

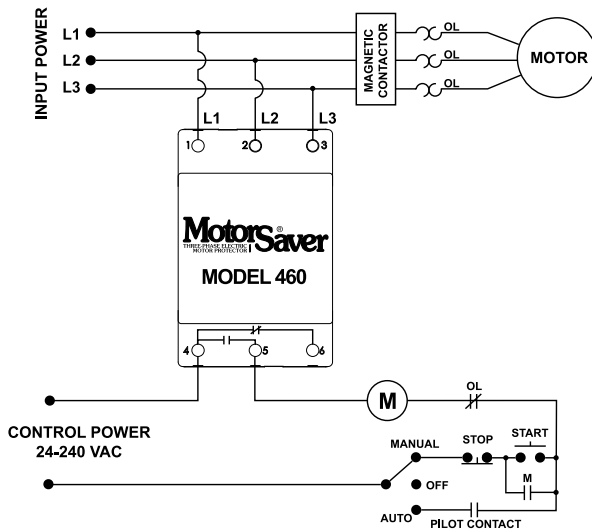
460 SERIES

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 |

For dimensional drawing see: Appendix, page 510, Figure 10.

Ordering Information

| 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-OEM | 190-480VAC | Bulk package of 460, 20 units |
| 460L-OEM | 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) | |
| Trip | 110% ±1% |
| Reset | 107% ±1% |
| Voltage Unbalance (NEMA) | |
| Trip | 2-8% adjustable |
| Reset | Trip setting minus 1% (5-8%) Trip setting minus 0.5% (2-4%) 6% UB fixed (4.5% reset) |
| 460L | |
| Trip Delay Time | |
| Low, High and Unbalanced Voltage | 1-30 seconds adjustable 4 seconds fixed |
| 460L | |
| Single-Phase Faults (>25% 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 150 MHz, 10V/m |
| RFI, Radiated | IEC 61000-4-4, Level 3, 3.5kV input power and controls |
| Fast Transient Burst | |

Surge

| | |
|------------------|--|
| IEC | 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 Meets UL508 (2 x rated V +1000V for 1 minute) |

Hi-potential Test

| | |
|------------------------------|---|
| 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. |