User Manual

rocket brushless competition

Power Specs:

120 A/800 A Peak
6 Power-Programs
3 Aktive-Stock-Programs
4 A Mega-BEC
4,8 - 8,4 V
2 LiPo/LiFe
Forward/Brake
Forward/Brake/Reverse

Optimized for:

1:12 Pan Car 4 cells
1:10 Onroad 5 cells
1:10 Offroad 6 cells
1:10 Onroad 6 cells
Stock motors
NiCd, NiMH,
LiPo, LiIo, LiFe
and much more

Motor Specs:

above 2.5 Turn
4.8 - 12.0 V
Sensor-Motors
Sensorless-Motors

The CS-Rocket Competition speed controller has everything, what racers need.

Order-No. C130200

CS-ELECTRONIC

Z-C130200AE

Content

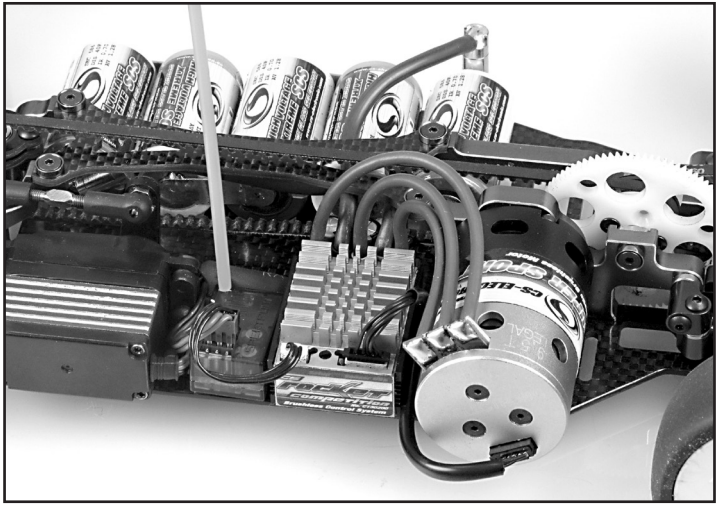
1. Dear Customer,

congratulations for buying your new digital CS-Rocket Competition Brushless speed controller for brushless motors from CS-ELECTRONIC. You can be sure having purchased a product, which was developed on the basis of the newest technical knowledge and constructed as well as optimized for the use in RC-Cars. We have realized several pioneering technologies in this product and are proud to present to you a intelligent high performance speed controller, which has outstanding features in performance, functionality and safety.

2. Range of Application

The CS-Rocket Competition Brushleee Speed Controller is conceived for 1/10 RC-cars with an operating voltage from 4.8 V to 8.4 V. It can be used with all current brushless motors with or without sensor in the “540-size”.

3. Installation



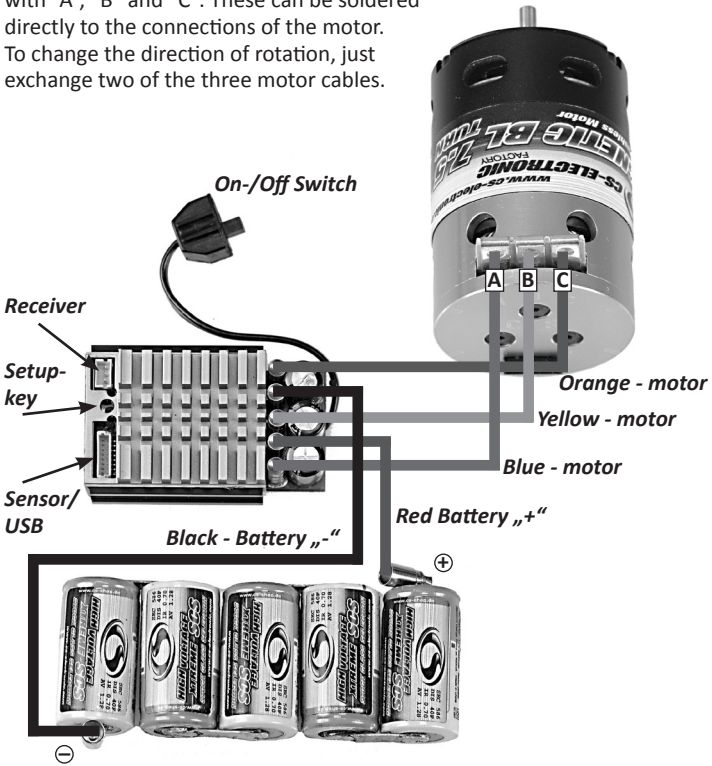
The speed controller must be placed in a cool and crash-protected area in the car.

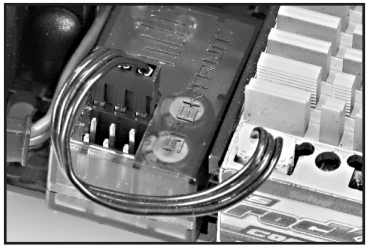
For fastening the speed controller use only two small stripes of double sided adhesive tape in a way, that not the complete cooling area of the bottom is covered. The receiver as well as the receiver antenna must have a distance of more than 3 cm to the speed controller. Current-carrying battery- or motor-cables should not be near the antenna.
Avoid direct contact of the antenna to graphite or metal parts. To avoid any interference problems, guide the antenna on the direct way to the top of the car and do not coil up the antenna. If necessary the antenna can be shortened to appr. 35 cm in length.
Sufficient cooling openings in the body as well as cases free of dust or dirt increase the efficiency and the life time of electronic components.

4. Connection of the Components

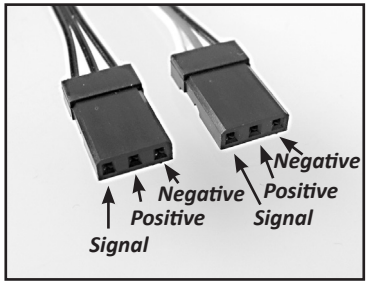
The CS-Rocket Competition is factory equipped with 10-AWG-power cables for the connection to the battery. Please use only suitable high current plugs (i.e. C180712 und C180713) and pay attention to the polarity “+” and “-“. A short circuit or a wrong polarity results in a serious damage of the speed controller.

The connection to the motor is done with 12-AWG-power cables marked with “A”, “B” and “C”. These can be soldered directly to the connections of the motor. To change the direction of rotation, just exchange two of the three motor cables.

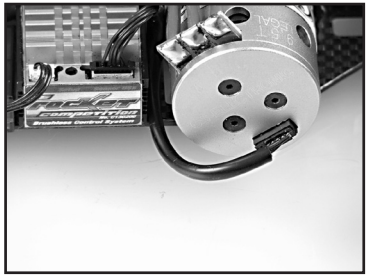




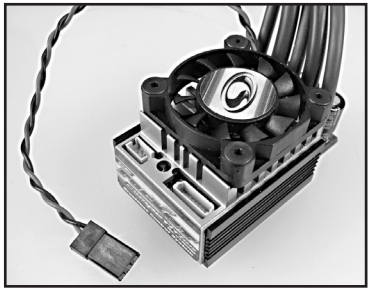
Receiver connection:
First you connect the receiver cable (BEC) with the white three-pole plug of your CS-Rocket-Seppdcontrollers. Guide strips on the side makes sure the position and the polarity.
The black receiver plug is connected to the plug-in place 2 of your receiver.



Polarity of the receiver connection:
Please observe the polarity as follows::
Red is receiver “+“
Black is receiver “-“
White is receiver “signal”



Sensor connection:
If the brushless motor is used in the sensor mode, the motor must be connected with a sensor cable to the speed controller before you switch on the speed controller. The sensor cable included is equipped with a standardized 6-pole JST-plug for the connection with the mostly used brushless motors. The 8-pole plug is plugged in the sensor jack of the speed controller. Faulty sensor cables must be replaced immediately. A spare cable or cables with different length can be ordered from CS-ELECTRONIC.

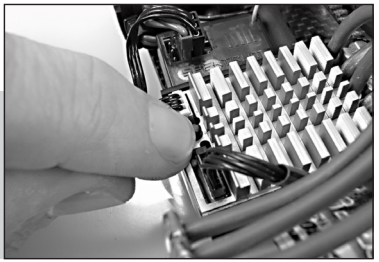


Assembly of the air fan:
If you use brushless motors with less than 4.5T or if the ambient temperature is high, we recommend the use of the included air fan. The fan is assembled with 4 screws on the cooling surface of the speed controller. To ensure the 6 V power supply the cable of the fan is plugged in a free plug-in place of the receiver.

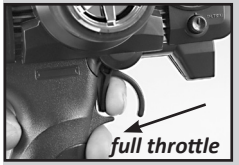
5. Basic Setting Controller/Transmitter-Setup

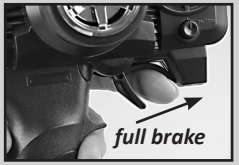
Requirements for the basic settings are the following conditions:

a) The power cable „A“, „B“ und „C“ of the speed controller must be connected to the motor!
b) The controller BEC-cable is connected to the receiver in plug-in place 2!
c) The sensor cable is not connected to the Sensor/USB-jack. The jack must be open!
d) Now switch on the transmitter and you can begin with the basic set up!
e) The direction of rotation of the throttle-function of the transmitter must be set to “NOR“ (normal)!
f) Special setting for Futaba transmitters: The direction of rotation must be set to “REV“ (reverse)!
g) The end point adjustment of the throttle (EPA) must be set to 100 % and the end point of the brake must be set to 150 % (if possible, otherwise 100 % too). With very cheap transmitters this setting is not be possible, use the standard settings.
h) Now connect the battery to the speed controller, take care of the polarity!
i) The switch of the CS-Rocket-controllers is now set to ON!



j) Press the setup key for more than 3 seconds until you hear a sound.
k) Push the throttle trigger to full throttle - you hear a sound again.
l) Now you push the throttle trigger to full brake until you hear a sound again.
m) The throttle trigger is now moved back to the neutral position and the basic setup is finished.
n) Both LEDs of the speed controller go out and three sounds confirm the correct setup. Please note, this takes appr. 10 seconds. Please wait for the sounds for the confirmation.





Check of the basic setup “Speed-Controller-Transmitter-Adjustment”:

a) in neutral position of the throttle trigger, both LEDs shine red and yellow,
b) at slow acceleration, the red LED goes out,
c) at full throttle, the yellow LED goes out and the red LED shines,
d) at slow braking, both LEDs go out,
e) at full brake, the red LED shines.

The speed controller is now calibrated to your transmitter.

6. Power Programs, Overview and Setting

The CS-Rocket Competition Brushless comes with 9 power programs, which can be selected for different types of RC-Cars and different handling characteristics. The setting is done with the setup key and the throttle trigger of the transmitter. By moving the throttle trigger to full throttle or full brake the program numbers will be increased and finally saved in the speed controller.
Hint: Move the throttle trigger slowly and always to the end point.
The table on the next page shows the recommended use of the different programs.

Power-Programs	Section	Motor Limit	Hall-Sensor + Sensor cable	sensor-less	Number of cells	For-ward	Brake MIN	Re-verse	NiMH Lipo	Auto Battery Cutt Off	Very less grip	less grip	nor-mal grip	high grip	Recommended classes
1	**Modified** soft	above 2.5T to 7.5T	yes	recom-mended	4 to 7	yes	15%	no	4,8 / 8,4V	Automatic Lipo and 4-7 Cells	X				Offroad 2WD, 4WD, 1:12, Pro10
2	**Modified** medium	above 2.5T to 7.5T	yes	recom-mended	4 to 7	yes	15%	no	4,8 / 8,4V	Automatic Lipo and 4-7 Cells		X			Saloon cars, Offroad 2WD, 4WD, 1:12, Pro10
3	**Modified** race	above 2.5T to 7.5T	yes	recom-mended	4 to 7	yes	15%	no	4,8 / 8,4V	Automatic Lipo and 4-7 Cells			X		Saloon cars, Offroad , 4WD, 1:12, Pro10
4	**Modified** aggressiv	above 2.5T to 7.5T	yes	recom-mended	4 to 7	yes	15%	no	4,8 / 6,0V	Automatic Lipo and 4-7 Cells				X	Saloon cars
5	**Modified** Reverse after full breaking	above 4,5T to 7.5T	yes	recom-mended	4 to 6	yes	15%	yes	4,8 / 7,2V	Automatic Lipo and 4-7 Cells		X	X	X	all models + fun classes
6	**Modified** Reverse after full stop	above 4,5T to 7.5T	yes	recom-mended	4 to 6	yes	15%	yes	4,8 / 7,2V	Automatic Lipo and 4-7 Cells		X	X	X	all models + fun classes
7	**Sport** Max. Punch High Speed	above 8.5T to 23.5T	erforderlich für max. Leistung	no	4 to 6	yes	15%	no	4,8 / 8,4V	Automatic Lipo and 4-7 Cells		X	X	X	Saloon cars, Offroad 2WD Standard, 1:12 Attention! Adjust gear ratio, check motor temperatur!
8	**Sport** Medium Punch Super High Speed	above 8.5T to 23.5T	erforderlich für max. Leistung	no	4 to 6	yes	15%	no	4,8 / 8,4V	Automatic Lipo and 4-7 Cells		X	X		Saloon cars, Offroad 2WD Standard, 1:12 Attention! Adjust gear ratio, check motor temperatur!
9	**Sport** Mega Punch Mega High Speed	above 8.5T to 23.5T	erforderlich für max. Leistung	no	4 to 6	yes	15%	no	4,8 / 8,4V	Automatic Lipo and 4-7 Cells	X	X	X		Saloon cars, Offroad 2WD Standard, 1:12 Attention! Adjust gear ratio 50 % shorter, check motor temperatur!

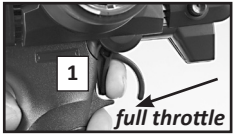
Selecting Programs

- First of all select one of the programs in the overview!
- Press the setup-key for more than 3 seconds until you hear a sound. Now you move the throttle trigger from full speed to full brake as much as it corresponds to the number of the program. Please note, that the last movement to the neutral position counts as one.
  Every movement will be confirmed from the speed controller with a sound, which also refers to the program number. The last movement to the neutral position is also counted as one, but you do not hear a sound for that.

Power Program 1

- Press the setup key for more than 3 seconds
- Throttle trigger remains in neutral position
- Controller confirms after 10 seconds the power program 1 with 1 sound.

Power Program 2

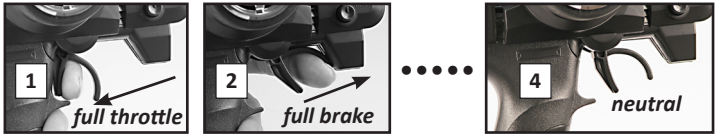


- Press the setup key for more than 3 seconds
- Throttle trigger on full speed (speedo cheeps 1x) and back to the neutral position (2)
- Controller confirms after 10 seconds the power program 2 with 2 sounds.

Power Program 3

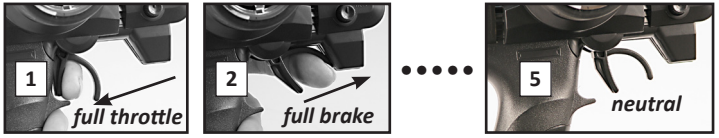
- Press the setup key for more than 3 seconds
- Throttle trigger on full speed (speedo cheeps 1x), now full brake (speedo cheeps 1x) and back to the neutral position (3)
- Controller confirms after 10 seconds the power program 3 with 3 sounds.

Power Program 4



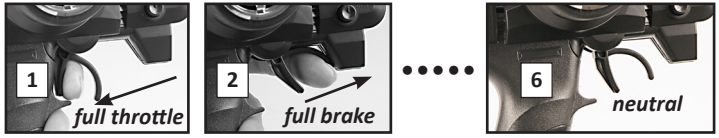
- Press the setup key for more than 3 seconds
- Throttle trigger on full speed (speedo cheeps 1x), now full brake (speedo cheeps 1x), full speed again (speedo cheeps 1x) and back to the neutral position (4)
- Controller confirms after 10 seconds the power program 4 with 4 sounds.

Power Program 5



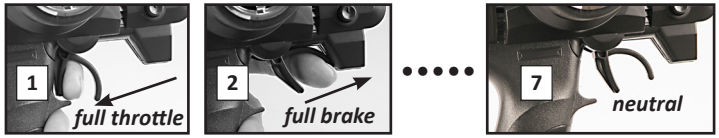
- Press the setup key for more than 3 seconds
- Throttle trigger on full speed (1), full brake (2), full speed (3), full brake (4) and back to the neutral position (5)
- Controller confirms after 10 seconds the power program 5 with 5 sounds.

Power Program 6



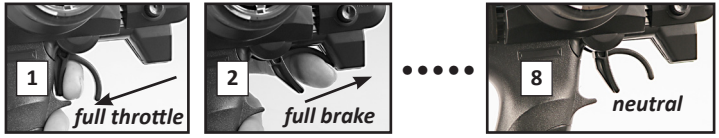
- Press the setup key for more than 3 seconds
- Throttle trigger on full speed (1), full brake (2), full speed (3), full brake (4), full speed (5) and back to the neutral position (6)
- Controller confirms after 10 seconds the power program 6 with 6 sounds.

Power Program 7



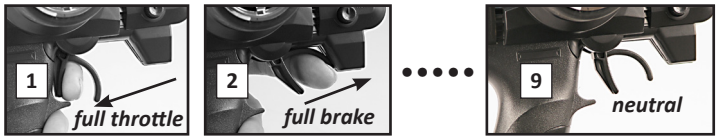
- Press the setup key for more than 3 seconds
- Throttle trigger on full speed (1), full brake (2), full speed (3), full brake (4), full speed (5), full brake (6) and back to the neutral position (7)
- Controller confirms after appr. 10 seconds the power program 7 with 7 sounds.

Power Program 8



- Press the setup key for more than 3 seconds
- Throttle trigger on full speed (1), full brake (2), full speed (3), full brake (4), full speed (5), full brake (6), full speed (7) and back to the neutral position (8)
- Controller confirms after 10 seconds the power program 8 with 8 sounds.

Power Program 9



- Press the setup key for more than 3 seconds
- Throttle trigger on full speed (1), full brake (2), full speed (3), full brake (4), full speed (5), full brake (6), full speed (7), full brake (8) and back to the neutral position (9)
- Controller confirms after 10 seconds the power program 9 with 9 sounds.

Please note: The timing of the motor must be set to minimum, if possible!

Finalizing the Programming

After the selection of the program, the speed controller is ready for use.
Please note: After each program selection the gear ratio has to be exactly adjuste and must be checked after a short running time with the temperature of the brushless motor. It is sufficient to strongly grasp the motor with three fingers. If you can hold the motor for appr. 4 seconds tight, it is o.k. If not, the temperature is raised over 65 °C. In this case you have to change the gear ratio immediately by using a smaller pinion to avoid any serious damage or destruction of one of the components.
After a new speed controller/transmitter-setup you have to select the power program again. If you do not reselect the power program, the speed controller is using the power program 3!

7. Features

- **6 selectable Modified Programs** = graded driving profiles for different cars and tracks.
- **3 selectable Sport Stock Programs with adjustable motortiming** = more power and top speed for the serious racer. Attention: the timing of the motor must be set to minimum, if possible.
- **Power-Programs can be changed quite simple** = selectable with the throttle trigger of the transmitter.
- **Automatic recognition of sensor and sensorless motors** = no setup for different motors necessary.
- **PDM Precice Digital Drive Mode Technology** = exact, sensitive and controllable driving feeling results in constant fast lap times.
- **Auto Battery Cut Off** = automatic recognition and intelligent monitoring of the batteries to avoid deep discharging.
- **TPI Temperatur monitoring and display =** safe protection against thermal damage.
- **CCD Copper Cool Drive Technology** = 8 track conductors of copper for minimized power loss and for low temperature of the speed controller.
- **PCB Integrierte Powercapacitor** = maximum protection without high resistant cables**.**
- **DCB Drive Controlled Break Software** = rational speed controlled breaking efficiency at all speeds.
- **Re-Charging** = battery will be charged at breaking for more running time and power.
- **Mega BEC System** = powerful and stable for interference free operating.
- **MegaFlex Powercable** = high flexible 4,0 mm² und 2,5 mm² LowDrill-silver-stranded wires for maximum power
- **PC-Interface compatible** = more settings for the professional racer.

8. Additional Features for the Serious Racer

The following settings can be done with the optional PC-interface (# C130208). These settings can be preset at home with an PC/laptop or at the racetrack.

- **Power-Programs** = Display of the different power programs
- **Profile memory** = save user profiles with details about the tracks
- **Launch Control** = adjustable start automatic for maximum acceleration
- **Current limiter** = configure the motor for the track conditions
- **Automatic brake** = adjustable braking power at neutral throttle for tight corners
- **Brake MIN**. = adjustable minimum braking power when starting braking
- **Brake MAX.** = adjustable maximum braking power at full brake
- **Power-acceleration curve** = selectable from soft/linear/aggressive for an optimized adjustment to track and style of driving
- **Automatic-Drive** = adjustable minimum acceleration at throttle trigger neutral position
- **Low battery recocnition** = manual adjustable or automatic mode
- **Transmitter settings** = checking of the detailed transmitter signal of full throttle, full brake and neutral

9. Diagnostics

It can have several reasons if your CS-Rocket Competition speed controller does not work properly. First check all components connected to the speed controller to exclude other failure sources.
If you can not solve the problem, we recommend to perform a reset to the factory settings before you send the speed controller for repair to us.
The following table can help you with the diagnostic:

Diagnostic		
Display/failure	**Reason**	**Correction**
Red LED off Yellow LED off No sound	Battery voltage 4,8V	Charge battery
	Plugs dirty or faulty	Clean plugs and check connections!
Red LED flashes 1x or Sound 1x	Battery voltage too high!	Use battery with correct voltage!
Red LED flahes 3x or Sound 3x	No Motor connected	Connect brushless-Motor
	Motor not properly connected	Check motor cables and connect the right way!
Motor does not start but Steeringservo works	Motor defect	Check motor and exchange
	Receiver cable is wrong or not connected	Check connection and reconnect cable, Receiver plug in place 2
	Receiver cable defect	Exchange receiver cable
Motor does not start and Steering Servo does not work	Receiver cable of the controller is wrong or not connected	Check connections an reconnect: Servo = Receiver plug in place 1 Speed controller = Receiver plug in place 2
	Receiver defect	Exchange
	Crystal defect	Exchange
	Transmitter defect	Exchange

Diagnostic		
Display/failure	**Reason**	**Correction**
Car drives backwards or Dirction of rotation of the motor is wrong at acceleration	Motor cables are mixed up	Connect the motor cables properly
Controller is getting too hot or Controller switches off	Drive train turns not free	Check and make it running smooth
	Wrong gear ratio	Use smaller pinion
	Motor defect	Exchange motor
	Permanent operation	Break driving and wait for the controller cooling down
Brake too weak	Gear ratio much too long	Use a very much smaller pinion
	Setting of the end point of the transmitter is not high enough	Set end point at the tranmsitter to 100 % and perform a transmitter set up
Motor has not enough power or not enough top speed	Gear ratio wrong	Use a smaller pinion
	Transmitter-Setup mixed up	Set end point at the transmitter to 100 % and perform a transmitter set up
	Motor defect	Exchange motor
	Too much wear of the motor	

Diagnostic		
Display/failure	**Reason**	**Correction**
Interference	Power of the transmitter too low	Check batteries and antenna of the transmitter. Antenna must be fully extended!
	Antenna in the car is rolled up or shorter than 35 cm	Refer to installation
	Antenna is near the speed controller and/or the battery cables	Refer to installation
	Receiver defect	Exchange receiver
	Crystal defect	Exchange crystals
	Car does not stop	Set the trim triggers at the transmitter. Water or humidity damage, send in for repair!

10. Reset to Factory Defauls

When performing a reset to the factory defaults, all data of the program will be set to the factory defaults. All setup parameters done are lost. The speed controller is set to all values when you bought it.

a) Remove the sensor cable if it is connected.
b) Press the setup key and hold it pressed.
c) After 3 seconds you hear a sound, hold the setup key pressed until 3 short and 1 long sound can be heard.
d) Now let the setup key off
e) Both LED´s go off. The controller now deletes all parameters of the selected program. This will be confirmed with additional sounds. At the end , both LED`s go on. This procedure takes some time, please wait!
f) Switch off the speed controller now and wait for appr. 2 Seconds. Now switch on the speed controller again and perform a transmitter setup. Please note, that you should set up the transmitter before as described in 5.d to g.
g) Select the power program you nee as described above.

11. Safety Precautions

- Not for children below 14 years. No toy!
- The CE-certificate of this speed controllers does not exempt from the obligation to handle this product with care.
- Use only motors from CS-ELECTRONIC which are intended for the used voltage range!
- Use only high performance batteries from CS-ELECTRONIC.
- Do not leave you RC-model unsupervised as far as a battery is connected. In case of a failure this can be cause fire.
- The speed controller and other electronic components should never get in touch with water. The speed controller must be protected against dust, dirt, humidity and vibration.
- If the motor is connected to the speed controller, the motor may never be run with an external battery. This destroys the speed controller and the guarantee is lost.
- Never reverse connect the polarity of the speed controller. Use a reverse connected protection plug systems. Avoid short circuits and blocked motors.
- All cables and connections must be isolated properly. Short circuits can destroy the speed controller.
- The speed controller may be only used in battery driven, radio controlled models. Another use of the speed controller is not permitted. The use in a model for carrying of passengers is forbidden!
- First check the holdup of your radio control (hold you model tight) before using you model.
- It is not allowed to modify the speed controller in another way as described in this manual.
- Exclusion of liability: The retention of the assembly and the users-instruction as well as the conditions and methods of installation, operating, use and maintenance can not be supervised by CS-ELECTRONIC. Therefore

CS-ELECTRONIC does not take over any liability for losses, damages or costs, which result from a faulty use or operating or are connected in any kind to such conditions.
- Only components and spare parts recommended by CS-ELECTRONIC may be used. Use only suitable plugs original from CS-ELECTRONIC.
- Please be sure, that your transmitter is working on a free frequency, is switched on and the throttle trigger is in neutral position before connecting the speed controller and using the model.

12. Technical Data

Operating voltage:	4,8 - 8,4 V
Number of cells NiMH, NiCd:	4 - 7
Number of cells LiPo:	2
Constant current (brushless M.)	120 A
Shorttime current 10s:	250 A
Pulse current at 25°C:	800 A
Inner resistance at 20°C appr.	0,0004 Ω
Voltage loss at 20A app.	0,008 V
Temperature protection:	yes
Low voltage protection:	automatic/adjustable
BEC-Power:	5,8 V/short time 4 A
Max. BEC dissipation power:	2,5 W
Clock frequency:	2/4/8/16 kHz
Dimension in mm incl. capacitor appr.:	50 x 31 x 27
Weight without cables appr.:	60 g
Weight with cable appr.:	95 g

13. Accessories

C130201	Receiver cable, 5 cm, black
C130202	Receiver cable, 10 cm
C130203	Receiver cable, 20 cm
C130204	Sensor cable, 11 cm black for CS, LRP, GM, Novak
C130205	Sensor cable, 20 cm black for CS, LRP, GM, Novak
C130206	Silicone cable Megaflex 11AWG black, 4,0 mm², 1m
C130207	Silicone cable Megaflex 12AWG black, 2,5 mm², 1m
C130208	CS-Rocket Competition Interface with USB Adapter
C130209	Cooling fan for CS-Rocket Competition, 30x30x6, incl. 4 x screws M2,5x8
C130210	Sensor cable adapter

14. 24 Month Guarantee

CS-ELECTRONIC GmbH, Johann-Karg-Str. 30, D-85540 Haar b. München, Germany guarantees this product for a period of 24 months from date of purchase. This guarantee applies only to such material of operational defects which are present at the time of purchase. Damages due to wear, overloading, incompetent handling are not covered by this guarantee. The users legal rights and claims under guarantee are not affected by this guarantee. Please check the product carefully for defects before you make a claim or send the item back to us, since we are obliged to make a charge of 15,- EUR, if the product is found free of faults.

We can opnly handle a guarantee if the used motor is also send to us together with a detailed description of the failure including the used gear ratio and the used battery.

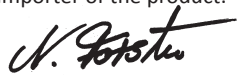
15. Service/Returns

Freight collect can not be accepted, Please inform us about your complete address for question we maybe will have. Please do not forget to include your telephone number and (if existent) your email-address as well as your mobile number. If you are a registered dealer of us, please give us your customer code.
CS-ELECTRONIC GmbH, Johann-Karg-Str. 30, D-85540 Haar b. München,
Tel.: +49 89 436 302 99-0, E-Mail: service@cs-electronic.com
In case of questions you can call or email us.

16. CE Conformity Declaration:

We hereby declare that the following product CS-Rocket Competition Best.-Nr.: C130200 conforms with the essential protective requirements as laid down in the directive for harmonizing the statutory directives of the member states concerning electro-magnetic interference (2004/108/CE) and the low voltage guideline (LVD) (2006/95/CE). This product has been tested for electro-magnetic interference in accordance with the following norms:
EN61000-6-1
EN61000-6-3

This declaration was produced by CS-ELECTRONIC GmbH, Johann-Karg-Strasse 30, 85540 Haar bei München and is valid for the manufacturer/importer of the product.



Norbert Forster
85540 Haar, 30.01.2009

17. Environmental Protection Notes

When this product comes to the end of its useful life you must not dispose it in the ordinary domestic waste. The correct method of disposal is to take it to your local collection point for recycling electrical and electronic equipment. Individual markings indicate which material can be recycled. You make an important contribution to the protection of our common environment by recycling the basic materials or recycling redundant materials in other ways. Remove batteries from your device and dispose them at your local collection point for batteries. In case of RC-models you have to remove electronic parts like servos, receivers or speed controllers from the product and these parts must be disposed of with a corresponding collection point for electronic scarp. Please contact your municipal administration for the details of the disposal facility in question.

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Amtsgericht: München HRB 170180, USt-IdNr. DE252920550, Geschäftsführer: Norbert Forster