

# 4518B, 10458B High Power PIN Photodiode Receivers

MICROWAVE



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.

## Features

- High dynamic range
- Long distance communications
- 100 MHz to 10 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)

## Performance Highlights

	Minimum	Typical	Maximum	Units
Wavelength	1290	-	1580	nm
Optical Input Power	-	-	15	mW
Optical Input Power	-	-	12	dBm
Total Operating Current	-	-	12	mA
Temperature Range	-40	-	+65	°C
Frequency Range	0.1		10.00	GHz

See following pages for complete specifications and conditions.

## Ordering Information

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

## DC

Pin Number	Min	Type	Max	Max Ripple	Current
1	14V	15V	16V	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 <sub>OP</sub>	continuous	-40	+65	°C
			-10	+50	°C
Storage Temperature Flange-mount Plug-in	T <sub>STG</sub>	-	-40	+85	°C
			-40	+85	°C
Delay			4	10	ns

### Optical Characteristics

Parameter	Specifications
Model Number Flange-mount Rx Plug-in Rx	4518B 10458B
dc Responsivity 1310 nm, 25°C 1550 nm, 25°C	>0.70 A/W >0.80 A/W
Delay	8 ns
RF Receiver Efficiency (typ) at 1 GHz <sup>1</sup> 1310 nm 1550 nm	>0.35 >0.40
Optical Return Loss <sup>2</sup>	45 dB
Optical Input Power	15 mW
Pigtail Fiber Type (where applicable)	>1 m, 9 μm/125 μm single-mode SMF-28 <sup>3</sup> or equivalent

### RF Characteristics

1. Relative to value at 1 GHz

Parameter	Specifications
Model Number Flange-mount Rx Plug-in Rx	4518B 10458B
Maximum Frequency	10 GHz
Minimum Frequency	0.1 GHz
Output Coupling	AC
Amplitude Flatness <sup>1</sup>	4 dB p-p
Output VSWR 2.0:1	0.1 – 15 GHz
Output Impedance	50 Ω

### Connector Options

Parameter	Specifications
Model Number Flange-mount Rx Plug-in Rx	4518B 10458B
RF Connector Flange Mount Plugin	SMA (f) SMA (f)

- 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)
- Optical return loss specified for APC connectors or fusion splices only. Other connection methods can degrade optical return loss.
- SMF-28 is a trademark of Corning Incorporated.

### Pin/Package Information

Nine-Pin D-sub Connector 4518B and 10458B

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

- Open collector outputs

### 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

# 4518B, 10458B High Power

## PIN Photodiode Receivers



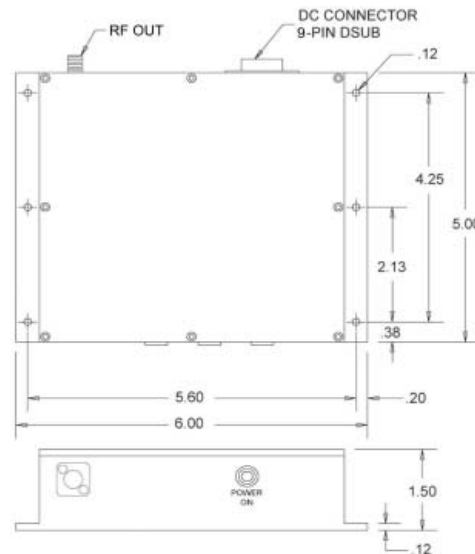
MICROWAVE

### Mechanical Dimensions

10458B



4518B



Rev: December 9, 2010