



Features

- High dynamic range
- Long distance communications
- 100 MHz to 20 GHz bandwidth
- Dual 1310 nm or 1550 nm window
- CE certified

Applications

- Antenna remoting
- Cellular and PCS networks
- Military triband communications
- Tracking, telemetry, and control (TT&C)

Emcore's family of microwave photodiode receivers is ideally suited for use in analog fiber-optic communications. With their wide bandwidth and flat response, these devices are used in a wide array of applications, including antenna remoting, timing and reference signal distribution, measurement, delay lines, and two-way communications. Of particular note is the high optical return loss, which enables high-quality noise performance for sensitive optical links.

A complete receiver, packaged either as a flange-mount for extreme environments, or as a plug-in for integration with Emcore's System 10000 rack-mountable chassis and power supplies. Electronics within flange mount and plug-in receivers bias the photodiodes and monitor the dc level of the optical input power, thus providing a fully integrated microwave product.

Performance Highlights

	Minimum	Typical	Maximum	Units
Available wavelengths	1290	-	1580	nm
Optical Output Power	-	-	2	mW
Total Operating Current	-	-	5	mA
Temperature Range	-40	-	+65	°C
Frequency Range	0.1		20.00	GHz

See following pages for complete specifications and conditions.

Ordering Information

Option	Connector Pigtail	Package Type	
		Flange	Plug-in
-020	FC/APC Bulkhead Optical Connector	X	X

DC (Flange-mount / Rack-

Pin Number	Min	Type	Max	Max Ripple	Current
1	4	15V	16	100 mV p-p	0.2 A max



Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

Parameter	Symbol	Condition	Min	Max	Units
Operating Temperature Range of Baseplate: Flange-mount Plug-in	T_{OP}	continuous	-40 0	+65 +50	°C °C
Storage Temperature Flange-mount Plug-in	T_{STG}	-	-40 -40	+85 +85	°C °C
Delay			4	10	ns

Optical Characteristics

Parameter	Specifications
Model Number Flange-mount Rx Plug-in Rx	4516A 10456A
dc Responsivity at 1310 nm, 25°C at 1550 nm, 25°C	>0.65 A/W >0.75 A/W
Delay	8 ns, max
RF Receiver Efficiency (typ) at 1 GHz ² at 1310 nm at 1550 nm	>0.33 >0.38
Optical Return Loss ³	>45 dB
Optical Input Power	2 mW
Pigtail Fiber Type (where applicable)	> 1 m, 9 μm/125 μm single-mode SMF-28 ³ or equivalent

RF Characteristics

1. Relative to value at 1 GHz

Parameter	Specifications
Model Number Flange-mount Rx Plug-in Rx	4516A 10456A
Maximum Frequency	20 GHz
Minimum Frequency	1 GHz
Output Coupling	AC
Amplitude Flatness ¹	± 2.0 dB
Output VSWR 2.0:1 2.5:1	1 – 10 GHz 10 – 20 GHz
Output Impedance	50 Ω

Connector Options

Parameter	Specifications
Model Number Flange-mount Rx Plug-in Rx	4516A 10456A
RF Connector Flange Mount Plug-in	SMA (f) SMA (f)

1. The photodiode RF current splits evenly between the internal matching resistor and the external load. (See Emcore's, System Designer's Guide to RF and Microwave Fiber Optics)

2. Optical return loss specified for APC connectors or fusion splices only. Other connection methods can degrade optical return loss.

3. SMF-28 is a trademark of Corning Incorporated.

Pin/Package Information

Nine-Pin D-sub Connector 4516A and 10456A

Pin	Description
1	+15 Vdc
2	NC
3	NC
4	Power Ground
5	Reference Ground
6	Optical Current Monitor
7	Low Optical Power Alarm ¹
8	NC
9	NC

Front Panel LEDs

- Power on
- Optical Power Received (plug-ins only)

Alarm Circuits

- The alarms are open-collector outputs capable 20 mA when active and withstanding 15V when off.
- Low optical Power, pin-7
- Sinks current when power drops below approximately 100 μW.

dc Monitor Voltages

- dc Photocurrent, pin6
- 1V/mA ±2% accuracy (into 1 MΩ load). Proportional to photodiode input power

4516A, 10456A

PIN Photodiode Receivers



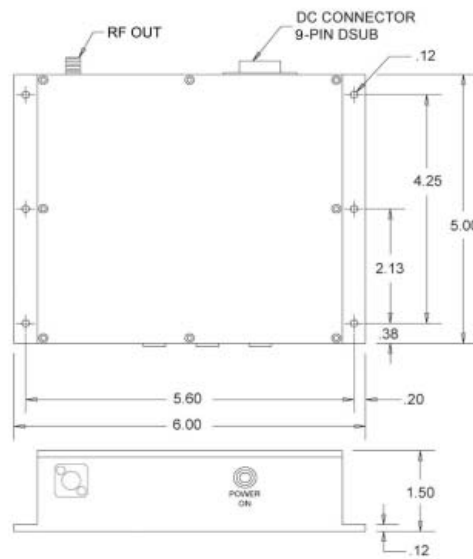
MICROWAVE

Mechanical Dimensions

10456A Receiver



4516A Receiver



Rev: December 9, 2010