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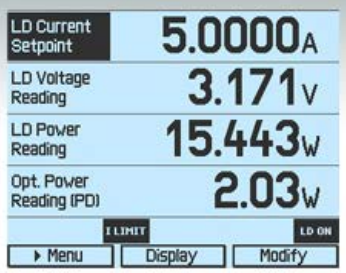
CAL-LDC4000 - June 9, 2021

Item # CAL-LDC4000 was discontinued on June 9, 2021. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

HIGH-POWER LASER DIODE CONTROLLERS

- Control Currents up to 5 A or 20 A
- Excellent Current Stability and Accuracy
- Continuous Wave or Quasi-Continuous Wave Operation
- USB Interface (SCPI)

LDC4020



Hide Overview

OVERVIEW

Laser Diode Controller Features

- Two Models for 5 A and 20 A Laser Currents
- Operate with Anode- or Cathode-Grounded Laser Diodes and Photodiodes
- Also Capable of Driving LEDs in CW
- Continuous Wave or Quasi-Continuous Wave Operation
- Internal Function Generator for Analog Modulation
- External Modulation Input
- Analog Monitor Output for the Laser Current
- Laser Diode Voltage Measurement
- Power Efficient by Active Power Management
- **Compatible Optical Detectors:**
  - Photodiodes
  - Thermopiles
  - Sensors with Amplifier
  - Power Meters
- **Control Modes:**
  - Constant Current (CC)
  - Constant Power (CP)
- **Enhanced Laser Diode Protection Features:**
  - Adjustable Laser Current Limit
  - Adjustable Laser Power Limit
  - Laser Over-Voltage Protection
  - Over Temperature Protection
- **Interface and Drivers:**
  - USB Interface (SCPI compliant)
  - VXIpnp/VISA Drivers for all Common Programming Environments like LabWindows/CVI™, LabVIEW™, and MS Visual Studio™

Item #	LDC4005	LDC4020
Laser Current Control Range	0 to 5 A	0 to 20 A
Compliance Voltage	12 V	11 V
Photocurrent Measurement Ranges	2 mA / 20 mA	
Power Monitor Voltage Measurement Ranges	10 mV / 100 mV / 1 V / 10 V	
QCW* Pulse Width Range	100 µs to 1 s	
QCW* Repetition Rate Range	1 ms to 5 s (0.2 to 1000 Hz)	
Internal Modulation Waveforms	Sine, Square, Triangle	
Internal Modulation Small Signal Bandwidth	20 Hz to 100 kHz	20 Hz to 50 kHz

*Quasi-Continuous Wave

The LDC4000 Series of Laser Diode Current Controllers provide precise and stable current for driving high-power laser diodes with injection currents up to 20 A. This series supports all laser diode and monitor diode pin configurations and features a constant current or constant power mode. The series is designed for stand-alone operation and is controlled via front panel keys and intuitive operation menus on a large and easy-to-read graphic LC display. See the *Display Screens* tab for some examples. Additionally, the LDC4000 Series can be fully remote controlled via an SCPI compatible USB Interface. A higher setting resolution and measurement resolution is offered via remote control.

Compared to the LDC200C Series, the LDC4000 Series offers higher injection currents as well as additional features like the Quasi-Continuous Wave (QCW) operation mode, an internal modulation generator, a thermopile input, laser voltage measurement, and an optical power limit. These features, together with the new design, which offers silent and efficient operation, make the LDC4000 Series Laser Diode Controllers an ideal choice for most applications.

For more information about the constant current and constant power modes, the photodiode and thermopile monitor inputs, the continuous wave (CW) or quasi-continuous wave (QCW) operation and the enhanced protection features for the laser diodes please see the *More Info* tab.

For driver software, as well as programming reference guides for Standard Commands for the Programmable Instruments (SCPI) standard, LabVIEW™, Visual C++, Visual C#, and Visual Basic, please see the *Software* tab.

Companion Products

The TED4015 TEC Controller is the ideal companion for the LDC4000 Series Controllers. When combined with our TEC laser mounts, the TED4015 can achieve a thermal stability of 0.001 °C. This temperature stability is required for applications like diode laser wavelength tuning and atomic absorption cell spectroscopy.

Laser Diode Accessory Selection Guide					
Temperature Controlled Mounts	Passive Mounts	Passive Mounts with Collimation Package	Strain Relief Cables	Diode Sockets	Other Controllers
					

Hide More Info

MORE INFO

Constant Current and Constant Power Modes

The laser diodes can be driven in either constant current (CC) or constant power (CP) mode. In CC mode, the laser current is held precisely at the level set by the user. The CC mode is ideal when the lowest noise and highest response speed is required. In CP mode, the monitoring optical sensor is used to actively stabilize the output power of the laser. A feedback circuit controls the output power of the laser. A power limit can be set to restrict the control loop to a maximum laser output power. To ensure best possible performance, laser diodes are driven with respect to ground, offering significant advantages regarding noise, transient suppression, and stability.

Photodiode and Thermopile Monitor Input

The LDC4000 Series allows the user to select photodiodes or thermopiles as the sensor for monitoring the laser diode power output. For each, a monitor input is provided. The photodiode input provides two ranges: 2 mA or 20 mA maximum current. An adjustable-bias voltage can be applied to the photodiode to improve the linearity. The thermopile input provides four ranges: 10 mV, 100 mV, 1 V, or 10 V maximum voltage. Instead of bare thermopile sensors, sensor amplifiers or power meters with analog voltage output can be connected here as well. Both monitor inputs can be calibrated by a sensor response parameter to directly display the optical power in milliwatts.

Continuous Wave (CW) or Quasi-Continuous Wave (QCW) Operation

The LDC4000 Series can be operated in continuous wave (CW) or quasi-CW (QCW) mode. The LDC4020 is at ease providing sharp and accurate 100 µs pulses of 20 A peak current without any unwanted overshoots. The integrated pulse generator can be triggered internally with an adjustable repetition rate or externally via a BNC jack at the rear of the unit.

100 µs Pulses of 20 A

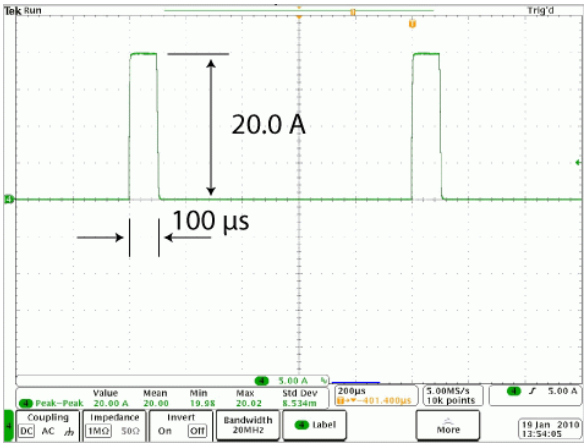


Figure: Oscilloscope screenshot of a typ. short 100 µs Pulse of 20.0 A generated by the LDC4020 in QCW mode

Enhanced Protection Features for the Laser Diode

For optimal LD protection, the LDC4000 Series offers a set of enhanced protection features. Independent of operation mode or compliance voltage, a precisely adjustable current limit ensures that the maximum allowed laser current cannot be exceeded. The LDC will return an error signal whenever this pre-set limit is reached by user settings or external modulation. The soft start feature ensures a slow increase of the laser current without voltage peaks after the device is switched on. Voltage peaks on the AC line are effectively suppressed by electrical filters and by careful grounding of the chassis. Even in the case of power line failure, the laser current remains transient-free. When the output is disabled, the laser is additionally protected by an electronic output short circuit. If the connection between current source and laser diode is interrupted, or the laser voltage exceeds the adjustable voltage protection threshold, the laser current is switched off.

Hide Specs

SPECS

Item #	LDC4005		LDC4020	
	Front Panel[a]	Remote Control[a]	Front Panel[a]	Remote Control[a]
Current Control (Constant Current Mode)				
Laser Diode Current Range	0 to 5 A		0 to 20 A	
Compliance Voltage	12 V		11 V	
Setting / Measurement Resolution	1 mA	80 µA	1 mA	320 µA
Accuracy	±(0.1% + 2 mA)		±(0.1% + 8 mA)	
Noise and Ripple (10 Hz to 10 MHz, rms, typ. without Noise Reduction Filter)	<250 µA		<10 mA	
Noise and Ripple (10 Hz to 10 MHz, rms, typ. with Noise Reduction Filter)	<50 µA		N/A	
Drift, 24 hours (0-10 Hz, Typical at Constant Ambient Temperature)	<300 µA		<1 mA	
Temperature Coefficient	≤50 ppm/°C			
Current Limit				
Setting Range	5 mA to 5 A		20 mA to 20 A	
Resolution	1 mA	80 µA	1 mA	320 µA
Accuracy	±(0.12% + 3 mA)		±(0.12% + 12 mA)	
Power Monitor Input - Photodiode				
Photocurrent Measurement Ranges	0 to 2 mA / 0 to 20 mA			
Photocurrent Measurement Resolution (2 mA Range / 20 mA Range)	1 µA / 10 µA	32 nA / 320 nA	1 µA / 10 µA	32 nA / 320 nA
Photocurrent Accuracy (2 mA Range / 20 mA Range)	±(0.08% +0.5 µA) / ±(0.08% +5 µA)			
Photodiode Reverse Bias Voltage	0 to 10 V			
Photodiode Input Impedance	~0 Ω (Virtual Ground)			
Power Monitor Input - Thermopile[b]				
Voltage Measurement Ranges	0 to 10 mV / 0 to 100 mV / 0 to 1 V / 0 to 10 V			
Voltage Measurement Resolution (for 10 mV / 100 mV / 1V / 10 V Range)	1 µV / 10 µV / 100 µV / 1 mV	0.16 µV / 1.6 µV / 16 µV / 160 µV	1 µV / 10 µV / 100 µV / 1 mV	0.16 µV / 1.6 µV / 16 µV / 160 µV
Voltage Measurement Accuracy (for 10 mV / 100 mV / 1V / 10 V Range)	±(0.1% + 10 µV) / ±(0.1% + 100 µV) / ±(0.1% + 1 mV) / ±(0.1% + 5 mV)			
Voltage Input Resistance	1 MΩ			
Laser Power Control (Constant Power Mode)				
Photocurrent Control Ranges[c]	0 to 2 mA / 0 to 20 mA			
Photocurrent Setting Resolution	1 µA / 10 µA	32 nA / 320 nA	1 µA / 10 µA	32 nA / 320 nA
Thermopile Voltage Control Ranges[c]	1 µV to 10 mV / 10 µV to 100 mV / 100 µV to 1V / 1 mV to 10 V			
Thermopile Voltage Setting Resolution[c]	1 µV / 10 µV / 100 µV / 1 mV	0.16 µV / 1.6 µV / 16 µV / 160 µV	1 µV / 10 µV / 100 µV / 1 mV	0.16 µV / 1.6 µV / 16 µV / 160 µV
Power Limit (Constant Power Mode)				
Photocurrent Limit Setting Ranges[c]	5 µA to 2 mA / 50 µA to 20 mA			
Photocurrent Limit Resolution	1 µA / 10 µA	128 nA / 1.28 µA	1 µA / 10 µA	128 nA / 1.28 µA
Photocurrent Limit Accuracy	±20 µA / ±200 µA			
Thermopile Voltage Limit Setting Ranges[c]	10 µV to 10 mV / 100 µV to 100 mV / 1 mV to 1V / 10 mV to 10V			
Thermopile Voltage Limit Resolution	1 µV / 10 µV / 100 µV / 1 mV	730 nV / 7.3 µV / 73 µV / 730 µV	1 µV / 10 µV / 100 µV / 1 mV	730 nV / 7.3 µV / 73 µV / 730 µV
Thermopile Voltage Limit Accuracy	±10 µV / ±100 µV / ±1 mV / ±10 mV			
Laser Voltage Measurement				
Measurement Principle	4-Wire			
Measurement Range	0 to 14 V			
Measurement Resolution	1 mV	160 µV	1 mV	160 µV
Accuracy	±20 mV			
Laser Overvoltage Protection				
Setting Range	1 V to 12 V		1 V to 11 V	
Resolution	1 mV			
Accuracy	±50 mV			
Laser Current Monitor Output				
Load Resistance	>10 kΩ			

Transmission Coefficient	2 V/A ±5%	500 mV/A ±5%
External Modulation Input		
Input Impedance	10 kΩ	
Small Signal 3 dB Bandwidth, CC Mode (without Noise Reduction Filter)	DC to 100 kHz (1 Ω Load)	DC to 50 kHz (0.2 Ω Load)
Small Signal 3 dB Bandwidth, CC Mode (with Noise Reduction Filter)	DC to 6 kHz (1 Ω Load)	N/A
Modulation Coefficient, CC Mode	500 mA/V ± 5%	2 A/V ± 5%
Modulation Coefficient, CP Mode, Current Sensor[c]	200 µA/V / 2 mA/V ±5%	
Modulation Coefficient, CP Mode, Voltage Sensor[c]	10 mV/V / 10 mV/V 100 mV/V / 1V/V ±5%	
Internal Modulation		
Waveforms	Sine, Square, Triangle	
Frequency Range	20 Hz to 100 kHz	20 Hz to 50 kHz
Modulation Depth>	0.1 to 100%	
QCW Mode		
Pulse Width Range	100 µs to 1 s	
Pulse Width Resolution	1 µs	
Repetition Rate Range	1 ms to 5 s (0.2 to 1000 Hz)	
Repetition Rate Resolution	10 µs	
Trigger		
Input	Rising Edge Triggered, Starts QCW Pulse with Internal Adjusted Width	
Input Level	TTL or 5 V CMOS	
Output	Active High, Tracks Pulse Width	
Output Level	TTL or 5 V CMOS	
Dead Time to Next Pulse	>10 µs	
Digital I/O Port		
Number of I/O Lines	4 (Separately Configurable)	
Input Level	TTL or CMOS, Voltage Tolerant up to 24 V	
Output Level (Source Operation)	TTL or 5 V CMOS, 2 mA MAX.	
Output Level (Sink Operation)	Open Collector, up to 24 V, 400 mA MAX.	
Interface		
USB2.0	According to USBTMC/USBTMC-USB488 Specification Rev. 1.0	
Protocol	SCPI Compliant Command Set	
Drivers	VISA VXIpnp™, MS Visual Studio™, MS Visual Studio.net™, NI LabView™, NI LabWindows/CVI™	
General Data		
Safety Features	Interlock, Inhibit, Keylock Switch, Laser Current Limit, Laser Power Limit, Soft Start, Short Circuit when Laser off, Adjustable Laser Overvoltage Protection, Over Temperature Protection Temperature Window Protection (only in combination with TED4015)	
Display	LCD 320 x 240 Pixel	
Connector for Laser, Photodiode, Interlock & Laser On Signal	13W3 Mixed D-Sub Jack (Female)	
Connectors for Control Input / Output	BNC	
Connector for Digital I/O	Mini DIN 6	
Connector for USB-Interface	USB Type B	
Chassis Ground Connector	4 mm Banana Jack	
Line Voltage / Frequency	100 to 120 V and 200 to 240 V ±10%, 50 to 60 Hz	
Maximum Power Consumption	200 VA	600 VA
Mains Supply Overvoltage	Category II (Cat II)	
Operating Temperature	0 to 40°C	
Storage Temperature	-40 to 70°C	
Relative Humidity	Max. 80% Up to 31 °C, Decreasing to 50% at 40 °C	
Pollution Degree (Indoor Use Only)	2	
Operation Altitude	<2000 m	
Warm-up Time for Rated Accuracy	20 min	
Weight	5.5 kg	
Dimensions without Operating Elements (W x H x D)	263 mm x 122 mm x 307 mm (10.4" x 4.8" x 12.1")	
Dimensions with Operating Elements (W x H x D)	263 mm x 122 mm x 345 mm (10.4" x 4.8" x 13.6")	

a. Via front panel the resolution is limited by the display. Via Remote Control a higher resolution is offered.
b. The Thermopile Power Monitor Input can also be used for sensor amplifiers and power meters with voltage output.
c. Depending on the selected measurement range.

All technical data valid at 23 ± 5°C and 45 ±15% relative humidity. Subject to change without notice.

Hide Front & Back Panel

FRONT & BACK PANEL

LDC Front Panel

Click to Enlarge

Callout	Connection	Callout	Connection
1	Key Switch	5	Escape Key
2	Supply Power Switch	6	LD Status Indicator
3	LC Display	7	Adjustment Knob
4	Softkeys for Menu Navigation		

LDC Back Panel

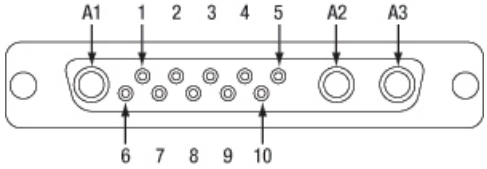
Click to Enlarge

Callout	Connection	Callout	Connection
1	TTL Input "Laser Enable In" 5 V Max	8	Cooling Fan
2	TTL Input "QCW Pulse In" 5 V Max	9	LD Output and Optical Sensor Input "Laser Output"
3	TTL Output "Trigger Out" 0 - 5 V	10	Power Connector and Fuse Holder "Line In"
4	Optical Sensor Input "Opt Sensor In" 0 - 10 V Max		
5	Modulation Input "Modulation In" -10 to 10 V	11	USB Connector
6	Laser Current Monitor "Analog CTL Out" 0 - 10 V	12	4 mm Banana Jack for Chassis Ground
7	Serial Number of the Unit	13	MiniDin-6 Jack "Digital I/O"

Hide Pin Diagrams

PIN DIAGRAMS

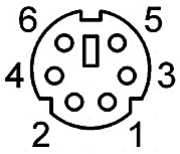
13W3 Mixed D-Sub Jack Pin Configuration



Pin	Connection	Pin	Connection
1	(Thermo) Voltage Sensor Input (+)	7	Photo Current Sensor Input (+)
2	(Thermo) Voltage Sensor Ground (-)	8	Photo Current Sensor Ground (-)
3	Not Connected	9	Not Connected
4	Laser Diode Anode (+)	10	Laser Diode Cathode (-)
5	Output for Interlock and Status Indicator “LASER ON/OFF” (+)	A1	Laser Diode Ground
6	Ground Pin for Interlock and Status Indicator “LASER ON/OFF” (-)	A2	Laser Diode Cathode (with Polarity AG) (-)
		A3	Laser Diode Anode (with Polarity CG) (+)

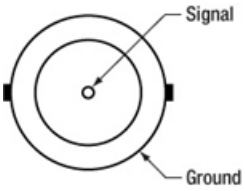
Digital I/O Ports

Pin	Connection
1	I/O 1
2	I/O 2



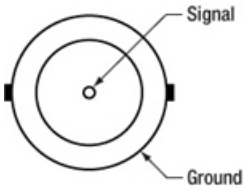
3	I/O 3
4	I/O 4
5	GND
6	I/O Supply Voltage (+12 V from internal or higher external voltage up to +24 V)

LD Enable In
BNC Female



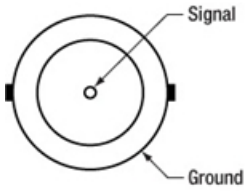
Laser Enable Input (High to Enable Laser ON), TTL 5 V Max

QCW Pulse In
BNC Female



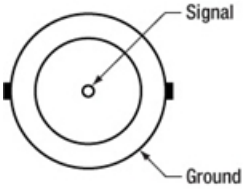
Input for External Trigger Signal, TTL 5 V Max

Trigger Out
BNC Female



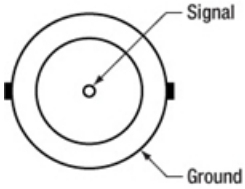
QCW Pulse Tracking Output, TTL 5 V

OPT Sensor In
BNC Female



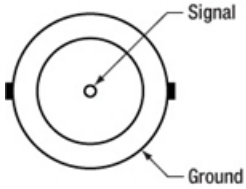
Input for Optical Sensor, 0 to +10 V Max

Modulation In
BNC Female



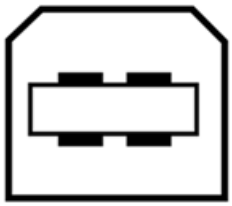
Input for External Modulation Signal, -10 to +10 V Max

Analog CTL Out
BNC Female



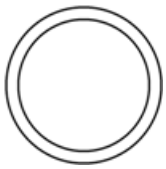
Output for Laser Current Monitoring, 0 to +10 V

Computer Connection
USB Type B



USB Type B to Type A Cable Included

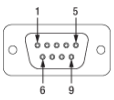
Ground



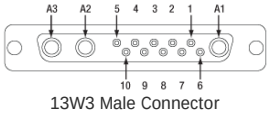
4 mm Banana Jack for Chassis Ground

CAB4005 and CAB4006 Laser Diode Cables

These cables contains a DB-9 male connector on one side and a 13W3 male connector on the other side. Both views shown below are looking into the connector.



DB-9 Male Connector



13W3 Male Connector

Pin Matching	DB-9 Connector Colors	13W3 Connector Colors

DB-9 Pin	13W3 Pin
1	5
2	8
3	A1
4	7
5	6
6	10
7	A2
8	A3
9	4
Shield	Shield

Pin	Color
1	White
2	Gray and Pink
3	Gray / Black (2 Wires)
4	Red and Blue
5	Brown
6	Blue
7	Yellow / Purple (2 Wires)
8	Green / Pink (2 Wires)
9	Red

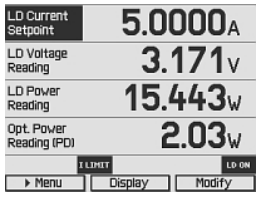
Pin	Color	Pin	Color
1	No Connection	9	No Connection
2	No Connection	10	Blue
3	No Connection	A1	Gray / Black (2 Wires)
4	Red		
5	White	A2	Yellow / Purple (2 Wires)
6	Brown		
7	Red and Blue	A3	Green / Pink (2 Wires)
8	Green and Pink		

Hide Display Screens

DISPLAY SCREENS

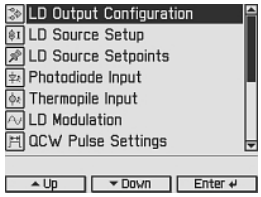
Sample Screens of the LDC4000 Series

Measurement Screen



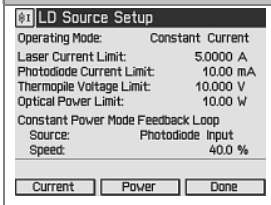
The measurement screen offers an easy readout of measurement values and device status information. It also allows to adjust the major instrument setpoints. You can freely select two, four, or six values to be displayed with optimized character size.

Menu Screen



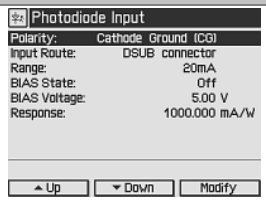
The menu screen allows selecting various operation modes and options.

Laser Diode Setup Screen



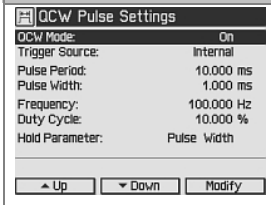
The laser diode setup screen allows to enter essential laser control parameters: constant current or constant power mode, limits for laser current and laser power, speed and source of the constant power feedback loop.

Photodiode Input Screen



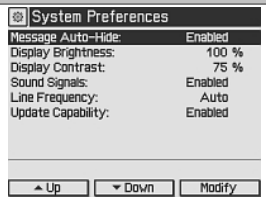
Via the photodiode input screen, all parameters concerning the photodiode sensor are entered.

QCW Settings Screen



This is the input screen for the Quasi-Continous Wave (QCW) pulse mode settings, e.g. trigger source and pulse parameters.

Preferences Screen



The preferences screen offers access to the device preferences, e.g. display and signal settings.

Hide Software

SOFTWARE

Software for Laser Diode Controllers

The download button below links to VISA VXI pnp™, MS Visual Studio™, MS Visual Studio.net™, LabVIEW™, and LabWindows/CVI™ drivers, firmware, utilities, and support documentation for Thorlabs' ITC4000 Series laser controllers, LDC4000 Series laser controllers, CLD1000 Series compact laser diode controllers, and TED4000 Series TEC controllers.

The software download page also offers programming reference notes for interfacing with compatible controllers using SCPI, LabVIEW, Visual C++, Visual C#, and Visual Basic. Please see the *Programming Reference* tab on the software download page for more information and download links.

Driver Software

Version 3.1.0 (April 11, 2014)

Programming Reference

Version 3.3 (April 8, 2015) - SCPI Commands
Version 1.0 (June 16, 2015) - LabVIEW, Visual C++, Visual C#, Visual Basic

Software

The software packages support LabVIEW 8.5 and higher. If you are using an earlier version of LabVIEW, please contact Technical Support for assistance.

Hide Shipping List

SHIPPING LIST

LDC4000 Series Shipping List

Item #	LDC4005	LDC4020
Benchtop Laser Diode Controller, 5 A / 10 V	x	
Benchtop Laser Diode Controller, 20 A / 10 V		x
Cable LDC4000/ITC4000 to Laser Mount, 5 A, 13W3, D-Sub-9 (CAB4005)	x	
Cable LDC4000/ITC4000 to Laser Mount, 20 A, 13W3, 13W3 (CAB4006)		x
Mixed D-Sub Connector, 13W3, Male & Female with 3 High-Current Contacts Each, 20 A (CON4005)	x	x
USB Cable A-B, 2 m	x	x
Instrumentation CD Series 4000	x	x
Printed Operation Manual LDC4000 Series	x	x
Certificate of Calibration	x	x

Hide Selection Guide

SELECTION GUIDE

Laser Diode Controller Selection Guide

The tables below are designed to give a quick overview of the key specifications for our laser diode controllers and dual diode/temperature controllers. For more details and specifications, or to order a specific item, click on the appropriate item number below.

Current Controllers						
Item #	**Drive Current**	**Compliance Voltage**	**Constant Current**	**Constant Power**	**Modulation**	**Package**
LDC200CV	20 mA	6 V	✓	✓	External	Benchtop
VLDC002	25 mA	5 V	✓	-	Int/Ext	OEM
LDC201CU	100 mA	5 V	✓	✓	External	Benchtop
LD2000R	100 mA	3.5 V	-	✓	External	OEM
EK2000	100 mA	3.5 V	-	✓	External	OEM
LDC202C	200 mA	10 V	✓	✓	External	Benchtop
KLD101	230 mA	≤10 V	✓	✓	External	K-Cube™
IP250-BV	250 mA	8 V[a]	✓	✓	External	OEM
LD1100	250 mA	6.5 V[a]	-	✓	--	OEM
LD1101	250 mA	6.5 V[a]	-	✓	--	OEM
EK1101	250 mA	6.5 V[a]	-	✓	--	OEM
EK1102	250 mA	6.5 V[a]	-	✓	--	OEM
LD1255R	250 mA	3.3 V	✓	-	External	OEM
LDC205C	500 mA	10 V	✓	✓	External	Benchtop
IP500	500 mA	3 V	✓	✓	External	OEM
LDC210C	1 A	10 V	✓	✓	External	Benchtop
LDC220C	2 A	4 V	✓	✓	External	Benchtop
LD3000R	2.5 A	--	✓	-	External	OEM
LDC240C	4 A	5 V	✓	✓	External	Benchtop
LDC4005	5 A	12 V	✓	✓	Int/Ext	Benchtop
LDC4020	20 A	11 V	✓	✓	Int/Ext	Benchtop

a. When using a 12 V power supply.

Dual Temperature and Current Controllers							
Item #	**Drive Current**	**Compliance Voltage**	**TEC Power (Max)**	**Constant Current**	**Constant Power**	**Modulation**	**Package**
VITC002	25 mA	5 V	>2 W	✓	-	Int/Ext	OEM
ITC102	200 mA	>4 V	12 W	✓	✓	Ext	OEM
ITC110	1 A	>4 V	12 W	✓	✓	Ext	OEM

ITC4001	1 A	11 V	>96 W	✓	✓	Int/Ext	Benchtop
CLD1010LP[a]	1.0 A	>8 V	>14.1 W	✓	✓	Ext	Benchtop
CLD1011LP[b]	1.0 A	>8 V	>14.1 W	✓	✓	Ext	Benchtop
CLD1015[c]	1.5 A	>4 V	>14.1 W	✓	✓	Ext	Benchtop
ITC4002QCL[d]	2 A	17 V	>225 W	✓	✓	Int/Ext	Benchtop
ITC133	3 A	>4 V	18 W	✓	✓	Ext	OEM
ITC4005	5 A	12 V	>225 W	✓	✓	Int/Ext	Benchtop
ITC4005QCL[d]	5 A	20 V	>225 W	✓	✓	Int/Ext	Benchtop
ITC4020	20 A	11 V	>225 W	✓	✓	Int/Ext	Benchtop

a. Combined controller and mount for pigtailed laser diodes in TO can packages with A, D, E, or G pin codes only.
b. Combined controller and mount for pigtailed laser diodes in TO can packages with B, C, or H pin codes only.
c. Combined controller and mount for laser diodes in butterfly packages only.
d. Enhanced compliance voltage for QCL operation.

We also offer a variety of OEM and rack-mounted laser diode current & temperature controllers (OEM Modules, PRO8 Current Control Rack Modules, and PRO8 Current and Temperature Control Rack Modules).

Hide LDC4000 Series Benchtop Controllers

LDC4000 Series Benchtop Controllers

Part Number	Description	Price	Availability
LDC4005	**Benchtop Laser Diode Controller, 5 A / 12 V**	**$3,154.38**	**Today**
LDC4020	**Benchtop Laser Diode Controller, 20 A / 11 V**	**$3,728.98**	**Today**

Hide Laser Diode Connector Cables

Laser Diode Connector Cables

Item #	CAB4005	CAB4006	CON4005
Click Image to Enlarge			
Description	Standard Laser Diode Cable	High Current Laser Diode Cable	13W3 Male and Female Connector Kit (One Each)
Max Current	5 A	20 A	20 A
Connector Type	13W3 Male to DB-9 Male	13W3 Male to 13W3 Male	Loose 13W3 Connectors, Male and Female

These cables connect our LDC4000 series current controllers or our ITC4000 series dual current / temperature controllers to laser diodes. We also provide loose 13W3 connectors for customers who wish to make their own cables. For the pinout of the CAB4005 and CAB4006 cables, please see the *Pin Diagrams* tab.

Please note that one CAB4005 cable and one CON4005 connector kit are included with the purchase of an LDC4005 benchtop controller. The LDC4020 is shipped with the CAB4006 cable and CON4005 connector kit.

Part Number	Description	Price	Availability
CAB4005	**Connection Cable for LDC4000/ITC4000, 13W3 to D-Sub-9, 5 A**	**$139.60**	**Today**
CAB4006	**Connection Cable for LDC4000/ITC4000, 13W3 to 13W3, 20 A**	**$142.84**	**Today**
CON4005	**Connector Kit, 13W3 Male & Female, 20 A**	**$16.02**	**5-8 Days**

Hide LDC4000 Series Calibration Service

LDC4000 Series Calibration Service

Thorlabs offers Calibration Services for the LDC4000 Laser Diode Benchtop Controller Series.
To ensure accurate measurements, we recommend recalibrating the devices every second year.

Please Note:
To ensure your item being returned for

calibration is routed appropriately once it arrives at our facility, please do not ship it prior to being provided an RMA Number and return instructions by a member of our team.

Part Number	Description	Price	Availability
CAL-LDC4000	Recalibration Service for LDC4000	$243.48	Lead Time