Product Description

ATP3330 and ATP5330 are newly designed ultra-thin, cooled, ultra-high resolution miniature spectrometer. 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 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℃, 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.

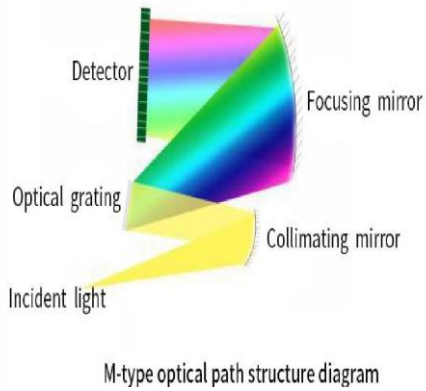
	Cooled	Pixels
ATP3330	NO	2048
ATP3334	NO	4096
ATP5330	YES，-5℃	2048
ATP5334	YES，-5℃	4096
ATP5330P	YES，-10℃，BI CMOS	2048

Key Features

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

Typical 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

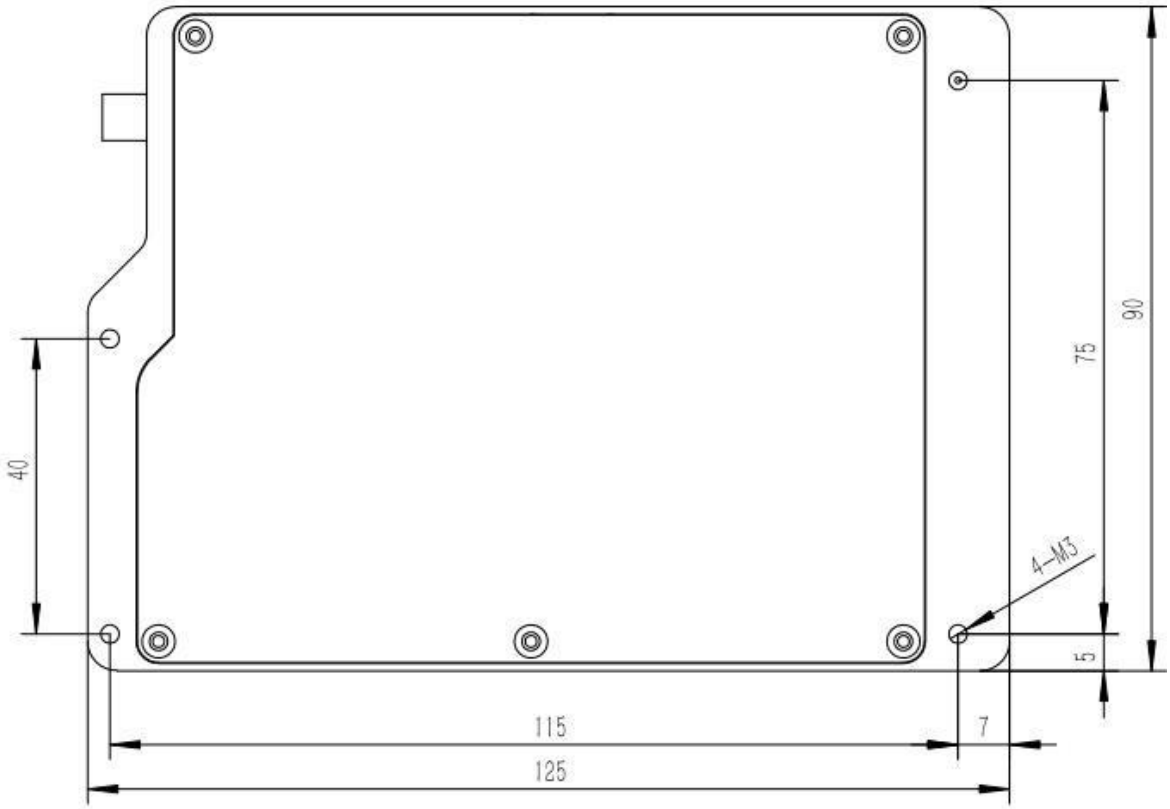


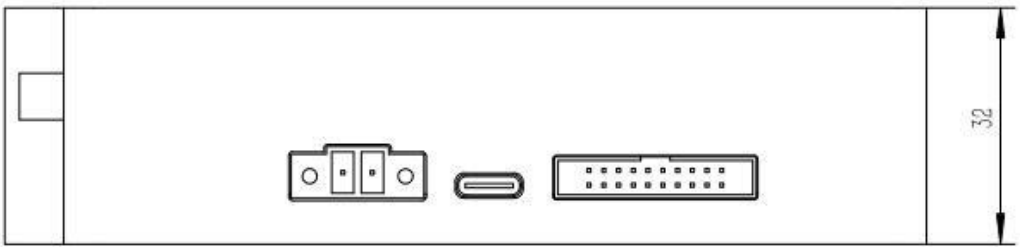
M-type optical path structure diagram

1. Performance Specifications

Detector	
Type	Linear array detector
Detectable range	200-1100 nm
Effective pixel	4096 pixels
Sensor Cooled	ATP3XXX: Uncooled 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 x 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	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/Dconversionresolution	16 bits
Supply voltage	DC 4.5 to 5.5 V (type @5V)
Operating current	ATP3334：200mA, ATP5334：1.5 A@Typ. 3A Max
Storage temperature	-30°C to +70°C
Operating temperature	-25 ~ 50 ^{o}C
Working humidity	< 90%RH
Physics Parameter	
Dimension	125 × 90 × 32 mm
weight	500 g (ATP3330), 670 g (ATP5330)

2. Mechanical Dimensions





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 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	
ATP5334	Short wavelength	Long wavelength	Slit width	

For example:

What to buy ATP5334, spectral region: 200-1000nm, slit width is 50um, then the order no is: ATP5334-200-1000-050

Order No	Spectral region	Slit	
ATP5334-200-400-###	200~400	10μm	
ATP5334-200-850-###	200~850	25μm	
ATP5334-200-1000-###	200~1000	50μm	
ATP5334-340-850-###	340~850	100μm	
ATP5334-600-1100-###	600~1100	200μm	
ATP5334-###-###-###	Other	Other μm	

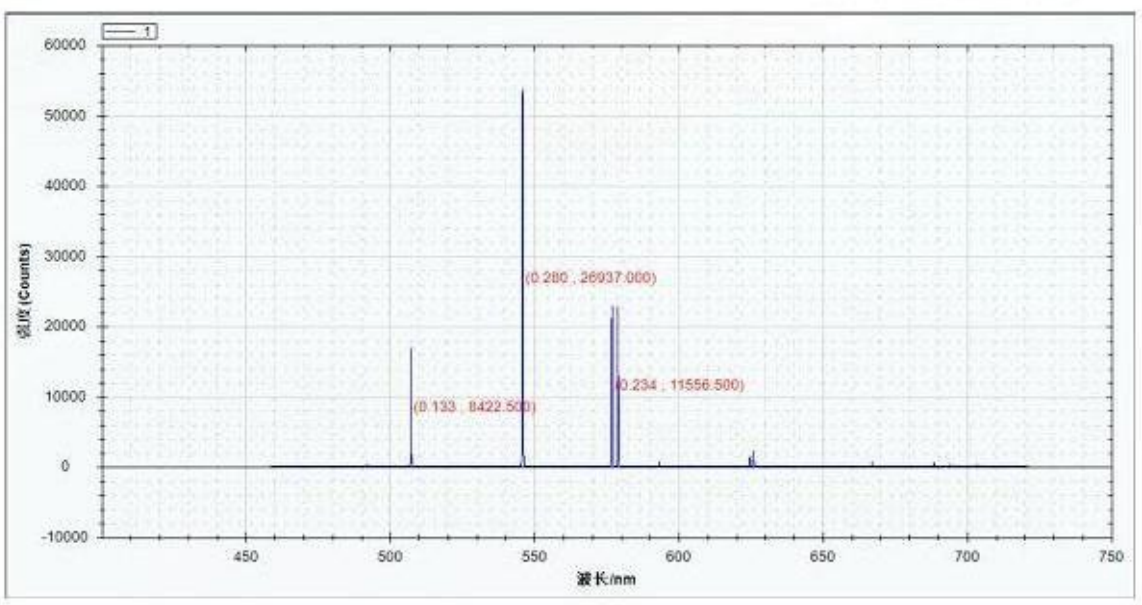


Fig 1 The spectrogram of ATP3334, 460-720nm, Optical Resolution0.133n