

Marsh-McBirney FLO-DAR™ with Flo-Logger XT Remote Communications Radar Velocity/Area Flow Meter



The XT Remote Communications Flow Meter provides the versatility of integrated modem technology for reliable, cost-effective wireless flow monitoring for long term/permanent flow studies or temporary installations in inaccessible locations. Users have the flexibility to choose how their data is hosted—Hach's secure server, third party, or their facility.

Features and Benefits

The XT Radar Velocity/Area Flow Meter provides a revolutionary approach to open channel flow monitoring. The XT combines advanced Digital Doppler Radar velocity sensing technology, ultrasonic pulse echo depth sensing and is equipped with wireless data transmission to remotely measure open channel flow.

Accurate Flow Measurement

Flo-Dar XT provides the user with highly accurate flow measurements under a wide range of flows and site conditions. By measuring the velocity of the fluid from above, the Flo-Dar XT sensor eliminates accuracy problems inherent with submerged sensors including sensor disturbances, high solids content and distribution of reflectors.

Multiple Data Hosting Options

The XT Remote Communications Flow Meter allows you to choose from a variety of Data Hosting options. End users can store, download, and view their flow data from our secure servers, third party systems, or their own. Hach offers data hosting services using redundant Cisco PIX firewalls, fully redundant servers with dual power supplies, daily tape back ups, and more. Servers are stored in a secure, climate-controlled data center. For details on third party data hosting or to host your own data please contact your sales representative.

Non-Contact Sensor Eliminates Lost Data

No lost data with non-contact, above the flow sensor that is unaffected by fouling due to debris and grease.

Easy Installation and Maintenance

As the sensor is mounted above the flow, personnel have little or no contact with the flow during installation. Future sensor removal can be done without the need for confined space entry.

Perfect Solution for Difficult Flow Conditions

Operates in the most difficult conditions including flows with high solids content, high temperature, shallow and caustic flows, large man-made channels, and high velocities up to 20 ft/s.

Optional Surcharge Velocity Sensor

During surcharge events Flo-Dar XT's optional electromagnetic sensor will continue to provide uninterrupted and accurate flow monitoring through dry and wet weather flows without the need for routine sensor cleaning or maintenance.

Applications

Municipal

- Sanitary Sewer Evaluation Studies
- Collection Systems
- Capacity Studies
- Combined Sewer Overflows
- Inflow and Infiltration (I&I) Studies
- Billing / Custody Transfer
- Plant Influent and Effluent

Industrial

- Process Waste
- Plant Influent
- Plant Effluent
- Non-contact Cooling Water
- Stormwater Monitoring and Compliance

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*

FLO-DAR SENSOR (Without SVS)

Enclosure

IP 68 Waterproof rating, Polystyrene

Dimensions

160.5 W x 432.2 L x 297 D mm (6.32 x 16.66 x 11.7 in.), with SVS, D = 387 mm (15.2 in.)

Weight

4.8 kg (10.5 lbs.)

Operating Temperature

-10 to 50°C (14 to 122°F)

Storage Temperature

-40 to 60°C (-40 to 140°F)

Power Requirements

Supplied by Flo-Logger XT

Interconnecting Cable

-Disconnectable at both sensor and logger

Polyurethane, 0.400 (±0.015) in. diameter; IP68
Standard length 9M (30 ft), maximum 305 m (1000 ft)

Certification

FCC Rules Part 15, Subpart C; Industry Canada RS-S210
(No user license required)

SURCHARGE DEPTH MEASUREMENT

Auto zero function maintains zero error below 0.5 cm (0.2 in.)

Method

Piezo-resistive pressure transducer with stainless steel diaphragm

Range

3.5 m (138 in.), overpressure rating 2.5 x full scale

VELOCITY MEASUREMENT

Method

Radar

Range

0.23 to 6.10 m/s (0.75 to 20 ft/s)

Frequency Range

24.075 to 24.175 G-Hz, 15.2mW (max.)

Accuracy

±0.5%; ±0.03 m/s (±0.1 ft/s)

DEPTH MEASUREMENT

Method

Ultrasonic

Standard Operating Range from Flo-Dar Housing to Liquid

0 to 152.4 cm (0 to 60 in.)

Optional Extended Operating Range from Transducer Face to Liquid

0 to 6.1 m (0 to 20 ft.) with 43.18 cm (17 in.) dead band, temperature compensated.

Accuracy

±1%; ±0.25 cm (±0.1 in.)

FLOW MEASUREMENT

Method

Based on Continuity Equation

Accuracy

±5% of reading typical where flow is in a channel with uniform flow conditions and is not surcharged, ±1% full scale max.

SURCHARGE CONDITIONS DEPTH/VELOCITY

DEPTH (Std with Flo-Dar Sensor)

Surcharge depth supplied by Flo-Dar sensor.

VELOCITY (Optional Surcharge Velocity Sensor)

Method

Electromagnetic

Range

±4.8 m/s (±16 ft/s)

Accuracy

±0.15 ft/s or 4% of reading, whichever is greater.

Zero Stability

> ±0.05 ft/s

FLO-LOGGER XT PORTABLE DC POWERED ELECTRONICS

Data Storage

64K (16K cycles of velocity/depth data)

Local Terminal

RS232C at 19.2K baud

Power Requirements

Lithium Battery Pack housed in the Logger or Alkaline Battery Pack housed in a separate waterproof enclosure. (requires external power connector option)

Time-Based Accuracy

1 second per day

Housing

Sealed watertight Polystyrene – meets IP68 rating

Length: 37.03 cm (14.625 in.)

Diameter: 19.69 cm (7.75 in.)

Weight: 4.4 kg (9.8 lbs) (including lithium batteries)

Temperature

Operating Range: -10 to 51°C (14 to 125°F)

Storage Range: -20 to 51°C (-4 to 125°F)

Flo-Logger Disconnect

The Flo-Logger has waterproof (IP68) connectors for easy separation from the interconnecting cable.

Remote Communications

RTU configured with a packet switched IP protocol data over a Cellular Network, supported with a FCC approved embedded cellular modem.

Certification

This Class A device complies with Part 15 of the FCC rules ID P4M-EMIV and Industry Canada RSS129 and RSS133, ID 4594A-EMIV (user licensing is not required). Operation is subject to the following conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.



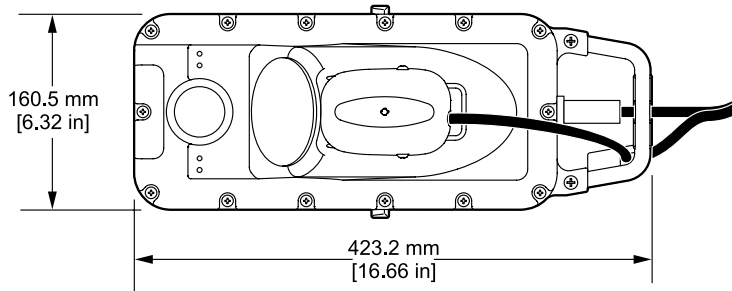
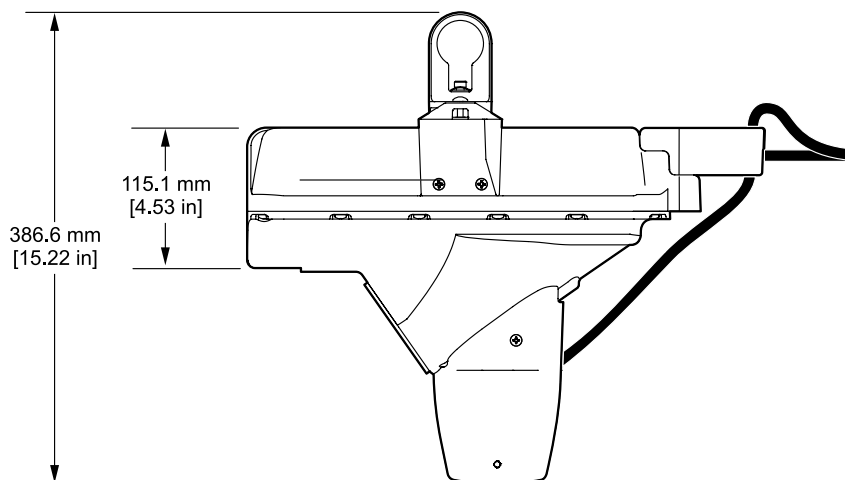
Both Flo-Dar sensor and Flo-Logger XT meet CE requirements.

Engineering Specifications

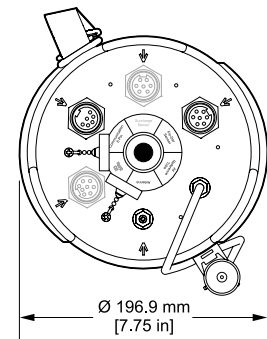
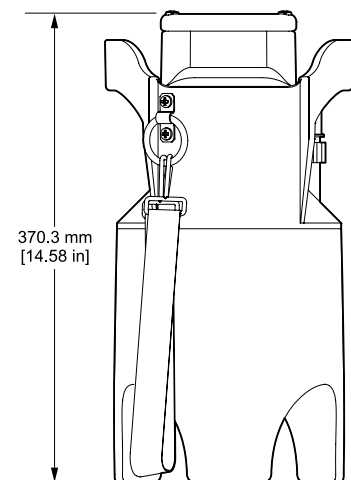
FLO-DAR XT SENSOR

- The flow meter shall be capable of measuring level, average velocity and surcharge depth.
- The method of velocity measurement shall be Doppler radar.
- The sensor shall combine advanced Doppler Radar velocity sensing technology with ultrasonic pulse echo depth sensing to measure open channel flow.
- Flow shall be calculated based on the Continuity Equation ($Q=V \times A$), where Q =Flow, V =Average Velocity and A =Area.
- The range of velocity measurement shall be 0.23 to 6.10 m/s (0.75 to 20 ft/s).
- The method of depth measurement shall be ultrasonic.
- The standard operating range for depth measurement shall be 0 to 152.4 cm (0 to 60 in.) with an optional operating range of 0 to 6.1 m (0 to 20 ft.) with 43.18 cm (17 in.) deadband, temperature compensated.
- The flow meter shall have a surcharge condition velocity sensor option.
- Exterior dimensions of the sensor shall not exceed 160.5 W x 432.2 L x 297 D mm (6.32 W x 16.66 L x 11.7 D in.) or 160.5 W x 432.2 L x 387 D mm (6.32 W x 16.66 L x 15.2 D in.) with Surcharge Velocity option.
- The flow meter shall communicate with a host computer to transfer data and alarms, reconfigure computations, schedules and site parameters, perform clock maintenance and shall be configured with a cellular modem.
- The flow meter shall be the Marsh-McBirney Flo-Dar/Flo-Logger XT Open Channel Flow Meter.

Dimensions



FLO-DAR Sensor



Flo-Logger XT

Ordering Information

			IS or SVS Options	Extended Range
Flo-Dar Sensors	Model 4000-	---	---	---
30 ft.		1		
60 ft.		2		
100 ft.		3		
As needed (Max 1000 feet)		4		
Non IS (Intrinsically Safe)			0	
Surcharge Velocity Option (SVS)			3	
Standard				0
Extended Range Option				1
Extended Range Option w/Remote Depth Sensor				2
		SVS Connector	External Power	Verizon/Sprint
Flo-Dar Electronics (Flo-Logger XT)	Model 1004T-	---	---	---
No		1	P	0/S
Yes		2	P	0/S

Mounting Hardware

800016701	Permanent Mount includes sensor frame and all mounting hardware for permanent installations Portable Sensor Mounts below include jack bar assembly, frame, and all hardware
800016401	34-54 inch manhole diameters
800016402	52-70 inch manhole diameters
800016403	70-88 inch manhole diameters
800016404	89-107 inch manhole diameters
800012402	Laser Alignment Tool

Accessories & Spares

A-CBA	Burial Antenna Verizon - Mounts in street next to manhole
6686000	Burial Antenna Sprint - Mounts in street next to manhole
570015001	Tamper Cable - Required to trigger modem during installation
624250C	Teloger Software - Software used to set up Flo-Logger XT
DATAEFR	Monthly Cellular Fee
HOSTING	Data Hosting Fee
DDS ALARM	Provides alarm to cell phone, internet, pager, email
110000501	Lithium Battery Pack, 12 month life at 15 minute measurement cycle 7.2 Vdc
800017701	Alkaline Long Life Battery Pack w/Enclosure (requires external power connector option)
110000701	Alkaline Replacement Battery Pack
800015901	Desiccant Replacement Cartridge (XT Logger only)
800007201	Suspension Cable - Stainless Steel to hang Flo-Logger to manhole step
420001001	Suspension Strap - Fabric to hang Flo-Logger to manhole step (spare)
Odd Shape SPC	Odd Shaped Table - Configures Flo-Ware software for user's specified conduit
245000501	Sensor Retrieval Pole - Used to place and retrieve sensor from mounting bracket. Pole extends to 7.3 m (21 ft.)
510012701	Sensor Retrieval Hook - Used with Sensor Retrieval Pole

Lit. No. 2617

L92 Printed in U.S.A.

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In the interest of improving and updating its equipment, Hach Company reserves the right to alter specifications to equipment at any time.

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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