OPTOSKY
Spectroscopy Solutions

Datasheet

Low Noise Micro Spectrometer ATP2000P

FEATURES

- **spectral region: 200-1100 nm**
- **Spectral resolution: 0.2-5 nm**
- **Optical configuration: crossed C-T**
- **Linear low noise CMOS detector with 2048 pixel**
- **Integration times: 0.1ms-256s**
- **Supply voltage: DC 5V (USB Power)**
- **16 bit, 2MHz A/D Converter**
- **Interface: USB2.0 (High speed)**
- **20-pin connector for interfacing to external products**

APPLICATIONS

- **LED spectrophotometer**
- **Fluorescence**
- **Biochemical analyzer**
- **Transmittance detection**
- **Reflectance detection**

GENERAL DESCRIPTION

ATP2000P micro spectrometer is a low noise high-performance, miniature modular Spectrometer. Its sensor is a 2048 pixel CCD which responds from200-1100 nm.

ATP2000P is perfect for fast detection attribute to its high A/D converter frequency and the high speed data transmission. In ATP2000P memory chip, some algorithms to improve the performance are programed solidly, such as wavelength calibration coefficients, linearity coefficients. It output the spectrum data to PC through USB 2.0 or RS232 interface. ATP2000P operates with a single +5VDC supply supplied from USB or duo-pin interface

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 Specifications

Detector	
Type	Linear array detector
Detectable range	200-1100 nm
Effective pixel	2048
Pixel dimension	14μm×200μm
Sensitivity	1300 V/(lx·s)
Dark noise	13 RMS @ 13 ˚C
Optical Parameter	
Wavelength range	200-1100 nm
Optical resolution	0.2-5 nm
Signal-to-noise	>1800:1
Dynamic range	8.5 x 10^7 (system); 2000:1 for a single acquisition
Stray light	<0.05% at 600 nm; <0.09% at 435 nm
Working temperature	-25-50 ℃
Working humidity	< 90%RH
Optical Configuration	
Optical Design	f/4 crossed asymmetrical C-T
Focal Distance	40 mm for incidence / 60 mm for output
Incidence slit	50 μm (25, 100 um are optional)
Incident Interface	SMA905 connector
Electrical Parameter	
Integration time	0.1 ms - 256 second
Interfaces	USB 2.0
A/D conversion resolution	16 bit
Supply voltage	DC4.5 to 5.5 V (type @5V)
Operating current	170mA@Typ.
Storage temperature	-30°C to +70°C
Operating temperature	-25-50 ℃
Physics Parameter	
Dimension	102×72×34 mm^3
weight	0.2 kg
Sealing	Anti-sweat

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2 Performance

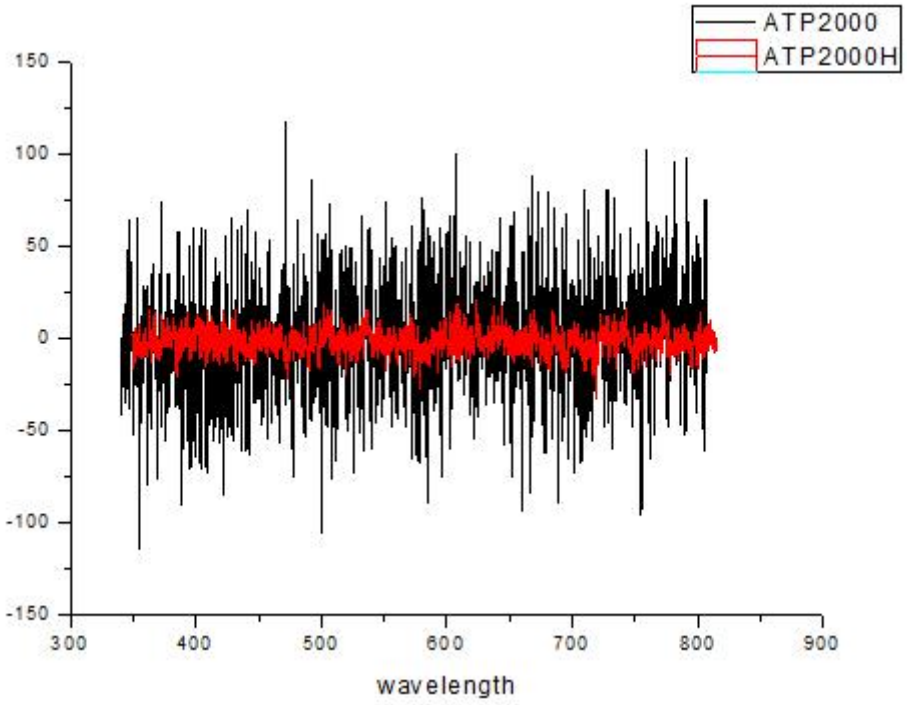

图 1 The noise of ATP2000P/ATP2000H (Red) vs ATP2000 (Black)

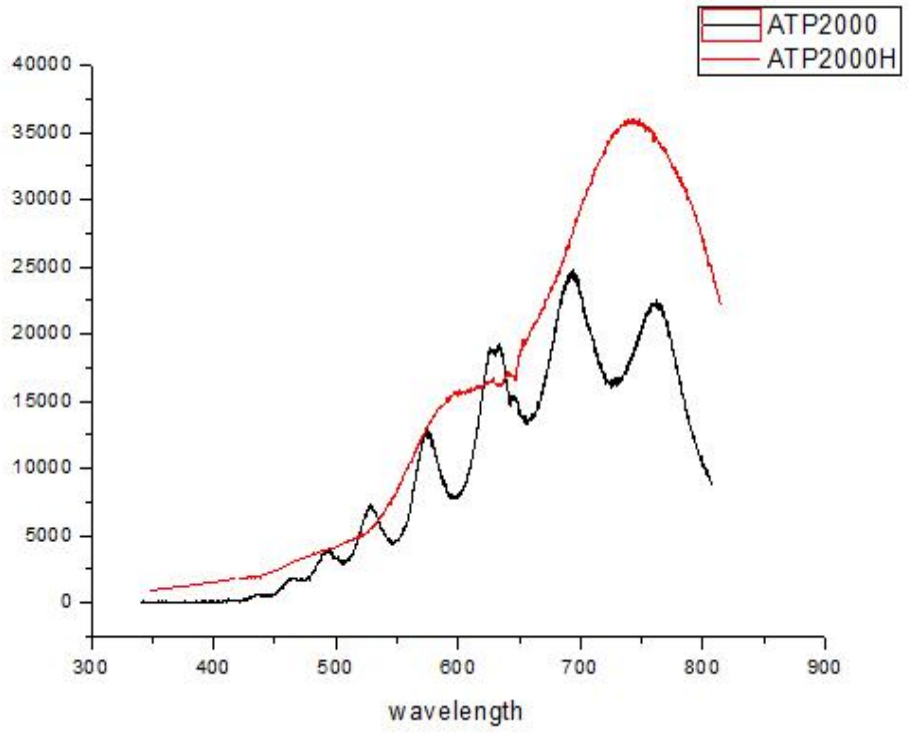

图 2 The sensitive of ATP2000P/ATP2000H (Red) vs ATP2000 (Black)

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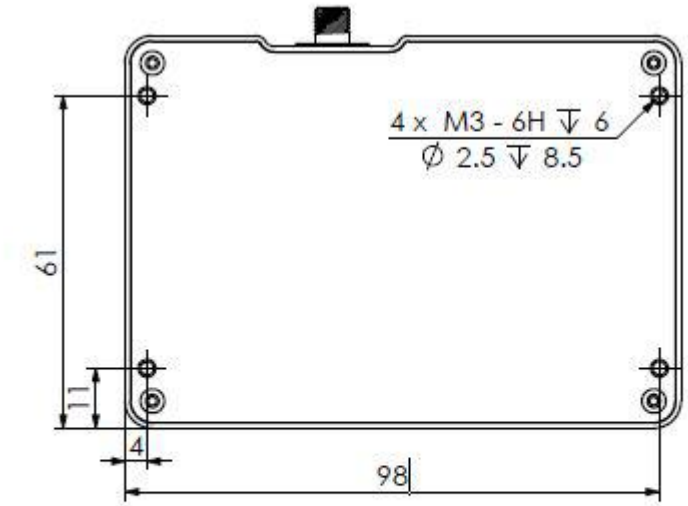
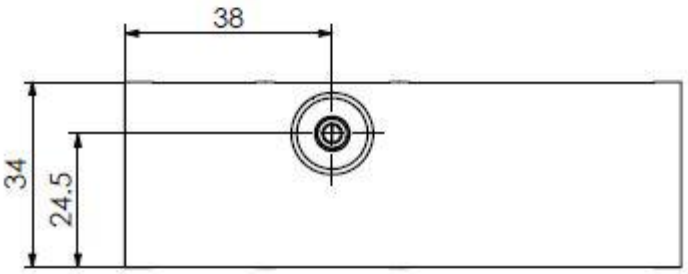
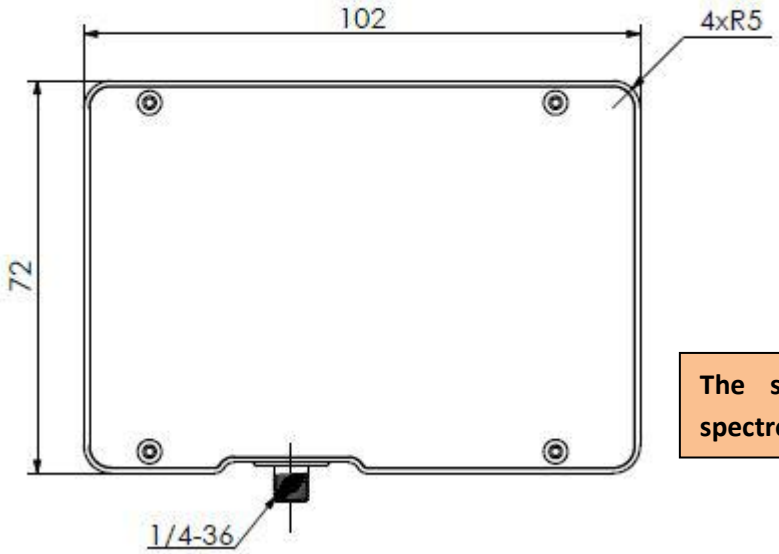
3 Mechanical Diagrams



Mounting Holes (M3 X 4)
固定空位：4 个 M3 螺孔



SMA905 Female Fiber interface



The size of ATP2000 micro spectrometer

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4 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.

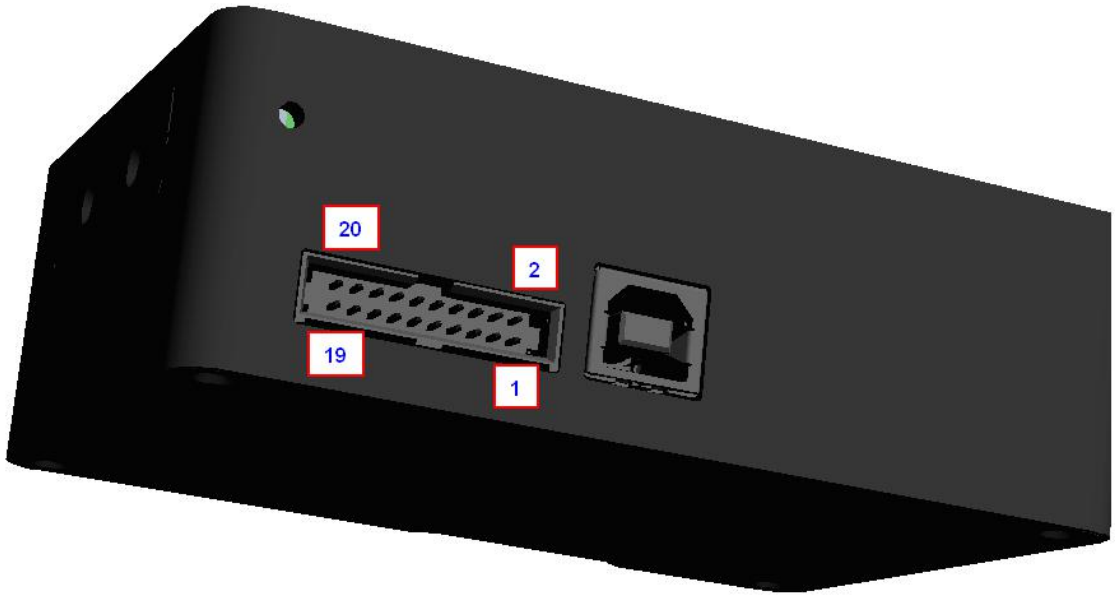

Table 2 Electrical Pin-Out

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

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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.

5 Order Guide

Order number Rules:

Model	Spectral region		Slit width	
ATP2000P	Short wavelength	Long wavelength	Slit width	

For example:

What to buy ATP2000P, spectral region: 200-850nm, slit width is 50 um, then the order no is:

ATP2000P-200-850-050

Order No	Spectral region	Slit	
ATP2000P-200-400-###	200~400	10 μm	
ATP2000P-200-850-###	200~850	25 μm	
ATP2000P-200-1100-###	200~1000	50 μm	

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ATP2000P-340-850-###	340~850	100 μm	
ATP2000P-600-1100-###	600~1100	200 μm	
ATP2000P-###-###-###	Other	Other:_____μm	

6 Derivation

PN	Description
ATP2000	Basic type
ATP2000P	The high performance version
ATP2000H	High speed to 1Kpfs

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7. 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

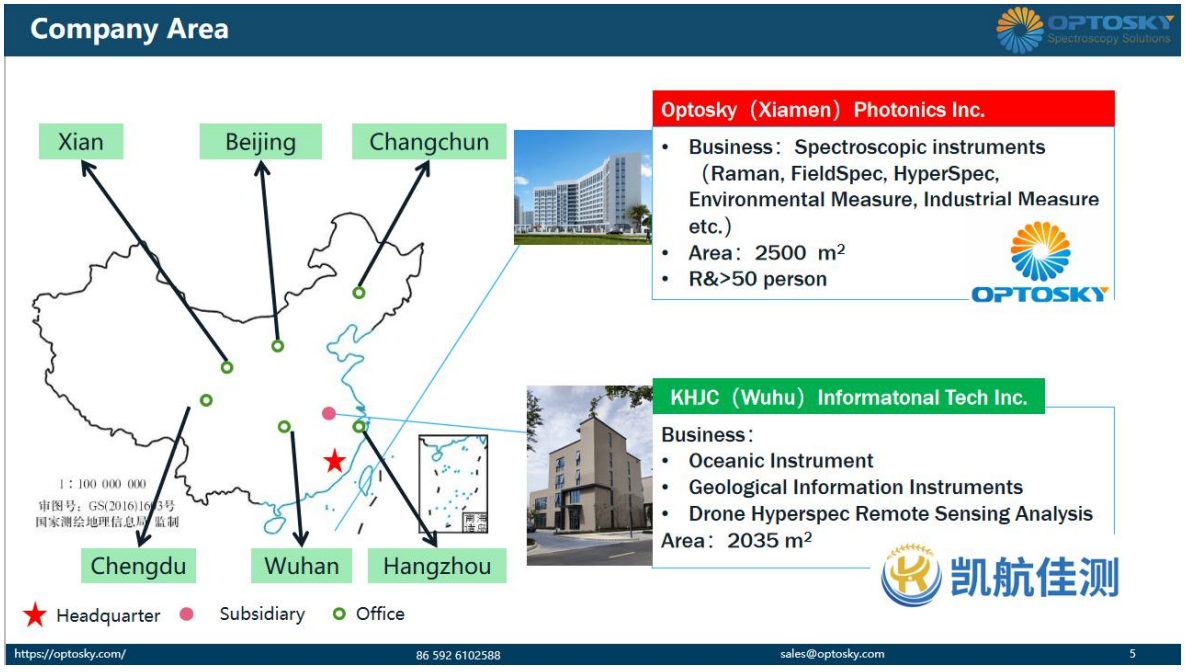

Figure 2 Optosky Company Area

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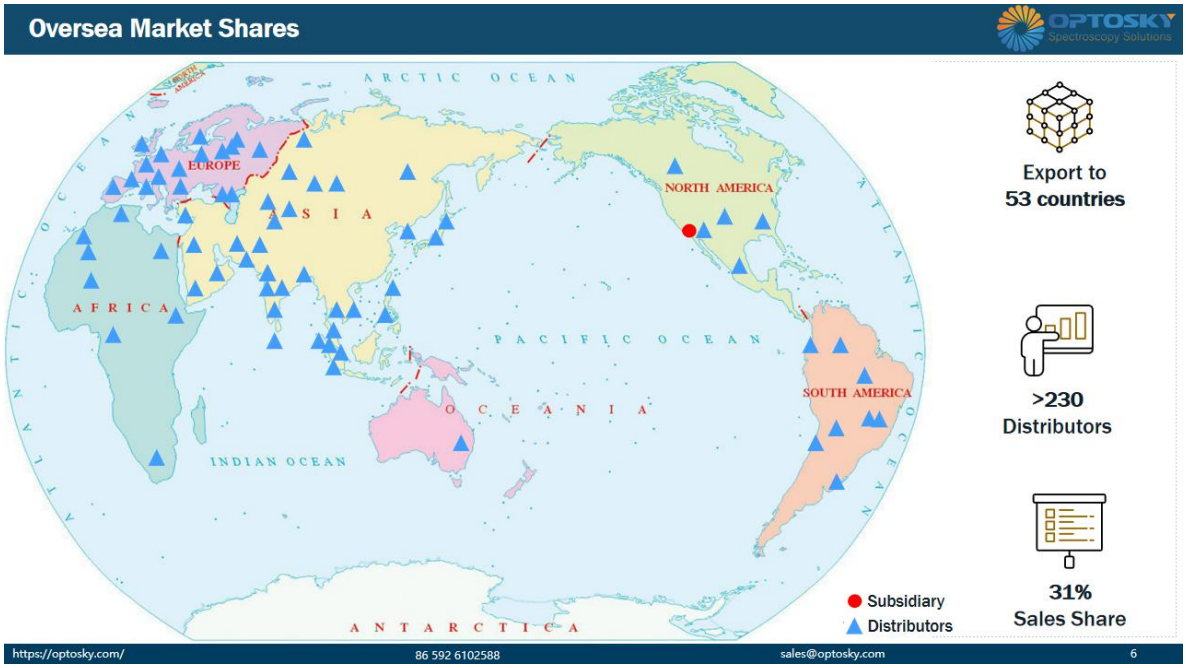

Figure 3 Oversea Market Shares

Figure 4 Optosky Chair and Draft National Standards Lists.

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Figure 5 Qualification

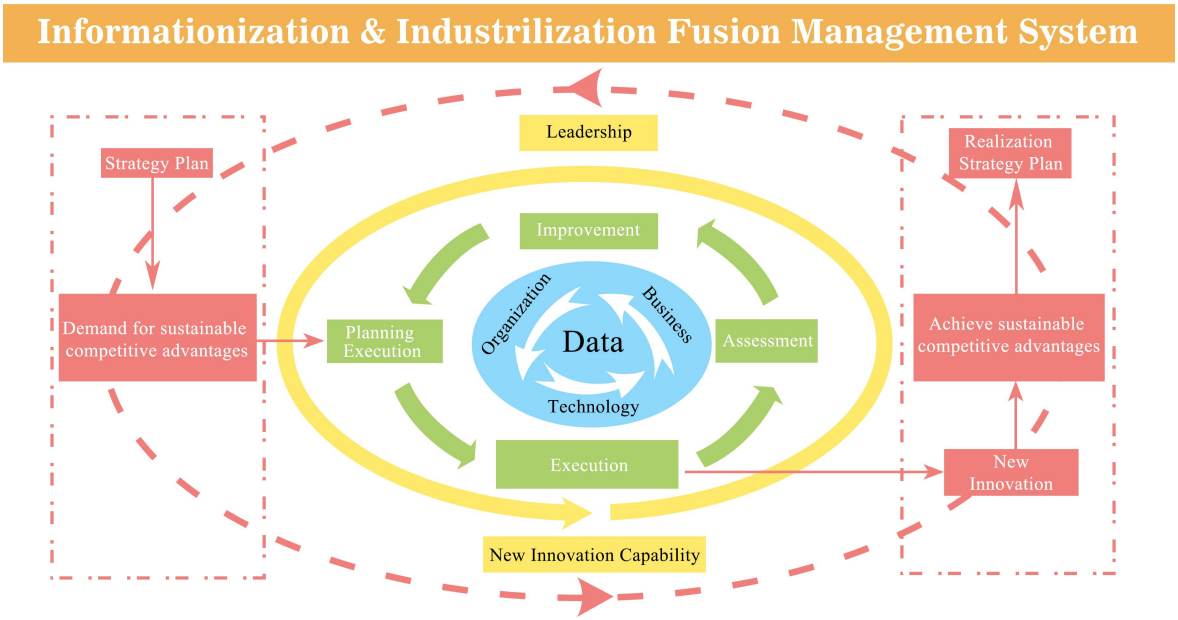

Figure 6 GB/T 23001_Informationization & Industrilization Fusion Management System

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Figure 7 Optosky's Co-founder_Dr. Hongfei Liu

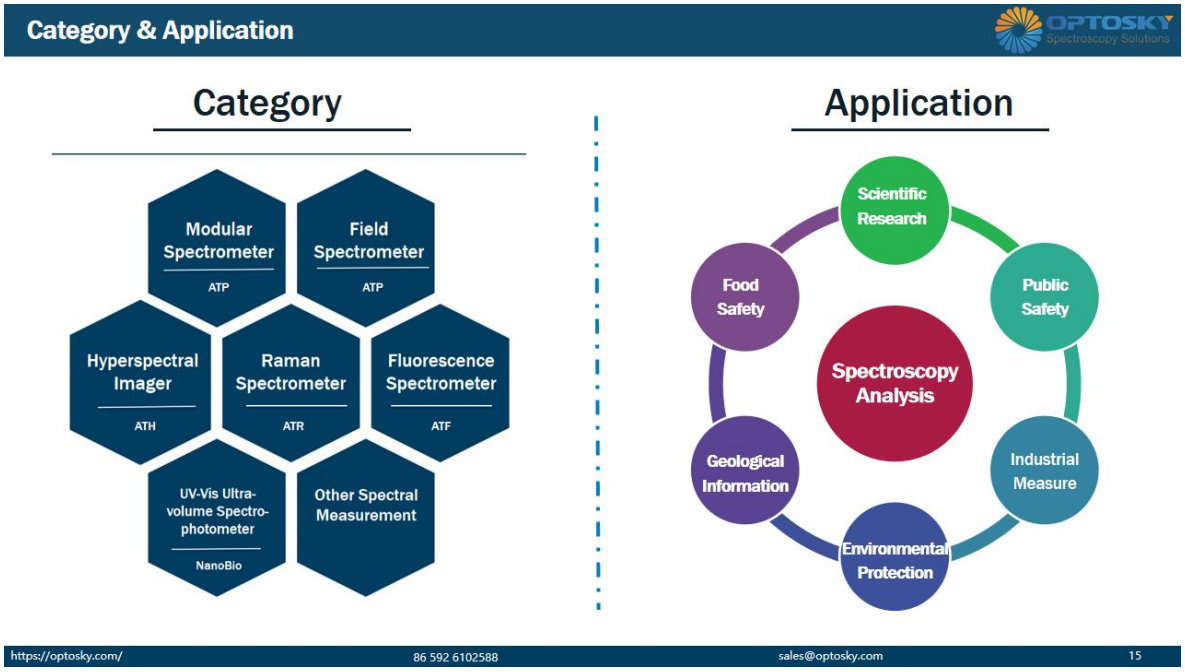

Figure 8 Category & Application

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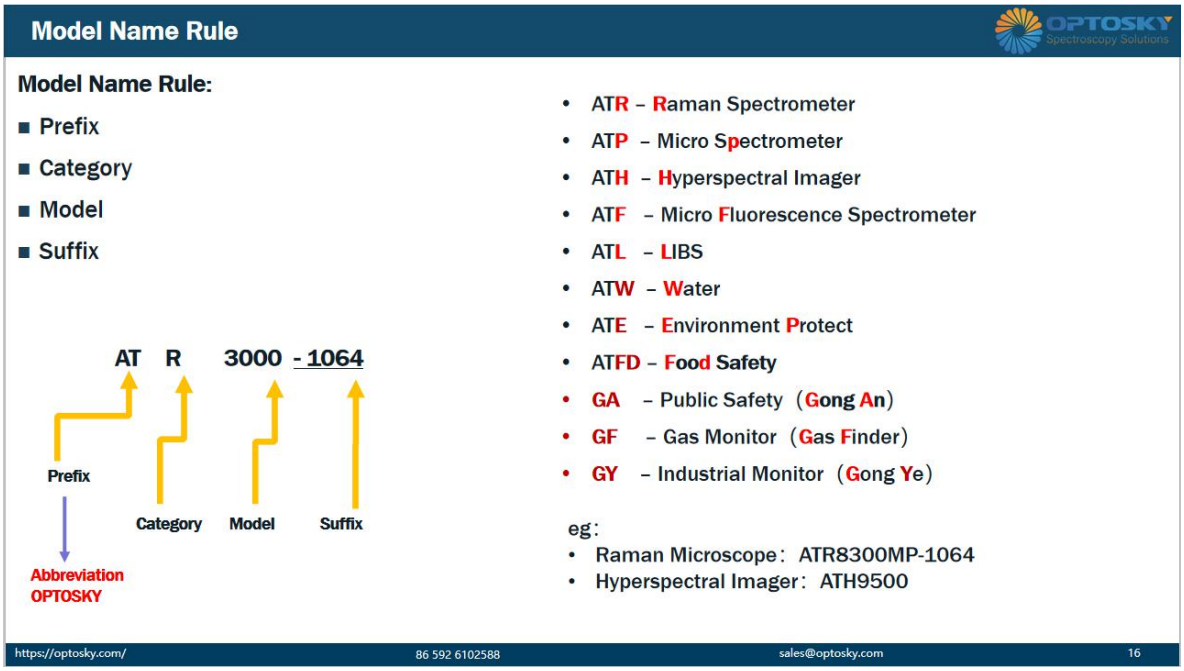

Figure 9 Model Name Rule

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