

Miniature Spectrometer (High-Sensitivity & Low-Noise)

ATP3000

Features

- Resolution: 0.05-2 nm
- Detector Pixels: 2048/4096
- High Sensitivity
- Spectral Range: 190-1100 nm
- Max Readout Rate: 10 MHz
- Optical Design: Crossed Czerny-Turner
- Integration Time: 1 ms - 65 s
- Power Supply: USB-powered
- Optical Input: SMA905 or free-space
- Data Interface: USB 2.0 or UART

Applications

- Micro-volume Rapid Spectrophotometer
- Spectral Analysis / Radiation Spectroscopy / Spectrophotometric Analysis
- Transmittance and Absorbance Detection
- Reflectance Measurement
- Ellipsometry
- Laser Wavelength Determination
- UV, Visible and Short-wave Near-infrared Wavelength Detection

Description

ATP3000 Series Low-Noise, High-Sensitivity Fiber Optic Spectrometers utilize linear CMOS sensors with exceptional responsivity from UV to NIR wavelengths. With a readout rate of up to 10 MHz and low-noise signal processing circuitry, these spectrometers deliver fast and accurate spectral data acquisition.

Featuring high-pixel linear array detectors (2048 or 4096 pixels), the ATP3000 maintains high resolution while achieving enhanced sensitivity through optimized optical design with improved numerical aperture (NA). This results in significantly better signal-to-noise ratio and dynamic range. The spectrometer ensures highly stable measurements unaffected by ambient temperature variations, guaranteeing reliable results.

The ATP3000/ATP3000-4 models support SMA905 fiber optic input or free-space light input, with spectral data output via USB 2.0 or UART ports. Their flexible power supply requires only a 5V DC source, greatly simplifying integration in various applications.



1. Selection Guide

Model	Descrip
ATP3000	2048 Pixels
ATP3000-4	4096 Pixels
ATP3000-LVF	Built-in LVF for Eliminating Higher-Order Diffraction

2. Parameter

	Specifications	ATP3000	ATP3000-4
Detector	Type	UV-enhanced linear CMOS	
	Active Pixels	2048	4096
	Pixel Size	14×200 μm	7×200 μm
	Sensitivity	1300 V/(lx • s)	
	Dark Noise	13 RMS @ 13 ° C	
Optical Parameters	Wavelength Range	190-1100 nm (custom ranges available)	
	Optical Resolution	0.05-2 nm (slit and range dependent)	
	SNR	>450: 1	
	Dynamic Range	3000: 1	
	Optical Design	Crossed Czerny-Turner	
	Entrance Slit Width	5/10/25/50/100/150/200 μm (custom sizes available)	
	Light Input Interface	SMA905 fiber optic	
Electrical Parameters	Integration Time	1 ms ~ 65 s	
	Frame Rate	300 fps (max)	100 fps (max)
	Data Output Interface	USB2.0 OR UART	
	ADC Resolution	16bit	
	Power Supply	5V±5% DC	
	Operating Current	<350 mA (uncooled) / <3.0A (cooled)	
Physical Parameters	Operating Temperature	-10° C to +50° C	
	Operating Humidity	< 90%RH (non-condensing)	
	Dimensions (mm)	170×110×52 mm3	
	Weight (g)	800 g	

3. Test Report

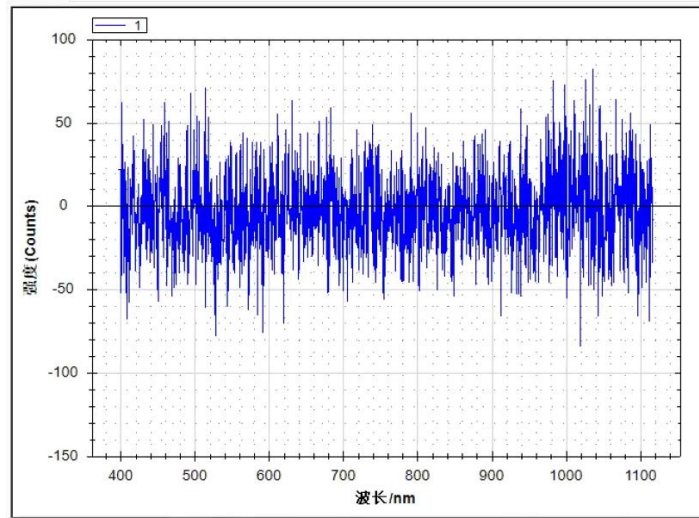


Figure 2 ATP3000 Dark Current Test

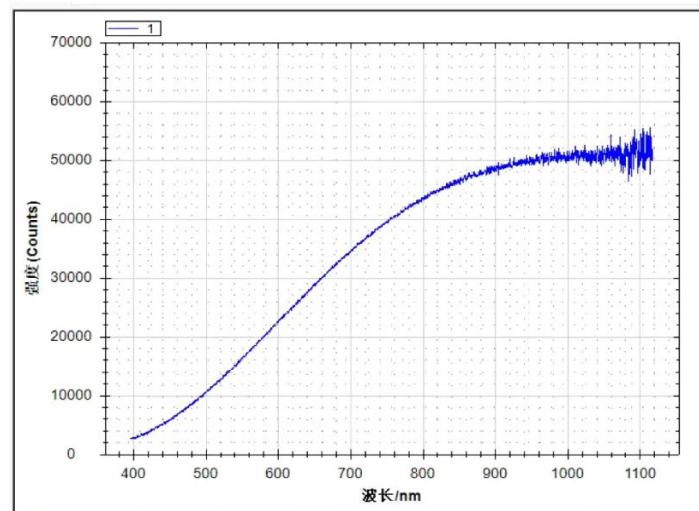


Figure 3 ATP3000 Spectral Profile Correction

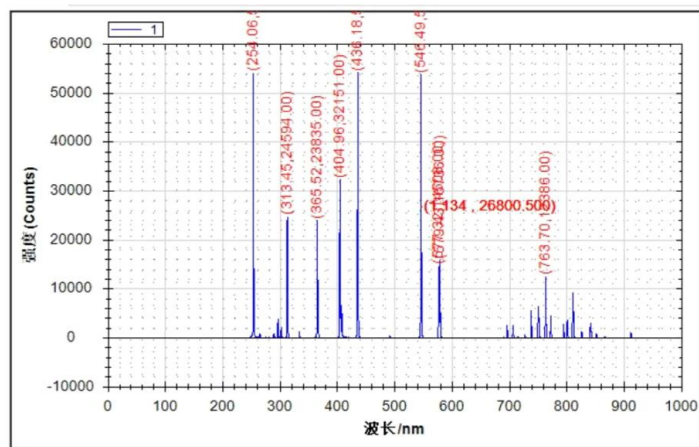
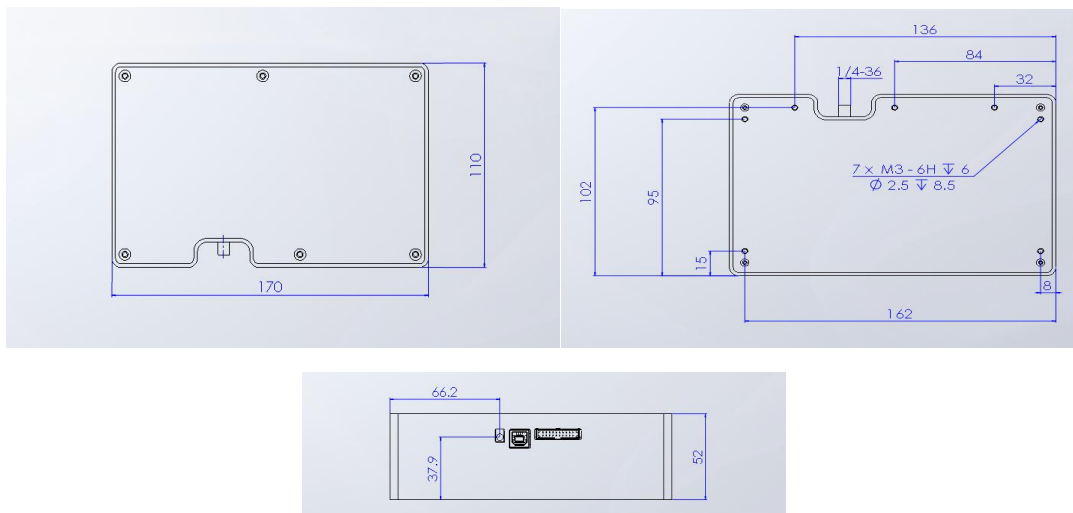


Figure 4 ATP3000 Resolution Test

4. Accessories

Standard Accessories	
1	USB Data Cable
2	20-PinRibbon Cable
Optional Accessories	
1	Anti-UV-Visible Light Fiber
2	Adjustable Optical Attenuator
3	Standard Diffuse Reflectance White Reference Panel
4	Transmission/Reflectance Measurement Integrating Sphere Holder
5	Fiber Collimator
6	Cosine Corrector

5. Effect Diagram



6. Application Scenarios & Measured Data

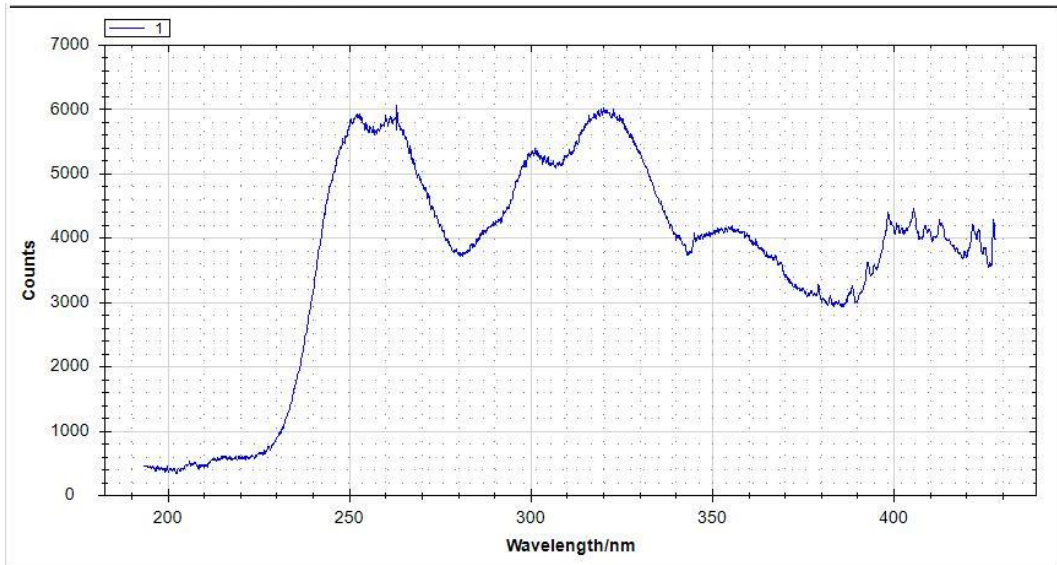


Figure 6 ATP3000 Skin Reflectance Spectrum Test

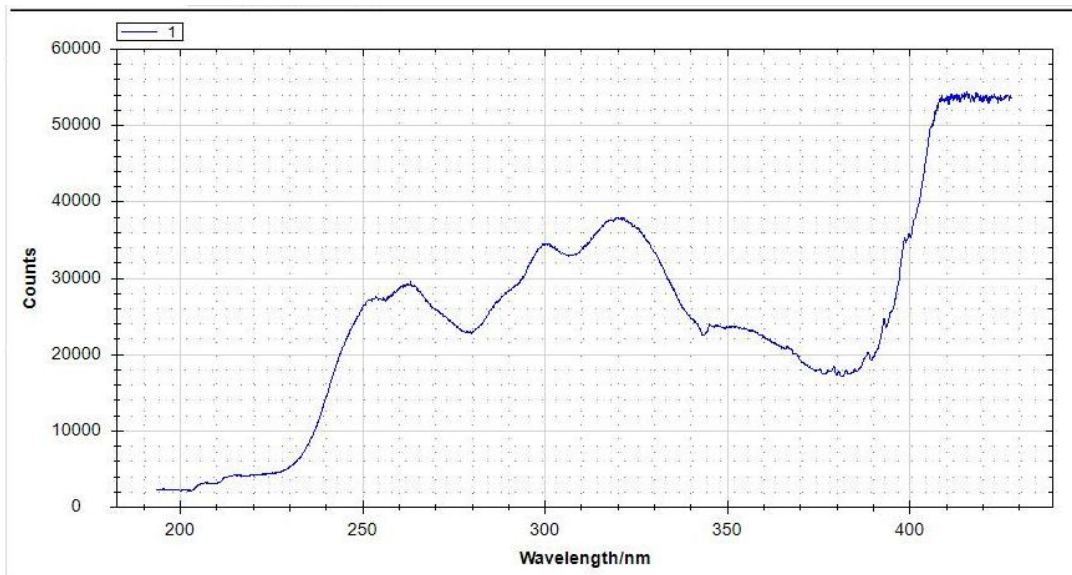


Figure 7 ATP3000 White Paper Reflectance Spectrum Test