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INSTRUCTION MANUAL

BATTERY SAVER LR HO

LOW RIPPLE POWER SUPPLY / AUTOMATIC LOAD SWITCH FOR 12VDC VEHICLE SYSTEMS

MODEL #091-92A-12

INPUT: 120 Volts, 50/60 Hz AC, 1.8 Amps RMS
OUTPUT: 13.2VDC, 10 Amps DC, Low Ripple

3 YEAR WARRANTY

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INTRODUCTION

The Battery Saver Low Ripple (BSLR) is a power supply with a load power transfer function. Loads connected to the BSLR are powered by the vehicle's battery when the AC power to the BSLR is OFF. When AC power is applied to the BSLR special circuitry within the Battery Saver transfers the load(s) to the Battery Saver output. The Battery Saver output then provides low ripple 12VDC System power to Battery Saver load(s). Installation of a Battery Saver eliminates the power drain on a vehicle battery and or a battery under-charge ensuring all vehicle battery charger power is available to charge the battery.
This Battery Saver is unique in that there is no interruption of power supplied to the loads during power transfers. The feature makes the BSLR ideal for Mobile Data Terminal (MDT) and or 12VDC vehicle computer systems that may "re-boot" during an input power interruption.

INSTALLATION

1. Mount the Battery Saver in a convenient location with 4 screws in the mounting holes provided. Be certain that adequate ventilation is available and that the unit is not subject to weather damage.

2. Connect the 120VAC input power to the Battery Saver using the suppled IEC line cord as shown in INSTALLATION WIRING DIAGRAM, See Figure 1.

3. The low voltage connections are made through the DC output connector as shown in INSTALLATION WIRING DIAGRAM, See Figure 1.
    1. Connect terminal 1 to the vehicle's 12 volt battery (+).
    2. Connect terminal 2 to the vehicle ground or to the battery (-).
    3. Connect terminal 3 to the +12 volt electrical loads.

    The installation is now complete. Loads connected to the Battery Saver will be powered from the vehicle battery when the AC power to the Battery Saver is OFF and from the Battery Saver output when the AC power is ON.

OPERATION and TEST

Operation:

The Battery Saver Low Ripple eliminates power delivery "glitches" or interruptions during load power transfer(s) from:

- > Vehicle Battery to Battery Saver: Five (5) second delay as Battery Saver output stabilizes. Installation Test para. 3.2.
- > Battery Saver to Vehicle Battery: No delay. The MINIMUM voltage at the load during any power transition is: Vehicle Battery VDC - 1.3VDC for a MAXIMUM of 150 milli-seconds (0.150 seconds).

Indicators:

The BSLR system front panel contains two (2) Green LEDs as follows: Refer to the INSTALLATION WIRING DIAGRAM, See Figure 1.

- > **Battery Connected LED**: Illuminates when the battery is properly connected to the Batter Saver.
- > **Battery Saver ON LED**: Illuminates when Battery Saver is receiving AC power and the power supply internal to the Battery Saver is ON.

Installation Test:

1. Remove AC power from the BSLR.
2. Verify "**BAT SVR ON" LED** is OFFand loads are being powered by vehicle battery (voltage at load is approximately equal to vehicle battery terminal voltage).
3. Apply AC power to BSLR and verify:
    1. "**BAT CONNECTED"** remains illuminated.
    2. "**BAT SVR ON**" **LED** illuminates approximately five (5) seconds after application of AC power to Battery Saver.
    3. Load voltage is between 13.2VDC and 14.0VDC.

INSTALLATION PRECAUTIONS

1. The Battery Saver Low Ripple is AC Input **AND** DC Output over-current protected as follows:
   > 120VAC 60Hz Input Fuse: 5 Amp
   > DC Output: ATC, 15 Amp

   Note: The external ATC 15 Amp DC OUTPUT FUSE is common to both the Battery Saver output **AND** the vehicle battery connection that supplies power to the load when the Battery Saver is OFF (120VAC to Battery Saver - OFF).

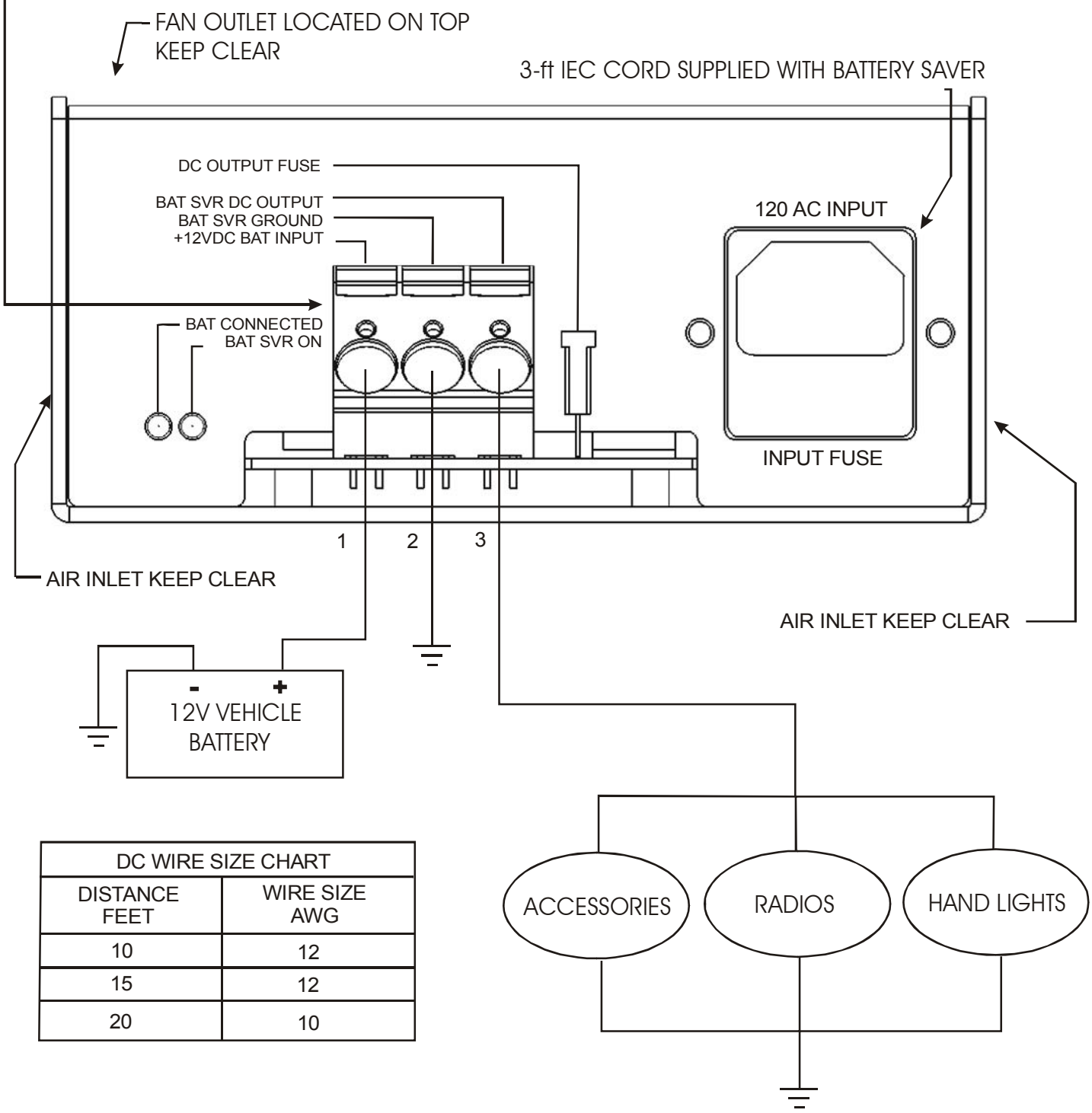
2. OVERLOADING the Battery Saver in excess of 15 amperes when the BSLR is ON:
   A. In excess of 20 amperes: initiate current limiting of the Battery Saver output with a corresponding reduction in output voltage.
   B. In excess of 20 amperes: causes the ATC 15 Amp DC OUTPUT FUSE to open within 2 minutes.

3. OVERLOADING the Battery Saver in excess of 20 amperes when the BSLR is OFF:
   A. When the BSLR is OFF, loads are powered by the battery, which is overload protected with a ATC 15 Amp fuse. The fuse will open when the current exceeds 20 amperes for 2 minutes

Manage Battery Saver Connected Loads to 10 Amperes or Less!

INSTALLATION WIRING DIAGRAM

<u>CAUTION</u>: DC OUTPUT TERMINAL IS SPRING LOADED, USE CAUTION WHEN OPENING AND CLOSING CAGE.



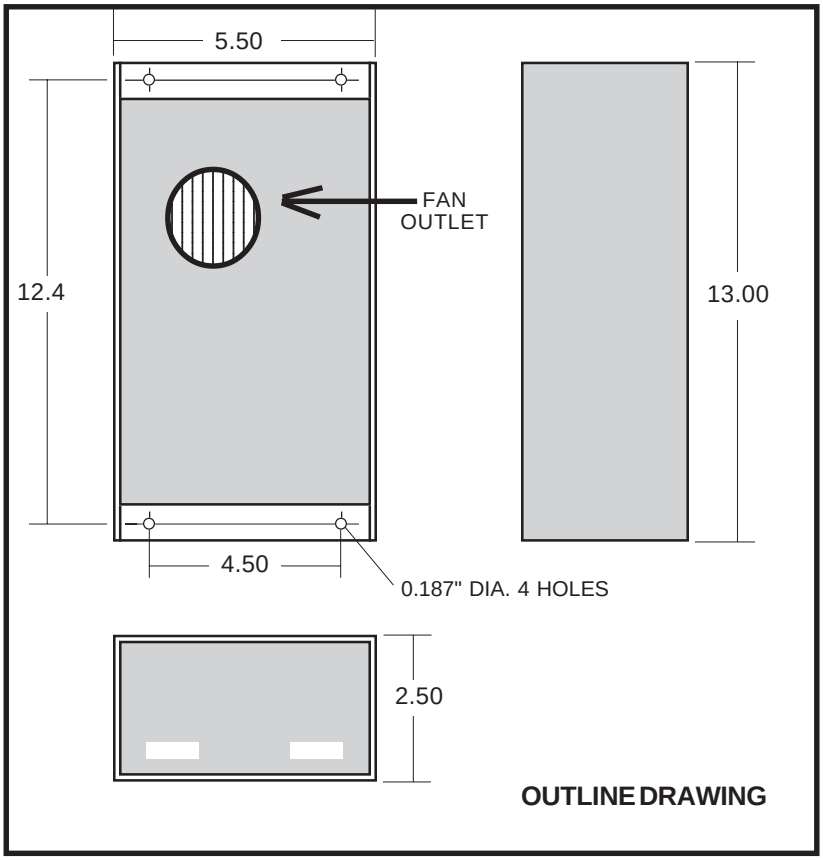
DC WIRE SIZE CHART	
DISTANCE FEET	WIRE SIZE AWG
10	12
15	12
20	10

FIGURE 1

SPECIFICATION & OUTLINE

Specifications

Input Power:	120Volts AC., 50/60Hz, 1.8 Amp RMS (3-ft IEC cord set supplied with unit)
Input Fuse:	(2) - 5 Amp, fast acting, 5 X 20mm, Littlefuse p/n: 216005
Output Voltage:	13.2 Volts DC @ 10Amps (factory adjustable)
Output Ripple:	30 millivolts, AC., RMS
Output Current:	10 Amps, D.C.
Output Fuse:	15 Amp, fast acting Autofuse, Littlefuse p/n: 257015 ***Please refer to Installation Precautions***
Indicators:	1. Battery Connected: Green LED 2. Battery Saver ON: Green LED
Size:	13.00" L x 5.50" W x 2.5" H
Mounting Hole Diameter:	0.187"
Weight:	3.75 lbs



INSTALLATION RECORD & WARRANTY

Date Installed _____

Installed By _____

Vehicle Identification _____

Vehicle Owner _____

WARRANTY

All product of Kussmaul Electronics Company Inc. are warranted to be free of defects of material or workmanship. Liability is limited to repairing or replacing at our factory, without charge, any material or defects which become apparent in normal use within 3 years from the date the equipment was shipped.

Kussmaul Electronics Company, Inc. shall have no liability for damages of any kind to associated equipment arising from the installation and /or use of the Kussmaul Electronics Company, Inc. products. The purchaser, by the acceptance of the equipment, assumes all liability for any damages which may result from its installation, use or misuse, by the purchaser, his or its employees or others.