

# CERTIFIKÁT EÚ SKÚŠKY TYPU

## EU – type examination certificate

Číslo dokumentu: **SK 10-MI001-SMU011** **Revízia 2**  
*Document number:* **SK 10-MI001-SMU011** **Revision 2**  
*Document number:* **SK 10-MI001-SMU011** **Revision 2**  
*Revision 2 replaces the certificate issued by November 30, 2010*

V súlade s: prílohou č. 2, Modul B nariadenia vlády Slovenskej republiky č. 145/2016 Z. z. o sprístupňovaní meradiel na trhu v znení nariadenia vlády SR č. 328/2019 Z. z., ktorým sa preberá smernica Európskeho parlamentu a Rady 2014/32/EU o harmonizácii právnych predpisov členských štátov týkajúcich sa sprístupnenia meradiel na trhu  
*In accordance with:* **prílohou č. 2, Modul B nariadenia vlády Slovenskej republiky č. 145/2016 Z. z. o sprístupňovaní meradiel na trhu v znení nariadenia vlády SR č. 328/2019 Z. z., ktorým sa preberá smernica Európskeho parlamentu a Rady 2014/32/EU o harmonizácii právnych predpisov členských štátov týkajúcich sa sprístupnenia meradiel na trhu**  
*In accordance with:* **prílohou č. 2, Modul B nariadenia vlády Slovenskej republiky č. 145/2016 Z. z. o sprístupňovaní meradiel na trhu v znení nariadenia vlády SR č. 328/2019 Z. z., ktorým sa preberá smernica Európskeho parlamentu a Rady 2014/32/EU o harmonizácii právnych predpisov členských štátov týkajúcich sa sprístupnenia meradiel na trhu**  
*Annex II, Module B to Government Ordinance of the Slovak Republic No. 145/2016 Coll. Relating to the making available on the market of measuring instruments as amended by Government Ordinance of the Slovak Republic No. 328/2019 Coll., which implemented the Directive 2014/32/EU of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to the making available on the market of measuring instruments*

Žiadateľ/Výrobca: **Arad Dalia Ltd.**  
*Issued to (Manufacturer):* **Kibbutz Dalia 19239, Israel**

Druh meradla: **Vodomer (MI-001)**  
*Type of instrument:* **Water meter (MI-001)**

Označenie typu: **P**  
*Type designation:* **P**

Základné požiadavky: príloha č. 1 a príloha č. 3 Vodomery (MI-001) k nariadeniu vlády SR č. 145/2016 Z. z. v znení nariadenia vlády SR č. 328/2019 Z. z.  
*Essential requirements:* **príloha č. 1 a príloha č. 3 Vodomery (MI-001) k nariadeniu vlády SR č. 145/2016 Z. z. v znení nariadenia vlády SR č. 328/2019 Z. z.**  
*Annex No. I and Annex No. III Water meters (MI-001) to Government Ordinance of the Slovak Republic No. 145/2016 Coll. as amended by Government Ordinance of the Slovak Republic No. 328/2019 Coll.*


Platnosť do: **17. jún 2030**  
*Valid until:* **June 17, 2030**

Notifikovaná osoba: **Slovenský metrologický ústav 1781**  
*Notified body:* **Slovak Institute of Metrology 1781**

Dátum vydania: **17. jún 2020**  
*Date of issue:* **June 17, 2020**

Základné charakteristiky, popis meradla a podmienky schválenia sú uvedené v prílohe, ktorá je súčasťou tohto certifikátu. Certifikát vrátane prílohy má spolu 9 strán.  
*Essential characteristics, instrument description and approval conditions are set out in the appendix hereto, which forms the part of the certificate. The certificate including the appendix contains 9 pages.*



  
Viliam Mazúr  
zástupca notifikovanej osoby  
representative of notified body

Poznámka: Tento certifikát EÚ skúšky typu môže byť rozmnožovaný len celý a nezmenený. Bez podpisu a odtlačku pečiatky je neplatný.  
*Note: This EU-type examination certificate shall not be reproduced except in full. Certificates without signature and stamp are not valid.*

**History of the Certificate**

Issue of the Certificate	Date	Modification
SK 10-MI001-SMU011, Revision 0	June 18, 2010	Initial certificate
SK 10-MI001-SMU011, Revision 1	November 30, 2010	Add DN20
SK 10-MI001-SMU011, Revision 2	June 17, 2020	Certificate renewal

**Place of production:**

- Arad Dalia Ltd.,**  
Kibbutz Dalia 19239, Israel
- Ningbo Water Meter Co., Ltd.**  
355, Hong Xing Road, Jiangbei District, Ningbo 315033 China


**1 Instructions and standards used within assessment**
**1.1 Generally binding instructions**

Meter type was examined in terms of request for given type provisions Government Ordinance of the Slovak Republic No. 145/2016 Coll. relating to the making available on the market of measuring instruments as amended by Government Ordinance of the Slovak Republic No. 328/2019 Coll., which implemented the Directive 2014/32/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of measuring instruments as later amended (next Government Ordinance).

Requirements are set out in Annex No. 1 and Annex No. 3 Water Meters (MI-001) to Government Ordinance of SR No. 145/2016 Coll. as amended by Government Ordinance of the Slovak Republic No. 328/2019 Coll..

**1.2 Harmonised standards and normative documents used**

OIML R 49-1:2006	Water meters intended for the metering of cold potable water and hot water. Part 1: Metrological and technical requirements
OIML R 49-2:2004	Water meters intended for the metering of cold potable water and hot water. Part 2: Test methods
EN 14154-1:2005+A2:2011	Water meters - Part 1: General requirements
EN 14154-2:2005+A2:2011	Water meters - Part 2: Installation and conditions of use
EN 14154-3:2005+A2:2011	Water meters - Part 3: Test methods and equipment

**1.3 Other instructions used:**

OIML R 49-1:2013	Water meters intended for the metering of cold potable water and hot water. Part 1: Metrological and technical requirements
OIML R 49-2:2013	Water meters intended for the metering of cold potable water and hot water. Part 2: Test methods
OIML R 49-3:2013	Water meters intended for the metering of cold potable water and hot water. Part 3: Test report format

EN ISO 4064-1: 2017	Water meters for cold potable water and hot water. Part 1: Metrological and technical requirements
EN ISO 4064-2: 2017	Water meters for cold potable water and hot water. Part 2: Test methods
EN ISO 4064-5: 2017	Water meters for cold potable water and hot water. Part 5: Installation requirements

## 2 Type marking

### Positive displacement water meter - P

Meter is made in following subgroups:

Type of meter	Temperature class	Class	Nominal Diameter
P	T50	M1 <sup>1)</sup>	DN15, DN20

## 3 Description of measuring instrument

**Meter name:** Positive displacement water meter

**Type marking:** P

### Description of operating principle instrument design:

Positive displacement water meter P (Picture No. 1) , rotating piston type is intended for metering of delivered cold water quantity. The flowing water causes the piston to rotate within its chamber, each piston revolution being equivalent to a known volume of meter. The piston movement is transferred by a magneting to the register which has the appropriate reduction gearing.

Positive displacement water meters measure the volume or flow rate of a moving fluid by dividing the media into fixed, metered volumes. These devices consist of a chamber that obstructs the media flow and a rotating or reciprocating mechanism that allows the passage of fixed-volume amounts. The number of parcels that pass through the chamber determines the media volume. The rate of revolution or reciprocation determines the flow rate.

The meter is mainly composed of the body group and measuring unit group.

The body group consists of the body, the cap, the lid and the inlet strainer. The glass cover can protect the register against the external damages, and the lid provides the further protection to the register.

Water meters have been fitted for mounting on pipelines in horizontal and vertical positions. Accidental occurrence of a reverse flow does not affect metrological characteristics provided for a normal flow.

<sup>1</sup> according to Government Ordinance of the Slovak Republic, Annex No. 1



*Picture No.1 Positive displacement water meter*

### 3.1 Description of subgroups

Marking: P  
 DN: DN15, DN20

### 3.2 Measuring insert

The measuring unit group consists of the counting register and the measuring chamber. It is a key group for the accuracy performance of the meter. The magnetic gear on the top of chamber shaft transmits the movement of the piston to the counting register.

### 3.3 Indicating device

The capacity of the counter is 99 999 m<sup>3</sup> for size DN 15 and DN 20 and minimum resolution of the reading is 0,05 dm<sup>3</sup>. The register lens (IP 68) is made of glass on request to give the register protection against the impact damage and contamination.

The counter design does not allow for resetting of meter indications. Counter pointers rotate clockwise. Indicated digital values increase as the drums with digits marked on them move upwards. An indication increase by one digit is complete when a digit in a lower decade change from 9 to 0. In a decade of the lowest values digital indications change continuously. Black digits marked on digital drums or black pointers indicate cubic meters or their multiples whereas red digits or pointers indicate submultiples of cubic meters. The pointers move round scales marked with proper multipliers and placed on an indicating dial.

### 3.4 Principle of operation

The flowing water causes the piston to rotate within its chamber, each piston revolution being equivalent to a known volume of water. The piston movement is transferred by a magnetic coupling to the register which has the appropriate reduction gearing.

**3.5 Technical documentation**

A number of drawing of technical documentations are listed in the following table:

Drawing No.	Description
11201009/A	P 1/2 15mm class C
34123009/02	Body PD 1/2 165x17
23142309/05	Sliding ring
23142609/07	Pressure ring KMM
20600155/12	O-rings table - PARKER 2-151 NBR(75.87X2.62); Part. No. 20600109/12
25441909/07	Strainer 17 C H F
54120109/0A	Cartridge PD Qn 1.5 EEC
28512109/02	Thread cap 1/2" 17
25820329/04	Register cover 19 with plastic lid ARAD
54301019/00	Measuring chamber PD 1/2 4 POLE NWM-China
20920009/03	Gegister housing PD N 1.5
53120109/00	Register PD 1.5 Class C
5 43 011 09/00	MEASURING CHAMBER PD 3/4" 4POLE
2 09 206 09/00	REGISTER HOUSING PD 3/4"
2 58 203 29/04	REGISTER COVER 19 WITH PLASTIC LID ARAD
3 41 356 09/02	BODY PD 3/4" 190x21
5 31 501 99/00	REGISTER M N2.5 EMC 19.6 ARAD
2 31 426 09/07	PRESSURE RING KMM
2 31 473 09/02	LIFTING RING PD 3/4"
2 54 413 09/02	STRAINER 21 C,H,F
1 12 050 09/0B	P 3/4 20mm class C
2 31 423 09/05	SLIDING RING
23696211/01	Dial plate p Q3-1.6 R160 m3 3p ESPH-Approved
23696212/01	Dial plate p Q3-1.6 R160 m3 3p-Approved

All drawings, schemes and technical documentations used during the conformity assessment are saved in document No. NO-080/09 and NO-446/20.

**4 Basic technical characteristics**

Type marking		P
Nominal diameter DN	mm	15, 20
Indicating range	m <sup>3</sup>	10 <sup>5</sup>
Resolution of the reading	m <sup>3</sup>	0,00005
Maximum admissible pressure	-	MAP10
Working pressure range	bar	from 0,3 to 10
Pressure loss	-	$\Delta p$ 63
Temperature class	-	T50
Flow profile sensitivity classes	-	U3, D0
Position	-	H, V
Climatic and mechanical environments	-	closed spaces /from -10°C to 40°C/mech. class M1

**4.1 Additional technical characteristics**

IP Code	IP 68
Weight	1,5 kg and 1,75 kg

**5 Basic metrological characteristics**

The maximum permissible error (accuracy class):

$$\pm 5 \% (Q_1 \leq Q < Q_2)$$

$$\pm 2 \% (Q_2 \leq Q \leq Q_4) \text{ for water temperature (from 0,1 to 30) } ^\circ\text{C}$$

$$\pm 3 \% (Q_2 \leq Q \leq Q_4) \text{ for water temperature greater than 30 } ^\circ\text{C}$$

Diameter	DN	mm	15	20	15	20
Minimum flowrate	$Q_1$	m <sup>3</sup> /h	0,016	0,025	0,01	0,015625
Transitional flowrate	$Q_2$	m <sup>3</sup> /h	0,0256	0,04	0,016	0,025
Permanent flowrate	$Q_3$	m <sup>3</sup> /h	1,6	2,5	1,6	2,5
Overload flowrate	$Q_4$	m <sup>3</sup> /h	2	3,125	2	3,125
Measuring range R	$Q_3/Q_1$	-	100		160	
Ratio	$Q_2/Q_1$	-	1,6		1,6	



## 6 Results of conformity assessment

The results of tests, assessments and evaluations given in the evaluation report No. NO-466/20/B/ER dated June 16, 2020 give sufficient evidence, that the technical design of the measuring instrument – Positive displacement water meter type P is in compliance with the technical requirements of the Slovak Republic Governmental Ordinance No. 145/2016 Coll. relating to the making available on the market of measuring instruments as amended by Government Ordinance of the Slovak Republic No. 328/2019 Coll., Annex No. 1 and Annex No. 3 Water Meters (MI-001) and the EN 14154-1:2005+A2:2011, EN 14154-2:2005+A2:2011, EN 14154-3:2005+A2:2011 and OIML R49-1:2006, OIML R49-2:2004 (harmonised standards and normative documents) and other instructions OIML R49-2:2013, EN ISO 4064-1:2017, EN ISO 4064-2:2017 and EN ISO 4064-3:2014 standards, which are relevant for this type of meter.

## 7 Datas placed on the measuring instrument

On the shroud, the dial of the indicating device or on an identification plate of every water meter or in the product documentation minimum the following data should be marked:

- a) producer's name, registered trade name or registered trade mark and contact postal address at which they can be contacted
- b) type of the Positive displacement meter
- c) measuring unit ( $m^3$ )
- d) numerical value of  $Q_3$  and ratio  $Q_3/Q_1$
- e) production number and the year of production
- f) number of EU-type examination certificate and conformity mark
- g) the highest admissible pressure if it differs from 1 MPa
- h) flow direction
- i) the letter V or H, if the meter can only be operated in the vertical or horizontal position
- j) class of pressure loss if it differs from  $\Delta p_{63}$
- k) class of climatic and mechanical environment
- l) flow profile sensitivity classes where it differs from U0 - D0
- m) the temperature class where it differs from T30

## 8 Conditions of conformity assessment of measuring instruments produced with type approval

Positive displacement water meter put onto the market in line with the procedure of conformity assessment according to the Annex No.2 (Module D or F) of the Governmental ordinance should be in compliance with the technical description by the item 3 of this report and at test should be in compliance with the requirements determined in OIML R 49-1:2013 and ISO4064-1:2017. Metrological test is performed by testing equipment which should be in compliance with the requirements determined in STN EN 14154-3:2005+A2 and ISO4064-2:2017 and water at temperature  $20\text{ °C} \pm 5\text{ °C}$  in following points of flowrate:

- a) Minimum flowrate  $Q_1 \leq Q \leq 1,1Q_1$
- b) Transitional flowrate  $Q_2 \leq Q \leq 1,1Q_2$
- c) Permanent flowrate  $0,9 Q_3 \leq Q \leq Q_3$

A metrological test may only be performed by a producer, or a notified body respectively in line with the conformity assessment procedure according to the Annex No.2 (Module D or F) of the Governmental ordinance respectively.



## 9 Measures asked for providing measuring instrument integrity

### 9.1 Identification

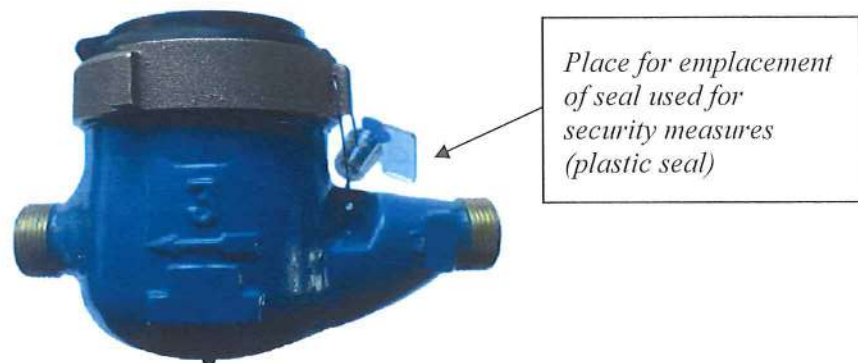
The Positive displacement meter should be in compliance with the description provided on the item 3 of this Annex and should be in compliance with the marking specified by the item 7 of this Annex. The number given to the EU-type examination certificate is put at each piece of the measuring instrument.

Emplacement of the conformity mark is determined by § 15 of the Governmental ordinance.

### 9.2 Sealing of the measuring instrument

The Positive displacement magnetic water meter shall be sealed before the conformity assessment according to the Annex No.2 (Module D or F) of the Governmental ordinance sealed by following sealing marks:

Connexion of counter shroud and water meter body shall be sealed by seal used for security measures (plastic seal) (Picture No. 2)



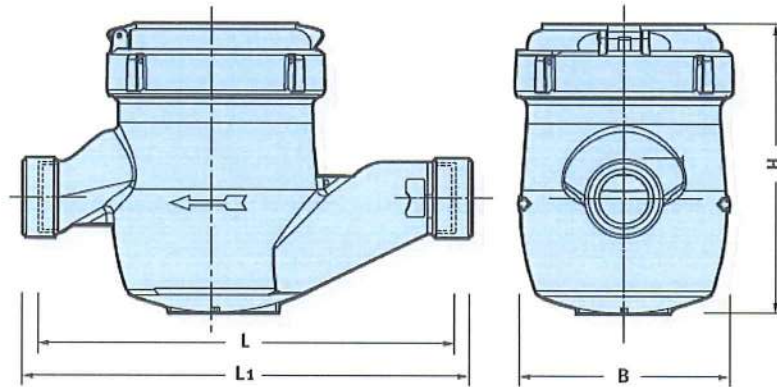
Picture No.2 Emplacement of the seal for security measures

## 10 Requirements for installation, especially conditions of usage

### 10.1 Installation data

Nominal diameter	DN15	DN20
Construction length [mm] - <i>L</i>	190	190
Length with couplings [mm] - <i>L<sub>1</sub></i>	285	285
Width [mm] - <i>B</i>	100	100
Hight [mm] - <i>H</i>	108	112
Weight [kg]	1,5	1,75
Weight with couplings [kg]	1,7	2,1





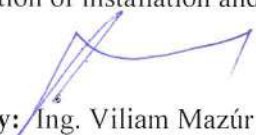
Picture No.3 Installation dimensions

### 10.2 Installation requirements

A Positive displacement water meter is introduced into the operation by a worker having a certificate for this activity performance. The Positive displacement meter is possible to be put into use after a construction in line with this report and in line with a producer instruction by “Instruction of installation and conditions of use of water meters”. A measuring instrument should be installed in direction of water flow arrow marked on the meter body.

### 10.3 Conditions of use

Within using the measuring instrument, it is needed to be managed by recommendations of a producer by “Instruction of installation and conditions of use of water meters”.

Assessment done by:  Ing. Viliam Mazúr

\*\*\*

