

WINSEN



Zhengzhou Winsen Electronics Technology Co., Ltd.



Household Appliance Sensor Solutions

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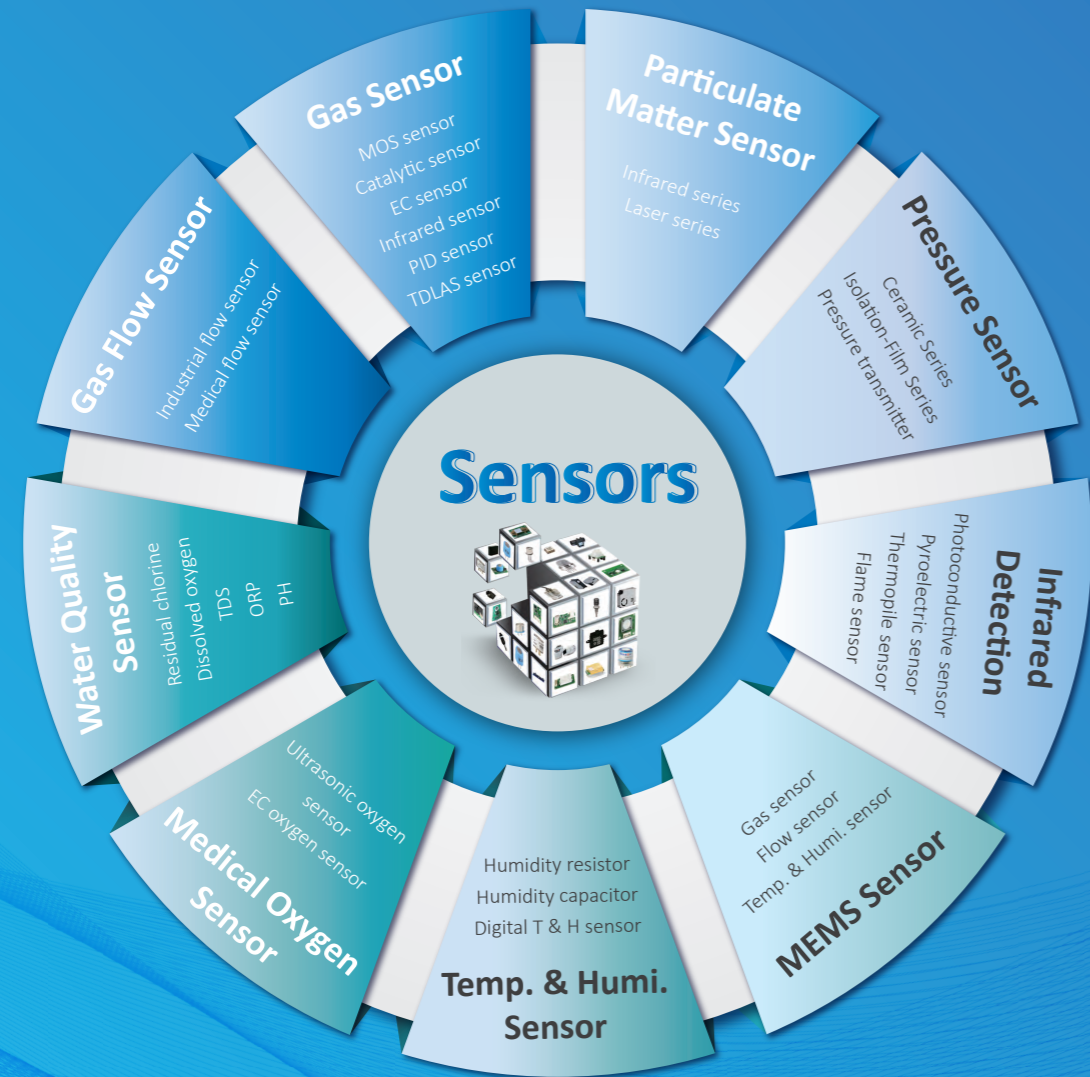


Winsen Zhengzhou



Winsen Shanghai

WINSEN SENSOR SERIES



SENSOR APPLICATION FIELDS



COMPANY PROFILE

Established in 2003, Winsen is a high-tech enterprise integrated with R&D, production and sales of sensing products and solutions, covering an area of 30000 m².

Listed on the GEM in 2009, Winsen has a comprehensive strength ranks in the top of the sensing industry in China. After more than 20 years of development, it has become a well-known enterprise in the global and a leader in the domestic gas sensor sector.

Winsen's products cover total 7 types and 200+ series capable to detect 300+ indicators, including gas sensors based on four principles of semiconductor, catalytic, electrochemical and infrared absorption, and sensors of infrared detection, MEMS, pressure, humidity, flow and water quality, etc. The products are widely used in industrial safety, civil fire prevention, environmental protection, household appliances, automotive electronics, medical & healthcare, and smart city, etc. Moreover, Winsen proceeds to make continuous innovation in new application directions.



Winsen owns strong strength in R&D: excellent R&D team of more than 100 talents and professionals; more than 500 sets of equipment and devices for production and R&D. Our R&D achievements have been approved by Henan Provincial Science and Technology, and kept synchronous with international advanced level. At present, Winsen has more than 100 patents, more than 10 software copyrights, lead or participated in the formulation of 14 national and industrial standards.

The company has been certified with ISO9001, ISO14001, ISO45001, and IATF16949 systems to regulate its management and our products are compliant with ROHS, CE, UL, and RESET to meet different customers demand.

Winsen takes it a mission to "create value for customers, and create win-win future with customers". Inspired by pioneering and innovative spirit, Winsen will be dedicated to promoting healthy development of sensing and IoT industries, and using advanced technology to build a safe, green, healthy, and intelligent environment for production and living.

COOPERATIVE CASES



Smart household appliances introduce microprocessor, sensor and network communication technologies, and can be divided into three scenarios according to their functions: Smart Living & Bed Rooms, smart kitchen, and smart bathroom.

In the market with serious product homogeneity, innovation can break the predicament of competition. In addition to the basic functions, it's important to add innovative functions and on-trend selling concepts to the product based on customer experience and the market demand for a better life.

For consumers, comfort and health are the main theme of modern life. And sensors, as components of the perception, are an important basis for data acquisition and data collection to meet individual needs. Sensors can accurately identify consumers' living environment, living status, life trajectory, and household equipment status; according to the information perceived by sensors, smart home appliance systems are able to automatically regulate and manage so as to realize the intelligent interconnection between people and things, as well as between things.

Integrating sensors and the solutions into smart household appliances is a predictable trend for the industry. Under the ever changing market demand, it's more necessary cooperate the upstream and downstream of the industry chain and make innovations based needs of consumers to bring incremental growth.

HOUSEHOLD APPLIANCE APPLICATION SOLUTIONS

 Smart Room	• Comfortable Temperature	• Fresh Air	• Smart Linkage	• Clean Floor
Environmental Appliance				3
HVAC System				5
Fresh Air Conditioner				7
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Floor Cleaner, Vacuum Cleaner, Sweeping Robot				11
 Smart Kitchen	• Smoke Free	• Safe Operation	• Delicious Food	• Clean Water
Refrigerator				15
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Sensor Solutions-Smart Room

TV, Projector
Human induction

The correlation between indoor air quality and human health is becoming more and more obvious. Indoor air pollution is more serious than imagined. There are more than 900 types of pollutants, mainly gas pollutants such as volatile organic compounds (VOCs), CO, CO₂, NO_x, etc., microbial pollutants and respirable particulate matter (PM_{2.5} and PM₁₀).

“Family Micro Climate” scene increases users’ demand from single temperature to five dimensions of temperature, humidity, wind sensation, cleanliness and freshness; it enables users to personalize their family air conditions. Jointed linkage of multiple devices can be realized between air conditioner, air purifier, humidifier, air quality monitor to achieve accurate control of the household air quality according to the individualized requirements. When air quality monitor detects the air deteriorated, it will link different equipment to purify the air without any manual operation.

Air Conditioner

PM_{2.5}, CO₂, HCHO, VOC, human induction, refrigerant, pressure, Temp. & Humi.

Air Quality Monitor, Smart Audio

PM_{2.5}, CO₂, HCHO, VOC, Temp. & Humi.

Lighting

Human induction

Air Purifier

PM_{2.5}, CO₂, HCHO, VOC, human induction, Temp. & Humi.

HVAC System

PM_{2.5}, CO₂, HCHO, VOC, human induction, Temp. & Humi.

Smart Door

Human induction

Vacuum Cleaner, Sweeping Robot

Dust, human induction, humidity

Sensor Solutions-Environmental Appliance

Air Purifier, Air Disinfection Machine



Quick Response
High Accuracy



Meet Multiple Installation Needs
of Air Inlet & Outlet Orientations



Provides Multiple
Integration Solution

In recent years, more and more environmental appliances such as air purifiers have appeared in people's life. For environmental appliances, "health" and "intelligence" are the two major themes which are continuously deepened under the dual drives of technology progress and updated consumption demand. Resulting from consumers' concerns about indoor formaldehyde, particulate matter (PM), influenza viruses and other air pollutants, sensors to detect different pollutants are widely used in various environmental appliances. New consumer demand and market innovation also put forward higher requirements for sensors.

For this field, Winsen has a variety of products such as PM sensors, formaldehyde sensors, ozone sensors, air quality sensors, ambient temperature and humidity sensors, etc. It provides professional sensor solutions to support the expansion of the environmental appliances and the increase of market opportunities.



Ozone Sensor ZE25-O3

- High sensitivity & resolution
- UART / analog voltage output
- Excellent stability & linearity



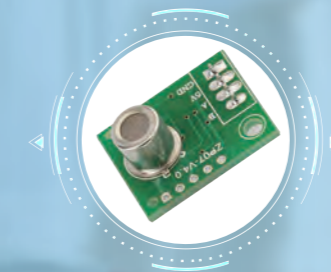
MEMS Temp. & Humi. Module ZS13

- High sensitivity
- Serial / PWM output
- Excellent stability



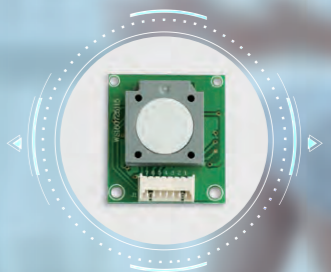
Particulate Matter Sensor ZPH04

- High sensitivity
- Modular design
- Multiple output ways



10-Grade Air Quality Module ZP07

- Ultra high sensitivity
- Calibrated, faulty auto-check
- Long life, cost effective



Electrochemical HCHO Module ZE08K-CH2O

- Excellent anti-interference
- High sensitivity, high resolution
- Long lifespan, high stability

Sensor Solutions-HVAC System



Low Power Consumption
Long Lifespan, Cost Effective



Multiple Output ways
Easy to Use



High Sensitivity
Great Consistency

As people pay more and more attention to air quality and life experience, the demand for air purification equipment has gradually increased. Air purifiers and HVAC system have become daily-use equipment, and HVAC system has become one of the indispensable devices in many indoor places.

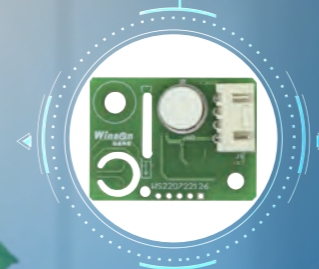
The use of various sensors has made the intelligent control of the HVAC system a mainstream developing trend. Air quality sensor, PM2.5 sensor, carbon dioxide sensor, formaldehyde sensor, temperature & humidity sensor, and ozone sensor have become standard configuration for HVAC systems. One way is to use sensors in the separate detector, which can display the data of various monitoring indicators in real time, and then realize the linkage control with HVAC system through wireless connection; another is to integrate sensors in the host of HVAC, and through setting various parameters, it can realize the automatic start and stop, change of air volume , etc.

Winsen has developed series of sensors widely used in HVAC system for real-time detection, like CO2 sensor, air quality sensor, etc.



MEMS Temp. & Humi. Module ZS13

- High sensitivity
- Serial / PWM output
- Excellent stability



VOC+ Temp. & Humi. Module ZPS20-VOC

- High sensitivity
- Excellent stability
- IIC output, easy to use



Particulate Matter Sensor ZH10

- Real time response
- Accurate data, anti-interference
- Compatible with VOC, T & H output



CO2 Gas Sensor MH-Z1911A

- High sensitivity and stability
- Temperature compensation
- Excellent linear output

Sensor Solutions-Fresh Air Conditioner



Accurate Data and Good Consistency



Professional Algorithm and Calibration Process



Strong Anti-interference High Stability

With the high development of science and technology, people's demand for intelligent air-conditioning products is increasing. Intelligent air-conditioning products not only bring comfort and convenience to our life, but also gradually redefine people's lifestyle. In recent years, household air conditioners have experienced waves of competition such as clean trend, comfort trend, and sterilization trend.

In different subdivisions, consumers' demands for healthy air conditioners are constantly upgraded to be more diversified and multi-level with the renewal of life concepts and life styles. Today, fresh air conditioners have become from concept to reality. With the overall increase in market share, competition in this field will continue to heat up.

As a professional sensor company, Winsen provides a variety of sensor solutions for intelligent air conditioners, including refrigerant leakage sensor, particulate matter sensor, carbon dioxide sensor, formaldehyde sensors, temperature humidity sensor, air quality sensor and multi-in-one integrated gas sensors solutions.



Sensor Solutions-Air Quality Monitor



Low Power Consumption



Design Solution for Complex Structure

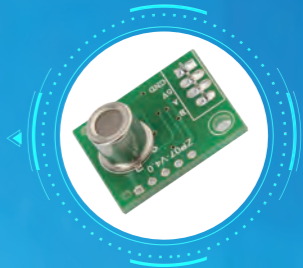
With the improvement of our life, more and more people begin to pay attention to the air quality of their living environment. With more than 20 years of experience, Winsen has accumulated profound and extensive professional knowledge in the sensor market. In addition to a variety of air quality detection modules for parameters such as PM2.5, CO2, HCHO, VOC, temperature and humidity, Winsen is also able to provide highly competitive technical support by integrating sensor technology and systematic solution thinking in the overall design.



Multi-in-One Air Quality Module
ZPHS01C



4-Grade Air Quality Module
ZP07-MP503



HCHO Sensor Module
ZE08-HCHO



MEMS Temp. & Humi. Module
ZS13



CO2 Gas Sensor
MH-Z1911A



Laser Particulate Matter Sensor
ZH07



Sensor Solutions-Floor Cleaner



Low Power Consumption
Long Lifespan, Cost Effective



Professional Algorithm
and Calibration Process



Solving Temperature Influence

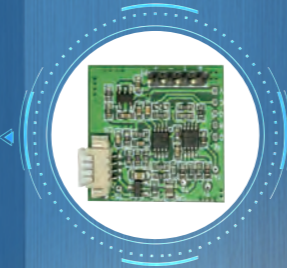
Now the working process of the floor cleaner is relatively intelligent, including four parts: roller brush cleaning, pipe cleaning, intelligent detection and deep cleaning. The scrubber is able to “sense” dirty levels due to the intelligent dirt detection sensor equipped inside, which can identify the status of the roller brush, thereby adjusting the suction strength and water volume, and at the same time, distinguishing color can be read on the display screen.

There are diversified styles of vacuum cleaners, but small and intelligent are still the mainstream. The smart functions of vacuum cleaner can be realized with the use of a small dust detection sensor.



Ultrasonic Ranging Module

- MM-Level detection
- Excellent performance
- Detection range 20mm-60mm



Dirt Detection ZPH05

- Detects Min. particle 0.3mm
- Serial / PWM outputs
- Accurate data

Sensor Solutions-Smart Kitchen Appliance

Through the IoT and artificial intelligence, the smart kitchen allows products to have the ability to “think” and at the same time to be linked with other products to bring a better user experience. Such as smart refrigerators, smart dishwashers, and various smart kitchen appliances, they will intelligently help us to plan a day's kitchen schedule, making food safer, life easier, and enable us to spare more time on favorite things.

- Gas leakage detection, smart alarm
- Stove temperature monitoring, preventing dry burnt
- Accurate monitoring of temperature and humidity to preserve fresh food
- Temperature detection enables automatic adjusting the wind volume of range hood with no need of touching.
- Water quality test for safe drinking

Rangehood, Stove

Smoke concentration, CO, temperature, combustible gas human induction, dry burnt prevention

Oven

Burnt smell, food temperature, temperature humidity

Water Purifier

PH, residual chlorine, dissolved oxygen, ORP, water quality

Refrigerator

Temperature and humidity, food freshness
O2 concentration, CO2 concentration

Sensor Solutions-Refrigerator

MEMS

MEMS Technology



Low Power Consumption
Stable Performance



Strong Anti- interference

The future development of refrigerators will be inseparable from the two characteristics of intelligence and individualization.

Smart refrigerators can realize new functions that break through the tradition, such as automatic temperature adjustment, freshness management, human interaction, and intelligent interconnection. These functions cannot be realized without the fusion of various sensors such as temperature and humidity detection, odor detection, and human body induction, etc. Innovation brings consumers rich functions, better interaction, diversified use scenarios and increasingly satisfying experience.

Winsen provides professional sensors of temperature humidity, pyroelectric, ammonia, hydrogen sulfide and other sensing solutions for smart refrigerators.

Temperature Sensor MRTD-3011

- TO-39 package, small view
- Integrated digital infrared thermopile
- IIC interface, Temp. self-compensation

MEMS Temp. & Humi. Module ZS13

- High sensitivity
- Serial / PWM output
- Excellent stability

MEMS Odor Sensor GM-802B

- MEMS technology, Mini-size
- Fast response and resume
- Low power consumption

Human Induction Module ZRD-09

- Wide work voltage, high sensitivity
- Optional: Repeatable / non-repeatable trigger terminal

Sensor Solutions-**Small Appliances**

Oven, Microwave Oven, Air Fryer, Electric Steaming Pot, Frying Machine.



Low Power Consumption
Long Lifespan, Cost Effective



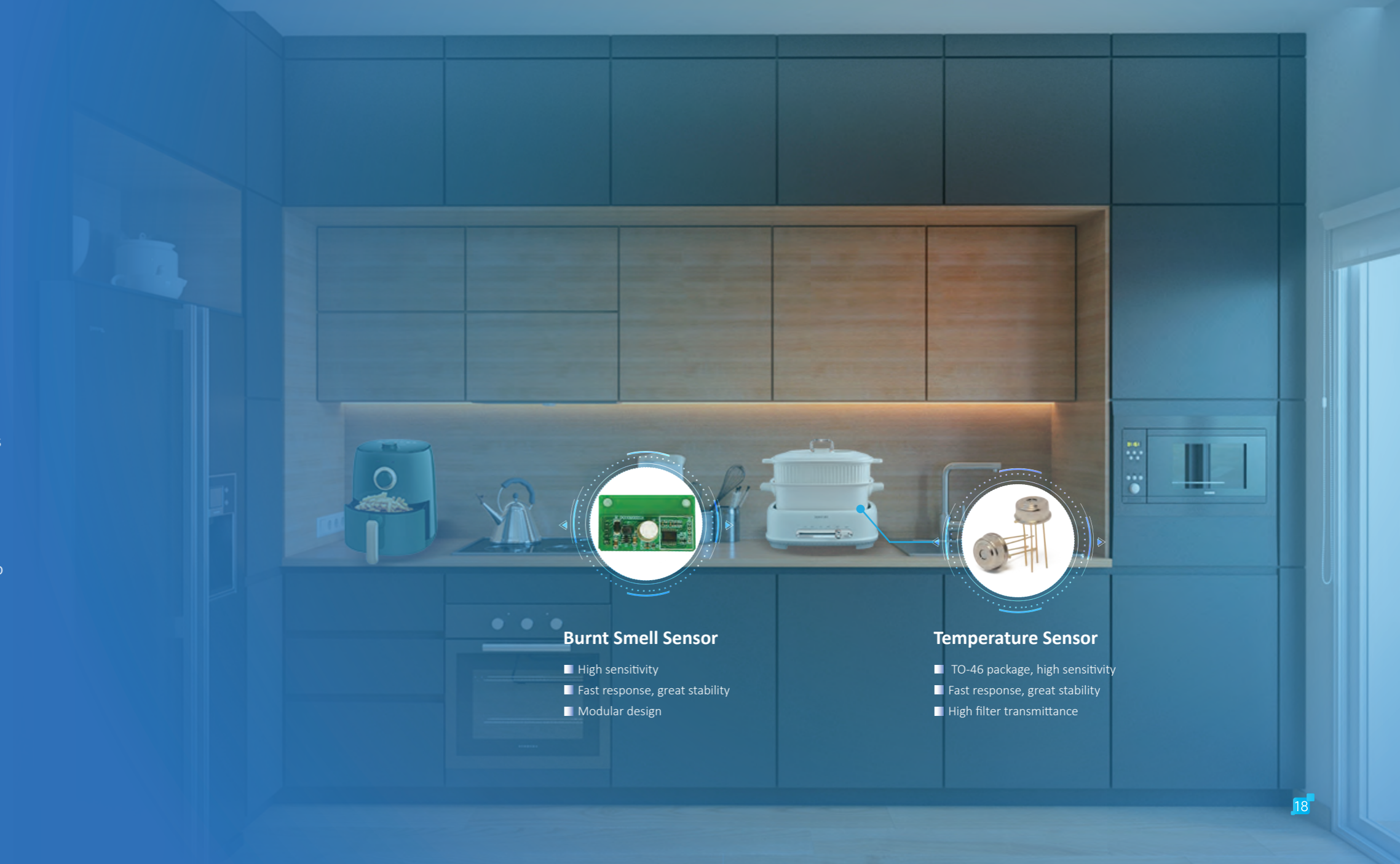
Multiple Output ways
Easy to Use



High Sensitivity
Great Consistency

The young consumers pay more attention to ritual, personalized and diversified lifestyles, and small kitchen appliances are thus ushering in explosive growth. Multi-sensor fusion technology can help the companies to solve the fundamental pain points of consumers, find touching points for product updates, and usher in a growth in the new market environment.

Based on sensor technology, small household appliances such as ovens, microwave ovens, and air fryers can realize new functions such as intelligent temperature control, food maturity detection, and burnt smell detection: use temperature detection to control the maturity of food and solve the pain of microwave parameter setting to preserve the nutrition of food; heat up quickly, monitor the surface temperature, cause Maillard reaction on the surface of meat products, and then roast at low temperature; when the food is burnt and produce peculiar smell, cut off the power in time to ensure the safety of electricity; detect the temperature and humidity in the steamer, adjust volume of the wind and the steam.



Burnt Smell Sensor

- High sensitivity
- Fast response, great stability
- Modular design

Temperature Sensor

- TO-46 package, high sensitivity
- Fast response, great stability
- High filter transmittance

Sensor Solutions-**Water Heater**



Fast Response



High Sensitivity
High Resolution



Multiple Output Methods
Easy to Use

Gas water heaters have the characteristics of unlimited water outlet, no liner, and not easy to scale compared with electric water heaters. They have been the first choice for many families.

The gas water heater is in contact with water, gas, fire and electricity at the same time, so it is necessary to choose a product with comprehensive safety, among which the CO safety is particularly important. In the face of various potential risks, consumers need smart gas water heaters that are safer and feel relieved to use.

Looking through the current mid-to-high-end gas water heater market, CO safety and gas leakage preventive functions have become common configurations. As a professional sensor company, Winsen provides sensor solutions of combustible gas, carbon monoxide gas for water heaters.



Water Heater Gas Leakage Module

- Great selectivity, stable performance
- Sound and light alarm output, 1-wire communication mode



Combustible Gas Module ZP14

- With basic household functions: status indication, buzzer, relay, electric switch signal output by magnetic valve, and support alarm value reset



Water Heater Gas Leakage Module ZE33

- Great selectivity, stable performance
- Sound and light alarm output, 1-wire communication mode



CO Module ZE15-CO

- High sensitivity and resolution
- Low power consumption, long life
- Output: UART / analog voltage...

Sensor Solutions-Range Hood, Stove, Integrated Stove



Fast Response



High Sensitivity
High Resolution



Multiple Output Methods
Easy to Use

In order to meet the ever-increasing demand and to better protect consumers' rights in healthy cooking, many mainstream companies have successively launched gas stoves with certain protection and intelligent functions, such as anti-dry cooking and automatic flameout, intelligent linkage with range hood, smart integrated stoves, etc. Intelligence, integration, and modular have become the main trend of the range hood industry.

From the perspective of safety, the sensor can realize gas leakage detection, non-contact temperature measurement and dry burnt protection. From the perspective of health, the soot particles produced by cooking not only affect the household air quality but also endanger family health. Kitchen particulate matter detection and air quality monitoring are the new requirements for improving consumer experience and product iterative upgrading.



10-Grade Air Quality Module ZP07

- Ultra high sensitivity
- Calibrated, faulty auto-check
- Long life, cost effective



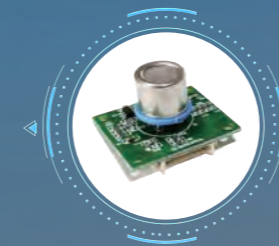
Particulate Matter sensor ZH07

- Real time response
- Accurate output data
- Min. detection particle 0.3 μm



Non-contact Anti-Dry Burnt Probe

- Non-contact, high accuracy
- Strong corrosion resistance
- Long life, use for gas stove



Combustible Gas Leakage Module ZC13

- Quick response
- Serial port upload
- Long life, small size



Dry Burnt Protection Module MRT-313

- TO-39 package, specific view
- Fast response, great stability
- High NTC accuracy

Sensor Solutions-**Water Dispenser, Water Purifier**



Fast Response



High Sensitivity
High Resolution



Multiple Output Methods
Easy to Use

Problems of severe water pollution, boiled water scale, and unfresh bottle water have become pain points of consumers. The traditional water purification market can no longer meet the needs of individuals and families for healthy drinking water. Many families have installed water dispensers, water purifiers, etc. According to the routine indicators and limits in many standards for drinking water quality, focus is put on water quality TDS, turbidity, PH value, conductivity, COD, etc.

Water Quality TDS Sensor



Sensor Solutions-**Kitchen Cooling Fan**



Quick Response
High Accuracy



Meet Different Directions
of Inlet and Outlet



Provides Multiple
Integration Solutions

The most troublesome area in the home must be the kitchen which is hot, humid, and full of oil fume and easy to breed mosquitoes. In order to solve these problems, a corresponding product- Kitchen Cooling Fan has appeared on the market. In recent years, the cooling fan has gradually become the "standard equipment" in our kitchen.

The cooling fans on current market are all integrated with the function of lighting and many additional functions, which are good looking and take small space. For example, adding odor sensor can help to realize the functions of automatic ventilation, deodorization and sterilization.



Smoke Module ZP13

- Ultra high sensitivity
- Excellent long-term stability
- Calibrated, 3MIN preheat judgement

Odor Sensor MP503

- High sensitivity, long life
- Quick response and resume
- Simple detection circuit

Odor Module ZP07

- Ultra high sensitivity
- Calibrated, faulty auto-check
- Long life, cost effective

Sensor Solutions-Smart Bathroom

Combining sensors of human induction, temperature humidity, pressure and flow with the electronic control, digital, and automation as to realize function expansion of bathroom products, and improve the experience of health, comfort and convenience.

Smart Flush

Pressure, water flow, human induction

Electric Water Heater

Liquid level, temperature humidity, water flow

Magic Mirror

Human induction, temperature and humidity

Bathroom Heater

Odor detection, temperature and humidity

Washer, Dryer

Liquid level, temperature humidity, particles

Smart Wardrobe

Odor, particles, human induction, ozone

Sensor Solutions-**Washing and Drying**



Low Power Consumption
Long Lifespan, Cost Effective



Multiple Output Methods
Easy to Use



High Sensitivity
High Resolution

Ozone air purification and sterilization use a generator device to convert oxygen in the air into ozone by high-voltage ionization, and then use its strong oxidizing property to sterilize and remove odors in a closed environment. According to the smell of the clothes, the laundry set can automatically turn on the functions of deodorization and perfuming. Laundry water turbidity detection helps to determine the cleanliness and number of washing times.

The deodorization function will be automatically activated according to the odor in the shoe cabinet and wardrobe. In the humid environment, automatic functions of drying, preheating in winter and ozone sterilization will work intelligently to ensure clean clothes.



MEMS Temp. & Humi. Module ZS13

- High sensitivity
- Serial / PWM output
- Excellent stability



Turbidity Sensor

Sensor Solutions-Smart Flush



Accurate Data and Good Consistency



Professional Algorithm and Calibration Process



Strong Anti-interference High Stability

Human infrared induction sensor, automatic wake-up within 2 meters, automatic sleeping after 10 seconds away to save energy;

The toilet automatically judges the user's actions through pressure sensing and human body motion detection;

Automatic flip, self-flushing, less button strokes;

Automatic flushing and sterilization after user leaves, intelligent interactions;

Real-time display of indoor temperature and humidity, linkage with smart home appliances;

Odor sensor linkage exhaust and HVAC system to ensure fresh air in the bathroom.



Human Induction Sensor ZRD-09

- Wide work voltage, high sensitivity
- Optional: Repeatable / non-repeatable trigger terminal



Flexible Pressure Module ZRD-09

- Long Lifespan
- High sensitivity to pressure
- Thin and bend resistant

