

Z5 Competition Brushless Motor (Z5竞赛级车用无刷马达)

The Z5 brushless motor is a no compromise high performance sensored motor. It is designed to withstand extreme levels of use at the highest possible performance. The motor works as a sensored unit and also sensorless without the sensor cable attached if your ESC runs sensorless. Please read the following information to maximize your performance from your purchase. Z5竞赛级无刷马达是一款当之无愧的高性能感车用马达，是基于高水平比赛而设计的。该马达兼具有感无感功能，所以在无感的情况下也能很好的配合到电调的无感模式完成比赛。请阅读以下信息以便您更好的使用本产品。

Cautions (注意事项)

This is not a toy. Not suitable for children under 14 years. Keep the product out of the reach of children. Pay close attention to the following points, as they can destroy the product and void your warranty. Non-observance of these points can lead to property damage, personal and severe injuries! 该产品不是玩具，不适合14岁以下的儿童使用。请将产品放在儿童不宜接触到的地方。请注意以下几点，因为它们可以毁坏产品且使您的产品无法保修。不遵守以下要点可能会导致财产损失及造成人身伤害！

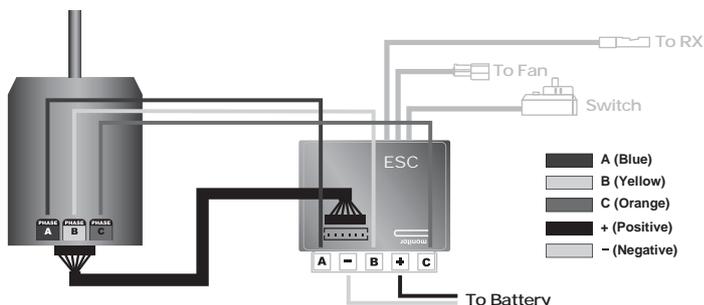
- Never leave the product unsupervised while it is switched on, in use or connected with a power source. If a defect occurs, it could set fire to the product or the surroundings.
- Avoid incorrect connections or connections with reversed polarity of the product.
- All wires and connections have to be well insulated. Short-circuits can possibly destroy the product.
- Never allow this product or other electronic components to come in contact with water, oil or fuels or other electroconductive liquids, as these could contain minerals, which are harmful for electronic circuits. If this happens, stop the use of your product immediately and let it dry carefully.
- Avoid overloading the motor due to wrong or too long gear ratios. Different ESC's have different built in timings, follow the ESC instructions.
- Never apply full throttle if the pinion is not installed. Due to the extremely high RPMs without load, the motor can get damaged.
- Always wire up all the parts of the equipment carefully. If any of the connections come loose as a result of vibration, you could loose control over your model.
- Avoid soldering longer than 5 seconds per soldering joint when replacing the power wires to prevent possible damage to the product due to overheating of the components. Use a high power soldering station with at least 60W for soldering.
- Never allow the motor to get over 80 degrees Celsius (176 degrees Fahrenheit) as you may damage the motor and especially loose strength in your rotor.
- The manufacturer can not be held responsible for damages, which are a result of non-observance of the caution advices.
- 绝不能在产品处于通电状态时放在一边处理别的事情。如果出现问题，产品本身会造成起火并影响到周边设备。
- 避免连接错误或极性反接的情况发生。
- 确保所有电线和连接部绝缘良好，短路可能毁坏产品。
- 请不要让本产品或其他电子元件与水、油、燃料或其他导电液体接触，因为这些可能含有对电子电路有害的矿物质。如果发生以上情况，请立即停用您的产品，并小心进行干燥处理。
- 避免由于错误齿比太大导致马达超载。不同的ESC的进角调节有所不同，请按照ESC指示操作。
- 齿轮未安装前提下禁止全油门操作，无负载情况下，高转会损坏电机。
- 请务必仔细连接好各部件。若因连接松动造成车体震动，此时您有可能会失去对车子的控制。
- 当更换电源线时，避免焊接超过5秒以预防由于部件过热可能对产品造成的损害。使用至少60W功率的焊接配置进行焊接。
- 切勿使马达温度超过80摄氏度（176华氏度），高温将会毁坏马达并且会导致转子消磁。
- 在使用者不按照产品说明书进行操作，而造成产品毁坏的情况下，生产商不承担任何责任。

Installation & Connections (安装和连接)

There are 3 Power Wires that must be soldered to your motor. These are normally colour coded as Blue for Wire A, Yellow for wire B and Orange/Red for Wire C. Please note the ESC markings match the correct wires to the correct terminals on the motor. 马达需焊接三根电源线。这些电源线通常以颜色区分，蓝色作为A相，黄色作为B相，橙色或红色作为C相。请注意ESC标记，匹配正确的线连接到电机上的正确的端子。

The sensor cable supplied with the motor can only be installed in one direction to the motor. Always make sure the wire is clean and not damaged. Never shorten the length of the wire, you can get optional length wires but altering them will cause the wire to fail. Please note the ESC markings and match the correct wires to the correct terminals on the motor. 随马达提供的感应线与马达连接时不能反插。务必确保感应线是干净的，未损坏的。切勿缩短感应线的长度，您可以选配不同长度的感应线，擅自改动感应线长度可能会导致感应线功能失效。请注意ESC标记，匹配正确的线连接到电机上的正确的端子。

- Install the motor in the model using M3 screws no longer than 8mm in length.
- Connect the power wires of the ESC making sure you match wire A with wire A, B with B and C with C.
- 采用不长于8mm的 M3螺丝安装马达到模型上。
- 连接/焊接ESC的动力线，确保他们一一对应即：电线A与A相匹配，电线B与B相匹配，电线C与C相匹配。
- If you are using a sensored ESC then connect the sensor wire to both the motor and ESC.
- Double check you have all the connections correct before use.
- 如果您要使用有感ESC，请将感应线两端分别连接在马达和ESC的接口上。
- 使用前再次仔细检查所有连接的正确性。



Timing Adjustment (进角调整)

To adjust the timing simply loosen the 3 outer screws on the back of the motor and rotate the Sensor Back Cover, noting the lines on the motor and the mark on the cover. 通过松动马达后盖的三颗螺丝来调节马达的进角，根据后盖上的刻度调节您所需要的进角角度，调节完成，记得扭紧后盖螺丝。

You can alter the timing on the motor to change the powerband and characteristics of the motor for best and the most efficient performance. Neutral timing is 40 degrees with 10 degrees tuning either side. 30 degrees timing on minimum setting (fully clockwise) to 50 degrees (fully anti-clockwise).

您可以通过调整马达的进角改变动力输出区间和特性以达到最佳的性能。中位进角是40度，两侧有10度调节范围。最小进角30度（顺时针调节到底），最大进角50度（逆时针调节到底）。

The motor comes set to 30 degrees timing. Increasing the timing will increase the RPM of the motor whilst at the same time increasing temperatures and losing efficiency. Higher timing will require a shorter gear ratio. We recommend you start with this setting and adjust based on your needs from that position. 马达默认设置30度进角（最小）。调大进角将增加马达的转速，同时马达的温度上升和效率降低。调大进角需要配合到较高（较大）的齿比，我们建议您基于以上建议开始设定马达的进角。

When setting your motor timing it is important to make sure your ESC is set correctly. Please follow your ESC instructions on how to do this. To check your motor temperatures during testing simply drive for 3 laps of the track, stop and use a temperature gun (74151) to make sure you are not too hot. If the motor is too hot then allow the motor to cool before trying it again.

当设置您的马达进角时，请确保您的ESC设置正确，这一点很重要。请按照ESC说明书进行操作。测试马达的温度是很简单的，你只需沿赛道跑三圈然后停下来用温度枪来确认马达是否过热。如果马达太热，您需等到马达冷却后方可再次测试。



	21.5T	17.5T ¹	13.5T ¹	11.5T	10.5T ¹	9.5T	8.5T	7.5T	6.5T	6.0T	5.5T	5.0T	4.5T	4.0T	3.5T	3.0T
Item No. 序号	53653	53652	53651	53650	53649	53648	53647	53646	53645	53776	53644	53643	53642	53641	53640	53639
KV (RPM/V) KV值	1510	1860	2380	2790	3050	3350	3730	4250	4840	5480	5580	5900	6520	7200	8200	9400
Weight(g) 重量	169	170	170	169	170	170	170	168	169	169	170	170	172	170	168	165
Resistance(mOhm) 电阻	76.8	50	32.2	22.7	18.4	15.3	12.5	10.1	7.6	6.4	5.4	4.6	3.7	3.2	2.4	2
Peak Watts(W) 峰值功率	120	156	234	260	282	298	322	391	449	467	483	541	610	656	713	770
Max Efficiency 最大效率	93%	93%	93%	92%	92%	92%	92%	92%	91%	91%	91%	91%	90%	90%	88%	85%
Voltage Input 输入电压	3.7V-11.1V LiPo						3.7V-7.4V LiPo									
Rotor Diameter 转子直径	12.5mm									13.0mm						

(1) Compliant to IFMAR/EFRA/ROAR/FEMCA/JMRC/BRCA/DMC rules

Gearing & Tuning (传动装置及调整)

Below is a very rough idea of starting gear ratios for the motors, please be aware that these are guide ratios for ESC without 'boost timing'. Please always check with other drivers using the same ESC/motor combination at your track for a good starting point. Setups will be available at www.dualsky.com for ESC and motors settings. Always run a lower gearing and then adjust as needed.

下面是一个关于马达启动齿轮齿数比非常粗略的想法，请注意，这些建议齿比是针对没有“超进角”的ESC。请经常与场地上使用相同动力组的车手交流，已获得适合该场地的基础数据。更多关于ESC和Motor的设置信息请访问 www.dualsky.com。始终从一个较大的齿轮比开始设定，然后根据需要进行调整。

Class 级别	Battery 电池	21.5T	17.5T	13.5T	11.5T	10.5T	9.5T	8.5T	7.5T	6.5T	6.0T	5.5T	5.0T	4.5T	4.0T	3.5T
TC(small track) 房车(小场地)	7.4V LiPo	3.8:1	4.3:1	6.3:1	6.3:1	6.8:1	7.0:1	7.3:1	7.6:1	8.0:1	8.5:1	8.5:1	8.9:1	9.5:1	10.5:1	11.0:1
TC(big track) 房车(大场地)	7.4V LiPo	3.5:1	4.0:1	6.0:1	5.5:1	6.5:1	6.5:1	6.3:1	6.6:1	7.0:1	7.5:1	7.5:1	7.9:1	8.5:1	9.5:1	10.5:1
1/12th Scale 1/12th	3.7V LiPo	66mm	66mm	51mm	N/A	42mm	N/A	38mm	36mm	35m	32m	32m	32m	29mm	29m	25mm
2wd Off Road 2驱越野	7.4V LiPo	5.5:1	6.0:1	7.0:1	7.6:1	8.0:1	8.2:1	8.5:1	9.4:1	10.3:1	11.1:1	11.1:1	11.5:1	12.2:1	12.7:1	13.5:1
4wd Off Road 4驱越野	7.4V LiPo	5.5:1	6.0:1	7.0:1	7.6:1	8.0:1	8.4:1	8.9:1	9.8:1	10.8:1	12.0:1	12.0:1	12.4:1	13.0:1	13.5:1	15.1:1
Truck Off Road 越野卡车	7.4V LiPo	6.5:1	7.0:1	8.0:1	8.8:1	9.0:1	9.5:1	10.4:1	11.5:1	12.6:1	13.5:1	13.5:1	14.0:1	14.6:1	15.0:1	16.5:1

• The above suggestion is based on using 12.5mm rotor and ESC without Ttronic funcation (super boost).

• 以上建议数据基于12.5mm转子，ESC没有使用Ttronic功能（超增压）。

Parts List (零件清单)

53364	Ball Bearing for replacement (2PCS)	滚珠轴承 (2PCS)
53371	Sensor wire 200mm, Default	200毫米感应线，默认配备
53712	MR12.5TF-Z5, Sintered 12.5mm rotor	竞赛型12.5毫米转子
53717	Front cover w/ BB for Z5	马达前盖配轴承
53718	Back cover w/ BB for Z5	马达后盖配轴承
53719	Timing Ring for Z5	Z5马达进角环
53720	Screws (46.5mm x 3PCS)	螺丝 (46.5毫米x 3PCS)

Option parts (选购产品)

53711	MR12.2TF-Z5, Sintered 12.2mm rotor	MR12.2TF - Z5, 竞赛型12.2毫米转子
53713	MR12.8TF-Z5, Sintered 12.8mm rotor	MR12.8TF - Z5, 竞赛型12.8毫米转子
53714	MR13.0TF-Z5, Sintered 13.0mm rotor ¹	MR13.0TF - Z5, 竞赛型13.0毫米转子 ¹
53715	MR13.5TF-Z5, Sintered 13.5mm rotor	MR13.5TF - Z5, 竞赛型13.5毫米转子
53716	Cooling fan for Z5 rotors w/ washer set	Z5转子的冷却风扇/垫圈装置
53708	30mm cooling fan New High speed, brushless (6V)	30毫米高速散热风扇，无刷 (6V)
53722	Sensor wire 80mm(black)	80毫米感应线 (黑色)
53370	Sensor wire 120mm	120毫米彩色感应线

(1) 3.0T-5.5T original motor rotor

3.0T-5.5T马达原装转子

Maintenance (维护)

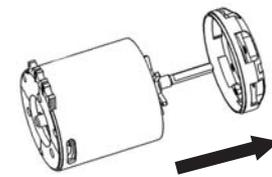
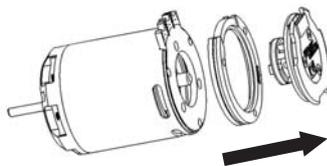
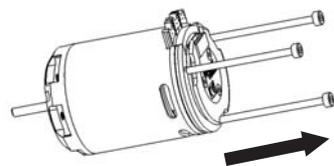
The Z5 motor is designed to be very strong in construction and simple to disassemble. We recommend periodical checking of bearings and to clean the motor of dirt, dependant on your racing class and surface depends on often you should clean out the motor. For disassembly follow these easy steps.

Z5马达结构设计牢固、拆卸简单。我们建议定期检查轴承并清理马达上的污垢，具体时间取决于您参与的赛事级别和场地情况。拆卸时请遵循以下简单的步骤：

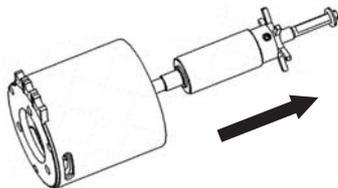
1. Remove the three M3x46.5mm screws
1. 拆除三个M3x46.5毫米螺丝

2. Remove the Sensor Back Cover and Timing Ring
2. 拆下传感器的后盖和进角环

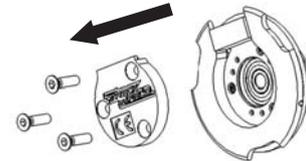
3. Remove the Front Cover
3. 卸下前盖，可以维护前轴承。



4. Remove the Rotor, don't lose the shim.
4. 拆下转子，不要丢失垫片。
• Fan is option part.
风扇为选购产品



5. To access the bearing on the Sensor Back Cover remove the 3 small screws and lift the plastic cover out.
5. 卸下固定传感器的三颗螺丝，移除塑料盖板既可以维护后轴承部位。



Warranty (保修)

All products from TRACK&FIELD Racing Ltd are manufactured according to the highest quality standards. TRACK&FIELD guarantees this product to be free from defects in materials or workmanship for 90 days from the original date of purchase verified by sales receipt.

所有出自Track &Field公司的产品均按照最高标准生产。Track &Field保证所有产品若在材料或工艺上存在缺陷，自购买日期起90天内可进行保修。

This limited warranty doesn't cover defects, which are a result of misuse, improper maintenance, outside interference or mechanical damage. This applies among other things on: 此保修不包括以下内容：由于使用不当，保养不当，外界干扰或机械损伤而导致的损坏。此条款也适用于其他类似损坏：

- | | | | | |
|-----------------------------------------------------------------------|------------------------------------------------------------------|------------------|---------------------------------------------------------------|---------------------------------------------------------------|
| 1. Overload (for example: unsoldered Star-ring)
1. 过载 (例如：内部接线板脱焊) | 2. Rotor damage due to debris inside motor
2. 由于马达内部碎片导致的转子损害 | 3. Rust
3. 生锈 | 4. Excessive amounts of dirt inside the motor
4. 马达内有过量的污垢 | 5. Mechanical damage due to external causes
5. 外部原因导致的机械损伤 |
|-----------------------------------------------------------------------|------------------------------------------------------------------|------------------|---------------------------------------------------------------|---------------------------------------------------------------|

In order to claim against your warranty, please contact your local TRACK&FIELD distributor to arrange the return and testing of your motor. 针对您保修期内的索赔，请联系您当地的 Track &Field 经销商来安排返还及测试。