Czech Metrology Institute

Member state
Czech Republic

OIML Certificate No.
R49/2013-CZ-16.04
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: MAGX2

For further characteristics see page 2 to 7

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-P3021-16 from 17th August 2016 that includes 240 pages including annexes, Test report No. 8551-PT-E0122-16 from 30th May 2016 that includes 42 pages including annexes and Test report No. 8551-PT-E0142-16 from 10th July 2016 that includes 48 pages including annexes. Test report No. 6015-PT-P3039-17 from 12th September 2017 that includes 23 pages including annexes, Test report No. 8553-PT-P1005-17 from 7th February 2017 that includes 6 pages including annexes, Test report No. 8551-PT-E0152-17 from 12th July 2017 that includes 44 pages including annexes and Test report No. 8551-PT-E0153-17 from 27th August 2017 that includes 44 pages including annexes.

Measuring system description:

The water meter type MAGX2 is electromagnetic water meter. There are two modifications: compact and remote version.
The water meters type MAGX2 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 passwords (user, service and factory) secure access to the metrological parameters.
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 with, and is equipped by 6 buttons. The display can show up to 9 digits in two lines. The normal resolution mode is used during normal operation. The water meter displays in the normal resolution mode up to 000000.001 m^3/h flow rate and 000.001 m^3 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 buttons or factory tool (software would be attached). Version of software and checksum can be displayed using buttons.
The water meters type MAGX2 can be equipped by frequency output which can be used for remote reading or by RS 485 communication.

Český metrologický institut

The OIML Issuing Authority
Pavel Klenovský

12 October 2017

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Member state
Czech Republic

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Characteristics:

Basic technical data of water meters type **MAGX2** DN25 TO DN 150

Manufacturer:	Arkon Flow Systems, s.r.o. Berkova 534/92, 612 00 Brno, Czech Republic								
Model number:	MAGX2								
Type details:									
Nominal diameter(DN)[mm]	25	32	40	50	65	80	100	125	150
Overload flowrate(Q_4)[m^3/h]	flowrates are shown in Table flowrates (page 5)								
Permanent flowrate(Q_3)[m^3/h]									
Transitional flowrate(Q_2)[m^3/h]									
Minimum flowrate(Q_1)[m^3/h]									
Ratio Q_3/Q_1:	400 or 250 or 200 or 160 or 100 or 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℃ ±3% for water having a temperature > 30℃								
Temperature class:	T50								
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						250		300
Connection type-screw thread size	flange								
Climatic environment class:	B								
Electromagnetic environment class:	E2								
Software version	21.39								
Checksum	09585								
Power supply	(90 – 250) VAC / 50 Hz								
	(12 – 36) VDC								
Low flow cut off	1 % from nominal flowrate								

Basic technical data of water meters type **MAGX2** DN200 TO DN 300

Manufacturer:	Arkon Flow Systems, s.r.o. Berkova 534/92, 612 00 Brno, Czech Republic		
Model number:	MAGX2		
Type details:			
Nominal diameter(DN)[mm]	200	250	300
Overload flowrate(Q_4)[m^3/h]	flowrates are shown in Table flowrates (page 5)		
Permanent flowrate(Q_3)[m^3/h]			
Transitional flowrate(Q_2)[m^3/h]			
Minimum flowrate(Q_1)[m^3/h]			
Ratio Q_3/Q_1:	400 or 250 or 200 or 160 or 100 or 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_1)	±5%		
Maximum permissible error for the upper flowrate zone (MPE_u)	±2% for water having a temperature ≤ 30℃ ±3% for water having a temperature > 30℃		
Temperature class:	T50		
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:	E2		
Software version	21.39		
Checksum	09585		
Power supply	(90 – 250) VAC / 50 Hz		
	(12 – 36) VDC		
Low flow cut off	1 % from nominal flowrate		

Basic technical data of water meters type **MAGX2** flowrates

Manufacturer:	Arkon Flow Systems, s.r.o.											
Model number:	MAX2											
Nominal diameter:	25	32	40	50	65	80	100	125	150	200	250	300
Type details:												
Q_1 [m³/h]:	0.04	0.06	0.10	0.16	0.25	0.40	0.63	1.00	1.58	2.50	2.50	4.00
Q_2 [m³/h]:	0.06	0.10	0.16	0.25	0.40	0.64	1.00	1.60	2.52	4.00	4.00	6.40
Q_3 [m³/h]:	16.0	25.0	40.0	63.0	100.0	160.0	250.0	400.0	630.0	1000.0	1000.0	1600.0
Q_4 [m³/h]:	20.0	31.3	50.0	78.8	125.0	200.0	312.5	500.0	787.5	1250.0	1250.0	2000.0
Q_3/Q_1:	400											
Q_1 [m³/h]:	0.06	0.10	0.16	0.25	0.40	0.64	1.00	1.60	2.52	4.00	4.00	6.40
Q_2 [m³/h]:	0.10	0.16	0.26	0.40	0.64	1.02	1.60	2.56	4.03	6.40	6.40	10.24
Q_3 [m³/h]:	16.0	25.0	40.0	63.0	100.0	160.0	250.0	400.0	630.0	1000.0	1000.0	1600.0
Q_4 [m³/h]:	20.0	31.3	50.0	78.8	125.0	200.0	312.5	500.0	787.5	1250.0	1250.0	2000.0
Q_3/Q_1:	250											
Q_1 [m³/h]:	0.08	0.13	0.20	0.32	0.50	0.80	1.25	2.00	3.15	5.00	5.00	8.00
Q_2 [m³/h]:	0.13	0.20	0.32	0.50	0.80	1.28	2.00	3.20	5.04	8.00	8.00	12.80
Q_3 [m³/h]:	16.0	25.0	40.0	63.0	100.0	160.0	250.0	400.0	630.0	1000.0	1000.0	1600.0
Q_4 [m³/h]:	20.0	31.3	50.0	78.8	125.0	200.0	312.5	500.0	787.5	1250.0	1250.0	2000.0
Q_3/Q_1:	200											
Q_1 [m³/h]:	0.10	0.16	0.25	0.39	0.63	1.00	1.56	2.50	3.94	6.25	6.25	10.00
Q_2 [m³/h]:	0.16	0.25	0.40	0.63	1.00	1.60	2.50	4.00	6.30	10.00	10.00	16.00
Q_3 [m³/h]:	16.0	25.0	40.0	63.0	100.0	160.0	250.0	400.0	630.0	1000.0	1000.0	1600.0
Q_4 [m³/h]:	20.0	31.3	50.0	78.8	125.0	200.0	312.5	500.0	787.5	1250.0	1250.0	2000.0
Q_3/Q_1:	160											
Q_1 [m³/h]:	0.16	0.25	0.40	0.63	1.00	1.60	2.50	4.00	6.30	10.00	10.00	16.00
Q_2 [m³/h]:	0.26	0.40	0.64	1.01	1.60	2.56	4.00	6.40	10.08	16.00	16.00	25.60
Q_3 [m³/h]:	16.0	25.0	40.0	63.0	100.0	160.0	250.0	400.0	630.0	1000.0	1000.0	1600.0
Q_4 [m³/h]:	20.0	31.3	50.0	78.8	125.0	200.0	312.5	500.0	787.5	1250.0	1250.0	2000.0
Q_3/Q_1:	100											
Q_1 [m³/h]:	0.32	0.50	0.80	1.26	2.00	3.20	5.00	8.00	12.60	20.00	20.00	32.00
Q_2 [m³/h]:	0.51	0.80	1.28	2.02	3.20	5.12	8.00	12.80	20.16	32.00	32.00	51.20
Q_3 [m³/h]:	16.0	25.0	40.0	63.0	100.0	160.0	250.0	400.0	630.0	1000.0	1000.0	1600.0
Q_4 [m³/h]:	20.0	31.3	50.0	78.8	125.0	200.0	312.5	500.0	787.5	1250.0	1250.0	2000.0
Q_3/Q_1:	50											

Marking and inscriptions

The water meters type **MAGX2** shall be clearly and indelibly marked with the following information:

- Unit of measurement (m^3)
- Numerical value Q_3 in m^3/h (Q_3 ×.×) and the ratio Q_3 / Q_1, (R400 or R250 or R200 or 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; E2)
- For an external power supply: the voltage and frequency (VAC) or the voltage (VDC)
- Software version

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

To prevent tampering with the water meter and its electronics, passwords (user, service and factory) are used and seals are put on following places:

- screw on the cover plate inside the electronic (Figure 1);
- SD card inside the body (Figure 1) and screw on the outside of the body;
- the frequency module, if equipped (Figure 2);
- the RS 485 module, if equipped (Figure 2);
- connecting flow sensor and indicating device in case of compact version (Figure 3);
- connecting the label to the body (Figure 3).

Alternatively sealing: the connection of both sides cover of the electronic have to be sealed by a safeguarding stickers (Figure 4) and connecting flow sensor and indicating device in case of compact version (Figure 3).

The location and type of the seals are described in Figure 1 to Figure 4.

Figure 1: The water meter type MAGX2 – sealing of the screw on the cover plate inside the electronic and SD card inside the body:

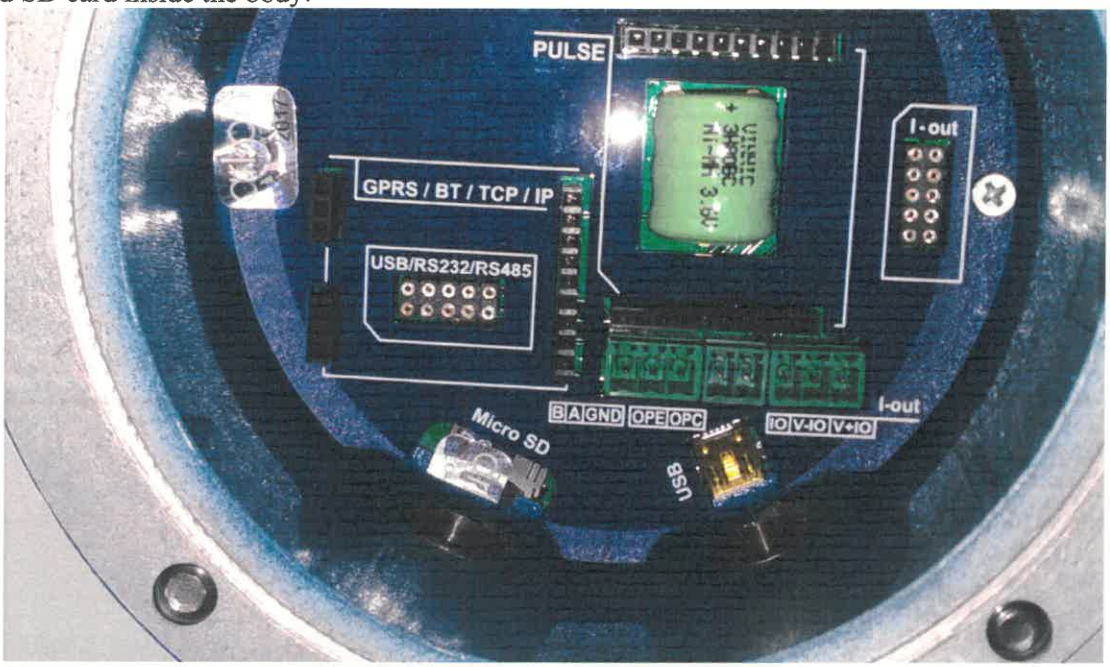

Figure 2: The water meter type MAGX2 – frequency module and RS 485 module sealing:

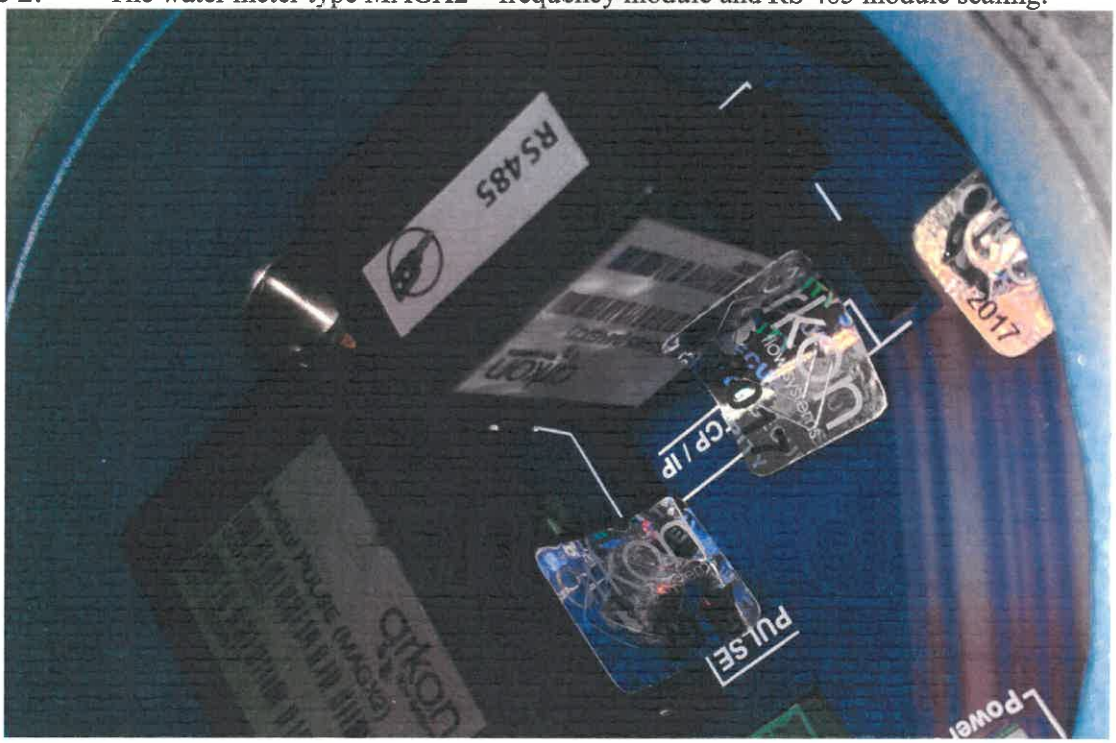

Figure 3: The water meter type MAGX2 – sealing of connecting flow sensor and indicating device in case of compact version including an example of the label:

Figure 4: The water meter type MAGX2 – alternatively sealing: