

105U-G Wireless Gateway

Data-bus Interface and Conversion



Description

ELPRO wireless gateways provide the interface and communication between industrial data-bus devices and field devices (e.g., Modbus to Profibus to EtherNet/IP; PLC's to SCADA/DCS etc). Connected via RS232/RS485/RJ-45, register allocated data-bus values are transmitted/received by radio to and from field and control room devices.

ELPRO 105U-G series products can multi-hop repeat up to five times, support a variety of industrial protocols and can be combined with ELPRO 105U/505U-K and 115S series products to create I/O and data-bus networks.

Features

- 150/220/400/869MHz, 5mW-5W, DFSK⁽¹⁾, 3.6-19.2kbps radio communications to 35m/56Km with multi-hop repeating.⁽²⁾
- Able to connect similar/dissimilar industrial protocols and vendor devices (incorporating: Master/Slave, Slave/Slave, Master/Master networks).
- Simple to complex, point to multi-point communications with forward-error correction (FEC), data integrity check (CRC) and data encryption.
- Eight configurable digital I/O with I/O expansion via ELPRO 115S range.
- AC/DC/battery power options with UPS battery charger.
- Module diagnostics including read/write of register I/O, reporting of signal strength indication (RSSI), communications logging and internal measurement of low/normal and battery supply voltages.

Applications

- Similar/dissimilar data-bus SCADA/DCS to PLC-PLC communications
- Moving machinery PLC-PLC/HMI connection/operation
- Data-bus cable replacement
- Smart instrument interface and connection (e.g., gas analyzer)
- Multi I/O data concentrator/repeater for large networks

Specifications	
Transmitter/Receiver	
Modulation	DFSK ⁽¹⁾
Transmit Power	148 - 174MHz, 0.1 - 5W 220 - 235MHz, 0.1 - 5W 360 - 512MHz, 10mW - 5W 869.525MHz, 500mW 869.875MHz, 5mW
Receiver Sensitivity	150/220/400MHz: -112dBm 869MHz: -108dBm
Data Rate	150/220/400MHz: 3.6 kbps 869MHz: 19.2kbps
Line Of Sight Range ⁽²⁾	150/220/400MHz: 10mW EIRP to 2km, 500mW EIRP to 10km, 5W EIRP to 50km 869MHz: 5km (500mW), 1km (5mW)
Antenna Connector	150/220/400MHz: BNC female coaxial (with gas discharge arrestor). 869MHz - SMA female (with gas discharge arrestor).
Input/Output	
Onboard D I/O ⁽¹⁾	Eight non voltage/FET I/O: 30Vdc/500mA
Ethernet Port - model/protocol dependent	
Ethernet Port	10/100Mbps, RJ45 - IEEE802.3
LEDs	Link/100Mbps
Note: Specifications subject to change. 1) DFSK - Digital Frequency Shift Key. 2) Actual radio distances dependent on terrain/obstacles. Country regulations and module dependant.	
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Specifications	
Serial Port	
RS232	9pin DB9 female connector
RS485	Terminal connector (serial expansion module option: cable <2000m)
Data Rate Configurable	9600 baud, 8 bits, no parity, 1 stop bit (programming) 300 - 38400, 7/8 bits, N/O/E, Parity, 1/2 Stop. Modbus/DF1
Protocols and Configuration	
105U-G-MD1 Modbus RTU (Master/Slave), DF1	Up to 4300 I/O points: analog and/or discrete Modbus - RS232/485: 300 - 38400bps DF1 (full duplex) - RS232: 300 - 38400bps
105U-G-ET1 EtherNet/IP (Level 2/I/O Server)	Modbus/TCP (Class 0, 1: partially class 2 Slave) TCP/IP functions; embedded web system (dynamic HTTP); on-board file system for downloadable web pages via FTP server; email (SMTP) 2048 bytes input/2048 bytes output: up to 4300DI/O or 1024AI/1024AO. 10/100Mbps, RJ45 connector
105U-G-PR1 Profibus DP Slave to EN 50170 standard	416I/O bytes (up to 1952DI/ 1952DO or up to 122AI/ 122AO) RS-485 optically isolated with onboard DC/DC converter Automatic baud rate detection: 9600bps - 12Mbps
105U-G-PR2 Profibus DP Master to EN 50170 standard	2048 bytes input/2048 bytes output: up to 4300 DI/O or 1024AI/1024AO RS-485 optically isolated with onboard DC/DC converter Automatic baud rate detection: 9600bps - 12Mbps
105U-G-DE1 DeviceNet Slave	512 bytes input/512 bytes output (up to 4300DI/O or 256AI/ 256AO) Re.g.,ister size 16 bit - number of remote 905U addresses 500 RS422 optically isolated (selectable baud rate between 125, 250, 500kbps)
105U-G-M+1 Modbus+Slave	Global database transactions: routing up to six networks 2048 bytes input/2048bytes output (up to 4300DI/O or 1024AI/1024AO) RS485 optically isolated: standard baud rate 1Mbps
User Configuration	E-Series configuration utility
LED Indication	
ACTIVE (ACT)	Micro processor/ Module operational
OK	Mains/ battery power supply available
SERIAL TX & RX	Serial port transmitting; Serial port receiving
RADIO TX & RX	Radio transmitting; Radio receiving
I/O LED markers	I/O inputs and/or outputs status

General	
Size	5.1" x 7.3" x 2.4" (130 x 185 x 60mm)
Weight	2.2lbs (1Kg)
Temperature	105U-G-MD1 150/220/400MHz: -30 to +60°C (-22 to 140°F) 105U-G-MD1 869MHz: -40 to +60°C (-40 to 140°F) 105U-G-ET1/PR1/PR2/DE1/M+1: -30 to +60°C (-22 to 140°F)
Humidity	105U-G-MD1: RH Non-condensing 0-99% 105 U-G-ET1/PR1/PR2/DE1/M+1: RH Non-condensing 0 - 95%
Housing	Extruded aluminum
Mounting	DIN rail mounting
Terminal strip	Removable: up to 2.5mm ² (12AWG)
Approvals	EMC: FCC Part 15, AS3548, EN 301 489 Radio: EN 300 220, FCC Part 90, RSS 119, AS4295, AS4768.1, EN 300 113 Safety: EN 60950, Class I Division 2 hazardous areas (USA/ Canada)
Power Supply	
Nominal Supply	12-24Vac/9-30Vdc: over-voltage/reverse power protected
Quiescent Current	105U-G-MD1: +12V, 150mA; 24V, 90mA: add 5mA per I/O point 105U-G-ET1/PR1/PR2/DE1/M+1: +12V, 270mA; 24V, 170mA: add 5mA per I/O point
Transmission Current	450mA @ 13.8Vdc (0.5W) 600mA @ 13.8Vdc (1W) 800mA @ 13.8Vdc (2W) 1.25A @ 13.8Vdc (5W)
Battery Supply	11.5-15.0Vdc (battery supply volts internal I/O value)
Battery Charge Circuit	Suitable for 12Vdc sealed lead acid batteries, max charge current 2.0A (5W), 0.9A (500mW)
Note: Specifications subject to change. 1) Configurable as inputs/outputs.	



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