

EU-Type Examination Certificate

Measuring Instrument Directive

Certificate number: DK-0200-MI001-029

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 3 Battery Powered / Renewable Energy Model MM/GA or FER2

Valid until: 24 March 2021

Number of pages: 11, including appendix

Date of issue: 3 October 2019

Version: 1
This new version of DK-0200-MI001-029 is issued due to editorial change and it replaces the previous version.

Approved by



Michael Møller Nielsen
Certification Manager

Processed by



Lars Poder
Examiner

The conformity markings may only be affixed to the above type approved equipment. The manufacturer's Declaration of Conformity may only be issued and the notified body identification number may only be affixed on the instrument when the production/product assessment module (D or F) of the Directive is fully complied with and controlled by a written inspection agreement with a notified body.

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FORCE Certification references: TASK no.: 119-25135.15 and ID. No.: 0200-MID-07332

Appendix to

EU-Type Examination Certificate Measuring Instrument Directive

Number: DK-0200-MI001-029

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Version	Issue date	Changes
DK-0200-MI001-029	6 May 2019	Original certificate
DK-0200-MI001-029 ver 1	3 October 2019	Editorial change on page 7

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 named AquaMaster, utilising a common, electromagnetic principle and having the following characteristics:

AquaMaster 3 Battery Powered / Renewable Energy Model MM/GA or FER2.

Size: DN40, DN50, DN80, DN100, DN125, DN150, DN200, DN250 & DN300.

Transmitter model FET2, 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 models of the AquaMaster 3 battery or renewable energy powered family based on an electromagnetic measurement principle.

Functional description:

The AquaMaster 3 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 (Figures 1 and 2).

Technical documentation:

Reference No.: 119-25135.15 and 119-25135.06

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
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
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:	E2
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:	<u>ABB Supplied Battery Pack</u> U _{max} : Main Pack = 10 VDC U _{min} : Main Pack = 4.5 VDC Frequency: N/A <u>Renewable Power</u> Solar or wind Input voltage: 6 to 22 VDC

Software versions

	Software i.d.	Software version	Checksum
Main Application	VKK WAJC 2103	01.00.01	0xACF6D1B8
Bootloader	VKK WAJC 2101	01.00.00	0x1E0C83AD
Update Application Manager	VKK WAJC 2102	01.00.00	0x6BA1C132
Pre-Amp Sensor Memory	WAJC 2004	1.00	0x30804391
Pre-Amp EEROM	WAJC 2033	1.03	1CF560E7

Alternative Software versions

	Software i.d.	Software version	Checksum
Main Application	VKK WAJC 2103	01.00.03	0xA9E98002
Main Application	VKK WAJC 2103	01.01.00	0xB4E3F42B
Main Application	VKK WAJC 2103	01.02.00	0x3FF2D622
Main Application	VKK WAJC 2103	01.03.00	0x131323C1
Main Application – WITS Ver	VKK WAJC 2113	02.00.07	CA3F549E
Main Application – WITS Ver	VKK WAJC 2113	02.01.01	0xB7A3C909
Update Application Manager	VKK WAJC 2112	01.00.01	9A76F2BF
Main Application	VKK WAJC 2103	01.04.00	0x5FDFD6EF
Main Application	VKK WAJC 2103	01.04.01	0x95492EEC
Main Application	VKK WAJC 2103	01.05.01	0x6CD16CBE
Main Application – WITS Ver	VKK WAJC 2113	02.01.04	0xB4CDCBB6

Interfaces and Peripheral Devices

Interfaces

The instrument may have the following interfaces:

- (i) Digital Pulse Output
- (ii) Scancoder Remote Reading Interface
- (iii) RS232 Communications
- (iv) Optional GSM Radio Communications
- (v) Optional Pressure Transducer Connection
- (vi) RS485 ModBus

Peripheral Devices

The instrument may be connected to any peripheral device that has been issued with a test certificate or parts certificate by a Notified Body responsible for Annex B (MI-001) under Directive 2004/22/EC in any Member State and bears the CE marking of conformity to the relevant directives; or

A peripheral device without a test 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 flow meter, other than to check for correct data transmission or validation / verification;
- Any Pulse / Frequency Output receiving equipment;
- Alarm Contact Output receiving equipment;
- RS232 communications equipment;
- Scancoder reader via wired connection or an individual pad;
- RS485 ModBus equipment

Approval Conditions

The certificate is issued subject to the following conditions:

The instrument bears the following legends:

- 'CE' marking
- Supplementary metrology marking
- Notified Body identification number
- Accuracy class
- Serial number
- Manufacturers mark or name and post code
- Certificate number
- Permanent flow rate Q_3
- Flow rate range Q_3/Q_1 (R)

Location of Seals and Verification Marks

Securing the software – Explorer Form

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 a wire link between two pins on the connector shown in Figure 3. ABB supplies either the plug WEBX0060 or adapter lead WEBC2025 which have this link made, also shown in Figure 3. The adapter is to facilitate connection of pressure transducers which do not have this “metrological read only” shorting link already made.

The “read only” mode works on all interfaces including the GSM / SMS communication option.

Sealing the transmitter – Explorer Form

Anti-tamper seals should be fitted, as shown in Figure 8.

Securing the software – AquaMaster Metal Form

After installation and commissioning, to prevent unauthorized modification of any parameters the “read only” dip switch, must be set to “ON”, which prevents login thereby making all parameters read only. As shown in Figures 9 and 10.

The “read only” mode works on all interfaces including the GSM / SMS communication option.

Sealing the transmitter – Explorer Form

Anti-tamper seals should be fitted, as shown in Figure 11.

Alternatives

Alternative manufacturing address:

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



Figure 1 AquaMaster Integral Form



Figure 2 AquaMaster Remote Form

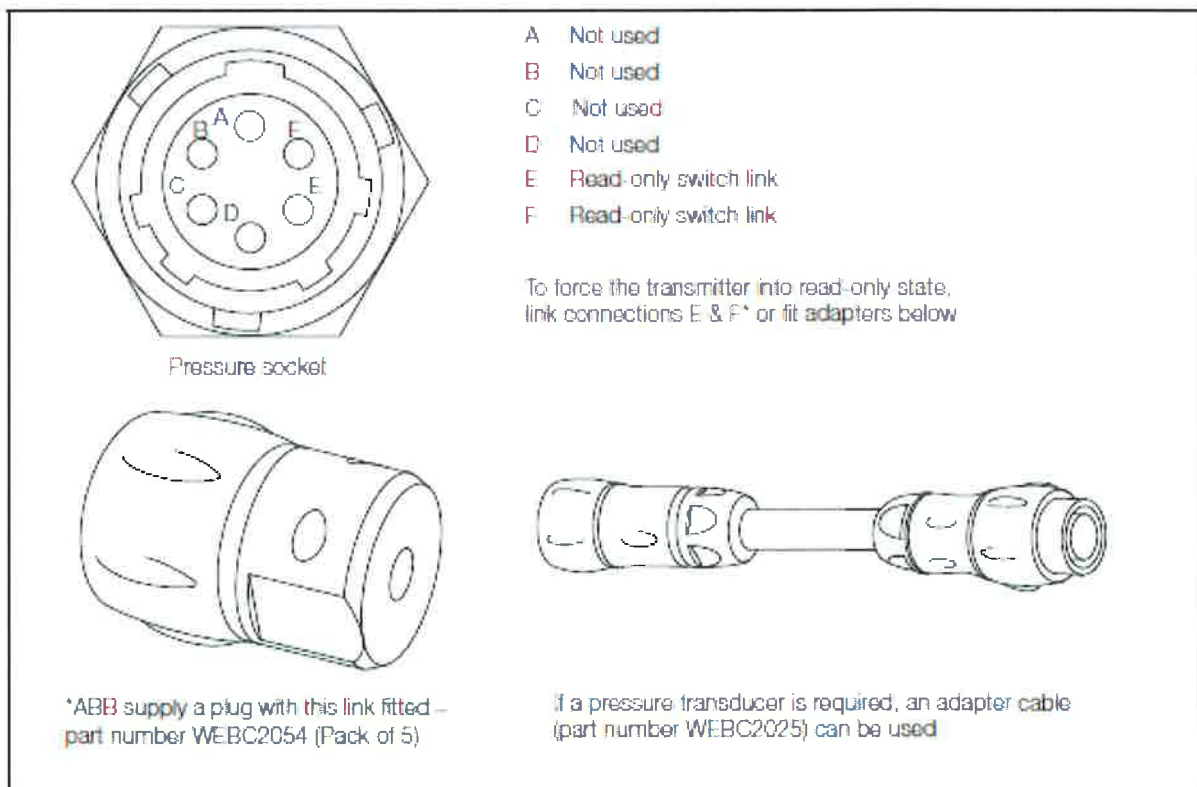


Figure 3 Transmitter "Metrological Read Only" Link

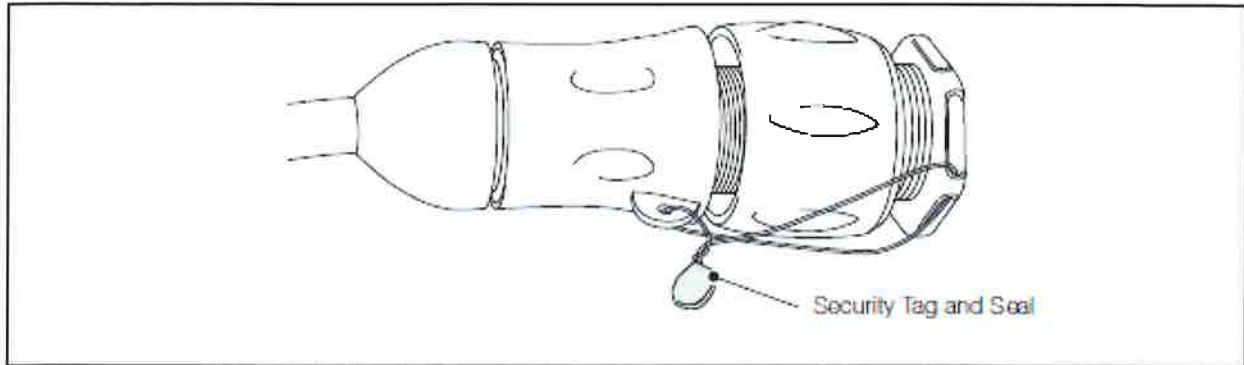


Figure 4 Transmitter Sealing