

## NEXLINE® OEM Linear Actuator

Nanopositioning Over Long Travel Ranges, PiezoWalk® Principle



### N-111

- Travel range 10 mm
- Integrated direct-measuring linear encoder with resolution 5 nm
- Force generation to 50 N
- Holding force to 70 N

#### Fields of application

- Industrial precision positioning
- Semiconductor technology
- Semiconductor tests
- Wafer inspection
- Lithography
- Nanoimprinting
- Nanometrology
- Motion in strong magnetic fields and in a vacuum

#### Nanometer precision and high feed force with PiezoWalk® walking drives

Several piezo actuators perform a walking motion in the PiezoWalk® walking drive that leads to forward feed of a runner. Control of the actuators allows the smallest step and forward feed motion at a resolution of well under one nanometer.

#### Highly accurate position measuring with incremental encoder

Noncontact optical encoders measure the position directly at the platform with the greatest accuracy. Nonlinearity, mechanical play or elastic deformation have no influence on the measurement.

#### Suitable for sophisticated vacuum applications

Piezo motors from PI can be designed for use in a vacuum and are suitable for operating in strong magnetic fields. Special versions of the drives are available for this purpose. Piezo walking drives can also be used in cleanrooms or in environments with strong ultraviolet radiation.

## Specifications

	N-111.201	N-111.2A1	Unit	Tolerance
Active axes	X	X		
<b>Motion and positioning</b>				
Travel range	10	10	mm	
Travel range in analog mode	±2	±2	µm	
Integrated sensor	–	Linear encoder		
Resolution, open loop	0.025	0.025	nm	typ.
Resolution, closed loop	–	5 nm		
Velocity (10 % duty cycle, full step mode)*	1.0	1.0	mm/s	max.
Velocity (100 % duty cycle, full step mode)*	0.6	0.6	mm/s	max.
Velocity (100 % duty cycle, nanostepping mode)**	0.4	0.4	mm/s	max.
<b>Mechanical properties</b>				
Drive force (active)***	50	50	N	max.
Holding force (passive)	70	70	N	min.
<b>Drive properties</b>				
Motor type	NEXLINE®	NEXLINE®		
Operating voltage	-250 to +250	-250 to +250	V	
<b>Miscellaneous</b>				
Operating temperature range	0 to 55	0 to 55	°C	
Material	Aluminum, stainless steel, titanium	Aluminum, stainless steel, titanium		
Mass	245	325	g	
Cable length	1.5	1.5	m	±10 mm
Connector	Sub-D 25 (m)	Sub-D 25 (m)		
Recommended electronics	E-712.1AM	E-712.1AM		

\* Depending on drive electronics.

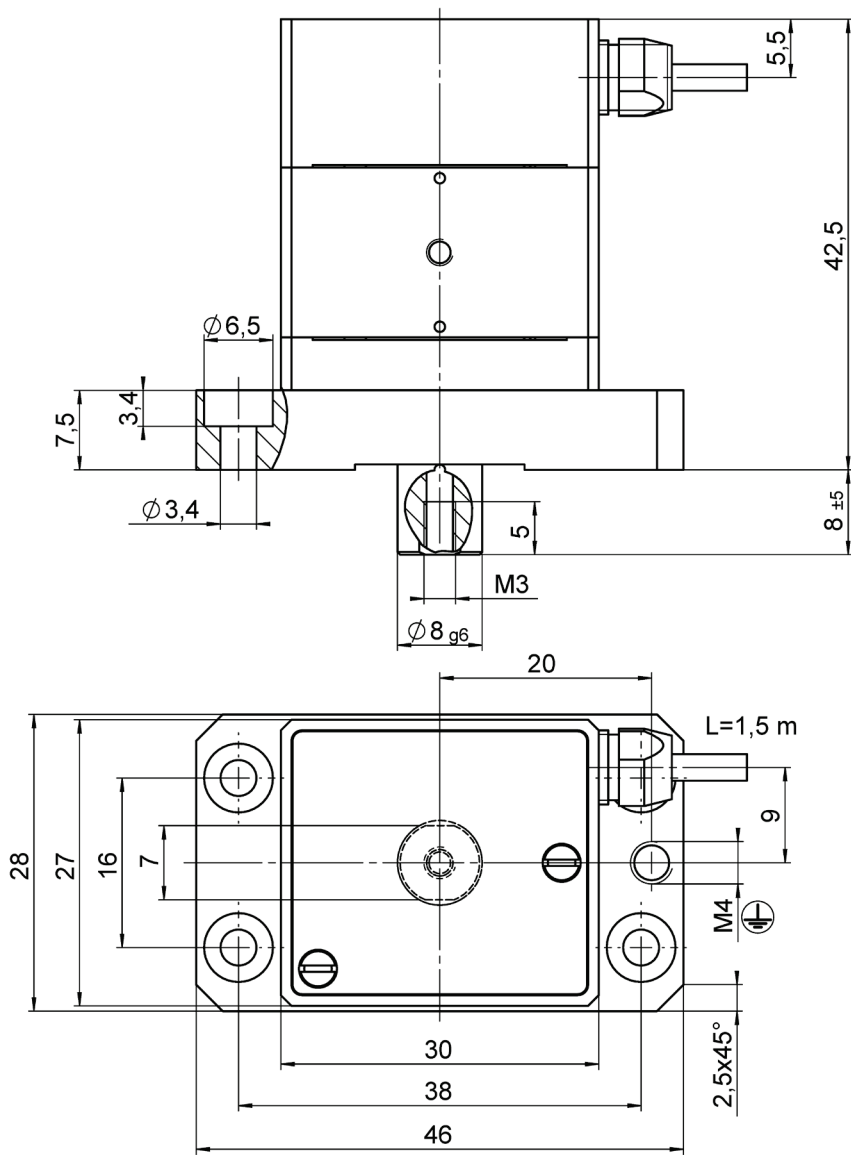
\*\* Depending on drive electronics. The maximum velocity in nanostepping mode is designed for the best possible constancy so that no velocity variations occur when executing the steps.

\*\*\* Data refer to operation in full step mode.

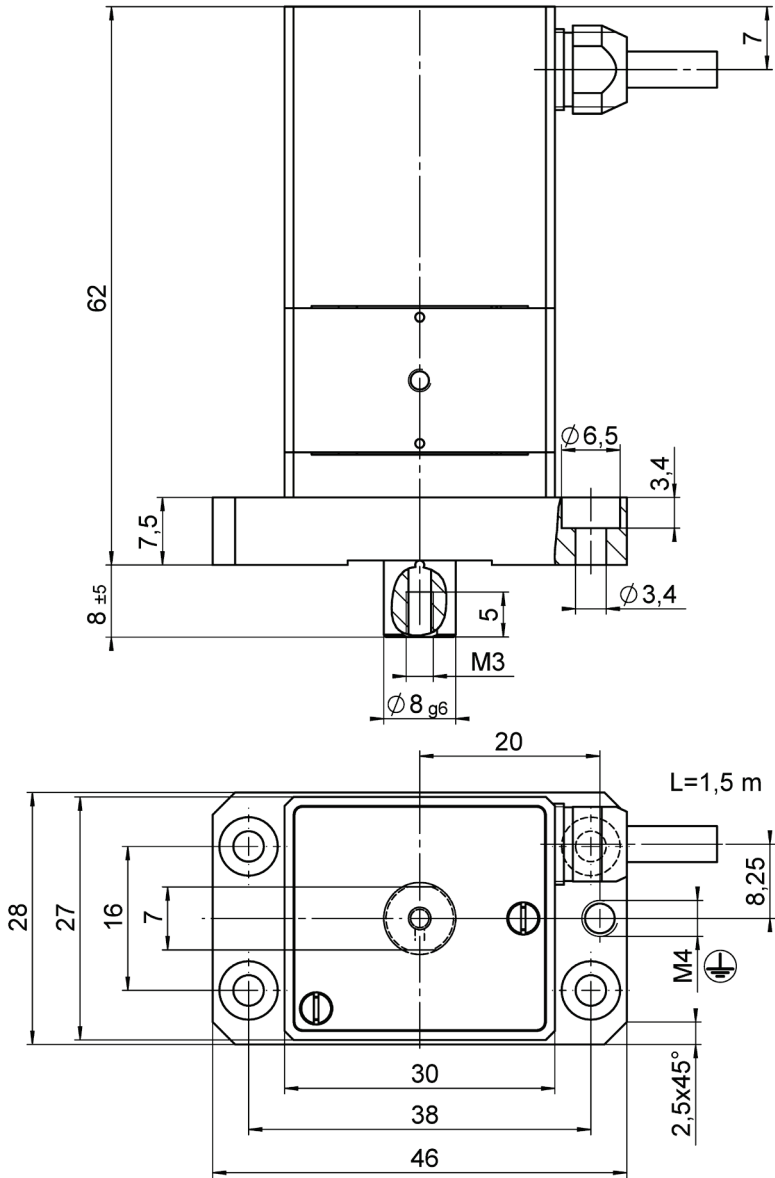
All specifications based on room temperature (22 °C ±3 °C).

Ask about customized versions.

## Drawings / Images



N-111.20, dimensions in mm



N-111.2A, dimensions in mm

## Ordering Information

### **N-111.2A1**

NEXLINE® OEM piezo stepping actuator, 10 mm, 50 N, linear encoder, 5 nm resolution

### **N-111.201**

NEXLINE® OEM piezo stepping actuator, 10 mm, 50 N