

# IO Series

## I2IO-M Industrial 2.4 GHz Industrial Radio



I2IO-M

### OVERVIEW

The I2IO-M System provides outstanding performance and versatility in wireless transmission of process-control signals. FGRIIO 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 I2IO-M is Class 1 Division 2 Approved and is lower-cost and provides better signal integrity than vulnerable wiring.

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

### MODEL

### DIMENSIONS

### PRODUCT OPTIONS

I2IO-M-U

140 L x 70 W x 34 H (mm)

Board Level

### APPLICATIONS



Oil & Gas



Smart Grid



Water & Wastewater



Precision Agriculture

### KEY FEATURES

- **Frequency Hopping:** Communication and diagnostics between the IO Master and the IO Slaves
- **Low Latency:** Less than one second signal delay
- **High Accuracy:** I2IO 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
- **Master Input Voltage Range:** +6 to +30 VDC at full RF output power
- **Noise Immunity:** Superior performance in noise congested environments
- **Secure:** FHSS technology prevents unauthorized access
- **Slave Radio:** Accepts 2 Digital Inputs, 2 Analog Inputs and switches 2 Digital Outputs.
- **Master Radio:** Mirrors signals for up to 4 Slaves and provides Link and Command Alarm signals
- **Wire Replacement:** I2IO System accuracy is not diminished by distance as it may be in wired systems

## I2IO-M 2.4 GHz Industrial Radio Technical Specifications

TRANSMITTER			
Frequency Range	2.4 to 2.483 Ghz (FHSS)	Hopping Patterns	15 per Band, 105 total, user selectable
Output Power	5 mW to 500 mW	Hopping Channels	50 to 80 out of 240 user selectable
Data Link Range	2 miles, Clear Line of Sight	Hopping Bands	7, user selectable
Modulation	2 level GFSK	RF Connector	Type SMA
Occupied Bandwidth	230 kHz		

MASTER RECEIVER		MASTER ANALOG OUTPUTS	
Sensitivity	-105 dBm for BER 10 <sup>-6</sup> -107 dBm for BER 10 <sup>-4</sup>	Number of Outputs	4, can be mapped to up to 4 slaves
IF Selectivity	TBD	Accuracy, Resolution	+/- .1%, 16 bit
System Gain	134 dB	Output Range	.2 - 5.62 V, >10 kohm Load Resistance

MASTER DIGITAL OUTPUTS		MASTER DIGITAL INPUTS	
Number of Outputs	4 per Master, 1 Link, 1 Command Alarm	Number of Outputs	4
Output Connector	Mini Phoenix (3.55mm)	Slave Input to Master Output Delay	1 sec. Max
Slave Input to Master Output Delay	1 sec. Max	Low Input Voltage Range	0 to 1.75 V
Signal Output Voltage Range	0 to 4.6 V	High Input Voltage Range	3.25 to 5.0 V

DATA TRANSMISSION	
Error Detection	32 bit CRC, Retransmit on error
Data Encryption	FHSS Technology
Data Throughput	115.2 kbps
Protocol	RS232 / RS485 / RS422, 1200 baud to 115.2 kbaud
Data Interface	Serial
Data Connector	10 pin header with locking ramp 0.1 inch spacing, power/data connector

DIAGNOSTICS
Connector: Separate 20-pin PCB header

POWER REQUIREMENTS
Operating Voltage: +6 to +30 VDC

Typical Current (mA)	Mode	+6 VDC	+12 VDC	+30 VDC
	Transmit	375 mA	295 mA	140 mA
	Receive	120 mA	80 mA	51 mA
	Idle	9 mA	5 mA	3 mA

GENERAL INFORMATION	
Operating Temperature	-40° C to +75° C
Humidity	0 to 95%, non-condensing
Dimension	140 L x 62 W x 16 H (mm)
Weight	137 g



FreeWave Radios Require Professional Installation. Specifications may change at any time without notice. ©2013 FreeWave Technologies, Inc.

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