

Ultrasonic Residential Smart Gas Meter NB-IoT

SMART METER FOR THE INTERNET OF THINGS

Residential gas meters "Smartico" are produced by the size range G-1.6, G-2.5, G-4, G-6. They are used to measure the volume of used natural and liquefied gas, with conversion to standard reference conditions at a temperature of 20 °C. The meter is made in a compact design, which has no moving mechanical parts and allows mounting in a confined space. The meter measurement system provides high-precision metrological characteristics.

The meter provides the possibility visual control and wireless data transmission by **Narrow Band (NB-IoT)** technology which is focused specifically on indoor coverage, low cost, long battery life, and high connection density.

Parameter	Size			
	G-1.6	G-2.5	G-4	G-6
Minimum flow rate Q _{min} , m ³ /h	0,016	0,025	0,04	0,06
Transient flow Q _t , m ³ /h	0,3	0,4	0,6	1,0
Maximum flow rate Q _{max} , m ³ /h	2,5	4,0	6,0	10,0
Relative measurement error of volume, reduced to standard conditions of temperature, %	Q _{min} ≤ Q < Q _t			
	Q _t ≤ Q ≤ Q _{max}			
Excessive ambient pressure, kPa	≤ 50			
Ambient temperature, °C	-25...+75			
Gas temperature, °C	-25...+55			
Pressure loss, Pa	<100		<250	
Voltage of lithium battery, V	3,6			
Overall dimensions WxDxH, mm	82x85x193			
Weight, kg	0,9			
Average service life, years	>15			
Connecting size	1" (3/4")			
Ingress protection rating	IP54			



KEY FEATURES:

- Built-in temperature sensor and gas flow rate adjustment to standard conditions.
- Absence of mobile mechanical parts, resistance to external magnetic field due to the use of an ultrasonic sensor.
- Protection from external influences and transmission of an alarm message to the dispatcher's software when the case is opened.
- Control and transmission to the dispatcher's software:
 - presence of reverse flow;
 - excess of the flow above the maximum allowable;
 - the presence of an external magnetic field;
 - battery discharge status;
 - performance monitoring of internal sensors;
 - gas flow below the nominal, which indicates a gas leak;
 - determination of the gas/air;
 - shock control and repositioning of meter.
- Built-in non-volatile memory, archiving, built-in real-time clock.
- Battery life 10 years.
- Two systems of measurement: metric/imperial
- Data transmission in mobile networks using NB-IoT technology (Cat NB1, Bands: B1, B3, B5, B8, B20, B28).
- Exclusion of the human factor when taking readings.
- Reducing the cost of gas distribution by reducing the number of staff of the subscriber service.
- Operative calculation of the balance of gas consumption in the house, district, city.
- Timely invoicing of consumers for the actually consumed volume of gas.
- Small size, aesthetic appearance, easy installation.

ADVANTAGES OF THE SYSTEM BASED ON NB-IoT:

- No need to deploy a network, using the resources of mobile operators;
- Sustainable communications in dense urban areas;
- Autonomy of the end devices (more than 5 years from the built-in batteries);
- Transmission of data arrays with confirmation, data integrity control;
- Using TCP / IP stacks for data transfer, including a secure DTLS connection;
- Ability to expand and change the functionality of devices due to update by air (OTA);
- Flexible custom reporting functionality and software analytics;
- Export data to any analytical and billing systems.

