

Thermo Scientific AquaSensors  
DataStick measurement system  
for universal plug & play

Product Specifications

## Thermo Scientific AquaSensors DataStick Conductivity/Resistivity Measurement System



### Markets/Applications

- Food processing
- Pharmaceutical
- Water production
- Reverse osmosis filters
- Desalination
- Deionization
- Ultrafiltration
- Distilled water
- Semiconductor
- Power generation
  - Steam production
  - Condensate return
  - Boiler blowdown
  - Cooling towers
  - Leak detection in heat exchangers
  - Demineralizers

### AquaSensors Conductivity/ Resistivity DataStick™

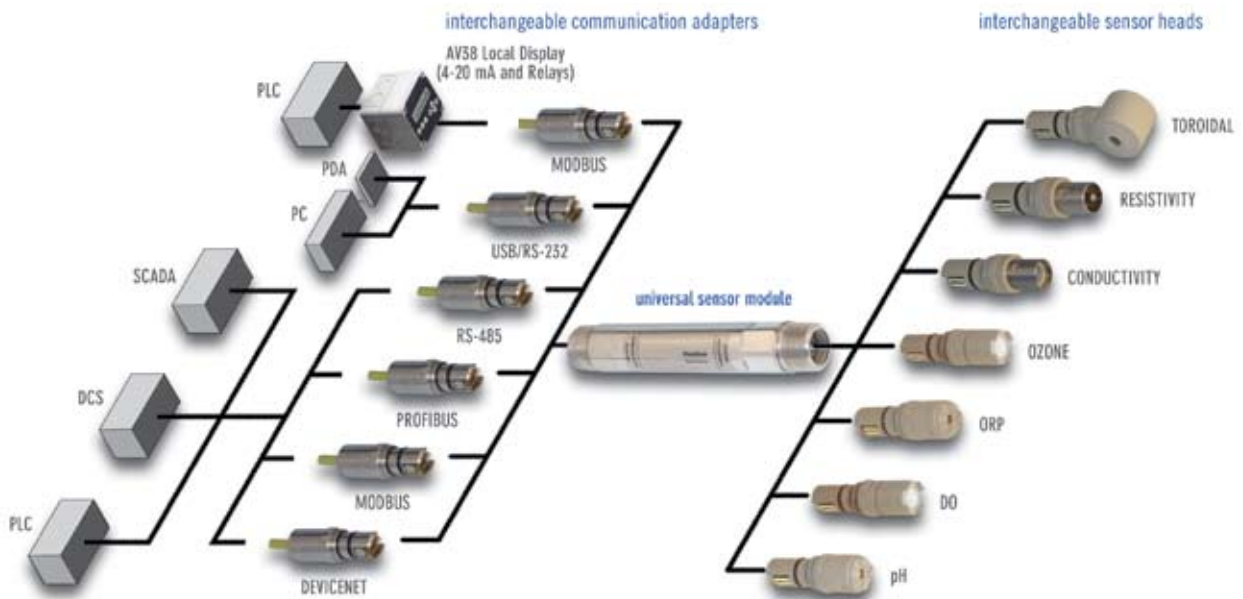
- High performance construction
- Pre-calibrated (no field calibration required)
- Plug & play sensor heads
- Two electrode measurement
- High accuracy temperature compensation
- Offered in a variety of materials
- Direct data reporting (24-bit)
- Plug & play industrial communications adapters

Connect this conductivity 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 conductivity sensor shall have two electrodes manufactured to exacting tolerances using durable metals.
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 assembly.
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 be AquaSensors Conductivity DataStick.

Thermo Scientific DataStick Analytical System



Key Components

**DataStick**

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



**Conductivity Sensor Head**

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



**Communications Adapter**

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

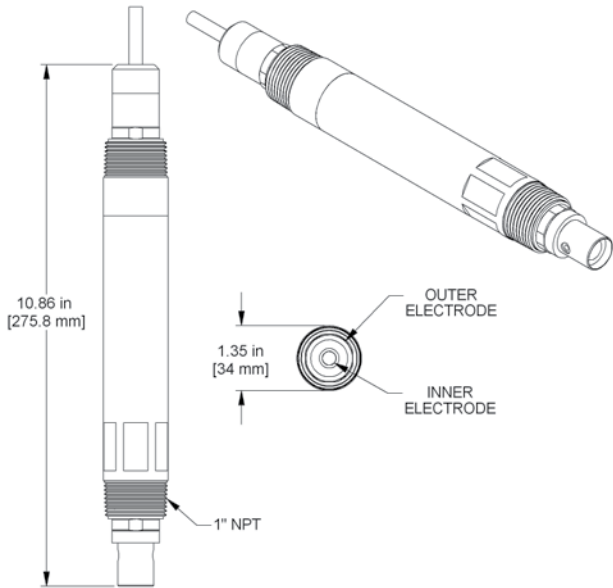


**AV38 Local Display/Controller**

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



**Thermo Scientific AquaSensors DataStick Conductivity Sensor Data Sheet**



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**



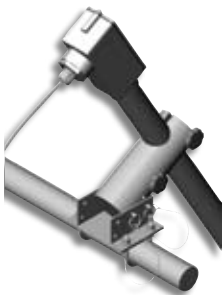
**1.5 Inch Union Mounting**



**1.5 Inch Ball Valve**



**Sanitary Mount**



**Hand Rail Mounting Assembly**



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

**Specifications**

<b>Measurement System Performance†</b>	<b>Range</b> <b>0.01 Cell:</b> 18.2 MΩ • cm to 50 μS/cm <b>0.1 Cell:</b> 0 to 500 μS/cm <b>1.0 Cell:</b> 0 to 5000 μS/cm <b>Resolution:</b> 4.5 significant digits <b>Accuracy:</b> 0.1% of reading <b>Step Response Time:</b> 90% in 30 seconds
<b>Operational Environment</b>	<b>PEEK Sensor Head</b> <b>Temperature Range:</b> -5°C to 95 °C <b>Maximum Pressure:</b> 150 psig @ 95 °C <b>Maximum Flow Rate:</b> 10 ft/second <b>CPVC Sensor Head</b> <b>Temperature Range:</b> -5°C to 75 °C <b>Maximum Pressure:</b> 150 psig @ 75 °C <b>Maximum Flow Rate:</b> 10 ft/second
<b>Power Requirements‡</b>	<b>Voltage Range:</b> 10 to 30 VDC <b>Maximum Power:</b> 200 mW <b>Typical Power:</b> 120 mW
<b>Construction††</b>	<b>Cell Constants</b> 0.01 for resistivity 0.1 and 1.0 for conductivity <b>Electrode Material:</b> Titanium, 316 stainless steel <b>O-rings:</b> Viton® (other materials available) <b>Sensor Head Material:</b> PEEK or CPVC <b>DataStick Material:</b> 316 stainless steel, PEEK or CPVC <b>Weight</b> 1.2 lbs (PEEK or CPVC) 2.6 lbs (316 stainless steel)
<b>Units of Measure</b>	<b>Measurement Units:</b> μS/cm, TDS, %, MΩ • cm <b>Temperature Units:</b> °C, °F
<b>Calibration‡‡</b>	<b>Zero:</b> In dry air <b>Span:</b> 1 point <b>Temperature:</b> 1 point
<b>Temperature Compensation Options†††</b>	<b>Linear:</b> % per °C
<b>Other Configuration Options</b>	<b>Sensor Filter:</b> 0 to 100 seconds <b>Temperature Filter:</b> 0 to 100 seconds <b>Concentration Table:</b> User 10-point
<b>Approvals and Ratings</b>	<b>Immunity &amp; Emissions:</b> CE Certified 89/336/EEC: CISPER 11, EN61000 (-4-2,-4-3,-4-4,-4-6, 4-8) <b>Safety:</b> cULus Listed; 367G E303570 <b>Hazardous Locations:</b> Haz Loc Class 1, Division 2, Groups A, B, C, D. Max Ambient 80 °C

† Note: Typical at 25°C Performance unaffected by cable length

‡ Note: Class II DC power supply required

†† Note: Conductivity and temperature are pre-calibrated at the factory

‡‡ Note: Temperature can be entered manually

### Thermo Scientific AquaSensors Conductivity/Resistivity 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).

### Conductivity/Resistivity 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 = NPT front/back 2 = 1 inch NPT front only 3 = 1.5 inch Ball Valve Insertion 4 = 2 inch Tri-clamp 5 = 2.5 inch Tri-clamp
<b>CC-b-c-x-z</b>	<b>Conductivity Sensor Head</b>
<b>Body Material (b)</b>	2 = CPVC 3 = PEEK
<b>Electrode type (c)</b>	1 = Titanium 2 = 316 Stainless Steel
<b>Sensor (x)</b>	A = 0.01 Cell (Resistivity) B = 0.1 Cell (Conductivity) C = 1.0 Cell (Conductivity)
<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/Controller Interface</b>	
<b>AV38</b>	1/4 DIN, Outputs, Relays, Digital Communications Options
<b>Mounting Hardware</b>	
<b>MH3022</b>	1 inch Tee Mounting, CPVC
<b>MH3011</b>	1 inch Tee Mounting, 316 Stainless Steel
<b>MH1042-COND</b>	1.5 inch Union Mounting, CPVC
<b>MH1041-COND</b>	1.5 inch Union Mounting, 316 Stainless Steel
<b>MH1112</b>	1.5 Inch Ball Valve, CPVC, Low Pressure
<b>MH1111</b>	1.5 Inch Ball Valve, 316 SS, Low Pressure
<b>MH1122</b>	1.5 Inch Ball Valve, CPVC, High Pressure
<b>MH1121</b>	1.5 Inch Ball Valve, 316 SS, High Pressure
<b>MH1242</b>	Hand Rail Mounting Assembly, Swivel/Immersion, PVC
<b>MH3083</b>	1 Inch Immersion Mounting with Junction Box, PVC (7 foot extension is standard)

Consult factory for other sensor mounting options.

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