

Simple, Non-Contacting Flow Meter



Works from Outside a Pipe with Strap-On Sensor

New!

Doppler Flow Meter Model DFM-IV

**Displays, Transmits,
Totalizes and Controls**

User-Friendly, 3-Key Calibration
Password Protected
Isolated 4-20mA Output
3 Control Relays
Self-Testing, Surge-Protected
RFI Rejection Filters
Optional Data Logger



Non-Contacting Flow Monitoring and Control Standard Sensor mounts on any Pipe

Ideal for "Problem Liquids"

**External Sensor
No Contact, No Maintenance**

Greyline Doppler Flow Meters monitor the flow rate of "difficult" liquids including: wastewater, chemicals, acids, slurries, abrasives and viscous liquids. Recommended for full pipes and any fluid that contains solids or bubbles.

The DFM-IV strap-on sensor is mounted on the outside of a plastic or metal pipe. To measure flow an acoustic signal is reflected back to the sensor from particles or gas bubbles in the fluid.

Installation is easy - without shutting down the flow system. No contact is made with the moving fluid and no pipe cutting or drilling is required. There is no fouling or scale build-up on the sensor.

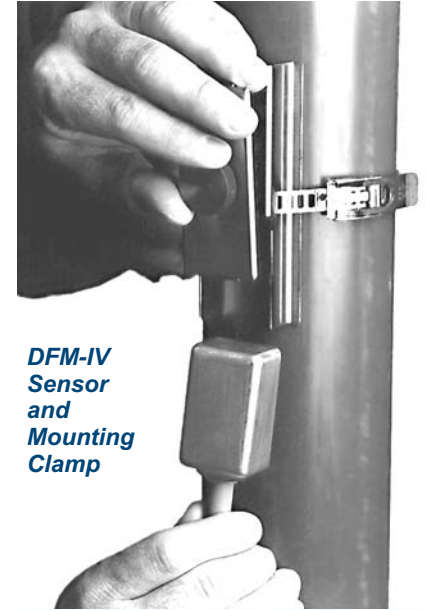
Non-Contacting Doppler Flow Meter Measures Flow with Strap-On Ultrasonic Sensor

Ideal for “difficult” liquids

The DFM-IV Doppler flow meter works best in applications that would defeat regular contacting flow meters. Because the Sensor is mounted on the outside of the pipe, it is unaffected by abrasives or harsh chemicals. There is no obstruction to flow and no pressure drop.

Easy to Install

Each DFM-IV Flow Meter includes one strap-on Doppler Sensor, an adjustable stainless steel mounting clamp and sensor coupling compound. The standard sensor fits on the outside of *any* pipe diameter 1/2" (12.5 mm) or larger. It takes just a few minutes to install. There is no pipe cutting and no need to shut down flow.



***DFM-IV
Sensor
and
Mounting
Clamp***

DFM-IV Flow Meters are Installed in these Applications:

- Sewage***
- Viscous liquids***
- Acids***
- Slurries***
- Solvents***
- Treated wastewater***
- Sludge***
- Pulp stock***
- Food products***
- Lubricating Oils***
- Crude Oil***
- Chemicals***
- Aerated Water***
- Cooling Water***

***Ideal for full pipes and
any liquid containing
gas bubbles or solids
larger than 100 microns
and in concentrations
greater than 75 ppm.***

Works on most Pipes

The Greyline DFM-IV Flow Meter measures flow in most common pipe materials: PVC, carbon steel, stainless steel, cast iron, fiberglass, and lined pipes...any pipe material that conducts ultrasound. Doppler signals cannot be transmitted through pipes walls which contain air pockets (materials like concrete and wood), or loose insertion liners (with an air gap between the liner and pipe wall). Because the sensor is so easy to install you can test any application and pipe material in a few minutes.

Simple, Single-Head Sensor design

Ultrasonic signals are transmitted and received from a single sensor so installation is easy. The mounting clamp (included) ensures correct sensor alignment on horizontal or vertical pipes. Optional dual-head Sensors are available for special applications.

Self-tunes to extended Sensor Cable length

Each Sensor includes 20 ft. (6 m), shielded coaxial cable. Cable can be extended up to 500 ft. (152 m) with no loss of signal strength or performance. The DFM-IV automatically self-tunes to the cable length.

Intrinsically Safe Sensor for Hazardous locations

DFM-IV Sensors are CSA rated for installation in hazardous locations with optional intrinsic safety barriers. Safety barriers are factory-installed in the electronics enclosure so all sensor cable and any junction boxes are intrinsically safe. Electronics are normally mounted in a non-rated general purpose location, or they can be factory-installed in an optional explosion proof enclosure for mounting in hazardous-rated areas.

Displays, Totalizes, Controls and Transmits

Each DFM-IV Doppler Flow Meter includes a large, 4-digit LCD display of flow rate, a 16-digit alphanumeric display for calibration menu and totalizer, 3 programmable control relays, and an isolated 4-20mA output (1000 ohm). A 50,000 point data logger is optional.

DFM-IV Doppler Flow Meter Specifications

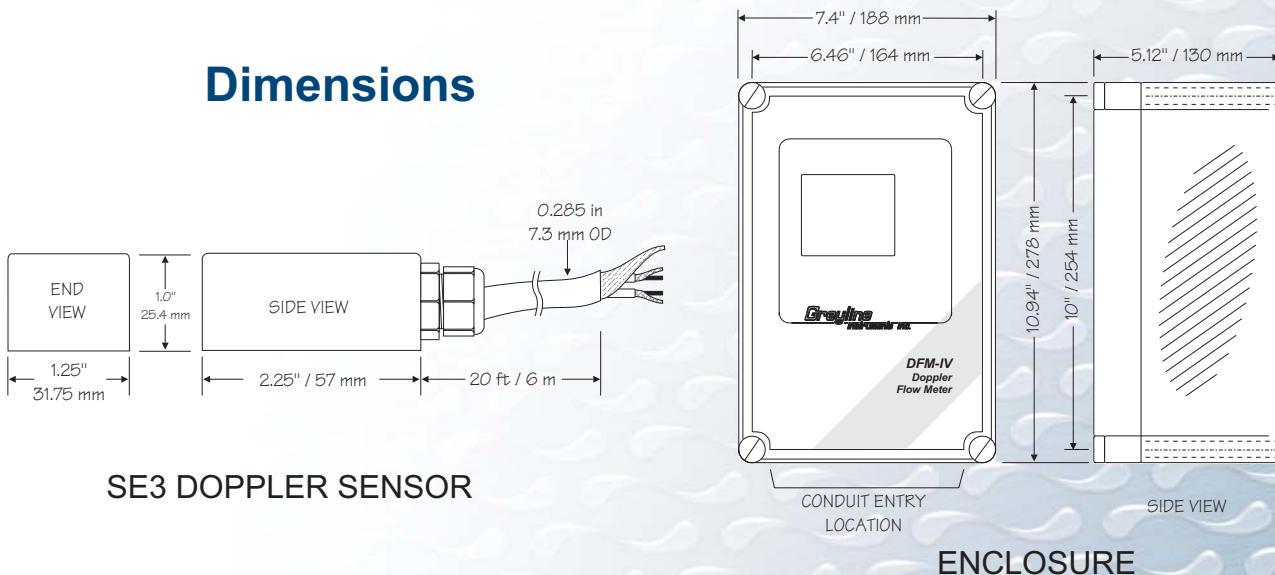
Specifications: Flow Rate Range: 0.25 to 40 ft/sec (0.08 to 12.2 m/sec) in most applications
 Pipe Size: Any pipe ID from ½" to 180" (12.7 mm to 4.5 m)
 Accuracy: ±2% of full scale. Requires solids or bubbles minimum size of 100 microns, minimum concentration 75 ppm. Repeatability: ±0.1%, Linearity ±0.5% of full scale
 Displays: Flow Rate - large, 4-digit LCD in programmable engineering units
 Totalizer/Menu/Status/Signal Strength - 16-digit LCD, alphanumeric
 Calibration: built-in 3-key calibrator, No-drift transmitter: quartz crystal frequency reference
 Power Input: 100-130VAC 50-60Hz (see Options), 5 watts maximum
 Output: Isolated 4-20mA (1000 ohm load max.)
 Control Relays: Qty 3, rated 5 amp SPDT, programmable flow alarm and/or proportional pulse
 Back Flow Rejection: forces display and outputs to zero with contact closure from remote relay
 Enclosure: watertight, dust tight NEMA4X (IP 66) fiberglass with a clear shatter-proof face
 Electronics Operating Temperature: -10° to 140°F (-23° to 60°C)
 Sensitivity: adjustable. Damping: adjustable
 Electrical Surge Protection: Sensor, 4-20mA output and AC power input
 Shipping Weight: 12 lbs (5 kg)

Sensor: Model SE3 single-head ultrasonic with 20 ft (6 m) shielded cable and stainless steel mounting kit for pipes ½" (12.7 mm) ID or larger. Designed to withstand accidental submersion to 10 psi (non-functional while submerged). Sensor Operating Temperature: -40° to 200°F (-40° to 93°C)

Options: Sensors: Intrinsic Safety Barriers for Sensor mounting in hazardous locations, SE3H High Temperature model rated up to 302°F (150°C), ISE Insertion type for special applications
 Sensor Cable: 50 ft. (15 m) continuous shielded coaxial pair, or splice up to 500 ft (152 m) with Junction Box. Self tunes to extended cable
 Enclosure Heater: for outdoor installation, 16 watt thermostatically controlled to -40°F (-40°C)
 Data Logger: Built-in 50,000 point logger with RS232 output and Windows™ software
 Power input: 200-260VAC 50-60HZ, 24VDC or 12VDC (battery power)

- Applications:**
- Recommended for liquids containing suspended solids or bubbles minimum size of 100 microns, minimum concentration 75 ppm
 - Sensor mounts on Vertical or Horizontal pipes
 - Sensor Mounting Location:
 6-10 pipe diameters from elbows, tees (turbulence increasing devices)
 >30 pipe diameters from pumps, controlling valves and pipe discharge
 - Pipe Materials: steel, stainless steel, cast iron, PVC, fiberglass, any contiguous pipe material that conducts sound, including lined pipes with liner bonded to pipe wall. Avoid pipes with loose insertion liners and pipe walls which contain air (concrete, wood etc.)

Dimensions

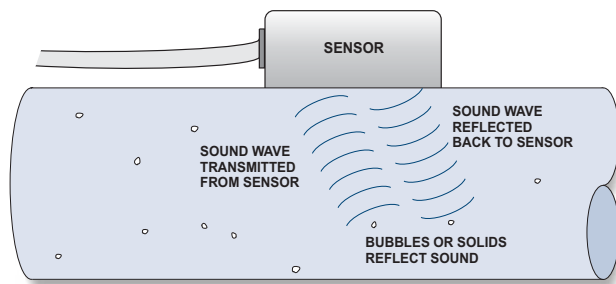


Non-Contacting Doppler Flow Meter

Monitors, Displays, Totalizes and Controls from Outside a Pipe

Principle of Operation

The DFM-IV Sensor transmits a continuous high frequency sound through the pipe wall and into the flowing liquid.



Sound is reflected back to the Sensor from particles or gas bubbles in the liquid. If the liquid is flowing, the reflected sound returns at an altered frequency (the Doppler effect). The DFM-IV continuously measures this frequency shift to accurately measure flow.

Greyline DFM-IV Doppler Flow Meter

The DFM-IV flow sensor installs *without cutting the pipe*. It takes just a few minutes to mount on the *outside* of any pipe. Calibration is easy with the built-in, 3-button keypad. Select your choice of flow units and enter pipe diameter through the plain-English calibration menu. Enable password protection to prevent tampering.

Special Features make Flow Measurement Easy

- Noise suppression circuitry filters “dirty” power and electrical interference from most VFD’s
- Automatically converts between measurement units (e.g. gallons or liters)
- Calibration data and Totalizer values are stored automatically during power interruptions
- 3 control relays are programmable for flow proportionate pulse, and flow alarm and control
- Output “simulation” function simplifies calibration of remote devices (e.g. chart recorders or controllers)
- Self-tunes to Sensor cable length

Benefits of Non-Contacting Flow Measurement

No Contact means no maintenance, no sensor fouling, no obstruction to flow, no pressure drop, no corrosion and no pipe cutting or drilling for installation.

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