Scorpion Power System
www.scorpion-team.com

Scorpion User Guide for S3-80 Turbo Stock Kit Set

V4.1

IMPORTANT
Update the ESC firmware to latest version.

Introduction
Thank you for purchasing Scorpion Vanguard Electronic Speed Controller. This ultimate ready to race ESC gives you a powerful range and reliable performance, even in the extreme conditions.

A high power system for RC model can be very dangerous, please read this manual carefully before installing your new ESC.

1.0   Features

- Wide input voltage range 6-8.4V (2S LiPo)
- Sensored and Sensorless brushless motors (BLDC)
- Motor Limits from 8.5T or above
- Up to 80A continued current
- Profession PC program and Android apps (Download from Play Store)
- Aluminum heat sinks
- Build-in temperature sensor with adjustable temperature protection
- Over voltage protection ture DC-DC 3A/6V BEC for servo and receiver
- Over voltage Protection autoDetect mode
- Motor over temperature protection
- Upgradeable Firmware
- Wide range of settings for different race courses

2.0   Specification

	S3-80-Turbo Stock
Cont./ Brust Current, A	80/200
Brushless Motor Type Supported	Sensored and Sensorless Brushless Motor
Cars Applicable	1/10th & 1/12th on road and off road
Motor Limits	>= 8.5T
Resistance	0.00155Ohm *2
Voltage Input	2s LiPo
BEC	6V@3A DC-DC
Footprint	30 mm (W) x 30 mm (L)
Size (w/o FAN)	35.2 x 30.2 x 14.4 mm
Weight	22g
FAN	Battery
External Programming Port Output	1

2.1   Vanguard Super Booster

- 470 uf x 4 = 1880 uf total
- Voltage: 16V
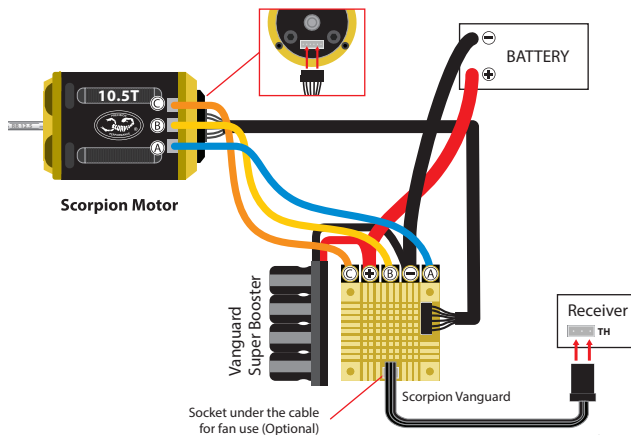- Size: 5mm (L) x 9mm (W) x 15mm (H)
- Working Temperature: 105 ℃

3.0   Preparation

- Choose a location for the ESC that is close to the motor, but away from the receiver and single cable to prevent radio interference
- If using double-side tape, clean the bottom of the ESC before applying for best result
- Keep the motor wire as short as possible for the best electric current
- Install cooling fan (optional)
- Install Scorpion Vanguard Super Booster (included), placing the booster as close as

---

to the ESC, to keep the booster wire as short as possible
- Booster should be mounted directly to the positive (+) and negative (-) on the ESC, as shown in the diagram below
- Keep battery wire as short as possible to crate the best electric current efficiency
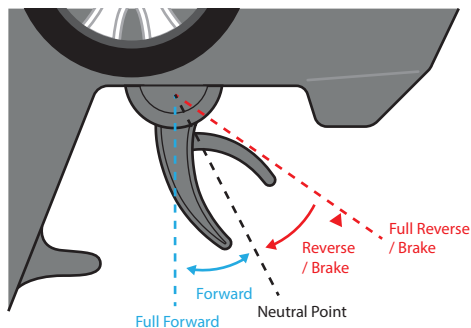
4.0   Soldering and Connection

- Always provide a steady working area and easy access to the solder posts
- Do not connect the car battery while working on soldering
- Cut the motor wires to desired length and strip the insulation about 3.2mm-6.35mm from the end. Apply solder to the exposed wire until it is thoroughly covered. ** Caution: Solder and iron tip are hot
- Place the iron tip in the notch on top of the post, and then apply small amount of solder to the post
- Hold the tinned wire contact with the notch of the post. Then use the iron tip to heat up the tinned wire and and the post for about 2 seconds, allowing the solder to flow. Then remove the iron and hold the wire in position for about 1-2 seconds allowing the solder to set. Caution: do not overheat the ESC
- Refer to the below diagram for proper connection
- Check with battery supplier for the battery connectors (excluded)

Scorpion Motor

BATTERY

Vanguard Super Booster

Socket under the cable for fan use (Optional)

Scorpion Vanguard

Receiver

5.0   Radio Throttle Calibration

Calibration is necessary for any first use of the ESC, It is also necessary whenever it is used with a new/ different transmitter or when new firmware is updated.

- Make sure the ESC on/off button is " Off "
- Connect the battery, receiver and motor
- Turn on the transmitter
- Move and hold throttle trigger to full reserve/brake
  Important: if the full reserve/brake is not held, then the ESC will not activate to calibration mode.
- Press on/off button once to turn on the ESC
- Wait for the first beeping sound (Beep...), then the full reserve/brake will be set
- Pull and hold the throttle trigger to full forward
- Wait for second beep sound (Beep….Beep….), then the full throttle been set
- Hold the throttle trigger in neutral position
- Wait for third beep sound (Beep….Beep….. Beep……), the neutral been set
- Calibration finish, ESC will restart automatically

Full Reverse / Brake

Reverse / Brake

Forward

Neutral Point

Full Forward

6.0   Led & Motor Sound Indication

ESC turn on	Green / Red - On

Throttle Trigger in Neutral Position	Red	• Off if no errors, On if errors
	Green	• Blinks if zero timing (no boost, no turbo)
		• On if voltage is OK
		• Off if voltage is low
	Motor Sound	• ESC over heat - beep...beep...beep...
		• Motor over heat - beep beep...beep beep...beep beep...
		• ESC & Motor over heat - beep beep...beep beep...beep beep...

The motor is running or braking	Red	• Off if no errors, On if errors
	Green	• On if voltage is OK (according to program setting value)
		• Off if voltage is low (according to program setting value)

Firmware Update Mode	When Updating - Green, Red - Blinks
	Update Finish - ESC Restart, automatically

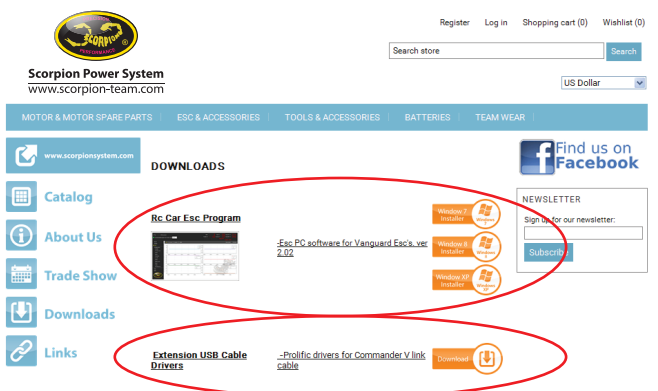| Example of error indication	Conditions	• Red LED is ON
		• Throttle in natural position
	Example	• Green LED off - low voltage or cut off (according to program setting value)
		• ESC over heat - beep...beep...beep...
		• Motor over heat - beep beep...beep beep...beep beep...
		• ESC & Motor over heat - beep beep...beep beep...beep beep...
	Others	• Red LED is ON

Or connect to PC program locate the problem

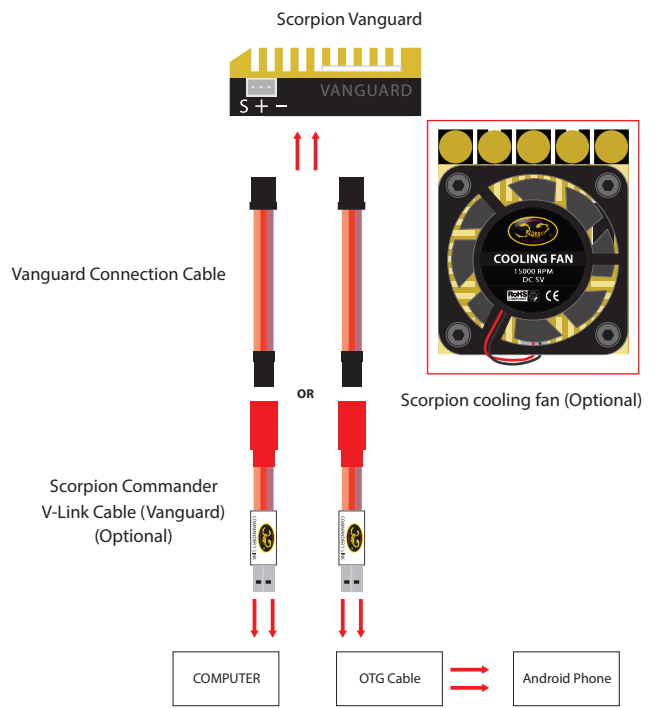** Error Diagnosis Example !!   Signal lost

7.0 Connect ESC to Computer

Team Scorpion provides the most advance setting features or simply download factory driver setting form www.scorpion-team.com
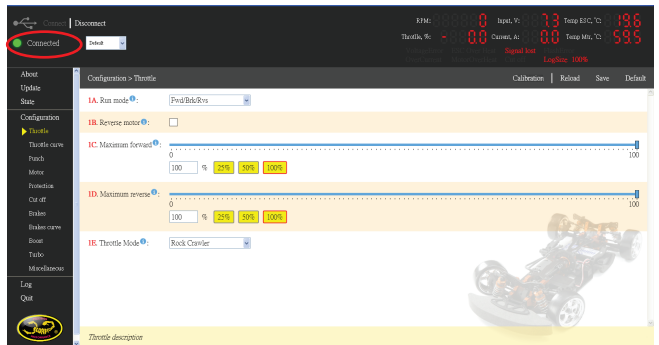
- Download "**RC Car ESC Program"** from www.scorpion-team.com, program available for Windows XP, Windows 7, Windows 8, Windows 10. Double click the exe file to start installation.

- Download "**V-link Cable Drivers**"from www.scorpion-team.com to install the USB If you have any problem installing the USB driver, please read the manual thoroughly or ask an administrator for advice.
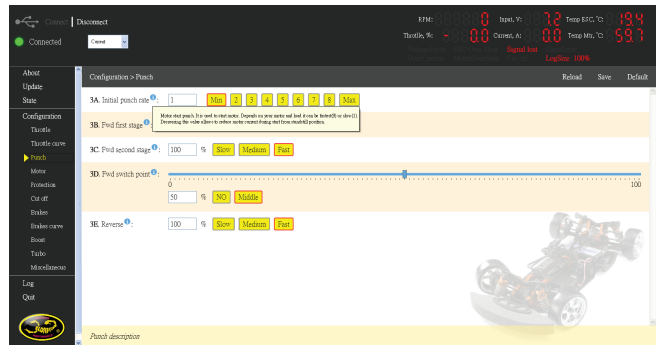

- Follow the below diagram to connect the ESC to computer, using the Scorpion V-link USB Cable (Optional)

Scorpion Vanguard

VANGUARD
S + −

Vanguard Connection Cable

COOLING FAN
15000 RPM
DC 5V

Scorpion cooling fan (Optional)

OR

Scorpion Commander
V-Link Cable (Vanguard)
(Optional)

| COMPUTER | | OTG Cable | | Android Phone |

- After the connection has been made successfully, the "Connected" display notification and the green light appears

Throttle description

To know more about each setting description, simply point the mouse cursor to the blue exclamation mark next to the each setting item

Punch description

8.0 Trouble Shooting

Trouble	Possible Reason	Solution
After powered on, the motor does not rotate and there is no signal light	Poor power connection	Check the power connections, replace the connectors if necessary.
After power on, the motor does not spin, but there is signal light	Wrong setting	Refer to **LED INDICATION** to indentify problem
Motor stops halfway	Multiple protection including • Over Current • Over Voltage • Low Voltage • Temperature Protection	Refer to **LED INDICATION** to indentify problem
No signs of recognizing from computer program	• ESC off • Cable failure • Poor connection • USB driver	• Turn on the ESC • Change a new cable • Check all the sockets • Replace the Windows® default USB driver with Scorpion provided USB driver

9.0 Warranty and Service

Scorpion Vanguard Speed Controller is guaranteed to be free from defected materials a dated, itemized sales receipt).

During the warranty period Scorpion will repair speed controller that are found to be defective, providing that it has no signs of damage or abuse. The user will be responsible for shipping charges back to an authorized Scorpion Repair Facility, and Scorpion will pay the return shipping charges. If the damage is the result of a crash or mis-use, the returned item will be repaired, but the cost of repairs will be billed to the user. Repairs will never exceed 50% of the cost of a new speed controller, and if the speed controller is badly damaged or non-repairable, a brand new ESC will be offered at 50% discount of the current retail price for the ESC, plus a nominal shipping charge. If the speed controller returned is no longer in production, Scorpion reserves the right to substitute any other speed controller of equal or better quality. In any event, Scorpion shall not be responsible for the damage that may result from the overuse of products, for consequential or special damages, or for any amount that exceeds the product value. If the motor product is purchased in clearance section, crash and dent section from www.scorpionsystem.com and www.scorpion-team.com, then the items are sold "AS IS". No refund or warranty policy will be covered with these products. It is because we do not have parts anymore to repair or replace. or replacement. Please obtain an RMA number by submitting a request by email to our RMA Department support@spihk.com or our distributors for the RMA number before

sending. The RMA process normally takes around 3 - 4 weeks.

RMA form can be found and download from
http://www.scorpion-team.com/downloads/
http://www.scorpionsystem.com

The Power System of Champions!!

Scorpion Power System

www.scorpionsystem.com

User Guide for Vanguard Super Booster

Features:

· Smoother power
· Cooler running speed control
· More punch to brushless system
· Small size and light weight

Note:
Installed as close to the ESC as possible.

Scorpion Vanguard

Vanguard Super Booster

16V

· **470 uf x 4 = 1880 uf total**
· **Suitable ESC: Vanguard Series**
· **Voltage: 16V**
· **Size: 5mm (L) x 9mm (W) x 15mm (H)**
· **Working Temperature: 105 °C**