# 905U-1 Wireless Multi-I/O

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


## Description

The ELPRO 905U Wireless Multi-I/O is a multiple I/O 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
- 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, verification of I/O values
- Low voltage AC/DC/battery power options, UPS battery charger and solar regulator
- User-friendly configuration software

## Applications

- High-level alarms
- Security gate control
- Emergency shower notification
- Flow meter monitoring
- Storage tank monitoring
- Pipeline cathodic protection
- Pump stop-start
- Lighting bank control
- Weather station reporting
- Bearing condition monitoring

ELPRO Technologies

## Specifications

| SPECIFICATION | DESCRIPTION |
|---|---|
| **Transmitter and Receiver** | |
| Frequency | 865–867 MHz [a], 902–928 MHz [b], 915–928 MHz [c] |
| 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 kms) @ 4W EIRP [d]<br>9.3 miles (15 kms) @ 1W EIRP (other countries) |
| Antenna connector | 1 x SMA female standard polarity |
| **Serial Port** | |
| RS-232 | 9-pin DB-9 female connector |
| RS-485 | Terminal connector, serial expansion only, cable to 4000' (1200m) |
| 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 four 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 |
| **LED Indication and Diagnostics** | |
| LED indication | Power/OK, I/O status, OK/module OK, TX, RX<br>Refer to the 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<br>+10 mA per active digital input<br>+25 mA per active digital output<br>+2 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 AHr 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 |

| SPECIFICATION | DESCRIPTION |
|---|---|
| **Input and Output** | |
| Digital input | Voltage-free/NPN, wetting current 0.5 mA<br>Surge protected (non-isolated) |
| Digital output | 4 relay contacts. AC 50V: 5A/DC 30V: 2A |
| Analog input | Floating differential inputs, common mode, voltage 27V<br>24 Vdc for external loops provided, digital filtering 1 second<br>2 current, 4–20 mA, 15-bit resolution, accuracy 0.1% , over range indication 2–25 mA<br>Over range indication 0–25 mA |
| Analog output | Current sink to common, max. loop voltage 27V, max. loop resistance 1000 ohms<br>2 current, 4–20 mA, 15-bit resolution, accuracy 0.1%, over range indication 0.5–25 mA |
| Pulse input | As per the digital input specifications, max. pulse rate 1000 Hz, pulse width min 5 ms<br>1 pulse input, terminated at DI 1 |
| Pulse output | As per FET digital outputs specifications<br>FET DO/PO 30 Vdc/500 mA, max. pulse rate 100 Hz<br>905U-1: 1 pulse output |
| **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 mounting |
| Terminal blocks | Removable; max. conductor 14 AWG 0.1 in.$^2$ (2.5 mm$^2$) |
| Temperature rating | 869 MHz: –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.

[a] Available in selected asian countries

[b] Configured for US

[c] Configured for Australia

[d] Typical maximum line-of-sight range (check country regulations, single hop, repeaters will extend range)

## Ordering

| PRODUCT CODE | DESCRIPTION | FREQUENCY | RF POWER |
|---|---|---|---|
| 905U-1-900-1W | Wireless I/O 4 DI, 4 DO, 2 AI, 2 AO, 1 P0 | 902–928 MHz | 1W |
| 905U-1-866-1W | Wireless I/O 4 DI, 4 DO, 2 AI, 2 AO, 1 P0 | 865–867 MHz | 1W |

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

## Accessories

| PRODUCT CODE | DESCRIPTION |
|---|---|
| **Antennas 900 MHz** | |
| DG900-1/5 | 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/male |
| ETH-C5X | Serial cable, 6' (1.8m), crossover, RJ-45 to RJ-45 |
| ETH-C5A | Serial cable, 6' (1.8m), direct, RJ-45 to RJ-45 |
| SER-DB9 | Serial RS-232 cable, DB-9 male to DB-9 female, straight through |
| SER-RJ45 | RS-232 serial cable, 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/S1 | Power supply surge diverter, 110 Vac/15A |
| Power Supplies | |
| PS-DINAC-12DC-OK | DIN rail power supply, 100–250 Vac, 12 Vdc/5A |
| PS-DINAC-24DC-OK | 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 |
| MA15/D/1/S1 | Power supply surge diverter, 110 Vac/15A |
| MA15/D/2/S1 | Power supply surge diverter, 240 Vac/15A |
| IOP32D | Signal surge diverter, 2 x 2-wire/1 x 4-wire |
| **Power Supplies** | |
| PS-DINAC-12DC-OK | DIN rail power supply, 100–250 Vac, 12 Vdc/5A |
| PS-DINAC-24DC-OK | DIN rail power supply, 85–264 Vac, 24 Vdc/2.5A |
| Mounting Brackets | |
| BR-YAGI-KIT | Mounting bracket kit for Yagi antenna |
| BR-COL-KIT | Mounting bracket kit for collinear antenna |

ELPRO Technologies
29 Lathe St
Virginia, QLD 4014
Australia
www.elpro.com.au

Telephone:
Global:+61 7 3352 86
USA: +1 855 443 5776



ELPRO Technologies Inc
2028 East Ben White Blvd,
#240-5656 Austin, TX 78741-6931
USA

Telephone:
USA: +1 855 443 5776