

505U-K Wireless I/O

One-way low-power transmitter



Description

The ELPRO 505U-K Wireless I/O is a small I/O transmitter that extends long-range, license-free communications to sensors in local, remote, or difficult-to-reach locations. Designed with low power consumption and simple plug-in of ELPRO BU-5 battery packs, the ELPRO 505U-K provides reliable continuity in environments typical of industrial applications with power constraints.

Capable of transferring analog, pulse, or discrete inputs, and powering a loop-powered analog device (24 Vdc, 50 mA), the ELPRO 505U-K offers a simple-to-deploy and highly reliable solution.

Features

- 869.525 MHz frequency and 500 mW RF power, or 869.875 MHz frequency and 5 mW RF power models
- Link process inputs to single or multiple outputs (peer to peer)
- Multiple power supply options, including battery-only supply with ultra-low power consumption (reverts to "sleep" mode)
- Input-only transmitter unit (2 or 4 DI/PI, 1 AI) that can be connected to multi-I/O and/or gateway units, up to 3000 units in a system
- Peer-to-peer communications with exception reporting, reliable self-checking via update time, and secure data encryption
- External inputs plus internally calculated values, including analog set point status, pulse rate and pulse total, power/battery supply voltage, and power supply alarm
- Can connect to up/down counter transducers, such as shaft encoders
- Configurable repeat transmissions to five times for message reliability
- Set point, pulse count, and rate available. Additional internal I/O points provided for health monitoring

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
- Power reticulation relay fault notifications
- Weather station reporting
- Bearing condition monitoring



Powering Business Worldwide

Specifications

SPECIFICATION	DESCRIPTION
Transmitter and Receiver	
Frequency	868.525 MHz ① 869.875 MHz ②
Transmit power	500 mW ① 5 mW ②
Transmission	Frequency modulation (FM)
Modulation	Digital frequency shift key (DFSK)
Channel spacing	250 kHz
Data rate	19.2 kbps with forward error correction
Range (LoS)	6.2 miles (10 km) @ 500 mW ① ③ EIRP 0.62 miles (1 km) @ 5 mW ② ③ EIRP
Antenna connector	Female SMA standard polarity Internal gas discharger arrestor protection
Input and Output	
Digital inputs	TTL voltage 0–1.5 Vdc (on), 3.5–13 Vdc (off) Surge protected, not isolated, voltage-free/NPN contacts 2 DI (external, status)
Analog inputs	0–24 mA or 0–10V (selectable, over range indication 0–25 mA) Floating differential inputs, common mode voltage 27V Resolution 12-bit, accuracy <0.1% 24 Vdc @ 50 mA for external loops provided
Pulse inputs	As per digital input specifications above Maximum pulse rate 10 kHz (50 kHz possible on PI1 using a configurable divider) Pulse width minimum 0.2 ms, volt-free contacts 300 Hz 2 PI (pulse total, count, rate)
Serial Port	
RS-232	9-pin DB-9 female connector (use for programming only)
Data rate (bps)	9600 bps
Serial settings	8 data bits, 1 stop, no parity
Protocols and Configuration	
System address	Configurable system address
Protocols supported	ELPRO WIBnet™ 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
Security	64-bit encryption on radio
LED Indication and Diagnostics	
LED indication	OK/active, TX/link Refer to product manual for further information
Reported diagnostics	I/O status
General	
Size	6.7" x 2.5" x 1.4" (170 mm x 64 mm x 36 mm)
Housing	Powder-coated aluminum
Mounting	Panel mount/connector and cable lead
Terminal blocks	Weatherproof connector with 3.2" (1m) lead
Temperature rating	–40 to +140°F (–40 to +60°C)
Humidity rating	0–99% RH noncondensing
Weight	1 lb (500g)
Power Supply	
Nominal supply	6 to 30 Vdc, under/over voltage protection 9 Vdc battery supply
Average current draw	10 mA @ 12 Vdc (idle) + analog loop 2 (internally generated, 24 Vdc/50 mA) Sleep mode 140 µA
Transmit current draw	300 mA @ 12 Vdc
Battery (optional ELPRO BU5-2)	6 x AA alkaline batteries 9V, up to 1.4-year service life depending on input configuration Enclosure specifications as per 505U-K enclosure Temperature dependent on battery type used

SPECIFICATION	DESCRIPTION
Compliance	
EMC	CE; EN 301 489
RF (radio)	EN 300 220; AS 4268.2; AS 3548
Safety	IEC 60950 (RoHS compliant)

Note: Specifications are subject to change.

① 869.525 MHz available only at 500 mW

② 869.875 MHz available only at 5 mW

③ Typical maximum line-of-sight range (check country regulations, single hop, repeaters will extend)

Accessories

PRODUCT CODE	DESCRIPTION	DATA SHEET
Antennas - 900MHz		
DG800-1/5	Whip antenna, SMA male, angle bracket, –2 dBi gain, 3' (1m) or 16.4' (5m) coaxial cable	TD032046EN
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
YU6-870	Yagi antenna, N-type female, 9 dBi gain	TD032042EN
YU16-870	Yagi antenna, N-type female, 15 dBi gain	TD032051EN
Cables		
CC3/10/20-SMA/BNC	Coaxial cable kit, 9.8' (3m)/32' (10m)/65' (20m), N-type to N-type, SMA male/BNC male	TD032019EN TD032020EN TD032021EN
CCTAIL-SMA-F/M	Coaxial cable tail, 24" (600 mm), SMA to N-type female/male	TD032023EN
CCTAIL-BNC-F/M	Coaxial cable tail, 24" (600 mm), BNC to N-type female/male	TD032022EN
SER-DB9	Serial RS-232 cable, DB-9 male to DB-9 female, straight through	TD032026EN
Surge Diverters		
CSD-SMA-2500	SMA surge diverter for use with CC10/CC20-SMA	TD032030EN
CSD-N-6000	Coaxial surge diverter, bulkhead N female to N female	TD032031EN
MA15/D/1/S1	Power supply surge diverter, 110 Vac/15A	TD032029EN
MA15/D/2/S1	Power supply surge diverter, 240 Vac/15A	
IOP32D	Signal surge diverter, 2 x 2-wire/1 x 4-wire	TD032032EN
Power Supplies		
BU5-2	IP66 battery pack	TD032035EN
PS-DINAC-12DC-OK	DIN rail power supply, 100–250 Vac, 12 Vdc/2.5A	TD032033EN
PSG60	DIN rail power supply, 85–264 Vac, 24 Vdc/2.5A	TD032034EN
Mounting Brackets		
BR-YAGI-KIT	Mounting bracket kit for Yagi antenna	TD032072EN
BR-COL-KIT	Mounting bracket kit for collinear antenna	TD032071EN

Ordering

PRODUCT CODE	DESCRIPTION	FREQUENCY	RF POWER
505U-K-868-5M	Transmit only, 2DI, 1 AI, 6–30 Vdc external	869.875 MHz	5 mW
505U-K-868-500M	Transmit only, 2 DI, 1 AI, 6–30 Vdc external	869.525 MHz	500 mW

Note: Specifications are subject to change.