

Instruction Manual

brushless + brushed

GM - GENIUS 75 #97163
GM - GENIUS 90 #97164
GM - GENIUS 120 #97168
GM - GENIUS 150 #97169



Generation II

Attention! Read the instruction carefully,
because there are many changes,
i. e. the motortype setting must be done
manually with the PC-Software!



- ❖ Congratulations for buying GM-Racing's Genius Controller for brushed and brushless motors, probably the best and most universal controller for use in contest world-wide. It is adapted for use with brushless motors with or without Hall sensors. During our tests, however, the controller proved so sensitive that there appeared to be no need for using the more expensive sensor-equipped motors. Marc Fischer won the first A-Main at the European Championship 2006 without sensors in wet conditions. With this controller, Ralf Helbing is extending his series of successful controllers, which won numerous World and European Championships, as well as national competitions. Genius controllers are again offering a new challenge in functionality, size, and controlling attitudes.
- ❖ German Champion Touring car modified 2007, 2008, BRCA Champion TC - Modified 2007, 2008, 2009, European Champion 1/12 stock 2009

Important notice:

Please read this manual carefully before using your controller. Only then can you have full profit of the potential of your controller, and avoid mistakes. Hand the instruction to the next user, in case you sell the speed controller.

Characteristics:

GM-Racing controllers are packed with the latest components. Functionality, life time, state-of-the-art features, functional design, and ideal component sizes have been given the greatest consideration. The software which has been developed and continually improved by our team stands in the first line for simplicity and precision of the settings. Our "Easy Set System", in connection with the "IDA System", enables you to set each mode within seconds, either with or without the help of the GMVIS Commander 94401 (software version V2005 or later) or the GENIUS-PROGRAMMER 2894.12 or a PC with Windows 2000, XP, Vista. With a few clicks you will be able to adapt the controller and thus the driving styles of your model to the environment. Still the controller can be used on the spot, without any programming, in the factory settings.

Factory settings for this controller include its use with both NiMH and NiCD, as well as for Li-cells.

The controller automatically determines the type of the drive battery after plugging it in, and then also automatically slowly shuts down power when the tension drops below 50/80 of the start-up tension, so as to avoid a deep discharge of LiPo / Lilo, or NiMH, and NiCd cells. One condition for this function is that the battery pack is well-balanced, with every cell having the same capacity.

Caution! When using a conventional (brush) motor, the reserved2 function must be set to the right motor configuration. In configuration #3 or #4 to make the reverse gear available, use only batteries up to 7.4V.

Main programmable functions:

- Mode 0 (forward, with brakes): modified low grip (PRO 10)
- Mode 1 (forward, with brakes): modified high grip with additional timing
- Mode 2 (forward, with brakes): modified medium grip
- Mode 3 (forward, with brakes): modified low grip
- Mode 4 (forward with brakes, reverse mode 1 available)
- Mode 5 (forward with brakes, reverse mode 2 available)
- Modes for stock racing with 9.5T...21.5T with variable timing with hall sensors
- Mode 6 (forward, with brakes): soft additional timing
- Mode 7 (forward, with brakes): medium additional timing
- Mode 8 (forward, with brakes): high additional timing
- Mode 9 (forward, with brakes): max. additional timing

Additional timing increases the motor rpm and increases the top speed of the car. Also the current and the motor temperature will increase.

For a detailed description of the factory settings read out the mode with the PC software.

Other features:

- Reading of the maximum rpm and maximum current, display the maximum speed with PC
- Voltage control
- Powerful BEC system
- Digital power settings adaptation
- Re-charging batteries while breaking
- USB-circuit with LED for easy PC programming of the supplementary functions
- All modes 0-9 are user programmable
- easy setting of the modes 0-9 with Red and green LEDs, SET-Button and the transmitter
- Over-temperature switch-off ...

Supplementary programmable functions:

The following supplementary functions are available:

#1	On / Off switch function with controller button, save max. rpm and max. current
#2	Automatic brake
#3	Maximum brake
#4	Full brake
#5	Maximum reverse speed
#6	ABS
#7	Automatic throttle
#8	Soft-start
#9	Timing (brushless motors only)
#10	Speed limiter (brushless motors only)
#11	Current limiter
#12	Start-up current limiter
#13	Turbo
#14	Power curve
#15	Minimum brake
#16	Reserved, Set-up for temperatur cut-off, Sensormode, Brake modes, motor type
#17	Frequency
#18	Reserved 1, configuration for data transfer, transmitter mode programming, beeps
#19	Soft brake
#20	Full-throttle point
#21	Zero point
#22	Full brake point
#23	Zero point width
#24	Mode
#25	Program number
#26	Low-voltage power-down (Cut-off voltage)
#27	Maximum start-up power (PWM width) without sensor
#28	Maximum start-up current without sensor
...	see PC-Software

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Warnings:

- The controller's CE certificate doesn't unbind users from their obligation to use ultimate caution
- Should the motor refuse to start up, or after a crash, then you should immediately set the transmitter's control stick to the neutral position to avoid any overload to the controller. Set the RPM limitation to 8 = 125.000 RPM, and select a softer start-up for a better and smoother start.
- Use only motors delivered by GM-Racing or Graupner which are designed for the intended range of voltages!
- **Use only high performance batteries by Graupner or GM-Racing. Using batteries with an increased internal resistance may lead to the destruction of the controller!**
- **When other brand motors or batteries are used, the warranty is lost, because GM-Racing can not control the quality of other products.**
- Never leave your transmitter unattended when a battery is connected. In case of a deficiency this may cause an outbreak of fire on the model or its environment.
- Neither the controller nor any other electronic components should ever come in touch with water. Protect the controller against dust, dirt, humidity, vibrations, or other dangerous elements (with the exception of water-sealed controllers).
- Never run the motor on a separate battery while the motor is connected to the controller. This may destroy the controller, and leads to the loss of our warranty.
- Never mix up polarities. Use plug systems which offer protection against wrong polarity. Avoid short-circuiting and blocking the motors.
- All cables and connectors should have good insulation. Short-circuits may lead to the destruction of your motor.
- This product isn't designed for use by children under the age of 14, it isn't a toy!
- GM-controllers are designed for use in battery-driven, radio-controlled models only, any other use is not permissible. Using this device on a passenger-carrying model is forbidden!
- Motors, gears or gearboxes, and propellers are dangerous objects. Never keep next to or in front of the danger area of the drive!
- Technical defects or failures of mechanical or electronic parts may lead to an unexpected start-up of the motor, with parts of it flying off, maybe causing severe injuries.
- Always check the service range of transmission of your model first thing while it's still on the ground (hold the model tightly!).
- Don't make any changes on the structure and design of your controller unless they are described in the manual!
- Limited warranty: Graupner Ltd cannot survey the proper application of the mounting and using regulations, nor the working methods and conditions during the installation, use, operation, and servicing of the controller. Therefore Graupner Ltd cannot take on any liability for any loss, damage, or costs resulting from an incorrect use or operation of the product, or connected in any way with incorrect use or operation.
- Only those components and accessory parts which have been recommended by us may be used. Use only genuine and matching Graupner connectors and accessory parts.
- Make sure whenever you start connecting and operating the controller, that:
 - your transmitter is the only one working on that frequency,
 - is switched on,
 - and has the throttle set to position "Neutral".
- Use only high-quality batteries by Graupner or GM-Racing. Cheap or old batteries with a high internal resistance may lead to poor performance or even to the destruction of the controller.

Installing the controller in the model:

After unpacking the controller think carefully about what position in the model will be ideal. Please keep in mind that the controller must be optimally cooled, and that both the receiver and the aerial should have more than 3cm distance to the controller and the thick high-current cables and the battery. After deciding where to place the controller fix it in place with two strips of double-sided adhesive tape, so that the cooling surface shows upward for better cooling, or is reduced in surface by no more than 30%.

GM-GENIUS 150:

The speed controller must be mounted with thermal adhesive glue f. e. Graupner #97169.W or Loctite 315 or with other thermal adhesive material like Fischer Elektronik WSF16 or GEL10 to the alloy chassé of the car for the maximum continuous current.



Connecting the controller to the receiver:

By factory standard, your GM controller is equipped with a Graupner/JR plug which fits into Graupner/JR as well as Futaba and KO (models 1995 and later) receivers. When using other receivers please inquire after the proper polarity.

Red	=	receiver (+)
Black or brown	=	receiver (-)
White or orange	=	pulse cable

Insert the plug of the receiver connector cable into the desired servo socket (socket 2 on car models) of your receiver.

Switch the transmitter on, with the throttle set to position "Motor Neutral", before connecting the drive battery!

Connecting the power capacitor PCB:

The power capacitor PCB must be always soldered with the right polarity to the battery + (red) and battery- (black) solder posts. If a motor is running without the capacitor PCB the speed controller can be destroyed.

Motorconfiguration #1: Connecting a brushless motor to the controller:

Use only motors produced by Graupner or GM-Racing which are designed for the desired voltage range! Poor quality motors from other sources may lead to bad start-up characteristics and, in the worst case, destroy the controller.

Connect the three cables of the controller with the motor by inserting the plug(s) or by soldering the cables in place. In case the motor turns the wrong way round, you can reverse the motor direction in the reserved2 function, with the PC. Never swap the connectors on the battery! Do not swap the connectors at motors with hall sensors!

The motor and battery connector cables should all be the same length and never longer than 12cm. The longer the cables, the heavier your model will be, and the more interference will be radioed by them. If the wires are longer as 20cm, an additional power capacitor must be soldered with right polarity every 10cm to the battery wire.

On motors with Hall sensors you should now insert the plugs of the sensors into the controller with one of the adapter wires #2894.4, #2894.8 (GM brushless SPORT/PRO/EVO3/ LRP/Reedy motors) or #2894.9 (GM brushless EVO2/Novak motors) (red = 3V, black = GND, other colours = sensors 1-3).

The correct connection of the wires is very important, otherwise the speed controller will be damaged. For IFMAR motors with bonded neodym magnets we recommend this mode. The motor must be connected to the same wire colours on the speed controller.

speed controller	connect to	EFRA motor (f.e. GM #97213-97293, Reedy/LRP)
A = blue		A = blue
B = yellow		B = yellow
C = orange		C = orange

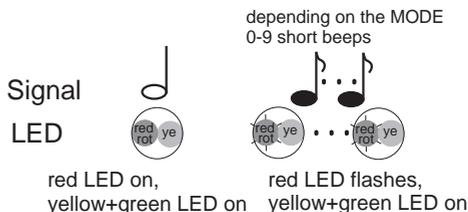
When the Hall sensors are connected, the LEDs show the positions of all sensors, when the throttle stick is in half brake position or when the speed controller is switched off with the SET-button.

Connecting to the battery:

Use only high-quality batteries offered by Graupner Ltd or GM-Racing. Using batteries with an increased internal resistance may lead to the destruction of the controller!

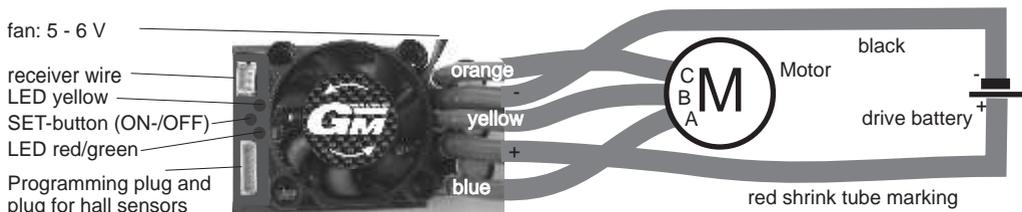
Connecting to the battery:

Connect the red battery cable to the drive battery (+).
Connect the black battery cable to the drive battery (-).



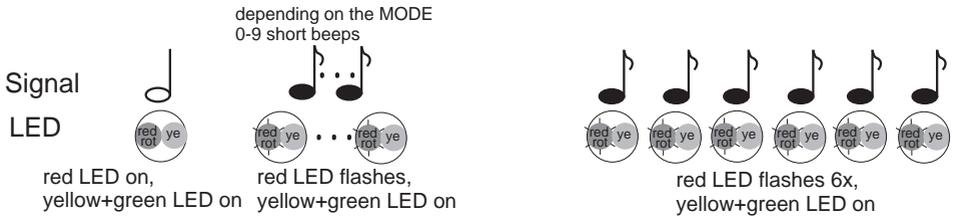
(Motorconfiguration #1)

Connecting a brushless motor to the controller
Reserved 2 = 1 must be set! (factory setting)

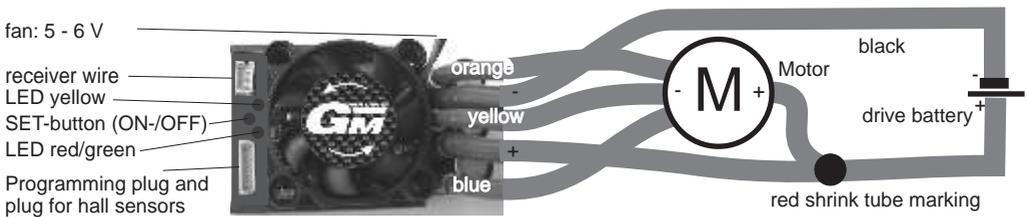


Connecting a conventional brushed motor:

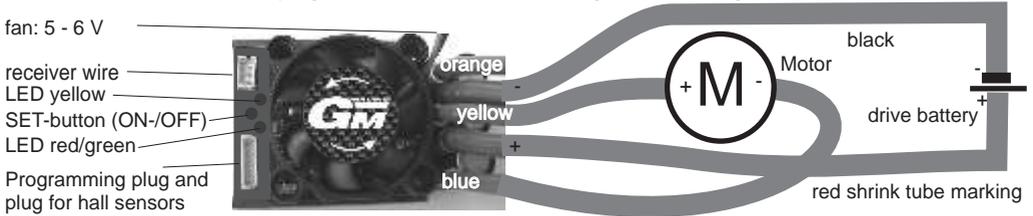
The speed controller does not automatically detect the motor configuration, so the right motor configuration must be set with the reserved2 function with the PC!



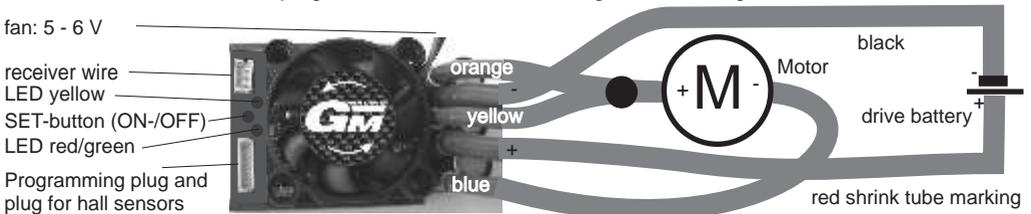
(Motorconfiguration #2): Connecting a brushed motor for the functions forward/Motor stop/(brake)
RESERVED2 = 3 must be programmed with the PC to the right motor configuration!



(Motorconfiguration #3) Connecting a brushed motor for the functions forward/Motor stop/brake/reverse
In this mode, only half the indicated permanent current drain is available.
In addition, only batteries of max. 7.4V may be connected in this mode!
RESERVED2 = 7 must be programmed with the PC to the right motor configuration!



(Motorconfiguration #4) Connecting a brushed motor for the functions forward/Motor stop/brake/reverse
In this mode, only half the indicated permanent current drain is available.
In addition, only batteries of max. 7.4V may be connected in this mode!
RESERVED2 = 7 must be programmed with the PC to the right motor configuration!



Adjusting the controller to the transmitter stick travel, programming the main functions, setting the supplementary functions back to their default values:

If the controller is to work properly then all the throttle functions should be set to normal (Futaba "REVERSE"), and travel to 100%.

The receiver pulsed width must be longer at full throttle compare to the neutral point. The values of the full throttle, neutral point and full brake position can be checked and adjusted with the PC-Software.

As the controller uses the motor as a loudspeaker for the beep sounds, you can hear the beeps only when the motor connector is plugged in. If the motor is not connected, the speed controller will go into the error mode.

Programming with the USB-adaptor #7168.6 is possible without motor and battery.

When Hall sensors are activated the LEDs show the positions of all Hall sensors when the throttle stick is in the half brake area or the speed controller is switched off with the SET-button.

The controller has pre-set stick travels. The factory setting is for model mode #2 (forward with brakes), and is suitable for all models using the LiPo/NiMH switch-off. This mode allows for all models to be run with all sorts of batteries, for a start. **In order to initially activate the motor** the transmitter stick should be set to position "motor stop / brake", or else the motor won't start up for safety reasons. If the motor brakes in the full throttle position but starts up in the brake position then you should programme the stick to "reverse"!

The correct settings of the transmitter travels will light these LEDs:

- the red and the yellow LED when the stick is in position "motor stop / brake"
- the yellow LED in the "throttle control range"
- the red LED in the "full throttle range"
- no LED in the "brake control range" or hall sensor position, if hall sensors are plugged in
- the red LED in the "slam brakes" position.

Adjusting the controller to the transmitter stick travel, programming the main functions, setting the supplementary functions back to their default values:

If the controller is to work properly then all the throttle functions should be set to normal (Futaba "REVERSE"), and travel to 100%.

The receiver pulse width must be longer at full throttle compared to the neutral point. The values of the full throttle, neutral point and full brake position can be checked and adjusted with the PC-Software.

Adjusting the controller to the exact transmitter stick travel, and setting the additional functions presets to specific track conditions (modes 0-9):

- Mode 0 (forward, with brakes): modified low grip (PRO 10)
 - Mode 1 (forward, with brakes): modified high grip additional timing
 - Mode 2 (forward, with brakes): modified medium grip
 - Mode 3 (forward, with brakes): modified low grip
 - Mode 4 (forward with brakes, reverse mode 1 available)
 - Mode 5 (forward with brakes, reverse mode 2 available)
- Modes for stock racing with 9.5T...21.5T with variable timing with hall sensors
- Mode 6 (forward, with brakes): soft additional timing
 - Mode 7 (forward, with brakes): medium additional timing
 - Mode 8 (forward, with brakes): high additional timing
 - Mode 9 (forward, with brakes): max. additional timing

For a detailed description of the factory settings read out the mode with the PC software.

Programming mode # 0 - 9 and the transmitter stick travel with SET-button and transmitter:
If the controller is to work properly then all the throttle functions should be set to normal (Futaba "REVERSE"), and travel to 100%.

The receiver pul width must be longer at full throttle compare to the neutral point. The values of the full throttle, neutral point and full brake position can be checked and adjusted with the PC-Software.

Important information:

Modes 2-9:

If reserved1 = 0, 4, 8, 12, 128, 132, 136 or 140, the transmitter ways will be learned together with the new mode.

Disable learning the transmitter ways:

If reserved1 = 130, 134, 138, 142, the transmitter ways will not be learned, only the mode will be changed.

The transmitter ways will be read out of the mode values from the EEPROM.

Mode 0:

The programmed throttle way for Mode 0 will be used from the last Mode (>=2) programm settings or can be programmed with the PC-software. The transmitter ways in this mode can be changed with the PC software.

Mode 1:

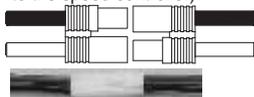
The programmed full brake position for Mode 1 is used from the last mode setting or from the EEPROM values, if the transmitter learning process is disabled.

Programming mode #0-9 (4 + 5 is with reverse function others forward with brakes):

1. Switch on the transmitter and next connect/switch on the speed controller to the drive battery.
 (The motor must be connected to the speed controller)

2. Move the throttle stick to the "Neutral/Motor STOP" position

3. Press the SET-button for about 4s, until the red LED is on and you hear a long beep. After the beep the yellow and green LED will be on and you can program the throttle ways and the modes.



Depending on the mode 0-9 short beeps "Neutral=Motor STOP"

SIGNAL

LED



red LED on,
yellow+green LED on

red LED flashes,
yellow+green LED on

red LED on,
yellow+green LED on

5. The Mode can be chosen by changing the throttle stick position.

Stay at neutral position = Mode 0, go to full throttle = Mode 1, go to full throttle - full brake = Mode 2,

go to full throttle - full brake - full throttle = Mode 3, and so on.

There is about 4s time for every stick position change. The LED will change the colour between red and yellow every change and you will hear one beep every change of a mode.

If mode 1 is beeped at the full brake position, you have to reverse the transmitter throttle way.

(If you want to do a factory reset, push now the SET-button again, until you hear 3x short and 1 long beep.)

After the last mode change both LEDs will be on and then you will hear one long beep and the confirmation beeps for the mode again. The speed controller is now ready to use again.

4s delay

Mode 0	Mode 1	Mode 2	Mode 3	...	Mode x	
"neutral=Motor off"	"full throttle"	"full brake"	"full throttle"		"full ..."	red LED on, yellow+green LED on
						0-9x
red LED on, yellow LED on						red LED flashes, yellow+green LED on

Activating reverse gear / changing into reverse gear

The Reverse function can be activated or deactivated in the reserved function with the PC for all modes. Reserved = 2 (Reverse mode 1) or reserved = 4 (Reverse mode 2)

Both a fully proportional brake and a fully proportional reverse gear are available in mode #4+5 (reverse =2 or 4 activated).

To change into reverse set the stick to position "slam brake" and hold it until the vehicle comes to a stop, and for another second. Then move the stick to "neutral". Reverse gear is now activated. You can now drive backwards proportionally by moving the stick in the "brake" direction.

Reverse mode 2: Additionally to reverse mode 1, the reverse function will be enabled in neutral position, if a brushless motor doesn't turn any more.

Activating forward gear / changing into forward gear

Of course you can also slow the car down proportionally by moving the stick in the direction full throttle. To change into forward gear after a run in reverse, set the stick to position "full throttle" to slow the vehicle down, and hold it until the vehicle comes to a stop. Then move the stick to "neutral". Now forward gear is again activated. You can now drive forward proportionally by moving the stick towards the "full throttle" position.

Reverse mode 2: Additionally to reverse mode 1, the reverse function will be enabled in neutral position, if a brushless motor doesn't turn any more.

Supplementary programmable functions:

Supplementary functions can be adjusted using the GENIUS-Programmer #2894.12 or with the GMVIS-Commander with software version V2005 or with a PC with USB and Windows 2000/XP/Vista.

- #1 On / Off switch function with controller button, save max. rpm and max. current
- #2 Automatic brake
- #3 Maximum brake
- #4 Full brake
- #5 Maximum reverse speed
- #6 ABS
- #7 Automatic throttle
- #8 Soft-start
- #9 Timing (brushless motors only)
- #10 Speed limiter (brushless motors only)
- #11 Current limiter
- #12 Start-up current limiter
- #13 Turbo
- #14 Power curve
- #15 Minimum brake
- #16 Reserved
- #17 Frequency

Only programmable with the PC-software:

- #18 Reserved 1, configuration for data transfer, transmitter mode programming, beeps
- #19 Soft brake
- #20 Full-throttle point
- #21 Zero point
- #22 Full brake point
- #23 Zero point width
- #24 Mode
- #25 Program number
- #26 Low-voltage power-down (Cut-off voltage)
- #27 Maximum start-up power (PWM width) without sensor
- #28 Maximum start-up current without sensor
- ... see PC-Software

#1 SWITCH ON/OFF button for the controller, save max. current and max. rpm

FUNCTION CONTROLLER ON / OFF (0,1,2,4,5)

The controller can be programmed to allow for it to be switched on / off, together with the BEC system, by using the SET button. It can as well be programmed for switch on / off over the transmitter by setting the stick to "slam brake" for at least 16 secs.

Whenever the controller is being switched on it will give a series of 1-4 beeps, according to the selected mode, and the red LED will flash, so as to acknowledge the model mode # and the switching on.

Save the max. current and max. rpm: The maximum current and maximum rpm will be stored to the EEPROM, if you switch off the speed controller with the SET-button or 16s full brake.

To do this, the SWITCH function must be programmed to 1, 2, 4, 5 or 6.

The max. current, rpm, top speed and overtemperature can be displayed on the PC screen after reading out the speed controller datas with the USB-circuit.

If the displayed rpm is not realistic and much too high, timing errors did occur. Try to prevent timing errors with changing the following functions (FREQUENCY, SOFTGAS, AMPLIMIT, TIMING or setting the RPM LIMIT to 8 (125000rpm) or 13 (100000rpm).

0 = Controller is always switched on

1 = Controller can be switched on by shortly pressing down the button, and off after pressing it down one more time

2 = Controller is on after plugging in the drive battery but can be switched on / off again by shortly pressing down the button.

4 = Controller is switched off after setting the stick to "slam brake" for 16sec, or by pressing the button.

5 = Controller is switched on using the button, and switched off using the button, or holding the stick for 16 sec in "slam brake" position

6 Controller is switched on by plugging in the drive battery and switched off by pressing the button or by 16 sec "slam brake", and switched on again by pressing the button

Reading 64 + the adjusted value means, that the temperature was higher as the cut-off level.

#2 AUTOBRAKE (automatic brake)

The autobrake function is adjustable from 0-100% and it is already starting to brake when the throttle stick is set to neutral. It is adjustable regardless of the max and min braking action, and therefore allows driving through tighter bends.

recommended values 0-20%

#3 BRAKEMAX (max. braking action)

Brakemax is the braking action which is applied shortly before the red LED is lit. This is the range between neutral position and 95% of the throttle way. This function allows to avoid overbraking / blocking the wheels

The max. braking action within the controllable range is adjustable from 0-100%

recommended values for car models 70-100%

#4 FULLBRAKE (slam brake)

The desired braking action in the throttle position FULLBRAKE can be adjusted separately from the max. braking action. This is a handy feature in off-road driving where a good range of controlled brake application is desirable but full braking action is required for correcting trajectories where jumps need to be made. Further on, this function is useful as an "emergency brake".

FULLBRAKE is also adjustable from 0-100%.

recommended values 70-100%

#5 MAXREVERSE (max. reverse speed)

The max. reverse speed is adjustable from 0-100%. It may be used to set a limit to the max. reverse speed of racing boats or on RC cars.

If MAXREVERSE is set to 0, the undervoltage protection does switch from 4V to 3V in NiMH mode.

If the LiPo-discharge protection is deactivated and the cut-off voltage is set to 250. Otherwise the cut-off voltage setting is used.

Recommended values for racing boats 20-50%, 50-100% for car models

#6 ABS (0 = OFF, 1 = ON)

The ABS braking function prevents cars from swerving when the brakes are applied. The ABS brake pulses between the max. braking action as assigned by the throttle stick, and the BRAKEMAX value.

Factory setting: 0 = OFF,

Recommended settings: 1 = ON, BRAKEMIN 20-40%, BRAKEMAX 70-100%

#7 AUTOGAS (automatic throttle)

"Idle" in the throttle position "neutral" is a sensible setting especially for the standard classes where easy taxiing is desired. AUTOGAS will be automatically disengaged after a few seconds to avoid an early start on the starting line, with the model driving off slowly, and to save battery power during longer stops. For AUTOGAS to work it is necessary to set AUTOBRAKE to 0%!

Factory setting: 0, recommended values for the standard classes: 1 - 20

#8 SOFTGAS (soft start) (0-10 by SET-button, 0-200 by GMVIS-Commander)

The smaller the pre-set value the softer the controller will speed the motor up.

In case the motor doesn't speed up as desired, or gets stuck at lower RPMs than desired, then immediately switch the motor off and reduce the SOFTANLAUF value (i.e. increase run-up time) until the motor accelerates smoothly. In normal conditions all motors should run up smoothly with the factory settings.

1 = run-up time 4 sec

2 = run-up time 2 sec

3 = run-up time 1.33 sec

4 = run-up time 1 sec (for airplane)

...

16 = run-up time .22 sec (for acrobatic airplane)

...

40 = run-up time .1 sec

60 = run-up time 68 ms

100 = run-up time 40 ms

200 = run-up time 20 ms

#9 TIMING see PC-Software

To get the max. efficiency and the max. power, the timing can be adjusted with many functions.

In the most cases, the factory settings are the best choices.

0 = Standard timing 30°

1 = programmable additional timing up to max. Timing (limited through max. Timing)

2 = programmable additional timing (activate a lot of other timing functions)

The timing in the sensorless mode can be set and reduced with the function fixed timing.

Attention! If additional timing is used, the motor rpm and motor temperature will increase a lot.

Because of this, using this function, warranty can not be given for the motors and speed controller.

Also a much smaller gearing pinion must be used and the motor and speed controller temperature must be always checked. The max. temperature is 80°C (measured with an infrared thermometer on the outside of the motor and the speed controller. Use the shortest gearing first and use step by step a bigger pinion, until you get the best speed and a safe working area.

At temperatures of the speed controller or the motor over 100°C in the inside, you will lose the warranty. The max. values will be stored in the speed controller and can not be deleted.

#10 RPMLIMIT (RPM limitation) (only with conventional motors)

The max. RPMs can be limited. This feature has been introduced especially for the Standard classes in order to achieve standardized RPMs at a stipulated gear reduction, and thus achieve the same terminal velocities, or to set a limit to the RPMs of airplane propellers. RPMLIMIT is also ideal for beginners who want to set a top speed limit for their models.

By use of the GMVIS-Commander the speed limit can be adjusted between 12.500 and 210.000 RPM in 200 steps on 2-pole motors see the formula and the graphic curve.

When you encounter motor problems on the run-up it is recommended to set the RPM limit to 125.000 RPM (8) (on a 2-pole motor). In this case the controller can provide a better run-up attitude by using a different software!

On motors with more than 2 poles the corresponding RPMs are as follows:

True RPM = indicated RPM * 2 / number of poles

Formula for the max RPMs when programmed over a GMVIS-Commander:

Max. RPM approx. = $5.000.000 / \{(\text{programmed value} + 12) * \text{number of poles of the motor}\}$

Programmed value (approx.) = $\{5.000.000 / (\text{max. RPM} * \text{number of poles})\} 12$

ROAR-Sportsman = $92 = 24\ 000\text{rpm}$

#11 AMP LIMIT (Current drain limitation)

The AMP LIMIT can be set from 50-150 A by using the push-button, or from 0-200 A with the GMVIS-Commander. The current limitation can have an influence on the torque of the motor. AMP LIMIT should be set so as to avoid that for instance the wheels of a car do not or only slightly grind on the ground.

recommended values: 40-200 A according to the grip of the tyres

#12 START LIMIT (Start-up current drain limitation)

START LIMIT is activated when the throttle stick is being held in position "neutral" for at least 3 sec.

It is deactivated once the position "full throttle" has been reached for the first time.

The start-up current should be chosen so as to avoid that the wheels do not or only slightly grind on the ground, and maximum traction is guaranteed at the start.

recommended values: 40-200 A according to the grip of the tyres

#13 TURBO (0-9A)

At full throttle the turbo function increases the potential current drain by the selected value (in amps) within 4 msec, beginning with the current which has been set in AMP LIMIT. (see graphic curve)

recommended values: 0-5 A

Example: You've set the current drain limit to 50 A, which means that you currently have at least 50A at your disposition. At the moment you set the throttle to "full throttle" the turbo sets in, i.e. every 4ms the current drain is increased by the selected value until the max current is reached.

This procedure increases traction especially on slippery routes, is power-saving, and increases your top speed on straight tracks. The turbo function will engage whenever you set the throttle to "neutral" and then to "full throttle".

#14 POWERCURVE (0-16)

This function allows you to select 16 different power curves so as to optimally adjust the controller's behaviour to the route and your driving attitudes.
Hallsensors must be used for additional timing.

0 = no additional timing with power curves. Other timing adjustments are used.

1 = soft additional timing for modified motors

2 = hard additional timing for modified motors

3 = soft additional timing for 6.5T motors

4 = hard additional timing for 6.5T motors

5 = softest additional timing 1 for 9.5T - 13.5T motors

6 = soft additional timing 2 for 9.5T - 13.5T motors

7 = soft additional timing 3 for 9.5T - 13.5T motors

8 = middle additional timing 1 for 9.5T - 13.5T motors

9 = middle additional timing 2 for 9.5T - 13.5T motors

10 = middle additional timing 3 for 9.5T - 13.5T motors

11 = hard additional timing 1 for 9.5T - 13.5T motors

12 = hard additional timing 2 for 9.5T - 13.5T motors

13 = hardest additional timing 3 for 9.5T - 13.5T motors

14 = soft additional timing for 1/12 9.5T - 13.5T motors with 4 cells NiMH

15 = hard additional timing for 1/12 9.5T - 13.5T motors with 4 cells NiMH

16 = hard additional timing for 1/12 9.5T - 13.5T motors with 1 LiPo cell

#15 BRAKEMIN (Minimum brake)

The min brake is the braking action which follows immediately after neutral. An ABS brake pulses between the max braking action as selected on the throttle stick and the BRKMIN value.

recommended values: 0-50 %

Example: If you set MINBRK to 30% you'll have 30% of the braking action at your disposition when using the brakes. This means that the range of braking action is distributed over 30% and the max braking action. You'll thus have a more sensitive control of the brakes.

#16 RESERVED

See PC-Software

Bit value:

0 = 1 temperature cut-off deactivated (warranty is lost!)

1 = 2 Reverse mode 1

2 = 4 Reverse mode 2

3 = 8 additional timing with Timing 1 up to + 30° above switching point rpm activated

4 = 16 new brake software (speed dependend) activated

5 = 32 special brake software for automatic brake

6 = 64 additional timing with Timing 1 up to +max. Timing above the switching point rpm activated

7 = 128 Current limiter for the brake deactivated

8 + 64 = 72 additional timing Timing 1 until switching point rpm + Timing 2 up to +max. timing above switching point rpm activated

To set more then one function, you need to add the values of all functions.

#17 FREQUENCY

0 = 16 kc

1 = 16 kc, with adjustable current drain limitation

2 = 32 kc

3 = 32 kc, with adjustable current drain limitation

4 = 4 kc

5 = 4 kc, with adjustable current drain limitation

8 = 8 kc

9 = 8 kc, with adjustable current drain limitation

16 = 1 kc

17 = 1 kc, with adjustable current drain limitation

18 = 2 kc

19 = 2 kc, with adjustable current drain limitation

20 = 0.25 kc

21 = 0.25 kc, with adjustable current drain limitation

24 = 0.5 kc

25 = 0.5 kc, with adjustable current drain limitation

Lower frequencies run the speed controller cooler and gives you a smoother power feeling and makes less radio clitches to AM/FM receivers.

Higher frequencies are more efficient to the motor and gives you more power.

New feature - and so far unattained!

Instead of altering the pulse width we control the current. This helps keep the controller's behaviour constant over the entire running time, independent of the battery tension, and so enables you to achieve almost the same elapsed time for all laps until the battery load is finished, and, in particular, keeps the controller's attitudes constant. By using the throttle curves and the current limitation you can optimally adjust the controller functions to the model's needs and to the situation, even when the max. motor power is used at "full throttle".

Factory setting: dependend on the mode factory setting

Programming the supplementary functions which are programmable using the PC software or the SET-button:

#18 RESERVED1 (0 -254)

Bit value

0 = 0 = send data #1 to #17 (for programmer #2894.12 or GMVIS-Commander V2005 and later),

1 = 2 = Do not program transmitter ways, when changing the mode with the transmitter and SET-Button

2 = 4 = long beep after switch on the speed controller disabled

3 = 8 = short beeps for mode confirmation after switch on the speed controller disabled

4 = 16 = Interrupt for BEC-undervoltage detection activated

5 = 32 = no BEC voltage (beep tones) for programming the additional functions with the SET-Button

7 = 128 = send all data

To set more then one function, you need to add the values of all functions.

#19 SOFT BRAKE (0 TO 200)

The smaller the set value, the softer the braking effect of the controller (see SOFTGAS for values/2).

1 = brake engage time 2 sec., 2 = brake engage time 1 sec ... 100 = brake engage time 20 ms

see PC-Software!

#20 Full-throttle point

The full-throttle point setting in ms is normally dictated by the programmed MODE (1 to 9), but it can also be programmed and altered using the PC. The full-throttle point must be set to at least 1600 or 0.1 ms greater than the zero point.

#21 Zero point

The zero point setting in ms is normally dictated by the programmed MODE (1 to 9), but it can also be programmed and altered using the PC. The zero point must be set to at least 1600 or 0.1 ms greater than the full brake point.

#22 Full brake point

The full brake point setting in ms is normally dictated by the programmed MODE (1 to 9), but it can also be programmed and altered using the PC.

Programming the supplementary functions which are only programmable using the PC software:

#23 Zero point width

The zero point width can be set individually. For example, this may be necessary if the dead zone of the transmitter stick is excessive: in this case the zero point width should be enlarged.

#24 MODE- Mode 0 (forward, with brakes): modified low grip (PRO 10)

- Mode 1 (forward, with brakes): modified high grip
- Mode 2 (forward, with brakes): modified medium grip
- Mode 3 (forward, with brakes): modified low grip
- Mode 4 (forward with brakes, reverse mode 1 available)
- Mode 5 (forward with brakes, reverse mode 2 available)

Modes for stock racing with 9.5T...21.5T with variable timing with hall sensors

- Mode 6 (forward, with brakes): soft additional timing
- Mode 7 (forward, with brakes): medium additional timing
- Mode 8 (forward, with brakes): high additional timing
- Mode 9 (forward, with brakes): max. additional timing

For a detailed description of the factory settings read out the mode with the PC software.

#25 STRENGTH OF NEW BRAKE SOFTWARE

The strength of the new brake software can be adjusted. Higher values make the brake softer at high speed.

#26 Low voltage power-down

The low voltage power-down can be programmed in V; see PC software.

This enables you to adjust the low voltage power-down setting in very fine increments, which is useful for NiMH batteries, but especially important with Lithium packs.

Setting the programmed value to 250 disables this function; the controller then adopts automatic battery detection.

#27 Maximum start-up power (PWM width) without sensor

The maximum start-up power (PWM pulse width) with the sensorless motor stopped can be selected to ensure that the motor starts as smoothly as possible. Start with as low a value as possible, and increase the setting until the motor starts smoothly. Default setting 128.

Excessive values, i.e. settings which prevent the motor starting immediately, may ruin the controller.

#28 Maximum start-up current without sensor

The maximum start-up current with the sensorless motor stopped can be selected to ensure that the motor starts as smoothly as possible (10 to 50 A). As soon as the motor starts running, the maximum current is that dictated by the settings of the current limiter (START AMP) and / or current limiter (AMP LIMIT). Default setting 30 A. Excessive values, i.e. settings which prevent the motor starting immediately, can wreck the controller.

#29 RESERVED2 see PC-software!

Bit value:

0 = 1 Manual motor configuration setting (automatic motor detection does not work!)

1 = 2 brushed motor (motor configuration 2)

2+1 = 6 brushed motor (motor configuration 3 + 4)

3 = 8 variable dependend additional timing activated

4 = 16 variable timing only active at full throttle

5 = 32 reverse motor direction

6 = 64 Timingsoftware like V7.1...7.x activated

7 = 128 hallsensorinput inverted (you must not use! Otherwise you loose the warranty!) Only for special hall sensors with reversed detection direction.

To set more then one function, you need to add the values of all functions.

#30 speed controller cut-off temperature

The speed controller does limit the motor current to the set value in program #39, when the cut-off temperature is reached. If the temperature increases another 10°C, the speed controller will cut-off the motor current until it cooled down again.

At temperatures over 120°C, the warranty is lost. The absolute max. temperature will be stored and can not be reset.

#31 switching point rpm

The switching point rpm is important for the good motor start in the **sensorless** motor mode.

With frequency 4kc the switching point rpm should be set to 250 = 10000rpm.

With frequencies 8-32kc the switching point rpm should be set between 150 and 250.

In **sensored** motor mode the additional timing will be active over the adjusted switching point rpm, if additional timing is activated.

Switching point rpm in sensed mode:

9.5T-13.5T 200 - 250 (10000 -12500 rpm)

6.5T approx. 150 (>16667 rpm)

Modified 7T delta or 4T star 70-90 (>27778rpm)

Modified 6T delta or 3.5T star 70-60 (>35714rpm)

Never adjust a lower switching point rpm for modified motors. This would overheat the motor and the speed controller.

#32 Timing 1

Higher values will give more timing and a higher motor temperature.

Usefull values are for 10000-20000 rpm: 80-110

For higher rpms, the value must be lower. For modified the value of the timing 1 should be set at about 50 and the switching point rpm over 30000rpm.

#33 Timing 2

Similar to timing 1, but only active, if reserved = 72 = +60° timing is choosed.

Timing 1 will be active from 10000rpm to the switching point rpm

Timing 2 will be active over the switching point rpm.

This mode is mainly use for motors with >=13.5T.

#34 minimum Timing time

This function does limit the minimum timing time and will effect this will limit the max. rpm. This feature can be used to get a constant top speed and a cooler motor. Using this function keep the motor cooler at the beginning of the heat. Higher values will reduce the max. rpm more.

#35 fix Timing

The fix timing is adjustable between 0...30° for sensorless motor mode. For most motors 30° is used.

In sensed mode this value does reduce the standard motor timing of 30° to 0...30°.

#36 max. Timing

The max. timing does limit the additional timing to the max. timing. The motor temperatures can be optimized with the min timing time and the max. timing functions.

#37 Motor cut-off temperature

The speed controller does limit the motor current to the set value in program #39, when the cut-off temperature of the motor is reached. If the temperature increases another 10°C, the speed controller will cut-off the motor current until it cooled down again.

At temperatures over 110°C inside the motor, the warranty is lost. The absolute max. temperature will be stored and can not be reset.

#38 Current limit at over (cut-off) temperature

max. motor current limit between the cut-off temperature and the cut-off temperature +10°C.

#39 Time to full brake

The time factor to activate the full brake can be adjusted. So even with reduced full brake, after this time, the full brake will be active. Higher values will activate this function later.

This function makes it easy to stop the car in the box.

#40 correction factor for current limit

Never adjust this value! This is only to adjust the right current for the current limit at production.

Value without correction = 64.

#0 IDA system: setting the values using a PC (with USB and Windows 2000, XP, Vista):

A PC and software can be used with the IDA system to read out and / or program the speed controller data. The USB-driver and controller programming software (AS Genius Tool) can be downloaded at www.graupner.de product search: 7168.6.

Install first the USB-driver 5.4 or newer and second the PC-software 1.4 or newer.

The desired set-up values can then be selected using the mouse.

0 IDA system: sending and receiving DATA using a PC and USB port:

(no separate power source required!)

Disconnect the Genius speed controller from the power supply.

Download the appropriate USB driver for Order No. 7186.6 and install it on your PC.

Connect the USB adaptor, Order No. 7168.6, to a vacant USB port.

Install the AS Genius Tool PC software, start the program, Update the Ports, select the right port (COM) parameter, click on the port in use, and enable it.

Transferring speed controller data from and to the PC:

- 1.) If you click with the mouse on "Receive data", the PC software switches to "Waiting for data", and you can read out the data from the Genius speed controller using the following procedure:
- 2.) Connect the eight-pin interface plug to the appropriate socket on the controller. After a brief period the red LED lights up, indicating that the IDA program has started. If the red LED does not light up after a few seconds, hold the SET button on the controller pressed in, and briefly press the RESET button on the USB adaptor until the red LED flashes 6 x.
- 3.) After a short period the red LED will be on, and the data is sent.
- 4.) The LED lights up red and yellow once the controller has sent the data. The Genius controller now waits for data.
- 5.) If you now wish to transfer data to the controller from the PC, click on "Send data".
- 6.) Otherwise, i.e. if you only wish to read out the data from the controller, and do not need to program it using the PC, simply disconnect the interface plug from the controller.
- 7.) The green LED flashes once data has been received correctly from the PC. If the red LED flashes, the parity byte was wrong and the data is not stored. Disconnect the data lead and the speed controller is ready for use again next time you connect the power source. If the button function has been activated as the switch and switch on was not selected, then next time you use the speed controller, you must press the button to ensure that the controller is switched on.

Programming the supplementary functions with the SET button:

- 1) Disconnect the batteries from the controller, and switch the transmitter on if possible
- 2) Hold the SET button down and at the same time connect the drive battery/switch on the speed controller (for controllers without BEC connect the receiver power as well).
The SET button should be held down until the controller gives 6 short beeps and the red LED is flashing 6 times during the 6 beep sounds. Release the SET button during this period.
Now you're in the program selection mode. If you don't press the SET button again within the next 8 secs the controller will pass on into #0 IDA programming mode. (see #0 IDA system!)
- 3) Now press the SET button as often as corresponds to the desired program number. At every push on the button the controller will give one long beep. The LEDs will show you the new program number, see table.
- 4) About 8 secs after the last push on the button the controller will acknowledge the end of programming with 3 short beeps, the red LED will flash 3 x, and the yellow LED will be off.
- 5) Immediately thereafter the controller will indicate the start of the program with the given values, giving another 3 short beeps, with the red LED flashing 3 x and the yellow LED lighting.
- 6) The LEDs will show you the adjusted value. Now press the SET button until the desired value is reached. At every push on the button the controller will give 1 long beep, and the LEDs will show you the adjusted value.
- 7) About 8 secs after the last push on the button the controller will acknowledge the end of programming with 3 short beeps, the red LED will flash 3 x, and the yellow LED will be on.
Now you can start again at 3.) Otherwise disconnect the power!

#1-31 IDA system: setting the values using the SET-button: Programming example supplementary function: (f.e.: minimum brake = 30%)

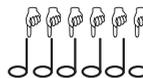
1. Disconnect the batteries from the controller, and switch the transmitter on if possible.
(Motor must be connected.)
Connect the programming wire to the PC or G/VI5-Commander and to the controller.

2. Hold the SET button down and at the same time connect the power to the controller (for controllers without BEC connect the receiver battery as well).
The SET button should be held down until the controller gives 6 short beeps and the red LED is flashing 6 times during the 6 beep sounds. Release the SET button during this period.

3. Now you're in the program selection mode. If you don't press the SET button again within the next 8 secs the controller will pass on into #0 IDA programming mode. (see #0 IDA system!)
Now press the SET button as often as corresponds to the desired program number. At every push on the button the controller will give one long beep, and the LEDs will show you the choosed value of the program number. see table.



SIGNAL LED



6x The LEDs show the number of the 6x wait approx. 8s!
red LED flashes 6x, program f. e. 6 = yellow and green on

4. About 8 secs after the last push on the button the controller will acknowledge the end of programming with 3 short beeps, the red LED will flash 3 x, and the yellow LED will be off. Immediately thereafter the controller will indicate the start of the value choice program with the given values, giving another 3 short beeps, with the red LED flashing 3 x and the yellow LED lighting.

5. The LEDs will show you the adjusted value. Now press the SET until the desired value.
At every push on the button the controller will give 1 long beep, and LEDs will show you the adjusted value. see table.

6. About 8 secs after the last push on the button the controller will acknowledge the end of programming with 3 short beeps, the red LED will flash 3 x.
Then you can start again at 3.



LED

3x red LED flashes 3x, yellow LED off



3x red LED flashes 3x, yellow LED on



Xx The LEDs show allway the adjusted value.

wait approx. 8s!



3x red LED flashes 3x, yellow LED on

value	LEDs on	Program	step	max. value
0	no	RS232- send datas to PC	/push button	
1	red	controller mode	1	9
2	green	switch on/off	1	6
3	green/red	powerkurve	1	15
4	yellow	timing	1	2
5	yellow/red	reserved	4	32
6	yellow/green	brake minimum	10%	10
7	yellow/green/red	brake maximum	10%	10
8	red	flashes slowly	full brake	10%
9	green	flashes slowly	max. reverse	10%
10	green/red	flashes slowly	automatic brake	10%
11	yellow	flashes slowly	automatic throttle	1
12	yellow/red	flashes slowly	current limit	10A
13	yellow/green	flashes slowly	Start current	10A
14	yellow/green/red	flashes slowly	turbo	1A
15	red	flashes normal	frequency	1
16	green	flashes normal	soft start	10
17	green/red	flashes normal	softbrake	10
18	yellow	flashes normal	voltage cut-off	10
19	yellow/red	flashes normal	switching point rpm	10
20	yellow/green	flashes normal	timing 1	10
21	yellow/green/red	flashes normal	timing 2	10
22	red	flashes fast	max. timing	2°
23	green	flashes fast	min. Timing time	2
24	green/red	flashes fast	reserved 1	1
25	yellow	flashes fast	reserved 2	1
26	yellow/red	flashes fast	speedo cut-off temperature	10°C
27	yellow/green	flashes fast	motor cut-off temperature	10°C
28	yellow/green/red	flashes fast	ABS	1
29	red	flashes very fast	fix timing	1°
30	green	flashes very fast	strength of brake new software	10
31	green/red	flashes very fast	factory reset	
32	yellow	flashes very fast	factory reset	
33	yellow/red	flashes very fast	factory reset	
34	yellow/green	flashes very fast	factory reset	
35	yellow/green/red	flashes very fast	factory reset	

#0 IDA-System Changing settings with the programmer box #7200 or #97160:

All important settings can be also done with the programmer boxes.

1.) Activate the used programmer box with the PC-Software at reserved1 and the telemetry functions, if you use the programmer box #7200. The factory settings are for the programmer box #97160, so nothing must be changed for this one.

2.) Connect the receiverwire with the right polarity to the plug of the Programmer Box.

3.) Push the set-button and hold it during the speed controller is switched on or connected to the power until the telemetry display is displayed in the programmer box.

4.) With the down and up buttons, the menu point can be changed forward and backwards.

5.) With the buttons left and right, the value can be decreased or increased.

6.) Now the next menu point can be choosen.

7.) With pushing the down and up buttons at the same time, the values will be stored in the speed controller and the speed controller goes back to the telemetry display.

If the mode is changed and the menu point is changed, the speed controller does automatically save the new mode and goes back to the telemetry display.

Display Telemetry data:

23°C 110A 000.0 = temperature speed controller, current, used mAh

25°C 6.6V 14453 = temperature motor, battery voltage, rpm

or

23°C 110A 4120.0 temperature speed controller, current, used mAh

25°C 6.6V 55=v temperature motor, battery voltage, velocity in km/h or meiles/h

next menu:

23°C 110A 4120.0 max. temperature speed controller, max. current, used mAh

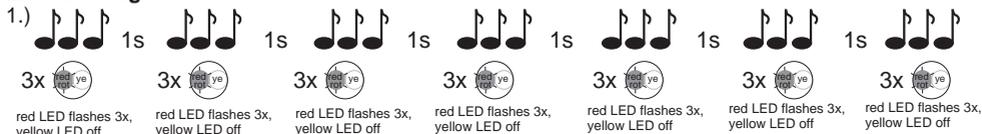
25°C 6.6V 14453 max. temperature motor, absolute max. input voltage, max. rpm

or

23°C 110A 4120.0 max. temperature speed controller, max. current, used mAh

25°C 6.6V 55=v max. temperature motor, absolute max. input voltage, max. velocity

Error messages:

1.) 
3x  1s  1s  1s  1s  1s  1s  1s

red LED flashes 3x, yellow LED off red LED flashes 3x, yellow LED off

Description of error:

If you hear a continuous beeping (repeated triple short beep) and / or the red LED flashes continuously when you connect the speed controller to the power supply, then either the motor is connected incorrectly or is not connected at all.

Eliminating the error: Check the motor connections, connect the motor correctly.

2.) 
1s  1s  1s  1s  1s  1s  1s  1s

Description of error:

If you hear a continuous beeping (single long beep) and the red LED flashes continuously, then the operating voltage is too high.

Eliminating the error:

Select the correct operating voltage for the operating mode, i.e. use a battery with the appropriate number of cells.

3.) Description of error:

The controller does not work at all.

Eliminating the error:

Operating voltage too low. Charge the flight battery and check that all connectors are making good contact.

If this does not solve the problem, send the controller to us for checking.

Technical specifications:

Designation:	Genius 75	Genius 90	Genius 120	Genius 150
Order-No.	97163	97164	97168	97169
Operation voltage [V]:	4.8-12	4.8-12	4.8-12	7.2-22.2
Number of cells Ni-MH, Ni-Cd:	4-10	4-10	4-10	6-12
Number of cells LiPo (LiFe):	2 - 3	2 - 3	2 - 3	2 (3) - 5 (6)
Continuous current (brushless m.)	75A	90A	120A	120A/150A* mounted direct on alloy chassis
Peak current 10sec	150A	200A	250A	250A
Pulse current at 25°C	400A	600A	800A	800A
Internal resistance at 20°C app.	0.0008	0.0005	0.0004	0.0004
Voltage drop @20A approx.	0.017V	0.01V	0.008V	0.008V
Temperature cut-off:	yes	yes	yes	yes
Low voltage run down:	yes	yes	yes	yes
BEC:	5,8V/short time 4A (all)			
Max. BEC Power loss:	2,5W			
Pulse frequency:	0,25/0,5/1/2/4/8/16/32 kc			
Dim [mm] with capacitor app.:	34x31x18	44x31x27	44x31x27	44x31x28 (with fan 57 x 44 x 40)
Weight without wires app.:	50g	60g	64g	65g
Weight with wires and conn. app.:	85g	95g	99g	100g + fan 30g

Accessories:

- 2894.3 Opto-coupler for galvanic separation for Genius and other BEC speedos with use of receiver pack
- 2894.4 Adapter cable for sensor (GM/LRP/Reedy motors) 11cm
- 7168.6 Interface USB cable PC (Windows XP or 2000) / Genius
- 2894.7 Receiver cable for Genius 75, 90, 120, 150 (servo cable) 20cm
- 2894.8 Adapter cable for sensor (GM EVO3/Dr. Speed/LRP/Reedy motors) 20cm
- 2894.9 Adapter cable for sensor (GM EVO2 IFMAR SPEC / Novak motors)
- 2894.10 Receiver cable for Genius 75, 90, 120, 150 (servo cable) 10cm
- 2894.12 R/C-Tester and GENIUS-Programmer for GENIUS-speed controller
- 2894.15 Receiver cable for Genius 75, 90, 120, 150 (servo cable) 5cm
- 7157.K Power Capacitor PCB-board for #97163
- 97168.T Adapter cable for sensor with telemetry cable (GM/LRP/Reedy motors) 11cm
- 97168.K Power Capacitor PCB-board 5x 470µF/16V for #97164, #97168
- 97169.K Power Capacitor PCB-board 5x 220µF/35V for #97169
- 2894.L fan for GENIUS speedos 30mm x 30mm x 6mm
- 2894.L40 fan for GENIUS speedos 40mm x 40mm x 10mm

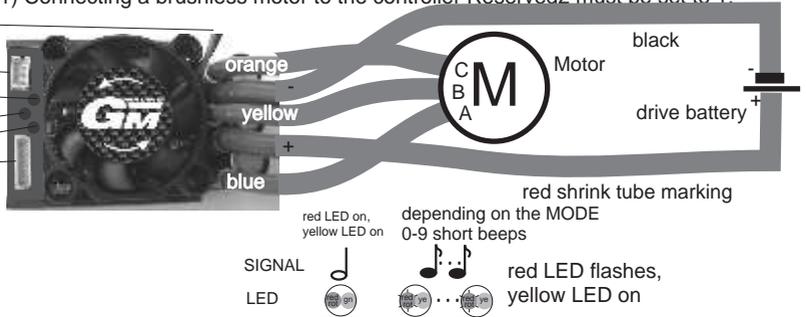
Short instruction overview:

Connecting the GENIUS-Controller to the motor:

(Motorconfiguration #1) Connecting a brushless motor to the controller Reserved2 must be set to 1.

fan: 5 - 6 V

- receiver wire
- LED yellow
- SET-button (ON-/OFF)
- LED red/green
- Programming plug and plug for hall sensors

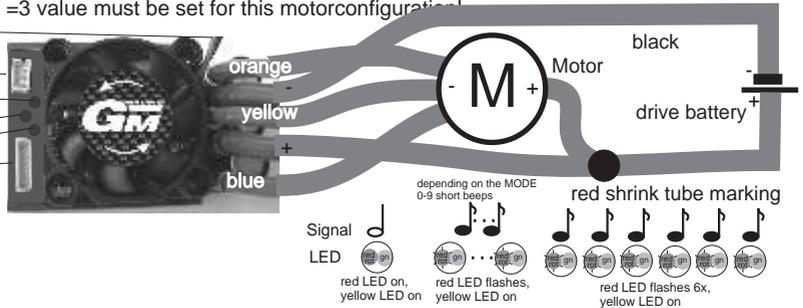


(Motorconfiguration #2): Connecting a brushed motor for the functions forward/Motor stop/(brake)

The right RESERVED2 = 3 value must be set for this motorconfiguration!

fan: 5 - 6 V

- receiver wire
- LED yellow
- SET-button (ON-/OFF)
- LED red/green
- Programming plug and plug for hall sensors



(Motorconfiguration #3) Connecting a brushed motor for the functions forward/Motor stop/brake/reverse

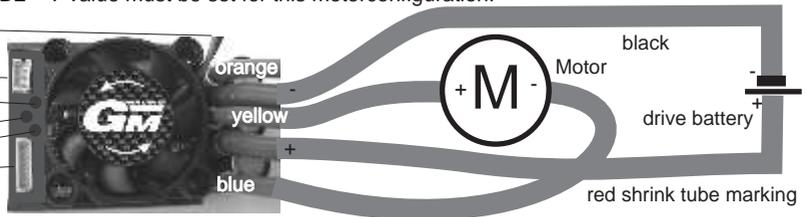
In this mode, only half the indicated permanent current drain is available.

In addition, only batteries of max. 7.4V may be connected in this mode!

The right RESERVED2 = 7 value must be set for this motorconfiguration!

fan: 5 - 6 V

- receiver wire
- LED yellow
- SET-button (ON-/OFF)
- LED red/green
- Programming plug and plug for hall sensors



(Motorconfiguration #4) Connecting a brushed motor for the functions forward/Motor stop/brake/reverse

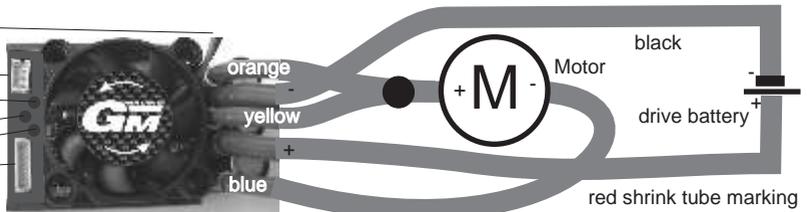
In this mode, only half the indicated permanent current drain is available.

In addition, only batteries of max. 7.4V may be connected in this mode!

The right RESERVED2=7 value must be set for this motorconfiguration!

fan: 5 - 6 V

- receiver wire
- LED yellow
- SET-button (ON-/OFF)
- LED red/green
- Programming plug and plug for hall sensors



Modus-Programmierung GENIUS:

Programming mode # 0 - 9 with SET-button and transmitter:

If the controller is to work properly then all the throttle functions should be set to normal (Futaba "REVERSE"), and travel to 100%.

The receiver pul width must be longer at full throttle compare to the neutral point. The values of the full throttle, neutral point and full brake position can be checked and adjusted with the PC-Software.

Important information:

Modes 2-8:

If reserved1 = 0, 4, 8, 12, 128, 132, 136 or 140, the transmitter ways will be learned together with the new mode.

Disable learning the transmitter ways:

If reserved1 = 130, 134, 138, 142, the transmitter ways will not be learned, only the mode will be changed.

The transmitter ways will be read out of the mode values from the EEPROM.

Mode 0:

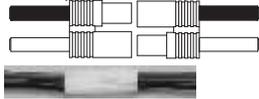
The programmed throttle way for Mode 0 will be used from the last Mode (>=2) programm settings or can be programmed with the PC-software. The transmitter ways in this mode can be changed with the PC software.

Mode 1:

The programmed full brake position for Mode 1 is used from the last mode setting or from the EEPROM values, if the transmitter learning process is disabled.

Programming mode #0-8 (4 + 5 is with reverse function others forward with brakes):

1. Switch on the transmitter and next connect/switch on the speed controller to the drive battery. (The motor must be connected to the speed controller)



2. Move the throttle stick to the "Neutral/Motor STOP" position



3. Press the SET-button for about 4s, until the red LED is on and you hear a long beep. After the beep the yellow LED will be on and you can program the throttle ways and the modes.



Depending on the mode 0-9 short beeps "Neutral=Motor STOP"

SIGNAL

LED



red LED flashes, yellow LED on



red LED on, yellow LED off

5. The Mode can be chosen by changing the throttle stick position.

Stay at neutral position = Mode 0, go to full throttle = Mode 1, go to full throttle - full brake = Mode 2,

go to full throttle - full brake - full throttle = Mode 3, and so on.

There is about 4s time for every stick position change. The LED will change the colour every change and you will hear the beeps for the actual mode.

If mode 1 is beeped at the full brake position, you have to reverse the transmitter throttle way.

(If you want to do a factory reset, push now the SET-button again, until you hear 3x short and 1 long beep.)

After the last mode change both LEDs will be off and then you will hear one long beep with red LED on and the confirmation beeps for the mode again. The speed controller is now ready to use again.

4s delay

1s delay

Mode 0

Mode 1

Mode 2

Mode 3

Mode x



"neutral=Motor off"

"full throttle"

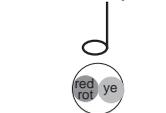
"full brake"

"full throttle"

"full ..."



red LED off, yellow LED on



red LED on, yellow LED on



0-9x

red LED flashes, yellow LED on

Declaration of Conformity

We hereby certify that the product designated in the following:

Order Nr:

97163 GM-GENIUS 75

97164 GM-GENIUS 90

97168 GM-GENIUS 120

97169 GM-GENIUS 150

complies with the essential safety requirements as laid down in the Outlines of the Council for the Adaptation of Legal Regulations for Electro-Magnetic Compatibility (2004/108/CE) and LVD (2006/95/CE) in its member states.

In assessing the electro-magnetic compatibility of this product the following norms have been applied:

EN 61000-6-1

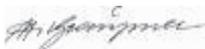
EN 61000-6-3

This declaration of responsibility has been issued in accordance with the producer/importer

Graupner GmbH & Co. KG

Henriettenstr. 94-96

73230 Kirchheim/Teck



by Managing Director

73230 Kirchheim/Teck signed on 12.03.2008

Signature

Environmental Protection Notes



When this product comes to the end of its useful life, you must not dispose of 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. The symbol shown here, which may be found on the product itself, in the operating instructions or on the packaging, indicates that this is the case.

Individual markings indicate which materials can be recycled and re-used. You can make an important contribution to the protection of our common environment by re-using the product, recycling the basic materials or recycling redundant equipment in other ways.

Remove batteries from your device and dispose of them at your local collection point for batteries.

In case of R/C models, you have to remove electronic parts like servos, receiver, or speed controller from the product in question, and these parts must be disposed of with a corresponding collection point for electrical scrap.

If you don't know the location of your nearest disposal centre, please enquire at your local council office.

**Manufacturer's declaration from Graupner GmbH & Co. KG,
Henriettenstr. 94 - 96, D-73230 Kirchheim / Teck, Germany**

Content of the manufacturer's declaration

If material defects or manufacturing faults should arise in a product distributed by us in the Federal Republic of Germany and purchased by a consumer (§ 13 BGB), we, Graupner GmbH & Co. KG, D-73230 Kirchheim/Teck, Germany, acknowledge the obligation to correct those defects within the limitations described below.

The consumer is not entitled to exploit this manufacturer's declaration if the failure in the usability of the product is due to natural wear, use under competition conditions, incompetent or improper use (including incorrect installation) or external influences.

This manufacturer's declaration does not affect the consumer's legal or contractual rights regarding defects arising from the purchase contract between the consumer and the vendor (dealer).

Extent of the guarantee

If a claim is made under guarantee, we undertake at our discretion to repair or replace the defective goods. We will not consider supplementary claims, especially for reimbursement of costs relating to the defect (e.g. installation / removal costs) and compensation for consequent damages unless they are allowed by statute. This does not affect claims based on legal regulations, especially according to product liability law.

Guarantee requirements

The purchaser is required to make the guarantee claim in writing, and must enclose original proof of purchase (e.g. invoice, receipt, delivery note) and this guarantee card. In the case of speed controllers the purchaser must also send us the motor used, and state the number of battery cells, so that we can investigate the cause of the defect. The purchaser must send the defective goods to us at his own cost, using the following address:

**Graupner GmbH & Co. KG, Service Department,
Henriettenstr. 94 - 96, D-73230 Kirchheim / Teck, Germany**

or UK: GLIDERS, Brunel Drive, Newark, Nottinghamshire, NG24 2EG, (+44) 16 36 63 05 39

The purchaser should state the material defect or manufacturing fault, or the symptoms of the fault, in as accurate a manner as possible, so that we can check if our guarantee obligation is applicable. The goods are transported from the consumer to us and from us to the consumer at the risk of the consumer.

Duration of validity

This declaration only applies to claims made to us during the claim period as stated in this declaration. The claim period is 24 months from the date of purchase of the product by the consumer from a dealer in the Federal Republic of Germany (purchase date). If a defect arises after the end of the claim period, or if the evidence or documents required according to this declaration in order to make the claim valid are not presented until after this period, then the consumer forfeits any rights or claims from this declaration.

Limitation by lapse of time

If we do not acknowledge the validity of a claim based on this declaration within the claim period, all claims based on this declaration are barred by the statute of limitations after six months from the time of implementation; however, this cannot occur before the end of the claim period.

Applicable law

This declaration, and the claims, rights and obligations arising from it, are based exclusively on the pertinent German Law, excluding the norms of international private law, and excluding UN retail law.

**Graupner GmbH & Co. KG,
Henriettenstr. 94 - 96, D-73230 Kirchheim / Teck, Germany**