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If you wish to buy an ILX Laser Controller or control module or would consider another brand, visit our catalog [here](#) to see our current stock with actual photos.

ILX LDC-3916370 series laser controller modules. Trust the Simbol Test Systems expertise

With more than 20 years of expertise in repair of OSA, Tunable Lasers, Wavemeters, **Laser drivers and controllers**, and many more, the quality of our services is renowned amongst the service centers community and highly appreciated by our partners and customers. We developed custom software allowing fast testing of Laser controllers racks and modules. Each module is tested with a butterfly laser attached to it to ensure all its control functions are per specifications. Each shelf is tested with a full load of modules. That is the only way to know if a shelf can be used at 100%. Don't settle for a two-page summary assessment to trust that your Laser Diode Controller shelf or any Laser Control module is operating properly; our report contains the complete table of all results, confirming it has **really** been tested. A report from other labs with less data reflects a not completely calibrated unit. So be careful of other sellers saying their equipment is "tested good", "powered on, self-tested", "pulled from a working environment". When you choose AssetRelay, you can be confident that we actually test everything we sell so you know it will work when it gets to your workplace.

Simbol Test Systems ILX Laser and Temperature Controller LDC-39xx modules testing

The ILX LDC-3916370 series controller modules sold by AssetRelay or Serviced by Simbol Test Systems will go through a series of tests to ensure they meet or exceed manufacturer's published specifications. The equipment is shipped with a comprehensive calibration/test report showing all performed and passed test. A dated calibration sticker is affixed on the machine. Module numbers are LDC-3916371, LDC-3916372, LDC-3916374 and LDC-3916376.

ILX LDC-391637x tests performed:

- Temperature Control
- TEC/LDD Stability at 30°C
- TEC Operational Test (25°C to 45°C Range)
- Current Driver Operational Test
- Full Scale Current Source at 1000 mA Range
- Current Limit
- Laser Power Stability

Specifications¹

Fine Temperature Resolution Controller Module

CURRENT SOURCE¹	
3916371	
500 mA/9W	
LASER CURRENT OUTPUT	
Output Current Range:	0–500 mA
Setpoint Resolution:	10 μ A
Setpoint Accuracy:	$\pm 0.1\%$ of FS
Compliance Voltage:	>6 V (adjustable voltage limit)
Temperature Coefficient:	<50 ppm/ $^{\circ}$ C
Short-Term Stability (1 hr.): ²	<20 ppm
Long-Term Stability (24 hr.): ³	<50 ppm
Noise and Ripple ⁴	
High bandwidth:	<10 μ A rms
Low bandwidth:	<5 μ A rms
Transients	
Operational: ⁵	<3 mA
1kV EFT:	<4 mA
Surge: ⁶	<8 mA

LASER DRIVE LIMIT SETTINGS

Current Limit Range:	0–500 mA
Current Limit Resolution:	0.2 mA
Current Limit Accuracy:	± 0.7 mA
Voltage Limit Range:	0–7.5 V
Voltage Limit Resolution:	0.1 V

PHOTODIODE FEEDBACK

Type:	Differential 10 Ω Input. Selectable Zero Bias or 5 V 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	0–10 V, 50 Ω
Transfer Function:	50 mA/V
High Bandwidth Mode	
Small Signal Bandwidth: ⁹	DC to 1.2 MHz
Large Signal Bandwidth: ¹⁰	DC to 1.0 MHz
Low Bandwidth Mode	DC to 30 kHz

LASER CURRENT MEASUREMENT (DISPLAY)

Output Current Range:	0–500.00 mA
Output Current Resolution:	0.01 mA
Output Current Accuracy (@25 $^{\circ}$ C):	$\pm 0.05\%$ of FS
Photodiode Current Range:	0–5000 μ A
Photodiode Current Resolution:	0.1 μ A
Photodiode Current Accuracy:	± 2 μ A (@25 $^{\circ}$ C)
Photodiode Responsivity Range: ¹¹	0.00–1000.00 μ A/mW
Photodiode Responsivity Resolution:	0.01 μ A/mW
Optical Power Range:	0.00–5000.0 mW
Optical Power Resolution:	100 μ W
Forward Voltage Range:	0.00–7.5 V
Forward Voltage Resolution:	10 mV
Forward Voltage Accuracy: ¹²	± 7 mV

TEMPERATURE CONTROL¹	
3916371	
500 mA/9W	
TEMPERATURE CONTROL OUTPUT	
Temperature Control Range: ²	-5 $^{\circ}$ C to 50 $^{\circ}$ C
Thermistor Setpoint	
Resolution:	0.01 $^{\circ}$ C
Accuracy: ³	$\pm 0.2^{\circ}$ C
Short-Term Stability (1 hr.): ⁴	$\leq \pm 0.007^{\circ}$ C
Long-Term Stability (24 hrs.): ⁵	$\leq \pm 0.01^{\circ}$ C
Output Type:	Bipolar current source
Compliance Voltage:	>7 V DC
Maximum Output Current:	1.5 A
Maximum Output Power:	9 W
Current Noise and Ripple: ⁶	<1 mA rms
Current Limit Range:	0–1.5 A
Current Limit Set Accuracy:	± 0.05 A
Control Algorithm:	Smart Integrator, Hybrid PI, Gain adjustable from 1–127

TEMPERATURE SENSOR

Types:	Thermistor (2-wire NTC)
Thermistor Sensing Current:	100 μ A
Usable Thermistor Range:	5100–13,000 Ω , typical
User Calibration:	Steinhart-Hart, 3 constants

TEC MEASUREMENT (DISPLAY)

Temperature	
Range: ⁷	-99.9 $^{\circ}$ C to 199.9 $^{\circ}$ C
Accuracy: ³	$\pm 0.5^{\circ}$ C
Thermistor Resistance	
Range:	5100–13,000 Ω
Accuracy:	± 5 Ω
TEC Current	
Range:	-1.50 to 1.50 A
Accuracy:	± 0.04 A
Voltage	
Range:	-9.999 to 9.999 V
Resolution:	100 mV (1 mV in GPIB)
Accuracy: ⁸	± 70 mV (± 20 mV in GPIB)

NOTES

The 3916371 Laser Current Source specifications are the same as the 3916372 Controller Module specifications.

Current Source Notes and Temperature Control Notes are on the following pages.

Controller Modules (Laser and TE Control)

CURRENT SOURCE¹

3916372
500 mA/9 W

3916374
1 A/9 W

3916376
1.5 A/9W

LASER CURRENT OUTPUT

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:	6 V (adjustable voltage limit)	6 V (adjustable voltage limit)	4.75 V (adjustable voltage limit)
Temperature Coefficient:	≤ 50 ppm/ $^{\circ}$ C	≤ 50 ppm/ $^{\circ}$ C	≤ 50 ppm/ $^{\circ}$ C
Short-Term Stability (1 hr.): ²	≤ 20 ppm	≤ 20 ppm	≤ 20 ppm
Long-Term Stability (24 hr.): ³	≤ 50 ppm	≤ 50 ppm	≤ 50 ppm
Noise and Ripple ⁴			
High Bandwidth:	<10 μ A rms	<10 μ A rms	<12 μ A rms
Low Bandwidth:	<5 μ A rms	<5 μ A rms	<8 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	0–1500 mA
Current Limit Resolution:	0.2 mA	0.4 mA	0.6 mA
Current Limit Accuracy:	± 0.7 mA	± 1.4 mA	± 4.5 mA
Voltage Limit Range:	0–7.5 V	0–7.5 V	0–7.5 V
Voltage Limit Resolution:	0.1 V	0.1 V	0.1 V
Voltage Limit Accuracy:	± 0.2 V	± 0.2 V	± 0.2 V

PHOTODIODE FEEDBACK

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

EXTERNAL ANALOG MODULATION

Input: ⁸	0–10 V, 50 Ω	0–10 V, 50 Ω	0–7.5 V, 50 Ω
Transfer Function:	50 mA/V	100 mA/V	200 mA/V
High Bandwidth Mode			
Small Signal Bandwidth: ⁹	DC to 1.2 MHz	DC to 1.0 MHz	DC to 0.9 MHz
Large Signal Bandwidth: ¹⁰	DC to 1.0 MHz	DC to 1.0 MHz	DC to 0.9 MHz
Low Bandwidth Mode:	DC to 30 kHz	DC to 30 kHz	DC to 30 kHz

LASER CURRENT MEASUREMENT (DISPLAY)

Output Current Range:	0–500.00 mA	0–1000.0 mA	0–1500.0 mA
Output Current Resolution:	0.01 mA	0.01 mA	0.03 mA
Output Current Accuracy (@ 25 $^{\circ}$ C):	$\pm 0.05\%$ of FS	$\pm 0.05\%$ of FS	$\pm 0.07\%$ of FS
Photodiode Current Range:	0–5000 μ A	0–5000 μ A	0–5000 μ A
Photodiode Current Resolution:	0.1 μ A	0.1 μ A	0.1 μ A
Photodiode Current Accuracy (@ 25 $^{\circ}$ C):	± 2 μ A	± 2 μ A	± 2 μ A
Photodiode Responsivity Range: ¹¹	0.0–1000.00 μ A/mW	0.0–1000.00 μ A/mW	0.0–1000.00 μ A/mW
Responsivity Resolution:	0.01 μ A/mW	0.01 μ A/mW	0.01 μ A/mW
Optical Power Range:	0.0–5000.00 mW	0.0–5000.00 mW	0.0–5000.00 mW
Optical Power Resolution:	100 μ W	100 μ W	100 μ W
Forward Voltage Range:	0.00–7.5 V	0.00–7.5 V	0.00–5 V
Forward Voltage Resolution:	10 mV (1 mV through GPIB)	10 mV (1 mV through GPIB)	10 mV (1 mV through GPIB)
Forward Voltage Accuracy: ¹²	± 7 mV (± 2 mV through GPIB)	± 7 mV (± 2 mV through GPIB)	± 7 mV (± 2 mV through GPIB)

CURRENT SOURCE NOTES

- 1 All values relate to a one-hour warm-up period.
- 2 Over any one-hour period, half-scale output.
- 3 Over any 24-hour period, half-scale output.
- 4 Measured optically, evaluating noise intensity of a laser diode into a photodiode with 150 kHz 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 1000 V power-line transient spike. Tested to ILX Lightwave Technical Standard #LDC-00196. Request ILX Application Note #3.
- 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.
- 9 250 mA setpoint, 50 mA modulation current, 1 Ω load.
- 10 50% modulation at mid-scale output, 1 Ω load.
- 11 Responsivity value is user-defined and is used to calculate the optical power.
- 12 Four-wire voltage measurement while driving calibration load. Specification valid for values above 10 mV.

Controller Modules (Laser and TE Control)continued

TEMPERATURE CONTROL ¹	3916372 500 mA/9 W	3916374 1 A/9 W	3916376 1.5 A/9 W
OUTPUT			
Temperature Control Range: ²	–99°C to 150°C	–99°C to 150°C	–99°C to 150°C
Thermistor Setpoint			
Resolution and Accuracy:	Resolution Accuracy ³	Resolution Accuracy ³	Resolution Accuracy ³
–20°C to 20°C	0.1°C ±0.2°C	0.1°C ±0.2°C	0.1°C ±0.2°C
20°C–50°C	0.2°C ±0.2°C	0.2°C ±0.2°C	0.2°C ±0.2°C
Short-Term Stability (1 hr.): ⁴	<±0.007°C	<±0.007°C	<±0.007°C
Long-Term Stability (24 hrs.): ⁵	<±0.01°C	<±0.01°C	<±0.01°C
Output Type:	Bipolar current source	Bipolar current source	Bipolar current source
Compliance Voltage:	>7 V DC	>7 V DC	>7 V DC
Short Circuit Output Current:	1.5 A	1.5 A	1.5 A
Maximum Output Power:	9 W	9 W	9 W
Current Noise and Ripple: ⁶	<1 mA rms	<1 mA rms	<1 mA rms
Current Limit Range:	0–1.5 A	0–1.5 A	0–1.5 A
Current Limit Set Accuracy:	±0.05 A	±0.05 A	±0.05 A
Control Algorithm:	Smart Integrator, Hybrid PI Gain adjustable from 1–127	Smart Integrator, Hybrid PI Gain adjustable from 1–127	Smart Integrator, Hybrid PI Gain adjustable from 1–127
TEMPERATURE SENSOR			
Types:	Thermistor (2-wire NTC)	Thermistor (2-wire NTC)	Thermistor (2-wire NTC)
Thermistor Sensing Current: ⁷	10/100 µA	10/100 µA	10/100 µA
Usable Thermistor Range:	25–450,000 Ω, typical	25–450,000 Ω, typical	25–450,000 Ω, typical
User Calibration:	Steinhart-Hart, 3 constants	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	–99.9°C to 199.9°C
Accuracy:	±0.5°C	±0.5°C	±0.5°C
Thermistor Resistance			
10 µA Setting			
Range:	0.01–450.00 kΩ	0.01–450.00 kΩ	0.01–450.00 kΩ
Accuracy: ⁹	±0.05 kΩ	±0.05 kΩ	±0.05 kΩ
100 µA Setting			
Range:	0.001–45.000 kΩ	0.001–45.000 kΩ	0.001–45.000 kΩ
Accuracy: ¹⁰	±0.005 kΩ	±0.005 kΩ	±0.005 kΩ
TEC Current			
Range:	–1.50 to 1.50 A	–1.50 to 1.50 A	–1.50 to 1.50 A
Accuracy:	±0.04 A	±0.04 A	±0.04 A
Current Resolution:	±0.01 A	±0.01 A	±0.01 A
Voltage			
Range:	–9.999 to 9.999 V	–9.999 to 9.999 V	–9.999 to 9.999 V
Resolution:	100 mV (1 mV in GPIB)	100 mV (1 mV in GPIB)	100 mV (1 mV in GPIB)
Accuracy: ¹¹	±70 mV (±20 mV in GPIB)	±70 mV (±20 mV in GPIB)	±70 mV (±20 mV in GPIB)



When coupled with the LDM-4616 Modular Laser Diode Mount, the LDC-3916 Multi-channel controllers provide a configurable, cost-effective solution for multi-channel, DWDM signal sources. The mount can also support many popular 980 nm and 1480 nm pump laser diodes for EDFA test applications.

TEMPERATURE CONTROL NOTES

- All values relate to a one-hour warm-up period.
- Software limits of range. Actual range possible depends on the physical load, thermistor type, and TEC module used.
- Accuracy figures are quoted for a typical 10 kΩ thermistor and 100 µA current setting for –5°C to 50°C, and typical 10 kΩ thermistor and 10 µA 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.
- Over any one-hour period, half-scale output, controlling an LDM-4412 mount @ 25°C, with 10 kΩ thermistor, on 100 µA setting.
- Over any 24-hour period, half-scale output, controlling an LDM-4412 Mount @ 25°C, with 10 kΩ thermistor, on 100 µA setting.
- Measured at 1 A output over a bandwidth of 10 Hz to 10 MHz.
- Thermistor current range software selectable by front panel or GPIB.
- Software limits of display range.
- Using a 10 kΩ thermistor, controlling an LDM-4412 mount over –30°C to 65°C (–200–2 kΩ) or a 100kΩ thermistor controlling an LDM-4412 mount over 10°C–85°C (–200–10 kΩ).
- Using a 10 kΩ thermistor, controlling an LDM-4412 mount over –5°C to 90°C (–45–1 kΩ).
- Voltage measurement accuracy while driving calibration load. Accuracy is dependent upon load used.
- Measured at 2 A output over a bandwidth of DC to 25 MHz.