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## T-Cube USB Laser Diode Controller



**TLD001**  
Double Wide T-Cube  
Footprint:  
4.72" x 2.36" x 1.85"  
(120 mm x 60 mm x 47 mm)

The TLD001 T-Cube is a versatile, high-precision laser diode and LED controller designed to drive a wide range of semiconductor laser diodes. It supports operating currents up to 200 mA, compliance voltages up to 8 V (suitable for driving blue laser diodes), and both constant current and constant power operating modes. As a member of the T-cube family of products, the TLD001 allows both standalone or PC-based operation via a USB interface.

This laser diode controller is a highly compact, yet fully functional, unit. It is provided with a USB interface for easy PC control as well as a manual interface panel containing a 5-digit, 7-segment display, adjustment potentiometer, mode, display and laser on buttons, and safety key switch. The unit can be set to control either the injection current or the optical output power of the laser diode. The footprint of this unit has been kept to a minimum; measuring only 120 mm x 60 mm x 47 mm (4.8" x 2.4" x 1.8"), the unit can be directly mounted to an optical table. For safety purposes, the TLD001 also features a key switch and interlock connector, as well as a laser enabled indicator.

The unit has been designed specifically for use with our TTC001 TEC controller (see page 1454) and LDM21 (see page 1487) mount for a complete temperature controlled laser diode driver system. It is also compatible with our TCLDM9 (see page 1486) and LM14S2 mounts (see page 1482) when used to drive diodes up to 200 mA.

USB connectivity provides easy plug-and-play PC-controlled operation. The TTC001 driver can be controlled via this USB connection by a computer running the included apt™ software or ActiveX command modules. The functionality of the ActiveX controls and apt™ software is the same for Thorlabs' entire line of T-Cubes, which greatly simplifies the integration of other T-Cube products into any setup that utilizes the TLD001 laser diode controller.

**Power Supply Options**

For each member of the T-Cube family, Thorlabs offers a number of power supply options. The preferred power supply (i.e., single channel, multi-channel, or hub-based) depends on the end user's application and whether you already own compatible power supplies. The TPS002 power supply can be used for standalone or single-channel operation, while the TCH002 T-Cube controller hub is well-suited for system or multi-channel operation.

**Features**

- Compatible with All Laser Diode Pin Configurations
- Constant Current (CC) and Constant Power (CP) Modes
- Low Noise (<3.0  $\mu$ A)
- Five-Digit LED Display
- Enable Key Switch and Laser Safety Interlock
- Manual and USB Interfaces
- External Modulation Input
- Flexible Software Libraries
- Current Output up to 200 mA

**Specifications**

- **Laser Diode (LD) Output:** 9-Pin D-Type
- **Operating Current Range:** 20 to 200 mA
- **LD Compliance Voltage:** >8 V
- **LD Current Setting Resolution:** 10  $\mu$ A
- **LD Power Setting Resolution:** 1  $\mu$ W
- **LD Current/Power Measurement Resolution:** 10  $\mu$ A (14-Bit)
- **Temperature Drift:** <70 ppm/°C (Typical)
- **LD Current Noise:** <3  $\mu$ A RMS (Typical)
- **Supported LD/PD Configurations:** All
- **LD Protection:** Relay - Open Circuit, Under/Over Voltage
- **Operating Modes:** Constant Current (CC) or Constant Power (CP)
- **Modulation Input (SMA) Range\*:** 0 - 10 V
- **Modulation Bandwidth:** 20 kHz
- **Interlock Input:** 3.5 mm Jack Socket
- **Power Input:** +15 V, -15 V, +5 V
- **Dimensions (W x D x H):** 120 mm x 60 mm x 47 mm (4.8" x 2.4" x 1.8")

\*DC or Sine Wave Input Only

**TCH002**

Power Supply for up to 6 T-Cubes

**TPS002**Power Supply for  
up to 2 T-Cubes

ITEM #	\$	£	€	RMB	DESCRIPTION
TLD001	\$ 750.00	£ 540.00	€ 652.50	¥ 5,977.50	T-Cube™ Laser Diode Controller
TPS002	\$ 105.00	£ 75.60	€ 91.35	¥ 836.85	±15 V/5 V Power Supply Unit for up to 2 T-Cubes
TCH002	\$ 726.90	£ 523.37	€ 632.40	¥ 5,793.39	T-Cube™ Controller Hub and Power Supply Unit
CAB400	\$ 66.00	£ 47.52	€ 57.42	¥ 526.02	Cable for Laser Diode Current Controller, 9-Pin D-Sub Connector, 1.5 m

Thorlabs' Selection of Laser Diodes and Laser Diode Mounts  
is found on Pages 1212 - 1266 and 1481 - 1492, Respectively.