



Datasheet

High sensitive
Micro Spectrometer (Cooled Back-thinned CCD)

EOC-SI-

FEATURES

- spectral region: 190-1100 nm
- Spectral resolution: <2 nm (depend on spectral region, Slit width)
- Optical configuration: crossed Czerny-Turner
- Linear CCD detector with 2048 pixel
- Integration times: 2ms-130s
- Supply voltage: DC 5V @ <2.3A
- 18 bit, 570KHz A/D Converter
- Interface: USB2.0 (High speed)
- 20-pin connector for interfacing to external products

APPLICATIONS

- LED spectrophotometer
- Water Analysis
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- Fluorescence
- Biochemical analyzer
- Transmittance detection
- Reflectance detection

GENERAL DESCRIPTION

EOC-SI-5001 micro spectrometer is a high-performance, miniature fiber-optic Spectrometer. Its sensor is a 2048 pixel CCD which responds from 200-1100 nm, CCD is cooled by TEC to -15° C.

EOC-SI-5001 is perfect for fast detection attribute to its high A/D converter frequency and the high speed data transmission. In EOC-SI-5001 memory chip, some algorithms to improve the performance are programed solidly, such as wavelength calibration coefficients, linearity coefficients. It output the spectrum data to PC through USB 2.0 or UART interface. EOC-SI-5001 operates with a single +5VDC supply supplied from adapter.



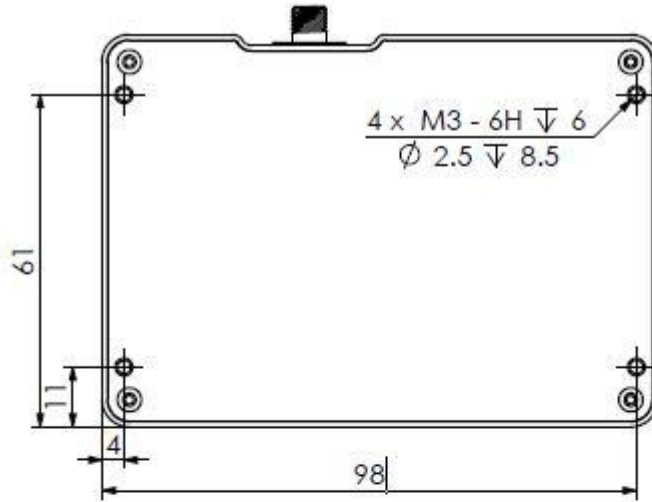
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Specifications

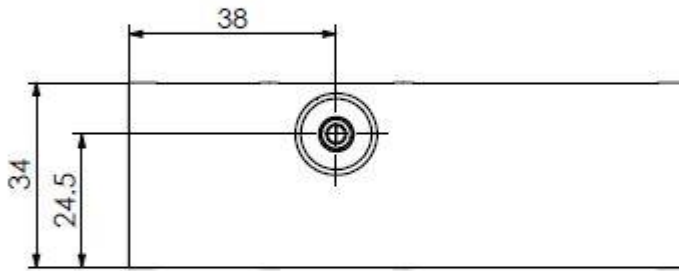
Detector	
Type	Linear array detector (TEC cooled to -15° C)
Detectable range	190-1100 nm
Effective pixel	2048×64
Pixel dimension	14μm×14μm
Full well capacity	~200 ke ⁻
Sensitivity	6.5 uV/e ⁻
Dark noise	6 e ⁻
Optical Parameter	
Wavelength range	190-1100 nm
Optical resolution	0.1-4 nm (depend on slit width, spectral width)
Signal-to-noise	>1300:1
Dynamic range	5000: 1
Working temperature	-10-40 °C
Working humidity	< 85%RH
Optical Configuration	
Optical Design	f/4 crossed asymmetrical Czerny-Turner
Focal Distance	40 mm for incidence / 60 mm for output
Incidence slit	5, 10, 25, 50, 100, 200 μm are optional, other width can be customized
Incident Interface	SMA905 fiber interface or free space
Electrical Parameter	
Integration time	1 ms - 130 second
Interfaces	USB 2.0
A/D conversion resolution	18 bit
Supply voltage	DC4.5 to 5.5 V (type @5V)
Operating current	<3A
Storage temperature	-20°C to +70°C
Operating temperature	-10°C to +40°C
Physics Parameter	
Dimension	120×80×46 mm ³
weight	0.5 kg
Sealing	Anti-sweat

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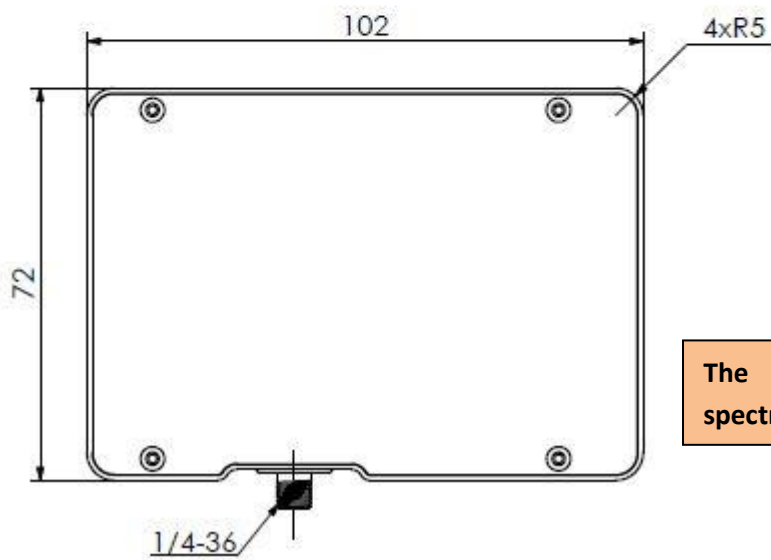
2 Mechanical Diagrams



Mounting Holes (M3 X 4)
固定空位: 4 个 M3 螺孔



SMA905 Female Fiber interface



The size of ATP2000 micro spectrometer

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3 Electrical Pin-out

Table 1 Electrical Characteristics

Parameter	Min	Typ	Max	Unit
Power Supply				
Operating voltage range	4.5	5	5.5	V
Operating current	170	500	2000	mA
Logic Inputs(3.3V LVTTL, Five-volt tolerant)				
High level input voltage	1.7		3.6	V
Low level input voltage	-0.3		1.0	V
Logic Output(3.3V LVTTL)				
High level output voltage	2.4			V
Low level output voltage			0.4	V

The module is equipped with a 20-pin male angled box header(2x10, 2.00 mm pitch) and USB2.0 B 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.

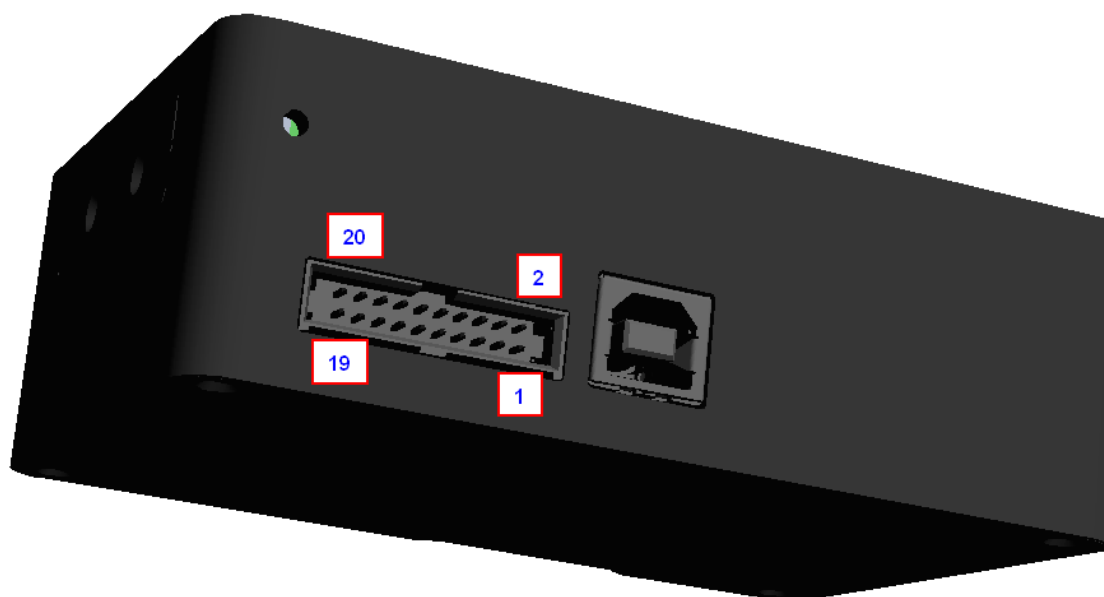


Table 2 Electrical Pin-Out

Pin#	Description	I/O	Function Description
1	VCC	/	Power Supply, 5V \pm 0.5,
2	GND	/	Ground
3	UART_TX	Output	UART Transmit signal
4	UART_RX	Input	UART Receive signal
5	Lamp_En	Output	LVTTL output the lamp enable signal.
6	Continuous_	Output	LVTTL output the continues strobe signal.

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	strobe		
7	Ext_trigger_in	Input	LVTTL input the trigger signal.
8	Single_strobe	Output	LVTTL output the single strobe signal.
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
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 Order Guide

Order number Rules:

Model	Spectral region		Slit width	
EOC-SI-5001	Short wavelength	Long wavelength	Slit width	

For example:

What to buy EOC-SI-5001, spectral region: 200-850nm, slit width is 50 μ m, then the order no is:

EOC-SI-5001-200-850-050

Order No	Spectral region	Slit	
EOC-SI-5001-200-400-###	200~400	10 μ m	

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EOC-SI-5001-200-850-###	200~850	25 μm	
EOC-SI-5001-200-1100-###	200~1000	50 μm	
EOC-SI-5001-340-850-###	340~850	100 μm	
EOC-SI-5001-600-1100-###	600~1100	200 μm	
EOC-SI-5001-###-###-###	Other	Other: _____ μm	