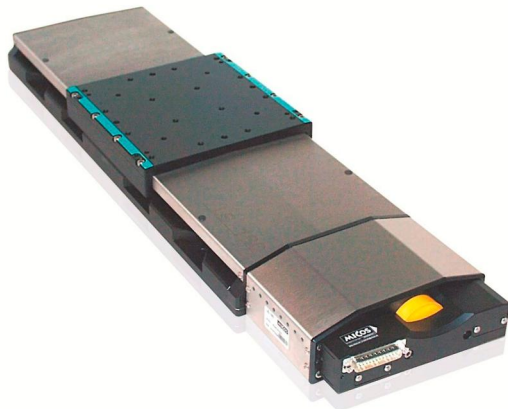


Linear Stage for Heavy Loads

Robust Design for Industrial Use



LS-180

- Travel ranges from 155 mm to 508 mm (6" to 20")
- Max. Velocity to 150 mm/s
- Load capacity to 1000 N
- Optional: Linear encoder for direct position measuring

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 and load capacity thanks to recirculating ball bearing guides. Precision ball screw with 5 mm pitch. Stress-relieved aluminum base for high stability. Noncontact inductive limit switches.

Drive types

- Closed-loop DC servo motor with rotary encoder on the motor shaft
- 2-phase stepper motor for high torque even at low velocities and high resolution

Highly accurate position measuring with incremental linear encoder

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

Recirculating ball bearing guides

When carefully assembled, recirculating ball bearing guides are distinguished by a beneficial combination of high load capacity, lifetime, maintenance-free operation, and guide accuracy. The moving part of the stages is supported by four preloaded recirculating ball bearing units, which run on two guide rails. Each bearing unit is made up of two independent rows of circulating ball bearings.

Minimum incremental motion

In conjunction with the SMC Hydra controller, versions with stepper motor and integrated linear encoder achieve repeatable minimum incremental motion in the range of the sensor resolution. The same configuration achieves constant low velocities of a few sensor increments per second.

Application fields

Sample inspection. Scanning. Research. Semiconductor technology.

Motion	Unit	Tolerance	62409221-0001
Active axes			X
Travel range in X	mm		205
Maximum velocity in X, unloaded	mm/s		75
Straightness (Linear crosstalk in Y with motion in X)	μm	Typ.	±3
Flatness (Linear crosstalk in Z with motion in X)	μm	Typ.	±3
Pitch (Rotational crosstalk in θY with motion in X)	μrad	Typ.	±50
Yaw (Rotational crosstalk in θZ with motion in X)	μrad	Typ.	±50

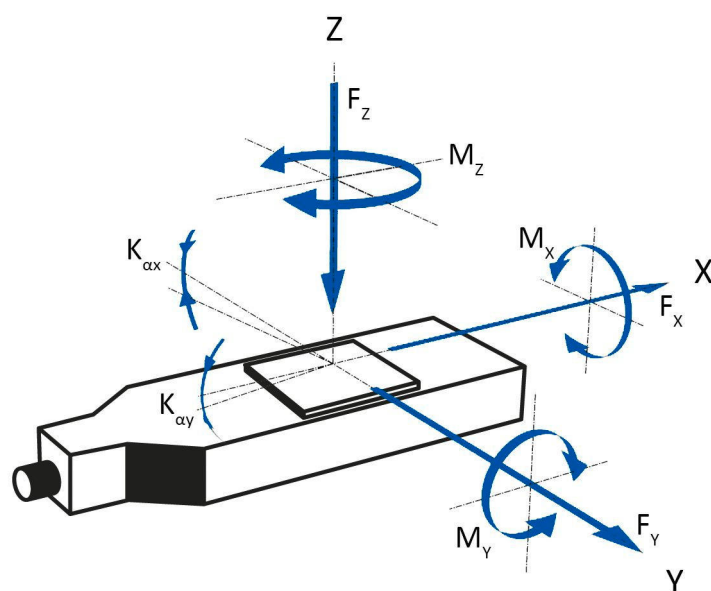
Positioning	Unit	Tolerance	62409221-0001
Minimum incremental motion in X	μm	Typ.	0.1
Unidirectional repeatability in X	μm	Typ.	±0.1
Bidirectional repeatability in X	μm	Typ.	0.4
Reference switch			Encoder index
Limit switches			Inductive, N/C contact, 10 V to 30 V, PNP
Integrated sensor			Incremental linear encoder
Sensor signal			Sin/cos, 1 V peak-peak
Sensor signal period	μm		20
Sensor resolution	nm		—
Sensor resolution	Cts./rev.		—
Motor encoder			—
Motor encoder: Sensor signal			—
Resolution, motor encoder	Cts./rev.		—

Drive Properties	Unit	Tolerance	62409221-0001
Drive type			2-phase stepper motor
Nominal voltage	V		48
Peak voltage	V		48
Nominal current, RMS	A	Typ.	—
Peak current, RMS	A	Typ.	2
Motor resolution	Full steps/rev.		200
Drive force in positive direction of motion in X	N	Typ.	200
Drive force in negative direction of motion in X	N	Typ.	200
Time constant	ms		—
Resistance phase-phase	Ω	Typ.	2.4
Inductance phase-phase	mH		2.87
Back EMF, phase-phase, rotational	V/kRPM	Max.	—

Mechanical Properties	Unit	Tolerance	62409221-0001
Permissible push force in Y	N	Max.	500
Permissible push force in Z	N	Max.	1000
Permissible torque in θX	N·m	Max.	250
Permissible torque in θY	N·m	Max.	132
Permissible torque in θZ	N·m	Max.	125
Holding force in X, passive	N		50
Moved mass in X, unloaded	g		2.2
Drive screw type			Ball screw
Drive screw pitch	mm		5
Guide			Recirculating ball bearing guide
Overall mass	g		9600
Material			Aluminum, steel

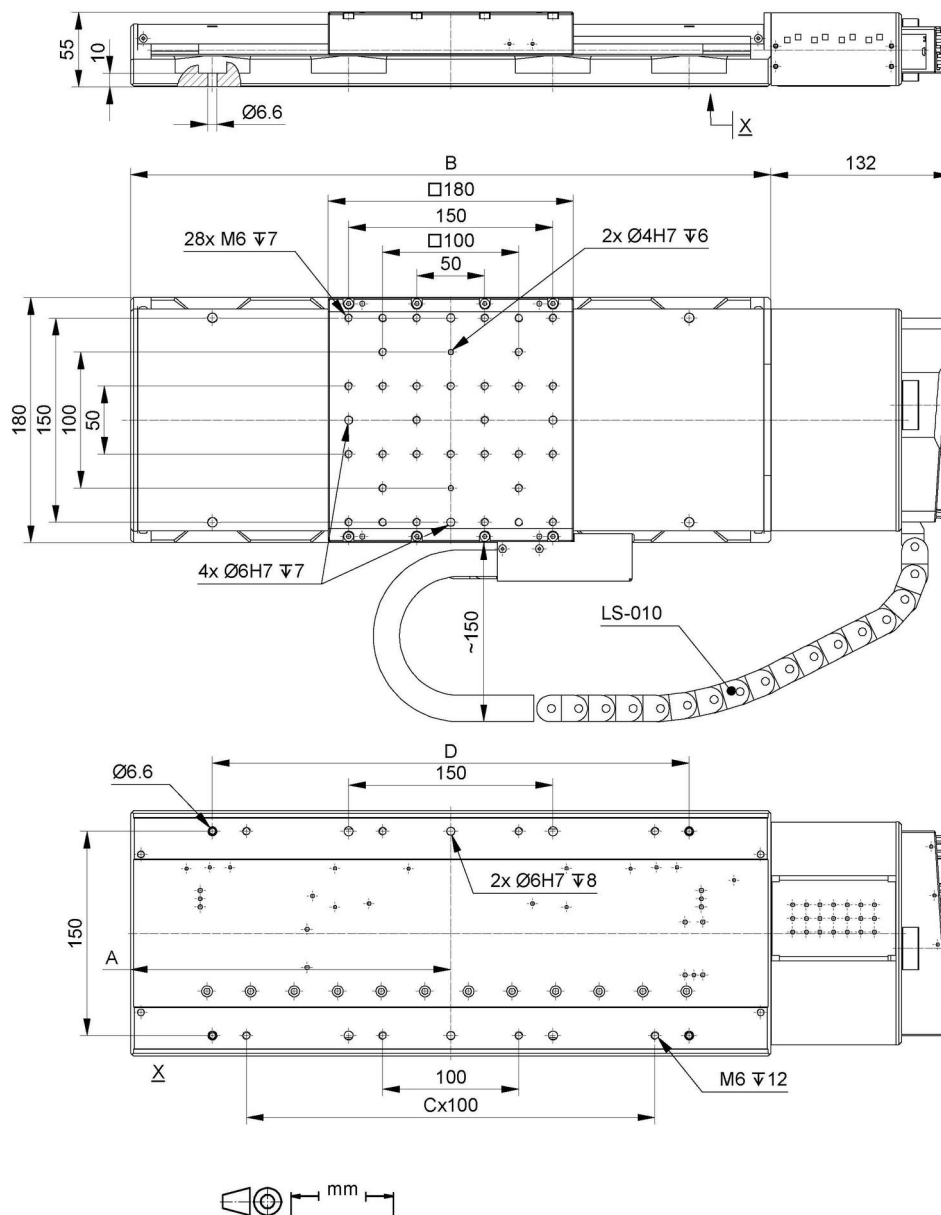
Miscellaneous	Unit	62409221-0001
Operating temperature range	°C	0 to 55
Connector		D-sub 25 (m)
Sensor connector		D-sub 9 (m)
Recommended controllers / drivers		C-663.12, C-885 with C-663.12C885, Modular ACS controller

Drawings / Images



Direction of the axes and torques for linear stages

Drawings / Images



Stellweg / mm	A	B	C	D
155	235	470	3	350
205	260	520	3	350
305	310	620	5	450
508	410	820	5	650

LS-180, dimensions in mm. Note that a comma is used in the drawings instead of a decimal point., LS-010: Cable for linear encoder

Order Information

62409221-0001

Linear stage for high loads; 2-phase stepper motor; 205 mm travel range; 1000 N load capacity; 75 mm/s maximum velocity; ball screw; incremental linear encoder, 20 µm sensor signal period, sin/cos, 1 V peak-peak