

High Resolution Micro Spectrometer

ATP3030/4

Features

- High resolution, low stray light
- UV enhance & NIR less
- Max range: 200-1100nm
- Resolution: 0.05-2nm
- Light path: M-shape C-T
- Detector: 2048 or 4096 pixel CMOS
- Integration time: 0.1ms - 60s
- Power: DC 5V±10% or USB power
- ADC: 16 bit
- Sample rate: 2 MHz
- Output: USB 2.0 or UART
- USB connector: USB Type-C;

Applications:

- Plasma luminescence detection;
- LIBS
- Raman spectrum detection;
- Wavelength monitoring, laser, led, etc
- Water quality analyzer
- Ultraviolet flue gas analyzer
- Led sorter and color detection;
- Micro and fast spectrophotometer;
- Spectrum analysis, radiation spectrophotometry and spectrophotometry

Description

ATP3030 is a ultra-high resolution micro spectrometer developed by Optosky. The highest resolution can reach 0.05nm, which is suitable for all kinds of high-resolution applications. At the same time, it has the characteristics of high reliability, ultra-high speed, low cost, high cost performance and so on. It can be used in various environmental applications such as online testing.

ATP3030 is perfect for fast detection attribute to its high A/D converter frequency and the high speed data transmission. In ATP3030 memory chip, some algorithms to improve the performance are programmed solidly, such as wavelength calibration coefficients, linearity coefficients. ATP3030 operates with a single +5V DC supply supplied from USB or UART.

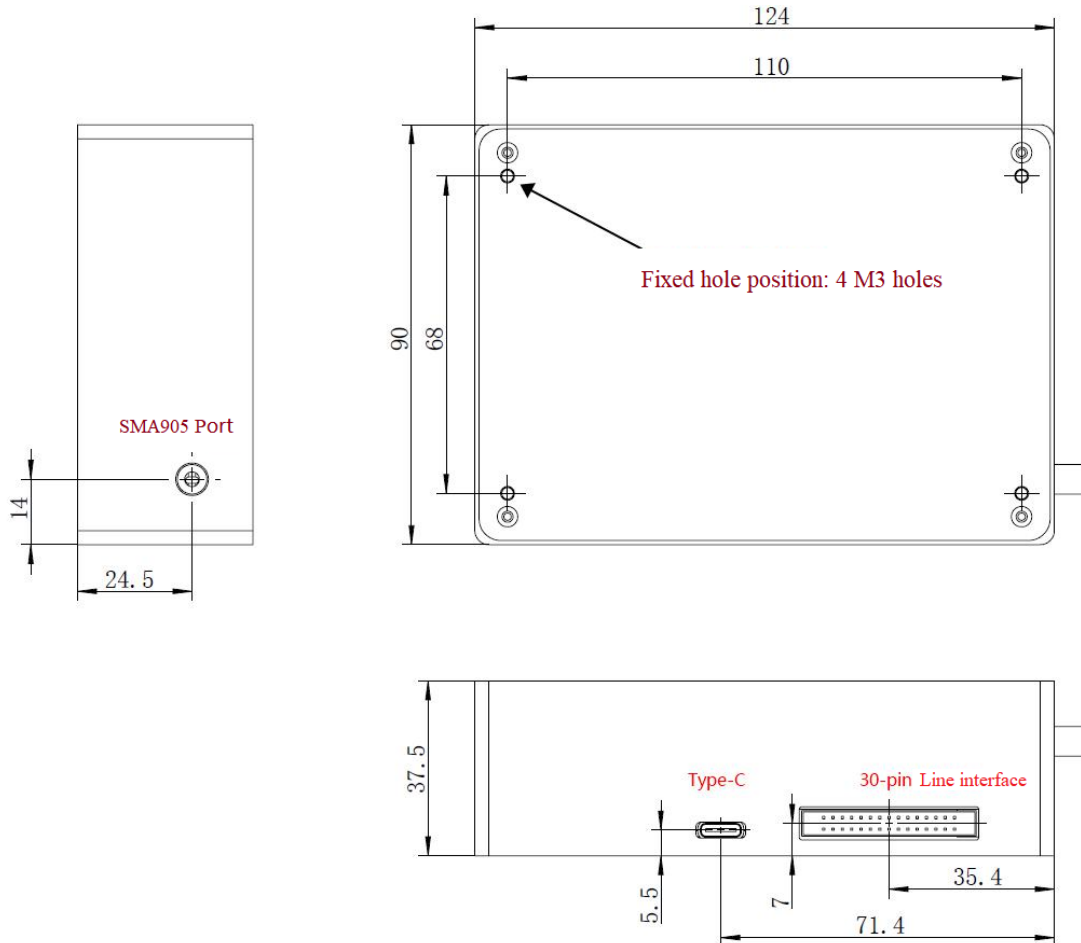
| PN | Detector pixels | |
|---------|-----------------|--|
| ATP3030 | 2048 | |
| ATP3034 | 4096 | |



1 Specifications

| Detector | |
|---------------------------|---|
| Type | Linear array detector |
| Detectable range | 200 - 1100 nm |
| Effective pixel | 2048 or 4096 pixels |
| Pixel dimension | 14 μ m \times 200 μ m |
| Sensitivity | 1300 V/(lx·s) |
| Dark noise | 13 RMS @ 13 °C |
| Optical Parameter | |
| Max wavelength range | 200 - 1100 nm |
| Optical resolution | 0.05 - 2 nm |
| Signal-to-noise | >600:1 |
| 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 °C |
| Working humidity | < 90%RH |
| Optical Configuration | |
| Optical Design | M-type C-T |
| Focal Distance | 75mm |
| Incidence slit | 50 μ m (5, 10, 25, 100 μ m are optional) |
| Incident Interface | SMA905 connector |
| Electrical Parameter | |
| Integration time | 0.1 ms - 60 seconds |
| Data interface | USB 2.0 or UART |
| Connector | USB Type-C |
| A/D conversion resolution | 16 bit |
| Supply voltage | DC4.5 to 5.5 V (type @5V) |
| Operating current | 170mA@Typ. |
| Storage temperature | -30 to +70 °C |
| Operating temperature | -25 - 50 °C |
| Physics Parameter | |
| Dimension | 124 \times 90 \times 37.5 mm |
| weight | 530 \pm 20 g |

3 Mechanical Diagrams





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 LVTTTL, 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 LVTTTL) | | | | |
| High level output voltage | 2.4 | | | V |
| Low level output voltage | | | 0.4 | V |

The module is equipped with a 30-pin male angled box header(2x15, 2.00 mm pitch) and Type-C interface.

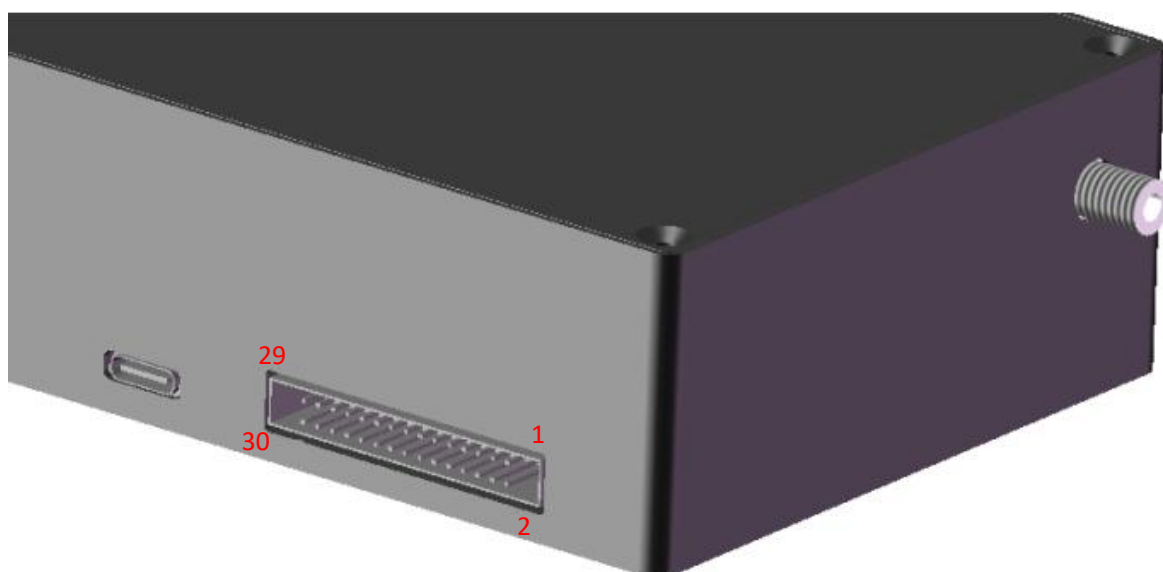


Table 2 Electrical Pin-Out

| Pin | Description | I/O | Function Description |
|-----|---------------------|---------------|--|
| 1 | MCU_RX | / | LVTTL Transmit signal |
| 2 | MCU_TX | / | LVTTL Transmit signal |
| 3 | GPIO2 | Input /Output | General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic. |
| 4 | V5_SW | Output | Power Supply, 5V±0.5, |
| 5 | Ground | Input /Output | Ground |
| 6 | NC | / | / |
| 7 | GPIO0 | Input /Output | General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic. |
| 8 | NC | / | / |
| 9 | GPIO1 | Input /Output | General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic. |
| 10 | External Trigger In | Input | LVTTL input the trigger signal. Falling edge trigger collection. |
| 11 | GPIO3 | Input /Output | General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic. |
| 12 | NC | / | / |
| 13 | GPIO10 | Input /Output | General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic. |
| 14 | NC | / | / |
| 15 | GPIO11 | Input /Output | General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic. |
| 16 | GPIO4 | Input /Output | General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic. |
| 17 | NC | / | / |

| | | | |
|----|-------------------|---------------|---|
| 18 | GPIO5 | Input /Output | General Purpose Software Programmable Digital Inputs/Outputs, LVTTTL Logic. |
| 19 | Ground | Input /Output | Ground |
| 20 | NC | / | / |
| 21 | Ground | Input /Output | Ground |
| 22 | GPIO6 | Input /Output | General Purpose Software Programmable Digital Inputs/Outputs, LVTTTL Logic. |
| 23 | NC | / | / |
| 24 | Analog Out (0-5V) | Output | The Analog Out is a 8-bit programmable output voltage with a 0-5 Volt range |
| 25 | Lamp Enable | Output | Enable the Lamp Enable Digital Output, LVTTTL Logic. |
| 26 | GPIO7 | Input /Output | General Purpose Software Programmable Digital Inputs/Outputs, LVTTTL Logic. |
| 27 | Ground | Input /Output | Ground |
| 28 | GPIO8 | Input /Output | General Purpose Software Programmable Digital Inputs/Outputs, LVTTTL Logic. |
| 29 | Ground | Input /Output | Ground |
| 30 | GPIO9 | Input /Output | General Purpose Software Programmable Digital Inputs/Outputs, LVTTTL Logic. |

5 Order Guide

Order number Rules:

| Model | Spectral region | | Slit width | |
|---------|------------------|-----------------|------------|--|
| ATP3030 | Short wavelength | Long wavelength | Slit width | |

For example:

What to buy ATP3030, spectral region: 200-1000nm, slit width is 50 μm , then the order no is:

ATP3030-200-1000-050

| Order No | Spectral region | Slit | |
|----------------------|-----------------|----------------------------|--|
| ATP3030-200-400-### | 200~400 | 10 μm | |
| ATP3030-200-850-### | 200~850 | 25 μm | |
| ATP3030-200-1000-### | 200~1000 | 50 μm | |
| ATP3030-340-850-### | 340~850 | 100 μm | |
| ATP3030-600-1100-### | 600~1100 | 200 μm | |
| ATP3030-###-###-### | Other | Other: _____ μm | |

6.ATP3030/4 Picture



Figure1 ATP3030/4



Figure2 ATP3030/4

7 ATP3030 Spectrum

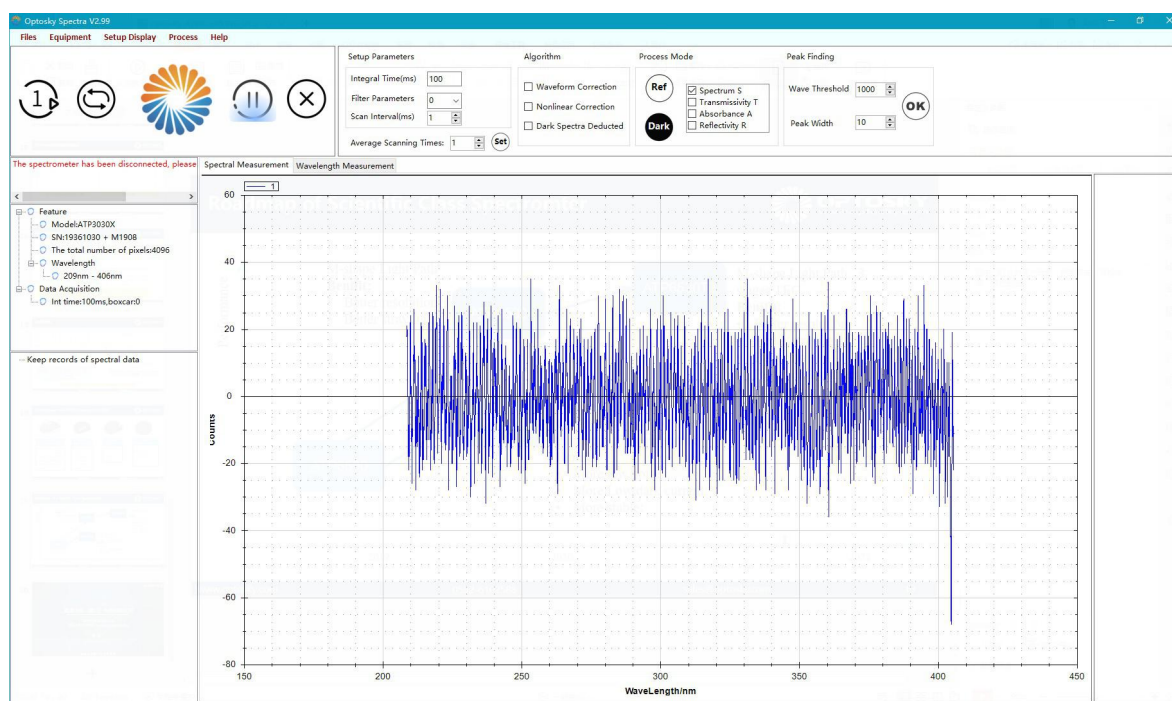


Figure 3 Noise test chart of ATP3030 (peak-to-peak value is about ± 25 count)

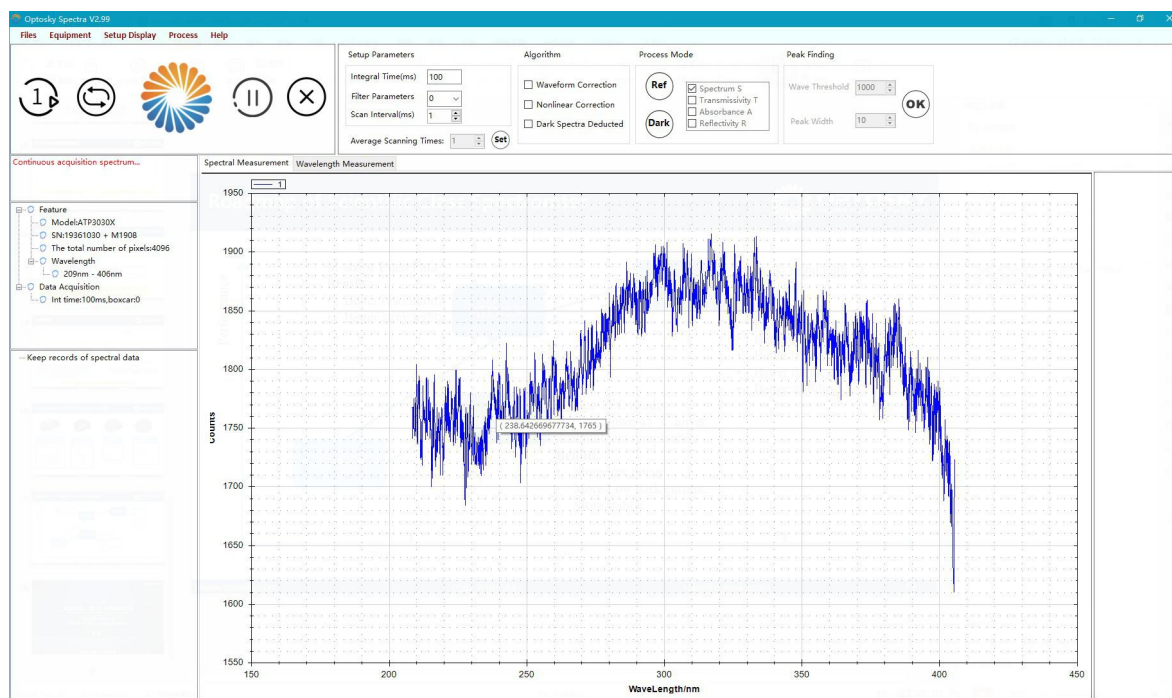


Figure3 ATP3030 Dark current testing

8. 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.

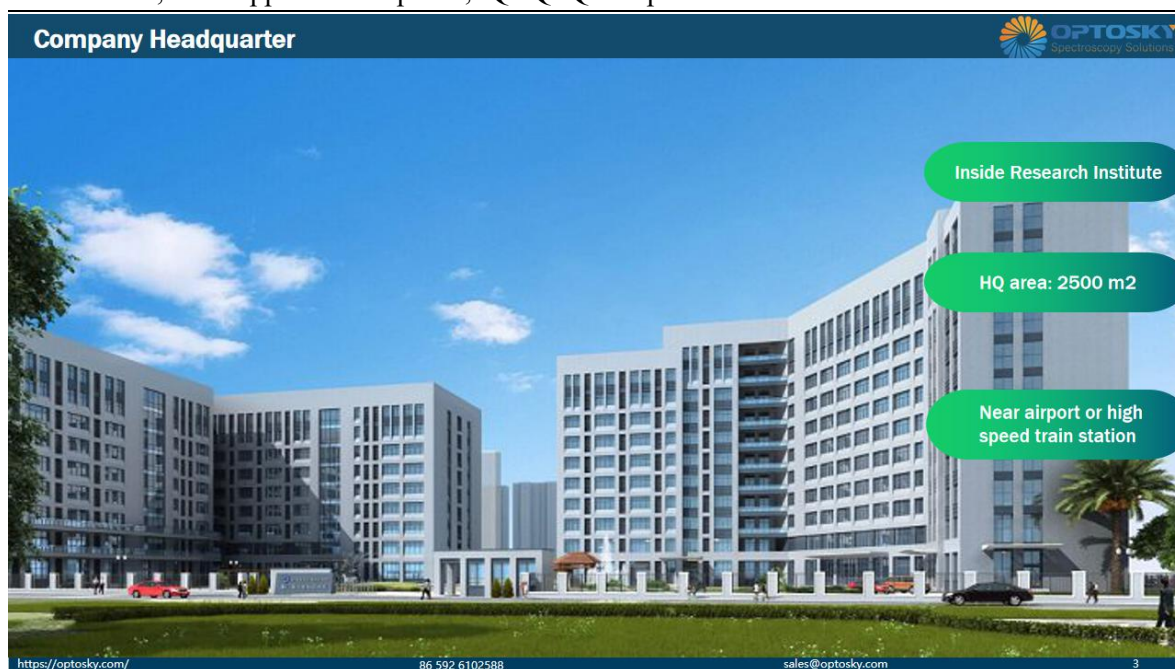


Figure 1 Optosky (Xiamen) Photonics Inc. Company Headquarter

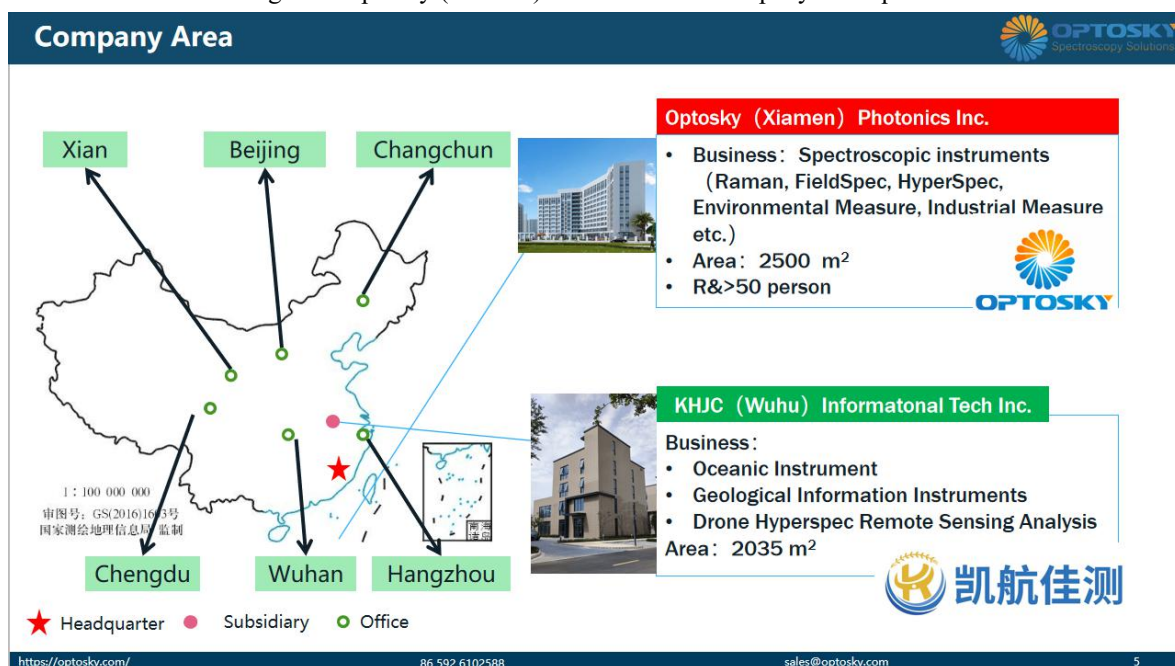


Figure 2 Optosky Company Area

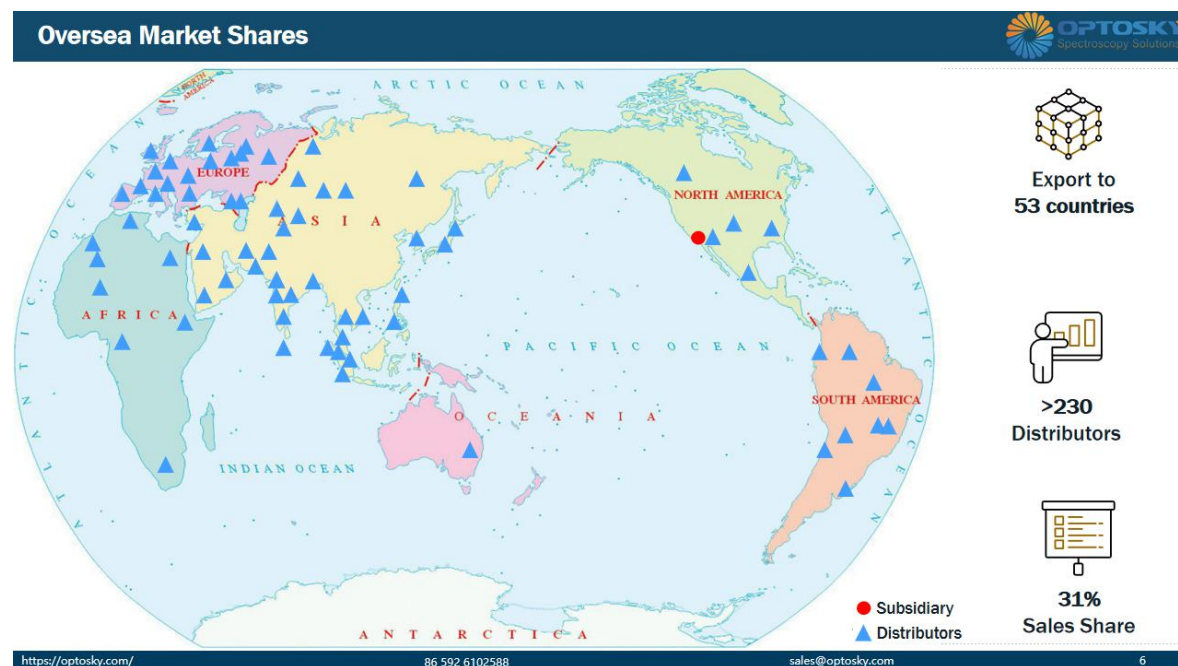


Figure 3 Oversea Market Shares



Figure 4 Optosky Chair and Draft National Standards Lists.

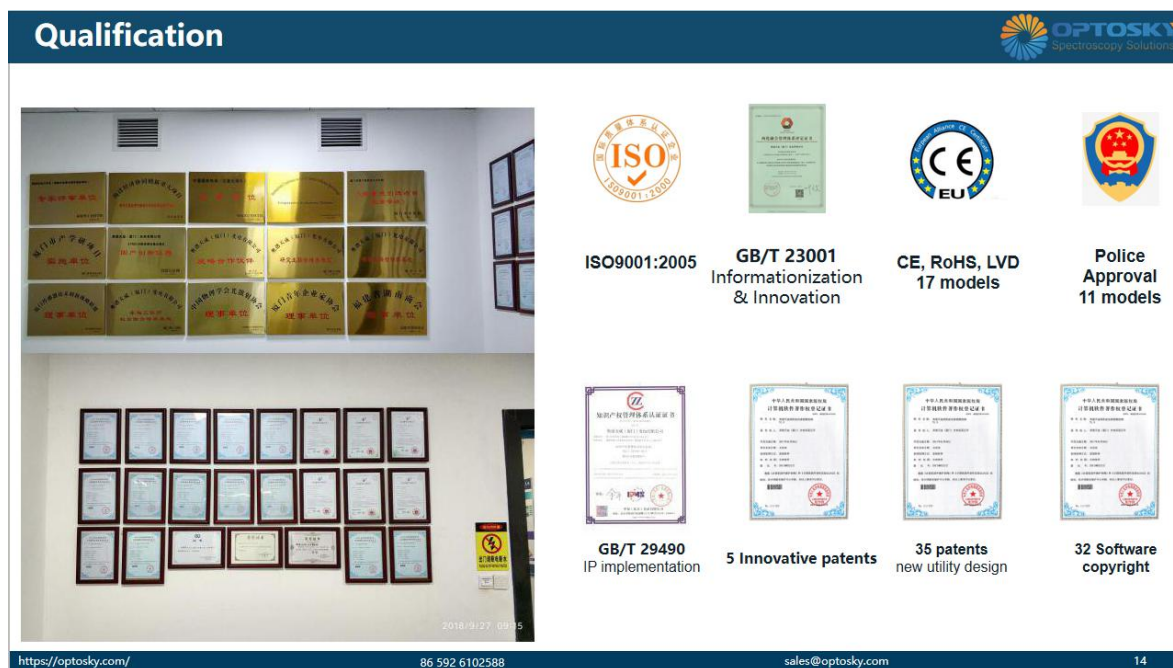


Figure 5 Qualification

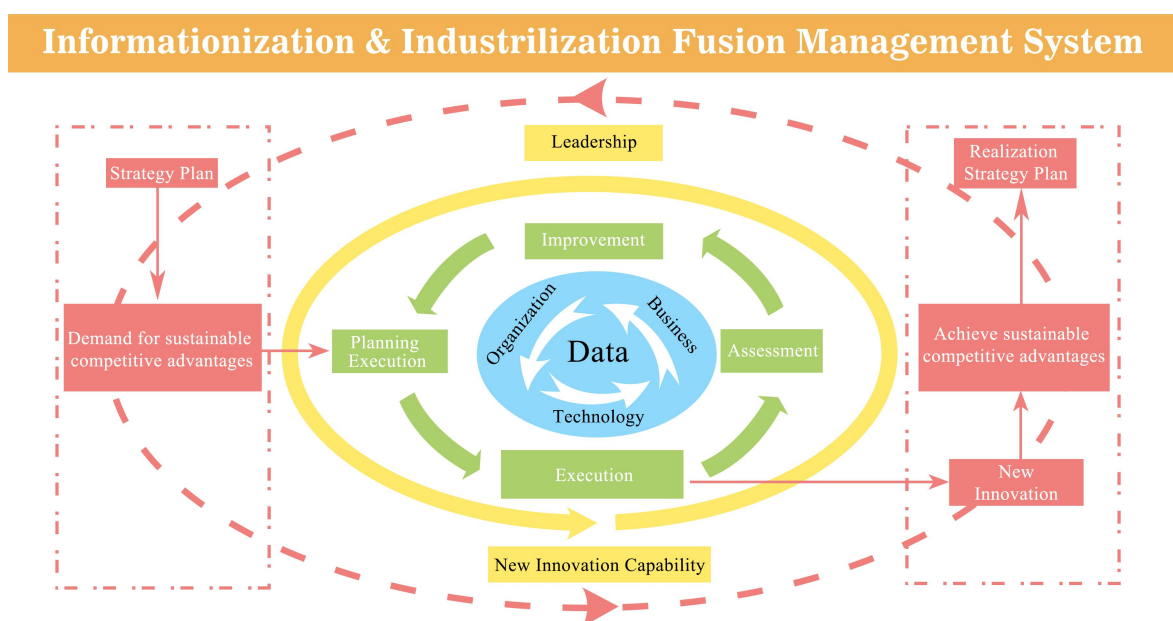


Figure 6 GB/T 23001_Informationization & Industrilization Fusion Management System

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

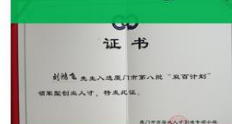
- Engineer → R&D Manager → GM
- **Agilent**, Leader of instrument, Fortune 500 company, Job: engineer
- II-VI Incorporated (Nasdaq: IIVI) leader in optical & electrical industries, Job: GM of Instrumentation and Automation

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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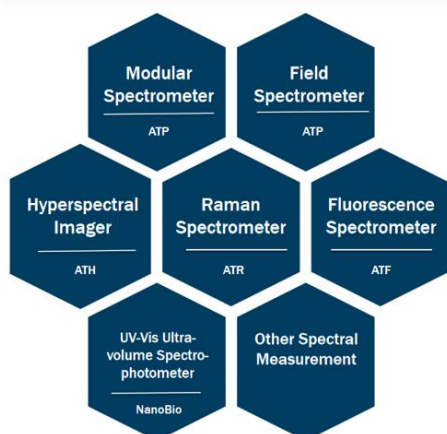
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Figure 7 Optosky's Co-founder_Dr. Hongfei Liu

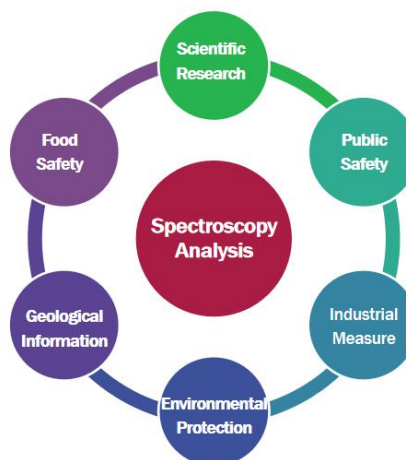
Category & Application



Category



Application




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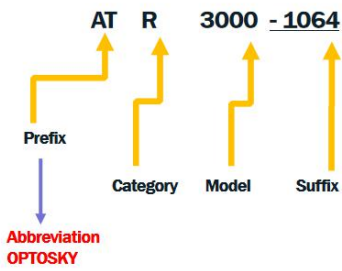
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Figure 8 Category & Application


Model Name Rule

Model Name Rule:

- Prefix
- 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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16

Figure 9 Model Name Rule