

# MPE Battery Operated Alarm with Charger (BOAC) Specification

The Battery Operated Alarm with Charger (BOAC) shall be a 12 pin plug-in device that charges a backup battery used in a 12 V DC alarm system that activates an alarm strobe light and horn. The BOAC shall have a built in Power Loss Alarm with an Enable/Disable Select Switch. With the Power Loss Alarm Mode Switch in the Enable position, a loss of 120 VAC power shall cause the strobe light and horn to be activated after a 5 seconds delay.

During an alarm with a loss of 120 VAC, the alarm strobe light and horn shall be powered by the battery. Battery power shall be conserved by operating the horn intermittently, on for 2 seconds, and then off for 2 seconds. An alarm contact closure across pins 3 and 10 shall also activate the strobe light and horn. A push-to-test button shall be provided to verify system operation. When pushed, the battery charger shall be turned off so that the strobe light and horn may be powered solely by the battery during the test. After an alarm, with 120 VAC applied / restored, the BOAC shall recharge the 12 V backup battery.

The BOAC shall utilize a battery Charge Controller IC chip that was specifically designed to manage the charging of sealed lead-acid batteries. This chip shall carefully control the charging current and voltage during the charging process to maximize battery capacity and life.

The Charge Controller shall have two charging modes, “Cyclic Charging” and “Float Charging”. During an alarm event, the strobe light and horn shall slowly run down the battery. As long as the battery voltage stays above 12.1 V (50% charged), the Charge Controller shall stay in the Float Charging Mode. In the Float Charging Mode, the battery shall be recharged to  $13.6V \pm 1\%$  @ 25°C, when the alarm clears.

If the alarm were to be turned on often enough (or stay on long enough) to run the battery down below 12.1 V (50% charged), the Charge Controller shall toggle into the Cyclic Charging Mode and recharge the battery to  $14.6 V \pm 1\%$  @ 25°C.

After a period of time in the Cyclic Charging Mode with no alarm events, the charging current shall drop below 25 mA, and the Charge Controller shall toggle back to the Float Charging Mode. Battery manufacturers typically recommend this dual voltage charging regiment to ensure the optimum capacity and life of their batteries. To accommodate lead-acid battery chemistry, the Charge Controller shall also adjust the charging voltage to account for the ambient temperature ( $-20.7 \text{ mV/C}^\circ$  or  $-11.5 \text{ mV/F}^\circ$ ).

The Battery Operated Alarm with Charger unit shall be Model BOAC-001, as manufactured by Motor Protection Electronics, Apopka, Florida, (407) 299-3825.