

**DANGER!**



**HAZARDOUS VOLTAGES MAY BE PRESENT DURING INSTALLATION.**

Electrical shock can cause death or serious injury.

Installation should be done by qualified personnel following all national, state and local electrical codes.



**BE SURE POWER IS DISCONNECTED PRIOR TO INSTALLATION!  
FOLLOW NATIONAL, STATE, AND LOCAL CODES!  
READ THESE INSTRUCTIONS ENTIRELY BEFORE INSTALLATION!**

**! WARNING !**

**UNEXPECTED OUTPUT ACTUATION CAN OCCUR.**

Use hard-wired safety interlocks where personnel and/or equipment hazards exist.

Failure to follow this instruction can result in death, injury or equipment damage.

The Model 460-SP MotorSaver® is a voltage monitor designed to protect single-phase motors regardless of size. The MotorSaver® is used on 190-240 (95-120) VAC, 50 to 60 Hz motors to protect from damage caused by low voltage and high voltage.

**CONNECTIONS**

1. Mount the MotorSaver® in a convenient location in or near the motor control panel. If the location is wet or dusty, the MotorSaver® should be mounted in a NEMA 4 or 12 enclosure. The MotorSaver® can be mounted to a back panel using two #6 or #8 x 5/8 screws or can be snapped onto a DIN rail.
2. Connect L1 and L2 on the MotorSaver's terminal strip to the LINE SIDE of the motor starter (See Figure 1).
3. Connect the output relay to the circuitry to be controlled. For motor control, connect the normally open contact in series with the magnetic coil of the motor starter (See Figure 1). For alarm operation, connect the normally closed contact in series with the control circuit (See Figure 2).

II-460-SP-B



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(800) 843-8848 [www.symcom.com](http://www.symcom.com)

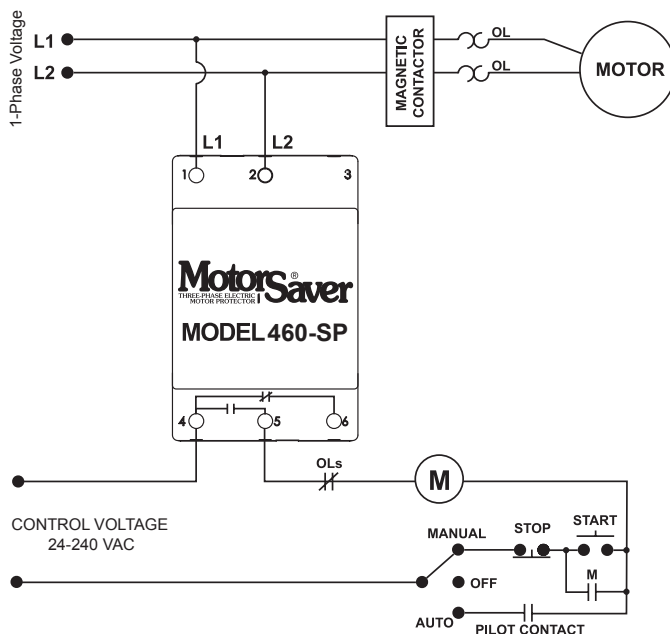


FIGURE 1: CONTROL WIRING DIAGRAM

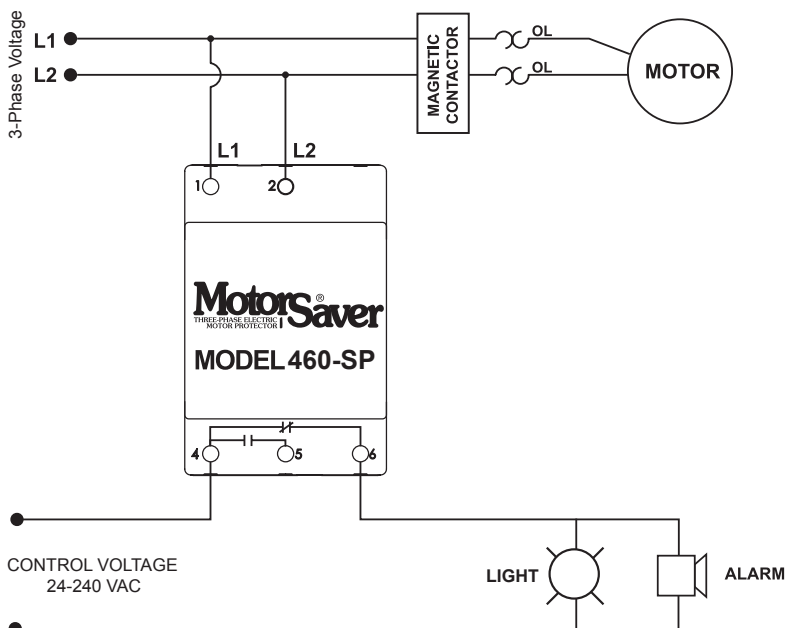
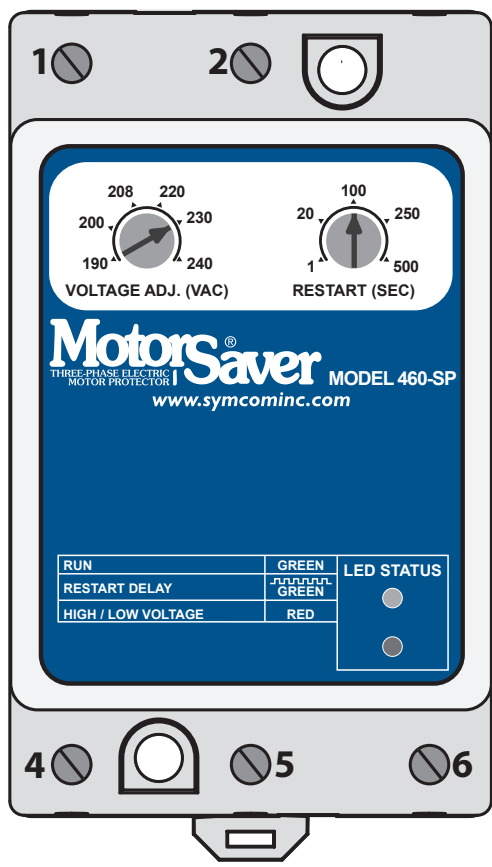


FIGURE 2: ALARM WIRING DIAGRAM

**SETTINGS**

- 1. Line voltage adjustment: Rotate the “**VOLTAGE ADJ. (VAC)**” to the nominal line voltage feeding the motor to be protected.
- 2. Restart delay adjustment: Rotate the “**RESTART (SEC)**” adjustment to the desired position. The restart delay is the time between the MotorSaver® seeing acceptable voltage and the MotorSaver® closing its output contacts. For compressor applications, the restart delay should be set for the approximate time it takes for the head pressure to bleed off of the compressor. For other applications, the restart delay is typically set between 2 and 10 seconds.



**POWER-UP**

Turn on the power to the motor. The MotorSaver’s green RUN light will blink during the RESTART delay. After the RESTART delay, the MotorSaver® will energize its output contacts and the green RUN light will illuminate. If the contacts do not energize and the RUN light does not illuminate, see the TROUBLESHOOTING section.

| <b><u>DIAGNOSTIC INDICATOR LIGHTS</u></b> |                                                                                                   |
|-------------------------------------------|---------------------------------------------------------------------------------------------------|
| <b>RUN</b>                                | <b>GREEN</b>                                                                                      |
| <b>RESTART DELAY</b>                      | <br><b>GREEN</b> |
| <b>HIGH / LOW VOLTAGE</b>                 | <b>RED</b>                                                                                        |

**CONGRATULATIONS!!  
YOU HAVE JUST INSTALLED THE FINEST  
MOTOR PROTECTION AVAILABLE!!**

**TROUBLESHOOTING**

| SYMPTOM                                              | LIGHT PATTERN                                                                           | SOLUTION                                                                                                                                                                                                                                                                                                               |
|------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| No lights are on.<br>The unit seems completely dead. | N / A                                                                                   | Measure the voltage. If the voltage is below 75 VAC, the MotorSaver® does not have enough power to operate its internal electronics.<br>If the voltage is correct, call SymCom at 1-800-843-8848 or 1-605-348-5580.                                                                                                    |
| Red light is on steady.                              | RED                                                                                     | The voltage is out of tolerance. Measure the input voltage. If the voltage is 7% above or below the nominal voltage as selected by the LINE VOLTAGE ADJUST, the MotorSaver® is functioning properly. If the voltage is within $\pm 7\%$ of the selected line voltage, call SymCom at 1-800-843-8848 or 1-605-348-5580. |
| Green light blinks and motor is not running.         |  GREEN | The MotorSaver® is in restart delay.                                                                                                                                                                                                                                                                                   |
| Green light is on steady, but motor does not start.  | GREEN                                                                                   | The MotorSaver® is in run mode. Ensure other control devices are allowing the motor to start. Check control circuit for loose wires or malfunctioning switches.                                                                                                                                                        |

**Any questions or comments call SymCom at 1-800-843-8848 or 1-605-348-5580**

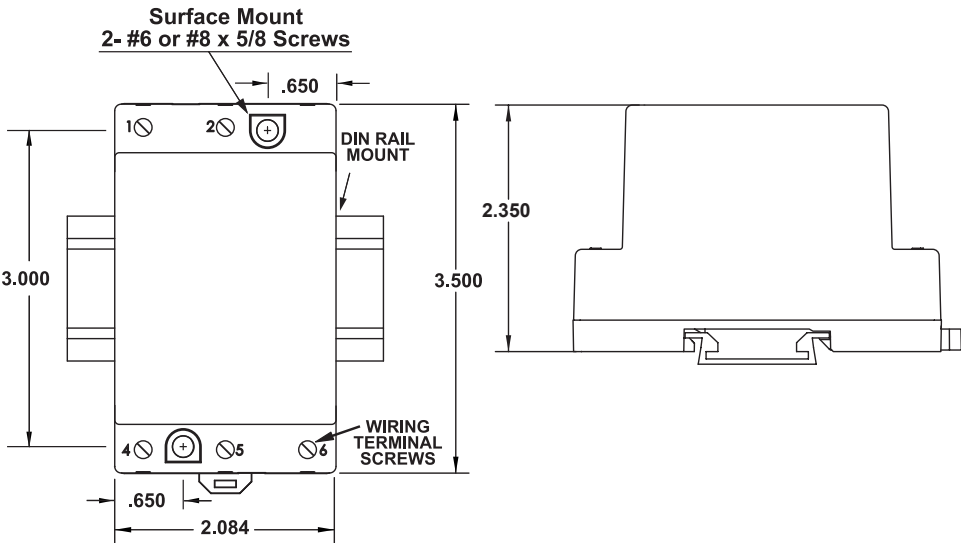
## **SPECIFICATIONS**

|                                     |                                                        |
|-------------------------------------|--------------------------------------------------------|
| <b>1 - Phase Line Voltage</b>       | 190 - 240 (95-120) VAC                                 |
| <b>Frequency</b>                    | 50* - 60 Hz                                            |
| <b>High Voltage (% of setpoint)</b> |                                                        |
| Trip                                | 110% $\pm$ 1%                                          |
| Reset                               | 107% $\pm$ 1%                                          |
| <b>Low Voltage (% of setpoint)</b>  |                                                        |
| Trip                                | 90% $\pm$ 1%                                           |
| Reset                               | 93% $\pm$ 1%                                           |
| <b>Trip Delay Time</b>              |                                                        |
| Low Voltage                         | 4 Seconds Fixed                                        |
| High Voltage                        | 4 Seconds Fixed                                        |
| <b>Restart Delay Time</b>           |                                                        |
| After a complete power loss         | 1-500 Seconds Adjustable                               |
| <b>Output Contact Rating - SPDT</b> |                                                        |
| Pilot Duty                          | 480 VA @ 240 VAC                                       |
| General Purpose                     | 10 A @ 240 VAC                                         |
| <b>Power Consumption</b>            | 6 Watts (maximum)                                      |
| <b>Weight</b>                       | 14 oz                                                  |
| <b>Enclosure</b>                    | Polycarbonate                                          |
| <b>Terminal</b>                     |                                                        |
| Torque                              | 6 Inch-Pounds                                          |
| 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, 3.5 kv input power and controls |

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

| Surge               |                                                                                               |
|---------------------|-----------------------------------------------------------------------------------------------|
| IEC                 | IEC 1000-4-5, Level 3, 4kv line-to-line;<br>Level 4, 4kv line-to-ground                       |
| ANSI / IEEE         | C62.41 Surge and Ring Wave Compliance<br>to a level of 6kv line-to-line                       |
| Hi-potential Test   | Meets UL508 (2 x rated V +1000V for 1<br>minute)                                              |
| Environmental       |                                                                                               |
| 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                                                         |

DIMENSIONS



SymCom warrants its microcontroller based products against defects in material or workmanship for a period of five (5) years\* from the date of manufacture. All other products manufactured by SymCom shall be warranted against defects in material and workmanship for a period of two (2) years from the date of manufacture. For complete information on warranty, liability, terms, and conditions, please refer to the SymCom Terms and Conditions of Sale document.

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