

- Standard system accuracy is  $\pm 0.5\%$  of rate from 2 to 100% of meter capacity. ( $\pm 0.25\%$  is optional).
- Extremely low power consumption.
- TEFZEL<sup>®</sup> liner provides superior chemical and abrasion resistance.
- Long term accuracy, stability and absolute zero stability by digital signal processing with pulsed DC excitation.
- 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<sup>®</sup> J/S  
Magnetic Flowmeters

## MINI-MAG® J/S MAGNETIC FLOWMETER

The Mini-Mag® is the ideal flowmeter to measure liquids, pastes, or slurries 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, ABB magmeters have been successfully installed in the chemical, pharmaceutical, food, municipal water and waste water industries.

The Series 10D1475J/S 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. The standard converter is the microprocessor based converter. This is available integral - with the primary and converter as one unit, or remotely with the primary and converter as separate components.

### Engineering Specifications

**Minimum Liquid Conductivity:** 5  $\mu$ S/cm

**Pressure Limits:** 740 psi (5.10 Mpa) @ 100°F (38°C) or mating pipe flange if lower.

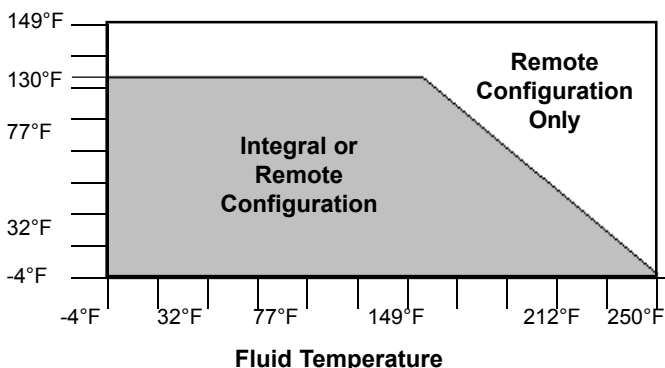
**Vacuum Limits:**

1/10" to 3" -- Full Vacuum to 212°F (100°C)  
4" -- Full Vacuum to 176°F (80°C)

**Temperature Limits:**

Process: 266°F (130°C)  
Ambient:  
Remote Configuration: -40 to 149°F (-40 to 65°C)  
Integral Configuration: -4 to 131°F (-20 to 55°C)  
Storage: -40 to 160°F (-40 to 70°C)

**Operating Conditions:**



**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  $\pm$ 6%  
24 VDC, -30/+30%, residual ripple -5%.

**Power Consumption:** 23VA (primary and converter)

**Coil Excitation Frequency:**

6-1/4, 12.5 Hz, or 25 Hz for 50 Hz power supply.  
7-1/2, 15 Hz, or 30 Hz for 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 50  $\mu$ S/cm.

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

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

**Current Output:** Configurable 4-20 mA dc into 0-750 $\Omega$  load, including split range capabilities w/o HART.

**Active Scaled Pulse Output (Optional):** 24 VDC into >150W load. Maximum scaled pulse output frequency is 4 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.

**HART® Protocol Communications:** 1200 Baud using frequency shift keying. Maximum cable length: 5000 ft (1667m).

**Communications:** 9600 Baud using frequency shift keying.

**System Accuracy:**

Frequency Output:  
Flow > 2% of Cal. Factor =  $\pm$ 0.5% of rate  
Flow < 2% of Cal. Factor =  $\pm$ 0.01% of Meter Capacity

Analog Output:  
Same as frequency output but with an additional  $\pm$ 0.1% of span

**Enclosure Classification:**

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

Optional: Continuous Submergence (IEC 529, IP68) in water up to a depth of 33 feet (10m).

## Capacity Table

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	0.021	0.08	1.06	4.0
5/32	4	2.12	0.042	0.16	2.12	8.0
1/4	6	5.28	0.11	0.40	5.28	20.0
3/8	10	11.9	0.24	0.90	11.9	45.0
1/2	15	26.4	0.53	2.00	26.4	100.0
1	25	52.8	1.06	4.00	52.8	200.0
1-1/2	40	158.5	3.17	12.0	158	600.0
				m <sup>3</sup> /hr		m <sup>3</sup> /hr
2	50	264.2	5.28	1.2	264	60.0
3	80	792.5	15.85	3.6	792	180.0
4	100	1057	21.14	4.8	1057	240.0

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

\*Maximum values listed are at 10 m/s velocity. Meter can be overranged to 1.5 x meter capacity with standard software.

TABLE 1.

### Safety Classification:

Standard: 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 - Explosion proof 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 II, Division 1.

**Display:** LCD dot matrix display, 2 lines x 16 digits. The internal flow totalizer integrates in both forward and reverse flow directions.

**Data Security:** All data is stored in a NV-RAM for a period of more than 10 years without requiring external power.

### 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.

## Approximate Shipping Weights

Meter Size		Remote *Primary	Integral (Primary & Converter)	Remote - Explosion proof Design
in.	mm	lbs	lbs	lbs
1/10	3	4	9	5
5/32	4	4	9	5
1/4	6	4	9	5
3/8	10	4	9	5
1/2	15	4	9	5
1	25	4	10	5
1-1/2	40	5	11	6
2	50	7	12	8
3	80	10	16	11
4	100	16	22	17

\* Cl 1, Div 2



## Model Number Designation for the 10D1475J/S

	<b>10D1475</b>	
<b>Output Current</b>		
No output (remote converter) .....	A	
4-20 mA dc .....	C	
<b>Output Options</b>		
No Output Signal (Remote Converter) .....	1	
Active scaled pulse forward and zero return (Standard) .....	2	
Active scaled pulse forward and reverse .....	4	
Data link RS232C .....	5	
Data link RS485 .....	6	
<b>Communication Mode</b>		
None (Remote Converter) .....	1	
ASCII .....	2	
HART® Protocol (Standard) .....	4	
<b>Coil Drive Frequency (Line Frequency)</b>		
7-1/2 Hz, (60 Hz ), (Standard) .....	1	
15 Hz, (60 Hz) .....	2	
15 Hz, (DC) .....	3	
6-1/4 Hz, (50 Hz) (Standard) .....	4	
12-1/2 Hz, (50 Hz) .....	5	
12-1/2 Hz, (DC) .....	7	
7-1/2 Hz, (DC) .....	8	
<b>Additional Options</b>		
Empty Pipe Detector Enable (EPD available ≥ 1/2" size only) .....	1	
Empty Pipe Detector (Disabled) (Standard) .....	2	
HART® Protocol & Empty Pipe Detector (Enabled) (EPD available ≥ 1/2" size only) .....	3	
HART® Protocol & Empty Pipe Detector (Disabled) .....	4	
<b>Mounting Hardware Kit</b>		
Standard Kit: Steel bolts & nuts, centering device, Klinger Sil, C4401 gaskets .....	C	
Optional Kit: Steel bolts & nuts, centering device, Teflon gaskets .....	E	
Standard Kit: Not required .....	X	
<b>Converter</b>		
Required .....	1	
Not required (Primary only) .....	2	

**Options & Accessories:** ..... See Price List 10D9000

**Instruction Manual:** PN25006A

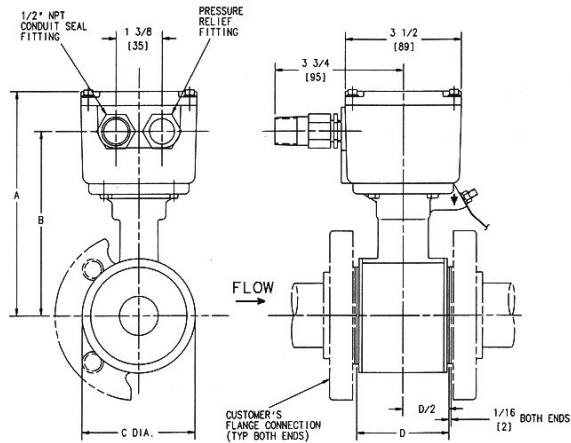
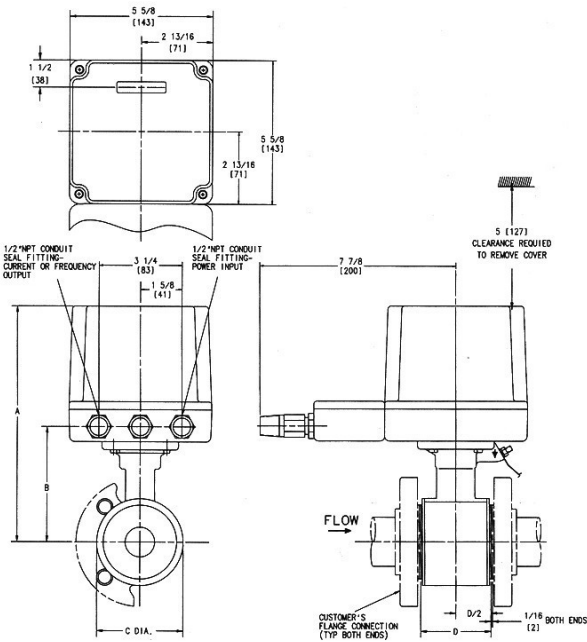
\* Available ≥ 1/2" size only  
For grounding rings see D-FMZ-10D9000\_2

Tefzel® is a registered trademark of E.I. DuPont de Nemours & Co., Inc.  
HART® is a registered trademark of HART Communication Foundation  
Hastelloy® is a registered trademark of Haynes International, Inc.

**Electro-Magnetic Flowmeters**

Mini-Mag® J & S Magnetic Flowmeters - 10D1475J/S

D-FMP-10D1475J/S\_4



METER AND FLANGE SIZES	CUSTOMER FLANGE TYPE AND RATING	A	B	C DIA	D
1/10 (3) - 1/2 (15)	ANSI CLASS 150 ANSI CLASS 300 BS 10 TBL D.E.F. DIN PN 10, 16, 25 & 40	7-11/16 (95)	3-3/4 (95)	1-7/8 (48)	2-5/32 (55)
1 (25)		8-1/16 (205)	4-1/8 (105)	2-5/8 (87)	2-5/32 (55)
1-1/2 (40)		8-7/16 (214)	4-1/2 (114)	3-3/8 (86)	2-3/4 (70)
2 (50)		8-3/4 (222)	4-13/16 (122)	4 (102)	3-11/32 (85)
3 (80)		9-3/8 (238)	5-7/16 (138)	5-1/4 (133)	4-23/32 (120)
4 (100)		10 (254)	6-1/16 (154)	6-1/2 (165)	5-29/32 (150)

**NOTES:**

- Dimensions are in inches. Dimensions in brackets [ ] are in millimeters.
- Dimensions guaranteed only if this print is certified
- All dimensions subject to Manufacturing tolerance of ±1/8 inch (3mm)
- Meter must be completely filled with liquid to insure accuracy
- Flow must be in same direction as flow arrow. 1/2 NPT conduit connections in housing indicate "upstream" end of meter.
- Meter mounts between customer's pipeline flanges. Types and ratings listed in table of dimensions.
- This drawing is third angle projection as shown

METER AND FLANGE SIZES	CUSTOMER FLANGE TYPE AND RATING	A	B	C DIA	D
1/10 (3) - 1/2 (15)	ANSI CLASS 150 ANSI CLASS 300 BS 10 TBL D.E.F. DIN PN 10, 16, 25 & 40	5-23/32 (145)	4-21/32 (118)	1-7/8 (48)	2-5/32 (55)
1 (25)		63/32 (155)	5-1/32 (128)	2-5/8 (67)	2-5/32 (55)
1-1/2 (40)		6-15/32 (164)	5-13/32 (137)	3-3/8 (86)	2-3/4 (70)
2 (50)		6-25/32 (172)	5-23/32 (145)	4 (102)	3-11/32 (85)
3 (80)		7-13/32 (188)	6-11/32 (161)	5-1/4 (133)	4-23/32 (120)
4 (100)		8-1/16 (205)	8-1/16 (205)	6-1/2 (165)	5-29/32 (150)

ABB has Sales & Customer Support expertise in over 100 countries worldwide

[www.abb.com/instrumentation](http://www.abb.com/instrumentation)

The Company's policy is one of continuous product improvement and the right is reserved to modify the information contained herein without notice.

Printed in USA (3.9.08)

©ABB 2005, 2008



**ABB Inc.**  
125 East County Line Road  
Warminster  
PA 18974  
USA  
Tel: +1 215 674 6000  
Fax: +1 215 674 7183

D-FMP-10D1475J/S\_4 (US)