



OIML Member State
Czech Republic

OIML Certificate No.
R49/2013-A-CZ1-2023.02

OIML CERTIFICATE ISSUED UNDER SCHEME A

OIML Issuing Authority

Name: Czech Metrology Institute
Address: Okružní 31, 638 00 Brno, Czech Republic

Person responsible: Jan Kalandra

Applicant

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

Manufacturer

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

Identification of the certified type *(the detailed characteristics will be defined in the additional pages)*

Water meter - inductive
MAGB2

Designation of the module *(if applicable)*

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This OIML Certificate attests the conformity of the above identified type (represented by the sample(s) identified in the OIML type evaluation report) with the requirements of the following Recommendation of the International Organization of Legal Metrology (OIML):

OIML R 49

Edition (year): 2013

For accuracy class (if applicable): 2



This OIML Certificate relates only to metrological and technical characteristics of the type of measuring instrument covered by the relevant OIML Recommendation identified above.

This OIML 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 OIML type evaluation report:

- No. 0511-ER-V001-23 dated 10 February 2023 that includes 24 pages
- Annex 1 of OIML type Evaluation No. 0511-ER-V001-23 that includes 85 pages
- Test report No. 6015-PT-P5001-23 that includes 81 pages including annexes 1, 2, 3, 4
- Test report No. 6011-PT-SW021-22 that includes 6 pages including annex 1
- Test report No. 8551-PT-E0063-22 that includes 12 pages including annex 1

The technical documentation relating to the identified type is contained in documentation file:
0511-UL-V001-23

OIML Certificate History

Revision No.	Date	Description of the modification
	21 February 2023	Issuing certificate

The OIML Issuing Authority

RNDr. Pavel Klenovský
Head of Certification Body

Date: 21 February 2023



Important note: Apart from the mention of the Certificate's reference number and the name of the OIML Member State in which the Certificate is issued, partial quotation of the Certificate and of the associated OIML type evaluation report(s) is not permitted, although either may be reproduced in full.

Measuring system description

The water meters type MAGB2 are the electromagnetic water meters. There are two modifications: compact and remote version.

The water meters type MAGB2 consist of flow sensor and an electronic calculating/indicating device. The flow sensor measure based on an induction principle with PTFE and hard rubber lining, with straight inlet (0 times the diameter) and outlet (0 times the diameter) length, without flow conditioner. The maximum cable length for remote version is 10 meters. The meter is designed to measure reverse flow. The meter does not require any extra-mechanical housing or adjustments.

The water meters type MAGB2 are equipped with the electronic indicating device. The display shows the measurements in cubic meters (positive, negative, total and auxiliary) and cubic meters per hour. The display is a digital type that can show up to 10 digits in two lines, and is equipped by 6 buttons. The normal resolution mode is used during normal operation. The water meter displays in the normal resolution mode up to 00000000.001 m³/h flow rate and 00000000.001 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 has to be attached) where the passwords (user, service and factory) secure access to the metrological parameters. Version of software is shown after reset system in last row on the display. Checksum can be displayed by entering menu Info – FW Checksum. The water meters type MAGB2 shall be installed to operate in arbitrary positions 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 water meters type MAGB2 can be equipped by frequency output which can be used for remote reading and can be equipped RS 485 (with maximum cable length 30 m).

Marking and inscriptions

The water meters types MAGB2 shall be clearly and indelibly marked with the following information:

- Unit of measurement (m³)
- Numerical value Q₃ in m³/h (Q₃ ×.×) and the ratio Q₃ / Q
- 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 (MAP ××)
- Letter H↑ (horizontal position with the indicating device at the top)
- The temperature class (T××)
- The pressure loss class (Δp ××)
- The installation sensitivity class (Ux Dx)

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.

Characteristics

Basic technical data of water meters types MAGB2:

Manufacturer:	Arkon Flow Systems, s.r.o.				
Model number:	MAGB2				
Nominal diameter:	25	32	40	50	65
Type details:	flowrates are shown in Table <i>Basic metrological data (flowrates)</i>				
Q ₁ [m ³ /h]:					
Q ₂ [m ³ /h]:					
Q ₃ [m ³ /h]:					
Q ₄ [m ³ /h]:					



Q_3/Q_1 :	R250 for H↑ (horizontal position with the indicating device at the top) R100 for V↑ (vertical position with flow from bottom to top)	
Q_2/Q_1 :	1.6	
Q_4/Q_3 :	1.25	
Measuring principle:	Water meter – inductive	
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:	T30; T50	
Water pressure class:	MAP16	
Pressure loss class:	Δp16	
Reverse flow:	designed to measure	
Environmental class:	B (from 5 to 55 °C)	
Electromagnetic environment:	E2	
Maximum admissible temperature [°C]:	50°C	
Maximum admissible pressure [MPa]:	1,6MPa	
Orientation limitation:	H (horizontal position with the indicating device at the top) for R250 V↑ (vertical position with flow from bottom to top) for R100	
Indicating range [m ³]:	99 999	99 999 999
Resolution of the indicating device [m ³]:	0.000 001	0.001
Resolution of the device for rapid testing [m ³]:	-	
EUT testing requirements (OIML R 49-2:2013, 8.1.8):		
Category:	B	
Case:	B	
Installation details:		
Connection type (screw thread):	Flanges	
Minimum straight length of inlet pipe [mm]:	0	
Minimum straight length of outlet pipe [mm]:	0	
Flow profile sensitivity class:	U0D0	
Flow conditioner (details if required):	No	
Mounting:	Flanges	
Orientation:	H↑ (horizontal position with the indicating device at the top) for R250 V↑ (vertical position with flow from bottom to top) for R100	
Other relevant information:	-	
Length [mm]:	200	
Reed switch power supply (U _{max} / I _{max}):	-	
Reed switch K-factor (impulse / L):	-	
Installation details (electrical):		
Wiring instructions:	-	



Mounting arrangement:	-
Orientation limitations:	-
Power supply:	
Type (battery, mains AC, mains DC):	Battery
U_{\max} (V):	4.2V
U_{\min} (V):	2V
Frequency:	-
Minimum battery life time [years]:	5
Software version (of legally relevant SW):	22.28
CRC checksum (of legally relevant SW):	0xCB68D76D
Information specified by the manufacturer (information in the table below are not certified)	
-	-

Manufacturer:	Arkon Flow Systems, s.r.o.				
Model number:	MAGB2				
Nominal diameter:	80	100	125	150	200
Type details:					
Q_1 [m ³ /h]:	flowrates are shown in Table <i>Basic metrological data (flowrates)</i>				
Q_2 [m ³ /h]:					
Q_3 [m ³ /h]:					
Q_4 [m ³ /h]:					
Q_3/Q_1 :	H (horizontal position with the indicating device at the top) for R250 V↑ (vertical position with flow from bottom to top) for R100				
Q_2/Q_1 :	1.6				
Q_4/Q_3 :	1.25				
Measuring principle:	Water meter – inductive				
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:	T30; T50				
Water pressure class:	MAP16				
Pressure loss class:	Δp16				
Reverse flow:	<i>designed to measure</i>				
Environmental class:	<i>B (from 5 to 55 °C)</i>				
Electromagnetic environment:	E2				
Maximum admissible temperature [°C]:	50°C				
Maximum admissible pressure [MPa]:	1,6MPa				
Orientation limitation:	H (horizontal position with the indicating device at the top) for R250 V↑ (vertical position with flow from bottom to top) for R100				
Indicating range [m ³]:	99 999 999				



<i>Resolution of the indicating device [m³]:</i>	0.001			
<i>Resolution of the device for rapid testing [m³]:</i>	-			
EUT testing requirements (OIML R 49-2:2013, 8.1.8):				
Category:	B			
Case:	B			
Installation details:				
Connection type (screw thread):	Flanges			
Minimum straight length of inlet pipe [mm]:	0			
Minimum straight length of outlet pipe [mm]:	0			
<i>Flow profile sensitivity class:</i>	U0D0			
Flow conditioner (details if required):	No			
Mounting:	Flanges			
Orientation:	H (horizontal position with the indicating device at the top) for R250 V↑ (vertical position with flow from bottom to top) for R100			
Other relevant information:	-			
<i>Length [mm]:</i>	200	250	300	350
<i>Reed switch power supply (U_{max} / I_{max}):</i>	-			
<i>Reed switch K-factor (impulse / L):</i>	-			
Installation details (electrical):				
Wiring instructions:	-			
Mounting arrangement:	-			
Orientation limitations:	-			
Power supply:				
Type (battery, mains AC, mains DC):	Battery			
U _{max} (V):	4.2V			
U _{min} (V):	2V			
Frequency:	-			
<i>Minimum battery life time [years]:</i>	5			
<i>Software version (of legally relevant SW):</i>	22.28			
<i>CRC checksum (of legally relevant SW):</i>	0xCB68D76D			
Information specified by the manufacturer (information in the table below are not certified)				
-	-			

Manufacturer:	Arkon Flow Systems, s.r.o.
Model number:	MAGB2
Nominal diameter:	250
Type details:	
Q ₁ [m ³ /h]:	flowrates are shown in Table <i>Basic metrological data (flowrates)</i>
Q ₂ [m ³ /h]:	



Q_3 [m ³ /h]:	
Q_4 [m ³ /h]:	
Q_3/Q_1 :	H (horizontal position with the indicating device at the top) for R250 V↑ (vertical position with flow from bottom to top) for R100
Q_2/Q_1 :	1.6
Q_4/Q_3 :	1.25
Measuring principle:	Water meter – inductive
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:	T30; T50
Water pressure class:	MAP16
Pressure loss class:	Δp16
Reverse flow:	designed to measure
Environmental class:	B (from 5 to 55 °C)
Electromagnetic environment:	E2
Maximum admissible temperature [°C]:	50°C
Maximum admissible pressure [MPa]:	1,6MPa
Orientation limitation:	H (horizontal position with the indicating device at the top) for R250 V↑ (vertical position with flow from bottom to top) for R100
Indicating range [m ³]:	99 999 999
Resolution of the indicating device [m ³]:	0.001
Resolution of the device for rapid testing [m ³]:	-
EUT testing requirements (OIML R 49-2:2013, 8.1.8):	
Category:	B
Case:	B
Installation details:	
Connection type (screw thread):	Flanges
Minimum straight length of inlet pipe [mm]:	0
Minimum straight length of outlet pipe [mm]:	0
Flow profile sensitivity class:	U0D0
Flow conditioner (details if required):	No
Mounting:	Flanges
Orientation:	H (horizontal position with the indicating device at the top) for R250 V↑ (vertical position with flow from bottom to top) for R100
Other relevant information:	-
Length [mm]:	400
Reed switch power supply (U_{max} / I_{max}):	-
Reed switch K-factor (impulse / L):	-



Installation details (electrical):	
Wiring instructions:	-
Mounting arrangement:	-
Orientation limitations:	-
Power supply:	
Type (battery, mains AC, mains DC):	Battery
U_{\max} (V):	4.2V
U_{\min} (V):	2V
Frequency:	-
<i>Minimum battery life time [years]:</i>	5
<i>Software version (of legally relevant SW):</i>	22.28
<i>CRC checksum (of legally relevant SW):</i>	0xCB68D76D
Information specified by the manufacturer (information in the table below are not certified)	
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Basic metrological data (flowrates)

Manufacturer:	Arkon Flow Systems, s.r.o.								
Model number:	MAGB2								
Nominal diameter:	25								
Type details:									
Q_1 [m ³ /h]:	0.064	0.080	0.100	0.128	0.160	0.200	0.254	0.320	0.400
Q_2 [m ³ /h]:	0.102	0.128	0.160	0.205	0.256	0.320	0.406	0.512	0.640
Q_3 [m ³ /h]:	16	16	16	16	16	16	16	16	16
Q_4 [m ³ /h]:	20	20	20	20	20	20	20	20	20
Q_3/Q_1 :	250	200	160	125	100	80	63	50	40

Manufacturer:	Arkon Flow Systems, s.r.o.								
Model number:	MAGB2								
Nominal diameter:	32								
Type details:									
Q_1 [m ³ /h]:	0.100	0.125	0.156	0.200	0.250	0.313	0.400	0.500	0.625
Q_2 [m ³ /h]:	0.160	0.200	0.250	0.320	0.400	0.500	0.635	0.800	1.000
Q_3 [m ³ /h]:	25	25	25	25	25	25	25	25	25
Q_4 [m ³ /h]:	31.25	31.25	31.25	31.25	31.25	31.25	31.25	31.25	31.25
Q_3/Q_1 :	250	200	160	125	100	80	63	50	40

Manufacturer:	Arkon Flow Systems, s.r.o.								
Model number:	MAGB2								
Nominal diameter:	40								
Type details:									
Q_1 [m ³ /h]:	0.160	0.200	0.250	0.320	0.400	0.500	0.635	0.800	1.000
Q_2 [m ³ /h]:	0.256	0.320	0.400	0.512	0.640	0.800	1.016	1.280	1.600
Q_3 [m ³ /h]:	40	40	40	40	40	40	40	40	40
Q_4 [m ³ /h]:	50	50	50	50	50	50	50	50	50
Q_3/Q_1 :	250	200	160	125	100	80	63	50	40



Manufacturer:	Arkon Flow Systems, s.r.o.								
Model number:	MAGB2								
Nominal diameter:	50								
Type details:									
Q_1 [m ³ /h]:	0.252	0.315	0.394	0.504	0.630	0.788	1.000	1.260	1.575
Q_2 [m ³ /h]:	0.403	0.504	0.630	0.806	1.008	1.260	1.600	2.016	2.520
Q_3 [m ³ /h]:	63	63	63	63	63	63	63	63	63
Q_4 [m ³ /h]:	79	79	79	79	79	79	79	79	79
Q_3/Q_1 :	250	200	160	125	100	80	63	50	40

Manufacturer:	Arkon Flow Systems, s.r.o.								
Model number:	MAGB2								
Nominal diameter:	65								
Type details:									
Q_1 [m ³ /h]:	0.400	0.500	0.625	0.800	1.000	1.250	1.587	2.000	2.500
Q_2 [m ³ /h]:	0.640	0.800	1.000	1.280	1.600	2.000	2.587	3.200	4.000
Q_3 [m ³ /h]:	100	100	100	100	100	100	100	100	100
Q_4 [m ³ /h]:	125	125	125	125	125	125	125	125	125
Q_3/Q_1 :	250	200	160	125	100	80	63	50	40

Manufacturer:	Arkon Flow Systems, s.r.o.								
Model number:	MAGB2								
Nominal diameter:	80								
Type details:									
Q_1 [m ³ /h]:	0.640	0.800	1.000	1.280	1.600	2.000	2.540	3.200	4.000
Q_2 [m ³ /h]:	1.024	1.280	1.600	2.048	2.560	3.200	4.064	5.120	6.400
Q_3 [m ³ /h]:	160	160	160	160	160	160	160	160	160
Q_4 [m ³ /h]:	200	200	200	200	200	200	200	200	200
Q_3/Q_1 :	250	200	160	125	100	80	63	50	40

Manufacturer:	Arkon Flow Systems, s.r.o.								
Model number:	MAGB2								
Nominal diameter:	100								
Type details:									
Q_1 [m ³ /h]:	1.000	1.250	1.563	2.000	2.500	3.125	3.970	5.000	6.250
Q_2 [m ³ /h]:	1.600	2.000	2.500	3.200	4.000	5.000	6.350	8.000	10.000
Q_3 [m ³ /h]:	250	250	250	250	250	250	250	250	250
Q_4 [m ³ /h]:	313	313	313	313	313	313	313	313	313
Q_3/Q_1 :	250	200	160	125	100	80	63	50	40

Manufacturer:	Arkon Flow Systems, s.r.o.								
Model number:	MAGB2								
Nominal diameter:	125								
Type details:									
Q_1 [m ³ /h]:	1.60	2.00	2.50	3.20	4.00	5.00	6.35	8.00	10.00
Q_2 [m ³ /h]:	2.56	3.20	4.00	5.12	6.40	8.00	10.16	12.80	16.00
Q_3 [m ³ /h]:	400	400	400	400	400	400	400	400	400



Q_4 [m ³ /h]:	500	500	500	500	500	500	500	500	500
Q_3/Q_1 :	250	200	160	125	100	80	63	50	40

Manufacturer:	Arkon Flow Systems, s.r.o.								
Model number:	MAGB2								
Nominal diameter:	150								
Type details:									
Q_1 [m ³ /h]:	2.52	3.15	3.94	5.04	6.30	7.88	10.00	12.60	15.75
Q_2 [m ³ /h]:	4.03	5.04	6.30	8.06	10.08	12.60	16.00	20.16	25.20
Q_3 [m ³ /h]:	630	630	630	630	630	630	630	630	630
Q_4 [m ³ /h]:	788	788	788	788	788	788	788	788	788
Q_3/Q_1 :	250	200	160	125	100	80	63	50	40

Manufacturer:	Arkon Flow Systems, s.r.o.								
Model number:	MAGB2								
Nominal diameter:	200								
Type details:									
Q_1 [m ³ /h]:	2.52	3.15	3.94	5.04	6.30	7.88	10.00	12.60	15.75
Q_2 [m ³ /h]:	4.03	5.04	6.30	8.06	10.08	12.60	16.00	20.16	25.20
Q_3 [m ³ /h]:	630	630	630	630	630	630	630	630	630
Q_4 [m ³ /h]:	788	788	788	788	788	788	788	788	788
Q_3/Q_1 :	250	200	160	125	100	80	63	50	40

Manufacturer:	Arkon Flow Systems, s.r.o.								
Model number:	MAGB2								
Nominal diameter:	250								
Type details:									
Q_1 [m ³ /h]:	4.00	5.00	6.25	8.00	10.00	12.50	15.87	20.00	25.00
Q_2 [m ³ /h]:	6.40	8.00	10.00	12.80	16.00	20.00	25.40	32.00	40.00
Q_3 [m ³ /h]:	1000	1000	1000	1000	1000	1000	1000	1000	1000
Q_4 [m ³ /h]:	1250	1250	1250	1250	1250	1250	1250	1250	1250
Q_3/Q_1 :	250	200	160	125	100	80	63	50	40

Securing components and verification marks

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;
- the screw covering the USB;
- the label to the body and marks.

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

