

Sigma 910 Portable Area Velocity Flow Meter



The design and weight makes it one of the best choices for temporary flow monitoring projects. Use it to log depth and velocity data for more than 60 days without changing the battery. Its sealed design provides superior system protection against surcharge conditions.

Features and Benefits

Simple and Reliable Flow Measurement

The compact and lightweight Sigma 910 Portable Area Velocity Flow Meter measures average velocity directly, without the need for time-consuming and costly flow profiling. Hach's exclusive Submersible Area Velocity Sensor assures accuracy and reliability for unsurpassed versatility, even in the harshest open-channel applications.

Ideal for Harsh Environments

The 910 Flow Meter is NEMA 6P sealed to withstand submergence and prolonged surcharge conditions. Its compact size makes it easily portable and provides for easy storage and fit in a variety of applications such as sewer and storm water monitoring.

Advanced Technology for Accuracy

The technology used in the Sigma 910 flow meter automatically corrects for temperature effects on depth measurement for a higher level of accuracy. The patented* "Drawdown Correction" feature corrects the effects of velocity on accurate depth measurement. Advanced, ultrasonic one-MHz Doppler technology avoids signal dropouts and ensures high levels of accuracy in low-flow, full-pipe, or reversed-flow conditions. The hydrodynamic body and side-mounted cable also maintains accuracy by reducing turbulence along the sensor body.

*Patent number U55691914

Easy Installation and Maintenance

The 4.5-inch diameter of the Sigma 910 flow meter means it can be installed almost anywhere. It has a low profile for reduced maintenance. The low maintenance sensor is detachable and interchangeable for flexibility. An oil-filled probe greatly reduces sensor fouling and need for regular cleaning schedules. Single point calibration (atmospheric) makes calibration quick and accurate.

Applications

The Sigma 910 Portable Area Velocity Flow Meter is ideal for short-term flow studies and sanitary sewer evaluation studies.



DW = drinking water WW = wastewater municipal PW = pure water / power
IW = industrial water E = environmental C = collections FB = food and beverage



Be Right™

WW

IW

C

Specifications*

910 Flow Meter

Units of Measurement

Depth: m, cm, ft., in.

Flow: gps, gpm, gph, lps, lpm, lph, mgd, afd, cfs, cfm, cfh, cfd, m³s, m³m, m³h, m³d

Totalized Flow: L, m³, ft.³, gal., acre-ft.,

Monitoring Intervals

1, 2, 3, 5, 6, 10, 12, 15, 20, 30, and 60 minutes

Operating Temperature

-18 to 60°C (0 to 140°F)

Storage Temperature

-40 to 60°C (-40 to 140°F)

Time-Based Accuracy

±1 second per day

User Interface

IBM-compatible PC

Program Memory

Non-volatile programmable flash, can be updated via RS-232 port

Data Storage

Capacity: 90 days of 1 depth and 1 velocity reading at 15-minute recording intervals

Data Types: Depth and velocity

Storage Mode: Wrap or slate

RAM Memory: 128 K

Communications

Serial connection to IBM-compatible computer with Hach Data Management software

Enclosure Material

PVC

Enclosure Rating

NEMA 6P (IP67)

Power Source

One Energizer 529 alkaline 6 Vdc battery or EN-529-CAN

Battery Life

60 days typical (with 15-minute recording interval, 1 depth and 1 velocity, data download once per week, at 10°C (50°F), also affected by site conditions)

Dimensions

11.4 cm diameter x 44.8 cm (4.5 in. diameter x 17.625 in.)

Weight

3.54 kg (7.8 lbs.) with battery

Submerged Depth/Velocity (AV) Sensor

VELOCITY MEASUREMENT

Range

-1.52 to 6.10 m/s (-5 to 20 ft./s)

Zero Stability

0.015 m/s (<0.05 ft./s)

Accuracy

±2% of reading

Operating Temperature

-18 to 60°C (0 to 140°F)

Typical Minimum Depth for Velocity

2 cm (0.8 in.)

Method

Doppler ultrasonic

Transducer Type

Twin 1 MHz piezoelectric crystals

DEPTH MEASUREMENT

Range

Standard: 0 to 3 m (0 to 10 ft.)

Extended: 0 to 9 m (0 to 30 ft.)

Accuracy

±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 160°F)

Maximum Allowable Depth

Standard: 10.5 m (34.5 ft.)

Extended: 31.5 m (103.5 ft.)

Air Intake

Atmospheric pressure reference is desiccant protected

Method

Pressure transducer with stainless steel diaphragm

GENERAL

Material

Noryl® plastic outer shell with epoxy potting

Cable

Standard: 9, 15, 23, and 30.5 m (30, 50, 75 and 100 ft.)

Custom: greater than 30.5 m (100 ft.)

Maximum: 76 m (250 ft.)

Cable Diameter

0.91 cm (0.36 in.)

Sensor Dimensions

2.3 x 3.8 x 13.5 cm (0.9 x 1.5 x 5.3 in.)

*Specifications subject to change without notice.

Engineering Specifications

910 Flow Meter

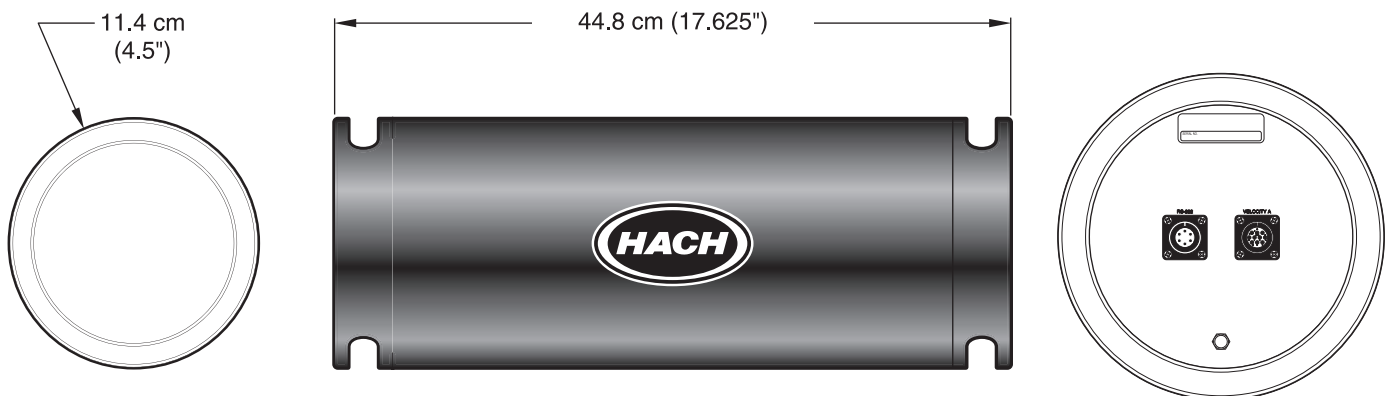
1. The flow meter system shall consist of a flow meter and a submerged depth/velocity sensor.
2. The sensor shall be equipped with depth drawdown correction to compensate for the effects of velocity in depth measurement accuracy.
3. The flow meter housing shall be made of NEMA 6P (IP67) PVC sealed to withstand submergence and prolonged surcharge conditions.
4. The flow meter shall be capable of reporting in the following units:
 - a. Depth; m, cm, ft., in.
 - b. Flow; gps, gpm, gph, lps, lpm, lph, mgd, afd, cfs, cfm, cfh, cfd, m³s, m³m, m³h, m³d.
 - c. Totalized flow; L, m³, ft.³, gal., acre-ft.
5. The flow meter shall monitor at 1, 2, 3, 5, 6, 10, 12, 15, 20, 30, and 60-minute intervals.
6. The flow meter shall be capable of storing data in non-volatile, programmable flash memory that can be updated via RS232 port.
 - a. Capacity shall be 90 days of one depth and one velocity reading at 15-minute recording intervals.
 - b. Data types shall be depth and velocity.
 - c. Storage mode shall be wrap or slate.
7. The flow meter shall have Modbus[®] and GSM wireless communication functionality.
8. Exterior dimensions shall not exceed 4.5 inches diameter and 17.625 inches length.
9. The flow meter shall be the Sigma Model 910 Portable Area Velocity Flow Meter manufactured by 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

The Sigma 910 Portable Area Velocity Flow Meter should not be used in hazardous locations where combustible gases may be present. Mount the meter so that the connectors face down. When not in use, cover the connectors with their protective caps to prevent corrosion. Always use the appropriate manhole support bracket/spanner bar.



Ordering Information

Flow Meter

4900 Sigma 910 Flow Meter with 6-volt battery

Complete Flow Meter Systems

4900910 Includes Sigma 910 Flow Meter (p/n 4900) standard submerged depth/velocity (AV) sensor (p/n 77065-030) and suspension harness (p/n 4920)

Flow Meter Accessories

4920 Suspension Harness for suspending the flow meter

9542 Manhole Support Bracket/Spanner; 18 in., fits 18- to 28-in. manholes

9557 Manhole Support Bracket/Spanner; 28 in., fits 28- to 48-in. manholes

5713000 Manhole Support Bracket; 18 to 27 in.

Sensors

All sensors are equipped with a connector

Non-oil Filled Standard Submerged Depth/Velocity (AV) Sensors (0 to 10 ft. range)

77065-030 Non-oil Filled Standard Sigma Submerged AV Sensor; 30 ft. cable

77065-050 Non-oil Filled Standard Sigma Submerged AV Sensor; 50 ft. cable

77065-075 Non-oil Filled Standard Sigma Submerged AV Sensor; 75 ft. cable

77065-100 Non-oil Filled Standard Sigma Submerged AV Sensor; 100 ft. cable

Oil Filled Standard Submerged Depth/Velocity (AV) Sensors (0 to 10 ft. range)

77064-030 Oil Filled Standard Sigma Submerged AV Sensor; 30 ft. cable

77064-050 Oil Filled Standard Sigma Submerged AV Sensor; 50 ft. cable

77064-075 Oil-Filled Standard Sigma Submerged AV Sensor; 75 ft. cable

77064-100 Oil-Filled Standard Sigma Submerged AV Sensor; 100 ft. cable

Sensor Mounting Hardware

4939 Submerged AV Mounting Plate, for pipe wall installation

9574 Insertion Tool for Street Level, for use with spring rings only

Spring Rings

1361 Spring Ring for 6-in. dia. pipe

1362 Spring Ring for 8-in. dia. pipe

1363 Spring Ring for 10-in. dia. pipe

1364 Spring Ring for 12-in. dia. pipe

Cables and Interfaces

3513 DTU-to-PC Cable; 115 Vac

3580 DTU-to-PC Cable; 230 Vac

1727 Sampler or Flow Meter to PC Cable

3358 RS232 Extension Cable

Accessories

5254 Insight Software (free of charge)

8764300 Flo-Center Software CD Only

8764500 Flo-Center Software CD with RS232

8764600 Flo-Center Software CD with RS232 and USB

7724700 Silicon Oil; dual 50-ml pack (refills 100 sensors)

7724800 Silicon Oil Refill Kit; includes dispensing tool and oil packs.

7725600 Oil-Filled Submerged AV Sensor Kit

7730000 Retrofit Kit (converts non oil-filled to oil-filled); includes kit Silicon Oil Refill Kit

8713200 Solar Module with 10-Watt panel and Power Regulator Assembly

8713300 Solar Module with 20-Watt panel and power Regulator Assembly

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.

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