



Electro Optical Components, Inc.

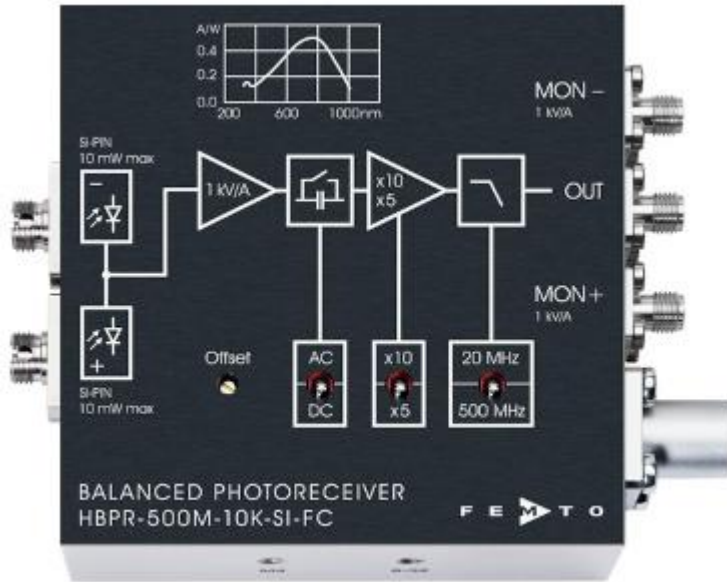
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BALANCED PHOTORECEIVER SERIES HBPR



FEATURES

- Bandwidth up to 500 MHz
- Common-Mode Rejection Ratio (CMRR) up to 55 dB
- Very low noise, NEP down to $3.7 \text{ pW}/\sqrt{\text{Hz}}$
- Si and InGaAs models for spectral range from 320 to 1700 nm
- Switchable 20 MHz low pass filter to minimize wideband noise
- High gain of up to 60,000 V/A, switchable in two stages
- Switchable output coupling (AC/DC)
- Fast DC-coupled monitor outputs with 10 MHz bandwidth
- Input either free space or fiber-coupled
- 1.035 "-40 threaded free space input, compatible with many standard optical systems

DETECTION OF SMALLEST OPTICAL DIFFERENCE SIGNALS FROM DC UP TO 500 MHZ

By taking the exact difference between the two input signals, common-mode noise, such as the intensity noise of the laser source used, is suppressed. This way, smallest optical signals can be extracted from the signal measurement path that would otherwise be buried in the noise.

The photoreceivers of the HBPR series consist of a combination of two anti-parallel connected photodiodes with a subsequent low-noise transimpedance amplifier. The photodiodes are carefully selected and matched in pairs to achieve the highest possible common mode rejection ratio (CMRR). The low input noise (NEP) and excellent common mode rejection set standards for balanced photoreceivers in the MHz range and enable highly sensitive signal detection. The high bandwidth allows the precise detection of laser pulses, even with high repetition rates and rapidly changing signal shapes, such as in quantum state tomography.

Thanks to additional features such as switchable bandwidth limitation (low-pass filter), separate fast monitor outputs, adjustable offset and switchable AC/DC coupling, the photoreceivers of the HBPR series are among the most versatile balanced photoreceivers.

COMPATIBLE WITH OPTICAL BENCH (FREE SPACE) AND FIBER OPTICS

The free space inputs are designed as 1.035"-40 threaded flange with screw-on coupler ring (FST) or as a 25 mm round flange without thread (FS). Both types open up broad compatibility with optical accessories from various manufacturers, such as lenses, tubes, cage systems, optical adapters etc.

The relatively large-area detectors facilitate optical focusing in free space applications and ensure high and stable coupling efficiency when using the optionally available fiber optic adapters.

The FST free space SI models with \varnothing 0.8 mm photodetectors can easily be converted to a fiber connection (FC, FSMA) thanks to the large detector surface, by simply screwing on one optionally available fiber adapter of the PRA series. For models with smaller detector areas, such as \varnothing 0.4 / 0.3 mm, the use of a fiber adapter is only recommended to a limited extent, since coupling losses and instabilities can occur. If the focus is on high-precision fiber optic measurements, using HBPR FC-models with fixed optical fiber input will usually give the best results.

All HBPR photoreceivers are equipped with UNC 8-32 and M4 threaded holes and can therefore be conveniently and stably integrated into optical systems on standard holders.



Pic.1 Fiber-coupled version (FC)



Pic. 2 Free space version, 1.035"-40 Thread (FST)