

EU TYPE EXAMINATION CERTIFICATE

Nr PL-MI002-1450DO0001

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

Diaphragm gas meters

type: UG G1,6 iSmart2 V=1,2 dm³
UG G2,5 iSmart2 V=1,2 dm³;
UG G4 iSmart2 V=1,2 dm³; V=2,2 dm³
UG G6 iSmart2 V=2,4 dm³

being manufactured by: **APATOR METRIX S.A.**
ul. Grunwaldzka 14
83-110 Tczew, Polska

in: **APATOR METRIX S.A.**
ul. Grunwaldzka 14
83-110 Tczew, 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)


document of reference: **PN-EN 1359:2017-11 [EN 1359:2017]**
1/GM/2023, 3/GM/2023, 30/GM/2023, 37/GM/2023,
40/GM/2023, 45/GM/2023, 46/GM/2023

test reports: issued by:
Zespół Laboratoriów Badawczych Sieci, Instalacji i Urządzeń Gazowych Instytutu Nafty i Gazu – Państwowego Instytutu Badawczego

pages: **7**

certificate is valid until: **12th January 2033**

Certification
Office Manager


Magdalena Swat



Kraków, 24-08-2023

3rd issue, replaces 2nd issue of 20-02-2023

Director of Instytut Nafty i Gazu
Państwowy Instytut Badawczy


Jacek Jaworski



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



AC 010



Appliance

Diaphragm gas meters

Models

UG G1,6 iSmart2	V=1,2 dm ³	
UG G2,5 iSmart2	V=1,2 dm ³ ;	
UG G4 iSmart2	V=1,2 dm ³ ;	V=2,2 dm ³
UG G6 iSmart2	V=2,4 dm ³	

Design of the instrument

The gas meter consists of four main assemblies:

- measuring unit,
- housing,
- electronic index
- internal valve (optional).

Measuring unit

Consists of two measuring chambers containing diaphragms, a distribution channel and a timing mechanism comprising sliders, swinging levers and a mechanism generating an alternating magnetic field detected by Hall sensors.

Gas meter housing

It consists of an upper and lower casing assembly connected tightly by a clamp.

A sleeve and an external magnet sub-assembly are embedded in the upper housing assembly.

Electronic index

The index has a diagnostic system and, in addition to volume measurement, supervises the gas meter in the following:

- interference detection (magnetic field, removing the index cover),
- valve status - closed/open,
- valve operation error,
- reverse flow detection,
- number of days until planned replacement if the battery,
- enables temperature correction of the volume,
- enables software update,
- enables displaying as default the uncorrected volume Vc or the corrected volume Vb.

Gas valve

The gas meter can be optionally equipped with a built-in internal valve.

The valve is controlled by a procedure ensuring safety level SIL2. The opening of the valve is preceded by a procedure that takes into account the filling of the system and monitors for potential uncontrolled gas leakage. If an abnormality is detected, the valve will remain closed.



Technical data

Technical documentation - list of figures

Gas meter	Fig No.
Gas meter UG1,2 iSmart2	SN0000I2.2V04
Gas meter UG2,2 iSmart2 in case UG-EN	SY0000I2.13
Gas meter UG2,2 iSmart2 in case UG-MG	SY00MG12.13
Gas meter UG2,2 iSmart2 in case UG-NL	MM0000I2.22
Gas meter UG2,2 iSmart2 in case UG-DE	MM0000I2.25
Gas meter UG2,4 iSmart2 in case UG-FL2	MS0000iS2.04

Gas-meter trade name	Gas-meter size	Maximum flowrate Q_{max}	Minimum flowrate Q_{min}	Cyclic volume V
-	-	m ³ /h	m ³ /h	dm ³
UG G1,6	G1,6	2,5	0,016	1,2
UG G2,5	G2,5	4	0,016 or 0,025	1,2
UG G4	G4	6	0,016 (only 1,2 dm ³) or 0,025 (only 1,2 dm ³) or 0,04	1,2 or 2,2
UG G6	G6	10	0,06	2,4

V = 1,2 dm³

Case version	Distance between connections
UG-DE	250 mm
UG-EN	0 mm or 130 mm or 152,4 (6") mm or 160 mm
UG-F	0 mm or 100 mm or 110 mm or 130 mm
UG-MG	130 mm or 152,4 (6") mm or 160 mm
UG-NL	220 mm





V = 2,2 dm ³	
Case version	Distance between connections
UG-DE	250 mm
UG-EN	0 mm or 130 mm or 152,4 (6") mm or 160 mm
UG-MG	110 mm or 130 mm or 152,4 (6") mm or 160 mm
UG-NL	220 mm
V = 2,4 dm ³	
UG-FL2	0 mm

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	-25÷60°C
Resistance to high ambient temperature	T (przy 10kPa /0,1 bar/ acc. EN 1359:2017)
Index measuring range	99999,9999 m ³
Nominal cyclic volume V	1,2 dm ³ or 2,2 dm ³ or 2,4 dm ³
Nominal size of connections	DN20 - DN25
Membrane type	EFFBE (401617P) or SMI (CSQ3)
Family of gases	Gaseous fuels: family 1, 2 & 3 acc. to EN 437
Software version number.....	02.05.XX.YY*
Legally relevant software checksum..	cde87c04d8c3c93868600fb718d7e965

* The software identifier is easily available on the meter's display under section 'Meter infor.'
Software version labelling is divided into four parts according to the following structure:
VV.MM.XX.YY, where
VV – HW configuration – always 02 for iSmart2 868MHz eMUCs
MM – legally relevant part (Metersrv) – requires MID update – MD5 checksum on the display
XX – project configuration
YY – application version

It was confirmed that the gas meters meet the requirements of the PN-EN 16314:2013-11 standard and WELMEC Guide 7.2:2022 (p. 4, 8, 9,10). The index software fulfills the basic requirements for type P, and requirements for extension: D, T and S.





Interfaces and compatibility conditions

The gas meter's index is equipped with a W-MBUS 868 MHz communication module, enabling remote communication protocol with dedicated external devices and, through them, with AMI/AMR-type systems.

The gas meter's index has an optical port. This interface has been designed in accordance with EN 62056-21.

Requirements on production, putting into use and utilisation

Production

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

- 100% inspection of incoming goods (the quantity inspection), statistical quality inspection;
- tests during production: measurement check, 100% leak test, statistical check of torque and statistical check of bending moment,
- final tests: checking internal and external tightness, marking, checking the operation of meter, 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 the user 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 (MID). In order to make a proof of performed conformity assessment the appropriate manufacturer's symbols. Separate national legislation determine the date when gas-meter should be submitted to next legalization after completion of conformity assessment.

Security measures

Mechanical security features:

- Metrology seal located inside the index under the index cover,
- Service seals of 4pcs covering the mounting screws of the index cover.

Electronic security features:

- Sensors indicating that the index cover and metrology cover have been removed.

Marking requirements

Each gas-meter should bear a marking plate on index or on display 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} (m³/h);
- f) minimum flowrate Q_{min} (m³/h);
- g) maximum working pressure, p_{max} (bar);
- h) nominal cyclic volume, V (dm³);



- 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;
- m) software version number,
- n) legally relevant software checksum.

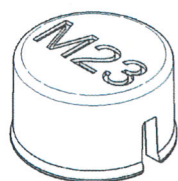
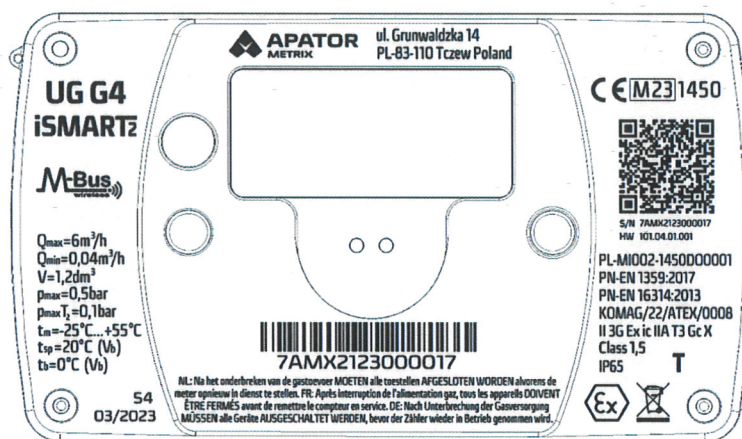
If gas-meter is resistant to high ambient temperature it should be additionally mark with „T” symbol.

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

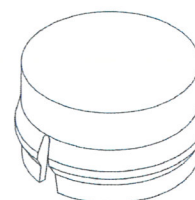
Marking should be visible and permanent in normal operating conditions of gas-meter.

Labelling and inscriptions

Gas-meter marking example



Metrology seal

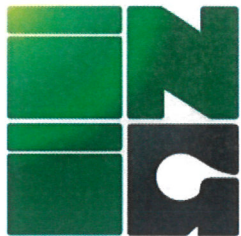


Service seal

Kraków, 24-08-2023

Certification
Office Manager

Magdalena Swat



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

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Table of certificate's revisions PL-MI002-1450DO0001		
Issue No.	Description of introduces changes	Date
1	-----	13-01-2023
2	Extension of the scope of the certificate by the size of the UG G6 iSmart2 gas meter	20-02-2023
3	Certificate update: adding information on meeting the requirements of WELMEC Guide 7.2:2022 (p. 4, 8, 9, 10); WELMEC Guide 11.3:2020 and supplementing numbers of test reports, software version, legally relevant software checksum and seal designs	24-08-2023