

## Scientific-Grade Micro Spectrometer

# ATP6500

### Features:

- ✧ Integration time: 8ms ~ 1.2 hours
- ✧ Detector: back-thinned CCD, cooled down to -20 °C
- ✧ CCD parameters: 1024×64 pixels or 2048 x 128
- ✧ Ultra-low noise CCD signal processing circuit
- ✧ Quantum efficiency > 90%
- ✧ Ultra-high dynamic range Ultra high signal-to-noise ratio
- ✧ Spectral range: 180-1100nm(depend on spectral range, slit size)
- ✧ Spectral resolution: 0.01-4nm(depend on spectral range, slit size)
- ✧ Optical path: crossed Czerny-Turner (C-T)
- ✧ power supply: DC 5V±10% @ <3A
- ✧ 18 bit, 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

### Application:

- ✧ Scientific research
- ✧ Weak (Biological) fluorescence measurement
- ✧ Transmittance measurement, reflectance measurement
- ✧ Raman spectrometer
- ✧ Microscale, fast spectrophotometer

### Description:

Optosky ATP6500 Fiber Optic Spectrometer employs ultra-high performance, 1044 x 64 pixel, back-thinned CCD with the widest dynamic range, semiconductor-cooled technology can reduce operating dark current, CCD cooled down to -20°C under constant temperature. It greatly reduces sensor noise resulting in almost 2 times higher SNR than other competitors. It increases measuring reliability, and measuring result does not changed with temperature.

Built inside the customized ultra-low noise CCD signal processing circuit attributes to quantization noise less than 3 counts that are excel in the industry.

ATP6500 can receive lights via SMA905 connector or free space, and output spectral data via USB2.0/UART.

ATP6500 requires only 5V DC supply, and convenient to integration.

Type	Feature
ATP6500	1024 pixels, fixed slit
ATP6500-2	2048 pixels, fixed slit
ATP6500CH	1024pixels, replaceable slit
ATP6500CH-2	2048 pixels, replaceable slit



## 1 Performance Parameters

	ATP6500	ATP6500-2
<b>Detector</b>		
Type	back-thinned linear CCD (cooled down to -20°C)	
Spectral range	180-1100 nm	
Effective pixels	1024 x 64	2048 x 128
Pixel size	24μm × 24μm	12 × 12 μm
Full range	~600 ke <sup>-</sup>	500 ke <sup>-</sup>
Sensitivity	6.5 uV/e <sup>-</sup>	5 uV/e <sup>-</sup>
Dark noise	8 e-rms	4 e-rms
<b>Optical Parameters</b>		
Wavelength range	180-1100 nm (available in custom wavelengths)	
Optical Resolution	0.01-1.3 nm (decide on slit size, spectral range)	0.08-0.9 nm (decide on slit size, spectral range)
SNR	>3000:1	>1000:1
Dynamic range	>50000: 1 or 100000: 1	125000:1
<b>Optical Path Parameters</b>		
Optical path	f/4 crossed C-T	
Focal length	98 mm for incidence / 107 mm for output	
Slit	5,10,25,50,100,150,200 μm optional	
Interface	SMA905 connector or free space	
<b>Electrical Parameters</b>		
Integration time	8ms ~ 1.2 hours	
Interface	USB 2.0 or UART	
ADC bit depth	18 bit (output 16bit)	
Power supply	DC 5V±10%	
Operating current	< 3 A	
Dimension	170×110×52 mm <sup>3</sup>	
Weight	1.65 kg	
Operating temperature	-10°C to +45°C	
Operating humidity	< 90% RH	

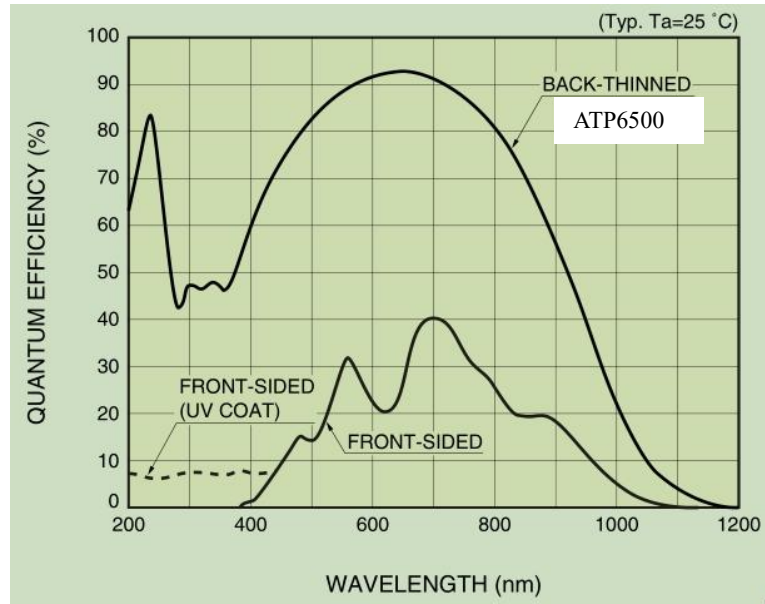


Fig 1 ATP6500 CCD employs 2 times higher quantum efficiency than normal CCD

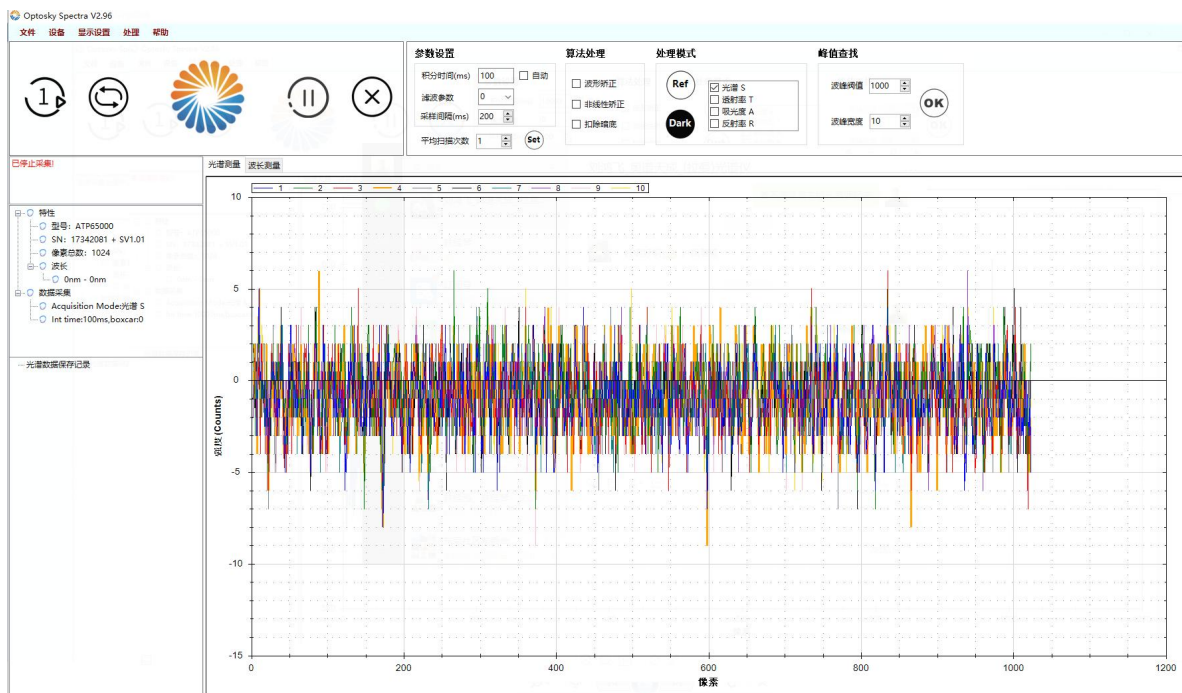


Fig 2 ATP6500 noise test (integration time is 100ms)

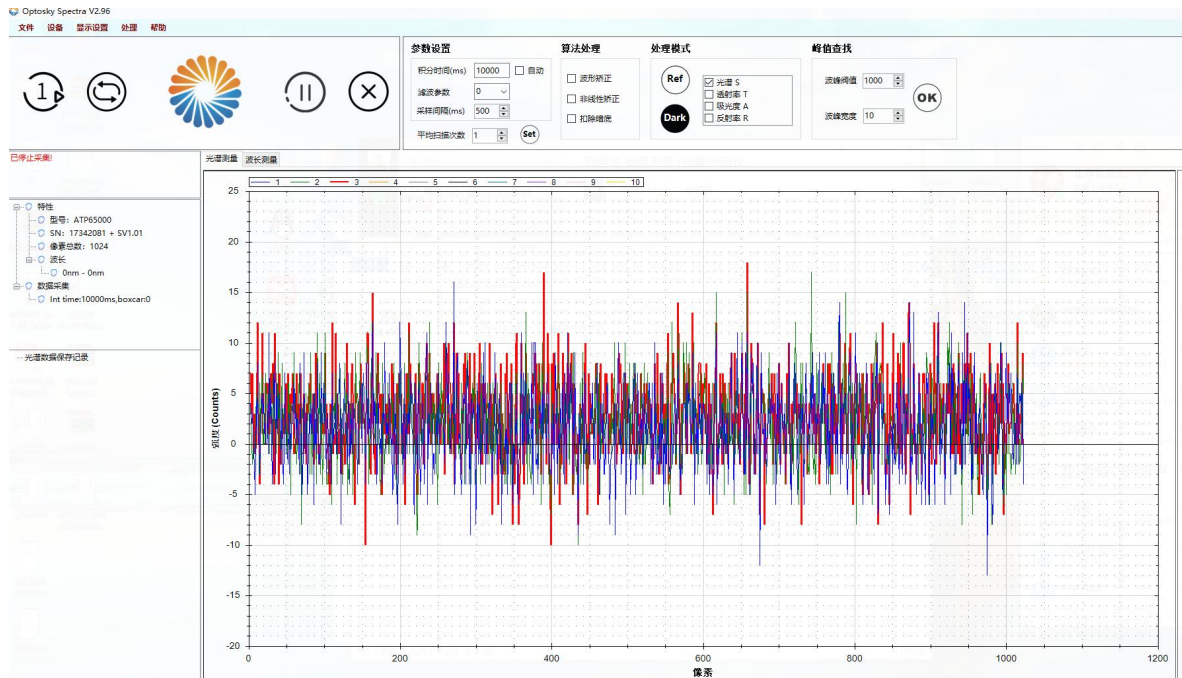


Fig 3 ATP6500 noise test (integration time is 10 s)

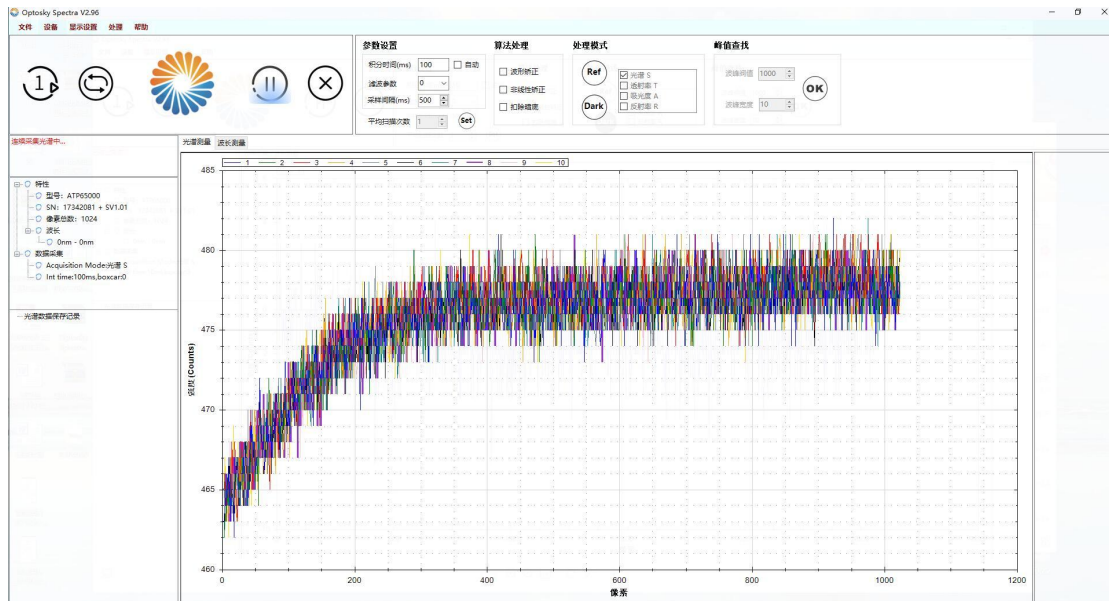


Fig 4 ATP6500 test result (integration time is 100ms) , average dark current around 477, noise is 6 counts.

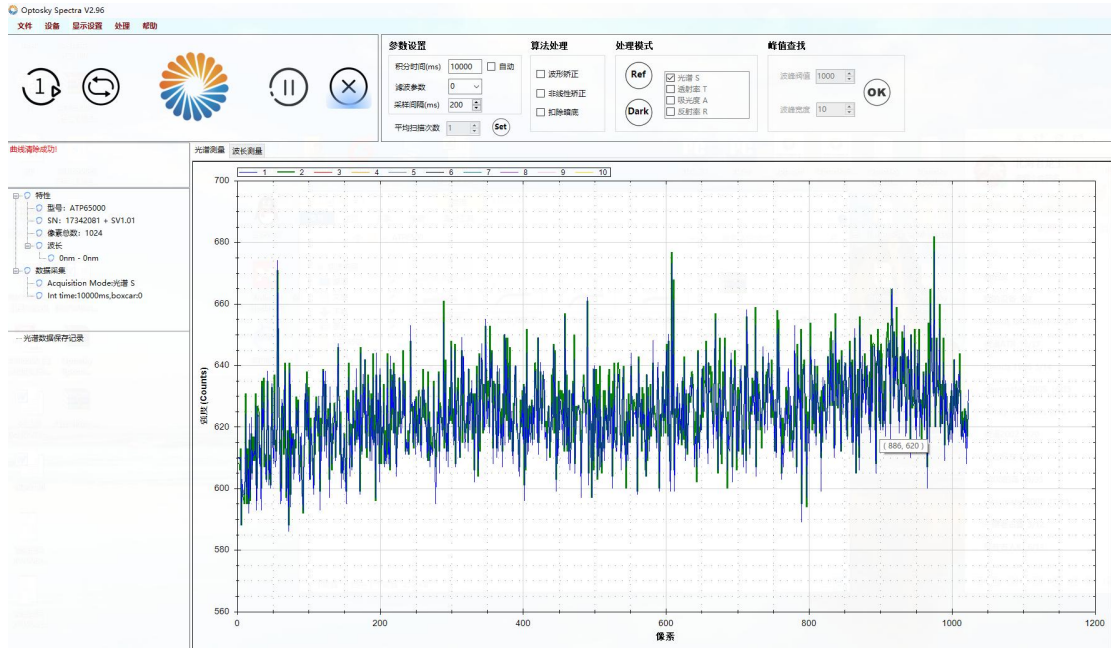


Fig 5 ATP6500 test result (integration time is 10s) , average dark current around 620, noise about 60 counts

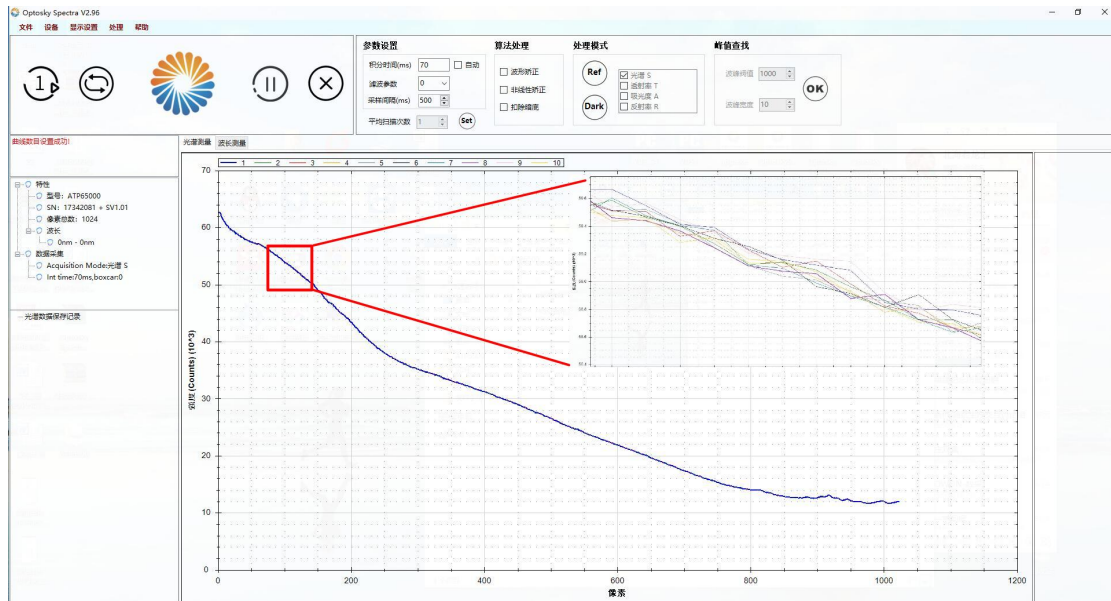


Fig 6 ATP6500 repeatability test (10 times), excellent repeatability!

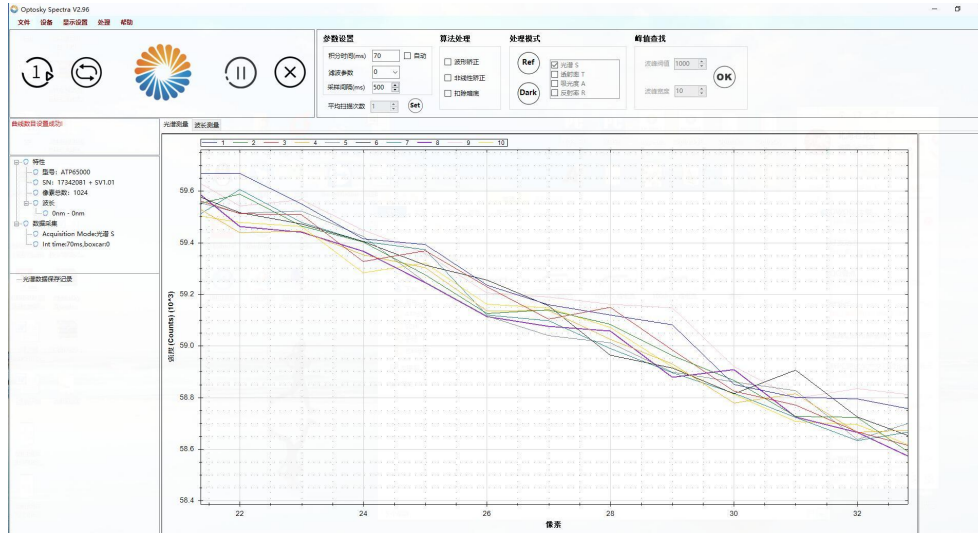


Fig 7 ATP6500 repeatability test result (10 times), enlarge the partial

## 2 Mechanical Diagrams

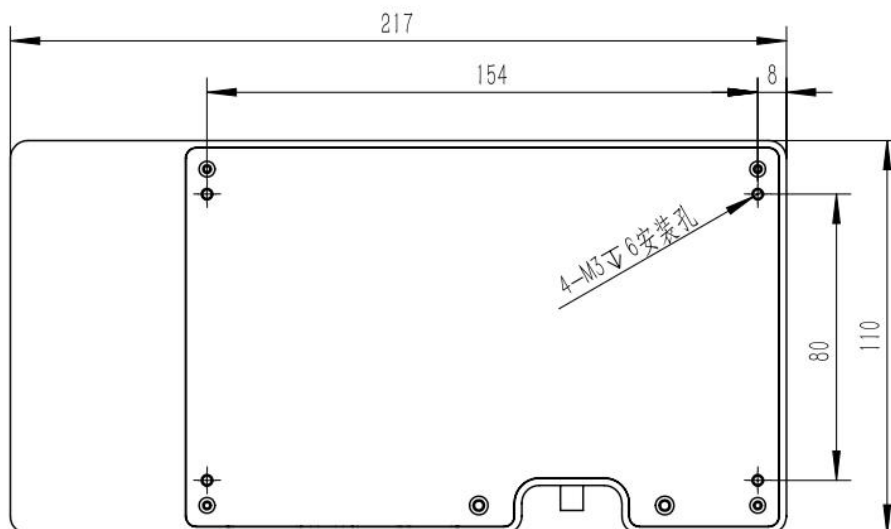
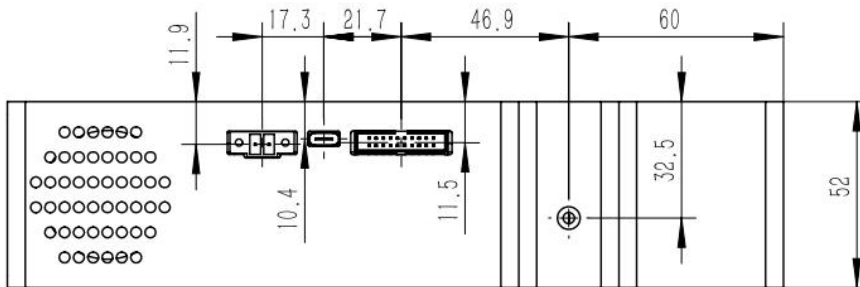


Fig 8 Dimensions of the ATP6500

## 3 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: _____ μm	
atp6500-300-1100-###	300-1100		
atp6500-###-###-###	Other		