OIML Certificate

OIML Member State
The Netherlands

Number R137/2012-A-NL1-24.10 revision 1
Project number 3942966

Issuing authority	NMi Certin B.V.
Person responsible:	M.Ph.D. Schmidt
Applicant and Manufacturer	Tancy Instrument Group Co., Ltd. No. 198, Hualian d, Cangnan Industrial Park Wenzhou City, Zhejiang Prov. P.R. China
Identification of the certified type	An **Ultrasonic Gas Meter** Type: TUF series
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 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.

Important note: Apart from the mention of the Certificate's reference number and the name of the OIML Member State in which the Certificate was issued, partial quotation of the Certificate and of the associated OIML Type Evaluation Reports is not permitted, although either may be reproduced in full.

Issuing Authority **NMi Certin B.V., OIML Issuing Authority NL1**
29 December 2025

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The conformity was established by the results of tests and examinations provided in the associated reports:
- Number NMi-3565688-01, dated 20 December 2024 that includes 54 pages.

Characteristics of the Ultrasonic Gas Meter
In Table 2 the general characteristics of the family of instruments of the 2-path meters are presented.
In Table 3 the general characteristics of the family of instruments of the 4-path meters are presented.

The construction of the TUF series meter is recorded in documentation folder number T12885-1.

Table 1 General characteristics

Destined for the measurement of	Gas volume
Accuracy class	1.0
Intended for the measurement of	Natural gas
Minimum – maximum pressure	1 – 16 bar
Ambient temperature range	-25 – +55 °C
Gas temperature range	-25 – +55 °C
Designed for	Condensing humidity
Orientation	All orientations
Flow direction	Bi-directional
Path configuration	Direct measuring paths in an X-shape: - 2-path meters: 1 + 1 paths - 4-path meters: 2 + 2 paths
Path angle	- 2-path meters: 45° - 4-path meters: 60°
Sound frequency	200 kHz
Inlet pipe	20D
Outlet pipe	5D
Power supply voltage	18 – 30 VDC
Attached inlet flow conditioner	Type: FC-80
Software identification	See table 4

Table 2 General characteristics of the 2-path meters

Model	DN Nominal bore size	Maximum Qmax	Minimum Qt	Minimum Qmin	Remarks
	[mm]	[m^3/h]	[m^3/h]	[m^3/h]	-
TUF-DN25	25	40	4	0,5	-
TUF-DN32	32	65	6,5	0,5	-
TUF-DN40	40	100	10	0,6	-
TUF-DN50	50	160	16	1	-

Table 3 General characteristics of the 4-path meters

Model	DN Nominal bore size	Maximum Qmax	Minimum Qt	Minimum Qmin	Remarks
	[mm]	[m^3/h]	[m^3/h]	[m^3/h]	-
TUF-DN80	80	400	40	2	-
TUF-DN100	100	650	65	4	-
TUF-DN150	150	1600	160	10	-
TUF-DN200	200	2500	250	15	-

Note regarding tables 2 and 3:
- Higher values for Qmin or Qt and/or lower values for Qmax 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 $Q_{max}:Q_t \geq 10$

Table 4 Software identification

Part	Version	Checksum	Remarks
EVC	V02204513	AC4D	Main Software
	V02204514	0x7898C7F3	
APU	2.0.3.3	0x8C5D7940	Module Software
FPGA	0.12.0.25	0xBFA34CB7	Module Software

Installation conditions:

Installation requirements
The meter needs to be installed according the following configurations:
- 2-path meters and 4 path meters:
  - Upstream: a minimum of 20D + FC-||Meter|| + 5D of straight pipe.
    The flow conditioner (FC) shall be a FC-80 compliant design that is attached at the inlet of the meter.
  - Downstream: a minimum of 5D including an additional temperature sensor can be installed between 2-5D.

The accompanying drawing for the flow conditioner (FC) is given documentation number 12885/0-04

Working pressure
The spool piece and the transducers can be used up to the specified pressure as given in table 1.

The following working pressure ranges are applicable:
- For a working pressure range 1 bar(g) < ($p_{min/max}$) <16 bar(g) a calibration shall be performed on the two pressures at p_{min} and p_{max} as given on the name plate.
- The working pressure range (p_{min} and p_{max}) as given on the name plate is allowed to be within ½·p_{fix} and 2·p_{fix}.

The ultrasonic gas meter does not make use of an internal pressure or temperature sensor. The correct gas density (ρ_{gas}), fixed pressure setting (p_{fix}) and meter factors shall be applied before calibration in the USM setting.

Pressure tapping
The static pressure can be measured via the pressure tapping (p_m) provided on the meter body. The pressure tapping is not close to the transducer port.

Bi-directional flow measurement
- 2 and 4-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.

Adjustment
The meter allows adjusting the measured flow reading by means by of a N-point piece-wise linearization. These adjustments are typically set during a flow calibration at an accredited flow lab or by an authorized inspector.

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Markings:
The nameplate is bearing at least, good legible, the following information:
- Certificate no. R137/2012-A-NL1-24.10.
- Manufacturer's name, registered trade name or registered trademark.
- Manufacturer's postal address.
- Serial number, model number of the meter and month and year of manufacture.
- Meter body design code and material, flange design code and material.
- Q_{max}, Q_t and Q_{min}.
- The working pressure range.
- Ambient temperature range.
- Gas temperature range.
- Accuracy class.
- Indication of the flow direction, e.g. an arrow.

An example drawing for the nameplate is given in documentation number 12885/0-12.

Certificate history:
This revision replaces the previous version.

Revision	Date	Description of the modification
0	20 December 2024	Initial issue.
1	29 December 2025	Addition of new Software version.