OPTOSKY
Spectroscopy Solutions

Datasheet

High sensitivity, high resolution Micro spectrometer

ATP5020

Feature：

✧ Detector：CMOS+Cooler (-5°C)
✧Detector parameters：2048×64pixel, 14×14um ✧ Spectral range: 200-1100nm
✧ Spectral resolution: 0.1-2 nm(depend on spectral range, slit width)
✧ Optical path：Crossed C-T
✧ Integration time：2ms-130s
✧ power supply：DC 5V±10% @ <2.3A
✧ 18 bit, 570KHzA/D Converter
✧ Entrance connector：SMA905 connector or free space
✧ Output interface: high speed USB2.0 or UART
✧ 20 pins, dual rows programmable extension connector

Application：

✧ Raman spectrometer
✧ Micro spectrophotometer,
✧ high speed spectrophotometer
✧ Spectral analysis /radiation spectrophotometer/ spectrophotometric analysis
✧ Transmittance, absorbance, reflectance detection
✧ UV-, VIS-, shortwave NIR-
✧ Wavelength detection
✧ LIBS

Description:

Optosky ATP5020 UV-Vis spectrometer employs the ultra-high performance, high-sensitivity, high resolution, and cost-effective model. The award-winner spectrometer is called cooled Maya, it can even replace Maya and QE65 in SNR, sensitivity, and resolution. ATP5020 spectrometer is ideal for Raman system well. It uses 2048 x 64 pixel, a back-thinned CMOS+Cooler (-5).Sensor noise is reduced, and SNR is almost 2 times higher than others . Increased reliability can remain measure result do not change with temperature.Customized design of CMOS+Cooler (-5) signal processing circuit built inside, Noise is lower can 3 counts is ahead of records in the industries. ATP5020 spectrometer is designed with SMA905 optic fiber entrance connector or free space, and it outputs spectral data via USB2.0/UART

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

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1.Performance parameters:

Detector	
Type	CMOS+Cooler (-5)
Spectral range	200-1100 nm
Effective pixels	2048×64
Pixel sizes	14μm×14μm
Full range	~200 ke-
Sensitivity	6.5 uV/e-
Dark noise	6 e-
Optical parameters	
Wavelength range	200-1100 nm
resolution	0.02-2 nm (depend on slit, spectral range)
SNR	>8000:1
Dynamic range	10000：1
Operating temperature	-10-40 ℃
Operating humidity	< 85%RH
Optical parameters	
Optical path	f/4 crossed C-T
Focal	77.5 mm for incidence / 111.6 mm for output
Entrance slit width	5、10、25、50、100、150、200 μm (optional) Available in customized other widths
Entrance connector	SMA905 Fiber optic connector, free space
Electrical parameters	
Integration time	1 ms - 130 second
Data output port	USB 2.0
ADC in-depth	18 bit (Actual output16bit)
Power supply	DC 5V±10%
Operating current	<2.3A
Storage temperature	-20°C to +70°C
Operating temperature	-10°C to +40°C
Physical parameters	
Size	170×110×52 mm^3
Weight	1.3 kg
Sealing	Anti-sweat

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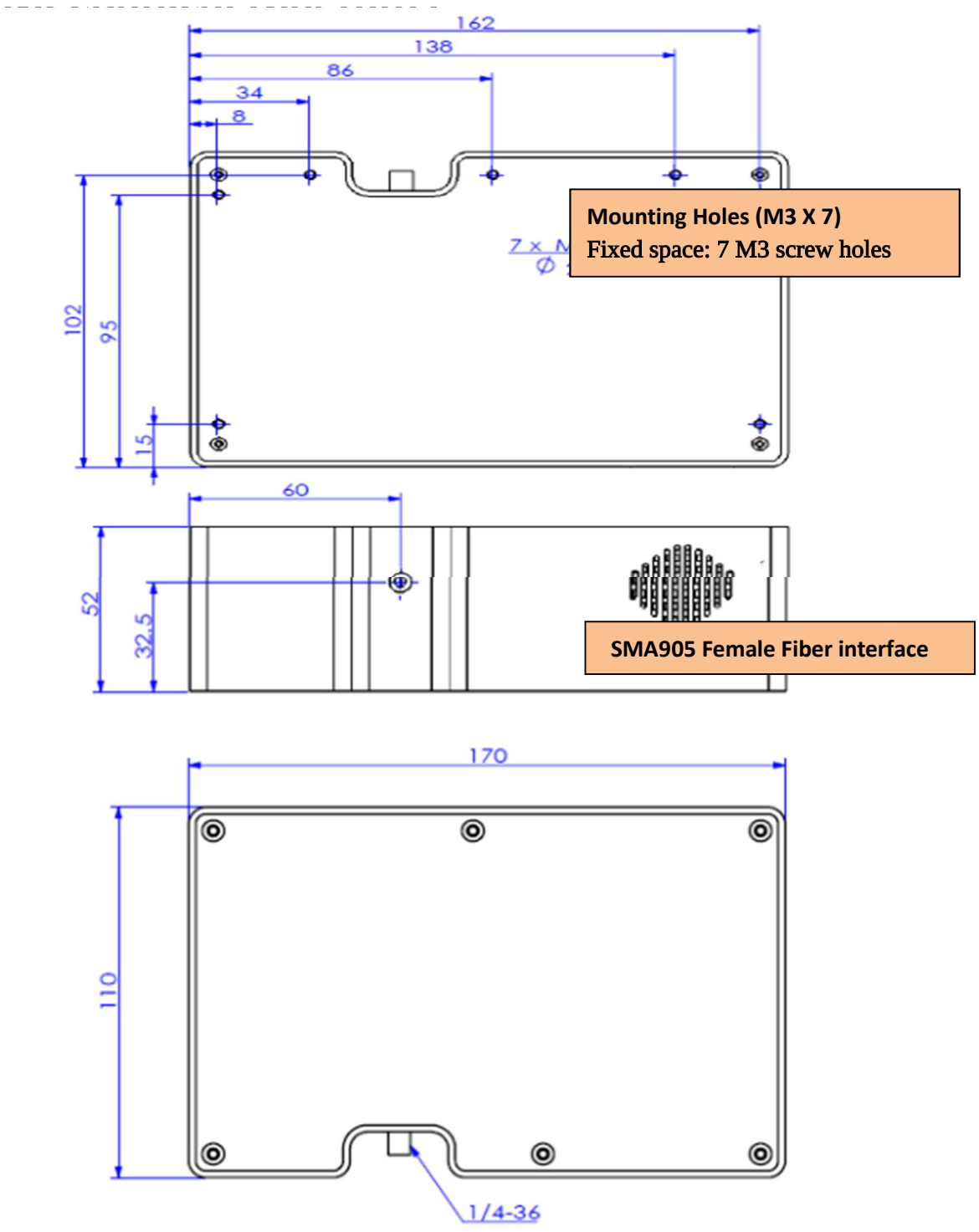
2 Mechanical Diagrams



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3 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	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.

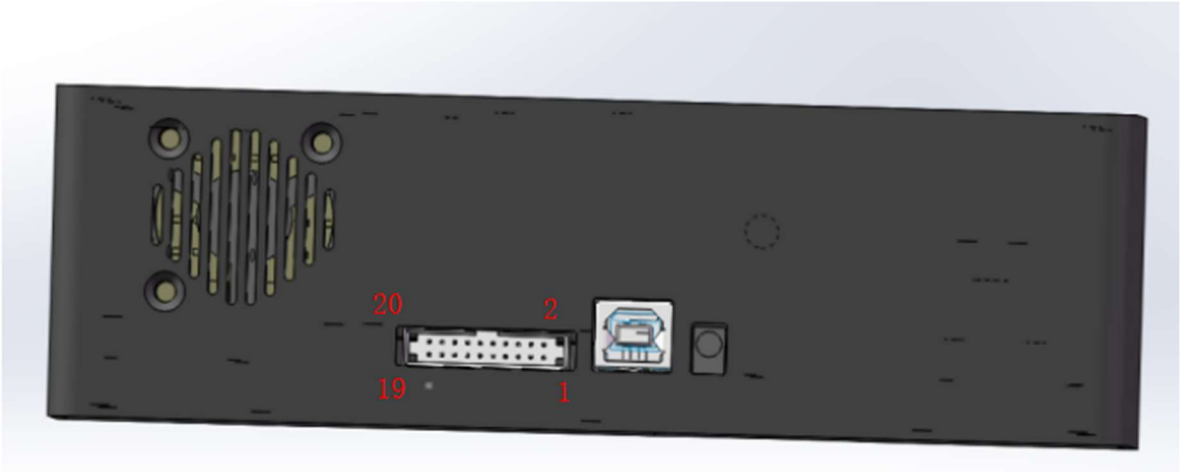

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Table 2 Electrical Pin-Out

Pin#	Description	I/O	Function Description
1	VCC	/	Power Supply, 5V±0.5,
2	GND	/	Ground
3	UART_TX	Output	UART Transmit signal
4	UART_RX	Input	UART Receive signal
5	LD_Control	Output	LVTTL output the LD enable signal.
6	NC	/	Remained to define.
7	LD_Trigger_in	Input	LVTTL output the LD trigger signal.
8	NC	/	Remained to define.
9	LD_TX	Output	LD UART Transmit signal
10	NC	/	Remained to define.
11	LD_RX	Input	LD UART Receive signal
12	NC	/	Remained to define.
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.

4 Order Guide

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Order number Rules:

Model	Spectral region		Slit width	
ATP5020	Short wavelength	Long wavelength	Slit width	

For example:

What to buy ATP5020, spectral region: 200-850nm, slit width is 50 um, then the order no is:

ATP5020-200-850-050

Order No	Spectral region	Slit	
ATP5020-200-400-###	200~400	10 μm	
ATP5020-200-850-###	200~850	25 μm	
ATP5020-200-1100-###	200~1000	50 μm	
ATP5020-340-850-###	340~850	100 μm	
ATP5020-600-1100-###	600~1100	200 μm	
ATP5020-###-###-###	Other	Other:_____μm	

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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

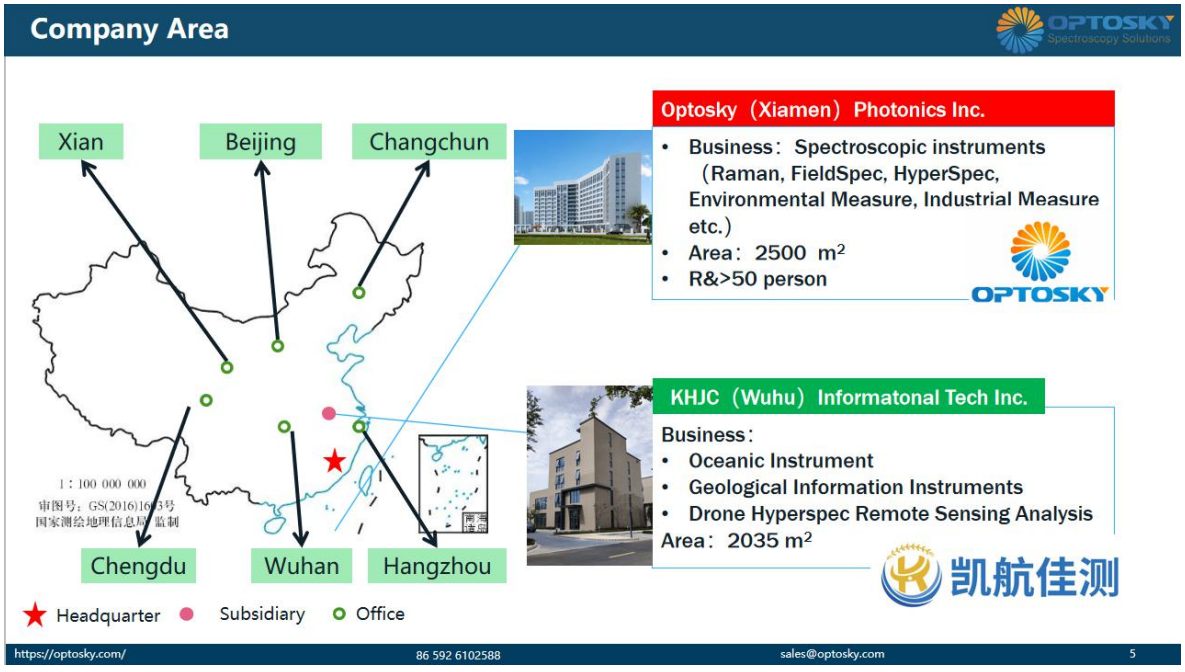

Figure 2 Optosky Company Area

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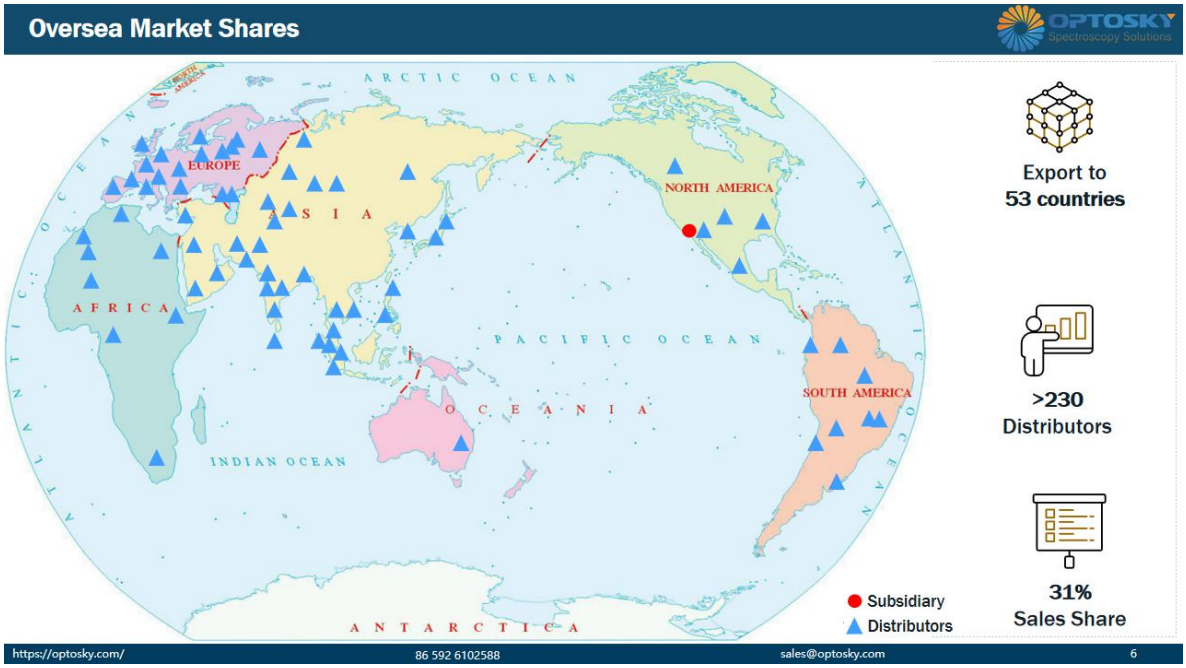

Figure 3 Oversea Market Shares

Figure 4 Optosky Chair and Draft National Standards Lists.

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Figure 5 Qualification

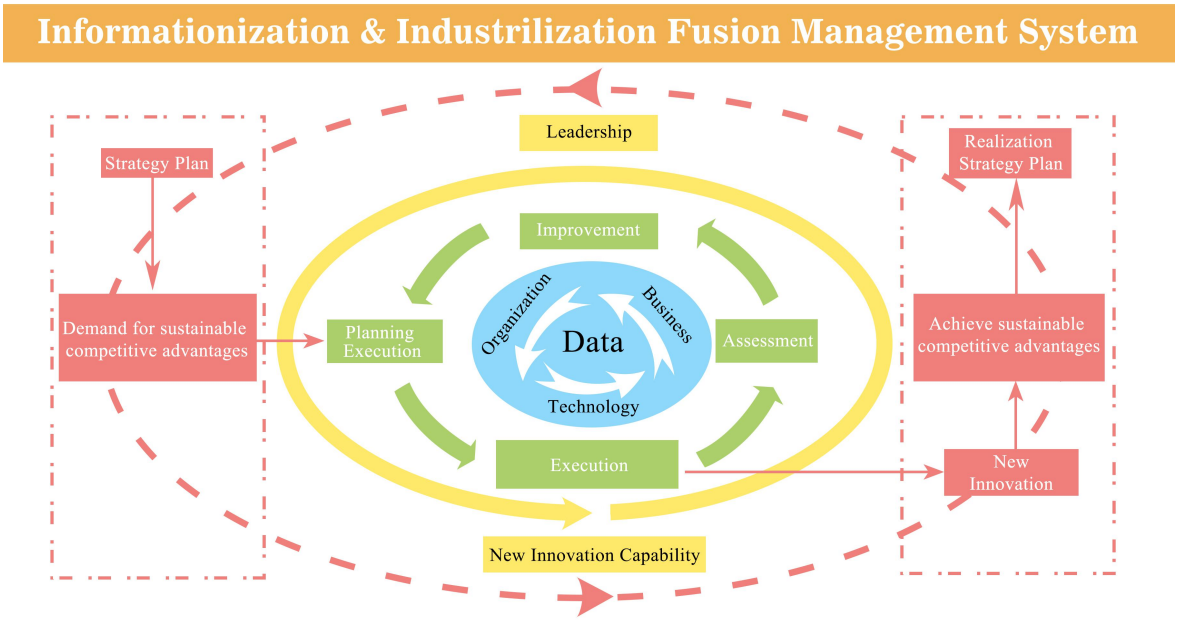

Figure 6 GB/T 23001_Informationization & Industrilization Fusion Management System

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Figure 7 Optosky's Co-founder_Dr. Hongfei Liu

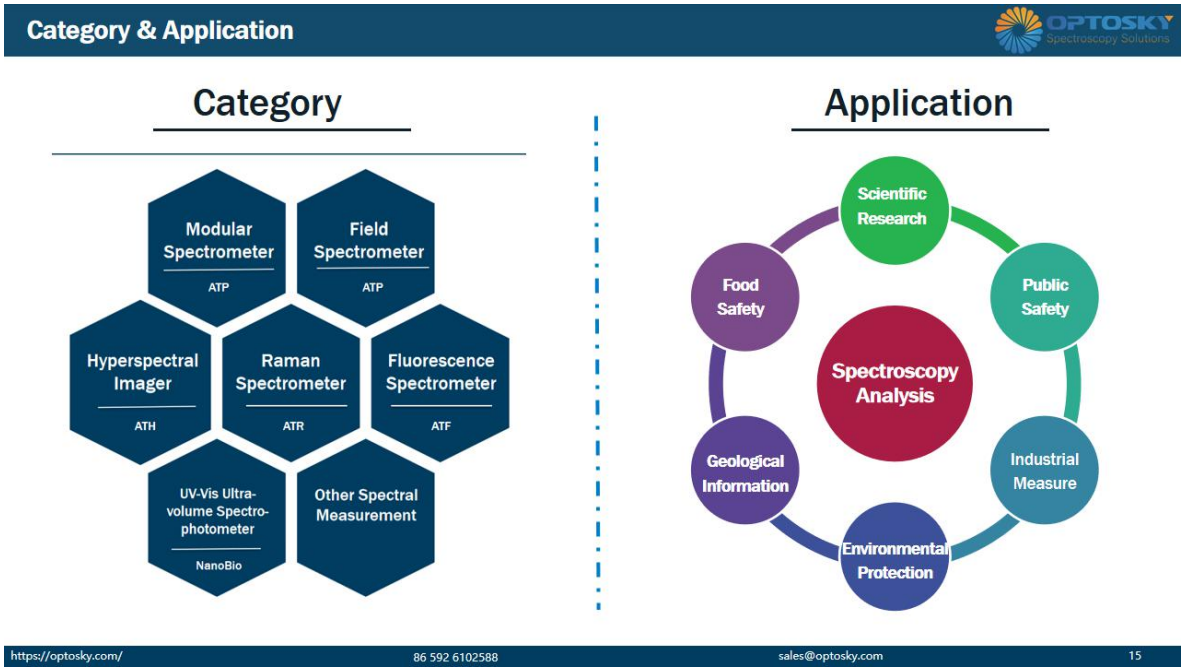

Figure 8 Category & Application

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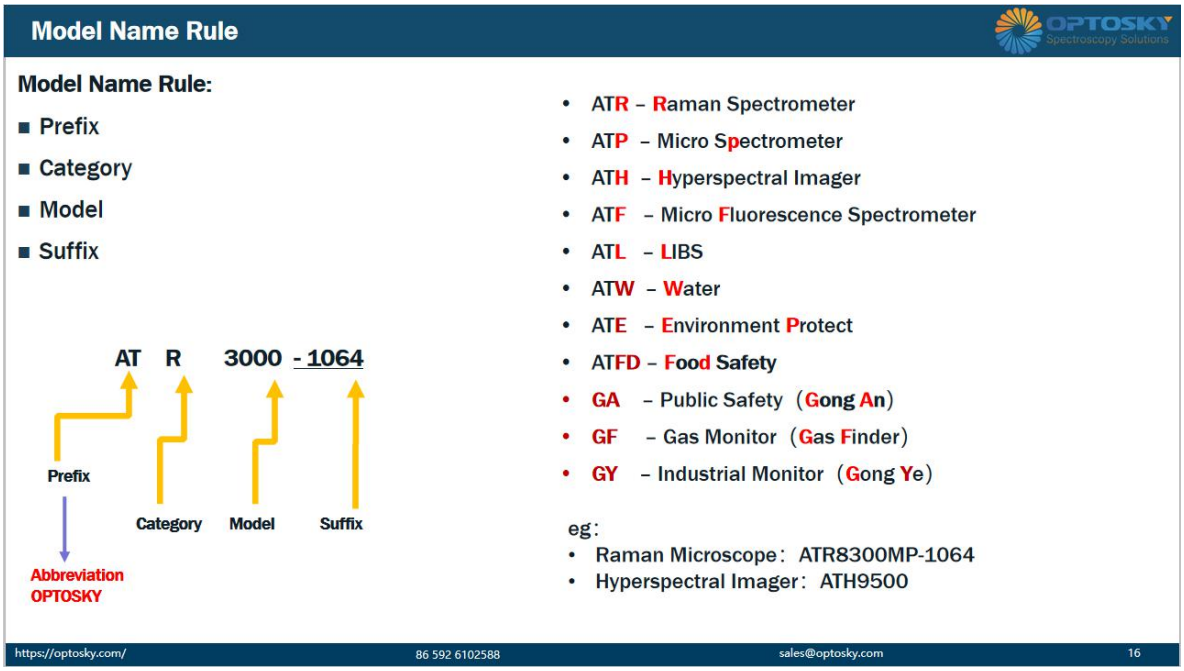

Figure 9 Model Name Rule

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