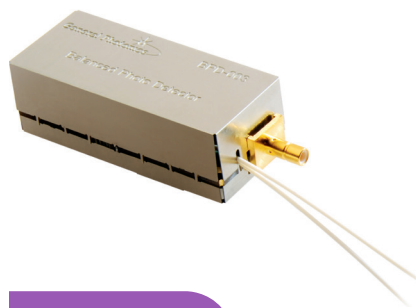


## OEM Balanced Detector (BPD-003)



OCT and sensor systems require high performance balanced photodetectors to boost system signal to noise ratio. The BPD-003 is specially designed for OEM applications in such fields, engineered for low cost and small size as well as high performance. The device consists of an optical head and a post-amplification board with an SMA or SMB RF output. The optical head has two input fibers aligned with a pair of balanced photodetectors, followed by an integrated ultra low noise transimpedance amplifier (TIA) placed immediately after the photodetectors to amplify received signals with low noise and enhanced CMRR. The post-amplification circuit further conditions and amplifies the signal to a range of  $\pm 3.5$  V maximum. With a bandwidth of up to 200 MHz and a high conversion gain, the BPD-003 is ideal for integration into OCT, fiber sensor and high performance optical measurement systems.

### Specifications:

| Photodetector                                                                                                                                                                                                                                                                                                                                            |                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Operating Wavelengths                                                                                                                                                                                                                                                                                                                                    | 1060, 1310, or 1550 $\pm$ 50nm                                                                                       |
| Photodetector Type                                                                                                                                                                                                                                                                                                                                       | InGaAs                                                                                                               |
| PD Responsivity <sup>1</sup>                                                                                                                                                                                                                                                                                                                             | > 0.8mA / mW at 1550nm<br>> 0.7mA / mW at 1310nm<br>> 0.5mA / mW at 1060nm                                           |
| PDL                                                                                                                                                                                                                                                                                                                                                      | < 0.2 dB                                                                                                             |
| Return Loss                                                                                                                                                                                                                                                                                                                                              | > 45 dB                                                                                                              |
| Maximum Input Power                                                                                                                                                                                                                                                                                                                                      | 10 mW                                                                                                                |
| Pigtail Length                                                                                                                                                                                                                                                                                                                                           | > 0.75m                                                                                                              |
| Fiber Type                                                                                                                                                                                                                                                                                                                                               | SMF - 28 for 1310 or 1550nm<br>Hi1060 for 1060nm                                                                     |
| RF Output                                                                                                                                                                                                                                                                                                                                                |                                                                                                                      |
| RF Output Bandwidth (3dB) <sup>2,3</sup>                                                                                                                                                                                                                                                                                                                 | DC to 200 MHz                                                                                                        |
| Transimpedance Gain <sup>3</sup>                                                                                                                                                                                                                                                                                                                         | $100 \times 10^3$ V/A (TIA + post amplifier)                                                                         |
| Conversion Gain <sup>4</sup>                                                                                                                                                                                                                                                                                                                             | > $80 \times 10^3$ mV / mW at 1550nm<br>> $70 \times 10^3$ mV / mW at 1310nm<br>> $50 \times 10^3$ mV / mW at 1060nm |
| CW Balanced Saturation Power <sup>5</sup>                                                                                                                                                                                                                                                                                                                | 36 $\mu$ W at 1550nm<br>42 $\mu$ W at 1310nm<br>58 $\mu$ W at 1060nm                                                 |
| Common Mode Rejection Ratio                                                                                                                                                                                                                                                                                                                              | > 35 dB (DC to 40MHz)<br>> 15 dB (40 to 200MHz)                                                                      |
| NEP (DC - 100MHz)                                                                                                                                                                                                                                                                                                                                        | < 6 pW / $\sqrt{\text{Hz}}$                                                                                          |
| RF Output Impedance                                                                                                                                                                                                                                                                                                                                      | 50 $\Omega$                                                                                                          |
| RF Output Voltage (Linear Range)                                                                                                                                                                                                                                                                                                                         | $\pm 1.75$ V at 50 $\Omega$ load<br>$\pm 3.5$ V at high impedance load                                               |
| RF Output Connector                                                                                                                                                                                                                                                                                                                                      | SMA or SMB                                                                                                           |
| Power Supply Input Connector                                                                                                                                                                                                                                                                                                                             | 6 - pin connector header with 0.1" pitch<br>or 7 - pin SATA connector                                                |
| Power Supply                                                                                                                                                                                                                                                                                                                                             | $\pm 5$ V / 200 mA                                                                                                   |
| General                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                      |
| Operating Temperature                                                                                                                                                                                                                                                                                                                                    | 10 to 50 $^{\circ}\text{C}$                                                                                          |
| Storage Temperature                                                                                                                                                                                                                                                                                                                                      | -40 to 85 $^{\circ}\text{C}$                                                                                         |
| Dimensions                                                                                                                                                                                                                                                                                                                                               | 1.95" (L) $\times$ 0.85" (W) $\times$ 0.65" (H)                                                                      |
| Notes:<br>Values are referenced without connectors.<br>1. Includes the coupling loss of fiber to photodiode.<br>2. Tolerance $\approx$ 20%.<br>3. Other bandwidths may be available.<br>4. Other gains are available.<br>5. For other transimpedance gains and wavelengths, CW Saturation Power is specified by (3.5V/Transimpedance gain)* Responsivity |                                                                                                                      |

# MODULES

- Optical Coherence Tomography Technologies

## PASSIVE COMPONENTS