# CO-OPS Engineering Bulletin 10-002

**Engineering Change:** Standardized Battery Type for CO-OPS Stations

**Systems Affected:** All systems employing 12V batteries

**Originating Team:** Chesapeake Instrument Lab

**Original MSCS Approval Date:** 30 September 2010


Figure 1. Power Sonic PS-12400 NB

**Background:** Rechargeable, sealed lead-acid batteries are widely used in oceanographic and meteorological observatories and are ideally suited for CO-OPS application because of their long, reliable life and low cost of ownership. While there are many factors that are important in considering battery selection, the most critical is lifecycle. Batteries from different manufacturers may have the same capacity and energy content, and be similar in weight, but design materials, process, and quality greatly influence how long the battery will cycle. It is critical that each battery at CO-OPS stations maintain appropriate voltage and available power between charging cycles with enough reserve to accommodate multiple days of low solar voltaic charging and/or loss of shore power. Poorly performing batteries can lead to failed systems, loss of data, damage to sensitive electronics, and costly emergency field maintenance. CO-OPS has undertaken testing of numerous batteries manufactured by multiple vendors. After thorough review of test data, the Measurement Systems Configuration Subcommittee determined that the PowerSonic PS-12400 is the best suited for CO-OPS observatories.

The PowerSonic PS-12400 utilizes the latest technology and equipment to cast grids from a lead-calcium alloy free of antimony. The small amount of calcium and tin in the grid alloy imparts strength to the plate and guarantees durability even in extensive cycle service. Lead oxide paste is added to the grid to form the electrically active material. In the charged state, the negative plate paste is pure lead and that of the positive lead oxide. Both of these are in a porous or spongy form to optimize surface area and thereby maximize capacity. Terminals are post-type surrounded and sealed with epoxy and include nut/bolt hardware. The case is constructed of high-impact resistant polypropylene-polyethylene copolymer that is sealed using ultrasonic welds. This 12 VDC Absorbent Glass Mat, 40 Ah, sealed lead-acid battery has been selected because of its proven suitability, energy capacity, reliability, availability, ease of shipping, size, and rugged design.

**Action Required:** All new and replacement batteries installed at CO-OPS stations and observatories shall use the PowerSonic PS-12400 battery for all 12VDC battery requirements of the data collection platforms. Field personnel shall also verify that batteries currently installed at CO-OPS stations meet this requirement and document any variance. Field personnel shall replace all non-standard batteries at the first available opportunity with the PowerSonic PS-12400.

**Estimated Time To Complete:** 10 minutes per battery where required

**References:**

CO-OPS SOP 3.2.3.5 (E1) Standing Project Instructions for Coastal and Great Lakes Water Level Stations
CO-OPS SOP 4.2.1.5 (E7) Power Sonic PS-12400 Battery Inspection and Acceptance (I&A) Checklist
CO-OPS SOP 4.3.1.6 (F15) Power Sonic PS-12400 Datasheet