

905U-1,2,3,4 Wireless Multi-I/O

Simple to deploy, long-range, reliable wireless I/O connectivity



Description

The ELPRO 905U Wireless Multi-I/O is a node that extends communications to sensors and actuators in local, remote, or difficult-to-reach locations. Designed with a long-range, license-free or licensed wireless transceiver, the ELPRO 905U module provides a simple-to-deploy solution to transfer process I/O signals reliably over long distances or within an industrial plant.

Capable of transferring analog or discrete I/O points in point-to-point or point-to-multi-point situations. Each 905U product can also provide repeater functionality to extend the distance of the network and capture remote I/O points. The I/O is scalable using 115S serial expansion units at each 905U unit.

Features

- 865–867 MHz/902–928 MHz frequency and 1W RF power
- Link I/O inputs to single or multiple I/O outputs (peer to peer)
- Reliable point-to-multi-point two-way communications combining exception reporting, self-checking and data encryption
- Multi-hop repeater function provides increased communication distance
- Multiple I/O channels for monitoring and controlling field devices with set-point, pulse count, and rate available. Additional internal I/O points provided for health monitoring
- Communication failure notification and diagnostics, including radio path measurement, communications logging, and verification of I/O values
- Built-in low voltage AC/DC/battery power options, UPS battery charger and solar regulator
- User-friendly configuration software

Applications

- High-level alarms
- Flow meter monitoring
- Storage tank monitoring
- Pipeline cathodic protection
- Pump stop-start
- Weather station reporting
- Bearing condition monitoring

Specifications

SPECIFICATION	DESCRIPTION
Transmitter and Receiver	
Frequency	865–867 MHz ①, 902–928 MHz ②, 915–928 MHz ③
Transmit power	1W
Transmission	Frequency hopping spread spectrum (FHSS)
Modulation	Frequency shift keying
Receiver sensitivity	–106 dBm @ 19.2 kbps
Channel spacing	50 x 250 kHz
Data rate	19.2 kbps
Range (LoS)	20 miles (32 km) @ 4W EIRP ④ 9.3 miles (15 km) @ 1W EIRP (other countries)
Antenna connector	1 x female SMA standard polarity
Input and Output	
Digital input	Voltage free/NPN, wetting current 0.5 mA Surge protected (non-isolated) 905U-1: 4 905U-2: 4 905U-3: 0 905U-4: 4–16 inputs ⑤
Digital output (3)	905U-1: 4 relay contacts, AC 50V: 5 AC/DC 30V: 2A 905U-2: 1 FET output 30 Vdc/500 mA 905U-3: 8 FET output 30 Vdc/500 mA 905U-4: 4–16 FET outputs ⑤
Analog input	Floating differential inputs, common mode voltage 27V 24 Vdc for external loops provided, digital filtering 1 second 905U-1: 2 current, 4–20 mA, 15-bit resolution, 0.1% accuracy, over range indication 2–25 mA 905U-2: 6 current, 0–20 mA, 12-bit resolution, 0.1% accuracy, over range indication 0–25 mA
Analog output	Current sink to common, max loop voltage 27V, max. loop resistance 1000 Ohms 905U-1: 2 current, 4–20 mA, 15-bit resolution, 0.1% accuracy, over range indication 0.5–25 mA 905U-3: 8 current, 0–20 mA, 12-bit resolution, 0.1% accuracy, over range indication 0–20.5 mA
Pulse input	As per digital input specifications above Max. pulse rate 1000 Hz, pulse width min. 5 ms 905U-1: 1 pulse input, terminated at DI 1 905U-2: 4 pulse inputs, terminated at DI 1–4 905U-2: first DI/PI max. 1000 Hz, pulse width min. 0.5 ms 905U-2: DI/PI 2, 3, 4 max. 100 Hz, pulse width 5 ms 905U-4: 4 pulse inputs, terminated at DI 1–4 905U-4: first digital inputs/pulse inputs max 1000 Hz, pulse width min. 0.5 ms. 2, 3, 4 DI/PIs max 100 Hz, pulse width 5 ms
Pulse output	As per FET digital outputs specifications above FET DO/PO 30 Vdc/500 mA, max pulse rate 100 Hz 905U-1: 1 pulse output 905U-3: 4 pulse outputs, terminated at DO 1–4 905U-4: 4 pulse outputs, terminated at DO 1–4
Serial Port	
RS-232	9-pin DB-9 female connector (for programming use only)
RS-485	2-pin terminal block ⑥, serial expansion 4000' (1.2 km)
Data rate (bps)	9600
Serial settings	7/8 data bits, no parity, 1 stop bit
Protocols and Configuration	
System address	Configurable system address
Protocols supported	ELPRO WIBnet™ auto acknowledgement up to 4 retries, CRC error checking
User configuration	E-series configuration utility
Configurable parameters	Individual I/O mappings, analog and digital debounce, update time, analog set points and sensitivities, output reset times
Security	64-bit encryption on radio and serial

SPECIFICATION	DESCRIPTION
LED Indication and Diagnostics	
LED indication	Power/OK, I/O status, OK/module OK, TX, RX Refer to product manual for further information.
Reported diagnostics	RSSI, comms logging, I/O status
Power Supply	
Nominal supply	12–24 Vac/15–30 Vdc: over-voltage/reverse power protected
Average current draw	At 12 Vdc: 85 mA +10 mA per active digital input +25 mA per active digital output 2 x per analog I/O loop (mA)
Transmit current draw	350 mA @13.8 Vdc, 250 mA @ 24 Vdc
Battery supply	11.5–15.0 Vdc (battery supply volts internal I/O value)
Battery charging circuit	1.2–12 Ah battery: max. charge current 0.7A @ >12V
Solar regulator	Direct connection solar panel (to 30W)/solar battery 100 Ah
Loop supply	Internal DC/DC converter: 24 Vdc/150 mA current limited
Compliance	
EMC	FCC Part 15
RF (radio)	FCC Part 15.247, RSS 210, AS/NZS4268
Hazardous area	CSA Class I, Division 2
Safety	EN 60950
General	
Size	5.1" x 7.3" x 2.4" (130 mm x 185 mm x 60 mm)
Housing	Extruded 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	2.2 lbs (1 kg)

Note: Specifications are subject to change.

- ① Available in selected asian countries
- ② Configured for US
- ③ Configured for Australia
- ④ Typical maximum line-of-sight range (check country regulations, single hop, repeaters will extend range)
- ⑤ 905U-4 has 12 digital I/O which are selectable inputs or outputs
- ⑥ Max. distance 4000' (1.2 km)

Ordering

PRODUCT CODE	DESCRIPTION	FREQUENCY	RF POWER
905U-1-900-1W	Wireless I/O 4 DI, 4 DO, 2 AI, 2 AO, 1 PO	902–928 MHz	1W
905U-1-866-1W	Wireless I/O 4 DI, 4 DO, 2 AI, 2 AO, 1 PO	865–867 MHz	1W
905U-2-900-1W	Wireless I/O 4 DI, 1 DO, 6 AI, 4 PI	902–928 MHz	1W
905U-2-866-1W	Wireless I/O 4 DI, 1 DO, 6 AI, 4 PI	865–867 MHz	1W
905U-3-900-1W	Wireless I/O, 8 DO, 8 AO, 4 PO	902–928 MHz	1W
905U-3-866-1W	Wireless I/O, 8 DO, 8 AO, 4 PO	865–867 MHz	1W
905U-4-900-1W	Wireless I/O, 16 DIO, 4 DO, 4 DI	902–928 MHz	1W
905U-4-866-1W	Wireless I/O, 16 DIO, 4 DO, 4 DI	865–867 MHz	1W

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

Accessories

PRODUCT CODE DESCRIPTION

Antennas - 900 MHz

DG900-1	Whip antenna, SMA male, angle bracket, -2 dBi gain, 3' (1m) coaxial cable
WH900-SMA	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
CCTAIL-SMA-F/M	Coaxial cable tail, 24" (600 mm), SMA to N-type female or male
SER-DB9	Serial RS-232 cable, DB-9 male to DB-9 female straight through

PRODUCT CODE DESCRIPTION

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 Vdc/15A
MA15/D/2/S1	Power supply surge diverter, 240 Vac/15A
IOP32D	Signal surge diverter, 2-wire/4-wire

Power Supplies

PS-DINAC-12DC-OK	DIN rail power supply, 100-250 Vac, 12 Vdc/2.5A
PSG60E	DIN rail power supply, 85-264 Vac, 24 Vdc/2.5A

Mounting Brackets

BR-COL-KIT	Mounting bracket kit for collinear antenna
BR-YAG-KIT	Mounting bracket kit for Yagi antenna



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Publication No. EL-905U-1234
October 2018

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