

# 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

<b>50R-100</b>	95–120 V ac
<b>50R200</b>	190–240 V ac
<b>50R400</b>	380–480 V ac

##### Frequency

50\*/60 Hz

#### Functional Characteristics

##### Low Voltage

<b>Trip (% of setpoint)</b>	90%
<b>Reset (% of setpoint)</b>	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

<b>Pilot Duty</b>	480 VA @ 240 V ac
<b>General Purpose</b>	10 A @ 240 V ac

##### 50R400

<b>Pilot Duty</b>	470 VA @ 600 V ac
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#### General Characteristics

##### Ambient Temperature Range

<b>Operating</b>	-20°C to 70 °C (-4 °F to 158 °F)
<b>Storage</b>	-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

<b>Trip (% of Setpoint)</b>	110%
<b>Reset (% of Setpoint)</b>	107%

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

### Certification & Compliance

<b>UL</b>	UL 508 (File #E68520)
<b>CE</b>	IEC 60947-6-2

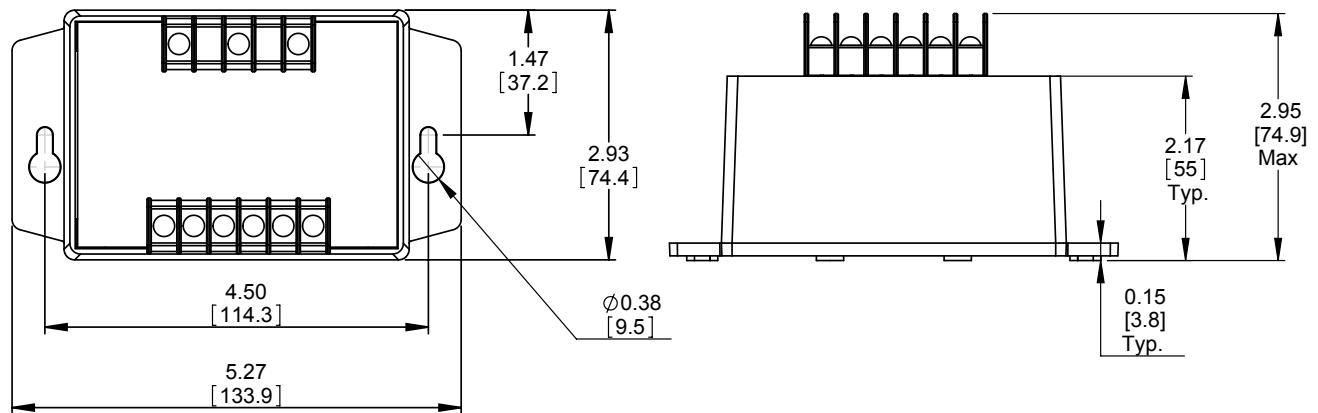
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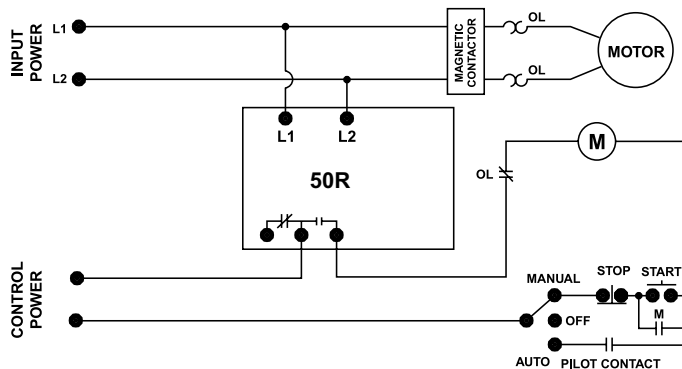
### Ordering Information

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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