Australian Government
Department of Industry, Science and Resources

National Measurement Institute

36 Bradfield Road, West Lindfield NSW 2070

Certificate of Approval
NMI 14/3/70

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.

Sanchuan DN20&DN25 Ultrasonic Water Meter

submitted by Sanchuan Wisdom Technology Co., Ltd.
Sanchuan Hydraulic Industrial Park, Longgang Section
Hi-Tech Development Zone
Yingtan
Jiangxi 335000

CHINA

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 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 & Variants 1 to 4 approved – certificate issued	27/11/24
1	Variant 4 amended (firmware), Variants 5 & 6 approved – certificate issued	07/03/25
2	Variant 7 (end connections) approved – certificate issued	23/05/25

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI 14/3/70' 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 14/3/70

1. Description of Pattern approved on 27/11/24

A Sanchuan DN20&DN25 Ultrasonic Water Meter (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 Sanchuan DN20&DN25 Ultrasonic water meter 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
Temperature class:	T50
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 only
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) and has features/functions as listed below:

Connection type:	Threaded end connections
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 (Figure 2)
Communications[(1)]:	Optical output
Materials:	Flow tube: Brass
	Meter casing: Polymer material
Meter length:	154 mm
Non-return device:	Check valves

[(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.

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 Firmware

The pattern is approved for use with firmware version V12910.35.

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 seals may be applied (Figure 3). Electronic access to meter functions and parameters may be locked to prevent unauthorised access. Certain parameters shall remain protected and are only configurable by the supplier.

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 (Figures 4 and 5):

Manufacturer's name or mark	Sanchuan
Serial number	...
Pattern approval number	NMI 14/3/70
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 Δp63

(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 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

2. Description of Variant 1 approved on 27/11/24

The Pattern and Variants are approved with the alternative 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 27/11/24

The Pattern and Variants are approved (Figure 6) with the alternative meter size (DN25) 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 27/11/24

The Pattern and Variants may be marked with the alternative branding and model name Elster Honeywell Q400 (Figure 7).

5. Description of Variant 4 approved on 27/11/24 amended and approved on 07/03/25

The Pattern and Variants are approved with the firmware versions specified in Table 3. Firmware version information is available in the selectable menus accessible via the meter display.

Table 3 – Approved Firmware Versions

Version Number	Notes
V12910.28	Base firmware
V12910.35	Approved with Pattern
V12910.37	Optimization of communications functions
V12910.43	Minor changes to the message displays
V12911.03	Minor changes to the LCD display, optimization of communications functions encryption
V12932	Provides support for the use of an alternative GP30 timing chip (see Variant 5).

6. Description of Variant 5 approved on 07/03/25

The Pattern and Variants are approved with an alternative GP30 timing chip. In this arrangement the meter is approved with the alternative firmware version V12932 (see Variant 4) to support the operation of the GP30 chip.

7. Description of Variant 6 approved on 07/03/25

The Pattern and Variants are approved with an alternative non-replaceable dual battery power supply. The supply voltage remains 3.0-3.6 V. The meter body housing is modified to accommodate the dual battery.

8. Description of Variant 7 approved on 23/05/25

The Pattern and Variants are approved with an alternative ball joint end connection.

TEST PROCEDURE No 14/3/70

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 14/3/70 – 1

Sanchuan DN20 Ultrasonic water meter – (the Pattern)

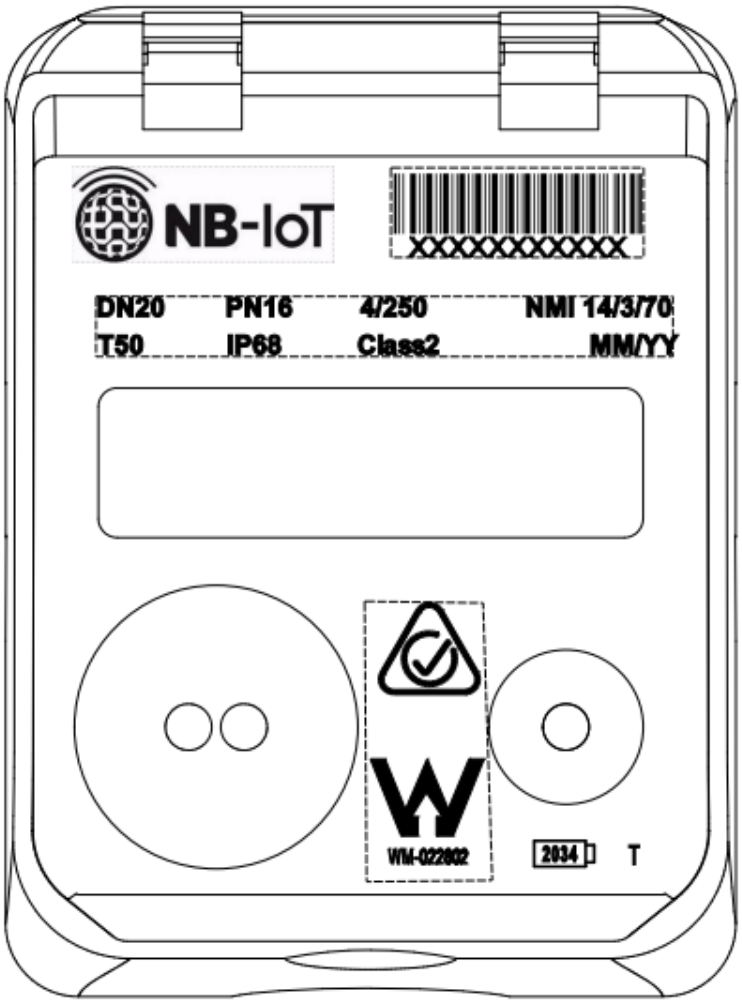
FIGURE 14/3/70 – 2

Sanchuan DN20 Series Ultrasonic Water Meter – Indicating device

FIGURE 14/3/70 – 3

Sanchuan DN20 Series Ultrasonic Water Meter – Sealing

FIGURE 14/3/70 – 4



Required Markings

FIGURE 14/3/70 – 5

Required markings

FIGURE 14/3/70 – 6

Sanchuan DN25 Ultrasonic Water Meter – (Variant 2)

FIGURE 14/3/70 – 7

Alternative branding – Elster Honeywell Q400 (Variant 3)

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