



## FIBER TO PHOTODIODE COUPLERS

### Features

- High coupling efficiency
- Available in single mode, polarization maintaining and multimode versions
- Compact housing
- InGaAs or Si photodiodes standard
- Contact factory for custom specific diodes
- Small active area photodiodes for high bandwidth

### Applications

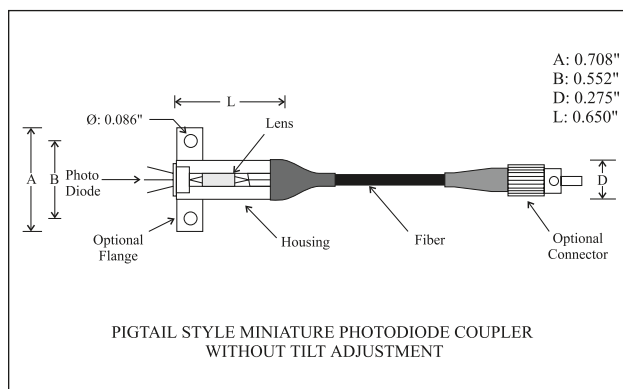
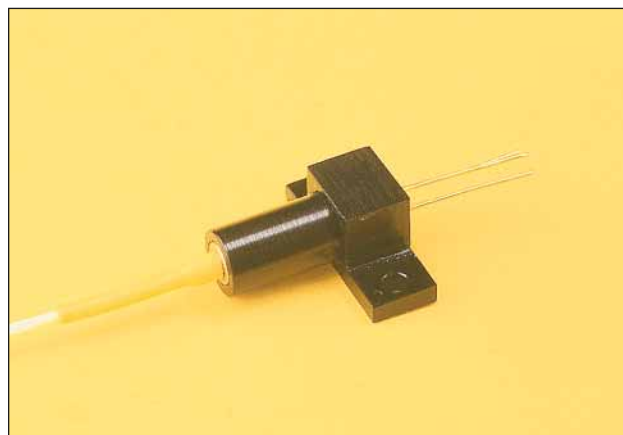
- Power measurements
- Optical signal measurements
- Optical power control devices
- Fiber optic sensors
- Data transmission systems

OZ Optics provides packaging services of photodiodes at a low cost. Fiber to photodiode couplers are available for virtually any photodiode available, using either singlemode, multimode or polarization maintaining fiber. The coupler design is both rugged and flexible, allowing people to do their own alignment, if they desire. For OEM applications, miniature pigtail style fiber to photodiode couplers are available that do not use the tilt adjustment technique. These feature both a smaller size and lower cost.

OZ Optics' fiber to photodiode couplers come in three basic designs. The most common design consists of two baseplates, separated by a resilient O-ring. The photodiode is epoxied into one plate. The other plate contains the focusing optics and the connector for the input fiber. A focusing lens is used to focus the light from the fiber to a spot less than or equal to the size of the active area of the photodiode. Spot sizes of less than 10 microns in size can be achieved with this method, making it ideal for very high speed transmission rates.

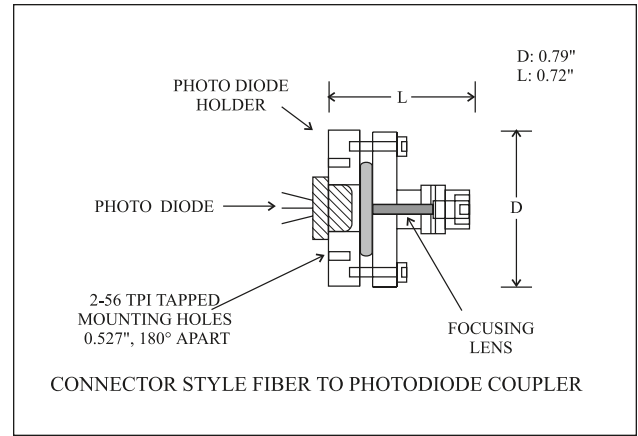
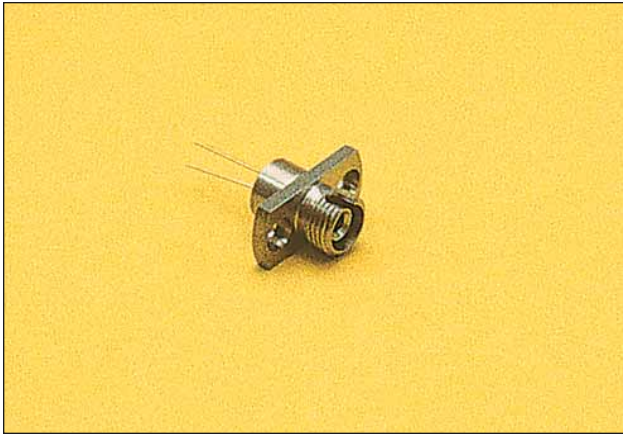
Utilizing OZ Optics patented tilt adjustment technique, the alignment between the photodiode and the coupling optics is adjusted until the maximum coupling efficiency is achieved. Typical coupling efficiency exceeds 80 percent for singlemode fibers, although this varies, depending on the fiber and photodiode characteristics. The tilt adjustment design is recommended for getting the best coupling efficiencies into very small surface area photodiodes.

The second design does not have the tilt adjustment design built in. Instead, the fiber, lens and photodiode are glued into a single assembly. The third and final design uses no lens at all. The fiber is simply butted against the photodiode. Both of these designs are intended for OEM applications.



For optimum coupling efficiency, stability, and minimum backreflection, we recommend using pigtail style fiber to photodiode couplers. These units have the fiber directly attached to the photodiode. A wide variety of fiber types are available from stock. They can be cabled with different cable sizes, and preterminated with different types of connectors. Metallized fibers and lenses, as well as soldering techniques, are available for photodiode couplers requiring hermetic sealing. Receptacle style versions are typically only available for multimode applications, or large active area photodiodes.

OZ Optics welcomes opportunities to fiber couple into your specific photodiode. Please contact us with details of the fiber required and the photodiode specifications, and we will determine the best, most cost effective method of fiber coupling.



## ORDERING INFORMATION

**A** = 0 = Lens style fiber to photodiode coupler with a receptacle and tilt adjustment design.  
 1 = Lens style miniature fiber to photodiode coupler with a receptacle, without tilt adjustment.  
 2 = Miniature fiber to photodiode coupler with a receptacle, without tilt adjustment or lens.

### FPD-A-X-W-F

**F** = is the type of fiber being used (S for singlemode, M for multimode, P for polarization maintaining fiber).

**W** = is the operating wavelength of the photodiode, in nm.

**X** = is the connector receptacle type. For pigtail style photodiode couplers it refers to the male connector on the end of the fiber. (3 for NTT-FC compatible, 3S for Super FC, 3A for Angled PC, 5 for SMA 905, 8 for AT&T-ST, SC for SC connectors, X for unterminated fiber ends).

### PFPD-A1-W-a/b-F-LB-X-JD-L

**A** = 1 = Lens style fiber pigtailed photodiode coupler using the tilt adjustment design.  
 2 = Lens style miniature fiber pigtailed photodiode coupler without tilt adjustment.  
 3 = Miniature fiber pigtailed photodiode coupler without tilt adjustment or lens.

**W** = is the operating wavelength of the photodiode, in nm.

**a.b** = are the fiber core and cladding diameters respectively, in microns.

**F** = is the type of fiber being used (S for singlemode, M for multimode, P for polarization maintaining fiber).

**L** = is the length of fiber in meters.

**JD** = is the fiber jacket type (0.25 or 0.4 for unjacketed fiber, 1 for 900 micron OD nylon jacketing or loose tubing, 3 for 3mm OD loose tube PVC cable).

**X** = is the connector receptacle type. For pigtail style photodiode couplers it refers to the male connector on the end of the fiber. (3 for NTT-FC compatible, 3S for Super FC, 3A for Angled PC, 5 for SMA 905, 8 for AT&T-ST, SC for SC connectors, X for unterminated fiber ends).

**LB** = is the desired backreflection level for pigtail style fiber to photodiode couplers. (25, 40 or 60dB typically).

When ordering, please email us your photodiode and fiber specifications. Add "PD" to the end of the part number if the photodiode is to be provided with the coupler by OZ Optics. Add "PO" to the end of the part number for Parts Only - if the customer is to do the alignment him/herself.

### Ordering example for custom parts

A customer wants to pigtail a photodiode to a 9/125 singlemode fiber, to work at both 1300 and 1550nm. To minimize size he chooses the fiber to photodiode coupler without tilt adjustment, but including a lens to maximize coupling efficiency. The fiber is to be 0.5 meters long, with 900 micron nylon jacketing, and unterminated. OZ Optics part number: **PFPD-21-1300/1550-9/125-S-40-X-1-0.5**