

Balanced Photodetector Module

----HC-BPRM Series

Product introduction

-  HC-BPRM series balanced photodetector module integrates two matched high-linearity analog PIN detectors and a low-noise broadband transimpedance amplifier, featuring high gain, high sensitivity, DC-coupled output and high common-mode rejection ratio, which can effectively reduce the common-mode noise of the input light and improve the signal-to-noise ratio of the system. The power supply of the module is positive 12 V, the input optical interface can select optical fiber interface or space incidence, and the electrical signal is output from the SMA port. The module is mainly used in the fields of nanosecond optical pulse detection, laser radar, optical fiber coherent tomography and optical fiber sensing system.

Product features

-  Spectral range 400 ~ 1700nm
-  3dB bandwidth multiple options
-  Optional with output monitoring
-  Response Time Min. <0.2ns
-  CMRR > 30dB
-  Low noise
-  DC 12V single power supply
-  Compact 47x42x20mm
-  Can be customized

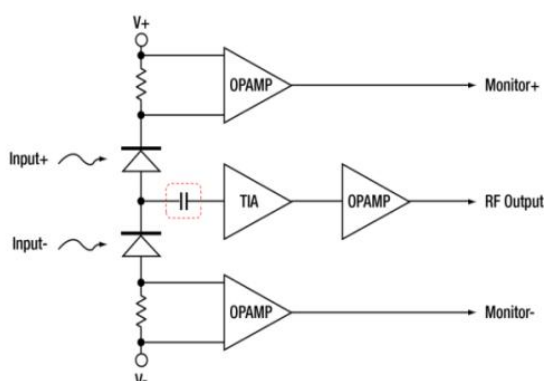


Scope of application

-  Ns optical pulse detection
-  Laser radar
-  Brillouin optical fiber sensing system
-  ∅ - OTDR
-  Optical coherence tomography (OCT)

Optional

-  Photosensitive surface
-  Bandwidth
-  Gain
-  Coupling mode



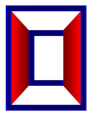
Technical parameters

silicon balanced photodetector module				
Parameter		HC-BPRM-BW-S-FA/FS		
Detector type		Si / PIN		
Optical input		Free Space or FC/APC		
Wavelength range		400-1100nm		
Peak responsivity		0.5 A/W @ 905 nm		
Photosensitive surface diameter		1.2mm	0.5 mm	
Common Mode Rejection Ratio (CMRR)		>25 dB (typ. >30 dB)		
Bandwidth (3dB)		RF OUTPUT	10MHz	350MHz
Conversion gain @ high impedance			26x103V/W	5x 103 V/W
Rise time			30ns	1ns
Saturate d optical power	Out of balance		115uW	0.76mW
	Balance		5mW	
Coupling mode			DC (AC optional)	
Output impedance			50Ω	
Equivalent noise power NEP			7.0 pW/√Hz	42.7 pW/√Hz
Total Output Noise Voltage *			<0.3mVRMS	<4mVRMS

InGaAs balanced photodetector module (fiber input)							
Parameter		HC-BPRM-BW-I--FA					
Detector type		InGaAs / PIN					
Optical input		FC/APC					
Wavelength range		800-1700nm					
Peak responsivity		0.9A/W @ 1550 nm					
Photosensitive surface diameter		75μm					
Bandwidth (3dB)	RF OUTPUT	10MHz	75MHz	200MHz	400MHz	500MHz	30K~1.5GHz
Conversion gain @ high impedance		51x 103 V/W	250x 103 V/W	40 x 103 V/W	10x 103 V/W	2x 103 V/W	2x 103 V/W
Rise time		30ns	4.5ns	1.8ns	0.9ns	0.6ns	0.2ns
Common Mode Rejection Ratio (CMRR)		>30 dB	>30 dB	>25 dB			

Saturated Light Power	Out of balanc e		58.8uW	12.5uW	97.5uW	0.38mW	1mW	1mW
	Balanc e		5mW					
Coupling mode			DC					AC only
Output impedance			50Ω					
Equivalent noise power NEP			4.1pW/√Hz	6.9pW/√Hz	11.2pW/√Hz	17.9 pW/√Hz	15pW/√Hz	12.9pW/√Hz
Total Output Noise Voltage *			<0.3mVRMS	<15mVRMS	< 6.3mVRMS	<4mVRMS	<1mVRMS	<1mVRMS

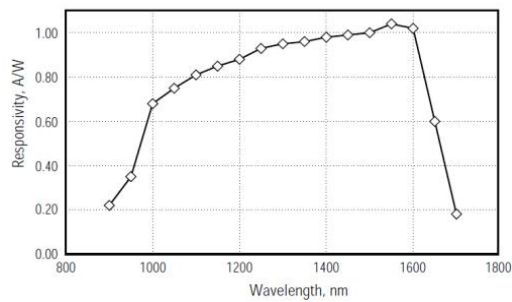
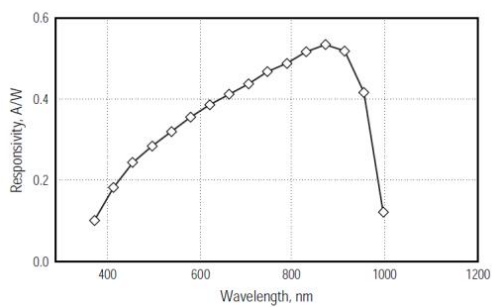
InGaAs balanced photodetector module (spatial light input)									
Parameter			HC-BPRM-BW-I-FS						
Detector type			InGaAs / PIN						
Optical input			Free Space						
Wavelength range			800-1700nm						
Peak responsivity			0.9A/W @ 1550 nm						
Photosensitive surface diameter			500μm						
Bandwidth (3dB)		RF OUTPUT	75MHz						
Conversion gain @ high impedance			10x 103 V/W						
Rise time			4.7ns						
Common Mode Rejection Ratio (CMRR)			>30 dB						
Saturated optical power	Out of balance		0.38mW						
	Balance		5mW						
Coupling mode			DC						
Output impedance			50Ω						
Equivalent noise power NEP			54.4 pW/√Hz						
Total Output Noise Voltage *			< 2.1 mVRMS						



General parameters

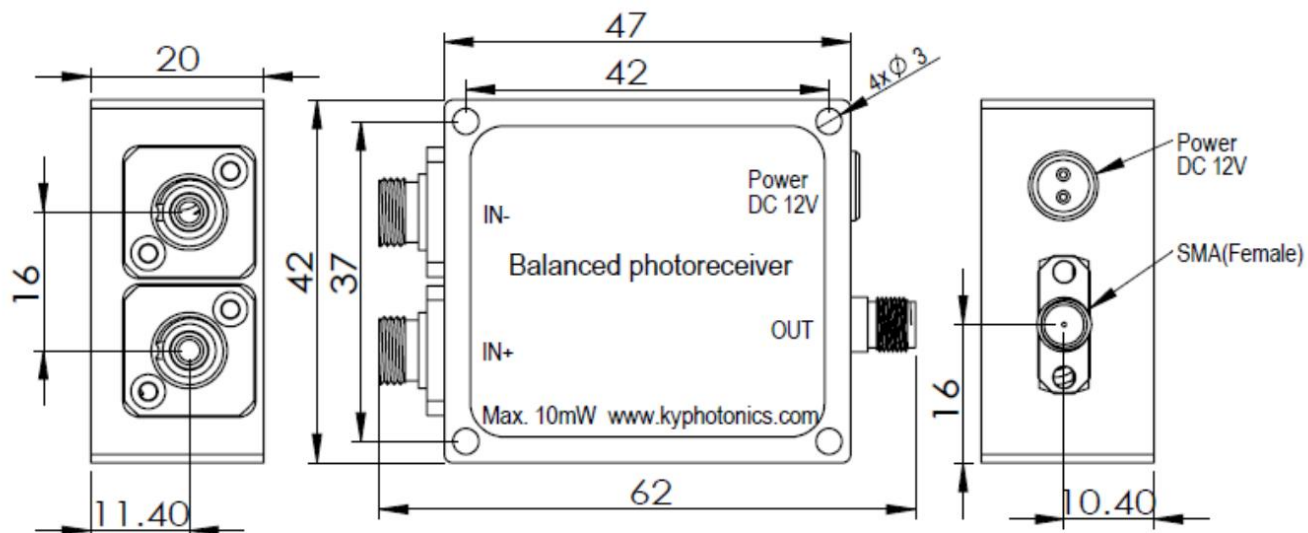
Parameter		Typical value	Remark
RF out terminal	Output electrical signal interface	SMA(Female)	
	Output DC Bias	+/-3mV	No input
	Maximum output voltage	$\pm 3.8\text{V}$ $\pm 1.9\text{V}$	High resistance 50 Ω
Monitoring terminal (optional)	Bandwidth	DC-1MHz	
	Output voltage	0-5V	@ High resistance
	Gain	10KV/W	@1550nm
	Resistance	100 Ω	
	Saturated optical power	0.5mW	@ High resistance
Power connector		Aviation plug	2P or 4P
Power supply		DC 12V	Operating voltage
		<100mA	Operating current
Photodamage threshold		10mW	CW or peak power
Operating temperature		-20~65°C	

Characteristic curve

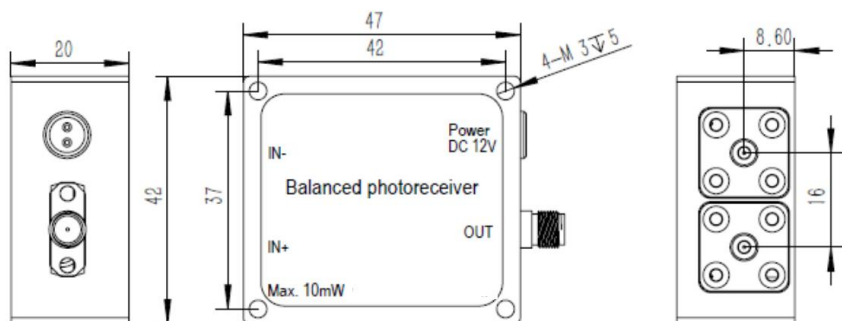


Typical spectral response

 Mechanical dimensions in mm



Fiber optic interface



Space optical interface (with adapter board to adapt to M4 optical connector)

**XX--Other special requirements**