

Thermo Scientific AquaSensors  
DataStick measurement system  
for universal plug & play

Product Specifications

## Thermo Scientific AquaSensors DataStick pH Measurement System



### Markets/Applications

- Wastewater treatment
- Neutralization of effluent
  - Steel
  - Pulp and paper
  - Food
  - Chemical
  - Pharmaceutical
- Metal finishing (chrome/cyanide destruct)
- High purity water
- Odor scrubbers
- Pharmaceutical
- Chemical & petrochemical
- Reverse osmosis
- Cooling tower control
- Food processing
  - Carbon dioxide control
  - Cleaning
  - Canning

### AquaSensors pH DataStick™

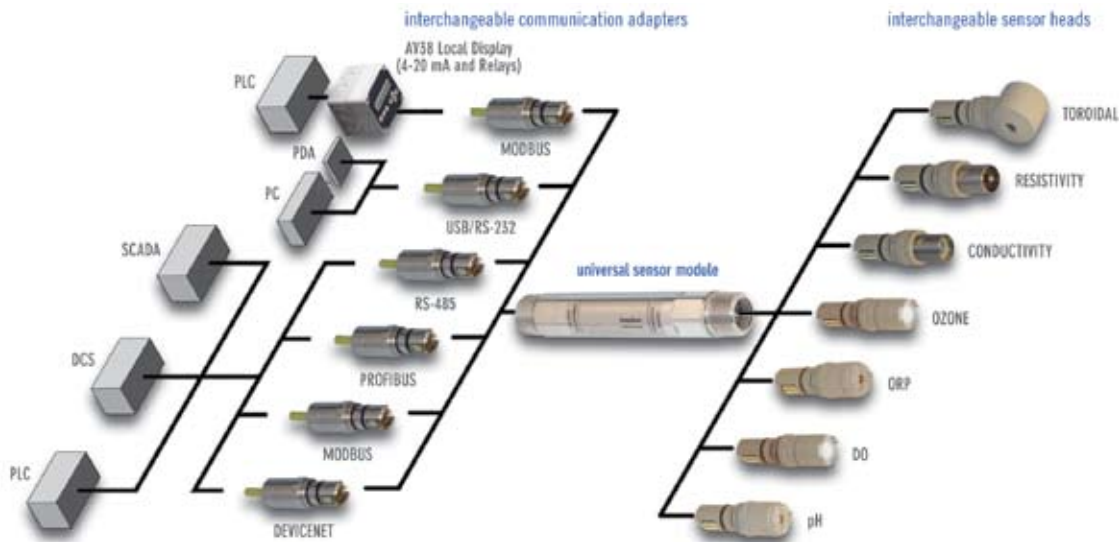
- Differential pH measurement
- Pre-calibrated (no field calibration required)
- Plug & play sensor heads
- Replaceable quad junction salt bridges
- Electrode protection options
- Offered in a variety of materials
- Direct data reporting (24-bit)
- Plug & play industrial communications adapters

Connect this pH sensor directly to a PLC (Programmable Logic Controller) for seamless integration with industrial control systems. Use any computer to display data, calibrate and customize the measurement without an intermediate analyzer electronics box. Sensor heads are pre-calibrated and can be replaced or exchanged with any other type of sensor without taking the system down. Save space, time and money.

Engineering Specifications

1. The pH sensor shall be of Differential Electrode Technique design using two electrodes to compare the process value to a stable internal reference standard buffer solution. The standard electrode shall have non-flowing and fouling-resistant characteristics.
2. The sensor shall have hex-shaped wrench flats to facilitate mounting, and shall be constructed of a material with exceptional chemical resistance and mechanical strength. This material shall enable the sensor to be installed in metal fittings without leakage usually caused by heating and cooling cycles when dissimilar materials are threaded together.
3. The sensor shall have interchangeable, pre-calibrated plug-in sensor heads and communications adapters that can be installed without powering down the system.
4. The sensor shall have 1 inch NPT threads on both ends to mount into a standard 1 inch pipe tee, a 1.5 inch union mounting, or immersion hardware.
5. The built-in electronics of the sensor shall be completely encapsulated and O-ring sealed for protection from moisture and humidity.
6. The sensor shall have a built-in pre-amplifier, universal signal conditioning electronics, universal engineering units conversion, and interactive communications with a host computer or display interface using one of several protocols including Modbus® RTU, DeviceNet, Profibus, USB, CANopen or Ethernet.
7. The sensor shall have an integral temperature sensor to automatically compensate measured values for changes in process temperature.
8. The sensor shall include a titanium ground electrode (standard) to eliminate ground loop currents in the measuring electrode.
9. The sensor shall be Thermo Scientific AquaSensors pH DataStick.

Thermo Scientific DataStick Analytical System



Key Components

DataStick

Provides universal conversion of sensor signals and interactive communications for measurement, calibration, configuration and diagnostics.



Communications Adapter

Plugs into the DataStick to provide power and direct interactive communications with control systems.



Differential pH Sensor Head

Pre-calibrated for pH and temperature. Can be plugged into any DataStick to yield accurate 24-bit data.

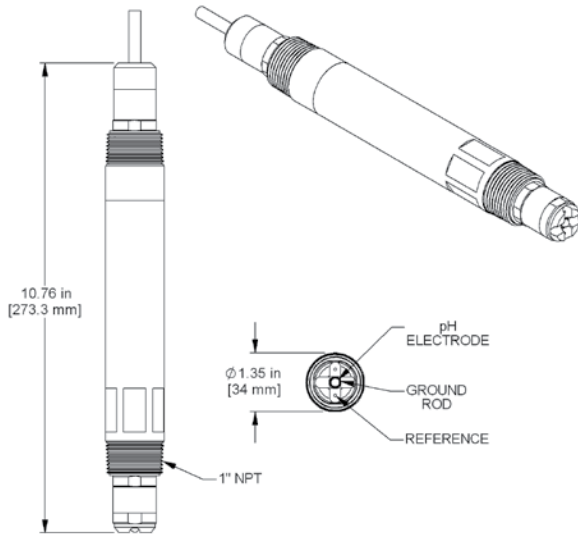


AV38 Local Display

2 line display and 7 key navigation. Data reporting with up to 2 current loops. 2 Form C relays. Digital communications.



Thermo Scientific AquaSensors pH DataStick



Provides universal conversion of sensor signals and interactive communications for measurement, calibration, configuration and diagnostics. Mounting adapters, junction boxes and recharge kits are available.



1 Inch Tee Mounting



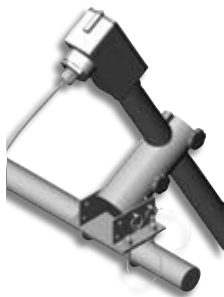
1.5 Inch Union Mounting



1.5 Inch Ball Valve



Sanitary Mount



Hand Rail Mounting Assembly



1 Inch Immersion Mounting with Junction Box  
(7 foot extension is standard)

Specifications

**Measurement System Performance†**  
**Range:** 0 to 14 pH  
**Resolution:** 0.01 pH  
**Accuracy:** 0.1% of reading  
**Step Response Time:** 90% in 30 seconds

**Operational Environment**  
**PEEK Sensor Head**  
**Temperature Range:** -5 °C to 95 °C  
**Maximum Pressure:** 100 psig @ 95 °C  
**Maximum Flow Rate:** 10 ft/second

**CPVC Sensor Head**  
**Temperature Range:** -5 °C to 75 °C  
**Maximum Pressure:** 85 psig @ 75 °C  
**Maximum Flow Rate:** 10 ft/second

**Power Requirements‡**  
**Voltage Range:** 10 to 30 VDC  
**Maximum Power:** 200 mW  
**Typical Power:** 120 mW

**Construction**  
**Process Electrode:** "G", "HF", low temperature, pure water, or high temperature glass  
**Ground Rod:** Titanium, 316 stainless steel or Hastelloy C  
**O-rings:** Viton® (other materials available)  
**Sensor Head Material:** PEEK or CPVC  
**DataStick Material:** 316 stainless steel, PEEK, or CPVC  
**Weight**  
 1.2 lbs (PEEK or CPVC)  
 2.6 lbs (316 stainless steel)

**Units of Measure**  
**Measurement Units:** pH, mV  
**Temperature Units:** °C, °F

**Calibration††**  
**Automatic Buffer:** 1 and 2 point  
**Sample:** 1 and 2 point  
**Temperature:** 1 point

**Temperature Compensation Options**  
**Linear:** % per °C  
**Built-in tables:** Ammonia or Morpholine

**Other Configuration Options**  
**Sensor Filter:** 0 to 100 seconds  
**Temperature Filter:** 0 to 100 seconds  
**Auto Calibration Buffer Standards:** (4, 7, 10) and DIN 19267

**Approvals and Ratings**  
**Immunity & Emissions:** CE Certified 89/336/EEC: CISPER 11, EN61000 (-4-2,-4-3,-4-4,-4-6, 4-8)  
**Safety:** cULus Listed; 367G E303570  
**Hazardous Locations:** Haz Loc Class 1, Division 2, Groups A, B, C, D. Max Ambient 50°C

† Note: Typical at 25 °C Performance unaffected by cable length  
 ‡ Note: Class II DC power supply required  
 †† Note: pH and Temperature are precalibrated at the factory  
 †† Note: Temperature can be entered manually

### Thermo Scientific AquaSensors pH DataStick

- Global support — with experience that comes from supporting our customers for over 35 years throughout the world, our water quality specialists and customer support teams offer a quick, thorough and professional response to any problem encountered.
- Focus on user benefits — we work closely with you to define your needs, and ensure you are using the monitor in a way that improves your bottom line. For more information, contact your local water quality specialists or visit [www.thermo.com/processwater](http://www.thermo.com/processwater).

#### pH DataStick Ordering Information

Part No.	Description
<b>DS-b-t</b>	<b>DataStick</b>
<b>Body Material (b)</b>	1 = 316 Stainless Steel 2 = CPVC 3 = PEEK
<b>Mounting (t)</b>	1 = 1 inch NPT front/back 2 = 1 inch NPT front only 3 = 1.5 inch Ball Valve 4 = 2 inch Tri-clamp (Sanitary) 5 = 2.5 inch Tri-clamp (Sanitary)
<b>PH-b-t-x-y-z-r</b>	<b>Differential pH Sensor Head</b>
<b>Body Material (b)</b>	2 = CPVC 3 = PEEK
<b>Electrode Type (t)</b>	1 = Standard Glass      4 = Pure Water 2 = HF Glass              5 = High Temperature 3 = Low Temperature
<b>Sensor Tip (x)</b>	A = Protected B = Process Flat C = Face Seal (For flow chamber mounting)
<b>Filling Solution (y)</b>	1 = Standard
<b>Salt Bridge (z)</b>	A = Standard
<b>Ground Rod (r)</b>	1 = 316 Stainless Steel 2 = Titanium 3 = Hastelloy® C
<b>CA-b-nw-x-y</b>	<b>Communications Adapter</b>
<b>Body Material (b)</b>	1 = 316 Stainless Steel 2 = CPVC 3 = PEEK
<b>Communications (nw)</b>	1A = RS232 ASCII      7R = Ethernet 2B = Modbus RTU      5R = DeviceNet 2A = Modbus RS232    8R = USB 4B = CANopen
<b>Cable Length (x)</b>	1 = 10 feet 2 = 20 feet 3 = 30 feet
<b>Cable Termination (y)</b>	A = Stripped Wires

#### Accessories Ordering Information

Part No.	Description
<b>Local Display Interface</b>	
AV38	1/4 DIN, Outputs, Relays, Digital Communications Options
<b>Salt Bridge Replacements</b>	
SBS01	PEEK Protected
SBS02	PEEK Process Flat
SBS03	CPVC Protected
SBS04	CPVC Process Flat
SBC01	Storage Cap With Sponge
<b>pH Solutions</b>	
RCS03	pH Storage Solution, 60 mL Bottle
RCS01	Standard Cell Solution, 60 mL Bottle
910104	4 pH Buffer, 500 mL Bottle
910107	7 pH Buffer, 500 mL Bottle
910110	10 pH Buffer, 500 mL Bottle
<b>Mounting Hardware</b>	
MH3022	1 Inch Tee Mounting, CPVC
MH3011	1 Inch Tee Mounting, 316 Stainless Steel
MH1042	1.5 Inch Tee Mounting, CPVC
MH1041	1.5 Inch Tee Mounting, 316 Stainless Steel
MH1112	1.5 Inch Ball Valve, CPVC, Low Pressure
MH1111	1.5 Inch Ball Valve, 316 SS, Low Pressure
MH1122	1.5 Inch Ball Valve, CPVC, High Pressure
MH1121	1.5 Inch Ball Valve, 316 SS, High Pressure
MH1242	Hand Rail Mounting Assembly, Swivel/Immersion, PVC
MH3083	1 Inch Immersion Mounting with Junction Box, PVC (7 foot extension is standard)

Consult factory for other available sensor mounting options.

©2008 Thermo Fisher Scientific Inc. All rights reserved. ® Viton is a registered trademark of E. I. Du Pont De Nemours & Company. Modbus is a registered trademark of Schneider Automation, Inc. Hastelloy is a registered trademark of Haynes International, Inc. All other trademarks are the property of Thermo Fisher Scientific Inc. and its subsidiaries.



Environmental Instruments  
Water Analysis Instruments

**North America**  
166 Cummings Center  
Beverly, MA 01915 USA  
Toll Free: 1-800-225-1480  
Tel: 1-978-232-6000  
Dom. Fax: 1-978-232-6015  
Int'l Fax: 978-232-6031

**Europe**  
P.O. Box 254, 3860 AG Nijkerk  
Wallerstraat 125K, 3862 BN  
Nijkerk, Netherlands  
Tel: (31) 033-2463887  
Fax: (31) 033-2460832

**Asia Pacific**  
Blk 55, Ayer Rajah Crescent  
#04-16/24, Singapore 139949  
Tel: 65-6778-6876  
Fax: 65-6773-0836

[www.thermo.com/water](http://www.thermo.com/water)

**Thermo**  
SCIENTIFIC