

## Technical Data TD032003EN

Effective January 2014

# 245U-E Wireless Ethernet Modem

**802.11 wireless Ethernet for reliable high-speed connectivity**


## Features

- 802.11b/g and 802.11a standard-compliant options
- 2.412–2.472 GHz frequency (802.11b/g) and 15–400 mW RF power
- 5.18–5.825 GHz frequency (802.11a) and 15–400 mW RF power
- Up to 108-Mbps data throughput
- 13-channel (802.11b/g) and 27-channel (802.11a) options
- Transmit and receive antenna diversity
- Access point/client and bridge/router configuration
- Serial client/server/multicast Modbus® TCP to RTU gateway
- 10/100baseT 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

## Description

The ELPRO 245U-E Wireless Ethernet Modem is a robust, license-free wireless 802.11 standards-compliant transceiver capable of high-bandwidth communications. Operating at 2.4 GHz or 5 GHz and up to 400 mW, the ELPRO 245U-E is optimized for throughputs of up to 108 Mbps, providing robust and secure two-way wireless communications in challenging indoor and outdoor 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 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.

## Applications

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

## Specifications

SPECIFICATION	DESCRIPTION
<b>Transmitter and Receiver</b>	
Frequency	2.412–2.472 GHz ① 5.150–5.825 GHz ②
Transmit power	15–400 mW (data rate and country-specific)
Transmission	Direct sequence spread spectrum (DSSS) ① ②
Modulation	Orthogonal frequency data modulation (OFDM) ① ②
Receiver sensitivity	–100 dBm @ 250 kbps, 74 dBm @ 108 Mbps (8% FER) ① 100 Bm @ 250 kbps, 74 dBm @ 108 Mbps (8% FER) ②
Channel spacing	5-MHz spacing (13 channels, 2.412–2.472 GHz) ① 20-MHz spacing (27 channels, 5.150–5.8 GHz) ②
Data rate	1–108 Mbps ① 6–108 Mbps ② "Auto Mode" selects fastest rate possible relative to RSSI
Range (LoS)	6 miles (10 km) @ 400 mW ① ③, 3 miles (5 km) @ 400 mW ② ③
Antenna connector	2 x female SMA, standard polarity ④



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## Specifications (continued)

SPECIFICATION	DESCRIPTION
<b>Input and Output</b>	
Discrete I/O	Input voltage-free contact ①, output FET 30 Vdc 500 mA ②
<b>Ethernet Port</b>	
Ethernet port	100baseT, RJ-45 connector—IEEE 802.3
Link activity	Link, 100baseT via LED
<b>Serial Port</b>	
RS-232	DB-9 female DCE, RTS/CTS/DTR/DCD
RS-485	2-pin terminal block, non-isolated ③
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)
<b>Protocols and Configuration</b>	
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
<b>LED Indication and Diagnostics</b>	
LED indication	Power/OK, RX, TX/link, RS-232, LAN, RS-485, digital/O status Refer to product manual for further information
Reported diagnostics	RSSI measurements, connectivity information/statistics, log file
Network management	Optional network management system
<b>Compliance</b>	
EMC	FCC Part 15; EN 301 489–17; AS/NZS CISPR22
RF (radio)	EN 300 328 ④; EN 301 893 ⑤; FCC Part 15; RSS 210
Hazardous area	CSA Class I, Division 2; ATEX; IECEx nA IIC
Safety	IEC 60950 (RoHS compliant)
UL	UL listed
<b>General</b>	
Size	4.5" x 5.5" x 1.2" (114 x 140 x 30 mm)
Housing	Powder-coated aluminum
Mounting	DIN rail
Terminal blocks	Removable, max conductor 14 AWG 0.1 in. <sup>2</sup> (2.5 mm <sup>2</sup> )
Temperature rating	–40 to +140°F (–40 to +60°C)
Humidity rating	0–99% RH noncondensing
Weight	1.0 lb (0.45 kg)
<b>Power Supply</b>	
Nominal supply	9 to 30 Vdc, under/over voltage protection
Average current draw	270 mA @ 12V (idle); 140 mA @ 24V (idle)
Transmit current draw	470 mA @ 12V (400 mW), 250 mA @ 24V (400 mW)

**Note:** Specifications subject to change.

① Order option for 802.11b/g

② Order option for 802.11a

③ Typical maximum line of sight range

④ Supports signal diversity or high-gain antenna

⑤ Can be used to transfer I/O status or communications failure output

⑥ Maximum distance: 3937' (1200m)

## Ordering

PRODUCT CODE	DESCRIPTION	FREQUENCY	RF POWER
245U-E-G	Ethernet 802.11b,g	2.4 GHz DSSS	100/400 mW
245U-E-A	Ethernet 802.11a	5.8 GHz DSSS	400 mW

**Note:** Available RF power and frequency may vary depending on country of application.

## Accessories

PRODUCT CODE	DESCRIPTION	DATA SHEET
<b>Antennas 2.4 GHz</b>		
MD2400-EL	Dipole antenna, 15' (4.6m) cellfoil/SMA, 0-dBi gain, mounting bracket	TD032053EN
SG2400-EL	Collinear antenna, N-type, 5-dBi gain, mounting bracket	TD032054EN
Z2400-EL	Collinear antenna, N-type, 10-dBi gain, mounting bracket	TD032054EN
Y2400-18EL	Yagi antenna, N-type, 18-dBi gain	TD032056EN
WH2400	Whip antenna: SMA male, 2-dBi gain, 2.1" (54 mm)	TD032052EN
<b>Antennas 5.8 GHz</b>		
COL5806	Collinear antenna, N-type female, 6-dBi gain, mounting bracket	TD032057EN
COL5810	Collinear antenna, N-type female, 10-dBi gain, mounting bracket	TD032058EN
<b>Cables</b>		
CC3/10/20-SMA	Coaxial cable kit, 9.8' (3m)/32' (10m)/65' (20m), N-type to SMA	TD032019EN TD032020EN TD032021EN
CCTAIL-SMA-F/M	Coaxial cable tail, 24" (600 mm), SMA to N-type female/male	TD032023EN
ETH-C5X	Ethernet cable, 6' (1.8m), crossover, RJ-45 to RJ-45	TD032025EN
ETH-C5A	Ethernet cable, 6' (1.8m), direct, RJ-45 to RJ-45	TD032024EN
<b>Surge Diverters</b>		
CSD-SMA-2500	SMA surge diverter for use with CC10/CC20-SMA	TD032030EN
CSD-N-6000	Coaxial surge diverter, bulkhead N-female to N-female	TD032031EN
MA15/D/1/S1	Power supply surge diverter, 110 Vac/15A	TD032029EN
<b>Power Supplies</b>		
PS-DINAC-12DC-OK	DIN rail power supply, 100–250 Vac, 12 Vdc/2.5A	TD032033EN
PSG60E	DIN rail power supply, 85–264 Vac, 24 Vdc/2.5A	TD032034EN
<b>Mounting Brackets</b>		
BR-COL-KIT	Mounting bracket kit for collinear antenna	TD032072EN



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