



Australian Government  
Department of Industry,  
Innovation and Science

## 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 GmbH Ludwigshafen  
Industriestr. 16  
Ludwigshafen  
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 for cold potable water and hot water, Part 1 Metrological and technical requirements*, dated September 2015.

This approval becomes subject to review on 01/07/23, and then every 5 years thereafter.

#### 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

## 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 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  
Pattern Approval, Policy and  
Licensing Section

## TECHNICAL SCHEDULE No 14/3/38

### 1. Description of Pattern

**approved on 27/06/17**

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 <sup>3</sup> /h
Transition flow rate, $Q_2$ :	0.016 m <sup>3</sup> /h
Maximum continuous flow rate, $Q_3$ :	4.0 m <sup>3</sup> /h
Overload flow rate, $Q_4$ :	5.0 m <sup>3</sup> /h
Flow rate ratio, $Q_3/Q_1$ :	400
Maximum admissible temperature:	50 °C
Maximum admissible pressure:	1600 kPa
Pressure Loss:	$\Delta p$ 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 <sup>3</sup> in 0.0001 m <sup>3</sup> increments
Verification scale interval:	0.0001 m <sup>3</sup>
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 <sup>(1)</sup>	1600 kPa
Maximum pressure loss <sup>(2)</sup>	63 kPa or $\Delta p$ 63
Maximum admissible temperature <sup>(3)</sup>	T50
Orientation <sup>(4)</sup>	...
Flow profile sensitive class <sup>(5)</sup>	U0/D0
Direction of flow	→ or similar
Accuracy class <sup>(6)</sup>	2

<sup>(1)</sup> Optional for meters with MAP = 1400 kPa

<sup>(2)</sup> Optional for class  $\Delta p$ 63

<sup>(3)</sup> Optional for T30 meters

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

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

<sup>(6)</sup> 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 <sup>3</sup> /h)	0.020	0.016	0.013	<b>0.010</b>
Transitional flowrate $Q_2$ (m <sup>3</sup> /h)	0.032	0.026	0.020	<b>0.016</b>
Maximum continuous flowrate $Q_3$ (m <sup>3</sup> /h)	4.0			
Overload flowrate $Q_4$ (m <sup>3</sup> /h)	5.0			
Ratio $Q_3/Q_1$	200	250	315	<b>400</b>

## 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).

## TEST PROCEDURE No 14/3/38

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 14/3/38 – 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

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