# Hach FH950 Portable Flow Meter with Electromagnetic Flow Sensor

Now Measures Both Depth and Velocity

NEW!

*The FH950 Velocity Meter simplifies set up, displays real time data and trend information, auto-calculates discharge volumes and eliminates the need for manual recording with its convenient USB to PC data download; with no moving parts, the sensor never requires mechanical maintenance.*

## Features and Benefits

The lightweight, battery-powered FH950 Velocity Flow Meter was designed to provide accurate velocity measurements while simplifying the entire measurement process in rugged field environments. Multiple user-friendly features designed into the FH950 allow you to quickly and easily determine stream velocities for required discharge measurements, or use the FH950 to calibrate area velocity flow meters, or verify primary devices such as weirs and flumes.

### User-Friendly Interface Simplifies Programming and Reduces Man-hours by 50%

The FH950's rugged, lightweight and user-friendly design allows for easy set-up, operation and data management. An easy-to-use, menu-driven user interface includes a graphics display that is readable even in bright sunlight. The ability to store and download velocity and depth information within the meter, minimizes field time up to 50%. Discharge calculations are automatically calculated by the meter. Conveniently download collected data to a PC via the USB connection, eliminating the need for labor intensive manual data transfer.

### Maintenance-Free Electromagnetic Sensor

The FH950's electromagnetic sensor has no moving parts and never requires maintenance, making it one of the lowest maintenance solutions on the market. Turbulent, noisy and low velocities are easily metered.

When the sensor is placed in flowing water, its magnetic field creates a voltage that is sensed by electrodes embedded in the sensor. The voltage amplitude, proportional to the water velocity flowing around the sensor, is electronically processed by the smart sensor's microprocessor and is digitally transmitted through the cable to the portable meter display.

### See the Difference the FH950 Makes!

- *Reduce man-hours 50%—the step-by-step user interface simplifies programming, delivers real time data, and downloads direct to PC—allowing a single person to take the readings and eliminating post site visit manual data transfer from log book to PC*
- *Automatically calculates total discharge based on USGS and ISO methods—reduces time to manually calculate and likelihood of errors*
- *Real-time velocity graphed on color display—visualize velocity trends quickly*
- *Color graphic display guides user to the ideal depth measurement position*
- *One of the lowest maintenance solutions on the market—electromagnetic velocity sensor with no moving parts never requires mechanical maintenance*
- *Lightweight, rugged portable meter—only 1.5 pounds*
- *Water resistant electronics*
- *Rechargeable portable meter*
- *Data Storage for up to 10 profiles (metering sites) with 32 stations (vertical profiles) per profile (site)*
- *Easy-to-use, menu-driven interface display remains readable even in bright sunlight*
- *Ideal for use in waters with organic matter; the magnetic inductive measurement principle is not negatively affected by these conditions like acoustics or mechanical meters*

### Applications

- *Streams*
- *Rivers*
- *Weir/Flume/Flow Meter Calibration*
- *Sewers*
- *Mining Channels*
- *Irrigation Channels*

## Specifications*

### Sensor

VELOCITY MEASUREMENT

*Method*
Electromagnetic

*Accuracy*
±2% of reading ±0.05 ft/s (±0.015 m/s) through the range 0 to 10 ft/s (0 to 3.04 m/s); ±4% of reading from 10 to 16 ft/s. (3.04 to 4.87 m/s)

*Zero Stability*
±0.05 ft/s (± 0.015 m/s)

*Resolution*
0.01 value <100; 0.1 value <1000; 1.0 value ≥1000

*Range*
0 to +20 ft/s (0 to +6.09 m/s)

DEPTH MEASUREMENT

*Method*
Diaphragm type: Absolute pressure with single point calibration

*Accuracy (static)*
The larger of ±2% of reading or ±0.504 in (0.015 m). Steady state temperature and static non-flowing water.

*Range*
0 to 10 ft (0 to 3.05 m)

*Resolution*
0.01 value <100; 0.1 value <1000; 1.0 value ≥1000

*Minimum Water Depth*
1.25 in (3.18 cm)

GENERAL ATTRIBUTES

*Material*
ABS, glass-filled

*Environmental Rating*
IP68

*Dimensions of Sensor*
4.7" L x 1.7" W x 2.5" H (11.9 cm L x 4.3 cm W x 6.3 H cm)

*Cable Material*
Polyurethane jacketed

*Cable Lengths*
6.5, 20, 40, and 100 ft. (2, 6.1,12.2, and 30.5 m)

### Portable Meter

GENERAL ATTRIBUTES

*Material*
Polycarbonate with a thermoplastic elastomer (TPE) overmold

*Environmental Rating*
IP67

*Dimensions of Portable Meter*
8.6" L x 3.7" W x 2.1" H (21.8 L x 9.3 W x 5.3 H cm)

*Storage Temperature Range*
-4 to 140°F (-20 to 60°C)

*Operating Temperature Range*
-4 to 131°F (-20 to 55°C)

*Battery Charge Temperature Range*
32 to 104°F (0 to 40°C)

*Battery Type*
Lithium-Ion, rechargeable

*Battery Life Gauge*
5 segment bar graph

*Battery Life*
18 hours heavy typical day use†; 68°F (20°C)

*†Defined as 30 minutes of set up, 6 one-hour periods of continuous use with sensor active and display at maximum brightness, 30 minutes of sleep mode between use periods, data download and power off.*

*Battery Charger*
AC wall outlet charger

*USB Connector*
Type Mini-B, 5-pin, rated to IP67 when capped

USER INTERFACE AND PROGRAMMING

*Graphics Display*
Color, LCD; 3.5" QVGA, transflective (readable in direct sunlight)

*Measurement Resolution*
0.01 value <100; 0.1 value <1000; 1.0 value ≥1000

*Keypad*
Alpha-numeric

*Operating Modes*
Real-time, Profiling

*Profiling Types*
Stream, Conduit

*Conduit Shapes*
Circular, Rectangular, Trapezoidal, 2/3 Egg, Inverted 2/3 Egg

*Stream Entries*
Fixed, Non-Fixed Stations

*Firmware*
Sensor and portable meter firmware are field upgradeable via USB

*Noise Rejection*
User selectable 50Hz, 60Hz

*Units of Measure*
Velocity: ft/s, m/s, cm/s, mm/s
Flow: $ft^3$/sec, million gal/day, gal/day, gal/min, $m^3$/sec, $m^3$/min, $m^3$/hour, $m^3$/day, liters/s, liters/min
Depth: in, ft, m, cm, mm

*Stream Flow Calculation*
Mean-section, Mid-section

*Diagnostics*
Self test, keypad, display, event log

*Conduit Profile Methods*
0.9 x Vmax, 0.2/0.4/0.8, velocity and level integrator, 2D

*Stream Profile Methods*
1, 2, 3, 5 and 6 point (Velocity method - USGS and ISO)

*File Types*
Real-time, Profiling, Event Log

*Profiles*
Data storage for up to 10 profiles with 32 stations per profile.

*Maximum Number of Real-Time Files*
Three each with up to 75 readings captured by the user.

*Language Support*
English, Bulgarian, Chinese, Czech, Danish, Dutch, Finnish, French, German, Greek, Hungarian, Italian, Japanese, Korean, Polish, Portuguese, Romanian, Russian, Slovenian, Spanish, Swedish, Turkish

**Specifications subject to change without notice.*

## Engineering Specifications

1. The flow meter shall be a portable meter with electromagnetic sensor capable of measuring depth and velocity or velocity only.
2. The sensor technology shall be electromagnetic, with no moving parts and able to be disconnected from meter.
3. The range of velocity measurement shall be 0 to +20 ft/s (0 to 6.09 m/s)
4. The range of depth measurement shall be 0 to 10 feet.
5. The flow meter shall include a USB port for data downloads to a personal computer.
6. The flow meter shall measure noisy and turbulent velocities.
7. The flow meter shall be capable of storing up to 10 monitoring sites and 32 vertical profiles, and performing basic open channel profiling in the field.
8. The flow meter shall have a 5 segment bar graph battery life gauge.
9. The flow meter shall have a system self-check function.
10. The flow meter shall have a battery saver mode/auto shut-off.
11. The flow meter shall be battery powered using rechargeable Lithium Ion batteries.
12. The flow meter shall have an external AC recharging capability.
13. The flow meter shall have a graphical display. The display shall be color LCD, 3.5" QVGA, transflective (readable in direct sunlight).
14. The flow meter shall have a color bar indicator for proper sensor positioning for collecting depth measurements.
15. The flow meter shall automatically calculate total discharge based on USGS and ISO methods.
16. The flow meter shall be water resistant, rated to IP67.
17. The weight of the flow meter shall be no greater than 1.5 lbs (0.68 kg) without the sensor and no greater than 2.6 lbs (1.18 kg.) with the sensor and 20 feet of cable.
18. The portable flow meter shall have a 21-key alphanumeric key pad, including power, hot keys and arrow keys.
19. Environmental noise rejection levels shall be user selectable at 50Hz or 60Hz.
20. Real-time velocity shall be graphed on the flow meter's display.
21. The flow meter shall be the Hach FH950 Portable Velocity Flow Meter.

## Ordering Information

### FH950 Portable Flow Meter System

System includes portable flow meter, electromagnetic sensor with specified cable length, universal sensor mount, USB cable, wading rod mount, power supply/charger, neck strap, thumb screw kit, soft case, and disposable cloth for cleaning.

| FH950 Meter and Sensor System | FH950. | 1 | X | X | X | X |
|---|---|---|---|---|---|---|
| **Portable Meter (Hach FH950, with User Manual)** | | 1 | | | | |
| **Electromagnetic Sensor (Velocity Only)** | | | 0 | | | |
| **Electromagnetic Sensor (Velocity and Depth)** | | | 1 | | | |
| **Cable Length** | | | | | | |
| 6.5 foot (2m) | | | | 0 | 0 | 5 |
| 20 foot (6.1m) | | | | 0 | 2 | 0 |
| 40 foot (12.2m) | | | | 0 | 4 | 0 |
| 100 foot (30.5m) | | | | 1 | 0 | 0 |

### Replacement Parts & Accessories

*FH950 Portable Meter*

**FH950.1** FH950 Portable Flow Meter (includes battery, battery charger and meter), English

*Electromagnetic Sensors*

**EM950.0005** Velocity Only Sensor w/6.5 ft (2 m) cable

**EM950.0020** Velocity Only Sensor w/20 ft (6.1 m) cable

**EM950.0040** Velocity Only Sensor w/40 ft (12.2 m) cable

**EM950.0100** Velocity Only Sensor w/100 ft (30.5 m) cable

**EM950.1005** Velocity and Depth Sensor w/6.5 ft (2 m) cable

**EM950.1020** Velocity and Depth Sensor w/20 ft (6.1 m) cable

**EM950.1040** Velocity and Depth Sensor w/40 ft (12.2 m) cable

**EM950.1100** Velocity and Depth Sensor w/100 ft (30.5 m) cable

*Accessories*

**9073400** Fabric Carrying Case

**9073600** Lithium Ion Battery

**9072600** Battery Charger

**9070800** USB Cable, 3 ft (1 m)

**75015** Universal Sensor Mount

**9071700** Adjustable Meter Mount

**9073500** Wipe Cloth, used for cleaning

**9073200** Sensor Thumb Screw Kit

**9072700** Lanyard

*Contact factory for information on Standard and Top Setting Wading Rod Kits or Suspension Cable Kits.*

*NOTE: Additional cable cannot be added after order is entered.*

**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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