

Area-Velocity Flow Meter

for Open Channels and Pipes – No Flume or Weir required

New!

Area-Velocity Flow Meter

Model AVFM-II

Display, Transmit and Totalize
Open Channel Flow in
Pipes and Channels



Measures Velocity + Level to Calculate Flow

Area-Velocity Flowmeter

Monitor flow through open channels, partially full sewer pipes and surcharged pipes *without* a flume or weir. Ideal for municipal stormwater, combined effluent, raw sewage and irrigation water.

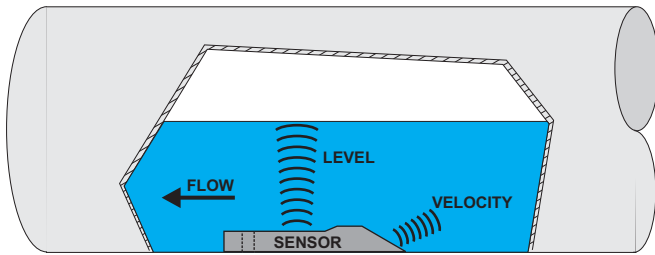
Streamlined Ultrasonic Sensor

Uses a submerged ultrasonic sensor to continuously measure both Velocity and Level in the channel. The sensor is resistant to fouling, corrosion and abrasion. It is tolerant of turbulence and high approach velocity. Can be configured with the standard submerged velocity-level sensor, or with submerged velocity plus a separate non-contacting ultrasonic level sensor.

RELIABLE MEASUREMENT AND CONTROL

Flow Monitor for Open Pipes & Channels

Easy Set-up and Calibration



SUBMERGED ULTRASONIC SENSOR
MEASURES LEVEL AND VELOCITY

The AVFM-II Area-Velocity Flow Meter measures both Level and Velocity to calculate flow volume in an open channel or pipe. Calibration is simple: enter the pipe ID or channel width and the AVFM-II automatically computes flow volume and displays the flow rate.

The AVFM-II sensor mounts inside the pipe or on the bottom of a channel. No special compounds, tools or hardware are required. The ultrasonic sensor is completely sealed with no orifices or ports

Recommended Pipe or Channel Conditions

Careful selection of sensor mounting location results in best performance and maintenance-free operation. Avoid locations where sediment builds up.

Best possible accuracy will result when the water is not highly turbulent and where velocity is evenly distributed across the channel. The channel should not have drops or direction changes immediately upstream of the sensor mounting location. Pipe or channel slope should not exceed 3%.

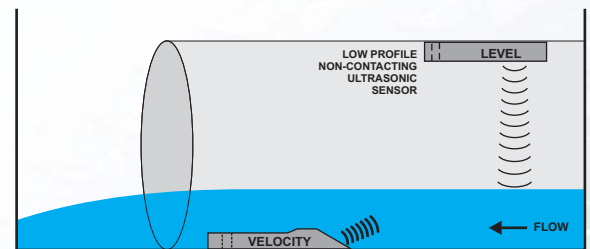
The AVFM-II can measure flow velocity up to 20 ft/sec (6 m/sec). The flowmeter's electronics and software sample and average flow rates continuously to provide stable readings. The submerged velocity/level sensor will measure flow in partially full and surcharged pipes with pressure up to 10 psi. No special set-up or adjustment is required.

Minimum recommended pipe diameter is 6" (150 mm).

Alternate Sensor Configurations

The standard sensor measures both velocity and level with a single submerged probe. It is installed in the pipe or channel floor with a set-screw through the stainless steel mounting bracket (supplied), or mounted with an optional stainless steel band for round pipes.

Alternate sensor models are available for special applications: a separate non-contacting ultrasonic level sensor with a submerged velocity sensor. Sensor cable can be extended up to 500 ft (150 m).



Three 4-20mA Outputs

Transmit to external loggers, chart recorders, controllers or remote displays. AVFM-II 4-20mA outputs are configured to transmit Level, Velocity and Flow. Outputs can be turned off for reduced power consumption (2.9 Watts minimum) or factory-configured with 0-5VDC outputs for power consumption as low as 3.6 Watts.

No Calculations - No Programming Codes

Calibrate the AVFM-II by entering the pipe diameter or channel width and select your choice of measurement units from a simple menu. You can display water level, velocity or flow in gallons, liters, ft³ or m³. Calibration parameters are stored through power interruptions. The AVFM-II will resume normal operation as soon as power is restored.

Optional 50,000 point Data Logger

Choose the built-in data logger option if you want the AVFM-II to store time and date-stamped flow values from 1 second to 30 minute intervals. Or use the convenient 'Flow Report' format where total, minimum, maximum and average flow rates are stored in your choice of hourly or daily summaries. Transfer flow logs to your PC or laptop through the AVFM-II RS232 output (included with the data logger option). Use 'Greyline Logger' software for data retrieval by dial-up connection through modems and phone lines, or by direct connection to the AVFM-II. This powerful software displays data in both graph and table formats and exports to graphic or text file formats for use in other programs. Runs on any PC with Windows™ 98, 2000, NT or XP.

Optional Intrinsically Safe Sensor

The AVFM-II sensor and cable is rated Intrinsically Safe for installation in Class I,II,III Div. I,II, Groups C,D,E,F,G hazardous locations when connected through three optional Intrinsic Safety Barriers (factory-installed inside the AVFM-II electronics enclosure). Electronics can be mounted in a general purpose area up to 500 ft. (150 m) from the sensor.

AVFM-II Specifications

General Specifications

Channel Types:	Round pipe, Rectangular, trapezoid or egg-shaped
Electronics Enclosure:	Watertight and dust tight NEMA4X (IP 66) polycarbonate with clear, shatterproof cover
Accuracy:	Level: $\pm 0.25\%$ of Range. Velocity: $\pm 2\%$ of Reading. Repeatability and Linearity: $\pm 0.1\%$
Displays:	Numeric Values: large 4 digit LCD; Menu/Status/Totalizer: 16 digit alphanumeric
Programming:	3-button keypad with Menu selection. Calibration parameters are Password protected
Power Input:	100-130VAC 50/60Hz, 8.5 Watts maximum
Outputs:	3 Isolated 4-20mA, 1000 ohm, (Flow, Level and Velocity)
Control Relays:	2 Relays, form 'C' dry contacts rated 5 amp SPDT; programmable for flow proportional pulse (sampler/totalizer), flow and/or level alarm
Electrical Surge Protection:	Sensor, 4-20mA outputs and AC power input
Operating Temp. (electronics):	-5° to 140°F (-20° to 60°C)
Approximate Shipping Weight:	10 lbs. (4.5 kg)

AVFM-II Area-Velocity Flow Monitor

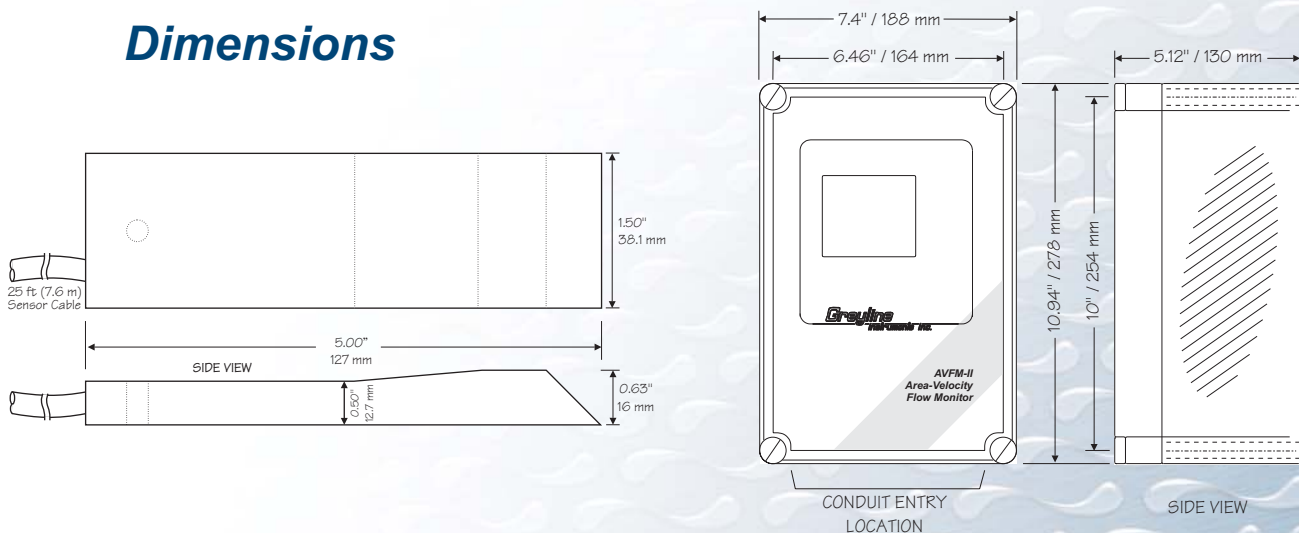
QZ02L Sensor

Velocity Measurement Range:	0.1 to 20 ft/sec (0.03 to 6.2 m/sec)
Level Measurement Range:	Minimum Head: 1 in (25.4 mm). Maximum Head: 15 ft. (4.57 m)
Operating Temperature:	5 to 150°F (-15 to 65°C)
Exposed Materials:	PVC, epoxy resin, polyurethane
Sensor Cable:	25 ft. (7.6 m) submersible polyurethane jacket, shielded, 3-coaxial
Sensor Mounting:	includes MB-QZ stainless steel mounting bracket
Temperature Compensation:	Automatic, continuous

Options

Data Logging:	Programmable 50,000 point data capacity, time and date stamped or formatted flow reports including Total, Average, Minimum, Maximum and Times of occurrence. Includes RS232 output, serial cable and Windows software
Sensor Cable:	50 ft. (15 m) or 100 ft. (30 m) submersible, continuous from Sensor - or splice up to total of 500 ft (150 m) length
Sensor Cable Junction Box:	Watertight NEMA4 steel with connection terminal strip
Power Input:	200-250VAC 50/60Hz; or 9-36VDC (2.9 W min., 6.2 W max.)
Analog Outputs:	Factory-configured for three 0-5VDC outputs
Enclosure Heater:	Thermostatically controlled - recommended for temperatures below 32°F (0°C)
Intrinsic Safety Barriers:	For Sensor mounting in Class I,II,III, Div. I,II, Groups C,D,E,F,G hazardous locations
Sensors:	Separate non-contacting ultrasonic level sensor and submerged velocity sensor
Sensor Mounting Bands:	Stainless steel sensor mounting bands for pipes 6" to 72" (150 to 1800 mm) diameter

Dimensions



QZ02L VELOCITY/LEVEL SENSOR

ELECTRONICS ENCLOSURE

New Open Channel Flow Monitor Measures Velocity + Level to calculate Flow



New AVFM-II Area-Velocity Flow Monitor

Recommended for:

- ✓ Sewer Flow Monitoring and Reporting
- ✓ Infiltration Studies
- ✓ Stormwater Monitoring
- ✓ Natural Streams
- ✓ Irrigation Water

New – AVFM-II Area-Velocity Flow Meter

- ◆ Flow measurement in pipes, rectangular, trapezoid and egg-shaped channels
- ◆ Ideal where flumes or weirs are difficult to install
- ◆ Sealed ultrasonic sensor resists fouling
- ◆ Works with water level 1" (25.4 mm) to 15 ft (4.57 m)

The AVFM-II Area-Velocity Flow Meter includes a submerged ultrasonic sensor that is installed at the bottom of an open pipe or channel. Exposed materials are all plastic so the sensor resists fouling and corrosion. It has no moving parts and no orifices, ports or electrodes.

The AVFM-II displays and totalizes flow. It includes three 4-20mA outputs (Flow, Level and Velocity), plus two control relays for level alarms or flow proportionate pulse output for samplers and chlorinators. It is easy to calibrate with the built-in, 3-button keypad and menu system. A built-in 50,000 point data logger with RS232 output is optional. Intrinsic Safety Barriers for sensor and cable installation in hazardous rated channels is also optional.