

## Features

Four adjustment pots provide versatility for all kinds of applications.

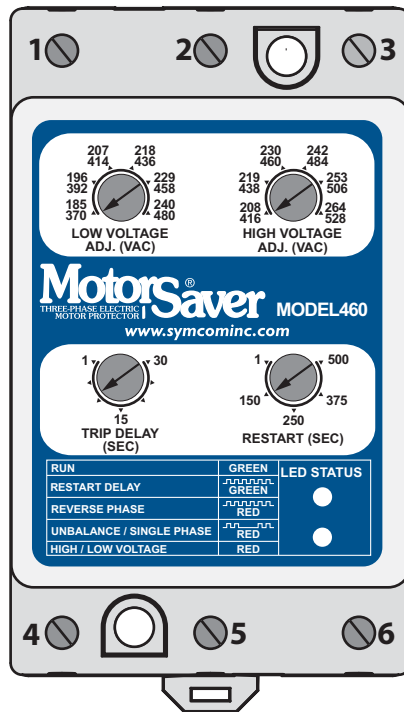
Universal range from 190-480VAC 50 or 60Hz provides the versatility needed to handle global applications.

Diagnostic LEDs indicate trip status and provide simple troubleshooting.

Microcontroller-based circuitry provides better accuracy and higher reliability than analog designs.

Transient protection meets IEEE and IEC standards and permits operation under tough conditions.

Single-phase conditions are detected regardless of regenerated voltages.



**Motorsaver**  
THREE-PHASE ELECTRIC  
MOTOR PROTECTOR

**Model  
460-VBM**

**Three-Phase  
Voltage Monitor**

**Engineered  
Protection**

**Microcontroller  
Based**

### **Protects 3-Phase Motors from:**

- Loss of any phase
- Low voltage
- High voltage
- Voltage unbalance
- Phase reversal
- Rapid cycling

### **Additional Features:**

- Compact design
- UL and cUL listed
- CE compliant
- Finger-safe terminals
- 5-year warranty
- Made in USA
- Surface or DIN rail mountable
- Standard 1-500 sec. variable restart delay
- Standard 1-30 sec. variable trip delay
- One 10 amp general purpose form C relay

The **Model 460-VBM** is designed to protect 3-phase loads from damaging power conditions. The 460-VBM's wide operating range combined with UL and CE compliance enables quick access to domestic and global markets.

A unique microcontroller-based voltage and phase-sensing circuit constantly monitors the 3-phase voltages to detect harmful power line conditions. When a harmful condition is detected, the MotorSaver's 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.

The Model 460-VBM automatically senses whether it is connected to a 190-240V 60Hz system, a 440-480V 60Hz system, or a 380-416V 50Hz system. Adjustments are provided to set the low voltage and high voltage trip points. Other adjustments include a 1-30 second trip delay and a 1-500 second restart delay.

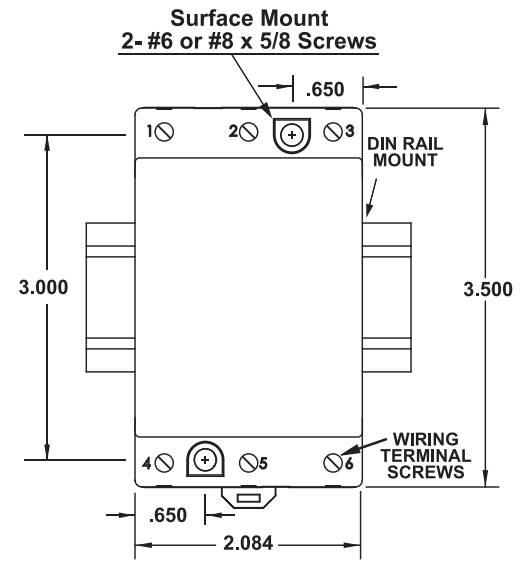
## Model 460-VBM Three-Phase Voltage Monitor

### SPECIFICATIONS

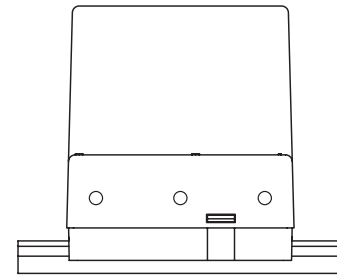
|  |   |
|--|---|
| <b>3-Phase Line Voltage</b> .....          | 190-480VAC  |
| <b>Frequency</b> .....                     | 50* or 60Hz   |
| <b>Low Voltage</b>                         |   |
| Trip .....                                 | 185-480VAC  |
| Reset .....                                | Trip Setting plus 3%  |
| <b>High Voltage</b>                        |   |
| Trip .....                                 | 208-528VAC  |
| Reset .....                                | Trip Setting minus 3%   |
| <b>Voltage Unbalance (NEMA)</b>            |   |
| Trip .....                                 | 6%  |
| Reset .....                                | 5%  |
| <b>Trip Delay Time</b>                     |   |
| Low, High and Unbalanced Voltage .....     | 1-30 Seconds Adjustable   |
| Single-phasing Faults .....                | 1 Second  |
| <b>Restart Delay Time</b>                  |   |
| After a fault or complete power loss ..... | 1-500 Seconds   |
| <b>Output Contact Rating - SPDT</b>        |   |
| Pilot Duty .....                           | 480VA @ 24VAC   |
| General Purpose .....                      | 10A @ 240VAC  |
| <b>Power Consumption</b> .....             | 6 Watts (maximum)   |
| <b>Weight</b> .....                        | 14 oz   |
| <b>Enclosure</b> .....                     | Polycarbonate   |
| <b>Terminal</b>                            |   |
| Torque .....                               | 6 in.-lbs. Max.   |
| Wire AWG .....                             | 12 - 20 AWG   |
| <b>Safety Marks</b>                        |   |
| UL .....                                   | UL508 (File # E68520)   |
| CE .....                                   | IEC 60947-6-2   |
| <b>Standards Passed</b>                    |   |
| Electrostatic Discharge (ESD) .....        | IEC 1000-4-2, Level 3, 6 kV contact, 8 kV air   |
| Radio Frequency Immunity, Radiated .....   | 159 MHz, 10 V/m   |
| Fast Transient Burst .....                 | IEC 1000-4-4, Level 3,<br>3.5 kV input power and controls                                   |
| <b>Surge</b>                               |   |
| IEC .....                                  | IEC 1000-4-5, Level 3, 4 kV line-to-line;<br>Level 4, 4 kV line-to-ground                   |
| ANSI / IEEE .....                          | C62.41 Surge and Ring Wave Compliance<br>to a level of 6 kV line-to-line                    |
| Hi-potential Test .....                    | Meets UL508<br>(2 x rated V +1000V for 1 minute)  |
| <b>Environmental</b>                       |   |
| Temperature Range .....                    | Ambient Operating: -20° - 70°C (-4° - 158°F)<br>Ambient Storage: -40° - 80°C (-40° - 176°F) |
| Class of Protection .....                  | IP20, NEMA 1 (finger safe)  |
| Relative Humidity .....                    | 10-95%, non-condensing per IEC 68-2-3   |

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

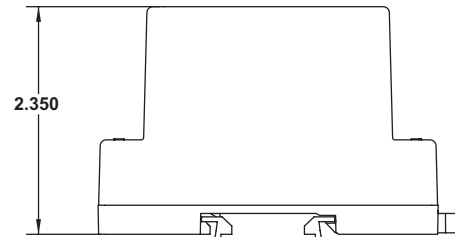
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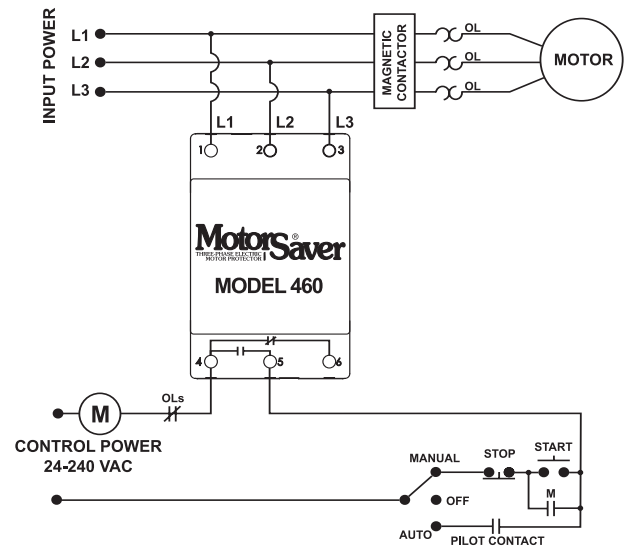
FRONT VIEW



BOTTOM VIEW



SIDE VIEW



TYPICAL WIRING DIAGRAM