BACnet IP Router

Dual MS/TP Trunks · Web Interface

EPL-BAC-100
User Manual · V1.0
18.11.2026



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.

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1. DESCRIPTION

The EPL-BAC-100 connects two RS-485 BACnet MS/TP trunks to a BACnet/IP network over Ethernet. Building automation systems such as Niagara discover, read and write field devices on the MS/TP trunks over IP. Configuration and diagnostics run in a web browser.

Key Features

- Routes between BACnet/IP and two independent BACnet MS/TP trunks (3-port router)
- Each MS/TP trunk is its own BACnet network: network number, MAC, baud and Max Master per trunk
- BBMD Foreign Device support: discovery across VPNs and other subnets
- Configuration and live diagnostics from any web browser; no software to install
- Firmware update over the network with RSA-4096 digital signature verification
- Self-recovery: software watchdog, Ethernet health monitoring, automatic restart on fault
- Flow control with Router-Busy / Router-Available, Reject-Message-To-Network for unreachable networks
- Tested with Tridium Niagara 4

1.1 Package Contents

- 1x EPL-BAC-100 Bacnet IP Router
- 1x Plug-in terminal set

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



Figure 1.1 – General view

2. TECHNICAL SPECIFICATIONS

GENERAL	
Model	EPL-BAC-100
Product Name	BACnet IP Router
Brand	Energyplus
Country of Origin	Türkiye
Conformity	CE
Firmware Version	V1.0.13

HARDWARE	
Ethernet	10/100 Mbit/s, auto-negotiation
Serial ports	2 × RS-485, half-duplex (COM1, COM2)
Indicators	2 LEDs: green (run), red (fault)
Settings storage	Non-volatile flash, CRC32 protected
Ethernet connector	2 x 10/100 Mbps
RS-485 terminals / isolation / termination	120 ohm

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

BACNET/IP	
Protocol	BACnet/IP (ASHRAE 135 Annex J), UDP
UDP port	47808 (0xBAC0) default, configurable 1–65535
Network number	1–65534, default 1
IP addressing	DHCP (default) or static IP; falls back to static address if no DHCP server answers
BBMD	Foreign device registration, 4-entry FDT, Distribute-Broadcast-To-Network, Read-FDT, Delete-FDT-Entry
BBMD peering (BDT)	Not supported
Ethernet MAC address	Unique per device, fixed at factory

BACNET MS/TP	
Trunks	2 independent MS/TP trunks, each can be enabled or disabled
Node type	Master
Baud rate	9600, 19200, 38400, 57600, 76800, 115200 bit/s
Auto-baud detection	Optional (off by default)
MAC address	0–127, per trunk (default 1)
Max Master	1–127 (default 20)
Max Info Frames	1–255 (default 20)
Network number	1–65534; default COM1 2, COM2 3
Max APDU	480 octets (standard MS/TP frame)
Extended (COBS) frames	Not supported

ROUTING

Architecture	3-port BACnet router: BACnet/IP + COM1 + COM2, single Device object
Network layer messages	Who-Is-Router-To-Network · I-Am-Router-To-Network · Initialize-Routing-Table / -Ack · Reject-Message-To-Network · Router-Busy-To-Network · Router-Available-To-Network
Broadcast handling	Global broadcast (with hop count), remote broadcast, local broadcast forwarding for device discovery
Source addressing	SNET/SADR added to every routed message
Flow control	Router-Busy when an MS/TP transmit queue fills, Router-Available when it drains
Visibility	The router's Device object is discoverable from both the IP and the MS/TP side

BACNET DEVICE OBJECT

Vendor	EnergyPlus Teknoloji İmalat İthalat ve İhracat Sanayi A.Ş.
BACnet Vendor ID	1600
Model name	EnergyPlus BACnet Router
Protocol Revision	16
Device instance	0–4194302, default 12345
Segmentation	None
Objects	Device
Firmware version	1.0.13 (Application Software Version)

BACNET SERVICES AND BIBBS

Who-Is / I-Am	DM-DDB-B · Executes
Who-Has / I-Have	DM-DOB-B · Executes
ReadProperty	DS-RP-B · Executes
ReadPropertyMultiple	DS-RPM-B · Executes
WriteProperty	DS-WP-B · Executes
DeviceCommunicationControl	DM-DCC-B · Executes

MANAGEMENT

Interface	Built-in web server (HTTP, port 80), any web browser
Pages	Network, Serials, BACnet, Info, Firmware
Access	Settings are password protected
Live diagnostics	Per-trunk frame/error counters and token state, routing counters, Ethernet link, last restart reason
Firmware update	From the browser, from file or online; SHA-256 and RSA-4096 signature check, unsigned images are rejected
Restart	From the web interface

RELIABILITY

Software watchdog	Detects a stalled main loop and restarts the device
Fault recovery	Application restarts automatically on a fault; on repeated faults the device enters update mode at the same IP address
Ethernet monitoring	Continuous Ethernet controller health check, automatic recovery from link lock-ups
Settings integrity	Starts with factory defaults if the stored settings are corrupt

FACTORY DEFAULTS

IP addressing	DHCP
Fallback static IP	192.168.1.192 / 255.255.255.0, gateway 192.168.1.1
BACnet/IP UDP port	47808
BACnet/IP network	1
Device instance	12345
Device name	EnergyPlus BACnet Router ###### (last 6 MAC digits)
COM1	Enabled · network 2 · MAC 1 · 38400 bit/s · Max Master 20
COM2	Disabled · network 3 · MAC 1 · 38400 bit/s · Max Master 20

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	200 g
Enclosure	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, 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.
Red LED	Indicates a fault condition.

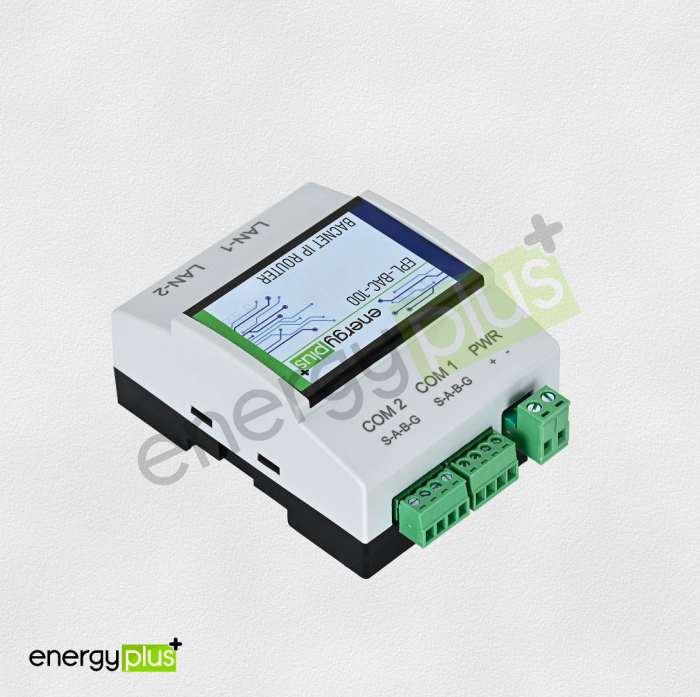


Figure 3.1 – Top face: PWR, COM 1, COM 2

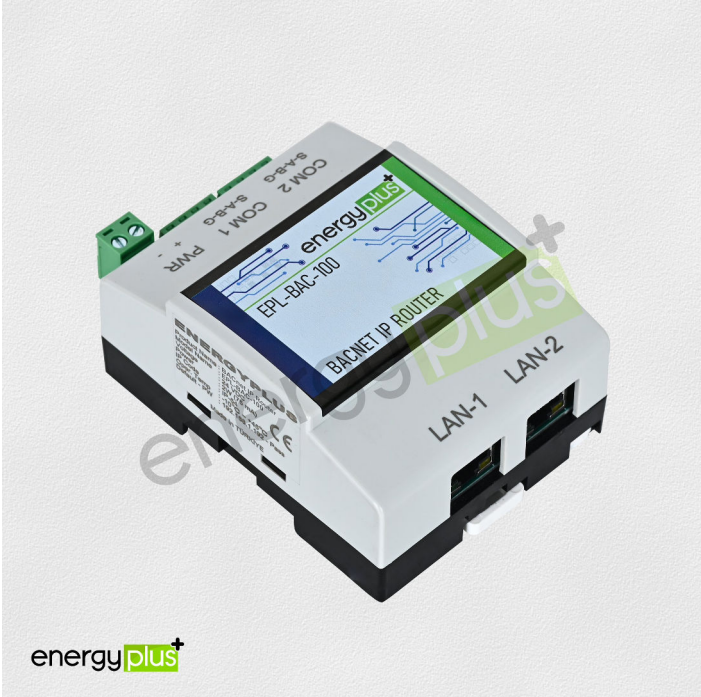


Figure 3.2 – Bottom face: LAN-1, LAN-2

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 — Terminator (RS-485-A Connected)
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)

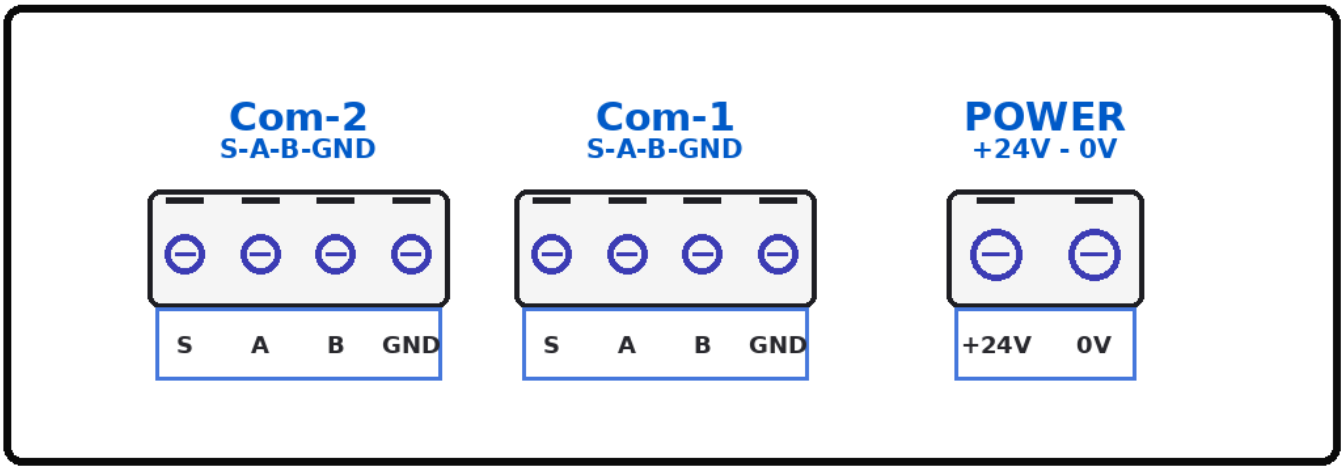


Figure 4.1 - RS-485 and Power Port Layout

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 the A, B and G (GND) terminals of COM 1 and COM 2. The S terminal is for 120 Ω line termination and is not used for the line itself.
4. Both ends of the RS-485 line must be terminated. If the unit is at the end of the line, use the 120 Ω termination on the S terminal.
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. The unit obtains its address by DHCP by default and falls back to 192.168.1.192 if no DHCP server answers. Enter the unit's address in a browser and log in to the web interface with the password "Pass".
9. Configure the network settings (IP / DHCP) and the MS/TP trunk parameters (network number, MAC address, baud rate); COM2 is disabled at the factory, so enable it if it is used. Then change the password.
10. Run a BACnet/IP discovery (Who-Is) from the building automation system and confirm that the devices on the MS/TP trunks are listed (UDP 47808).

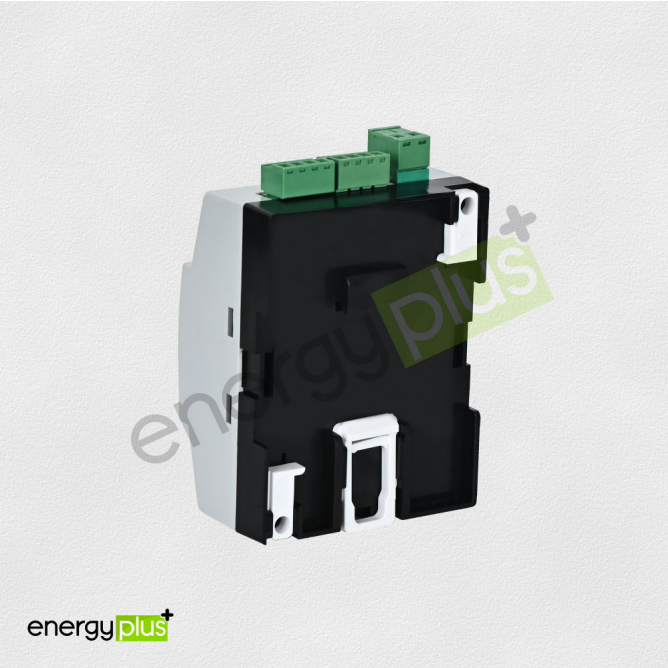


Figure 5.1 – Rear face and DIN rail clip

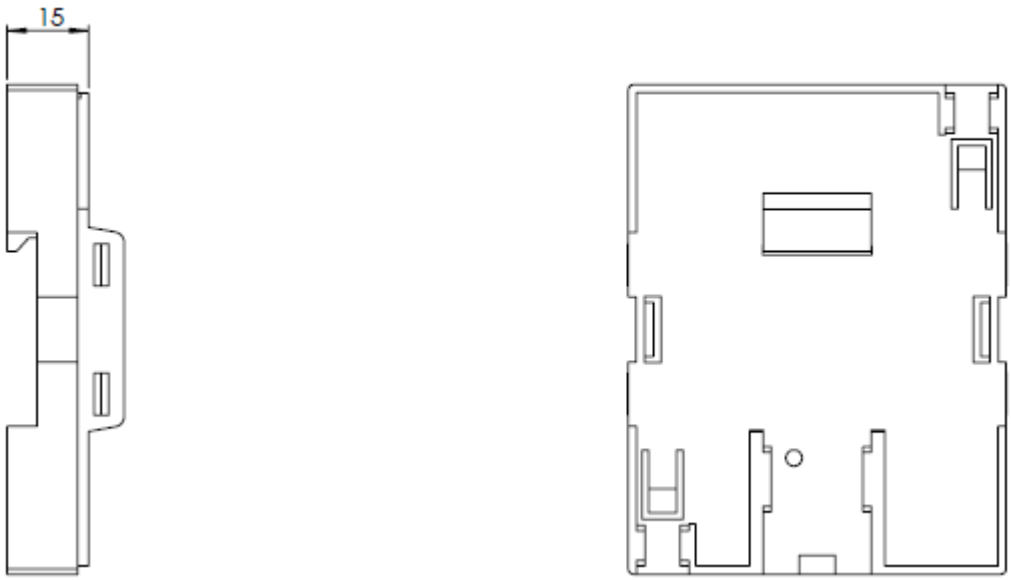


Figure 5.2 – DIN-rail mounted box

6. 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 cable shield must be earthed at one point only; earthing both ends creates an earth loop. The S terminal is not a shield connection; it is for line termination.
- ⚠ 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.

7. DIMENSIONS

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

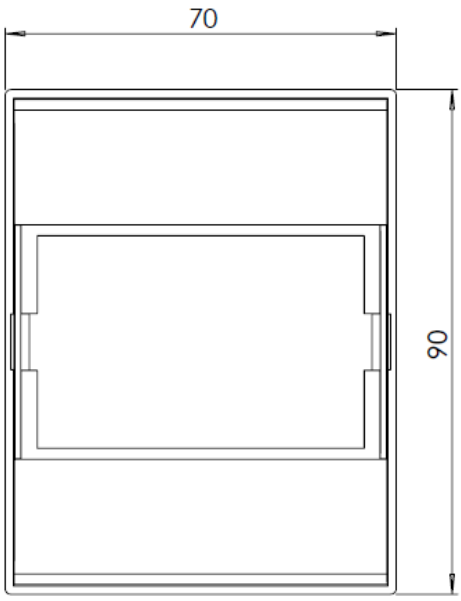


Figure 7.1 – Box dimensions including the outer lid

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