

# 245U-E Wireless Ethernet Range

## Product Overview

The ELPRO 245U-E range forms part of ELPRO's Industrial Wireless Ethernet product series, providing reliable, secure wireless communication solutions.

Comprising the 245U-E-G (2.4GHz, 400mW) and the 245U-E-A (5GHz, 400mW), the new 245U-E products provide 54Mbps, encrypted, repeatable, meshed Ethernet connectivity to link industrial process and automation applications.



## ELPRO TECHNOLOGIES

### Industrial Wireless Technology

## Features and Benefits

- 802.11 a, b, g (2.412 - 2.462GHz: 5.20 – 5.825GHz) option availability
- 54Mbps for large data transfer applications (1 - 54Mbps configurable)
- Configurable transmit power (15mW – 400mW) for superior radio range
- WDS (AP - AP) multi-hop repeater function to extend radio coverage
- Spanning Tree functionality enabling self healing of network
- Bridge /Router, Access Point /Client in one reducing inventory costs
- Serial client /server /multicast functionality (point-point; point-multipoint)
- Modbus TCP to Modbus RTU Gateway /Modbus Master for I/O transfer
- Hardware encryption ensuring no reduction in data throughput
- Security to WPA2 PSK /802.11i - 802.1x military grade encryption
- MAC address and IP filtering to reduce unnecessary network traffic
- Online diagnostics and configuration throughout the network
- Lifetime Warranty and 24 Hour Technical Support.

## Applications

- Monitoring, control and reporting for:
  - Oil /Gas field production /distribution
  - Mine vehicle diagnostics
  - Traffic management
  - Water /Waste water to SCADA
  - PLC - PLC - SCADA/DCS connection
  - Serial field devices to LAN (serial server)
- Video surveillance /monitoring
- Linking process /automation networks.

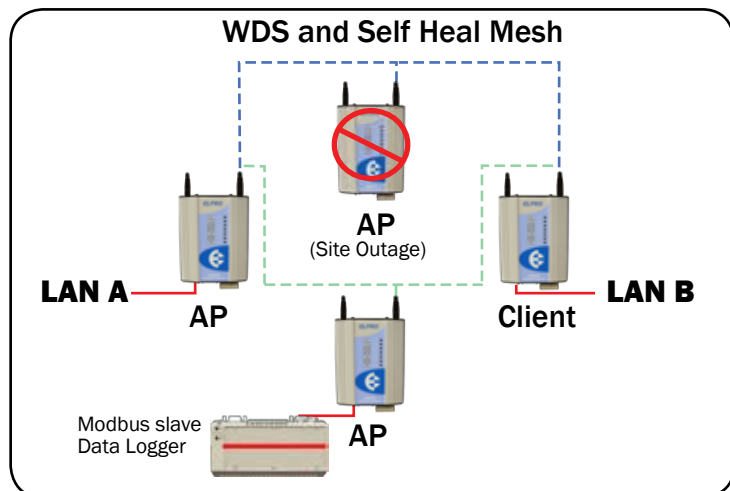
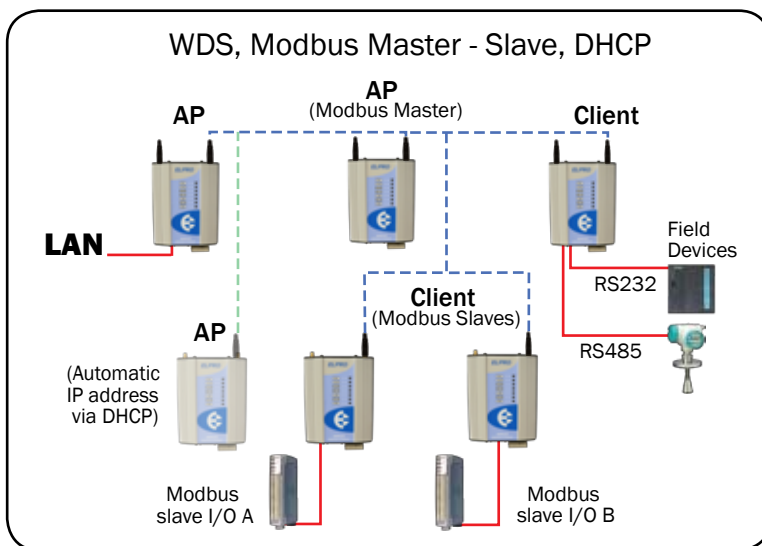


# 245U-E System Design Advantages

The 245U-E range is feature rich allowing end users to create complex, reliable engineering solutions for process and automation systems.

System advantages of the 245U-E range includes serial client /server /multicast (RJ-45 to simultaneous RS232/485) connections with online diagnostics and configuration capability. The units can provide standalone Modbus Master-Slave functionality within the network and additional modules readily added to the system with DHCP automatic IP addressing capability.

In the diagram right, the LAN is connected serially to the field devices via an AP using serial server capability. A Modbus Master AP also polls Modbus slave I/O (A>B). For ease of use, the additional AP is readily added via DHCP and online diagnostics /configuration assists with system design /fault analysis.



Using WDS (AP-AP) and Spanning Tree (self-healing) features of the 245U-E allows distance linkage in bridge / router modes and preservation of system communications in the event of a site outage.

In the diagram left, LAN's A and B are connected by the middle AP. Loss of power (site outage) to the middle AP creates a communications failure but traffic is automatically diverted through redundant AP modem to LAN B.

## Product comparison and ordering guide (includes existing 240U-E and 905 /805U-E products)

	245U-E-G	245U-E-A <sup>(4)</sup>	240U-E	905U-E	805U-E
<b>Frequency</b>	2.412 - 2.462GHz	5.20 - 5.825GHz <sup>(1)</sup>	2.462 - 2.62GHz	902 - 928MHz(1)	869MHz
<b>IEEE Standard</b>	802.11b/g	802.11a	802.11b	802.11-FHSS	802.11- Fixed frequency
<b>TX Power</b>	15 - 400mW <sup>(2)</sup>	15 - 400mW <sup>(2)</sup>	100 /300mW	100mW - 1W <sup>(2)</sup>	10,100 - 500mW <sup>(3)</sup>
<b>Data Rate</b>	54Mbps	54Mbps	11Mbps	200Kbps	72Kbps
<b>WDS (AP-AP)</b>	Yes	Yes	Yes	No	No
<b>Self Heal (Spanning Tree)</b>	Yes	Yes	Yes	Yes	Yes
<b>Serial Client /Server /Multicast</b>	Yes	Yes	Yes	Yes	Yes
<b>Encryption Security Level (Maximum level highlighted)</b>	WPA2 /802.11i	WPA2 /802.11i	WPA - PSK (TKIP / AES 128 bit)	128 bit AES Encryption	128 bit AES Encryption
<b>MAC / IP Filtering</b>	Yes	Yes	Yes	Yes	Yes
<b>Network Function</b>	AP /Client Bridge /Router	AP /Client Bridge /Router	AP /Client Bridge /Router	AP /Client Bridge /Router	AP /Client Bridge /Router
<b>Online Diagnostics</b>	Yes	Yes	Yes	Yes	Yes
<b>Online Configuration</b>	Yes	Yes	Yes	Yes	Yes

### Footnote:

- (1) Model frequency set to country regulatory guidelines.  
 (2) Configurable TX Power option available - all modules shipped to Europe and South Africa 100mW maximum.

- (3) Model dependant - relative to country guidelines and duty cycle compliance in system design.  
 (4) Released Quarter 1 2009.

# 245U-E Wireless Ethernet Range Range Specifications

ELPRO Technologies is an ISO 9001:2000  
Quality Assured Company. REGN No: 282

## Wireless Specifications

### Frequency band and data throughput (configurable):

245U-E-G	2.412 - 2.462GHz	1 - 54Mbps
245U-E-A	5.20 - 5.825GHz	6 - 54Mbps

'Auto mode' determines fastest rate possible relative to RSSI

### Receiver sensitivity: (8% FER)

245U-E-G	97dBm @ 1Mb/s - 74dBm @ 54Mb/s
245U-E-A	94dBm @ 6Mb/s - 74dBm @ 54Mb/s

### Transmit Power: (configurable)

245U-E-G	1-24 Mb/s:400mW (+26 dBm) - 54 Mb/s:125mW(+21 dBm)
245U-E-A	6-24 Mb/s:400mW (+26 dBm) - 54 Mb/s:125mW(+21 dBm)

### Channel Spacing: 11 x 5MHz Spacing (first channel centre at 2.412 GHz)

### Line-of-sight-range: (Range may be extended using WDS: AP - AP)

- 1km @ 100mW (Europe)
- 3 miles /5km @ 400mW (Americas /Australia)

### Antenna connector: 2 x Female SMA standard polarity

(Signal diversity or high gain receive antenna)

## Ethernet Port

Standard: 10 /100 BaseT; RJ45 - IEEE 802.3

## Serial Port

### RS232 Port: DB9 female DCE ; RTS /CTS /DTR /DCD

(hardware signals provided)

### RS485 Port: 2 pin terminal block (max distance 4000' /1.2km - non isolated)

### Data rate (bit/sec) configurable:

- 1200, 2400, 4800, 9600, 14400, 19200, 38400, 57600, 76800, 115200, 230400
- 7 or 8 data bits, Stop /start /parity bits configurable

## Power Supply

Nominal supply: 9 to 30VDC ; under /over voltage protection

### Average current draw:

- Idle 12V - 270mA
- Idle 24V - 140mA

### Transmit current draw:

- Full TX (400mW) 12V - 470mA
- Full TX (400mW) 24V - 250mA

## Discrete I/O

Input voltage-free contact /output FET 30VDC 500mA.

Used to transfer input /output status or communications failure output.

## System Configuration Parameters

System address (ESSID): 1 - 31 character text string

### Security:

- Data encryption 64 /128 bit WEP - WPA2 PSK - 802.11i - 802.1x
- Password https accessibility

### Bandwidth Protection:

- MAC Address Whitelist/Blacklist
- IP Filtering Whitelist/Blacklist
- ARP Filtering

Configurable: Access Point or Client/ Bridge or Router

- Broadcast or Control Mode - Point to Point, Point to Multipoint
- WDS Wireless Distribution System: AP - AP repeater functionality
- Modbus TCP /RTU Gateway
- Serial client /server /multicast (simultaneous RS232 /485 connection)
- On-board Modbus Master for I/O transfer

### Protocols supported:

- TCP /IP, UDP, ARP, SNMP, RADIUS /802.1X, DHCP, DNS, PPP, ICMP, HTTP, FTP, TFTP, TELNET

User Configuration: Embedded web page default URL

## Diagnostics

### Diagnostics / LED indication:

- Power /OK; RX; TX /Link; RS232; LAN; RS485; Digital I/O status

### Reported diagnostics:

- RSSI measurement in dBm
- Connectivity information / statistics
- System Log file

Ethernet Port Indication: Link /100mb/s

## General

### Compliances:

- EMC EN 301 489 - 17; FCC Part 15
- Radio EN 300 328 ; FCC Part 15.247, RSS 210
- CSA Class I, Division 2 (pending)
- LVD EN 60950

Size: 4.5 x 5.5 x 1.2 in. /114 x 140 x 30 mm

Housing: Powder-coated, extruded aluminium

Mount: DIN rail

Terminal blocks: Removable; Max 12 gauge (2.5sqmm)

Temperature: -40 to +60 °C ; -40 to +140 °F (operating)

Humidity: 0 – 99% RH non-condensing

Weight: <1lb /0.5kg

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### Contact ELPRO

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