LASER LAB SOURCE
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*manufactured for Laser Lab Source by* OSTECH

# Laser Diode Controller - 27 A, 24 Volt Laser Output
# 216 Watt Thermoelectric Temperature Controller


## 27 Amp, 24 Volt Laser Diode Driver
## 216 Watt TEC Controller

- Laser Current to 27 A, Voltage up to 24 V
- Bipolar Temperature Controller up to 216 W
- Optimized for High Power Multi Single-Emitter Laser Diodes from Coherent/DILAS, nLight, Lumentum, and II-VI
- CW Mode and Integrated Quasi-CW Pulse Generator, External Modulation Source
- Full Complement of Protection Features

LASER DIODE CONTROLLERS

Laser Lab Source
a division of Research Lab Source Corporation

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## LDC-506 Controller for Multi Single-Emitter Laser Diodes

The LDC-506 can drive full CW power up to 27 Amps with a 24 Volt compliance, and the integrated function generator can be programmed to generate QCW pulses from 25 microseconds to CW. The QCW pulse mode feature is capable of delivering continuous pulses, single pulses, and pulse bursts which are internally or externally triggered.

## Internal Function Generator & QCW Pulse Modes

In addition to CW (continuous wave) mode of operation, the LDC-506 laser diode controller offers flexible modulation capabilities and a QCW mode. The rear panel of the controller has a BNC input for an analog or TTL digital modulation input with a 10 kΩ input impedance. The controller has an internal function generator which can be used to set the quasi-CW pulses. In QCW mode, the user can also set the 25µs to CW pulses from a remote TTL signal source.

### LDC-506
### REAR PANEL CONNECTIONS

**Laser Connector**

SubD-ZW2 female

| PIN. No | Abbr. | Function |
|---|---|---|
| A1 | LDA+ | Laser Diode Anode (+) |
| A2 | LDC- | Laser Diode Cathode (-) |

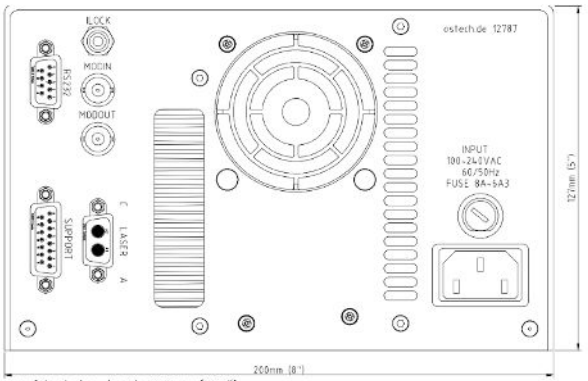
**Support & Peltier Connector**

SubD-15 female

| PIN.No | Abbr. | Function |
|---|---|---|
| 1;2;7;8 | PEL+ | Peltier element (+) |
| 3 | SGND | Supply Ground |
| 4 | LLED | Laser ON LED |
| 5 | PL+ | pilot laser supply (5V), vs. GND |
| 6 | PD | photo diode cathode (-) input, vs. GND |
| 9;10;14;15 | PEL- | Peltier element (-) |
| 11 | T1 | Temperature Sensor Input, vs. GND, default NTC10kΩ |
| 12 | GND | Common Ground |
| 13 | S1..24V | 1..24V Supply, max. 800mA, vs. SGND, supports fan etc. |

| RS232 Connector | AMOD/DMOD-IN Connector | MOD-OUT Connector | Interlock Connector |
|---|---|---|---|
| | MODGND<br>MODIN | GND<br>OUT | IL+<br>IL-<br>= not connected |
| SubD-9 female<br>Standard RS232-Connector<br>9600-Baud-8N1<br>(No Null-Modem Cable !) | BNC-Socked<br>Input-Impdanz 10kOhm<br>Digital Modulation with TTL-Pegel<br>Analog Mod. 0-4[V] => 0-Imax[A] | BNC-Socked, current monitor<br>0-Imax[A] -> 0-4[V]<br>Take care for laser isolation if you connect GND potential to an oscilloscope f.e. | Jack Connector 3,5mm<br>Laser runs only if closed<br>(ca. 5mA over 2V -> R <= 400R) |

### LDC-506
### REAR PANEL LAYOUT



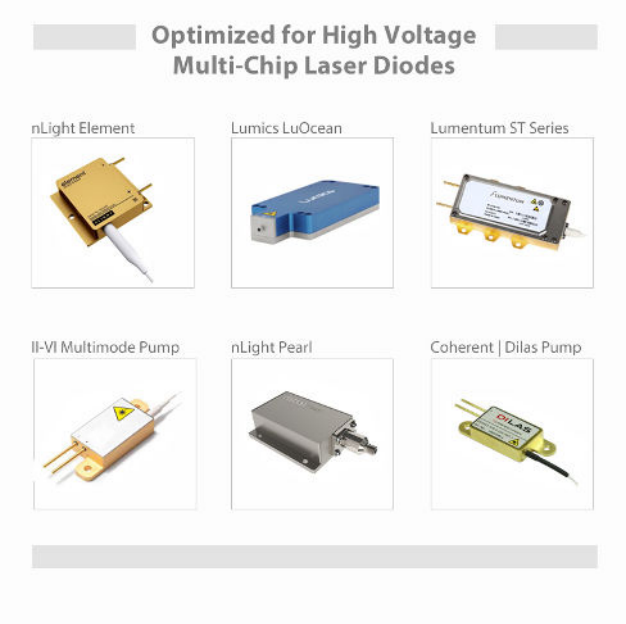

rear of the device length = 275mm (10.8")

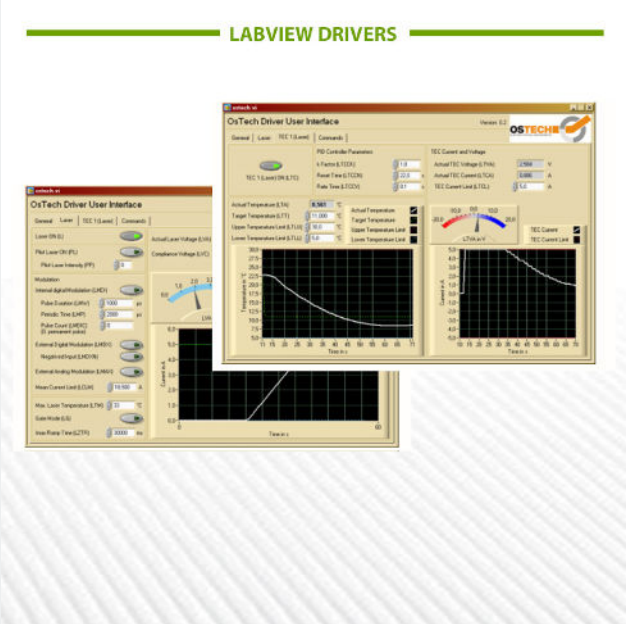
## High Power Bipolar Temperature Controller Features

The full PID loop provides millidegree temperature stability, and can quickly stabilize high heat loads to the temperature set-point to reduce the risk of damage to your laser. User adjustable upper and lower temperature limits protect the laser diode and the Peltier device. Additionally, TEC output current limits are user-configured to protect the Peltier device from over-drive damage.

## Protection Features for High Power Multi Single-Emitter Laser Diodes

These current sources feature multiple levels of built-in laser diode protection which have been optimized for bars and arrays. One of the unique features is a user programmable soft-start ramp of the bias current to the device under test. The factory sets the ramp time to 300 milliseconds as a default, but the user can adjust this time period from 1 millisecond up to 10's of seconds. This current ramp up and down function is designed to protect the laser from thermal shock during power up and down sequences.



# LDC-506 Laser Diode Controller Specifications

## LASER DIODE CURRENT AND VOLTAGE OUTPUT

- Output Current Range: 0.00 - 27.00 Amps
- Compliance Voltage Range: 0.00 - 24.00 Volts
- Current Noise & Ripple (rms): < ± 0.5% of Full Scale Current
- Current Setpoint Resolution: 3 mA
- Current Setpoint Accuracy: ± 0.5%
- Current Stability (4 hours): ≤ 200 ppm
- Current Limit Setpoint Accuracy: ± 2%
- Photodiode Current Measurement Range: 0.00 - 700 µA

## INTEGRATED LASER DIODE PROTECTION FEATURES

- Soft-Start Current Ramp Factory Default Set to 300 Milliseconds; User Adjustable
- User-Programmable Current Limit
- Programmable Temperature Limits (Upper and Lower)
- Open Circuit Detection; Short Circuit when Laser Diode Current Turned OFF
- ESD and Power Surge Clamp, AC Line Filter
- Reverse Voltage Transient Clamp
- Rear Panel Keylock Switch and Safety Interlock
- Front Panel e-Stop Button Emergency Shut-Down

## TEC TEMPERATURE CONTROLLER

- TEC Output Power Total: 216 Watts
- TEC Output Current Range (bipolar): ± 12.00 Amps
- TEC Output Voltage Range (bipolar) : ± 18.00 Volts
- Temperature Sensor Inputs: 10 kΩ Thermistor, NTC, PT100, PT1000
- TEC Control Loop Algorithm: Full P.I.D.
- P.I.D. Variables: User Adjustable to Optimize Temp. Settling Speed
- TEC Setpoint Resolution: 0.01°C
- Temperature Range: -25°C to 150°C
- Factory Set Default Lower Temperature Limit: 5°C
- Factory Set Default Upper Temperature Limit: 35°C

# LDC-506 Laser Diode Controller Specifications

## QCW MODE AND MODULATION

- User Adjustable Pulse Width Range: 25 µs to CW
- Rear Panel Modulation Input: Digital or Analog
- QCW Trigger: Internal or External
- QCW Pulse Modes: Continuous, Single Pulses, Bursts
- Modulation Input: BNC, Digital (TTL) or Analog, 10kΩ Impedance
- ----------
- Modulation Input Voltage Range: 0 ~ 4 Volts (4V = Max Current)
- Analog Modulation Bandwidth: 1 Hz – 20 kHz

## AUXILIARY FUNCTIONS

- Temperature Sensor Input: 10kΩ NTC Thermistor
- External Fan Control Circuit, 1 - 24V, 500mA (max)
- Pilot Laser Anode, vs. Ground: (5V, 150 mA)
- Laser-On External LED Indicator: 5mA Output

## USER INTERFACE AND CONNECTORS

- Front Panel: Alphanumeric LCD
- USB Optional: $95.00 (Option SVC-USB)
- LabView Drivers Included
- Laser and Peltier Connector: SubD-15, Female
- Laser Connector: SubD-2W2, Female
- RS232 Connector: SubD-9, Female
- Safety Interlock: Jack Connector, Stereo 3.5mm

## DIMENSIONS AND POWER INPUT

- Power Input: Universal 100V ~ 240 VAC, 50/60 Hz
- Dimensions: 127 mm (H) x 200 mm (W) x 275 mm (L)

## RECOMMENDED ACCESSORIES

- kab-39 Unterminated Connecting Cable -or-
  kab-231 Terminated Connecting Cable
- kab-286 Unterminated Power Cable -or-
  kab-297 Terminated Power Cable
- acc-417 USB-RS232 Converter

## Product Sales and Service

Orders for this product are fulfilled by LaserDiodeControl.com, part of the Laser Lab Source group. It is manufactured for Laser Lab Source by OsTech, GmbH.

## Product Warranty

This product is sold with a full one-year warranty. It is warrantied to be free from defects in material and/or workmanship for a period of one year from the date of shipment.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