

Precision Linear Stage

High Dynamics due to Magnetic Direct Drive, Excellent Travel Accuracy



LMS-180

- Travel ranges to 508 mm (20")
- Velocity to 500 mm/s
- Incremental encoder with 15 nm resolution

Please note that at the moment only a limited selection of variants of this product family is available. This selection can be found here on the web page. The complete list of products can be found in the PDF datasheet that is available for download.

If you require further information contact us via info@pi.ws.

Reference-class linear stage

High travel accuracy with recirculating ball bearings. Inductive limit switches. High position resolution due to incremental encoder with analog signal transmission (sin/cos, 1 Vpp). Multi-axis combinations with the directly driven rotation stages of the UPR series. Models with DC servo or stepper motors are available with the same footprint.

Magnetic direct drive

Ironless magnetic direct drive for high velocity and acceleration. High position resolution.

Application fields

Industry and research. Metrology, precision scanning in semiconductor or electronics manufacturing.

Motion	Unit	Toleran- ce	68509131
Active axes			X
Travel range in X	mm		305
Maximum velocity in X, un- loaded	mm/s		500
Straightness (Linear cros- stalk in Y with motion in X)	μm	Тур.	±4
Flatness (Linear crosstalk in Z with motion in X)	μm	Тур.	±4
Pitch (Rotational crosstalk in θY with motion in X)	µrad	Тур.	±60
Yaw (Rotational crosstalk in θZ with motion in X)	µrad	Тур.	±50

Positioning	Unit	Toleran- ce	68509131
Minimum incremental motion in X	μm	Тур.	0.04
Unidirectional repeatability in X	μm	Тур.	±0.05
Bidirectional repeatability in X	μm	Тур.	0.2
Reference switch			Encoder index
Limit switches			Inductive
Integrated sensor			Incremental linear encoder
Sensor signal			Sin/cos, 1 V peak-peak
Sensor resolution	nm		15

\mathbf{PI}

Drive Properties	Unit	Toleran- ce	68509131		
Drive type			Ironless 3-phase linear motor		
Nominal voltage	V		48		
Nominal current, RMS	A	Тур.	3.2		
Peak current, RMS	A	Тур.	7.5		
Drive force in positive direction of motion in X	N	Тур.	50		
Drive force in negative direction of motion in X	N	Тур.	50		
Peak force in positive direction of motion in X	Ν		150		
Peak force in negative direc- tion of motion in X	N		150		
Force constant	N/A		19.9		
Resistance phase-phase	Ω	Тур.	1.8		
Inductance phase-phase	mH		0.6		
Back EMF phase-phase	V·s/m	Max.	16		
Pole pitch N-N	mm		30		

Mechanical Properties	Unit	Toleran- ce	68509131
Permissible push force in Y	N	Max.	500
Permissible push force in Z	N	Max.	250
Moved mass in X, unloaded	g		900
Guide			Recirculating ball bearing guide
Overall mass	g		11500
Material			Black anodized aluminum

Miscellaneous	Unit	68509131
Operating temperature ran- ge	°C	10 to 50
Connector		D-sub 9W4 (m)
Sensor connector		D-sub 9 (m)
Recommended controllers / drivers		ACS SPii+EC and other industrial solutions



Drawings / Images



Direction of the axes and torques for linear stages



Drawings / Images



~	A (mm)	B (mm)	C (mm)	D (mm)
155 mm	235	470	3	350
205 mm	260	520	3	350
305 mm	310	620	5	450
408 mm	360	720	5	550
508 mm	410	820	5	650

LMS-180, dimensions in mm. LS-010: Cable for linear encoder



Drawings / Images



LMS-180, dimensions in mm. LS-010: Cable for linear encoder

Order Information

235

260

310

360

410

68509131

155 mm

205 mm

305 mm

408 mm

508 mm

Precision linear stage; ironless 3-phase linear motor; 305 mm travel range; 250 N load capacity; 500 mm/s maximum velocity; incremental linear encoder, 15 nm sensor resolution, sin/cos, 1 V peak-peak