

**Emergency Vehicle Battery Manager PS1012 and PS 824.**



These products are designed as on vehicle battery chargers and battery charge state monitors. While the vehicle is at its base or station, the charger is connected to the AC mains supply. An ignition interlock relay on the charger prevents starting the vehicle when the AC mains are on. The charger first applies a fast charge to bring the battery up to nominal capacity and then applies a trickle charge to maintain that state. The charger cannot overcharge or cause loss of electrolyte like simple automotive chargers do.

Should the mains fail for an extended period, as can happen in rural locations, the manager monitors the battery condition for a low battery state. The charger sounds an audible warning and closes a relay contact pair that can be used to warn remotely of this state.

When the vehicle is required, the 240 is unplugged and the vehicle can be driven away to the emergency site. Here the battery drain can be considerable when work lights, hazard lights and radio loads are considered. The manager monitors the battery condition and sounds an audible warning and closes a relay contact pair that can be used to warn operators to start the main vehicle engine to recharge the battery with the vehicle alternator.



### **Description.**

The products consist on a black anodized custom-made aluminum case 175 mm long and 190mm wide. Laser cut stainless steel ends are fixed to the case. The ends are predrilled with 6 by 6mm holes. The charger must be mounted with the air vent holes clear, but it can be mounted in any position.

### **Mounting.**

The products are not waterproof. They should be mounted in a waterproof equipment locker, or in the crew cab itself. Do not mount in engine bays or next to exhaust stacks that radiate heat.

The 240-volt AC mains input socket is supplied with a matching plug and tail that should be connected to a caravan type inlet on the vehicle body. Use of an earth current circuit breaker is strongly recommended on the supply circuit.

The output to the battery, the ignition interlock relay and the alarm contact pair use a 6-pin AMP type locking connector. The mating socket and pins are provided.

The mounting base is predrilled. The charger is fan cooled and must be mounted with the air vent holes clear. The fan is on a thermostat, so it may not come on while you watch. Care must be taken that loose equipment and clothing cannot stop the airflow

## Electrical Specification.

The chargers are switch mode forward converters of the current mode type. They operate first at a constant current to bring the battery up to its charged state, then operate at a constant voltage to trickle charge the battery. This constant voltage point is very precise so the battery cannot "boil" or lose electrolyte as happens with simple automotive chargers. The charger can therefore be left permanently connected to the battery. They have a number of built in microprocessor controlled alarm features. (See "Alarms").

## Voltage and Current Ratings.

- ❑ PS1210                      13.9 V at 10 amps
- ❑ PS824                        27.8 V at 8 amps

These are the factory set points for voltage, measured at 1-ampere load. They can be trimmed with an internal preset.

## Output Voltage Regulation.

The Output Voltage regulation with both load (10% to 90%) and mains input is:

- ❑ Regulation <3% typical.

## Input Voltage.

- ❑ The input range is 240 V AC +/- 10%. The input frequency can be from 40 to 400 Hertz. The input is internally fused on the PCB with an IEC type socket, and transients are clamped by a varistor.

- ❑ The Mains isolation is

Input to output:                      3500 V AC for 1 minute.

Input to case:                        3500 V AC for 1 minute.

- ❑ EMI Approvals:

The products carry the "Ctick" mark.



- ❑ AC 240 V Connected.

When the mains is first connected to the charger the audible alarm gives 4 short beeps to indicate that all is well, and a "AC On" Led lights.

## Temperature Rating.

The product is rated from -10°C to +60°C. It is fitted with a thermostat-controlled fan.

### **Ignition Interlock.**

A relay shuts to provide a closed floating contact pair when the 240V mains are applied. The pair should be used to shut an interlock relay on the vehicle ignition to stop it being driven away with the 240 connected. An "Ac on" green daylight visible Led is lit.

### **Reverse Polarity Protection.**

If a charged battery should be reverse polarity connected to the charger, the PS1012 and PS824 protect themselves by blowing an easily replaced external fuse. A Red "Polarity" LED is lit and an audible alert sounds.

### **Low Voltage Warning.**

The manager's microprocessor monitors the battery condition and sounds an audible warning and closes a relay contact pair that can be used to warn operators to start the main engine to recharge the battery. The detection circuits have time delays to eliminate the short transient dips and hysteresis to stop hunting. Once the battery terminal voltage comes up, the condition is cleared automatically.

- |   |        |          |
|---|--------|----------|
| <input type="checkbox"/> Threshold      | PS1012 | 11 volts |
|   | PS824  | 22 volts |
| <input type="checkbox"/> Contact Rating |        | 10 amps  |
| <input type="checkbox"/> Alarm pulses.  |        |          |

### **Using the Alarm Contacts.**

The floating alarm contacts can be used in many ways. One way is to warn of the low battery state on the vehicle when it is at the emergency site. The contacts shut and operate a warning siren or strobe before the battery is unable to start the vehicle.

Another use would be in remote locations, for example Country Fire Service garages. Here if the power fails for some time and the site is un-manned, the contacts could be used to activate a remote telephone dialer, operate a CB, or again trip an alarm.

### **Alarm Summary.**

- AC ON when the 240 V mains is first connected to the charger the internal audible alarm gives 4 short beeps to show all is well.
- Battery Low. The alarm sounds and the alarm contacts shut.

- Polarity Wrong. The PS1012 and PS824 protect themselves by blowing a fuse. A Red "Polarity" LED is lit.

