



# FGR - SERIES

## FGR115RC / FGR115WC Industrial 900 MHz Radio

### Overview:

FreeWave® Technologies provides wireless data solutions for applications around the world ranging from mission critical to recreational. While most users deploy the FGR board level radio, this radio is often used for base stations.

All radios are built and tested in our world class manufacturing facility in Boulder, Colorado. The quality and versatility of these radios has led to their use in locations ranging from Mount Everest and Antarctica to the Amazon rainforest.

### Features:

- Separate Diagnostic Port - Real time remote diagnostics and setup, transparent to network communications.
- Wide Input Voltage Range - 6 to 30 Volt DC.
- The lowest current draw of any radio: 12 Volts
  - 6 mA in sleep mode with no wake up delay
  - 21 mA in idle mode
  - 86 mA in full time receive
  - 500 mA transmit current
- Synthesized Waveform transmit data - reduces out of band modulation products.
- Backward compatible - 100% compatible with all existing 900 MHz FreeWave radios.
- Versatile - A single radio can operate simultaneously as a Slave and as a Repeater.
- High Noise Immunity - Superior Performance in noise congested environments.
- Secure - Proprietary spread spectrum technology prevents detection and unauthorized access.
- High Speed - 115.2 Kbps continuous throughput.
- Long Range - 60 mile line of sight range.
- Error Free Communications - 32 bit CRC with automatic retransmission.
- Industrial Grade Specifications - 100% tested for RF performance from -40 °C to +75 °C.



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Technical Specifications

### Transmitter

Frequency Range	902-928 MHz (FHSS)
Output Power	5 mW to 1 Watt
Range, Line of Sight	60 Miles
Modulation	2 level GFSK, 115.2 Kbps or 153.6 Kbps
Occupied Bandwidth	230 kHz
Hopping Patterns	15 per Band, 105 total, user selectable
Hopping Channels	50 to 112, user selectable
Hopping Bands	7, user selectable
Frequency Zones	16 Zones, 7 Channels per zone
RF Connector	N Type

### Receiver

Sensitivity	-108 dBm for BER $1 \times 10^{-6}$ , -110 dBm for BER $1 \times 10^{-4}$
Selectivity	20 dB at $f_c \pm 230$ kHz
System Gain	140 dB

### Data Transmission

Error Detection	32 bit CRC, Retransmit on Error
Data Encryption	Dynamic Key Substitution
Link Throughput**	115.2 Kbps standard speed, 80 Kbps low speed ** Uncompressed, measured assuming 75% frequency availability
Data Interface	Serial
Protocol	RS232 / 485 / 422 or TTL, 1200 Baud to 115.2 KBaud
Data Connector	DB9 (RC), Fischer 11-pin (WC)

### Diagnostics Interface

Connector	3-pin PCB header (RC), Fischer 11-pin (WC)
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### Power Requirement

Operating Voltage	6-30 VDC			
Current [mA]	<b>Mode</b>	<b>6VDC</b>	<b>12 VDC</b>	<b>30 VDC</b>
	<b>Transmit</b>	1 A	500 mA	200 mA
	<b>Receive</b>	152 mA	86 mA	43 mA
	<b>Idle</b>	40 mA	21 mA	12 mA
	<b>Sleep</b>	8 mA	6 mA	3 mA

### General Information

Operating Temperature Range	-40 °C to +75 °C
Ruggedized Dimension	165 L x 74 W x 59 H (mm) (Waterproof: 165 L x 78 W x 60 H mm)
Ruggedized Weight	441 g (Waterproof: 496 g)
Humidity	0 to 95% non-condensing

FreeWave Radios Require Professional Installation.

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