

Radios
communication without barriers



FGR Series 900 MHz Spread Spectrum Radios

Features:

Freewave® Technologies provides wireless data solutions for applications around the world ranging from mission critical to recreational. All radios are built and tested in our world class manufacturing facility in Boulder, Colorado to operate over the temperature range of -40° to +75°C. The quality and versatility of our radios has led to their use in locations ranging from Mount Everest and Antarctica to the Amazon rainforest.



- **Frequency Hopping**
- **High Speed** –115.2 Kbps true throughput.
- **Long Range** – 60+ mile range with clear line of sight, ability to extend through repeaters.
- **Error Free Communications** – 32 bit CRC with automatic retransmission.
- **Industrial Grade Specifications** – 100% tested for full performance from -40°C to +75°C. Available in rugged or waterproof enclosure.
- **Repeater** and simultaneous Slave and Repeater function all in a single radio.
- **Improved supply voltage range and power consumption.** Input voltage range is now 6-30 VDC at full RF output power. Receive current is less than 86 mA @ 12 VDC. A new sleep mode consumes only 6 mA. A unit in sleep mode will wake up, synchronize with the network, and accept data in less than 150 *microseconds*.
- **Separate diagnostic serial connector** on non-waterproof models allows real time local diagnostics and setup menu access.
- **Better diagnostics**, including signal level in dBm and transmit current.
- **RS485/RS232 Interface.** In addition to RS-232, the FGR Series is now available with a user-programmable RS-232/RS-485/RS-422 interface.
- **Noise Immunity** – Superior performance in noise congested environments.
- **Secure** – proprietary spread spectrum technology prevents detection and unauthorized access.
- **100% backward compatible** with every 900 MHz FreeWave radio ever shipped.





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FGR Series 900 MHz Spread Spectrum Radios Technical Specifications

Transmitter & Receiver	Transmitter	
	Frequency Range	902-928 MHz
	Output Power	100 mW to 1 watt (+30 dBm)
	Range, Line of Sight	60 miles with clear line of sight
	Modulation	Spread Spectrum GFSK, 115.2 Kbps or 153.6 Kbps
	Occupied Bandwidth	230 kHz
	Spreading Method	Frequency Hopping
	Hopping Patterns	15 per band, 105 total, user selectable
	Hopping Channels	50 to 112, user selectable
	Hopping Bands	7, user selectable
	Receiver	
	Sensitivity	-108 dBm for 10 ⁻⁶ BER -110 dBm for 10 ⁻⁴ BER
	Selectivity	20 dB at fc ± 115 kHz 60 dB at fc ± 145 kHz
System Gain	140 dB	

Data Transmission & Power	Data Transmission																					
	Error Detection	32 bit CRC, Retransmit on Error																				
	Data Encryption	Substitution, Dynamic Key																				
	Maximum Throughput	115.2 Kbps																				
	Data Interface	RS232/485/422																				
	Data Connector	Standard DB9 connector (FGR-115RC) 11-pin waterproof connector with 6 foot pigtail (FGR-115WC)																				
	Power Requirement																					
	Operating Voltage	6-30 VDC																				
	Current Drain	<table border="1"> <thead> <tr> <th>Mode</th> <th>6VDC</th> <th>12 VDC</th> <th>30 VDC</th> </tr> </thead> <tbody> <tr> <td>Transmit</td> <td>1 A</td> <td>500 mA</td> <td>200 mA</td> </tr> <tr> <td>Receive</td> <td>152 mA</td> <td>86 mA</td> <td>43 mA</td> </tr> <tr> <td>Idle</td> <td>40 mA</td> <td>21 mA</td> <td>12 mA</td> </tr> <tr> <td>Sleep</td> <td>8 mA</td> <td>6 mA</td> <td>3 mA</td> </tr> </tbody> </table>	Mode	6VDC	12 VDC	30 VDC	Transmit	1 A	500 mA	200 mA	Receive	152 mA	86 mA	43 mA	Idle	40 mA	21 mA	12 mA	Sleep	8 mA	6 mA	3 mA
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General	General Information	
	Operating Temperature Range	-40°C to +75°C 100% full performance tested
	Dimension	165.1 mm L x 74.42 mm W x 58.64 mm H (FGR-115RC) 165.1 mm L x 78.23 mm W x 60.45 mm H (FGR-115WC)
	Weight	441 grams (FGR-115RC) 496 grams (FGR-115WC)
	External Antenna Connector	Type N female. Professional installation only.
	Humidity	0 to 95% non-condensing

Specifications may change at any time without notice
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