

- Flowmeter Systems utilizes a smart microprocessor converter.
- System accuracy of  $\pm 0.5\%$  of rate.
- Field configurable via integral push-button thereby eliminating the need for an external handheld device. Magnetic wand allows configuration without opening the converter cover.
- Long term accuracy stability and stable zero point by digital signal processing with pulsed DC excitation.
- One time configuration at start up via EEPROM for field parameter selection.
- Wafer design body mounts between ANSI Class 150 or 300 flanges and global flange designs available.
- Available in sizes 1/10" to 4".



**MINI-MAG® W/Y**  
**with integral XE converter**  
**Series 10D1475W/Y**

## MINI-MAG® W MAGNETIC FLOWMETER (with Integral XE Converter)

The Mini-Mag® W is the ideal flowmeter to measure homogeneous liquids with a specific minimum electrical conductivity. The flowmeter's accuracy, lack of moving parts, minimal pressure loss and resistance to abrasion and chemical corrosion make it suitable for a variety of applications. For many years, magmeters have been successfully installed in the chemical, pharmaceutical, food, municipal water and waste water industries.

The Mini-Mag® W flowmeter is compact design where the primary and converter are assembled as one unit. This configuration provides for a simple cost saving installation with no need for interconnecting cables between the primary and converter.

The Series 10D1475W magmeter is a pulsed DC volumetric liquid flow rate detector. The coils of the meter primary are excited with pulsed DC current in order to establish a magnetic field. As a conductive liquid passes through this magnetic field, an electrical voltage is induced in the liquid which is directly proportional to its velocity. This induced voltage is sensed by the electrodes and sent to the converter which digitally processes the signals and converts them into analog and digital output signals.

### Engineering Specifications

**Minimum Liquid Conductivity:** 20µS/cm

**Pressure Limits:**

740 psi (5.10 Mpa) @ 100°F (38°C)

**Vacuum Limits:**

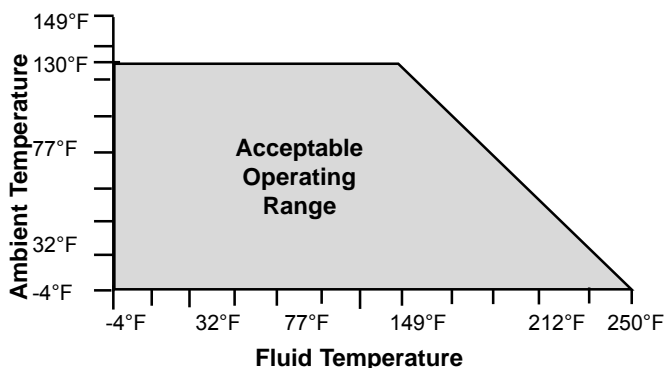
1/10" to 3"-- Full Vacuum to 212°F (100°C)

4" -- Full Vacuum to 176°F (80°C)

**Temperature Limits:**

Process: -13 to 266°F (-25 to 130°C)

Ambient: -4 to 149°F (-20 to 55°C)



**Vibration Limits:** 5 to 14 Hz, 0.10 inch displacement, 14 to 2000 Hz, 1g.

**Power Requirements:**

115/230 VAC, -15/+10%, 50/60 Hz ±6%

24 VDC, -30/+30%, residual ripple -5%.

**Power Consumption:** 10 VA (primary and converter)

**Coil Excitation Frequency:**

6-1/4 or 7/1/2 Hz for 50/60 Hz power supply.

**Empty Pipe Detector:** Drives the outputs to a value when the electrodes become uncovered (0% or 130% of the limiting current value) and the totalizer will stop incrementing. Minimum fluid conductivity is 50 µS/cm.

**Low Flow Cut-Off:** 0 to 10%, software selectable.

**Damping:** 0.5 to 99.99 seconds, software selectable.

**Current Output:** Selectable between -

0/4-20 mA dc into 0-600Ω load,

0/2-20 mA dc into 0-1200Ω load,

**Scaled Pulse Output (Passive):** Maximum scaled pulse output frequency is 1 kHz. The pulse multiplication factor may be set between 0.001 and 1000. The pulse width is adjustable from 0.1 ms to 2000 ms.

**Isolation:** Current and pulse outputs are galvanically isolated from the input circuit and from one another.

**Contact Output:** The following functions are software selectable:

-System Supervision -- opened or closed at alarm

-Empty Pipe -- opened or closed at alarm

-Forward / Reverse Flow -- closed for forward flow

-Limit Alarm -- opened or closed at alarm

-Optocouple, terminals G2 & P7

16V < UCEH < 30V; 0V < UCEL < 2V

0mA < ICEH < 0.2 mA; 2mA < ICWL < 5mA

\* Contact functions (normally closed, normally open) are software selectable.

**Contact Input:**

The following functions are software selectable:

-External Output Cutoff -- all output signals are turned off.

-External Totalizer Reset -- The internal Totalizer value can be reset via application of external signal.

-Optocoupler, Terminals G2 & X1

16V < U < 30V, Ri = 2kΩ

**HART® Protocol Communications:** 1200 Baud using frequency shift keying. Maximum cable length: 5000 ft (1500m).

**FOUNDATION Fieldbus:** This instrument can be configured directly using the buttons on the converter keypad, by using the services integrated in the system or using the National Configurator. The Foundation Fieldbus data link conforms to the standards FF-890/891, as well as FF-902/90.

*Note: If the Foundation Fieldbus option is selected, no other outputs are available.*

**PROFIBUS PA:** This instrument can be configured directly using the buttons on the converter keypad, or by using the configuration and operator software SMART VISION. The instrument can be operated with the PROFIBUS Standard-Ident-No. 9700 or 9740.

*Note: If the Profibus PA option is selected, no other outputs are available.*

**System Accuracy:**

Frequency Output:

Flow > 7% of Cal. Factor = ±0.5% of rate

Flow < 7% of Cal. Factor = ±0.00035 of Cal. Factor

Analog Output: Same as frequency output but with an additional ±0.1% of span

**Enclosure Classification:**

Standard: NEMA 4X (IEC 529, IP65) suitable for indoor or outdoor installation.

Optional: Accidental submergence (IEC 529, IP67) in water up to a depth of 33 feet (10m) for up to 48 hours.

**Safety Classification:**

Standard: General Purpose (No Approvals)

Optional: FM Approved - Nonincendive for Class I, Division 2, Groups A, B, C & D: Electrodes are intrinsically safe for Class I, Division 1, Groups A, B, C, & D: Dust-Ignition proof for Class II, Division 1, Groups E, F & G: Suitable for Class III, Division 1.

Optional: FM Approved - Explosionproof for Class I, Division 1, Groups B, C & D: Electrodes are intrinsically safe for Class I, Division 1, Groups A, B, C & D: Dust-Ignition proof for Class II, Division 1, Groups E, F & G: Suitable for Class III, Division 1.

**Display:**

LCD dot matrix display, 2 lines x 16 digits. The internal flow totalizer integrates in both forward and reverse flow directions. The Class 1, Div. 2 converter housing may be rotated up to 90° and the display can be placed in three different positions in 90° increments.

**Materials of Construction**

**Meter Housing:** All welded carbon steel construction with epoxy finish

**Electronics Housing:** Epoxy painted cast aluminum

**Electrical Connections:** Cage-clamp terminals for wiring and 1/2 inch NPT internally threaded conduit fittings.

**Liner:** Tefzel®

**Electrodes:** Hastelloy-C, Tantalum, Platinum

**CAPACITY TABLE**

TABLE 1

SIZE		METER CAPACITY	CONFIGURABLE FLOW RANGE: 0 TO VALUE			
			MINIMUM		MAXIMUM*	
Inch	mm	gpm	gpm	l/min	gpm	l/min
1/10	3	1.06	0.05	0.2	1.06	4
5/32	4	2.12	0.11	0.4	2.12	8
1/4	6	5.28	0.26	1	5.28	20
3/8	10	11.9	0.6	2.25	11.9	45
1/2	15	26.4	1.33	5	26.4	100
1	25	52.8	2.65	10	52.8	200
1-1/2	40	158.5	7.93	30	158	600
				m <sup>3</sup> /hr		m <sup>3</sup> /hr
2	50	264.2	13.3	3	264	60
3	80	792.5	39.7	9	792	180
4	100	1057	52.9	12	1057	240

Flow Velocity (ft/s) = Operating GPM x 32.81 / Meter Capacity

\*Maximum values listed are at 10 m/s velocity.

**Approximate Shipping Weight (lbs.)**

Meter Size		General Purpose & CI 1, Div. 2 Meters	CI 1, Div. 1 Meters
inch	mm		
1/10	3	7	9
5/32	4	7	9
1/4	6	7	9
3/8	10	7	9
1/2	15	7	9
1	25	8	10
1-1/2	40	9	11
2	50	10	12
3	80	14	16
4	100	20	21

Meters are wafer-style and clamp between customer's pipeline flanges. Mounting hardware kit is furnished and includes: studs, nuts, gaskets and adaptor for the class of selected mating flange.

1/2-inch and smaller are designed for use with 1/2-inch size flanges.

Only for 1/2-inch and larger sizes and when conductivity is 50mS/cm or greater. Not available with FM CL.1 Div 1 option

Standard Product =

Code

**Electromagnetic Flowmeter Mini-Mag with Integral  
50XE4000 Converter Meter Size 1/2 ... 4 in.**

**10D1475W**

**1 : Liner Material**

Tefzel (ETFE)	N
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**2 : Meter Size**

15 mm (1/2 in.)	07
25 mm (1 in.)	09
40 mm (1-1/2 in.)	11
50 mm (2 in.)	12
80 mm (3 in.)	14
100 mm (4 in.)	15

**3 : Flange Standard Pressure Rating**

ASME Class 150	P
ASME Class 300	Q

**4 : Electrode Material**

Hastelloy C	D
Tantalum	F
Platinum (1/2 in. ... 4 in.)	M

**5 : Electrode Type**

Electrode Type, Flush	2
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**6 : Design**

Wafer Design, English - Self Adhesive Tag	8
Wafer Design, English - Stainless Steel Riveted Tag	9

**7 : Safety Classification**

General Purpose	A
FM Approved Non-Incendive for CI I, Div. 2, Groups A, B, C, D, Outdoor Hazardous Locations, with Intrinsically Safe Electrodes (Note 1)	K
FM Approved Explosion Proof for CI I, Div. 1, Groups B, C & D (Note 2)	L

**8 : Power Requirements**

220 / 240 V AC 50 / 60 Hz	A
110 / 120 V AC 50 / 60 Hz, Standard	C
24 V DC	H

**9 : Enclosure Classification**

IEC 529 IP 65, NEMA 4X	1
IEC 529 IP 67 Accidental Submergence (in water to 10 m [33 ft.] for 48 hours)	5

**10 : Fluid Temperature Range**

Integral Converter	1
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<b>10D1475W</b>		<b>Code</b>
<b>11 : Output Signal</b>		
No Output Signal		<b>A</b>
0 ... 20 mA DC		<b>B</b>
4 ... 20 mA DC, Standard		<b>C</b>
<b>12 : Output Options</b>		
No Scaled Pulse		<b>1</b>
<b>13 : Communication Mode</b>		
None		<b>1</b>
HART Protocol		<b>4</b>
<b>14 : Excitation Frequency / Line Frequency</b>		
7-1/2 Hz / 60 Hz, Standard	(Note 3)	<b>1</b>
6-1/4 Hz / 50 Hz	(Note 3)	<b>2</b>
6-1/4 Hz / 24 V DC	(Note 4)	<b>6</b>
7-1/2 Hz / 24 V DC	(Note 4)	<b>8</b>
30 Hz (24 VDC)	(Note 4)	<b>T</b>
30 Hz (60 Hz Line Frequency)	(Note 3)	<b>D</b>
<b>15 : Additional Options</b>		
Empty Pipe Detector, Enabled		<b>1</b>
Empty Pipe Detector, Disabled		<b>2</b>
HART Protocol & Empty Pipe Detector, Enabled	(Note 5)	<b>3</b>
HART Protocol & Empty Pipe Detector, Disabled	(Note 5)	<b>4</b>
FOUNDATION Fieldbus & Empty Pipe Detection, Disabled	(Note 6)	<b>F</b>
PROFIBUS PA & Empty Pipe Detection, Disabled	(Note 6)	<b>P</b>
<b>16 : Mounting Hardware Kit</b>		
Steel Bolts & Nuts, Centering Device Klinger SIL C-4401 Gaskets, Standard		<b>C</b>
Steel Bolts & Nuts, Centering Device, Teflon Gaskets		<b>E</b>
Not Required		<b>X</b>
<b>17 : Converter</b>		
Required		<b>1</b>
Not Required (Primary only)		<b>2</b>

**ACCESSORIES**

Instruction Manual	<b>PN25007</b>
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Note 1: Not available with Design code 9

Note 2: Not available with Design code 8

Note 3: Not available with Power Requirements code H

Note 4: Not available with Power Requirements code A, C

Note 5: Not available with Communication Mode code 1

Note 6: Not available with Safety Classification code K and Output Signal code B, C and Communication Mode code 4

ELECTRO-MAGNETIC FLOWMETERS 10D1475Y MINI-MAG

Meters are wafer-style and clamp between customer's pipeline flanges. Mounting hardware kit is furnished and includes: studs, nuts, gaskets and adaptor for the class of selected mating flange.

1/2-inch and smaller are designed for use with 1/2-inch size flanges.

Not available with FM CL.Div 1 option

Standard Product =

Code

**Electromagnetic Flowmeter Mini-Mag with Integral  
 50XE4000 Converter Meter Size 1/10 ... 3/8 in.**

**10D1475Y**

**1 : Liner Material**

Tefzel (ETFE)	N
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**2 : Meter Size**

3 mm (1/10 in.)	01
4 mm (5/32 in.)	02
6 mm (1/4 in.)	04
10 mm (3/8 in.)	06

**3 : Flange Standard Pressure Rating**

ASME Class 150	P
ASME Class 300	Q

**4 : Electrode Material**

Hastelloy C	D
Tantalum	F
Platinum (1/10 in. ... 3/8 in.)	M

**5 : Electrode Type**

Flush	2
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**6 : Design**

Wafer Design, with English Tag	9
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**7 : Safety Classification**

General Purpose	A
FM Approved, Non-incendive for CI I, Div. 2, Groups A, B, C, D, Outdoor Hazardous Locations, Intrinsically Safe Electrodes	K
FM Approved Explosion Proof for CI I, Div. 1, Groups B, C & D	L

**8 : Power Requirements**

220 / 240 V AC 50 / 60 Hz	A
110 / 120 V AC 50 / 60 Hz, Standard	C
24 V DC	H

**9 : Enclosure Classification**

IEC 529 IP 65, NEMA 4X	1
IEC 529 IP 67 Accidental Submergence (in Water to 10 m [33 ft]. for 48 hrs)	5

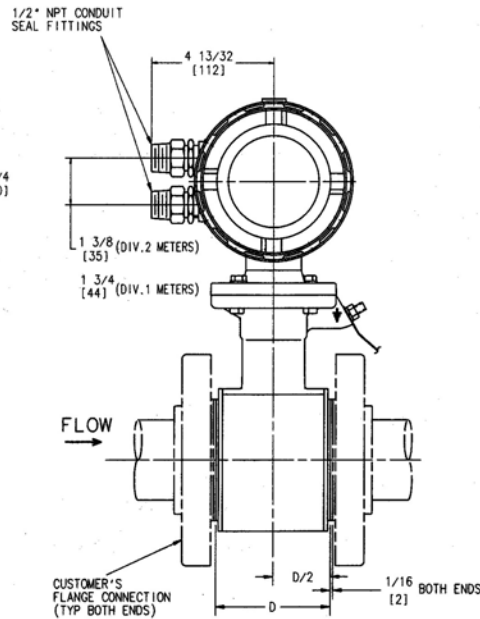
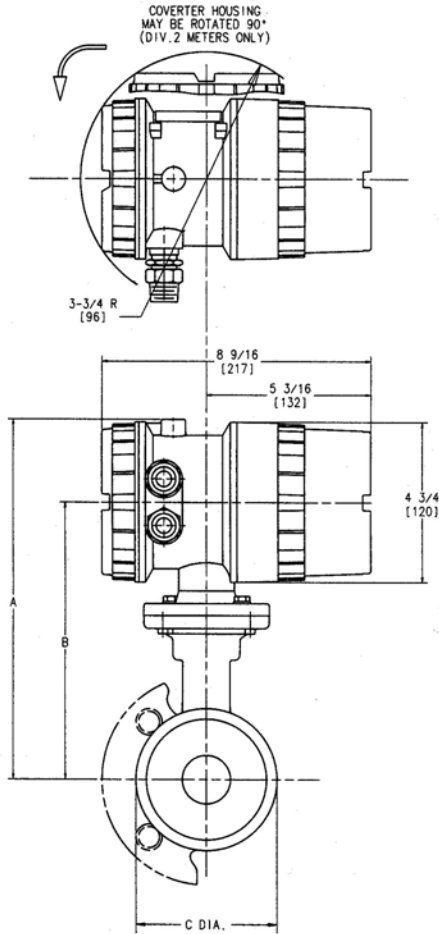
**10 : Fluid Temperature Range**

Integral Converter	1
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<b>10D1475Y</b>	<b>Code</b>
<b>11 : Output Signal</b>	
0 ... 20 mA DC	<b>B</b>
4 ... 20 mA DC, Standard	<b>C</b>
<b>12 : Output Options</b>	
Scaled Pulse, Passive	<b>1</b>
<b>13 : Communication Mode</b>	
None	<b>1</b>
HART Protocol	<b>4</b>
<b>14 : Excitation Frequency / Line Frequency</b>	
7-1/2 Hz / 60 Hz, Standard	<b>1</b>
6-1/4 Hz / 50 Hz	<b>2</b>
6-1/4 Hz / 24 V DC	<b>6</b>
7-1/2 Hz / 24 V DC	<b>8</b>
30 Hz (24 VDC)	<b>T</b>
30 Hz (60 Hz Line Frequency)	<b>D</b>
<b>15 : Additional Options</b>	
Empty Pipe Detector, Disabled	<b>2</b>
HART Protocol & Empty Pipe Detector, Disabled	<b>4</b>
FOUNDATION Fieldbus & Empty Pipe Detection, Disabled	(Note: 1) <b>F</b>
PROFIBUS PA & Empty Pipe Detection, Disabled	(Note: 1) <b>P</b>
<b>16 : Mounting Hardware Kit</b>	
Standard Kit, Steel Bolts & Nuts, Centering Device Klinger SIL C-4401 Gaskets, Standard	<b>C</b>
Optional Kit, Steel Bolts & Nuts, Centering Device, Teflon Gaskets	<b>E</b>
Not Required	<b>X</b>
<b>17 : Converter</b>	
Required	<b>1</b>
Not Required (Primary only)	<b>2</b>
<b>ACCESSORIES</b>	
Instruction Manual	<b>PN25007</b>

Note 1: Not available with Safety Classification code L

METER & FLANGE SIZES	CUSTOMER FLANGE TYPE AND RATING	A	B	C DIA	D
1/2 (15)	ANSI CLASS 150 ANSI CLASS 300 BS 10 TL D.E.F. DIN PN 10, 16, 25 & 40	8-31/32 (228)	6-17/32 (166)	1-7/8 (48)	2-5/32 (55)
1 (25)		9-11/32 (237)	6-29/32 (175)	2-5/8 (67)	2-5/32 (55)
1-1/2 (40)		9-23/32 (247)	7-9/32 (185)	3-3/8 (86)	2-3/4 (70)
2 (50)		10-1/32 (255)	7-19/32 (193)	4 (102)	3-11/32 (85)
3 (80)		10-21/32 (271)	8-7/32 (209)	5-1/4 (133)	4-23/32 (120)
4 (100)		11-5/16 (287)	8-7/8 (225)	6-1/2 (165)	5-29/32 (150)



NOTES:

1. DIMENSIONS ARE IN INCHES. DIMENSIONS IN BRACKETS [ ] ARE IN MILLIMETERS
  2. DIMENSIONS GUARANTEED ONLY IF THIS PRINT IS CERTIFIED
  3. ALL DIMENSIONS SUBJECT TO MANUFACTURING TOLERANCE OF +/-1/8 INCH (3mm)
  4. METER MUST BE COMPLETELY FILLED WITH LIQUID TO INSURE ACCURACY
  5. FLOW MUST BE IN SAME DIRECTION AS FLOW ARROW. 1/2 NPT CONDUIT CONNECTIONS IN HOUSING INDICATE "UPSTREAM" END OF METER.
  6. METER MOUNTS BETWEEN CUSTOMER'S PIPELINE FLANGES.
  7. TYPES AND RATINGS LISTED IN TABLE OF DIMENSIONS
- TYPES AND RATINGS LISTED IN TABLE OF DIMENSIONS  
THIS DRAWING IS THIRD ANGLE PROJECTION AS SHOWN

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