

WxS8800-317611

LoRaWAN Displacement Smart Sensor & RTU 2-in-1 Terminal

Product Highlights

- ❖ LoRaWAN Displacement Smart Sensor & 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)
- ❖ It can monitor cracks at high altitude and inaccessible positions of the structure, and the displacement range is optional
- ❖ 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:

- ❖ WxS8800 LoRa Smart IoT and RTU 2-in-1 Terminal
- ❖ ENC-102001 WxS Series 4.0 Enclosure(ϕ 145x90x55mm, IP67)
- ❖ PSS-317611 Displacement sensor, Resolution 0.01mm

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 Enclosure(ϕ 145x90x55mm, IP67) , as shown in the figure below
- ❖ The sensor is externally connected. See the following document PSS-317611 for the sensor picture



WxS8800

LoRa Smart IoT and RTU 2-in-1 Terminal

Related Products

Product .	Interf.	Descriptions
WxS8800	11MPI+RS485+OD*2+PWR*2	LoRa Smart IoT and RTU 2-in-1 Terminal (Inc. WxS88xx, PSM-xx00, PSB-BD01, & Enclosure)
WxS8801	RS485+OD*2+PWR*2	LoRa Smart IoT and RTU 2-in-1 Terminal (Inc. WxS88xx, PSM-xx01, PSB-BD01, & Enclosure)
WxS8802	0-20mA*1+OD*2+PWR*2	LoRa Smart IoT and RTU 2-in-1 Terminal (Inc. WxS88xx, PSM-xx02, PSB-BD01, & Enclosure)
WxS8803	0-20mA*4+OD*2+PWR*2	LoRa Smart IoT and RTU 2-in-1 Terminal (Inc. WxS88xx, PSM-xx03, PSB-BD01, & Enclosure)
WxS8804	0-3.3V*2+OD*2+PWR*2	LoRa Smart IoT and RTU 2-in-1 Terminal (Inc. WxS88xx, PSM-xx04, PSB-BD01, & Enclosure)
WxS8805	0-3.3V*4+OD*2+PWR*2	LoRa Smart IoT and RTU 2-in-1 Terminal (Inc. WxS88xx, PSM-xx05, PSB-BD01, & Enclosure)
WxS8806	0-10V*2+OD*2+PWR*2	LoRa Smart IoT and RTU 2-in-1 Terminal (Inc. WxS88xx, PSM-xx06, PSB-BD01, & Enclosure)
WxS8807	0-10V*4+OD*2+PWR*2	LoRa Smart IoT and RTU 2-in-1 Terminal (Inc. WxS88xx, PSM-xx07, PSB-BD01, & Enclosure)
WxS8808	PT100*1+OD*2+PWR*2	LoRa Smart IoT and RTU 2-in-1 Terminal (Inc. WxS88xx, PSM-xx08, PSB-BD01, & Enclosure)
WxS8809	PT100*5+OD*2+PWR*2	LoRa Smart IoT and RTU 2-in-1 Terminal (Inc. WxS88xx, PSM-xx09, PSB-BD01, & Enclosure)
WxS880A	Switch*1+OD*2+PWR*2	LoRa Smart IoT and RTU 2-in-1 Terminal (Inc. WxS88xx, PSM-xx0A, PSB-BD01, & Enclosure)
WxS880B	Switch*5+OD*2+PWR*2	LoRa Smart IoT and RTU 2-in-1 Terminal (Inc. WxS88xx, PSM-xx0B, PSB-BD01, & Enclosure)
WxS880C	Unibus*1+OD*2+PWR*2	LoRa Smart IoT and RTU 2-in-1 Terminal (Inc. WxS88xx, PSM-xx0C, PSB-BD01, & Enclosure)
WxS880D	Unibus*18+OD*2+PWR*2	LoRa Smart IoT and RTU 2-in-1 Terminal (Inc. WxS88xx, PSM-xx0D, PSB-BD01, & Enclosure)
WxS880E	IIC*1+OD*2+PWR*2	LoRa Smart IoT and RTU 2-in-1 Terminal (Inc. WxS88xx, PSM-xx0E, PSB-BD01, & Enclosure)
WxS880F	SPI*1+OD*2+PWR*2	LoRa Smart IoT and RTU 2-in-1 Terminal (Inc. WxS88xx, PSM-xx0F, PSB-BD01, & Enclosure)
WxS880G	Uart*2+OD*2+PWR*2	LoRa Smart IoT and RTU 2-in-1 Terminal (Inc. WxS88xx, PSM-xx0G, PSB-BD01, & Enclosure)
WxS880H	Uart*3+OD*2+PWR*2	LoRa Smart IoT and RTU 2-in-1 Terminal (Inc. WxS88xx, PSM-xx0H, PSB-BD01, & Enclosure)
WxS880J	Uart*1+RS485+OD*2+PWR*2	LoRa Smart IoT and RTU 2-in-1 Terminal (Inc. WxS88xx, PSM-xx0J, PSB-BD01, & Enclosure)
WxS8850	Ai/Ao/Di/Pi/Ro/IIC/SPI/Ci + RS232/485/Ro/RJ45	LoRa 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(φ145x90x55mm, IP67)
 - ENC-102002 WxS Series 4.0 Poromeric Enclosure(φ145x90x59mm)
 - ENC-102003 WxS Series 4.0 High Poromeric Enclosure(φ145x90x70mm)

- ❖ Terminal and sensor parameters configurable with Configuration Tool running on PC
 - LoRaWAN ISM Global Bands Supported and SW Configurable
 - LoRaWAN 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-SOCI2 ER34615H/M Battery with various scenarios
- ❖ Integrated internal antenna, or optional external SMA/IPEX antenna
- ❖ The transmission reaches 5km in NLoS (non-line of sight) and 18km in LoS (line of sight) environment
- ❖ LoRaWAN 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	
ISM Regional Parameters	AS923 (AS923-1, AS923-2, AS923-3, AS923-4) AU915 CN470 CN779 EU433 EU868 IN865 KR920 RU864 US915
Maximum Link Budget	168dB
Distance	Up to 5km in NLOS; up to 18km in LOS
Antenna	Integrated internal antenna or external 1/2 wavelength whip antenna (SMA)

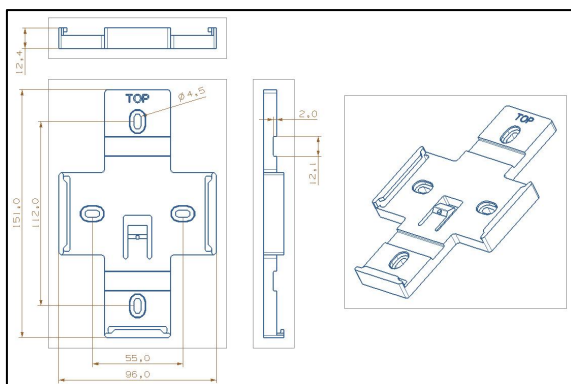
Mechanical	
Dimension	3 Enclosure options with different size WxS Series 4.0 Enclosure(ϕ 145x90x55mm, IP67) WxS Series 4.0 Poromeric Enclosure(ϕ 145x90x59mm) WxS Series 4.0 High Poromeric Enclosure(ϕ 145x90x70mm)
IP rating	IP65 & IP67
Operating Temperature	-40C to +85C
Total Weight	150 g
Electrical	
Supply Voltage	3.6VDC
Power Type	Replaceable 1 ER34615H/M 3.6V Li-SOCI2 Battery (H/M); DC 4.5V – 12V optional
Compliance/Certification	
 LoRa Alliance	LoRaWAN 1.0.2
	FCC(America): 2A07W-WXS8000, IC(Canada): 23701-WXS8000 CE(European Union): B1810246 ROHS(European Union): R2BJ180927F0664E

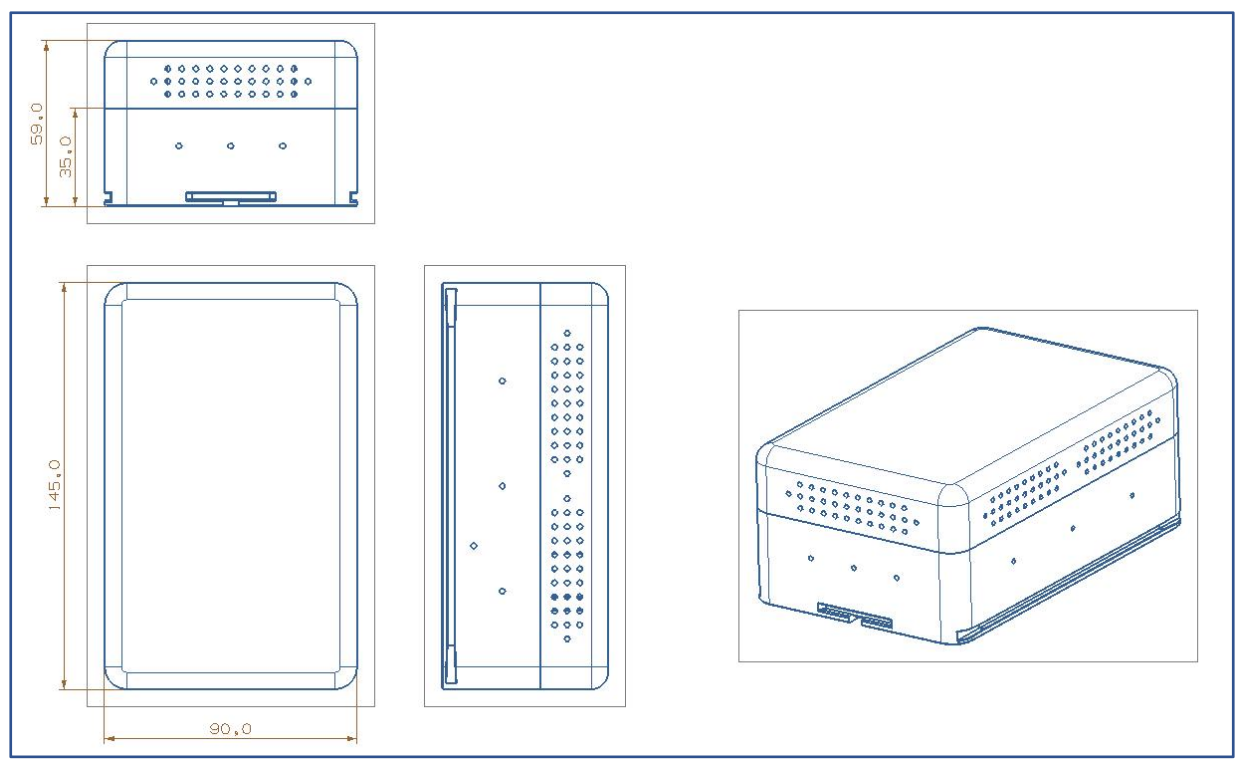
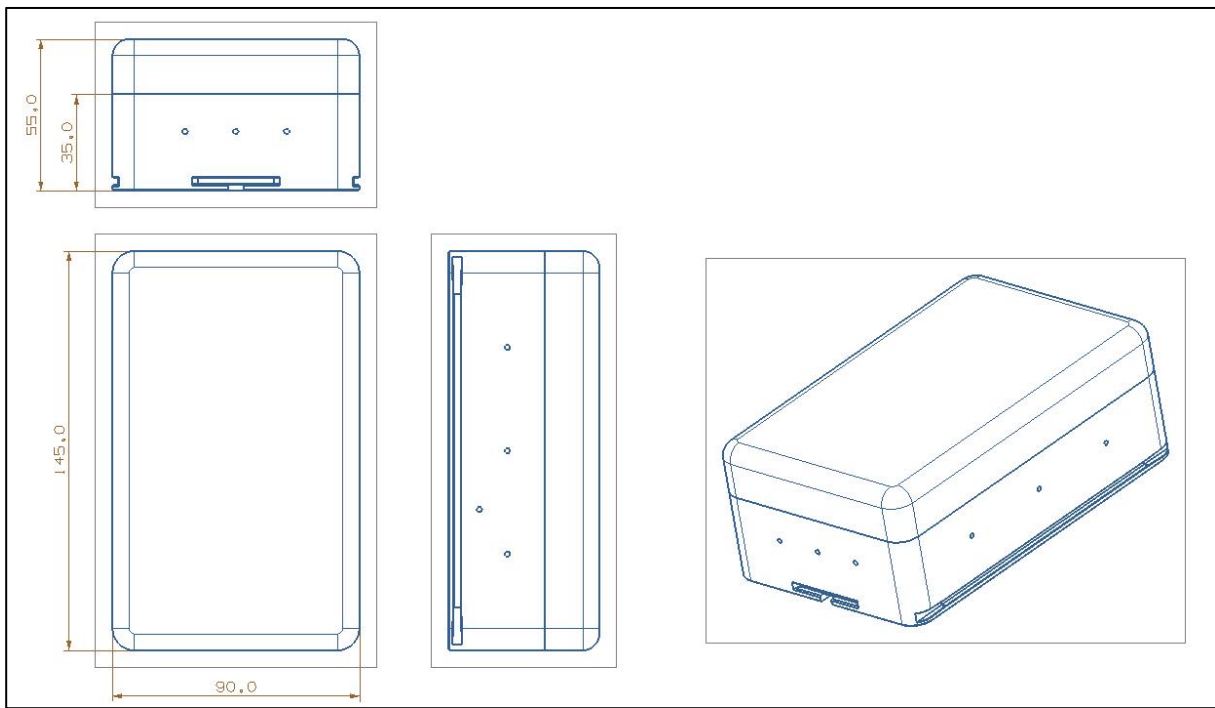
Configuration Tool

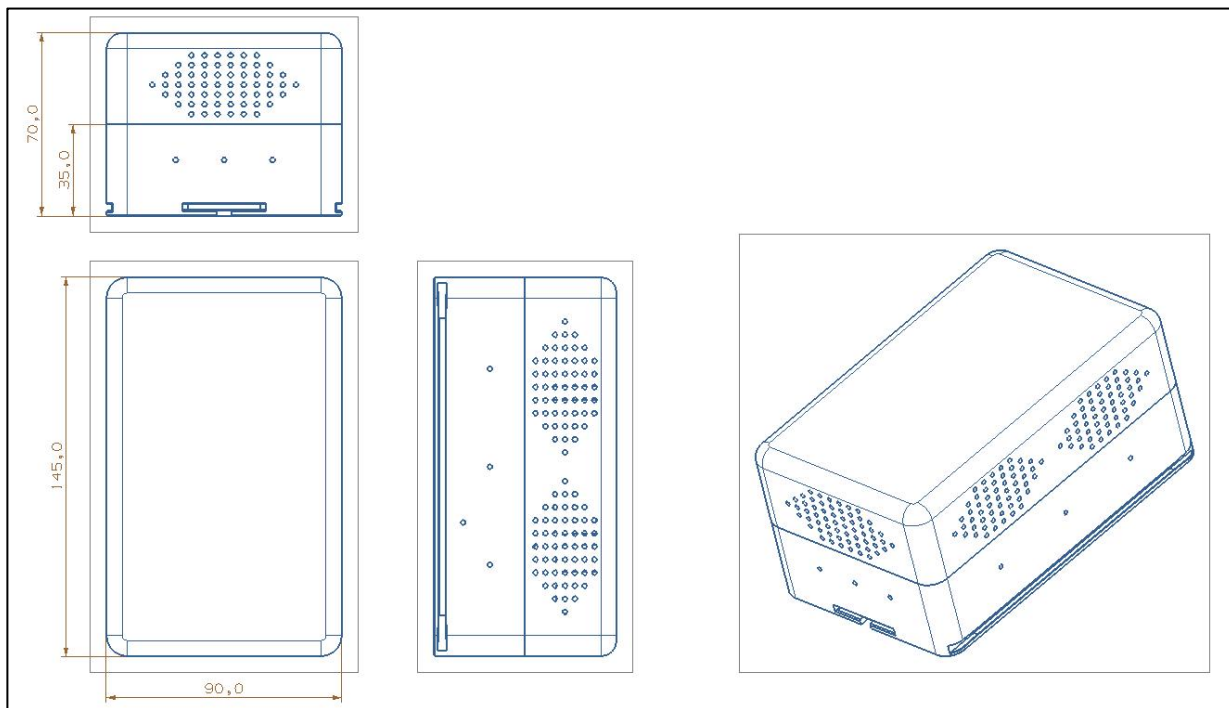
- ❖ iEdge4.0 WxS IoT Terminal products can be configured with PolySuite software-visual based Configuration Tool or CLI interface command or OTA via IoT platform, such as PolySuite PaaS platform iView.
- ❖ Download link <http://ota.polysense.online/wincc/ConfigurationTool.rar>

Installation Guide

- ❖ Below diagram shows the general installation guide for WxS8800, it can be installed on any flat and solid surface:

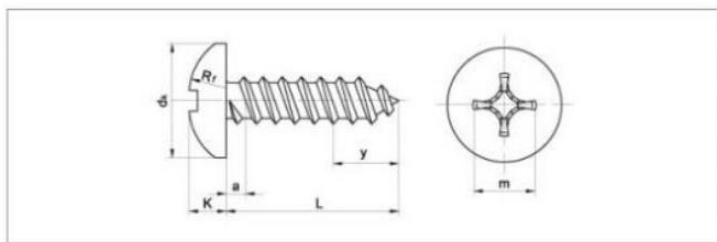






❖ Below is the recommendation of the self-tapping screw and its sizes:

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-317611

Displacement sensor

Product introduction

PSS-317611 Displacement sensor is a linear device of metal induction. It converts various measured physical quantities into electricity and measures small distance (length) changes. The resolution can reach 0.01 mm. It is widely used for monitoring cracks in bridges and walls.

Detection principle

The mechanical displacement is converted into a resistance or voltage output with a linear or arbitrary functional relationship through the potentiometer element. The displacement of the object causes the resistance change at the moving end of the potentiometer. The change of resistance value reflects the displacement value, and the increase or decrease of resistance value indicates the direction of displacement.

Product features

- ❖ Conductive plastic material has long service life and is made of high-precision displacement sensor.
- ❖ The displacement range is optional, and the appropriate range can be selected according to the use scenario, with a resolution of 0.01mm
- ❖ For long-term monitoring and recording of cracks at high altitudes and inaccessible locations of structures



Product parameters

Parameters	
Displacement range	Range: 10mm, 15mm, 25mm, 50mm, 75mm, 100mm, 125mm, 150mm, 175mm, 200mm, 225mm, 250mm, 275mm, 300mm
linear	±0.05% FS
Resolution	0.01mm
Maximum operating speed	10M/S
Communication	
Output signal	0-3.3V
Warranty	
Warranty period	1year
Mechanics	
Size	175*32*30mm
Working temperature	-60℃~150℃
Maximum bearing tension of tie rod	50kg
Working stress	Horizontal direction < 10N Vertical direction ≤ 10N
Service life	> 100*10 ⁶ times
Degree of protection	IP65
Power	
Power	3.6V

Application

According to its working characteristics, it is widely used to detect the cracks of reserved bridge structures and expansion joints, structural cracks of beams / walls / panels of old buildings, external wall cracks of historical heritage buildings, structural cracks of important sites, etc.

Ordering Guide

- ❖ PSS-317611 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:
 - WxS7800-317611 WiFi Series Displacement Smart Sensor & RTU 2-in-1 Terminal
 - WxS8800-317611 LoRaWAN Series Displacement Smart Sensor & RTU 2-in-1 Terminal
 - WxS9800-317611 NB-IoT (China) Series Displacement Smart Sensor & RTU 2-in-1 Terminal
 - WxS9900-317611 NB-IoT (Global) Series Displacement Smart Sensor & RTU 2-in-1 Terminal
 - WxSC800-317611 LTE Cat1 Series Displacement Smart Sensor & RTU 2-in-1 Terminal
 - WxSC900-317611 LTE Cat1 w/GPS Series Displacement Smart Sensor & RTU 2-in-1 Terminal
 - WxSD800-317611 LTE Cat4 Series Displacement Smart Sensor & RTU 2-in-1 Terminal
 - CxS1800-317611 Ethernet (RJ45) Series Displacement Smart Sensor & RTU 2-in-1 Terminal