PMM® WATER METERS

Invensys Metering Systems

MULTI-JET TYPE MAGNETIC DRIVE COLD WATER METERS
5/8" (DN 15mm), 3/4" (DN 20mm) and 1" (DN 25mm)

DESCRIPTION

APPLICATION: Measurement of cold water where flow is in one direction only; in residential, commercial and industrial services.

CONFORMANCE TO STANDARDS: Invensys PMM Water Meters comply with ANSI/AWWA Standard C708, latest revision. Each meter is tested to insure compliance.

CONSTRUCTION: Invensys PMM Water Meters consist of three basic components: maincase; measuring chamber; and sealed register. Main cases are of bronze with externally-threaded spuds. Registers are housed in synthetic polymer ring and lid, a bronze bonnet, is available as an option. Measuring chambers are made of Polystyrene, Nylon, and Polycarbonate. They are corrosion-resistant, tailored thermoplastic material formulated for long-term performance and especially suitable for aggressive water conditions. Main case bottom plates are available in bronze.

REGISTER: Hermetically sealed; proven magnetic drive design eliminates dirt and moisture contamination, tampering and lens fogging problems. Standard register includes a straight-reading, odometer-type totalization display; a 360° test circle with center sweep hand; and a low flow (leak) detector. Gears are self-lubricating, molded plastic for long life and minimum friction. No change gears are required for accuracy calibration. Encoder-type remote reading systems are available for all PMM Water Meters. (See other side of sheet for additional information.)

TAMPER-RESISTANT FEATURE: A unique locking system prevents customer removal of the register to obtain free water. A special tool, available only to water utilities, is required to remove the register ring. When the optional bronze register bonnet is selected, a tamper detection seal is available.

MAGNETIC DRIVE: The PMM features a hydrodynamically cushioned design that eliminates premature wear of components. The meter utilizes a patented positive, reliable drive coupling. The high-strength magnets used will eliminate “drive slip” in normal use and also provide adequate strength to drive remote register units.

OPERATION: Water flows through the meter’s strainer and into the measuring chamber where it drives the impeller. The impeller has a sapphire bearing and is balanced on a tungsten-based titanium stainless steel shaft. The drive magnet transmits the rotation of the impeller to a drive magnet located within the hermetically sealed register. The drive magnet is connected to the register gear train. It reduces the impeller’s rotation into volume totalization units displayed on the register dial face.

MAINTENANCE: Invensys PMM Water Meters are engineered to provide long-term value and virtually maintenance-free operation. Simplicity of design and precise machining of components allows interchangeability of parts of like-size meters, reduced parts inventory requirements, and ease of maintenance. The register can be removed without relieving the water pressure or removing the case from the installation.

As an alternative to utility repair, Invensys offers maintenance programs to provide factory reconditioning of the main case and replacement component at low fixed prices. See bulletin MJ-399.

CONNECTIONS: Tailpieces/Unions for installing the meters on a variety of pipe types and sizes are available.

GUARANTEE: Invensys PMM Water Meters are backed by “The Invensys Guarantee.” Ask your Invensys representative for details or see Bulletin G-500.

SPECIFICATIONS

5/8" PMM® (DN 15mm) **3/4" PMM® (DN 20mm)** **1" PMM® (DN 25mm)**

SERVICE	Measurement of cold water with flow in one direction only.
NORMAL OPERATING FLOW RANGE①	5/8" (DN 15mm) size: 1 to 20 gal/min. (0.25 to 4.5 m^3h) 3/4" (DN 20mm) size: 2 to 30 gal/min. (0.45 to 7.0 m^3h) 1" (DN 25mm) size: 3 to 50 gal/min. (0.7 to 11.0 m^3h)
ACCURACY	100% ± 1.5% of actual thru put in normal flow range.
LOW FLOW REGISTRATION	5/8" size: 97% at 1/4 gal/min. (0.06 m^3h) 3/4" size: 97% at gal/min. (0.10 m^3h) 1" size: 97 at 3/4 gal/min (0.15 m^3h)
MAXIMUM PRESSURE LOSS	5/8" size: 7.0 psi at 20 gal/min. (0.5 bar at 4.5 m^3h) 3/4" size: 9.0 psi at 30 gal/min. (0.6 bar at 7.0 m^3h) 1" size: 7.3 psi at 50 gal/min. (0.5 bar at 11.0 m^3h)
MAXIMUM OPERATING PRESSURE	150 psi (10.0 bar)
MEASUREMENT ELEMENT	Multi-Jet
REGISTER	Straight reading, hermetically sealed, magnetic drive. Remote reading unit optional.
REGISTRATION	10 gallons, 1 cubic foot or 0.01 m^3/sweep hand revolution. 10,000,000 gallons, 1,000,000 cubic feet or 10,000 m^3 capacity. 6 odometer wheels.
METER CONNECTIONS②	5/8" (DN 15mm) size: 3/4" (26.44mm) threads 5/8" x 3/4" (DN 15mm x 33mm) size: 1" (33.25) threads 3/4" (DN 20mm) size: 1" (33.25 threads) 3/4" x 1" (DN 20mm x 42mm) size: 1-1/4" (41.91mm) threads 1" (DN 25mm) size: 1-1/4" (41.91mm) threads (All threads are straight pipe, external type, conforming to ANSI B2.1
MATERIALS	Maincase — Bronze Register box — synthetic polymer (standard), Bronze (optional) Measuring chamber — Nylon, Polycarbonate Bottom plate — Bronze Magnets — Ceramic material Casing bolts — Stainless steel Strainer — Synthetic polymer

① Maximum rates listed are for intermittent flow only. Maximum continuous flow rates a specified by AWWA are: 5/8" (DN 15mm) — 10 gal/min (2.3 m^3h), 3/4" (DN 20mm) —15 gal/min (3.4 m^3h) 1" (DN 25mm) — 25 gal/min (5.7 m^3h)

② Unless otherwise noted, 5/8" size and 5/8" x 3/4" characteristics are identical. (5/8" x 3/4" designates 5/8" with 3/4" connection thread.) Also unless otherwise noted 3/4" size and 3/4" x 1" size characteristics are identical. (3/4" x 1" designates 3/4" with 1" connection thread.)
Metric designation is the normal bore x the outside diameter.

MULTI-JET TYPE MAGNETIC DRIVE COLD WATER METERS

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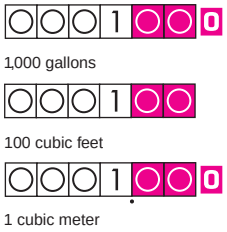

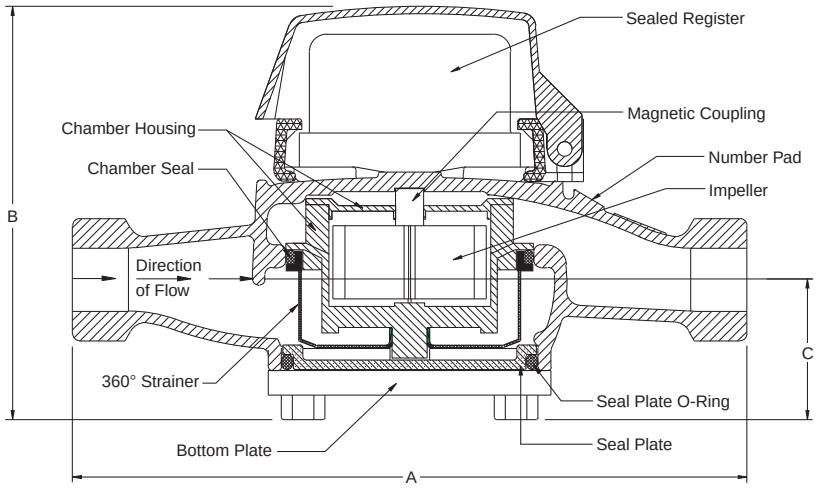

Dimensions and Net Weights

Meter Size	A	B	C	Width	Net Weight
5/8" (DN 15mm)	7-1/2" (190mm)	4-3/4" (121mm)	1-5/8" (41mm)	3-3/4" (96mm)	4 lbs (1.8 kg)
5/8" x 3/4" DN 15mm x 33mm)	7-1/2" (190mm)	4-3/4" (121mm)	1-5/8" (41mm)	3-3/4" (96mm)	4 lbs (1.8 kg)
3/4" Short (DN 20mm)	7-1/2" (190mm)	4-3/4" (121mm)	1-5/8" (41mm)	3-3/4" (96mm)	4 lbs (1.8 kg)
3/4" (DN 20mm)	9" (229mm)	4-3/4" (121mm)	1-5/8" (41mm)	3-3/4" (96mm)	4.5 lbs (2 kg)
3/4" x 1" (DN 20mm x 42mm)	9" (229mm)	4-3/4" (121mm)	1-5/8" (41mm)	3-3/4" (96mm)	4.5 lbs (2 kg)
1" (DN 25mm)	10-3/4" (273mm)	5-1/4" (133mm)	2-1/4" (57mm)	5-1/4" (133mm)	7 lbs (3.2 kg)

Remote Reading Systems—For use with all sizes of Invensys PMM Multi-Jet

All Invensys AMR systems work with the Evaluator electronic register (EER), enabling the utility to mix and reach or easily move from one system to another without changing registers for each.

The TouchRead® Automated Meter Reading and Billing System—is a multi-purpose encoder remote system suitable for indoor and/or outdoor use. The EER Register uses a wired connection between the meter and an outside remote for inside set meters—or a pitlid mounted module, enabling underground meters to be read automatically without opening the meter box or vault. All wired connections and terminals of the TouchRead PitLid (TR/PL) modules and registers are fully sealed at the factory using a special process to ensure protection from water infiltration. The connection terminals of EER/WP registers are also factory sealed. Meters equipped for TouchRead System reading can be read with a visual reading device, AutoGun and/or an AutoRead Handheld Device. For more information on TouchRead System equipment refer to bulletins RS-983, TR-984, RS-990 and TR-995.

PhonRead® AMR—is a reliable telephone-based call-in system that does not require batteries for operation. It also does not require equipment to be installed at telephone company facilities. PhonRead Meter Interface Units (MIU) automatically call "in" to the utility office for transferring meter reading data from the meter site to a PC. PhonRead is a transparent AMR system that does not interfere with customers' telephone service. For more information refer to bulletins AMR-PR02 and AMR-302.

RadioRead® AMR—uses superior Direct Sequence Spread Spectrum modulation to provide reliable, safe and virtually interference free radio-based transmission of reading data from underground meters or inside-set meters that are equipped with Meter Transceiver Units (MXU). A choice of meter reading options is available. A hand-held RF Device (RF-HHD) can be used by a meter reader on foot. The RF-HHD can also be used to collect readings from TouchRead equipped meters, or for manual meter reading entries. A more powerful Vehicle Transceiver Unit (VXU) can be used in any car or truck to read meters while on the move and eliminating the need for a dedicated radio reading vehicle. For more information refer to bulletins AMR-RR01, AMR-303 and AMR-301.

MultiRead® Port Expanders—can provide the capability to connect multiple EER equipped meters to a single PhonRead MIU or RadioRead MXU to save the utility time and money for installations such as apartment complexes and shopping centers. Refer to bulletin AMR-305.

Remote Systems—For use with all sizes of Invensys Water Meters.

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Metering Systems

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