



FGR Series 900 MHz Spread Spectrum OEM Modules

Features:

The FreeWave® Technologies family of board level radios provides outstanding performance and versatility in a small footprint that is ideal for OEM applications. The board level radio offers a cost effective solution that allows customers to incorporate wireless communications into a wide variety of applications. With more interface options available, a 6-30 VDC operating voltage, a temperature range of -40°C to +75°C, surface mount design, no additional RF shielding, and a unit with Class 1 Div 2 classification, the OEM board level product has tremendous flexibility for use in applications around the world.



- **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.
- **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** 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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Communication without barriers

Technical Specifications

Transmitter & Receiver	Transmitter	
	Frequency Range	902-928 MHz
	Output Power	100 mW to 1 watt
	Range, Line of Sight	60 Miles with clear LOS
	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 BER 1×10^{-6} -110 dBm for BER 1×10^{-4}
	Selectivity	20 dB at $f_c \pm 47$ kHz (2nd IF)
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/RS485/422 or TTL																				
	Data Connector	10 pin header with locking ramp, 0.1 inch spacing, power/data connector. Separate Diagnostics connector																				
	Power Requirement																					
	Operating Voltage	9.5-30 VDC																				
	Current Drain	<table border="1" style="margin-left: auto; margin-right: auto;"> <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	127 mm L x 60.96 mm W x 15.49 mm H
	Weight	74.4 g
	External Antenna Connector	SMA. Professional Installation Only
	Humidity	0 to 95% non-condensing

Specifications may change at any time without notice
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