I/O Series

FGRIO-M 900 MHz Industrial Radio

KEY FEATURES

Versatility: Gateway or Endpoint function in a single radio.

- **Gateway Radio**: Mirrors signals for up to 4 Endpoints and provides link and command alarm signals.
- **Endpoint Radio**: Accepts 2 digital inputs, 2 analog inputs, and switches 2 digital outputs.

Long Range: 60 miles with clear line of sight.

Secure: Frequency Hopping Spread Spectrum technology prevents detection and unauthorized access.

Error Free Communications: 32-bit CRC with automatic retransmissions.

Input Voltage: +6 to +30 VDC wide input voltage range.

Industrial Grade: 100% tested for RF performance from –40°C to +75°C.

Wire Replacement: FGRIO system accuracy is not diminished by distance as it may be in wired systems.

OVERVIEW

The FGRIO-M System provides outstanding performance and versatility in wireless transmission of process-control signals. FGRIO-M 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 FGRIO-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, CO.

GENERAL INFORMATION

Operating Temperature	-40°C to +75°C
Humidity	0 to 95%, non-condensing
Dimensions	140 L x 70 W x 34 H (mm)
Weight	137 g

INFORMATION TO ORDER

Model Number	**Description**
FGRIO-M	Board Level

TECHNICAL SPECIFICATIONS

TRANSMITTER

Frequency Range	902 to 928 MHz
Type	FHSS
Output Power	5 mW to 1 W (+30dBm)
Data Link Range	Up to 60 miles line of sight
Modulation	2 level GFSK
Occupied Bandwidth	230 kHz
Hopping Patterns	15 per band, 105 total, user-selectable
Hopping Channels	0 to 112, user-selectable
Hopping Bands	7, user-selectable
RF Connector	SMA

RECEIVER

Sensitivity	-108 dBm for BER 1 x 10^{-6} -110 dBm for BER 1 x 10^{-4}
Selectivity	20 dB at fc +/- 115 kHz 60 dB at fc +/- 145 kHz
System Gain	140 dB

DATA TRANSMISSION

Error Detection	32-bit CRC, retransmit on error
Data Encryption	Dynamic Key Substitution
Data Throughput	115.2 kbps
Data Interface	Serial
Protocol	RS232 / RS422 / RS485, 1200 baud to 115.2 kbaud

INTERFACES

Data Connector	10-pin header with locking ramp 0.1 inch spacing, power / data connector
Connector	Separate 20-pin PCB header

POWER REQUIREMENTS

Operating Voltage +6 VDC to +30 VDC

+6 VDC Typical Current
Transmit: 1 A
Receive: 140 mA
Idle: 120 mA

+12 VDC Typical Current
Transmit: 500 mA
Receive: 86 mA
Idle: 70 mA

+30 VDC Typical Current
Transmit: 200 mA
Receive: 43 mA
Idle: 28 mA

MASTER ANALOG OUTPUTS

Number of Outputs	4, can be mapped to a maximum of 4 Slaves
Accuracy / Resolution	+/- 0.1%, 16-bit
Output Range	0.2 to 5.62 V, > kohm Load Resistance Data Interface Serial, 1200 bps to 230.4 kbps, DCE

MASTER DIGITAL OUTPUTS

Number of Outputs	4 per Master, 1 link, 1 Command Alarm
Output Connector	Mini Phoenix (3.55mm)
Slave Input to Master Output Delay	1 Sec. maximum
Signal Output Voltage Range	0 to 4.6 V

MASTER DIGITAL INPUTS

Number of Outputs	4
Slave Input to Master Output Delay	1 Sec. maximum
Voltage Range	0 to 4.6 V

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