

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 |
|---------------------------------|--|
| Transmitter and Receiver | |
| 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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Effective January 2014

Specifications (continued)

| SPECIFICATION | DESCRIPTION |
|---------------------------------------|--|
| Input and Output | |
| Discrete I/O | Input voltage-free contact ①, output FET 30 Vdc 500 mA ② |
| Ethernet Port | |
| Ethernet port | 100baseT, RJ-45 connector—IEEE 802.3 |
| Link activity | Link, 100baseT via LED |
| Serial Port | |
| 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) |
| 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/O status Refer to product manual for further information |
| Reported diagnostics | RSSI measurements, connectivity information/statistics, log file |
| Network management | Optional network management system |
| Compliance | |
| 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 |
| General | |
| 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. 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/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 |
|--------------------------|--|--|
| Antennas 2.4 GHz | | |
| MD2400-EL | Dipole antenna, 15' (4.6m) cellfoi/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 |
| Antennas 5.8 GHz | | |
| COL5806 | Collinear antenna, N-type female, 6-dBi gain, mounting bracket | TD032057EN |
| COL5810 | Collinear antenna, N-type female, 10-dBi gain, mounting bracket | TD032058EN |
| Cables | | |
| 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 |
| Surge Diverters | | |
| 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 |
| Power Supplies | | |
| 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 |
| Mounting Brackets | | |
| BR-COL-KIT | Mounting bracket kit for collinear antenna | TD032072EN |

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