



## PC Series 850nm and 1300nm MM App Dual Laser Combiner Modules

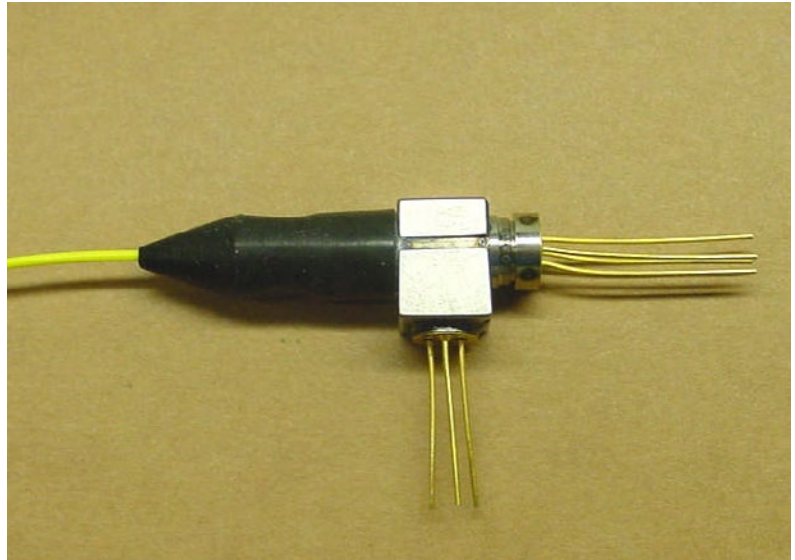
PD-LD Inc. now offers its next generation of Dual Wavelength Laser Combiner Modules. These devices are designed to couple light from two different semiconductor laser diodes into a single optical fiber output. Single fiber dual wavelength combiner modules offer the user the simplicity of using a single device when configuring equipment that requires the output of two different laser wavelengths.. These Combiner Modules combine two sources in a single housing thus relieving the user of having to fusion splice two discreet lasers along with a coupler and then squeeze them onto their PCB.

These small, compact modules require minimal board real estate and may be specified by combining any combination of the following three wavelengths:

- 850nm VCSEL
- 1310 nm FP
- 1550 nm FP

The PD-LD product incorporates low threshold current, high differential quantum efficiency MQW (Multiple Quantum Well) FP semiconductor lasers whose typical total operating currents are less than 30 mA. These low current consuming laser diodes are well suited for equipment using battery power sources. The 850nm Vertical Cavity Surface Emitting Lasers (VCSELs) are also very low threshold current devices requiring only 4 to 6 mA of operating current. Low threshold and drive currents help to extend operating duration between battery recharge or replacement.

PD-LD's Combiner modules are built to meet the demanding requirements of the instrumentation marketplace. These units are assembled using state of the art YAG Laser welding processes. This technique guarantees a semiconductor to optical fiber interface that remains stable over mechanical and environmental extreme. Monitor diode to fiber output tracking error is guaranteed for less than 1dB over the -20 to +70C operating temperature range. The optical semiconductor die are mounted within hermetically sealed TO can subassemblies making them impervious to contaminants and moisture. Combiner modules are built with 1 meter long 50/125/900 um MMF fiber optic pigtailed. These fibers may be terminated with most standard fiber optic connectors including FC, SC, ST and LC.



### Features

- Output Power -7dBm to -3dBm
- -40 to +85° Operating Temperature
- Choice of Wavelengths  
850nm  
1310nm  
1550nm

### Applications

- Stabilized Light Source
- Hand Held Instruments
- Fiber Loss Measurement
- Fiber Plant Characterization

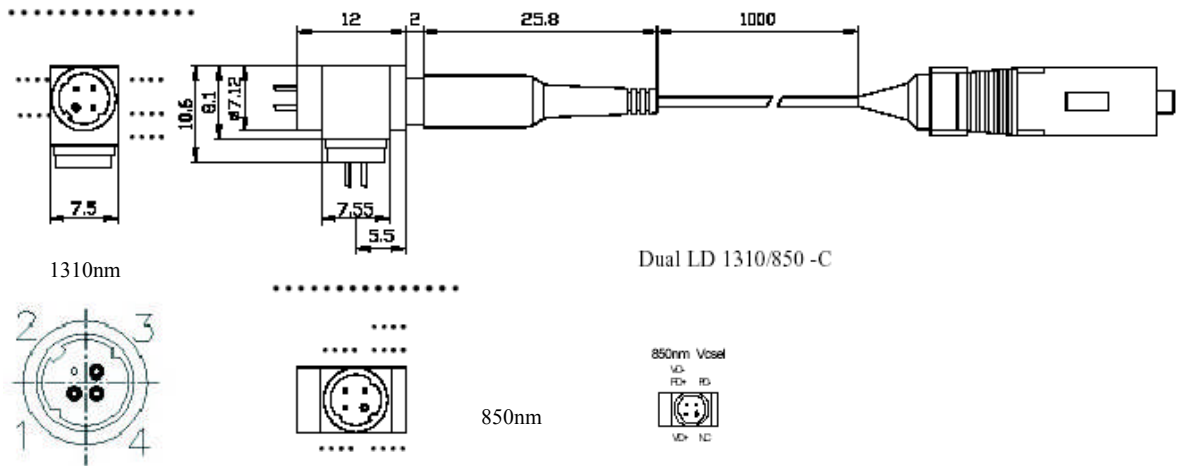
### Compact, rugged construction

- Low Threshold Current Laser
- Low Power Consumption
- Available with optical connectors
- Replaces Discreet Lasers and Optical Couplers
- Class 1 Eye Safe Device
- UL Listed

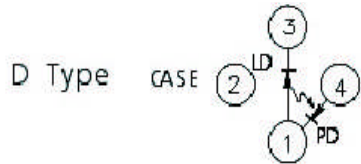
### Absolute Maximum Ratings Parameters

Module	Symbol	Rating	Units
Operating Temp	T <sub>OP</sub>	-20 to 70	°C
Storage Temp	T <sub>STG</sub>	-40 to 85	°C
Soldering Temp	T <sub>SLD</sub>	250	°C
<b>Laser Diode</b>			
Forward Current	I <sub>F(LD)</sub>	I <sub>TH</sub> + 50	mA
Reverse Voltage	V <sub>R(LD)</sub>	2	V
<b>Monitor Diode</b>			
Forward Current	I <sub>F(MD)</sub>	2	mA
Reverse Voltage	V <sub>R(MD)</sub>	20	V

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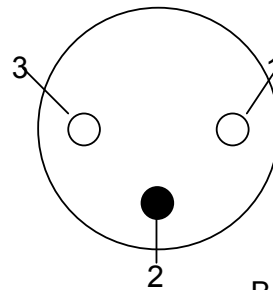


1300nm Laser PIN-OUT



- P in1 : Laser Anode and Monitor Diode Cathode
- P in2 : Case Gnd
- P in3 : Laser Cathode
- P in4 : Monitor Diode Anode

3 Lead VCSEL PIN-OUT



3 Lead VCSEL	
Pin-Out	"85L"
Pin #1	LD <sub>cathode</sub>
Pin #2	PD <sub>cathode</sub> LD <sub>Anode</sub>
Pin #3	PD <sub>Anode</sub>

## PC Series 850nm and 1300nm MM App Dual Laser Combiner Modules

Dual Laser MMF Combiner Module Characteristics and Parameters						
	Symbol	MIN.	TYP.	MAX	Units	Test Condition
<b>Laser Diode</b>						
Power, High	P <sub>O</sub>	0.5			mW	50/125um MMF CW
Threshold Current 1310nm	I <sub>TH</sub>	-	5	15	mA	CW
Threshold Current 850nm	I <sub>TH</sub>	-	3	6	mA	CW
Operating Current 1310nm	I <sub>OP</sub>	-	20	30	mA	I <sub>F</sub> = I <sub>OP</sub>
Operating Current 850nm	I <sub>OP</sub>	-	5	10	mA	I <sub>F</sub> = I <sub>OP</sub>
Operating Voltage, 1310nm	V <sub>OP</sub>	-	1.1	1.5	V	I <sub>F</sub> = I <sub>OP</sub>
Operating Voltage, 850nm	V <sub>OP</sub>		1.9	2.2	V	I <sub>F</sub> = I <sub>OP</sub>
Peak Wavelength 1310nm	Lambda	1290	1310	1330	nm	25°C
		1260		1360	nm	-40 to 85°C
Peak Wavelength 850nm	Lambda	830	850	860	nm	-40 to 85°C
Spectral Width 1310nm	Delta Lambda	-	1.0	3.0	nm	RMS,-20dB
Spectral Width 850nm	Delta Lambda	-	-	0.85	nm	RMS,-20dB
Temp. Coefficient 1310nm		-	-	<0.8	nm/°C	-40 to 85°C
Rise/Fall Time	t <sub>r</sub> , t <sub>f</sub>	-	0.3	0.7	nsec	10~90%
<b>Monitor Diode</b>						
Output 1310nm	I <sub>MD</sub>	0.1	0.5		mA	I <sub>F</sub> = I <sub>OP</sub> , P <sub>O</sub> V <sub>RD</sub> =1V
Output 850nm	I <sub>MD</sub>	0.03	0.1		mA	I <sub>F</sub> = I <sub>OP</sub> , P <sub>O</sub> V <sub>RD</sub> =1V
Dark Current	I <sub>D(MD)</sub>	-	0.01	0.1	μA	V <sub>R(MD)</sub> =10V
Capacitance	C <sub>(MD)</sub>	-	10	20	pF	V <sub>R(MD)</sub> =10V, f=1MHz
<b>Module</b>						
Tracking Error		-1		+1	dB	-20 to 70°C