

## Product Features

Precision pulsed current  
up to 1 A or 3 A

Adjustable pulse width  
from 100 ns to 10  $\mu$ s

GPIO interface

User-selectable pulse polarity

Standard trigger-in and  
out functions

Proven laser protection features

Closed-case calibration

The LDP-3840 Series Precision Pulsed Current Source is a microprocessor-controlled instrument ideal for providing clean, reliable current pulses to higher power laser diodes. Your choice of output stage provides either 1 A or 3 A maximum peak pulse current, with pulse widths adjustable from 100 ns to 10  $\mu$ s.

The advanced pulse network of the LDP-3840 offers selectable polarity pulse modes and provides fast rise times while maintaining overshoot less than 5%. In addition, the instrument includes a standard GPIO interface to facilitate data collection. Like all ILX Lightwave laser diode instruments, it incorporates proven laser diode protection and safety features.

# LDP 3840

## Precision Pulsed Current Sources



## Precision Pulsed Control of Laser Diodes

# LDP 3840

## Precision Pulsed Current Sources

The LDP-3840 Precision Pulsed Current Source provides state-of-the-art pulsed current for driving laser diodes. It's designed to provide uncompromising performance, making it an essential part of your laser test system. Your choice of output stages provide either 1 A or 3 A maximum pulse output, so you can test a variety of laser diodes. Most importantly, advanced laser protection features safeguard your device under test.

By combining state-of-the-art pulse current technology, useful features, and unbeatable laser protection, the LDP-3840 raises pulse laser testing to a new level.

### State-of-the-Art Current Source Topology Provides A New Dimension In Control

At the heart of the LDP-3840 is an advanced pulsed current source designed exclusively for driving laser diodes. If you're worried about pulse distortion, the LDP-3840 will put your concerns to rest. It delivers exceptionally clean pulses guaranteed for less than 5% overshoot. Its low noise, transient-suppressed output is designed specifically to drive low-impedance laser diodes.

The LDP-3840 delivers outstanding pulse amplitude accuracy ensuring that your test parameters are exact. Temperature coefficients are also minimized — an important consideration, especially if you work in adverse conditions.

### A Choice Of Pulse Polarity Puts You In The Driver's Seat

The LDP-3840 Pulsed Current Source operates in your choice of pulse polarity when used with the appropriate ILX LPB general purpose mounting board. Whether your device is a cathode-ground or anode-ground

configuration, the LDP-3840 easily adapts to your needs.

### Standard GPIB Interface Improves Communication In Your Lab

The LDP-3840's advanced GPIB interface allows remote programming and readout from most computers. All instrument functions accessible from the front panel are also accessible through the interface bus. The usually laborious task of data gathering is faster, easier and more accurate.

### Remote Triggering Simplifies Measurements

The triggering capability of the LDP-3840 provides convenience when setting up your test system. Standard TTL Trigger-In and Trigger-Out functions give you the ability to trigger measurements from remote instruments, simplify data collection, and ensure accurate start and end points for pulse analysis.

### Intuitive Front Panel Makes Pulse Adjustments Easy

The intuitive front panel of the LDP-3840 Precision Pulsed Current Source is designed for quick and easy operation, letting you precisely adjust your pulse parameters. You can set pulse amplitude, pulse widths from 100 ns to 10  $\mu$ s, and pulse repetition interval (PRI) from 1  $\mu$ s to 6.5 ms. (An even greater range of pulse intervals is provided by the 3840's trigger-in capability.) A selection of operating modes lets you set one parameter while maintaining others. A constant duty cycle mode even lets you maintain a preset duty cycle, regardless of PRI or pulse width adjustment.

Parameters are logically grouped together without confusing "multifunction" keys. The bright 4-digit, green LED display is easy to view

# LDP 3840

Precision Pulsed  
Current Sources



## Flexible pulsed control ideal for laser diode characterization.

— even with safety goggles. Precision tuning is a snap with the accurate digital adjust knob. In addition, informative error indicators have been added for laser diode protection. These indicators also help you quickly resolve setup problems.

### Closed-case Calibration Makes the LDP-3840 Virtually Service-free

The LDP-3840 architecture simplifies routine maintenance, since calibration can be performed without removing the instrument cover. The instrument is placed in calibration mode by pressing a unique combination of front panel buttons. Calibration data is automatically stored in nonvolatile memory.

### Advanced, Proven Laser Protection Lets You Work Worry-free

The most important feature of the LDP-3840 Precision Pulsed Current Source is one you'll never notice — ILX Lightwave's exclusive, advanced laser protection.\* An output shorting switch provides a safe and convenient method of switching the output off and on during operation. The LDP-3840 also incorporates AC line filters, transient suppression, and a double-shielded transformer to provide the best protection available. During AC power-up, your laser is protected from current transients by the LDP-3840's careful turn-on sequencing and redundant output shorting circuits.

*\* Semiconductor lasers are sensitive devices. Always take appropriate antistatic precautions and use extreme care when handling laser diodes. For more information, request ILX Application Note #3, "Protecting Your Laser Diode."*

# LDP 3840

## Precision Pulsed Current Sources

### Specifications<sup>1</sup>

#### PULSE AMPLITUDE

	3840/01	3840/03
Range:	0–1 A	0–3 A
Resolution:	0.3 mA	1 mA
Accuracy: <sup>2</sup>	±2.5% of FS	±2.5% of FS
Compliance Voltage:	25 V	25 V
Overshoot:	<5%	<5%
Noise (rms):	<300 $\mu$ A	<500 $\mu$ A

#### PULSE PARAMETERS

Pulse Width		
Range:	100 ns to 10 $\mu$ s	100 ns to 10 $\mu$ s
Resolution:	100 ns	100 ns
Accuracy:	–35 to 10 ns	–35 to 10 ns
Rise/Fall Time: <sup>3</sup>	≤40 ns	≤50 ns
Polarity: <sup>4</sup>	pos. or neg.	pos. or neg.

#### PULSE REPETITION RATE (PRI)

Range	
Internal:	1 $\mu$ s to 6.5 ms
External:	1 $\mu$ s to single shot <sup>5</sup>
Resolution:	1 $\mu$ s
Accuracy:	20 ns ±0.01%

#### DUTY CYCLE (MAX.)

Internal:	10%
External:	10%

#### OUTPUT CABLE

Type:	microstrip
Termination:	unterminated <sup>6</sup>

#### DISPLAY

Type:	4-digit green LED
-------	-------------------

#### TRIGGER INPUT

Type:	TTL
Connector:	BNC
Jitter:	<±100 ns
Delay:	250 ns ±20 ns

#### TRIGGER OUTPUT

Type:	TTL
Connector:	BNC (rear panel)
Jitter:	<±5 ns
Delay:	75 ns ±10 ns

#### ANALOG OUTPUT

Transfer Function:	10 V/ full scale current
Connector:	BNC

#### GENERAL

Chassis Ground:	4 mm Banana
Power Requirements:	50–60 Hz 95–125 V, 210–250 V
Size (HxWxD):	88 mm x 185 mm x 304 mm (3.5" x 7.3" x 12")
Weight:	3.6 kg (8 lbs)
Operating Temperature:	10°C to 40°C
Storage Temperature:	–40°C to 70°C
Humidity:	<85% relative
Laser Safety Features:	Interlock, keyswitch, output delay (Meets CDRH US21 CFR 1040.10)

#### NOTES

- 1 All specifications measured at 25°C after a one-hour period, unless otherwise specified. Pulsed parameters measured at current levels >300 mA.
- 2 For setpoint <10% of full range, the output accuracy is 20 mA ±4% of setpoint.
- 3 Measured from 10% – 90% points at half scale output with the typical being 25 ms.
- 4 Polarity selected via front-panel switch.
- 5 Pulse amplitude accuracy is slightly reduced in single-shot trigger mode.
- 6 Includes low-impedance microstrip cable.

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 continuing improvement, ILX Lightwave reserves the right to change specifications without notice and without liability for such changes.

#### ORDERING INFORMATION

LDP-3840/01	Precision Pulsed Current Source, 1 A
LDP-3840/03	Precision Pulsed Current Source, 3 A
LPB-382P	General-purpose Mounting Board, case +
LPB-382N	General-purpose Mounting Board, case –
LPC-388	Current/Voltage Monitor Cable
LabVIEW® 3.0	Instrument driver