INSTALLATION MANUAL FOR GEARBOX V2

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Scylla - V2 optical parameters

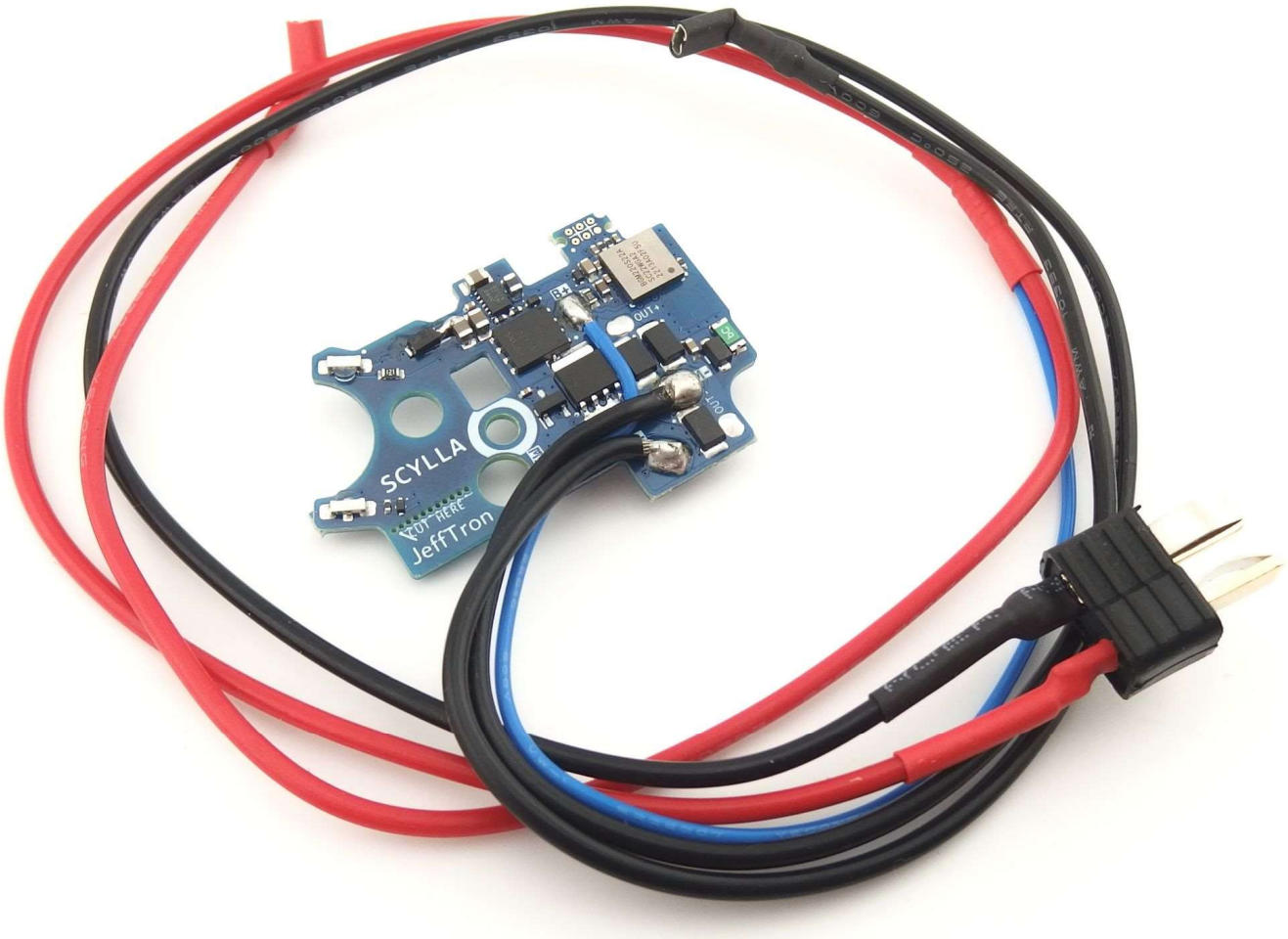
- It is a processor controlled mosfet with wireless communication.
- Device parameters are changed with a smartphone via application (Android and iOS).
- Device is fully integrated inside the gearbox instead of the original trigger contacts.
- Compatible with standard Version 2 Tokyo Marui style gearbox.
- Fully prewired with T-plug connector to fit front or read wired.
- New shooting modes, control of RoF, pre-cocking, active braking, electronic fuse, low battery indication, statistics, etc.
- Usable for battery with max. 13 volts (max. lipol 3S 11,1V).

Safety warning

- Installation of this device into the gearbox requires advanced technician skills!
- Please read the manual before installing your device to prevent any damage.
- Short circuit or incorrectly connected battery will cause immediate damage to the device which is not covered by the warranty. It can lead to fire or even battery explosion.
- Disconnect battery, when the gun is not in use! Otherwise, it will fully discharge the battery because the device drains small amount of current from the gun all the time.
- Do NOT connect battery when gun is pointing towards you, another person or an animal
- Do not modify, repair, put into any kind of liquids or thermal shock the Scylla.

Package contents

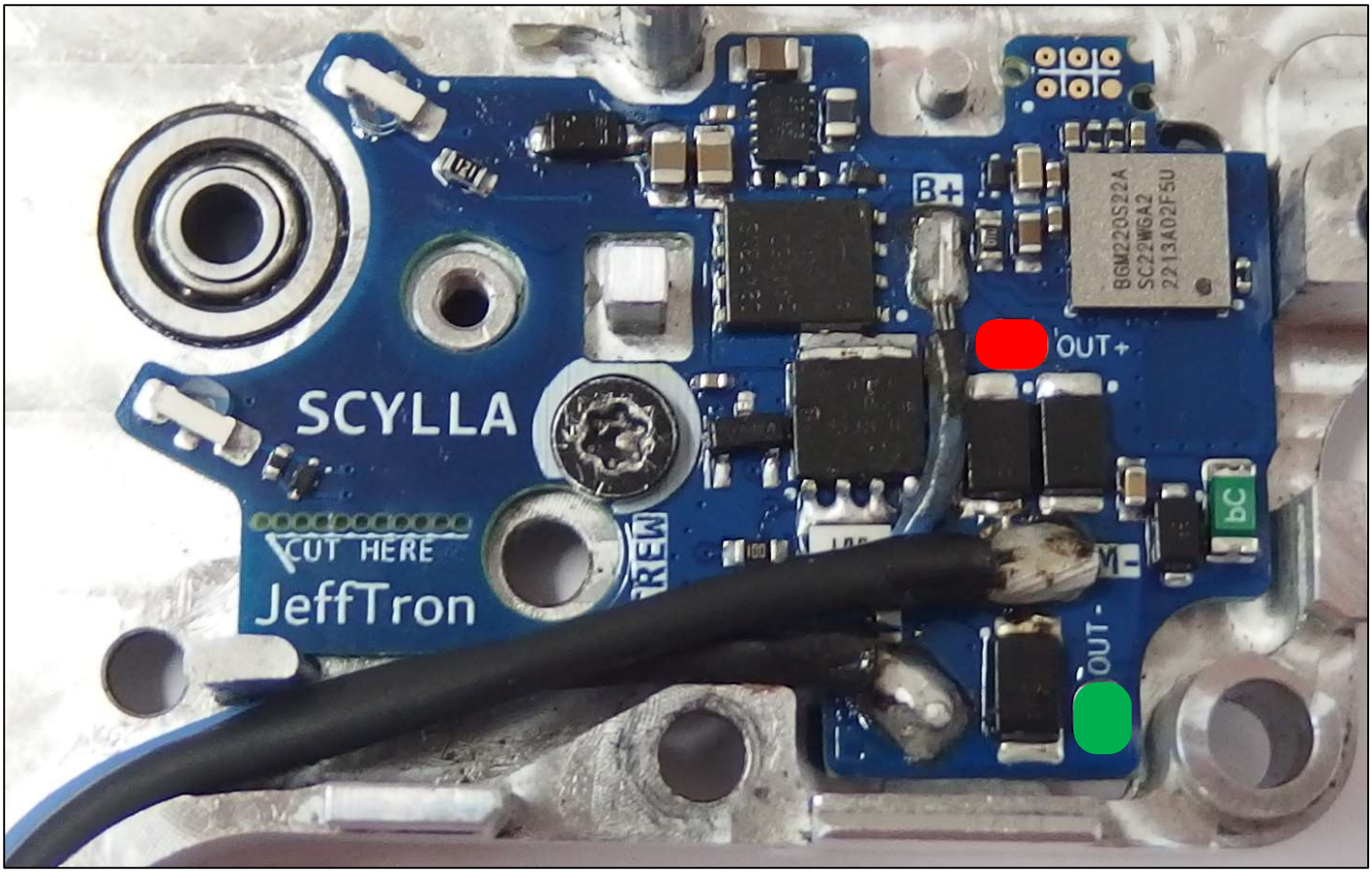
- Scylla - V2 optical drop-in module with complete wiring to stock or to front
- Screw to secure it in the gearbox
- Magnet trigger adapter
- 2pcs Wires holder
- Scylla dog tag keychain
- Sheet with selector plate stickers + Scylla sticker + QR code to this installation manual



Output pads

There are **2 pads** on the board of the Scylla - V2 for powering Maxx hop-up LED illumination or to power the electrical magazine while gun is shooting.

- **Plus battery pole** is in the **red** square.
- **Negative pole** from the **motor** is in the **green** square.
- The power supply works only when the motor is running.
- These pads are not programmable from the app.
- The wires can‘t touch other tabs and components on the Scylla - V2 board.

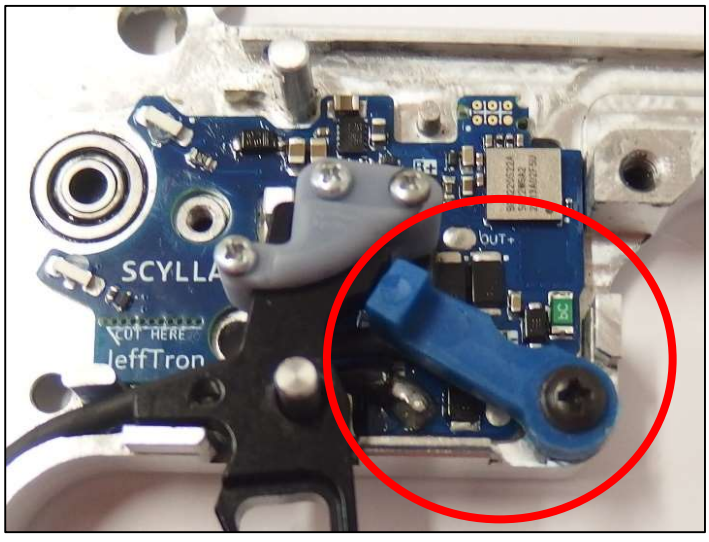


Preparation before installation the Scylla V2

Remove and open the gearbox according to the normal gun disassembly procedure.
Take out all the internals from the gearbox and clean the grease and oil.
Check the gearbox for edges. Grind for smooth surface to prevent Scylla damage.

Take out: cut off lever with its screw and spring.
Take out trigger contacts. They are not used with the Scylla.

You can choose: if you want, you can use this mechanical arm to block the trigger on the safe position.



But it is not necessary, because Scylla use **electronic safety** to block firing, when is trigger pulled on Safe position.

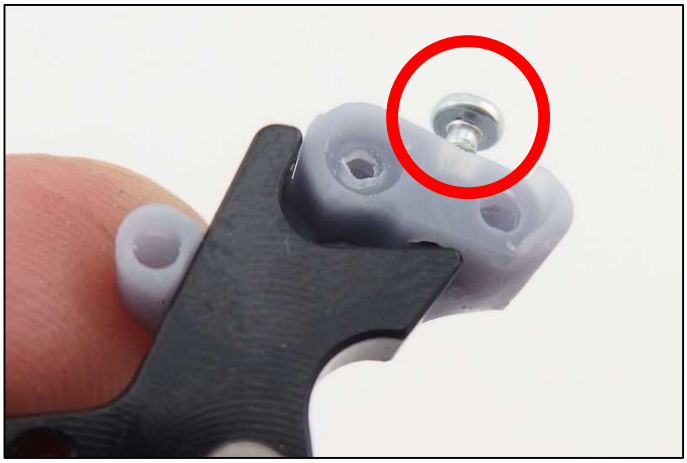
Remove other internals from the gearbox. The gearbox is prepared for installation.

Adapter with magnet installation

Scylla trigger sensor uses hall transistor, which detect magnetic field. For its right function it has to be installed magnet to the trigger which is compatible with stock and aftermarket triggers.

This adapter could not be used with Leviathan trigger, but you can buy compatible one here in the Jefftron eshop.

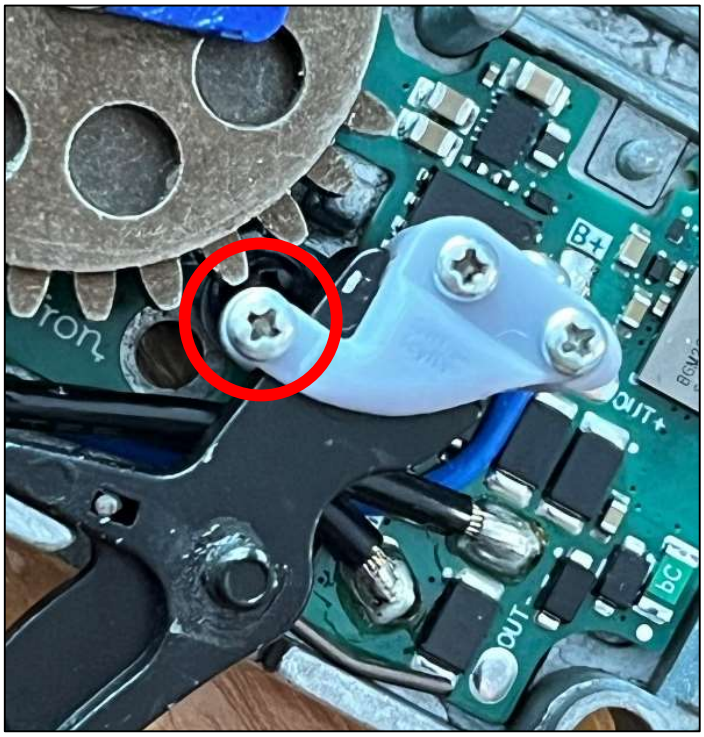
Place left trigger part on the top of the trigger like on the picture.
Do not screw this top screw yet.



Gently screw 3 screws on the right adapter part to assemble magnet adapter over the trigger

Top 4rd screw on the adapter has function securing adapter on various trigger types. **Gently tighten the screw** to make adapter fit into the trigger

Make sure adapter will not hit **sector gear teeth**, otherwise grind the adapter to fit better on the trigger



Test if **trigger** with adapter has **smooth travel** inside the gearbox.

If not then:

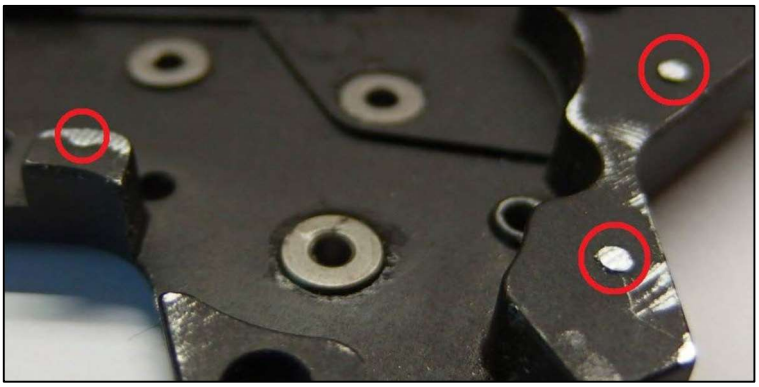
1) Add 0,2 – 0,5mm high shim to the right side of trigger axis. You can use shims for the gears.

2) If the first step did not help, then you have to grind this edge on the right side of the gearbox.

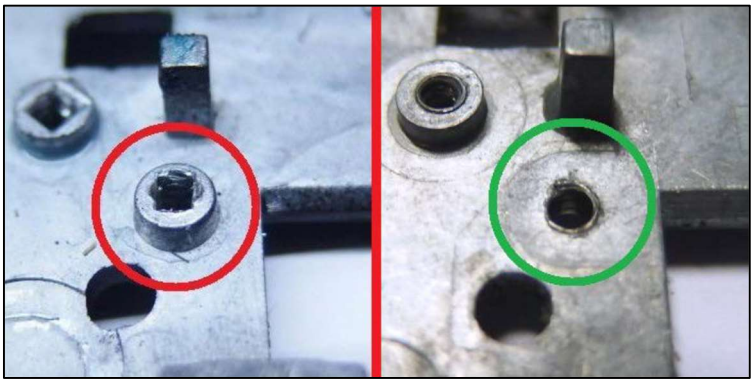
Gearbox shell modification

- Gearbox modifications are necessary to fit the Scylla without damaging it.
- Some modifications are only for specific gearbox manufacturer.
- Scylla is not compatible with KWA gearboxes due to a different sector gear position.
- It is not compatible with proprietary gearboxes such as Ares, Arcturus, KWA, etc.

Grind these 3 pins to flat, it is necessary to fit wiring inside the gearbox.



If your gearbox has high screw mounting, cut it off to flat surface.

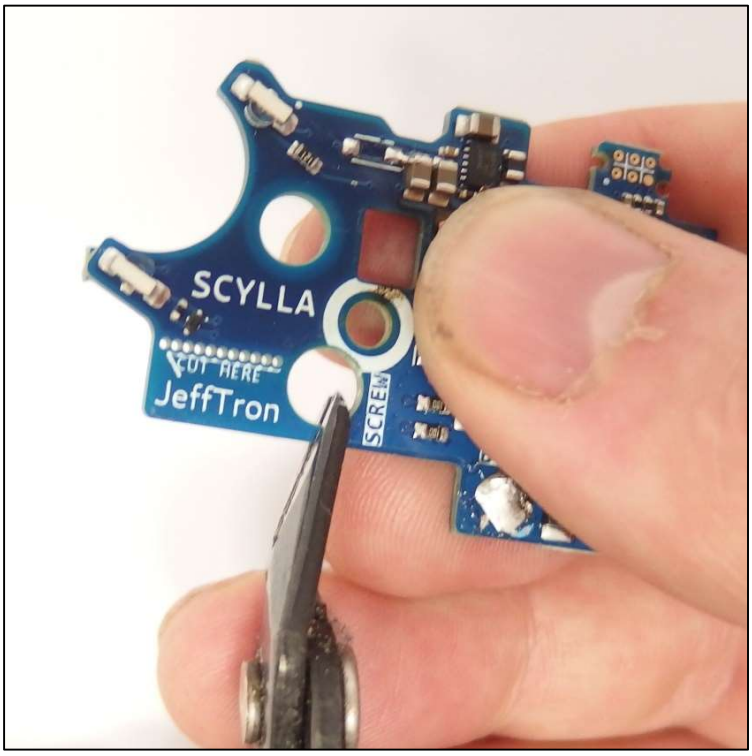


Scylla cut board for the Krytac or G&G G2 gearbox

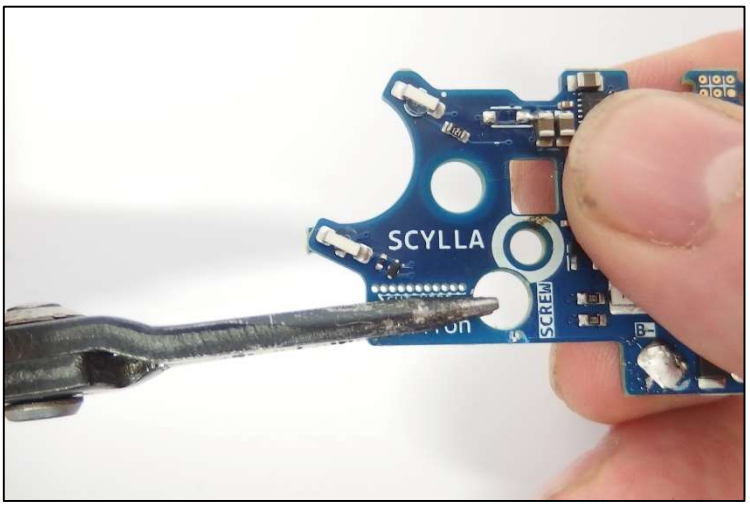
- You do not have to modify the gearbox V2 from the Krytac company or gearbox G2 from G&G company.
- Simply cut the Scylla board on marked area shown on the pictures below.

Use splitters to cut the thinnest board section under the bottom hole (arrow).

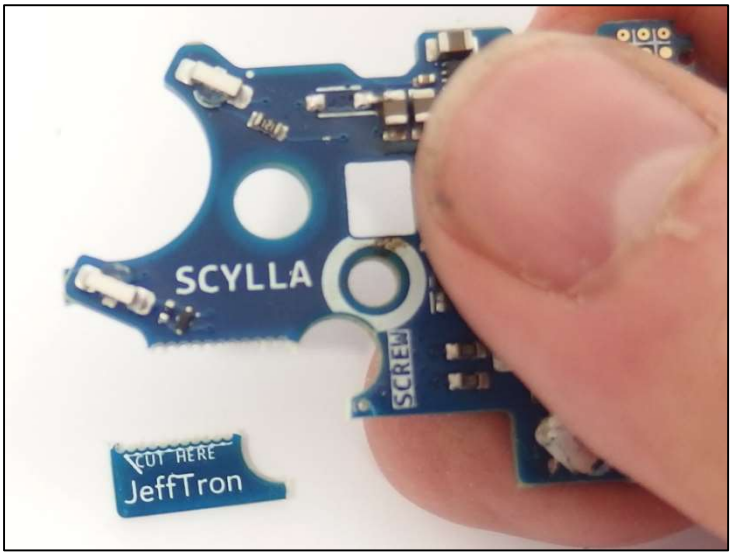
WARNING: do not cut the wiring!



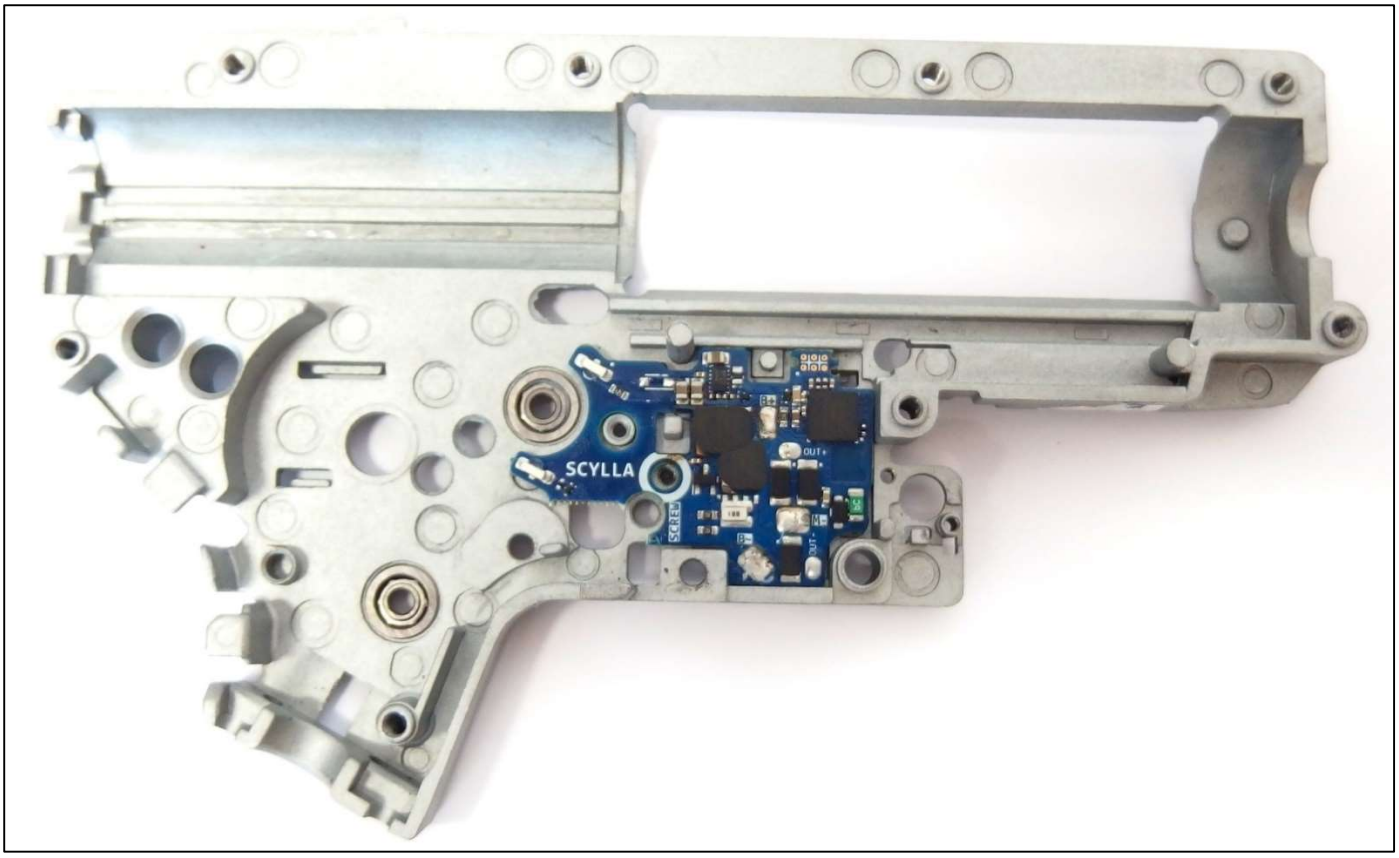
Put pliers near the drilled line and move the board up and down until it breaks of from the rest of the Scylla.



Separated board for instalation into the Krytac gearbox V2 and G&G G2.



Now Scylla sits perfectly inside the G&G gearbox G2.



Selector plate sticker installation

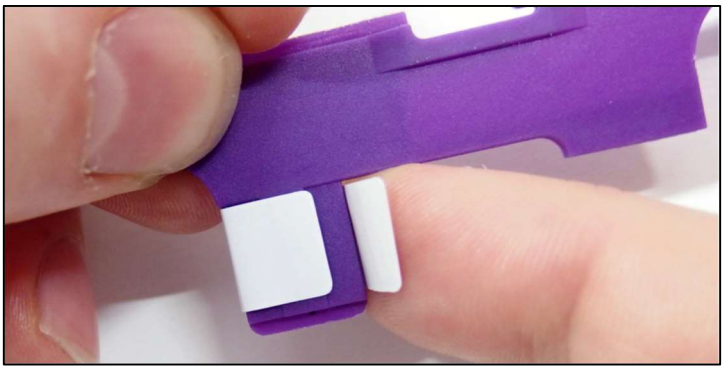
Wide sticker has a wider semi section. Grab a sticker by tweezers.

No fingers on sticky part!

Clean selector plate by a degreaser.

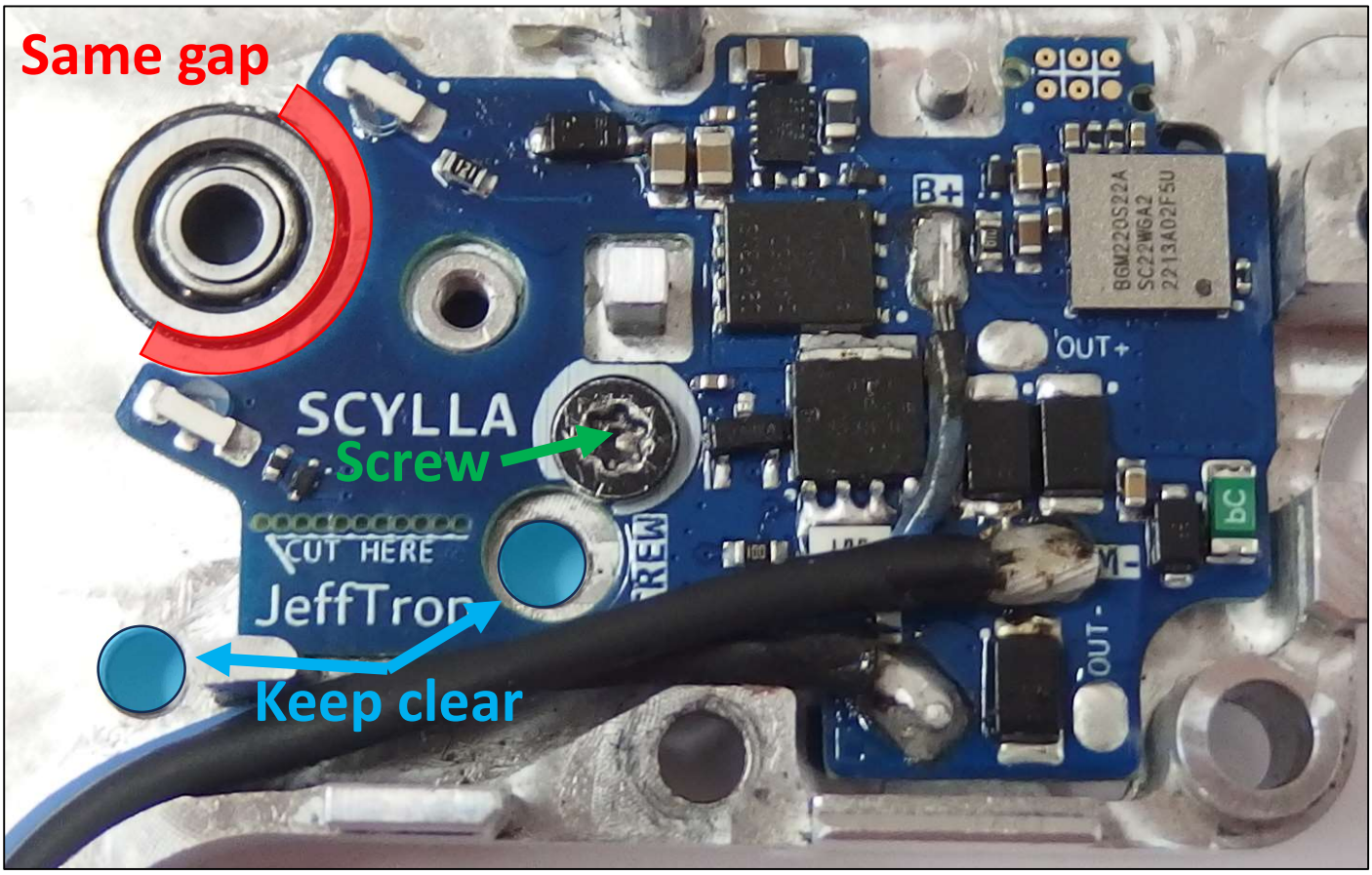
Apply the sticker, equally dividing the white/black areas.

Bend the sticker around the selector plate.



Placed sticker on the selector plate.

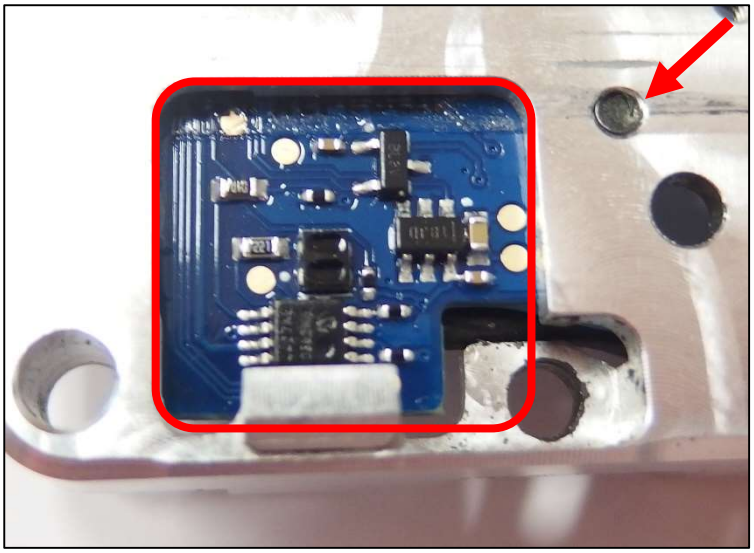
Insertion procedure of Scylla - V2 into the gearbox



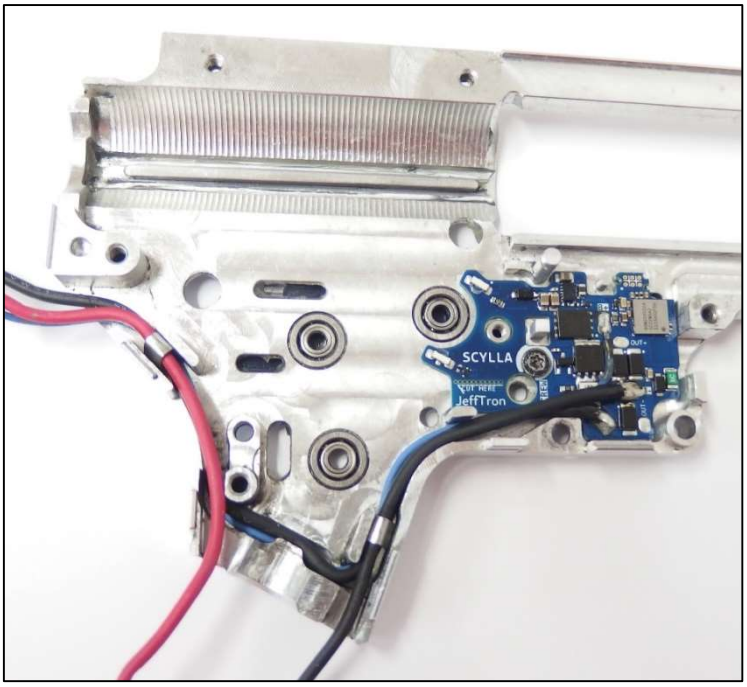
Insert the Scylla - V2 instead of the original contacts:

- Check if it is laid flat on the gearbox and **blue areas** are **not covered** by board or wires.
- Adjust the Scylla position to the **same distance** from sector gear bearing (**red area**).
- Use a **screw** from package or original one and screw the device to gearbox (**green arrow**).
- Do not place the screw in a place for the cut off lever, the gearbox stump is too high.

Make sure the **screw** does **NOT stick outside** of the gearbox. If it does, grind it.
Check if there are NOT any parts in contact with the gearbox around the red area.

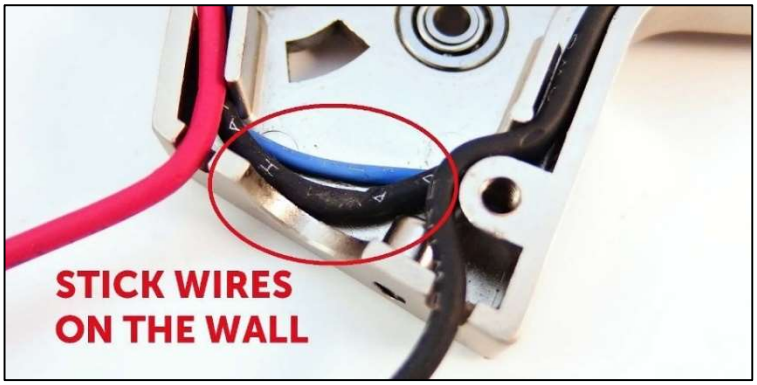


Wires to stock:
Place wires in order from the gearbox bottom:
1) Blue
2) Black to -battery
3) Black to -motor

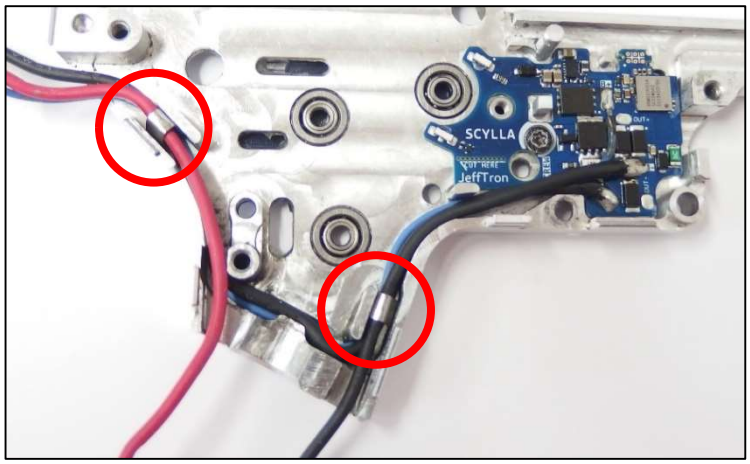


Wires to front: Red motor leads to the left hole and to the battery leads to front, it could be disconnected in the middle.

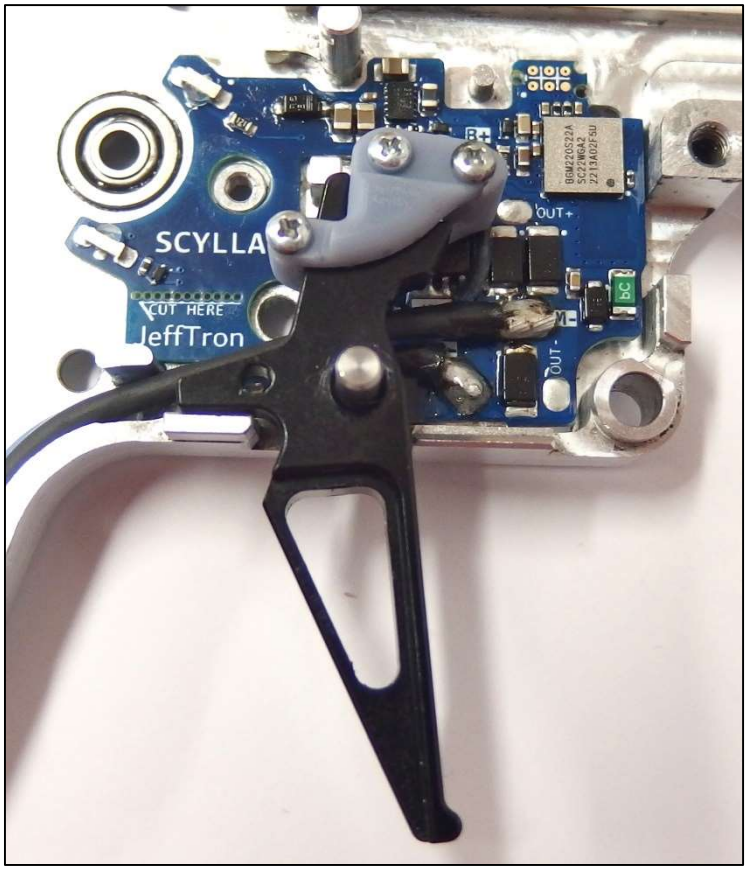
Wires under the motor have to stick to the wall. You can use a hot glue to fix them to their position in the gearbox.



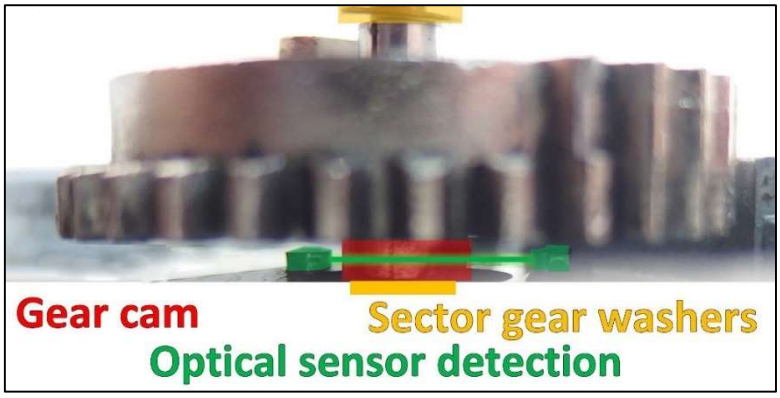
Insert metal holders against pressure point on the other side of the gearbox! Grind pressure point if necessary.



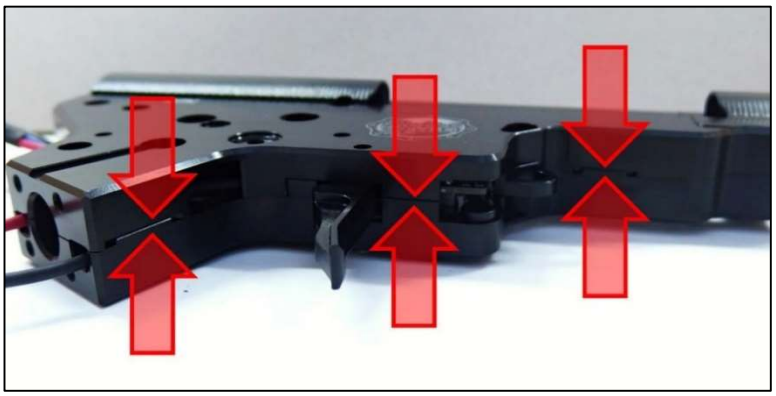
Place spring on the trigger and insert the trigger with build in magnet into the gearbox



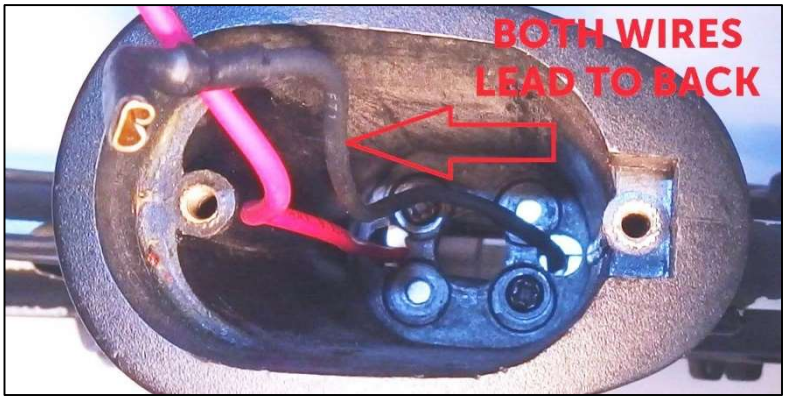
Check the sector gear height. **Gear must not touch the optical sensor!**



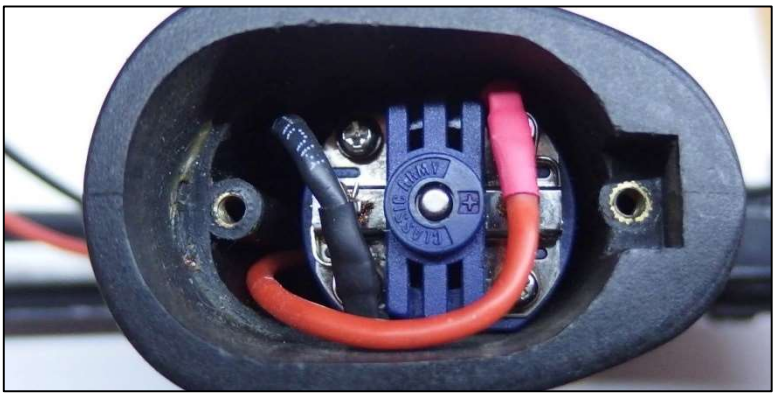
Insert the remaining parts into the gearbox. Put together the gearbox shell. Check if it fits perfectly together.



Black wire bends back at the bottom and leads both wires back.



Connect the black wire first. Keep in mind the right motor polarity!

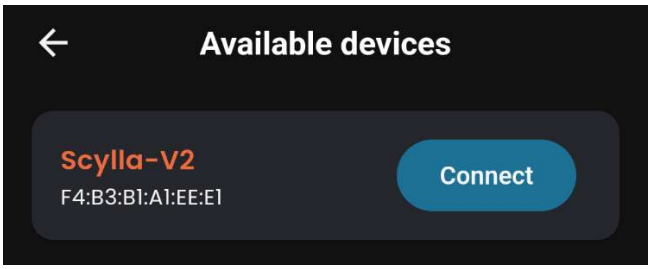


Sensors configuration and testing

Install a „**Leviathan & Scylla by JeffTron**“ app from the App store (iOS) or Google play (Android) into your smartphone.

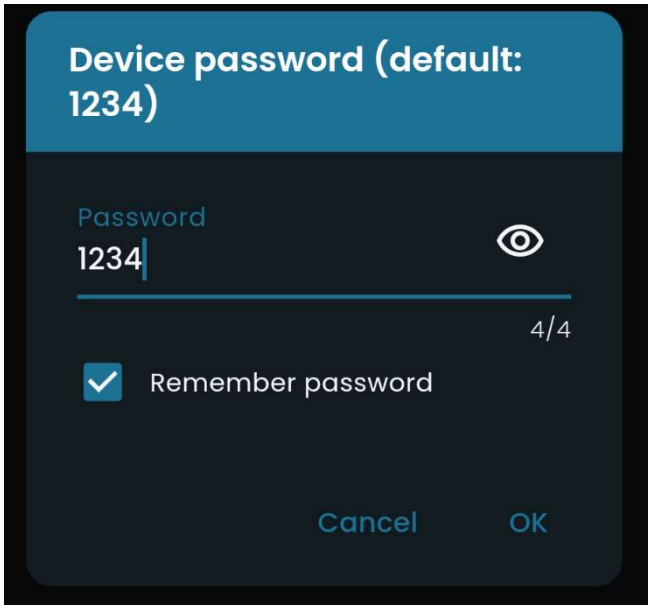
Or use link https://www.jefftron.net/application (QR code).

Connect the battery to the Scylla and pair it with your smartphone.

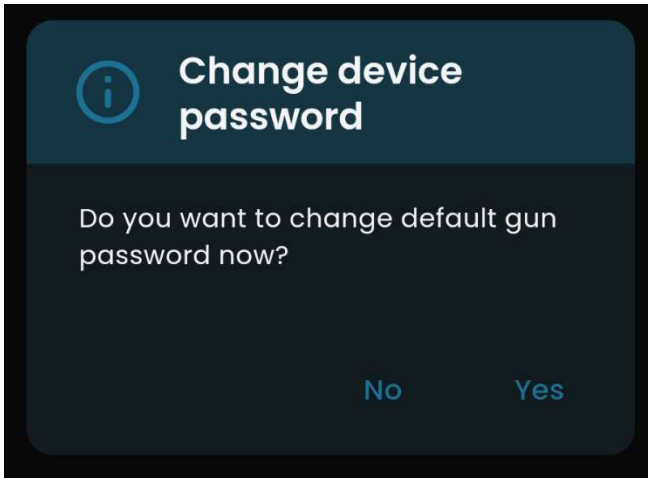


Use a default password „**1234**“.

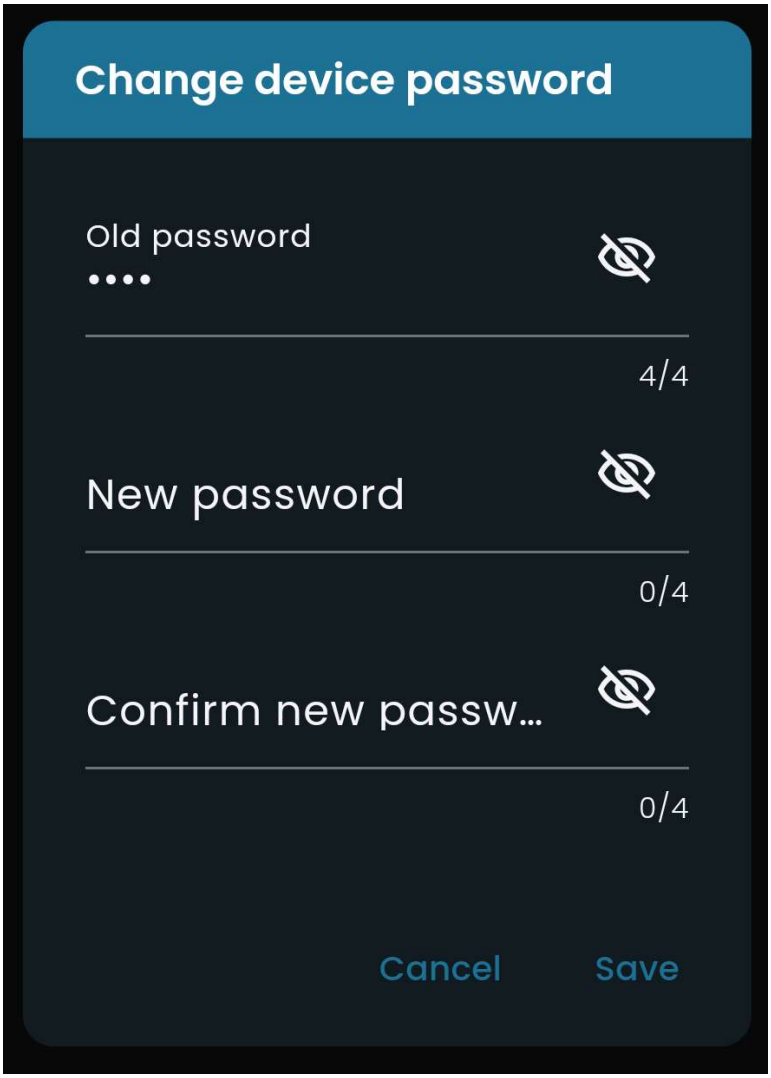
You can save it by checking the box “Remember password.



Change the password to your own 4 digit one.



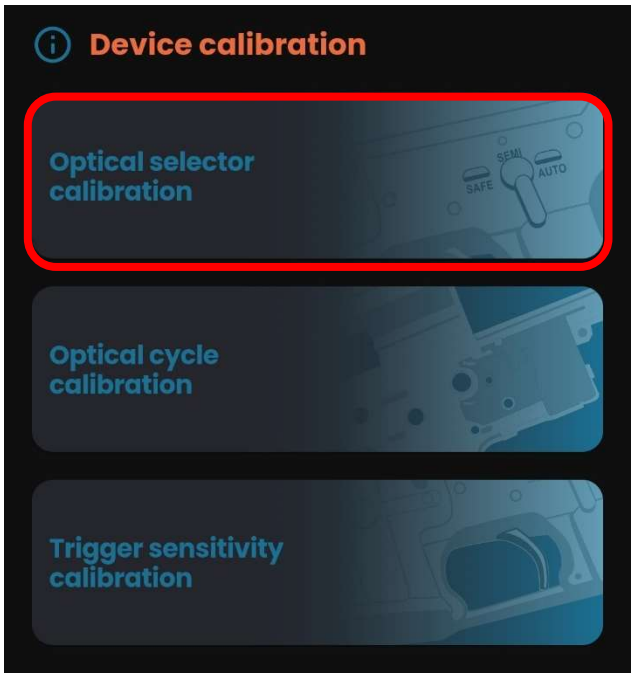
Confirm new password and push Save.
Do not tell the password to anybody!



Factory & password reset

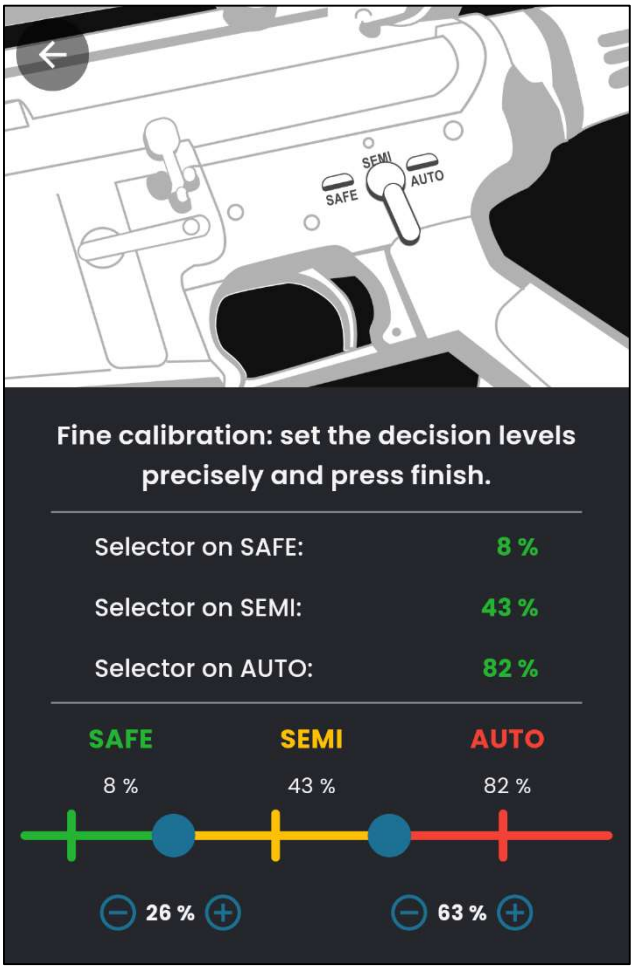
If you **forgot your password -** restore it:
Connect and disconnect 3x the battery in short time period – motor will play melody for successful **factory reset**

Optical selector calibration

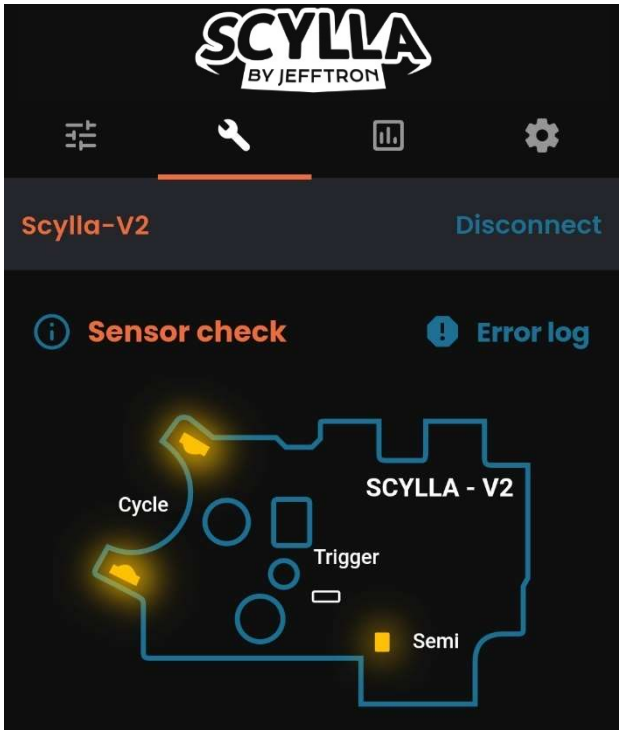


Optical calibration process is for setting your selector on gun (safe, semi, auto)
At the end, every selector position has to be green.
You can change decision points in the **fine calibration**

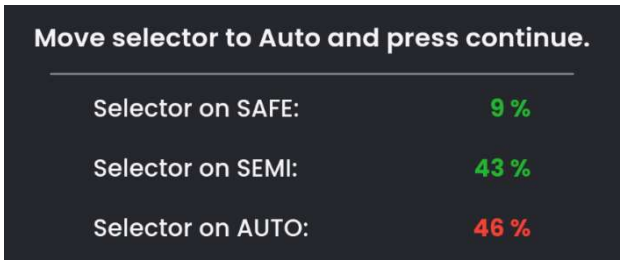
Follow instructions in the calibration:
Move the selector plate to **Safe**, its value should be in range **6% - 30%** and press continue.
Move the selector to **Semi (range 40%-70%)** and press continue.
Move selector to **Auto (range 80%-99%)** and press finish.



Try the correct responses in the „**Sensor check**“ function.



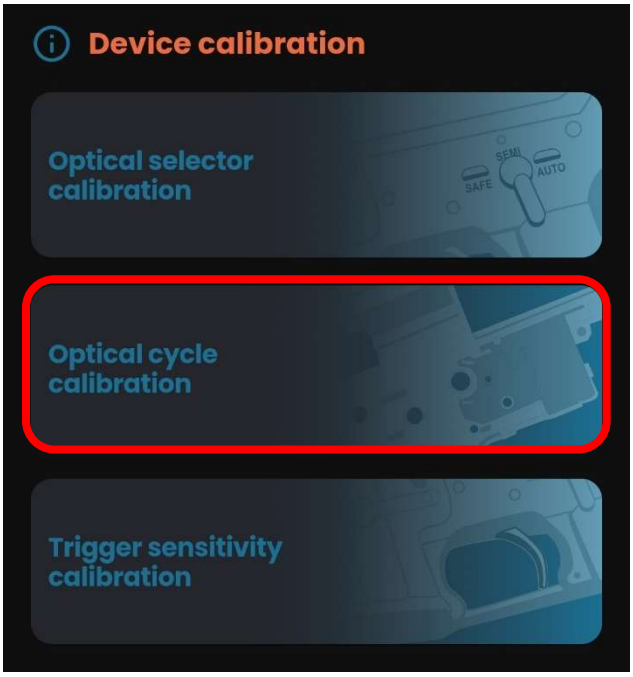
If any selector position ends in red, its value is too close to another one, so the position will not be set right.



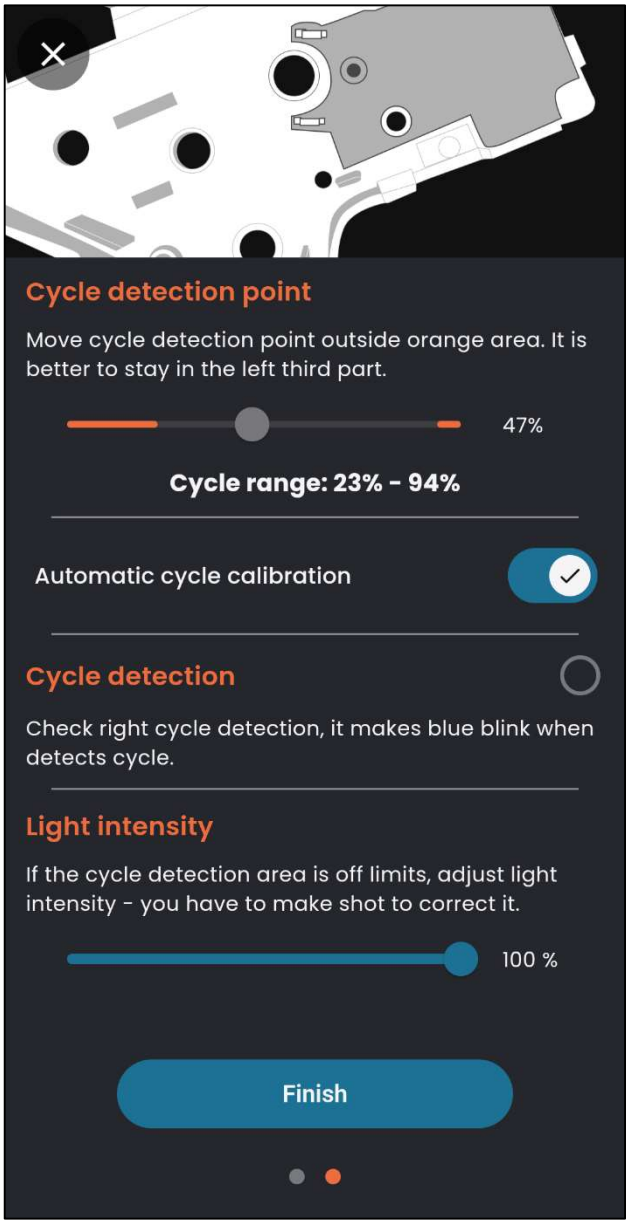
This could be caused by wrong sticker position or dirt on selector plate or sensor.
It is also possible you didn‘t change selector position during calibration process.

Optical cycle calibration

This process is for setting your gun cycle detection. For that you have to make shot to spin cycle gear. **Follow instructions in the calibration. Make sure no BBs are in the gun!**



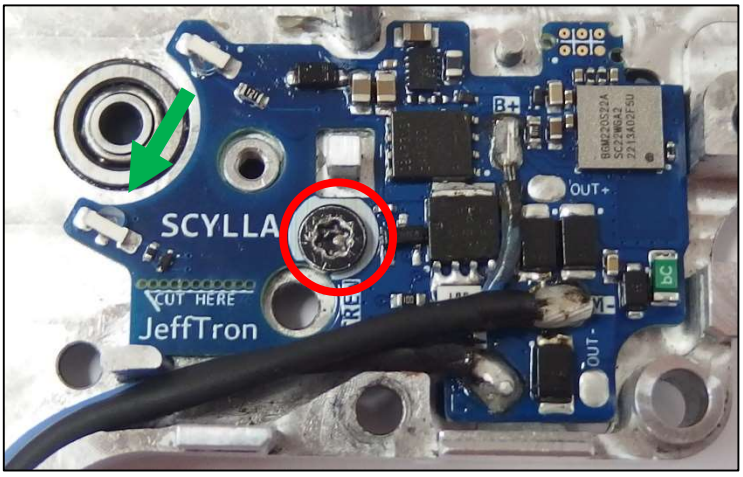
After the shot, this page appears.



Cycle detection point determines when cycle is detected. Higher value = sooner.
Cycle range shows sensor reading when sector gear is spinning. Ideal range is **10% - 90%**. It **works perfectly** even with a range difference of **only 20%**.

Automatic cycle calibration sets cycle detection point when error 103 appears.
Cycle detection blinks when a sensor detects sector gear complete cycle.
Light intensity lowers the cycle range if it is too high.
For update shoot again.

If the cycle range values are **too high**, move the sensor slightly **left** to be closer to the sector gear.

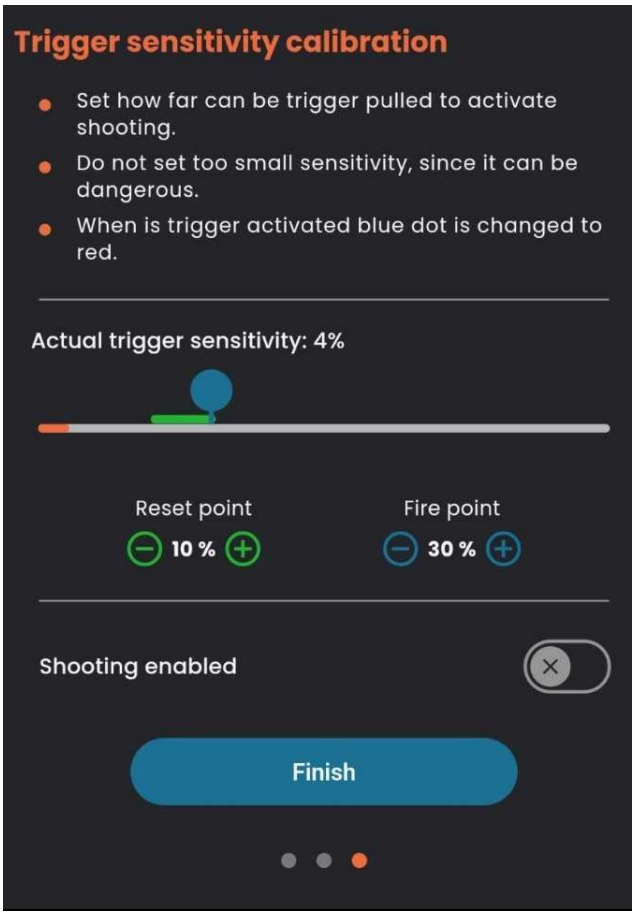


If cycle range values are **too low**, move the sensor slightly **right** to be further from the sector gear or clean the sensor.
To do that, use the screw in **red circle.**

Trigger sensitivity calibration

Set how far can be trigger pulled to activate shooting.

Follow instructions in the calibration. Make sure no BBs are in the gun!



Set how far can be trigger pulled to activate shooting.
Do not set too small sensitivity, since it can be dangerous.
When is trigger activated blue dot is changed to red.
Reset point has to be overcome to make shot again.
„**Shooting enabled**“ button makes gun to shot, now you can test actual trigger response.

First time shooting

1. Connect the battery, after 1s you will feel a short vibration - power-up self-test is complete.

2. Put the gun into SAFE-nothing will happen on trigger pull

3. Put the gun into SEMI and it will fire once.

4. Put the gun into AUTO and pull the trigger shortly. Gun should fire a burst of 3 rounds. If you hold down the trigger longer, the gun will go on auto fire.

5. If everything works as described, congratulations for the correct installation the Scylla. If not, check what is written in the error log and last pages in this manual

6. Pair your phone with Scylla and update firmware to the newest version.

Keep your app and firmware always up to date!

WARNING: Disconnect the battery, when the gun is not in use! Scylla drains a small amount of current from the battery at all time, so it will over discharge the battery.

Application

Firing mode

Selector: safe - semi - auto

Safe: No responding to the trigger pull.

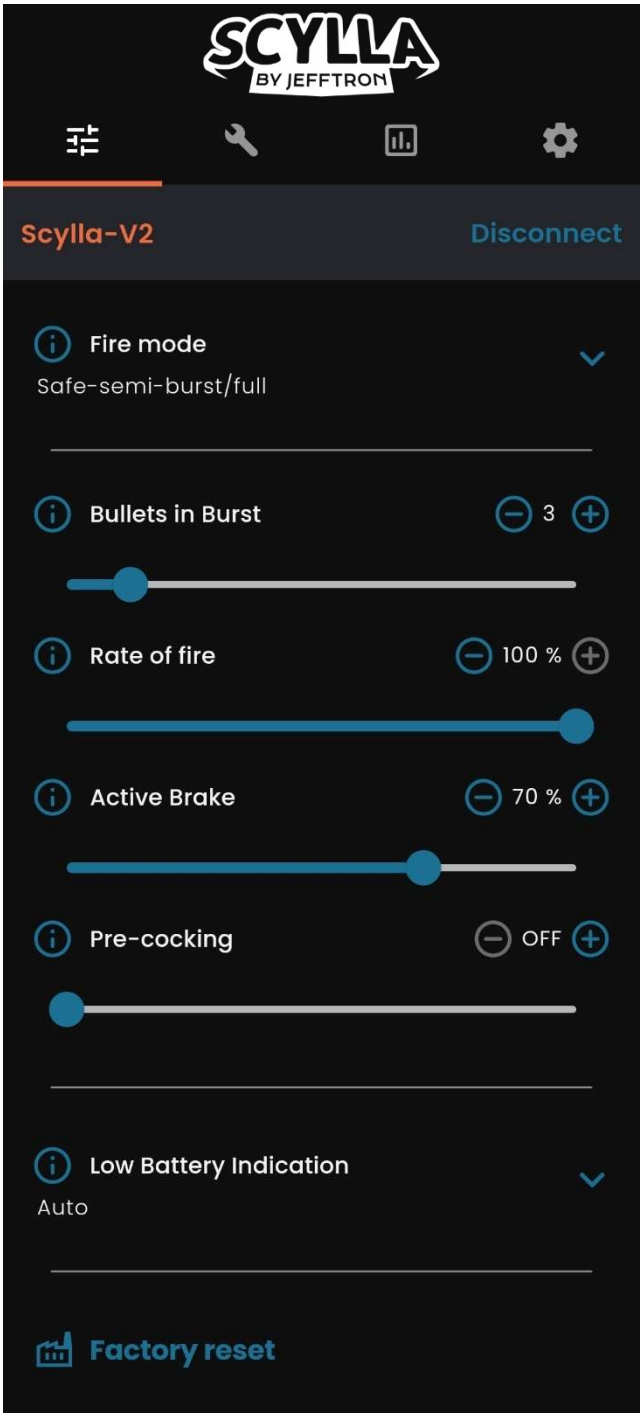
Semi: It fires a single shot per trigger pull.

Binary trigger: Fire semi when a trigger is pulled and semi again when it is released in less than 3s.

Burst: Gun shot a burst per trigger pull.

Burst/Full: A short trigger pull fires a burst, a long trigger pull makes auto fire.

Full: Gun makes auto fire until trigger is released.

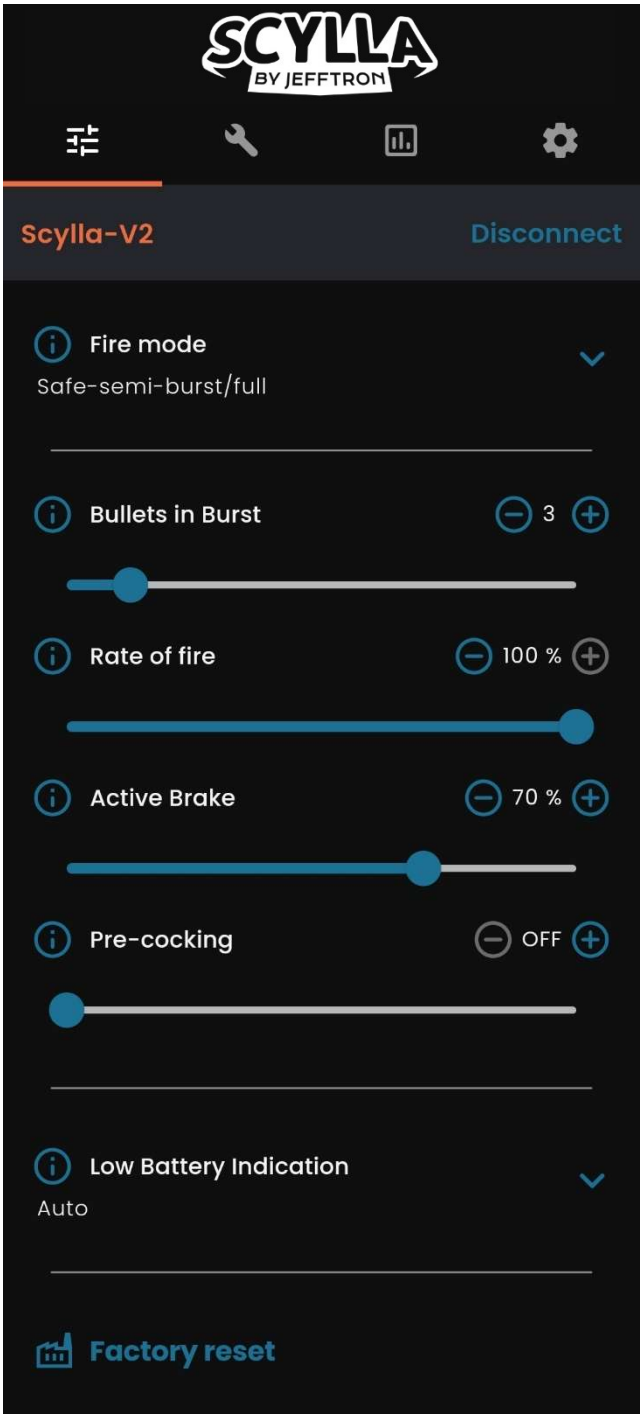


Burst

It enables you to shoot a set number of BBs on one trigger pull. It will always complete the burst. Every selector has its own burst settings.

Rate of fire

It is useful for solving problems when RoF is too high. This function makes breaks between shots to reduce the RoF. It gives you fast trigger response even with a very low RoF, just like a real gun.



Active Brake

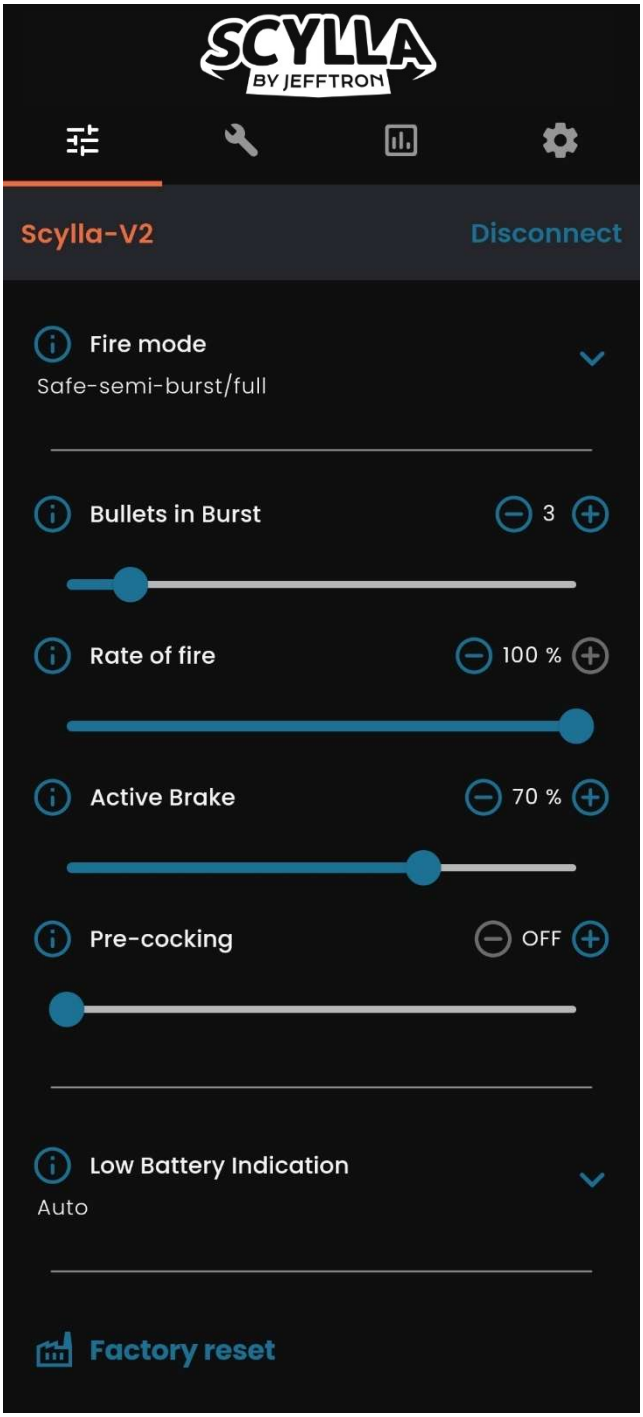
It uses the excess energy from the motor to stop it. Spring is fully released, parts in gearbox aren‘t under strain. Higher braking is for weapons with high RoF. Braking effect is more powerful with torque motor.

Note: Lower braking intensity spares the motor coils.

Pre-cocking

The piston is partly compressed after SEMI fire. There isn‘t almost any delay between trigger pull and shot. Recommended compression is about 40 %. Holding the trigger for 3 seconds, gun shots again with de-cocked piston - use it for storing the gun after game.

WARNING: it increases wear and tear on the gearbox.



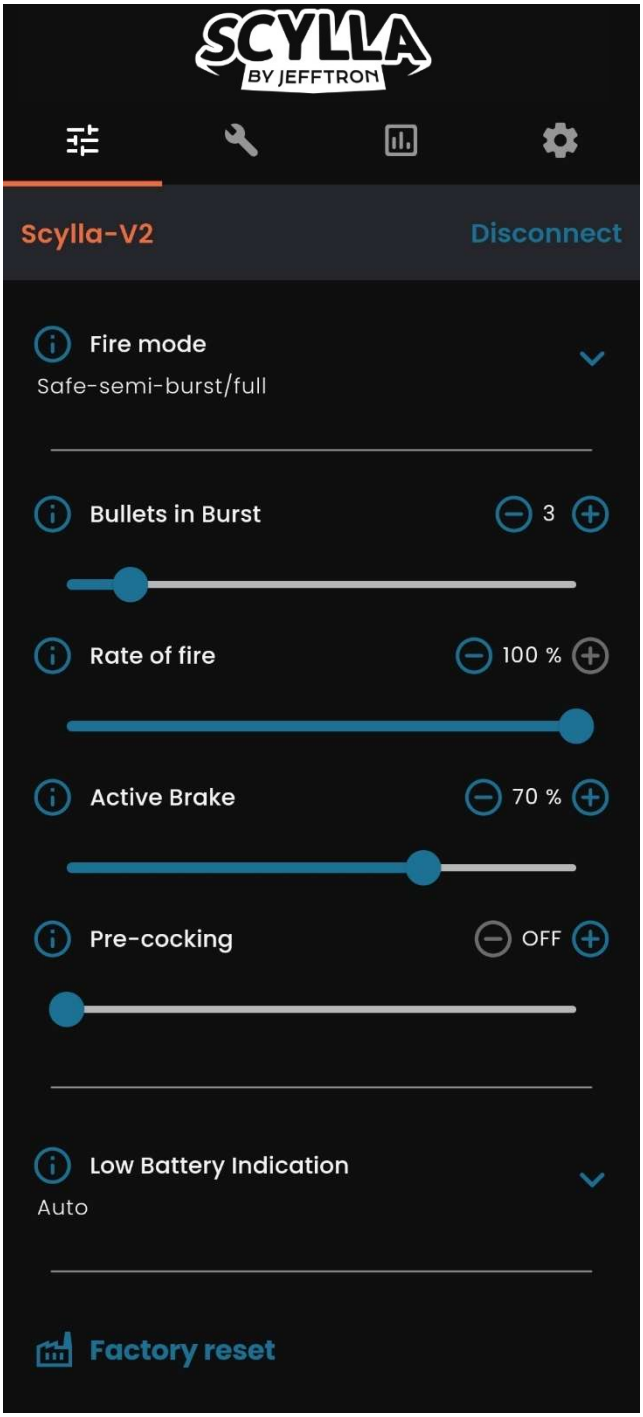
Low Battery Indication

It is used for only Li-pol batteries 2S and 3S.

Choose “**Auto**” mode for automatic detection of your Li-pol battery or you can set it manually.

When is the low battery voltage detected, gun vibrates after each shot. Now it is good time to replace the battery at the nearest opportunity.

When the battery is discharged the gun vibrates instead of firing for battery protection.
WARNING: Scylla drains small amount of current from the battery all the time!



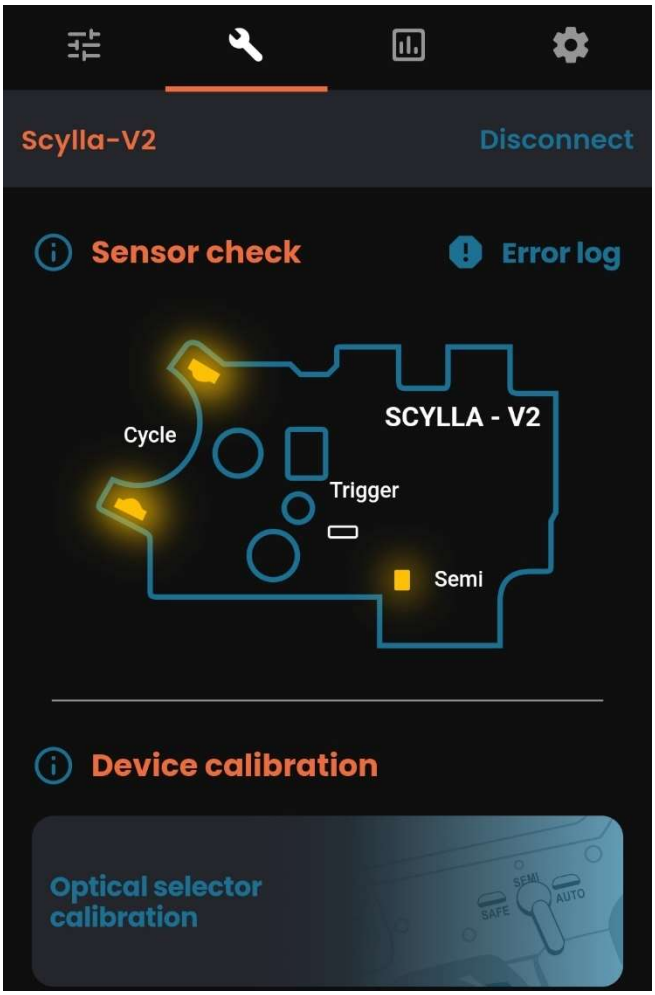
FACTORY RESET

It restores parameters to factory state (password is unchanged).

If you **forgot your password** - restore it:
Connect and disconnect 3x the battery in short time period – motor will play melody for successful **factory reset**

Sensor check

Shows how the sensors respond. Black color is OFF, yellow is ON. If sensor doesn't work as it should, please recalibrate it on this app page. Selector on “Safe“ is detected as OFF.

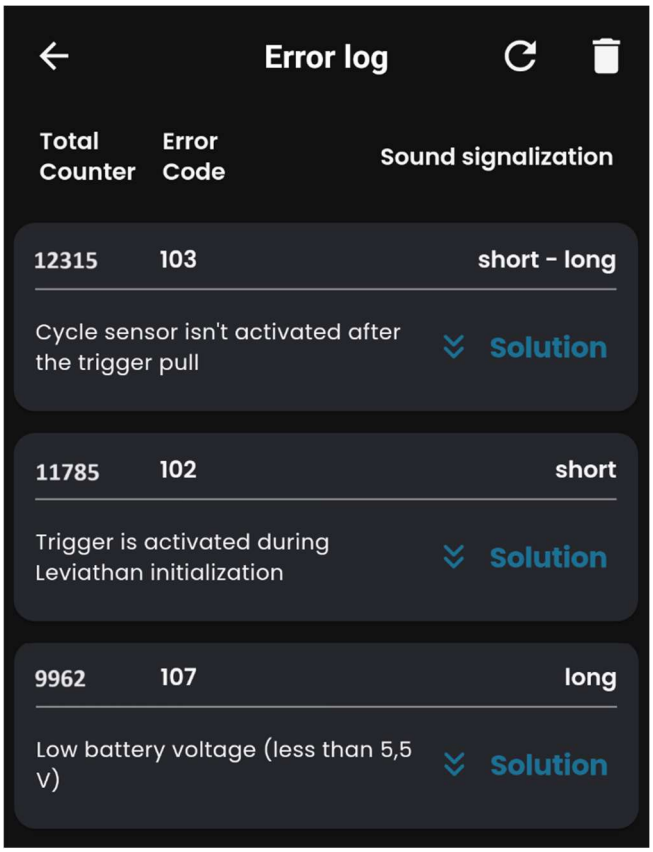


Device calibration

It was described on previous pages.

Error log

shows the errors made during the device life. A total shot counter value is saved when an error happens. “**Solution**” shows a possible solution.
Bin at the top corner will reset all errors.



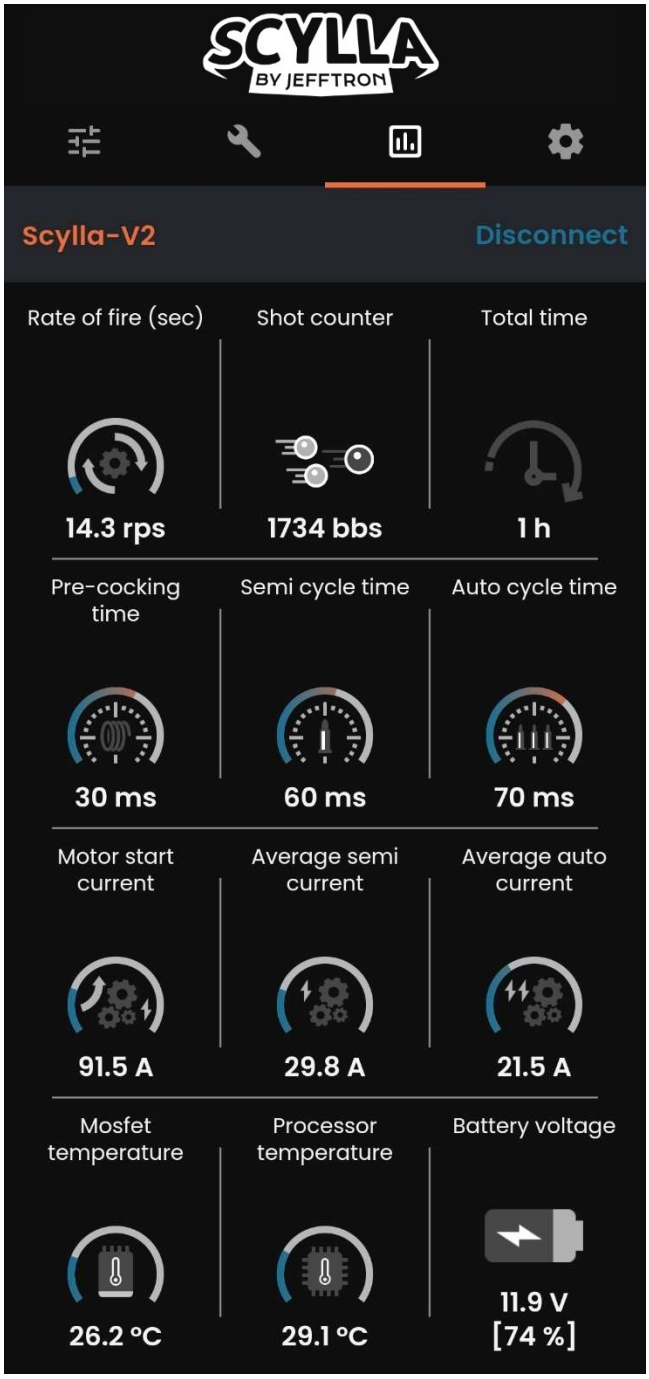
Statistics

Rate of fire: Gun rate of fire per second.

Shot counter: records full gear spin and counts every shot during a lifetime.

Total time: how long is the battery connected during a lifetime.

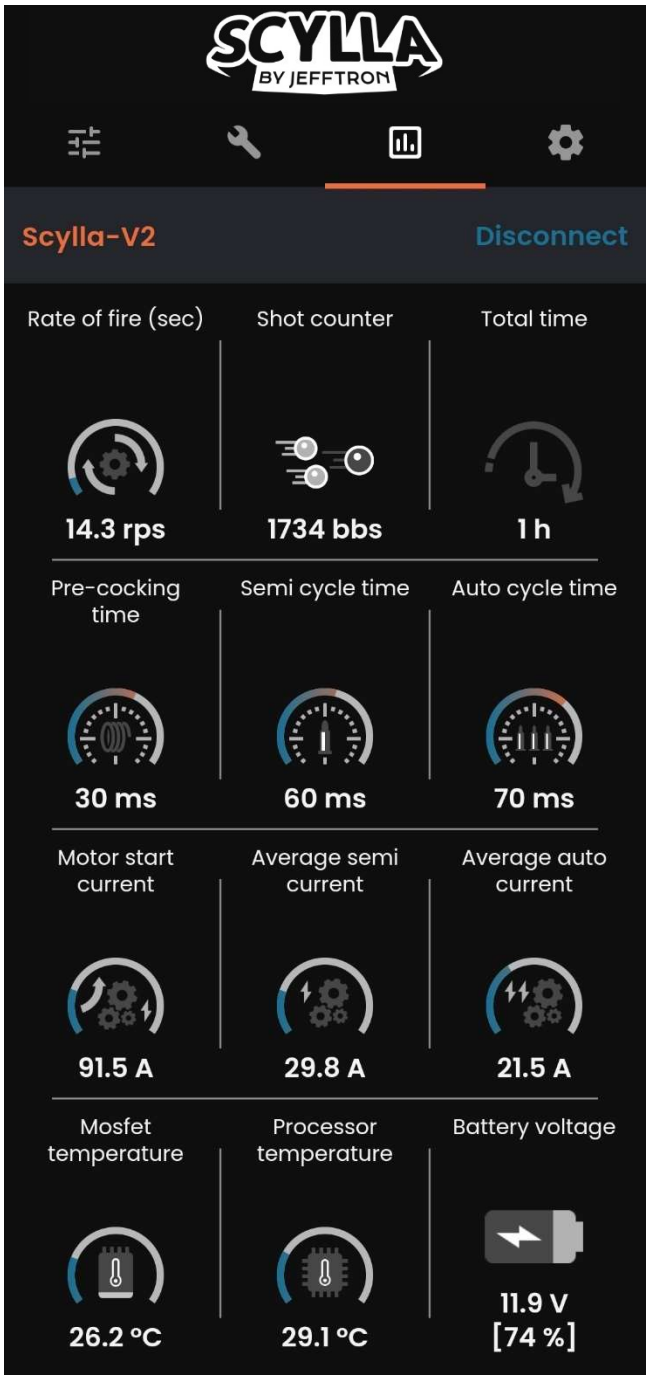
Pre-cocking time: Time to move piston to compressed position (it will reduce a Semi cycle time).



Semi cycle time: Time between motor start and a piston release.

Auto cycle time: Time between shots in a burst where the RoF has already reached its max. value.

Motor start current: Peak current when the motor starts spinning.



Average semi current: Current during the first shot.

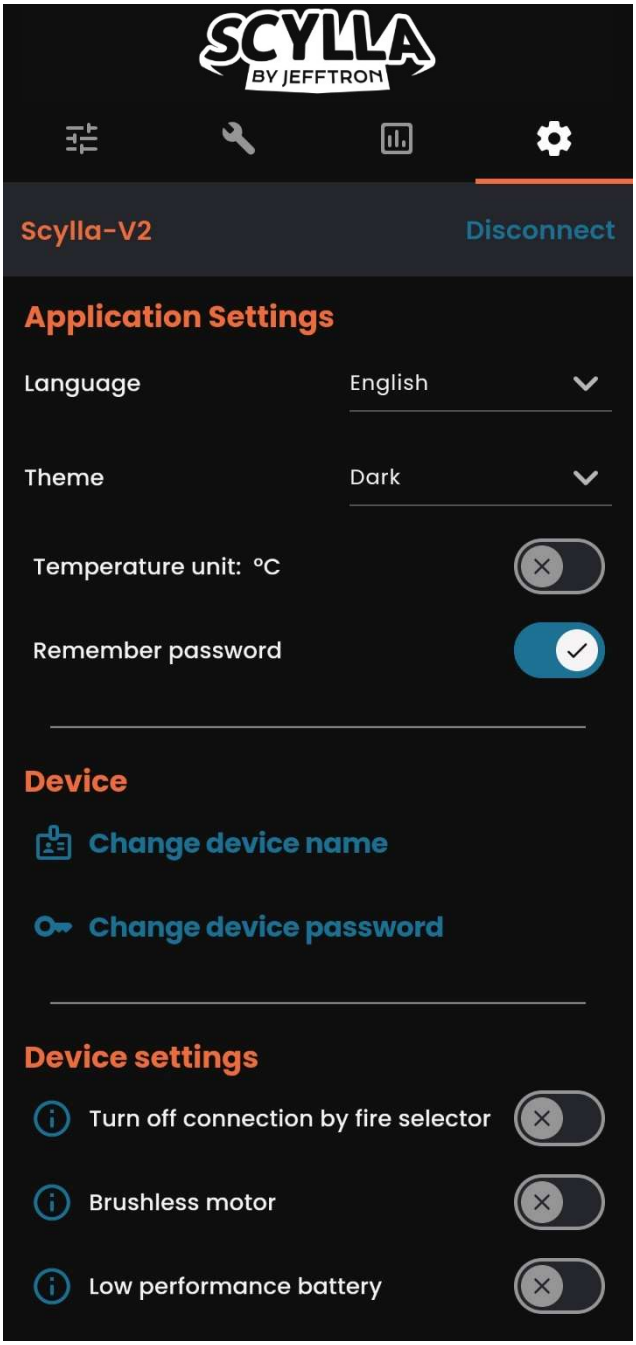
Average auto current: Current during burst fire.

Mosfet temperature: Actual mosfet temperature, the cut-off temperature is 75 °C.

Processor temperature: Actual processor temperature, the cut-off temperature is 75 °C.

Battery voltage: It shows actual voltage value. When is used lipo monitoring, it shows battery capacity percentage.

Settings



Language: Text translation in the app to different languages. Tacticool language is made up for fun.

Theme: Choose white or black app interface.

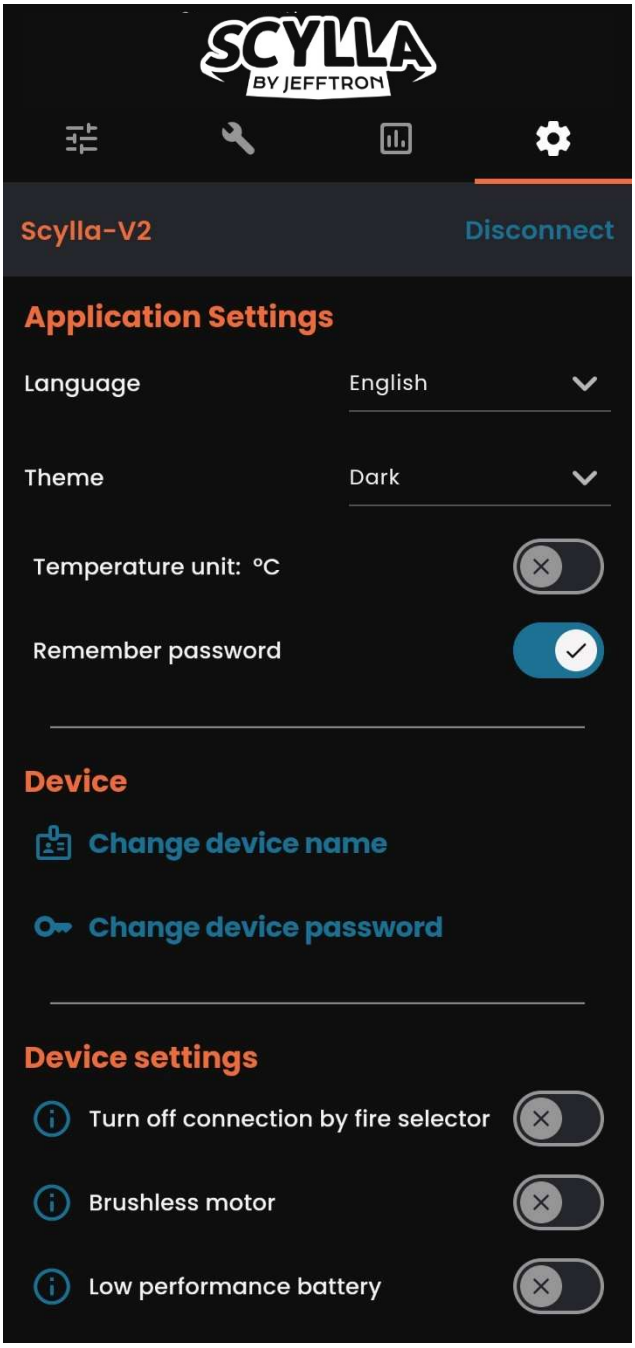
Temperature: Set mosfet and processor temperature unit from °C to °F.

Remember password: Sets automatic login to the “Leviathan by Jefftron” app.

Change device name: Is visible on the devices list (max. length is 16 characters). Scylla disconnects from the application after the name is saved.

Change device password:
Write to the first-row old password and to the other

two new passwords (4 digits) and tap the SAVE button.

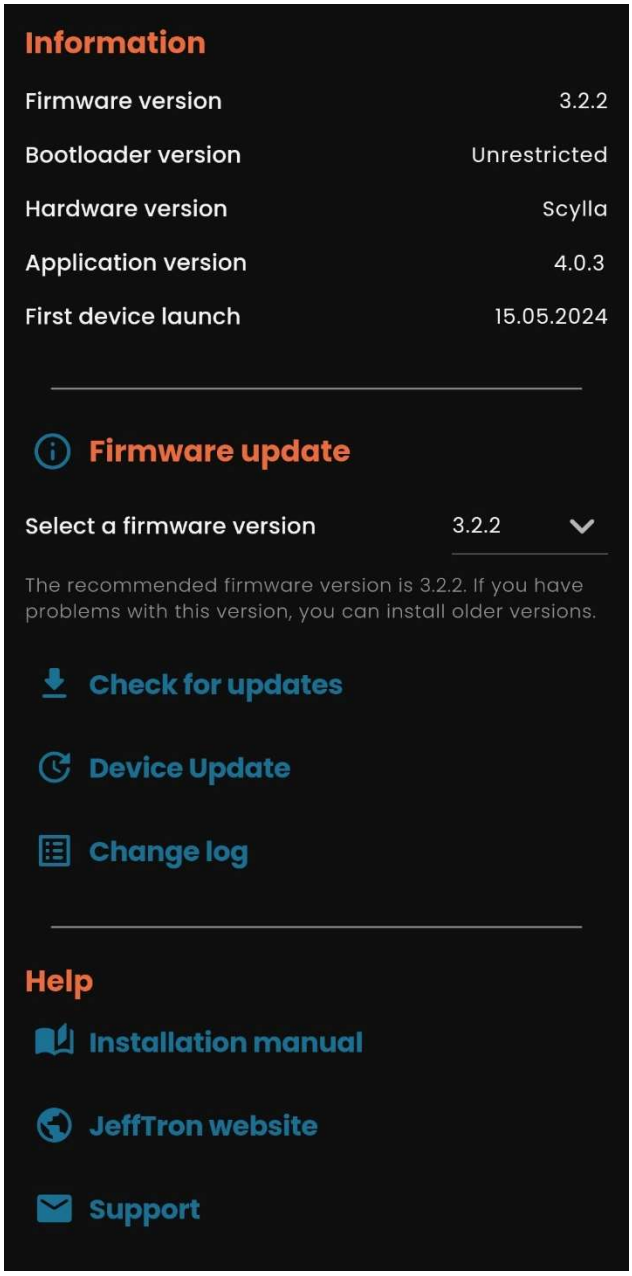


Turn off connection by fire selector: If it is ON, then wireless connection will be turned OFF/ON by fast change selector from **Safe to Auto and back**. It is good for gun security.

Brushless motor: The active brake is disabled all time to safely use a brushless motor. You can use the rate of fire and de-cocking function now.

Low performance battery: Reduce motor start current for a battery which can´t handle high current spikes for running the gun.
Low performance battery will increase Semi cycle time (worse trigger response).

Settings



Information: Information about app and firmware version. Bootloader and hardware versions are constant. First device launch is date of first app connection with scylla.

Select a firmware version: If the newest firmware version doesn‘t work right, you can downgrade it to the previous version any time.

Check for updates: If your phone lost connection, use this function to see the actual firmware version.

Device update: Fixes bugs and adds new features. It takes approximately 1 minute to finish. After that will pop up a successful message + vibration.

Installation manual: Link to the latest manual in .pdf.

JeffTron website: Link to the eshop **www.jefftron.net**

Support: If you have any questions or problems, please contact us via email: **support@jefftron.cz**.

Startup codes

After connecting the battery the Scylla does a power up self check, which lasts a 1s.
It results in the motor vibration or error beeps with the error log record:

1 Short vibration - All systems are OK. This vibration is about half a second long.

1 Short beep - A trigger is pressed during battery connection (102)

2 Short beeps - High current flow in the mosfet (106)

3 Short beeps - High temperature of the mosfet (104)

1 Long beep - Battery voltage is less than 5.5 volts (107)

2 Long beeps - Battery voltage is more than 13.0 volts (105)

3 Long beeps - High processor temperature (108)

Short-long-short beep - Motor is disconnected (109)

Long-short-long beep - Nonfunctional application (200)

Post firing codes

If any problem occur during firing, it will be signaled by beeps with the error log record:

Short-long beep - Sector gear sensor isn‘t pressed after a trigger pull (103)

2 Short beeps - High current flow in the mosfet (106)

3 Short beeps - High temperature of the mosfet (104)

1 Long beep - Battery volt. is less than 5.5 volts (107)

3 Long beeps - High processor temperature (108)

1 Vibration after shot - Battery voltage is low. If the battery drops much further, the gun will vibrate instead firing. Now it is a good time to change your battery for new one.

1 Vibration instead of fire - Battery is discharged. The gun vibrates on every trigger pull. change your battery for new one. **WARNING:** the battery is still slowly discharging.

1 Vibration after some time - When is „delay between shot“ activated, it vibrates after the time ends. It is a notification the gun is ready for shooting (sound signalization disables it)

Decreasing melody = Wireless connection is OFF

Increasing melody = Wireless connection is ON

Troubleshooting

ISSUE: Weapon doesn‘t react at all after battery connection.
SOLUTION: Check if the battery is properly connected and charged. Also check motor
contacts and motor functionality. Check if the safety fuse hasn’t been blown.

ISSUE: Weapon doesn‘t make shots after trigger pull (start-up vibration was made).
SOLUTION: Damaged or misplaced micro switch for trigger, check it‘s proper function.

ISSUE: Selector is set to semi but act like on SAFE or AUTO (or any other combination).
SOLUTION: Check the right sticker position on the selector plate or clear dirt on this sensor, check its proper function through „Sensor check“ in the app and use „Optical selector calibration“ to set it again.

ISSUE: Burst of 2 BBs on semi fire -> piston over traveling.

SOLUTION: Gun have too high rate of fire and piston make over spinning. Solve it by increasing active brake or reducing pre-cocking (if used) or reducing rate of fire or use battery with lower voltage or change gear ratio or use low speed high torque motor.

ISSUE: Selector plate has moved during shooting
SOLUTION: You have changed by mistake fire selector during shooting or it was changed
by vibrations from shooting. Check and change if necessary the right sticker position on the selector plate, and use „Optical selector calibration“ to set it again.

ISSUE: Trigger is pressed during battery connection (Error 102).
SOLUTION: Release the trigger and try again. Check for right trigger microswitch function.

ISSUE: The gun always shoots BURST with short-long beep after fire (Error 103).

SOLUTION: Cycle sensor doesn‘t detect sector gear motion. Clean the sensor from dirt.
check its right position in the gearbox to detect the gear cam and use „Optical cycle calibration“ to set it again.

ISSUE: High temperature on the mosfet (Error 104).
SOLUTION: Wait until temperature will be dropped down. If it repeats, mosfet is overloaded by too high Amps. Change gearbox internals to drain less amperage.

ISSUE: Battery voltage is too high (Error 105).
SOLUTION: Change battery with less voltage than 13.0 volts.

ISSUE: High current flow the mosfet (Error 106).
SOLUTION: Check if motor or gears is damaged or jammed. Check wires to motor for short
circuits or exposed connections. Could be problem of unbalanced gun upgrade.

ISSUE: Battery voltage is too low (Error 107).
SOLUTION: Change or charge battery to have more voltage than 5.5 volts. Activates function “Low performance battery”

ISSUE: High temperature on processor (Error 108).
SOLUTION: check for short circuits on Scylla through the gearbox or damaged parts.

ISSUE: Motor is disconnected (Error 109).
SOLUTION: Check motor and contacts for it, if they aren‘t damaged or disconnected.

ISSUE: Nonfunctional application (Error 200).
SOLUTION: Program error in the Scylla. Make update firmware to the newest version.

ISSUE: Gun suddenly stopped firing.
SOLUTION: Protection could be activated - check error log. Check battery charge. Check motor contacts and motor functionality.

ISSUE: The Scylla is not visible in the device list in the application.
SOLUTION: Click to refresh button in the app. Check if battery is charged and connected
into the Scylla. Enable wireless and location in your phone. Restart mobile app.

ISSUE: You programmed the Scylla, now it doesn‘t do what you wanted.
SOLUTION: Best way is to do **FACTORY RESET** and start again.

ISSUE: The gun does something strange or nothing.
SOLUTION: STOP! Release trigger, disconnect battery and search for the problem before something will be irreversibly damaged! Contact us at email **support@jefftron.cz**.

MANUFACTURER

Ing. Filip Němec

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ID: 87936062, TAX ID: CZ8503013475

Made in Czech Republic

www.JeffTron.net

Warranty does not cover:
water immersion, defects or damage from accident, misuse, opposite battery polarity, abuse, damaged wires, wrong installation, bad handling, any modification by user, unusual physical, electrical or electromechanical stress.

Exclusion of liability: Manufacturer Ing. Filip Němec is not liable for any damages, injuries or accidents of any kind resulting from the use of this product in the airsoft gun.

CE RoHS

For technical support or reclamation use email:
support@jefftron.cz

MANUAL VERSION 9.2024