DATASHEET
EOC-SI-2400
High Performance Ultra Thin Fiber Spectrometer

Features：

- The minim, ultra-thin, ultra-light weight of a minim;
- Fiber input and signal output are on the same side, which is very easy to integrate.
- Detector: linear CMOS
- Detector pixel: 2048 pixels
- Ultra-low noise CCD signal processing circuit
- Maximum spectral range: 200-1180 nm (depending on requirements)
- Spectral resolution: 0.1-2 nm (depending on spectral range, slit width)
- Optical Design: cross-C-T
- Built-in pulsed xenon lamp driver
- Casual time: 0.1ms-130s
- Vinner power supply: DC 5V±10% or USB power supply
- A16 bit, 2MHz ADC
- Incident Interface: SMA905 or free space
- Supported data output interface: USB 2.0 (High speed) or UART
- 20-pin dual-row programmable external expansion interface

Application：

- Fast and ultra-micro spectrophotometer; ;
- Environmental protection equipment (flue gas, water quality);
- Reflection and transmission spectrum detection;
- Spectral analysis, radiation spectroscopic analysis, spectrophotometric analysis;
- Laser wavelength measurement.

Description:

After 20 years in the development of optical fiber spectrometers, a new generation of high-performance ultra-thin fiber spectrometer, the EOC-SI-2400, is now available. It has built-in pulsed xenon lamp drive circuits, adopts high sensitivity linear CMOS, and specially customized ultra-low noise CMOS signal processing circuits. The noise of the sensor is lower, the signal-to-noise ratio is obtained (about twice higher than that of similar competitors), and the measurement reliability of the EOC-SI2400 is improved. The measurement results do not change with the ambient temperature, which is the best level in the industry.

EOC-SI-2400 can receive SMA905 fiber input light or free space light, and output spectral data measured through USB2.0 or UART ports.

EOC-SI-2400 only requires a 5V DC power supply or USB power supply, which is very easy to integrate.

Model	Detector pixel	Sensor Cooled
EOC-SI-2400	2048pixel	No

1. Performance parameters:

Detector	
Type	Linear CMOS
Detectable range	200-1100 nm
Effective pixel	2048×1
Pixel dimension	14μm×200μm
Full scale range	~200 ke-
Sensitivity	1300 V/(lx•s)
Dark noise	0.4 mV rms
Optical Parameter	
Wavelength range	200-1100 nm （Specific according to needs）
Optical resolution	0.1-2 nm （Depends on slit, spectral range）
SNR	>450 : 1
Dynamic range	3000：1
Optical Configuration	
Optical Design	f/4 cross asymmetric C-T optical path
Incidence slit	5、10、25、50、100、150、200 μm Optional, other sizes can be customized
Incident Interface	SMA905 Optical fiber interface, free space
Electrical Parameter	
Integration time	0.1 ms - 256 second
Interfaces	USB 2.0
A/D conversion resolution	16 bit
Supply voltage	DC4.5 to 5.5 V (type @5V)
Operating current	250mA@Typ.
Operating current	-30°C to +70°C
Operating temperature	-25-50°C
Working humidity	< 90%RH （No condensation）
Physics Parameter	
Dimension	85 × 61 × 24 mm
weight	0.15 kg

2 Mechanical Diagrams

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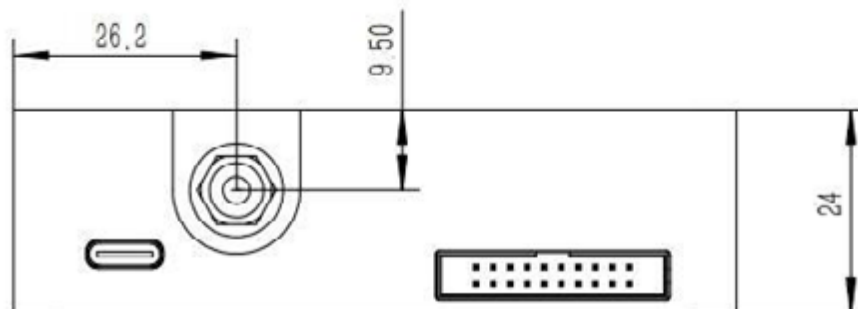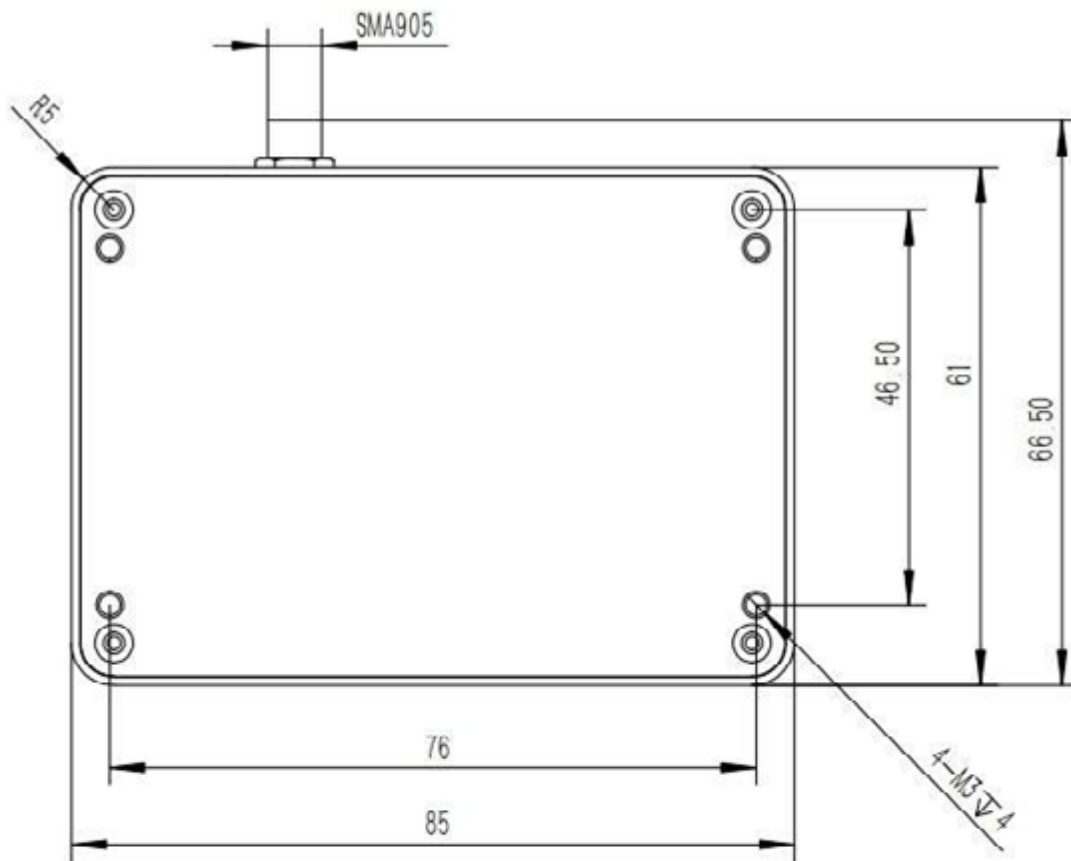
3 Electrical Pin-out

Table 1 Electrical Characteristics

Parameter	Min	Typ	Max	Unit
Power Supply Operating voltage range Operating current	4.5	5 250	5.5	V mA
Logic Inputs(3.3V LVTTL, Five-volt tolerant) High level input voltage Low level input voltage	1.7 -0.3		3.6 1.0	V V
Logic Output(3.3V LVTTL) High level output voltage Low level output voltage	2.4		0.4	V V

The module is equipped with a 20-pin male angled box header(2x10, 2.00 mm pitch) and USB2.0 C type interface. The 20-pin connector is a Samtec part # STMM-110-02-L-D-RA connector. The mate to this is a Samtec part # TCSD-10-D-XX.XX-01-N.
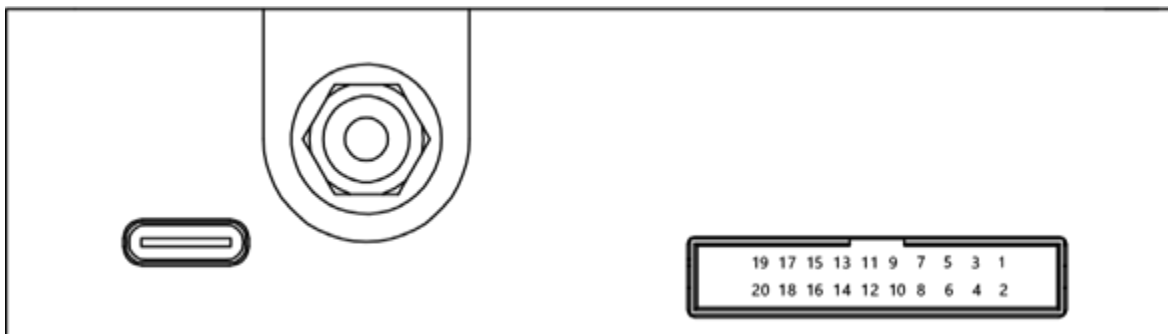

Table 2 Electrical Pin-Out

Pin#	Description	I/O	Function Description
1	VCC	/	Power Supply, 5V±0.5,
2	GND	/	Ground
3	TX	Output	LVTTL Transmit signal
4	RX	Input	LVTTL Receive signal
5	Lamp Enable	Output	LVTTL output the lamp enable signal.
6	N.C.	/	/
7	Ext_trigger_in	Input	LVTTL input the trigger signal. Falling edge trigger collection
8	N.C.	/	/
9	SPI_SCK	Output	The SPI Clock signal for communications to other SPI peripherals
10	SPI_MOSI	Output	The SPI Master Out Slave In (MOSI) signal for communications to other SPI peripherals

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11	SPI_MISO	Input	The SPI Master In Slave Out (MISO) signal for communications to other SPI peripherals
12	SPI_CS	Output	The SPI Chip/Device Select signal for communications to other SPI peripherals
13	GPIO0	Input /Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
14	GPIO1	Input /Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
15	GPIO2	Input /Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
16	GPIO3	Input /Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
17	GPIO4	Input /Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
18	GPIO5	Input /Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
19	GPIO6	Input /Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
20	GPIO7	Input /Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.

4 Spectrogram example

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PN: EOC-SI-2400
Range: 180-410nm
Slit: 50 um
Resolution: 0.621nm

(0.621 ; 21836.000)