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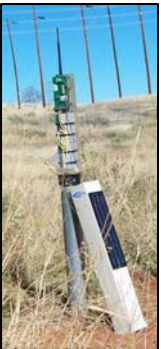
Cathodic Protection Rectifier Kits

FGRCP 900 MHz/GX CP 2.4 GHz

Overview:

These kits are designed to simplify installation of a FreeWave FGRCP 900 MHz or 2.4 GHz inside a Rectifier or as a battery backup device in a separate enclosure. FGRCP Cathodic Protection remote monitoring radio is a multi-purpose, spread spectrum, board level product with specific inputs and outputs for monitoring and reporting CP operational values on pipelines, tanks, structures and other underground facilities subject to environmental corrosion.

Designed to be compatible with other FreeWave radio products, the FGRCP is ideal for pipeline and tank companies wishing to extend their investment in telemetry automation to Cathodic Protection structures as well. The FGRCP board level radio (shown below) is also available in a pre-assembled FGRCP Line Marker Test Station complete with Solar Power System, antenna and conduit mounting bracket.



FGRCP LineMarker Test Station Available with one or two solar panels.



FGRCP Board Level Radio



FGRCP & GX CP unit feature are as follows:

- Multi-Purpose, All-in-One Radio Modem: Monitor rectifiers, pipe-to-soil test stations, pressure, and pipeline scrubbing operations.
- Enhanced lightning surge isolation: Full CP isolation protection from field structures.
- Open Protocol Communications: Uses open Modbus and Extended Modbus.
- No Obsolescence: 100% backwards compatibility with all legacy FreeWave 900 MHz/ 2.4 GHz products
- No Recurring Monthly Costs: You own your own communication network.
- Enhanced Security: Retains all data within company firewall protection.
- Easily Integrates into existing radio networks leveraging existing investments in supervisory control and data acquisition systems using open extended Modbus network addressing.
- Frequency Hopping Spread Spectrum: Invented for military use in 1940's.
- High Speed Communications: 115.2 Kbps true data throughput.
- Long Range: Up to 60 miles line of sight (FGRCP 900 MHz), Up to 20 miles line of sight (GX CP 2.4 GHz) both with ability to extend range by repeating from station to station to station or to existing FreeWave radio products.
- Error Free Communications: 32 bit CRC with automatic retransmission.
- Repeater Capabilities: Each FGRCP can perform as a Slave Radio, a Repeater and simultaneous Slave/Repeater.
- Wide Supply Voltage Range: Supply voltage 10 to 30 VDC.
- Ultra Low Power Consumption: Current draw is less than 8 mA, 12 VDC in linked idle mode, and less than 60 mA in receive mode.
- Separate Diagnostics Serial Port: Allows real time simultaneous diagnostics and setup without tying up the FGRCP main communication port.
- Separate RS232 Serial Port: Allows the FGRCP radio to simultaneously communicate to the CP monitoring points and to auxiliary PLC's, EFM's, RTU's, etc.
- Enhanced Diagnostics: Including signal level in dBm and transmit current.
- RS232/RS485/RS422 Interface available with user programmability.
- Noise Immunity: Robust communication performance in noisy, congested areas.
- Secure: Proprietary Spread Spectrum Technology and user programmable security features prevent detection or unauthorized access.

#	CP RMU Station ID Number	CP RMU Station Description	Select Devices	Rectifier Input Power Status	Rectifier Shunt Voltage (mVDC)	Rectifier Amperage	Rectifier Voltage (VDC)	Pipe-Soil Potential (mVDC)	CP RMU Temp (°F)	CP RMU Battery Voltage (VDC)	Discrete Output Control	Analog Input Value	CP RMU Polling Status	Comments
1			<input checked="" type="checkbox"/>	OFF	117.080	11.71	0.000	6.88	80.60	15.75	<input checked="" type="checkbox"/>	0.01		
2	2		<input type="checkbox"/>	OFF	117.910	11.79	0.000	225.21	89.60	15.18	<input type="checkbox"/>	0.01		
3	3		<input type="checkbox"/>	OFF	118.760	11.88	0.000	225.21	93.20	15.50	<input type="checkbox"/>	0.01		
4	4		<input type="checkbox"/>	OFF	117.500	11.75	0.000	225.74	95.00	15.45	<input type="checkbox"/>	0.01		

CP DataLogger Software (optional)

Cathodic Protection Rectifier Kits

FGRCP 900 MHz/GX 2.4 GHz

For radio specification on the GX CP 2.4 GHz please visit www.freewave.com/prododucts/category-39.html

FGRCP Specifications			
Rectifier Output Monitoring	Voltage: 12 to + 112 VDC Current Sense: -0.156 to +0.156 VDC		
Rectifier Status Monitoring	Inlet power status monitoring: 13-115 VAC or VDC		
Rectifier Interruption	12 VDC, DO relay output, user selectable		
Pipe-to-Soil Monitoring	Potential: -8 to +8 volt VDC		
Auxiliary Discrete Output	Used for rectifier interruption or remote control of field equipment		
Auxiliary Analog Input	1 to 5 VDC or 4 to 20 mA (250 ohm)		
Integrated Solar Charging	12 or 24 VDC, up to 50 watt charging circuit and regulator, controller		
Soil (Input) Impedance	Optional high soil input impedance available		
FGRCP 900 MHz Transmitter		GX CP 2.4 GHz Transmitter	
Frequency Range	902 to 928 MHz	Frequency Range	2.4 to 2.483 GHz
Output Power	100mW to 1 Watt	Output Power	5 mW to 500 mW
Range - Line of Sight	60 miles (100 km) with clear line of sight	Range - Line of Sight	20 miles (32 km) with clear line of sight
Modulation	Spread Spectrum GFSK	Modulation	2 level GFSK, 115.2 Kbps or 153.6 Kbps
Data Transmission			
Error Detection	32 bit CRC, Retransmit on error		
Data Encryption	Proprietary Spread Spectrum Technology		
Data Throughput	115.2 Kbps		
Data Interface	RS232 / RS 485 / RS 422 or TTL		
Data & Diagnostics Connector	Data: 10-pin, locking data and power connector. Diagnostics: 20 pin header connector.		
Antenna Connector	Board Level Radio: SMA, threaded Line Marker Test Station: Antenna included		
Occupied Bandwidth	230 kHz		
Spreading Method	Frequency Hopping		
Hopping Pattern	15 per band, 105 total, user selectable		
Hopping Channels	50 to 112, user selectable		
Hopping Bands	7, user selectable		
Power Requirements			
Backup Power Supply	Includes an 110 VAC/DC converter, charging circuit, integral wiring and a 36 inch, 18 gauge wiring harness (cut to suit)		
Battery Backup	7.5 amp-hour, gel-cell sealed deep cycle battery		
Power Outage Autonomy	5 to 20 days (depending on functionality)		
Electrical Classification	None, Class 1, Division 2 (pending)		
General Information			
Operating Temperature Range	-40° C to +75° C, fully tested		
Humidity	0 to 95% non-condensing		
Accessories		Accessories + Battery Backup System Kit	
36 inch coaxial antenna cable, a bulkhead connector 20 foot LMR 400 coaxial cable w/connectors and a 9 db YAGI antenna w/brackets		36 inch coaxial antenna cable, a bulkhead connector 20 foot LMR 400 coaxial cable w/connectors and a 9 db YAGI antenna w/ brackets, 5 Watt Solar Panel , Solar Controller, 7 Amp battery , Nema Box	

6.7.11

FreeWave Radios Require Professional Installation. *Specifications may change at any time without notice. ©2011 FreeWave Technologies, Inc.



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