

EMCO's 4411e flow transmitter produces a clean and powerful bi-directional flow signal with unsurpassed fast response and a uniquely high signal strength.

Features

- High excitation current (to 5.5 base to peak) and high exciter frequency (40 Hz or 33 Hz) for all size UniMag Sensors
- Suitable for problem media (mining, slurries, pulps, liquors and low conductivity media)
- 4 lines of 20 character alphanumeric, backlit LCD display with sealed, tactile feedback and vandal-resistant keyboard
- Noise countervailence and auto-zero circuits with RF and VFD filtration
- Virtually immune to common noise effects, including eddy current drift, radio frequency, variable frequency drives and similar
- Bi-directional flow measurement; accurately eliminates back flow from net totals
- Reference coils to compensate for media temperature
- Fast time constant of 0.30 seconds
- Comprehensive alarm relays and setpoints



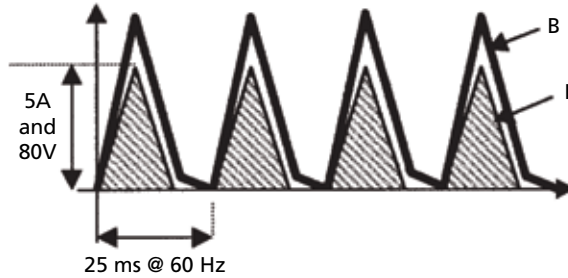
The 4411e Magnetic Flow Transmitter.

The 4411e flow transmitter uses an innovative and patented Pulsed Hybrid method of coil excitation to create an ultra stable flow signal to media noise ratio up to 50 times higher than other magmeter technologies

The 4411e is a versatile and advanced magmeter transmitter with a user-friendly keypad for programming, a 10-year memory, batch control, RS232 interface, two 4 x 20mA outputs and a scaleable pulse frequency output.

4411e Technology

The 4411e uses a patented type of Pulsed Hybrid coil excitation. The magnetizing current I is fed to the coils of a UniMag magmeter, and is uni-polar and derived from half wave rectification of line voltage.



The magnetizing current is uniquely high, up to 5.5 Amps, base to peak. This provides an ultra high signal strength which is applied in a series of pulses at the highest practical frequency. This combination provides an unsurpassed signal to media noise ratio, caused by such media as greasy sewage, paper pulp, paper mill liquors, mining and dredging slurries, low conductivity media and media which coats the internal diameter.

4411e Innovation

- Diagnostic readings and system status are displayed on the front panel
- Diagnostics can also be communicated to a computer interface through a Windows Interface Program
- Simple batch control entered through the keypad relays initial flow, counting from zero to the total set amount

4411e Features

Noise Countervailance Circuit

- Continuously integrates the erratic signal of media noise and compensates for it
- Creates a clean and powerful signal, with a signal to media noise ratio up to 50 times higher than other magmeters

Powerful Pulse Technology

- Powerful pulses used at a common high frequency for all size magmeters, from 1/16" to 80" (1.5mm to 2000mm)
- Each pulse has a duration of only 16.7 ms (for 60 Hz supply); the magnetic field, which includes the signal function, follows the current by a few milliseconds and dissipates after 25 ms
- Unsurpassed high efficiency energy management is the result; power consumption is typically only 20 watts, despite having the highest signal strength and exciter frequency available

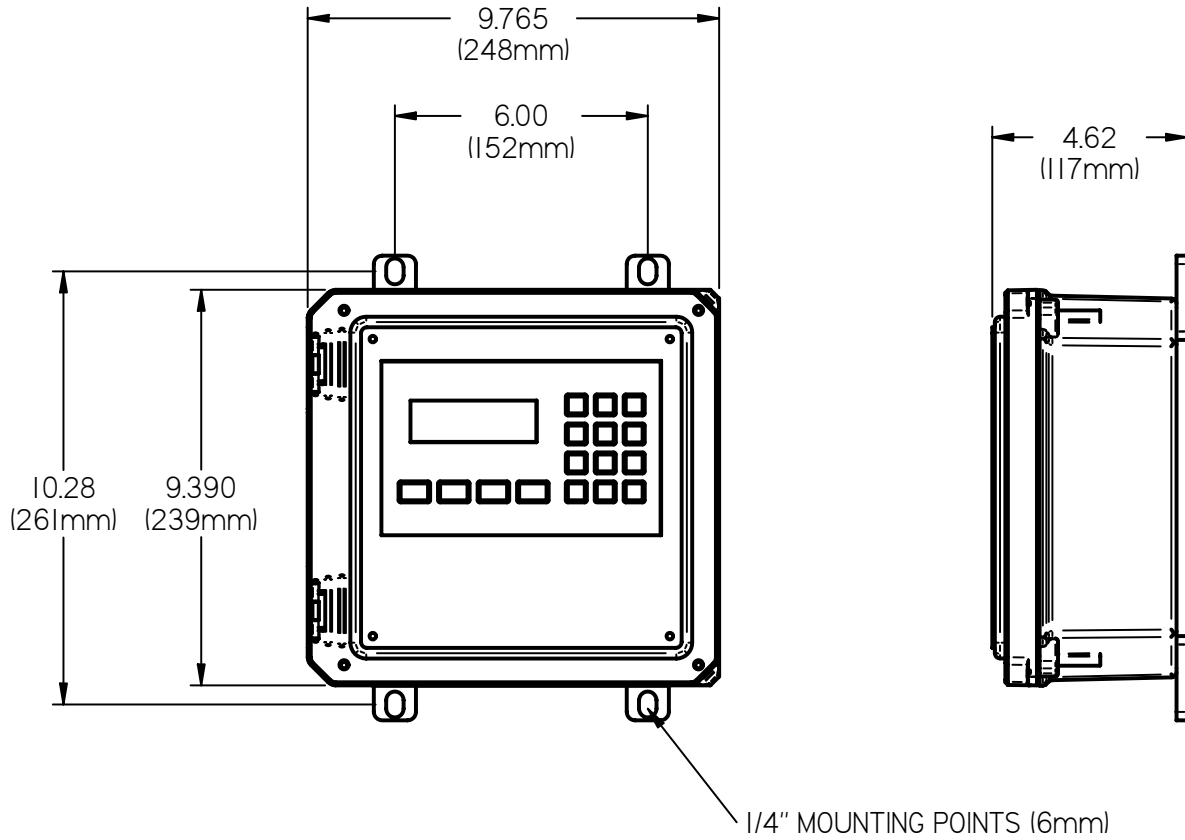
Auto Zero

- The 4411e incorporates the first auto zero for Pulsed Hybrid technology
- Auto zero functionality means compensation for the integrated rate of change of the magnetic field over time, resulting in virtual elimination of eddy current drift

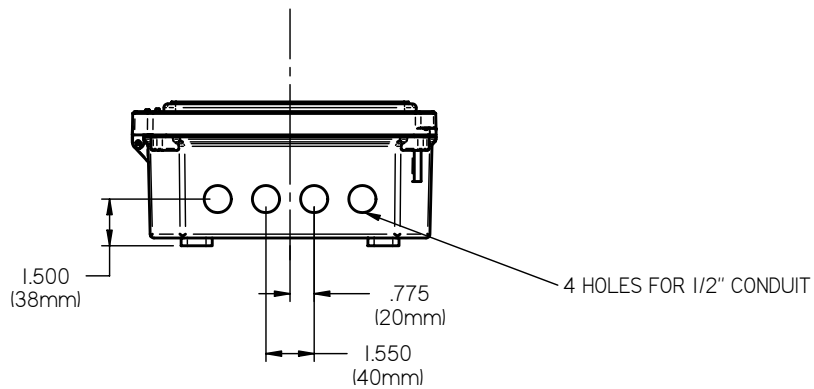
Outputs

- Frequency Mode up to 10,000Hz square wave
- Analog Outputs from separate terminals for bi-directional flow
- Pulsed Outputs for totalized or rate of flow available in three speeds
- Communication Outputs RS232 and RS485 are standard
- Relay Outputs with contact rating 125 V AC, 1A, 30V A

Dimensions and Weight



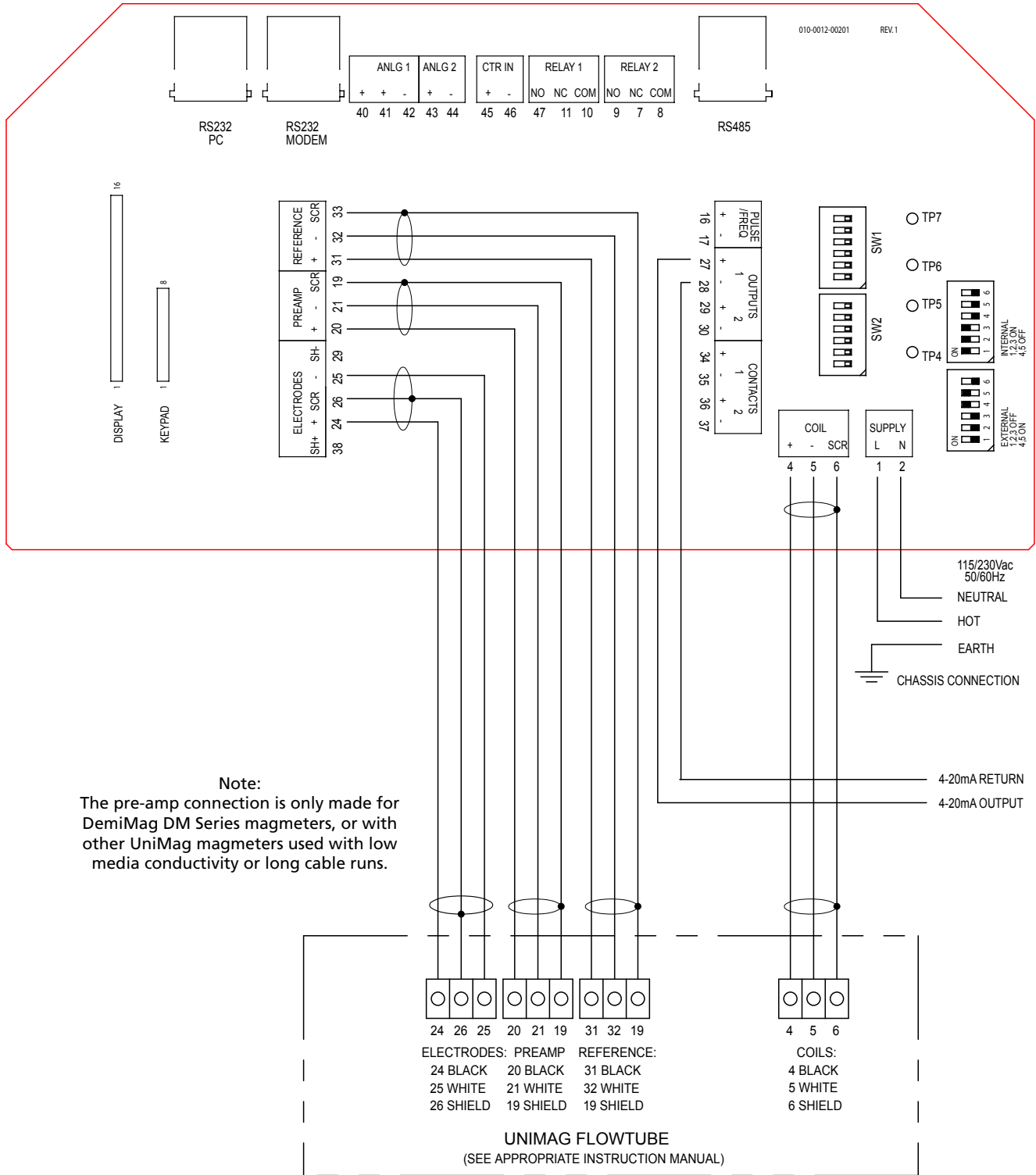
4411e Front Panel Dimensions



4411e Bottom Dimensions

Weight: 7 lb (3.2 kg)

Wiring Diagram



Note:
The pre-amp connection is only made for DemiMag DM Series magmeters, or with other UniMag magmeters used with low media conductivity or long cable runs.

NOTE
THE CABLE SHIELDING SHOULD NOT BE MORE THAN 1" (25mm) FROM THE CABLE END

4411e Specifications

Enclosure	Wall mounted, UV resistant fiberglass with lockable stainless steel latches (locks not included).
Display	Four lines of 20 characters; waterproof, back-lit LCD display.
Front Panel Keypad	Tactile feedback, waterproof sealed.
Environmental Protection	NEMA 4X and IP65
Ambient Temperature¹	-4°F to 140°F (-20°C to 60°C)
Supply Voltage	120V, 60Hz; 120V, 50Hz; 230V, 50Hz
Power Consumption	20 watts typical, including sensors.
Diagnostics	All necessary diagnostics, readings and system status are available via the front panel keypad without opening the door. A user security password is programmable, allowing revalidation of the magmeter's NIST traceable Calibration Certificates. A separate calibration box is not necessary.
Windows Interface Program	Computer interface via serial connection, enabling programming of setup, the ability to upload new firmware and download diagnostics and status.
Magnetizing Current	Up to 5.5A, depending on sensor size.
Exciter Frequency	40Hz (with 60Hz) or 33Hz (with 50 Hz)
Time Constant (T)	Minimum 30 milliseconds
Signal Averaging (5T)	Infinitely adjustable 150ms to 300 seconds.
Optional Batch Control	For batch control, the total set amount is entered via the keypad and displayed. Keypad actuation of batch flow via a 4411e relay initiates flow, counting from zero to the total set amount.
Frequency Mode	0 to 1000Hz, up to 10,000Hz square wave. The external isolated outputs are rated 30V DC maximum, current of 250mA.
Analog Outputs²	Two 4-20mA outputs from separate terminals are available for bi-directional flow. Either may be configured as an internally powered 2-wire output or an externally powered 2-wire output.
Pulsed Outputs	An externally powered, 2-wire scaled output (for totalizing flow) or frequency output (for rate of flow) is available as follows: <ul style="list-style-type: none"> • Slow speed: 100 ms pulse width, 5Hz maximum frequency • Medium speed: 50 ms pulse width, 10Hz maximum frequency • Fast speed: 5 ms pulse width, 100Hz maximum frequency
Communication Outputs	RS-232 and RS-485 are available as standard.
Relay Outputs	Two user configurable form C (changeover) relays with contact rating 125V AC, 1A, 30VA.
Contact Inputs	Two user configurable inputs, rated 12V DC, 10mA. These inputs require a contact closure or transistor switch between the terminals.
Input Impedance	10 ¹² Ohms
Pre-Amp Supply	A pre-amp is internally supplied on all DM Series DemiMags as standard. On other magmeters, an internal booster pre-amp is recommended for media conductivity < 20 mS/cm.
Analog Inputs (Including Level)³	Two 4 - 20mA inputs with 2 wire, 18V DC supply.
Maximum Cable Length	50 feet (15m) for conductivities < 3 μS/cm (micromhos/cm) or 300 feet or 10 x C (90m or 3 x C) for conductivities > 3 μS/cm, whichever is less, where C is the conductivity in μS/cm (preamplifier required over 150 feet).

See footnotes on Page 7

Model and Suffix Codes

Category	Suffix Codes			
Model				
4411e Transmitter	DSM			
Approvals				
Pending - Entela Certified Compliant to UL and CSA Ordinary Locations		1		
Power Supply				
120V AC, 60Hz			1	
120V AC, 50Hz			2	
230V AC, 50Hz			3	
Options				
No Further Options				O
2-Wire Level, 12 - 30V DC Supply / 4 - 20mA Input for use with ChannelMag				C
2-Wire Level, 12 - 30V DC Supply / 4 - 20mA Input for use with UniMag NFP or ChannelMag PM2				D
Batch Control				B
	DSM	1	1	C

- 1 Below 14°F (-10°C) LCD display may not be visible. A heated enclosure is recommended for these temperatures and below. A protective cover is recommended when operating in strong sunlight.
- 2 When internally powered, a loop voltage of 24V DC is supplied with a maximum load of 800 Ohms. These outputs are isolated from all circuits, with the exception of the contact inputs and each other. When externally powered, the maximum load is calculated by: Maximum Ohms = [(48.83 x DC voltage) - 488.3]. For an external 24V DC supply, this would be [(48.83 x 24) - 488.3] = 683 Ohms. Minimum current 3.75mA, maximum 22mA.
- 3 One may be a level input for use with ChannelMag open channel flow meter or UniMag NFP flow meter for non-full pipes. The level signal is linearized if necessary and multiplied by the mean velocity from the flow meter to provide continuous measurement of volumetric flow.



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