245U-E-A1 wireless Ethernet modem

802.11 wireless Ethernet for reliable long-distance connectivity

The ELPRO 245U-E-A1 is a cost-effective and robust solution to enable your devices for the Internet of Things (IoT) and Industrie 4.0. With an easy to access 802.11 wireless network, the 245U-E-A1 allows your devices to communicate through the industry-standard 5.8GHz frequency band used by most devices. The 245U-E is a cost-effective and robust Ethernet modem, with industry-leading transmit power and industrial ratings.

Applications

- Factory automation and safety interlocks
- Networking wind turbines and solar collectors
- Video surveillance
- Automated vehicle control
- Tank farm monitoring

Description

The ELPRO 245U-E-A1 wireless Ethernet modem is a robust, inexpensive, license-free wireless 802.11 standards-compliant transceiver capable of high-bandwidth communications. Operating at 5.8GHz and up to 630 mW, the ELPRO 245U-E-A1 is optimized for data rates of up to 108 Mbps, providing robust long-distance and secure two-way wireless communications in challenging environments typical of industrial monitoring and control applications.

Capable of operating in access point/client configuration, functioning as a network bridge/router, or serving as a serial server (RS-232/ RS-485), the ELPRO 245U-E-A1 offers node-to-node deterministic mesh network repeatability for greater range and multiple channel spacing options to increase network scalability. Integrated Modbus® server capability allows seamless I/O expansion through the use of ELPRO 115S expansion modules or third-party modbus devices.

Features

- 802.11a standard-compliant options
- 5.18 – 5.825 GHz frequency (802.11a) and 15–630 mW RF power
- Up to 108 Mbps data rate support
- 27-channel option support
- Single antenna connection for easy installation
- Access point/client and bridge/router configuration
- Serial client/server/multicast Modbus TCP to RTU gateway
- 10/100Base-T IEEE® 802.3 Ethernet
- Spanning tree (self-healing) support
- Deterministic AP-to-AP mesh network repeatability
- Fast roaming for AP-to-AP handover
- IEEE 802.11i secure 128-bit AES encryption (WPA2)
- MAC and IP address filtering
- Digital I/O channel transfer
- Configurable settings for high-noise environments
- Over-the-air network diagnostics and configuration
- VLAN tagging support for bridging and routing modes

Technical Data **EL-245U-E-A1**

Specifications

Specifications subject to change.

Table 1. 245U-E-A1 specifications

Specification	Description
Transmitter and receiver	
Frequency	5.150 - 5.825 GHz ①
Transmit power	15–630 mW (country-specific)
Transmission modulation	Direct sequence spread spectrum (DSSS) ①
	Orthogonal frequency data modulation (OFDM) ①
Receiver sensitivity	−95 dBm at 6 Mbps; −74 dBm at 108 Mbps (8% FER) ①
Channel spacing	20 MHz spacing (27 channels,) ①
Data rate	6–108 Mbps ① "Auto Mode" selects fastest rate possible relative to RSSI
Range (LoS)	9 miles (15 km) ①
Antenna connector	1 x female SMA, standard polarity
Input and output	
Discrete I/O	Input voltage-free contact ③ Output FET 30 Vdc 500 mA ③
Ethernet port	
Ethernet port	100Base-T, RJ-45 connector–IEEE 802.3
Link activity	Link, 100Base-T via LED
Serial port	
RS-232	DB-9 female DCE, RTS/CTS/DTR/DCD
RS-485	2-pin terminal block, non-isolated ④
Data rate (bps)	1200, 2400, 4800, 9600, 14400, 19200, 38400, 57600, 76800, 115200, 230400 bps
Serial settings	7/8 data bits, stop/start/parity (configurable)
Protocols and configuration	
System address	ESSID; 1–31 character text string
Protocols supported	TCP/IP, UDP, ARP, SNMP, RADIUS/802.1x, DHCP, DNS, PPP, ICMP, HTTP, FTP, TFTP, TELNET, Modbus and Modbus-TCP
User configuration	User configurable parameters via HTTPS embedded Web server
Configurable parameters	Access point/client/bridge/router/VLAN Point to point, point to multipoint Wireless distribution system (AP–AP repeater) Modbus TCP/RTU gateway Serial client/server/multicast Simultaneous RS-232/RS-485 connection Embedded Modbus master/slave for I/O transfer
Security	Data encryption, 802.11i with CCMP 128-bit AES Support for 802.1x Radius server Secure HTTP protocol
Bandwidth protection	MAC address; whitelist/blacklist IP filtering; whitelist/blacklist ARP/GARP filtering; whitelist/blacklist
LED indication and diagnostics	
LED indication	Power/OK, RX, TX/link, RS-232, LAN, RS-485, digital I/O status Refer to product manual for further information
Reported diagnostics	RSSI measurements, connectivity information/statistics, log file
Network management	Optional network management system

① Frequency range dependent on country of model.

② Typical maximum line of sight range, RF Power dependent.

③ Can be used to transfer I/O status or communications failure output.

④ Maximum distance: 3937 ft (1200 m).

Table 1. 245U-E-A1 specifications, continued

Specification	Description
Compliance	
EMC	FCC Part 15; EN 301 489–17; AS/NZS CISPR22
RF (radio)	EN 301 893; FCC Part 15; RSS 210
Hazardous area	CSA Class I, Division 2; ATEX; IECEx nA IIC
Safety	IEC 60950 (RoHS compliant)
UL®	UL Listed
General	
Size	4.5 in x 5.5 in x 1.2 in (114 mm x 140 mm x 30 mm)
Housing	Powder-coated aluminum
Mounting	DIN rail
Terminal blocks	Removable, max. conductor 14 AWG 0.1 in^2 (2.5 mm^2)
Temperature rating	−40 to +140 °F (−40 to +60 °C)
Humidity rating	0–99% RH noncondensing
Weight	1.0 lb (0.45 kg)
Power supply	
Nominal supply	9 to 30 Vdc, under/overvoltage protection
Average current draw	270 mA at 12 V (idle); 140 mA at 24 V (idle)
Transmit current draw	470 mA at 12 V (400 mW), 250 mA at 24 V (600 mW)

Product selection

Table 2. 245U-E-A1 accessories

Description	Product code
Antennas 5.8 GHz	
Collinear antenna, N-type female, 6-dBi gain, mounting bracket	**COL5806**
Collinear antenna, N-type female, 10-dBi gain, mounting bracket	**COL5810**
Cables	
Coaxial cable kit, 9.8 ft (3 m)/ 32.8 ft (10 m)/65.6 ft (20 m), N-type to SMA	**CC3/10/20-SMA**
Coaxial cable tail, 1.97 ft (600 mm), SMA to N-type female/male	**CCTAIL-SMA-F/M**
Ethernet cable, 6 ft (1.8 m), crossover, RJ-45 to RJ-45	**ETH-C5X**
Ethernet cable, 6 ft (1.8 m), direct, RJ-45 to RJ-45	**ETH-C5A**
Surge diverters	
SMA surge diverter for use with CC10/ CC20-SMA	**CSD-SMA-2500**
Coaxial surge diverter, bulkhead N-female to N-female	**CSD-N-6000**
Power supply surge diverter, 110 Vac/15 A	**MA15/D/1/S1**
Power supplies	
DIN rail power supply, 100–250 Vac, 12 Vdc/2.5 A	**PS-DINAC-12DC-OK**
DIN rail power supply, 85–264 Vac, 24 Vdc/2.5 A	**PS-DINAC-24DC-OK**
Mounting brackets	
Mounting bracket kit for collinear antenna	**BR-COL-KIT**

Table 3. 245U-E-A1 ordering

Description	Frequency	RF power	Product code
Ethernet 802.11a	5.8GHz DSSS	630 mW	**EL-245U-E-A1-AU**
Ethernet 802.11a	5.8GHz DSSS	630 mW	**EL-245U-E-A1-US**
Ethernet 802.11a	5.8GHz DSSS	100 mW	**EL-245U-E-A1-EU**