

DC Powered Wafer EFM

Model MUT1000-MC406

The MUT1000 with MC406 is a battery operated electromagnetic water meter for use in district metering areas (DMA), water abstraction, and custody transfer measurement of potable water (MI-001, OIML R49), and many other applications. Unlike other water meters, the MUT1000 is a maintenance-free meter, offering a flexible wafer installation in a compact or remote mounted version. Thanks to the optimized flow profile, the MUT1000 can be installed virtually anywhere with minimal straight inlet or outlet runs. With optional pressure and temperature sensors, GSM/GPRS integrated modem and 12-24Vdc power source, the meter is the perfect solution for pressure management systems. The highly robust structure, allows burial installation or the use in flooded areas. A full on-site verification without process interruption can be carried out using the Field Vericator service tool.



Features & Benefits

- No moving parts
- Neglectable pressure drop
- Long lasting stability and precision
- Zero maintenance
- Extremely sturdy structure
- High chemical resilience
- Wider range of measurement

Typical Applications

- District metering of potable water
- Distribution, municipal water
- Industrial waste water
- Industrial process liquids, muds and concretes
- Fiscal measures, custody transfer
- Irrigation
- Booster pump stations
- Lift stations

High performances to a low cost of ownership:

Capability to read flow velocities of 0.015 m/s (MID-001 OIML R49 certified), within Class 2 accuracy

Multiple outputs:

pulse, analog 4-20mA, Modbus, frequency, Hart protocol and programmable output

No data lost:

Data automatically stored in the internal EEPROM memory. Up to 100.000 lines of active datalogging

Information always available:

Add-on communication module GSM/GPRS automatically sends the information via SMS, e-mail or on a website portal with personal ID and password. Accessible also from smart phones and tablets. Configurable FTP communication

Empty pipe detection:

Empty pipe electrode supplied as standard ($\geq$ DN65). Empty pipe detection on measuring electrodes standard for all sizes

Flow - pressure – temperature: all at the same time:

Add on modules of temperature and pressure readying make the MUT1000 with MC608 one of the most complete electromagnetic flowmeter available in the market

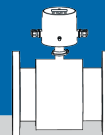
Easy management, easy programming:

A software is supplied with the unit to allow users to communicate with the MC608 via IRCOM port to any pc, lap top or windows tablet.

Certifications and compliance: OIML R49 (on request) / EX - IEC IECEx (on request and only separate version) / NSF ANSI61 (On model MUT1000US)

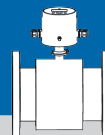
Always verified:

The FIELD VERIFICATOR is available for full on-site verification, without interruption of the process



Converter Specifications

Transmitter type	Battery powered - 2 x D Cell 3.6 V * / 12-24VDC	
Battery life	Lithium battery pack up to 10 years	
Accuracy	0.2% +/- 2mm/s (0.08 inch/s), insertion sensors 2% of rate +/- 2mm/s (0.08 inch/s)	
Temperature	Ambient: -20 ... +60 C° (-4 ... +140 F) Media -25 ... 80 C° (-13 ... +176 F) Storage -40 ... +70 C° (-22 ... +158 F)	
Enclosure	Technopolymer case with aluminum bottom on compact vertical version. IP 68. Remote wall mount bracket in carbon steel zinc plated	
Cable entries	4X M16 Glands I/O - 2X M20 x 1.5. Glands junction box in remote version	
Custody transfer	Type approved OIML R49-1 2013 / EN 14154 MID EN-ISO 4064 - Certificate n. T10713	
Conformity	EMC: EN 61010 - LVD: EN 61326 ; EN/IEC 60529 IP68	
Sensor type	Up to DN300	
Flow velocity range	0.015 m/s up to 10 m/s (0.05 ft/s up to 33 ft/s)	
Sampling rate	Standard mode 1 / 5 Hz up to 1 / 60 Hz (default 1 / 15 Hz) max 3.125 Hz	
Installation	Integral (compact) or remote with factory mounted sensor cable in 5 m (16.4 ft) up to 30 m (98.4 ft)	
Digital filters	Damping - cutt-off (0.05 m/s default) - bypass - peak cut	
Display and keys	LCD display - Index, menu, and symbols icons for dedicated information 4 Push buttons to access all functions Totalizer informations can be displayed with 5 decimal digits	
Displayed informations	Live flowrate Total positive totalizer (T+), Total negative totalizer (T-) Partial positive totalizer (P+), Partial negative totalizer (P-) Time & date, Converter temperature. Process pressure and temperature (if available). Parameters corresponding code and value	
Flow Units	m, m3, l, ML, ft3, GAL, AC FT, AC IN	
Outputs	2 pulses passive outputs (MOS), individual galvanically isolated - clean contact Maximum load +/- 35V DC, 100 mA short circuit protected	
Communication	Integrated IrComm interface	
Datalogging	100,000 lines of data with a frequency of log between 1 minute and 120 minutes (default 15 minutes)	
Add on modules	GSM/GPRS Module Pressure (1) and temperature (2) Energy metering ready	
Totalizers	4 (2 positive and 2 negative)	
Data protection	Password available, automatic firmware check and recover during the update	
Alarms and status	Status icon displayed and alarm logged in the datalogger	
Self diagnostic	Alarms available: excitation failure empty pipe on the 4th electrode empty pipe on the measuring electrodes	high temperature high voltage supply pulse overlapped wet electronic board
External verification	Field verifcator available for calibration verification and electronic status	
Software for communication and programming	Commissioning (equal settings of meters) - Data print for documentation - Data export (CSV file) - Firmware update - Read instant flowrate - Read and write all non volatile parameters - Download internal datalogger - View instrument event logger	



Sensor Specifications

Pipe sizes inches/mm	1" - 12" Inch / DN25 - 300 mm	
Flanges Connections Available	EN1092-1, ANSI 150, ANSI 300, ANSI 600, ANSI 900, DIN 2501, BS 4504, AS 2129 (TABLE D - E - F), AS 4087, ISO 7005-1, KS 10K	
Maximum pressure	40 bar for diameters $\leq$ DN150	16 bar for diameters $\geq$ DN200
Internal lining and liquid temperature	Internal lining: PTFE Ebonite	Liquid temperature: Standard -40 / +130°C (up to +180° on request) -40°C / +80°C
Protection Degree	IP68 (EN 60529) permanents submersion at 1.5m (4.92ft)	
Electrical connections	Cableglands M20 x 1.5 + terminal box + sealing resin	

The electromagnetic flowmeter designed for the toughest applications

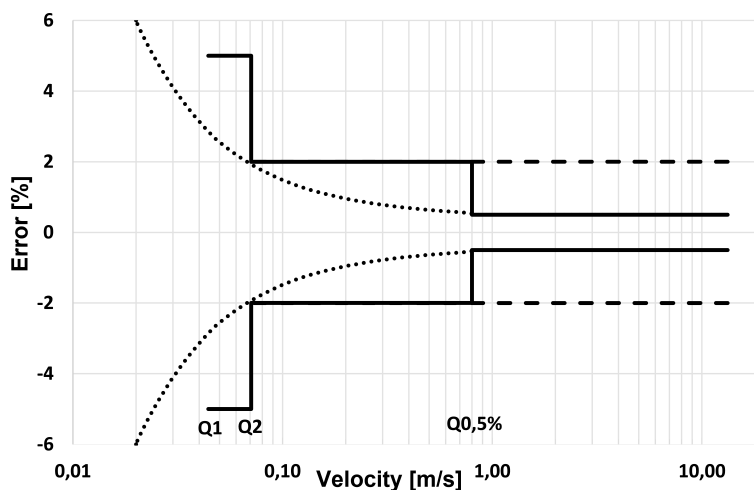


Modbus



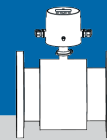
Measuring Accuracy

Each flowmeter is standard wet calibrated under reference conditions by direct volume comparison. The performance of the flowmeter is defined and documented in an individual calibration certificate. Accuracy 0.2% +/- 2mm/s (0.2% +/- 1mm/s on request)



Flow Rate

Size Q @ (m³/h)	DN25 1"	DN32 1¼"	DN40 1½"	DN50 2"	DN65 2½"	DN80 3"	DN100 4"	DN125 5"	DN150 6"	DN200 8"	DN250 10"	DN300 12"
Q1 Minimum Flow	0.08	0.08	0.13	0.2	0.32	0.5	0.8	1.28	2	3.2	5.04	8
Q2 Transitional Flow	0.13	0.13	0.2	0.32	0.51	0.8	1.28	2.05	3.2	5.12	8.06	12.8
Q3 Permanent Flow	10	10	16	25	40	63	100	160	250	400	630	1000
Q4 Maximum Flow (Short Time)	12.5	12.5	20	31	50	78	125	200	312	500	787	1250



Installation Recommendations

- The water meter can be installed in any orientation without interfering with metrological performance.
- 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.

