

RC Electric Flight

Batteries, Motors & Electric
Aeroplanes

Electric Aeroplanes

- Electric Gliders
- Electric Scale
- Electric Sport & Aerobatic
- Electric Ducted Fan - EDF

Electric Gliders

- Thermal
- Warmliners
- Hotliners
- Long flight times from one battery charge 15 – 45 min
- Flat field or slope



Electric Scale

- Easy Motor Installation
- No slime to ruin your scale paint job
- Scale Sound using electric sound systems



Electric Sport & Aerobatic

- Pattern Aerobatic
- Scale Aerobatic
- 3D Aerobatic



Electric Ducted Fan - EDF

- Electric Jets, cheaper and safer than Gas Turbines
- All sizes and budgets covered
- As battery technology improves so do EDF jets.

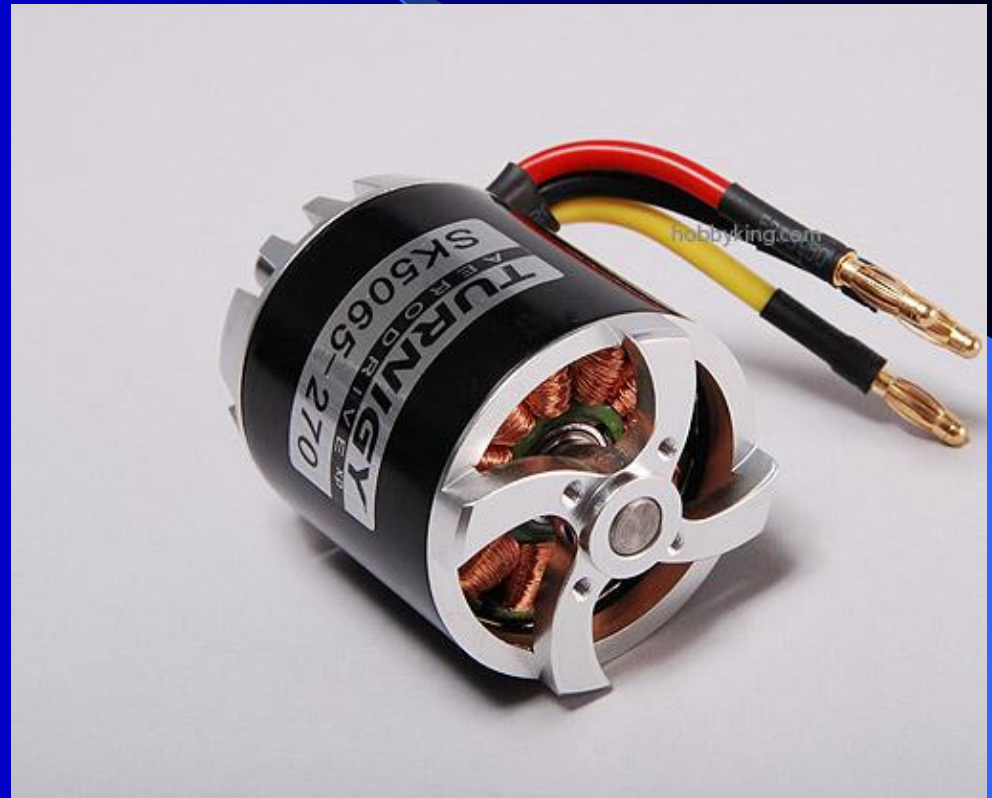


Motors

- Outrunners & Inrunners
- What do the numbers mean?
- What size do I need for my model plane?

Outrunners & Inrunners

- **Outrunners**
 - Turn Big Props
 - No Gearbox
 - Suited to most common applications.
- **Inrunners**
 - High RPM and very efficient.
 - Needs Gearbox for Large Props
 - Great for EDF



What do the numbers mean?

TGY Aerodrive Xp 90 SK Series 50-65 270Kv / 2100W

50mm Dia. 65mm Can Length

Kv (rpm/v) 270 – This how fast it will spin.

Max Current (A) 70 – To help size the ESC.

Max Voltage (V) 29 – To size the battery.

Power (W) 2100 – Equivalent to a 90 2-stroke glow.

Electric motors are flexible, we could spin up to a 22X12 @ 66A on 6S or 18.5x12 @ 60A on 8S



What size do I need for my model plane?

Two methods if the kit manufacturer does not recommend a size of electric motor.

1. Multiply the 2-stroke engine size by 20 to give the required power e.g. $60 \times 20 = 1200W$
2. Alternatively if you have a good idea what the finished weight will be including battery, ESC and radio there are different power to weight ratios depending on style and type of aircraft.
 - 150 – 250 W/LB EDF
 - 150 - 200 W/LB 3D Aerobatic
 - 100 - 150 W/LB Sport / Aerobatic
 - 50 - 70 W/LB Scale
 - 25 – 250 W /LB Electric Glider
 - E.g. a Sport model weighing 7lb would be $125 \times 7 = 875W$



Model: SK42-50-650

Kv: 650rpm/v

Rated Power: 1150w

ESC: 60A

Cell count: 4~7 Lipoly

Suggested Prop: 12x10, 13x8, 14x7

Power equivalent : .42~60 glow engine

LiPo Batteries

- What are the dangers?
- What do the numbers mean?
- What size do I need?
- How do I look after them?

What Are the Dangers?

- Don't charge unattended.
- Charge at correct voltage and current, pay attention to cell count.
- Use a good quality LiPo Balance charger.
- Don't charge in the model.
- Check cells for puffing after a crash or accidental over discharge.

LiPo Fire



What Size Do I Need?

What is the power and current draw and how long will it last?

E.G. A 11.1Volt, 2.2 Ah Battery will give 244W at 22A current draw

Power = Voltage x Current

$$P = 11.1V \times 22A = 244W$$

It will last 6 min at full throttle

Duration = (Capacity / Current) x 60 Min

$$\text{Duration} = (2.2Ah / 22A) \times 60 \text{ Min} = 6 \text{ Min}$$

At part throttle, we would probably achieve a flight time of 7 or 8 min depending on flying style, wind strength and model type.

How do I look after them?

- Keep them cool, damage occurs at high temps.
- Use a timer, aim to leave 20% left in the battery.
- When not in use store at 3.85V per cell at room temp or cooler.
- Keep packs balanced to prevent one cell dropping too low, use a cell voltage meter.
- Keep current draw within 75% of the current rating for the pack e.g. 20C pack use at 15C max.

Electric Speed Controller

- Throttle Control
- Switches On and Off rapidly to control speed.
- Plugs in between battery and motor
- Must be sized to the motor and battery



Wattmeter

- Essential for the E-flyer.
- Check that you are not exceeding the current and power rating of your battery, motor and ESC.
- Otherwise it all goes up in smoke.

