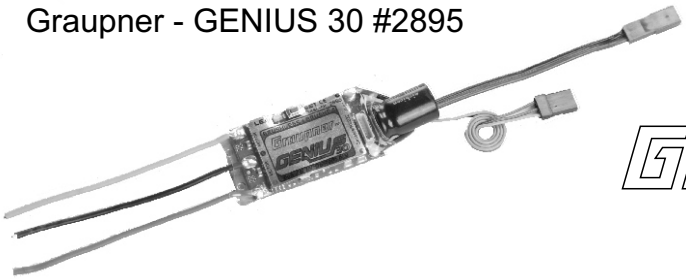
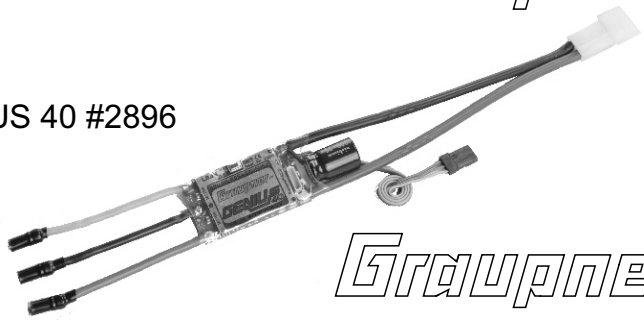
Instruction Manual

brushless + brushed

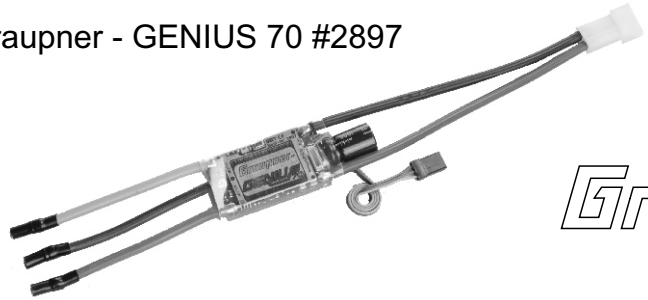
Graupner - GENIUS 30 #2895



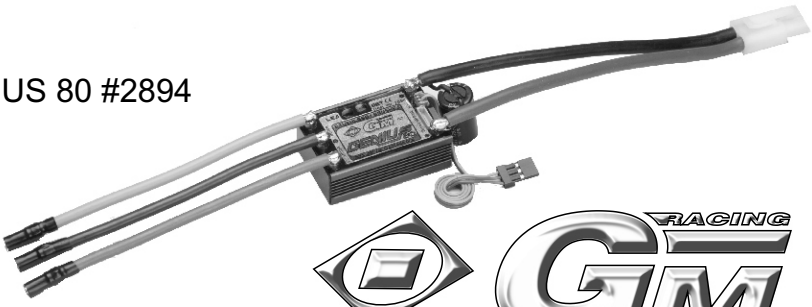
Graupner - GENIUS 40 #2896



Graupner - GENIUS 70 #2897



GM - GENIUS 80 #2894



- Congratulations for buying GM-Racing's Genius Controller for conventional 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. When you connect a brushless motor with Hall sensors made by GM-Racing the controller automatically reads out the positions of the Hall sensors on the first power impulse after connecting and thus makes its additional controlling sensitivity available. During our tests, however, the controller proved so sentitive that there appeared to be no need for using the more expensive sensor-equipped motors. 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.

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.

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 of its functions within seconds, either with or without the help of the GMVIS Commander 94401 (software version V2005 or later). With a few clicks you will be able to adapt the controller and thus the driving attitudes 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 LiPo batteries.
In modes 1-3, the controller automatically determines the tension of the drive battery after plugging it in, and then also automatically disconnects power when the tension drops below 5/8th of the start-up tension, so as to avoid a deep discharge of LiPo / LiIo, 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.
Further on the controller automatically determines on plugging-in whether a conventional or a brushless motor (sensor-equipped or not) has been connected.
Caution! When using a conventional (brush) motor in configuration #4 to make the reverse gear available, use only batteries up to 9.6V.

Main programmable functions:

- Mode 1 (forward, with brakes): motorized sailplane models (all models), with LiPo switch-off and revs limitation at 180.000 RPM on 2-pole motors
- Mode 2 (forward, no brakes available): motorized airplane models or racing boats with LiPo switch-off, RPM limitation at 120.000 RPM on 2-pole motors
- Mode 3 (forward, no brakes, RPM limitation): heli models with LiPo switch-off (this mode is available for brushless motors only!), RPM limitation at 180.000 RPM on 2-pole motors
- Mode 4 (forward with brakes, reverse available): motor car models, boats, trucks with LiPo switch-off for 2-cell-batteries, push button used as ON/OFF switch. RPM limitation at 180.000 RPM on 2-pole motors

For a detailed description of the factory settings see Main functions, pages 9 and following

Other features:

- Voltage control
- Powerful BEC system
- Digital power settings adaptation in mode #4
- Re-charging batteries while breaking
- Red and green LEDs for easy programming
- Over-temperature switch-off
- …

Supplementary programmable functions:

#1 Push-button ON/OFF switch for the controller
#2 Automatic brakes
#3 Max. brakes
#4 Slam brakes
#5 Max reverse speed
#6 ABS
#7 Automatic throttle
#8 Soft start-up
#9 Timing (only with brushless motors)
#10 Revs limitation (only with brushless motors)
(in mode 3 = heli mode: RPM control)
#11 Max current limitation
#12 Max start-up current limitation
#13 Turbo mode
#14 Power curves
#15 Min. brakes
#16 Reserved
#17 Frequency

Content:

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 OFF position to avoid any overload to the controller. Set the RPM limitation to 20 = 120.000 RPM or less, 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!

- 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 seperate 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 “STOP”.
- 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.

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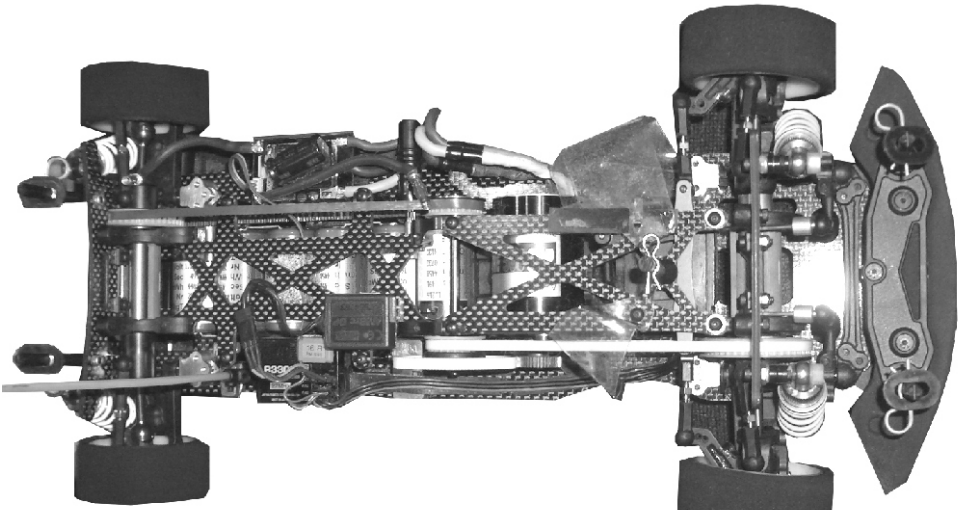
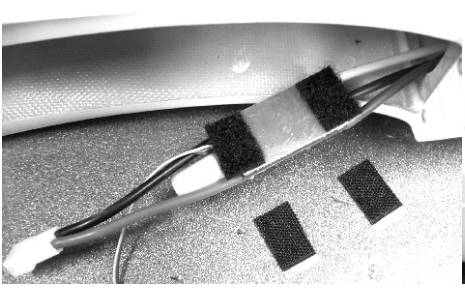
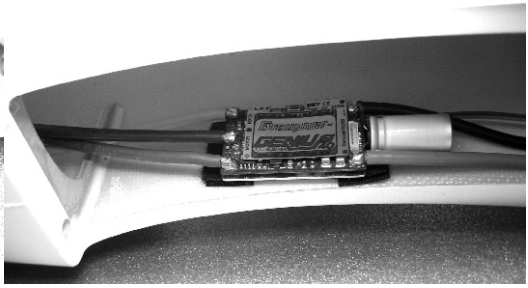
Installing the controller in the model:

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%.







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 Stop”, before connecting the drive battery!

Connecting a brushless motor to the controller (mode #1):

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 characteristiques 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, swap two connectors on the motor. Never swap the connectors on the battery!
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.

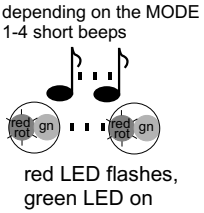
On motors with Hall sensors you can now insert the plugs of the sensors into the controller (red = 3V, black = GND, other colours = sensors 1-3). When using other products you should buy the corresponding adapters if desired. However, the sensors needn't be connected if you want the motor to run without sensor support.
At the first burst of throttle the positions of the sensors will be read automatically so that the motor will be started using the sensors on the second burst of throttle. After reaching a certain RPM level the motor automatically returns to sensorless commutation to achieve better timing and a higher efficiency. When the Hall sensors are connected, the LEDs show the positions of two sensors but don't work in the way as described later on in this documentation. Therefore we recommend disconnecting the sensors from the power supply before doing the programming.

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:

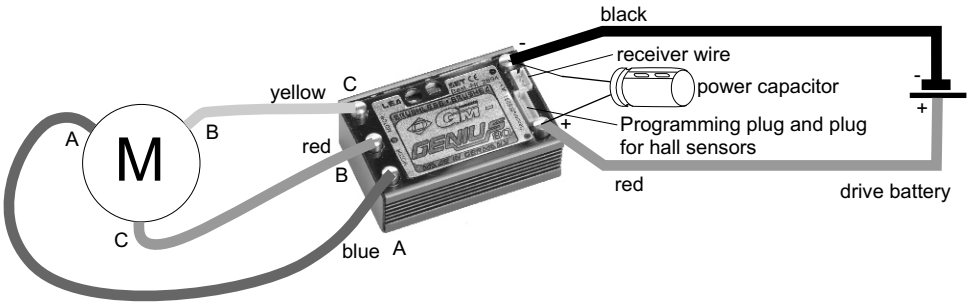
Connect the red battery cable to the drive battery (+).
Connect the black battery cable to the drive battery (-).

Signal
LED



red LED flashes,
green LED on

Connecting a brushless motor to the controller (Motorconfiguration #1)



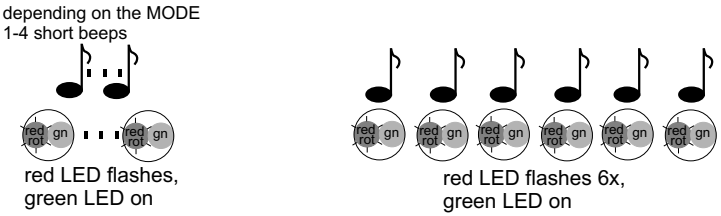
Connecting a conventional motor for the functions forward /motor stop/(brake) (motor mode #2)
In this mode, double the indicated permanent current drain is available since all the three terminal amplifier stages are in parallel use.

Connect or solder all three motor connectors A, B, and C of the controller to the motor input (-). Connect the motor input (+) directly to the (+) connector of the controller. In case your motor turns the wrong way round, swap the connectors on the motor. Never swap the connectors on the battery!
On switching the controller ON the controller determines the connector settings and adapts the software automatically to this motor mode so that all three terminal amplifier stages are in parallel use.
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.

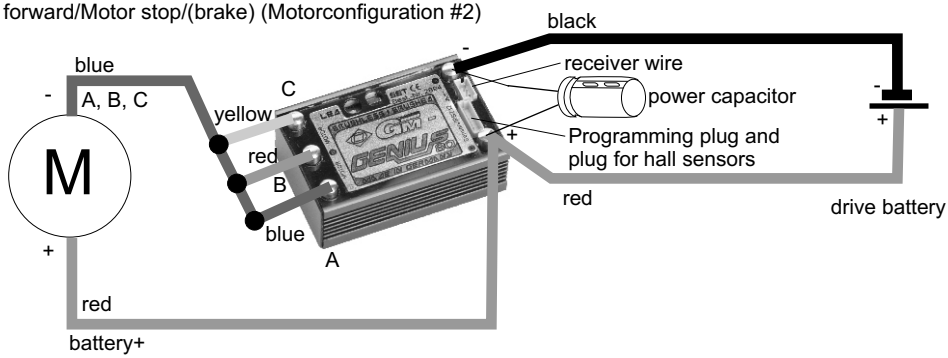
Connecting to the battery:
Use only high-quality batteries offered by Graupner Ltd or GM-Racing. Using batteries with an increased internal resistance may lead to the destruction of the controller!

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

Signal LED



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



Connecting a conventional motor for the functions forward / motor stop / brake / reverse (motor mode #3)
In this mode, only half the indicated permanent current drain is available. In addition, only batteries of max. 9.6V may be connected in this mode!

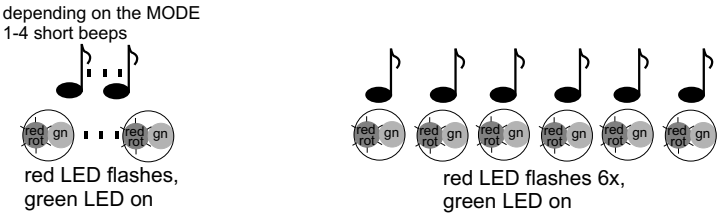
Connect or solder the outer blue motor connector A of the controller to the motor input (-). Connect the yellow (the other outer) motor connector C directly to the input (+) of the motor. The central connector isn't in use. In case your motor turns the wrong way round, swap the connectors on the motor. Never swap the connectors on the battery!
On switching the controller ON the controller determines the connector settings and adapts the software automatically to this motor configuration.

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.

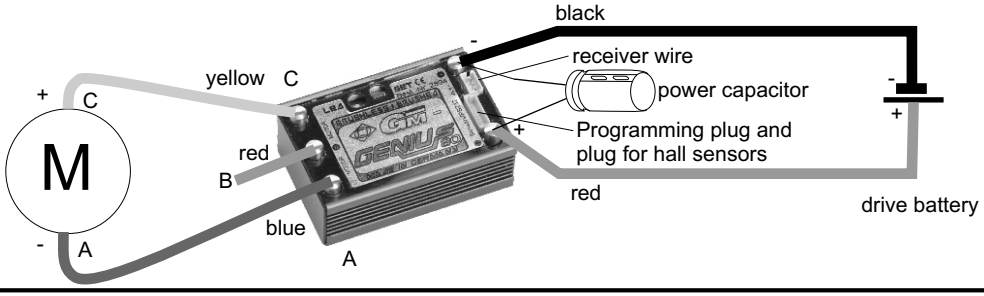
Connecting to the battery:
Use only high-quality batteries offered by Graupner Ltd or GM-Racing. Using batteries with an increased internal resistance may lead to the destruction of the controller!

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

Signal LED



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



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 shoud be set to normal, and travel to 100%.
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.

When Hall sensors are activated the LEDs show the positions of two Hall sensors and don't work as described later on in this manual. It is therefore recommended to disconnect the Hall sensors before connecting the power supply cables. Expert programmers, however, may programme the controller also without the help of the beeps.

The controller has pre-set stick travels. The factory setting is for model mode #1 (forward with brakes), and is suitable for all models using the LiPo 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 green LED when the stick is in position “motor stop / brake”
- the green LED in the “throttle control range”
- the red LED in the “full throttle range”
- no LED in the “brake control range”
- the red LED in the “slam brakes” position.

Adjusting the controller to the exact transmitter stick travel, and setting the main functions (modes 1-4):

In modes 1-3 the controller will, on switching on, determine the battery tension and calculate the low-tension switch-off value so that both values will be optimized for LiPo batteries as well as for NiCd or NiMH batteries.
Whenever the controller is being switched on it will give 1-4 short beeps according to which mode has been selected. At the same time the red LED will start to flash to acknowledge the model mode and the successful switch-on.
The controller will be fully switched on and activated as soon as the drive battery is connected and the transmitter stick is in position “motor on / brake”.
The soft start is programmed as from zero throttle to full throttle in one second. Timing: 15°

In mode 4 the motor will be governed down at a battery tension of less than 4V. This will ensure the max. possible acceleration without causing malfunctions of the receiver. The controller can be switched on or off using the SET button. It may also be switched off by holding th throttle stick in position “slam brake” for approx. 16 sec. You may thus switch the controller off without having to leave the drivers' box.

Whenever the controller is being switched on it will give 1-4 short beeps according to which mode has been selected. At the same time the red LED will start to flash to acknowledge the model mode and the successful switch-on.
The controller will be fully switched on only after the button was pressed, and activated when the transmitter stick is in position “motor stop / brake”
The soft start is programmed as from zero throttle to full throttle in 0.25 seconds. Timing: 30°
In this mode NiMH or NiCD batteries can be used without any restrictions, and also LiPo batteries of two cells.

- mode #1 (forward, with brakes): motor-powered sailplane models, (all models) with LiPo switch-off.
- mode #2 (forward, no brakes): motor airplanes models, racing boats with LiPo switch-off
- mode #3 (forward, no brakes, RPM controlling) for heli models with LiPo switch-off
- mode #4 (forward, with brakes, reverse) for car models, boats, trucks without LiPo cell number recognition, on / off button

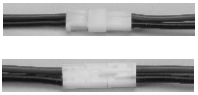
Programming mode #1 (forward, with brake):

1) Switch the transmitter on, connect the drive battery to the controller, and switch the latter on, if necessary, by pressing the SET button for a moment.
2) Set the throttle stick to the position “motor stop / neutral”.
3) Press the SET button for at least 4 secs until the controller beeps once and the red LED is on.
4) Stand by until the controller beeps twice and the red LED flashes twice and then goes out as soon as the green LED is on.
5) Push the transmitter stick to position “full throttle”, immediately thereafter back to position “full brake”. Leave it in position “full brake”.
If you want to reset the supplementary functions to their factory settings you should now press the SET button and hold it down until you hear the first beeps.
The programming process is finished when the controller gives one short beep (mode #1) and, after 2 secs, another short beep (controller is switched on in mode #1), and the red LED lights up shortly at every beep sound. You can now release the button, if you pushed it for a reset.
The functions are successfully reset if the controller gave 3 short and 1 long beeps (reset successful), and another short beep after 3 secs (controller is switched on in mode #1).

factory settings: timing 30°, softgas 1s, max. rpm. 180000U/min with 2 pole motor

Programming mode #1 (forward, with brake) f. e. for folding prop air planes:

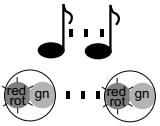
1. Switch on the transmitter and next connect/switch on the speed controller to the drive battery. (The motor must be connected to the speed controller)



SIGNAL

LED

Depending on the mode 1-4 short beeps

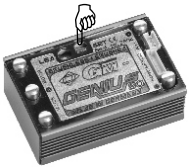


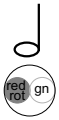
red LED flashes, green LED on

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

“Neutral=Motor STOP”

3. Press the SET-button for about 4s, until the red LED is on





red LED on, green LED off

4. Wait about 2s, until the red LED does flash 2x and until the green LED lit.

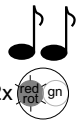
5. Within the next 4s move the transmitter stick to the position “full throttle” and immediately thereafter to the position “full brake” and leave it at the position “full brake”, until you hear the beeps for Mode 1.

“full throttle”

“full brake”

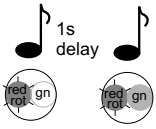
SIGNAL

LED



red LED flashes, green LED off

red LED off, green LED on



red LED flashes, green LED off

red LED flashes, green LED on

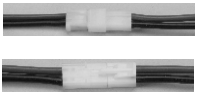
Programming mode #2 (forward, no brake):

1) Switch the transmitter on, connect the drive battery to the controller, and switch the latter on, if necessary, by pressing the SET button for a moment.
2) Set the throttle stick to the position “motor stop / neutral”.
3) Press the SET button for at least 4 secs until the controller beeps once and the red LED is lit.
4) Stand by until the controller beeps twice and the red LED flashes twice and then goes out as soon as the green LED is lit.
5) Push the transmitter stick to position “full throttle” and leave it in position “full throttle”.
If you want to reset the supplementary functions to their factory settings you should now press the SET button and hold it down until you hear the first beeps. Then you should immediately release the SET button.
The programming process is finished when the controller gives two short beeps (mode #2) and, after 2 secs, another 2 short beeps (controller is switched on in mode #2), and the red LED lights up shortly at every beep sound.
The functions are successfully reset after the controller gave 3 short and 1 long beeps (reset successful), and another 2 short beeps after 3 secs (controller is switched on in mode #2).

factory settings: timing 30°, softgas 1s, max. rpm 120000U/min with 2 pole motor

Programming mode #2 (forward without brake) motorplanes:

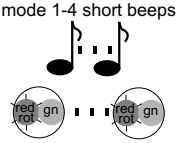
1. Switch on the transmitter and next connect/switch on the speed controller to the drive battery. (The motor must be connected to the speed controller)



SIGNAL

LED

Depending on the mode 1-4 short beeps

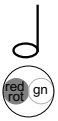


red LED flashes, green LED on

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

“Neutral=Motor STOP”

3. Press the SET-button for about 4s, until the red LED is on



red LED on, green LED off

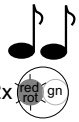
4. Wait about 2s, until the red LED does flash 2x and until the green LED lit.

5. Within the next 4s move the transmitter stick to the position “full throttle” and leave it at the position “full throttle”, until you hear the beeps for Mode 2.

“full throttle”

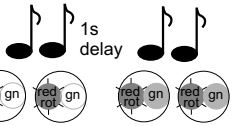
SIGNAL

LED



red LED flashes, green LED off

red LED off, green LED on



red LED flashes, green LED off

red LED flashes, green LED on

Programming mode #3 (forward, no brake, with RPM regulation): HELI MODE

In this mode, you should absolutely use a channel - being independent of the gas/pitch mixing - with connected sliding or rotary potentiometer (in the following called stick), for the setting of the constantly kept rpm.

1) Switch the transmitter on, connect the drive battery to the controller, and switch the latter on, if necessary, by pressing the SET button for a moment.

2) Set the throttle stick to the position “motor stop / neutral”.

3) Press the SET button for at least 4 secs until the controller beeps once and the red LED is lit.

4) Stand by until the controller beeps twice and the red LED flashes twice and then goes out as soon as the green LED is lit.

5) Push the transmitter stick to position “full throttle”, then immediately back to “neutral”, and immediately thereafter to “full throttle”. Leave it in position “full throttle”.

If you want to reset the supplementary functions to their factory settings you should now press the SET button and hold it down until you hear the first beeps. Then you should immediately release the SET button.

Programming of the stick travel is finished when the controller gives three short beeps (mode #3) and, after 2 secs, another 3 short beeps (controller is switched on in mode #3), and the red LED lights up shortly at every beep sound.

The functions are successfully reset after the controller gave 3 short and 1 long beeps (reset successful), and another 3 short beeps after 3 secs (controller is switched on in mode #3).

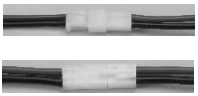
After programming the stick travel the desired max RPMs should now be entered.
To do this, set the transmitter stick to position “motor stop” to activate the controller. Then push the stick slowly forward until the desired max RPM is reached. Now set the stick back again to position “motor stop”. After the motor has stopped running the max RPM ± 10% will be stored. This will be acknowledged by 3 short beeps while the red LED is flashing three times.
The programming is now done and you can fly your heli using an RPM control of 50-100%. Below this RPM range, the controller works in manual mode.

If you should not find the max RPMs to be according to your wishes just repeat the whole programming process, or enter your max RPMs using the supplementary functions.

factory settings: timing 15°, softgas 0,2s, max. rpm 180000U/min with 2 pole motor

Programming Mode #3 (forward, no brake, with rpm regulation) HELI MODE:

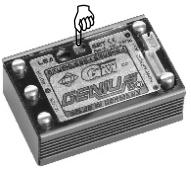
1. Switch on the transmitter and next connect/switch on the speed controller to the drive battery. (The motor must be connected to the speed controller)



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

"Neutral=Motor STOP"

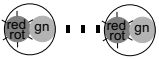
3. Press the SET-button for about 4s, until the red LED is on



SIGNAL

LED

Depending on the mode 1-4 short beeps



red LED flashes, green LED on

red LED on, green LED off

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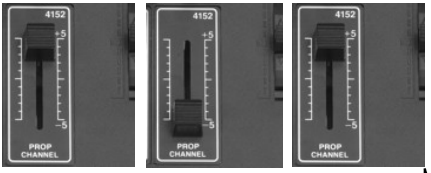
4. Wait about 2s, until the red LED does flash 2x and until the green LED lit.

5. Within the next 4s move the transmitter stick to the position "full throttle" and immediately thereafter to the position "motor stop" immediately thereafter to the position "full throttle" again and leave it at the position "full throttle", until you hear the beeps for Mode 3.



"full throttle" "Neutral=Motor STOP" "full throttle"

SIGNAL

LED

2x 

red LED flashes, green LED off

red LED off, green LED on

1s delay

3x 

red LED flashes, green LED off

3x 

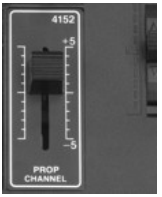
red LED flashes, green LED on

---

6. Move the transmitter stick to position "motor stop" to activate the controller

"Neutral=Motor STOP"

7. Move the stick slowly forward until the desired max RPM is reached



"Throttle for the desired max. rpm"

8. Move the transmitter stick to the position "Neutral"

"Neutral=Motor STOP"

SIGNAL

LED

3x 

red LED flashes, green LED on

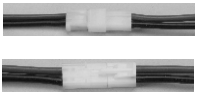
Programming mode #4 (forward, with brakes and reverse): CAR/BOAT MODE

1) Switch the transmitter on, connect the drive battery to the controller, and switch the latter on, if necessary, by pressing the SET button for a moment.
2) Set the throttle stick to the position “motor stop / zero”.
3) Press the SET button for at least 4 secs until the controller beeps and the red LED is lit.
4) Stand by until the controller beeps twice and the red LED flashes twice and then goes out as soon as the green LED is lit.
5) Push the transmitter stick to position “full throttle” and then immediately back to position “full brake” and immediately again to “full throttle” and again to “full brake” and leave it in that position.
If you want to reset the supplementary functions to their factory settings you should now press the SET button and hold it down until you hear the first beeps. Then you should immediately release the SET button.
The programming process is finished when the controller gives four short beeps (mode #4), and the red LED flashes at every beep sound.
After switching on the controller with the SET button it will give 4 short beeps to acknowledge mode #4 and ready for use.
The functions are successfully reset after the controller gave 3 short and 1 long beeps (reset successful), and another 4 short beeps after 3 secs (controller is switched on in mode #4).

factory settings: timing 30°, Softanlauf ca. 68ms, max. rpm 180000U/min with 2 pole motor, SWITCH =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

Programming Mode #4 (forward with brake and reverse) Car/Boat:

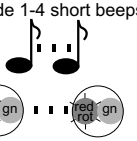
1. Switch on the transmitter and next connect/switch on the speed controller to the drive battery. (The motor must be connected to the speed controller)



SIGNAL

LED

Depending on the mode 1-4 short beeps

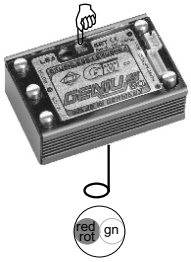


red LED flashes, green LED on

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

“Neutral=Motor STOP”

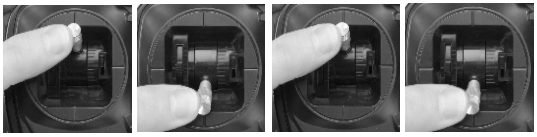
3. Press the SET-button for about 4s, until the red LED is on



red LED on, green LED off

4. Wait about 2s, until the red LED does flashes 2x and until the green LED lit.

5. Within the next 4s move the transmitter stick to the position “full throttle” and immediately thereafter to the position “full brake” and immediately thereafter again to the to the position “full throttle” and immediately thereafter again to the position “full brake” and leave it at the position “full brake”, until you hear the beeps for Mode 4.



“full throttle” “full brake” “full throttle” “full brake”

SIGNAL

LED

2x

red LED flashes, green LED off

red LED off, green LED on

1s delay

4x

red LED flashes, green LED off

4x

red LED flashes, green LED on

Activating reverse gear / changing into reverse gear

Both a fully proportional brake and a fully proportional reverse gear are available in mode #4.
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.

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.

Supplementary functions:

All supplementary functions can be adjusted using the SET button, or with the GMVIS-Commander, software version V2001-V2004 or higher or with a PC with RS232. The GMVIS-Commander V2001-V2004, however, doesn't allow for all functions to be set.
The following supplementary functions are available:

#0 IDA system
#1 Push-button SWITCH-ON/OFF for the controller
#2 AUTOBRAKE
#3 BRAKEMAX
#4 FULLBRAKE
#5 MAXREVERSE
#6 ABS
#7 AUTOGAS
#8 SOFTANLAUF (Soft start-up)
#9 TIMING
#10 RPM limitation (in mode #4 = Heli mode: RPM control)
#11 Max current limitation
#12 Max start-up current limitation
#13 Turbo mode
#14 Power curve
#15 Min brakes
#16 Reserved
#17 Frequency

#1 SWITCH ON/OFF button for the controller

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.
0 = Controller is always switched on (factory setting in modes 1-3)
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 (factory setting in mode #4)
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

#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.

Factory setting: 0%, recommended values 0-30%

#3 BRAKEMAX (max. braking action)

Brakemax is the braking action which is applied shortly before the red LED is lit. This function allows to avoid overbraking / blocking the wheels
The max. braking action within the controllable range is adjustable from 0-100%
After programming the max. braking action with the SET button the Brakemax value will be set equal to the max. braking action so as to avoid unwanted overbraking also in the slam brake range (red LED on). If a different value is desired for Brakemax it may be programmed after the max. braking action or by using the GMVIS-Commander.

Factory setting: 100%, recommended values for car models 70-80%

#4 FULLBRAKE (slam brake)

The desired braking action in the throttle position FULLBRAKE can be adjusted seperately 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”.
The FULLBRAKE function must be programmed after the BRAKEMAX function, or by using the GMVIS-Commander, or else the max. braking action will be equal to the FULLBRAKE value.
FULLBRAKE is also adjustable from 0-100%.

Factory setting: 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.

Factory setting: 100%, 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 = 4% to 5 = 20%

#8 SOFTANLAUF (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.

0 = run-up time 2 sec
1 = run-up time 1 sec (factory setting in modes #1-3)
2 = run-up time .7 sec
3 = run-up time .5 sec
4 = run-up time .4 sec
5 = run-up time .34 sec
6 = run-up time .3 sec
7 = run-up time .25 sec
8 = run-up time .22 sec
9 = run-up time .2 sec
10 with GMVIS-Commander run-up time .18 sec, with SET button = 30: run-up time 68 ms
(factory setting in mode #4 = 68ms)
Only with GMVIS-Commander:
…
20 = run-up time .1 sec
…
30 = run-up time 68 ms
…
50 = run-up time 40 ms
…
100 = run-up time 20 ms
…
200 = run-up time 10 ms

#9 TIMING (0-4) (only with conventional motors!)

If you want to achieve the maximum efficiency you should adjust the timing.
In most cases the factory setting will achieve best efficiency.
A timing of 30° is recommended when run-up problems are being encountered.

0 = 0° timing
1 = 7.5° timing
2 = 15° timing (factory setting in mode #3)
4 = 30° timing (factory setting in modes #1-2, 4)

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

In modes #1,2 and 4 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.
In mode #3 (heli mode) the motor speed can be controlled between 50% of the pre-set RPM-limit and the selected speed limit. Below this 50%-limit the controller acts like a controller without any RPM limitation. 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 12.000 RPM (on a 2-pole motor) or less since 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
With the SET button you can program 11 different motor speeds.

Value as set with the SET - button	2-pole rpm	4-pole rpm	8-pole rpm	10-pole rpm	14-pole rpm	16-pole motor rpm
0 (Werkseinstellung)	210 000	105 000	52 000	42 000	30 000	26 000
1	160 000	80 000	40 000	32 000	23 000	20 000
2	120 000	60 000	30 000	24 000	17 000	15 000
3	90 000	45 000	22 500	18 000	13 000	11 250
4	70 000	35 000	17 500	14 000	10 000	8 750
5	50 000	25 000	12 500	10 000	7 000	6 250
6	40 000	20 000	10 000	8 000	5 700	5 000
7	30 000	15 000	7 500	6 000	4 300	3 750
8(ROAR-Sportsman)	24 000	12 000	6 000	4 800	3 400	3 000
9	17 500	8 750	4 375	3 500	2 500	2 200
10	12 500	6 250	3 125	2 500	1 800	1 500

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

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

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

ROAR-Sportsman = 92 = 24 000rpm

#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.

Factory setting: 200 A, 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.

Factory setting: 200 A, 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)

Factory setting: 5 A, 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 (0-2)

This function allows you to select three different throttle curves so as to optimally adjust the controller's behaviour to the route and your driving attitudes.

0 = linear
1 = soft (similar to exponential '-' on the transmitter)
2 = hard, for the standard classes (similar to exponential '+' on the transmitter)

Factory setting: 1 = soft

#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.

Factory setting: 0%, recommended values: 0-50 %

Example: If you set MINBRK to 30% you'll have 30% of the breaking 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

(reserved for a potential new function in the future)

#17 FREQUENCY

0 = 8 kc
1 = 8 kc, with adjustable current drain limitation
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”.

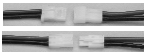
Factory setting: 1 = 8 kc, with adjustable current drain limitation
recommended values for the current limitation: 60-200 A

Programming the supplementary functions with the SET button:

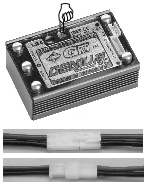
1) Disconnect the batteries from the controller, and switch the transmitter on if possible
2) Hold the SET button down and at the same time connect the drive battery to the controller (for controllers without BEC connect the receiver battery as well).
   The SET button should be held down until the controller gives 6 short beeps and the green LED is lit, 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 4 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, and the red LED will flash see table.
4) About 4 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 green 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 green LED lighting.
6) Now press the SET button as often as corresponds to the desired value. At every push on the button the controller will give 1 long beep, and the red LED will flash for a longer period.
   (value 0 = push 0 x, value 1 = push 1 x, value 2 = push 2 x, …)
7) About 4 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 green LED will be off.
   Then the controller will return to normal. Done!

Programming example supplementary function: (f.e.: Soft start #8 run up time 0,5s = 3)

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 GMVIS-Commander and to the controller.



2. Hold the SET button down and at the same time connect the drive battery 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 green LED is lit, 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 4 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 red LED will flash see table.

wait approx. 4s!

SIGNAL LED

6x red LED flashes, green LED on

red LED off, green LED on

8x red LED flashes 8x, green LED on

red LED off, green LED on

4. About 4 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 green LED will be off.
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 green LED lighting.

5. Now press the SET button as often as corresponds to the desired value. At every push on the button the controller will give 1 long beep, and the red LED will flash for a longer period.

6. About 4 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 green LED will be off. Then the controller will return to normal. Done!

wait approx. 4s!

SIGNAL LED

3x red LED flashes 3x, green LED off

3x red LED flashes 3x, green LED on

3x red LED flashes 3x, green LED on

red LED off, green LED on

3x red LED flashes 3x, green LED off

Program table, when programming the supplementary functions with the SET-button:

PROGRAM NUMBER	VALUE 0	VALUE 1	VALUE 2	VALUE 3	VALUE 4	VALUE 5	VALUE 6	VALUE 7	VALUE 8	VALUE 9	VALUE 10
#0 IDA-System	IDA-System	-	-	-	-	-	-	-	-	-	-
#1 SWITCH	Controller always ON	Controller with SET-button ON/OFF	Controller ON after plug in, but can be switched OFF with SET-button	-	Controller can be Switched OFF with SET-button or with 16s "full brake"	Controller ON/OFF wth SET-Button or wth 16s "full brake"	Controller ON after plug in, but can be switched OFF with SET-Button or 16s "full brake"	=6	=6	=6	=6
#2 AUTOBRK	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
#3 BRAKEMAX	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
#4 FULLBRAKE	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
#5 MAXREVERSE	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
#6 ABS	OFF	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
#7 AUTOGAS	0	1	2	3	4	5	6	7	8	9	10
#8 SOFTGAS	2s	1s	0,7s	0,5s	0,4s	0,34s	0,3s	0,25s	0,22s	0,2s	68ms
#9 TIMING	0°	7,5°	15°	30°	30°	30°	30°	30°	30°	30°	30°
#10 RPMLIMIT	210000 rpm 2 pole motor	160000	120000	90000	70000	50000	40000	30000	25000	17500	12500
#11 AMP LIMIT	40A	50A	60A	70A	80A	90A	100A	110A	120A	130A	140A
#12 START AMP	40A	50A	60A	70A	80A	90A	100A	110A	120A	130A	140A
#13 TURBO	0A	1A	2A	3A	4A	5A	6A	7A	8A	9A	9A
#14 POWERKURVE	LINEAR	SOFT	HARD	HARD	HARD	HARD	HARD	HARD	HARD	HARD	HARD
#15 BRAKEMIN	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
#16 RESERVED	-	-	-	-	-	-	-	-	-	-	-
#17 FREQUENCY	8kc with fixed current limit	8kc with adjustable current limit									

#0 IDA system Programming the values with the GMVIS-Commander

With the help of the IDA system the controller's data can be reported and/or alternatively programmed using the GMVIS-Commander 94401 versions V2005 or higher.
Select the menu PROGRAM by pressing the right arrow key on the GMVIS-Commander.
With the arrow up / down keys you may select the subordinate menus.
Pressing the MODE key leads to the setup mode in which the desired values can be entered. On pressing the START / STOP key all data will be stored and transferred. They will be exported anew on every push on the START / STOP key.
After pressing the Timer key, data can be received within the next 30 secs.

#0 IDA system (RS232) Transmitting data and receiving:

Disconnect the GMVIS-Commander from the power source and switch the Genius controller off.
Connect the RS232 interface cable Order № 2894.5 to the Genius controller. The brown cable should point to the right side of the GMVIS-Commander!
Now plug the recommended power source (12-24V) into the IN-socket of the GMVIS-Commander.
Set the GMVIS-Commander 94401 to programming mode as described above.

<u>Transmitting the controller data to and from the GMVIS-Commander:</u>

When the GMVIS-Commander is in the programming mode the Genius controller's data can be read out as follows:

1) Press the TIMER key on the GMVIS-Commander.
2) The following symbols should now appear in the first line of the display: RD? (=read data)
   If RD? fails to appear then stop the procedure using the START / STOP key and press the TIMER key again until RD? or RD? 000 or any other value bigger than 251 will turn up.
   In case you don't want to read out data from the controller then press the START / STOP key, or simply don't call up the RD?-mode at all.
3) Now press the SET button of your Genius controller while you're switching it on, and release it while the red LED is flashing 3 x and the controller gives 3 short beeps. (green LED being lit.) (see also Programming of the supplementary functions in programming mode 0#.)
4) After about 4 secs the red LED will flash 3 x, and the controller will give 3 short beeps (green LED off). Immediately after this, the red LED will flash 3 x, and the controller will give 3 short beeps (green LED on).
5) Now the green LED is off while the red LED is flickering a little. In this period of time the data of the Genius controller are being sent to the GMVIS-Commander.
   If you wish to transmit data to the GMVIS-Commander it must be in the RD? mode. The received data will be shown for a moment on-screen while transmitting, e.g. RD? 100.
   The RD? mode can be interrupted before the transmission of the data with the START / STOP key. This may be useful if you don't want to apply data first, but want to transmit the data stored in the GMVIS-Commander directly.
6) After the controller has finished transmitting the green LED will be lit. The Genius controller is now waiting for data to be sent.
7) For transmission of the data stored in the GMVIS-Commander press the START / STOP key on the GMVIS-Commander.
8) Otherwise, if you only wish to read out the data from the controller but don't want to programme it again with the GMVIS-Commander, shortly press down the SET-button on the Genius controller.
9) After receiving the data from the GMVIS-Commander or after pressing the SET-button on the controller the red LED will flash 3 x, and the controller will give 3 short beeps and will be ready for use after disconnecting the RS232 cable.

#0 IDA system Programming the values with the PC

With the help of the IDA system the controller's data can be reported and/or alternatively programmed using the PC with RS-232.
The software for the PC can be downloaded at www.gm-racing.de in the download section.
Choose the used RS-232 COM1-COM4 and Enable the COM 1-4.
With the mouse, you can adjust the wished values.

#0 IDA system (RS232) Transmitting data and receiving with the PC:

Disconnect the GMVIS-Commander from the power source and switch the Genius controller off. Connect the RS232 interface cable Order № 2894.6 to the Genius controller and the wished COM1-COM4. Choose the used RS-232 COM1-COM4 and Enable the COM 1-4.
With the mouse, you can adjust the wished values.

Transmitting the controller data to and from the GMVIS-Commander:

To read the GENIUS values, click on the GET DATA button with the PC mouse.
1.) Now press the SET button of your Genius controller while you're switching it on, and release it while the red LED is flashing 3 x and the controller gives 3 short beeps. (green LED being lit.) (see also Programming of the supplementary functions in programming mode 0#.)

2) After about 4 secs the red LED will flash 3 x, and the controller will give 3 short beeps (green LED off). Immediately after this, the red LED will flash 3 x, and the controller will give 3 short beeps (green LED on).

3) Now the green and red LED is off. In this period of time the data of the Genius controller are being sent to the PC. If you wish to transmit data to the PC, it must be in the GET DATA mode. With CANCEL you can leave the GET DATA mode, if you don’t want to read the values from the controller. Some PCs can not read the DATAS with the RS232 interface cable Order No. 2894.6. In this case you can only send the datas.

4) After the controller has finished transmitting the green LED will be lit. The Genius controller is now waiting for data to be sent.

5) For transmission of the datas click on the SEND DATA button.

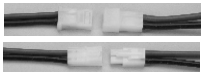
6) Otherwise, if you only wish to read out the data from the controller but don't want to programme it again with the PC press down the SET-button on the Genius controller.

7) After receiving the data from the GMVIS-Commander or after pressing the SET key on the controller the red LED will flash 3 x, and the controller will give 3 short beeps and will be ready for use after disconnecting the RS232 cable.

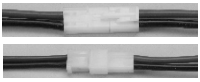
Programming overview IDA-System, supplementary functions:

Programming with IDA-System:

1. Disconnect the drive battery from the controller and switch on the transmitter, if possible. (Motor must be connected) Connect the programing wire to the programming plug and to the PC or GMVIS-commander as described at page 22, 23.

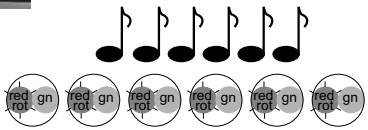


2. Hold the SET-button down and at the same time connect the drive battery to the controller. The SET-button should be held down, until the controller does start to show 6x red LED flashes (green LED on) and at the same time 6 short beeps. During the controller does show the signal, release the SET-button.



SIGNAL

LED



red LED flashes 6x,
green LED on

---

3. Now you are in the program selection mode.
Don't press the SET-button to ENTER the IDA-System.

4. After waiting approx. 4s the red LED will flash 3x (green LED off)

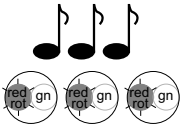
5. The green and red LED is now off. In this time the controller does send the datas to the GMVIS-Commander or PC. If you want to read this datas out, the PC or the GMVIS-Commander must be in the DATA receive mode.

SIGNAL

LED

wait 4s!

red LED off,
green LED on



red LED flashes 3x,
green LED off

red LED off,
green LED off

---

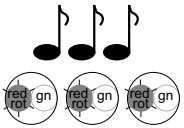
6. The controller does wait for datas, if the green LED is on,
If you want to send the Datas from the PC or GMVIS-Commander to the controller, start the Data transmission now.
Otherwise push the SET-button to leave the IDA-System.

7. After receiving the datas or after pushing the SET-button, the controller will show the program end with 3 red LED flashes. Disconnect the programming plug now.
The BEC-System can be switched-off after programming.
In this case switch on the controller by prushing the SET-button.
The controller will now work normally.

SIGNAL

LED

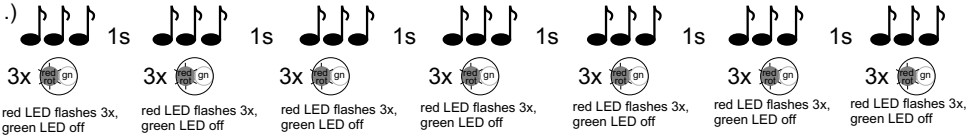
red LED off,
green LED on



red LED flashes 3x,
green LED off

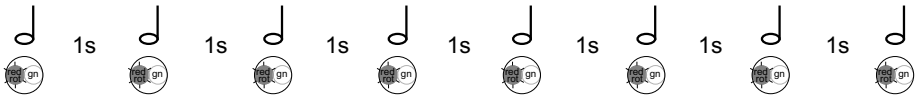
Error messages:

1.)



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.)



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 80	Genius 30	Genius 40	Genius 70
Order №	2894	2895	2896	2897
Operation voltage [V]	7.2-12	7.2-14.8	7.2-14.8(*19.2)	7.2-14.8(*19.2)
Number of cells NiMH, NiCd	6-10	6-12	6-12 (*16)	6-12 (*16)
Number of cells LiPo	2-3	2-4	2-4 (*5)	2-4 (+5)
Continuous current (brushless)	80A	30A	40A	70A
Peak current 10 sec	160A	60A	80A	140A
Pulse current at 25°C	300A	90A	150A	300A
Internal resistance at 20°C app.	.001	.004	.003	.0015
Voltage drop at 20A approx.	.02V	.008V	.06V	.03V
Temperature switch-off	yes	yes	yes	yes
Low voltage run down	Yes	Yes	Yes	Yes
Low voltage cut-off: in modes #1-3 (all)				
Reverse gear: in mode #4 (all)				
BEC	5.8V/short 4A	5.5V/short 4A	5.5V/short 4A	5.5V/short 4A
Max BEC power loss	2.5W	2,5W	2.5W	2.5W
Pulse frequency	8kc	8kc	8kc	8kc
Dim [mm] without capacitor	48x 31x15	55x27x10	50x27x10	50x27x15
Dim [mm] with capacitor	optional	70x27x13	70x27x13	70x27x15
Weight without connectors app.	50g	18g	18g	33g
Weight with connector cables	90g	28g	45g	70g

* with opto-coupler 2894.3 and 4-cells receiver battery

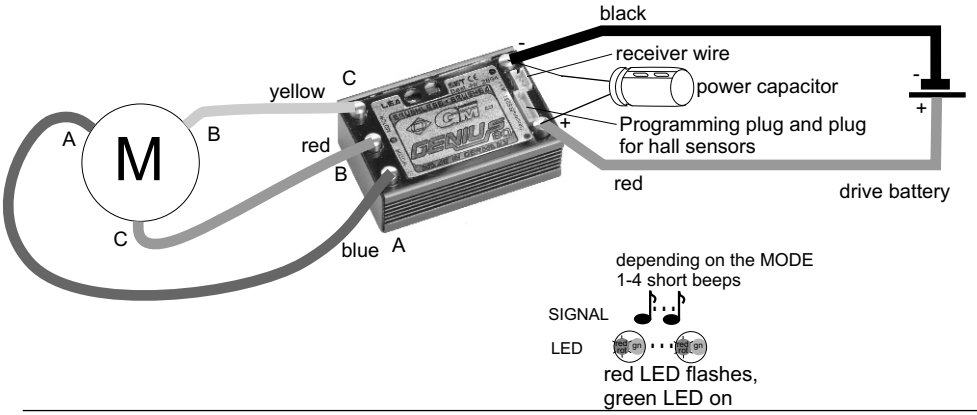
Accessories:

2894.1 Spare sticker Genius 80
2894.2 Spare body Genius 80
2894.3 Opto-coupler for galvanic separation for Genius and other BEC controllers
2894.4 Adapter cable for sensor (Novak/Reedy - motors)
2894.5 Interface cables GMVIS-Commander / Genius
2894.6 Interface cable PC / Genius
2894.7 Receiver cable for Genius 80 (Servo cable)

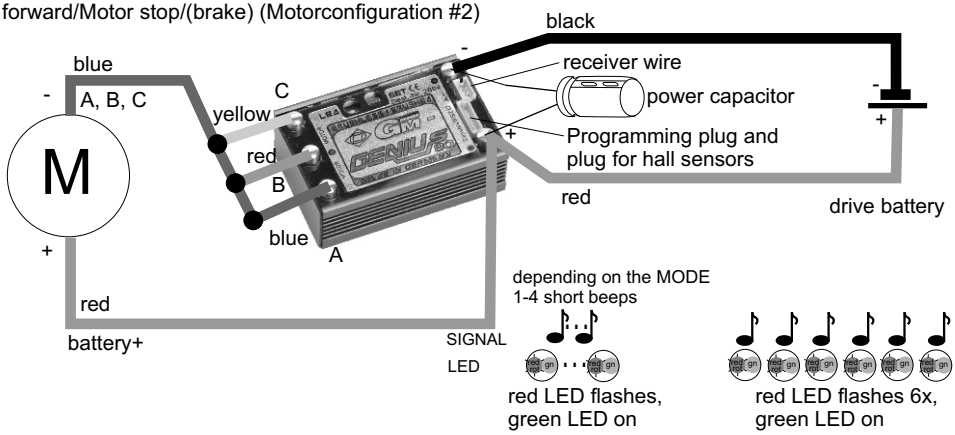
Short instruction overview:

Connecting the GENIUS-Controller to the motor:

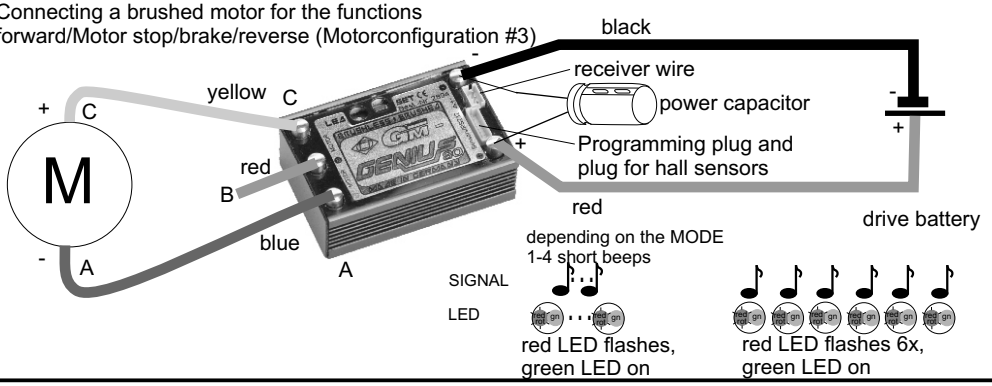
Connecting a brushless motor to the controller (Motorconfiguration #1)



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



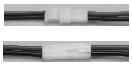
Connecting a brushed motor for the functions forward/Motor stop/brake/reverse (Motorconfiguration #3)



Modus-Programmierung GENIUS:

Programming mode #1 (forward, with brake) f. e. for folding prop air planes:

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

4. Wait about 2s, until the red LED does flash 2x and until the green LED lit.

5. Within the next 4s move the transmitter stick to the position "full throttle" and immediately thereafter to the position "full brake" and leave it at the position "full brake", until you hear the beeps for Mode 1.

"full throttle" "full brake"

Depending on the mode 1-4 short beeps

"Neutral=Motor STOP"

SIGNAL

LED

red LED flashes, green LED on

red LED on, green LED off

2x

red LED flashes, green LED off

red LED off, green LED on

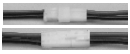
1s delay

red LED flashes, green LED off

red LED flashes, green LED on

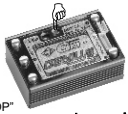
Programming mode #2 (forward without brake) motorplanes:

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



4. Wait about 2s, until the red LED does flash 2x and until the green LED lit.

5. Within the next 4s move the transmitter stick to the position "full throttle" and leave it at the position "full throttle", until you hear the beeps for Mode 2.

"full throttle"

Depending on the mode 1-4 short beeps

"Neutral=Motor STOP"

SIGNAL

LED

red LED flashes, green LED on

red LED on, green LED off

2x

red LED flashes, green LED off

red LED off, green LED on

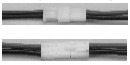
1s delay

red LED flashes, green LED off

red LED flashes, green LED on

Programming Mode #3 (forward, no brake, with rpm regulation) HELI MODE:

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)

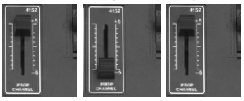


2. Move the throttle stick to the "Neutral/Motor STOP" position

3. Press the SET-button for about 4s, until the red LED is on

4. Wait about 2s, until the red LED does flash 2x and until the green LED lit.

5. Within the next 4s move the transmitter stick to the position "full throttle" and immediately thereafter to the position "motor stop" immediately thereafter to the position "full throttle" again and leave it at the position "full throttle", until you hear the beeps for Mode 3.



"full throttle" "Neutral=Motor STOP" "full throttle"

Depending on the mode 1-4 short beeps

"Neutral=Motor STOP"

SIGNAL

LED

2x

1s delay

3x

3x

6. Move the transmitter stick to position "motor stop" to activate the controller

"Neutral=Motor STOP"

7. Move the stick slowly forward until the desired max RPM is reached

"Throttle for the desired max. rpm"

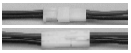
8. Move the transmitter stick to the position "Neutral"

"Neutral=Motor STOP"

3x

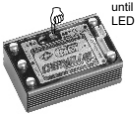
Programming Mode #4 (forward with brake and reverse) Car/Boat:

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



4. Wait about 2s, until the red LED does flashes 2x and until the green LED lit.

5. Within the next 4s move the transmitter stick to the position "full throttle" and immediately thereafter to the position "full brake" and immediately thereafter again to the to the position "full throttle" and immediately thereafter again to the position "full brake" and leave it at the position "full brake", until you hear the beeps for Mode 4.

"full throttle" "full brake" "full throttle" "full brake"

Depending on the mode 1-4 short beeps

"Neutral=Motor STOP"

SIGNAL

LED

red LED flashes, green LED on

red LED on, green LED off

2x

red LED flashes, green LED off

red LED off, green LED on

1s delay

4x

4x

red LED flashes, green LED off

red LED flashes, green LED on

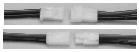
Program table, when programming the supplementary functions with the SET-button:

PROGRAM NUMBER	VALUE 0	VALUE 1	VALUE 2	VALUE 3	VALUE 4	VALUE 5	VALUE 6	VALUE 7	VALUE 8	VALUE 9	VALUE 10
#0 IDA-System	IDA-System	-	-	-	-	-	-	-	-	-	-
#1 SWITCH	Controller always ON	Controller with SET-button ON/OFF	Controller ON after plug in, but can be switched OFF with SET-button	-	Controller can be Switched OFF with SET-button or with 16s "full brake"	Controller ON/OFF wth SET-Button or wth 16s "full brake"	Controller ON after plug in, but can be switched OFF with SET-Button or 16s "full brake"	=6	=6	=6	=6
#2 AUTOBRK	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
#3 BRAKEMAX	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
#4 FULLBRAKE	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
#5 MAXREVERSE	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
#6 ABS	OFF	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
#7 AUTOGAS	0	1	2	3	4	5	6	7	8	9	10
#8 SOFTGAS	2s	1s	0,7s	0,5s	0,4s	0,34s	0,3s	0,25s	0,22s	0,2s	68ms
#9 TIMING	0°	7,5°	15°	30°	30°	30°	30°	30°	30°	30°	30°
#10 RPMLIMIT	210000 rpm 2 pole motor	160000	120000	90000	70000	50000	40000	30000	25000	17500	12500
#11 AMP LIMIT	40A	50A	60A	70A	80A	90A	100A	110A	120A	130A	140A
#12 START AMP	40A	50A	60A	70A	80A	90A	100A	110A	120A	130A	140A
#13 TURBO	0A	1A	2A	3A	4A	5A	6A	7A	8A	9A	9A
#14 POWERKURVE	LINEAR	SOFT	HARD	HARD	HARD	HARD	HARD	HARD	HARD	HARD	HARD
#15 BRAKEMIN	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
#16 RESERVED	-	-	-	-	-	-	-	-	-	-	-
#17 FREQUENCY	8kc with fixed current limit	8kc with adjustable current limit									

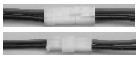
Programming overview IDA-System, supplementary functions:

Programming with IDA-System:

1. Disconnect the drive battery from the controller and switch on the transmitter, if possible. (Motor must be connected) Connect the programing wire to the programming plug and to the PC or GMVIS-commander as described at page 22, 23.



2. Hold the SET-button down and at the same time connect the drive battery to the controller. The SET-button should be held down, until the controller does start to show 6x red LED flashes (green LED on) and at the same time 6 short beeps. During the controller does show the signal, release the SET-button.



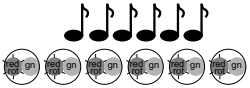
3. Now you are in the program selection mode.
Don't press the SET-button to ENTER the IDA-System.

wait 4s!

4. After waiting approx. 4s the red LED will flash 3x (green LED off)

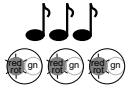
SIGNAL

LED



red LED flashes 6x, green LED on

red LED off, green LED on

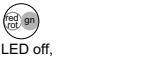


red LED flashes 3x, green LED off

5. The green and red LED is now off. In this time the controller does send the datas to the GMVIS-Commander or PC. If you want to read this datas out, the PC or the GMVIS-Commander must be in the DATA receive mode.

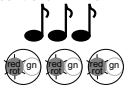
red LED off, green LED off

6. The controller does wait for datas, if the green LED is on,
If you want to send the Datas from the PC or GMVIS-Commander to the controller, start the Data transmission now.
Otherwise push the SET-button to leave the IDA-System.



red LED off, green LED on

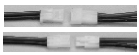
7. After receiving the datas or after pushing the SET-button, the controller will show the program end with 3 red LED flashes. Disconnect the programming plug now.
The BEC-System can be switched-off after programming.
In this case switch on the controller by prushing the SET-button.
The controller will now work normally.



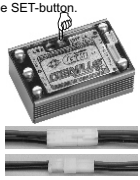
red LED flashes 3x, green LED off

Programming the supplementary functions with the SET-button: (for example: programming softgas #8 with 0,5s = 3)

1. Disconnect the drive battery from the controller and switch on the transmitter, if possible.
(Motor must be connected)



2. Hold the SET-button down and at the same time connect the drive battery to the controller. The SET-button should be held down, until the controller does start to show 6x red LED flashes (green LED on) and at the same time 6 short beeps. During the controller does show the signal, release the SET-button.

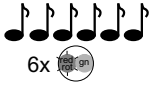


3. Now you are in the program selection mode. Press the SET-button as often as corresponds to the desired program number or stay as long on the SET-button until the desired program number is reached.

wait approx. 4s!

SIGNAL

LED



6x

red LED flashes 6x, green LED on

red LED off, green LED on

8x

red LED signals 8x, green LED on

red LED off, green LED on

4. After waiting approx. 4s the controller confirms ending the program mode with 3x red LED flashes and green LED off. Thereafter the red LED does flash again 3x with green LED on, which means you are now in the value mode.

5. Now the value can be adjusted.
Push the SET-button as often as the requested value (f. e. 3) is reached
or stay on the SET-button continously until you heared the requested amount of beeps and LED signals

wait approx. 4s!

6. After approx. 4s waiting the red LED does flash 3x (green LED off).
Programming is finished.

SIGNAL

LED

3x

red LED flashes 3x, green LED off

3x

red LED flashes 3x, green LED off

3x

red LED signals 3x, green LED on

red LED off, green LED on

3x

red LED flashes 3x, green LED off

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