

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™

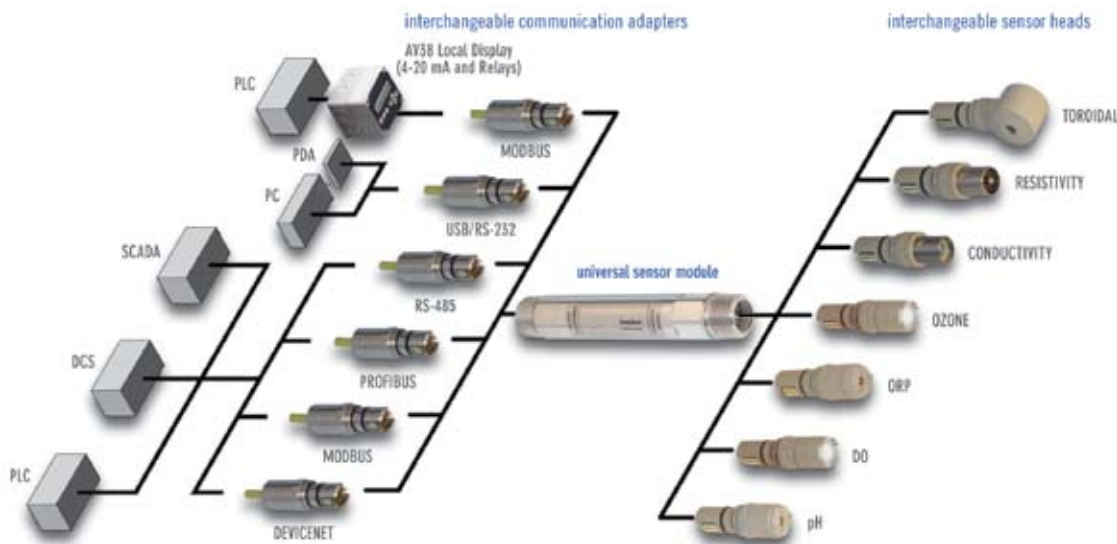
- Differential pH measurement
- Pre-calibrated (no field calibration required)
- Plug & play sensor heads
- Replaceable quad junction salt bridges
- Electrode protection options
- Offered in a variety of materials
- Direct data reporting (24-bit)
- Plug & play industrial communications adapters

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.

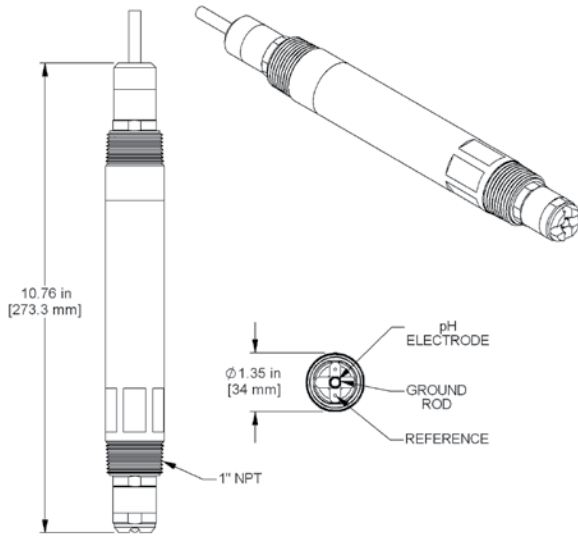


AV38 Local Display

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



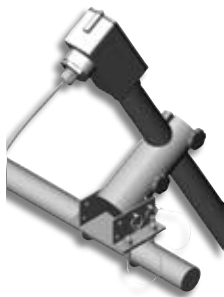
1.5 Inch Union Mounting



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.

pH DataStick Ordering Information

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

Accessories Ordering Information

| Part No. | Description |
|---------------------------------|---------------------------------------------------------------------------------|
| Local Display Interface | |
| AV38 | 1/4 DIN, Outputs, Relays, Digital Communications Options |
| Salt Bridge Replacements | |
| SBS01 | PEEK Protected |
| SBS02 | PEEK Process Flat |
| SBS03 | CPVC Protected |
| SBS04 | CPVC Process Flat |
| SBC01 | Storage Cap With Sponge |
| pH Solutions | |
| 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 |
| Mounting Hardware | |
| 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.

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