

## ES TIPĀ PĀRBAUDES SERTIFIKĀTS

### EU TYPE EXAMINATION CERTIFICATE

**Nr. VM23-01 MI-001 versija 0**

No. VM23-01 MI-001 revision 0

<b>Izdevējs</b>	<b>SIA „V&amp;V VentMet laboratorija”</b> Kuldīgas iela 127, Ventspils, LV-3601, Latvija
<b>Issued by</b>	„V&V VentMet laboratory” Ltd. Kuldīgas street 127, Ventspils, LV-3601, Latvia
<b>Ražotājs</b>	<b>ŞENSOYLAR Klape Tesisat Malzeme San. ve Tic. Ltd. Şti.</b> Bakırcılar ve Prinççiler Sanayi Sitesi Menekşe Cad. No.13 Beylikdüzü, ISTANBUL, TURKEY
<b>Ražotnes adrese</b>	Bakırcılar ve Prinççiler Sanayi Sitesi Menekşe Cad. No.13 Beylikdüzü, ISTANBUL, TURKEY
<b>Attiecībā uz</b>	Daudzstrūklū, sausā tipa, mehāniskais aukstā ūdens patēriņa skaitītājs ar priekšapmaksas ierīci
<b>In respect of</b>	Multi-jet, dry dial, mechanical cold water meter with pre-payment mode <b>ZZZ-15, ZZZ-20, trademark Türkoğlu</b>
<b>Saskaņā ar</b>	LR Ministru kabineta noteikumiem Nr.212 no 12.04.2016, kas transponē Eiropas Parlamenta un Padomes direktīvu 2014/32/ES no 2014.gada 26.februāra par dalībvalstu tiesību aktu saskaņošanu attiecībā uz mērinstrumentu pieejamību tirgū Latvijā.
<b>In accordance with</b>	Cabinet Regulation of the Republic of Latvia No.212 dated 12.04.2016, transposing in the Republic of Latvia 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.
<b>Piemērojamās būtiskās prasības</b>	Direktīvas 2014/32/ES Pielikums I & Pielikums III (MI-001)
<b>Applicable essential requirements</b>	Annex I & Annex III (MI-001) of the directive 2014/32/EU
<b>Derīgs līdz</b>	<b>20.04.2033.</b>

**Valid until**

Galvenie raksturlielumi, apstiprināšanas nosacījumi ir izklāstīti pievienotajā pielikumā, kas ir daļa no apstiprināšanas dokumentiem, un sastāv no 10 lapām. Visi plāni, shematiskās diagrammas un dokumentācija ir reģistrēta lietā TEHD\_TP-U22-2.

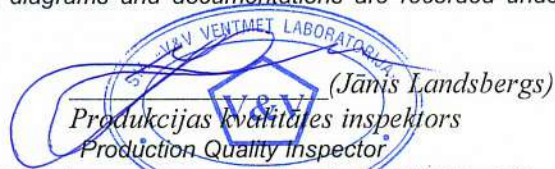
The principal characteristics, approval conditions are set out in the appendix hereto, which forms part of the approval documents and consists of 10 pages. All the plans, schematic diagrams and documentations are recorded under reference file TEHD\_TP-U22-2.

**Izsniegts 20.04.2023.**

**Issued on**

Piezīme: ES tipa pārbaudes sertifikāts nav derīgs bez paraksta un zīmoga. Sertifikātu aizliegts pavaiņot nepilnā apjomā bez SIA "V&V VentMet laboratorija" rakstiskas atļaujas.

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### History of the Certificate

Issue of the Certificate	Date	Modifications
VM23-01 MI-001 revision 0	20.04.2023	Type examination certificate first issued

### Conclusions of the examination

For the measuring instrument mentioned in this Certificate, the following essential requirements of Directive 2014/32/EU apply:

- Annex I "Essential Requirements"
- Annex III (MI-001) "Water meters"

For the measuring instrument, the following standards and normative documents apply:

- EN ISO 4064-1:2017; EN ISO 4064-2:2017, EN ISO 4064-4:2014; EN ISO 4064-5:2017,
- OIML R 49-1:2013, OIML R 49-2:2013,
- WELMEC 7.2:2022.

The measuring instrument's technical design which is described below complies with the above-mentioned essential requirements. With this Certificate, permission is given to attach the number of this Certificate to the instruments that have been manufactured in compliance with this Certificate.

The instrument must meet the following provisions:

#### 1. Design of the instrument

##### 1.1. Construction

The multi-jet, dry dial water meter type **ZZZ-15** and **ZZZ-20** is designed to measure and display the volume (consumption) of clean cold water in residential and commercial use at metering conditions of water passing through the measurement transducer in the sense of 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.

The water meter is produced under trademark **Türkoğlu**.

The water meter consists of a brass body with connecting threads and an inlet filter, a wet measuring part included a plastic (ABS) rotary turbine wheel, lower and upper tightening plates with bearing hubs and gears, magnetic coupling and mechanical dry-dial, vacuum encapsulated mechanical indicating device with rotary pointers and numbered drums, a plastic glass with a brass or plastic register cap.

The water meter may be equipped with an electronic volume pre-setting device (pre-payment mode). The external view and main dimensions of water meter fitted with pre-setting device are laid down on drawings 1 and 3.

##### 1.2. Transducer

The water meter shall be installed to operate in horizontal position.

The turbine wheel with an axle perpendicular to the water flow direction is tangentially fluxed by water that brings it to turning. The rotary movement of the wheel is transmitted by a magnetic coupling through a tightening plate to the gear transmission and to dry dial counter indicating the measurement results, namely, the volume of water passed.

The adjustment device consists of an adjustment screw that directs the brake jet to the turbine. The access to the adjusting screw is protected by sealed plug.

Drawing 4 presents an exploded diagram of water meter.



### 1.3. Measurement value processing

Electronic board evaluates the sensor output and multifunction electronic 6-digits 128\*64 graphic LCD displays the consumption.

Software SW.V2.2.0

### 1.4. Indication of the measurement results

The hermetically sealed non-resettable totalizing register which indicates up to 99999.99995 m<sup>3</sup> is mounted on top of the body plate. The register comprises five drums in colour black, mechanical counter and a dial indicator (Drawing 5), the last significant drum indicates 1 m<sup>3</sup> per numbered division. The least significant drum moves continuously whilst motion of the other drums from one digit to the next is completed during the time that the drum of the immediately next lowest value completes the last tenth of its revolution. Four dial indicators, marked "x 0.1", "x 0.01", "x 0.001" and "x 0.0001", have a metallic rotating pointer which moves continuously and displays 0.1 m<sup>3</sup>, 0.01 m<sup>3</sup>, 0.001 m<sup>3</sup> and 0.0001 m<sup>3</sup>, respectively, per numbered division. The least dial is sub-divided to indicate 0.00005 m<sup>3</sup>.

The water meter can be equipped by a reed impulse transmitter which can be used for remote reading. The module works with a single inductive sensor.

### 1.5. Optional equipment and functions subject to MID requirements

#### 1.5.1. Data recording and memorizing device

The following data are recorded and stored in the permanent memory (E<sup>2</sup>PROM) of the control unit:

- volume of water used;
- remaining water volume (or credit), i.e. the pre-set (pre-paid) volume minus used volume;
- daily consumption;
- error and alarm messages concerning the measured volumes and hardware (alarms).

### 1.6. Technical documentation

Technical documents and drawings used for assessment purposes:

- ZZZ-15/20 prepaid water meter, general description, design of the instrument, flow designation, 17.09.2022;
- ZZZ-15/20 prepaid water meter, structure and installation dimensions, 10.09.2022;
- ZZZ-15/20 prepaid water meter, technical data, 23.09.2022;
- Assembly drawings No.ZZZ-1 to ZZZ-30, ZZZ-EXPLODED, ZZZ-MÜHÜR, ZZZ-TÜM, 25.09.2022
- ZZZ series prepaid water meter user manual for operation of prepayment device and cards, 27.02.2023;
- ZZZ-15/20 prepaid water meter installation and repair, 10.09.2022;
- Applicable document list, 20.03.2022;
- ZZZ On-screen User Guide, 27.02.2023;
- Information on Software used in ZZZ Prepayment Meters 16.03.2023

Other reference documents on which basis this certificate is issued are stored in a file No.TEHD\_TP-U22-2.



### 1.7. Integrated equipment and functions not subject to MID

#### 1.7.1. Pre-setting device (system used for pre-payment mode)

The water meter may be equipped with an electronic pre-setting device (pre-payment mode).

Electromechanical device consists of ball valve (DN15, DN20), hall pulse transmitter, electromotor type KM 47, RF-enabled smart card and electronic control unit with multifunctional display.

Pre-setting valve is connected with the outlet tube of water meter; the position of the valve (open – closed) is actuated by the electromotor.

In case of pre-payment mode the control electronics is cumulative subtracting the passed volume of water (consumed) from the pre-set (pre-paid) volume as set up by RF-enabled smart card.

When the credit is over, the control electronics start the electromotor by the command “CLOSE” and the electromotor closes the pre-setting valve and stops the water flow. The valve is opened again upon the smart card recharging in Water Administration Office and holding the card close to the meter for a few seconds to load the credit to the meter.

The Water Card (RF-enabled smart card) used in the system enables information exchange between Administration and the meter. While Administration sends credit information to the meter, the meter sends consumption information to Administration.

The messages in local language on the LCD display allow much easier use. Display functions are laid down on drawing 6.

#### 1.7.2. RF Remote Control Unit.

Electronic card TWM ZZZ-A transmits data via radio frequency using LORA signaling technology.

Electronic card TWM ZZZ-B transmits data through TAGs using MIFARE V1.0 technology.

#### 1.7.3. Battery (Lithium, type ER18505H, nominal voltage 3.66V).

## 2. Technical data

### 2.1. Rated operating conditions

#### 2.1.1. Measurand

The volume of water (consumption) passing through the meter, indicated by mechanical dry dial and optionally displayed on the LCD.

#### 2.1.2. Measurement range

The measurement range of the water meter ZZZ-xx and other technical characteristics are presented in table 1:

Table 1

Type	ZZZ-15	ZZZ-20
Nominal diameter, DN	15	20
Ratio $Q_2/Q_1$	1.6	
<b>Ratio <math>Q_3/Q_1</math></b>	<b>80</b>	
Minimum flowrate $Q_1$ , m <sup>3</sup> /h	0.031	0.031
Transitional flowrate $Q_2$ , m <sup>3</sup> /h	0.050	0.050
Permanent flowrate $Q_3$ , m <sup>3</sup> /h	2.5	2.5
Overload flowrate $Q_4$ , m <sup>3</sup> /h	3.125	3.125



Table 1 (continued)

Type	ZZZ-15	ZZZ-20
<b>Ratio <math>Q_3/Q_1</math></b>	<b>100</b>	
Minimum flowrate $Q_1$ , m <sup>3</sup> /h	0.025	0.025
Transitional flowrate $Q_2$ , m <sup>3</sup> /h	0.040	0.040
Permanent flowrate $Q_3$ , m <sup>3</sup> /h	2.5	2.5
Overload flowrate $Q_4$ , m <sup>3</sup> /h	3.125	3.125
<b>Ratio <math>Q_3/Q_1</math></b>	<b>160</b>	
Minimum flowrate $Q_1$ , m <sup>3</sup> /h	0.0156	0.0156
Transitional flowrate $Q_2$ , m <sup>3</sup> /h	0.025	0.025
Permanent flowrate $Q_3$ , m <sup>3</sup> /h	2.5	2.5
Overload flowrate $Q_4$ , m <sup>3</sup> /h	3.125	3.125
Water pressure class	MAP 16	
Maximum admissible pressure	1.6 MPa (16 bar)	
Pressure-loss class	$\Delta P$ 63	
Construction length, mm	190	190
Construction width, mm	98	98
Construction height, mm	122	122

### 2.1.3. Accuracy class (MPE)

The maximum permissible errors are presented in table 2:

Table 2

Type	ZZZ-15	ZZZ-20
Accuracy class	2	
Maximum permissible error (MPE) in lower flow range $Q_1 \leq Q < Q_2$	$\pm 5\%$	
Maximum permissible error (MPE) in upper flow range $Q_2 \leq Q \leq Q_4$	$\pm 2\%$ for water having a temperature $\leq 30\text{ }^\circ\text{C}$ $\pm 3\%$ for water having a temperature $> 30\text{ }^\circ\text{C}$	
Temperature class	T50	
Maximum admissible temperature	50 °C	

### 2.1.4. Environment / influence quantities

Mechanical class:	M1
Electromagnetic class:	E1
Climatic and mechanical class:	B
Ambient temperature:	+5 °C to + 55 °C
Installation:	in a building

## 2.2. Other operating conditions

### 2.2.1. Mounting position of the water meter

The water meter ZZZ-xx can be mounted horizontally.

### **3. Interfaces and compatibility conditions**

The communication interfaces of the water meter are described in section 1.7. of this Appendix.

### **4. Requirements on production, putting into use and utilisation**

#### **4.1. Requirements on production**

At the end of the manufacturing and adjustment process the water meters shall be tested (module D, Directive 2014/32/EU) or verified (module F, Directive 2014/32/EU) according to the requirements of the standard EN ISO 4064-2:2017, section 10.1, at a water temperature ( $20 \pm 10$ ) °C and at the following flowrates with the associated maximum permissible errors:

- between  $Q_1$  and  $1,1 Q_1$ :  $\pm 5 \%$ ;
- between  $Q_2$  and  $1,1 Q_2$ :  $\pm 2 \%$ ;
- between  $0,9 Q_3$  and  $Q_3$ :  $\pm 2 \%$ .

The errors (of indication) observed for each of the above mentioned flowrates shall not exceed the maximum permissible errors.

If all the errors (of indication) of the water meter have the same sign, at least one of these errors shall not exceed one half of the maximum permissible error.

#### **4.2. Requirements on putting into use**

The water meter ZZZ-xx must be installed in accordance with the requirements of the user manual.

The water meter ZZZ-xx must be mounted in a horizontal position and in the direction of water flow according to arrow indicated on the water meter case. The installation must be done by a qualified technician. The straight pipelines installation in upstream and downstream is not necessary (flow profile sensitivity class U0 D0).

### **5. Checking of instruments which are in operation**

#### **5.1. Documents required for the test**

None.

#### **5.2. Special test facilities or software**

Test Mode card is used only by manufacturer for setting device identification number, updating date and time, setting measuring parameters, checking measuring accuracy etc.

#### **5.3. Identification of hardware and software**

Pre-payment and Valve Control Unit:

- identification of hardware: version number is V 2.1.
- identification of software: version number is V 2.2.0

#### **5.4. Calibration / adjustment procedure**

Adjustment procedure and calibration is made only by manufacturer using Test Mode card.



## 6. Security measures

### 6.1. Mechanical seals

The water meter that passed the tests, is provided by sealing marks securing:

- the connection of the water meter head with the cap of adjustment device;
- the pre-setting box.

The location of seals is described in drawing 2.

### 6.2. Software seals

For the purpose of security and verification of communication, all incoming and outgoing data packets are protected with a 96-bit special password for TWM ZZZ-A and a special 128-bit password for TWM ZZZ-B.

## 7. Labelling and inscriptions

### 7.1. Information to be enclosed with the instrument

The following data shall be marked on the water meter:

- number of this EU-type examination certificate;
- manufacturer's name or his trademark;
- type of the water meter;
- year of production and serial number;
- permanent flowrate  $Q_3$  in  $m^3/h$  and ratio  $Q_3/Q_1$  (R..);
- unit of measurement ( $m^3$ );
- maximum pressure lost ( $\Delta P..$ );
- temperature class (T..);
- maximum admissible pressure (MAP..);
- installation orientation letter H (horizontal mounting);
- pipe diameter DN..;
- accuracy class 2.

The flow direction shall be marked on the water meter's body in form of an arrow.

### 7.2. Conformity marking

Each water meter that satisfies the applicable requirement of the Directive 2014/32/EU shall be marked with:

- "CE" marking;
- supplementary metrology marking consisting of the capital letter 'M' and the last two digits of the year of its affixing, surrounded by a rectangle;
- the identification number of the notified body that carried out the conformity assessment (module D or module F according to the Directive 2014/32/EU).

The inscriptions and marking shall comply with the requirements of Article 9, Annex 1 of the Directive 2014/32/EU.



*Appendix to EU type examination certificate No.VM23-01 MI-001, Rev. 0*

**7.3. Designation of trademark on the water meter**



**8. List of drawings annexed to the certificate**

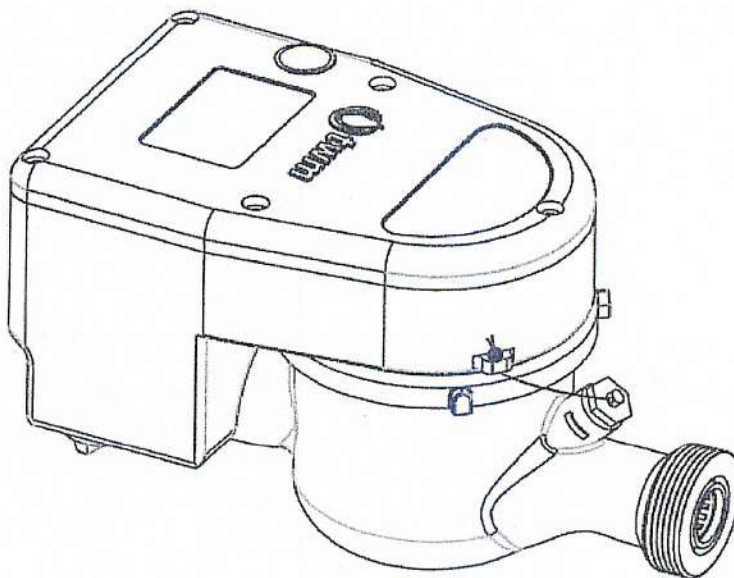
- Drawing 1: Water meter type ZZZ-15, ZZZ-20, trademark Türkoğlu, photo
- Drawing 2: Location of seal of water meter type ZZZ-15, ZZZ-20
- Drawing 3: Main dimensions of water meter type ZZZ-15, ZZZ-20 fitted with pre-setting device
- Drawing 4: Exploded diagram of water meter type ZZZ-15, ZZZ-20
- Drawing 5: Register of water meter type ZZZ-15, ZZZ-20
- Drawing 6: Display functions of water meter type ZZZ-15, ZZZ-20

*Drawing 1: Water meter type ZZZ-15, ZZZ-20, photo*

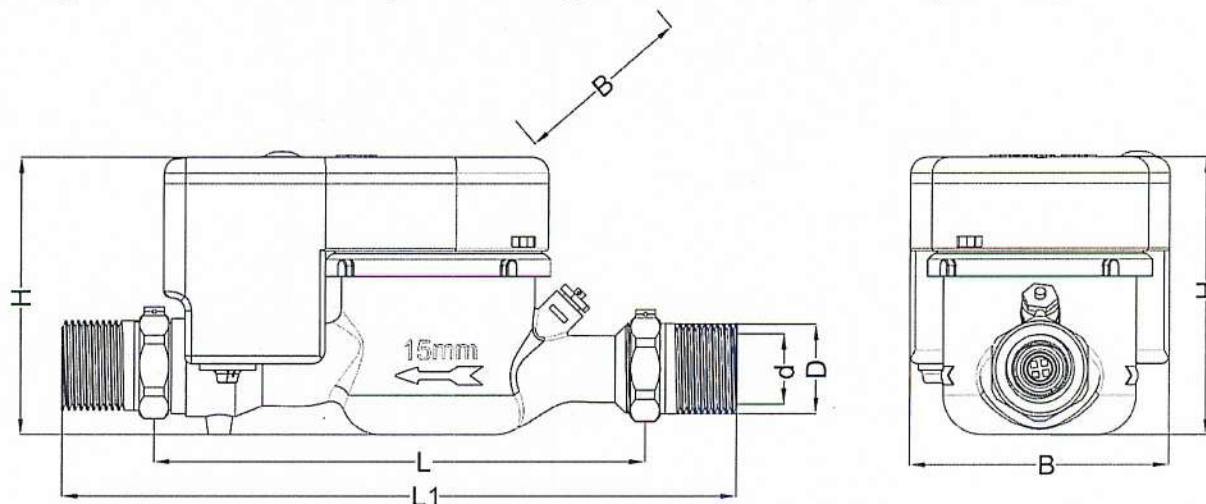




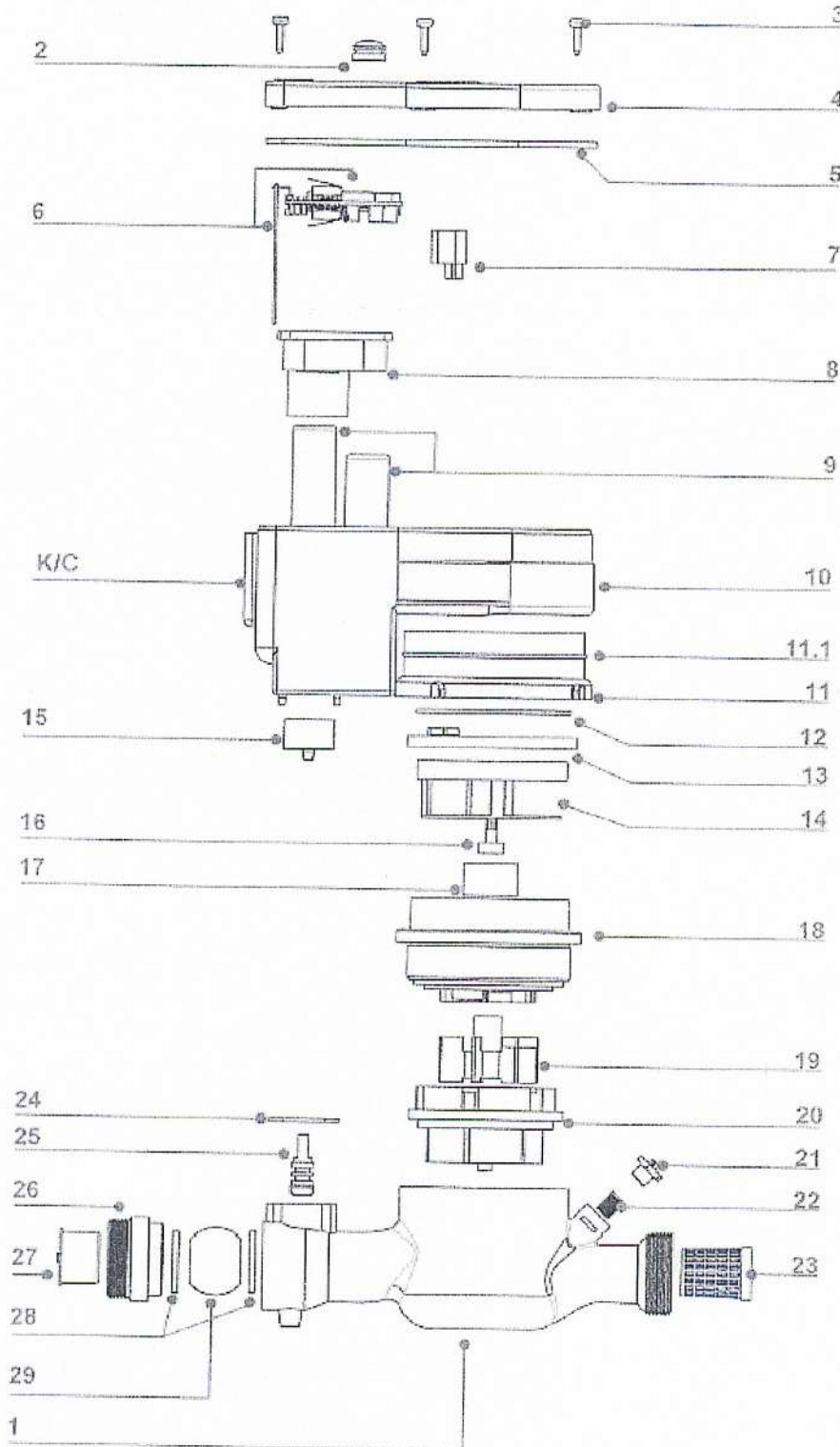
Drawing 2: Location of seal of water meter type ZZZ-15, ZZZ-20



Drawing 3: Main dimensions of water meter type ZZZ-15, ZZZ-20 fitted with pre-setting device



DN	L	L1	B	H	Connection Screw Thread	
					d	D
					mm	
15	190	260	98	122	R 2/4 B	G 3/4 B
20	190	260	98	122	R 3/4 B	G 1 B

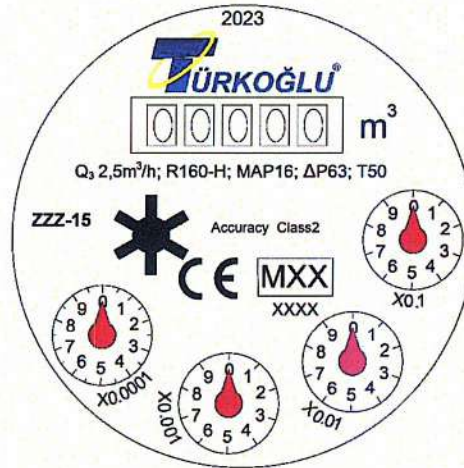
**Drawing 4: Exploded diagram of water meter type ZZZ-15, ZZZ-20**


1	BODY (BRASS)
2	PUSH BUTTON
3	SCREW AND GASKET KIT
4	CASING BOX COVER (PC)
5	CASING BOX GASKET
6	LCD SCREEN
7	PULSE DEVICE
8	MOTOR KM47
9	LITHIUM BATTERY
10	CASING BOX
11	REGISTER CAP (BRASS / PC)
11.1	CAP SEALING GASKET
12	SLIDING GASKET
13	GLASS (PC)
14	REGISTER
15	BATTERY PLUG
16	CENTRAL GEAR
17	ANTI-MAGNETIC METAL RING
18	CLAMPING MATERIAL
19	TURBINE-VANE WHEEL
20	MEASURING CHAMBER
21	ADJUSTING PLUG
22	ADJUSTING SCREW
23	STRAINER / FILTER
24	STEM GASKET
25	STEM OF VALVE
26	UNION OF VALVE
27	CHECK NON-RETURN VALVE
28	SEALS OF VALVE
29	BALL OF VALVE



**Appendix to EU type examination certificate No.VM23-01 MI-001, Rev. 0**

**Drawing 5: Register of water meter type ZZZ-15, ZZZ-20**



**Drawing 6: Display functions of water meter type ZZZ-15, ZZZ-20**

