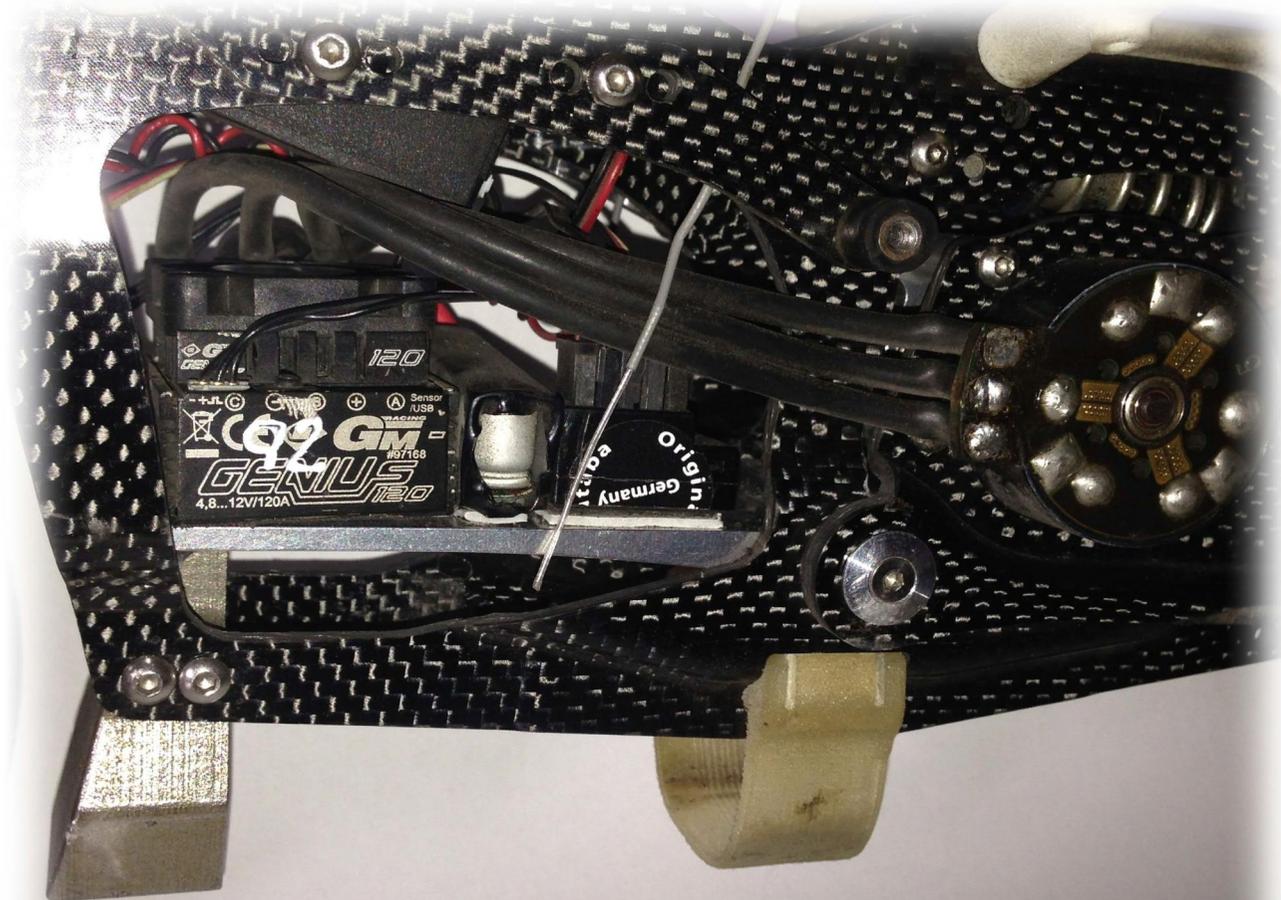


JABBER Worldchampionship Bikes

GM Genius 120 and Lehner 1920/5 "Bike" Setuptips



JABBER

World Championship Bikes

Keep on "Lipo Mode".
Be careful to always start with fully charged battery.
Reason is explained in help.

This is the only timing that works with
sensorless motors like the Lehner.
Keep between 0°-15°.

Keep both Parameters identical!
This is where you change how much power is deployed
(no wheelies). Usually it is somewhere between 80 and
120A.
This can differ from one ESC to the other. Reason is the
hardware of the ESC and the "Correction Factor Current
limit" on page 3.

This is when you use very low Amp Limit
settings and you do not have enough power on
the straight. Use with care and start with 1A and
then one step after the next.

Stay at 125000. The help says so and
I found some things might work
differently if this is changed. This is
not 100% proven!

This is in case the motor has a rough start up
characteristic. Use with care. Read the help file!

The screenshot shows the AS Genius Tool GUI for a Graupner GM motor. The main window is titled "AS Genius Tool GII V. 1.6.5 - Registered for Eduard Winter". The interface is divided into several sections:

- General:** Datum: 25.03.2016, Location: Planet Earth, Car: JABBER 2015+, Motor: Lehner 1920/5 Bike, Comment: Have fun!
- Acceleration:** Lipo Mode is selected. Parameters include Voltage Cut off (250), Start AMP [A] (165), AMP Limit [A] (165), Turbo [A/4ms] (2), Soft Start (80 ms), Automatic Throttle [%] (0), and Frequency (9).
- RPM Limitation:** RPM Limit is set to 125000 [RPM].
- Start Settings:** PWM Start (128) and LimStart (38).
- Timing:** Switching Point RPM (125), Power Curve (0), High Speed Timing (unchecked), Timing: With Sensors (+0°), Fixed Timing (10), Timing1 (110), Timing2 (110), Minimal Timing Time (8), Max. Timing (60).

Red boxes highlight the following settings:

- Voltage Cut off: 250
- Start AMP [A]: 165
- AMP Limit [A]: 165
- Turbo [A/4ms]: 2
- RPM Limit: 125000 [RPM]
- PWM Start: 128
- LimStart: 38
- Fixed Timing: 10

This is minimum brake if you just touch the brake on the transmitter. I prefer this to be zero.

Keep these always the same. Bikes need lower brake power. Set this parameter somewhere between 50 and 70. This can differ between radio systems.

Set this to 20 (full left position). The ESC has a setting that is intended for cars. To eliminate this setting you have to do this.

This is how abrupt the brake sets in. Parameters are between 0,10s and 0,20s. This helps that the rear wheel doesn't lift when the brake is quickly applied.

You CAN play with this.. I recommend to adjust as illustrated here.

The screenshot shows the AS Genius Tool GUI V. 1.6.5 interface. The main window is titled "AS Genius Tool GUI V. 1.6.5 - Registered for Eduard Winter". The interface includes a menu bar (File, Version, Extras, ?), a toolbar, and a status bar at the bottom. The main content area is divided into several sections:

- General:** Datum: 25.03.2016, Location: Planet Earth, Car: JABBER 2015+, Motor: Lehner 1920/5 Bike, Comment: Have fun.
- Brake / Reverse:** This section contains the "Brake Settings" and "advanced Brake Settings".
- Brake Settings:**
 - BrakeMin [%]: 0 (highlighted with a red box and arrow pointing to the text box above).
 - BrakeMax [%]: 55 (highlighted with a red box and arrow pointing to the text box above).
 - Autobrake [%]: 0
 - Fullbrake [%]: 55 (highlighted with a red box and arrow pointing to the text box above).
 - Time to full brake: 20 (highlighted with a red box and arrow pointing to the text box above).
 - Softbrake: 0.20 s, 10 (highlighted with a red box and arrow pointing to the text box above).
- advanced Brake Settings:**
 - ABS: (highlighted with a red box and arrow pointing to the text box above).
 - New brake software: (highlighted with a red box and arrow pointing to the text box above).
 - Effect new brake software: 150 (highlighted with a red box and arrow pointing to the text box above).
 - New brake software for autobrake:
 - Current limit for brake off:
 - Brake frequency 1/4:
 - Brake frequency 1/16:
 - Brake variant X:
- Reverse:**
 - Reverse Mode 1:
 - Reverse Mode 2:
 - Max Reverse [%]: 0

The status bar at the bottom shows "Interface" settings: Device Manager, COM Port 5, Fix Port checked, Port activ, Read/Write, Receive Data, and Send Data. The footer includes logos for Graupner and GM, and the website addresses www.graupner.com and www.gm-racing.de.

This is a very important Parameter. If you don't know what you are doing you will completely FUCK UP your ESC with this ;)

Unluckally only the german help describes exactly what it is all about.

Here is my explanation:

With this setting, the current can be calibrated. **!! This means ALL settings that have something to do with current throughout the whole ESC change!!**

Calibration can be achieved with LiPo batteries, since the discharged capacity is equivalent to the charged capacity.

If the discharged capacity (in Telemetry page 5) after a run is read out and then compared with the charged capacity of your Lipo, this should be equal.

If this is not the case, the correction factor can be set in the following way:

- Mount a freshly charged Lipo in your bike.
- Give your bike a 5 minute run.
- BEFORE switching off the bike press the SET button ONCE (just a short press).
- read out the discharged capacity (Telemetry page 5)
- note this correction factor.
- Fully charge the Lipo you just used.
- Read how much charge capacity went into the battery.

If discharged capacity of the telemetry and charged capacity of the lipo are not equal you can calibrate it with the following formula:

Correction factor (new) = correction factor (ESC) \times charged capacity / discharge capacity telemetry.

Then change the parameter to the new calculated correction factor.

Factory setting: 64, if it wasn't calibrated at the factory.

In case you are in the A-finals of the Worlds and are having trouble, you can override safe ESC protection with these two parameters and start a grill party.

If you have that trigger happy feeling , just switch off temperature protection (NOT RECOMMENDED)

AS Genius Tool GUI Screenshot:

- General: Datum: 25.03.2016, Location: Planet Earth, Car: JABBER 2015+, Motor: Lehner 1920/5 Bike
- Protection / Programming:
 - Shutdown temperature: 110
 - Cut off temperture motor: 100
 - Current limit if excess temp.: 60
 - Correction factor current limit: 92
 - Correction factor voltage [V]: 180
 - Temperature protection off (loose warranty):
 - BEC-Undervoltage interrupt active:
- Motor Type Configuration Manually:
 - Reverse motor rotation:
- Programming functions:
 - Long beep after switch on deactivated:
 - Short beeps for mode confirmation after switch on deactivated:
 - Send/Receive all values:

Just in case the motor is rotating in the wrong direction. You can change that here.

For a lot of reasons I prefer to do all modifications only to Mode 2.

The screenshot displays the AS Genius Tool GUI V. 1.6.5 interface. The window title is "AS Genius Tool GUI V. 1.6.5 - Registered for Eduard Winter". The main menu includes "File", "Version", and "Extras". The status bar shows "Undervoltage Protection : LiPo Mode" and the Graupner GM logo. The "General" section contains fields for "Datum : 25.03.2016", "Location : Planet Earth", "Car : JABBER 2015+", and "Motor : Lehner 1920/5 Bike". The "Comment" field contains "Have fun!". The "Transmitter / Mode" tab is active, showing "Transmitter Settings" with sliders for "Full Throttle" (24034 to 33000), "Neutral Point" (16885 to 20000), "Full Brake Point" (9654 to 18000), and "Neutral Point Width" (80 to 250). Below these are "Load Transmitter Data" and "Save Transmitter Data" buttons. The "Mode Settings" section shows "Controller mode" set to "2" and "Mode 2" selected in a dropdown menu. The "Interface" section at the bottom shows "Device Manager", "COM Port" set to "5", and "Fix Port" checked. The footer includes the Graupner logo, "www.graupner.com", the GM logo, "www.gm-racing.de", and another Graupner logo. The status bar at the bottom indicates "Compare Data Source : Speed Controller" and "Data Source : Speed Controller".

This is the discharge capacity I was talking about on page 3. This should be equal to the charge capacity of your Lipo after recharging.

Activate this.

The screenshot shows the AS Genius Tool GUI V. 1.6.5 interface. The 'Telemetry' tab is active, displaying various settings and data. A red box highlights the 'Telemetry function active' checkbox, which is checked. Another red box highlights the 'Discharged capacity [mAh]' field, which shows a value of 3576.5. A third red box highlights the gear settings, including 'Number of Poles', 'Pinion', 'Main Gear', 'Internal Gear', 'Tire Diameter [mm]', and 'Correction factor [%]'. The 'Interface' section at the bottom shows 'Device Manager' set to 'COM Port 5' and 'Fix Port' checked. The footer includes the Graupner logo, website addresses (www.graupner.com and www.gm-racing.de), and the text 'Compare Data Source : Speed Controller' and 'Data Source : Speed Controller'.

Data for Telemetry

Telemetry function active	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Show Velocity	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Velocity in mph	<input type="checkbox"/>	<input type="checkbox"/>
Telemetry Functions for Programmer Box #7200	<input type="checkbox"/>	<input type="checkbox"/>
Digital receiver input	<input type="checkbox"/>	<input type="checkbox"/>

Drive Data from Controller

Max. Current [A] : 200	
Max. rotation speed : 52083 [RPM] => Velocity : 104.32 [km/h] = 64.82 [mph]	
max. controller temp. [°C]	75
max. motor temp. [°C]	0
actual controller temp. [°C]	19
actual motor temp. [°C]	0
EEPROM counter	391
Current Offset [A]	0
Reserved : Temperature protection sensor mode, brake mode, motor type	16 16
Reserved 1 : Configuration data transfer, transmitter mode programming	133 133
Reserved 2 :	33 33
Telemetry :	128 128
Reserved 4 :	0 0

Discharged capacity [mAh] : 3576.5

Max Voltage [V] : 9.91

HighByte Paritätsinteger : 22

LowByte Paritätsinteger : 69

Number of Poles : 2 2 2 | 16

Pinion : 13 13 10 | 50

Main Gear : 58 58 50 | 14

Internal Gear : 27 27 10 | 10

Tire Diameter [mm] : 128 128 20 | 20

Correction factor [%] : 100 100 50 | 110

Overall Calculation : 49.93

Overall Gear Ratio : 12.05

Rev Imm/RI : 33.38

Interface

Device Manager: COM Port 5 | Fix Port:

Port activ: | Read/Write:

Receive Data: | Send Data:

Footer: Graupner www.graupner.com Gm www.gm-racing.de Graupner

Compare Data Source : Speed Controller | Data Source : Speed Controller

This has no effect on ESC Performance. It just shows up the correct speed in the telemetry... woohoo..

This is just a summary page of all the previous pages.
Changes here are equal to changes on the other pages.

AS Genius Tool GUI V. 1.6.5 - Registered for Eduard Winter

File Version Extras ?

Undervoltage Protection : LiPo Mode

Graupner **GM**

General:
Datum : 25.03.2016 Location : Planet Earth Car : JABBER 2015+ Motor : Lehner 1920/5 Bike
Comment : Have fun

Acceleration Brake / Reverse Protection / Programming Transmitter / Mode Telemetry **Basic Settings** Firmware Version : Readout 13.1 File --

Acceleration

LiPo Mode

Voltage Cut off : 250 250 30 250 ?

Start AMP [A] : 165 165 0 200 ?

AMP Limit [A] : 165 165 0 250 ?

Turbo [A/4ms] : 2 2 0 9 ?

Frequency : 9 9 8 kc with adjustable current dra ?

Timing

Switching Point RPM : 125 125 10 250 ?

High Speed Timing High Speed Timing from switching point RPM ?

Fixed Timing : 10 10 0 30 ?

Max. Timing : 60 60 0 60 ?

Variable depece timing ?

Beeps

Long beep after switch on deactivated ?

Short beeps for mode confirmation after switch on deactivated ?

Bremseinstellungen

BrakeMin [%] : 0 0 0 90 ?

BrakeMax [%] : 55 55 0 100 ?

Autobrake [%] : 0 0 0 100 ?

Brake variant X Brake frequency 1/4 ?

Neue Bremssoftware ?

Wirkung neue Bremssoftware 150 150 0 250 ?

Protection

Shutdown temperature : 110 110 0 250 ?

Cut off temperture motor : 100 100 50 250 ?

Transmitter Data and Mode

Full Throttle : 1.975 [ms]
Neutral Point : 1.528 [ms]
Full Brake Point : 1.076 [ms]
Neutral Point Width : 0.478 [ms]

Load Save

Controller Mode 2 2 Mode 2 ?

Drive Data from Controller

Max. Current [A] : 200
Max. rotation speed : 52083 [RPM]

max. controller temp. [°C]	75
max. motor temp. [°C]	0
abs. max. controller temp. [°C]	105
abs. max. motor temp. [°C]	0

Interface

Device Manager COM Port 5 Fix Port Port activ Read/Write Receive Data ? Send Data ?

Graupner www.graupner.com **Gm** www.gm-racing.de **Graupner**

Compare Data Source : Speed Controller Data Source : Speed Controller

Tip ZERO:
RTFM.....Read the fucking Manual.

Tip1:
Unplug and shortcut battery leads to discharge the capacitors before trying to read out the ESC via USB. It won't work properly otherwise.

Tip2:
If you are driving and after a while the throttle feels "mushy" you are in temperature protection mode. Sometimes this is only for a Lap or two. That's when the ESC has cooled down and switches back to full power. This can really piss up your driving.

Tip3:
If throttle is feeling good but you are losing brake power you need to use the fan on the ESC. Weird enough the top cooler seems to do the cooling for the brake. Most of the power Diodes are on the bottom of the ESC housing.

Tip4:
With Lehner 1920/5 Bike I found you can use Gear ratios from ~9 to ~12. Adjust this on track. Only the stopping distance end of straight and temperature protection is the limit ;)

Tip5:
Clean out the battery plugs on the Lipo regularly. I use ear tips. Also be sure that the ESC plugs fit tightly into the battery. I change these plugs regularly. Bad contact can reduce run time considerably. Also acceleration can be very inconsistent. In the worst case you will be increasing the Amp Limit and at a certain point the sockets on your LIPO will start melting.

Tip6:
Protect the Sensor/USB socket on the ESC from debris getting into it. A plug from a sensor cable does a good job. Be careful using the socket. Make it easily accessible on your bike. Always check the orientation of the plug before inserting it into the socket. The plug always goes in effortlessly if all is okay. NEVER try to force it into the socket. If you bend the contacts in the socket it can mean you will never be able to access the parameters again. If the contacts are bent or the socket is clogged up with debris: grab a magnifying glass and a needle and patiently "repair" it. Sometimes bent contacts touch within the socket. This can cause the ESC to not work properly. If you break a contact the game is over.

Tip7:
Sometimes the top cooler comes off the ESC. You can prevent or repair this by glueing the cooler with thermally conductive epoxy. Mostly you then also lose the plastic SET Button. You can still activate the switch through the hole in the housing.

Tip8:
Be careful using thermal conductive glues. Mostly they are also electrically conductive ;).

Tip9:
For RC Biking we recommend using only 2S1P (two"S"one"P") Lipos. 2S2P Lipos with whopping "C" ratings tend to get pregnant when used in RC Bikes. The reason is that RC Bikes accelerate and AMPstress the Lipo for a much longer time than RC Cars do.

Tip10:
NEVER copy the parameters with the software from one ESC to the other!!! Always adjust the parameters manually. If you have to factory reset the ESC and have saved it's parameters, you can use them. IF YOU ARE SURE they are from this very ESC. I still encourage you to freshly recalibrate the ESC to the receiver.

Tip JABBER Bikes:
On JABBER Bikes we recommend to glue the ESC onto the Aluminum electronic bay holder with thermally conductive epoxy. Mount it in the front this assures better cooling and more room for the fan. Mount it with the main cables to the RIGHT of the bike. Then the cables to the motor have enough leeway and are flexible enough to not influence the rear suspension. Further there is less possibility that the ESC breaks loose from the electronic bay or the soldering is stressed and malfunctions.

If you have read to this point you have reached the first step to a reliable power system. All the above are just recommendations and tips. You still will have to find out what works best for you. May the dark angle of reverse polarity and the frightening scent of amperedioxide stay away from you.