
Backlash in X	μm	Typ.	5	10	10	10
Reference switch			Hall effect	Hall effect	Hall effect	Hall effect
Reference switch repeatability	μm		1	1	1	1
Limit switches			Hall effect	Hall effect	Hall effect	Hall effect

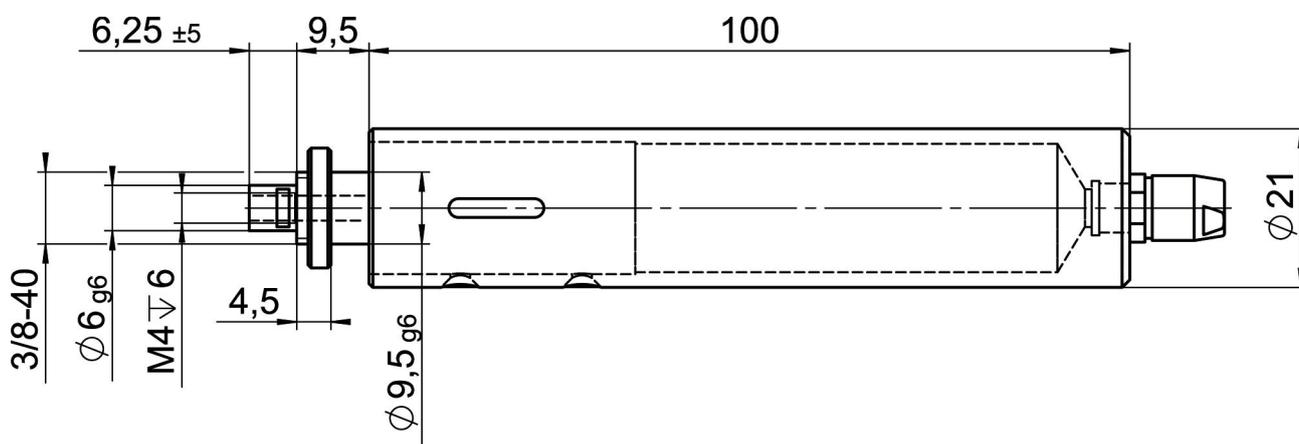
Drive Properties	Unit	Tolerance	M-228.10S	M-228.11S	M-229.25S	M-229.26S
Drive type			2-phase stepper motor with gearhead	2-phase stepper motor	2-phase stepper motor with gearhead	2-phase stepper motor
Operating voltage	V		24	24	24	24
Nominal current, RMS	A	Typ.	0.25	0.85	1	0.85
Motor resolution	Full steps/rev.		24	400	24	400
Drive force in X	N	Typ.	20	50	50	80

Mechanical Properties	Unit		M-228.10S	M-228.11S	M-229.25S	M-229.26S
Drive screw type			Trapezoidal drive screw	Trapezoidal drive screw	Trapezoidal drive screw	Trapezoidal drive screw
Drive screw pitch	mm		0.5	0.5	0.5	0.5
Gear ratio i			256 : 9	-	256 : 9	-
Overall mass	g		230	360	400	610
Material			Anodized aluminum, chrome steel, brass			

Miscellaneous	Unit		M-228.10S	M-228.11S	M-229.25S	M-229.26S
Operating temperature range	°C		-20 to 65	-20 to 65	-20 to 65	-20 to 65
Connector			D-sub 15-pin (m)	D-sub 15-pin (m)	D-sub 15-pin (m)	D-sub 15-pin (m)
Cable length	m		0.5	0.6	0.5	0.6
Recommended controllers / drivers			C-663.12 C-885 with C-663.12C885	C-663.12 C-885 with C-663.12C885	C-663.12 C-885 with C-663.12C885	C-663.12 C-885 with C-663.12C885

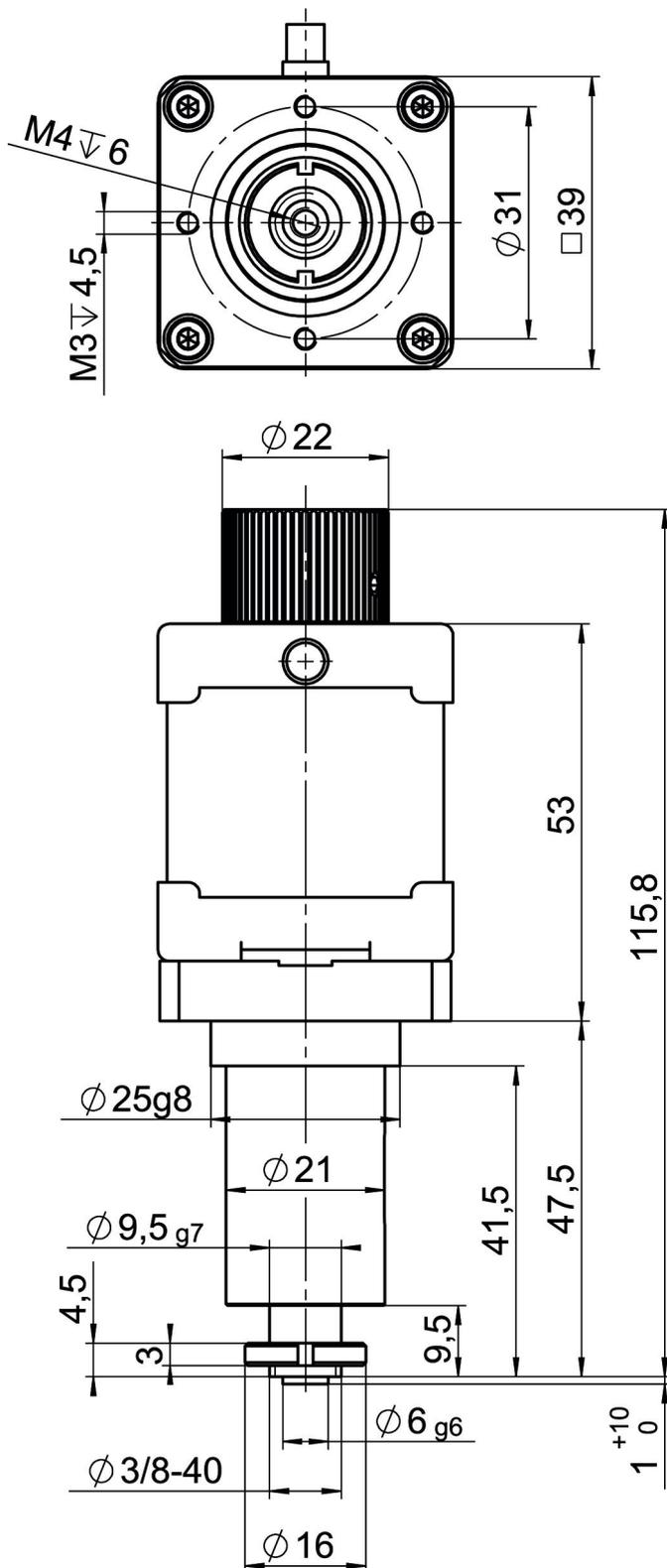
Note on minimum incremental motion: with recommended controller  
 Note on backlash: with preload  
 Note on nominal current, RMS: per motor phase

## Drawings / Images



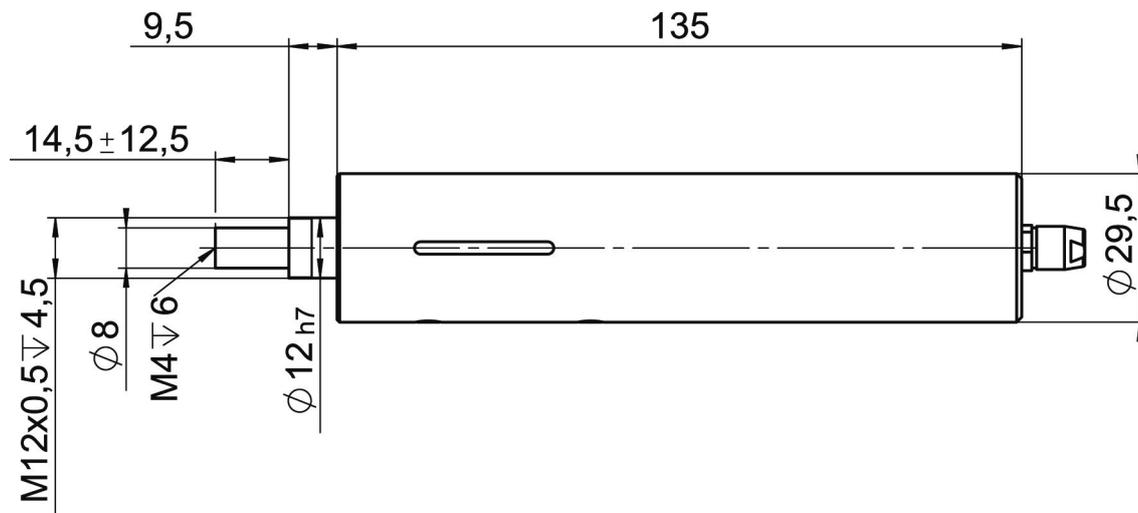
M-228.10S, dimensions in mm. Note that a comma is used in the drawings instead of a decimal point.

## Drawings / Images



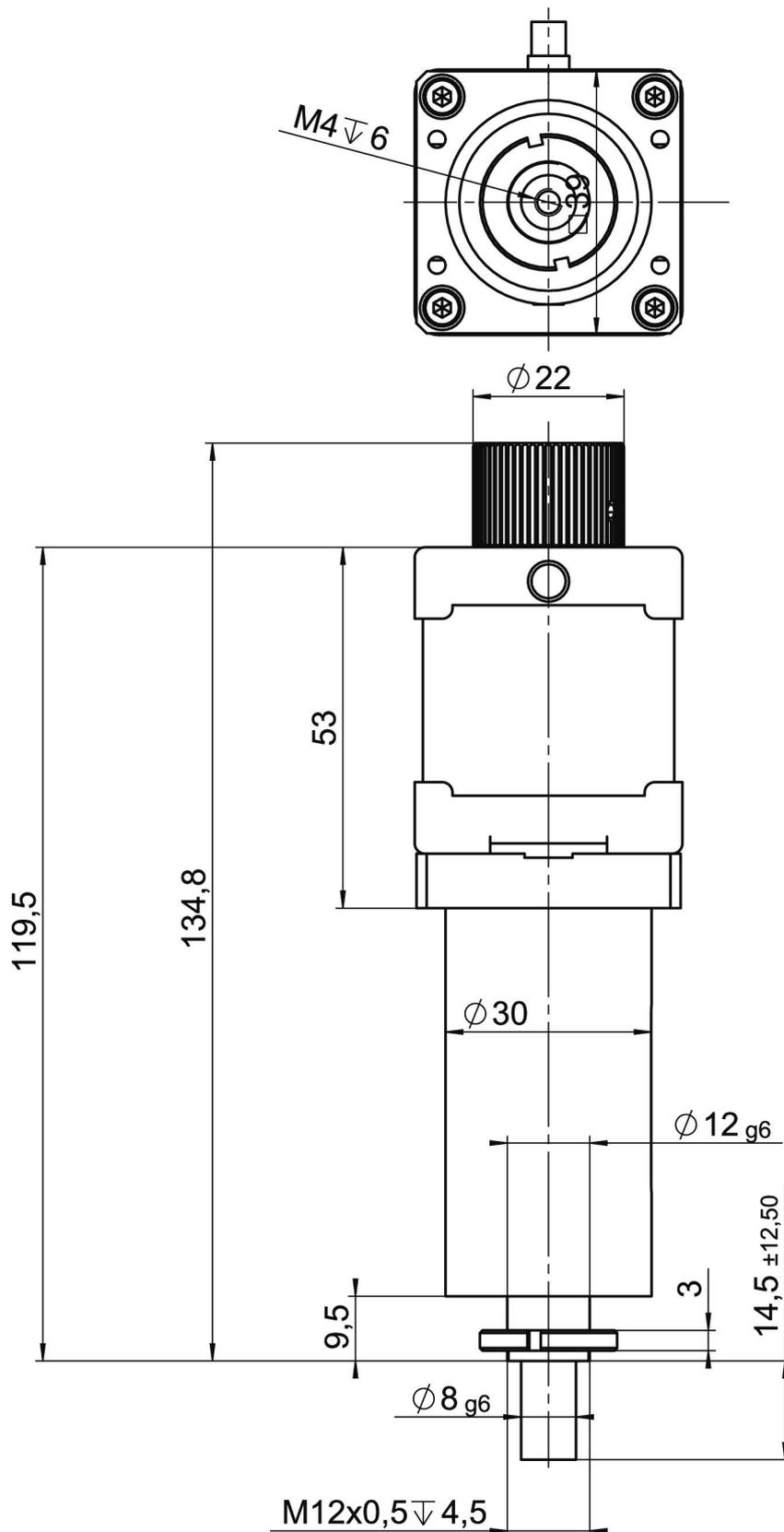
M-228.11S, dimensions in mm. Note that a comma is used in the drawings instead of a decimal point.

## Drawings / Images



M-229.25S, dimensions in mm. Note that a comma is used in the drawings instead of a decimal point.

## Drawings / Images



M-229.26S, dimensions in mm. Note that a comma is used in the drawings instead of a decimal point.

## Order Information

**M-228.10S**

High-resolution linear actuator with stepper motor; 2-phase stepper motor with gearhead; 10 mm travel range; 20 N feed force; 1.5 mm/s maximum velocity; trapezoidal-threaded spindle; limit switches: Hall effect; 0.5 m cable length

**M-228.11S**

High-resolution linear actuator with stepper motor; 2-phase stepper motor; 10 mm travel range; 50 N feed force; 4 mm/s maximum velocity; trapezoidal-threaded spindle; limit switches: Hall effect; 0.6 m cable length

**M-229.25S**

High-resolution linear actuator with stepper motor; 2-phase stepper motor with gearhead; 25 mm travel range; 50 N feed force; 1.5 mm/s maximum velocity; trapezoidal-threaded spindle; limit switches: Hall effect; 0.5 m cable length

**M-229.26S**

High-resolution linear actuator with stepper motor; 2-phase stepper motor; 25 mm travel range; 80 N feed force; 4 mm/s maximum velocity; trapezoidal-threaded spindle; limit switches: Hall effect; 0.6 m cable length