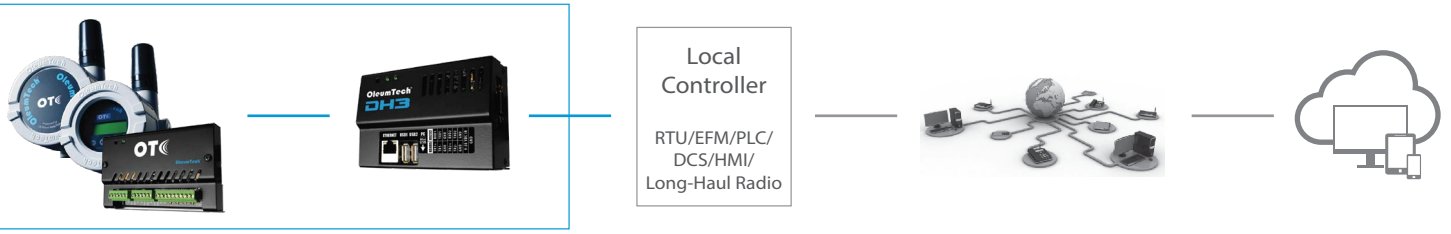
DATASHEET

WM-002

Highlights

- 4 analog inputs (24-bit ADC)
- Independent selectability for 0-10 Vdc or 4-20 mA mode
- 4 programmable digital I/O channels
- Modbus master functionality (RS485)
- Supports Over-the-Air (OTA) functionality for updating the device configuration/calibration*
- -40 ˚C to 80 ˚C (-40 ˚F to 176 ˚F)
- 900 MHz / 915 MHz / 2.4 GHz / 868 MHz
- Secure AES encryption
- Class I, Division 2 (Zone 2) certified

US Patent #6,967,589



OTC Transmitters | OTC Gateway | Network Infrastructure | Cloud (Analytics)

Wireless Multi-I/O Solution with Modbus Master Functionality

Scalable I/O Solution

The OleumTech® OTC Wireless Multi-I/O Module provides a quick and scalable solution for adding analog inputs and digital I/O points to any OTC Sensor and I/O Network. It is equipped with four high resolution analog inputs (24-bit ADC). Each input can be independently selected for either 0-10 Vdc or 4-20 mA mode of operation. It also packs four independently configurable digital channels. Each channel can be setup as an input, counter, output, or pulsed output.

Modbus Master Function

The Wireless Multi-I/O Module also features Modbus Master functionality, which gives users read and write controls over assets connected over its RS485 Serial port.

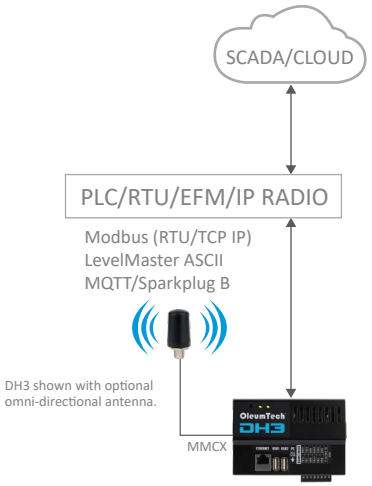
Robust Range, Advanced Networking

With the provided robust RF range, the Wireless Multi-I/O Module can rescue stranded I/O points that was once economically not feasible. The Wireless Multi-I/O Module can be added to the network as needed and its I/O points can be mapped to anywhere within the OTC Network creating an efficient, highly advanced system that is easy to create and manage. The Wireless Multi-I/O Module communicates with an assigned wireless gateway in the OTC Network. This wireless device is certified for use in Class I, Division 2 (Zone 2) hazardous locations.

Technical Specifications

HARDWARE FEATURES	
Device Functionality	· Wireless Multiple Input / Output Module
Embedded Controller	· Ultra-Low Power RISC Microcontroller with Internal FLASH (Field Upgradeable)
Configuration	· Config / Debug Port - RS232 Slave Only (RJ-45) / BreeZ® Software for PC
Serial	· RS485 Port - Modbus Master Only (RJ-45)
I/O Interfaces	· 4 Analog Inputs (24-bit ADC): 0-10 V or 4-20 mA Selectable Modes · 4 Programmable Digital (Discrete) Channels - Supports Mix of Inputs and Outputs - 30 Vdc (Max) Input for All Channels - 1A Sink Current for Open-Drain Outputs - Configurable Debounce Filter
Device Diagnostics	· Health Tags: Supply Voltage, Received Signal Strength Indication (RSSI), RF Refresh, RF Timeout
WIRELESS COMMUNICATIONS	
Radio Band	· ISM Band (License-Free)
900 MHz / 915 MHz	· FHSS, FSK, AES Encryption 256-bit (900 MHz), 128-bit (915 MHz)
2.4 GHz	· DSSS, AES Encryption 128-bit
868 MHz	· LBT-AFA, AES Encryption 128-bit
Bit Rate	· 900/915 MHz: 9600 bps / 115.2 kbps; 2.4 GHz: 250 kbps; 868 MHz: 80 kpbs
Output Power (Max)	· 900/915 MHz: 1000 mW; 2.4 GHz: 63 mW; 868 MHz: 25mW
Receiving Sensitivity	· 900/915 MHz: -110 dBm @ 9600 bps, -100 dBm @ 115.2 kbps · 2.4 GHz: -101 dBm @ 250 kbps; 868 MHz: -106 dBm @ 80 kbps
RF Range	· 900/915 MHz: Up to 40 Miles / 64 km with Clear Line of Sight[1] · 2.4 GHz: Up to 4.3 Miles / 7 km with Clear Line of Sight[1] · 868 MHz: Up to 5.2 Miles / 8.4 km with Clear Line of Sight[1]
CERTIFICATIONS & COMPLIANCE	
EMC/EMI	· FCC Part 15 (USA), IC ICES-003 (Canada), ACMA (Australia) · AS/NZS CISPR 32 (Australia), EN55032 & EN55024 (EU)
Safety	· Class I, Division 2, Groups A, B, C, D T4; Ex nA IIC T4 · Class I, Zone 2 AEx nA IIC T4 · ATEX: Sira 14ATEX4143X; Ex nA IIC T4 Gc, II 3 G · IECEx: SIR 13.0055X; Ex nA IIC T4 Gc
MECHANICAL SPECIFICATIONS	
Dimensions	· 4.9" (W) x 3" (H) x 1.4" (D) / 124.5 mm (W) x 76.2 mm (H) x 35.6 mm (D)
Package Dimensions	· 8" (W) x 6" (H) x 2.5" (D) / 203 mm (W) x 152 mm (H) x 63 mm (D)
Weight	· Net: 0.75 lbs / 0.3 kg; Packaging: 1 lbs / 0.4 kg
Mounting	· DIN Rail Mountable with Height Adjustability
ELECTRICAL SPECIFICATIONS	
DC Power Input	· 9-30 Vdc
Average Power Input	· 2 Watt
900/915 MHz Pwr Cons. @ 12 V	· @100 mW: Idle = 33 mA; Transmit = 138 mA | @1 Watt: Idle = 33 mA; Transmit = 272 mA
900/915 MHz Pwr Cons. @ 24 V	· @100 mW: Idle = 26 mA; Transmit = 92 mA; | @1 Watt: Idle = 26 mA; Transmit = 180 mA
2.4 GHz Pwr Cons. @ 12 V	· @25 mW: Idle = 28 mA; Transmit = 60 mA | @ 63 mW: Idle = 28 mA; Transmit = 74 mA
2.4 GHz Pwr Cons. @ 24 V	· @25 mW: Idle = 22 mA; Transmit = 44 mA | @ 63 mW: Idle = 22 mA; Transmit = 58 mA
868 MHz Pwr Cons. @ 12 V	· @10 mW: Idle = 22 mA; Transmit = 40 mA | @ 25 mW: Idle = 22 mA; Transmit = 49 mA
868 MHz Pwr Cons. @ 24 V	· @10 mW: Idle = 20 mA; Transmit = 28 mA | @ 25 mW: Idle = 20 mA; Transmit = 33 mA
GENERAL SPECIFICATIONS	
Operating Conditions	· Temperature: Class I, Division 2 (Zone 2): -40 °C to 80 °C (-40 °F to 176 °F) · Humidity: 0 to 99 %, Non-Condensing
Warranty	· 2-Year Parts and Labor
Country of Origin	· USA
ORDERING INFORMATION	
Model Numbers	· WM-0900-002, WM-0915-002, 2.4 GHz, WM-2400-002, WM-0868-002
Wirelessly Connects To	· OTC Wireless Gateway
Configuration Cable	· SX1000-CC2, 20-ft All-in-One Configuration Cable

Networking Diagram



OTC GATEWAY

OTC TRANSMITTERS

Point-to-Multipoint
"Star Topology"

*OTA functionality does not support changing the radio settings or upgrading the device firmware.

[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.

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