Australian Government
Department of Industry, Innovation and Science

National Measurement Institute

36 Bradfield Road, West Lindfield NSW 2070

Certificate of Approval

NMI 14/3/45

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.

Arad PD25 Polymer model water meter

submitted by Arad Ltd
Kibutz Dalia 19239
Israel

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 01/08/24, and then every 5 years thereafter.

DOCUMENT HISTORY

Rev	Reason/Details	Date
0	Pattern & variants 1 to 3 approved – certificate issued	29/07/19

CONDITIONS OF APPROVAL

General

Instruments purporting to comply with this approval shall be marked with pattern approval number 'NMI 14/3/45' 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 14/3/45

1. Description of Pattern approved on 29/07/19

A DN25 sized Arad PD25 Polymer 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 DN25 Arad PD25 Polymer model water meter is determined by the following characteristics:

Minimum flow rate, Q_1:	0.020 m^3/h
Transition flow rate, Q_2:	0.032 m^3/h
Maximum continuous flow rate, Q_3:	6.300 m^3/h
Overload flow rate, Q_4:	7.875 m^3/h
Flow rate ratio, Q_3/Q_1:	315
Maximum admissible temperature:	50 °C
Temperature class:	T50
Maximum admissible pressure:	1600 kPa
Pressure loss class:	Δp63
Accuracy class:	2
Flow profile sensitivity class:	U0/D0
Electromagnetic class:	E1 (residential, commercial, light industrial)
Environmental class:	B and O (indoor and outdoor)
Orientation:	Horizontal only
Flow Direction:	Forward only

1.2 Features/Functions

The pattern (Figure 1) consists of a positive displacement rotary piston flow sensor and a mechanical indicating flow converter (calculator/indicator) and has features/functions as listed below:

Connection type:	Threaded end connections
Display:	A mechanical indicating device allowing for a maximum indication range of 99,999 m^3 in 0.0001 m^3 increments
Materials:	Polymer material
Meter length:	260 mm

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 potable water supplies.

1.5 Verification Provision

Provision is made for the application of a verification mark.

1.6 Sealing Provision

The meter body is connected to the indicating device with a snap-fitted shroud (Figure 2) such that any attempt to dissemble the meter or access metrologically significant components is made evident.

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	Arad
Serial number	...
Pattern approval number	NMI 14/3/45
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
Maximum pressure loss (3)	63 kPa or Δp63
Orientation (4)	H
Flow profile sensitive class (5)	U0/D0
Direction of flow	→ or similar
Accuracy class (6)	2

(1) Optional for Class T30

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

(3) Optional for Class Δp63

(4) Optional for meters approved for all orientations

(5) Optional for U0/D0 meters

(6) Optional for class 2 meters

2. Description of Variant 1 approved on 29/07/19

The Pattern and Variants are approved with the alternative meter lengths (Figure 4): 198 mm and 178 mm.

3. Description of Variant 2 approved on 29/07/19

The Pattern and Variants are approved with the following alternative register (indicating device) covers (Figure 5):

a. Register cover PD
b. Register cover high

4. Description of Variant 3 approved on 29/07/19

The Pattern and Variants are approved with the following communication output options:

a. Mechanical register with electronic 3G unit

The register (Figure 6) is similar to the standard mechanical register but contains an electronic 3G communication device for remote reading of the measurement. The transmission of measurement data using this device is not covered by this approval. This device has three variations with regards to power supply;

- Powered by “A” cell batteries;
- Powered by “AA” cell batteries; or
- Powered by Tadiran Lithium Batteries.

An additional capacitor may be added depending on the register configuration.

b. LoRa, Veolia and Homerider registers

Having the 3G register (as described in a) above) with different communications protocols and operating frequencies: LoRa and Homerider. The registers are identified by LoRa and VE on the dial plate.

TEST PROCEDURE No 14/3/45

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.

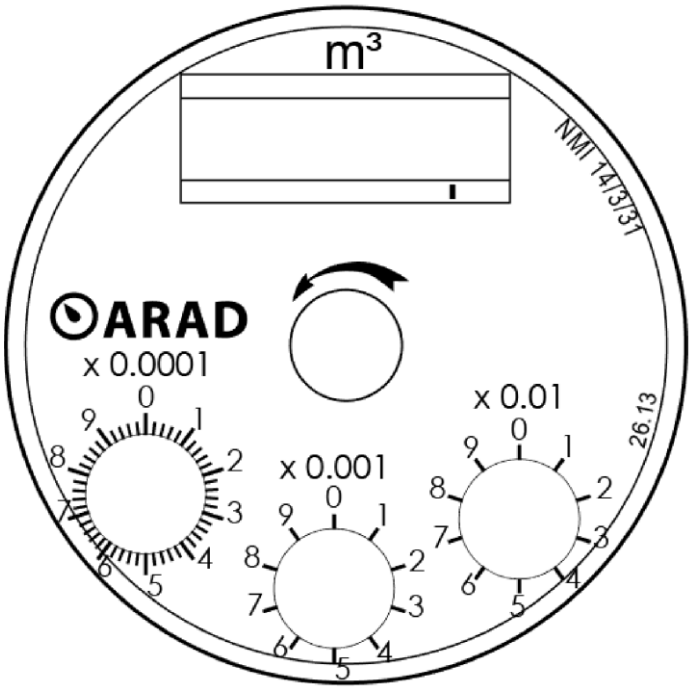
FIGURE 14/3/45 – 1

Arad PD25 Polymer model water meter – The Pattern

FIGURE 14/3/45 – 2

Sealing Shroud

FIGURE 14/3/45 – 3

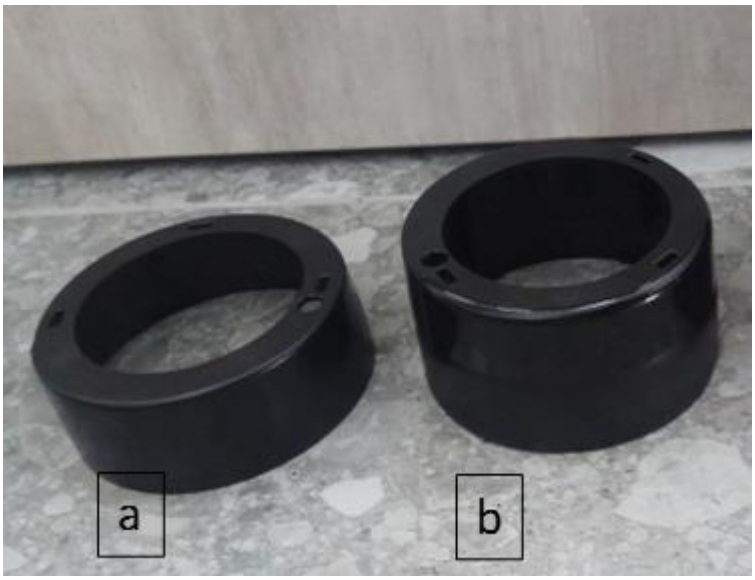


An example of markings

FIGURE 14/3/45 – 4

Alternative meter lengths – Variant 1

FIGURE 14/3/45 – 5



Alternative Register Covers – Variant 2
a. Register cover PD
b. Register cover high

FIGURE 14/3/45 – 6

Mechanical register with electronic 3G unit – Variant 3

~ End of Document ~