

M-545< XY Microscope Stage with Ultrasonic Linear Drives

High Stability, Low Profile, High Speed, Direct Position Measurement



The M-545S microscope stage with closed-loop ultrasonic piezo motors provides 25 x 25 mm travel range and very high stability

- **Integrated Closed-Loop Linear Piezomotor Drives Provide Smooth Motion and High Speed to 50 mm/s**
- **Travel Ranges 25 x 25 mm**
- **Integrated Linear Encoders with 0.5 μm Resolution**
- **Compact Design: 30 mm Profile Height,**
- **Mounts Directly to Microscopes**
- **Self-Locking at Rest, with no Servo Dither**
- **Compatible with PI Piezo Nanopositioning / Scanning Stages**

M-545K piezomotor stages are mainly designed for automated positioning applications in microscopy. The form factor of the M-545 is optimized for a low profile height of 30 mm on ly; the mounting pattern is compatible with many PI piezo nanopositioning stages.

Space Saving Piezomotors

Compared to conventional motorized translation stages, the M-545 provides a lower profile and smaller footprint. The compact PLine® piezoelectric linear motors and linear encoders make both, the lead screw duct and the flanged, bulky stepper motors

employed in traditional stages obsolete. In addition, the piezomotors are **self-locking at rest** and hold the stage in a stable position without generating heat.

Compatibility to PI Nanopositioning and Scanning Stages

A number of standard PI piezo flexure stages can be mounted on the M-545 stage. Depending on the application, these highly specialized, ultra-precise nanopositioning systems are available as fast XY Z scanners (for fluorescence microscopy), as vertical Z positioners (3D imaging), or with up to 6 degrees of freedom.

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.

Advantages of PLine® Micropositioning Systems

The ultrasonic piezoceramic drives used in PLine® micropositioners have a number of advantages over classical drives:

- Higher Acceleration, Speed
- Smooth Motion, no Vibrations
- Small Form Factor
- Self-Locking when Powered Down, no Dither, no Energy Consumption
- No Shafts, Gears or Other Rotating Parts
- Non-Magnetic, Vacuum Compatible Drive Principle

Preliminary Specs

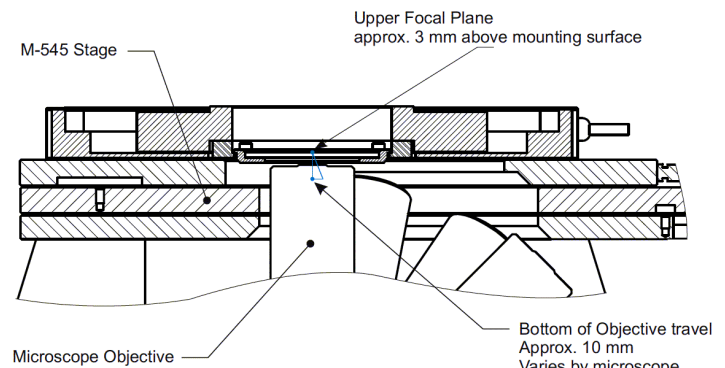
Ordering Information

XY Microscope Stage System with Closed-Loop PLine® Piezomotor Drives, 25 x 25 mm, 0.5 μm Linear Encoder, Includes C-867.260 2 Axis Controller and Joystick.

The following PI stages can be used with the M-545:

- P-545 PInano™: all versions
- P-5x7 & P-528: all versions
- P-561 & P-562: all versions
- P-541 & P-542: all versions
- P-736 PInano™-Z: Adapter P-736.AP1 required

- Biotechnology
- Microscopy
- Scanning microscopy
- Confocal microscopy
- Semiconductor testing
- Handling



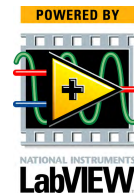
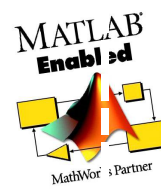
PInano™ XYZ piezo scanner mounted on a M-545K Microscope stage. The XYZ piezo nanopositioning stage provides <1 nm resolution and 200x200x200μm scanning range. The high stability and autolocking feature of M-545 provides significant advantages over other microscope stage designs when using fast piezo scanning stages.



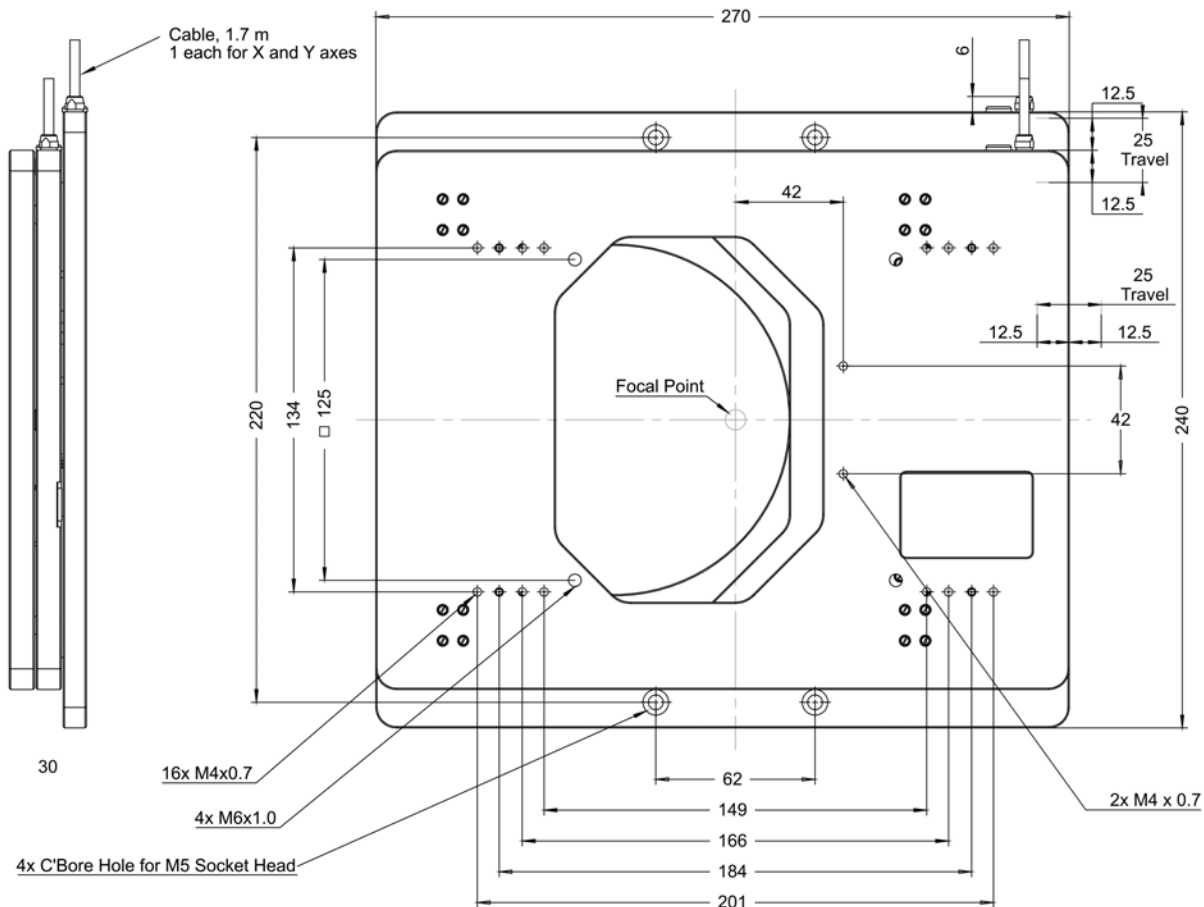
The two-channel C-867.260 controller

Preliminary Specs

Model	M-545K
Active axes	XY
Travel range	25 x 25 mm
Integrated sensor	Linear encoder
Sensor resolution	0.5 μm (no dither at rest)
Min. incremental motion	1 μm
Unidirectional repeatability	1 μm
Bidirectional repeatability	2 μm
Max. velocity	50 mm/s
Load Capacity	50*N
Max. push/pull force	5 N
Max. lateral force	4 N
Motor type	PILine® U-164
Operating voltage	67 V (RMS)***
Electrical power	10 W / Axis**
Operating temperature range	10 to +30 °C
Material	Aluminum (black anodized)
Mass	3.2 kg
Cable length	1.7 m
Connector	2 x MDR connector, 14-pin
Controller/driver	C-867.260 2-axis Controller/Driver



* 10 N for max. velocity. ** For drive electronics
 *** Piezomotor drive voltage; controller requires 12 VDC



M-545 dimensions in mm