

SENSAPHONE WATER QUALITY INSTRUMENTATION



PH

Measuring Range: 0 to 14 pH

Flow Rate: 10 ft./sec maximum (3 meters/sec) Flow should be as low as possible in water with low conductivity water or high suspended solids

Wetted Materials: CPVC, Kynar/ceramic, titanium, Viton

Saltbridge: Replaceable for extended service life

Sensitivity: <0.005 pH

Stability: 0.03 pH per day, non-cumulative

Resolution: 0.01mA

Temperature Compensation: Automatic -5 to 95°C (23 to 203°F) RTD

Pressure Limit: 100 psig at 65°C maximum

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

Output: 4-20mA

Mounting: 1.5" NPT, Fixed threads on both ends, flow thru or submersible mounting

Power Supply Limit: 24(+/-4) VDC

Probe Cable : 24 AWG Two conductor shielded w/ Ground, 15 ft. (4.6m)



ORP

Measuring Range: 0 to 1000 mV or -500 to +500 mV

Flow Rate: 10 ft./sec maximum (3 meters/sec) Flow should be as low as possible in water with low conductivity water or high suspended solids

Wetted Materials: CPVC, Kynar/ceramic, titanium, Platinum

Saltbridge: Replaceable for extended service life

Sensitivity: <0.5mV

Stability: 2 mV/day

Resolution: ± the greater of 0.1% of range or 2 mA

Temperature Compensation: Automatic -5 to 95°C (23 to 203°F) RTD

Pressure Limit: 100 psig at 65°C maximum

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

Output: 4-20mA

Mounting: 2" NPT, Fixed threads on both ends, flow thru or submersible mounting

Power Supply Limit: 24(+/-4) VDC

Probe Cable : 24 AWG Two conductor shielded w/ Ground, 15 ft. (4.6m)



Toroidal Conductivity

Measuring ranges available: 0-10 mS/cm, 0-100mS/cm, 0-1000mS/cm

Wetted Materials: CPVC

Electrode Corrosion: None, Toroid is fully encapsulated.

Temperature Compensation: Automatic, Pt100RTD

Operating Temperature Range: -10 to 60°C

Pressure/Temperature Limits: 50psi at 40°C

Maximum Flow Rate: 10ft (3m)/sec
Sensor Cable 20ft (6m)

Process Connection: 1.5" MNPT at both ends of sensor for submersion or in-line.

Output: 4-20mA

Mounting: 1.5" NPT, Fixed threads on both ends, In-flow or submersible mounting

Power Supply Limit: 24VDC Load 600 Ω Max at 24 VDC

Probe Cable: 24 AWG Two conductor shielded w/ Ground, 20 ft. (6m)

MORE DETAIL: PH & ORP

Sensaphone 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 a PLC or a DCS.

The Sensaphone 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 E1 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, E2. Both circuits have a common potential E3 developed at the return electrode. The two circuits are fed into amplifiers which provide an output representing the differential between them:

$(E1 - E3) - (E2 - E3)$. The common potential E3 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 E3, 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 by removing the screw-out salt bridge. A salt bridge and buffer kit is available for this purpose.

Another advantage 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.

MORE DETAIL: TOROIDAL

Sensaphone toroidal conductivity sensors are used in processes where conventional contacting sensors may become fouled or corroded. They are loop-powered and provide direct 4-20 mA output.

Each sensor comes standard with a Pt100 RTD temperature device, which provides automatic temperature compensation to 25°C (77°F).

The Sensaphone toroidal sensors are equipped with 1.5" MNPT threads on both ends so that they can be mounted for in-flow applications or submersion mounted in tanks or open vessels.

Toroidal conductivity sensors are made up of two-wire wound toroids encapsulated in a potting compound and encased in a plastic body. One toroid acts as

a transmitter and the other as a receiver. An electric current is induced between the toroids through the process solution. This current is directly proportional to the conductivity of the process solution.

SENSAPHONE®
901 TRYENS ROAD
ASTON, PA 19014

PH: 888-369-4781
F: 610-558-0222

WWW.SENSAPHONE.COM

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