



Australian Government  
Department of Industry,  
Science and Resources

**National  
Measurement  
Institute**

36 Bradfield Road, West Lindfield NSW 2070

**Provisional Certificate of Approval  
NMI P14/3/80**

**VALID FOR VERIFICATION PURPOSES UNTIL 5 AUGUST 2026**

Issued by the Chief Metrologist under Regulation 60  
of the  
*National Measurement Regulations 1999*

This is to certify that an approval for use for trade has been granted in respect of the instruments herein described.

Sensus Cordonel DN50 Water Meter

submitted by Sensus GmbH Hannover  
Meineckestrasse 10  
D-30880 Laatzen  
Germany

**NOTE:** This Certificate relates to the suitability of the pattern of the instrument for use for trade only in respect of its metrological characteristics. This Certificate does not constitute or imply any guarantee of compliance by the manufacturer or any other person with any requirements regarding safety.

This approval has been granted with reference to document NMI R 49-1 Water Meters Intended for the Metering of Cold Potable Water and Hot Water, *Part 1 Metrological and Technical Requirements*, dated May 2022 and NMI M 10-1 Meters Intended for the Metering of Water in Full Flowing Pipes, *Part 1: Metrological and Technical Requirements*, dated July 2010.

This approval is subject to review at the decision of the Chief Metrologist in accordance with the conditions specified in the document NMI P 106.

**DOCUMENT HISTORY**

| <b>Rev</b> | <b>Reason/Details</b>   | <b>Date</b> |
|------------|---|-------------|
| 0          | Pattern & variant 1 provisionally approved – certificate issued | 05/05/26    |
|            |   |             |

## CONDITIONS OF APPROVAL

### General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI P14/3/80' and only by persons authorised by the submitter.

It is the submitter's responsibility to ensure that all instruments marked with this approval number are constructed as described in the documentation lodged with the National Measurement Institute (NMI) and with the relevant Certificate of Approval and Technical Schedule. Failure to comply with this Condition may attract penalties under Section 19B of the National Measurement Act and may result in cancellation or withdrawal of the approval, in accordance with document NMI P 106.

### Special conditions of provisional approval

The approval will remain provisional pending completion of required testing and evaluation. In the event of unsatisfactory performance of the meter or non-compliance with the special conditions, the provisional approval may be varied, cancelled or withdrawn.

The submitter shall implement such modifications as required by the Chief Metrologist (or their Delegate). In the event that such modifications (if any are required) are not made to the satisfaction of the Chief Metrologist, the provisional approval may be varied, cancelled or withdrawn.

The submitter shall provide the Chief Metrologist with copies of all required test results and additional information within 3 months of the issue date of this certificate.

Signed by a person authorised by the Chief Metrologist to exercise their powers under Regulation 60 of the *National Measurement Regulations 1999*.



**Phillip Mitchell**  
A/Manager  
Policy and Regulatory Services

TECHNICAL SCHEDULE No P14/3/80

**1. Description of Pattern** **approved on 05/05/26**

A DN50 sized Sensus Cordonel model water meter (Figure 1) used to measure cold potable water supplies for trade.

**1.1 Field of Operation**

The field of operation of the measuring system is determined by the following characteristics:

|   |                           |
|---|---------------------------|
| Minimum flow rate, Q <sub>1</sub> :                   | 0.04 m <sup>3</sup> /h    |
| Transition flow rate, Q <sub>2</sub> <sup>(1)</sup> : | 0.06 m <sup>3</sup> /h    |
| Maximum continuous flow rate, Q <sub>3</sub> :        | 40 m <sup>3</sup> /h      |
| Overload flow rate, Q <sub>4</sub> :                  | 50 m <sup>3</sup> /h      |
| Flow rate ratio, Q <sub>3</sub> /Q <sub>1</sub> :     | 1000                      |
| Temperature class <sup>(1)</sup> :                    | T50                       |
| Maximum admissible temperature:                       | 50 °C                     |
| Maximum admissible pressure:                          | 1600 kPa                  |
| Pressure loss class:                                  | Δp 16                     |
| Accuracy class:                                       | 2 or 2.5                  |
| Flow profile sensitivity class:                       | U0/D0 (see 1.1.3)         |
| Electromagnetic class:                                | E2                        |
| Environmental class:                                  | B, O or M                 |
| Orientation:  | H (indicator on top) or V |
| Flow Direction:                                       | Forward & reverse         |
| Power supply:   | Battery (non-replaceable) |

<sup>(1)</sup> Not applicable to class 2.5 meters.

**1.2 Features/Functions**

The pattern consists of an ultrasonic flow sensor and electronic indicating device and has features/functions as listed below:

|                                 |   |
|---------------------------------|---|
| Connection type:                | Flanged   |
| Display:                        | Electronic indicator allowing for a maximum indication range of 999999.999 m <sup>3</sup> in 0.001 m <sup>3</sup> increments. |
| Communications <sup>(1)</sup> : | Radio (433 MHz or 868 MHz) including wM-Bus protocol and optional pulse output module (Figure 2).                             |
| Materials:                      | Flanges: Cast iron<br>Flow tube: POM<br>Case: Glass fibre reenforced plastic  |
| Meter length:                   | 200 mm  |

<sup>(1)</sup> The pattern and variants may be fitted and/or configured with the communication options listed in this Certificate. However, the primary

indication of volume displayed by the indicating device of the meter is the approved indication of volume.

### 1.3 Conditions

#### 1.3.1 Installation Conditions

No flow straightener or flow conditioner is required.

For Accuracy Class 2 (NMI R 49-1) the flow profile sensitivity class is U0/D0.

For Accuracy Class 2.5 (NMI M 10-1) the installation conditions by flow disturbance type are specified in Table 1.

**Table 1 - Minimum pipe lengths required by flow disturbance type**

| Disturbance Type <sup>(1)</sup> | Minimum upstream pipe length (mm) | Minimum downstream pipe length (mm) |
|---------------------------------|-----------------------------------|-------------------------------------|
| 1                               | 0 x DN <sup>(2)</sup>             | 0 x DN                              |
| 2                               | 0 x DN                            | 0 x DN                              |
| 3                               | 0 x DN                            | 0 x DN                              |

<sup>(1)</sup> For information on the different types of flow disturbances which are examined as part of pattern approval, refer to NMI M 10-2.

<sup>(2)</sup> DN (Nominal Diameter) is the alphanumeric designation of size for components of a pipework system, including water meters. It comprises the letters DN followed by a dimensionless whole number that is directly related to the physical size, in millimetres (mm), of the bore or outside diameter of the end connections.

#### 1.3.2 Specified Installations and Open Channel Emplacements

The meter (pattern and variants) has not been tested or evaluated for performance in specified installations or open channel emplacements as part of this approval.

More information regarding specified installation and open channel emplacement testing may be found in NMI M 10-1 and NMI M 10-2.

#### 1.3.3 Water Quality

The meter is approved for use in the metering of potable water supplies.

The meter is approved for use in the metering of non-potable water supplies of an unspecified quality.

### 1.4 Software Version

The pattern is approved with software version '302' (CRC checksum 'A3A6').

### 1.5 Verification Provision

Provision is made for the application of a verification mark.

### 1.6 Sealing Provision

The meter has both mechanical and electronic sealed.

For DN50-DN125 sizes, the meter is designed and sealed in a manner that it cannot be opened without use of force and leaving visible traces.

In addition to the above, for the DN150 size (Figure 3), the register adaptor is affixed by means of four screw connectors in the cover flange and secured by sealing plugs.

After completion of manufacture and configuration, the meter is electronically sealed by a defined bit pattern. After electronic sealing, no modification to the metrologically relevant parameters is possible.

### 1.7 Descriptive Markings and Notices

Instruments are marked with the following data, either grouped or distributed on the casing, the indicating device dial or an identification plate (Figure 4):

|  |                         |
|--|-------------------------|
| Manufacturer's name or mark                            | ...                     |
| Serial number  | ...                     |
| Pattern approval number                                | NMI P14/3/80            |
| Numerical value of maximum continuous flow rate, $Q_3$ | ...                     |
| Flow rate ratio, $Q_3/Q_1$                             | ...                     |
| Unit of measurement                                    | $m^3$                   |
| Temperature class <sup>(1)</sup>                       | T50                     |
| Maximum admissible pressure <sup>(2)</sup>             | 1600 kPa                |
| Pressure loss class <sup>(3)</sup>                     | 16 kPa or $\Delta p$ 16 |
| Orientation <sup>(4)</sup>                             | ...                     |
| Flow profile sensitive class <sup>(5)</sup>            | U0/D0                   |
| Direction of flow                                      | → or similar            |
| Accuracy class <sup>(6)</sup>                          | 2 or 2.5                |

<sup>(1)</sup> Optional for temperature class T30 meters

<sup>(2)</sup> Optional for meters with MAP = 1400 kPa

<sup>(3)</sup> Optional for pressure loss class  $\Delta p$  63

<sup>(4)</sup> Optional for meters approved for all orientations

<sup>(5)</sup> Optional for U0/D0 class meters and accuracy class 2.5 meters

<sup>(6)</sup> Optional for accuracy class 2 meters

For instruments that incorporate electronic devices, the following information can either be physically marked on the instrument or provided electronically via the indicating device or similar means:

|                            |   |
|----------------------------|---|
| Electromagnetic class      | E2  |
| Environmental class        | B, O or M   |
| For battery powered meters | a replacement date or similar indication of expected battery life |
| IP rating                  | IP68  |

## 2. Description of Variant 1

approved on 05/05/26

The pattern is approved with a range of different sizes, flowrates and associated characteristics as specified in Table 2 below. The Pattern is shown in **bold** for completeness.

**Table 2 - Meter sizes, flowrates and related information**

| Meter size   | <b>DN50</b>                     | DN65       | DN80                            | DN100              | DN125 | DN150      |
|--|---------------------------------|------------|---------------------------------|--------------------|-------|------------|
| Minimum flowrate<br>Q1 (m <sup>3</sup> /h)                     | <b>0.04</b>                     | 0.06       | 0.1                             | 0.16               | 0.25  | 0.4        |
| Transitional flowrate<br>Q2 (m <sup>3</sup> /h) <sup>(1)</sup> | <b>0.06</b>                     | 0.1        | 0.16                            | 0.25               | 0.4   | 0.64       |
| Maximum<br>continuous flowrate<br>Q3 (m <sup>3</sup> /h)       | <b>40</b>                       | 63         | 100                             | 160                | 160   | 400        |
| Overload flowrate<br>Q4 (m <sup>3</sup> /h)                    | <b>50</b>                       | 78.75      | 125                             | 200                | 200   | 500        |
| Ratio Q3/Q1  | <b>1000</b>                     | 1000       | 1000                            | 1000               | 1000  | 1000       |
| Meter length/s (mm)  | <b>200, 270,<br/>300 or 311</b> | 200 or 300 | 200, 225,<br>300, 350 or<br>413 | 250, 350 or<br>483 | 250   | 300 or 500 |
| Pressure loss class  | <b>Δp 16</b>                    | Δp 25      | Δp 16                           | Δp 40              | Δp 40 | Δp 16      |

<sup>(1)</sup> Not applicable to class 2.5 meters.

### TEST PROCEDURE No 14/3/80

Water meters tested for verification shall comply with the Certificate of Approval, Technical Schedule, and the maximum permissible errors for verification at the operating conditions in effect at the time of verification. Maximum permissible errors for verification of water meters are given in the *National Trade Measurement Regulations 2009* (Cth).

Water meters shall be verified in accordance with the following national instrument test procedures:

- NITP 14.0 – Utility meters – general requirements
- NITP 14.3 – Utility meters – water meters

NOTE: NMI reserves the right to vary this procedure. Any such variation shall be notified in writing by NMI.

FIGURE P14/3/80 – 1



Sensus Cordonel DN50 Water Meter (the Pattern)

FIGURE P14/3/80 – 2



Optional pulse output module

FIGURE P14/3/80 – 3



Sensus Cordonel (DN150)

FIGURE P14/3/80 – 4



Example of required markings

~ End of Document ~