BACnet IP Router

Connects BACnet MS/TP Trunks to BACnet/IP

PRODUCT DATA

GENERAL INTRODUCTION



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. Each MS/TP trunk is configured as its own BACnet network, and BBMD Foreign Device support allows discovery across VPNs and other subnets. Configuration and diagnostics run in a web browser.

Key Feature:

3-port routing between BACnet/IP and two independent MS/TP trunks

ADVANTAGES

◊ **Two Independent MS/TP Trunks**
COM1 and COM2 are separate BACnet networks; network number, MAC address, baud rate and Max Master are set per trunk.

◊ **Discovery Across Subnets**
BBMD Foreign Device support lets building automation systems on a VPN or another subnet discover the devices.

◊ **No Software to Install**
Configuration and live diagnostics run in any web browser; firmware is updated over the network with RSA-4096 digital signature verification.

◊ **Self-Recovery**
A software watchdog, Ethernet health monitoring and automatic restart on fault keep the unit running without intervention.

TECHNICAL SPECIFICATIONS

GENERAL

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)

TECHNICAL SPECIFICATIONS

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

WIRING DIAGRAM & INSTALLATION

The top face carries the 24 VDC supply (PWR) and two RS-485 ports, each wired S-A-B-G (Termination, A, B, GND). The LAN-1 and LAN-2 Ethernet ports are on the bottom face. The unit mounts on a DIN rail.

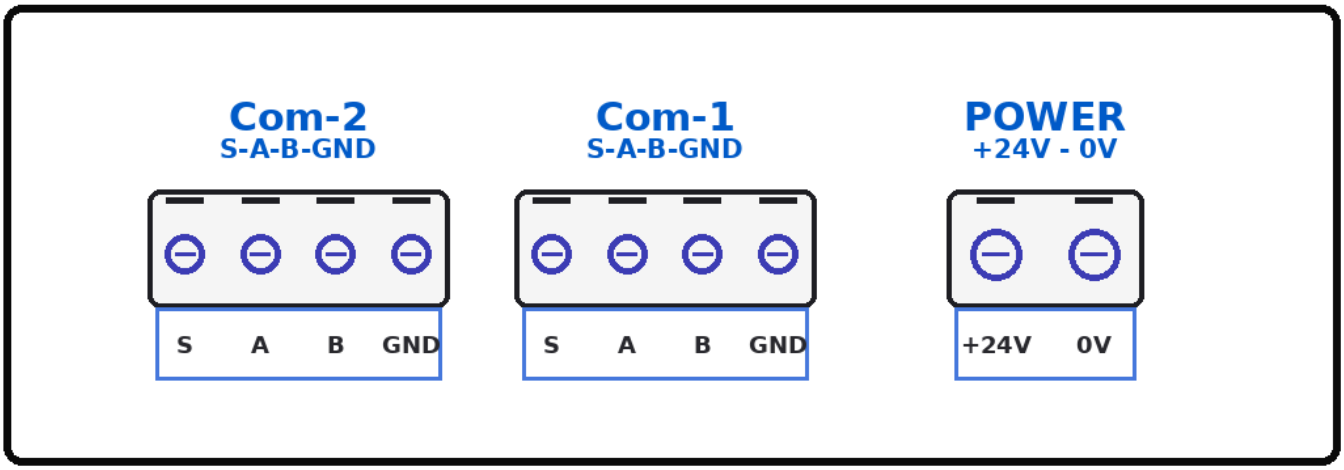


Figure 1 – RS-485 and Power Port Layout

PHYSICAL DIMENSIONS

DIMENSIONS AND WEIGHT	
Dimensions (W x D x H)	90 x 70 x 32 mm
Weight	200 g
Mounting Type	DIN Rail / ray (TS35)

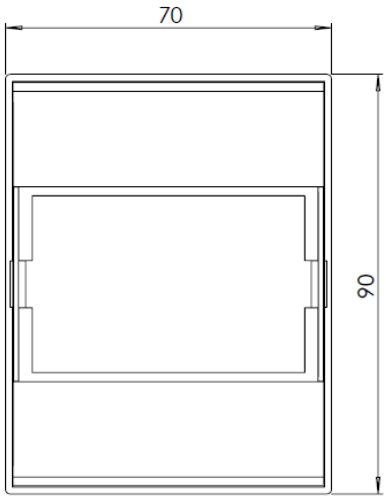


Figure 2 – Box dimensions including the outer lid

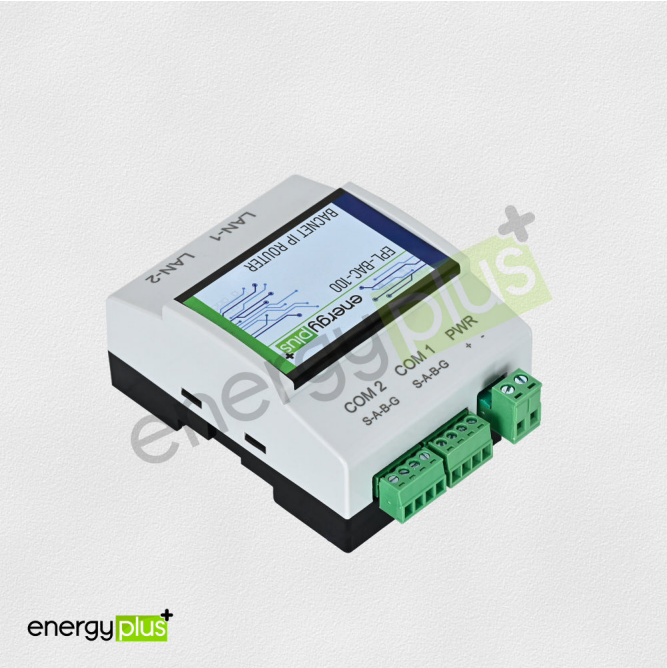


Figure 3 – Top face: PWR, COM 1, COM 2

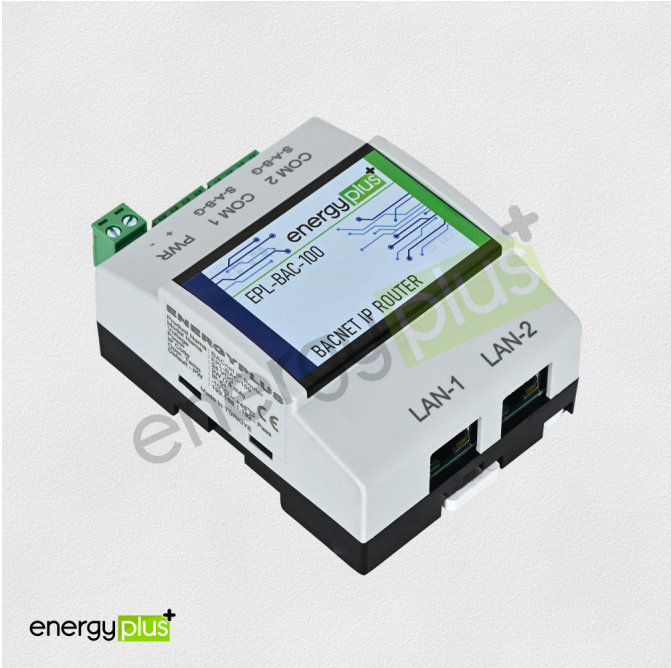


Figure 4 – Bottom face: LAN-1, LAN-2

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