

# DIFFERENTIAL SERIES UNIVERSAL & LOOP-POWERED pH/ORP SENSORS

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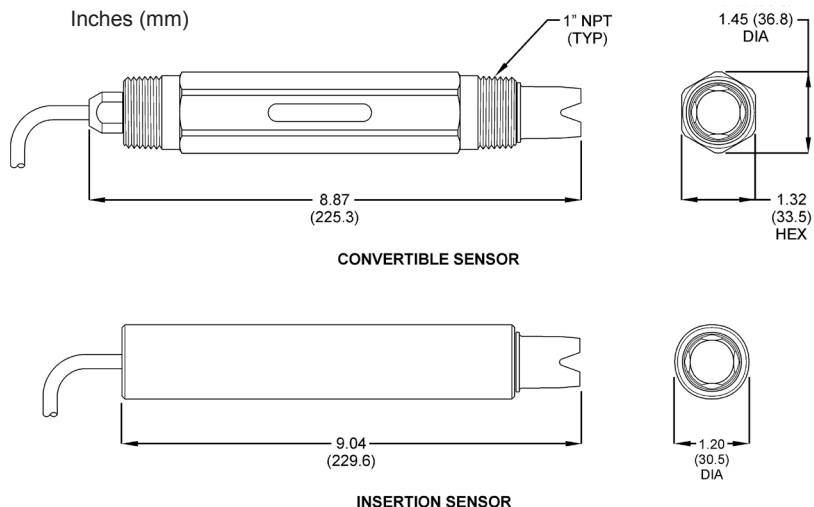


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The Differential Series pH/ORP sensors are designed for use with most commercially available analyzer systems and generic panel meters, allowing these end users to benefit from the advantages of differential electrode technology sensors. The sensors are classified as either Universal or Loop-Powered, depending on the output selected.

The Universal sensors emulate standard, non-amplified combination sensors and are designed to interface with virtually all pH/ORP analyzers. The sensors require no power supply as the preamplifier is powered by an internal lithium battery. The pH sensor outputs a mV signal in the range of -500 to +500 mV, linear over the 0 to 14 pH range. The ORP sensor outputs a mV signal that ranges from -1000 to +1000 mV.

The Loop-Powered sensors require an external 7-30 VDC power supply and provide a 4-20 mA output signal for direct connection to generic panel meters, data acquisition systems, or other devices that accept a current input. The sensor includes integral temperature compensation of the pH signal, so no temperature output is provided. The sensor output is uncalibrated, therefore, the receiving instrument must be capable of providing user calibration of the pH or ORP signal on a periodic basis.



### **Differential Series VL22 pH/ORP Sensor Specifications:**

**Measuring Range:** 0 to 14 pH; -1000 mV to +1000 mV ORP

**Sensitivity:** 0.002 pH; 0.2 mV ORP

**Stability:** 0.02 pH; 2 mV (per 24 hours, non-cumulative)

**Wetted Materials:** PEEK®, ceramic, titanium, glass, Viton®, EDPM; Platinum (ORP); 316 Stainless Steel with insertion body styles

**Temperature Compensation:** Pt1000 or Pt100 RTD

**Sensor Cable:** 6 conductor plus 2 shields, HDPE Jacket (5 wires used w/ Universal sensors and 2 wires used with Loop-Powered sensors)

**Temperature Range:** -5 to 95°C (23 to 203°F)

**Pressure Range:** 0 to 100 psig

**Max. Flow Rate:** 10 feet (3 meters) per second

**Max. Sensor to Analyzer Distance:** 3000 feet (914 meters) for Universal and 1000 feet (305 meters) for Loop-Powered

**Sensor Body Options:** 1" NPT convertible or 1¼" insertion

**Shipping Weight:** 1 pound (0.45 kilogram)

**Differential-Style Sensor:** The reference element is a second glass pH electrode immersed in a reference buffer solution. This glass reference system allows the sensor to be used in applications that poison conventional pH or ORP sensors.

**PEEK® or 316SS Sensor Body Construction:** All sensor housings are constructed of either PEEK®, a high performance thermoplastic that provides outstanding mechanical strength and chemical resistance, or 316 stainless steel.

**Replaceable Sensor Salt Bridge:** A large volume, dual junction salt bridge is used to maximize the in-service time of the sensor. The replaceable salt bridge allows for easy and inexpensive sensor reference regeneration.

**Integral Preamplifier:** The integral preamplifier is encapsulated in the body of the sensor. This creates a low impedance signal output which ensures stable readings in harsh environments, and maximizes the distance between sensor and analyzer.

**Multiple Electrode Types:** Sensor electrodes are user specified to ensure measurement reliability and maximum sensor lifetime. The industrial pH glass electrode is provided for optimal performance over a broad range of process applications. The metal ORP electrode is either platinum or gold, depending on the process chemicals or if poisoning conditions exist.

## Differential Series VL22 pH/ORP Sensor Ordering Information:

### Model VL22-A-B-C-D-E Sensor

#### Suffix A: Electrode Type

- P1 - Industrial pH Glass
- R1 - ORP; Platinum

#### Suffix B: Temperature Compensation Element

- 1 - Integral (Standard with Loop-Powered 4-20 mA output)
- 2 - Pt1000 RTD (Standard with Universal Combination Output)
- 3 - Pt100 RTD (Optional with Universal Combination Output)

#### Suffix C: Output

- 1 - +/- 500 mV for 0-14 pH, or +/- 1000 mV for ORP (Universal Model)
- 3 - 4 to 20 mA current output (Loop-Powered)

#### Suffix D: Sensor Body Style

- 1 - Convertible-style; 1" NPT, PEEK
- 2 - Insertion Style; PEEK & 316SS (fits 1-1/4" insertion assemblies or larger)

#### Suffix E: Sensor Cable Length

- 1 - 15 feet (4.6 m)
- 2 - 30 feet (9.1 m)



Please contact our Asia Pacific distributor:

# H2O Rx

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### Regeneration Salt Bridge Option:

VL05-0057 Sensor Regeneration Kit (includes salt bridge and reference solution)

### Part Numbers for Insertion Assembly

VL07-0203 w/o Assist, 316SS, 1 1/4" NPT  
VL07-0223 w/o Assist, CPVC, 1 1/4" NPT  
VL07-0228 WITH Assist, 316SS, 1 1/4" NPT

Note: VL22 sensors used with Insertion Hardware must have 316SS Insertion-style body.

### Insertion Sensor Assembly

