



Australian Government  
Department of Industry,  
Science and Resources

## National Measurement Institute

36 Bradfield Road, West Lindfield NSW 2070

# Certificate of Approval

## NMI 14/3/43

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.

UAB Axioma Qalcosonic W1 Ultrasonic Water Meter

submitted by       AMS Water Metering Pty Ltd  
                          Unit 20, 51 Kalman Drive  
                          Boronia VIC 3155

**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 & variants 1 to 3 approved – certificate issued	17/05/19
1	Variants 1 to 3 amended, Variants 4 to 23 approved – certificate issued	25/09/23
2	Variant 23 amended (correction to version numbers) – certificate issued	31/01/24
3	Variant 23 amended (software), variant 24 approved – certificate issued	05/08/24

## CONDITIONS OF APPROVAL

### General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI 14/3/43' 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*.



**Darryl Hines**  
Manager  
Policy and Regulatory Services

TECHNICAL SCHEDULE No 14/3/43

**1. Description of Pattern** **approved on 17/05/19**

A DN20 sized UAB Axioma Metering Qalcosonic W1 Ultrasonic Water Meter used to measure cold potable and hot water supplies for trade.

**1.1 Field of Operation**

The field of operation of the measuring system using the DN20 Qalcosonic W1 Ultrasonic Water Meter is determined by the following characteristics:

Minimum flow rate, $Q_1$	0.005 m <sup>3</sup> /h
Transition flow rate, $Q_2$	0.008 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, $Q_3/Q_1$ :	800
Temperature Class:	T30
Maximum admissible temperature:	30 °C
Maximum admissible pressure:	1600 kPa
Pressure loss class:	$\Delta p$ 63
Accuracy class:	2
Flow profile sensitivity class:	U0/D0
Electromagnetic class:	E1 & E2 (industrial)
Environmental class:	B & O (indoor & outdoor)
Orientation:	All positions
Flow Direction:	Forward only
Power supply:	3.6 V non-replaceable battery

## 1.2 Features/Functions

The pattern (Figure 1) 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 (G1")

Display: A digital, electronic, liquid crystal display allowing for a maximum indication range of 999,999.999 m<sup>3</sup> in 0.001 m<sup>3</sup> increments. The display may be placed into verification mode allowing a minimum resolution of 0.000001 m<sup>3</sup>.

Communications<sup>(1)</sup>: Pulse and Mbus output is available via optical interface via means of a clamp-on module.

An internal radio module provides configurable wireless communications at the following frequencies:

- 868 MHz;
- 433 MHz; or
- 915 MHz;

Using the following protocols:

- W-M-Bus (T1/S1/C1);
- SIGFOX; or
- LORA WAN.

Materials: Polymer material

Meter length: 105 mm

Software version: 1.01

<sup>(1)</sup> 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, the flow profile sensitivity class is U0/D0.

### 1.3.2 Water Quality

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

## 1.4 Software Version

The pattern is approved for use with software version SW:1.01.

## 1.5 Verification Provision

Provision is made for the application of a verification mark.

## 1.6 Sealing Provision

The upper and lower parts of the meter casing are fitted such that any unauthorised attempt to physically access the casing is impossible without damaging the meter. When the upper casing is opened, a safety button is activated and an error code appears on the meter display. For sealing the meter after installation, there are holes provided in the meter body.

The meter is sealed against unauthorised changes to electronic parameters.

## 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 2):

Manufacturer's name or mark	...
Serial number	...
Pattern approval number	NMI 14/3/43
Numerical value of maximum continuous flow rate, $Q_3$	...
Flow rate ratio, $Q_3/Q_1$	...
Unit of measurement	$m^3$
Temperature class <sup>(1)</sup>	T30
Maximum admissible pressure <sup>(2)</sup>	1600 kPa
Maximum pressure loss <sup>(3)</sup>	63 kPa or $\Delta p$ 63
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 Class T30

<sup>(2)</sup> Optional for meters with MAP of 1400 kPa or 600 kPa for  $DN \geq 500$

<sup>(3)</sup> Optional for Class  $\Delta p$ 63

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

<sup>(5)</sup> Optional for 0U/0D 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 or E2
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 17/05/19  
amended on 25/09/23**

The UAB Axioma Metering Qalcosonic W1 Ultrasonic Water Meter is approved for operation with forward flow with a range of different flowrates and associated characteristics as specified in Table 1.1 below. The Pattern is shown in **Bold** for completeness.

**Table 1.1 Meter flowrates and related information – DN20 forward flow**

<b>Meter size</b>	<b>DN20</b>						
Flow direction	<b>Forward flow</b>						
Minimum flowrate Q <sub>1</sub> (m <sup>3</sup> /h)	0.020	0.016	0.013	0.010	0.008	0.006	<b>0.005</b>
Transitional flowrate Q <sub>2</sub> (m <sup>3</sup> /h)	0.032	0.026	0.020	0.016	0.013	0.010	<b>0.008</b>
Maximum continuous flowrate Q <sub>3</sub> (m <sup>3</sup> /h)	<b>4.0</b>						
Overload flowrate Q <sub>4</sub> (m <sup>3</sup> /h)	<b>5.0</b>						
Ratio Q <sub>3</sub> /Q <sub>1</sub>	200	250	315	400	500	630	<b>800</b>
Meter Lengths (mm)	<b>105, 110, 130, 165 or 190</b>						
Temperature class	<b>T30, T50, T70 or T90</b>						
Pressure loss class	<b>Δp 40 or Δp 63</b>						
Connection	Threaded end connection (G 1")						

*Variant 1 continued overpage.*

The UAB Axioma Metering Qalcosonic W1 Ultrasonic Water Meter is approved for operation with reverse flow with a range of different flowrates and associated characteristics as specified in Table 2.2 below.

**Table 1.2 Meter flowrates and related information – DN20 reverse flow**

<b>Meter size</b>	<b>DN20</b>						
Flow direction	Reverse flow						
Minimum flowrate $Q_1$ (m <sup>3</sup> /h)	0.020	0.016	0.013	0.010	0.008	0.006	0.005
Transitional flowrate $Q_2$ (m <sup>3</sup> /h)	0.032	0.026	0.020	0.016	0.013	0.010	0.008
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	400	500	630	800
Meter Lengths (mm)	105, 110, 130, 165 or 190						
Temperature class	T30, T50, T70 or T90				T30		
Pressure loss class	$\Delta p$ 40 or $\Delta p$ 63						
Connection	Threaded end connection (G 1")						

**3. Description of Variant 2**

**approved on 17/05/19  
amended on 25/09/23**

The UAB Axioma Metering Qalcosonic W1 Ultrasonic Water Meter is approved as a DN15 sized meter for operation with forward flow with flowrates and associated characteristics as specified in Table 2 below.

**Table 2 Meter flowrates and related information – DN15 forward flow**

<b>Meter size</b>	<b>DN15</b>						
Flow direction	Forward flow						
Minimum flowrate Q <sub>1</sub> (m <sup>3</sup> /h)	0.013	0.010	0.008	0.006	0.005	0.004	0.003
Transitional flowrate Q <sub>2</sub> (m <sup>3</sup> /h)	0.020	0.016	0.013	0.010	0.008	0.006	0.005
Maximum continuous flowrate Q <sub>3</sub> (m <sup>3</sup> /h)	2.5						
Overload flowrate Q <sub>4</sub> (m <sup>3</sup> /h)	3.125						
Ratio Q <sub>3</sub> /Q <sub>1</sub>	200	250	315	400	500	630	800
Meter Lengths (mm)	80, 105, 110, 165 or 170						
Temperature class	T30, T50, T70, T90					T30	
Pressure loss class	Δp 25, Δp 40 or Δp 63						
Connection	Threaded end connection (G ¾")						



**4. Description of Variant 3**

**approved on 17/05/19  
amended 25/09/23**

The UAB Axioma Metering Qalcosonic W1 Ultrasonic Water Meter is approved as a DN15 sized meter for operation with forward flow with alternative flowrates and associated characteristics as specified in Table 3 below.

**Table 3 Meter flowrates and related information - DN15 forward flow**

<b>Meter size</b>	<b>DN15</b>		
Flow direction	Forward flow		
Minimum flowrate Q <sub>1</sub> (m <sup>3</sup> /h)	0.008	0.006	0.005
Transitional flowrate Q <sub>2</sub> (m <sup>3</sup> /h)	0.013	0.010	0.008
Maximum continuous flowrate Q <sub>3</sub> (m <sup>3</sup> /h)	1.6		
Overload flowrate Q <sub>4</sub> (m <sup>3</sup> /h)	2.0		
Ratio Q <sub>3</sub> /Q <sub>1</sub>	200	250	315
Meter Lengths (mm)	80, 105, 110, 165 or 170		
Temperature class	T30, T50, T70, T90		
Pressure loss class	Δp 16, Δp 25, Δp 40 or Δp 63		
Connection	Threaded end connection (G ¾")		

**5. Description of Variant 4**

**approved on 25/09/23**

The UAB Axioma Metering Qalcosonic W1 Ultrasonic Water Meter is approved as a DN15 sized meter for operation with reverse flow with a range of different flowrates and associated characteristics as specified in Table 4 below.

**Table 4 Meter flowrates and related information – DN15 reverse flow**

<b>Meter size</b>	<b>DN15</b>						
Flow direction	Reverse flow						
Minimum flowrate Q <sub>1</sub> (m <sup>3</sup> /h)	0.013	0.010	0.008	0.006	0.005	0.004	0.003
Transitional flowrate Q <sub>2</sub> (m <sup>3</sup> /h)	0.020	0.016	0.013	0.010	0.008	0.006	0.005
Maximum continuous flowrate Q <sub>3</sub> (m <sup>3</sup> /h)	2.5						
Overload flowrate Q <sub>4</sub> (m <sup>3</sup> /h)	3.125						
Ratio Q <sub>3</sub> /Q <sub>1</sub>	200	250	315	400	500	630	800
Meter Lengths (mm)	80, 105, 110, 165 or 170						
Temperature class	T30, T50, T70 or T90				T30		
Pressure loss class	Δp 16, Δp 25, Δp 40 or Δp 63						
Connection	Threaded end connection (G ¾")						

**6. Description of Variant 5**

**approved on 25/09/23**

The UAB Axioma Metering Qalcosonic W1 Ultrasonic Water Meter is approved as a DN25 sized meter (as shown in Figure 3) for operation with forward flow with alternative flowrates and associated characteristics as specified in Table 5 below.

**Table 5 Meter flowrates and related information – DN25 forward flow**

<b>Meter size</b>	<b>DN25</b>								
Flow direction	Forward flow								
Minimum flowrate Q <sub>1</sub> (m <sup>3</sup> /h)	0.079	0.039	0.032	0.025	0.020	0.016	0.013	0.010	0.008
Transitional flowrate Q <sub>2</sub> (m <sup>3</sup> /h)	0.126	0.063	0.050	0.040	0.032	0.025	0.020	0.016	0.013
Maximum continuous flowrate Q <sub>3</sub> (m <sup>3</sup> /h)	6.3								
Overload flowrate Q <sub>4</sub> (m <sup>3</sup> /h)	7.875								
Ratio Q <sub>3</sub> /Q <sub>1</sub>	80	160	200	250	315	400	500	630	800
Meter Length (mm)	260								
Temperature class	T30, T50, T70 or T90							T30	
Pressure loss class	Δp 40 or Δp 63								
Orientation	H and/or V								
Connection	Threaded end connection (G 1¼")								

**7. Description of Variant 6**

**approved on 25/09/23**

The UAB Axioma Metering Qalcosonic W1 Ultrasonic Water Meter is approved as a DN25 sized meter (as shown in Figure 3) for operation with forward flow with alternative flowrates and associated characteristics as specified in Table 6 below.

**Table 6 Meter flowrates and related information – DN25 forward flow**

<b>Meter size</b>	<b>DN25</b>									
Flow direction	Forward flow									
Minimum flowrate Q <sub>1</sub> (m <sup>3</sup> /h)	0.125	0.063	0.050	0.040	0.032	0.025	0.020	0.016	0.013	0.010
Transitional flowrate Q <sub>2</sub> (m <sup>3</sup> /h)	0.200	0.100	0.080	0.064	0.051	0.040	0.032	0.025	0.020	0.016
Maximum continuous flowrate Q <sub>3</sub> (m <sup>3</sup> /h)	10.0									
Overload flowrate Q <sub>4</sub> (m <sup>3</sup> /h)	12.5									
Ratio Q <sub>3</sub> /Q <sub>1</sub>	80	160	200	250	315	400	500	630	800	1000
Meter Length (mm)	260									
Temperature class	T30, T50, T70 or T90							T30		
Pressure loss class	Δp 40 or Δp 63									Δp 63
Orientation	H and/or V									
Connection	Threaded end connection (G 1¼")									

**8. Description of Variant 7**

**approved on 25/09/23**

The UAB Axioma Metering Qalcosonic W1 Ultrasonic Water Meter is approved as a DN25 sized meter (as shown in Figure 3) for operation with reverse flow with alternative flowrates and associated characteristics as specified in Table 7 below.

**Table 7 Meter flowrates and related information – DN25 reverse flow**

<b>Meter size</b>	<b>DN25</b>								
Flow direction	Reverse flow								
Minimum flowrate Q <sub>1</sub> (m <sup>3</sup> /h)	0.079	0.039	0.032	0.025	0.020	0.016	0.013	0.010	0.008
Transitional flowrate Q <sub>2</sub> (m <sup>3</sup> /h)	0.126	0.063	0.050	0.040	0.032	0.025	0.020	0.016	0.013
Maximum continuous flowrate Q <sub>3</sub> (m <sup>3</sup> /h)	6.3								
Overload flowrate Q <sub>4</sub> (m <sup>3</sup> /h)	7.875								
Ratio Q <sub>3</sub> /Q <sub>1</sub>	80	160	200	250	315	400	500	630	800
Meter Length (mm)	260								
Temperature class	T30, T50, T70 or T90						T30		
Pressure loss class	Δp 40 or Δp 63								
Orientation	H and/or V								
Connection	Threaded end connection (G 1¼")								

**9. Description of Variant 8**

**approved on 25/09/23**

The UAB Axioma Metering Qalcosonic W1 Ultrasonic Water Meter is approved as a DN32 sized meter for operation with forward flow with alternative flowrates and associated characteristics as specified in Table 8 below.

**Table 8 Meter flowrates and related information – DN32**

<b>Meter size</b>	<b>DN32</b>								
Flow direction	Forward flow								
Minimum flowrate Q <sub>1</sub> (m <sup>3</sup> /h)	0.079	0.039	0.032	0.025	0.020	0.016	0.013	0.010	0.008
Transitional flowrate Q <sub>2</sub> (m <sup>3</sup> /h)	0.126	0.063	0.050	0.040	0.032	0.025	0.020	0.016	0.013
Maximum continuous flowrate Q <sub>3</sub> (m <sup>3</sup> /h)	6.3								
Overload flowrate Q <sub>4</sub> (m <sup>3</sup> /h)	7.875								
Ratio Q <sub>3</sub> /Q <sub>1</sub>	80	160	200	250	315	400	500	630	800
Meter Length (mm)	260								
Temperature class	T30, T50, T70 or T90							T30	
Pressure loss class	Δp 40 or Δp 63								
Orientation	H and/or V								
Connection	Threaded end connection (G 1 ½")								

**10. Description of Variant 9**

**approved on 25/09/23**

The UAB Axioma Metering Qalcosonic W1 Ultrasonic Water Meter is approved as a DN32 sized meter for operation with forward flow with alternative flowrates and associated characteristics as specified in Table 9 below.

**Table 9 Meter flowrates and related information – DN32**

<b>Meter size</b>	<b>DN32</b>								
Flow direction	Forward flow								
Minimum flowrate Q <sub>1</sub> (m <sup>3</sup> /h)	0.125	0.063	0.050	0.040	0.032	0.025	0.020	0.016	0.013
Transitional flowrate Q <sub>2</sub> (m <sup>3</sup> /h)	0.200	0.100	0.080	0.064	0.051	0.040	0.032	0.025	0.020
Maximum continuous flowrate Q <sub>3</sub> (m <sup>3</sup> /h)	10.0								
Overload flowrate Q <sub>4</sub> (m <sup>3</sup> /h)	12.5								
Ratio Q <sub>3</sub> /Q <sub>1</sub>	80	160	200	250	315	400	500	630	800
Meter Length (mm)	260								
Temperature class	T30, T50, T70 or T90							T30	
Pressure loss class	Δp 40 or Δp 63								
Orientation	H and/or V								
Connection	Threaded end connection (G 1 ½")								

**11. Description of Variant 10**

**approved on 25/09/23**

The UAB Axioma Metering Qalcosonic W1 Ultrasonic Water Meter is approved as a DN32 sized meter for operation with reverse flow with alternative flowrates and associated characteristics as specified in Table 10 below.

**Table 10 Meter flowrates and related information – DN32 reverse flow**

<b>Meter size</b>	<b>DN32</b>								
Flow direction	Reverse flow								
Minimum flowrate Q <sub>1</sub> (m <sup>3</sup> /h)	0.079	0.039	0.032	0.025	0.020	0.016	0.013	0.010	0.008
Transitional flowrate Q <sub>2</sub> (m <sup>3</sup> /h)	0.126	0.063	0.050	0.040	0.032	0.025	0.020	0.016	0.013
Maximum continuous flowrate Q <sub>3</sub> (m <sup>3</sup> /h)	6.3								
Overload flowrate Q <sub>4</sub> (m <sup>3</sup> /h)	7.875								
Ratio Q <sub>3</sub> /Q <sub>1</sub>	80	160	200	250	315	400	500	630	800
Meter Length (mm)	260								
Temperature class	T30, T50, T70 or T90						T30		
Pressure loss class	Δp 40 or Δp 63								
Orientation	H and/or V								
Connection	Threaded end connection (G 1¼")								



**12. Description of Variant 11**

**approved on 25/09/23**

The UAB Axioma Metering Qalcosonic W1 Ultrasonic Water Meter is approved as a DN40 sized meter (as shown in Figure 4) for operation with forward flow with alternative flowrates and associated characteristics as specified in Table 11 below.

**Table 11 Meter flowrates and related information – DN40**

<b>Meter size</b>	<b>DN40</b>			
Flow direction	Forward flow			
Minimum flowrate Q <sub>1</sub> (m <sup>3</sup> /h)	0.125	0.063	0.050	0.040
Transitional flowrate Q <sub>2</sub> (m <sup>3</sup> /h)	0.200	0.100	0.080	0.064
Maximum continuous flowrate Q <sub>3</sub> (m <sup>3</sup> /h)	10.0			
Overload flowrate Q <sub>4</sub> (m <sup>3</sup> /h)	12.5			
Ratio Q <sub>3</sub> /Q <sub>1</sub>	80	160	200	250
Meter Length (mm)	300			
Temperature class	T30, T50, T70 or T90			
Pressure loss class	Δp 16, Δp 25, Δp 40 or Δp 63			
Orientation	H and/or V			
Connection	Threaded end connection (G 2")			

**13. Description of Variant 12**

**approved on 25/09/23**

The UAB Axioma Metering Qalcosonic W1 Ultrasonic Water Meter is approved as a DN40 sized meter (as shown in Figure 4) for operation with forward flow with alternative flowrates and associated characteristics as specified in Table 12 below.

**Table 12 Meter flowrates and related information – DN40**

<b>Meter size</b>	<b>DN40</b>								
Flow direction	Forward flow								
Minimum flowrate Q <sub>1</sub> (m <sup>3</sup> /h)	0.200	0.100	0.080	0.064	0.051	0.040	0.032	0.025	0.020
Transitional flowrate Q <sub>2</sub> (m <sup>3</sup> /h)	0.320	0.160	0.128	0.102	0.081	0.064	0.051	0.041	0.032
Maximum continuous flowrate Q <sub>3</sub> (m <sup>3</sup> /h)	16.0								
Overload flowrate Q <sub>4</sub> (m <sup>3</sup> /h)	20.0								
Ratio Q <sub>3</sub> /Q <sub>1</sub>	80	160	200	250	315	400	500	630	800
Meter Length (mm)	300								
Temperature class	T30, T50, T70 or T90							T30	
Pressure loss class	Δp 16, Δp 25, Δp 40 or Δp 63								
Orientation	H and/or V								
Connection	Threaded end connection (G 2")								

**14. Description of Variant 13**

**approved on 25/09/23**

The UAB Axioma Metering Qalcosonic W1 Ultrasonic Water Meter is approved as a DN40 sized meter (as shown in Figure 4) for operation with forward flow with alternative flowrates and associated characteristics as specified in Table 13 below.

**Table 13 Meter flowrates and related information – DN40**

<b>Meter size</b>	<b>DN40</b>								
Flow direction	Forward flow								
Minimum flowrate Q <sub>1</sub> (m <sup>3</sup> /h)	0.313	0.156	0.125	0.100	0.079	0.063	0.050	0.040	0.031
Transitional flowrate Q <sub>2</sub> (m <sup>3</sup> /h)	0.500	0.250	0.200	0.160	0.127	0.100	0.080	0.063	0.050
Maximum continuous flowrate Q <sub>3</sub> (m <sup>3</sup> /h)	25.0								
Overload flowrate Q <sub>4</sub> (m <sup>3</sup> /h)	31.25								
Ratio Q <sub>3</sub> /Q <sub>1</sub>	80	160	200	250	315	400	500	630	800
Meter Length (mm)	300								
Temperature class	T30, T50, T70 or T90							T30	
Pressure loss class	Δp 25, Δp 40 or Δp 63								
Orientation	H and/or V								
Connection	Threaded end connection (G 2")								

**15. Description of Variant 14**

**approved on 25/09/23**

The UAB Axioma Metering Qalcosonic W1 Ultrasonic Water Meter is approved as a DN40 sized meter (as shown in Figure 4) for operation with reverse flow with alternative flowrates and associated characteristics as specified in Table 14 below.

**Table 14 Meter flowrates and related information – DN40**

<b>Meter size</b>	<b>DN40</b>			
Flow direction	Reverse flow			
Minimum flowrate Q <sub>1</sub> (m <sup>3</sup> /h)	0.125	0.063	0.050	0.040
Transitional flowrate Q <sub>2</sub> (m <sup>3</sup> /h)	0.200	0.100	0.080	0.064
Maximum continuous flowrate Q <sub>3</sub> (m <sup>3</sup> /h)	10.0			
Overload flowrate Q <sub>4</sub> (m <sup>3</sup> /h)	12.5			
Ratio Q <sub>3</sub> /Q <sub>1</sub>	80	160	200	250
Meter Length (mm)	300			
Temperature class	T30, T50, T70 or T90			
Pressure loss class	Δp 16, Δp 25, Δp 40 or Δp 63			
Orientation	H and/or V			
Connection	Threaded end connection (G 2")			

**16. Description of Variant 15**

**approved on 25/09/23**

The UAB Axioma Metering Qalcosonic W1 Ultrasonic Water Meter is approved as a DN40 sized meter (as shown in Figure 4) for operation with reverse flow with alternative flowrates and associated characteristics as specified in Table 15 below.

**Table 15 Meter flowrates and related information – DN40**

<b>Meter size</b>	<b>DN40</b>								
Flow direction	Reverse flow								
Minimum flowrate Q <sub>1</sub> (m <sup>3</sup> /h)	0.200	0.100	0.080	0.064	0.051	0.040	0.032	0.025	0.020
Transitional flowrate Q <sub>2</sub> (m <sup>3</sup> /h)	0.320	0.160	0.128	0.102	0.081	0.064	0.051	0.041	0.032
Maximum continuous flowrate Q <sub>3</sub> (m <sup>3</sup> /h)	16.0								
Overload flowrate Q <sub>4</sub> (m <sup>3</sup> /h)	20.0								
Ratio Q <sub>3</sub> /Q <sub>1</sub>	80	160	200	250	315	400	500	630	800
Meter Length (mm)	300								
Temperature class	T30, T50, T70 or T90						T30		
Pressure loss class	Δp 16, Δp 25, Δp 40 or Δp 63								
Orientation	H and/or V								
Connection	Threaded end connection (G 2")								

**17. Description of Variant 16**

**approved on 25/09/23**

The UAB Axioma Metering Qalcosonic W1 Ultrasonic Water Meter is approved as a DN50 sized meter (as shown in Figure 5) for operation with forward flow with alternative flowrates and associated characteristics as specified in Table 17 below.

**Table 17 Meter flowrates and related information – DN50**

<b>Meter size</b>	<b>DN50</b>					
Flow direction	Forward flow					
Minimum flowrate Q <sub>1</sub> (m <sup>3</sup> /h)	0.200	0.100	0.080	0.064	0.051	0.040
Transitional flowrate Q <sub>2</sub> (m <sup>3</sup> /h)	0.320	0.160	0.128	0.102	0.081	0.064
Maximum continuous flowrate Q <sub>3</sub> (m <sup>3</sup> /h)	16.0					
Overload flowrate Q <sub>4</sub> (m <sup>3</sup> /h)	20.0					
Ratio Q <sub>3</sub> /Q <sub>1</sub>	80	160	200	250	315	400
Meter Length (mm)	200					
Temperature class	T30, T50, T70 or T90					
Pressure loss class	Δp 16, Δp 25, Δp 40 or Δp 63					
Orientation	H and/or V					
Connection	Flanged					

**18. Description of Variant 17**

**approved on 25/09/23**

The UAB Axioma Metering Qalcosonic W1 Ultrasonic Water Meter is approved as a DN50 sized meter (as shown in Figure 5) for operation with forward flow with alternative flowrates and associated characteristics as specified in Table 18 below.

**Table 18 Meter flowrates and related information – DN50**

<b>Meter size</b>	<b>DN50</b>								
Flow direction	Forward flow								
Minimum flowrate Q <sub>1</sub> (m <sup>3</sup> /h)	0.313	0.156	0.125	0.100	0.079	0.063	0.050	0.040	0.031
Transitional flowrate Q <sub>2</sub> (m <sup>3</sup> /h)	0.500	0.250	0.200	0.160	0.127	0.100	0.080	0.063	0.050
Maximum continuous flowrate Q <sub>3</sub> (m <sup>3</sup> /h)	25.00								
Overload flowrate Q <sub>4</sub> (m <sup>3</sup> /h)	31.25								
Ratio Q <sub>3</sub> /Q <sub>1</sub>	80	160	200	250	315	400	500	630	800
Meter Length (mm)	200								
Temperature class	T30, T50, T70 or T90							T30	
Pressure loss class	Δp 16, Δp 25, Δp 40 or Δp 63								
Orientation	H and/or V								
Connection	Flanged								

**19. Description of Variant 18**

**approved on 25/09/23**

The UAB Axioma Metering Qalcosonic W1 Ultrasonic Water Meter is approved as a DN50 sized meter (as shown in Figure 5) for operation with forward flow with alternative flowrates and associated characteristics as specified in Table 19 below.

**Table 19 Meter flowrates and related information – DN50**

<b>Meter size</b>	<b>DN50</b>								
Flow direction	Forward flow								
Minimum flowrate Q <sub>1</sub> (m <sup>3</sup> /h)	0.500	0.250	0.200	0.160	0.127	0.100	0.080	0.063	0.050
Transitional flowrate Q <sub>2</sub> (m <sup>3</sup> /h)	0.800	0.400	0.320	0.256	0.203	0.160	0.128	0.102	0.080
Maximum continuous flowrate Q <sub>3</sub> (m <sup>3</sup> /h)	40.0								
Overload flowrate Q <sub>4</sub> (m <sup>3</sup> /h)	50.0								
Ratio Q <sub>3</sub> /Q <sub>1</sub>	80	160	200	250	315	400	500	630	800
Meter Length (mm)	200								
Temperature class	T30, T50, T70 or T90							T30	
Pressure loss class	Δp 25, Δp 40 or Δp 63								
Orientation	H and/or V								
Connection	Flanged								



**20. Description of Variant 19**

**approved on 25/09/23**

The UAB Axioma Metering Qalcosonic W1 Ultrasonic Water Meter is approved as a DN50 sized meter (as shown in Figure 5) for operation with reverse flow with alternative flowrates and associated characteristics as specified in Table 20 below.

**Table 20 Meter flowrates and related information – DN50**

<b>Meter size</b>	<b>DN50</b>					
Flow direction	Reverse flow					
Minimum flowrate Q <sub>1</sub> (m <sup>3</sup> /h)	0.200	0.100	0.080	0.064	0.051	0.040
Transitional flowrate Q <sub>2</sub> (m <sup>3</sup> /h)	0.320	0.160	0.128	0.102	0.081	0.064
Maximum continuous flowrate Q <sub>3</sub> (m <sup>3</sup> /h)	16.0					
Overload flowrate Q <sub>4</sub> (m <sup>3</sup> /h)	20.0					
Ratio Q <sub>3</sub> /Q <sub>1</sub>	80	160	200	250	315	400
Meter Length (mm)	200					
Temperature class	T30, T50, T70 or T90					
Pressure loss class	Δp 16, Δp 25, Δp 40 or Δp 63					
Orientation	H and/or V					
Connection	Flanged					

**21. Description of Variant 20** **approved on 25/09/23**

The pattern and variants are approved for use with non-return devices fitted at the outlet of the meter.

The pattern and variants are approved for use with strainers and filters fitted at the inlet of the meter.

**22. Description of Variant 21** **approved on 25/09/23**

The pattern and variants are approved with the following alternative body designs shown in Figure 6:

- B design (Version “n”) for meter size DN15; and
- B design (Version “n”) for meter size DN20.

**23. Description of Variant 22** **approved on 25/09/23**

The pattern and variants are approved incorporating the alternative Nuvoton M258KE3AE model microprocessor.

**24. Description of Variant 23** **approved on 25/09/23**  
**amended on 31/01/24**  
**amended on 05/08/24**

The pattern and variants are approved with the software versions as specified in Table 21 below. The software version number is marked on the meter.

**Table 21 – Approved Software Versions**

<b>Software version number</b>	<b>Notes</b>
SW:1.01	None.
SW:1.03	Approved for use with the Renesas RF10WMGAFB model microprocessor in meter sizes DN15, DN20, DN25 and DN32.
SW:3.01	Approved for use with the Nuvoton M258KE3AE model microprocessor in meter sizes DN15, DN20, DN25 and DN32.
SW:2.02	Approved for use with the Renesas RF10WMGAFB model microprocessor in meter sizes DN40 and DN50.
SW:4.01	Approved for use with the 16-bit Renesas R5F111PJGFB model microcontroller in all meter sizes.

**25. Description of Variant 24**

**approved on 05/08/24**

The DN50 sized meter (described in Variants 16, 17, 18 and 19) is approved with an alternative measurement channel (W1 DN50 L200 Housing). In this case the meter is approved with the same flowrates and associated characteristics with the exception of the alternative pressure loss classes as specified in table 22.

**Table 22 Alternative pressure loss classes – DN50**

<b>Meter size</b>	<b>DN50</b>	
Maximum continuous flowrate $Q_3$ (m <sup>3</sup> /h)	25.0	40.0
Pressure loss class	$\Delta p$ 25, $\Delta p$ 40 or $\Delta p$ 63	$\Delta p$ 63

## TEST PROCEDURE No 14/3/43

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 NITP 14 *National Instrument Test Procedures for Utility Meters*.

The following exceptions apply for accuracy class 2 meters:

- The working water temperature range for verification is dependent on the temperature class of the meter as follows:
  - T30, T50:  $20\text{ }^{\circ}\text{C} \pm 10\text{ }^{\circ}\text{C}$ ;
  - T70 to T180:  $20\text{ }^{\circ}\text{C} \pm 10\text{ }^{\circ}\text{C}$  and  $50\text{ }^{\circ}\text{C} \pm 10\text{ }^{\circ}\text{C}$ ;
  - T30/70 to T30/180:  $50\text{ }^{\circ}\text{C} \pm 10\text{ }^{\circ}\text{C}$ .
- Where a meter is tested with a working water temperature greater than  $30\text{ }^{\circ}\text{C}$ , the maximum permissible errors shall be:
  - $\pm 5\%$  within the flowrate range  $Q_1 \leq Q < Q_2$ ; and
  - $\pm 3\%$  within the flowrate range  $Q_2 \leq Q \leq Q_4$ .

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

FIGURE 14/3/43 – 1



UAB Axioma Metering Qalcosonic W1 Ultrasonic Water Meter – the Pattern

FIGURE 14/3/43 – 2



Example of required markings – the Pattern

FIGURE 14/3/43 – 3



A DN25 sized Qalcosonic W1 Ultrasonic Water Meter – Variants 5, 6 & 7

FIGURE 14/3/43 – 4



A DN40 sized Qalcosonic W1 Ultrasonic Water Meter – Variants 11 to 15



FIGURE 14/3/43 – 5



A DN50 sized Qalcosonic W1 Ultrasonic Water Meter – Variants 16 to 19

FIGURE 14/3/43 – 6



An example of the B design (Version “n”) meter body – Variant 21

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