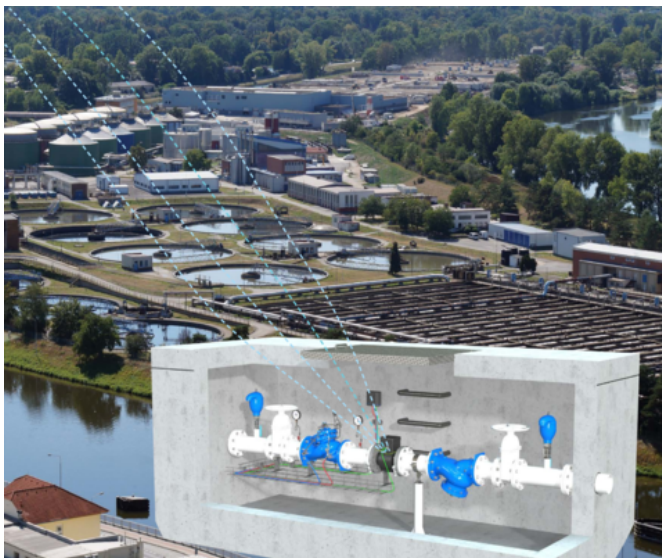


DC Powered Composite EFM

Model MUT7000

MUT7000 is an electromagnetic flow meter grooved sensor that covers all diameters from DN50 to DN150. When high accuracy, light weight, and compact dimensions are required, the choice of sensors cannot be other than MUT7000. These performances allow to measure low flow rates precisely and repeatable, even in difficult/ problematic applications with solid parts. The MUT7000 sensor series bases its operation on the Faraday Principle, by which a conductor crossing a magnetic field generates an electrical potential perpendicular to the field itself. On the top and on the lower side of the composite flow tube, two coils are installed; the magnetic field generated by the electric current crossing the coils, induces in the electrodes a potential difference proportional to the flow rate. The integrated battery powered converter generates the current supplying the coils, acquires the electrodes potential difference, process the signal to calculate the flow rate and manages all the communications. The entire sensor has an IP68 protection degree suitable for a permanent immersion in water up to a depth of 1.5m.



[1] The MUT7000 internal part of the sensor, allows an optimized and accelerated flow profile which permits to install the sensor in any kind of condition; no need to have straight sections.

Features & Benefits

- No moving parts
- Grooved connection - fits all applications
- Long lasting stability and precision, no filter needed, zero maintenance
- Lightweight sturdy structure
- Accurate measure at high flow rate and at low flow rates
- Bi-directional measure
- Internal parts protected by a bi-component resin in order to increase protection from external agents
- Wider range of measurement

Typical Applications

- District metering of potable water
- Fiscal measures, custody transfer
- Distribution, municipal water
- Overnight applications with very low flow rate
- Installation in small places without straight distances
- Leak detection and monitoring

The electromagnetic flowmeter designed for the toughest applications



Modbus

Body and flanges

The MUT7000 have a flow tube made from composite material. It is equipped with an integrated converter. The degree of protection is IP68. It may be installed between flanges up to PN 16 or ANSI 150. The sensor is grooved and can easily fit to all type of end connections with the preferred adaptor.

Electrodes and grounding

The MUT7000 has three electrodes in AISI 316L and, on request, they can be supplied in other materials. It should be noted that if the sensor is installed in metal pipe line, the liquid grounding does not require the use of grounding rings, because of the presence of the third electrode.

A revolutionary perspective of the flowmetering

The MUT7000 is a battery powered and 12Vdc electromagnetic water meter for use in district metering areas (DMA), water abstraction, and custody transfer measurement of potable water (MI-001, OIML R49), irrigation, and many other applications.

Unlike other water meters, the MUT7000 is a maintenance-free meter, offering a much wider range of flow, in a compact version. Thanks to the optimized flow profile, the MUT7000 can be installed virtually anywhere without straight inlet or outlet runs, behind

pipe bends, slide valves or a reduction in the pipe. Its measuring tube is in fact specifically designed to enable a stable measurement even at the lowest flow rates.

Made out of highly reinforced polyamide, the meter is the perfect solution for leak detection, and pressure management systems. The highly robust and at same time lightweight structure, allows IP68 installations with accordance to the manufacturer's guidelines.

Victualic OGS process connections make the flow meter compatible with almost all installations, adapting flanges of all type and standards are also available. Easy and quick to install, users will find this flow meter the perfect solution compared not only to mechanical meters, but to any other non-moving parts flowmeters.

The inbuilt logger functionality provides total flexibility - enabling data to be interrogated in precise detail through the smart and user friendly Mag-Net app, available on Apple and Google play store.

Standards reference

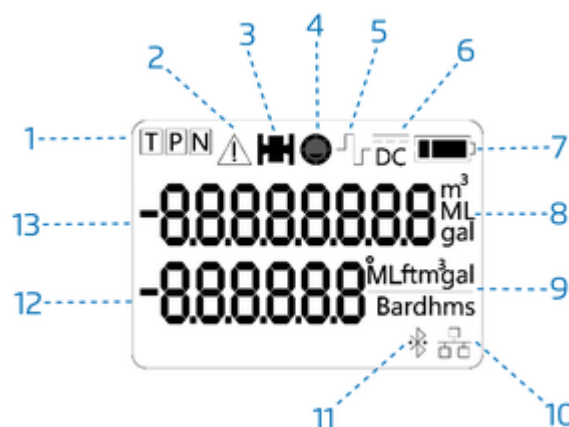
The MUT7000 electromagnetic meters are marked CE and are manufactured according to the following standards:

- 2014/53/EU
- 2014/30/EU - EN 61326-1:2013 (EMC)
- 2014/65/EU
- EN IEC 60529
- OIML R49-1:2013
- European directive 2014/32/EU (MID)
- WRAS
- NSF

Communication

- Modbus
- Bluetooth

Display



Num	Description
1	totalizer: T partial totalizer: P net totalizer: N
2	Generic error icon
3	Excitation failure icon
4	Empty pipe icon
5	Sleep/awake icon; On - awake; Off - sleep
6	DC mains icon: On-meter powered by DC mains
7	Battery charge icon
8	Volume technical unit
9	Flow rate technical unit
10	RS485 icon: Flashing - communicating Fixed - waiting for communication
11	Bluetooth icon: 1s flashing - configuring Fixed - configured 2s flashing - connected
12	6 digits number
13	8 digits number

Specifications

Structure	Integral Flow meter	
DN Range	DN50/2" ÷ DN150/6"	
Nominal Pressure	16 bar	
Process Connection	Victaulic OGS	
Fluid Conductivity	> 20 µS/cm	
Process Temperature Range	0 ÷ 80 °C (32 ÷ 176 °F)	
Materials in contact with water	Flow tube: Glass fibre reinforced plastic Electrodes: AISI316L	
Power supply	Battery Powered: 3.6 V Lithium Battery Mains Powered: 12Vdc (10.8 ÷ 13.2V), max 100mA	
Consumption	0,25W÷1W (Mains powered)	
Outputs	2 passive outputs (1 programmable), SSR Type (dry contact), galvanically insulated Max. load +/- 35VDC, 100 mA protected against short circuits, minimum pulse duration 5ms. RS458 2 wire /half-duplex	
Communication	Modbus RTU Slave Bluetooth	
Display	LCD Segment display, with dedicated status icons, 8+6 digits	
User Interfaces	Magnetic reed Bluetooth Mobile App Euromag Link Software	
Process memory	100,000 data lines Programmable frequency 1 ÷ 120 minutes (15 minutes factory standard)	
Metrological certificate	OIML R49-1:2013 / MID 2014/32/EU - Class 2 (if requested)	
Temperature range	Ambient: -20 ÷ 60 °C (-4 ÷ +140 °F) Process: 0 ÷ 80 °C (32 ÷ 176 °F) Storage: -40 ÷ 70 °C (-40 ÷ +158 °F)	
Flow velocity range	0.015 m/s up to 10 m/s	
Technical units	m, m3, l, ML, ft3, GAL, AC FT, AC IN	
Totalizers	5 (2 Positive, 2 Negative, 1 Net)	
Alarms and status icons	Status icons displayed and alarms recorded in the data logger	
Self diagnostic	Excitation failure	Bluetooth communication error
	Excessive ambient temperature	Empty pipe
	Wet electronic board	Measurement error
	Low battery level / Mains voltage out of range	Software/memory malfunction
	Pulses overlapping	Mains power interruption
Software for communication and programming	Bluetooth Mobile App - Mag-Net Euromag Link Software (trough Bluetooth dongle, or RS485 interface)	
Data Protection	Customizable password protection EEPROM Memory with safe data storage management	

Overall Dimensions



Size	De (mm)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)
2" ; DN50	60.3	230	100	150	200
3" ; DN80	88.6	230	100	150	225
4" ; DN100	114.3	230	100	150	250
6" ; DN150	168.3	300	100	210	300

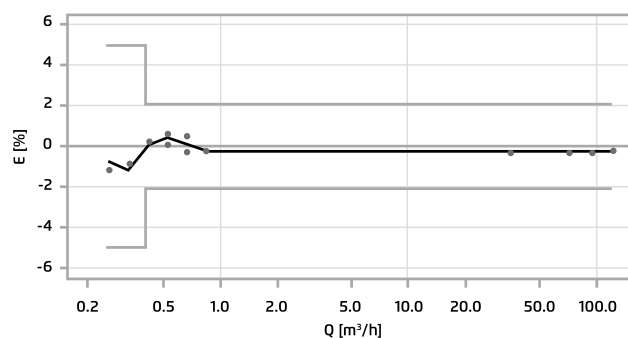
Calibration and maximum error

Each sensor is calibrated on an hydraulic test rig equipped with a ISO17025 traceable weighing system. The accuracy is equal to 0.2% $\pm$ 2mm/s. The repeatability of the measure is about 0.1%. Bi-directional measure. On request the MUT7000 can be supplied certified MID OIML R49 for custody transfer.

Flow Rate

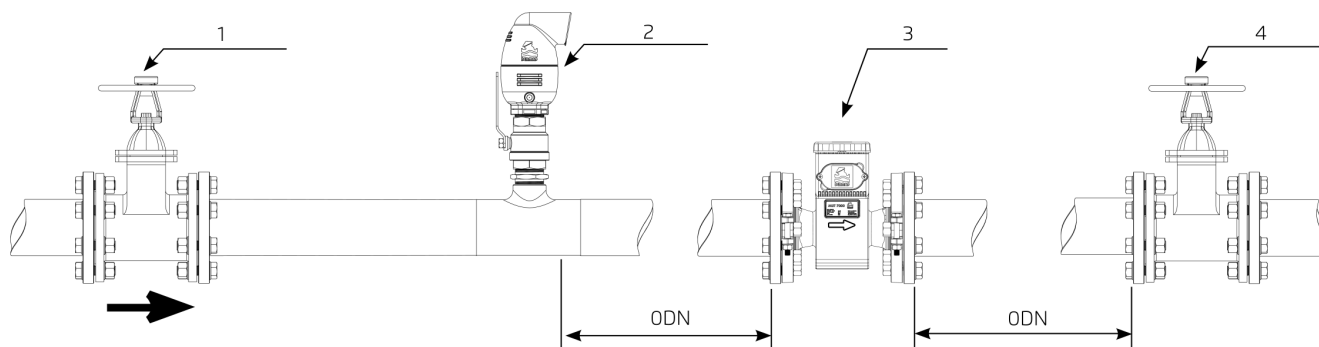
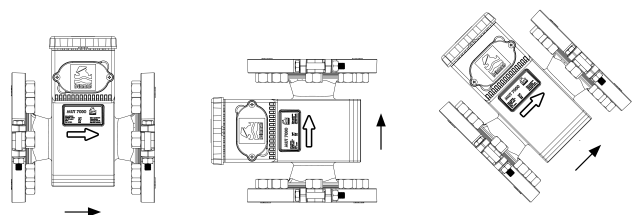
Size Q @ (m³/h)	DN50 2"	DN80 3"	DN100 4"	DN150 6"
Q1 Minimum Flow	0.1	0.25	0.4	1
Q2 Transitional Flow	0.16	0.4	0.64	1.6
Q3 Permanent Flow	40	100	160	400
Q4 Maximum Flow (Short Time)	50	125	200	500

Maximum Permissible Error is within the limits indicated in the following graph:



Installation Recommendations

- The arrow on water meter body must be in the same direction with the flow.
- Prior to installation, flush the line to remove debris.
- The water meter must be filled with water to operate.



[1] Isolation Valve

[2] Air Valve

[ODN] Unrestricted pipe,
minimum ODN

[3] MUT7000

[4] Isolation Valve