



RADIO-MODEM FREE WAVE 900-928 MHz FGR-SERIES SPREAD SPECTRUM TECHNOLOGY

FGR5013008/511X006/521X008 Industrial 900 MHz Radio

Overview:

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.

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 - at 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.

Technical specifications:

Transmitter

<i>Frequency Range</i>	902-928 MHz (FHSS)
<i>Output Power</i>	5 mW to 1 Watt
<i>Range, Line of Sight</i>	60 Miles
<i>Modulation</i>	2 level GFSK, 115.2 Kbps or 153.6 Kbps
<i>Occupied Bandwidth</i>	230 kHz
<i>Hopping Patterns</i>	15 per Band, 105 total, user selectable
<i>Hopping Channels</i>	50 to 112, user selectable
<i>Hopping Bands</i>	7, user selectable
<i>Frequency Zones</i>	16 Zones, 7 Channels per zone
<i>RF Connector</i>	SMA FGR511X006/FGR521X006 = no RF connector)

Receiver

<i>Sensitivity</i>	-108 dBm for BER 1x10-6, -110 dBm for BER 1x10-4
<i>Selectivity</i>	20 dB at fc ± 230 kHz
<i>System Gain</i>	140 dB

Data Transmission

<i>Error Detection</i>	32 bit CRC, Retransmit on Error
<i>Data Encryption</i>	Substitution, Dynamic Key
<i>Link Throughput**</i>	115.2 Kbps standard speed, 80 Kbps low speed
<small>** Uncompressed , measured assuming 75% frequency availability Data Interface:Serial Protocol</small>	
<i>Data Connector</i>	10-pin PCB header (board), DB9 (sandwich)

Diagnostic Interface:

<i>Connector</i>	Separate 20-pin PCB header (board), 3-pin PCB (sandwich)
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Power Requirement:

<i>Operating Current [mA]</i>	<i>Voltage 6-30 VDC</i>			
	Mode	6VDC	12VDC	30VDC
	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

General Information:

<i>Operating Temperature Range</i>	-40 °C to +75 °C
<i>Single Board Dimension</i>	127 L x 61 W x 15 H (mm) (Sandwich board: 140 L x 70 W x 34 H mm)
<i>Single Board Weight</i>	74 g (Sandwich Board: 137 g)
<i>Humidity</i>	0 to 95% non-condensing

