The LDX-3232 High Compliance Laser Diode Current Source is the industry's only laser diode driver specifically developed for controlling high compliance voltage devices such as quantum cascade laser diodes. Careful attention to design allows these drivers to deliver up to 4A of low noise current at up to 15V with a stability of better than 20ppm. This performance is critical for development of room temperature quantum cascade lasers and spectroscopic applications using quantum cascade lasers. This new current source joins ILX Lightwave’s LDX-3200 Series Laser Diode Drivers, which are known throughout the industry for their reliability, precision, and ease-of-use.

In addition to precision current control, the LDX-3232 is loaded with standard features such as dual current ranges, constant power control, fine/coarse setpoint control, laser diode protection including slow start, adjustable compliance limits and compliance voltage, input/over temperature, forward voltage adjustment and measurement, an external modulation input.

Furthermore, all of ILX Lightwave’s proven laser diode protection strategies have been designed into each model including slow start, adjustable current limits and compliance voltage, intermitted contact protection, over temperature input shuts off current source output.

### Product Features

**4A high stability, low noise driver with up to 15V compliance**

**Designed specifically for quantum cascade lasers**

**Laser current modulation to 250kHz**

**Precision 4-wire forward voltage measurement**

**Laser diode protection including adjustable compliance voltage, independent current limits, and intermitted contact protection**

**Over temperature input shuts off current source output**

**GPIB/IEEE-488 interface and trigger output**
Remote operation in an R&D or production environment is afforded through the GPIB/IEEE488 interface and a TTL output trigger. For virtual instrument programming, LabView® instrument drivers are available free-of-charge on request or can be downloaded from the ILX website.

HIGH COMPLIANCE PRECISION LASER DIODE DRIVER

The LDX-3232 Driver offers a precision 16-bit current source delivering 0.05% setpoint accuracy in two user-selectable ranges of 2A and 4A for laser diodes and modules requiring high compliance voltage up to 15V. Careful attention to design delivers as low as 20ppm stability and 20µA of noise, ensuring user confidence with consistency and precision in laser wavelength and power stability for sensitive spectroscopic measurement applications.

The laser driver's current source can be operated in one of three modes:

1. Constant current, CW
2. Constant current, high bandwidth
3. Constant light power

The CW mode offers improved laser protection and noise performance and is optimized for DC operation. In high bandwidth mode, the output stage supports laser current modulation at frequencies up to 250kHz for wavelength tuning and control in sensitive spectroscopic measurement applications. The modulation port is implemented as a differential input, allowing the modulation control voltage and laser output to use different grounds.

The constant light power mode provides constant optical power at the laser diode by using the photocurrent from the laser diode's rear facet monitor or an external photodiode as an input through the 9-pin connector on the rear panel in a feedback control loop to the laser driver output stage. If the photo-diode responsivity is known, the driver can act as a power meter by entering the responsivity through the front panel controls or through GPIB.

SAFEGUARD YOUR LASER INVESTMENT

ILX Lightwave has implemented rigorous laser diode protection standards as described in our Technical Standard LDC-00196. These standards have lead to advanced protection features, which are designed into the LDX-3232 to ensure protection for your laser diode under all operating conditions.

Laser diode protection features include independent current limits under CW and modulated operating conditions and exclusive braid-shielded cables specifically designed to suppress radiated noise and transients commonly found in laboratory or production environments. During AC power up, careful turn-on sequencing and redundant output shorting circuits protect the laser from current transients. When the output is enabled, a slow start circuit gradually opens the output circuits. Current is withheld from the output until the control circuits are fully active and all circuit transients have died out. Fast monitoring, turn off circuits, and adjustable compliance voltage protect against intermittent contact at the diode.

A new laser diode protection feature was designed into the LDX-3232 to protect expensive higher power laser diodes and modules in an over-temperature condition. A TTL interlock input at the rear panel of the instrument is monitored and under a “low” condition, the output of the current source will be disabled.

EASE OF OPERATION

Designed for quick and easy operation, the LDX-3232 laser diode driver displays information without confusing multi-layer menus. All of the instrument’s parameters (except for PD bias) and operation modes are logically grouped by function with easy-to-use pushbuttons and indicating LEDs. A digital potentiometer with a large adjustment knob simplifies current source setpoints and limit adjustments, and a “Fine Adjustment” mode enables higher precision control of the current source output and, ultimately, the laser diode. Laser current modulation is easy with a BNC input from the front panel.

Remote operation is available with the built-in IEEE/GPIB interface for easy remote programming and control in automated test systems where repeatable and accurate test sequencing, measurements, and data handling are required. All instrument controls and functions are accessible through the GPIB/IEEE-488 interface. For virtual instrument programming, LabView® drivers are available on request or through the ILX website.

The LDX-3232 architecture simplifies routine maintenance with the ability to perform closed case calibration through the front panel or the GPIB interface.

SAVE AND RECALL

For repeat applications with unique operating parameters, the LDX-3232 offers a SAVE and RECALL feature. The SAVE feature stores all the front panel settings for any given instrument condition; up to 10 instrument settings can be saved. Any saved instrument setting can easily be reset by using the RECALL feature where the condition is retrieved with a single button press.

PUT OUR EXPERTISE TO WORK

ILX Lightwave is a recognized world leader in laser diode test instrumentation. Our products are known for their reliability, quality, and value, and they’re backed by strong after-sales support. For more information about the LDX-3232 High Compliance Laser Diode Driver and our complete family of Laser Diode Instrumentation, Power Meters, and Fiber Optic Sources, call us today or visit our website at www.ilxlightwave.com.

Specifications

<table>
<thead>
<tr>
<th>DRIVE CURRENT OUTPUT1</th>
<th>COMPLIANCE VOLTAGE ADJUST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Current Range:</td>
<td>Range: 0 to 2000mA</td>
</tr>
<tr>
<td>Setpoint Resolution:</td>
<td>40µA</td>
</tr>
<tr>
<td>Setpoint Accuracy:</td>
<td>±0.15% of SP +2mA</td>
</tr>
<tr>
<td>Compliance Voltage:</td>
<td>±0.15% of SP +2mA</td>
</tr>
<tr>
<td>Temperature Coefficient:</td>
<td>0–15°C ±20ppm</td>
</tr>
<tr>
<td>Short Term Stability (1 hr.):</td>
<td>&lt;2ppm</td>
</tr>
<tr>
<td>Long Term Stability (24 hrs):</td>
<td>&lt;20µA</td>
</tr>
<tr>
<td>Noise and Ripple (rms):</td>
<td>&lt;4mA</td>
</tr>
<tr>
<td>High Bandwidth Mode:</td>
<td>50%</td>
</tr>
<tr>
<td>Low Bandwidth Mode:</td>
<td>40µA</td>
</tr>
<tr>
<td>Transients:</td>
<td>100% EFT/ESD @5ka</td>
</tr>
<tr>
<td>Compliance Voltage:</td>
<td>0–15V</td>
</tr>
<tr>
<td>Resolution:</td>
<td>60mV</td>
</tr>
<tr>
<td>Accuracy:</td>
<td>±2%</td>
</tr>
</tbody>
</table>

VOLTAGE MEASUREMENT

Range: 0–15V
Resolution: 1mV
Accuracy: ±2mV

The LDX-3232 Laser Diode Driver delivers up to 4A at 15V of low noise current with a stability of better than 20ppm, which is critical for spectroscopic applications such as the development of new laser optical sensors for gas analysis.
Remote operation in an R&D or production environment is afforded through the GPIB/IEEE488 interface and a TTL output trigger. For virtual instrument programming, LabView® instrument drivers are available free-of-charge on request or can be downloaded from the ILX website.

**HIGH COMPLIANCE PRECISION LASER DIODE DRIVER**

The LDX-3232 Driver offers a precision 16-bit current source delivering 0.05% setpoint accuracy in two user-selectable ranges of 2A and 4A for laser diodes and modules requiring high compliance voltage up to 15V. Careful attention to design delivers as low as 20ppm stability and 20µA of noise, ensuring user confidence with consistency and precision in laser wavelength and power stability for sensitive spectroscopic measurement applications.

The laser driver’s current source can be operated in one of three modes:

1. **Constant current, CW**
2. **Constant current, high bandwidth**
3. **Constant light power**

The CW mode offers improved laser protection and noise performance and is optimized for DC operation. In high bandwidth mode, the output stage supports laser current modulation at frequencies up to 250kHz for wavelength tuning and control in sensitive spectroscopic measurement applications. The modulation port is implemented as a differential input, allowing the modulation control voltage and laser output to use different grounds.

The constant light power mode provides constant optical power at the laser diode by using the photocurrent from the laser diode’s rear facet monitor or an external photodiode as an input through the 9-pin connector on the rear panel in a feedback control loop to the laser driver output stage. If the photo-diode responsibility is known, the driver can act as a power meter by enabling the responsivity through the front panel or through GPIB.

**SAFEGUARD YOUR LASER INVESTMENT**

ILX Lightwave has implemented rigorous laser diode protection standards as described in our Technical Standard LDC-00196. These standards have lead to advanced protection features, which are designed into the LDX-3232 to ensure protection for your laser diode under all operating conditions.

Laser diode protection features include independent current limits under CW and modulated operating conditions and exclusive braided-shielded cables specifically designed to suppress radiated noise and transients commonly found in laboratory or production environments. During AC power up, careful turn-on sequencing and redundant output shorting circuits protect the laser from current transients. When the output is enabled, a slow start circuit gradually opens the output circuits. Current is withheld from the output until the control circuits are fully active and all circuit transients have died out. Fast monitoring, turn off circuits, and adjustable compliance voltage protect against intermittent contact at the diode.

A new laser diode protection feature was designed into the LDX-3232 to protect expensive higher power laser diodes and modules in an over-temperature condition. A TTL interlock input at the rear panel of the instrument is monitored and under a “low” condition, the output of the current source will be disabled.

**EASE OF OPERATION**

Designed for quick and easy operation, the LDX-3232 laser diode driver displays information without confusing multi-layer menus. All of the instrument’s parameters (except for PD bias) and operation modes are logically grouped by function with easy-to-use pushbuttons and indicating LEDs. A digital potentiometer with a large adjustment knob simplifies current source setpoints and limit adjustments, and a “Fine Adjustment” mode enables higher precision control of the current source output and, ultimately, the laser diode. Laser current modulation is easy with a BNC input from the front panel.

Remote operation is available with the built-in IEEE/GPIB interface for easy remote programming and control in automated test systems where repeatable and accurate test sequencing, measurements, and data handling are required. All instrument controls and functions are accessible through the GPIB/IEEE-488 interface. For virtual instrument programming, LabView® drivers are available on request or through the ILX website.

The LDX-3232 architecture simplifies routine maintenance with the ability to perform closed case calibration through the front panel or the GPIB interface.

**Specifications**

**DRIVE CURRENT OUTPUT**

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 2000mA</td>
<td>40µA</td>
<td>±0.15% of SP +2 mA</td>
</tr>
<tr>
<td>0 to 4000mA</td>
<td>80µA</td>
<td>±0.15% of SP +2 mA</td>
</tr>
</tbody>
</table>

**COMPLIANCE VOLTAGE ADJUST**

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 15V</td>
<td>60mV</td>
<td>±2.5%</td>
</tr>
</tbody>
</table>

**VOLTAGE MEASUREMENT**

<table>
<thead>
<tr>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 15V</td>
<td>1mV</td>
<td>±2mV</td>
</tr>
</tbody>
</table>

SAVING AND RECALL

For repeat applications with unique operating parameters, the LDX-3232 offers a SAVE and RECALL feature. The SAVE feature stores all the front panel settings for any given instrument condition; up to 10 instrument settings can be saved. Any saved instrument setting can easily be reset by using the RECALL feature where the condition is retrieved with a single button press.

**PUT OUR EXPERTISE TO WORK**

ILX Lightwave is a recognized world leader in laser diode test instrumentation. Our products are known for their reliability, quality, and value, and they’re backed by strong after-sales support. For more information about the LDX-3232 High Compliance Laser Diode Driver and our complete family of Laser Diode Instrumentation, Power Meters, and Fiber Optic Sources, call us today or visit our website at www.ilxlightwave.com.

![Image of the LDX-3232 Laser Diode Driver](image-url)
The LDX-3232 High Compliance Laser Diode Current Source is the industry’s only laser diode driver specifically developed for controlling high compliance voltage devices such as quantum cascade laser diodes. Careful attention to design allows these drivers to deliver up to 4A of low noise current at up to 15V with a stability of better than 200ppm. This performance is critical for development of room temperature quantum cascade lasers and spectroscopic applications using quantum cascade lasers. This new current source joins ILX Lightwave’s LDX-3200 Series Laser Diode Drivers, which are known throughout the industry for their reliability, precision, and ease-of-use.

In addition to precision current control, the LDX-3232 is loaded with standard features such as dual current ranges, constant power control, fine/coarse setpoint control, laser current and voltage measurement, photodiode current display modes, forward voltage adjustment and measurement, and an external modulation input.

Furthermore, all of ILX Lightwave’s proven laser diode protection strategies have been designed into each model including slow start, adjustable current limits and compliance voltage, intermittent contact protection, over temperature input shuts off current source output.

GPIB/IEEE-488 interface and trigger output.

### Product Features

- **4A high stability, low noise driver with up to 15V compliance**
- **Designed specifically for quantum cascade lasers**
- **Laser current modulation to 250kHz**
- **Precision 4-wire forward voltage measurement**
- **Laser diode protection including adjustable compliance voltage, independent current limits, and intermittent contact protection**
- **Over temperature input shuts off current source output**

**Specifications**

<table>
<thead>
<tr>
<th>Drive Current Limit Settings</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 2020mA</td>
<td>±20mA</td>
<td>±20mA</td>
<td></td>
</tr>
<tr>
<td>1 to 4040mA</td>
<td>±40mA</td>
<td>±40mA</td>
<td></td>
</tr>
</tbody>
</table>

**Photodiode Feedback**

- Type: Differential, Adjustable
- PC Current Range: 5 to 1000mA
- PC Accuracy: ±100µA

**External Analog Modulation**

<table>
<thead>
<tr>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Bandwidth Mode</td>
<td>0.00 to 1000µW</td>
</tr>
<tr>
<td>Low Bandwidth Mode</td>
<td>0.00 to 500µW</td>
</tr>
</tbody>
</table>

**Interlock Input**

- TTL, edge triggered, active low

**Trigger Output**

- TTL
- Pulse Width: 12ns

**Measurement (Display)**

- Output Current Range: 0 to 2000.0mA
- Accuracy: ±2mA
- Photodiode Current Range: 0 to 10000µA
- Accuracy: ±2mA
- Responsivity Range: 0.00 to 1000.00µA/mW
- Accuracy: ±3µA/mW
- Optical Power Range: 0.00 to 350mW
- Accuracy: ±2mW
- Forward Voltage Range: 0.000 to 15.000V
- Accuracy: ±2mV

**Notes**

1. All values include a one-hour warm-up period at room temperature, 20°C.
2. Resolution of digital scaling elements used in circuit.
3. Over a one hour period, high-rail output.
4. Over a one hour period, high-rail output.
5. Measured with a 0.1% bandpass filter and output enabling spectral noise density over a 350µA bandwidth (1GHz to 500MHz).
6. Maximum output current limited by feedback operational amplifiers (e.g., power off current, current limit, and amplifier limitations) as well as temperature, power limiting the maximum output current.
7. Specifications taken with LabView® Instrument Driver for LDX-3232.

**Ordering Information**

- LDX-3232 High Compliance Laser Diode Current Source
- CC-305S Terminated Current Source Interconnect Cable
- LNF-320 Low Noise Filter
- PAL-69 Single Rack Mounting Kit
- PAL-140 Dual Rack Mounting Kit
- LabView® Instrument Driver

**For CW Quantum Cascade Lasers and other High Power Laser Modules**

For information call 1-800-459-9459

company.com