OIML Certificate

OIML Member State
The Netherlands

Number R137/2012-A-NL1-21.05 revision 3
Project number 4121193

Issuing authority	NMi Certin B.V. Person responsible: M.Ph.D. Schmidt
Applicant and Manufacturer	Endress+Hauser SICK GmbH + Co. KG Bergener Ring 27 01458 Ottendorf-Okrilla Germany
Identification of the certified type	An **[ultrasonic gas meter]** Type: FLOWSIC600-XT
Characteristics	See following page(s)

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.

This certificate and supporting reports comply with the requirements of OIML-CS-PD-07 clause 6.2.

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Issuing Authority **NMi Certin B.V., OIML Issuing Authority NL1**
6 October 2026

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The conformity was established by the results of tests and examinations provided in the associated report(s):
- NMi 2518128 01 revision 1, dated 27 July 2023 that includes 65 pages.
- NMi-3509954-01 dated 27 July 2023 that includes 33 pages.
- NMi-4121193-01 dated 6 October 2026 that includes 28 pages.

Characteristics of the measuring instrument
In Table 1 the general characteristics of the measuring instrument are presented.
In Table 2 to Table 4, the characteristics of the family of instruments are presented.

Table 1 General characteristics

Destined for the measurement of	Gas volume			
Accuracy class	0.5			
Environmental classes	M2 / E2			
Minimum pressure	Atmospheric			
Maximum pressure	Depending on transducer type, see below			
Ambient temperature range	-40 – +70 °C; non condensing humidity			
Gas temperature range	-40 – +70 °C			
Orientation	Horizontal / vertical up / vertical down (all orientations)			
Power supply voltage	10,8 … 28,8 VDC when using Ex d or Ex de power supply 6 … 16 VDC when using Ex i power supply			
Software identification	See Table 2			
Path angle	60°			
Transducer	Type	Frequency [kHz]	Pmax [bar]	Beam angle [°C]
	15	350	105	8,9
	22	205	200	12,2
	26	205	200	11,7
	28	135	200	11,8
	46	205	200	15,9
	S5	350	105	9,5
	S6	205	103	11,9
	S7	135	20	9,0
	S8	135	103	10,6
	K8	135	103	9,9
	T210	205	105	13,7
	T218	205	105	13,7
	T220	205	200	12,2
	T228	205	200	12,2
	T240	205	200	9,5
	H210	205	105	6,8
	H218	205	105	6,8

Table 2 Software identification

Software version	CRC Checksum	Remarks
1.05.00	0x78E1	Initial release
1.06.00	0x06F9	-
2.01.00	0x1E05	-
2.01.02	0x6FE2A91E	Update to 32-bit CRC checksum for the software as result of the renewal of PTB EU-type examination certificate number

The software version and checksum can be accessed via the display of the gas meter.

Table 3 Meter types, path configuration and installation conditions

The meter consists of a cylindrical spool piece with 4 or 8 horizontal direct paths. Multiple configurations can be combined in a single housing according to the table below.

When the meter is equipped with a double meter configuration, the pay and check meter shall have a different indicator. A clear distinction between pay and check indicator shall be present; both meters must have their own nameplate with unique serial number.

FLOWSIC 600-XT ...	Metrological relevant transducer paths	Check paths (non-metrological relevant)	Flow disturbance	Minimum installation conditions up- and downstream[1]
Standard	4	-	Mild	2D – FC1[2] – 8D - USM – 3D
2plex	4	1		
Quatro	4	4		
Standard	4	-	Mild & Severe	5D – FC2[2] – 5D - USM – 3D
2plex	4	1		
Quatro	4	4		
Forte	8	-	Mild & Severe	5D - USM – 3D

Remarks:

[1] In respect of the inlet condition, the following is applicable
xD Minimum straight inlet piping length
FCx Flow conditioner
USM Ultrasonic gas meter

[2] The following flow conditioners are applicable:
FC1: PTB design, FL600, drawing number 9211779, dated 2014-05-19.
FC2: CPA type 55E, see Canadian approval number GA-0625 revision 1 for details.

Table 4 General characteristic of the family of instruments

Standard (4 Path), 2plex (4 Path), Quatro (4 Path) and Forte (8 Path)					
Diameter	**Internal bore**		**Maximum**	**Minimum**	
Nominal	**minimum [mm]**	**maximum [mm]**	**V_{max} [m/s]**	**V_t [m/s]**	**V_{min} [m/s]**
3” (80 mm)	73	85	39,22	2,45	0,31
4” (100 mm)	94,96	110		2,54	
6” (150 mm)	142	160		1,75	
8” (200 mm)	190	210		1,57	
10” (250 mm)	235	270		1,54	
12” (300 mm)	270	315	37,84	1,5	
14” (350 mm)	315	340	35,64		
16” (400 mm)	360	400	35,48		
18” (450 mm)	405	450	34,64		
20” (500 mm)	450	500			
22” (550 mm)	495	550			
24” (600 mm)	540	600			
26” (650 mm)	585	650	33,96		
28” (700 mm)	630	700	33,07		
30” (750 mm)	675	750	32,08		
32” (800 mm)	720	800	31,05		
34” (850 mm)	765	850	29,34		
36” (900 mm)	810	900	28,40		
38” (950 mm)	855	950	27,49		
40” (1000 mm)	900	1000	27,09		

Remarks:

[1] If higher values are chosen for Q_{min} or Q_t and/or lower values for Q_{max}, it has to be taken into account that:
- If ratio $Q_{max}/Q_{min} \geq 50$, then ration $Q_{max}/Q_t \geq 10$
- If ratio $Q_{max}/Q_{min} \geq 5$ and <50, then ratio $Q_{max}/Q_t \geq 5$

[2] Depending on the internal bore, the maximum flow rate in m^3/h can be calculated using the following formula:

$$Q_{max} = v \cdot \frac{1}{4} \cdot \pi \cdot D^2 \cdot 3600$$

With: Q_{max} = flow rate [m^3/h]
v = velocity [m/s]
D = internal diameter [m]

[3] Example calculation for a 4" ultrasonic gas meter with an internal bore of 94,96 mm:
$Q_{max} = 39{,}22 \cdot ¼ \cdot 3{,}14159 \cdot (94{,}96/1000)^2 \cdot 3600 = 1000\ m^3/h$

Installation conditions:

- Installation requirements
  Any components which could affect the gas flow must be avoided within the prescribed inlet pipe length. The inlet pipe must be designed as a straight pipe section of the same nominal diameter as the gas meter. The necessary straight pipe length is stated on the name plate of the meter.

  The installation requirements, based on accuracy class and mild and/or severe flow disturbance are specified in Table 3. The used flow conditioner (if applicable) is of the type mentioned in Table 3.

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

  The two pressures, at which the meter shall be calibrated, without intermediate adjustment over its full flow rate range during initial verification ($p_{min\ calibration}$ and $p_{max\ calibration}$), shall be equal to the operating pressure range (p_{min} and p_{max}) as given on the type plate.

  In case the claimed minimum working pressure (p_{min}) of the meter is ≥4 bar, the meter can be calibrated on one pressure. The working pressure range (p_{min} and p_{max}) is allowed to be within $½ \cdot p_{fix}$ and $3 \cdot p_{fix}$.

  The ultrasonic gas meter does not make use of an internal pressure or temperature sensor. The setting for pressure and temperature are a fixed value (fixed setting before calibration) in the parameter settings:
  - In the menu sequence p_{fix} can be checked and represents the fixed pressure setting.
  - In the menu sequence T_{fix} can be checked and represents the fixed temperature setting.

  For a maximum working pressure (p_{max}) of the ultrasonic gas meter above 65 bar(a), a maximum calibration pressure ($p_{max\ calibration}$) of around 65 bar(a) is allowed since this is the highest possible test pressure at any test location traceable to (inter)national standards.

- Thermowell
  A thermowell may be mounted at 2D - 5D from the outlet of the meter.

- *Bi-directional flow measurement*
  - 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.

- *Alternative welded configuration of the gas meter*
  The central meter body can be welded directly onto the flanges or to inlet and outlet pipes. The welding may not cause more than a 3% diameter step. The meter shall be installed as stated in "*Installation requirements*". The central meter body, including welded piping or welded flanges, shall be calibrated as a meter package during the examination for putting into use of the gas meter.

- Maintenance
  A transducer path pair and the main electronics board can be exchanged without deterioration of the metrological performance.

Certificate history:
This revision replaces the previous version.

Revision	Date	Description of the modification
Initial	4 August 2021	Initial issue.
1	27 July 2023	New electronics, firmware, and transducers.
2	28 April 2025	Manufacturer's name change and software update. Previously named as "SICK Engineering GmbH".
3	6 October 2026	- Addition of the CPA 55E flow conditioner with inlet condition 5D-FC-5D-USM-3D for mild and severe flow disturbance. - Addition of software version 2.01.02 with a 32-bit CRC checksum over the software.