10 Watt, 808 nm Turn-Key Laser Diode Source & Pre-Configured Control System

- Includes 10W, 808nm, LUMICS Fiber Coupled Laser Diode
- Factory Set Current & Temperature Limits Keep Laser in Safe Operation Range
- All-Inclusive: Laser + Current Source + TEC Controller + Peltier Cooled Mount
- User Adjustable Output Power 0 to 10 Watts (CW)
- Peltier Cooled System
LDX808-10W Overview:
The model LDX808-10W is a completely integrated, turn-key laser diode source and control system for R&D and manufacturing applications. These pre-configured 10 Watt instruments give the user full control over the integrated laser module. The user can adjust drive current, optical power, temperature set-point, CW or QCW mode and other parameters. The 808 nm laser diode is a fiber coupled module which is mounted on a Peltier cooled mounting plate inside the instrument. The laser is precisely calibrated and controlled to deliver a highly stable output.

These all-inclusive instruments include the 10W laser (fiber coupled), a precision current source to bias the laser, a high power TEC controller to stabilize the temperature, and a TEC / Peltier cooled mounting plate for the laser.
**Factory Configured Protection Settings for the Laser Diode:**
The LDX808 series instruments ship with factory configured protection settings to make sure that the laser is run safely and operates within the specified maximum operating limits. These limits include the upper current limit and upper temperature limit. Additionally, a soft-start current ramp is set to 300 milliseconds to protect the laser from thermal shock when the bias current is applied. This soft-start ramp time can be customer configured through the front panel or digital interface. These units also have clamping circuitry to protect the laser against power surges and ESD.

**Peltier Based Temperature Control System:**
These units have an integrated TEC controller with a full P.I.D. control loop to deliver fast and efficient heat removal from the laser diode source. The laser diode is mounted on a Peltier cooled mounting plate. The mounting plate materials are nickel plate copper. This internal mounting plate is machined with very high surface finish and flatness to provide low thermal resistance. Typical thermal resistance is less than 0.06 K/C. The laser mounting plate is attached to a fan cooled air duct to remove the waste heat and keep the laser temperature stable.
**Soft-Start Current Ramp:**
In addition to the current the temperature limit protection settings, the LDX808 series instruments give the user the option of setting the soft-start current ramp time from 300 milliseconds up to 10 seconds. The system is set to a 300 millisecond ramp as the default. This user adjustable current ramp allows you to customize the "power on" sequence of the source for your specific application.

**User Controls:**
Users have full control of the fiber coupled laser module power through a touch-key front panel menu and LCD display or through the digital interface. Laser output power is set by adjusting the current level (ACC mode) or adjusting the laser in automatic power (APC) control mode. The APC mode utilizes the laser diode's internal monitor photo-diode to feedback to the bias current and temperature controller. The LDX808-10W systems can be controlled remotely by RS232 or USB. They ship with LabView drivers.
### Optical Output: Laser Diode Specifications (Typical @ 25°C)

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laser Center Wavelength:</td>
<td>808 nm (+/- 10 nm)</td>
</tr>
<tr>
<td>Laser Output Power Range:</td>
<td>0 - 10 Watts (user adjustable)</td>
</tr>
<tr>
<td>Laser Slope Efficiency:</td>
<td>&gt; 0.85 W/A</td>
</tr>
<tr>
<td>Laser Spectral Line Width (FWHM):</td>
<td>3 nm</td>
</tr>
<tr>
<td>Laser Wavelength Temperature Tuning:</td>
<td>0.3 nm/K</td>
</tr>
<tr>
<td>Laser Fiber Termination:</td>
<td>SMA905 (rear panel output)</td>
</tr>
<tr>
<td>Laser Fiber Numeric Aperture:</td>
<td>0.22</td>
</tr>
<tr>
<td>Laser Fiber Core Diameter:</td>
<td>105 µm</td>
</tr>
<tr>
<td>LUMICS Laser Diode Source Module Model:</td>
<td>LU0808D</td>
</tr>
</tbody>
</table>

### Control Unit Current & Voltage Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laser Diode Bias Current Range:</td>
<td>0.00 - 10.00 Amps</td>
</tr>
<tr>
<td>Laser Diode Bias Voltage Range:</td>
<td>10.00 Volts</td>
</tr>
<tr>
<td>Current Source Noise &amp; Ripple (rms):</td>
<td>&lt; ± 0.5% (of full scale current)</td>
</tr>
<tr>
<td>Current Source Setpoint Resolution:</td>
<td>3 mA</td>
</tr>
<tr>
<td>Current Source Setpoint Accuracy:</td>
<td>± 0.5%</td>
</tr>
<tr>
<td>Current Source Stability (4 hours):</td>
<td>≤ 300 ppm</td>
</tr>
<tr>
<td>Current Source Limit Setpoint Accuracy:</td>
<td>± 2%</td>
</tr>
<tr>
<td>Photodiode Current Measurement Accuracy:</td>
<td>± 0.5%</td>
</tr>
<tr>
<td>Photodiode Current Measurement Range:</td>
<td>0.00 - 4,000 µA</td>
</tr>
</tbody>
</table>

### Control Unit Laser Diode Protection Features

- Soft-Start Current Ramp to Setpoint, (User Programmable)
- Soft-Start Current Ramp Factory Default Set to 300 Milliseconds
- Factory Pre-Set Maximum Current Limit
- Factory Pre-Set Upper Temperature Limit
- ESD and Power Surge Clamp
- Reverse Voltage Transient Clamp
- AC Line Filter
- Keylock Switch and Safety Interlock
- Short Circuit when Laser Diode Current Turned OFF
- Front Panel e-Stop Button Emergency Shut-Down
- Factory Pre-Set Upper Temperature Limit
- Open Circuit Detection and Fast Shut-Down
**LDX808-10W SPECIFICATIONS**

**CONTROL UNIT TEMPERATURE CONTROLLER AND TEC COOLED LASER DIODE MOUNTING PLATE SPECIFICATIONS**

- **Cooling Design:** Peltier (TEC) Cooled Laser Diode Mounting Plate
- **Laser Diode Mounting Plate Material:** Nickel Plated Copper
- **Laser Diode Mounting Plate Thermal Resistance:** < 0.06 K/W
- **TEC Controller Output Power Total:** 336 Watts
- **TEC Controller Output Current Range (bipolar):** ± 7.00 Amps
- **TEC Controller Output Voltage Range (bipolar):** ± 48.00 Volts
- **Laser Temperature Setpoint:** User Adjustable within Factory Pre-Set Range
- **TEC Control Loop Algorithm:** Full P.I.D.
- **P.I.D. Variables:** User Adjustable, Factory Pre-Set for Optimum Performance
- **Temperature Control Accuracy:** 0.05°C
- **TEC Controller Setpoint Resolution:** 0.01°C
- **Laser Diode Upper & Lower Temperature Limits:** Factory Pre-Set
- **Control Unit Chassis Waste Heat Removed by Fan**

**QCW PULSING MODE AND MODULATION SPECIFICATIONS**

- **QCW Pulse Rise and Fall Time:** < 20 µs to CW (< 10 µs on request)
- **QCW Trigger:** Internal Function Generator or External Trigger
- **QCW Pulse Modes:** Continuous Pulses, Single Pulses, Bursts
- **Pulse Time Base Accuracy:** ± 1.0%
- **MODULATION Signal:** Accepts External Digital (TTL) or Analog
- **MODULATION Input Connector:** BNC, Input Impedance 10K ohm
- **MODULATION Input Voltage Range:** 0 – 4 Volts (4V = Max Current)

**SYSTEM DIMENSIONS AND POWER REQUIREMENT**

- **Height:** 2U (rack units)
- **Depth:** 260 mm
- **Width:** 48.26 cm (Standard 19 Inch Rack Width)
- **Input Power:** Universal 100V ~ 230 VAC, 50/60Hz
- **Includes Front Panel Mounting Brackets and Bottom Panel Feet**

**USER INTERFACE**

- **Front Panel LCD, Full Alphanumeric Display with Key Pad**
- **RS232 Standard**
- **USB Optional ($100.00)**
- **LabView Drivers Included**
- **GUI Control Software Included**
- **Terminal Control Software Program Included**
**Product Warranty:**
In addition to the standard full one year warranty, this product is offered with an additional 3 months of extended warranty for a total of 15 months of warranty coverage. The warranty includes all parts and labor.

**Our Customer Commitment:**

*i* You Get Direct, Fast Tech-Support from a Product ENGINEER ... Not a Sales Person
You get DIRECT access to the correct factory engineer for your product. We eliminate the sales person “middle-man” back and forth time delays. No “Contact Us” forms. Every product has an assigned engineer in our auto-messaging data base to give you direct, immediate access to the correct tech-support.

*You Get an Extended Warranty*
All products from Laser Lab Source come with a 12 month factory warranty. Additionally, we offer an extra 3 months of warranty on top of the standard warranty. *Warranty does not include customer induced product damage.*

*You Get the Lowest Factory-Direct Prices Worldwide*
All of our 3rd party global suppliers set & quote their own direct pricing. There are NO Mark-Up’s. You get their lowest direct price.