

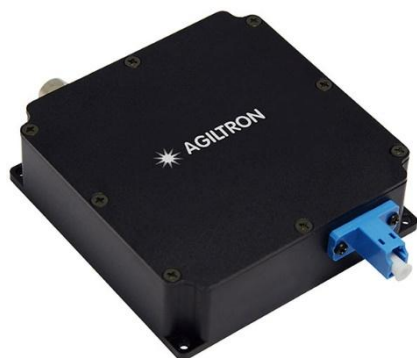
20GHz Photoreceiver Module – SM and MM

Analog up to 20 GHz bandwidth, SM28, 50/125 fiber, differential output



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The HPRM is a turnkey high-speed photoreceiver engineered for advanced analog and digital applications. It supports both single-mode and multimode fiber coupling configurations. With its high conversion gain and low input-referred noise, the HPRM delivers exceptional linearity and precision. The module offers 20 GHz analog bandwidth and 3000 V/W differential conversion gain. The differential RF output utilizes dual GPPO connectors (+ and -) to minimize susceptibility to external noise and electromagnetic interference (EMI), providing excellent common-mode rejection for superior signal integrity. For added flexibility, either connector can also be used as a single-ended output relative to ground. The unit includes a pluggable low-noise power supply, ensuring simple, reliable plug-and-play operation.

Features

- Up to 20 GHz Analog Bandwidth
- High Linearity
- Differential Low Noise Output

Applications

- Pulse Amplitude Modulation (PAM) Détection
- 30 GHz RF over fiber link

Specifications

Parameter	Min	Typical	Max	Unit
Optimized Operating Wavelength	1250 840	850	1650 880	nm
Optical Input Level			+7	dBm
S21 3 dB Bandwidth		20		GHz
Differential Conversion Gain		3000		V/W
Optical Return Loss		30		dB
Optical PDL @ 1550 nm			0.25	dB
Output Return Loss (up to 25 GHz)	-10			dB
Differential Output Voltage			1800	mVpp
Impedance		50		Ω
Output Coupling	DC (external AC coupling required)			V
Equivalent Input Noise Density			32	pA/√Hz
Noise Equivalent Power (NEP) @ 1GHz		17		pA/√Hz
Operating Temperature	0		50	°C
Storage Temperature	-55		85	°C
Power Supply Requirements		5		V
Optical Connector	FC/APC			
RF Connector	2.92 mm, Female (K/SMA Compatible), GPPO			
Input Optical Power			10	mW
Humidity		95		%



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Rev 04/21/26

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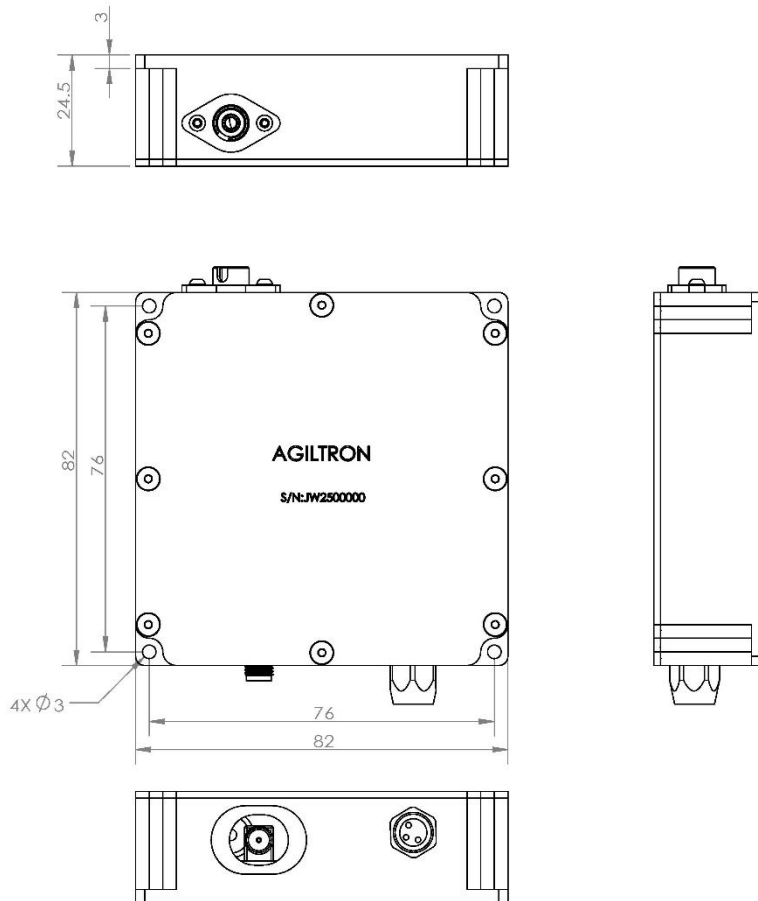
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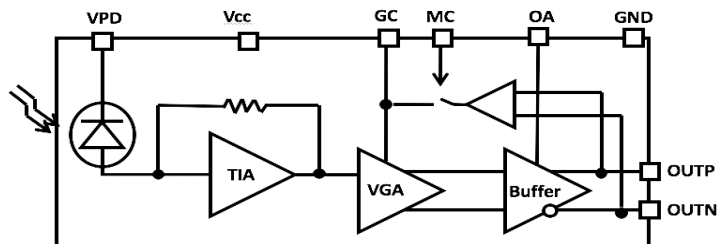
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Dimensions (mm)



*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

Function Diagram



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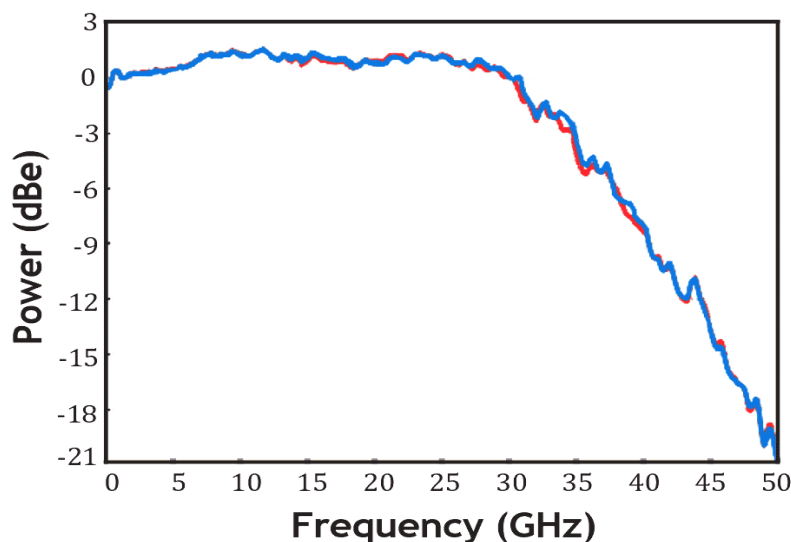
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S21 Graph



Ordering Information (Part Number)

	1	☐	20	1	2	2	☐	☐	☐
Prefix	Detector Type	Wavelength Range	Bandwidth	Module ^[1]		Configuration	Fiber	Connector ^{[1][2]}	RF Connector
HPRM-	PIN = 1	1200-1600nm = 1 850nm = 2	20GHz = 20		Non = 1 Yes = 2	Differential = 2	SM28 = 1 50/125 = 2 1mm = 3	FC/APC = 3 FC/PC = 2 Special = 0	GPPO = G K = 2

[1]. Default connector for SM is FC/APC, and For MM is FC/PC.

Regular fiber connector has PER ~22dB. Connector with PER >27 dB is available using special process

[2]. The default connector configuration uses fiber with 0.9 mm buffer protection. The connector cannot be installed directly onto bare fiber because the bare fiber is prone to damage during shipping. However, the connector can be assembled on bare fiber if a 3 cm protective loose tube is added for reinforcement. The customer may remove this protective tube after testing. The optical power handling of a standard connector is less than 0.5 W for SMF-28 fiber and decreases further for smaller-core fibers.

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Operation Instruction

1. Connect the optical fiber input port to the signal source.
2. Connect the RF output port to the readout instrument.
3. Plug in the provided power supply to power the device. The LED will turn on.
4. The unit will operate with the performance specified in the test report.
5. If the device is not working, contact us via the sales email. **Do not open the enclosure** — doing so will invalidate the one-year warranty.

Laser Safety

This product meets the appropriate standard in Title 21 of the Code of Federal Regulations (CFR). FDA/CDRH Class 1M laser product. This device has been classified with the FDA/CDRH under accession number 0220191. All versions of this laser are Class 1M laser products, tested according to IEC 60825-1:2007 / EN 60825-1:2007. An additional warning for Class 1M laser products. For diverging beams, this warning shall state that viewing the laser output with certain optical instruments (for example eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye hazard. For collimated beams, this warning shall state that viewing the laser output with certain instruments designed for use at a distance (for example telescopes and binoculars) may pose an eye hazard.

Wavelength = 1.3/1.5 μm .

Maximum power = 30 mW.



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Caution Electrostatic Sensitivity



- Never touch laser diode and the module using hands
- Always use protections when handle a photodiode
- Recommend mounting the laser diode using an ionic gun and ESD finger cots



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