NIR Spectrometers 1000 – 1650 nm

(low cost, high sensitivity, USB)

Patent pending

DATASHEET

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The NIRS Series Spectrometer, based on TE-cooled InGaAs detector coupled with a grating, is optimized for NIR spectroscopic measurements requiring an exceptional signal-to-noise ratio and high dynamic range across the 0.9 - 2.5 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 NIRS 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 NIRS 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

- Laboratory use
- Testing
- Instrumentation

Specifications

Parameter		Min	Typical	Max	Unit
Wavelength Range		1000		1650	nm
Resolution		0.2	0.4	0.6	nm
Wavelength Accuracy		0.05	0.08	0.1	nm
PDL		-	0.15	0.35	dB
Sensor Size			0.2		mm
Noise Floor [1]		-110		-10	dBm
Scan Time		1		200	s
Input Optical Power	Standard version	-		0.3	W
	High power version			5	W
f-number			1.8		
Electronic Interface				Mini USB	
Operating Temperature		0	20	60	°C
Storage Temperature		-10	-	70	°C
Weight			10		lbs

Notes:

[1]. The lowest level requires -40 °C 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

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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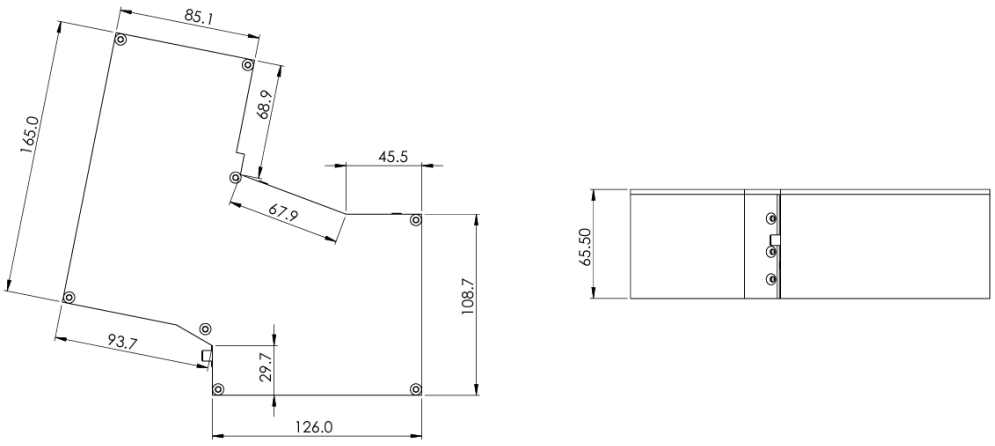
Dimensions (mm)



*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.

USB 2.0, 480 Mbps; RS-232 (3-wire)

Ordering Information

	1	☐	☐	☐	☐	☐	☐	☐
Prefix	**Type**	**Wavelength**	**Input Optical Power**	**Cooling ***	**Resolution ****	**Shutter**	**Chopper**	**Connector**
NIRS-		1-1.6µm = 1 Special = 0	Standard = 1 High Power = 2	Non = 1 -5°C = 2 -20°C = 3 -40°C = 5	1nm = 1 0.5nm = 2 5nm = 3 10nm = 4	Non = 1 Yes = 2	Non = 1 Yes = 2	SMA905 = 1 FC/PC = 2 SC/PC = 4 ST/PC = 6 Special = 0

* Non cooling is low cost for strong light measurements. At -5°C:Noise is reduced by about 4×, improving performance in low-light applications. At -40°C:Noise is reduced by about 16×, enabling high-sensitivity measurements, such as weak signal detection in spectroscopy or astronomy.

** Low resolution high sensitivity.

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