Mid IR Spectrometers 2.5 – 5 µm

(low cost, Deep Cooling high sensitivity, high resolution, USB)

Patent pending

DATASHEET

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The MIRS Series Spectrometer, based on TE-cooled PbSe detectors, is optimized for MIRS spectroscopic measurements requiring an exceptional signal-to-noise ratio and high dynamic range across the 2.5 - 3 µm spectral range. This system leverages innovative, patent-pending scanning technology, offering significant advantages: 1) Unmatched low cost; 2) Industry-leading sensitivity with deep cooling to -40 °C; 3) Extended spectral coverage beyond traditional spectrometers; 4) Low power consumption; 5) Integrated MEMS chopper; 6) High resolution performance. Additional features include photon integration for low-noise detection and connectivity via USB or RS232 with an intuitive GUI. The MIRS series is available in both OEM modules and turn-key units with integrated power supplies.

The MIRS Series spectrometers deliver high performance with ultra-low noise levels, making them suitable for a range of demanding applications. The detectors' excellent sensitivity supports broad-band applications, such as analyzing the optical properties of solids, liquids, and gases in the NIR range, chemical component analysis, moisture detection, and narrow-bandwidth tasks like NIR laser characterization. The MIRS series comes standard with a USB interface, and software support includes SDK examples, DLLs for custom application development, and Windows-based spectral acquisition and analysis tools.

Features

- High Sensitivity
- Low Cost
- USB/GUI
- Deep-Cooling Option
- MEMS Chopper Option

Applications

- Sensor
- Testing
- Instrumentation

Specifications

Parameter		Min	Typical	Max	Unit
Center Wavelength		0.9		2.5	µm
Spectral Resolution		10	30	100	nm
Wavelength Accuracy			10	100	nm
Wavelength Repeatability		-		±10	nm
PDL		-	0.5	3	dB
Signal to Noise Ratio [1]				2500:1	
Dark Readout Noise [2]			±10	-	RMS
Power Accuracy			±5	-	dB
Scan Time		10		10000	s
Input Optical Power	Standard version	-		0.3	W
	High power version			5	W
Electronic Interface				Mini USB	
Operating Temperature		-10	20	60	°C
Storage Temperature		-14	-	70	°C

Notes:

[1]. The lowest level requires -40 cooling, the high level is room temperature. These are also related to the integration time setting. Low spectral resolution increase sensitivity.

[2]. An integrated shutter is available to calibrate the dark readout

RoHS COMPLIANT

Note: The specifications provided are for general applications with a cost-effective approach. If you need to narrow or expand the tolerance, coverage, limit, or qualifications, please [click this link]:

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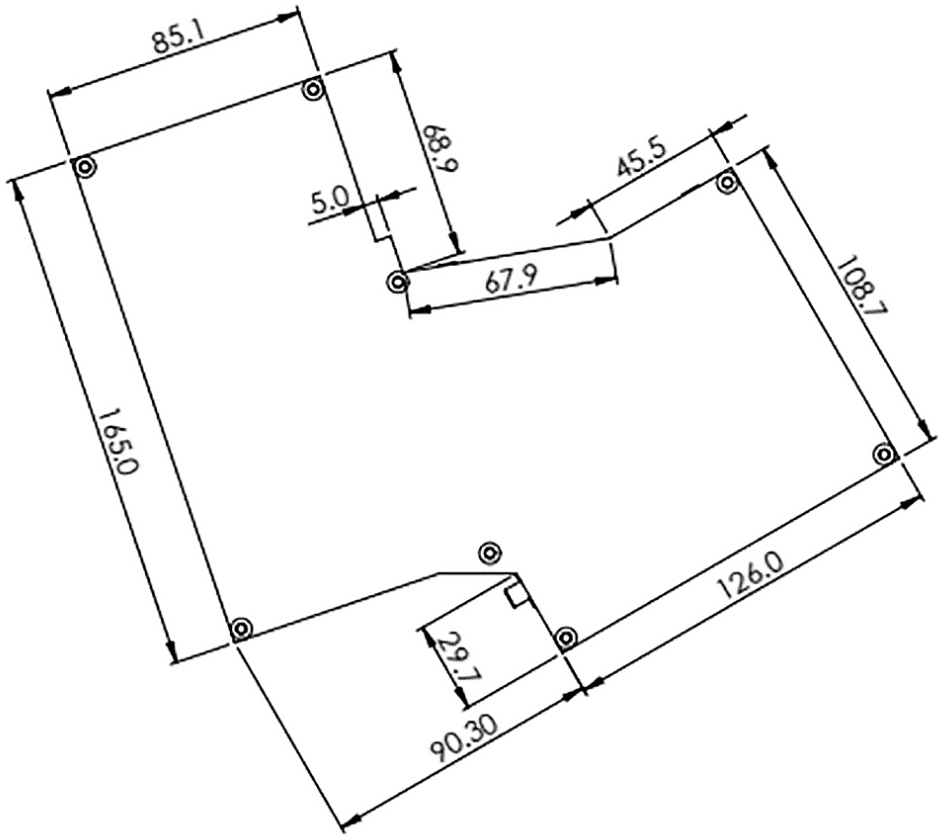
Mechanical Dimensions (mm)



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

Electrical/Computer Connection

Module comes with a 12V DC power wall pluggable power supply

Turn-key unit has a 110-220 ACV input and a USB input at the back and optical input at the front.

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Ordering Information (Part Number)

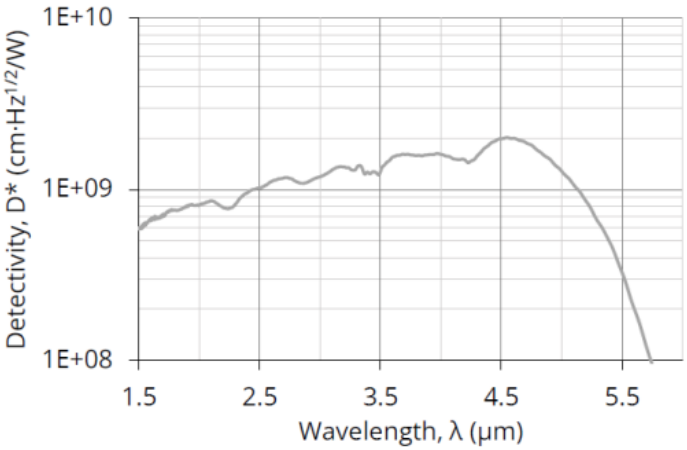
	☐	☐	☐	☐	☐	☐	☐	☐	☐
Prefix	**Type**	**Wavelength**	**Input Optical Power**	**Cooling**	**Resolution [1]**	**Shutter**	**Chopper**	**Connector [2]**	**Package**
MIRM-	Module = 1 Turn-Key = 2	2.5- 5 µm = 1 Special = 0	Standard = 1 High Power = 2	Non = 1 -10°C = 2 -20°C = 3 -40°C = 5	10nm = 1 20nm = 2 50nm = 3 100nm = 4	Non = 1 Yes=2	Non = 1 Yes = 2	SMA905 = 1 FC/PC = 2 SC/PC = 4 ST/PC = 6 Special = 0	Module = M Benchtop = B

[1]. Low resolution high sensitivity.

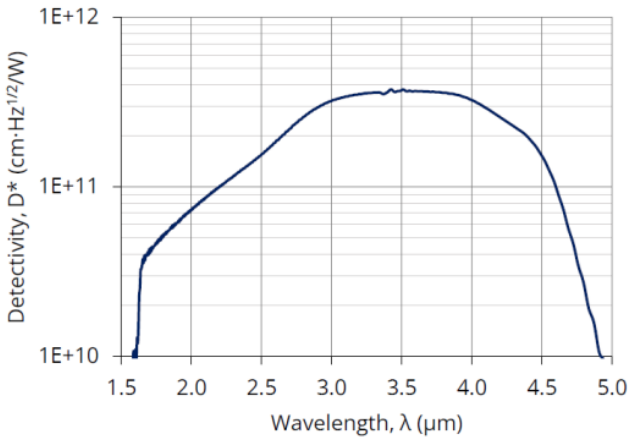
[2]. The default connector configuration uses fiber with 0.9 mm buffer protection. The connector cannot be installed directly onto bare fiber because the bare fiber is prone to damage during shipping. However, the connector can be assembled on bare fiber if a 3 cm protective loose tube is added for reinforcement. 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.

Spectral Response

Uncooled



Cooled



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