



SSM-U4

Ultrasonic Smart Gas Meter

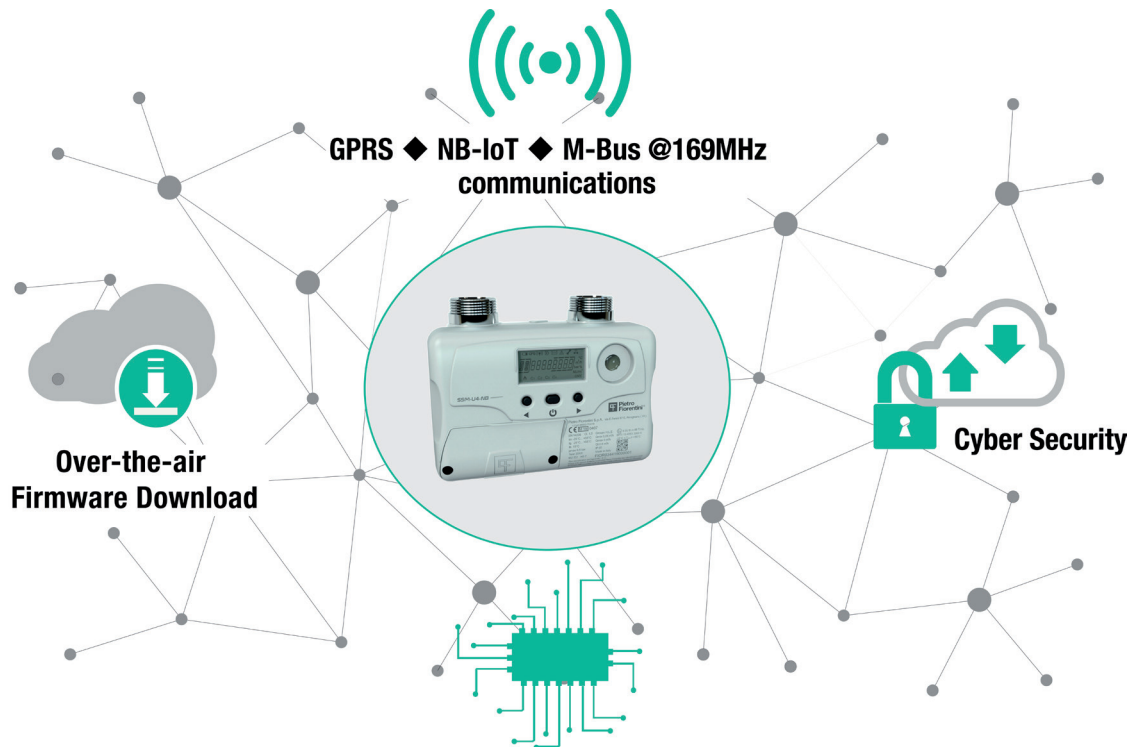


**NEWER,
SMALLER,
SMARTER,
*BETTER.***

Ultrasonic Smart Gas Meter with Latest Communication Technology.

SSM-U4 is the newest addition to Pietro Fiorentini's portfolio of gas smart meters.

This model combines **Ultrasonic Measurement** principle and **NB-IoT** communication providing a static smart gas meter to utilities willing to take benefit of the latest communication technology and pave the way to future smart grids.



Pietro Fiorentini's Smart Meters

Pietro Fiorentini has grown a significant experience in terms of smart metering over the last few years consolidating itself as **one of the top 3 worldwide suppliers of Gas Smart Meters**.

A **Modular design concept** combined with the adoption of consolidated open standard protocols have been the key to success of Pietro Fiorentini's smart meter portfolio, which includes point-to-point and point-to-multipoint communication models **easy to integrate with most common AMR/AMI/MDM solutions**.

Ultrasonic Measurement Principle

With the introduction of the **Ultrasonic Measurement principle** the unit has now reached a compact design unique in the class of static meters.

The **SSM-U4** model has been designed to **meet all the most recent requirements** and in compliance with the existing international norms. It is certified for the use with Natural Gas (2nd family - group H, L and E).

SSM-U4 Major Design Features

The meter design includes **unique solutions** in the treatment of dust and other contaminants as well as introduces the **highest protection against tampering** of the ultrasonic sensor. The meter can also mount a **sensor to detect the dismantling of the unit**.

An **internal shut-off valve** is included in the meter to provide contract management and pre-payment meter functionalities.

The meter has an integrated **temperature sensor** (immersed in the gas) to provide live calculation of the **temperature compensated volume** index (the base temperature for volume compensation is customizable).

Time-of-Use **Tariff management** with up to 3 daily tiers is available in the meter to profile end-user's consumption.

The unit provides a **large display** with self-descriptive icons/symbols for easy interpretation of the menus. Menu navigation is accessible via the **3-button (soft rubber type) user interface**.

The device is battery operated and it is designed to have a meter lifetime higher than 15 years.

Remote Communication

The **remote communication interface** is modular (factory option) and currently available as:

- Model **SSM-U4-NB**: point-to-point **NB-IoT multi-band** interface communication
- Model **SSM-U4-GPRS**: point-to-point **GPRS** interface communication
- Model **SSM-U4-RF169**: point-to-multipoint **Wireless M-Bus 169MHz** interface communication

Other interfaces are under development.

For all the communication interfaces the **antenna is integrated** into the meter.

The meter also provides a local **optical port** (according to IEC 62056-21) for installation and maintenance activities.

The metering application protocol layer is based on **DLMS standard protocol** and communications are secured using **authentication and encryption** mechanism (according to AES 128-GCM standard).

The smart gas meter provides a **non-volatile memory for data retention** even in case of battery failures.

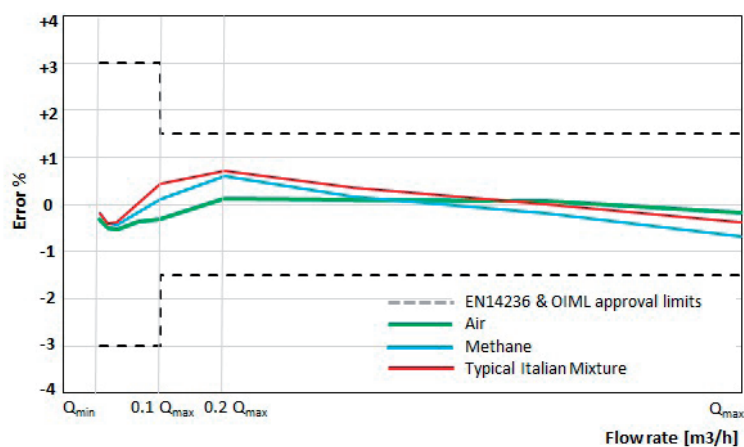
Over-the-air firmware download is supported (according to Welmecc 7.2) and the meter software has been designed to meet **firmware separation requirements**.



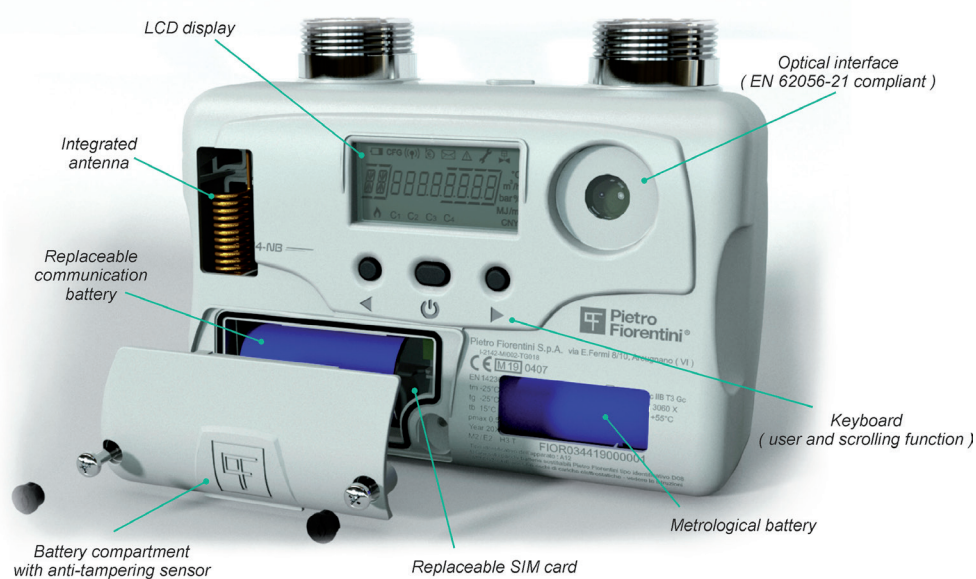
SSM-U4 Technical Features

Accuracy Class	1.5
Measurement Range (according to EN14236)	Qmin: 0.04 m ³ /h ÷ Qmax: 6 m ³ /h
Low Flow Registration	0.01 m ³ /h (Cut-off flow-rate)
Measuring Gas	Natural Gas (2nd family - group H, L and E- according to EN 437)
Meter Body	Zinc-coated pressed steel plate, Polyester powder paint cooked in oven at 200°C; Polycarbonate plastic flame retardant (V0 class) according to UL94 and IEC 60695-11-10/-20, UV stabilized for outdoor use (UL746C).
Max Operating Pressure	Pmax: 0.5 bar
Shut-off Valve	Integrated full bore ball-valve (option), EN16314 compliant
Operating Temperature	-25°C ÷ +55°C
Storage Temperature	-25°C ÷ +70°C
Pressure Loss	≤ 2 @Qmax
Inlet / Outlet Gas Connection Types	Standard connection: 1"1/4 ISO 228; Other connection types available on request
Local Communication Interface	Infrared optical port, IEC 62056-21 compliant
Remote Communication Interfaces	NB-IoT, GPRS, Wireless M-Bus @169MHz (Other communication interfaces under development)
Metering Communication Protocols	Application Protocol: DLMS compliant; Data-Model: UNI/TS 11291 compliant; Authentication & Encryption supported: AES-128-GCM (NIST FIPS PUB 197)
Firmware Architecture	Firmware separation (Metrological and Communication separation); Over-the-air remote upgrade option available
Battery Lifetime	Metrological Battery: > 15 years (non field-replaceable); Communication Battery (field-replaceable): - NBloT & Wireless M-Bus: > 15 years - GPRS: > 8 years Batteries health-check and consumption monitoring integrated in the meter software.
Homologations and Approvals	Directive 2014/32/EU (MID) - I-2142-MI002-TG018 ATEX II 3G Ex ic IIB T3 Gc - EPTI 19 ATEX 3060 X Radio Equipment Directive 2014/53/EU (RED) RoHS compliant Waste electrical and electronic equipment (WEEE) EU 2003/108/EC directive compliant Welmecc 7.2
Mechanical & Environmental	Class: M2 / E2 IP Protection Level: IP65 Relative humidity: 95% Corrosion Test: 1000h salt spray resistant
Resistance to High Ambient Temp.	High Ambient Temperature approved, "T" marking

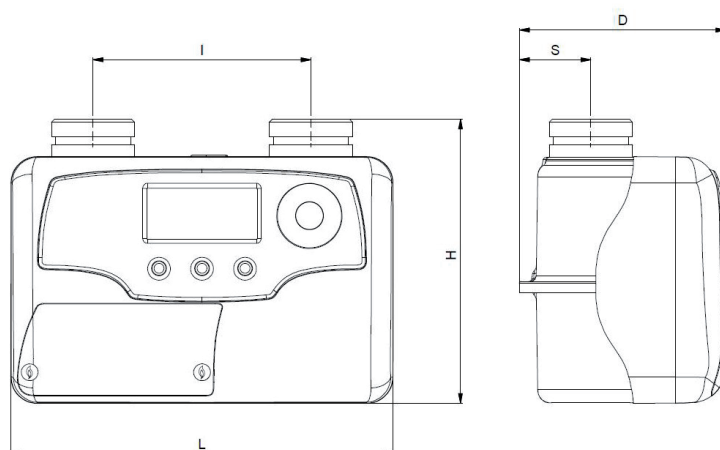
SSM-U4 Error Curves



SSM-U4 Overview



SSM-U4 Overall Dimensions



MODEL	L	H	D	S	I
G4	193	143	104	36	110

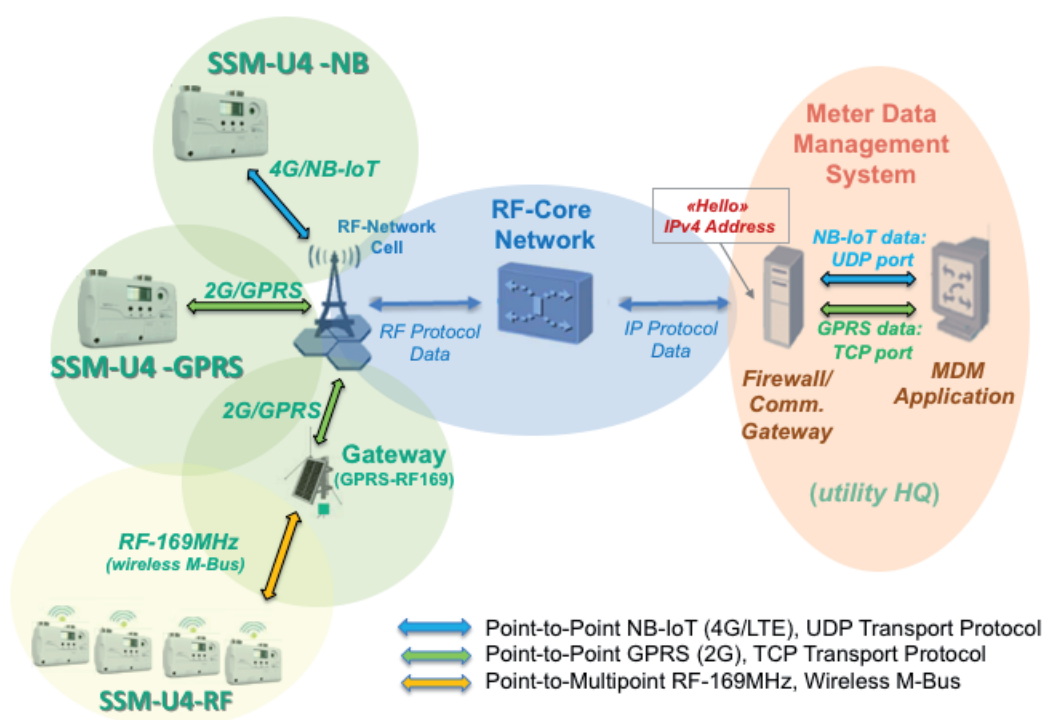
Measurement unit = millimeter

MODEL	Weight
G4	1,35 kg

Metering System Architecture

The following diagram shows the **metering system architecture** with the **point-to-point** and **point-to-multipoint** networking capabilities of Pietro Fiorentini's portfolio of smart gas meters.

Gas Smart Metering Architecture



Note that all models support the **DLMS protocol standard** and share the same data-model for the metering data.

The **SSM-U4 models** also combine in the metering systems with the earlier generation of Pietro Fiorentini's residential gas smart meters, the **RSE** family, an hybrid meter type based on a diaphragm measuring unit.

www.fiorentini.com

Disclaimer: the information included in this document is not binding and can be subject to changes without notice..

