



**ГБ05**

### RESIDENTIAL GAS METERS

SGB G4 SIGNAL

SGB G2,5 SIGNAL

SGB G4-1 SIGNAL

SGB G2,5-1 SIGNAL

Variants:

left

right

vertical

horizontal

M33x1,5

G1<sup>1</sup>/<sub>4</sub>

G<sup>3</sup>/<sub>4</sub>

**Instruction manual**

## CONTENTS

1	Description	3
1.1	Assignment	3
1.2	Specification	3
1.3	Design	7
1.4	Operation	7
1.5	Marking and sealing	7
1.6	Packing	7
2	Intended use	9
2.1	Preparing to use	9
2.1.1	Security rules	9
2.1.2	Inspection	9
2.1.3	Installation	9
2.2	Maintenance	11
3	Storage	13
4	Transportation	13
5	Utilization	13
6	Warranty	13
7	Packing certificate	15
8	Acceptance certificate	15
9	Normative documents	16
Appendix A	State system of ensuring unity of measurements. Residential gas meters SGB G4 SIGNAL, SGB G2,5 SIGNAL, SGB G4-1 SIGNAL, SGB G2,5-1 SIGNAL, SGK G4 SIGNAL, SGK G2,5 SIGNAL.	18

The present Instruction manual on operation contains the description of a design, specification, an operation principle, installation rules, service, the approval certificate, packaging, a manufacturer's guarantee and other data necessary for the correct installation and operation of domestic gas meters SGB G4 SIGNAL, SGB G2,5 SIGNAL, SGB G4-1 SIGNAL, SGB G2,5-1 SIGNAL (further Meters).

Meters are made EPO Signal LLC, Russia, and conform to requirements of GOST R 50818-95 and specifications of TU 4213-054-51416204-01.

**ATTENTION! To carry out operation of the meter to VERTICAL POSITION. Change of position of the meter after mounting on the pipeline can lead to depressurization and a gas leak.**

## 1 DESCRIPTION

### 1.1 Assignment

Meters are designed for measurement of gas volume and its commercial accounting.

Type of a climatic modification of the UHL meter, category of placement 2.1 in accordance with GOST 15150–69. Meters are intended for operation at ambient temperature from -40 to +60 °C ( from -40 to +140 °F).

Meters have some variants:

- a) depending on an arrangement of the inlet union – left, right;
- b) depending on an arrangement of unions:
  - 1) vertical - SGB G4 SIGNAL and SGB G2,5 SIGNAL;
  - 2) horizontal - SGB G4-1 SIGNAL and SGB G2,5-1 SIGNAL;
- c) depending on a thread of unions:
  - 1) M33x1,5; G1¼; G¾; - SGB G4 SIGNAL and SGB G2,5 SIGNAL;
  - 2) M33x1,5 - SGB G4-1 SIGNAL and SGB G2,5-1 SIGNAL.

Example of record of designation at the order:

SGB G4 SIGNAL (left, vertical, G1¼) TU 4213-054-51416204-01 (the inlet union is located at the left in relation to front part of the meter, union vertical and have G1¼ thread).

SGB G4 SIGNAL (right, vertical, G1¼) TU 4213-054-51416204-01 (the inlet union is located on the right in relation to front part of the meter, union vertical and have G1¼ thread).

SGB G4-1 SIGNAL (left, horizontal, M33x1,5) TU 4213-054-51416204-01 (the inlet union is located at the left in relation to front part of the meter, union horizontal and have M33x1,5 thread);

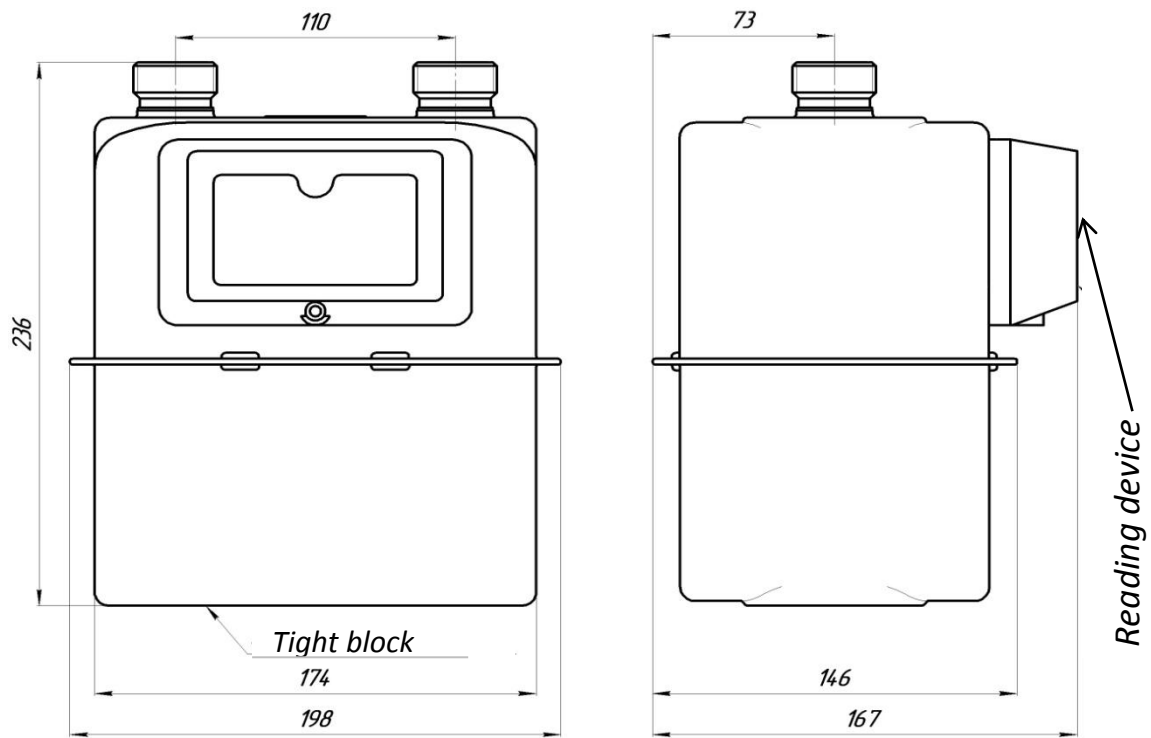
SGB G4-1 SIGNAL (right, horizontal, M33x1,5) TU 4213-054-51416204-01 (the inlet union is located on the right in relation to front part of the meter, union horizontal and have M33x1,5 thread).

## 1.2 Technical characteristics

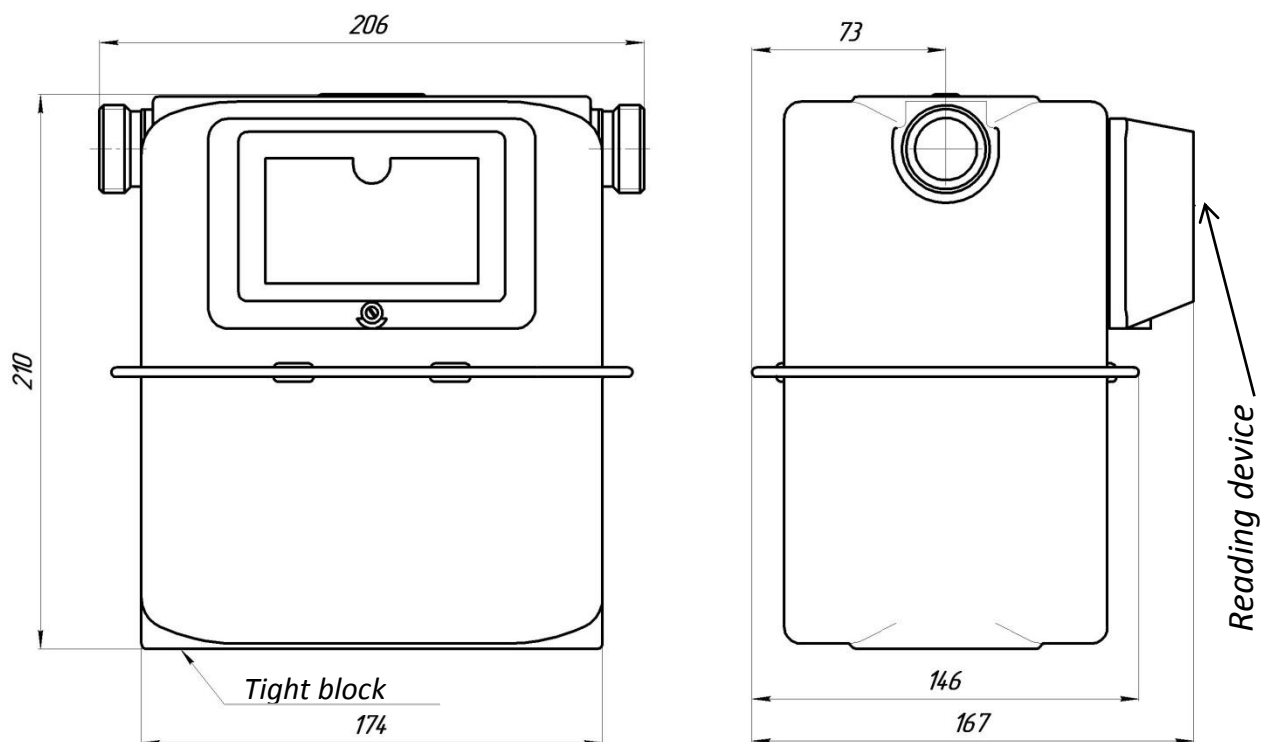
Specifications, key parameters and characteristics are provided in table 1.

Table 1

Name of parameter	Value of parameter for meters			
	SGB G4 SIGNAL	SGB G2,5 SIGNAL	SGB G4-1 SIGNAL	SGB G2,5-1 SIGNAL
1. Measured environment	Natural gas , liquefied gas			
2. Maximum flow rate $Q_{max}$ , m <sup>3</sup> /h	6	4	6	4
3. Nominal flow rate, $Q_{nom}$ , m <sup>3</sup> /h	4	2,5	4	2,5
4. Minimum flow rate $Q_{min}$ , m <sup>3</sup> /h	0,04	0,025	0,04	0,025
5. Maximum pressure, kPa,(bar)	50 (0,5)			
6. Pressure loss at $Q_{max}$ , Pa (bar), no more	200 (0,002)			
7. Temperature of the measured environment, °C,( °F)	from -40 to + 60, (from-40 to +140)			
8. Limits of the allowed main relative error when releasing from production and after repair in the ranges of the flow rate, %, no more: from $Q_{min}$ . to 0,1 $Q_{nom}$ . from 0,1 $Q_{nom}$ . to $Q_{max}$ .	±3 ±1,5			
9 .Threshold of sensitivity, m <sup>3</sup> /h, no more	0,008	0,005	0,008	0,005
10. Cyclic volume, dm <sup>3</sup>	1,2			
11. Maximum index, m <sup>3</sup>	99999,999			
12. Resolution m <sup>3</sup> (dm <sup>3</sup> )	0,0002 (0,2)			
13 .Overall dimensions, mm, height, length, width (without mounting parts), no more	236x198x167		210x206x167	
14 Connecting sizes – thread of unions	G <sup>3</sup> / <sub>4</sub> , G1 <sup>1</sup> / <sub>4</sub> , or M33x1,5		M33x1,5	
- distance between unions, mm	110			
15 Weight without mounting parts, kg, no more	2,1			
16. Operating conditions: - ambient air temperature, °C,( °F) - relative humidity, % - atmospheric pressure, kPa , (bar)	from -40 to + 60, (from-40 to +140) from 30 to 80 from 84 to 106,7 (from 0,84 to 1,067)			
17. Service life, years, not less	20			



Picture 1 – Domestic gas meter SGB G4 G2,5 SIGNAL or SGB SIGNAL



Picture 2 - Domestic gas meter  
SGB G4-1 SIGNAL or SGB G2,5-1 SIGNAL

### 1.3 Design

Appearance of the meter is presented at the picture – SGB G4 SIGNAL or SGB G2,5 SIGNAL and at the picture 2 - SGB G4-1 SIGNAL or SGB G2,5-1 SIGNAL.

The meter consists of two blocks:

- 1) tight block;
- 2) reading device.

1.3.1 The tight block includes:

- 1) two measuring furs with mobile dividing membranes and system of levers;
- 2) crank gear;
- 3) distributor gear.

1.3.2 On front part of the tight block the sealed lead-out transferring the movement from a crank gear to the reading device is located. The screen excluding hit of solid particles on the distributor gear which is carrying out function of the filtering device is installed in the entrance union of the tight block.

1.3.3 The meter is equipped with the stopper preventing reverse motion of the reading device.

1.3.4 Reading device (**index**) of roller type, mechanical, eight-digit.

### 1.4 Operation

Under the influence of excessive pressure gas via the entrance union fills space under an upper cover of the meter and through a distributor gear comes to measuring furs.

On a dividing membrane there is a pressure difference under the influence of which the membrane moves. One of the cavities separated by a membrane is filled with gas, thus from other cavity gas is forced out through a distributor gear in the output union.

Movement of a membrane by means of a crank gear will be transformed to reciprocal motion of the gate of a distributor gear and a rotary motion of the reading device fixing number of the forced-out measuring volumes.

The design of the meter provides possibility of repair of all nodes in the services or at manufacturer.

### 1.5 Marking and sealing

#### 1.5.1 Marking

1.5.1.1 Marking of the meter is put on a nameplate of gas meter and a label of the reading device. On the tight block is available the shooter specifying the direction of a gas flow.

1.5.1.2 Transport and packaging container have designation of the meter and handling instructions.

#### 1.5.2 Sealing.

1.5.2.1 The meter has a print of a brand of the vericator in a sealing bowl of the reading device.

For the purpose of an exception of access to the screw fixing a cover of the reading device installation of a seal (from a delivery set) is provided in a bowl of the reading device.

1.5.2.2 The transport container has a seal.

1.5.2.3 The packaging container is sealed up by a tape for gluing together and a label.

## 1.6 Packaging

1.6.1 Place the meter in a packing-case from a corrugated cardboard.

1.6.2 Stack the operation manual in a plastic bag and place in a packing-case.

1.6.3 The packed meters stack in transport container.

## 2 Intended use

### 2.1 Preparing to use

#### 2.1.1 Security rules

2.1.1.1 Mounting, dismantle, commissioning and checking of the meter is made by the organization having permission to this type of activity.

2.1.1.2 Before works with the meter it is necessary to study the present manual on operation.

2.1.1.3 All works on mounting and dismantle of the meter need to be carried out in the absence of gas in the gas pipeline.

2.1.1.4 Before start-up of the meter of gas in operation it is necessary to be convinced that gas pressure on an entrance does not exceed 0,5bar.

#### 2.1.2 Inspection

2.1.2.1 Open a box and check completeness of delivery according to the operation manual.

2.1.2.2 Check availability on the meter of a print of a brand of the vericator. The meter without print of a brand of the vericator is not allowed to installation.

#### 2.1.3 Installation

2.1.3.1 The meter is installed in well aired room or in the open air in the conditions of protection against blows, vibration, mechanical influences, hit of direct sunshine and atmospheric precipitation. Contact of a bottom of the meter with a floor is not allowed. At installation the free access for removal of indications from the reading device of the meter should be provided.

2.1.3.2 The meter is installed according to requirements of the SR 42-101-2003. It is recommended to provide fastening of the gas pipeline in places of connection of the meter to the gas pipeline. Installation of the meter according to picture 3 is allowed.

2.1.3.3 The gas pipeline should not have biases to the meter to exclude hit of condensate in the meter.

2.1.3.4 The gas pipeline before installation of the meter should be blown and checked for tightness and durability by means of a simulator tube.

2.1.3.5 **FORBIDDEN** to make mounting of the meter on the gas pipeline by means of welding and in places where formation of corrosion and the increased influence of heat is possible (from above plus 60 °C).

2.1.3.6 **ATTENTION! The meter should be installed In VERTICAL POSITION that the direction of an arrow on the tight block corresponded to the direction of**

**gas flow in the gas pipeline, and should be connected to the gas pipeline without tension.**

2.1.3.7 At installation it is necessary to be guided by rules of mounting of gas lines and to use the rundown couplings or captive nuts corresponding to diameters of the pipeline and unions of the meter.

2.1.3.8 Check tightness of junctions of the gas pipeline with the meter and the meter body.

2.1.3.9 Before turning on of the meter in work to check correctness of mounting.

2.1.3.10 Prior to start-up of the meter all valves on the gas pipeline should be closed. At all stages of the start-up a gas rate passing through the meter should not exceed at all value of the maximum expense specified on a nameplate of the reading device.

2.1.3.11 At start-up of the meter it is necessary to provide slow filling of system with gas, using the crane installed just before the meter.

**ATTENTION!** Replacement of gas-air mixture from the gas pipeline with the meter mounted on it before the first ignition of the gas device installed on the line of the meter should be provided.

2.1.3.12 An indicator of normal functioning of the meter is change of indications on the reading device of the meter at the switched-on gas devices.

2.1.3.13 Be convinced in quiet, without tugs and jammings, operation of the reading device.

2.1.3.14 After mounting and check of operability of the meter the statement of installation of the meter is drawn up, the mark in point 6.3 of the present manual on date of commissioning becomes and the meter is sealed up.

2.1.3.15 **ATTENTION!** For the purpose of control of change of position of the meter (SGB G4-1 SIGNAL, SGB G2,5-1 SIGNAL) after mounting recommend to paste auto-disable a seal 287-01-05 (from a delivery set) on one of connection meter unions a nipple – a nut – the meter.

Destruction of a seal happens at the minimum mechanical influence.

## 2.2 Maintenance

2.2.1 The persons who have studied the present manual on operation are allowed to service of the meter.

2.2.2 During operation it is necessary to remember that the meter is the gas device, therefore:

- avoid hit of dirt, water, steam jets on the meter;
- preserve it against mechanical damages;
- do not use organic solvents for refining of surfaces;
- do not allow violation of seals.

2.2.3 **ATTENTION! Change of vertical position of the meter after mounting on the pipeline can lead to violation of tightness and a gas leak.**

2.2.4 To carry out control of operability of the meter on operation of the reading device.

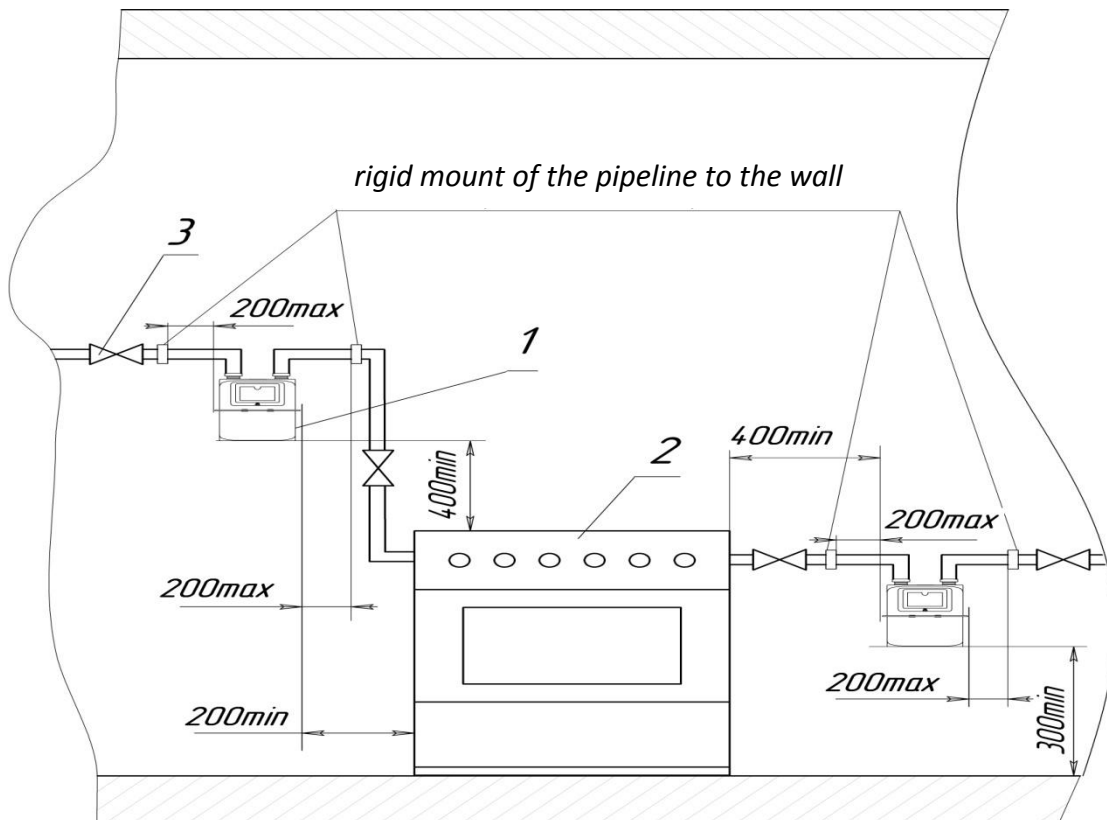
At the switched-on gas devices operation of the reading device should be quiet, without tugs and jammings.

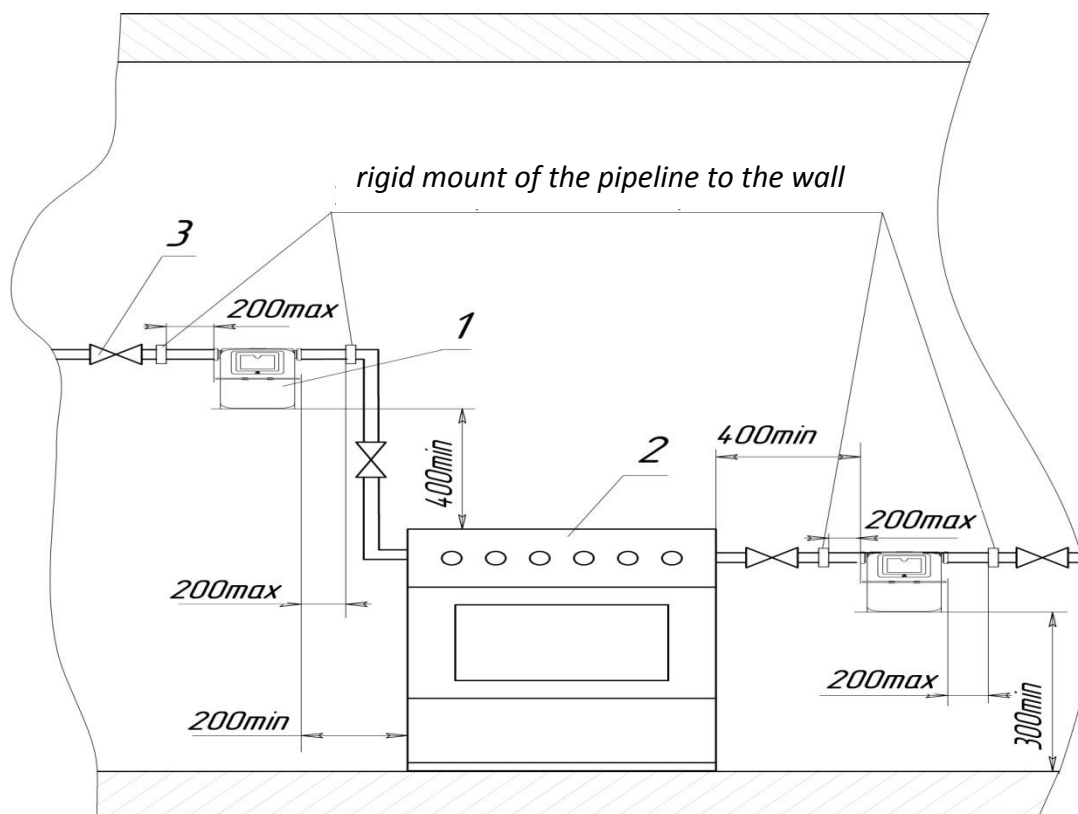


2.2.5 Operation of the meter should be carried out according to "Rules of fire prevention regime in the Russian Federation".

2.2.6 In case of emergence in a smell of gas it is necessary to stop immediately its giving, to air the room and to cause repair or emergency service. To a fault repair it is forbidden to light indoors matches, to smoke, apply naked flame, to switch on and off electric devices!

2.2.7 To lead indications of the meter of gas at calculation between the consumer and the supplier of gas to standard conditions on a standard technique of MI 2721-2007 using correction coefficients, considering the actual installation site of the meter (out of the room, in not heated room, in the heated room).





- 1 – domestic gas meter;
- 2 – household gas stove;
- 3 – disconnecting device (crane)

Picture 3 – Schematic diagram of installation of domestic gas meter with two fittings in the kitchen.

### 3 STORAGE

3.1 Storage of meters in packed form should be carried out in the following storage conditions in the closed or other rooms with natural ventilation without artificially adjustable climatic conditions where it is significantly less than fluctuation of temperature and humidity of air, than in the open air, for example stone, concrete and other storages).

At storage meters should not be affected by vapors of corrosion active agents, rain-fall, direct sunlight, moisture condensation.

3.2 Meters are stored and transported in group container of the manufacturer in the conditions corresponding to marking on container.

### 4 TRANSPORT

4.1 The packed meters can be transported by any kind of the closed transport on any distances according to the rules of transportation of goods existing on this type of transport with observance of point 4.2 and the following requirements:

- 1) ambient temperature from - 50 to +70 C° (from -58 to + 158 F°);
- 2) transport shaking with acceleration no more than 98 m/c<sup>2</sup>;

3) relative humidity of air no more than 95% at a temperature of 35 C°( 95 F°).

Transportation of meters by air transport is allowed to be carried out only in the heated pressurized compartments.

4.2 The way of laying and fastening of container on the transporting means should exclude possibility of its movement and mutual blows.

4.3 During handling works and transportation boxes should not be exposed to sharp blows and influence of an atmospheric precipitation.

## 5 UTILIZATION

5.1 Meters after the termination of service life do not pose hazard to life and human health, environment and do not require special preparation for utilization.

## 6 WARRANTY

6.1 The manufacturer guarantees compliance of the meter to requirements at observance of conditions of transportation, storage, mounting and operation. Guaranty period - 48 months from the date of production.

Address of manufacturer: 413119, Engels, Saratov region, EPO Signal LLC.

6.2 In use the meter is exposed to calibration according GOST 8.324-2002. .

Calibration interval of 10 years.

6.3 The malfunctions of the meter during guaranty period confirmed with the act issued by the ranking officer of gas economy with the indication of an operating time are eliminated free of charge, however the manufacturer reserves the right of refusal of free warranty repair in case of non-compliance with the guarantee conditions stated below.

The guarantee on meters does not extend in the following cases:

- a) in the presence of the mechanical damages caused by transportation;
- b) if the verification mark print on the meter is broken;
- c) if service regulations are violated;
- d) the damages caused by elements, the fire, household factors.

The guarantee is valid only in the presence correctly and accurately completed warranty card, with the indication of number of the meter, date of sale, the accurate seals of the seller.

Serial number and designation of the meter should correspond specified in the warranty card.

Date of commissioning \_\_\_\_\_ 201\_ .

Representative

the operating organization \_\_\_\_\_ Stamp place

(personal signature)

The address of the operating organization \_\_\_\_\_

\_\_\_\_\_ ph. \_\_\_\_\_

## 7 PACKING CERTIFICATE

Domestic gas meter SGB G \_\_\_\_\_ SIGNAL  
(designation)

Packed \_\_\_\_\_ EPO Signal LLC \_\_\_\_\_  
(name or manufacturer's code)

according to the requirements provided in the existing technical documentation

\_\_\_\_\_  
position                      personal signature                      interpretation of the signature

\_\_\_\_\_  
year, month, number

## 8 ACCEPTANCE CERTIFICATE

Domestic gas meter SGB G \_\_\_\_\_ SIGNAL \_\_\_\_\_  
(designation)                      (serial number)

it is made and accepted according to obligatory requirements of the existing technical documentation and it is recognized serviceable.

Chief of Quality Department

Stamp place \_\_\_\_\_  
personal signature                      interpretation of the signature

\_\_\_\_\_  
year, month, number

Representative of workshop \_\_\_\_\_  
personal signature

Verificator

Stamp place \_\_\_\_\_  
personal signature

\_\_\_\_\_  
year, month, number

## 9 NORMATIVE DOCUMENTS

Reference Normative Documents	Number of the section, subsection, point, the subparagraph, transfer
GOST 8.324-2002 State system of measurements ensuring unity Gas meters Checking technique.	6.2
GOST 5542-87 Natural combustible gases for industrial and household function. Specifications.	1.2
GOST 15150-69 Machines, devices and other technical products. Executions for different climatic areas. Categories, operating conditions, storages and transportations to parts of influence of climatic factors of environment.	1.1; 3.1
GOST 20448-90 The hydrocarbon gases, liquefied fuel for residential consumption. Specifications.	1.2
MI 2721-2007 State system of measurements ensuring unity . Gas volume. A standard technique of performance of measurements by gas meters without temperature compensation.	2.2.8
"Rules of fire prevention regime in the Russian Federation". SR 42-101-2003	2.2.5
SR 42-101-2003 General provisions on design and construction of gas-distribution systems from metal and polyethylene pipes.	2.1.3.2

**Root of the coupon No.**

On warranty repair  
(maintenance)

\_\_\_\_\_ (name of a product)

HI. mechanic of workshop (studio)

\_\_\_\_\_ (surname, personal signature)

## FORM OF THE WARRANTY CARD

EPO Signal LLC, Engels, 413119

(name of manufacturer and its address)

**COUPON NO.**

on warranty repair \_\_\_\_\_

(maintenance) (products)

\_\_\_\_\_ produced \_\_\_\_\_

(date of production)

Factory No.

Sold by shop \_\_\_\_\_

(name of shop)

"\_\_" \_\_\_\_\_ 201\_\_.

Stamp of shop \_\_\_\_\_

(personal signature)

Owner and his address \_\_\_\_\_

\_\_\_\_\_ (personal signature)

Works on Troubleshooting: \_\_\_\_\_

\_\_\_\_\_ Workshop mechanic \_\_\_\_\_

(personal signature)

Owner \_\_\_\_\_

(personal signature)

**Approve**

Manager. workshops

\_\_\_\_\_ (name of repair company)

Stamp of workshop "\_\_" \_\_\_\_\_ 201\_\_ . \_\_\_\_\_

(Personal signature)

Note

\* At production in the typographical way the reverse side of sheet should be free.

**Cut edge**

