Weidmueller IE-CS-MBGW Modbus Gateway Installation Guide

Contents

Weidmueller IE-CS-MBGW Modbus Gateway

Specifications

- Product Name: Serial/Ethernet Converter / Modbus Gateway
- Model: IE-CS-MBGW-2TX-1COM
- Part Number: 2682600000
- Revision: V1.1

Product Information

The Serial/Ethernet Converter / Modbus Gateway is designed for communication networks within industrial environments. It must be mounted on a well-grounded surface and operated within specified technical parameters to avoid damage.

Installation Instructions

1. **Safety Notice:** The device heats up during operation. Ensure it cools down before handling. Use protection gloves if needed. Connect only to specified voltage.
2. **Qualified Personnel:** Installation, commissioning, and maintenance should be done by qualified electricians.
3. **Intended Use:** The device is for restricted access areas, mounted on a metal panel. Follow technical data and documentation for proper use.
4. **Environmental Conditions:** Operate within specified temperature limits, ensure proper airflow, and avoid mechanical stress on the device.
5. **FCC Compliance:** Complies with FCC Rules regarding interference.

Package Checklist

- 1 x Serial/Ethernet-Converter/Modbus-Gateway

- 1 x 4-Pin Terminal connector
- 1 x Adapter DB9-Connector-to-Terminal-Block
- 1 x Hardware Installation Guide
- 1 x Wall mounting kit

Panel Layouts

1. Terminal block for power input PWR1/PWR2
2. Grounding screw / Frame ground
3. Power input LEDs (PWR1 / PWR2)
4. Link/Activity LEDs Ethernet Ports
5. Data Transmission LEDs Serial Port
6. Serial Port (DB9 male Connector)
7. DIP Switches for serial line settings
8. Ethernet RJ45 Ports 10/100BASE-T(X)
9. Article Number
10. Reset Button
11. DIN-rail kit

Mounting Dimensions
(units = mm)

DIN-Rail Mounting
Slide the device onto DIN-rail ensuring a firm click into place.

1. **STEP 1:** Insert the top of the DINRail into the slot below the metal spring.
2. **STEP 2:** Snap the DIN-Rail attachment unit in place. To remove, reverse steps 1 and 2.

Frequently Asked Questions (FAQ)

- **Q: What should I do if the device heats up excessively during operation?**
  - **A:** If the device heats up excessively, allow it to cool down or consider improving airflow around the device to prevent overheating
- **Q: Can I connect the device to a voltage higher than specified?**
  - **A:** No, connecting the device to a higher voltage than specified will damage the device. Always connect to the voltage shown on the product label.
- **Q: Who should perform the installation and maintenance of the device?**
  - **A:** Installation, commissioning, and maintenance should only be carried out by qualified electricians to ensure safety and proper functionality of the device.

Serial/Ethernet Converter / Modbus Gateway
IE-CS-MBGW-2TX-1COM (Part No. 2682600000) (from product Rev. V1.1)

Introduction

Device IE-CS-MBGW-2TX-1COM is a multi-purpose Serial/Ethernet converter and Modbus TCP/RTU-ASCII protocol gateway and is equipped with one configurable RS232/422/485 port and two Ethernet RJ45 ports (acting like an unmanaged 2-Port switch).

If configured as Serial/Ethernet converter it can be used to convert data streams between serial and Ethernet networks. The converter supports standard device server features like Virtual COM Mode, TCP Server/Client or UDP Server/Client operation modes.

Running as Modbus protocol gateway it can be used to convert data streams between protocols Modbus TCP (Ethernet) and Modbus ASCII/RTU (serial-based). The device supports the operation modes “ASCII/RTU Master to TCP Slave Gateway” and “TCP Master to ASCII/RTU Slave Gateway”.

The devices are designed for industrial applications and fitted with a robust housing. To ensure reliable, error-free operation, and to prevent damage or injury, please read the operating instructions, all safety information provided in this document and any other safety information that were supplied with the product

Safety notice

	The device heats up during operation. Allow the unit to cool down or use protection gloves when carrying out any work.
	The device may only be connected to the supply voltage shown on the product label. Higher voltage than specified will destroy the device. The device must be supplied by a SELV source as defined in the Low Voltage Directive 2014/35/EU and 2014/30/EU.
	Installation, commissioning and maintenance may only be performed by qualified electricians.
	Observe the operating instructions.

	• Indoor use and pollution degree II, it must be wiped with a dry cloth for clean up the device and l abel. • Do not block air ventilation holes. • If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired. • Shall be mounted in the Industrial Control Panel and ambient temperature is not exceed 70 degr ees C.

Intended use: The device is intended for the realization of communication networks within an industrial environment, it is intended to be used in a restricted access location. The device may only be used within the scope of the specified technical data. The device is intended to be mounted to a well-grounded mounting surface, such as a metal panel. Any other use may result in unintentional malfunction and damage. Observing the documentation is part of the intended use.

Environmental conditions: This equipment is intended to be used in a restricted access location. When planning the installation site make sure that the ambient temperature during operation will not exceed the temperature given in the technical data.

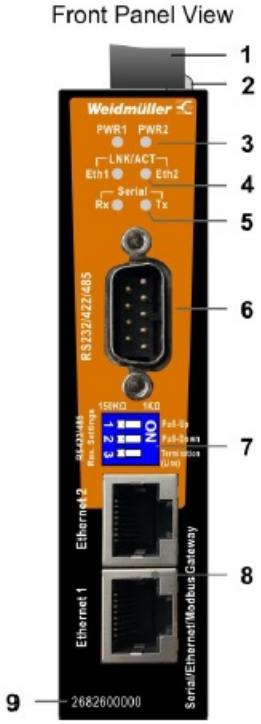
Also make sure that the air flow will not be compromised by other devices. Ensure that the mounted and wired device is not exposed to any mechanical stress.

FCC compliance: This device complies with part 15 of FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation

Package Checklist

- 1 x Serial/Ethernet-Converter/Modbus-Gateway
- 1 x Hardware Installation Guide
- 1 x 4-Pin Terminal connector
- 1 x Wall mounting kit
- 1 x Adapter DB9-Connector-to-Terminal-Block

Panel Layouts
IE-CS-MBGW-2TX-1COM



1. Terminal block for power input PWR1/PWR2
2. Grounding screw / Frame ground (Note: The shielding ground of the LAN port is electrically connected to the grounding screw)
3. Power input LEDs (PWR1 / PWR2)
4. Link/Activity LEDs Ethernet Ports
5. Data Transmission LEDs Serial Port
6. Serial Port (DB9 male Connector)
7. DIP Switches for serial line settings

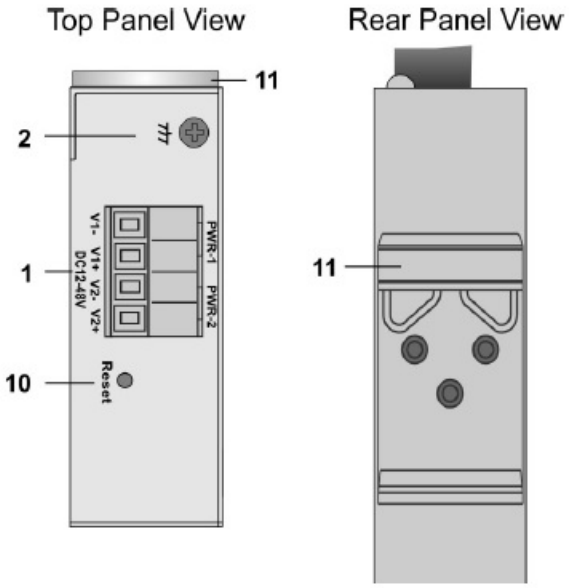
   SW1: Sets Pull-Up resistor to 1 KΩ (ON) or 150 KΩ (OFF).

   SW2: Sets Pull-Down resistor to 1 KΩ (ON) or 150 KΩ (OFF).

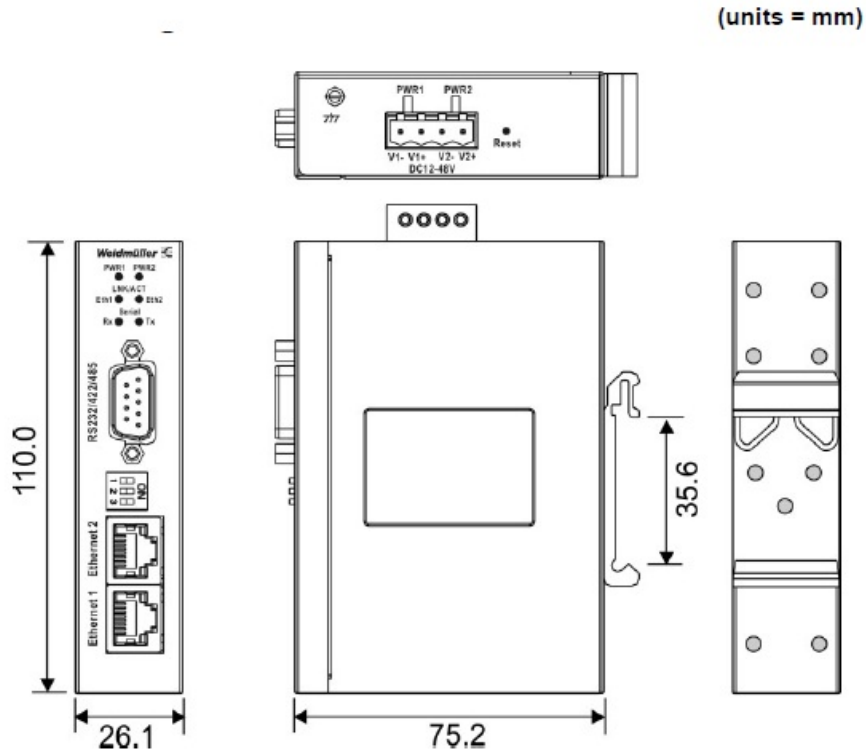
   SW3: Enables / Disables Line Termination.

By factory default all DIP switches are set to OFF.

8. Ethernet RJ45 Ports 10/100BASE-T(X)
9. Article Number
10. Reset Button
11. DIN-rail kit



Mounting Dimensions

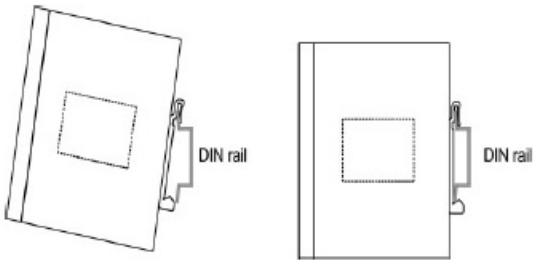


DIN-Rail Mounting
Slide the device onto DIN-rail and make sure that the Din-rail clip clicks into the rail firmly.

STEP 1: Insert the top of the DIN Rail into the slot just below the stiff metal spring.

STEP 2: The DIN-Rail attachment unit will snap into place as shown below.

To remove the device from the DIN-rail simply reverse steps 1 and 2.

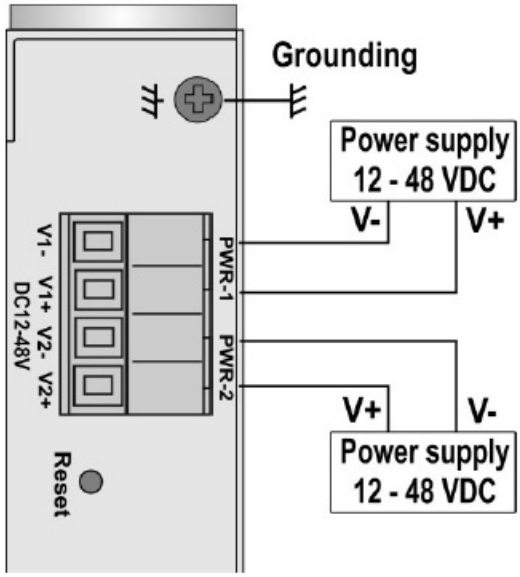


Grounding

⚠	**ATTENTION** • Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). • Do the ground connection from the ground screw to the grounding surface prior to connecting devices. • This product is intended to be mounted to a well-grounded mounting surface, such as a metal panel. • The shielding ground of the RJ45 ports are electrically connected to the ground connection (screw).

Wiring Redundant Power Inputs
The Converter/Gateway supports redundant power supply inputs. Refer to illustration below for correct wiring

⚠	**Warning** • Take into consideration the following guidelines before wiring the device • Terminal block is mating with Plug and suitable for 12-24AWG. Torque value 4.5 lb-in. • The temperature rating of the input connection cable should higher than 105°C. • Supplied by SELV source evaluated by UL 61010-1 or 61010-2-201 power supply only.



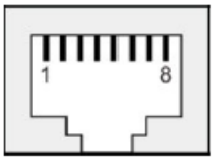
Communication Connections
The Converter/Gateway is equipped with

- 2 x RJ45 Ethernet Port 10/100BASE-T(X) / Auto MDI-X
- q1 x Serial Interface (DB9 male connector)

Please use for RJ45 Ethernet Ports only cables suitable for the respective type of communication and ensure that signals are protected from possible interference.

10/100BASE-T(X) RJ45 Ports
The 10/100BASE-T(X) ports are used to connect to Ethernet-enabled devices. Below table shows pinouts for both MDI (NIC-type) ports and MDI-X (HUB/Switch-type) ports. Auto MDI-X ensures that both wiring-schemes are supported (Automatic crossover).

10/100BASE-T(X) RJ45 Pinouts

MDI Port Pinouts		**MDI-X Port Pinouts**		**8-pin RJ45**
Pin	Signal	Pin	Signal	
1	Tx+	1	Rx+	
2	Tx-	2	Rx-	
3	Rx+	3	Tx+	
6	Rx-	6	Tx-	

Serial Interface DB-9 Connector
Pinouts DB-9 Connector (male)

Pin #	RS-232 (**DTE** Device)	RS-422	RS-485 (4-wire)	RS-485 (2-wire)	
1	DCD	RX-	RX-	DATA-	
2	RXD	RX+	RX+	DATA+	
3	TXD	TX+	TX+	—	
4	DTR	TX-	TX-	—	
5	GND	GND	GND	GND	
6	DSR	—	—	—	
7	RTS	—	—	—	
8	CTS	—	—	—	
9	RI	—	—	—	

Device Access (Login to Web Interface)
For configuration the Web interface can be accessed via following factory default settings:

- **IP address** / **Netmask:** 192.168.1.110 / 255.255.255.0
- **Username**: admin
- **Password:** Weidmueller

Connect the PC to any Ethernet port of the Converter/Gateway and set the PC's IP address to a free one of range 192.168.1.0 / 255.255.255.0

Start a web browser and enter the IP address of the connected device into the browser's address line (http://192.168.1.110).

After the appearance of prompt (login) enter the login credentials. After confirmation of your input with "OK" the home page of the Converter/Gateway will be displayed

Device Reset

- Press reset button for < 5 seconds to reboot the device (Warm Start).
- Press reset button for >= 5 seconds to reset the Converter/Gateway to factory default settings

LED Indicators
Description of front panel LED indicators

LED	Color	Status	Description
PWR1	Green	On	Power is supplied to power input PWR1.
PWR2	Green	On	Power is supplied to power input PWR2.
Eth1	Green	On	Ethernet Port 1 is connected.
		Blinking	Data is transmitted.
Eth2	Green	On	Ethernet Port 2 is connected.
		Blinking	Data is transmitted.
Rx	Amber	Blinking	Receiving serial data.
Tx	Green	Blinking	Transmitting serial data.
Note: If – after connecting the Converter/Gateway to the serial device via a **RS485 2-wire** connection – the Rx LED is constantly on (Amber) though no data traffic has been started, this indicates a reversed connection of DATA- (A) and DATA+ (B) between the devices (RS485 cabling error).			

Disposal information


Observe the notes for proper disposal of the product. You can find the notes here: www.weidmueller.com/disposal

Specifications

Interfaces	
Ethernet Ports	2 x RJ45 10/100BASE-T(X) auto negotiation speed, F/H duplex mode and auto MDI/MDI-X connection
Serial Port	1x DB9 connector (male) • Interface Settings RS-232/422/485 • Baud Rates 110 bps to 460800 bps • Data Bits 7, 8 • Parity odd, even, none, mark, space • Stop Bits 1, 2 • RS-232: TxD,RxD, RTS, CTS, DTR, DSR, DCD, GND • RS-422: Rx-, Rx+, Tx+, Tx-, GND • RS-485 4 wire: Rx-, Rx+, Tx+, Tx-, GND • RS-485 2 wire: Data-, Data+, GND • Flow Control XON/XOFF, RTS/CTS, DTR/DSR

LED Indicators	PWR 1 / 2 (Power supply) Eth 1 / 2 (Ethernet Port Link / Activity) Tx / Rx (Serial Port Data Transmit / Receive)
DIP Switch	SW1:Sets Pull-Up resistor to 1 KΩ (ON) or 150 Ω (OFF) SW2:Sets Pull-Down res. to 1 KΩ (ON) or 150 KΩ (OFF) SW3:Enables (ON) / Disables (OFF) Line Termination
Power supply	
Input Voltage	24 V DC (12 to 48 V DC), 2 redundant inputs
Current Consumption	0.05 A – 0.1 A
Connection	One removable 4-pin terminal block, Wiring cable 12- 24AWG
Overload Current Protection	Present
Reverse Polarity Protection	Present
Physical Characteristics	
Housing	IP30 protection, metal
Dimension (W x H x D)	26.1 x 110 x 75.2 mm (1.02 x 4.33 x 2.95 inch)
Weight	200 g
Installation	DIN-rail, Wall
Environmental conditions	
Operating Temperature	-40 to 70°C (-40 to 158°F)
Storage Temperature	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)
Altitude	up to 2000 m
Regulatory Approvals	
Safety	UL 61010-1; UL 61010-2-201
EMC	EN 55032, EN 55024, FCC Part 15 Subpart B Class A, IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV, IEC 61000-4-3 RS: 80 MHz bis 1 Ghz: 3 V/m, IEC 61000-4-4 EFT: Power: 0.5 kV; Signal: 0.5 kV, IEC 61000-4-5 Surge: Power: 0,5 kV; Signal: 1 kV, IEC 61000-4-6 CS: 3 Vrms
Shock	IEC 60068-2-27
Free Fall	IEC 60068-2-31

Vibration	IEC 60068-2-6
MTBF	
Time	1.479.078 hrs
Database	Telcordia SR332
Warranty	
Time Period	5 years

- Contact Information
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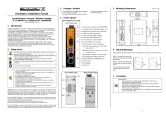
Documents / Resources

	Weidmueller IE-CS-MBGW Modbus Gateway [pdf] Installation Guide IE-CS-MBGW-2TX-1COM, IE-CS-MBGW Modbus Gateway, IE-CS-MBGW, Modbus Gateway, Gateway

References

- User Manual