

Datasheet

Cooled, Ultra High Resolution Optical Fiber Spectrometer

ATP5030/4

Features

- Detector cooling temperature: -5 °C;
- M type optical path, higher resolution;
- Spectral range: 200-1100 nm;
- Spectral resolution: 0.05 ~ 2 nm;
- Optical path structure: non-crossing C-T;
- Detector: 2048 or 4096 pixels;
- Integration time: 0.1ms ~ 256s;
- Power supply: DC 5V power supply;
- ADC bit depth: 16 bits;
- Data output interface: USB Type-C;
- 20-pin expansion interface.

Applications

- LIBS, Plasma luminescence detection;
- Raman spectroscopy detection;
- Wavelength monitoring, laser, LED and other luminous bodies;
- Water quality analyzer;
- UV flue gas analyzer;
- LED sorting machine, color detection;
- Spectral analysis, radiation spectroscopic analysis, spectrophotometric analysis;
- Reflection and transmission spectrum detection.

Description

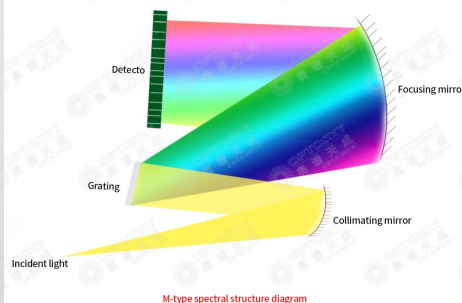
ATP5030/4 is a cooled, ultra-high resolution micro spectrometer newly developed by Optosky, ATP5030/4 is based on the M-type optical path structure independently developed by Optosky, with extraordinary ultra-high resolution; at the same time, it uses a cooled 2048 or 4096 pixel linear array detector to achieve the ultimate ultra-high resolution, the highest resolution can reach 0.05nm, It is a miniature spectrometer suitable for various high-resolution applications, with high reliability, ultra-high speed, low cost, and high cost performance. It can be adapted to various environmental uses such as online testing.

ATP5030/4 adopts TEC electric cooling, the cooling temperature is -5°C. Greatly reduce the dark current and noise of the spectrometer, and improve the dynamic range and signal-to-noise ratio of the spectrometer.

ATP5030 can receive SMA905 optical fiber input light or free space light, and output the measured spectrum data through USB2.0 or UART port.

ATP5030 only needs a 5V DC power supply, which is very easy to integrate and use.

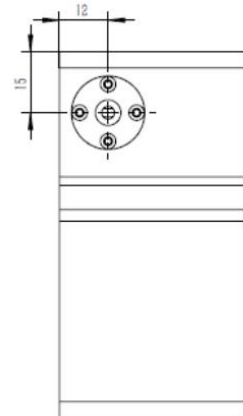
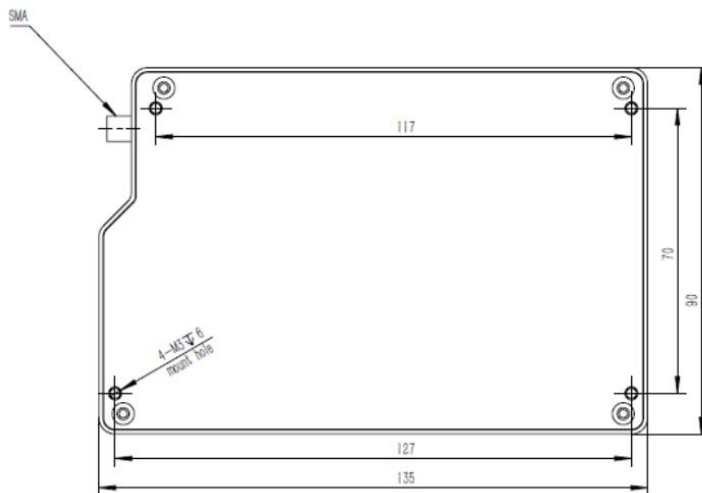
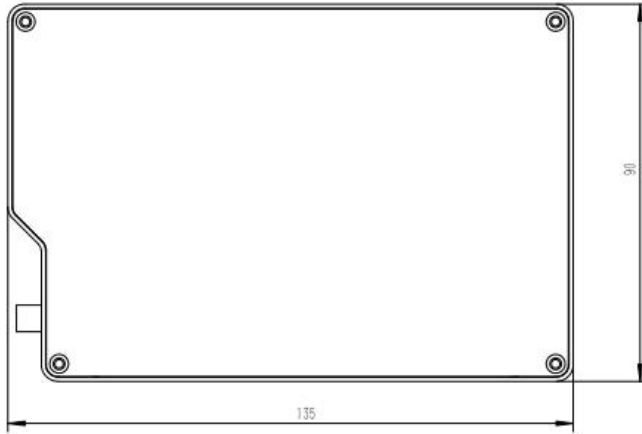
	Detector pixels	
ATP5030	2048	
ATP5034	4096	
ATP5030P	2048	Cooled, Back-thinned CCD

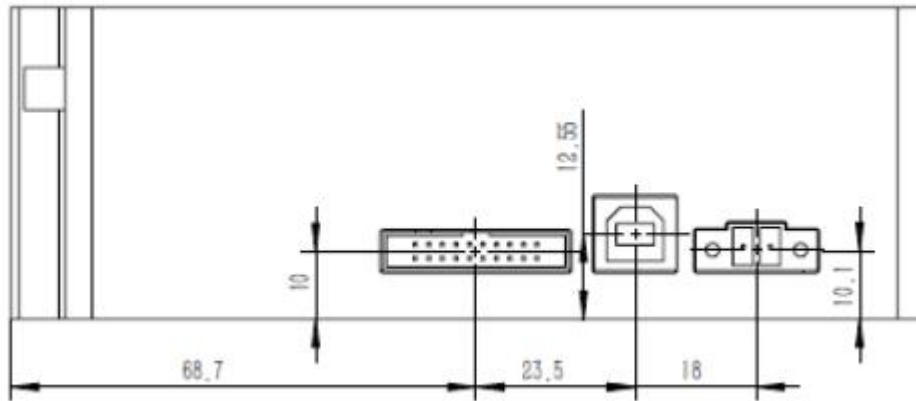


Specifications

Detector	
Type	Linear array detector
Detectable range	200-1100 nm
Effective pixel	2048 or 4096 pixels
Sensor Cooled	TEC cooled, -5 °C
Pixel dimension	14μm × 200μm
Sensitivity	1300 V/(lx·s)
Dark noise	13 RMS @ 13 °C
Optical Parameter	
Wavelength range	200-1100 nm
Optical resolution	0.07-3 nm
Signal-to-noise	>600:1
Dynamic range	8.5 × 10 ⁷ (system); 2000:1 for a single acquisition
Stray light	<0.05% at 600 nm; <0.09% at 435 nm
Optical Configuration	
Optical Design	Czerny-Turner
Focal Distance	75mm
Incidence slit	50 μm (10, 25, 100, 200 μm are optional)
Incident Interface	SMA905 connector
Electrical Parameter	
Integration time	0.1 ms - 256 second
Interfaces	USB Type-C
A/D conversion resolution	16 bit
Supply voltage	DC4.5 to 5.5 V (type @5V)
Operating current	1.5 A@Typ. 3A Max
Storage temperature	-30°C to +70°C
Operating temperature	-25 ~ 50 °C
Working humidity	< 90%RH
Physics Parameter	
Dimension	135 × 99 × 46 mm
weight	0.5 kg
Sealing	Anti-sweat

2 Mechanical Diagrams





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		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 30-pin male angled box header(2x15, 2.00 mm pitch) and Type-C interface.

Table 2 Electrical Pin-Out

Pin#	Description	I/O	Function Description
1	VCC	/	Power Supply, 5V ± 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_strobe	Output	LVTTL output the continues strobe signal.
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
15	GPIO2	Input /Output	General Purpose Software Programmable Digital
16	GPIO3	Input /Output	General Purpose Software Programmable Digital
17	GPIO4	Input /Output	General Purpose Software Programmable Digital
18	GPIO5	Input /Output	General Purpose Software Programmable Digital
19	GPIO6	Input /Output	General Purpose Software Programmable Digital
20	GPIO7	Input /Output	General Purpose Software Programmable Digital

4 Order Guide

Order number Rules:

Model	Spectral region		Slit width
ATP5030	Short wavelength	Long wavelength	Slit width

For example:

What to buy ATP5030, spectral region: 200-1000nm, slit width is 50 μ m, then the order no is:

ATP5030-200-1000-050

Order No	Spectral region	Slit
ATP5030-200-400-###	200~400	10 μ m
ATP5030-200-850-###	200~850	25 μ m
ATP5030-200-1000-###	200~1000	50 μ m
ATP5030-340-850-###	340~850	100 μ m
ATP5030-600-1100-###	600~1100	200 μ m
ATP5030-###-###-###	Other	Other: _____ μ m

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Product data information is current as of publication data. Products conform to specifications per the terms of Optosky Standard warranty.