We have Mod Mode and Stock Mod for each have 15 menus.

Menus 1-12 for touring (Drift 1-10, Crawler 1-7) are operational settings of the ESC. Each menu consists of its own set of parameters. Detailed explanation of each menu and its parameter set is found later in this chapter. It is important that you familiarize yourself with these menu items in order to get the most out of your ESC.

Menu 13 allows you to save the current displayed parameter in the setting card. Maximum of 2 sets of parameters can be stored.

Menu Load allows you to load either the factory default parameter for any previously saved settings back to the setting card memory.

Menu 15 allows you to send the current displayed parameter on the setting card to the ESC - overwriting whatever is in the ESC.

Tips! Whenever in doubt, double check your ESC setting by initializing the setting card again and check each menu setting.

Navigation around the Program Menu is done using the 4 button on the back of the setting card. The function of each button varies depending on which screen the display is showing:

- You could also switch your ESC around from Touring, Drift and Crawler Mode by updating the ESC firmware with 'Hacktronic Firmware Update USB Cable #HTN-303' (Sold Separately)

To avoid unnecessary service and mailing charges, always eliminate all other possibilities and check all components for malfunctions before sending in your unit for repair. Products sent in for repair that operate perfectly will be charged a service fee.

Since we do not have control over the installation and use of this product, we cannot accept any liability for any damages resulting from the usage of this product. Therefore, using this product is at your own risk, and the user accepts all resulting liability from the usage of this product.

OPERATION DIAGRAM

Detailed Explanation of each ESC Menu Items:

Touring Car:

1. Timing Start — Allows you to adjust which throttle point the timing setting kicks in, this setting can be adjusted to suit different track layout with different motors. (5%-40% @5%, blinky = Off)

2. Timing — Allows you to adjust the timing of the motor (0–16 for Mod Mode and 0–36 for Stock Mode 1st increments):

- With Modify motor start from Timing 6

3. Turbo Delay — Allows you to adjust how responsive the ESC is to the throttle. The setting card will display "un/updated" if changes are made, you will hear a series of beeps and the setting card will display "Send OK".

4. Turbo Delay — Allows you to adjust the time gap between the Timing System to Turbo Timing system (From 0.02 sec to 1 second during a run, the ESC will be switched off until the signal resumes.

MULTI PROTECTION SYSTEM

- The ESC has built-in protections:

- Motor Lock Protection:
  - The ESC is protected against damage when the motor is stuck and does not turn at all. Power will not be applied in this situation.
  - Caution! The ESC relies on the feedback of the 3 motor wires to deploy this protection, it only works if the motor does not turn AT ALL. If the motor has any natural rotation, the ESC will consider the motor to be operational and the power to the motor will not be cut off.

- Fall Signal Protection:
  - Connect the battery wires to a charged pack of battery. Turn on the ESC and the setting card will activate automatically. Note that the screen will show "Loading..." during initialization indicating that the ESC is copying the current setup in the ESC to the setting card. Once it has completed, the screen will show "Yah Racing Program" and Current Firmware Version 

- Motor Lock Protection:
  - The ESC is protected against damage when the motor is stuck and does not turn at all. Power will not be applied in this situation.
  - Caution! The ESC relies on the feedback of the 3 motor wires to deploy this protection, it only works if the motor does not turn AT ALL. If the motor has any natural rotation, the ESC will consider the motor to be operational and the power to the motor will not be cut off.

- Fall Signal Protection:
  - Connect the battery wires to a charged pack of battery. Turn on the ESC and the setting card will activate automatically. Note that the screen will show "Loading..." during initialization indicating that the ESC is copying the current setup in the ESC to the setting card. Once it has completed, the screen will show "Yah Racing Program" and Current Firmware Version

Press “Enter” to enter the Program Mode or Data Reading. (Detail please see the OPERATION DIAGRAM in page 2)
5. Turbo Timing – Turbo Timing is unique to brushless systems because the ESC can simulate motor timing advance. While mechanical timing advance in brush motor system is limited by the physical phasing of the motor, brushless ESC timing can push beyond that physical limit. As a result, motors can run at a super-high RPM in the Turbo Timing mode, resulting in a sensation similar to 2nd gear/Turbo mode. This setting is used to control vehicle speed. Be sure to check ESC and motor temperatures after applying turbo mode. 

Caution! Heat is ESC’s biggest enemy! Monitor your ESC and motor temperature to avoid equipment damage.

6. Turbo Interval – Turbo Interval is effective only when Turbo Timing is in operation. Allows you to adjust how responsive and quickly to apply turbo timing to ESC when the throttle is at neutral position (0-16 for Modify Mode at 1º increments): 

- Turbo Interval setup is important to ensure high top-end speed on long straightaways.
- Turbo Interval affects how hard brakes will be applied when the throttle returns to neutral position (25 steps from 0% to 100%):

7. Drag Brake – Also known as ‘engine braking’, allows you to slow how hard brakes are force applied when the throttle return to neutral position (25 steps from 0% to 100%):

- Drag brake affects how a car handles off-throttle (entering a corner/avoid crashes). With drag brake on, there will be more weight shift to the front tires thus increasing the front end grip when you let off the throttle.
- Drag brake affects how hard it brakes when throttle is not applied. (30 steps from 0% to 100%):

8. Release curve – This parameter controls how fast the car will slow down when you release throttle. You can adjust this parameter to get the desired weight shift to enter a corner. Level 10 will have the most aggressive weight shift and simultaneous respond while Level 1 will have the smoothest drive and least weight shift hence easier to control (For experienced drifter, you are recommended to set this parameter to Level 7 or higher). 

9. RPM Lock – Allows you to limit the motor maximum rpm (100%-30%) to fit the track size and surface traction.

10. Punch – Allows you to change the punch of the ESC (1 to 10):

- Level 1 has the least punch and Level 10 has the highest punch.
- Punch level is usually adjust to maximize acceleration speed with minimum wheel spin.

11. PWM – Allows you to change the forward drive frequency of the ESC (2K, 4K, 8K and 32K):

- The 2K setup will give you good punch at the low end.
- The 32K setup will result in strong mid to top end.
- Experiment to find out what suits your driving style best.

12. Save – Allows you to save the setting card display Parameter to the selected memory Parameters in the setting card (5 user defined Parameters):

- This feature allows you save Parameters for future use. It also allows easy sharing of ESC setup amongst team members.

13. Load – Allows you to load the saved Parameters in the setting card memory to the setting card display menu (6) with user defined Parameters:

- Loading saved Parameter does not change the ESC setting. It only changes the setting card display Parameter. In order to change the ESC setting, you still need to “Send” the Parameter to the ESC (Menu 14).

14. Send – Allows you to send the setting card display Parameter to the ESC (Yes / No):

- Yes to confirm or No to cancel sending
- Note that the original parameter in the ESC will be lost after this operation.

15. Exit – Finish the setting and exit the menu return to previous menu.

Drift Car

1. Timing Start – Allows you to adjust at which throttle point (5%-40%) the timing function will kick in, this setting will aid to get a smooth power band for all kind of motors. (Blinky Mode means no timing will be applied)

2. Timing – Allows you to adjust the timing of the motor (0-16 for Modify Mode at 1º increments):

- Increase in timing will result in increase of motor RPM. However, increase in timing also decrease the efficiency of the system, thus generating extra heat on the ESC and motor.
- Lower timing setting will result in more torque and lower RPM, while higher timing setting will result in the least torque with the highest RPM.

3. Timing Interval – Allows you to adjust how smooth the motor ‘ramp-up’ when timing kicks in. Whereas -3 will have the smoothest acceleration and +3 will have the most aggressive acceleration. (7 Steps from -3 to +3, Default at “Normal”)

4. Punch – Allows you to change the punch of the ESC (1 to 10):

- Level 1 has the least punch and Level 10 has the highest punch.
- Punch level is usually adjust to maximize acceleration speed with minimum wheel spin.

5. Drag Brake – Also known as ‘engine brake’, allows you to slow how hard it brakes when throttle is not applied. (30 steps from 0% to 100%):

- Drag brake affects how a car handles off-throttle (entering a corner). With drag brake on, there will be more weight shift to the front tires thus increasing the front end grip when you let off the throttle.
- Drag brake affects how hard it brakes when throttle is not applied. (30 steps from 0% to 100%):

6. Release curve – This parameter controls how fast the car will slow down when you release throttle. You can adjust this parameter to get the desired weight shift to enter a corner. Level 10 will have the most aggressive weight shift and simultaneous respond while Level 1 will have the smoothest drive and least weight shift hence easier to control (For experienced drifter, you are recommended to set this parameter to Level 7 or higher).

7. Brake LV – Allows you to set the maximum brake force applied during manual braking (Off to 100%)

8. Turbo Timing – This setting allow you to adjust the amount Turbo Timing in your ESC in 1º increments (Off-25º):

- Turbo Timing is applied when 98% throttle is achieved more than 1 sec
- Higher Turbo Timing settings will increase top speed, but will drives up motor and ESC temperatures as well.

Crawler Car

1. Turbo Timing – This setting allow you to adjust the amount Turbo Timing in your ESC in 1º increments (Off-25º):

- Turbo Timing is applied when 98% throttle is achieved more than 1 sec
- Higher Turbo Timing settings will increase top speed, but will drives up motor and ESC temperatures as well.

2. Punch – Allows you to change the punch of the ESC (1 to 10):

- Level 1 has the least punch and Level 10 has the highest punch.
- Punch level is usually adjust to maximize acceleration speed with minimum wheel spin.

3. RPM Lock – Allows you to limit the motor maximum rpm (100%-30%) to fit the track size and surface traction.
FRD Drive feel

(System for Start and middle speed)

Turbo Timing System for Top speed

Braking System for Brake feel

Drive feel

1. Timing Start
2. Timing Interval
3. Punch
4. Brake Level
5. R.P.M. Lock
6. Save Parameter
7. Load Default
8. Send
9. Exit

BASIC SETTING FOR MOTORS

Based on Hackmoto Motor setup. If you use another brand Motor, please gear up 1 to 2 motor gear and cut out half the timing and turbo timing to start.

<table>
<thead>
<tr>
<th>RPM</th>
<th>Modify Mode</th>
<th>Stock Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>50-60</td>
<td>50-60</td>
</tr>
<tr>
<td>12</td>
<td>60-70</td>
<td>60-70</td>
</tr>
<tr>
<td>15</td>
<td>70-80</td>
<td>70-80</td>
</tr>
<tr>
<td>20</td>
<td>80-90</td>
<td>80-90</td>
</tr>
<tr>
<td>25</td>
<td>90-100</td>
<td>90-100</td>
</tr>
</tbody>
</table>

Turbo Timing

- Turbo Delay: 0.02's ~ 0.05's
- Turbo Timing: 26~34
- Turbo Interval: (+1~+3) (+1~+3) (Normal~+2) (-1~+2) (-2~+2) (-3~+1)

Braking

- Drag Brake: 8%
- Brake Level: 8%
- Brake Frequency: 2K

PWM

- PWM: 4K or 8K

Copyright © 2014 "FRD" All rights reserved. Images may not be used without permission.