

## **280-WL400 Water Level Sensor**

The **Model 280-WL400 Water Level Sensor** provides highly accurate water level measurement for a wide variety of applications, including those in severe environments. The submersible pressure transducers have a dynamic temperature compensation system, enabling high accuracy measurements over a wide temperature range. The water level sensor is easily adapted to all dataloggers, telemetry, monitoring equipment, and displays.

Each of the water level sensors consist of a solid state submersible pressure transducer encapsulated in a stainless steel 13/16" diameter housing. The water level sensor has a molded-on waterproof cable and a two-wire 4-20 mA high level output for connection to a monitoring device. A 25' cable is standard, and optional cable lengths are available up to 500'.

The water level sensor's submersible pressure transducer is fully encapsulated with marine-grade epoxy so that moisture can never leak in or work its way down the vent tube to cause drift or level sensor failure. The water level sensor uses a unique, highly flexible silicon diaphragm to interface between water and the sensing element. This silicon diaphragm protects the water level sensor's electronics from moisture and provides each sensor with exceptional linearity and very low hysteresis. The design of the submersible pressure transducers eliminates the issues associated with metal foil diaphragms, which tend to crinkle and stretch out over time causing drift, linearity, and hysteresis problems. The water level sensor also has automatic barometric compensation due to the attached vent cable and is protected by a stainless steel micro-screen cap, which makes fouling with silt, mud, or sludge virtually impossible. The water level sensor's design is great for all saltwater applications including tide level monitoring, floating docks, and others.

Pressure transducer level ranges of 0-3', 0-15', 0-30', 0-60', 0-120' and 0-250' are available. The 0-3' low-level range is ideal for measuring shallow flows or small water level changes like those encountered in sewers, storm drains, weirs, and flumes. The 0-3' water monitoring sensor accurately measures small changes in water, even when the water's depth is only a few inches deep. Other metal foil-type water level sensors typically have serious problems at low-level ranges because of sensor crinkling, stretching, and drifting.

Each submersible pressure transducer has a two-wire 4-20 mA output signal that is linear with water depth. From 10 to 36 Vdc is required to operate the water level sensor, so the level sensors can be operated from common 12 Vdc battery systems. The 4-20 mA signal can run up to 3,000' from the submersible pressure transducer to the logging device. Common twisted pair or electrical extension cord wire may be spliced to the vented cable once the cable is out of the water. The 4-20 mA signal may be converted to 0.5 to 2.5 Vdc by dropping the current signal across a 125 ohm resistor.

### **Specifications**

#### **Sensing Element**

Sensor element: Silicone diaphragm, wet/wet transducer  
Pressure range: 0-3', 0-15', 0-30', 0-60', 0-120', 0-250'  
Linearity and hysteresis:  $\pm 0.1\%$  FS  
Accuracy:  $\pm 0.1\%$  of full scale at constant temperature,  $\pm 0.2\%$  over 35°F to 70°F range  
Overpressure: Not to exceed 2 x full scale range  
Resolution: Infinitesimal (analog)  
Outputs: 4-20 mA or 0.5 to 2.5 Vdc across 125 ohms  
Supply voltage: 10 to 36 Vdc  
Current draw: Same as sensor output  
Warm-up time: 10 ms minimum  
Operating temperature: -40° to +185°F  
Compensation: Uses dynamic temperature compensation 30-70F.  
Automatic barometric pressure compensation  
Weight: 1/2 lb

#### **Housing**

Material: 304L Stainless Steel, SS microscreen (hundreds of holes to prevent fouling), electronics are fully encapsulated in marine grade epoxy, guaranteed not to leak  
Size: up to 5 1/2" long x 13/16" diameter (small enough for a 1" well)

#### **Cable**

Conductors: 4 each 22 AWG  
Jacket material: Marine grade polyurethane  
Vent tube material: HD polyethylene  
Shield: Aluminum Mylar  
Outer diameter: .307"  
Temperature range: -22° to +185°F  
Weight: 0.7 oz/ft length; Standard 25' (up to 500' from the factory)

### **Ordering Information**

**280-WL400** Water Level Sensor, includes 25' cable  
The submersible pressure sensor may be placed slightly below the lowest expected water level. Water level sensor level ranges of 0-3', 0-15', 0-30', 0-60', 0-120', and 0-250' are available. When ordering, select the level sensor range that will cover the maximum water level change (this is not necessarily the total depth of water). Selecting the smallest water level range possible will ensure the greatest accuracy.

**280-WLEXC** Extra Cable, per foot  
Cable length is measured from top of logger to bottom of sensor. The 280-WL400 includes 25 feet of cable, and extra cable can be added up to 500