

Issued by NMI Certin B.V.

In accordance with

- "Metrologiewet" (Stb. 2006, 137)
- "Regeling nationaal autonoom geregelde meetinstrumenten"

Producer

Heinrichs Messtechnik GmbH
Robert-Perthel-Strasse 9
50739 Köln
Germany

Part

A **measurement sensor** (Coriolis sensor) intended to be used as a part of a CG dispenser.

Producer's mark or name : Heinrichs

Type designation : TMU-W004

Accuracy class : 2,0 or 4,0

Destined for the measurement of : Hydrogen (H₂)

Further properties and test results are described in the annexes:

- Description TC9013 revision 0;
- Documentation folder TC9013-1.

Issuing Authority

The Designated Body, NMI Certin B.V.

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Certification Board

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1 General information about the measurement sensor

All properties of the measurement sensor, whether mentioned or not, shall not be in conflict with the legislation.

This Test Certificate is the positive result of the applied voluntary, modular approach, for a component of a measuring instrument, as described in WELMEC 8.8, 2017.

The complete measuring instrument must be covered by relevant metrological certification that is valid in the country where the instrument is put into use.



Example of the measurement sensor

The measurement sensor consists of a housing in which two parallel measuring tubes are mounted. On the measurement tubes, three coils are mounted: one drive-coil and two pick-off coils. The measurement transducer oscillates the flow tubes of the sensor by means of an excitation coil and captures, via pick-up coils, the measuring signal which is proportional to the mass flow. After temperature compensation, the measuring signal is converted into an analogue output signal that is consistent with the measuring range setting.

1.1 Essential parts

1.1.1 Measurement sensor

The measurement sensor is constructed as a single part. See documentation no. 9013/0-01 for details on the construction and dimensions of the measurement sensor.

1.1.2 Measurement transducer (flow transmitter)

The measurement sensor TMU-W004 must be used in combination with a measurement transducer covered with test certificate TC11764.

1.2 Essential characteristics

1.2.1 Measuring range

The measurement sensor has the following characteristics:

| Sensor type | Q_{min} [kg/h] | Q_{max} [kg/h] | Maximum pressure [bar(g)] | minimum measured quantity (MMQ) |
|-------------|---------------------|---------------------|---------------------------------|---------------------------------------|
| TMU-W004 | 8 | 240 | 1050 | 1 kg |

1.2.2 Bi-directional flow

All sensors can be used to measure flow in forward and reverse directions. See also the conditions as stated in chapter 3.

1.2.3 Temperature range gas

- -40 °C / +55 °C

1.2.4 Temperature range ambient

- -40 °C / +55 °C

1.2.5 Environment classes

- M2 / E2

1.2.6 Temperature correction

In the measurement transducer a temperature correction is applied depending on the connected sensor type.

Temperature correction for the sensor behaviour due to process temperature variations takes automatically place by default, based on the integral temperature sensor and the configured temperature coefficients in the electronics.

1.3 Essential shapes

1.3.1 Inscriptions

On the measurement sensor, clearly visible, at least the following is inscribed:

- Test Certificate number TC9013;
- Name or trade mark of the producer;
- Type designation;
- Serial number and year of manufacture.

The markings must be clearly visible without removing any covers.

See documentation no. 9013/0-02 for an example of the markings.

1.3.2 EMI protection measures

The following measures are taken for EMI protection:

- The cable connected to the transmitter is shielded.

1.4 Conditional parts

1.4.1 Housing

The housing of the measurement sensor is made of stainless steel.

2 Seals

The following seals are applied:

- The inscriptions are fixed to the measurement sensor and secured against removal by seal or it will be destroyed when removed.
- The cable connection from the measurement sensor to the measurement transducer is protected with a sealing sticker against disconnection

See documentation no. 9013/0-03 for an example of the sealing positions.

3 Conditions for conformity assessment

- Other parties may use this Test Certificate only with the written permission of the producer.
- Before taken into use the measurement sensor shall be calibrated on the product it is going to measure or on a product with similar properties (density and viscosity) at operating temperature and pressure (if possible).
- 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 measurement sensor is used bi-directional, the measurement accuracy shall be determined in both directions.

4 Reports

An overview of the performed tests is given in Evaluation Report ER9013 revision 0 issued together with this Test Certificate.