

# Voltage Monitoring Relays

## 50R Series

### Single-Phase Voltage Monitor



## Description

The 50R series is a single-phase voltage monitor with a voltage-sensing circuit that constantly monitors the single-phase power for a low-voltage condition. When a harmful condition is detected, the MotorSaver® deactivates its output relay after a specified trip delay. The output relay reactivates after power line conditions return to an acceptable level and a specified amount of time has elapsed (restart delay). The trip delay prevents nuisance tripping due to rapidly fluctuating power line conditions. This monitor is used in a variety of applications such as compressors, air conditioners, heat pumps, well pumps, sump pumps, and small conveyer motors.

## Features & Benefits

| FEATURES                                                                        | BENEFITS                                                                                                                                |
|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Proprietary voltage sensing circuitry</b>                                    | Constant monitoring of single-phase power for a low-voltage condition                                                                   |
| <b>Adjustable trip delay (-3 models) and restart delay (-2 models) settings</b> | Prevents nuisance tripping due to rapidly fluctuating power line conditions, allows staggered start-up of multiple motors after a fault |
| <b>High-voltage detection (-9 models)</b>                                       | Trips and resets at a fixed percentage of the setpoint: trip 110%, reset 107%                                                           |
| <b>600 V rated relay contacts available on some models</b>                      | Eliminates the need for a control transformer to step voltage down to 120–240 V for a control circuit                                   |

## Applications

- Fan motors
- Air conditioners
- Compressors
- Heat, well, and sump pumps
- Small conveyer motors

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### Specifications

#### Input Characteristics

##### Line Voltage

|         |              |
|---------|--------------|
| 50R-100 | 95–120 V ac  |
| 50R200  | 190–240 V ac |
| 50R400  | 380–480 V ac |

##### Frequency

50\*/60 Hz

#### Functional Characteristics

##### Low Voltage

|                       |     |
|-----------------------|-----|
| Trip (% of setpoint)  | 90% |
| Reset (% of setpoint) | 93% |

##### Delay Time (Nominal) Trip

4 seconds

##### Restart (low voltage)

2 seconds

##### Restart (complete power loss)

2 seconds

#### Output Characteristics

##### Output Contact Rating

###### (SPDT - 1 Form C)

##### 50R-100, 50R200

|                 |                   |
|-----------------|-------------------|
| Pilot Duty      | 480 VA @ 240 V ac |
| General Purpose | 10 A @ 240 V ac   |

##### 50R400

|            |                   |
|------------|-------------------|
| Pilot Duty | 470 VA @ 600 V ac |
|------------|-------------------|

#### General Characteristics

##### Ambient Temperature Range

|           |                                    |
|-----------|------------------------------------|
| Operating | -20°C to 70 °C (-4 °F to 158 °F)   |
| Storage   | -40 °C to 80 °C (-40 °F to 176 °F) |

##### Maximum Input Power

5 W

##### Relative Humidity

10–95%, non-condensing per IEC 68-2-3

##### Terminal Torque

7 in.-lbs.

##### Wire Size

12–18AWG

##### Electrostatic Discharge (ESD)

IEC 61000-4-2, Level 3, 6 kV contact, 8 kV air

##### Fast Transient Burst

IEC 61000-4-4, Level 3, 3.5 kV input power and controls

##### Transient Protection (Internal)

IEC 61000-4-5; 1995 ±6 kV

##### Dimensions

**H** 74.4 mm (2.93"); **W** 133.9 mm (5.27"); **D** 74.9 mm (2.95")

##### Weight

0.98 lb. (15.68 oz., 444.52 g)

##### Mounting Method

#8 screws

#### Special Options

##### Opt. 2: Variable Restart Delay

Manual, 2–300 seconds

##### Opt. 3: Variable Trip Delay

2–30 seconds

##### Opt. 9: High Voltage Detection

###### Operating Points

|                       |      |
|-----------------------|------|
| Trip (% of Setpoint)  | 110% |
| Reset (% of Setpoint) | 107% |

\*Note: 50 Hz will increase all delay timers by 20%

### Certification & Compliance

|    |                       |
|----|-----------------------|
| UL | UL 508 (File #E68520) |
| CE | IEC 60947-6-2         |

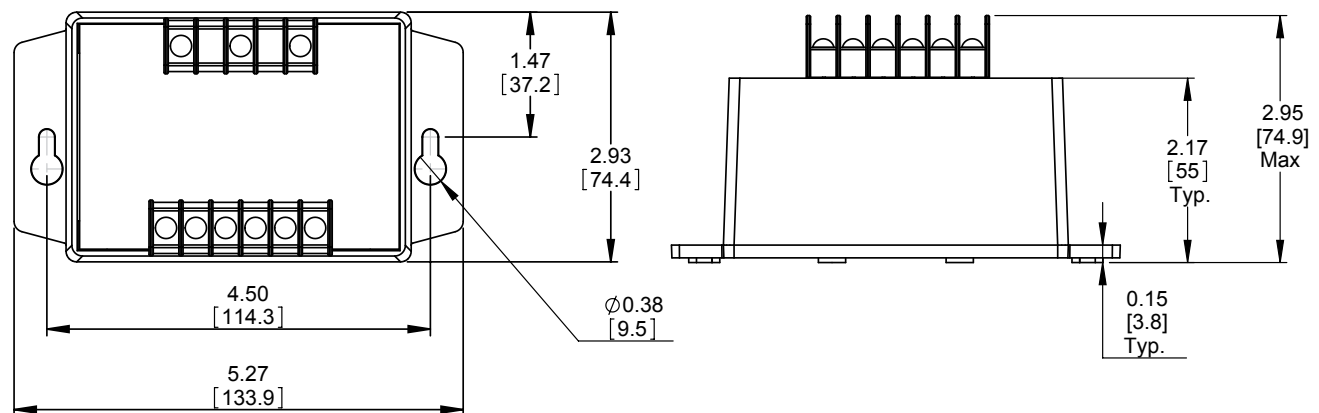
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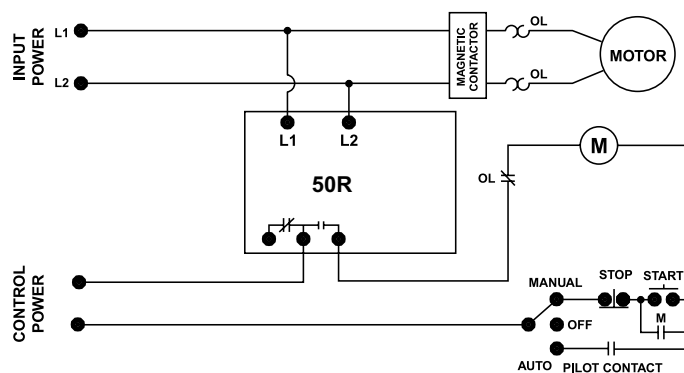
### Ordering Information

| MODEL     | LINE VOLTAGE | DESCRIPTION                                                                         |
|-----------|--------------|-------------------------------------------------------------------------------------|
| 50R-100   | 95–120 V ac  | Fixed trip and restart delay                                                        |
| 50R-100-2 | 95–120 V ac  | Fixed trip and variable restart delay (manual, 2–300 s)                             |
| 50R200    | 190–240 V ac | Fixed trip and restart delay                                                        |
| 50R2002   | 190–240 V ac | Fixed trip and variable restart delay (manual, 2–300 s)                             |
| 50R2003   | 190–240 V ac | Fixed restart and variable trip delay (2–30 s)                                      |
| 50R20029  | 190–240 V ac | Fixed trip and variable restart delay (manual, 2–300 s) plus high voltage detection |
| 50R400    | 380–480 V ac | Fixed trip and restart delay                                                        |
| 50R4002   | 380–480 V ac | Fixed trip and variable restart delay (manual, 2–300 s)                             |
| 50R4003   | 380–480 V ac | Fixed restart and variable trip delay (2–30 s)                                      |
| 50R40029  | 380–480 V ac | Fixed trip and variable restart delay (manual, 2–300 s) plus high voltage detection |

### Dimensions Inches (mm)



### Wiring Diagram



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