

I/O Series

FGR2-IOS & FGR2-IO

900 MHz Industrial Radio



FGR2-IOS-C-U



FGR2-IO-IOE



FGR2-IOS-CE-U

KEY FEATURES

User-configurable: I/O Digital or Analog

Long Range: 60 miles with clear line of sight with the ability to extend through Endpoint/Repeater.

Modbus Gateway can be any FGR Series radio.

Noise Immunity: Superior performance in noise congested environments.

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.

INFORMATION TO ORDER

Model Number	Description
FGR2-IOS-C-U	Board Level
FGR2-IOS-CE-U	Enclosed
FGR2-IO-IOE	Expandable I/O

OVERVIEW

The FGR2-IOS radio with embedded I/O functions is available in either as board level device or in an enclosure. The FGR2-IO-IOE has embedded I/O functions is available in Expandable I/O.

All models can operate in one of two modes: Modbus and Wire Replacement.

- In the Modbus mode, all models can be directly connected as an I/O peripheral to a SCADA network.
- For Wire Replacement mode (wireless signal replication), the all models can operate as an Endpoint linked to an FGRIO-M (Gateway) radio.

The enclosure version also includes switchable and protected resistors for convenience when using 4-20 mA sensors.

- All AIs are reported as 16-bit integers or 32-bit floating points.
- Pulse counting (32-bit) DIs allow detection of 500 used. Pulses and count to 1000 Hz.
- Active data port allows extension by adding external devices.
- Single register access to 16-bit a/d. Two register access for full 20bits.
- Enhance proportional control by 4 to 20 mA AOs with programmable offsets and commloss set points.
- DOs control up to 60 W each and have optional pulse-output protection intermittent rated loads.

These products are also expandable with the IOE-4422 I/O Series.

The FGR2-IOS is UL Class 1, Division 2 approved.

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

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TECHNICAL SPECIFICATIONS

TRANSMITTER

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

RECEIVER

Sensitivity	-107 dBm @ 115.2 for BER 10^{-6} -109 dBm @ 153.6 kbps BER 10^{-4}
Selectivity	20 dB at fc +/- 115 kHz 60 dB at fc +/- 145 kHz
System Gain	140 dB

DATA TRANSMISSION⁽¹⁾

Modulation	2 level GFSK
Data Throughput	115.2 kbps or 153.6 kbps
Error Detection	32-bit CRC, retransmit on error
Hopping Zones	16 zones, user-selectable
Hopping Bands	7, user-selectable
Hopping Channels	50 to 112, user-selectable
Hopping Patterns	15 per band, 105 total, user-selectable
Protocol	RS232 / RS422 / RS485

POWER REQUIREMENTS

Operating Voltage	+6 VDC to +30 VDC		
Current Consumption			
Voltage	Transmit	Receive	Idle
+6 VDC	800 mA	90 mA	24 mA
+12 VDC	380 mA	55 mA	16 mA
+30 VDC	170 mA	40 mA	8 mA

INTERFACES

Data Interface	10-pin header with locking ramp for power and data 2.5mm (0.1in.) pin spacing Separate 20-pin PCB header
Diagnostics Interface	Serial
RF Connector	SMA, TNC (female connector)

GENERAL INFORMATION

Operating Temperature	-40°C to +75°C (-40°F to +167°F)
Humidity	0 to 95%, non-condensing
Dimensions	
FGR2-IOS-C-U:	127 L x 62 W x 16 H (mm) 5.0 L x 2.4 W x 0.63 H (in.)
FGR2-IOS-CE-U:	173 L x 96 W x 35 H (mm) 6.8 L x 3.8 W x 1.4 H (in.)
FGR2-IO-IOE	181 L x 80 W x 35 H (mm) 7.1 L x 3.2 W x 1.4 H (in.)
Weight	
FGR2-IOS-C-U:	60g (0.13 lbs.)
FGR2-IOS-CE-U:	500g (1.1 lbs.)
FGR2-IO-IOE	163g (0.36 lbs.)

INPUT

2: Precision AIs (20-bit, 0 - 5.625 V, 0.1% FS accuracy), also acts as exact-threshold Dis	X	X
2: Dis with counters (32-bits, 1000 Hz), also acts as aux. AIs (10 bits, 0-3.5V, 0.25% FS Accuracy)	X	(2)
1: DI with pull down resistor (5 Kohm)	X	
1: DI with pulsed 50 mA pull-up for long-lines or high noise	X	

MODBUS

WIRE REPLACEMENT

OUTPUT

2: High Current (2 A sink to GND) Dos with current sensing and self-resetting protection	X	X ⁽³⁾
1: AO - 15-bits, 4 to 22 mA, 0.1% FS accuracy, also acts as 50 mA sensor power or DI	X	
1: AO - 16-bits, 4 to 22 mA, 0.1% FS accuracy	X	

INTERNAL

1: Battery/Supply Voltage - 10-bits, 0 to 30 V, 1% FS accuracy	X
1: Radio Temperature -1°C units, -40°C to+70°C, 4°C accuracy	X

Notes

- (1) Data port not operative in Wire Replacement mode.
- (2) Dis operative but there are no counters in Wire Replacement mode.
- (3) No current sensing in Wire Replacement mode.

CONTACT US

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