DATASHEET

RM4

Highlights

- Wireless I/O mirroring system
- Integrated radio and onboard I/O design
- 2x 4-20 mA inputs/outputs (Radio A to B)
- 2x configurable discrete I/O (Bi-directional)
- Fixed I/O count for ease of use
- No software programming required
- Designed for use in non-hazardous locations
- -40 ˚C to 80 ˚C
- 868 MHz, 900 MHz, or 2.4 GHz radio option
- 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 kit is comprised of Radio Module A and Radio Module B.

The Kit provides two unidirectional analog 4-20 mA inputs and outputs (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 (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). This WIO System option is designed for use in non-hazardous/ordinary locations.

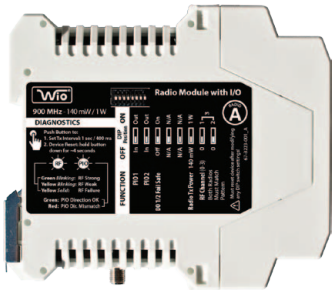
Reliable, Robust, and Secure

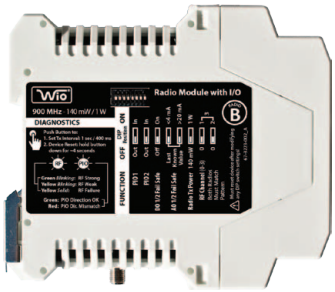
The WIO System leverages reliable, robust, and secure RF technology that replaces traditional hardwire systems by eliminating the need to trench and run conduit and wire. By doing so, the WIO System provides a significant reduction in both setup time and cost to users.

The Radio I/O Kit is available in 900 MHz, 2.4 GHz, or 868 MHz option. The Radio set comes paired from factory lessening the workload to the users. The system offers secure RF communication using AES encryption and fail-safe output protection in case RF goes down 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.

I/O & 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	TBD
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

Communication Type	Point-to-Point Wireless I/O Communication System
Radio Frequency (RF)	868 MHz | 902-928 MHz | 2.4 GHz License-Free ISM Band
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[1]	868 MHz: TBD 900 MHz: Up to 40 Miles (64.4 Km) 2.4 GHz: Up to 5.7 Mile (9.2 Km)
RF Transmit Power	868 MHz: 25 mW (14 dBm) 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	868 MHz: -101 dBm / 900 MHz: -101 dBm / 2.4 GHz: -100 dBm
Spread Spectrum	900 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 (400ms)
RF Signal Quality	Flashing Green = Strong / Flashing Yellow = Weak
RF ID 900 MHz	FCC: MCQ-XBPSX / IC: 1846A-XBPSX
RF ID 2.4 GHz	FCC: OUR-XBEEPRO / IC: 4214A-XBEEPRO
RF ID 868 MHz	TBD

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

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)

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

IO Channel Count	2x Available on Each Radio Module
Signal Direction	Any Direction, Any Combination (If A = In; B = Out) Signal Direction Controlled via DIP Switches
Input Voltage Range	3-30 VDC
Input Voltage Threshold	Signal ("H"): > 2.3 VDC (TBD) 0 Signal ("L"): < 1.1 VDC
Output Rating	1 A Sink Current for Open-Drain Outputs / NPN
RF Fail-Safe Output Modes	On or Off (DIP Switch Controlled)

SAFETY & COMPLIANCE

Operational Temperature	-40 °C to 80 °C / -40 °F to 176 °F
Ambient Temperature	-20 °C to 80 °C / -4 °F to 176 °F
Humidity	0 to 99 %, Non-condensing
Degree of Protection	IP20 / Plastic
RF Emissions	FCC Part 15/IC

ORDERING INFORMATION

868 MHz System	BR-0868-RM4 (Includes Radio A and B)
900 MHz System	BR-0900-RM4 (Includes Radio A and B)
2.4 GHz System	BR-2400-RM4 (Includes Radio A and B)

[1]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.

MADE IN USA

tf 1.866.508.8586 | ph 1.949.305.9009 | fx 1.949.305.9010 | wio.oleumtech.com | sales@oleumtech.com