Polysense

WxS7800-423081

WiFi Smart Gas (CO, H2S, O2, CH4) Sensors & RTU 2-in-1 Terminal

Product Highlights

❖ WiFi Smart Gas (CO, H2S, O2, CH4) Sensors & RTU 2-in-1 Terminal
❖ 2-in-1 smart sensor(s) and RTU terminal product
❖ Optional DC 5V/DC 12V power supply
❖ Optional Battery power supply (ER34615H 19,000mAh/ER34615M 13,500mAh)
❖ The concentration of four combined gases CO, H2S, O2 and CH4 in the environment can be monitored and reported in real time
❖ Expandable with 2 of 14 types PSS gas sensors with aluminum sleeve enclosure
❖ Up to 8 working simultaneously including sensors and controllers; Customization needed if more than 8 working at the same time
❖ RTU controlling signal and interfaces OD/PWR triggered by sensor(s) data or OTA command for solenoid valve or other devices
❖ Optional (Public/Private) IoT cloud platform PolySuite iView and LoRaWAN network iServer
❖ LoRaWAN Compliance

Products includes following parts:

❖ WxS7800 WiFi Smart IoT and RTU 2-in-1 Terminal
❖ ENC-102003 WxS Series 4.0 High Poromeric Enclosure(ϕ145x90x70mm)
❖ PSS-423081 Gas (CO, H2S, O2, CH4) Sensors

Configuration Tool

❖ iEdge4.0 WxS IoT Terminal products can be configured with PolySuite software-visual based Configuration Tool or CLI interface command or OTA via IoT platform, such as PolySuite PaaS platform iView.
❖ Download link http://ota.polysense.online/wincc/ConfigurationTool.rar

Product Image

❖ The shell is WxS Series 4.0 High Poromeric Enclosure(ϕ145x90x70mm) , as shown in the figure below
❖ The sensor is externally connected. See the following document PSS-423081 for the sensor picture

WxS7800

WiFi Smart IoT and RTU 2-in-1 Terminal

Related Products

Product #	Interf.	Descriptions
WxS7800	11MPI+RS485+OD*2+PWR*2	WiFi Smart IoT and RTU 2-in-1 Terminal (Inc.WxS78xx,PSM-xx00,PSB-BD01,&Enclosure)
WxS7801	RS485+OD*2+PWR*2	WiFi Smart IoT and RTU 2-in-1 Terminal (Inc.WxS78xx,PSM-xx01,PSB-BD01,&Enclosure)
WxS7802	0-20mA*1+OD*2+PWR*2	WiFi Smart IoT and RTU 2-in-1 Terminal (Inc.WxS78xx,PSM-xx02,PSB-BD01,&Enclosure)
WxS7803	0-20mA*4+OD*2+PWR*2	WiFi Smart IoT and RTU 2-in-1 Terminal (Inc.WxS78xx,PSM-xx03,PSB-BD01,&Enclosure)
WxS7804	0-3.3V*2+OD*2+PWR*2	WiFi Smart IoT and RTU 2-in-1 Terminal (Inc.WxS78xx,PSM-xx04,PSB-BD01,&Enclosure)
WxS7805	0-3.3V*4+OD*2+PWR*2	WiFi Smart IoT and RTU 2-in-1 Terminal (Inc.WxS78xx,PSM-xx05,PSB-BD01,&Enclosure)
WxS7806	0-10V*2+OD*2+PWR*2	WiFi Smart IoT and RTU 2-in-1 Terminal (Inc.WxS78xx,PSM-xx06,PSB-BD01,&Enclosure)
WxS7807	0-10V*4+OD*2+PWR*2	WiFi Smart IoT and RTU 2-in-1 Terminal (Inc.WxS78xx,PSM-xx07,PSB-BD01,&Enclosure)
WxS7808	PT100*1+OD*2+PWR*2	WiFi Smart IoT and RTU 2-in-1 Terminal (Inc.WxS78xx,PSM-xx08,PSB-BD01,&Enclosure)
WxS7809	PT100*5+OD*2+PWR*2	WiFi Smart IoT and RTU 2-in-1 Terminal (Inc.WxS78xx,PSM-xx09,PSB-BD01,&Enclosure)
WxS780A	Switch*1+OD*2+PWR*2	WiFi Smart IoT and RTU 2-in-1 Terminal (Inc.WxS78xx,PSM-xx0A,PSB-BD01,&Enclosure)
WxS780B	Switch*5+OD*2+PWR*2	WiFi Smart IoT and RTU 2-in-1 Terminal (Inc.WxS78xx,PSM-xx0B,PSB-BD01,&Enclosure)
WxS780C	Unibus*1+OD*2+PWR*2	WiFi Smart IoT and RTU 2-in-1 Terminal (Inc.WxS78xx,PSM-xx0C,PSB-BD01,&Enclosure)
WxS780D	Unibus*18+OD*2+PWR*2	WiFi Smart IoT and RTU 2-in-1 Terminal (Inc.WxS78xx,PSM-xx0D,PSB-BD01,&Enclosure)
WxS780E	IIC*1+OD*2+PWR*2	WiFi Smart IoT and RTU 2-in-1 Terminal (Inc.WxS78xx,PSM-xx0E,PSB-BD01,&Enclosure)
WxS780F	SPI*1+OD*2+PWR*2	WiFi Smart IoT and RTU 2-in-1 Terminal (Inc.WxS78xx,PSM-xx0F,PSB-BD01,&Enclosure)
WxS780G	Uart*2+OD*2+PWR*2	WiFi Smart IoT and RTU 2-in-1 Terminal (Inc.WxS78xx,PSM-xx0G,PSB-BD01,&Enclosure)
WxS780H	Uart*3+OD*2+PWR*2	WiFi Smart IoT and RTU 2-in-1 Terminal (Inc.WxS78xx,PSM-xx0H,PSB-BD01,&Enclosure)
WxS780J	Uart*1+RS485+OD*2+PWR*2	WiFi Smart IoT and RTU 2-in-1 Terminal (Inc.WxS78xx,PSM-xx0J,PSB-BD01,&Enclosure)
WxS7850	Ai/Ao/Di/Pi/Ro/IIC/SPI/Ci + RS232/485/Ro/RJ45	WiFi Smart RTU

Product Highlights

❖ Interfaces supported:

   o MPI:(AIN(0-20mA)*2, PT100*1, VIN(0-10V/0-3.3V)*2, Switch*1 ,Unibus*1, IIC *1，SPI*1, Uart(3.3V TTL)*2), RS485*1
   o RTU interfaces
      ▪ OD*2 output for external devices controlling
      ▪ PWR*2 output for external devices/sensors power supply or customization usage

❖ 2-in-1 DC(5V/12V)+Battery(3.6V Li-SOCl2 ER34615H/M) Power Supply, DC in priority
❖ Up to 8 working simultaneously including sensors and controllers; Customization needed if more than 8 working at the same time
❖ Built-in sensor options including:

   o PSS-403011 IIC Temperature and Humidity Sensor (Indoor)
   o PSS-403012 RS485 Temperature and Humidity Sensor (Indoor)
   o PSS-403013 IIC Temperature and Humidity Sensor (IP67,Outdoor)
   o PSS-403014 RS485 Temperature and Humidity Sensor (IP67,Outdoor)

- o PSS-403015 IIC   Temperature and Humidity Sensors (Indoor)
- o PSS-403016 RS485 Temperature and Humidity Sensors (Indoor)
- o PSS-403017 IIC   Temperature and Humidity Sensors (IP67,Outdoor)
- o PSS-403018 RS485 Temperature and Humidity Sensors (IP67,Outdoor)
- o PSS-403019 IIC   Temperature and Humidity Sensors (Indoor)
- o PSS-40301A RS485 Temperature and Humidity Sensors (Indoor)
- o PSS-40301B IIC   Temperature and Humidity Sensors (IP67,Outdoor)
- o PSS-40301C RS485 Temperature and Humidity Sensors (IP67,Outdoor)
- o PSS-403021 IIC   Temperature + Humidity + Barometric Pressure Sensors(Indoor)
- o PSS-403022 RS485 Temperature + Humidity + Barometric Pressure Sensors(Indoor)
- o PSS-403023 IIC   Temperature + Humidity + Barometric Pressure Sensors (IP67,Outdoor)
- o PSS-403024 RS485 Temperature + Humidity + Barometric Pressure Sensors (IP67,Outdoor)
- o PSS-33B011 RS485 illumination Sensor(Indoor)
- o PSS-423011 Uart   AQI(PM2.5/10, SO2,NO2, O3, CO,Temp,Humidity) PPM Level Sensors
- o PSS-423031 Uart   IAQ(PM2.5/10, CO2, HCHO, Temp,Humidity) Sensors
- o PSS-423041 Uart   IAQ(PM2.5/10, CO2, TVOC, Temp,Humidity) Sensors
- o PSS-423051 Uart   IAQ(PM2.5/10, CO2, HCHO, TVOC,Temp,Humidity)Sensors
- o PSS-318711 Uart   GPS/Beidou Positioning Sensor
- o PSS-318712 RS485   GPS/Beidou Positioning Sensor
- o PSS-319311 0-3.3V Tilt / Inclination Sensor (SHM- Structure Health Monitoring)
- o PSS-333051 0-3.3V   PIR Sensor (3-4 Meters)
- o PSS-333052 0-3.3V   PIR Sensor (up to 20 Meters)
- o PSS-334061 0-3.3V   UV Sensor (Range:0-15 grade, outdoor)
- o PSS-355051 Switch   Uni-Call Button & Controller
- o PSS-362011 Uart   Sound/Noise Sensor (30~130dB range, Indoor)
- o All Gas Sensors with Product No. PSS-21xxxx

❖ Support 1-8 enclosure externally connected sensors

- o All enclosure external PSS sensors w/o separate power supply

❖ RTU OD&PWR(PWM) output control inerfaces

- o OD output control interface for controlling external devices such as electric relay,AC contactor, beeper, draught fan, lamps and lantern etc.
- o PWR*2 output, one default for external devices/sensors power supply voltage output, one with 3.3V voltage; or customization usage,such as for PWM port
- o PWR port signal can be used as PWM output to control stepper moter or lamp
- o Sensor(s) data or OTA Command triggered OD/PWR controlling signal&interfaces

❖ Power supply options:

- o PSB-BT01 WxS Terminal Battery Power (3.6VDC Output) (3.6V Li-SOCl2 ER34615H/M)
- o PSB-BT02 WxS Terminal Battery Power Board (3/5/9/12VDC Output) (3.6V Li-SOCl2 ER34615H/M)
- o PSB-DC01 WxS Terminal DC Power Board (Inc. PSP-DC012V)
- o PSB-BD01 WxS Terminal Battery (3.6V Li-SOCl2 ER34615H/M) & DC Power Board(Inc. PSP-DC012V)
- o Battery capacity ER34615H: 19000mAh/ER34615M: 13500mAh

❖ iEdge 4.0 terminal enclosure options

  o ENC-102001 WxS Series Standard Enclosure(145x90x55mm)IP67
  o ENC-102002 WxS Series Poromeric Enclosure(145x90x59mm)
  o ENC-102003 WxS Series High Poromeric Enclosure(145x90x70mm)

❖ Terminal and sensor parameters configurable with Configuration Tool running on PC

  o WiFi Bands Supported and SW Configurable
  o WiFi Uplink Transmission Cycle Configurable
  o Sensor Parameters Configurable
  o Sensor Data Report Cycle Configurable

❖ FOTA (Over The Air) firmware upgrade, including to upgrade loader and application images
❖ OTA (Over The Air) terminal running parameters supported including output signal
❖ Low power consumption, years of battery operational life with 3.6V Li-SOCl2 ER45615H/M Battery with various scenarios
❖ Integrated internal antenna, or optional external SMA/IPEX antenna
❖ WiFi Compliance

Specifications

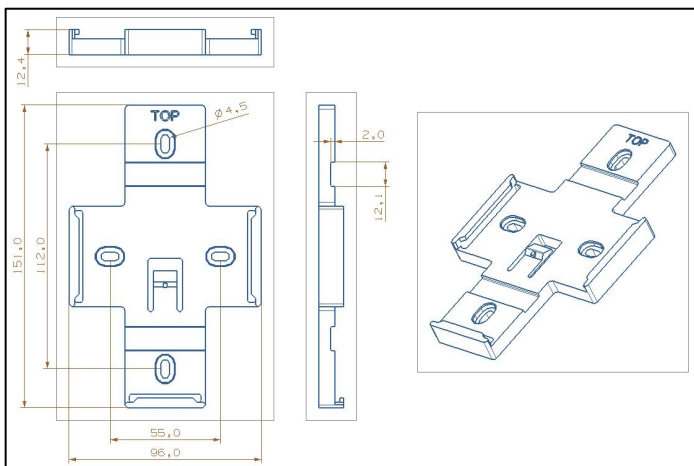| Parameters	Value
Smart Terminal	
Interfaces	MPI Interfaces-Any Mixture of Following: MPI:(AIN(0-20mA) *2, PT100 *1, VIN(0-10V/0-3.3V) *2, Switch *1 ,Unibus*1, IIC *1，SPI*1, Uart(3.3V TTL)*2), RS485*1 Output Control: OD*2&PWR*2
Data Report	Cross-threshold report, plus periodic report (the threshold and the periodic report cycle are both user-configurable)
Intensive data sampling and averaging	Support intensive data sampling and averaging to improve data accuracy
Wireless	
Wireless standards	802.11 b/g/n
output power	+20 dBm in 802.11b mode
frequency range	2.4GHz-2.5GHz (2400M-2483.5M)
Data connection	UART/HSPI/I2C/I2S/Ir Remote Contorl
Wireless network mode	station/softAP/SoftAP+station
Network Protocol	IPv4, TCP/UDP/HTTP/FTP
Power	Power consumption in standby mode is less than 1.0 mW (DTIM3)
Antenna	Integrated internal antenna or external 1/2 wavelength whip antenna (SMA)
Mechanical	
Dimension	3 Enclosure options with different size WxS Series 4.0 Enclosure(φ145x90x55mm, IP67) WxS Series 4.0 Poromeric Enclosure(φ145x90x59mm) WxS Series 4.0 High Poromeric Enclosure(φ145x90x70mm)
IP rating	IP65&IP67

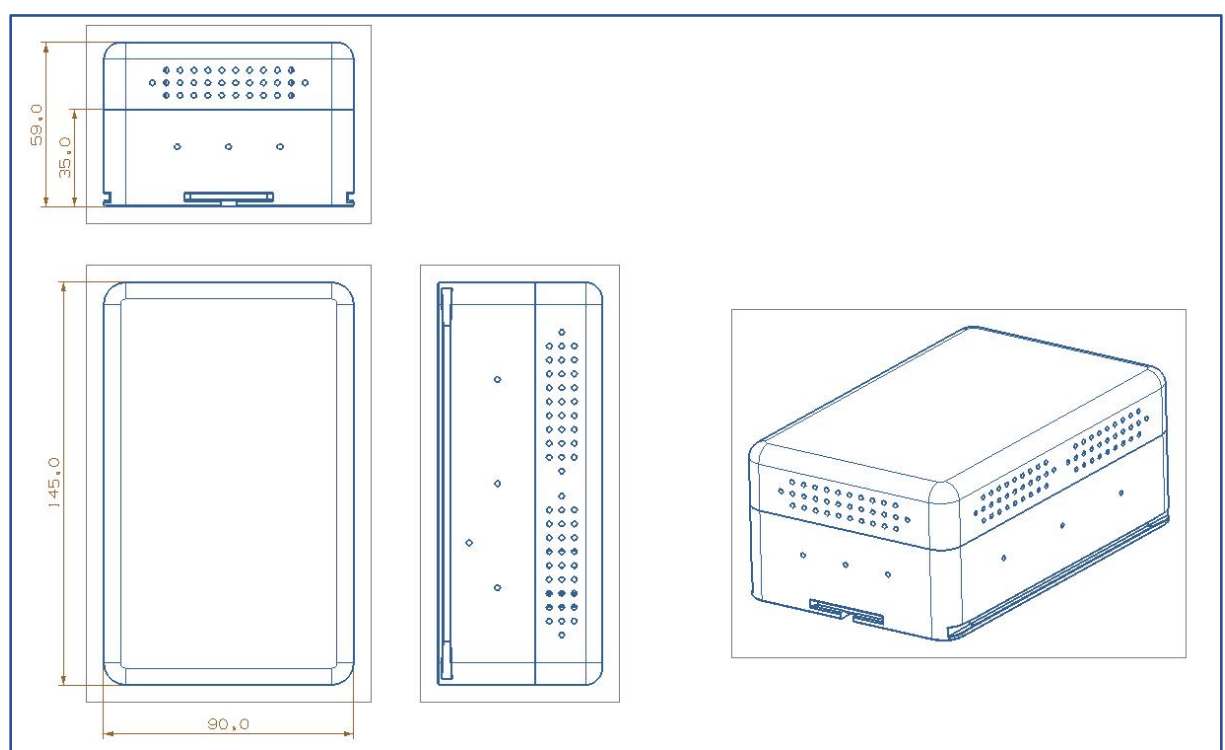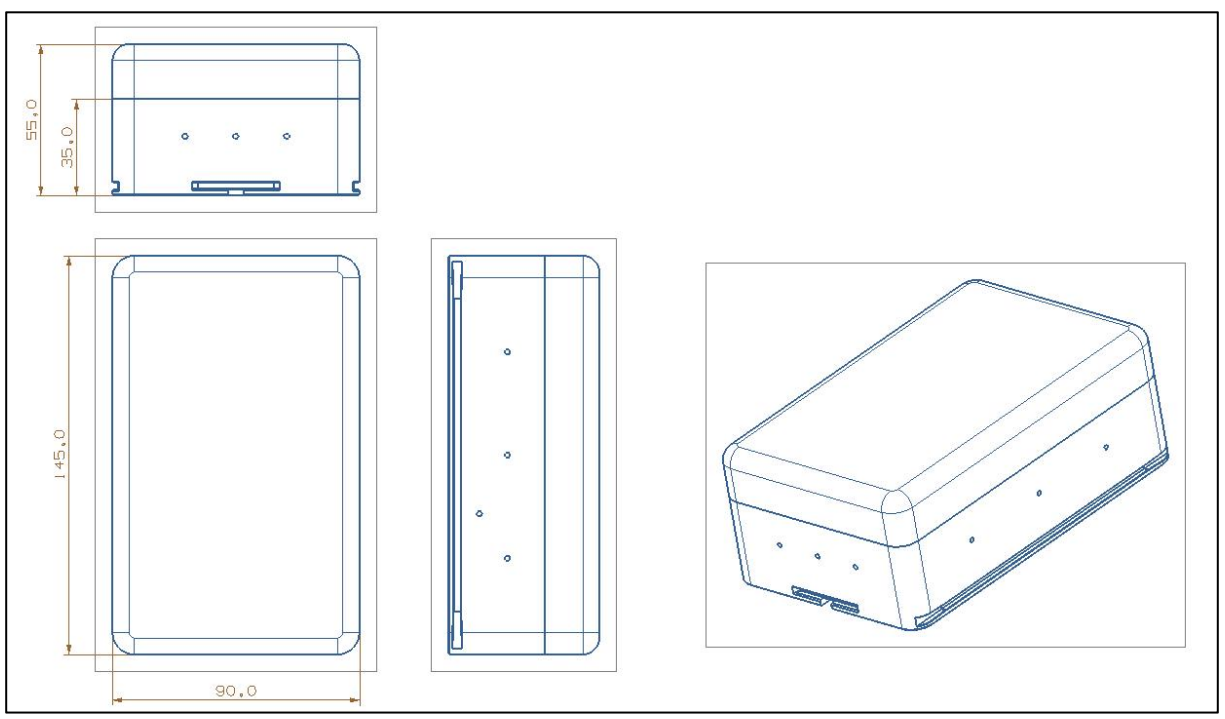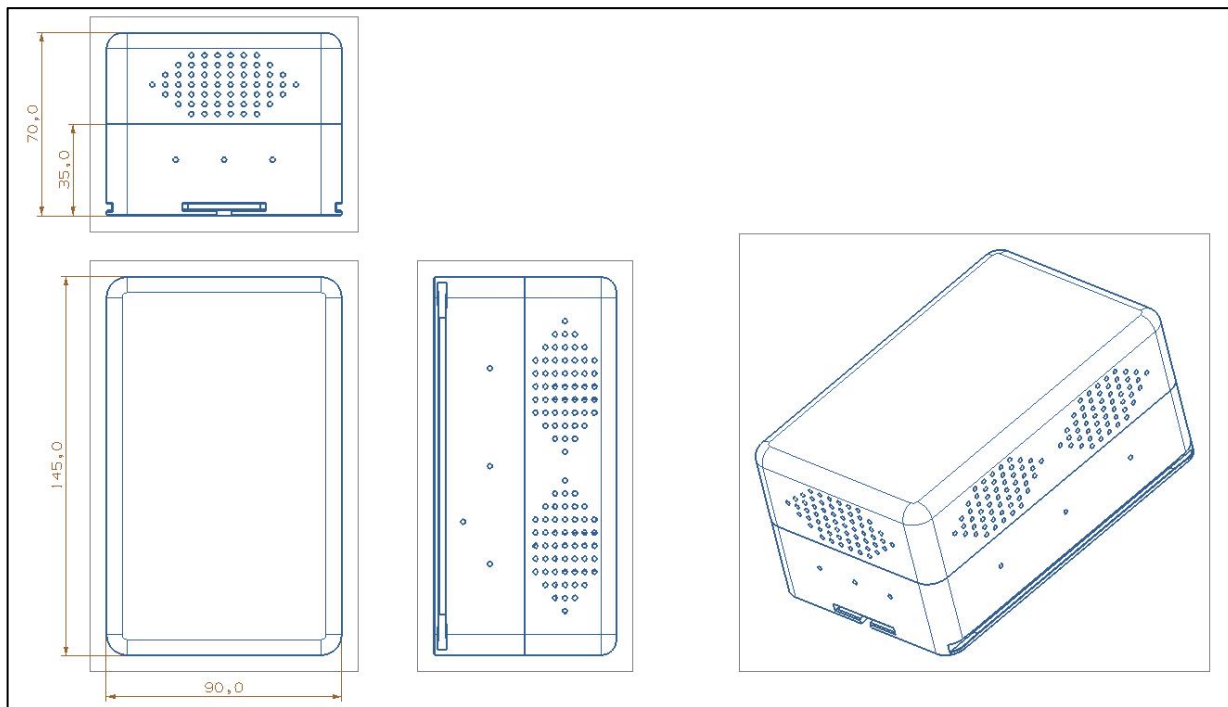| Operating Temperature	-40C to +85C
Total Weight	150 g
Electrical	
Supply Voltage	3.6VDC
Power Type	Replaceable 1 ER34615H/M 3.6V Li-SOCI2 Battery (H/M); DC 4.5V – 12V optional

Configuration Tool

❖ iEdge4.0 WxS IoT Terminal products can be configured with PolySuite software-visual based Configuration Tool or CLI interface command or OTA via IoT platform, such as PolySuite PaaS platform iView.

❖ Download linkhttp://ota.polysense.online/wincc/ConfigurationTool.rar

Installation Guide

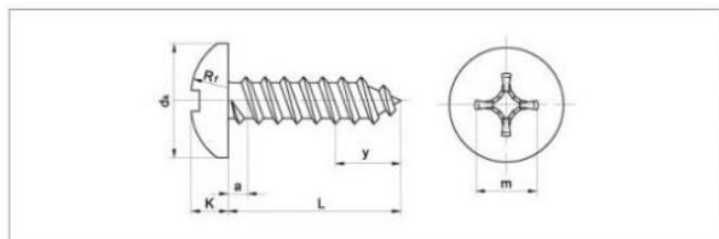❖ Below diagram shows the general installation guide for WxS7800, it can be installed on any flat and solid surface:

❖ Below is the recommendation of the self-tapping screw and its sizes:

螺纹规格		ST2.2	ST2.9	ST3.5	ST4.2	ST4.8	ST5.5	ST6.3
dk	min	3.7	5.3	6.64	7.64	9.14	10.57	11.57
K	min	1.4	2.15	2.35	2.8	3.4	3.7	4.3
m		1.9	3	3.9	4.4	4.9	6.4	6.9
L		4.5mm–100mm						

Product Images

❖ WxS Series 4.0 Enclosure(φ145x90x55mm, IP67)

❖ WxS Series 4.0 Poromeric Enclosure(φ145x90x59mm)

❖　WxS Series 4.0 High Poromeric Enclosure(φ145x90x70mm)

PSS-423081

Gas (CO, H2S, O2, CH4) Sensors

Product introduction

PSS-423081 The gas detection sensor is designed for various places requiring environmental gas detection, including four types of gas sensors (CO, H2S, O2, CH4 and other gases can be expanded). With good selectivity and stability, the module can output the current concentration values of four gases in real time through the digital serial port.

Detection principle

Carbon monoxide CO, hydrogen sulfide H2S and oxygen O2 are electrochemical detection. The electrochemical structure is a three electrode structure. The principle of electrochemical detection is that the compounds on the sensor change according to the concentration of the ambient gas, the conductivity changes, and the voltage value output by the module changes accordingly to obtain the concentration data.

Methane CH4 is the principle of catalytic combustion. At a certain temperature, combustible gas will be catalytic combustion on its surface. Combustion is a function of the concentration of combustible gas when platinum resistance temperature rises and resistance changes.

Product features

❖ Detect item: carbon monoxide CO, hydrogen sulfide H2S, oxygen O2, methane CH4
❖ High integration
❖ Good stability and fast response
❖ Real time serial port output concentration

Product parameters

Parameters	
Detection gas	CO,H2S,O2,CH4
Measuring range	CO：（0-1000）ppm H2S：（0-100）ppm O2：（0-30）%VOL CH4：（0-100）%LEL
Resolution	CO：1ppm H2S：1ppm O2：0.1%VOL CH4：1%LEL
Working voltage	（3.5~5）V
Operating current	<100mA
Response time	<30s
Interface	
Output signal	UART
Mechanical	
Size	46mm*46mm*21.6mm
Working temperature	-20℃～50℃
Operating humidity	15%RH~90%RH

Storage temperature	0 ℃~20 ℃ (recommended)
Life expectancy	2 years (in normal air)
Power	
Power	3.5~5V

Application

It can be used in the environment of plant gas leakage, underground operation, tunnel detection, coal mine detection, etc. It can be worn or held by human body to enter the detection site, or it can be used in fixed sites to detect the current ambient gas concentration and remind personnel of safety.

Ordering Guide

❖ PSS-423081 sensor is a sensor only, it needs to use with WxS terminals to combine to different product series; On the basis of the combination, multiple PSS sensors can be loaded through the Multiple Purpose Interface (MPI) of the intelligent IoT terminal.

❖ According to the specific scenario of use case, the enclosure and antenna of intelligent IoT terminal will be replaced to ensure the product quality and performance.

❖ PSS sensors can be integrated with the WxS terminal via the MPI interface to form different product series.

❖ Example of products are as follows:

- WxS7800-423081 WiFi Series Smart Gas (CO, H2S, O2, CH4) Sensors & RTU 2-in-1 Terminal
- WxS8800-423081 LoRaWAN Series Smart Gas (CO, H2S, O2, CH4) Sensors & RTU 2-in-1 Terminal
- WxS9800-423081 NB-IoT (China) Series Smart Gas (CO, H2S, O2, CH4) Sensors & RTU 2-in-1 Terminal
- WxS9900-423081 NB-IoT (Global) Series Smart Gas (CO, H2S, O2, CH4) Sensors & RTU 2-in-1 Terminal
- WxSC800-423081 LTE Cat1 Series Smart Gas (CO, H2S, O2, CH4) Sensors & RTU 2-in-1 Terminal
- WxSC900-423081 LTE Cat1 w/GPS Series Smart Gas (CO, H2S, O2, CH4) Sensors & RTU 2-in-1 Terminal
- WxSD800-423081 LTE Cat4 Series Smart Gas (CO, H2S, O2, CH4) Sensors & RTU 2-in-1 Terminal