

Background:

Today's vessels are equipped with powerful electrical systems that often incorporate high-output alternators and lithium-ion batteries. The potential for damage to expensive electronic components is significant where there is a possibility of circuit disconnection or rapid high-load loss. An abrupt disconnect or load drop results in high-voltage surge from the power generating source; which unless contained can quickly compromise expensive electronic components, possibly disabling the vessel. An ultra-fast acting device to control these potential surges is an essential safety and insurance element for every vessel.

The ElectroMaax SSP provides both the protection and "peace of mind" to ensure system integrity.

SSP (System Surge Protector):

A robust electronic module that is easily mounted and connected in "parallel" with the primary circuit and in "series" with the ignition and field circuits of the alternator. Designed to provide protection for both internally and externally regulated alternator systems (Figure 1 & 2).

As a voltage sensitive monitoring system the SSP provides protection "at or greater than" 15 volts for a 12 volt system or 30 volts for a 24 volt system. Designed to handle up to a 3.5 Kw surge, while providing controlled disconnection and re-connection.

As a protection device the SSP has 3 primary functions;

1. Monitor system voltages and provide controlled disconnect of vulnerable equipment (e.g.- Alternator) within milli-seconds.
2. Safely dissipate any transient electrical "spikes" or surges protecting all voltage sensitive electronic instruments.
3. Monitor system integrity and re-connect when safe to do so, minimal disconnect time of 0.2 seconds.

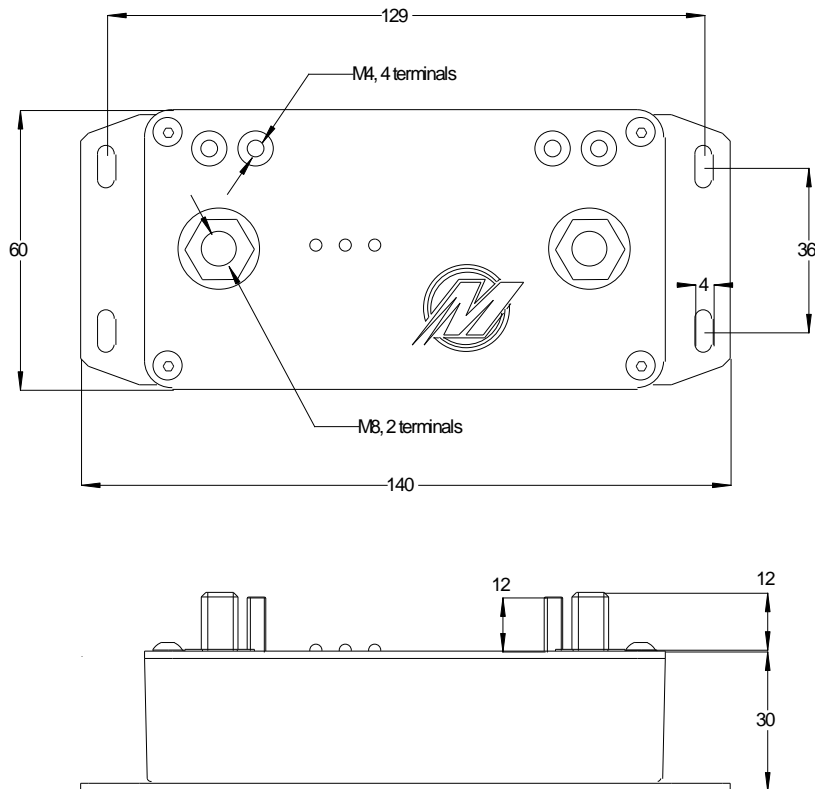
Features:

- Compact size –easily mounted
- LED Status indicators - 12 Volt / 24 Volt / Surge
- Surge capability - 3 KW
- Recognizes system voltage, 12 or 24 V, and adjusts accordingly
- Provides protection for all alternator types, even with internal regulators.



Installation:

The SSP has four mounting slots, which allow a firm connection to a solid supporting surface.



The SSP has 6 connection studs; the primary system connection (positive and negative) is to the 5/16" (8 mm) studs. The primary connections are in-parallel at any location in the system that is convenient.

The Ignition and Field connections on the small (4 mm) studs are to be connected in "series" to provide the circuit interruption. The Ignition connections are on the top-left corner and the Field on the top-right corner. Field connections are required for external regulators only. The supply and return can be connected in either position.

The following schematics show 3 possible system configurations; having either an internal regulator, or an external regulator, or a remote rectifier with an external regulator.

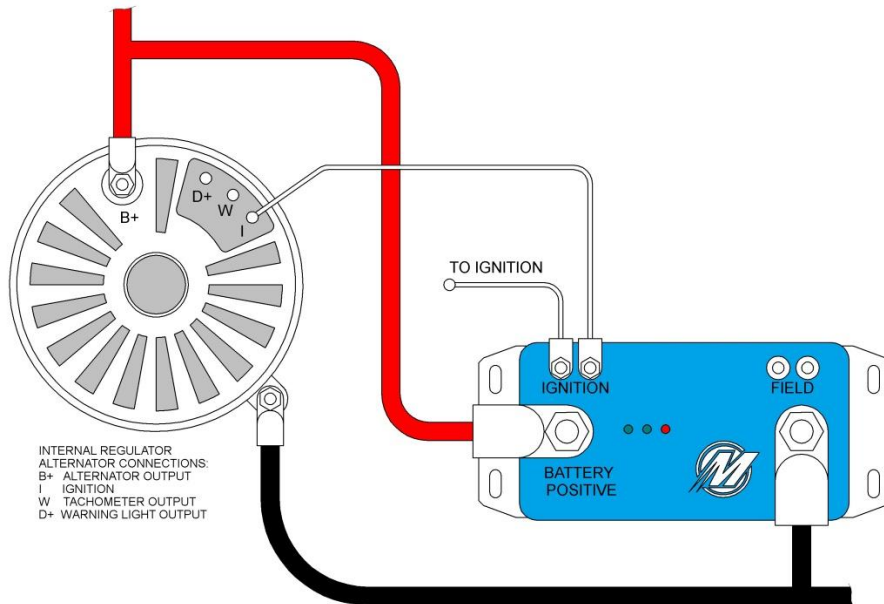


Figure 1: Internal Regulator

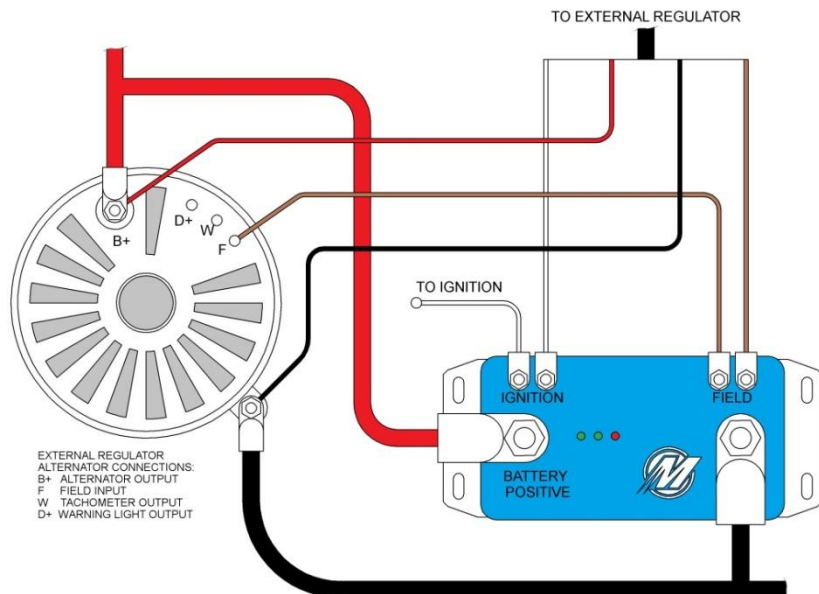


Figure 2 External Regulator

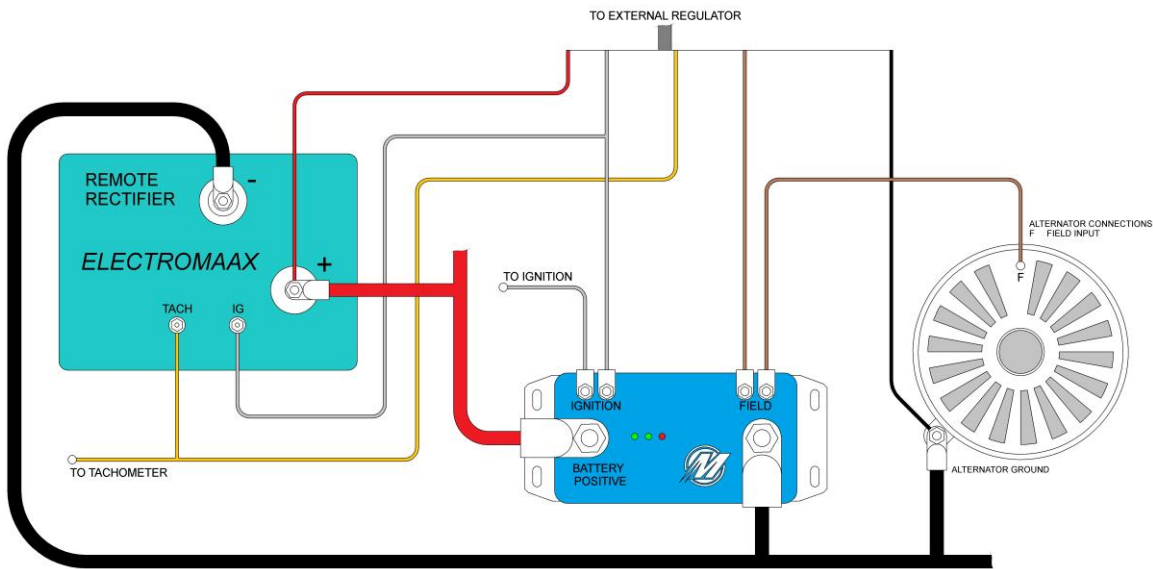


Figure 3 Remote Rectifier and External Regulator

Operation:

When under power the 3 LED's will indicate status.

During the initial 2 seconds of every power-up the 2 green LEDs will flash as the SSP detects the system voltage and sets the appropriate voltage thresholds.

The first LED (from the left) will flash green for a 12 Volt system or the center LED will flash green for a 24 volt system, the Surge LED (red) will only light when the SSP has detected a surge and is actively suppressing.

In the event of a surge, the SSP will interrupt the ignition and field circuits and direct the electrical spike to a dissipating resistor. During this suppressing mode the "Surge" red LED will light. If the surge is transient and the system conditions return to normal both the Ignition and Field are re-connected, allowing the regulator to provide a controlled re-start of the alternator.

Review:

High-voltage electrical surges can be both dangerous and expensive. The SSP is designed to provide a safe, controlled response to such an occurrence. Today's vessels typically have thousands of dollars of sensitive electronics; the SSP provides both security and peace of mind, and is simple to install. More than a fast-acting resettable fuse, the SSP has the intelligence to respond and restart in a controlled technique.

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