

OIML Member State  
Slovakia



OIML Certificate N°  
R49/2013-SK1-14.02  
Revision 2



## OIML CERTIFICATE OF CONFORMITY

*Issuing Authority*

Name Slovak Legal Metrology  
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*Applicant*

Name Ningbo Aimei Meter Manufacture Co., Ltd.  
Address 68, West Town Road, Shangtian Town, Fenghua City  
Zhejiang, 315511 P.R. of China

*Manufacturer of the certified type*

The applicant

*Identification of the certified type*

**Mechanical multi - jet dry dial water meter type for metering  
of cold and hot water**

Type **MD-A, MD-AP**

For further characteristics see pages 2 to 7

This Certificate attests the conformity of the above identified type (represented by the sample or samples identified in the associated Test Report) with the requirements of the following Recommendation of the International Organization of Legal Metrology (OIML):

**R 49-1, edition 2013**  
Accuracy class 2

This Certificate relates only to the metrological and technical characteristics of the type of instrument covered by the relevant OIML Recommendation 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 OIML Test Reports No: 2013/MI-001/B075/001 having 64 pages, 2014/MI-001/B041/001 having 56 pages and 2016/MI-001/B 018/312.03 having 86 pages.

**The Issuing Authority**  
assoc. prof. Ing. Jaromír Markovič, PhD.

21 June 2017



**The OIML Member**  
Ing. Pavol Pavlis

21 June 2017

*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 Test Report is not permitted, although either may be reproduced in full.



## 1. Designation

The mechanical multi-jet dry dial water meters types *MD-A* and *MD-AP* are designed to measure, memorise and display the volume of water passing through the measurement transducer at metering conditions. The water meters are intended for the measurement of volumes (consumption) of clean cold and hot water in household and commercial use.

The mechanical water meters types *MD-A* and *MD-AP* are multi-jet rotary vane wheel water meters with the mechanical indication device, with brass body (type *MD-A*) and plastic body (type *MD-AP*). The water meters are installed into pipe lines in horizontal position only with the indication device positioned at the top. The water meter is not designed to measure reverse flows.

## 2. Description

Essential parts of water meters types *MD-A* and *MD-AP*:

- measuring mechanism - consisting of measuring chamber and the rotary vane wheel (impeller) with an axle perpendicular to the flow direction;
- dry type mechanical register and indication device with:
  - o 5 numbered drums (last significant drum moves continuously) and 4 continuously moving rotating pointers for DN15, D20, DN25, DN32
  - o 6 numbered drums (last significant drum moves continuously) and 4 pointers for DN40 and DN50;
- housings of water meter with inlet and outlet connections;
- adjustment device – an adjustment screw placed on the body of housing and regulates the internal by-pass flow of the meter;
- magnetic coupling for the connection of the register with the measuring part (impeller).

Non-essential parts of water meter:

- strainer in the inlet of the meter;
- non-return valve in the outlet tube of water meter (optional). non - return valve in the outlet tube of water meter (optional).

### 2.1 Metrological functions

- measuring, memorizing and displaying the volume of the water passing through the water meter

### 2.2 Software

- not applicable

### 2.3 Integrated equipment and functions

- data output module RF or MBUS (optional);
- pulse output module (optional).



### 3. Technical and metrological data

#### 3.1 Technical and metrological parameters of the water meters types *MD-A* and *MD-AP*, DN15

Type		<i>MD-A / MD-AP</i>							
Nominal diameter DN	mm	15							
Permanent flowrate $Q_3$	m <sup>3</sup> /h	1,6				2,5			
Minimum flowrate $Q_1$	m <sup>3</sup> /h	0,032	0,0254	0,02	0,016	0,03125	0,025	0,02	0,015625
Transitional flowrate $Q_2$	m <sup>3</sup> /h	0,0512	0,04064	0,032	0,0256	0,05	0,04	0,032	0,025
Overload flowrate $Q_4$	m <sup>3</sup> /h	2				3,125			
Ratio $Q_3/Q_1$	-	50	63	80	100	80	100	125	160
Ratio $Q_2/Q_1$	-	1,6							
Connection thread	-	G ¾ B							
Construction length L	mm	115 / 130 / 165 / 170 / 190							
Installation position	-	H (indicating device positioned on top)							
Water temperature range	°C	0,1 to 50 ( <i>MD-A / MD-AP</i> ) 0,1 to 90 ( <i>MD-A</i> )							
Meter temperature class	-	T30/T50 ( <i>MD-A / MD-AP</i> ) T90 ( <i>MD-A</i> )							
Maximum working pressure	bar	16							
Pressure loss $\Delta P$	bar	0,63							
Maximum permissible error in upper flowrates range $Q_2 \leq Q \leq Q_4$	%	$\pm 2$ (at $\Theta \leq 30^\circ\text{C}$ ) $\pm 3$ (at $\Theta > 30^\circ\text{C}$ )							
Maximum permissible error in lower flowrates ranges $Q_1 \leq Q < Q_2$	%	$\pm 5$ (at $\Theta \leq 30^\circ\text{C}$ ) $\pm 6$ (at $\Theta > 30^\circ\text{C}$ )							
Scale interval	m <sup>3</sup>	0,00005							
Capacity of calculator	m <sup>3</sup>	99999							
Mechanical class	-	M1							
Climatic class	°C	-10 to +55							
Electromagnetic class	-	E1							
Flow profile sensitivity class	-	U0D0							





3.2 Technical and metrological parameters of the water meters types *MD-A* and *MD-AP*, DN20

Type		<i>MD-A / MD-AP</i>							
Nominal diameter DN	mm	20							
Permanent flowrate Q <sub>3</sub>	m <sup>3</sup> /h	2,5				4			
Minimum flowrate Q <sub>1</sub>	m <sup>3</sup> /h	0,05	0,0397	0,03125	0,025	0,05	0,04	0,032	0,025
Transitional flowrate Q <sub>2</sub>	m <sup>3</sup> /h	0,08	0,06349	0,05	0,040	0,08	0,064	0,0512	0,04
Overload flowrate Q <sub>4</sub>	m <sup>3</sup> /h	3,125				5			
Ratio Q <sub>3</sub> /Q <sub>1</sub>	-	50	63	80	100	80	100	125	160
Ratio Q <sub>2</sub> /Q <sub>1</sub>	-	1,6							
Connection thread	-	G 1 B							
Construction length L	mm	130 / 170 / 190							
Installation position	-	H (indicating device positioned on top)							
Water temperature range	°C	0,1 to 50 ( <i>MD-A / MD-AP</i> ) 0,1 to 90 ( <i>MD-A</i> )							
Meter temperature class	-	T30/T50 ( <i>MD-A / MD-AP</i> ) T90 ( <i>MD-A</i> )							
Maximum working pressure	bar	16							
Pressure loss $\Delta P$	bar	0,63							
Maximum permissible error in upper flowrates range Q <sub>2</sub> ≤ Q ≤ Q <sub>4</sub>	%	± 2 (at $\Theta \leq 30^\circ\text{C}$ ) ± 3 (at $\Theta > 30^\circ\text{C}$ )							
Maximum permissible error in lower flowrates ranges Q <sub>1</sub> ≤ Q < Q <sub>2</sub>	%	± 5 (at $\Theta \leq 30^\circ\text{C}$ ) ± 6 (at $\Theta > 30^\circ\text{C}$ )							
Scale interval	m <sup>3</sup>	0,00005							
Capacity of calculator	m <sup>3</sup>	99999							
Mechanical class	-	M1							
Climatic class	°C	-10 to +55							
Electromagnetic class	-	E1							
Flow profile sensitivity class	-	U0D0							



3.3 Technical and metrological parameters of the water meters types *MD-A* and *MD-AP*, DN25, DN32

Type		<i>MD-A / MD-AP</i>							
Nominal diameter DN	mm	25				32			
Permanent flowrate $Q_3$	m <sup>3</sup> /h	6,3				10			
Minimum flowrate $Q_1$	m <sup>3</sup> /h	0,07875	0,063	0,0504	0,039375	0,125	0,1	0,08	0,0625
Transitional flowrate $Q_2$	m <sup>3</sup> /h	0,126	0,1008	0,0864	0,063	0,2	0,16	0,128	0,1
Overload flowrate $Q_4$	m <sup>3</sup> /h	7,875				12,5			
Ratio $Q_3/Q_1$	-	80	100	125	160	80	100	125	160
Ratio $Q_2/Q_1$	-	1,6							
Connection thread	-	G ¼ B				G 1 ½ B			
Construction length L	mm	225/260				230/260			
Installation position	-	H (indicating device positioned on top)							
Water temperature range	°C	0,1 to 50 ( <i>MD-A / MD-AP</i> ) 0,1 to 90 ( <i>MD-A</i> )							
Meter temperature class	-	T30/T50 ( <i>MD-A / MD-AP</i> ) T90 ( <i>MD-A</i> )							
Maximum working pressure	bar	16							
Pressure loss $\Delta P$	bar	0,63							
Maximum permissible error in upper flowrates range $Q_2 \leq Q \leq Q_4$	%	$\pm 2$ (at $\Theta \leq 30^\circ\text{C}$ ) $\pm 3$ (at $\Theta > 30^\circ\text{C}$ )							
Maximum permissible error in lower flowrates ranges $Q_1 \leq Q < Q_2$	%	$\pm 5$ (at $\Theta \leq 30^\circ\text{C}$ ) $\pm 6$ (at $\Theta > 30^\circ\text{C}$ )							
Scale interval	m <sup>3</sup>	0,00005							
Capacity of calculator	m <sup>3</sup>	99999							
Mechanical class	-	M1							
Climatic class	°C	-10 to +55							
Electromagnetic class	-	E1							
Flow profile sensitivity class	-	U0D0							



3.4 Technical and metrological parameters of water meters types *MD-A* and *MD-AP*, DN40, DN50

Type		<i>MD-A / MD-AP</i>							
Nominal diameter DN	mm	40				50			
Permanent flowrate $Q_3$	m <sup>3</sup> /h	16				25			
Minimum flowrate $Q_1$	m <sup>3</sup> /h	0,2	0,16	0,128	0,1	0,3125	0,25	0,2	0,15625
Transitional flowrate $Q_2$	m <sup>3</sup> /h	0,32	0,256	0,2048	0,16	0,5	0,4	0,32	0,25
Overload flowrate $Q_4$	m <sup>3</sup> /h	20				31,25			
Ratio $Q_3/Q_1$	-	80	100	125	160	80	100	125	160
Ratio $Q_2/Q_1$	-	1,6							
Connection thread	-	G 2 B				G 2 ½ B or Flange ISO 7005			
Construction length L	mm	245/300				280/300			
Installation position	-	H (indicating device positioned on top)							
Water temperature range	°C	0,1 to 50 ( <i>MD-A / MD-AP</i> ) 0,1 to 90 ( <i>MD-A</i> )							
Meter temperature class	-	T30/T50 ( <i>MD-A / MD-AP</i> ) T90 ( <i>MD-A</i> )							
Maximum working pressure	bar	16							
Pressure loss $\Delta P$	bar	0,63							
Maximum permissible error in upper flowrates range $Q_2 \leq Q \leq Q_4$	%	$\pm 2$ (at $\Theta \leq 30^\circ\text{C}$ ) $\pm 3$ (at $\Theta > 30^\circ\text{C}$ )							
Maximum permissible error in lower flowrates ranges $Q_1 \leq Q < Q_2$	%	$\pm 5$ (at $\Theta \leq 30^\circ\text{C}$ ) $\pm 6$ (at $\Theta > 30^\circ\text{C}$ )							
Scale interval	m <sup>3</sup>	0,00005							
Capacity of calculator	m <sup>3</sup>	999999							
Mechanical class	-	M1							
Climatic class	°C	-10 to +55							
Electromagnetic class	-	E1							
Flow profile sensitivity class	-	U0D0							





#### 4. Interfaces and compatibility conditions

- not applicable

#### 5. Marking and inscriptions

The following data shall be marked on the water meter:

- manufacturer's name or mark;
- type of water meter;
- measuring unit m<sup>3</sup>;
- year of production and serial number;
- flowrate  $Q_3$  and ratio  $Q_3/Q_1$  indicated as (R) followed by the ratio;
- maximum working pressure, indicated as MAP 16;
- maximum water temperature, indicated as T50 or T90;
- indication that the meter must be installed horizontally (H);
- OIML Certificate of conformity number.

The flow direction shall be marked on a water meter's body in form of an arrow.  
Markings on water meter must comply with the requirements OIML R 49.

Manufacturer can use following trademarks on its water meters:

**AIMEI**

**ASM**



#### 6. Security measures

The water meter shall be protected against unauthorised manipulation by one seal securing the connection of the water meter head with the screw cap of adjustment device

#### 7. Documentation used for assessment purposes

- Test report No 2016/MI-001/B 018/312.03;
- Manufacturer's technical documentation stored in folder *Ningbo\_MD-A\_AP\_02*.

#### 8. Standards and regulations used for assessment purposes

- OIML R 49-1, edition 2013 (E);
- OIML R 49-2, edition 2013 (E);
- OIML R 49-3, edition 2013 (E).

#### 9. Certificate history

Issue No	Certificate No	Date	Description of modification
1	R49/2006-SK1-14.02	04.04.2014	-
2	R49/2013-SK1-14.02 Rev. 1	05.11.2014	add DN25, 32, 40, 50
3	R49/2013-SK1-14.02 Rev. 2	21.06.2017	- add. T90 - add for DN15: Q3=1,6 and L115,130, 170 - add for DN20: Q3=2,5 and L130, 170