Australian Government
Department of Industry, Innovation and Science

National Measurement Institute

36 Bradfield Road, West Lindfield NSW 2070

Certificate of Approval

NMI 14/3/39

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.

SCL-61H Residential Ultrasonic Water Meter

submitted by Huizhong Instrumentation Co., Ltd.
No. 126 West Gaoxin Road
High-Tech Industrial Development Zone
Tangshan
Hebei 063020
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 Intended for the Metering of Cold Potable Water and Hot Water, *Part 1 Metrological and Technical Requirements*, dated September 2015.

This approval becomes subject to review on 1/10/22, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern & variant 1 approved – certificate issued	19/09/17
1	Pattern & variant 1 amended, variant 2 approved – certificate issued	07/02/19
2	Variant 3 approved – certificate issued	15/01/20

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI 14/3/39' 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 14/3/39

1. Description of Pattern

approved on 19/09/17
amended on 07/02/19

A Huizhong Instrumentation Co., Ltd. DN20 sized SCL-61H Residential Ultrasonic 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 DN20 SCL-61H model 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 class:	Δp 40
Accuracy class:	2
Flow profile sensitivity class:	U0/D0
Electromagnetic class:	E1 (residential, commercial & light industrial)
Environmental class:	O (outdoors)
Orientation:	All positions
Flow Direction:	Forward only
Power supply:	Non-replaceable battery 3.35 – 3.70 V

1.2 Features/Functions

The pattern (Figure 1) consists of an ultrasonic flow sensor, a flow computer electronic indicating device 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 m^3 in 0.00001 m^3 increments
Materials:	Inlet/Outlet connections: brass
	Flow sensor: Composite material
	Flow converter: Composite material
Meter length:	154 mm
Software version:	V 01-02 Checksum 53345

The meter is approved in two different housings as indicating in Figure 1.

1.3 Conditions

1.3.1 Installation Conditions:

The flow profile sensitivity class is U0/D0.

1.3.2 Water Quality

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

1.4 Software Version

The Pattern and Variants are approved with the software versions specified in Table 1 below.

Table 1 Software Versions

Software Versions	Meter Size	Checksum
01-02	DN15	53285
	DN20	53345
	DN25	53525

1.5 Verification Provision

Provision is made for the application of a verification mark.

1.6 Sealing Provision

The meter is mechanically sealed via the use of tamper-evident covers for the screws that connect the upper and lower components of the meter housing, such that attempts to mechanically access the meter will result in evidence of tampering.

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 3):

Manufacturer's name or mark	...
Serial number	...
Pattern approval number	NMI 14/3/39
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
Pressure loss class (2)	40 kPa or Δp 40
Maximum admissible temperature (3)	T50
Orientation (4)	…
Flow profile sensitive class (5)	U0/D0 or U10S/D5
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	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 19/09/17 amended on 07/02/19

The DN20 SCL-61H model water meter is approved with a range of different sizes, flowrates and associated characteristics as specified in Table 2 below. The Pattern is shown in **Bold** for completeness.

Table 2 Meter sizes, flowrates and related information

Meter size	**DN15**	**DN20**	**DN25**	**DN25**
Minimum flowrate Q_1 (m^3/h)	0.00625	**0.01**	0.01	0.01575
Transitional flowrate Q_2 (m^3/h)	0.01	**0.016**	0.016	0.0252
Maximum continuous flowrate Q_3 (m^3/h)	2.5	**4.0**	4.0	6.3
Overload flowrate Q_4 (m^3/h)	3.125	**5.0**	5.0	7.875
Ratio Q_3/Q_1	400	**400**	400	400
Meter Length (mm)	165	**154**	178	178
Flow Profile Sensitivity Class	U0/D0	**U0/D0**	U0/D0	U0/D0
Pressure Loss Class	Δp 40	**Δp 40**	Δp 25	Δp 25
Verification scale interval (m^3)	0.00001	**0.00001**	0.0001	0.0001

3. Description of Variant 2 approved on 07/02/19

The DN20 SCL-61H model water meter is approved with an alternative flow profile sensitive classes specified in Table 3.

Table 3 Alternative Flow Profile Sensitivity Classes

Meter size	**DN15**	**DN20**	**DN25**	**DN25**
Flow Profile Sensitivity Class	U10S/D5	U10S/D5	U10/D5	U10/D5

The use of a flow conditioner (Figure 2) is required for DN20 and DN15 sized meters with a U10S/D5 flow profile sensitivity class.

For a DN15 sized meter: flow conditioner model HZZLJ20170721-01

For a DN20 sized meter: flow conditioner model HZZLJ20170721-02

4. Description of Variant 3 approved on 15/01/20

The Pattern and Variants are approved with an alternative “Communications CPU” (designated STM32) to support Firmware over the Air (FOTA) functionality in relation to communications firmware only.

The approved software versions to support the FOTA functionality are specified in Table 4 below.

Table 4 Software Versions – Variant 3

Software Versions	Meter Size	Checksum
v3-2.1	DN15	50786
	DN20	50786
	DN25	50786

The “Metrology CPU” is identical to the Pattern and remains protected against unauthorised access or change.

The metrologically functions of the software version specified in Table 4 are identical to those in software version 01-02 specified in Table 1.

TEST PROCEDURE No 14/3/39

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).

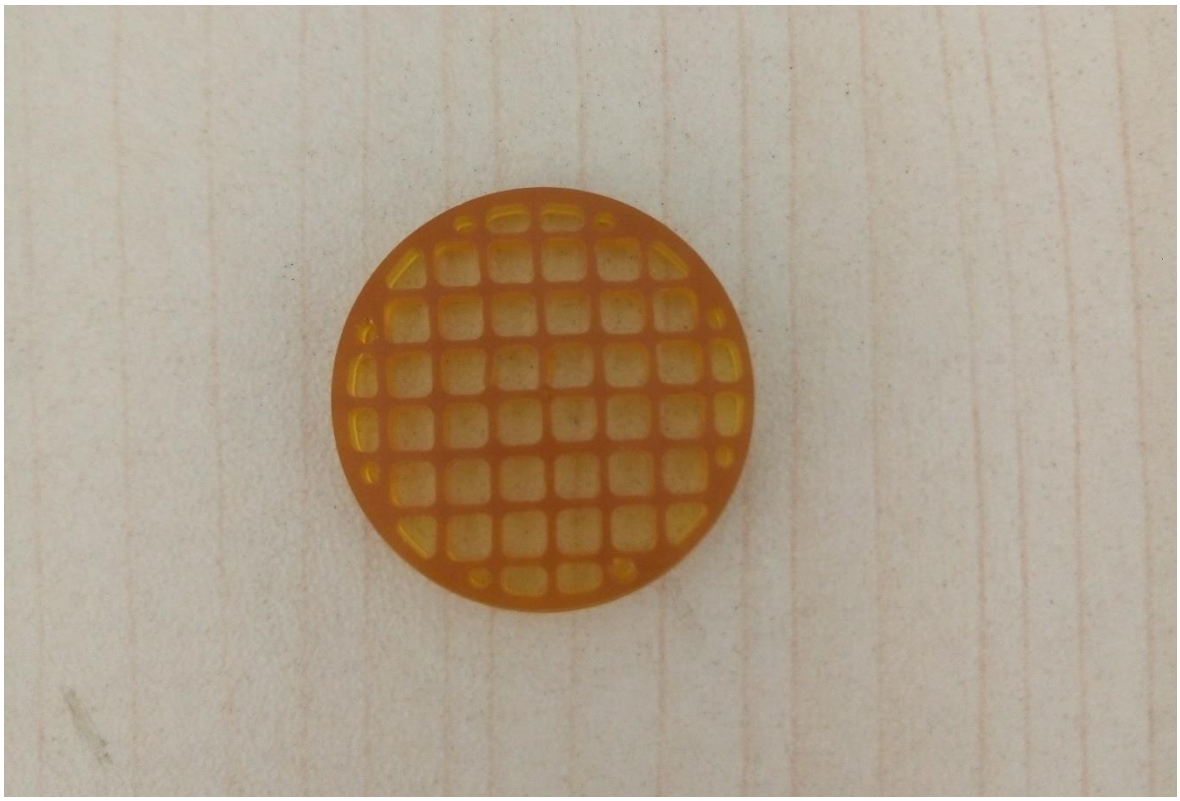
Water meters shall be verified in accordance with NITP 14 *National Instrument Test Procedures for Utility Meters*.

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

FIGURE 14/3/39 – 1

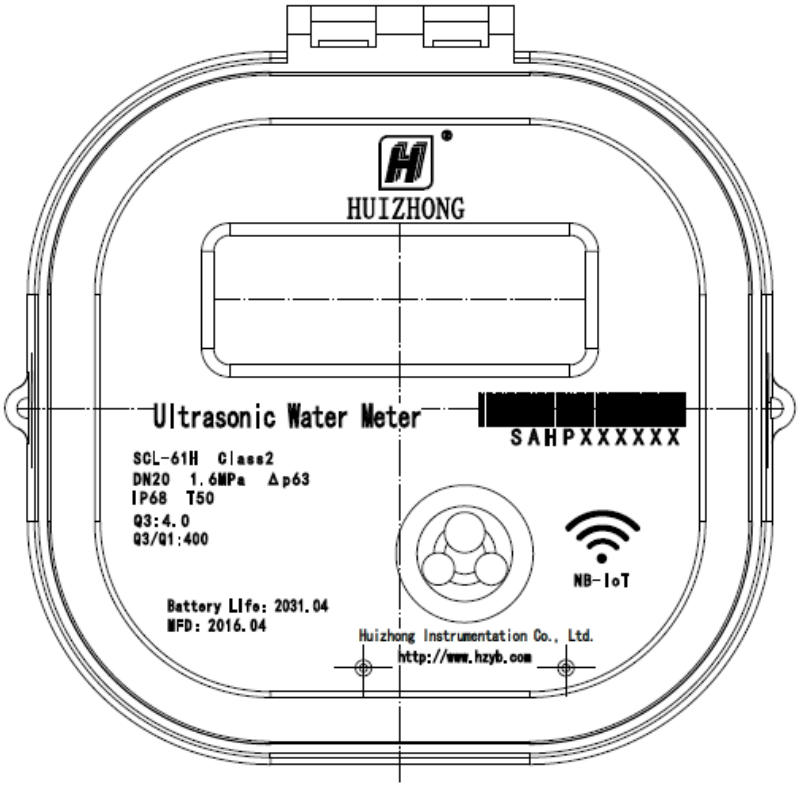
SCL-61H Residential Ultrasonic Water Meter – both housings

FIGURE 14/3/39 – 2



Flow conditioner

FIGURE 14/3/39 – 3



An example of markings

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