10 GHz High-Gain Photo Receiver

**Overview**

The Optilab PR-12-B-M is a 12 GHz bandwidth amplified PIN photodiode receiver module, designed for RF over fiber, antenna remoting, and broadband RF signals transmission applications using single mode optical fiber. The PR-12-B-M utilizes a wide bandwidth PIN photodiode plus a linear Trans-Impedance Amplifier (TIA) that provides optical to RF conversion to the frequency range beyond 12 GHz. The PR-12-B-M is a highly linear O/E converter that can be used for every type of analog and digital signal, with remote status monitoring through an RS-485 interface. When the PR-12-B-M RF over fiber receiver module is linked with the LTA-20-M lightwave transmitter module, the combination provides an excellent solution for cost-effective 12 GHz RF over fiber applications.

**Features**

- RFoF Receiver, 0.01 GHz to 12 GHz
- Highly Linear for analog transmission
- Linear TIA Gain of 500
- Remote monitor through USB 2.0 or RS-485
- Housing designed for RF shielding
- LabVIEW interface

**Use In**

- 12 GHz RF Transmission over Fiber
- RF/IF signal distribution
- Satcom microwave antenna signal distribution
- Broadband delay-line and signal processing
- Radar system link
- Phased and interferometric array antenna

**Function Diagram**
PR-12-B-M

SPECIFICATIONS

Photodiode Wavelength Range
1250 nm to 1650 nm

Operational Bandwidth
0.01 GHz to 12 GHz

Optical Input Level
+3 dBm Maximum

Responsivity
0.85 A/W @ 1550 nm Typical

Trans-Impedance Gain
500 typ.

Bandwidth
12 GHz typ.

S22 Characteristics
<10 dB to 10 GHz typ.

Optical Return Loss
-30.0 dB typ.

2nd Harmonic Distortion
-60.0 dBc max.

3rd Harmonic Distortion
-70.0 dBc max.

Optical PDL @ 1550 nm
0.05 dB typ., 0.1 dB max.

Output Coupling
AC Coupled

RF Impedance
50 Ω

Ripple Over Bandwidth
±1.0 dB

GENERAL

MECHANICAL

Operating Temperature
-20°C to +70 °C

Storage Temperature
-55 °C to +85 °C

Power Supply Requirements
±5 V DC, 1 mA max.

Optical Connector
FC/APC

RF Input Connector
K Connector Female, 50 Ω

DC Connector
USB 2.0

Local Alarm
LED: Optional Input Power

Remote Alarms
RS-232 Interface (optional)

Dimensions
90mm x 80mm x 22mm

Included Accessories
110 V - 240 V AC Adaptor & Cable

Housing
Precision Mach, Anodized Aluminum

Product specifications and description are subject to change without notice. © 2018 Optilab, LLC. PR-12-B-M. Oct 2018 Rev. 1.0
TYPICAL S21 RESPONSE

![TYPICAL S21 RESPONSE GRAPH]

LINK GAIN

![LINK GAIN GRAPH]

TEST CONDITIONS & LINK GAIN MEASUREMENTS

![TEST CONDITIONS & LINK GAIN MEASUREMENTS DIAGRAM]
MECHANICAL DRAWING

REMOTE LABVIEW INTERFACE

Optilab offers remote interface via Labview software, for parameter adjustment and status monitoring, contact Optilab for more details.