1.0 Features
- Wide input voltage range 3-14V (15-35 Lipo)
- Sensored and Sensorless brushless motors (BLDC)
- Drive down to 4.5T motor (Scorpion Vanguard S3-140)
- Drive down to 6.5T motor (Scorpion Vanguard S3-80)
- High current, up to 140A continued current, with current protection (Scorpion Vanguard S3-140 Modify Kit Set)
- High current, up to 80A continued current, with current protection (Scorpion Vanguard S3-80 Super Stock Kit Set)
- Factory driver suggested setting (for use with Scorpion RS-3420 motor and Scorpion competition battery pack)
- Profession PC program and Android apps
- Store up to 8,000 data
- Aluminum heat sinks
- Build-in temperature sensor with adjustable temperature protection
- True DC-DC 3A/6V BEC for servo and receiver
- Multiple protection include: over current, over voltage, temperature protection
- AutoDetect mode
- Motor over temperature protection (for Scorpion RS-3420 motor)
- 2 x hall sensor connectors: each also can be used for PC connection
- Upgradeable Firmware
- Wide range of settings for different race courses

2.0 Specification

<table>
<thead>
<tr>
<th>Motor Type Supported</th>
<th>S3-140-Modify</th>
<th>S3-80-Super Stock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor Type Supported</td>
<td>Sensored and Sensorless Brushless Motor</td>
<td>Sensored and Sensorless Brushless Motor</td>
</tr>
<tr>
<td>Current Limit</td>
<td>3.5 A</td>
<td>3.5 A</td>
</tr>
<tr>
<td>Voltage Rating</td>
<td>3.5 A</td>
<td>3.5 A</td>
</tr>
<tr>
<td>BEC</td>
<td>4.5V/3.6V DC-DC</td>
<td>4.5V/3.6V DC-DC</td>
</tr>
<tr>
<td>Size (inches)</td>
<td>33.6 x 33.6 x 21.8 mm</td>
<td>33.6 x 33.6 x 21.8 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>40g</td>
<td>40g</td>
</tr>
<tr>
<td>FAN</td>
<td>35mm PA</td>
<td>35mm PA</td>
</tr>
<tr>
<td>External Programming Port Output</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

2.1 Vanguard Super Booster
- 470oz-in x 4 = 1880 oz of total
- Voltage: 10V
- Size: 9.5 x 9.5 x 9.5 mm (W) x 15mm (H)
- Working Temperature: 15°C

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 (included)
- Install Scorpion Vanguard Super Booster (included), placing the booster as close as possible 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 (included)

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
- Hold and hold 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

6.0 Led & Motor Sound Indication

- **Error Diagnosis Example!!**
  - **Signal lost**
  - **Red LED is ON**

Or connect to PC program locate the problem

---

**Example of error indication**

- **Conditions:** Red LED is ON
- **Throttle in neutral position**
  - **Example:** Green LED off - low voltage or cut off (according to program setting value)
  - **Others:** Red LED is ON
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 Installer from www.scorpion-team.com, program available for Windows XP, Windows 7, Windows 8
  Double click the exe file to start installation

- Download "Extension USB Cable Drivers" from www.scorpion-team.com
  Double click the "PL2303_Prolific_DriverInstaller_v1.5.0.exe" to install the USB driver
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 (included)

8.0 Trouble Shooting

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

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.scorpion-system.com and www.scorpion-team.com, 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/
**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.

- 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