Hach AV9000 Area Velocity Analyzer Module

Flow

NEW!

AV9000 Analyzer Module shown with Sub AV Sensor and Wireless FL904 Flow Logger. Sensor, analyzer module and logger are ordered separately.

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Features and Benefits

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Advanced Diagnostic Tools and Settings for Difficult Sites

For ease of use in the majority of sites, our factory default settings have been carefully selected to streamline set up, maximize battery life, and provide reliable data. For difficult sites and users desiring in-depth analysis and custom settings, the full set of diagnostic tools and advanced architecture of the AV9000 Area Velocity Analyzer facilitate collection of useful flow data in even the most difficult sites. On demand, a quick graph shows the Doppler spectrum and validates measurement quality. New quality and diagnostic parameters may be logged alongside the flow data.

Improved Accuracy

The AV9000 Area Velocity Analyzer module is compensated for temperature, thus eliminating potential velocity errors of 2.7% over a 10ºC seasonal swing*. Its advanced multi-scale digital Doppler analysis provides the optimal combination of resolution and noise immunity. Mirror Image Processing™ eliminates sign errors and the advanced Target Set Processing™ reduces the impact of dominant targets (particles) in the stream to deliver a more representative velocity. More accurate data produces more accurate billing.

*Calculated on a baseline temperature 10ºC, assuming ±5ºC shift between seasons.
NOTE: Mirror Image Processing™ and Target Set Processing™ are patent-pending.

Confidence in Your Data

Don't risk missing an event. Have confidence in your data before you leave the site from real time sensor diagnostic feedback and measurement flags. The LED indicator on the FL900 Series logger will also verify correct programming sensor set up and telemetry success or failure.

Less Maintenance and Troubleshooting

Submerged AV sensors are available with either oil-filled or non-oil-filled cover plates. The oil-filled models are designed for sites susceptible to fouling. The cavity is filled with high-viscosity silicon oil to reduce the collection of sand, silt and grit on the pressure transducer. Use the non-oil-filled cover plate model in sites where the pipe could run dry.

Area Velocity Data on the Web

When using the AV9000 with the Hach FL900 Series Flow Logger with cellular modem (optional) get real-time Area Velocity flow data on the internet, make remote programming changes and define site-specific alarm conditions to receive an alert on your cell phone or by email.

HACH®

***Be Right*™**

Specifications*

AV9000 Module
VELOCITY MEASUREMENT

Measurement Method
1 MHz Doppler Ultrasound

Doppler Analysis Type
Digital Spectral Analysis

Doppler Accuracy
±1% of reading or 0.025 fps (with electronically simulated Doppler signal, -25 to +25 fps equivalent velocity)

Power Requirements
Supply voltage: 9-15 Vdc

Peak Current
<130 mA @ 12 Vdc with Sub A/V Sensor

Energy Per Measurement
<15 Joules (typical)

Operating Temperature
-18 to 60ºC (0 to 140ºF) at 95% RH

GENERAL ATTRIBUTES

Dimensions
5 cm H x 17.5 cm W x 13 cm L
(2.0 in. H x 6.875 in. W x 5.0 in. L)

Enclosure
PC/ABS

Environmental Rating
NEMA 6P (IP67)

Compatible Instruments
FL900 Series Flow Loggers and Sigma Submerged Area Velocity Sensors.

Compatible Software
Flo-Ware software and FL900 Series driver v1.0.4.0 or greater for local programming and reporting. When using with FL900 Series Loggers with wireless option, use with FSDATA for web access and remote programming.

Submerged Area Velocity Sensor
VELOCITY MEASUREMENT

Method
Doppler ultrasonic; twin 1 MHz piezoelectric crystals

Typical Minimum Operating Depth
2 cm (0.8cm)

Recommended Range
-1.52 to 6.10 m/s (-5 to 20 ft/sec)

Accuracy
±2% of reading or 0.05 fps[**]

[**]*Uniform velocity profile, known salinity, positive flow.
  Field performance is site specific.*

LEVEL MEASUREMENT

Method
Pressure transducer with stainless steel diaphragm

Accuracy (static)
±0.16% full scale ±1.5% of reading at constant temp (±2.5ºC)
±0.20% full scale ±1.75% of reading from 0 to 30ºC (32 to 86ºF)
±0.25% full scale ±2.1% of reading from 0 to 70ºC (32 to 158ºF)

Velocity-Induced Depth Error
Compensated based on flow velocity

Level Range
Standard: 0–3 m (0–10 ft)
Extended: 0–9 m (0–30 ft)

Allowable Level
Standard: 10.5 m (34.5 ft)
Extended: 31.5 m (103.5 ft)

GENERAL ATTRIBUTES

Air Intake
Atmospheric pressure reference is desiccant protected

Operating Temperature
0 to 70ºC (32 to 158ºF)

Level Compensated Temperature Range
0 to 70ºC (32 to 158ºF)

Material
Noryl® outer shell with epoxy potting within

Power Consumption
Less than or equal to 1.2 W @ 12 Vdc

Cable
Urethane sensor cable with air vent

Connector
Hard anodized, satisfies Military Spec 5015

Cable Lengths Available
Standard: 9, 15, 23 and 30.5 m (30, 50, 75, 100 ft)
Custom: 30.75 m (101 ft) to 76 m (250 ft) maximum

Cable Diameter
0.91 cm (0.36 in.)

Dimensions
2.3 cm H x 3.8 cm W x 13.5 cm L
(0.9 in. H x 1.5 in. W x 5.31 in. L)

Compatible Instruments
910, 920, 930, 930T, 950, 900 Max Samplers, and AV9000 Interface Analyzer Module (for use with FL900 Series Flow Loggers)

Compatible Software
For FL900 Series Loggers: Flo-Ware software and FL900 Series driver v1.0.4.0 or greater.

For Sigma meters: InSight v5.7 or greater.

Both programs can be found at http://www.hachflow.com or ordered on a disk from customer service.

Specifications subject to change without notice.

Engineering Specifications
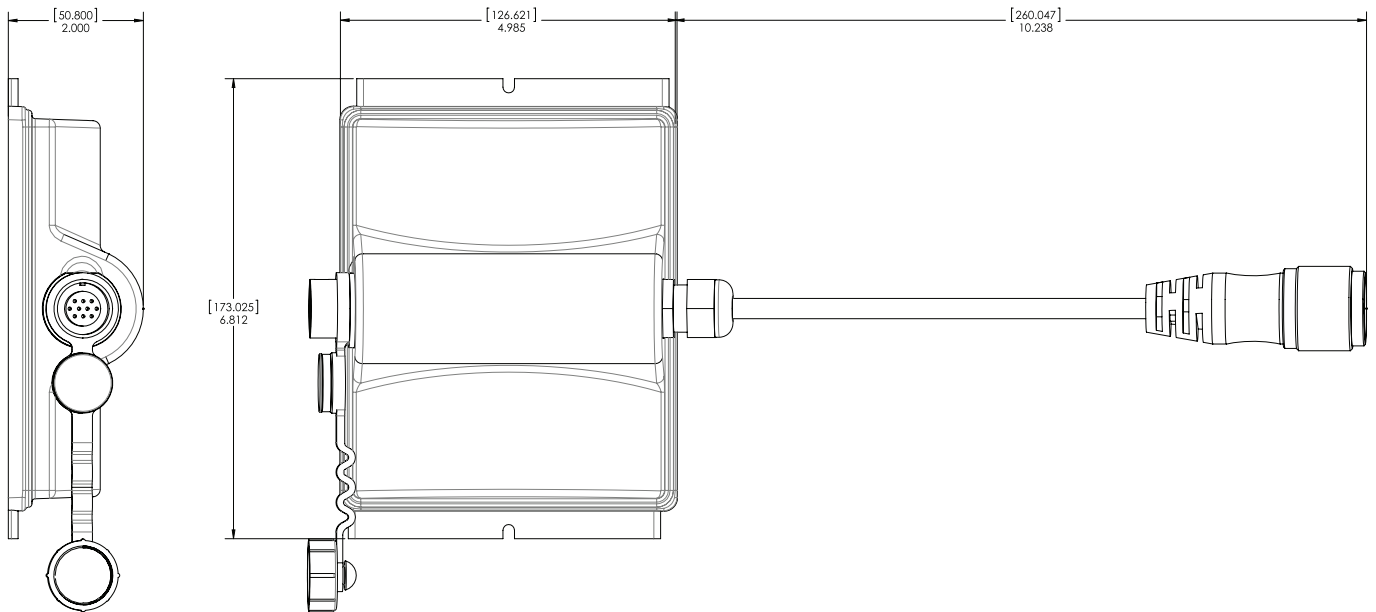
AV9000 AV Analyzer Module

1. The module shall have the ability to perform advanced multi-scale Doppler analysis, Target Set Processing and Mirror Image Processing.

2. Flo-Ware software shall be used for programming.

3. The Doppler accuracy shall be 1% of reading (with electronically simulated Doppler, -25 to 25 fps equivalent velocity).

4. The module shall be the Hach AV9000 Area Velocity Analyzer Module manufactured by the Hach Company.

Submerged Depth/Velocity (AV) Sensor

1. The sensor shall be capable of directly measuring average velocity.

2. The method of velocity measurement shall employ transducer type that is twin 1-MHz piezoelectric crystals.

3. The method of depth measurement shall be pressure transducer with stainless steel diaphragm.

4. Velocity range shall be -1.52 to 6.10 m/s (-5 to 20 ft./s)

5. The range of depth measurement shall be 0 to 3 m (0 to 10 ft.), standard, and 0 to 9 m (0 to 30 ft.), extended.

6. The body material of the sensor shall be Noryl® plastic outer shell with epoxy potting.

7. The connector of the sensor shall be hard anodized and satisfy Military Spec 5015.

8. Power consumption of the sensor shall be less than or equal to 1.2 W at 12 Vdc.

9. The sensor shall be the Sigma AV Sensor Flow Sensor manufactured by Hach Company.

Dimensions

AV9000 AV Analyzer Module

Ordering Information

Analyzer Module

8531300   AV9000 Area Velocity Analyzer module

Submerged Area Velocity Sensors

77065-030   Non-oil filled with connector, 0 to 10 ft range, 30 ft cable

77065-050   Non-oil filled with connector, 0 to 10 ft range, 50 ft cable

77065-075   Non-oil filled with connector, 0 to 10 ft range, 75 ft cable

77065-100   Non-oil filled with connector, 0 to 10 ft range, 100 ft cable

77075-030   Non-oil filled with connector, 0 to 30 ft range, 30 ft cable

77075-050   Non-oil filled with connector, 0 to 30 ft range, 50 ft cable

77075-075   Non-oil filled with connector, 0 to 30 ft range, 75 ft cable

77075-100   Non-oil filled with connector, 0 to 30 ft range, 100 ft cable

77064-030   Oil filled with connector, 0 to 10 ft range, 30 ft cable

77064-050   Oil filled with connector, 0 to 10 ft range, 50 ft cable

77064-075   Oil filled with connector, 0 to 10 ft range, 75 ft cable

77064-100   Oil filled with connector, 0 to 10 ft range, 100 ft cable

77074-030   Oil filled with connector, 0 to 30 ft range, 30 ft cable

77074-050   Oil filled with connector, 0 to 30 ft range, 50 ft cable

77074-075   Oil filled with connector, 0 to 30 ft range, 75 ft cable

77074-100   Oil filled with connector, 0 to 30 ft range, 100 ft cable

77074-XXX   Oil filled with connector, 0 to 30 ft range, custom cable length - max 250'

7724800   Silicone oil refill kit, includes dispensing gun, dual 50 mL oil pack & hardware

7715300   Silicone oil/gel dispensing gun for oil-filled sensors

FL900 Series Flow Logger

FL900.97   FL900 Flow Logger, 1 sensor port, English

FL900AV.97   FL900 Flow Logger with AV9000 analyzer module, 1 sensor port, English

FL900 Series Flow Logger with Wireless Option

		Sensor Connector(s)	Country Code	Modem	Rain Gauge
FL90X Electronics (Flow Logger)	**Model FL90**	___	97	___	___
1 Sensor Connector		1			
2 Sensor Connectors		2			
4 Sensor Connectors		4			
None				X	
AT&T (Activated)				A	
GPRS no SIM				G	
Sprint (Inactive)				R	
Sprint (Activated)				S	
No Rain Gauge Connector					X
With Rain Gauge Connector					R

At Hach, it's about learning from our customers and providing the right answers. It's more than ensuring the quality of water—it's about ensuring the quality of life. When it comes to the things that touch our lives...

Keep it pure.

Make it simple.

Be right.

For current price information, technical support, and ordering assistance, contact the Hach office or distributor serving your area.

In the United States and all other countries except Europe, contact:

HACH COMPANY
4539 Metropolitan Court
Frederick, MD 21704-9452, U.S.A.
Telephone: 800-368-2723
Fax: 301-874-8459
E-mail: hachflowsales@hach.com
www.hachflow.com

In Europe contact:

Flow-Tronic
Rue J.H. Cool 19a
B-4840 Welkenraedt Belgium
Telephone: +32-87-899799
Fax: +32-87-899790
E-mail: site@flow-tronic.com
www.flow-tronic.com

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