



ENEROOO Box Kit



CENTRAL CONTROL UNIT of the whole system, which interacts with the PV plant and connected devices. It provides intelligent real-time control of energy production and consumption.

Physical Specifications - ER10K

Product Type	Complete housing
Dimensions (W×H×D)	326 x 308 x 185 mm (12" x 10" x 6")
Enclosure Type	Outdoor enclosure
Enclosure Material	UV-stabilized PC (Polycarbonate)
Seal Material	PUR (Polyurethane)
Protection Class (IP rating)	Max. IP69 (IEC 60529:2001-02)
NEMA Rating	6P
Impact Resistance	IK10 (at -35°C to +40°C)
Flammability rating according to UL 94	V2
Dimensions (W×H×D)	326 x 308 x 185 mm (12" x 10" x 6")
Weight (assembled)	~4.25 kg

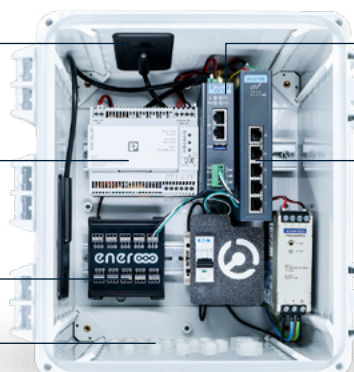
Color (Housing)	Light gray (RAL 7035)
Color (Hous. Cover)	Transparent (with Eneroo sticker)
Ventilation Openings	No
Battery Bay	No
Cable Gland Openings	14 total – 1 × large (power input), 13 × standard (signal/data cables), Ø 10 mm
Mounting Type	Mast mounting or panel mounting
PCB Mounting	Bolt mounting
Operating Temperature Range	-40°C to +80°C (enclosure) / -20°C to +60°C (assembled system, depending on components)
Operating Humidity Range	5% to 95% RH, non-condensing
Cooling Method	Passive cooling (natural convection)

ER10L – Mini PCI-e LTE card

ER12P – online UPS 24 V / 46 Wh

ER10X – DIN rail RS-485 terminal block splitter

ER10E – DIN rail cabinet



ER10C – DIN rail industrial embedded computer

ER10S – EDIN rail Ethernet switch 1+4 PoE ports



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Main Components – ER10K

Main Controller	Advantech ECU-150-12A1 (edge computing unit, LTE + Ethernet)
Switch	Advantech EKI-2705E-1GPI-A (5-port unmanaged industrial switch, 24-48 V DC)
Power Supply	Advantech PSD-A60W24 (100-240 V AC in / 24 V DC 2.5A out)
RS-485 Terminal Block	HARDWARIO SKU
Supported Protocols	Modbus RTU/TCP, MQTT, gRPC, HTTP, HTTPS, LoRaWAN
Network Modes	DHCP Server/Client, NAT
Antenna Types	Vertical + horizontal LTE antennas
Compatible Devices	LoRaWAN: gateways, wall sockets, thermostats, stickers, smoke detectors. Modbus: inverters, meters, boilers
Management	Web UI, CLI, API, Mobile App, remote SSH/VPN access

Power Supply – ER10K: ER10P

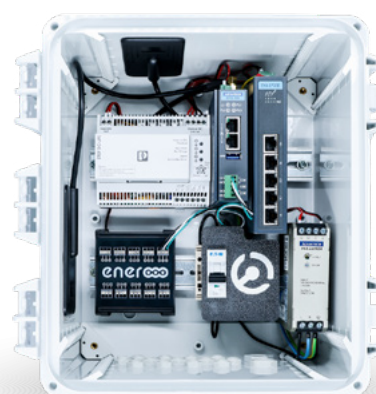
Model	Advantech PSD-A60W24 (100-240 V AC in / 24 V DC 2.5A out)
Dimensions (W×H×D)	32 x 90.2 x 100 mm
Power Source	External AC input
Input Voltage Range	100-240 V AC
Input Frequency	47-63 Hz
Input Current / Power	1.4 A @ 115 V AC
Output Voltage	24 V DC
Output Current / Power	2.5 A / 60 W
Power Protection	Integrated breaker, 10 A max
Backup Power	None (optional external UPS)

Main Components – Edge Box – ER10K: ER10C

Model	Advantech ECU-150-12A1 (Industrial IoT Gateway)
Dimensions (W×H×D)	100 x 93 x 30 mm
Processor	NXP i.MX8M Quad-Core Cortex-A53 @ 1.3 GHz
RAM	2 GB LPDDR4
Storage	16 GB eMMC, expandable via SD card
Interfaces	2 × Gigabit Ethernet (10/100/1000), 2 × RS-232/485 (isolated), 1 × USB 3.0
SIM Slots	1 × Nano SIM (for LTE)
LTE/5G Support	LTE Cat.4 via mini-PCIe module, with dual antennas (vertical + horizontal)
Operating System	Embedded Linux (supports containerized Edgelink)

Functions

- Edge computing for energy data aggregation
- Modbus RTU/TCP gateway
- LoRaWAN network integration
- Industrial protocols: Modbus, IEC-60870-5, DNP3.0, OPC-UA, BACnet
- Remote management: Web UI, CLI, SSH/VPN
- Data logging to SD card with online firmware update





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Main Components – Switch – ER10K: ER10S

Model	Advantech EKI-2705E-1GPI-A (Industrial Unmanaged Ethernet Switch)
Dimensions (W×H×D)	30 x 140 x 95 mm (1.18' x 5.51' x 3.74 in.)
Number of Ports	5 × RJ-45 (4 × Fast Ethernet with PoE, 1 × Gigabit uplink)
Port Speed	4 × 10/100 Mbps + 1 × 10/100/1000 Mbps
PoE Support	IEEE 802.3af/at, 4 × PoE ports
Power Input Range	24–48 V DC (redundant dual input)
Power Consumption	Max. 2 W (without PoE load)

Main Components – Terminal Blocks – ER10K: ER10X

Dimensions (W×H×D)	76 x 72.6 mm
Type	AC input terminal block (with breaker) + RS-485/data terminal block (enerooo board)
Number of Channels	AC: 3 (L, N, GND), RS-485/Data: 10 channels (screw terminals, dual-level)
Rated Load	AC: up to 10 A @ 230 V AC (breaker protected), RS-485/Data: 24 V DC, low-power signal lines

Interfaces & Ports – ER10K

LAN Ports	5 × RJ-45 (4 × 10/100 Mbps with PoE, 1 × Gigabit uplink via EKI-2705E switch)
WAN Ports	1 × RJ-45 (ECU-150 eth0, 10/100/1000 Mbps)
COM Ports (RS-232/RS-485)	2 × RS-232/485 isolated serial (via ECU-150 terminal block)
USB Ports	1 × USB 3.0 (ECU-150)
SIM Slots	1 × Nano SIM (Vodafone pre-installed)
Power Connectors	3-pin DC input terminal block (10–30 VDC)
Antenna Connectors	2 × SMA (vertical & horizontal LTE antennas)

Features

- Unmanaged plug-and-play operation
- Jumbo frame support (up to 9 KB)
- Compact IP30 metal enclosure
- DIN-rail or wall mount
- Operating temperature –40 to +75°C

Networking – ER10K

IP Address Scheme	Public IP: 10.0.0.xxx/24, Private LAN IP: 172.31.255.xxx (range 172.31.255.100–199)
Supported Protocols	Modbus RTU/TCP, MQTT, HTTP, HTTPS, LoRaWAN, gRPC
Data Rate	Up to 1 Gbps (LAN uplink)
Operating Modes	DHCP Server (LAN), DHCP Client (WAN), NAT routing
Internet Connectivity	Primary via Ethernet WAN (eth0), fallback via LTE (Vodafone SIM, dual antenna)





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Device & Integration – ER10K

Compatible LoRaWAN Gateways	Milesight UG65-868M-EA
Compatible Inverters	Solax Power (X3-Hybrid G4, X3-Ultra)
Supported Platforms	ChirpStack (LoRaWAN network server), InfluxDB, Grafana, Enerooo Cloud
Integration API/SDK	REST API, gRPC, MQTT, Modbus TCP

Compatible Sensors – ER10K

- LoRaWAN: wall sockets (ER10W, ER11W, ER12W), thermostats (ER10T), stickers (ER10H: motion, climate, input), smoke detectors (ER10F)
- Modbus: energy meters (ER10M, ER11M, ER12M), boilers, industrial devices

Indicators & Control – ER10K

LED Indicators	Edge Box: Power, LAN (Link/Activity), WAN
Control Buttons	None on ECU-150; system On/Off via integrated breaker (max. 10 A)
Web Interface / CLI	Yes
Remote Management	SSH access, VPN (OpenVPN/IPsec), Enerooo Cloud integration, optional mobile app

Security – ER10K

User Authentication	Linux, web UI
VPN Support	OpenVPN
Port Locking	Physical + logical

Package Contents – ER10K

- Enerooo Box (assembled)
- Power Cables
- Antennas
- Mounting Kit
- Documentation
- Software License

