

SPECTRAL ANALYSIS / DATA SHEET

SM-5002B

Near-Infrared Spectrometer

Compact near-infrared spectrometer with a 256-pixel uncooled InGaAs detector, replaceable slit configuration and selectable spectral ranges for industrial integration and scientific analysis.

Overview

- 256-pixel uncooled InGaAs detector for improved resolution and sensitivity with low power consumption.
- Compact optical and mechanical design for easy system integration.
- Configurable slit widths support different resolution and sensitivity requirements.
- 920-1700 nm spectral measurement range with stable intensity.



920-1700 nm SPECTRAL RANGE	~5 nm PRE-CONFIGURED RESOLUTION	256 px UNCOOLED InGaAs	USB / RS232 COMMUNICATION
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Key Advantages

- Uncooled InGaAs detector with ultra-low power consumption.
- Compact optical and mechanical design for straightforward system integration.
- Interchangeable slits for flexible resolution and sensitivity adjustment.
- Supports selectable wavelength ranges, secondary development and OEM integration.
- Software supports automatic calculation of peak wavelength and bandwidth.

Application Scenarios

- Freshness and sugar-content testing for fruits and vegetables.
- Fat and protein content analysis in meat products.
- Quality assessment of grains and seeds.
- Composition analysis of oil and fat materials.
- Life science and pharmaceutical applications.
- Plastic manufacturing, material screening and quality control.

MEASUREMENT PRINCIPLE

Near-Infrared Measurement with Configurable Slit

The SM-5002B uses a compact optical path and an uncooled InGaAs detector to measure near-infrared signals across 920-1700 nm. Its configurable slit design allows different slit widths to be selected for different resolution and sensitivity requirements. The optical signal is coupled through an SMA905 fiber connector and digitized through the USB 2.0 or RS232 interface.

TYPICAL TEST DATA

Spectral Test Comparison

Representative tungsten-lamp comparison plot from the supplied source document; legacy model identifiers have been removed from the figure.



Tungsten lamp spectral test comparison

SYSTEM DATA

Technical Specifications

Specifications are compiled from the supplied SM-5002B source document. The source specification table lists 94 x 60 x 36.5 mm; the drawing contains additional dimensional references.

Item	Specification
Model number	SM-5002B
Wavelength range	920-1700 nm
Optical resolution	~5 nm (pre-configured)
Fiber connector	SMA905
Detector	InGaAs 256-pixel uncooled detector
Pixel size	50 μ m x 500 μ m
A/D resolution	16 bit
Integration time	0.1 ms-65 s
Dynamic range	50,000:1
Trigger modes	Normal, mode, software, hardware and synchronization trigger
Power consumption	5 V DC, 250 mA
Operating temperature	5-35°C (25°C recommended)
Communication interface	USB 2.0; RS232
Operating system	Win XP, Win 7, Win 8, Win 10
Linearity	>99%
Power supply	USB or 5 V DC

Item	Specification
Dimension	94 x 60 x 36.5 mm

OUTPUT & COMMUNICATION

Output and System Integration

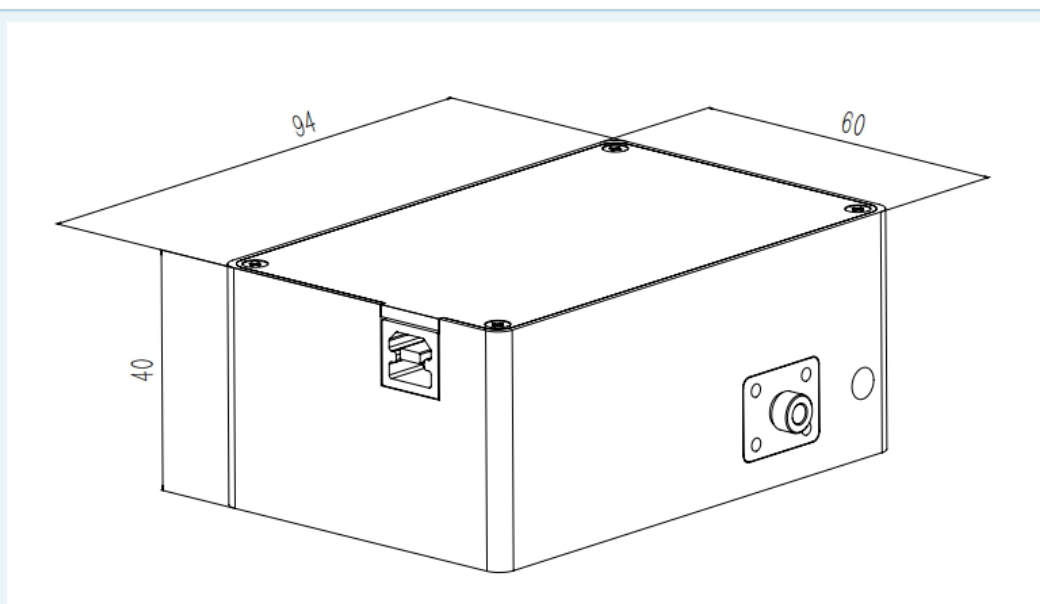
USB 2.0 and RS232 support data communication and system integration. The source also identifies USB or 5 V DC power and normal, software, hardware and synchronous trigger modes.

Interface / function	Source-supported specification
USB 2.0	Data communication and USB power option
RS232	Serial communication interface
Power input	USB or 5 V DC
Triggering	Normal mode, software trigger, hardware trigger and synchronous trigger
Software	Automatic calculation of peak wavelength and bandwidth
Integration	Supports secondary development and OEM integration

MECHANICAL DATA

Mechanical Dimensions & Mounting

The supplied outline drawing is reproduced for mechanical reference. The specification-table envelope is 94 x 60 x 36.5 mm; the drawing also shows 94 mm, 60 mm and 40 mm reference dimensions.



Outline dimensions

The specification table lists 94 x 60 x 36.5 mm; the supplied drawing also shows 94 mm, 60 mm and 40 mm reference dimensions.

Configuration List

No.	Component	Qty.
1	Spectrometer	1

No.	Component	Qty.
2	USB cable	1
3	Calibration report, software and user manual access	1
4	Suitcase	1

Optional Accessories

- Cooled halogen-tungsten light source.
- Straight-through quartz double-clad fiber, 200-1100 nm.
- Spectrum analysis software.

ORDERING INFORMATION

Product Selection

The following configuration codes are transcribed from the supplied source document and use the SpeSense SM-5002B family name.

Model code	Wavelength range	Resolution
SM-5002B-01-S03L00F00G37	920-1700 nm	~5 nm
SM-5002B-02-S03L00F00G39	1530-1705 nm	~1 nm
SM-5002B-03-S03L00F00G39	950-1170 nm	~1 nm

CONTACT / SUPPORT

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