



Description

AquaMetrix pH and ORP differential probes stay in service and provide accurate measurements under conditions that often render conventional pH probes inoperable. Now for added versatility, these probes, field-proven in hundreds of installations, are available with an integral encapsulated 4-20 mA two-wire transmitter to feed directly to an AquaMetrix Model 2300P receiver/analyzer, a PLC or a DCS.

The P65 pH and R65 ORP probes employ a differential measurement technique. Unlike conventional combination probes, the differential probe has two high impedance measurement circuits containing a common metallic return electrode. One circuit includes the process measurement electrode which generates a potential E_1 proportional to the process pH. The second circuit includes an internal measurement electrode immersed in a stable buffer solution which generates a standard reference potential, E_2 . Both circuits have a common potential E_3 developed at the return electrode. The two circuits are fed into amplifiers which provide an output representing the differential between them: $(E_1 - E_3) - (E_2 - E_3)$. The common potential E_3 is cancelled out electronically, greatly reducing inaccuracies caused by ground loops which may exist between process and instrument grounds. Ground loop current will flow through the low impedance path of the return electrode, affecting the potential E_3 , but not the differential measurement.

The differential probe maintains its accuracy and stability in aggressive process applications long after a combination-style probe's performance begins to deteriorate. Maintenance costs are reduced and the life of the probe is increased.

The internal reference electrode is electrically connected to the process solution by means of a field-replaceable double junction salt bridge which greatly reduces the possibility of contamination of the buffer solution in the reference circuit. Although seldom required, the reference solution may be easily replaced with needle-nosed pliers by removing the screw-out salt bridge. A salt bridge and buffer kit is available for this purpose.

Another advantage of the 65 series is the semi-flush face which is easily cleaned and avoids solution materials gathering on protrusions found in competitive probes. The domed glass electrode, the protective metal electrode and the temperature sensor protrude only about 1/8 inch while the salt bridge is flush. A flat-face version of the pH probe is also available.

The 65 series can be provided in any of the physical configurations in the P60/R60 series differential probes: 65C-3 with 1-1/2" threaded body style, 65C-6 "Easy-In, Easy-Out" variable insertion depth version with 1-1/4" NPT compression fitting, or the 65C-7 hot tap version.

Advantages/Benefits

Two-Wire Transmitter built in

- Integral two-wire 4-20 mA transmitter can be fed directly to PLC, DCS or AquaMetrix 2300P receiver/analyzer

Differential Measurement

- Replaceable Salt Bridge
- Long-lasting
- Low Maintenance Cost
- Field-proven
- Reduces ground loop problems

Easy Cleaning

- Semi-flush face: reduced buildup

Temperature Compensation

- Automatic temperature compensation on pH versions

Options

- Flow-through and submersion
- Hot-Tap available
- Flat-faced available (pH)
- Gold electrode available (ORP)
- Differential pH & ORP versions without 2 wire transmitter available - see P/R60 series

Applications

- Process Control in areas with high electrical interference
- Industrial and Municipal Water Treatment
- Industrial and Municipal Waste Treatment and Neutralization
- Suitable for:
 - Fume Scrubbers
 - Plating
 - Circuit Board Manufacturing
 - Food and Beverage
 - Chemical Processing
 - Pulp & Paper
 - Mining
 - Power Generation
 - Pharmaceutical

pH & ORP Probes

P65C / R65C

Technical Data

Measuring Range

pH 0 to 14.00 pH (Consult factory for applications below 2 and above 12)
 ORP -1000 mV to +1000 mV or 0 mV to +1000 mV, field selectable

Flow Rate

10 ft./sec maximum (3 metres/sec)
 Flow should be as low as possible in low conductivity water and in solutions with high suspended solids

Wetted Materials

CPVC, ceramic, glass, titanium palladium alloy and EPDM (platinum for ORP probe)

Transmission Distance

Dependant upon transmission distance and supply voltage

Sensitivity

pH Less than 0.005 pH
 ORP Less than 0.5 mV

Stability

0.03 pH per day, non-cumulative

Response Time

1 second

Load at 20 mA

450 ohms

Output

The 4-20 mA output is non-isolated and uncalibrated. The instrument or PLC must provide 24VDC to power the sensor and be able to calibrate for offset and span.

Output Span

1.14 mA per pH / 16 mA per 1000 mV

Output offset

12 mA at 7.0 pH +/- 0.6 mA
 12 mA at 500 mV +/- 40 on 0 -1000 range
 12 mA at 0 mV +/- 40 on -1000 +/-1000 range

Pressure Limit

100 psig at 65°C maximum

Temperature Compensation

Automatic: pH only -5 to 95°C (23 to 203°F)

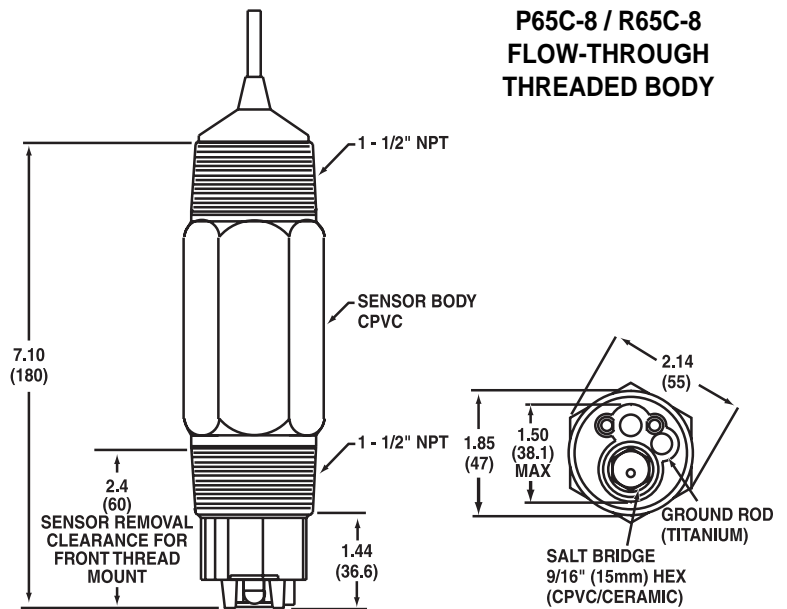
Temperature Limits

CPVC -5 to 95°C (23 to 203°F)
 The temperature limit of probes in flow-through applications is limited by pressure and by the pipe fitting material.

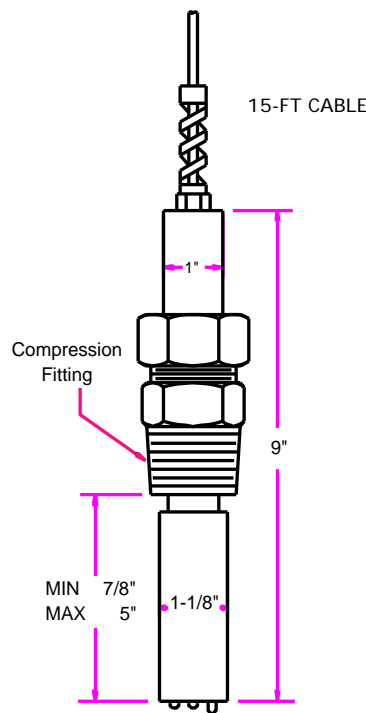
Probe cable

2 conductor, twisted pair 4.6m (15ft) long

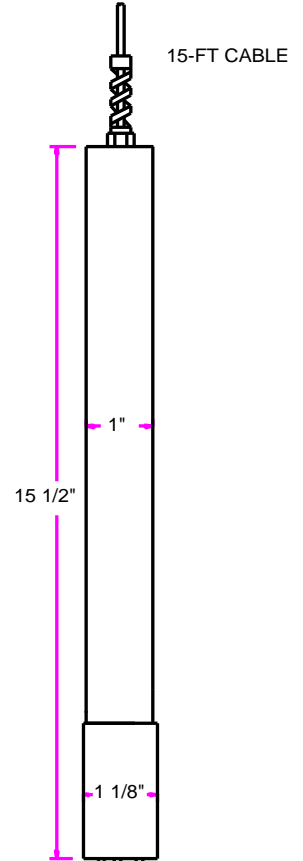
Dimensions



P65C-6 / R65C-6 Variable Insertion Depth Probe & Fitting



P65C-7 / R65C-7 Hot Tap



Related Products

CABLES & ACCESSORIES

JB-1 NEMA 4X junction box
 STC60-L Submersion mounting kit for P/R65C-8
 STC60-6 Submersion mounting kit for P/R65C-6
 P60-HTC Hot Tap Ball Valve assembly
 C42-5P050 Interconnect cable; 50 feet dressed both ends
 A35-17 Salt Bridge Kit for P/R65C-6/7, package of 3
 AM60-9765 Salt Bridge Kit for P/R65C-8, package of 3
 PROTECTOR-6 Submersion protector for P/R65C-6/7

CALIBRATION SOLUTIONS

A35-13 pH 4 Buffer, 500mL.
 A35-14 pH 7 Buffer, 500mL.
 A35-24 pH 10 Buffer, 500mL.
 A35-40 ORP Buffer, 200mV, 500mL
 A35-41 ORP Buffer, 600mV, 500mL

Ordering Information

P/R65C-8 Flow-through or submersion applications; body threaded 1-1/2" both ends (P-pH; R-ORP)
P/R65C-6 "Easy-in Easy out" variable insertion depth, 1-1/4" fitting (P-pH; R-ORP)
P65C-7 pH probe for use with Hot-Tap hardware
P65C-8-F Flat-Face pH probe
P65C-8-A Antimony pH probe
R60C-8-G ORP probe with Gold Electrode
R60C-7 ORP probe for use with Hot-Tap hardware



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