

WxS 880-010

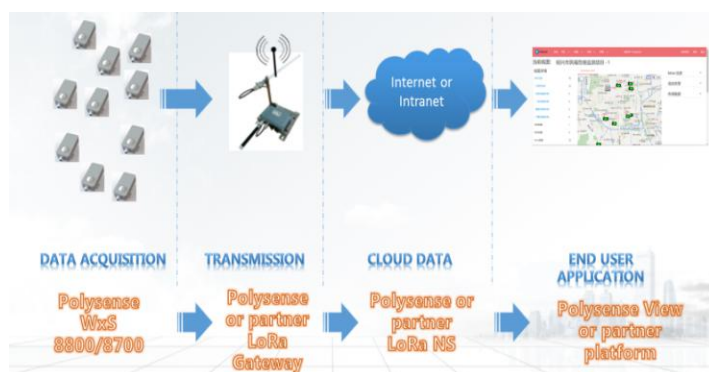
LoRaWAN Ultrasonic Distance Smart sensor

Product Highlights

- ✓ It is a high performance ranging controller. Using the principle of ultrasonic echo ranging, using precise time difference measurement technology, the distance between the sensor and the target object is detected non-contact.
- ✓ The detection blind zone is small, the precision is high, and the detection distance is long
- ✓ High precision temperature compensation
- ✓ With a physical bell mouth shell for better directivity and stability
- ✓ Cross-threshold report, plus periodic report every 2 hours (the threshold and the periodic report cycle are both user-configurable)
- ✓ OTA (Over The Air) firmware upgrade, including to upgrade loader and application images
- ✓ Analog and digital interface for external sensor connectivity and pulse counting (MPI)
- ✓ Low power consumption, 5 – 10 years of battery operational life with 2 x AA Li-SOCI2 Battery
- ✓ Optional DC 5V power source
- ✓ Integrated internal antenna, or optional external SMA/IPEX antenna
- ✓ Up to 5km reach in NLoS (Non-Line-of-Sight) and up to 18km LoS (Line-of-Sight) environments
- ✓ IP67 enclosure rating





Application Architecture and Sample Applications



High precision ranging;
Obstacle avoidance control;
Traffic control
Security monitoring;

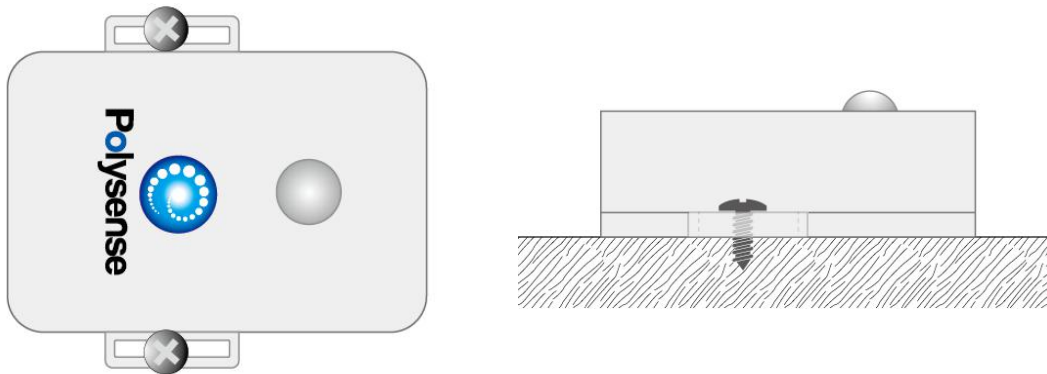
Specifications

Parameter	Value
Sensor	
Supply voltage:	5~12V
Center frequency:	40KHz
Maximum detection distance:	3.3M(0~3.3V) / 8M(RS232) optional
Launch angle:	8°
Ranging accuracy:	1CM
Resolution:	1mm
Temperature compensation:	yes
Data Report	Cross-threshold report, plus periodic report every 2 hours (the threshold and the periodic report cycle are both user-configurable)
Wireless	
ISM Band	EU 863 – 870MHz; US 902 – 928MHz China 779 – 787MHz; EU 433MHz AS 923MHz; CN 470 – 510MHz
Maximum Link Budget	168dB
Distance	Up to 5km NLOS; up to 18km LOS
Antenna	Integrated internal antenna or external 1/2 wavelength whip antenna (SMA)
Mechanical	
Dimension	60mm x 100mm x 30mm (WxS8800)
IP rating	IP67 (WxS8800)
Operating Temperature	-40C to +85C (WxS8800);
Cable length	0.5 meters
Total Weight	120 g
Electrical	
Supply Voltage	3.0 – 3.8 VDC
Power Type	Replaceable 1 or 2 AA 3.6V Li-SOCI2 Battery; DC 4.5V – 12V optional
Battery Life	5 – 10 years (assume one motion event one day)
Compliance/Certification	
 LoRa Alliance	LoRaWAN 1.0.2
	FCC(America): 2A07W-WXS8000, IC(Canada): 23701-WXS8000 CE(European Union): B1810246 ROHS(European Union): R2BJ180927F0664E

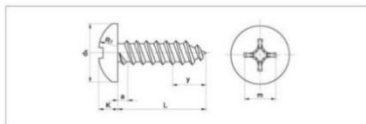


Installation Guide

● Below diagram shows the general installation guide for WxS8800, it can be installed on any flat and solid surface, the lid is contacted with the surface and fixed via 2 self-tapping screws:

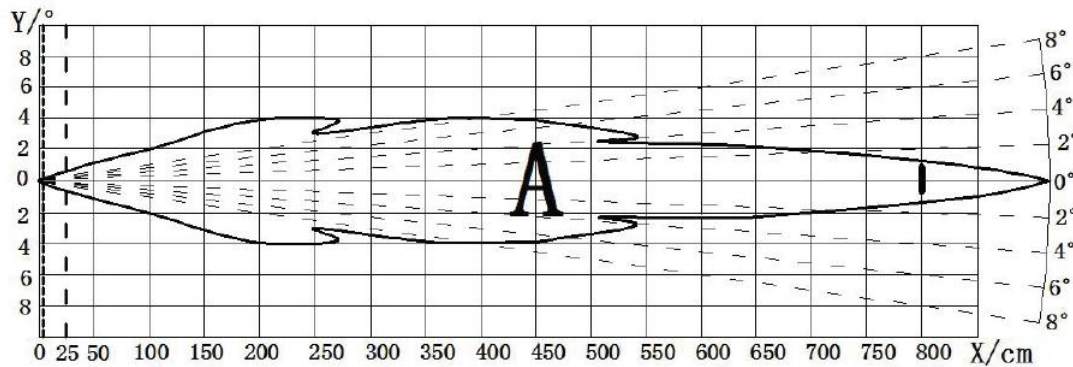


Below is the recommendation of the self-tapping screw and its sizes:



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						

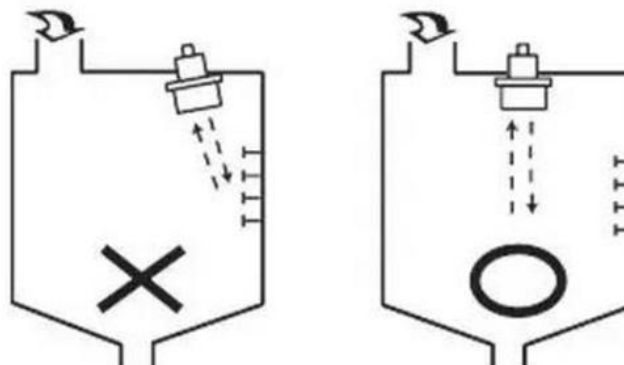
● The following is how to install the ultrasonic sensor. Water level monitoring
 Since the sensor's launch angle is only 8°, the target level/material height can be accurately detected.



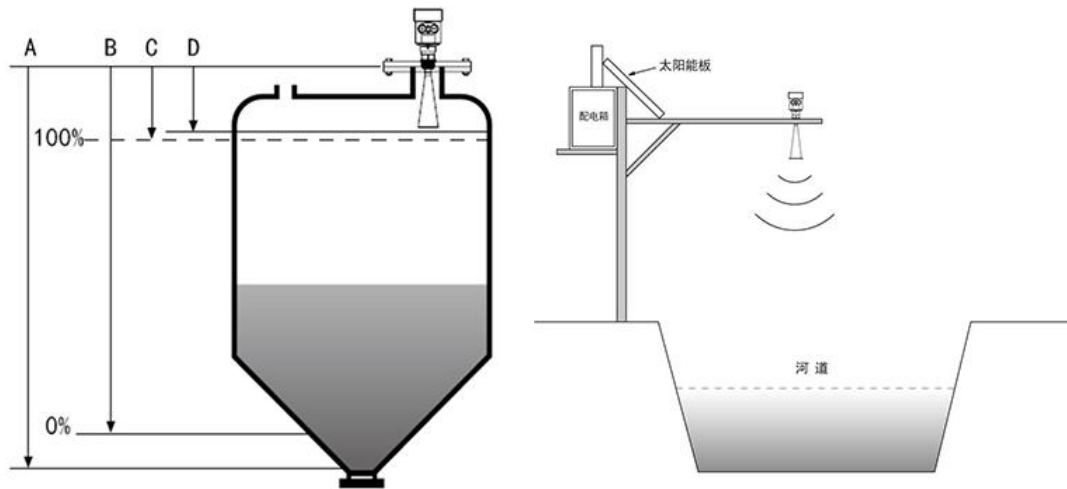
However, in the actual installation, you should pay attention to the following points.



Sound wave incident angle must be at right angles to the horizontal plane



Sensor installation should not be too close to the inner wall to cause measurement error; Installation should be avoided at the location of the inlet to protect it from material or obstructions.



A good installation can detect the actual height of the liquid level. Early warning monitoring of upper and lower limits is achieved.

● Here's how to install an ultrasonic sensor.--Parking place

When the vehicle travels into a predetermined area, the ultrasonic sensor begins recording the height of the detected object from the ground and the time the data is held. Determine if the vehicle is occupying a parking space.



The underground garage can be installed above the vehicle.



Open-air parking lots or roadsides can be installed directly behind or at the rear of the vehicle.

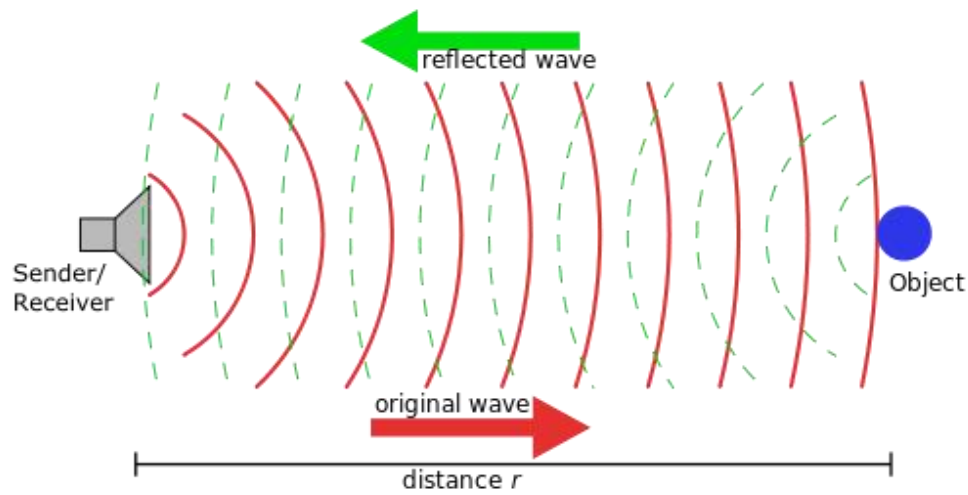
- Here's how to install an ultrasonic sensor.-- Trash can or recycling bin
Can be mounted on the top of the cabinet. The interference formed by the input of the object can be excluded by an algorithm. Determine the true material fullness.



Ranging principle:

The ultrasonic pulse emitted by the ultrasonic probe is transmitted to the measured object through the air medium, and then returned to the ultrasonic probe through

the air medium after reflection, and the time when the ultrasonic pulse propagates from the transmission to the receiving in the air medium is measured. According to the speed of sound in the air medium, the distance from the ultrasonic probe to the surface of the object can be calculated. So we can calculate the distance from the probe to the reflecting surface $s = v * t / 2$ (divide by 2 because the sound wave actually goes back and forth from launch to reception, s is the distance, v is the speed of sound, t is the time).





Polysense Technologies

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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