OIML Certificate

OIML Member State
The Netherlands

Number R49/2013-A-NL1-20.01 revision 1
Project number 2254799

Issuing authority Person responsible:	NMi Certin B.V. M. Boudewijns
Applicant and Manufacturer	ABB Limited Oldends Lane GL10 3TA Stonehouse United Kingdom
Identification of the certified type	An electromagnetic **water meter** Type: AquaMaster4 FEW4XX.R and FET4 * *) The type designation XX can be on the first X for 1 or 3 (standard or enhanced) and the second X can be 1, 2, 8 or 9 (integral/remote version, optionally sensor only.
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):

R 49-1 (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.

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**
1 October 2020

Certification Board

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

- No. NMi-2254799-01 dated 14 August 2020 that includes 235 pages.
- No. NMi-2254799-03 dated 30 September 2020 that includes 44 pages.

Characteristics of the measuring instrument
In Table 1 the general characteristics of the measuring instrument are presented.
Table 2 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. T11851-2.

Table 1 General characteristics

Measuring principle	Electromagnetic
Accuracy class	1 and 2
Environmental class	B (installed in buildings) for flow transmitter O (installed outdoors) for flow sensor
Electromagnetic environment	E1
Temperature range ambient	+5 °C / +55 °C (for flow transmitter) -25 °C / +55 °C (for flow sensor)
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)
Reverse flow	The sensor is intended to measure reverse flow
Pressure loss class	Δp 40 (0,40 bar) for sizes DN40 and DN50 Δp 63 (0,63 bar) for sizes larger than DN50
Power supply	AC mains: 85 –240 VAC @ 50/60 Hz Renewable energy power (DC powered): 6 – 32 V Replaceable Battery: 3,6 V (operating range: 2,9 - 3,6 V)
Software identification	Version number: 03.00.03 Checksum: B26AFE6B
Checking facilities	Type P (permanent) automatic checking facility

Table 2 General characteristics of the family of instruments
Reduce bore - AC mains powered

Meter size	Accuracy class	Flow rates [m³/h]				Ratio Q3/Q1
		Minimum Q1	Transitional Q2	Permanent Q3	Overload Q4	
DN40	1	0,05	0,08	25	31,25	500
	2	0,025	0,04	25	31,25	1000
DN50	1	0,08	0,128	40	50	500
	2	0,04	0,064	40	50	1000
DN65	1 & 2	0,063	0,1008	63	78,75	1000
DN80	1 & 2	0,1	0,16	100	125	1000
DN100	1	0,32	0,512	160	200	500
	2	0,16	0,256	160	200	1000
DN125	1	0,32	0,512	160	200	500
	2	0,16	0,256	160	200	1000
DN150	1 & 2	0,4	0,64	400	500	1000
DN200	1 & 2	0,63	1,008	630	787,5	1000
DN250	1	2	3,2	1000	1250	500
	2	1	1,6	1000	1250	1000
DN300	1	3,2	5,12	1600	2000	500
	2	1,6	2,56	1600	2000	1000
DN350	1	3,2	5,12	1600	2000	500
	2	1,6	2,56	1600	2000	1000
DN400	1 & 2	5	8	2500	3125	500
DN450	1 & 2	5	8	2500	3125	500
DN500	1	8	12,8	4000	5000	500
DN500	2	4	6,4	4000	5000	1000
DN600	1	12,6	20,16	6300	7875	500
DN600	2	6,3	10,08	6300	7875	1000

Please note that the flow rates Q1, Q2, Q3 and Q4 can be freely chosen as long as:
- Values Q3 and ratio Q3/Q1 are selected from paragraph 4.1 of OIML R49-1: 2013(E);
- Values mentioned for Q1 and Q2 are minimum values and the ratio Q2/Q1 = 1,6;
- Values mentioned for Q3 and Q4 are maximum values and the ratio Q4/Q3 = 1,25;
- The ratio Q3/Q1 is at least 40.

Table 3 General characteristics of the family of instruments
Reduce bore - Battery / Renewable energy powered

Meter size	Accuracy class	Flow rates [m³/h]				Ratio Q3/Q1
		Minimum Q1	Transitional Q2	Permanent Q3	Overload Q4	
DN40	1 & 2	0,0625	0,1	25	31,25	400
DN50	1 & 2	0,1	0,16	40	50	400
DN65	1	0,39375	0,63	63	78,75	160
	2	0,1575	0,252	63	78,75	400
DN80	1	0,625	1	100	125	160
DN80	2	0,25	0,4	100	125	400
DN100	1	1	1,6	160	200	160
	2	0,4	0,64	160	200	400
DN125	1	1	1,6	160	200	160
	2	0,4	0,64	160	200	400
DN150	1 & 2	1	1,6	400	500	400
DN200	1 & 2	1,575	2,52	630	787,5	400
DN250	1	6,25	10	1000	1250	160
	2	2,5	4	1000	1250	400
DN300	1	10	16	1600	2000	160
	2	4	6,4	1600	2000	400
DN350	1	10	16	1600	2000	160
	2	4	6,4	1600	2000	400
DN400	1	15,625	25	2500	3125	160
DN400	2	12,5	20	2500	3125	200
DN450	1	15,625	25	2500	3125	160
DN450	2	12,5	20	2500	3125	200
DN500	1	100	160	4000	5000	40
DN500	2	40	64	4000	5000	100
DN600	1	157,5	252	6300	7875	40
DN600	2	63	100,8	6300	7875	100

Please note that the flow rates Q1, Q2, Q3 and Q4 can be freely chosen as long as:
- Values Q3 and ratio Q3/Q1 are selected from paragraph 4.1 of OIML R49-1: 2013(E);

- Values mentioned for Q1 and Q2 are minimum values and the ratio Q2/Q1 = 1,6;
- Values mentioned for Q3 and Q4 are maximum values and the ratio Q4/Q3 = 1,25;
- The ratio Q3/Q1 is at least 40.

Table 4 General characteristics of the indicating device
Reduce bore – AC mains powered

Meter size [mm]	Indicating range (maximum value) [m³]	Indicating range (minimum value) [m³]	Verification scale interval (maximum value) [m³]
DN40, DN50, DN65	9999999	99999	0,0001
DN80	9999999	999999	0,0001
DN100, DN125, DN150, DN200	9999999	999999	0,001
DN250	9999999	9999999	0,001
DN300, DN350, DN400, DN450, DN500, DN600	9999999	9999999	0,01

Table 5 General characteristics of the indicating device
Reduce bore – Battery / Renewable energy powered:

Meter size [mm]	Indicating range (maximum value) [m³]	Indicating range (minimum value) [m³]	Verification scale interval (maximum value) [m³]
DN40, DN50	9999999	99999	0,0001
DN65	9999999	99999	0,001
DN80, DN100, DN125, DN150	9999999	999999	0,001
DN200	9999999	999999	0,01
DN250, DN300, DN350, DN400, DN450	9999999	9999999	0,01
DN500, DN600	9999999	9999999	0,1

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Production location

The water meter is produced at one of the following production locations:

- ABB Limited
  Oldends Lane
  GL10 3TA Stonehouse
  United Kingdom (UK)
- ABB Engineering (Shanghai) Ltd.
  No. 4528, Kangxin Highway
  Pudong New District
  Shanghai, 201319
  P.R. China
- ABB Inc.
  125 E. County Line Road
  Warminster, PA 18974
  United States of America (USA)

Certificate history:
This revision replaces the previous version.

Revision	Date	Description of the modification
Initial	14 August 2020	-
1	30 September 2020	Additional evaluation of reduced bore larger sizes up to DN600