

# General Purpose pH/ORP Sensors

- EXTENDED SENSOR LIFE provided by double junction reference.
- ENHANCED PERFORMANCE AND INCREASED LIFE with minimized glass cracking provided by field-proven AccuGLASS™ pH glass formulations.
- VP8 QUICK CABLE-TO-SENSOR RELEASE, provided by the watertight VP8 multiple-pin connector, eliminates cable twisting.
- MAXIMUM CHEMICAL RESISTANCE provided by rugged polyphenylene sulfide body, completely sealed to eliminate sensor leakage.
- NEW 3/4" AND 1" MOUNTING SOLUTIONS to meet a variety of application installation requirements.
- OPTIMUM VERSATILITY WITH VARIOUS MOUNTING OPTIONS provided by one-piece construction with process threads in two places.
- OPERATES IN SUB-ZERO TEMPERATURES down to -10°C (14°F).



**MODEL 3900**  
Insertion/Submersion  
Sensor

## FEATURES AND APPLICATIONS

### General purpose pH/ORP sensor model

**3900/3900VP.** The double junction reference aids in the sensor's resistance to harsh environments and helps prolong sensor life. Models 3900 and 3900VP are provided with a double junction reference, which protects the reference element from poisoning ions – such as ammonia, chlorine, cyanides, and sulfides – in the process. Both models are made with porous Teflon® junction positioned near the pH/ORP-sensitive membrane.

The AccuGLASS pH glass formulations exceed industry standards. The AccuGLASS pH glass is a result of many years of glass research resulting in a formulation which has been found to increase the life of the sensor. Unlike other pH glasses presently on the market, this glass resists cracking especially at higher temperatures and reduces sodium ion error commonly found in high pH applications. Overall, the AccuGlass formulation enhances the sensor performance to measure pH more accurately and have a longer sensor life than ever before.

## FEATURES AND APPLICATIONS (cont.)

Model 3900VP is offered with a watertight sensor-to-cable connector which eliminates re-wiring and cable twisting when replacing sensors. The Variopol VP multiple pin connector is an integral part of each sensor model and uses a mating VP cable. Once the cable is installed and wired to the analyzer, sensors are easily replaced without replacing the cable and without rewiring the analyzer. Also the cable can be disconnected from the sensor before removal from the process which eliminates cable twisting.

Models 3900 and 3900VP are housed in a molded PPS body, making each sensor virtually indestructible and chemically resistant. Complete encapsulation eliminates leakage or high humidity problems traditionally found in other pH/ORP designs. The simplified construction, designed with user convenience in mind does not require electrolyte (KCl) replenishment or any high maintenance troubleshooting procedures.

Installation is easily achieved through the wide variety of mounting configurations. Both Models feature 1" and ¾" inch (MNPT) front facing connections for insertion, submersion, or flow-through pH and ORP applications.

Both models are combination sensors (pH, reference, and temperature within sensor body) and measure pH or ORP (Oxidation/Reduction Potential) of aqueous solutions in pipelines, open tanks, or ponds. Models 3900 and 3900VP are suitable for virtually all applications and are compatible with Rosemount Analytical and other manufacturers' instruments.

## PHYSICAL PERFORMANCE AND SPECIFICATIONS

**Sensor Type:** General purpose 3900

**Measured Range:** pH: ACCUGLASS 0-14  
ORP: -1500 to +1500 mV

**Percent Linearity Over pH Range:**

Range	Linearity
0 - 7	97%
1 - 7	98%
4 - 7	98%
7 - 10	99%
7 - 12	97%
7 - 13	96%
7 - 14	95%

**Operating Temperature:** -10° to 100°C (14° to 212°F)  
Automatic temperature compensation -10° to 100°C (14° to 212°F)

**Maximum Pressure:** 790 kPa [abs] (100 psig) at 100°C (212°F)

**Materials of Construction:** stainless steel, glass, Teflon®, polyphenylene sulfide (PPS), EPDM and silicone

**Materials of ORP:** Platinum

**Process Connections**

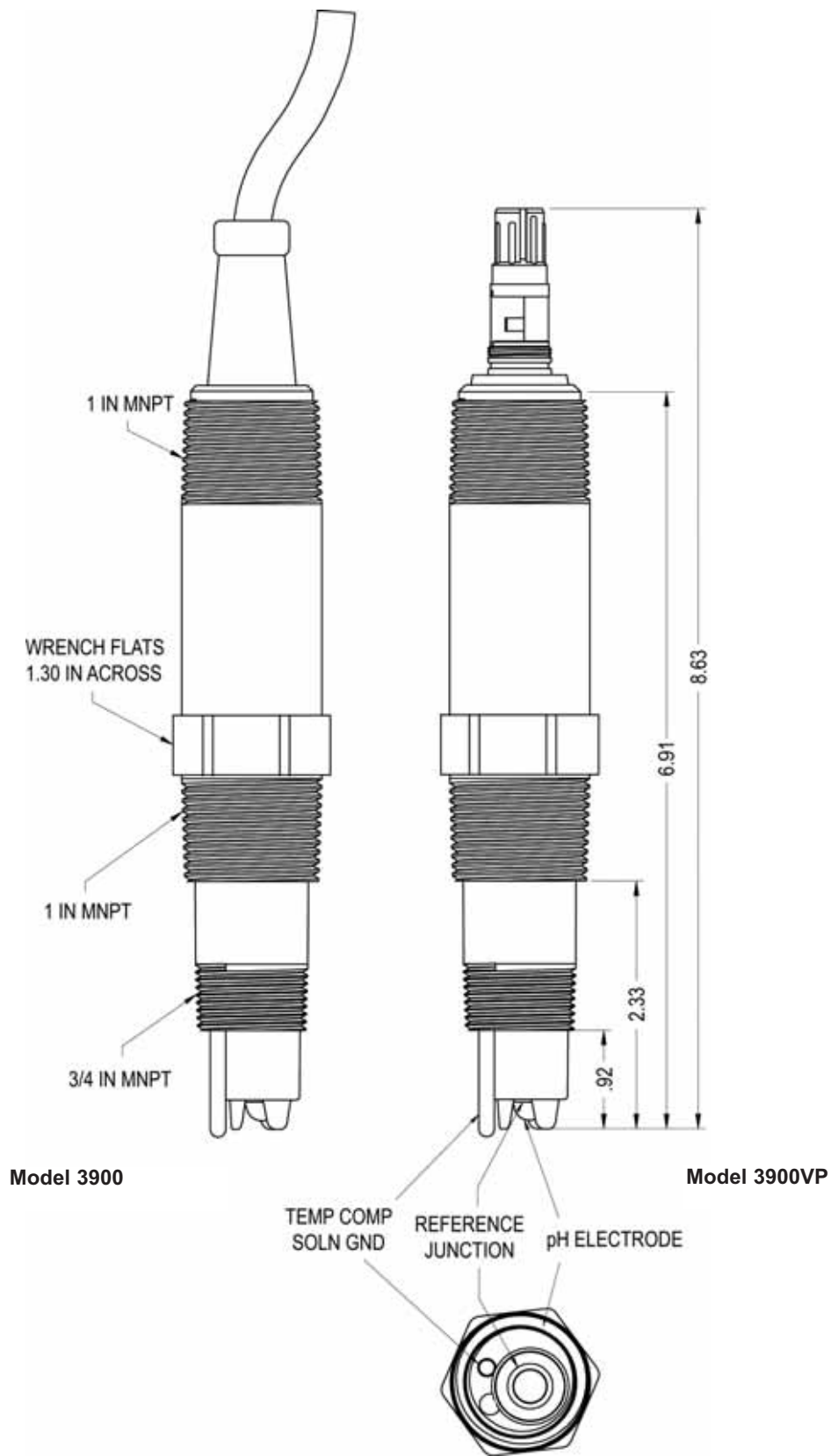
Front facing: ¾" and 1" MNPT

Rear facing: 1" MNPT

**Integral Cable:** 32 ft (10m) cable with integral preamp;  
15 ft (4.7m) cable without preamp sensor

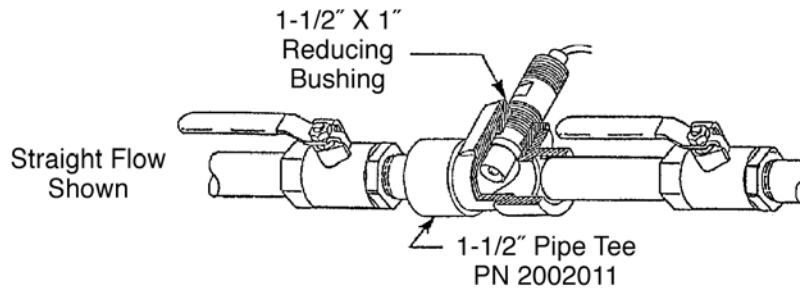
**VP8 Cable:** use 24281-XX, 2.5 ft (.8m) to 100 ft (31m)

**Weight/Shipping Weight:** 0.45 kg/0.9 kg (1 lb/2 lb)



DIMENSIONAL DRAWING FOR MODEL 3900 AND 3900VP

# INSTALLATIONS AND ACCESSORIES SPECIFICATIONS



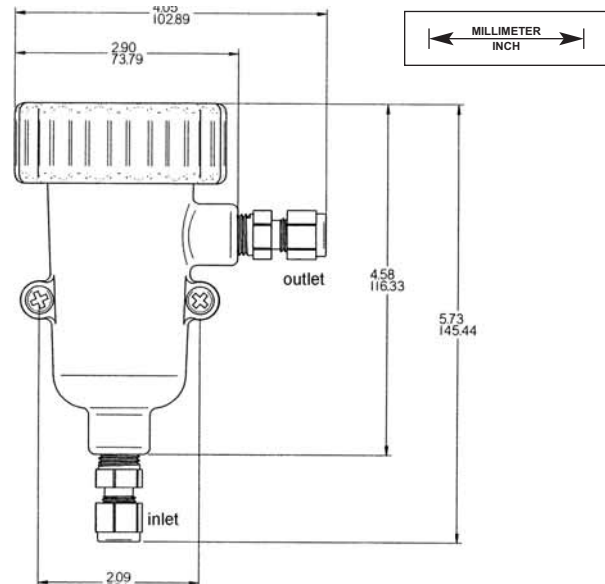
## Horizontal Pipe Tee (PN 2002011) Pressure/Temperature Ratings

psig (kPa [abs])	°F (°C)
150 (1136)	150 (65)
128 (984)	160 (71)
102 (805)	170 (77)
80 (653)	180 (82)
57 (494)	200 (93)
48 (432)	210 (99)

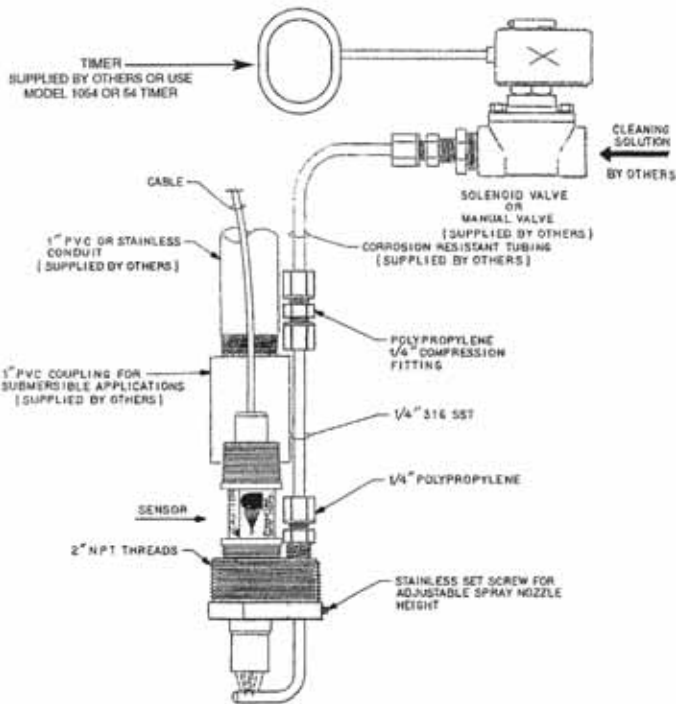
**Typical Flow Through insertion installation using PN 2002011 Pipe Tee  
(sensor must be installed at least 10° above the horizon)**

Inlet and outlet connections are stainless steel and take 1/4-inch OD tubing. Flow cell is polycarbonate with 1/4-inch FNPT fittings.

<b>WETTED MATERIALS:</b> BODY & NUT - POLYESTER/ POLYCARBONATE FITTINGS - 316 SST SEALS - SILICONE
<b>FLOW CELL RATINGS</b> TEMPERATURE: 32°-158°F (0-70°C) MAX. PRESSURE: 90 PSIG (721 kPa [abs]) FLOW RATE: 2-5 GPH (7.6-18.9 LPH)



**Low Flow Cell PN 24091-00**



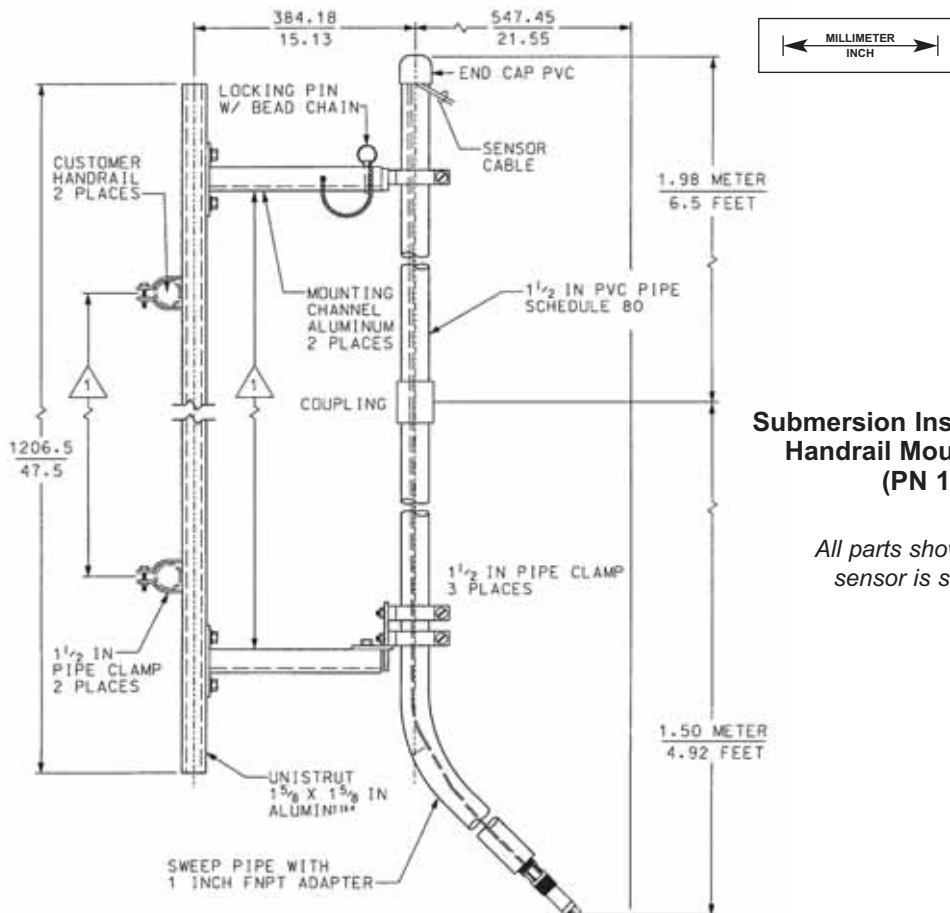
The Jet Spray Cleaner eliminates routine, manual sensor maintenance by cleaning the sensor with water or compressed air. Flow through the cleaner can be controlled by a solenoid valve.



**Jet Spray Cleaner shown with Model 3900VP pH sensor**

NOTE: The Jet Spray Cleaner can be used with Handrail Mounting Assembly (PN 11275-01, not shown) or can be mounted through conduit as shown above.

**Jet Spray Cleaner PN 12707-00**



**Submersion Installation Using the Handrail Mounting Assembly (PN 11275-01)**

*All parts shown are supplied; sensor is sold separately.*

## MODEL 3900/3900VP PH/ORP SENSOR

The Model 3900/3900VP pH/ORP Sensor is housed in a PSS plastic body with built-in solution ground for advanced diagnostics. A Pt-100 RTD is offered for temperature compensator. The sensor is available with an integral cable or VP8 connector. Integral preamplifier (-01) is the standard preamplifier option, and is compatible with Models XMT, 3081, 5081, 6081, 54e, 1055 and 1056 analyzers/transmitters. Junction box kits with preamplifiers can be ordered separately if an analyzer/ transmitter with an integral preamplifier is not located within 15 ft. of the sensor.

<b>Model 3900 pH/ORP Sensor - New Generation general purpose sensor</b>	
<b>CODE</b>	<b>PREAMPLIFIER OPTION</b>
01	Preamplifier, 32' cable
02	No preamplifier, 15' cable

<b>CODE</b>	<b>MEASURING ELECTRODE</b>
10	General Purpose Low resistivity GPLR pH Glass (0 - 14pH)
12	Platinum ORP

**Example 3900 - 01- 12**

<b>Model 3900VP pH/ORP Sensor - New Generation general purpose sensor with VP</b>	
<b>CODE</b>	<b>PREAMPLIFIER OPTION</b>
01	Preamplifier
02	No preamplifier

<b>CODE</b>	<b>MEASURING ELECTRODE</b>
10	General Purpose Low resistivity (GPLR) pH Glass (0 - 14pH)
12	Platinum ORP

**Example 3900VP - 02- 10**

AccuGLASS is a trademark of Rosemount Analytical.

Teflon is a registered trademark of E. I. du Pont de Nemours and Company

## ACCESSORIES

Other Accessories	
PART NUMBER	DESCRIPTION
24281-00	15 ft. cable with mating VP8 connector
24281-01	25 ft. cable with mating VP8 connector
24281-02	2.5 ft. cable with mating VP8 connector
24281-03	50 ft. cable with mating VP8 connector
24281-04	100 ft. cable with mating VP8 connector
24281-05	4 ft. cable with mating VP8 connector
24281-06	10 ft. cable with mating VP8 connector
24281-07	20 ft. cable with mating VP8 connector
24281-08	30 ft. cable with mating VP8 connector
12707-00	Jet cleaner
23242-02	Insertion adapter
24091-00	Low flow cell
23555-00	Junction Box with Preamp for Models 54e, 3081, 4081, 5081, XMT, 1055, 1056
2002011	CPVC flow through Tee, 1-1/2 in. NPT process connection
11275-01	Sensor handrail assembly
9210012	Buffer solution, 4.01 pH, 16oz
9210013	Buffer solution, 6.86 pH, 16oz
9210014	Buffer solution, 9.18 pH, 16oz
9200273	Extension cable, gray
9200348	Extension cable, blue

**Authorized Distributor:**  
**GasDetectorsUSA.com**  
**Houston, TX USA**  
**832-615-3588**  
**sales@GasDetectorsUSA.com**



Credit Cards for U.S. Purchases Only.

