Modbus TCP/RTU Gateway

Dual RS-485 Ports · Web Interface

EPL-MBC-100
User Manual · V1.0
20.08.2026

SAFETY WARNINGS

Read this user manual carefully before operating the device. Follow the installation, electrical connection and commissioning sections step by step. Thereafter the owner/user must keep this manual in a known and visible place for the service life of the product.

- ⚠ Use the product inside a panel only and within the stated environmental conditions.
- ⚠ The operating voltage of the product is stated on its label. Do not supply the product from any source outside this value.
- ⚠ Do not touch the supply terminals of the product with bare hands.
- ⚠ All service and repair work may be carried out only by Energyplus technical service. No other person should intervene in the product.
- ⚠ Ensure that the system is properly earthed so that the product operates correctly.
- ⚠ Store the product in a dry environment; otherwise a fault may occur.

Use of the product contrary to the conditions stated above may cause fire, serious personal injury, or damage to the product or to the structure in which it is installed. Energyplus Teknoloji accepts no liability for such situations caused by the user.

SYMBOLS

SYMBOL DESCRIPTIONS	
!	Used for important points in the following sections.
⚡	Used for warnings relating to voltage.
⎓	Indicates that the supply voltage of the product is DC.
CE	Indicates that the product complies with the relevant EU directives.
♻	The product must not be treated as normal household waste; it must be handed over to a collection point for the recycling of electronic equipment.

1. DESCRIPTION

The EPL-MBC-100 is an industrial gateway that performs protocol conversion between Modbus TCP clients and Modbus RTU slave devices. SCADA systems, HMI panels and building management software send Modbus TCP requests over Ethernet, and the unit delivers them to the PLCs, meters, sensors and actuators on the RS-485 line. Two independent RS-485 ports, support for 32 slave devices per port, a built-in web interface, slave health monitoring and an error log simplify both commissioning and fault tracing. The unit is built on an STM32F103CB microcontroller with a WIZnet W5500 Ethernet controller and runs FreeRTOS-based multitasking firmware.

Key Features

- Modbus TCP ↔ Modbus RTU protocol conversion
- Two independent RS-485 ports (COM01, COM02)
- Support for 32 slave devices per port, 64 in total
- Two simultaneous Modbus TCP client connections (Ports 501 and 502)
- Network configuration by static IP or DHCP
- Built-in web interface for configuration, monitoring and diagnostics
- Slave device health monitoring (response time, success rate)
- Timestamped error log (last 50 records)
- Automatic recovery through hardware and software watchdogs
- DIN rail mounting

1.1 Package Contents

- 1x EPL-MBC-100 Modbus TCP/RTU Gateway
- 1x User Manual
- 1x Plug-in terminal set

* For special orders, package contents may vary depending on the project or customer request.

Figure 1.1 – EPL-MBC-100 front panel view

2. TECHNICAL SPECIFICATIONS

GENERAL	
Model	EPL-MBC-100
Product Name	Modbus TCP/RTU Gateway
Brand	Energyplus
Country of Origin	Türkiye
Conformity	CE
Firmware Version	v1.5.7

ELECTRICAL RATINGS	
Supply Voltage	24 VDC ±5%
Power Consumption	2 W (75 mA)

MODBUS TCP	
Port	501, 502 (configurable)
Simultaneous Connections	2 clients
Timeout	3000 ms (configurable)
Buffer Size	260 bytes (7 MBAP + 253 PDU)

MODBUS RTU	
Number of Ports	2 independent RS-485 (COM01, COM02)
Baud Rate	9600 / 19200 / 38400 / 57600 / 115200
Data Bits	8 or 9
Parity	None, Even, Odd
Stop Bits	1 or 2
Timeout	100 – 5000 ms (configurable)
Slave Count	32 per port (64 total)
Slave Address Range	1 – 247

SUPPORTED FUNCTION CODES	
0x01 / 0x02	Read Coils and Discrete Inputs
0x03 / 0x04	Read Holding and Input Registers
0x05 / 0x06	Write Single Coil and Single Register
0x0F / 0x10	Write Multiple Coils and Multiple Registers

ETHERNET	
Speed	10 / 100 Mbps auto-negotiation
Duplex Mode	Half / Full auto-negotiation
IP Assignment	Static or DHCP
Web Interface	HTTP, Port 80
Connector	RJ45 with status LEDs
Default IP Address	192.168.1.192
Default Password	Pass

PERFORMANCE

Latency (average)	42 ms
Latency (maximum)	150 ms
Throughput	150 requests/s per port
Success Rate	99.2%
MTBF	> 10,000 hours

ENVIRONMENTAL CONDITIONS

Operating Temperature	-10 °C ... +45 °C
Storage Temperature	-20 °C ... +70 °C
Relative Humidity	10% ... 90% (non-condensing)
Ingress Protection	IP-54

PHYSICAL SPECIFICATIONS

Dimensions (W x D x H)	90 x 70 x 32 mm
Weight	XXX g
Enclosure	Altınkaya RT-504
Mounting Type	DIN rail (TS35)

3. PRODUCT COMPONENTS

INDICATORS AND CONNECTION ELEMENTS	
PWR terminal	24 VDC supply input; the + and – poles are marked on the unit.
COM 1 / COM 2	Two independent RS-485 ports, each with S (Shield), A, B and G (GND) terminals.
LAN-1 / LAN-2	Ethernet ports; link and activity LEDs are on the connectors.
Green LED	Indicates that the system is running in normal operation.
Yellow LED	Network activity, or a DHCP address is being obtained.
Red LED	Fault condition, or traffic on the Modbus line.

Figure 3.1 – Terminal layout and connection points

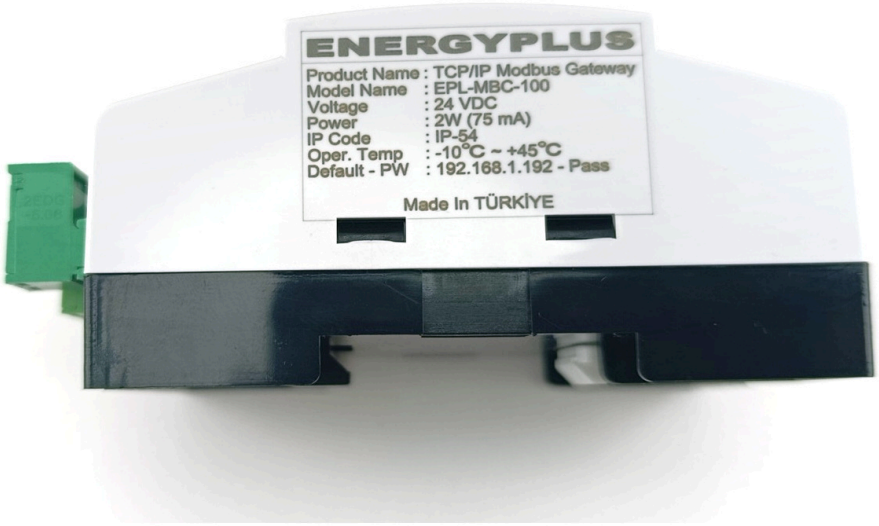


Figure 3.2 – Product label

4. WIRING DIAGRAM

Terminal layout: **PWR (+ –) · COM 1 (S-A-B-G) · COM 2 (S-A-B-G) · LAN-1 · LAN-2**

TERMINAL CONNECTIONS	
PWR — + / –	24 VDC supply input
COM 1 — S	RS-485 line 1 — Shield
COM 1 — A	RS-485 line 1 — A conductor
COM 1 — B	RS-485 line 1 — B conductor
COM 1 — G	RS-485 line 1 — GND
COM 2 — S / A / B / G	RS-485 line 2 — same layout
LAN-1 / LAN-2	Ethernet ports (RJ45)

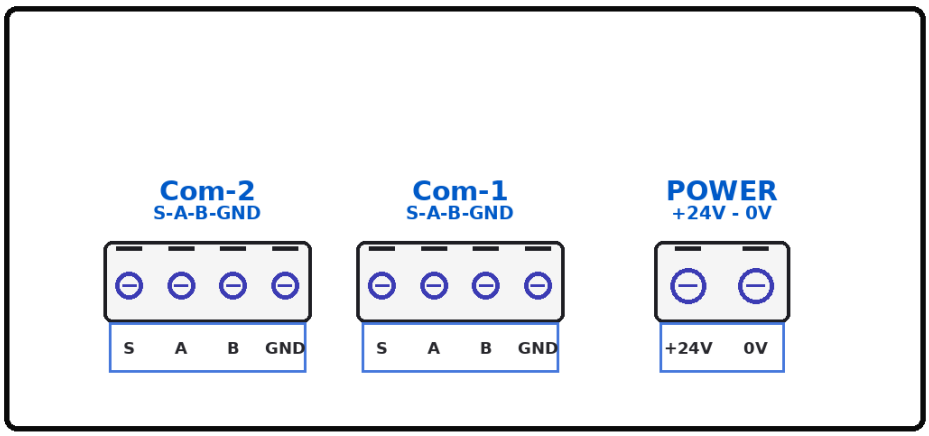


Figure 4.1

5. INSTALLATION

1. Disconnect the supply and confirm that the panel is de-energised.
2. Mount the unit on the DIN rail, leaving clearance for ventilation.
3. Connect the RS-485 lines to COM 1 and COM 2 following the S-A-B-G order: S = Shield, A, B, G = GND. Earth the shield at one point only.
4. Ensure that termination resistors are fitted at both ends of the RS-485 line.
5. Plug the Ethernet cable into the LAN-1 or LAN-2 port.
6. Connect the 24 VDC supply to the PWR terminal, observing the + and – markings.
7. Apply power and confirm that the green LED lights.
8. Put your computer on the same network and enter the default address (192.168.1.192) in a browser, then log in to the web interface with the password "Pass".
9. Configure the network settings (IP / DHCP) and the Modbus port parameters, then change the password.
10. Test the Modbus TCP connection from the SCADA/BMS (Ports 501 and 502).

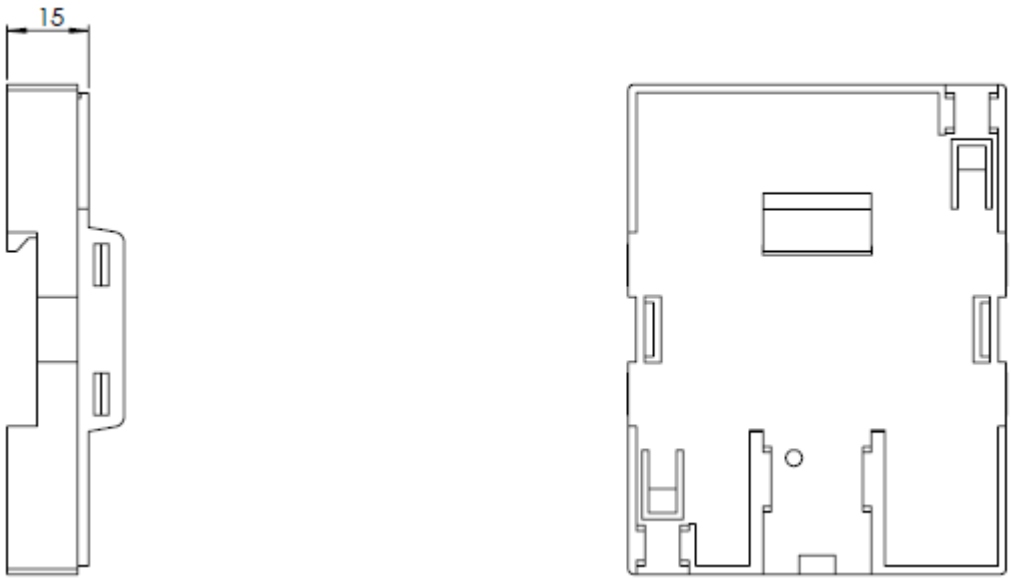
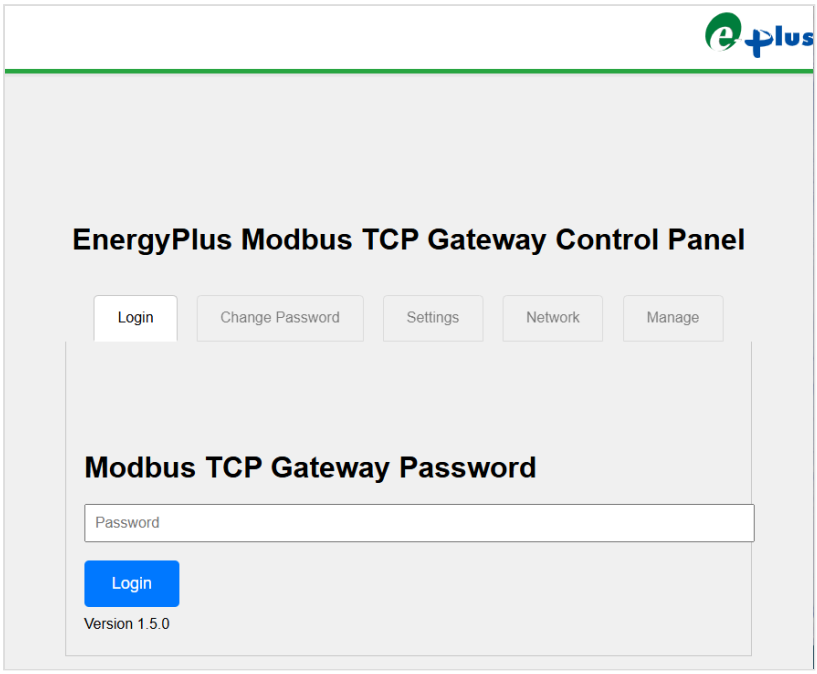


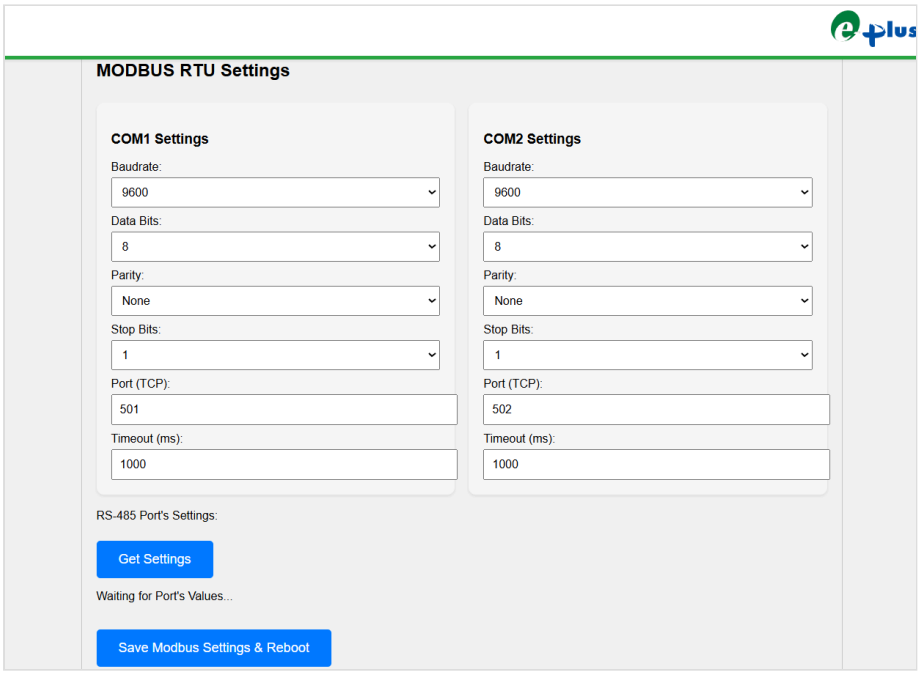
Figure 5.1

6. WEB INTERFACE

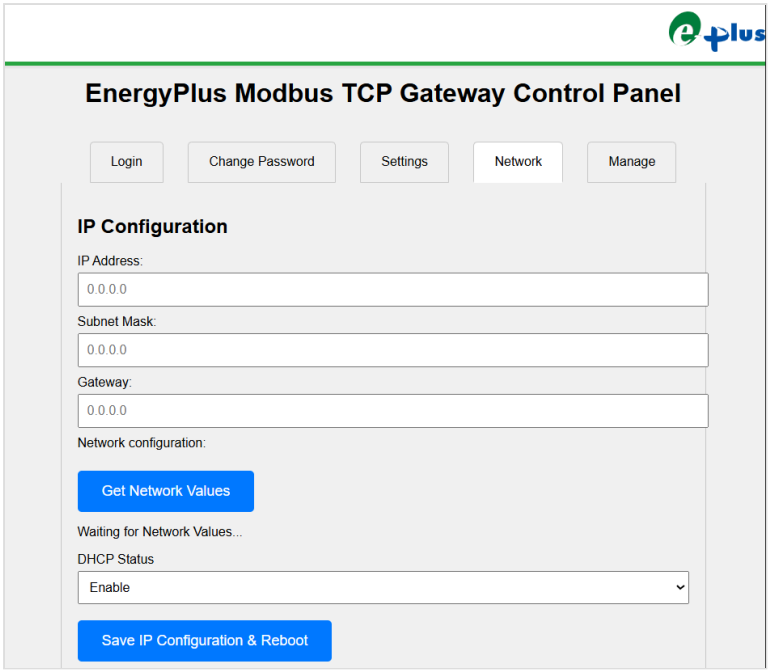
The unit includes a built-in web interface accessible from a browser. Network settings, port parameters and the slave list are configured here, and the diagnostics panel provides live status. The factory default address is 192.168.1.192 and the default password is "Pass". Changing the password after the first login is recommended.



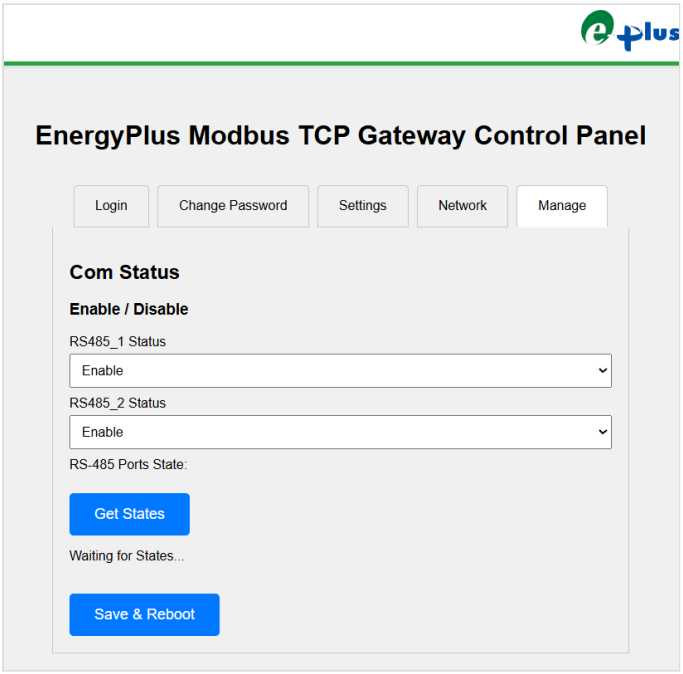
Login Screen – Access to the interface is password protected



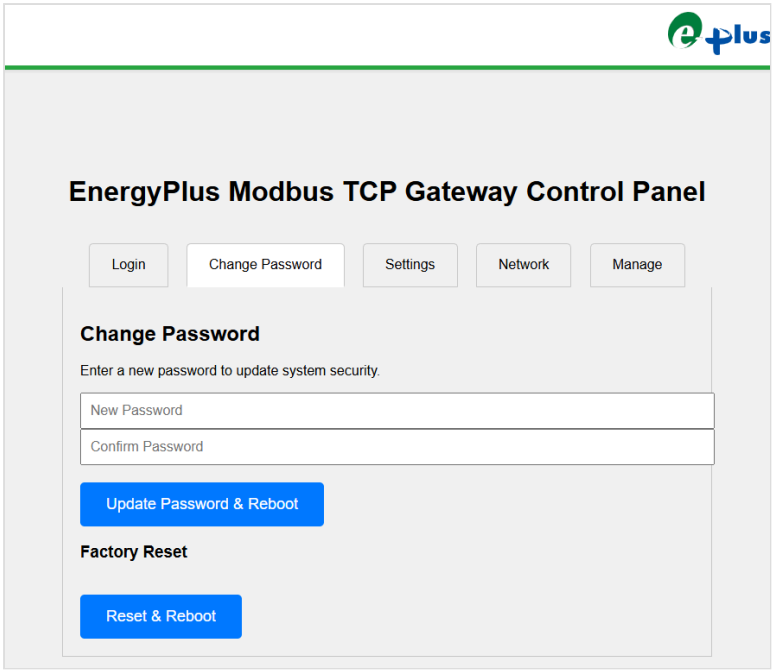
Settings – Modbus port parameters and timeout values



Network Settings – IP address, subnet mask, gateway and DHCP selection



Management – Slave device list and system management



Change Password – Updating the interface access password

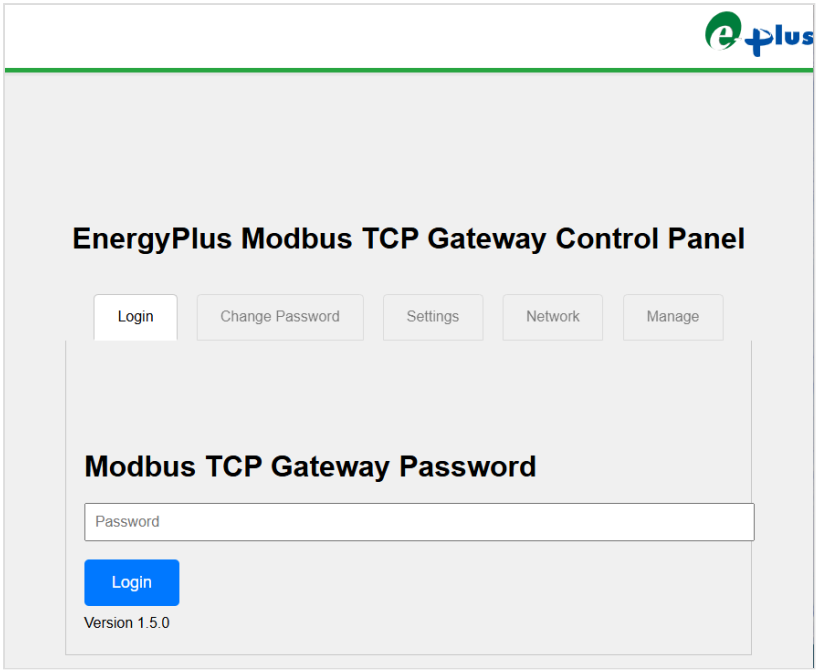

EnergyPlus Modbus TCP Gateway Control Panel
Login
Change Password
Settings
Network
Manage
Modbus TCP Gateway Password
Password
Login
Version 1.5.0

Figure 6.1

7. INSTALLATION WARNINGS

- ⚠ Installation and maintenance must be carried out only by qualified technical personnel, with the unit disconnected from the supply.
- ⚠ The unit ships with a factory default password. The password must be changed during commissioning; otherwise anyone with network access can reconfigure the device.
- ⚠ The unit is intended for in-panel use and must not be exposed to direct water or dust.
- ⚠ Reversing A and B on the RS-485 line prevents communication; follow the terminal markings.
- ⚠ The shield (S) must be earthed at one point only; earthing both ends creates an earth loop.
- ⚠ Do not route the RS-485 line in the same conduit as power cables.
- ⚠ Do not obstruct the ventilation openings or mount the unit directly beside heat-producing equipment.
- ⚠ The supply voltage must not go outside the 24 VDC ±5% range.

8. DIMENSIONS

Dimensions (W x D x H): 90 x 70 x 32 mm · Weight: 200 g

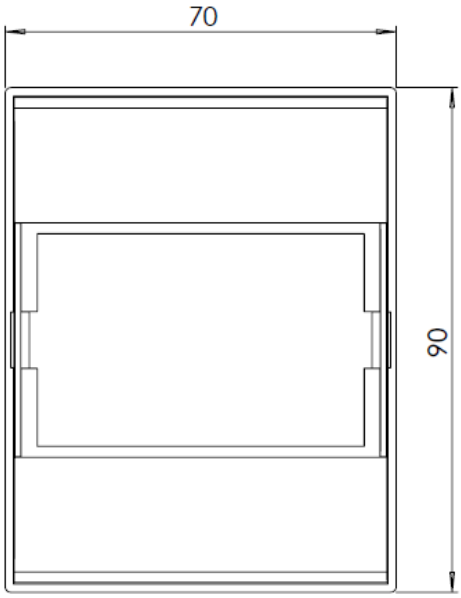


Figure 8.1

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