

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

Thermo Scientific AquaSensors DataStick AquaTrace™ Dissolved Oxygen System



AquaSensors DataStick™ AquaTrace™ ppb Dissolved Oxygen System

- Reagent-free amperometric design
- Trace DO system consists of the Trace DO DataStick, flow cell, AV38 local display and is assembled on the panel for simple installation
- Temperature compensated
- Pre-calibrated, plug & play sensors
- Rugged Teflon® membrane in replaceable sensor cap
- Remote measurement, calibration, configuration and diagnostics
- Convenient turn-key AquaTrace DO monitoring system offers reliable low DO measurements with a small footprint

Markets/Applications

- Process water
 - Production & distribution
 - Collect quality control data
- Food & beverage
 - Monitor process water quality
- Pure water
 - Accurate trace DO measurements and minimal drift

This trace dissolved oxygen sensor will measure accurately in pure water processes. Monitoring at trace oxygen levels in critical processes will allow quick response and minimize costly downtime. Best performance is achieved when used in applications where process temperature, flow and pressure are stable.

When used with the Thermo Scientific AV38 Local Display/Controller selecting a system to meet your requirements is easy. The controller displays data and you can select from several protocols to transfer information for record keeping.

Engineering Specifications

1. The Trace Dissolved Oxygen measurement system shall employ the amperometric measurement technique, using a gold cathode and silver anode.
2. The sensor shall have hex-shaped wrench flats to facilitate mounting, and shall continuously measure trace dissolved oxygen and temperature in water to determine low level dissolved oxygen concentration.
3. The trace DO sensor and packaged monitoring system shall be able to send data signal to external collection location for data documentation.
4. The sensor shall sample continuously at a user-regulated flow rate between 50 and 400 mL per minute.
5. The system shall be a reagent-free design, requiring no additional buffers or indicators for trace dissolved oxygen measurement.
6. The system shall display from 0-20 ppm on a LCD display with backlighting.
7. The minimum detection limit for trace dissolved sealed system shall be 0.1 ppb.
8. The sensor shall have an integral temperature sensor to measure temperature independently and that may be calibrated.
9. The analyzer shall automatically compensate for sample temperature and entered pressure that shall be between 5 °C and 50 °C.
10. The calibration method for the trace DO sensor or system shall be with an approved laboratory method.
11. The local display/controller enclosure shall be rated at NEMA 4X.
12. 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 IP.
13. The system shall have two isolated 4-20 mA analog outputs that can represent the measured trace dissolved oxygen as well as measured temperature in °C or °F.
14. The system may have two available relays that can be selected to operate as a control, alarm, or timer relay.
15. The Thermo Scientific AquaTrace DO System shall be AquaSensors Model AQD-series with Trace ppb Dissolved Oxygen DataStick.

Thermo Scientific DataStick Analytical System

The diagram illustrates the Thermo Scientific DataStick Analytical System. It features a central **Universal Sensor Module** that can be configured with various **Interchangeable Communication Adapters** and **Interchangeable Sensor Heads**.

Interchangeable Communication Adapters: These include PLC, PDA, PC, SCADA, BCS, and AV38 Local Display (4-20 mA and Relays). The adapters support protocols such as MODBUS, USB/RS-232, RS-485, PROFIBUS, MODBUS, and DEVICENET.

Interchangeable Sensor Heads: These include TOROIDAL, RESISTIVITY, CONDUCTIVITY, OZONE, DRP, DO, and pH.

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.
- AV38 Local Display:** 2 line display and 7 key navigation. Data reporting with up to 2 current outputs. 2 Form C relays. Digital communications.

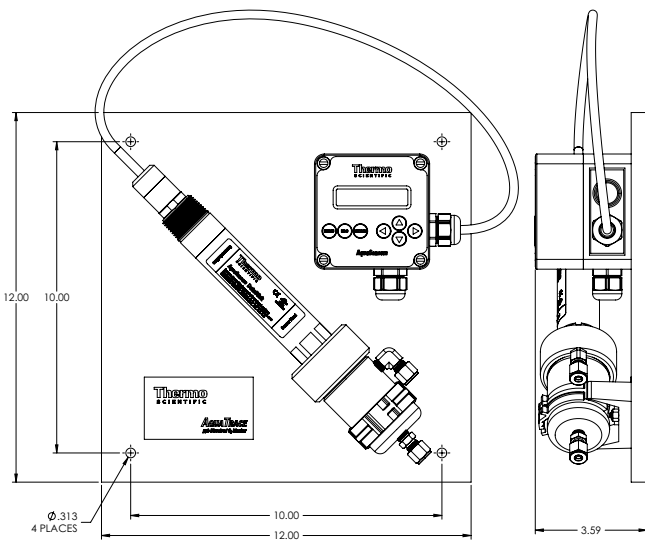
AquaTrace ppb DO System: With Trace DO ppb DataStick and flow cell installed.

Trace ppb Dissolved Oxygen Sensor Head: Pre-calibrated for ppb level dissolved oxygen and temperature. Can be plugged into any DataStick to yield accurate 24-bit data.

**Thermo Scientific AquaSensors
ppb Trace DO DataStick**



ppb Trace DO DataStick Dimensions



AquaTrace DO System Dimensions

Thermo Scientific Trace DO System

Specifications	
Performance	
DO Measurement Range	0.1 ppb to 20 ppm
Low Range (Below 20 ppb) DO Measurement Accuracy	±1 ppb or ±2 % of reading (whichever is greater)
High Range DO Measurement Accuracy	±5 % of reading
DO Measurement Response	< 2 hours to 10 ppb
DO Measurement Drift	4 % max over 60 days
Temperature Element	PT1000 RTD
Temp Measurement Resolution	0.1 °C
Temperature Measurement Response	< 475 sec for 90 % of change for ±50 °C change
Temperature Measurement Repeatability	±0.5 °C
Electrolyte Life	2 months (approximate)
Shelf Life	6 months (may require electrolyte replacement after extended storage)
Environmental	
Service Pressure	0 - 60 psig
Service Temperature	5 °C - 50 °C
Storage Temperature	0 °C - 60 °C
System Process Flow Rate	50 - 400 mL/min
Features	
Sensor Mounting Threads	1" NPT threads at back of sensor 1" NPT threads at front of sensor
Process Connections	¼" tube fittings for process inlet and outlet
Sensor Wetted Materials	316 SS, PEEK, Viton, FEP Teflon
Flow Chamber Wetted Parts	Acrylic, 316 SS, Viton
Sensor Serviceability	Field replaceable membrane Field replaceable reference fill
Sensor Head Electronics	Integral pre-amplifier
Display Mounting	Integral or remote (w/20' cable)
Available Communication Protocols	Modbus R TU, DeviceNet, CANopen, EtherNet, USB, RJ-45, RS485
Regulatory	
Material Regulations	RoHS compliant assembly

Thermo Scientific ppb DO DataStick and AquaTrace Monitoring System

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.thermoscientific.com/water.

AquaTrace Dissolved Oxygen Systems

Part No.	Description
AQD-d-x-y	AquaTrace Dissolved Oxygen Systems
<i>Trace level dissolved oxygen measurement system with precalibrated ppb range dissolved oxygen sensor heads, integrated temperature compensation with DataStick module, low flow sample chamber, mounting plate and local display/controller.</i>	
Display Configuration (d)	1 = Integral mount 2 = Remote mount with 20 ft cable
AV38 Display Configuration (x)	A = 1 current output; 24 VDC power B = 2 current, 2 relays; 24 VDC power C = 2 current, 2 relays; 100 to 240 VAC power
AV38 Host Communications (y)	0 = None 4 = Modbus RTU (RS-485) 5 = DeviceNet 6 = CANopen 7 = EtherNet IP, Modbus/TCP, TCP/IP

Part No.	Description
Recommended AquaTrace DO Systems	
<i>Below are examples of part numbers for configuring a typical ppb level dissolved oxygen measurement system.</i>	
AQD1A0	AquaTrace DO System, Integral AV38 with one current output, flow chamber, 24 VDC
AQD1C0	AquaTrace DO System, Integral AV38 with two current outputs, two relays, flow chamber, 100 - 240 VAC

Accessories Ordering Information

Part No.	Description
ppb Trace DO Electrolyte	
080514	ppb DO Electrolyte, 60 mL Bottle
Membrane Caps	
DMR18	ppb Trace DO Membrane Cap
SBC01	Storage Cap With Sponge
Replacement Sensor Head	
TD031B2A	Replacement Sensor Head, Factory Calibrated

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