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Datasheet

High Resolution Micro Spectrometer

ATP3030/4

Features

- High resolution, low stray light
- Max range: 180-1150nm
- Resolution: 0.05-2nm
- Light path: M-shape
- Detector: 2048 or 4096 pixel CMOS
- Integration time: 0.1ms - 60s
- Power: DC 5V±10% or USB power
- ADC: 16 bit
- Sample rate: 2 MHz
- Output: USB 2.0 or UART
- USB connector: USB Type-C;

Applications:

- Plasma luminescence detection;
- LIBS
- Raman spectrum detection;
- Wavelength monitoring, laser, led, etc
- Water quality analyzer
- Ultraviolet flue gas analyzer
- Led sorter and color detection;
- Micro and fast spectrophotometer;
- Spectrum analysis, radiation spectrophotometry and spectrophotometry

Description

ATP3030 is a ultra-high resolution micro spectrometer developed by Optosky. The highest resolution can reach 0.05nm, which is suitable for all kinds of high-resolution applications. At the same time, it has the characteristics of high reliability, ultra-high speed, low cost, high cost performance and so on. It can be used in various environmental applications such as online testing.

ATP3030 is perfect for fast detection attribute to its high A/D converter frequency and the high speed data transmission. In ATP3030 memory chip, some algorithms to improve the performance are programed solidly, such as wavelength calibration coefficients, linearity coefficients. ATP3030 operates with a single +5V DC supply supplied from USB or UART.

PN	Detector pixels	
ATP3030	2048	
ATP3034	4096	

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2 Specifications

Detector	
Type	Linear array detector
Detectable range	180 - 1150 nm
Effective pixel	2048 or 4096 pixels
Pixel dimension	14μm × 200μm
Sensitivity	1300 V/(lx·s)
Dark noise	13 RMS @ 13 ˚C
Optical Parameter	
Max wavelength range	180 - 1150 nm
Optical resolution	0.05 - 2 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
Working temperature	-25-50 ºC
Working humidity	< 90%RH
Optical Configuration	
Optical Design	Czerny-Turner
Focal Distance	75mm
Incidence slit	50 μm (5, 10, 25, 100 um are optional)
Incident Interface	SMA905 connector
Electrical Parameter	
Integration time	0.1 ms - 60 seconds
Data interface	USB 2.0 or UART
Connector	USB Type-C
A/D conversion resolution	16 bit
Supply voltage	DC4.5 to 5.5 V (type @5V)
Operating current	170mA@Typ.
Storage temperature	-30 to +70 °C
Operating temperature	-25 - 50 ºC
Physics Parameter	
Dimension	124 × 90 × 37.5 mm
weight	530 ± 20 g

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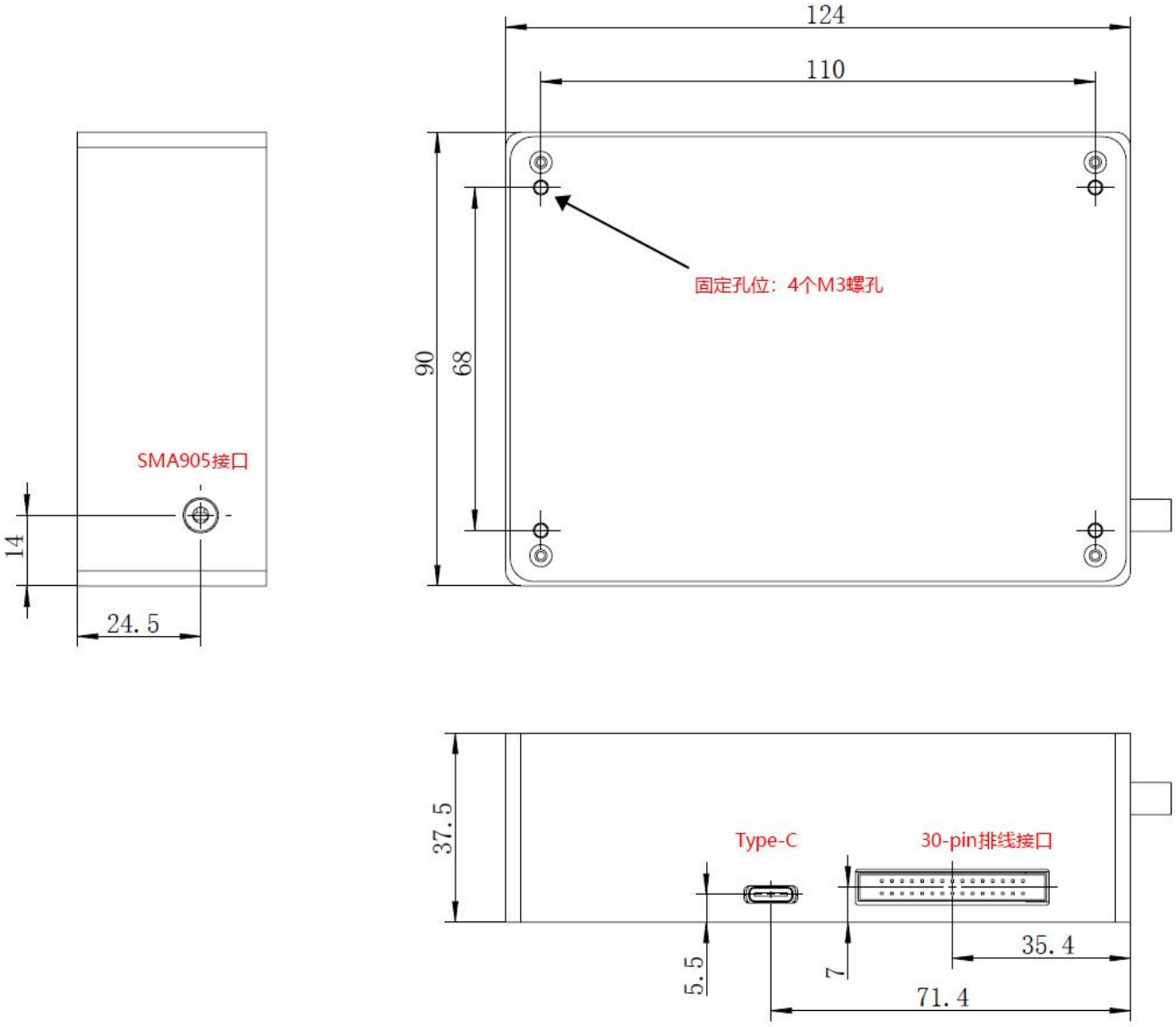
3 Mechanical Diagrams



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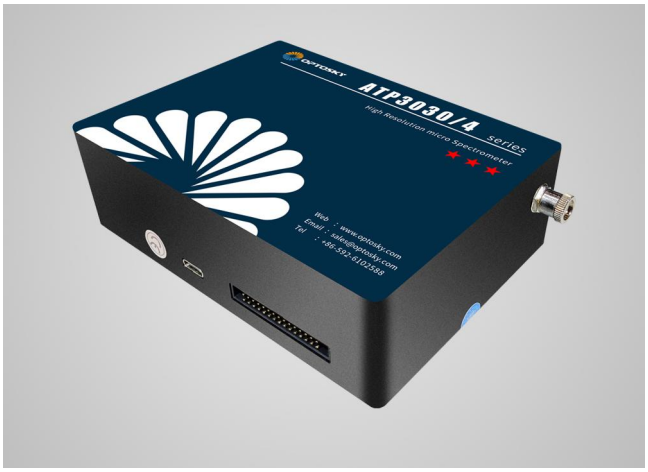

4 Electrical Pin-out

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.

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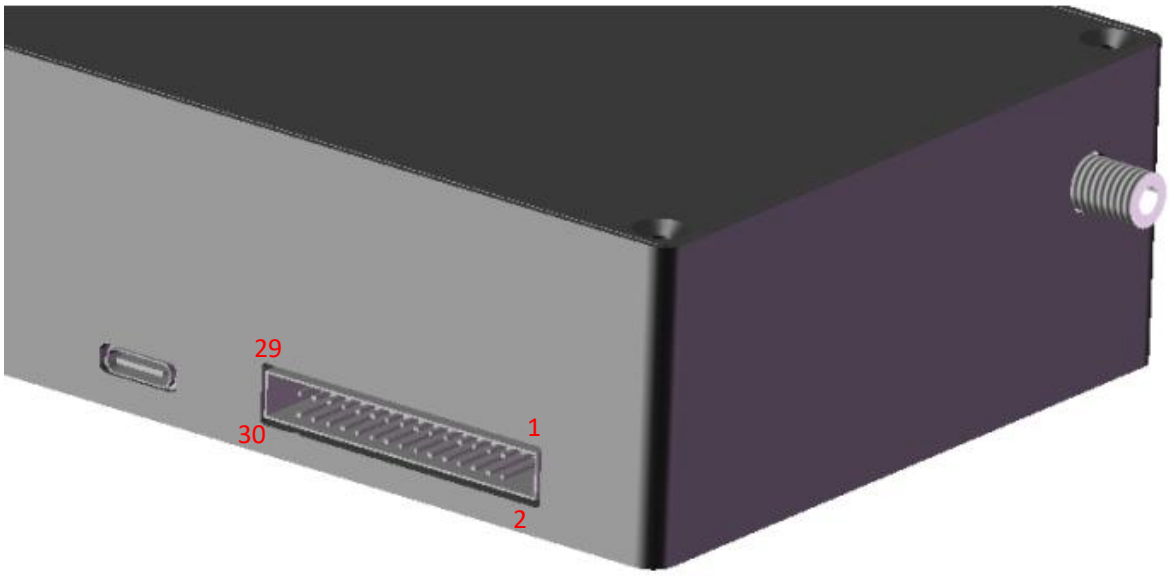

Table 2 Electrical Pin-Out

Pin	Description	I/O	Function Description
1	MCU_RX	/	LVTTL Transmit signal
2	MCU_TX	/	LVTTL Transmit signal
3	GPIO2	Input /Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
4	V5_SW	Output	Power Supply, 5V±0.5,
5	Ground	Input /Output	Ground
6	NC		
7	GPIO0	Input /Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
8	NC		
9	GPIO1	Input /Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
10	External Trigger In	Input	LVTTL input the trigger signal. Falling edge trigger collection.
11	GPIO3	Input /Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
12	NC		
13	GPIO10	Input /Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
14	NC		
15	GPIO11	Input /Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
16	GPIO4	Input /Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
17	NC		

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18	GPIO5	Input /Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
19	Ground	Input /Output	Ground
20	NC		
21	Ground	Input /Output	Ground
22	GPIO6	Input /Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
23	NC		
24	Analog Out (0-5V)	Output	The Analog Out is a 8-bit programmable output voltage with a 0-5 Volt range
25	Lamp Enable	Output	Enable the Lamp Enable Digital Output, LVTTL Logic.
26	GPIO7	Input /Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
27	Ground	Input /Output	Ground
28	GPIO8	Input /Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
29	Ground	Input /Output	Ground
30	GPIO9	Input /Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.

5 Order Guide

Order number Rules:

Model	Spectral region		Slit width	
ATP3030	Short wavelength	Long wavelength	Slit width	

For example:

What to buy ATP3030, spectral region: 200-1000nm, slit width is 50 um, then the order no is:

ATP3030-200-1000-050

Order No	Spectral region	Slit	
ATP3030-200-400-###	200~400	10 μm	
ATP3030-200-850-###	200~850	25 μm	
ATP3030-200-1000-###	200~1000	50 μm	
ATP3030-340-850-###	340~850	100 μm	
ATP3030-600-1100-###	600~1100	200 μm	

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ATP3030-###-###-###	Other	Other:_____μm