SIU-MBM, SIU-MBC

Gateways from M-Bus/wM-Bus to Modbus TCP/IP

Description

SIU-MBMs are gateways that transform data from the M-Bus and wireless M-Bus protocol into the Modbus TCP/IP protocol, to then send them to a master.
Two versions are available: SIU-MBM-01 (that can integrate, according to the model, from 20 to 160 wired M-Bus devices) and SIU-MBM-02 (20 wired M-Bus devices and 32 wireless M-Bus devices).
Moreover, thanks to the SIU-MBC radio transmitter, SIU-MBM-02 can read consumption of devices with pulse output such as gas or water meters.
The UCS software, available for free download, scans and identifies the M-Bus devices connected to SIU-MBM and the wireless M-Bus devices operating withing the range, automatically generating the Modbus map.
For rapid and automatic integration with the VMU-C EM / UWP 3.0 masters, UCS generates a Modbus driver that can be imported directly.

Benefits

- **Simple integration.** SIU-MBMs integrate all devices that communicate with the standard M-Bus protocol, wired and wireless. Thanks to the SIU-MBC radio transmitter, they can also read data of devices with pulse outputs.
- **Product sold and usable individually.** The products SIU-MBM, SIU-MBC and the master VMU-C EM and UWP 3.0 have been created to be integrated in the same system, where necessary, and designed to operate efficiently together. However, they may be sold and used individually as well.
- **Ease of installation.** SIU-MBMs can be installed on DIN rail. SIU-MBC can be installed on DIN rail or wall-mounted by means of screws or tube/mast mounted by means of zip ties and it is suitable also for outdoor installation.
- **Tamper-proof.** Subsequent modifications to the configuration of SIU-MBC are blocked by means of the anti-fraud system.
- **Free specific software.** The UCS software enables rapid configuration with a simple and intuitive interface. The software and subsequent updates are free.
- **Auomatic scanning and mapping.** The UCS software automatically scans and maps the M-Bus devices present in the system.
- **Automatic import of mapping into VMU-C EM / UWP 3.0.** The UCS software is able to generate the driver to easily import the map of Modbus registers of all the integrated devices in the VMU-C EM / UWP 3.0 master.

Applications

Designed for commercial, residential and industrial applications, guarantee rapid installation with few and easy connections.

SIU-MBM is especially recommended for:
- retrofit applications in which data is to be collected from existing devices equipped for M-Bus or wireless M-Bus communication
- new installations in which M-Bus or wireless M-Bus devices are used, taking advantage of the ease of installation and integration.

All consumption data (e.g. electricity, gas, water, heat) and ambient data (e.g. temperature and humidity) of a commercial or industrial building or a residential home can be integrated in the same VMU-C EM / UWP 3.0 master, enabling the following:

- precise cost allocation
- implementation of energy efficiency improvement policies
- check on correct operation and use of systems and machinery.

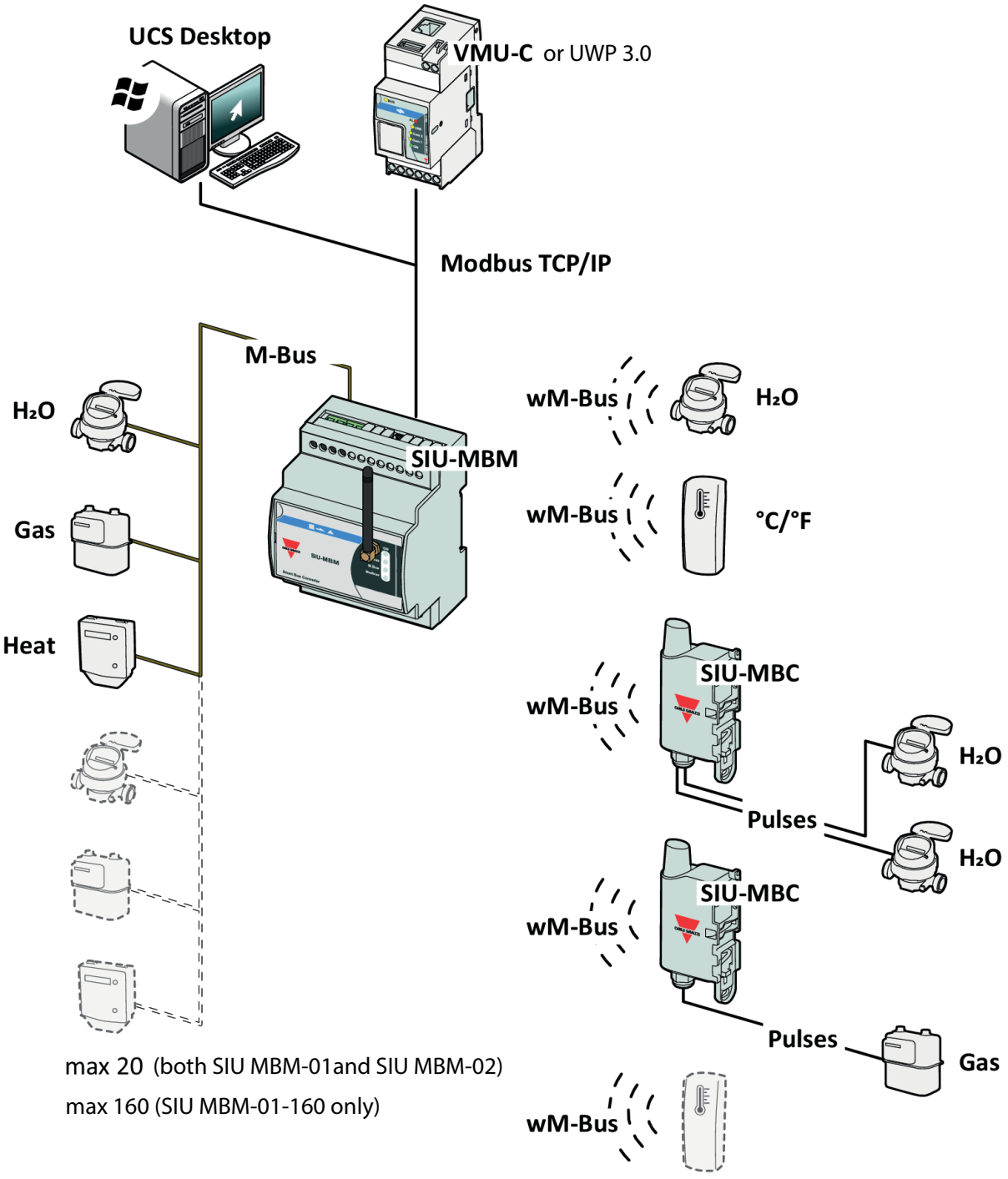
Moreover, devices with pulse output not physically connectable to the master can be easily integrated in the system thanks to wireless communication of SIU-MBC, which can also be installed outdoors.

Note: in case of connection to certified meters, we recommend checking for the possible need to make adaptations for the installation with the building owner or manager of the devices to be integrated.

Main functions

- Collect data from multiple M-Bus and wireless M-Bus devices
- Convert data from M-Bus and wireless M-Bus into Modbus TCP/IP
- Communicate data to a Modbus master
- Scan devices and mapping (from UCS)
- Automatically import the map of Modbus registers into the VMU-C EM / UWP 3.0 master, thanks to the driver generated by UCS
- Diagnose potential problems with wireless power and verify communication (from UCS)
- Decode data from wireless M-Bus devices via entry of decryption key (from UCS)

Architecture



Main features

- Up to 160 connected M-Bus devices (SIU-MBM-01-160)
- Up to 20 connected M-Bus devices (SIU-MBM-02 / SIU-MBM-02)
- Up to 32 wireless M-Bus devices (SIU-MBM-02)
- DIN rail mounting
- Wireless communication antenna (SIU-MBM-02)
- Ethernet Modbus TCP/IP output
- Free UCS software

UCS specifications

- Intuitive interface
- 3-steps scanning and mapping process.

Structure

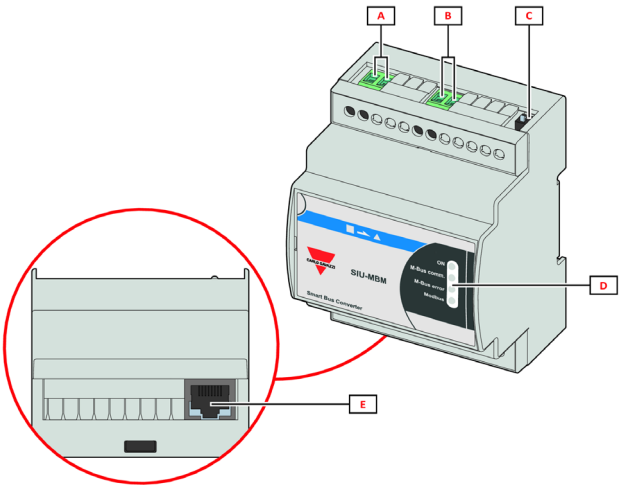


Fig. 1 *SIU-MBM-01*

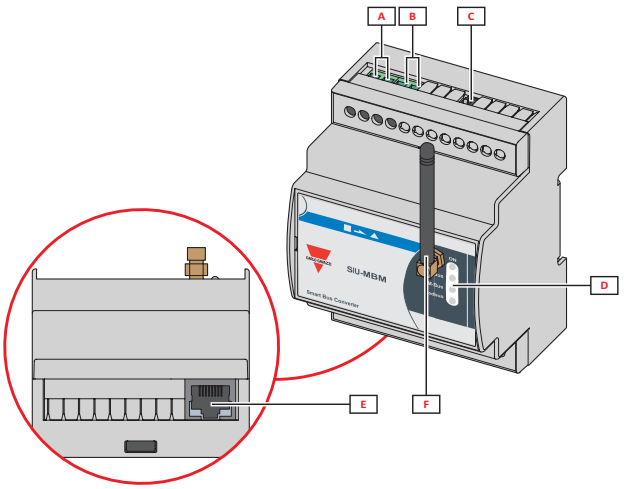


Fig. 2 *SIU-MBM-02*

Area	Description
A	Power supply input terminal block
B	M-Bus input terminal block
C	Dip-switch for initial configuration
D	LED
E	Ethernet port
F	(SIU-MBM-02 only) Antenna

Features

General

Material	PVC
Protection degree	IP20
Terminals	Cable section: from 0.5 to 3 mm2 Torque: 0.5 Nm
Insulation	See "Input and output insulation" on page 5
Mounting	On DIN rail or wall-mounted
Weight	approx. 200 g

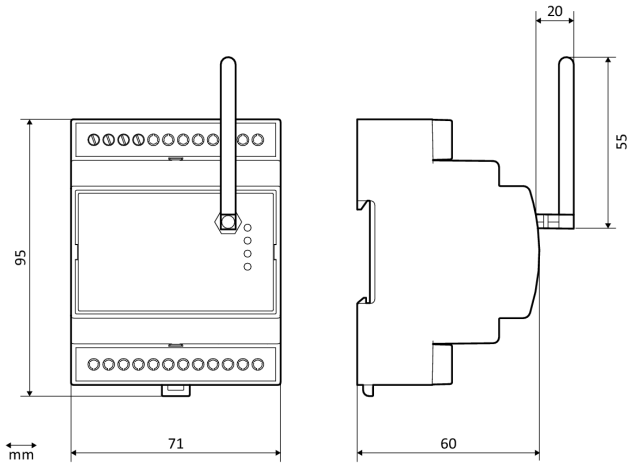


Fig. 3 *Fig. 1 SIU-MBM-02 dimensions*

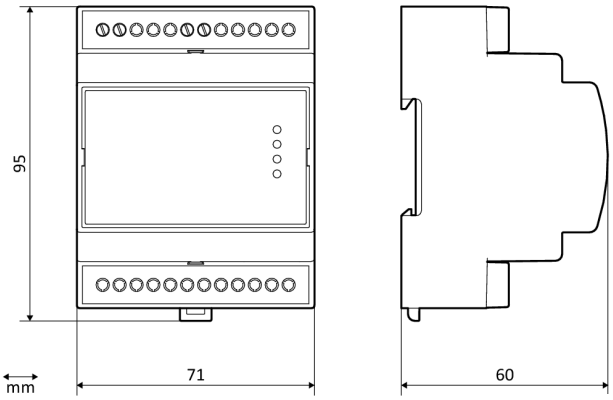


Fig. 4 *Fig. 2 SIU-MBM-01 dimensions*

Environmental specifications

Operating temperature	From -40 to + 85 °C
Storage temperature	From -40 to + 85 °C

Input and output insulation

Power supply and M-Bus port	Not insulated
Power supply and Ethernet port	2000 V rms/0.5 mA/60 s
M-bus and Ethernet port	2000 V rms/0.5 mA/60 s

Conformity

Directives	2011/65/EU (RoHS - Restriction of Hazardous Substances) 2014/35/EU (LVD – Low Voltage Directive) 2014/30/EU (EMC – Electro Magnetic Compatibility)
Standards	EN13757-3:2013 EN13757-4:2013
Approvals	CE

Power supply

Power supply	From 15 to 21 V ac, from 18 to 35 V dc
Consumption	3.5/4 W, 15 mA (with one device)
Connector	Screw terminals
Recommended power supply units	SPM3241 SPD2418

LED SIU-MBM-01 / SIU-MBM-01-160

LED	Description
ON	Gateway ON
M-Bus	Reception of M-Bus communication
Modbus	Reception of Modbus communication

LED SIU-MBM-02

LED	Description
ON	Gateway ON
wM-Bus	Reception of wireless M-Bus communication
M-Bus	Reception of M-Bus communication
Modbus	Reception of Modbus communication

Ethernet port

Protocols	Modbus TCP/IP
Connections	Maximum 4
Connection type	RJ45 connector
Transmission speed	Automatic detection 10/100 base-T

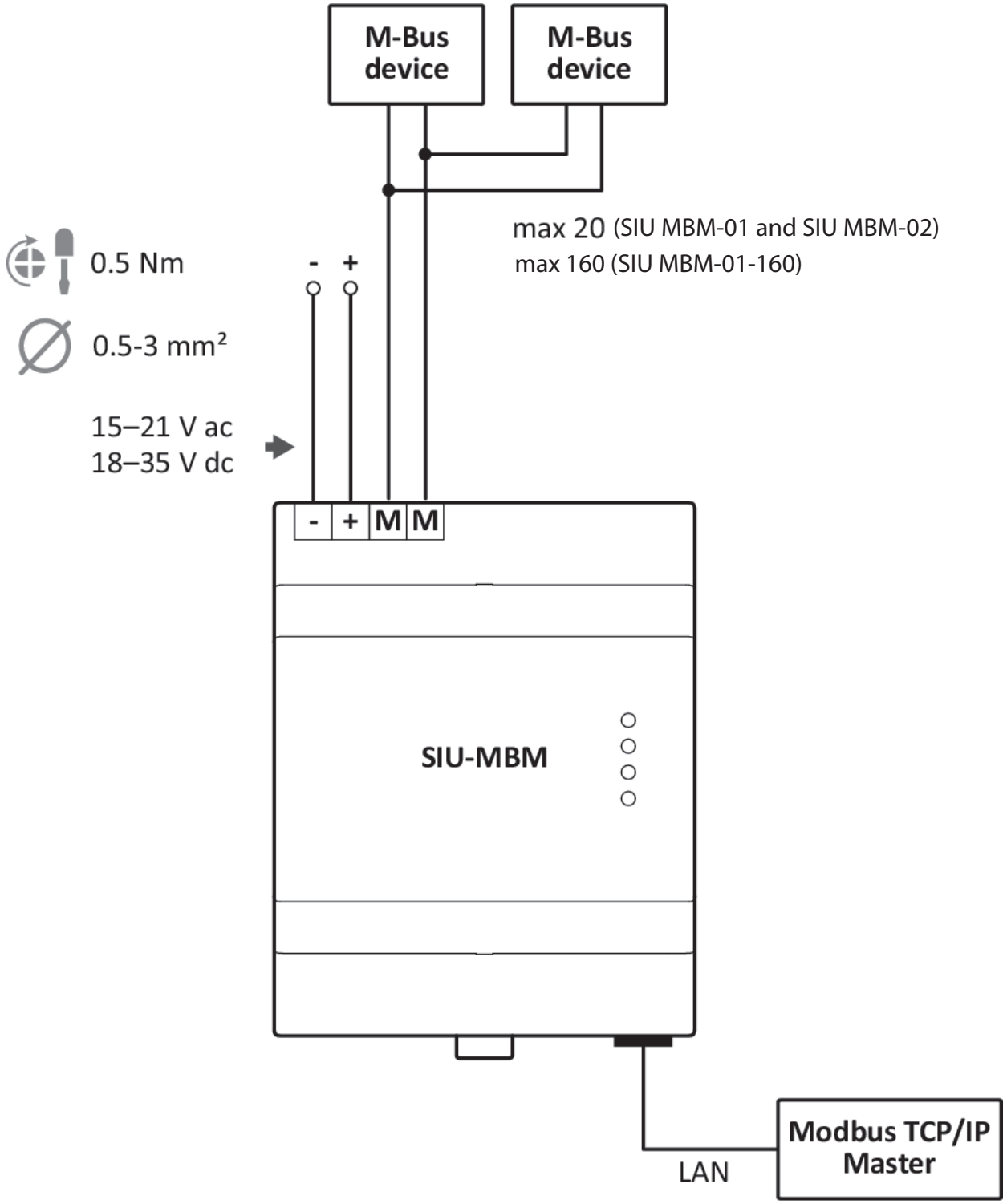
M-Bus port

Standard	EN13757-2:2013
Protocols	M-Bus
Connections	Maximum 160 devices (SIU MBM-01-160) Maximum 20 devices (SIU MBM-01 and SIU MBM-02) Daisy chain or star connection
Connection type	Screw terminals
Transmission speed	From 300 to 38,400 bps

Wireless M-Bus communication (for SIU-MBM-02 only)

Standard	EN13757-4
Protocols	Wireless M-Bus
Connections	Maximum 32 devices
Connection type	SMA connector for 868 MHz antenna (50 ohm)
Frequency	868 MHz

Connection Diagrams



References

Further reading

Information	Document	Where to find it
Instructions for installation, operation and maintenance	Instruction manual - SIU-MBM-01	www.productselection.net/MANUALS/UK/siumbm01_im.pdf
Instructions for installation, operation and maintenance	Instruction manual - SIU-MBM-02	www.productselection.net/MANUALS/UK/siumbm02_im.pdf
Instructions for installation, operation and maintenance	Instruction manual - SIU-MBM-01-160	www.productselection.net/MANUALS/UK/siumbm01_160_im.pdf
Datasheet	VMU-C EM Datasheet	www.productselection.net/PDF/UK/vmucemds.pdf
Datasheet	UWP 3.0 Datasheet	www.productselection.net/PDF/UK/uwp3.0_ds.pdf

CARLO GAVAZZI compatible components

Purpose	Component name/part number	Notes
Configure SIU-MBM and generate the Modbus map and driver for VMU-C EM / UWP 3.0	UCS configuration software	Available for free download at: www.productselection.net/Download/UK/ucs.zip
Collect data from devices with pulse output	SIU-MBC	See next chapter
Monitor data from several devices	VMU-C EM (limit of devices to be managed: 128)	See relevant datasheet
	UWP 3.0 (limit of devices to be managed: 160)	See relevant datasheet

SIU-MBC

Description

Radio trasmitter, easy to configure and ready for use, designed to count the pulses of devices with pulse output (meters for water, gas, electricity and heat) and to transmit the acquired consumption data in wireless M-Bus format for easy reading.
Can manage up to two devices thus significantly reducing times and costs of installation.
Compatible with wireless M-Bus gateways in the SIU-MBM range, and developed for integration in systems managed by VMU-C EM master.

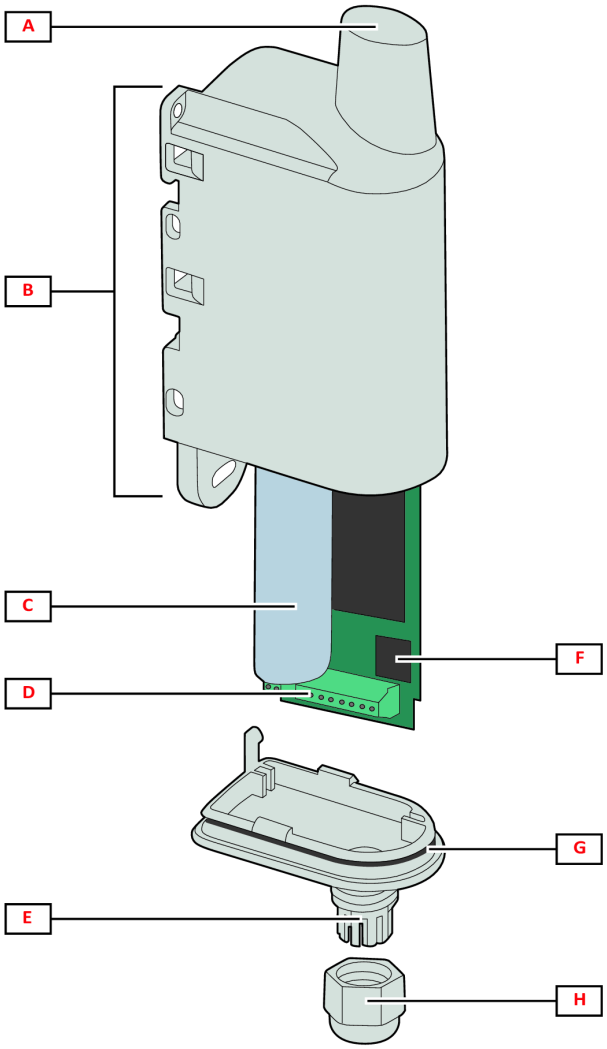
Main functions

- Obtain data from devices with pulse output
- Transmit data from devices with pulse output in wireless M-Bus format for remote reading

Main features

- Two pulse inputs
- Protection degree: IP67
- Mechanical block with safety seal to ensure protection degree and prevent accidental opening
- Assembly with zip ties on tube/mast or wall-mounted with screws or on DIN rails
- Activation by magnet (not included)
- Communication via standard European wireless M-Bus protocol
- Battery-powered with built-in long life battery
- Anti-fraud system

Structure



Area	Description
A	Antenna
B	Fixing supports
C	Battery
D	Screw terminals
E	Cable input/output
F	Dip-switch for configuration
G	Seal
H	Cable gland

Features

General

Material	Plastic
Protection degree	IP67
Connection to gateway	Wireless M-Bus
Mounting	Tube/mast mounted using zip ties DIN rail Wall-mounted using screws
Weight	110 g

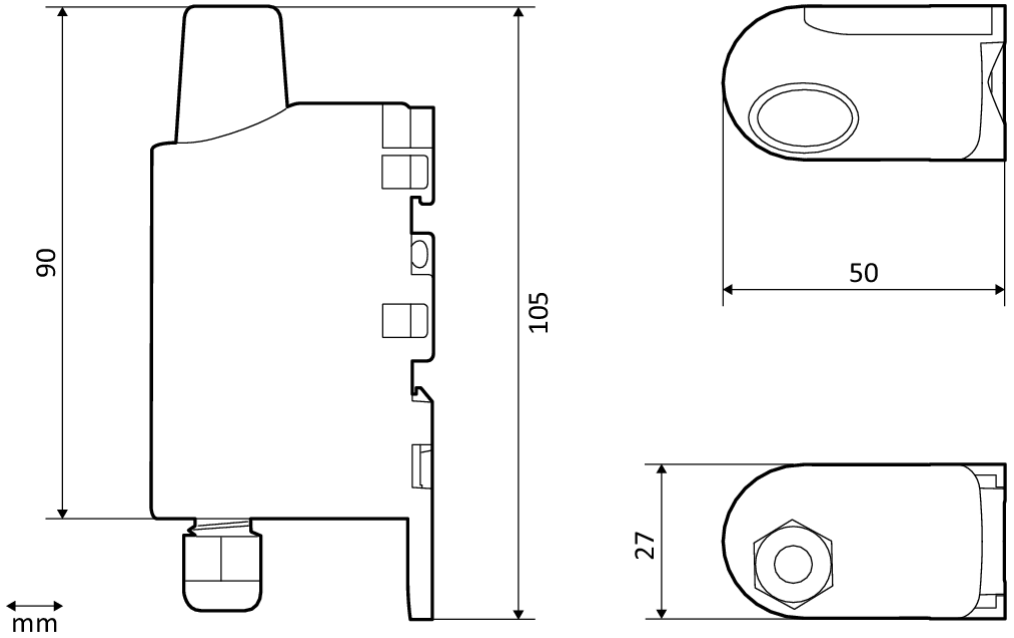


Fig. 5 *Fig. 3 SIU-MBC dimensions*

Environmental specifications

Operating temperature	From -20 to +75 °C
Storage temperature	From -20 to +75 °C

Conformity

Directives	2011/65/EU (RoHS - Restriction of Hazardous Substances) 2014/53/EU (RED - Radio Equipment Directive)
Standards	EN 13757-4:2005
Approvals	CE

Power supply

Battery	1 Metal-ion non-replaceable battery; 0.9 g
Recharge	Not possible
Lifetime	≥12 years *Note: value referred to an operating temperature of 20° C and maximum one year of storage before use.*

Note: The device contains metal-ion batteries. For the sending, you must comply with the relevant packaging and labelling regulation.

Radio communication specifications

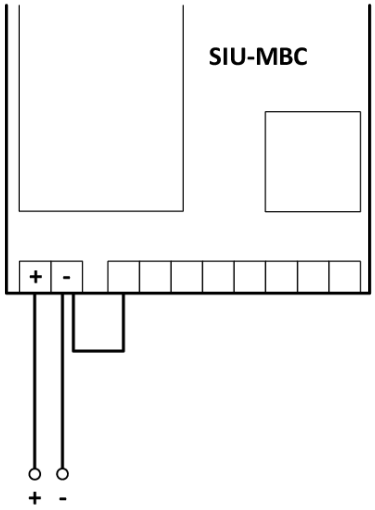
Protocol	Wireless M-Bus
Mode	T1
Frequency	868.95 MHz
Data type	Selectable: water, gas, electricity, heat
Data transmission interval	Selectable: 10 s, 10 min, 1 h, 12 h
Encryption	No
RF power	14 dBm (25 mW)
Radio bandwidth	100 kbps
Operating range	up to 600 m in open air

Digital inputs

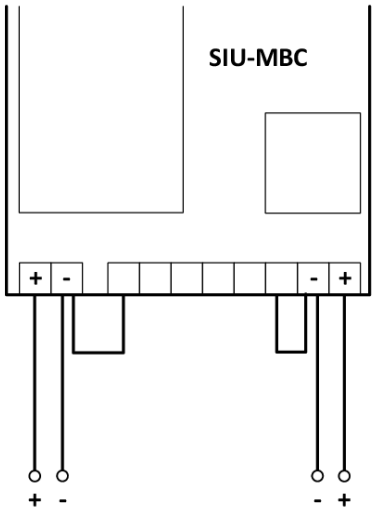
Number of inputs	2
Function	Pulse count (water, gas, electricity, heat)
Pulse weight	Selectable: 1/10/100/1000 (Wh, dm3 or L)
Maximum current	1 mA (open collector version)
Maximum voltage	3.6 V
Minimum pulse width	8 ms
Maximum pulse frequency	33 Hz
Input resistance	1 kΩ (dry contact version)
Maximum cable length	10 metres
Cable cross section	From 0.25 to 0.5 mm^2

Connection Diagrams

Connections of a device and anti-fraud cable



Connection of two devices and anti-fraud cables



References

Further reading

Information	Document	Where to find it
Instructions for installation, operation and maintenance	Instruction manual - SIU-MBC	www.productselection.net/MANUALS/UK/siumbc_im.pdf
M-Bus frame decoding	M-Bus protocol	www.productselection.net

CARLO GAVAZZI compatible components

Purpose	Component name/part number	Notes
Convert data from wireless M-Bus to Modbus TCP/IP	SIU-MBM-02	See previous chapter

How to order

SIU-MBC

Code	Description
SIU-MBC-XX	Gateway from pulses to wireless M-Bus

SIU-MBM

Code	Description
SIU-MBM- 01	Gateway from M-Bus to Modbus TCP/IP
SIU-MBM- 02	Gateway from M-Bus/wireless M-Bus to Modbus TCP/IP
SIU-MBM-01-160	Gateway from M-Bus to Modbus TCP/IP (up to 160 connected M-Bus devices)