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# 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.

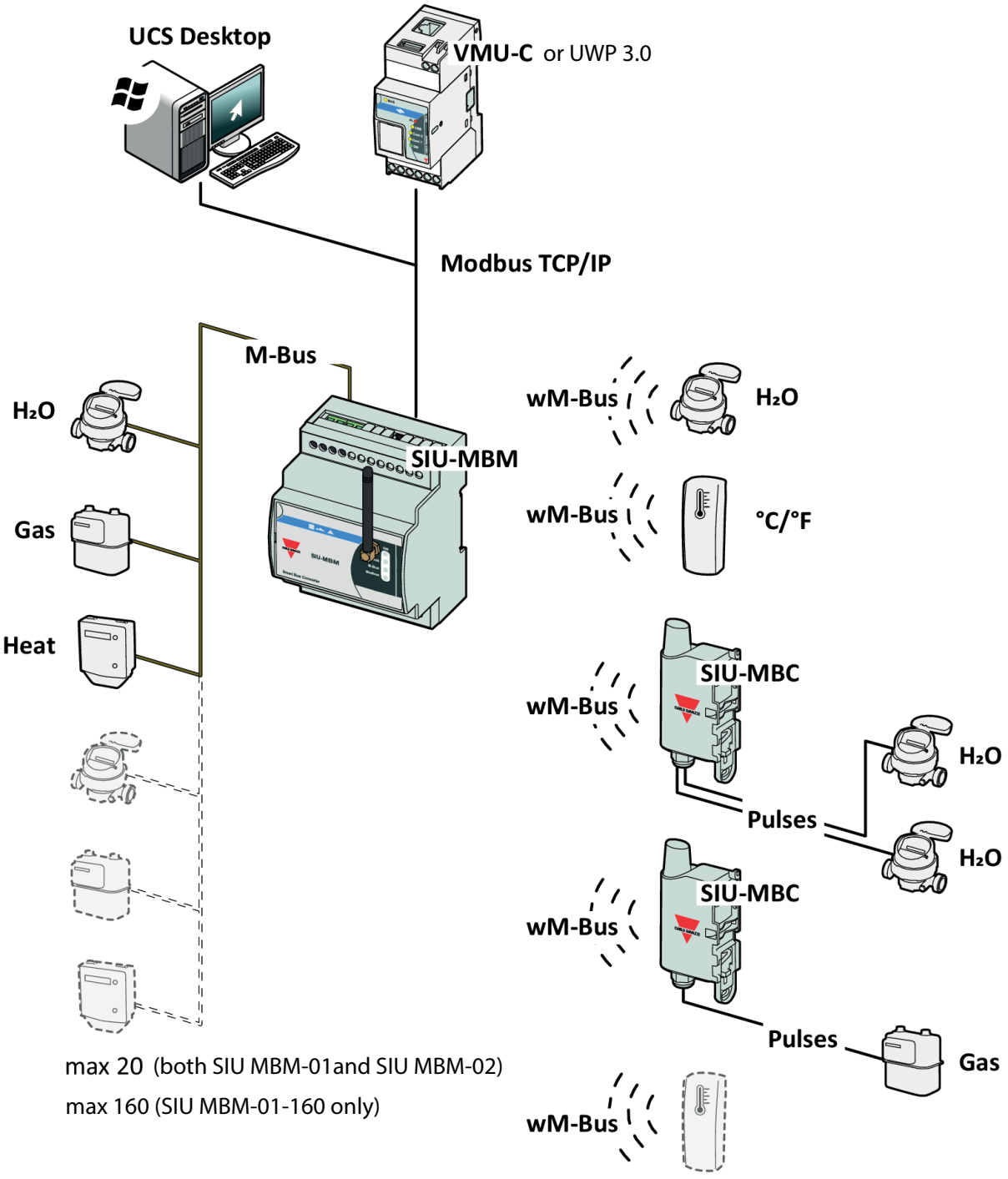
Moreover, devices with pulse output not physically connectable to the master can be easily integrated in the system thanks to wireless communication of SIU-MBC, which can also be installed outdoors.

**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




max 20 (both SIU MBM-01and SIU MBM-02)
max 160 (SIU MBM-01-160 only)

max 32
(SIU MBM-02 only)

## Main features

- Up to 160 connected M-Bus devices (SIU-MBM-01-160)
- Up to 20 connected M-Bus devices (SIU-MBM-01 / 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

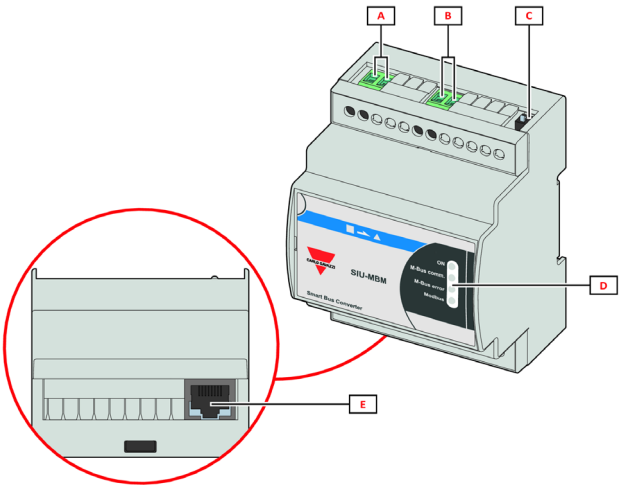



**Fig. 1** *SIU-MBM-01*

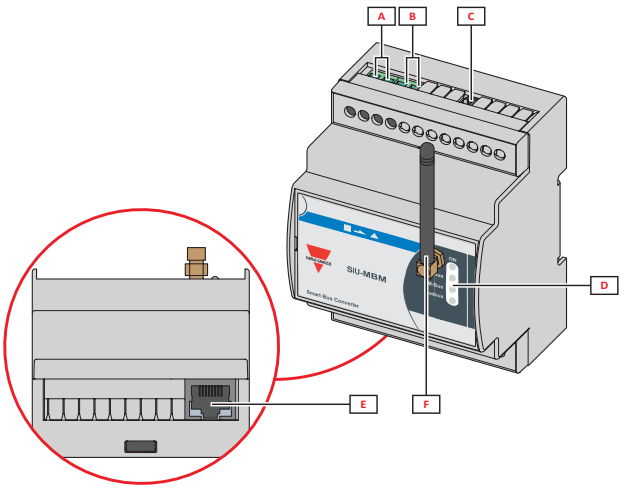



**Fig. 2** *SIU-MBM-02*

| 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 mm$^2$<br>Torque: 0.5 Nm |
| **Insulation** | See "Input and output insulation" on page 5 |
| **Mounting** | On DIN rail or wall-mounted |
| **Weight** | approx. 200 g |

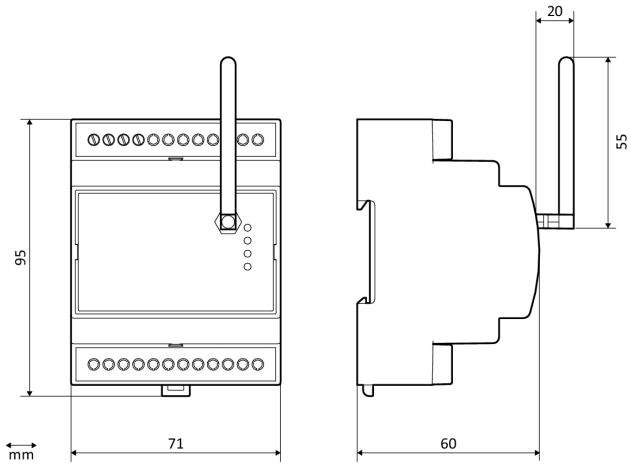



**Fig. 3** *Fig. 1 SIU-MBM-02 dimensions*

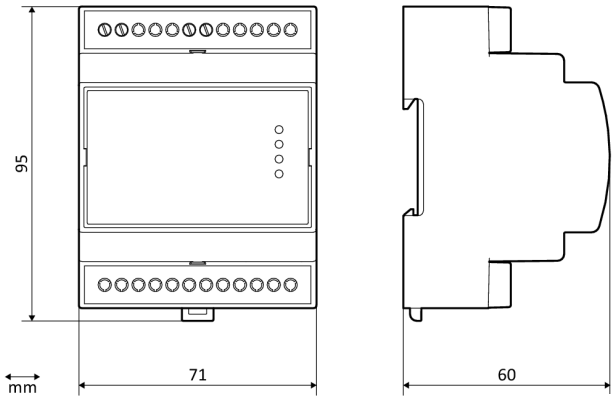



**Fig. 4** *Fig. 2 SIU-MBM-01 dimensions*

## 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)<br>2014/35/EU (LVD – Low Voltage Directive)<br>2014/30/EU (EMC – Electro Magnetic Compatibility) |
| **Standards** | EN13757-3:2013<br>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<br>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)<br>Maximum 20 devices (SIU MBM-01 and SIU MBM-02)<br>Daisy chain or star connection |
| **Connection type** | Screw terminals |
| **Transmission speed** | From 300 to 38,400 bps |

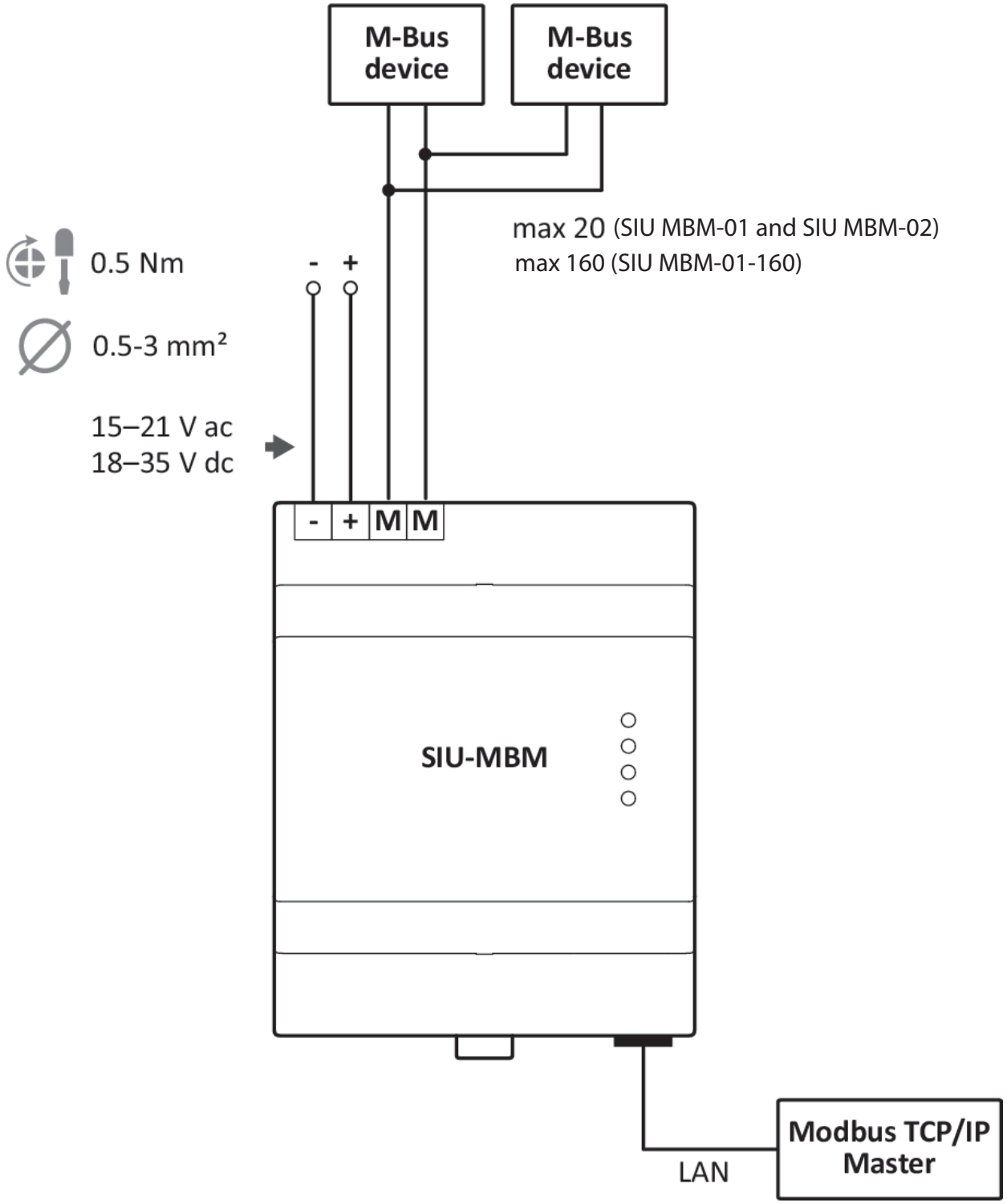
## Wireless M-Bus communication (for SIU-MBM-02 only)

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

## Supported encryption types

- NO encryption
- Encryption mode: 5

# Connection Diagrams



# References

## Further reading

| Information | Document | Where to find it |
|---|---|---|
| Instructions for installation, operation and maintenance | Instruction manual - SIU-MBM-01 | |
| Instructions for installation, operation and maintenance | Instruction manual - SIU-MBM-02 | |
| Instructions for installation, operation and maintenance | Instruction manual - SIU-MBM-01-160 | |
| Datasheet | VMU-C EM Datasheet | |
| Datasheet | UWP 3.0 Datasheet | |

## 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 | |
| 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) | |
| | UWP 3.0 (limit of devices to be managed: 160) | |
| Energy analyzer | EM24DIN wireless M-Bus | |

# 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.

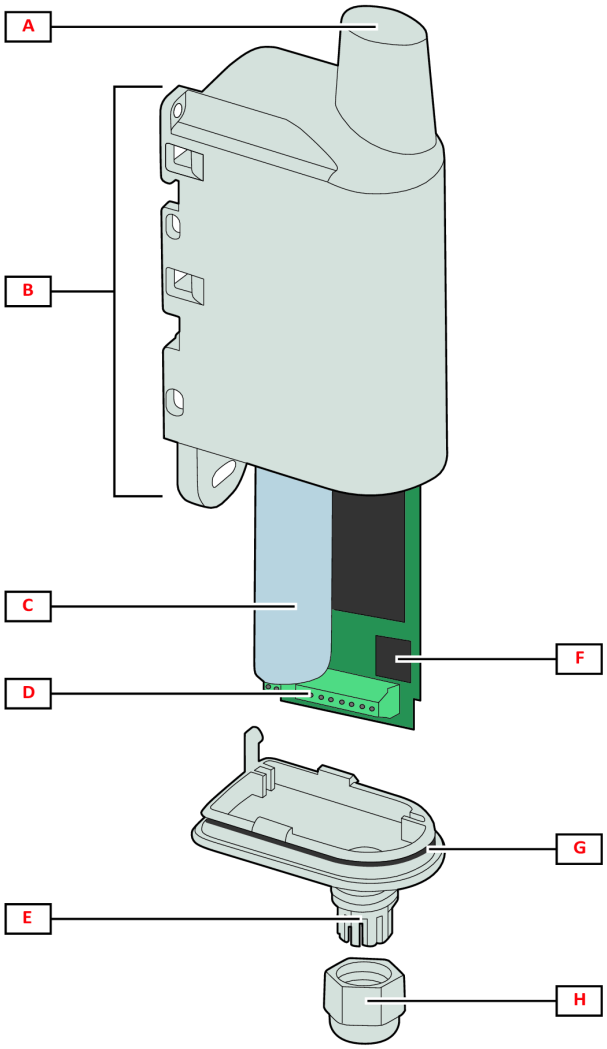
## Main functions

- 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<br>DIN rail<br>Wall-mounted using screws |
| **Weight** | 110 g |

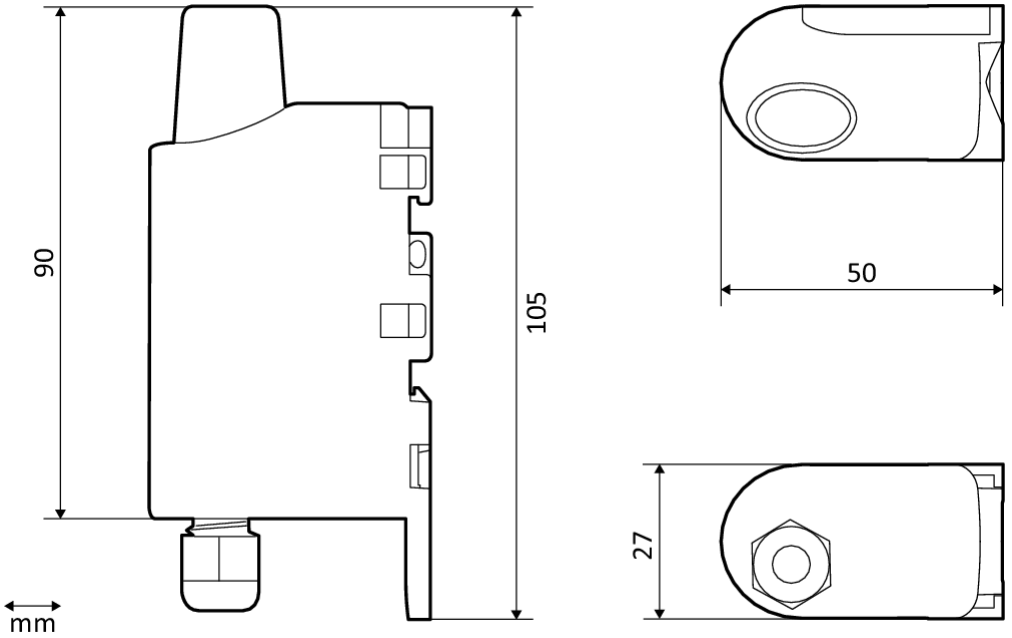



**Fig. 5** *Fig. 3 SIU-MBC dimensions*

## 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)<br>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<br>*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

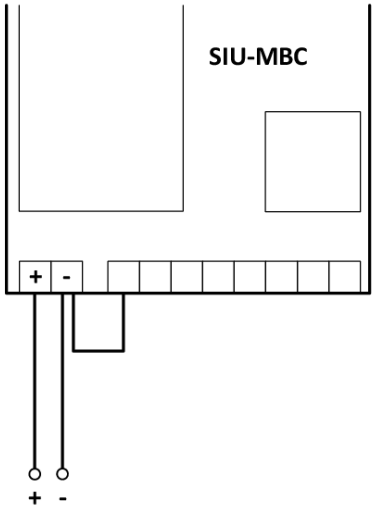
| | |
|---|---|
| **Protocol** | Wireless M-Bus |
| **Mode** | T1 |
| **Frequency** | 868.95 MHz |
| **Data type** | Selectable: water, gas, electricity, heat |
| **Data transmission interval** | Selectable: 10 s, 10 min, 1 h, 12 h |
| **Encryption** | No |
| **RF power** | 14 dBm (25 mW) |
| **Radio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

## Digital inputs

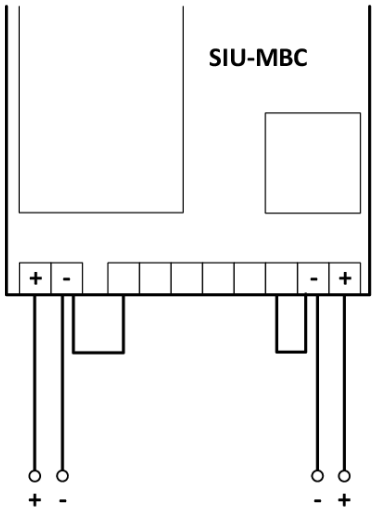
| | |
|---|---|
| **Number of inputs** | 2 |
| **Function** | Pulse count (water, gas, electricity, heat) |
| **Pulse weight** | Selectable: 1/10/100/1000 (Wh, dm3 or L) |
| **Maximum current** | 1 mA (open collector version) |
| **Maximum voltage** | 3.6 V |
| **Minimum pulse width** | 8 ms |
| **Maximum 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 | |
| M-Bus frame decoding | M-Bus protocol | |

## 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) |

# SIU-SNM

## Smart Bus Converter


### Benefits

- Easy and fast configuration via PC software
- Compatibility with any Modbus device
- Compatibility with SNMP v1, v2c, v3

### Description

SIU-SNM is a gateway converting data gathered from Modbus devices like energy meters or power analysers to SNMP, opening up the integration of Carlo Gavazzi meters/analysers into SNMP based monitoring systems.

### Applications

Data center monitoring systems: SNMP is widely used in data centers to monitor many aspects of those environments. All the data center monitoring software suites include SNMP among the main communication protocols. SNMP is the natural choice for users who need to monitor energy consumption and electrical variables in data center systems.

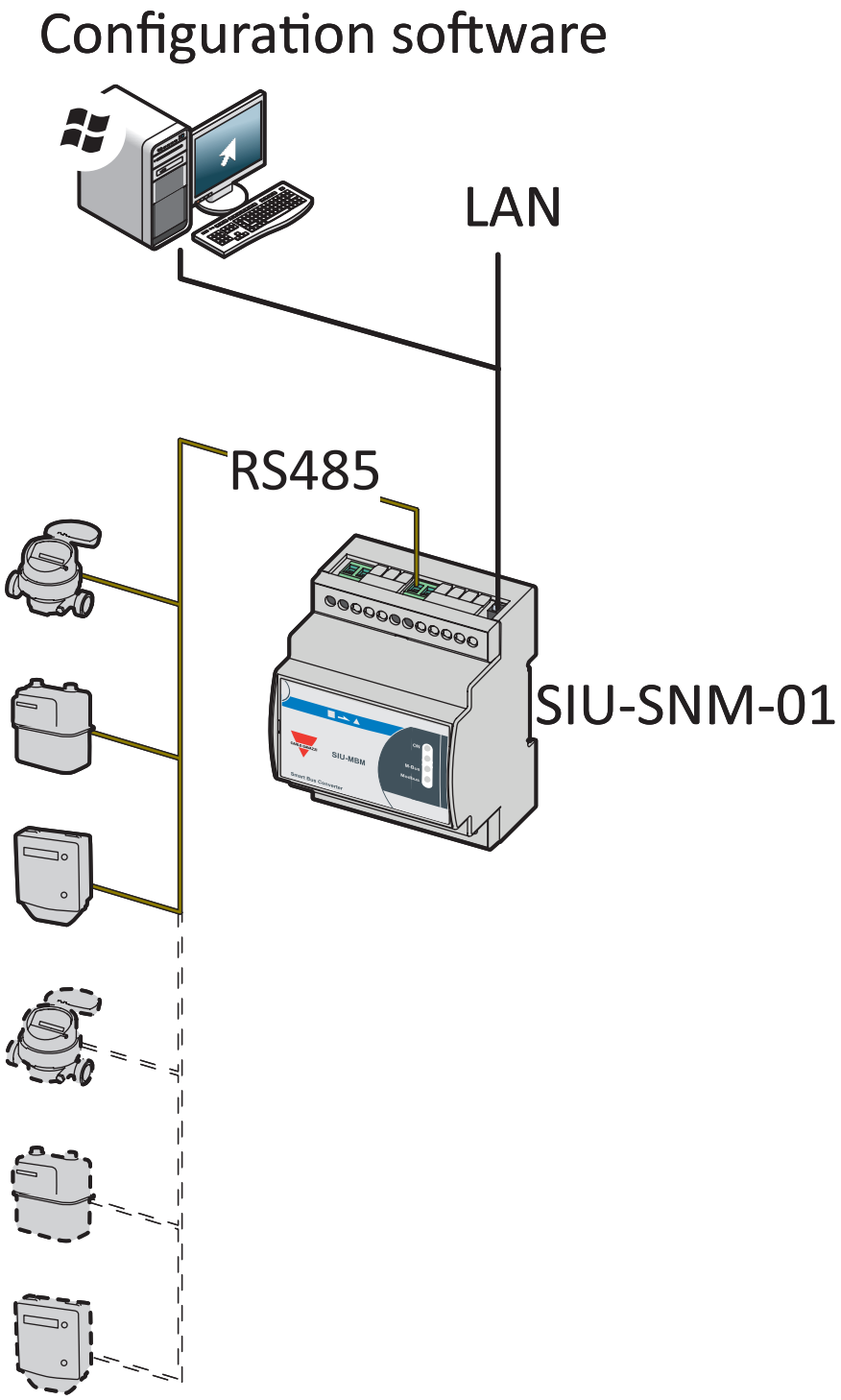
### Main functions

- Gathering of selected MODBUS variables from a network of Modbus devices via RS485
- Allowing SNMP polling of the selected Modbus variables
- Converting the selected MODBUS variables into SNMP TRAPS on a schedule or a value change
- MIB file generation by means of PC software

### Main features

- Up to 1024 bytes in reading and 1024 bytes in writing
- Bidirectional information between Modbus bus and SNMP bus

## Architecture



# Features

## General

| | |
|---|---|
| **Material** | PVC |
| **Protection degree** | IP20 |
| **Terminals** | Cable section: from 0.5 to 3 $mm^2$<br>Torque: 0.5 Nm |
| **Mounting** | DIN rail |
| **Dimensions (mm)** | 95 x 71 x 60 (H x W x D) |

## Power supply

| | |
|---|---|
| **Power supply** | From 15 to 21 V ac, from 18 to 35 V dc |
| **Consumption** | 3.5 W |
| **Connector** | Screw terminals |

## Environmental specifications

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

## Ethernet port

| | |
|---|---|
| **Protocols** | SNMP |
| **Connection type** | RS45 connector |

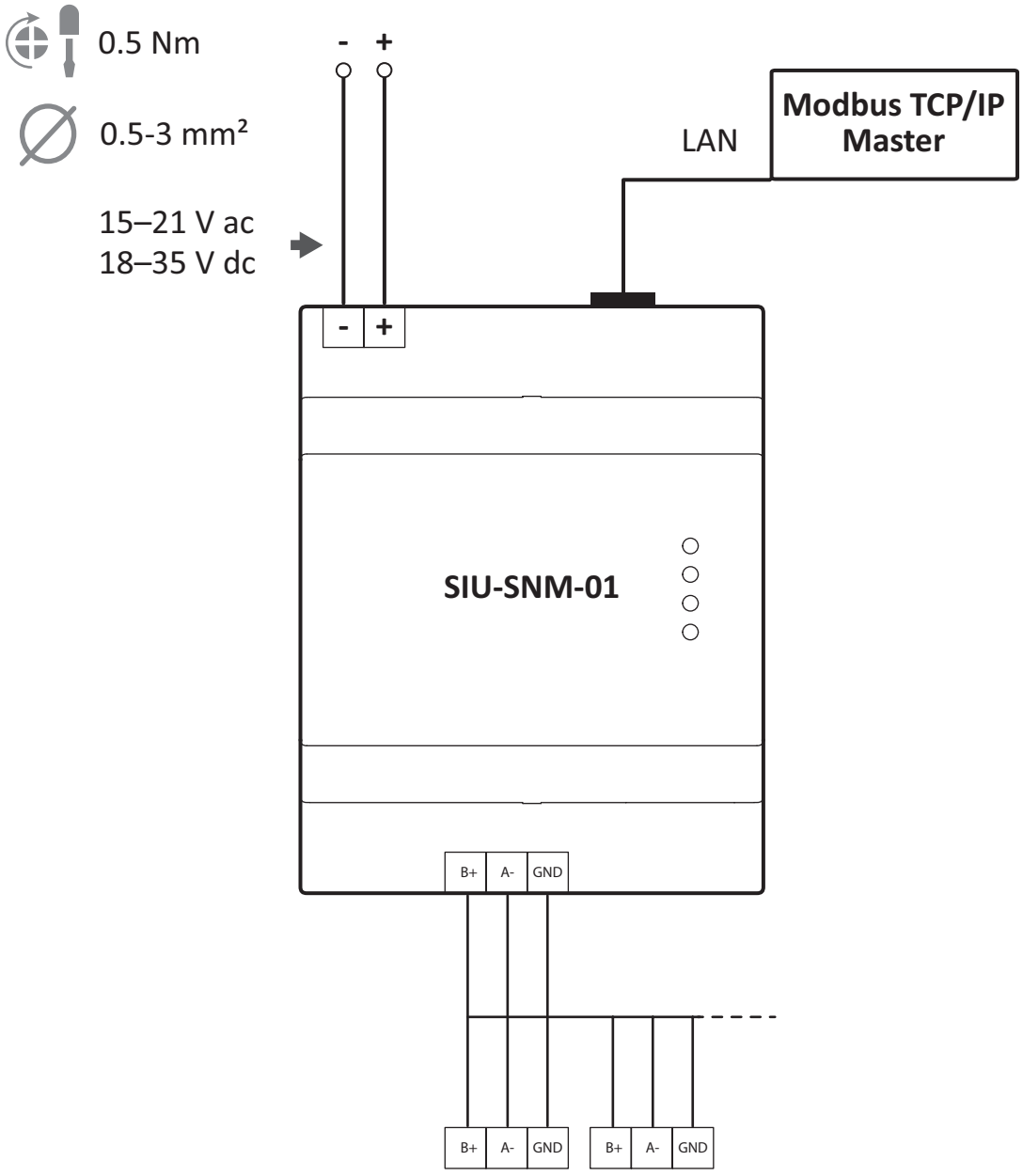
## RS485 port

| | |
|---|---|
| **Protocols** | Modbus RTU |
| **Connection type** | Screw terminals |
| **Configuration parameters** | Baud rate: from 1.2 to 625 kbps<br>Parity (None/ Odd/ Even) |

## Conformity

| | |
|---|---|
| **Directives** | 2002/95/EU (RoHS - Restriction of Hazardous Substances) |
| **Approvals** | CE |

# Connection Diagrams



# References

## Further reading

| Information | Where to find it |
|---|---|
| Configuration Software | |
| User manual | |

## CARLO GAVAZZI compatible components

| Purpose |
|---|
| Carlo Gavazzi Meters with RS485 and  Modbus/RTU communication |

# How to order

## SIU-SNM

| Code | Description |
|---|---|
| SIU-SNM-01 | Smart Bus Converter |

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