Datasheet

Deep Cooled, 900-2500nm NIR spectrometer

ATP8000T3

Feature:

- Deep cooling technology, CCD cooled down to -30℃
- Lower dark current and noise;
- 512 pixels InGaAs Array;
- Spectral range：900-2600nm（Available in custom spectral range）
- Ultra-low noise, dual-sampling PCB;
- Integration time：7.8ms - 256s
- CCD parameters：256/512×1 pixel，50/25×500 um
- Power supply：DC 12V@<5A;
- 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 ATP8000T3 is designed for maximum working range 900-2600nm NIR (can be customized), miniature optic fiber spectrometer. It use the deep cooling technology, can cooled down to -30ºC under constant operating temperature. It employs 512 pixels cooled InGaAs Array, semiconductor cooling technology CCD, resulting in low noise, 2 times SNR higher than competitors, improved measuring reliability, measuring results do not change with ambient temperatures.

Due to the use of deep cooling technology, the noise of the detector is greatly reduced, an excellent SNR (about 4 times higher than similar competitors) is obtained, the measurement reliability of ATP8000T3 is improved, and its result does not change.

ATP8000T3 has exclusive designed ultra-low noise CCD signal dual-sampling processing circuit, noise<5 counts.

ATP8000T3 receives light via SMA905 connector or free space, and outputs spectral data measured via USB2.0/UART PORT.

ATP8000 requires only 12V DC power supply, and it's convenient to apply integration.

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1. Performance parameters:

Sensor	
Type	Deep Cooled InGaAs Array CCD，Cooled down to -30ºC
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	0.05-5 nm （decide on slit, spectral range）
SNR	>10000:1
Dynamic range	16666
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	12VDC±5%
Operating current	<5A
Storage temperature	-20°C to +70°C
Operating temperature	-20°C to +45°C
Operating humidity	< 90%RH
Physical parameters	
Dimension	215x130×53 mm3
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		170		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.

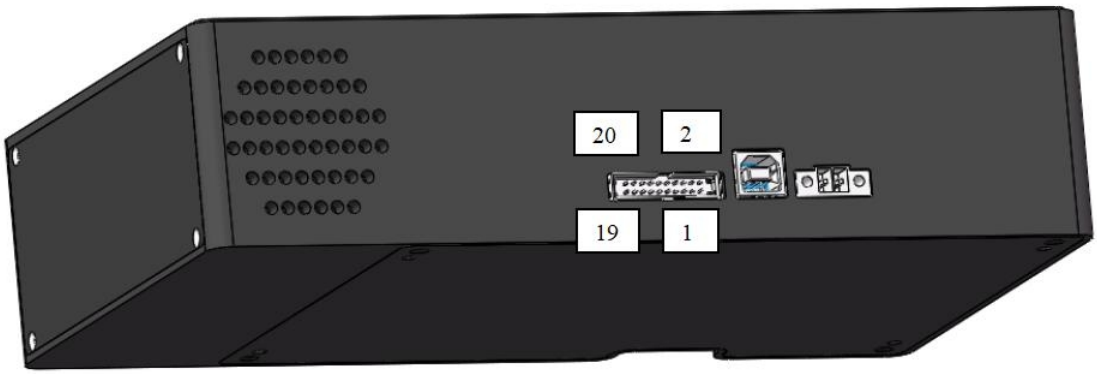

Table 2 Electrical Pin-Out

Pin#	Description	I/O	Function Description
1	VCC	/	Power Supply, 12V±0.5,
2	GND	/	Ground
3	RS232_TX	Output	RS232 Transmit signal
4	RS232_RX	Input	RS232 Receive signal
5	Lamp_En	Output	LVTTL output the lamp enable signal.
6	Continuous_strobe	Output	LVTTL output the continues strobe signal.
7	Ext_trigger_i	Input	LVTTL input the trigger signal.

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	n		
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	**ATP8000T3-5-17**	**ATP8000T3-5-21**	**ATP8000T3-5-26**	**ATP8000T3-5-A**
Spectral range	900-1700nm	900-2100nm	900-2600nm	1510-1590nm
Spectral resolution 25um slit	3-4nm	4-5nm	6-8nm	<0.3nm
Detector	High performance Deep Cooled InGaAs, -30℃			
Effective pixels	512			
Pixel size	25×500μm			
Cooled	TE-cooled down to -30℃			
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			

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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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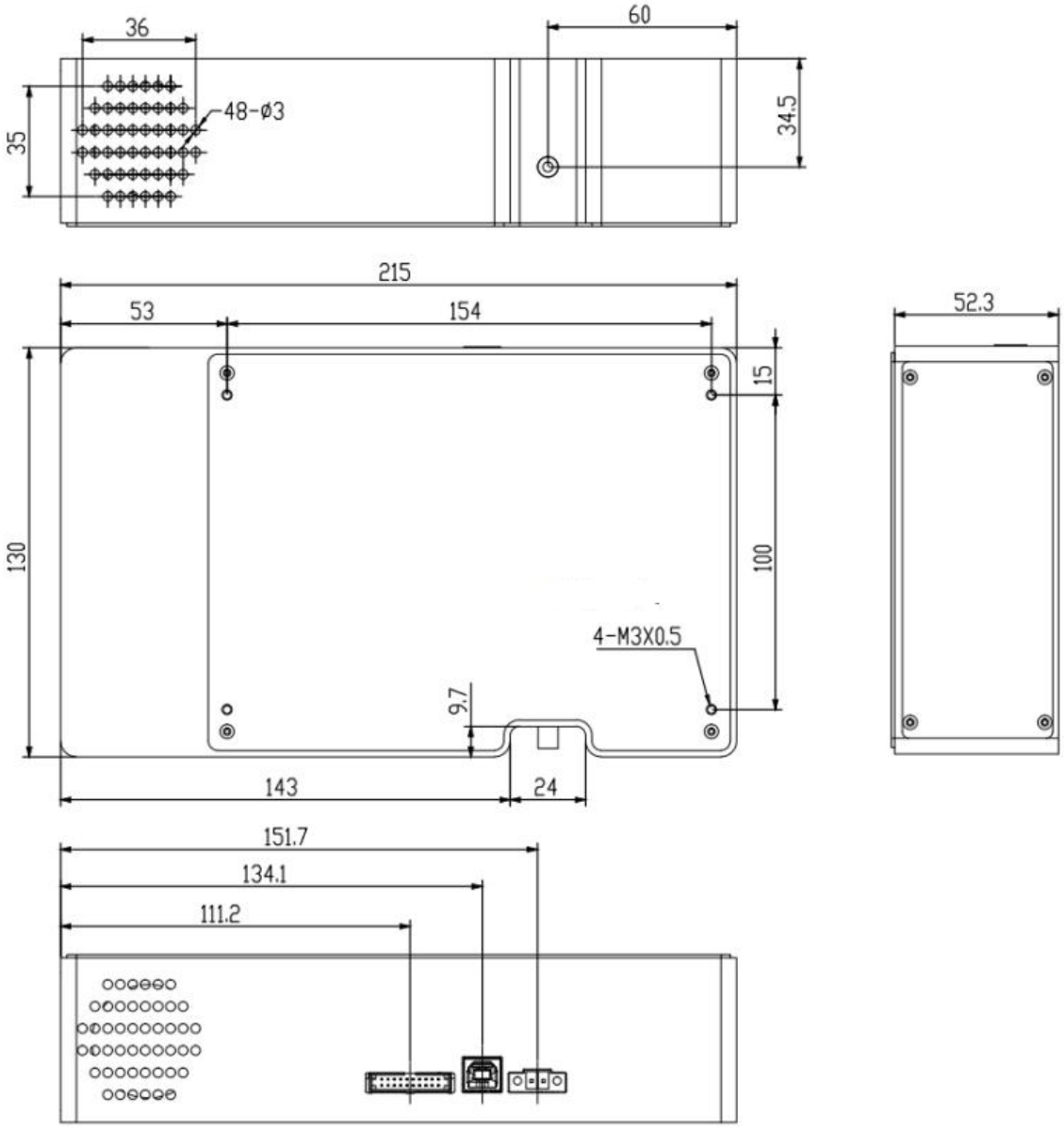
4. Outline dimension



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5. Company Profile

Optosky company is an 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 meter.

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The company founder Dr.Hongfei,Liu graduated Docter degree from Chinese Academic of Science and postdoctral 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 technologies 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 industries companies, as well as many innovative intellectual property, software copyright, qualification certification, and winner awards over hundred numbers.

Optosky receives top class A introduced 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 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 dollar. The company in charge of drafting national industry standard of VNIR and SWNIR Field Spectroradiometer, and six national standard drafter, 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 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.

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

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Figure 1 Optosky (Xiamen) Photonics Inc. Company Headquarter

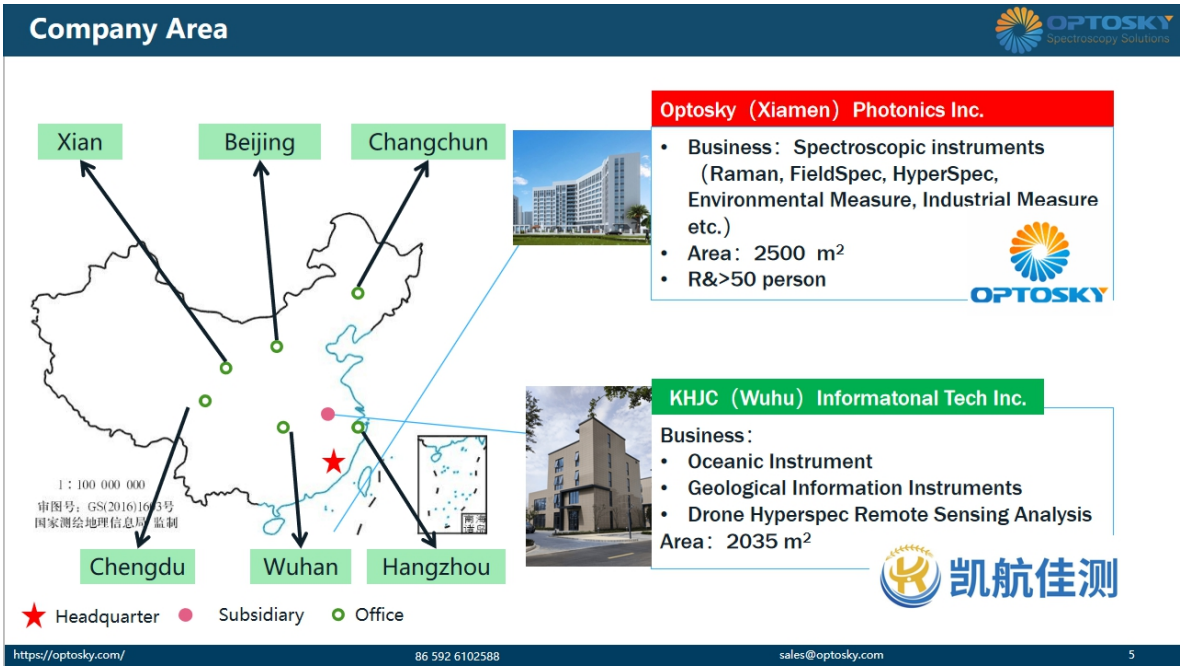

Figure 2 Optosky Company Area

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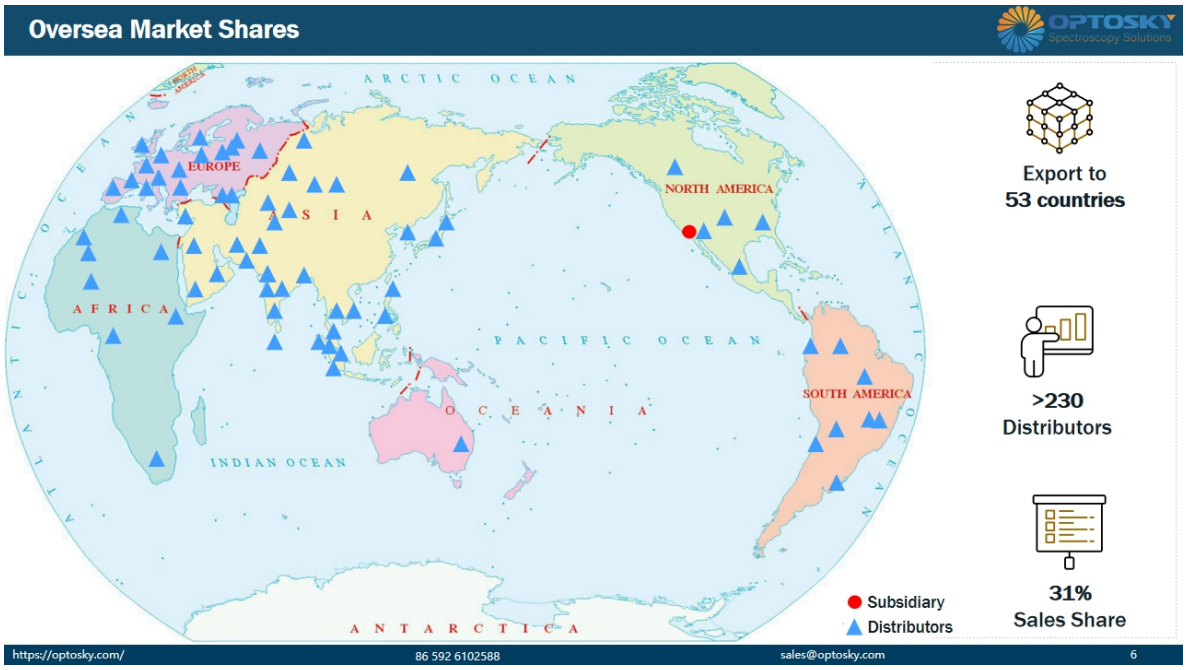

Figure 3 Oversea Market Shares

Figure 4 Optosky Chair and Draft National Standards Lists.

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Figure 5 Qualification

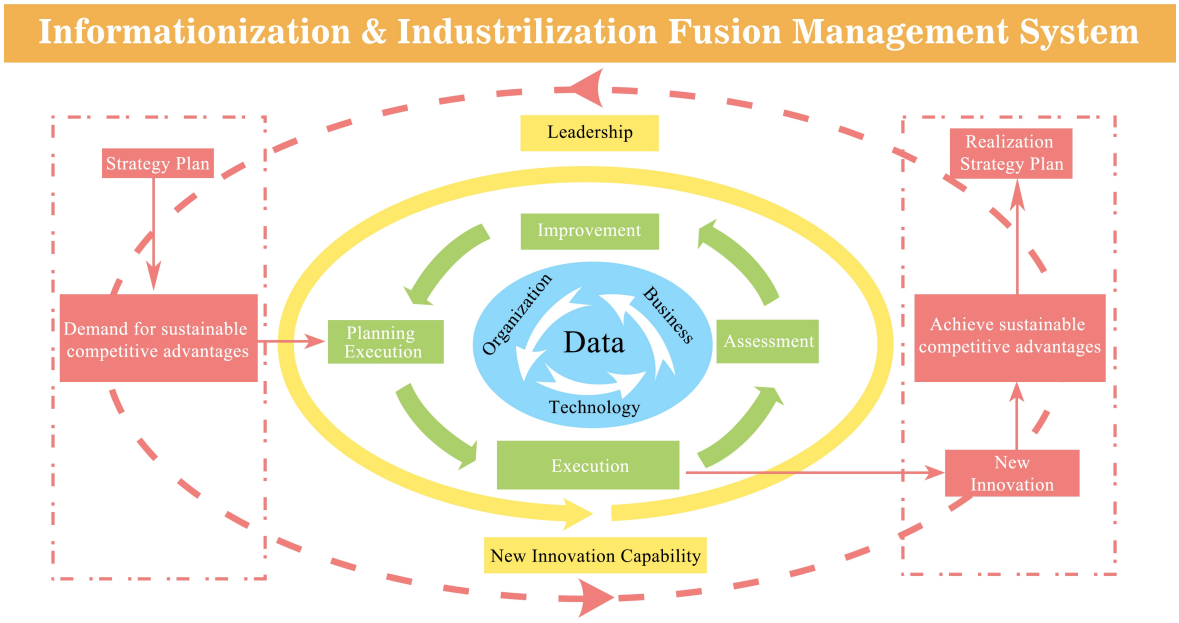

Figure 6 GB/T 23001_Informationization & Industrilization Fusion Management System

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Figure 7 Optosky's Co-founder_Dr. Hongfei Liu

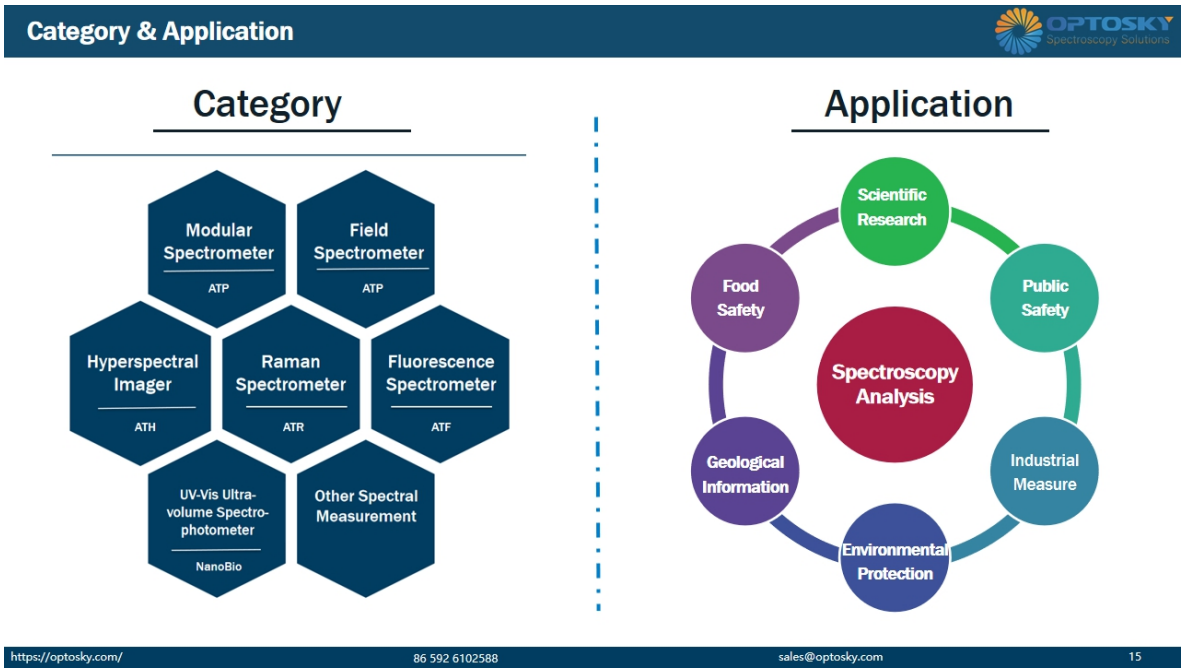

Figure 8 Category & Application

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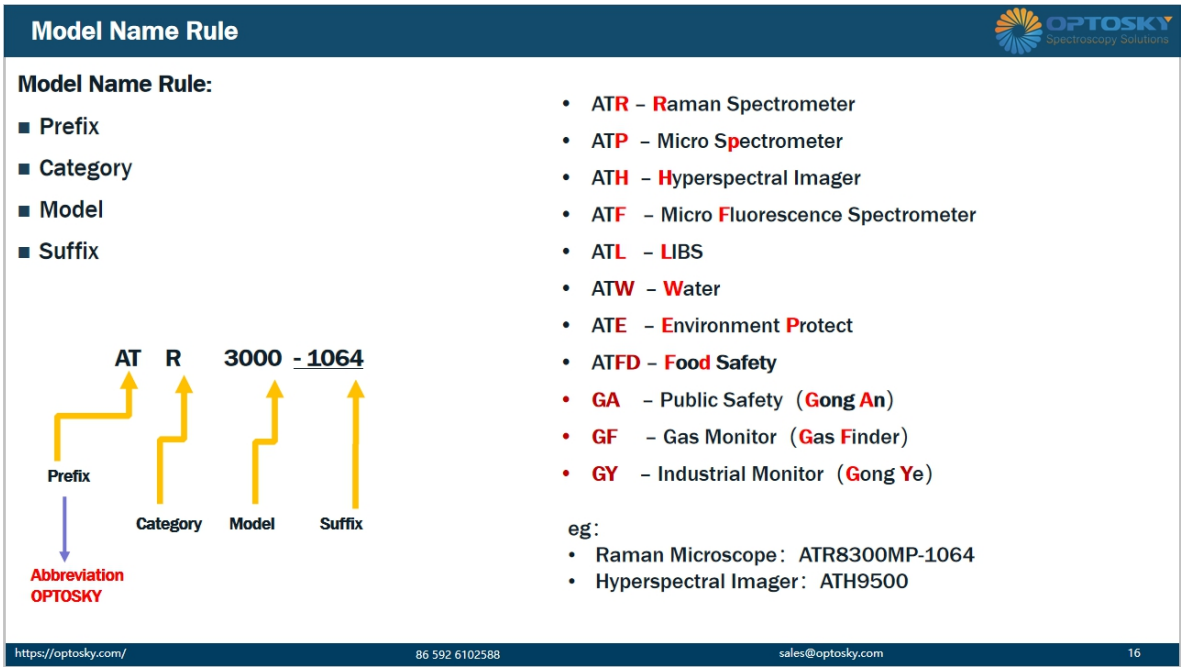

Figure 9 Model Name Rule

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