### Highlights

- Wirelessly gather/distribute sensor data
- Map I/O anywhere within the network
- Modbus Master/Slave functionality
- 1 configurable Serial/RTU port (RS232/RS485)
- 1 dedicated RS485 port (RJ-45)
- 4 analog inputs (0-5 Vdc)
- 2 discrete inputs & 2 discrete outputs
- -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

### The OleumTech® DH1 Wireless Gateway

The OleumTech® DH1 Wireless Gateway plays an integral role in the OTC Wireless Sensor and I/O Network. It possesses the ability to aggregate data from OTC wireless transmitters and I/O modules onto its 320-point register holding table. Third-party devices can access the data over the Modbus or LevelMaster ASCII protocol.

### Primary Data Collection Point

The DH1 is equipped with onboard I/O, comprised of 4 analog inputs (0-5 Vdc), 2 digital inputs, and 2 digital outputs. If additional I/O points are needed, integrate the OleumTech RS485 Modular I/O Expansion System with the DH1 or any other gateway for added versatility.
# Technical Specifications

## HARDWARE FEATURES

<table>
<thead>
<tr>
<th>Device Functionality</th>
<th>Embedded Controller</th>
<th>Serial Interfaces</th>
<th>I/O Interfaces</th>
<th>Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial Wireless Gateway with Onboard I/O</td>
<td>32-bit Low Power ARM7 Microcontroller with Internal FLASH (Field Upgradeable)</td>
<td>Modbus Master/Slave, LevelMaster ASCII Slave, ROC-Link Master (Supports Opcodes 17 and 10)</td>
<td>4 Analog Inputs (0-5 Vdc) with 12-bit ADC</td>
<td>Config / Debug Port - RS232 Slave Only (RJ-45) / BreeZ® Software for PC</td>
</tr>
</tbody>
</table>

## WIRELESS COMMUNICATIONS

<table>
<thead>
<tr>
<th>Radio Band</th>
<th>ISM Band (License-Free)</th>
<th>900 MHz / 915 MHz</th>
<th>2.4 GHz</th>
<th>868 MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bit Rate</td>
<td>900/915 MHz: 110 dBm @ 9600 bps, -100 dBm @ 115.2 kbps</td>
<td>900/915 MHz: 1000 mW</td>
<td>2.4 GHz: 63 mA</td>
<td>868 MHz: 80 kbps</td>
</tr>
<tr>
<td>Output Power (Max)</td>
<td>900/915 MHz: -110 dBm @ 9600 bps, -106 dBm @ 80 kbps</td>
<td>2.4 GHz: -101 dBm</td>
<td>900/915 MHz: -110 dBm @ 9600 bps, -100 dBm @ 115.2 kbps</td>
<td>2.4 GHz: -101 dBm @ 250 kbps, 868 MHz: -106 dBm @ 80 kbps</td>
</tr>
<tr>
<td>Receiving Sensitivity</td>
<td>900/915 MHz: Up to 40 Miles / 64 km with Clear Line of Sight1 (Gateway-to-Gateway)</td>
<td>2.4 GHz: Up to 4.3 Miles / 7 km with Clear Line of Sight2</td>
<td>900/915 MHz: Up to 7500 Feet / 1.4 Miles / 2.3 km with Clear Line of Sight1</td>
<td>868 MHz: Up to 5.2 Miles / 8.4 km with Clear Line of Sight1</td>
</tr>
<tr>
<td>RF Range</td>
<td>900/915 MHz: Up to 40 Miles / 64 km with Clear Line of Sight1 (Gateway-to-Gateway)</td>
<td>2.4 GHz: Up to 4.3 Miles / 7 km with Clear Line of Sight2</td>
<td>900/915 MHz: Up to 7500 Feet / 1.4 Miles / 2.3 km with Clear Line of Sight1</td>
<td>868 MHz: Up to 5.2 Miles / 8.4 km with Clear Line of Sight1</td>
</tr>
</tbody>
</table>

## 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) |
| Package Weight | ~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
- Power Consumption @12 Vdc: 900/915 MHz @ 1000 mW: Receive Avg 63 mA, Transmit Avg 348 mA
- 2.4 GHz @ 63 mW: Receive Avg 61 mA, Transmit Avg 112 mA
- 868 MHz @ 25 mW: Receive Avg 58 mA, Transmit Avg 72 mA
- Power Consumption @24 Vdc: 900/915 MHz @ 1000 mW: Receive Avg 40 mA, Transmit Avg 174 mA
- 2.4 GHz @ 63 mW: Receive Avg 38 mA, Transmit Avg 61 mA
- 868 MHz @ 25 mW: Receive Avg 37 mA, Transmit Avg 45 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

## CERTIFICATIONS & COMPLIANCE

- EMC/EMI: FCC Part 15 (USA), IC ICES-003 (Canada), ACMA (Australia)
- Safety: Class I, Division 2, Groups A, B, C, D, T4; Ex na IIC T4
- MECHANICAL SPECIFICATIONS: Class I Zone 2 ATEX, Ex na IIC T4
- Safety: Class I Zone 2 ATEX, Ex na IIC T4
- 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

## ORGANIZATIONAL INFORMATION

- Model Numbers: WG-0900-DH1, WG-0915-DH1, WG-2400-DH1, WG-0868-DH1
- Wirelessly Connects To: OTC Wireless Devices (Gateways, Transmitters, I/O Modules)
- Configuration Cable: SX1000-CC2, 20-ft All-in-One Configuration Cable

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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.