OIML Certificate

OIML Member State
The Netherlands

Number R49/2013-A-NL1-20.01 revision 16
Project number 4107575

Issuing authority Person responsible:	NMi Certin B.V. M.Ph.D. Schmidt
Applicant and Manufacturer	ABB Limited Oldends Lane GL10 3TA Stonehouse United Kingdom
Identification of the certified type	An electromagnetic **water meter** Type: AquaMaster4 FEW4XY.Z and FET4 *

* With X being 1 for standard or 3 for advanced or 5 for premium (mobile Comms - MC) variant
Y being 1, 2, 8 or 9 (integral/remote version, optionally sensor only)
Z being R (reduced bore), V (virtual full bore) or F (full bore).

Characteristics: See following page(s)

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 / 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**
16 October 2026

Certification Board

NMi Certin B.V.
Thijsseweg 11
2629 JA Delft
The Netherlands
T +31 88 636 2332
certin@nmi.nl
www.nmi.nl

This document is issued under the provision that no liability is accepted and that the applicant shall indemnify third-party liability.

The notification of NMi Certin B.V. as Issuing Authority can be verified at www.oiml.org

This document is digitally signed and sealed. The digital signature can be verified in the blue ribbon at the top of the electronic version of this certificate.

PRODUCTS RvA C 681

OIML Certificate

OIML Member State
The Netherlands

Number R49/2013-A-NL1-20.01 revision 16
Project number 4107575

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

- NMi-2254799-01 dated 14 August 2020 that includes 235 pages.
- NMi-2254799-03 dated 30 September 2020 that includes 44 pages.
- NMi-2254799-04 dated 24 December 2020 that includes 180 pages.
- NMi-2564429-01 dated 2 August 2021 that includes 26 pages.
- NMi-2496280-01 dated 26 August 2021 that includes 29 pages.
- NMi-2496280-02 dated 23 November 2021 that includes 25 pages.
- NMi-2563125-01 dated 22 September 2023 that includes 94 pages.

Characteristics of the measuring instrument

The characteristics of the measuring instrument are given in the following tables below:

Table 1: General characteristics of AquaMaster4 with transmitter types FEW41Y.Z and FEW43Y.Z
Table 2: General characteristics of AquaMaster4 with transmitter type FEW45Y.Z
Table 3: Software identification of AquaMaster4 with transmitter types FEW41Y.Z and FEW43Y.Z
Table 4: Software identification of AquaMaster4 with transmitter type FEW45Y.Z
Table 5: General characteristics of the family of instruments, reduced bore, AC powered
Table 6: General characteristics of the family of instruments, reduced bore, battery / renewable energy powered
Table 7: General characteristics of the family of instruments, full bore, AC powered
Table 8: General characteristics of the family of instruments, full bore, battery / renewable energy powered
Table 9: General characteristics of the indicating device, reduced bore, AC powered
Table 10: General characteristics of the indicating device, reduced bore, battery / renewable energy powered
Table 11: General characteristics of the indicating device, full bore, AC powered
Table 12: General characteristics of the indicating device, full bore, battery / renewable energy powered

The construction of the measuring instrument is recorded in the Documentation folder number T11851-11.

OIML Member State
The Netherlands

Number R49/2013-A-NL1-20.01 revision 16
Project number 4107575

Table 1 General characteristics for AquaMaster4 FEW41Y.Z and AquaMaster4 FEW43Y.Z

Measuring principle	Electromagnetic
Accuracy class	1 and 2
Environmental class	O (installed outdoors)
Electromagnetic environment	E2
Mechanical class	M1
Temperature range ambient	-25 °C / +55 °C (for both flow sensor and flow transmitter)
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), except for full bore sizes DN250 and larger which have: U3 and D0 (3 x DN upstream and 0 x DN downstream)
Reverse flow	The sensor is intended to measure reverse flow
Pressure loss class	Reduced bore: - For sizes DN40 and DN50: Δp 40 (0,40 bar) - For sizes larger than DN50: Δp 63 (0,63 bar) (Virtual) Full bore: - For sizes DN40 and DN50: Δp 10 (0,10 bar) - For sizes DN65 to DN200: Δp 16 (0,16 bar) - For sizes DN250 and larger: Δp 10 (0,10 bar)
Power supply	- AC mains: 95 –240 VAC @ 50/60 Hz - Renewable energy power (DC powered): 6 – 32 V - Replaceable Battery: 2x 3,6 V (operating range: 2,9 - 3,6 V)
Software identification	See details in table 3
Checking facilities	Type P (permanent) automatic checking facility

Table 2 General characteristics for AquaMaster4 FEW45Y.Z

Measuring principle	Electromagnetic
Accuracy class	1 and 2
Environmental class	O (installed outdoors)
Electromagnetic environment	E1 for transmitter with external antenna cable E2 for transmitter without external antenna cable
Mechanical class	M1
Temperature range ambient	-25 °C / +55 °C (for both flow sensor and flow transmitter)
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), except for full bore sizes DN250 and larger which have: U3 and D0 (3 x DN upstream and 0 x DN downstream)
Reverse flow	The sensor is intended to measure reverse flow
Pressure loss class	<u>Reduced bore:</u> - For sizes DN40 and DN50: Δp 40 (0,40 bar) - For sizes larger than DN50: Δp 63 (0,63 bar) <u>(Virtual) Full bore:</u> - For sizes DN40 and DN50: Δp 10 (0,10 bar) - For sizes DN65 to DN200: Δp 16 (0,16 bar) - For sizes DN250 and larger: Δp 10 (0,10 bar)
Power supply	- AC mains: 95 –240 VAC @ 50/60 Hz including 4x 3.6 V replaceable batteries. - Renewable energy power (DC powered): 6 – 32 V including 4x 3.6 V replaceable batteries. - Replaceable Battery: 6x 3,6 V (operating range: 2,9 - 3,6 V)
Software identification	See details in table 4
Checking facilities	Type P (permanent) automatic checking facility

Table 3 Software identification for AquaMaster4 FEW41Y.Z and AquaMaster4 FEW43Y.Z variant

Software versions	CRC Checksum	Remarks
Software part code 3KXF208402U0113 (Full functionality)		
03.00.03	B26AFE6B	-
03.00.04	6E98963A	-
03.02.00	E12E5C04	-
03.03.02	D4D1E40B	HMI display bug fixes. Low flow output bug fix.
03.03.03	CEEF45F1	Modbus communication bug fix.

Software versions	CRC Checksum	Remarks
03.03.06	DAC51328	-
03.04.00	277BA336	-
03.04.02	66624063	-
03.04.04	850D2D68	Bugfix: sensor fingerprint issue.
Software part code 3KXF208402U0313 (Modbus / Pressure / VKL sensor updater)		
02.00.02	84EBD1C8	-
02.00.05	F517559F	-
02.00.06	A5A7C062	Bugfix: sensor fingerprint issue.
Software part code 3KXF208402U0513 (Sensus / Logger / Pressure / VKL sensor updater)		
02.00.01	C28EAA16	-
02.00.04	5D2D2DD	-
02.00.05	78690624	Bugfix: sensor fingerprint issue.

Table 4 Software identification for AquaMaster4 FEW45Y.Z variant[1]

Software versions	CRC Checksum	Remarks
Measurement		
01.02.00	94E6FAE9	Software identification for Measurement MCU
01.03.00	A6C913AF	
01.03.01	2BB4AE79	
01.03.03	2358C8FF	
4G		
01.02.00	AE3D9862	Software identification for Communication MCU
01.03.00	3B33D2C8	
01.03.01	FDE7CBB6	
01.03.02	CD0C1881	
01.05.01	947F95FD	
01.05.03	EC5B9ED3	
NB-IoT		
01.03.00	E5742163	Software identification for Communication MCU
01.03.01	EC4FF9C6	
01.03.02	C8CABC2D	
01.03.03	31459473	

[1] The software version and checksum are displayed on the meter during the circular sequence every 10 minutes.
The software version and checksum are displayed sequentially with first for the Measurement part then the Communications part.

OIML Member State
The Netherlands

Number R49/2013-A-NL1-20.01 revision 16
Project number 4107575

Table 5 General characteristics of the family of instruments
Reduced bore - AC mains powered

Meter size	Accuracy class	Flow rates [m^3/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.
- 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 6 General characteristics of the family of instruments
Reduced bore - Battery / Renewable energy powered

Meter size	Accuracy class	Flow rates [m^3/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.
- 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 7 General characteristics of the family of instruments
Full 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 & 2	0,08	0,128	40	50	500
DN50	1 & 2	0,126	0,2016	63	78,75	500
DN65	1 & 2	0,2	0,32	100	125	500
DN80	1 & 2	0,32	0,512	160	200	500
DN100	1 & 2	0,5	0,8	250	312,5	500
DN125	1 & 2	0,5	0,8	250	312,5	500
DN150	1	2,52	4,032	630	787,5	250
	2	1,26	2,016	630	787,5	500
DN200	1	4	6,4	1000	1250	250
	2	2	3,2	1000	1250	500
DN250	1	6,4	10,24	1600	2000	250
	2	3,2	5,12	1600	2000	500
DN300	1	10	16	2500	3125	250
	2	5	8	2500	3125	500
DN350	1 & 2	40	64	4000	5000	100
DN400	1 & 2	40	64	4000	5000	100
DN450	1 & 2	63	100,8	6300	7875	100
DN500	1 & 2	63	100,8	6300	7875	100
DN600	1 & 2	63	100,8	6300	7875	100
DN700	1	100	160	10000	12500	100
	2	50	80	10000	12500	200
DN750	1	100	160	10000	12500	100
	2	50	80	10000	12500	200
DN800	1	100	160	10000	12500	100
	2	50	80	10000	12500	200
DN900	1	158,7	253,9	10000	12500	63
	2	80	128	10000	12500	125
DN1000	1	160	256	16000	20000	100
	2	80	128	16000	20000	200
DN1050	1	160	256	16000	20000	100
	2	80	128	16000	20000	200
DN1100	1	253,9	406,2	16000	20000	63
	2	128	204,8	16000	20000	125

Meter size	Accuracy class	Flow rates [m³/h]				Ratio Q3/Q1
		Minimum Q1	Transitional Q2	Permanent Q3	Overload Q4	
DN1200	1	253,9	406,2	16000	20000	63
	2	128	204,8	16000	20000	125
DN1350	1	400	640	16000	20000	40
	2	200	320	16000	20000	80
DN1400	1	400	640	16000	20000	40
	2	200	320	16000	20000	80
DN1500	1	400	640	16000	20000	40
	2	200	320	16000	20000	80
DN1600	1	400	640	16000	20000	40
	2	200	320	16000	20000	80
DN1650	1	400	640	16000	20000	40
	2	200	320	16000	20000	80
DN1800	1 & 2	317,5	507,9	16000	20000	50

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.
- 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 8 General characteristics of the family of instruments
Full 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	0,32	0,512	40	50	125
	2	0,16	0,256	40	50	250
DN50	1	0,504	0,8064	63	78,75	125
	2	0,252	0,4032	63	78,75	250
DN65	1 & 2	0,4	0,64	100	125	250
DN80	1 & 2	0,64	1,024	160	200	250
DN100	1 & 2	1	1,6	250	312,5	250
DN125	1 & 2	1	1,6	250	312,5	250
DN150	1	5,04	8,064	630	787,5	125
	2	2,52	4,032	630	787,5	250

Meter size	Accuracy class	Flow rates [m³/h]				Ratio Q3/Q1
		Minimum Q1	Transitional Q2	Permanent Q3	Overload Q4	
DN200	1	8	12,8	1000	1250	125
	2	4	6,4	1000	1250	250
DN250	1	12,8	20,48	1600	2000	125
	2	6,4	10,24	1600	2000	250
DN300	1	20	32	2500	3125	125
	2	10	16	2500	3125	250
DN350	1 & 2	16	25,6	4000	5000	250
DN400	1 & 2	16	25,6	4000	5000	250
DN450	1 & 2	25,2	40,32	6300	7875	250
DN500	1 & 2	25,2	40,32	6300	7875	250
DN600	1	78,75	126	6300	7875	80
	2	39,375	63	6300	7875	160
DN700	1	200	320	10000	12500	50
	2	100	160	10000	12500	100
DN750	1	200	320	10000	12500	50
	2	100	160	10000	12500	100
DN800	1	200	320	10000	12500	50
	2	100	160	10000	12500	100
DN900	2	158,7	254	10000	12500	63
DN1000	2	160	250	16000	20000	100
DN1050	2	160	250	16000	20000	100
DN1100	2	254	406,3	16000	20000	63
DN1200	2	254	406,3	16000	20000	63
DN1350	2	400	640	16000	20000	40
DN1400	2	400	640	16000	20000	40
DN1500	2	400	640	16000	20000	40
DN1600	2	400	640	16000	20000	40
DN1650	2	400	640	16000	20000	40

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.
- 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 9 General characteristics of the indicating device
Reduced 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 10 General characteristics of the indicating device
Reduced 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

Table 11 General characteristics of the indicating device
Full bore – AC mains powered

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

Meter size	Indicating range (maximum value)	Indicating range (minimum value)	Verification scale interval (maximum value)
[mm]	[m³]	[m³]	[m³]
DN350, DN400, DN450, DN500, DN600	9999999	9999999	0,1
DN700, DN750, DN800, DN900, DN1000, DN1050, DN1100, DN1200	99999999	99999999	0,1
DN1350, DN1400, DN1500, DN1600, DN1650, DN1800	999999999	99999999	1

Table 12 General characteristics of the indicating device
Full 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	0,001
DN65, DN80, DN100, DN125	9999999	999999	0,001
DN150	9999999	999999	0,01
DN200, DN250, DN300, DN350, DN400, DN450, DN500	9999999	9999999	0,01
DN600	99999999	9999999	0,1
DN700, DN750, DN800	99999999	99999999	0,1
DN900, DN1000, DN1050, DN1100, DN1200, DN1350, DN1400, DN1500, DN1600, DN1650	999999999	99999999	1

OIML Certificate

OIML Member State
The Netherlands

Number R49/2013-A-NL1-20.01 revision 16
Project number 4107575

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, 201315, P.R. China.
- **ABB Inc.**
  125 E. County Line Road, Warminster, PA 18974, United States of America (USA).
- **ABB India Limited**
  Plot No. 5 & 6, 2nd Phase, Peenya Industrial Area, Bengaluru – 560058, Karnataka India.

Certificate history:
This revision replaces the previous version.

Revision	Date	Description of the modification
Initial	14 August 2020	First issue.
1	30 September 2020	Additional evaluation of reduced bore larger sizes up to DN600.
2	24 December 2020	Additional evaluation of (virtual) full bore sensor and additional software version
3	2 August 2021	Additional evaluation for extending temperature to – 25 °C and for E2 class and O class for the flow transmitter. Addition of software version.
4	26 August 2021	Addition of full-bore sizes up to DN1200.
5	23 November 2021	Addition of full-bore sizes up to DN1800.
6	20 May 2022	Addition of accuracy class 1 to DN1800.
7	30 August 2022	Software version updates due to addition of microprocessors.
8	3 July 2023	Software update
9	23 September 2023	Addition of AquaMaster4 FEW45Y.Z Mobile comms variant of calculating and indicating device. Software update
10	26 February 2024	Software update and change to U200 wireless module for global use.
11	27 January 2024	Software update.
12	7 April 2025	Hardware update due to the addition of resistor alternatives.
13	5 June 2025	Software update.
14	8 January 2026	Documentation folder update.
15	16 February 2026	Software update.
16	16 October 2026	Software update.