

# DUALSKY® XMotor™ Brushless Outrunner

## Instructions

Thank you for choosing a product of Dualsky Models. DUALSKY® XMotor™ brushless motors are designed and produced with high quality, power, precision and efficiency in mind. Designed to be power upgrades for 3D aerobats and flat-foamies. Our brushless motors with **neodymium magnets** and a rotating case are manufactured using advanced technology. A hardened steel drive shaft mounted in two/three robust ball bearings, and overall robust but lightweight construction ensure long motor life. The "outrunner" design of the motor gives extremely high torque allowing the use of large diameter and high pitch propellers without the need for a gearbox. To enjoy trouble-free operation of your new motor, please take time to read through these instructions.

### SPECIAL FEATURES

- Great for high performance airplanes, from flat foams to FAI F3A.
- Prop mounting system eliminates the need for a prop adapter for many applications.
- Outrunner design often eliminates the need for using external gear drives for many applications.
- Very reliable and virtually maintenance free. No brushes to wear out. Dual ball-bearings are shielded on both sides to keep out dirt and debris.
- Exceptionally high power to weight ratio.
- Very durable machined aluminum and iron can.
- Maximum rated efficiency of 80%.
- Gold plated bullet connectors pre-installed (3 per motor).

### Running-in and MAINTENANCE

There are no brushes or other moving parts to bed in, so no running-in is required. XMotor™ brushless motors require virtually no maintenance. There aren't any brushes to wear out and replace. The ball-bearings have a very long service life and should maintain good operating condition for a very long period of time. Blowing pressurized air into the motor can help to remove dirt and debris, and improve overall efficiency. The output wires should not require replacement. If used with a gear drive, the gear drive itself might require addition of lubricating grease after a certain period of time. See the instructions which came with your gear drive for detailed information.

### MOUNTING THE MOTOR IN FRONT OF THE FIREWALL

XMotor™ with the hardened steel shaft supported in two/three robust ball bearings allows the mounting of your motor to the front firewall using "Radial mount set". This feature is very useful for electric scale models. See pictures below:



Motor mounting plate & Rotor side prop adaptor are included with the motor

Please note: the case of the motor rotates! Beware of unsecured wires, parts or RC flight equipment etc. The XMotor™ design with its rotating case significantly increases the need of a robust motor mount. We strongly recommend the use of a folding propeller even with aerobatic models. If you are using your motor at the upper end of its power range, or if you must use a fixed propeller, please make sure that your motor really is securely mounted.

### MOUNTING THE MOTOR BEHIND THE FIREWALL

The motor can be installed behind a firewall. The motor must be mounted on a rigid mounting with two (or four) bolts screwed into the front plate. The screws should extend at least 3 mm into the front plate, but not more than 5 mm (there is a risk of the motor winding damage). The mounting should have holes corresponding to the holes in the front plate to allow proper cooling of your motor.



Prop. mounter of stator side need buy separately

### COMPATIBLE ESCs

DUALSKY® XMotor™ brushless motors must be controlled with a brushless electronic speed control. And, XMotors are sensorless so the ESC must be of sensorless design as well. Do NOT attempt to use XMotor™ with ESCs that are designed for traditional brushed motors as permanent damage will result! The XC series Brushless ESC from Dualsky is a perfect match for the XMotor™ brushless motor with special optimizations. ESCs with more power may be better suited when using the XMotor™ in slightly larger airplanes which require more current / torque. Check your local hobby retailer for details on different ESC options.

#### Recommended speed controllers:

DUALSKY XC0610BA	6Amps, XC1010BA 10Amps,
DUALSKY XC1210BA	12Amps continuous,
DUALSKY XC1812BA	18Amps continuous,
DUALSKY XC2512BA	25Amps continuous,
DUALSKY XC3012BA	30Amps continuous,
DUALSKY XC4018BA	40Amps continuous,
DUALSKY XC6018BA	60Amps continuous.
DUALSKY XC8018BA	80Amps continuous.
DUALSKY XC9036HV	99Amps continuous.

### Direction of Rotation and Motor Timing

To change the direction of rotation, simply switch over the connection of the outer two cables between the motor and speed controller, but leave the centre cable connection untouched. The optimum motor timing is set by the speed controller, however, some high-end programmable speed controllers allow for some adjustment of the motor timing.

### Cooling

XMotor™ is a high performance electric motor working under high current loading which produces some heat. Proper cooling is essential in just the same way as it is with an internal combustion engine. Overheating of your motor causes increased wear in the bearings and partial demagnetisation, which decreases the performance of the motor. As with all types of magnetic material, complete demagnetisation of the neodymium magnets can occur at over 130C. Please make sure that cooling air can flow through the holes in the front plate to allow cooling of the armature and magnets. There is a simple rule of thumb: the area of cooling air intake(s) on your model should be at least twice the total area of openings on your motor. The area of cooling outlet(s) should be larger than the intakes to allow for expansion of the heated air.

### IMPORTANT PRECAUTIONS

- Do NOT change the shaft direction because the shaft and rotor are assembled very tightly. Any attempt to change the direction and resulting damage will not be covered by warranty.
- Do NOT apply any input voltage and/or current to the motor that exceed the maximum listed in the specifications.
- Do NOT allow the input connectors to accidentally touch each other while power is applied to the motor. Make sure all input connections are insulated electrically.
- Do NOT allow water or moisture to enter the motor, as it can cause permanent damage to the motor and possibly short out the attached ESC.
- Allow the motor to adequately cool if it becomes hot during operation.
- The output shaft will rotate at very high RPMs. Do NOT attempt to touch the shaft while it is rotating. When setting up the motor/ESC on the workbench, make sure the motor is securely attached and that nothing is connected to the output shaft BEFORE applying power.
- Never attempt to use a damaged motor (having mechanical or electrical defects).

### HOBBY SERVICES

RM.1016, NO.201, New Jinqiao RD., Shanghai, China.  
TEL: 86-21-50322161 FAX: 86-21-50322163  
Email: [hobbyservices@dualsky.com](mailto:hobbyservices@dualsky.com)

Note: Please see the additional warranty information insert (if applicable) or ask your retailer for more information.

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