High-sensitivity, High-resolution, Te-cooled Spectrometer ATP5020P

Product Description

ATP5020P uses a back thinned 2048x64 pixels cooled linear CCD. The CCD can work in a set of constant temperature environment (up to -5C). The spectrometer features excellent measurement reliability and high performance. The measurement results do not change with the ambient temperature.

The spectrometer ATP5020P accepts SMA905 fiber input or free-space light, and exports measured spectral data via a Type-C or UART port. It requires power supply of 5VD and can be integrated easily.

Key Features

- Detector: Back-illuminated CCD (cooled to -5C)
- Pixels: 2048x64
- Ultra-low noise CCD signal processing circuit
- Wavelength Range: 180-1180 nm
- Optical Sensitivity: 0.01-3 nm (depend on wavelength range, slit width).
- Optical Path: Crossed C-T
- Integration Time：10ms-65s
- Supply Voltage: 5VDC±10% @ <2A
- A/D Converter: 18 bits, 250KHz
- Interface: SMA905 or free.
- Trigger: Type-C or UART
- 20-pin dual-row programmable external expansion interface

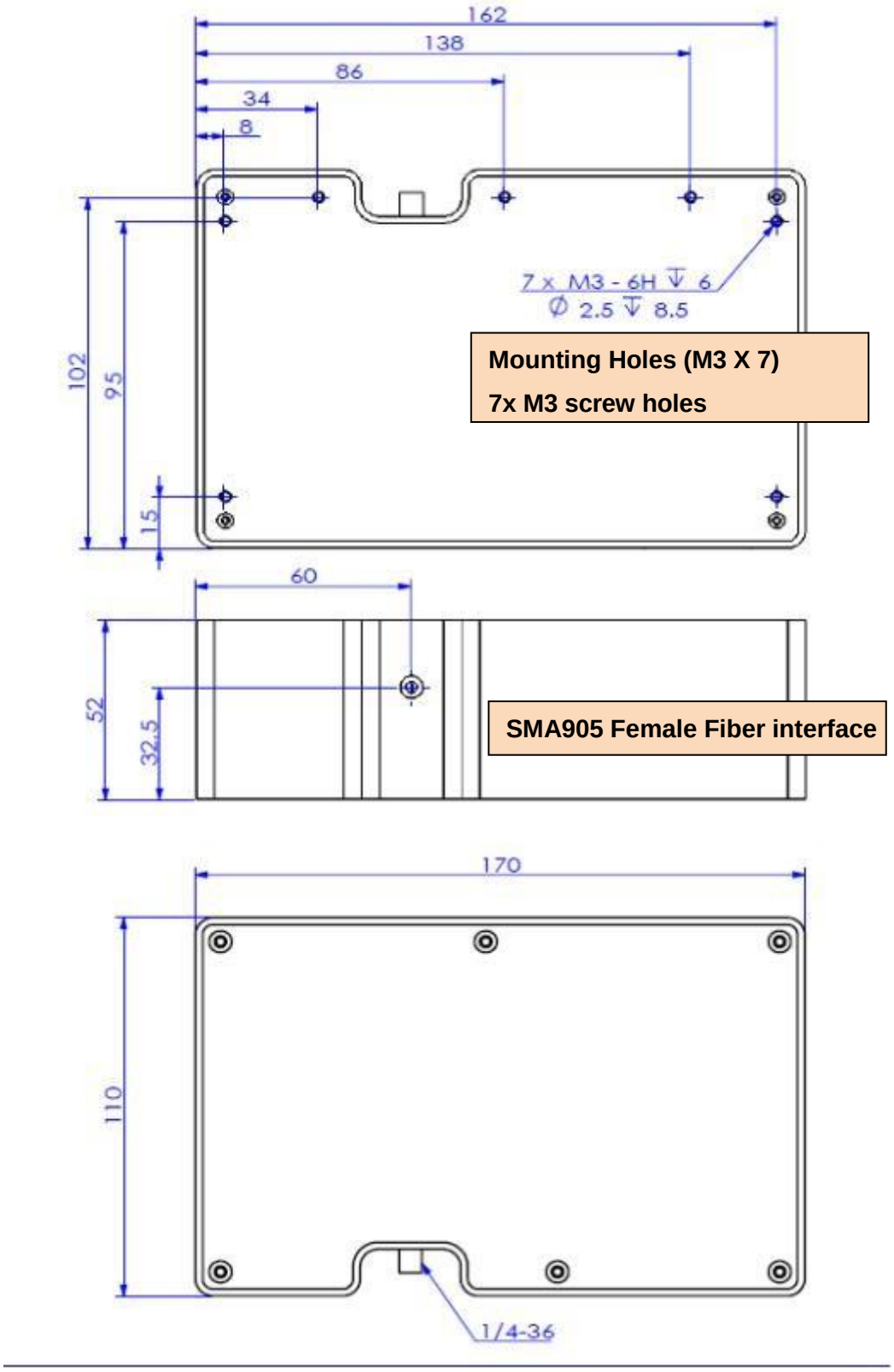
Typical Applications

- Trace, fast spectrophotometer can use it for better user
- Perform spectral analysis
- Radiation spectrometry
- Spectrophotometric analysis
- Transmittance, absorbance detection
- Reflectance
- UV, VIS, SWNIR

1. Performance Specifications

DETECTOR	
Model	TE-cooled back-illuminated linear array CCD (cooling to -5C)
Spectrum Range	180-1180 nm
Effective Pixels	2048*64 (Total pixels: 2068x70)
Pixel size	14μm x14μm
Full range	~600 ke^-
Sensitivity	6.5uV/e-
Dark noise	6e-
OPTICAL	
Wavelength Range	150-1100 nm
Optical Resolution	0.2-3 nm (Depend on wavelength range, slit width.)
SNR	>600:1
Dynamic Range	50000：1
Working T	-10-40 ºC
LIGHT PATH	
Optical Design	f/4 crossed, asymmetrical C-T
Focus	77.5 mm for incidence / 111.6 mm for output
Silt size	5,10,25,50,100,150,200μm (customized)
Optical Interface	Fiber optic interface SMA905, free space
ELECTRICAL	
Integration Time	10ms - 60 seconds
Trigger	Type-C
ADC	18 bits (Output 16bit)
Supply Voltage	DC 5V±10%
Working current	<2A
Storing Temp	-20°C to +70°C
Working Temp	-10°C to +40°C
PHYSICAL	
Size	170×110×52 mm
Wight	1.3 kg
Sealing	Anti-sweat

2. Mechanical Drawings



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	500	2000	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 20-pin male angled box header (2x10, 2.00 mm pitch) and USB2.0 B type interface.

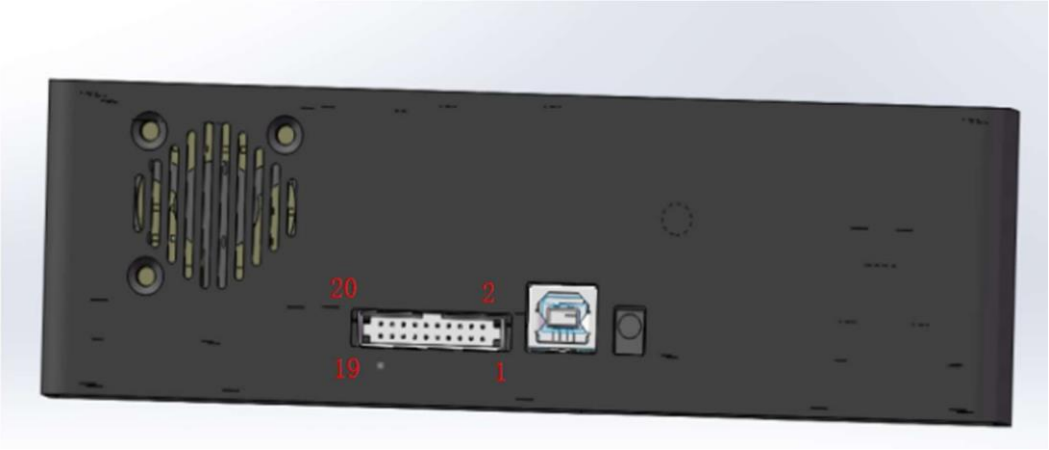


Table 2 Electrical Pin-Out

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.	TX0	Output	UARTO TX
6.	RX0	Input	UARTO RX.
7.	Ext _Trigger_ in	Input	LVTTL input trigger signal
8.	LD_EN	Output	LD Enable
9.	TX6	Output	UART6 TX
10.	RX6	Input	UART6 RX
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.
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.	3.3V	/	3.3V OUTPUT
18.	GND	/	Ground
19.	RS232 _ TX	Output	RS232 TX
20.	RS232 _ RX	Input	RS232 RX

4. Order Guide

Order number Rules:

Model	Spectral region		Slit width	
ATP5020P	Shortwave length	Longwave length	Slit width	

For example:

What to buy ATP5020P, spectral region: 200-1000nm, slit width is 50 um, then the order no is: **ATP5020P-200-1000-050**

Order No	Spectral region	Slit	
ATP5020P-200-400-###	200~400	10μm	
ATP5020P-200-850-###	200~850	25μm	
ATP5020P-200-1100-###	200~1000	50μm	
ATP5020P-340-850-###	340~850	100μm	
ATP5020P-600-1100-###	600~1100	200μm	
ATP5020P-###-###-###	Other	Other	