

# **460 SERIES**

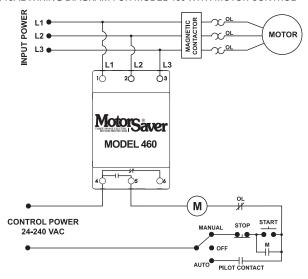
## 3-Phase Voltage Monitor





### Wiring Diagram

TYPICAL WIRING DIAGRAM FOR MODEL 460 WITH MOTOR CONTROL



### **Description**

The 460 is a 3-phase voltage monitor that protects 190-480VAC or 475-600V, 50/60Hz motors regardless of size. The product provides a user selectable nominal voltage setpoint and the voltage monitor automatically senses line voltage.

This unique microcontroller-based voltage and phase-sensing device constantly monitors the 3-phase voltages to detect harmful power line conditions such as low, high, and unbalanced voltage, loss of any phase, and phase reversal. When a harmful condition is detected, the MotorSaver® output relay is deactivated after a specified trip delay. The output relay reactivates after power line conditions return to an acceptable level for a specified amount of time (restart delay). The trip and restart delays prevent nuisance tripping due to rapidly fluctuating power line conditions.

All 460 models feature adjustable 1-30 second trip delay, 1-500 second restart delay, 2-8% voltage unbalance trip point, and one form C contact except where noted below.

#### **Features & Benefits**

FEATURES	BENEFITS
Auto-sensing wide voltage range	Automatically senses system voltage between 190 - 480VAC or 475-600VAC. Saves set-up time
Adjustable trip & restart delay settings	Prevent nuisance tripping due to rapidly fluctuating power line conditions
Microcontroller based circuitry	Improved accuracy and higher reliability
Advanced LED diagnostics	Quick visual indicator for cause of trip and relay status
Adjustable voltage unbalance trip setting	Provides reliable protection when regenerative voltage is present

#### Ordering Information

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MODEL	VOLTAGE	DESCRIPTION	
460	190-480VAC	Automatically senses line voltage, adjustable 1-30 second trip delay, 1-500 second restart delay, and 2-8% voltage unbalance trip point	
460-L	190-480VAC	Fixed 4 second trip delay and 1 second for single-phase faults, and fixed 6% voltage unbalance trip point	
460-14	190-480VAC	Equipped with 2 sets of contacts: Form A (NO) and Form B (NC). Used for applications requiring 2 different voltages such as 5VDC for a PLC input and 115VAC for an alarm	
460-575	475-600VAC	Commonly used in Eastern Canada and on generator units that generate 600 VAC power	
460-575-14	475-600VAC	Commonly used in Eastern Canada and on generator units that generate 600 VAC power. Equipped with 2 sets of contacts: Form A and Form B	
460-15	190-480VAC	Equipped with 2 sets of Form A (NO) contacts. Used on applications where two different units are to be controlled at once such as a unit that has separate contacts for a compressor and a fan	
460-MR	190-480VAC	Equipped with a 2-prong connection for a normally open push button mounted outside the panel. Used in applications requiring an external manual reset button	
460-VBM	190-480VAC	Fixed 6% voltage unbalance trip point. User adjustable low and high voltage trip points	
460-400HZ	190-480VAC	For use with 400Hz power supply	
460-0EM	190-480VAC	Bulk package of 460, 20 units	
460L-0EM	190-480VAC	Bulk package of 460-L, 20 units	



## 460 SERIES

**Specifications** 

Frequency 50/60Hz Low Voltage (% of setpoint)

 Trip
 90% ±1%

 Reset
 93% ±1%

High Voltage (% of setpoint)

Voltage Unbalance (NEMA)

**Trip** 2-8% adjustable

 Reset
 Trip setting minus 1% (5-8%)

 Trip setting minus 0.5% (2-4%)

 460L
 6% UB fixed (4.5% reset)

**Trip Delay Time** 

Low, High and

Unbalanced Voltage 1-30 seconds adjustable

**460L** 4 seconds fixed

Single-Phase Faults

(>15% UB) 1 second fixed

**Restart Delay Time** 

After a Fault 1-500 seconds adjustable
After a Complete Power Loss 1-500 seconds adjustable

**Output Contact Rating** 

Form C

 Pilot Duty
 480VA @ 240VAC, B300

 General Purpose
 10A @ 240VAC

Form A & Form B

**Pilot Duty** 360VA @ 240VAC, B300

**General Purpose** 8A @ 240VAC

**Ambient Temperature Range** 

 Operating
 -20° to 70°C (-4° to 158°F)

 Storage
 -40° to 80°C (-40° to 176°F)

Maximum Input Power 6 W

Class of Protection IP20, NEMA 1 (finger safe)

**Relative Humidity** 10-95%, non-condensing per IEC 68-2-3

**Terminal Torque** 4.5 in.-lbs

Wire Type Stranded or solid 12-20 AWG, one per terminal

Standards Passed

Electrostatic Discharge (ESD) IEC 61000-4-2, Level 3, 6kV contact, 8kV air

RFI, Radiated 150 MHz, 10V/m
Fast Transient Burst IEC 61000-4-4, Level 3, 3.5kV input power and controls

Surge

IEC 61000-4-5. Level 3. 4kV line-to-line:

Level 4, 4kV line-to-ground

**ANSI/IEEE** C62.41 Surge and Ring Wave Compliance

to a level of 6kV line-to-line

Hi-potential Test Meets UL508 (2 x rated V +1000V for 1 minute)

**Safety Marks** 

 UL
 UL508 (File #E68520)

 CE
 IEC 60947-6-2

 Enclosure
 Polycarbonate

**Dimensions H** 88.9 mm (3.5"); **W** 52.9 mm (2.08");

**D** 59.69 mm (2.35")

Weight 0.7 lb. (11.2 oz., 317.51 g)

Mounting Method 35 mm DIN rail or Surface Mount

(#6 or #8 screws)

**460-MR (manual reset)** External NO pushbutton required.

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