robbe Modellsport roCONTROL V2 Engine Controller Instruction Manual

Contents

1 robbe Modellsport roCONTROL V2 Engine Controller
2 Product Information
3 Product Usage Instructions
4 FEATURES
5 SPECIFICATIONS
6 USER GUIDE
7 CONNECTIONS
8 PROGRAM YOUR ESC WITH A LED PROGRAM BOX
9 PROGRAMMABLE ITEMS
10 TROUBLESHOOTING & MULTIPLE PROTECTIONS
11 WARRANTY
12 SAFETY INSTRUCTIONS FOR CONTROLLERS
13 Documents / Resources
13.1 References
14 Related Posts

robbe Modellsport roCONTROL V2 Engine Controller

Product Information

Specifications

- **Model:** RO-CONTROL V2 40A
- **Dauerstrom:** 40 A
- **Max. Strom:** 60 A
- **BEC Ausgang:** 5V @ 5A (Switch-mode)
- **Eingangsspannung:** 3-4S
- **Gewicht:** 36 g
- **Abmessungen:** 60x25x8 mm

Product Usage Instructions

Frequently Asked Questions (FAQ)

1. **Question 1: How do I calibrate the speed controller?**
   Answer: To calibrate the speed controller, follow the steps provided in the “Drehzahlregler Kalibrierung” section of the user manual.
2. Question 2: How do I perform a normal start?
   Answer: To perform a normal start, follow the steps provided in the “Normaler Startvorgang” section of the user manual.

USER MANUAL RO-CONTROL V2 ESC

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Thank you for purchasing this Robbe Modellsport pro- duct! Brushless power systems can be very dangerous.
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Any improper use may cause personal injury and damage to the product and related devices. We strongly re-commend reading through this user manual before use. Because we have no control over the use, installation, or maintenance of this product, no liability may be assumed for any damages or losses resulting from the use of the product. We do not assume responsibility for any losses caused by unauthorized

modifications to our product. Besides, we have the right to modify our product design, appearance, features and usage requirements without notification. We, Robbe Modellsport, are only responsible for our product cost and nothing else as result of using our product.

WARNINGS

- Read through the manuals of all power devices and aircraft and ensure the power configuration is rational before using this unit.
- Ensure all wires and connections are well insulated before connecting the ESC to related devices, as short circuit will damage your ESC . Ensure all devices are well connected, in order to prevent poor connections that may cause your aircraft to lose control or other unpredictable issues like damage to the device. If necessary, please use a soldering iron with enough power to solder all input/output wires and connectors.
- Never get the motor locked up during high-speed rotation, otherwise the ESC may get destroyed and may also get your motor damaged. (Note: move the throttle stick to the bottom position or disconnect the battery immediately if the motor really gets locked up.)
- Never use this unit in the extremely hot weather or continue to use it when it gets really hot. Because high temperature will activate the ESC thermal protection or even damage your ESC.
- Always disconnect and remove batteries after use, as the ESC will continue to consume current if it`s still connected to batteries. Long-time contact will cause batteries to completely discharge and result in damage to batteries or/and ESC. This will not be covered under warranty.

FEATURES

- ESC which features a high performance 32-bit microprocessor (with a running frequency of up to 96MHz) is compati-ble with various brushless motors.
- DEO (Driving Efficiency Optimization) Technology greatly improves throttle response & driving efficiency and reduces ESC temperature.
- Separate programming cable for connecting ESC to a LED program box and allows users to program the ESC anytime, anywhere. (For detailed info, please refer to the user manual of Robbe Modellsport LED program box.)
- Normal/Reverse brake modes (esp. reverse brake mode) can effectively shorten the landing distance for the aircraft.
- Search mode can help users find the aircraft by the alarm beeps after the aircraft falls into the complex environment.
- Multiple protection features like start-up, ESC thermal, capacitor thermal, over-current, over-load, abnormal input voltage and throttle signal loss effectively prolong the service life of the ESC.

SPECIFICATIONS

		Current	Current		Voltage		
RO-CONTROL V2	**40A**	40 A	60 A	5V @ 5A (Switch-mode)	3–4S LiPo	36 g	60x25x8 mm
RO-CONTROL V2	**50A**	50 A	70 A	5V @ 5A (Switch-mode)	3–4S LiPo	36 g	60x25x8 mm
RO-CONTROL V2	**80A**	80 A	100 A	5V @ 7A (Switch-mode)	3–6S LiPo	79 g	85x36x9 mm
RO-CONTROL V2	**100 A**	100 A	120 A	5V @ 7A (Switch-mode)	3–6S LiPo	92 g	85x36x9 mm

- RO-CONTROL 3-40 V2 3-4S -40(60)A BEC №: 8739
- RO-CONTROL 4-50 V2 3-4S -50(70)A BEC №: 8738
- RO-CONTROL 6- 80 V2 3-6S – 80(100)A SWITCH BEC №: 8736
- RO-CONTROL 6-100 V2 3-6S -100(120)A SWITCH BEC №: 8735

USER GUIDE

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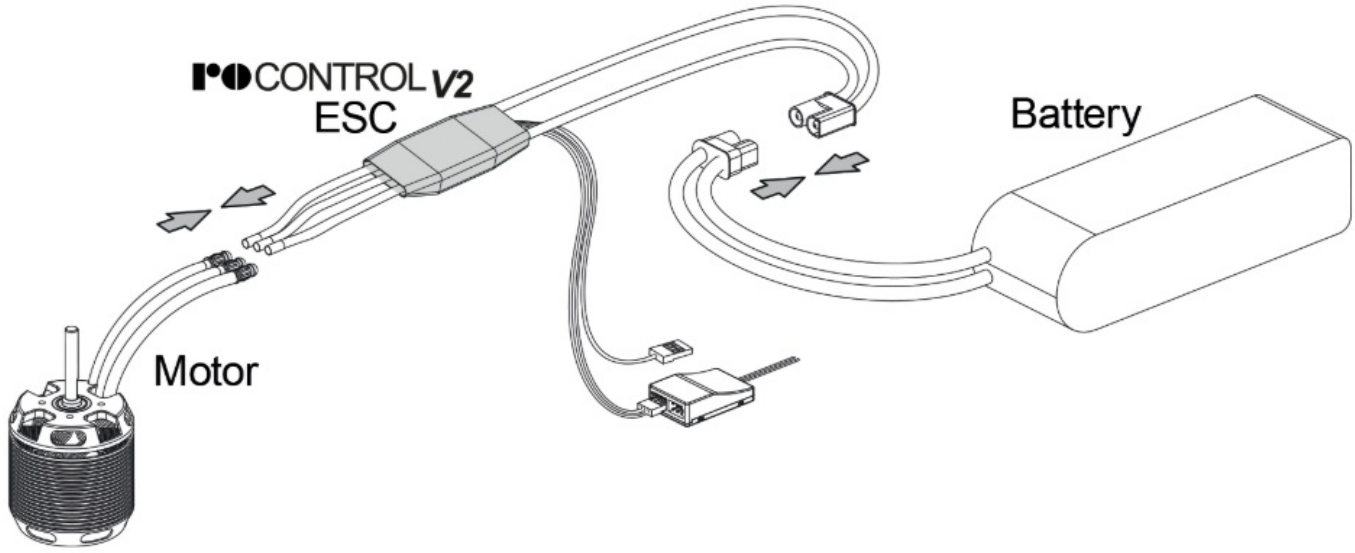
Attention! The default throttle range of this ESC is from 1100μs to 1940μs (Futaba's standard); users need to calibrate the throttle range when they start to use a new Ro-Control V2 brushless ESC or another transmitter.

CONNECTIONS



2 ESC/RADIO CALIBRATION

- Turn on the transmitter and move the throttle stick to the top position.

- Connect a battery to the ESC; the motor will sound “ 123” to indicate the ESC is normally powered on.
- Then the motor will beep two short beeps to indicate the maximum throttle endpoint is accepted

- Move the throttle stick to the bottom position within 5 seconds after the two short beeps, the minimum throttle position will be accepted 1 second later.
- The motor will beep “Number” beeps to indicate the number of LiPo cells you have plugged in.
- The motor will beep a long beep to indicate the calibration is complete.

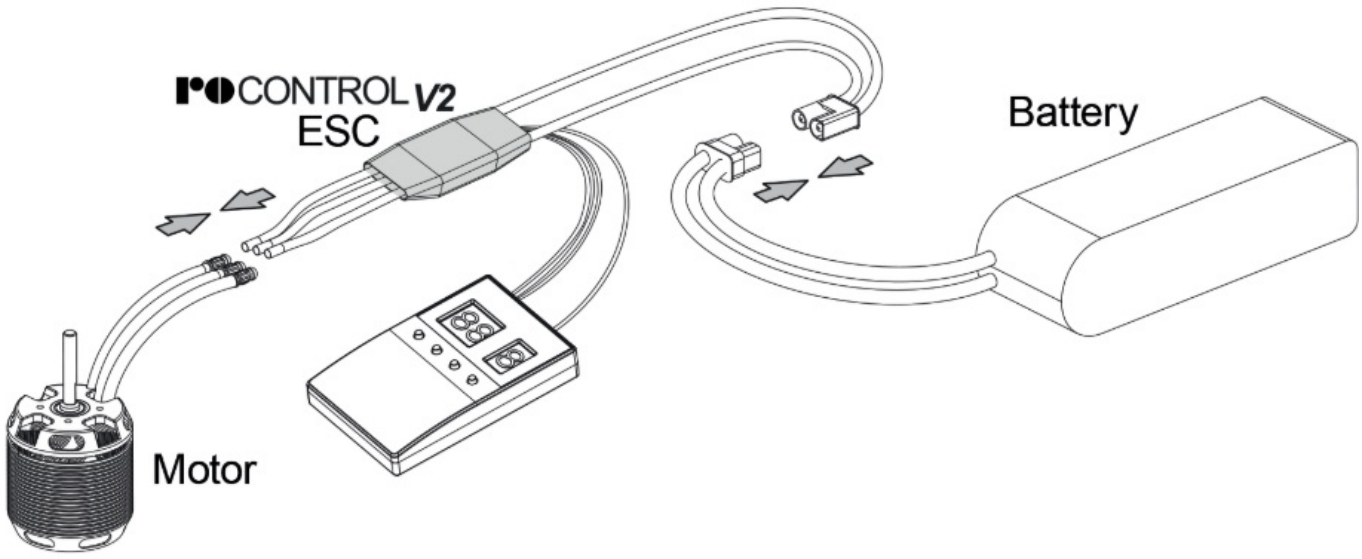
NORMAL START-UP PROCESS

- Turn on the transmitter, and then move the throttle stick to the bottom position

- After connected the ESC to a battery, the motor will emit “♪ 123” indicating the ESC is normally powered on.
- The motor will emit several beeps to indicate the number of LiPo cell
- The motor emits a long beep to indicate the ESC is ready to go.

PROGRAM YOUR ESC WITH A LED PROGRAM BOX

Wiring;



Attention: You need to power your ESC off and then on after adjusting parameters. Otherwise, new parameters won't take effect.

1. Plug the programming cable (on your ESC) into the programming port on the LED program box.
   Note: Need plug the throttle signal cable into the power port on the LED program box and the programming wire (yellow wire) into the programming port on the LED program box.
2. (With a battery connected to your ESC), after connected a LED program box to the ESC, you need to disconnect the battery first and then reconnect it to the ESC to enter the programming mode, check and set parameters. The portable program box is an optional accessory applicable for field use. Its friendly interface makes the ESC programming easy and quick. Connect a battery to your ESC after connecting a LED program box to the ESC, all programmable items will show up a few seconds later. You can select the item you want to program and the setting you want to choose via "ITEM" & "VALUE" buttons on the program box, and then press the "OK" button to save all new settings to your ESC.

PROGRAM YOUR ESC WITH THE TRANSMITTER
It consists of 4 steps: Enter the programming → Select parameter items → Select parameter values → Exit the programming

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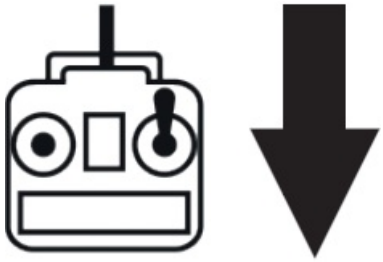
ENTER THE PROGRAMMING

- Turn on the transmitter, move the throttle stick to the top position, and connect a battery to the ESC, 2 seconds later, the motor will beep "B-B-" first, then emit 5 seconds later to indicate that you are in the ESC programming mode.



- **SELECT PARAMETER ITEMS**
  After entering the programming, you'll hear the following 12 kinds of beeps circularly. Move the throttle stick to the bottom position within 3 seconds after you hear some kind of beeps, you'll enter the corresponding parameter item.
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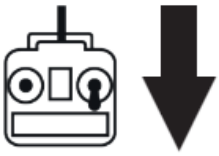
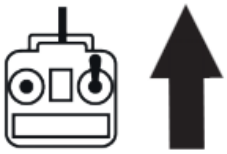
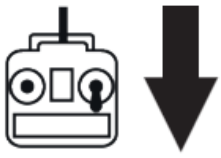
1	"B-"	Brake Type	(1 Short B)	7	"B——B-B-"	Timing	(1 Long B & 2 Short Bs)
2	"B-B-"	Brake Force	(2 Short Bs)	8	"B——B-B-B-"	Active Freewheeling	(1 Long B & 3 Short Bs)
3	"B-B-B-"	Voltage Cutoff Type	(3 Short Bs)	9	"B——B-B-B-B-"	Search Mode	(1 Long B & 4 Short Bs)
4	"B-B-B-B-"	LiPo Cells	(4 Short Bs)	10	"B——B——"	Factory Reset	(2 Long Bs)
5	"B——"	Cutoff Voltage	(1 Long B)	11	"B——B——B-"	Exit	(2 Long Bs & 1 Short B)
6	"B——B-"	Start-up Mode	(1 Long B & 1 Short B)				

Note: A long "B——" equals to 5 short "B-", so a long "B——" and a short "B-" represent the 6th item in "Select Parameter Items".

SELECT PARAMETER VALUES

- The motor will beep different kinds of beeps circularly, move the throttle stick to the top position after you hear some kind of beeps will get you to the corresponding parameter value, then you'll hear the motor emit " " to indicate the value is saved, then get back to "Select Parameter Items" and continue to select other parameter items that you want to adjust.

	Values (Bs)	**1**	**2**	**3**	**4**	**5**
Items		**B-**	**B-B-**	**B-B-B-**	**B-B-B-B**	**B–**
1 Brake Type		Disabled	Normal	Reverse	Linear Reverse	
2 Brake Force		Low	Medium	High		
3 Voltage Cutoff Type		Soft	Hard			
4 LiPo Cells		Auto Calc.	3S	4S	5S	6S
5 Cutoff Voltage		Disabled	Low	Medium	High	
6 Start-up Mode		Normal	Soft	Very Soft		
7 Timing		Low	Medium	High		
8 Actives Freewheeling		On	Off			
9 Search Mode		Off	5min	10min	15min	

EXIT THE PROGRAMMING

- Move the throttle stick to the bottom position within 3 seconds after you hear "Two long and One short beeps" (emitting from the motor) can get you exit the programming mode. The motor beeps "Number" beeps to indicate the number of LiPo cells you have plugged in, and then a long beep to indicate the power system is

ready to go.

PROGRAMMABLE ITEMS

Items \ Values (Bs)		1	2	3	4	5
1	Brake Type	*Disabled	Normal	Reverse	Linear Reverse	
2	Brake Force	*Low	Medium	High		
3	Voltage Cutoff Type	*Soft	Hard			
4	LiPo Cells	*Auto Calc.	3S	4S	5S	6S
5	Cutoff Voltage	Disabled	Low	*Medium	High	
6	Start-up Mode	*Normal	Soft	Very Soft		
7	Timing	Low	*Medium	High		
8	Acitve Freewheeling	*On	Off			
9	Search Mode	*Off	5min	10min	15min	

Brake Type

1. **Normal Brake**
   After selected this option, the brake function will be activated when you move the throttle stick to the bottom position. In this mode, the brake amount equals to the brake force you've preset.
2. **Reverse Brake**
   After selected this option, the Reverse Brake signal wire (its signal range must be the same as the throttle range) must to be plugged into any vacant channel on the receiver, and you can control the motor direction via that channel. The channel range of 0-50% is the default motor direction, and the channel range of 50% to 100% will cause the motor to spin counterclockwise. The channel stick should be within the channel range of 0-50% (0 would be better) when the first time you power on the ESC. After the Reverse function is activated, the motor will stop first and then spin in the reversed direction and then increase to the speed corresponding to the throttle input. Either signal loss, no matter reverse brake signal loss or throttle signal loss during the flight, can cause the throttle signal loss protection to be activated.
3. **Linear Reverse Brake**
   After selected this option, the Reverse Brake signal wire must to be plugged into any vacant channel on the receiver, and you can control the motor direction via that channel. This channel should be set to a linear switch (usually a knob on the transmitter).Turn the linear channel switch to activate the reverse function. The speed of the motor is controlled by the linear channel switch. When reversed, the initial throttle value is started at 10%, and the throttle stroke of the linear switch is cured to 1.34ms-1.79ms. The channel stick should be at 0% throttle position when the first time you po-wer on the ESC. Either signal loss, no matter reverse brake signal loss or throttle signal loss during the flight, can cause the throttle signal loss protection to be activated.

2. **Brake Force**
   This item is only effect in the "Normal brake" mode ,The higher the level, the stronger the braking effect , where the low/medium/high corresponds to the braking force: 60%/90%/100%
3. **Voltage Cutoff Type**

1. **Soft Cutoff**

   After selected this option, the ESC will gradually reduce the output to 60% of the full power in 3 seconds after the low-voltage cutoff protection is activated.

2. **Hard Cutoff**

   After selected this option, the ESC will immediately cut off the output when the low-voltage cutoff protection is activated.

4. **LiPo Cells**
   - The ESC will automatically calculate the number of LiPo cells you have plugged in as per the “3.7V/Cell” rule if “Auto Calc.” is selected, or you can set this item manually.
   - RO-CONTROL 3-40 V2 3-4S -40(60)A BEC №: 8739
   - RO-CONTROL 4-50 V2 3-4S -50(70)A BEC №: 8738
   - RO-CONTROL 6- 80 V2 3-6S – 80(100)A SWITCH BEC №: 8736
   - RO-CONTROL 6-100 V2 3-6S -100(120)A SWITCH BEC №: 8735
5. **Cutoff Voltage**

   If set off, the low-voltage protection function is disabled. In addition, the protection voltage value of the low-voltage protection function corresponding to the low/medium/three modes is about 2.8V / 3.0V and 3.4V. This value is the voltage of a single battery, multiplied by the number of lithium batteries automatically identified by the electronic governor or the number of lithium batteries manually set, which is the protection voltage value of the battery. (For ex-ample, if the low voltage protection threshold of 3 lithium batteries is medium, the protection voltage of the batteries is 3X3.0=9.0V)

6. **Start-up Mode**

   This is used to adjust the throttle response time of ESC acceleration from 0% to 100%. Normal/Soft/Very Soft correspond to approximately 200ms/500ms/800ms respectively

7. **Timing**

   Can adjust the drive motor timing value. The low / Medium and high are respectively: 5°/15°/25°.

8. **Active Freewheeling (DEO)**

   This item is adjustable between “Enabled” and “Disabled”, and it is enabled by default. With it enabled, you can have better throttle linearity or smoother throttle response.

9. **Search Mode**

   After selected this option, ESC will drive the motor chirping prompt when the throttle is keep 0% and continues to the set time.

TROUBLESHOOTING & MULTIPLE PROTECTIONS

TROUBLESHOOTING

Troubles	Warning Tones	Causes	Solutions
The ESC didn't work after it was powered on while the motor kept beeping.	"BB, BB, BB....."	The input voltage was beyond the operating voltage range of the ESC.	Adjust the power-on voltage and ensure it's in the operating voltage range of the ESC.
The ESC didn't work after it was powered on while the motor kept beeping.	"B-, B-, B-, B-....."	The ESC didn't receive any throttle signal from the receiver	Check if the transmitter and receiver are well bound, if any poor connection exists between the ESC and receiver.
The ESC didn't work after it was powered on while the motor kept beeping.	"B, B, B, B....."	The throttle stick has not been moved to the bottom position.	Move the throttle stick to the bottom position and calibrate the throttle range.
The ESC didn't work after the throttle calibration while the motor kept beeping.	"B, B, B, B....."	The throttle range you set was too narrow.	Re-calibrate the throttle range.
The ESC output suddenly reduced to 50% during the flight, the motor kept beeping after the flight completed but the battery was still connected to the ESC.	"BB, BB, BB....."	The ESC thermal protection has been activated.	Improve the heat dissipating condition (i.e. add a cooling fan) or reduce the ESC load.
The ESC output suddenly reduced to 50% during the flight, the motor kept beeping after the flight completed but the battery was still connected to the ESC.	"BBB, BBB, BBB....."	The low-voltage cutoff protection has been activated.	Change another pack; lower down the cutoff voltage or disable the LVC protection (we do not recommend this).

MULTIPLE PROTECTIONS

1. **Start-up Protection**

   The ESC will monitor the motor speed during the start-up process. When the speed stops increasing or the speed increase is not stable, the ESC will take it as a start-up failure. At that time, if the throttle amount is less than 15%, the ESC will try to restart automatically; if it is larger than 20%, you need to move the throttle stick back to the bottom position first and then restart the ESC. (Possible causes of this problem: poor connection/disconnection between the ESC and motor wires, propellers are blocked, etc.)
2. **ESC Thermal Protection**

   The ESC will gradually reduce the output but won't cut it off when the ESC temperature goes above 120°C. For ensuring the motor can still get some power and won't cause crashes, so the maximum reduction is about 60% of the full power. (Here we are describing the ESC's reaction in soft cutoff mode, while if in hard cutoff mode; it will immediately cut off the power.)
3. **Throttle Signal Loss Protection**

   When the ESC detects loss of signal for over 0.25 second, it will cut off the output immediately to avoid an even greater loss which may be caused by the continuous high-speed rotation of propellers or rotor blades. The ESC will resume the corresponding output after normal signals are received.
4. **Overload Protection**

   The ESC will cut off the power/output or automatically restart itself when the load suddenly increases to a very high value. (Possible cause to sudden load increase is that propellers are blocked.)
5. **Low Voltage protection**

   When the battery voltage is lower than the cutoff voltage set by the ESC, the ESC will trigger the low-voltage portion. If the battery voltage is set to soft cutoff, the battery voltage will be reduced to a maximum of 60% of the full power. When set to hard cutoff, the output is cutoff immediately. After the throttle returns to 0%, the ESC will drive the motor to sound the alarm.
6. **Abnormal voltage input protection**

When the battery voltage is not within the input voltage range supported by the ESC, the ESC will trigger the Abnormal input voltage protection, ESC will drive the motor to sound the alarm.

WARRANTY

- Our articles are equipped with the legally required 24 months warranty. Should you wish to assert a justified warranty claim, always contact your dealer, who is responsible for the warranty and the processing. During this time, any functional defects that may occur, as well as manufacturing or other problems, will be rectified. Material defects corrected by us free of charge. Further claims, e.g. for consequential damages, are excluded. The transport to us must be free, the re-turn transport to you is also free. Freight collect shipments cannot be accepted. We cannot accept liability for transport damage and loss of your consignment. We recommend appropriate insurance.
- To process your warranty claims, the following requirements must be met
  - Attach the proof of purchase (receipt) to your shipment.
  - The units have been operated in accordance with the operating instructions.
  - Only recommended power sources and original robbe accessories have been used.
  - There is no moisture damage, external interference, reverse polarity, overloading or mechanical damage.
  - Attach relevant information for finding the fault or defect.

CONFORMITY

- CE Robbe Modellsport hereby declares that this device complies with the essential requirements and other relevant regulations of the corresponding CE directives. The original declaration of conformity can be found on the Internet at **www.robbe.com**, in the detailed product view of the respective device description or on request. This product can be operated in all EU countries.

DISPOSAL

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This symbol means that small electrical and electronic devices must be disposed of at the end of their useful life, separated from the household refuse. Dispose of the device at your local municipal collection point or recycling centre. This applies to all countries of the European Union and other European coun-tries with a separate collection system.

  - RO-CONTROL 3-40 V2 3-4S -40(60)A BEC №: 8739
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- RO-CONTROL 6-100 V2 3-6S -100(120)A SWITCH BEC №: 8735

SAFETY INSTRUCTIONS FOR CONTROLLERS

- Observe the technical data of the controller.
- Observe the polarity of all connection cables.
- Avoid short circuits at all costs.
- Install or package the regulator so that it cannot come into contact with grease, oil or water.
- Effective interference suppression measures on the electric motor with, for example, interference suppression capaci-tors
- Ensure adequate air circulation.
- Never reach into the turning circle of the propeller during start-up Risk of injury
- Dealing with model aircraft and vehicles requires technical understanding and a high level of safety awareness. Incor-rect assembly, incorrect adjustment, improper use or the like can lead to personal injury or damage to property. Sudden starting of connected motors can lead to injuries due to rotating parts such as propellers. Always stay away from these rotating parts when the power source is connected. All drive components should be safely and securely mounted during a function test. Use is only permitted within the scope of the technical specification and only for RC hobby applications. Before use, check that the speed controller is compatible with your drive motor or power source. Never operate the speed controller (correct speed controller) with external power supply units. Speed controllers should always be pro-tected from dust, moisture, vibration and other mechanical stresses.
- Even splash-proof or waterproof equipment should not be permanently exposed to moisture or moisture. High operating temperatures or poor cooling should be avoided. The recommended temperature range should be approximately between -5°C and +50°C. Ensure proper connection and do not cause reverse polarity which would permanently damage the speed controller. Never disconnect the de-vice from the motor or battery during operation. Use high-quality plug systems with sufficient load capacity. Avoid strong bending or tensile stress on the connecting cables. After termination of flight or driving operation, disconnect the battery to prevent deep discharge of the battery. This would cause permanent damage. For the BEC version of the controller, check that the BEC power of the device is sufficient for the servos used. Speed controllers should be installed as far away as possible from other remote control components. We recommend carrying out a range test before operation. We recommend regular checking of the controller for function and externally visible damage. Do not continue operating the controller if you notice any damage. The connection cables must not be extended. This can lead to unwanted malfunctions. Despite existing safety and protective devices of the device, damage may occur which is not covered by warranty. The warranty also expires if changes are made to the device.

Important information

- The receiver system is powered by the built-in BEC system of the controller.
- For commissioning, always move the throttle stick to the „Motor off“ position and switch on the transmitter. Only then connect the battery. To switch off always disconnect the connection battery motor controller, first then turn off the transmitter. During the functional test, move the servos of the rudders to neutral position with the remote control (stick and trimming lever on the transmitter to the middle position). Please make sure to leave the throttle stick in the lowest position so that the engine does not start. For all work on to the parts of the remote control, motor or controller, follow the instructions supplied with the units. Also read the instructions of the

battery and the charger carefully before commissioning. Check the engine mounting bolts in the fuselage regularly for tightness.

DISCLAIMER

- Robbe Modellsport cannot monitor compliance with the assembly and operating instructions or the conditions and methods for installation, operation, use and maintenance of the model components. Therefore, we accept no liability for losses, damage or costs arising from or in any way connected with incorrect use and operation. To the extent permitted by law, the obligation to pay damages, irrespective of the legal grounds, shall be limited directly to the invoice value of the claims arising from the event causing the damage.

DISTRIBUTOR

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Documents / Resources

	robbe Modellsport roCONTROL V2 Engine Controller [pdf] Instruction Manual 3-40 V2, 6-80 V2, 4-50 V2, 6-100 V2, roCONTROL V2, roCONTROL V2 Engine Controller, Engine Controller, Controller

References

- Robbe Modellsport - Offizielle Markenwebsite und Shop
- User Manual