23 GHz Linear PhotoReceiver Module

SK-PR-23-M

The Optilab PR-23-M is a 23 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-23-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 23 GHz. The PR-23-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 a USB interface. When the PR-23-M RF over fiber receiver module is linked with the LTA-20-M lightwave transmitter module, the combination provides an excellent solution for ultra-wideband RF to fiber conversion applications. Contact Optilab for more information.

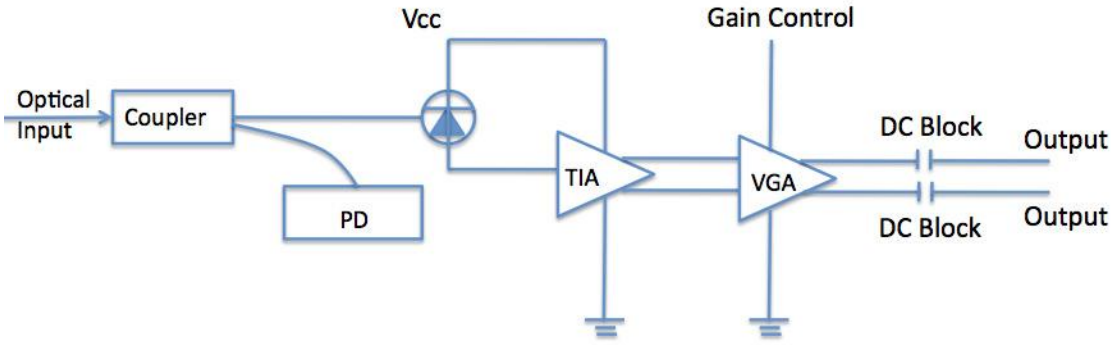
Features

- 3 dB S21 bandwidth, 0.01 GHz to 23 GHz
- Highly linear for analog transmission
- High TIA conversion gain of 1500 V/W
- Differential dual SMA output
- RS 232 interface via USB 2.0
- Integrated DC block for AC coupling
- Auto Gain Control (AGC) or Manual Gain Control (MGC) modes
- Maximum optical input protection

Applications

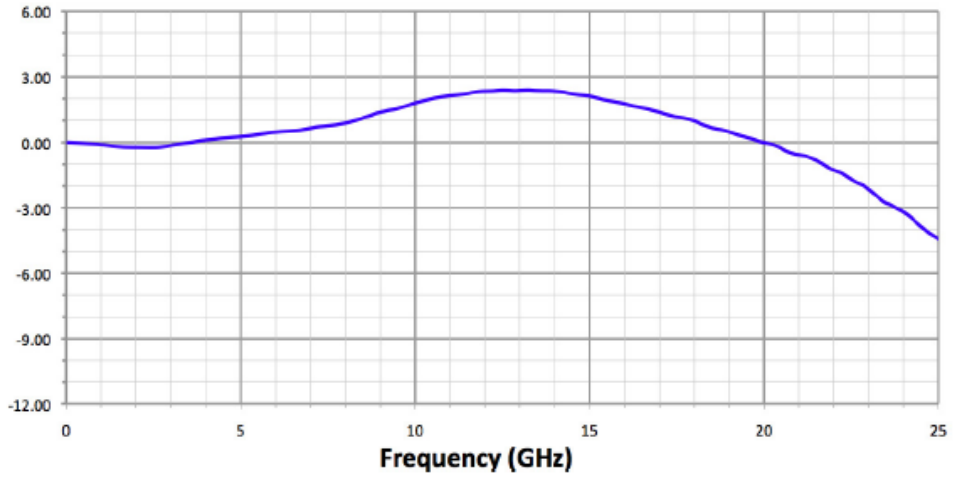
- RF transmission over fiber to 25 GHz
- RF/IF signal distribution
- Satcom microwave antenna signal distribution
- Broadband delay-line and signal processing
- Phased and interferometric array antenna

Functional Diagram



General Specifications	
Photodiode Wavelength Range	1250 nm to 1650 nm
Operational Bandwidth	0.005 GHz to 23 GHz
Optical Input Level	+3 dBm max.
Repsonsitivity	0.65 A/W @ 1550 nm typ.
Trans-Impedance Gain	4500 typ.
S21 3 dB Bandwidth	23 GHz typ., 21 GHz min.
S22 Characteristics	< -10 dB to 10 GHz typ.
Optical Return Loss	-30.00 dB typ.
2nd Harmonics Distortion	-60.0 dBc max.
3rd Harmonics Distortion	-70.0 dBc max.
Optical PDL @ 1550 nm	0.05 dB typ., 0.1dB max.
Output Coupling	AC Coupled
RF Impedence	50 Ω
Ripple over Bandwidth	±1.0 dB
Mechanical Specifications	
Operating Temperature	-40° C to +70° C
Storage Temperature	-55° C to +85° C
Power Supply Requirements	+12 V DC, 500 mA max.
Optical Connector	FC/APC
RF Input Connector	K Connector Female, 50 Ω
DC Connector	USB
Local Alarm	LED: Optional Input Power
Remote Alarms	RS-232 Interface (Optional)
Dimensions	130 mm x 70 mm x 35 mm
Accessories Included	110 V - 240 V AC Adaptor & Cable
Housing	Precision Mach. Anodized Aluminum

Typical S21 Bandwidth



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23 GHz RF over Fiber Link Configuration

The PR Series can be ordered as RF over Fiber 23 GHz Link. This link, the LL-23 series form a high-performance set that include the 15 GHz transmitter and 23 GHz Amplified Receiver. Below is a diagram of how the RF over Fiber link functions. Go to optilab.com/LL12 for more information.

23 GHz Link with Optional EDFA Configuration

The LL-23 can come equiped with an optional EDFA that is used to overcome transmission loss in long distances.

Link Configuration using Multiple Wavelengths

The LL series of products can have multiple wavelengths intergrated using WDM multiplexers. Up to 8 wavelengths can be installed into a single rackmountable chassis. Below is an illustration of a typical 4 wavelength RF over Fiber link using WDM multiplexers.