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USGM101

ULTRASONIC SMART GAS METER



Product Overview

The Ultrasonic Smart Gas Meter utilizes cutting-edge ultrasonic measurement technology to provide high-precision, durable, and maintenance-free metering. With no moving parts, it ensures exceptional accuracy, long-term stability, and an extended measurement range, making it a superior alternative to traditional diaphragm meters. Its compact, lightweight design enhances installation flexibility, while advanced digital capabilities support seamless integration with smart utility networks.

Working Principle

The meter determines gas flow rate by analyzing the time difference between ultrasonic waves traveling in opposite directions (T1 for U1→U2 and T2 for U2→U1). Using this data, the system precisely calculates the flow velocity and adjusts the reading based on the cross-sectional area of the flow channel, delivering accurate, real-time gas consumption measurement.

ULTRASONIC SMART GAS METER - BENEFITS

1.

Exceptional Measurement Accuracy & Sensitivity

Utilizing ultrasonic technology, this meter ensures high-precision gas flow measurement, detecting even minimal gas flow variations for accurate billing and consumption analysis.

2.

Long-Term Reliability & Maintenance-Free Operation

With no moving parts, the meter offers consistent performance over its lifespan, eliminating mechanical wear, reducing maintenance needs, and ensuring long-term stability.

3.

Compact, Lightweight & Space-Saving Design

Smaller and lighter than traditional diaphragm meters, allowing for flexible installation in space-constrained environments.

4.

Strong Anti-Interference & Secure Data Transmission

The digital signal output is immune to magnetic interference, ensuring reliable performance and tamper-resistant data accuracy.

5.

Advanced Safety Mechanisms for Leak Prevention

Equipped with overflow, reverse flow, and continuous flow detection, the meter automatically closes the valve to prevent leaks, appliance malfunctions, and pipeline damage.

6.

Built-in Fire & Hazard Detection

Integrated high-temperature sensors detect potential fire hazards, triggering automatic gas shut-off and real-time alerts to ensure safety.

7.

Tamper & Disassembly Detection

Monitors unauthorized access, water ingress, or physical tampering, reporting security threats in real-time and maintaining system integrity.

8.

Optimized Performance with Temperature & Pressure Compensation

Built-in temperature and pressure sensors adjust volume readings to Standard Temperature and Pressure (STP) conditions, ensuring consistent and precise measurement.

9.

Future-Proof with IoT Connectivity & Remote Management

Supports seamless integration with smart grids, enabling real-time monitoring, automated diagnostics, and remote control, enhancing operational efficiency.

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ULTRASONIC SMART GAS METER - KEY FEATURES

Compact and Lightweight Design

Smaller and lighter than traditional diaphragm meters, allowing for easy installation and space-saving deployment.

High Reliability & No Moving Parts

The ultrasonic measurement system ensures long-term accuracy, eliminating mechanical wear and the need for frequent recalibration.

Built-in Temperature & Pressure Compensation

Integrated sensors automatically adjust readings under standard temperature (STP) conditions, delivering accurate and standardized measurements.

Ultra-High Sensitivity & Accuracy

Detects even minimal gas flow variations, ensuring precise metering across a wide range ratio (up to 1:375 for G4W and 1:4000 for G40W).

Strong Anti-Interference Technology

The digital signal output is immune to magnetic interference, ensuring secure and tamper-resistant data transmission.

Advanced Gas Safety Features

- **Overflow Detection:**
Closes the valve at excessive flow rates to prevent pipeline damage.

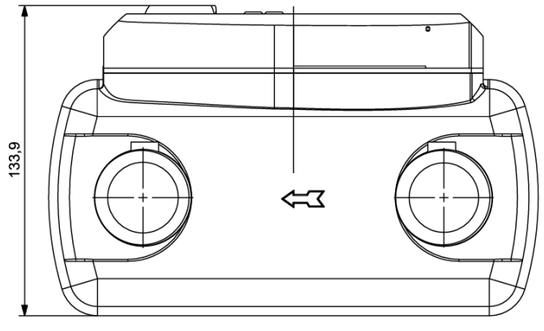
- **Reverse Flow Detection:**
Detects incorrect gas flow direction and automatically shuts the valve.

- **Continuous Flow Detection:**
Prevents accidents caused by leaks or forgotten appliances.

- **High-Temperature Detection:**
Shuts the valve and sends alerts in case of fire hazards.

- **Air & Water Ingress Detection:**
Detects unauthorized disassembly or water intrusion, securing the gas pipeline system.

- **Tamper & Disassembly Detection:**
Monitors and records battery cover removal, meter disassembly, and tampering attempts, alerting the system to potential fraud.

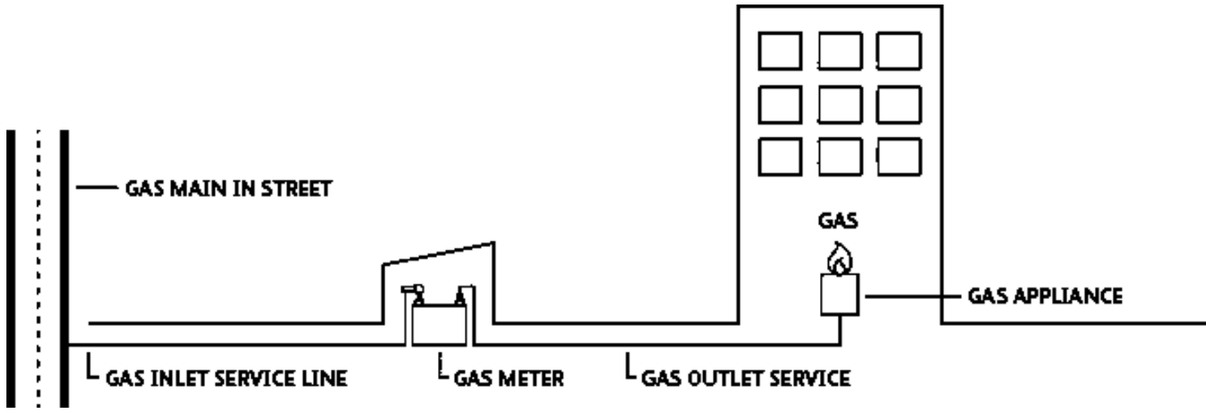


WHY CHOOSE THE ULTRASONIC SMART GAS METER?

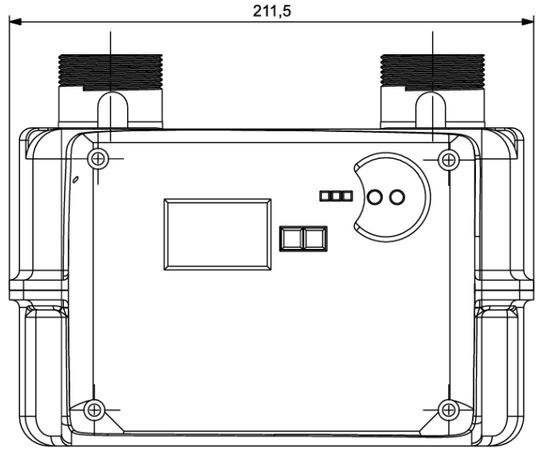
Smart. Safe. Reliable

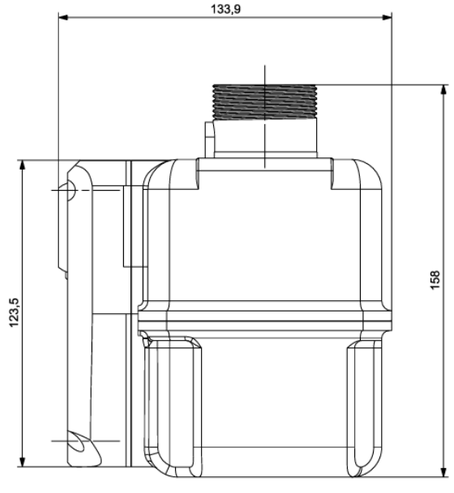
The Ultrasonic Smart Gas Meter is an intelligent, future-ready solution for modern gas measurement and safety. Its precision, reliability, and innovative safety mechanisms deliver unmatched value for both consumers and utilities. With advanced features like digital metering, tamper detection, and environmental compensation, this meter ensures efficiency, safety, and compliance with industry standards.

Discover the next level of gas metering with the Ultrasonic Smart Gas Meter.



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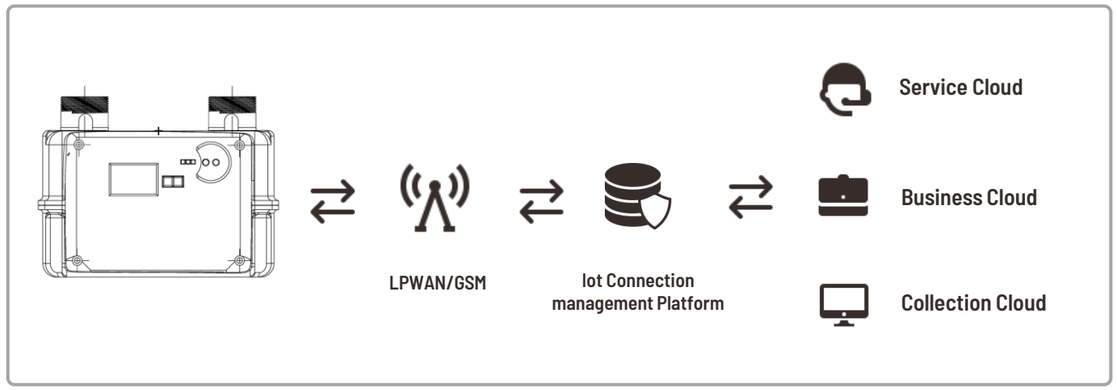




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SOLUTION ARCHITECTURE



TECHNICAL PARAMETERS

Technical Parameters							
Type	G2.5	G4	G6	G10	G16	G25	G40
Starting Flow (m^3/h)	0.005	0.005	0.008	0.013	0.013	0.020	0.032
Q_{max} (m^3/h)	4	6	10	16	25	40	65
Q_{min} (m^3/h)	0.025	0.04	0.06	0.1	0.16	0.25	0.4
Overload Flow (m^3/h)	4.8	7.2	12.0	19.2	30.0	48.0	78.0
Accuracy Class	1.5						
Maximum Permissible Error (MPE)	$Q_{min} \le Q < Qt = \pm 3\%$ $Qt \le Q < Q_{max} = \pm 1.5\%$						
Working Temperature (°C)	- 30°C ~ +55°C						
Ingress Protection level	IP55						
Communication mode	NB-IoT/GPRS/Sigfox/LoRaWAN/Wireless and Wired M-Bus						
Valve Lifetime (time)	>10 years						
Battery Life (year)	≥ 10 years						

