

455U-D Industrial Radio Modem

HIGH PERFORMANCE MODEM

Performance, integrity, security
Powerful, flexible, easy to use

ELPRO TECHNOLOGIES

Industrial Wireless Technology



Licensed and license-free radio channels,
380 – 512 MHz, 10mW – 5W, 12.5/20/25 KHz

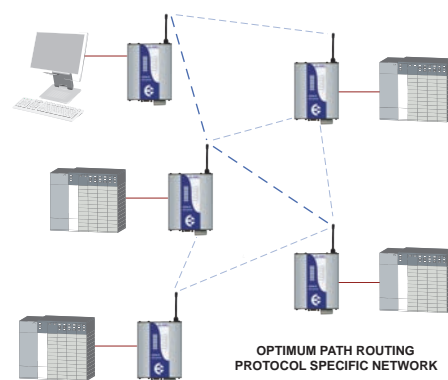
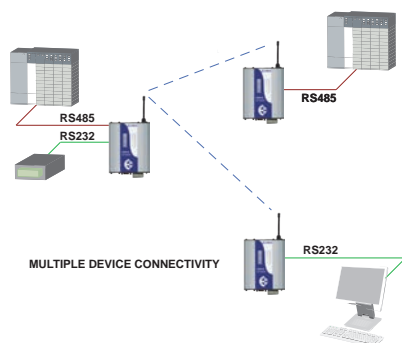
Three serial ports - two RS232 and one RS485,
two data ports and one configuration port
available with audio 600 ohm input for external modems

Connect to two serial devices using **MDC technology...**
Multiple Device Connectivity - two independent configurable
serial ports

Wireless data rate up to 19.2 Kb/s

Diagnostics and Configuration via dedicated RS232 port
Remote configuration and diagnostics to all units via the
wireless channel

Military-grade security encryption - 128 bit AES



Mesh Repeater networking – each unit can act as a
repeater **and** connect to serial devices

Multiple operating modes

OPR Functionality ... Protocol sensitive mode with
Optimum Path Routing for Modbus, DF1 and DNP3
networks - maximum network communications efficiency

Broadcast “multidrop” mode

Addressed “dial-up” or fixed connection mode

On-line and remote modem control via AT commands

Hot-redundant standby functionality

Backup battery charging functionality with smart power
monitoring and low power sleep mode



455U-D Industrial Radio Modem Range Specifications

ELPRO Technologies is an ISO 9001:2008

Quality Assured Company.

Different Models

- 455U-D High performance data modem
- 455U-A Data radio, audio input
- 455U-B Modem with Bell 202 or V23 (limited functionality)
- 455U-C Compatible with ELPRO 405U modem (limited functionality)

Standards Compliance

EN 300 113, EN 300 220, EN 300 086, EN 301 489-5
FCC Part 90, Part 15, RSS-119, AS4295, AS4768.1

General Specifications

Size: 140mm x 114mm x 30mm / 5.5in x 4.5in x 1.2in
Weight: 0.4 kg / 1 lb
DIN rail mounting, Painted aluminum housing
Temperature Range: -30°C to +60°C / -22 to +140°F
Humidity: 0 to 99% non-condensing
Supply Voltage: 11 to 30VDC
Battery Charger: Float charge voltage 13.8VDC with current limit set to 1.6A (minimum supply voltage 15V)
Low power sleep mode configurable using DTR control
Current @ 13.5VDC: quiescent 110mA; transmit 450mA (<0.5W), 800mA (1W), 1.25A (2W), 2A (5W)
Hazardous rating: Class 1 Div 2 (USA/Canada) pending

Serial Port (455U-D,B,C)

Data: 1 x RS232 (1.2 to 115.2 Kb/s) and 1 x RS485 (1.2 to 187.5 Kb/s)
Configuration: second RS232 port for configuration/diagnostics
7/8 data bits, 1/2 stop bits, odd/even/no parity

External Modem Option (455U-A only)

600 ohm audio input with level adjustment, PTT control, signal indication or audio mute output, received signal strength output as a voltage, enable/disable received audio muting with mute activation point adjustment
Configurable CTCSS sub-audible tone encoding

Radio Specifications

380 – 512 MHz radio transceiver, half-duplex or simplex operation
455U-D up to 9.6/19.2 Kb/s wireless data (12.5/25 KHz channels)
Data modulation DFSK, GMSK, 4-level FSK
455U-B V23, Bell202 up to 1200 b/s with configurable CTCSS sub-audible tone encoding
Frequency configurable within 20 MHz band in 5/6.25 KHz steps
Configurable transmitter power 10 to 500mW, 0.5 to 5W
Frequency tolerance: +/-1.5ppm over temperature range
Duty cycle: At 5W recommended duty cycle limit 50%, 30 second maximum transmission time, also limited by configurable timeout and internal thermal shutdown protection
Data modulation DFSK, GMSK, 4-level FSK
Receiver sensitivity: -112dBm @ 10E-3 BER
-120dBm @ 12dB SINAD
Lightening protection: Internal gas discharge arrester

Digital Input/Output

Input voltage-free contact / Output FET 30VDC 500mA
May be used for powering up local devices or hot-redundant standby control.

Operating Functions for 455U-D

Configuration/Diagnostics

Configuration via AT commands or dedicated Windows Configuration package
Configuration and diagnostics access to remote units via wireless channel, both on-line and off-line
Diagnostic information can be accessed by dedicated Windows package or on-line by a host serial device
RSSI and noise signal measurement in dBm
Supply voltage, battery voltage, internal temperature, antenna fault status

Multiple Device Connectivity (MDC)

Two independent wireless links managed simultaneously - two serial devices can be connected to each unit (RS232 & RS485).

Security

128-bit AES encryption of wireless data can be enabled
Uses a 16-byte encryption key combined with a random 16-byte initialization vector unique to each message
Remote configuration/diagnostics password protected.

Operating Modes

Broadcast mode - wireless "multi-drop"
Addressed mode - acknowledged or un-acknowledged
Optimum Path Routing (OPR) mode - protocol specific modes for Modbus, DF1, DNP3 and Profibus - ensures optimum wireless message routing for fastest system response in busy networks

Store& forward Repeater

Each unit can act as a repeater and modem
Multiple repeater functionality can be configured in each operating mode using routing tables

Hot-redundant Standby

Two units connected together in a hot-redundant standby configuration
Changeover triggered by radio or serial communication delay timeout, CPU watchdog, low supply voltage, antenna fault

Model Details

455U - Type - Power - Band - Channel

Type	D	Data modem, full functionality
	B	Data modem, Bell 202 or V23 messaging
	C	Data modem compatible with ELPRO 405U
Power	L	10 – 500mW
Band	390	380 – 400 MHz
	430	420 – 440 MHz
	460	450 – 470 MHz
	500	490 – 512 MHz
Channel	N	12.5 KHz
	W	25KHz

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COOPER Bussmann

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