



# GX Series

## Industrial 2.4 GHz Cathodic Protection Remote Monitoring



GX-CP

### OVERVIEW

The GX Cathodic Protection remote monitoring radio is a multi-purpose, spread spectrum radio with specific inputs and outputs for monitoring and reporting operational values on pipelines, tanks, structures and other underground facilities subject to environmental corrosion. Designed to be compatible with other FreeWave radio products, the GX-CP is ideal for pipeline and tank companies wishing to extend their investment in telemetry automation to Cathodic Protection structures as well. The GX-CP has no recurring monthly costs or fees

All radios are designed, manufactured and tested in Boulder, Colorado.

MODEL	DIMENSIONS	PRODUCT OPTIONS
GX-CP	6.5 L x 3.5 W x 2 H (in)	Board Level

### APPLICATIONS



Oil & Gas



Smart Grid



Water & Wastewater



Precision Agriculture

### KEY FEATURES

- **Multi-purpose, All-in-One Radio Modem:** Monitor rectifiers, pipe-to-soil test stations, pressure and pipeline scrubbing operations
- **Open Protocol Communications:** Uses open Modbus and Extended Modbus
- **No Obsolescence:** 100% backwards compatibility with all legacy FreeWave 900 MHz products
- **No Recurring Monthly Costs:** You own your own communication network
- **Repeater Capabilities:** Each GX-CP 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
- **Interface:** RS232/RS485/RS422 Interface available with user programmability
- **Secure:** FHSS technology and user programmable security features prevent detection or unauthorized access

# GX-CP 2.4 GHz Cathodic Protection Remote Monitoring Technical Specifications

FGR2-CP Specifications		Transmitter	
Rectifier Output Monitoring	Voltage: 0 to +112 VDC Current Sense; -0.156 to +0.156 VDC	Frequency Range	902 to 928 MHz (FHSS)
Rectifier Status Monitoring	Inlet power status monitoring: 115 VAC to 480 VAC w/ available Transformer	Output Power	1 Watt
Rectifier Interruption	12 VDC, DO relay output, user selectable	Data Link Range	60 miles (100 km), clear line of sight
Pipe-to-soil Monitoring	Potential: -8 to +8 VDC	Modulation	2 level GFSK, 115.2 kbps or 153.6 kbps
Auxiliary Discrete Output	Used for rectifier interruption or remote control of field equipment	Hopping Patterns	15 per Band, 105 total, user selectable
Auxiliary Analog Input	+1 to +5 VDC or 4 to 20 mA (250 ohm)	Hopping Channels	75 to 80, user selectable
Integrated Solar Charging, Including Solar Charger Negates UL Approval	+12 or +24 VDC, up to 50 watt Charging circuit and regulator, controller	Frequency Zones	16 Zones, 5 Channels per zone
Soil (Input) Impedance	Optional high soil input impedance available	Occupied Bandwidth	230 kHz
		RF Connector	SMA straight, or reversed SMA
		Receiver	
		Sensitivity (Board Level Only)	-107 dBm for BER $1 \times 10^{-6}$ -109 dBm for BER $1 \times 10^{-4}$
		Selectivity	20 dB at fc +/- 230 kHz 60 dB at fc +/- 290 kHz
		System Gain	134 dB

Data Transmission	
Error Detection	32 bit CRC, Retransmit on error
Data Encryption	FHSS Technology
Data Throughput	115.2 kbps standard speed, 80 kbps low speed <i>Uncompressed; measured assuming 75% frequency availability</i>
Data Interface	RS232/RS485/RS422
Data & Diagnostics Connector	10-pin header with locking ramp, 0.1 inch spacing power/data connector Separate 20 pin header diagnostics connector
Antenna Connector	Board Level Radio: SMA, threaded

## POWER REQUIREMENTS

Operating Voltage: +10 to +30 VDC

Typical Current (mA)	Mode	+10 VDC	+12 VDC	+30 VDC
	Transmit	400 mA	325 mA	150 mA
	Receive	155 mA	123 mA	51 mA
	Sleep	16 mA	13 mA	5 mA

## GENERAL INFORMATION

Operating Temperature	-40° C to +75° C
Humidity	0 to 95%, non-condensing
Dimension	Board Level Radio: 6.5 L x 3.5 W x 2 H (in) LineMarker Test Station: 30 L x 4 W x 4 H (in)
Weight	Board Level Radio: 160 g
Mounting	Board Level Radio: Standoffs available for FGR2-CP bracket mount



FreeWave Radios Require Professional Installation. Specifications may change at any time without notice. ©2013 FreeWave Technologies, Inc.

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