WxS Ext-050

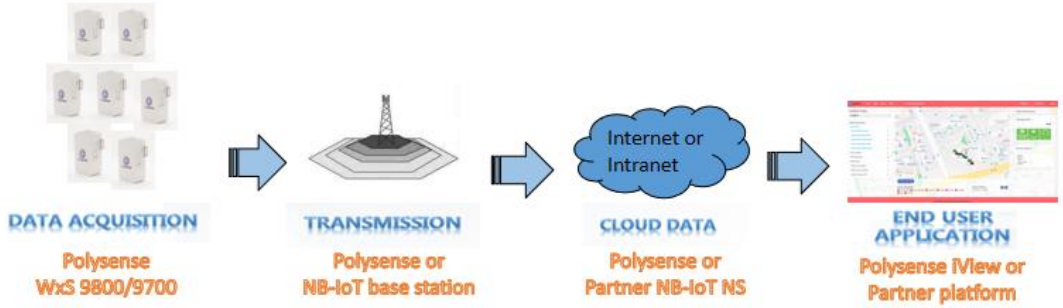
Wind speed sensor

Product Highlights

- ✓ Wind speed sensor
- ✓ Wind speed accuracy is ±(0.2+0.03V)m/s
- ✓ Measuring range is 0~60m/s
- ✓ Resolution 0.1m/s
- ✓ Start-up wind speed≤0.2m/s
- ✓ Automatic zero
- ✓ Automatic regulating sensitivity
- ✓ Moisture proof, waterproof and anti-corrosive, high strength, high weather resistance
- ✓ Good stability
- ✓ Edge calculation and cloud data processing and analysis
- ✓ Deployed in a cellular topology, Support service providers, the municipal governments and the enterprises to deploy public and private IOT networks
- ✓ The sensitivity of NB-IoT module is 129 dBm±1 dB, excellent penetration, the network coverage is 20dB stronger than GSM, LTE and other networks.
- ✓ Support the communication protocol frequency band published by the international organization agreement 3GPP.
- ✓ Support two kinds of configuration for data transmission.Single-tone transmission,15kHz/3.75kHz Subcarrier interval:25.2kbps(Downlink) , 15.625kbps(Uplink);Multi-tone transmission, 15kHz Subcarrier interval:25.2kbps(Downlink),54kbps(Uplink)
- ✓ Switch freely between Active/Idle/PSM modes, and ensure that the un-received data is retransmitted.
- ✓ Support IPv4/IPv6/UDP/CoAP/LwM2M/Non-IP/DTLS/TCP/MQTT protocol stack.

- ✓ Intelligent terminal provides multi-function interface (MPI), it can be connected with external analog and digital quantity sensors. (RS232/RS485 interface is optional.)
- ✓ Integrated internal antenna or optional external SMA/IPEX antenna.
- ✓ OTA (Over The Air) firmware upgrade, including to upgrade loader and application images
- ✓ Support wide voltage 5~12V DC input, 5-10 years of battery operational life with 2 x AA Li-SOCI2 Battery.
- ✓ IP67 enclosure rating.

Application architecture



Wind speed sensor specifications

Different models of wind speed sensors have slightly different parameters.Please refer to the following:

RS485 type：

Equipment power supply	3.3V
Maximum power	0.4W
Wind speed accuracy	±（0.2+0.03V）m/s
Measurement range	0~60m/s
Resolution	0.1m/s
Start-up wind speed	≤0.2m/s
Response time	≤0.5s
Output signal	RS485（Modbu-RTU protocol）
Communication	Default device address 1,baud rate 4800

parameters	

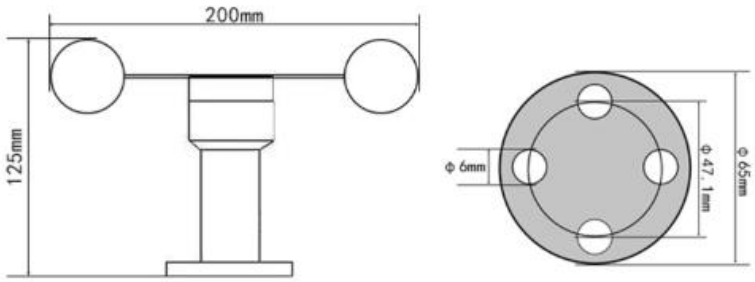
Analog type：

Equipment power supply	3.3V
Maximum power	1.2W
Wind speed accuracy	±(0.2+0.03V)m/s
Measurement range	0~30m/s
Resolution	0.1m/s
Start-up wind speed	≤0.2m/s
Response time	≤0.5s
Output signal	4-20mA/0-5V/0-10V
Load capacity	Output resistance≤250Ω (Voltage output) ≤600Ω (Current output)

Pulse type：

Equipment power supply	3.3V
Work environment	-20℃~60℃； 0%RH~80%RH
Wind speed accuracy	±(0.2+0.03V)m/s
Measurement range	0~60m/s
Resolution	0.125m/s
Start-up wind speed	≤0.2m/s
Response time	≤0.5s
Output signal	Pulse output(PNP/NPN/NPNR)
Load capacity	≥100mA(PNP),≥100mA(NPN)

Product size



Sensor specifications

Parameters	value

Sensor		
Operating Mode	Active	The terminal is active, all functions are available and data can be sent and received. In this mode, the terminal can switch to Idle mode or PSM mode.
	Idle	The terminal is in the state of light sleep and the network is connected. Paging messages are accepted and the terminal can switch to Active mode or PSM mode in this mode.
	PSM	Only the RTC is working, the network is disconnected, and paging messages are not acceptable. When DTE (Data Terminal Equipment) actively sends Data or the timer T3412 (associated with periodic updates) times out, the terminal is awakened.
MPI	Analog input 0 - 3/5/10V:4-20mA;Digital interface:RS232/RS485/UART	
Upgrade	The serial port or DFOTA	
Data report	For any of the above sensor types, support for cross-threshold data reporting and periodic data reporting every 2 hours (both threshold and periodic reporting cycles can be configured by the user)	
Wireless		
Sensitivity	- 129dBm±1dB	
Frequency band	B1 @H-FDD: 2100MHz B3 @H-FDD: 1800MHz B8 @H-FDD: 900MHz B5 @H-FDD: 850MHz B20 @H-FDD: 800MHz B28 @H-FDD: 700MHz	
Protocol	IPv4 / IPv6 IP/UDP/CoAP/LwM2M/Non-IP/ DTLS/TCP/MQTT	
Distance	NLOS（Non-line-of-sight） 2km;	
Antenna	Integrated internal antenna or external IPEX antenna (SMA)	
Mechanical		
Dimension	114mm x 80mm x38mm The overall height increases with the increase of sensors.	
Shell IP rating	IP67	
Operating Temperature	-40℃to +85℃	
Storage Temperature	-40℃ to +90℃	
Total Weight	150g	
Electrical		
Supply Voltage	Low power consumption, 3.1V~3.66V; 1or2 Li-SOCI2 Battery; 5VDC optional.	

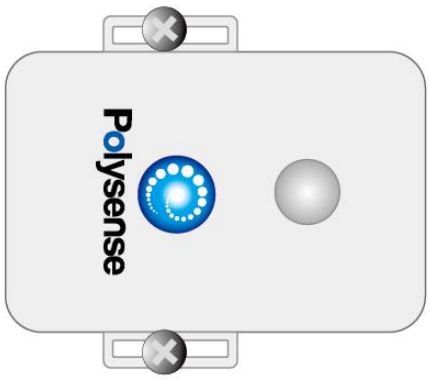
Wind classification table

Wind Scale	Name	Wind speed		Status on land	Sea state
		(m/s)	(km/h)		
0	Calm	0~0.2	＜1	Quiet,smoke straight up.	Calm sea glassy
1	Light air	0.3~1.5	1~5	Smoke can indicate wind direction, but the wind vane cannot rotate.	Rippled sea
2	Light breeze	1.6~3.3	6~11	Face feel the wind, leaves have a little ring, wind vane can turn.	Smooth sea
3	Gentle breeze	3.4~5.4	12~19	Leaves and twigs sway and flags spread.	Smooth sea
4	Zephyr	5.5~7.9	20~28	Dust paper and leaves on the ground, the twigs of the tree moved slightly.	Slight sea
5	Fresh breeze	8.0~10.7	29~38	Leafed twigs sway, inland water waves.	Moderate sea
6	Strong breeze	10.8~13.8	39~49	Big branches swing, wire whirs ound, difficult to lift the umbrella.	Rough sea
7	Moderate gale	13.9~17.1	50~61	The whole tree shakes, walking in the wind feels inconvenient.	Very rough sea
8	Fresh gale	17.2~20.7	62~74	The twigs are broken, and people feel very resistant to moving forward.	High sea
9	Strong gale	20.8~24.4	75~88	Building damage (chimney top and roof tile moving)	Very high sea
10	Whole gale	24.5~28.4	89~102	Rare on land, trees can be uprooted and buildings seriously damaged when seen	Very high sea
11	Storm	28.5~32.6	103~117	There are very few on the land, and there will be major damage on the land.	Storm surge

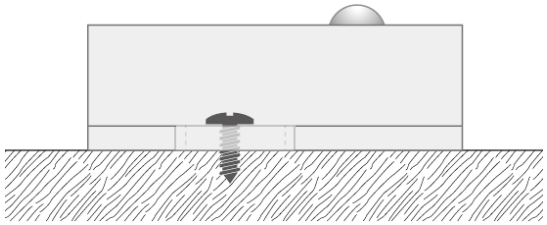
12	Typhoon, also known as "hurricane"	32.6~36.9	118~133	There are few on the land, and its destruction is enormous.	Storm surge
13	Typhoon	37.0~41.4	134~149	There are few on the land, and its destruction is enormous.	Tsunami
14	Violent typhoon	41.5~46.1	150~166	There are few on the land, and its destruction is enormous.	Tsunami
15	Violent typhoon	46.2~50.9	167~183	There are few on the land, and its destruction is enormous.	Tsunami
16	Super typhoon	51.0~56.0	184~202	Rarely on land, the largest range, the strongest intensity, the destruction power is super.	Tsunami
17	Super typhoon	≥56.1	≥203	Rarely on land, the largest range, the strongest intensity, the destruction power is super.	Special tsunami

Installation guide

The following figure shows the general installation guide for Wxs9800， which can be mounted on any flat and solid surface,the cover is in contact with the surface and secured by 2 self-tapping screws:

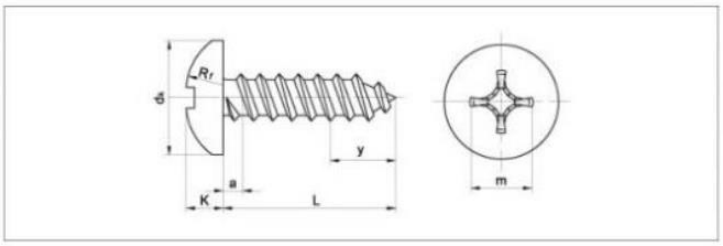


Mounted on the wall



Mounted on the pole

The following self-tapping screws types and sizes are recommended:



Thread specification		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						

Application example

- **Power plant wind speed detection**

The generator's speed and output power are adjusted in real time by collecting information such as external wind speed and wind direction.

- **Navigation and aviation wind speed detection**

Through the collection of wind speed, we can give early warning of the gale di saster weather,it is also possible to make full use of the wind resources.

- **Weather monitoring station wind speed detection**

Collect real-time wind speed data and comprehensively analyze meteorological trends.

About Polysense

Polysense Technologies Inc., Located in Santa Clara, California, with offices in St. Paul, Brazil, Beijing, Luo Yang ,Shanghai and Guangzhou, China, develops Universal Sensing and communicating Solutions with Distributed Data Analytic for IoT.

Polysense focuses on fiber and wireless IoT products, solutions, and engineering services for service providers, enterprises, government agencies, and consumers, including 3G/4G LTE based WxS 6x00, Wi-Fi/BLE based WxS 7x00, LoRa based WxS 8x00, and NB-IoT/eMTC based WxS 9x00, enabling a rich array of applications such as Smart City, Industrial Internet of Things, Smart Retail and SMB, Precision Agriculture, Water Treatment, Environmental Protection, Energy and Power. Polysense currently supports over 100 sensing parameter, iEdge edge computing turnkey software,iView data visualization cloud PaaS platform, and iServer scalable Network Server, with a goal to offer the industry's broadest portfolio of sensors over 140 sensing parameters, including temperature, humidity, light, pressure, acoustic, accelerometer, tilt, vibration, displacement, environmental and industrial gases, water quality, PIR/IR motion, ultrasonic, soil sensors, thermal imaging, and 18 types gases with flammable, explosive, poisonous, or bad odor attributes.

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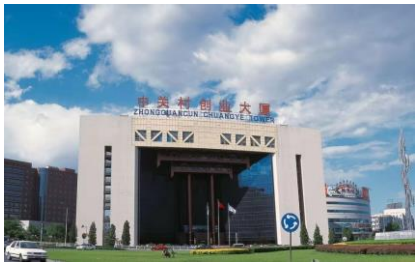

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