



FLO-DAR™

The Revolutionary New
Flowmeter Technology

Finally...
a flowmeter that rises above
all the rest and keeps you
out of the sewer!





FLO-DAR™

Accurate Flow Measurement for:

Billing Purposes

EPA Permitting Requirements

Inflow/Infiltration Studies

Combined Sewer Overflow Monitoring

Process Control

Sampler Pacing

Modeling/Sewer System Evaluations

Wastewater Treatment Plant Balancing

Industrial Applications

Process Waste

Plant Influent

Plant Effluent

Raw Sewage

Municipal Applications

Storm Water

Collection Systems

Raw Sewage

Combined Sewer Overflows

Waste Water Treatment Plant Balancing

Plant Influent

Plant Effluent

Manage Your Flowmeters From Anywhere!

Ask us about Wired, Wireless and World Wide Web Solutions

The Flo-Dar™ Flowmeter provides a revolutionary approach to open channel flow monitoring. Flo-Dar™ combines advanced Digital Doppler Radar velocity sensing technology with ultrasonic pulse echo level sensing to remotely measure open channel flow.

Here's How It Works

Flo-Dar™ transmits a radar beam that interacts with the fluid and reflects back signals at a different frequency than that which was transmitted. These reflected signals are compared with the transmitted frequency. The resulting frequency shift provides an accurate measure of the velocity and the direction of the flow. Level is detected by ultrasonic pulse echo. Flow is then calculated based on the Continuity Equation $Q = \bar{V} \times A$, Where Q = Flow, \bar{V} = Average Velocity and A = Area.

Accurate Flow Measurement

Flo-Dar™ provides the user with highly accurate flow measurements under a wide range of flows and site conditions.

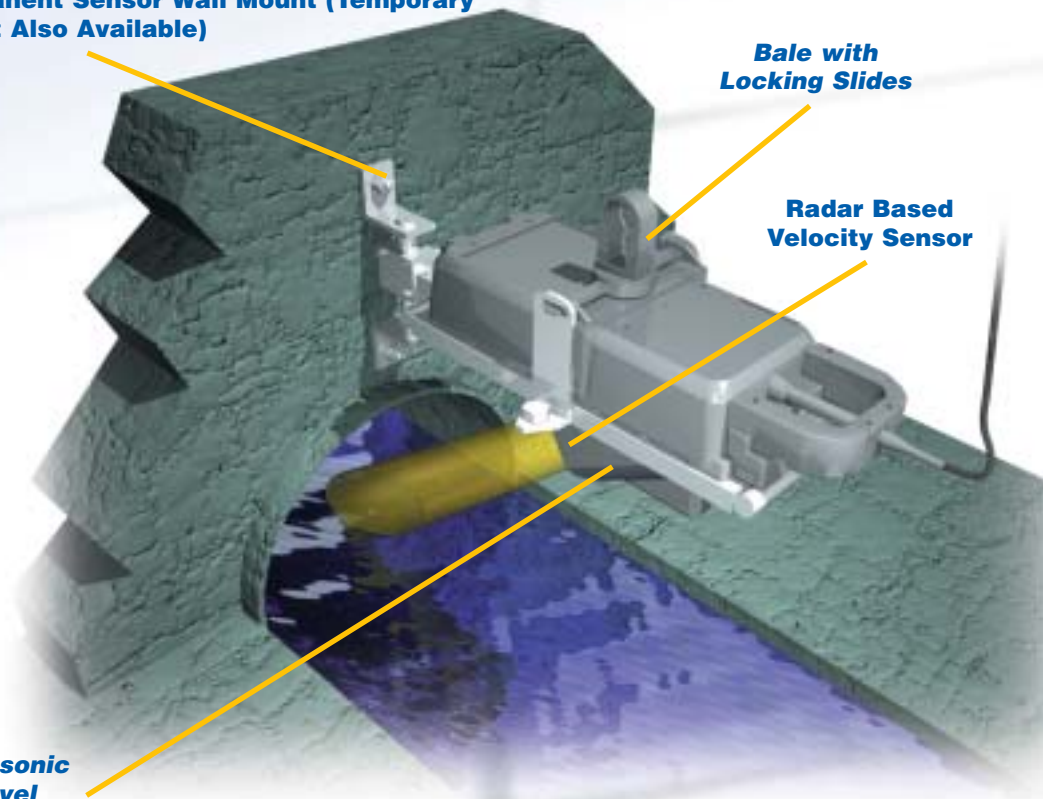
By measuring the velocity of the fluid from above, Flo-Dar™ eliminates accuracy problems inherent with submerged sensors including sensor disturbances, high solids content and distribution of reflectors.

Permanent Sensor Wall Mount (Temporary Mount Also Available)

Bale with Locking Slides

Radar Based Velocity Sensor

Ultrasonic Level Sensor



Portable Flo-Dar System utilizing Temporary Sensor Mount

Temporary sensor mount can be used for both permanent and portable applications.



Perfect Solution for Difficult Flow Conditions:

*Flows with High Solids Content
High Temperature Flows
Caustic Flows
Large Man-Made Channels
High Velocities ± 20 ft/s
Shallow Flows*

Benefits

*Personnel have no
contact with flow during
installation
Maintenance caused
by sensor fouling is
eliminated
Field Replaceable/
Interchangeable Sensors and
Monitors*

**Let us show you how to immediately start saving
money on your flow monitoring costs!
Call for your free demonstration NOW!**



Easy Install

No manhole entry required. Sensor can be re-installed/removed from street-level.



No Lost Data

"Above the flow" installation eliminates maintenance and lost data due to sensor fouling.



Cost Savings

Eliminates expensive manpower and equipment requirements for confined space entry.

**Request a free copy of the Flowmeter Savings Calculator to
see how much the Flo-Dar flowmeter can save you!**

Also available on-line at www.marsh-mcberney.com/savings

**Manage Your Flowmeters
From Anywhere!**

**Ask us about Wired,
Wireless and World Wide
Web Solutions**

Specifications — Flo-Dar™ Open Channel Flowmeter

SENSOR Model 4000

Enclosure

Material: Polystyrene

Dimensions:

6.9" W x 16.65" L x 11.7" D
(17.5 cm x 42.3 cm x 29.7 cm)

Weight: 10.5 lbs (4.8kg)

Temperature

Operating Range: 14° F to 122° F
(-10° C to 50° C)

Storage Range: -40° F to 140° F
(-40° C to 60° C)

Sensor Cable

Material: Polyurethane jacketed

Standard Length: 30' (9.14m), maximum 1000' (304.8 m).

Disconnectable at both sensor and monitor



VELOCITY MEASUREMENT

Method: Radar

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

Accuracy: ±0.5%; ±0.1 ft/s (±0.03 m/s)

LEVEL MEASUREMENT

Method: Ultrasonic

Standard Operating Range: 0.25 to 60 in. (0.635 to 152.4 cm)

Optional Operating Range: 0 (0 cm) to 224" (5.7 m) (with 16" dead band)

Temperature Compensated

Accuracy: ±0.25 in. (±0.64 cm)

1% Accuracy

SURCHARGE LEVEL MEASUREMENT

Method - Piezo-resistive pressure transducer

Maximum Range - 138 inches (3.5 meters)

FLOW MEASUREMENT

Based on Continuity Equation.

Accuracy: ±5.0% of reading typical where flow is in a channel with uniform flow conditions and is not surcharged.

ELECTRONICS

Permanent AC Powered Monitor Model 450

Graphic Display

Passive matrix color LCD

320 x 240 quarter VGA

Dimensions: 4.6" x 3.6"

(11.7 cm x 9.14 cm)

Displays flow rate, flow totals, average velocity and level.

Data Entry

Touch screen keypad

Menu-driven programming

Time base accuracy: 1 second per day

Outputs

Two (2) 4-20 mA outputs: First (Std.) isolated up to 600 ohm load. Second requires optional isolator.

Each output selectable between flow rate, velocity or level.

Contact Closure – one form C dry contact closure

Selectable for either flow proportional or alarm for either flow rate, velocity or level.

Rating: 1A 30 VDC (resistive) 0.5A 125 VAC (resistive)

Power Requirements

AC: 85-264 VAC, 47-63 Hz, 32 watts

Housing

Material: NEMA 4, ABS Plastic

Dimensions: (with mounting bracket in place)

10.2" W x 13" H x 7.25" D

(25.9 cm W x 33 cm H x 18.4 cm D)

Weight - 7.5 lbs.

Temperature

Operating Range:

14° F to 122° F (-10° C to 50° C)

(relative humidity non-condensing 10-90%)

Storage Temperature: -40° F to 140° F
(-40° C to 60° C)



Portable DC Powered Monitor Model 1000-1

Data Storage

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

Local Terminal

RS232C at 19.2K baud

Power Requirements

+12 VDC (Two six volt lantern batteries are supplied standard)

Battery Life

10 weeks at a sample interval of 15 minutes

Housing

Sealed watertight IP68 Polystyrene enclosure

Length: 13.85" (35 cm)

Diameter: 7.75" (19 cm)

Weight: 7.5 lbs. (3.4 kg) (including batteries)

Temperature

Operating Range: 14° F to 125° F
(-10° C to 52° C)

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

Sensor/Logger Disconnect

Both the sensor and the logger have waterproof (IP68) connectors for easy separation from the interconnecting cable.

Set-Up/Data Retrieval

Flo-Ware/Flo-Ware FX for Windows software

(sold separately) is the user on-site data management and report generation software. It is compatible with computers

(desktop/ portable/pocket PC) utilizing

Windows 95/98/2000/Me/NT/XP. Flo-Ware

for Windows software can retrieve data from

both Flo-Tote and Flo-Dar Models 1000-1

and 1000-2 Flowmeters.



Permanent AC or DC Powered Monitor Model 1000-2

Data Storage

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

Local Terminal

RS232C at 19.2K baud

Four 4-20 mA outputs standard. (4)

programmable, isolated outputs capable of sinking 650 ohm each

Power Requirements

+12 VDC @ 220 mA with all three 4-20 mA outputs @ 20 mA)

Contact Closure – one form C dry contact closure

Housing

Material: Polystyrene (IP66)

Dimensions: 9" W x 7" H x 4" D

(229 mm W x 178 mm H x 102 mm D)

Weight: 7.5 lbs

Temperature

Operating Range: 14° F to 122° F
(-10° C to 50° C)

Storage Range: -4° F to 122° F
(-20° C to 50° C)

Set-Up/Data Retrieval

Flo-Ware/Flo-Ware FX for Windows software

(sold separately) is the user on-site set-up,

data management and report generation

software. It is compatible with computers

(desktop and portable/pocket PC) utilizing

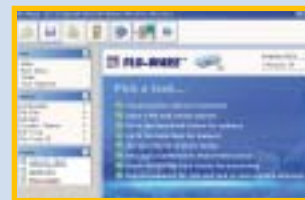
Windows 95/98/2000/Me/NT/XP/Pocket PC

2002. Flo-Ware for Windows software can retrieve data from both Flo-Tote and Flo-Dar Model 1000-1 and 1000-2 Flowmeters.



All Models: See Sensor Mount Insert Sheet

Intrinsically Safe Models Available -
Contact Factory



Flo-Ware Software

CERTIFICATION

FCC Rules Part 15; Industry Canada RSS 210 (No user license required.)

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