



Company Introduction



IR sense Technology (Shanghai)Co.,Ltd.



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PART ONE

Company Introduction



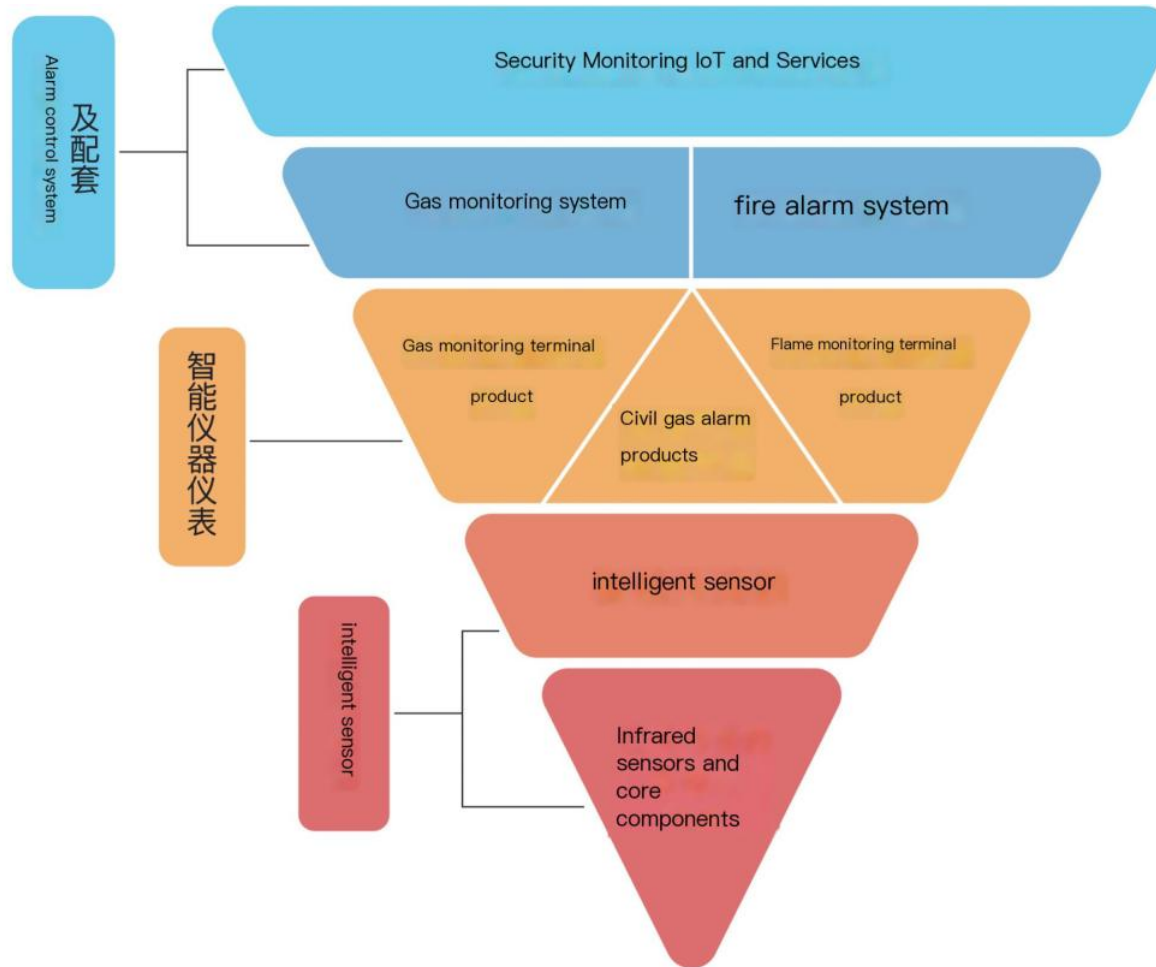
IR sense Technology (Shanghai)Co.,Ltd.

Group Structure

Shanghai AEGIS Industrial Safety Equipment Co., Ltd.



Group product lines





About Us

IR sense Technology (Shanghai)Co.,Ltd.,with nearly two decades of dedication to the research and development of infrared gas sensing technology, we are a manufacturer of infrared gas sensors that boasts independent intellectual property rights and full-chain production capabilities, encompassing everything from basic components to final products.

Our company possesses the capability for innovation and independent research and development of underlying sensor components. In the field of infrared sensor technology, we have broken through the technical barriers imposed by foreign enterprises, achieving mass production of infrared gas sensors and their core components, such as pyroelectric infrared sensors, thermopile sensors, blackbody light sources, and optical filters. These components are successfully applied in smart instrumentation.

Equipped with domestically advanced gas detection and calibration laboratories, environmental laboratories, a class 10,000 cleanroom, and numerous testing instruments and specialized equipment, we ensure the quality of our products. Our product line includes infrared gas sensors, laser methane sensors, pyroelectric infrared sensors, and more. These products have been widely used in various industrial process safety monitoring sectors, including petroleum, chemicals, electricity, metallurgy, gas, environmental protection, transportation, and more. The core technology of these products has reached international standards and holds a leading position domestically, delivering significant economic and social benefits to our customers.



Development history

The predecessor of Yixin Company, Shanghai Anyu Company, was established.

Focus on the research of infrared safety detection technology.

2005

Fully expand business volume

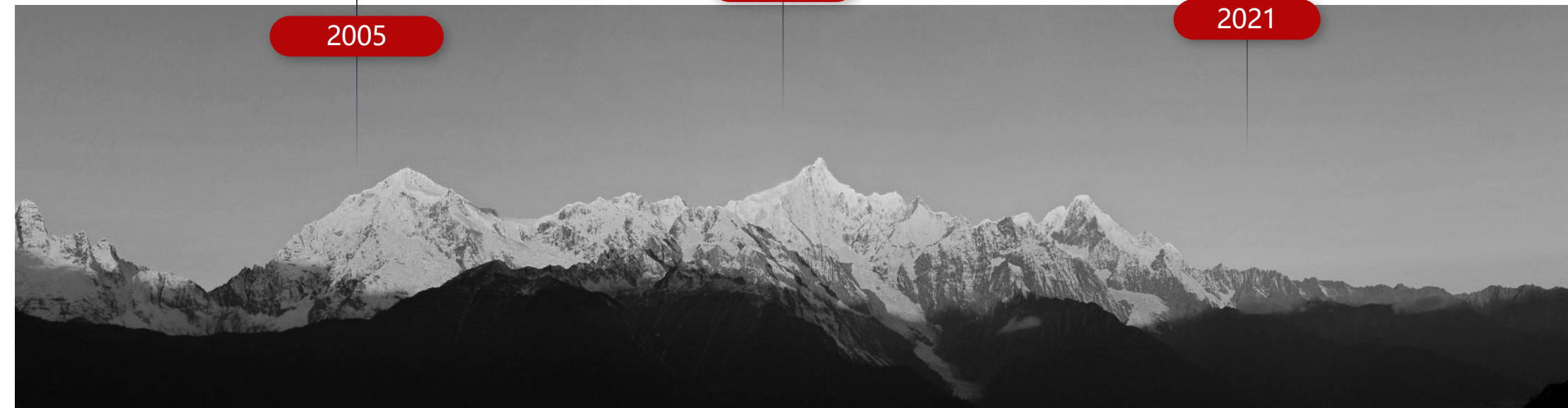
IR Sentce was established and officially began external sales.

2016

Annual sales exceed ten million.

Autonomous sales of 4-series, 7-series, and 8-series sensors

2021



Development history

2005



The predecessor of Yixin Company was Shanghai Anyu.

Focusing on the research of infrared security detection technology

Anysafe Certified as a qualified supplier by General Electric (GE) in the United States

Large angle, high response, compensated single channel and dual channel pyroelectric infrared sensors have been successfully developed;

2006



Launch 4 series infrared gas sensors

Develop a new generation of high-precision and wide temperature working range infrared gas sensors

2008



Product startup

Focusing on research and development in the field of infrared gas detection, breaking the monopoly and technological barriers of foreign infrared sensors.

Development history

**In 2015, the Sensor Business Unit was established.
In 2016, IRsenTec Company was founded.**

Established in the infrared gas sensor market, officially commenced external sales.

2009~2013



Dual explosion-proof certification and wide application in industrial process monitoring

- ◆ Batch application in important places such as gas and underground pipe galleries, such as Beijing Zhongguancun underground pipe gallery, gas power plant, Shanghai World Expo Park, etc
- ◆ Introduce infrared gas sensors suitable for mining and compatible with imported sensors

2015~2016



2017~2019



Civilian Series Sensors

The G8 Series Civilian Infrared CO2 Gas Sensor has been launched and is being fully promoted. It is primarily designed to be integrated with fresh air controllers, fresh air instruments, consumer electronics, and in-vehicle systems, aiming to improve indoor air quality.

Technical precipitation

After 10 years of dedicated research and technological accumulation, Yixin has expanded its product line from industrial to civilian applications, with an increasingly diverse range of products and wider application fields.

Development history

G7 Series Refrigerant Sensor

The G7-R32, R134A, and other refrigerant infrared sensors in the G7 Series are used as supporting components in online leakage detection and alarm systems for cold storage facilities and large commercial HVAC systems.

2020



G7 Series SF6 Sensor

The G7-SF6 Series is dedicated to online monitoring and alarm systems for sulfur hexafluoride gas leakage in GIS rooms within the power plant industry, which have been extensively applied and integrated as supporting equipment in various power grid projects across China.

2021~2022



G13 Series Laser Sensor

The G13 Series sensors are primarily used in industrial process environmental monitoring, with wide applications in sectors such as petrochemicals, gas valve pits, and mine safety.

2023



Rapid development period

After 10 years of dedicated research, Yixin has accumulated outstanding talents from various fields, continuously optimized and innovated its products, ushering in a period of rapid development.

● The core advantage stems from "ground-level innovation".

Core components

- Pyroelectric Infrared Sensor: Fifth Generation
- Infrared Gas Sensor: Third Generation

Production process

- High-cleanliness production workshop.
- Consistent and high-quality product delivery

Intelligent algorithm

- Gas concentration analysis algorithm
- Flame recognition algorithm

Highly integrated

- Integration of electronic components
- Integration of algorithm chips





Our Advantages

Professional technical team

The founder of the company has over twenty years of experience in the safety monitoring industry. They have led or participated in multiple invention patents and developments related to smart sensors, intelligent instrumentation, and safety monitoring control systems within the safety monitoring field.

With nearly two decades of deep expertise in the industry

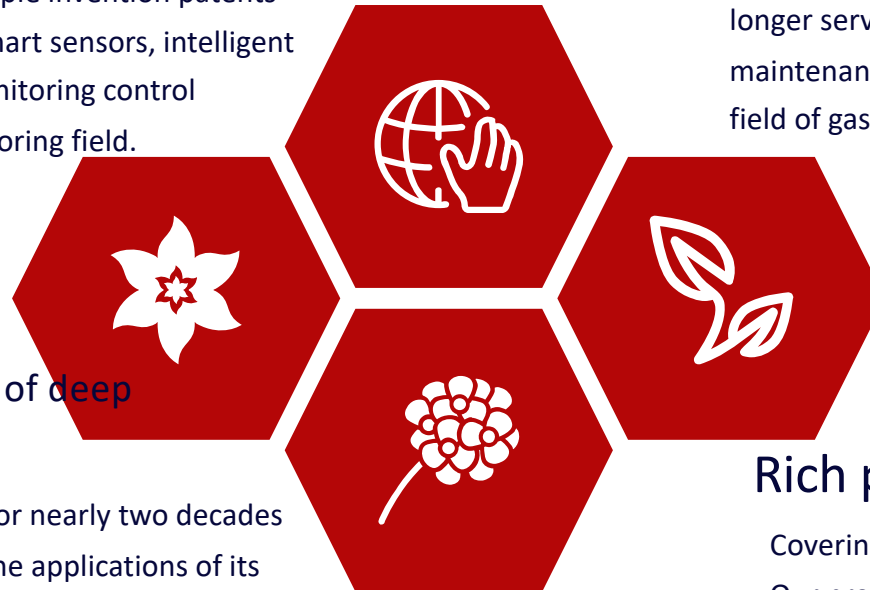
IR Sentech has been operating for nearly two decades since its inception. Leveraging the applications of its parent company in the instrumentation industry, it has continuously expanded, updated, and refined the application areas of its products.

A profound understanding of the industry

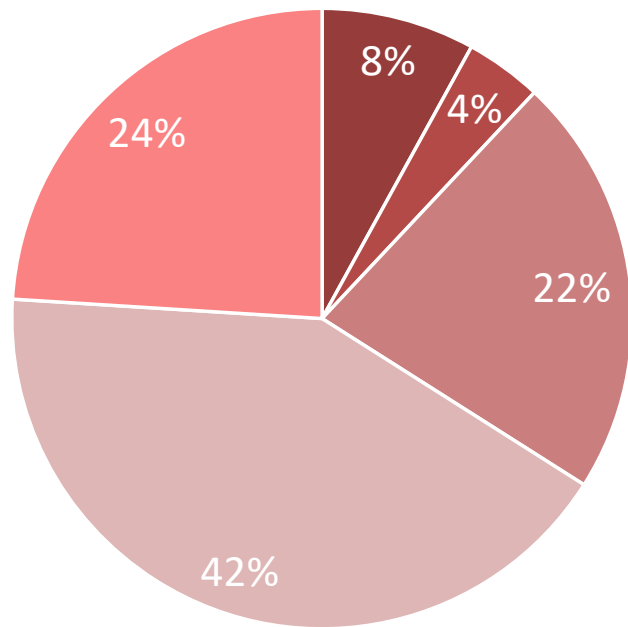
The NDIR infrared gas detection principle is superior to the catalytic principle. It has a longer service life, more convenient later-stage maintenance, and broader applications in the field of gas detection.

Rich product line

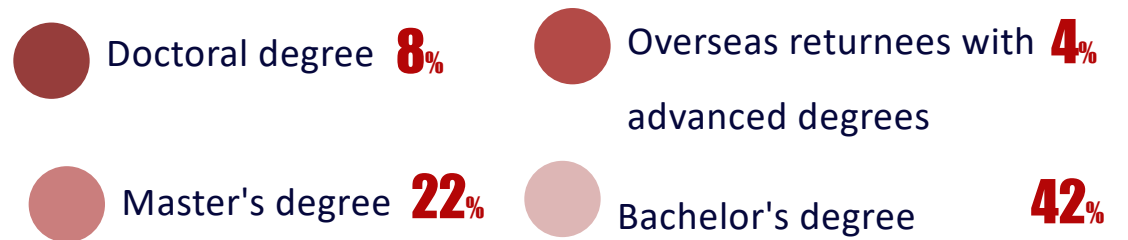
Covering industrial and civilian product series. Our products are widely used in various industries such as petroleum, chemicals, metallurgy, gas, environmental protection, transportation, biomedicine, and more.



Research and Development Team Structure

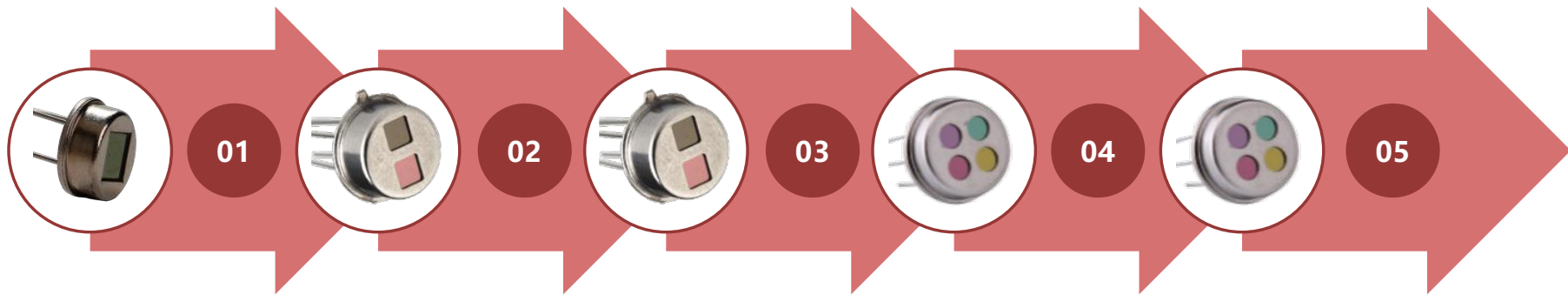


The company boasts a highly educated, multidisciplinary R&D team with rich industry experience. Among them, 8% are doctoral degree holders, 4% are returnees with overseas education, 22% hold master's degrees, and 42% hold bachelor's degrees. They specialize in various advanced technological fields such as infrared optics, sensing technology, cloud computing, and the Internet of Things.





Ground-level Innovation: Iterative Upgrades of Infrared Pyroelectric Sensors



First Generation

- Single source / Voltage type
- NoCompensation
- 60um process

Second Generation:

- Dual source / Voltage type
- No compensation
- 60um process

Third Generation

- Dual source / Current type
- With compensation
- 50um process

Fourth Generation

- Four sources / Current type
- With compensation
- 50um process

Fifth Generation

- Four sources / Customized
- With compensation
- 30um process

Research and Development Innovation: 100% Proprietary Intellectual Property Rights for Core Technologies

Patent Name	Patent Type	Patent Number
总线型气体监测和报警控制系统及方法	发明专利	201310536355.8
具有多通道模块结构的气体报警控制器及其控制方法	发明专利	201610963358.3
基于传感器网络的气体检测智能风险预警系统	发明专利	201810806473.9
基于传感器网络的气体检测智能云端监控	发明专利	201810806410.3
大视场火焰探测用红外滤光片及其制备方法	发明专利	201911074298.X
一种自补偿红外黑体光源及补偿方法	发明专利	201910229427.1
一种单窗口双通道红外探测器及方法	发明-实质审查	CN201910229715.7
多光源光锥阵列气体传感器及检测方法	发明-实质审查	CN201910229712.3
一种可调长光路红外气体传感器及监测方法	发明-实质审查	CN201910229714.2
基于红外光谱分析的气体传感器	发明-实质审查	CN201811524404.5
贴片式热释电红外传感器装置	发明-实质审查	CN201610939877.6
带一体化温度传感器的MEMS微加热器	发明-实质审查	CN201910188969.9
宽角度宽波段增透膜及其制备方法和应用	发明-实质审查	CN201710575811.8
基于传感器网络的气体检测系统用高效稳定通讯体系	发明-实质审查	CN201810806472.4

Research and Development Innovation: 100% Proprietary Intellectual Property Rights for Core Technologies

Some utility model patents	Patent Type	Patent Number
双通道热释电红外传感器	实用新型	ZL201420098276.3
宽角度宽波段增透膜及相应的红外气体传感器光源	实用新型	ZL201720857333.5
一种红外多频火焰探测器	实用新型	ZL201721392592.1
光学气体传感器	实用新型	ZL201020615300.8
红外紫外复合火焰探测器	实用新型	ZL201020607875.5
三波长红外火焰探测器	实用新型	ZL201020607771.4
种全视角红外线火焰探测器	实用新型	ZL201721392597.4
贴片式热释电红外传感器装置	实用新型	ZL201621164827.7
基于红外气体传感器的点型可燃气体探测装置	实用新型	ZL201720756591.4

Partial qualifications and patents

Qualifications and Patents

Meet the requirements of "GB 15322 Combustible Gas Detectors", "AQ 6211-2008 Non-dispersive Infrared Methane Sensors for Coal Mines", and "AQ 1052-2008 General Technical Conditions for Mine-used Carbon Dioxide Sensors".



Explosion-proof certificate

- GB/T 3836.1-2021 "Explosive atmospheres - Part 1: Equipment - General requirements"
- GB/T 3836.4-2021 "Explosive atmospheres - Part 4: Equipment protection by intrinsic safety 'i'"



Patent certificate

1. Wide-angle and wide-band anti-reflection film and corresponding infrared gas sensor light source
2. Patch-type pyroelectric infrared sensor device
- 3.....



Environmental Protection Certificate

ROHS



Application areas

Petroleum (or Oil)



Chemical Industry



Gas



Coal Mining



Biomedic



Transportation



Environmental Protection



Metallurgy



Electricity



Agricultur





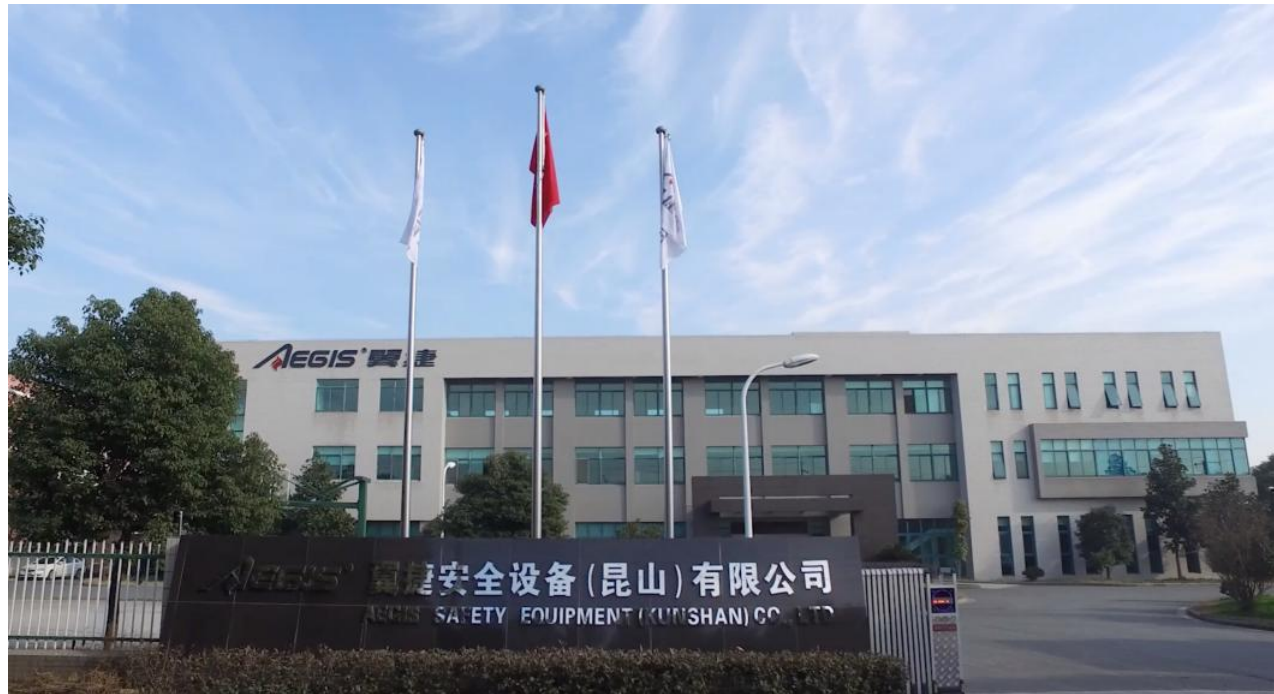
PART TWO

Manufacturing capability



IR sense Technology (Shanghai)Co.,Ltd.

- Production Scale: 10,000 square meter "smart manufacturing" base



Aegis Safety Equipment (KunShan) CO., Ltd. occupies an area of 10,000 square meters and currently employs 110 production personnel. The manufacturing center has an annual design capacity of 720,000 units, including 300,000 units of household gas detectors, 240,000 units of fixed combustible/toxic gas detectors, 30,000 units of gas alarm controllers, and 150,000 units of flame detectors.

● Manufacturing Quality Control Capability: 90% fully automated production line



Clean and dust-free workshop

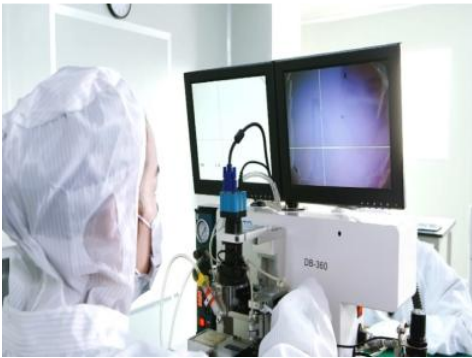
With advanced production and management systems such as a fully automatic SMT chip placement production line, flow production lines, fully automatic gas calibration, and electronic work instruction systems, the degree of full automation exceeds 90%, and the annual production capacity across the entire product line is over 700,000 units.



Product testing laboratory

We possess the most advanced gas detection and calibration laboratories, as well as environmental laboratories in China, equipped with numerous testing instruments and specialized equipment. Besides these, we also have electrostatic equipment generators, electrical transient detection devices, and more. In Shanghai, we have established gas analysis laboratories, reliability testing laboratories, and product testing centers. Our self-developed data acquisition and calibration system can achieve high-precision gas dispensing, as well as automatic collection, compensation, and screening of sensor data.

 Manufacturing Quality Control Capability: 90% fully automated production line



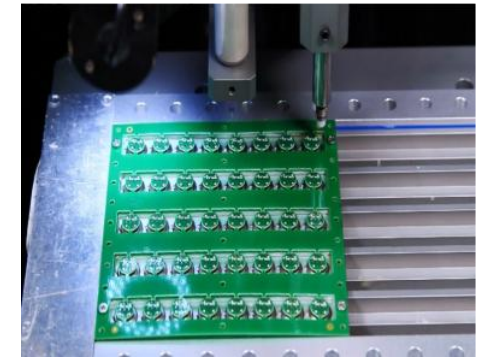
High-precision equipment and advanced automated processes.



Stringent process control



96-hour continuous high and low temperature test



100% finished product testing



PART THREE

Products and Services



Products



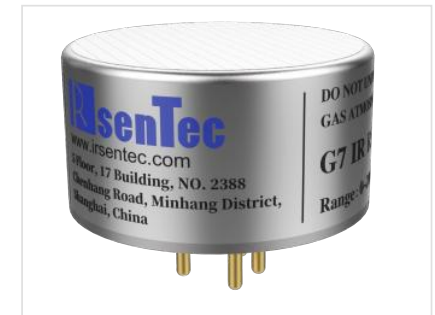
G4



G4Pul

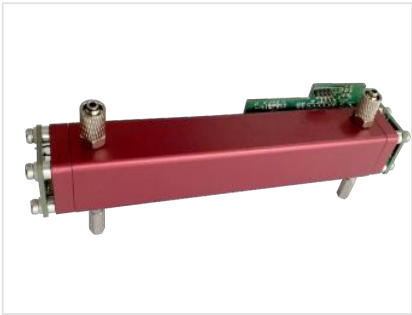


G7IR SF6



G7 R32

 Products



G12



G13



TP0243



P4G

Products



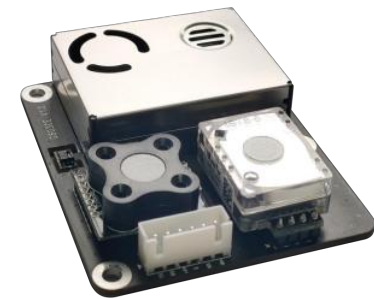
G8S/C



G8C01



PM2.5



G8C05

Product features



Temperature compensation, automatically correcting environmental impacts

01

Product introduction

The intelligent micro gas sensor, designed based on the NDIR (Non-Dispersive Infrared) optical principle, utilizes the absorption characteristics of gases to specific infrared spectra for concentration measurement. The G4 series is primarily used for detecting: CH₄ (combustible and hydrocarbon gases) and CO₂ gas concentrations.

02

Product Features

- 1.NDIR principle, dual-wavelength optical path design, small size, low power consumption
- 2.With temperature compensation, linear output within the range of -40° C~70° C
- 3.Digital and analog signal output modes
Long-term stability, easy calibration
- 4.Certified for both intrinsic safety and explosion-proof with an explosion-proof rating of Ex ia IIC T4

03

Application Fields

Petrochemical, fine chemicals, pharmaceuticals, industrial plants, transportation tunnels, energy and power, coal mine tunnels, gas drainage, environmental monitoring, etc.

Product features



01

Product introduction

This is an intelligent miniature gas sensor designed based on the non-dispersive infrared (NDIR) principle. It utilizes the absorption characteristics of gases to specific infrared spectra to measure the concentration of refrigerant leaks.

02

Product Features

- Principle of Non-Dispersive Infrared (NDIR) Technology:
- Temperature compensation, with a wide operating temperature range of -20°C to 60°C .
- High precision, long lifespan, long-term stability, and easy calibration.
- Available in both digital and analog signal output modes.

03

Application Fields

Environmental monitoring
Early warning for refrigerant gas leaks
Online monitoring
Gas composition analysis

Product features



01

Product introduction

This is an intelligent miniature gas sensor designed based on the non-dispersive infrared (NDIR) principle. It utilizes the absorption characteristics of gases to specific infrared spectra to measure the concentration of refrigerant leaks.

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- Available in both digital and analog signal output modes.

03

Application Fields

Environmental monitoring
Early warning for refrigerant gas leaks
Online monitoring
Gas composition analysis

Product features



01

Product introduction

Designed based on the NDIR principle, it features higher detection accuracy and sensitivity, as well as advantages such as easy installation, stability, and reliability.

02

Product Features

- High precision, high resolution
- Wide operating temperature range with linear output within -40°C to 70°C
- Full-range temperature compensation
- Two signal output modes: digital and analog
- Customizable gas types, measurement ranges, and precision according to customer requirements

03

Application Environment

Gas Analyzer

Environmental monitoring, etc.

Product features



G13 CH4 Laser Sensor

01

Product introduction

The G13 series is an intelligent gas sensor designed based on the principle of Tunable Diode Laser Absorption Spectroscopy (TDLAS). It utilizes the absorption characteristics of gases to specific lasers for concentration measurement, featuring resistance to humidity interference, long lifespan, high accuracy, strong selectivity, and stable performance. The sensor can directly output a gas concentration value signal that has been linearly processed and temperature-compensated. Users do not need to process the gas cell when using it; they can directly connect it to the instrument housing via threaded connection, making it easier to use.

02

Product Features

It has unique selectivity for the gas to be measured.

The measurement range can reach 0~100% VOL.

With temperature compensation, it automatically corrects for environmental influences and provides linear output within the range of -20° C to 60° C.

High precision, high sensitivity, long service life, long-term stability, and easy calibration.

Two signal output modes: digital and analog.

03

Application Environment

Industrial gas leak monitoring

Coal mine safety monitoring

Underground wellbore environment monitoring

Product features



01

Product introduction

The TP0243 dual-channel thermopile sensor features two independent MEMS sensor elements. One channel is equipped with a 4.26 μ m filter that targets CO₂ infrared absorption, while the other channel is equipped with a 3.91 μ m filter that does not produce CO₂ infrared absorption, serving as a reference.

02

Product Features

The product adopts TO39 packaging and is equipped with high-precision NTC compensation. It features high signal strength, high sensitivity, high repeatability, and high reliability.

Operating Temperature: -20° C to 120° C

Peak transmittance is greater than 85%.

03

Application Environment

NDIR CO₂ Gas Detector

Indoor Air Quality Monitoring

Central Ventilation System, HVAC

Greenhouse Gas Monitoring

Detected gas types and measurement range

Sensor Series	Gas types	Standard measurement range (customizable)
G4/G4P	CH4	5%VOL (100%LEL) 、 100%VOL
	CO2	5000ppm、 5%VOL 、 100%VOL
	C2H2	100%LEL
	C4H	100%LEL
G7	CO2	100%LEL
	C2H6O	100%LEL
	Other gases	100%LEL
G13/13C/13P	NO2	5%VOL
	SF6/R32、 134A	1000ppm、 1500ppm、 2000ppm、 3000ppm
G13/13C/13P	CH4	100%LEL
	CH4	100%VOL

G4 Industry Applications



Point type gas detector



Portable gas detector



Mining carbon dioxide sensor



CO2 incubator

Reference Standards:

According to "GB 15322 Combustible Gas Detectors", "AQ 6211-2008 Non-dispersive Infrared Methane Sensors for Coal Mines", and "AQ 1052-2008 General Technical Conditions for Mine-used Carbon Dioxide Sensors".

G7 Industry Applications



Online SF6 Detector



Online Monitoring Device for SF6 Leakage in GIS Control Room



SF6 Leak Detector

Reference Standards:

According to Chapter 8 of "DL408-1991 Safety Code for Electric Power Work (Electrical Part of Power Plants and Substations)", Chapter 4 of "DLT 639-1997 Safety Protection Rules for Operation, Testing, and Maintenance Personnel of Sulfur Hexafluoride Electrical Equipment", and "JBT 10893-2008 Environmental Monitoring System for Sulfur Hexafluoride in High-Voltage Composite Apparatus Distribution Rooms".

G13 Industry Applications



Online Laser Methane Detector



Intelligent monitoring
of underground
chamber (valve
chamber)



Mine-used Laser
Methane Detector

G8 Industry Applications



01

Product introduction

Designed based on the principle of non-dispersive infrared (NDIR), utilizing an industrial-grade optical path, it can be embedded into various instruments or environmental improvement devices related to CO2 concentration, providing timely and accurate concentration values.

02

Product Features

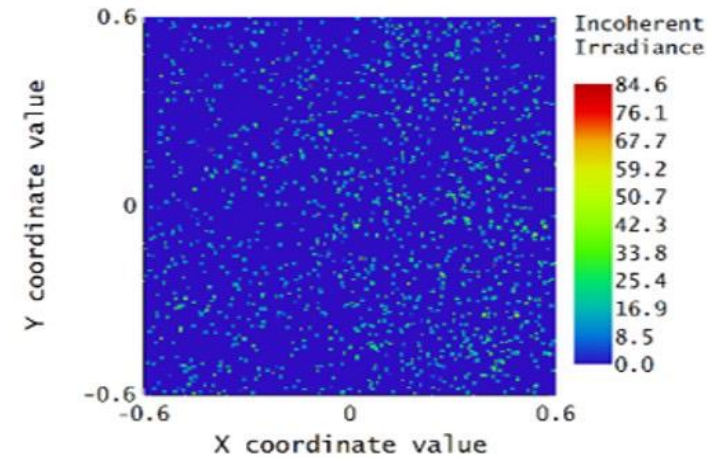
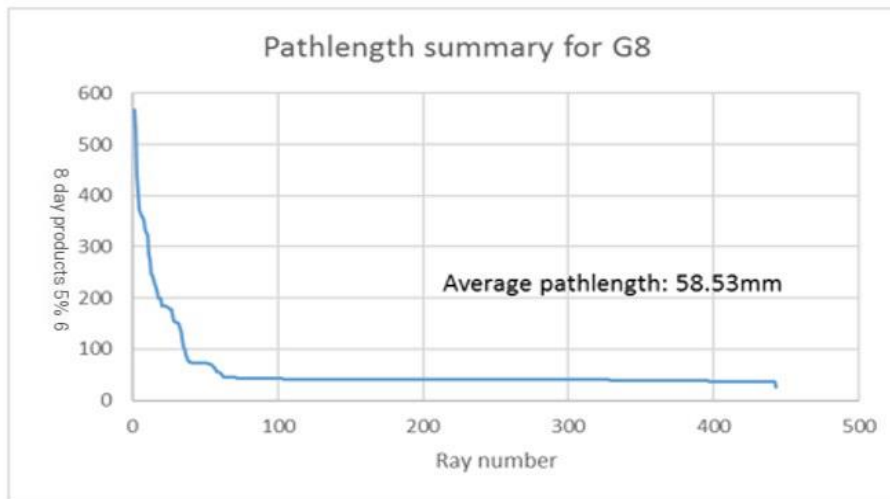
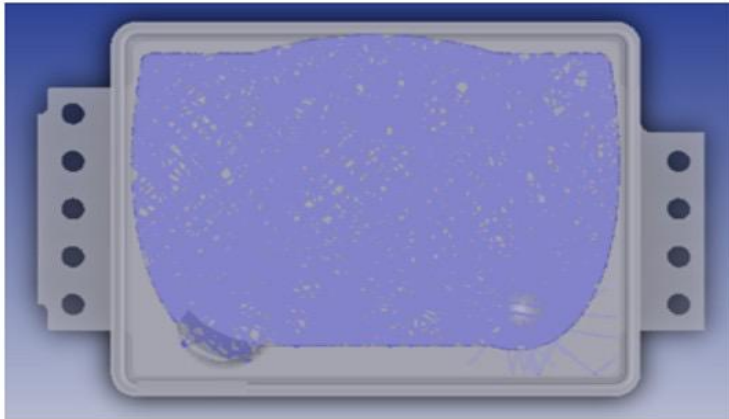
Adopting Non-Dispersive Infrared (NDIR) technology with highly optimized infrared light source.
Periodic Automatic Calibration (PACal), Manual Calibration (MCal)
Modbus communication protocol with UART, PWM, and other interfaces.
Compliant with ROHS environmental protection requirements.

03

Application Environment

Fresh air ventilation system
Greenhouse gas monitoring
Indoor air quality monitoring
In-vehicle air purification
Environmental monitoring, etc.

G8 Optical path design



- The optical path length is equivalent to that of industrial grade sensors

Efficiency is about 2.8 times that of industrial sensors

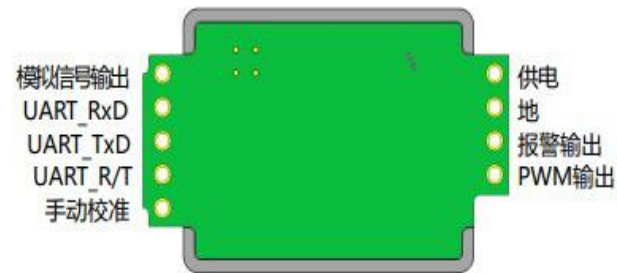
- Increase signal-to-noise ratio by 2.2 times
- Optical grade mirror

The water filtration dustproof film adopts IP65 Teflon film

G8 Pin definition



■ G8S



PWM and digital signal outputs

● Pin Definition:

- Vcc: Power Supply +
- Gnd: Power Supply –
- Alarm: Alarm Output
- \PWM: Pulse Width Modulation Output
- MCal: Manual Calibration
- R/T: RS-485 Control Pin
- Tx: Serial Port Transmit Terminal
- Rx: Serial Port Receive Terminal
- Vout: Analog Output



■ G8C



Application Fields

- Fresh air ventilator



- In-vehicle



- Fresh air controller



- Air Quality Detector



Customer distribution



- Our industry clients are spread across the country.
- Hundreds of key and demanding professional clients enjoy the professional services provided by IR Sentec.

THKS



WE ARE PROFESSIONAL