



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

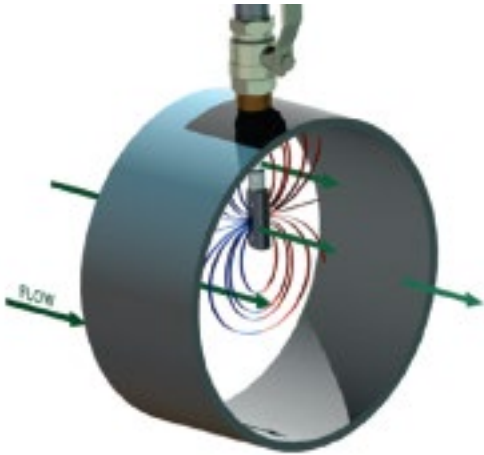


THE RIGHT METER FOR

- 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 the 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 the flow or drain the system. The insertion depth is adjustable according to the pipe diameter. An insertion depth gauge 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 the 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 1.25 inch 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, a connection to the pipe itself is normally a sufficient earth ground. Plastic or lined pipes typically require the installation of Grounding Rings for flange installations, 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.



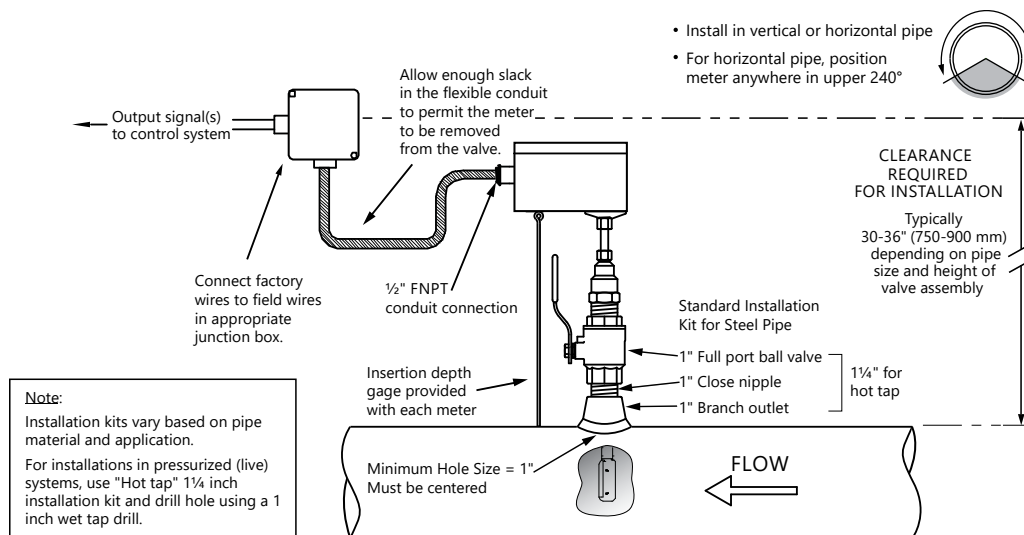
Technical Specifications

GENERAL SPECIFICATIONS

Flow Measurement Range:	0.031 m/s to 6.2 m/s (0.1 ft/s to 20 ft/s), 200:1 turndown
Accuracy:	<ul style="list-style-type: none">• ±1.0% of reading from 0.61 m/s to 6.2 m/s (2 ft/s to 20 ft/s)• ±0.0061 m/s (0.02 ft/s) below 0.61 m/s (2 ft/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 µSiemens/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:	<ul style="list-style-type: none">• 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
Approvals:	NSF 61 and 372
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:	<ul style="list-style-type: none">• D-100-MOD rate/total display with 2 analog inputs, Modbus RTU or TCP/IP• DB-1201-01 LCD with flow direction LED's



New ISM 5.0 Insertion Magmeter 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 a 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 7.0

ISM 5.0 Insertion Electromagnetic Meter

Approximate shipping weight: 6 lbs / 2.7 kg

Model	ISM 5.0 - - -
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STANDARD FEATURES:

- quad-electrode sensor
- watertight, airtight, dust-proof cast aluminum electronics enclosure
- analog output – selectable 4-20mA, 0-5V or 0-10V
- frequency output – 0-500Hz, for remote display option
- pulse output – scalable
- power input – 20-28VDC or 20-28VAC
- signal cable length – 25 ft (7.6 m) multi-conductor, submersible
- NIST traceable calibration certificate
- 1 Manual - Installation and Operation

FLOW DIRECTION

Standard single direction		A
Bi-directional with 2 pulse outputs and flow direction relay		B

POWER INPUT

Standard 20-28VDC / 20-28VAC		1
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METER LENGTH (bottom of enclosure to bottom of sensing head)

20" (508 mm) for 3-16" nominal pipe size (DN 80-400 mm)		A
24" (610 mm) for 18-72" nominal pipe size (DN 450-1800 mm)		B
Custom		C

OPTIONS AND ACCESSORIES

SEPARATE ADDITIONAL LENGTH SIGNAL CABLE, submersible PVC jacketed, multi-conductor

CODE	DESCRIPTION
25 MXC	25 ft (7.6 m) length
50 MXC	50 ft (15 m) length
100 MXC	100 ft (30 m) length

GROUNDING RINGS AND PROBES

CODE	DESCRIPTION
HTGP2	1 Pair of Hot Tap Stainless Steel Grounding Probes (requires installation kit for each ground probe, ordered separately - see Options and Accessories section)
HTGP1	1 (single) Hot Tap Stainless Steel Grounding Probe (requires installation kit for each ground probe, ordered separately - see Options and Accessories section)
GR3	3" Pair of Grounding Rings, ANSI Class 150
GR4	4" Pair of Grounding Rings, ANSI Class 150
GR6	6" Pair of Grounding Rings, ANSI Class 150
GR8	8" Pair of Grounding Rings, ANSI Class 150
GR10	10" Pair of Grounding Rings, ANSI Class 150
GR12	12" Pair of Grounding Rings, ANSI Class 150
GR14	14" Pair of Grounding Rings, ANSI Class 150
GR16	16" Pair of Grounding Rings, ANSI Class 150
GR18	18" Pair of Grounding Rings, ANSI Class 150
GR20	20" Pair of Grounding Rings, ANSI Class 150
GR24	24" Pair of Grounding Rings, ANSI Class 150

REMOTE DISPLAYS

CODE	DESCRIPTION
D-100-120	Microprocessor-based rate/total display with 2 auxiliary analog inputs, and bi-directional input. 120VAC input power.
D-100-024	Microprocessor-based rate/total display with 2 auxiliary analog inputs, and bi-directional input. 120VAC input power.
D-100-240	Microprocessor-based rate/total display with 2 auxiliary analog inputs, and bi-directional input. 120VAC input power.
D-100-MOD-120	Microprocessor-based rate/total display with 2 auxiliary analog inputs, plus MODBUS®-RTU RS485 or TCP/ IP serial interface. 120VAC input power
D-100-MOD-024	Microprocessor-based rate/total display with 2 auxiliary analog inputs, plus MODBUS®-RTU RS485 or TCP/ IP serial interface. 24VAC input power
D-100-MOD-240	Microprocessor-based rate/total display with 2 auxiliary analog inputs, plus MODBUS®-RTU RS485 or TCP/ IP serial interface. 240VAC input power
D-1201-01-120 ^{1,2}	Display Module: 1 LCD, flow rate and/or total. 120VAC input power
D-1201-01-024 ^{1,2}	Display Module: 1 LCD, flow rate and/or total. 24VAC input power
D-1201-01-240 ^{1,2}	Display Module: 1 LCD, flow rate and/or total. 240VAC input power

¹ FLOW DIRECTION = A only. Use the D-100 when FLOW DIRECTION = B

² Flow Rate and Total cannot be set for MGD and Gal x 1 Mil. Use D-100 for these requests

OPTIONS AND ACCESSORIES

“STANDARD” INSTALLATION KITS (Dry Pipe Install)

CARBON STEEL/BLACK IRON WELDED PIPE

CODE	KIT DESCRIPTION	KIT INCLUDES
INSTL01DW-FMD	Installation kit for 3" and larger welded steel domestic water pipes (Valve & nipple comply with NSF/ANSI 61 & 372)	<ul style="list-style-type: none"> • 1" full port bronze ball valve • 1" weld-on carbon steel branch outlet • 1" brass close nipple
INSTL0015-FMD	Stainless steel installation kit for 3/4" and larger welded steel pipe	<ul style="list-style-type: none"> • 1" full port SS ball valve • 1" SS close nipple • 1" weld-on carbon steel branch outlet

COPPER TUBE

F-STD-INSTL4	Installation kit for 3" copper tube (Complies with NSF/ANSI 61 & 372)	<ul style="list-style-type: none"> • 1" full port bronze ball valve • 1" copper street adapter with MNPT threads • Copper tee with 1" outlet
F-STD-INSTL9	Installation kit for 4" copper tube (Complies with NSF/ANSI 61 & 372)	<ul style="list-style-type: none"> • 1" full port bronze ball valve • 1" copper street adapter with MNPT threads • Copper tee with 1" outlet

“HOT TAP” INSTALLATION KITS (Dry or Wet Pipe Install)

CARBON STEEL/BLACK IRON (WELDED PIPE)

CODE	KIT DESCRIPTION	KIT INCLUDES
INSTL02DW-FMH	Hot tap installation kit for 3" and larger welded steel domestic water pipes (Valve, nipple & bushing comply with NSF/ANSI 61 & 372)	<ul style="list-style-type: none"> • 1 1/4" full port bronze ball valve • 1 1/4" brass close nipple • 1 1/4" x 1" brass reducing bushing • 1 1/4" weld-on carbon steel branch outlet
INSTL0006-FMH	Stainless steel hot tap installation kit for 3" and larger welded steel pipe	<ul style="list-style-type: none"> • 1 1/4" full port SS ball valve • 1 1/4" SS close nipple • 1 1/4" x 1" SS reducing bushing • 1 1/4" weld-on carbon steel branch outlet

CARBON STEEL or PVC PIPE WITH SADDLES

INSTL019A-FMH	Hot tap installation kit for Sch Std, Sch 40 or Sch 80 steel or PVC pipe (3" to 6") (Complies with NSF/ANSI 61 & 372)	<ul style="list-style-type: none"> • 1 1/4" full port bronze ball valve • 1 1/4" brass close nipple • 1 1/4" x 1" brass reducing bushing • Ductile iron saddle with 1 1/4" outlet
INSTL019B-FMH	Hot tap installation kit for Sch Std, Sch 40 or Sch 80 steel or PVC pipe (8" to 14") (Complies with NSF/ANSI 61 & 372)	<ul style="list-style-type: none"> • 1 1/4" full port bronze ball valve • 1 1/4" brass close nipple • 1 1/4" x 1" brass reducing bushing • Ductile iron saddle with 1 1/4" outlet

COPPER TUBE WITH SADDLES

INSTL0022-FMH	Hot tap installation kit for 3" to 6" copper tube. (Complies with NSF/ANSI 61 & 372)	<ul style="list-style-type: none"> • 1 1/4" full port bronze ball valve • 1 1/4" brass close nipple • 1 1/4" x 1" brass reducing bushing • SS saddle with 1 1/4" outlet
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HDPE/PPR PIPE

INSTL5002-FMH	Hot tap installation kit for pipe size range 3" to 42". Customer provides their own 1 1/4" female NPT pipe outlet. (Complies with NSF/ANSI 61 & 372)	<ul style="list-style-type: none"> • 1 1/4" full port bronze ball valve • 1 1/4" brass close nipple • 1 1/4" x 1" brass reducing bushing
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STAINLESS STEEL

F-HTAP-INSTL31	Hot tap installation kit for 1 1/4" and larger welded stainless steel pipe	<ul style="list-style-type: none"> • 1 1/4" full port 316 SS ball valve • 1 1/4" 316 SS close nipple • 1 1/4" x 1" 316 SS reducing bushing • 1 1/4" weld-on 316 SS branch outlet
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Important Note: For installation in any pipe not referenced above, it is up to the installer to provide either a 1" or 1 1/4" female NPT pipe outlet so that one of the above kits can be used, or a complete valve assembly already installed on the pipe, at least 1" full-port. The ISM installs into a 1" female NPT thread, so if the existing valve assembly is larger than 1" NPT, a reducer bushing can be installed so that the meter can be inserted.