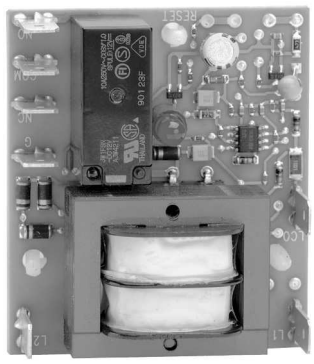


The LLC8 Series is a low cost, single-probe conductive liquid level control designed for low liquid level cutoff protection. It offers a factory fixed time delay of 1 - 60s and is available for input voltages of 24, 120, or 230VAC. LED indicator illuminates whenever the LLC8's isolated, 10A, SPDT output relay is energized. Sense resistance is fixed from 5K - 250KΩ. Available with manual/automatic reset or a special manual reset with a power outage feature that auto resets the unit when power is restored and the water level is acceptable. 24 and 120VAC units are UL recognized as limit switches under UL353 (230VAC units are UL 508) and CSA certified under Standard 14.

For more information see:
Appendix B, page 167, Figure 28 for dimensional drawing.
Appendix C, page 170, Figure 25 for connection diagram.

Features:

- Designed for low level cutoff protection
- Energized on wet probe
- Fixed time delay 1 - 60s
- Fixed sense resistance of 5K - 250KΩ
- 24, 120, or 230VAC input voltages available
- Isolated, 10A, SPDT output contacts

Approvals:

Auxiliary Products:

- **Quick connect to screw adaptor:** P/N: P1015-18
- **Electrode:** P/N: PHST-38QTN
- **Threaded probe (24"):** P/N: LLP-24
- **Female quick connect:**
  P/N: P1015-13 (AWG 10/12)
  P/N: P1015-64 (AWG 14/16)
  P/N: P1015-14 (AWG 18/22)

Available Models:

LLC825F5M	LLC843F26P
LLC843F10M	LLC845F25P
LLC843F10P	LLC8610F12M
LLC843F26M	

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

Operation

Automatic Reset (Reset switch not connected): When liquid rises to low level cutoff probe, output relay and LED indicator energize. When liquid falls below the low level cutoff probe, the output relay and LED indicator de-energize after a fixed time delay.

Manual Reset (Reset switch connected): When the liquid level falls below low level probe, the output relay and LED de-energize after a fixed time delay. When the liquid level rises to low level probe, the output relay and LED indicator remain de-energized until the NC manual reset switch is opened; then they energize immediately.

Power Outage Manual Reset (Reset switch connected): A power outage causes the output relay and LED indicator to de-energize. Upon restoration of power, if the liquid is touching the low level probe, the output relay and LED indicator will re-energize. If the liquid level is below the low level probe, the output relay and LED indicator remain de-energized until the NC reset switch is opened.

Order Table:

LLC8 X X X X

- **Input**
  - **2** - 24VAC
  - **4** - 120VAC
  - **6** - 230VAC
- **Time Delay (fixed)**
  - Specify fixed delay in seconds (**1-60**) in 1s increments
- **Sense Resistance**
  - **F** - Fixed (Specify fixed resistance in kilohms (**5-250**) in 1K increments.)
- **Reset**
  - **M** - Manual/Automatic Reset
  - **P** - Power outage manual reset

Specifications

Control

Type	Resistance sensing for conductive liquids with time delay
Sense Voltage	12VAC nominal at probe terminals
Sense Resistance	Fixed 5K - 250KΩ
Sense Resistance Tolerance	±10%

Time Delay

Tolerance	±20%
Repeat Accuracy	±10%
Time Delay vs Temp. & Voltage	±10%
Power Outage Reset Delay	≤1s

Input

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

Output

Type	Electromechanical relay
Form	Isolated SPDT
Rating	10A resistive @ 120/240VAC; 1/4 hp @ 125VAC; 1/2 hp @ 250VAC

Protection

Surge	IEEE C62.41-1991 Level A
Isolation Voltage	≥ 2500V RMS input to output terminals

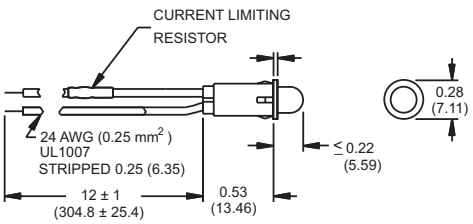
Mechanical

Mounting		0.5 in. (12.7 mm) x .187 (4.76 mm) dia. nylon standoffs (3)
Termination	Electrical	0.25 in. (6.35 mm) male quick connect terminals
	Reset Switch & Probe(s)	0.187 x 0.03 in. (4.75 x 0.76 mm) male quick connect terminals

Environmental

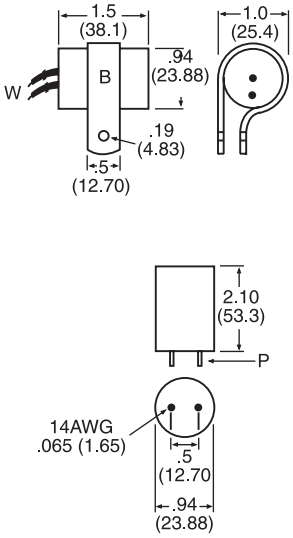
Operating / Storage Temperature	-40° to 60°C / -40° to 80°C
Coating	Printed circuit board is conformal coated to resist moisture & corrosion
Humidity	95% relative, non-condensing
Weight	≅ 5 oz (141.7 g)

FIGURE 24



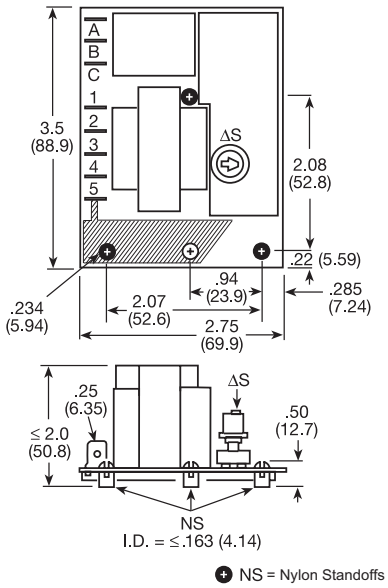
LPM

FIGURE 25



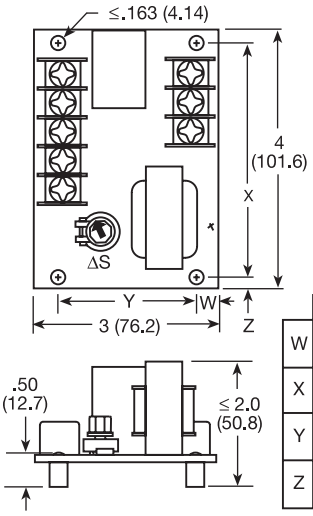
MSM

FIGURE 26



LLC1

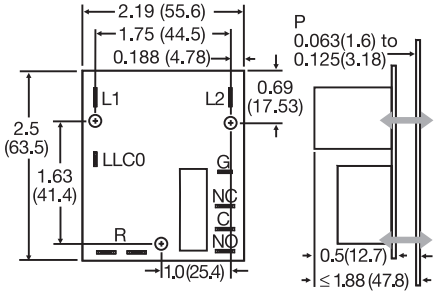
FIGURE 27



	N	C
W	.44 (11.35)	.25 (6.35)
X	3.62 (91.9)	3.5 (88.9)
Y	2.12 (53.8)	2.5 (63.5)
Z	.19 (4.83)	.25 (6.35)

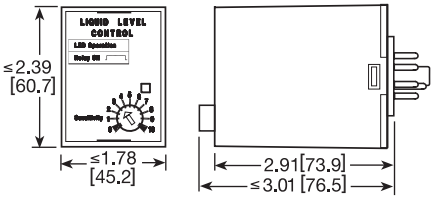
LLC2

FIGURE 28



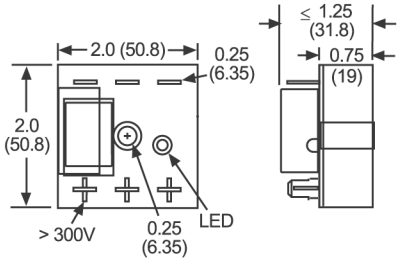
LLC8

FIGURE 29



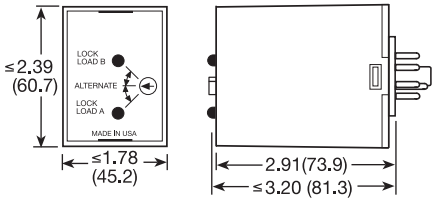
LLC5

FIGURE 30



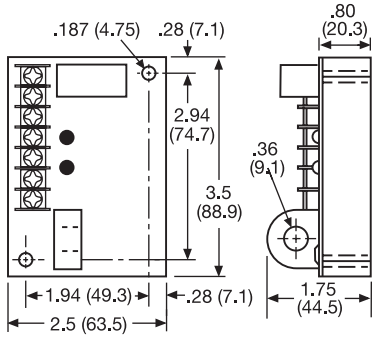
TVM; TVW

FIGURE 31



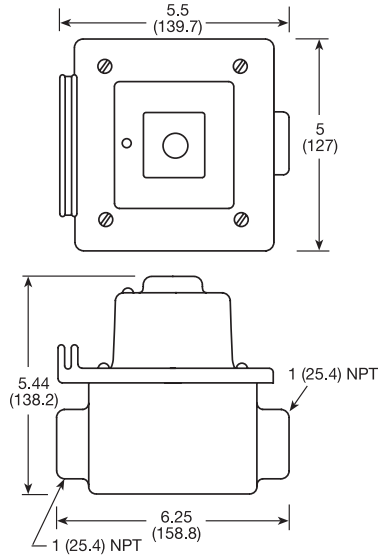
ARP

FIGURE 32



FB; SCR

FIGURE 33

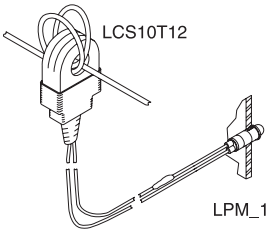


PCR

inches (millimeters)

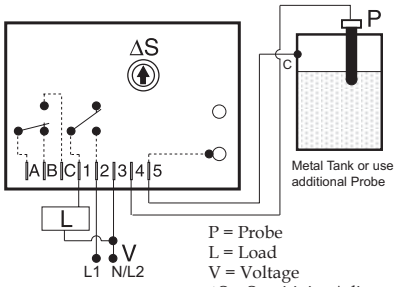
Appendix C - Connection Diagrams

FIGURE 22 - LCS10T12



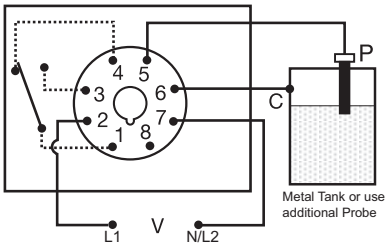
Wire Length: 500 ft. (152.4m) max. (Customer Supplied)
CAUTION: The LCS10T12 must be connected to the LPM12 or LPMG12 before current flows to prevent damage or shock hazard. Monitored wires must be properly insulated.

FIGURE 23 - LLC1 Series



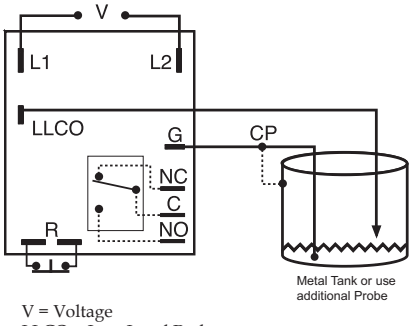
P = Probe
L = Load
V = Voltage
ΔS = Sensitivity Adjustment
Connect common to conductive tank or an additional probe as required.
Contacts A, B & C are isolated.

FIGURE 24 - LLC4 Series



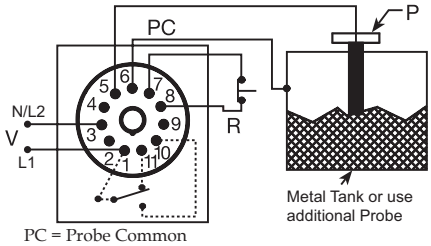
P = Probe
C = Probe Common
V = Voltage
Relay contacts are isolated.
Connect common to conductive tank. Additional probe is necessary for non-conductive or insulated tanks.

FIGURE 25 - LLC8 Series



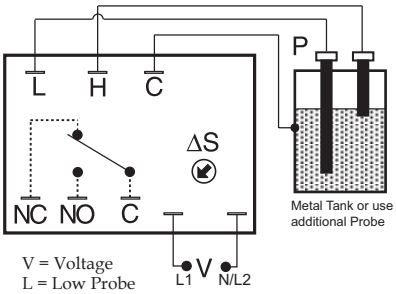
V = Voltage
LLCO = Low Level Probe
G or CP = Ground or Common (Reference) Probe
R = Optional NC Reset Switch (not included)
NO = Normally Open
NC = Normally Closed
C = Common or Transfer Contact
Relay contacts are isolated.
Connect common to conductive tank. Additional probe is necessary for non-conductive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

FIGURE 26 - LLC6 Series



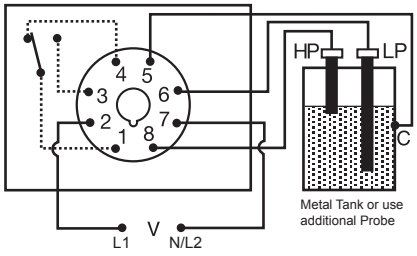
PC = Probe Common
P = Probe
V = Voltage
R = Optional NC Reset Switch
Connect common to conductive tank. Additional probe is necessary for non-conductive or insulated tanks.

FIGURE 27 - LLC2 Series



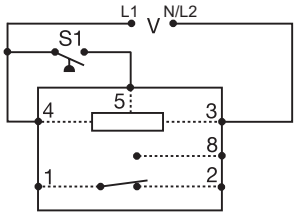
V = Voltage
L = Low Probe
H = High Probe
C = Probe Common
ΔS = Sensitivity Adjustment
NC = Normally Closed
NO = Normally Open
Connect common to conductive tank. Additional probe is necessary for non-conductive or insulated tanks.

FIGURE 28 - LLC5 Series

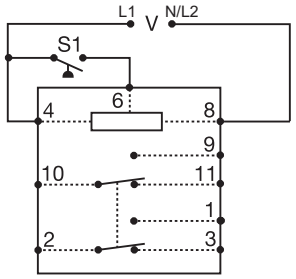


HP = High Level Probe
LP = Low Level Probe
C = Probe Common
V = Voltage
Relay contacts are isolated.
Connect common to conductive tank. Additional probe is necessary for non-conductive or insulated tanks.

FIGURE 29 - ARP Series

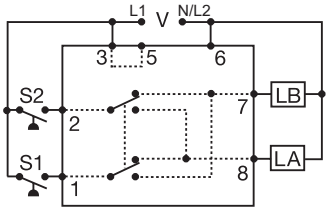


SPDT 8-pin



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.