



Australian Government  
Department of Industry,  
Science and Resources

**National  
Measurement  
Institute**

36 Bradfield Road, West Lindfield NSW 2070

**Certificate of Approval**  
**NMI 14/3/71**

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.

Bermad M10 Water Meter

submitted by Bermad Australia Pty Ltd  
26 Brand Drive  
Thomastown VIC 3074  
Australia

**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 and Variants 1 & 2 approved – certificate issued	21/06/24

## CONDITIONS OF APPROVAL

### General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI 14/3/71' 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.

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



**Darryl Hines**  
Manager  
Policy and Regulatory Services

TECHNICAL SCHEDULE No 14/3/71

**1. Description of Pattern** **approved on 21/06/24**

A DN50 sized Bermad M10 model water meter used to measure cold potable water supplies for trade.

**1.1 Field of Operation**

The field of operation of the measuring system using the DN50 sized water meter is determined by the following characteristics:

Minimum flow rate, $Q_1$ :	0.1 m <sup>3</sup> /h
Transition flow rate, $Q_2$ :	0.16 m <sup>3</sup> /h
Maximum continuous flow rate, $Q_3$ :	40 m <sup>3</sup> /h
Overload flow rate, $Q_4$ :	50 m <sup>3</sup> /h
Flow rate ratio, $Q_3 / Q_4$ :	400
Temperature class:	T50
Maximum admissible temperature:	50 °C
Maximum admissible pressure:	1600 kPa
Pressure loss class:	$\Delta p$ 16
Accuracy class:	2
Flow profile sensitivity class:	U0/D0
Electromagnetic class:	E1 (residential, commercial & light industrial)
Environmental class:	B or O (indoors or outdoors)
Orientation:	Horizontal
Flow Direction:	Forward & reverse
Power supply:	12 V DC / Replaceable battery (3.6 V)

**1.2 Features/Functions**

The pattern (Figure 1) consists of an ultrasonic flow sensor, a flow computer electronic indicating device and has features/functions as listed below:

Connection type:	Roll grooved allowing for various fitting types
Display:	A digital, electronic, liquid crystal display (Figure 2) allowing for a maximum indication range of 99,999,999.999 m <sup>3</sup> in 0.001 m <sup>3</sup> increments
Communications <sup>(1)</sup> :	Pulse output, Modbus, bluetooth
Materials:	Meter body: Glass fibre reinforced 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

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

(2) 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 and variants are approved with software version 1.08 (CRC checksum AC406F7C).

### 1.5 Verification Provision

Provision is made for the application of a verification mark.

## 1.6 Sealing Provision

The Bermad M10 water meter is supplied with a bracket to facilitate an anti-tamper seal to be fitted (Figure 3) so that any unauthorised tampering of the meter internals and battery pack is clearly evident.

## 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:

Manufacturer's name or mark	...
Serial number	...
Pattern approval number	NMI 14/3/71
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>	...
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	E1
Environmental class	B or O
For meters with an external power supply	the voltage and frequency
For battery powered meters	a replacement date or similar indication of expected battery life
IP rating	IP68

**2. Description of Variant 1** **approved on 21/06/24**

The Bermad M10 water meter is approved as Accuracy Class 2 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**

<b>Meter size</b>	<b>DN50</b>	DN80	DN100
Minimum flowrate Q <sub>1</sub> (m <sup>3</sup> /h)	<b>0.1</b>	0.25	0.4
Transitional flowrate Q <sub>2</sub> (m <sup>3</sup> /h)	<b>0.16</b>	0.4	0.64
Maximum continuous flowrate Q <sub>3</sub> (m <sup>3</sup> /h)	<b>40</b>	100	160
Overload flowrate Q <sub>4</sub> (m <sup>3</sup> /h)	<b>50</b>	125	200
Ratio Q <sub>3</sub> /Q <sub>1</sub>	<b>400</b>		
Meter Length	<b>200</b>	225	250

**3. Description of Variant 2** **approved on 21/06/24**

The Bermad M10 water meter is approved as Accuracy Class 2.5 with a range of different sizes, flowrates and associated characteristics as specified in Table 3 below.

**Table 3 - Meter sizes, flowrates and related information**

<b>Meter size</b>	DN50	DN80	DN100
Minimum flowrate Q <sub>1</sub> (m <sup>3</sup> /h)	0.1	0.25	0.4
Maximum continuous flowrate Q <sub>3</sub> (m <sup>3</sup> /h)	40	100	160
Overload flowrate Q <sub>4</sub> (m <sup>3</sup> /h)	50	125	200
Ratio Q <sub>3</sub> /Q <sub>1</sub>	400		
Meter Length	200	225	250

## TEST PROCEDURE No 14/3/71

This Approval and Certificate is issued only with respect to the design (the pattern and variants) of the water meter described herein. The calibration and measurement accuracy of individual water meters manufactured and marked in accordance with the approved pattern and variants should be verified in accordance with the test procedures specified below, or as required by relevant legislation.

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 the verification of water meters are given in the *National Trade Measurement Regulations 2009* (Cth).

Water meters shall be verified in accordance with NITP 14 *National Instrument Test Procedures for Utility Meters*.

The following exceptions apply for accuracy class 2.5 meters:

- The maximum permissible errors shall be:  
 $\pm 2.5\%$  within the flowrate range  $Q_1$  to  $Q_4$ .
- The flow rates specified for initial verification in NMI M 10-2 may replace the flow rates specified in NITP 14.

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

FIGURE 14/3/71 – 1



Water Meter Technologies Bermad M10 water meter (the pattern) fitted with flanged end connections

FIGURE 14/3/71 – 2



Indicating device



FIGURE 14/3/71 – 3



Bracket to facilitate sealing

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