

SPECTRAL ANALYSIS / DATA SHEET

SM-2001B

Miniature Spectrometer

Business-card-sized spectrometer for portable spectral measurement, instrument integration and scientific research.

Overview

- A compact optical-mechanical platform with optimized optical design and high resolution up to approximately 0.35 nm.
- An upgraded circuit provides up to 10,000:1 dynamic range, 0.5 ms minimum integration time and improved sensitivity.
- RS232 communication and enhanced anti-interference performance support industrial and scientific research applications.



315–1100 nm OPTIONAL RANGE	~0.35 nm OPTIMAL RESOLUTION	300:1 SIGNAL-TO-NOISE	USB / RS232 COMMUNICATION
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Key Advantages

- Compact, portable, business-card-sized package.
- Crossed Czerny-Turner optical design with interference filter to suppress secondary diffraction spectrum.
- Standard SMA905 fiber connector and selectable wavelength range / optical resolution.
- USB 2.0 for data transmission and power supply; RS232 communication for system integration.
- Automatic peak-wavelength and FWHM display; SDK provided for 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-2001B uses a crossed Czerny-Turner optical design with an interference filter to eliminate the secondary diffraction spectrum. The compact optical-mechanical platform uses a standard SMA905 fiber connector and a TCD1304 3648-line CCD detector; the wavelength range and optical resolution can be selected for the intended application.

OUTPUT & COMMUNICATION

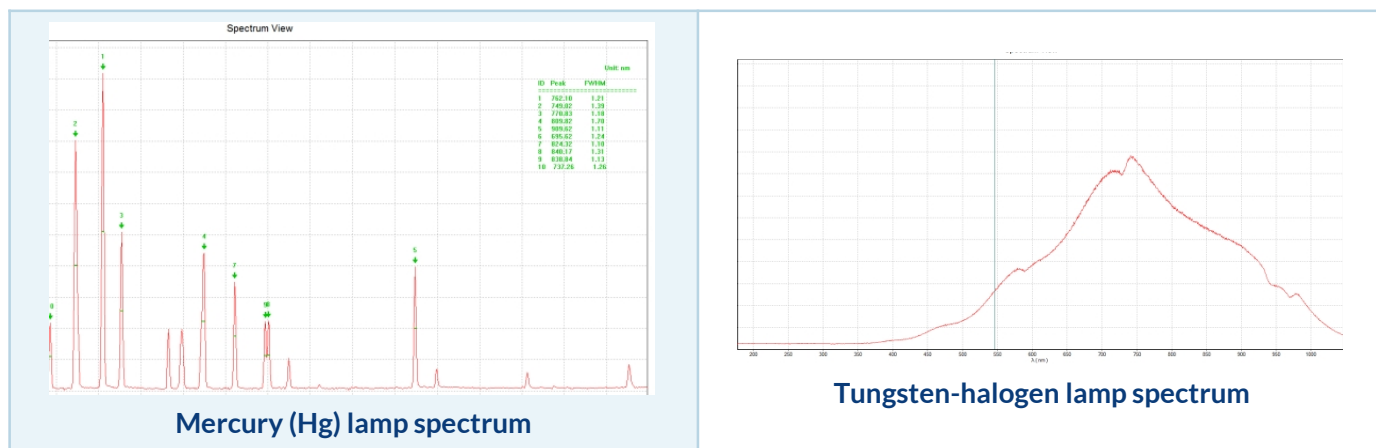
Output and System Integration

USB 2.0 provides data transmission and power supply, while RS232 provides serial communication. Normal, software, hardware and synchronization trigger modes support flexible operation and integration.

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

Typical spectrum

Representative mercury-lamp and tungsten-halogen spectra are reproduced from the supplied source document.



SYSTEM DATA

Technical Specifications

Specifications below are compiled from the supplied SM-2001B source document. The optional wavelength range and selectable resolution depend on the ordered configuration.

Item	Specification
Wavelength range	315–1100 nm, optional
Optical resolution	Approx. 0.35 nm (optimal)
Fiber connector	SMA905
Detector	TCD1304, 3648-line CCD
Detector pixels	3648 pixels; each pixel 8 μm × 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

Item	Specification
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
Mounting holes	4 × M3 threaded holes at bottom; 2 × M3 threaded holes at side
Power supply	USB
Dimensions	94 × 60 × 34.5 mm
Weight	0.3 kg

ORDERING INFORMATION

Product Selection

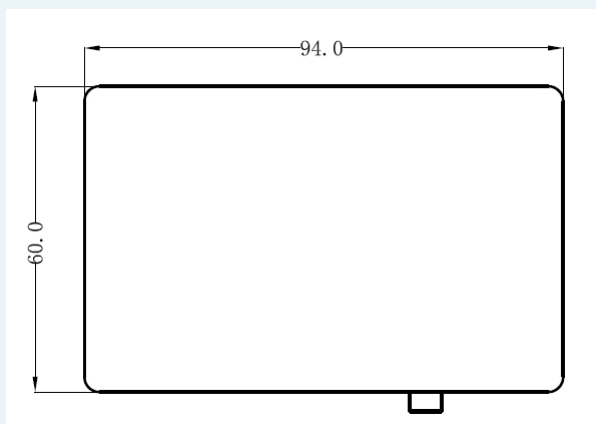
The following ordering codes retain the source configuration suffixes while using the SpeSense SM-2001B family name throughout.

Model code	Wavelength range	Resolution
SM-2001B-02-S03L00F05G02	400–1100 nm	~1 nm
SM-2001B-03-S03L00F00G03	350–700 nm	~0.6 nm
SM-2001B-04-S03L00F00G04	350–583 nm	~0.4 nm
SM-2001B-05-S03L00F08G05	750–1100 nm	~0.6 nm
SM-2001B-05-S03L00F00G05	750–1100 nm	~0.6 nm
SM-2001B-05-S04L00F08G05	750–1100 nm	~1 nm
SM-2001B-06-S03L00F05G02	350–1050 nm	~1 nm
SM-2001B-06-S03L01F05G02	350–1050 nm	~1 nm
SM-2001B-07-S03L01F05G02	315–1015 nm	~1 nm
SM-2001B-07-S03L00F05G02	315–1015 nm	~1 nm
SM-2001B-07-S03L00F06G02	315–1000 nm	~1 nm
SM-2001B-07-S03L01F06G02	315–1000 nm	~1 nm
SM-2001B-08-S02L00F00G03	380–730 nm	~0.5 nm
SM-2001B-09-S02L01F08G05	600–950 nm	~0.5 nm
SM-2001B-10-S02L01F08G22	820–1040 nm	~0.4 nm

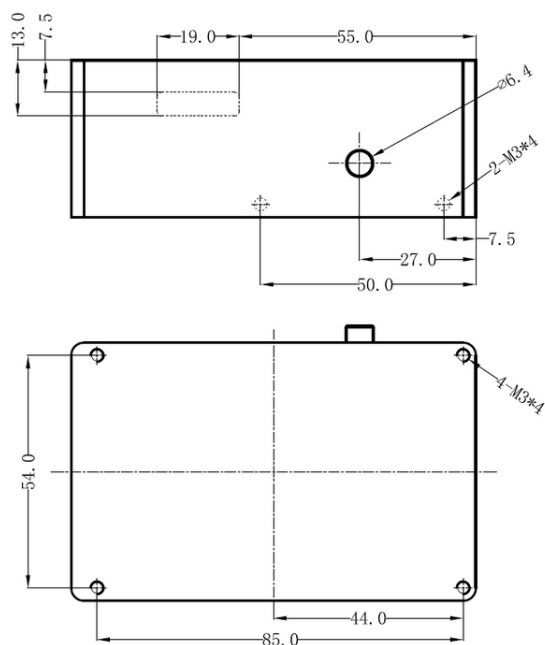
MECHANICAL DATA

Mechanical Dimensions & Mounting

The supplied outline and mounting drawings are reproduced for mechanical reference. Overall dimensions are 94 × 60 × 34.5 mm, with M3 threaded mounting holes at the bottom and side.



Outline dimensions
94 × 60 × 34.5 mm



Mounting hole configuration
4 × M3 bottom; 2 × M3 side

Configuration List

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