

<b>OP-10XX-YY-300-ns</b> Fiber Coupled Pulsed Distributed Feedback Laser Diode Assembly	
	<p><b>Features:</b></p> <ul style="list-style-type: none"> <li>• 300 mW peak power</li> <li>• 1-10 ns pulse duration (FWHM)</li> <li>• On-board TEC controller</li> <li>• USB/RS 232/CAN INTERFACES</li> <li>• LabView compatible</li> </ul> <p><b>Application:</b></p> <ul style="list-style-type: none"> <li>• Fiber Laser seeding</li> <li>• LIDAR in automotive</li> <li>• Equipment calibration</li> </ul>
Specification	DATE: 17 <sup>th</sup> June 2019

SPECIFICATIONS					
Parameters	Symb.	Min.	Typ.	Max.	Unit
Pulse current amplitude	$I_{amp}$	0		2	A
Compliance voltage	$V_c$			3	V
Pulse repetition rate	F	single shot		6	MHz
Pulse duration (FWHM)	$\tau$	1		10	ns
Pulse duration accuracy setting	$T_{step}$		0.1		ns
Trigger in (50Ohm impedance)	$V_{in}$	3		5	V
Trigger out (50Ohm impedance)	$V_{out}$		3.3		V
Chip temperature	$T_{op}$	15	25	55	°C
External power (Voltage)	V	4.75	5	5.25	V
External power (Current)	I		0.3	1	A
Dimensions		80x85x21			mm

OPTICAL PULSES					
Test conditions: $I_{amp} = 1A$ , $F = 1\text{ MHz}$ , $\tau = 5\text{ ns}$ , case temperature 25°C.					
Parameters	Symb.	Min.	Typ.	Max.	Unit
Peak power	$P_{peak}$	250	300		mW
Central wavelength	$\lambda$	1028		1080	nm
Wavelength tolerance	$\lambda_t$		1		nm
Wavelength Thermal Coefficient	$\Delta\lambda/\Delta T$		90	110	pm/°C

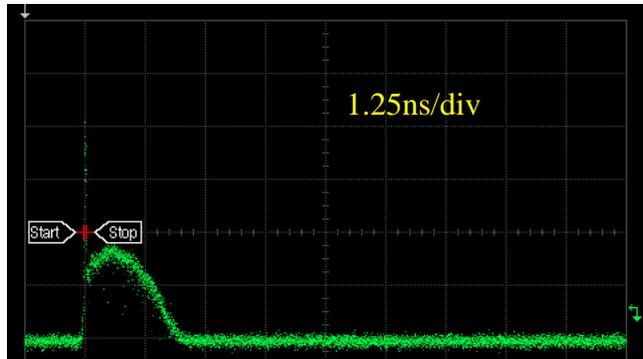
ABSOLUTE MAXIMUM RATINGS			
Parameters	Min.	Max.	Unit
LD forward current (Pulse, 2% duty cycle)		2	A
Laser diode reverse voltage		1	V
TEC current		1	A
TEC voltage		4	V
Storage temperature range (in original sealed pack)	5	80	°C
Case operating temperature range	10	50	°C

## TYPICAL PERFORMANCE for reference only

Test conditions: @ operating point, case temperature 25°C.

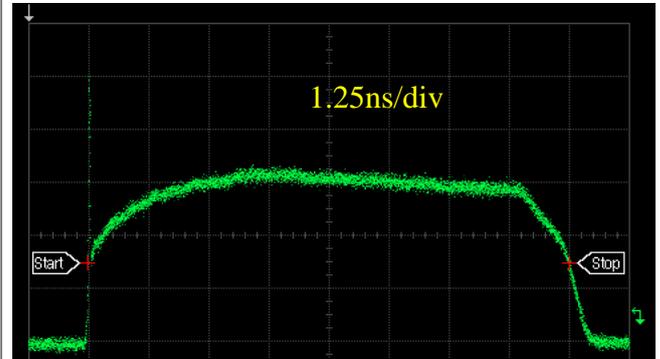
### 1 ns Pulse shape

$I_{amp} = 1A$ ,  $F = 1MHz$ ,  $T_{op} = 25°C$ ; Triggered by splitted optical signal; 1.25ns/div



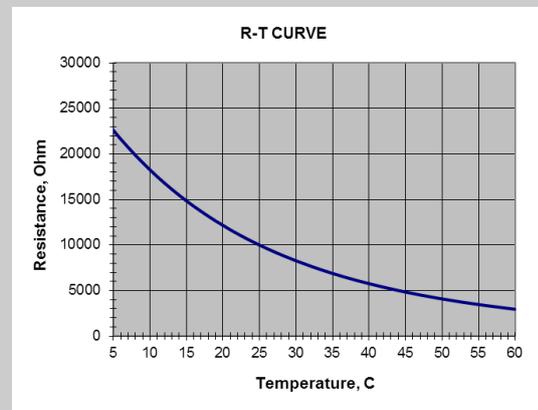
### 10ns Pulse shape

$I_{amp} = 1A$ ,  $F = 1MHz$ ,  $T_{op} = 25°C$ ; Triggered by splitted optical signal; 1.25ns/div



## THERMISTOR SPECIFICATION

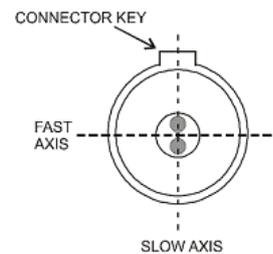
Parameters	Value	Unit
Thermistor type	NTC	
Resistance @25°C	10 ± 0.1	kOhm
Beta 0-50°C	3375	K



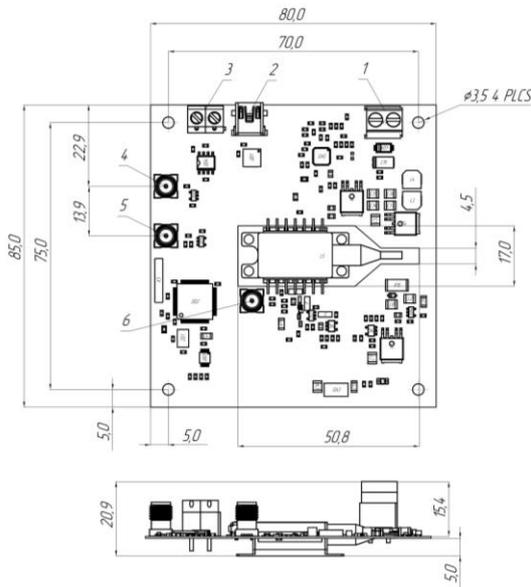
## FIBER SPECIFICATION

Parameters	HI1060	PM980	Unit
Numerical aperture (Typical)	0.14	0.12	
Cutoff wavelength	920±50	900±70	nm
Mode-field diameter (@1060nm)	6.2±0.3	6.6±0.3	µm
Cladding diameter	125±1	125±1	µm
Core-to-cladding offset	≤0.5	≤0.5	µm
Length	1.0 ± 0.1	1.0 ± 0.1	m
Connector	FC/APC (narrow key)		

Connector alignment to PANDA Fiber



## DIMENSIONS (All sizes are given in mm)



### Connectors identification:

1. Power (+5V)
2. USB
3. CAN
4. Trigger out
5. Trigger in
6. Current measurement

## SAFETY AND OPERATING INSTRUCTIONS

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.

Absolute Maximum Ratings may be applied to the Laser Diode 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 Laser Diode 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.

A proper heatsink for the Laser Diode on thermal radiator is required. The Laser Diode must be mounted on radiator with 4 screws (bolt down in X-style fashion with initial torque set to 0.075Nm and final X-style bolt down at 0.15Nm) or with clamps. 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 case and heatsink for thermal interface. It's undesirable to use thermal grease for this.

Avoid back reflection to the Laser Diode. It may give impact on the device performance in aspects of spectrum and power stability. It also may cause fatal laser diode 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. Operate the laser module with clean fiber connector only. Periodically check and clean the connector if necessary. To clean the connector use a clean-room compatible tissue only, put some Isopropyl alcohol onto it and carefully clean the facet of the connector, or use special fiber cleaning tools. Perform cleaning only with the laser current switched off.

Electrostatic discharge can lead to device failure. Take necessary precautions to prevent ESD.



## Example of Part Number Identification

OP-1064-PM-300-ns -> 300mW pulse power at wavelength 1064nm, PM-980 fiber  
OP-1064-HI-300-ns -> 300mW pulse power at wavelength 1064nm, HI-1060 fiber  
OP-1030-PM-300-ns -> 300mW pulse power at wavelength 1030nm, PM-980 fiber

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