

Ultra-thin micro-optic spectrometer

ATP2400

Features:

- The minim, ultra-thin, ultra-light weight of a minim;
- Fiber input and signal output are on the same side, which is very easy to integrate.
- Detector: linear CMOS
- Detector pixel: 2048 pixels
- Ultra-low noise CMOS signal processing circuit
- Maximum spectral interval: 910 nm (spectral range 180-1100nm)
- Spectral resolution: 0. 1-2 nm (depending on spectral range, slit width)
- Optical Design: cross-C-T
- Built-in pulsed xenon lamp driver
- Integration time: 0. 1ms- 256s
- Vinner power supply: DC 5V± 10% or USB power supply
- A16 bit, 2MHz ADC
- Incident Interface: SMA905 or free space
- Supported data output interface: USB 2.0 (High speed) or UART
- 20-pin dual-row programmable external expansion interface

Application:

- Fast and ultra-micro spectrophotometer; ;
- Environmental protection equipment (flue gas, water quality);
- Reflection and transmission spectrum detection;
- Spectral analysis, radiation spectroscopic analysis, spectrophotometric analysis;
- Laser wavelength measurement.

Description:

After 20 years of experience in the development of optical fiber spectrometer, Optosky launched a new generation of high-performance ultra-thin fiber spectrometer: ATP2400, which has built-in pulsed xenon lamp drive circuits, adopts high sensitivity linear CMOS, and specially customized ultra-low noise CMOS signal processing circuits, which greatly reduces The noise of the sensor is lower, the signal-to-noise ratio is obtained (about twice higher than that of similar competitors), and the measurement reliability of the ATP2400 is improved. The measurement results do not change with the ambient temperature, which is the best level in the industry.

ATP2400 can receive SMA905 fiber input light or free space light, and output spectral data measured through USB2.0 or UART ports.

ATP2400 only requires a 5V DC power supply or USB power supply, which is very easy to integrate.

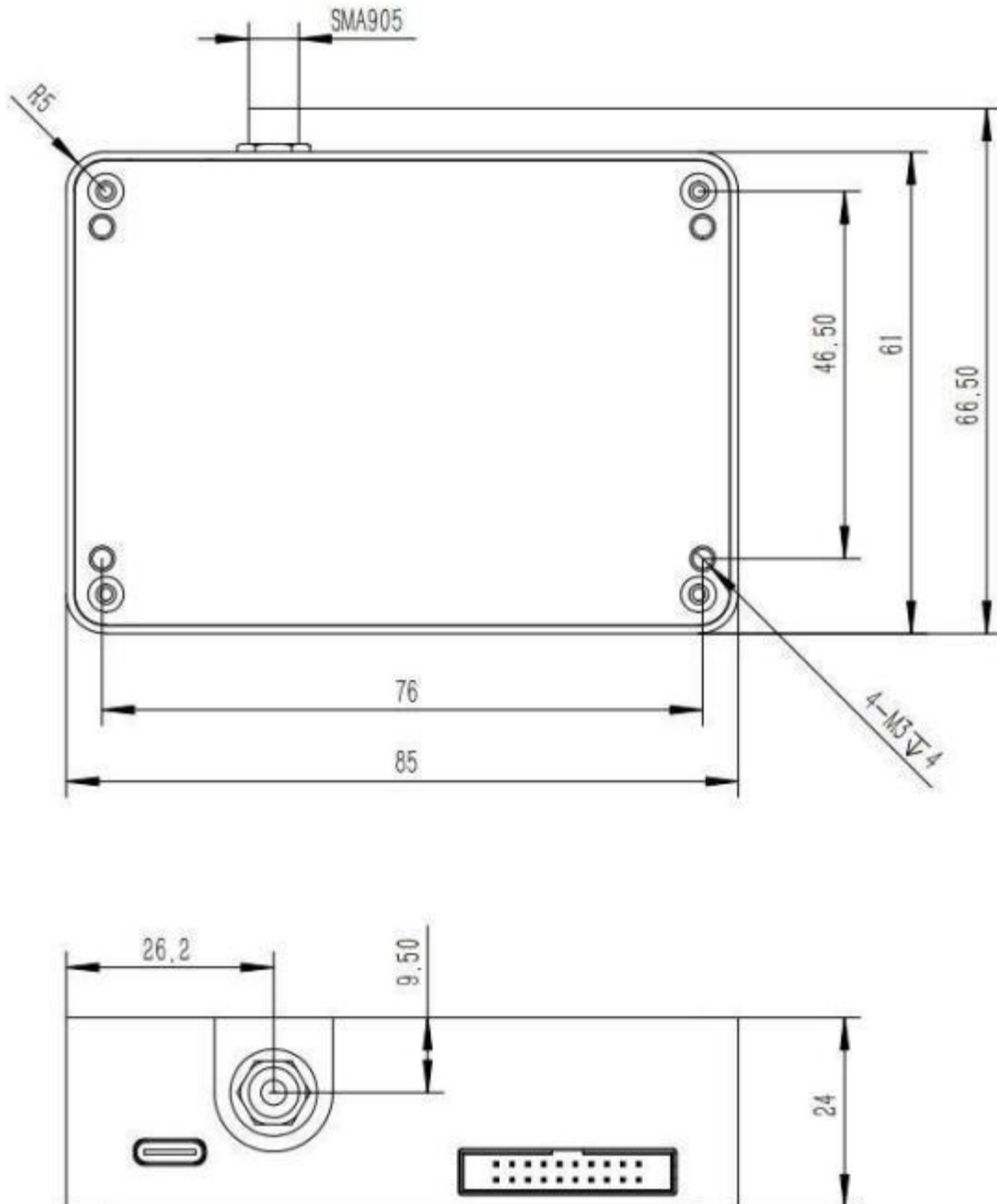
Model	Detector pixel	Sensor Cooled
ATP2400	2048pixel	No



1. Performance parameters:

Detector	
Type	Linear CMOS
Detectable range	180- 1100 nm
Effective pixel	2048× 1
Pixel dimension	14μm ×200μm
Full scale range	~200 ke-
Sensitivity	1300 V/(lx•s)
Dark noise	0.4 mV rms
Optical Parameter	
Wavelength range	maximum spectral interval: 910 nm (spectral range 180-1100nm)
Optical resolution	0. 1-2 nm (Depends on slit, spectral range)
SNR	>450 : 1
Dynamic range	3000: 1
Optical Configuration	
Optical Design	f/4 cross asymmetric C-T optical path
Incidence slit	5、 10、 25、 50、 100、 150、 200 μm Optional, other sizes can be customized
Incident Interface	SMA905 Optical fiber interface, free space
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	250mA@Typ.
Operating current	-30oC to +70oC
Operating temperature	-25-50oC
Working humidity	< 90%RH (No condensation)
Physics Parameter	
Dimension	85 × 61 × 24 mm
weight	0. 15 kg

2 Mechanical Diagrams



单位: mm

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		250		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 C 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.

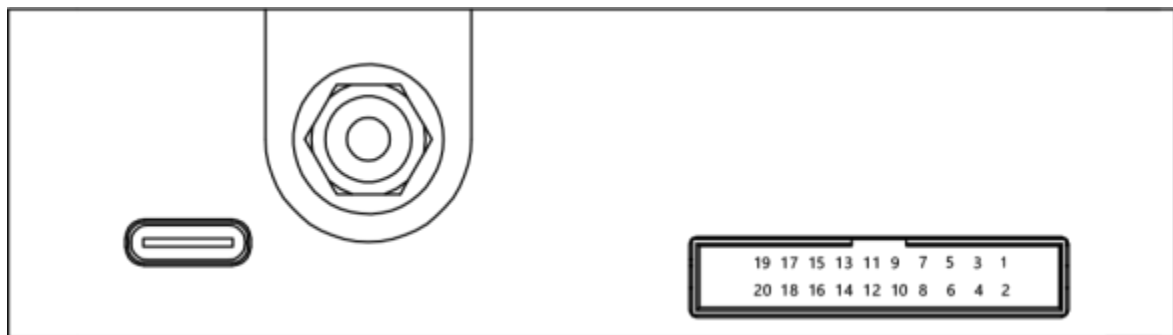
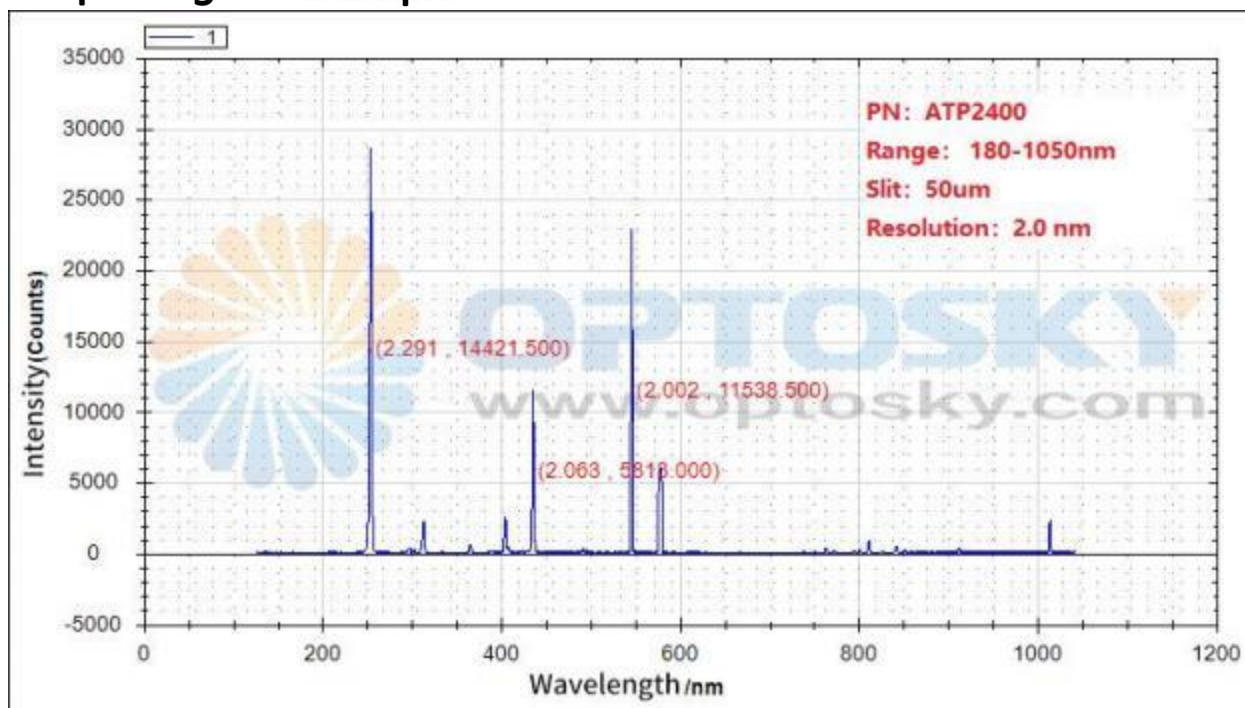


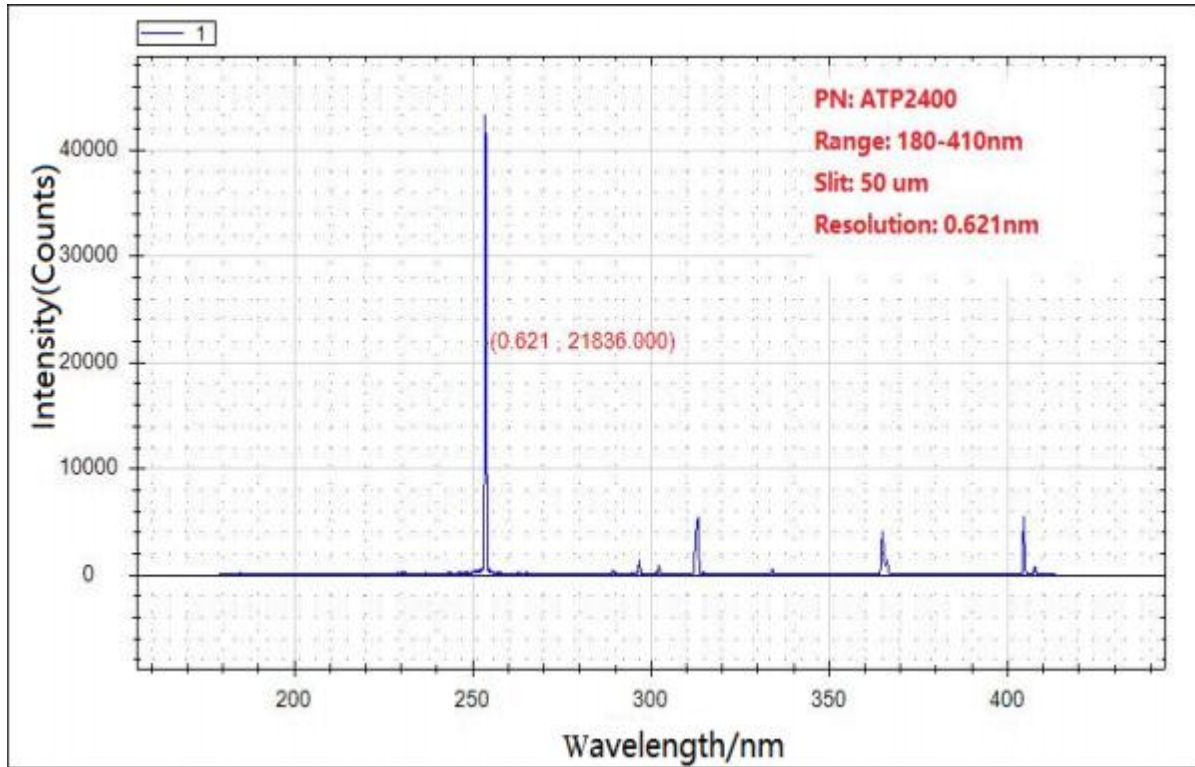
Table 2 Electrical Pin-Out

Pin#	Description	I/O	Function Description
1	VCC	/	Power Supply, 5V±0.5,
2	GND	/	Ground
3	TX	Output	LVTTL Transmit signal
4	RX	Input	LVTTL Receive signal
5	Lamp Enable	Output	LVTTL output the lamp enable signal.
6	N.C.	/	/
7	Ext_trigger_in	Input	LVTTL input the trigger signal. Falling edge trigger collection
8	N.C.	/	/
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.

4 Spectrogram example





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 Doctor 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.

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



Figure 1 Optosky (Xiamen) Photonics Inc. Company Headquarter

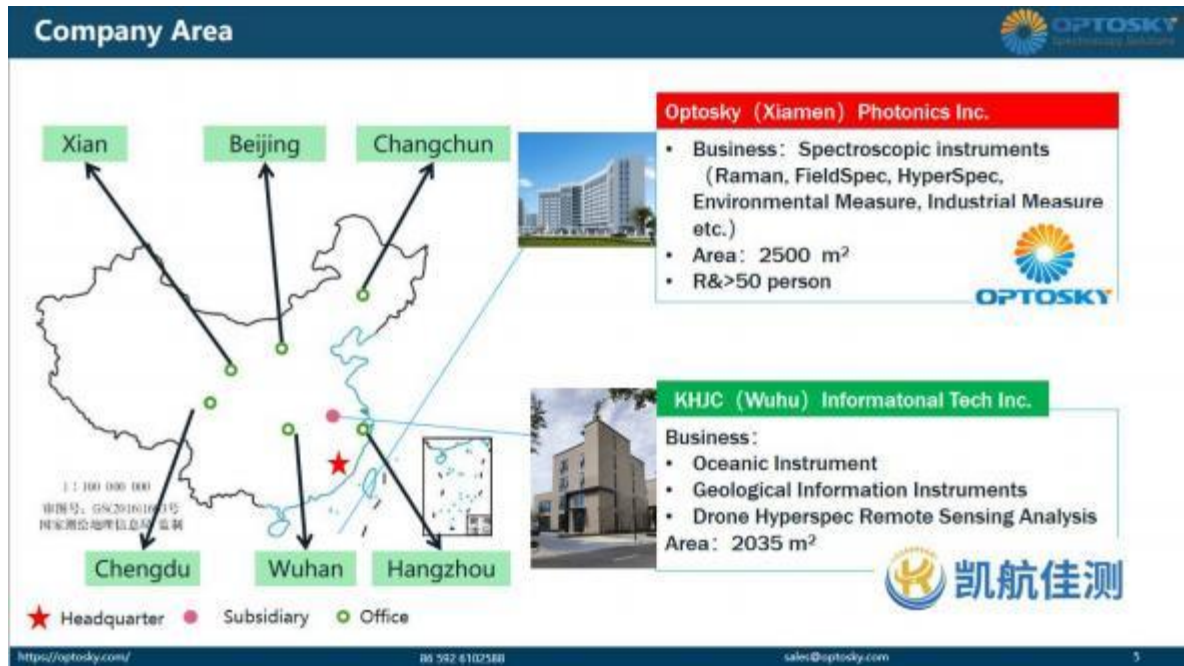


Figure 2 Optosky Company Area



Figure 3 Overseas Market Shares



Figure 4 Optosky Chair and Draft National Standards Lists.

Qualification



 ISO9001:2005	 GB/T 23001 Informationization & Innovation	 CE, RoHS, LVD 17 models	 Police Approval 11 models
 GB/T 29490 IP implementation	 5 Innovative patents	 36 patents new utility design	 32 Software copyright

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Figure 5 Qualification

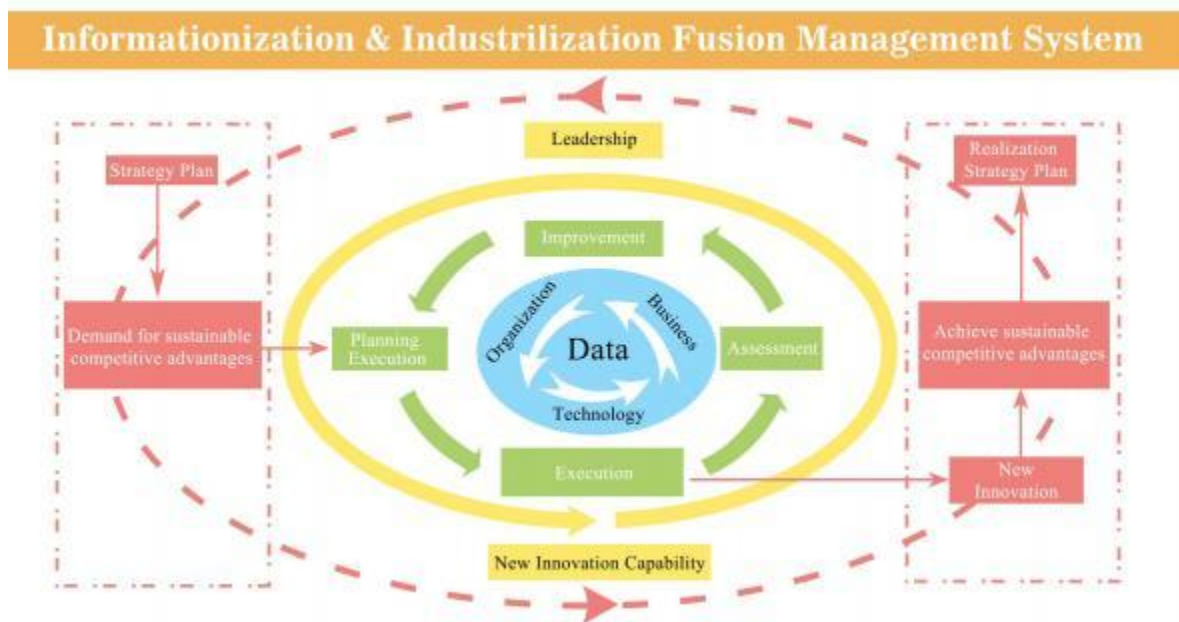


Figure 6 GB/T 23001_ Informationization & Industrilization Fusion Management System

Co-Founder—Dr. Hongfei Liu



Postdoctoral Hongfei Liu

- Selected "Innovative Talent" by Science and Technology ministry
- Top Class A Talent by Xiamen City
- CCTV Science & Technology Interview
- Fortune 500 experience in Agilent, II-VI

- Honors**
 - Selected by science & technology ministry as "Innovation Talent"
 - CCTV Science & Technology Interview
 - Top Class A Talent credited by Xiamen City
 - Innovation Hero**
- Education**
 - PhD • Chinese Science of Academic • Prof. Gui-Lin Chen, Originator in spectroscopy
 - Postdoctoral • Xiamen University • Prof. Zhong-Qun Tian guided by the SERS founder M.Fleischmann
- Career**
 - Engineer → R&D Manager → GM
 - Agilent**, Leader of Instrument, Fortune 500 company, Job: engineer
 - II-VI Incorporated (Nasdaq: IIVI) leader in optical & electrical industries, Job: GM of Instrumentation and Automation
- Academic**
 - University graduate tutor
 - obtain more than 60 IPs, more than 10 innovation patents;
 - Publish more than 20 papers, 2 recorded SCI, 8 recorded EI



Selected "Innovative Talent" by Science and Technology ministry

Top Class A Talent by Xiamen City

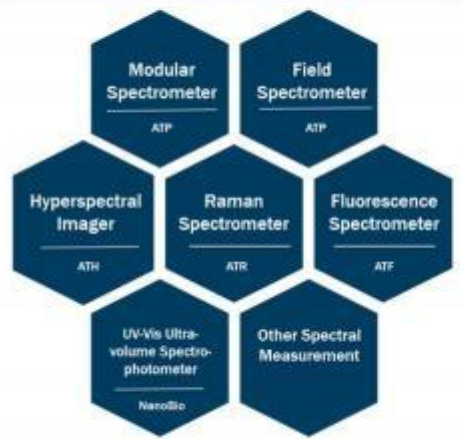
Founder & Tutors

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Figure 7 Optosky's Co-founder_Dr. Hongfei Liu

Category & Application

Category




Application



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Figure 8 Category & Application



Model Name Rule

Model Name Rule:

- Prefix
- Category
- Model
- Suffix

Prefix

↓

Abbreviation
OPTOSKY

AT R 3000 - 1064

↑ ↑ ↑ ↑

Category Model Suffix

- ATR - Raman Spectrometer
- ATP - Micro Spectrometer
- ATH - Hyperspectral Imager
- ATF - Micro Fluorescence Spectrometer
- ATL - LIBS
- ATW - Water
- ATE - Environment Protect
- ATFD - Food Safety
- GA - Public Safety (Gong An)
- GF - Gas Monitor (Gas Finder)
- GY - Industrial Monitor (Gong Ye)

eg:

- Raman Microscope: ATR8300MP-1064
- Hyperspectral Imager: ATH9500

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Figure 9 Model Name Rule