

OIML Member State
The Netherlands

Number R137/2012-A-NL1-23.01 revision 1
Project number 3498026
Page 1 of 4

Issuing authority
Person responsible: NMi Certin B.V.
M.Ph.D. Schmidt

Applicant and
Manufacturer Tancy Instrument Group Co., Ltd.
No. 198, Hualian d, Cangnan Industrial Park
Wenzhou, Zhejiang Prov.
China

Identification of the
certified type **A measuring instrument**
Type: TUS; iSonic

Characteristics See page 2 and further

This OIML Certificate is issued under scheme A

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 0.5

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
16 May 2024

Certification Board

NMi Certin B.V.
Thijssseweg 11
2629 JA Delft
The Netherlands
T +31 88 636 2332
certin@nmi.nl
www.nmi.nl

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OIML Member State
The Netherlands

Number R137/2012-A-NL1-23.01 revision 1
Project number 3498026
Page 2 of 4

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

- Number NMI-2477621-01, dated 29 December 2022 that includes 53 pages.
- Number NMI-2477621-02, dated 27 October 2023 that includes 16 pages.
- Number NMI-3498026-01, dated 16 May 2024 that includes 23 pages.

Characteristics of the measuring instrument

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

Table 1 General characteristics

Destined for the measurement of	Gas volume		
Accuracy class	0.5		
Intended for the measurement of	Natural gas		
Minimum – maximum pressure	8 – 255 bar		
Ambient temperature range	-40 – +55 °C		
Gas temperature range	-40 – +55 °C		
Designed for	Condensing humidity		
Orientation	All orientations		
Flow direction	Bi-directional		
Path configuration	Direct measuring paths in an X-shape: - 6-path meters: 4 + 2 paths - 8-path meters: 4 + 4 paths		
Path angle	62,5°		
Sound frequency	200 kHz		
Outlet pipe	5D		
Power supply voltage	18 – 30 VDC		
Software identification			
Part	Version	Checksum	Remarks
MCU	3.1.1.8	F2E09A6A	
APU	1.0.0.34	D9C2A05A	
FPGA	0.0.1.55	DE04FF99	

OIML Member State
The Netherlands

Number R137/2012-A-NL1-23.01 revision 1
Project number 3498026
Page 3 of 4

Table 2 General characteristics of the 6-path meters

Nominal Diameter	Nominal bore size	Maximum Qmax Mild disturbance	Maximum Qmax Severe disturbance	Minimum Qt	Minimum Qmin
	[mm]	[m/s]	[m/s]	[m/s]	[m/s]
4 (100 mm)	95	36	30	1,8	0,6
6 (150 mm)	140				
8 (200 mm)	185				
10 (250 mm)	235	35			
12 (300 mm)	270				
14 (350 mm)	310				
16 (400 mm)	355				

Table 3 General characteristics of the 8-path meters

Nominal Diameter	Nominal bore size	Maximum Qmax Mild disturbance	Maximum Qmax Severe disturbance	Minimum Qt	Minimum Qmin
	[mm]	[m/s]	[m/s]	[m/s]	[m/s]
4 (100 mm)	95	40	22	1,5	0,6
6 (150 mm)	140				
8 (200 mm)	185				
10 (250 mm)	235				
12 (300 mm)	270				
14 (350 mm)	310				
16 (400 mm)	355				

The corresponding flow rates can be calculated as follows:

$$Q = 3600 \cdot \frac{1}{4} \cdot \pi \cdot D^2 \cdot v = 900 \cdot \pi \cdot D^2 \cdot v$$

Where:

Q = flow rate [m³/h]
v = velocity [m/s]
D = nominal bore size diameter [m]

OIML Member State
The Netherlands

Number R137/2012-A-NL1-23.01 revision 1
Project number 3498026
Page 4 of 4

Note regarding tables 2 and 3:

- Higher values for Q_{min} or Q_t and/or lower values for Q_{max} can be chosen, under the condition that:

- If ratio $5 \leq Q_{max}:Q_{min} < 50$ then ratio $Q_{max}:Q_t \geq 5$
- If ratio $Q_{max}:Q_{min} \geq 50$ then ratio $Q_{max}:Q_t \geq 10$

Installation conditions:

Installation requirements

The meter needs to be installed according the following configurations:

- 6-path meters:
 - Upstream: a minimum of $5D + FC + 5D$ of straight pipe.
The flow conditioner (FC) shall be a CPA type 50E compliant design.
 - Downstream: a minimum of $5D$
- 8-path meters:
 - Upstream: a minimum of $10D$ of straight pipe without a flow conditioner.
 - Downstream: a minimum of $5D$

Bi-directional flow measurement

- 6-path meters
During conformity assessment it is sufficient to verify a bi-directional meter in one direction only. For bi-directional flow measurement the outlet pipe and flow conditioner shall be identical to the inlet. The installation of a temperature sensor is at $2-5D$ from the outlet of the meter. For bi-directional applications, an additional temperature sensor can be installed $2-5D$ upstream of the meter. For bi-directional applications the meter and pipe spools including the thermowell(s), shall be calibrated as a meter package during the examination for putting into use of the gas meter.
- 8-path meters
During conformity assessment, the meter shall be calibrated in both directions if the meter is intended to be used for bi-directional measurements. The requirements shall be met without modification of the meter's parameter settings.

Certificate history:

This revision replaces the previous version.

Revision	Date	Description of the modification
0	12 January 2023	Initial issue
1	16 May 2024	Addition of the 8-path meters.