



# OIML Certificate

**OIML Member State**  
The Netherlands

Number R49/2013-A-NL1-21.04 revision 5  
Project number 4074653  
Page 1 of 4

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

Applicant and  
Manufacturer Badger Meter, Inc.  
4545 West Brown Deer Road  
Milwaukee, WI 53224  
United States of America

Identification of the  
certified type An ultrasonic **water meter**  
Type: E-Series G2®

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):

**OIML R 49 (2013)** "Water meters intended for the metering of cold potable water and hot water"

Accuracy class 2

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**  
31 August 2026

Certification Board

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**OIML Member State**  
The Netherlands

Number R49/2013-A-NL1-21.04 revision 5  
Project number 4074653  
Page 2 of 4

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

- NMI-2284950-01 dated 11 June 2021 that includes 120 pages.
- NMI-2619384-01 dated 21 January 2022 that includes 70 pages.
- NMI-4020293-01 dated 13 April 2026 that includes 12 pages.
- NMI-4074653-01 dated 31 August 2026 that includes 17 pages.

## Characteristics of the measuring instrument

In Table 1 the general characteristics of the measuring instrument are presented.

In Table 2 the software identification of the measuring instrument is presented.

In Table 3 the characteristics of the family of instruments are presented.

In Table 4 the general characteristics of the indicating device are presented.

The construction of the measuring instrument is recorded in documentation folder number T12126-5.

**Table 1 General characteristics**

|                                      |                                                                 |
|--------------------------------------|-----------------------------------------------------------------|
| Measuring principle                  | Ultrasonic                                                      |
| Accuracy class                       | 2                                                               |
| Environmental class                  | M1 / O (installed outdoors)                                     |
| Electromagnetic environment          | E1                                                              |
| Temperature range ambient            | -25 °C / +55 °C                                                 |
| Water temperature class              | T50 (+0,1 °C / +50 °C)                                          |
| Maximum admissible pressure (MAP)    | 1,6 MPa (16 bar)                                                |
| Orientation                          | All positions (Horizontal, vertical or diagonal)                |
| Flow profile sensitivity class       | U0 and D0 (0 x DN upstream and 0 x DN downstream)               |
| Reverse flow                         | The sensor is not intended to measure reverse flow              |
| Pressure loss class                  | $\Delta p$ 25 (0,25 bar)                                        |
| Power supply                         | Non-replaceable battery (3,2 – 3,6 V);<br>Battery life 15 years |
| Software identification              | See table 2                                                     |
| Characteristics of indicating device | See table 4                                                     |

**OIML Member State**  
The Netherlands

Number R49/2013-A-NL1-21.04 revision 5  
Project number 4074653  
Page 3 of 4

**Table 2 Software identification**

| Product Code | Firmware Platform                   | Firmware Version | Checksum                            |
|--------------|-------------------------------------|------------------|-------------------------------------|
| 0x0700       | ARM - Standard Output               | F 1.0.4414       | 0x6A4A <b>68EB</b> *                |
| 0x0702       | ARM - Wire M-BUS                    | F 1.0.548        | 0xC8AD <b>E86F</b> *                |
| 0x0703       | ARM - Wireless M-BUS (434/868 MHz)  | F 1.0.548        | 0x5FB7 <b>298F</b> *                |
| 0x0701       | ASIC - Ultrasonic transit time data | A 1.0.4414       | 0x <b>8580</b> or 0x <b>2BC7</b> ** |
|              |                                     | A 1.0.4491       | 0x <b>B106</b> or 0x <b>62FF</b> ** |

\* Only the lower 16-bits of the 32-bit calculations is displayed as stated in **bold**.

\*\* Two checksums are possible depending on the memory section used at that time.

**Table 3 General characteristics of the family of instruments**

| Meter size        | Flow rates [m³/h] |                 |              |             | Ratio Q3/Q1 |
|-------------------|-------------------|-----------------|--------------|-------------|-------------|
|                   | Minimum Q1        | Transitional Q2 | Permanent Q3 | Overload Q4 |             |
| DN15 <sup>1</sup> | 0,0063            | 0,01            | 2,5          | 3,125       | 400         |
| DN20 <sup>1</sup> | 0,01              | 0,016           | 4            | 5           | 400         |
| DN15 <sup>2</sup> | 0,0031            | 0,005           | 2,5          | 3,125       | 800         |
| DN20 <sup>2</sup> | 0,005             | 0,008           | 4            | 5           | 800         |

Please note that the flow rates Q1, Q2, Q3 and Q4 can be freely chosen as long as:

- Values Q3 and ratio Q3/Q1 are selected from paragraph 4.1 of OIML R49-1: 2013(E);
- Values mentioned for Q1 and Q2 are minimum values and the ratio Q2/Q1 = 1,6;
- Values mentioned for Q3 and Q4 are maximum values and the ratio Q4/Q3 = 1,25;
- The ratio Q3/Q1 is at least 40.

**Table 4 General characteristics of the indicating device**

| Meter size | Indicating range (minimum value) [m³] | Verification scale interval (minimum resolution) [m³] |
|------------|---------------------------------------|-------------------------------------------------------|
| DN15; DN20 | 9999,99999                            | 0,00001                                               |

<sup>1</sup> The measurement sensor with element insert according to documentation number 12126/0-05

<sup>2</sup> The measurement sensor with element insert according to documentation number 12126/1-01 and 12126/4-04.



**OIML Member State**  
The Netherlands

# OIML Certificate

Number R49/2013-A-NL1-21.04 revision 5  
Project number 4074653  
Page 4 of 4

## Certificate history:

This revision replaces the previous version.

| Revision | Date             | Description of the modification                                        |
|----------|------------------|------------------------------------------------------------------------|
| 0        | 11 June 2021     | Initial issue.                                                         |
| 1        | 21 January 2022  | Increasing flow rate ratio Q3/Q1 to R800 due to revised element insert |
| 2        | 2 September 2022 | ASIC firmware update to support alternate pressure transducer          |
| 3        | 1 April 2025     | Documentation folder update                                            |
| 4        | 13 April 2026    | Addition of reflector material 90/10 COPPER-NICKEL, C70600             |
| 5        | 31 August 2026   | Changes of PCBA                                                        |