



Greyline

# ISM 5.0

Insertion magnetic flow meter for accurate flow measurement in full pipes. 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 provide 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.

## Simple, Low-Cost Installation

### How It works

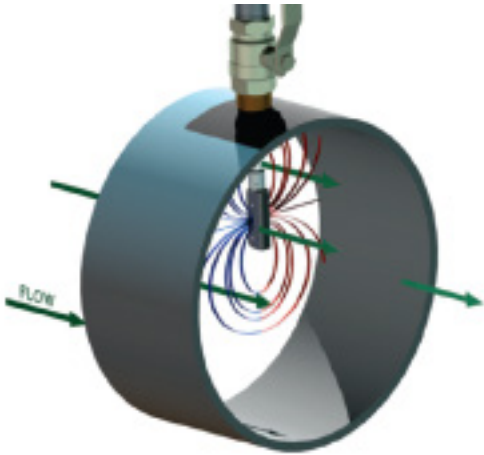
The ISM 5.0 Insertion Magmeter operates based on Faraday’s Law of electromagnetic induction: as flow



- THE RIGHT METER FOR**
- Potable Water
  - Water Distribution
  - Pumping Stations
  - Filter Balancing & Backwash
  - Reclaimed Water
  - Treated Water
  - Irrigation Water
  - Cooling Water
  - Raw Water

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 µS/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.



### **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.

### **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. The 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.



# Technical Specifications

## GENERAL SPECIFICATIONS

**Flow Measurement Range:** 30.5 mm/s to 6.2 m/s (1.2 in/s to 20 ft/s), 200:1 turndown

**Accuracy:**

- $\pm 1.0\%$  of reading from 609.6 mm/s to 6.2 m/s (24 in/s to 20 ft/s)
- $\pm 6.1$  mm/s (0.24 in/s) below 609.6 mm/s (24 in/s)

**Nominal Pipe Diameter:** 76.2 mm to 1.8 m (3 in to 6 ft)

**Liquid Temperature Range:** -26 °C to +121°C (-15 °F to +250 °F)

**Operating Temp. (Electronics):** -28 °C to +65°C (-20 °F to +150°F)

**Maximum Operating Pressure:** 14 bar (200 psi)

**Pressure Drop:** Less than 0.007 bar (0.1 psi) at 3.6 m/s (12 ft/s)

**Conductivity Range:** 20-60,000  $\mu$ Siemens/cm

**Power Input:** 20-28 V DC, 250mA at 24 V DC (6 Watts) 20-28V AC, 50-60Hz, 8VA

**Analog Output:** Selectable 4-20mA, 0-5 V or 0-10 V

**Frequency Output:** 0-15 V peak pulse, 0-500 Hz

**Scalable Pulse Output:**

- Isolated solid state dry contact rated 50 V DC, 100mA
- maximum Pulse duration: 0.5 sec, 1 sec, 2 sec, or 6 sec

**Signal Cable Length:** 7.6 m (25 ft) PVC jacketed multi-conductor

**Electronics Enclosure:** IP68 powder coated cast aluminum

**Wetted Materials:** 316 L stainless steel, polypropylene

**Approximate Shipping Weight:** 2.7 kg (6 lb)

## POPULAR OPTIONS

**Model ISM 5.0-B:** For bi-directional flow

**Extra Sensor Cable:** Separate length 7.6 m, 15.2 m, or 30.5 m (25 ft, 50 ft, or 100 ft) PVC jacketed multi-conductor

**Standard Installation Hardware Kit:** Threaded branch outlet, close nipple, 1 in full port isolation valve

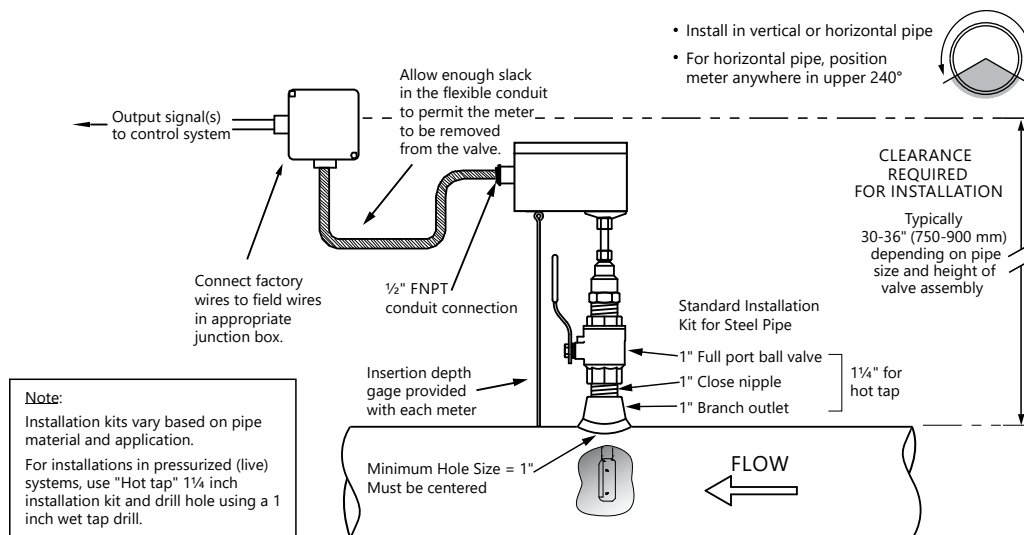
**Hot Tap Installation Hardware Kit:** 31.8 mm (1.3 in) branch outlet, close nipple, 31.8 mm (1.3 in) full port ball valve

**Grounding Rings:** ANSI Class 150, 316 Stainless Steel from 76.2 mm to 1.1 m (3 in to 3.5 ft) 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



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

### 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 pressurized 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 the control system or remote display, or use the relay pulse output.

### Versatile and Reliable

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.



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Rev 3.0