

High Resolution Spectrometer

ATP2400-4

Features:

- High resolution;
- Fiber input and signal output are on the same side, which is very easy to integrate.
- Detector: linear CMOS
- Detector pixel: 2048 or 4096 pixels
- Ultra-low noise CCD signal processing circuit
- Maximum spectral range: 180-1180 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
- integration 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 of experience in the development of optical fiber spectrometer, Optosky launched a new generation of high-performance ultra-thin fiber spectrometer: ATP2400, which has built-in pulsed xenon lamp drive circuits, adopts high sensitivity linear CMOS, and specially customized ultra-low noise CMOS signal processing circuits, which greatly reduces 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 ATP2400 is improved. The measurement results do not change with the ambient temperature, which is the best level in the industry.

ATP2400 can receive SMA905 fiber input light or free space light, and output spectral data measured through USB2.0 or UART ports.

ATP2400 only requires a 5V DC power supply or USB power supply, which is very easy to integrate.

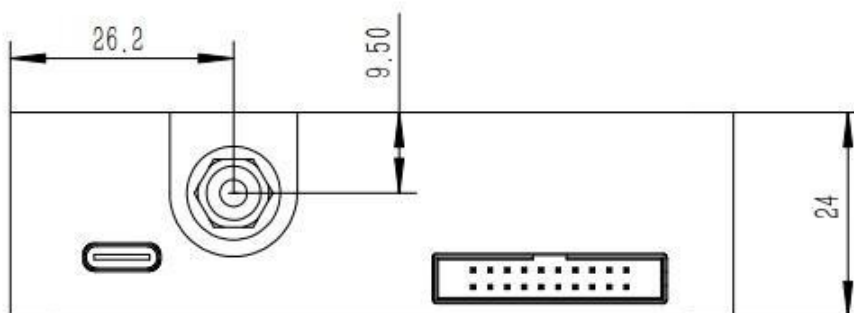
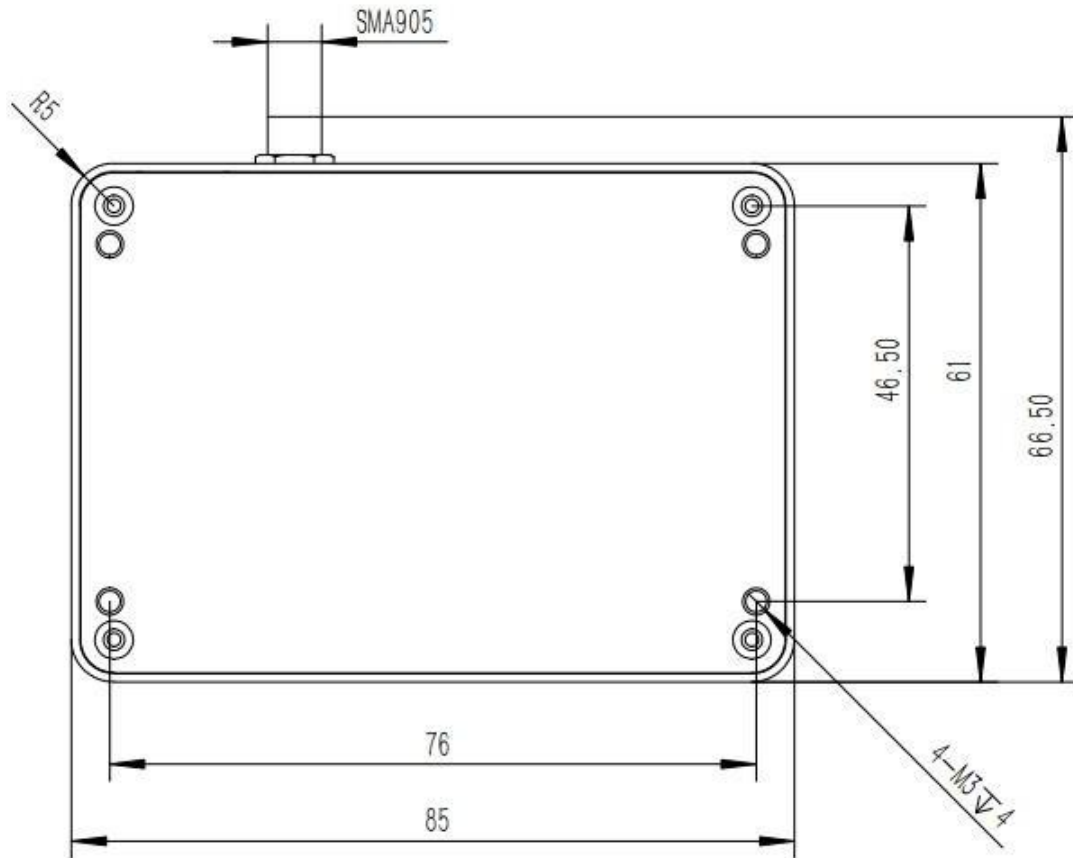
Model	Detector pixel	Sensor
ATP2400	2048 pixels	S11639
ATP2400-4	4096 pixels	S13496



1. Performance parameters:

Detector	
Type	Linear CMOS
Detectable range	180-1100 nm
Effective pixel	2048 or 4096 pixels
Pixel dimension	7 μ m \times 200 μ m
Full scale range	~200 ke-
Sensitivity	1300 V/(lx•s)
Dark noise	0.4 mV rms
Optical Parameter	
Wavelength range	180-1100 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 μ m 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 \times 61 \times 24 mm
weight	0.15 kg

2 Mechanical Diagrams



单位: mm

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		250		mA
Logic Inputs(3.3V LVTTTL, 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 LVTTTL)				
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 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.

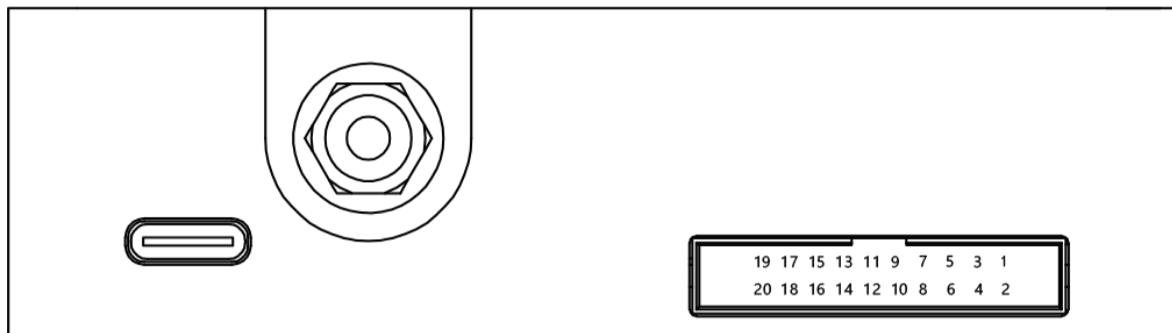


Table 2 Electrical Pin-Out

Pin#	Description	I/O	Function Description
1	VCC	/	Power Supply, 5V±0.5,
2	GND	/	Ground
3	TX	Output	LVTTTL Transmit signal
4	RX	Input	LVTTTL Receive signal
5	Lamp Enable	Output	LVTTTL output the lamp enable signal.
6	N.C.	/	/
7	Ext_trigger_in	Input	LVTTTL 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

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

