Specifications

PULSED CURRENT OUTPUT
- **Range**: 0.00 to 5.00 A
- **Resolution**: 0.01 A
- **Accuracy**: ±(0.05 A + 1% of setpoint)

PULSED CURRENT LIMIT
- **Range**: 0.00 - 5.50 A
- **Resolution**: 0.01 A
- **Limit**: ±(0.05 A + 1% of setpoint)

PULSED WIDTH PARAMETERS
- **Range**: 25 ns to 1 μs
- **Resolution**: 1 ns
- **Accuracy**: ±0.15 ns

PULSE REPEITION INTERVAL (PRI)
- **Range Internal**: 500 ns to 1 ms
- **Range External**: 5 500 ns to single shot
- **Resolution**: 10 ns
- **Accuracy**: ±0.2% of set point

DUTY CYCLE
- **Range**: 0.01% to 5.00%
- **Resolution**: 0.1% typical
- **Accuracy**: ±1% typical

MEASUREMENT (DISPLAY)
- **Current Range**: 0.00 - 5.00 A
- **Resolution**: 0.01 A
- **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**: >25% PRI up to 12.5 μs

EXTERNAL MONITOR (LPB-386)
- **Connector**: SMB
- **Output Impedance**: 50 Ω
- **Current Measurement Ratio**: 2.0 A/V

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 0.6 A. Dependant on device forward voltage and parallel capacitance. See TN 3830-1
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.

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.
**Pulsed Precision Current Source**

**LDP-3830**

**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 \( \mu \text{s} \) 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.

**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.

**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.

**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-5025B-120V Thermoelectric Temperature Controller, 120V
LDT-5025B-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

**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](http://www.newport.com/ilxlightwave).
**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.

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**PUT OUR EXPERTISE TO WORK**

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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**

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- LDP-3830-220V: Precision Pulsed Current Source, 220V
- CCC-385: Pulsed Output Cable
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- LDT-5545B-120V: Thermoelectric Temperature Controller, 120V
- LDT-5545B-220V: Thermoelectric Temperature Controller, 220V
- LDT-5948: Precision Temperature Controller
- LDT-5988: Precision Temperature Controller
## Specifications

<table>
<thead>
<tr>
<th>PULSE CURRENT OUTPUT</th>
<th></th>
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<tbody>
<tr>
<td><strong>Range:</strong> 0.00 to 5.00 A</td>
<td></td>
</tr>
<tr>
<td><strong>Resolution:</strong> 0.001 A</td>
<td></td>
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<tr>
<td><strong>Accuracy:</strong> ±(0.05 A + 1% of setpoint)</td>
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<th>PULSE CURRENT LIMIT</th>
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<td>Resolution: 0.001 A</td>
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<tbody>
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<td></td>
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<tr>
<td>Resolution: 1 ns</td>
<td></td>
</tr>
<tr>
<td>Accuracy: ±(0.05 A + 1% of setpoint)</td>
<td></td>
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<tr>
<td>Repeatability: 20.15 ns</td>
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<tr>
<td>Rise/Fall Time: &lt;10 ns</td>
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<table>
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<tr>
<th>PULSE REPEITION INTERVAL (PRI)</th>
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<tbody>
<tr>
<td>Range Internal: 500 ns to 1 ms</td>
<td></td>
</tr>
<tr>
<td>Range External: 500 ns to single shot</td>
<td></td>
</tr>
<tr>
<td>Resolution: 10 ns: PRI &lt;10 μs</td>
<td></td>
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<tr>
<td>40 μs: PRI &lt;100 μs</td>
<td></td>
</tr>
<tr>
<td>300 μs: PRI &lt;1 ms</td>
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<tr>
<td>Accuracy: ±0.2% of set point</td>
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<table>
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<tr>
<th>DUTY CYCLE</th>
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<tbody>
<tr>
<td>Range: 0.01% to 5.00%</td>
<td></td>
</tr>
<tr>
<td>Resolution: 0.01%</td>
<td></td>
</tr>
<tr>
<td>Accuracy: ±0.1%</td>
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</tbody>
</table>

MEASUREMENT (DISPLAY)

| Current Range: 0.00 to 5.00 A |  |
| Current Resolution: 0.001 A |  |
| Current Accuracy: ±(0.05 A + 1% of reading) |  |

**For information call** 1-800-459-9459

### LASER DIODE PROTECTION

<table>
<thead>
<tr>
<th>Output: Shorting Relay</th>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>LDP-386:</strong> Normally closed</td>
<td></td>
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</table>

**Pulse Current Limit:** Adjustable, redundant hardware

<table>
<thead>
<tr>
<th>Transient: Operational</th>
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<tbody>
<tr>
<td>1 kV FT / Surge, AC Power</td>
<td></td>
</tr>
<tr>
<td>Failure / Brown Out</td>
<td></td>
</tr>
</tbody>
</table>

**5% pulse width change**

**5% duty cycle change**

**INTERLOCK INPUT**

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

### GENERAL (LDP-3830)

**Size (WxDxH):** 102 mm x 216 mm x 356 mm (4.0” x 8.5” x 14.0”)

**Weight:** 3.80 kg

**Power Requirements:** 100 to 240 VAC, 50/60 Hz

**Size (WxDxH):** 114 mm x 114 mm x 38 mm (4.5” x 4.5” x 1.5”)

**Weight:** 0.42 kg

### GENERAL (LPB-386)

**Size (WxDxH):** 114 mm x 114 mm x 38 mm (4.5” x 4.5” x 1.5”)

**Weight:** 0.42 kg

| Interface: | GPIB IEEE488.1, USB 2.0 |  |
| Regiduation: | CE certified |  |

**NOTES**

**Specifications are for a one hour warm up.**

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