

## ANNEX III

## WATER METERS (MI-001)

The relevant requirements of Annex I, the specific requirements of this Annex and the conformity assessment procedures listed in this Annex, apply to water meters intended for the measurement of volumes of clean, cold or heated water in residential, commercial and light industrial use.

## DEFINITIONS

Water Meter	An instrument designed to measure, memorise and display the volume at metering conditions of water passing through the measurement transducer.
Minimum Flowrate (Q <sub>1</sub> )	The lowest flowrate at which the water meter provides indications that satisfy the requirements concerning the maximum permissible errors (MPEs.)
Transitional Flowrate (Q <sub>2</sub> )	The transitional flowrate is the flowrate value occurring between the permanent and minimum flowrates, at which the flowrate range is divided into two zones, the 'upper zone' and the 'lower zone'. Each zone has a characteristic MPE.
Permanent Flowrate (Q <sub>3</sub> )	The highest flowrate at which the water meter operates in a satisfactory manner under normal conditions of use, i.e. under steady or intermittent flow conditions.
Overload Flowrate (Q <sub>4</sub> )	The overload flowrate is the highest flowrate at which the meter operates in a satisfactory manner for a short period of time without deteriorating.

## SPECIFIC REQUIREMENTS

**Rated Operating Conditions**

The manufacturer shall specify the rated operating conditions for the instrument, in particular:

1. [F1]The flowrate range of the water.

The values for the flowrate range shall fulfil the following conditions:

$$Q_3/Q_1 \geq 40$$

$$Q_2/Q_1 = 1,6$$

$$Q_4/Q_3 = 1,25]$$

2. The temperature range of the water.

The values for the temperature range shall fulfil the following conditions:

0,1 °C to at least 30 °C, or

30 °C to at least 90 °C.

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The meter may be designed to operate over both ranges.

3. The relative pressure range of the water, the range being 0,3 bar to at least 10 bar at  $Q_3$ .
4. For the power supply: the nominal value of the AC voltage supply and/or the limits of DC supply.

#### Textual Amendments

- F1** Substituted by [Commission Delegated Directive \(EU\) 2015/13 of 31 October 2014 amending Annex III to Directive 2014/32/EU of the European Parliament and of the Council, as regards the flowrate range of water meters \(Text with EEA relevance\)](#).

#### MPE

5. The MPE, positive or negative, on volumes delivered at flowrates between the transitional flowrate ( $Q_2$ ) (included) and the overload flowrate ( $Q_4$ ) is:
  - 2 % for water having a temperature  $\leq 30$  °C,
  - 3 % for water having a temperature  $> 30$  °C.

The meter shall not exploit the MPE or systematically favour any party.

6. The MPE, positive or negative, on volumes delivered at flowrates between the minimum flowrate ( $Q_1$ ) and the transitional flowrate ( $Q_2$ ) (excluded) is 5 % for water having any temperature.

The meter shall not exploit the MPE or systematically favour any party.

#### Permissible Effect of Disturbances

##### 7.1. *Electromagnetic immunity*

- 7.1.1. The effect of an electromagnetic disturbance on a water meter shall be such that:
  - the change in the measurement result is no greater than the critical change value as defined in point 7.1.3, or
  - the indication of the measurement result is such that it cannot be interpreted as a valid result, such as a momentary variation that cannot be interpreted, memorised or transmitted as a measuring result.
- 7.1.2. After undergoing an electromagnetic disturbance the water meter shall:
  - recover to operate within MPE, and
  - have all measurement functions safeguarded, and
  - allow recovery of all measurement data present just before the disturbance.
- 7.1.3. The critical change value is the smaller of the two following values:
  - the volume corresponding to half of the magnitude of the MPE in the upper zone on the measured volume;
  - the volume corresponding to the MPE on the volume corresponding to one minute at flowrate  $Q_3$ .

##### 7.2. *Durability*

After an appropriate test, taking into account the period of time estimated by the manufacturer, has been performed, the following criteria shall be satisfied:

- 7.2.1. The variation of the measurement result after the durability test, when compared with the initial measurement result, shall not exceed:
- 3 % of the metered volume between  $Q_1$  included and  $Q_2$  excluded;
  - 1,5 % of the metered volume between  $Q_2$  included and  $Q_4$  included.
- 7.2.2. The error of indication for the volume metered after the durability test shall not exceed:
- $\pm 6$  % of the metered volume between  $Q_1$  included and  $Q_2$  excluded;
  - $\pm 2,5$  % of the metered volume between  $Q_2$  included and  $Q_4$  included for water meters intended to meter water with a temperature between 0,1 °C and 30 °C,
  - $\pm 3,5$  % of the metered volume between  $Q_2$  included and  $Q_4$  included for water meters intended to meter water with a temperature between 30 °C and 90 °C.

### **Suitability**

- 8.1. The meter shall be able to be installed to operate in any position unless clearly marked otherwise.
- 8.2. The manufacturer shall specify whether the meter is designed to measure reverse flow. In such a case, the reverse flow volume shall either be subtracted from the cumulated volume or shall be separately recorded. The same MPE shall apply to both forward and reverse flow.

Water meters not designed to measure reverse flow shall either prevent reverse flow or shall withstand an accidental reverse flow without any deterioration or change in metrological properties.

### **Units of Measurement**

9. Metered volume shall be displayed in cubic metres.

### **Putting into Use**

10. The Member State shall ensure that the requirements under points 1, 2 and 3 are determined by the utility or the person legally designated for installing the meter, so that the meter is appropriate for the accurate measurement of consumption that is foreseen or foreseeable.

### **CONFORMITY ASSESSMENT**

The conformity assessment procedures referred to in Article 17 that the manufacturer can choose between are:

B + F or B + D or H1.