SUPERB LEVEL MEASUREMENT
The OleumTech® LL1 and LL2 Transmitters are designed to work with high precision Magnetostrictive liquid level sensors by OleumTech. These Transmitters are capable of monitoring product, interface, and temperature, making it ideal for industrial tank level applications. The level output can be provided in inches or cm. Additional data such as volume and tank full % can be reported as well based on user preference. The LL1 requires no wiring with provided quick connect adapter while the LL2 is equipped with two discrete inputs for monitoring high level conditions and/or opening and closing of thief hatches.

SENSOR OPTIONS
OleumTech offers ultra-flex PVDF and rigid 316SS sensor to be mated to these Transmitters. The ultra-flex sensor is available in 96 to 600-inch (2.4 to 15.3 m) lengths while the rigid sensor is offered in 20 to 200-inch (0.5 to 5 m) lengths. Both versions are available in 1-inch (2.5 cm) increments and can be ordered for a single or dual-float operation.

BATTERY-POWERED
These 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.

LOCAL DISPLAY
The LL1 and LL2 feature 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.

INTRINSICALLY SAFE
Designed for use in Class I, Division 1 (Zone 0) hazardous locations. The Magnetostrictive Transmitters are intrinsically safe, meaning it 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. These Transmitters can be configured using the push button interface or BreeZ Software.

COMMUNICATES WITH WIRELESS GATEWAY
The LL4 and LL5 communicate with an OleumTech Wireless Gateway within its network, creating a highly scalable network, accommodating virtually any I/O requirement.
**HARDWARE FEATURES**  
- **Device Functionality**: Liquid Level Sensing Wireless Transmitter using Magnetostrictive Tech.  
  - LL1: 3-in-1 Measurement Capability: Product, Interface and Temperature  
  - LL2: 5-in-1 Measurement Capability: Product, Interface and Temperature + 2x Discrete Inputs  
- **Embedded Controller**: Ultra-Low Power RISC Microcontroller with Internal FLASH (Field Upgradable)  
- **Configuration**: Standard RS232 Serial / BreeZ® Software for PC  
- **Sensor Type**: Magnetostrictive  
- **Resolution**: High Resolution of 0.01” and Linearity of 0.01 % Span  
- **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**: 900 MHz / 2.4 GHz  
  - 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  

**CERTIFICATIONS & COMPLIANCE**  
- **EMC/EMI**: FCC Part 15 (USA)  
- **Safety**: ICES-003 (Canada)  
- **Type**: Class I, Division 1, Groups C, D T3C  
- **CLASS I, DIVISION 1**: Ultra-Flex Sensor  
- **Package Dimensions**: 10.25” (W) x 14” (H) x 6.5” (D) / 260mm (W) x 356mm (H) x 165mm (D)  

**MECHANICAL SPECIFICATIONS**  
- **Dimensions, LL1 (QC)**: 5.25” (W) x 9” (H) x 4.25” (D) / 134mm (W) x 230mm (H) x 108mm (D)  
- **Dimensions, LL2**: 5.25” (W) x 12.8” (H) x 4.25” (D) / 134mm (W) x 325mm (H) x 108mm (D)  
- **Connection Fitting**: LL1: Quick Connect Adapter to Sensor / LL2: Ultra-Flex Sensor: 1” NPT Male; Rigid Sensor: 3/4” NPT Male  
- **Enclosure Casing Material**: Type 4X Aluminum; IP66  
- **Ultra-Flex Sensor Length**: 96”-600” / 8-50 ft / 2.4 m-15.2 m (See Pg. 4 for Details)  
- **Rigid Sensor Length**: 20”-200” / 1.7-16.7 ft / 2.4 m-15.2 m (See Pg. 3 for Details)  
- **Sensor Material**: Ultra-Flex: PVDF / Rigid: 316 Stainless Steel / Float: 316 SS / Polypropylene  

**GENERAL SPECIFICATIONS**  
- **Ambient Temperature (Class I, Division 1)**: Transmitter: -40 °F to 158 °F (-40 °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-LL1 (Quick Connect) / WT-0900-LL2 (Junction Box Version)  
  - 2.4 GHz: WT-2400-LL1 (Quick Connect) / WT-2400-LL2 (Junction Box Version)  
- **Wirelessly Connects To**: Wireless Gateway: DH1, DH2, or DH3

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.
**SPECIFICATIONS**

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<thead>
<tr>
<th>Measured Variables</th>
<th>Level: Product, Interface, and Temperature Level</th>
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<td>Sensor Technology</td>
<td>Magnetostrictive</td>
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<tr>
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<tr>
<td>Resolution</td>
<td>0.01&quot;</td>
</tr>
<tr>
<td>Repeatability</td>
<td>Equal to Resolution</td>
</tr>
<tr>
<td>Linearity</td>
<td>± 0.01% of Span or ± 0.015&quot;, Whichever is Greater</td>
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<tr>
<td>Hysteresis</td>
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<tr>
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<td>-40 °F / -40 °C ≤ Tamb ≤ 158 °F / 70 °C</td>
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**RIGID SENSOR MAGNETOSTRICTIVE**

Length: 20 to 200 in. / 1.7 to 16.7 ft. / 0.5 to 5 m In 1" / 25.4 mm Increments

**COMPATIBILITY**

- Wireless Digital Level Transmitter Head
- Hardwired “H-Series” Level Sensor Head (Standard Connector Version)

**FLOAT OPTION**

**STANDARD SS FLOAT**

Product: 0.64 SG  
Interface: 0.96 SG  
Inner Clearance: 0.1"  
Pressure Rating: 440 PSI / 30 bar  
Material: 316 Stainless Steel  
2" Float Spacer Required for Dual Float Configuration

**LARGE SS FLOAT**

Product: 0.63 SG  
Interface: 0.95 SG  
Inner Clearance: 0.5"  
Pressure Rating: 363 PSI / 25 bar  
Material: 316 Stainless Steel  
Float Spacer is NOT Required for Dual Float Configuration

**LARGE POLYPROPYLENE FLOAT**

Product: 0.64 SG  
Interface: 0.96 SG  
Inner Clearance: 0.5"  
Pressure Rating: 72 PSI / 5 bar  
Material: Polypropylene Plastic  
2" Float Spacer Required for Dual Float Configuration

**TOLL-FREE 866.508.8586 | PH 949.305.9009 | FAX 949.305-9010 | OLEUMTECH.COM | SALES@OLEUMTECH.COM**
**Technical Specifications**

### Measured Variables
- Level: Product, Interface, and Temperature Level

### Ultra-Flex Sensor Length
- 96”-210” / 2.4-5.3 m
- Available in 1”/25.4 mm Increments

### Sensor Technology
- Magnetostrictive

### Sensor Material
- PVDF (Polyvinylidene Fluoride)

### Operating Temp. Sensing Area
- -40 °F to 158 °F / -40 °C to 70 °C (Class I; Division 1 / Zone 0)

### Electronic Area
- -40 °F to 158 °F / -40 °C to 70 °C

### Sensor Pressure Rating
- 140 PSI (Depends on Float Type)

### Resolution
- 0.01"

### Repeatability
- Equal to Resolution

### Linearity
- Sensors 193° to 600°: ± 0.01% of Span or ± 0.039”, Whichever is Greater

### Hysteresis
- Sensors 193° to 600°: ± 0.002% of Span or ± 0.005”, Whichever is Greater

### Null Zone
- 12"

### Dead Band
- 6" to 17" / 0.15 to 0.43 m Depending on Sensor Length

### Sensor Enclosure Mat. Rating
- IP66

### Hazardous Area Approvals
- Group II A, IIB Zones 0, 1
- Group IIC, Zone 2
- Class I, II & III, Div 1, Groups C, D, E, F & G, T4
- Class I, Div 2, Groups A, B, C, & D
- ATEX: FM14ATEX0001X, Ex ia IIB T4 Ga, -40 °F/-40 °C ≤ Tamb ≤ 158 °F/70 °C
- IECEx: FMG 14.0001X, Ex ia IIB T4 Ga, -40 °F/-40 °C ≤ Tamb ≤ 158 °F/70 °C
- ATEX: FM14ATEX0001X, Ex ia IIB T4 Ga, -40 °F/-40 °C ≤ Tamb ≤ 158 °F/70 °C
- IECEx: FMG 14.0001X, Ex ia IIB T4 Ga, -40 °F/-40 °C ≤ Tamb ≤ 158 °F/70 °C

### Compatibility
- Wireless Digital Level Transmitter Head
- Hardwired “H-Series” Level Sensor Head (Standard Connector Version)

## Float Option
### Standard SS Float
- Product: 0.64 SG
- Interface: 0.96 SG
- Inner Clearance: 0.1"
- Pressure Rating: 440 PSI / 30 bar
- Material: 316 Stainless Steel
- 2" Float Spacer Required for Dual Float Configuration

### Large SS Float
- Product: 0.62 SG
- Interface: 0.95 SG
- Inner Clearance: 0.5"
- Pressure Rating: 363 PSI / 25 bar
- Material: 316 Stainless Steel
- Float Spacer is NOT Required for Dual Float Configuration

### Large Polypropylene Float
- Product: 0.64 SG
- Interface: 0.96 SG
- Inner Clearance: 0.5"
- Pressure Rating: 72 PSI / 5 bar
- Material: Polypropylene Plastic
- 2" Float Spacer Required for Dual Float Configuration

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