

220 mm Travel Stage with Brushless DC Servo Motor

Thorlabs' DDS220 low-profile, direct-drive translation stage provides 220 mm of travel with 50 nm resolution and a maximum speed of 300 mm/s. This stage is ideal for applications that require high speeds and high positioning accuracy, including automated alignment, surface inspection, mapping, and probing.

An innovative, low-profile design with integrated, brushless linear motors eliminates the external housings that create mechanical clash points and impede access to the moving platform. The direct-drive technology doesn't utilize a lead screw, thereby eliminating backlash while significantly improving the linearity of the motion. Internal flexible ducting ensures cables cannot become trapped as the mechanism moves. Twin, precision-grooved linear bearings provide superior rigidity and linearity with excellent on-axis accuracy. This backlash-free operation coupled with high-resolution, closed-loop optical feedback ensures a minimal bidirectional repeatability of $\pm 0.25 \mu\text{m}$. Characterized by high-speed translation and high-positional accuracy, the DDS220 stage is well-suited for surface mapping and characterization applications where there is a need to move a camera or probe at constant velocity while simultaneously capturing data.

Dual-Axis Configuration

For dual-axis applications, two stages can be directly bolted together in an XY configuration without the need for an adapter or spacer plate, thereby keeping the vertical profile to a minimum. Furthermore, end users can choose to bolt the upper stage on centrally or off center as shown to the right.

Please note that these stages are not suitable for operation in a vertical (Z-axis) orientation.

Controller Options

The recommended controller for the DDS220 direct-drive, linear translation stage is the BBD101 single-axis or BBD102 dual-axis Brushless DC Motor Controller. These controllers provide a user-configurable, S-curve acceleration/deceleration profile that enables fast, smooth positioning without vibration or shock. See pages 628 – 629 for the full presentation for these Brushless DC Motor Controllers.

Joystick Option

An optional 2-axis joystick console (MJC001) is also available for remote positioning applications. See pages 628 – 629 for more details.

NEW
product

DDS220

Features

- Low Profile, Long Travel Design
- Integrated, Brushless DC Linear Servo Motor Actuators
- Linear Optical Encoders
- High-Quality, Precision-Engineered Linear Bearings
- High Velocity (300 mm/s) Stage



XY Configuration

Specifications

- **Travel Range:** 220 mm (8.6")
- **Recommended Controller:** BBD101 or BBD102
- **Max Velocity:** 300 mm/s
- **Bidirectional Repeatability:** $\pm 0.25 \mu\text{m}$
- **Backlash:** None*
- **Minimum Achievable Incremental Movement:** 0.1 μm
- **Max On-Axis Load Capacity:** 6.6 lbs (3.0 kg)
- **Absolute On-Axis Accuracy:** $\pm 2.0 \mu\text{m}$
- **Straightness/Flatness:** $\pm 5 \mu\text{m}$
- **Pitch/Yaw:** $\pm 0.01^\circ$
- **Home Location Accuracy:** $\pm 0.25 \mu\text{m}$
- **Continuous Motor Force:** 7.0 N
- **Peak Motor Force (2 sec):** 15 N
- **Weight:** 5.3 lbs (2.4 kg)
- **Dimensions:** 370 mm x 90 mm x 45 mm (14.6" x 3.5" x 1.77")

*This stage does not exhibit backlash since there is no lead screw.

 **Mechanical**
Drawings Available on the
WEB



BBD102

Specifications for the BBD101 and BBD102 single- and dual-channel controllers can be found on pages 628 – 629.

ITEM #	METRIC ITEM #	\$	£	€	RMB	DESCRIPTION
DDS220	DDS220/M	\$ 3,660.00	£ 2,635.20	€ 3,184.20	¥ 29,170.20	Direct Drive Stage, 220 mm Travel