

DJI battery summary.txt

Solentlife personal view on DJI battery maintenance :

So you have just bought your first DJI Phantom - with proper setup and care - you will be amazed at its video and photographic possibilities. Let's go through various aspects of this new acquisition.

Many people new to Hobby Battery systems wonder how to treat these battery's. They are used to charging computers / mobile phones but when it comes to hobby battery's such as LiPo - the rules change. DJI battery's, while they are supposedly intelligent batteries, they fall short on various.

I hope the following can dispel some of the myths and misinformation that has grown up around the Phantom 3 battery series. Note this is primarily aimed at the P3 battery's and I do not suggest applies to other. General principles of LiPo use and maintenance though are fairly universal and only adjusted here by DJI connecting a charge control board and telemetry circuitry to the pack.

But first we have to consider opening the box and putting into service the whole system.

New Purchase:

You open the box and in eagerness want to get out and there and fly ! Please don't. Please resist that urge. There are a few items you need to do first.

- a) Have latest DJI GO to register with DJI to activate the Aircraft (we shall call this AC).
- b) Fully charged battery to ensure any updates / activation has sufficient battery power to complete.
- c) Checked level floor for IMU calibration and identify a nice clean outside area for Compass calibration. I suggest taking a hand held compass outside... walk around and see where needle gets deflected - that is a spot you should stay away from. It could be pipes, cables, rebar etc. under the ground, overhead etc.

Follow the DJI tutorials for initial setup and calibrations. YouTube search will point you directly.

OK - you have setup your P3. I will not go into flight as that is something that you should practice and develop your own skill at. Just note that it is worth once reasonably happy with P-GPS mode - to swap to ATTI mode and fly manually to get used to a less stable AC. This skill will save you later when things start to get out of hand.

- a) Never fly with a partial discharged battery.
- b) I strongly suggest that the default 10 day discharge setting of GO be changed to 2 - 3 days for start of auto-discharge. Plug in each battery and power up to ensure each battery has this setting programmed in.
- c) Do not deep discharge battery's every 20 flights or so - only do this rarely - as it accumulates damage to a LiPo. Even DJI themselves advise against it now. The claimed re-calibration is purely a mA in vs mA out counter in the battery control board. It can be useful to reset counter occasionally but it does not recover lost battery performance.

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- d) Try not to fly into the low battery warning zone. I leave my warnings at default - 30% low and 10% critical. I plan to land with about 30 - 35% battery level - which gives me a good storage level to bench my battery's. It is not necessary to charge to 50% or more.
- e) Resist temptation to keep checking battery's - this resets auto discharge timer.
- f) If you plan to not fly for significant period - then charge battery's fully. Place into storage and leave them alone. After a couple of weeks - check levels. If down to 2 LED's - then charge again. Let auto discharge do its job. This way you will not enter hibernation mode and have any problems to use battery's months later.
- g) A lot of talk about battery temperature - LiPo battery's are fine from 10C upwards. For some reason DJI decided to program the system so that we need to have a 'warm' battery to fly. That is easily accomplished by placing battery inside your coat ... warmed in the car driving to site ... LiPo warming bags ... picnic bags with warmers in ... Many ways to accomplish this. It is a myth that you need to hover the AC if it is cold. If the AC powers up and takes off - that means battery is at working level and will fly. DJI AC do not fall out of sky for this !

Let us move on to after flight.

Battery's warm up when used. So it is good practice to allow the battery to cool before recharging.

Note that being a layered cell pack and inside a case - the inner cells will take longer to cool down.

If you are not planning on flying for a while - then refer to point f) above. Some will advise charging partially etc. But the easiest and best way is via f). Charge up and let auto-discharge do its work. Note that the LED's are representative of 25% increments... when flashing 12.5% - this means you are not that sure of what it really means when you see the LED's. But if you use the auto discharge system - you then know your battery's are being looked after. You just need to check every week or so.

Summary :

- 1) Always fly on a fully charged battery and land when your battery level is around 30%.
- 2) Have auto discharge set to 2 - 3 days maximum and plug in every battery you have to AC to make sure battery FW is updated to this setting.
- 2) Let your battery cool down before charging-somewhere around 30 minutes or until it is around room temperature.
- 3) If you fly and land to 30% - after about one week - charge your battery fully and let auto-discharge do its job to avoid battery entering Hibernation mode. Check each week or so for level and recharge if it falls below 2 LED's and let auto discharge work again.
- 4) Always top up charge before flight if battery stands for more than one day after charging. At high charged levels you will need to switch on battery, then plug in charger to make sure top-up occurs.

I accept that this may disagree with some people's views on the matter - but I base my suggestions on many years of LiPo use and a significant period of DJI ownership. My battery's perform ... and keep performing.

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I wish all good flights and long battery life.

Nigel