

EMS Operation.

OPERATION IN VEHICLES USING AVAILABLE SERVICE

The **EMS** is turned on by the presence of 120VAC, or 240VAC at the L1 or L2 inputs (J6, pin 3 and 1 respectively). This feature is intended to prevent the **EMS** from drawing current from the +12 VDC battery supply when not in operation.

When 120 VAC or 240 VAC power is applied, the system automatically powers up and determines the nature of the power source. There is a two-minute start-up delay built into the system to prevent short-cycling of motor driven loads. During this delay period, the Load Meter display will exhibit rotating segments, indicating to the user that the system is in the delay mode. After the initial two-minute delay, the unit will apply power to controlled loads sequentially, with a one-second delay between each load to prevent power surges generated by simultaneous application of all loads.

If the generator is running, 120 VAC will be present at the L1 and L2 inputs and a +12 VDC signal will be present at J2 pin 2 on the Control Module. The **EMS** will assume that 120 VAC, 45 or 60 Amp Genset power is available and the energy management feature will be enabled. The Control Module sends a signal to the Display Module causing the load meter to display actual load current, the GEN SET service indicator to light and all power status indicators to light.

The generator source mode takes priority over all other modes; that is, if the generator is running, the **EMS** will operate in that mode independent of the presence of other sources.

If 120 VAC is present at the L1 and L2 inputs and no +12 VDC signal is present at J2 pin 2 on the Control Module, the **EMS** will assume that 120 VAC, 30 Amp shore power is available and the energy management feature will be enabled. If only 20 Amp service is available, the user must select the 20 AMP service mode by momentarily pressing the 20/30 Amp select switch on the Control Panel.

If 240 VAC, 50 Amp service is available, the energy management feature is disabled and all control relay contacts are closed, energizing all of the controlled loads. The Control Module sends a signal to the Display Module which causes the load meter to go blank, the 50 AMP service indicator to light, and all power status indicators to light.

Initially, the control turns all loads on with a one-second interval and the total current is monitored. If the total current should exceed the service limit, the system will turn off the first load in the shedding table. As it turns the loads off, it calculates the amount of current that was removed, which is the value for that load. This value is placed in memory. If the current remains above the service limit, the system will turn off the next load in the shedding table. Again, it calculates the amount of current that was removed and places the value for that load in memory. The system continues to turn off loads until the total current falls below the service limit, or all of the six controlled loads have been shed. Through this process, the system has "learned" the amount of current that each particular load draws. This feature compensates for the differences in current draw over a range of line voltage and ambient temperature, by re-learning the load each time it is turned off or "shed".

The **50 Amp Smart EMS™ Model 900** now waits until the total current is lower than the service limit and enough current is available (as compared with the amount in memory for the last load shed) before it will turn that load back on. This assures that there is sufficient current to operate the load.

Note: There is a two minute minimum delay period after a load is shed before the load will be turned back on again, to prevent air conditioners from turning on with a head of pressure.