The LLC4 combines resistance sensing circuitry with solid-state timing to provide single probe level maintenance. On adjustable units, the sensitivity adjustment allows accurate level sensing while ignoring foaming agents and floating debris. Isolated pulsed DC is provided at the probe to prevent electrolysis. A trickle current of less than 1mA determines the presence or absence of conductive liquid between the probe and common. The LLC4 Series can be used with many types of low voltage (resistance changing) transducers to perform other control functions like temperature limit control, photo limit control, condensation sensing, and ice sensing.

For more information see:
Appendix B, page 166, Figure 19 for dimensional drawing.
Appendix C, page 170, Figure 24 for connection diagram.

Features:

- Single probe level control for conductive liquids
- Adjustable or fixed sensing up to 250 KΩ
- Selectable or fixed fill or drain operation available
- 24, 120, or 230VAC models are available
- Isolated pulsed DC on the probes
- Isolated, 4A, SPDT output contacts

Approvals:

Auxiliary Products:

- **Electrode:** P/N: PHST-38QTN
- **Threaded probe (24"):** P/N: LLP-24
- **Panel mount kit:** P/N: BZ1
- **8-pin socket:** P/N: NDS-8
- **Hold-down clips (sold in pairs):** P/N: PSC8 (NDS-8)

Available Models:

LLC42A10A	LLC44A60A
LLC42A1A	LLC44B1F250
LLC42B15A	LLC44B20A
LLC44A10A	LLC44B2A
LLC44A1A	LLC44B30A
LLC44A2A	LLC44B4A
LLC44A4A	LLC44B5A
LLC44A5A	LLC44B5F100

If desired part number is not listed, please call us to see if it is technically possible to build.

Operation

Drain (Pump-Down Mode): When the liquid level rises and touches the probe, the time delay begins. This time delay prevents rapid cycling of the output relay and its load. At the end of the time delay, the output relay and LED energize and remain energized until the liquid level falls below the probe level. The output relay and LED de-energize and remain de-energized until the liquid rises and touches the probe.

Fill (Pump-Up Mode): When the liquid level falls below the probe, the time delay begins. This time delay prevents rapid cycling of the output relay and its load. At the end of the time delay, the output relay and LED energize and remain energized until the liquid level rises and touches the probe. The output relay and LED then de-energize and remain de-energized until the liquid level again falls below the probe level.

Order Table:

LLC4 **X** **X** **X** **X**

- **Input**
  - **2** - 24VAC
  - **4** - 120VAC
  - **6** - 230VAC
- **Operation**
  - **A** - Drain
  - **B** - Fill
- **Time Delay**
  - Specify fixed delay **1-60**s in 1s increments
- **Sense Resistance**
  - **A** - Adjustable (**1-250k**)
  - **F** - Fixed (Specify fixed resistance (**1-250**) in 1KΩ increments.)

Specifications

Control

Type	ON/OFF (single level) resistance sensor with built-in time delay to prevent rapid cycling
Sensing Voltage	Pulsed DC at probe terminals
Sensing Resistance	Fixed or adjustable to 250KΩ
Sensing Resistance Tolerance	Adjustable: 1K ±500Ω at low end; 250K ±25% at high end Factory fixed: ±10% or 500Ω, whichever is greater

Input

Voltage	24, 120, or 230VAC
Tolerance 24VAC	-15%, +20%
120 & 230VAC	-20%, +10%
AC Line Frequency	50/60 Hz

Output

Type	Electromechanical relay
Form	Isolated, SPDT
Rating	4A resistive @ 240VAC; 1/10 hp @ 240VAC

Protection

Surge	IEEE C62.41-1991 Level A
Isolation Voltage	≥ 1500V RMS between input, output & probe

Mechanical

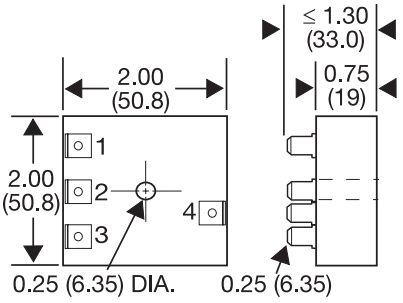
Mounting	Plug-in socket
Termination	Octal 8-pin plug-in
Dimensions	2.91 x 2.39 x 1.78 in. (73.9 x 60.7 x 45.2 mm)

Environmental

Operating / Storage Temperature	-20° to 60°C/-40° to 80°C
Weight	≅ 6 oz (170 g)

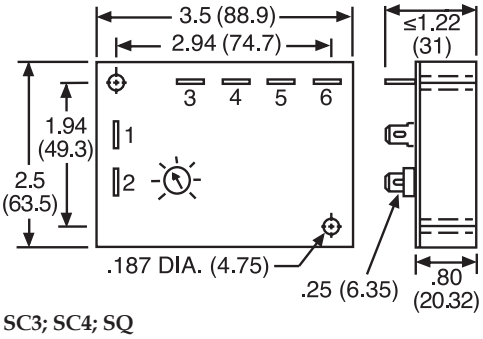
Appendix B - Dimensional Drawings

FIGURE 13



AF

FIGURE 14



SC3; SC4; SQ

FIGURE 15

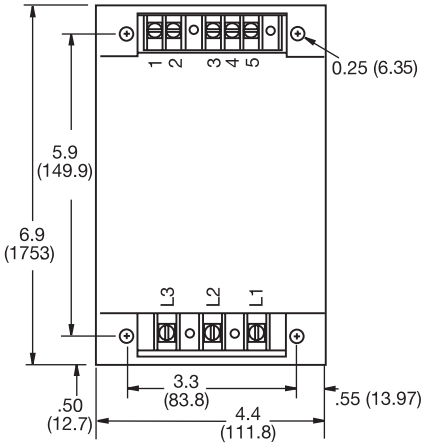
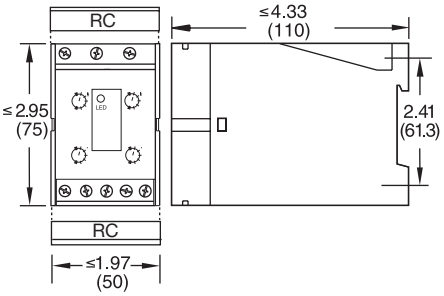
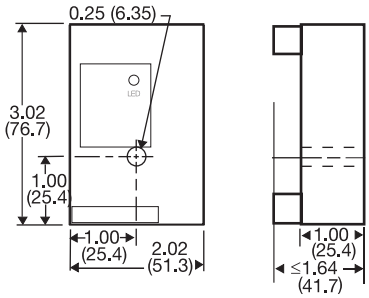


FIGURE 16

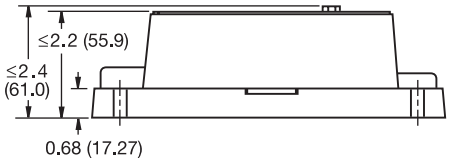


DLMU

FIGURE 17

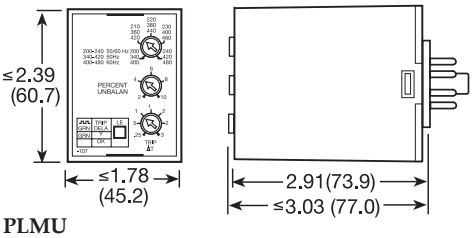


FB9L; HLMU; SCR9L



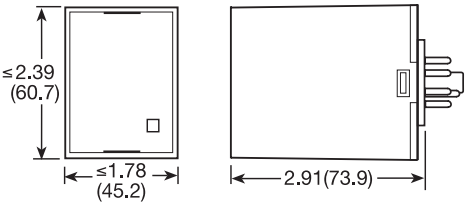
WVM

FIGURE 18



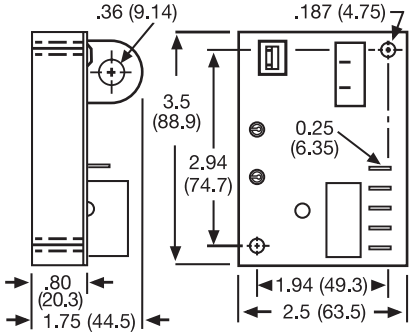
PLMU

FIGURE 19



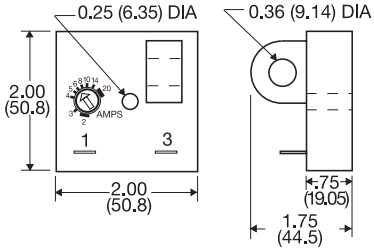
LLC4; LLC6; PLS

FIGURE 20



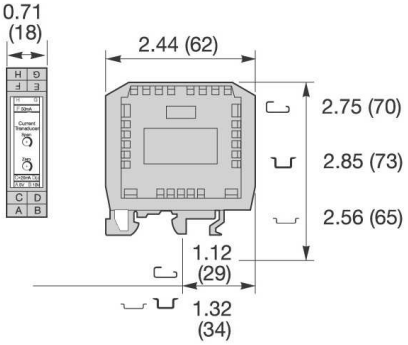
ECS; ECSW (ECS has spade connectors and ECSW has terminal board)

FIGURE 21



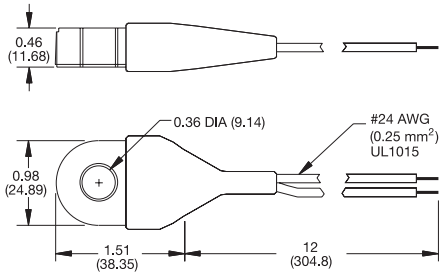
TCS; TCSA

FIGURE 22



DCSA

FIGURE 23

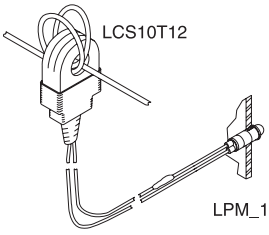


LCS

inches (millimeters)

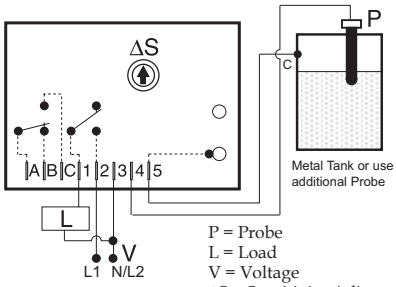
Appendix C - Connection Diagrams

FIGURE 22 - LCS10T12



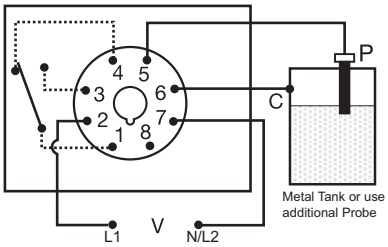
Wire Length: 500 ft. (152.4m) max. (Customer Supplied)
CAUTION: The LCS10T12 must be connected to the LPM12 or LPMG12 before current flows to prevent damage or shock hazard. Monitored wires must be properly insulated.

FIGURE 23 - LLC1 Series



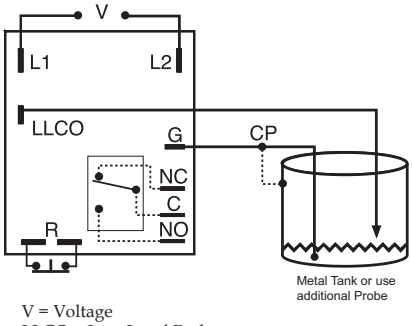
P = Probe
L = Load
V = Voltage
ΔS = Sensitivity Adjustment
Connect common to conductive tank or an additional probe as required.
Contacts A, B & C are isolated.

FIGURE 24 - LLC4 Series



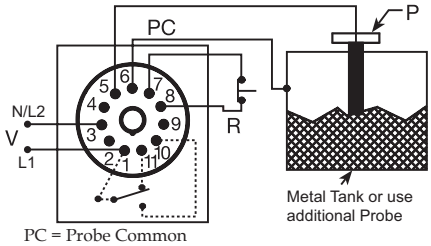
P = Probe
C = Probe Common
V = Voltage
Relay contacts are isolated.
Connect common to conductive tank. Additional probe is necessary for non-conductive or insulated tanks.

FIGURE 25 - LLC8 Series



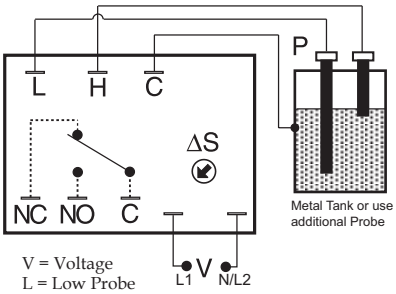
V = Voltage
LLCO = Low Level Probe
G or CP = Ground or Common (Reference) Probe
R = Optional NC Reset Switch (not included)
NO = Normally Open
NC = Normally Closed
C = Common or Transfer Contact
Relay contacts are isolated.
Connect common to conductive tank. Additional probe is necessary for non-conductive or insulated tanks.

FIGURE 26 - LLC6 Series



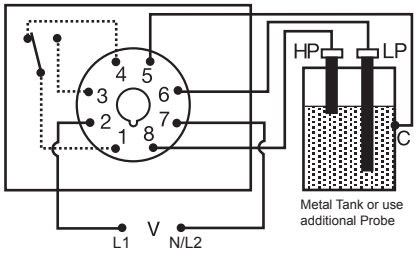
PC = Probe Common
P = Probe
V = Voltage
R = Optional NC Reset Switch
Connect common to conductive tank. Additional probe is necessary for non-conductive or insulated tanks.

FIGURE 27 - LLC2 Series



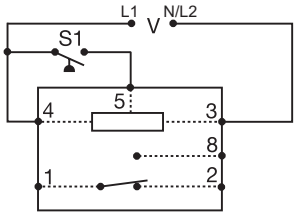
V = Voltage
L = Low Probe
H = High Probe
C = Probe Common
ΔS = Sensitivity Adjustment
NC = Normally Closed
NO = Normally Open
Connect common to conductive tank. Additional probe is necessary for non-conductive or insulated tanks.

FIGURE 28 - LLC5 Series

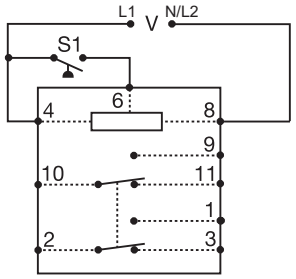


HP = High Level Probe
LP = Low Level Probe
C = Probe Common
V = Voltage
Relay contacts are isolated.
Connect common to conductive tank. Additional probe is necessary for non-conductive or insulated tanks.

FIGURE 29 - ARP Series

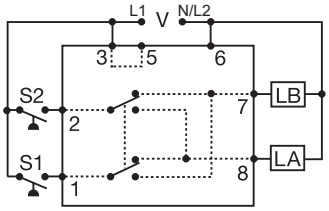


SPDT 8-pin



DPDT 11-pin

Relay contacts in above are isolated.



DPDT 8-pin cross wired

V = Voltage
LA = Load A
LB = Load B
S1 = Primary Control Switch
S2 = Lag Load Switch

Duplexing (Cross Wired): Duplexing models operate the same as alternating relays and when both the Control (S1) and Lag Load (S2) Switches are closed, Load A and Load B energize simultaneously.

The DPDT 8-pin, cross wired option, allows extra system load capacity through simultaneous operation of both motors when needed. Relay contacts are not isolated.