National Measurement Office Certification

UK/0126/0076

MI-001

EC type-examination certificate UK/0126/0076 Revision 6

issued by:

The National Measurement Office
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 (SI 2006/1270) 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 WaterMaster, utilising a common, electromagnetic principle and having the following characteristics:

Water Master Model FEV1, Size DN40, DN50, DN65, DN80, DN100, DN125, DN150, DN200, DN250 & DN300.
WaterMaster Transmitter FET1
Q_3/Q_1 (R) = 200 or 315.

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 this certificate

Issue Date: 21 May 2013
Valid Until: 25 April 2020
Reference No: T23/0017

Signatory: G S Stones
for Chief Executive

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NMO is an Executive Agency of the Department for Business Innovation & Skills

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0135

National Measurement Office

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 WaterMaster family based on an electromagnetic measurement principle.

2 FUNCTIONAL DESCRIPTION

The WaterMaster 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).

3 TECHNICAL DATA

3.1 Flow designation

3.1.1 Meters with Q3/Q1 (R315)

DN	Q4 (m³/h)	Q3 (m³/h)	Q2 (m³/h)	Q1 (m³/h)
40	50	40	0.2	0.125
50	79	63	0.32	0.20
65	125	100	0.5	0.32
80	200	160	0.81	0.51
100	313	250	1.3	0.79
125	313	250	1.3	0.79
150	788	630	3.2	2.0
200	1,250	1,000	5.1	3.2
250	2,000	1,600	8.1	5.1
300	3,125	2,500	12.7	7.9

Table 1: Related flowrates according to DN

3.1.2 Meters with Q3/Q1 (R200)

DN	Q4 (m³/h)	Q3 (m³/h)	Q2 (m³/h)	Q1 (m³/h)
40	50	40	0.32	0.2
50	79	63	0.5	0.32
65	125	100	0.8	0.5
80	200	160	1.3	0.8
100	313	250	2	1.25
125	313	250	2	1.25
150	788	630	5	3.2
200	1,250	1,000	8	5
250	2,000	1,600	13	8
300	3,125	2,500	20	12.5

Table 2: Related flowrates according to DN

3.2 Other Designations

Temperature class:	T50 (0.1°C – 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:	E2
Location:	Integral or Remote (<200m cable)
Reverse Flow:	Bi-directional measurement
Minimum straight length of inlet pipe:	5D (DN x 5)
Minimum straight length of outlet pipe:	0D (0)
Orientation:	Can be installed in any position
Power Supply:	Mains or DC 85 to 265V AC or 24V AC +10%-30% / 24V DC +/-30% Frequency 50Hz or 60Hz

3.2.1 Software Versions

WaterMaster HART - Version 01.02.00

	Software i.d.	Software Version	CRC Number
Main Application	WAJC 2506	01.02.00	0x5849
Sensor PIC	WAJC 2501	01.00.03	0x5BBA6C2C
MSP HART Software	WAJC2505	01.00.00	0x56302F5D

WaterMaster HART - Version 01.03.00

	Software i.d.	Software Version	CRC Number
Main Application	WAJC 2506	01.03.01	0x88EC
Sensor PIC	WAJC 2501	01.00.03	0x5BBA6C2C
MSP HART Software	WAJC2505	01.00.00	0x56302F5D

WaterMaster HART - Version 01.04.00

	Software i.d.	Software Version	CRC Number
Main Application	WAJC 2506	01.04.00	0xA257
Sensor PIC	WAJC 2501	01.00.03	0x5BBA6C2C
Sensor PIC	WAJC 2501	02.00.00	0x3213
MSP HART Software	WAJC2505	01.00.00	0x56302F5D

WaterMaster HART - Version 01.04.01

	Software i.d.	Software Version	CRC Number
Main Application	WAJC 2506	01.04.01	0xD308
Sensor PIC	WAJC 2501	01.00.03	0x5BBA6C2C
Sensor PIC	WAJC 2501	02.00.00	0x3213
MSP HART Software	WAJC2505	01.00.00	0x56302F5D

WaterMaster HART - Version 01.05.00

	Software i.d.	Software Version	CRC Number
Main Application	WAJC 2506	01.05.00	0xBAC1
Sensor PIC	WAJC 2501	01.00.03	0x5BBA6C2C
Sensor PIC	WAJC 2501	02.00.00	0x3213
MSP HART Software	WAJC2505	01.00.00	0x56302F5D

WaterMaster Profibus DP - Version 01.00.00

	Software i.d.	Software Version	CRC Number
Main Application	WAJC 2540	01.00.00	0x1881
Sensor PIC	WAJC 2501	01.00.03	0x5BBA6C2C

WaterMaster Profibus DP - Version 01.01.00

	Software i.d.	Software Version	CRC Number
Main Application	WAJC 2540	01.01.00	0xA25C
Sensor PIC	WAJC 2501	01.00.03	0x5BBA6C2C
Sensor PIC	WAJC 2501	02.00.00	0x3213

WaterMaster Profibus DP - Version 01.01.01

	Software i.d.	Software Version	CRC Number
Main Application	WAJC 2540	01.01.01	0x49C9
Sensor PIC	WAJC 2501	01.00.03	0x5BBA6C2C
Sensor PIC	WAJC 2501	02.00.00	0x3213

WaterMaster Profibus DP - Version 01.02.00

	Software i.d.	Software Version	CRC Number
Main Application	WAJC 2540	01.02.00	0x23CB
Sensor PIC	WAJC 2501	01.00.03	0x5BBA6C2C
Sensor PIC	WAJC 2501	02.00.00	0x3213

WaterMaster Modbus - Version 01.00.00

	Software i.d.	Software Version	CRC Number
Main Application	WAJC 2547	01.00.00	0xEFAF
Sensor PIC	WAJC 2501	01.00.03	0x5BBA6C2C
Sensor PIC	WAJC 2501	02.00.00	0x3213

WaterMaster Modbus - Version 01.00.01

	Software i.d.	Software Version	CRC Number
Main Application	WAJC 2547	01.00.01	0xAAC8
Sensor PIC	WAJC 2501	01.00.03	0x5BBA6C2C
Sensor PIC	WAJC 2501	02.00.00	0x3213

WaterMaster Modbus - Version 01.01.00

	Software i.d.	Software Version	CRC Number
Main Application	WAJC 2547	01.01.00	0x4B5C
Sensor PIC	WAJC 2501	01.00.03	0x5BBA6C2C
Sensor PIC	WAJC 2501	02.00.00	0x3213

WaterMaster Modbus - Version 01.01.04

	Software i.d.	Software Version	CRC Number
Main Application	WAJC 2547	01.01.04	0x52AF
Sensor PIC	WAJC 2501	01.00.03	0x5BBA6C2C
Sensor PIC	WAJC 2501	02.00.00	0x3213

4 PERIPHERAL DEVICES AND INTERFACES

4.1 Interfaces

The instrument may have the following interfaces:

(i) Digital Pulse output
(ii) HART Interface
(iii) 4 to 20 mA current loop
(iv) Profibus DP
(v) Modbus Interface

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 4 to 20mA current loop
- Any Pulse / Frequency Output receiving equipment
- Alarm Contact Output receiving equipment

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

For WaterMaster HART Version 01.02.00, 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 3.

For WaterMaster HART Version 01.03.00, Version 01.04.00, WaterMaster Profibus DP Version 01.00.00 and Modbus Version 01.00.00 - after installation and commissioning - to prevent unauthorised modification of any parameters SW1 switch – MID Lock (see fig 3) must be set to ON, which prevents login at Service access level, making all metrological parameters read only. Access and modification of non metrological parameters is still permitted.

6.2 Sealing the transmitter

Anti tamper seals should be fitted to points "D", as shown in Figure 4.

7 ALTERNATIVES

7.1 Alternative manufacturing address:

ABB Engineering (Shanghai) Ltd.
No. 5, Lane 369, Chuangye Road,
Kangqiao Town, Pudong District,
Shanghai, 201319,
P.R. China

8 ILLUSTRATIONS

Figure 1 WaterMaster Integral Form
Figure 2 WaterMaster Remote Form
Figure 3 Read Only Dip Switch Setting
Figure 4 Transmitter Sealing Position "D"

9 CERTIFICATE HISTORY

ISSUE NO.	DATE	DESCRIPTION
UK/0126/0076	26 April 2010	Type examination certificate first issued.
UK/0126/0076 Revision 1	26 November 2010	Revision 1 issued: Addition of Profibus DP interface to section 4.1 Addition of HART Version 01.03.00 and Profibus DP Version 01.00.00 to section 3.2.1 Change to function of "Read only" switch to "MID Lock" in section 6.1 Updated Fig 3 to show alternative "MID Lock" wording
UK/0126/0076 Revision 2	06 October 2011	Revision 2 issued: Addition of Meter sizes DN65 and DN125 to Tables 1 and 2 in section 3.1 and on front page. Additions of HART Version 01.04.00, Profibus DP Version 01.01.00 and Modbus version 01.00.00 to sections 3.2.1 and 6.1. Addition of Modbus Version 01.00.00 to section 4.1.
UK/0126/0076 Revision 3	29 February 2012	Revision 3 issued: Additions of HART Version 01.04.01, Profibus DP Version 01.01.01 and Modbus version 01.00.01 to section 3.2.1. Section 3.2.1 rearranged.
UK/0126/0076 Revision 4	28 August 2012	Revision 4 Issued: Addition of Section 7.1 Alternative manufacturing address.
UK/0126/0076 Revision 5	11 February 2013	Revision 5 Issued: Additions of HART Version 01.05.00, Profibus DP Version 01.02.00 and Modbus Version 01.01.00 to Section 3.2.1
UK/0126/0076 Revision 6	21 May 2013	Revision 6 Issued: Addition of Modbus Version 01.01.04 to Section 3.2.1



Figure 1 WaterMaster Integral Form



Figure 2 WaterMaster Remote Form

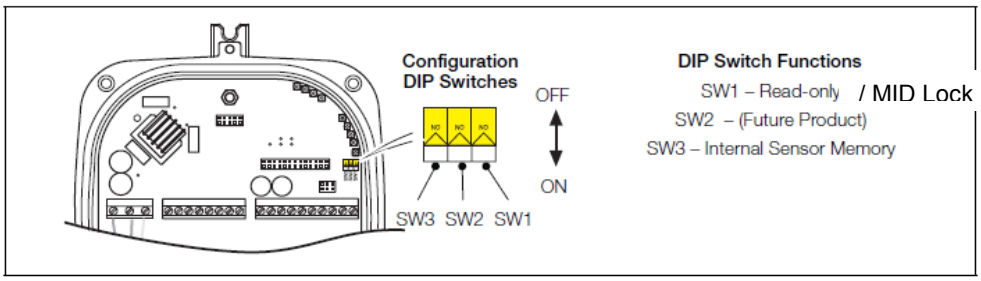


Figure 3 Read Only Dip Switch Setting

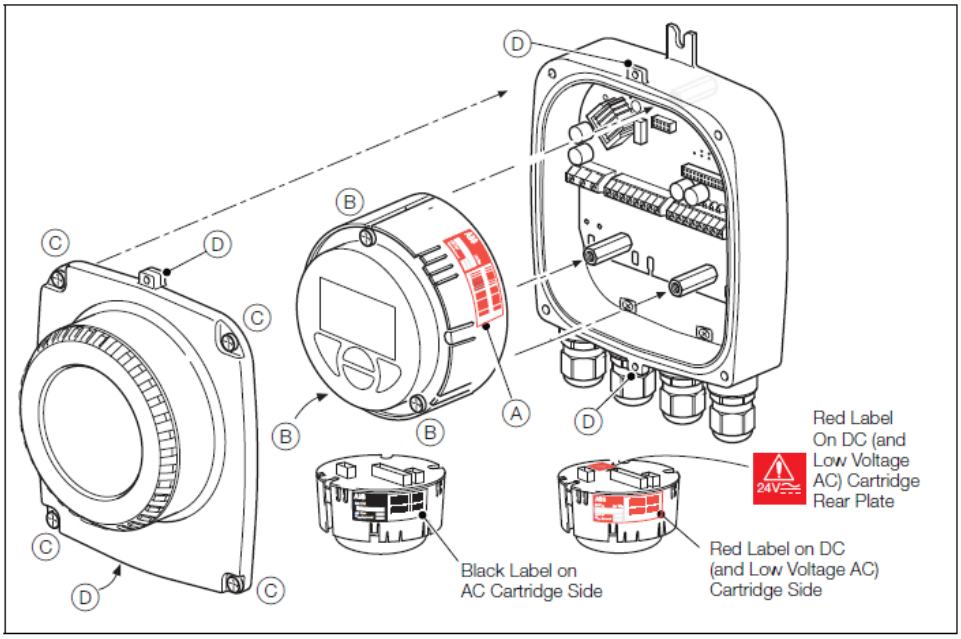


Figure 4 Transmitter Sealing Position "D"

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