



SUBMERSIBLE SMART pH/ISE/Redox SENSOR

WITH DATA LOGGING



FEATURES

- RS485/RS232 interface
- Small diameter
- Up to 261,000 records / non-volatile
- 316 stainless steel, Viton®, Delrin® and Teflon® construction
- Polyethylene, polyurethane and FEP Teflon® cable options
- Solution ground for excellent noise protection
- Long-term sensor stability
- MODBUS® protocol
- Easy export to spreadsheets & databases

DESCRIPTION

The AquiStar® TempHion™ Smart Sensor is a submersible water quality sensor and datalogger capable of measuring pH, specific ions, redox, and temperature. Each unit comes with one thermistor based temperature element plus up to four pH, ISE, or redox elements. The TempHion™ Smart Sensor records, operates on low power, and comes with easy-to-use software with powerful features.

Several TempHions, or a combination of TempHions and other INW Smart Sensors, can be networked together and controlled from one location, either directly from a single computer or via a WaveData® Wireless Data Collection System.

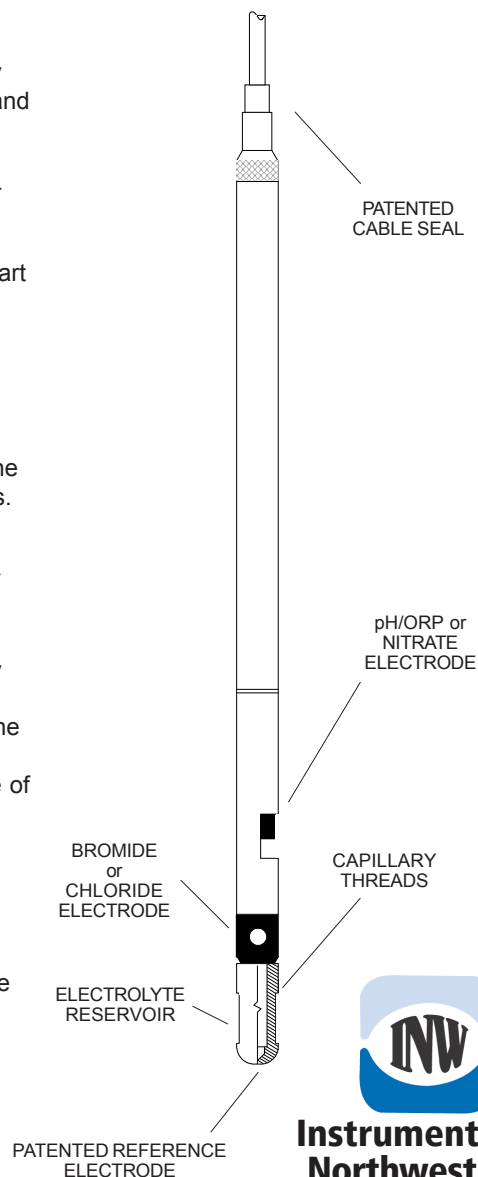
OPERATION

The TempHion™ Smart Sensor is powered internally with two AA alkaline batteries or with an auxiliary power supply for data intensive applications. The unit is programmed using a laptop or desktop Windows® based computer via its RS485/RS232 adaptor and INW's Aqua4Plus software. Once programmed, the unit will measure and collect data on a variety of time intervals.

The internal processor in the TempHion™ Smart Sensor allows for easy calibration, using the calibration utilities in INW's Aqua4Plus. Once calibrated, this calibration data is stored in non-volatile memory within the Smart Sensor. When data is collected, this calibration information is applied to the data, resulting in highly accurate readings at a wide range of temperatures.

APPLICATIONS

The TempHion™ can be used for precise single- or multi-well tracer tests, saltwater intrusion tracking, tidal influence studies, wastewater treatment discharge and pH monitoring. Its patented reference electrode provides long-term stability for continuous or intermittent monitoring making unattended insitu pH testing possible, without frequent calibrations or service.

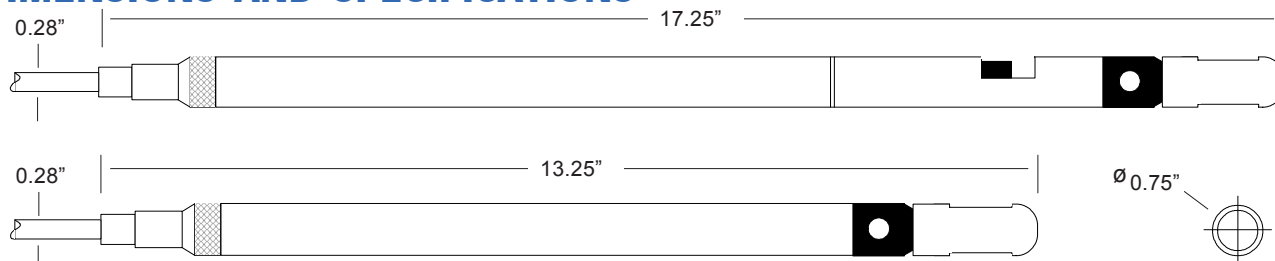


**Instrumentation
Northwest, Inc.**

1-800-776-9355
<http://www.inwusa.com>

SUBMERSIBLE SMART pH/ISE/Redox SENSOR

DIMENSIONS AND SPECIFICATIONS



GENERAL

Length	13.25" - 17.25" (varies by parameters)
Diameter	0.75"
Weight	.85lb.
Body Material	Delrin® & 316 Stainless Steel or Titanium
Wire Seal Materials	Viton® and Teflon®
Submersible Cable	Polyurethane, Polyethylene, FEP or Tefzel®
Cable Weight	4lbs/100 ft
Protection Rating	IP68, NEMA 6P
Terminating Connector	Available
Communication	RS485 Modbus SDI-12 (ver. 1.3) (optional)

Millivolt Channels

No. Available Channels

3 mV, 1 temp
1 pressure (optional)

Range

± 1200mV

Accuracy

0.1% value

Resolution

0.1mV

Operating Temp. Range

0°C to 50°C

Storage Temp. Range¹

-20°C to 80°C

Reference

Electrode

Ag/AgCl solid-state electrode

Junction

Patented capillary liquid junction

Electrolyte

TempHion reference solution

Maximum Operating Pressure

100 PSI

Burst Pressure

200 PSI

LOGGING

Memory	2MB - 261,000 records
Log Types	Variable, User-Defined, Logarithmic, Profiled
Programmable Baud Rate	9600, 19200, 38400
(optional)	
Logging Rate	2x/sec
Resolution	16 bit
Software	Complimentary Aqua4Plus or Aqua4Push
Networking	32 available addresses per junction w/ batching capabilities (up to 255)
File Formats	.xls/.csv/.a4d

POWER

Internal Battery	2x1.5V AA Alkaline ²
Auxiliary Power	12VDC - Nominal 6V-15VDC - Range
Exp. Battery Life	18 months at 15 min. polling interval

TEMPERATURE

Element Type	30K Ohm thermistor
Element Material	Epoxy bead/external housing
Accuracy	±0.5°C
Resolution	0.01°C
Range	-5°C to 100°C
Units	Celsius, Fahrenheit, Kelvin

¹ Storage without batteries

² Lithium available upon request

³ Accuracy is reduced from 0-4ppm Nitrate

ION SPECIFIC ELECTRODE

CHLORIDE

Measurement Principle	Ion electrode method
Probe Material	Ag/AgCl solid state electrode
Range	0-10,000ppm
Typical Accuracy	± 2.0% of measured value
Resolution	0.1ppm
Thermal Compensation	Isopotential point characterization
Calibration	1-2 point method w/ ionic strength adjustment
Reference Solution	Potassium Nitrate - (KNO ₃)

BROMIDE

Measurement Principle	Ion electrode method
Probe Material	Ag/AgCl solid state electrode
Range	0-10,000ppm
Typical Accuracy	± 2.0% of measured value
Resolution	0.1ppm
Thermal Compensation	Isopotential point characterization
Calibration	1-2 point method w/ ionic strength adjustment
Reference Solution	Potassium Nitrate - (KNO ₃)

NITRATE

Measurement Principle	Ion exchange principle
Probe Material	Proprietary plastic membrane
Range³	0-10,000ppm
Typical Accuracy	± 4.0% of measured value
Resolution	0.1ppm
Thermal Compensation	Characterized
Calibration	1-2 point method w/ ionic strength adjustment
Reference Solution	Ammonium Sulfate - ((NH ₄) ₂ SO ₄)

pH/ORP

Sensor Type/Material	
<i>pH</i>	Glass combination electrode
<i>ORP</i>	Platinum ring

Ranges

<i>pH</i>	0-14 pH units -538mV to 260mV
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ORP

±1200mV

Units

pH, mV, Eh

Typical Accuracy

pH ± 2 pH Units

ORP 0.1 mVH

Resolution

pH 0.01 pH units

ORP 0.01 mVH

Maximum Zero Offset ±1200mV (User Defined)

Compensated Range 0°C to 40°C

Calibration

pH one point auto-calibration or two point

w/ pH buffers (7 & 4 or 10)

ORP EH auto-calibration to standard

hydrogen electrode

Reference Solution Potassium Nitrate - (KNO₃)

Information in this document is subject to change without notice.

Instrumentation Northwest, Inc.



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