Submerged Area Velocity Flow Meter

By pairing the Submerged AV Sensor with our state-of-the-art AV9000 Analyzer Module, you create a powerful Submerged Area Velocity Meter (FL900AV) which provides "cleaner," more precise data than ever before.

AV9000 Analyzer Module shown with Submerged AV Sensor and Wireless FL900 Series Flow Logger. Logger, analyzer module and sensor are ordered separately.

Applications

- Wastewater
- Collection Systems
- Industrial Water

Our **Submerged AV Sensor** is a robust, 1 MHz Acoustic Doppler velocity sensor designed to measure wastewater flow with improved accuracy and reliability. This tried-and-true sensor also uses a pressure transducer to measure flow level and incorporates advanced technologies to ensure precision, including automatically correcting for temperature and velocity effects on measurements.

With advanced signal processing and filtering options, the **AV9000 Analyzer Module** expands the applicability of the sensor into more difficult applications. Plus, advanced analyzer diagnostics, including capture and display of the Doppler spectra, allow you to verify that the sensor is working properly even before you leave the site, giving you peace of mind.

Improved Accuracy

The AV9000 Area Velocity Analyzer module is compensated for temperature, thus eliminating potential velocity errors of 2.7% over a 10°C 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.

**Calculated on a baseline temperature 10°C, assuming ±5°C shift between seasons.*

Less Maintenance and Troubleshooting

Oil-filled Submerged AV sensor models are great solution for monitoring sites that are susceptible to fouling of the pressure transducer. 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. Either way, we've thought about the little details that will reduce your maintenance or lost data hassles.

Specifications*

FL900 Series Flow Logger Specifications can be found in DOC053.53.35081. FL1500 Series Flow Logger Specifications can be found in DOC053.53.30400. Specifications for the AV9000 Analyzer Module and the Submerged AV Sensor are as follows:

AV9000 Analyzer Module

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)
Operating Temperature	-18 to 60°C (0 to 140°F) 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 (IP68)
Warranty	1 year
Compatible Instruments	FL900 and FL1500 Series Flow Loggers and Submerged Area Velocity Sensors. It is also compatible with Hach's AS950 Automatic Sampler.

Compatible Software

FSDATA Desktop software is used for programming the FL900 and FL1500 series loggers. It can be used for data management and report generation on the FL900 and FL1500 Series Flow Loggers and Hach's AS950 Sampler. It is compatible with both desktop and laptop computers utilizing Windows operating system. Minimum resolution needed is 1024x768.

For wireless enabled FL900 flow loggers, data can also be viewed online via FSDATA Online software, a web-based software solution for flow meter programming, data management and report generation for wireless flow meters.

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)
Velocity Accuracy	±2% of reading or 0.05 fps**
	***Uniform velocity profile, known salinity, positive flow. Field performance is site specific.*
Level Measurement Method	Differential pressure transducer with stainless steel diaphragm and atmospheric pressure reference
Level Accuracy (static)	±0.16% full scale ±1.5% of reading at constant temp (±2.5°C) ±0.20% full scale ±1.75% of reading from 0 to 30°C (32 to 86°F) ±0.25% full scale ±2.1% of reading from 0 to 70°C (32 to 158°F)
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)

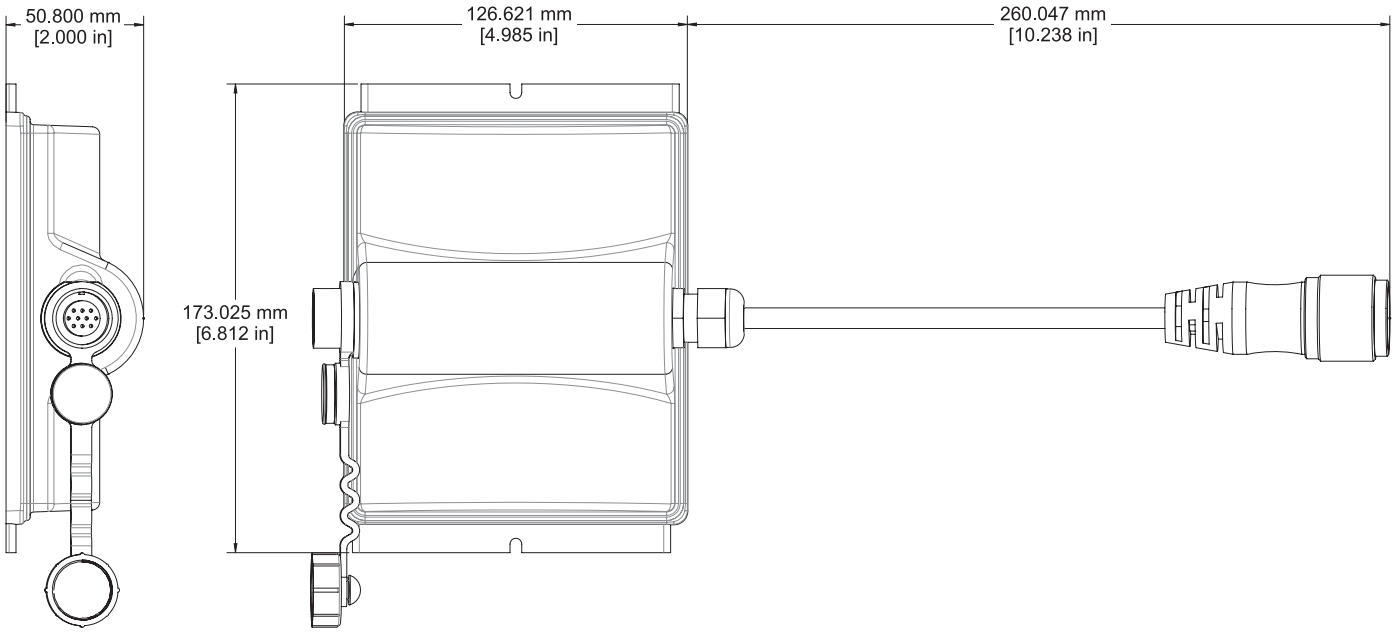
General Attributes

Air Intake	Atmospheric pressure reference is desiccant protected
Operating Temperature	0 to 70°C (32 to 158°F)
Level Compensated Temperature Range	0 TO 70°C (32 TO 158°F)
Material	Noryl® outer shell with epoxy potting within
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	2.3cm 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	FL900 and FL1500 Series Flow Loggers; Hach AS950 Automatic Samplers

**Subject to change without notice.*

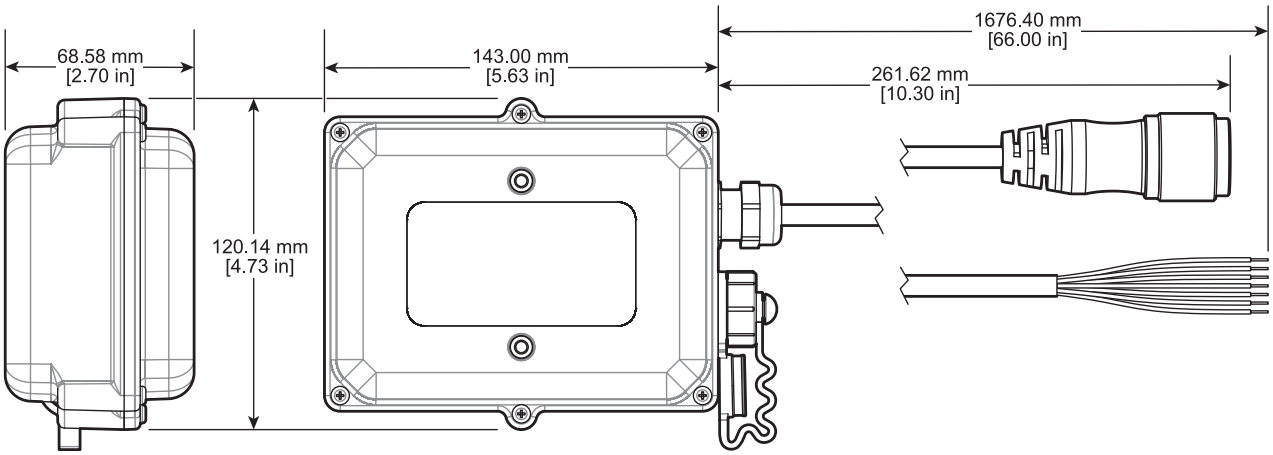
AV9000 Analyzer Module Dimensions

For FL900 (PN 8531300)

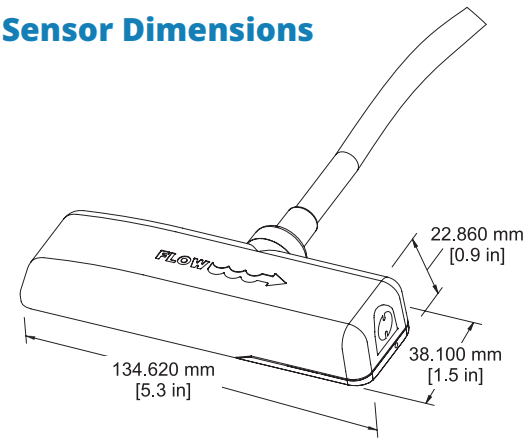


AV9000S Analyzer Module Dimensions

Bare wire for FL1500 (PN 9504601) or with connector for AS950 (PN 9504600)



Submerged Area Velocity Sensor Dimensions



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Ordering Information

Ordering information for the AV9000 Analyzer Module and the Submerged AV Sensor are as follows:

AV9000 Analyzer Module

8531300	AV9000 with connector for use with FL900 Flow Meter
9504601	AV9000S with bare wires for use with FL1500 Flow Meter
9504600	AV9000S with Connector for use with AS950 Sampler

Submerged Area Velocity Sensor

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
7724800	Silicone oil refill kit, includes dispensing gun, dual 50 mL oil pack & hardware 7715300
7715300	Silicone oil/gel dispensing gun for oil-filled sensors
8755500	Desiccant refill beads, 1.5 pound bulk

Contact McCrometer Technical Support at 800-220-2279 if custom cables longer than 100 feet are required and for mounting hardware information.

For additional information on products mentioned in this data sheet, download the following data sheets at: www.mccrometer.com

FL900 Series Flow Logger (DOC053.53.35081)

FL1500 Series Flow Logger (DOC053.53.30400)

FSDATA Desktop Software (LIT2832)

FSDATA Online Software (LIT2707)

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