WMX101

FLANGED INDUSTRIAL MAGMETER INSTRUCTIONS

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SeaMetrics

The Leader in Flow Meter Value.

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GENERAL INFORMATION

The WMX101 is a flanged electromagnetic flowmeter for use in industrial or municipal applications in pipe sizes from 4" to 8". With no moving parts, it is impervious to the types of debris found in ground or surface water. There is no rotor to stop turning or bearings to wear out.

The WMX101 comes standard with a built-in display giving full indication of flow rate and totalization. The indicator has a current-sinking pulse output that can be fed directly to another controller or appropriate field panel. The low power requirements also make it ideal for radio-telemetry systems. The WMX101 is splashproof.

Optional features include submersible and tamper-evident packages, data logging, and a pulse to analog converter (AO55) if a 4-20 mA signal is required. For installations where line power is not available, the WMX101 can be powered by a small optional solar panel.

SPECIFICATIONS

POWER
12 – 24 Vdc, 30 mA max

FLOW RANGE
0.5 – 15 ft/sec (.09 - 4.57 m/sec)

TEMPERATURE

Ambient:	0–130˚ F (-17–55˚C)
Fluid:	33–120˚ F (1–49˚C)

PRESSURE
150 psi

CALIBRATION ACCURACY
+/- 1.5% of reading across the range

MATERIALS

Body:	Powder coated steel
Liner:	HDPE
Electrodes:	316 stainless steel
Housing:	Diecast aluminum

OUTPUT
Current sinking pulse, opto isolated

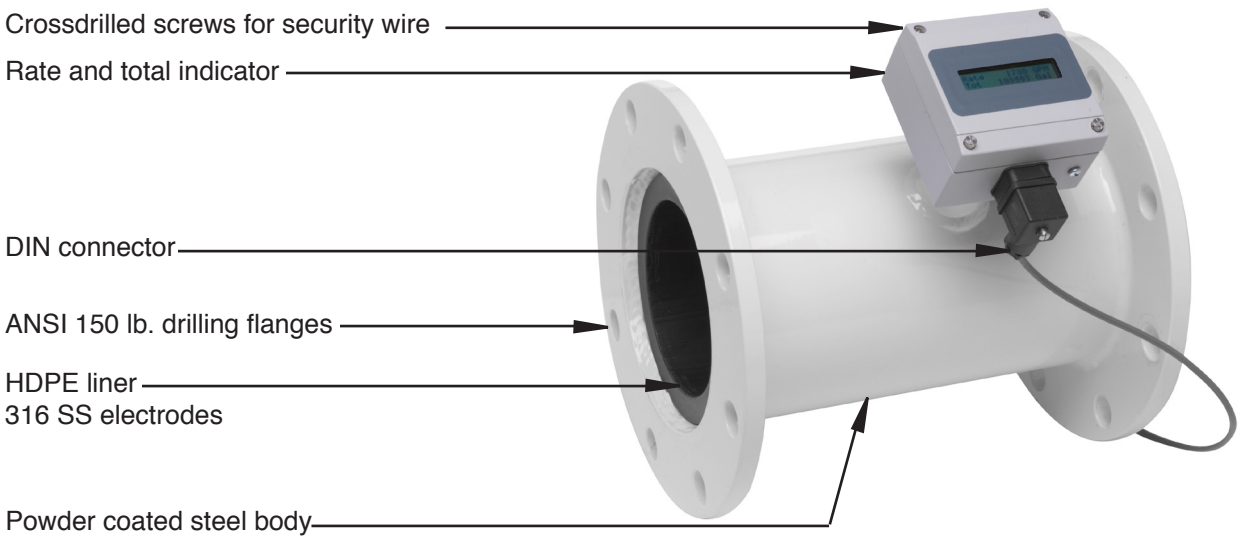
EMPTY PIPE DETECTION
Software, defaults to zero flow

DISPLAY
6 digits rate, 8 digits total
Units: Gallons, million gallons, cubic feet, cubic meters

MOUNTING MODE
Flanges meet ANSI 150 lb. drilling

MINIMUM STRAIGHT PIPE
2 diameters after an elbow

WMX101 PARTS DIAGRAM



INSTALLATION

Piping Conditions. As with most flow meters, the WMX101 requires some straight pipe before and/or after the meter for best accuracy. However, the tendency of electromagnetic meters to average the flow across the entire pipe allows for shorter straight pipe recommendations than most mechanical meters. See the diagrams on page 3 for guidance. Follow the guideline for the type of installation that best matches yours.

Although the meter is designed with an empty pipe detection feature, it requires that one or more electrodes be exposed. An installation in which the pipe is nearly but not quite full will cause reading errors. Be sure that the piping is configured to ensure that the pipe is full when there is flow. See diagrams on page 4 for examples of recommended installations.

Flanges. The flanges on the WMX101 have standard ANSI 150 lb drilling, and should match up with any other ANSI 150 lb flange.

Positioning the Meter. These are all-position meters, meaning that they can be installed horizontally, vertically, and in any radial position. If there is potentially a problem with sludge accumulation, vertical or horizontal with the register up may be preferred.

Caution: These flow sensors are not recommended for installation downstream of a boiler feedwater pump where installation fault may expose the flow sensor to boiler pressure and temperature. Maximum recommended temperature is 120°F.

ELECTRICAL CONNECTION

Electrical Connections. A current source of some kind at 12 to 24 VDC must be connected to the meter. If needed for remote reading, logging or telemetry, the pulse output can also be connected. See the Connections diagram for guidance. It shows the color coding of the pre-installed power/pulse output cable. If it is necessary to replace this cable, for instance to install a longer one, see the drawings for proper installation of the cable into the connector half.

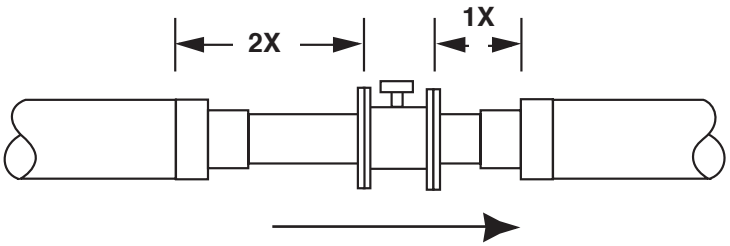
Electrical Noise Immunity. For best results, connect grounds and cable shielding as shown in the diagram on page 5, and install the included ferrite beads by snapping them onto the outside of the cable.

Caution: There are no connections inside the display. Breaking the seal wire will **VOID WARRANTY**.

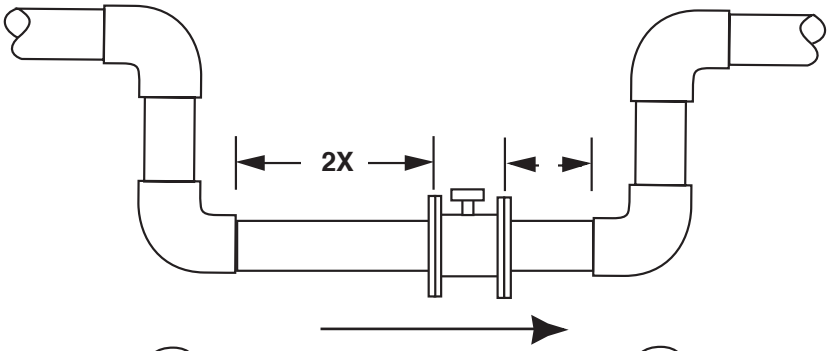
STRAIGHT PIPE RECOMMENDATIONS

(X = diameter)

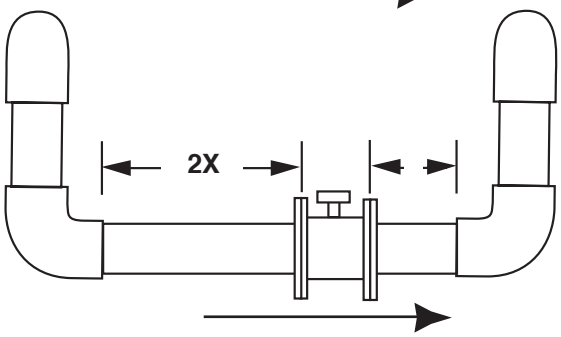
Reduced Pipe



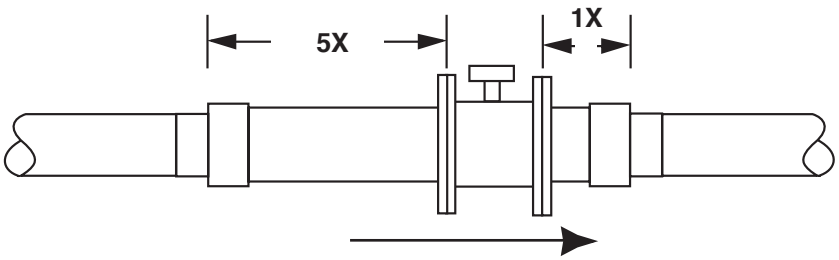
Two Elbows In Plane

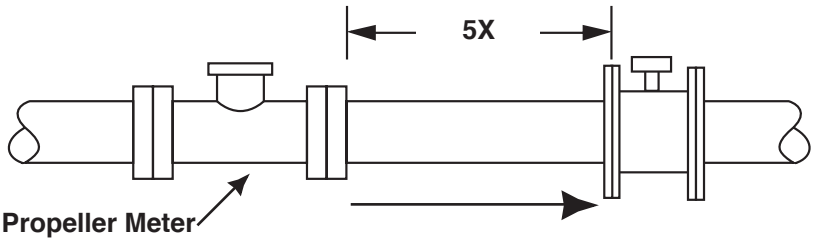


Two Elbows, Out Of Plane

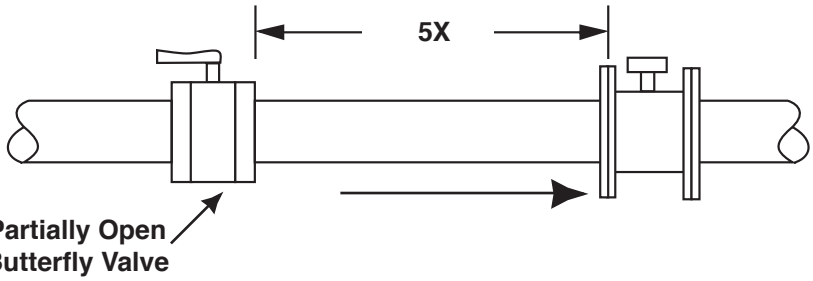


Expanded Pipe



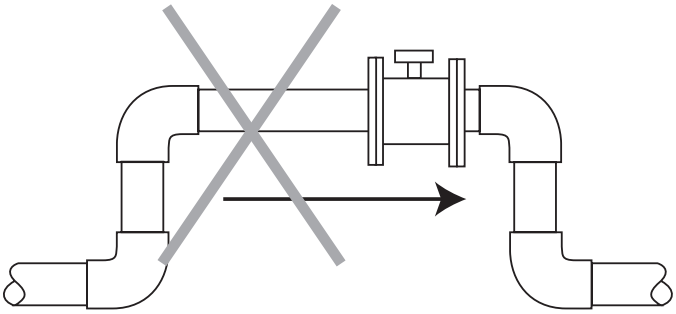


Swirling Flow



FULL PIPE RECOMMENDATIONS

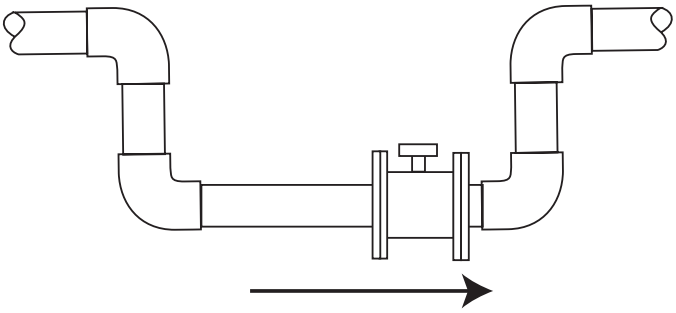
NOT RECOMMENDED



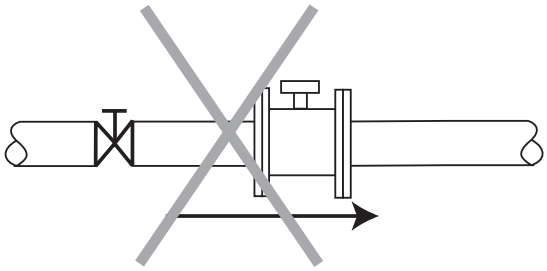
Allows air pockets to form at sensor

RECOMMENDED

Ensures full pipe

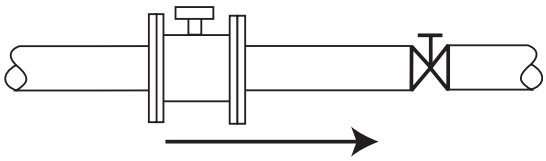


NOT RECOMMENDED



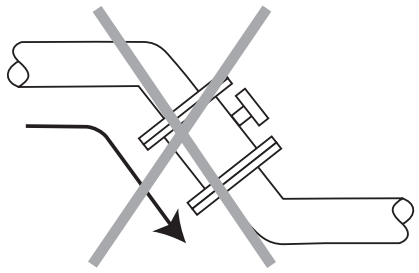
Post-valve cavitation can create air pocket

RECOMMENDED



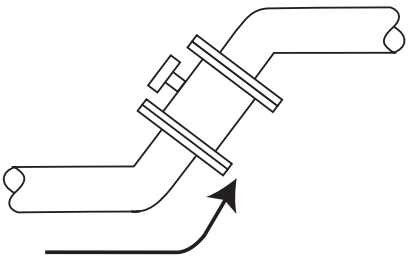
Keeps pipe full at sensor

NOT RECOMMENDED



Air can be trapped

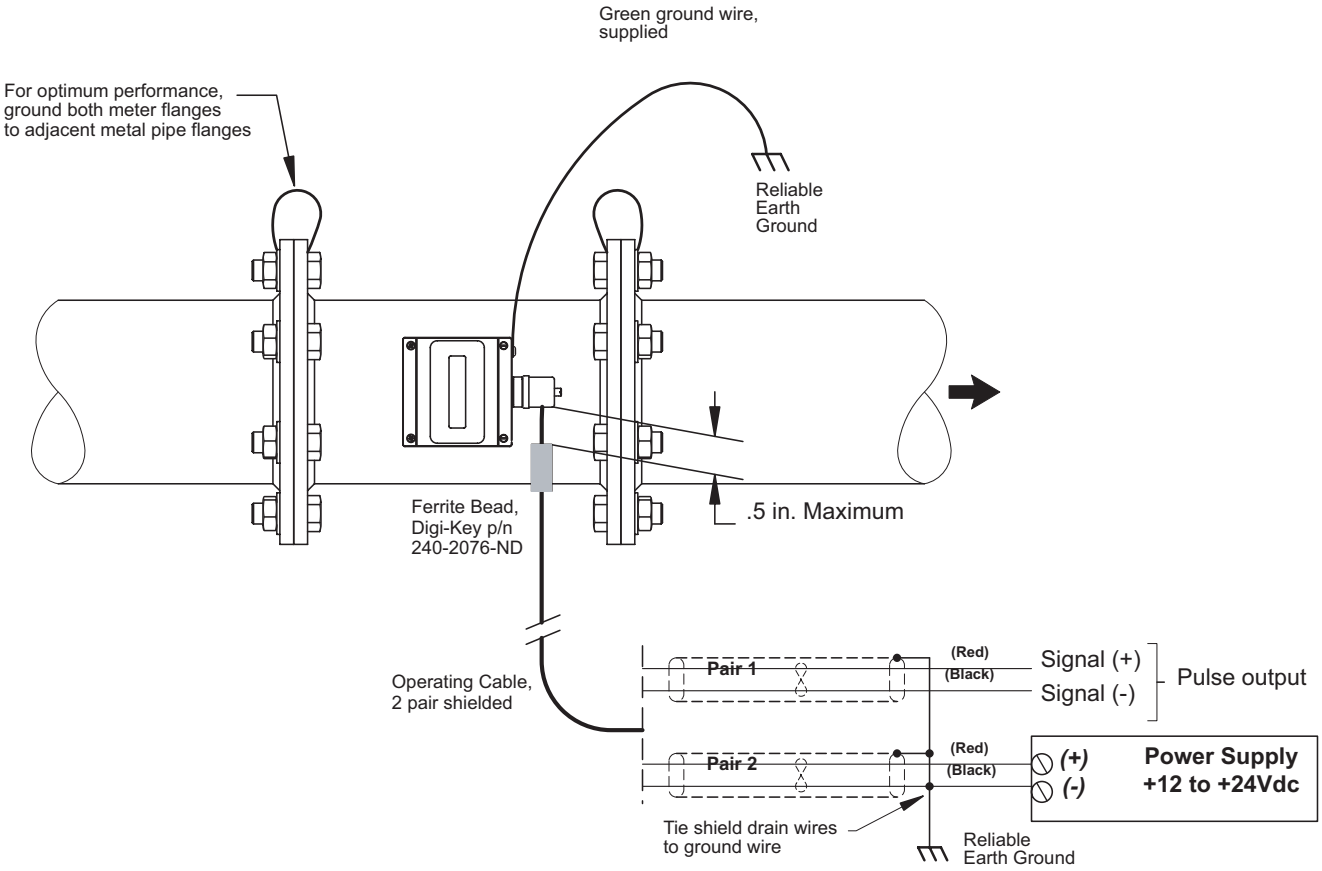
RECOMMENDED



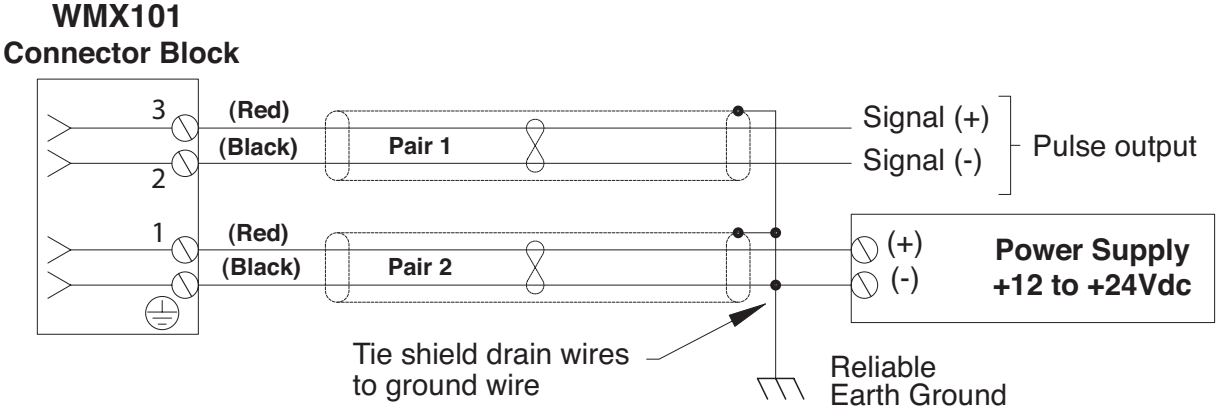
Allows air to bleed off

Caution: These flow sensors are not recommended for installation downstream of a boiler feedwater pump where installation fault may expose the flow sensor to boiler pressure and temperature. Maximum recommended temperature is 120°F.

STANDARD CONNECTION



CONNECTION WHEN REPLACING CABLE



CAUTION: Be sure to note Pair 1 & Pair 2 numbers printed on the wires, since there are 2 wires of each color

OPERATION

Display. There are two lines to the display, one for flow rate and one for accumulated total. The units used are indicated on the display. These are pre-ordered and factory set, and can not be changed in the field.

If the display indicates letters and digits, the meter has power and should be functioning normally. If there is no display (the display is blank) the meter is not powered.

Solar Operation. In most areas of the US, a 12-volt, 10 watt solar power unit (panel, charge controller and battery) should suffice to operate the meter, which draws approximately 30 mA.

Calibration. The WMX101 is factory calibrated and should not require any form of field calibration.

Empty Pipe Detection. All magmeters require a method for determining that the pipe is empty, since in many cases an empty pipe may otherwise cause a false reading. This meter uses a software-based empty pipe detection method. It should immediately go to a zero reading if one or more electrodes is exposed.

FLOW RANGE IN GPM

	4”	6”	8”
Min	12	32	60
Max	500	1200	1500

NOMINAL K-FACTORS

Meter Size	Pulses per gallon
4”	16.738
6”	6.316
8”	3.333

TROUBLESHOOTING

Problem	Probable Cause	Try...
No pulse output	Unit not grounded	Connect to earth ground
	Flow reversed	Note flow direction arrow, reverse direction to meter
	Output connections reversed	Change output connections
	Pipe not full	Check plumbing
	Excessive electrical noise	Check for proper electrical wiring
	No power	Check for power across power input terminals
	Power reversed	Reverse connections
	Fluid conductivity <20 microSiemens/cm	Select another flow meter
Output pulses incorrect	Missing or incorrect ground wire	Check for proper gound
	Fluid conductivity <20 microSiemens/cm	Select another flow meter
	Empty pipe	Check for full pipe or install meter in the vertical position
	Excessive electrical noise	Check for proper electical wiring

19026 72nd Ave South, Kent, WA 98032 USA
(P) 253.872.0284 (F) 253.872.0285
www.seametrics.com 1.800.975.8153

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