



Highlights

- Wireless I/O mirroring system
- Integrated radio and onboard I/O design
- Two 4-20 mA inputs/outputs (Radio Module A to B)
- Two configurable discrete I/O (Bi-directional)
- Fixed radio pairing and I/O count for ease of use
- No software programming required
- Designed for use in non-hazardous locations
- -40 °C to 80 °C (-40 °F to 176 °F)
- 900 MHz/915 MHz/2.4 GHz
- Secure AES encryption



US Patent #8,811,459 B1

Simplest, Point-to-Point Wireless Signal Replication Solution

Integrated Radio and I/O Design

The OleumTech® WIO® Radio Kit with Onboard I/O provides instant I/O connectivity and is one of the easiest and most cost-effective solutions for solving a vast number of point-to-point I/O and stranded asset monitoring and control challenges. The RM4 Kit is comprised of Radio Modules A and B.

The RM4 Wireless I/O Kit provides two unidirectional analog 4-20 mA inputs and outputs (Module A to B only). It also provides two independently configurable discrete I/O channels that can be set up for the signals to travel in either direction (Module A to B or B to A). For the sake of simplicity and ease of use, the I/O count in this system is fixed (non-expandable). The RM4 Kit is designed for use in non-hazardous/ordinary locations.

Reliable, Robust, and Secure

The WIO System leverages reliable, robust, and secure RF technology that replaces traditional hardwire systems by eliminating the need to trench and run conduit and wire. Thus, the WIO System provides a significant reduction in both setup time and cost to its users.

The RM4 Wireless I/O Kit is available in 900 MHz, 915 MHz, or 2.4 GHz option. The Radio Kit comes paired from the factory, meaning there is no programming involved, and the over-the-air connection is instant once the system is up and running. The system offers secure RF communication using AES encryption and fail-safe output protection in case RF traffic is interrupted for any reason. The communication response time can be set to either 400 ms or 1 second, giving you additional control over update speed and power consumption.

IO & HARDWARE FEATURES

Analog 4-20 mA Communication	Uni-Directional (Radio A to B Only)
Digital/Discrete Communication	Bi-Directional (Configurable Using DIP Switches)
DIO Mismatch Indication - Right LED	Green = OK / Red = Mismatch
DIN Rail Mounting Compatibility	35 mm Standard DIN Rail (Direct Mount)
Built-In Mounting Hardware	Spring-Loaded Clip-On System
Wire Gauge	Solid / Stranded (AWG) 28-12 Gauge
Wire Rating (Recommended)	300 V RMS, 80 °C and 300 V, 105 °C
Supply Voltage Range	9 - 30 Vdc (±5 %)
Reverse Polarity Protection	Yes
Power Consumption (Maximum)	Radio A: 230 mA @12 V, 120 mA @24 V Radio B: 260 mA @12 V, 120 mA @24 V
Packaging Dimensions (WxHxD)	4.8 x 5.1 x 2.8-in / 123 x 129 x 72 mm
Net Dimensions	0.7 x 3.9 x 4.5-in / 17.5 x 99 x 114 mm
Packaging Weight	Single: 0.5 lbs / 227 g; Double: 0.8 lbs / 363 g
Net Weight (Single Radio)	0.3 lbs / 136 g
Warranty	2-Year Limited



RADIO FEATURES (900 MHz / 915 MHz / 2.4 GHz License-Free ISM Bands)

Communication Type	Point-to-Point Wireless I/O Communication System
Radio Frequency (RF)	902-928 MHz 915-928 MHz 2.4 GHz
RF Security	128-bit AES Encryption
Antenna Connector Type	SMA (Female Connector)
Default Transmission Speed / Response Time	1 Second
Turbo Transmission Speed / Response Time	400 ms
Line of Sight Maximum RF Range	900/915 MHz: 40 Miles (64.4 Km) / 2.4 GHz: 4.3 Miles (7 Km)
RF Transmit Power	900 MHz: 140 mW/1 W (22 or 30 dBm - DIP Switch Selectable) 915 MHz: 140 mW/1 W (22 or 30 dBm - DIP Switch Selectable) 2.4 GHz: 63 mW (18 dBm) 2.4 GHz Low Power: 10 mW (10 dBm)
Receiver Sensitivity	900/915 MHz: -101 dBm / 2.4 GHz: -100 dBm
Spread Spectrum	900/915 MHz: FHSS / 2.4 GHz DSSS
RF Link Indication - Left LED	Green = OK / Solid Yellow = Failed
RF Timeout Trigger	10 Seconds
RF Response Time	Flashing Normal (1 sec) / Flashing Fast (250ms)
RF Signal Quality	Flashing Green = Strong / Flashing Yellow = Weak

ANALOG INPUTS (RADIO A ONLY)

2x Analog Inputs	4 mA to 20 mA (16-bit Resolution)
Accuracy	< 0.2 % of Full Scale
Internal Loop Power	+13.5 Vdc
AI Input Impedance (loop)	250 ohm

DIGITAL I/O (CONFIGURABLE) BOTH RADIO MODULES A + B

IO Channel Count	2 Available on Each Radio Module
Signal Direction	Any Direction, Any Combination (If A = In; B = Out) Signal Direction Controlled via DIP Switches
Digital Inputs	Accepts Dry Contact, Open-Drain (NPN) and Voltage Level Output (0-30 Vdc Max.)
Input Voltage Threshold	Signal "H", Vi > 1.85 Vdc Signal "L", Vi < 1.03 Vdc
Output Rating	Inductive Load (Sink Current): 1 Amp / 30 Vdc Max. Voltage Level Output: Internal Pull-Up: Signal "H", Vo = 3.3 Vdc Signal "L", Vo = 0.2 Vdc Accepts Opt. Ext. Pull-Up, 30V Max. Req. 10 K Resistor
RF Fail-Safe Output Modes	On or Off (DIP Switch Controlled)

ANALOG OUTPUTS (RADIO B ONLY)

2x Analog Outputs	4 mA to 20 mA (16-bit Resolution)
AO Terminal Voltage Range	10 Vdc Min. / 31.5 Vdc Max.
RF Fail-Safe Output Modes	Last Known Value (Def.), <4 mA, >20 mA (DIP)

SAFETY & COMPLIANCE

Ambient Temperature	-40 °C to 80 °C / -40 °F to 176 °F
Humidity	0 to 99 %, Non-condensing
Degree of Protection	IP20 / Plastic
RF Emissions	FCC Part 15 (USA), IC ICES-003 (Canada) ACMA (Australia), AS/NZS CISPR 32 (Australia) EN55032 & EN55024 (EU)
Classification	Ordinary Locations (Non-hazardous)



ORDERING INFORMATION

900 MHz System	BR-0900-RM4
915 MHz System	BR-0915-RM4
2.4 GHz System	BR-2400-RM4

*The maximum RF range data was collected under optimal test conditions, including a clear line of sight between antennas. Actual wireless RF range may vary depending on location, RF interference, weather, antenna type, cable type, and line of sight.

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