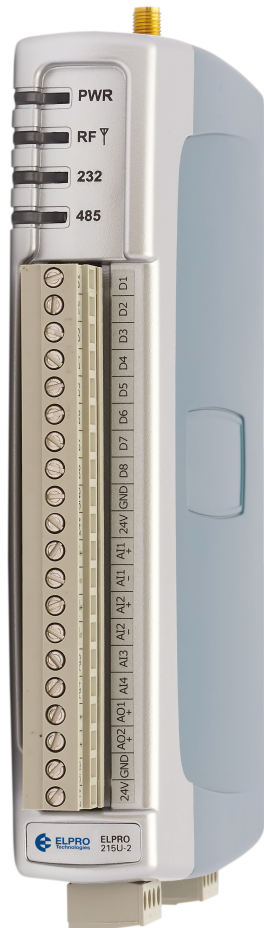


# 215U-2 wireless I/O and gateway

802.11 b/g scalable industrial wireless I/O module for reliable and secure connectivity



## Description

The ELPRO 215U-2 wireless networking I/O and gateway is an integrated I/O node that extends communications in sprawling industrial applications to sensors and actuators in local, remote, or difficult to reach locations using standards based 802.11 b/g.

The 215U-2 provides robust/secure two-way wireless communications in extremely challenging indoor and outdoor industrial environments.

The internal radio transceiver is designed to operate reliably with the challenges of obstructed paths, typical of remote monitoring and control applications. Supporting base and ProMesh meshing functionality, the 215U-2 provides for reliable redundant networks in industrial applications.

The 215U-2 configuration is quick and easy using built-in Web-based tool either directly at the unit or over the air, which also provides comprehensive diagnostic features.

Enabling Internet of Things (IoT) applications, the 215U-2 provides a powerful and versatile low-cost I/O connectivity solution for today's equipment and machines with a simple and easy-to-implement product to allow customers an easy way to get their devices on the Internet. The 215U-2 can also provide Ethernet and serial gateway support for industrial protocols including Modbus TCP/RTU.

## Features

- WPA2 secure 2.412–2.472 GHz frequency (802.11 b/g) 200 mW RF power
- I/O, Ethernet, or RS-232/RS-485 serial data and Modbus RTU/TCP gateway
- ProMesh intelligent communications network protocol
- Provides Wi-Fi hot-spot access to I/O data and dashboard
- Web-based dashboard allows monitoring and control of critical I/O
- Quick back-to-back I/O mode for cable replacement applications
- Over-the-air network configuration
- Expandable digital I/O for local alarms and inputs/outputs

## Applications

- Machinery OEM I/O connectivity in factories—discrete sensors and digital I/O (e-Stops)
- Water and wastewater plant applications—flow and level sensors
- Oil and gas remote well sensor monitoring
- Electrical control panel hot-spot for remote monitoring of meters and control through PLC extension

## Specifications

| Specification                          | Description  |
|--|--|
| <b>Transmitter and receiver</b>        |  |
| Frequency ①                            | 2.401–2.483 GHz<br>802.11 b/g  |
| Transmit power ①                       | 200 mW (+23 dBm)   |
| Modulation                             | Direct sequence spread spectrum (DSSS)<br>Orthogonal frequency-division multiplexing (OFDM)  |
| Receiver sensitivity                   | –94 dBm (11 Mbps) 802.11 b<br>–75 dBm (54 Mbps) 802.11 g   |
| Channels ①                             | 13 channels, 20 MHz  |
| Data rate                              | 1–54 Mbps (selects fastest connection rate available)  |
| Typical range (LoS)                    | 1300 ft (400 m)  |
| Antenna connector                      | SMA female   |
| <b>Protocols and configuration</b>     |  |
| System name                            | ESSID; 1- to 31-character text string  |
| Protocols supported                    | TCP/IP, UDP, ARP, DHCP, ICMP, HTTP, FTP, VLAN<br>802.1Q, Modbus RTU, Modbus TCP  |
| Configurable parameters                | Unit details, I/O mappings and parameters, radio settings (refer to the user manual for details)<br>Modbus TCP/RTU gateway<br>Embedded Modbus master/slave for I/O transfer<br>Ethernet mode, bridge (default), or router<br>Prioritization of traffic flows, bandwidth efficiency features, bandwidth utilization, bridging, VLAN |
| User configuration                     | Via HTTPS Web server<br>Network access: USB or Ethernet<br>Remote access: over the air   |
| Security                               | Data encryption, 802.11i with CCMP 128-bit AES<br>Support for 802.1x radius server<br>Secure HTTP protocol   |
| Address filtering                      | Easy mode automatic filtering or advanced IP address, whitelist/blacklist MAC address, whitelist/blacklist ARP filtering, whitelist/blacklist  |
| <b>LED indications and diagnostics</b> |  |
| LED indication                         | Power/OK, Radio TX/RX/Link, RS-232, RS-485, digital I/O, analog I/O status   |
| <b>Reported diagnostics</b>            |  |
| Radio diagnostics                      | RSSI measurements (dBm), connectivity information/statistics through Web page, dashboard, or local Modbus registers for SCADA  |
| <b>Connections</b>                     |  |
| LAN                                    | 1 x 10/100BASE-T auto-MDIX RJ-45   |
| Serial                                 | 1 x RS-232, 1 x RS-485, 1200–230400 bps  |
| <b>Operation</b>                       |  |
| Modes                                  | Base, mesh node, or manual setup for advanced configuration  |
| Repeater and base                      | Maximum of 6 total remote/repeater/base/hot spot connections   |
| Remote                                 | Mesh node or fixed   |

| Specification           | Description  |
|-------------------------|--|
| <b>Input and output</b> |  |
| Discrete input ②        | 8 digital I/O (1–4 configurable as PI or PO)<br>On-state voltage: <2.1 Vdc<br>Wetting current: 5 mA<br>Max. I/P pulse rate—DI 1/2: 50 kHz, DI 3/4: 1 kHz<br>Max. I/P pulse width—DI 1/2: 10 µs, PI 3/4: 0.2 ms |
| Discrete output ②       | 8 digital I/O (1–4 configurable as PI or PO)<br>Working voltage maximum: 30 Vdc<br>Working current maximum: 200 mA<br>Maximum O/P pulse rate—PO max. rate: 1 kHz   |
| Analog input            | 4 AI (2 differential, 2 single ended)<br>Current range: 0–24 mA<br>Voltage input range: AI 1/2: 0–25 V, AI 3/4: 0–5 V<br>Accuracy: 0.1%<br>Resolution: 14 bits   |
| Analog output           | 2 AO (sourcing)<br>Current range: 0–24 mA<br>Current resolution: 13 bits<br>Accuracy (current): 0.1%   |
| Analog loop supply      | 24 Vdc at 100 mA maximum (current limited)   |
| <b>Compliance</b>       |  |
| EMC                     | FCC Part 15; EN 301 489-17; AS/NZS CISPR22   |
| RF (radio)              | FCC Part 15.247; IC RSS 210; EN 300 328; AS/NZS4268  |
| Safety                  | EN/IEC 60950   |
| Hazardous area          | UL® Class 1, Division 2;<br>Pending IEC EX Zone 2; ATEX Zone 2   |
| <b>Power supply</b>     |  |
| Nominal supply          | 10.8–30 Vdc, undervoltage/overvoltage protection<br>Sealed lead acid backup battery can be charged by main power supply input.   |
| Average current draw    | 200 mA at 12 Vdc (idle), 100 mA at 24 Vdc (idle)   |
| Transmit current draw   | 200 mA at 12 Vdc, 100 mA at 24 Vdc   |
| <b>General</b>          |  |
| Size                    | 5.91 x 7.09 x 1.38 in (150 x 180 x 35 mm)  |
| Housing                 | IP20 rated high density thermoplastic  |
| Terminal blocks         | Removable, maximum conductor 12 AWG  |
| Mounting                | DIN rail   |
| Temperature rating      | –40 to +158 °F (–40 to +70 °C)   |
| Humidity rating         | 0–90% RH noncondensing   |
| Weight                  | 1.1 lb (0.5 kg)  |

① Frequency range, number of channels, RF power specification may vary depending on the country of application.

② Discrete input and output function shared for total of 8 discrete inputs and outputs.

**Notes:** Available RF power and frequency may vary depending on country of application. Please check user manual for your application.

Specifications subject to change.

## Accessories

| Product code             | Description  |
|--------------------------|--|
| <b>Antennas</b>          |  |
| <b>ANTMD2400-EL</b>      | Dipole antenna, 15 ft (4.6 m) cellfoil/SMA, 0dBi gain, mounting bracket      |
| <b>ANTSG2400-EL</b>      | Collinear antenna, N-type, 5 dBi gain, mounting bracket                      |
| <b>ANTZ2400-EL</b>       | Collinear antenna, N-type, 10 dBi gain, mounting bracket                     |
| <b>Cables</b>            |  |
| <b>CC3/10/20-SMA</b>     | Coaxial cable kit, 9.8 ft (3 m) / 32 ft (10 m) / 65 ft (20 m), N-type to SMA |
| <b>CCTAIL-SMA-F/M</b>    | Coaxial cable tail, 24 in (600 mm), SMA to N-type female or male             |
| <b>CBLETH-C5A</b>        | Ethernet cable, 6 ft (1.8 m), straight through, RJ 45 to RJ 45               |
| <b>Surge diverters</b>   |  |
| <b>CSD-SMA-2500</b>      | Coaxial surge diverter SMA male to SMA female                                |
| <b>SURCSD-N-6000</b>     | Coaxial surge diverter, bulkhead N female to N female                        |
| <b>SURMA15/D/1/SI</b>    | Power supply surge diverter, 110 Vac / 15 A                                  |
| <b>SURMA15/D/2/SI</b>    | Power supply surge diverter, 240 Vac / 10 A                                  |
| <b>Mounting brackets</b> |  |
| <b>BR-COL-KIT</b>        | Mounting bracket kit for collinear antenna                                   |
| <b>Power supplies</b>    |  |
| <b>PSG60E</b>            | DIN rail power supply, 85–264 Vac, 24 Vdc / 2.5 A                            |
| <b>PS-WW-SP-24DC</b>     | 24 Vdc 1.25 A ac wall adapter  |

## Ordering

| Product code         | Description  | Frequency       | RF power |
|----------------------|--|-----------------|----------|
| <b>EL-215U-2-BGN</b> | Base/repeater/remote, 802.11 b/g I/O gateway, 9–30 Vdc | 2.401–2.483 GHz | 200 mW   |



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