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THORLABS

TPZNF15/M - APR 27, 2016

Item # TPZNF15/M was discontinued on APR 27, 2016. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

SINGLE-AXIS FLEXURE TRANSLATION STAGES: 1.5 MM TRAVEL

- ► Flexure Design - No Friction or Sticking
- ► Thumbscrew Adjuster and 25 µm Piezo Actuator
- ► Mounting Plate and Angle Bracket Available

NF15P1 Adapter with NF15AP25 Stage

NF15AP25

NF15P2 Adapt with Two NF15AP Stag

Save 10% with Stage and Controller Bundles

TPZNF15

OVERVIEW

NanoFlex Translation Stage

- Manual Translation Range: 1.5 mm
- Piezoelectric Translation Range: 25 µm
- Compact Size - 30.0 mm x 30.0 mm x 12.5 mm
- XYZ Configurable with Optional Base Plate and Angle Bracket
- All Drive Cables Included
- Compatible Piezo Controllers: KPZ101, BPC301, MDT694B, MPZ601
- Available Bundled with Former Generation TPZ001 Piezo Controller (See *Bundles* Tab for Details)

Item #	NF15AP25
Manual Travel	0.06" (1.5 mm)
Manual Travel Resolution	2 µm
Coarse Adjustment	0.02" (0.5 mm) per Rev. of Thumbscrew (Typical)
Leadscrew Pitch	0.25 mm
Load Capacity	Horizontal: 1.1 lbs (0.5 kg) Vertical: 0.55 lbs (0.25 kg)
Cross Talk	1.0 µm (Max)
Piezo Travel	25 µm
Piezo Voltage	0 - 75 V

Thorlabs' NanoFlex™ flexure stages are compact stages that offer translation without friction or sticking. The flexure mechanism used in these translation stages is a frictionless mechanism that has improved positioning and resolution when compared to similar stages made using bearings. The translation of the stage is accomplished by the elastic deformation (flexing) of a linkage attached to the mounting platform. The translation stage has a manual translation range of 1.5 mm with an independent piezoelectric translation range of 25 µm (see the *Selection Guide* tab for stages with 5 mm manual translation). Piezo connection is by a standard SMC terminal.

Single-Axis Flexure Translation Stages
1.5 mm Travel
5 mm Travel

The NanoFlex™ flexure stages are rated for a maximum load of 0.5 kg (1.1 lbs), which makes them an ideal choice for many laboratory and OEM applications. The modular design allows for multiple stages to be stacked in multi-axis configurations. An XYZ configuration can be constructed using three NF15AP25(/M) stages and an NF15P2(/M) angle bracket. Thorlabs offers an imperial (TPZNF15) and metric (TPZNF15/M) bundle that includes a NanoFlex™ flexure stage, a TPZ001 piezo controller, and a mounting bracket. Please see the *Bundles* tab for more information.

SPECS

Item #	NF15AP25
Manual Travel	0.06" (1.5 mm)
Manual Travel Resolution	2 µm
Coarse Adjustment	0.02" (0.5 mm) per Revolution of Thumbscrew (Typical)
Leadscrew Pitch	0.25 mm
Load Capacity	Horizontal: 1.1 lbs (0.5 kg) Vertical: 0.55 lbs (0.25 kg)
Maximum Cross Talk	1.0 µm
Piezo Travel	25 µm
Piezo Voltage	0 - 75 V
Piezo Capacitance	5 µF ± 30% (@ 1 V, 1 kHz)
Piezo Connector	SMC
Piezo Cable Length	3 m (9.8 ft)
Compatible Piezo Controller	KPZ101, BPC301, MDT694B, MPZ601

These specifications are for the stage used in a single-axis configuration. When translation stages are stacked to make multi-axis configurations the resolution of the positioning system is deteriorated by cosine and Abbe errors (crosstalk). The positioning error cause by the stacked stages not being orthogonal to each other is referred to as the cosine error while the Abbe error is due to the non-zero height of the stacked stage. This height leads to an amplification of any angular roll, pitch, or yaw errors in the base stage. These errors can be avoided by using a multi-axis translation stage where the degrees of freedom are controlled by parallel linkages. A variety of 3, 4, 5, and 6 axis stages can be purchased from Thorlabs in a wide variety of manual and automated configurations. For a 3-axis solution, consider the MAX311D and MAX312D translation stages.

SELECTION GUIDE

NF Series Selection Guide

	NF15AP25	NF5DP20S	NF5DP20	NF5D
Manual Translation Travel Range (Resolution)	1.5 mm (2 µm)	5 mm (1 µm)		
Piezoelectric Translation Travel Range (Resolution)	25 µm (25 nm)	20 µm (10 nm)	20 µm (20 nm)	-
Closed-Loop Piezoelectric Position Sensor	No	Yes	No	No
# of Translation Axis Per Stage	1			
Multi-Axis Stackable Design	Yes			
Maximum Stage Load (Mass)	1.1 lbs (0.5 kg)	2.2 lbs (1 kg)		
Stage Mounting Surface Dimensions	1.18" x 1.18" (30 mm x 30 mm)	2.95" x 2.95" (75 mm x 75 mm)		
Stage Height	0.49" (13 mm)	1.18" (30 mm)		

Thorlabs offers an extensive selection of single-axis translation stages and multi-axis flexure translation stages. The 3-axis flexure translation stages, MAX311D and MAX312D, are similar to the NF series of stages in that they have a manual adjustment range of (4 mm) and a piezoelectric translation range of (20 µm).

BUNDLES

Stage and Controller Packages

(10% Savings Over Individual Components)

The TPZNF15(/M) bundle includes the NF15AP25(/M) stage, TPZ001 T-Cube piezo controller, piezo drive cable, and NF15P1(/M) mounting plate. The stage provides 0.06" (1.5 mm) of total translation via a thumbscrew. For finer adjustment, the piezo drive offers 25 µm of translation with 10 nm resolution.

T-Cube Piezo Controller

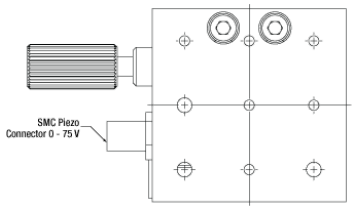
The TPZ001 can be controlled by its top panel for standalone operation or through its PC interface. The TPZ001 connects to a PC via a mini USB port and utilizes Thorlabs' APT™ software. The APT™ software features an intuitive graphical user interface (GUI) that allows the unit to be controlled completely a PC. For more demanding applications, customers can utilize ActiveX® programming to create their own software for Thorlabs' line of T-Cubes.

Power Supplies

The TPZ001 comes without a power supply as our customers have varying needs. Please see the recommended power supply below.

Item #	TPZNF15(/M)
NF15AP25(/M) Stage Specifications	
Manual Travel	0.06" (1.5 mm)
Manual Travel Resolution	2 µm
Coarse Adjustment	0.01" (0.25 mm) per Rev. of Thumbscrew
Leadscrew Pitch	0.25 mm
Load Capacity	Horizontal: 1.1 lbs (0.5 kg) Vertical: 0.55 lbs (0.25 kg)
Cross Talk	1.0 µm (Max)
Piezo Travel	25 µm
Piezo Resolution	10 nm
Piezo Voltage	0 - 75 V
TPZ001 Controller Specifications	
Drive Voltage	0 - 150 V
Drive Current, Max, Cont.	7.5 mA
Stability	100 ppm Over 24 hrs (After 30 min Warm-Up)
Noise	<2 mV_{RMS}
Typical Piezo Capacitance	1 - 10 µF
Bandwidth	1 kHz (1 µF Load, 1 V_{p-p})
External Input (SMA Male)	0 - 10 V (BNC)
Output Monitor (SMA Male)	0 - 10 V (BNC)
USB Port	Version 1.1 mini

PIN CONNECTION



Piezo Connection

SMC Male

0 - 75 V

Single-Axis Flexure Stage: 1.5 mm Travel

The stages are supplied with a thumbscrew adjuster which provides manual adjustment and a 25 µm piezo actuator. The NF15AP25(/M) stages are ideal for a variety of laboratory and OEM applications. The NF15AP25(/M) translation stages are shipped with three M2 cap screws, an Allen key, and a 3 m long male SMC to male SMC cable.

See the *Specs* tab above for more detailed information including compatible controllers.

Part Number	Description	Price	Availability
NF15AP25/M	**NanoFlex Single-Axis 1.5 mm Positioner with 25 µm Piezo Actuator, Metric**	**$726.00**	**Today**
NF15AP25	**NanoFlex Single-Axis 1.5 mm Positioner with 25 µm Piezo Actuator**	**$726.00**	**Today**

Single-Axis Flexure Stage with Controller

- 10% Savings Over Individual Components
- Includes NanoFlex™ Flexure Stage, Piezo Driver and Mounting Plate

We offer stages bundled with controllers at a discounted price. The TPZNF15(/M) bundle includes the TPZ001 T-Cube Piezo Driver, the ideal driver for the NF15AP25(/M) stage and includes all necessary cables for a complete system. The TPZNF15(/M) also includes a NF15AP25(/M) stage and NF15P1(/M) base plate. A power supply for the TPZ001 is not included.

Please see the *Bundles* tab for more information on these bundles.

Part Number	Description	Price	Availability
TPZNF15/M	**NanoFlex™ 1.5 mm Travel Stage & TPZ001 Piezo Driver, Metric**	**$1,210.00**	**Today**
TPZNF15	**NanoFlex™ 1.5 mm Travel Stage & TPZ001 Piezo Driver**	**$1,210.00**	**Today**

Mounting Adapters

- Build XY, XZ, and XYZ Configured Stages
- Angle Bracket for Vertical Mounting

The NF15P1(/M) and NF15P2(/M) are adapter plates designed for the NF15(/M) Series of translation stages. The NF15P1(/M) is a special base plate designed to fit the NF15(/M) Series translation stages with slots on the side that enable obstruction-free mounting onto an optical breadboard. This base is ideal for XY or XYZ multi-axis configurations where the standard counterbores in the middle of the stages are obstructed.

The NF15P2(/M) is an angle bracket that allows a NF15 Series stage to be mounted vertically. This is necessary in some XY and all XYZ configurations.

Part Number	Description	Price	Availability
NF15P1/M	**Mounting Plate for NF15AP25/M Flexure Stage**	**$48.00**	**Today**
NF15P2/M	**Angle Bracket for NF15AP25/M Flexure Stage**	**$48.00**	**Today**
NF15P1	**Mounting Plate for NF15AP25 Flexure Stage**	**$48.00**	**Today**
NF15P2	**Angle Bracket for NF15AP25 Flexure Stage**	**$48.00**	**Today**

Compatible Power Supplies

Click to Enlarge

- ±15 V/5 V Power Supply
  - TPS002: For up to Two K-Cubes or T-Cubes
- USB Controller Hubs Provide Power and Communications
  - KCH301: For up to Three K-Cubes or T-Cubes
  - KCH601: For up to Six K-Cubes or T-Cubes
  - KAP101: Adapter Plate for Connecting 60 mm Wide T-Cubes to KCH Series Hubs
  - KAP102: Adapter Plate for Connecting 120 mm Wide T-Cubes to KCH Series Hubs

The TPS002 supplies power for up to two K-Cubes or T-Cubes. The cubes still need to be connected to a computer individually via a USB cable.

The KCH301 and KCH601 USB Controller Hubs each consist of two parts: the hub, which can support up to three (KCH301) or six (KCH601) K-Cubes or T-Cubes, and a power supply that plugs into a standard wall outlet. The hub draws a maximum current of 10 A; please verify that the cubes being used do not require a total current of more than 10 A. In addition, the hub provides USB connectivity to any docked K-Cube or T-Cube through a single USB connection.

A KAP101 or KAP102 Adapter Plate (sold separately) is required for each T-Cube to operate on the KCH301 or KCH601 controller hub. The KAP101 is designed to adapt 60 mm wide T-Cubes to the hubs, while the KAP102 is designed to adapt 120 mm wide T-Cubes to the hubs.

For more information on the USB Controller Hubs, see the full web presentation.

Please note that our KPS101 Power Supply is not compatible with this module since it does not offer reversible polarity.

Part Number	Description	Price	Availability
TPS002	**±15 V/5 V Power Supply Unit for up to Two K-Cube or T-Cubes**	**$105.00**	**Lead Time**
KCH301	**NEW! USB Controller Hub and Power Supply for Three K-Cubes or T-Cubes**	**$475.00**	**Today**
KCH601	**NEW! USB Controller Hub and Power Supply for Six K-Cubes or T-Cubes**	**$575.00**	**Today**
KAP101	**NEW! Adapter Plate for KCH Series Hubs and 60 mm Wide T-Cubes**	**$55.00**	**Today**
KAP102	**NEW! Adapter Plate for KCH Series Hubs and 120 mm Wide T-Cubes**	**$60.00**	**Today**

Visit the *Single-Axis Flexure Translation Stages: 1.5 mm Travel* page for pricing and availability information:
https://www.thorlabs.com/newgrouppage9.cfm?objectgroup_id=787