

900-2500nm NIR, Mini optic fiber spectrometer

ATP8000

Feature:

- 256/512/1024 pixels InGaAs Array;
- Spectral range: 900-2600nm (Available in custom spectral 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: 500 KHz;
- Light connector: SM905 connector or free space;
- Output data port: USB2.0/UART;
- 20pins extension interface;

Application:

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

Description:

Optosky 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 -20°C under constant operating temperature, resulting in low noise, 2 times SNR higher than competitors, improved measuring reliability, measuring results do not change with ambient temperatures.

ATP8000 has exclusive designed ultra-low noise CCD signal dual-sampling processing circuit, noise<5 counts.

ATP8000 receives light via SMA905 connector or free space, and outputs spectral data measured via USB2.0/UART PORT.

ATP8000 requires only 5V DC power supply, and it's convenient to apply integration.



1. Performance parameters:

Sensor	
Type	Cooled InGaAs Array CCD, Cooled down to -20°C
Spectral range	900-1700nm, 900-2100nm, 900-2500 nm (Three sensors)
Effective pixels	256/512/1024 pixels (suggest 512 pixels)
Pixel size	50/25μm×500μm
Full range	~187.5 Me-
Dynamic range	16666
Sensitivity	16 nV/ e-
Peak value	2300 nm
Dark noise	180 μV rms
Optical parameters	
Wavelength range	900-2600nm, available in custom wavelength
Optical resolution	5-50 nm (decide on slit, spectral range)
SNR	>10000:1
Dynamic range	16666
Operating temperature	0-40 oC
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 bit (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	215x130x53 mm ³
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		170		mA
Logic Inputs(3.3V LVTTTL, 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 LVTTTL)				
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.

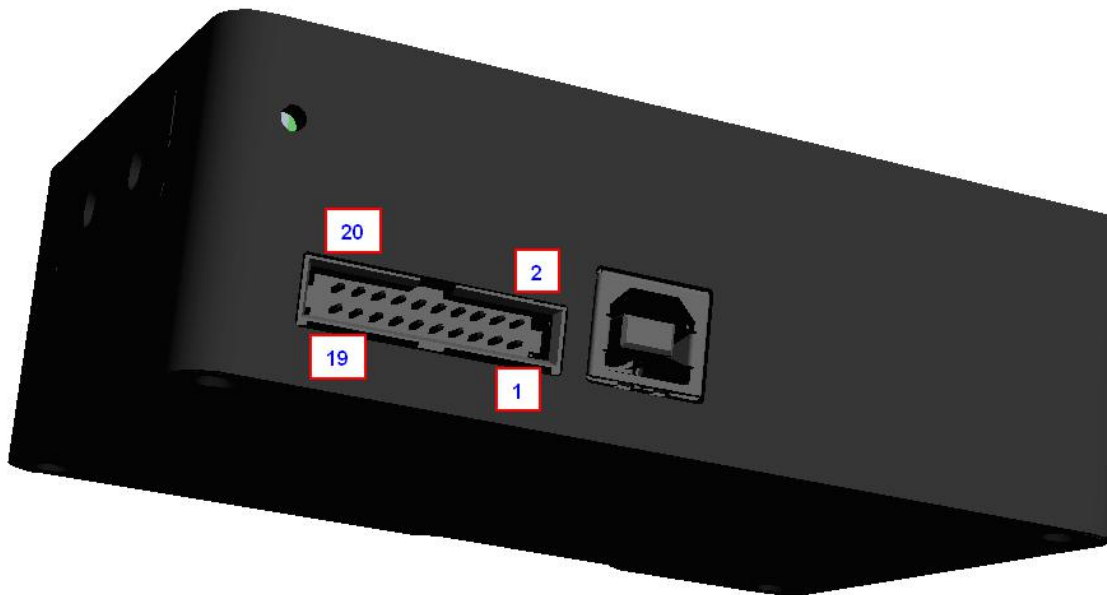


Table 2 Electrical Pin-Out

Pin#	Description	I/O	Function Description
1	VCC	/	Power Supply, 5V ± 0.5,
2	GND	/	Ground
3	RS232_TX	Output	RS232 Transmit signal
4	RS232_RX	Input	RS232 Receive signal
5	Lamp_En	Output	LVTTTL 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.

3. Order guide

PN	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

Product data information is current as of publication data. Products conform to specifications per the terms of Optosky Standard warranty.

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

