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SOLUTIONS

smart metering
solutions.

SGM101

G4 DIAPHRAGM
SMART MODULAR GAS METER



Efficiency, Accuracy, and Safety for Smart Gas Management

The Smart Gas Meter is an advanced IoT-enabled solution designed to enhance accuracy, efficiency, and safety in gas metering. It is ideal for residential, commercial, and industrial applications, ensuring precise consumption tracking, real-time monitoring, and seamless integration with modern utility networks. With plug and play communication modules, smart gas meters eliminate manual readings, reduce errors, and optimize gas distribution, making them a cornerstone of smart energy management.

KEY FEATURES & BENEFITS

1.

Improved Meter Reading Efficiency & Accuracy

Automatically collects daily consumption data, eliminating human errors and reducing manual meter reading costs. Shortens billing cycles and supports big data analysis for optimized utility operations

2.

Real-Time & Complex Pricing Capabilities

Enables flexible and dynamic pricing models, helping utilities manage gas demand efficiently while promoting energy conservation and optimizing revenue.

3.

Remote Monitoring of Meter Status & Gas Usage

Provides real-time gas consumption insights, supports peak demand management, and enables data-driven business decisions.

4.

Enhanced Home Gas Safety

Built-in safety monitoring features, including automatic valve control and gas leak detection, ensure reliable and secure gas usage.

5.

Gas Theft & Leakage Detection

Utilizes big data analytics to identify gas theft or leaks, ensuring precise monitoring of supplied and consumed gas

6.

Opportunities for Business Expansion

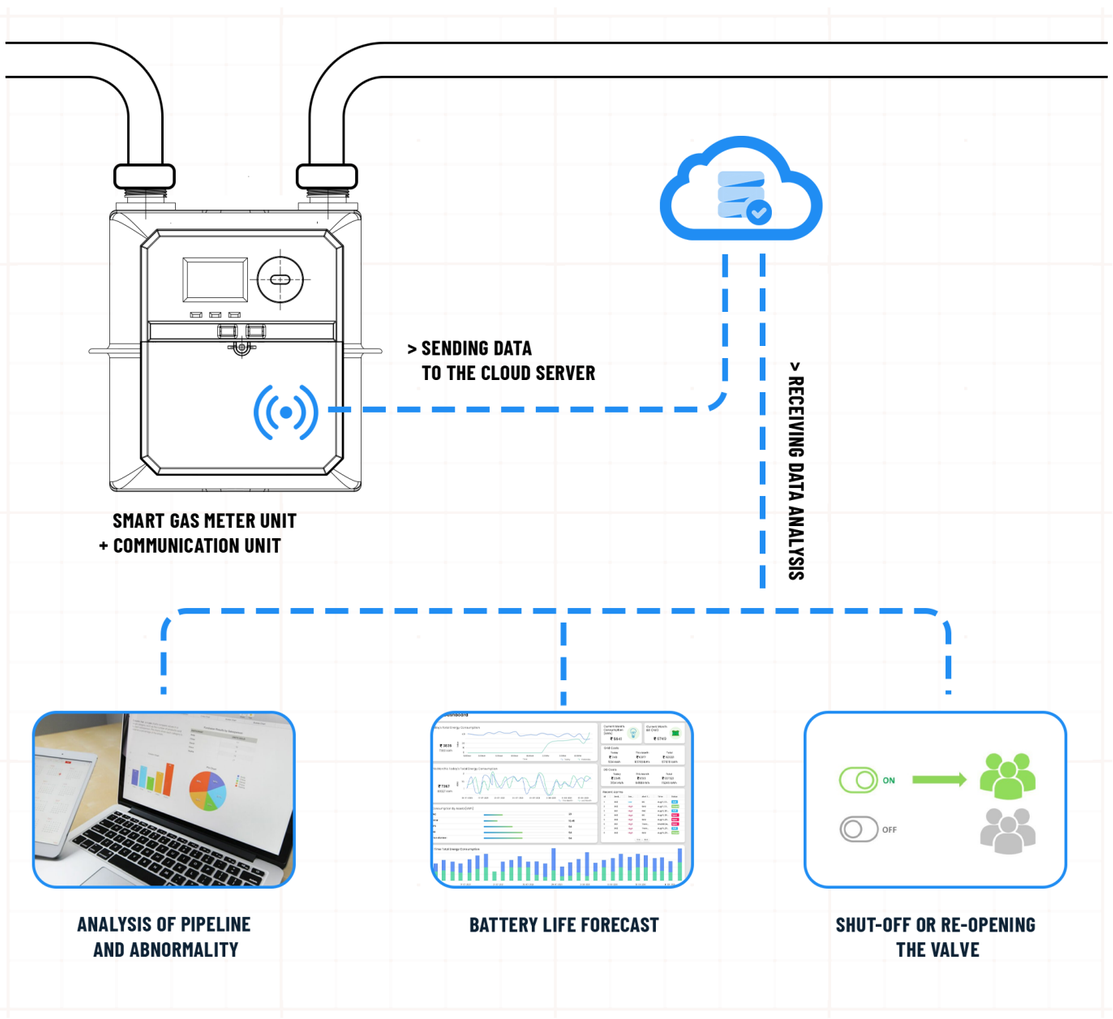
The smart gas meter ecosystem enables new business opportunities, such as gas-related smart home devices, insurance services, and ecommerce integrations.

7.

Convenient User Experience

Supports online billing and payments, offering consumers greater control over their gas usage and spending..

SMART GAS SOLUTION STRUCTURE



MODULAR SMART GAS METER

A Future-Proof, High-Performance Solution for Utility Companies

The Modular Smart Gas Meter is an advanced metering device designed to meet the rigorous smart metering standards of the European Union, Russian Federation, and other global markets. Built on a modular design philosophy, it features a fully separable communication module and smart controller, allowing on-site upgrades to accommodate evolving communication technologies. This future-ready architecture enables long-term stability, adaptability, and high-value services for gas companies. Utility providers can modernize their infrastructure cost-effectively by transitioning from traditional to smart metering without replacing the entire meter.

KEY COMPONENTS & HOW IT WORKS

BASE UNIT
THE DIGITAL GAS METER

Accurate Measurment

Ensures precise gas consumption tracking, eliminating billing discrepancies

Modular Design

The core meter remains unchanged, while communication modules can be upgraded or replaced as technology evolves.

Investment Flexibility

Utility companies can begin with a basic meter and upgrade over time, spreading investment costs efficiently.

COMMUNICATION MODULES
(OPTIONAL ADD-ONS)

Supported Technologies

NB-IoT, LTE-M, LoRaWAN, Wireless M-Bus, Wired M-Bus, Sigfox, and GPRS.

Functionality

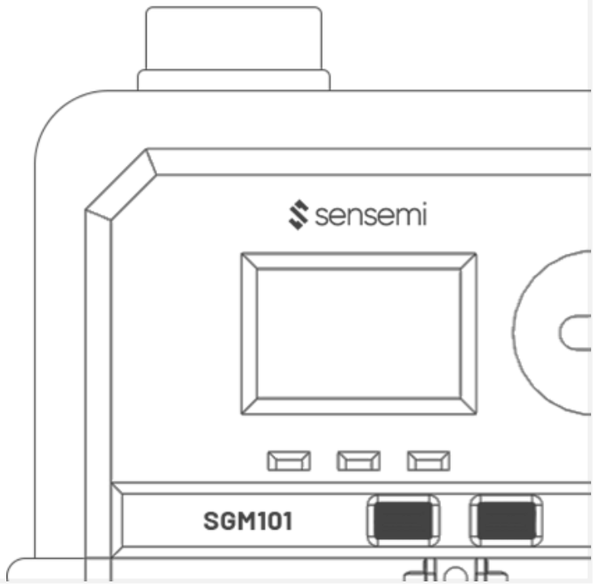
Enables wireless data transmission to a central system for remote monitoring and smart gas management.

Seamless Integration

Communication modules can be replaced or upgraded on-site without dismounting the meter or updating firmware.

SUPPORTED TECHNOLOGIES:

NB-IoT
LTE-M
LoRaWAN
GPRS
M-Bus
sigfox
M-Bus wireless



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BENEFITS

Smart Meter Conversion: Start Simple, Upgrade Later

Start with a basic digital meter and upgrade to a smart meter by adding a communication module. This modular approach minimizes costs, prevents service disruption, and allows utilities to modernize at their own pace.

Unified System Management

Seamlessly integrates gas, water, and electricity meters into a centralized Platform enabling efficient monitoring, streamlined operations, and improved resource allocation.

Cost Efficiency & Energy-Saving Operation

Gradual upgrades reduce initial investment, while automated data collection and improved billing accuracy lead to long-term cost savings. Low power consumption extends battery life, reducing maintenance costs.

Modular Communication Design & Extensive Connectivity Options

Supports NB-IoT, LTE-M, LoRaWAN, Wireless M-Bus, Wired M-Bus, LoRa Mesh, and Sigfox, ensuring low power, long-range, and secure communication. The modular design allows easy adaptation to evolving technologies without replacing the meter.



REPLACABLE BATTERY
10+ YEARS LIFETIME

COMMUNICATION MODULE
> LORAWAN
> NBIOT
> LTE-M

Easy Installation & Seamless Integration

Standard fittings and plug-and-play communication modules simplify installation, reduce setup time, and ensure effortless integration with existing utility infrastructure.

High-Accuracy Measurement

Inductive Pulse-based high precision sensor provide precise gas pulse readings, ensuring accurate consumption tracking for billing and data analysis.

Advanced Tamper Detection & Security

Built-in tamper detection mechanisms identify unauthorized access, reverse flow, and manipulation attempts, enhancing security and regulatory compliance.

Wide Operating Temperature Range

Built for extreme conditions, the meter operates reliably in -25°C to +55°C (-13°F to +131°F) ambient temperature, making it ideal for harsh environments.

Future-Proof & Scalable Design

Modular architecture allows for easy integration of emerging technologies, ensuring long-term adaptability and effortless expansion from small-scale to nationwide deployments

Remote Monitoring & Over-the-Air (OTA) Updates

Real-time data transmission and OTA firmware updates enable proactive diagnostics, seamless software upgrades, and enhanced service reliability with minimal manual intervention.

Features

Versatile replaceable communication modules

The single base meter supports multiple interchangeable communication modules, including GPRS, NB-IoT, LoRaWAN, Wireless M-Bus, Wired M-Bus, Sigfox, and more. Modules can be replaced on-site without dismounting the meter or updating firmware, ensuring seamless network adaptation. The meter integrates with IoT platforms, allowing efficient remote management and connectivity.

Flexible and Convenient Payment Options

Supports prepayment and post-payment methods, allowing customers to pay online, via mobile apps, or directly from their smartphones. Compatible with IC card functions for secure access and payment flexibility.

Remote Management and Upgradability

- **Remote Control:**
Allows operators to manage meter settings and functions remotely, minimizing on-site visits

- **Remote Upgrade (FOTA):**
Supports firmware updates over the air, keeping the system up to date without manual intervention.

Robust Communication and Connectivity

- **High Penetration:**
Strong signal penetration for stable connectivity, even in dense urban or underground environments.

- **Wide Coverage:**
Supports long-range communication protocols, ensuring reliable data transmission in remote areas.

Advanced safety features

Equipped with gas usage monitoring, reverse flow detection, and overflow protection, ensuring enhanced safety and operational reliability. The integrated valve control system offers multiple control logics, providing greater flexibility and security in gas distribution.

Low Power Consumption

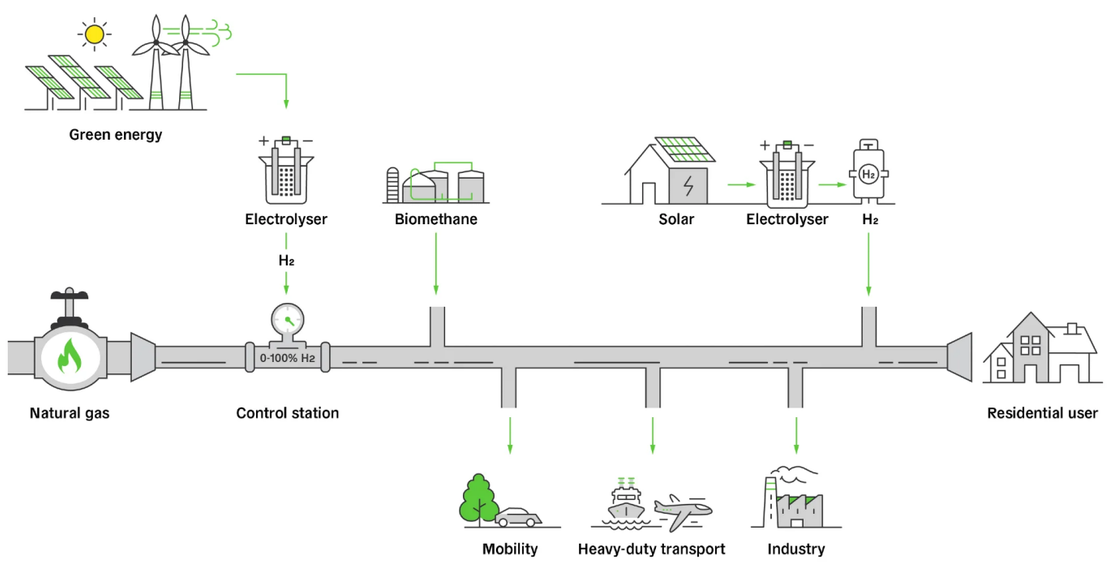
Designed for energy efficiency, reducing battery drain and extending operational life, making it ideal for long-term installations.

Accurate And Efficient Metering

- **Electronic Temperature Compensation:**
Automatically adjusts gas flow measurements for temperature variations, maintaining accuracy under different conditions.

- **Detailed Metering**:
Provides high-precision gas usage data, supporting accurate billing and consumption analysis.

- **Automatic Meter Reading:**
Enables data collection without manual intervention, improving accuracy and reducing labor costs.



Intelligent Monitoring and Diagnostics

- **Real-Time Self-Diagnostics:**
Continuously monitors system performance, detecting anomalies and potential issues for proactive maintenance.

- **Remote Alarm:**
Transmits configurable alarms for tampering, low battery, abnormal flow, valve events and other meter conditions to the central management system.

- **Optical Port Local Communication:**
Facilitates on-site maintenance and troubleshooting without network connectivity.

Why Choose the Modular Smart Gas Meter?

The Modular Smart Gas Meter from SenseMi provides unmatched adaptability, cost efficiency, and future-proof performance for utility companies. Its modular design supports seamless upgrades with evolving communication technologies like GPRS, NB-IoT, LoRaWAN, Wireless M-Bus, Wired M-Bus, and Sigfox. With its robust security features, IoT integration, and remote management capabilities, it ensures efficient gas distribution, real-time monitoring, and flexible billing options.

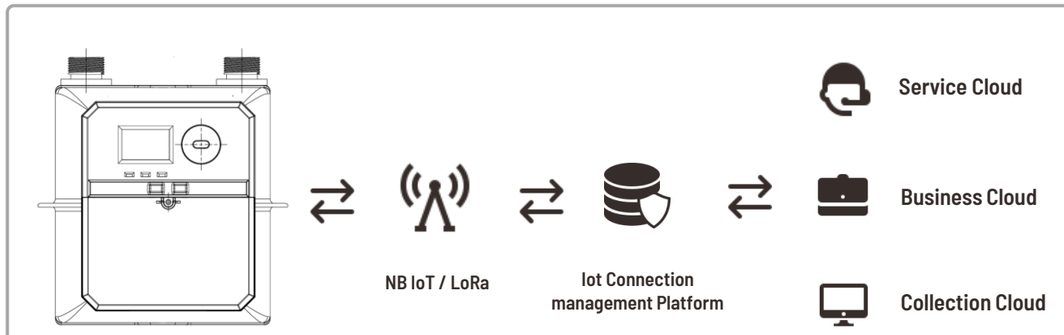
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-SGM101 G6T
-SGM101 G4T

SOLUTION ARCHITECTURE



TECHNICAL PARAMETERS

Technical Parameters								
Type	G1.6	G2.5	G4	G6	G10	G16	G25	G40
Starting Flow (m^3/h)	0.003	0.005	0.005	0.008	0.013	0.013	0.020	0.032
Q_{max} (m^3/h)	2.5	4	6	10	16	25	40	65
Q_{min} (m^3/h)	0.016	0.025	0.04	0.06	0.1	0.16	0.25	0.4
Overload Flow (m^3/h)	3.0	4.8	7.2	12.0	19.2	30.0	48.0	78.0
Accuracy Class	1.5							
Maximum Permissible Error (MPE)	$Q_{min} \le Q < Qt = \pm 3\%$ $Qt \le Q < Q_{max} = \pm 1.5\%$							
Max. Working Pressure (kPa)	50							
Pressure Loss (Pa)	< 200				< 300			
Working Temperature (°C)	- 25°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							

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ADVANCED SMART CONVERSION OF MECHANICAL METERS

Elevate Your Utility Management with Smartization!

Our cost-effective, retrofit solution modernizes mechanical gas meters, enabling real-time data management, remote monitoring, and automated billing. By integrating advanced smart modules, utility companies can enhance operational efficiency, streamline resource management, and optimize service delivery—all without replacing existing infrastructure

Transforming Mechanical Meters into Smart Meters

The Gas Meter Module converts traditional mechanical gas meters into intelligent, connected devices, eliminating the need for a full system replacement. Equipped with NB-IoT and LoRaWAN communication, it automates meter reading, improves billing accuracy, and enables remote management. Ideal for gas distribution networks, sub-metering applications, and institutions requiring precise consumption tracking, this module provides a seamless solution for hard-to-reach areas where manual readings are impractical. Its flexible installation allows for effortless retrofitting onto existing meters or integration into new deployments, ensuring a smooth transition to smart metering technology

KEY COMPONENTS & HOW GAS METER READER MODULE WORKS

1. Mechanical Meter Base

The mechanical meter base retains its primary function of measuring gas consumption while utilizing existing infrastructure. When integrated with the smart module, its readings are digitally calibrated, ensuring higher accuracy and more precise billing. This enhancement allows utility companies to modernize their metering systems without replacing the entire meter, making the transition to smart technology cost-effective and efficient

2. Smart Module (NB-IoT/LoRaWAN Communication Unit)

The smart module is a compact, attachable device that seamlessly upgrades mechanical meters into intelligent, connected systems. Equipped with advanced communication technologies such as NB-IoT and LoRaWAN, it enables wireless data transmission, sending real-time gas usage information to a central management system. This integration allows for remote monitoring, automated billing, and enhanced anomaly detection, significantly improving operational efficiency. The module is designed to be scalable, supporting future upgrades and new communication technologies, ensuring long-term adaptability for utilityproviders.

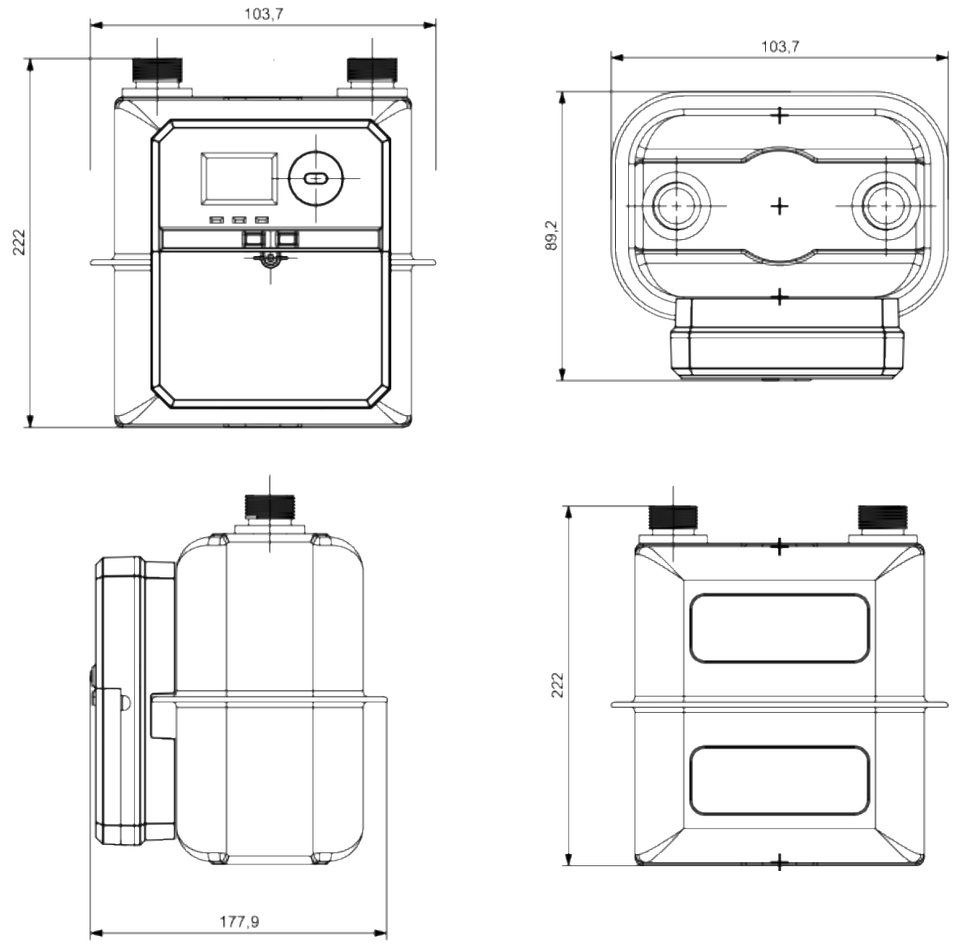
SPECIFICATIONS

Feature	Description
Meter Sizes	Available in G1.6 to G6 sizes. For meters sized G10 and above, please contact our sales team.
Gas Pulse Reading	Inductive pulse based, tamper proof measurement sensor
Tamper Detection	Physical tampering, magnetic tampering, Jerk or tilt attempt detection
Communication Modules	Modular design supporting various communication modules
Wireless Connectivity	NB-IoT, LoRaWAN, Wired and Wireless M-Bus, SigFox, LTE-M
Power Supply	LiSoCl2 Lithium Battery, 19Ah rating, single use, customer replaceable
Operating Temperature	T_p -25°C to +55°C T_m -20°C to +40°C
Environmental Protection	IP55-rated enclosure for protection against dust and water ingress, suitable for outdoor installations. IP65 available upon request
Dimensions	G4 Meter: [182×95×136mm), G6 Meter: [200×113×160mm]
Flow Rate Capacity	Refer to Technical Parameters Table
Compliance Standards	OIML R137-1&2:2012, MID Module 'B', MID Module 'D', EN1359, EN16314, ATEx, IECEx, RED, Welmec 2.7, Data Protocol - UNI/TS 11291-12-2
Installation	Standard fittings G1 1/4 or 23mm
Display	LCD display for local readings with Backlight
Data Logging	Data Storage, Main flash 16 MB, Backup flash 2 MB, EEPROM 4 KB Event log capacity ~87,000 records Snapshot capacity ~436,000 records Snapshot content Timestamp, pulse count, valve state, tamper, temperature, battery, flow and more
Firmware Updates	Supports over-the-air (OTA) firmware updates
Battery Life	>10 years, depending on frequency of Display usage and frequency of data upload
Security	AES-128 bit encryption for highly secure communication with cloud
Diagnostic Features	Remote diagnostics and monitoring capabilities
Material Construction	Durable materials suitable for various environmental conditions
Mounting Options	Wall-mounted or pipe-mounted configurations available
Alarm Notifications	Configurable alerts for tampering, low battery, and other critical events
User Interface	Web-based and mobile applications for monitoring and management (if applicable)

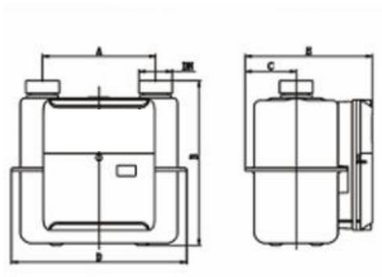
DIMENSIONS

SGM101 G4 SMART GAS METER





METER BODY SIZES COMPARISON



Type	G1.6~4		G4/G6	G6	G10	G16	G25
A(mm)	110/152.4	130	250	152.4	200	240	300
B(mm)	227	224.4	260	272	327.5	375.5	437
C(mm)	68.8	67.5	77	85	96	107	132
D(mm)	236.5	204	329	254.5	316	355.5	438.8
E(mm)	171.5	170.2	202	197.1	224	244	294
Thread	G1¼"; G3/4"; M30x2, or customized			G1¼"	G2"	G2"	G2½"

*ALL UNITS ARE IN MM (MILIMETER)