Thermo Scientific AquaSensors DataStick measurement system for universal plug & play

Product Specifications

Thermo Scientific AquaSensors DataStick

AquaClear Low-Range Turbidimeter

Markets/Applications

- Drinking water
- Filter monitoring membrane filtration
- Distribution monitoring
- Wastewater effluent (clarified)
- Packaged water systems
- Food & beverage process
- Pharmaceutical process water

Product Benefits

- Meets or exceeds USEPA method 180.1
- Pre-calibrated measurement
- Plug & play sensor heads
- Simple to operate

AquaSensors DataStick™ AquaClear™ Drinking Water Turbidimeter

For drinking water turbidity applications, the DataStick uses a pre-calibrated plug-in, optical detector. The DataStick is simply inserted into a sample chamber specifically designed to prepare water for turbidity measurements.

The chamber removes bubbles from the water so that solid particles can be accurately detected. The chamber lamp will provide collimated white light for a minimum of three years and is easily changed.

Because the chamber is only 135 mL, it takes a very small amount of Formazin standard to perform EPA mandated calibrations.

The AquaClear drinking water turbidimeter is part of the DataStick family of products. The DataStick can be used with any sensor head by Thermo Scientific and can communicate directly with industrial computer systems using any of the communications adapters offered.

Thermo Scientific AquaSensors AV38 local display is provided as standard equipment for this system. It is, however, not required and any number of turbidity systems can be digitally networked to a single computer interface. Open protocol commands for calibration, configuration, diagnostics and measurement are available.

Product Benefits

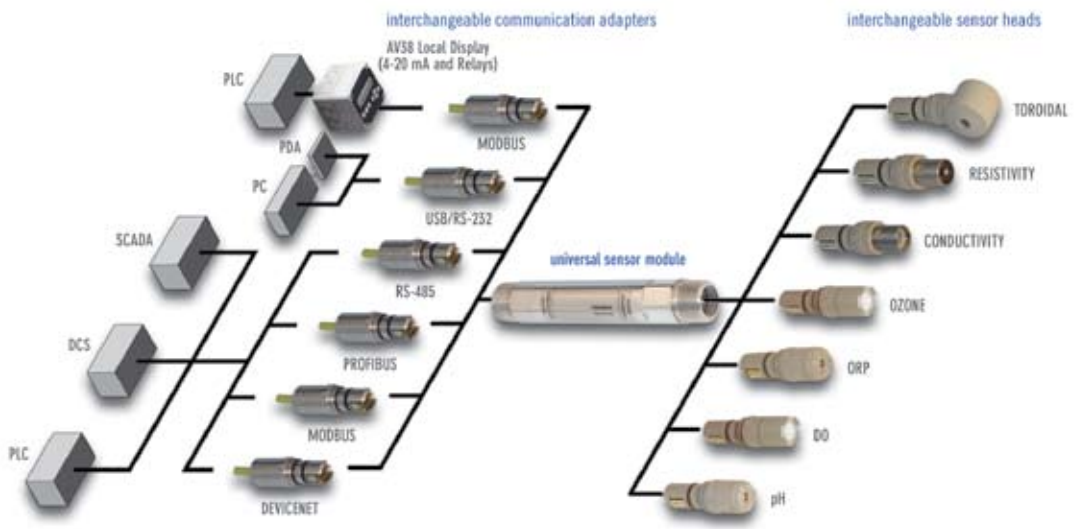
- Meets or exceeds USEPA method 180.1
- 135 mL sample chamber
- 0.001 NTU resolution
- 3 year light source
- Compact mounting foot print
- Digital network interface
- Local interface with current outputs and relays
- Low flow rate
- Temperature measurement included
- Plug & play industrial communications adapters

Use this system when very accurate turbidity measurement is needed in drinking water applications. Connect this system 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. Report data with standard current outputs and set alarms with optional relays. Save on calibration cost with smaller volumes of Formazin standard. Save space, time and money.

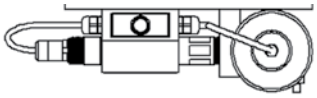
Engineering Specifications

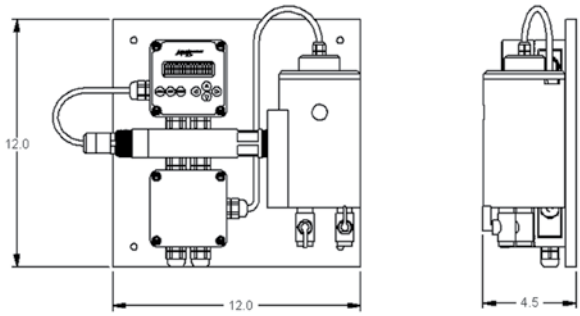
1. The turbidity monitoring system shall be capable of functioning independently with a local or remote display or in an expandable network of systems that can be calibrated, configured or diagnosed by a remote computer.
2. The turbidimeter shall continuously measure turbidity in the range of 0.001 to 200 NTU and be a microprocessor-based, on-line nephelometric instrument meeting all design and performance criteria specified by USEPA method 180.1.
3. Light shall be directed through the surface of the sample and the detector shall be immersed in the sample, eliminating glass windows and flow cells. Optical components shall be mounted in a sealed head assembly that can be removed easily for calibration/service.
4. The sample chamber shall be constructed of corrosion-resistant ABS plastic, and shall include an internal bubble removal system to vent entrained air from the sample stream.
5. Accuracy shall be ±2% of reading or ±0.015 NTU (whichever is greater) from 0 to 10 NTU; ±5% of reading from 40 to 200 NTU.
6. Displayed resolution shall be 0.001 NTU from 0 to 200 NTU.
7. User selectable signal averaging, bubble removal, alarm and diagnostics shall be provided.
8. 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.
9. The sensor shall have an integral temperature sensor to measure temperature independently.
10. All system components are C-UL-US Listed (367G E303570). For EMC immunity and emissions, system components are CE-Certified 89/336/EEC: CISPER 11, EN61000 (-4-2,-4-3,-4-4, -4-6, 4-8). Haz Loc Class 1, Division 2, Groups A, B, C, D. Max Ambient 50ºC.
11. The sensor shall be Thermo Scientific AquaSensors AquaClear™ low-range turbidimeter.

Thermo Scientific DataStick Analytical System



Thermo Scientific AquaSensors AquaClear Turbidimeter





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

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.

Optical Sensor Head
Yields 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

Specifications	
Measurement System Performance	**Range:** 0 to 200 NTU **Resolution:** 0.001 NTU **Accuracy:** ±2% of reading or ±0.015 NTU whichever is greater. ±5% of reading above 40 NTU.
Operational Environment	**Water Temperature Range:** –5 °C to 50 °C **Air Temperature Range:** –20 °C to 60 °C **Maximum Flow Rate:** 500 mL/min (7.9 gal/hr) **Minimum Flow Rate:** 250 mL/min (4 gal/hr)
Power Requirements	**Voltage Range:** 24 VDC or 100-240 VAC **Maximum Power:** 8W with AV38 DataStick & light source **Typical Power:** 6W with AV38 DataStick & light source
Construction	**Light Source:** White Light (Tungsten) **Sample Chamber Material:** ABS plastic **Sample Chamber Volume:** 135 mL **Light Source Housing:** Anodized aluminum **Mounting Plate:** 12 x 12 inches, 4 mounting holes **Sensor Head Material:** Quartz glass, anodized aluminum **Weight:** 5.6 lbs
Units of Measure	**Measurement Units:** NTU **Temperature Units:** °C, °F
Calibration	**Sample:** 1 point **Zero:** 1 point **Temperature:** 1 point
Interface	**Display:** 2 lines, 16 characters, 7 key menu navigation **Current Outputs:** 1 standard, 2nd optional **Relays:** 2 Form C (optional)
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: Turbidity and temperature are pre-calibrated at the factory

Thermo Scientific AquaSensors AquaClear Drinking Water Turbidimeter

- 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.

Turbidity System Ordering information

Part No.	Description
AQT-x-y-z	**Drinking Water Turbidity System**
Display Configuration (x)	**1** = Integral **2** = Remote with 20 ft cable
AV38 Configuration (y)	**A** = 1 current output and 24 VDC power **B** = 2 current outputs, 2 relays and 24 VDC power **C** = 1 current output and 100-240 VAC power **D** = 2 current outputs, 2 relays and 100-240 VAC power
Host Communications (z)	**0** = None **4** = Modbus® RTU **5** = DeviceNet **6** = CANopen **7** = Ethernet

Accessories and Ordering information

Part No.	Description
TDWLS00	Lamp And Cable
TDWCC01	Chamber Lid
TDWSC01	Turbidity Sample Chamber
DW21	Turbidity Sensor Head
FOR40	40 NTU Formazin Calibration Kit
FOR4K	4000 NTU Formazin Stock
TDWCAL01	Cal Stick Validation

Key Components Ordering information

Part No.	Description
DS21	DataStick
DW21	Turbidity Sensor Head
CA-b-nw-x-y	**Communications Adapter**
Body Material (b)	**1** = 316 Stainless Steel **2** = CPVC **3** = PEEK
Communications (nw)	**1A** = RS232 ASCII **2B** = Modbus RTU **2A** = Modbus RS232 **4B** = CANopen **7R** = Ethernet **5R** = DeviceNet **8R** = USB
Cable Length (x)	**1** = 10 feet **2** = 20 feet **3** = 30 feet
Cable Termination (y)	**A** = Stripped Wires
AV38-v-w-x-y-z	**AV38 Local Display/Controller**
Current Outputs (v)	**B** = 1 **C** = 2 with 2 Relays
Mounting (w)	**B** = ¼ DIN NEMA 4X Wall-mount Enclosure
Host Communications (x)	**0** = None **1** = RS232 ASCII **2** = Modbus RS232 **4** = Modbus RTU **5** = DeviceNet **6** = CANopen **7** = Ethernet
Relays (y)	**A** = 0 **C** = 2 with 2 current outputs selected
Power (z)	**1** = 24 VDC **2** = 100-240 VAC

S-ASDSTRLR-E 1108 RevA

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