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APPLICATION NOTE NO. 21

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Instructions for use of Nickel-Cadmium Battery Packs

Nickel-Cadmium (Ni-Cad) battery packs are shipped uncharged. Follow this procedure to charge and install a battery pack, and to set up the instrument to run with Ni-Cad batteries:

1. To charge the pack, follow the instructions in Application Note 43, which came with the Sea-Bird Universal Battery Charger. The batteries should charge for 15 hours (overcharging will not damage the batteries).
2. Disconnect the battery pack from the charger and the charger from the power source. Check the voltage at BAT+ and BAT- on the battery cover. It should be approximately 10.8 volts for a 9-cell pack or 14.4 volts for a 12-cell pack.
3. To install the battery pack, remove the individual alkaline D-cells (if applicable) from your instrument. Lower the Ni-Cad pack (pin jacks up) into the battery compartment.
 - The posts inside the housing are not placed symmetrically, so the battery pack fits into the housing only when aligned correctly. Looking at the battery bottom cover, note that one circular cutout is closer to the edge than the others, corresponding to the post that is closest to the housing.
 - Some older Sea-Bird instruments have PVC plastic *chocks* (spacers) used to position and reinforce the posts when the instrument is used with loose alkaline batteries. Cut away the silicon rubber securing these chocks and remove them before installing the Ni-Cad pack.
4. While pressing the pack firmly into the battery compartment to compress the springs, secure the pack in place with 3 Phillips-head screws and washers. **The screws must be fully tightened, with the washers beneath the screw heads, or battery power to the circuitry will be intermittent.**
5. Update the battery type setting for the instrument:
 - SBE 17*plus* SEARAM - Run SeatermAF. In the Configure menu, select SBE 17*plus* V2. In the dialog box, on the 17*plus* Communications tab, select Ni-Cad batteries and click *OK* or *Save As*. On SeatermAF's Toolbar, click Program to program the updated configuration into the instrument.
 - SBE 19*plus* SEACAT CTD - Run SEATERM, and connect to the CTD.
(19*plus* firmware version < 1.5) Send the **BatteryType=1** command to set up for Ni-Cad batteries.
(19*plus* firmware version 1.5 and later) Send the **BatteryType=nicad** command to set up for Ni-Cad batteries.
 - SBE 19*plus* V2 SEACAT CTD - Run SeatermV2, and connect to the CTD. Send the **BatteryType=nicad** command to set up for Ni-Cad batteries.
 - SBE 25 SEALOGGER CTD - Run SEATERM, and connect to the CTD. Send the **CC** command. The SBE 25 responds with a number of setup prompts; for battery type, select Ni-Cad.

Note: When using Ni-Cad batteries with an SBE 19 (**not plus**) SEACAT Profiler CTD, no change in the instrument setup is required.

These Ni-Cad cells have a rated capacity of 4.4 Amp-hours at temperatures between 0 and 30 degrees C. Ni-Cad batteries lose charge with time and should be re-charged if not used within 30 days.

Remove the battery pack from the instrument housing before recharging. If you recharge while the battery pack is in the housing, you may damage the instrument electronics.