

(Cooled) Ultra-thin&High resolution M-shape C - T Micro-spectrometer

ATP3330/4**ATP5330/4**

Description:

ATP3330 and ATP5330 are newly designed ultra thin, cooled, ultra high resolution miniature spectrometers developed by Optosky. ATP3330 and ATP5330 are m-type optical path structures, which have extraordinary ultra-high resolution. Cooled 2048 or 4096 pixels at the same time, it uses the linear array detector, reached the acme of the ultra high resolution, high resolution can reach <0.05 nm, suitable for all kinds of applications, high resolution and high reliability, ultra-high speed, low cost, high cost performance and other characteristics, can adapt to the online test USES a variety of environments such as micro spectrometer.

ATP3330 is uncooled, while ATP5330 USES TEC cooled at -5°C, which greatly reduces the dark current and noise, improves the dynamic range and signal-to-noise ratio, and improves the environmental adaptability of the spectrometer. ATP5330P adopts cooled back-illuminated CCD with better signal-to-noise ratio.

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ATP3330 only needs a 5v DC power supply or directly from the USB interface, which is very easy to integrate and use. ATP5330 requires an additional 5V power supply.

Features:

- M-shape, high resolution;
- Wavelength range: 190-1100 nm;
- Resolution: 0.05~2 nm;
- Optical path: M-shape C-T;
- Detector: 2048/4096 pixel;
- Integration time: 10ms ~ 65s;
- Power supply: DC 5V power supply;
- ADC: 16 bit;
- Output: USB Type-C;
- 20-pin expansion interface

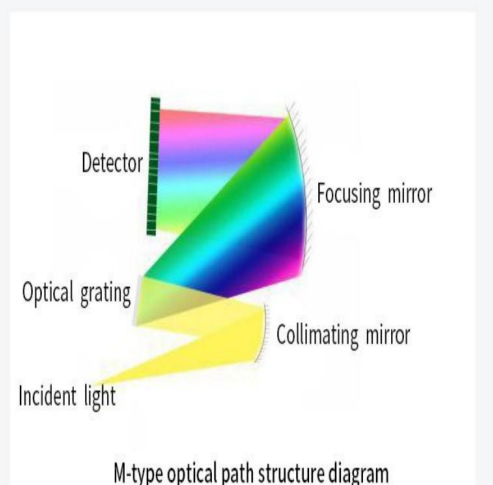
Applications:

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

1. Selection guide

Model	Cooled	Pixels
ATP3330	NO	2048
ATP3334	NO	4096
ATP5330	YES , -5°C	2048
ATP5334	YES , -5°C	4096
ATP5330/4-LVF	Built-in LVF Multi-Diffraction Suppression	
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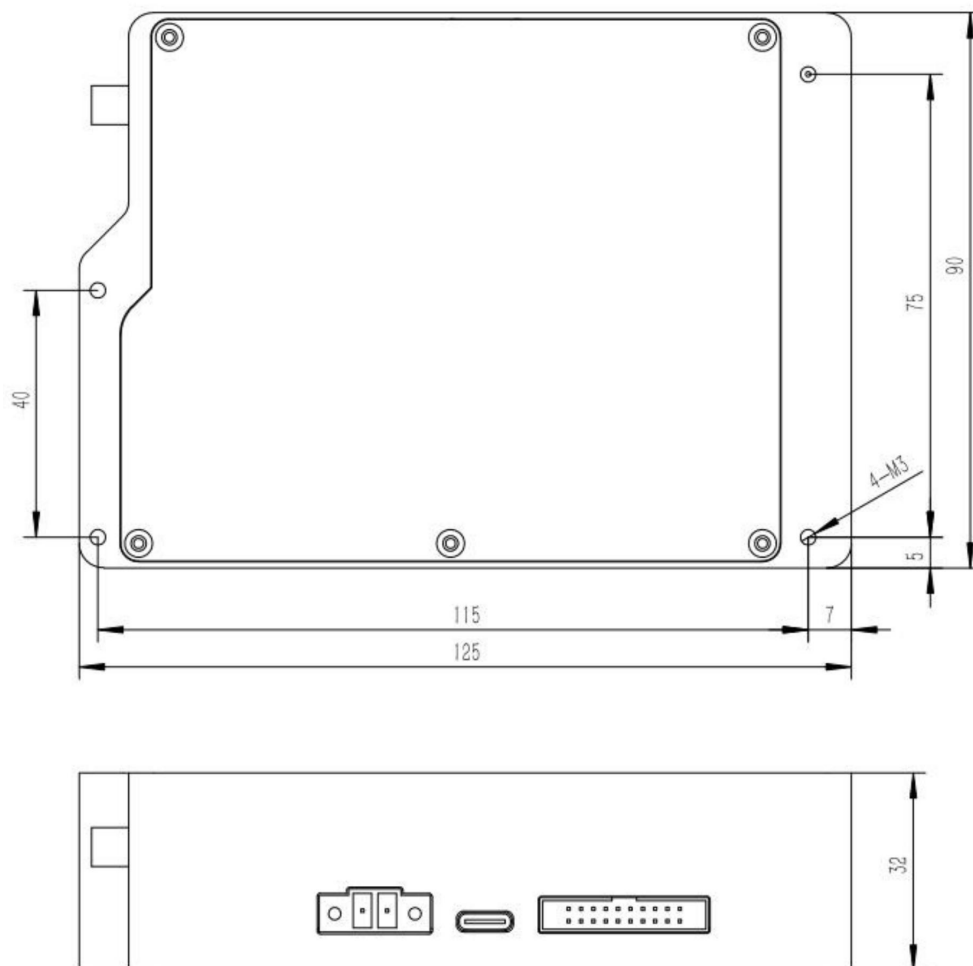
2. Stereogram



3. Specifications

Detector	
Type	UV-enhanced linear array CMOS
Detectable range	200-1100 nm
Effective pixel	ATP3330/5330: 2048 pixels ATP3334/5334: 4096 pixels
Sensor Cooled	ATP3XXX: NO cooled;: ATP5XXX: TEC cooled, -5 °C
Pixel dimension	ATP3330/5330: 14μm × 200μm ATP3334/5334: 7μm × 200μm
Sensitivity	1300 V/(lx·s)
Dark noise	13 RMS @ 13 °C
Optical Parameter	
Wavelength range	ATP5330/4: 190-1100 nm (Max. Bandwidth: 700 nm); ATP3330/4: 200-1100 nm (Max. Bandwidth: 700 nm)
Optical resolution	0.05-2nm
Signal-to-noise	>600:1
Dynamic range	8.5 x 10 ⁷ (system); 5 000:1 for a single acquisition
Stray light	<0.05% at 600 nm; <0.09% at 435 nm
Optical Configuration	
Optical Design	M-shaped CT
Focal Distance	75mm
Incidence slit	50 μm (10, 25, 100, 200 μm are optional)
Incident Interface	SMA905 connector
Electrical Parameter	
Integration time	10 ms - 65 seconds
Interfaces	USB Type-C
A/D conversion resolution	16 bit
Supply voltage	DC 4.5 to 5.5 V (type @5V)
Operating current	ATP3330: 200mA , ATP5330: 1.5 A@Typ. 3A Max
Storage temperature	-10°C to +50°C
Working humidity	< 90%RH
Physics Parameter	
Dimension	125 × 90 × 32 mm
weight	500 g (ATP3330/4) , 670 g (ATP5330/4)

4. Mechanical Diagrams



5. 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 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.

6. Order Guide

Order number Rules:

Model	Spectral region		Slit width	
ATP5330	Short wavelength	Long wavelength	Slit width	

For example:

What to buy ATP5330, spectral region: 200-1000nm, slit width is 50 μ m, then the order no is:

ATP5030-200-1000-050

Order No	Spectral region	Slit	
ATP5330-200-400-###	200~400	10 μ m	
ATP5330-200-850-###	200~850	25 μ m	
ATP5330-200-1000-###	200~1000	50 μ m	
ATP5330-340-850-###	340~850	100 μ m	
ATP5330-600-1100-###	600~1100	200 μ m	
ATP5330-###-###-###	Other	Other: _____ μ m	

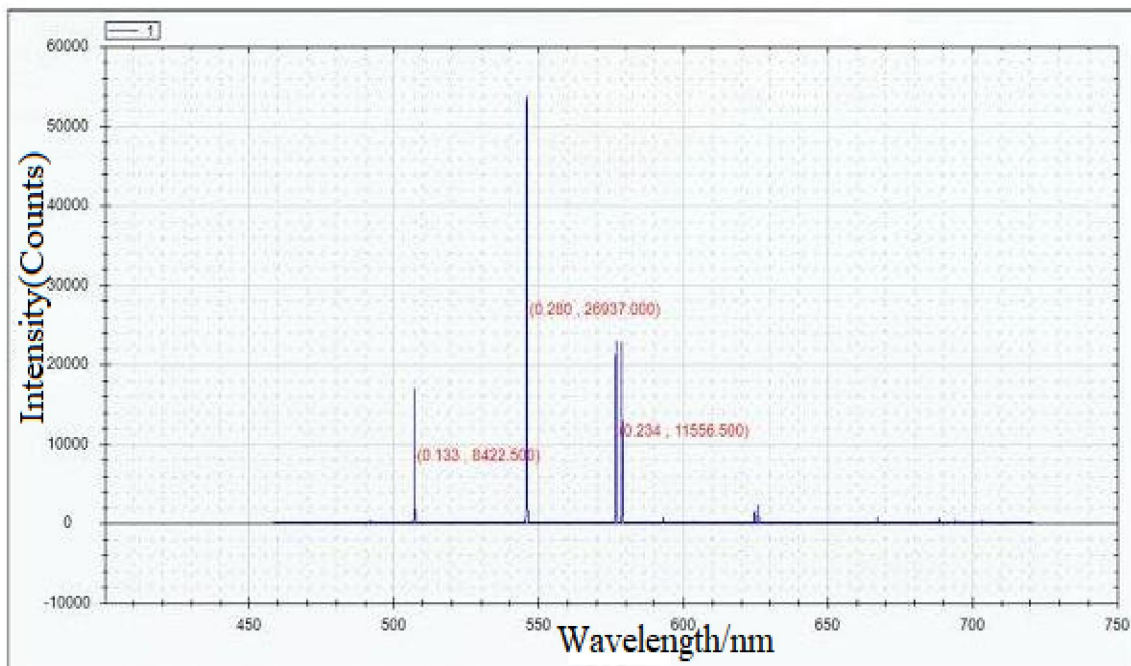


Fig 1 The spectrogram of ATP3334, 460-720nm, Optical resolution 0.133nm

7. Accessories

Standard Accessories	
1	Type-C to USB data cable
2	5V standard adapter and power cord
Optional Accessories	
1	UV-Vis resistant optical fiber;
2	Adjustable optical attenuator
3	Standard diffuse reflectance standard white board
4	Transmittance/Reflectance measurement integrating sphere holder
5	Fiber collimator
6	Cosine corrector