



Australian Government

Department of Industry,
Science and Resources

**National
Measurement
Institute**

36 Bradfield Road, West Lindfield NSW 2070

Certificate of Approval

NMI 14/3/38

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 Model 620 Piston Meter

submitted by Sensus Germany GmbH & Co.KG
 Industriestraße 16
 Ludwigshafen am Rhein
 Rhineland-Palatinate 67063
 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.

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

Rev	Reason/Details	Date
0	Pattern & variant 1 approved – interim certificate issued	27/06/17
1	Pattern & variants 1 & 2 approved – certificate issued	04/06/18
2	Variants 3 & 4 approved – certificate issued.	18/11/24
3	Pattern amended (change of company) – certificate issued	12/02/26

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI 14/3/38' 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.



Phillip Mitchell
A/g Manager
Policy and Regulatory Services

TECHNICAL SCHEDULE No 14/3/38

1. Description of Pattern

approved on 27/06/17

amended on 12/02/26

A DN20 sized Sensus Model 620 Piston water meter 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 DN20 Sensus Model 620 Piston water meter is determined by the following characteristics:

Minimum flow rate, Q_1 :	0.010 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:	Δp 63
Accuracy class:	2
Flow profile sensitivity class:	U0/D0
Electromagnetic class:	E1 & E2 (industrial)
Environmental class:	B & O (indoor and outdoor)
Orientation:	All positions
Flow Direction:	Forward only
Power supply:	3 V battery (non-replaceable)

1.2 Features/Functions

The pattern (Figure 1) consists of a positive displacement rotary piston flow sensor and a mechanical indicating device and has features/functions as listed below:

Connection type:	Threaded end connections as normally used in QLD, NSW, ACT, VIC, TAS, WA, SA, NT
Display:	A mechanical display allowing for a maximum indication range of 99,999.9999 m ³ in 0.0001 m ³ increments
Verification scale interval:	0.0001 m ³
Material:	body: brass
	Indicating device: composite material
Meter length:	154 mm

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).

1.3.2 Water Quality

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

1.4 Software Version

The meter is approved for use with Firmware version 1.1.

1.5 Verification Provision

Provision is made for the application of a verification mark.

1.6 Sealing Provision

The register housing is snap-fitted onto the meter body such that access to the internal components is only possible by force and leaving visible traces of tampering. Additional protection may be provided via the application of wire or cable seals connecting the housing and register (Figure 2 and Figure 3).

1.7 Descriptive Markings

Instruments shall be 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 14/3/38
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⁾	63 kPa or Δp 63
Maximum admissible temperature ⁽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/ E2
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 27/06/17

The DN20 sized Sensus Model 620 Piston water meter is also approved with the flowrate characteristics specified in Table 1 (the Pattern is included in **bold** for completeness).

Table 1 Meter flowrates

Meter size	DN20	DN20	DN20	DN20
Minimum flowrate Q ₁ (m ³ /h)	0.020	0.016	0.013	0.010
Transitional flowrate Q ₂ (m ³ /h)	0.032	0.026	0.020	0.016
Maximum continuous flowrate Q ₃ (m ³ /h)			4.0	
Overload flowrate Q ₄ (m ³ /h)			5.0	
Ratio Q ₃ /Q ₁	200	250	315	400

3. Description of Variant 2

approved on 04/06/18

A Sensus Model 640 Piston water meter with the same technical characteristics as the Pattern and variants except incorporating an electronic indicating device (Figure 5).

4. Description of Variant 3

approved on 18/11/24

The pattern and variants are approved with a meter length of 140 mm.

5. Description of Variant 4

approved on 18/11/24

The pattern and variants are approved with or without a single or dual check valve.

TEST PROCEDURE No 14/3/38

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 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 14/3/38 – 1



The Pattern

FIGURE 14/3/38 – 2



Wire sealing provision

FIGURE 14/3/38 – 3



Cable sealing provision

FIGURE 14/3/38 – 4



Required markings

FIGURE 14/3/38 – 5



Variant 2 showing the Electronic Indicating Device

~ End of Document ~