OPTOSKY
Spectroscopy Solutions

Datasheet

900-2500nm NIR，Mini optic fiber spectrometer ATP8000

Feature:

- 512 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：1ms - 100ms
- CCD parameters：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 -20ºC 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.

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1. Performance parameters:

Sensor	
Type	Cooled InGaAs Array CCD， Cooled down to-20ºC
Spectral range	900-1700nm, 900-2100nm, 900-2500 nm (Three sensors)
Effective pixels	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	ATP8000-17: 32s ATP8000-25: 200ms
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	215x130×53 mm
Weight	1.8kg

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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

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.

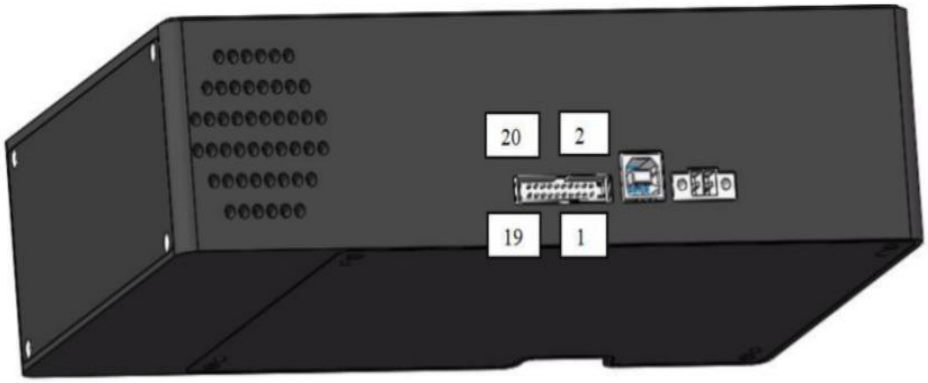

Table 2 Electrical Pin-Out

Pin#	Description	I/O	Function Description
1	VCC	/	Power Supply, 5V±0.5,
2	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	/	

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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	Intput	EXT UART Receive signal LVTTL Logic

3. Order guide

PN	**ATP8000-5-17**	**ATP8000-5-22**	**ATP8000-5-26**	**ATP8000-5-A**
Spectral range	900-1700nm	900-2200nm	900-2600nm	1510-1590nm
Spectral resolution 25um slit	3-4nm	4-5nm	6-8nm	<0.3nm
Effective pixels	512			
Pixel size	25×500μm			
Detector	High performance TE-cooled InGaAs			
Cooled	TE-cooled down to -20°C			
SNR	10000:1			
Dynamic range	13000:1			
A/D resolution	18 bit 150kHz			

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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 ~ 100ms

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.

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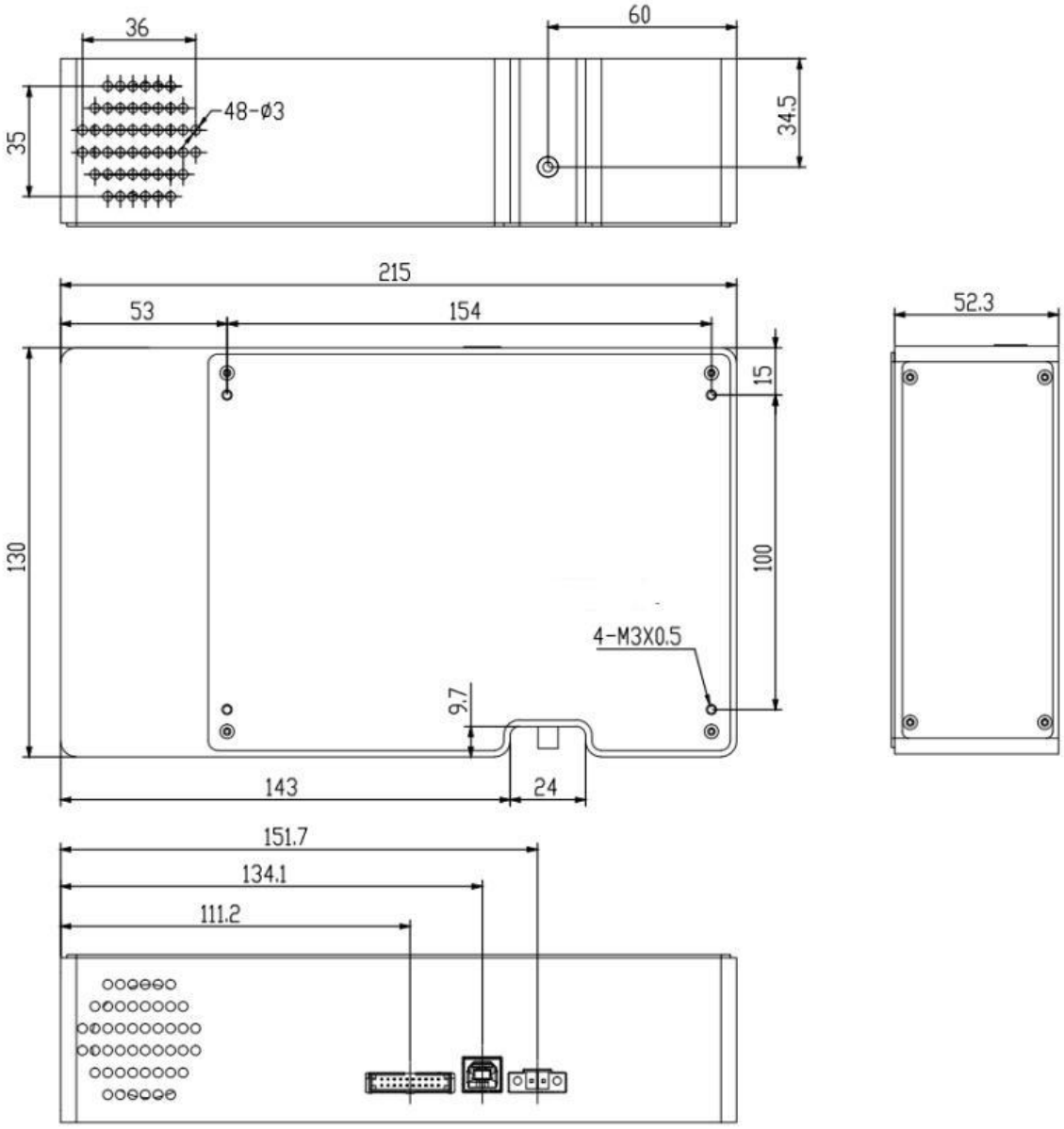
4. Outline dimension



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5. Company Profile

Optosky company is a first-class spectroscopy solution provider, with the headquarter locates in the 7th floor of the research institute of the Chinese Academic of Science at an area of 2500 square meter in Xiamen city where successfully held the international 9th BRICK summit in 2017.The subsidiary company locates in Wuhu city with an area of 2035 square meters.

The company founder Dr.Hongfei,Liu graduated Docter degree from the Chinese Academic of Science and postdoctoral degree from Xiamen University, by integrating both of top Universities' spectroscopy technology background into Optosky company aiming at developing the leading spectroscopy equipment in the world.

The company bases on unique technologies of Optomechatronics, Spectroscopy Analysis, Process Weak Optical and Electrical Signals, Cloud Computing, and have been developed wide products line of the competitive Raman spectroscopy instruments, micro spectrometer, hyperspectral imager, field spectroradiometer, fluorescence spectroscopy, LIBS etc. Driven by advanced technologies and products, Optosky brand has been well-known to customers all over the world.

Optosky company base on technology innovation, market-driven direction, customer first, provides first-class products and services, and one-stop solutions to many fortune 500 companies in many industries. The company received praise from different industry companies, as well as many innovative intellectual properties, software copyright, qualification certification, and winner awards over hundred numbers.

Optosky receives top class A introduced the high-tech company to international Xiamen city, the national high-tech and new innovative technology company award. The founder Dr.Hongfei Liu receives the innovation talent award by the ministry of science and technology.

The company is currently conducting the exclusive project of major industrialization national oceanic administration with a total fund of five million us dollars. The company in charge of drafting national industry standard of VNIR and SWNIR Field Spectroradiometer, and six national standard drafters, including China National Standard Drafter for Hazmat detector based on Raman spectroscopy, China National Standard Drafter for Buoy-type Monitor eco-environment, China National Standard Drafter for water quality monitor in the unmanned boat, China National Standards drafter for online water quality monitor by spectroscopy, China National Standard Drafter for UV-absorbent measure fabrics.

The company has over 70 IPs and over 20 innovative patents.

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The company received ISO9001:2015 certification, CE certification, Police Administration Certification, FDA approval compliant, IQOQPQ compliant.

Figure 1 Optosky (Xiamen) Photonics Inc. Company Headquarter

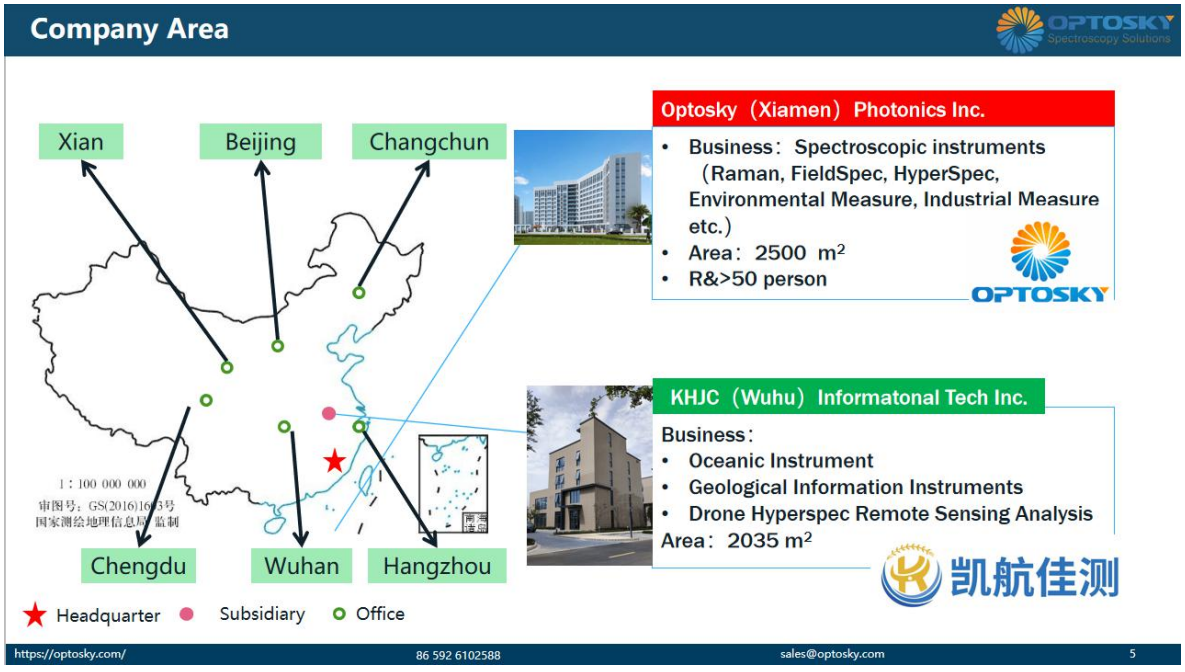

Figure 2 Optosky Company Area

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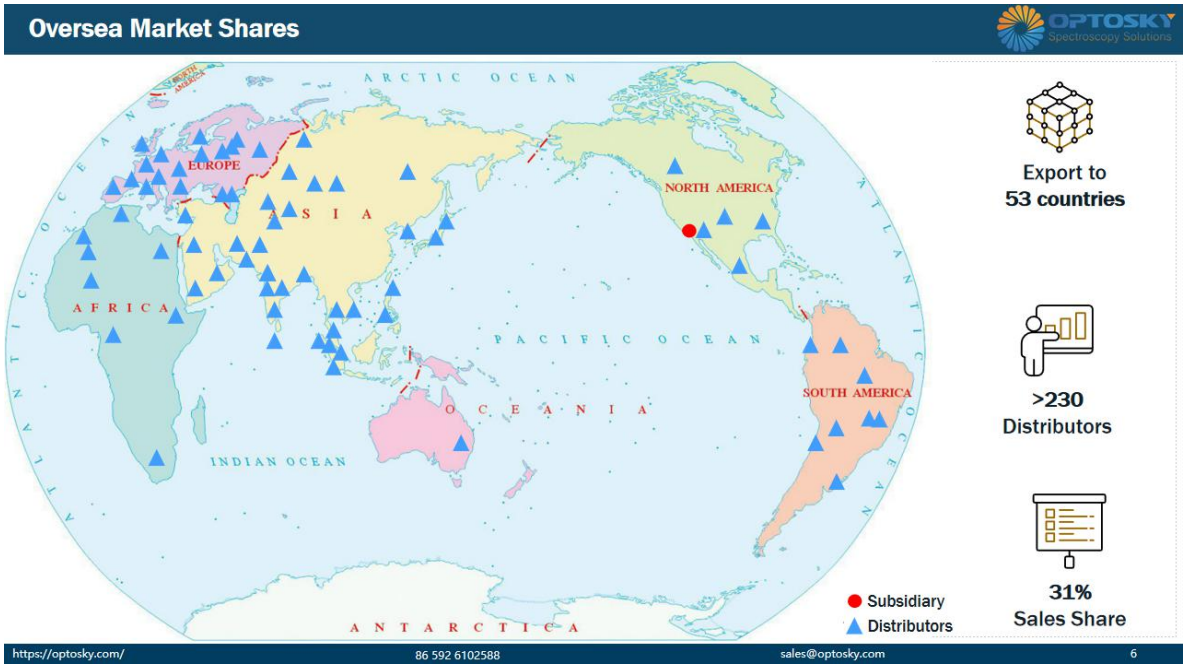

Figure 3 Oversea Market Shares

Figure 4 Optosky Chair and Draft National Standards Lists.

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Figure 5 Qualification

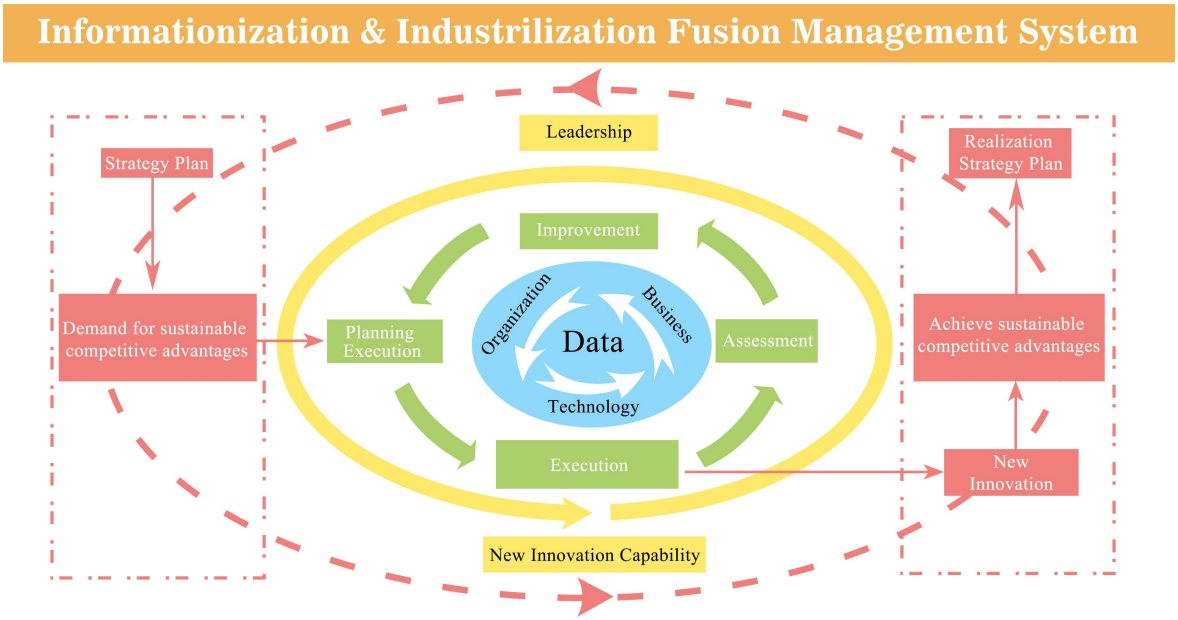

Figure 6 GB/T 23001_Informationization & Industrilization Fusion Management System

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Figure 7 Optosky's Co-founder_Dr. Hongfei Liu

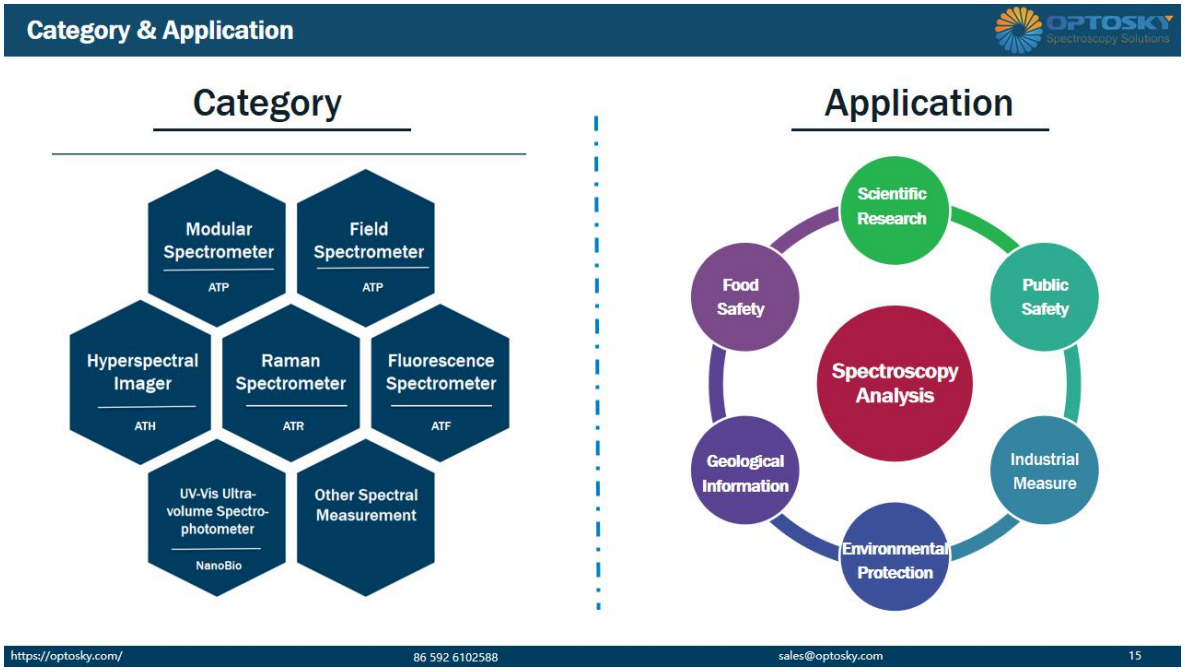

Figure 8 Category & Application

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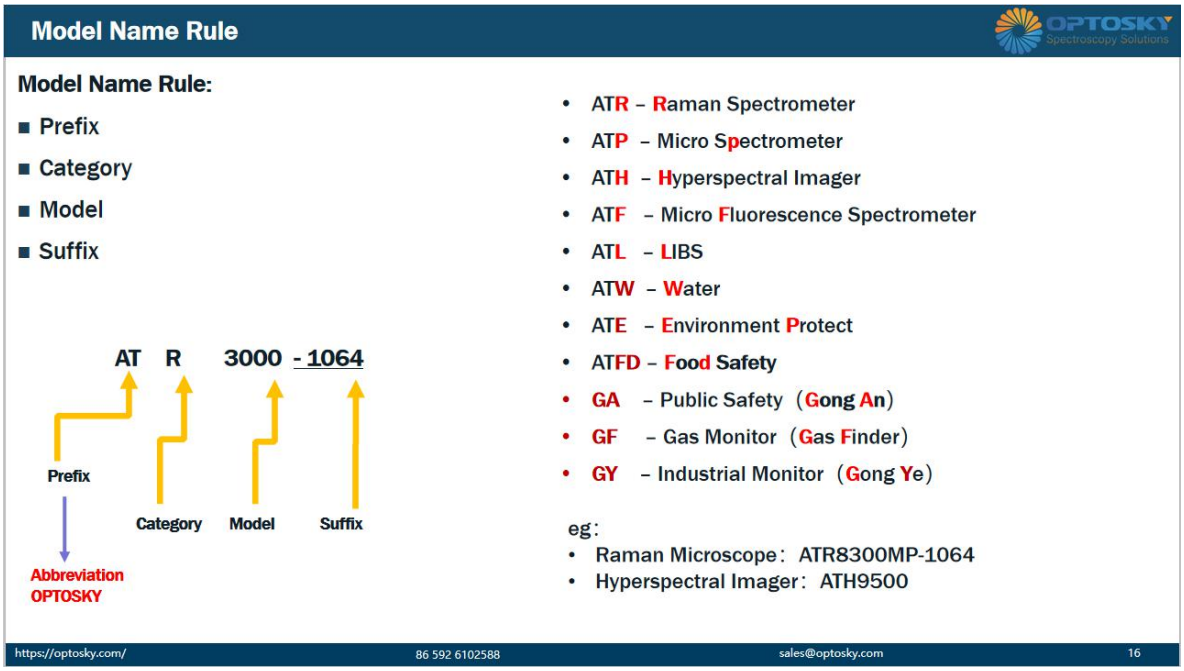

Figure 9 Model Name Rule

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