

WARNINGS

- This is a high-performance product which can cause injuries if used improperly.
- 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 stops functioning properly (stutter, overheating, smoke, etc.), immediately discontinue use, disconnect the battery and seek assistance.

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 issue 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.

FEATURES

- High-performance racing ESC.
- For sensor or sensorless motors (auto-sensing).
- Multiple settings to adjust performance.
- Multiple protection systems (low voltage, overheat, radio signal loss).
- Optional program box available for easy setup and firmware upgrade.

CONNECTIONS

Motor : Connect the three motor wires to the motor, respecting the ABC order. **Sensor** : If the motor is equipped with a sensor, connect a sensor cable to the ESC and motor sensor ports. **Receiver** : Connect the receiver plug to the receiver (position nr.2, throttle channel).

Battery : Connect the two battery wires to the battery, respecting the positive + and negative - polarities.

WARNING! Reversing the polarities will irretrievably damage the ESC.

CALIBRATION

In order to ensure proper function, the ESC must be calibrated to your transmitter inputs.

Center the trims, reset all the transmitter settings and make sure the throttle channel reverse switch is on the REV position before proceeding to the calibration.

1. Power on your transmitter.
2. Hold the SETUP button located on the switch and then power ON the ESC.
3. Release the SETUP button as soon as the LED flashes RED and the motor beeps.
4. Keep the throttle in the neutral position and press the SETUP button, the LED flashes GREEN once and the motor beeps once.
5. Move the throttle in the full throttle position and press the SETUP button, the LED flashes GREEN twice and the motor beeps twice.
6. Move the throttle in the full brakes position and press the SETUP button, the LED flashes GREEN three times and the motor beeps three times.
7. The calibration procedure is completed and the ESC is ready to use.

NOTE : If the motor rotates in the wrong direction, Sensorless mode only : reverse two of the motor wires. Sensorless and sensor mode : use the optional program box to modify the motor rotation direction setting .

ESC PARAMETERS

You can adjust the ESC parameters by using the setup button located on the switch or by using the optional program box.

NOTE: The optional program box is required to access all parameters and update the ESC firmware (if available).

Modifying parameters using the SETUP button located on the switch

1. Switch on the ESC.
2. Press and hold the SETUP button until the GREEN LED starts flashing and release the button.
3. Press the SETUP button once more, the GREEN LED starts flashing once repeatedly, indicating that parameter one (Running mode) is selected.
4. Press the SETUP button repeatedly to switch between the different available parameters. The number of GREEN LED flashes indicates the currently selected parameter (1 to 6).
5. To modify the current parameter, while the GREEN LED is flashing, press and hold the SETUP button until the RED LED starts flashing.
6. The RED LED flashes indicate the actual setting. One flash = setting 1, two flashes = setting 2 and so on. Press the SETUP button repeatedly to switch between the different available settings.
7. Press and hold the SETUP button for 3 seconds to save the modification.
8. 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 off the ESC and power it on again on to make the parameter change effective and be able to modify another parameter.

NOTE : holding the setup button for 5 seconds will restore the ESC to factory defaults.

PARAMETERS DESCRIPTION

1. LOW VOLTAGE CUT-OFF

To avoid over-discharging batteries, you can adjust a voltage threshold at which power output will be reduced. You can use the OFF setting for racing conditions or with NIMH batteries.

2. RUNNING MODE

1. "Forward/Brake" this mode is meant for competition use. In this mode the car can go forward and brake, there is no reverse.
2. "Forward/Brake/Reverse" In this mode the car can go forward and brake but also go into reverse. To drive in reverse, you need to stop the car for 2 seconds, only then can reverse activate.

3. MOTOR TIMING

Timing is used to increase the motor's performance. Lower timing provides better efficiency but lower performance, higher timing provides more performance but is less efficient and will make the ESC and motor run hotter.
NOTE: a higher setting puts more stress on the ESC and motor and can cause them to overheat.

4. ACCELERATION

This parameter sets the throttle response of the ESC. The higher the setting the stronger the ESC will react to throttle inputs. You can use a higher setting for high grip tracks and a lower setting for low grip tracks or to make the car handling easier.

5. START MODE

This parameter sets the initial power when the car starts from a complete stop. Use a higher setting for a stronger start or for heavier cars.

6. POWER LIMIT

This parameter limits the power output of the ESC, the higher the setting the lower the power output. Use for very low grip tracks or inexperienced users.

7. BRAKING FORCE

Adjusts the maximum braking power, higher settings gives stronger brakes. For example, you can use a higher setting for high grip tracks or lower setting for low grip tracks.

NOTE: a higher setting puts more stress on the ESC and motor and can cause them to overheat.

8. DRAG BRAKE FORCE

Drag brake applies a certain amount of braking power when you release the throttle. It can help improve the car's handling in certain track conditions. Use a higher setting for higher grip tracks and lower setting for low grip tracks.

9. MOTOR ROTATION

Use this setting to change the motor's rotation direction. In sensor mode, this is the only way to change a motor's rotation direction.

10. REVERSE POWER

This parameter sets the maximum power available when in reverse. A higher setting increases the performance when running the car in reverse.

11. SERVO BEC VOLTAGE

Sets the voltage output from the ESC to the receiver. Some high-end receivers and servos can use 7.2V for more performance. Make sure that your servo and receiver are compatible before modifying this parameter.

12. NEUTRAL WIDTH

This parameter adjusts the throttle sensitivity around the neutral point. A higher value will make the throttle less sensitive to inputs and the throttle will have to be moved further for the car to move forward, backward or brake.

OPTIONAL PROGRAM BOX AND PC SOFTWARE

An optional program box P1 Control Box Part#PA9352 is available. The program box allows you to modify all the ESC parameters (the setup button only allows modifying some of the parameters). It is not mandatory to purchase the program box to use the ESC, but the program box is required to be able to fine tune all of the performance aspects of the ESC. By connecting the program box to a PC you can also use the PC interface to modify the ESC settings and update the ESC firmware if we release an update.

Find settings and specs on page 2.

PARAMETERS AVAILABLE WITH THE SETUP BUTTON				
Item No.	1	2	3	4
1. Running Mode	Forward with Brake	Forward/Reverse with Brake		
2. Cut-off Voltage/Cell	3.0V	3.2V	3.4V	Off
3. Drag Brake Force	0%	4%	8%	15%
4. Max Brake Force	25%	50%	80%	100%
5. Start Mode	Slower	Slow	Fast	Faster
6. Acceleration	Smooth	low	Medium	X-high



LED FUNCTION

The ESC LED can inform you about its status. Refer to the table below for a description.

STATUS	LED color	LED State
Throttle at neutral	Red, green LED	Off
Forward or Backward in sensorless mode	Red LED	Solid on
Forward or Backward in sensed mode	Green LED	Solid on
Battery Low Voltage	Red LED	Blinking
ESC Overheat	Red, green LED	Blinking alternatively
No radio signal	Red LED	Blinking

PARAMETERS AVAILABLE WITH THE PROGRAM BOX AND PC SOFTWARE									
Item No.	1	2	3	4	5	6	7	8	9
1. Running Mode	Forward with Brake	Forward/Reverse with Brake							
2. Cut-off Voltage/Cell	3.0V	3.2V	3.4V	Off					
3. Drag Brake Force	0%	4%	8%	12%	15%	20%	25%	30%	
4. Max Brake Force	25%	30%	40%	50%	60%	70%	80%	90%	100%
5. Start Mode	Slower	slow	Fast	faster					
6. Acceleration	Smooth	Low	Medium	High	X-High				
7. Motor timing	Blinky	Low	Medium	High	X-High				
8. Power limit	0%	10%	20%	30%	50%				
9. Motor Rotation	Normal	Reverse							
10. Reverse power	30%	40%	50%	60%					
11. Servo BEC V	6.0V	8.4V							
12. Neutral width	2%	4%	6%	8%	10%				

Performa ESC Specifications			
Model No.	PA9345	PA9346	PA9348
Max continuous current	60A	120A	150A
Burst Current	360A	650A	1080A
BEC adjustable	No	Yes	Yes
Motor type	Sensor/sensorless	Sensor/sensorless	Sensor/sensorless
BEC output	6V/2A	6V/4A & 8.4V/4A	6/8.4V/4A
Compatible motor	2 Pole, 4 Pole, 6 Pole	2 Pole, 4 Pole, 6 Pole	2 Pole, 4 Pole, 6 Pole
Battery Range	4-8 Cell NiMH/NiCD,2-3S LiPo	2-4S LiPo	2-6S LiPo
Suitable Vehicles	1:12 off-road, on-road, 1:10 on-road	1/10 on-road, 1:8 off-road, on-road	1:8 off-road, on-road
Dimensions	L37*W30*H21	L48*W35*H35	L58*W48*H37
Weight(g)	63	121	159