**Thermo Scientific AquaSensors
DataStick measurement system
for universal plug & play**

Thermo Scientific
AquaSensors DataStick
ORP Measurement System

Markets/Applications

- Wastewater treatment
- Metal finishing (chrome/cyanide destruct)
- Bleaching pulp
- Disinfection control

AquaSensors ORP DataStick™

- Differential ORP 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 ORP 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.

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Engineering Specifications

1. The ORP sensor shall be of Differential Electrode Technique design using two electrodes to compare the process value to a stable internal reference 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 measure temperature independently.

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 ORP DataStick.

Thermo Scientific DataStick Analytical System
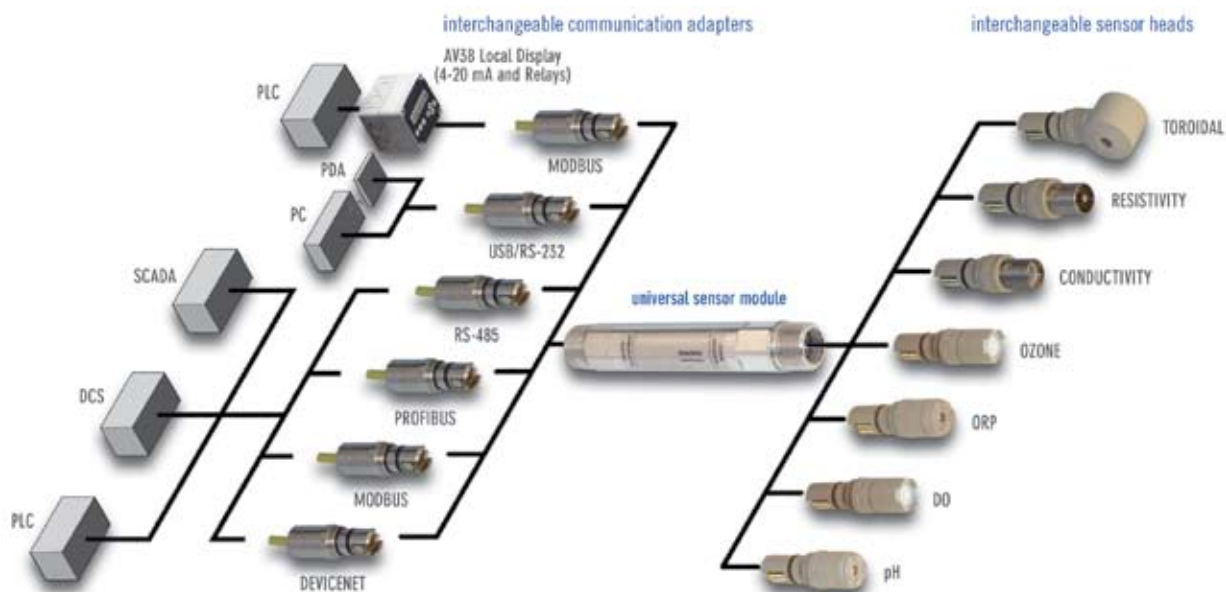
Key Components

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 ORP Sensor Head

Precalibrated for ORP and temperature. Can be plugged into any DataStick to yield accurate 24-bit data.

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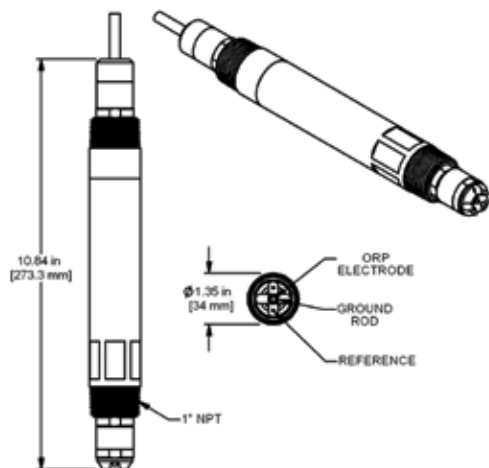
Provides universal conversion of sensor signals and interactive communications for measurement, calibration, configuration and diagnostics. Mounting adapters, junction boxes and recharge kits are available.
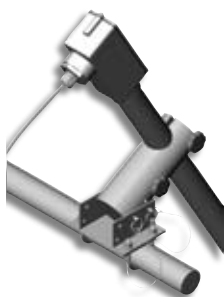

1 Inch Tee Mounting

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

Measurement System Performance†	**Range:** –2100 mV to +2100 mV **Resolution:** 0.1 mV **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
	CVPC 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 Electrodes:** Platinum or gold
	Ground Rod: Titanium (standard), 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:** mV **Temperature Units:** °C, °F
Calibration††	**Sample:** 1 point **Temperature:** 1 point
Temperature Compensation Options‡‡	Temperature measurement is provided as an independent measurement.
Other Configuration Options	**Sensor Filter:** 0 to 100 seconds **Temperature Filter:** 0 to 100 seconds
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 80 °C

† Note: Typical at 25 °C Performance unaffected by cable length
‡ Note: Class ll DC power supply required
†† Note: ORP and temperature are pre-calibrated at the factory
‡‡ Note: Temperature can be entered manually

Thermo Scientific AquaSensors ORP 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.

ORP DataStick Ordering Information

Part No.	Description
DS-b-t	**DataStick**
Body Material (b)	**1 =** 316 Stainless Steel **2 =** CPVC **3 =** PEEK
Mounting (t)	**1 =** NPT front/back **2 =** 1 inch NPT front only **3 =** 1.5 Ball Valve insertion **4 =** 2 inch Tri-clamp **5 =** 2.5 inch Tri-clamp
ORP-b-t-x-y-z-r	**ORP Sensor Head**
Body Material (b)	**2 =** CPVC **3 =** PEEK
Electrode type (t)	**1 =** Platinum **2 =** Gold
Sensor (x)	**A =** Protected **B =** Process Flat
Filling Solution (y)	**1 =** Standard
Salt Bridge (z)	**A =** Standard
Ground Rod (r)	**1 =** 316 Stainless Steel **2 =** Titanium (Standard) **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 Controller 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
ORP Solutions - 500 mL bottles	
RCS04	ORP Storage solution
RCS01	Standard cell solution
ORPSOL200	200 mV Calibration
Mounting Hardware	
MH3022	1 Inch Tee Mounting, CPVC
MH3011	1 Inch Tee Mounting, 316 Stainless Steel
MH1042	1.5 Inch Union Mounting, CPVC
MH1041	1.5 Inch Union 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.

Registered Quality System **ISO** 9001:2000   CE   cULus   S-ASDSORP-E 1108 RevA

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