LEVIATHAN
BY JEFFTRON

INSTALLATION MANUAL

## FOR GEARBOX EVO3

Leviathan-EVO3 parameters

- It is processor controlled mosfet with wireless communication.
- Device is fully integrated inside the gearbox Scorpion EVO3 A1 from ASG manufacturer instead of the original electronics.
- Completely made wires with dean T connector.
- It adds new shooting modes, controls RoF, pre-cocking, active braking, electronic fuse, low battery indication, statistics, bolt catch disable, empty magazine sound indication ...
- Controls via app in the smartphone (Android and iOS operating system).
- Usable for battery with max. 17 volts (max. lipol 4S 14,8V).

Safety warning

- Installation of this device into the gearbox requires advanced technician skills!
- Please read these informations 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 you aren't using the gun! Otherwise you will fully discharge the battery. Because the device drains small amount of current from it all the time.
- Don't connect battery when gun pointing towards you, another person or an animal.
- Don't modify, repair, put into any kind of liquids or thermal shock the Leviathan-EVO3.

Package contents

- Leviathan-EVO3 drop-in module with wiring
- Two washers with screws to secure Leviathan-EVO3 in the gearbox
- Set for installation anti reverse latch
- Leviathan black 40mm round sticker
- Foam to keep device in place
- Installation manual
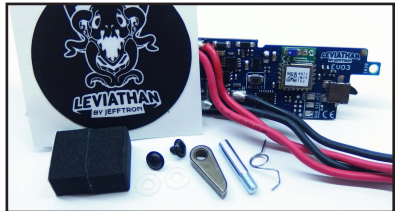
The gearbox preparation

1. Remove and open the gearbox according to the normal gun disassembly procedure.
2. Take out all the internals from the gearbox and clean the vaseline, oils after them.
**3.** Remove electronics and cut off lever from the gearbox, not used with Leviathan-EVO3.

Anti-reverse latch modification (ARL mode)

ARL mode allows to use pre-cocking, lower level active braking and DSG gears, because anti-reverse latch holds gears in the position, when is piston partly stretched.
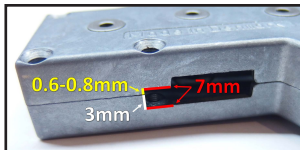
WARNING: Without ARL mode you risk damaging your gear box which will void warranty!
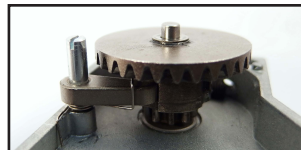

1. Parts used for ARL mode are included in package with Leviathan-EVO3.
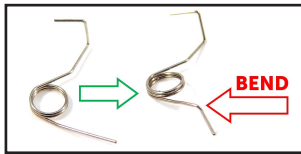
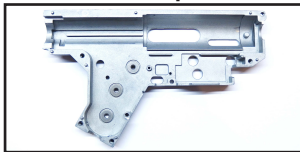**2.** Bend in the middle the spring for ARL approximately 45° down.

3. Grind hole in both gearbox halves for ARL. Don't make it too big, continuously check ARL fitment in the hole.
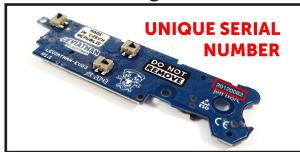

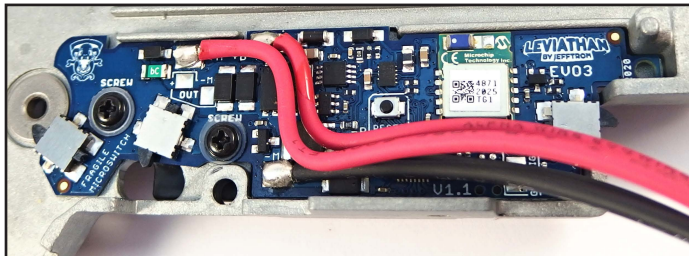**4.** Use glue to hold screw in place. Test if ARL holds gear to not spin clockwise. ARL mode is finished now. **2**

Insertion procedure of Leviathan-EVO3 into the gearbox

1. Prepaired gearbox for installation.

UNIQUE SERIAL NUMBER
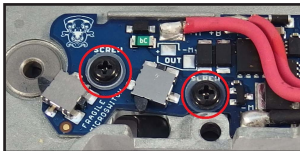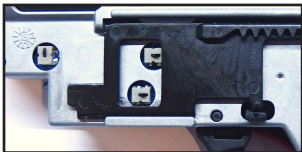
2. Do not remove this transparent foil.

3. Insert Leviathan-EVO3 instead of the original electronics:
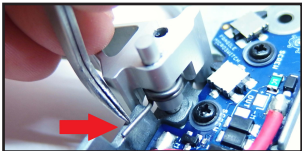- Check if it is laid flat on the gearbox shell.
- Adjust the position of the Leviathan-EVO3 to same distance from sector gear bushing.
- Use screws with pads from package and screw the Leviathan-EVO3 to the gearbox (red circles).
<u>3</u> - Bend wires according the picture.

4. Check other side if all 3 micro switches are in the center of the holes.

AVOID MICRO SWITCH DAMAGE

5. Carefully insert the trigger into the gearbox in rest position. Trigger spring must be outside the gearbox.

6. Push trigger spring into the gearbox by screwdriver.
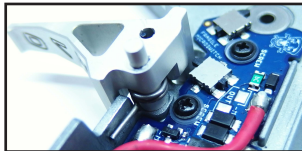
7. Final trigger assembly.

8. Insert into the gearbox sector gear with piston teeth in up position. Use shims with small outer diameter.

MAKE GAP
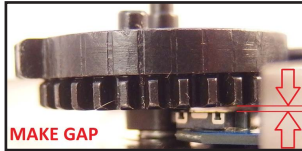
9. Make sure the gear does not touch micro switch body. Spin the gear slowly to check right cycle detection in the app.
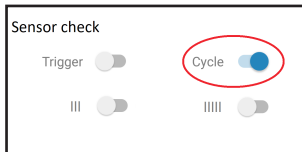
10. When is turning sector gear, the "Cycle" icon must be flashing blue. See the connection procedure on page 7.

12. Stick the foam to the right gearbox shell (included in the package).

14. Overal look to the wiring.
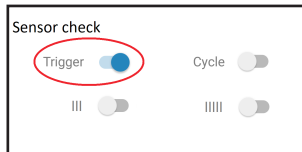
11. When is trigger pressed, the "Trigger" icon must be flashing blue.

13. Insert all internals into the gearbox, screw gearbox together and place wires to the holders on the picture.
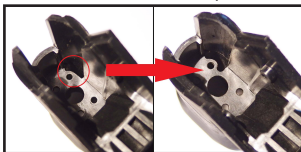
15. Grind hole to the pistol grip for better pull wires through it.
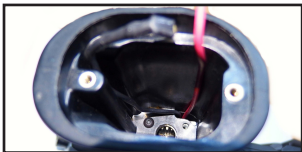
16. Black wire bends back at the bottom of the grip and red wire lead to the front.

17. Bend both motor connectors exactly like on the picture.
Do not bend it to other site!

18. Connect wires to the motor. Keep in mind right motor polarity.
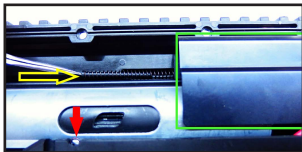
19. Red arrow - push spring inside the hole.
Green frame - put the metal slide on gearbox and then into the gun body.
Yellow arrow - push the spring into the groove.

20. Wires to the battery lead in the groove in the hop-up chamber.

21. Finish rest according to the normal gun reassembly procedure.

Testing micro switches

1. Install „**Leviathan & Scylla by JeffTron**" app from iOS store or Google play into your smartphone.
Or use link **https://www.jefftron.net/application** (QR code).

🔫 **Leviathan-E3** 04:91:62:A9:6D:0F	**Connect**
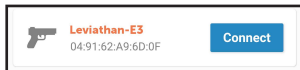
2. Connect battery to Leviathan - EVO3 and pair smartphone.

Gun password

password
1234   👁

                                          4/4

☐ Remember password

                              Cancel   OK

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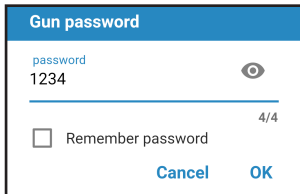
3. Use a default password „**1234**".
You can save it by checking the box "Remember password.

Change device password

Do you want to change default gun password now?

                              No   Yes

---
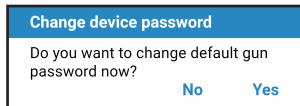
4. Change the password to your own
7   4 digit one.

Change device password

Old password   👁̶

                                          0/4

New password   👁̶

                                          0/4

Confirm new password   👁̶

                                          0/4

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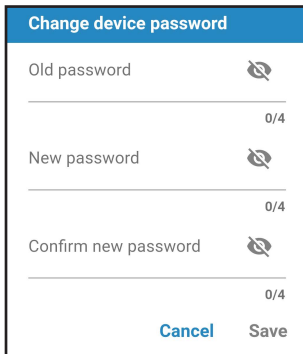
5. Confirm new password and push Save.
Do not tell the password to anybody!

If you **forget your password**, restore it by holding RESET button for 2sec - see page 3. Battery has to be connected.

7. Micro switch „III" is in the green circle and „IIIII" is in the red circle. In yellow circle is Bolt catch, which has to be pressed after battery connection and when is magazine changed.

6. Check if every micro switch responding in the app.
- white color is OFF, yellow is ON.
- Micro switches positions are displayed on picture 7 and 8 at page 8.
- With selector on **IIIII** are micro switches „III" and „IIIII" ON (as on this pic.).
- **I** position is when micro switch „III" and „IIIII" are in OFF state.
- Bolt catch is ON, when is switch in rest position.
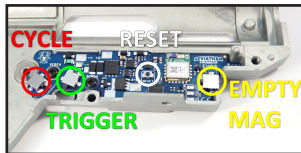
8. Trigger micro switch position is in the green circle and cycle micro switch position is in the red circle.
- When is turning the sector gear, the "Cycle" icon must be flashing blue.
- Yellow is for detect empty magazine.
- White reset button hold for 2s, password is reset to **1234** after vibration from motor (settings are reset too). **8**

First time shooting

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

2. Pull bolt catch to load the gun.

3. Put the gun into **O** - trigger is blocked for pull.

4. Put the gun into **I** to fire once.

If you hear **2 short fast beeps**, you didn't **pull bolt catch** or the magazine is empty.

5. Put the gun into **III** and the gun should fire a burst of 3 rounds.

6. Put the gun into **IIII** and the gun will go to auto fire.

7. If everything works as described, congratulations for the correct installation the Leviathan-EVO3. If not, check what is in the error log and **16-18 pages in this manual**.

8. Pair the leviathan-EVO3 and update firmware to the newest version. Your smartphone has to be connected to the internet. ***Keep your app and firmware always up to date!***

WARNING

Disconnect the battery, when the gun is not in use! Leviathan - EVO3 drains small amount of current from the battery all the time so it will cause damage to your battery.

Output pads

- Leviathan-EVO3 v1.1 has 2 pads on the board for powering Maxx hop-up LED illumination or flashlight or laser etc. while gun is shooting.

- **Positive** pad is battery voltage (**red area**).

- **Negative** motor pad is in the **green area**.

- These pads cannot be controlled from the smartphone app. The power supply will work only when the motor is running.

9 Wires can't touch other pads on the board!
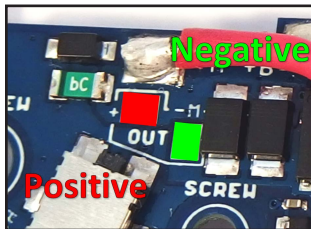
Input terminal

- Leviathan-EVO3 v1.1 3 pads for connecting of the external button, the virtual reload or sensor.
- **3,1V** is in the **red area** (for sensor only).
- **Signal** is in the **yellow area**.
- **Negative** pole is in the **green area**.
- External button connects on SIG and GND pad.
- In the app use an interface „**External input**"
- Wires can't touch other pads a on the board.
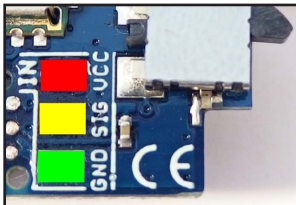
Change parameters page 1/3

Orange stripe = not paired, **green stripe** = paired
Paired = loads parameters from Leviathan.
Change parameter -> shows „**writting...**" in the green stripe. **Text dissapear ->** parameter is saved

Fire modes with **Selector on safe/semi/auto**:
- **SAFE**: no responding to the trigger pull.
- **Semi**: it fires single shot per trigger pull.
- **Semi/BurstX**: short trigger pull fires single shot, long trigger pull fires burst.
- **Binary trigger**: fire semi when trigger is pulled and semi again when it is released in less than 3s.
- **BurstX**: gun shoot burst per trigger pull.
- **BurstX+BurstY**: short trigger pull fire burstX, long trigger pull fire burstX plus burstY bullets.
- **BurstX/Full**: short trigger press fires burstX, long trigger press makes auto fire.
- **Full**: gun makes auto fire until trigger is released.
- **Virtual reload:** pull trigger to reload virtual mag.
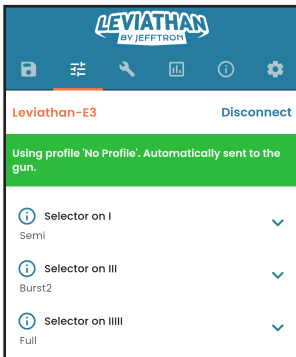
Burst functions:

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 with too high gun RoF. This function makes breaks between shots to reduce RoF. It gives you fast trigger response even with very low rate of fire, just like in a real gun.

Active Brake: *ARL mode has to be active (0-100%)*

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: *ARL mode has to be activated*

The piston is partly compressed after SEMI fire. There isn't almost any delay between trigger pull and shot. Recommended compression is about 70%. Holding the trigger for 3 seconds, gun shots again with de-cocked piston - use it for storing the gun after game.

*Note: it increases wear and tear on the gearbox.*

Delay between shots:

It is for simulation the delay from gun reload or recoil. During delay gun can't shoot. After delay gun vibrates shortly to notify the gun is ready for shooting.

Electronic fuse:

Set sensitivity for high current detection to avoid any damage if something goes wrong.

11 We recommend to set 10A above average auto current.
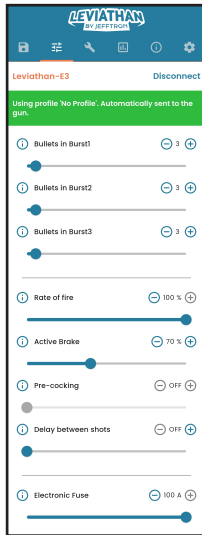
Change parameters page 3/3

Low Battery Indication:
It is used for only Li-xx batteries. When is low battery voltage detected, gun vibrates after each shot. It is time to replace the battery at the nearest opportunity. When the battery is discharged the gun vibrates instead of fire.
WARNING: battery is still slowly discharged.

External Input: Works with Input terminal - **page 10.**
- OFF: Every signal to Input terminal is ignored.
- External trigger: trigger is disabled and replaced by micro switch connected to Input (SIG and GND)
- Burst-3 trigger: micro switch connected to Input (SIG and GND) make 3 burst fire when it is pressed**.** Gun trigger is still functional.
- AUG trigger: selector plate detection is disabled. Gun trigger is set to selector on semi. Micro switch connected to Input (SIG, GND) is set to selector on auto.
- Empty mag (NO): Micro switch activates empty magazine detection, when is connected SIG with GND.

- Empty mag (NC): Micro switch activates empty mag. detection, when is disconnected SIG with GND.

- Virtual reload: Micro switch activates virtual mag. reload, when is connect SIG with GND.

Virtual magazine: value sets number of shots when it detects empty magazine.

Near empty magazine: makes 2 short beeps after each shot before it is empty.

Reload delay: is time when gun can't shoot after empty magazine or by „Virtual reload".

SAVE: You can save these parameters under custom name into your smartphone.

FACTORY RESET: It restores parameters to factory state (password is unchanged).   **12**
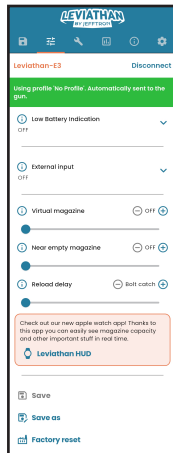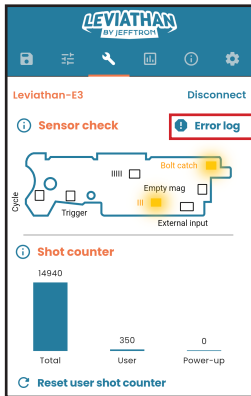
Sensor check: Shows micro switch responding. White color = OFF, yellow = ON. Micro switches are displayed on pic. 1 and 2 at page 2. With selector on **IIIII** are micro switches „III" and „IIIII" ON. Bolt catch is ON in rest position.

Shot counter: records full gear spin
Total - count every shot during lifetime
User - can be reset by user anytime
13 Power-up - battery connection reset it
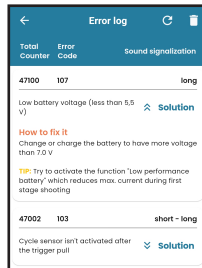
Error log: shows the errors made during the device life. A total shot counter value is saved when an error happens. Error expansion shows a possible solution.
Bin at the top corner will **reset all errors**.
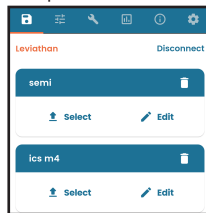
Profiles: You can save a profile here.
„Select" will upload settings to a device.

Statistics

Rate of fire (sec): Gun rate of fire per second.

Rate of fire (min): Gun rate of fire per minute.

Last trigger pull shots: The number of BBs fired at the last trigger pull.

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.

Power up time: how long is the battery connected.

Battery voltage: It shows actual voltage value. **Red color** line indicates when gun won't shoot. In **yellow** it will shoot with warning vibration. In **green** is everything OK and **grey** is discharge from 100% charge.
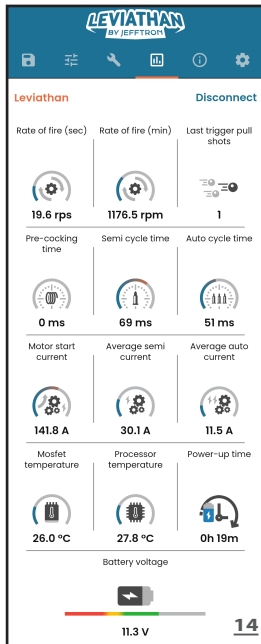
Informations

External sound system: Play custom sound when you pull the trigger, change fire mode, etc. through the phone speaker. More info about this system is on the next page.

Change device name: IIs visible on the devices list (max. length is 12 characters). Leviathan 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.

Vibration intensity: increases motor vibration feedback in 5 levels - use with low voltage battery.

Information: Information about app and firmware version. Bootloader and hardware versions are constant.

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 30 sec to finish. After that will pop up a successful message + vibration.

Change log: list of changes in Leviahtan firmwares.

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**.
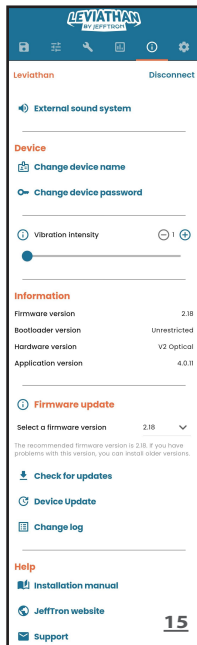
External sound system

Play custom sound when you pull the trigger, change fire mode, etc. through the phone speaker. Phone has to be paired with a Leviathan to use this function.

It also plays sounds through an external speaker which is connected to the phone (through jag or bluetooth).

Enable External sound system: enables or disables every sound on this screen.

Shot fire sound: It makes a sound every time the trigger is pulled.
It plays sounds even if gun is not shooting (fire mode = SAFE), with selector on AUTO it plays sound in a loop.
You can choose to play different sounds on trigger pull for selector on SAFE, SEMI and AUTO.

Selector switch sound: It makes sound everytime selector changes it's position. You can choose to play different sounds for selector on SAFE, SEMI and AUTO.

External input sound: It plays sound when the external input is pressed.

Empty magazine sound: It plays sound when virtual magazine reach 0 bb in the counter.

External sound system

Play custom sound when you pull the trigger, change fire mode, etc. through the phone speaker. Phone has to be paired with a Leviathan to use this function.

Enable external sound system

Shot fire sound

Trigger pulled on SAFE	Laser shot
Trigger pulled on SEMI	Air horn
Trigger pulled on AUTO	Machine gun

Selector switch sound

Selector on SAFE	Fart
Selector on SEMI	Custom sound
Selector on AUTO	OFF

| **External input sound** | OFF |

| **Empty magazine sound** | OFF |

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: mosfet and processor temp. unit °C or °F.

Remember password: Set automatic login to Leviathan.

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

Overspin detection (Error 100): It will turn off error 100.

Selector movement (Error 101): It deactivates warning when selector plate changes position during firing.

Sound signalization: Allow/deny sounds for empty magazine, delay between shots and virtual reload.

Full auto limit: It cut off power after 100 bb burst.

ARL mode: In the gun has to be installed anti reverse latch to unlock full access to Active brake and Pre-cocking features. If **ARL mode is grey (OFF):** Active brake is limited to 50-100% range and Pre-cocking is disabled to prevent gears overspin.

Functional bolt catch: it can be disabled for faster magazine reload

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

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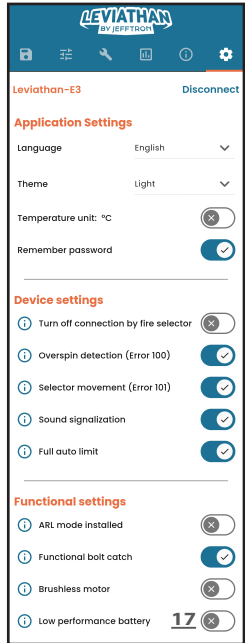
Startup codes

After connecting battery Leviathan-EVO3 does a power up self check, which lasts a 1s:

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

1 short beep - Trigger is pressed during battery connection (102)

2 beeps - High current flow the mosfet (106)

3 short beeps - High temperature on the mosfet (104)

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

2 long beeps - Battery voltage is more than 17.0 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 occurs during firing, it will be signaled by beeps with the error log record:

1 short beep - Micro switch for sector gear is pressed after the motor stop (100)

short-long beep - Micro switch for sector gear isn't pressed after the trigger pull (103)

2 short and long beep - Selector plate has moved during shooting (101)

2 short beeps - High current flow the mosfet (106)

3 short beeps - High temperature on the mosfet (104)

1 long beep - Battery voltage 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:** battery still slowly discharging.

1 vibration after some time - When is delay between shot activated, it vibrates after the delay time ends. It is for notification the gun is ready for shooting.

Decreasing melody = Wireless conect. OFF, **Increasing melody =** Wireless connect. ON

2 short fast beeps - Empty magazine or not pressed bolt catch to load the gun.   **18**

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: Damaged or misplaced micro switch for selector plate, check its proper function through micro switch check page in the app and correct selector plate shape according page 7 in this manual.

ISSUE: Micro switch for sector gear is pressed after motor stop (Error 100).
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 (Error 101).
SOLUTION: You have changed by mistake fire selector during shooting or it was changed by vibrations from shooting. Check microswitches through app, if they change state too close the selector position, modify selector plate shape to change it further.

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 micro switch doesn't detect sector gear motion. Use micro switch check function to move cycle micro switch to the right position detecting edte at the gear.

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.

Troubleshooting

ISSUE: Battery voltage is too high (Error 105).
SOLUTION: Change battery with less voltage than 17.0 volts.

ISSUE: High current flow the mosfet (Error 106).
SOLUTION: Check if motor or gears is damaged or jammed. Also check wires to motor for short circuits or exposed connections.

ISSUE: Battery voltage is too low (Error 107).
SOLUTION: Change or charge battery to have more voltage than 5.5 volts.

ISSUE: High temperature on the processor (Error 108).
SOLUTION: check for short circuits on the leviathan-EVO3 through the gearbox.

ISSUE: Motor is disconnected (Error 109).
SOLUTION: Check contacts for the motor, if they aren't damaged or disconnected.

ISSUE: Nonfunctional application (Error 200).
SOLUTION: Program error in the Leviathan-EVO3. 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. Check if the safety fuse hasn't been blown.

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

ISSUE: You programmed Leviathan - EVO3, 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

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VERSION 4.25

2 WARRANTY YEARS

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.

WARNING!
ELECTROSTATIC SENSITIVE DEVICE

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

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