915U-2 Wireless Mesh Networking I/O & Gateway
Long Range, Scalable and Highly Resilient Multi I/O Node and Gateway

Description
The ELPRO 915U-2 Wireless Mesh Networking I/O and Gateway 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 900MHz wireless transceiver, the ELPRO 915U-2 is capable of providing IP-based mesh networking across sprawling industrial environments typical of industrial applications.

Capable of ad-hoc mesh networking, roaming and discovery, as well as deterministic mesh, the 915U-2 can serve as an end node, routing node or network gateway. Scalable to thousands of nodes, Gather-Scatter™ and Block Mapping technology offers the efficient utilization of network resources, and eases integration into complex monitoring and control systems. Integrated Modbus server capability allows further I/O expansion through the use of ELPRO 115S Expansion modules.

Features
- 902 – 928MHz Frequency up to 1W RF Power
- Frequency Hopping Spread Spectrum to 115kbps
- 50 x 250kHz Channels
- Self Healing IP-Based Wireless Mesh Networking
- Multi-Hop Repeater and Gateway Functionality
- Gather-Scatter™ and Block Mapping
- Serial Client/Server/Multicast Modbus TCP to RTU Gateway
- Configurable Digital, Pulse and Analog I/O to 14bit Resolution
- 10/100baset IEEE 802.3 Ethernet
- Secure 128-bit AES Encryption
- Modbus RTU and TCP Support
- Over-The-Air Network Diagnostics and Configuration

Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>902 – 928MHz</td>
</tr>
<tr>
<td>Transmit Power</td>
<td>1mW (+0dBm) to 1W (+30dBm)</td>
</tr>
<tr>
<td>Transmission</td>
<td>Frequency Hopping Spread Spectrum (FHSS)</td>
</tr>
<tr>
<td>Modulation</td>
<td>Frequency Shift Keying (FSK)</td>
</tr>
<tr>
<td>Receive Sensitivity</td>
<td>-109dBm @ 19.2kbps (3% FER)</td>
</tr>
<tr>
<td>Channel Spacing</td>
<td>50 x 250kHz</td>
</tr>
<tr>
<td>Data Rate</td>
<td>19.2 – 115.2kbps</td>
</tr>
<tr>
<td>“Auto Mode” selects fastest rate possible relative to RSSI</td>
<td></td>
</tr>
<tr>
<td>Range (LoS)</td>
<td>32Km (20 mi.) @ 1W</td>
</tr>
<tr>
<td>Antenna Connector</td>
<td>1 x Female SMA Standard Polarity</td>
</tr>
<tr>
<td>Discrete Input</td>
<td>8 Digital I/O (1 – 4 Configurable as PI or PO)</td>
</tr>
<tr>
<td>On-State Voltage</td>
<td>&lt;2.1Vdc</td>
</tr>
<tr>
<td>Wetting Current</td>
<td>5mA</td>
</tr>
<tr>
<td>Max I/P Pulse Rate</td>
<td>DI 1/2: 50kHz, DI 3/4: 1kHz</td>
</tr>
<tr>
<td>Max I/P Pulse Width</td>
<td>DI 1/2: 10uSec, PI 3/4: 0.2mSec</td>
</tr>
<tr>
<td>Discrete Output</td>
<td>8 Digital I/O (1 – 4 Configurable as PI or PO)</td>
</tr>
<tr>
<td>On-State Voltage</td>
<td>DO Max: 30Vdc</td>
</tr>
<tr>
<td>Wetting Current</td>
<td>DO Max: 200mA</td>
</tr>
<tr>
<td>Max O/P Pulse Rate</td>
<td>PO Max Rate: 10kHz</td>
</tr>
<tr>
<td>Analog Inputs</td>
<td>4 AI (2 Differential, 2 Single Ended)</td>
</tr>
<tr>
<td>Current Range</td>
<td>0 – 24mA</td>
</tr>
<tr>
<td>Current Resolution</td>
<td>14 Bits</td>
</tr>
<tr>
<td>Accuracy (Current)</td>
<td>0.1%</td>
</tr>
<tr>
<td>Voltage Input Range</td>
<td>AI 1/2: 0 – 25V, AI 3/4: 0 – 5V</td>
</tr>
<tr>
<td>Voltage Resolution</td>
<td>14 Bits</td>
</tr>
<tr>
<td>Accuracy (Voltage)</td>
<td>0.1%</td>
</tr>
<tr>
<td>Analog Output</td>
<td>2 AO (Sourcing)</td>
</tr>
<tr>
<td>Current Range</td>
<td>0 – 24mA</td>
</tr>
<tr>
<td>Current Resolution</td>
<td>13 Bits</td>
</tr>
<tr>
<td>Accuracy (Current)</td>
<td>0.1%</td>
</tr>
</tbody>
</table>

Applications
- Oil and Gas Production and Distribution
- Pipeline Monitoring and Leak Detection
- Pharmaceutical Monitoring and Production
- Mining Operations Infrastructure
- Water Treatment Facilities
- Water & Wastewater Systems and Treatment Facilities

Note: Specifications subject to change.
1) Country specific configuration
2) 18 New Zealand
3) Typical Maximum Line of Sight Range

Continued on back.
Specifications

**Ethernet Port**
- Ethernet Port: 10/100baseT, RJ45 Connector – IEEE 802.3
- Link Activity: Link, 100baseT via LED

**Serial Port**
- RS232: EIA-562 (RJ45 Connector)
- RS485: 2-Pin Terminal Block – Non-Isolated
- Data Rate (Bps): 1200, 2400, 4800, 9600, 14400, 19200, 38400, 57600, 76800, 115200, 230400bps
- Serial Settings: 7 / 8 Data Bits; Stop/Start/Parity (Configurable)

**Protocols and Configuration**
- System Address: ESSID; 1 – 31 Character Text String
- Protocols Supported: TCP/IP, UDP, HTTP, FTP, TFTP, TELNET, MODBUS, MODBUS-TCP
- User Configuration: All User Configurable Parameters via HTTPS

**Security**
- Data Encryption – 128bit AES. Secure HTTP Protocol

**LED Indication/Diagnostics**
- LED Indication: Power/OK; TX/RX; RS232; RS485; Digital I/O; Analog I/O status
- Reported Diagnostics: RSSI Measurements (dBm), Connectivity Information/Statistics, System Log file

**Network Management**
- Optional Network Management System

**Compliance**
- EMC: FCC Part 15; EN 301 489; AS 3548
- RF (Radio): FCC Part 15.247; AS 4268.2 ; RFS29 NZ
- Hazardous Area: CSA Class I, Division 2; ATEX; IECEx Na IIC
- Safety: IEC 60950 (RoHS Compliant)
- UL: UL Listed

**General**
- Size: 180 x 150 x 35 mm (5.91" x 7.09" x 1.38")
- Housing: IP20 Rated High Density Thermoplastic
- Mounting: DIN Rail
- Terminal Blocks: Removable; Max conductor 12AWG (2.5 mm²)
- Temperature Rating: -40 to +60°C; -40 to +140°F
- Humidity Rating: 0 – 99% RH Non-condensing
- Weight: 0.5 kg (1.1lb).

**Power Supply**
- Nominal Supply: 15 to 30Vdc; Under/Over Voltage Protection
- Average Current Draw: 220mA @ 12V (Idle), 110mA @ 24V (Idle)
- Transmit Current Draw: 500mA @ 12V (1W), 250mA @ 24V (1W)

**Ordering**
To order, select product code from the table and specify country of application.

**Accessories**
The following accessories can assist with compatibility when commissioning.

**Product Code** | **Description** | **Frequency** | **RF Power** | **Data Sheet #**
--- | --- | --- | --- | ---
915U-2 | Wireless Mesh I/O | 902-928MHz | FSK | 1W | 7923
915U-TCP | Modbus TCP/RTU Gateway | | | | 7923
915U-TCADP | TCP Adaptor (Type T Thermocouple) | | | | 7930

**Antennas – 900MHz**
- DG900: Whip Antenna - SMA Male, angle bracket, -2dB gain, 1m (3') coaxial cable
- WH900: Whip Antenna - SMA Male
- CF890EL: Dipole Antenna - SMA Male, mounting bracket, 5m (16') Coaxial cable
- SG900EL: Collinear Antenna - N-type Female, 5dB gain
- SG900-6: Collinear Antenna - N-type Female, 8dB gain
- YU6-900: Yagi Antenna - N-type Female, 10dB gain
- YU16-900: Yagi antenna - N-type Female, 15dB gain

**Cables**
- CC3/10/20-SMA: Coaxial Cable Kit - 3m (9.8')/10m (32')/20m (65'), N-type to SMA
- CCTAIL -SMA-F/M: Coaxial Cable Tail - 600mm (24''), SMA to N-type Female or Male
- ETH-C5A: Ethernet Cable - 1.8m (6'), direct, RJ45 to RJ45
- SER-DB9: RS232 Serial Cable - DB9 Male to DB9 Female
- SER-RJ45: RS232 Serial Cable - DB9 Female to RJ45

**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/SL: Power Supply Surge Diverter, 110Vac/15A
- IOP32D: Signal Surge Diverter, 2 x 2-wire/1 x 4-wire

**Power Supplies**
- PS-DINAC-12DC-OK: DIN Rail Power Supply, 100 - 250Vac, 12Vdc/2.5A
- PS-DINAC-24DC-OK: DIN Rail Power Supply, 100 - 250Vac, 24Vdc/2A

**Mounting Brackets**
- BR-COL-KIT: Mounting Bracket Kit for Collinear Antenna
- BR-YAG-KIT: Mounting Bracket Kit for Yagi Antenna

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