

SPECTRAL ANALYSIS / DATA SHEET

SM-3001B

VIS-NIR High-Resolution Spectrometer

Compact VIS-NIR spectrometer with configurable gratings for high-resolution spectral measurement, industrial systems and research applications.

Overview

- Compact and portable optical-mechanical structure with selectable wavelength range and resolution.
- The source introduction states resolution up to 0.08 nm; the specification table lists 0.35 nm. Confirm the final value for the selected configuration.
- USB power/data transfer and RS232 communication support cost-effective industrial and research integration.



315–1100 nm OPTIONAL RANGE	0.08–0.35 nm* SOURCE VALUES	300:1 SIGNAL-TO-NOISE	USB / RS232 COMMUNICATION
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**The supplied source document presents both 0.08 nm and 0.35 nm resolution values in different sections; verify the ordered configuration.*

Key Advantages

- Handy, compact and portable, with a package described as small as a name card.
- Crossed Czerny-Turner optical design with interference filter to eliminate secondary diffraction spectrum.
- Standard SMA905 fiber connector and configurable gratings for selectable wavelength range and resolution.
- USB 2.0 data transmission and power supply; RS232 communication and multiple trigger modes.
- Automatic peak-wavelength and FWHM display; SDK provided for secondary development and customization.

Application Scenarios

- Emission and absorption spectrum measurement.
- Transmittance and absorbance testing.
- LED characterization and analysis.
- Solar energy spectrum testing.
- Fluorescence detection and color measurement.
- Laser spectrum analysis systems.

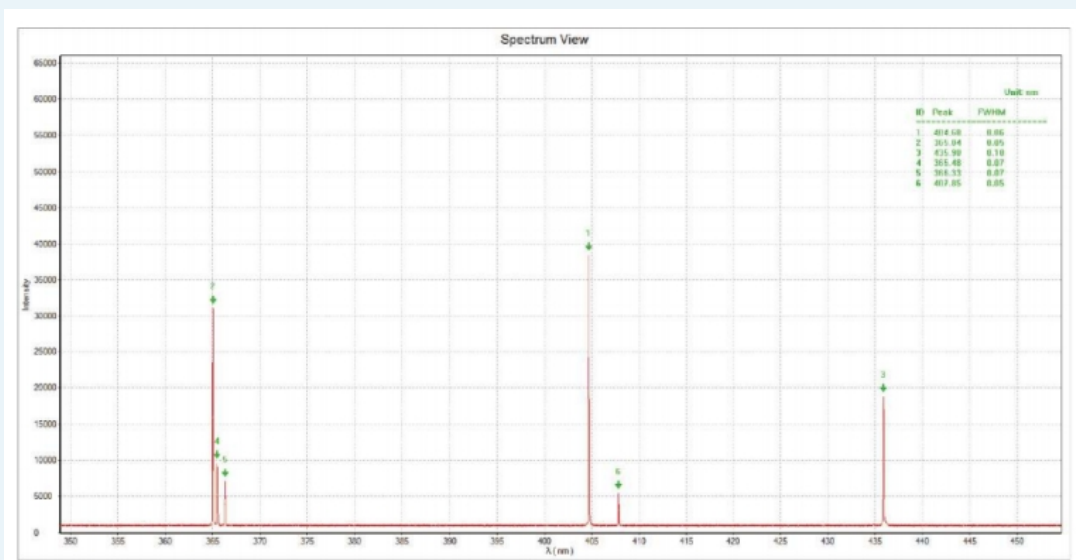
MEASUREMENT PRINCIPLE

Crossed Czerny-Turner Optical Design

The SM-3001B adopts a high-resolution optical-mechanical structure with a crossed Czerny-Turner optical design and an interference filter to eliminate the secondary diffraction spectrum. Different gratings can be selected for different wavelength ranges and resolutions. The system uses a standard SMA905 fiber connector and a TCD1304 linear CCD detector.

Typical spectrum

Representative mercury-lamp spectrum reproduced from the supplied source document.



Mercury (Hg) lamp spectrum

SYSTEM DATA

Technical Specifications

Specifications below are compiled from the supplied SM-3001B source document. Where the source presents more than one value, the original qualification is retained for confirmation against the selected configuration.

Item	Specification
Wavelength range	315–1100 nm, optional
Resolution	0.35 nm in the specification table; the source introduction states resolution up to 0.08 nm. Confirm for the selected configuration.
Fiber connector	SMA905
Detector	TCD1304 linear CCD
Detector pixels	3648 pixels; each pixel 8 μm $\times$ 200 μm
Signal-to-noise ratio	300:1
A/D resolution	16 bit
Integration time	4 ms–10 s
Dynamic range	300:1
Trigger modes	Normal, mode, software, hardware and synchronization trigger
Power consumption	250 mA at 5 V DC
Operating temperature	5–35°C (25°C recommended)
Communication interface	USB 2.0 (12 Mbps); RS232 (115200 bps)
Operating system	Win XP, Win 7, Win 8, Win 10
Linearity	>99%

Item	Specification
Mounting holes	Fixed mounting holes at the bottom and side for system integration; see supplied drawing.
Power supply	USB
Dimension	94 × 60 × 34.5 mm (source specification table); see mechanical drawing for additional drawing references.
Weight	0.3 kg

OUTPUT & COMMUNICATION

Output and System Integration

USB 2.0 provides power and data transfer, while RS232 provides serial communication. Multiple trigger modes support flexible measurement and system integration; the supplied SDK supports secondary development and customization.

Interface / function	Source-supported specification
USB 2.0	12 Mbps data transfer and USB power supply
RS232	115200 bps serial communication
Triggering	Normal, mode, software, hardware and synchronization trigger
Display	Automatic display of peak wavelength and FWHM
Development	SDK provided for secondary development and customization

ORDERING INFORMATION

Product Selection

The following ordering codes retain the supplied configuration suffixes while using the SpeSense SM-3001B family name throughout.

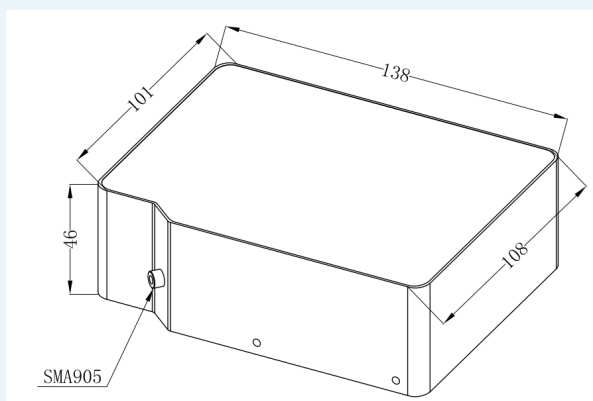
Model code	Wavelength range	Resolution
SM-3001B-01-S03L00F00G10	400–620 nm	~0.3 nm
SM-3001B-02-S02L00F08G08	890–990 nm	~0.15 nm
SM-3001B-03-S02L00F00G08	1005–1080 nm	~0.15 nm
SM-3001B-03-S02L00F08G08	1005–1080 nm	~0.15 nm
SM-3001B-04-S02L00F08G08	750–870 nm	~0.15 nm
SM-3001B-05-S02L00F08G27	900–1100 nm	~0.2 nm
SM-3001B-06-S02L00F00G08	355–495 nm	~0.15 nm
SM-3001B-07-S02L00F00G08	510–650 nm	~0.15 nm
SM-3001B-08-S01L00F08G08	900–1000 nm	~0.1 nm
SM-3001B-09-S01L00F00G25	300–750 nm	~0.4 nm
SM-3001B-10-S01L00F00G10	445–655 nm	~0.1 nm
SM-3001B-11-S01L00F08G28	697–1137 nm	~0.4 nm

Model code	Wavelength range	Resolution
SM-3001B-12-S02L00F08G08	725–845 nm	~0.15 nm
SM-3001B-13-S01L00F08G29	810–1095 nm	~0.2 nm
SM-3001B-14-S01L00F00G30	380–482 nm	~0.08 nm
SM-3001B-15-S01L00F00G30	360–460 nm	~0.08 nm
SM-3001B-15-S01L02F00G30	350–450 nm	~0.08 nm
SM-3001B-15-S01L01F08G30	680–730 nm	~0.08 nm
SM-3001B-15-S01L02F08G30	680–730 nm	~0.08 nm
SM-3001B-16-S01L00F00G30	510–605 nm	~0.08 nm
SM-3001B-17-S01L01F08G27	800–1000 nm	~0.1 nm
SM-3001B-18-S02L00F08G08	570–690 nm	~0.15 nm
SM-3001B-19-S02L02F05G12	380–900 nm	~0.8 nm
SM-3001B-20-S01L01F11G34	400–840 nm	~0.4 nm

MECHANICAL DATA

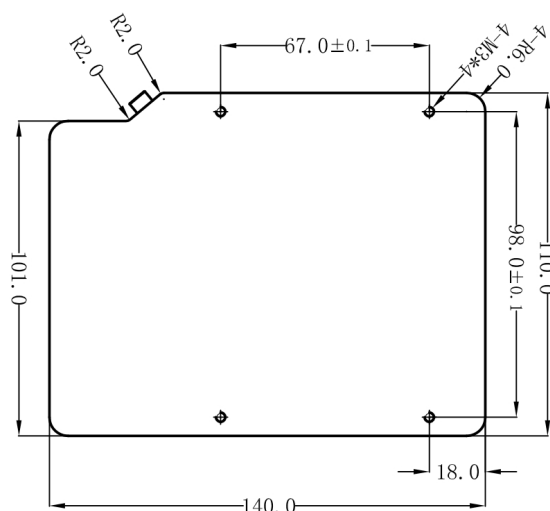
Mechanical Dimensions & Mounting

The supplied outline and mounting drawings are reproduced for mechanical reference. The specification table lists 94 × 60 × 34.5 mm, while the drawing carries additional references including 138 mm, 108 mm and 46 mm. Confirm the applicable dimensions before mechanical integration.



Outline dimensions

Drawing references: 138 mm, 108 mm, 101 mm and 46 mm



Mounting hole configuration

Drawing references include 140 mm, 110 mm, 67 ± 0.1 mm and 62 ± 0.1 mm

Configuration List

No.	Component	Qty.
1	Spectrometer	1
2	USB cable	1

No.	Component	Qty.
3	Calibration report (software and user manual)	1
4	Suitcase	1

Optional Accessories

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

CONTACT / SUPPORT

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