

## 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 photodiodes and TIA
- Matched responsivity
- Photo-current monitor outputs
- Rugged and Robust
- RoHS compliant
- Enhanced EMC/EMI performance

### Applications

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

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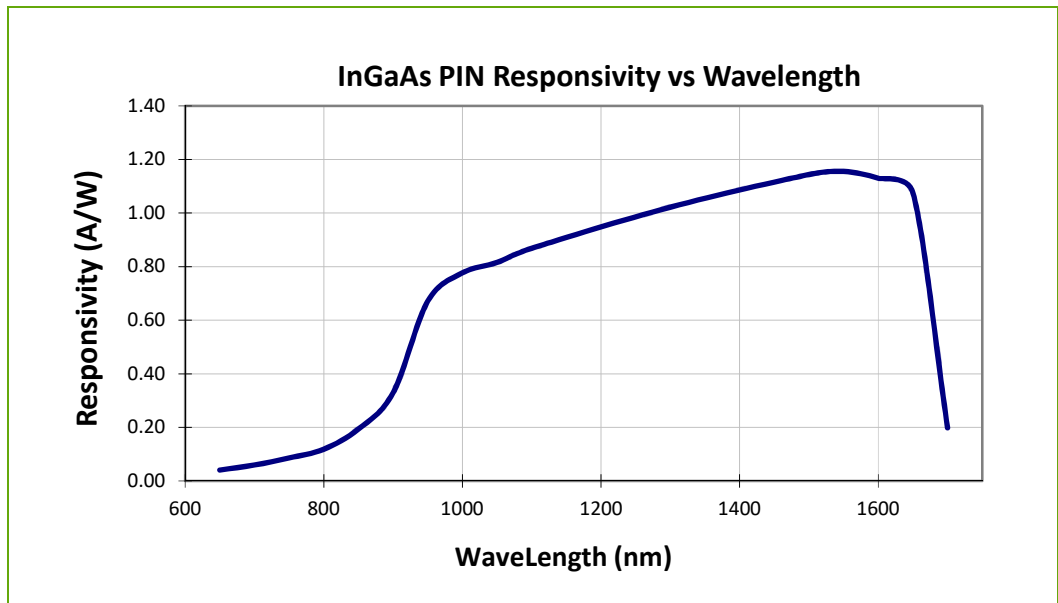
### Coherent InGaAs PIN balanced receiver module

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

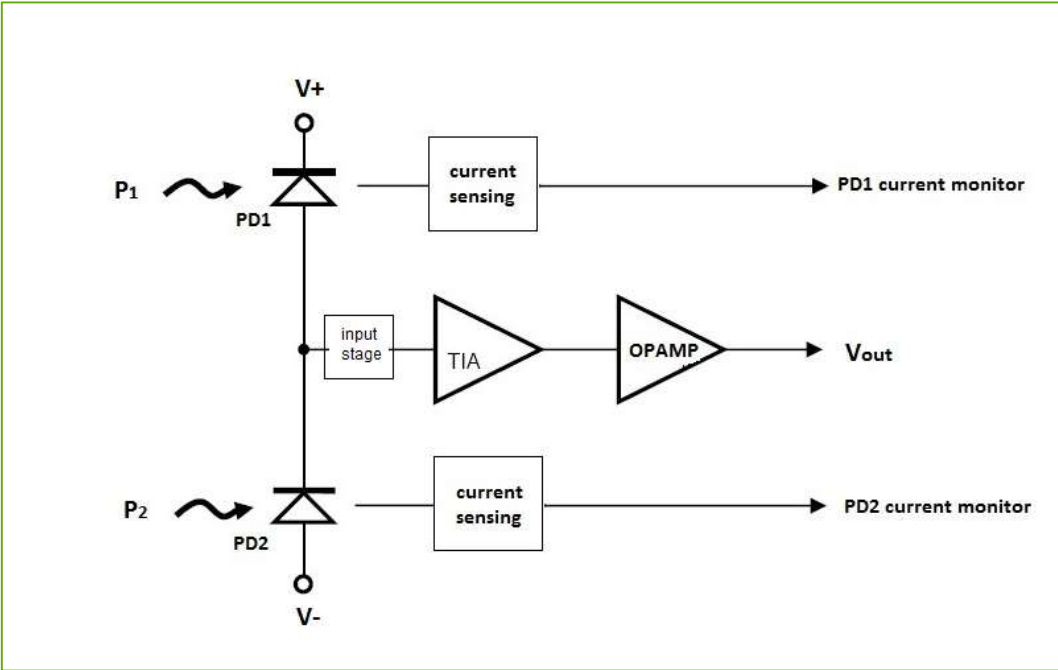
Parameter	Typical specification	Notes
Wavelength Range	800-1700nm	
Detector Material	InGaAs	
Detector Diameter	0.1mm	
Detector Responsivity (Peak)	0.95 (A/W)	@1550nm
Optical Input	FC/APC	For -110, SM fiber, 9/125 with 900μm buffer
Saturation Optical Power	200μW	CW or average power on one detector, (unbalanced)
	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*VBW (at input)
Photo-current Monitoring Coefficient	2.85V/mW	
Transimpedance Gain	32x10 <sup>3</sup> V/A	
Conversion Gain, Maximum	30x10 <sup>3</sup> V/W	
Bandwidth (-3 dB)	2.5kHz - 200MHz	
Rise Time	2ns	
Common Mode Rejection	30dB	
NEP	7 pW/vHz	Calculated
Overall output voltage noise	4mVrms	Measured
Output Impedance	50Ω	
Output Connector	SMA	
Maximum RF Power	+11dBm in 50Ω	
Power Supply Requirements	±12V DC	Supply voltage
	I <sub>+12V</sub> = 32mA I <sub>-12V</sub> = 5mA	Supply current

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**Figure 1**  
Typical Responsivity vs. Wavelength



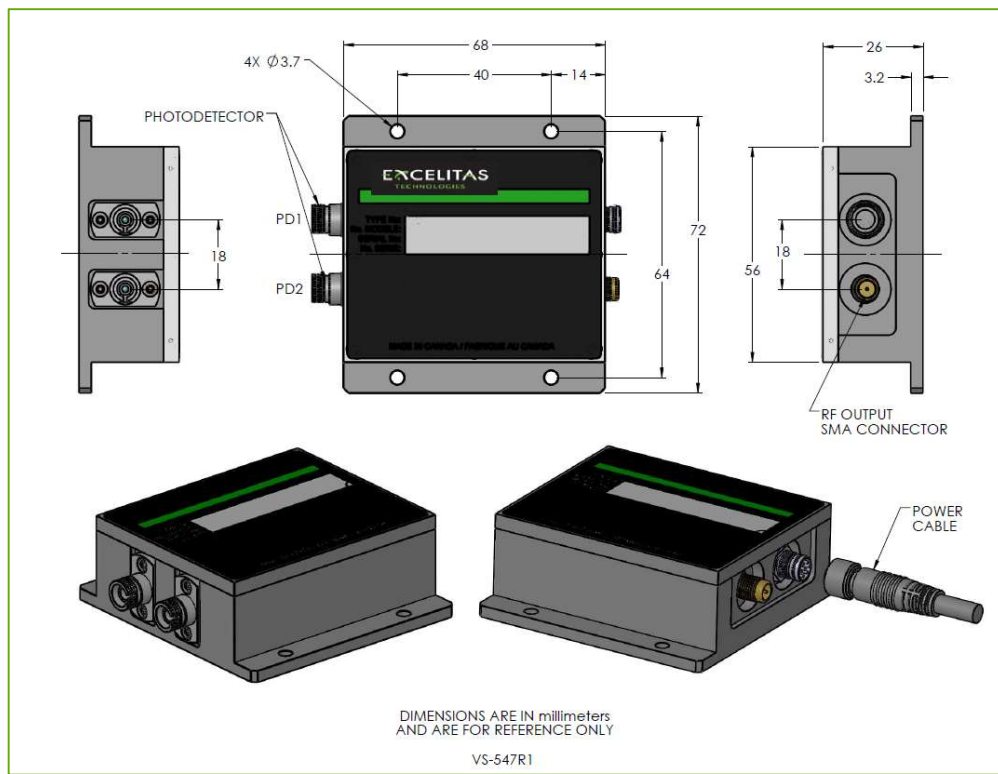
**Figure 2**  
Electrical block diagram

**Table 2: Ordering Guide**

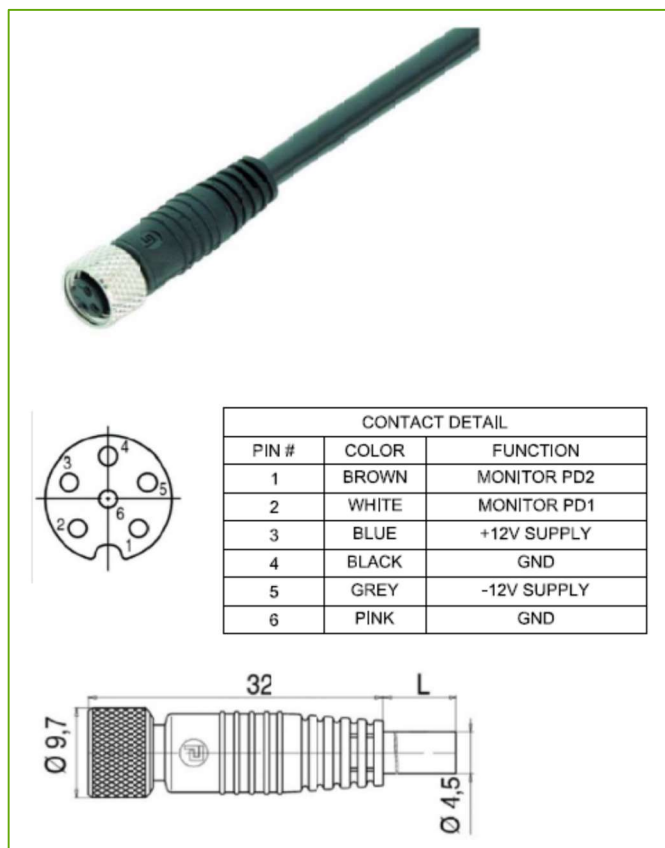
Part Number	Description
CIPRM-110	Fibered module, 2 meter single mode fiber
CIPRM-210	FC connectorized Module
1342-2	Shielded power cable

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**Figure 3**  
Module mechanical outline, Pigtailed configuration



**Figure 4**  
Shielded power cable connection detail

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#### 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](mailto: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](mailto: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](mailto:detection.asia@excelitas.com)



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