415U-1-Cx Battery Powered Wireless I/O

Condor series long-range industrial wireless I/O

Description

With over 35 years of Industrial Wireless expertise, the 415U-1-Cx provides asset owners with new opportunities via the smart battery and I/O monitoring technology. Designed with the Condor series long-range, high data speed radio, the 415U-1-Cx has the power and flexibility to perform reliably in sprawling harsh industrial environments.

The 415U-1-Cx easily integrates into existing 415U-2-Cx and 415U-E-Cx Condor Series systems feeding into IIoT networks or into Greenfield applications where critical monitoring of I/O Data is required which has not been possible before due to no power being available or too costly to integrate solar solutions.

Features

- Extremely low power remote I/O monitoring
- Integrated Wireless, I/O, Charger, Regulator and battery in the one water proof unit
- Supports Lithium, Lead Acid or fixed power sources
- Licenced/licence-free VHF/UHF radio transceiver
- Flexible weatherproof enclosure design allows for simple installation for cabinet or outdoor situations
- Enhanced security for both cyber and data transmission
- Two Analog inputs (4-20mA) with separate internally generated configurable 24V loop supply
- 4 Discrete inputs or Pulsed Inputs
- Flexible configuration of I/O
- Monitoring and reporting of Radio status
- SDI-12 Interface for Smart Sensors such as ice, wind, level, ground moisture and weather station applications
- Innovative power management system including integrated smart solar regulator, internal or external battery, external power options
- Direct wiring to internal junction box through M20 entry
- Tough Aluminum enclosure
- Compatible with the ELPRO Condor Series product range

Applications

- Tailings leakage and movement detection
- Pipeline monitoring for Environmental protection
- Wellhead monitoring
- Remote I/O connectivity with no fixed power available
- Sewage outfall monitoring
- Flood Warning
- Groundwater monitoring
- Metering usage
- Automatic Weather Station
- Detection and Indication of Flooded Roads
- Water Quality and Environmental
- Rainfall monitoring

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Specification	Description
Operation	
Modes - Topology	Remote Unit Type
Input and Output	
Discrete Input/Output	4 Digital Inputs configurable as on/off or DI1-3 pulse inputs
Analog Inputs	2 differential analog inputs configurable 0-20mA (under/over range), 16 bits resolution
Sensor Loop Power	Analog: 24Vdc, max 50mA SDI-12: 12Vdc, max 500mA
SDI-12 (V1.4)	Maximum of 5 configured variables total M or R command / CRC configurable
Heater Output	Open Collector output (active close to ground) ON @ -0°C OFF @ 2°C, 30Vdc/2A max
Protocols / Configuration	
User Configuration	USB Type-B or RS232 (9600/8/N/1)
Configurable Parameters	Unit details, I/O mappings, I/O parameters, Analog sample time, SDI-12 sensor sample time, SDI-12 polled sensor variables
RS485	Modbus RTU master gateway. Configurable 300-115200 baud, data bits, parity, stop bits
Reported Diagnostics	
Radio Diagnostics	Monitoring communications, RSSI measurements, Antenna fail, Background noise
External / Internal Inputs	digital/pulsed/analog, solar panel/external supply voltage, battery voltage, SDI-12 data

Specification	Description
Communications - UHF / VHF Internal Radio	
Frequency (Note 1)	C1: 148 – 174MHz C3: 340 - 400MHz C4: 400 – 480MHz C5: 470 - 520MHz C9: 928 - 960MHz
Transmit Power	C1: 10mW - 5W (+37dBm) C3 - C5: 10mW - 10W (+40dBm) C91 - C92: 5mW - 6.3W (+38dBm) All Configurable
Receiver Sensitivity	Modulation C1, 3, 4, 5 C9 QPSK-FEC: -116dBm -112dBm QPSK: -113dBm -109dBm 16-QAM: -104dBm -100dBm 64-QAM: -97dBm -93dBm
Channel Spacing	6.25/12.5/25KHz Software Configurable
Typical Range (LoS)	50km+ (62Miles)
Connections	
USB Type B	Local unit Configuration
USB Type A	Firmware upgrades
Serial	1 x RS232 Configuration 1 x RS485 Modbus RTU Master
USB Type A	Retrieval of logged data to USB memory stick (Future)
Cable entry	Standard M20 cable gland 5-13mm cable diameter UL/VDE, Accessory option M20 to ½”NPT Conduit Adapter
Terminals	Internal wiring terminals (push connect) 0.20 - 1.5 mm² (24 - 16 AWG), Wire Strip length 8mm (0.3”)
Antenna	N-Type Female

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Specification	Description
LED Indications and Diagnostics	
LED Indications	Front Panel: Power/OK, Radio TX/RX, Sensor, Test Mode Internal: I/O Status, Service Status, Battery Charger status
Push Buttons	Front Panel: Test Transmission Internal Boot: Test, Reset, Firmware update
Power Supply	
Nominal Supply	Supply/Solar 17-30Vdc, under/rev voltage protection External Battery 11-15Vdc, under/over voltage protection
Idle Current Draw @13.8Vdc	Field Station 100µA
Transmit Current Draw	2.5A @ 13.8Vdc (10W RF) 1.2A @ 24Vdc (10W RF)
Battery Options	**Lithium Iron Phosphate(LFP):** Internal rechargeable **Lithium Thionyl Chloride(LiP):** Internal non-rechargeable **Lead Acid (Pb):** Externally connected 12V Battery
Battery Charger or Solar Regulator	External power supply/MPPT solar panel charges internal lithium (LFP) or external battery Up to 2A charge optimized for 5-30W panel Automatic temperature compensation/protection
Battery Life @5W RF Power 2 x Digital Inputs only 60min Updates	Non Rechargeable Lithium (LiP): 2 years
Battery Life @5W RF Power 1 x Analogue Input 60min Sample Time	Non Rechargeable Lithium (LiP): 1.8 years

Specification	Description
General	
Size	190mm x 197mm x 98mm (7.5” x 7.8” x 3.8”)
Housing	Aluminum cast enclosure with removable door IP66 rated
Mounting	Panel mount standard (DINA rail, pole or solar mount options)
Temperature Rating	External supply -40 to 70°C (-40 to 158°F) LFP rechargeable battery -20 to 60°C (-4 to 140°F) LiP non-rechargeable battery -40 to 70°C (-40 to 158°F)
Weight	1.8 kg (4.0lb) – not including internal battery
Altitude	0-3000m (0-10000ft)
Humidity Rating	0-99% RH non condensing
Pollution Degree	4
Compliance	
Regulatory UHF/VHF	Australia: RCM, Europe: CE/RED, USA: FCC, Canada: IC RF: FCC CFR47 Part 90; IC RSS 119; EN 300 113; EN 300 220; AS/NZS4295; AS/NZS4268
EMC	FCC CFR47 Part 15; EN 301 489-3; EN 301 489-5
Safety	EN/IEC/UL 62368
Hazardous Area	UL Class 1 Div 2

Notes:

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Notes:
1. Available RF power and frequency may vary depending on country of application. Please confirm with local regulatory body.

Specifications are subject to change.