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# LIQUID LEVEL CONTROL RELAYS

CATALOG OF PRODUCTS



# SINGLE PROBE | PUMP UP & PUMP DOWN

## LCP SERIES

LIQUID LEVEL CONTROL RELAYS | PLUG-IN



- ◆ Controls Level of Conductive Liquids in Pump Up (Fill) or Pump Down (Drain) Applications
- ◆ Single Probe
- ◆ Probe is Pulsed with a DC Voltage to Prevent Electroplating
- ◆ Factory-Fixed Time Delay of 1-60 Seconds Prevents Rapid Cycling
- ◆ Two Adjustable Sensitivity Ranges
- ◆ LED Status Indication
- ◆ Uses industry-standard 8 pin octal socket
- ◆ Pilot Duty Rating



LCP Series Liquid Level Control Relays detect and control levels of conductive liquids (tap water, seawater, sewage, chemical solutions, coffee, ice cream, etc.) in single probe pump up or pump down applications. The conductive properties of the liquid complete a circuit between a probe and common when the liquid comes in contact with both. These relays compare the value of the measured resistance between probes with the setpoint of the adjustable potentiometer provided on the product. The output of the relay is used to control pumps, solenoids or valves to lower, raise or maintain the level of the liquid in the tank. Probes are pulsed with a DC voltage to prevent potential electroplating issues. A built-in time delay prevents rapid cycling.

Two versions of Single Probe products are available:

- **Pump Up (Fill):** The relay is OFF as long as the liquid is in contact with the probe. The relay energizes after a fixed time delay when the liquid level drops below the probe. The relay de-energizes when the liquid level touches the probe.
- **Pump Down (Drain):** The relay is OFF as long as no liquid is in contact with the probe. The relay energizes after a fixed time delay when the liquid level touches the probe. The relay de-energizes when the liquid level falls below the probe.

### Single Probe

FUNCTION	INPUT VOLTAGE	SENSITIVITY RANGE	PRODUCT NUMBER ◆	WIRING/SOCKET
PUMP UP (FILL)	24V AC	4.7K to 100KΩ 1K to 250KΩ	LCP8A100F◆ LCP8A250F◆	<p>DIAGRAM 203</p>
	120V AC	4.7K to 100KΩ 1K to 250KΩ	LCP2A100F◆ LCP2A250F◆	
	240V AC	4.7K to 100KΩ 1K to 250KΩ	LCP1A100F◆ LCP1A250F◆	
PUMP DOWN (DRAIN)	24V AC	4.7K to 100KΩ 1K to 250KΩ	LCP8B100F◆ LCP8B250F◆	
	120V AC	4.7K to 100KΩ 1K to 250KΩ	LCP2B100F◆ LCP2B250F◆	
	240V AC	4.7K to 100KΩ 1K to 250KΩ	LCP1B100F◆ LCP1B250F◆	

- ◆ Complete Product Number by adding time delay in one second increments between 1 & 60, i.e., LCP2A100F2 is a Single Probe Pump Up Relay, 120V Input Voltage, 4.7K-100KΩ Sensitivity with a Fixed 2 Second Delay

Sockets & Accessories available



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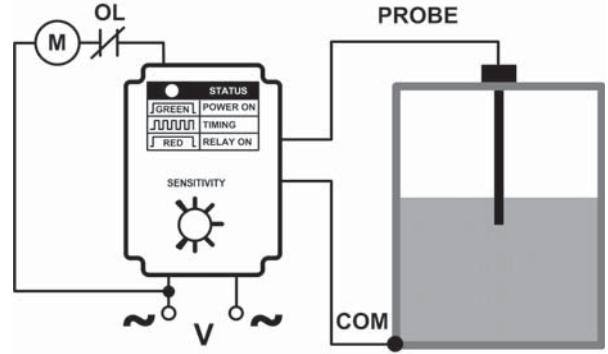
# SINGLE PROBE | PUMP UP & PUMP DOWN

## LCP SERIES

### OPERATION

**Pump Up (Fill):** When the liquid level falls below the probe, a fixed time delay begins and the LED flashes Red. This time delay prevents rapid cycling of the output relay and its load. At the end of the time delay, the output relay energizes and the LED is Red ON. The pump is ON to fill the tank. The relay remains energized until the liquid level rises and touches the probe. The output relay de-energizes, turning off the pump, and remains de-energized and the LED is Green ON until the liquid level falls below the probe.

**Pump Down (Drain):** When the liquid level rises and touches the probe, a fixed time delay begins and the LED flashes Red. This time delay prevents rapid cycling of the output relay and its load. At the end of the time delay, the output relay energizes and the LED is Red ON. The pump is ON to drain the tank. The relay remains energized until the liquid level falls below the probe level. The output relay de-energizes, turning off the pump, and remains de-energized and the LED is Green ON until the liquid level rises and touches the probe.



If the container is non-conductive or insulated, an additional probe must be installed as the COM connection where it will always be submerged.

### APPLICATION DATA

**Voltage Tolerance:**

AC Operation: +10/-15% of nominal at 50/60 Hz.

**Load (Burden):**

2 VA

**Probe Voltage:**

5V DC Pulsed

**Resistance Sensitivity Range:**

4.7K - 100KΩ or 1K - 250KΩ

**Response Time:**

Pick-up: Fixed in one second increments from 1-60 seconds  
(Minimum Quantities may apply)

Drop-out: 500ms

**LED Indicator:**

Green ON with Input Voltage applied; Red Flashing during timing;  
Red ON when relay energized

**Temperature:** Operating: -28° to 65°C (-18° to 149°F)  
Storage: -40° to 85°C (-40° to 185°F)

**Output Contacts:**

10A @ 240V AC / 7A @ 28V DC, 1/4HP @ 120V AC (N.O.)

**Life:**

Mechanical: 10,000,000 operations

Full Load: 100,000 operations

**Mounting:**

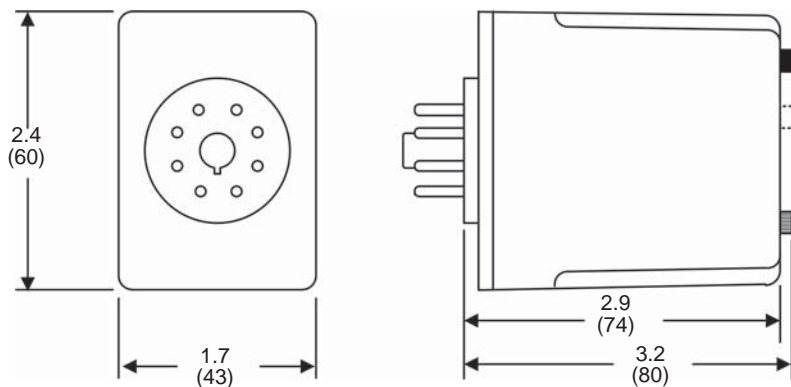
Requires Industry-Standard 8 Pin Octal Socket  
(Macromatic 70169-D or equivalent)

**Approvals:**



with appropriate socket  
File #E109466

### DIMENSIONS



All Dimensions in Inches (Millimeters)

# DUAL PROBE | PUMP UP & PUMP DOWN

## LCP SERIES

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- ◆ Controls Level of Conductive Liquids in Pump Up (Fill) or Pump Down (Drain) Applications
- ◆ Dual Probe
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- ◆ Two Adjustable Sensitivity Ranges
- ◆ LED Status Indication
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- ◆ Pilot Duty Rating



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LCP Series Liquid Level Control Relays detect and control levels of conductive liquids (tap water, seawater, sewage, chemical solutions, coffee, ice cream, etc.) in dual probe pump up or pump down applications. The conductive properties of the liquid complete a circuit between a probe and common when the liquid comes in contact with both. These relays compare the value of the measured resistance between probes with the setpoint of the adjustable potentiometer provided on the product. The output of the relay is used to control pumps, solenoids or valves to lower, raise or maintain the level of the liquid in the tank. Probes are pulsed with a DC voltage to prevent potential electroplating issues.

Two versions of Dual Probe products are available:

- **Pump Up (Fill):** The relay energizes when the liquid level falls below the low probe and remains energized until the liquid level comes in contact with the high probe.
- **Pump Down (Drain):** The relay energizes when the liquid level comes in contact with the high probe and remains energized until the liquid level falls below the lower probe.

### Dual Probe

FUNCTION	INPUT VOLTAGE	SENSITIVITY RANGE	PRODUCT NUMBER	WIRING/SOCKET
PUMP UP (FILL)	24V AC	4.7K to 100KΩ 1K to 250KΩ	LCP8C100 LCP8C250	8 Pin Octal <b>70169-D</b>  <b>DIAGRAM 197</b> Cross to Products from SSAC & NCC
	120V AC	4.7K to 100KΩ 1K to 250KΩ	LCP2C100 LCP2C250	
	240V AC	4.7K to 100KΩ 1K to 250KΩ	LCP1C100 LCP1C250	
PUMP DOWN (DRAIN)	24V AC	4.7K to 100KΩ 1K to 250KΩ	LCP8D100 LCP8D250	 <b>DIAGRAM 206</b> Cross to Products from Symcom & Crouzet
	120V AC	4.7K to 100KΩ 1K to 250KΩ	LCP2D100 LCP2D250	
	240V AC	4.7K to 100KΩ 1K to 250KΩ	LCP1D100 LCP1D250	
PUMP UP (FILL)	24V AC	4.7K to 100KΩ 1K to 250KΩ	LCP8E100 LCP8E250	8 Pin Octal <b>70169-D</b>  <b>DIAGRAM 206</b> Cross to Products from Symcom & Crouzet
	120V AC	4.7K to 100KΩ 1K to 250KΩ	LCP2E100 LCP2E250	
	240V AC	4.7K to 100KΩ 1K to 250KΩ	LCP1E100 LCP1E250	
PUMP DOWN (DRAIN)	24V AC	4.7K to 100KΩ 1K to 250KΩ	LCP8G100 LCP8G250	 <b>DIAGRAM 206</b> Cross to Products from Symcom & Crouzet
	120V AC	4.7K to 100KΩ 1K to 250KΩ	LCP2G100 LCP2G250	
	240V AC	4.7K to 100KΩ 1K to 250KΩ	LCP1G100 LCP1G250	
PUMP UP (FILL)	24V AC	4.7K to 100KΩ 1K to 250KΩ	LCP8H100 LCP8H250	8 Pin Octal <b>70169-D</b>  <b>DIAGRAM 199</b> Cross to Products from GEMS (Warrick)
	120V AC	4.7K to 100KΩ 1K to 250KΩ	LCP2H100 LCP2H250	
	240V AC	4.7K to 100KΩ 1K to 250KΩ	LCP1H100 LCP1H250	
PUMP DOWN (DRAIN)	24V AC	4.7K to 100KΩ 1K to 250KΩ	LCP8J100 LCP8J250	 <b>DIAGRAM 199</b> Cross to Products from GEMS (Warrick)
	120V AC	4.7K to 100KΩ 1K to 250KΩ	LCP2J100 LCP2J250	
	240V AC	4.7K to 100KΩ 1K to 250KΩ	LCP1J100 LCP1J250	

Sockets & Accessories available

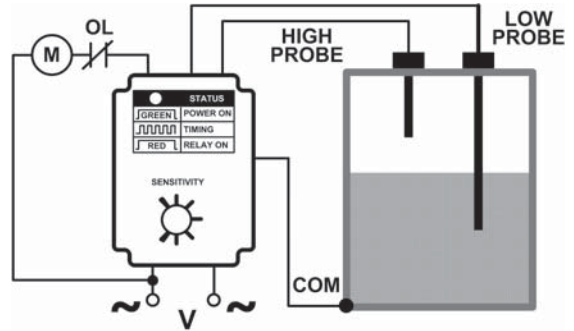
# DUAL PROBE | PUMP UP & PUMP DOWN

## LCP SERIES

### OPERATION

**Pump Up (Fill):** When the liquid level falls below the low level probe, the output relay energizes and the LED is Red ON. The pump is ON to fill the tank. The relay remains energized until the liquid level rises and touches the high level probe. The output relay de-energizes, turning off the pump, and remains de-energized and the LED is Green ON until the liquid level again falls below the low level probe.

**Pump Down (Drain):** When the liquid level rises and touches the high level probe, the output relay energizes and the LED is Red ON. The pump is ON to drain the tank. The relay remains energized until the liquid level falls below the low level probe. The output relay de-energizes, turning off the pump, and remains de-energized and the LED is Green ON until the liquid level rises and touches the high level probe.



If the container is non-conductive or insulated, an additional probe must be installed as the COM connection where it will always be submerged.

**NOTE:** the Connection Diagram shown above is for Functions C & D (Wiring Diagram 197). If other Dual Probe Functions are used (E, G, H or J), please check appropriate Wiring Diagram on the product label.

### APPLICATION DATA

**Voltage Tolerance:**

AC Operation: +10/-15% of nominal at 50/60 Hz.

**Load (Burden):**

2 VA

**Probe Voltage:**

5V DC Pulsed

**Resistance Sensitivity Range:**

4.7K - 100KΩ or 1K - 250KΩ

**Response Time:**

Pick-up: One second

Drop-out: One second

**LED Indicator:**

Green ON with Input Voltage applied; Red Flashing during timing;  
Red ON when relay energized

**Temperature:** Operating: -28° to 65°C (-18° to 149°F)  
Storage: -40° to 85°C (-40° to 185°F)

**Output Contacts:**

10A @ 240V AC / 7A @ 28V DC, 1/4HP @ 120V AC (N.O.)

**Life:**

Mechanical: 10,000,000 operations

Full Load: 100,000 operations

**Mounting:**

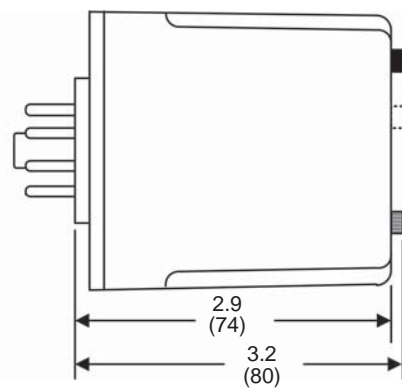
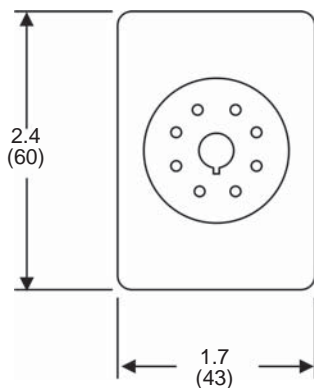
Requires Industry-Standard 8 Pin Octal Socket (Macromatic 70169-D or equivalent)

**Approvals:**



with appropriate socket  
File #E109466

### DIMENSIONS



All Dimensions in Inches (Millimeters)

# SOCKETS & ACCESSORIES

## 8 Pin Octal Socket- Surface or DIN Rail-Mounted

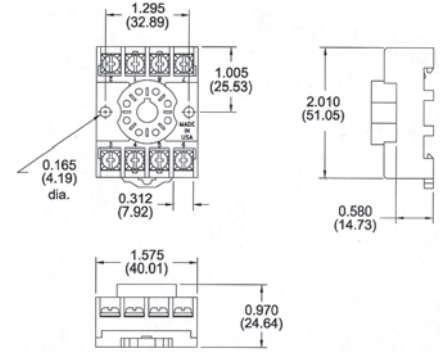
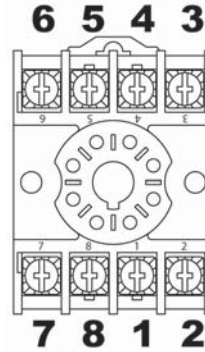
- ◆ 10A @ 600V
- ◆ 1 or 2 #12-20 AWG Wire
- ◆ Pressure Wire Clamp Terminations
- ◆ Recommended Tightening Torque 12 in-lbs



File #E169693 File #LR701114



Catalog Number:  
70169-D



## Hold Down Spring

Can be used for:

- ◆ Panel-Mounted Sockets
- ◆ Sockets Mounted to 35mm DIN Rail \*

\* Requires two #8, 3/4" length machine screws with washers & nuts--contact Macromatic or [www.macromatic.com/70166](http://www.macromatic.com/70166) for more information.



Catalog Number: 70166



# MACROMATIC INDUSTRIAL CONTROLS

Located in Menomonee Falls, Wisconsin, Macromatic Industrial Controls engineers and manufactures industrial relays that control electrical processes and monitor power for damaging fault conditions.

Macromatic provides solutions for almost any application in any industry. Macromatic's products are used in the HVACR, pump control, material handling, motor control, generator, and lift and elevator industries, plus more.

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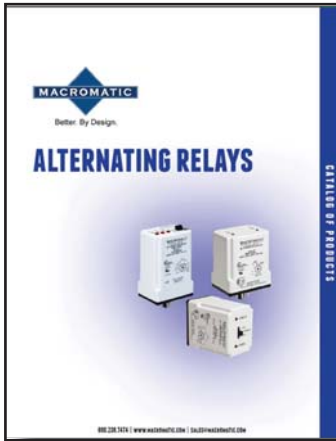
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