

## GXM Series

### GXM-MR 2.4 GHz Global Radio Module



Building on the success of our 900 MHz product family, the FreeWave 2.4 GHz GXM radio has been designed to provide OEMs the performance, reliability and quality they have come to know and expect in our products in a globally available spectrum and full ETSI, FCC, IC, and UL Class I, Division 2 Certifications.

The GXM-MR has all of the functionality of our larger footprint GX family of products and is backward compatible with the I2 Series of radios.

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

#### Key Features

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

**Long Range:** 32 km (20 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 (FHSS) 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 +85°C; C1D2

**Available Options:** TDMA and 256-bit AES encryption

## Transmitter

<b>Frequency Range</b>	2.4 to 2.483 GHz
<b>Output Power</b>	Up to 500 mW with options to limit to 100 mW
<b>Range</b>	Up to 32 km (20 miles) with clear line of sight
<b>Channel Spacing</b>	230 kHz
<b>RF Data Rate</b>	115.2 or 153.6 kbps, user-selectable

## Receiver

<b>Sensitivity</b>	-104 dBm @ 115.2 kbps for BER 10 <sup>-4</sup> -101 dBm @ 153.6 kbps for BER 10 <sup>-6</sup>
<b>IF Selectivity</b>	20 dB at fc +/- 345 kHz
<b>Dynamic Range</b>	+10 dBm 3 <sup>rd</sup> Order Intercept Point at Input Connector

## Data Transmission

<b>Type</b>	Frequency Hopping Spread Spectrum Option: TDMA
<b>Modulation</b>	2 or 4 level GFSK
<b>Data Throughput</b>	115.2 kbps
<b>Error Detection</b>	32-bit CRC, retransmit on error
<b>Data Encryption</b>	Options: 256-bit AES encryption
<b>Hopping Zones</b>	16 zones, user-selectable
<b>Hopping Bands</b>	7, user-selectable
<b>Hopping Channels</b>	3 groups of 80, user-selectable
<b>Hopping Patterns</b>	15 per band, 105 total, user-selectable
<b>Protocol</b>	RS232 / RS485 or TTL

## Power Requirements

<b>Operating Voltage</b>	+6.5 VDC to +30 VDC			
<b>Current Consumption</b>	<b>Voltage</b>	<b>Transmit</b>	<b>Receive</b>	<b>Idle</b>
	+6.5 VDC	375 mA	120 mA	9 mA
	+12 VDC	295 mA	80 mA	5 mA
	+30 VDC	140 mA	51 mA	3 mA

## Interfaces

<b>Data Interface</b>	10-pin header for power, data, and diagnostics 0.25 mm pin spacing
<b>Diagnostics Interface</b>	Serial, RS232 or TTL
<b>RF Connector</b>	MMCX

## General Information

<b>Operating Temperature</b>	-40°C to +85°C (-40°F to +185°F)
<b>Humidity</b>	0 to 95%, non-condensing
<b>Dimensions</b>	70 L x 62 W x 10 H (mm) 2.76 L x 2.44 W x 0.39 H (in)
<b>Weight</b>	37 g (0.8 lbs)

## Certifications

<b>UL</b>	Class I, Division 2
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## Information to Order

Model Number	Description
<b>GXM-MR-R</b>	Board level, RS232
<b>GXM-MR-T</b>	Board level, TTL