Australian Government
Department of Industry, Innovation and Science

National Measurement Institute

Certificate of Approval

NMI 14/3/47

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.

Pioneer Ultrasonic Water Meter Model: DN20+

submitted by Dream Industrial Pty Ltd
Unit 2, 9-11 Chaplin Drive
Lane Cove NSW 2066

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 for cold potable water and hot water, Part 1 Metrological and technical requirements*, dated September 2015.

This approval becomes subject to review on 01/11/24, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern and variants 1 & 2 approved – certificate issued	18/10/19
1	Variant 3 approved – certificate issued	19/05/20

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI 14/3/47' and only by persons authorised by the submittor.

It is the submittor'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 14/3/47

1. Description of Pattern approved on 18/10/19

A Pioneer Ultrasonic Water Meter Model: DN20+ (Figure 1) used to measure cold potable water for supply for trade.

1.1 Field of Operation

The field of operation of the measuring system using the Pioneer Ultrasonic Water Meter Model: DN20+ is determined by the following characteristics:

Minimum flow rate, Q_1:	0.01 m^3/h
Transition flow rate, Q_2:	0.016 m^3/h
Maximum continuous flow rate, Q_3:	4.0 m^3/h
Overload flow rate, Q_4:	5.0 m^3/h
Flow rate ratio, Q_3/Q_1:	400
Maximum admissible temperature:	50 °C
Maximum admissible pressure:	1600 kPa
Pressure loss class:	Δp 40
Accuracy class:	2
Flow profile sensitivity class:	U0/D0 – see clause 1.3
Electromagnetic class:	E1 (residential, commercial, light industrial)
Environmental class:	B & O (indoor and outdoor)
Orientation:	All positions
Flow Direction:	Forward
Power supply:	Non-replaceable battery (3.0-3.6 V)

1.2 Features/Functions

The pattern consists of an ultrasonic flow sensor and an indicating flow converter (calculator/indicator) (Figure 2) and has features/functions as listed below:

Connection type:	Threaded end connections type standard R3/4 G1
Display:	A digital, electronic, liquid crystal display allowing for a maximum indication range of 9,999,999.9999 m^3 in 0.0001 m^3 increments
Communications:	Optical output
Materials:	Flow tube: Brass
	Meter casing: Polymer material
Meter length:	154 mm
Non-return device:	Check valves

1.3 Conditions

1.3.1 Installation Conditions:

No flow straightener or flow conditioner is required.

The flow profile class is U0/D0 (Accuracy Class 2).

An optional strainer may be fitted.

1.4 Water Quality

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

1.5 Software Version

The meter is approved for use with software versions:

- V5708.9

1.6 Verification Provision

Provision is made for the application of a verification mark.

1.7 Sealing Provision

The meter is mechanically sealed via the snap-fitting of the upper and lower sections of the meter casing, such that attempts to mechanically access the meter will result in evidence of tampering. Additional mechanical seal may be applied (Figure 3) Electronic access to meter functions may be locked to prevent unauthorised access.

1.8 Descriptive Markings

Instruments are marked with the following data, either grouped or distributed on the casing, the indicating device dial or an identification plate (Figure 2):

Manufacturer's name or mark	...
Serial number	...
Pattern approval number	NMI 14/3/47
Numerical value of maximum continuous flow rate, Q_3	...
Flow rate ratio, Q_3/Q_1	...
Unit of measurement	m^3
Maximum admissible pressure (1)	1600 kPa
Maximum pressure loss (2)	40 kPa or Δp 40
Temperature class (3)	T50
Orientation (4)	…
Flow profile sensitive class (5)	U0/D0
Direction of flow	→ or similar
Accuracy class (6)	2

(1) Optional for meters with MAP = 1400 kPa

(2) Optional for class Δp 63

(3) Optional for T30 meters

(4) Optional for meters approved for all orientations

(5) Optional for U0/D0 class meters

(6) Optional for 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/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

2. Description of Variant 1 approved on 18/10/19

The Pioneer Ultrasonic Water Meter Model: DN20+ is approved with the flowrates and technical characteristics as listed below in Table 1. The Pattern is included in **bold** for completeness.

TABLE 1 – Flowrates and technical characteristics for DN20

Meter size	**DN20**	**DN20**	**DN20**
Minimum flowrate Q_1 (m^3/h)	**0.01**	0.013	0.016
Transitional flowrate Q_2 (m^3/h)	**0.016**	0.02	0.0256
Maximum continuous flowrate Q_3 (m^3/h)	**4.0**		
Overload flowrate Q_4 (m^3/h)	**5.0**		
Ratio Q_3/Q_1	**400**	315	250
Meter Length (mm)	**154**		
Maximum Admissible Pressure (kPa)	**1600** or 1400		
Pressure loss class	**Δp 63** or Δp 40		
Verification scale interval (m^3)	**0.0001**		

3. Description of Variant 2 approved on 18/10/19

A Pioneer Ultrasonic Water Meter Model: DN25+ (Figure 4) with the flowrates and technical characteristics as listed below in Table 2.

TABLE 2 – Flowrates and technical Characteristics for DN25

Meter size	**DN25**	**DN25**	**DN25**
Minimum flowrate Q_1 (m^3/h)	0.01575	0.02	0.0252
Transitional flowrate Q_2 (m^3/h)	0.0252	0.032	0.04
Maximum continuous flowrate Q_3 (m^3/h)	6.3		
Overload flowrate Q_4 (m^3/h)	7.875		
Ratio Q_3/Q_1	400	315	250
Meter Length (mm)	178		
Maximum Admissible Pressure (kPa)	1600 or 1400		
Pressure loss class	Δp 63 or Δp 40		
Verification scale interval (m^3)	0.0001		

4. Description of Variant 3 approved on 19/05/20

The Pattern and Variants of both the DN20+ and DN25+ are approved with the alternative meter casing and marking arrangements as indicated in Figure 5 and Figure 6.

TEST PROCEDURE No 14/3/47

Water meters tested for initial verification shall comply with the Certificate of Approval, Technical Schedule, and the maximum permissible errors for initial and subsequent verifications at the operating conditions in effect at the time of verification. Maximum permissible errors for the initial and subsequent 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*.

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

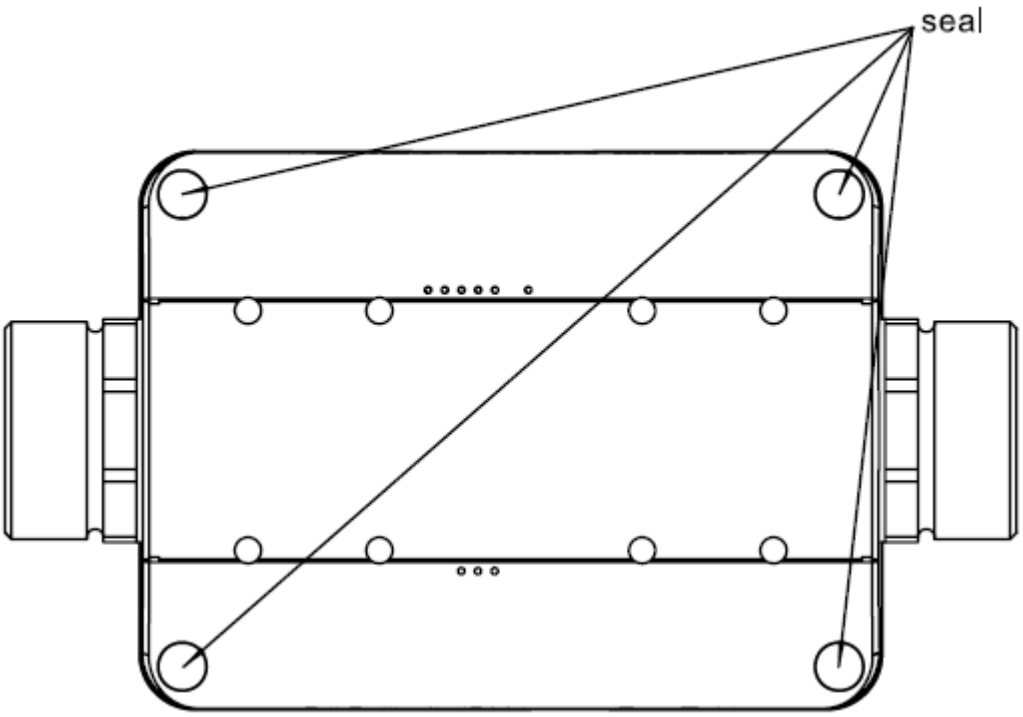
FIGURE 14/3/47 – 1

Pioneer Ultrasonic Water Meter Model: DN20+

FIGURE 14/3/47 – 2

Pioneer Ultrasonic Water Meter Model: DN20+ (Indicating Device and Markings)

FIGURE 14/3/47 – 3

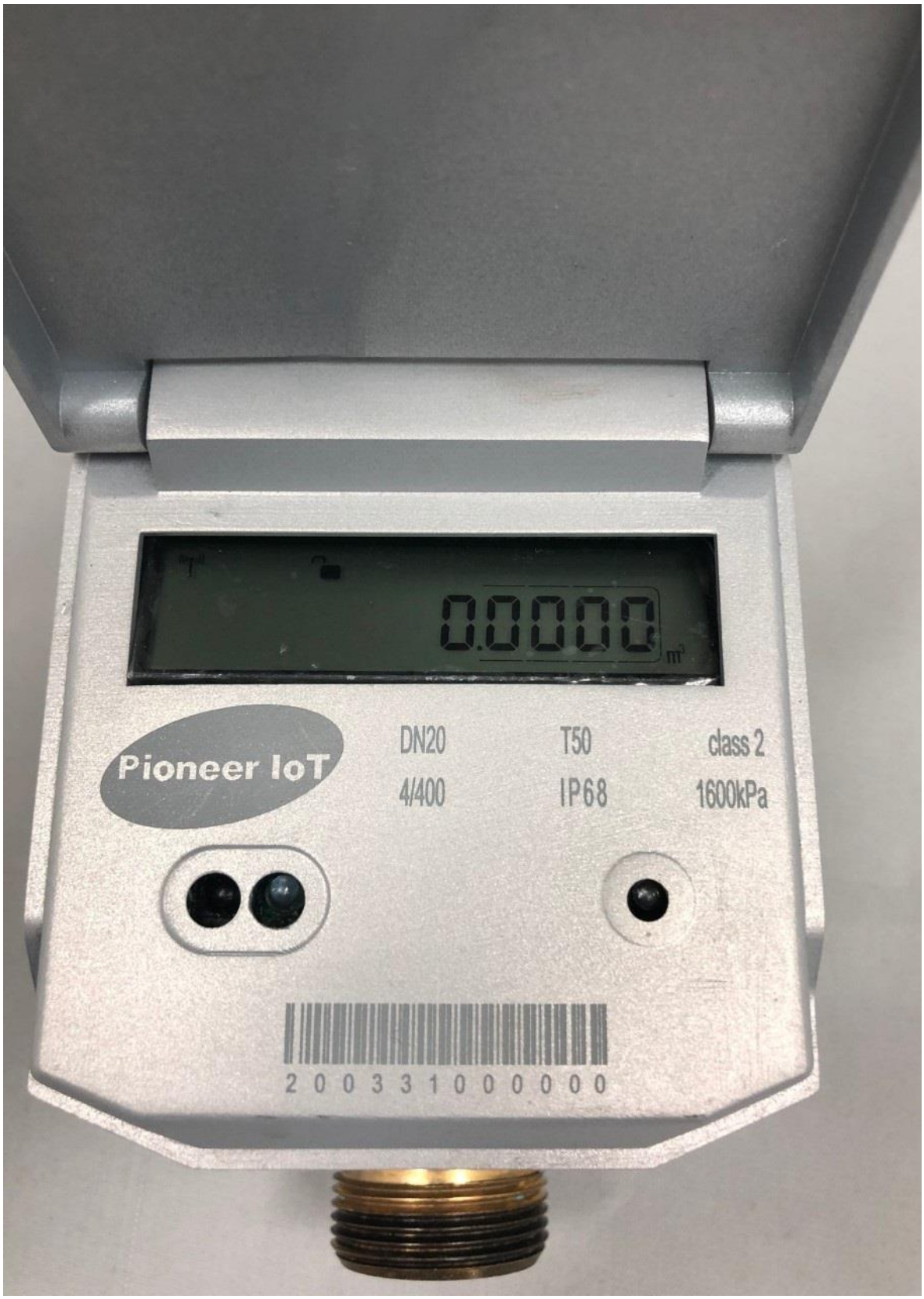


Pioneer Ultrasonic Water Meter Model: DN20+ (Sealing)

FIGURE 14/3/47 – 4

Pioneer Ultrasonic Water Meter Model: DN25+ (Variant 2)

FIGURE 14/3/47 – 5



Pioneer Ultrasonic Water Meter Model: DN20+ alternative meter casing and marking arrangement (Variant 3)

FIGURE 14/3/47 – 6

Pioneer Ultrasonic Water Meter Model: DN25+ alternative meter casing and marking arrangement (Variant 3)

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