

# 1" (25.4 mm) Travel Motorized Translation Stages

## Features

- Optical Encoder with 34,304 Pulses/Rev. of Leadscrew
- 67:1 Gear Head for High Torque
- Built-In Limit Switches
- Right-Handed Configuration, User Changeable to Left-Handed

The PT1-Z8 and the PT3-Z8 motorized stages provide a 1" (25.4 mm) total travel range for each axis. The PT3-Z8 is assembled from three single axis stages using the PT102 (/M) bracket. Each stage comes with two mounting dowels to ensure orthogonality when stacking multiple stages. The motorized actuators allow sub-micron control and provide position feedback via an optical encoder. A 12 VDC servo motor and gear head rotate the 1.0 mm pitch leadscrew that drives the stage; built-in limit switches provide overdrive protection.

Thorlabs' motorized actuators are some of the smallest that are commercially available. Combining these actuators with our compact high-precision translation stages results in an extremely compact sub-micron translator.

Manual Stages

See Our Manual Stages Chapter for  
Details on the PT3 w/Manual Drives

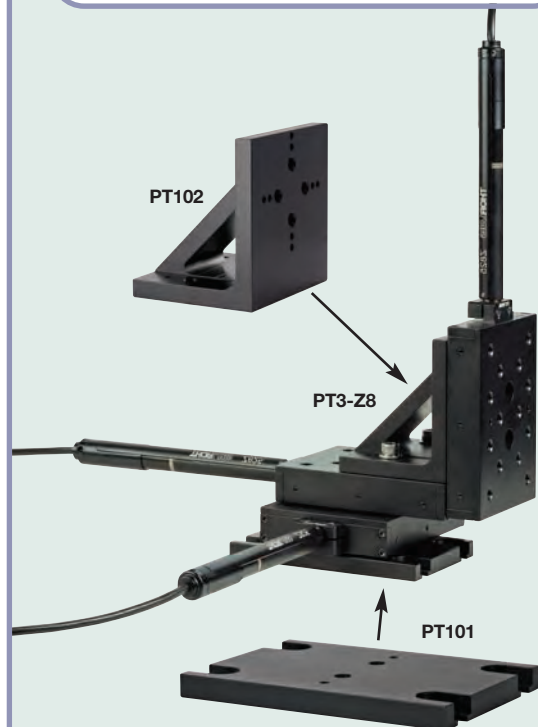
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Motorized Stages

## Manual Stages



This motorized translation stage is based on our popular PT-Series manually-driven stages. The manually-driven version of this stage utilizes micrometer drives; this product is featured in our Manual Stages chapter.



## Specifications

- **Travel Range:** 1" (25.4 mm)
- **Recommended Controller:** TDC001
- **Max Velocity:** 3 mm/s
- **Stage Bearing Construction:** Aluminum/Ball Bearing
- **Bidirectional Repeatability:** 1.5  $\mu$ m
- **Backlash:** <12  $\mu$ m
- **Min Achievable Incremental Movement:** 100 nm
- **Max On-Axis Load Capacity (vertical):** 10 lbs (4.5 kg)
- **Max On-Axis Load Capacity (horizontal):** 20 lbs (9 kg)
- **Absolute On-Axis Accuracy:** 130  $\mu$ m
- **Max Percentage Accuracy:** 0.52%
- **Home Location Accuracy:** <2  $\mu$ m
- **Pitch:** 0.006°
- **Yaw:** 0.013°
- **Platform**
  - 3.00" x 4.00" (76.2 mm x 101.6 mm)
  - 1/4"-20 (M6 x 1.0) Tapped Holes, 16 Places

**Linear Displacement per Encoder Count:** There are 512 encoder counts per revolution of the motor. The output shaft of the motor goes into a 67:1 planetary gear head. This requires the motor to rotate 67 times in order to rotate the 1.0 mm pitch leadscrew one revolution. The end result advances the stage by 1.0 mm. To calculate the linear displacement of the actuator per encoder count:

- $512 \times 67 = 34,304$  encoder counts per revolution of the leadscrew
- $1.0 \text{ mm} / 34,304 \text{ counts} = 2.915 \times 10^{-5} \text{ mm}$  (29 nm) linear displacement of the leadscrew per encoder count.

## Save 10% When Purchasing Complete Package Stage Plus Motorized Actuators

ITEM #	METRIC ITEM #	\$	£	€	RMB	DESCRIPTION
PT1-Z8	PT1/M-Z8	\$ 683.10	£ 491.83	€ 594.30	¥ 5,444.31	Single-Axis Motorized Translation Stage, 1" (25.4 mm) Travel
PT3-Z8	PT3/M-Z8	\$ 2,094.30	£ 1,507.90	€ 1,822.04	¥ 16,691.57	Three-Axis Motorized Translation Stage, 1" (25.4 mm) Travel
PT101*	PT101*	\$ 22.00	£ 15.84	€ 19.14	¥ 175.34	Base Plate
PT102	PT102/M	\$ 71.00	£ 51.12	€ 61.77	¥ 565.87	Angle Mounting Bracket

\*Imperial and Metric parts are equivalent.