



NexSens AccuStage

Smart Water Level Sensor
User Manual

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Overview

The NexSens AccuStage water level sensor is a completely self-contained pressure transducer. Both water level and temperature readings are available on the RS-485 Modbus output. Additionally, water level is available on the 0-2.5VDC analog output.

The AccuStage is available in vented or absolute configurations and is ideally suited for long-term environmental monitoring applications in surface water, streams and reservoirs. This device is also perfect for measuring water level in weirs, flumes, or irrigation channels to compute flow. Additionally it can be used with NexSens iChart software and an iSIC or SDL data logger to measure significant wave height, dominant wave period, and level for tide gauge systems.



Figure 1: NexSens AccuStage

Specifications

Table 1: Vented Water Level Specifications

Sensor	Vented Pressure Transducer
Measurement Range	0 to 5 meters standard; Custom ranges from 1 to 275 meters
Accuracy	+/-0.1% Full Scale TEB
Operating Temperature	-10 to +80 C
Power Requirements	8 to 28 VDC
Outputs	0 to 2.5 VDC analog, Modbus RS-485
Body Material	316L stainless steel or titanium
Cable Type	Hytrel-jacketed, vented & shielded
Cable Length	10, 20 & 30 meters standard; Custom lengths available
Sensor Length	109mm (4.29")
Sensor Diameter	21mm (0.825")

Table 2: Non-vented Water Level Specifications

Sensor	Absolute pressure transducer
Measurement Range	1 to 275 meters
Accuracy	+/-0.1% Full Scale TEB
Operating Temperature	-10 to +80 C
Compensated Temperature	-10 to +80 C
Power Requirements	8 to 28 VDC
Outputs	0 to 2.5 VDC analog, Modbus RS-485
Body Material	316L stainless steel or titanium
Cable Type	Hytrel-jacketed & shielded
Cable Length	10, 20 & 30 meters standard; Custom lengths available
Sensor Length	109mm (4.29")
Sensor Diameter	21mm (0.825")

Connecting to an iSIC Data Logger

To wire the sensor into the iSIC, route the cable and wires through a gland fitting installed in the enclosure, and then unplug the green terminal strip from the data logger before securing individual wires according to the wiring diagram below. Avoid clamping on wire insulation.

**Figure 2:** Unplug the green terminal strip from the data logger before wiring the sensor

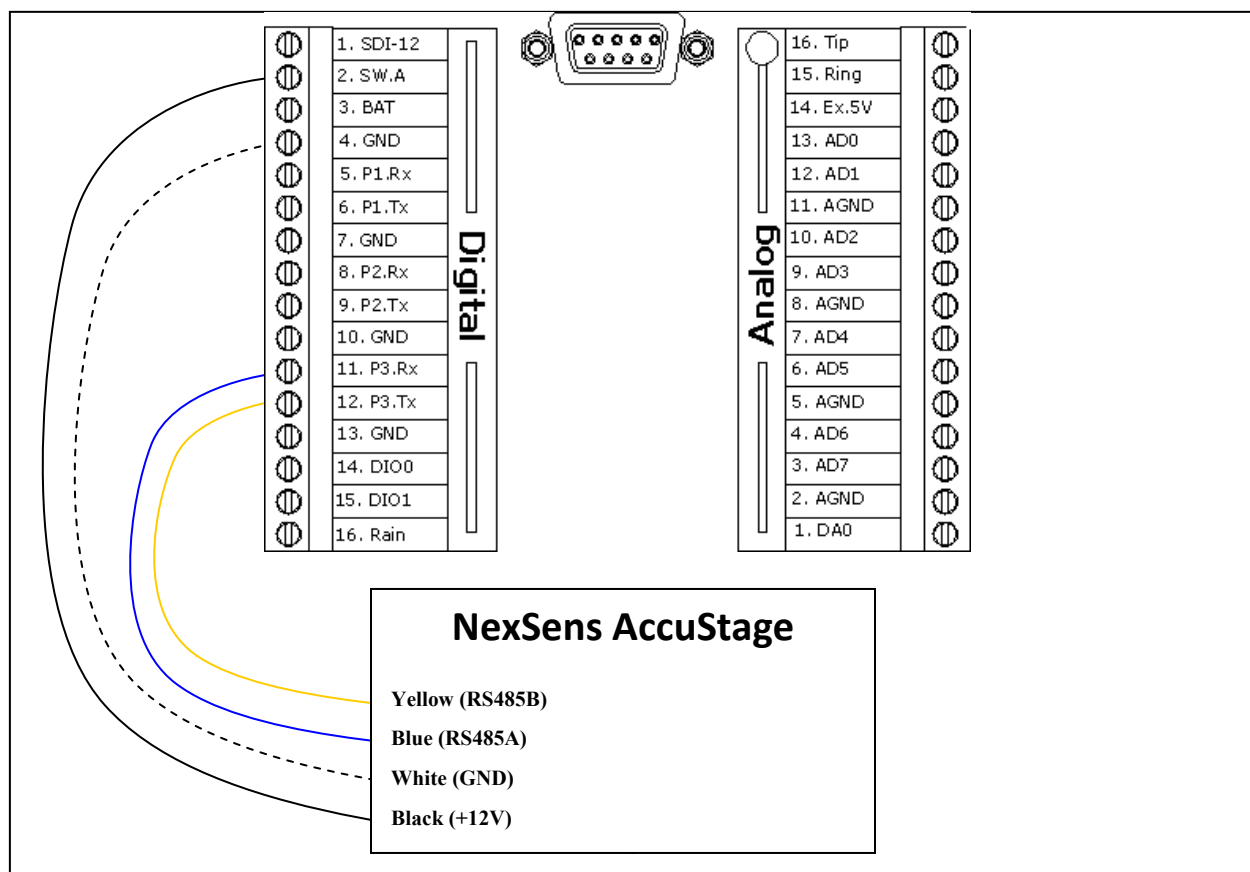


Figure 3: Physical wiring of sensor to an iSIC data logger

Notes:

- This Wiring is for iSIC Version 7 Data Logger. For older versions please contact NexSens Technology, Inc.
- Drain wire should be cut off.

Computer Interface

iChart software is used to set up the iSIC data logger, as well as to acquire and process data. Launch the software and select **File | New Project**. Follow the Setup Device Wizard to create a project file. Additional information is available in the iChart manual.

Deployment and Maintenance

Installation

The AccuStage level sensor can easily be installed in a 1" or larger stilling well or deployment pipe, or can be deployed beneath NexSens data buoys.

Additionally, for best level measurements make sure the AccuStage is installed below the lowest anticipated water level during unattended deployments.

For vented sensors, care should be taken to keep the cable jacket from bending tighter than a one inch radius. This can pinch the vent tube, thus preventing an accurate vented level reading. Prevent moist air from entering the vent tube. A NEMA 4X enclosure with desiccant and Gortex vent is recommended.

Maintenance

There is very little maintenance required for AccuStage vented level sensors, because they are designed for long term deployments in submersible applications. However, high fouling environments can cause the nose cap to become clogged, resulting in erroneous level readings.

Cleaning

Never attempt to clean the AccuStage nose cap or diaphragm with a sharp object. This could dent the sensor diaphragm and cause permanent damage to the transmitter.

Instead, it is recommended that a soap scum cleaner or hard-water stain remover be used. Follow the procedure below to clean the sensor:

1. Fill a container with the cleaning solution.
2. Fill a second container with 50/50 diluted cleaner.
3. Fill a third container with fresh water.
4. Beginning with the first bowl, hold the cable about six inches from the sensor housing and stir gently in the solution for 20-30 seconds.
5. Repeat stirring in the diluted solution and finally in the water.
6. Wipe dry with a soft rag or towel.

Storage

AccuStage vented level sensors should be stored in a cool, dry place.

Calibration

To ensure quality data, periodic manual quality control (QC) readings are recommended. When the sensor is drifted out of spec, it should be sent back for factory calibration.