



## Laser Diode Controller - 12 A, 24 Volt Laser Output 216 Watt Thermoelectric Temperature Controller

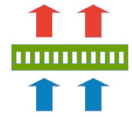


### 12 Amp, 24 Volt Laser Diode Driver 216 Watt TEC Controller

- o Laser Current to 12 A, Voltage up to 24 V
- o Bipolar Temperature Controller up to 216 W
- o Optimized for High Power Single-Emitter Laser Diodes from Coherent/DILAS, nLight, Lumentum, and II-VI
- o CW Mode and Integrated Quasi-CW Pulse Generator, External Modulation Source
- o Full Complement of Protection Features



**LASER  
DIODE  
CONTROLLERS**





## LDC-290 Controller for Single-Emitter Laser Diodes


The LDC-290 can drive full CW power up to 12 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-290 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 100μs to CW pulses from a remote TTL signal source.

### LDC-290 REAR PANEL CONNECTIONS


**Laser Connector**



SubD-2W2 female

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


**Laser & Peltier Connector**



SubD-15 female


PIN. No	Abbr.	Function
1,2	LDA+	Laser Diode Anode (+)
3	ILC.	
4	LLED	Laser Active LED (+), ca. 5mA, v.s. GND
5	PL+	Pilot Laser (+), v.s. GND
6	PDC-	Photo Diode Cathode (-), v.s. GND
7,8	PEL+	Peltier element (+)
9,10	LDC-	Laser Diode Cathode (-)
11	TI	Temp. Sensor 1 Input, default NTC10kΩ
12	GND	Common Ground
13	1-24V	1-24V Supply, max. 500mA, vs. GND, supports fan etc.
14,15	PEL-	Peltier element (-)

**RS232 Connector**




SubD-9 female  
Standard RS232-Connector  
1650-Baud-8N1  
(No Null-Modem Cable!)

**AMOD/DMOD-IN Connector**




BNC-Socketed  
Impedance: 10 kΩ 3pins  
Digital Modulation with TTL-Peget  
Analog Modulation 0-4[V] >> 0-1mA[A]

**MDD-OUT Connector**



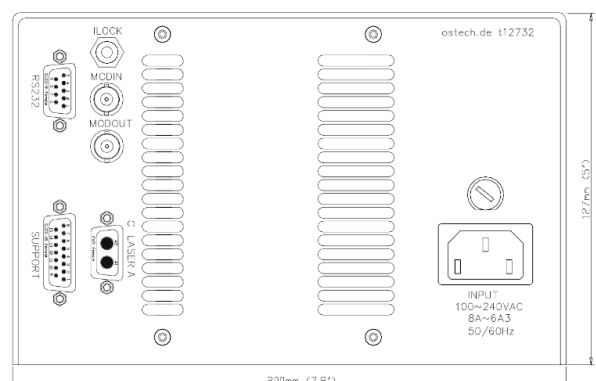
BNC-Socketed, current monitor  
0-1mA[A] >> 0-4[V]  
Take care for laser isolation if you  
connect GND potential to an  
oscilloscope i.e.

**Interlock Connector**



Jack Connector 3.5mm  
Laser turns only if closed  
(ca. 5mA over 2V -> R < 400R)

### LDC-290 REAR PANEL LAYOUT



ostech.de t12732

200mm (7.87")

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

127mm (5.0")

INPUT  
100~240VAC  
8A~6A3  
50/60Hz



## 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 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.

### Optimized for High Voltage Multi-Chip Laser Diodes

nLight Element



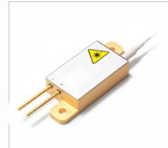
Lumics LuOcean



Lumentum ST Series



II-VI Multimode Pump



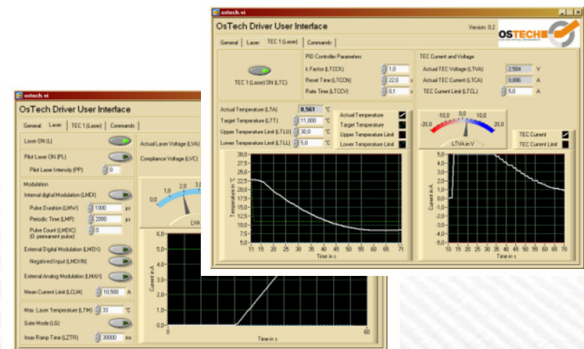
nLight Pearl



Coherent | Dilas Pump



### LABVIEW DRIVERS





## LDC-290 Single-Emitter Laser Diode Controller Specifications

### LASER DIODE CURRENT AND VOLTAGE OUTPUT

- Output Current Range: 0.00 - 12.00 Amps
- Compliance Voltage Range: 0.00 - 24.00 Volts
- Current Noise & Ripple (rms):  $< \pm 0.5\%$  of Full Scale Current
- Current Setpoint Resolution: 3 mA
- Current Setpoint Accuracy:  $\pm 0.5\%$
- Current Stability (4 hours):  $\leq 200$  ppm
- Current Limit Setpoint Accuracy:  $\pm 2\%$
- Photodiode Current Measurement Range: 0.00 - 700  $\mu$ A

### 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):  $\pm 12.00$  Amps
- TEC Output Voltage Range (bipolar) :  $\pm 18.00$  Volts
- Temperature Sensor Inputs: 10 k $\Omega$  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 $^{\circ}$ C
- Temperature Range: -25 $^{\circ}$ C to 150 $^{\circ}$ C
- Factory Set Default Lower Temperature Limit: 5 $^{\circ}$ C
- Factory Set Default Upper Temperature Limit: 35 $^{\circ}$ C



## LDC-290 Single-Emitter Laser Diode Controller Specifications

### QCW MODE AND MODULATION

- User Adjustable Pulse Width Range: 25  $\mu$ s 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, 10k $\Omega$  Impedance
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- Modulation Input Voltage Range: 0 ~ 4 Volts (4V = Max Current)
- Analog Modulation Bandwidth: 1 Hz – 20 kHz

### AUXILIARY FUNCTIONS

- Temperature Sensor Input: 10k $\Omega$  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 warranted 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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