

# Datasheet

**(Cooled) Ultra-thin&High resolution**

**M-shape C-T Micro-spectrometer**

**ATP3330**  
**ATP5330**

## 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.

ATP3330 and ATP5330 can receive SMA905 fiber input light or free space light, and output the spectral data obtained through USB2.0 or UART port.

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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.

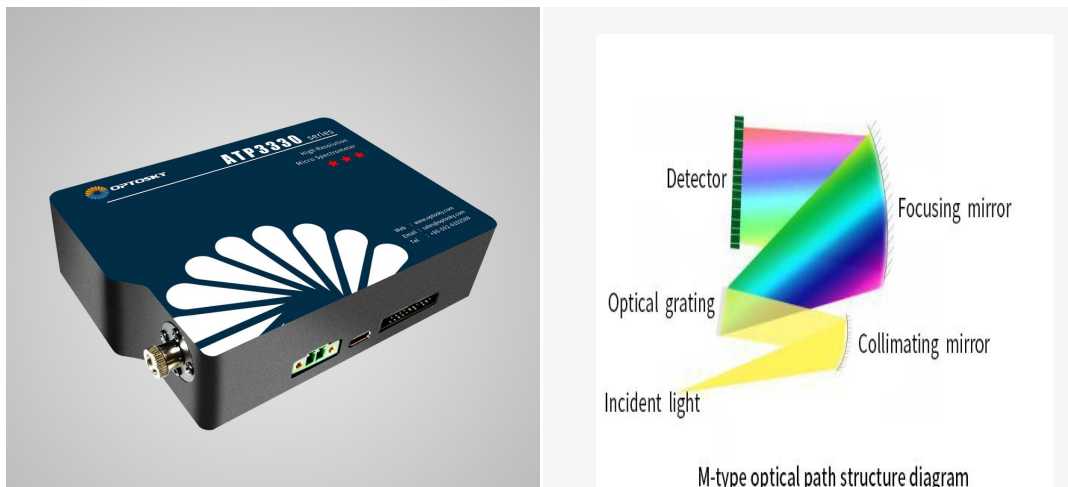
	Cooled	Pixels
ATP3330	NO	2048
ATP3334	NO	4096
ATP5330	YES, -5°C	2048
ATP5334	YES, -5°C	4096
ATP5330P	YES, -10°C, BI CMOS	2048

## Feature

- M-shape, high resolution;
- Wavelength range: 200-1100 nm ;
- Resolution: 0.05~ 3 nm ;
- Optical path: M-shape C-T;
- Detector: 2048/4096 pixel;
- Cooling Temperature: -5 °C
- Integration time: 0.1ms ~ 256s;
- Power supply: DC 5V power supply;
- ADC: 16 bit;
- Output: USB Type-C;
- 20-pin expansion interface;

## Application

- 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

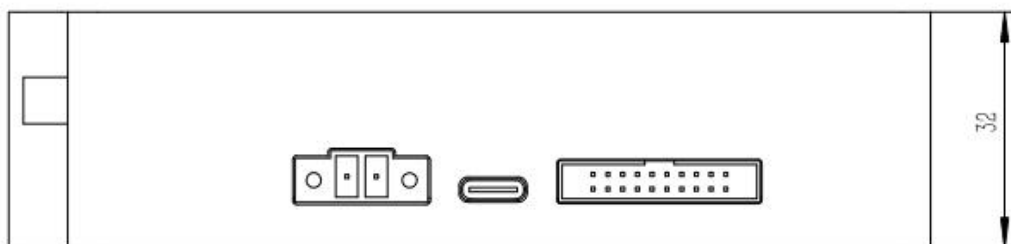
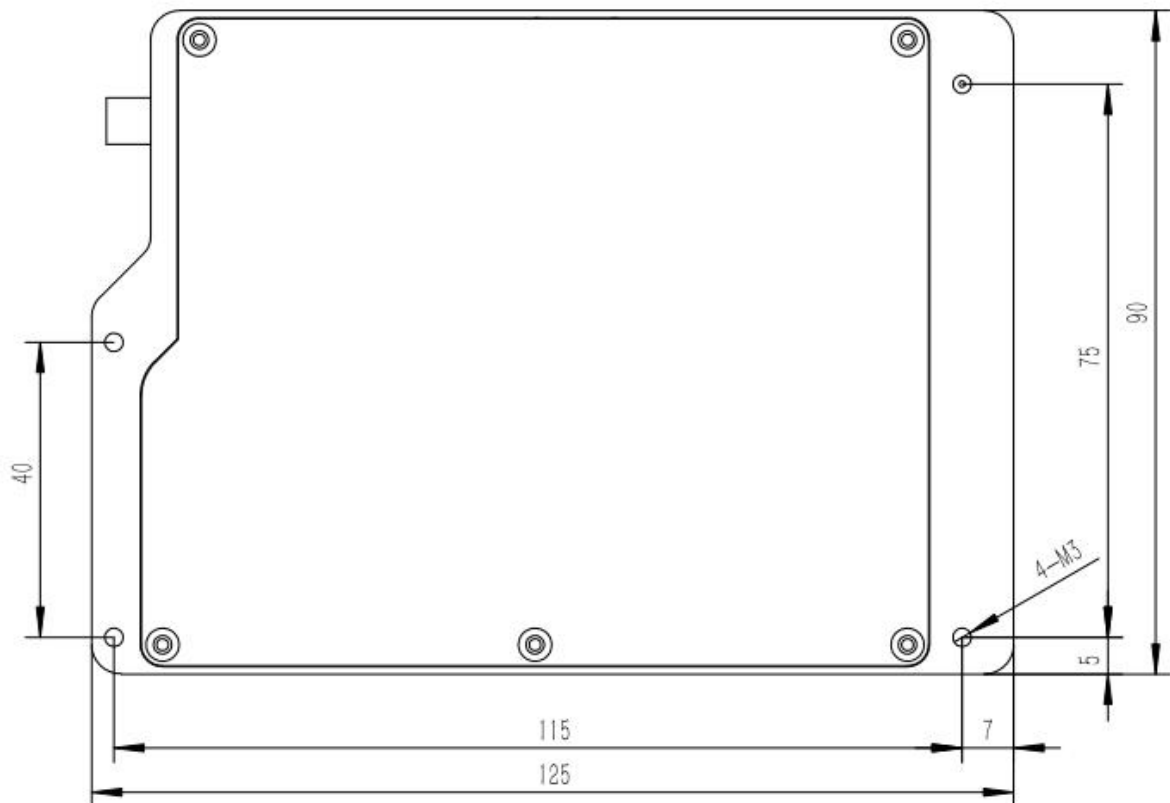


## Specifications

Detector	
Type	Linear array detector
Detectable range	200-1100 nm
Effective pixel	2048 or 4096 pixels
Sensor Cooled	ATP3XXX: NO cooled; ATP5XXX: 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 (optimal design for >500 nm)
Optical resolution	0.05-3 nm
Signal-to-noise	>600:1
Dynamic range	8.5 × 10 <sup>7</sup> (system); 2000:1 for a single acquisition
Stray light	<0.05% at 600 nm; <0.09% at 435 nm
Optical Configuration	
Optical Design	Traditional Czerny-Turner, M-shape light path
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	DC 4.5 to 5.5 V (type @5V)
Operating current	ATP3330: 200mA, ATP5330: 1.5 A@Typ. 3A Max
Storage temperature	-30 °C to +70 °C
Operating temperature	-25 ~ 50 °C

Working humidity	< 90%RH
<b>Physics Parameter</b>	
Dimension	125 × 90 × 32 mm
weight	500 g (ATP3330), 670 g (ATP5330)

## 2 Mechanical Diagrams



## 3 Electrical Pin-out

Table 1 Electrical Characteristics

Parameter	Min	Typ	Max	Unit
<b>Power Supply</b>				
Operating voltage range	4.5	5	5.5	V
Operating current		170		mA
<b>Logic Inputs(3.3V LVTTTL, Five-volt tolerant)</b>				
High level input voltage	1.7		3.6	V
Low level input voltage	-0.3		1.0	V
<b>Logic Output(3.3V LVTTTL)</b>				
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	LVTTTL output the lamp enable signal.
6	Continuous_strobe	Output	LVTTTL output the continues strobe signal.
7	Ext_trigger_in	Input	LVTTTL input the trigger signal.
8	Single_strobe	Output	LVTTTL 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
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	
ATP5330	Short wavelength	Long wavelength	Slit width	

For example:

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

**ATP5030-200-1000-050**

Order No	Spectral region	Slit	
ATP5330-200-400-###	200~400	10 μm	
ATP5330-200-850-###	200~850	25 μm	
ATP5330-200-1000-###	200~1000	50 μm	
ATP5330-340-850-###	340~850	100 μm	

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ATP5330-600-1100-###	600~1100	200 μm	
ATP5330-###-###-###	Other	Other: _____ μm	

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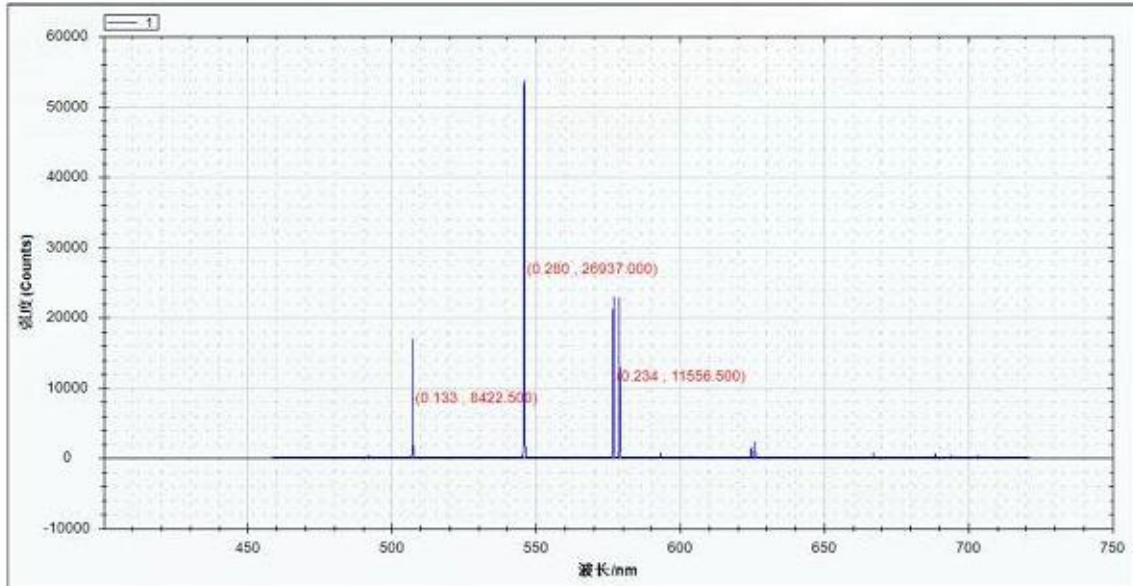


Fig 1 The spectrogram of ATP3334, 460-720nm, Optical resolution 0.133nm

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