



Member state
Czech Republic

OIML Certificate No.
R49/2013-CZ-16.03
Revision 1

OIML BASIC CERTIFICATE OF CONFORMITY

Issuing Authority

Name: Czech Metrology Institute
Address: Okružní 31,
638 00 Brno, CZ
Person responsible: Jan Kalandra

Applicant

Name: Arkon Flow Systems, s.r.o.
Address: Berkova 534/92, 612 00 Brno
Czech Republic

Manufacturer of the certified type

Name: Arkon Flow Systems, s.r.o.
Address: Berkova 534/92, 612 00 Brno
Czech Republic

Identification of the certified type

Water meter
Type: MAGB1

For further characteristics see page 2 to 6

This certificate attests the conformity of above identified type (represented by the sample or samples identified in the associated test report) with the requirements of the following Recommendation(s) of the International Organization of Legal Metrology (OIML):

R 49, edition 2013, for accuracy class 2

This certificate relates only to the metrological and technical characteristics of the type of instrument covered by the relevant OIML Recommendation(s) identified above.

This certificate does not bestow any form of legal international approval.

The conformity was established by the results of tests and examinations provided in the associated Test report No. 6015-PT-P3014-16 from 26th May 2016 that includes 184 pages including annexes, Test report No. 8551-PT-E0096-16 from 23rd May 2016 that includes 26 pages including annexes and Test report No. 8551-PT-E0097-16 from 23rd May 2016 that includes 35 pages including annexes, Test report No. 6015-PT-P3037-17 from 20th June 2017 that includes 23 pages including annexes, Test report No. 8553-PT-S1004-17 from 31st January 2017 that includes 5 pages including annexes and Test report No. 8553-PT-S1012-17 from 6th June 2017 that includes 6 pages including annexes.

Measuring system description:

The water meter type MAGB1 is electromagnetic water meter. There are two modifications: compact and remote version.

The water meters type MAGB1 are intended for metering cold potable water and hot water, based on an inductive principle, PTFE and hard rubber lining, with straight inlet (5 times the diameter) and outlet (3 times the diameter) length, without flow conditioner and there are equipped with an electronic calculating/indicating device. The maximum cable length for remote version is 6 meters. The display shows the measurements in cubic meter volume (positive, negative, total and auxiliary) and cubic meter per hour flow rate. The meter is not designed to measure reverse flow. The meter does not require any extra-mechanical housing or adjustments.

The meter is intended for mount to the connecting any pipework with the flow axis in the horizontal and vertical (from bottom to top and from top to bottom) plane and with the indicating device positioned at the top and at the side.

The meter is equipped with the electronic indicating device. The display is a digital type, and can show up to 9 digits. The normal resolution mode is used during normal operation. The water meter displays in the normal resolution mode up to 000000.001 m³/h flow rate and 000.001 m³ volume on the digital display. The water meter displays the volume resolution of 0.001 L on the digital display in the high resolution mode which would be used during the calibration process. This mode is set up by factory tool (software had to be attached).

The water meters type MAGB1 can be equipped by frequency output which can be used for remote reading or by RS 485 (with maximum cable length 3 m).



The OIML Issuing Authority
Pavel Klenovský

28 June 2017

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Characteristics:

Basic technical data of water meters type **MAGB1** DN25 TO DN 40

Manufacturer:	Arkon Flow Systems, s.r.o. Berkova 534/92, 612 00 Brno, Czech Republic									
Model number:	MAGB1									
Type details:										
Nominal diameter(DN)[mm]	25			32			40			
Overload flowrate(Q ₄)[m ³ /h]	20			31.3			50			
Permanent flowrate(Q ₃)[m ³ /h]	16			25			40			
Transitional flowrate(Q ₂)[m ³ /h]	0.16	0.26	0.51	0.25	0.40	0.80	0.40	0.64	1.28	
Minimum flowrate(Q ₁)[m ³ /h]	0.10	0.16	0.32	0.16	0.25	0.50	0.25	0.40	0.80	
Ratio Q ₃ /Q ₁ :	160	100	50	160	100	50	160	100	50	
Ratio Q ₂ /Q ₁ :	1.6									
Ratio Q ₄ /Q ₃ :	1.25									
Accuracy class	2									
Maximum permissible error for the lower flowrate zone (MPE _l)	±5%									
Maximum permissible error for the upper flowrate zone (MPE _u)	±2% for water having a temperature ≤ 30°C ±3% for water having a temperature > 30°C									
Temperature class:	T50									
Water pressure class:	MAP 10									
Pressure-loss classes	ΔP 10									
Indicating range[m ³]	99 999									
Resolution of the indicating device[m ³]	0.001 (normal mode) 0.000001 (calibration mode)									
Flow profile sensitivity classes	U5 D3									
Orientation limitation	any									
Length of horizontal water meter L [mm]	200									
Connection type-screw thread size	flange									
Climatic environment class:	B									
Electromagnetic environment class:	E1 (compact version) E2 (remote version)									
Software version	Version 1.0.0.25									
Firmware version	Version 10.28									
Battery	3.6 V									
Minimum battery life time:	5 years									
Low flow cut off	1 % from nominal flowrate									

Basic technical data of water meters type **MAGB1** DN50 TO DN 80

Manufacturer:	Arkon Flow Systems, s.r.o. Berkova 534/92, 612 00 Brno, Czech Republic								
Model number:	MAGB1								
Type details:									
Nominal diameter(DN)[mm]	50			65			80		
Overload flowrate(Q ₄)[m ³ /h]	78.8			125			200		
Permanent flowrate(Q ₃)[m ³ /h]	63			100			160		
Transitional flowrate(Q ₂)[m ³ /h]	0.63	1.01	2.02	1.00	1.60	3.20	1.60	2.56	5.12
Minimum flowrate(Q ₁)[m ³ /h]	0.40	0.63	1.26	0.63	1.00	2.00	1.00	1.60	3.20
Ratio Q ₃ /Q ₁ :	160	100	50	160	100	50	160	100	50
Ratio Q ₂ /Q ₁ :	1.6								
Ratio Q ₄ /Q ₃ :	1.25								
Accuracy class	2								
Maximum permissible error for the lower flowrate zone (MPE _l)	±5%								
Maximum permissible error for the upper flowrate zone (MPE _u)	±2% for water having a temperature ≤ 30°C ±3% for water having a temperature > 30°C								
Temperature class:	T50								
Water pressure class:	MAP 10								
Pressure-loss classes	ΔP 10								
Indicating range[m ³]	99 999				999 999				
Resolution of the indicating device[m ³]	0.001 (normal mode) 0.000001 (calibration mode)								
Flow profile sensitivity classes	U5 D3								
Orientation limitation	any								
Length of horizontal water meter L [mm]	200								
Connection type-screw thread size	flange								
Climatic environment class:	B								
Electromagnetic environment class:	E1 (compact version) E2 (remote version)								
Software version	Version 1.0.0.25								
Firmware version	Version 10.28								
Battery	3.6 V								
Minimum battery life time:	5 years								
Low flow cut off	1 % from nominal flowrate								

Basic technical data of water meters type **MAGB1** DN100 TO DN 150

Manufacturer:	Arkon Flow Systems, s.r.o. Berkova 534/92, 612 00 Brno, Czech Republic								
Model number:	MAGB1								
Type details:									
Nominal diameter(DN)[mm]	100			125			150		
Overload flowrate(Q ₄)[m ³ /h]	312.5			500			788		
Permanent flowrate(Q ₃)[m ³ /h]	250			400			630		
Transitional flowrate(Q ₂)[m ³ /h]	2.50	4.00	8.00	4.00	6.40	12.80	6.30	10.08	20.16
Minimum flowrate(Q ₁)[m ³ /h]	1.56	2.50	5.00	2.50	4.00	8.00	3.94	6.30	12.60
Ratio Q ₃ /Q ₁ :	160	100	50	160	100	50	160	100	50
Ratio Q ₂ /Q ₁ :	1.6								
Ratio Q ₄ /Q ₃ :	1.25								
Accuracy class	2								
Maximum permissible error for the lower flowrate zone (MPE _l)	±5%								
Maximum permissible error for the upper flowrate zone (MPE _u)	±2% for water having a temperature ≤ 30°C ±3% for water having a temperature > 30°C								
Temperature class:	T50								
Water pressure class:	MAP 10								
Pressure-loss classes	ΔP 10								
Indicating range[m ³]	999 999								
Resolution of the indicating device[m ³]	0.001 (normal mode) 0.000001 (calibration mode)								
Flow profile sensitivity classes	U5 D3								
Orientation limitation	any								
Length of horizontal water meter L [mm]	250			250			300		
Connection type-screw thread size	flange								
Climatic environment class:	B								
Electromagnetic environment class:	E1 (compact version) E2 (remote version)								
Software version	Version 1.0.0.25								
Firmware version	Version 10.28								
Battery	3.6 V								
Minimum battery life time:	5 years								
Low flow cut off	1 % from nominal flowrate								

Basic technical data of water meters type **MAGB1** DN200 TO DN 300

Manufacturer:	Arkon Flow Systems, s.r.o. Berkova 534/92, 612 00 Brno, Czech Republic								
Model number:	MAGB1								
Type details:									
Nominal diameter(DN)[mm]	200			250			300		
Overload flowrate(Q ₄)[m ³ /h]	787.5			1250			2000		
Permanent flowrate(Q ₃)[m ³ /h]	630			1000			1600		
Transitional flowrate(Q ₂)[m ³ /h]	6.30	10.08	20.16	6.30	10.08	20.16	6.30	10.08	20.16
Minimum flowrate(Q ₁)[m ³ /h]	3.94	6.30	12.60	3.94	6.30	12.60	3.94	6.30	12.60
Ratio Q ₃ /Q ₁ :	160	100	50	160	100	50	160	100	50
Ratio Q ₂ /Q ₁ :	1.6								
Ratio Q ₄ /Q ₃ :	1.25								
Accuracy class	2								
Maximum permissible error for the lower flowrate zone (MPE _l)	±5%								
Maximum permissible error for the upper flowrate zone (MPE _u)	±2% for water having a temperature ≤ 30°C ±3% for water having a temperature > 30°C								
Temperature class:	T50								
Water pressure class:	MAP 10								

Pressure-loss classes	ΔP 10		
Indicating range[m ³]	9 999 999		
Resolution of the indicating device[m ³]	0.001 (normal mode) 0.000001 (calibration mode)		
Flow profile sensitivity classes	U5 D3		
Orientation limitation	any		
Length of horizontal water meter L [mm]	350	400	500
Connection type-screw thread size	flange		
Climatic environment class:	B		
Electromagnetic environment class:	E1 (compact version) E2 (remote version)		
Software version	10.34		
Checksum	25668		
Battery	3.6 V		
Minimum battery life time:	5 years		
Low flow cut off	1 % from nominal flowrate		

Marking and inscriptions

The water meters type **MAGB1** shall be clearly and indelibly marked with the following information:

- Unit of measurement (m³)
- Numerical value Q_3 in m³/h ($Q_3 \times \times$) and the ratio Q_3 / Q_1 , (R160 or R100 or R50)
- OIML certificate of conformity number
- Name of trademark of the manufacturer
- Year of manufacture, two last digits of the year of manufacture, or the month and year of manufacture and serial number (as near as possible to the indicating device)
- Direction of flow, by means of an arrow (shown on both sides of the body or on one side only provided the direction of flow arrow is easily visible under all circumstances)
- Maximum admissible pressure (MAP10)
- The temperature class (T50)
- The pressure loss class (ΔP 10)
- The installation sensitivity class (U5D3)
- Climatic and electromagnetic environmental classes (B; E1 or E2)
- The latest date that the battery is to be replaced
- Version of software

These markings shall comply with the requirements of OIML R 49 and shall be visible without dismantling the water meter after the instrument has been placed on the market or put into use.

Security measures

The sealing is realized by passwords (user, service and factory) in case of factory tool and by putting seals on following places:

- screw on the cover plate inside the electronic (Figure 1);
- the screw covering the USB (Figure 2);
- reset jumper (Figure 3);
- the label to the body (Figure 4).

Alternatively sealing: the connection of both sides cover of the electronic have to be sealed by a safeguarding stickers (Figure 5) and the screw covering the USB (Figure 2).

The location and type of the seals are described in Figure 1 to Figure 5.

Connecting of the battery and the case of flow sensor and the frequency output and/or RS485 (Figure 6), if equipped, have to be secured by manufacturer's installation seal or other relevant authority seal.

Figure 1: The water meter type MAGB1 – sealing of screw on the cover plate inside the electronic:

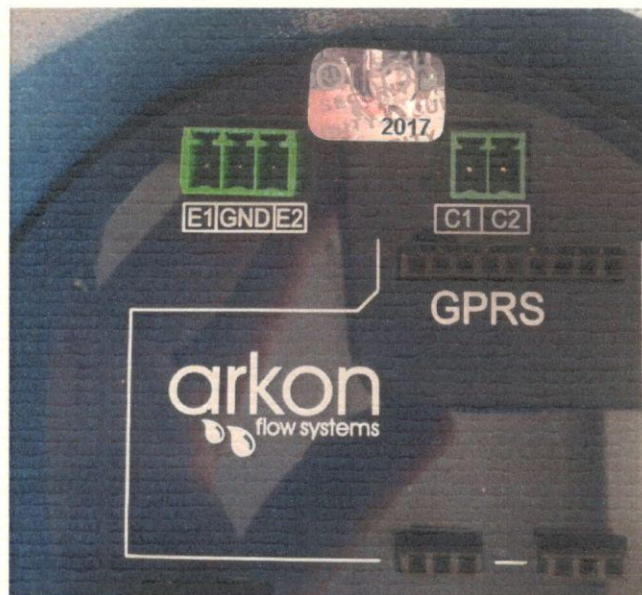


Figure 2: The water meter type MAGB1 – sealing of the screw covering the USB:

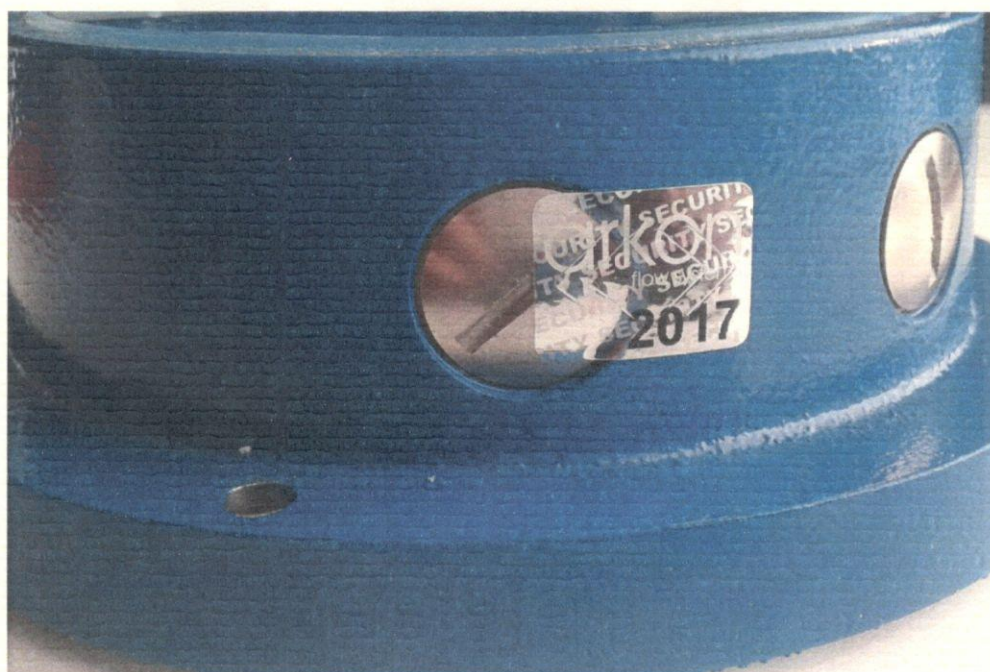


Figure 3: The water meter type MAGB1 – reset jumper:



Figure 4: An example of the label and sealing:



Figure 5: The water meter type MAGB1 – alternatively sealing:

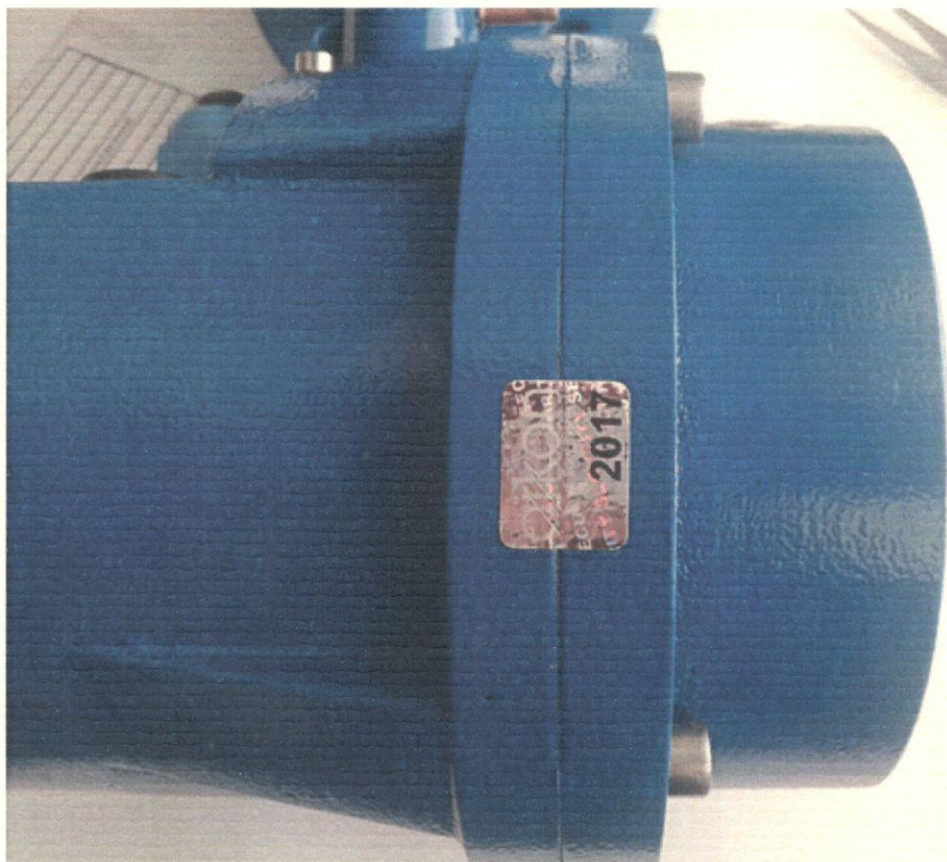


Figure 6: The water meter type MAGB1 – frequency output and RS 485 sealing:

