AquaSensors DataStick Suspended Solids Measurement System

For universal plug and play

Thermo Scientific AquaSensors DataStick Suspended Solids Measurement System

The Thermo Scientific™ DataStick™ Suspended Solids Measurement System sensor connects 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. This versatile system is ideal for monitoring all solids concentrations throughout a wastewater treatment plant.

Markets and applications

- Municipal/industrial wastewater

  – Primary and secondary clarifiers

  – Return activated sludge

  – Waste activated sludge

  – Mixed liquor

  – Aeration basins

  – Final effluent

- Municipal water

- Pulp and paper

- Dairy industry
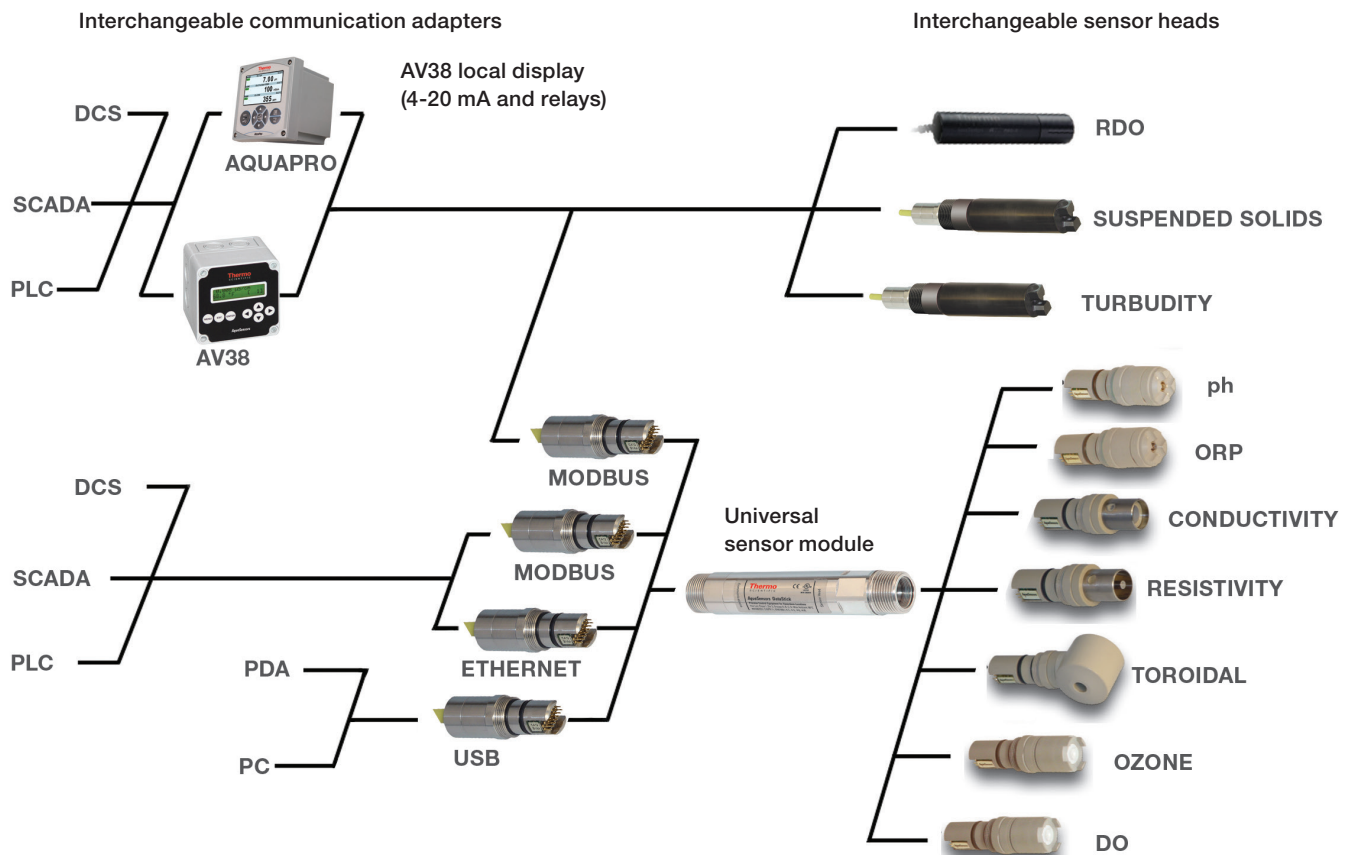
- Mining industry

- Chemical Process

Product benefits

- 0 to 20,000 mg/L measurement range

- Fouling correction optics

- Rugged construction

- Local and remote configuration and diagnostics

- Temperature measurement included

- Direct data reporting

- Plug and play industrial communications adapters

- Versatile mounting

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Engineering specifications

1. The suspended solids sensor measures suspended solids or TSS. The TSS measurement range is 0 to 20,000 mg/L. Resolution is at 1.0 mg/L.

2. The TSS sensor includes fouling correction optics and is capable of measuring 180 degree light to compensate 90 degree measurements.

3. The sensor is constructed of a polycarbonate material with exceptional chemical resistance and mechanical strength. This material enables the sensor to be installed in metal fittings without leakage usually caused by heating and cooling cycles when dissimilar materials are threaded together.

4. The sensor has interchangeable, pre-calibrated plug-in sensor heads and communications adapters that can be installed without powering down the system.

5. The sensor has 1 inch NPT threads to mount into a standard 2 inch union mounting, immersion or ball-float assembly.

6. The built-in electronics of the sensor are completely encapsulated and O-ring sealed for protection from moisture and humidity.

7. The sensor ha 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, Ethernet or USB.

8. An integral temperature sensor measures temperature independently.

DataStick Analytical System

Interchangeable communication adapters

Interchangeable sensor heads

AV38 local display (4-20 mA and relays)

DCS
SCADA
PLC

AQUAPRO
AV38

DCS
SCADA
PLC
PDA
PC

MODBUS
MODBUS
ETHERNET
USB

Universal sensor module

RDO
SUSPENDED SOLIDS
TURBUDITY
ph
ORP
CONDUCTIVITY
RESISTIVITY
TOROIDAL
OZONE
DO

AquaSensor DataStick Suspended Solids Measurement System

Key components

Suspended solids sensor head
Pre-calibrated for TSS and temperature. Can be plugged into any DataStick communications adapter for interactive measurement, calibration, configuration and diagnostics with industrial computers or AquaSensors AV38 local display.
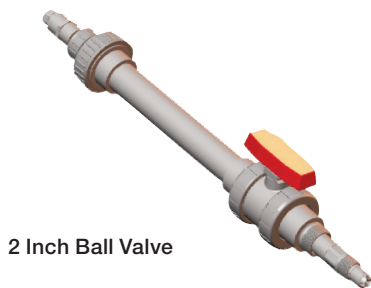
Communications adapter
Plugs into the DataStick body to provide power and direct interactive communications with control systems.

Wash head
In applications where the sensor head is quickly fouled with sediment, a wash head assembly can be attached. The head slips on the body of the sensor and the wash nozzle is aligned with the sensor fingers. A single screw is tightened to secure the wash head to the sensor. A hose is connected from the wash head to an air compressor or water source. Actuation is controlled by an AV38 wash relay that is programmed with a wash interval and duration.

AV38 Local display/controller
2 line display and 7 key navigation. Data reporting with up to 2 current loops. 2 Form C relays. Digital communications.
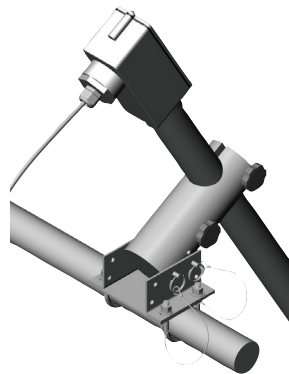
2 Inch Ball Valve

1.5 Inch Union Mounting

Ball Float Assembly

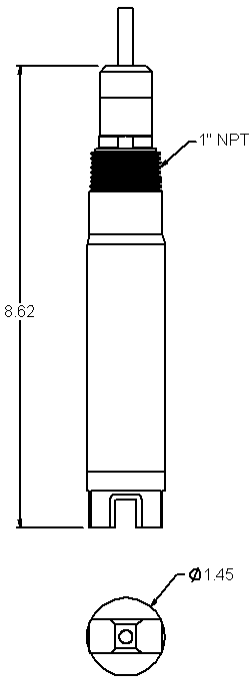1 Inch Immersion Mounting with Junction Box
(7 foot extension is standard)

Hand Rail Mounting Assembly

AquaSensors DataStick Suspended Solids Measurement System

Sensory mounting accessories include:

• Optional handrail mounting hardware assembly

• Submersion extension pipe is available to install submersion style sensors.

• A stainless steel ball valve assembly with neoprene O-rings is offered for insertion style sensor installation. The assembly includes safety restrictor rods to limit sensor retraction, and position bolts to secure the fully inserted sensor.

Engineering drawing AquaSensor DataStick

Specifications

AquaSensor DataStick	
Measurement system performance*	Range: 0 to 20,000 mg/L
	Resolution: 1 mg/L
	Step response time: 90% in 15 sec.
Operational equipment	Temperature range: -5°C to 50°C
	Maximum pressure: 150 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	Windows: Quartz
	Optical topology: 1 cm path lengths for measurement and reference. Detectors at 90 degrees and 180 degrees to source
	O-rings: Viton™ (other materials available)
	Sensor head material: Polycarbonate
	Weight: 1.2 lbs.
Units of measure	Suspended solids: mg/L, ppm, %
	Temperature units: °C, °F
Calibration***	Sample: 1 point
	Zero: 1 point
	Temperature: 1 point
Measurement Modes	Measurement units: Detected at 90 degrees and 180 degrees
	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 and 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

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AquaSensors DataStick Suspended Solids Measurement 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: **thermofisher.com/water**

Ordering information

AquaSensor DataStick			
Description			**Cat. No.**
DataStick and communications			RT-b-x-y-z
Measurement mode (b)	2	=	Suspended solids
Back-body and communications material (x)	1	=	CPVC
	2	=	316 stainless steel
Communications (y)	4	=	Modbus™ RTU
	7	=	Ethernet
Cable length (z)	1	=	10 feet
	3	=	30 feet
USB communications option			RT2181 RT2281

Accessory ordering information

AquaSensor Accessories	
Description	**Cat. No.**
Wash head assembly	MH1222
Mounting hardware	
1.5 inch union mounting, CPVC	MH1042-RT
1.5 inch union mounting, 316 SS	MH1041-RT
Hand rail mounting assembly, swivel/immersion, PVC	MH1242
Hand rail mounting assembly, swivel/immersion with ball float	MH1252
1 inch immersion mounting with junction box, PVC (7 foot extension is standard)	MH3083

Consult factory for additional configurations and accessories

Australia: (613) 9757-4300 **In Australia:** (1300) 735-295 **China:** (86) 21-6865-4588
Germany: (49) 6184-90-6321 **India:** (91) 22-4157-8800 **Japan:** (81) 045-453-9175
North America: 1-978-232-6000 Toll Free: 1-800-225-1480 **Singapore:** (65) 6778-6876

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