

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

Thermo Scientific AquaSensors DataStick

Dissolved Oxygen (ppm and ppb) Measurement System



Markets/Applications

- Municipal and industrial wastewater
 - Aeration tanks
 - Aerobic digesters
 - Plant effluent monitoring (NPDES Permit Holders)
 - Anaerobic digesters
- Aquaculture
- Brewing
- Fermentation
- Bio-processing
- Many applications also exist in chemical process, food and dairy, pulp and paper, and other process industries.
- Boiler feed water (ppb)
- Pharmaceutical (ppb)
- Semiconductor manufacturing (ppb)
- Ultrapure water (ppb)
- Power plants (ppb)

AquaSensors D.O. DataStick™

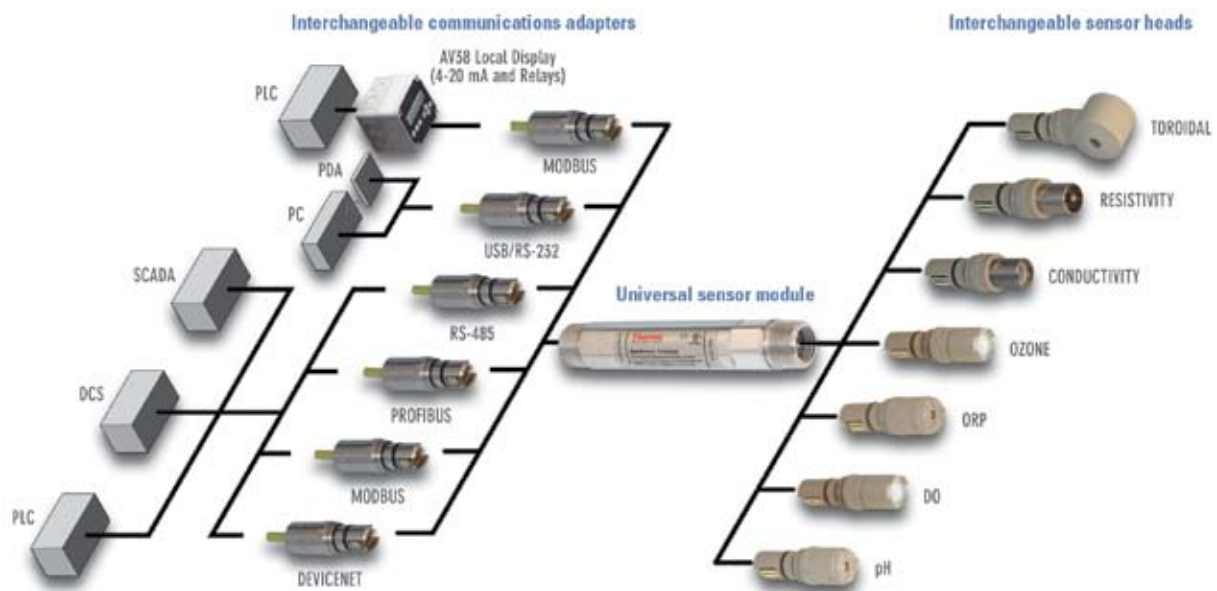
- Clark cell technology
- Pre-calibrated (no field calibration required)
- Plug & play sensor heads
- Rugged, foul resistant membrane
- Electrode protection options
- Simple membrane cap replacement
- Direct data reporting (24-bit)
- Plug & play industrial communications adapters

Connect this D.O. 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 D.O. sensor shall use three-electrode polarographic Clark Cell technology consisting of a silver reference electrode, a silver anode and a gold cathode.
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 mounting hardware and ball-float assemblies
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. Replaceable membranes cartridges shall have a pre-installed 50 micron thick gas permeable membrane.
9. The sensor shall be Thermo Scientific AquaSensors Dissolved Oxygen DataStick.

Thermo Scientific DataStick Analytical System



Key Components

DataStick

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



Dissolved Oxygen Sensor Head

Precalibrated for dissolved oxygen 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.

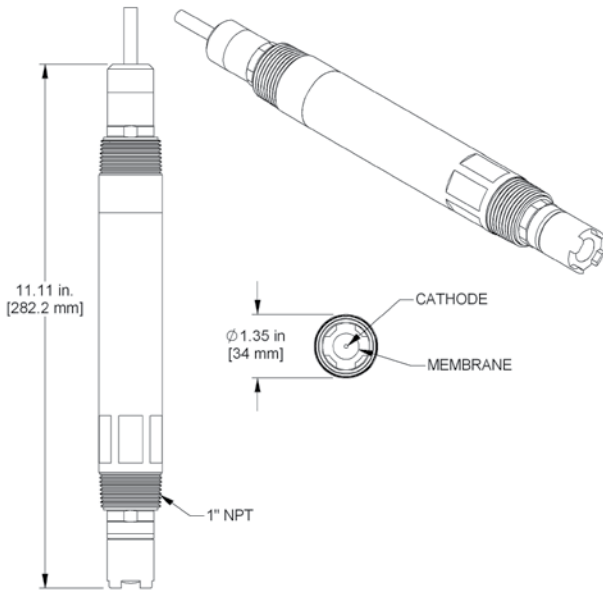


AV38 Local Display/Controller

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



Thermo Scientific AquaSensors D.O. DataStick



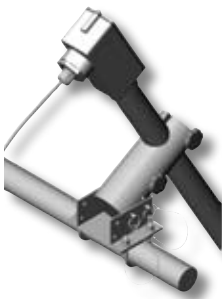
Provides universal conversion of sensor signals and interactive communications for measurement, calibration, configuration and diagnostics. Mounting adapters, junction boxes and recharge kits are available.



Low Flow Chamber



Ball Float Assembly



Hand Rail Mounting Assembly



Immersion Mounting with Junction Box

Specifications

Measurement System Performance†	Range: 0 to 40 ppm, 0 to 200% saturation Resolution: 0.01 ppm Accuracy: 1% of reading Step Response Time: 90% in 90 seconds
Operational Environment	Temperature Range: -5 °C to 50 °C Maximum Pressure: 65 psig @ 50 °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: Gold cathode, silver anode, silver reference (3 electrode polarographic clark cell) Membrane: FEP Teflon® O-rings: Viton® (other materials available) Sensor Head Material: PEEK 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: ppm, % Temperature Units: °C, °F
Calibration††	Air: Automatically adjusts for set pressure Sample: 1 point Zero: 1 point Temperature: 1 point
Compensation Options	Salinity: 0 mS/cm to 999.9 mS/cm Pressure: 539.2 mm Hg to 792.4 mm Hg Temperature: Automatic from -5 °C to 50 °C
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 50 °C

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

‡ Note: Class II DC power supply required

†† Note: D. O. and Temperature are precalibrated at the factory

Thermo Scientific AquaSensors D.O. 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.

D.O. DataStick Information

Part No.	Description
DS-b-t	DataStick
Body Material (b)	1 = Stainless Steel 2 = CPVC 3 = PEEK
Mounting (t)	1 = 1 inch NPT front/back 4 = 2 inch Tri-clamp 2 = 1 inch NPT front only 5 = 3 inch Tri-clamp 3 = 1 inch Tri-clamp 6 = 4 inch Tri-clamp
CA-b-nw-x-y	Communications Adapter
Body Material (b)	1 = 316 Stainless Steel 3 = PEEK 2 = CPVC 4 = Ryton
Communications (nw)	1A = RS232 ASCII 3B = DF1 RS485 1B = RS485 ASCII 7R = Ethernet 2B = Modbus® RTU 5R = DeviceNet 2A = Modbus RS232 6R = Profibus DP 3A = DF1 RS232 8R = USB
Cable Length (x)	1 = 10 feet 2 = 20 feet 3 = 30 feet
Cable Termination (y)	A = Stripped Wires
DO-b-t-x-y-z	D. O. Sensor Head (ppm)
Body Material (b)	3 = PEEK
Electrode Type (t)	1 = Gold/Silver
Sensor Tip (x)	A = Protected B = Process Flat C = Face Seal for Flow Chamber
Fill Solution (y)	1 = Standard
Membrane (z)	A = FEP Teflon® B = FEP Membrane with Stainless Steel Mask
TDO-b-t-x-y-z	Trace D. O. Sensor Head (ppb)
Body Material (b)	3 = PEEK
Electrode Type (t)	1 = Gold/Silver
Sensor Tip (x)	B = Process Flat C = Face Seal for Flow Chamber
Fill Solution (y)	1 = Standard
Membrane (z)	A = FEP Teflon

Accessories Ordering Information

Part No.	Description
Local Display/Controller Interface	
AV38	¼ DIN, Outputs, Relays, Digital Communications Options
D. O. Membrane Caps	
DMR03	PEEK Protected (ppm)
DMR04	PEEK Face Seal (ppm)
DMR08	PEEK Process Flat (ppm)
DMR13	PEEK Protected (ppb)
DMR14	PEEK Face Seal (ppb)
DMR18	PEEK Process Flat (ppb)
SBC01	Storage cap with sponge
D.O. Solutions	
RD0K1	ppm Electrolyte (60 mL bottle)
RD0K3	ppb Electrolyte (60 mL bottle)
Wash Adapters	
MH1142	Air purge, CPVC
Mounting Hardware	
MH1092	Hand Rail Mounting Assembly, Swivel/Immersion, PVC
MH1242	1 Inch Immersion Mounting with Junction Box, PVC (7 foot extension is standard)
MH1252	1 Inch Immersion Mounting with Swivel Rail Mount and Ball Float
FC001	Flow Chamber with Mounting Plate and PVDF Fitting
FC002	Flow Chamber with Mounting Plate and 316 SS Fitting

Consult factory for additional configurations and accessories.

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