DANAK
PROD Reg. No. 7026

FORCE Certification

EU-Type Examination Certificate

Measuring Instrument Directive

Certificate number: DK-0200-MI001-030

Issued by FORCE Certification A/S, Denmark
EU-notified body number 0200

In accordance with Directive 2014/32/EU of the European Parliament and Council of February 26, 2014 on measuring instruments (MID).

Issued to:	**ABB Limited** **Oldends Lane, Stonehouse** **GL10 3TA, Gloucestershire** **United Kingdom**
Type of instrument:	Water meter
Type designation:	AquaMaster 4 Battery Powered / Renewable Energy Model FEW4xxx.R
Valid until:	25 July 2028
Number of pages:	9, including appendix
Date of issue:	3 October 2019
Version:	2 This version of DK-0200-MI001-030 is issued due to editorial changes and it replaces the previous version.

Approved by

Michael Møller Nielsen
Certification Manager

Processed by

Lars Poder
Examiner

FORCE Certification references: TASK no.: 119-25135.16 and ID. No.: 0200-MID-07333

Appendix to

EU-Type Examination Certificate
Measuring Instrument Directive

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Issued by FORCE Certification A/S, Denmark
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Version	Issue date	Changes
DK-0200-MI001-030	6 May 2019	Original certificate
DK-0200-MI001-030 ver 1	30 August 2019	Section 'Software version' changed: Software information corrected, wording added '*The software identification and version are marked on the instrument*'
DK-0200-MI001-030 ver 2	3 October 2019	Editorial change on page 6

Applied standards and documents:
OIML R 49:2006

The instruments/measuring systems shall correspond with the following specifications:

Type designation:
A family of cold-water meters designated AquaMaster 4 and having the following characteristics:

AquaMaster 4 Battery Powered / Renewable Energy Model FEW4xxx.R
Rubber lined and reduced bore sensor.
Size: DN40, DN50, DN65, DN80, DN100, DN125, DN150, DN200, DN250 & DN300.
Transmitter model FET4xx, Battery or Renewable Energy Powered.
Q_3/Q_1 (R) = 160 or 250.

Introduction:
This pattern of liquid measuring instrument is for measuring the volume of cold water which has passed through it. It relates to a family of models designated the AquaMaster 4 which are battery or renewable energy powered based on an electromagnetic measurement principle.

Functional description:
The AquaMaster 4 consists of two main elements, the flow transmitter (calculator/indicator) and the flow sensor (meter).

The flow transmitter may be mounted on the sensor or positioned separately (Figure 1).

Technical documentation:
Reference No.: 119-25135.16, 119-25135.07.02 and 119-25135.07

Technical data

Flow Designation

Meters with $Q_3/Q_1 = 160$

DN	Q_4 [m^3/h]	Q_3 [m^3/h]	Q_2 [m^3/h]	Q_1 [m^3/h]
40	31	25	0.25	0.16
50	50	40	0.4	0.25
65	79	63	0.63	0.39
80	125	100	1	0.63
100	200	160	1.6	1
125	200	160	1.6	1
150	500	400	4	2.5
200	788	630	6.3	3.9
250	1,250	1,000	10	6.3
300	2,000	1,600	16	10

Table 1: Related flow rates according to DN

Meters with $Q_3/Q_1 = 250$

DN	Q_4 [m^3/h]	Q_3 [m^3/h]	Q_2 [m^3/h]	Q_1 [m^3/h]
40	31	25	0.16	0.1
50	50	40	0.26	0.16
65	79	63	0.4	0.25
80	125	100	0.64	0.4
100	200	160	1	0.63
125	200	160	1	0.63
150	500	400	2.56	1.6
200	788	630	4	2.5
250	1,250	1,000	6.4	4
300	2,000	1,600	10	6.3

Table 2: Related flow rates according to DN

Other Designations

Temperature class:	T30 (0.1 – 30 °C) Also tested T50 according to OIML R 49:2006
Orientation requirements:	None
Maximum admissible pressure (MAP):	16 bar
Pressure loss at Q_3:	0.63 bar max
Climatic environment:	-25 °C to +55 °C
Humidity:	Condensing / non-condensing
Mechanical environment:	M1
Electromagnetic environment:	E1
Location:	Integral or Remote (< 200 m cable)
Reverse flow:	Bi-directional measurement
Minimum straight length of inlet pipe:	0D (0)
Minimum straight length of outlet pipe:	0D (0)
Orientation:	Can be installed in any position
Power supply:	Battery supplied separately U_{max}: Main Pack = 3.6 VDC U_{min}: Main Pack = 3.1 VDC Frequency: N/A Renewable Power Solar or wind Input voltage: 6 to 22 VDC

Software version

Software	Software i.d.	Software Version	Checksum
Flowmeter Application	3KXF004476U0113	01.00.15	0xBD1C4895

The software identification and version are marked on the instrument.

Interfaces and Peripheral Devices

Interfaces

The instrument may have the following interfaces:
(i) Digital Pulse Output
(ii) NFC
(iii) Sensus

Peripheral Devices

The instrument may be connected to any peripheral device that has been issued with Parts Certificate by a Notified Body responsible for Module B under Directive 2014/32/EU and bears the CE marking of conformity to the relevant directives; or

A peripheral device without a Parts Certificate may be connected under the following conditions:

- It bears the CE marking for conformity to the EMC Directive;
- It is not capable of transmitting any data or instruction into the measuring instrument, other than to release a printout, checking for correct data transmission or validation;
- It prints measurement results and other data as received from the measuring instrument without any modification or further processing; and;
- It complies with the applicable requirements of Paragraph 8.1 of Annex I.

Approval Conditions

The certificate is issued subject to the following conditions:

The instrument shall bear the following inscriptions:

- CE marking
- Supplementary metrology marking
- Manufacturer's name, registered trade name or registered trade mark and postal address
- Identification number of the Notified Body
- Certificate number
- Serial number
- Permanent flow rate Q_3
- Flow rate range Q_3/Q_1 (R)
- Software version number

The markings and inscriptions shall fulfil the requirements of Article 8, Article 21, Article 22 and Point 9 of Annex I of Directive 2014/32/EU.

Location of Seals and Verification Marks

Securing the software

After installation and commissioning, to prevent unauthorized modification of any metrological parameter the transmitter must be put into "metrological read-only" mode, thereby making all metrological parameters read only. For this product, it is achieved by transitioning the "read-only" switch into the "read" position. A suitable anti-tamper seal must be fitted such that, in the event of unauthorized tampering, it is clearly visible that the fitted legal metrology seal has been broken.

Sealing the transmitter

Anti-tamper seals should be fitted, as shown in Figures 3 and 4.

Alternatives

Alternative manufacturing address:

ABB Engineering (Shanghai) Ltd.
No. 4528 KangXin Highway
201319 Shanghai
China

Illustrations

Figure 1 AquaMaster 4 Remote and Integral

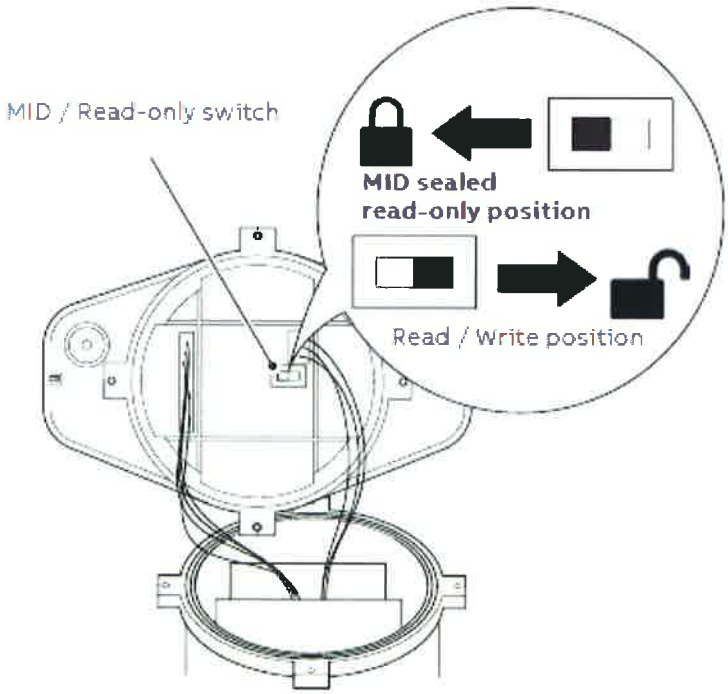

Figure 2 MID Read-only switch

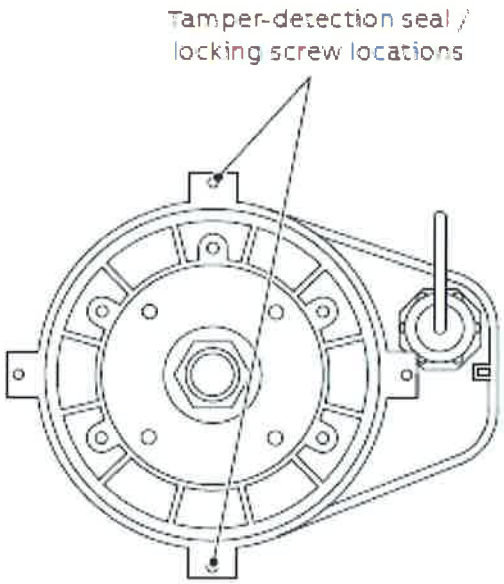

Figure 3 Integral Transmitter tamper-detection locations

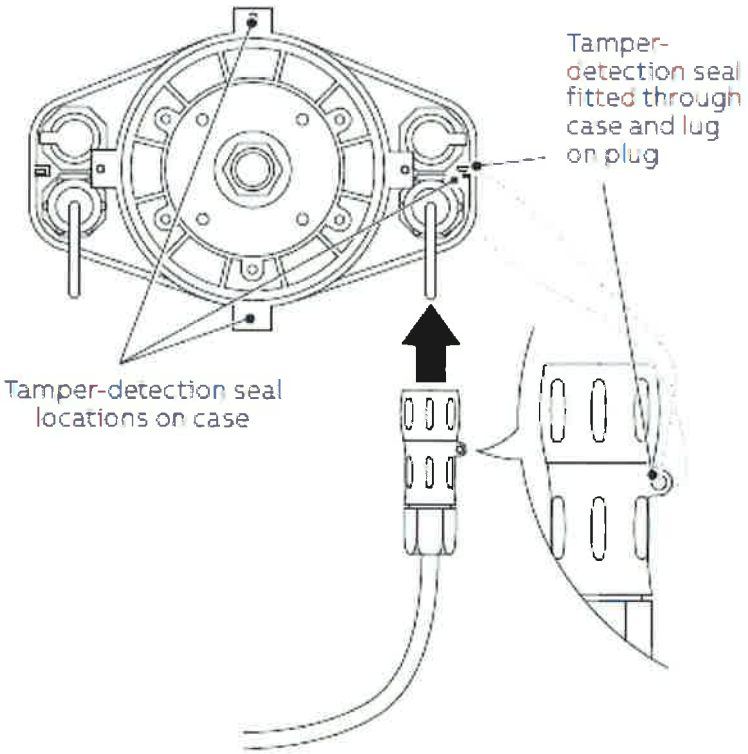

Figure 4 Remote Transmitter tamper-detection locations