

UV Enhanced Miniature Spectrometer

ATH1010

Features:

- Spectral range: 200-1100 nm; Max.800nm
- Optical Structure: Crossed C-T;
- Detector: 512 pixels CMOS;
- Integration Time: 1 ms ~ 65 s
- Power supply: DC 5V@<200mA;
- Power Interface: Type C USB or extendable
- ADC bits depth: 16bits;
- ADC Sampling rate: 10 MHz;
- Optical light input: SM905 or free space;
- Data output: USB2.0 (High speed) or UART;
- 10 Pins (2x5, 1.27mm pitch) Extendable pins;

Applications:

- Multi-parameters Water Quality Monitor
- LED sorting
- Colour measurement
- Micro-volumn spectrometer
- UV gas measurement
- Spectrum analysis, radiometer
- Fluorescence
- Reflection, transmission measurement

Description:

ATP1010 employs UV-enhanced 512pixels linear CMOS, and UV response is improved 20 times, meanwhile 200-1100nm wavelength range measure, CMOS sensor exposure time controlled within 1ms enable customer controlling SNR accurately.

The ATP1010 is highly reliable, ultra-high-speed, low-cost, and cost-effective, and can be adapted to miniature spectrometers for various environmental applications such as on-line testing.

ATP1010 is ideal for UV, visible, and near-infrared spectroscopy applications. Different slits, gratings, mirrors, and filters are available. You can configure spectrometers for different applications depending on your requirements. Spectral ranges from 200 nm Up to 1100nm, the spectral resolution can be selected from 1.0 to 5.0nm, and OPT Spectrum can also provide OEM customers with customized options.

The ATP1010 can receive optical fiber input or free-space input light from the SMA905 interface, measure it according to the set integration time, and output the measurement result via USB2.0 (high speed) or UART.

Model	Description
ATP1010	Ultra-low noise, peak value as low as 10 counts
ATP1010H	Ultra-high speed, frame rate up to 2Kfps



1. Performance

Sensor	
Type	Linear CMOS
Spectral Range	180-1100 nm Customize
Effective pixel	512
Pixel size	14 × 200 μm
Sensitivity	1300 V/(lx·s)
Dark Noise	13 RMS @ 13 °C
Optical Parameters	
Wavelength	200-1100nm , customized (Max.800 nm)
Resolution	1-5 nm (Slit size & spectral range)
SNR	> 450:1
Dynamic Range	3000: 1
Optical Path	
Optical Design	F/4 Crossed C-T
Focal Distance	28 mm for incidence / 28 mm for output
Slit size	5, 10, 25, 50, 100, 150, 200 μm , others customized
Input interface	SMA905 or free space
Electrical Parameters	
Integration Time	1 ms ~ 65 s
Data Port	USB 2.0 or UART
ADC bit depth	16 bit
Power Supply	DC 4.5 5.5 V (type @5V)
Working current	<200 mA
Storage Temp.	-20°C to +70°C
Operating Temp	-10°C to +50°C
Working Humidity	< 90%RH
Physical parameters	
Size	45×40×24 mm
Weight	60 g

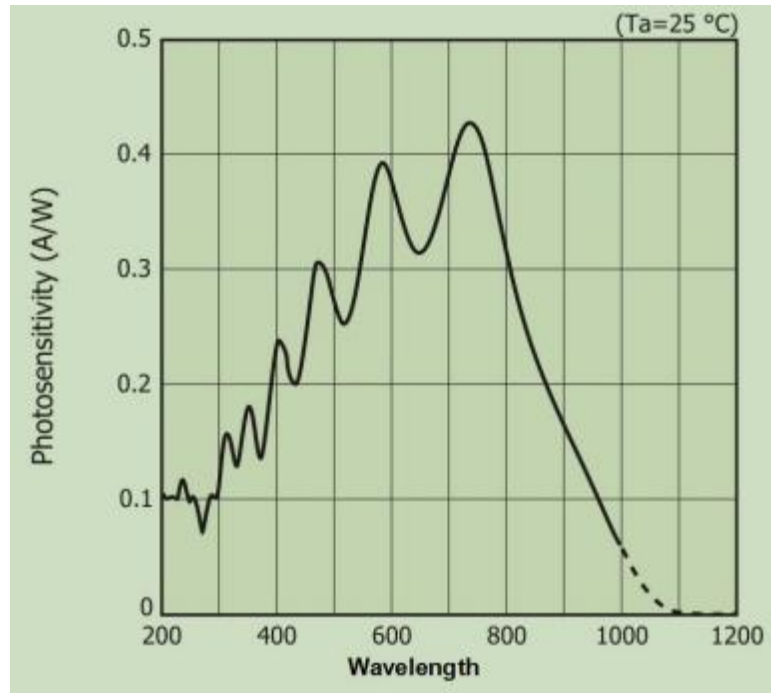


Fig. 1 Spectral response of the detector used in ATP1010

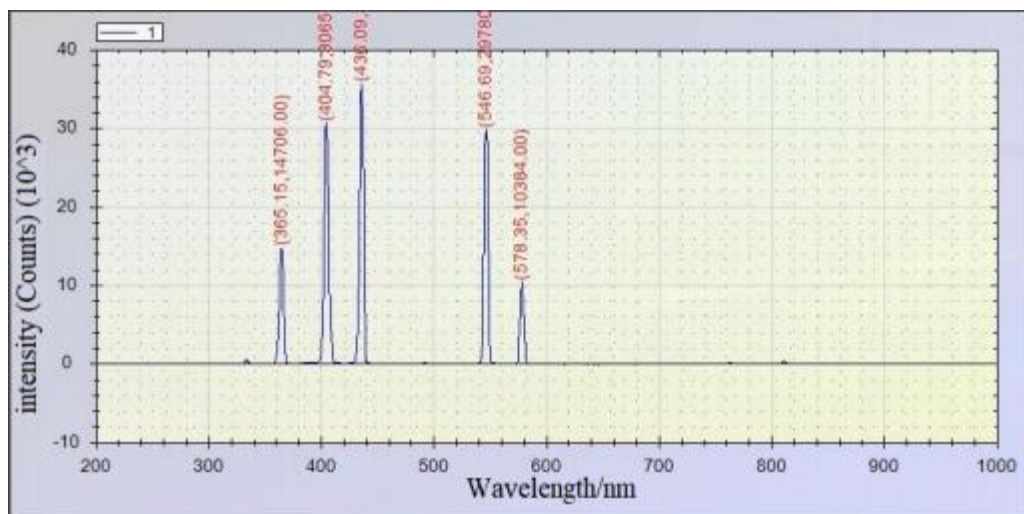


Fig. 2 Ar lamp spectral via ATP1010

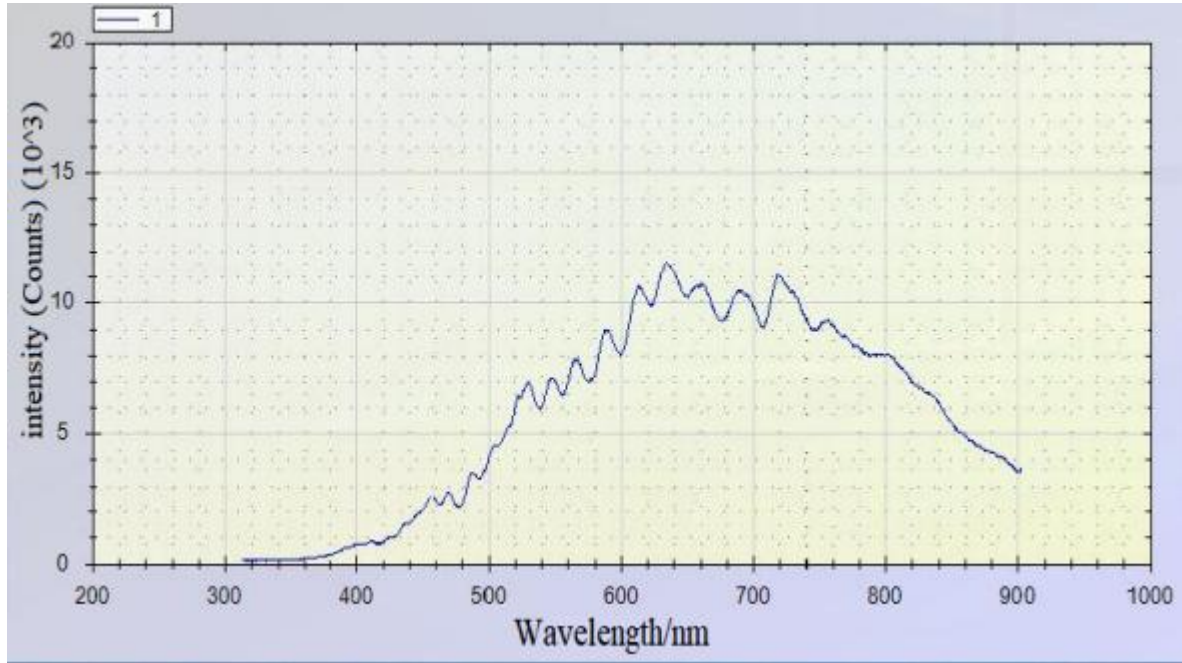
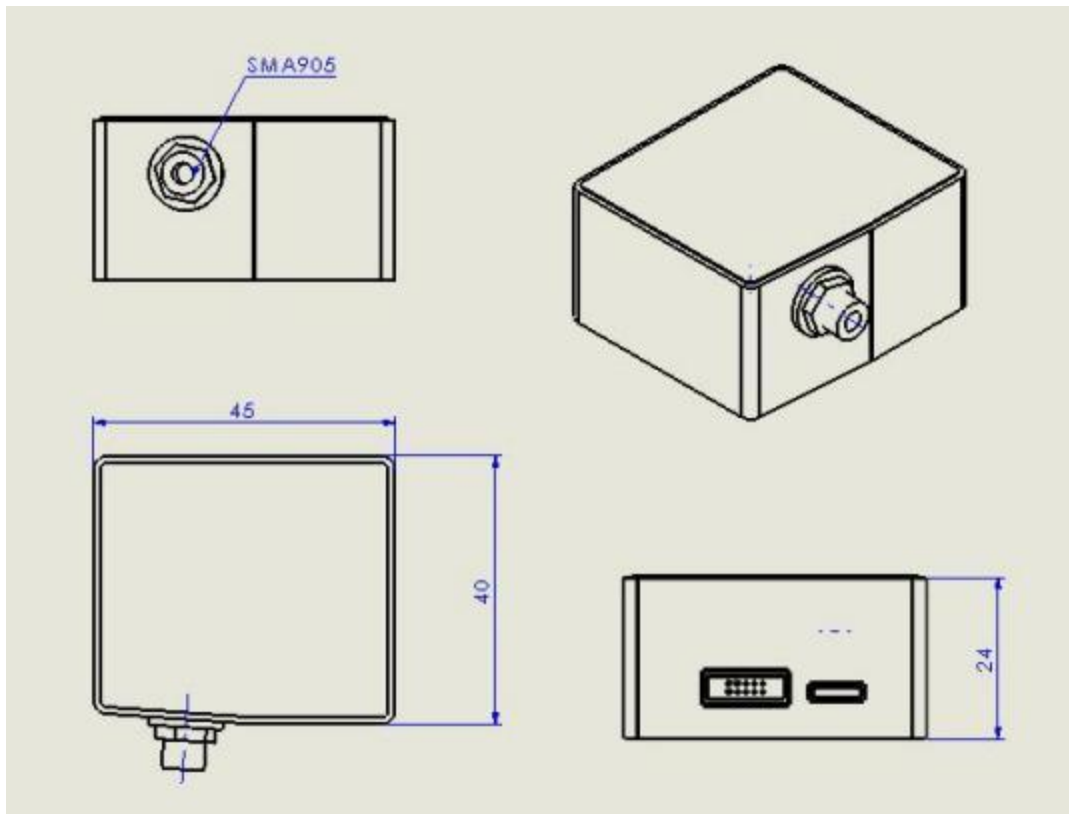


Fig.3 The spectral output by ATP1010 before calibrating

2. Mechanical Diagrams



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 10-pin male angled box header(2x5, 1.27mm pitch) and micro USB type interface.

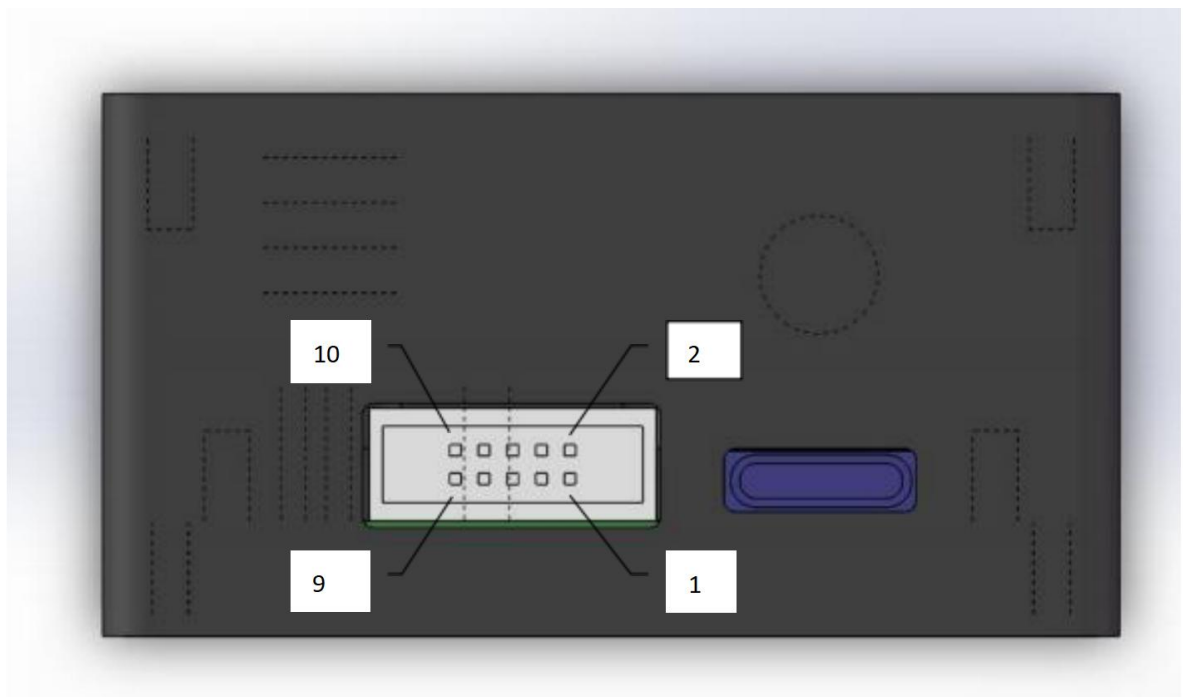


Table 2 Electrical Pin-Out

Pin	Description	I/O	Function Description
1	5V	/	Power Supply, 5V±0.5,
2	GND	/	Ground
3	NC	/	/

4	NC	/	/
5	NC	/	/
6	NC	/	/
7	EXT_TRIG	Input	External trigger pin
8	LIGHT	Output	Xenon lamp control pin
9	MCU_RX	Input /	LVTTL, Transmit signal
10	MCU_TX	/Output	LVTTL Transmit signal

4. Accessories

Standard Accessories	
1	TypeC-USB Data Cable
Optional Accessories	
1	UV-Vis resistant fiber
2	Adjustable optical attenuator
3	Standard diffuse reflectance standard white board
4	Transmittance/Reflectance measurement integrating sphere holder

