

# Pump Monitor Relay PMR1

MADE IN  
THE U.S.A.



UL FILE #E101681

## OPERATION

The Pump Monitor Relay provides Motor Over Temperature and Seal Leakage alarms for Submersible Pumps.

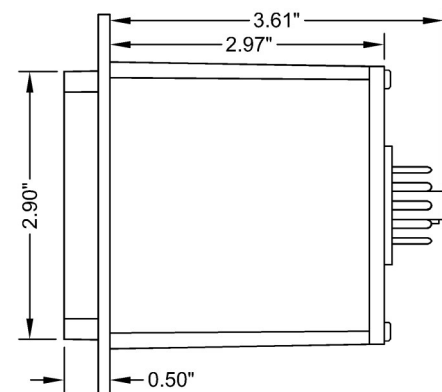
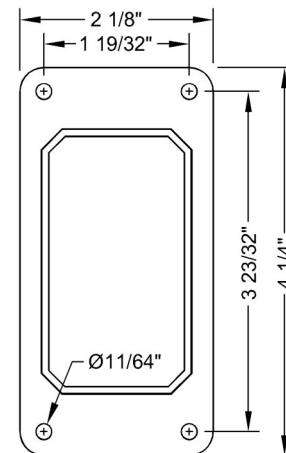
**Motor Over Temperature Alarm** - The unit applies a low voltage DC signal to the Motor Thermal Sensor to check its status. If the unit detects that the Motor Thermal Sensor contacts are closed (normal condition), the Overtemp indication remains off, and the Overtemp Relay is energized closing the contacts between terminals 2 and 11.

If the Motor Thermal Sensor contacts open (Over Temperature condition), the Overtemp Indication is turned on and the Overtemp Alarm Relay is de-energized opening the contacts between terminals 2 and 11 and closing the contacts between terminals 2 and 1.

When the High Motor Temperature condition has cleared, the unit will reset based on the position of Alarm Reset Mode Select Switch (Auto or Manual). When in the Auto position, the Overtemp Alarm resets automatically. If the switch is in the Manual position, the Overtemp Reset Push-button must be pushed for approximately 1.5 seconds to clear the alarm.

**Seal Leakage Alarm** - The unit detects moisture inside a pump motor by using a low voltage AC signal to measure the resistance between a single (or dual) Leakage Probe(s) and the grounded motor housing, or across two Leakage Probes. A Seal Leakage condition is considered present when the amount of moisture in the motor causes the resistance between terminal 6 and 5 to drop below the setting on the potentiometer. When this occurs the unit turns on the Leakage Indication and energizes the Leakage Alarm Relay closing the contacts between terminals 9 and 10.

The alarm trip point may be set by the following procedure: Isolate the Leakage Probe(s) from terminals 5 and 6. Connect a resistor, with the desired trip value, across terminals 5 and 6. Slowly adjust the potentiometer to the point where the alarm turns on. Remove the resistor and reconnect to the Leakage Probe(s).



## SPECIFICATIONS

Input Power:	120 VAC $\pm 10\%$ , 7.0 VA max
Output Rating:	8A Resistive @ 120VAC
Operating Temp:	-20°C to +65 °C
Storage Temp:	-45°C to +85 °C
Temp Sensor Voltage:	6.6 VDC $\pm 10\%$
Leak Sensor Voltage:	4.7 VAC $\pm 10\%$
Enclosure:	White Lexan
Base:	Phenolic

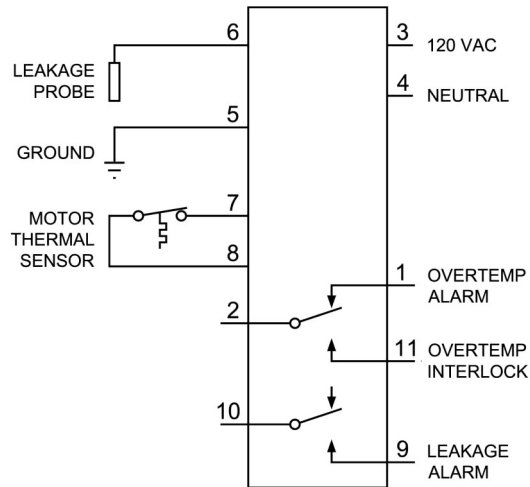
## ORDERING INFORMATION

Part Number: PMR1

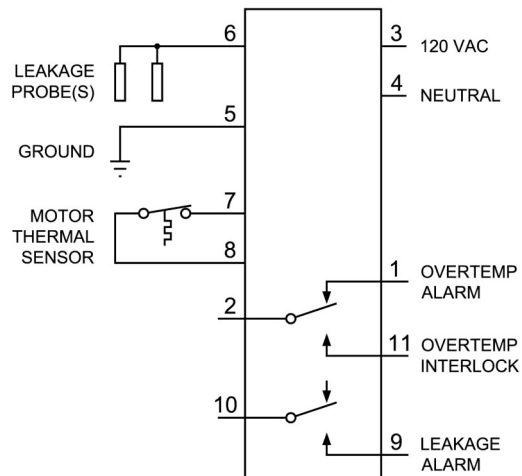
# Pump Monitor Relay PMR1

## CONNECTION DIAGRAMS

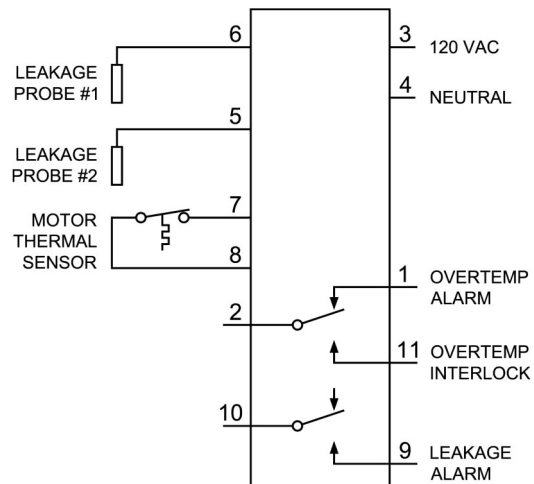
### CHECKS RESISTANCE BETWEEN ONE PROBE AND MOTOR HOUSING



### CHECKS RESISTANCE BETWEEN TWO PROBES AND MOTOR HOUSING



### CHECKS RESISTANCE BETWEEN TWO PROBES





# Pump Monitor Relay PMR2

MADE IN  
THE U.S.A.



UL FILE #E101681

## OPERATION

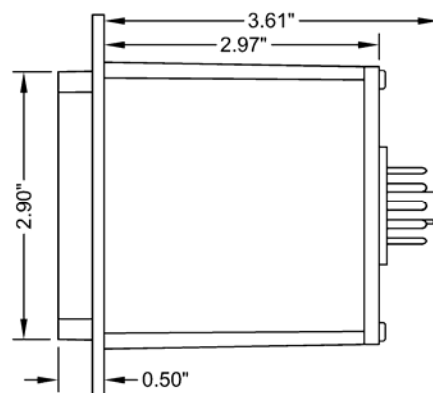
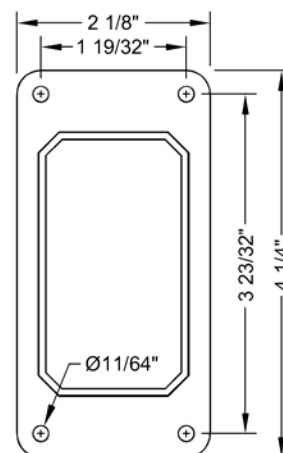
The PMR2 Pump Monitor Relay provides Motor Over Temperature and Seal Leakage alarms for submersible pumps equipped with FLS or CLS sensors.

The PMR2 applies 12 VDC to the sensor and measures the current flow through the sensor. The sensor controls the current in the circuit. If the sensor current is in the normal range the Temperature Alarm Relay is energized to allow normal pump operation. If the sensor circuit becomes shorted, the 12 VDC is turned off and all LEDs flash.

Upon a High Motor Temperature condition, the sensor opens so that the sensor circuit current drops to zero. With the sensor current below the Trip Point ( $\leq 3.0 \text{ mA} \pm 5\%$ ), the Overtemp Indication is turned on and the Temperature Alarm Relay is de-energized, preventing pump operation.

When the High Motor Temperature condition has cleared, the unit will reset based on the position of Alarm Reset Mode Select Switch (Auto or Manual). When in the Auto position, the Overtemp Alarm resets automatically. If the switch is in the Manual position, the Overtemp Reset Push-button must be pushed to clear the alarm.

Upon a Seal Leakage condition, the sensor increases the sensor circuit current above the Trip Point ( $\geq 22 \text{ mA} \pm 5\%$ ), the Leakage Indication is turned on and the Leakage Alarm Relay is energized.



## SPECIFICATIONS

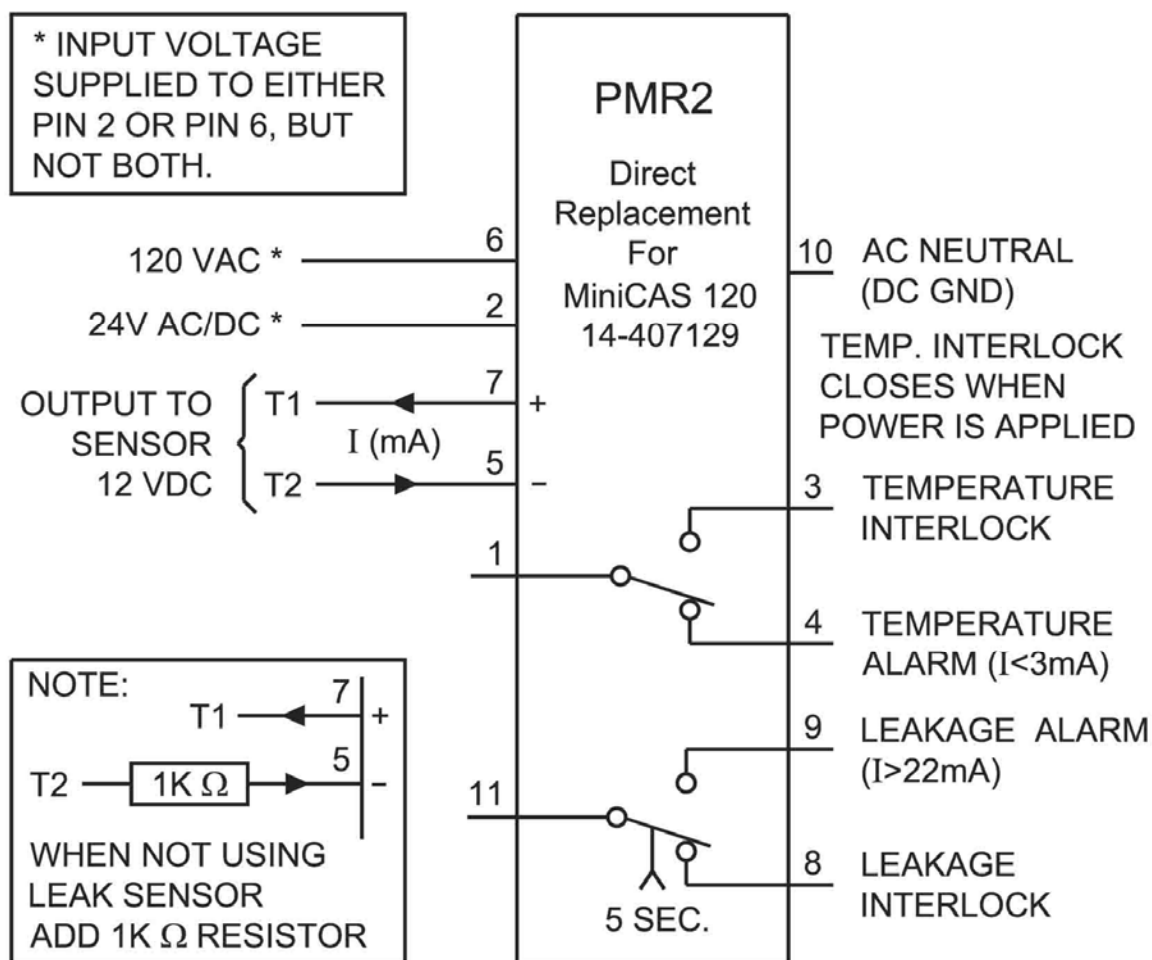
Input Power:	120 VAC $\pm 10\%$ , 7.0 VA max 24 VAC $\pm 10\%$ , 3.5 VA max 24 VDC $\pm 10\%$ , 125 mA max
Output Rating:	8A Resistive @ 120VAC
Operating Temp:	-20 °C to +65 °C
Storage Temp:	-45 °C to +85 °C
Sensor Circuit Voltage:	12 VDC $\pm 10\%$
Temp Alarm Trip Point:	$\leq 3.0 \text{ mA} \pm 5\%$
Leak Alarm Trip Point:	$\geq 22 \text{ mA} \pm 5\%$
Enclosure:	Blue Lexan
Base:	Phenolic

## ORDERING INFORMATION

Part Number: PMR2

# Pump Monitor Relay PMR2

## CONNECTION DIAGRAM





# Pump Monitor Relay PMR3

MADE IN  
THE U.S.A.

**UL** US  
UL FILE #E101681

## OPERATION

The Pump Monitor Relay provides Motor Over Temperature and Seal Leakage alarms for Submersible Pumps.

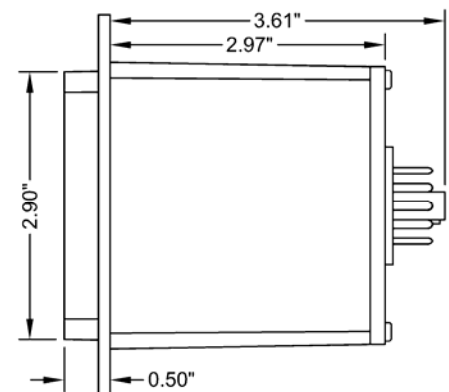
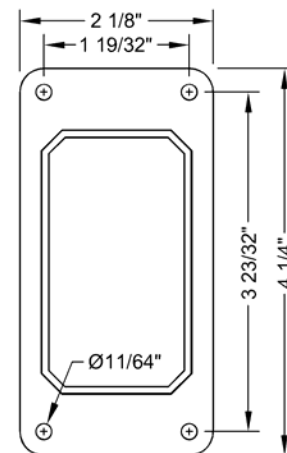
**Motor Over Temperature Alarm** - The unit applies a low voltage DC signal to the Motor Thermal Sensor to check its status. If the unit detects that the Motor Thermal Sensor contacts are closed (normal condition), the Overtemp indication remains off, and the Overtemp Relay is energized closing the contacts between terminals 1 and 3.

If the Motor Thermal Sensor contacts open (Over Temperature condition), the Overtemp Indication is turned on and the Overtemp Alarm Relay is de-energized opening the contacts between terminals 1 and 3 and closing the contacts between terminals 1 and 4.

When the High Motor Temperature condition has cleared, the unit will reset based on the position of Alarm Reset Mode Select Switch (Auto or Manual). When in the Auto position, the Overtemp Alarm resets automatically. If the switch is in the Manual position, the Overtemp Reset Push-button must be pushed for approximately 1.5 seconds to clear the alarm.

**Seal Leakage Alarm** - The unit detects moisture inside a pump motor by using a low voltage AC signal to measure the resistance between a single (or dual) Leakage Probe(s) and the grounded motor housing, or across two Leakage Probes. A Seal Leakage condition is considered present when the amount of moisture in the motor causes the resistance between terminal 2 and 5 to drop below the setting on the potentiometer. When this occurs the unit turns on the Leakage Indication and the Leakage Alarm Relay is energized opening the contacts between terminals 11 and 8 and closing the contacts between terminals 11 and 9.

The alarm trip point may be set by the following procedure: Isolate the Leakage Probe(s) from terminal 2. Connect a resistor, with the desired trip value, across terminals 2 and 5. Slowly adjust the potentiometer to the point where the alarm turns on. Remove the resistor and reconnect to the Leakage Probe(s).



## SPECIFICATIONS

Input Power:	230 VAC $\pm 10\%$ , 50 Hz / 60 Hz 7.0 VA max
Output Rating:	8A Resistive @ 230 VAC
Operating Temp:	-20 °C to +65 °C
Storage Temp:	-45 °C to +85 °C
Temp Sensor Voltage:	6.6 VDC $\pm 10\%$
Leak Sensor Voltage:	4.7 VAC $\pm 10\%$
Enclosure:	White Lexan
Base:	Phenolic

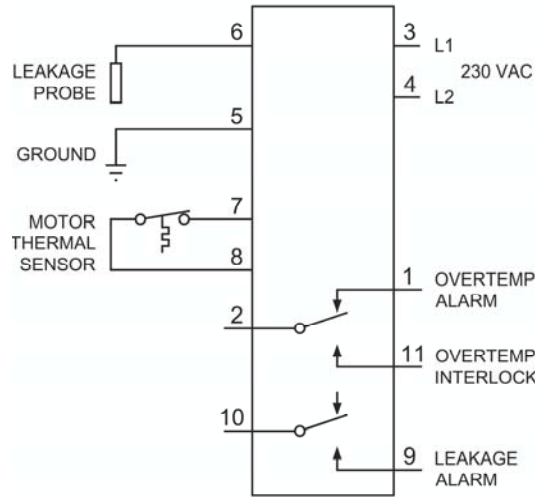
## ORDERING INFORMATION

Part Number: PMR3

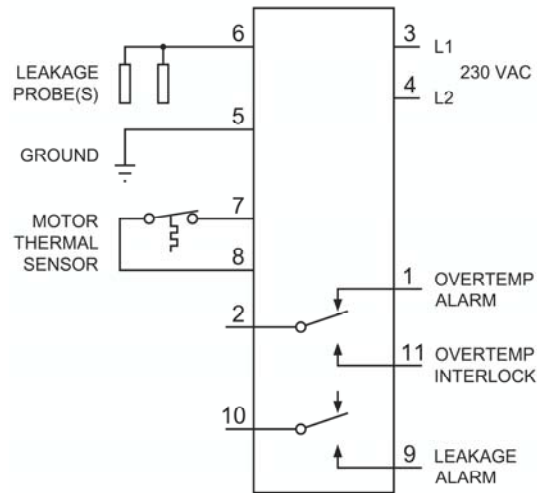
# Pump Monitor Relay PMR3

## CONNECTION DIAGRAMS

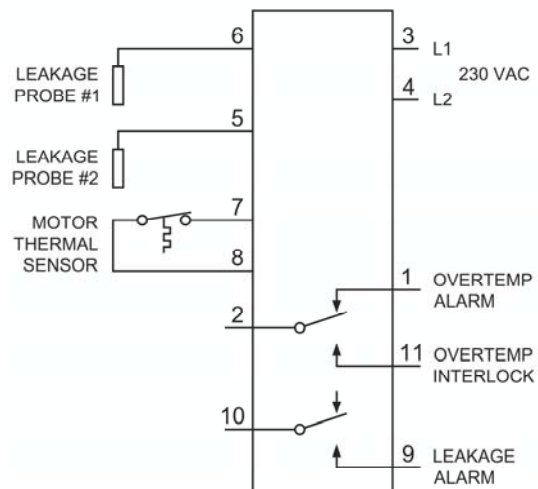
### CHECKS RESISTANCE BETWEEN ONE PROBE AND MOTOR HOUSING



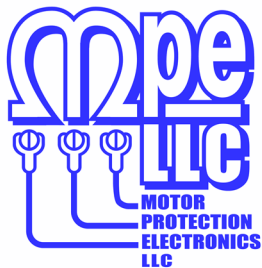
### CHECKS RESISTANCE BETWEEN TWO PROBES AND MOTOR HOUSING



### CHECKS RESISTANCE BETWEEN TWO PROBES







# Pump Monitor Relay PMR5

MADE IN  
THE U.S.A.

**cUL**®  
US  
UL FILE #E101681

## OPERATION

The Pump Monitor Relay provides Motor Over Temperature and Seal Leakage alarms for Submersible Pumps.

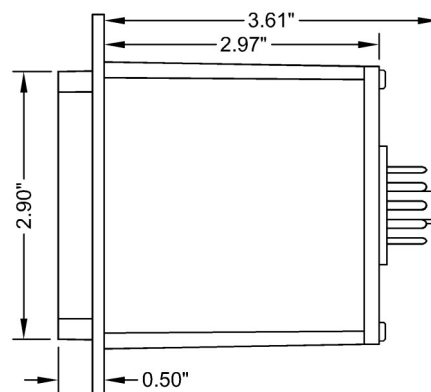
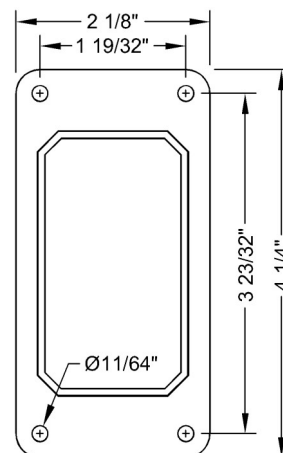
**Motor Over Temperature Alarm** - The unit applies a low voltage DC signal to the Motor Thermal Sensor to check its status. If the unit detects that the Motor Thermal Sensor contacts are closed (normal condition), the Overtemp indication remains off, and the Overtemp Relay is energized closing the contacts between terminals 1 and 3.

If the Motor Thermal Sensor contacts open (Over Temperature condition), the Overtemp Indication is turned on and the Overtemp Alarm Relay is de-energized opening the contacts between terminals 1 and 3 and closing the contacts between terminals 1 and 4.

When the High Motor Temperature condition has cleared, the unit will reset based on the position of Alarm Reset Mode Select Switch (Auto or Manual). When in the Auto position, the Overtemp Alarm resets automatically. If the switch is in the Manual position, the Overtemp Reset Push-button must be pushed for approximately 1.5 seconds to clear the alarm.

**Seal Leakage Alarm** - The unit detects moisture inside a pump motor by using a low voltage AC signal to measure the resistance between a single (or dual) Leakage Probe(s) and the grounded motor housing, or across two Leakage Probes. A Seal Leakage condition is considered present when the amount of moisture in the motor causes the resistance between terminal 2 and 5 to drop below the setting on the potentiometer. When this occurs the unit turns on the Leakage Indication and the Leakage Alarm Relay is energized opening the contacts between terminals 11 and 8 and closing the contacts between terminals 11 and 9.

The alarm trip point may be set by the following procedure: Isolate the Leakage Probe(s) from terminal 2. Connect a resistor, with the desired trip value, across terminals 2 and 5. Slowly adjust the potentiometer to the point where the alarm turns on. Remove the resistor and reconnect to the Leakage Probe(s).



## SPECIFICATIONS

Input Power:	120 VAC $\pm$ 10%, 7.0 VA max
Output Rating:	8A Resistive @ 120VAC
Operating Temp:	-20°C to +65 °C
Storage Temp:	-45°C to +85 °C
Temp Sensor Voltage:	6.6 VDC $\pm$ 10%
Leak Sensor Voltage:	4.7 VAC $\pm$ 10%
Enclosure:	White Lexan
Base:	Phenolic

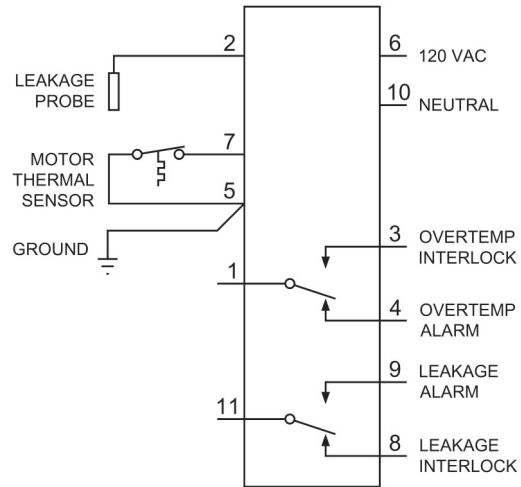
## ORDERING INFORMATION

**Part Number:** PMR5

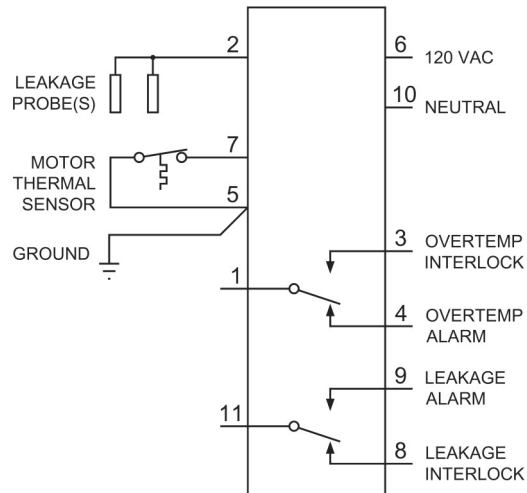
# Pump Monitor Relay PMR5

## CONNECTION DIAGRAMS

### CHECKS RESISTANCE BETWEEN ONE PROBE AND MOTOR HOUSING



### CHECKS RESISTANCE BETWEEN TWO PROBES AND MOTOR HOUSING



### CHECKS RESISTANCE BETWEEN TWO PROBES

