**Innolume GmbH**
Konrad-Adenauer-Allee 11
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**Specification**

# OPD10XX000YY0D2PGXXX

## Fiber Coupled Gain-Switched Distributed Feedback Laser Diode Assembly

**Features:**

- 250 mW peak power
- 60 ps optical pulse duration (FWHM)
- On-board TEC controller
- Control electronics and firmware
- Control application with graphical user interface (GUI)
- USB/RS-232/CAN/UART interfaces
- LabView and Python libraries
- Ready-to-use with mounted LD

**Applications:**

- Fiber laser seeding
- Equipment calibration

## Recommended Operating Conditions

@ Pulsed mode, the case is mounted on room temperature heatsink

| Parameter | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|
| Chip Temperature | 20 | 25* | 30 | °C |
| Peak Drive Voltage | | 20 | 30 | V |
| Peak Forward Current | | | 2 | A |
| Output Peak Power | | 250 | | mW |
| Pulse Repetition Rate | single shot | 10 | 30 | MHz |

* in some cases may vary depending on the selected wavelength

## Pulsed characteristics

@ 25°C*, Repetition rate = 10MHz

| Parameter | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|
| Output Peak Power @ Peak Drive Voltage < 30V | 200 | 250 | | mW |
| Pulse Width of Optical Signal (FWHM) | | 60 | 80 | ps |
| Peak Wavelength** (chosen by customer) | 1020 | | 1080 | nm |
| Peak Wavelength Tolerance | | ±1 | | nm |
| Bandwidth (at -10dB level) | | 0.2 | | nm |

* in some cases may vary in 20-30°C range depending on the selected wavelength

** reachable within wavelength tolerance at pulsed power > 200mW

## Input parameters

| Parameter | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|
| Voltage | 4.8 | 5 | 5.2 | V |
| Current | | | 0.6 | A |

## Modulation

| Parameter | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|
| Trigger input impedance | | 50 | | Ohm |
| Trigger input voltage | 3.3 | | 5 | V |
| Trigger output voltage (TTL logic) | | | 3.3 | V |
| Trigger input/output frequency | single shot | | 30 | MHz |

## Connection and Mechanical

| Parameter | Typ. | Unit |
|---|---|---|
| Size (WxDxH) | 60 x 85 x 21 | mm |
| Interfaces | USB/RS232/CAN/UART | |

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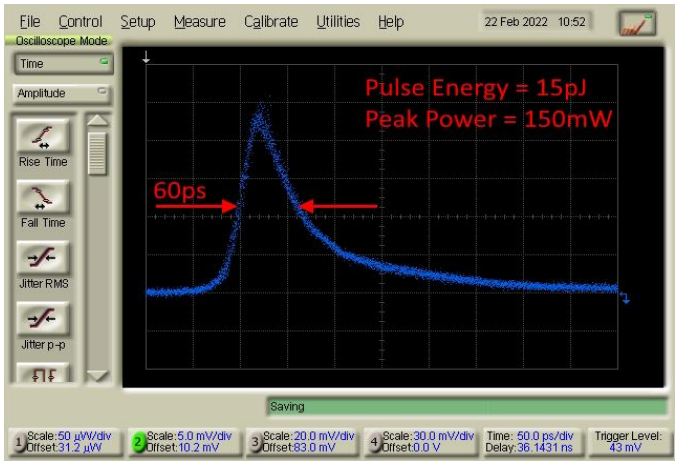
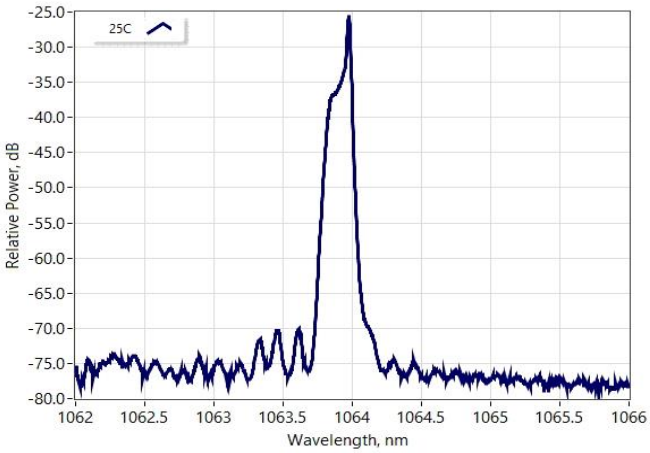
## Typical Pulse Performance (for reference only)

the LDD case is mounted on room temperature heatsink; Tchip=25°C; Peak Drive Voltage=13V; F=10MHz

### Pulse shape*




### Optical Spectra (res. 10pm)




*** - measured by 40GHz sampling oscilloscope with 45GHz photodetector; triggered by LDD "Trigger Output" signal**

## Absolute Maximum Ratings

| Parameter | Min | Max | Unit |
|---|---|---|---|
| LDD Input Voltage | | 5.2 | V |
| Output Peak Power (<1ns pulse width, <10% duty cycle) | | 450 | mW |
| Peak Forward Current (<1ns pulse width, <10% duty cycle) | | 2000 | mA |
| TEC Current | | 1.5 | A |
| TEC Voltage | | 4 | V |
| Chip Operating Temperature | 5 | 45 | °C |
| Case Operating Temperature | 10 | 50 | °C |
| Storage Temperature | -20 | 70 | °C |
| Pin Soldering Temperature (max 10 sec, max case temperature 120°C) | | 300 | °C |
| Fiber Band Radius | 3 | | cm |

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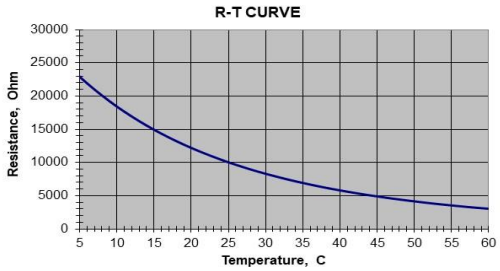
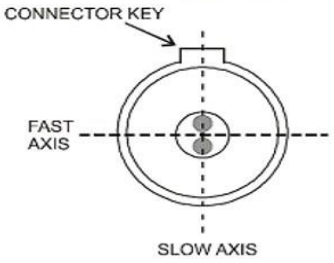
# Specification

| Thermistor specification | | |
|---|---|---|
| **Parameters** | **Value** | **Unit** |
| Type | NTC | |
| Resistance @ 25°C | 10±0.1 | kOhm |
| Beta 25-85°C | 3435±1% | K |

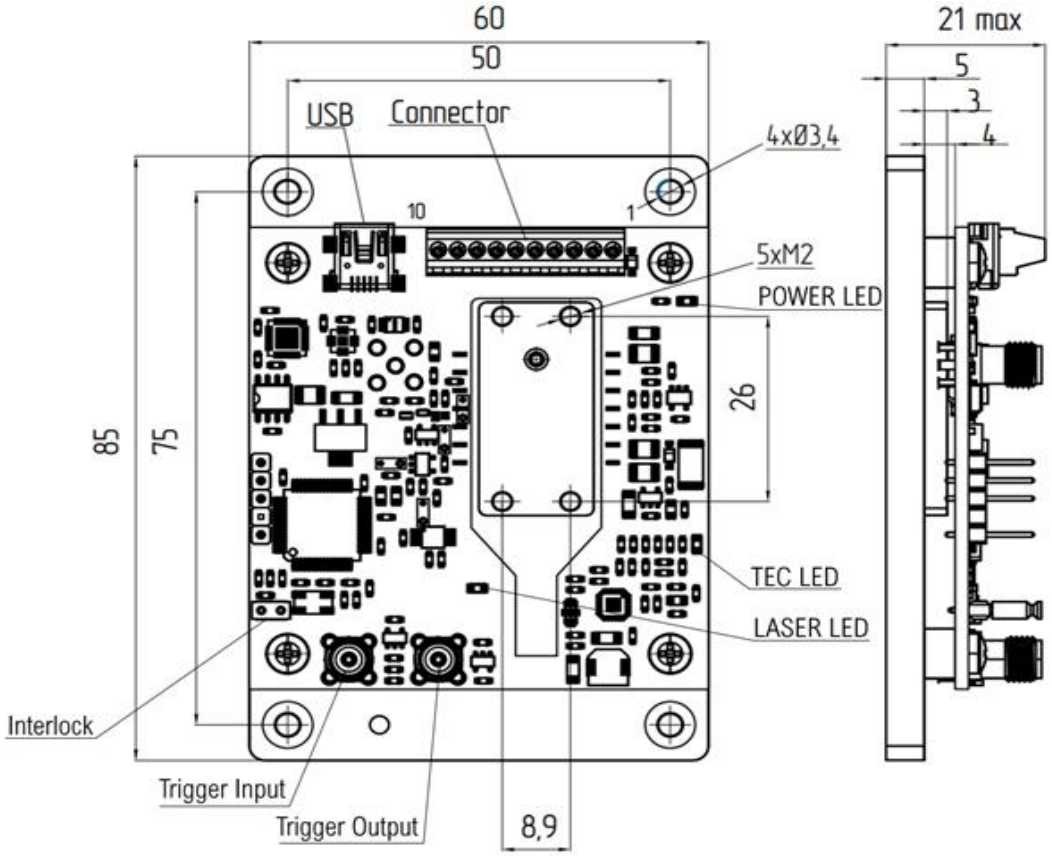



| Fiber specification | | | |
|---|---|---|---|
| **Parameters** | **Value** | **Value** | **Unit** |
| Fiber Type | HI1060 | PM980 | |
| Numerical Aperture (Typical) | 0.14 | 0.12 | |
| Cut-off Wavelength | 920±50 | 900±70 | nm |
| Mode-Field Diameter | 6.2±0.3 @1060nm | 6.6±0.3 @1060nm | μm |
| Cladding Diameter | 125±1 | 125±1 | μm |
| Coating Diameter | 245±15 | 245±15 | μm |
| Loose Tube Diameter (optional) | 900 | 900 | μm |
| Connector | FC/APC | FC/APC | |
| Key | narrow | narrow | |




The output light is polarized along the slow axis of PM fiber.

## Dimensions (in mm)



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## Safety and Operating Instructions

It's highly recommended to assemble the Laser Diode Driver (LDD) case by screws to optical table or some other solid metal surface to prevent device overheating. If it's not possible, a forced blow-off of driver case can help. The deviation from flatness of radiator surface must be less than 0.05mm. It's recommended using of Indium foil or thermal conductive and soft material between bottom of the LDD case and heatsink for thermal interface. It's undesirable to use thermal grease for this.

The light emitted from this device is invisible and can be harmful to the human eye. Avoid looking directly into the fiber connector when the device is in operation. Proper laser safety eyewear must be worn during operation with open connector.

Always set limits before operation with laser diode modules not to exceed absolute maximum ratings. Absolute Maximum Ratings may be applied to the device for short period of time only. Exposure to maximum ratings for extended period of time or exposure to more than one maximum rating may cause damage or affect the reliability of the device. Operating the device outside of its maximum ratings may cause device failure or a safety hazard. Power supplies used with the component must be employed such that the maximum forward current cannot be exceeded.

Avoid back reflection to the device. It may give impact on the device performance in aspects of spectrum and power stability. It also may cause fatal facet damage. Using of optical isolators is highly recommended to block back reflection.

Do not pull the fiber. Do not bend a fiber with a radius smaller than 3 cm. Fiber tip should always be protected from any contamination or damage during the process of installation. After removing the dust-preventing cap covered at fiber tip, carefully clean fiber tip by wiping through one direction using optical lens cleaning paper or cotton swab dabbed with Iso-Propanol or Ethyl alcohol. Operate the device with clean fiber connector only.

Laser diodes are susceptible to damage as a result of electrostatic discharge (ESD). Ensure that you take proper precautions when handling these devices. During device installation, ESD protection has to be maintained - use wrist straps, grounded work surfaces and rigorous antistatic techniques when handling the product.


## Part-number Identification

OPD1064000HI0D2PGXXX -> 250mW peak output power at 1064nm peak wavelength, HI-1060 fiber
OPD1064000PM0D2PGXXX -> 250mW peak output power at 1064nm peak wavelength, PM980 fiber

**NOTE: Innolume product specifications are subject to change without notice**