**Integrated Temperature Sensors**

- **Temperature Sensor Assembly**
- **Typical Wiring Diagram**

**Note:** End of unit stem must be submerged a minimum of 2-3/4” for level switch actuation.

**Important Points:**
- Product must be maintained and installed in strict accordance with the National Electrical Code and GEMS technical literature and instruction bulletin. Failure to observe this warning could result in serious injuries or damages.
- An appropriate explosion-proof enclosure or intrinsically safe interface device must be used for hazardous area applications involving such things as (but not limited to) ignitable mixtures, combustible dust and flammable materials.
- **WARNING:** To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.
- Pressure and temperature limitations shown on individual catalog pages and drawings for the specified level switches must not be exceeded. These pressures and temperatures take into consideration possible system surge pressures and frequencies.

**Switch Ratings - Maximum Resistive Load**

<table>
<thead>
<tr>
<th>VA</th>
<th>Amps (AC)</th>
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</tr>
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<tbody>
<tr>
<td>10 General Use</td>
<td>0.5</td>
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</tr>
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<td>0.2</td>
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**Level switch units with 100 VA switches are not UL recognized.**

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**Transducer for Continuous Indication**

**Input:** 4-20 mA DC

**Output:** 298mA to +77°F

**Current Change:** 15amps/2.8°F

**Response Time:** 150 Seconds (80% gradient in 60 Sec.)

**Operating Range:** -129°F to +221°F

**Accuracy:** ±2°F @ 77°F

**Thermistor for Switch Actuation**

**Switch Ratings:** 2.6A (240 VDC) or 1.8A (120 VDC) (inductive)

**Contact Operation on Increasing Temperature:**
- “O” type when set point reached - or - “C” type when set point reached

**Standard Temperature Set Point (±10°F):**
- 100°F, 125°F, 150°F, 175°F, 200°F or 225°F

**Life expectancy of switch contacts varies with applications. Contact materials.**

**Level switches have been designed to resist shock and vibration; however, specific gravity of a liquid can vary with temperature.**

**Level switches must not be field repaired.**

**Installation...**

Install LS-700 and LS-700-EP Series switches vertically in tank top (mounting up) or in tank bottom (mounting down). Multi-stat ion level switches will operate normally inclined up to 30°.

**LS-700 Series Mounting Types...**

Each mounting type can be configured with stem lengths (Lo) and float materials indicated in table below.

**Stem and Mounting Material**
- **Max. Length:** 48 inches (121.9 cm)
- **Mounting Position:** Vertical ± 30° inclination

**Float Stops**
- Brass Units: Beryllium Copper Grip Rings; Stainless Steel Units: S.S. ARMCO PH-15-7MO Grip Rings

**Pressure Rating, PSI, Max.**
- See float values below

**Mounting only. Maximum pressure rating for complete unit will be the lower of this pressure or the selected float pressure.**

**More Float Types...**

- **Typical Wiring Diagram**

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**LS-700 Series Mounting Types...**

Each mounting type can be configured with stem lengths (Lo) and float materials indicated in table below.

**Stem and Mounting Material**
- **Max. Length:** 48 inches (121.9 cm)
- **Mounting Position:** Vertical ± 30° inclination

**Float Stops**
- Brass Units: Beryllium Copper Grip Rings; Stainless Steel Units: S.S. ARMCO PH-15-7MO Grip Rings

**Pressure Rating, PSI, Max.**
- See float values below

**Mounting only. Maximum pressure rating for complete unit will be the lower of this pressure or the selected float pressure.**

**More Float Types...**
Float Types (LS-700 Series - Cont.)

<table>
<thead>
<tr>
<th>Float Material</th>
<th>316 Stainless Steel</th>
<th>304 Stainless Steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compatible Mtg Types</td>
<td>1, 3, 4, 5, 6</td>
<td>1, 2, 3, 4, 5, 6</td>
</tr>
</tbody>
</table>

**Float Dimensions**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>141750</th>
<th>156900</th>
<th>158369</th>
<th>136550</th>
</tr>
</thead>
</table>

**Operating Temp.**

-40°F to +300°F - Standard Construction

301°F to 500°F - Ceramic Potting Construction Required

**Pressure, PSI, Max.**

-275
-600
-150
-400

**Min. Liquid S.G.**

-90
-90
-85
-1.10

*Maximum pressure rating for complete unit will be the lower of this pressure or the selected float pressure.

Mounting Types .... LS-700-EP Series

Each mounting type can be configured with stem lengths (Lo) and float materials indicated in table below.

<table>
<thead>
<tr>
<th>Stem and Mounting Material</th>
<th>Brass or 316 Stainless Steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. Length (Lo)</td>
<td>48 inches (121.9 cm)</td>
</tr>
<tr>
<td>Mounting Position</td>
<td>Vertical at 30°/Inclination</td>
</tr>
</tbody>
</table>

**Float Stops**

Brass Units: Beryllium Copper Grip Rings

Stainless Steel Units: ARMCO PH-15-7MO Grip Rings

Pressure Rating, PSI, Max. (Mounting Only)

See Float Value (Chart Below)

**Number of Actuation Levels and Electrical Specifications**

Typically, one float is required for each point at which you need a switch action to occur. The number of actuation levels available depends on the Group Type Wiring selected. (See Below)

**LS-700 Series**

Group I Wiring: 1 to 5 Actuation Levels

Group II Wiring: 1 or 3 Actuation Levels

Switch (SPST, N.O. or N.C.): 20/100 VA

Lead Wires: #2 AWG, 24" L, Teflon


**LS-700-EP Series**

Switch (N.O. or N.C.) SPST - 20 VA

Electrical Termination: 7/8" Size 50 J-Box; Explosionproof, Watertight, With Terminal Strip

Approvals: Factory Mutual (FM)

**Actuation Level Dimensions**

Switch actuation levels shown on are determined as follows: (Actuation Levels Typical**)

- A = Minimum distance to highest actuation level
- B = Minimum distance between actuation levels
- C = Minimum distance between two actuation levels with one float (Note: One float for two levels can only be used when low level is N.C. dry and high level is N.O. dry.)
- D = Minimum distance from end of unit to lowest level

**Typical Wiring Diagram**

For clarity, only two actuation levels are shown in each group.

**Wiring Color Code**

Tinted Area Designates U.L. Recognized Wiring Configurations

<table>
<thead>
<tr>
<th>Common Wire</th>
<th>Group I</th>
<th>Group II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Red</td>
<td>Yellow</td>
<td>Yellow</td>
</tr>
<tr>
<td>Red</td>
<td>Yellow</td>
<td>Yellow</td>
</tr>
<tr>
<td>Blue</td>
<td>Blue</td>
<td>Blue</td>
</tr>
<tr>
<td>Red</td>
<td>Brown</td>
<td>L5</td>
</tr>
</tbody>
</table>

*Notes*

1. Units with 100 VA switches are not U.L. recognized.

<table>
<thead>
<tr>
<th>LS-700 Dimensions</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1 (Unit Length)</td>
<td>2-3/16&quot;</td>
<td>1-3/16&quot;</td>
<td>1/16&quot;</td>
<td>1/32&quot;</td>
</tr>
<tr>
<td>L2 (Unit Length)</td>
<td>1-3/16&quot;</td>
<td>1/16&quot;</td>
<td>1/32&quot;</td>
<td>1/64&quot;</td>
</tr>
<tr>
<td>L3 (Unit Length)</td>
<td>1/32&quot;</td>
<td>1/64&quot;</td>
<td>1/128&quot;</td>
<td>1/256&quot;</td>
</tr>
<tr>
<td>L4 (Unit Length)</td>
<td>1/128&quot;</td>
<td>1/256&quot;</td>
<td>1/512&quot;</td>
<td>1/1024&quot;</td>
</tr>
<tr>
<td>L5 (Unit Length)</td>
<td>1/512&quot;</td>
<td>1/1024&quot;</td>
<td>1/2048&quot;</td>
<td>1/4096&quot;</td>
</tr>
</tbody>
</table>

**Notes**

** Actuation Level Distances and Lo (overall unit length) are measured from inner surfaces of mounting plug or flange.

**L** Length Overall

**D** Dimension D, See Mounting Types for Maximum Length values.