

MUT2200-Engineering

MUT2200EL sensors represent the state of the art of BERMAD production for water cycle and process applications. The new structure for the generation of the magnetic field and the innovative route of the signal generated by the electrodes, provide a sensor with an extremely wide measurement range:

EL= Extended Linearity

This new sensors series follows the successful tradition of the MUT2200EL, introducing a measurement range of more than 1:1000 without linearization software. These kinds of performances allow very accurate measures on a wide flowrate range and to count lower flow rates that, before, would have been reset because of the effect of the converters cut off. This flanged sensors series bases its operation on the Faraday Principle, by which a conductor crossing a magnetic field generates a potential perpendicularly orientated to the same field. In this case the flow tube made in stainless steel AISI 304 is equipped with carbon steel or stainless steel flanges, two coils are installed on the top and inferior part; the magnetic field, generated by the electric current crossing the coil, induces in the electrodes a difference in the potential proportional to the flow rate. With the aim of measuring such potential of very low values, the interior of the flow tube is electrically insulated, thus the process liquid is no longer in contact neither with the material of the flow tube nor with that of the flange. The converter used generates the current supplying the coil, acquires the electrodes difference of potential, process the signal to calculate the flowrate and administers the communication with the exterior. The entire sensor, when installed in the separate version, has a degree of protection IP68 suitable for a permanent immersion in water up to a depth of 1.5m thanks to a welded plate structure containing the coil and the electrodes.



The electromagnetic flowmeter designed for the toughest applications



Modbus

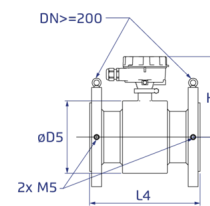
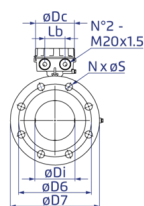


Sensor Specifications

Flow tube material	AISI 304 (std), AISI 316	
Flanges material	Carbon steel painted (std), AISI 304, AISI 316	
Electrodes material	Electrodes material Hastelloy C (std), Hastelloy B, Titanium, Tantalio, Platinum	
Internal lining and liquid temperature	Internal lining: PTFE Ebonite	Liquid temperature: Standard -40 /+130°C (up to +180° on request) -40°C / +80°C
Available Sizes	½"-80" ; DN15-2000 mm	
Flange standards 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	
Protection Degree	IP68 1.5 m continuous immersion (EN 60529)	
Electrical connections	Cable glands M20 x 1.5 + terminal block + sealing resin	



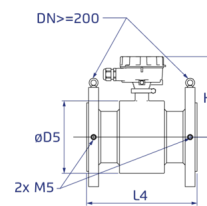
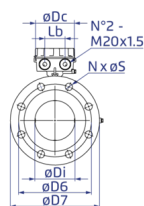
MUT2200EL PN 10 EN 1092-1



Size	L4 (In)	D5 (In)	Di (In)	D6 (In)	D7 (In)	N	H (In)	Dc (In)	Lb (In)
½" ; DN12	7.87 (+0/-0.12)	3.31	0.43	2.56	3.74	4	6.14	3.78	1.97
¾" ; DN20	7.87 (+0/-0.12)	3.31	0.67	2.95	4.13	4	6.14	3.78	1.97
1" ; DN25	7.87 (+0/-0.12)	2.91	0.94	3.35	4.53	4	5.94	3.78	1.97
1¼" ; DN32	7.87 (+0/-0.12)	3.27	1.22	3.94	5.51	4	6.1	3.78	1.97
1½" ; DN40	7.87 (+0/-0.12)	3.46	1.46	4.33	5.91	4	6.22	3.78	1.97
2" ; DN50	7.87 (+0/-0.12)	4.02	1.85	4.92	6.5	4	6.5	3.78	1.97
2½" ; DN65	7.87 (+0/-0.12)	4.49	2.48	5.71	7.28	8	6.73	3.78	1.97
3" ; DN80	7.87 (+0/-0.12)	5	2.95	6.3	7.87	8	6.97	3.78	1.97
4" ; DN100	9.84 (+0/-0.12)	6.34	3.9	7.09	8.66	8	7.64	3.78	1.97
5" ; DN125	9.84 (+0/-0.12)	7.36	4.88	8.27	9.84	8	8.15	3.78	1.97
6" ; DN150	11.81 (+0/-0.12)	8.27	5.98	9.45	11.22	8	8.62	3.78	1.97
8" ; DN200	13.78 (+0/-0.12)	10.28	7.91	11.61	13.39	8	9.61	3.78	1.97
10" ; DN250	17.72 (+0/-0.20)	12.56	10.04	13.78	15.55	12	10.75	3.78	1.97
12" ; DN300	19.69 (+0/-0.20)	14.61	12.13	15.75	17.52	12	11.77	3.78	1.97
14" ; DN350	21.65 (+0/-0.20)	15.91	13.39	18.11	19.88	16	12.44	3.78	1.97
16" ; DN400	23.62 (+0/-0.20)	17.91	15.35	20.28	22.24	16	13.43	3.78	1.97
18" ; DN450	17.72 (+0/-0.28)	20.43	17.36	22.24	24.21	20	14.69	3.78	1.97
20" ; DN500	19.69 (+0/-0.35)	22.44	19.37	24.41	26.38	20	15.71	3.78	1.97
24" ; DN600	23.62 (+0/-0.35)	26.93	23.31	28.54	30.71	20	17.95	3.78	1.97
28" ; DN700	27.56 (+0/-0.35)	30.83	27.36	33.07	35.24	24	19.88	3.78	1.97
32" ; DN800	31.50 (+0/-0.35)	34.84	31.26	37.4	39.96	24	21.89	3.78	1.97
36" ; DN900	35.43 (+0/-0.59)	39.21	35.28	41.34	43.9	28	24.09	3.78	1.97
40" ; DN1000	39.37 (+0/-0.59)	43.23	39.21	45.67	56.89	32	26.1	3.78	1.97
48" ; DN1200	47.24 (+0/-0.59)	51.65	47.2	54.33	48.43	28	30.31	3.78	1.97
56" ; DN1400	55.12 (+0/-0.59)	59.53	55.2	62.6	65.94	36	34.25	3.78	1.97
60" ; DN1500	59.06 (+0/-0.59)	63.47	59.06	66.93	70.28	36	36.22	3.78	1.97
64" ; DN1600	62.99 (+0/-0.59)	67.4	63.07	71.65	75.39	40	38.19	3.78	1.97
72" ; DN1800	70.87 (+0/-0.59)	75.67	71.02	79.53	83.27	44	42.32	3.78	1.97
80" ; DN2000	78.74 (+0/-0.59)	83.54	78.9	87.8	91.54	48	46.26	3.78	1.97



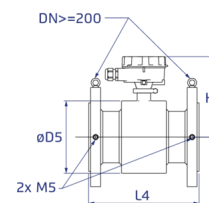
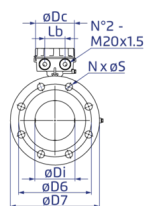
MUT2200EL PN 16 EN 1092-1



Size
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¾" ; DN20
1" ; DN25
1¼" ; DN32
1½" ; DN40
2" ; DN50
2½" ; DN65
3" ; DN80
4" ; DN100
5" ; DN125
6" ; DN150
8" ; DN200
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40" ; DN1000
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60" ; DN1500
64" ; DN1600
72" ; DN1800
80" ; DN2000



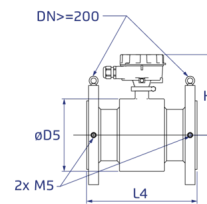
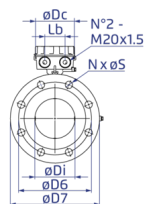
MUT2200EL PN 25 EN 1092-1



Size
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1½" ; DN40
2" ; DN50
2½" ; DN65
3" ; DN80
4" ; DN100
5" ; DN125
6" ; DN150
8" ; DN200
10" ; DN250
12" ; DN300
14" ; DN350
16" ; DN400
18" ; DN450
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24" ; DN600
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60" ; DN1500
64" ; DN1600
72" ; DN1800
80" ; DN2000



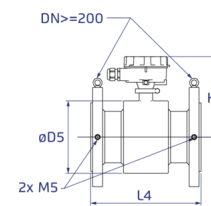
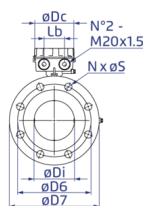
MUT2200EL PN 40 EN 1092-1



Size
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3/4" ; DN20
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1 1/4" ; DN32
1 1/2" ; DN40
2" ; DN50
2 1/2" ; DN65
3" ; DN80
4" ; DN100
5" ; DN125
6" ; DN150
8" ; DN200
10" ; DN250
12" ; DN300
14" ; DN350
16" ; DN400
18" ; DN450
20" ; DN500
24" ; DN600
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40" ; DN1000
48" ; DN1200
56" ; DN1400
60" ; DN1500
64" ; DN1600
72" ; DN1800
80" ; DN2000



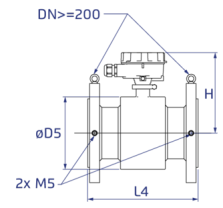
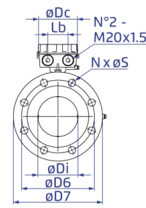
MUT2200EL ANSI 150



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2 1/2" ; DN65
3" ; DN80
4" ; DN100
5" ; DN125
6" ; DN150
8" ; DN200
10" ; DN250
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56" ; DN1400
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64" ; DN1600
72" ; DN1800
80" ; DN2000



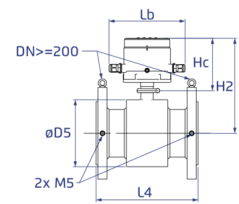
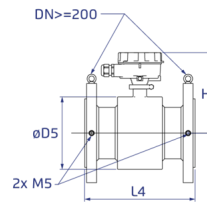
MUT2200EL ANSI 300



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24" ; DN600
28" ; DN700
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64" ; DN1600
72" ; DN1800
80" ; DN2000



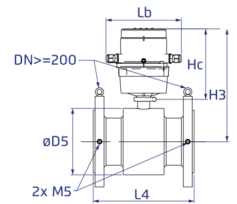
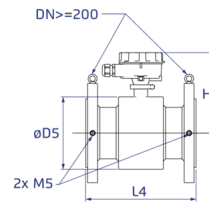
MUT2200EL-MC406



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56" ; DN1400
60" ; DN1500
64" ; DN1600
72" ; DN1800
80" ; DN2000

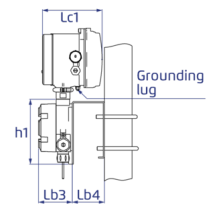
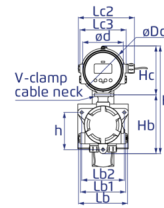


MUT2200EL-MC406 GSM



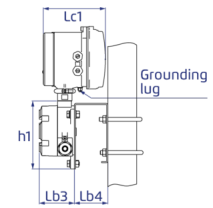
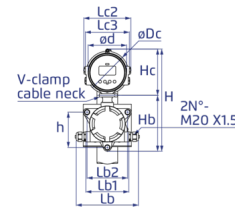
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64" ; DN1600
72" ; DN1800
80" ; DN2000

MC406 Military connectors



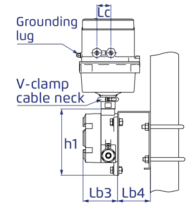
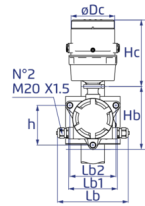
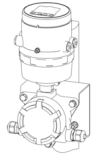
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11.65	5.28	5.12	6.1	5.04	4.84	4.41	6.36	5.35	4.92	4.65	2.89	2.76	5.55	1.32

MC406 Standard Separate

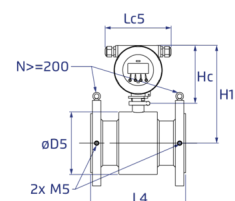
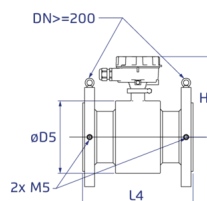


H (In)	Hc (In)	Lc1 (In)	Lc2 (In)	Lc3 (In)	Dc (In)	d (In)	Hb (In)	Lb (In)	Lb1 (In)	Lb2 (In)	Lb3 (In)	Lb4 (In)	h1 (In)	Weight (Lb)
11.65	5.28	5.12	5.04	5.39	4.84	4.41	6.36	7.13	4.92	4.65	2.89	2.76	5.55	1.32

MC406 Separate with GSM

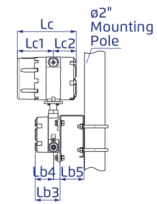
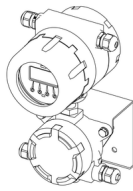


H (In)	Hc (In)	Lc (In)	Dc (In)	Hb (In)	Lb (In)	Lb1 (In)	Lb2 (In)	Lb3 (In)	Lb4 (In)	h1 (In)	Weight (Lb)
13.07	6.71	1.18	4.41	6.36	7.13	4.92	4.65	2.89	2.76	5.55	1.98


MUT2200EL-MC608


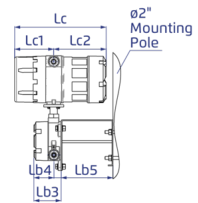
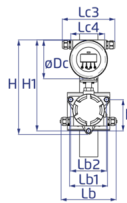
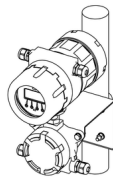
Size
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2" ; DN50
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3" ; DN80
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36" ; DN900
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60" ; DN1500
64" ; DN1600
72" ; DN1800
80" ; DN2000

MC608A



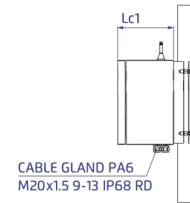
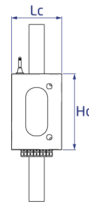
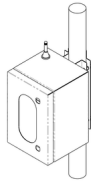
H (In)	H1 (In)	Lc (In)	Lc1 (In)	Lc2 (In)	Lc3 (In)	Lc4 (In)	Dc (In)	Lb (In)	Lb1 (In)	Lb2 (In)	Lb3 (In)	Lb4 (In)	Lb5 (In)	h1 (In)	h2 (In)
12.09	11.65	6.81	4.15	2.66	6.81	4.37	4.92	7.13	4.92	4.65	2.91	2.13	2.76	0.48	0.46

MC608B/R



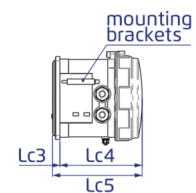
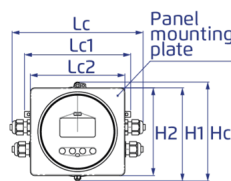
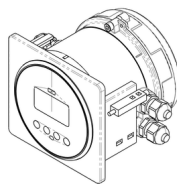
H (In)	H1 (In)	Lc (In)	Lc1 (In)	Lc2 (In)	Lc3 (In)	Lc4 (In)	Dc (In)	Lb (In)	Lb1 (In)	Lb2 (In)	Lb3 (In)	Lb4 (In)	Lb5 (In)	h1 (In)	h2 (In)
12.09	11.65	9.72	4.15	5.57	6.81	4.37	4.92	7.13	4.92	4.65	2.91	2.13	5.91	0.48	0.46

MC608I



Hc (In)	Lc (In)	Lc1 (In)
11.81	7.87	7.87

MC608P



H1 (In)	H2 (In)	Hc (In)	Lc (In)	Lc1 (In)	Lc2 (In)	Lc3 (In)	Lc4 (In)	Lc5 (In)	h2 (In)	h3 (In)
5.02	4.72	5.33	7.09	5.75	5.12	0.41	4.70	5.12	0.20	0.19

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 $\pm 0.2\% \pm 0.0066 \text{ ft/s}$ ($\pm 0.2\% \pm 0.0033 \text{ ft/s}$ on request).



Flow Rate

Size Q @ (gpm)	DN25 1"	DN32 1¼"	DN40 1½"	DN50 2"	DN65 2½"	DN80 3"	DN100 4"	DN125 5"	DN150 6"	DN200 8"	DN250 10"	DN300 12"	DN350 14"	DN400 16"	DN450 18"
Q1 Minimum Flow	0.35	0.35	0.56	0.88	1.41	2.22	3.52	5.64	8.81	14.09	22.19	35.22	56.36	56.36	110.07
Q2 Transitional Flow	0.56	0.56	0.9	1.41	2.25	3.55	5.64	9.02	14.09	22.54	35.50	56.36	90.17	90.17	176.11
Q3 Permanent Flow	44.03	44.03	70.45	110.07	176.11	277.38	440.29	704.46	1,100.72	1,761.15	2,773.81	4,402.87	7,044.59	7,044.59	11,007.17
Q4 Maximum Flow (Short Time)	55.04	55.04	88.06	137.59	220.14	346.73	550.36	880.57	1,375.90	2,201.43	3,467.26	5,503.58	8,805.73	8,805.73	13,758.96

Size Q @ (gpm)	DN500 20"	DN600 24"	DN700 28"	DN800 32"	DN900 36"	DN1000 40"	DN1200 48"	DN1400 56"	DN1500 60"	DN1600 64"	DN1800 72"	DN2000 80"
Q1 Minimum Flow	110.07	220.14	220.14	440.29	440.29	880.57	1,408.92	2,201.43	3,522.29	5,547.61	8,805.73	14,089.17
Q2 Transitional Flow	176.11	352.23	352.23	704.46	704.46	1,408.92	2,254.27	3,522.29	5,635.67	8,876.18	14,089.17	22,542.68
Q3 Permanent Flow	11,007.17	17,611.47	17,611.47	27,738.06	27,738.06	44,028.67	70,445.87	110,071.68	176,114.68	277,380.62	440,286.70	704,458.72
Q4 Maximum Flow (Short Time)	13,758.96	22,014.34	22,014.34	34,672.58	34,672.58	55,035.84	88,057.34	137,589.59	220,143.35	346,725.78	550,358.38	880,573.40

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.

