PERFORMA
RACING

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PERFORMA Racing

INSTRUCTION MANUAL · ENGLISH

WARNINGS

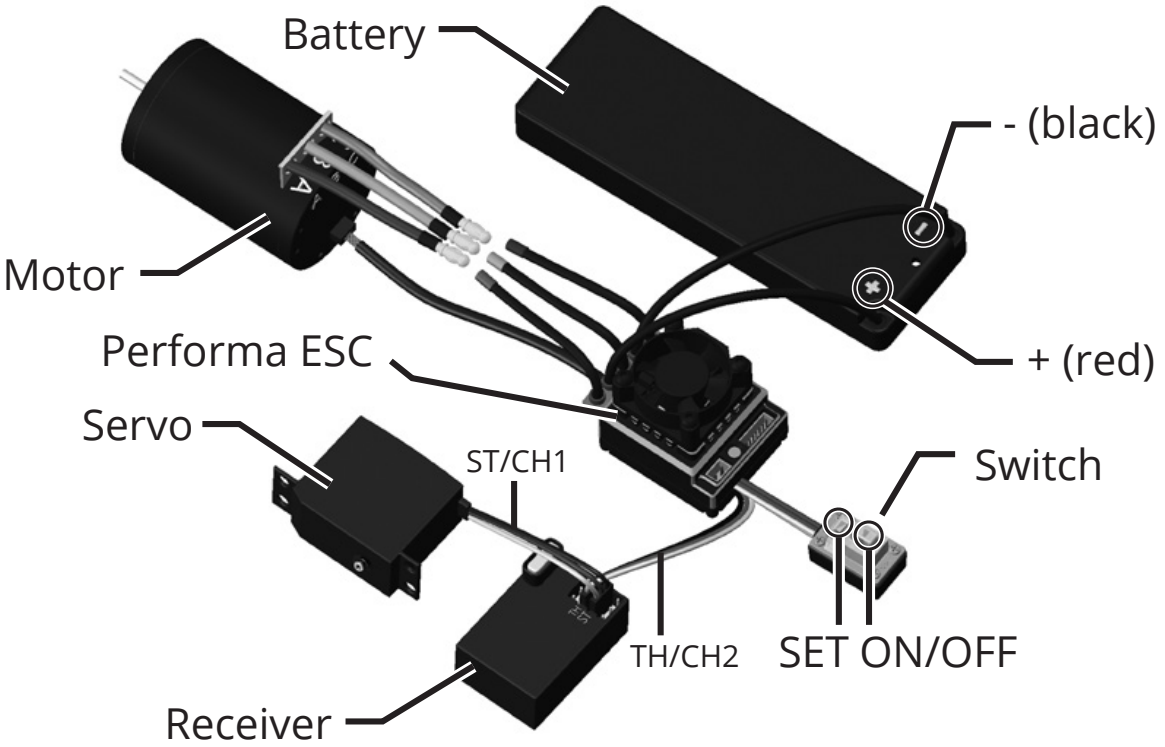
- Do not let children use this product without the supervision of an adult.
- Never leave the ESC unsupervised while it is powered on.
- The ESC might get hot during use, be careful when handling it.
- Always disconnect the battery after use, do not store with the battery connected.
- Do not use near flammable materials.
- If the ESC has suspicious reactions, immediately disconnect the battery and discontinue use.

WARRANTY

Performa guarantees this product to be free from manufacturing and workmanship defects. The warranty does not cover incorrect installation, components worn by use, or any other problem resulting from incorrect use or handling of the product. No liability will be accepted for any damage resulting from the use of this product. By the act of connecting and operating this product, the user accepts all resulting liability. Is considered incorrect use:

- Failure to follow instructions.
- Improper use of the product (abusive use, out of spec, etc.)
- Failure to adapt settings for proper function (improper connections, wrong gearing, installation, setup, etc.).
- Overload, overheating (desoldering, melting, etc.).
- Running in inadequate conditions (damage or rust from rain, humidity, etc.).
- Improper maintenance (presence of dirt, etc.).
- Disassembly, modification by the user (modifying original connectors, wires, components, etc.).
- Mechanical damage due to external causes.

CONNECTIONS



Sensorless brushless motors: When using a motor without sensors, if the motor spins in the wrong direction, simply reverse two of the motor wires.

Sensor brushless motors: When using a motor equipped with sensors, the motor should also be connected to the ESC via a sensor wire ⚠ **WARNING!** When using sensor equipped motors, you must respect the A-B-C wire connection order, you can't connect the wires randomly or the motor will not spin at all!

Brushed motors: Connect the A and C ESC wires to the +/- wires of the motor.

Note: the ESC has a setting to change the motor rotation direction.

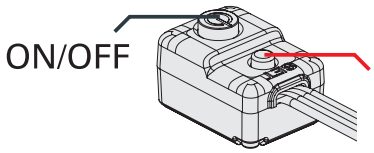
ESC CALIBRATION

In order to ensure proper function, the ESC must be calibrated to your transmitter inputs. Center the trims and reset all settings inside the transmitter before proceeding to the calibration

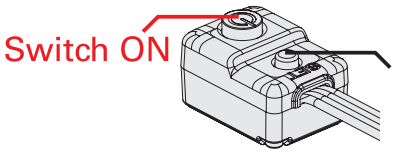
Calibration procedure

A. Make sure the ESC is switched off and switch the transmitter on.
B. Press and hold the setup button (located on the switch), then switch on the ESC. Release the button as soon as the red LED starts to flash.
C. Calibrate the throttle points by pressing the button once after each step.
    1. Neutral point (1 flash)
    2. Full throttle (2 flashes)
    3. Full brakes/reverse (3 flashes)
D. The motor will run 3 seconds after the last step is completed.

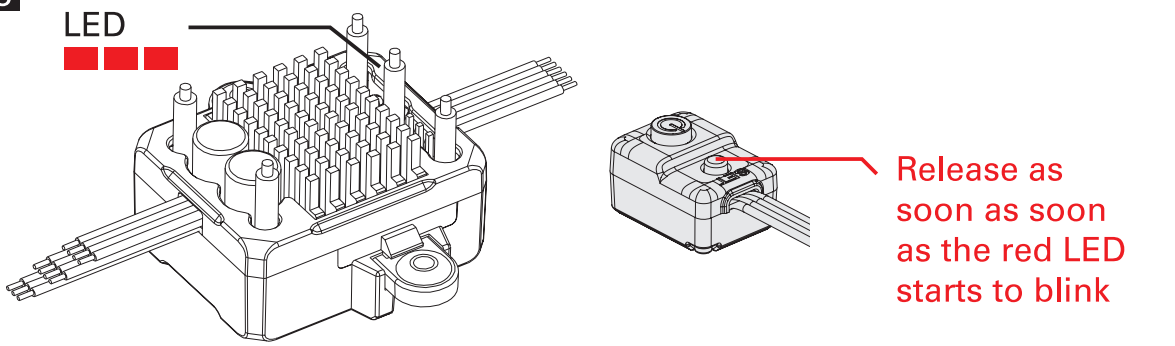
1


ON/OFF
Press and hold the SET button

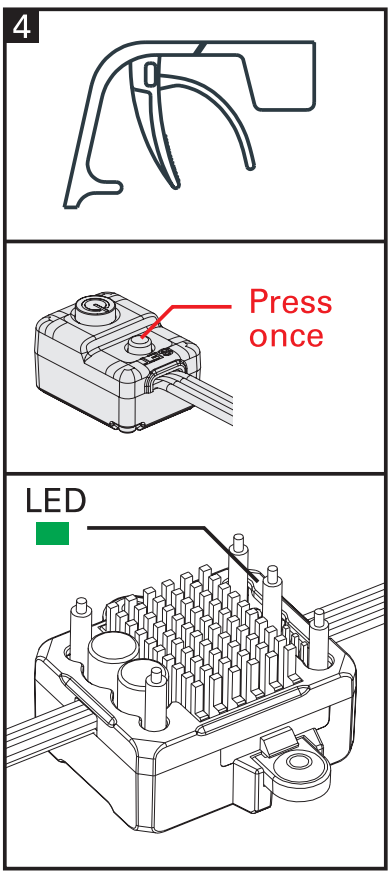
2


Switch ON
Keep pressing the SET button

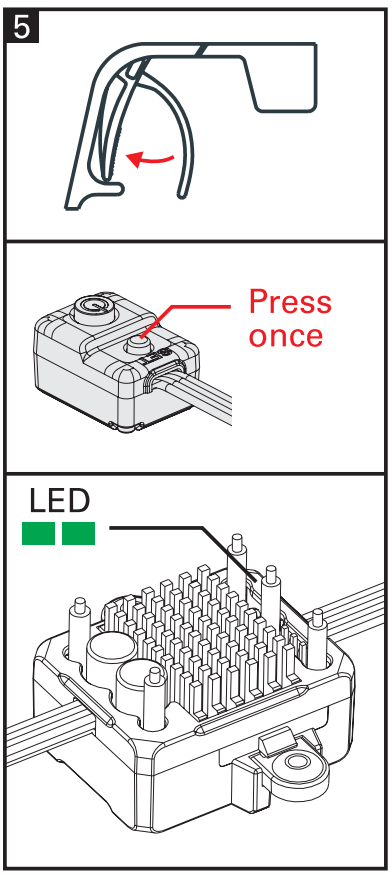
3


LED
Release as soon as soon as the red LED starts to blink

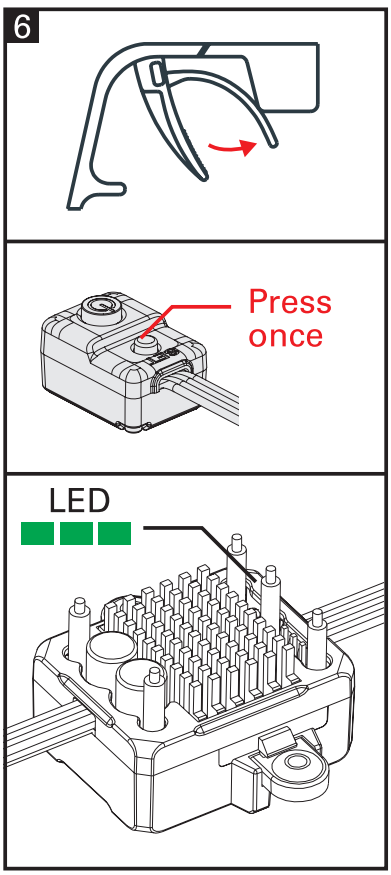
4


Press once
LED

5


Press once
LED

6

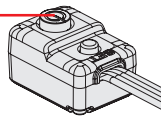

Press once
LED

PROGRAMMING YOUR ESC

1

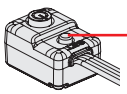
Connect the battery

Switch ON



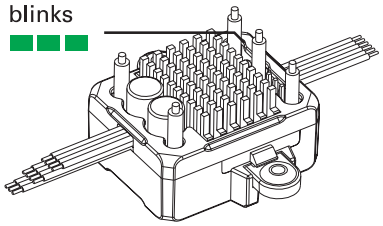
Enter Programming Mode **OR** Reset to factory default settings

2

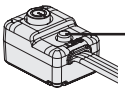


Press the SET button for **1s**

LED blinks



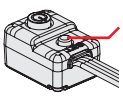
2



Press the SET button for **5s**

Select the parameter you wish to modify

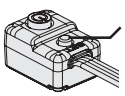
3



Press the SET button **1 time** to select the **1st** parameter...

LED blinks 1 time

3

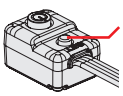


...press the SET button **2 times** to select the **2nd** parameter etc.

LED blinks 2 times

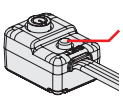
3

4



Press the SET button for **3s** to modify the setting of the parameter

5



Use the SET button to change the setting of the parameter.

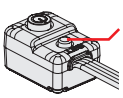
Press 1 time

LED blinks 1 time

Press 2 times etc.

LED blinks 2 times

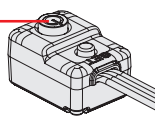
6



Press the SET button for **3s** to save the new setting

7

Switch OFF ESC to complete the procedure



AVAILABLE PARAMETERS AND DEFAULT SETTINGS

Parameter (indicated by green LED ■)		Setting (indicated by red LED ■)								
		1	2	3	4	5	6	7	8	9
Standard Parameters (adjustable with on/off switch)										
1	**Running Mode**	Forward with Brake	Forward/ Reverse with Brake	**Foward/ Reverse (For Rock Crawler)**						
2	**Drag Brake Force**	0%	5%	10%	50%	60%	70%	80%	90%	**100%**
3	**Drag Brake Rate (decreased)**	**Level 1**	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Level 8	Level 9
4	**Low Voltage Cut-Off Threshold**	Off	2.6V/Cell	2.8V/Cell	**3.0V/Cell**	3.2V/ Cell	3.4V/ Cell			
5	**Start Mode (Punch)**	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	**Level 7**	Level 8	Level 9
Advanced Parameters (adjustable with program box only)										
6	**Max Brake Force**	12.50%	25%	37.50%	50%	62.50%	75%	87.50%	**100%**	
7	**Max Reverse Force**	25%	50%	75%	**100%**					
8	**BEC Output**	**6V**	7.4V							
9	**Neutral Range**	**6% (Narrow)**	9% (Normal)	12% (Wide)						
10	**Driving Frequency**	1k	2k	4k	8k	12k	**16k**			
11	**Braking Frequency**	0.5k	**1k**	2k	4k					
12	**Motor Type**	**AUTO**	Sensored Brushless Motor	Sensorless Brushless Motor	Brushed Motor					
13	**R-RPM Offset**	Level 1	Level 2	Level 3	Level 4	Level 5	**Level 6**	Level 7	Level 8	
14	**Motor Rotation**	**CCW**	CW							

■ Default settings

Thank you for purchasing a Performa Brushless ESC. This ESC features the latest brushless technologies. Our World Championship winning development team has spent countless hours developing this ESC so that you can experience ultimate performance. Please read these instructions thoroughly before using the ESC.

FEATURES

- Designed for Crawler cars.
- Waterproof design with special sensor connector case
- Fine tuned for use with the Performa Crawler brushless motor
- Support 2S and 3S Lipo
- Multiple settings available for performance fine tuning
- Optional LED program box available

STATUS LED FUNCTION

- In the neutral position, no LED are lit
- The red LED lights when the car is moving forward, backwards or is braking.

ESC PARAMETERS SETUP

You can adjust several parameters by using the setup button located on the switch or by using the optional program box. The green flashing LED indicates the parameter and the red flashing LED indicates the setting value. To adjust the parameters using the setup button, follow the procedure below.

To modify the “advanced” parameters, the use of the optional program box is mandatory!

Standard parameters setup using the setup button located on the switch.

A. Switch on the ESC.
B. Press and hold the setup button until the green LED starts flashing and then release the setup button (holding the setup button for 5 seconds will restore the ESC to factory defaults).
C. Press the setup button once more.
D. The green LED starts flashing repeatedly, indicating the currently selected parameter. One flash = parameter 1, two flashes = parameter 2 and so on. Press the button to switch between the different available parameters.
E. To change the setting of the actual parameter, press and hold the setup button until the LED starts flashing red.
F. The red LED flashes indicating the actual setting. One flash = setting 1, two flashes = setting 2 and so on. Press the button to switch between the different available settings.
G. Press and hold the setup button for 3 seconds to save the modification.
H. Switch the ESC off and back on to make the parameter change effective.

Note: you can only change one setting at a time, after each modification you need to switch the ESC off and back on to make the parameter change effective and be able to modify another parameter.

SETTINGS

Standard parameters can be modified using the setup button located on the switch.

Running mode

1. “Forward Only with Brake” this mode is meant for racing. In this mode the car can go forward and brake, there is no reverse.
2. “Forward/Reverse with Brake” in this mode the car can go forward, brake and reverse. If the car is moving forward and you go into reverse, the car will first brake and stop, then you need to release the throttle and go into reverse again for the car to go backwards. While braking or in reverse, if you accelerate, the car will immediately accelerate forward.
3. “Forward/Reverse”
   This mode is meant for Rock Crawlers. In this mode there is no brake function, the car goes from forward to reverse or reverse to forward immediately without any pause
   Note: Do not use this mode with other car types as it can overload and/or damage the ESC.

Drag Brake Force

Sets braking power applied when the throttle is returned at the neutral position. A higher drag brake setting means stronger hold or hill brakes.
Note: stronger brakes cause more load on the drivetrain and heat output will be increased, use with caution.

Drag Brake Rate
Sets the rate at which the drag brake is applied until it reaches the pre-set value. A lower value causes the car to slow down more smoothly and a higher value causes the car to stop more abruptly.
You can also set a lower value to prevent load and wear on the drivetrain if your car is reaching higher speeds.

Low voltage cut-off
This function helps to prevent battery over-discharge. If the battery voltage becomes lower than the threshold for 2 seconds, the output power is shut off and the red LED flashes. The cut-off threshold calculation is based on LiPo individual cell voltage. For NiMH batteries, if the voltage battery pack is higher than 9.0V, it will be considered as a 3 cell LiPo battery pack; if it is lower than 9.0V, it will be considered as a 2 cell LiPo battery pack.

Start mode "Punch"
Sets the initial throttle punch when the car accelerates. Level 1 gives a very soft initial acceleration and level 9 gives a very strong initial acceleration. A lower setting can help to improve traction.

Max Brake Force
Sets the maximum braking force. If you want to run your car like a normal car (the car rolls when you release the throttle) you can disable or decrease the drag brake and use regular braking to slow down the car instead.
Note: stronger brakes cause more load on the drivetrain and heat output will be increased, use with caution.

Max Reverse Force
Sets the maximum power/speed when travelling in reverse.

BEC Output
The ESC BEC circuitry that supplies power to the receiver and steering servo can output 6V or 7.4V.
You can use 7.4V for improved performance and if your servo/receiver are compatible.
Note: using the wrong voltage setting can damage your servo and/or receiver.

Neutral range
Sets the throttle sensitivity around the neutral point. Depending on the transmitter this setting may need to be adjusted to achieve the proper feeling. It can also help in case of irregular drag brake function (due to imprecise neutral of the transmitter.

Driving Frequency
Sets the frequency on the forward motor drive frequency. A higher frequency gives a smoother power delivery, a lower frequency gives a more aggressive response.

Braking Frequency
Sets the frequency on the braking motor drive frequency. Use a higher frequency for smoother braking or a lower frequency for more aggressive braking.

Motor type
The ESC is able to auto detect the motor type, however you can use this setting if you want to ensure that the ESC is using the correct drive mode.

R-RPM Offset

This setting affects the ESC response when you move the throttle into the reverse or brakes position.
Some transmitters have a different range of movement when moving the throttle forward or backward, this can make the car difficult to control when going into reverse or braking. This setting can help to smoothen out the throttle response and improve driveability.

Motor rotation

Sets the motor rotation direction in the case that it's rotating the wrong way in relation to your transmitter inputs.

LED PROGRAM BOX

The optional LED program box PA9352 allows you to adjust the ESC settings much more easily.
It is a recommended buy if you like tinkering with the ESC settings.

RESTORE DEFAULT SETTINGS

With the throttle in the neutral position, press and hold the "SET" key for 5 seconds, the red and green LED will flash simultaneously indicating that the parameters have been reset to the factory default values

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