Thermo Scientific AquaSensors DataStick measurement system for universal plug & play

Product Specifications

Thermo Scientific AquaSensors DataStick

AquaChlor Free Chlorine Sensor and Monitoring System

Markets/Applications

- Drinking water
  – Production & distribution
- Food & beverage
  – Monitor sanitized process water
  – Monitor sterilization of glassware
- Reverse osmosis/ultrapure water
  – Chlorine damages filter membranes

AquaSensors DataStick™ AquaChlor™ Free Chlorine System

- Free chlorine
- Amperometric measurement
- Temperature compensated
- Optional automatic pH correction
- Pre-calibrated
- Plug & play
- Rugged Teflon® membrane
- Replaceable membrane cap
- Remote measurement, calibration, configuration, and diagnostics
- Turnkey AquaChlor monitoring system

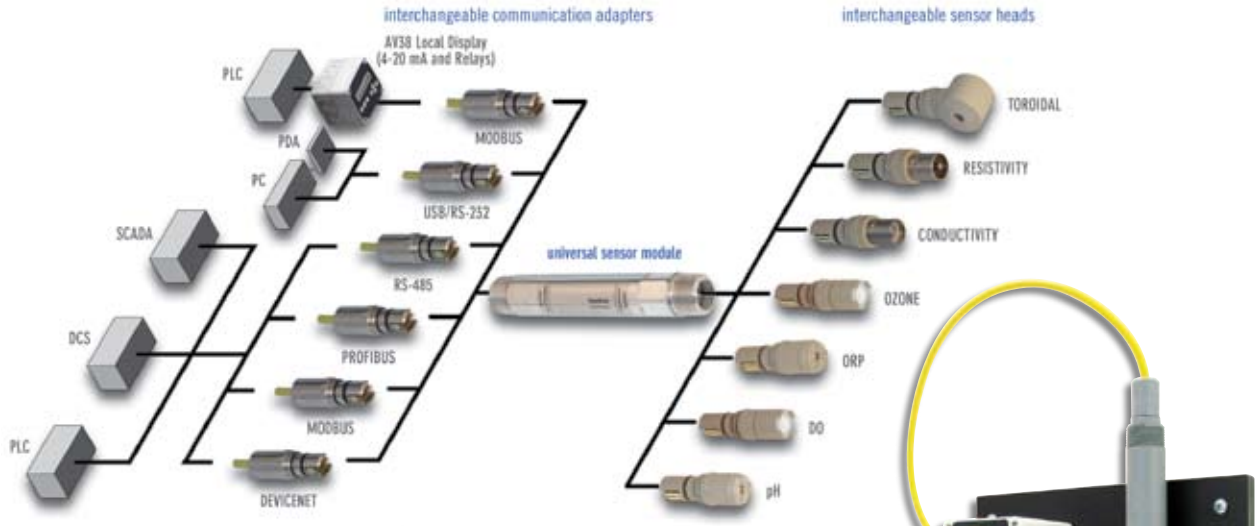
This free chlorine sensor will measure accurately in processes that are between 4 and 9 pH.

When used with the Thermo Scientific AV38 Local display unit and a pH measurement system, measured hypochlorous acid (HOCl) and hypochlorite ion (OCl^-) concentration can be used to determine free chlorine present.

Engineering Specifications

1. The free chlorine measurement system shall employ the amperometric measurement technique, using a gold cathode and silver cathode.
2. The sensor shall have hex-shaped wrench flats to facilitate mounting, and shall continuously measure hypochlorous acid (HOCl) and temperature in water to determine free chlorine concentration. When combined with pH measurements the sensor shall also determine total free chlorine concentration.
3. The sensor shall sample continuously at a user-regulated flow rate between 200 and 250 mL per minute, and automatically pH compensate over process solutions between 4.0 and 9.0 pH.
4. The system shall be a reagent-free design, requiring no additional buffers or indicators for free chlorine measurement.
5. The system shall display free residual chlorine from 0-5, 0-10 or 0-20 ppm on a LCD display with backlighting.
6. The minimum detection limit shall be 5 ppb or 0.005 mg/L HOCl.
7. The accuracy shall be less than 2% or ±10 ppb of the measured value, whichever is greater.
8. The sensor shall have an integral temperature sensor to measure temperature independently.
9. The analyzer shall automatically compensate for sample temperature that shall be between 0º and 45 °C.
10. The calibration method for the analyzer shall be comparison with the approved lab 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 free chlorine as well as measured pH (if pH sensor is also used). Temperature may also be assigned to one of these outputs.
14. The system shall have two available relays that can be selected to operate as a control, alarm, or timer relay.
15. The Thermo Scientific AquaChlor™ System shall be AquaSensors Model AQC-series with Free Chlorine DataStick and optional pH 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.

AV38 Local Display

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

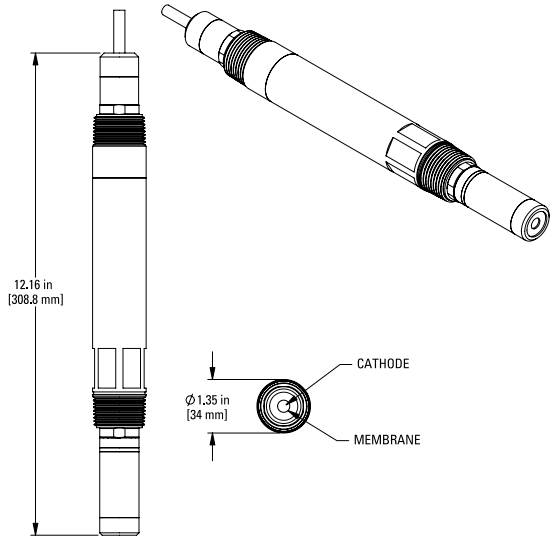
AquaChlor System

With Free chlorine and pH modules installed.

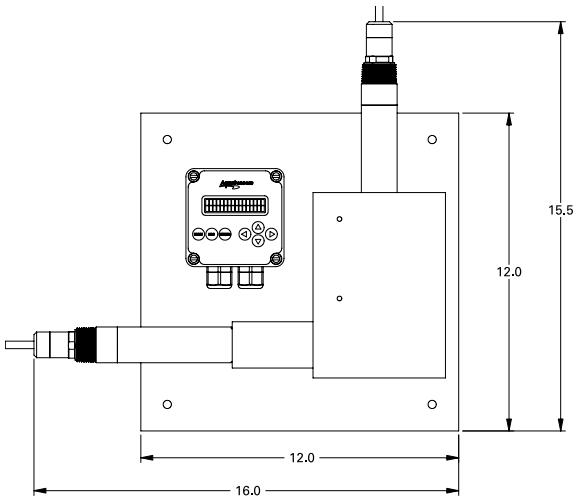
Free Chlorine Sensor Head

Pre-calibrated for free chlorine and temperature. Can be plugged into any DataStick™ to yield accurate 24-bit data.

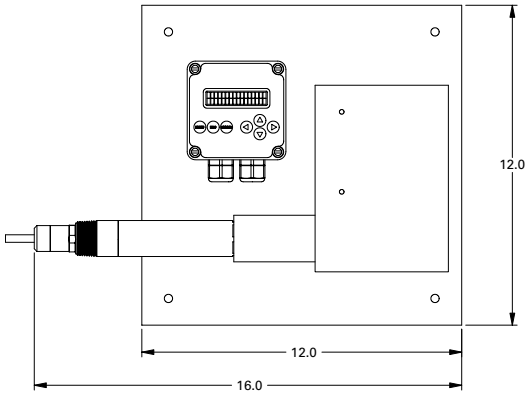
Thermo Scientific AquaSensors Free Chlorine DataStick Data Sheet



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



AquaChlor System with free chlorine and pH DataStick sensors installed.



AquaChlor System with free chlorine DataStick sensor only.

Specifications	
Measurement System Performance	**Ranges:** 0 to 5 ppm and 0 to 20 ppm **Resolution:** 0.005 ppm **Accuracy:** 2% or ±10 ppb (whichever is greater) **Step Response Time:** 90% in 90 seconds
Operational Environment	**Temperature Range:** 0 °C to 45 °C (32 °F to 113 °F) **Maximum Pressure:** 15 psig @ 45 °C **System Flow Rate in Chamber:** 200 to 250 mL/min
Free Chlorine Operation	When chlorine and pH DataSticks are connected to the AV38 local display, HOCl and ClO^- dissociation curves are pH compensated and used to calculate free chlorine present. A stable pH value can also be entered manually.
Power Requirements†	**Voltage Range:** 10 to 30 VDC **Maximum Power:** 200 mW **Typical Power:** 120 mW
Construction	**Process Electrodes:** Gold cathode, silver anode **Membrane:** Teflon® **O-rings:** Viton® **Sensor Head Material:** Noryl® **DataStick Material:** PEEK or CPVC **Weight:** 1.2 lbs
Units of Measure	**Measurement units:** ppm, free chlorine **Temperature Units:** °C, °F
Calibration‡	**Sample:** 1 point **Zero:** 1 point **Temperature**: point
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: Class II DC power supply required
‡ Note: Precalibrated at the factory

Thermo Scientific AquaSensors Free Chlorine DataStick and AquaChlor 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.thermo.com/processwater.

Free Chlorine DataStick Information

Part No.	Description
CL31-t-r	**Free Chlorine Sensor Head**
Sensor Tip (t)	**B** = Process Flat **C** = Face Seal (for flow chamber mounting
Measurement range (r)	**1** = 0 to 5 ppm **2** = 0 to 20 ppm
DS-b-t	**DataStick**
Body Material (b)	**1** = 316 SS **2** = CPVC **3** = PEEK
Mounting (t)	**1** = NPT
CA-b-nw-x-y	**Communications Adapter**
Body Material (b)	**2** = CPVC **3** = PEEK
Communications (nw)	**1A** = RS232 ASCII **1B** = RS485 ASCII **2B** = Modbus® RTU **2A** = Modbus RS232 **3A** = DF1 RS232 **3B** = DF1 RS485 **7R** = Ethernet **5R** = DeviceNet **6R** = Profibus DP **8R** = USB
Cable Length (x)	**1** = 10 feet **2** = 20 feet **3** = 30 feet
Cable Termination (y)	**A** = Stripped Wires

Part No.	Description
AQC-d-x-y-z	**AquaChlor System**
Display Location (d)	**1** = Integral **2** = Remote
AV38 Display Configurations (x)	**A** = 1 current output; 24 VDC power **B** = 2 current, 2 relays; 24 VDC Power **B** = 2 current, 2 relays; 100 to 240 VAC Power
AV38 Host Communications (y)	**0** = None **4** = Modbus RTU **5** = Device Net **6** = CANopen **7** = Ethernet IP, Modbus TCP, TCP/IP
pH Compensation (z)	**A** = Manual **B** = Automatic (w/pH DataStick)

Accessories Ordering Information

Part No.	Description
Local Display/Controller Interface	
AV38	1/4 DIN, Outputs, Relays, Digital Communications Options
Solution	
RD0K9	Chlorine Electrolyte, 60 mL bottle
Membrane Caps	
DMR09	Chlorine Membrane Cap
SBC01	Storage Cap With Sponge

Consult factory for other sensor mounting options.

S-ASDSFRCL-E 1108 RevA

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