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# SureStart™ Automotive

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## SPECIAL FEATURES

- *Dual Thresholds (Shut-off levels)*
- *Can be Used as Battery Isolator*
- *Programmable Turn-Off Thresholds*
- *Programmable Automatic Reset*
- *Programmable Running Sensor*
- *Programmable Threshold Timer*
- *Solid State (no mechanical parts)*
- *Soft Switching (reduces spikes & transients)*
- *Built-in Self Test*
- *Microprocessor Controlled*
- *Easy Installation (no cutting or splicing of cables)*
- *Programmable with Laptop/PC (Adapter Required)*

## FUNCTIONAL DESCRIPTION

SureStart™ protects the battery in your vehicle from accidental discharge. The battery is protected from the entire electrical system. Installation is facilitated in the engine compartment of a vehicle. The SureStart™ unit is attached to the battery and utilizes existing battery cables. It is a simple “bolt on” procedure, where NO cutting or splicing is required (see Installation Instructions).

The SureStart™ shuts off when the battery charge level has decreased to approximately 25%. The actual Shut-Off is delayed (Shut Down Delay) to assure that the SureStart™ is not accidentally triggered by transients and/or noise. The Shut Down Delay is Programmable (with a Laptop/PC). The Factory Setting is 15 Seconds.

Dual shut-off thresholds are employed in the SureStart™ to accommodate both heavy and light electrical loads (compensation for internal resistance in your battery). The shut-off thresholds are programmable (with a Laptop/PC) to accommodate special applications. The SureStart™ always powers up in the lower threshold mode. This threshold mode is also maintained when your vehicle is driven (engine running). A threshold timer (Programmable with a Laptop/PC) starts when your vehicle is turned off. SureStart™ enters its 2nd threshold mode (higher threshold) once the threshold timer expires. The 2nd threshold mode is maintained for 1 min, after which the 1st threshold level is re-entered and the threshold timer is restarted. The factory default settings are 11.7 [V] (lower threshold) and 12.1 [V] (higher threshold).



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The SureStart™ is reset (after it has shut off) by the brake pedal, the ignition, door switch, or the headlight switch. It is also possible to reset the SureStart™ by touching the normally un-connected test lead (Purple) to the positive (+) battery terminal, or by charging your battery to 13 [V] or higher (Actual voltage level is also programmable with a Laptop/PC).

The automatic reset function of SureStart™ has a programmable (with a Laptop/PC) dwell time (time delay from turn off until the reset circuit is powered up). The dwell time ensures that noise in the electrical system does not cause a false reset. The factory default setting is 5 seconds.

The running sensor detects when the engine is running and prevents the SureStart™ from shutting off when your vehicle is driven. This is a redundant circuit that prevents the SureStart™ from shutting off if, for example, your alternator is defective. The running sensor is also programmable (with a Laptop/PC). The factory default setting is a 64 milli second sensing window, i.e. the SureStart™ looks at the running sensor during a 64 milli Second time interval right before shut-off.

The built-in Self-Test is initiated, once the SureStart™ unit is installed in a vehicle, by continuously grounding the Purple Test Lead. The SureStart™ then interprets a low battery voltage and shuts off. The time it takes the SureStart™ to shut off during self test (Turn-off Delay) is programmable. The Factory setting is 2 Seconds.

The SureStart™ may also be re-programmed to work as a battery isolator. In this mode, the SureStart™ is connected to the primary battery (Starting or chassis battery) according to the standard installation instructions. The output of the SureStart™ is connected to the auxiliary battery. Suitable programming settings are as follows: Reset Voltage 13.0 to 13.2 [V], Threshold 1 12.6 to 12.8 [V], Threshold 2 Same as Threshold 1, Threshold Timer 1 hr (Noncritical), Shut Down Delay 30 Secs to 1 min (adjust to reduce/increase Auxiliary battery cycling), Run Sensor Off (0), Reset Sensor Off (0). The Turn-Off Delay is noncritical and can be left a factory setting.

Web: [www.loadingzonesafety.com](http://www.loadingzonesafety.com)

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## APPLICATIONS

- *Custom Vans*
- *Pickup Trucks*
- *Mini Vans*
- *Automobiles*
- *RVs*
- *Boats & Marine - Refer to SureStart Marine*



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## ELECTRICAL

For 12 V Automotive Systems with Negative Ground

Nominal Input Voltage	12 VDC
Input Voltage Range	8 - 20 VDC
Output Current (Nominal)	100 A
Output Current (Max)	150 A
Output Current (Pulsed)	800 A
Output Voltage	Same as Input Voltage
Current Draw (Nominal)	6.0 mA
Current Draw (Max)	7.5 mA
Reliability	728,000 MTBF (mil 217)

## ENVIRONMENTAL

Operating Temperature	-40 °C to +125 °C -40 °F to +257 °F
Storage Temperature	-55 °C to +130 °C -67 °F to +266 °F
Relative Humidity	0 - 100%
Mechanical Shock	20 G's

## MECHANICAL

Weight	10 oz (283 grams)
Dimensions	5.0" x 2.75" x 1.375"
Connections	5/16" Bolt (Input), 3/8" Nut (Output), 18AWG Ground Lead (Black) w/ 1/4" Ring Terminal, 18AWG Test Lead (Purple) w/ 1/4" Quick-Connect.
Enclosure	Anodized Aluminum (Black)
Insulation	Epoxy (Black) UL94V0 Rating
PCB	Fiber Glass Laminate - FR4, UL94V0

## SAFETY

The SureStart™ is built to relevant UL and SAE Standards. Designed and built to meet GM, Ford, and Chrysler specifications (GM's SVMQP Electrical Guidelines, MIL-85B, MS-8900, etc.)

All cables are SXL (SAE J-1128) with the full Automotive Temperature Range (125 °C).

## ADDITIONAL INFO

Please refer to the installation instructions for complete information on how to install this product in a motor vehicle.

Please refer to the Programming Manual for instructions on how to change the programmable factory settings in the SureStart™ unit.

All product documentation is available in PDF format and can be viewed by Acrobat Reader™, available free at [www.adobe.com](http://www.adobe.com).

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