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# IO - SERIES

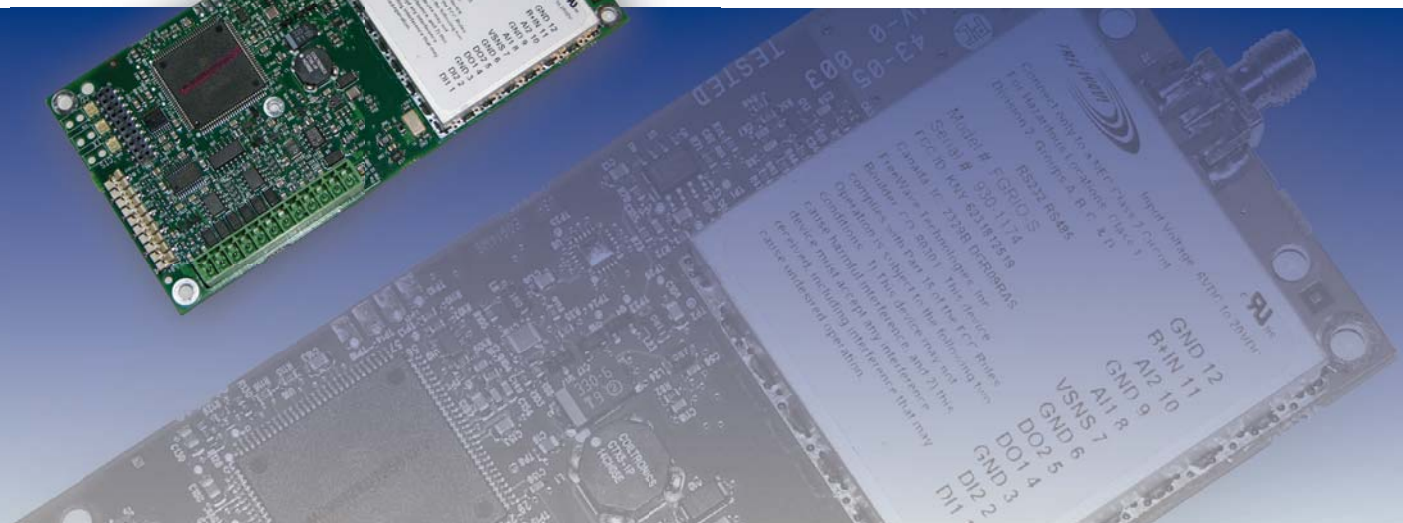
## FGRIO-S Industrial 900 MHz Radio

### Overview:

The FreeWave® Technologies FGRIOS System provides outstanding performance and versatility in wireless transmission of process-control signals. FGRIOS offers “transparent” acquisition, transport and reconstruction of analog, digital and power signals, eliminating the need for associated buried wiring. The RTU requires no altered programming. The FGRIOS is Class 1 Division 2 approved and is lower-cost and provides better signal integrity than vulnerable wiring.

### Features:

- Frequency Hopping - Communication and diagnostics between the IO Master and the IO Slaves.
- Affordable - Low installation and long-term maintenance costs.
- Low latency - Less than one second signal delay.
- High Accuracy - FGRIOS System analog signal fidelity is factory calibrated and drift with time and temperature is much less than that of transducers.
- Short Range/Low power - Suitable for solar powered installations.
- Error Free Communications - 32 bit CRC with automatic retransmission
- Industrial Grade Specifications - 100% tested for RF performance from -40° C to +75° C.
- Input Voltage Range - Input voltage range is 6-20 VDC at full RF output power.
- Noise Immunity – Superior performance in noise congested environments.
- Secure - Proprietary spread spectrum technology prevents unauthorized access.
- Slave Radio – Accepts 2 Digital Inputs (DI), 2 Analog Inputs (AI) and switches 2 Digital Outputs (DO).
- Master Radio – Mirrors signals for up to 4 Slaves and provides Link and Command Alarm signals.
- Wire Replacement – FGRIOS System accuracy is not diminished by distance as it may be in wired systems.



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Technical Specifications

Transmitter	
Frequency Range	902-928 MHz (FHSS)
Output Power	100 mW
Range, Line of Sight	2 Miles with clear LOS
Modulation	2 level GFSK
Occupied Bandwidth	230 kHz
Hopping Patterns	15 per Band, 105 total, user selectable
Hopping Channels	50 to 112, user selectable
Hopping Bands	7, user selectable
RF Connector	Type SMA

Slave Receiver		Slave Analog Inputs	
Sensitivity	10 <sup>-6</sup> BER -98 dBm, 10 <sup>-4</sup> BER -100 dBm	Number of Inputs	2 per Slave, Master Mirrors 4 signals, up to 4 Slaves
Selectivity	20 dB at fc ± 115 kHz, 60 dB at fc ± 145 kHz	Accuracy, Resolution	+/- .1%, 16 bit
System Gain	130 dB	Input Range	.2-5.62V, 94 Kohm Input Resistance

Slave Digital Inputs		Slave Digital Output	
Number of Inputs	2 per Slave	Number of Outputs	2 per Slave
Input pull-up	10 Kohm to 3.3 V	Current Rating	2 Amps Max
Input Connector	Mini Phoenix (3.55mm)	Voltage Rating	Lesser of 20 V or the Radio Supply Voltage
Slave Input to Master Output Delay	1 sec. Max		
Signal Input Voltage Max	+/- 20 V		

Diagnostics Interface	
Connector	Separate 20-pin PCB header

Power Requirement																	
Operating Voltage	6 to 20 VDC																
Average Current Update [mA]	<table border="1"> <thead> <tr> <th>Mode</th> <th>6VDC</th> <th>12 VDC</th> <th>20 VDC</th> </tr> </thead> <tbody> <tr> <td>Transmit</td> <td>120 mA</td> <td>68 mA</td> <td>48 mA</td> </tr> <tr> <td>Receive</td> <td>68 mA</td> <td>38 mA</td> <td>28 mA</td> </tr> <tr> <td>Linked</td> <td>12 mA</td> <td>7 mA</td> <td>6 mA</td> </tr> </tbody> </table>	Mode	6VDC	12 VDC	20 VDC	Transmit	120 mA	68 mA	48 mA	Receive	68 mA	38 mA	28 mA	Linked	12 mA	7 mA	6 mA
Mode	6VDC	12 VDC	20 VDC														
Transmit	120 mA	68 mA	48 mA														
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Linked	12 mA	7 mA	6 mA														

General Information	
Operating Temperature Range	-40° C to +75° C
Dimension	138 L x 76 W x 12 H (mm) (Professional Installation Only)
Weight	58 g
Humidity	0 to 95% non-condensing

FreeWave® Radios Require Professional Installation.

Specifications may change at any time without notice. ©2009 FreeWave Technologies, Inc.



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