

Precision Z stage

NEXACT® Piezo Stepping Drive with Subnanometer Encoder Resolution



N-765

- Direct measurement with PIONe incremental encoder, 0.5 nm resolution
- Min. incremental motion 1 nm
- Travel range 6.5 mm
- Load capacity to 25 N
- Can be mounted directly onto an N-565 linear positioner

NEXACT® reference-class linear stage

Linear stage with NEXACT® PiezoWalk® drives allow high-precision positioning in the nanometer range over long travel ranges. They are equipped with direct-measuring linear encoders and crossed roller bearings for the highest accuracy.

PiezoWalk® technology: High resolution and low wear

The PiezoWalk® technology combines the technological advantages of piezo actuators with those of piezomotors. PiezoWalk® walking drives offer not only subnanometer resolution, high forces, and high stiffness but allow theoretically unlimited travel ranges. In contrast to other piezo-motorized drive principles, PiezoWalk® walking drives are not subject to sliding friction effects. They are based on stiction contacts of several piezo actuators that step along a runner. At rest, PiezoWalk® walking drives are self-locking, consume no energy, and do not generate heat.

Direct position measuring with PIONe linear encoder

The high-resolution PIONe encoder was developed by PI and, with corresponding processing of the measured value, allows a position resolution of much less than one nanometer. In addition, due to the short signal period and the high quality of the signals, the linearity error of PIONe encoders is less than 1 %. PIONe encoders support direction sensing when evaluating a reference signal.

Crossed roller guide

With crossed roller guides, the point contact of the balls in ball guides is replaced by line contact of the hardened rollers. Consequently, they are considerably stiffer and need less preload, which reduces friction and allows smoother running. Crossed roller guides are also distinguished by high guiding accuracy and load capacity. Force-guided rolling element cages prevent cage creep.

Fields of application

Sample manipulation, sample positioning, optics or mechanical components with high precision and stability, precision mechanics in the semiconductor industry, micromanipulation, microscopy, automation, applications in confined spaces

Specifications

Motion and positioning	N-765.060	Unit	Tolerance
Active axes	Z		
Travel range	6.5	mm	
System resolution	0.5	nm	
Integrated sensor	PIOne linear encoder: Incremental, optical, direct measuring		
Sensor resolution	0.5	nm	
Minimum incremental motion	1	nm	typ.
Velocity, closed loop	2.5	mm/s	max.
Unidirectional repeatability	6	nm	typ.
Bidirectional repeatability	7	nm	typ.
Linear crosstalk on X with motion in Z	1.8	μm	typ.
Linear crosstalk on Y with motion in Z	2	μm	typ.
Rotational crosstalk on θ_x with motion in Z	25	μrad	typ.
Rotational crosstalk on θ_y with motion on Z	41	μrad	typ.
Rotational crosstalk on θ_z with motion on Z	34	μrad	typ.

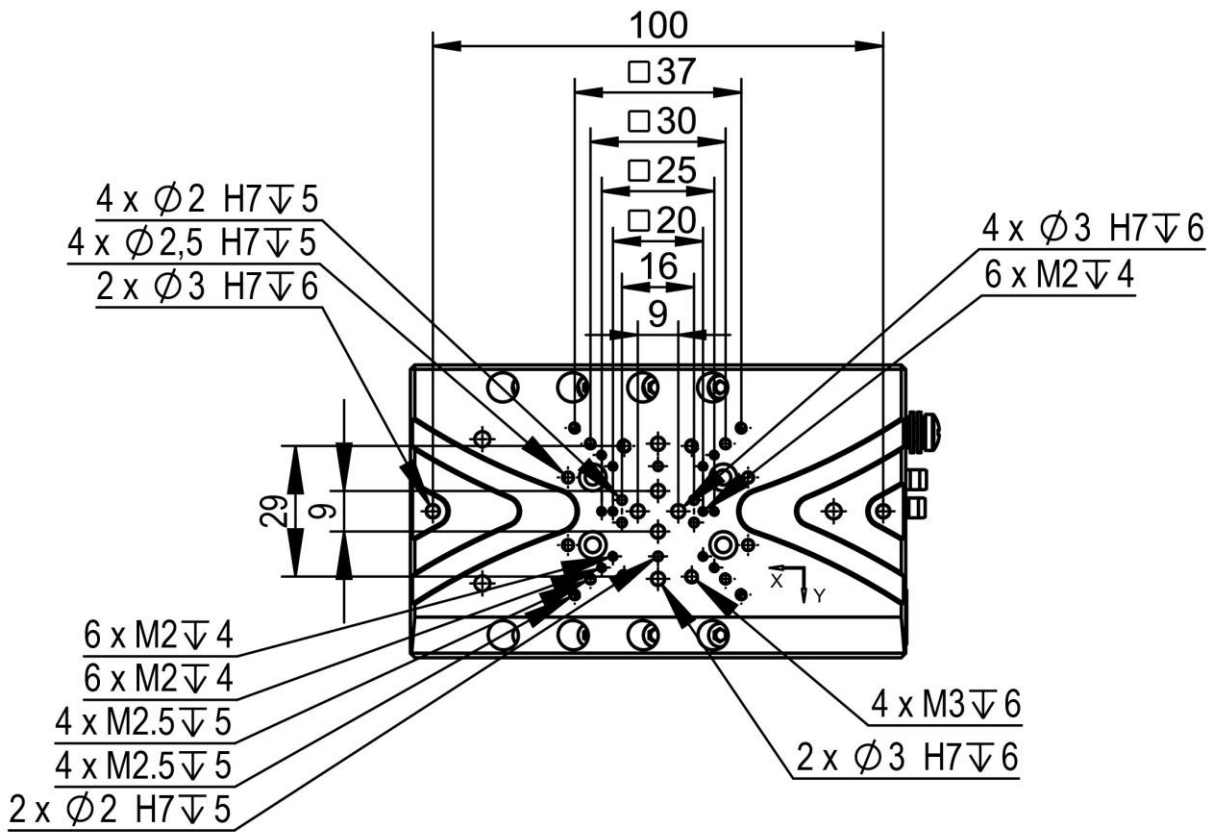
Mechanical properties	N-765.060	Unit	Tolerance
Load capacity	25	N	max.

Drive properties	N-765.060	Unit	Tolerance
Motor type	NEXACT® piezo walking drive		
Drive force	20	N	max.
Holding force (passive)	25	N	max.
Operating voltage	-10 to 45	V	

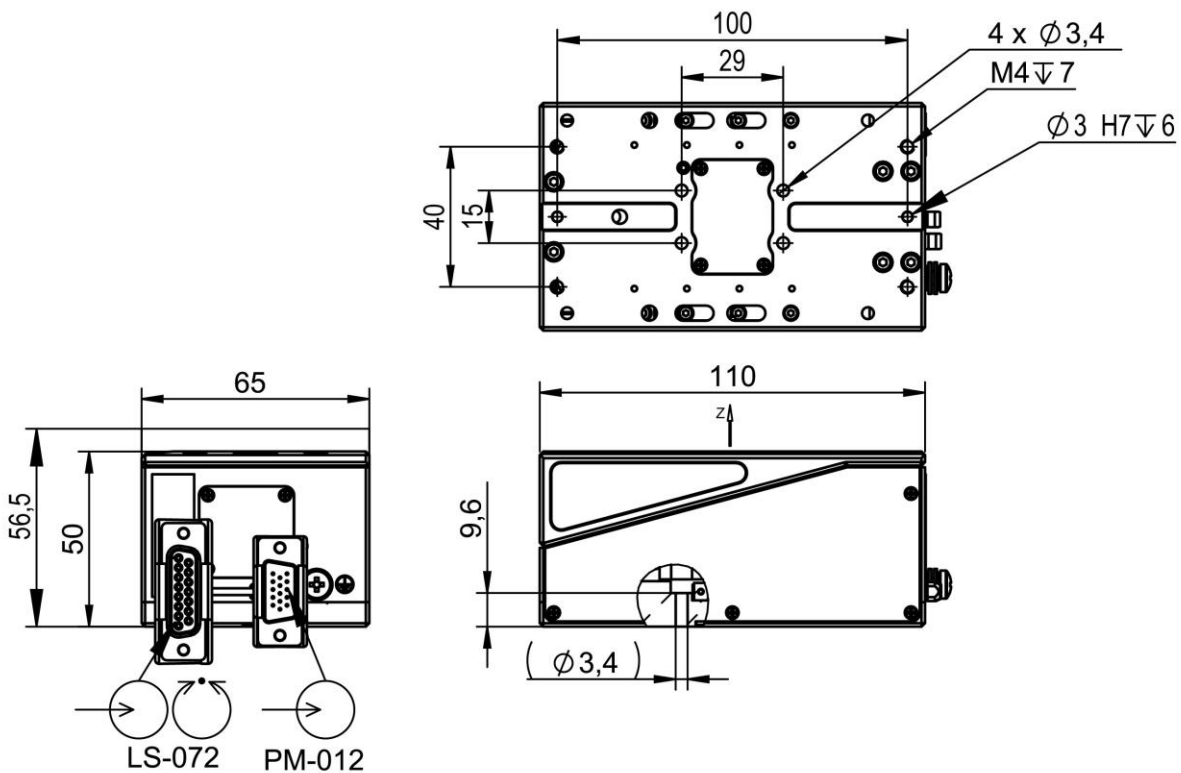
Miscellaneous	N-765.060	Unit	Tolerance
Operating temperature range	10 to 50 °C		
Mass	920	g	±5 %
Material	Aluminum, black anodized		
Cable length	3	m	±10 mm
Connector	HD Sub-D 15 (m)		
Sensor connector	Sub-D 15 (f)		
Recommended electronics	E-861.1A1		

Ask about customized versions.

Drawings / Images



N-765,060, Dimensions in mm



N-765,060, Dimensions in mm

Ordering Information

N-765.060

Precision Z stage, 6.5 mm travel range, PIOne linear encoder, 0.5 nm resolution, 25 N push/pull force, dimensions 65 × 110 × 56 mm (W × L × H), NEXACT® piezoelectric walking drive