Winsen

One-stop
sensor solutions provider

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Winsen

Automotive Sensor Solution

Comfort | Safety | Intelligence

www.winsen-sensor.com

Zhengzhou Winsen Electronics Technology Co., Ltd

Company Profile

Founded in 2003 and originated in 1990s, Zhengzhou Winsen Electronics Technology CO.,Ltd. (hereinafter referred to as "Winsen") is a 100% subsidiary of Hanwei Electronics Group (Stock code: 300007). And Winsen is a high-tech enterprise with integrated business of R&D, production, sales and solutions and services of sensing products.

Winsen's products cover gas sensors of four major principles in Semiconductor, Catalytic, Electrochemistry and Infrared, also sensors of categories in infrared detection, pressure, humidity, flow, water quality detection and application programs, a total of 7 series, more than 200 categories, which can be used for detection of more than 300 kinds of gases and infrared, pressure, humidity, water quality and other indicators. They are widely used in smart city, industrial safety, smart fire prevention, environmental monitoring,household appliances, automotive electronics, medical health, agriculture husbandry and other eight application fields.

After more than 30 years of development, Winsen has become a well-known enterprise in the global sensor industry and a leader of the domestic gas sensor industry.

7 Sensor series

8+ Application fields

200+ Sensor categories

300+ Detection objects


Smart City


Smart Fire Prevention


Household Appliances


Medical Health


Industrial Safety


Environmental Monitoring


Automotive Electronics


Agriculture Husbandry

www.winsen-sensor.com

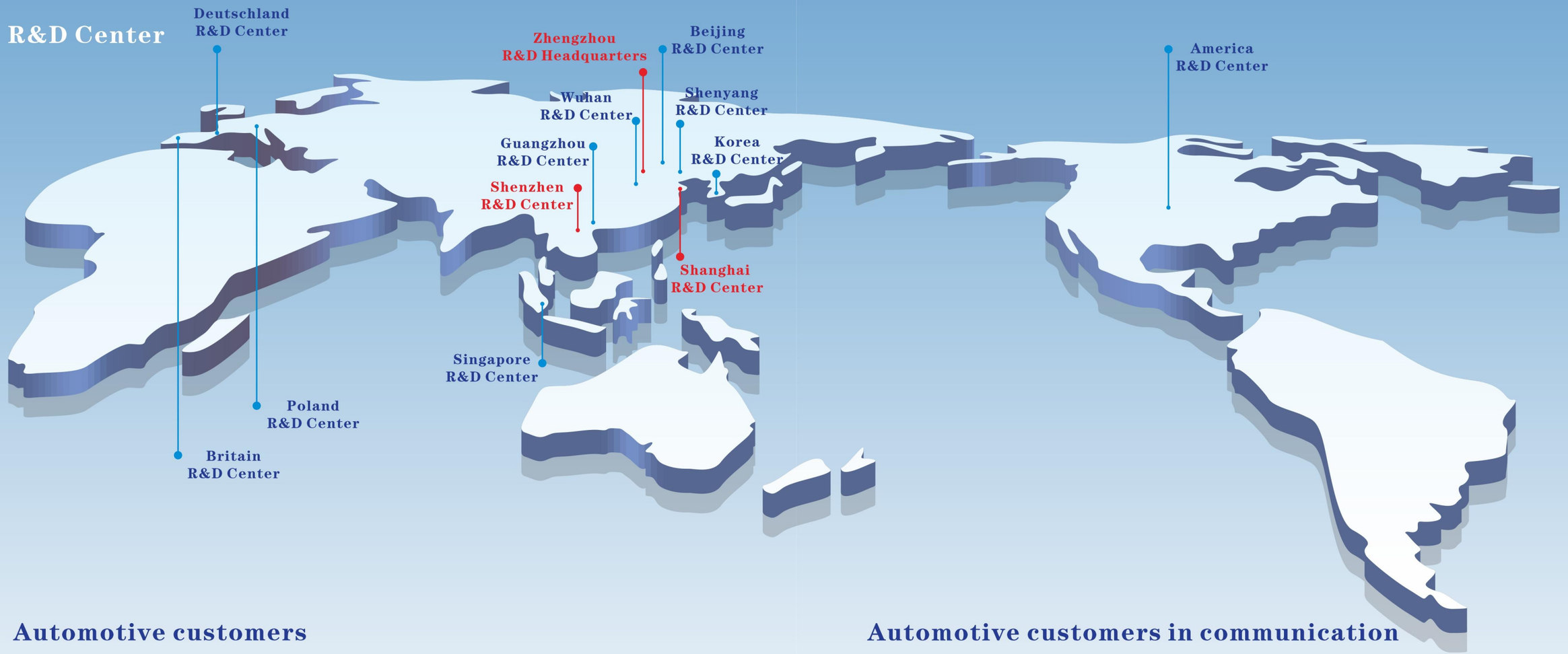
Certifications

Winsen has a perfect management system, and has successfully passed the IATF16949, IS09001, ISO14001, ISO45001, QC080000, GB/T29490 certification. These provide a sound basis for the company's delicacy management, high-quality sustainable development, and to provide customers with high-quality automotive sensor products.

R&D Strength

Winsen has strong R&D strength. At present, there are more than 160 in-service R&D personnel, more than 500 sets of various production and R&D equipment, and it has provincial laboratory, UL laboratory(US), and Henan Province International Joint Laboratory of Nanocomposite sensing materials. A number of R&D achievements have passed the identification of scientific and technological achievements in Henan Province and reached the international leading level. Now, it has more than 110 invention and utility model patents, 22 software Copyrights, and has led or participated in the formulation of 14 national and industry standards.

R&D Center



Automotive customers

吉利汽车 GEELY AUTO · 比亚迪汽车 BYD · 东风汽车 DONGFENG MOTOR · ZEEKR

CHERY · 阿维塔 AVATR · 亿华通 SinoHytec · YUTONG

HASCO AUTOMOTIVE · 南京协众集团 NANJING XIEZHONG GROUP · SONGZ 松芝股份 · 江苏超力 JIANGSU CHAOLI

*The above rankings are in no particular order.

Automotive customers in communication

Valeo 法雷奥 · 广汽集团 GAC GROUP · 北汽集团 · 捷途汽车 JETOUR AUTO

理想 · 长城汽车 · SANDEN · NIO

SAIC · 一汽解放 · MAHLE · And More .....

Note: The trademark rights belong to the customers. If there is any infringement, please contact us to delete it.

Automotive Sensor Solution

Winsen focuses on the layout of three automotive product lines, which includes comfort product line, safety product line and intelligence product line. Winsen successfully passed the IATF16949 Automotive Quality Management System Certification in 2021, and then fully entered the automotive field.

COMFORT PRODUCT LINE

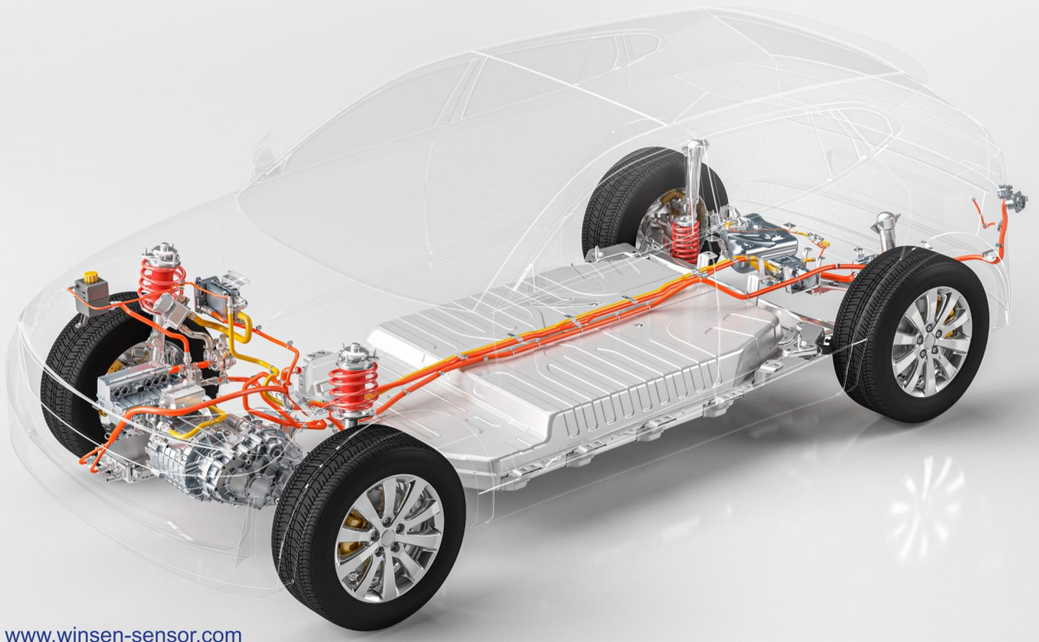
Winsen developed automotive comfort products, such as Air Quality Sensor (AQS), Carbon Dioxide Sensor (CO_2), PM2.5 Single/Dual Channel Laser Dust Sensor and All-in-one Air Quality Sensor, which can be widely used in traditional and new energy vehicles. They can detect the air quality inside and outside the car in real time, providing passengers with a healthier and more comfortable environment.

SAFETY PRODUCT LINE

Winsen developed automotive safety products, such as Hydrogen Leakage Sensor, On-line Water Conductivity Sensor, Coolant Temperature Sensor, All-in-one Lithium Battery Sensor, Refrigerant Leakage Detection Module and Alcohol Detection Sensor. They can sense early, make intelligent judgments, and intervene in advance to avoid unnecessary car safety accidents.

INTELLIGENCE PRODUCT LINE

Winsen developed automotive intelligent products, such as Rain and Light Sensor, Life Presence Sensor, and Anti-intrusion Sensor, greatly enhance the electronic and intelligent level of cars, and further improve vehicle safety and intelligent configuration.



Comfort Product Line

AND MORE ... ...

Air Quality Sensor (AQS)

Carbon Dioxide Sensor

PM2.5 Single/Dual Channel Laser Dust Sensor

All-in-one Air Quality Sensor

Negative-ion Generator

Plasma Generator

Water ion Generator

Safety Product Line

AND MORE ... ...

Hydrogen Leakage Sensor

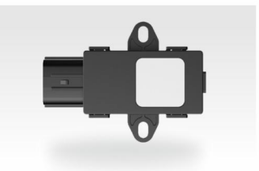
Natural Gas Leakage Sensor

Coolant Temperature Sensor

On-line Water Conductivity Sensor

All-in-one Lithium Battery Thermal Runaway Sensor

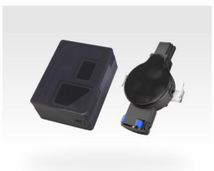
Alcohol Detection Sensor



Refrigerant Leakage Detection Module

Intelligence Product Line

AND MORE ... ...



Rain and Light Sensor

Sunlight Sensor

Light Sensor

Life Presence Sensor

Anti-intrusion Sensor

Air Quality Sensor(AQS)

ZM102 is a low-power, miniaturized, digital module for automotive air conditioning that uses MOS semiconductor gas sensors, MEMS manufacturing processes, and high-performance microprocessors. It can be used to detect air pollution levels inside and outside the automotive environment.

Technical parameter

Detection principle	MOS
Detection target	CO/HC, NOx, NH_3
Detection range	Co:1~5000ppm NOx:0~10ppm NH_3:1~300ppm
Operating voltage	DC (9~16)V
Operating current	<50mA
Quiescent Current	<10uA
Power consumption	<0.6W
Preheating time	30s
IP rating	IP6k6k
Operating temperature	-40℃~85℃
Storage temperature	-40℃~125℃
Operating humidity	5~95%RH(No condensation)
Connection type	Buckle, latch, clip
Output mode	LIN/PWM(Customizable)

Carbon Dioxide Sensor (CO_2)

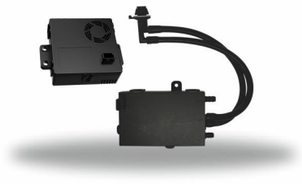
MH-V1512A-LGC is a general purpose, miniaturized sensor that uses non-dispersive infrared (NDIR) principle to detect CO_2 in the car. It has good selectivity, high sensitivity, low power consumption, no oxygen dependence, long life and other characteristics. It can be used to monitor the CO_2 concentration in the car to avoid fatigue driving caused by excessive concentration, thereby avoiding vehicle safety accidents.

Technical parameter

Detection principle	NDIR
Detection target	CO_2
Detection range	400~10000ppm optional
Resolution ratio	1ppm
Detection accuracy	±75ppm/±10% Reading value(-5℃~45℃) ±200ppm/±20% Reading value(-40℃~-5℃,45℃~85℃)
Operating voltage	DC (9~16)V
Operating current	<40mA
Peak current	≤125mA
Power consumption	<0.48W
Preheating time	20s
Response time	T90<60s
Recovery time	T10<60s
Operating temperature	-40℃~85℃
Storage temperature	-40℃~85℃
Operating humidity	0~95%RH(No condensation)
Output mode	LIN/PWM (Customizable)

Single/Dual Channel Laser Dust Sensor(PM2.5)

ZH30/ZH32 uses the Mie scattering principle to detect dust particles inside/outside the vehicle in real time. It is processed through professional algorithms and calibration detection processes, and has good consistency and stability. It can output a variety of signals, has low power consumption, low noise, small size, and is easy to integrate.

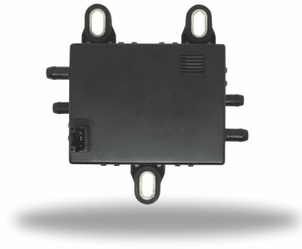


Technical parameter

Detection principle	Mie scattering principle
Detectio target	0.3~10μm dust particles
Detection range	0~1000μg/m³
Resolution ratio	1ug/m³
Detection accuracy	±15μg/m³(<100μg/m³) ±15%(100~1000μg/m³)
Operating voltage	DC (9~16)V
Operating current	Single channel<150mA Dual channel<300mA
Quiescent Current	Single channel<100uA
Power consumption	Single channel<1.8W Dual channel<3.6W
Preheating time	30s
Response time	T90<30s
IP rating	IP5K
Operating temperature	-40℃~85℃
Storage temperature	-40℃~85℃
Operating humidity	0~95%RH(No condensation)
Output mode	CAN/LIN(Customizable)

All-in-one Air Quality Sensor

ZMHS10 is an integrated, miniaturized product used in automotive air conditioners. It uses advanced manufacturing technology and high-performance microprocessors to simultaneously detect and output PM2.5, CO_2, AQS, temperature and humidity and other parameters. It integrates the functions of a variety of detection sensors to detect the composite air quality of the internal and external environment of the vehicle and make comprehensive judgments.



Technical parameter

Detection principle	Mie scattering principle, NDIR, MOS, Temperature sensing circuit, humidity sensing material and so on
Detection range	PM2.5:0~1000μg/m³;CO_2:400~10000ppm; AQS:CO: 1~5000ppmD、NOx: 0~10ppm、NH_3:1~300ppm;Temperature:-40~125℃;Humidity:0~100%RH
Detection accuracy	PM2.5: ±15ug/m³(＜100 ug/m³),±15%(100~1000ug/m³);CO_2:±75ppm(＜750ppm),±10%(750~10000ug/m³);Temperature:0.15~0.3℃;Humidity:2~3%RH;
Resolution ratio	PM2.5:1ug/m³;CO_2:1ppm;Temperature:0.016℃;Humidity:0.03%RH;
Detection target	PM2.5、CO_2、AQS、Temperature and humidity
Operating voltage	DC (9~16)V
Operating current	<500mA
Quiescent current	≤0.1mA
Power consumption	<6W
Output mode	CAN/LIN(Customizable)
Preheating time	30s
Response time	T90<15s
Operating temperature	-40℃~85℃
Storage temperature	-40℃~85℃
Operating humidity	0~95%RH（No condensation）

Negative-ion Generator

ZI100/ZI101 negative-ion generator main functions: purify the air, remove odors and improve air quality. A large number of electrons (e^-) generated by the negative ion generator are captured by oxygen molecules (O_2) in the air to form negative air ions. Negative air ions can absorb smoke, harmful substances, odors, etc. in the air, thereby purifying the air.

Technical parameter

Technical principle	Pulse oscillator circuit
Input voltage	DC (9~16)V
Output voltage	-(2.0-5.0)KVDC
Power consumption	≤1W
Operating current	<80mA
Ozone concentration	<0.05ppm
Ion concentration	>1.0x106n/cm³ (At a distance of 200mm/300mm)
Operating temperature	-40℃~85℃
Storage temperature	-40℃~85℃
Operating humidity	0~95%RH(No condensation)
Output mode	LIN(Customizable)

Plasma Generator

The plasma generator produces positive and negative ions at the same time, and produces a huge energy release at the moment of positive and negative charge neutralization in the air, which leads to the change of the structure of the bacteria around it or the conversion of energy, resulting in the death of the bacteria and the realization of its bactericidal effect.

Because the number of negative ions is greater than the number of positive ions, the excess negative ions are still floating in the air, which can achieve smoke elimination, dust removal, odor elimination, and air quality improvement to promote the health care role of human health.

Technical parameter

Technical principle	Pulse oscillator circuit
Operating voltage	DC (9~16)V
Ion concentration	5.0x10⁶n/cm³
Operating current	<20mA
Power consumption	≤1W
Ozone concentration	<0.05ppm
Operating noise	≤31db
Operating temperature	-40℃~85℃
Storage temperature	-40℃~85℃
Operating humidity	0~95%RH(No condensation)
Output mode	LIN(Customizable)

Water ion Generator

The technology of active water mist ion generation device originates from the simulated lightning effect and waterfall effect of nature, using semiconductor refrigeration sheet to condense water in the air, and using high voltage electric field to stimulate ionization reduction of condensed water, so as to stimulate small molecules of active water mist ions. This device doesn't need to add water, no consumables, and produces hundreds of billions of active water mist ions per second.

Active water mist ions are hair-skin friendly, negatively charged nano-level active water purification molecular groups, 5-20nm in diameter, small particle size, weak acid, high water content, rich in active oxygen, with deep cleaning, sterilization, odor removal and other effects.

Technical parameter

Technical principle	High voltage electric field excites the ionized condensate
Operating voltage	DC (9~16)V
Ion concentration	>10x10⁶n/cm³
Power consumption	≤1W
Operating current	<350mA
Quiescent current	≤0.1mA
Ozone concentration	<0.05ppm
Service life	≥10000h
Operating temperature	-40℃~85℃
Storage temperature	-40℃~85℃
Operating humidity	0~95%RH(No condensation)
Output mode	LIN (Customizable)

Hydrogen Leakage Sensor

ZC61 is mainly used in hydrogen fuel cell engines and hydrogen supply systems to monitor hydrogen leakage inside and outside the vehicle. It uses MEMS technology to closely combine mature detection technology with high-quality design circuits, and has good anti-electromagnetic interference properties, excellent repeatability and product stability.

Technical parameter

Detection principle	Catalytic combustion
Detection target	H_2
Detection range	0~40000ppm
Resolution ratio	1ppm
Detection accuracy	±10%(>1%VOL(H_2))
Operating voltage	DC (9~36)V
Operating current	<15mA
Power consumption	<0.2W
Start-up time	<1s
Response time	T90<3s
Recovery time	<10s
IP rating	IP68
Operating temperature	-40℃~85℃
Storage temperature	-40℃~125℃
Operating humidity	0~95%RH(No condensation)
Output mode	PWM/CAN/Analog quantity (Customizable)

Natural Gas Leakage Sensor(CH4)

ZC401 is a low-power, miniaturized, digital sensor used in gas fuel engines and their gas supply systems. It uses an aerobic catalytic sensor, combined with a high-performance microprocessor, and has good electromagnetic resistance. It is widely used in emerging energy vehicles (CNG/LNG) due to its interference characteristics, excellent repeatability and product stability.

Technical parameter

Detection principle	Catalytic combustion
Detection target	Natural gas, liquefied gas, coal gas, alkanes and other flammable gases
Detection range	0~100%LEL
Resolution ratio	1ppm
Detection accuracy	±10%(>1%VOL(CH_4))
Operating voltage	DC (9~16)V
Operating current	<100mA
Power consumption	<1.2W
Response time	T90 ⩽ 10s
Recovery time	≤20s
IP rating	IP68
Operating temperature	-40℃~85℃
Storage temperature	-40℃~125℃
Operating humidity	0~95%RH(No condensation)
Output mode	PWM/CAN/Analog quantity(Customizable)

On-line Water Conductivity Sensor

ZW-HC101 is a vehicle gauge level online conductivity detection sensor, which is periodically changing excitation signals at both ends of the electrodes to detect the output signal to determine the conductivity of the liquid to be measured. It has the characteristics of accurate measurement, fast response, long life and high reliability.

Technical parameter

Detection principle	Electrochemistry
Detection target	Coolant
Detection range	0.01~20 US/cm
Resolution ratio	0.01US/cm
Detection accuracy	±1.5% F.S.
Operating voltage	DC (9~36)V
Power consumption	≤0.3W
IP rating	IP68/IP6K9K
Operating temperature	-40℃~100℃
Operating pressure	<0.6 Mpa
Output mode	CAN/Analog quantity(Customizable)

Coolant Temperature Sensor

The coolant temperature sensor is applied in the cooling circuit pipe of the hydrogen engine to measure the temperature of the coolant and transmit the detected temperature to the engine control unit for intelligent temperature control with the thermal management system.

Technical parameter

Detection principle	NTC thermistor
Resistance range	0.08~50kΩ
Operating temperature	-40℃~150℃
IP rating	IP67
Installation torque	15~20N·m
Output mode	Resistance output

All-in-one Lithium Battery Thermal Runaway Sensor

ZEQH-101 performs real-time monitoring of CO_2, CO, VOC concentration, temperature, pressure and other indicators released before the battery thermal runaway is triggered, and transmits the monitored values to the vehicle battery management system (BMS). It has notable features such as accurate parameters, fast response time, less cross-interference, low power consumption, long life and high reliability.

Technical parameter

Detection principle	Planar semiconductor ;NDIR
Detection range	CO:0~1000ppm;CO_2:400~10000ppm;VOC:200~10000ppm;pressure:0 ~130kPa;temperature:-40℃~200℃
Detection accuracy	CO:±10%Reading value;CO_2:±50ppm or±5%Take the maximum reading; VOC:±250ppm or±25% Take the maximum reading;pressure:±1kPa;temperature:±2℃
Resolution ratio	CO:1ppm;CO_2:1ppm;VOC:1ppm;temperature:0.016℃
Detection target	CO、CO_2、VOC、temperature、pressure
Operating voltage	DC (9~16)V
Operating current	≤100mA
Power consumption	≤1.2W
Interface level	12V
Response time	T90<15s
IP rating	IP65
Operating temperature	-40℃~85℃
Storage temperature	-40℃~95℃
Output mode	CAN/LIN(Customizable)

Alcohol Detection Sensor

The alcohol detector is a detection instrument used to measure the alcohol content of human exhaled gas. Its core component adopts electrochemical principles and is equipped with a temperature sensor to achieve temperature compensation function. It has the characteristics of high precision, high sensitivity and strong anti-interference ability. At the same time, the pressure sensor is integrated to detect the human body's blowing action, further ensuring the authenticity of the measurement.

Technical parameter

Detection principle	Electrochemistry
Detection target	Alcohol
Detection range	0~440mg/100ml(0~2mg/L)
Resolution ratio	1mg/100mL
Detection accuracy	0~-15%
Operating voltage	DC (9~16)V
Operating current	<2.5A(Maximum value), <1mA(Standby value)
Response time	T90<5s(above 0℃);T90<15s(below 0℃)
Operating temperature	-40℃~85℃
Storage temperature	-40℃~85℃
Operating humidity	0~95%RH(No condensation)
Output mode	CAN/LIN(Customizable)

Refrigerant Leakage Detection Module

ZRT510 module is an intelligent infrared refrigerant detection module, using non-dispersive infrared (NDIR) principle to detect refrigerants, with good selectivity and no oxygen dependence. The module is a compact high performance module made by combining mature infrared absorption gas detection sensor with micro machining and excellent circuit design. It is easy to use and has excellent performance.

Technical parameter

Detection principle	NDIR
Detection target	R290
Operating voltage	5±0.1 VDC,Ripple<50mV
Average current	<60 mA(The heating function is not enabled)
Peak current	<200 mA
Data update	1s
Preheating time	<30s
Response time	In 25%LFL environments, the time to reach the alarm point(7%LFL)was less than 10s
Working condition	-40~80 °C, 0~100% RH
Storage condition	-40~60 °C, 0~100% RH
Output mode	RS485(UART/ PWM can be customized)

Sunlight Sensor

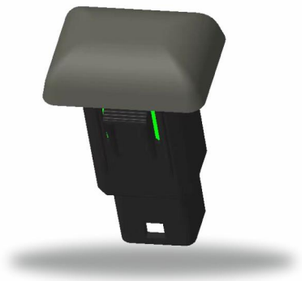
ZL-940-V3C is based on the photoelectric principle of semiconductors, which can be used to detect changes in external ambient light. It contains a photosensitive device that converts the light signal into an electrical signal. When the ambient light is too strong or too weak, the microcontroller inside the sensor determines whether the conditions for turning on/off the lights, and communicates with the vehicle to control the turning on/off of the lights. The sensor integrates light acquisition, signal processing, communication output, algorithm and other modules. It has the advantages of small volume, fast reaction and low power consumption.

Technical parameter

Detection principle	Photoelectric effect
Detection target	Light
Detection range	(0~7000)Lux
Supply voltage	DC (9~16)V
Rated voltage	DC 12V
Operating current	≤70mA
Output mode	LIN2.0
Operating temperature	(-40~85)℃
Storage temperature	(-40~95)℃
Operating humidity	0~95%RH(No condensation)
Response time	Sunlight from weak light to strong light - delay greater than 5s,No more than 20s of sunlight from strong to weak light - delay less than 2s
	(350~1100) nm

Light Sensor

ZH401 uses the ambient light sensor to detect the light intensity in front of the vehicle and can output different control signals to automatically control the switching status of the vehicle lights in different lighting environments.



Technical parameter

Detection principle	Photoelectric conversion
Detection target	Light
Detection range	1500~6000lx
Operating voltage	DC (9~16)V
Operating current	≤100mA
Power consumption	<0.3W
Response time	Low level-delay 0.5s;High resistance state-delay 10s
IP rating	IP5K
Operating temperature	-40℃~85℃
Storage temperature	-40℃~100℃
Operating humidity	0~95%RH(No condensation)
Output mode	Low level/High resistance state(Customizable)

Rain and Light Sensor

ZH101 integrates light detection and temperature and humidity functions from different angles, forming a five-in-one multi-functional composite sensor (temperature, humidity, rain, sunlight, and ambient light). Using advanced imaging technology, it can accurately detect the three-dimensional information of rain, with high signal-to-noise ratio, strong anti-interference ability, high sensitivity, and precise rainfall classification characteristics.

Technical parameter

Detection principle	Total reflection of light
Detection target	Water & light
Detection range	Rain:7*7mm(Rain detection area) Lighting directly above:1000~50000lx(Light intensity detection range) Front light:1000~100000lx(Light intensity detection range)temperature:-40~85℃ temperature:-40~85℃ humidity:0~100%RH
Resolution ratio	3*3 pixels
Detection accuracy	temperature:±0.5℃ humidity:±3.0%RH
Operating voltage	DC(9~24)V
Operating current	≤100mA
Power consumption	<0.3W
Response time	100ms
IP rating	IP5K
Operating temperature	-40℃~85℃
Storage temperature	-40℃~95℃
Operating humidity	0~95%RH(No condensation)
Output mode	CAN/LIN(Customizable)

Life Presence Sensor

ZHMT101 is equipped with a variety of human body perception and environmental temperature hardware, and the intelligent algorithm integrates a variety of human body detection signals and environmental parameters to detect the existence of life in the vehicle and indicate the danger degree of the environment in which the life is located. The sensor is a high accuracy, intelligent vehicle life detection and warning solution.

Technical parameter

Detection principle	Infrared thermopile NDIR
Detection target	Life form
Detection range	Detection field of view range:0.6*1.4*0.6m CO_2:400~5000ppm;Temperature:-50~100℃
Resolution ratio	CO_2:1ppm;Temperature:±0.1℃
Detection accuracy	CO_2:±(50+5% reading value); Temperature:±0.5℃
Operating voltage	DC (9~16)V
Operating current	29mA~130mA
Quiescent Current	29mA
Power consumption	Static power<0.3W; Peak:1.5W
Response time	T90<30s
Operating temperature	-30℃~85℃
Storage temperature	-40℃~95℃
Output mode	CAN/LIN(Customizable)

Anti-intrusion Sensor

The anti-intrusion sensor is a distributed network-wide vehicle-wide anti-intrusion solution. The sensor has the advantages of wide coverage, strong environmental stability, and convenient networking. In order to prevent living organisms outside the vehicle from intruding into the vehicle and causing property damage, provides a complete set of product solutions.

Technical parameter

Detection principle	Infrared pyroelectricity
Detection target	Life form
Detection range	Detection distance:3m Temperature:-55~125℃
Resolution ratio	Temperature:±0.1℃
Detection accuracy	Temperature:±0.5℃
Operating voltage	DC (9~16)V
Power consumption	<0.05W
Response time	<1s
Operating temperature	-30℃~70℃
Storage temperature	-40℃~95℃
Output mode	CAN/LIN(Customizable)