

Insertion Magnetic Flow Meter

For Accurate Flow Measurement in Full Pipes

*Insertion
Magmeter*

ISM 5.0

Transmits Flow in a
Wide Range of Pipe Sizes

*The Accurate, Low Cost
Alternative to Full-bore
Magnetic Flow Meters*



**Measures Flow of Conductive Liquids
in a Wide Range of Pipe Sizes**

Accurate and Versatile

The ISM 5.0 Insertion Magmeter senses flow using a low maintenance electromagnetic design with no moving parts. The dual-electrode sensor and continuous auto-zero function provides high accuracy – even at low flow rates. State-of-the-art electronics and patented design features help maintain its NIST traceable accuracy over time.

**Installs in Pressurized Pipes
Without Shutting Down Flow**

The simplified hot tap insertion design allows for ISM 5.0 insertion and removal by hand, without a system shutdown.



RELIABLE MEASUREMENT AND CONTROL

Simple Low-Cost Installation



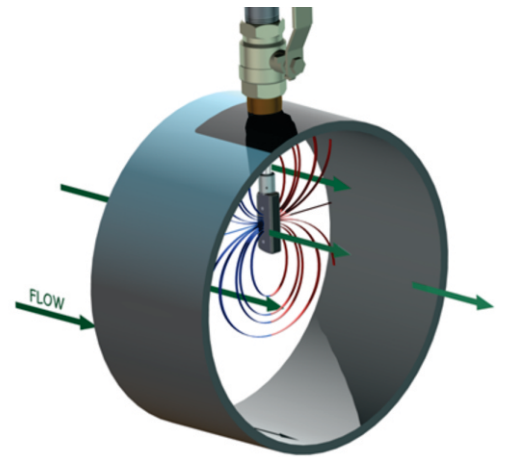
Easy To Install

1. Place saddle and ball valve
2. Hot tap
3. Insert meter and set depth
4. Tighten clamp
5. Provide electrical Ground connection on plastic pipes

How It Works

The ISM 5.0 Insertion Magmeter operates based on Faraday's Law of electromagnetic induction: as flow velocity of a liquid increases through the magnetic field generated by the sensor head of the ISM flow meter, electrodes measure the voltage increase to accurately calculate flow. Four electrodes measure the induced voltage on opposite sides of the sensor. The voltage readings are sampled and averaged.

The ISM 5.0 Insertion Magmeter measures flow of electrically conductive liquids ($20 \mu\text{S}/\text{cm}$ or greater) in full pipes. For proper measurement on plastic pipes the electromagnetic flow meter requires electrical grounding by connection to grounding rings or ground probes inserted into the pipe. Readings are not affected by the fluid temperature, pressure or viscosity.



Installation is Easy

The ISM 5.0 Insertion Magmeter installs in the pipe through a full port ball valve so the sensor can be easily retracted without having to shut down flow or drain the system. The insertion depth is adjustable according to the pipe diameter. An insertion depth gage is supplied with each flowmeter.

The optional Standard Installation Hardware Kit includes a branch outlet, close nipple and full port 1" isolation valve.

Hot Tap Installation

For applications where the ISM 5.0 will be installed in pressurized pipes, use the optional Hot Tap Installation Hardware Kit. It includes a branch outlet, close nipple and 1-1/4" full port ball valve.

Straight Pipe Requirements

The ISM 5.0 provides installed accuracy of $\pm 1\%$ of flow reading in most applications. This high accuracy is achieved by locating the sensor at a sufficient distance from upstream or downstream disturbances where a fully developed flow profile will occur. Recommended mounting location is 10 pipe diameters from upstream elbows and 30 diameters from control valves. The flowmeter should also be installed 5 pipe diameters from downstream obstructions.

Electrical Grounding

The ISM 5.0 Insertion Magmeter is designed to detect microvolt signal levels at the electrodes on the sensor head so care must be taken to minimize random electrical noise by Grounding.

For properly grounded steel or copper pipe, connection to the pipe itself is normally a sufficient earth ground. Plastic or lined pipes typically require installation of Grounding Rings for flange installation, or Grounding Probes can be used for insertion into the pipe. In both cases the Grounding devices are installed a short distance up and downstream from the ISM 5.0 flowmeter.

Insertion Magmeter Specifications

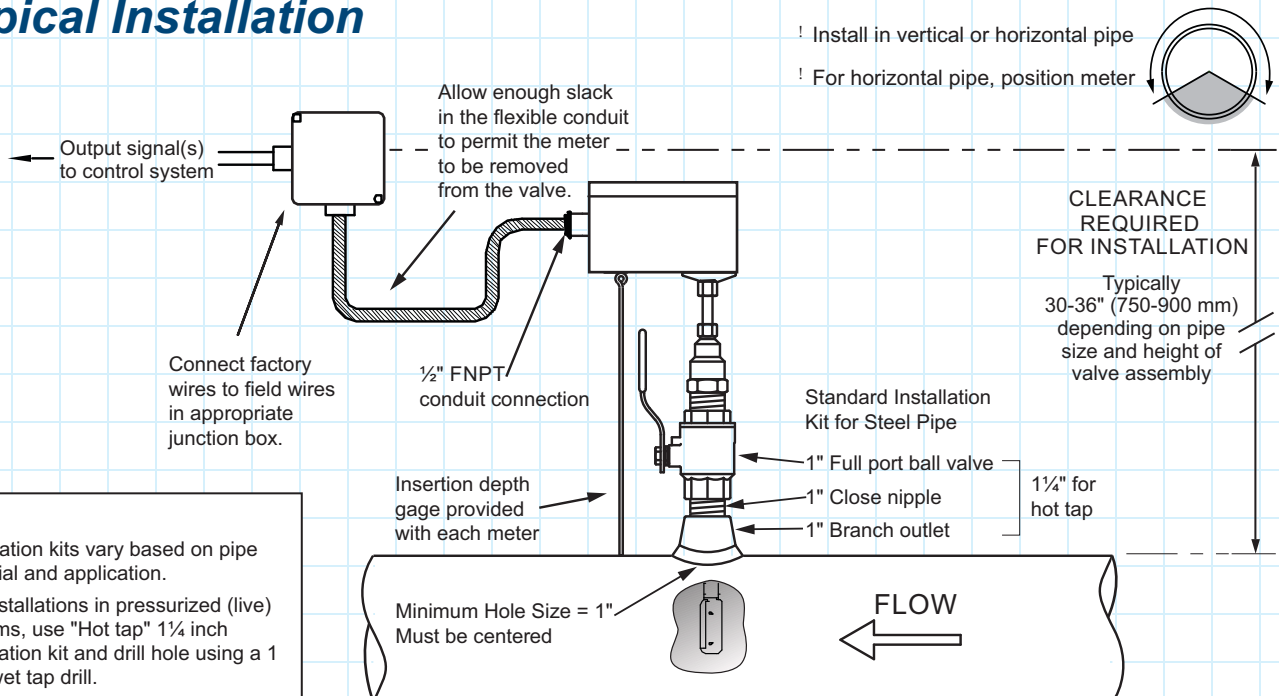
General Specifications Greyline ISM 5.0 Insertion Magmeter

Flow Measurement Range:	0.1 to 20 ft/sec (0.03 to 6 m/sec), 200:1 turndown
Accuracy:	±1.0% of reading from 2 to 20 ft/sec (0.6 to 6.0 m/sec) ±0.02 ft/sec (0.06 m/sec) below 2 ft/sec (below 0.6 m/sec)
Nominal Pipe Size:	3" to 72" diameter (DN 75 mm to 1800 mm)
Liquid Temperature Range:	-15° to 250°F (-26 to 121°C)
Electronics Operating Temperature:	-20° to 150°F (-28° to 65°C)
Maximum Operating Pressure:	200 psi (14 bar)
Pressure Drop:	Less than 0.1 psi (0.007 bar) at 12 ft/sec (3.65 m/sec)
Conductivity Range:	20 to 60,000 µSiemens/cm
Power Input:	20-28VDC, 250mA @24VDC (6 Watts) 20-28VAC, 50-60Hz, 8VA
Analog Output:	Selectable 4-20mA, 0-5V or 0-10V
Frequency Output:	0-15V peak pulse, 0-500Hz
Scalable Pulse Output:	Isolated solid state dry contact rated 50VDC, 100mA maximum Pulse duration: 0.5, 1, 2 or 6 seconds
Signal Cable Length:	25 ft (7.6 m) PVC jacketed multi-conductor
Electronics Enclosure:	Watertight, airtight, dust proof (IP 68) powder coated cast aluminum
Wetted Materials:	316L stainless steel, polypropylene
Approximate Shipping Weight:	6 lbs (2.75 kg)

Options

Model ISM 5.0-B	For bi-directional flow
Extra Sensor Cable:	separate length 25, 50 or 100 ft (7.6, 15 or 30 m) PVC jacketed multi-conductor
Standard Installation Hardware Kit:	Threaded branch outlet, close nipple, 1" full port isolation valve
Hot Tap Installation Hardware Kit:	1-1/4" branch outlet, close nipple, 1-1/4" full port ball valve
Grounding Rings:	ANSI Class 150, 316 Stainless Steel from 3 to 42" nominal size
Grounding Probes:	Hot Tap, stainless steel
Remote Displays:	D-100-MOD rate/total display with 2 analog inputs, Modbus RTU or TCP/IP DB-1201-01 LCD display with flow direction LED's

Typical Installation



New ISM 5.0 Insertion Mag Meter for Flow Measurement of Conductive Liquids

Use it for:

- ! **Potable Water**
- ! **Water Distribution**
- ! **Pumping Stations**
- ! **Filter Balancing
and Backwash**
- ! **Reclaimed Water**
- ! **Treated Water**
- ! **Irrigation Water**

Versatile and Reliable

How to Order

Applications Support

No Risk Appraisal

The Greyline Guarantee

Simplified Flow Measurement in Full Pipes

The ISM 5.0 Insertion Magmeter is a low cost alternative to full bore magnetic flow meters. The dual pair electrode sensor inserts through a tap in the pipe wall. It can be easily installed in new pipe systems or by hot tap in pressurised pipes with flowing liquids.

There are no moving parts so obstruction to flow and pressure drop is minimal. Installation through a full port ball valve allows easy retraction and reinsertion without shutting down flow.

No Onsite Calibration Required

Based on your pipe type and size, liquid and flow rate each ISM 5.0 Insertion Magmeter is shipped from our factory configured for your application and ready to install. Connect the isolated 4-20mA output to control system or remote display, or use the relay pulse output.

Accurately measure a wide range of flow rates in plastic or metal pipes.

The ISM 5.0 electronics housing and signal cable are fully waterproof (IP 68) for installation in meter pits or manholes where flooding may occur.

Contact a Greyline sales representative in your area or phone one of our sales engineers. Describe your requirements and receive our prompt quotation.

Take advantage of Greyline's applications experience. Phone toll free 1-888-473-9546 for advice on applications, installation or service for Greyline instruments.

The ISM 5.0 Insertion Magmeter must meet your requirements. Discuss your application with a Greyline representative to arrange a performance test.

Quality of Materials and Workmanship - Each instrument manufactured by Greyline is warranted against defects in materials and workmanship for a period of one year from date of purchase. Refer to our limited warranty included with each product.



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