Australian Government
Department of Industry, Science and Resources

National Measurement Institute

36 Bradfield Road, West Lindfield NSW 2070

Certificate of Approval

NMI 14/3/69

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.

Genus GWU001 Model Water Meter

submitted by Genus Power Infrastructures Ltd.
SPL-2A, RIICO Industrial Area, Sitapura, Tonk Road
Sitapura, Jaipur
Rajasthan 302022
INDIA

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 and 2 approved – certificate issued	18/01/24

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number ‘NMI 14/3/69’ 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 14/3/69

1. Description of Pattern approved on 18/01/24

A DN15 sized Genus GWU001 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 DN15 sized Genus GWU001 model water meter is determined by the following characteristics:

Minimum flow rate, Q_1:	0.0063 m^3/h
Transition flow rate, Q_2:	0.01 m^3/h
Maximum continuous flow rate, Q_3:	2.5 m^3/h
Overload flow rate, Q_4:	3.125 m^3/h
Flow rate ratio, Q_3/Q_1:	400
Temperature class:	T50
Maximum admissible temperature:	50 °C
Maximum admissible pressure:	1600 kPa
Pressure loss class:	Δp 63
Accuracy class:	2
Flow profile sensitivity class:	U0/D0
Electromagnetic class:	E1 (residential) or E2 (industrial)
Environmental class:	O (outdoor)
Orientation:	All positions
Flow Direction:	Forward only
Power supply:	3.6 V battery

1.2 Features/Functions

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

Connection type:	G 3/4 threaded end connections
Display:	A digital, electronic, liquid crystal display (Figure 2) allowing for a maximum indication range of 999,999 m^3 in 0.001 m^3 increments. The display may be placed into a high-resolution mode providing a verification scale interval of 0.001 L.
Communications(1):	M-bus, LoRa, Nb-IoT and optical pulse output
Materials:	Flow tube: brass
	Flow converter: polymer material
Meter length:	130 mm
Non-return device(s):	Single or dual check valves (downstream of the flow sensor)

(1) 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.

1.3.3 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 the following software version which may be displayed via menus on the indicating device:

- Software version SW: 1.00.
- Checksum (CRC-32): C42A30Cb

1.5 Verification Provision

Provision is made for the application of a verification mark.

1.6 Sealing Provision

The meter is sealed such that any attempt to access metrologically significant components will be made evident due to visible damage to the meter and seals (Figure 3). The meter case is fitted with screws and a pair of unique tamper evident holographic seals (Figure 4). Provision is provided for additional hardware sealing.

Legally relevant software, measurement data and metrological parameters are protected against unauthorised or unintended access and modification.

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 5):

Manufacturer's name or mark	...
Serial number	...
Pattern approval number	NMI 14/3/69
Numerical value of maximum continuous flow rate, Q_3	...
Flow rate ratio, Q_3/Q_1	...
Unit of measurement	m^3
Temperature class (1)	T50
Maximum admissible pressure (2)	1600 kPa
Pressure loss class (3)	63 kPa or Δp 63
Orientation (4)	…
Flow profile sensitive class (5)	U0/D0
Direction of flow	→ or similar
Accuracy class (6)	2

(1) Optional for temperature class T30

(2) Optional for meters with MAP of 1400 kPa or 600 kPa for DN ≥ 500

(3) Optional for pressure loss class Δp 63

(4) Optional for meters approved for all orientations

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

(6) 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 or E2
Environmental class	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 18/01/24

The Genus GWU001 model water meter is approved with a range of different meter lengths, flowrates and associated characteristics as specified in Tables 1 to 3 below. The Pattern is shown in **Bold** for completeness.

Table 1 - Meter sizes, flowrates and related information

Meter size	**DN15**			
Minimum flowrate Q_1 (m^3/h)	**0.0063**	0.0079	0.0100	0.0125
Transitional flowrate Q_2 (m^3/h)	**0.0100**	0.0127	0.0160	0.0200
Maximum continuous flowrate Q_3 (m^3/h)	**2.5**			
Overload flowrate Q_4 (m^3/h)	**3.125**			
Ratio Q_3/Q_1	**400**	315	250	200
Meter Length (mm)	**130** or 165			

Table 2 - Meter sizes, flowrates and related information

Meter size	**DN15**			
Minimum flowrate Q_1 (m^3/h)	0.016	0.020	0.025	0.031
Transitional flowrate Q_2 (m^3/h)	0.025	0.032	0.040	0.050
Maximum continuous flowrate Q_3 (m^3/h)	2.5			
Overload flowrate Q_4 (m^3/h)	3.125			
Ratio Q_3/Q_1	160	125	100	80
Meter Length (mm)	130 or 165			

Table 3 - Meter sizes, flowrates and related information

Meter size	**DN15**		
Minimum flowrate Q_1 (m^3/h)	0.040	0.050	0.063
Transitional flowrate Q_2 (m^3/h)	0.063	0.080	0.100
Maximum continuous flowrate Q_3 (m^3/h)	2.5		
Overload flowrate Q_4 (m^3/h)	3.125		
Ratio Q_3/Q_1	63	50	40
Meter Length (mm)	130 or 165		

3. Description of Variant 2 approved on 18/01/24

The Genus GWU002 model water meter (Figure 6) is approved with an alternative meter size of DN20 and with a range of different lengths, flowrates and associated characteristics as specified in Table 4 below.

Table 4 - Meter sizes, flowrates and related information

Meter size	**DN20 (Model GWU002)**			
Minimum flowrate Q_1 (m^3/h)	0.0100	0.0127	0.0160	0.0200
Transitional flowrate Q_2 (m^3/h)	0.0160	0.0203	0.0256	0.0320
Maximum continuous flowrate Q_3 (m^3/h)	4			
Overload flowrate Q_4 (m^3/h)	5			
Ratio Q_3/Q_1	400	315	250	200
Meter Length (mm)	130, 154, 165 or 190			

TEST PROCEDURE No 14/3/69

Water meters tested for verification shall comply with the Certificate of Approval, Technical Schedule, and the maximum permissible errors for verifications 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*.

Evidence of verification shall be confirmed via either:

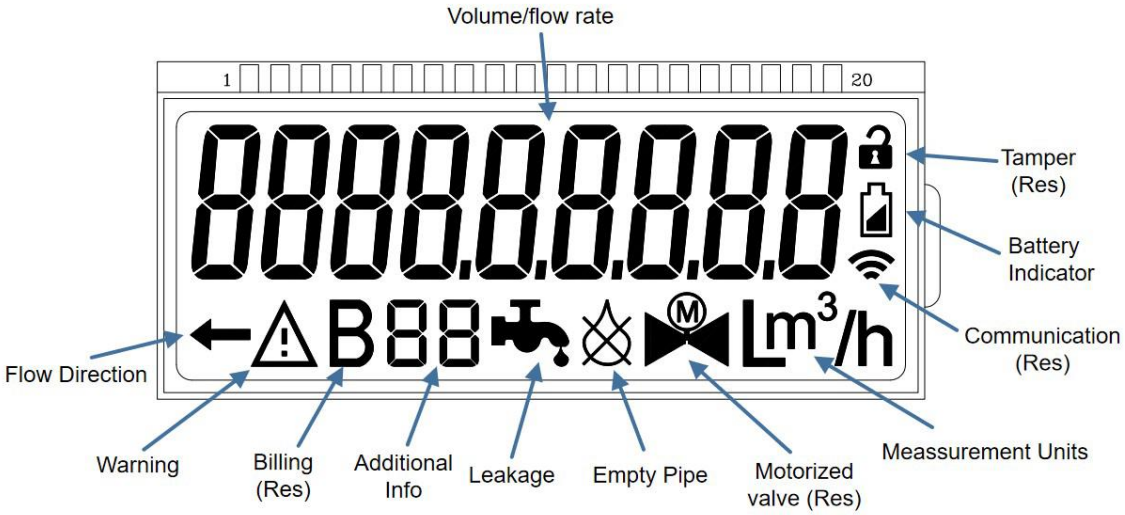
- the meter serial number and batch verification certificate issued by a utility meter verifier in accordance with NITP 14; or
- the verification mark applied to the meter by the utility meter verifier in accordance with NITP 14.

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

FIGURE 14/3/69 – 1

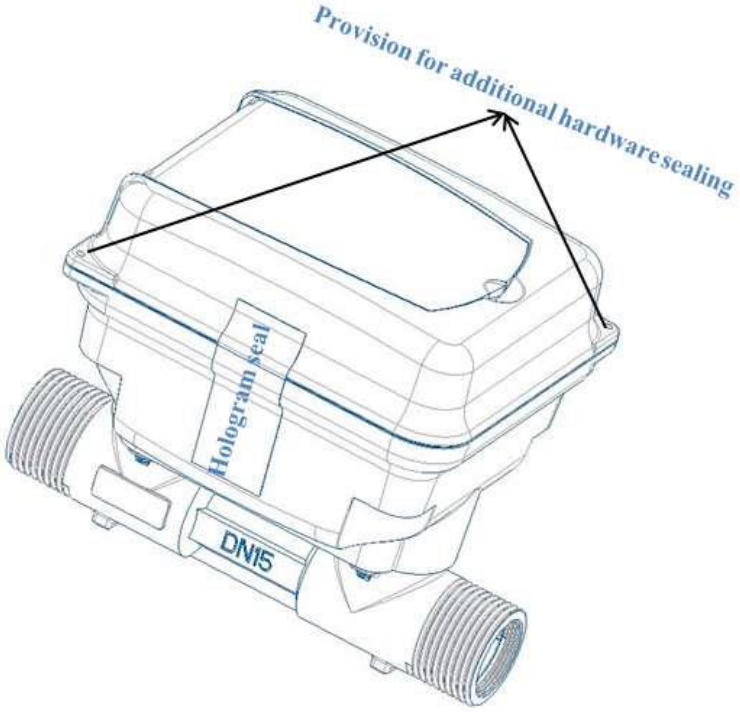
The Genus GWU001 model water meter – The Pattern

FIGURE 14/3/69 – 2



Indicating Device

FIGURE 14/3/69 – 3

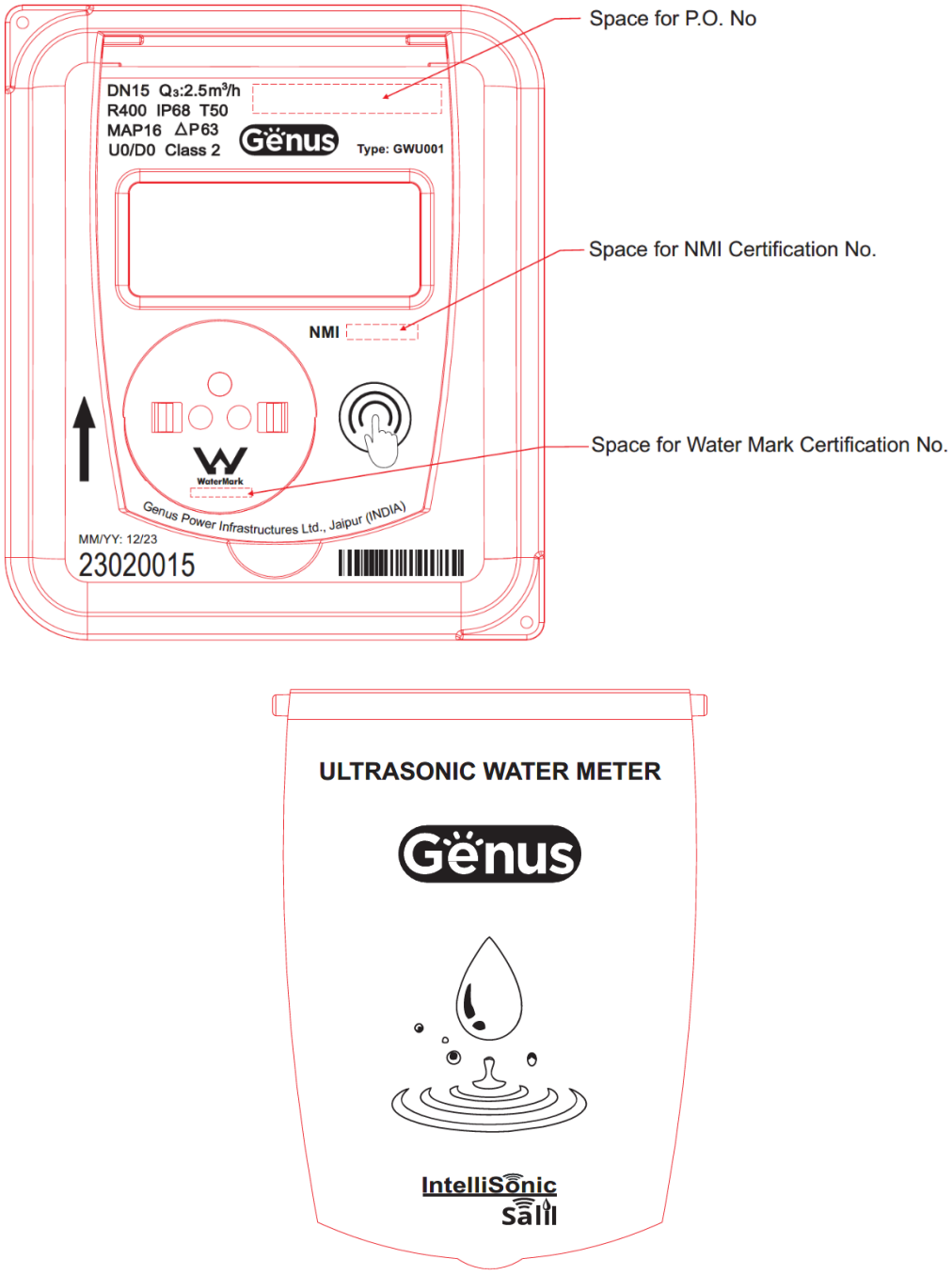


Sealing provisions

FIGURE 14/3/69 – 4

Unique holographic tamper evident seals

FIGURE 14/3/69 – 5



Example of required markings

FIGURE 14/3/69 – 6

DN20 sized Genus GWU002 model water meter – Variant 2

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