

LMS-180 Precision Linear Stage

High Dynamics due to Magnetic Direct Drive, Excellent Travel Accuracy



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

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 V_{pp}).

Multi-axis combinations with the directly driven rotation stages of the UPR series.

Versions 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.

Fields of application

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

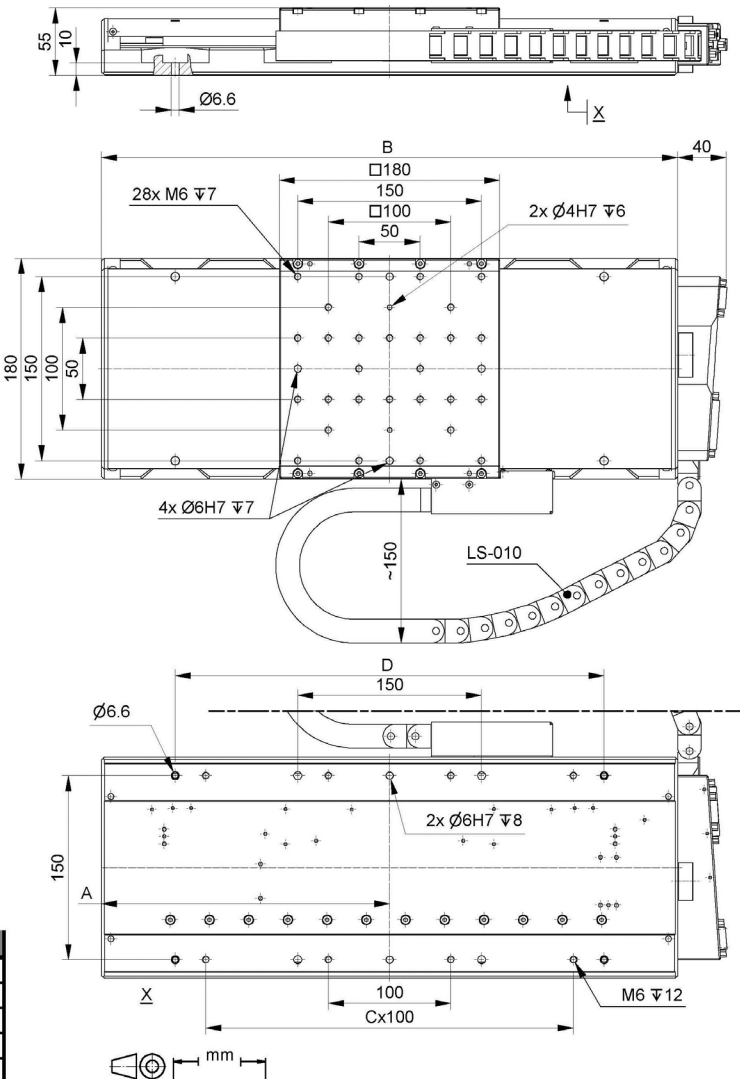
Specifications

| | 68509111 / 68509121 / 68509131 / 68509141 / 68509151 | Unit | Tolerance |
|-------------------------------|--|------|-----------|
| Motion and positioning | | | |
| Active axes | X | | |
| Travel range | 155 / 205 / 305 / 408 / 508 | mm | |
| Integrated sensor | Incremental encoder | | |
| Sensor resolution* | 15 | nm | |
| Minimum incremental motion | 0.04 | µm | typ. |
| Unidirectional repeatability | 0.05 | µm | typ. |
| Bidirectional repeatability | ±0.15 | µm | typ. |
| Pitch | ±40 / ±50 / ±60 / ±70 / ±80 | µrad | typ. |
| Yaw | ±50 | µrad | typ. |
| Straightness | ±2 / ±3 / ±4 / ±5 / ±6 | µm | typ. |
| Flatness | ±2 / ±3 / ±4 / ±5 / ±6 | µm | typ. |
| Velocity | 500 | mm/s | max. |
| Mechanical properties | | | |
| Load capacity in z | 250 | N | max. |
| Load capacity in y | 500 | N | max. |
| Moved mass | 0.9 | kg | |
| Overall mass | 10.2 / 10.4 / 11.5 / 12.8 / 14.2 | kg | |
| Linear guiding | Recirculating ball bearings | | |
| Drive properties | | | |
| Drive type | Linear motor, ironless | | |
| Intermediate circuit voltage | 48 | VDC | max. |
| Peak force | 150 | N | typ. |
| Nominal force | 50 | N | typ. |
| Peak current, effective | 7.5 | A | typ. |
| Nominal current, effective | 3.2 | A | typ. |
| Force constant, effective | 19.9 | N/A | typ. |
| Resistance per phase | 1.8 | Ω | typ. |
| Inductivity per phase | 0.6 | mH | typ. |
| Back EMF phase-phase | 16 | Vs/m | max. |

| | | | |
|-----------------------------|---|----|--|
| Limit switches | Inductive | | |
| Miscellaneous | | | |
| Operating temperature range | 10 to 50 | °C | |
| Humidity | 20 – 90% rel., not condensing | | |
| Material | Aluminum, black anodized | | |
| Recommended controller | SMC Hydra, ACS SPii+EC and other industrial solutions | | |

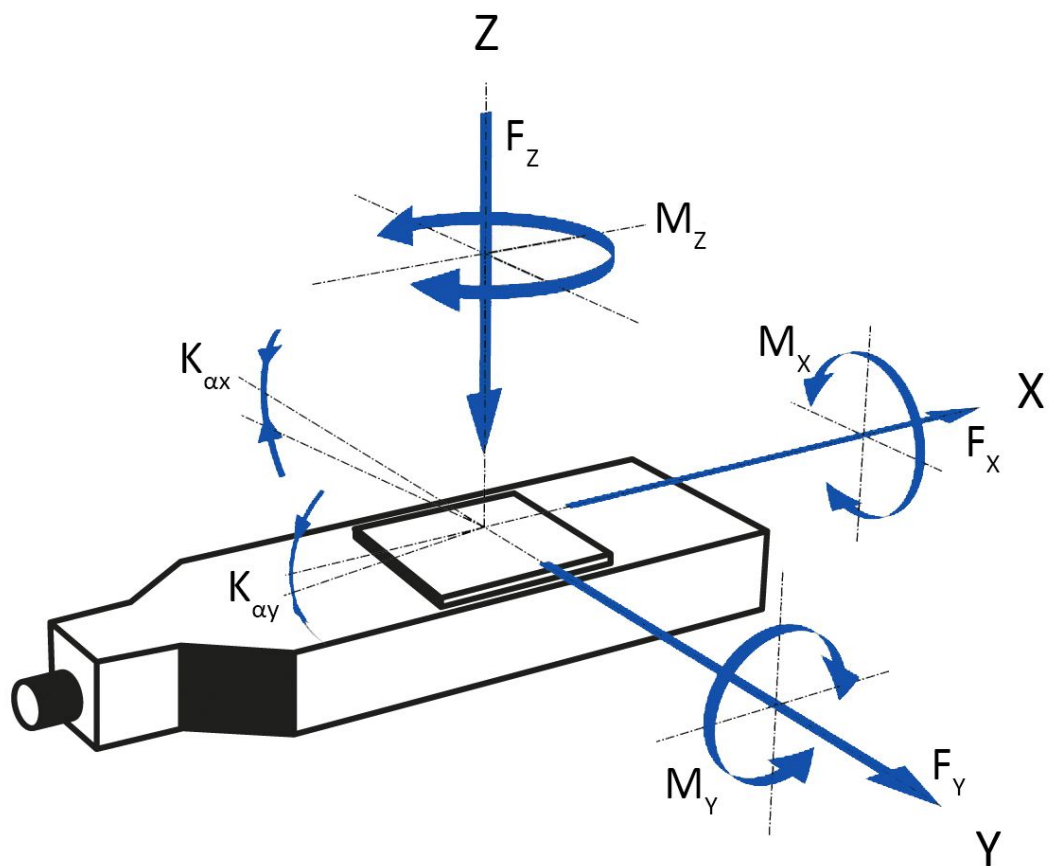
* With SMC Hydra controller.

Drawings and 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



Direction of the axes and torques for linear stages

Ordering information

68509111

LMS-180 High-Dynamics Precision Linear Stage, Ironless Linear Motor, 155 mm (6") Travel Range, Linear Encoder with Sin/Cos Signal Transmission

68509121

LMS-180 High-Dynamics Precision Linear Stage Ironless Linear Motor, 205 mm (8") Travel Range, Linear Encoder with Sin/Cos Signal Transmission

68509131

LMS-180 High-Dynamics Precision Linear Stage, Ironless Linear Motor, 305 mm (12") Travel Range, Linear Encoder with Sin/Cos Signal Transmission

68509141

LMS-180 High-Dynamics Precision Linear Stage, Ironless Linear Motor, 408 mm (16") Travel Range , Linear Encoder with Sin/Cos Signal Transmission

68509151

LMS-180 High-Dynamics Precision Linear Stage, Ironless Linear Motor, 508 mm (20") Travel Range, Linear Encoder with Sin/Cos Signal Transmission