Resistive Liquid Level Transmitter

- All-in-one wireless tank level monitoring solution
- One-person install job, regardless of Flex Sensor length
- Installs quickly, get off the catwalk faster than any other technology
- Provides high quality data, peace-of-mind performance
- Ideal for harsh and extreme conditions
- Safest liquid level solution available

OleumTech®
The OleumTech® LL3 Resistive Liquid Level Transmitter is capable of monitoring product, interface, and temperature, making it ideal for industrial tank level applications. The level output in inches or cm. Additional data such as volume and tank full % can be reported as well based on user preference. The LL3-D offers 1x discrete input, providing 4-in-1 capability.

**SENSOR OPTIONS**

The Resistive Transmitter mates to either OleumTech Flex or Rigid Resistive Sensor that is sold separately. The flex sensor is available in 8 to 38 ft (2.4 to 11.6 m) lengths while the rigid sensor is offered in 2 to 17 ft (0.6 to 5.2 m) lengths. Both versions are available in 1 ft (0.3 m) increments and can be ordered with a single or dual-float configuration option.

**LOCAL DISPLAY**

The device features a 32-character local LCD display for instantly reading process data, battery voltage, and RF strength (RSSI). When the display is set to configuration mode, users can set all of its parameters, perform calibration, and connect to a network just using the push button interface without the need of any configuration cables.

**3-IN-1 or 4-IN-1 MONITORING**

Highly Reliable Wireless Tank Level Monitoring Solution.

**BATTERY-POWERED**

The LL3 and LL3-D Transmitters rely on power from a replaceable battery. The system is engineered to achieve maximum battery life, providing +7 years of life from a single battery.

**INTRINSICALLY SAFE**

Designed for use in Class I, Division 1 (Zone 0) hazardous locations. These Transmitters are intrinsically safe, meaning they cannot cause a spark and can be serviced without being removed from a process.

**BreeZ® SOFTWARE**

The OTC Sensor Network is managed using the BreeZ Software by OleumTech, provided free of charge. The Resistive Transmitters can be configured using the push button interface or BreeZ Software.

**COMMUNICATES WITH WIRELESS GATEWAY**

The Resistive Transmitter is one of many Wireless Transmitters that communicates with an OleumTech Wireless Gateway within its network, creating a highly scalable network, accommodating virtually any level or I/O requirement.
**HARDWARE FEATURES**

- **Device Functionality**: Wireless Transmitter: Liquid Level Sensing Using Resistive Technology
  - LL3: 3-in-1 Measurement Capability: Product, Interface and Temperature
  - LL3-D: 4-in-1 Measurement Capability: Product, Interface and Temperature + 1x Discrete Inputs

- **Embedded Controller**: Ultra-Low Power RISC Microcontroller with Internal FLASH (Field Upgradable)

- **Configuration**: Standard RS232 Serial / BreeZ® Software for PC

- **Sensor Type**: Resistive

- **Resolution**: ±1/8-inch for 1/4-inch Resolution Sensor ; ±1/4-inch for 1/2-inch Resolution Sensor
  - ±3.2 mm for 6.4 mm Resolution Sensor ; ±6.4 mm for 12.7 mm Resolution Sensor

- **Power Source**: Self-Contained, Internal 3.6 VDC Lithium Battery

- **Internal Battery Life**: Over 7 Years, Based on User Defined Reporting Intervals

- **Local LCD Display**: 32 Character Display (16x2 Lines) with 4 Function Keys + Read Button

- **Instant Displayable Read**: Product / Interface / Temperature / Battery Voltage / RF Status

- **Local Configuration**: Integral LCD with Push Button Interface

- **Self-Diagnostics**: Contains Comprehensive Self-Checking Software and Hardware for Continuous Monitoring of Operation

**WIRELESS COMMUNICATIONS**

- **Type**: ISM Band, Spread Spectrum
  - 900 MHz: FHSS (Frequency Hopping), FSK, AES Encryption 256-bit (900 MHz), 128-bit (915 MHz)
  - 2.4 GHz: DSSS (Direct-Sequence), AES Encryption 128-bit

- **Bit Rate**: 900 MHz: 9600 bps / 115.2 kbps ; 2.4 GHz: 250 kbps

- **Output Power**: 900 MHz: Up to 10 mW; 2.4 GHz: 10 mW or 63 mW

- **Receiving Sensitivity**: 900 MHz: -110 dBm @ 9600 bps, -100 dBm @ 115.2 kbps ; 2.4 GHz: -100 dBm @ 250 kbps

- **RF Range**: 900 MHz: Up to 7500 Feet (2.3 km) with Clear Line of Sight
  - 2.4 GHz: Up to 7 km / 4.3 miles with Clear Line of Sight

**CERTIFICATIONS & COMPLIANCE**

- **EMC/EMI**: FCC Part 15 (USA)
  - IC ICES-003 (Canada)

- **Safety**: Class I, Division 1, Groups A, B, C, D T3C; Ex ia IIC T3
  - Class I, Zone 0 AEx ia IIC T3 Ga; II 1 G; -20 °C ≤ Tamb ≤ 70 °C

- **ATEX**: Sira 13ATEX2142X; Ex ia IIC T3 Ga; II 1 G; -20 °C ≤ Tamb ≤ 70 °C

- **IECEx**: SIR 13.0054X; Ex ia IIC T3 Ga; -20 °C ≤ Tamb ≤ 70 °C

**MECHANICAL SPECIFICATIONS**

- **Dimensions**: 5.25" (W) x 9" (H) x 4.25" (D) / 134mm (W) x 230mm (H) x 108mm (D)

- **Package Dimensions**: 10.25" (W) x 14" (H) x 6.5" (D) / 260mm (W) x 356mm (H) x 165mm (D)

- **Weight**: Net: 4 lbs / 1.8 kg; Gross: 7 lbs / 3.2 kg

- **Connection Fitting**: Quick Connect Adapter to Sensor - No Wiring Required

- **Enduser Casing Material**: Type 4X Aluminum; IP66

**GENERAL SPECIFICATIONS**

- **Ambient Temperature (Class I, Division 1, Transmitter)**: -40 °F to 158 °F (-40 °C to 70 °C)

- **Operating Conditions**: Ambient Temperature (Class I, Division 1, Transmitter) -40 °F to 158 °F (-40 °C to 70 °C)

- **LCD Screen**: -4 °F to 158 °F (-20 °C to 70 °C)

- **Humidity**: 0 to 99 %, Non-Condensing

**Warranty**: 2-Year Parts and Labor

**Country of Origin**: USA

**ORDERING INFORMATION**

- **Transmitter Model Number(s)**: 900 MHz: WT-0900-LL3; 2.4 GHz: WT-2400-LL3

- **Sensor Part Numbers**: Rigid 1/4-inch: 60-4000-XXX; Rigid 1/2-inch: 60-4001-XXX; Flex 1/2-inch: 60-4101-XXX

- **Wirelessly Connects To**: Wireless Gateway: DH1, DH2, or DH3

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1 70°F Fahrenheit ambient temperature and one transmission per 15 min interval without any retries were used to calculate battery life. The data only applies to a new battery part number SX1000-BP3. 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.
### Resistive Liquid Level Sensor

3-in-1 monitoring solution: product, interface, temp.
- Installs quickly, get off the catwalk faster than any other technology
- Provides high quality data, peace-of-mind performance
- Ideal for harsh and extreme conditions
- Safest liquid level solution available
- Lifetime limited warranty on floats

### Technical Specifications

<table>
<thead>
<tr>
<th>Sensor</th>
<th>Rigid: 316 Stainless Steel</th>
<th>Flex: Polytetrafluoroethylene “PTFE”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Highly Reliable Resisitive Reed Switch</td>
<td>Highly Reliable Resisitive Reed Switch</td>
</tr>
<tr>
<td>Measures</td>
<td>Product, Interface, and Temperature</td>
<td>Product, Interface, and Temperature</td>
</tr>
<tr>
<td>Lengths</td>
<td>2-17 ft in 1 ft increments (0.6 to 5.2 m)</td>
<td>8 to 38 ft in 1 ft increments (2.4 to 11.6 m)</td>
</tr>
<tr>
<td>Resolution and Accuracy</td>
<td>Opt: 1/4-inch (6.4 mm) Resolution with ±1/8-inch (±3.2 mm) Accuracy</td>
<td>1/2-inch (12.7 mm) Resolution with ±1/4-inch (±6.4 mm) Accuracy</td>
</tr>
<tr>
<td>Tubing Diameter</td>
<td>5/8-inch / 15.9 mm</td>
<td>N/A</td>
</tr>
<tr>
<td>Weight Diameter</td>
<td>N/A</td>
<td>2.9-inch / 73.7 mm</td>
</tr>
<tr>
<td>Weight of Weight Kit</td>
<td>N/A</td>
<td>10.5 lbs / 4.8 kg</td>
</tr>
<tr>
<td>Coiled Diameter</td>
<td>N/A</td>
<td>24-inch (71 cm) Coiled Diameter</td>
</tr>
<tr>
<td>Float Retention</td>
<td>Retaining Clip / Probe Foot Kit</td>
<td>3.5-inch / 88.9 mm (H) 316 SS Weight Kit</td>
</tr>
<tr>
<td>Minimum Measurement from Bottom (Deadband)</td>
<td>2 inches (50.8 mm) from Bottom</td>
<td>4.5 inches (114.3 mm) from Bottom with Weight Kit</td>
</tr>
<tr>
<td>Chemical Compatibility</td>
<td>Crude Oil, Diesel, Kerosene, Condensate, Gasoline, Water, Wastewater, and Much More</td>
<td></td>
</tr>
<tr>
<td>Sensor Pressure Rating</td>
<td>Float Dependent</td>
<td>440 PSI / 30 Bar</td>
</tr>
<tr>
<td>Small Stainless Steel Float (Included w/Rigid)</td>
<td>363 PSI / 25 Bar</td>
<td>142 PSI / 9.8 Bar</td>
</tr>
<tr>
<td>Large Stainless Steel Float</td>
<td>72 PSI / 5 Bar</td>
<td></td>
</tr>
<tr>
<td>Plastic Float (Included w/ Flex)</td>
<td>16 or 32-bit Modbus RTU, Modbus TCP, LevelMaster ASCII</td>
<td></td>
</tr>
<tr>
<td>Float Options:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polypropylene Plastic (PP)</td>
<td>72 PSI / 5 Bar</td>
<td></td>
</tr>
<tr>
<td>Small Stainless Steel - Standard, 440 PSI / 30 Bar</td>
<td>Product: 0.64 SG, Interface: 0.96 SG, ID 1.1&quot; (27.9mm), OD 2.01&quot; (51.0mm), Inner Clearance: 0.5&quot; (12.7mm)</td>
<td></td>
</tr>
<tr>
<td>Large Stainless Steel - Large, 363 PSI / 25 Bar</td>
<td>Product: 0.62 SG, Interface: 0.95 SG, ID 1.1&quot; (27.9mm), OD 2.76&quot; (70.1mm), Inner Clearance: 0.5&quot; (12.7mm)</td>
<td></td>
</tr>
<tr>
<td>Protocol (OTC Wireless)</td>
<td>Down to 5 Seconds</td>
<td></td>
</tr>
<tr>
<td>Minimum Read Interval (Wireless)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum Read Interval (Hardwired)</td>
<td>Down to 2 Seconds</td>
<td></td>
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<tr>
<td>Sensor Wiring</td>
<td>316 Stainless Steel Quick Connect Threaded Adapter, No Wiring Required</td>
<td></td>
</tr>
<tr>
<td>Operating Temp. Sensing Area</td>
<td>-40 °F to 248 °F (-40 °C to 120 °C)</td>
<td></td>
</tr>
<tr>
<td>Certifications</td>
<td>ILRex: SIR 13.0054X; Ex ia IIC T3 Ga; II 1G; -20 °C ≦ Tamb ≤ 70 °C</td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td>Powered by Resistive Transmitter 3.6 V Lithium Replaceable Battery Pack, 7+ Year Life @ 15 min Read Interval</td>
<td></td>
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</tbody>
</table>

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