

OIML Member State
The Netherlands

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Project number 2379625
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Issuing authority NMI Certin B.V.
Person responsible: C. Oosterman

Applicant and Manufacturer Tancy Instrument Group Co., Ltd.
No. 198, Hualian Road, Cangnan Industrial Zone
Wenzhou City, Zhejiang Province
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Identification of the certified type **A turbine gas meter**
Type: TBQM

Characteristics See page 2 and further

This OIML Certificate is issued under scheme B

This 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):

R 137-1 (2012) "Gas meters"

Accuracy class 1.0

This Certificate relates only to the metrological and technical characteristics of the type of measuring instrument covered by the relevant OIML International Recommendation identified above. This Certificate does not bestow any form of legal international approval.

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Issuing Authority **NMI Certin B.V., OIML Issuing Authority NL1**
17 June 2019


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The conformity was established by the results of tests and examinations provided in the associated report(s):

- No. NMI-12200520-02 dated 22 September 2014 that includes 39 pages.

Characteristics of the gas meter

In Table 1, the general characteristics of the measuring instrument are presented. Tables 2 and 3 gives an overview of the general characteristics of the family of instruments.

Table 1 General characteristics

Destined for the measurement of	Gas volume
Mechanical class	M1
Electromagnetic Class	Not applicable (the gas meter has no electronics)
Accuracy class	1.0
Maximum pressure	See tables 2 and 4
Ambient temperature range	+5 – +55 °C
Gas temperature range	+5 – +55 °C
Designed for humidity conditions	Not applicable (the gas meter has no electronics)
Orientation	Horizontal, vertical up and vertical down (all orientations)
Flow direction	Uni-directional (indicated with arrow)
Power supply voltage	Not applicable
Software identification	Not applicable

Table 2 Essential characteristics of the family of instruments

Nominal diameter	Type (G-value)	Qmax	Qt	Minimum Qmin [m ³ /h] for the specified pressure range			
				MR 1:20		MR 1:30	
[mm]		[m ³ /h]		0...100 bar(g)	8...100 bar(g)	8...100 bar(g)	16...100 bar(g)
50	65	100	20	5	-	3,3	-
80	100	160	32	-	8	-	5,3
	160	250	50	12,5	-	8,3	-
	250	400	80	20	-	13,3	-
100	160	250	50	-	12,5	-	8,3
	250	400	80	20	-	13,3	-
	400	650	130	32,5	-	21,7	-
150	400	650	130	-	32,5	-	21,7
	650	1000	200	50	-	33,3	-
	1000	1600	320	80	-	53,3	-
200	650	1000	200	-	50	-	33,3
	1000	1600	320	80	-	53,3	-
	1600	2500	500	125	-	83,3	-
250	1000	1600	320	-	80	-	53,3
	1600	2500	500	125	-	83,3	-
	2500	4000	800	200	-	133,3	-
300	1600	2500	500	-	125	-	83,3
	2500	4000	800	200	-	133,3	-
	4000	6500	1300	325	-	216,7	-

Remarks regarding table 2:

1. The application of permanently lubricated bearings, limits the maximum operating pressure to 16 bar(g), see also table 4
2. MR = measuring range ($Q_{max} / Q_{min} = 1:20$ or $1:30$)

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The measuring part consists of a cartridge including all metrological essential parts such as turbine wheel, bearings, shafts, primary gears and inlet flow straighteners. The number of blades, the appertaining angle of the blades and other essential dimensions of the turbine wheel are given below.

Table 3 Essential parts

Nominal diameter	Type (G-value)	Impeller diameter	Blade height	Vane thickness	Blade angle	Number of blades
[mm]		[mm]	[mm]	[mm]	[°]	
50	65	51	5	15,5	45	12
80	100 160 250	83	12	22		14
100	160 250 400	103	15	28		14
150	400 650 1000	154	22	27		16
200	650 1000 1600	198	40	27		18
250	1000 1600 2500	246	32	30		20
300	1600 2500 4000	296	35,5	30		22

The characteristics of the deep groove ball bearings, including their lubrication method in the applicable operating pressure range, are given in the table below.

Table 4 Bearing characteristics

Nominal diameter	Main shaft		Dynamic load rating C_r		Static load rating C_{or}		Maximum operating pressure	
	inlet	outlet	inlet	outlet	inlet	outlet	16	100
[mm]	[mm]	[mm]	[N]	[N]	[N]	[N]	bar(g)	bar(g)
50	2	2	286	286	90	90	Permanently lubricated bearings, double shielded	External oil pump lubricated bearings, single or double shielded
80	3	3	644	644	215	215		
100	4	3	1339	644	488	215		
150	5	4	1646	1339	663	488		
200	6	6	2522	2522	1057	1057	-	
250	8	8	3369	3369	1363	1363		
300	10	10	6100	6100	2600	2600		

The measured volume is presented by means of a conventional mechanical register, which is built up as given in table 5.

Table 5 Verification scale interval

Type	Number of drums		Control element
	Before the comma	Behind the comma	[m ³]
G65	6	2	0,002
G100 – G1600	7	1	0,02
G2000 – G4000	8	0	0,2

Installation conditions:

- The meter can operate in the following positions: horizontal flow, vertical flow up and vertical flow down.
- Any components, which cause severe flow disturbances and could affect the gas flow, must be avoided within the extra-prescribed inlet pipe length, which is 2 DN. The inlet pipe must be designed as a straight pipe section of the same nominal diameter as the gas meter.
- For mild flow disturbances, there is no prescribed extra inlet pipe length necessary.