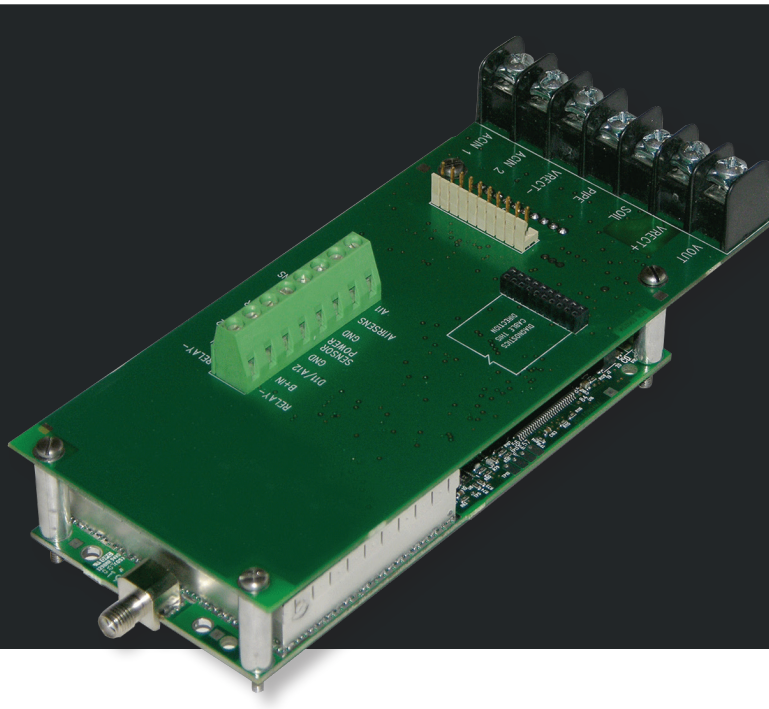
FREEWAVE

FGR2 Series

FGR2-CP

Industrial 900 MHz Cathodic Protection Remote Monitoring



The FGR2 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 FGR2-CP is ideal for pipeline and tank companies to extend their investment in telemetry automation to Cathodic Protection structures as well.

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

Key Features

Versatility: Gateway, Endpoint, Repeater or simultaneous Endpoint and Repeater function in a single radio

Long Range: 97 km (60 miles) with clear line of sight with the ability to extend through Repeaters

Noise Immunity: Superior performance in noise congested environments

Secure: Frequency Hopping Spread Spectrum (FHSS) technology prevents detection and unauthorized access

Error Free Communications: 32-bit CRC with automatic retransmissions

Low Power Consumption: Ideal for solar, battery, and DC applications

Industrial Grade: Operating temperature from -40°C to +75°C

Transmitter

Frequency Range	902 to 928 MHz
Output Power	Up to 1 W
Range	Up to 97 km (60 miles) with clear line of sight
Channel Spacing	230 kHz
RF Data Rate	115.2 or 153.6 kbps, user-selectable

Receiver

Sensitivity	-107 dBm @ 115.2 kbps for BER 10^{-6} -109 dBm @ 153.6 kbps BER 10^{-4}
Selectivity	20 dB at fc +/- 230 kHz 60 dB at fc +/- 290 kHz
System Gain	135 dB

Data Transmission

Type	Frequency Hopping Spread Spectrum
Modulation	2 level GFSK
Data Throughput	115.2 kbps standard speed, 80 kbps low speed Uncompressed; measured assuming 75% frequency availability
Error Detection	32-bit CRC, retransmit on error
Data Encryption	FHSS technology
Hopping Zones	16 zones, user-selectable
Hopping Channels	75 to 80, user-selectable
Hopping Patterns	15 per band, 105 total, user-selectable
Protocol	Open and Extended Modbus

Power Requirements

Operating Voltage	+ 10 VDC to +30 VDC			
Current Consumption	**Voltage**	**Transmit**	**Receive**	**Idle**
	+10 VDC	400 mA	155 mA	16 mA
	+12 VDC	325 mA	123 mA	13 mA
	+30 VDC	150 mA	51 mA	5 mA

Interfaces

Data Interface	10-pin header with locking map 2.5mm spacing power/data connector Separate 20-pin header diagnostics connector
Antenna Connector	**Board Level:** SMA, threaded **Line Marker Test Station:** Antenna included
Data Interface	RS232 / RS422 / RS485
RF Connector	SMA straight or reversed SMA

General Information

Operating Temperature	-40°C to +75°C (-40°F to +167°F)
Humidity	0 to 95%, non-condensing
Dimensions	**Board Level:** 165.1 L x 88.9 W x 50.8 H (mm) 6.5 L x 3.5 W x 2.0 H (in) **Line Marker Test Station:** 762 L x 102 W x 102 H (mm) 30 L x 4 W x 4 H (in)
Weight	160 g (0.35 lbs)

Certifications

FCC	Part 15

Information to Order

Model Number	Description
FGR2-CP	Board Level, UL Approved
FGR2-CP-S	Board Level, Non-UL Approved
Mounting	Board Level: Standoffs available for FGR2-CP bracket mount

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