OIML Certificate

OIML Member State
The Netherlands

Number R49/2013-A-NL1-19.01 revision 5
Project number 3670720

Issuing authority Person responsible:	NMi Certin B.V. M.Ph.D. Schmidt
Applicant and Manufacturer	Euromag International S.r.l. Via della Tecnica 20 35035 Mestrino (PD) Italy
Identification of the certified type	An electromagnetic **water meter** Type: MUT1000EL, MUT2200EL and MUT2300 with electronic converter MC406M and MC406AM
Characteristics	See page 2 and further

This OIML Certificate is issued under scheme A.

This Certificate attests the conformity of the above identified type (represented by the sample(s) identified in the OIML Type Evaluation Report) with the requirements of the following Recommendation of the International Organization of Legal Metrology (OIML):

R49-1 (2013) "Water meters intended for the metering of cold potable water and hot water"

Accuracy class 1 and 2

This Certificate relates only to the metrological and technical characteristics of the type of measuring instrument covered by the relevant OIML International Recommendation identified above. This Certificate does not bestow any form of legal international approval.

This certificate and supporting reports comply with the requirements of OIML-CS-PD-07 clause 6.2.

Important note: Apart from the mention of the Certificate's reference number and the name of the OIML Member State in which the Certificate was issued, partial quotation of the Certificate and of the associated OIML Type Evaluation Report(s) is not permitted, although either may be reproduced in full.

Issuing Authority **NMi Certin B.V., OIML Issuing Authority NL1**
22 September 2023

Certification Board

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INSPECTION RvA I 122

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The conformity was established by the results of tests and examinations provided in the associated reports:

- No. NMi-15200444-01 dated 31 March 2016 that includes 39 pages;
- No. 150701670/ Euromag DN 50/ MC 406 dated 30 March 2016 that includes 42 pages;
- No. NMi-16200309-01 revision 1 dated 22 March 2018 that includes 77 pages;
- No. 160600944/MUT 2200, DN 50, full bore dated 28 October 2016 that includes 31 pages;
- No. 160600948/MUT 2200, DN 65, full bore dated 28 October 2016 that includes 31 pages;
- No. 160600939/MUT 2300, DN 80, reduced bore dated 28 October 2016 that includes 34 pages;
- No. NMi-1902198-01 dated 3 December 2018 that includes 16 pages;
- No. NMi-2186686-01 dated 24 May 2019 that includes 43 pages;
- No. NMi-2186686-02 dated 24 May 2019 that includes 47 pages;
- No. NMi-2463352-01 dated 18 January 2021 that includes 27 pages;
- No. NMi-3369067-01 dated 10 May 2022 that includes 13 pages.
- No. NMi-3670720-01 dated 22 September 2023 that includes 12 pages.

Characteristics of the measuring instrument
In Table 1 the general characteristics of the measuring instrument are presented.
The measurement sensor can have the following cylindrical measuring tube:
- Full bore for type MUT1000EL (without flanges) or MUT2200EL (with flanges); or
- Reduced bore for type MUT2300.

Table 2 and 3 gives an overview of the general characteristics of the family of instruments.
The construction of the measuring instrument is recorded in the Documentation folder no. T10713-8.

Table 1 General characteristics

Measuring principle	Electromagnetic
Accuracy class of MUT2200EL	2
Accuracy class of MUT2300	1
Environmental class	M1 / O (installed outdoors)
Electromagnetic environment	E1 for remote version of converter MC406M E2 for compact version of converter MC406M E2 for compact and remote version of converter MC406AM E1 for compact and remote version of converter MC406M/AM with Bluetooth&RS485 and/or 4-20mA output
Temperature range ambient	-25 °C / +55 °C
Water temperature class	T50 (+0,1 °C / +50 °C)
Maximum admissible pressure (MAP)	1,6 MPa (16 bar)
Orientation	All positions (Horizontal, vertical or diagonal)
Flow profile sensitivity class	U0 and D0 (0 x DN upstream and 0 x DN downstream)

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<table>
<tr><td>Reverse flow</td><td>The water meter is designed to measure reverse flow</td></tr>
<tr><td>Pressure loss class of full-bore sensor types MUT1000EL or MUT2200EL</td><td>Δp 10 (0,010 MPa or 0,10 bar) for all sizes</td></tr>
<tr><td>Pressure loss class of MUT2300 based on documentation 10713/4-03</td><td>Δp 10 (0,010 MPa or 0,10 bar) for sizes < DN80
Δp 16 (0,016 MPa or 0,16 bar) for sizes ≥ DN80</td></tr>
<tr><td>Pressure loss class of MUT2300 based on documentation 10713/1-01</td><td>Δp 25 (0,025 MPa or 0,25 bar) for sizes < DN80
Δp 40 (0,040 MPa or 0,40 bar) for sizes ≥ DN80</td></tr>
<tr><td>Power supply</td><td>Replaceable battery (2,9 – 3,7 V)
DC mains (10 - 28 V) only for MC406AM</td></tr>
<tr><td>Software identification</td><td>Software ‘Bootloader’:
<table>
<tr><th>Software versions</th><th>CRC Checksum</th></tr>
<tr><td>01.00</td><td>63A2EDED</td></tr>
<tr><td>01.01</td><td>67AEA1E4</td></tr>
<tr><td>01.02</td><td>DE7A99AB</td></tr>
</table>
Software ‘Legally relevant firmware’:
<table>
<tr><th>Software versions</th><th>CRC Checksum</th></tr>
<tr><td>01.05</td><td>CAA8A4C7</td></tr>
<tr><td>01.15</td><td>6AA50C55</td></tr>
<tr><td>01.16</td><td>E93E3A1E</td></tr>
<tr><td>01.21</td><td>79413617</td></tr>
<tr><td>01.23</td><td>E7DD52E4</td></tr>
<tr><td>01.36</td><td>E1A52981</td></tr>
<tr><td>01.38</td><td>C2641A99</td></tr>
<tr><td>01.42</td><td>2B6CF4C7</td></tr>
<tr><td>01.44</td><td>D867EC79</td></tr>
</table></td></tr>
</table>

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Table 2 General characteristics of the family of instruments – Full bore type MUT1000EL or MUT2200EL

Meter size	Ø in- and outlet [mm]	Flow rates [m³/h]				Ratio Q3/Q1
		Minimum Q1	Transitional Q2	Permanent Q3	Overload Q4	
DN32	32	0,125	0,2	25	31,25	200
DN40	40	0,2	0,32	40	50	200
DN50	50	0,315	0,504	63	78,75	200
DN65	65	0,5	0,8	100	125	200
DN80	80	0,8	1,28	160	200	200
DN100	100	1,25	2	250	312,5	200
DN125	125	2	3,2	400	500	200
DN150	150	3,15	5,04	630	787,5	200
DN200	200	5	8	1000	1250	200
DN250	250	8	12,8	1600	2000	200
DN300	300	10	16	1600	2000	160

Table 3 General characteristics of the family of instruments - Reduced bore type MUT2300

Meter size	Ø in- and outlet [mm]	Flow rates [m³/h]				Ratio Q3/Q1
		Minimum Q1	Transitional Q2	Permanent Q3	Overload Q4	
DN50	50	0,125	0,2	25	31,25	200
DN65	65	0,2	0,32	40	50	200
DN80	80	0,315	0,504	63	78,75	200
DN100	100	0,5	0,8	100	125	200
DN125	125	0,8	1,28	160	200	200
DN150	150	1,25	2	250	312,5	200
DN200	200	3,15	5,04	630	787,5	200
DN250	250	5	8	1000	1250	200
DN300	300	8	12,5	1000	1250	125

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Table 4 General characteristics of the indicating device - Full bore type MUT1000EL or MUT2200EL

Meter size	Indicating range (minimum value) [m³]	Verification scale interval (minimum resolution) [m³]
DN32, DN40	9 999 999	0,0001
DN50, DN65, DN80, DN100	9 999 999	0,001
DN125, DN150, DN200, DN250, DN300	9 999 999	0,01

Table 5 General characteristics of the indicating device - Reduced bore type MUT2300

Meter size	Indicating range (minimum value) [m³]	Verification scale interval (minimum resolution) [m³]
DN50	9 999 999	0,0001
DN65, DN80, DN100, DN125, DN150	9 999 999	0,001
DN200, DN250, DN300	9 999 999	0,01

Certificate history:
This revision replaces the previous version.

Revision	Date	Description of the modification
Initial	24 May 2019	-
1	4 February 2021	Addition of MUT1000EL and full-bore sizes DN32 and DN40 Lowering pressure loss class of MUT2300
2	10 May 2022	Addition of electronic hardware module (Bluetooth&RS485 and/or 4-20mA output). Addition of new software.
3	7 July 2022	Software update
4	14 February 2023	Software update
5	22 September 2023	Update of electronic hardware module. software update