Mini Micro Spectrometer ATP2400SH

Features

- Ultra-small, ultra-thin, ultra-light
- Fiber optic input and signal output on the same side, very convenient for integration
- Detector: Linear CMOS
- Detector Pixels: 2048 pixels
- Ultra-low noise CCD signal processing circuit
- Maximum spectral range: 180-1180 nm (customizable)
- Spectral resolution: 0.1-2 nm (depending on spectral range and slit width)
- Optical Design: Crossed C-T
- Built-in pulse xenon lamp driver
- Integration time: 0.03ms-130s
- Power supply: DC 5V±10% or USB powered
- 16-bit, 2MHz ADC
- Optical input interface: SMA905 or free space
- Data output interface: USB2.0 (High speed) or RJ-45 interface
- 20-pin dual-row programmable expansion interface

Application

- spectrophotometer
- Environmental Science：Environmental instruments (flue gas, water quality)
- Transmittance and reflectance detection
- Spectral analysis / radiation spectroscopic analysis / spectrophotometric analysis
- Laser wavelength measurement

Description

With 20 years of experience in developing fiber optic spectrometers, Optosky presents the next generation of high-performance ultra-thin fiber optic spectrometers: the ATP2400SH. The ATP2400SH is extremely small and lightweight. It features a built-in pulse xenon lamp driver circuit, a high-sensitivity linear CMOS detector, and a specially designed ultra-low noise CMOS signal processing circuit, significantly reducing sensor noise and achieving an excellent signal-to-noise ratio (approximately twice that of similar competitors). This improvement enhances the measurement reliability of the ATP2400SH, ensuring that the measurement results remain stable regardless of environmental temperature changes, reaching the industry's best standards.

The ATP2400SH can receive light input through an SMA905 fiber or free space and output the measured spectral data via a USB 2.0 or UART port. The ATP2400SH offers a very fast frame rate: USB 2.0 (2Kfps) and RJ-45 (4Kfps). It only requires a 5V DC power supply or USB power, making it very convenient for integrated use.

1. Technical Parameters

Detector	
Type	Linear CMOS
Spectral Range	180-1100 nm
Effective Pixels	2048×1
Pixel Size	14μm×200μm
Full Range Capacity	~200 ke-
Sensitivity	1300 V/(lx•s)
Dark Noise	0.4 mV rms
Optical Parameters	
Wavelength Range	180-1100 nm （customizable as per requirements）
Optical Resolution	0.1-2 nm （depending on slit width and spectral range）
SNR	>450 : 1
Dynamic Range	3000： 1
Optical Path Parameters	
Optical Design	f/4 crossed asymmetric C-T optical path
Incident Slit Widths	5、10、25、50、100、150、200 μm (other sizes customizable)
Incident Light Interface	SMA905fiber optic interface, free space
Electrical Parameters	
Integration Time	0.03 ms ~ 130s
Data Output Interface	USB 2.0 or RJ-45
Frame Rate	USB 2.0(2Kfps);RJ-45(4Kfps)
ADC Bit Depth	16bit
Power Supply	DC4.5 to 5.5 V (type @5V)
Working Current:	250mA@Type
Working Temperature	-30°C to +70°C
Operating Temperature	-25-50°C
Operating Humidity	< 90%RH （(non-condensation）
Physical Parameters	
Dimensions	85×61×24 mm^3
Weight	0.15 kg

2. Selection Guide

Model	Features
ATP2400SH	2048 pixels
ATP2400SH-LVF	2048 pixels, built-in LVF to reduce multiple-order diffraction
ATP2400SH-4	4096 pixels

3. Relevant Test Data

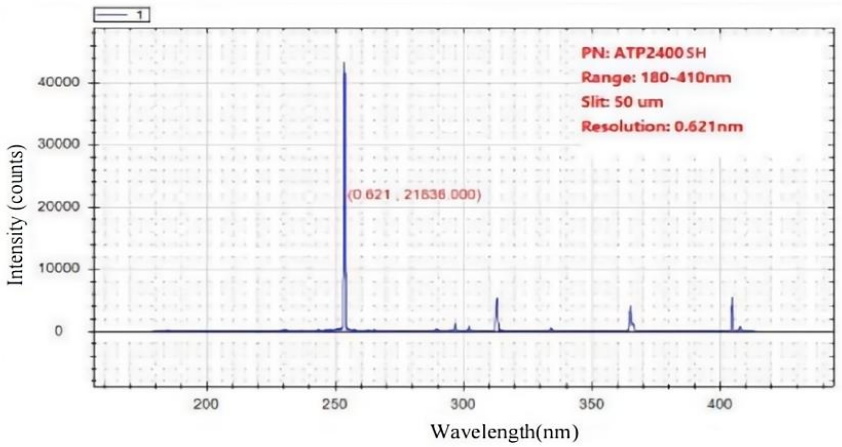

Figure3-1:Resolution test for ATP2400SH-180-410-50, with a resolution of 0.621 nm

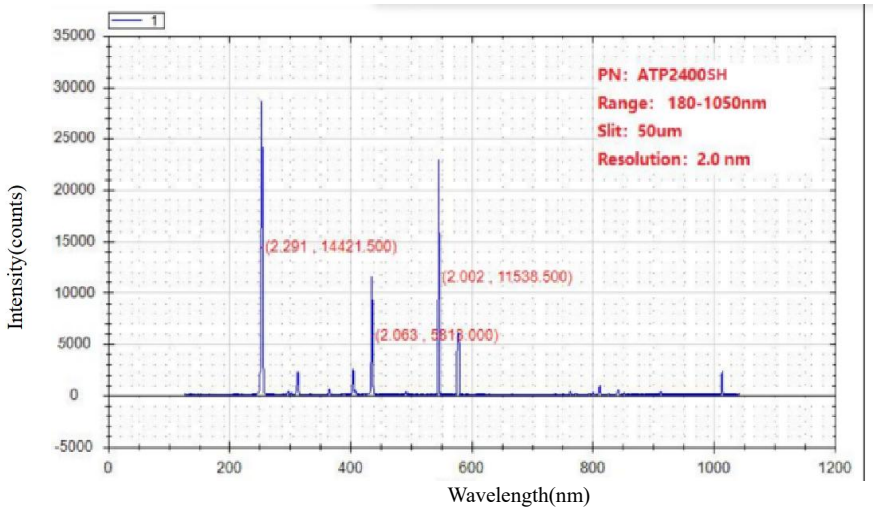

Figure 3-2: The resolution of ATP2400SH-180-1050-50 (wavelength range: 180-1050 nm, slit width: 50 μm) is 2.0 nm

4. Mechanical Dimensions

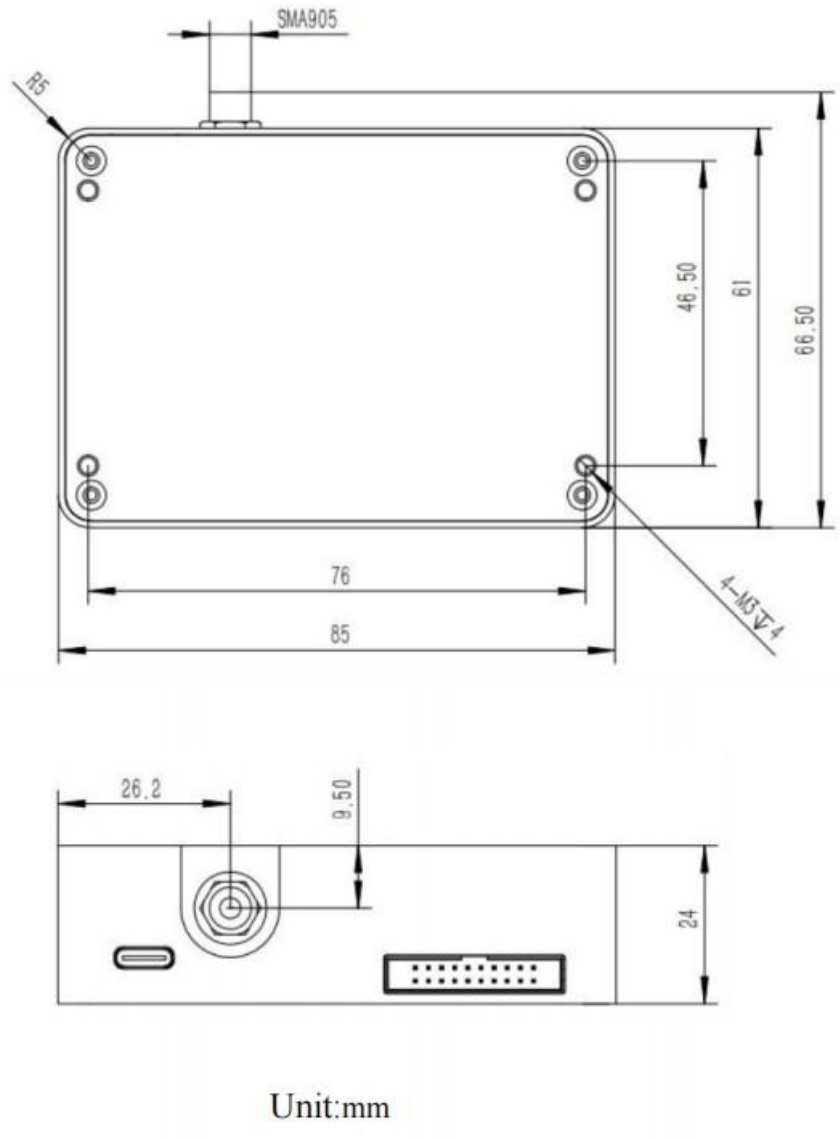

Figure 4: ATP2400SH Dimensional Drawing

5. ATP2400SH Image

Figure 5: Comparison of ATP2400SH with a Computer Mouse