Fiber Optical Detector Array

(4, 8, 12 channels, on amplifier PCB option)

DATASHEET

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The Integrated Fiber Optical Detector Array (ITMA) is a compact, multi-channel power monitoring solution that combines an array of fiber-optic detectors into a single device. It delivers low dark current and excellent temperature stability across a broad wavelength range, ensuring reliable performance in demanding applications. The ITMA is packaged in a standard 12- or 14-pin configuration for straightforward PCB integration and is thoroughly cleaned to remove solder flux, minimizing flux-induced noise. An optional readout amplification PCB is available, offering USB and RS232 interfaces for easy system connectivity. Custom configurations can also be developed to meet specific application needs.

Due to their high sensitivity to electrostatic discharge, warranty coverage applies only to fully metal covered modules the benchtops, which include proper protection. Other versions of the lasers and photodetectors are not covered by any warranty. Please use them with great caution.

Features

- Low Dark Current
- Ease PCB Mount
- Wide Wavelength
- High Stability

Applications

- WDM Channel Monitor
- System Monitor
- Sensor

Specifications

Parameter		Min	Typical	Max	Unit
Operation Wavelength		1100		1620	nm
Respond Speed		0		0.5	GHz
Saturate Optical Input Power			0.2		W
Polarization Dependent Loss				0.05	dB
Return Loss		45			dB
Responsivity [2]		10		32	mA/W
Responsivity Temperature Dependence				0.3	dB
Responsivity Polarization Dependence				0.1	dB
Dark Current [3]		2.5		10	nA
Reverse Voltage				20	V
Forward Current				10	mA
Input Optical Power	2%			21	dBm
	5%			16	
	10%			12	
Operating Temperature		-5		70	°C
Storage Temperature		-40		85	°C
Fiber Type		SM-28			

Notes:

[1]. @λop, Top, All SOP, Exclude Connector

[2]. Relative to input power

[3]. Measured at -5V bias, 70 ˚C

RoHS COMPLIANT

Warning: **The device is extremely ESD-sensitive. Its dark current increases by unprotected handling. It is recommended to be handled under a certified ion fan once the package is removed.**

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Rev 08/27/26

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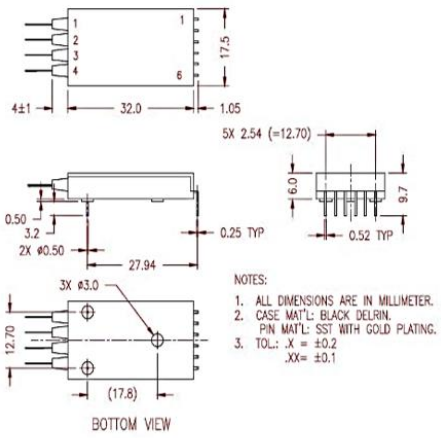
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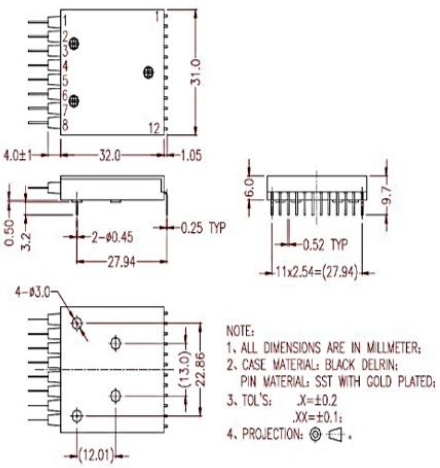
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Mechanical Dimensions (mm)

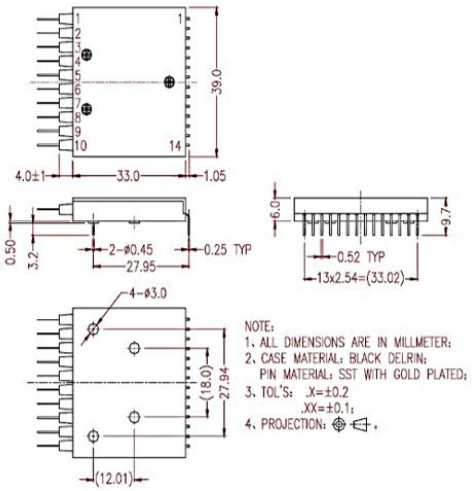
1) 4-ch ITMA



2) 8-ch ITMA



3) 10-ch ITMA



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

Electrical/Computer Connection

4-ch ITMA

Electrical Pin Assignment	
Pin #:	**Common Cathode Assignment**
Pin 1:	Common Cathode for Ch1 - 2
Pin 2:	Anode Ch1
Pin 3:	Anode Ch2
Pin 4:	Common Cathode for Ch3 - 4
Pin 5:	Anode Ch3
Pin 6:	Anode Ch4

8-ch ITMA

Electrical Pin Assignment	
Pin #:	**Common Cathode Assignment**
Pin 1:	Common Cathode for Ch1 - 2
Pin 2:	Anode Ch1
Pin 3:	Anode Ch2
Pin 4:	Common Cathode for Ch3 - 4
Pin 5:	Anode Ch3
Pin 6:	Anode Ch4
Pin 7:	Anode Ch5
Pin 8:	Common Cathode for Ch5 - 6
Pin 9:	Anode Ch6
Pin 10:	Anode Ch7
Pin 11:	Common Cathode for Ch7 - 8
Pin 12:	Anode Ch8

10-ch ITMA

Electrical Pin Assignment	
Pin #:	**Common Cathode Assignment**
Pin 1:	Common Cathode for Ch1 - 4
Pin 2:	Anode Ch1
Pin 3:	Anode Ch2
Pin 4:	Anode Ch3
Pin 5:	Anode Ch4
Pin 6:	Anode Ch5
Pin 7:	Common Cathode for Ch5 - 8
Pin 8:	Anode Ch6
Pin 9:	Anode Ch7
Pin 10:	Anode Ch8
Pin 11:	Anode Ch9
Pin 12:	Common Cathode for Ch9 - 10
Pin 13:	Anode Ch10
Pin 14:	Not connected

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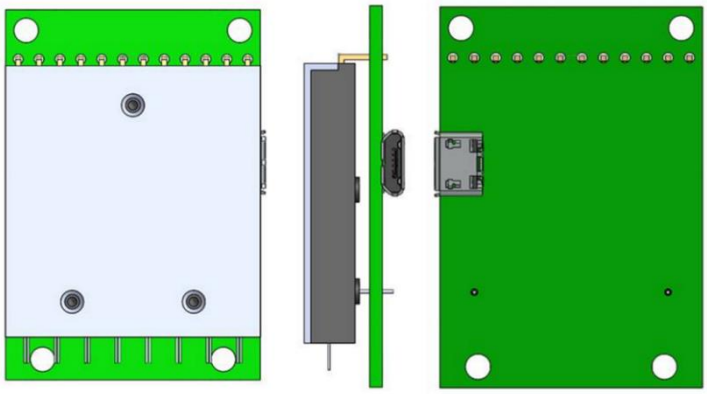
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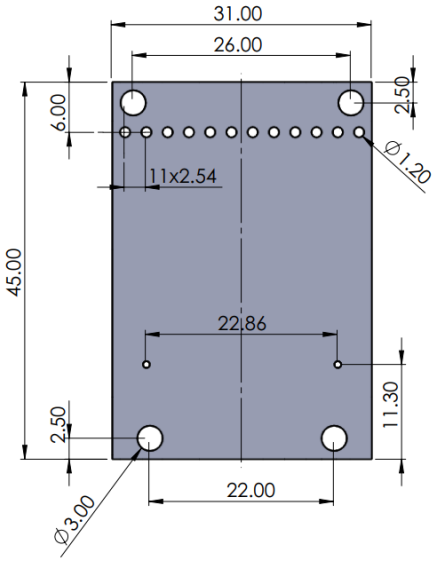
Amplifier Daughter PCB

This amplifier PCB is designed as a daughterboard for integration with a detector array. It features a switch-based scanner that supports up to 24 optical detectors, enabling multichannel optical power measurement. The amplifier offers a programmable gain range from 10 to 1,000,000, and the digital output for each channel is individually calibrated via software to accommodate different detector types and wavelengths. The interface is USB/RS232

Specifications

Parameter	Min	Typical	Max	Unit
Measured Range	-50		10	dBm
Wavelength [1]	850		1630	nm
Response Speed [2]	1	2		MHz
Resolution	0.1			%
Repeatability		0.1		dB
Multichannel Scanning Rate [3]	0		100	Hz
DC Voltage	4.7	5	5.5	V
DC Power		0.8		W
Digital Signal Output		USB		
Operating Temperature	-10		70	°C
Storage Temperature	-40		85	°C





Device Mounted on Amplifier with USB Power/Data Output



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Ordering Information (Part Number)

	☐☐	F	☐	☐	1	1	2	☐	☐
Prefix	**No. Channel**	**Tap Ratio**	**Configuration**	**Package [1][4]**	**Fiber Type**	**Fiber Cover**	**Fiber Length**	**Connector [2] [3]**	**Driver**
ITMA-	8 = 08 24 = 24 4 = 04	100% = F	Standard = 1 Special = 0	Component = 1 On Amplifier PCB = 3	SMF-28 = 1	Bare fiber = 1 0.9 nm tube = 2	0.25m = 1 0.5m = 2 1.0 m = 3 Special = 0	None = 1 FC/PC = 2 FC/APC = 3 SC/PC = 4 SC/APC = 5 ST/PC = 6 LC/PC = 7 LC/APC = A LC/UPC = U Special = 0	Non = N PCB = P Benchtop = B

[1]. Mount on PCB: amplifier PCB with 0-5V output or USB/RS232 interface with GUI. $990

[2]. Bare Fiber with connector is easy to beak

[3]. 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.

[4]. The component format is designed for OEM integration. For laboratory and university use, only the benchtop protected version has one year warranty.

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Monitor GUI



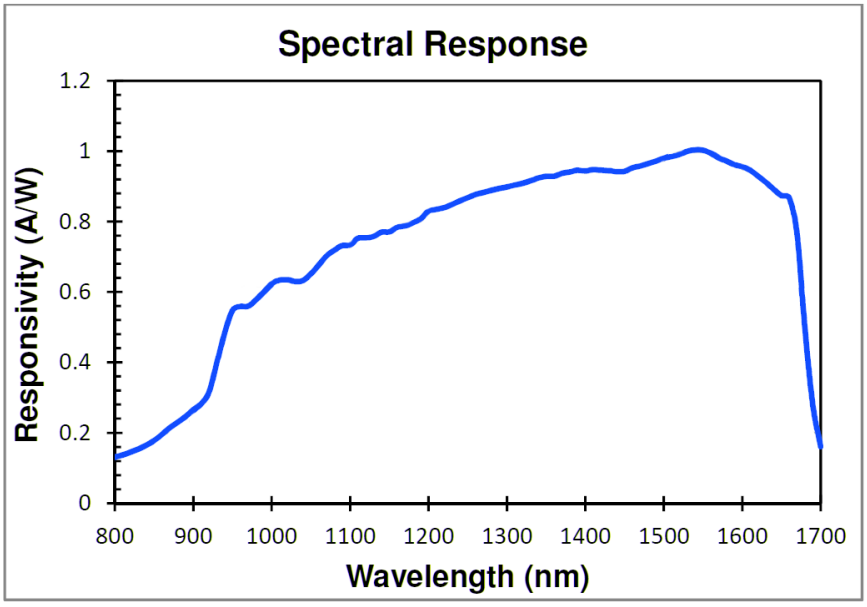
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Spectral Response



Application Notes

Fiber Core Alignment
Note that the minimum attenuation for these devices depends on excellent core-to-core alignment when the connectors are mated. This is crucial for shorter wavelengths with smaller fiber core diameters that can increase the loss of many decibels above the specification if they are not perfectly aligned. Different vendors' connectors may not mate well with each other, especially for angled APC.

Fiber Cleanliness
Fibers with smaller core diameters (<5 μm) must be kept extremely clean, contamination at fiber-fiber interfaces, combined with the high optical power density, can lead to significant optical damage. This type of damage usually requires re-polishing or replacement of the connector.

Maximum Optical Input Power
Due to their small fiber core diameters for short wavelength and high photon energies, the damage thresholds for device is substantially reduced than the common 1550nm fiber. To avoid damage to the exposed fiber end faces and internal components, the optical input power should never exceed 20 mW for wavelengths shorter 650nm. We produce a special version to increase the how handling by expanding the core side at the fiber ends.

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Caution Electrostatic Sensitivity



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



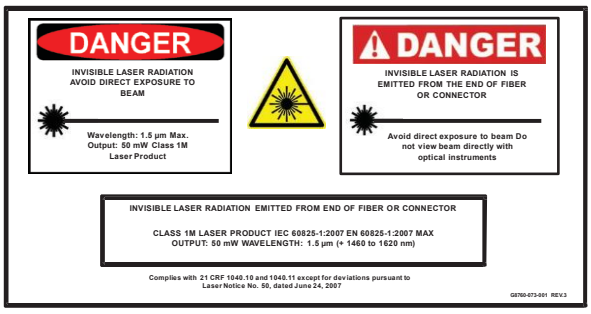


Laser Safety

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.



*Caution - Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
*IEC is a registered trademark of the International Electrotechnical Commission.

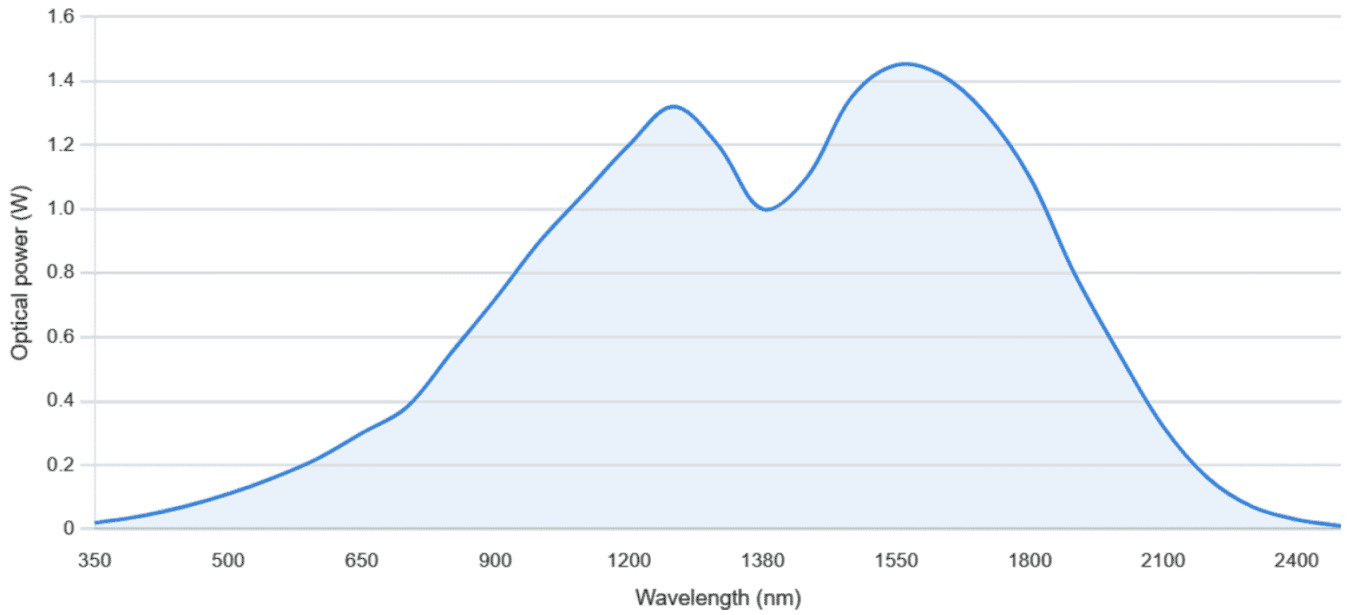
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Regular Single Mode / Polarization Maintaining Fiber Optical Power Handing vs Wavelength



Single mode fiber optical power is limited by nonlinear effects in addition to absorption that increase loss and generate heat. The curve shows the approximate safe CW power envelope for standard single-mode fiber. Actual limits depend on fiber design, core size, length, and laser characteristics. Specialty fibers can significantly increase the power limit.

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