Product Description

ATP8000 is designed for 900-2600nm NIR, miniature optic fiber spectrometer. It employs 256/512 pixels cooled InGaAs Array, semiconductor cooling technology CCD, cooled down to -20ºC under constant operating temperature. It features high reliability, high signal-to-noise ratio and high performance. Measurement doesn't change with ambient temperatures.

ATP8000 receives light via SMA905 connector or free space, and outputs spectral data measured via USB2.0/UART PORT. It requires only 5VDC power supply and easy to be integrated.

Key Features

- 256/512/1024 pixels InGaAs Array
- Spectral range: 900-2600nm（Available in custom spectra range）
- Ultra-low noise, dual-sampling PCB
- Spectral resolution: decide on entrance slit width
- Integration time：7.8ms - 256s
- CCD parameters：256/512×1 pixel，50/25×500 um
- Power supply: DC 5V@<3A
- Power connector: entrance 2pins plug-in
- ADC bits' depth: 18bits
- ADC sampling rate: 500KHz
- Light connector: SM905 connector or free space
- Output data port: USB2.0/UART
- 20pins extension interface

Typical Applications

- Food sorting
- Wastewater detection
- Agricultural water content, protein, fat, fiber detection
- Paper sorting
- Online monitoring Chinese herb production
- Solar cell detection

1. Performance Specifications

Sensor	
Type	Cooled InGaAs Array CCD, Cooled down to-20ºC
Spectral range	900-1700nm, 900-2100nm, 900-2500 nm (Three sensors)
Effective pixels	256/512/1024 pixels (suggest 512 pixels)
Pixel size	25μm×250μm
Full range	~17.5 Me-
Dynamic range	12700
Sensitivity	160 nV/ e-
Peak value	2300 nm
Dark noise	400 μV rms
Optical parameters	
Wavelength range	900-2600nm，available in custom wavelength
Optical resolution	5-50 nm （decide on slit, spectral range）
SNR	>3000:1
Dynamic range	12700
Operating temperature	0-40 ℃
Operating humidity	< 90%RH
Optical path	
Optical path	f/4 crossed C-T
Confocal distance	82.3 mm for incidence / 121.5 mm for output
Entrance slit width	5,10,25,50,100,150, 200 μm (optional), available in custom width
Incident connector	SMA905connector, free space
Electrical parameters	
Integration time	7.8ms-256s
Output data port	USB 2.0
ADC bit depth	18 bits (output 16bit)
Power supply	5VDC±5%
Operating current	<3A
Storage temperature	-20°C to +70°C
Operating temperature	-10°C to +50°C
Physical parameters	
Dimension	215x130×53 mm3
Weight	1.8kg

2. 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	200	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

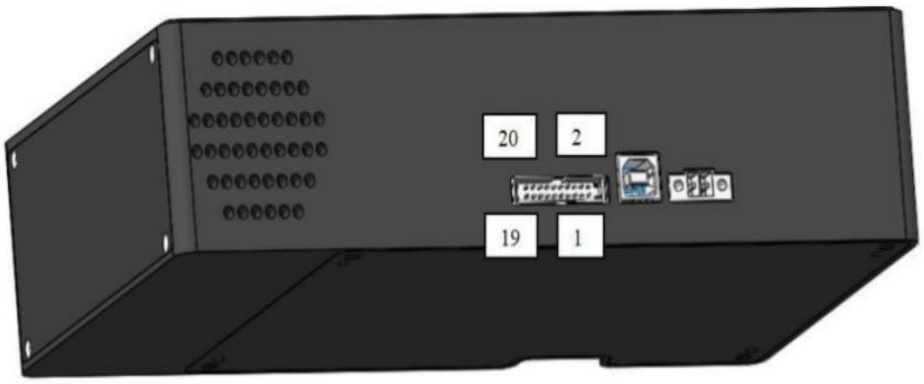

Table 2 Electrical Pin-Out

Pin#	Description	I/O	Function Description
1.	VCC	/	Power Supply, 5V±0.5,
2.	VCC	/	Power Supply, 5V±0.5,
3.	GND	/	Ground
4.	GND	/	Ground
5.			
6.			
7.	Ext_trigger_in	Input	LVTTL input the trigger signal. Falling edge trigger collection.
8.	LD_EN	Output	LVTTL output enable signal for LD.
9.	NC	/	
10.	NC	/	
11.	GPIO0	Input / Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
12.	GPIO1	Input / Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
13.	GPIO2	Input / Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
14.	GPIO3	Input / Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
15.	GPIO4	Input / Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
16.	GPIO5	Input / Output	General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic.
17.	VCC	/	3.3 V Power Output
18.	GND	/	Ground
19.	EXT_TX	Output	EXT UART Transmit signal LVTTL Logic
20.	EXT_RX	Input	EXT UART Receive signal LVTTL Logic

3. Order Guide

P/N	ATP8000-2-17	ATP8000-2-21	ATP8000-2-26	ATP8000-2-A	ATP8000-5-17	ATP8000-5-21	ATP8000-5-26	ATP8000-5-A
Spectral range	900-1700nm	900-2100nm	900-2600nm	1510-1590nm	900-1700nm	900-2100nm	900-2600nm	1510-1590nm
Spectral resolution 25um slit	<3nm	<4nm	<6nm	<0.3nm	<3nm	<4nm	<6nm	<0.3nm
Effective pixels	256				512			
Pixel size	50×500μm				25×500μm			
Detector	High performance TE-cooled InGaAs							
Cooled	TE-cooled down to -20℃							
SNR	10000:1							
Dynamic range	13000:1							
A/D resolution	18-bit 150kHz							
Operating temperature	-20℃-45℃							
Connector	SMA905, free space							
Entrance aperture	5,15,25,50,100,200,300μm, available in custom length							
PC interface	USB2.0 High speed/full speed							
Integral time	1ms ~ 256s							

The definition of ATP8000-A-B:

A: Pixel number:

- 2: 256 pixels
- 5: 512 pixels
- 10: 1024 pixels

B: Maximum wavelength range:

- 17: 900-1700nm
- 21: 900-2100nm
- 25: 900-2500nm

4. Outline dimension

