

WxS9900-333073

NB-IOT Atmospheric visibility Smart Sensor & RTU 2-in-1 Terminal

Product Highlights

- ❖ NB-IOT Atmospheric visibility Smart Sensor & RTU 2-in-1 Terminal
- ❖ 2-in-1 smart sensor(s) and RTU terminal product
- ❖ Optional DC 12V power supply
- ❖ Optional Battery power supply (ER34615H 19,000mAh/ER34615M 13,500mAh)
- ❖ It can monitor atmospheric visibility with a monitoring distance of 80km and good stability
- ❖ 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

Products includes following parts:

- ❖ WxS9900 NB-IOT Smart IoT and RTU 2-in-1 Terminal
- ❖ ENC-102001 WxS Series 4.0 Enclosure(ϕ 145x90x55mm, IP67)
- ❖ PSS-333073 Atmospheric visibility sensor (485, 80KM \pm 2%, resolution 1m), IP67

Configuration Tool

- ❖ Edge4.0 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 Enclosure(ϕ 145x90x55mm, IP67) , as shown in the figure below
- ❖ The sensor is externally connected. See the following document PSS-333073 for the sensor picture



WxS9900

NB-IoT Smart IoT and RTU 2-in-1 Terminal

Related Products

Product #	Interf.	Descriptions
WxS9900	11MPI+RS485+OD*2+PWR*2	NB-IoT Smart IoT and RTU 2-in-1 Terminal (Inc.WxS99xx,PSM-xx00,PSB-BD01,Enclosure)
WxS9901	RS485+OD*2+PWR*2	NB-IoT Smart IoT and RTU 2-in-1 Terminal (Inc.WxS99xx,PSM-xx01,PSB-BD01,Enclosure)
WxS9902	0-20mA*1+OD*2+PWR*2	NB-IoT Smart IoT and RTU 2-in-1 Terminal (Inc.WxS99xx,PSM-xx02,PSB-BD01,Enclosure)
WxS9903	0-20mA*4+OD*2+PWR*2	NB-IoT Smart IoT and RTU 2-in-1 Terminal (Inc.WxS99xx,PSM-xx03,PSB-BD01,Enclosure)
WxS9904	0-3.3V*2+OD*2+PWR*2	NB-IoT Smart IoT and RTU 2-in-1 Terminal (Inc.WxS99xx,PSM-xx04,PSB-BD01,Enclosure)
WxS9905	0-3.3V*4+OD*2+PWR*2	NB-IoT Smart IoT and RTU 2-in-1 Terminal (Inc.WxS99xx,PSM-xx05,PSB-BD01,Enclosure)
WxS9906	0-10V*2+OD*2+PWR*2	NB-IoT Smart IoT and RTU 2-in-1 Terminal (Inc.WxS99xx,PSM-xx06,PSB-BD01,Enclosure)
WxS9907	0-10V*4+OD*2+PWR*2	NB-IoT Smart IoT and RTU 2-in-1 Terminal (Inc.WxS99xx,PSM-xx07,PSB-BD01,Enclosure)
WxS9908	PT100*1+OD*2+PWR*2	NB-IoT Smart IoT and RTU 2-in-1 Terminal (Inc.WxS99xx,PSM-xx08,PSB-BD01,Enclosure)
WxS9909	PT100*5+OD*2+PWR*2	NB-IoT Smart IoT and RTU 2-in-1 Terminal (Inc.WxS99xx,PSM-xx09,PSB-BD01,Enclosure)
WxS990A	Switch*1+OD*2+PWR*2	NB-IoT Smart IoT and RTU 2-in-1 Terminal (Inc.WxS99xx,PSM-xx0A,PSB-BD01,Enclosure)
WxS990B	Switch*5+OD*2+PWR*2	NB-IoT Smart IoT and RTU 2-in-1 Terminal (Inc.WxS99xx,PSM-xx0B,PSB-BD01,Enclosure)
WxS990C	Unibus*1+OD*2+PWR*2	NB-IoT Smart IoT and RTU 2-in-1 Terminal (Inc.WxS99xx,PSM-xx0C,PSB-BD01,Enclosure)
WxS990D	Unibus*18+OD*2+PWR*2	NB-IoT Smart IoT and RTU 2-in-1 Terminal (Inc.WxS99xx,PSM-xx0D,PSB-BD01,Enclosure)
WxS990E	IIC*1+OD*2+PWR*2	NB-IoT Smart IoT and RTU 2-in-1 Terminal (Inc.WxS99xx,PSM-xx0E,PSB-BD01,Enclosure)
WxS990F	SPI*1+OD*2+PWR*2	NB-IoT Smart IoT and RTU 2-in-1 Terminal (Inc.WxS99xx,PSM-xx0F,PSB-BD01,Enclosure)
WxS990G	Uart*2+OD*2+PWR*2	NB-IoT Smart IoT and RTU 2-in-1 Terminal (Inc.WxS99xx,PSM-xx0G,PSB-BD01,Enclosure)
WxS990H	Uart*3+OD*2+PWR*2	NB-IoT Smart IoT and RTU 2-in-1 Terminal (Inc.WxS99xx,PSM-xx0H,PSB-BD01,Enclosure)
WxS990J	Uart*1+RS485+OD*2+PWR*2	NB-IoT Smart IoT and RTU 2-in-1 Terminal (Inc.WxS99xx,PSM-xx0J,PSB-BD01,Enclosure)
WxS9950	Ai/Ao/Di/Pi/Ro/IIC/SPI/Ci + RS232/485/Ro/RJ45	NB-IoT Smart RTU

Product Highlights

❖ Interfaces supported:

- 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
- 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:

- PSS-403011 IIC Temperature and Humidity Sensor (Indoor)
- PSS-403012 RS485 Temperature and Humidity Sensor (Indoor)
- PSS-403013 IIC Temperature and Humidity Sensor (IP67,Outdoor)
- PSS-403014 RS485 Temperature and Humidity Sensor (IP67,Outdoor)
- PSS-403015 IIC Temperature and Humidity Sensors (Indoor)

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

❖ Support 1-8 enclosure externally connected sensors

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

❖ RTU OD & PWR(PWM) output control interfaces

- OD output control interface for controlling external devices such as electric relay,AC contactor, beeper, draught fan, lamps and lantern etc.
- 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
- PWR port signal can be used as PWM output to control stepper moter or lamp
- Sensor(s) data or OTA Command triggered OD/PWR controlling signal & interfaces

❖ Power supply options:

- PSB-BT01 WxS Terminal Battery Power (3.6VDC Output) (3.6V Li-SOCI2 ER34615H/M)
- PSB-BT02 WxS Terminal Battery Power Board (3/5/9/12VDC Output) (3.6V Li-SOCI2 ER34615H/M)
- PSB-DC01 WxS Terminal DC Power Board (Inc. PSP-DC012V)
- PSB-BD01 WxS Terminal Battery (3.6V Li-SOCI2 ER34615H/M) & DC Power Board(Inc. PSP-DC012V)
- Battery capacity ER34615H: 19000mAh/ER34615M: 13500mAh

❖ iEdge 4.0 terminal enclosure options

- ENC-102001 WxS Series 4.0 Enclosure(ϕ 145x90x55mm, IP67)
- ENC-102002 WxS Series 4.0 Poromeric Enclosure(ϕ 145x90x59mm)
- ENC-102003 WxS Series 4.0 High Poromeric Enclosure(ϕ 145x90x70mm)

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

- NB-IoT Bands Supported and SW Configurable
- NB-IoT Uplink Transmission Cycle Configurable
- Sensor Parameters Configurable
- 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 ER34615H/M Battery with various scenarios
- ❖ Integrated internal antenna, or optional external SMA/IPEX antenna
- ❖ NB-IoT 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	
Frequency band	LTE-FDD: B1/2/3/4/5/8/12/13/18/19/20/25/26(Cat M1 Only)/27(Cat M1 Only)/28/31/66/71(Cat NB2 Only)/72/73/85/86(Cat NB2 only)/87/88 ; EGPRS: 850/900/1800/1900MHz
Rate	LTE Cat M1:Max. 588 (DL), Max. 1119 (UL) LTE Cat NB1:Max. 32(DL), Max. 70(UL) LTE Cat NB2:Max. 127 (DL), Max. 158.5 (UL) EDGE:Max. 296 (DL), Max. 236.8 (UL) GPRS :Max. 107 (DL), Max. 85.6 (UL)
Protocols	PPP/TCP/UDP/SSL/TLS/FTP(S)/HTTP(S)/NITZ/PING/MQTT(S)/MQTT-SN/LwM2M/CoAP(S)/IPv6/DNS/NTP
SMS	Point-to-point MO and MT/SMS Cell Broadcast/Text and PDU Mode
Current consumption	3.9 μ A@PSM
Antenna	Integrated internal antenna or external 1/2 wavelength whip antenna

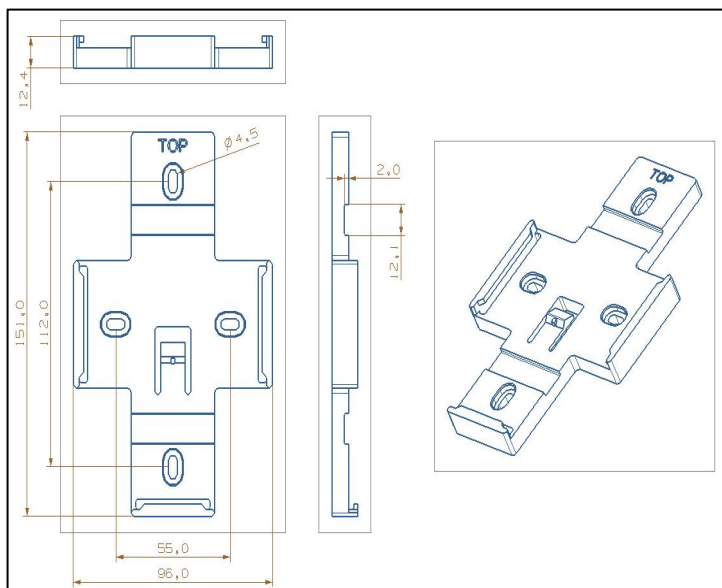
	(SMA)
Mechanical	
Dimension	3 Enclosure options with different size WxS Series 4.0 Enclosure($\phi 145 \times 90 \times 55 \text{mm}$, IP67) WxS Series 4.0 Poromeric Enclosure($\phi 145 \times 90 \times 59 \text{mm}$) WxS Series 4.0 High Poromeric Enclosure($\phi 145 \times 90 \times 70 \text{mm}$)
IP 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-SOCl ₂ Battery (H/M); DC 4.5V – 12V optional

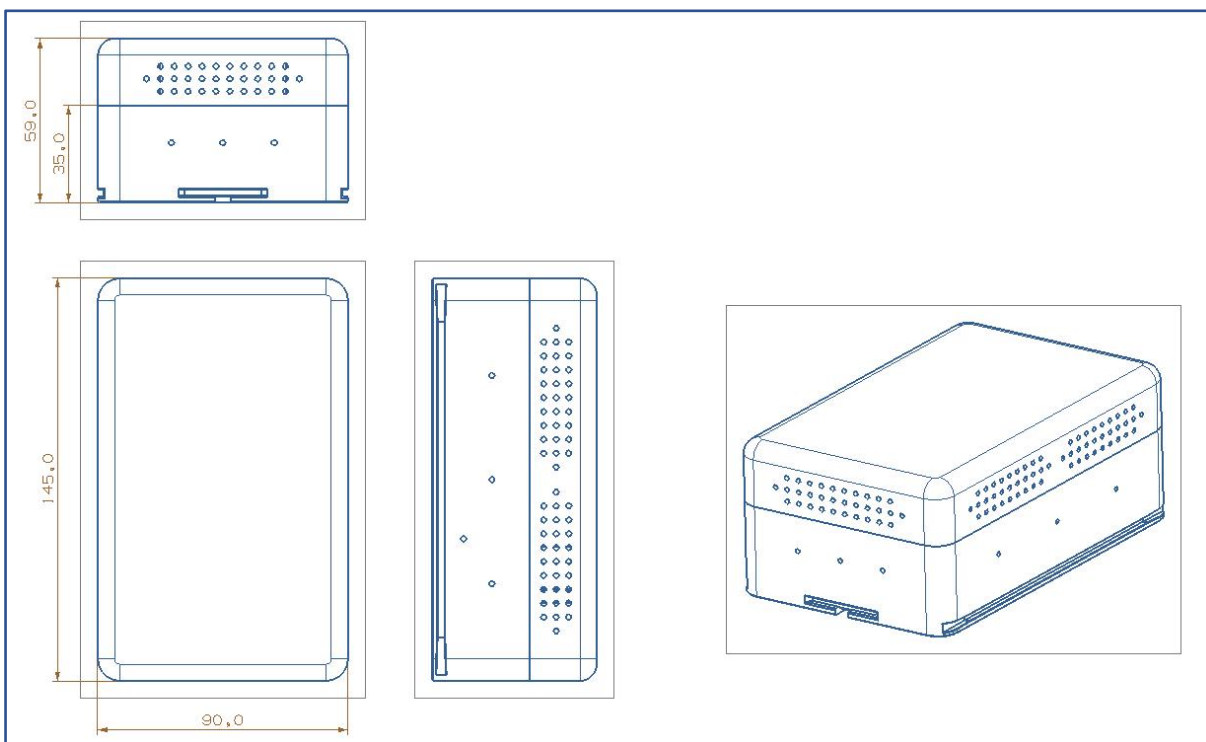
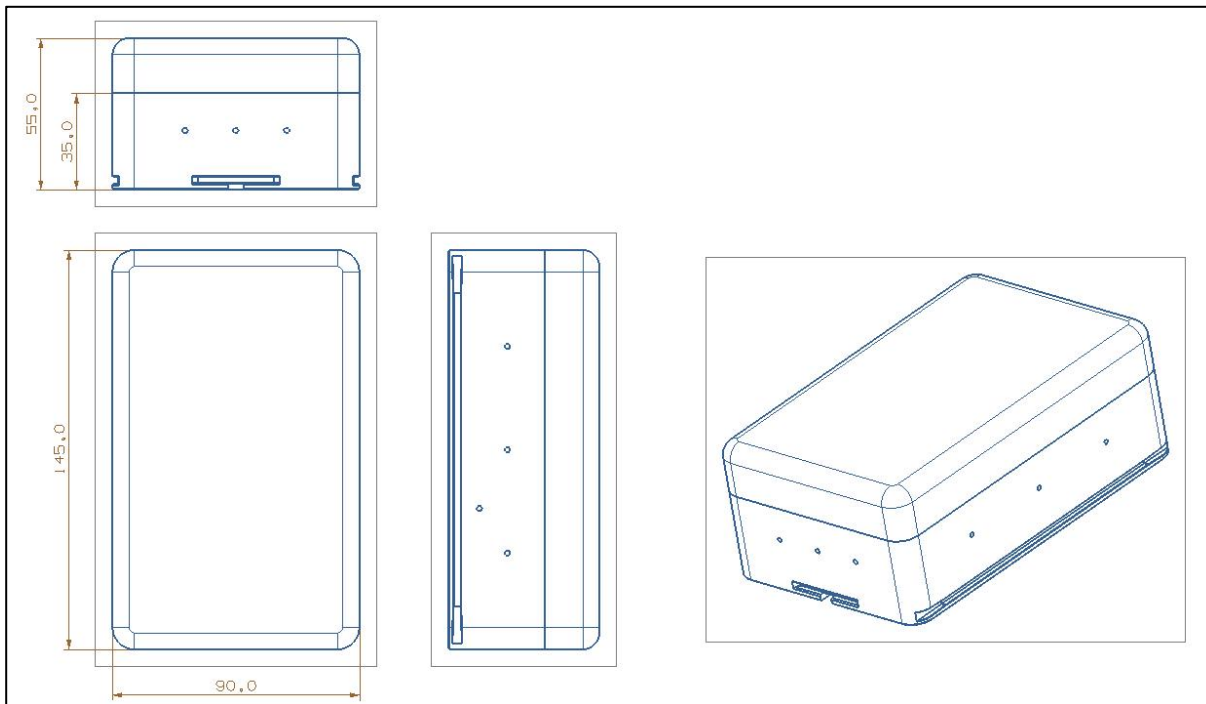
Configuration Tool

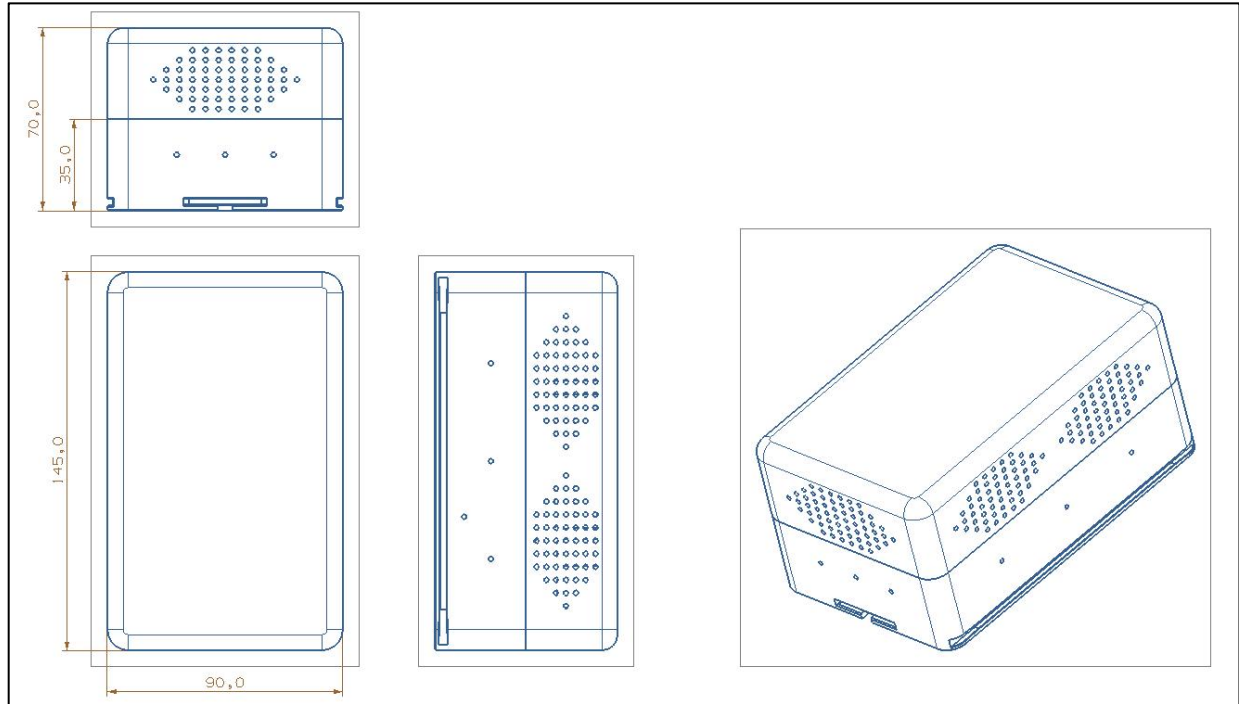
- ❖ iEdge4.0 WxS IoT Terminal products can be configured with PolySuite software-visual based Configuration Tool or CLI interface command or OTA via IoT platform, such as PolySuite PaaS platform iView.
- ❖ Download link <http://ota.polysense.online/wincc/ConfigurationTool.rar>

Installation Guide

- ❖ Below diagram shows the general installation guide for WxS9900, it can be installed on any flat and solid surface:

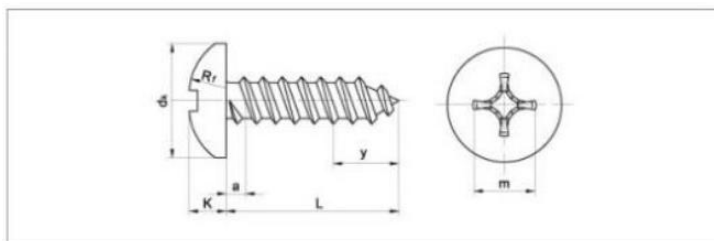






❖ Below is the recommendation of the self-tapping screw and its sizes:

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(ϕ 145x90x70mm)



PSS-333073

Atmospheric visibility sensor 80KM

Related Products

Product.	Interf.	Descriptions
PSS-333071	RS485	Atmospheric visibility sensor (485, 10KM \pm 2%, resolution 1m)
PSS-333072	RS485	Atmospheric visibility sensor (485, 50KM \pm 2%, resolution 1m)
PSS-333073	RS485	Atmospheric visibility sensor (485, 80KM \pm 2%, resolution 1m)

Product introduction

PSS-333073 The atmospheric visibility sensor is a device that determines the visibility distance by measuring the intensity of scattered light caused by gas molecules, aerosol particles, fog drops, etc. in a certain volume of air. It can adapt to various severe weather conditions. The integrated design makes the internal cable layout more reasonable. The lens of the optical component is downward and equipped with a protective cover to effectively prevent precipitation, droplets or dust from entering the lens and reduce the pollution of the probe surface.

Detection principle

The visible distance is determined by measuring the intensity of scattered light caused by gas molecules, aerosol particles, fog drops, etc. in a certain volume of air.

Product features

- ❖ 35 ° forward scattering principle, more accurate measurement
- ❖ Simple structure, good stability, high reliability, low energy consumption, easy use and maintenance
- ❖ Infrared LED light source, increased filter design and anti light source interference
- ❖ Anti corrosion treatment shall be carried out on the equipment surface to prevent rainwater corrosion
- ❖ Low power consumption, anti-interference design of internal circuit
- ❖ Continuous measurement output of atmospheric visibility
- ❖ The DC power supply circuit of the instrument has dual design of anti reverse connection and self recovery insurance



Product parameters

Parameters

Measuring range	80KM
Measurement error	$\leq 1\text{KM} \pm 2\% \pm 10\% > 1\text{KM}$
Resolving power	1m
Update interval	20s
Mean time between failures	(MTBF) more than 18000 hours
Operating ambient temperature	-40~60℃
Operating relative humidity	Not more than 95% (30 ℃)
Weight	< 10kg
Power waste	0.5W

Communication

Output signal	RS485
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Warranty

Warranty period	1 year
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Machinery

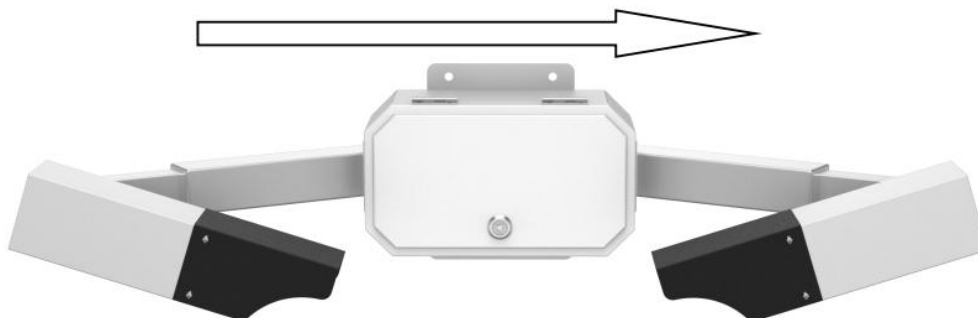
Size	986mm×236mm
Product maintenance	This instrument has been outdoors for a long time, and the operating environment is very harsh. Therefore, the surface of the instrument should be kept clean and often wiped with a soft clothwipe, the instrument should be cleaned once a month for long-term work, and once every three months;

Power

Power	10V~30V DC
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Installation method

Select a suitable place to install the equipment. The equipment shall be provided with an installation hoop. The hoop shall be used to install the equipment on a 75mm vertical pole. Pay attention to the installation direction of the equipment



Note: Install the visibility sensor about 2 meters from the ground. Ensure that there is no other object below the visibility to interfere with the test. The ideal installation site should be at least 100 meters away from large buildings or other facilities that will generate heat and hinder rainfall, and should also avoid the impact of shade. The site shall be free of obstacles, reflective surfaces and obvious pollution sources that interfere with optical measurement.

Application

The products are widely used in road meteorological information system, fog detection network, airport meteorological system, cooling tower smoke detection, meteorological monitoring and port security.

Ordering Guide

- ❖ PSS-333073 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:
 - WxS7800-333073 WiFi Series Atmospheric visibility Smart Sensor& RTU 2-in-1 Terminal
 - WxS8800-333073 LoRaWAN Series Atmospheric visibility Smart Sensor& RTU 2-in-1 Terminal
 - WxS9800-333073 NB-IoT (China) Series Atmospheric visibility Smart Sensor& RTU 2-in-1 Terminal
 - WxS9900-333073 NB-IoT (Global) Series Atmospheric visibility Smart Sensor& RTU 2-in-1 Terminal
 - WxSC800-333073 LTE Cat1 Series Atmospheric visibility Smart Sensor& RTU 2-in-1 Terminal
 - WxSC900-333073 LTE Cat1 w/GPS Series Atmospheric visibility Smart Sensor& RTU 2-in-1 Terminal
 - WxSD800-333073 LTE Cat4 Series Atmospheric visibility Smart Sensor& RTU 2-in-1 Terminal
 - CxS1800-333073 Ethernet (RJ45) Series Atmospheric visibility Smart Sensor& RTU 2-in-1 Terminal