SEN901-401 Doppler Ultrasonic Flow Meter

Product Description

The Doppler flow meter measures flow velocity based on the Doppler effect. The flow sensor emits ultrasonic waves at an upward angle. These waves propagate through the fluid, which may contain impurities such as air bubbles or particles (the velocity of these impurities can be considered the same as the water flow). When the ultrasonic waves encounter these impurities, the reflected waves generate a Doppler frequency shift Δf. This Doppler frequency shift Δf is proportional to the flow velocity. By measuring the Doppler frequency shift Δf, the flow velocity V (m/s) can be determined.Water level measurement utilizes a built-in pressure sensor to measure the distance between the Doppler flow meter and the water surface. A built-in temperature sensor measures the water temperature to correct for the water level.Channel parameters are then input. Using these parameters and the collected water level H (m), the flow area S (m^2) is calculated. The instantaneous flow rate (Q=V*S) is calculated by multiplying the flow area by the flow velocity V (m/s). The cumulative flow rate is then calculated by multiplying the flow rate by the cumulative time.The product housing is made of a single ABS shell, providing effective waterproof sealing. Especially suitable for low water levels; measurements can be taken normally when the water level exceeds 5 cm.



Features

- Employs Modbus communication protocol and RS485 for communication.
- Doppler flow meter is easy to install, with a metal base for fixation.
- All equipment is electronically designed, with wide voltage power supply, low power consumption, and no mechanical parts.
- Accurate, stable, and highly reliable measurement with strong anti-interference capabilities.

Applications

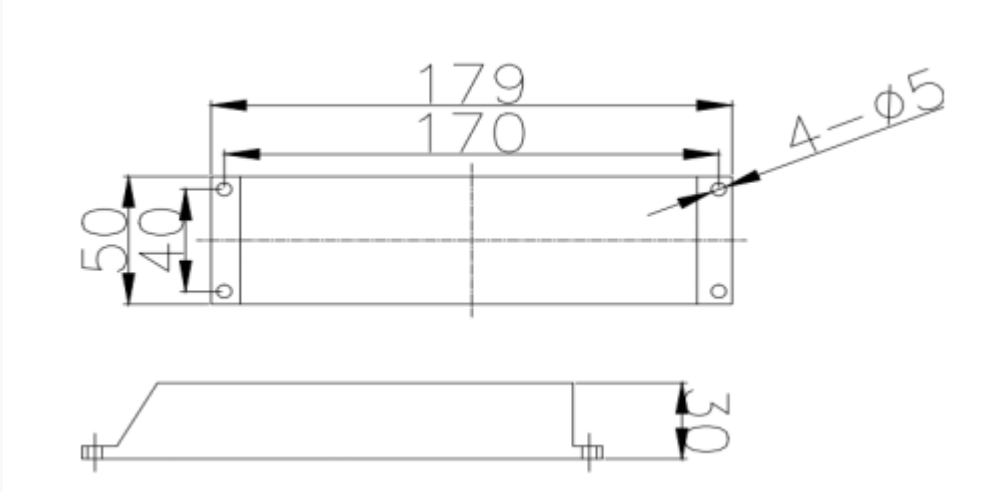
- Suitable for metering and monitoring of non-full pipes, sewage outlets, culverts, box culverts, manholes, and open channels.

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Specifications

Flow velocity parameters	Speed measurement range: 0.021m/s~10.00m/s	Temperature range	0~60°C
	Measurement accuracy: ±1.0%FS	Power supply voltage	7.5~15V DC
	Resolution: 0.001m/s	Total power consumption	⩽20mA/12V
Water level parameters	Water level measurement range: 0.02~10m	Data acquisition cycle	Settable (factory specified)
	Measurement accuracy: 0.5%FS	Interface type	RS485 (Modbus-RTU)
	Resolution: 0.001m	Storage temperature	-20~80°C
Flow rate parameters	Instantaneous flow rate: 0.001m^3/s ~999.99m^3/s	Protection rating	IP68
	Measurement accuracy: ±2%	Casing material	ABS material
	Resolution: 0.001m^3/s	Installation method	Base mounting
	Cumulative flow rate: 0.01m^3 to 999999999999999999m^3		
Dimensions (mm)	Dimensions: (179×50×30); Mounting hole spacing: (170×40)ϕ5		

Dimensions



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Electrical Connection

Colors	Definitions
Red	Positive power supply terminal
Black	Negative power supply terminal
Green	RS485-A
Yellow	RS485-B