Relationship between the maximum current of the ESC and the battery

How to choose an ESC battery?

Chose a battery with higher current rating than the peak current draw of the motor. The ESC can be selected based on the voltage and the peak current rating of the motor. A simple rule is to choose an ESC with atleast 5A more capacity than the peak rating of the motor,since you may be powering servos,receiver and other accessories from the ESC.

Do ESC batteries draw more current than ESC?

The batteries should be rated for the same or higher (continuous) current than the ESC, which should in turn be rated for a significantly higher current than the motor. The rule of thumb is: Never draw any more current than whatever you're drawing it from can supply. Also, motors can draw more current than they should.

Do ESCs limit current?

Some of the better ESC's do have current limiting,but experience in the flying field is that if you dork the thing into the dirt at full throttle,chances are that you'll damage the electronics due to overcurrent. An ESC could be designed to limit current in such a way (I've designed industrial motor controllers that do),but AFAIK ESC's don't.

How much current can a ESC handle?

Motor current is determined by voltage and loading. With good cooling Your motor should be able to handle ~15A continuous or 30A peak,which on 11.1V is achieved with a 5-6 inch propeller (test data here). Since your ESC is rated at 30A it should be safe so long as you don't overload the motor.

How does an ESC work?

An ESC can monitor current and have a current cutoff,but it delivers the same voltage for the same throttle imput regardless of the current flow that results. Also,the rated current of the motor,esc and battery do not necessarily reflect what you should actually run. The main factor is heat dissipation.

What is the difference between battery voltage and ESC voltage?

1.Battery voltages should not be higher than the maximum voltage that ESC can suffer. 2.Continuously output of battery's current need to be bigger than the ESC's. Working voltage of the motor is decided by the ESC, whilst the voltage of ESC is decided by the output of batteries.

The DC IR relationship study between different ambient temperature by Kim et al. [45] suggests when battery operating temperature increases, the value of internal resistance decreases; and when ...

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Both the ESC and battery should be rated for higher Amps than the actual current the motor draws in your application. It may draw up to ~5 times higher current at ...

If battery operates under the maximum current, the life of battery will be shortening. Propeller: For propeller, take 1045 as an example, "10" means the diameter and "45" means the pitch. Larger propeller causes larger ...

Battery parameters: Voltage + capacity + discharge rate, for example: 3S (11.1V), 4200mAh,30C. ESC parameters: Output capability. Motor parameters: Maximum current (A), maximum voltage (V), KV values. for example: LBP2860, Maximum Current is80A, Maximum Voltage is 17V and 3400MV. Let"s see their relationships below: Batteries & ESC:

The state-of-health (SoH of a battery describes the difference between a battery being studied and a fresh battery and considers cell aging. It is defined as the ratio of the maximum battery charge to its rated capacity. It is ...

o Maximum 30-sec Discharge Pulse Current -The maximum current at which the battery can be discharged for pulses of up to 30 seconds. This limit is usually defined by the battery manufacturer in order to prevent excessive discharge rates that would damage the battery or reduce its capacity. Along with the peak power of the electric motor, this

In other words, the maximum amount of current that the motor/propeller can draw is 5.5 A, while the maximum amount of current the ESC is capable of providing is 10 A. ...

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If battery operates under the maximum current, the life of battery will be shortening. Propeller: For propeller, take 1045 as an example, "10" means the diameter and "45" means the pitch. Larger propeller causes larger thrust force and therefore draws higher current. ESC: The ESC have the specification of current, for example ...

Peukert"s equation describes the relationship between battery capacity and discharge current for lead acid batteries. The relationship is known and widely used to this day. This paper re ...

The continuous rating signifies the consistent current an ESC can safely manage, while the burst rating

represents the maximum current the ESC can endure for brief periods, typically under ...

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My question is - how much voltage/current gets through an ESC to a brushless motor? More specifically, I"m pretty sure the current varies with the load, but the voltage doesn"t? For example, if I have an 11.1v battery with 60 amp potential, the motor will receive 11.1 volts and a variable amount of current depending on the load? Is ...

The relationship between battery charging voltage and charge capacity is shown in Fig. ... a compound pulse condition shown in Fig. 2.8 was established, with the maximum discharging current of 280A (8C) and the max. charging current of 175A(5C). Figure 2.9 shows the pulse charge and discharge curves of batteries It can be seen from the pulse experiment ...

The current is measured at the ESC input, so the motor efficiency is the combined ESC+motor efficiency. We recommend doing motor and propeller optimization first before working on ESC optimization. The gains that can be made with ESC optimization are much smaller than with proper motor and propeller optimization. Many parameters of the ESC can ...

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