

Broadband hyperspectral spectrometer (300nm~11μm)

ATP9110

Features

- Maximum band range: 300 nm~11μm
- High sensitivity, the highest quantum efficiency of the detector is 60%, and the near-infrared sensitivity is 40% higher than that of traditional PDA detectors
- The measurement speed is fast, time for a single sampling less than 10 seconds
- Optical fiber probe measurement, light weight, flexible use
- Built-in anti-secondary diffraction coating and filter, high accuracy
- Dynamic dark current correction to reduce the influence of thermal noise
- Display the inclination angle of the probe, and the laser indicates the detection position, convenient for adjustment
- Portable, special carrying case, easy to carry
- PC software control mode

Application

- Geological research, prospecting
- Remote sensing measurement
- Crop monitoring
- Forest research, oceanographic research

Description

ATP9110 spectrometer (field spectroradiometer) is the latest product of Optosky (Aopu Tiancheng) company. Monitoring, forest research, oceanographic research and other fields of application.

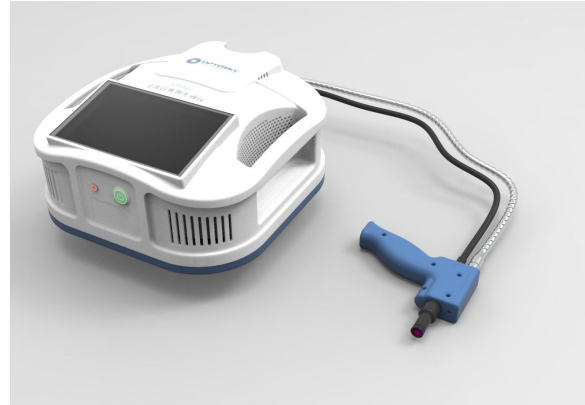
High cost performance, fast and accurate measurement, simple operation, and easy to carry. It is equipped with a powerful software package. In addition to reflectance measurement, it can also be used for radiometry, photometry and colorimetric measurements.

Model	Describe
ATP9110-25	Normal resolution,300~2500nm
ATP9110-25H	High resolution,300~2500nm
ATP9110-17	High resolution,300~1700nm
ATP9110-50	300~5000nmUltra-broadband surface object spectrometer
ATP9110-110	300nm~11μmUltra-wideband surface object spectrometer (missing5~5.5μm)
ATP9110TP	With capacitive touch screen, withandroidOperating system, with memory, can store1000,000 spectra
ATP9110Plus	With light intensity compensation
ATP9110Pro	With spectral compensation





ATP9110 Series Appearance



ATP9110TP Series Appearance



ATP9110Plus/Pro Series Appearance



Physical picture



Physical picture



Physical picture

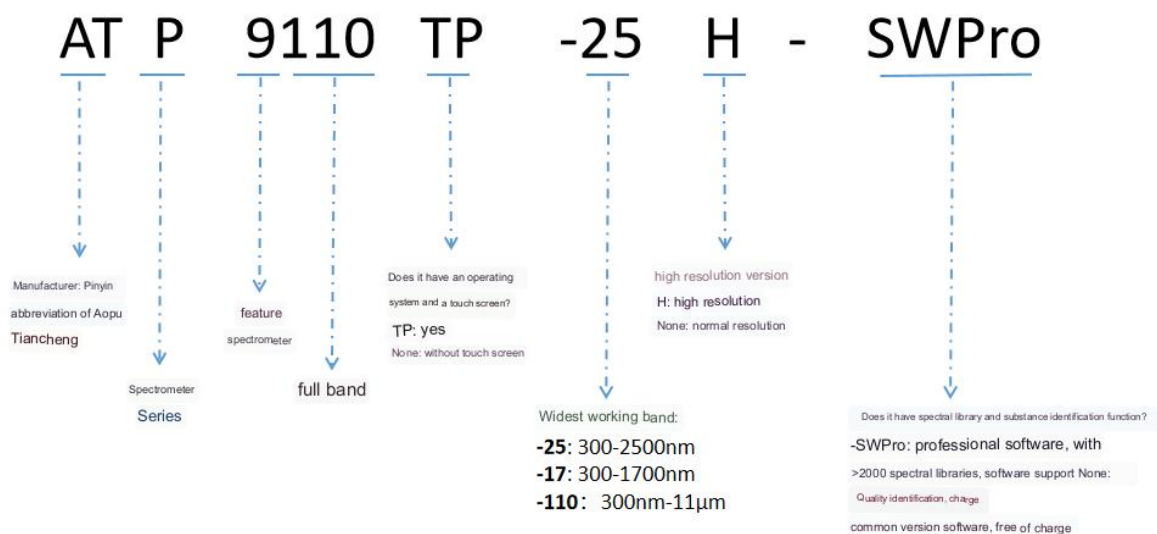


Scenarios used in the wild



The use scene of ATP9110TP spectrometer

1. Naming rules and selection guide



For example:

ATP9110-25H-SWPro: 300-2500nm, high resolution, professional software, no touch screen

ATP9110TP-25-SWPro: 300-2500nm band, normal resolution, professional software, touch screen and operating system

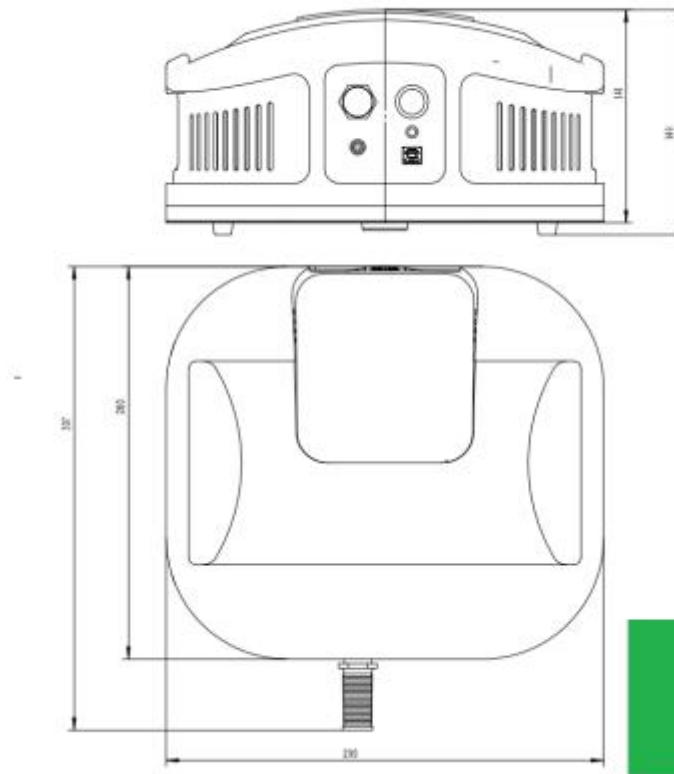
2. Performance

Detector					
Type	Line sensor/InGaAs sensor				
Detector	300~1100nm:2048 pixels				
	1100~1700nm:InGaAs 512 pixelsTwo-stage TEC refrigeration				
	1100~2500nm: InGaAs 512 pixelsTwo-stage TEC refrigeration				
	2.5~11 μm: linear array pyroelectric sensor				
Optical parameters					
Model	ATP9110-25	ATP9110-25H	ATP9110-17	ATP9110-50	ATP9110-110
Spectral range	300~2500nm		300~1700nm	0.3~5μm	0.3~11 μm
Spectral resolution	0.8~1.4nm@756nm	0.8~1.4nm@756nm	0.8~1.4nm@756nm	0.8~1.4nm@756nm	
	7~12nm@1400&2100nm	3~5nm@1400nm	3~5nm@1400nm	7~12nm@1400&2100nm	
		5~8nm@2100nm		30nm @ 2.5~5μm	
				50nm @ 5.5~11 μm (for ATP9110-110 only)	
Wavelength repeatability	± 0.1nm@ VIS				
	± 0.5nm@SWIR				
	± 3nm@MWIR				
Wavelength Accuracy	± 0.5nm @ VIS, ± 1.1nm@ SWIR, ± 5nm@MWIR				
Enter	1.5m fiber optic bundle (25° field of view), optional front lens to change the field of view, optional fiber length				
Field of view	Small field of view lens, 1°/8°/15°/25° optional				
Indicating laser wavelength	650 nm				
Indicate laser power	5mw				
Maximum	VNIR 2 times sunlight/SWIR 10 times sunlight				

Radiation				
SNR	300~1000nm: >800, 1000~2500nm: >16000			
Spectral sampling interval	Visible light: 0.4nm,	Visible light: 0.4nm,	Visible light: 0.4nm,	Visible light: 0.4nm,
	Short-wave infrared: 1.0 nm	Short-wave infrared: 1.0 nm	Short-wave infrared: 1.0 nm	SWIR: 1.0nm
				MWIR: 2.5nm
Spectral averaging times	Up to 100,000 times			
Electrical parameters	ATP9110		ATP9110TP	
Integration time	1ms~10 s/automatically optimized integration time			
Operating system	none		Android 6.0	
Touch screen	none		7 inches, 1280×720, multi-touch	
Data output interface	Standard configuration: USB 2.0; Optional: Bluetooth, WIFI		Standard configuration: USB, Bluetooth, WIFI	
Geographic location	Built-in GPS positioning system			
Angle data	MC3430 Gyroscope Optical Test Angle 0°~ 180°			
Power supply	External lithium battery pack, can be external 12V power supply / vehicle power supply			
Battery life	>3H (outdoor work), the battery can be replaced		>2.7H (outdoor work), the battery can be replaced	
Maximum operating current	ATP9110-17: 2.5 A		ATP9110-17: 3.5 A	
	ATP9110-25: 3.5 A		ATP9110-25: 4.5 A	
	ATP9110H-25: 5A		ATP9110H-25: 6A	
	ATP9110-50: 4.0A		ATP9110-50: 5.0A	
	ATP9110-110: 5.0A		ATP9110-110: 6.0 A	
Storage temperature	-20°C ~ +65°C			

Operating temperature	-20 ~ 50°C		-10 ~ 50°C		
Working humidity	< 90%RH (non-condensing)				
Physical parameters					
Waterproof level	IP54				
Size	290×260×141mm	350×300×170mm	290×260×141mm	290×260×141mm	350×300×170mm
Weight	4.5 kg	6.5Kg	4.5 kg	5.2 kg	5.8 kg

3. Product dimensions picture

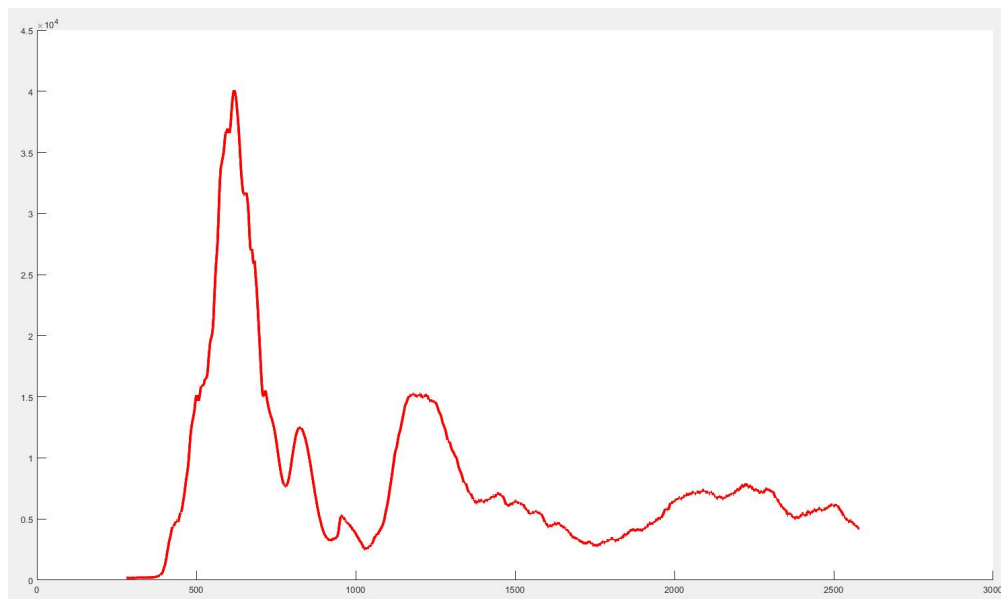


Dimensions of ATP9110

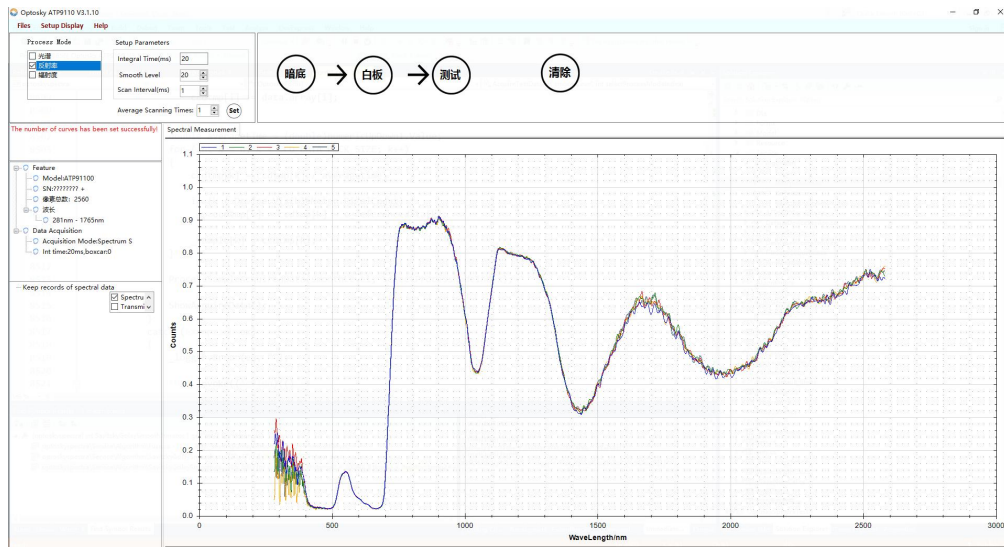


ATP9110H-25、ATP9110-50、ATP9110-110 Physical appearance drawing

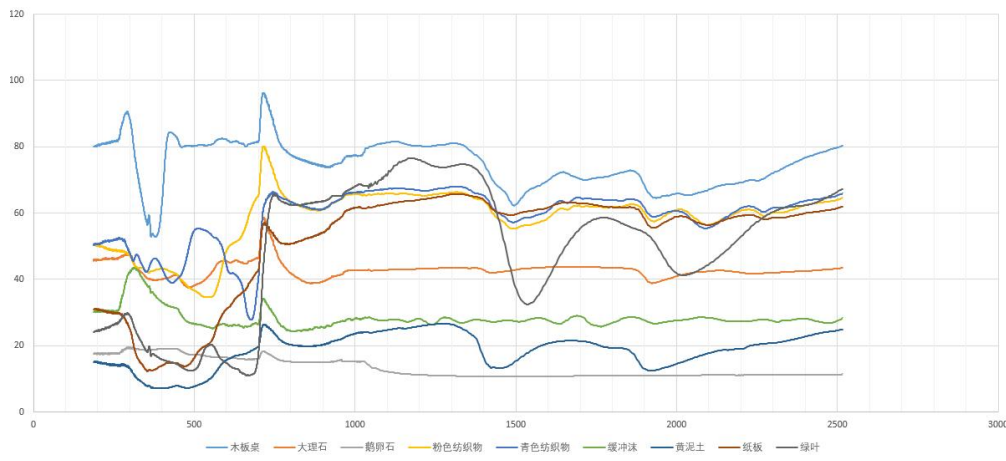
4. Measured spectrogram



Halogen lamp spectrum measured by ATP9110-25 (simulated solar spectrum)



Measure the reflectance spectrum of green leaves ATP9110-25 (5 repeated measurements)



Spectrum of different substances measured by ATP9110-25

5. On-site pictures of ATP9110





ATP9110 outdoor measurement pictures

6. Measuring accessories

Standard spare parts	
1	USB data line
2	Optical fiber jumper for field use
3	Dedicated PC terminal software
4	Adapter power12V/5A
5	Cosine angle lens
6	External battery pack14.4V
7	External battery pack charger
8	Field of View Lens25o
9	Standard whiteboard 10*10cm95%Reflectivity
10	Machine box
Optional accessories	
1	Field of view lens,1o/5o/8o/10o/15°/25° (optional)
2	Reflection probe+Blade clamp, used for reflectance measurement
3	High stability and high blue lighting source kit
4	Halogen lamp accessories full box /ATG1021INT:12V
5	Test stand+The use of integrating sphere test transmittance
6	10cmx10cmsize99%Reflectance standard whiteboard (customizable),95%,70%,50%,17%reflectivity optional
7	Tripod for Field Measurement+Extended Measuring Rod

7. Other application methods of ATP9110




The application of ATP9110 mounted on the UAV


8. Fieldspec spectrometer series products

> Ground Object Spectrometer



			
<p>Handheld ground object spectrometer (300-1100nm)</p> <ul style="list-style-type: none"> • ATP9100F: Display detection area • ATP91: Standard version 	<p>Full-band surface object spectrometer</p> <ul style="list-style-type: none"> • ATP9110-25 : 300-2500,10nm resolution • ATP9110-25H: 300-2500nm, 5nm • ATP9110-17 : 300-1700 nm, 5nm • ATP9110-50 : 300nm-5µm • ATP9110-110 : 300nm-11µm 	<p>ATP9110TP</p> <p>Full-band surface object spectrometer</p> <ul style="list-style-type: none"> • ATP9110TP-25 : 300-2500,10nm resolution • ATP9110TP-25H : 300-2500nm, 5nm • ATP9110TP-17 : 300-1700 nm, 5nm 	<p>ATP9101</p> <p>Miniature Ground Object Spectrometer (350-940nm)</p>
<p>Number of bands: 2048</p> <p>High resolution: 1.5nm</p> <p>Directly display the detection area</p> <p>5.5 inch capacitive touch screen</p> <p>laser pointing</p> <p>13-megapixel auto-focus camera</p> <p>Built-in lithium battery, battery life>6h</p>	<ul style="list-style-type: none"> • The widest wavelength range up to: 300nm-11µm • high resolution; • 制 Cold Backside Illuminated Detector • Two-stage cooled InGaAs detector; • Automatic dynamic dark current correction; • Automatic wavelength drift locking function 	<ul style="list-style-type: none"> • Have all the functions of ATP9110 • HD capacitive touch screen • Android operating system, can store >100,000 spectra • WIFI, Bluetooth remote control • Built-in battery life > 3 hours, the battery can be replaced 	<ul style="list-style-type: none"> • Pixels: 1024 pixels • High resolution: 2.5nm • Weight only 120g • laser pointing • Built-in lithium battery, battery life time>5h • bluetooth connection • Suitable for course teaching




OPTOSKY



ATH1010 series
Push-broom hyperspectral imager
(maximum range: 0.4-2.5 um)




ATH1500 series
Frame type hyperspectral imager
(maximum range: 0.4-5 um)




full band
400-1700nm or
400-2500nm full-
band hyperspectral imager


- Domestic hyperspectral imager
- Independent Intellectual Property




ATH9000 series
UAV-borne
hyperspectral imaging system




ATH8000 series
Laboratory plain scanning
hyperspectral imaging system




ATH6000 series
Portable
hyperspectral imaging system



ATH5000 series
Laboratory
Hyperspectral Imaging System



ATH3000 series
Turntable
Hyperspectral Imaging System



ATH2000 series
Handheld
Hyperspectral Imaging System

9. Company Profile

Optosky company has been providing first-class spectroscopy solution with 20 year, with the headquarter covers a area of 2500 square meter with 50 engineers in Xiamen city where held the international 9th BRICK summit in 2017. Another R&D research centers locates in Wuhu city with 30 engineers covering an area of 2035 square meters.

The company founder & CEO Dr.Hongfei,Liu received Doctor degree in Chinese Academic of Science and postdoctoral degree in Xiamen University, by cooperating with two top Universities' spectroscopy technology to integrate into Optosky company aiming at developing global leading spectroscopy solution provider.

The company technology bases on Optomechatronics, Spectroscopy Analysis, Process Weak Optical and Electrical Signals, Cloud Computing, and have been developed wide products line of Raman spectroscopy products, 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.

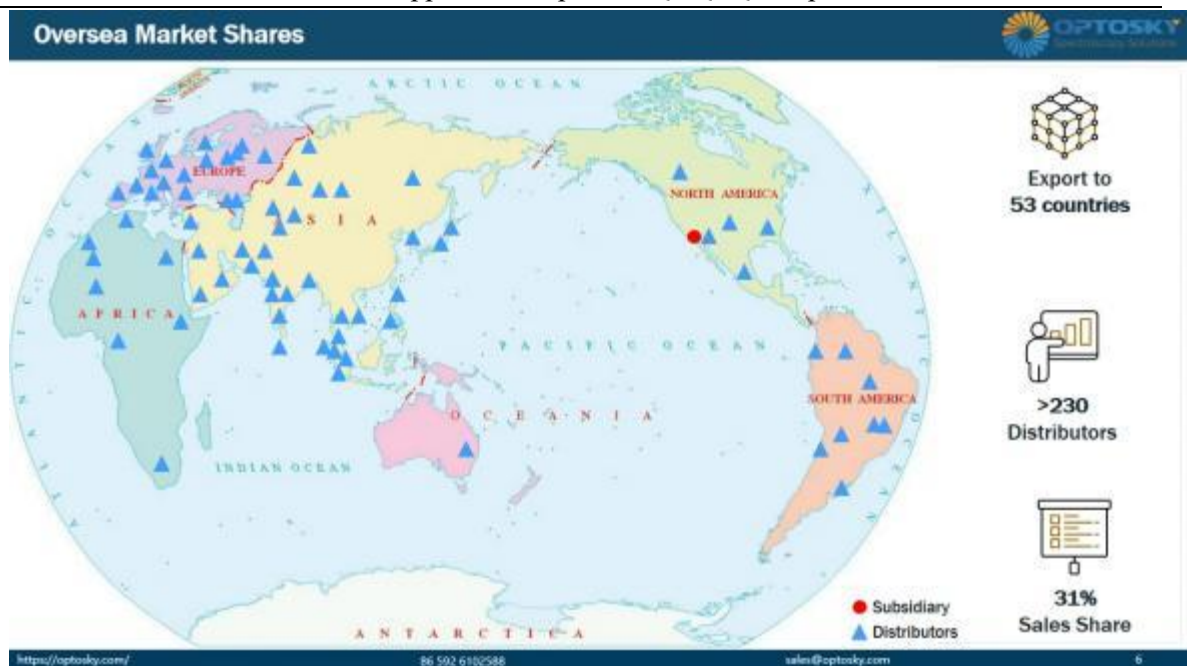
Optosky company base on technology innovation, market-driven innovation, customer first, provides first-class products and services, and one-stop solutions to many fortune 500 companies in many industries. The company received praise from leading industrial companies, as well as many innovative intellectual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

over hundred numbers. The company has received over 26 IPs, 35 innovative patents, and 32 copy rights.

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. Optosky company in charge of drafting 7 Chinese National Standards (GB) , including VNIR and SWNIR Field Spectroradiometer, Hazmat detector based on Raman spectroscopy, Buoy-type Monitor eco-environment, water quality monitor in the unmanned vessel, online water quality monitor by spectroscopy, UV-absorbent measure fabrics etc.

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



Oversea Market Shares

Optosky Chair and Draft National Standards Lists:

Chair Drafter
National Industry Standard Of VNIR & SWNIR Field Spectroradiometer

GB
China National Standard Drafter for Buoy-type Monitor eco-environment

GB
China National Standard Drafter for water quality monitor in unmanned boat

GB
China National Standard Drafter for Raman spectrometer

GB
China National Standard Drafter for Hazmat detector based on Raman spectroscopy

GB
China National Standards drafter for online water quality monitor by spectroscopy

GB
China National Standard Drafter for UV-absorbent measure fabrics

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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

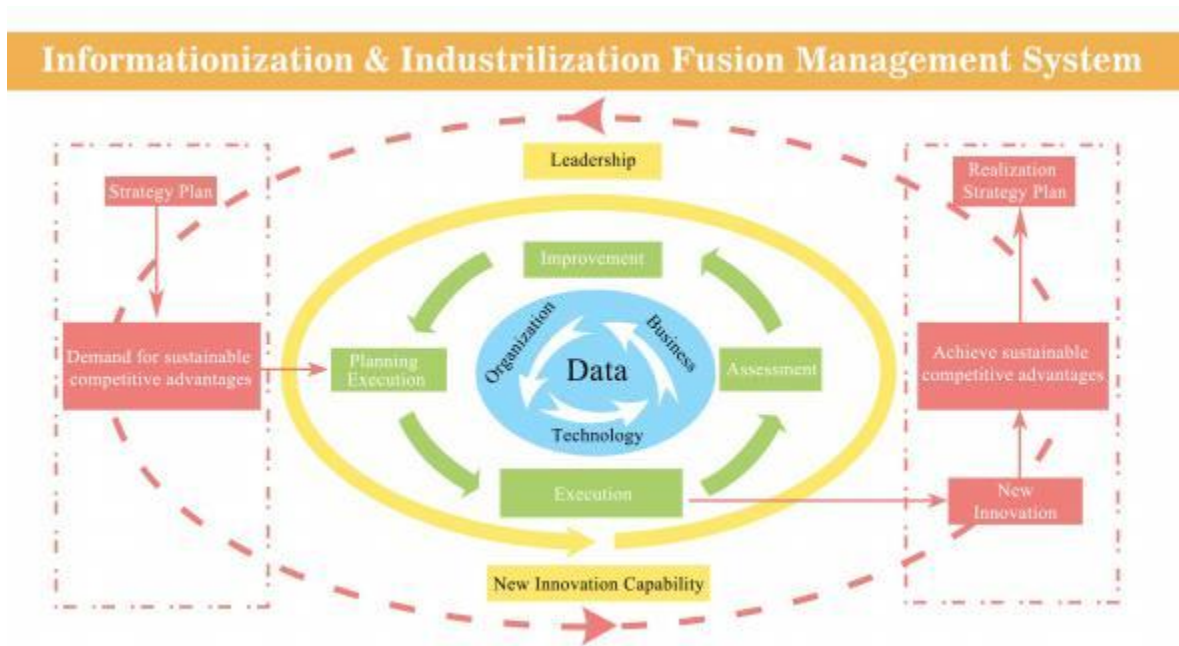
5 Innovative patents

36 patents
new utility design

32 Software
copyright

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Qualification



GB/T 23001_Informationization & Industrialization 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
- OCTV Science & Technology Interview
- Fortune 500 experience in Agilent, II-VI

- Honors**
 - Selected by science & technology ministry as "Innovation Talent"
 - OCTV 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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Optosky's Co-founder_Dr. Hongfei Liu

Category & Application

Category



Application



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Category & Application