## Specifications

### DRIVE CURRENT OUTPUT

<table>
<thead>
<tr>
<th>Output Current Range</th>
<th>0 to 200 mA</th>
<th>0 to 500 mA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compliance Voltage</td>
<td>5 V</td>
<td>5 V</td>
</tr>
<tr>
<td>Temperature Coefficient</td>
<td>0.025°C/°C</td>
<td>0.025°C/°C</td>
</tr>
<tr>
<td>Short Term Stability</td>
<td>&lt; 4%</td>
<td>&lt; 4%</td>
</tr>
<tr>
<td>Long Term Stability</td>
<td>&lt; 10 ppm</td>
<td>&lt; 10 ppm</td>
</tr>
<tr>
<td>Noise and Ripple</td>
<td>&lt; 50 ppm</td>
<td>&lt; 50 ppm</td>
</tr>
</tbody>
</table>

### Charge Mode Operation

- **Low Bandwidth Mode (100 Hz):**
  - 100 Hz to 1 M Hz: < 70 nA
  - 10 Hz to 100 Hz: < 300 nA
- **High Bandwidth Mode (1 MHz):**
  - 1 MHz to 10 MHz: < 2.0 µA
  - 100 kHz to 1 MHz: < 3.0 µA

### Battery Operation

- **Operating Temperature:**
  - -20°C to 50°C
- **Storage Temperature:**
  - -40°C to 85°C

### Photodiode Feedback

- **Type:** PD
- **Input Impedance:**
  - 500 ohms
- **Transfer Function:**
  - DC to 1 kHz: 100 kHz

### OTHER MEASUREMENTS

- **Output Current Range:**
  - 0 to 199.99 mA
- **Output Current Resolution:**
  - 0.01 mA
- **Output Current Accuracy:**
  - 0.1% FS
- **Output Voltage Range:**
  - 0 to 199.99 V
- **Output Voltage Resolution:**
  - 0.1 V
- **Output Voltage Accuracy:**
  - 0.2% FS
- **Power Supply Range:**
  - 0 to 30 V
- **Power Supply Resolution:**
  - 0.1 V
- **Power Supply Accuracy:**
  - 0.2% FS

### INPUT/OUTPUT CONNECTORS

- **Photodiode:**
  - 9-pin d-sub rear panel
  - BNC, front panel
- **Laser Current Source:**
  - 9-pin d-sub rear panel
  - BNC, front panel

### DC Input Power Requirements

- **AC Input Power:**
  - 100VAC - 120VAC: 1.2 A
  - 220VAC - 240VAC: 1.6 A

### Battery Power Source

- **Battery Operation Time:**
  - 15 hours

### DC Input Power Requirement

- **AC Input Power:**
  - 100VAC - 120VAC: 1.2 A
  - 220VAC - 240VAC: 1.6 A

### Drive Current Limit Settings

- **Range:** 10 to 500 mA
- **Accuracy (% of FS):**
  - ±2.0%

### Battery Charge Time

- 15 hours

### Battery Charge Mode Operation

- **Low Bandwidth Mode (100 Hz):**
  - < 70 nA
- **High Bandwidth Mode (1 MHz):**
  - < 2.0 µA

### Discharge Operating Temperature

- -20°C to 50°C

### Notes

1. Unless otherwise noted, all specifications measured at 23°C ±3°C after one-hour warm-up period.
2. Over the specified period, half-scale output into a temperature controlled resistive load.
3. Measured electrically, with a 24Ω load evaluating AC coupled rms value over the specified bandwidth.
4. Maximum output current transient resulting from normal operational situations (e.g., power on/off, current control, etc.) as well as accidental stabilities (e.g., power line dropouts).
5. Battery powered ultra low noise current source. Trip time < 100 ms into 24Ω, load circuit. Input impedance > 60 kΩ at all current range.
6. Maximum current measurement specification assumes no linearity error after 100µs in 250µs full scale and ±0.2% of current measurement full scale or ±0.1% of photodiode measurement current.

### ORDERING INFORMATION

- **LDX-3620B**
- **Ultra Low Noise Laser Diode Current Source**
- **CC-305S**
- **Current Source/LD Mount Interconnect Cable**
- **CC-305S**
- **Current Source Interface Interconnect Cable**
- **LDN-4412**
- **Temperature Controlled TO-can Laser Diode Mount with Collimating Lens**
- **LDM-4405**
- **Low Cost TO-can Laser Diode Mount**
- **LDM-4407**
- **Temperature Controlled TO-can Laser Diode Mount**
- **LDN-4962**
- **DIL Laser Diode Mount**
- **LDM-4964**
- **Butterfly Laser Diode Mount**

### Contact Information

- **For information call:** 1-800-459-9459
- **31950 Frontage Road, Bozeman, MT 59715 **
- **FAX: 406-586-9405**
- **International Inquiries: 406-556-2481**
- **www.newport.com/ilxlightwave**
- **email: sales@ilxlightwave.com**

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**Battery Operated Ultra Low Noise Laser Diode Current Source**

The LDX-3620B is a battery powered, ultra low noise current source, optimized for narrow linewidth and stable wavelength laser diode applications. The all new instrument provides a precision current output with <100 nA rms noise and <10ppm stability. The current source can be operated in one of two output ranges in constant current or constant power operating modes. Additionally, two AC or DC coupled modulation inputs, fine and coarse, can control the current source for precise laser diode wavelength or linewidth tuning with a bandwidth up to 1 MHz. All of ILX Lightwave's proven laser diode protection features are designed into each model, which include adjustable current limits, a floating output, slow turn-on circuit, and transient protection during power up and laser operation. Error indicators help resolve set up problems quickly such as open circuit and power limits.

Additional features include long battery life between charges, a battery charge mode and front panel charge indicator making the LDX-3620B a reliable test instrument for low noise, ultra low noise, and precision laser tuning. Additional features include long battery life between charges, a battery charge mode and front panel charge indicator making the LDX-3620B a reliable test instrument for low noise, precision laser wavelength control applications. The LDX-3620B is compatible with a large selection of ILX Lightwave laser diode TO-can, butterfly, and DIL laser mounting fixtures with interconnect cables for fast, easy system set up.

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**Product Features**

- **Battery operated dual range 200mA/500 mA current source**
- **<100 nA rms noise in battery mode**
- **Better than 10ppm stability over one hour**
- **Constant current and constant power operating modes**
- **Laser diode protection and error detection circuits protect lasers in all operating modes**
- **Two modulation inputs with up to 1 MHz bandwidth for precise laser tuning**
- **Battery charge mode with front panel charge level indication**
ULTRA LOW NOISE AND HIGH STABILITY

A lead acid battery and careful design and attention to detail in component selection, instrument and circuit board design allow the LDX-3620B to achieve an order of magnitude lower noise levels than AC powered current sources.

With proper cabling and laser diode mounting, current noise levels of <100 nA can be achieved; critical performance for spectroscopic, coherent communications, and other applications requiring narrow linewidths.

The same attention to detail also allows the LDX-3620B to achieve current source stability on the order of 10ppm over any one hour period in any instrument mode of operation.

LASER DIODE PROTECTION

Laser diodes are extremely sensitive to electro-static discharge, excessive current levels, current spikes or transients from power surges or other laboratory equipment. The LDX-3620B protects laser diodes from these potentially damaging events through instrument features such as adjustable current limit and circuit design. Slow start circuits minimize power up transients and a shorting relay across the output maintains the laser leads at the same potential until the output is enabled.

Instrument current source response is tested to IEC surge and electrically fast transients (EFT) standards. The current source output is floating relative to chassis ground to prevent any potentially damaging common ground coupling between instruments or machinery and the laser diode.

A CHOICE OF LASER CONTROL MODES

The LDX-3620B can be operated at full-scale current in constant current low bandwidth, constant current high bandwidth or constant optical power mode. The constant current low bandwidth mode provides stable DC current to the laser diode while offering lowest current noise. In constant current high bandwidth mode, an external control voltage is summed into the output current stage allowing DC or modulated voltage control of the output up to a 1 MHz bandwidth. For laser protection, the modulation port is implemented as a differential input allowing the control voltage and the instrument’s laser output to use different grounds.

The constant power mode maintains constant optical operation of the laser diode by measuring the photocurrent from the diode’s rear-facet photodiode, or from an external photodiode in a feedback control loop to the current source. Coarse and fine gain adjustments on the front panel are provided to scale the display to the full scale laser operating point and permit the feedback circuit to operate over a wide range of photodiode current.

LONG LIFE BATTERIES

The LDX-3620B can be operated up to 16 hours on a full charge making it ideal for overnight testing.

Monitoring the battery charge level any time during instrument operation is easy with a front panel battery charge indicator. Pushing the switch on the left of the display indicates a charge level up to 100% in 25% intervals.

The internal batteries provide the benefits of lower noise without the drawbacks of battery powered instruments. Lead acid batteries with good charge retention and charge recoverability were chosen. A DC input to the instrument with a battery charge mode is provided for charging the batteries even during instrument operation.

Low battery circuits were designed into the instrument to safely shut down the instrument if the battery charge gets below required instrument operating levels.

EXTERNAL CURRENT CONTROL

The current output of the LDX-3620B can be controlled by an external voltage source; either a DC signal or an alternating waveform for applications requiring DC biasing and/or linewidth broadening, wavelength control or amplitude modulation. One or two external voltage wave forms can be used to modulate the output current through the front panel modulation input ports. Both inputs can be AC or DC coupled to the current source drive circuits. The transconductance of each input differs by a factor of 10 for modulated and error signal summing to the drive circuits. In all modes of operation, the voltage inputs are summed with the front panel current controls for current control to the laser.

The LDX-3620B is compatible with a large selection of laser diode mounts. Shown is the LDX-3620B with an LDM-4412 TO-Can laser diode mount.
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Low battery circuits were designed into the instrument to safely shut down the instrument if the battery charge gets below required instrument operating levels.

The LDX-3620B is compatible with a large selection of laser diode mounts. Shown is the LDX-3620B with an LDM-4412 TO-Can laser diode mount.

The LDX-3620B delivers ±2ppm output current drift over a one-hour operating time.

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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 LDX-3620B, call us today or visit us at www.newport.com/ilxlightwave.
Specifications

**LDX 3620B**

Ultra Low Noise Laser Diode Current Source

### Drive Current Output

<table>
<thead>
<tr>
<th>Type</th>
<th>DC Input Power Requirements</th>
<th>Maximum Current Draw</th>
<th>Battery</th>
<th>Battery Operation Time</th>
<th>Battery Charge Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100VAC - 120VAC +10%, 47 to 63 Hz</td>
<td>100VAC to 120VAC</td>
<td>100VAC to 120VAC</td>
<td>1.6A</td>
<td>10 Hours</td>
</tr>
<tr>
<td></td>
<td>220VAC - 230VAC +10%, 47 to 63 Hz</td>
<td>220VAC to 240VAC</td>
<td>220VAC to 240VAC</td>
<td>1.6A</td>
<td>10 Hours</td>
</tr>
</tbody>
</table>

### Product Features

**Battery operated dual range 200mA/500 mA current source**

- <100 nA rms noise in battery mode
- Better than 10ppm stability over one hour
- Constant current and constant power operating modes
- Laser diode protection and error detection circuits protect lasers in all operating modes
- Two modulation inputs with up to 1 MHz bandwidth for precise laser tuning
- Battery charge mode with front panel charge level indication

### General

**Drive Current Power Requirements**

- Output Current Range: 0 to 200 mA
- Output Current Resolution: 0.01 mA
- Output Current Accuracy: 0.1% FS
- Photodiode Current Range: 0 to 1999.9 µA
- Photodiode Current Resolution: 0.1 µA
- Photodiode Current Accuracy: 10% FS

### Input/Output Connectors

- Standard Type II TB DIN 5-pin
- Photodiode Modulation (Input 1): 6-pin dual inline panel, BNC, rear panel
- Photodiode Modulation (Input 2): BNC, front panel
- Laser Current Source: 6-pin dual inline panel, BNC, rear panel
- DC Power Supply: 6-pin dual inline panel, BNC, rear panel

### External Analog Modulation

- Internal: 100 µV
- Transfer Function: 2 mV/V, 5 mV/V
- Bandwidth (DC coupled): 500 MHz
- Bandwidth (AC coupled): 10 MHz
- Input Impedance: 1 kΩ

### Measurement

- Output Current Range: 0 to 199.99 mA
- Output Current Resolution: 0.01 mA
- Output Current Accuracy: 0.1% FS
- Photodiode Current Range: 0 to 1999.9 µA
- Photodiode Current Resolution: 0.1 µA
- Photodiode Current Accuracy: 10% FS

**ORDERING INFORMATION**

LDX-3620B Ultra Low Noise Current Source

- CC-3055 Current Source/LD Mount Interconnect Cable
- LDM-4412 Temperature Controlled TO-can Laser Diode Mount with Collimating Lens
- LDM-4405 Low Cost TO-can Laser Diode Mount
- LDM-4407 Temperature Controlled TO-can Laser Diode Mount
- LDM-4962 DIL Laser Diode Mount
- LDM-4964 Butterfly Laser Diode Mount

Other laser diode mounts are available; contact sales@ilxlightwave.com for more information.

Battery Powered Ultra Low Noise Laser Diode Current Source

- The LDX-3620B is a battery powered, ultra low noise current source, optimized for narrow linewidth or stable wavelength laser diode applications. The all new instrument provides a precision current output with <100 nA rms noise and <10ppm stability. The current source can be operated in one of two output ranges in constant current or constant power operating modes. Additionally, two AC or DC coupled modulation inputs, fine and coarse, can control the current source for precise laser diode wavelength or linewidth tuning with a bandwidth up to 1 MHz.

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