OIML Certificate

OIML Member State
The Netherlands

Number R117/2019-A-NL1-24.05 revision 2
Project number 3978954

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	A **measuring device** (ultrasonic flow meter) intended to be used as part of an interruptible or non- interruptible dynamic measuring system for liquids other than water.[1] Manufacturers mark: Endress+Hauser Type: FLOWSIC900 F9**L**-XXX**Y**[2]
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 117-1: 2019 "Dynamic measuring systems for liquids other than water"

Accuracy class 0.3; 0.5; 1.0; 1.5

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.

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.

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[1] This measuring device was previously placed on the market under the manufacturer name Sick Engineering GmbH

[2] Where Y = D for 8-path and C for 4-path meter.
L = Large scale flow meter type.

Issuing Authority **NMi Certin B.V., OIML Issuing Authority NL1**
23 September 2025

Certification Board

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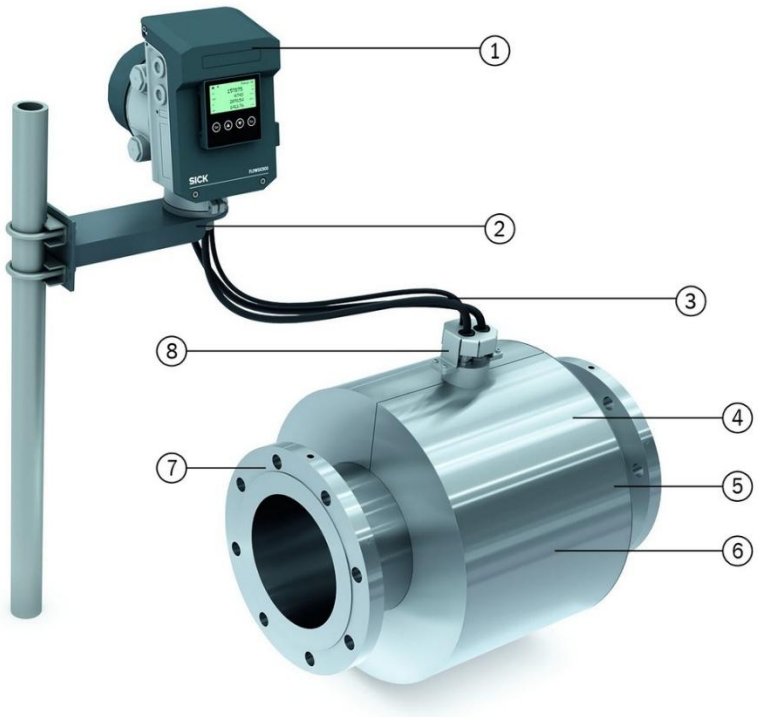
The conformity was established by the results of tests and examinations provided in the associated reports:

- NMi-3575261-01 dated 6 December 2024 that includes 77 pages.
- NMi-3978954-01 dated 10 September 2025 that includes 14 pages.

General information about the measuring device

The FLOWSIC900 F9**L**-XXX**Y** is an ultrasonic flow meter for measuring the volume of liquified natural gas (LNG) and low viscosity oil. It is based on the measurement of the runtimes of ultrasonic pulses along several measuring paths. The meter consists of the following assemblies:

- One meter body with a straight pipe section with 4 or 8 ultrasonic measuring paths.
- Two ultrasonic transducers per measuring path, where the two transducers both serve as transmitters and receivers,
- The signal processing unit (SPU) separated from the meter body with the measurement electronics for excitation and processing of the transducer signals, the interface electronic and the display.



1 SPU (Signal Processing Unit)
2 SPU holder
3 Connection cable (for ultrasonic transducers and temperature sensor)
4 Thermal factory pre-insulation (ultrasonic transducers under the insulation)
5 Jacketing
6 Meter body
7 Meter body flange (flange)
8 Meter body neck (neck)

Characteristics of the measuring device
In Table 1, the general characteristics of the measuring device are presented.
The construction of the measuring device is recorded in the Documentation folder number TC12890-2.

Table 1 General characteristics

Number of sound path	8 (4 + 4 in X- configuration) ; 4 (A-A plane)
Sound frequency	1,5 MHz
Path angle	52,5° ± 10°
Approved quantity	Volume at flowing conditions
Maximum pressure	20 bar(g)
Environmental classes	M3 / E2 Humidity class H3: condensing, open location
Ambient temperature range	-40 °C / +55 °C for pulse output and Modbus as the metrologically relevant output signal. -25 °C / +55 °C for local display on the SPU as the metrologically relevant display.
Product temperature range	-200 °C / +60 °C
Intended for the measurement of	Liquified Natural Gas (LNG); Liquid petroleum and related products, liquids food, chemical products any other liquids other than water in liquid state with maximum kinematic viscosity of 2 cSt.
Power supply voltage	23 VDC to 29 VDC The measuring device should always be powered using the following power supply units: Make: Phoenix Contact Type: STEP-CAP/24VDC/2/0.4KJ Part Number: 1519633 Make: FEAS Type: SSESSE24-M Part Number: 622406
Software identification	Version number: 1.1.0. Checksum: EFC304FA The metrological software version and checksum can be displayed: - by the electronic calculating/indicating device connected to the measuring device, or - via the serial communication line and a computer temporarily connected to the measuring device.
Flow characteristics	See Table 2

Approved inputs	-
Approved outputs	Local Display; Frequency output (maximum frequency is 10 kHz) Modbus RS485 serial communication.
Housing signal processing unit	Aluminium or Stainless steel
Electro-Magnetic Interference (EMI) protection measures	All cables between the sensor and the remote transmitter cannot be longer than 6 meters. Serial RS485 communication cable should be a shielded cable.

Table 2 Characteristics of the family of instruments

Meter size	**Inch**	**8**	**10**	**12**	**14**
	DN	**200**	**250**	**300**	**350**
Minimum flow rate [m³/hr]		60	90	130	160
Maximum flow rate [m³/hr]		1500	2300	3300	4100
MMQ [m³]		2	2	5	5
Minimum Reynolds Number		50000	50000	50000	50000

Production location
The measuring instrument is produced at one of the following production locations:

- Endress+Hauser SICK GmbH+Co. KG, Bergener Ring 27, 01458 Ottendorf-Okrilla, Germany

Further characteristics

- Component exchange
  The following components can be exchanged with an identical component without the need of a re-calibration of the measuring device:
  - Electronics module
    The electronics module is always completely replaced with a new module. All boards, making up the electronics module, are replaced in this step and never the individual boards alone. After replacement, the settings of the old electronics module need to be loaded into the new module with the exception of the following parameters, as these are module specific: timeoffset electronic and timedifference electronic. These parameters need to be set to the correct value corresponding with the new essential components FPE1-ANAB and FPE1-DIGI.
  - Transducers
    The transducers are always replaced in pairs which form the acoustic path. After the replacement the following parameter settings shall be updated in the electronics:
    - Length of transducer A and B.
    - Timeoffset and timedifference of the transducer pair.
  - Transducer cables
    The cables between the transducer(s) and the electronics can be replaced with new cables without the need of parameter adjustment.

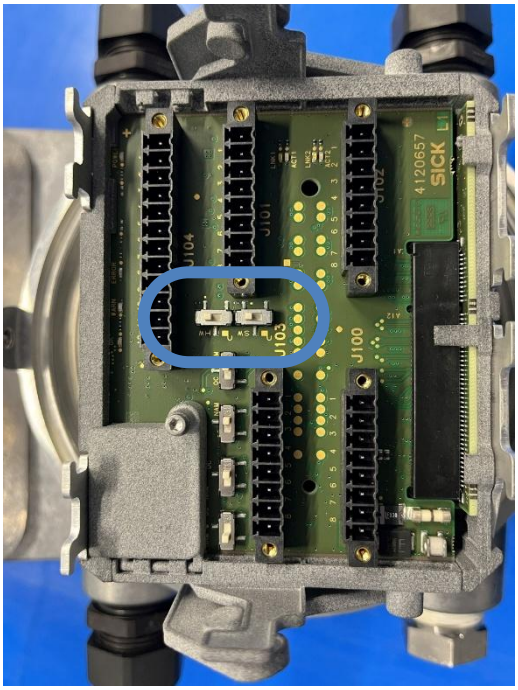
- Terminal board
  The essential terminal board sensor FPE1-TB_S can be replaced with a new board without the need of parameter adjustment.

The exchange of components can only be performed after breaking a seal.

Seals

The following seals are applied:

- The inscriptions are fixed to the measuring device and secured against removal by seal or it will be destroyed when removed.
- The housing of the remote signal processing unit is sealed against opening.
  Before sealing, the metrological relevant parameters are secured by setting the metrological lock switches to the closed position. It is not possible to change the position of the metrological lock switch without breaking a seal.



The metrological hardware lock status of the meter can be verified on the local display. When the meter switch is locked a close padlock symbol (🔒) is displayed on the top left of the local display.

- The ultrasonic transducers are sealed on the outside of the metallic jacketing after insulation of the measuring device. Alternatively, without insulation the ultrasonic transducers are sealed at their covers.

See below for an example of the sealing positions.

Figure 1 Sealing positions for remote signal processing unit

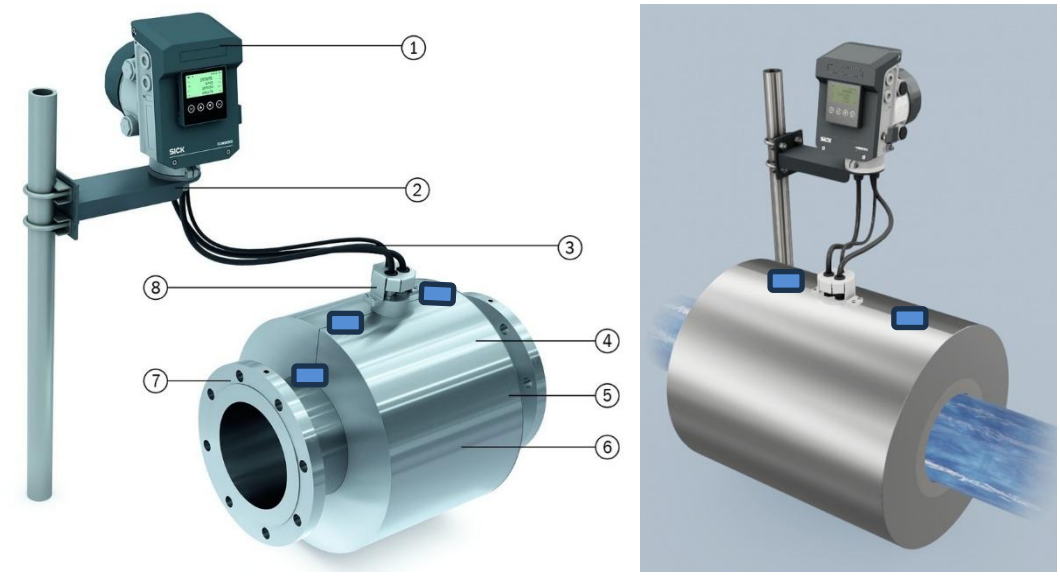


Figure 2 Sealing positions for meter body with metal jacket (L); and with insulation (R).

Sticker seal

Conditions for conformity assessment

- Before taken into use the measuring device shall be calibrated on the product it is going to measure or on a product with similar properties (density and viscosity) to cover a sufficient Reynolds-number range taking into account the operating range of the measurement system in which the measuring device is used.
- If the measuring device is intended to be used with multiple liquids without adjustments, the measuring device shall be calibrated on all applicable liquids without changing the parameters or it has to be calibrated in a Reynolds-number range covering all these fluids
- It is up to the authorized body to decide if the calibration with a single or multiple liquid(s) covers the process range on which the measuring device is going to be used.
- If a flow computer is used with a correction curve for multiple product applications, the accuracy requirements only have to be met for all products individually.
- The calibration can be performed on site or at a test laboratory. In the latter case the relevant parameter settings have to be registered and checked at the initial verification on site.
- In case the measuring device is used bi-directional, the measurement accuracy shall be determined in both directions.

Certificate history:

Revision	Date	Description of the modification
0	6 December 2024	Initial issue
1	25 July 2025	Manufacturer name change. Previously named as “Sick Engineering GmbH”.
2	23 September 2025	Added to the Certificate: - Component exchange without the need of recalibration of the instrument. - Guidance on sealing of the measuring device. - Guidance on the conformity assessment of the measuring device