

# 905U-D Wireless Serial Modem

**RS-232/RS-485 serial data networking**



## Description

The ELPRO 905U-D Wireless Serial Modem is a robust, license-free serial transceiver capable of long-range communications to 20 miles (32 km). Operating at 900 MHz and up to 1W, the ELPRO 905U-D provides high-speed RS-232 and RS-485 connectivity up to 115 kbps, which provides robust and secure two-way wireless serial communications in challenging environments typical of industrial monitoring and control applications.

Capable of high-speed communications with serial devices, the ELPRO 905U-D can communicate using either transparent broadcast mode or a controlled addressed mode. Both offer node-to-node, node-to-multi-node, and repeatability for greater range. Integrated forward error correction maximizes bit error rate, providing greater transmission reliability, and configurable DTR-controlled low-power mode on the RS-232 port aids reduction of overall power consumption. The modem is hazardous area approved, delivering strong resistance in harsh industrial environments.

## Features

- 902–928 MHz frequency up to 1W RF power
- Frequency hopping spread spectrum to 115.2 kbps
- 50 x 250 kHz channel spacing
- High-speed RS-232 and RS-485 data rate to 115 kbps
- Transparent/simultaneous broadcast and addressable device messaging
- LoS distance to 20 miles (32 kms) in a single hop; unlimited repeatability
- Low power consumption mode with DTR control
- Forward error correction communications (CRC error checking with ARQ)
- Simplistic configuration for AT Hayes commands or Windows®-based software
- Helpful diagnostics include radio signal strength and BER indication

## Applications

- Oil/gas field production/distribution
- Water/wastewater to SCADA
- Electrical metering/consumption
- Serial transducer devices to SCADA/HMI
- Serial data logger connectivity
- PLC to PLC to SCADA/DCS connection
- Conveyor belt header drums
- Notification panels and sirens

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## Specifications

SPECIFICATION	DESCRIPTION
<b>Transmitter and Receiver</b>	
Frequency	902–928 MHz ①, 915–928 MHz ②
Transmit power	1W
Transmission	Frequency hopping spread spectrum (FHSS)
Modulation	Frequency shift keying
Receiver sensitivity	–106 dBm @ 19.2 kbps, –103 dBm @ 115.2 kbps (1% FER)
Channel spacing	50 x 250 kHz
Data rate	19.2–115.2 kbps ① ②
Range (LoS)	20 miles (32 kms) @ 4W ③
Antenna connector	1 x female SMA standard polarity
<b>Serial Port</b>	
RS-232	DB-9 female DCE, RTS/CTS/DTR/DCD (hardware signals provided)
RS-485	2-pin terminal block (maximum distance 4000' (1.2 km), non-isolated)
Data rate (bps)	1.2–115.2 kbps, configurable
Serial settings	7 or 8 data bits, stop/start/parity bits configurable
<b>Protocols and Configuration</b>	
System address	Configurable 8-bit value (0–255)
Protocols supported	Operating mode, radio and serial settings
User configuration	Windows-based software or AT Hayes commands via serial port
<b>LED Indication and Diagnostics</b>	
LED indication	Power/OK, radio TX/RX, serial TX/RX, DCD
Reported diagnostics	RSSI measurement (dBm), bit error ratio (BER)
<b>Power Supply</b>	
Nominal supply	10–30 Vdc, under/over voltage protection
Average current draw	70 mA @ 12V (idle), 50 mA @ 24V (idle)
Transmit current draw	350 mA @ 12V (1W), 250 mA @ 24V (1W)
<b>Compliance</b>	
EMC	FCC Part 15 Class A
RF (radio)	AS/NZS 4268, FCC 15.247
Hazardous area	CSA Class I Division 2
Safety	AS/NZS 60950, IEC 60950
<b>General</b>	
Size	4.5" x 6.7" x 1.2" (114 mm x 168 mm x 30 mm)
Housing	Powder-coated aluminum
Mounting	DIN rail
Terminal blocks	Removable, max conductor 14 AWG 0.1 in. <sup>2</sup> (2.5 mm <sup>2</sup> )
Temperature rating	–40 to +140°F (–40 to +60°C)
Humidity rating	0–99% RH noncondensing
Weight	1.1 lbs (0.5 kg)

**Note:** Specifications are subject to change.

① Configured for US

③ Typical maximum line-of-sight range

② Configured for Australia

## Ordering

PRODUCT CODE	DESCRIPTION	FREQUENCY	RF POWER
905U-D-900-1W-US	UHF serial RS-232/RS-485, 115.2 kbps	902–928 MHz	1W
905U-D-900-1W-AU	UHF serial RS-232/RS-485, 115.2 kbps	915–928 MHz	1W

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

## Accessories

PRODUCT CODE	DESCRIPTION	DATA SHEET
<b>Antennas - 900 MHz</b>		
DG900-1/5	Whip antenna, SMA male, angle bracket, –2 dBi gain, 3' (1m) coaxial cable	TD032047EN
WH900-SMA	Whip antenna, SMA male, –2 dBi gain	TD032045EN
CFD890EL	Dipole antenna, SMA male, mounting bracket, 2 dBi gain, 16' (5m) coaxial cable	TD032048EN
SG900EL	Collinear antenna, N-type female, 5 dBi gain	TD032049EN
SG900-6	Collinear antenna, N-type female, 8 dBi gain	TD032050EN
YU6-900	Yagi antenna, N-type female, 9 dBi gain	TD032042EN
YU16-900	Yagi antenna, N-type female, 15 dBi gain	TD032051EN
<b>Cables</b>		
CC3/10/20-SMA	Coaxial cable kit, 9.8' (3m)/32' (10m)/65' (20m), N-type to SMA	TD032023EN
CCTAIL-SMA-F/M	Coaxial cable tail, 24" (0.6m), SMA to N-type female or male	TD032023EN
SER-DB9	Serial RS-232 cable, DB-9 male to DB-9 female straight through	TD032026EN
<b>Surge Diverters</b>		
CSD-SMA-2500	SMA surge diverter for use with CC10/CC20–SMA	TD032029EN
CSD-N-6000	Coaxial surge diverter, bulkhead N female to N female	TD032031EN
MA15/D/1/SI	Power supply surge diverter, 110 Vdc/15A	TD032029EN
IOP32D	Signal surge diverter, 2-wire/4-wire	TD032032EN
<b>Power Supplies</b>		
PS-DINAC-12DC-OK	DIN rail power supply, 100–250 Vac, 12 Vdc/2.5A	TD032033EN
PSG60E	DIN rail power supply, 85–264 Vac, 24 Vdc/2.5A	TD032034EN
<b>Mounting Brackets</b>		
BR-COL-KIT	Mounting bracket kit for collinear antenna	TD032071EN
BR-YAG-KIT	Mounting bracket kit for Yagi antenna	TD032072EN

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