Datasheet

Radar Level Transmitter

SUP-WSR201

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Radar Level Transmitter
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With high-frequency microwave radar technology, the 60G radar level transmitter is designed for real-time monitoring and precise measurement of hydrological information. Compared to traditional hydrological monitoring methods, radar technology offers benefits such as high measurement accuracy, strong real-time performance, and broad applicability. It features low beam energy, ensuring safety to humans or the environment. Additionally, this product, requiring no on-site calibration, is also unaffected by changes in density, and dielectric constant of the medium to be measured. All make it ideal for hydrological monitoring in natural waters such as rivers, reservoirs, lakes, irrigation channels, and waterways.

Features

- 60GHz PCR technology for higher resolution, better accuracy, and more stable performance.
- Detection up to 15m with a minimum blocking distance of 0.15m.
- The narrow beam angle and concentrated energy offer strong anti-interference capability, high measurement accuracy, and excellent reliability.
- Effective working in harsh environments; unaffected by light, rain, snow, dust, or water mist.
- Multiple output circuit interfaces are available.
- Low radar transmission power ensures safety for humans and the environment.
- Bluetooth commissioning via phone makes on-site maintenance quick and easy.

Principle

The fundamental operating principle of this transmitter is Pulsed Coherent Radar (PCR), which determines the measured distance by calculating the time of flight （ToF). The sensor transmits the signal in short pulses, which travel through the air, are reflected back by the surface of the material to be measured, and subsequently make their way back to the radar receiver. By measuring the time between pulse transmission and reception, the radar level transmitter determines the distance between the medium surface and the sensor.

Parameters		
Measured variable	Level	
Measuring range	5m/10m/15m	
Blocking distance	≤ 0.15m	
Modulation waveform	PCR	
Transmission frequency	57GHz~64GHz	
Beam angle	6°	
Accuracy	±5mm (5m/10m) ±0.1%FS (15m)	
Resolution	1mm	
Refresh rate	≥500ms	
Transmission output	(4~20)mA, current output accuracy 0.2% F.S 2-Wire: R_L=(U-18V)/0.021A 4-wire: R_L=(U-9V)/0.021A Note: U is supply voltage, unit in V	
Digital communication	RS485, Modbus-RTU	
Wireless communication	Bluetooth	
Power supply	2-wire	Supply voltage: 18-36V DC Supply current: ≤25mA, 24V DC
	4-wire	Supply voltage: 9-36V DC Supply current: ≤80mA, 24V DC
Power consumption	2-wire	≤1W
	4-wire	≤1.9W
Dielectric constant	≥3	
Process pressure	(-0.1~0.3) MPa	
Process temperature	(-40~85)°C	
Protection degree	IP68	

Wiring

The radar level transmitter is powered by a wide voltage range (4-wire: 9~36VDC;2-wire:18~36VDC). Since the wiring for the radar level transmitter is typically extended over a long distance (Note: users are not recommended to extend the cable themselves), there will be a voltage drop along the wiring. Therefore, a 24VDC power supply is recommended.

2-Wire/Bluetooth:

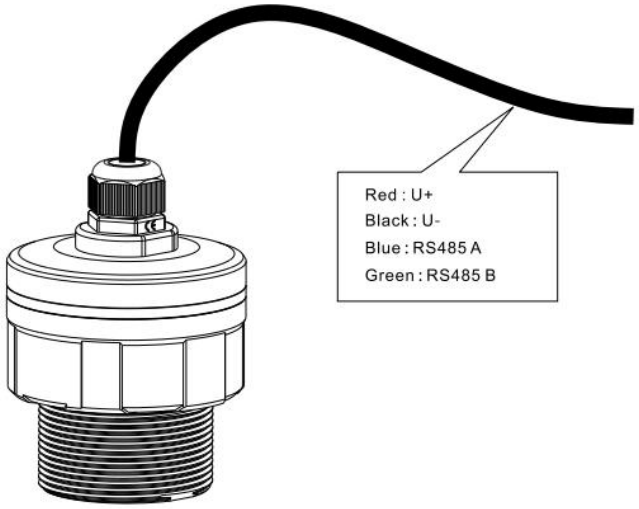

Figure1 Diagram of 2-wire version

Table1 Terminal description

Line color	Definitions
Red	U+, (4~20) mA output +
Black	U-, (4~20) mA output -
Blue	RS485 - A (for commissioning only)
Green	RS485 - B (for commissioning only)

4-Wire/RS485/Bluetooth:

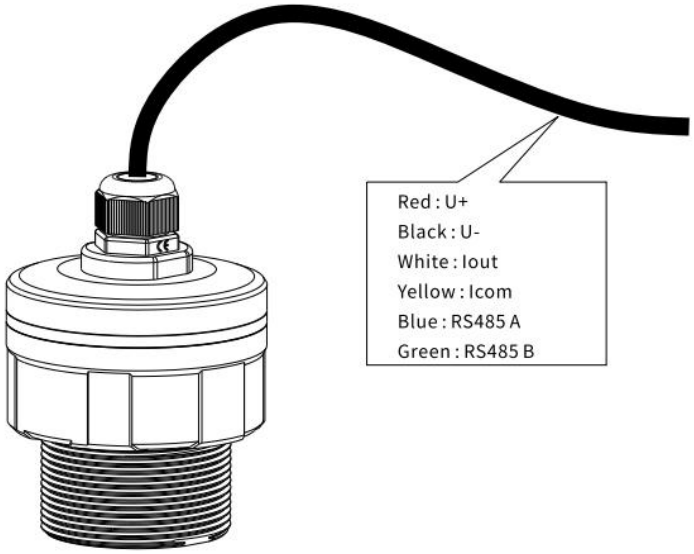

Figure2 Diagram of 4-wire cable

Table2 Terminal description

Line color	Definitions
Red	U+
Black	U-
White	Iout, (4~20) mA output + (Active)
Yellow	Icom, (4~20) mA output - (Active)
Blue	RS485 - A
Green	RS485 - B

Dimension

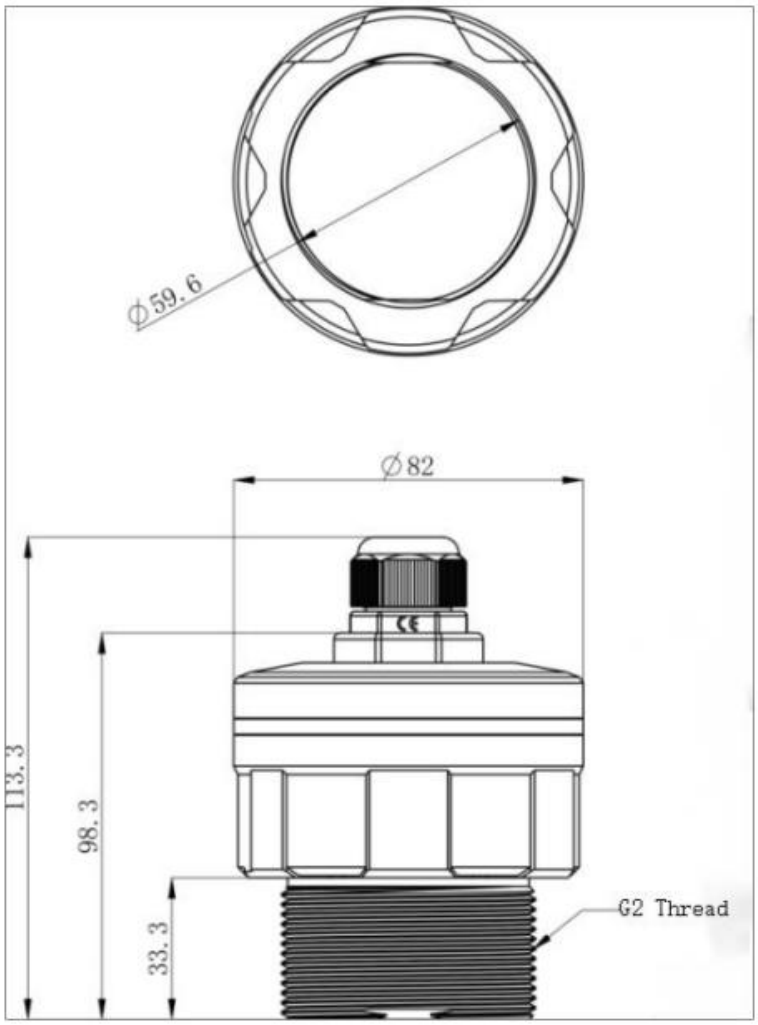

Figure3 Dimensions (unit: mm)

Ordering code

SUP-WSR201 -A-05-B8-L2-TQ-5-01								Description
SUP-WSR201	-	-	-	-	-	-	-	
Measuring Medium	A							Liquid
Measuring Range		05						5m
		10						10m
		15						15m
Output and Power Supply			B8					Two-wire 4-20mA + Bluetooth
			B9					Four-wire 4-20mA + RS485 + Bluetooth, 24VDC
Process Connection				L2				G2 Thread, Polycarbonate (PC)
Heat Resistance Temperature					TQ			-40-85℃
Housing Material and Protection Rating						5		Polycarbonate (PC), IP68
Cable Length							01	1m
							03	3m
							05	5m
							10	10m
							15	15m
							25	25m
							xx	Other