T-Cube™ NanoTrak™ Auto-Alignment Controller (Page 1 of 2)

TNA001/VIS

The T-Cube™ NanoTrak™ Controller with USB computer interface represents the latest developments in automated optical alignment technology. It is designed for use in entry-level photonics devices and fiber alignment applications and is ideal for low-volume device assembly, characterization, and mapping.

This auto-alignment T-Cube™ unit is used together with a pair of external piezo amplifier channels (TPZ001 T-Cube™ Piezo Drivers, see page 562) to provide a complete solution for manipulating piezo-actuated nanopositioning stages. The complete system is capable of aligning the device position down to the 10 nm regime. Equipped with a direct FC/PC PIN photodiode input fed to a high-gain, multi-range, transimpedance amplifier, this unit uses the same advanced auto-alignment algorithms pioneered on our high-end, higher bandwidth, benchtop NanoTrak™ Controller (BNT001). For information on how the NanoTrak is used in auto-alignment applications, see the BNT001 on page 574. For an explanation of the NanoTrak™ theory of operation, please visit our website or see the tutorial on page 583.

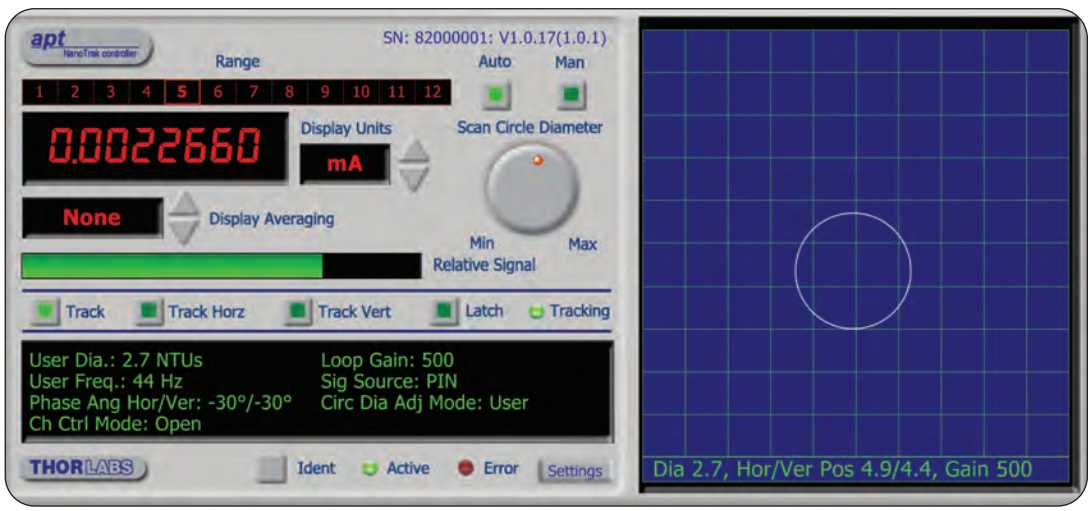
Features

- Compact Footprint
- Front Panel or PC Readout
- Active Fiber Alignment
- Maintain Optimum Power Throughput to Fiber
- InGaAs or Si Detectors and Pin Current Options
- USB Plug-and-Play Connectivity
- Full Software Control Suite Included
- Extensive ActiveX® Programming Interfaces

Operator interaction can be accomplished using either the manual control panel or via the intuitive apt™ software interface provided with the unit. This powerful controller in a miniature package can be mounted to an optical table directly with the included mounting plate so it is in close proximity to the device it controls. Tabletop operation also allows minimal drive cable lengths for easier cable management. All manual controls are located on the top face of the unit, making it convenient to adjust the piezo positions manually and to monitor the alignment via the easy-to-read target display.

Specifications

- **Optical Power Measurement:**
  - **PIN Photodiode:** 30 nA to 10 mA Photocurrent
  - **Si or InGaAs Detector:** FC/PC Fiber Input
  - **Signal Phase Compensation:** -180° to 180°
- **NanoTraking:**
  - **Circle Scanning Frequency:** 20 - 85 Hz
  - **Circle Diameter Makes Adjustment:** Automatic and Manual
- **Other Input/Output:**
  - **Feedback Signal In:** 0 - 10 V (SMA)
  - **Dual Piezo Position Demand Outputs:** 0 - 10 V (SMA)
  - **USB Port:** Version 1.1 Mini Connector
- **Input Power Requirements (DIN Connector):**
  - **Voltages:** 15 V (100 mA), -15 V (100 mA), or +5 V (400 mA)
- **Housing Dimensions (W x D x H):** 2.4" x 2.4" x 1.8" (60 mm x 60 mm x 47 mm)
- **Weight:** 5.5 oz (160 g)



Screenshot of the GUI that comes with the NanoTrak controller. Once in the tracking mode, the unit controls the piezo drivers, which adjust the stage's position in order to locate the position of maximum power.

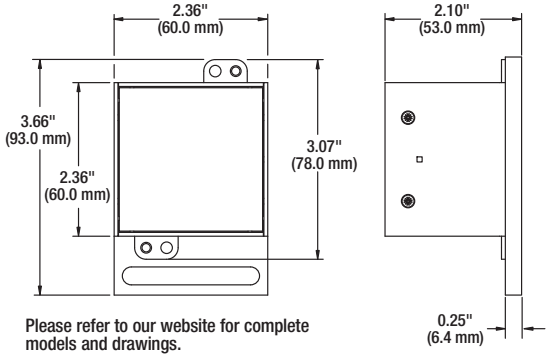
The diameter of the circle shown in the screen shot represents the amplitude of the fiber oscillation, while the center of the circle indicates the current horizontal and vertical position of the piezo actuators.

T-Cube™ NanoTrak™ Auto-Alignment Controller (Page 2 of 2)

Power Supply options

The TNA001 T-Cube™ requires a 5 V, 15 V, -15 V power supply. Thorlabs offers a compact, two-way power supply unit (TPS002), allowing up to two T-Cubes™ to be powered from a single main outlet.

Alternatively, the TCH002 USB Controller Hub (see page 546) provides power distribution for up to six T-Cubes. The Controller Hub contains a USB2.0 hub to provide communications for all six T-Cubes – a single USB connection to the Controller Hub is all that is required for PC control.



Please refer to our website for complete models and drawings.

apt™ NanoTrak™ Controller

For higher speed auto-alignment, please see our powerful benchtop NanoTrak™ unit. This controller combines an intelligent active feedback alignment control system and a two-channel, high-current piezoelectric controller into a single benchtop unit.

See Next Page

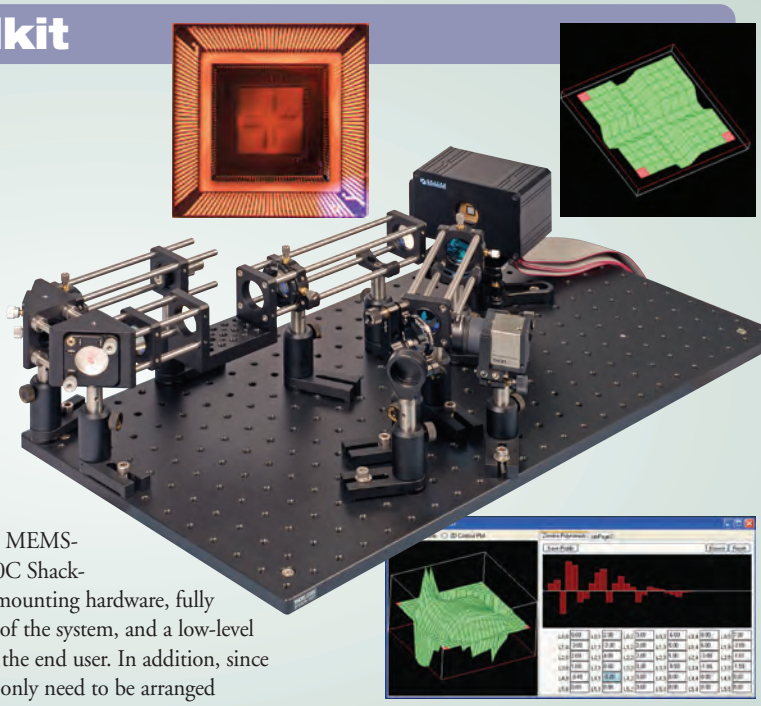
ITEM#	$	£	€	RMB	DESCRIPTION
TNA001/VIS*	$ 1,895.00	£ 1,313.50	€ 1.682,50	¥ 16,002.00	T-Cube™ NanoTrak™ Controller with Silicon Detector
TNA001/IR*	$ 1,895.00	£ 1,313.50	€ 1.682,50	¥ 16,002.00	T-Cube™ NanoTrak™ Controller with InGaAs Detector
NTA007	$ 295.00	£ 204.50	€ 262,00	¥ 2,491.00	InGaAs Detector for NanoTrak™
NTA009	$ 295.00	£ 204.50	€ 262,00	¥ 2,491.00	Silicon Detector for NanoTrak™
TPS002	$ 105.00	£ 72.80	€ 93,30	¥ 886.70	±15 V/5 V Power Supply Unit for up to 2 T-Cubes™
TCH002	$ 726.90	£ 504.00	€ 645,40	¥ 6,138.00	T-Cube™ Controller Hub and Power Supply Unit

*Power Supply not included

Adaptive Optics Toolkit

Features

- Out-of-the-Box Functionality for Real-Time, High-Precision Wavefront Control
- MEMS-Based DM Achieves High Spatial Resolution Due to High Actuator Count and Low Inter-Actuator Coupling
- Shack-Hartmann Wavefront Sensor with High Resolution CCD Camera and High-Quality Microlens Array
- Includes Light Source, Imaging Optics, and Associated Mounting Hardware



Thorlabs' new Adaptive Optics (AO) Toolkits remove the barrier for entry into adaptive optics, making this real-time wavefront-correcting technology accessible to researchers and OEM users alike. The kit includes Boston Micromachines Corporation's state of-the-art, 140-element, 3.5 micron stroke, MEMS-based deformable mirror. Also included is a Thorlabs' WFS150C Shack-Hartmann wavefront sensor, all necessary imaging optics and mounting hardware, fully functional stand-alone control software for immediate control of the system, and a low-level support library to assist with tailored applications authored by the end user. In addition, since the kit ships as three pre-aligned optomechanical sections that only need to be arranged on a user-supplied breadboard, our adaptive optics toolkits provide a near out-of-the-box solution for real-time wavefront compensation.

See Pages 1407-1411