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LDP 3830

Pulsed Precision Current Source

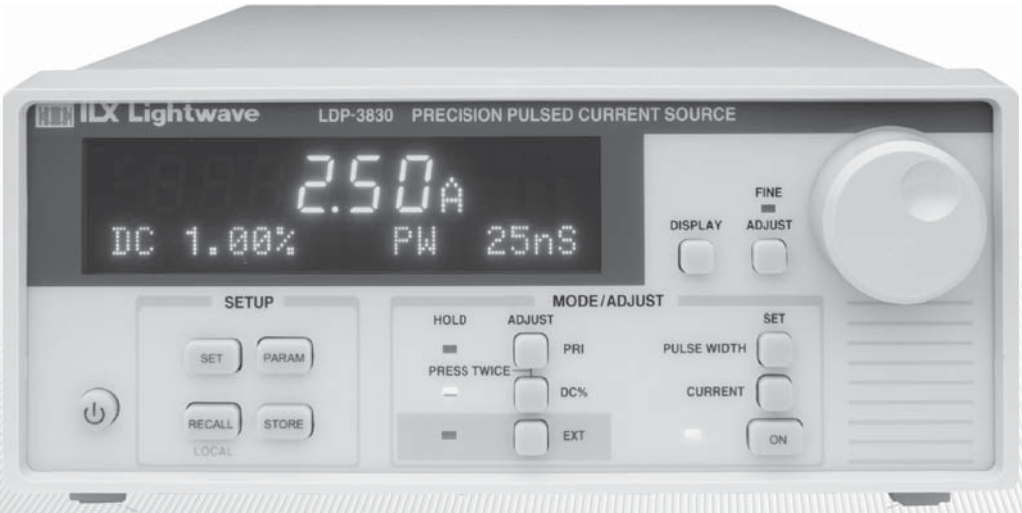
Product Features

- Pulsed current output up to 5A
- 20V compliance voltage
- Adjustable pulse width from 25 ns to 1 µs with adjustable duty cycle up to 5%
- Laser diode protection including current limits, transient protection, safety interlocks, and shorting relay
- USB and GPIB computer interfaces
- LabVIEW® instrument driver

The LDP-3830 Pulsed Precision Current Source is specifically designed for controlling laser diodes and quantum cascade lasers. The LDP-3830 provides adjustable peak pulse current up to 5A with a compliance voltage up to 20V, adjustable pulse widths from 25 ns to 1 µs, and adjustable duty cycle from 0.01% to 5.00%.

Careful attention to the design provides for highly repeatable pulse to pulse amplitude and pulse width. Laser protection features incorporated in the LDP-3830 include redundant current limits, transient protection, floating outputs, and safety interlocks.

For seamless integration into your automated test application, the LDP-3830 comes standard with GPIB/IEEE 488.1 and USB 2.0 computer interfaces. Additional instrument flexibility is provided by trigger in and trigger out functions to control pulses and initiate corresponding measurements without a command program.



High performance precision pulsed current source

ILX Lightwave®
A Newport Corporation Brand

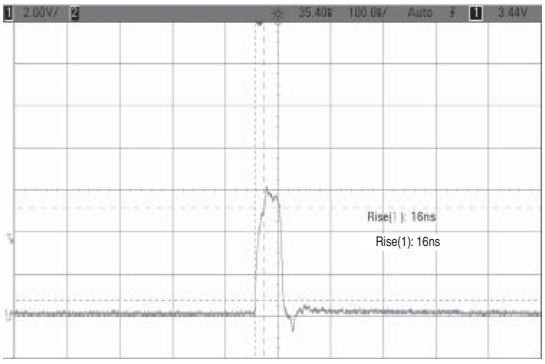
LDP 3830

Pulsed Precision Current Source

PRECISION PULSE CONTROL FOR LASER DIODES AND QUANTUM CASCADE LASERS

The LDP-3830 was designed to provide safe and repeatable pulse current for laser diodes and quantum cascade lasers. The LDP-3830 is capable of delivering up to 5A peak current over a pulse width range of 25 ns to 1 μs with a maximum duty cycle of 5%. To achieve pulse widths of 25 ns with rise times less than 10 ns, the pulse circuitry is contained in the LPB-386 Pulse Board with all control functions being sent from the LDP-3830. For accurate monitoring of laser drive parameters, the LPB-386 Pulse Board has the ability to monitor the current via a switch located on the LPB-386.

For quantum cascade laser applications, the LDP-3830 can deliver up to 20V of compliance with highly repeatable pulse to pulse amplitude and pulse width.



Output from a high power laser diode with a 2.5A 50ns current pulse, measured optically

LASER PROTECTION

One of the most important features of the LDP-3830 is ILX Lightwave's proven laser protection. Features include redundant current limits, output shorting relay, and transient suppression. During power up, the laser is protected from over current conditions by a slow start routine designed to ramp the current of the desired set point. In addition, the LDP-3830 monitors the AC power line and will immediately shut down the output current pulse if a failure is detected. These protection features all work in conjunction with all control modes of operation, providing worry free, fail safe control of your laser diode or quantum cascade laser.

EASE OF OPERATION

Designed for ease of use and readability, the front panel features a large 7-segment LED display with integrated dot matrix display. Instrument controls are grouped by mode and function to allow for easy setup. The display allows for easy viewing of multiple parameters such as pulse output current, pulse repetition interval set point, duty cycle set point, and pulse width set point. Discrete function buttons allow for quick configuration without a complex multiple menu system. A selection of instrument operating modes includes constant duty cycle, constant pulse repetition interval (PRI), and external trigger. During a system error, the dot matrix display provides easily readable errors to allow for quick troubleshooting.

In constant duty cycle mode, the set duty cycle is maintained while adjusting pulse widths. In constant PRI mode, the set pulse interval is maintained while adjusting pulse width. In external trigger mode, the user sets the current and pulse width and the LDP-3830 will respond to an external TTL signal from a single pulse up to the maximum PRI.

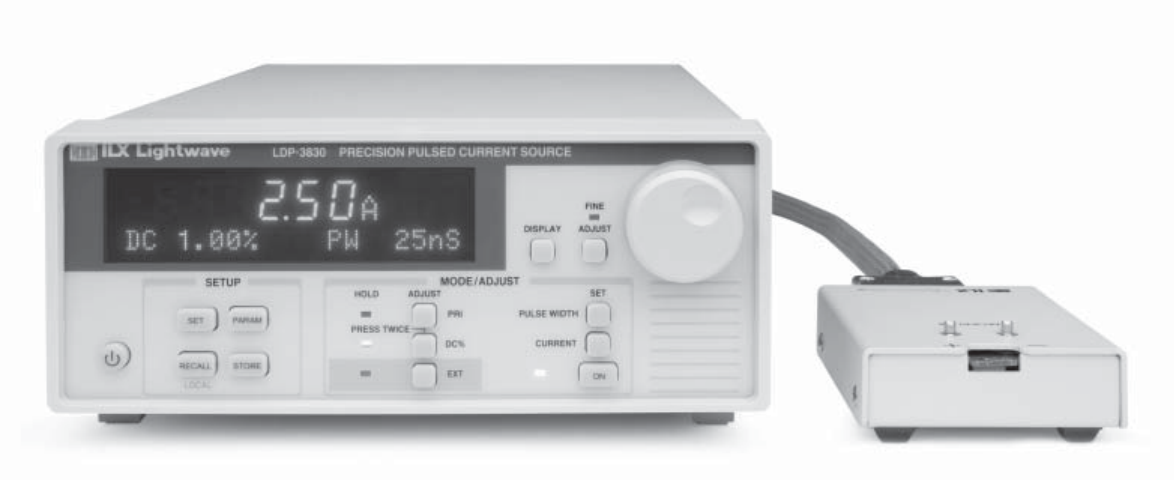
To maintain system uptime, the LDP-3830 provides the ability for the user to upgrade the firmware without returning the instrument to ILX. To upgrade the firmware, the user needs a computer with a USB and internet access. A simple step-by-step procedure is listed on the ILX website.

STORE AND RECALL SETTINGS

For multiple instrument test configurations, the LDP-3830 Precision Pulsed Laser Current Source offers a STORE and RECALL feature. The STORE function allows you to save all the front panel settings for any given instrument configuration to a numbered bin. The RECALL function allows you to retrieve any of the stored configurations at any time through simple front panel button presses or remotely through the GPIB or USB interface. This saves time in instrument re-configuration for different manufacturing runs or R&D experiments.

LDP 3830

Pulsed Precision Current Source



The LDP-3830 Precision Pulsed Current Source shown here with the LPB-386 can deliver peak pulse current up to 5A with 10ns rise times. Pulse width can be adjusted from 25ns to 1 µs and has a maximum duty cycle of 5%.

COMPLETE SYSTEM INTEGRATION

Remote instrument operation is available on the LDP-3830 through an IEEE488.1 / GPIB interface or USB 2.0 interface. All instrument controls and functions are accessible through the interfaces for easy remote programming and control in automated test systems where repeatable and accurate test sequencing, measurements, and data handling are required. TTL level triggers are incorporated into the LDP-3830 to control output pulses and to initiate corresponding measurements from other instruments without a command program.

A comprehensive and easily configurable LabVIEW® instrumentation driver is available for free download from the ILX Lightwave website to aid in development of system software.

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.

For more information about the LDP-3830 Precision Pulsed Laser Diode Current Source and our complete family of laser diode and quantum cascade laser instrumentation, call us today or visit us online at www.newport.com/ilxlightwave.

ORDERING INFORMATION

LDP-3830-120V	Precision Pulsed Current Source, 120V
LDP-3830-220V	Precision Pulsed Current Source, 220V
CC-385	Pulsed Output Cable
LPB-386	Pulsed Pulse Board
LPC-388	Current / Voltage Monitor Cable
LDT-5525B-120V	Thermoelectric Temperature Controller, 120V
LDT-5525B-220V	Thermoelectric Temperature Controller, 220V
LDT-5545B-120V	Thermoelectric Temperature Controller, 120V
LDT-5545B-220V	Thermoelectric Temperature Controller, 220V
LDT-5948	Precision Temperature Controller
LDT-5980	Precision Temperature Controller

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Pulsed Precision Current Source

Specifications

PULSE CURRENT OUTPUT

Range:	0.00 to 5.00A
Resolution:	0.01A
Accuracy:	±(0.05A +1% of setpoint)
Pulse Amplitude Repeatability:[1]	<(0.005A + 0.5%)
Compliance Voltage:	20V
Overshoot:[2]	<5%
Output:	Floating

PULSE CURRENT LIMIT

Range:	0.00 - 5.50A
Resolution:	0.01A
Accuracy Limit:	±(0.05A + 1% of setpoint)

PULSE WIDTH PARAMETERS

Range:	25 ns to 1 µs
Resolution:	1 ns
Accuracy:	±(2 ns + 1% of setpoint)
Repeatability:[1]	±0.15 ns
Rise/Fall Time:[2]	<10 ns

PULSE REPETITION INTERVAL (PRI)

Range Internal:	500 ns to 1 ms
Range External:[5]	500 ns to single shot
Resolution:	10 ns: PRI <10 µs 40 ns: PRI <100 µs 350 ns: PRI <1 ms
Accuracy:	±0.2% of set point

DUTY CYCLE

Range:	0.01% to 5.00%
Resolution:[3]	0.1% typical
Accuracy:[3]	<1% typical

MEASUREMENT (DISPLAY)

Current Range:	0.00 - 5.00 A
Current Resolution:	0.01 A
Current Accuracy:	±(0.05 A + 1% of reading)

TRIGGER IN

Type:	TTL rising edge
Connector:	BNC
Delay:	Adjustable
Set Point Resolution:	10 ns
Jitter:	10 ns
Pulse Width:	>100 ns

TRIGGER OUT

Type:	TTL
Connector:	BNC
Delay:	Adjustable
Set Point Resolution:	10 ns
Jitter:	1 ns
Pulse Width:[6]	25% PRI up to 12.5 µs

EXTERNAL MONITOR (LPB-386)

Connector:	SMB
Output Impedance:	50Ω
Current Measurement Ratio:	2 A/V

LASER DIODE PROTECTION

Output Shorting Relay	
LPB-386:	Normally closed
Pulse Current Limit:	Adjustable, redundant hardware
Transients: Operational,	<5% amplitude increase
1 kV EFT / Surge, AC Power	<5% pulse width change
Failure / Brown Out	<5% duty cycle change

INTERLOCK INPUT

Interlock 1:	Normally open, close to enable output
Interlock 2:	TTL, weak internal pull up, normally high, pull low to disable

GENERAL (LDP-3830)

Power Requirements:	100 to 240 VAC, 50/60 Hz
Size (HxWxD):	102 mm x 216 mm x 356 mm (4.0" x 8.5" x 14.0")
Weight:	3.80 kg; 7.45 lbs.
Operating Temperature:	+10°C to 40°C
Storage Temperature:	-40°C to +70°C
Humidity:	<85%
Regulatory:	CE certified
Interface:	GPIB IEEE488.1, USB 2.0

GENERAL (LPB-386)

Size (HxWxD):	114 mm x 114 mm x 38 mm (4.5" x 4.5" x 1.5")
Weight:	0.42 kg; 0.91 lbs.
Operating Temperature:	+10°C to 40°C
Storage Temperature:	-40°C to +70°C
Humidity:	<85%
Regulatory:	CE certified

NOTES

Specifications are for a one hour warm up.

1. Repeatability is measured as the standard deviation over 100 samples at 50% of amplitude.
2. Measured for set points above 0.6A. Dependant on device forward voltage and parallel capacitance. See TN 3830-1 Pulsed Performance of the LDP-3830 for additional information pulse overshoot.
3. Duty cycle resolution and accuracy is limited by the PRI and pulse width resolution and accuracy.
4. Dependant on device forward voltage and lead inductance.
5. Single shot performance can be achieved after initial current ramp. See TN 3830-2 LDP-3830 Trigger In / Out Performance for additional information.
6. Using trigger in, the trigger out pulse will be 5x the trigger in pulse width up to 12.5 µs.

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

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