

High-sensitivity Low-noise Micro Spectrometer

ATP3000/ATP3040

Features

- Resolution: 0.01-2 nm
- Detector pixels: 2048
- High sensitivity: 1300V (lx*s)
- Response range: from UV to NIR
- Maximum readout speed : 10MHz max
- Optical path : crossed C-T
- Integration time: 1ms-65535ms
- Power supply: USB port
- Light input connector: SMA905 or free space
- Data output connector : USB2.0(High speed) or UART

Application

- Small volume, fast spectrophotometer
- Spectral analysis/ radiation spectrophotometer analysis
- Transmission, absorbance measurement
- Reflectance detection
- Ellipsometer
- Laser wavelength measurement
- UV, VIS and short wave NIR wavelength measurement

Description

Optosky ATP3000/ATP3040 are low-noise, high-resolution optic fiber spectrometer. It employs 2048/4096 pixels CCD sensor spectral response covering UV to NIR wavelength. Readout speed reach up to 10MHz, low noise signal process circuit, and fast and accurate spectral data collection.

ATP3040 further improve SNR and dynamic range based on ATP3000, so measuring results have high stability and reliability, and they do not change with operating temperatures.

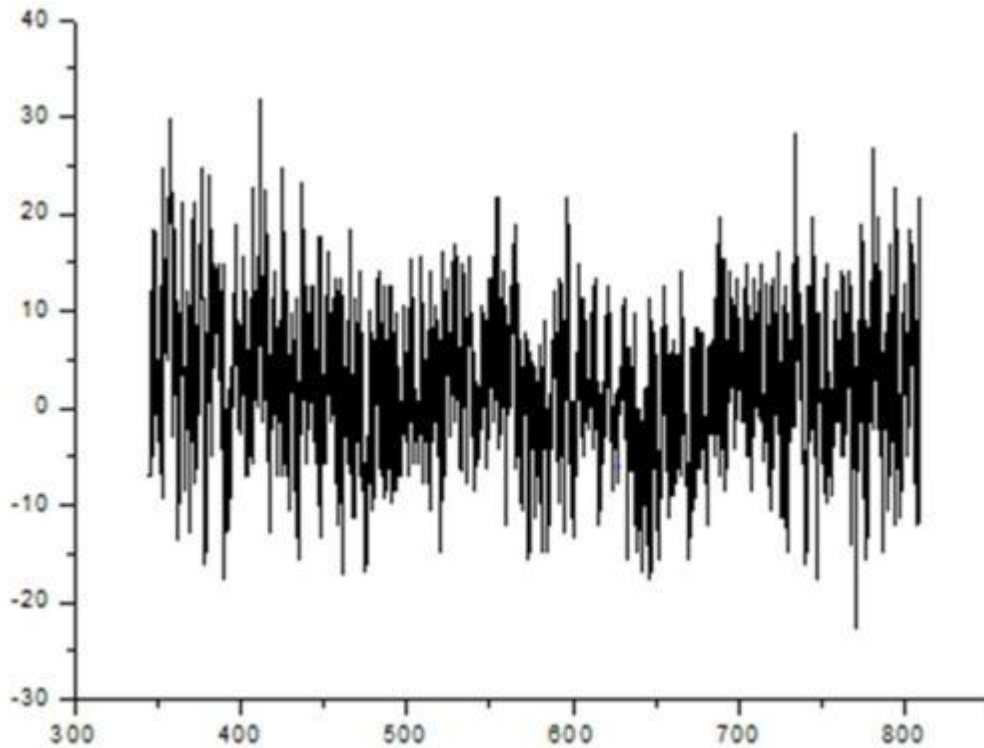
ATP3000/3040 supplies power directly via USB port, and outputs data via USB2.0/UART, and it's convenient to apply integration.

PN	CCD pixels	Cooling
ATP3000	2048pixels	Uncooled CCD
ATP3040	4096pixels	Uncooled CCD



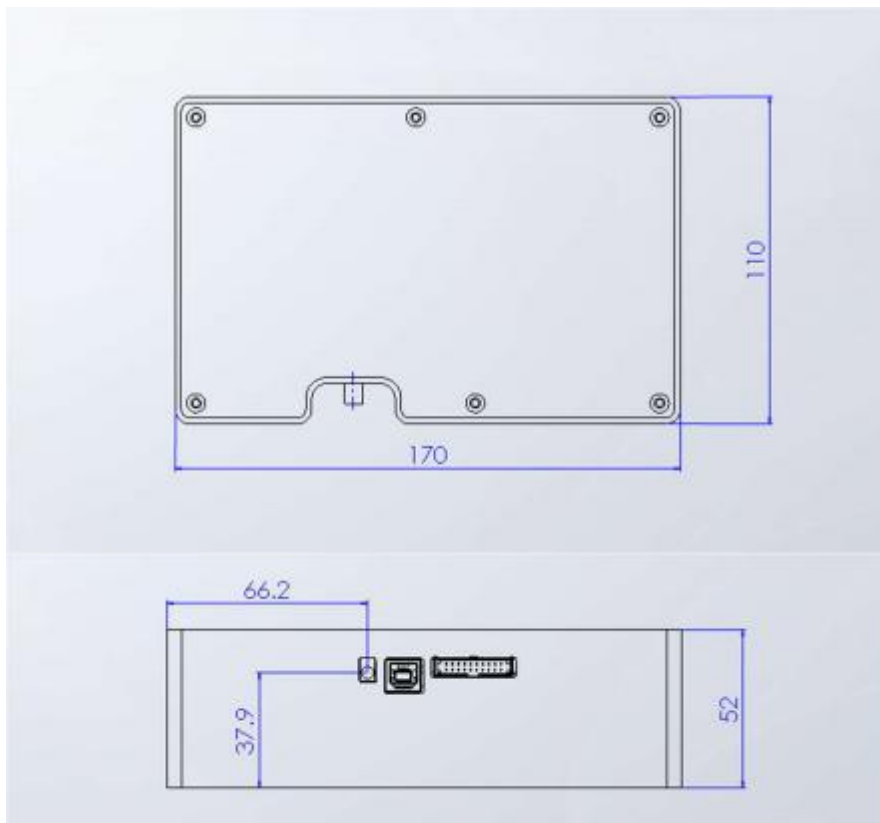
1. Performance

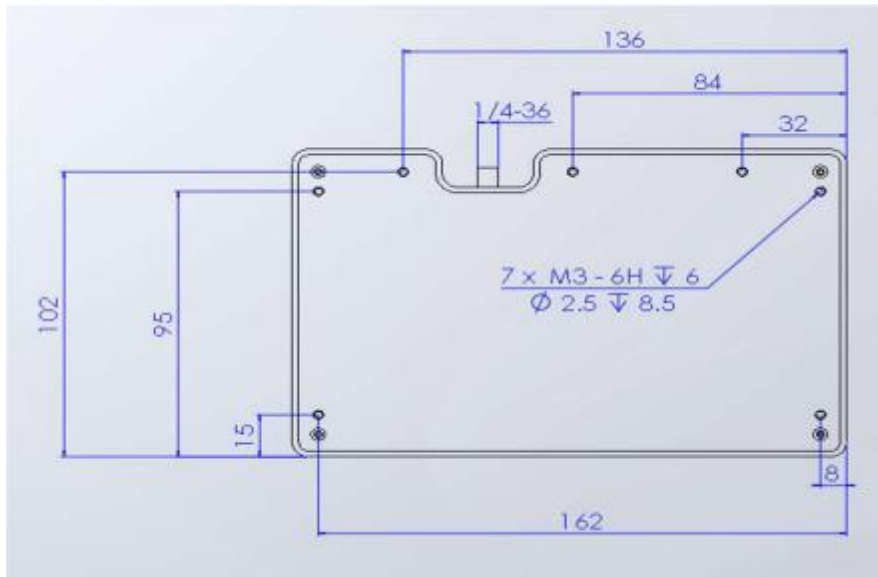
Detector		
Type	Hamamatsu S11639/ S13496 Linear CCD sensor	
Spectral range	180-1100 nm	
Resolution	0.01-2 nm	
Effective pixels	2048pixels (ATP3000) or 4096 pixels (ATP3040P)	
Pixel size	14 μ m \times 200 μ m (ATP3000)或 7 μ m \times 200 μ m (ATP3040P)	
Sensitivity	1300 (lx·s)	
conversion efficiency	25uV/e-	
Dark noise	ATP3000	8.3 RMS @ 25°C
Optical parameters		
Wavelength ranges	180- 1100 nm (available in custom wavelength)	
Optical resolution	0.01-1 nm (decide on slit and spectral range)	
SNR	ATP3000	>1000 : 1
Dynamic range	ATP3000	10000 : 1
Optical path parameters		
Optical path	f/4 crossed C-T	
Confocal distance	77.5 mm for incidence / 112 mm for output	
Entrance slit width	5 , 10 , 25, 50, 100, 150, 200 μ m (optional, available in custom width)	
Incident connector	SMA905 connector or free space	
Electrical parameters		
Integration time	1 – 65535 ms	
Output data port	USB 2.0	
ADC bits depth	16 bit	
Power supply	DC 5V \pm 10%	
Operating current	<350 mA (uncooled)、 <3.0A (cooled)	
Storage temperature	-20°C to +70°C	
Operating temperature	- 10-45 oC	
Operating humidity	< 90%RH	
Physical parameters		
Size	170 \times 110 \times 52 mm3	
Weight	0.8 kg	
Sealing	Anti-sweat	



ATP3000 dark noise

2. Mechanical dimension:





3. Electrical port:

Parameter	Min	Typ	Max	Unit
Power Supply				
Operating voltage range	4.5	5	5.5	V
Operating current	200	500	2000	mA
Logic Inputs(3.3V LVTTTL, 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 LVTTTL)				
High level output voltage	2.4			V
Low level output voltage			0.4	V



Electrical Pin-Out

Pin#	Description	I/O	Function Description
1	VCC	/	Power Supply, 5V±0.5,
2	VCC	/	Power Supply, 5V±0.5,
3	GND	/	Ground
4	GND	/	Ground
5	LD_TX	Output	UART Transmit signal LVTTL Logic for LD
6	LD_RX	Input	UART Receive signal LVTTL Logic for LD
7	LD_trigger	Input	LVTTL output trigger signal for LD
8	LD_EN	Output	LVTTL output enable signal.for LD
9	NC	/	
10	NC	/	
11	GPIO0	Input /Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
12	GPIO1	Input /Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
13	GPIO2	Input /Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
14	GPIO3	Input /Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.

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

15	GPIO4	Input /Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
16	GPIO5	Input /Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
17	VCC	/	3.3V Power Output
18	GND	/	Ground
19	EXT_TX	Output	EXT UART Transmit signal LVTTL Logic
20	EXT_RX	Input	EXT UART Receive signal LVTTL Logic