



### Highlights

- 4x analog inputs (4-20 mA / 0-10 Vdc)
- 2x discrete inputs
- 2x discrete outputs (1.1 Amp cont. / 1.5 Amp pulse)
- Master: Modbus/HART/LevelMaster
- Self-contained, rugged design
- Multi-drop up to 16 slave devices
- Dedicated 10 Vdc output for powering H-Series Resistive Tank Level Sensors
- IP66, -40 °C to 80 °C
- 900 MHz: up to 10 miles (16.1 km)<sup>1</sup>
- 2.4 GHz: up to 4.3 miles (7 km)<sup>1</sup>
- 868 MHz: up to 5.2 miles (8.4 km)<sup>1</sup>
- Secure AES encryption
- Class I, Division 2 (Zone 2) certified



US Patent #6967589



OTC Transmitters

OTC Gateway

Local  
Controller

RTU/EFM/PLC/  
DCS/HMI/  
Long-haul Radio



Network Infrastructure



Cloud (Analytics)

## The Most Flexible Multi-I/O Wireless Transmitter

### Long-Range Multi-Function Transmitter

The OleumTech® IO MAX® Transmitter provides four analog inputs for supporting 4-20 mA or 0-10 Vdc signals. The IO MAX also provides two discrete inputs and two discrete outputs. The MX1 can be configured to operate as a master device interfacing Modbus, LevelMaster ASCII, or HART devices. Multi-drop up to 16 instruments. The IO MAX is powered using an external 9-24 Vdc source. This not only enables its users to customize their power solution, but also allows for the IO MAX to supply continuous power to connected sensors or slave devices if required.

### Reliable, Scalable, and Safe

The field-proven wireless transmitter communicates with an assigned wireless gateway within the OTC Wireless Sensor and I/O Network creating a highly scalable network, accommodating virtually any I/O requirement.

The OleumTech Wireless Transmitter is certified for use in Class I, Division 2 (Zone 2) hazardous locations, and provides a robust RF range.

## Technical Specifications

### HARDWARE FEATURES

Device Functionality	<ul style="list-style-type: none"> <li>Wireless Transmitter: Multiple Analog Inputs, Digital I/O</li> <li>Master Function: Modbus/LevelMaster/HART (Software Selectable)</li> </ul>
Embedded Controller	<ul style="list-style-type: none"> <li>Ultra-Low Power RISC Microcontroller with Internal FLASH (Field Upgradeable)</li> </ul>
Configuration	<ul style="list-style-type: none"> <li>BreeZ® Software for PC</li> </ul>
I/O Interface	<ul style="list-style-type: none"> <li>4x Analog Inputs (0-10 Vdc or 4-20 mA), 24-bit ADC, Independently Selectable via DIP Switches</li> <li>2x Discrete Inputs (Up to 24 Vdc, For Dry Contact or Open-Drain Output/NPN Devices), 20 ms - 2 s Filter</li> <li>2x Discrete Outputs (Open-drain / NPN / 1 Amp Sink Current)</li> </ul>
Accuracy	<ul style="list-style-type: none"> <li>±0.2 % Accuracy for 4-20 mA Input</li> </ul>
RS485	<ul style="list-style-type: none"> <li>Half-Duplex</li> </ul>
Modbus RTU	<ul style="list-style-type: none"> <li>Master Function, Read and Write, Multi-drop up to 16 Slave Devices</li> </ul>
LevelMaster ASCII	<ul style="list-style-type: none"> <li>Master Function, Read Only, Multi-drop up to 16 Slave Devices</li> </ul>
HART	<ul style="list-style-type: none"> <li>Master Function, Read Only (PV, SV, TV, QV), Multi-drop up to 16 HART Instruments</li> </ul>
Power Source	<ul style="list-style-type: none"> <li>External 9-24 Vdc</li> </ul>
Output Power with Ext. Power	<ul style="list-style-type: none"> <li>Continuous Power: 9-24 Vdc, 12 Vdc, 200 mA Total Max, Switchable Power to Analog Sensors: 12 Vdc</li> </ul>
Sensor Power Up Delay	<ul style="list-style-type: none"> <li>Adjustable 0~60,000 ms (Switchable Power Only), 0 = Continuous (External Power Only)</li> </ul>
Device Diagnostics	<ul style="list-style-type: none"> <li>Health Tags: Battery Voltage, Received Signal Strength Indication (RSSI), RF Refresh, RF Timeout</li> </ul>

### WIRELESS COMMUNICATIONS

Type: 900 MHz / 915 MHz 2.4 GHz / 868 MHz	<ul style="list-style-type: none"> <li>ISM Band, Spread Spectrum</li> <li>900 MHz: FHSS (Frequency Hopping), FSK, AES Encryption 256-bit (900 MHz), 128-bit (915 MHz)</li> <li>2.4 GHz: DSSS (Direct-Sequence), AES Encryption 128-bit</li> <li>868 MHz: LBT (Listen Before Talk), AFA (Adaptive Frequency Agility), AES Encryption 128-bit</li> </ul>
Bit Rate	<ul style="list-style-type: none"> <li>900 MHz: 9600 bps / 115.2 kbps; 2.4 GHz: 250 kbps; 868 MHz: 80 kbps</li> </ul>
Output Power (Max)	<ul style="list-style-type: none"> <li>900 MHz: 100 mW; 2.4 GHz: 63 mW; 868 MHz: 25 mW</li> </ul>
Receiving Sensitivity	<ul style="list-style-type: none"> <li>900 MHz: -110 dBm @ 9600 bps, -100 dBm @ 115.2 kbps</li> <li>2.4 GHz: -100 dBm @ 250 kbps; 868 MHz: -101 dBm @ 80 kbps</li> </ul>
RF Range	<ul style="list-style-type: none"> <li>900 MHz: Up to 10 Miles / 16.1 km with Clear Line of Sight<sup>1</sup></li> <li>2.4 GHz: Up to 4.3 miles / 7 km with Clear Line of Sight<sup>1</sup></li> <li>868 MHz: Up to 5.2 Miles / 8.4 km with Clear Line of Sight<sup>1</sup></li> </ul>

### CERTIFICATIONS & COMPLIANCE

EMC/EMI	<ul style="list-style-type: none"> <li>FCC Part 15 (USA), IC ICES-003 (Canada), ACMA (Australia)</li> <li>AS/NZS CISPR 32 (Australia), EN55032 &amp; EN55024 (EU)</li> </ul>
Safety	<ul style="list-style-type: none"> <li>Class I, Division 2, Groups A, B, C, D T4; Ex nA IIC T4 Gc</li> <li>Class I, Zone 2; AEx nA ic IIC T4 Gc / 9-24 Vdc, 0.64 A</li> <li>ATEX: Sira 18ATEX4010X; Ex nA IIC T3 Gc; II 3 G</li> <li>IECEx: SIR 18.0002X; Ex nA IIC T3 Ga / 9-24 Vdc, 0.64 A</li> </ul>

### MECHANICAL SPECIFICATIONS

Dimensions (WxHxD)	<ul style="list-style-type: none"> <li>6.3 x 12.8 x 4.4-inch / 159 mm x 324 mm x 111 mm</li> </ul>
Package Dimensions	<ul style="list-style-type: none"> <li>10.38 x 14.38 x 6.5-inch / 26.4 cm x 36.5 cm x 16.5 cm</li> </ul>
Weight	<ul style="list-style-type: none"> <li>Net: 5.5 lbs / 2.4 kg; Package: 6.5 lbs / 3.5 kg</li> </ul>
Connection Fitting	<ul style="list-style-type: none"> <li>3x 3/4-inch NPT Female, Pipe Mountable</li> </ul>
Enclosure Casing Material	<ul style="list-style-type: none"> <li>Type 4X Aluminum; IP66</li> </ul>

### ELECTRICAL SPECIFICATIONS

DC Power Input	<ul style="list-style-type: none"> <li>9-24 Vdc</li> </ul>
Power Consumption @ 12 V	<ul style="list-style-type: none"> <li>Average Current: 0.35 mA (Tx Pwr @100 mW, Tx Interval @ 60 sec)</li> <li>Average Current: 0.66 mA (Tx Pwr @100 mW, Tx Interval @ 30 sec)</li> <li>Average Current: 18.58 mA (Tx Pwr @100 mW, Tx Interval @ 1 sec)</li> </ul>
Power Consumption @ 24 V	<ul style="list-style-type: none"> <li>Average Current: 0.21 mA (Tx Pwr @100 mW, Tx Interval @ 60 sec)</li> <li>Average Current: 0.38 mA (Tx Pwr @100 mW, Tx Interval @ 30 sec)</li> <li>Average Current: 10.44 mA (Tx Pwr @100 mW, Tx Interval @ 1 sec)</li> </ul>

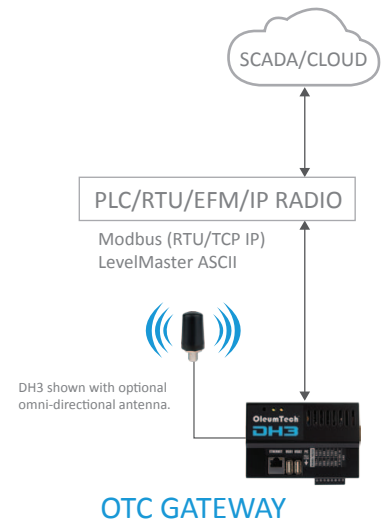
### GENERAL SPECIFICATIONS - TRANSMITTER

Operating Conditions	<ul style="list-style-type: none"> <li>Ambient Temperature (Class I, Division 2 / Zone 2): -40 °F to 176 °F (-40 °C to 80 °C)</li> <li>Humidity: 0 to 99 %, Non-Condensing</li> </ul>
Warranty	<ul style="list-style-type: none"> <li>2-Year Parts and Labor</li> </ul>
Country of Origin	<ul style="list-style-type: none"> <li>USA</li> </ul>

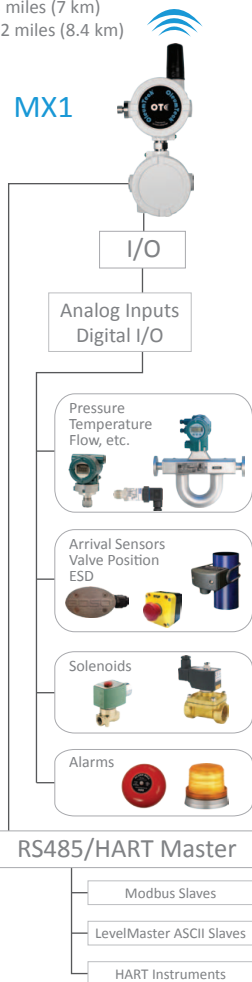
### ORDERING INFORMATION

Model Numbers	<ul style="list-style-type: none"> <li>WT-0900-MX1, WT-0915-MX1, WT-2400-MX1, WT-0868-MX1</li> </ul>
Wirelessly Connects To	<ul style="list-style-type: none"> <li>OTC Wireless Gateway</li> </ul>
Configuration Cable	<ul style="list-style-type: none"> <li>SX1000-CC2, 20-ft All-in-One Configuration Cable</li> </ul>

## Networking Diagram



**RF RANGE<sup>1</sup>**  
 900 MHz: Up to 10 miles (16.1 km)  
 2.4 GHz: Up to 4.3 miles (7 km)  
 868 MHz: Up to 5.2 miles (8.4 km)



<sup>1</sup>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.

