

Issued by NMI Certin B.V.,
designated and notified by the Netherlands to perform tasks with respect to conformity modules 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 Meter Italia S.p.A.
Via A. Grandi, 39
41033 Concordia s.S. (MO)
Italy

Measuring instrument **A Diaphragm Gas Meter**

Type : MGxx or Ph6 Gxx or EGxx or Ph6 Gxx SMART

Manufacturer's mark or name : Meter Italia S.p.A.

Destined for the measurement of : Gas volume

Accuracy class : Class 1,5

Environment classes : M2 / E1

Temperature range : - See description §1.2.1

Location : Closed

G-value	Q _{max} [m ³ /h]	Q _{min} [m ³ /h]	Q _t [m ³ /h]	V [dm ³]
10	16	0,10	1,6	6
16	25	0,16	2,5	6

Further properties are described in the annexes:
– Description T10495 revision 5;
– Documentation folder T10495-4.

Valid until 17 December 2022

Remarks This revision replaces the earlier versions, including its documentation folder.

Issuing Authority **NMI Certin B.V., Notified Body number 0122**
14 July 2016



C. Oosterman
Head Certification Board

1 General information about the gas meter

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

The meter is executed as follows:

- A gas meter with a mechanical register, indicating the volume at metering conditions, conform paragraph 2.1 of ANNEX IV (MI-002).
- A gas meter with an electronic register (EG or SMART), indicating the volume at base conditions only, conform paragraph 2.2 of ANNEX IV (MI-002).

1.1 Essential parts

Description	Documentation	Remarks	
		Manufacturer	Material (type name)
Construction	10495/0-02	-	-
Diaphragm	10495/0-03	TESI EFFBE	Rubber coated polyester (NBR) Rubber coated polyester (NBR)
Valve and valve seat	10495/0-03	Tromaplast SMI	Fenolic resin and graphite (Vyncolit) Fenolic resin and graphite (Delgra)

1.2 Essential characteristics

- 1.2.1 See EU-type examination certificate no. T10495 Revision 5 and the characteristics mentioned below:

Type	T _{min} [°C]	T _{max} [°C]
MG10 Ph6 G10	-25	+40
EG10 Ph6 G10 SMART	-25	+55
MG16 Ph6 G16	-25	+55
EG16 Ph6 G16 SMART	-25	+55

1.3 Essential shapes

- 1.3.1 The nameplate is bearing at least, good legible, the following information:
- CE marking including the supplementary metrological marking (M + last 2 digits of the year in which the instrument has been put into use);
 - Notified Body identification number, following the supplementary metrological marking;
 - EU-type examination certificate no. T10495;
 - manufacturer's name, registered trade name or registered trade mark;
 - manufacturer's postal address;
 - identification mark or name of the manufacturer;
 - serial number of the meter and year of manufacture;
 - Q_{max} , Q_t and Q_{min} ;
 - cyclic volume;
 - maximum working pressure p_{max} ;
 - ambient temperature range;
 - accuracy class;
 - base temperature (t_b) (EG and SMART only);
 - specific centre temperature (t_{sp}) (EG and SMART only);
 - base pressure (P_b) (EG and SMART only);

In case of an EG or a SMART meter the data may also be presented on the display. Examples of the markings are shown in documents no. 10495/5-01 and 10495/5-02.

This measuring instrument was previously placed on the market under the name "Sacofgas 1927 S.p.A."

- 1.3.2 Sealing: see chapter 3.

1.4 Conditional parts

- 1.4.1 Construction
In addition to the essential parts as mentioned at 1.1, the meter contains at least the following conditional parts:
- housing;
 - transmission;
 - register.

The meter can also be provided with low frequency impulse output.

- 1.4.2 Housing
The gas meter has a housing, which has sufficient tensile strength. The cover is made of steel sheet, the lower and upper case are connected with each other by a clamp with sealant in between. Examples of the housing are stated in document no. 10495/0-02.

1.4.3 Transmission

Mechanical register

The transmission between the measuring part and the register is executed via a fixed mechanical coupling.

Electronic register

The transmission between the measuring part and the register is executed via a magnetic encoder double pulse system consisting of a wheel with magnets and two Reed switches, see document no. 10495/1-08. A third Reed switch functions as an anti-tamper switch.

The pulse transmission board houses the temperature sensor. See documents 10495/1-16 and 10495/1-17.

1.4.4 Register

Mechanical register

The indication takes place in m³, by at least 6 drums before the comma and 2 drums after the comma. In drawing no. 10495/0-04 an example of the register is presented. The counter is adjustable via an adjusting wheel. Possible adjustment gears are given in document no. 10495/0-07. The register is connected to the upper case with two screws.

Electronic register

See chapter 2.

1.4.5 Low frequency impulse output (optional)

Mechanical register

In addition to the register a low frequency impulse output can be mounted to the meter. The pulse factor of the impulse output shall be indicated on the type plate.

Electronic register

The meter has a programmable output for base condition flow rate repetition, a second output can be used as a signal for diagnostics, or can be configured as the first one.

1.5 Conditional shapes

Connection

The meter is executed with a double pipe connection.

The inside diameter of the connections is at least 40 mm for G16 meters.

The inside diameter of the connections is at least 32 mm for G10 meters.

The distance between the middle of the in- and outlet connection is 280 mm maximally.

1.6 Pulse generator Conditional characteristics (electronic index)

1.6.1 Programming

Change of metrological parameters is protected by a programming button, password or key identification.

An exception is the converted main totalizer, which only can be changed after pressing the programming button.

In the normal situation the programming button is not activated and only accessible after breaking one or more metrological seals.

If the programming switch is not activated, parameters declared as protected can be changed after password or key-identification.

See further paragraph 9 "Device configuration" of document no. 10495/3-04.

1.6.2 Adjustment

The electronic register is adjustable via software correction. The meter is corrected with a multi point correction. Four correction factors are foreseen; F1 for Q_{min} , F2 for 0,1 Q_{max} , F3 for 0,7 Q_{max} and F4 for Q_{max} . In between the correction factors a linear interpolations will take place.

1.7 Non-essential parts

1.7.1 Reverse stop for preventing registration in reversed flow direction.

1.7.2 One pressure measuring point (inlet pressure).

1.7.3 Maximal two temperature tappings for measuring the gas temperature.

1.7.4 2 digital outputs (optional)

2 Electronic register

In case of the EGxx and the Ph6 Gxx SMART the meter will be equipped with an electronic register instead of a mechanical register.

2.1 Essential parts

Description	Documentation	Manufacturer	Type	Remarks
Display/CPU board	10495/1-01 10495/1-02			-
Pressure transmitter	10495/1-03 10495/3-03	BCM NWT	EPT1020 EPT0820	-
Temperature transmitter	10495/1-04	Texas Instruments	TMP112	Electronics Integrated Sensor
Input/output board	10495/1-11 10495/1-12			*

* To the cable connecting both the temperature transmitter and the pulse transmitter to the input/output board a ferrite has to be applied with the following characteristics: 83 Ω @ 25 MHz; 165 Ω @ 100 MHz with 1 turn.

2.2 Essential characteristics

2.2.1 Software specification (refer to WELMEC 7.2):

- Software type P;
- Risk Class C;
- Extension L, T, S and D.

Software version	Identification number (checksum)	Application	Remarks
491104 rel. x.1	0xBC79	Gas meter	Legally relevant
491104 rel. 1.x	0x05DF	Gas meter	Boot loader

Remark: The software version and checksum can be read on the display by scrolling to System info under the Configuration menu. (See paragraph 7.1 of document no. 10495/3-04).

2.2.2 Conversion

The conversion is performed according to the following formula as stated below:

$$V_b = V \times \frac{p_{abs}}{p_b} \times \frac{273,15 + t_b}{273,15 + t}$$

Symbol	Represented quantity	Unity
V_b	volume at base conditions	m ³
V	volume at measurement conditions	m ³
p_{abs}	absolute pressure at measurement conditions	bar
p_b	absolute pressure at base conditions	bar
t	gas temperature at measurement conditions	°C
t_b	temperature at base conditions	°C

2.2.3 Pressure range

The pressure range is: $0,8 \leq p_{abs} \leq 1,5$ bar

2.2.4 Presentation of legal data

The legal data is presented via a special menu by pressing the keys on the front panel. The menu structure, keyboard, display and (alarm) indicators are described in paragraph 6 "User's interface", 7 "Menu description" and 11.3 "Diagnostic" of document 10495/3-04.

2.2.5 Accountable alarms

The module has to be programmed such, that accountable alarms will be generated if extreme values are measured by the module or if otherwise a defect arises. Such conditions cause the registration of the volume at base conditions in a specific alarm register. During the alarm an event will be generated in the event logger.

The alarm indication can be reset by using the keyboard and entering the Metrological Events Archive under the Archives menu (see paragraph 7 "Menu description" of document no. 10495/3-04). It's also possible to clear an alarm by remote reading of the diagnostic register or the Metrological Events Archive. However, it is not possible to clear an alarm as long as the cause of the alarm is still present.

2.2.6 Service mode menu

For testing purposes there is a separate menu where the following items are presented:

- Converted volume
- Actual volume
- Temperature
- Pressure
- Various other items. See document no. 10495/3-04

2.3 Conditional parts

2.3.1 Housing

The module has a synthetic housing, which has sufficient tensile strength. For an example of the housing see document no. 10495/1-07.

2.3.2 LCD

The LCD is used for the presentation of legal data and (accountable) alarms. See further the documentation no. 10495/1-01 and 10495/1-02 (Display/CPU board).

2.3.3 Battery board

The module is powered by 2 lithium batteries (3,6 V dc, 26 Ah, D-size). The battery lifetime is approximately 8 years. The battery can be changed on field without breaking a metrological seal. When 10% or less of the lifetime is remaining a low battery alarm will be indicated. A back up battery (3,6 V dc, 2 x AA size) is dedicated to metrology and relevant data storage. The lifetime of this battery is at least 15 years and it cannot be removed. See further the documentation 10495/1-09 and 10495/1-10.

2.3.4 Serial communication (optional)

The module is equipped with an optical and RS232/RS485 communication port. Use of the serial communication may not influence the working of the module. In the normal situation (also see paragraph 1.6.1) the essential parameters needed for the conversion cannot be changed via the communication ports.

2.3.5 GSM/GPRS (optional)

The GSM/GPRS modem is integrated in the Input/output board and equipped with an internal or external stilo antenna. See further documentation no. 10495/1-11 and 10495/1-12.

2.3.6 Radio transmission board (optional)

The module is optional equipped with a Radio transmission board with an internal or external antenna. See further documentation no. 10495/1-14 and 10495/1-15.

3 Seals

The following items of the meter are sealed:

Mechanical register

- The entrance to the register is sealed with one or more seals.

See drawing no. 10495/0-05 for an example of the sealing.

Additionally the pressure tap can be sealed with a utility seal.

Electronic register

- the nameplate with the register;
- the register with the housing;
- the Display/CPU board covering plate;
- the frontal plate covering the keys and internals of the gas meter;
- the connection (flat cable) between the Display/CPU board and the Modem & I/O board;
- the connection (flat cable) between the transmission and the Modem & I/O board;
- the plate covering the access to the terminals of the pressure- and temperature transmitter;
- the plate covering the access to the pressure- and temperature transmitter.

See document no. 10495/5-03 for an example of the sealing.

Additionally the pressure tap can be sealed with a utility seal.