

(UK/0126/0078)



MI-001

United Kingdom of Great Britain and Northern Ireland

Certificate of EC type-examination of a measuring instrument

Number: UK/0126/0078 Revision 1

issued by the Secretary of State for Business, Innovation & Skills
Notified Body Number 0126

In accordance with the requirements of the Measuring Instruments (Cold-water Meters) Regulations 2006 (SI 2006/1268) and the Measuring Instruments (Non-Prescribed Instruments) Regulations 2006 which implement, in the United Kingdom, Council Directive 2004/22/EC, this certificate of EC type-examination has been issued to:

**ABB Limited
Oldends Lane
Stonehouse
Gloucestershire
GL10 3TA
United Kingdom**

in respect of a family of cold-water meters named AquaMaster, utilising a common, electromagnetic principle and having the following characteristics:

AquaMaster with Battery powered model MM/GA size DN40, DN50, DN80, DN100, DN150, DN200, DN250 & DN300.
Transmitter model FER2, Battery Powered and Explorer AM/E
 $Q_3/Q_1 (R) = 160$ or 250

The necessary data (principal characteristics, alterations, securing, functioning etc) for identification purposes and conditions (when applicable) are set out in the descriptive annex to this certificate.

This revision replaces previous versions of the certificate.

Signatory: P R Dixon
for Chief Executive
National Weights & Measures Laboratory
(Part of the National Measurement Office)
Department for Business, Innovation & Skills
Stanton Avenue
Teddington
Middlesex, TW11 0JZ
United Kingdom

Issue Date: 15 December 2010
Valid Until: 25 April 2020
Reference No: T23/0017

Descriptive Annex

1 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 battery powered family based on an electromagnetic measurement principle.

2 FUNCTIONAL DESCRIPTION

The AquaMaster consists of two main elements, the flow transmitter (calculator/indicator) and the flow sensor (meter). The transmitter is available in the “Explorer” form with an external battery pack and also the metal AquaMaster form with internal batteries. The flow transmitter may be mounted on the sensor or positioned separately (Figures 1, 2, 3 and 4).

3 TECHNICAL DATA

3.1 Flow designation

3.1.1 Meters with Q3/Q1 (R160)

DN	Q4 (m3/h)	Q3 (m3/h)	Q2 (m3/h)	Q1 (m3/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
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 flowrates according to DN

3.1.2 Meters with Q3/Q1 (R250)

DN	Q4 (m3/h)	Q3 (m3/h)	Q2 (m3/h)	Q1 (m3/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	0.63
150	500	400	2.56	1.6
200	788	630	4.0	2.5
250	1,250	1,000	6.4	4
300	2,000	1,600	10	6.3

Table 2: Related flowrates according to DN

3.2 Other Designations

Temperature class:	T50 (0.1 °C to 50 °C)
Orientation requirements:	None
Maximum admissible pressure (MAP)	16 bar
Pressure Loss at Q3	0.25 bar max
Climatic environment:	-25 °C to +55 °C
Humidity	Condensing / non-condensing
Mechanical environment:	M1
Electromagnetic environment:	E1
Location:	Integral or Remote (<200m 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:	ABB Supplied Battery Pack U _{max} Main Pack = 10V DC Standby Pack = 5.1V U _{min} : Main Pack = 6V DC Standby Pack = 3.3V DC Frequency: N/A

3.2.1 Software Versions

	Software i.d.	Software Version
Main Application	WAJC2027	v2.46 or v2.48
Bootloader	WAJC2009	V1.02
Update Application Manager (Non GSM Version)	WAJC2010	v1.04
Update Application Manager (GSM Version)	WAJC2026	V1.27
Pre Amp Sensor Memory	WAJC2004	V1.04
Pre-Amp EEROM	WAJC2033	V1.03

4 PERIPHERAL DEVICES AND INTERFACES

4.1 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

4.2 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
- Scancode reader via wired connection or an inductive pad

5 APPROVAL CONDITIONS

The certificate is issued subject to the following conditions:

5.1 Legends and inscriptions

5.1.1 The instrument bears the following legends:

- ‘CE’ marking
- Supplementary metrology marking
- Notified body identification number
- Accuracy class
- Serial number
- Manufacturers mark or name
- Certificate number
- Permanent flow rate Q_3
- Flowrate range Q_3/Q_1 (R)

6 LOCATION OF SEALS AND VERIFICATION MARKS

6.1 Securing the software – Explorer Form

After installation and commissioning, to prevent unauthorised modification of any parameters the transmitter must be put into “read-only” mode, which prevents login, thereby making all parameters read only. For this product, it achieved by a wire link between two pins on the connector shown in Figure 6. ABB supplies either the plug WEBX0060 or adapter lead WEBC2025 which have this link made, as shown in Figure 7. The adapter is to facilitate connection of pressure transducers which do not have this “read only” shorting link already made.

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

6.2 Sealing the transmitter – Explorer Form

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

6.3 Securing the software – AquaMaster Metal Form

After installation and commissioning, to prevent unauthorised 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 figure 9 and 10.

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

6.4 Sealing the transmitter - AquaMaster Metal Form

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

7 ALTERNATIVES

There are no alternatives at present.

8 ILLUSTRATIONS

- Figure 1 AquaMaster Explorer Remote Transmitters
- Figure 2 AquaMaster Metal Form, Battery Powered, Remote Transmitter
- Figure 3 AquaMaster Remote Sensor
- Figure 4 AquaMaster Explorer Integral Flowmeter
- Figure 5 AquaMaster, Metal Form, Integral Flowmeter
- Figure 6 Explorer - Transmitter “Read only” Connector Location
- Figure 7 Explorer - "Read Only" shorting plugs / adapters
- Figure 8 Explorer - Transmitter “Read Only” Sealing
- Figure 9 AquaMaster - Access to Read Only Switch
- Figure 10 AquaMaster - Location and Setting of the Read Only Switch
- Figure 11 AquaMaster - Transmitter Sealing

9 CERTIFICATE HISTORY

ISSUE NO.	DATE	DESCRIPTION
UK/0126/0078	26 April 2010	Type examination certificate first issued.
UK/0126/0078 Revision 1	15 December 2010	Revision 1 issued. Section 3.2.1 - New main application software version number 2.48 added



Figure 1 AquaMaster Explorer Remote Transmitters

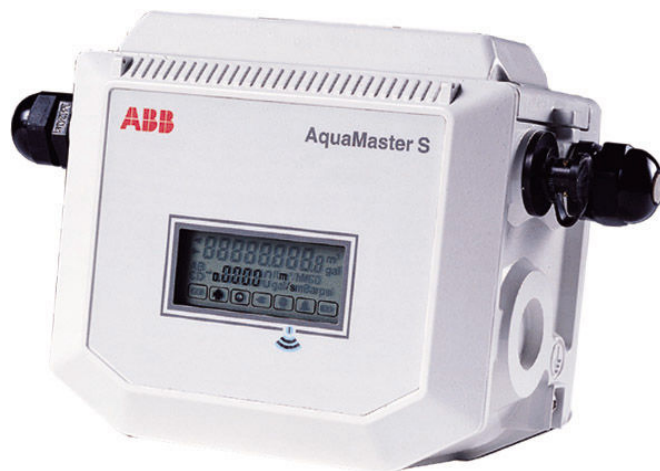


Figure 2 AquaMaster Metal Form, Battery Powered, Remote Transmitter



Figure 3 AquaMaster Remote Sensor



Figure 4 AquaMaster Explorer Integral Flowmeter



Figure 5 AquaMaster, Metal Form, Integral Flowmeter

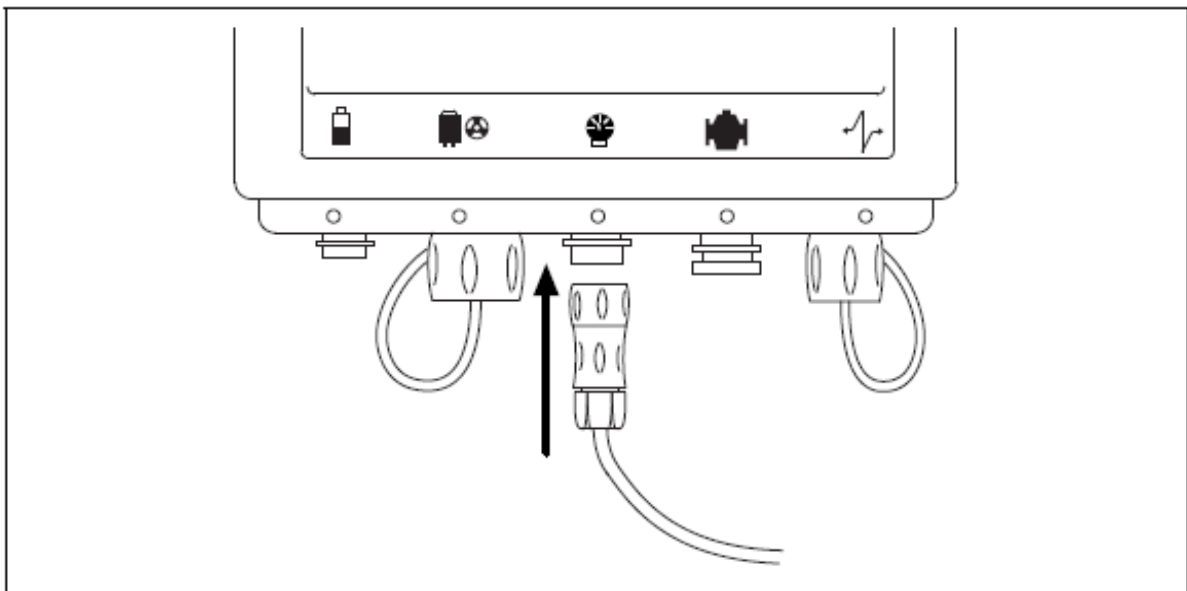


Figure 6 Explorer - Transmitter “Read Only” Connector Location

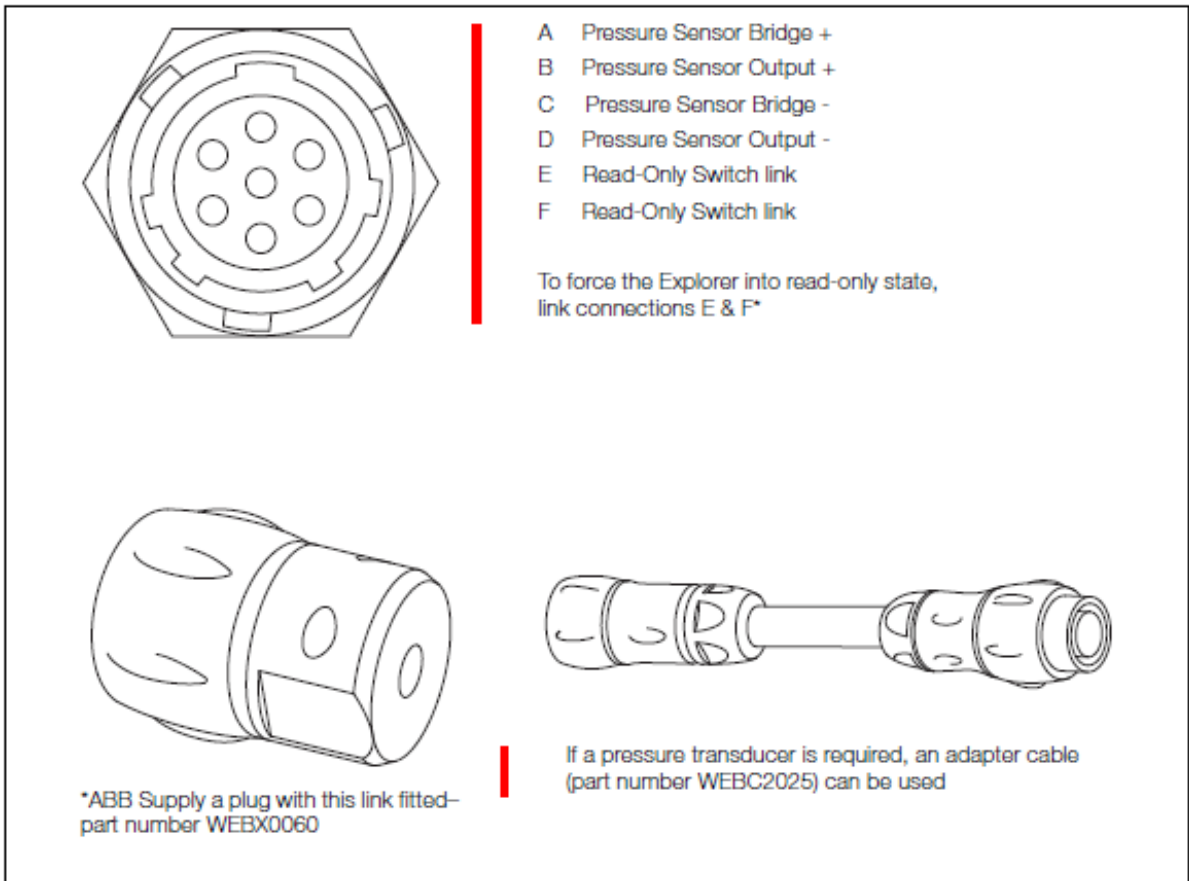


Figure 7 Explorer - "Read Only" shorting plugs / adapters

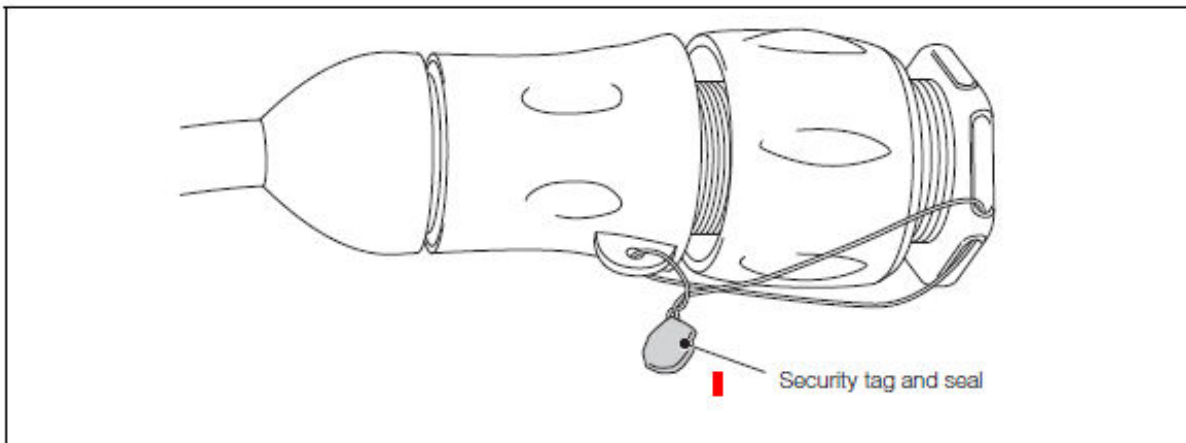


Figure 8 Explorer - Transmitter "Read Only" Sealing

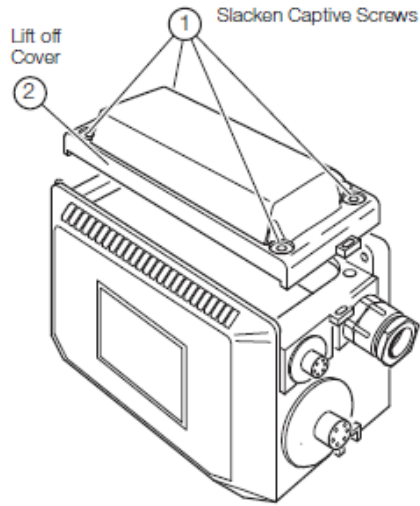


Figure 9 AquaMaster - Access to Read Only Switch

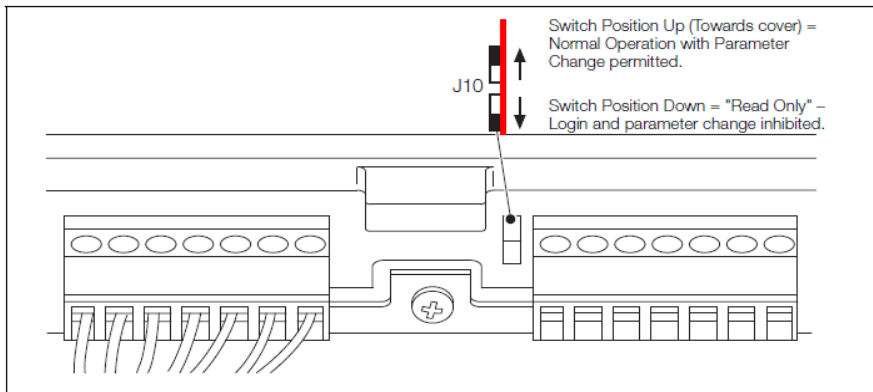


Fig. 3.17 Location of the Read Only switch

Figure 10 AquaMaster - Location and Setting of the Read Only Switch

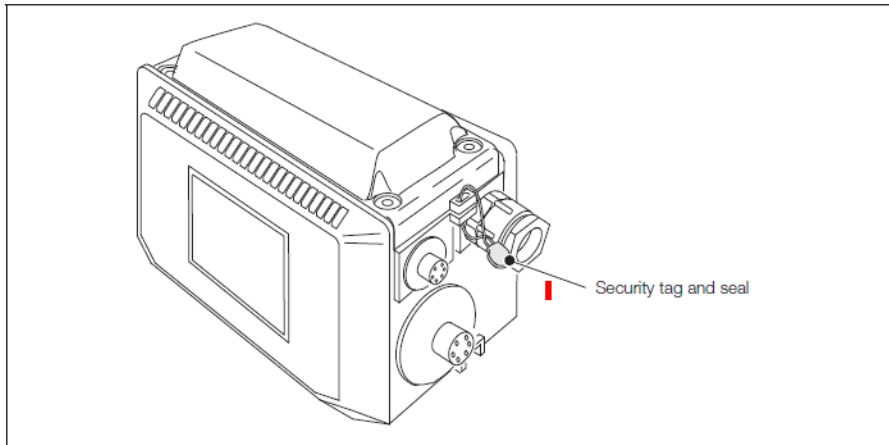


Figure 11 AquaMaster - Transmitter Sealing