

# OVER TEMPERATURE & SEAL LEAKAGE

## AUTO RESET | TCP SERIES

OVER TEMPERATURE & SEAL LEAKAGE RELAYS | PLUG-IN



- ◆ Monitors Submersible Pumps for Over Temperature & Seal Leakage
- ◆ Works with Pumps using Resistance Sensing Leakage Detection
- ◆ Auto Reset for Over Temperature
- ◆ Two Adjustable Sensitivity Ranges for Seal Leakage
- ◆ Low-Profile Adjustment Knob
- ◆ Full Status Indication on Top of Unit for Easy Troubleshooting
- ◆ Utilizes industry-standard 11 pin octal socket



with appropriate socket

Macromatic TCP Series products protect submersible pump motors against damage from both over temperature and seal leakage. The TCP Series products come with automatic reset for over temperature (for units with a choice of either automatic or manual reset in a flange-mounted enclosure, see the TCF Series products). These products utilize an industry-standard plug-in enclosure for panel or DIN-rail mounting.

### Operation:

Two wires from the relay are connected to a N.C. thermal switch in the windings of the pump motor to monitor for overheating. A low-voltage DC signal is applied to check the status of the thermal switch. Two additional wires are connected to a single or dual resistance-sensing probe and the grounded motor housing, or across two probes to monitor for seal leakage using a low-voltage DC signal. These products have isolated output contact relays, one for over temperature and one for seal leakage. The over temperature set-point is fixed at 5K ohms. Two adjustable seal leakage sensitivity ranges are available: 4.7K-100K ohms and 1K-250K ohms.

With input voltage applied, normal temperature condition (thermal switch closed) and no seal leakage, the over temperature relay is energized and the seal leak relay is de-energized. Both LEDs are Green, indicating normal conditions and input voltage applied. When the motor temperature rises and the N.C. thermal switch opens, the over temperature relay is de-energized, opening a contact that had been closed and turning off the pump contactor. The TEMP LED turns Red. If the over temperature condition is cleared, the unit will reset automatically.

If the seal starts to leak, contaminating fluid enters the pump motor cavity. This lowers the resistance between the internal probe and the common connection. When the resistance drops below the user-adjustable sensitivity set-point of the relay, the output relay energizes and closes a contact, which can be used to give an alarm indication of a leaking seal. The LEAK LED turns Red.

INPUT VOLTAGE	LEAKAGE SENSITIVITY RANGE	CATALOG NUMBER	WIRING/SOCKET
24V AC	4.7K to 100KΩ 1K to 250KΩ	TCP8G100 TCP8G250	<p>11 Pin Octal <b>70170-D</b></p> <p>DIAGRAM 207</p>
120V AC	4.7K to 100KΩ 1K to 250KΩ	TCP2G100 TCP2G250	
240V AC	4.7K to 100KΩ 1K to 250KΩ	TCP1G100 TCP1G250	



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### APPLICATION DATA

**Voltage Tolerance:**

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

**Load (Burden):**

3 VA

**Temp & Leakage Voltage:**

5V DC Pulsed

**Resistance Sensitivity Range (Seal Leakage):**

4.7K - 100KΩ or 1K - 250KΩ

**Resistance Setting (Over Temperature):**

5KΩ

**Response Time:**

Pick-up: 1 Second

Drop-out: 1 Second

**Temperature:**

Operating: -28° to 65°C (-18° to 149°F)

Storage: -40° to 85°C (-40° to 185°F)

**Output Contacts:**

7A @ 240V AC / 5A @ 28V DC, 1/4HP @ 120V AC (N.O.)

**Life:**

Mechanical: 10,000,000 operations

Full Load: 100,000 operations

**LED Indicator:**

Temp: Green ON with input voltage applied, normal temperature condition and relay energized; Red ON when over temperature detected and relay de-energized

Seal: Green ON with input voltage applied and no seal leak; Red ON when seal leak detected and relay energized

**Mounting:**

Requires industry-standard 11 Pin Octal socket (Macromatic 70170-D or equivalent).

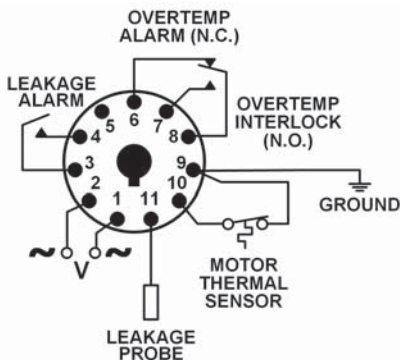
**Approvals:**



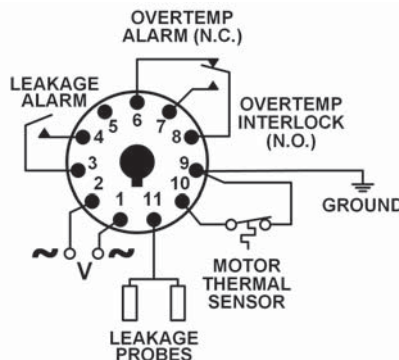
### CONNECTION DIAGRAMS

This flexible product offers three options for connection to monitor over temperature and seal leakage:

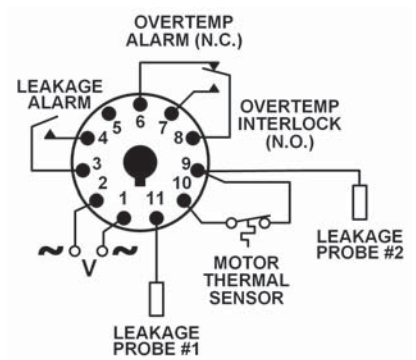
**BETWEEN ONE PROBE & MOTOR HOUSING**



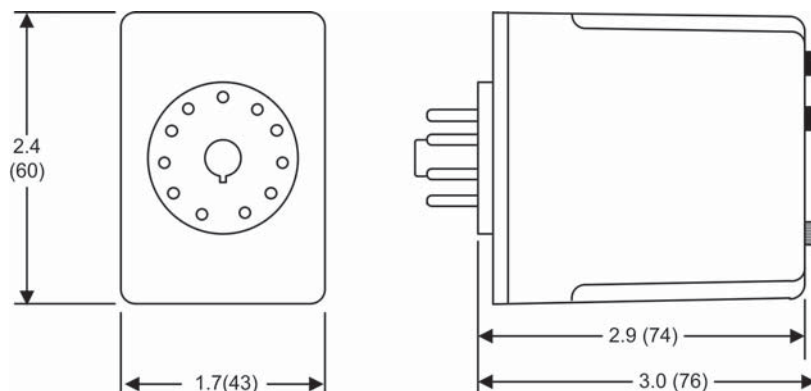
**BETWEEN TWO PROBES & MOTOR HOUSING**



**BETWEEN TWO PROBES**



### DIMENSIONS



All Dimensions in Inches (Millimeters)