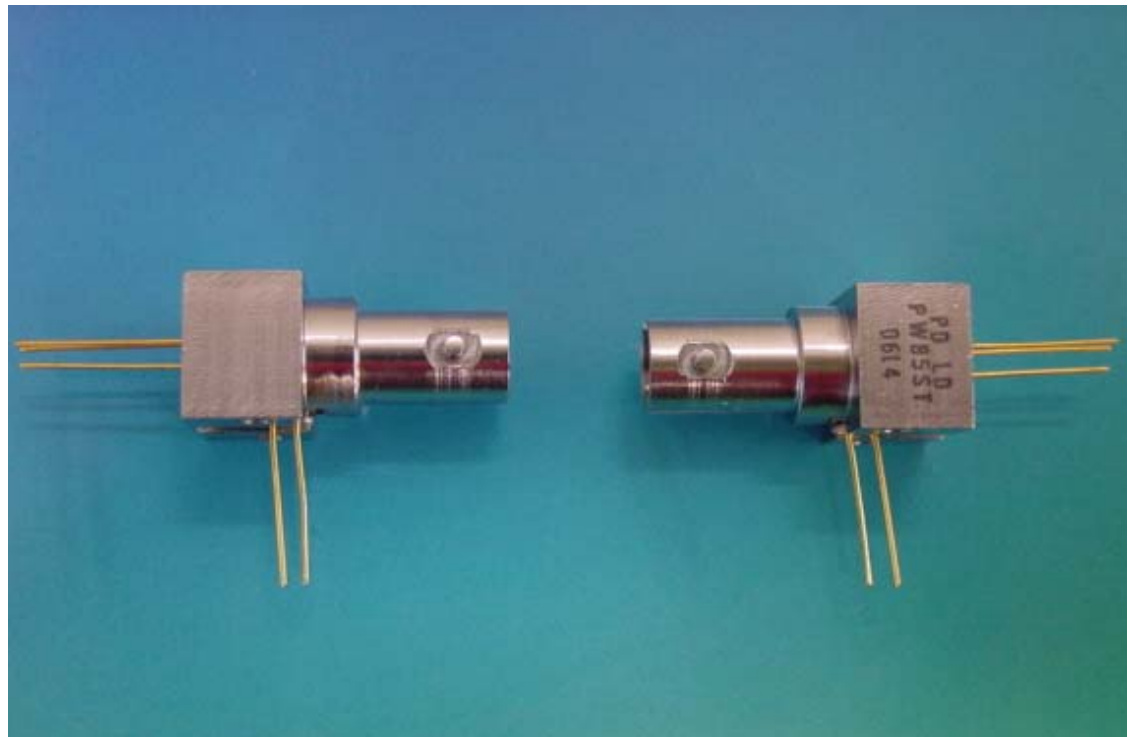


**Applications**

- Video Transmission
- Short distance over MMF
- Full Duplex Communications
- WDM Bi-Directional transmission over a single fiber

**Features**

- Output Power of -16dBm typical
- -40°C to 85° Operating Temperature Range
- 850 nm LED Source
- Low Internal Cross Talk
- Low Noise InGaAs PIN Photodiode Receiver
- Compact, rugged construction
- Low Power Consumption
- ST Board or Panel Mount Receptacle
- Replaces Discreet Components
- Class 1 Eye Safe Device
- UL Listed



PD-LD Inc. is now offering LED based WDM style BiDirectional transmitter and receiver modules operating in the 850 and 1310nm optical windows. These devices, part number PW85ST, are designed to simultaneously transmit and receive over a single optical fiber at frequencies from DC to 200MHz. Dual wavelength bi-directional modules replace the need for a multimode fiber coupled LEDs, a fiber coupled PIN photodiode, a discreet fiber optic WDM and a second stage optical isolator. The BiDirectional Modules combine all of these optical functions and relieve the user of having to fusion splice several discreet units together and then squeeze them onto their PCB.

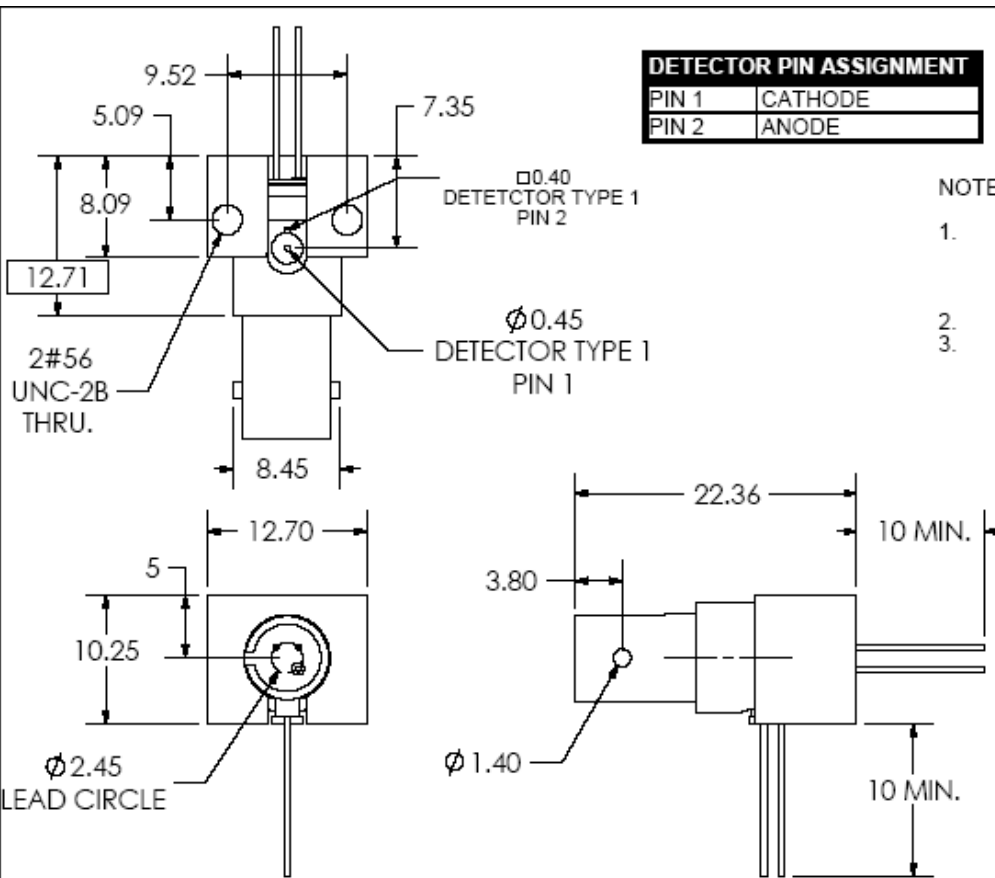
These small, compact modules require minimal board real estate and when used in pairs deliver two way operation over a single 62.5/125um optical fiber.

The PD-LD product incorporates high reliability surface emitting 850nm light emitting diodes (LEDs) transmitters that have typical operating currents between 50 and 100mA. The receiver sections offer discreet InGaAs PIN photodiodes of planar semiconductor design that have dielectric passivation for very low noise performance at 1310nm. See the data sheet for the PW13ST series for the matching bidirectional module. PD-LD's BiDirectional WDM modules are built to meet the demanding requirements of industrial operating temperature ranges of -40 to 85°C.

The PD-LD BiDirectional modules are 100% tested for conformance to specification and are of robust construction. The optical semiconductor die are mounted within hermetically sealed TO can subassemblies making them impervious to contaminants and moisture. This construction ensures that the modules will operate over full industrial temperature range.

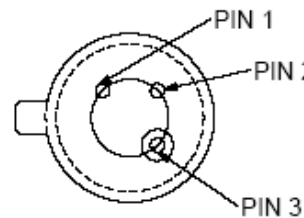
**Absolute  
Maximum Ratings  
Parameters**

Module	Symbol	Rating	Units
Operating Temp	$T_{OP}$	-40 to 85	°C
Storage Temp	$T_{STG}$	-55 to 125	°C
Soldering Temp	$T_{SLD}$	250	°C
<b>LED</b>			
Forward Current	$I_{F(LD)}$	100	mA
Reverse Voltage	$V_{R(LD)}$	1	V
<b>PIN Photodiode</b>			
Forward Current	$I_{F(PD)}$	10	mA
Reverse Current	$I_{R(PD)}$	5	mA
Reverse Voltage	$V_{R(PD)}$	20	V

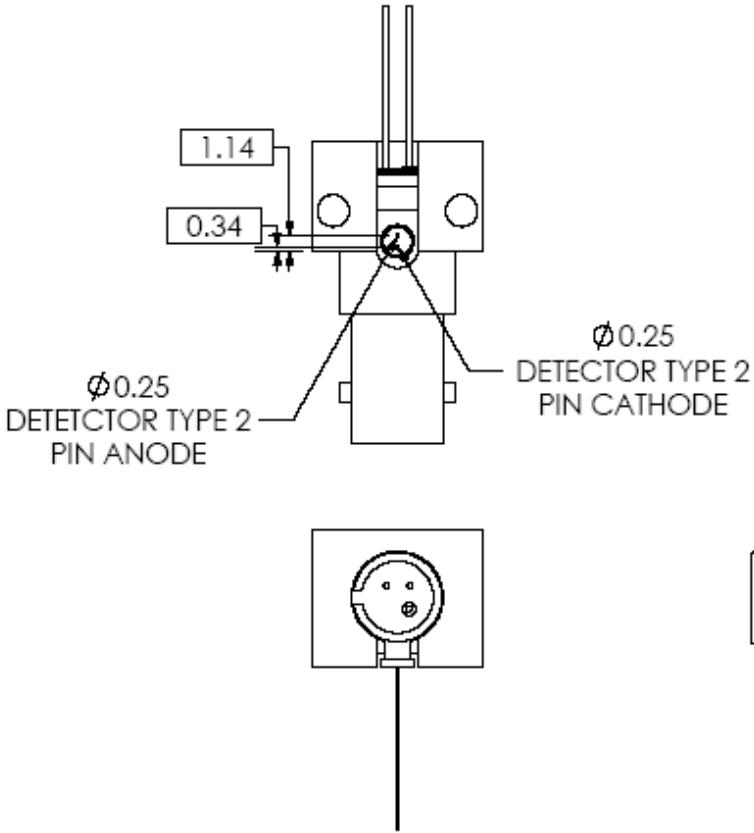


**NOTE :**

1. THIS DEVICE IS SUSCEPTABLE TO DAMAGE FROM ELECTROSTATIC DISCHARGE (ESD). FOLLOW GUIDELINES ACCORDING TO PROPER ESD PROCEDURES.
2. CROSSTALK TO BE <75nA
3. ANY OF TWO DIFFERENT DETECTOR TYPES (DIFFERENT PIN LOCATIONS) MAY BE USED WITH THIS PRODUCT. SEE SHEET 1 & 2.



PIN 1	ANODE
PIN 2	CATHODE
PIN 3	CASE GROUND



NOTES:

1. ALL MECHANICAL DIMENSIONS ARE SAME AS SHOWN IN SHEET 1.
2. FINAL PRODUCT MAY CONTAIN EITHER DETECTOR TYPE.

BiDirectional Module Characteristics and Parameters						
	Symbol	MIN.	TYP.	MAX	Units	Test Condition
<b>850nm LED</b>						
Power	$P_O$	20	35		uW	$I_F=100\text{ mA}$ (Note 1)
Operating Current	$I_{OP}$		50	100	mA	$I_F = I_{OP}$
Operating Voltage	$V_{OP}$	-	1.8	2.0	V	$I_F = I_{OP}$
Peak Wavelength	$\Lambda$	830	850	870	nm	25°C
Spectral Width	Delta $\Lambda$	-	35	-	nm	FWHM
Rise/Fall Time	$t_r, t_f$	-	4.5	6.0	nsec	10~90%
<b>PIN Photodiode</b>						
Active Area			300		$\mu\text{m}$	Diameter
Spectral Sensitivity	S	0.5	-		A/W	$V_{R(PD)}$ =5V@1310nm
Reverse Voltage	V		5	15	V	
Dark Current	$I_{D(PD)}$	-	0.3	1.0	nA	$V_{R(PD)}=5\text{V}@25^\circ\text{C}$
Capacitance	$C_{(PD)}$		5	8	pF	$V_{R(PD)}=5\text{V},$ $f=1\text{MHz}$
Rise/Fall Time	$t_r, t_f$	-	-	2.0	nsec	$V_{R(PD)}=5\text{V},$ 10~90%
<b>Cross Talk Current</b>	$I_{Cr}$		75		nA	$V_{R(PD)}=5\text{V}$ $I_{LED}=60\text{mA}$ (Note 2)

Note 1: 62.5/125um graded index fiber (NA=0.275)

Note 2: Internal Cross Talk with ceramic ferrule inserted but no optical power from fiber. Total current = Dark Current + Cross Talk Current.