EU TYPE EXAMINATION CERTIFICATE
No. PL-MI002-1450DO0003

Instytut Nafty i Gazu – Państwowy Instytut Badawczy (INiG-PIB)
hereby states that the measuring instrument:

Diaphragm gas meter

Type:	**EM-mGx** Models: EM-mG1,6; EM-mG2,5; EM-mG4
Produced for:	**ELEKTROMETAL S.A.** **ul. Stawowa 71** **43-400 Cieszyn, Polska**
in:	**ELEKTROMETAL S.A.** **ul. Stawowa 71** **43-400 Cieszyn, Polska**

meets the essential requirements covered by the Directive 2014/32/UE of The European Parliament and of the Council of 26th February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of measuring instruments (OJEU of 2014 L 96) on the basis of EU type examination according to Annex IV (MI-002) of Directive 2014/32/EU and at the same time the requirements of Regulation issued by Minister of Development of 2nd June 2016 on requirements for measuring instruments, Annex no. 2 (Polish Journal of Laws of 2016 item 815)

dokument odniesienia:	**PN-EN 1359:2017-11 [EN 1359:2017]**
raporty z badań:	10/GM/2022, 11/GM/2022, 2/GM/2023, 41/GM/2023 issued by: Zespół Laboratoriów Badawczych Sieci, Instalacji i Urządzeń Gazowych Instytutu Nafty i Gazu - Państwowego Instytutu Badawczego
stron:	**5**
certyfikat ważny do:	**6th August 2033**

Certification Office Manager
Magdalena Swat

Instytut Nafty i Gazu * Państwowy Instytut Badawczy *

Gas Engineering Division Deputy Director
of Instytut Nafty i Gazu - Państwowy Instytut Badawczy
Ewa Kukulska-Zając

1st issue, Kraków, 07-08-2023

INSTYTUT NAFTY I GAZU – Państwowy Instytut Badawczy
PL 31-503 Kraków, ul. Lubicz 25 A
tel.: +48 12 617 76 00
www.inig.pl office@inig.pl

BIURO CERTYFIKACJI
tel.: +48 12 617 76 38
e-mail: swat@inig.pl

PCA Polskie Centrum Akredytacji
Certyfikacja Wyrobów
AC 010

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Appliance

Diaphragm gas meter

Models

EM-mG1,6; EM-mG2,5; EM-mG4

Design of the instrument

Diaphragm gas meter type EM-mGx consists of three units: measurement unit, case and index.

The outer metal casing of the gas meter is made of 0.8 mm thick galvanised deep-drawn steel. The upper and lower cases, are secured with a stainless steel connecting band.

The parts of the measuring unit are made of POM plastic with high dimensional and chemical stability. The valve seat and meter's slide valves are made of phenolic resin with precision-fit valve seats.

Two diaphragms, forming a total of 4 chambers, are moved by the pressure of the flowing gas. They are connected to the arms that move the steel shaft, creating a reciprocating motion. At the other end of the steel shaft there are flags connected to the connecting mechanism and crank, transferring the reciprocating motion to the smooth rotation of the central shaft. Replacing the connecting mechanism allows you to adjust the valve timing to achieve a flat error curve. The rotations of this mechanism are transmitted to the index by means of a magnetic clutch, and the consumption volume is read by means of an 8-cylinder display. The cams of the crankshaft mechanism move the slide valves of the gas meter, the slide valves of the gas meter are also moved, ensuring the stability of the valve timing of the meter. The meter's precision parts are moulded from a special grade of POM for low noise and low wear.

Technical data

Technical documentation - list of figures	
Gas meter	Fig No.
Gazomierze EM-mGx	101-10-111

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Gas meter trade name	Gas meter size	Maximum flowrate Q_{max}	Minimum flowrate Q_{min}	Cyclic volume V	Distance between connections
-	-	m^3/h	m^3/h	dm^3	mm
EM-mG1,6	G1,6	2,5	0,016	1,2	110 or 130
EM-mG2,5	G2,5	4	0,025		
EM-mG4	G4	6	0,04		

Gas meter class 1,5
Mechanical Class M1
Electromagnetic Environment Class E1
Maximum operating pressure p_{max} .. 50 kPa (0,5 bar)
Ambient temperature range t_m ..... -25÷55°C
Gas temperature range t_g ..... -25÷55°C
Storage temperature range t_s ..... -30÷60°C
Resistance to high ambient temperature T (at 10 kPa /0,1 bar according to EN 1359:2017)
Index measuring range ..... 99999,999 m^3
1 impulse value ..... 0,01 m^3
Nominal cyclic volume V ..... 1,2 dm^3
Distance between connections..... 110 mm or 130 mm
Size of connection..... DN32
Membrane type ..... Nitta (material SYREX SD-33)
Family of gases ..... Gaseous fuels: family 1, 2 & 3 acc. to EN 437
Installation conditions ..... In enclosed spaces (indoors or outdoors) with condensation on the casing

Gas meters are equipped with devices to prevent backflow registration and are resistant to neodymium magnets.

Interfaces and compatibility conditions

Gas meter may be connected to reed relay low frequency impulse transmitter (LF). 1 impulse value is 0,01 m^3.

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Requirements on production, putting into use and utilisation

Production.
During production the following checks and inspections are being carried out:

- Assortment and quantity control of deliveries 100%; quality control according to material index card;
- Inter-operational checks including dimensional check, 100% initial calibration, torque check of connections of the first piece, then every 500th piece;
- Final inspection - 100%: external tightness check, check of marking, functional check, calibration.

Final tests consists also of checking the permissible errors of indication and pressure absorption in accordance with paragraph A.2.1, A.2.2 of EN 1359:2017.

Installation, utilisation and repair.
Requirements concerning installation, utilisation and repair are described in operation and maintenance manual provided with the gas meter.

Control of the measuring tasks of the instrument in use

Gas meters are subject to conformity assessment according to directive 2014/32/EU. In order to make a proof of performed conformity assessment the appropriate manufacturer's symbols are being stamped. Separate national legislation determine the date when gas meter should be submitted to next legalization after completion of conformity assessment.

Security measures

Security:
A plastic metrology seal located in the recess of the index's case, which prevents tampering with the index without leaving visible traces.

Marking requirements

Each gas meter should bear a marking plate on index or as a separate plate having at least the following information:

a) identification mark or manufacturer's name;
b) CE mark, additional metrology marking, identifying number of notified body;
c) accuracy class of the meter;
d) meter's serial number and year of production;
e) maximum flowrate Q_{max} (m^3/h);
f) minimum flowrate Q_{min} (m^3/h);
g) maximum working pressure, p_{max} (bar) (or kPa);
h) nominal cyclic volume, V (dm^3);
i) number and issue year of standard of object;
j) ambient temperature range, if higher than -10°C to 40°C;
k) gas temperature range, if different from ambient temperature range;
l) additional marking required by legislation, e.g. the number of type examination certificate;

If gas meter is resistant to high ambient temperature it should be additionally mark with „T" symbol.

Marking should be visible and permanent in normal operating conditions of gas meter.

If gas meter is intended to use outdoors, it should be additionally marked with the symbol H3.

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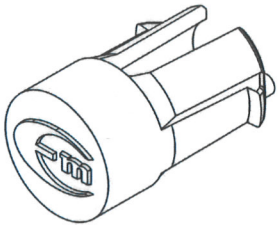
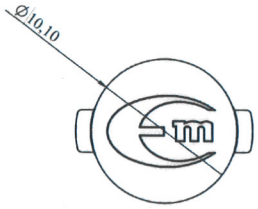
Labelling and inscriptions

Gas meter marking example





Manufacturer's mark

Kraków, 07-08-2023

Certification Office Manager
Magdalena Swat