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conformity assessment procedures mentioned in article 17 of Directive
2014/32/EU, after having established that the measuring instrument meets
the applicable requirements of Directive 2014/32/EU, to:

Manufacturer

BERMAD CS. LTD.
Evron 2280800
Israel

Measuring instrument

An electromagnetic **water meter**
Type : MUT7000 or M10

Further properties are described in the annexes:

- Description T12567 revision 1;
- Documentation folder T12567-1.

Valid until

13 March 2033

Remarks

- This revision replaces the previous revision;
- The documentation folder is not changed.

Issuing Authority

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1 General information on the water meter

All properties of the water meter, whether mentioned or not, shall not be in conflict with the legislation.

1.1 Essential parts

Description	Documents	Remarks
Measurement sensor	12567/0-04 12567/0-07	The tube is made of an insulating material. Through the tube, the 3 electrodes are in contact with the liquid. The flow sensor is equipped with a magnetic circuit containing 2 electromagnetic coils.
Calculator and indicating device	12567/0-04 12567/0-05 12567/0-06 12567/0-07	Signal converter and meter reading. Used to drive the magnetic spools and convert the electrode voltage to a flow rate.

1.2 Essential characteristics

1.2.1 Flow characteristics

Meter size	Ø in- and outlet [mm]	Flow rates [m ³ /h]				Max. ratio Q3/Q1
		Minimum Q1	Transitional Q2	Permanent Q3	Overload Q4	
DN80/3"	80	0,25	0,4	100	125	400
DN100/4"	100	0,4	0,64	160	200	400

Please note that the flow rates Q1, Q2, Q3 and Q4 can be freely chosen as long as:

- Values mentioned for Q1 and Q2 are minimum values and the ratio Q2/Q1 = 1,6;
- Values mentioned for Q3 and Q4 are maximum values and the ratio Q4/Q3 = 1,25;
- The ratio Q3/Q1 is at least 40.

1.2.2 Water temperature class

- T50 (+0,1 °C / +50 °C)

1.2.3 Maximum admissible pressure (MAP)

- 1,6 MPa (16 bar)

1.2.4 Orientation limitation

The sensor can be used in horizontal, vertical or diagonal position (all positions).

1.2.5 Flow profile sensitivity class

- U0 and D0 (0 x DN upstream and 0 x DN downstream)

1.2.6 Reverse flow

The sensor is also designed to measure reverse flow. The reverse flow is recorded on a separate volume totalization. Also for reverse flow another pulse output is used.

1.2.7 Pressure loss class

- Δp 16 (0,16 bar)

1.2.8 Temperature range ambient

- -25 °C / +55 °C

1.2.9 Environmental classification
 - M1 / E1 / O (installed outdoors)

1.2.10 Power supply
 The water meter is powered by means of:
 - A replaceable battery of 3,6 V (operating range: 2,9 - 3,7 V);
 - DC mains 10,8 – 13,2 V.

The user can choose, when installing, which power supply to use. Herewith a combination of battery and DC mains is allowed.

1.2.11 Measuring principle
 The magnetic field, generated through the 2 magnetic coils, induces a voltage across the flowing (conductive) liquid (Faraday's law for conductors moving through a magnetic field).
 This induced voltage is measured with the 2 electrodes and is directly proportional to the flow speed. By taking into account the pipe dimensions the flow rate can be calculated, displayed and outputted. By integrating over time the total measured volume can be calculated and displayed.
 The other electrode is used to fix the voltage reference to ground.

1.2.12 Operation and presentation of legal data
 The meter is equipped with an electronic LCD display and can be operated by swiping a magnet in correspondence of a magnetic reed installed on the electronic board. The display has two lines which can be used for visualization of the totalizer and other options through determinant gestures of the magnet.
 The display register is built up as followed, where the volume amount in whole cubic meters are presented at the first line and the decimals of the cubic meters (after the comma) are presented at the second line.

The display register is built up as followed:

Meter size	Indicating range (minimum value) [m ³]	Verification scale interval (minimum resolution) [m ³]
DN80; DN100	999999,999	0,00001

The following volume totalizers are used:

1. Total positive totalizer (T+)
2. Total negative totalizer (T-)
3. Partial positive totalizer (P+)
4. Partial negative totalizer (P-)

When the maximum indicating range of the volume totalization is reached, the indicating range will continue measuring starting from zero cubic meter.

1.2.13 Accountable alarms
 During the measuring process the calculator and indicating device detects automatically if a fault condition occurs and eventually stops the measurement reporting an alarm indication on the display.

1.2.14 Software specification (refer to WELMEC 7.2):

- Software type P;
- Risk Class C;
- Extension D, while extensions L, T and S are not applicable.

Identification	Software versions	CRC Checksum(*)	Remarks
Bootloader	1.06	b4F9C9Ab	-
Legally relevant firmware	1.08	AC406F7C	-

Note: (*) The checksum is stated as a hexadecimal value.

The software version and checksum are shown after powering up the device or can be check by bringing the magnet close to the reed for 5 seconds. Bootloader and firmware version are shown as the third and fourth screen after entering the menu system of the meter.

1.3 Essential shapes

1.3.1 Markings

See documentation number 12567/0-01 for an example. The following inscriptions shall be clearly marked on the water meter:

- CE marking including the supplementary metrological marking (M + last two digits of the year of its affixing);
- Notified Body identification number, following the supplementary metrological marking;
- This EU-type examination certificate number 12567;
- Manufacturers name, registered trade name or trade mark;
- Manufacturers postal address;
- Type;
- Year of manufacture and a serial number;
- The permanent flow rate Q3;
- The ratio between Q3 and Q1. This may be indicated as R followed by the ratio;
- The maximum working pressure, indicated as MAP followed by the max. pressure;
- Maximum water temperature, indicated as T50;
- Environmental classification;
- Electromagnetic environmental classification;
- For replaceable battery: The latest date by which the battery shall be replaced.

1.3.1 Further inscriptions

- An arrow indication for the positive direction of the water flow is placed on the measurement sensor.
- For clarification of the totalizers, the following is stated on the name plate:
 - T = Non-resettable
 - P = Resettable

1.3.2 EMI protection measures

- Grounding of the measurement sensor;
- Shielded cables of the I/O cables;
- Grounding of the shielded I/O cables at the receiving side.

1.4 Conditional parts

1.4.1 Housing

The housing of the meter (sensor and calculator and indicating device) is monolithic and made of plastic

Optionally a utility or installation seal may be used for securing housing against opening and access to the battery and cable connections.

1.4.2 Bluetooth and RS485 communication

The meter is also equipped with Bluetooth and RS485 communication channels, through which it is possible to view parameters and flow data (not legally relevant) and set the parameters of the instrument (not metrologically relevant).

1.5 Conditional characteristics

1.5.1 Programming

All parameters that influence the determination of the results of measurements are protected on the EEPROM. These can only be changed if a jumper is placed inside the electronics unit.

1.6 Conditional shapes

1.6.1 Measurement tube

The measurement tube is constructed so that the combination of material and wall thickness is such that the influence due to changing liquid pressure is negligible.

1.7 Non essential parts

The following outputs can be used, where in case of dispute the display of the indicating device forms the decisive indication of the water meter:

- Pulse output cable can be used for forward and reverse flow;
- Modbus/RS485 output cable.

2 Seals

The following seals are applied:

- The markings are fixed to the water meter and secured against removal by seal or it will be destroyed when removed.
- After removing the security jumper, the housing is secured against opening by seals that will be destroyed when removed and tamper proof caps. See documentation number 12567/0-02.
- Optionally an utility or installation seal may be used for securing housing against opening and access to the battery and cable connections. See documentation number 12567/0-03.

3 Conditions for conformity assessment

- At the initial verification the performance of the water meter has to be determined at least at Q1, Q2 and Q3.
- Bi-directional flow measurement
During conformity assessment it is sufficient to verify a bi-directional meter only in one direction.
- At least one magnetic is firmly attached to the meter by wire to operate the meter.
- The correct parameters shall be set by the manufacturer.
- The pulse value (if used) can be set by the manufacturer or user. This should be suitable for the application and should not exceed the maximum frequency of 100 Hz.