

BERMAD Meters

Merging monitoring & control



Battery Operated & Zero D Requirement Electromagnetic flowmeter

MUT2300
MC406



Bluetooth™



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 Verificator 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
- Booster pump stations
- Lift stations

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 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



— The electromagnetic flowmeter designed for the toughest applications —



DS401-1-ENG



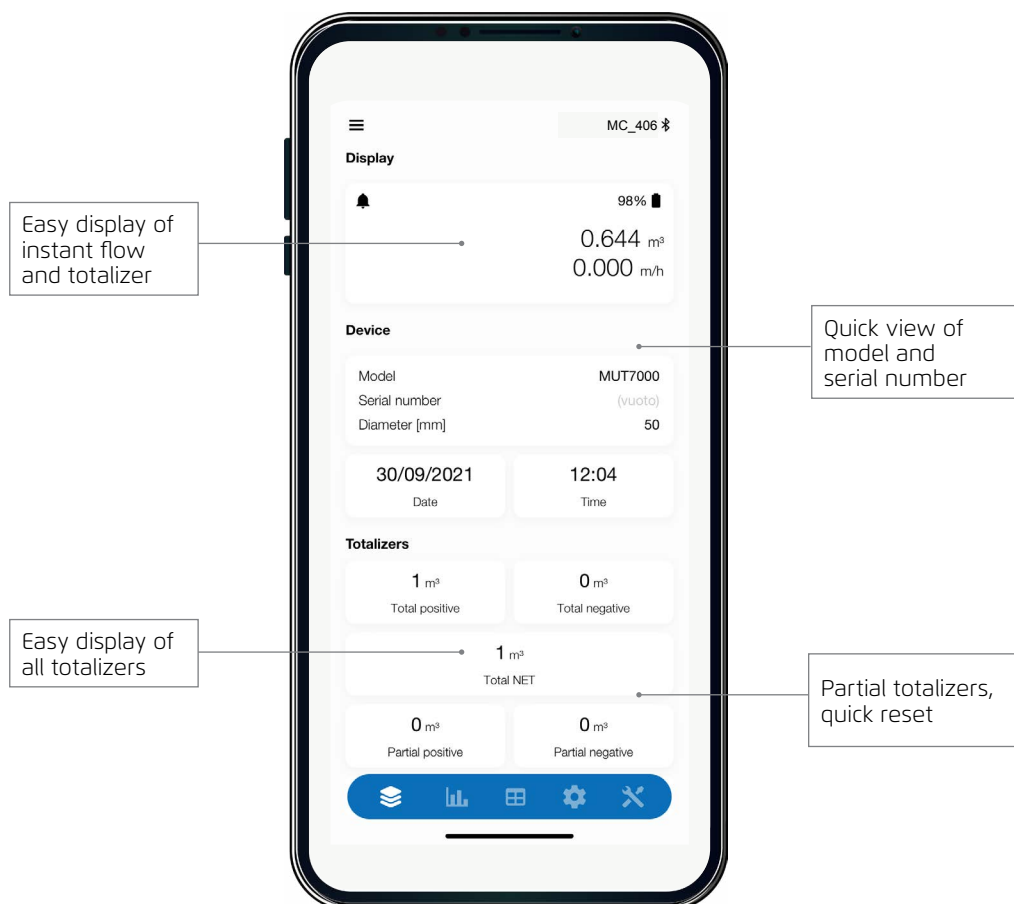
Features



Easy and intuitive interface

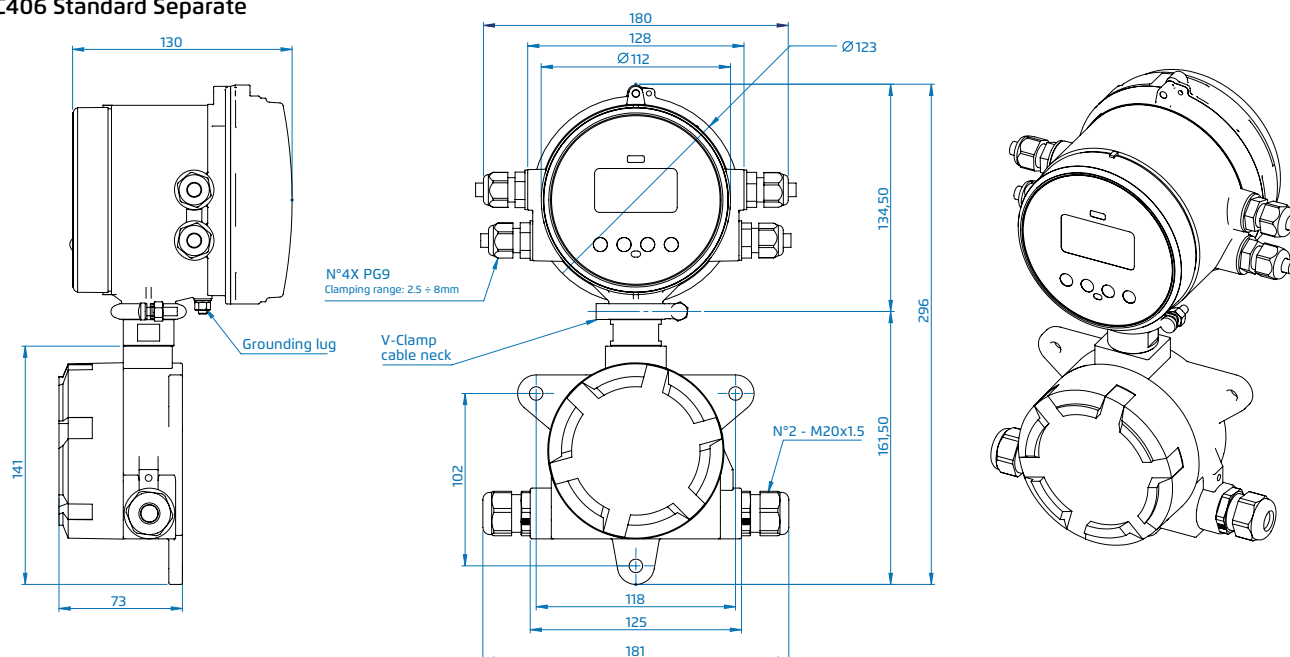
Everything you need from your flowmeter with a blink of an APP.

In a fast developing and interconnected world, data must be available and exchanged quick and easy
Mag-Net app is the Euromag solution.

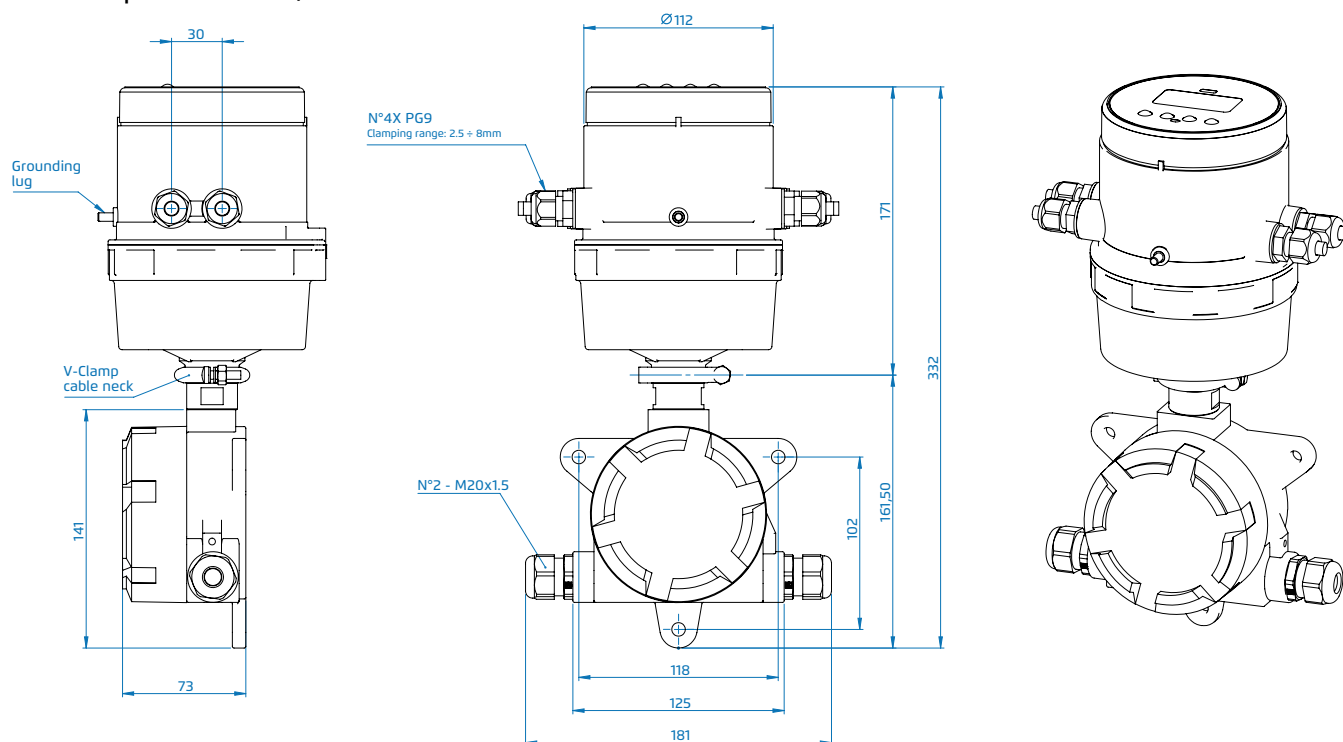


Overview Separate Converter

MC406 Standard Separate



MC406 Separate with GSM/GPRS



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 % +/- 2 mm/s - insertion sensors 2% of rate +/- 2mm/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 PG9 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
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

Specifications

Flow Units	m, m ³ , l, ML, ft ³ , GAL
Outputs	2 pulses passive outputs (MOS), individual galvanically isolated - clean contact Maximum load +/- 35V DC, 100 mA short circuit protected
Communication	Integrated BERMAD 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 BERMAD Module Pressure (1) and temperature (2) Energy metering ready
Totalizers	4 (2 positive and 2 negative)
Date and time	Yes
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

* 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

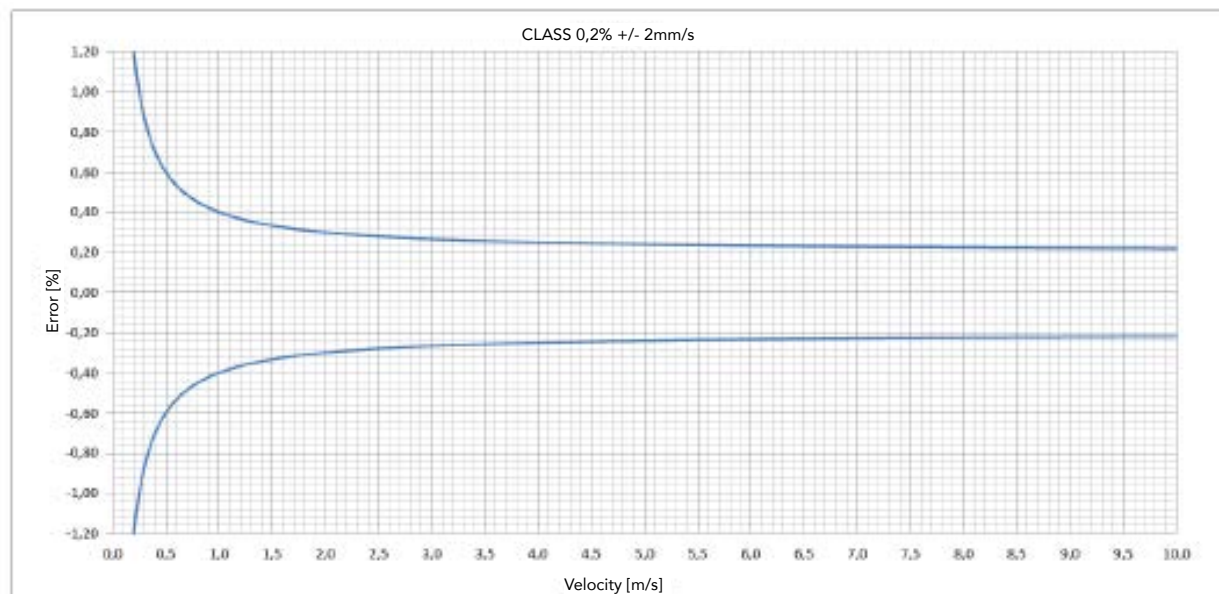
Specifications

Pipe sizes inches/mm	2", 2½", 3", 4", 5", 6", 8", 10", 12" / 50, 65, 80, 100, 125, 150, 200, 250, 300
Flanges Connections Available	EN1092-1 PN 10/16, ANSI 150, AS 2129 (table D, E, F), AS 4087, KS10K, Others on request
Pressure	21 bar - 305 psi
Temperature	Operating: -104°F/+176°F (-40°C/+80°C) Storage: -22°F/+158°F (-30...+70°C)
Accuracy	0,2% +/- 2mm/s • 0,2% +/- 0.08inch/s
Linear Material	Hard rubber (Ebonite)
Electrodes Materials	AISI316L (standard), Hastelloy C, Hastelloy B, Titanium, Tantalum, Platinum
Protection Degree	IP68 (EN 60529) permanents submersion at 1,5m (4,92ft)
Pressure Drop Class and Installation Conditions	DN≤80 ΔP10 (<0,10 bar) • DN≥100 ΔP16 (<0,16 bar) / ODN upstream - ODN downstream
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
Conformity	EMC: EN 61010 - LVD: EN 61326 ; EN/IEC 60529 IP68
Flow Units	m, m³, l, ML, ft³, GAL, Aft, Ain, BBL
Outputs	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.
Communication	Integrated Euromag IrCOM interface. Bluetooth module optional.
Datalogging	100,000 lines of data with a frequency of log between 1 minute and 120 minutes (default 15 minutes)
Transmitter Type	Battery powered - 2 x D Cell 3,6 V * - 12/24Vdc optional
Battery life	Lithium battery pack up to 10 years / GSM battery life up to 10 years
Add on modules	GSM/GPRS Euromag Module Pressure (up to 1 sensor) and temperature (up to 2 sensors) Energy metering ready
Custody transfer	Type approved OIML R49-1 2013 / EN14154 MID EN-ISO 4064 - Certificate n. T10713 - Class 1 & 2
Totalizers	5 (2 positive, 2 negative and 1 net)
Date and time	Yes
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 ■ high temperature ■ pulse overlapped ■ empty pipe on the measuring electrodes ■ empty pipe on the 4th electrode ■ high voltage supply ■ wet electronic board ■ low battery
External verification	Field vericator 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 - Live data recording

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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	2½" 65mm	3" 80mm	4" 100mm	5" 125mm	6" 150mm	8" 200mm	10" 250mm	12" 300mm
Max flow rate (gallons/minute)	137,59	220,14	346,76	550,36	880,57	1376	3467	5503	5503
min Flow Rate (gallons/minute)	0,55	0,88	1,39	2,2	3,52	5,5	13,87	22	35,22
Max Flow Rate (Liters/Second)	8,68	13,88	21,8	34,7	55,51	86,81	218,73	347	347
min Flow Rate (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.

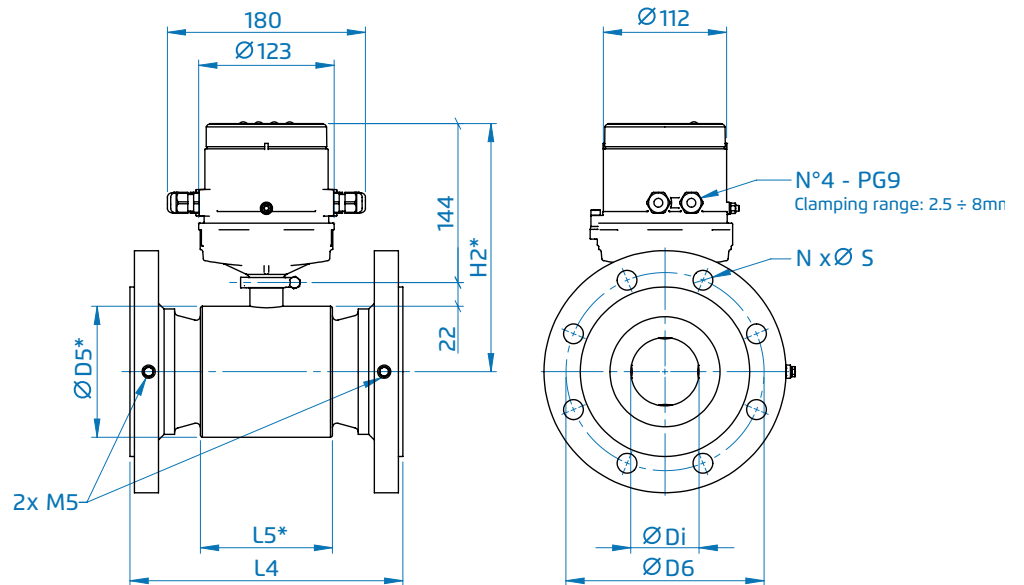
The MUT2300 combined with MC406M can be supplied on request with a certificate of conformity with the international recommendation OIML R49 MID which concerns water meters intended to be used for legal purposes. The certificate has been issued by NMI laboratories in The Netherlands.

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

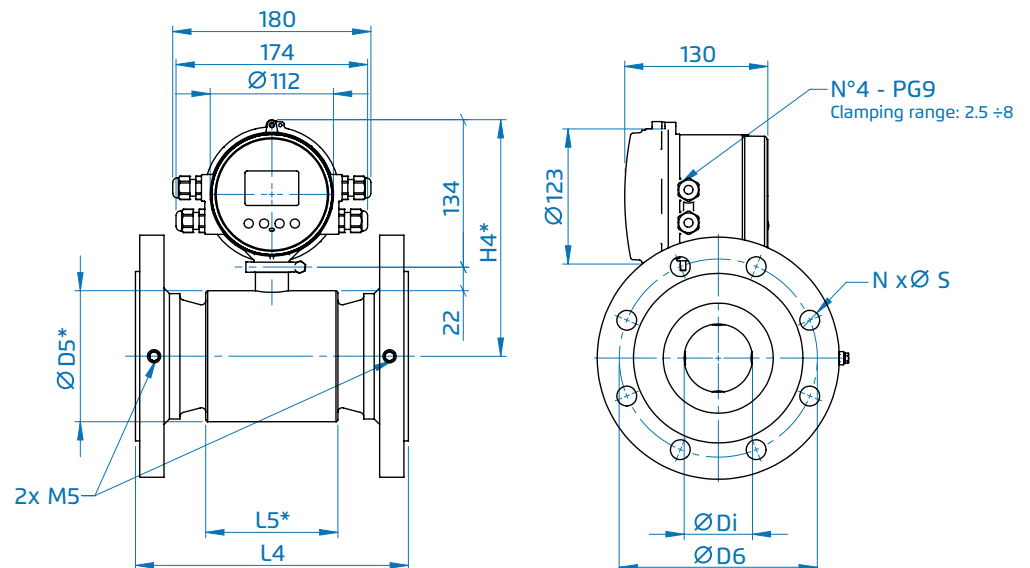
MC406 Vertical

DN	H2
50 - (2")	209
65 - (2½")	211
80 - (3")	218
100 - (4")	226
125 - (5")	236
150 - (6")	248
200 - (8")	276
250 - (10")	308
300 - (12")	336

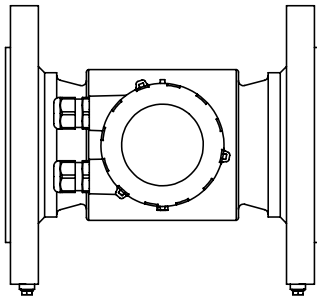
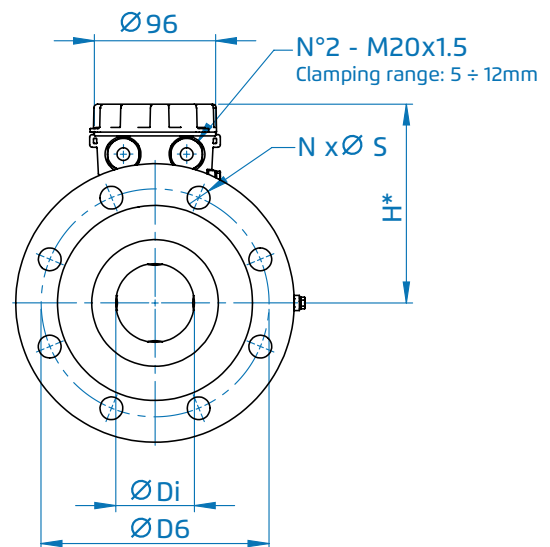
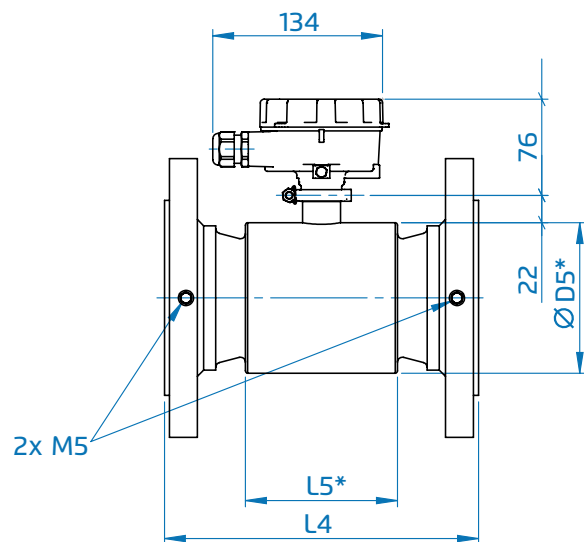


MC406 horizontal

DN	H4
50 - (2")	199
65 - (2½")	201
80 - (3")	208
100 - (4")	216
125 - (5")	226
150 - (6")	238
200 - (8")	266
250 - (10")	298
300 - (12")	326



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
2½" - (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

About BERMAD

BERMAD is a leading, privately-owned global company that designs, develops and manufactures tailor-made water & flow management solutions that include state-of-the-art hydraulic control valves, air valves and advanced metering solutions.

Founded in 1965, we have spent over 50 years interacting with the world's major end users,

and accumulating knowledge and experience in multiple markets and industries. Today, we are recognized as a pioneer and established world-leading provider of water & flow management solutions that give our customers the unprecedented operational efficiency, and superior quality, durability and performance they need to meet the demanding challenges of the 21st century.

