

HPS-170

High-Precision Linear Stage for Heavy Loads

Excellent Repeatability and Travel Accuracy



- Travel ranges from 52 to 205 mm (2 to 8")
- Max. velocity to 100 mm/s
- Load capacity to 35 kg
- Optional linear encoder for direct position measurement

Reference-class linear stage

High travel accuracy and load capacity due to crossed roller guides. Precision ball screw. Stress-relieved aluminum base for highest stability. Noncontact 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

Versions with direct position measurement

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

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 attains constant low velocities of a few sensor increments per second.

Fields of application

Precision positioning in industry and research, e.g., inspection tasks and metrology.

Specifications

| | 626291x0 | 626292x0 | 62629xx1 | Unit | Tolerance |
|--------------------------------------|---|---------------------------------|--|-------------|-----------|
| | Linear stage with DC motor and rotary encoder | Linear stage with stepper motor | Also with linear encoder (direct position measurement) | | |
| Motion axis | X | X | | | |
| Motion and positioning | | | | | |
| Travel range* | 52 / 102 / 155 / 205 | 52 / 102 / 155 / 205 | | mm | |
| Integrated sensor | Rotary encoder | – | Linear encoder | | |
| Design resolution | 0.1 | 10 (full step) | 0.05 | μm | |
| Minimum incremental motion | 0.2 | 0.1 | 0.05 | μm | typ. |
| Unidirectional repeatability | 0.2 | 0.2 | 0.05 | μm | typ. |
| Backlash | 2 | 2 | - | μm | typ. |
| Bidirectional repeatability | - | - | ±0.05 | μm | typ. |
| Crosstalk, angular error xry (pitch) | ±20 / ±25 / ±30 / ±35 | ±20 / ±25 / ±30 / ±35 | | μrad | typ. |
| Crosstalk, angular error xrz (yaw) | ±40 | ±40 | | μrad | typ. |
| Max. velocity | 100 | 35 | | mm/s | |
| Mechanical properties | | | | | |
| Spindle pitch ball screw | 2 | 2 | | mm | |
| Load capacity | 350 | 350 | | N | max. |
| Push/pull force | 100 | 150 | | N | max. |
| Permissible lateral force | 150 | 150 | | N | max. |
| Holding force | 15 | 30 | | N | max. |
| Stiffness $k_{\alpha x}$ | 8 | 8 | | μrad/N m | max. |
| Stiffness $k_{\alpha y}$ | 12 | 12 | | μrad/N m | max. |
| Permissible torque M_x | 400 | 400 | | Nm | max. |
| Permissible torque M_y | 300 | 300 | | Nm | max. |
| Permissible torque M_z | 300 | 300 | | Nm | max. |

| | 626291x0 | 626292x0 | 62629xx1 | Unit | Tolerance |
|-----------------------------|---|---|--|------|-----------|
| Drive properties | | | | | |
| Motor Type | DC motor | 2-phase stepper motor** | | | |
| Operating voltage | 24 | | | V | |
| Limit switches | Optical | Optical | | | |
| Miscellaneous | | | | | |
| Operating temperature range | -20 to 65 | -20 to 65 | 0 to 55 | °C | |
| Material | Aluminum, steel | Aluminum, steel | Aluminum, steel | | |
| Mass | 5 / 5.5 / 6 / 6.5 | 5 / 5.5 / 6 / 6.5 | also 0.3 | kg | ±5 % |
| Connector | Sub-D 25 | Sub-D 25 | Sub-D 9 | | |
| Recommended controllers | SMC Hydra motion controller (two channels) C-863 (one channel) | SMC Hydra motion controller (two channels) C-663 (one channel) | SMC Hydra motion controller (two channels) | | |

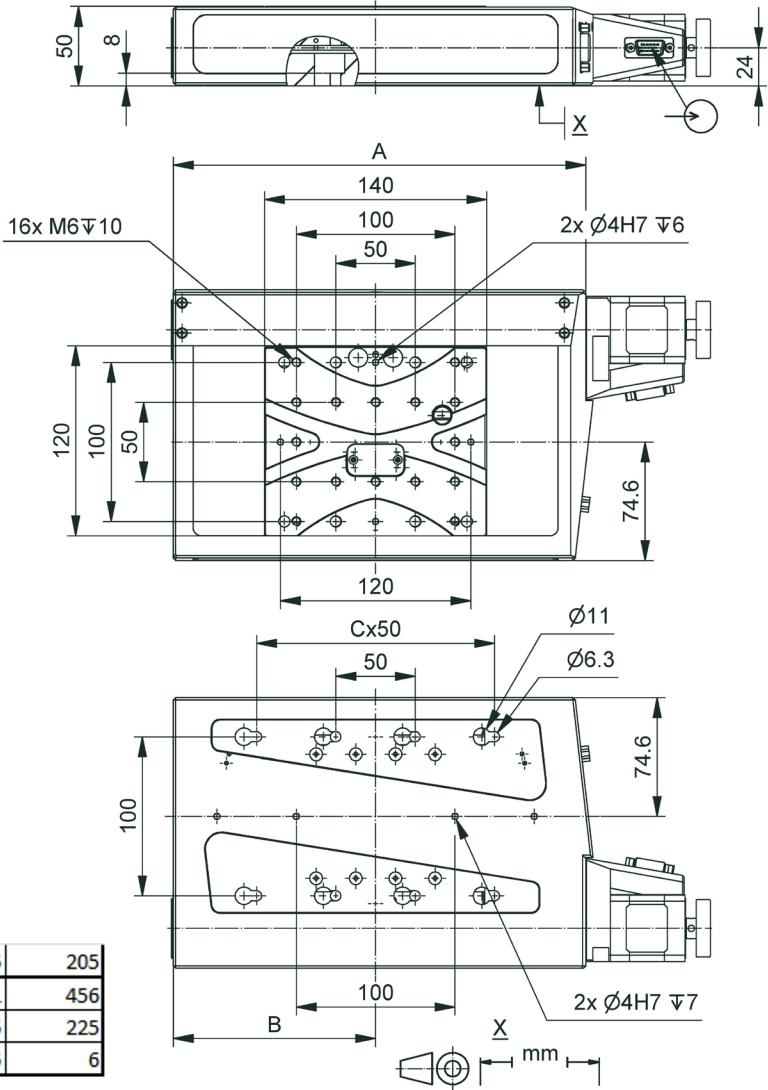
* Travel range of the variants: See ordering information

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

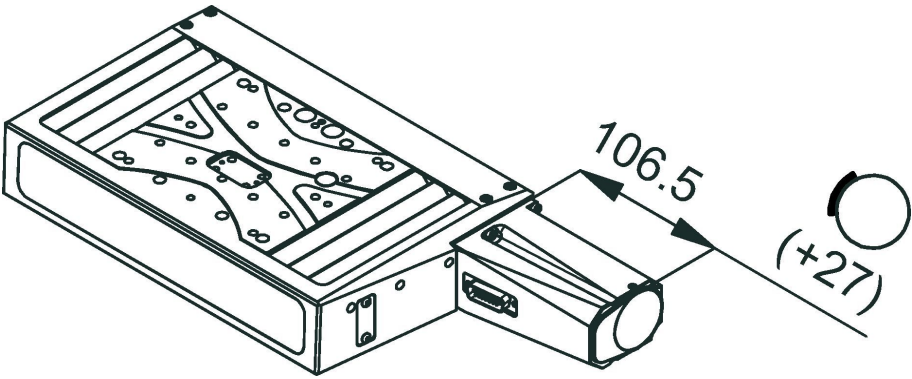
Ask about custom designs!

Connection cables for motor and sensor are not in the scope of delivery and must be ordered separately.

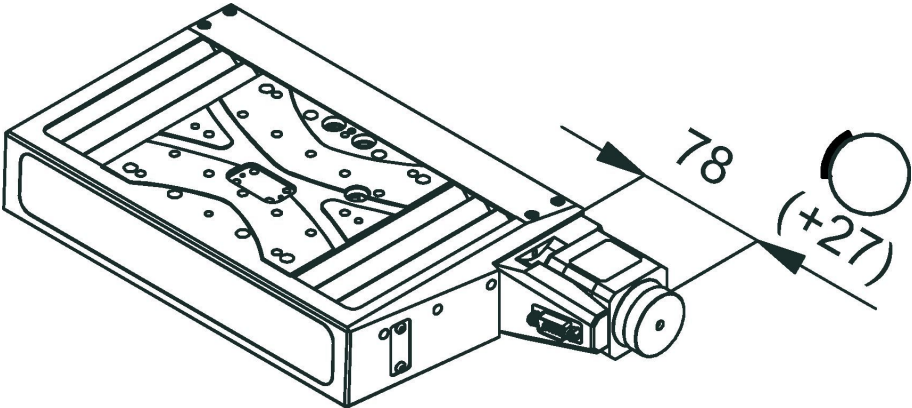
Drawings and Images



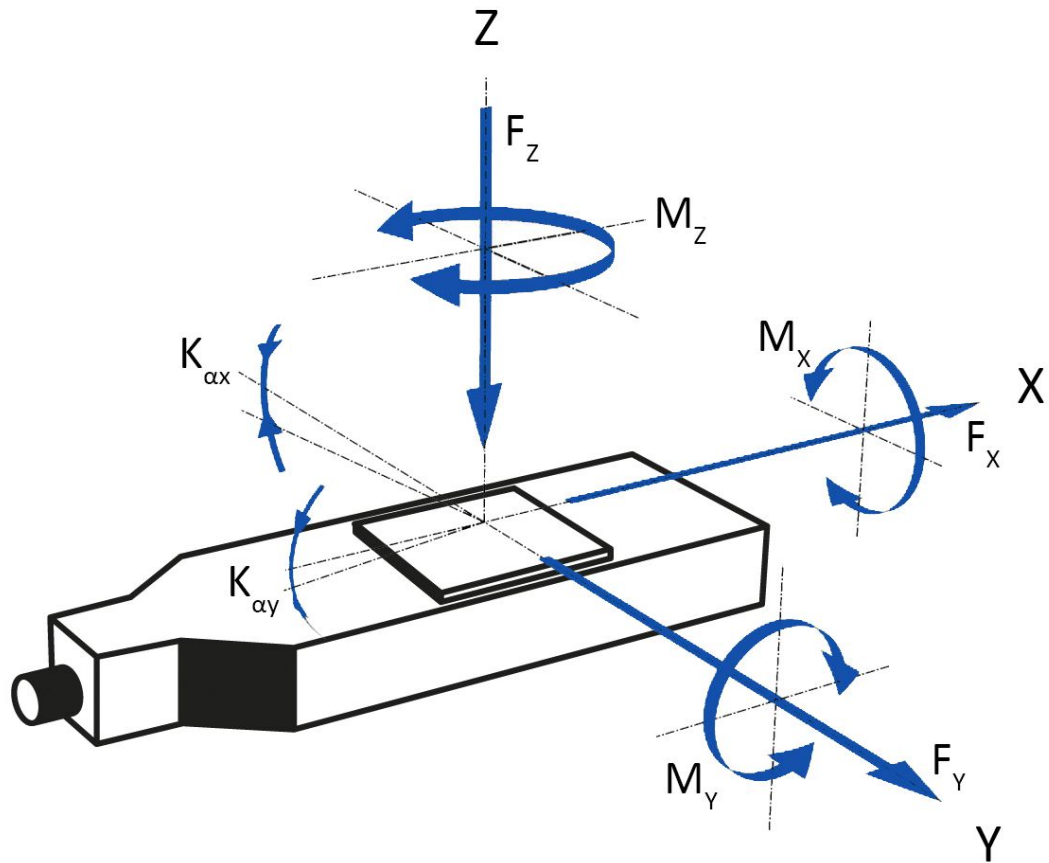
HPS-170, dimensions in mm



HPS-170, DC motor, dimensions in mm



HPS-170, stepper motor, dimensions in mm



Direction of the axes and torques for linear stages

Ordering Information

Stages with direct position measurement

626291110

HPS-170 High-Precision Linear Stage with Excellent Travel Accuracy, 170 mm Width, DC Motor, 52 mm Travel Range, Linear Encoder with A/B Quadrature Signal Transmission, Optical Limit Switches

626291210

HPS-170 High-Precision Linear Stage with Excellent Travel Accuracy, 170 mm Width, DC Motor, 102 mm Travel Range, Linear Encoder with A/B Quadrature Signal Transmission, Optical Limit Switches

626291310

HPS-170 High-Precision Linear Stage with Excellent Travel Accuracy, 170 mm Width, DC Motor, 155 mm Travel Range, Linear Encoder with A/B Quadrature Signal Transmission, Optical Limit Switches

626291410

HPS-170 High-Precision Linear Stage with Excellent Travel Accuracy, 170 mm Width, DC Motor, 205 mm Travel Range, Linear Encoder with A/B Quadrature Signal Transmission, Optical Limit Switches

626292110-0001

HPS-170 High-Precision Linear Stage with Excellent Travel Accuracy, 170 mm Width, Stepper Motor, 52 mm Travel Range, Linear Encoder with Sin/Cos Signal Transmission, Optical Limit Switches

626292210-0001

HPS-170 High-Precision Linear Stage with Excellent Travel Accuracy, 170 mm Width, Stepper Motor, 102 mm Travel Range, Linear Encoder with Sin/Cos Signal Transmission, Optical Limit Switches

626292310-0001

HPS-170 High-Precision Linear Stage with Excellent Travel Accuracy, 170 mm Width, Stepper Motor, 155 mm Travel Range, Linear Encoder with Sin/Cos Signal Transmission, Optical Limit Switches

626292410-0001

HPS-170 High-Precision Linear Stage with Excellent Travel Accuracy, 170 mm Width, Stepper Motor, 205 mm Travel Range, Linear Encoder with Sin/Cos Signal Transmission, Optical Limit Switches

Stages without direct position measurement

626291100

HPS-170 High-Precision Linear Stage with Excellent Travel Accuracy, 170 mm Width, DC Motor, 52 mm Travel Range, Optical Limit Switches

626291200

HPS-170 High-Precision Linear Stage with Excellent Travel Accuracy, 170 mm Width, DC Motor, 102 mm Travel Range, Optical Limit Switches

626291300

HPS-170 High-Precision Linear Stage with Excellent Travel Accuracy, 170 mm Width, DC Motor, 155 mm Travel Range, Optical Limit Switches

626291400

HPS-170 High-Precision Linear Stage with Excellent Travel Accuracy, 170 mm Width, DC Motor, 205 mm Travel Range, Optical Limit Switches

626292100

HPS-170 High-Precision Linear Stage with Excellent Travel Accuracy, 170 mm Width, Stepper Motor, 52 mm Travel Range, Optical Limit Switches

626292200

HPS-170 High-Precision Linear Stage with Excellent Travel Accuracy, 170 mm Width, Stepper Motor, 102 mm Travel Range, Optical Limit Switches

626292300

HPS-170 High-Precision Linear Stage with Excellent Travel Accuracy, 170 mm Width, Stepper Motor, 155 mm Travel Range, Optical Limit Switches

626292400

HPS-170 High-Precision Linear Stage with Excellent Travel Accuracy, 170 mm Width, Stepper Motor, 205 mm Travel Range, Optical Limit Switches

For accessories, please specify when ordering**720090000**

Connection Cable for Stages with Stepper Motor, 3 m

720190000

Connection Cable for Stages with DC Motor, 3 m

721090000

Cable Set for Stages with Measuring System, 3 m

Ask about custom designs!