4 Watt, 808 nm Laser Diode with All-Inclusive Control Electronics and Mounting System

- Includes 4 Watt, 808nm, Fiber Coupled Laser Diode
- All-Inclusive Control System:
  - Current Source and TEC Controller
  - Peltier / TEC Cooled Mounting Plate
  - Fan Cooled Heat Sink
  - Interconnect Cables
- Peltier / TEC Cooled System (no water)
**Product Overview:**
The LDX-808NM-4W-BT includes a fiber coupled 808 nm, 4 Watt laser diode as well as an all-inclusive control system. The control system includes a current source and temperature controller, laser diode mounting plate with the heat sink and cables. These systems are a convenient, high performance 808 nm multi-mode laser diode source and control solution for research and development in lab environments. The mounting plate is machined for the 808 nm laser diode package. A high reliability Peltier (TEC) element embedded under the laser mounting plate provides very stable thermal control of the laser. These current source and TEC control instrument comes with a standard RS-232 and USB interface. Additionally, complete control is available through an intuitive front panel LCD display with a simple menu structure.

The fiber coupled laser sources are known for their high efficiency and robust thermal design structure. They are designed to yield lifetimes of thousands of hours at full rated power. The 11-pin fiber coupled package laser is designed to easily attach to the pre-configured heat sink for highly stable thermal control. They are suitable for applications including material processing and sample illumination. They are also used for solid state laser pumping. The laser diode includes a 10K thermistor and TEC cooler to provide active heat control of the package. They also include an MPD.
User has Complete Control of the 808nm Laser Diode:
The user has complete control of the 4 Watt laser diode through the front panel or through the rear panel RS232/USB. The user controls the bias current, temperature set-point, CW or modulated mode and several other parameters. The front panel has an LCD display with a touch key-pad. The menu structure is simple to operate, and features a status menu with current and actual temperature for the default home page setting. These systems come with an RS-232 interface and can be ordered with an optional USB interface. LabView drivers are available free of charge charge. A LabView GUI makes set-up and control of the system fast and simple.

Modulation and Internal Function Generator Features:
In addition to standard DC continuous wave mode of operation, these units offer an external modulation input and circuitry. They will accept either TTL or analog modulation from DC to 500 kHz. The modulation input is a BNC connector on the rear panel of the controller. The controller also includes an internal function generator which can be used to generate the modulation signal or QCW pulses from 20 µs to CW. The user has the option of using the internal function generator or triggering from an external generator.
LASER DIODE SPECIFICATIONS (TYPICAL @ 25°C)

Output Power, CW (minimum): 4 Watts
Center Wavelength: 808 nm (±10 nm)
Spectral width, FWHM: < 5 nm
Threshold Current: 0.8 Amps
Operating Current: 7 Amps
Operating Voltage (max): 1.8 Volts
Slope Efficiency (typical): 0.8 W/A
Wavelength Tuning with Temperature λ/T (typical): 0.3 nm/°C
Internal Red Pilot Laser: 650 nm (±10 nm)
Internal Thermistor: 10 kΩ
Internal TEC Required Current: < 6 Amps
Internal TEC Required Voltage: < 10 Volts
Estimated Life Time (MTTF): 10,000 hours

LASER DIODE FIBER OUTPUT SPECIFICATIONS

Core Diameter: 200 μm (62.5 μm or 105 μm on request)
NA: 0.22
Fiber Connector: SMA905

CONTROL UNIT - LASER DIODE BIAS CURRENT SOURCE SPECIFICATIONS

Current Range: 0.00 - 8.00 Amps
Compliance Voltage Range: 14 Volts
Current Source Noise & Ripple (rms): < ±0.5% (of full scale current)
Current Setpoint Resolution: 5 mA
Current Setpoint Accuracy: +/- 0.5%
Current Source Stability (4 hours): ≤ 200 ppm
Current Source Limit Setpoint Accuracy: ± 2%
Photodiode Current Measurement Accuracy: ± 0.5%
Photodiode Current Measurement Range: 0.00 - 4,000 μA
CONTROL UNIT LASER DIODE PROTECTION FEATURES

- Maximum Current Limit
- Temperature Limit
- Soft-Start Current Ramp Factory Default Set to 300 Milliseconds
- Soft-Start Current Ramp to Setpoint (User Programmable)
- ESD and Power Surge Clamp Reverse Voltage
- Reverse Voltage Transient Clamp
- AC Line Filter
- Keylock Switch and Safety Interlock
- Short Circuit when Laser Diode Current Turned OFF
- Open Circuit Detection

CONTROL UNIT TEC CONTROLLER SPECIFICATIONS

- Cooling Design: Peltier (TEC) Cooled Laser Diode Mounting Plate
- TEC Controller Output Power Total: 96 Watts
- TEC Controller Output Current Range (bipolar): ± 8.00 Amps
- TEC Controller Output Voltage Range (bipolar): ± 14.00 Volts
- TEC Control Loop Algorithm: Full P.I.D.
- Temperature Control Accuracy: 0.05°C
- TEC Controller Setpoint Resolution: 0.01°C

PELTLIER COOLED MOUNT AND CABLE SPECIFICATIONS

- Integrated Mounting Plate Peltier/TEC Ratings: < 8 Amps, 12 Volts (supplied by control unit)
- Mount Heat Load Maximum: 38 Watts (@25°C)
- Fan Input Voltage Rating: 24 VDC (supplied by control unit)
- Fan Input Current Rating: 300 mA (supplied by control unit)
- Cooling Plate Material: Anodized Aluminum
- Laser Mounting Area (total): 105mm x 75mm
- Laser Mounting Plate Footprint: Holes Machined for Included Laser Diode
- Laser Diode Current and TEC Controller Connector: DSUB, 15-pin
- Includes 1.5 meter Current Interface Cable (20 Amp rated)
- Includes 1.5 meter TEC Controller Interface Cable
- Laser Diode Mounting Plate Thermal Resistance: < 0.06 K/W
- Mount Waste Heat Removed by Fan Embedded in Heat Sink Block
CONTROL UNIT MODULATION AND SLOW PULSE (QCW) SPECIFICATIONS

MODULATION Bandwidth: DC ~ 25 kHz
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)
QCW Pulse Rise and Fall Time: < 20 µs to CW (< 10 µs on request)
QCW Trigger: Internal Function Generator or External Trigger
QCW Pulse Time Base Accuracy: ± 1.0%

CONTROL UNIT DIMENSIONS AND POWER REQUIREMENT

Power Input: Universal 100 ~ 230 VAC, 50/60 Hz
Control Unit Weight (total): ~ 5 kg
Dimensions: 200mm x 105mm x 85mm
**Class 4 Laser Hazards:**

Class 4 lasers are hazardous for eye exposure. They also can burn skin and materials, especially dark and/or lightweight materials at close range. They should be used with extreme care. Class 4 lasers should not be used by any persons who have not been properly trained in laser safety practices.