The Most Reliable Wireless Tank Level Monitoring System

The field-proven wireless level 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.

OleumTech wireless level transmitters are certified for use in Class I, Division 1 (Zone 0) hazardous locations. They are intrinsically safe, designed not to cause a spark and can be serviced without being removed from a process.

The self-contained, battery-powered transmitter and sensor combination delivers exceptional performance, reliability, and accuracy, and is made to thrive under extreme outdoor conditions.

All OleumTech Resistive Level Sensors offer industry-leading 3-in-1 monitoring capabilities of product (oil), interface (water), and temperature from a single instrument. Ordering the SM-RL2 and SM-RL2-T transmitter option provides two additional discrete inputs, giving you a total of 5-in-1 monitoring capabilities.

The SM-RL1-T and SM-RL2-T options are compatible with the 1/4” resolution sensors providing API 18.2 compliance for handling custody transfer applications while the SM-RL1 and SM-RL2 work with 1/2” resolution sensors. A single, replaceable battery pack powers both the transmitter and sensor and can last up to 10 years.1

OleumTech® designed the OTC Wireless Resistive Level Transmitter to connect and power its flagship line of Resistive Tanks Level Sensors for enabling remote collection of critical tank level data. The self-contained, battery-powered transmitter and sensor combination delivers exceptional performance, reliability, and accuracy, and is made to thrive under extreme outdoor conditions.

Highlights

- Monitor product, interface & temperature using a single Resistive Level Sensor
- Up to a 10-year battery life¹
- ± 1/8” accuracy on 1/4” sensor* (T option)
  *API 18.2-compliant
- ± 1/4” accuracy on 1/2” sensor
- Flex (PTFE) or rigid (316 SS) sensor option
- Multiple liquid compatibility
- Sensor requires a one-time only calibration
- Installs in minutes: Quick Connect eliminates sensor wiring error and hassle
- Highly resistant to H2S damage, scaling, and paraffin buildup (Limited lifetime warranty, please contact your OleumTech representative for details)
- Self-contained, rugged design, IP66
- Sensor supports a wide temperature range
  -40 °C to 120 °C / -40 °F to 248 °F
- 900 MHz / 915 MHz / 2.4 GHz / 868 MHz
- Secure AES encryption
- Class I, Division 1 (Zone 0), Intrinsically Safe

OTC Wireless Resistive Level Transmitters

2 Discrete Inputs Provided

US Patent #6,967,589 & #8,763,455 B1
Sensor only requires a one-time calibration

**Wireless Resistive Level Transmitters**

**OleumTech Level Sensors are Ideal for:**
- Production Tanks
- Water Tanks
- SWD Locations
- Separators
- Condensate Tanks
- Midstream Collection and Blend Tanks
- Refinery Holding Tanks
- Chemical Tanks
- and Many Others

**SM-RL1 or SM-RL1-T**
- The Flex Level Sensor is shown with the OTC SM Series Wireless Transmitter SM-RL1 or SM-RL1-T option
- 20" coiled diameter (minimum): Easy to transport and install

**SM-RL2 or SM-RL2-T**
- The Rigid Level Sensor is shown with the OTC SM Series Wireless Transmitter SM-RL2 or SM-RL2-T option
- 2 discrete inputs available for SM-RL2 and SM-RL2-T
- Quick Connect allows for faster installs and gives ability to program on or off the tanks
- Height-adjustable compression fitting
- Sensor only requires a one-time calibration
- Monitor product, interface, and temperature using a single sensor
- Supports a wide temperature range
  - -40 °C to 120 °C / -40 °F to 248 °F
- Multiple fluid compatibility
- Highly resistant to H2S damage, scaling, and paraffin buildup (Limited lifetime warranty, please contact your OleumTech representative for details)
- 1/4” resolution with ±1/8” accuracy*
- *API 18.2-compliant
- 1/2” resolution with ±1/4” accuracy

**Flex (PTFE) Resistive Level Sensor**
- 20" coiled diameter (minimum): Easy to transport and install

**Rigid (316 SS) Resistive Level Sensor**

**Wireless:** 900 MHz, 915 MHz, 2.4 GHz, 868 MHz

Battery-powered, life up to 10 years

**OTC Transmitters**
**OTC Gateway**
**Network Infrastructure**
**Cloud (Analytics)**
**Technical Specifications (Transmitter)**

### HARDWARE FEATURES
- **Device Functionality**: OTC Wireless Transmitter with Support for Resistive Level Sensors
- **Model Configuration**:
  - SM-RL1: 1/2" Resolution, Product, Interface and Temperature (5-pin Quick Connect)
  - SM-RL2: 1/2" Resolution, 2 Discrete Inputs + Product, Interface and Temperature (6-pin Quick Connect)
  - SM-RL1-T: 1/4" Resolution, Product, Interface and Temperature (8-pin Quick Connect)
  - SM-RL2-T: 1/4" Resolution, 2 Discrete Inputs + Product, Interface and Temperature (8-pin Quick Connect)
- **Embedded Controller**: Ultra-Low Power RISC Microcontroller with Internal FLASH (Field Upgradable)
- **Configuration**: Standard RS232 Serial / BreeZ Software for PC (v5.5 or higher for 1/4" Resolution Models)
- **Resolution**: Resolution Depends on Sensor Type: 1/4" (6.4 mm) or 1/2" (12.7 mm)
- **Accuracy**:
  - 1/4" Resolution Sensor: ±1/8" (2/16") Accuracy; 1/2" Resolution Sensor: ±1/4" Accuracy
  - 6.4 mm Resolution Sensor: ±0.3 mm Accuracy; 12.7 mm Resolution Sensor: ±0.6 mm Accuracy
- **2 Discrete Inputs**: Dry-Contact, NPN (Sink), Debounce Filter 20 - 2000 ms, 16-bit Counter (Available on SM-RL2/SM-RL2-T)
- **Minimum Sensor Read Interval**: 5 Seconds
- **Power Source**: Self-Contained, Internal 3.6 Vdc Lithium Battery
- **Internal Battery Life**: Up to 10 Years, Based on User Defined Reporting Intervals
- **Device Diagnostics**: Health Tags: Battery Voltage, Received Signal Strength Indication (RSSI), RF Refresh, RF Timeout, Error Codes

### 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: 10 mW; 2.4 GHz: 63 mW; 868 MHz: 25 mW
- **Output Power (Max)**:
  - 900/915 MHz: -101 dBm @ 250 kbps; 868 MHz: -106 dBm @ 80 kbps
- **Receiving Sensitivity**: 2.4 GHz: -101 dBm @ 250 kbps; 868 MHz: -106 dBm @ 80 kbps
- **RF Range**:
  - 900/915 MHz: Up to 7500 Feet / 1.4 Miles (2.3 km) with Clear Line of Sight
  - 2.4 GHz: Up to 4.3 Miles (7 km) with Clear Line of Sight
  - 868 MHz: Up to 5.2 Miles (8.4 km) with Clear Line of Sight

### 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 1, Groups A, B, C, D T3C; Ex ia IIC T3
  - Class I, Zone 0; AEx ia IIC T3
  - ATEX: Sira 13ATEX2142X; Ex ia IIA T3 Ga; II 1 G
  - IECEx: SRC 13.0054X; Ex ia IIC T3 Ga

### MECHANICAL SPECIFICATIONS
- **Dimensions, RL1**:
  - SM-RL1/SM-RL1-T: 5" (W) x 7.9" (H) x 4.4" (D) / 127 mm (W) x 201 mm (H) x 112 mm (D)
- **Dimensions, RL2**:
  - 10.25" (W) x 14" (H) x 6.5" (D) / 260mm (W) x 356mm (H) x 165mm (D)
- **Package Dimensions**: SM-RL1/SM-RL1-T: -5.5 lbs / 2.5 kg, SM-RL2/SM-RL2-T: -7 lbs / 3.2 kg
- **Connection Fitting**: Quick Connect Adapter to Sensor - No Wiring Required, RL2: 2 3/4" NPT Female Ports (Both Plugged)
- **Enclosure Casing Material**: Type 4X Aluminum; IP66

### GENERAL SPECIFICATIONS
- **Sensor**: Ambient Temperature (Class I, Division 1): -40 °C to 120 °C (-40 °F to 248 °F)
- **Transmitter**: Ambient Temperature (Class I, Division 1 / Zone 0): -40 °C to 70 °C (-40 °F to 158 °F)
- **Transmitter**: Ambient Temperature (Non-Hazardous Applications): -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**:
  - 1/2": SMxxxx-RL1 / 3/4": SMxxxx-RL1-T / 1/2" w/ DI: SMxxxx-RL2 / 1/4" w/ DI: SMxxxx-RL2-T
  -xxxx = 900 MHz: 5000 / 915 MHz: 5010 / 2.4 GHz: 5400 / 868 MHz: 5020
- **Wirelessly Connects To**: OTC Wireless Gateway
- **Configuration Cable**: SX1000-CC2, 20-ft All-in-One Configuration Cable
- **Replacement Battery**: Use OleumTech SX1000-BP3 Only

### SENSOR COMPATIBILITY
- 1/2" Sensor Kits w/Float(s): 1/2" TGooxfx (Flex) and ZGooxfx (Rigid)
- 1/4" Sensor Kits w/Float(s): 1/4" THooxfx (Flex) and ZHooxfx (Rigid)

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1 Ambient temperature and one transmission per 1 min interval without any retries were used to calculate battery life. Actual battery life may vary depending on environmental factors, application, and usage. Use data shown above only as general point of reference. See OleumTech Battery Life Expectancy Chart for predicted battery life based on reporting interval.

2 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.
## Technical Specifications (Level Sensors)

### SENSOR

<table>
<thead>
<tr>
<th>Type</th>
<th>RIGID: 316 Stainless Steel &quot;SS&quot;</th>
<th>FLEX: Polytetrafluoroethylene &quot;PTFE&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Measurement Capabilities (3-in-1)</strong></td>
<td>Extremely Reliable and Accurate Resistive Reed Switch Technology</td>
<td></td>
</tr>
<tr>
<td><strong>Lengths Offered in US Units</strong></td>
<td>2 to 26 ft Length in 1 ft Increments</td>
<td>8 to 38 ft Length in 1 ft Increments</td>
</tr>
<tr>
<td><strong>Lengths Offered in Metric</strong></td>
<td>0.61 to 7.9 m in 0.31 m increments</td>
<td>2.44 to 11.58 m in 0.31 m increments</td>
</tr>
<tr>
<td><strong>Resolution and Accuracy</strong></td>
<td>Option 1: 1/2&quot; (12.7 mm) Resolution with ±1/4&quot; (±6.4 mm) Accuracy (6-pin Quick Connect)</td>
<td>Option 2: 1/4&quot; (6.4 mm) Resolution with ±1/8&quot; (±3.2 mm) Accuracy (8-pin Quick Connect)</td>
</tr>
<tr>
<td><strong>Tank Mating Connection (Adjustable Compression Fitting)</strong></td>
<td>316 SS Quick Connect: 6-pin Connection for 1/2&quot; Resolution, 8-pin Connection for 1/4&quot; Resolution</td>
<td></td>
</tr>
<tr>
<td><strong>Temperature Accuracy</strong></td>
<td>±1 °C</td>
<td>±1 °C</td>
</tr>
<tr>
<td><strong>Anchor Weight Diameter</strong></td>
<td>N/A</td>
<td>2.4&quot; / 60.3 mm</td>
</tr>
<tr>
<td><strong>Height of Anchor Weight</strong></td>
<td>N/A</td>
<td>8 to 19 ft Sensor: 5&quot;</td>
</tr>
<tr>
<td><strong>Coiled Diameter</strong></td>
<td>N/A</td>
<td>20&quot; (50.8 cm) Coiled Diameter</td>
</tr>
<tr>
<td><strong>Minimum Measurement from Bottom (Deadband)</strong></td>
<td>2&quot; (50.8 mm) from Bottom</td>
<td>From Top of Anchor Weight</td>
</tr>
<tr>
<td><strong>Pressure Rating</strong></td>
<td>Float Dependent</td>
<td>Float Dependent</td>
</tr>
<tr>
<td><strong>Sensor Only without Float(s)</strong></td>
<td>569 PSI (39 Bar)</td>
<td>142 PSI (9.8 Bar)</td>
</tr>
<tr>
<td><strong>Sensor w/ 316 SS Float - Small</strong></td>
<td>440 PSI (30 Bar)</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Sensor w/ 316 SS Float - Large</strong></td>
<td>356 PSI (24.5 Bar)</td>
<td>142 PSI (9.8 Bar)</td>
</tr>
<tr>
<td><strong>Sensor w/ Polyvinylidene Fluoride (PVDF) Float</strong></td>
<td>72.5 PSI (5 Bar)</td>
<td>72.5 PSI (5 Bar)</td>
</tr>
</tbody>
</table>

### Float Options:

- **316 Stainless Steel - Small, (Fx0)**
  - Compatible Only with Rigid Sensor Length up to 7 ft; Prod: 0.64 SG, Intf: 0.96 SG, ID 0.72" (18.3 mm)
  - OD 2.05" (52.1 mm), Inner Clearance: 0.04" (1 mm)

- **316 Stainless Steel - Large, (Fx1)**
  - Product: 0.62 SG, Interface: 0.95 SG, ID 1.1" (27.9 mm), OD 2.76" (70.1 mm), Inner Clearance: 0.5" (12.7 mm)

- **Polyvinylidene Fluoride (PVDF), (Fx3)**
  - Product: 0.64 SG, Interface: 0.96 SG, ID 1.1" (27.9 mm), OD 2.91" (73.9 mm), Inner Clearance: 0.5" (12.7 mm)

### Operating Temp. Sensing Area

-40 °C to 120 °C (-40 °F to 248 °F)

### Certifications

- Class I, Division 1, Groups C, D; T4; Ex ia IIB T4 Ga
- ATEX: Sira 16ATEX2229X; Ex ia IIB T4 Ga
- IECEx: SIR 16.0079X; Ex ia IIB T4 Ga

### Device Compatibility

- OleumTech WT, SM, and H Series Resistive Level Transmitters
- The Sensor is Powered by the Transmitter

### Kit Ordering:

- **1/2" Resolution with Float(s):**
  - ZGxxxFxx
  - TGxxxFxx

- **1/4" Resolution with Float(s):**
  - ZHxxxFxx
  - THxxxFxx

### Contact Information

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