MANUAL

...feel the spirit of a new generation

RESI-MBUS-LEVEL
RESI-MBUS3-LEVEL

1 History

Date	Editor	Description
7.2.15	DI HC Sigl	First version

2 Content

RESI-MBUS-LEVEL **1**

RESI-MBUS3-LEVEL **1**

1 HISTORY **2**

2 CONTENT **3**

3 IMPORTANT SECURITY NOTES **4**

4 GENERAL INFORMATION **6**

5 MOUNTING AND CONNECTIONS **8**

5.1 ASSEMBLING 8
5.2 CLAMPS 9
5.3 WIRING DIAGRAM 10

6 FUNCTIONAL DESCRIPTION **11**

6.1 FIELD OF APPLICATIONS 11

7 SPECIFICATIONS **14**

7.1 DIMENSIONS 14

3 IMPORTANT SECURITY NOTES

Danger to life through electrical current!
Only skilled personal trained in electro-engineering should perform the described steps in the following chapters. Please observe the country specific rules and standards. Do not perform any electrical work while the device is connected to power.

Pay attention to the following rules:

1. Disconnect the system from power
2. Secure the system against automatic power on
3. Check that the system is de-energized
4. Cover other energized parts of the system

IMPORTANT HINT: Before you start with the installation and the initial setup of the device, you have to read this document and the attached installation guide and the actual manual for the device very carefully. You have to follow all the herein given information very accurate!

- ❑ Only authorized and qualified personnel is allowed to install and setup the device!
- ❑ The connection of the device must be done in de-energized state!
- ❑ Do not perform any electrical work while the device is connected to power!
- ❑ Disable and secure the system against any automatic restart or power on procedure!
- ❑ The device must be operated with the defined voltage level!
- ❑ Supply voltage jitters must not exceed the technical specifications and tolerances given in the technical manuals for the product. If you do not obey this issue, the proper performance of the device cannot be guaranteed. This can lead to fail functions of the device and in worst case to a complete breakdown of the device!
- ❑ You have to obey the current EMC regulations for wiring!
- ❑ All signal, control and supply voltage cables must be wired in a way, that no inductive or capacitive interference or any other severe electrical noise disturbance may interfere with the device. Wrong wiring can lead to a malfunction of the device!
- ❑ For signal or sensor cables you have to use shielded cables, to avoid damages through induction!
- ❑ You have to obey and to apply the current safety regulations given by the ÖVE, VDE, the countries, their control authorities, the TÜV or the local energy supply company!
- ❑ Obey country-specific laws and standards!
- ❑ The device must be used for the intended purpose of the manufacturer!
- ❑ No warranties or liabilities will be accepted for defects and damages resulting from improper or incorrect usage of the device!
- ❑ Subsequent damages, which results from faults of this device, are excluded from warranty and liability!
- ❑ Only the technical data, wiring diagrams and operation instructions, which are part to the product shipment are valid!

- The information on our homepage, in our datasheets, in our manuals, in our catalogues or published by our partners can deviate from the product documentation and is not necessarily always actual, due to constant improvement of our products for technical progress!
- In case of modification of our devices made by the user, all warranty and liability claims are lost!
- The installation has to fulfill the technical conditions and specifications (e.g. operating temperatures, power supply, …) given in the devices documentation!
- Operating our device close to equipment, which do not comply with EMC directives, can influence the functionality of our device, leading to malfunction or in worst case to a breakdown of our device!
- Our devices must not be used for monitoring applications, which solely serve the purpose of protecting persons against hazards or injury, or as an emergency stop switch for systems or machinery, or for any other similar safety-relevant purposes!
- Dimensions of the enclosures or enclosures accessories may show slight tolerances on the specifications provided in these instructions!
- Modifications of this documentation is not allowed!
- In case of a complaint, only complete devices returned in original packing will be accepted!

4 General Information

Many systems can handle the MBUS protocol in their own software. Many controllers like PLCs, DDCs,, industrial PCs or SCADA systems can handle this software modules, but they have no MBUS hardware interface installed. Exactly for this situation, we developed our level converter modules. The converter transforms a RS232 signal electrically into a MBUS compatible signal. Each character, which is received on the RS232 interface by the converter, is transposed into a MBUS signal and vice versa.

We offer two versions of the level converter: One to handle 24 meters and the other, which can handle 48 meters on the MBUS interface. For the host system the converter offers a RS232 interface to communicate with.

- Meter-Bus interface for a maximum 24 / 48 unit loads (1,5 mA)
- Meter-Bus interface: 300 up to 38400 bps, 8 data bits, even parity, 1 stopbit
- Meter-Bus and RS232 interface electrically isolated
- RS232 interface is internally connected to MBUS interface
- 24V DC power supply

Type	Description	Voltage	Power	Weight
RESI-MBUS-LEVEL	Signal level converter from RS232 signal levels to Meter-Bus signal levels. A maximum of 24 meters is supported by the MBUS interface of the converter.	24 V=	<2.5W	60 g
RESI-MBUS3-LEVEL	Signal level converter from RS232 signal levels to Meter-Bus signal levels. A maximum of 48 meters is supported by the MBUS interface of the converter.	24 V=	<3.5W	60 g

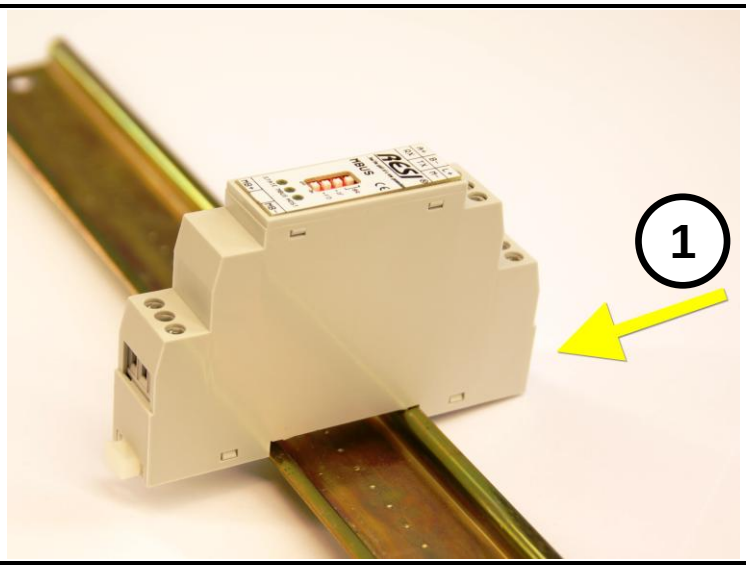
Technical Data			
Power supply			
Supply voltage	24 V= +/-10%	Storage temperature	-20...85 °C
		Operating Temperature	0...60°C
Power consumption		Humidity	25...90 % rH non-condensing
RESI-MBUS-LEVEL	<2.5W	Protection Class	IP20 (EN 60529)
RESI-MBUS3-LEVEL	<3.5W	Dimensions LxWxH	17,5mm x 90mm x 58mm
		Weight	60g
RS232 Interface		Mounting	on DIN EN50022 rail
Protocol	Meter Bus		
Type	RS232		
Cable Connection	Via clamps		
Galvanic insulation to MBUS interface	Yes		
Meter-Bus Interface		**Meter-Bus cabling**	
Protocol	Meter BUS	Cable type	JYStY 2 x 0,8 mm or JYStY 2 x 1,5mm²
1 unit load @ 1.5mA = 1 meter		Cable length	Max. 350m
RESI-MBUS-LEVEL	24 meters	Cable capacity	Max. 180nF
RESI-MBUS3-LEVEL	48 meters		
MBUS baud rates	300 to 38400/8/E/1		
Cable connection	Via clamps		
Galvanic insulation to RS232 interface	Yes		
Clamps			
Clamp wire cross section	Max. 1,5 mm²		
Tightening torque	Max. 0.5Nm	**CE conformity**	Yes

5 Mounting and Connections

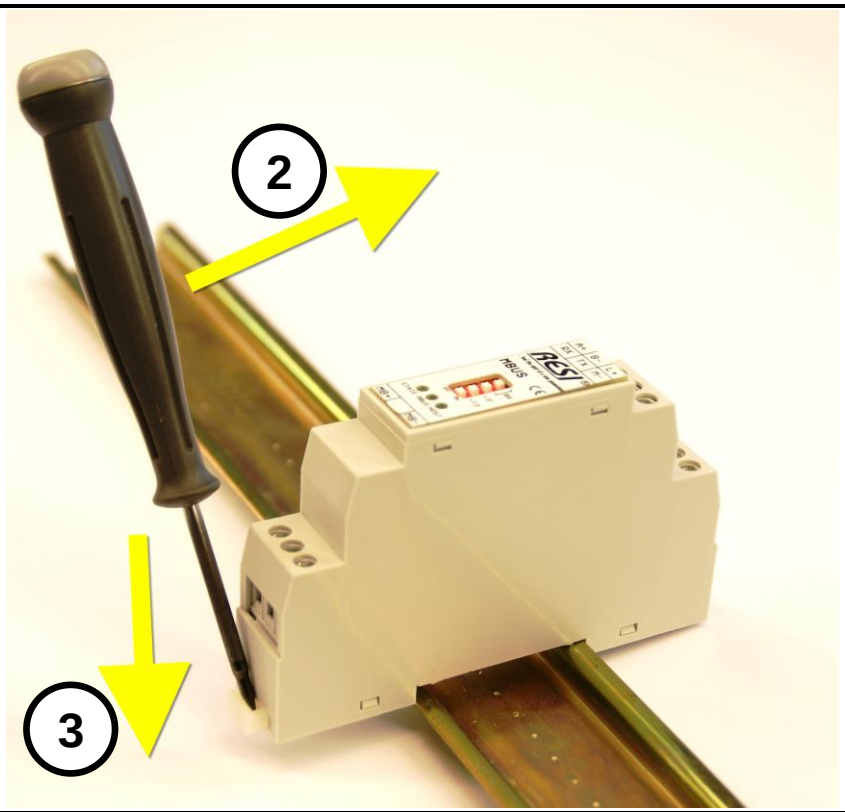
5.1 Assembling

Our RESI-MBUSx-LEVEL converters are designed for mounting on a 35mm DIN-EN50022 rail. Please note, that there are symbol photos used in the mounting pictures below.

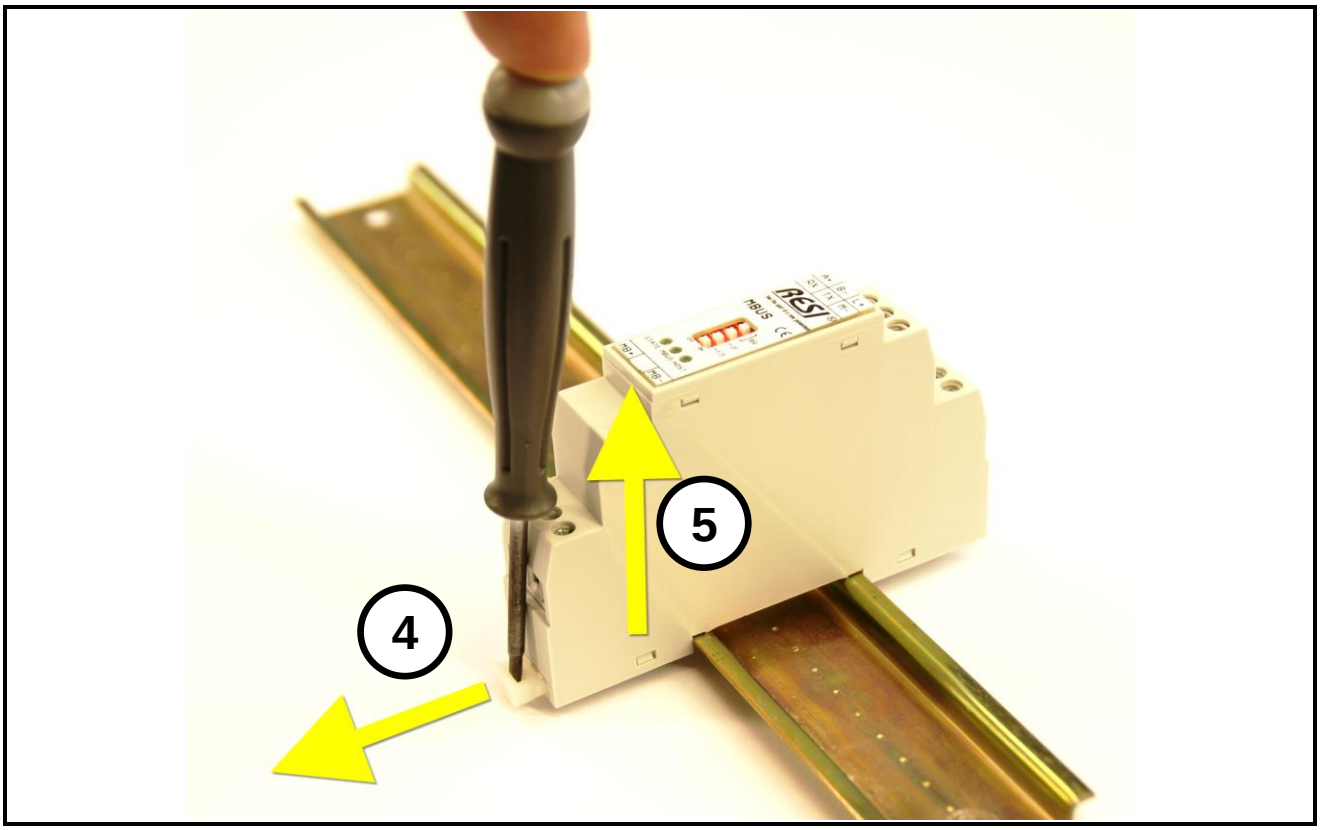
At first, put the converter with the top side on the DIN rail (1).



Then open the clamp lever on the bottom side with a screw driver (2) and press the device on the DIN rail (3). Release the clamp lever. The module is now placed correctly on the DIN rail.



To dismount the module from the DIN rail first open the clamp lever with a screwdriver on the bottom side (4). Hold the clamp lever opened while you lift the module from the DIN rail (5). Then remove the converter from the bar with while pulling it on the top side.



5.2 Clamps

CLAMPS	RESI-MBUSx-LEVEL
L+ M-	Power supply L+: 24 V= M-: Ground
RX TX M-	RS232 interface RX: serial receive TX: serial transmit M-: Ground for RS232
MB+ MB-	Interface to MBUS devices

Table: Description of connectors

5.3 Wiring diagram

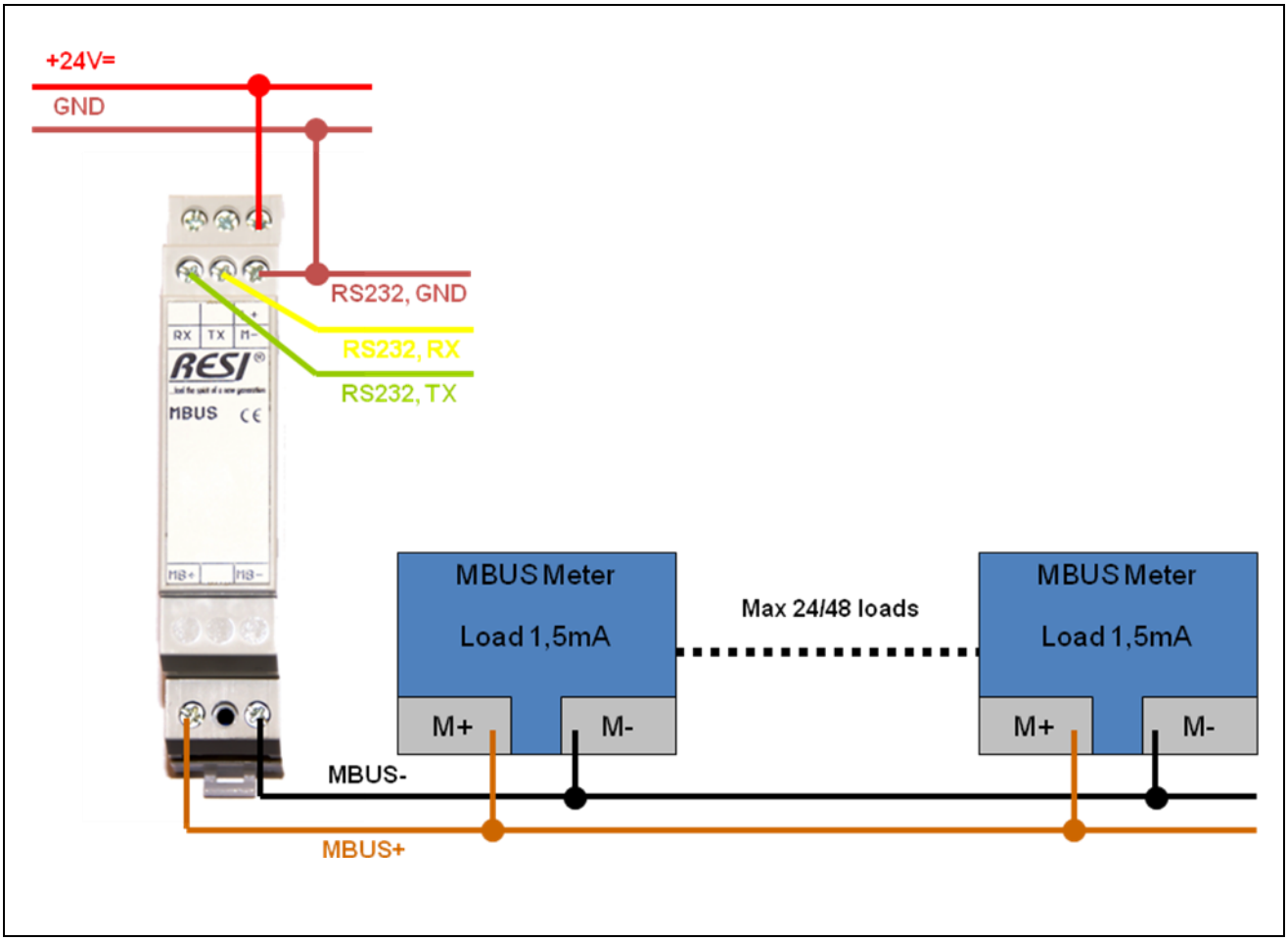


Illustration: wiring diagram for all four types of RESI-MBUSx-MODBUS converters

6 Functional Description

Our RESI-MBUSx-LEVEL converters are electrical signal converters from standard RS232 serial signal to Meterbus-signal levels. The converters are designed to read out a maximum of 24/48 meters with MBUS standard protocol using a host with MBUS software and a RS232 interface. The RS232 interface and the MBUS interface are galvanic insulated.

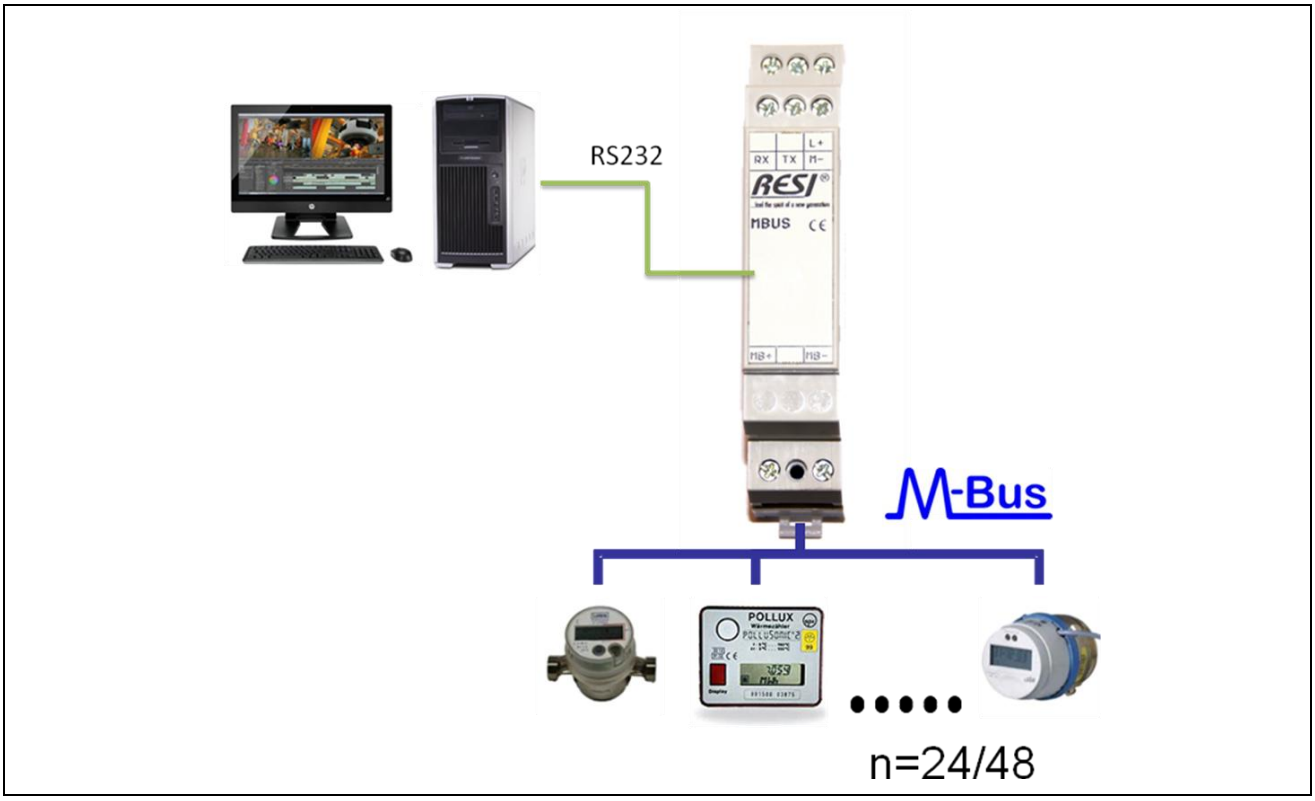
Please refer to our online help system for more details about this products. Use this link: http://www.resi.cc/resiwiki/index.php/MBUS_products

6.1 Field of applications

This chapter shows typical applications, where our converter can be used.

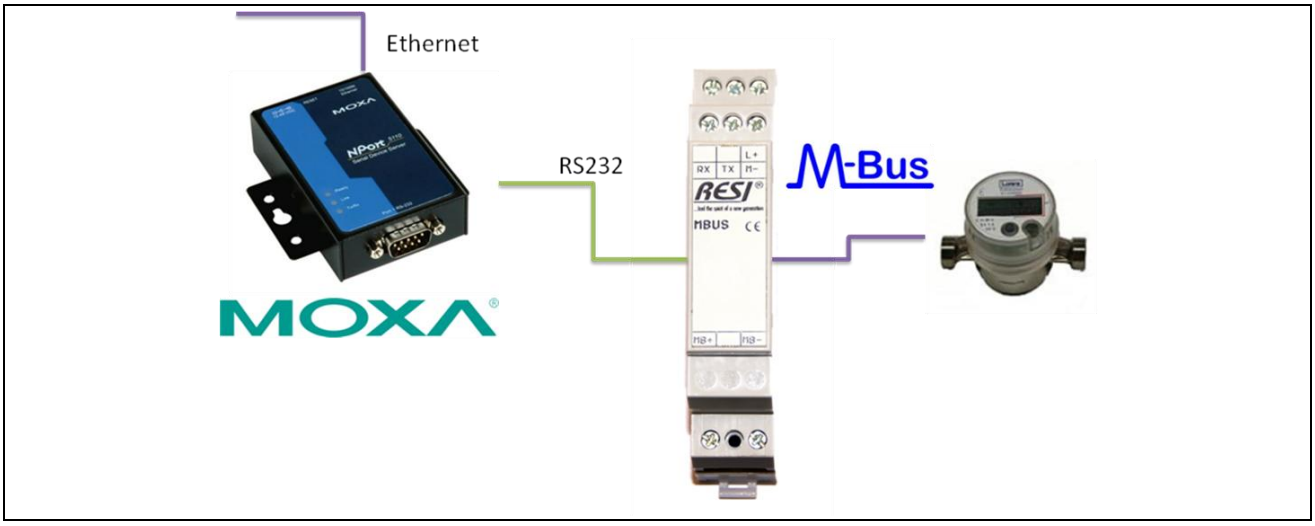
6.1.1 Use with a SCADA system

Many SCADA systems offer the possibility to install a MBUS master driver. Usually you will need an external level converter like our RESI-MBUSx-LEVEL. Then the SCADA system can read directly the meter data with MBUS standard protocol. See the graphics below:



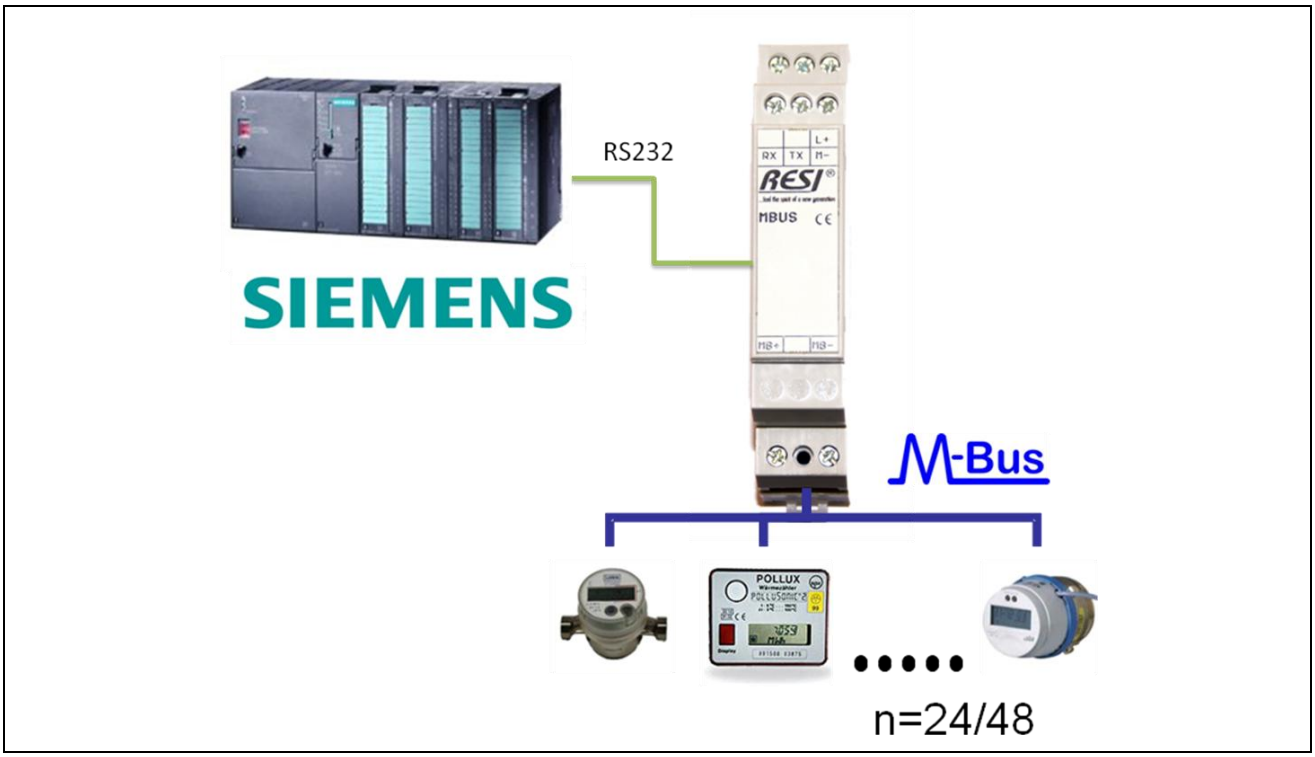
6.1.2 Use with a Ethernet to serial converter

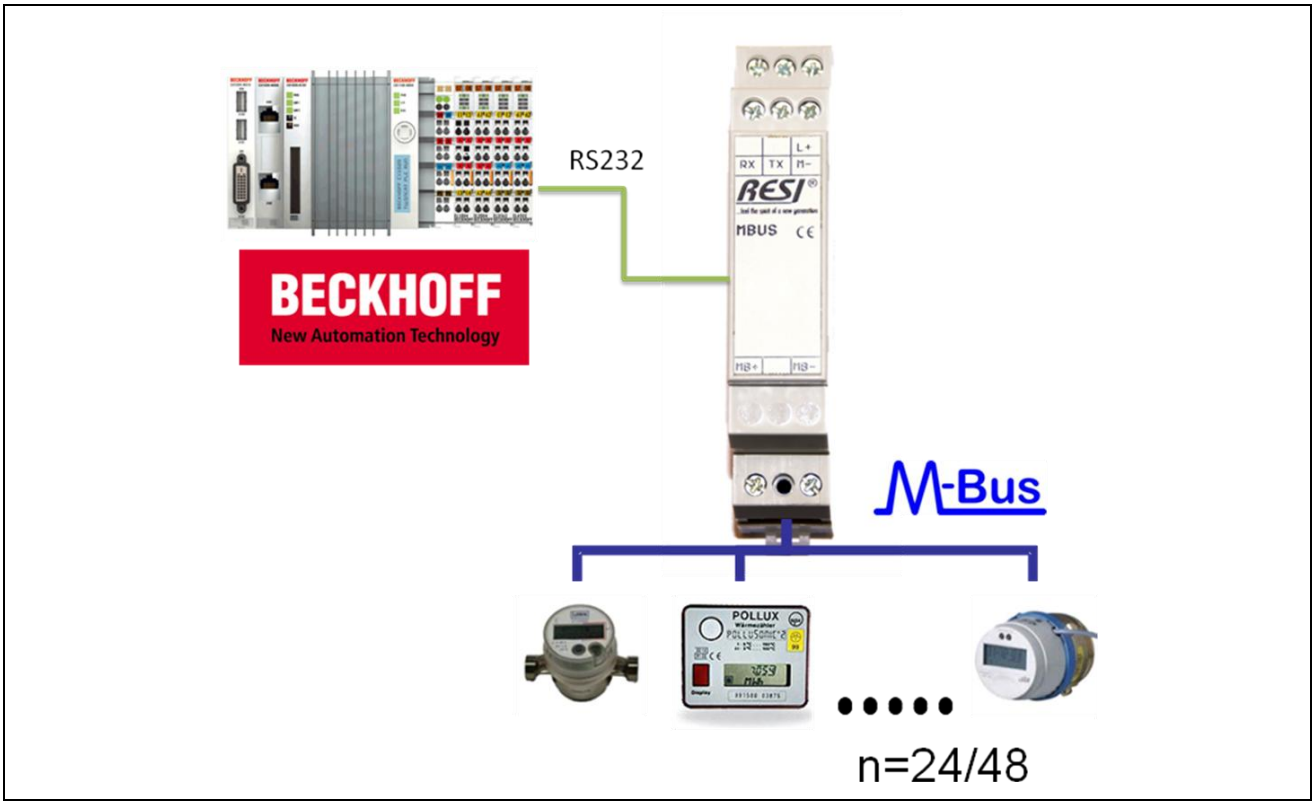
To access a widely distributed system you can use Ethernet to serial gateways like MOXAs NPORT. The host software now connects via Ethernet to the connected MBUS converters devices. See the graphics below:

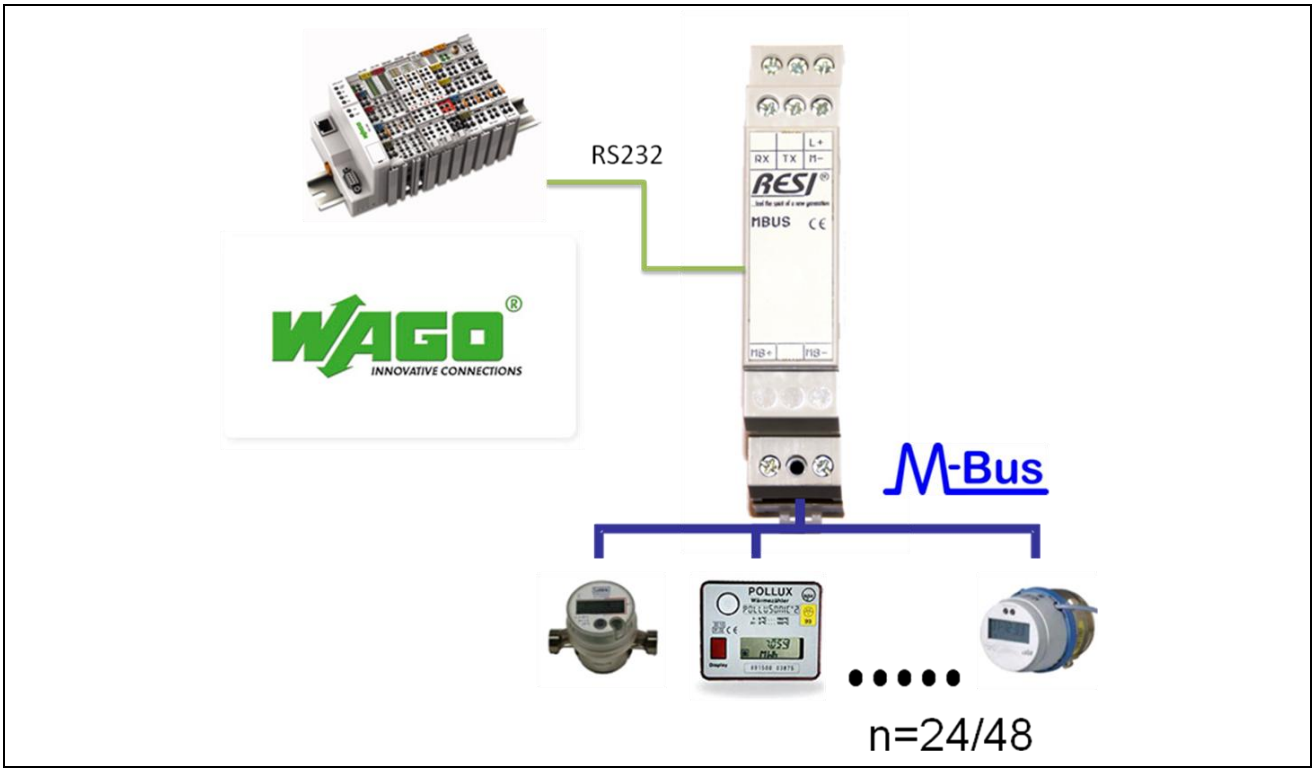


6.1.3 Use with a PLC

PLC systems offer also MBUS software libraries. With our RESI-MBUSx-LEVEL converters you can read out the connected MBUS meters via RS232 serial interface. See the graphics below:







7 Specifications

7.1 Dimensions

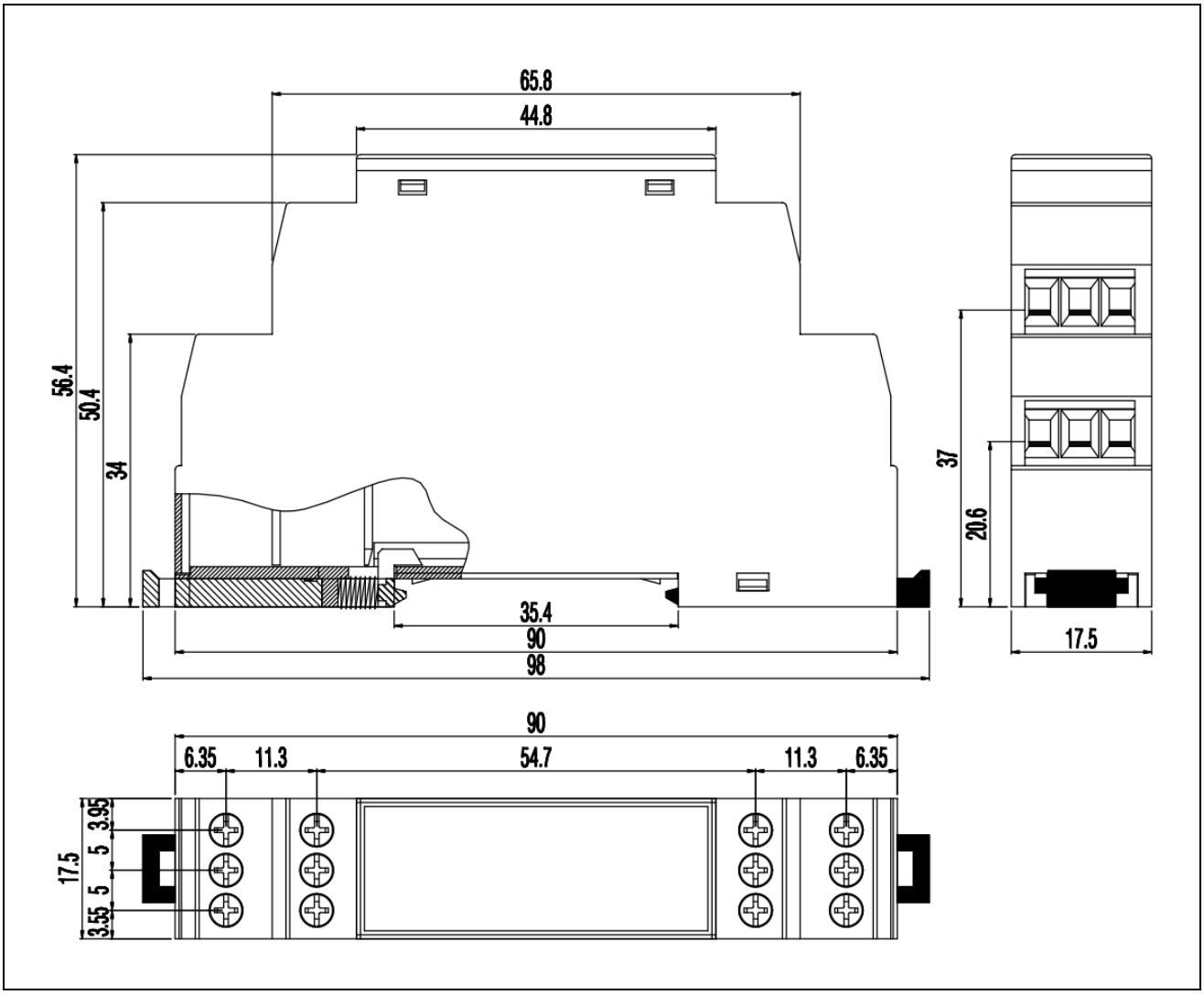


Illustration: dimension illustration in mm

Dimensions	
Enclosure dimensions L x W x H (mm)	17,5 x 90 x 58
Weight	60 g
Colour	Grey RAL7035
Material	PA - UL 94 V0
Protection class	IP20 based on DIN 40050/EN 60529

Table: Data of enclosure