

# M-605 Linear Positioning Stage

## Ultra-Compact, High-Accuracy Linear Stage



M-605.2DD high precision translation stage

- Integrated 0.1  $\mu\text{m}$  Linear Encoder for Highest Accuracy
- Travel Ranges 25 mm (1") and 50 mm (2")
- Max. Velocity 50 mm/s with ActiveDrive™ Motor
- High Load Capacity up to 30 kg
- Zero-Backlash Recirculating Ballscrews
- Non-contact Limit and Reference Switches
- Stress-Relieved Aluminum Base for Highest Stability
- Flexible Bellows Protects the Mechanics from Dust and Spray
- XY & XYZ Combinations Possible
- MTBF >20,000 h

M-605 series translation stages are designed to meet the most demanding positioning requirements in applications where space is limited.

They feature a space-saving design with the ballscrew side-by-side to the motor and an extremely flat, precision-

machined base of high-density, stress-relieved aluminum providing exceptional stability and minimum weight.

### Integrated Linear Scale Encoder

For highest accuracy and repeatability, M-605 stages are equipped with integrated linear-scale encoders (direct metrology) providing 0.1  $\mu\text{m}$  minimum incremental motion and 1  $\mu\text{m}$  full-travel accuracy.

### Heavy Duty and Maintenance Free

All models are equipped with high-precision linear guiding rails and recirculating ball bearings. The choice of components and careful mounting guarantees high load capacity, longer lifetime and high guiding accuracy.

### Ballscrews for High Speed, Precision and Lifetime

The precision-ground ballscrew is maintenance-free and preloaded to eliminate mechanical play. Its significantly reduced friction, compared to conventional leadscrews, allows for higher velocity, lower power consumption and longer lifetime.

A flexible bellows protects the mechanics from dust and spray.

### ActiveDrive™

For maximum dynamic performance, the M-605 series stages are equipped with the highly efficient ActiveDrive™ direct-drive system, which can achieve speeds of up to 50 mm/s. The ActiveDrive™ design, developed by PI, features a high-efficiency PWM (pulse width modulation) servo-amplifier mounted side-by-side with the DC motor and offers several advantages:

- Increased efficiency, by eliminating power losses between the amplifier and motor
- Reduced cost of ownership and improved reliability, because no external driver is required
- Elimination of PWM amplifier noise radiation, by



M-605.2DD XYZ-combination

### Ordering Information

#### M-605.1DD

Compact Precision Linear Stage, 25 mm, 0.1  $\mu\text{m}$  Linear Encoder, ActiveDrive™ DC Motor

#### M-605.2DD

Compact Precision Linear Stage, 50 mm, 0.1  $\mu\text{m}$  Linear Encoder, ActiveDrive™ DC Motor

#### Accessories:

##### M-605.AV0

Angle Bracket for Vertical Mount of M-605 on M-605

##### M-110.01

Adapter Plate for Horizontal Mount of M-605 on Honeycomb Tables, M-400- and M-500 Series Translation Stages and Several Rotation Stages

Ask about custom designs!

mounting the amplifier and motor together in a single, electrically shielded case

### Limit and Reference Switches

For the protection of your equipment, non-contact Hall-effect limit and reference switches are installed. The direction-sensing reference switch supports advanced automation applications with high precision.

### Precision Assembly

Each M-605 stage is precision assembled and optimized using laser interferometers for performance testing.

### Application Examples

- R&D
- Semiconductor testing
- Mass storage device testing
- Metrology
- Photonics packaging
- Quality assurance testing
- Precision Linear Motion Control

