

Linear Positioner with the Highest Precision

NEXACT® Piezo Stepping Drive with Subnanometer Encoder Resolution



N-565

- Ultraprecision: 2 nm minimum incremental motion and direct-measuring PIOne encoder with 0.5 nm resolution
- Long travel ranges: 13 mm, 26 mm or 52 mm
- Self-locking when switched off: Saves energy and reduces generation of heat
- Long lifetime and high reliability due to PiezoWalk® technology
- Compact design: 65 mm width, 20 mm height

NEXACT® reference-class linear positioner

Linear positioner 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.

Valid patents

In the technological field of piezo stepping drives (NEXACT®, NEXLINE®), PI has the following patents and patent applications: DE10148267B4, EP1267478B1, EP2209202B1, EP2209203B1, US6800984B2

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, applications in a vacuum or nonmagnetic environments.

Specifications

Motion	N-565.160	N-565.260	N-565.360	Unit	Tolerance
Active axes	X	X	X		
Travel range	13	26	52	mm	
Velocity, closed-loop	10	10	10	mm/s	max.
System resolution	0.5	0.5	0.5	nm	
Bidirectional repeatability	12	12	12	nm	typ.
Unidirectional repeatability	±5	±5	±5	nm	typ.
Straightness / flatness	±1	±1	±1.5	μm	typ.
Pitch	±30	±40	±80	μrad	typ.
Yaw	±30	±30	±30	μrad	typ.

Mechanical properties	N-565.160	N-565.260	N-565.360	Unit	Tolerance
Load capacity in z	20	20	20	N	max.
Overall mass	0.3	0.4	0.6	kg	±5 %

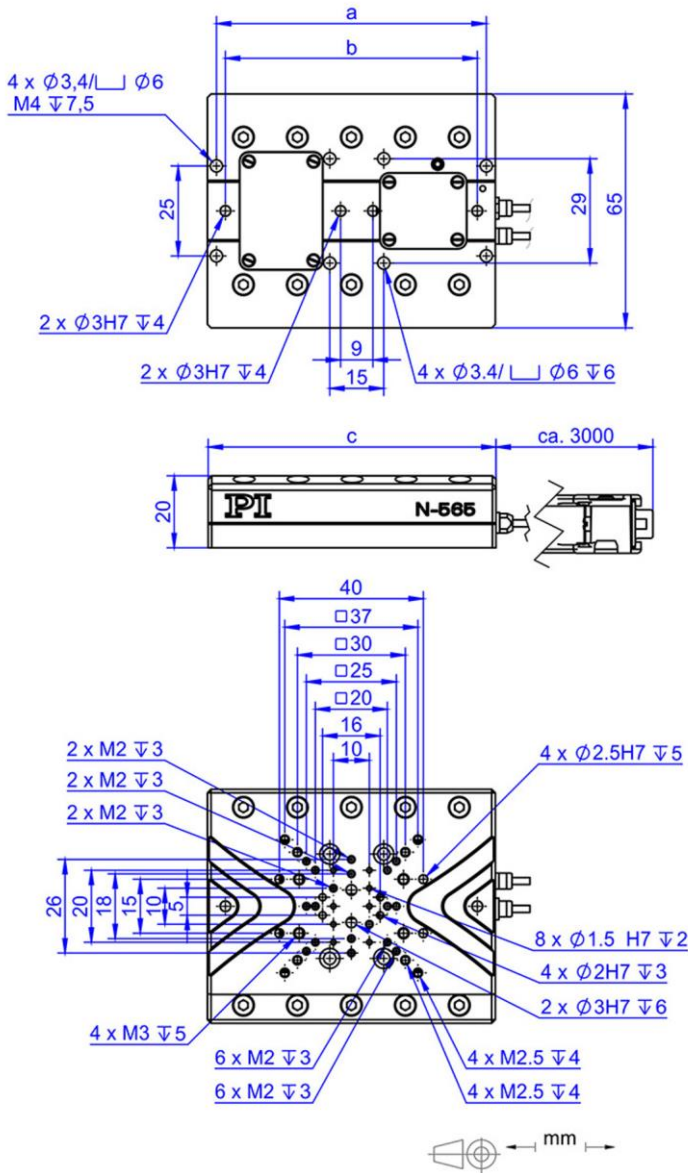
Drive properties	N-565	Unit	Tolerance
Drive type	NEXACT® piezo walking drive		
Push/pull force	10	N	max.
Holding force (passive)	10	N	min.

Positioning	N-565.x60	Unit	Tolerance
Integrated sensor	PIOne incremental linear encoder		
Measurement principle	Optical		
Measuring method	Direct measuring		
Sensor resolution	0.5	nm	
Minimum incremental motion	2	nm	typ.
Unidirectional repeatability	±5	nm	typ.
Bidirectional repeatability	12	nm	typ.
Reference point switch	Optical		

Miscellaneous	N-565.x60	Unit	Tolerance
Operating temperature range	10 to 50	°C	
Operating voltage	-10 to 45	V	
Material	Aluminum, black anodized		
Motor connector	HD Sub-D 15 (m)		
Sensor connection	Sub-D 15 (f)		

The N-565 stage series replaces the LPS-65 series.

Drawings and Images



N-565, dimensions in mm. N-565.160: a=75; b=70; c=80 N-565.260: a=100; b=100; c=110 N-565.360: a=150; b=150; c=160.

N-565.160

Precision linear stage, 13 mm travel range, PIOne linear encoder, 0.5 nm resolution, 10 N drive force, dimensions 65 × 80 × 20 mm (W × L × H), NEXACT® piezoelectric walking drive

N-565.260

Precision linear stage, 26 mm travel range, PIOne linear encoder, 0.5 nm resolution, 10 N drive force, dimensions 65 × 110 × 20 mm (W × L × H), NEXACT® piezoelectric walking drive

N-565.360

Precision linear stage, 52 mm travel range, PIOne linear encoder, 0.5 nm resolution, 10 N drive force, dimensions 65 × 160 × 20 mm (W × L × H), NEXACT® piezoelectric walking drive

Ask about custom designs!