

# FGR2 Series

## FGR2 900 MHz Industrial Radio



**FGR2-CE-U**



**FGR2-C-U**

### KEY FEATURES

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

**Long Range:** Up to 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 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.

**UL Approved:** Class 1 Division 2

**Available Options:** 128 and 256-bit AES encryption.

### OVERVIEW

The FGR2 radio is the next generation of the FGR Series that has the same proven performance, reliability and quality that our customers have come to know and expect in all of our products. The FGR2 is a cost effective solution that allows customers to incorporate wireless communications into a wide variety of applications.

Offered as a board level product and in an enclosure, the FGR2 provides tremendous flexibility for use in applications around the world ranging from oil and gas to golf carts, water systems and more. The FGR2 is backward compatible with the FGR and DGR Series of FreeWave radios, enabling existing customers to leverage and extend their existing investment.

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

### SOLUTIONS



**DRONES & ROBOTICS**



**EARTH MONITORING**



**GOV & DEFENSE**



**IRRIGATION & PRECISION AGRICULTURE**



**ASSET TRACKING**



**OIL & GAS**



**WATER & WASTEWATER**



**SMART CITIES**



**UTILITIES**

# TECHNICAL SPECIFICATIONS

## TRANSMITTER

<b>Frequency Range</b>	902 to 928 MHz
<b>Output Power</b>	Up to 1 W
<b>Range</b>	97 km (60 mi.), clear line of sight
<b>Channel Spacing</b>	230 kHz
<b>RF Data Rate</b>	115.2 kbps, standard speed 153.6 kbps, high speed user-selectable

## RECEIVER

<b>Sensitivity</b>	-108 dBm @ 115.2 for BER 10 <sup>-4</sup> -104 dBm @ 153.2 kbps BER 10 <sup>-4</sup>
<b>IF Selectivity</b>	40 dB at fc +/- 460 kHz
<b>RF Selectivity</b>	65 dB at 896 MHz, 935 MHz
<b>Maximum Input Power</b>	+10 dBm

## DATA TRANSMISSION

<b>Type</b>	Frequency Hopping Spread Spectrum
<b>Modulation</b>	2 level GFSK
<b>Data Throughput</b>	80 kbps, standard speed 115.2 kbps, high speed
<b>Error Detection</b>	32-bit CRC, retransmit on error
<b>Data Encryption</b>	Options: AES 128 / 256-bit encryption and PSST
<b>Hopping Zones</b>	16 zones, user-selectable
<b>Hopping Channels</b>	50 to 112, user-selectable
<b>Hopping Patterns</b>	15 per band, 105 total, user-selectable
<b>Protocol</b>	<b>FGR2-C-U:</b> RS232 / RS422 / RS485 <b>FGR2-CE-U:</b> RS232 / RS422 / RS485 <b>FGR2-T-U:</b> TTL

## CERTIFICATIONS

<b>Safety</b>	Class 1 Div 2 Groups A-D
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## POWER REQUIREMENTS

<b>Operating Voltage</b>	+6 to +30 VDC (+/- 5%) (>7.5 VDC recommended)
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### Current Consumption

Voltage	Transmit	Receive	Idle
+6 VDC	644mA	93 mA	48 mA
+12 VDC	330 mA	60 mA	32 mA
+30 VDC	125 mA	33 mA	23 mA

**Note:** All measurements at 25°C with LEDs disabled.

## INTERFACES

<b>Data Interface</b>	Serial, 1200 bps to 230.4 kbps, DCE
<b>FGR2-C-U:</b>	10-pin shrouded header for power and data, 2mm pin spacing
<b>FGR2-CE-U:</b>	DB9
<b>Diagnostics Interface</b>	Serial, RS232 or TTL
<b>FGR2-C-U:</b>	20-pin header
<b>FGR2-CE-U:</b>	3-pin plug
<b>FGR2-T-U:</b>	20-pin header
<b>RF Connector</b>	<b>FGR2-C-U:</b> SMA Female <b>FGR2-CE-U:</b> TNC Female <b>FGR2-T-U:</b> SMA Female

## GENERAL INFORMATION

<b>Operating Temperature</b>	-40°C to +75°C (-40°F to +167°F)
<b>Humidity</b>	0 to 95%, non-condensing
<b>Dimensions</b>	<b>FGR2-C-U:</b> 127 L x 61 W x 12 H (mm) 5.0 L x 2.4 W x 0.47 H (in) <b>FGR2-CE-U:</b> 173 L x 107 W x 35 H (mm) 6.8 L x 4.2 W x 1.4 H (in) <b>FGR2-T-U:</b> 127 L x 61 W x 12 H (mm) 5.0 L x 2.4 W x 0.47 H (in)
<b>Weight</b>	<b>FGR2-C-U:</b> 58g (0.13 lbs) <b>FGR2-CE-U:</b> 504g (1.1 lbs) <b>FGR2-T-U:</b> 58g (0.13 lbs)

## INFORMATION TO ORDER

Model Number	Description
<b>FGR2-C-U</b>	Board Level
<b>FGR2-CE-U</b>	Rugged Enclosure
<b>FGR2-T-U</b>	Board Level, TTL interface

## CONTACT US

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