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Datasheet

Low Turbidity Electrode

SUP-PTU-8012

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The low range turbidity sensor guides parallel light emitted by the light source downward into the water sample in the sensor. The light is scattered by suspended particles in the water sample, and the scattered light at a 90 degree angle to the incident angle is received by a silicon photovoltaic receiver immersed in the water sample. The turbidity value of the water sample is obtained by calculating the relationship between the 90 degree scattered light and the incident beam.

Applications

- online monitoring of turbidity in pre filtration
- post filtration
- factory water
- direct drinking water systems in water treatment plants
- Online monitoring of turbidity in various industrial production processes

Features

- high precision
- Sensitivity
- ease of maintenance
- calibration-free operation
- robust design
- range of measurement

Low Turbidity Electrode

Principle

The working principle of a low-turbidity electrode involves utilizing an electrochemical sensor to measure the turbidity of a liquid, typically water. This sensor contains electrodes that react with particles suspended in the liquid. As the liquid passes through the electrode chamber, particles adhere to the electrode surface, altering the electrical properties—such as resistance or capacitance—of the electrode. This change in electrical property is directly related to the turbidity level of the liquid. The electrode then converts this electrical signal into a readable turbidity value, which can be displayed or further processed for monitoring and control purposes. Essentially, it's a way to quantify the clarity of water by measuring how particles affect an electrical current.

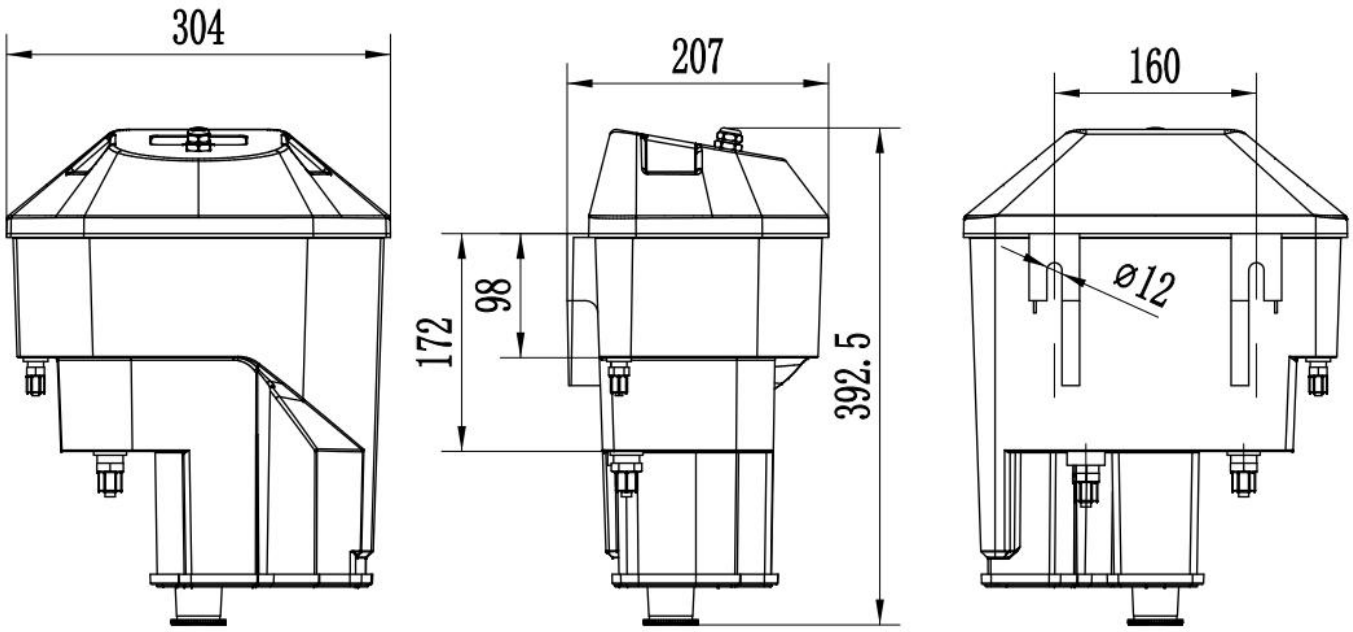
Parameters	
Measurement Range	(0.001~100)NTU
Measurement Accuracy	(0.001-40) NTU is ± 2% of the reading or ± 0.015NTU, whichever is greater; (40~100) NTU is ± 5% of the reading
Repeatability	±2%
Resolution	(0.001~0.1)NTU，Depending on different ranges
Water Sample Flow Rate	300mL/min≤X≤700mL/min
Pipe Fitting	Injection Port：1/4NPT；Discharge Port：1/2NPT
Pressure Resistance	≤0.2Mpa
Main Materials of Sensors	Body：ABS + SUS316L； Sealing component: nitrile rubber; Cable: PUR
Power Supply	12VDC
Communication Output	RS485，MODBUS-RTU Communication Protocol
Storage Temperature	(-15~60)℃
Working Environment	(0~45)℃（No condensation）
Weight	2.1kg
Level of Protection	IP65（indoor）
Cable Length	Standard 3-meter cable, LED version can be extended up to 30 meters
Power Consumption	LED version sensor with low power consumption of 3.5W

Wiring

Sensors are correctly connected according to the following wire core definitions:

Core Number	1	2	3	4	5
Sensor Wires	Brown	Black	Blue	White	Yellow&Green
Signal	+12VDC	AGND	RS485 A	RS485 B	Ground Wire

Dimension



Size Diagram of Low Range Turbidity Sensor

Installation

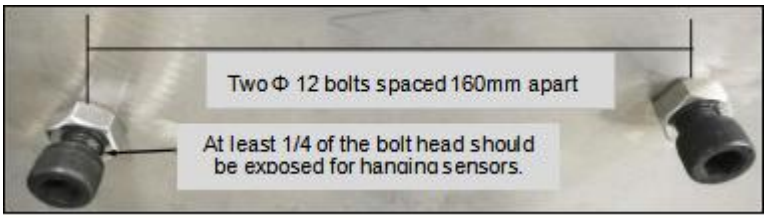
Installation

3.1 Installation of Sensors

Install the sensor as close as possible to the sampling point. The sample will produce a faster response time over a shorter distance. Clean the inside of the sensor before installation. Install according to the standard installation environment detailed below.

（1）Installed in a location isolated from vibration.

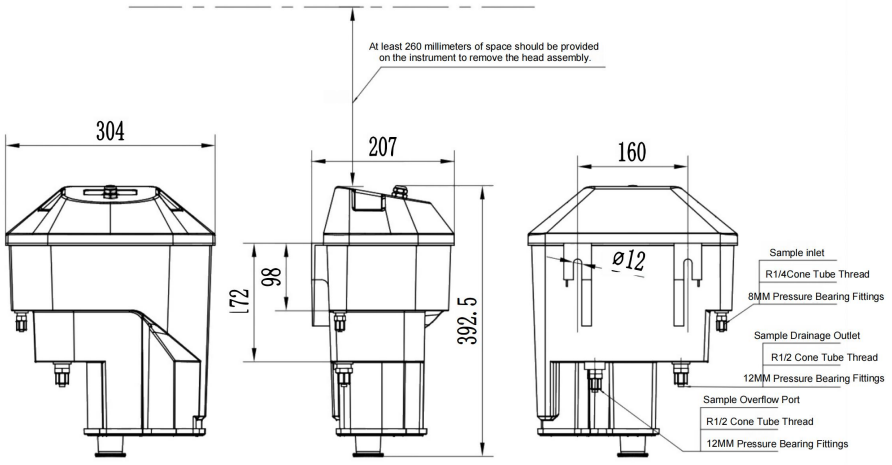
（2）Fix two Ø 12 bolts horizontally on the installation surface, with a distance of 160mm between them. At least 1/4 of the bolt head should be exposed for hanging the rotary sensor (as shown in the figure below).



（3）There should be at least 260mm of space above the instrument panel for removing the sensor cover. There should also be sufficient space below the sensor to remove the bottom plug cotton during calibration or cleaning, and a container should be placed under the drainage outlet.

（4）Hang the sensor properly, then place the sensor cover on top of the low turbidity sensor, and move the sensor cover forward and backward slightly to ensure that it is just in place on the instrument panel. If the sensor cover (head) is not properly positioned, it may cause light leakage and incorrect readings.

Note: Ensure that the turbidity meter sensor body is horizontal and vertical.



Sensor Installation Diagram

（5）Install water sample pipeline (user provided)

It is recommended to use quarter cone pipe thread, rigid or semi-rigid pipe for the water sample tube. The pipe wiring should be directly connected to the low turbidity sensor and sampling point as much as

possible to minimize the lag time of water sample circulation.

（6）Connection of sample inlet and outlet

There are water sample inlet and outlet on the turbidity sensor. The water inlet pipe fitting is a 1/4 cone pipe thread, 8mm pressure bearing pipe fitting. The water sample drainage outlet is equipped with a 1/2 cone pipe thread and a 12mm pressure bearing pipe fitting. The installation steps are as follows:

● Find the inlet and outlet as shown in the above picture.

● Unscrew the pressure bearing fittings of the inlet and outlet, then insert the matching hose into the fittings as shown in the above figure, and finally tighten the fittings.

● Cut the inlet pipe into two parts and insert them into both sides of the shut-off valve. Rotate the shut-off valve to control the flow rate, as shown in the above figure. Connect the empty end to the water sample pipeline.

Note：

The required flow rate is between 300 and 700 milliliters per minute. The flow rate entering the turbidity meter can be controlled by the shut-off valve on the inlet pipeline. Various flow rates below 300 milliliters per minute will reduce response time and result in incorrect readings. Various flow rates above 700 milliliters per minute will cause the turbidity meter to overflow, indicating that the flow rate is too high. To prevent overflow of water, an overflow port is installed on the back of the sensor. The matching overflow pipe can be directly inserted into the overflow port to prevent the sensor from overflowing.

Ordering code

SUP-PTU-8012 -ZD-A-B-10-ZY						Description
SUP-PTU-8012	-	-	-	-	-	
Measurement Range	ZD					0-100NTU
Output		A				RS485
Power Supply			B			12VDC
Cable Length				10		10m
				20		20m
				30		30m
				XX		Others
Cable Connector					ZY	Cable Connector
					HK	Aviation Plug