

Batteries, Batteries, Batteries

By John Bert

Sound familiar? I have written about this subject before, but it needs to be revisited. I do not keep detailed records of boat control problems in our lake, but the word “Batteries” in conjunction with “Loss of Control” is much too common. I have some fresh material. I hope to enlighten those who are in need.

FlySky Transmitter Batteries

The standard batteries for your transmitter are 4 AA batteries. Packaged non-rechargeable alkaline batteries are rated at 1.5 volts – 4 together = 6 volts. Typically, 4 new AA batteries will generate 6.25 volts. The higher the volts the greater distance your transmitter can be effective. As your volts drop below a certain value your FlySky will beep to alert you of low battery voltage and impending control failure.

Rechargeable AA Batteries – These batteries are only rated at 1.2 volts, lower than standard AA’s. Four together the rating is only 4.8 volts vs 6. The threshold for Battery Low Alarm is 4.2 on my FlySky. The rechargeables will reach this Battery Low Alarm much quicker than standard AA’s, and **because lower voltage reduces the effective distance on your FlySky you are always at a disadvantage using the rechargeable batteries.** Personally, I avoid using these batteries.

Lithium AA Batteries – These are my preferred batteries for my transmitters. I have been using them for years and typically get many months of use before having to change them. I buy Energizer Ultimate Lithium AA Batteries, they are packaged in blue and are available at Home Depot, Lowes, Target, Walmart to name a few.



Alkaline vs Lithium AA Batteries – Alkaline AA batteries are rated at 1500mAh, Lithium AA batteries are rated at 3500mAh more than double the endurance. Four AA batteries connected in series to generate 6 volts should still carry the same mAh ratings of 1500 (Alkaline) and 3500 (Lithium).

Once your AA batteries are spent, do not try to reuse them by mixing them with new batteries. This is a bad combination and will only reduce the effectiveness of the newer batteries. The expense is not that great and healthy batteries will keep your system powered better and longer. **Having a spare set of new batteries whenever you come to the lake is highly recommended.**

What does battery “mAh” (Milliamp per Hour) capacity mean? The mAh capacity rating refers to **the storage capacity available for a particular battery.** A battery with a capacity rating of 1800mAh could deliver a current of 1800mA for one hour or 200mA for nine hours. Higher mAh ratings will generally mean longer run times for the same hourly draw. The typical 850mAh LiFe batteries we use in our DF65 and 95’s that are good for 4-5 hours would mean they use 212 to

170 Milliamps per Hour. The more Milliamps your servos use per hour will determine the capacity of the batteries required. Because a Soling or EC12 use much bigger servos the Milliamps per Hour use will increase 2-3 times more than a DF65 or 95.

FlySky Receiver/Servo Batteries

There are different types of batteries that can be used to power your boat effectively. The size of the batteries will differ depending on the needs of your servos. Your DF 65 and 95 essentially use the same servos and can therefore use the same batteries. A Soling uses higher demand servos and require more powerful batteries.

DF65 & 95 Batteries – These boats come with a battery pack that holds 4 AA batteries. I have seen sailors that successfully use these battery packs. The big disadvantage in using this battery pack is weight. The four-battery pack is 2.6oz. An 850mAh LiFe rechargeable battery is only 1.7oz. That's extra weight that you do not need to carry.

LiFe 850mAh 6 volt Rechargeable Batteries – This is the standard battery on the lake for the DF65 and 95's. They are light, rechargeable, and typically last 4-5 hours for each charge. A regatta day when you will be out there for more than 4 hours you should change your battery at least once during the day. LiFe rechargeables typically last for years if treated with care.

- 1) They must be charged with a proper BALANCE LiFe battery charger.
- 2) You should recharge these batteries before every use.
- 3) Long periods of idle use should be left in an uncharged state (One month or more).
- 4) Having a means to check the charge status of a LiFe battery is an important option.
- 5) If they swell up or get too hot to touch during a charge the batteries are damaged and should not be used again.



LiFePo 6.4v 700mAh Battery Pack – This is a great add-on that comes with your new boat kits from Dragon Sailing. It is a light alternative battery that works well in your 65's and 95's. It comes with its own (Specific) charging cord and can reliably be used for 3-4 hours between charges. This is an easy-care battery that can be charged from a standard USB port. Unfortunately, these batteries are very difficult to find on the open market.



Soling Batteries – Your Soling servos will use more energy to operate therefore you need higher capacity batteries. I would consider a LiFe 1600 mAh 6 volt battery to be minimum. A heavy air day a 2000 mAh battery could be used. A AA 4 battery pack can be used as well.

NiMH Batteries – Nickel Metal Hydride Batteries (NiMH or Ni-MH) are typically used for higher capacity use boats. Two 2000mAh NiMH batteries can be purchased for \$20 on Amazon and will

easily power your Soling or EC12 for 4-5 hours. They also require a different charging process than a LiFe battery.

Battery Chargers – Each rechargeable battery type (LiFe, NiMH, LiPo) will require a specific charging specification. Some chargers will charge different types of batteries, **If so, A different Setting will be Required for Each Battery Type.** Many sailors have used NiMH batteries in the past that used a simple trickle type charger. These will not work on a LiFe or LiPo battery. If you try you will ruin your batteries and create a fire hazard.

For a simple LiFe 850mAh 6 volt battery a 2-4 Cell AC/DC Dual LiPo/LiFe Battery Balance Charger from Dragon Sailing will be sufficient. <https://radiosailing.net/collections/batteries-chargers/products/2-4-cell-ac-dc-dual-lipo-life-battery-balance-charger> This charger will charge LiPo or LiFe batteries and must be set up for the appropriate battery type. After 2-3 hours of sailing charging typically takes 20-30 minutes, a fully depleted battery 40-50 minutes. The battery should never get hot while charging or swell up like a pillow. If this happens the battery is ruined. This could easily happen if the wrong charger or wrong charger setting is used.

A battery tester is important to check the status of your batteries. This one from Amazon is good to check the condition of many different battery types. [https://www.amazon.com/HiLetgo-Digital-Battery-Capacity-CellMeter-](https://www.amazon.com/HiLetgo-Digital-Battery-Capacity-CellMeter-7/dp/B072QD8D8Y/ref=sr_1_15?crd=11KEDYHOU4FFC&keywords=6.6+life+battery+checker&qid=1663077184&sprefix=6.6+life+battery+checker%2Caps%2C98&sr=8-15)

[7/dp/B072QD8D8Y/ref=sr_1_15?crd=11KEDYHOU4FFC&keywords=6.6+life+battery+checker&qid=1663077184&sprefix=6.6+life+battery+checker%2Caps%2C98&sr=8-15](https://www.amazon.com/HiLetgo-Digital-Battery-Capacity-CellMeter-7/dp/B072QD8D8Y/ref=sr_1_15?crd=11KEDYHOU4FFC&keywords=6.6+life+battery+checker&qid=1663077184&sprefix=6.6+life+battery+checker%2Caps%2C98&sr=8-15)



A fully charged LiFe battery just off the charger will show on a tester 80-90%. After the battery sits for a period of time may only show 77-79%. This is normal. If you try to recharge it will say full within a minute or two. A fully charged LiFe will maintain its charge while dormant for many weeks.

A completely depleted LiFe battery may not register any power when tested and may not charge. Many of us have left our batteries plugged in and in the ON position while the boat is not being used. You will now be surprised when you place the battery in the charger, and it does not charge. If you have a battery capacity checker it will probably not even register. What you can do now is leave the battery unplugged from anything for 24 to 48 hours. It will frequently regain a small charge on its own to allow it to recharge. (I have had very good luck with this.)

Have questions? Don't hesitate to ask. jbbert@att.net or catch me at the lake.

Happy Sailing.

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