



Scorpion Precision Industry (H.K.) Co., Ltd.

# MOTOR Speed Controller

Motor &  
Speed Controller Series



## Company History

In 1987, the Scorpion Precision Industry Company was founded by Georges, an avid RC enthusiast since his early teens, for the purpose of manufacturing the highest quality glow plugs available for both sport and competitive RC flying. These original Scorpion products received wide acclaim throughout Europe and Asia during the late 1980's, and were frequently found in the winner's circles of many national competitions. Over the years, the Scorpion company grew and diversified, moving into other areas of manufacturing, but through these changes, Georges maintained his love for the RC hobby, and continued flying and competing in RC contests.

As the RC hobby evolved, electric power systems for model aircraft became more popular. During this time, Georges became interested in electric flight, and began competing in electric pattern and pylon racing events. Unfortunately, the electric power systems that were commercially available at that time did not hold up well to the stress of competition, and many flights ended with a trail of smoke coming from the motor, speed controller, or occasionally, both. After searching for several years to find a motor and speed controller that could withstand the rigors of serious competition, Georges realized that there were not many available, and saw this as an opportunity to provide a high quality power system for electric flyers. In 2005, Georges set aside a portion of his manufacturing facility, hired a team of design engineers, and set forth the following challenge: "Design a top quality motor and speed controller that will not burn up under the stress of competitive flying. Find the best materials that are available, and use them to make motors and speed controllers that can take the punishment that racing and competition has to offer." The engineers took the challenge, and began working towards this goal.

During extensive testing of other commercially available electric motors, it was determined that the weak link in the chain were the type of magnets that were being used. The Neodymium Iron Boron (NdFeB) magnets that are commonly used in brushless motor construction are the N50 and N48M grades, which can withstand operating temperatures of 80°C (176°F) and 100°C (212°F) respectively. Operation above these temperatures leads to irreversible loss of field strength within the magnets, which causes a runaway current situation that eventually burns out the motor windings. Scorpion engineers determined that the key to developing a true competition grade motor was to use better magnets with a higher temperature rating. To this end, Scorpion sought out the best magnet manufacturers in the world, and eventually had a new style magnet custom made for their motors. These magnets can withstand operating temperatures of 200°C (392°F), making them virtually immune to overheating problems. No other motors made use these magnets, and this feature sets Scorpion motors apart from all other brands available today. To compliment these exceptional new magnets, Scorpion winds their motors with wire that is rated for use at 180°C (356°F) to ensure consistent operation in the most demanding applications. Scorpion engineers then selected high quality materials for the stator plates, and special steel alloys for the flux ring, creating a system of components that work together to make Scorpion one of the most advanced brushless motors available for RC use today.

To complete the power systems, Scorpion engineers also set out to develop a series of speed controllers that would not only work well, but would also set new standards for ease of use and attention to detail. The Scorpion Commander Speed Controllers are the result of this commitment to quality and engineering excellence. Scorpion motors and speed controllers not only work great, they look good too! From the beautiful gold anodized aluminum parts and black Electro-coat finish, to the laser engraved model numbers and logos, Scorpion Motors and Speed Controllers set new standards for fit, finish, functional and appearance.

In 2006, Scorpion Products were introduced to the general public through a series of Beta test programs, and this feedback further refined the product to produce the finished form that is presented here in this catalog. The first Scorpion production motors and speed controllers were made available to the public in January of 2007. Since then, they have rapidly become the power systems of choice for modelers all over the world, and Scorpion continues to improve the quality and diversity of the product line as new models are released.

The above picture is the new, state of the art, 377,000 square foot manufacturing facilities and engineering centers, where Scorpion Motors and Speed Controllers are designed and assembled. Built in 2005, this complex has a staff of over 1000 factory workers and engineers, and is ISO 9001 certified for quality. The factory is also committed to maintaining ROHS (Restriction of Hazardous Substances Directive) compliance on all production lines. The manufacturing area includes modern CNC milling machines, both 3-axis and 5-axis, along with a CNC lathe, allowing for in-house manufacturing of critical motor parts to maintain high quality standards. Scorpion's long term business plan, in the RC products division, is to produce the largest selection of brushless motors, speed controllers and accessory products available anywhere, with quality and commitment to customer satisfaction the primary focus.

Scorpion Precision Industry is so committed to the quality of these brushless motors and speed controllers, that they are backed with a full 2-year warranty against defects in materials and workmanship. You have a choice when it comes to purchasing an electric power system for your next model, and when you consider the Quality, Performance and Value that these motors and speed controllers offer, the choice is obvious: Scorpion Brushless Motors and Speed Controllers.

## Scorpion Motors Offer Quality, Both Inside and Out

Scorpion Brushless Motors are built from the finest materials that are available today, with several design innovations that put them in a class all for themselves. From the moment you open the custom metal container, you will see that the attention to detail, and quality, are second to none. Scorpion Motors are built to give the highest levels of performance and reliability, and are backed with a 2-Year warranty. Let's take a look at some of the outstanding features that Scorpion Brushless Motors have to offer:

1. CNC Machined aluminum front housing with angled cooling slots or integrated axial cooling fan that pump air through the motor while it runs to keep the stator and wiring cool.
2. Durable black Electro-Coat finish on the motor casing to look good for years to come and avoid oxidation. Our part numbers and company logos are laser engraved.
3. CNC machined rear housing and bearing support, with threaded mount holes for Cross Mount or Stick mount attachment.
4. All motors come with an aluminum back plate mount and hardware. All motors, except helicopter models, also come with a threaded prop adapter.
5. Motor Magnets are rated to withstand operating temperatures of 200°C (392°F), a feature exclusive to Scorpion Brushless Motors.
6. A plated steel spacer ring locks the motor magnets firmly in place, while maintaining proper alignment for optimum performance.
7. To minimize Eddy current losses, high quality magnetic core stator plates are used on all our motors.
8. High temperature wire, which is rated for operation at 180°C (356°F), is utilized in the construction of all Scorpion brushless motors.
9. High quality Japanese double shielded, permanently lubricated, ball bearings are used to support the main shaft in all of our motors.
10. Our stators are powder coated, or special high temp paper insulated both inside the wire channels and on the ends, to prevent winding shorts during manufacturing & operation.



## Scorpion Brushless Motor Speed Controllers™



Scorpion designed the Commander Series Brushless Motor Speed Controllers to offer flyers the perfect blend of Performance, Quality and Value. These Speed Controllers have been rigorously tested to ensure maximum compatibility with a wide range of both Inrunner and Outrunner style motors. In order to provide complete functionality right out of the box, every Scorpion Speed Controller comes with a stand-alone Programming Card, included at no extra charge. With this Programming Card, there is no need to hook up to a computer to change your controller settings. This feature allows quick changes of the ESC parameters right at the field. The Scorpion Speed Controllers also feature a built-in over-current protection system, which automatically reduce the power output to safe level if the maximum current rating of the controller is exceeded for more than 15 seconds. This prevents damage to the controller from excess heat, while maintaining power to the motor. Scorpion Speed Controllers not only perform well, they also look great with gold anodized aluminum heat sink plates that are thermally bonded to the FET output transistors. The heavy duty heat shrink covering used on our Speed Controllers protects the sensitive electronic components which are located on the back side of the controller. On the front side of the Controller, this covering is cut away to expose the surface area to help enhance the cooling effectiveness of the heat sink assembly. To complete the performance package, all of the Scorpion Speed Controllers are backed with a 2-Year warranty plan, providing a power system that you can depend on.

## 22mm S-Series Brushless Motors



The Scorpion S-Series 22mm Brushless Motors are designed to provide reliable power for your smaller RC aircraft. These motors feature replaceable 3mm prop shafts with dual ball bearings. All Scorpion S-Series motors come with 3.5mm bullet style connectors already installed, and include a complete hardware package contains 3 matching female bullet connectors for your Speed Controller, a cross style back plate mount with screws, and a prop adapter, all in an attractive metal can package. All of the Scorpion S-Series 22mm motors are built with a 12 tooth stator assembly, with 14 magnets in the rotor housing

Model Number	Kv RPM/V	Io@10v Amps	Rm Ohms	Max Current	Max Power	Weight Ounce	Weight Grams	Body Diameter	Body Length	2-Cell Prop	3-Cell Prop	Configuration
S-2205-32	1980	0.76	0.168	12 A	130 W	1.13	32.0	27.9 mm	17.6 mm	8x4	7x3.5	12n14p
S-2205-36	1670	0.52	0.164	11 A	110 W	1.13	32.0	27.9 mm	17.6 mm	9x5	7x4	12n14p
S-2205-40	1551	0.56	0.217	10 A	110 W	1.13	32.0	27.9 mm	17.6 mm	9x5	8x4	12n14p
S-2208-30	1293	0.55	0.185	14 A	150 W	1.42	40.2	27.9 mm	20.6 mm	11x7	9x5	12n14p
S-2208-34	1150	0.45	0.168	12 A	130 W	1.41	40.0	27.9 mm	20.6 mm	12x6	9x6	12n14p
S-2212-1920KV	1920	1.15	0.034	22 A	230 W	1.95	55.0	27.9 mm	29.3 mm	7x5	6x5.5	12n14p
S-2212-22	1157	0.60	0.119	15 A	160 W	1.84	52.3	27.9 mm	24.6 mm	11x7	9x5	12n14p
S-2212-26	939	0.52	0.161	13 A	140 W	1.79	50.7	27.9 mm	24.6 mm	12x6	10x6	12n14p
S-2215-18	1131	0.68	0.097	20 A	210 W	2.18	61.9	27.9 mm	27.6 mm	12x6	10x6	12n14p
S-2215-22	940	0.5	0.13	16 A	180 W	2.16	61.3	27.9 mm	27.6 mm	12x8	11x5.5	12n14p
S-2215-1850KV	1860	1.26	0.030	25 A	260 W	2.27	64.0	27.9 mm	32.3 mm	8x4	6x5.5	12n14p

## 22mm HK-Series Brushless Motors



The Scorpion HK-Series 22mm Brushless Motors are designed to provide reliable power for your smaller RC aircraft and helicopter. These motors feature replaceable 3.175mm prop shafts with dual ball bearings. All Scorpion HK-Series motors come with 3.5mm bullet style connectors already installed, and include a complete hardware package containing 3 matching female bullet connectors for your Speed Controller, a cross style back plate mount with screws, all in an attractive metal can package. All of the Scorpion HK-Series 22mm motors are built with a 9 tooth stator assembly, with 6 magnets in the rotor housing

Model Number	Kv RPM/V	Io@10v Amps	Rm Ohms	Max Current	Max Power	Weight Ounce	Weight Grams	Body Diameter	Body Length	Configuration
HK-2208-24	3590	1.21	0.061	21 A	220 W	1.38	39.0	27.9 mm	20.5 mm	9n6p
HK-2208-28	3125	1.15	0.081	18 A	200 W	1.38	39.0	27.9 mm	20.5 mm	9n6p
HK-2208-34	2600	0.85	0.126	15 A	160 W	1.38	39.0	27.9 mm	20.5 mm	9n6p
*HK-2208-3600KV	3590	1.21	0.061	20 A	210 W	1.42	40.0	27.9 mm	51.5 mm	9n6p
*HK-2208-4660KV	4660	1.64	0.043	18 A	190 W	1.42	40.0	27.9 mm	51.5 mm	9n6p
HK-2213-14	3585	1.74	0.038	32 A	330 W	1.90	54.0	27.9 mm	25.6 mm	9n6p
HK-2213-16	3200	1.60	0.040	30 A	310 W	1.90	54.0	27.9 mm	25.6 mm	9n6p
HK-2213-20	2640	1.10	0.063	26 A	280 W	1.90	54.0	27.9 mm	25.6 mm	9n6p
HK-2216-12	3350	1.87	0.033	35 A	375 W	2.26	64.0	27.9 mm	28.6 mm	9n6p
HK-2216-14	2920	1.35	0.040	32 A	340 W	2.26	64.0	27.9 mm	28.6 mm	9n6p
HK-2216-16	2608	1.19	0.048	30 A	320 W	2.26	64.0	27.9 mm	28.6 mm	9n6p
HK-2221-6	4400	2.89	0.016	52 A	525 W	2.79	79.0	27.9 mm	33.6 mm	9n6p
HK-2221-8	3595	2.31	0.024	45 A	475 W	2.79	79.0	27.9 mm	33.6 mm	9n6p
HK-2221-10	3000	1.79	0.031	42 A	440 W	2.79	79.0	27.9 mm	33.6 mm	9n6p
HK-2221-12	2580	1.50	0.038	38 A	400 W	2.79	79.0	27.9 mm	33.6 mm	9n6p

\* These motors feature replaceable 2.3mm prop shafts with dual ball bearings

## 30mm S-Series Brushless Motors



The Scorpion S-Series 30mm Brushless Motors are available in 5 sizes to fit a wide range of Electric powered models, and are also suitable for Glow to Electric conversion of aircraft in the .10 to .60 size range. All the Scorpion 30mm S-Series motors feature a 5mm main shaft for extra strength, with 3 ball bearings to handle the loads. The 30mm S-Series motors have an extra rear bearing that supports the back end of the flux ring for bullet-proof stability. Each motor has 3.5mm bullet connectors already installed. A matching set of female bullet connectors, a cross style back plate mount with screws, and a threaded collet style prop adapter are also included. All of the 30mm S-Series motors are built with 12-tooth stators, and 14 magnets in the rotor housings.

Model Number	Kv RPM/V	Io@10v Amps	Rm Ohms	Max Current	Max Power	Weight Ounce	Weight Grams	Body Diameter	Body Length	3-Cell Prop	4-Cell Prop	5-Cell Prop	Configuration
S-3008-28	1253	1.53	0.072	30 A	400 W	3.02	85.5	37.5 mm	25.9 mm	10x5	8x4	7x5	12n14p
S-3008-32	1086	1.14	0.092	28 A	400 W	3.02	89.5	37.5 mm	25.9 mm	11x5.5	9x4.5	8x4	12n14p
S-3014-16	1187	2.45	0.038	43 A	600 W	4.31	122.1	37.5 mm	31.9 mm	11x7	9x6	8x4	12n14p
S-3014-18	1064	1.67	0.043	40 A	600 W	4.31	122.1	37.5 mm	31.9 mm	12x6	10x5	9x4.5	12n14p
S-3014-22	892	1.22	0.062	30A	550 W	4.31	122.1	37.5 mm	31.9 mm	13x6.5	11x5.5	10x5	12n14p
S-3020-12	1088	2.46	0.030	57 A	800 W	5.53	156.8	37.5 mm	37.9 mm	12x8	10x7	9x6	12n14p
S-3020-14	944	2.04	0.040	46 A	800 W	5.43	153.8	37.5 mm	37.9 mm	13x8	11x7	10x5	12n14p
S-3020-16	812	1.66	0.056	40 A	800 W	5.43	153.8	37.5 mm	37.9 mm	14x7	12x6	11x5.5	12n14p
S-3026-8	1212	3.45	0.020	76 A	1000 W	6.68	189.3	37.5 mm	43.9 mm	12x8	10x7	9x6	12n14p
S-3026-10	980	2.64	0.025	68 A	1000 W	6.72	190.6	37.5 mm	43.9 mm	14x7	12x6	10x7	12n14p
S-3026-12	840	2.27	0.034	60 A	1000 W	6.68	189.3	37.5 mm	43.9 mm	15x8	13x6.5	12x6	12n14p
S-3032-8	988	3.10	0.022	75 A	1200 W	7.91	224.3	37.5 mm	49.9 mm	14x8.5	12x6	10x7	12n14p
S-3032-10	823	2.61	0.029	80 A	1200 W	7.86	222.9	37.5 mm	49.9 mm	15x10	14x7	11x8	12n14p
S-3032-12	687	2.06	0.039	70 A	1200 W	7.89	223.6	37.5 mm	49.9 mm	18x12	15x8	12x8	12n14p

## 30mm HK-Series Brushless Motors



The Scorpion HK-Series 30mm Brushless Motors are designed for RC Helicopters in the 500-550 size range. They also work great in aircraft needing a High-Kv motor such as Pylon Racers and Hotliners. The high efficient and cool running properties of these motors make them an excellent choice for any RC helicopter. The HK-Series motors have a 5mm diameter replaceable shafts come with the package and a 3.5mm bullet connectors installed. Also included is a matching set of female bullet connectors and a cross style back plate mount. These motors feature a 12-tooth stator, with 8 magnets or 9-tooth stator with 6 magnets in the rotor housing and depending on it's KV.

Model Number	Kv RPM/V	Io@10v Amps	Rm Ohms	Max Current	Max Power	Weight Ounce	Weight Grams	Body Diameter	Body Length	Configuration
HK-3026-1000	1000	1.1	0.028	62 A	1300 W	6.70	190	37.5 mm	48.4 mm	12n8p
HK-3026-1210	1210	1.43	0.018	65 A	1365 W	6.80	193	37.5 mm	48.4 mm	12n10p
HK-3026-1400	1400	3.86	0.010	80 A	1680 W	7.02	199	37.5 mm	48.4 mm	12n8p
HK-3026-1600	1580	1.52	0.016	70 A	1470 W	6.83	196	37.5 mm	48.4 mm	9n6p
HK-3026-1900	1900	1.98	0.012	80 A	1400 W	6.80	193	37.5 mm	48.4 mm	9n6p

## 40mm S-Series Brushless Motors



The scorpion S-Series 40mm Brushless Motors are available in 2 sizes to fit larger electric powered models. These powerful motors are also suitable for Glow to Electric conversion of aircraft in the .60 to .90 glow to .90 to 1.20 four stroke size ranges. All of the Scorpion 40mm motors feature a 6mm main shaft for extra strength, with 3 ball bearings supporting the shaft to handle the loads. Each motor comes with the output leads pre-tinned, to allow the user to select their own style of connector. A cross style back plate mount with screws, and a threaded collect style prop adapter are also included with each motor. All of the 40mm S-Series motors are built with 12-tooth stators, and 14 magnets in the rotor housings.

Model Number	Kv RPM/V	Io@10v Amps	Rm Ohms	Max Current	Max Power	Weight Ounce	Weight Grams	Body Diameter	Body Length	4-Cell Prop	5-Cell Prop	6-Cell Prop	Configuration
S-4020-12	542	1.92	0.020	85 A	1500 W	10.72	304	48.7 mm	41.2 mm	18x12	16x10	14x10	12n14p
S-4020-14	484	1.59	0.024	80 A	1500 W	10.48	297	48.7 mm	41.2 mm	19x12	17x10	15x10	12n14p
S-4020-16	415	1.30	0.030	70 A	1500 W	10.72	304	48.7 mm	41.2 mm	20x13	19x12	17x10	12n14p
S-4025-10	515	2.32	0.016	100 A	2000 W	12.49	354	48.7 mm	46.2 mm	19x12	16x12	15x10	12n14p
S-4025-12	440	1.80	0.022	85 A	2000 W	12.24	347	48.7 mm	46.2 mm	20x13	18x12	17x10	12n14p
S-4025-16	332	1.17	0.034	75 A	2000 W	12.45	353	48.7 mm	46.2 mm	24x12	22x12	19x12	12n14p

## 40mm HK-Series Brushless Motors

The Scorpion HK40 motors have been developed for the newer 600 and 700 class electric helicopters that are now coming onto the market. These motors are designed to provide all the power that you can use, while still maintaining excellent efficiency and cool running characteristics.

Scorpion HK Series Brushless Motors are built from the best materials available, and are designed to provide both quality and performance at an affordable price. Scorpion starts with high quality aluminum alloy parts that are produced on the latest CNC milling machines. These parts are then gold anodized to provide a beautiful, long-lasting finish. To minimize Eddy current losses, high quality magnetic core stator plates are used on all our motor. The stators are epoxy coated to prevent shorts, and are wound with wire that is rated at 180 degrees °C (356 °F). The magnets used in Scorpion Motors are rated for operation at 200 degrees °C (392 °F), making a motor that is virtually impossible to burn up in normal use.

All Scorpion HK40 series motors come with 4mm male Bullet style connectors already attached, and include a hardware package that contains 3 matching female Bullet connectors for your speed controller with matching heat shrink tubing. For maximum strength, the Scorpion HK40 series motors feature an 8mm motor shaft that is ground down to a 6mm diameter at the output end to fit standard size pinion gears. Since the HK series motors are primarily designed for Helicopter and Ducted Fan use, they do not include a prop adapter. If you intend on running a prop on this motor, you will need to purchase a prop adapter for a 6mm shaft.

## 500 - 550 Class Heli Motor



HK-4020-910KV



HK-4020-1100KV



HK-4020-1390KV

Model Number	Kv RPM/V	Io@10v Amps	Rm Ohms	Max Current	Max Power	Weight Ounce	Weight Grams	Body Diameter	Body Length	Configuration
HK-4020-910KV	910	1.95	0.015	65 A	1820 W	9.21	284	48.9 mm	46.5 mm	12n8p
HK-4020-1100KV	1100	2.45	0.010	78 A	1640 W	9.28	286	48.9 mm	46.5 mm	12n8p
HK-4020-1390KV	1390	3.45	0.007	90 A	1890 W	9.21	284	48.9 mm	46.5 mm	12n8p

## 600 Class Heli Motor



HK-4025-630



HK-4025-740



HK-4025-890

Model Number	Kv RPM/V	Io@8.4v Amps	Rm Ohms	Max Current	Max Power	Weight Ounce	Weight Grams	Body Diameter	Body Length	Configuration
HK-4025-630	630	1.10	0.024	60 A	2520 W	10.59	326	48.9 mm	51.5 mm	12n8p
HK-4025-740	740	1.33	0.017	70 A	2450 W	10.59	326	48.9 mm	51.5 mm	12n8p
HK-4025-890	890	1.80	0.013	85 A	2480 W	10.59	326	48.9 mm	51.5 mm	12n8p

## 700 Class Heli Motor



HK-4035-500



HK-4035-560



HK-4035-630

Model Number	Kv RPM/V	Io@8.4v Amps	Rm Ohms	Max Current	Max Power	Weight Ounce	Weight Grams	Body Diameter	Body Length	Configuration
HK-4035-500	500	1.77	0.020	80 A	3360 W	14.97	428	48.9 mm	61.5 mm	12n10p
HK-4035-560	560	2.10	0.012	90 A	3800 W	15.29	437	48.9 mm	61.5 mm	12n10p
HK-4035-630	630	1.60	0.014	85 A	3600 W	15.23	435	48.9 mm	61.5 mm	12n10p

# Brushless Motor Kits

The complete line of Scorpion Brushless Motors are also available as do-it-yourself motor kits for modelers that want to produce their own custom wind for a specific application, or would just like to get the experience of winding their own motor, but do not have the tools or abilities to machine their own parts. Each kit contains all of the parts you need to complete a motor, except for the wire, which the builder needs to supply. These kits contain all the same pieces that are used to assemble the motors at the Scorpion factory, including the magnets that are designed to withstand operating temperatures of 200°C (392°F).

## 22mm S-Series Kit



Brushless Motor Kit 2205



Brushless Motor Kit 2208



Brushless Motor Kit 2212



Brushless Motor Kit 2215

## HK 22mm S-Series Kit



Brushless Motor Kit HK2208



Brushless Motor Kit HK2213



Brushless Motor Kit HK2216



Brushless Motor Kit HK2221

## 30mm S-Series Kit



Brushless Motor Kit 3008



Brushless Motor Kit 3014



Brushless Motor Kit 3020



Brushless Motor Kit 3026



Brushless Motor Kit 3032

Scorpion offers a full line of replacement parts and accessory products for all our motors. For the occasional "not so perfect" landings, the replacement Prop Shafts, Cross Mounts and Bearing Kits can get your motor back into service and running like new. Our Prop Adapters are available in many sizes, and work great with any brand motor. The Stick Mounts allow a Scorpion motor to be installed in models that have a 10mm or 3/8" motor mount stick. Our Prop Savers work great on slow-fly style props, and help to prevent props from breaking when they hit the ground. We also offer magnets which designed to withstand operating temperatures of 200°C (392°F). These are great for do-it-yourself motor building, and to replace broken magnets in the Scorpion Motors. We also offer a wide variety of pre-stacked and power coated Stator Assemblies for the motor scratch builders. For a complete listing of available stators sizes, check on-line at [www.scorpionsystem.com](http://www.scorpionsystem.com)



Bearing Kits



Cross Mounts



Prop Savers



Motor Magnets

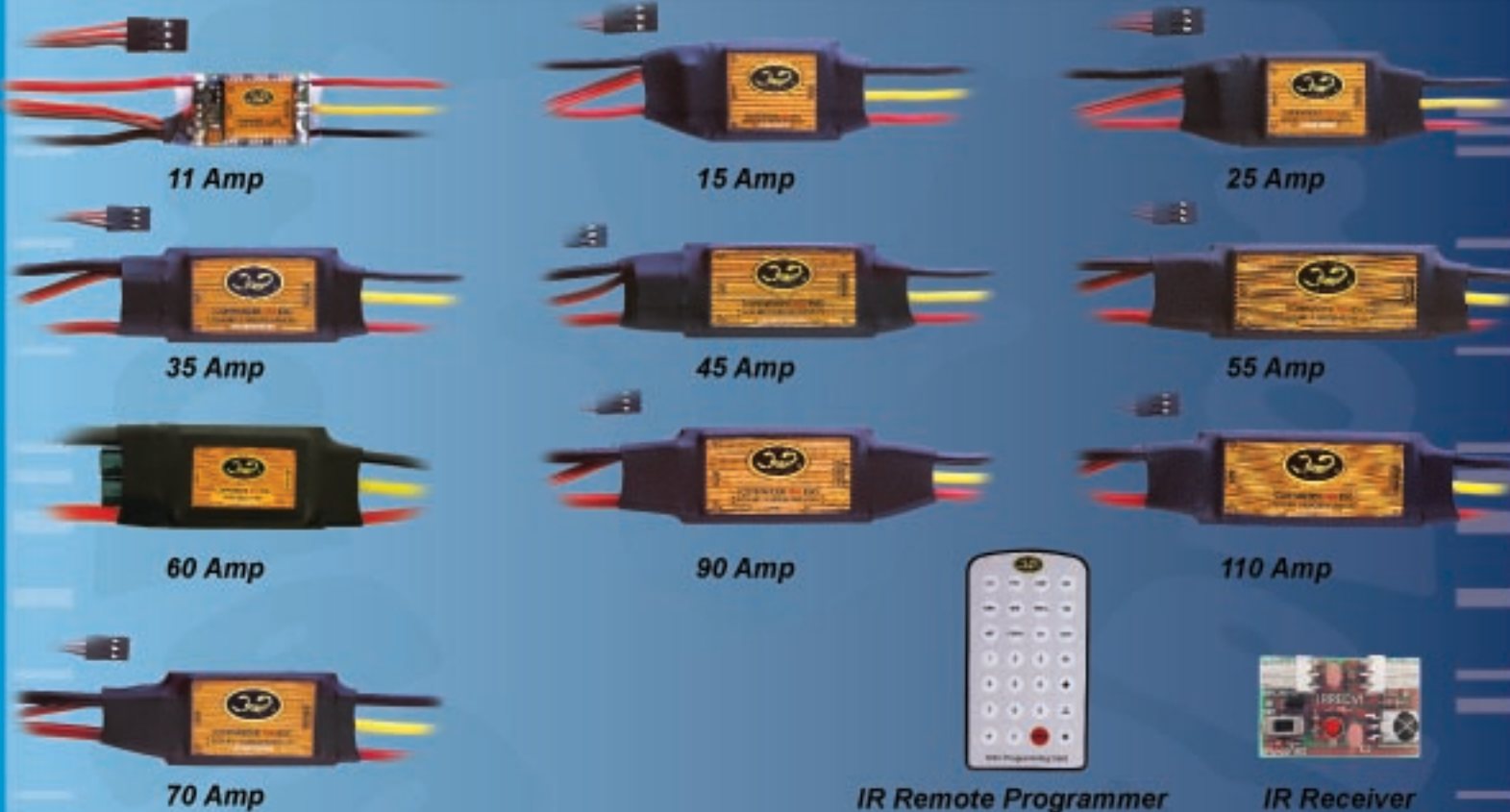


Stick Mounts



Prop Adapters

# Commander 15v Series Brushless Speed Controllers



## Each Scorpion Speed Controller are packaged with a FREE Programming Card

Scorpion Commander Series Brushless Speed Controllers represent one of the best values in the speed controller market today. From the beautiful gold anodized heatsinks, to the unique metal containers that the ESC's are shipped in, everything about Scorpion Speed Controllers shows the company's commitment to quality. These ESC's are manufactured from top quality components, in a state of the art manufacturing facility, and are designed to provide years of trouble free operation.

The V2 models of Scorpion Commander Speed Controllers contain new Helicopter programming that includes Soft-Start and Governor modes. The Soft-Start features 3 different user selectable spool-up times of 10, 15 and 20 seconds. The Governor mode allows settings of 50, 60, 70, 80, or 90 percent throttle. Another update is a revised LVC feature that is no longer cell dependent. With the new LVC system, any value can be selected from 5.0 to 13.8 volts in 0.2 volt increments.

Also included with the V2 model ESC's is the exclusive Scorpion Wireless Programming System. This system includes a postage stamp size infrared receiver module and a credit card size wireless remote transmitter. With this programming system, you do not need to unplug any wires or need to drag out a computer or cable to change the settings on your speed controller. The Scorpion Wireless Programming System makes changes on your ESC parameters as easy as changing the channel on your TV. The adjustable parameters on every Scorpion ESC include: Battery Type, Cell Count, Low Voltage Cut-off Level, Power Cut-off Type, Current Overload Protection, Braking Level, Acceleration Time Delay, Helicopter or Airplane Mode, Soft Start Mode, Soft Start Duration, Governor Mode, PWM Frequency Selection, Timing Advance and Motor Rotation.

Scorpion Speed Controllers also include all of the ESC parameters clearly labeled on the heatsink assembly. Voltage range, current rating, BEC rating, Ni-XX and Li-Po cell count and input polarity are all clearly marked to avoid any confusion. Scorpion Commander Series Speed Controllers are also backed by a 2 year manufacturers warranty against defects in materials and workmanship, so you can buy with confidence. For a total package of Quality, Performance and Value, use Scorpion Brushless Speed Controllers.

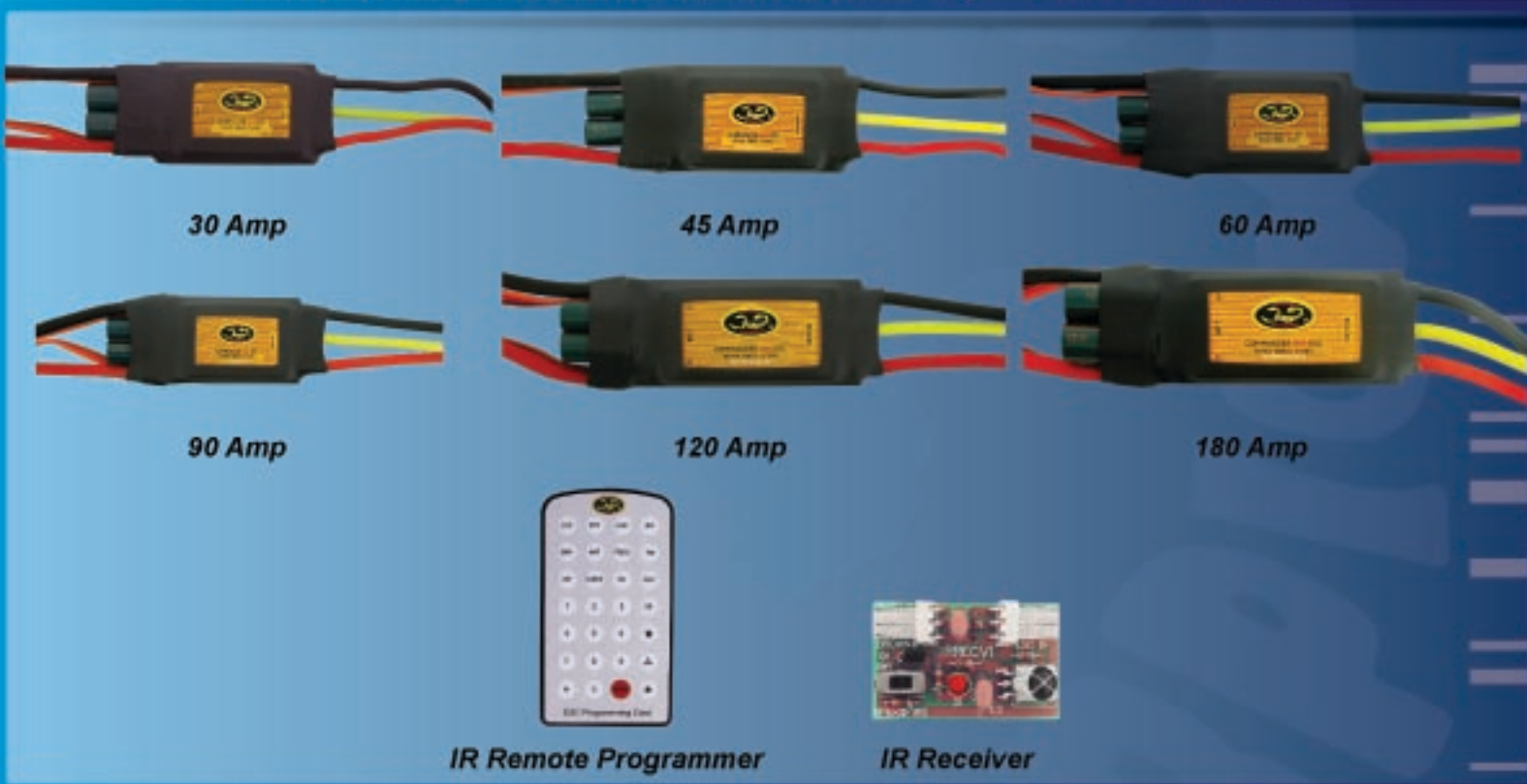
Current Rating	BEC Rating*	On Resistance	Weight Ounces	Weight Grams	Size Inches	Size Millimeter	Li-Po Battery	Ni-XX Battery
11 Amp	1 Amp	6.77 mΩ	0.33	9.5	1.06 x 0.67 x 0.35	27 x 17 x 9	2-3 Cells	6-10 Cells
15 Amp	2 Amps	7.11 mΩ	0.62	17.7	1.67 x 1.04 x 0.35	43 x 26 x 9	2-4 Cells	6-12 Cells
25 Amp	2 Amps	3.66 mΩ	0.72	20.3	1.89 x 1.04 x 0.35	48 x 26 x 9	2-4 Cells	6-12 Cells
35 Amp	3 Amps	2.56 mΩ	1.12	31.7	2.64 x 1.02 x 0.35	67 x 26 x 9	2-4 Cells	6-12 Cells
45 Amp	3 Amps	2.33 mΩ	1.46	41.5	2.95 x 1.18 x 0.35	75 x 30 x 9	2-4 Cells	6-12 Cells
55 Amp	3 Amps	1.56 mΩ	1.54	43.7	3.11 x 1.18 x 0.35	79 x 30 x 9	2-4 Cells	6-12 Cells
**60 Amp	3 Amps	1.38 mΩ	2.11	60.0	2.72 x 1.19 x 0.48	69 x 30 x 12	2-4 Cells	6-12 Cells
70 Amp	3 Amps	1.28 mΩ	1.66	47.0	2.72 x 1.18 x 0.47	69 x 30 x 12	2-4 Cells	6-12 Cells
90 Amp	3 Amps	1.17 mΩ	1.77	50.2	2.99 x 1.18 x 0.47	76 x 30 x 12	2-4 Cells	6-12 Cells
110 Amp	3 Amps	0.78 mΩ	1.93	54.7	3.11 x 1.18 x 0.51	79 x 30 x 13	2-4 Cells	6-12 Cells

\*The BEC ratings shown are for 2-cell Li-Po input. When run on 3-cell Li-Po reduce current rating by 50%. For operation on 4-cell Li-Po batteries, disable the on-board BEC and use an external switching type BEC regulator.

\*\*This Hel ESC was specifically developed for use in 450 and 480 class electric helicopters.

# The first speed controller with IR remote programmer in the world P.11

## Commander 26v Series Brushless Speed Controllers



**Each Scorpion Speed Controller are packaged with a FREE Programing Card**

The Scorpion 26V Commander Series Brushless Speed Controllers are designed to work with any brushless motor, and they are a perfect match for the entire range of Scorpion Brushless motors. At Scorpion, we believe that every Speed Controller should have complete functionality right out of the box, so every one of our 26V Commander Series Speed Controllers package come with an IR remote Programing Card plus an IR receiver unit with no extra charge. The full-featured IR Programming Card allows the user to set the following parameters:

Low Voltage Cut-off (5V to 25V at 0.5V increments) no more need to select battery type just set the voltage the ESC should work on, by doing this, the ESC will be compatible with any future type of battery designs.

LVC= Low Voltage Cut: 050(5V) TO 250(25V).

BRK= Brake Setting: 1, No Brake / 2, Very Soft Brake / 3, Soft Brake / 4, Hard Brake / 5, Very Hard Brake

AIR= Air Plane Mode.

PCT= Program Cut Type ( LVC Type): 1, Cut 50% / 2, No cut just LED warning / 3, Pulse warning

MAT= Motor Acceleration Time Delay: 1, 0.15s / 2, 0.3s / 3, 0.45s / 4, 0.7s / 5, 1.3s

CAR/B= 1, Without Reverse / 2, With Reverse, (Brake on Preset Level )

COP= Current Overload Protection: 1, Protection On / 2, Protection Off (Choosing option 2 voids warranty)

FREQ= Drive Frequency: 1, 8khz. / 2, 18khz. / 3, 32khz.

SS= 1, Soft start without Governor Mode / 2, Soft start with Governor Mode

RO= Rotate Direction: 1, Clockwise\* / 2, Counter Clockwise.

TIM= Motor Timing: 1, Auto Timing / 2, 5° / 3, 15° / 4, 20° / 5, 25° / 6, 30°

GOV= Governor: 50: 50%RPM / 60:60%RPM / 70: 70%RPM / 80: 80%RPM / 90: 90% RPM.

SB= Motor Starting Booster: 1, ON / 2, OFF

Current Rating	BEC Rating	On Resistance	Weight Ounces	Weight Grams	Size Inches	Size Millimeter	Li-Po Battery	Ni-XX Battery
30 Amp	4 Amps	6.77 mΩ	1.57	44.50	2.61 x 1.19 x 0.35	66.4 x 30.2 x 8.9	2-6 Cells	6-22 Cells
45 Amp	4 Amps	7.11 mΩ	1.63	46.35	2.85 x 1.19 x 0.37	72.5 x 30.2 x 9.4	2-6 Cells	6-22 Cells
60 Amp	4 Amps	3.66 mΩ	2.29	64.86	2.67 x 1.19 x 0.52	67.8 x 30.2 x 13	2-6 Cells	6-22 Cells
90 Amp	4 Amps	2.56 mΩ	2.32	65.90	2.69 x 1.19 x 0.55	68.4 x 30.2 x 14	2-6 Cells	6-22 Cells
120 Amp	4 Amps	2.33 mΩ	2.92	82.80	3.29 x 1.19 x 0.69	83.6 x 30.2 x 17	2-6 Cells	6-22 Cells
180 Amp	4 Amps	1.58 mΩ	3.28	93.10	3.59 x 1.19 x 0.55	91.3 x 30.2 x 21.3	2-6 Cells	6-22 Cells

# Commander 50v Series Brushless Speed Controllers



12s 90A ESC



12s 130A ESC



IR Remote Programmer



IR Receiver

## Each Scorpion Speed Controller are packaged with a FREE Programming Card

The Scorpion 50V Commander Series Brushless Speed Controllers are designed to work with any brushless motor, they are a perfect match for the entire range of Scorpion Brushless motors. At Scorpion, we believe every Speed Controller should have a complete functionality right out the box. Every 50V Commander Series Speed Controllers packaged come with an IR remote Programming Card plus an IR receiver unit at no extra charge. The full-featured IR Programming Card allows user to set the following parameters:

Low Voltage Cut-off (5V to 49V at 0.5V increments) no more need to select battery type just set the voltage the ESC should work on, by doing this, the ESC will be compatible with any future type of battery designs.

LVC = Low Voltage Cut: 050(5V) - 490(49V).

BRK = Brake Setting: 1, No Brake / 2, Very Soft Brake / 3, Soft Brake / 4, Hard Brake / 5, Very Hard Brake

AIR = Air Plane Mode

PCT = Program Cut Type ( LVC TYPE): 1, Cut 50% / 2, No cut just LED warning / 3, Pulse warning

MAT = Motor Acceleration Time Delay: 1, 0.15s / 2, 0.3s / 3, 0.45s / 4, 0.7s / 5, 1.3s

CARIB = 1, Without Reverse / 2, With Reverse (Brake on preset level )

COP = Current Overload Protection: 1, Protection / 2, Protection Off (choosing Option 2 voids warranty)

FREQ = Drive Frequency: 1, 8khz. / 2, 18khz / 3, 32khz.

SS = 1, Soft Start without Governor Mode / 2, Soft Start with Governor Mode

RO = Rotate Direction : 1, Clockwise / 2, Counter Clockwise

TIM = Motor Timing: 1, Auto Timing / 2, 5° / 3, 15° / 4, 20° / 5, 25° / 6, 30°

GOV = Governor: 50:50%RPM / 60:60%RPM / 70:70%RPM / 80:80%RPM / 90:90% RPM

SB = Motor Starting Booster 1, ON / 2, OFF

Current Rating	On Resistance	Weight Ounces	Weight Grams	Size Inches	Size Millimeter	Li-Po Battery	Ni-XX Battery
90 Amp	TBA mΩ	6.94	196.88	3.23 x 2.66 x 1.2	82 x 67.5 x 30.4	2-12 Cells	6-40 Cells
130 Amp	TBA mΩ	8.76	248.4	3.23 x 2.66 x 1.52	82 x 67.5 x 38.7	2-12 Cells	6-40 Cells

**- Coming Soon -**

37mm HK-Series (600 Class Heli Motor) 6s ~ 8s

55mm S-Series (20cc to 50cc Glow. Gas Conversion)

65mm S-Series (50cc to 100cc Glow. Gas Conversion)

90mm S-Series (Giant Scale)

63V 200A ESC

300A ESC

# Scorpion Precision Industry (H.K.) Co., Ltd.

Your Quality Brushless Power System Provider

In the rapidly changing field of electric powered RC models, you need a partner that can be counted on to provide the latest technological advancements: A company that possesses a thorough understanding of the product's application and use, that will also back the products in a professional manner, with the highest level of integrity. Originally founded in 1987, Scorpion Power System was created to provide the best power system solution to the RC Hobby Industry and the highest level of customer services. With over 30 years of RC hobby experience, plus 15 years of RC product manufacturing experience as the owner of Scorpion Precision Industry' founder, George van Gansen, possesses a wealth of both professional and practical knowledge in the growing field of RC electric power systems. We are a partner in the growth and development of new product lines with all fellow modelers from all over the world. We are also preparing several other product lines currently under development that are scheduled for release throughout the coming year. These included a new line of larger 55mm and 65mm brushless motors with matching 12-cell and 15-cell speed controllers. We are very excited about other Scorpion products, currently in development, that will completely revolutionize electric power systems. Scorpion is committed to producing the finest brushless motors and speed controllers available today.

You don't have to take our word for it, just take a look at what some of our customers are saying about their Scorpion Products.

I flew my new Scorpion powered Extra 300 today and it looks like I may have found a new motor line to stick with. To say performance is great would be an understatement. I have been flying this Scorpion 3026-10 for one week, 45 flights now and I am truly impressed. It never goes over 115°F (windings) according to my rather expensive Ray-tech IR gun, and it still feels like brand new. I have had some similar priced motors develop bearing problems with less usage.

I go out and fly every Friday at a club - There were more airplanes with Scorpion motors than pilots today. We're turning into a "Scorpion Club" and really putting a lot of time on various sizes of motors. It's good to see the products being put through the paces week after week.

I just wanted to write and say what an incredible motor the Scorpion HK-2221-8 is! It flies like a dream and is barely warm after hovering for 7 minutes. The ESC is great too, and incredibly failsafe for a "newbie" like myself! Both of them look just killer in my TREX 450SE V2, and I am the envy of the field!

Today in the mail I got my Scorpion motor. I unpacked it and almost passed out. It's packaged like a Rolex watch! I've got to post pictures of the packaging. First the shrink wrap, then a beautiful cardboard sleeve, next a tin box inside the sleeve with a hinge and more beautiful painting. Inside a clear plastic lid cover the motor. Next, a foam interior cut out to hold all the pieces. Mind boggling. I haven't seen anything like this in years. You have to buy one of these just to see the packaging!



## Scorpion Precision Industry (H.K.) Co., Ltd.

16<sup>th</sup> Floor, Excelsior Industrial Building  
68-76 Sha Tsui Road, Tsuen Wan, New Territories  
Hong Kong

Tel: +852 2851 3513

Fax: +852 2581 4199

Email: [info@scorpion.com.hk](mailto:info@scorpion.com.hk)

Url: [www.scorpionsystem.com](http://www.scorpionsystem.com)

[www.scorpion.com.hk](http://www.scorpion.com.hk)

