215U-2 wireless I/O and gateway
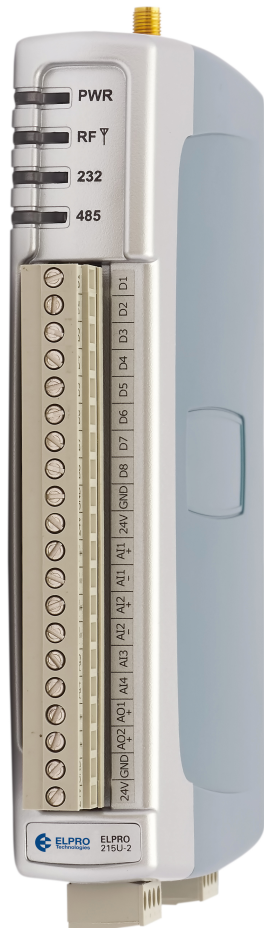
802.11 b/g scalable industrial wireless I/O module for reliable and secure connectivity

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

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.

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
Transmitter and receiver	
Frequency ①	2.401–2.483 GHz 802.11 b/g
Transmit power ①	200 mW (+23 dBm)
Modulation	Direct sequence spread spectrum (DSSS)
	Orthogonal frequency-division multiplexing (OFDM)
Receiver sensitivity	–94 dBm (11 Mbps) 802.11 b
	–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
Protocols and configuration	
System name	ESSID; 1- to 31-character text string
Protocols supported	TCP/IP, UDP, ARP, DHCP, ICMP, HTTP, FTP, VLAN 802.1Q, Modbus RTU, Modbus TCP
Configurable parameters	Unit details, I/O mappings and parameters, radio settings (refer to the user manual for details)
	Modbus TCP/RTU gateway
	Embedded Modbus master/slave for I/O transfer
	Ethernet mode, bridge (default), or router
	Prioritization of traffic flows, bandwidth efficiency features, bandwidth utilization, bridging, VLAN
User configuration	Via HTTPS Web server
	Network access: USB or Ethernet
	Remote access: over the air
Security	Data encryption, 802.11i with CCMP 128-bit AES
	Support for 802.1x radius server
	Secure HTTP protocol
Address filtering	Easy mode automatic filtering or advanced IP address, whitelist/blacklist MAC address, whitelist/blacklist ARP filtering, whitelist/blacklist
LED indications and diagnostics	
LED indication	Power/OK, Radio TX/RX/Link, RS-232, RS-485, digital I/O, analog I/O status
Reported diagnostics	
Radio diagnostics	RSSI measurements (dBm), connectivity information/statistics through Web page, dashboard, or local Modbus registers for SCADA
Connections	
LAN	1 x 10/100BASE-T auto-MDIX RJ-45
Serial	1 x RS-232, 1 x RS-485, 1200–230400 bps
Operation	
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
Input and output	
Discrete input ②	8 digital I/O (1–4 configurable as PI or PO)
	On-state voltage: <2.1 Vdc
	Wetting current: 5 mA
	Max. I/P pulse rate–DI 1/2: 50 kHz, DI 3/4: 1 kHz
	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)
	Working voltage maximum: 30 Vdc
	Working current maximum: 200 mA
	Maximum O/P pulse rate–PO max. rate: 1 kHz
Analog input	4 AI (2 differential, 2 single ended)
	Current range: 0–24 mA
	Voltage input range: AI 1/2: 0–25 V, AI 3/4: 0–5 V
	Accuracy: 0.1%
	Resolution: 14 bits
Analog output	2 AO (sourcing)
	Current range: 0–24 mA
	Current resolution: 13 bits
	Accuracy (current): 0.1%
Analog loop supply	24 Vdc at 100 mA maximum (current limited)
Compliance	
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;
	Pending IEC EX Zone 2; ATEX Zone 2
Power supply	
Nominal supply	10.8–30 Vdc, undervoltage/overvoltage protection
	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
General	
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 value 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
Antennas	
ANTMD2400-EL	Dipole antenna, 15 ft (4.6 m) cellfoil/SMA, 0dBi gain, mounting bracket
ANTSG2400-EL	Collinear antenna, N-type, 5 dBi gain, mounting bracket
ANTZ2400-EL	Collinear antenna, N-type, 10 dBi gain, mounting bracket
Cables	
CC3/10/20-SMA	Coaxial cable kit, 9.8 ft (3 m) / 32 ft (10 m) / 65 ft (20 m), N-type to SMA
CCTAIL-SMA-F/M	Coaxial cable tail, 24 in (600 mm), SMA to N-type female or male
CBLETH-C5A	Ethernet cable, 6 ft (1.8 m), straight through, RJ 45 to RJ 45
Surge diverters	
CSD-SMA-2500	Coaxial surge diverter SMA male to SMA female
SURCSD-N-6000	Coaxial surge diverter, bulkhead N female to N female
SURMA15/D/1/SI	Power supply surge diverter, 110 Vac / 15 A
SURMA15/D/2/SI	Power supply surge diverter, 240 Vac / 10 A
Mounting brackets	
BR-COL-KIT	Mounting bracket kit for collinear antenna
Power supplies	
PSG60E	DIN rail power supply, 85–264 Vac, 24 Vdc / 2.5 A
PS-WW-SP-24DC	24 Vdc 1.25 A ac wall adapter

Ordering

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

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