

Product Features

16 independent, isolated channels for laser and TEC control

Up to 6A laser control per channel for higher power laser diodes with 48W of TEC control

Compatible with all ILX LDC-3916 modules

Low noise, high stability constant current and constant power laser operation with all modules

4-wire laser voltage measurement with all modules

High stability temperature control

TE voltage measurement

GPB / IEEE488 and RS-232 serial interface

The LDC-3926 16-Channel Laser Diode Controller offers 16 channels of high power laser diode current source and temperature control in a space saving, rack mountable instrument. ILX Lightwave designed the LDC-3926 to meet the increasing pump laser control demands of high power optical amplifiers. With up to 6A available per channel, the LDC-3926 offers the only 16-channel modular instrument for development and production testing of high power optical amplifiers and pump lasers. Two high current output modules were specifically developed for the LDC-3926. A 24W, 6A laser current control module offers 4-wire forward voltage measurement, independent modulation, and enhanced laser diode protection with adjustable forward voltage. A 48W, 6A TEC control module offers precise temperature control with high stability and TE voltage measurement. For even more flexibility, the LDC-3926 accepts all ILX LDC-3916 control modules. For automated control of all sixteen channels, the LDC-3926 Laser Diode Controller comes with a GPB/IEEE488 compliant remote control interface and an RS-232 serial interface.

LDC 3926

16-Channel High Power Laser Diode Controller



16 Channels of High Power Laser Diode Control

ILX Lightwave
A Newport Corporation Brand

LDC 3926

16-Channel High Power Laser Diode Controller

The LDC-3926 16-Channel High Power Laser Diode Controller was developed specifically for controlling the current and temperature of multiple high power laser diode pumps used in optical amplifier tests, simplifying system setup and control. Up to sixteen laser diodes can be precisely controlled with one mainframe including temperature control using high stability current source modules or temperature control modules.

The modules slide easily into the back of the instrument with standard connectors for laser and TE control connections. All sixteen lasers can be controlled from the front panel or through the GPIB/IEEE488 bus or RS-232 interface.

FRONT PANEL INTERFACE PROVIDES SIMPLE OPERATION

The bright vacuum fluorescent display is readable from almost any angle. Status screens show four channels at once and scroll both directions to easily view any channel. You can monitor operations, change setpoints, and turn any output on or off from the status menu. Plus, you can define any two parameters displayed on the status screen for each channel.

For initial or detailed setup, simple and intuitive menus supported by screen-specific soft keys quickly configure and operate each channel. Menu depths have been limited to keep the front panel operation concise, while more sophisticated operations are reserved for the GPIB interface. An "All Channel" menu facilitates initial setup, and ten storage bins allow you to save and recall all instrument settings. Setpoints and other values can be entered through a numeric keypad, up/down arrow keys, or the rotary adjustment knob.

POWERFUL GPIB INTERFACE

A powerful master processor platform drives the LDC-3926 controller, communicating with all sixteen microprocessor-controlled modules. When coupled with the HS488TNT chipset GPIB technology from National Instruments®, the LDC-3926 provides all of the necessary processing capabilities for automated production testing. With microprocessors on each module, the mainframe master manages sixteen independent control channels quickly and reliably. Free LabVIEW® instrument drivers are available upon request or online at www.newport.com/ilxlightwave.

HIGH PERFORMANCE MODULES

Two high power modules are available specifically for the LDC-3926. The LDC-3926339 module provides up to 6A of laser current control per channel, and the LDC-3926559 provides up to 48W with 6A for TEC temperature control. High compliance voltage assures performance over long cable runs. These modules have the highest power available for high density controllers.

In addition to these high-power modules, all of the standard ILX LDC-3916 modules are compatible with the LDC-3926 High Power Laser Diode Controller. These modules include controller modules consisting of both 1.5A of laser current and 9W of TEC control, dual laser current control modules with two isolated outputs with 1.5 or 3A and dual TEC control modules with 9W or 24W.

SUPPORT FUTURE SYSTEM EXPANSION

Designed to provide the most efficient and safest control available for multiple laser diodes, each module's control functions are managed locally and communicated to the master processor. On-board intelligence simplifies future addition of modules since all operational and calibration data is stored in the module. Simply plug in the new module and power up the system. The mainframe never needs to leave the rack.

STATE-OF-THE-ART LASER DIODE CURRENT SOURCE

The LDC-3926 current source topology uses an innovative, proprietary control loop and incorporates the latest techniques for signal filtering and circuit board shielding. Adjustable voltage limit and faster shutoff help prevent dangerous reconnect transients that can occur from intermittent connections between controller and laser diode. Investment in this instrument provides assurance for safe, worry-free testing and control of higher power laser diodes.

HIGHER POWER LASER DIODES

Operational modes including constant current in low or high bandwidth or constant optical power are selectable from the front panel or via the remote interface. Measurement of the laser diode forward voltage is provided with 4-wire accuracy for protection environments where longer cable runs are common. A single, rear panel modulation port provides direct modulation of each channel's laser current and supports

LDC 3926

16-Channel High Power Laser Diode Controller

external modulation bandwidths of up to 1MHz (lower current modules). Individual channel modulation ports are available upon request.

HIGH STABILITY TEC CONTROL

Achieve up to $\pm 0.007^{\circ}\text{C}$ temperature stability with the low noise temperature controller modules. The temperature control circuits optimize temperature settling times with a smart integrator control loop with expanded gain setting ranges. All TEC control modules for the LDC-3926 include voltage measurement capabilities and internal thermistor current selection via front panel or remotely for control over a wide temperature range.

FLEXIBLE CONTROL OVER A WIDE RANGE OF APPLICATIONS

By combining true modularity and high channel density, the LDC-3926 easily adapts to a wide variety of applications. This system can be used for controlling multiple pump lasers in amplifier test or low channel count burn-in applications. When coupled with ILX's LDM-4616 16-channel laser diode mount, the LDC-3926 can provide a cost effective DWDM optical source test set. For picometer tuning of wavelengths, select the LDC-3916371 module with 0.01°C temperature setpoint resolution.

PROTECT YOUR INVESTMENT WITH THE LEADERS IN LASER DIODE PROTECTION

The LDC-3926 provides all of ILX Lightwave's proven laser protection features like independent current limits, slow start turn-on circuits, and isolated power supplies. The adjustable laser voltage limit brings even greater levels of protection. If a temperature limit is reached, the TEC temperature control modules can be programmed to turn off any or all lasers in a mainframe.

Designed for protection test, the LDC-3926 will satisfy higher power multiple laser diode operation with reliable and secure control.

PUT OUR EXPERTISE TO WORK

ILX Lightwave is a recognized world leader in Laser Diode Instrumentation and Test Systems. Our products are not only renowned for their reliability, quality, and value; they're backed by industry leading after sales support.

Specifications

GENERAL

Chassis Ground:	4 mm Banana jack
GPIB Connector:	24-pin IEEE-488
RS-232 Connector:	9-pin D-sub
Power Requirements: ¹	100VAC $\pm 10\%$, 15A 120VAC $\pm 10\%$, 12A 200-240VAC $\pm 10\%$, 6A
Size (HxWxD):	133 mm x 482 mm x 653 mm 5.25" x 18.98" x 25.7"
Weight (typical)	
Mainframe only:	20 kg; 44 lbs.
With modules:	27 kg; 59 lbs.
Operating Temperature:	0°C to 40°C
Storage Temperature:	-40°C to $+70^{\circ}\text{C}$
Humidity: ²	20-85%, non-condensing
Laser Safety Features:	Keypad, Interlock, Output Delay Meets 21CFR1040.10)
Display:	Vacuum fluorescent, 64 x 128 pixels 83 mm x 41 mm

NOTES

1. All channels driving 6A.
2. Based on the vacuum fluorescent display specification.

ORDERING INFORMATION

LDC-3916	16-Channel Laser Diode Controller Mainframe
LDC-3916371	Fine Temperature Resolution 500mA/9W Controller Module
LDC-3916372	500mA/9W Controller Module
LDC-3916374	1A/9W Controller Module
LDC-3916376	1.5A/9W Controller Module
LDC-3916332	500mA/500mA Dual Current Source Module
LDC-3916334	1A/1A Dual Current Source Module
LDC-3916338	3A Current Source Module
LDC-3916550	9W/9W Dual Temperature (TEC) Controller Module
LDC-3915558	3A (24W) Temperature (TEC) Controller Module
LDC-3926339	6A Current Source Module
LDC-3926559	48W/6A Temperature (TEC) Controller Module
LDM-4616	16-Channel Laser Diode Mount
UCA-350	Unipolar Heater Control Adapter

LabVIEW® Instrument Driver; LabVIEW® is a registered trademark of National Instruments.

This product has passed all CE requirements and bears the CE mark.

In keeping with our commitment to continuous improvement, ILX Lightwave reserves the right to change specifications without notice and without liability for such changes.

LDC 3926

16-Channel High Power Laser Diode Controller

Specifications

HIGH POWER CURRENT SOURCE MODULES

CURRENT SOURCE¹ 3926339 SINGLE 6A

LASER CURRENT OUTPUT

Output Current Range:	0-6000mA
Setpoint Resolution:	130 μ A
Setpoint Accuracy:	\pm 0.1% of FS
Compliance Voltage:	7V (adjustable voltage limit)
Temperature Coefficient:	\leq 75ppm/ $^{\circ}$ C
Short Term Stability (1 hr.): ²	\leq 50ppm
Long Term Stability (24 hrs.): ³	\leq 75ppm
Noise and Ripple ⁴	
High Bandwidth:	<48 μ A rms
Low Bandwidth:	<32 μ A rms
Transients	
Operational: ⁵	<5mA
1kV EFT: ⁶	<7mA
Surge:	<12mA

LASER DRIVE LIMIT SETTINGS

Current Limit Range:	0-6025mA
Current Limit Resolution:	2.05mA
Current Limit Accuracy:	\pm 18mA
Voltage Limit Range:	0-7.5V
Voltage Limit Resolution:	10V
Voltage Limit Accuracy:	\pm 200V

PHOTODIODE FEEDBACK

Type:	Differential 10 Ω input, Selectable Zero Bias, or 5V Reverse Bias
Photodiode Current Range:	0-5000 μ A
Output Stability: ⁷	0.01%
Setpoint Accuracy:	\pm 0.1% of FS

EXTERNAL ANALOG MODULATION

Input: ⁸	0-8V, 50 Ω
Transfer Function:	750mA/V \pm 10%
High Bandwidth Mode	
Large Signal Bandwidth: ⁹	DC to 100kHz
Low Bandwidth Mode:	DC to 27kHz

LASER CURRENT MEASUREMENT (DISPLAY)

Output Current Range:	0-6000.0mA
Output Resolution:	0.01mA
Output Current Accuracy:	\pm 0.07% of FS (@ 25 $^{\circ}$ C)
Photodiode Current	
Range:	0-5000 μ A
Resolution:	0.1 μ A
Accuracy:	\pm 2 μ A (@ 25 $^{\circ}$ C)
Photodiode Responsivity	
Range: ¹⁰	0.00-1000.00 μ A/mW
Resolution:	0.01 μ A/mW
Optical Power Range:	0.0-5000.00mW
Optical Power Resolution:	100 μ W
Forward Voltage Range:	0.00-7.5V
Forward Voltage Resolution: ¹¹	10mV
Forward Voltage Accuracy: ^{12, 13}	\pm 7mW

TEMPERATURE CONTROL¹ 3926559 SINGLE 48W (6A)

TEMPERATURE CONTROL OUTPUT

Temperature Control Range: ²	-99 $^{\circ}$ C to 150 $^{\circ}$ C
Thermistor Setpoint Resolution:	0.1 $^{\circ}$ C (-20 $^{\circ}$ C to 20 $^{\circ}$ C)
Thermistor Setpoint Accuracy: ³	\pm 0.2 $^{\circ}$ C (-20 $^{\circ}$ C to 20 $^{\circ}$ C)
Thermistor Setpoint Resolution:	0.2 $^{\circ}$ C (20 $^{\circ}$ C to 50 $^{\circ}$ C)
Thermistor Setpoint Accuracy: ³	\pm 0.2 $^{\circ}$ C (20 $^{\circ}$ C to 50 $^{\circ}$ C)
Short Term Stability (1 hr.): ⁴	\pm 0.007 $^{\circ}$ C
Long Term Stability (24 hrs.): ⁵	\pm 0.01 $^{\circ}$ C
Output Type:	Bipolar current source
Compliance Voltage:	>8V DC
Maximum Output Current:	6.0A
Maximum Output Power:	48W
Current Noise and Ripple: ⁶	<2mA rms
Current Limit Range:	0.1-6.10A
Current Limit Accuracy:	\pm 0.06A
Control Algorithm:	Smart Integrator, Hybrid PI, Gain adjustable from 1-127

TEMPERATURE SENSOR

Types:	Thermistor (2-wire NTC)
Thermistor Sensing Current: ⁷	10 μ A/100 μ A
Usable Thermistor Range:	25 to 450,000 Ω , τ π χ α λ
User Calibration:	Steinhart-Hart, 3 constants

TEC MEASUREMENT (DISPLAY)

Temperature Range: ⁸	-99.9 $^{\circ}$ C to 199.9 $^{\circ}$ C
Temperature Accuracy: ³	\pm 0.5 $^{\circ}$ C
Thermistor Resistance	
Range (10 μ A setting):	0.01-450.00k Ω
Accuracy (10 μ A setting):	\pm 0.05k Ω ¹⁰
Range (100 μ A setting):	0.001-45.000k Ω
Accuracy (100 μ A setting):	\pm 0.005k Ω ¹⁰
TEC Current Range:	-6.00 to 6.00A
TEC Current Accuracy:	\pm 0.04A
Voltage Range:	-10.75 to 10.75V
Voltage Resolution: ¹¹	100mV
Voltage Accuracy: ¹²	\pm 70mW

In keeping with our commitment to continuous improvement, ILX Lightwave reserves the right to change specifications without notice and without liability for such changes.



31950 Frontage Road, Bozeman, MT 59715 • FAX: 406-586-9405

www.newport.com/ilxlightwave

For information call

1-800-459-9459

International Inquiries: 406-556-2481
email: sales@ilxlightwave.com



Rev04.060713

Specifications

CURRENT SOURCE MODULES

	3916332* DUAL 500mA	3916334* DUAL 1A	3916338 ¹ SINGLE 3A
LASER CURRENT OUTPUT			
Output Current Range:	0-500 mA	0-1000mA	0-3000mA
Setpoint Resolution:	10 μ A	20 μ A	80 μ A
Setpoint Accuracy:	\pm 0.1% of FS	\pm 0.1% of FS	\pm 0.15% of FS ¹⁴
Compliance Voltage:	6V (adjustable voltage limit)	6V (adjustable voltage limit)	4.5V (adjustable voltage limit)
Temperature Coefficient:	\leq 50ppm/ $^{\circ}$ C	\leq 50ppm/ $^{\circ}$ C	\leq 100ppm/ $^{\circ}$ C
Short Term Stability (1 hr.): ²	\leq 20ppm	\leq 20ppm	\leq 50ppm/ $^{\circ}$ C
Long Term Stability (24 hrs.): ³	\leq 50ppm	\leq 50ppm	\leq 75ppm/ $^{\circ}$ C
Noise and Ripple ⁴			
High Bandwidth:	<30 μ A rms	<24 μ A rms	<36 μ A rms
Low Bandwidth:	<24 μ A rms	<22 μ A rms	<24 μ A rms
Transients			
Operational: ⁵	<3mA	<3mA	<5mA
1kV EFT:	<4mA	<5mA	<10mA
Surge: ⁶	<8mA	<10mA	<8mA

LASER DRIVE LIMIT SETTINGS

Current Limit Range:	0-500 mA	0-1000 mA	0-3000mA
Current Limit Resolution:	0.2mA	0.4mA	1.025mA
Current Limit Accuracy:	\pm 0.7mA	\pm 1.4mA	\pm 8mA
Voltage Limit Range:	0-7.5V	0-7.5V	0-7.5V
Voltage Limit Resolution:	0.1V	0.1V	10mV
Voltage Limit Accuracy:	\pm 200mV	\pm 200mV	\pm 200mV

PHOTODIODE FEEDBACK

Type:	Differential 10 Ω input, Selectable Zero Bias, or 5V Reverse Bias		
Photodiode Current Range:	0-5000 μ A	0-5000 μ A	0-5000 μ A
Output Stability: ⁷	0.01%	0.01%	\pm 0.01%
Setpoint Accuracy:	\pm 0.1% of FS	\pm 0.1% of FS	\pm 0.1% of FS

EXTERNAL ANALOG MODULATION

Input: ⁸	0-10V, 50 Ω	0-10V, 50 Ω	0-8.0V, 50 Ω
Transfer Function:	50mA/V	100mA/V	375mA/V \pm 10%
High Bandwidth Mode			
Small Signal Bandwidth: ⁹	DC to 1.2MHz	DC to 1.0MHz	DC to 0.6MHz
Large Signal Bandwidth: ¹⁰	DC to 1.0MHz	DC to 1.0MHz	DC to 0.6MHz
Low Bandwidth Mode:	DC to 30kHz	DC to 30kHz	DC to 30kHz

LASER CURRENT MEASUREMENT (DISPLAY)

Output Current Range:	0-500.0mA	0-1000.0mA	0-3000.0mA
Output Resolution:	0.01mA	0.01mA	0.01mA
Output Current Accuracy:	\pm 0.05% of FS (@ 25 $^{\circ}$ C)	\pm 0.05% of FS (@ 25 $^{\circ}$ C)	\pm 0.07% of FS (@ 25 $^{\circ}$ C)
Photodiode Current			
Range:	0-5000 μ A	0-5000 μ A	0-5000 μ A
Resolution:	0.1 μ A	0.1 μ A	0.1 μ A
Accuracy:	\pm 2 μ A (@ 25 $^{\circ}$ C)	\pm 2 μ A (@ 25 $^{\circ}$ C)	\pm 2 μ A (@ 25 $^{\circ}$ C)
Photodiode Responsivity			
Range: ¹¹	0.00-1000.00 μ A/mW	0.00-1000.00 μ A/mW	0.00-1000.00 μ A/mW
Resolution:	0.01 μ A/mW	0.01 μ A/mW	0.01 μ A/mW
Optical Power Range:	0.0-5000.00mW	0.0-5000.00mW	0.0-5000.00mW
Optical Power Resolution:	100 μ W	100 μ W	100 μ W
Forward Voltage Range:	0.00-7.5V	0.0-7.5V	0.0-7.5V
Forward Voltage Resolution: ¹²	10mV	10mV	10mV
Forward Voltage Accuracy: ¹³	\pm 7mW	\pm 7mW	\pm 7mW

In keeping with our commitment to continuous improvement, ILX Lightwave reserves the right to change specifications without notice and without liability for such changes.

LDC 3926

16-Channel High Power Laser Diode Controller

LDC 3926

16-Channel High Power Laser Diode Controller

Specifications

LASER DIODE CONTROLLER MODULE

	3916371 / 372 500mA/9W	3916374 1A/9W	3916376 1.5A/9W
LASER CURRENT OUTPUT¹			
Output Current Range:	0-500 mA	0-1000 mA	0-1500 mA
Setpoint Resolution:	10 μ A	20 μ A	40 μ A
Setpoint Accuracy:	\pm 0.1% of FS	\pm 0.1% of FS	\pm 0.1% of FS
Compliance Voltage:	6V (adjustable voltage limit)	6V (adjustable voltage limit)	4.75V (adjustable voltage limit)
Temperature Coefficient:	\leq 50ppm/ $^{\circ}$ C	\leq 50ppm/ $^{\circ}$ C	\leq 50ppm/ $^{\circ}$ C
Short Term Stability (1 hr.): ²	\leq 20ppm	\leq 20ppm	\leq 20ppm
Long Term Stability (24 hrs.): ³	\leq 50ppm	\leq 50ppm	\leq 50ppm
Noise and Ripple ⁴			
High Bandwidth:	<30 μ A rms	<24 μ A rms	<24 μ A rms
Low Bandwidth:	<24 μ A rms	<22 μ A rms	<22 μ A rms
Transients			
Operational: ⁵	<3 mA	<3 mA	<3 mA
1kV EFT:	<4 mA	<5 mA	<5 mA
Surge: ⁶	<8 mA	<10 mA	<10 mA
LASER DRIVE LIMIT SETTINGS			
Current Limit Range:	0-500 mA	0-1000 mA	0 to 1500 mA
Current Limit Resolution:	0.2 mA	0.4 mA	0.6 mA
Current Limit Accuracy:	\pm 0.7 mA	\pm 1.4 mA	\pm 4.5 mA
Voltage Limit Range:	0-7.5V	0-7.5V	0-7.5V
Voltage Limit Resolution:	0.1V	0.1V	0.1V
Voltage Limit Accuracy:	\pm 0.2V	\pm 0.2V	\pm 0.2V
PHOTODIODE FEEDBACK			
Type:	Differential 10 Ω input, Selectable Zero Bias, or 5V Reverse Bias	Differential 10 Ω input, Selectable Zero Bias, or 5V Reverse Bias	Differential 10 Ω input, Selectable Zero Bias, or 5V Reverse Bias
Photodiode Current Range:	0-5000 μ A	0-5000 μ A	0-5000 μ A
Output Stability: ⁷	0.01%	0.01%	0.01%
Setpoint Accuracy:	\pm 0.1% of FS	\pm 0.1% of FS	\pm 0.1% of FS
EXTERNAL ANALOG MODULATION			
Input: ⁸	0-10V, 50 Ω	0-10V, 50 Ω	0-7.5V, 50 Ω
Transfer Function:	50 mA/V	100 mA/V	200 mA/V
High Bandwidth Mode			
Small Signal Bandwidth: ⁹	DC to 1.2MHz	DC to 1.0MHz	DC to 0.9MHz
Large Signal Bandwidth: ¹⁰	DC to 1.0MHz	DC to 1.0MHz	DC to 0.9MHz
Low Bandwidth Mode:	DC to 30kHz	DC to 30kHz	DC to 30kHz
LASER CURRENT MEASUREMENT (DISPLAY)			
Output Current Range:	0-500.0 mA	0-1000.0 mA	0-1500.0 mA
Output Resolution:	0.01 mA	0.01 mA	0.01 mA
Output Current Accuracy:	\pm 0.05% of FS (@ 25 $^{\circ}$ C)	\pm 0.05% of FS (@ 25 $^{\circ}$ C)	\pm 0.07% of FS (@ 25 $^{\circ}$ C)
Photodiode Current			
Range:	0-5000 μ A	0-5000 μ A	0-5000 μ A
Resolution:	0.1 μ A	0.1 μ A	0.1 μ A
Accuracy:	\pm 2 μ A (@ 25 $^{\circ}$ C)	\pm 2 μ A (@ 25 $^{\circ}$ C)	\pm 2 μ A (@ 25 $^{\circ}$ C)
Photodiode Responsivity			
Range: ¹¹	0.00-1000.00 μ A/mW	0.00-1000.00 μ A/mW	0.00-1000.00 μ A/mW
Resolution:	0.01 μ A/mW	0.01 μ A/mW	0.01 μ A/mW
Optical Power Range:	0.0-500.00mW	0.0-500.00mW	0.0-500.00mW
Optical Power Resolution:	100 μ W	100 μ W	100 μ W
Forward Voltage Range:	0.00-7.5V	0.00-7.5V	0.00-7.5V
Forward Voltage Resolution: ¹²	10mV (1mV through GPIB)	10mV (1mV through GPIB)	10mV (1mV through GPIB)
Forward Voltage Accuracy: ¹³	\pm 7mV (\pm 2mV through GPIB)	\pm 7mV (\pm 2mV through GPIB)	\pm 7mV (\pm 2mV through GPIB)

LDC 3926

16-Channel High Power Laser Diode Controller

3916372 500mA/9W
3916374 1A/9W
3916376 1.5A/9W

3916371 500mA/9W

TEMPERATURE CONTROL OUTPUT¹

	3916372 500mA/9W 3916374 1A/9W 3916376 1.5A/9W	3916371 500mA/9W
Temperature Control Range: ²	-99°C to 150°C	-5°C to 50°C
Temperature Setpoint		
Resolution (-20°C to 20°C):	0.1°C	0.01°C
Accuracy (-20°C to 20°C): ³	±0.2°C	±0.2°C
Resolution (20°C to 50°C):	0.2°C	0.01°C
Accuracy (20°C to 50°C): ³	±0.2°C	±0.2°C
Short Term Stability (1 hr.): ⁴	<±0.007°C	<±0.007°C
Long Term Stability (24 hrs.): ⁵	±0.01°C	±0.01°C
Output Type:	Bipolar current source	Bipolar current source
Compliance Voltage:	>7V DC	>7V DC
Maximum Output Current:	1.5A	1.5A
Maximum Output Power:	9W	9W
Current Noise and Ripple: ⁶	<1mA rms	<1mA rms
Current Limit Range:	0-1.5A	0-1.5A
Current Limit Accuracy:	±0.05A	±0.05A
Control Algorithm:	Smart Integrator, Hybrid PI, Gain adjustable from 1-127	Smart Integrator, Hybrid PI, Gain adjustable from 1-127

TEMPERATURE SENSOR

Types:	3916372 500mA/9W 3916374 1A/9W 3916376 1.5A/9W	3916371 500mA/9W
Thermistor Sensing Current: ⁷	10/100µA	100µA
Usable Thermistor Range:	25-450,000Ω, typical 2	3,500-45,000Ω, typical
User Calibration:	Steinhart-Hart, 3 constants	Steinhart-Hart, 3 constants

TEC MEASUREMENT (DISPLAY)

	3916372 500mA/9W 3916374 1A/9W 3916376 1.5A/9W	3916371 500mA/9W
Temperature Range: ⁸	-99.9°C to 199.9°C	-99.9°C to 199.9°C
Temperature Accuracy: ³	±0.5°C	±0.5°C
Thermistor Resistance		
Range (10µA setting):	0.01-450.00kΩ	35.0-45.00kΩ
Accuracy (10µA setting): ⁹	±0.05kΩ	±50Ω
Range (100µA setting):	0.001-45.000kΩ	3.5-45.00kΩ
Accuracy (100µA setting): ¹⁰	±0.005kΩ	±5kΩ
TEC Current Range:	-1.50 to 1.50A	-1.50 to 1.50A
TEC Current Accuracy:	±0.04A	±0.04A
TEC Current Resolution:	±0.01A	±0.01A
Voltage Range:	-9.999 to 9.999V	-9.999 to 9.999V
Voltage Resolution:	100mV (1mV in GPIB)	100mV (1mV in GPIB)
Voltage Accuracy: ¹¹	±70mW (±20mV in GPIB)	±70mW (±20mV in GPIB)

TEMPERATURE CONTROL MODULES

3916550 DUAL 9W

3916558 SINGLE 24W (3A)

TEMPERATURE CONTROL OUTPUT

	3916550 DUAL 9W	3916558 SINGLE 24W (3A)
Temperature Control Range: ²	-99.9°C to 150°C	-99.9°C to 150°C
Temperature Setpoint		
Resolution (-20°C to 20°C):	0.1°C	0.1°C
Accuracy (-20°C to 20°C):	±0.2°C	±0.2°C
Resolution (20°C to 50°C):	0.2°C	0.2°C
Accuracy (0°C to 50°C):	±0.2°C	±0.2°C
Short-Term Stability (1 hr.): ⁴	<±0.007°C	<±0.007°C
Long-Term Stability (24 hrs.): ⁵	<±0.01°C	<±0.01°C
Output Type:	Bipolar current source	Bipolar current source
Compliance Voltage:	>6V DC	>8V DC
Maximum Output Current:	1.5A	3A
Maximum Output Power:	9W	24W
Current Noise and Ripple: ⁶	<1mA rms ⁶	<2mA rms ¹²
Current Limit Range:	0.1-1.6A	0.1-3.10A
Current Limit Set Accuracy:	±0.05A	±0.05A
Control Algorithm:	Smart integrator, Hybrid PI Gain adjustable from 1-127	

LDC 3926

16-Channel High Power Laser Diode Controller

Specifications

TEMPERATURE CONTROL MODULES (CONTINUED)

	3916550 DUAL 9W	3916558 SINGLE 24W (3A)
TEMPERATURE SENSOR		
Types:	Thermistor (2-wire NTC)	Thermistor (2-wire NTC)
Thermistor Sensing Current: ⁷	10 μ A/100 μ A	10 μ A/100 μ A
Usable Thermistor Range:	25-450,000 Ω , typical	25-450,000 Ω , typical
User Calibration:	Steinhart-Hart, 3 constants	Steinhart-Hart, 3 constants
TEC MEASUREMENT (DISPLAY)		
Temperature Range: ⁸	-99.9°C to 199.9°C	-99.9°C to 199.9°C
Temperature Accuracy:	\pm 0.5°C	\pm 0.5°C
Thermistor Resistance		
Range (10 μ A setting):	0.01-450.00k Ω	0.01-450.00k Ω
Accuracy (10 μ A setting):	\pm 0.05k Ω ⁹	\pm 0.05k Ω ⁹
Range (100 μ A setting):	0.001-45.000k Ω	0.001-45.000k Ω
Accuracy (100 μ A setting):	\pm 0.005k Ω ⁹	\pm 0.005k Ω ⁹
TEC Current Range:	-1.50 to 1.50A	-3.00 to 3.00A
TEC Current Accuracy:	\pm 0.04A	\pm 0.04A
Voltage Range:	-9.999 to 9.999V	-10.75 to 10.75V
Voltage Resolution:	100mV (1mV in GPIB)	100mV (1mV in GPIB)
Voltage Accuracy: ¹¹	\pm 70mV (\pm 20mV in GPIB)	\pm 70mV (\pm 20mV in GPIB)

CURRENT SOURCE NOTES

* Two isolated laser sources in each module

1. All values after a one-hour warm-up period.
2. Over any on-hour period, half-scale output.
3. Over any 24-hour period, half-scale output.
4. Measured optically, evaluating noise intensity of a 1480nm laser diode into a photodetector with 160kHz bandwidth.
5. Maximum output current transient resulting from normal operational situations (e.g. power on/off, current on/off), as well as accidental situations (e.g. power line plug removal).
6. Maximum output current transient resulting from a 1000V power line transient spike. Tested to ILX Lightwave Technical Standard #LDC-00196. Request ILX Application Note #3 "Protecting Your Laser Diode".
7. Maximum monitor photodiode current drift over any 30-minute period. Assumes zero drift in responsivity of photodiode.
8. Modulation input is 50 Ω terminated inside the mainframe.
9. 250mA setpoint, 50mA modulation current, 1 Ω load.
10. 50% modulation at mid-scale output, 1 Ω load, high bandwidth mode.
11. Responsivity value is user-defined and is used to calculate the optical power.
12. 1mV through GPIB.
13. Four-wire voltage measurement while driving calibration load. Specifications are valid for values above 10mV. Accuracy is \pm 2mV through GPIB.
14. Accuracy is 0.15% above 2.5A after a one-hour warm-up period.

TEMPERATURE CONTROL NOTES

1. All values after a one-hour warm-up period.
2. Software limits of range. Actual range possible depends on the physical load, thermistor type, and TEC module.
3. Accuracy figures are quoted for a typical 10k Ω thermistor and 100 μ A current setting for -5°C to 50°C and typical 10k Ω thermistor and 10 μ A current setting for -20°C to -5°C. Accuracy figures are relative to the calibration standard. Both resolution and accuracy are dependent upon the user-defined configuration of the instrument.
4. Over any one-hour period, half-scale output, controlling an LDM-4412 mount at 25°C with 10k Ω thermistor on a 100 μ A setting.
5. Over any 24-hour period, half-scale output, controlling an LDM-4412 mount at 25°C with 10k Ω thermistor on a 100 μ A setting.
6. Measured at 1A output over a bandwidth of 10Hz to 10MHz. 3916558 module noise measured at 2A output over a bandwidth of DC to 25MHz.
7. Thermistor current range software selectable by front panel or GPIB.
8. Software limits of display range.
9. Using a 10k Ω thermistor, controlling an LDM-4412 mount over -30°C to 65°C (~200-2k Ω) or a 100k Ω thermistor controlling an LDM-4412 mount over 10°C - 85°C (~200-10k Ω). For the LDC-3916371 using a 100k Ω thermistor over -5°C to 50°C.
10. Using a 10k Ω thermistor, controlling an LDM-4412 mount over -5°C to 90°C (45-1k Ω).
11. 1mV through GPIB.
12. Voltage measurement accuracy while driving calibration load. Accuracy is dependent upon load used. Accuracy of \pm 20mV through GPIB.



31950 Frontage Road, Bozeman, MT 59715 • FAX: 406-586-9405

www.newport.com/ilxlightwave

For information call

1-800-459-9459

International Inquiries: 406-556-2481
email: sales@ilxlightwave.com



Rev04.060613