Thank you for choosing ORCA Products, and welcome to the power and convenience of Brushless RC. By purchasing the ViTRA VX3 18 competition brushless Electronic Speed Control (ESC), you have chosen one of the most advanced speed controllers designed for all competition, allowing multiple programmable parameters of the ESC’s Setting Card to be purchased separately. Please read this manual thoroughly to familiarize yourself with the installation, setup, operation, and limitations of this unit. By operating this product, you accept the ORCA Warranty Terms.

SPECIFICATIONS

System: Brushless
Forward/Brake/Reverse: Yes (Factory preset at Forward/Brake)
Dimensions: 41(L) x 38(W) x 20(H)mm
Weight: 48g (excluding wires)
Voltage Input: (3.3 – 9.9V DC)
- 3 – 6 Cells NiCd/NIMH
- 1 – 2 Cell LiPo / 1 – 3 Cell LiFe
Peak Current: 720A
Motor Limit: Over 4.0 Turns
Motor Type: Sensored 540 sized brushless motors
B.E.C.: 6V / 2.0A
Multi Protection System: Yes

INSTALLATION & CONNECTORS

Solder the supplied wires to the soldering posts on the ESC according to the following scheme:

- Black wire: " + " post (Battery +ve) " - " post (Battery -ve)
- Black wire: " + " post (Motor A)
- Black wire: " + " post (Motor B)
- Black wire: " + " post (Motor C)
- Switch wire: " + " post (2pin port)
- BEC wire: " + " post (3pin port)
- Capacitor Red wire: " + " post (Capacitor +ve)
- Capacitor Black wire: " + " post (Capacitor -ve)

(Warning! Use good quality solder and avoid soldering longer than 5 seconds per solder joint)

Wire connections:

- Red wire: " + " post (Motor A)
- Black wire: " + " post (Motor B)
- Black wire: " + " post (Motor C)
- Switch wire: " + " post (2pin port)
- BEC wire: " + " post (3pin port)
- Capacitor Red wire: " + " post (Capacitor +ve)
- Capacitor Black wire: " + " post (Capacitor -ve)

Operate the ESC using an R/C transmitter and receiver to connect the ESC and receiver.

OPERATING TIPS

- To avoid radio glitches, arrange for the placement of the ESC such that the power wires and the receiver antenna wires do not cross over each other.
- Try to change the parametric setting such that the receiver plugs are easily accessible. Use supplied extension cable if plugs are not accessible for (ESC setup purposes).
- Position the ESC where it is protected in the event of a crash, and use the supplied double-sided tape to secure the ESC onto the chassis.
- Install/Sober your favorite battery connector to the battery wires if you do not plan to direct solder your battery. RED to +ve and BLACK to –ve. Reversing the battery polarity will destroy your ESC and void the warranty.
- Connect supplied BEC wire (180mm) to 3pin port match the " + " post of the B.C.A (+) post
- Connect supplied Switch Wire to 2pin port (-o)
- Connect the 3 pin motor wires to the motor, you can either solder the wires directly to the motor or use your favorite connectors. Match the label of the wire to the labels of the tabs on the motor when soldering. Avoid soldering longer than five seconds per solder joint and avoid shorting the motor by creating a wire bridge or a solder bridge on the solder tabs on the motor. (Warning! Improper wiring may damage the ESC and void the warranty).
- Connect the sensor cable between the ESC sensor plug and the motor sensor plug.
- Connect the receiver plug to the CH2/3/4 pin of the receiver.
- Secure the on/off switch in a place where it will not be accidentally knocked to the “off” position during a crash.
- Fan port voltage output from battery.
- Motor A,B,C position can change to B,C,A in program card in Initial Setup Mode
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- Solder the wires directly to the motor or use your favorite connectors. Match the label of the wires (A, B, C) to the labels on the tabs on the motor when soldering. Avoid soldering longer than five seconds per solder joint and avoid shorting the motor by creating a wire bridge or a solder bridge on the solder tabs on the motor. (Warning! Improper wiring may damage the ESC and void the warranty).

BATTERY

Connect the battery wires to a charged pack of battery, then connect supplied 3pin wire (200mm) to the ESC setting port (4pin port) and setting card. 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 loading is completed, the screen will show "TEAM ORCA Program" and the current Firmware Version and Date code e.g. Ver. 3.0.1 XXXXXX. You can now start to program your ESC.

Press “Enter” to enter the Program Mode or Date Reading.

(Operate TIPS / page 2) We have added a Mode and have added another 15 menus in the Program.

Menus 1 to 12 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 document. Each menu is to familiarize yourself with these menu items in order to get the most out of your ESC.

Menu 14 allows you to save the previously saved Parameters back to the setting card memory. Menu 15 allows you to send the currently displayed Parameter on the setting card to the ESC – overwriting whatever is in the ESC.

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

When navigating around the Program Menu is done using the 4 buttons on the right hand side of the setting card. The function of each button varies depending on which screen the display is showing:

- "Enter" button - go to next page
- "Advance" button - go to "Program Setup"
- "Enter" button - go to "Date Reading"

Note! The setting card is not included the package, please purchase separately.

The setting card will collect the Parameters before writing. If no changes are made, the setting card will display "unchanged". If changes are made, you will hear a series of beeps and the setting card will display "Send OK".

Tips! Do not worry about making mistakes. You will not damage your ESC during setting. If in doubt, you can always reload the default set up and start over again (Load Menu 13 Default and confirm Send on Menu 15).

Due to the different requirements of each type of racing, it is important to customize your ESC for a particular usage. Customization of the ESC is done using the setting card (purchased separately). To start, simply plug the ESC receiver wire from the receiver and plug it into the receptacle on the side of the setting card (as shown below), making sure that you plug it in correctly:

- s (signal) + (Red)
- * (ve) + (White)
- (ve) - (Black)

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Tips! Do not worry about making mistakes. You will not damage your ESC during setting. If in doubt, you can always reload the default set up and start over again (Load Menu 13 Default and confirm Send on Menu 15).

Fall Signal Protection:

In case the radio signal to the ESC is interrupted for over 1 second during a run, the ESC will cut off until the signal resumes.

ROAR Stock Spec Racing:

ROAR is a new class of Stock Spec Racing using a zero degree timing ESC and 17.5 turn Motor. The ViTRA VX3 COMP ESSENTIALS satisfies the ROAR requirement showing a blinking LED when set at 0 timing and 0 turbo timing.

Misc. Tips:

- Connect the ESC to the battery pack only when you are ready to run. This will avoid draining the battery pack.
- Always disconnect the battery after your run.
- A small spark may occur at the connection when the battery is connected. This is normal and is due to the charging up of the capacitors.

Limited Warranties / Repair Procedures

All ORCA products are manufactured according to the highest quality standards. ORCA guarantees this product to be free from defects in materials or workmanship for 60 days from the original date of purchase verified by sales receipt. This limited warranty does not cover damages that are results of normal wear, misuse or improper maintenance of the product.

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

When sending in the product, always pack carefully and include the original sales receipt, a description of the problem encountered, your return address and contact information.

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 installing and using the product.

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! Since the ESC relies on the feedback from the 3 motor wires to deploy this protection, it ONLY works if the ESC does turn AT ALL. If the ESC has any rotation, the ESC will consider the motor to be operational and the power to the motor will not be cut off.

Competition

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Detailed Explanation of each ESC Menu Items:

1. **Timing Start** – Allows you to adjust which throttle point to start to add timing, this will make easy to get a smooth power band for all kind of motors.

2. **Timing** – Allows you to adjust the timing of the motor (0-20 for Mod Mode and 0-40 for Stock Mode 1st increments);
   - Generally speaking, in brushless systems, increase in timing will result in increase RPM of the motor. However, increase in timing also decrease the efficiency of the system, thus generating heat on the ESC and motor.
   - Lower timing has the most torque and the lowest RPM;
   - Higher timing has the least torque and the highest RPM.

3. **Turbo Delay** – Allows you to adjust the time gap between the Timing System to Turbo Timing system (From 0.02 sec to 0.15 sec in 0.01 sec increments):
   - Turbo Delay is needed because when the ESC is operating under the Turbo Timing mode, it drives the motor to very high RPM - however, with very low torque. With Turbo Delay, the motor has a chance to rev up before the Timing kicks in. Thus achieving higher top speed.
   - Proper adjustment of the Turbo Delay will result in smooth transition and continuous power band from regular Timing to Turbo Timing.

4. **Turbo Timing** – Turbo Timing is unique to brushless systems because the ESC can simulate motor timing advance. While mechanical timing advance in brush motor systems is limited by the physical phasing of the motor, brushless ESC timing advance 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 of having a 3rd gear Turbo for top speed. This menu allows you to adjust the amount of Turbo Timing in your ESC in 1° increments. (The “Turbo Timing” never bigger than “Timing”).
   - Turbo Timing is applied at 98% throttle.
   - Higher Turbo Timing settings will increase top speed, but will drive motor and ESC temperatures up as well.

5. **Turbo Interval** – Turbo Interval is effective only when Turbo Timing is in operation. It acts as a “ramp-up” for the Turbo Timing (4,5,6,7,8,9,10 Normal, 1,2,3,4,5,6,7,8,9,10):
   - Turbo Interval setup is important to ensure high top-end speed on long straightaway.
   - (-6) this will make the turbo more aggressive and early to top speed. (Suitable for high traction)
   - (+1) this will make the turbo more smooth and less to top speed. (Suitable on low traction)
   - Default in “Normal”

6. **Initial Brake** – Allows you to set the automatic brake force applied when the throttle returns to neutral position (25 steps from 0% to 25%).
   - 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 go the throttle.
   - Experiment with different settings to find the setting that fits your driving style most.

7. **Brake Frequency** – Brake Frequency operates similar to PWM except it affects the braking intensity of the throttle (3 steps 1k,2k(default),4k):
   - At 1kHz, the Drag brake and the Brake force will feel the punchiest.
   - At 4 kHz, the Drag brake and the Brake force will feel very smooth.

8. **Punch** – Allows you to set the amount of brake during manual braking (Steps from OFF to 20%):
   - OFF – Brake linear base on transmitter.
   - Adjust initial brake to set certain level of “hard brake” effect.(can also adjust your transmitter brake hi-point to get your need the brake force)

9. **Load Defualt** – Allows you to change the load in the ESC (1 to 10):
   - Level 1 has the least punch and Level 10 has the highest punch.
   - Adjust punch level to maximize acceleration speed with minimum wheel spin.
   - With Mod Mode, start with Level 3.
   - With Stock Mode, start with Level 6

10. **Save** – Allows you to save the setting card display Parameter to the selected memory Parameters in the setting card (2 user defined Parameters):
   - This feature allows you save Parameters for future use. It also allows easy sharing of ESC setup amongst team members.

11. **Load** – Allows you to load the saved Parameters in 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).

12. **Send** – Allows you to send the setting card display Parameter to the ESC (Yes / No):
   - Yes to confirm or No to cancel sending.

13. **Blink** – Allows you to set the amount of brake during manual braking (Steps from OFF to 20%):
   - OFF – Brake linear base on transmitter.
   - Adjust initial brake to set certain level of “hard brake” effect.(can also adjust your transmitter brake hi-point to get your need the brake force)

14. **Punch** – Allows you to set the amount of brake during manual braking (Steps from OFF to 20%):
   - OFF – Brake linear base on transmitter.
   - Adjust initial brake to set certain level of “hard brake” effect.(can also adjust your transmitter brake hi-point to get your need the brake force)