

WxS8800

LoRaWAN Universal Smart SW-Defined Sensors Terminal

WxS8800 is the LoRaWAN version of universal “Sensing and Communicating” SW-defined sensors IoT terminal powered by the iEdge4.0 OS with which you can Build-You-Own-Devices (BYOD) with Polysense PSS sensors. Any up to 8 of over 1,000 Polysense PSS sensors can be mixed to create a customized sensor node via plug-and-play with dynamically loaded sensors driver. The software-defined sensor approach of WxS8800 addresses IoT fragmentation and forms the foundation of Universal Software-Defined Sensors.

With the software-defined WxS8800, meet any sensing requirement by combining Polysense chemical and physical PSS sensors, simplifying complexity and reducing costs in fragmented IoT deployments, including diverse IIoT scenarios.

The WxS8801 is a compact enclosure variant.

Product Highlights

- ❖ **iEdge 4.0 OS:** Powered SW-defined sensors and controllers HW platform
- ❖ **LoRaWAN 1.0.4 Compliance:** Supports Class A and C operation, configurable via software
- ❖ **Hardware Security:** Hardware Cryptographic Engine (HCE) for AES-128/192/256, PKA (Public Key Accelerator) for ECC secp256r1, and flash read protection (RDP) for secure key storage
- ❖ **Ultra-Low Power:** Leverages low-power modes for extended battery life
- ❖ **Open architecture:** modular and configurable BYOD features supported, customize products with PSS sensors, mainboard, power supply and communication modules
- ❖ **Sensor Flexibility:** up to 8 PSS built-in and/or externally connected Sensors and Controllers can be mixed in one system; Customization available for more than 8 daemons
- ❖ **Antenna Options:** Integrated internal antenna, or optional external SMA/IPEX antenna
- ❖ **Control interfaces:**
 - OD (Open Drain) control for external devices (relays, contactors, beepers, fans, lamps etc.)
 - PWR interfaces, for external devices/sensors power (3.3V) or PWM control (stepper motors lamps)
 - Sensor(s) data or OTA Commands can trigger OD/PWR controlling signal
- ❖ **Sensors Interfaces:**
 - **MPI (Multiple Purpose Interface):** Configurable to support:
 - Analog inputs: AIN(0-20mA), PT100, VIN(0-10V/0-3.3V)
 - Digital: Switch input
 - Series: Unibus, I2C, SPI, UART(3.3V TTL), RS485 (with auto-direction control)
 - **High-Precision Sensing:**
 - 16-bit ADC with oversampling and DMA for $\pm 0.1\%$ FSR accuracy at 25°C
 - PWMoutputwith16-bit resolution (TIM1 at 100 MHZ)

❖ **Power supply options:**

- PSB-BT01 Battery power (3.6VDC Li-SOCI2 ER34615H/M, Output: 3.3/5/9/12/24VDC)
- PSB-BD01 Battery (3.6V Li-SOCI2 ER34615H/M) & DC Power(Input: 5/12/24VDC)
- PSB-DC01 DC power only (Input: 5/12/24VDC)
- 2-in-1 Power: DC (5V/12V)+Battery (3.6V Li-SOCI2 ER34615H/M), DC has priority
- Battery capacity ER34615H: 19,000mAh or ER34615M: 13,500mAh
- WxS8801 Up to 3xER14505 (8,100mAh total)

❖ **Configuration and Management**

- **ConfigurationTool Software (PC-based) for:**
- Terminal and sensors firmware/driver updates
- Configuration of LoRaWan parameters (Class A/C, regional sub-bands, uplink cycle)
- Sensor Parameters Configuration and reading
- Data report Cycle and threshold configuration
- **OTA and FOTA features:**
- FOTA (Firmware Over The Air): update terminal firmware (OS loader and application images)
- OTA (Over The Air): configure terminal and sensor parameters configurable

Specifications

Parameters	Value
Smart Terminal	
Interfaces	MPI Interfaces-Any Mixture of Following: Analog input: (AIN(0-20mA) , PT100 , VIN(0-10V/0-3.3V) Digital: Switch input Series: Unibus, I2C , SPI*1, UART(3.3V TTL), RS485 Control interface: OD & PWR
Data Report Mode	Cross-threshold report, plus periodic report (the threshold and the periodic report cycle are both user-configurable)
Data Sampling	Support intensive data sampling and averaging to improve data accuracy
Wireless	
LoRaWan Global Bandes	LoRaWan Alliance Certified Stack V1.0.4 (Class A/C) AS923 (AS923-1, AS923-2, AS923-3, AS923-4), AU915, CN470, CN779, EU433, EU868, IN865, KR920, RU864, US915
LoRa Chip	Integrated SX1262x RF LoRa/(G)FSK/(G)MSK/BPSK
Maximum Link Budget	168 dB
Rx Sensitivity	-148dBm (SF12/125kHz/~293bps)
Distance	Up to 5km (NLOS); 18km (LOS)
Antenna	Integrated or external SMA (½ wavelength whip)
Security	
Data Encryption	HCE enabled AES-128/192/256
Mechanical	
Dimension	4 standard enclosure options with different size WxS8800 4.0 Enclosure (φ145x90x55mm, IP67) WxS8800 4.0 Gas Enclosure (φ145x90x59mm) WxS8800 4.0 Gas Enclosure (φ145x90x70mm) WxS8801 4.0 Enclosure (φ100x60x40mm, IP67)

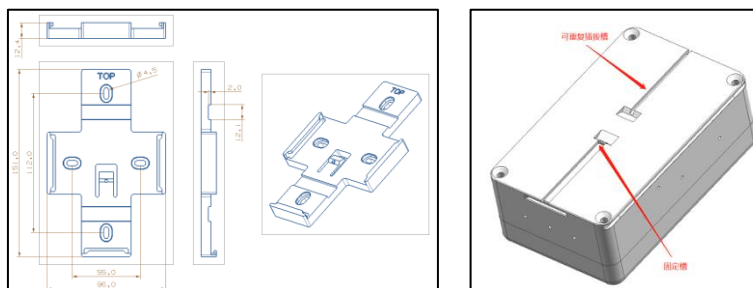
IP rating	IP67 & IP30 (gas enclosure)
Operating Temperature	-40°C to +85°C
Total Weight	150~250 g
Electrical	
Power Supply	3.6VDC or 5/12/24VDC
Power Type	Replaceable 1 ER34615H/M 3.6V Li-SOCl ₂ Battery (H/M); DC 4.5V – 24V optional
Compliance/Certification	
 Alliance	LoRaWAN 1.0.4 Class A/C
Regulatory	FCC(America): 2A07W-WXS8000, IC(Canada): 23701-WXS8000 CE(European Union): B1810246 ROHS(European Union): R2BJ180927F0664E

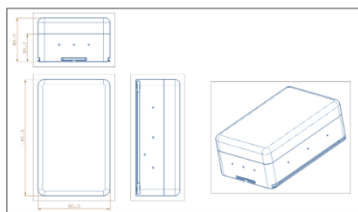
Documentation Resources

- ❖ ConfigurationTool Download:
 - <https://OTA.polysense.online/wincc/ConfigurationTool.rar>
 - <https://Github.com/Polysense/ConfigurationTool>
- ❖ Payload Online Decoder:
 - <https://www.polysense.online/decode/index.html>
- ❖ Payload Online Documentations:
 - <https://github.com/Polysense/SensorDecoders>

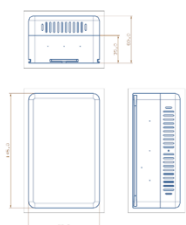
Installation Guide

- ❖ The device can be installed on any flat, solid surface:
- ❖ Self-tapping screws (size: M4x25mm)
- ❖ Clamps Installation

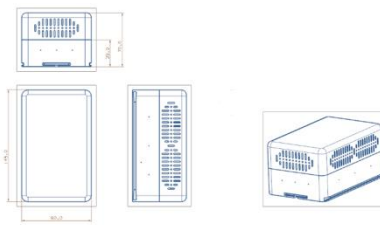




WxS Series 4.0 Enclosure(φ145x90x55mm, IP67)



WxS Series 4.0 Poromeric Enclosure(φ145x90x60mm)



WxS Series 4.0 High Poromeric Enclosure(φ145x90x70mm)

Product Images

- ❖ WxS8800 4.0 Enclosure (φ145x90x55mm, IP67)
- ❖ WxS8800 4.0 Gas Enclosure (φ145x90x59mm) IP30
- ❖ WxS8800 4.0 Gas Enclosure (φ145x90x70mm) IP30
- ❖ WxS8801 4.0 Enclosure (φ100x60x40mm, IP67)
- ❖ WxS8800 4.0 Enclosure (φ146x85x55mm, IP67)

