



# EUROMAG INTERNATIONAL

*Measure > Sense > Innovate*

## MUT2300 MC406

Electromagnetic  
Flowmeter



DS402-3-EN



The MUT2300 with MC406 is a battery powered 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 MUT2300 is a maintenance-free meter, offering a much wider range of flow, in a compact or remote mounted version. Thanks to the optimized flow profile, the MUT2300 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, maintaining a neglectable pressure loss in all its range. With optional pressure and temperature sensors, GSM/GPRS integrated modem and 12...24Vdc power source, the meter is the perfect solution for leak detection, and 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.

## Applications

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

## Key advantages

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

## Product's benefit

### 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 1 accuracy

### Up to 10 years of battery life

High-efficiency, technologically advanced battery powered converter

### U0-D0

Zero upstream and downstream distances (MID-001 OIML R49 certified)

### 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 [www.euromagdata.com](http://www.euromagdata.com) 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 MUT2300 with MC406 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 MC406 via IRCOM port to any pc, lap top or windows tablet.

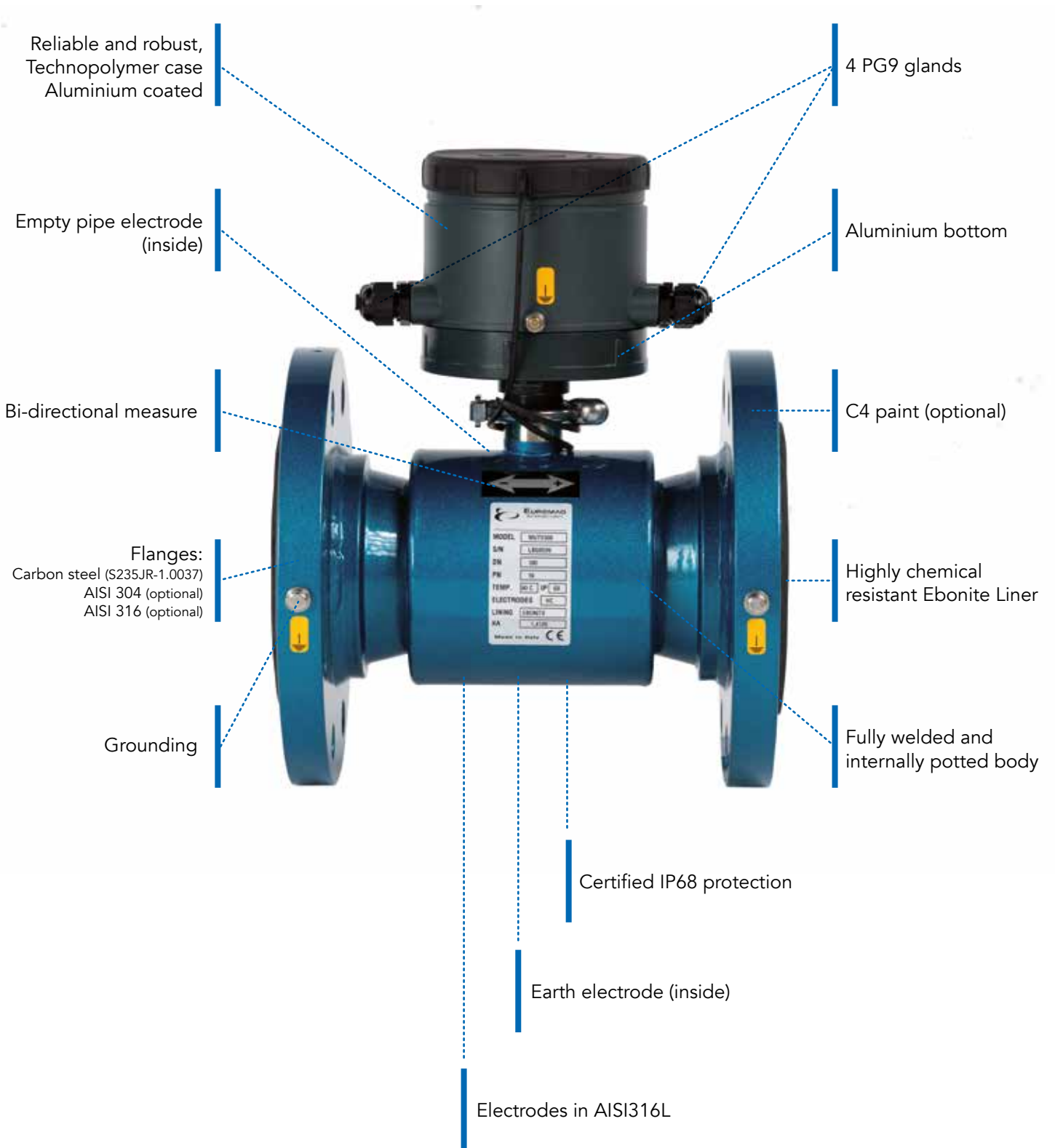
### Certifications and compliance

OIML R49-MID Class 1 (on request) / EX - IEC IECEx (on request and only separate version) / NSF ANSI61 (On model MUT2300US)

### Always verified

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

# Features



## Features



IrCOM communication

LCD display

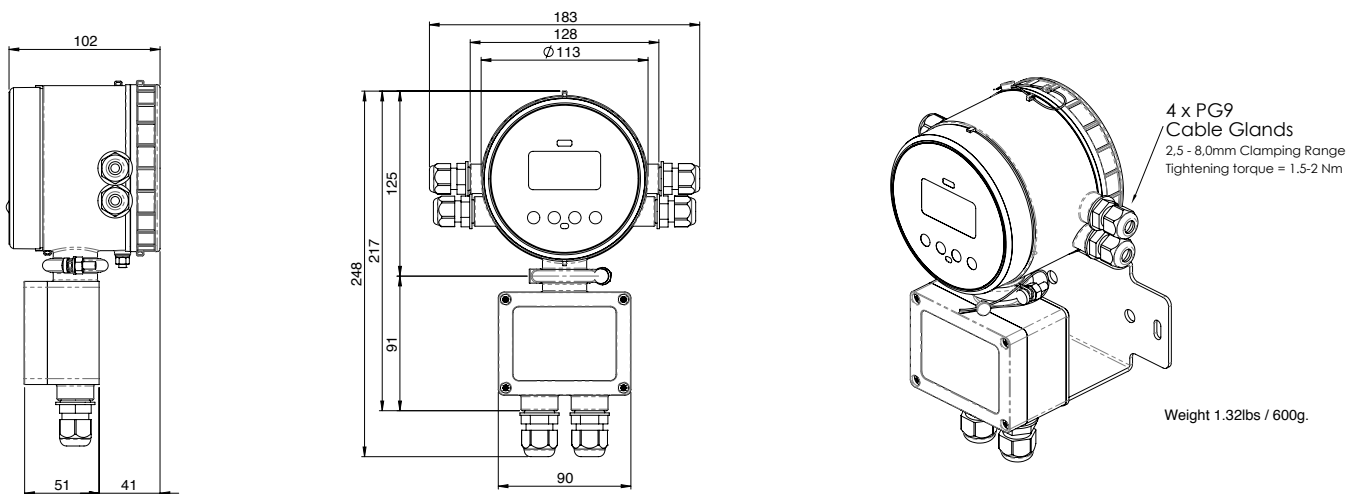
- Live flowrate
- Battery powered
- Bidirectional flow reading
- Advanced self-diagnostic
- Excellent data security
- Temperature module (*optional*)
- Pressure module (*optional*)
- GSM/GPRS Euromag (*optional*)
- Compact or separate

4 Push buttons

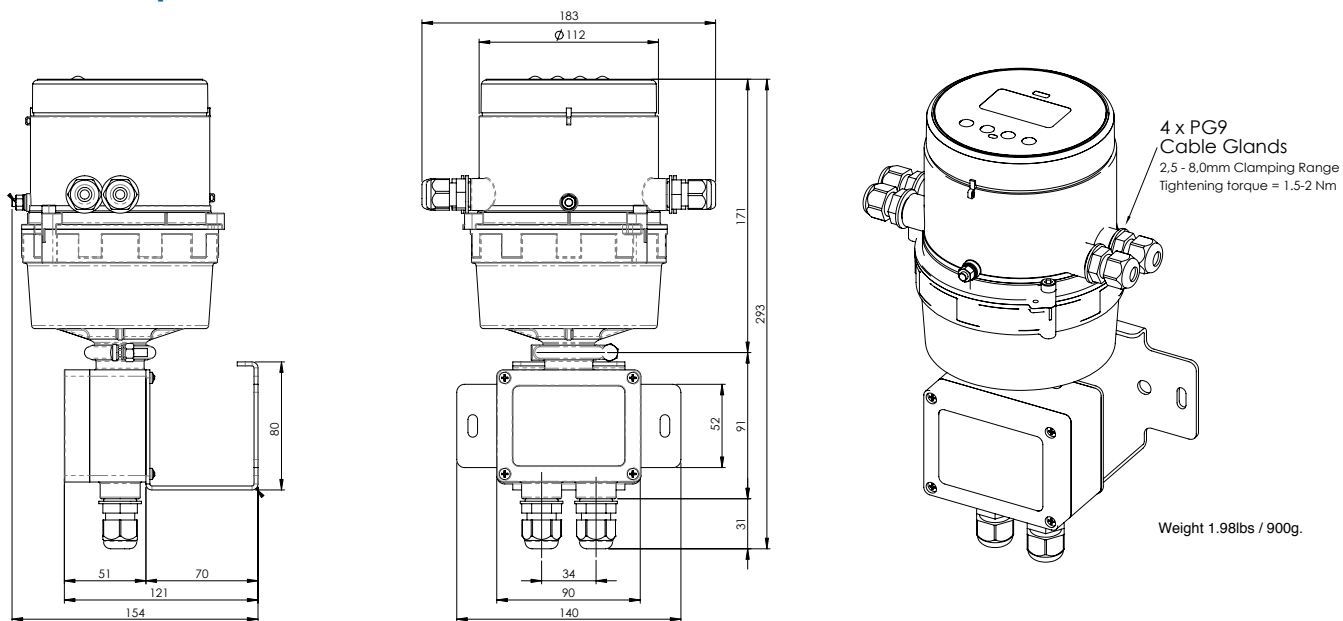


# Overview Separate Converter

## MC406 Standard Separate



## MC406 Separate with GSM/GPRS



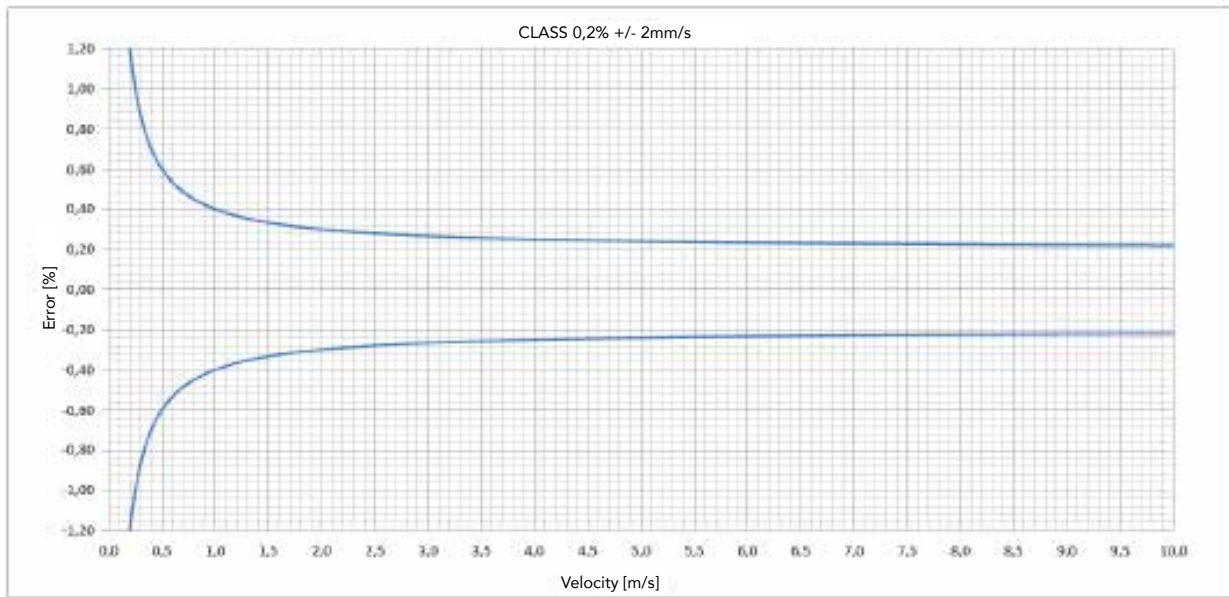
# Specifications

<b>Pipe sizes inches/mm</b>	2", 2.1/2", 3", 4", 5", 6", 8", 10", 12" / 50, 65, 80, 100, 125, 150, 200, 250, 300
<b>Flanges Connections Available</b>	EN1092-1 PN 10/16, ANSI 150, AS 2129 (table D, E, F), AS 4087, KS10K, Others on request
<b>Pressure</b>	21 bar - 305 psi
<b>Temperature</b>	Operating: -104°F/+176°F (-40°C/+80°C) Storage: -22°F/+158°F (-30...+70°C)
<b>Accuracy</b>	0,2% +/- 2mm/s • 0,2% +/- 0.08inch/s
<b>Linear Material</b>	Hard rubber (Ebonite)
<b>Electrodes Materials</b>	AISI316L (standard), Hastelloy C, Hastelloy B, Titanium, Tantalum, Platinum
<b>Protection Degree</b>	IP68 (EN 60529) permanents submersion at 1,5m (4,92ft)
<b>Pressure Drop Class and Installation Conditions</b>	DN≤80 ΔP10 (<0,10 bar) • DN≥100 ΔP16 (<0,16 bar) / 0DN upstream - 0DN downstream
<b>Digital filters</b>	Damping - cutt-off (0,05 m/s default) - bypass - peak cut
<b>Display and keys</b>	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
<b>Conformity</b>	EMC: EN 61010 - LVD: EN 61326 ; EN/IEC 60529 IP68
<b>Flow Units</b>	m, m3, l, ML, ft3, GAL, Aft, Ain, BBL
<b>Outputs</b>	2 pulses passive outputs (1 programmable as alarm), individual galvanically isolated - clean contact Maximum load +/- 35V DC, 100 mA short circuit protected. 4...20mA loop powered optional. RS485 Modbus output optional.
<b>Communication</b>	Integrated Euromag IrCOM interface. Bluetooth module optional.
<b>Datalogging</b>	100,000 lines of data with a frequency of log between 1 minute and 120 minutes (default 15 minutes)
<b>Transmitter Type</b>	Battery powered - 2 x D Cell 3,6 V * - 12/24Vdc optional
<b>Battery life</b>	Lithium battery pack up to 10 years / GSM battery life up to 10 years
<b>Add on modules</b>	GSM/GPRS Euromag Module Pressure (up to 1 sensor) and temperature (up to 2 sensors) Energy metering ready
<b>Custody transfer</b>	Type approved OIML R49-1 2013 / EN14154 MID EN-ISO 4064 - Certificate n. T10713 - Class 1 & 2
<b>Totalizers</b>	5 (2 positive, 2 negative and 1 net)
<b>Date and time</b>	Yes
<b>Data protection</b>	Password available, automatic firmware check and recover during the update
<b>Alarms and status</b>	Status icon displayed and alarm logged in the datalogger
<b>Self diagnostic</b>	Alarms available: <ul style="list-style-type: none"> <li>• excitation failure</li> <li>• high temperature</li> <li>• pulse overlapped</li> <li>• empty pipe on the measuring electrodes</li> <li>• empty pipe on the 4th electrode</li> <li>• high voltage supply</li> <li>• wet electronic board</li> <li>• low battery</li> </ul>
<b>External verification</b>	Field vericator available for calibration verification and electronic status
<b>Software for communication and programming</b>	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 - Live data recording

\* Lithium batteries are subject to special transportation regulations according to United Nations "Regulation of Dangerous Good", UN 3090 and UN 3091. Special transport documentation is required to observe these regulations. This may influence both transport time and cost

## 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

Pipe size	2" 50mm	2" ½ 65mm	3" 80mm	4" 100mm	5" 125mm	6" 150mm	8" 200mm	10" 250mm	12" 300mm
<b>Max flow rate</b> (gallons/minute)	137,59	220,14	346,76	550,36	880,57	1376	3467	5503	5503
<b>min Flow Rate</b> (gallons/minute)	0,55	0,88	1,39	2,2	3,52	5,5	13,87	22	35,22
<b>Max Flow Rate</b> (Liters/Second)	8,68	13,88	21,8	34,7	55,51	86,81	218,73	347	347
<b>min Flow Rate</b> (Liters/Second)	0,034	0,055	0,087	0,13	0,22	0,34	0,87	1,38	2,22

\*NOTE: The indicated low flowrate is at factory settings. Lower flowrates can be achieved modifying the cut off filter

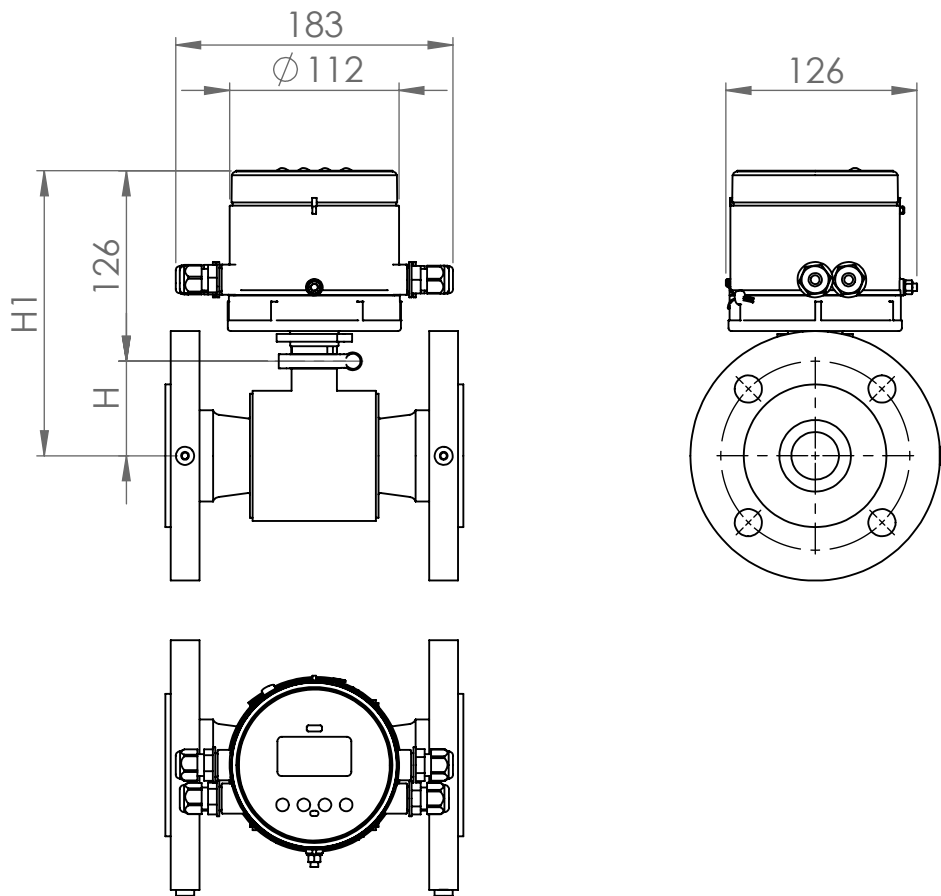
## Legal Metrology

### MID and OIML R49 requirement.

The MUT2300 combined with MC406M can be supplied on request with a certificate of conformity with the international recommendation OIML R49 MID which concerns water meters intended to be used for legal purposes. The certificate has been issued by NMI laboratories in The Netherlands.

The MUT2300 with MC406M meets the requirements for water meters of accuracy Class 1 where the maximum permissible error is  $\pm 3\%$  between Q1 and Q2 and  $\pm 1\%$  between Q2 and Q4. For more details on flowrates and accuracy curve, please refer to the MUT2300 datasheet DS401

## MUT2300 - MC406 COMPACT

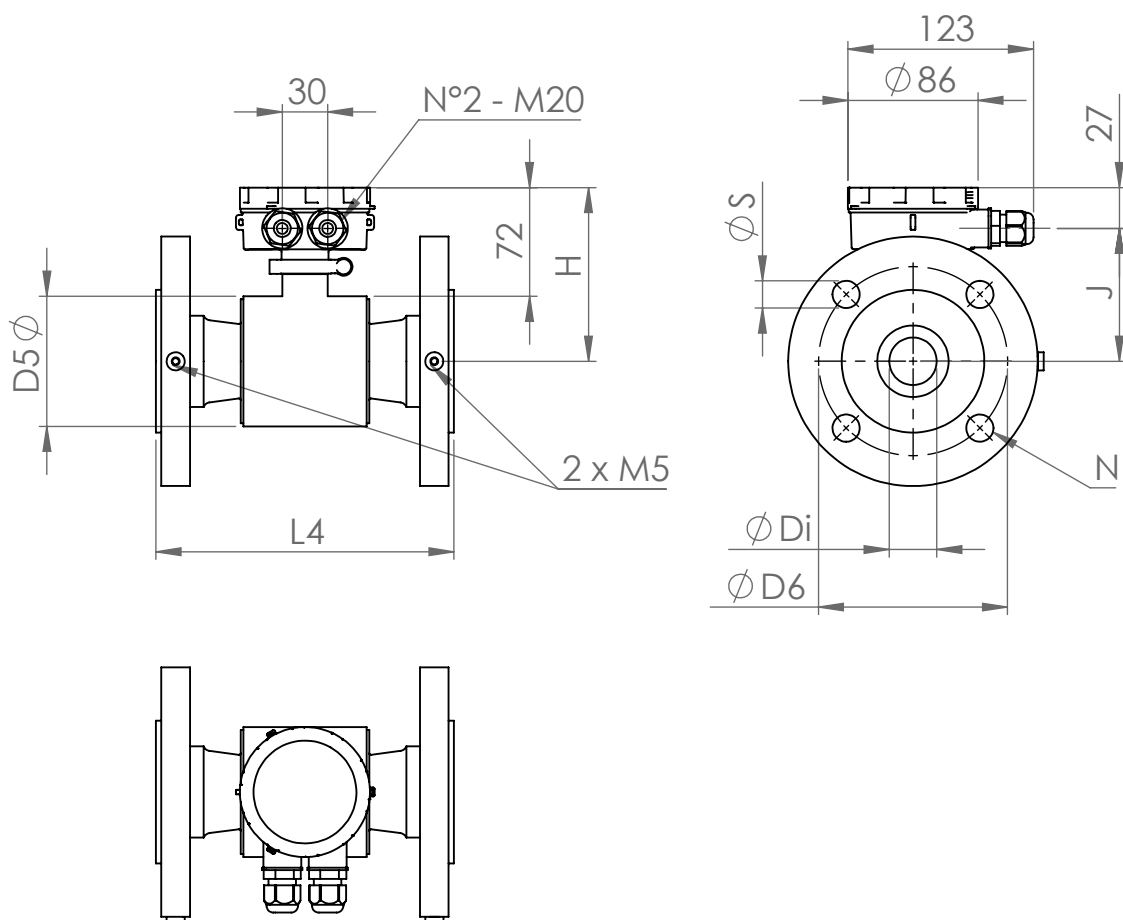


### MC406 VERTICAL

DN	H	H1
50 - (2")	62	188
65 - (2" 1/2)	62	188
80 - (3")	71	197
100 - (4")	79	205
125 - (5")	106	232
150 - (6")	101	227
200 - (8")	147	273
250 - (10")	176	302
300 - (12")	207	333



## MUT2300 - SEPARATE



## MUT2300 - EN 1092 / PN 16

DN	D5	L4	J	Di	D6	N	S	H
50	85	200 (+0/-3)	87,35	30,4	125	4	18	114,5
65	85	200 (+0/-3)	87,35	34,3	145	8	18	114,5
80	103	200 (+0/-3)	96,35	46,3	160	8	18	123,5
100	118	250 (+0/-3)	103,85	62,1	180	8	18	131
125	172	250 (+0/-3)	130,85	74,9	210	8	18	158
150	163	300 (+0/-3)	126,35	100	240	8	22	153,5
200	255	350 (+0/-3)	172,35	154,3	295	12	22	199,5
250	312	450 (+0/-5)	200,85	205	355	12	26	228
300	375	500 (+0/-5)	232,35	259	410	12	26	259,5

## MUT2300 - ANSI 150

DN	D5	L4	J	Di	D6	N	S	H
2" - (DN 50)	85	200 (+0/-3)	87,35	30,4	120,6	4	19,0	114,5
2" 1/2 - (DN 65)	85	200 (+0/-3)	87,35	34,3	139,7	4	19,0	114,5
3" - (DN 80)	103	200 (+0/-3)	96,35	46,3	152,4	4	19,0	123,5
4" - (DN 100)	118	250 (+0/-3)	103,85	62,1	190,5	8	19,0	131
5" - (DN 125)	172	250 (+0/-3)	130,85	74,9	215,9	8	22,2	158
6" - (DN 150)	163	300 (+0/-3)	126,35	100	241,3	8	22,2	153,5
8" - (DN 200)	255	350 (+0/-3)	172,35	154,3	298,4	8	22,2	199,5
10" - (DN 250)	312	450 (+0/-5)	200,85	205	361,9	12	25,4	228
12" - (DN 300)	375	500 (+0/-5)	232,35	259	431,8	12	25,5	259,5

## MUT2300 - AS 2129 / Table D

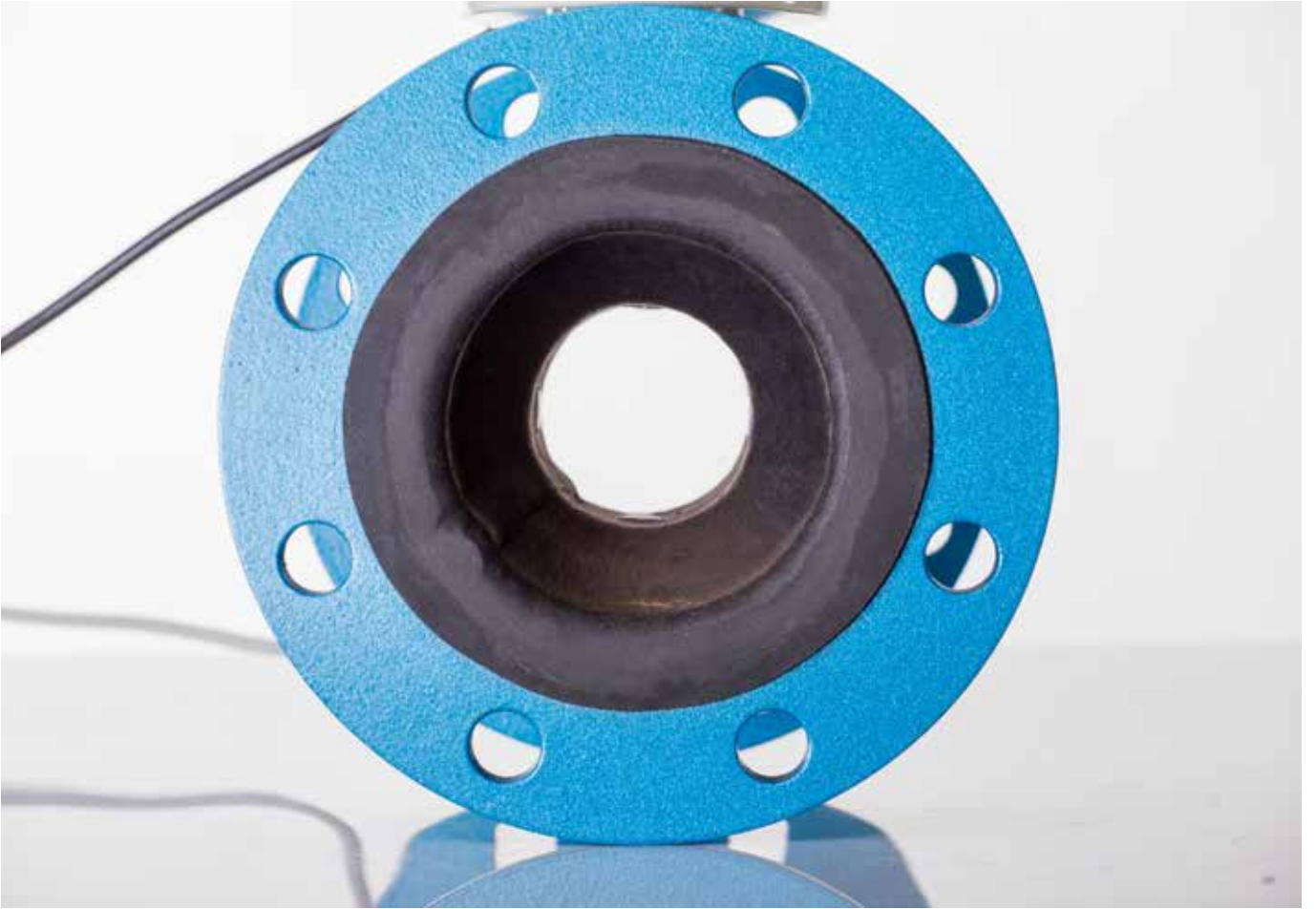
DN	D5	L4	J	Di	D6	N	S	H
50	85	200 (+0/-3)	87,35	30,4	114	4	18	114,5
65	85	200 (+0/-3)	87,35	34,3	127	4	18	114,5
80	103	200 (+0/-3)	96,35	46,3	146	4	18	123,5
100	118	250 (+0/-3)	103,85	62,1	178	4	18	131
125	172	250 (+0/-3)	130,85	74,9	210	8	18	158
150	163	300 (+0/-3)	126,35	100	235	8	18	153,5
200	255	350 (+0/-3)	172,35	154,3	292	8	18	199,5
250	312	450 (+0/-5)	200,85	205	356	8	22	228
300	375	500 (+0/-5)	232,35	259	406	12	22	259,5

## MUT2300 - AS 2129 / Table E

DN	D5	L4	J	Di	D6	N	S	H
50	85	200 (+0/-3)	87,35	30,4	114	4	18	114,5
65	85	200 (+0/-3)	87,35	34,3	127	4	18	114,5
80	103	200 (+0/-3)	96,35	46,3	146	8	18	123,5
100	118	250 (+0/-3)	103,85	62,1	178	8	18	131
125	172	250 (+0/-3)	130,85	74,9	210	8	18	158
150	163	300 (+0/-3)	126,35	100	235	8	22	153,5
200	255	350 (+0/-3)	172,35	154,3	292	8	22	199,5
250	312	450 (+0/-5)	200,85	205	356	12	22	228
300	375	500 (+0/-5)	232,35	259	406	12	26	259,5

## MUT2300 - AS 4087 / PN 16

DN	D5	L4	J	Di	D6	N	S	H
50	85	200 (+0/-3)	87,35	30,4	114	4	18	114,5
65	85	200 (+0/-3)	87,35	34,3	127	4	18	114,5
80	103	200 (+0/-3)	96,35	46,3	146	8	18	123,5
100	118	250 (+0/-3)	103,85	62,1	178	4	18	131
125	172	250 (+0/-3)	130,85	74,9	210	8	18	158
150	163	300 (+0/-3)	126,35	100	235	8	18	153,5
200	255	350 (+0/-3)	172,35	154,3	292	8	18	199,5
250	312	450 (+0/-5)	200,85	205	356	8	22	228
300	375	500 (+0/-5)	232,35	259	406	12	22	259,5





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