High-Sensitivity, High-Resolution Scientific, Mini Optic Fiber Spectrometer ATP6500

Product Description

ATP6500 Fiber Optic Spectrometer employs ultra-high performance, 1044 x 64 pixel, back-thinned CCD with the widest dynamic range. It features high reliability and high performance. The spectrometer receives lights via SMA905 connector or free space, and exports spectral data via USB2.0/UART. It requires only 5VDC power supply and easy to be integrated.

Key Features

- Detector: Back-thinned CCD, cooled down to -20°C
- CCD parameters: 1044×64 pixels
- Ultra-low noise CCD signal processing circuit
- Ultra-high dynamic range
- Ultra-low Etalon effect
- Quantum efficiency>90%
- Spectral range: 180-1100nm
- Spectral resolution: 0.01-4nm (depend on spectral range, slit size)
- Optical path: Crossed Czerny-Turner (C-T)
- Integration time：2ms-130s
- Power supply: 5VDC±10% @ <3A
- 18 bits, 570KHz A/D Converter
- Entrance connector: SMA905 connector or free space
- Output interface: high speed USB2.0 or UART
- 20 pins, dual rows programmable extension connector

Typical Applications

- Scientific research
- Weak (biological) fluorescence measurement
- Raman spectrometer
- Microscale, fast spectrophotometer
- Reflectance measurement
- Transmittance measurement

1. Performance Specification

Detector	
Type	back-thinned linear CCD (cooled down to -20ºC)
Spectral range	180-1100 nm
Effective pixels	1044 x 64
Pixel size	24μm × 24μm
Full range	~600 ke-
Sensitivity	6.5 uV/e-
Dark noise	8 e-
Optical parameters	
Wavelength range	180-1100 nm （available in custom wavelengths）
Resolution	0.01-1.3 nm （decide on slit size, spectral range）
SNR	>1000:1
Dynamic range	>50000：1
Operating temperature	-10 - 45 oC
Operating humidity	< 90%RH
Optical path parameters	
Optical path	f/4 crossed C-T
Confocal distance	98 mm for incidence / 107 mm for output
Entrance slit width	5,10,25,50,100,150,200 μm optional, available in custom width
Incident connector	SMA905 connector or free space
Electrical parameters	
Integration time	8ms – 30 minutes
Data output interface	USB 2.0
ADC bit depth	18 bit (output 16bit)
Power supply	DC 5V±10%
Operating current	<3A
Storage temperature	-20°C to +70°C
Operating temperature	-10°C to +45°C
Physical parameters	
Dimension	217×110×52 mm3
Weight	0.97 kg
Sealing	Anti-sweat

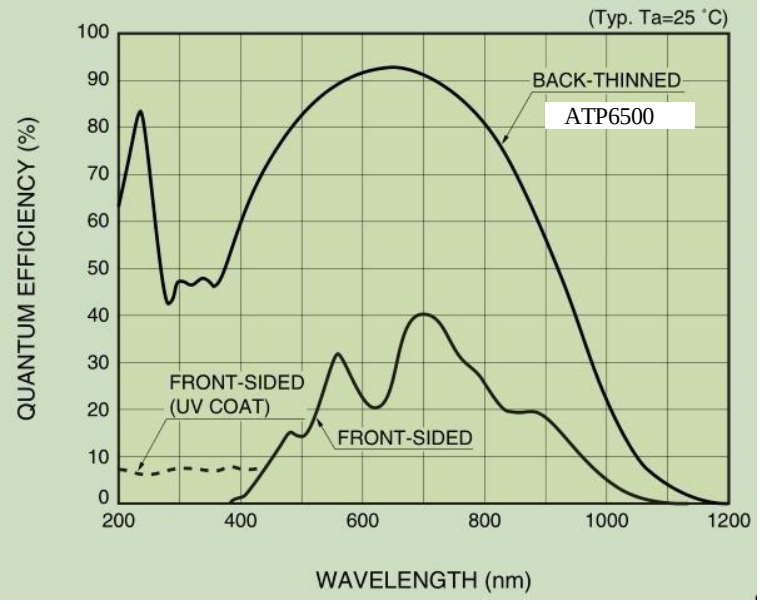
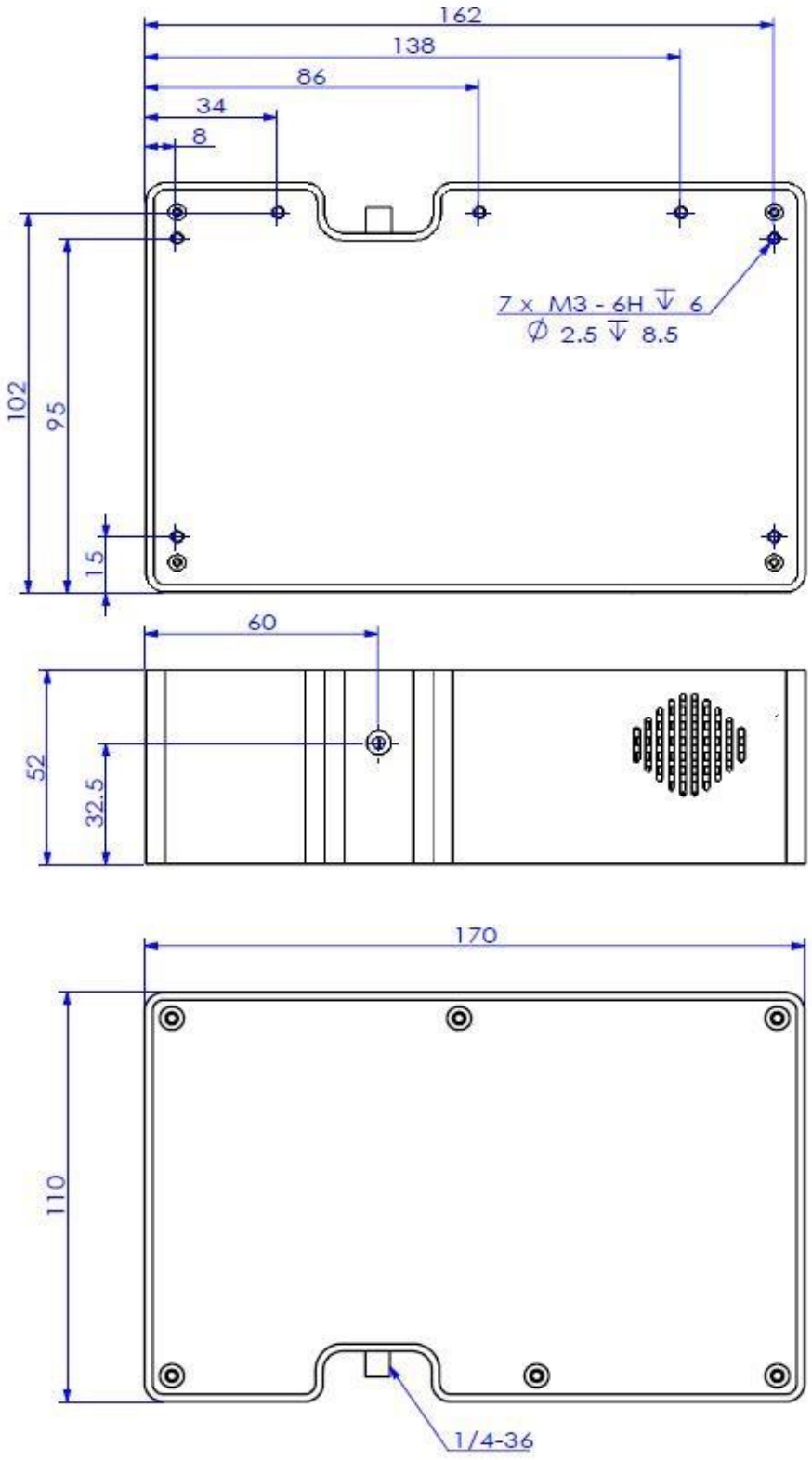


Fig 1 ATP6500 CCD employs 2 times higher quantum efficiency than normal CCD

2. Mechanical Drawing


162
138
86
34
8
7 x M3 - 6H ↧ 6
⌀ 2.5 ↧ 8.5
102
95
15
60
52
32.5
170
110
1/4-36

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. The 20-pin connector is a Samtec part # STMM-110-02-L-D-RA connector. The mate to this is a Samtec part # TCSD-10-D-XX. XX-01-N.

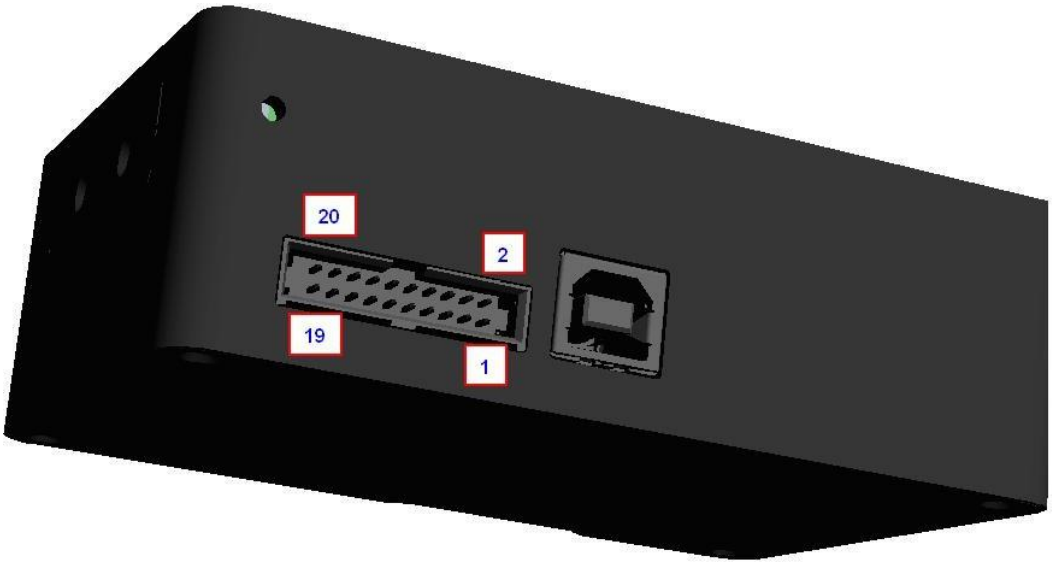


Table 2 Electrical Pin-Out

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	
ATP6500	Short wavelength	Long wavelength	Slit width	

For example:
What to buy atp6500, spectral region: 200-850nm, slit width is 50 um, then the order no is: ATP6500-200-850-050

Order No	Spectral region (nm)	Slit	
ATP6500-200-400-###	200~400	10 μm	
ATP6500-200-850-###	200~850	25 μm	
ATP6500-200-1100-###	200~1000	50 μm	
ATP6500-340-850-###	340~850	100 μm	
ATP6500-600-1100-###	600~1100	200 μm	
ATP6500-800-1000-###	800-1000	Other:__μ	
ATP6500-300-1100-###	300-1100	m	
ATP6500-###-###-###	Other		