CIPRM series

Coherent InGaAs PIN balanced receiver module

In the CIPRM series balanced optical receiver Excelitas has the best features of high performance InGaAs photodiodes and low noise, high gain transimpedance amplifier to offer a practical solution to detect small changes above the interfering noise floor of incoming signal. The advantage is that the common optical noise is cancelled out.

This receiver incorporates two low-noise photodiodes with well-matched responsivity in order to ensure a high common mode rejection ratio (CMRR). It has two optical inputs (single mode fiber in -1 series and FC connectorized in -2 series), an RF output, electrical supply inputs and two photo-current monitor outputs.

The CIPRM modules come in a robust casing with flange mounting holes for securing the module to working surfaces or platforms. Combined with a wide operating temperature range, the CIPRM can work in some of the toughest and harshest environments.

Excelitas' series of optical balanced receiver modules are designed and built to be fully compliant with the European Union's RoHS Directive 2011/65/EU.

Key Features

- Spectral range—800-1650nm
- 200MHz bandwidth
- High performance InGaAs photodiode and TIA
- Matching responsivity
- Photo-current monitor outputs
- Rugged and Robust
- RoHS compliant

Applications

- Spectroscopy
- Optical delay measurement
- Heterodyne Detection
- Optical coherent tomography
- Ellipsometry
- Ultra low signal detection

EXCELITAS® TECHNOLOGIES

Table 1: receiver specifications @ Tcase = 22 °C, in 50Ω load, unless otherwise specified

Parameter	Typical specification	Notes
Wavelength Range	800-1700nm	
Detector Material	InGaAs	
Detector Diameter	0.1mm	
Detector Responsivity (Peak)	0.95 (A/W)	@1550nm
Optical Input	FC/APC for -1 Flanged pigtail for -2	For -2, SM fiber, 9/125 with 900µm buffer
Saturation Optical Power	200µW	CW or average power on one detector, (unbalanced)
	10mW	When average power is the same on both detectors (balanced)
Maximum Input Range	0.35mW	Differential signal
	10mW	Absolute maximum, differential signal
Integrated noise	100nW	NEP*√BW (at input)
Photo-current Monitoring Coefficient	10V/mW	
Transimpedance Gain	$32x10^3$ V/A	
Conversion Gain, Maximum	$30×10^3$V/W	
Bandwidth (-3 dB)	2.5kHz - 200MHz	
Rise Time	2ns	
Common Mode Rejection	30dB	
NEP	5 pW/√Hz	Calculated
Overall output voltage noise	3mVrms	Measured
Output Impedance	50Ω	
Output Connector	SMA	
Maximum RF Power	+11dBm in 50Ω	
Power Supply Requirements	±12V DC	Supply voltage
	I_{+12V} =32mA I_{-12V} = 5mA	Supply current

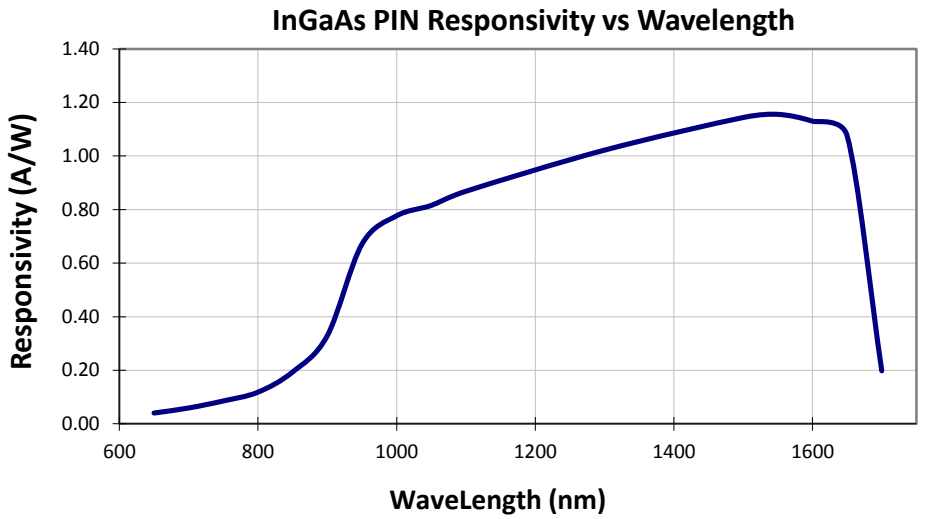


Figure 1
Typical Responsivity vs. Wavelength

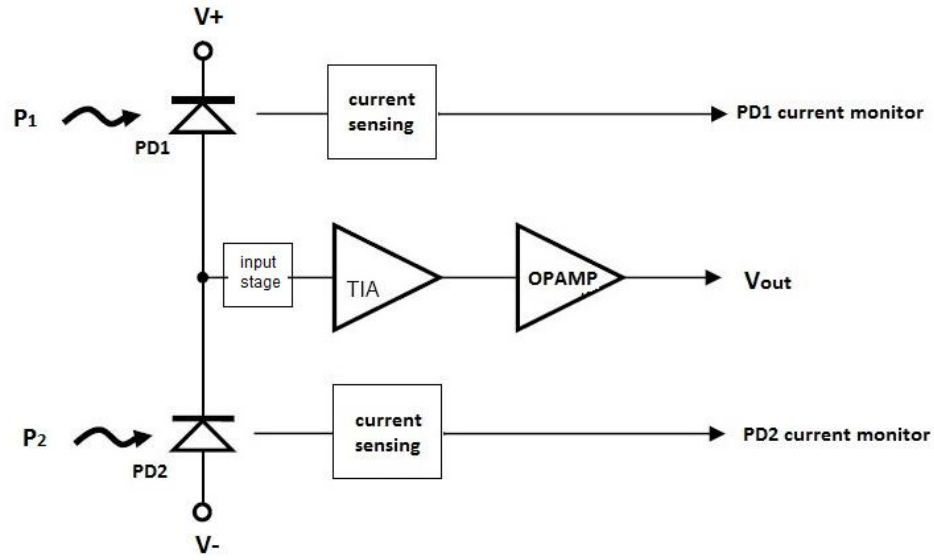


Figure 2
Electrical block diagram

Table 2: Ordering Guide

Part Number	Description
CIPRM-110	Fibered module, 2 meter single mode fiber
CIPRM-210	FC connectorized Module
1342-1	Power cable

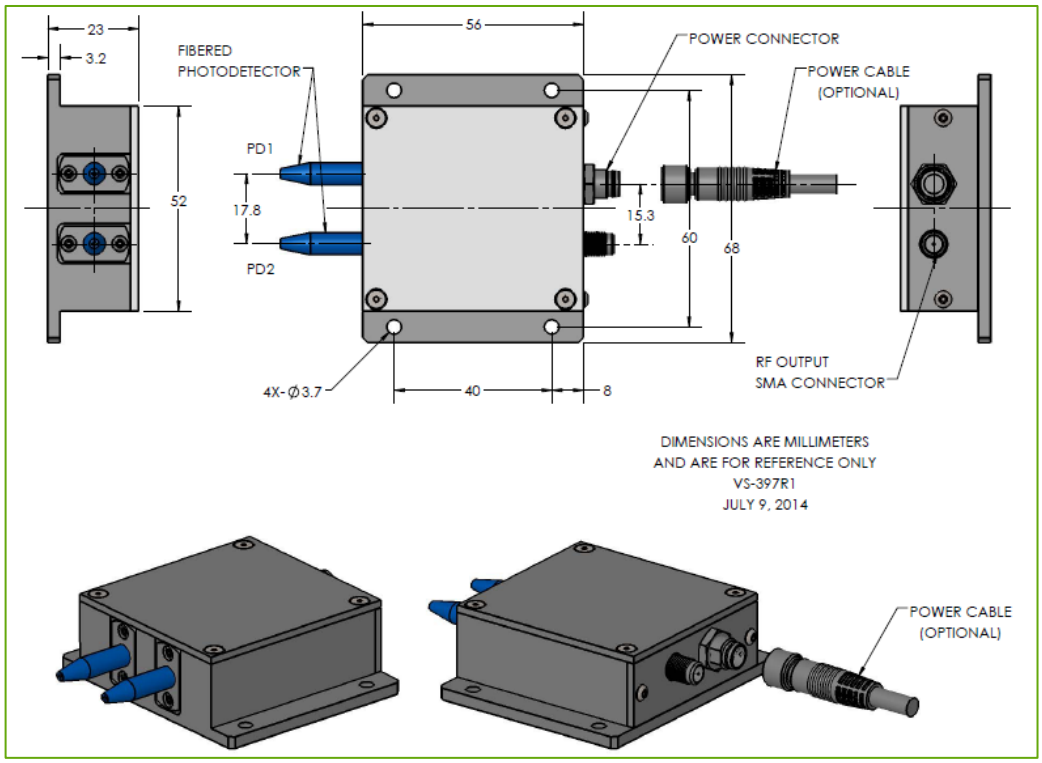
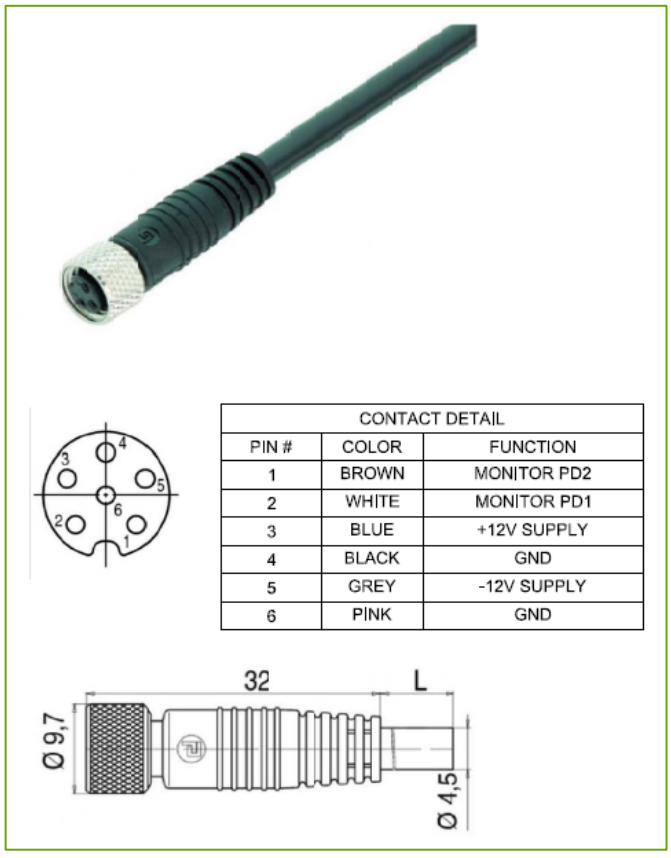


Figure 3
Module mechanical outline, Pigtailed configuration



CONTACT DETAIL		
PIN #	COLOR	FUNCTION
1	BROWN	MONITOR PD2
2	WHITE	MONITOR PD1
3	BLUE	+12V SUPPLY
4	BLACK	GND
5	GREY	-12V SUPPLY
6	PINK	GND

Figure 4
Power cable connection detail

RoHS Compliance

The CIPRM balanced receiver module is designed and built to be fully compliant with the European Union Directive 2011/65/EU – Restriction of the use of certain Hazardous Substances (RoHS) in Electrical and Electronic equipment.

About Excelitas Technologies

Excelitas Technologies is a global technology leader focused on delivering innovative, customized solutions to meet the lighting, detection and other high-performance technology needs of OEM customers.

From analytical instrumentation to clinical diagnostics, medical, industrial, safety and security, and aerospace and defense applications, Excelitas Technologies is committed to enabling our customers' success in their specialty end-markets. Excelitas Technologies has approximately 5,000 employees in North America, Europe and Asia, serving customers across the world.

Excelitas Technologies
22001 Dumberry Road
Vaudreuil-Dorion, Quebec
Canada J7V 8P7
Telephone: (+1) 450.424.3300
Toll-free: (+1) 800.775.6786
Fax: (+1) 450.424.3345
detection.na@excelitas.com

Excelitas Technologies GmbH & Co. KG
Wenzel-Jaksch-Str. 31
D-65199 Wiesbaden
Germany
Telephone: (+49) 611 492 430
Fax: (+49) 611 492 165
detection.europe@excelitas.com

Excelitas Technologies Singapore, Pte. Ltd.
8 Tractor Road
Singapore 627969
Telephone: (+65) 6775 2022 (Main number)
Telephone: (+65) 6770 4366 (Customer Service)
Fax: (+65) 6778-1752
detection.asia@excelitas.com

For a complete listing of our global offices, visit www.excelitas.com/locations

© 2015 Excelitas Technologies Corp. All rights reserved. The Excelitas logo and design are registered trademarks of Excelitas Technologies Corp. All other trademarks not owned by Excelitas Technologies or its subsidiaries that are depicted herein are the property of their respective owners. Excelitas reserves the right to change this document at any time without notice and disclaims liability for editorial, pictorial or typographical errors.