# -E M C O **DemiMag DM Series Magnetic Flowtubes**



The DM series DemiMags are sized from 1/16" - 1/2" (1.5 - 12 mm), all with 1/2" connectors. They are used with a remote, patented Pulsed AC 4411e transmitter.

The DemiMag features listed below are unmatched by other magmeters. Yearly maintenance / repair costs associated with metering pumps and positive displacement meters can be lowered as a result of this exceptional performance. DemiMags can meter expensive raw materials or additives with greater effiency, thus improving product quality.

The DemiMag has an optional 3A cleanin-place certification for liquid food and beverage applications.

The DemiMag is Entela approved as standard supply to UL and CSA compliance for safety in ordinary locations, or optionally to NEC and CSA Class 1, Division 2 and ATEX Zone 2 explosive atmospheres.

DEMIMAG DM SERIES FEATURE	BENEFIT			
Patented Pulsed AC coil excitation (high coil current and high pulsation frequency)	Produces a signal-to-noise ratio up to 3x higher than conventional AC magmeters and up to 50x higher than typical pulsed DC magmeters; fast response time achieves stable proportional control, even when measuring media that create high media noise.			
Fast time constant of 0.030 seconds	Suitable for high speed batching applications and measuring pulsating flow created by diaphragm or piston style pumps.			
Compatible with fluid conductivity $\geq 0.08 \ \mu\text{S/cm}$	Standard design cost effectively measures fluids like alcohol, glycol, distilled water and cutting oil.			
Low flow range capability, down to 0 - 0.01 gpm (0 - 2 lph) Resolution to 0.02 fps (0.006 m/s)	Measures flows below 1.5 fps (0.45 m/s) with higher accuracy than other magmeters; prevents overdosing and underfeeding; suitable for paper additives, pilot plant and research applications.			
Option for quick disconnect process connections	3A certified for food and dairy applications			
Integral grounding	Simplifies installation, particularly in non-conductive pipes; eliminates the need for separate grounding rings or straps.			
For use in explosive atmospheres	Entela approved to UL and CSA standards to Class 1, Div. 2 areas. Entela approved to ATEX standards to Zone 2 explosive atmospheres.			

# **EMCO Flow Systems**

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See specifications for 4411e transmitters

#### ACCURACY (NOTE 1)

 $\pm$  0.5% of rate for flows > 1.5 f/s (0.45 m/s)  $\pm$  0.0075 f/s (0.0025 m/s) for flows < 1.5 f/s (0.45 m/s)

Note: For media such as ferric chloride, ferric sulphate (Odophos), high temperature paper mill liquors, lime mud or similar highly conductive media, flowmeter performance can be adversely affected. Please consult EMCO for these types of applications, otherwise performance guarantee is null and void.

#### MINIMUM STRAIGHT PIPE RUNS

All piping configurationsOD up and OD downPump upstream5D up and OD downPump downstream3D downD = 1 Diameter of straight length

#### NOMINAL DIAMETER

1/16 in. (1.5 mm) to 1/2 in. (12 mm)

#### MEAN VELOCITY RANGES

Minimum: 0 to 0.6 f/s (0 to 0..2 m/s) (note 2) Maximum: 0 to 30 f/s (0 to 10 m/s)

#### COIL EXCITATION

Pulsed AC from remote 4411e transmitter (see 4411e data sheet for details)

#### MEDIA CONDUCTIVITY

≥ 1.0 µS/cm standard ≥ 0.08 µS/cm (option) For deionized, demineralized or distilled water applications, consult factory.

All DM DemiMags are equipped with a pre-amp. However, for media < 5  $\mu$ S/cm, a booster pre-amp is embodied.

#### ENVIRONMENTAL PROTECTION

NEMA 6 and IP68 indefinitely submersible to 10 ft. w.c. (3 m w.c.)  $\,$ 

#### CABLING TO TRANSMITTER

To 4411e Transmitter: 4 separate 2-conductor cables, 18 gage (0.75 mm²) twisted and shielded (Beldon 8760)

15 ft. (5 m) supplied standard, longer lengths on request.

#### MAX. RECOMMENDED CABLE LENGTH

< 3 µS/cm	30 ft ( 9 m)
≥ 3 µS/cm	300 or 10 x C (90 m or 3 x C
	whichever is less

# C is conductivity in $\mu S/cm$ (note 3) MATERIALS, PRESSURES & TEMPERATURE RATING

FLOW TUBE AND ELECTRODES:

1/8" and 1/4" (4 and 8 mm) Ø Kynar® (polyvinylidene fluoride PVDF, PVF2) flowtube with fused conductive Kynar electrodes (note 4 and 5)

250° F (120° C) Max Temp (note 6) @ 40 psig (3 bar g) 150 psig (10 bar g) Max Pressure @ 70° F (20° C) (Note 7)

1/16" and 1/2"~(1.5 and  $12~{\rm mm})$  Ø Aluminum trioxide ceramic flowtube with fused-in platinum electrodes and type 316 stainless steel grounding

285° F (140° C) Max Temp 150 psig (10 bar g) Max Pressure (note 7)

#### PROCESS CONNECTIONS

316 stainless steel wetted parts have sanitary or screwed ends, or rotary flanges.

PVDF wetted parts have screwed ends or PVC nonwetted rotary flanges.

#### GROUNDING

316 stainless steel process connectors are used for grounding to the media. Alternatively, PVDF process connectors have conductive PVDF/graphite grounding rings fusion bonded with them.

#### PROCESS CONNECTION SEALS

Viton<sup>®</sup>, Kalrez<sup>®</sup>

#### HOUSING

Glass-filled nylon (polyaminde) or type 316 stainless steel

#### LIMITED WARRANTY

2 year standard against material defects and bad workmanship (not including media incompatibility, erosion or abrasion, or for media > 180° F / 80° C).

#### NOTES

1. Accuracy is traceable to the US National Institute of Science and Technology (NIST). A NIST traceable calibration certificate is provided with each DemiMag.

2. Minimum nominal velocity range for 1/16 in. flowtube is 0 to 1 ft/s (0 to 0.3 m/s).

3. The typical conductivity of drinking water is 200 to 600 µS/cm.

4. US Food and Drug Administration (FDA) approved for sanitary applications. 3A approved for steam or caustic solution clean-in-place. FDA approval #21CFR177.2510.

5. Not available in 1/16 in. nominal diameter.

6. Maximum temperature based on water, and may be lower for other fluids based on corrosion considerations (refer to manufacturer's recommendations).

7. Higher on request.

8. Flanged versions have loose, non-wetted PVC flanges as standard.

Nominal Flowtube Diameter and Material		Minimal Nominal Flow Range 0 - 0.6 FT/S (0 - 0.2 M/S)*			Minimum Flow Rate to Obtain Accuracy of ± 0.5% of Flow Rate 1.5 FT/S (0.45 M/S)			Maximum Nominal Flow Range O - 30 FT/S (O - 10 M/S)		
INCHES	ММ	GPH	L/HR	ML/MIN	GPH	L/HR	M/MIN	GPH	L/HR	ML/MIN
1/16	1.5	0 - 0.6*	0 - 2.3*	0 - 38*	0.85	3.2	53	0 - 18	0 - 70	0 - 1200
(CERAMIC ONLY)										
1/8	4	0 - 1.2	0 - 4.5	0 - 75	3.6	14	230	0 - 70	0 - 260	0 - 4300
(PVDF ONLY)		]								
1/4	8	0 - 6	0 - 20	0 - 330	14	52	860	0 - 275	0 - 1000	0 - 17000
(PVDF ONLY)		1								
1/2	12	0 - 20	0 - 80	0 - 1300	55	200	3300	0 - 1100	0 - 4200	0 - 70000
(CERAM	IC ONLY)									

### FLOW RANGES FOR DEMIMAG WITH 4411e TRANSMITTER

\* Minimum mean velocity range for 1/16 inch (2 mm) flowtube is 0 - 1 ft/s (0 - 0.3 m/s)

Note: All size flowtubes have 1/2" (or 15 mm metric system) process connections.

Accuracy is 
$$\pm \left[\frac{110 D^2}{gph}\right]$$
% where nom. Ø D is in inches.  
 $\pm \left[\frac{0.7D^2}{lph}\right]$ % where Ø D is in mm

- OR - ± 0.5% of rate, whichever is greater

# DemiMag DM Series Dimensions and Weights



Weight: 7 lb (3 kg) with plastic enclosure 11 lb (5 kg) with stainless steel enclosure

## DemiMag DM Flowtube Ordering Information

A 4411e transmitter must be used with the flowtube and ordered separately.



#### NOTES

- 1. Nominal Size Code 02 not available with PVDF flowtube material. Must be used with a stainless steel enclosure.
- 2. All special codes must be described after the ordering code.
- 3. Ceramic flowtubes only available with platinum electrodes.
- 4. 316 stainless steel process connections have sanitary, threaded or rotary stainless steel flanges. Kynar (PVDF) process connections have threaded or rotary PVC flanges.
- 5. All flowtubes have 1/2 in. or 15 mm fittings.
- 6. Matings connectors, seals and clamps are not included in the price for the sanitary ends. Use for 3A certified liquid food and beverage applications. These are 316 stainless steel only.



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#### DEMIMAGS IN EXPLOSIVE ATMOSPHERES

- 7. For Entela approval conforming to ATEX Zone 2 it is conditional that the reference coil and exciter coil use a single IEC approved cable through a single gland. This is normally supplied through Advanced Flow Technology Company. Only a remote 4411e transmitter is available for this option, located in a safe area.
- 8. For approval by Entela to CSA and UL standards for use in a Class 1, Div. 2, T4 explosive atmosphere, it is a requirement that cables are laid in conduit or Teck metal clad cable for the connection of a 4411e transmitter. Conduit connectors Appleton type UNY50NR-A are supplied. Only the 4411e is available for this option, located in the safe area.