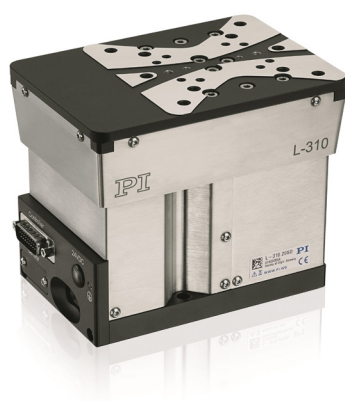


L-310 Precision Z Stage

Compact Multi-Axis Combinations with Linear and Rotation Stages



- Travel range 26 mm (1")
- High-resolution encoder
- Zero-play ball screws
- MTBF 10000 h
- Self locking to 10 kg

Precision-class Z stage

High guiding accuracy and stiffness due to ball screws and crossed roller guides. Stress-relieved aluminum base for highest stability. Vacuum versions available on request. Noncontact limit and reference point switches.

Drive types

- .xxSD variant: 2-phase stepper motor for high torque even at low velocities and high resolution. Noncontact limit switches. Noncontact optical reference point switch with direction sensing in the middle of the travel range.

Position measurement

- Integrated linear encoder, centrally installed. Direct position measurement of the motion platform without influence on the positioning precision by mechanical play or hysteresis in the drivetrain

Minimum incremental motion and slow motion

In conjunction with the SMC Hydra controller, versions with stepper motor and integrated linear encoder (L-310.xASD) achieve repeatable minimum incremental motion in the range of the sensor resolution. The same configuration attains constant low velocities of a few sensor increments per second.

Fields of application

Precision positioning in industry and research, high duty cycles.

Related and Compatible Products

Compatible electronics

SMC Hydra Motion Controller
C-663 Mercury Step Controller

Compatible accessories

L-500 Adapter Bracket

Related products

M-501 Precision Z Stage
M-451 High-Load Precision Z Stage
UPL-120 Ultra Precision Elevation Stage
L-511 High-Precision Linear Stage
L-611 Precision Rotation Stage

Specifications

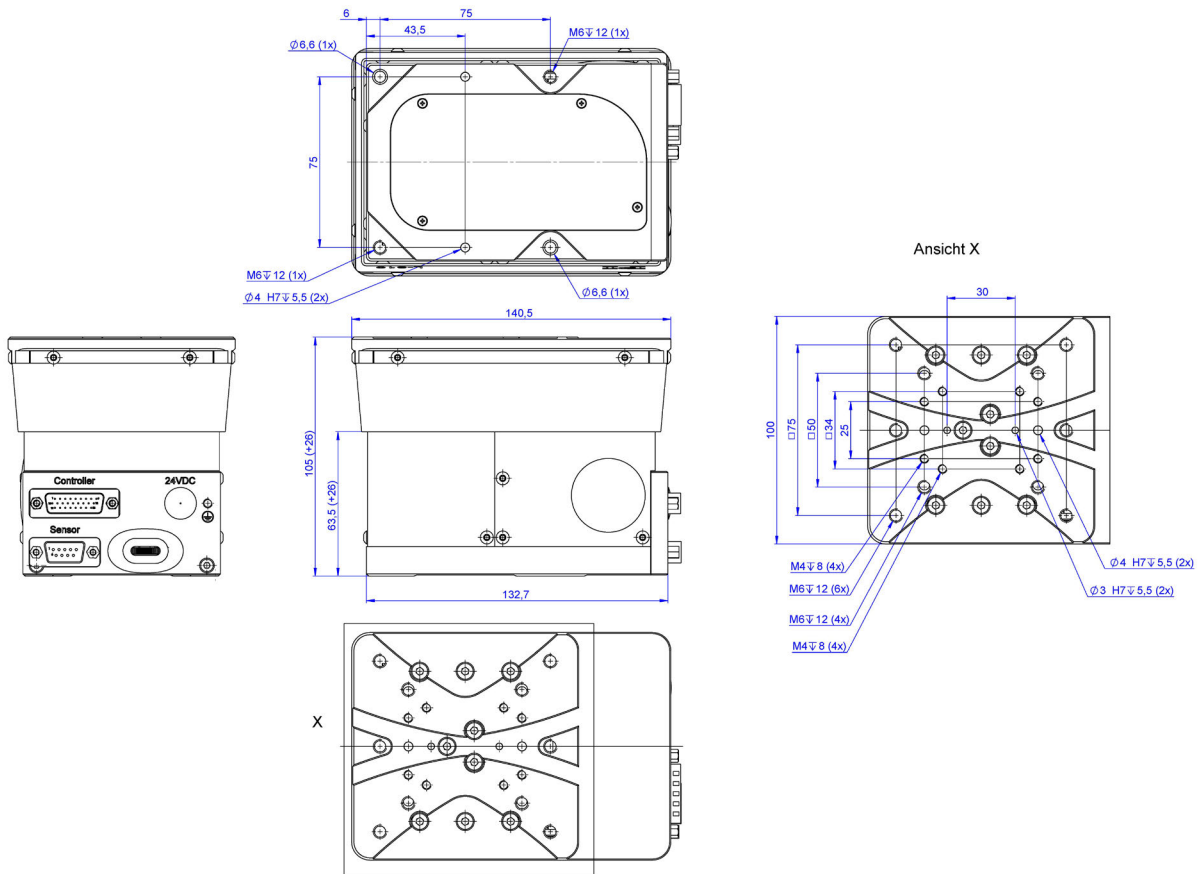
	L-310.20SD	L-310.2ASD	Unit	Tolerance
	Z	Z		
Motion and positioning				
Travel range	26	26	mm	
Integrated sensor	–	Linear encoder		
Design resolution	5 (full step)	0.05	µm	
Minimum incremental motion	0.2	0.1	µm	typ.
Unidirectional repeatability	0.2	0.1	µm	typ.
Pitch	±150	±150	µrad	typ.
Yaw	±150	±150	µrad	typ.
Straightness / flatness	±15	±15	µm	typ.
Velocity	15	15	mm/s	max.
Reference point switch repeatability	2	2	µm	
Mechanical properties				
Drive screw	Ball screw	Ball screw		
Spindle pitch	1	1	mm	
Guiding	Crossed roller guides	Crossed roller guides		

Load capacity, Fz	55	55	N	max.
Holding force, power off	100	100	N	max.
Permissible lateral force, Fx	100	100	N	max.
Permissible lateral force, Fy	50	50	N	max.
Tip/tilt stiffness in X ($k_{\alpha x}$)	60	60	$\mu\text{rad/Nm}$	
Tip/tilt stiffness in Y ($k_{\alpha y}$)	60	60	$\mu\text{rad/Nm}$	
Permissible torque in X (M_x)	40	40	Nm	max.
Permissible torque in Y (M_y)	80	80	Nm	max.
Permissible torque in Z (M_z)	80	80	Nm	max.
Drive properties				
Motor Type	2-phase stepper motor*	2-phase stepper motor*		
Reference point switch	Hall effect	Hall effect		
Miscellaneous				
Operating temperature range	-20 to 60	20 to 60	$^{\circ}\text{C}$	
Material	Al (black anodized)	Al (black anodized)		
Mass	2.7	2.8	kg	
Recommended controllers/drivers	C-663 (single axis)	SMC Hydra (double axis)		

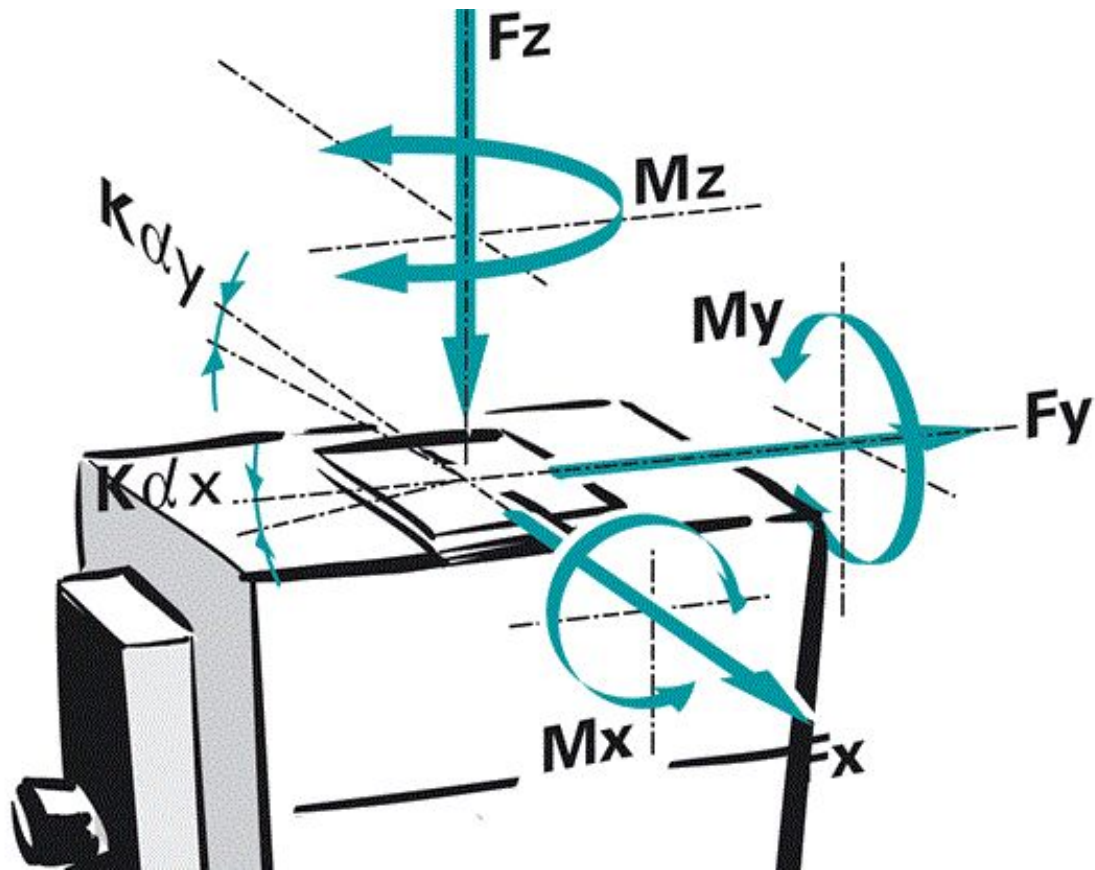
Ask about custom designs!

* 200 full steps/rev., max. 1.2 A/phase.

Drawings and Images



L-310, dimensions in mm



L-310, direction of the axes and torques for Z stages

Ordering Information

L-310.20SD

Vertical Stage, 26 mm, Stepper Motor

L-310.2ASD

Vertical Stage, 26 mm, Stepper Motor, Linear Encoder with Sin/Cos Signal Transmission

Ask about custom designs!