Pietro Fiorentini

SSM-iCON

Residential metering
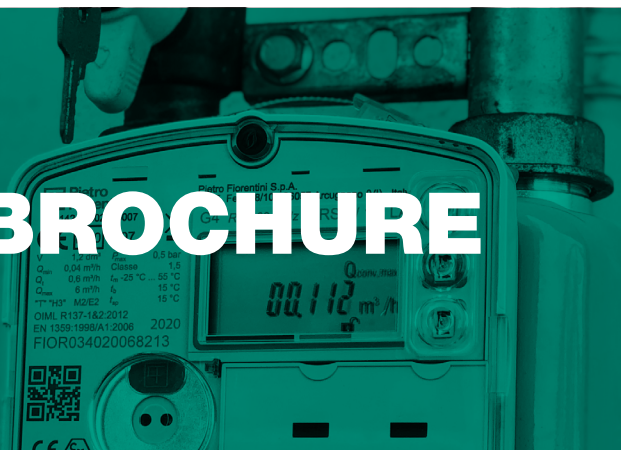
www.fiorentini.com

Who we are

We are a global organization specialized in designing and manufacturing technologically advanced solutions for natural gas treatment, transmission and distribution systems.

We are the ideal partner for operators in the Oil & Gas sector, with a business offer that goes across the whole natural gas chain.

We are in constant evolution to meet our customers' highest expectations in terms of quality and reliability.

Our aim is to be a step ahead of the competition, with customized technologies and an after-sale service program undertaken with the highest grade of professionalism.

Pietro Fiorentini advantages
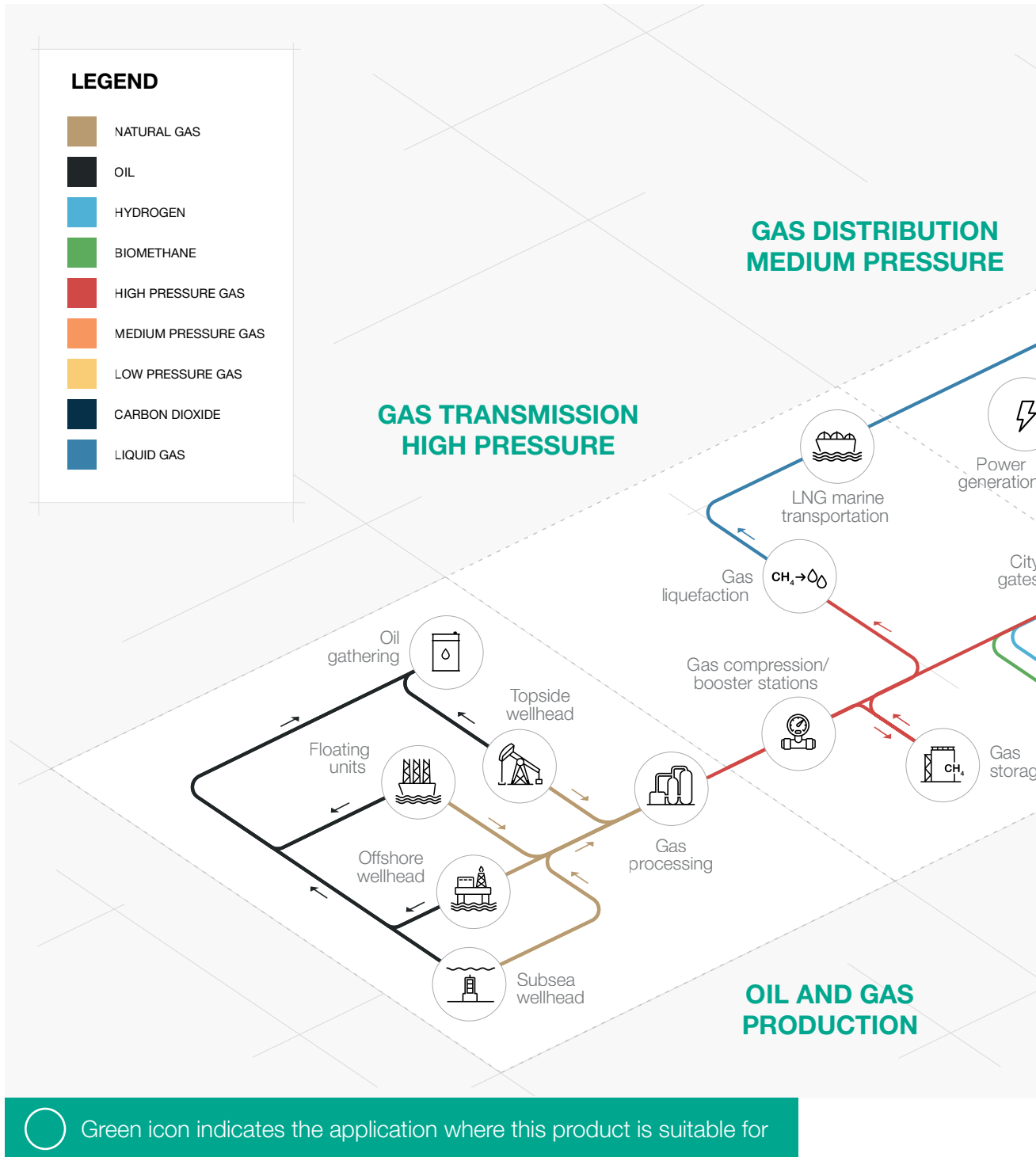
Localised technical support

Experience since 1940

We operate in over 100 countries

Area of Application

LEGEND

- ■ NATURAL GAS
- ■ OIL
- ■ HYDROGEN
- ■ BIOMETHANE
- ■ HIGH PRESSURE GAS
- ■ MEDIUM PRESSURE GAS
- ■ LOW PRESSURE GAS
- ■ CARBON DIOXIDE
- ■ LIQUID GAS

GAS DISTRIBUTION MEDIUM PRESSURE

GAS TRANSMISSION HIGH PRESSURE

Power generation

City gates

LNG marine transportation

Gas liquefaction

Gas compression/ booster stations

CH₄

Gas storage

Oil gathering

Topside wellhead

Floating units

Gas processing

Offshore wellhead

Subsea wellhead

OIL AND GAS PRODUCTION

○ Green icon indicates the application where this product is suitable for

GAS DISTRIBUTION LOW PRESSURE

Medium / small industry

Commercial users

Residential users

Regasification

Heavy industry

Gas engines

District stations

Gas reverse-flow

GREEN GAS PRODUCTION

P2G & Methanation

P2Hy

Biomethane Production

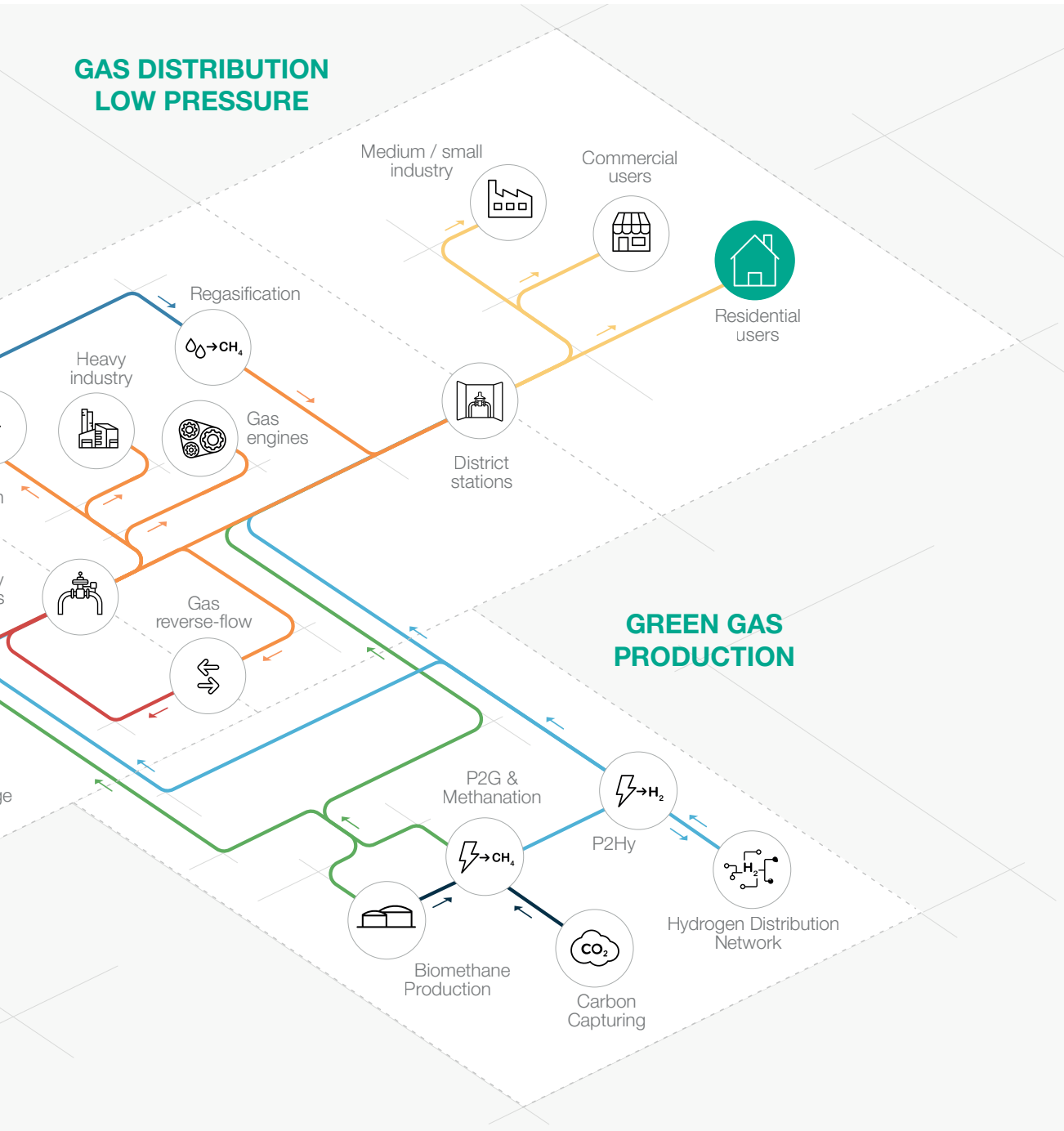Carbon Capturing

Hydrogen Distribution Network

Figure 1 Area of application map

Introduction

SSM-iCON is the natural evolution of the Pietro Fiorentini know-how and experience in the gas industry.

With its **ultrasonic technology** SSM-iCON provides gas volume measurement.
This device is used in residential environment, for dry gas volume measurement.

Figure 2 SSM-iCON with built-in wireless communication module

Features

The SSM-iCON smart meter by Pietro Fiorentini incorporates the latest ultrasonic measurement technology to the flexibility of the **multi communication module**.
Equipped with state-of-the-art monitoring sensors, it can stop the gas flow even remotely, to increase customers safety.

Suitable for use with **natural gas**, **biomethane** and hydrogen blends (up to 20%), this device is used for residential application on low pressure gas distribution networks.

High accuracy

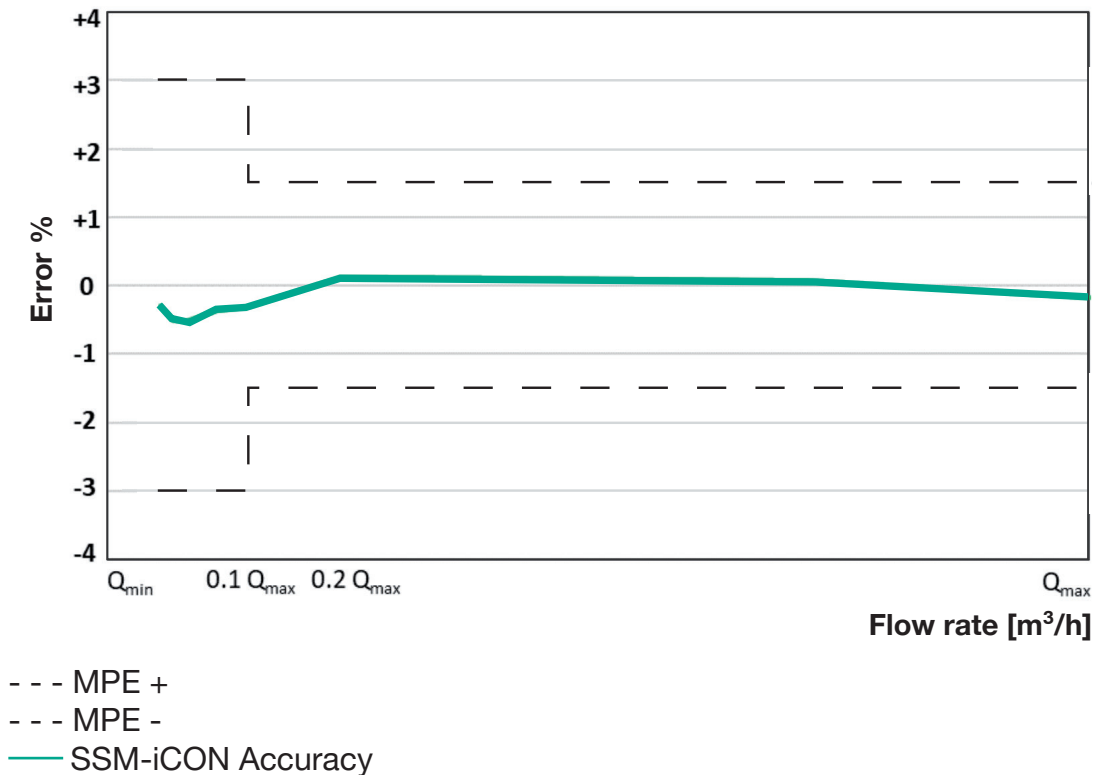Below a typical accuracy performance of SSM-iCON ultrasonic smart gas meter.

- - - MPE +
- - - MPE -
—— SSM-iCON Accuracy

Figure 3 Accuracy curve

Benefits of Ultrasonic Measurement Technology

Ultrasonic measurement is well known in the gas industry and applied in many areas for several decades, now.

In recent time static metering technology has arrived at the residential sector, offering the same measurement quality and service levels as for the industrial sector.

The ultrasonic measurement-based meters are offering many advantages over the diaphragm gas meters that make these meter competitive in the residential meter market.

Thanks to its static design the meter has high performance against dust contamination and freezing temperature conditions.

Another significant benefit is the **high measurement accuracy**. These meters' small footprint enables to install them into tight spaces.

Simplified design

During User Experience and User Interface design it was the key driver was to give the user the best experience that interaction with a gas meter can give. With a **multiple dedicated button design** the most important parameters can be scrolled through with zero-latency.

The **large display is well readable** and has a high contrast to be able to read it during strong daylight conditions.

Features

Features	Values
Measurement Range (Qmin - Qmax)	from 0.040 to 6 m³/h from 1.4 to 212 cfh
Minimum Flow rate (Qstart)	0.01 m³/h 0.35 cfh
Maximum Operating Pressure*	up to 50 kPa up to 500 mbar
Pressure drop	≤ 0.2 kPa @Qmax ≤ 2 mbar @Qmax
Ambient temperature*	from -25 °C to 55 °C from -13 °F to 131 °F
Gas temperature range*	from -25 °C to 55 °C from -13 °F to 131 °F
Accuracy	Class 1.5
Ingress protection	Compliant to IP55 (IP66 on request)
Metrological power supplies and operating lifetime	Lithium batteries 15 years for standard version (non-replaceable). 20 years for extended life version (non-replaceable)
Communication power supplies and operating lifetime	Lithium batteries Up to 20 years for communication battery (replaceable) depending on remote communcation interface
Remote communication interface	NB-IoT, GPRS (2G), RF WM-Bus @169 MHz
Communication protocols	DLMS compliant, UNI/TS 11291 compliant (others on request)
Measuring Gas	Natural Gas (2nd family - group H, L and E - according to EN 437)
High Ambient Temperature approved	T
ATEX classification	II 3G Ex ic IIB T3 Gc
Gas volume compensation	Temperature compensated (TC) and non temperature compensated (NTC) options available
Nominal dimensions	Connection distance – 110 mm Width 206 mm; Height 130.4 mm; Depth 112.2 mm for standard version (120.2 mm for extended life version) Connection distance – 4.3 inches Width 8.1 inches; Height 5.1 inches; Depth 4.4 inches (4.7 inches for extended life version)
Connections	1" 1/4 ISO 228, 1" ISO 228, 7/8" ISO 228

(*) REMARK: Different functional features and/or extended temperature ranges available on request. Stated temperature ranges are the maximum for which the equipment's full performance, including accuracy, are fulfilled. Standard product may have a narrower range.

Table 1 Features

SSM-iCON competitive advantages

🌡️ Temperature monitoring sensor

🔀 Integrated shut off valve

🧩 Open communication protocol

🔋 15 years metrological battery

🔋 Up to 20 years communication battery life depending on radio interface installed

🔋XL Extended life metrological battery option (20 years)

H₂ Biomethane compatible and 20% Hydrogen blending compatible. Higher blending available on request

Materials and Approvals

Part	Material
Body	Zinc-coated pressed steel plate
Electronic enclosure	Plastic polycarbonate
REMARK: The materials indicated above refer to the standard models. Different materials can be provided according to specific needs.	

Table 2 Materials

The SSM-iCON is designed to meet OIML R137, EN 14236 and UNI/TS 11291.
The product is certified according to European Directives 2014/32/EU (MID), 2014/34/EU (ATEX) and 2014/53/EU (RED).

OIML R137   EN 14236   UNI/TS 11291   ATEX   MID   RED

Advanced safety

Temperature monitoring sensor

The SSM-iCON can be equipped temperature sensors to monitor the gas flow and help the conversion of the raw gas volume to the reference thermodynamic conditions that will result the **accurate compensated volume for consumption settlement**.

Smart funtionalities

Advanced diagnostic

The meter is capable to identify any sort of malfunction in the built-in sensors, or the telecommunication network or any other parts that are connected to the central processor. These **advanced self-diagnostic** features prevent the meter to perform in a failed state. It indicates the type of malfunction, sends alert to the gas utility (if possible), and stops the gas flow, if needed.

Communication & batteries

Advanced communication and longevity

The SSM-iCON is equipped with the latest generation **NB-IoT** communication module to ensure **long-term compatibility** and maintain battery operation lifetime up to 20 years. The 4G communication technology is laying on the strong foundation of **3GPP international standards** that ensures back-to-back compatibility. The meter is equipped with **over the air firmware upgrade** function to ensure cyber security compliance through its operating lifetime.

Open protocol

The meter is capable of communicating on **DLMS** and **UNI/TS protocols**, which are designed for the smart meter communication bringing **security, interoperability, efficiency**. These protocols are **globally accepted** and used for smart metering applications, the ideal for fostering multivendor environment.

Versatility

Suitable for outdoor installation

The meter is designed to **resist harsh environmental conditions** in both indoor and outdoor installations. The high-level ingress protection prevents dust and water to penetrate the enclosure in all weather conditions.

Sustainability

The SSM-iCON is compatible with **biomethane, hydrogen blending (up to 20%) and natural gas blends**. That positions this meter as a facilitator of the green gas / natural gas blend injection into the gas grid.

Weights and Dimensions

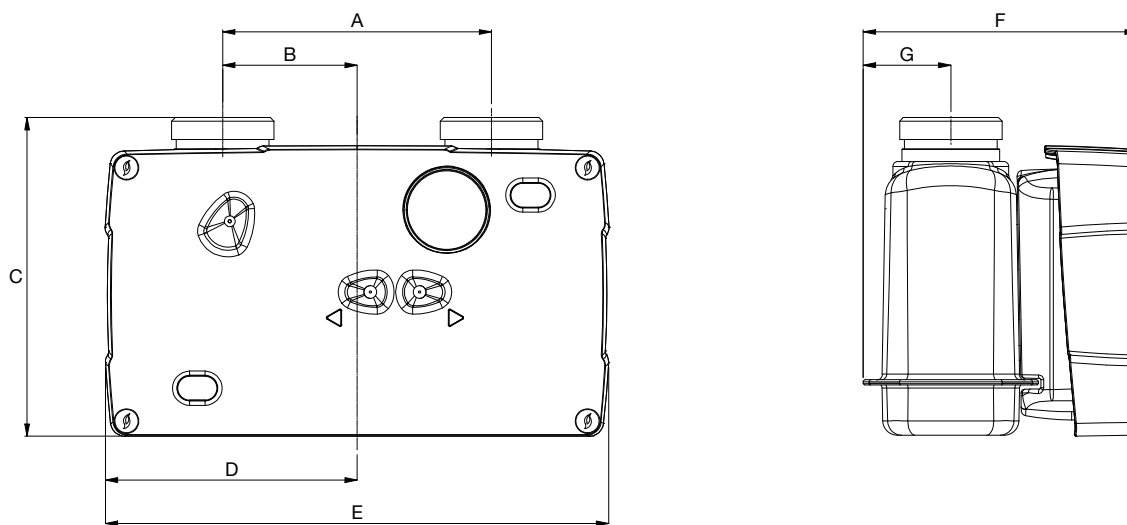## SSM-iCON - standard version

Figure 4 SSM-iCON - standard version dimensions

Weights and Dimensions (for other connections please contact your closest Pietro Fiorentini representative)		
Model	iCON	
Connection distance - [mm]	110	
Connection distance - inches	4.3"	
	[mm]	inches
A	110	4.3"
B	55	2.2"
C	130.4	5.1"
D	103	4"
E	206	8.1"
F	112.2	4.4"
G	35.9	1.4"
Weight	kg	lbs
	1.2	2.6

Table 3 Weights and dimensions

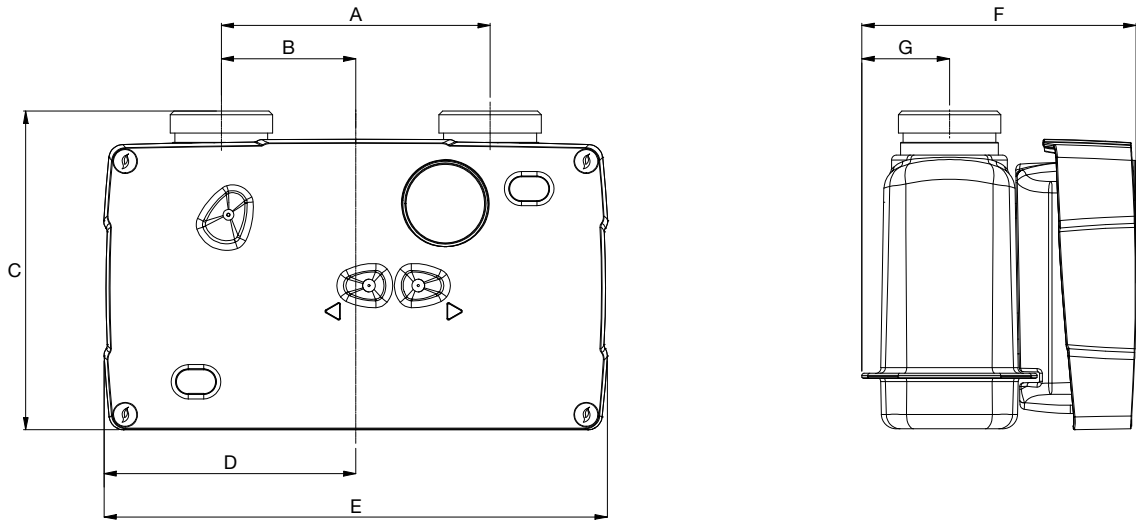# SSM-iCON - extended life version

Figure 5 SSM-iCON - extended life dimensions

Weights and Dimensions (for other connections please contact your closest Pietro Fiorentini representative)		
Model	**iCON**	
Connection distance - [mm]	**110**	
Connection distance - inches	**4.3"**	
	[mm]	inches
A	110	4.3"
B	55	2.2"
C	130.4	5.1"
D	103	4"
E	206	8.1"
F	120.2	4.7"
G	35.9	1.4"
Weight	kg	lbs
	1.3	2.9

Table 4 Weights and dimensions

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