WxS 870-036

Temp+Humidity+AirPressure+SO2

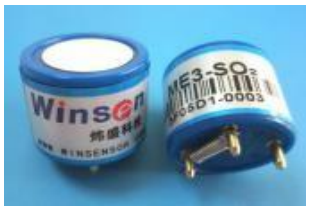
Overview

The WxS 8700 is a wireless gas sensing platform based on LoRa technology operating at license free spectrum (ISM), enabling both public and private IoT network deployments by service providers, municipality governments, enterprises. It's deployed in star topology with very high density, particularly suited for industrial and enterprise IoT applications such as

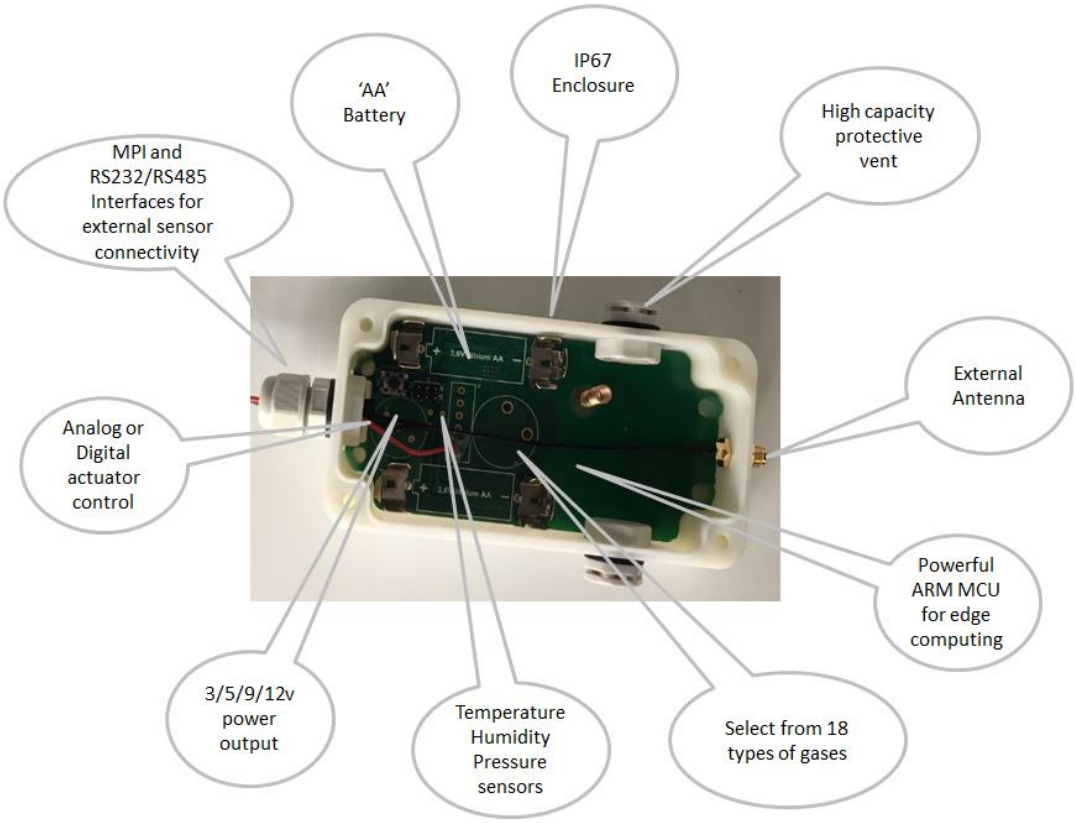
1) Industrial campus safety
2) Smart and Safety
3) Environmental Monitoring
4) Subway security and safety
5) Hospitality safety
6) Residential complex, shopping center, CBD safety

Polysense iView is a cloud IoT network management and sensing data analytic platform, supporting Polysense sensor end nodes, such as WxS 8800 and WxS 8700, and 3rd party sensor nodes and definition of new sensor data types. It provides flexible sensor data format conversion, data import and export; charting, data analytic, integrated map, zone and priority based alert management, SMS text and email notification, and open API for 3rd party integration.

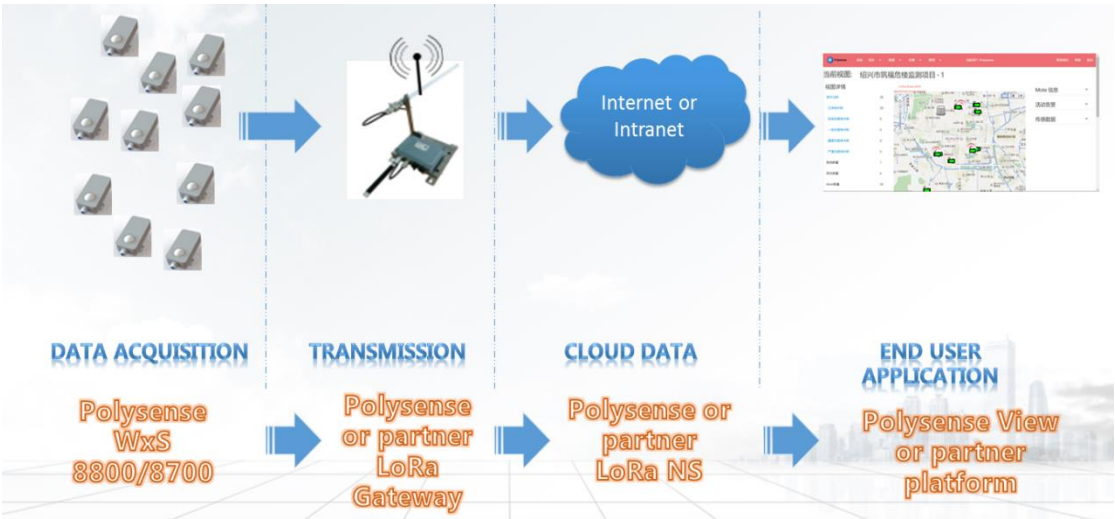
Product Highlights



- ✓ 18 types of gases supported (flammable, explosive, poisonous, pollutant or with bad odor)
- ✓ PM 1/2. 5/10, VOC, CO2 also supported
- ✓ Integrated temperature, humidity, and atmospheric pressure sensor
- ✓ Temperature Range: -40~125℃
- ✓ Humidity Range: 0 ~ 100%; +/- 2% typical accuracy
- ✓ Air pressure:260 to 1260 hPa absolute pressure range;High-resolution mode: 0.01 hPa RMS
- ✓ SO2 gas measurement range:0-20PPM;Maximum limit of measurement:150PPM; Sensitivity:0.55±0.15uA/PPM;Resolution:0.1PPM
- ✓ Response time≤30s
- ✓ Zero Draft(-20℃~40℃)≤0.2PPM
- ✓ Use temperature and humidity range:-20℃~+50℃;15~90 RH
- ✓ Pin insertion, small size, easy installation
- ✓ 4 MPI interfaces: each MPI can operate as 0-10v analog voltage input, 4-20mA current input, open/close, pulse counting
- ✓ Selectable RS232/RS485, Modbus interface for external sensor connectivity
- ✓ Analog and 16 level PWM digital output for actuator control
- ✓ 3v/5v/9v/12v power output to external devices
- ✓ IP 67+ enclosure rating
- ✓ Integrated internal antenna
- ✓ 1 or 2 'AA' Li-Ion Battery; 5 – 10 years of battery operational life
- ✓ Optional DC 5V power source
- ✓ Optional external SMA/IPEX antenna
- ✓ LoRaWAN 1.02 compliant
- ✓ Up to 5km reach in NLOS and up to 18km LOS environments
- ✓ Edge computing and cloud sensor data processing and analytic



Application Architecture



Sensor Specification

Parameter	value
Temperature	±0.3 ℃ accuracy; ±0.1 ℃ resolution; -40C to +125C range
Humidity	±2% typical accuracy; 0.1%rh resolution; 0-100% range
Atmospheric pressure	260-1260 hPa range; 0.01 hPa RMS
SO2	Measurement range:0-20PPM; Maximum limit of measurement:150PPM; Sensitivity:0.55±0.15uA/PPM; Resolution:0.1PPM Response time≤30s Zero Draft(-20℃~40℃)≤0.2PPM Use temperature and humidity range:-20℃~+50℃;15~90 RH
LoRa Alliance	LoRaWAN 1.0.2
FC IC CE ROHS	FCC(America): 2AO7W-WXS8000, IC(Canada): 23701-WXS8000 CE(European Union)：B1810246 ROHS(European Union): R2BJ180927F0664E

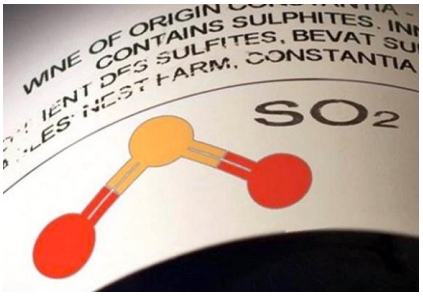
Wireless Specification

Parameter	value
Antenna	Internal or external (SMA)
Channels	8/16/64 full duplex
Channel plan	NA (902MHz), EU (868MHz) and CN (470MHz)
Compliance	LoRaWAN 1.0.2
Maximum Link Budget	168dB
Distance	2-5km NLOS; 15km LOS

Mechanical Specification

Parameter	value
Enclosure dimension	60mm x 100mm x 30mm
Enclosure IP rating	IP65 or IP67
Power	1 or 2 AA Battery; DC 5v optional
Operating Temperature	-40C to +85C
High airflow protective vent	8,000ml/min (dp = 70mbar)
Total Weight	120 g

The harm of SO2



SO2 is a toxic gas that is most sensitive to people with heart and respiratory problems.The following are adverse reactions to changes in SO2 concentration:

(1)When the concentration of SO2 in the air is only 1ppm, the chest will feel an uncomfortable feeling of compression.

(2)At 8ppm, people find it difficult to breathe.

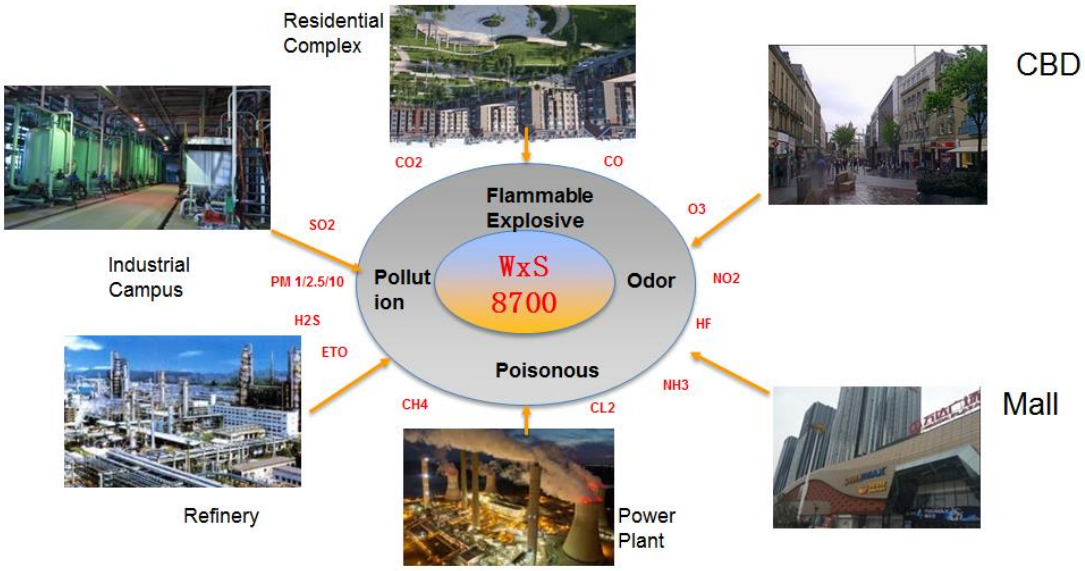
(3)At 10ppm, the throat cilia expel mucus

The Sample Applications

Gas, dust, and particulate matters are today present everywhere in our daily lives – in our breathing atmosphere, in our homes, in our working environment, in our vehicles; there is no escape of such seemingly invisible stuff.

Some of them are unharmful, even necessary, such as O2. However, many are dangerous – flammable to cause fire, explosive to cause major accidents, poisonous to cause cancers, major elements of environmental pollutions, or bad living environment with bad odor. They can be generated in many industrial processes, from vehicles, or just gas leaks.

Therefore, it is becoming increasingly critical to be able to detect and monitor the presence and density of such type of gases, dust and particulate matters, for the safety of the society and the health of human beings, making sure the density level does not rise or cross the dangerous threshold level or report timely to avoid major accidents by advanced warnings.



Applications	**Description**
Industrial campus safety	Many industrial operations, as part of the chemical process, generate certain types of gases which may be harmful to workers, pollute the air, or even causing fire or explosion under certain conditions (temperature and pressure). WxS 8700 can be installed to detect and monitor virtually all dangerous gases while assessing the environmental condition (temperature and pressure)
Residential Complex, hospitality hotels, shopping center, CBD Safety	Keeping the shopping center, CBD and complex safe and pleasant is one of the key factors to attract customers. WxS 8800 can be installed at strategic locations, such as public square, hallway, restroom to detect and monitor fire and smoke (Temperature and CO), bad odor (NH3, O3), and dangerous gases (such as CH4).
Subway security and safety	Crowded spaces such as subway are always potentially dangerous for accidental gas leaks, fire, or terrorism attacks. WxS 8700 can be installed at strategic locations to monitor the presence and arise of such dangerous gas elements in combination with temperature monitoring
Environment Monitoring	Air quality (AQI) is now a major measurement of quality of life in any city. A holistic view of the air quality consists of a number of measurements, including CO, CO2, O3, NO2, and PM 1/2.5/10, street noise level. WxS

	8700 enables the sampling, collection, edge processing, transmission of all these critical parameters
Smart Home	You often go back home multiple times to double check that the appliances in kitchen is turned off when you leave home to work or go on a vacation. You are concerned about gas leaks and fire. WxS 8700 can monitor temperature, CO, CH4, nature gas – while you are away and alert you if anything abnormal is detected

About Polysense

Polysense develops products and solutions for Industrial IoT and smart homes, including distributed fiber sensing, LPWAN LoRa and NB-IoT based wireless IoT sensors, Passive Optical Network (PONs) and cloud based data management and analytic platform.

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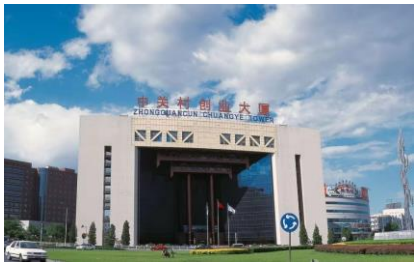

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