



945U-E Wireless Ethernet Modem

Long-range wireless Ethernet for high-speed and reliable connectivity



Description

The ELPRO 945U-E Wireless Ethernet Modem is a robust, license-free wireless transceiver capable of long-range and high-bandwidth communications. Operating at 900 MHz, the 802.11 standards-based ELPRO 945U-E is optimized for throughputs of up to 54 Mbps, which provides robust and secure two-way wireless communications in challenging 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 945U-E offers node-to-node deterministic mesh network repeatability for further 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.

Features

- 902–928 MHz frequency and 250–630 mW RF power
- 802.11 DSSS to 54 Mbps data throughput
- 1.25/2.5/5/10/20 MHz channel spacing options
- Transmit and receive antenna diversity
- 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
- AP-to-AP fast roaming for movable machinery
- 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 supported for bridging and routing modes

Applications

- Remote well head monitoring
- Pipeline leak detection
- Mining operations infrastructure
- Water treatment facilities
- Video surveillance and security
- Facilities management
- Automated vehicle control
- Tank farm monitoring
- Networking wind turbines
- Solar collectors

Specifications

SPECIFICATION	DESCRIPTION
Transmitter and Receiver	
Frequency	902–928 MHz ^a 915–928 MHz ^b
Transmit power	250 mW (+24 dBm) to 630mW (+28 dBm)
Transmission	Direct sequence spread spectrum (DSSS)
Modulation	802.11g orthogonal frequency data modulation (OFDM)
Receiver sensitivity	–95 dBm @ 0.25 Mbps, –71 dBm @ 54 Mbps (8% FER)
Channel spacing	9 x 1.25 MHz, 9 x 2.5 MHz, 4 x 5 MHz, 4 x 10 MHz, 2 x 20 MHz
Data rate	1–54 Mbps ^a 0.25–27 Mbps ^b Auto mode selects fastest rate possible relative to RSSI
Range (LoS)	18 miles (30 km) @ 1W [Ⓞ]
Antenna connector	2 x female SMA standard polarity. Use CSD-SMA-2500 surge diverter

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	10/100Base-T, RJ-45 connector, IEEE 802.3
Link activity	Link, 100BaseT via LED
Serial Port	
RS-232	D-B9 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
Serial settings	7/8 data bits, stop/start/parity (configurable)
Protocols and Configuration	
System address	ESSID; 1 to 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-to-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, link/100bT, RS-232, LAN, RS-485, digital I/O status
Reported diagnostics	RSSI measurements (dBm), connectivity information/statistics, system 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; FCC Part 15; RSS 210
Hazardous area ④	CSA Class I, Division 2; ATEX; IECEx NA IIC
Safety	IEC 60950 (RoHS compliant)
UL	UL listed
General	
Size	4.5" x 6.7" x 1.2" (114 mm x 168 mm x 30 mm)
Housing	Powder-coated aluminum
Mounting	DIN rail
Terminal blocks	Removable, max. conductor 12 AWG, 0.1 in. ² (2.5 mm ²)
Temperature rating	–40°F to +140°F (–40°C to +60°C)
Humidity rating	0–99% RH noncondensing
Weight	1.1 lb (0.5 kg)

SPECIFICATION	DESCRIPTION
Power Supply	
Nominal supply	9–30 Vdc, under/over voltage protection
Average current draw	300 mA @ 12V (idle), 160 mA @ 24V (idle)
Transmit current draw	500 mA @ 12V (+30 dBm), 250 mA @ 24V (+30 dBm)

Note: Specifications are subject to change.

- ① Configured for US
- ② Configured for Australia, Brazil
- 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)
- ⑦ Certifications pending for 945U-E-H (1W)

Accessories

PRODUCT CODE	DESCRIPTION
Antennas - 900 MHz	
DG900	Whip antenna, SMA male, angle bracket, –2 dBi gain, 3' (1m) or 16.4' (5m) coaxial cable
WH900	Whip antenna, SMA male, –2 dBi gain
CFD890EL	Dipole antenna, SMA male, mounting bracket, 2 dBi gain, 16' (5m) coaxial cable
SG900EL	Collinear antenna, N-type female, 5 dBi gain
SG900-6	Collinear antenna, N-type female, 8 dBi gain
YU6-900	Yagi antenna, N-type female, 9 dBi gain
YU16-900	Yagi antenna, N-type female, 15 dBi gain
Cables	
CC3/10/20-SMA	Coaxial cable kit, 9.8' (3m)/32' (10m)/65' (20m), N-type to SMA male
CCTAIL-SMA-F/M	Coaxial cable tail, 24" (600 mm), SMA to N-type female or male
ETH-C5X	Ethernet cable, 6' (1.8m), crossover, RJ-45 to RJ-45
ETH-C5A	Ethernet cable, 6' (1.8m), straight through, RJ-45 to RJ-45
SER-DB9	Serial RS-232 cable, DB-9 male to DB-9 female, straight through
SER-RJ45	Configuration cable, RS-232 serial, DB-9 female to RJ-45
Surge Diverters	
CSD-SMA-2500	SMA surge diverter for use with CC10/CC20-SMA
CSD-N-6000	Coaxial surge diverter, bulkhead N female to N female
MA15/D/1/SI	Power supply surge diverter, 110 Vac/15A
IOP32D	Signal surge diverter, 2 x 2-wire/1 x 4-wire
Power Supplies	
PSG60E	
Mounting Brackets	
BR-COL-KIT	Mounting bracket kit for collinear antenna
BR-YAG-KIT	Mounting bracket kit for Yagi antenna

Ordering

PRODUCT CODE	DESCRIPTION	FREQUENCY	RF POWER
945U-E	Ethernet 802.11g, 900 MHz, high speed	902–928 MHz DSSS	630 mW

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



ELPRO Technologies

9/12 Billabong Street
Stafford Queensland 4053 Australia

Telephone:
Global: +61 7 3352 8600
USA: +1 855 443 5776

sales@elpro.com.au
www.elpro.com.au

© 2018 ELPRO Technologies
All Rights Reserved
Publication No. EL-945U-E
September 2018

ELPRO Technologies is a registered trademark.

All other trademarks are property of their respective owners.