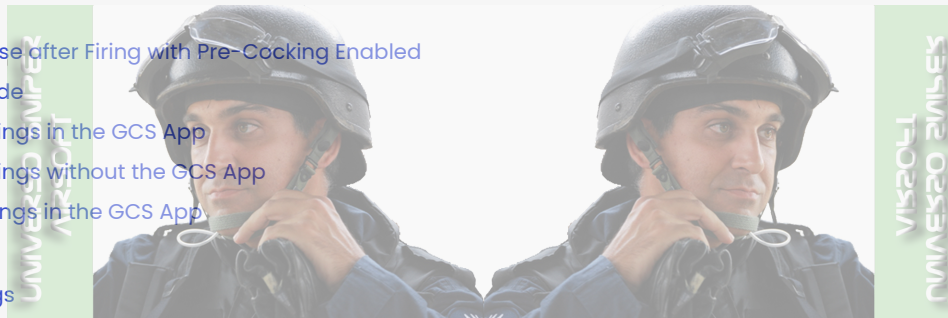


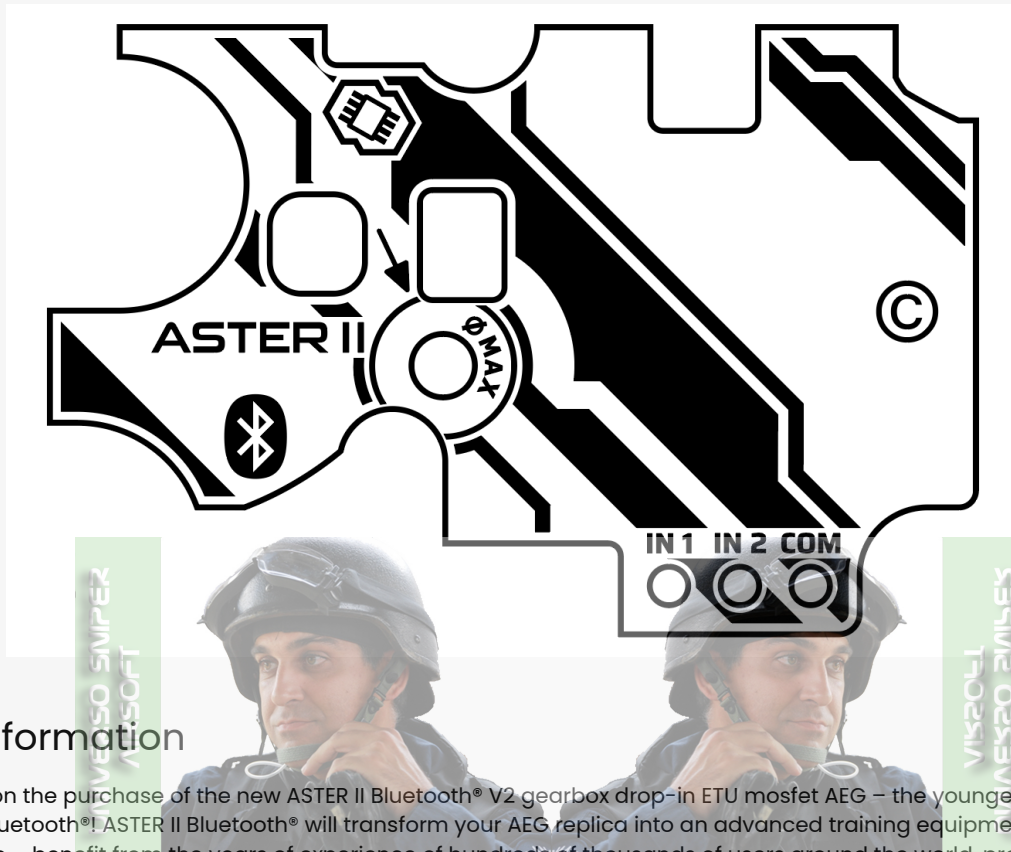
User Manual – ASTER II Bluetooth® EXPERT for V2 GB [AEG & HPA]

Última actualización 2 octubre, 2024 • 28 min de lectura

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ASTER II



General Information

Congratulations on the purchase of the new ASTER II Bluetooth® V2 gearbox drop-in ETU mosfet AEG – the younger brother of the famous TITAN II Bluetooth®! ASTER II Bluetooth® will transform your AEG replica into an advanced training equipment of the future. Don't compromise – benefit from the years of experience of hundreds of thousands of users around the world, proving that ASTER II Bluetooth® is the best choice. The built-in Bluetooth® 5.2 provides convenient access to ASTER II Bluetooth® settings, replica telemetry and the ability to use smartwatches, STATUS and other future parts of the GATE ecosystem.

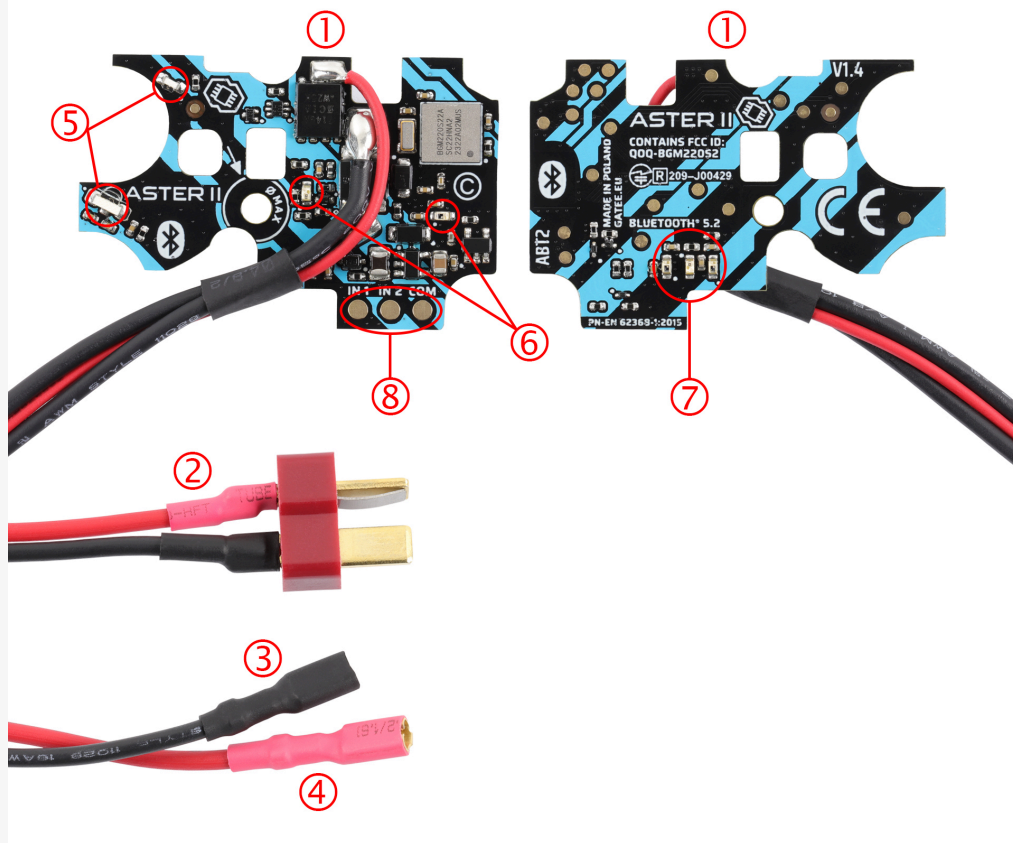
The information contained in this document is subject to change without notice.

Read carefully before use the whole manual. Keep for future reference.

Failing to read this information may void the guarantee!

When using the product, always follow basic safety rules to reduce the risk of injury from fire or electrical shock.

Device Structure



1. Printed Circuit Board (PCB)
2. Circuit power wires with DEANS-T connector
3. Motor power wire minus "-"
4. Motor power wire plus "+"
5. Sector gear position sensors
6. Trigger sensor
7. Fire selector sensor
8. Multifunctional Port solder fields



Kit Contents

- ASTER II Bluetooth®
- Gearbox stickers
- Selector plate stickers
- Installation Kit
- QuickStart Guide
- Quantum Trigger 2

Safety Summary

Please read this to ensure safe and correct use. Retain this information for future reference. The information contained in this document is subject to update without notice.

For your safety, this product should be installed by a skilled person.

⚠ Warning

Situations that may cause injury to yourself or others.

⚠ Caution

Situations that may cause damage to your device or other equipment.

✓ Note

Notes, usage tips or additional information.

Warning

This device is not a toy and may not be operated by people (including children) with limited physical or mental abilities, as well as by people with no earlier experience in operation of electronic equipment. They may use the device only under the supervision of people responsible for their safety.

Warning

Before starting the installation process, make sure that your AEG magazine is empty and there are no BBs inside.

Warning

This equipment is not suitable for use in locations where children are likely to be present.

Warning

Persons under 18 years of age ought not stay unattended near the device during the installation or servicing of a device installed in an ASG replica.

Warning

Persons under 18 years of age ought not stay unattended near the device installed in an ASG replica ready for use.

Warning

Persons under 18 years of age are not allowed to install or commission the device in an ASG replica.

Warning

Persons under 18 years of age are not allowed to service this device.

Warning

Do not store or carry flammable liquids, gases or explosive materials in the same compartment as the device, its parts or accessories.

Warning

Take caution to prevent short-circuiting the battery as the consequences may be very dangerous to the health of the user.

Warning

Excessive trigger sensitivity may cause unintentional discharge (firing).

Warning

When an airsoft replica is not in use, its battery must be disconnected and the hop-up chamber must be empty.

Warning

While handling an AEG replica with a connected battery, anyone within the range of the replica must wear personal protective equipment.

Warning

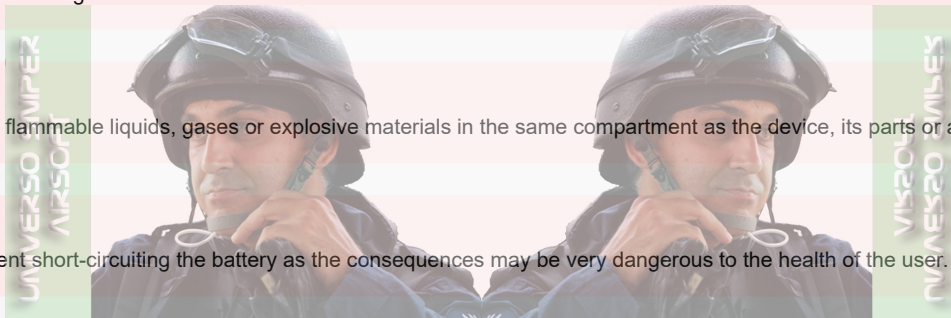
When not in SAFE mode, avoid using the device around strong electromagnetic fields, such as PMR transmitters exceeding European standards or when electrostatic discharges, e.g. lightning, occur in the atmosphere, which may cause malfunction of the device and unintentional discharge (firing).

Warning

When an airsoft gun is not in use, its magazine must be detached or kept empty with no BBs inside.

Warning

Incorrectly connecting positive and negative battery terminals will cause immediate damage to the device, which is not covered by warranty, and can lead to fire.



Warning

Pay attention to correctly connect positive and negative wires to the battery. Make sure you are connecting the positive terminal of the battery to the red wire of the device, and the negative terminal of the battery is connected to the black wire of the device. Incorrect power polarity may result in damage to the device and could even lead to fire or battery explosion.



Caution

Do not remove the device protective film or heat shrink tubes. Removing them will void the warranty.

Caution

For your own safety you ought to use an additional fuse between the battery and the device.

Caution

When operating under unusual conditions, perform maintenance outlined below for the climate similar to your area. Operating in extremely cold temperatures is not recommended. Do not expose ASTER II Bluetooth® to direct sunlight for long periods of time. Keep away from dust or sand, which can cause malfunctions and/or excessive wear. Keep ASTER II Bluetooth® out of snow, rain, and water. This will prevent electrical failure and fluid buildup inside the gearbox.

Note

The product Warranty Form is available here: <http://www.gatee.eu/warranty>.



Note

Bluetooth 4.0 or higher is required to connect to ASTER II Bluetooth® with a smartphone or other device.

Installation

Introductory information

Caution

Regardless of your previous experience, follow all safety precautions to prevent any damage to your ASTER II Bluetooth®.

Caution

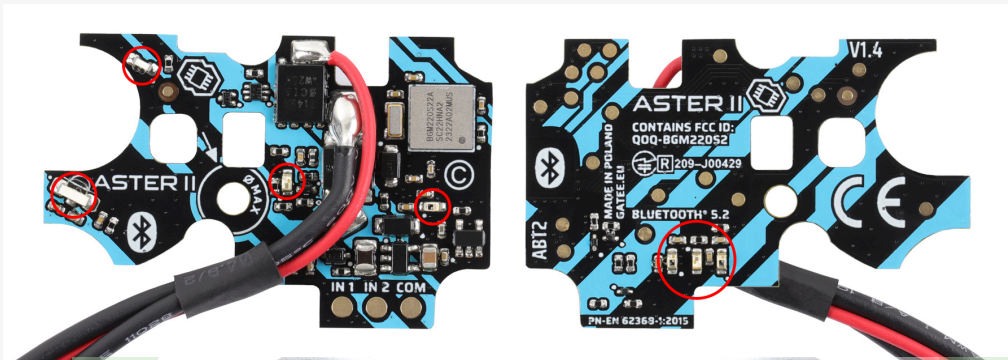
ASTER II Bluetooth® installation requires deep technical knowledge of gearbox internals. To avoid damage, we recommend it to be installed by a skilled person. If, however, you wish to proceed with ASTER II Bluetooth® installation on your own, you must read this full-length document and watch the installation video beforehand. Incorrect installation may result in, among others, sensor damage, which is not covered by warranty.



Watch video

Caution

The optoelectronic components of ASTER II Bluetooth® marked in the photo below are very delicate. Protect them against damage.

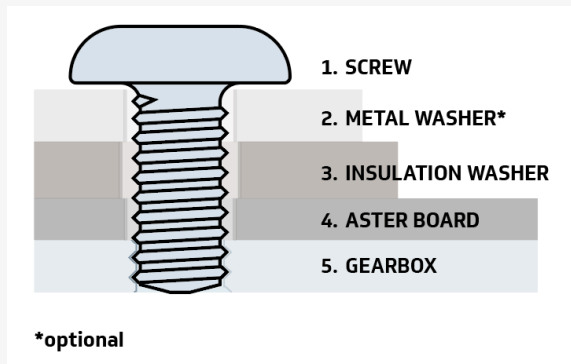


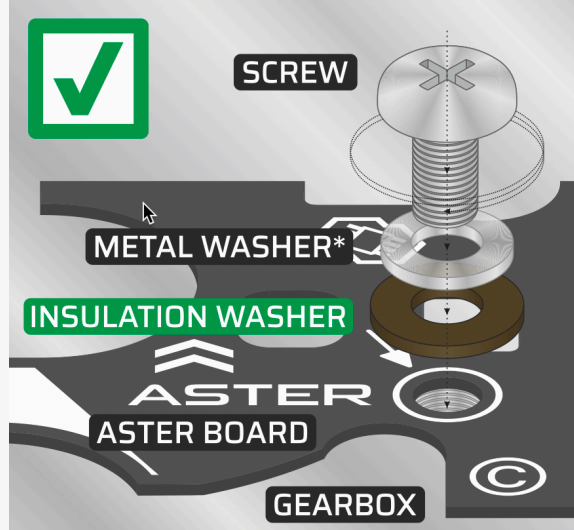
Caution

Do not remove the device protective film or heat shrink tubes. Removing them will void the warranty.

Caution

We recommend using an insulation washer when tightening the PCB to the gearbox. When tightening the PCB, follow the order of the washers according to the graphic below.





Caution

Incorrect placement of wiring under the motor gear may cause insulation damage and a short circuit, which is not covered by warranty.



Caution

In ASTER II Bluetooth® connectors must be bent according to the photo below. Bending connectors in the opposite direction may cause them to break. If this should happen, spare terminals are included in the INSTALLATION KIT.



Caution

Do not pull the trigger when the gearbox is open. This may result in trigger sensor damage.



⚠ **Caution**

For triggers that have adjustable pivot, first adjust the range of trigger movement using the screws, only then calibrate the trigger. With ASTER II Bluetooth®, we recommend using the Quantum Trigger 2 adjustable trigger.

✓ **Note**

The selector sensor does not detect black surface. If the selector plate does not come with a metal connector or is not working correctly, you must use an appropriate sticker from the INSTALLATION KIT.



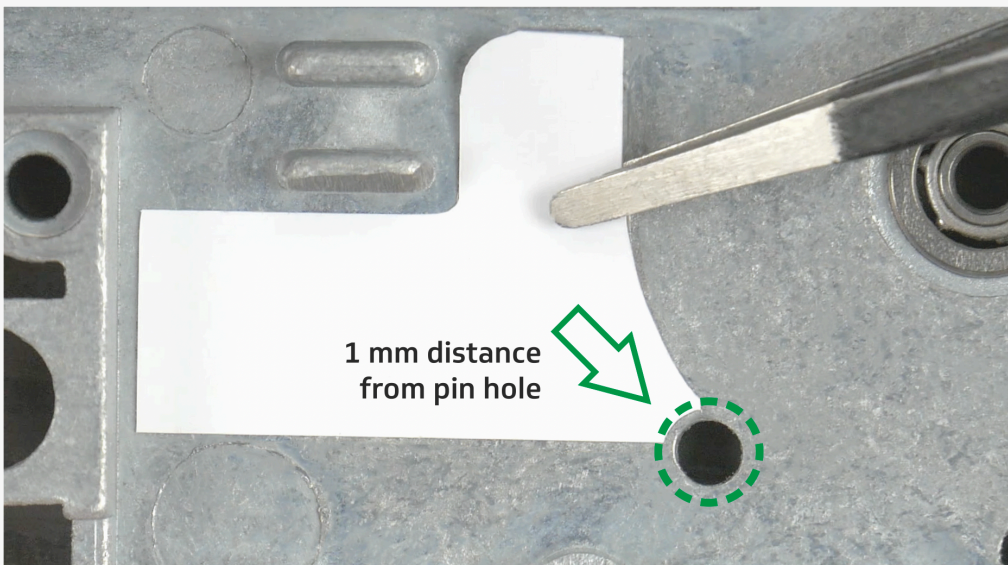
✓ **Note**

Sticker position is crucial. Make sure to align the sticker exactly **to the left edge and the top red line**. The INSTALLATION KIT contains 3 different sticker types. First, use the one with the thinner black line. If you are not able to calibrate the selector, try the other ones.



Note

If using a standard trigger, stick the gearbox sticker as shown in the photo below. This will allow ASTER II Bluetooth® to detect the movement of the trigger. If you want to use the Quantum Trigger, do not use the gearbox sticker.



Quantum Trigger

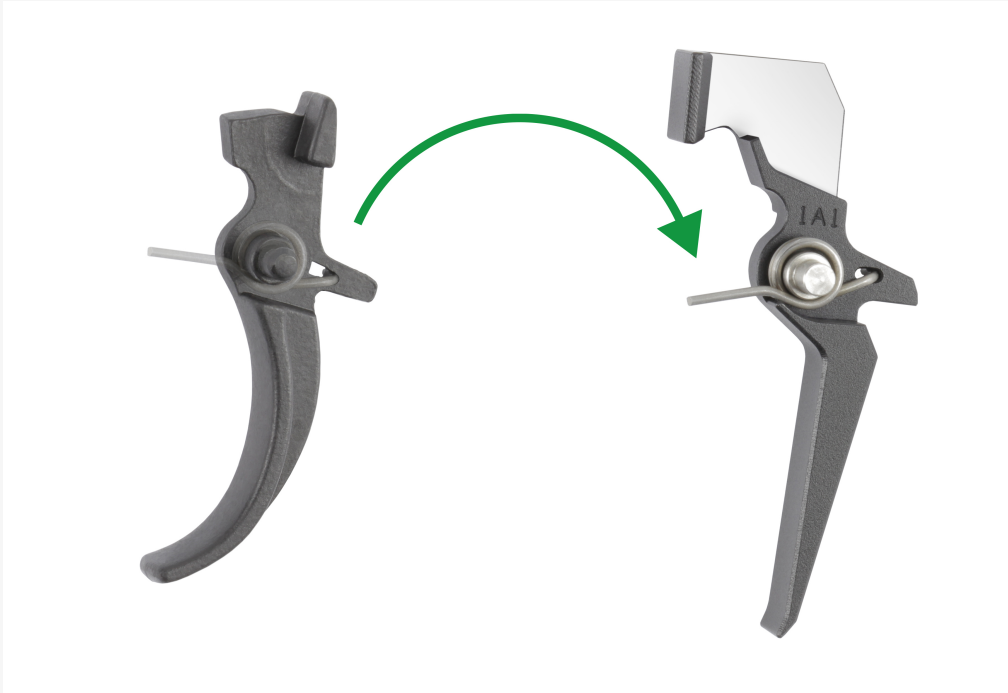


Note

Quantum Trigger is compatible only with ASTER V2 & ASTER II Bluetooth®.

✔ **Note**

While replacing your old trigger with a Quantum Trigger, use the same trigger spring.



⚠ **Caution**

Do not remove the white sticker from your Quantum Trigger.

⚠ **Caution**

While installing a Quantum Trigger, do not place the gearbox sticker inside. If you have a white sticker on the gearbox, please remove it.



✔ **Note**

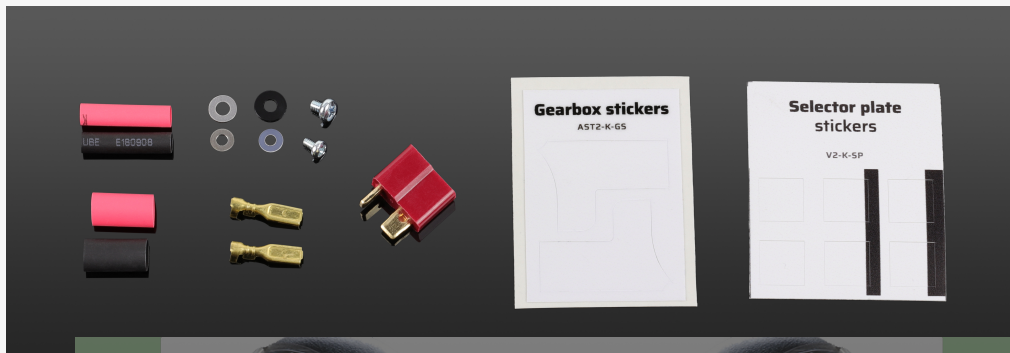
In case you have any difficulties while installing or using this product:

- contact us via <https://help.gatee.eu>
- send us an e-mail: support@gatee.eu
- join [GATE Airsoft Community Discord Server](#)

Installation of the unit in the gearbox

INSTALLATION KIT Contents

- selector plate sticker set (6 pcs)
- gearbox sticker set (2 pcs)
- M2 screw and washer set:
 - 1 x insulation washer (nylon or pressboard)
 - 3 x steel zinc screw
- M2.5 screw and washer set:
 - 1 x screw
 - 1 x pressboard insulation washer
 - 1 x steel washer
- connector set:
 - 1 x Deans-T connector with heatshrink tubes
 - 2 x motor connectors (2.8 x 0.5 mm – 0.11 x 0.02 in) with heatshrink tubes



Tools and Materials Needed

- a cross-head screwdriver
- a flat-blade screwdriver
- a metal file or milling machine
- solvent
- grease
- device with the GCS app installed

Installation procedure

Follow the steps below in order to mount the ASTER II Bluetooth® drop-in module:

1. Remove the gearbox from the AEG body
2. Disassemble your gearbox and take out all the internals
3. Clean the gearbox case using solvent
4. Pay attention to the marked area. If you see that it is not smooth, use a metal file or grindstone to prepare the surface. The gearbox surface should be smooth, with no sharp edges which may damage ASTER II Bluetooth®.

⚠ Caution

If the PCB does not perfectly fit in your shell, make the necessary modifications to the gearbox shell, **not to the PCB**.

It is forbidden to make any modifications to the PCB shell such as drilling the screw hole, grinding the edges of the PCB, etc. Doing so may result in immediate damage to the circuit, which is not covered by the warranty.



5. Place the ASTER II Bluetooth® board in the bottom part of the gearbox. Do not use a screw yet. Check if the board is laid flat in the gearbox.



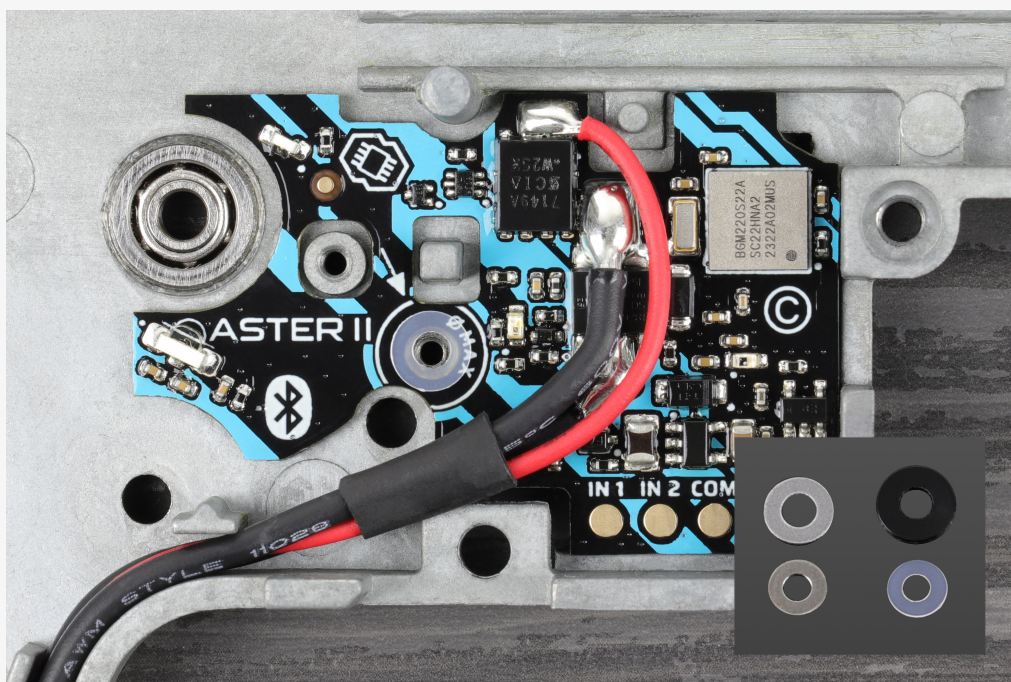
6. Make sure that the electronic components found on the side of the fire selector board do not touch the gearbox case.



7. Use the (milky white or black) insulation washer from the INSTALLATION KIT.

Caution

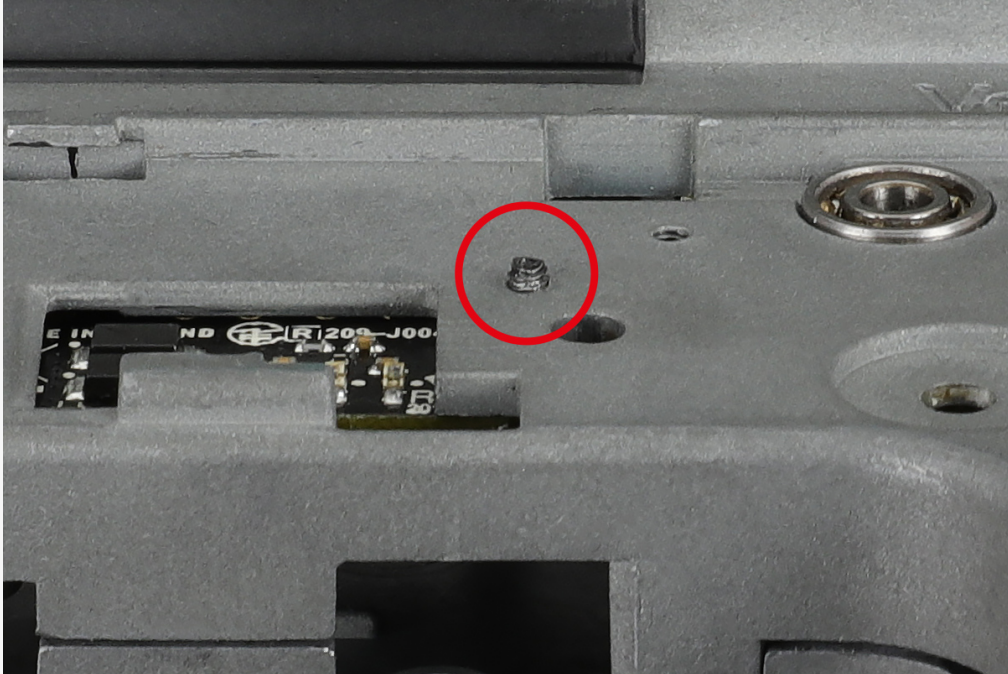
The insulation washer protects the circuit PCB from mechanical damage, which does not affect the functioning of the unit, only its aesthetics. Damage to the soldermask in the marked area cannot cause a short circuit and damage to ASTER II Bluetooth®. However, we recommend the use of insulation washers if possible.



8. Fasten the board to the shell. Use the original screw or the one(s) from the INSTALLATION KIT.



9. Check if the screw is sticking out of the gearbox.



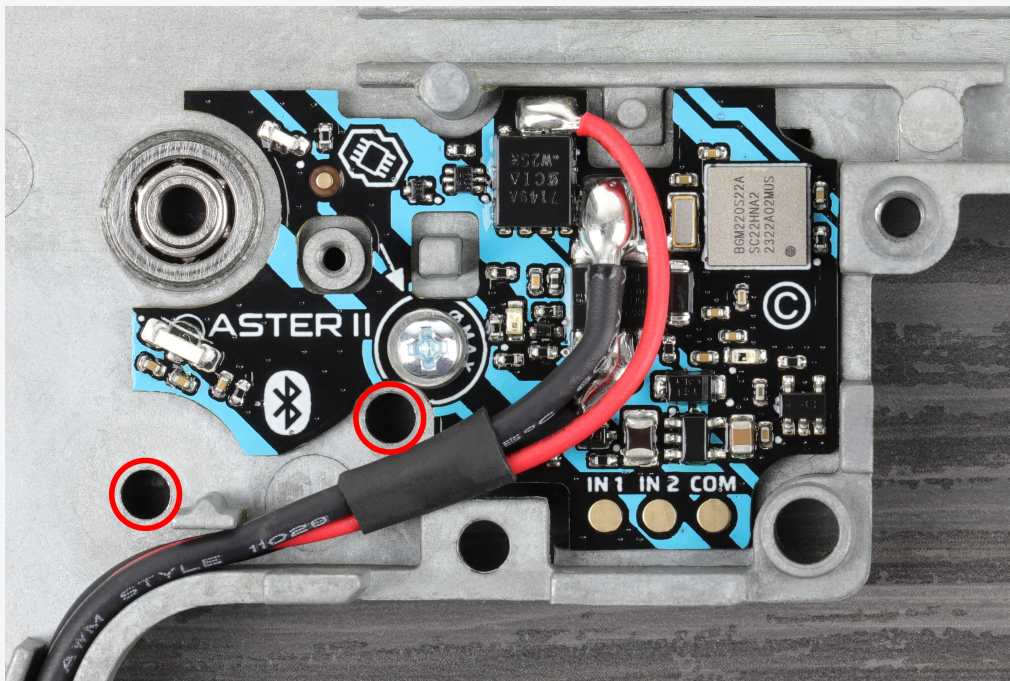
10. If so, add the metal washer(s) included in the kit. Make sure that the metal washer is placed between the screw and the insulation washer. If you can't shim any more, you can use a shorter screw or shorten this one.



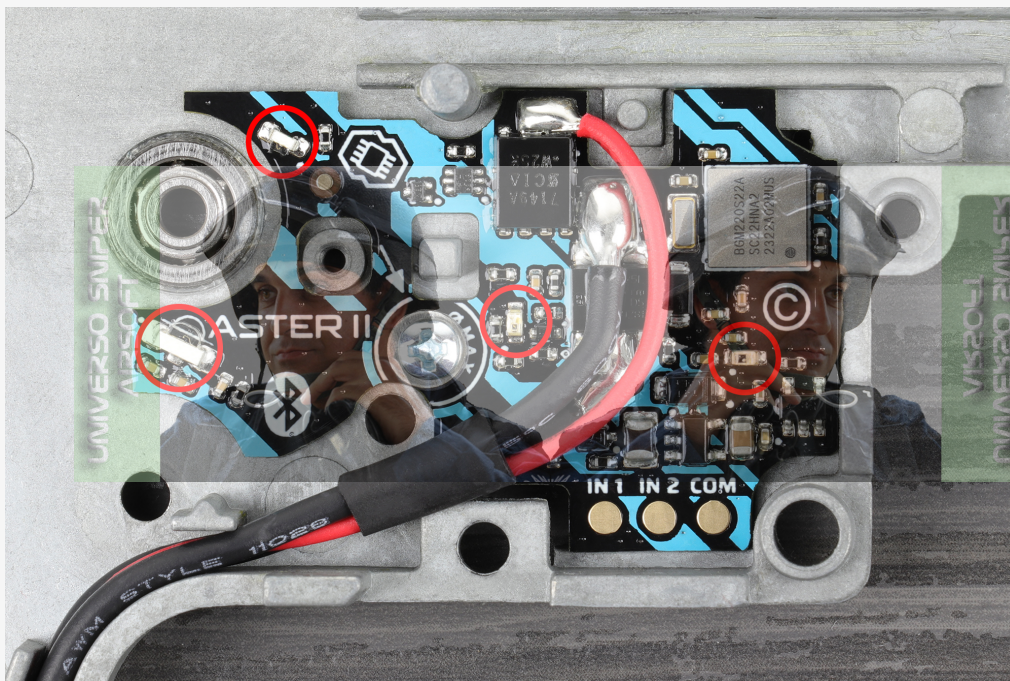
11. Loosen the screw. Adjust the position of the ASTER II Bluetooth® unit board. The distance between the PCB and the bearing must be the same throughout (as indicated in the marked area).



12. Make sure the marked areas are not covered by the board or wires.



13. Check if the sensors are clean and not covered by wires.

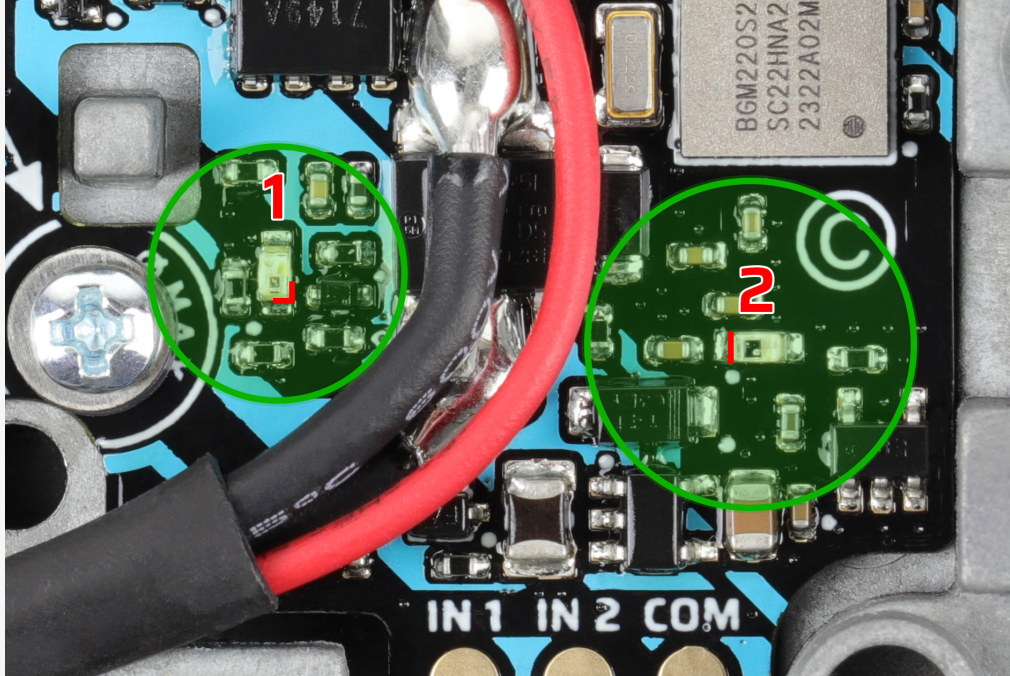


14. Check wire placement in relation to trigger sensors:

Caution

For ASTER II Bluetooth® with REAR wiring, the **minimum** distance for wire location from the edge of the trigger sensors must be the following:

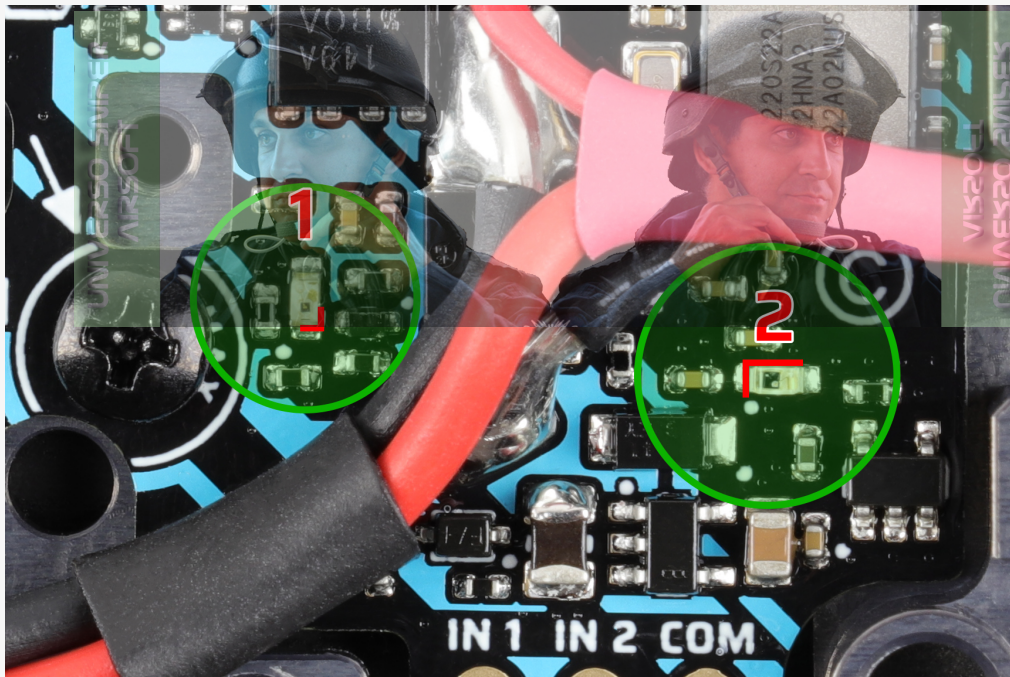
- 2.5 mm from the marked edge of the left hand sensor (1)
- 5 mm from the marked edge of the right hand sensor (2)



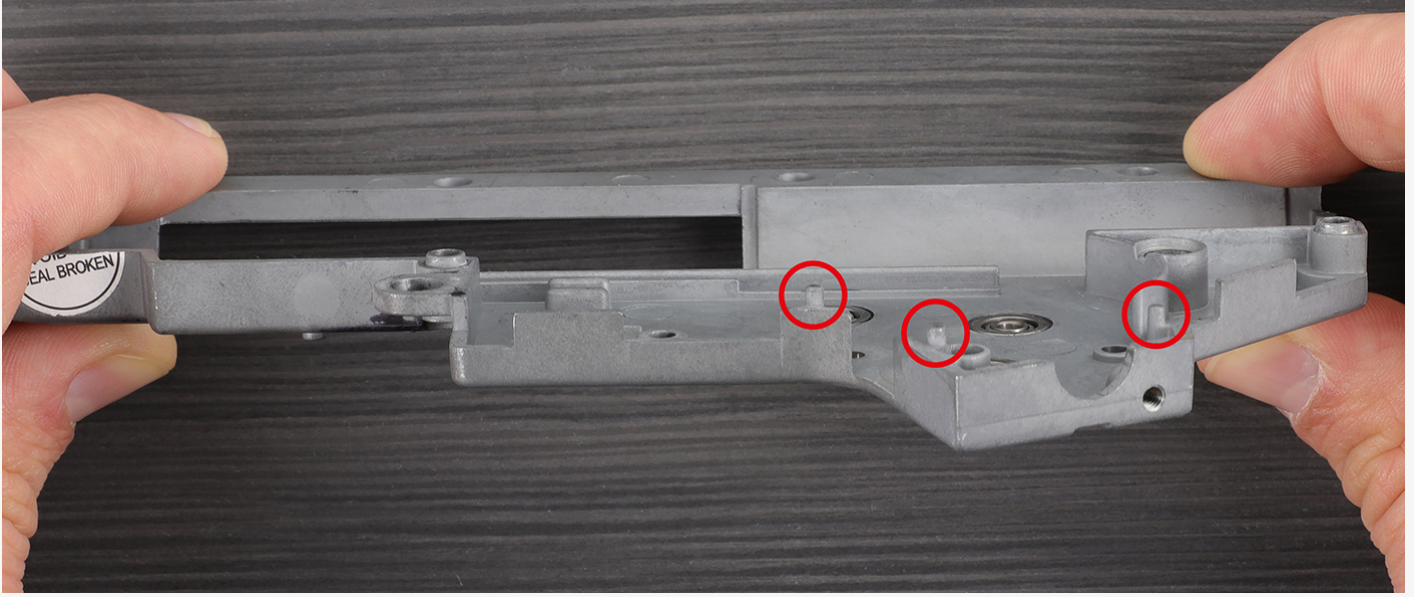
ⓘ Caution

For ASTER II Bluetooth® with FRONT wiring, the **minimum** distance for wire location from the edge of the trigger sensors must be the following:

- 2.5 mm from the marked edge of the left hand sensor (1)
- 2 mm from the marked edge of the right hand sensor (2)



15. Some gearboxes need modification. Check if your gearbox has the marked pins. If so, remove them.

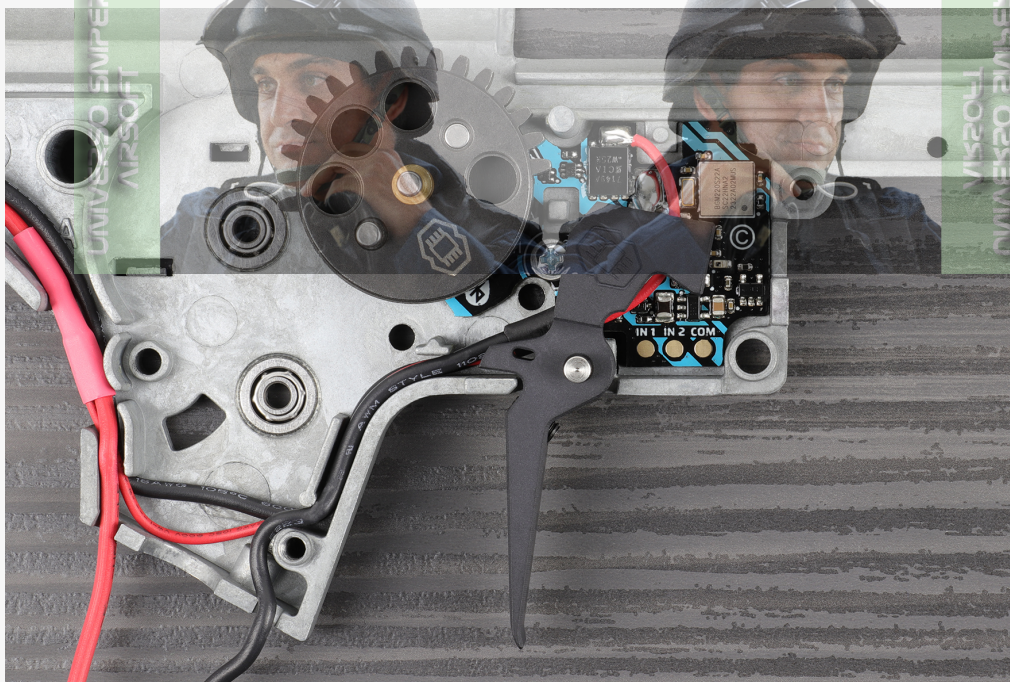


16. Check if both parts of the gearbox fit together perfectly.



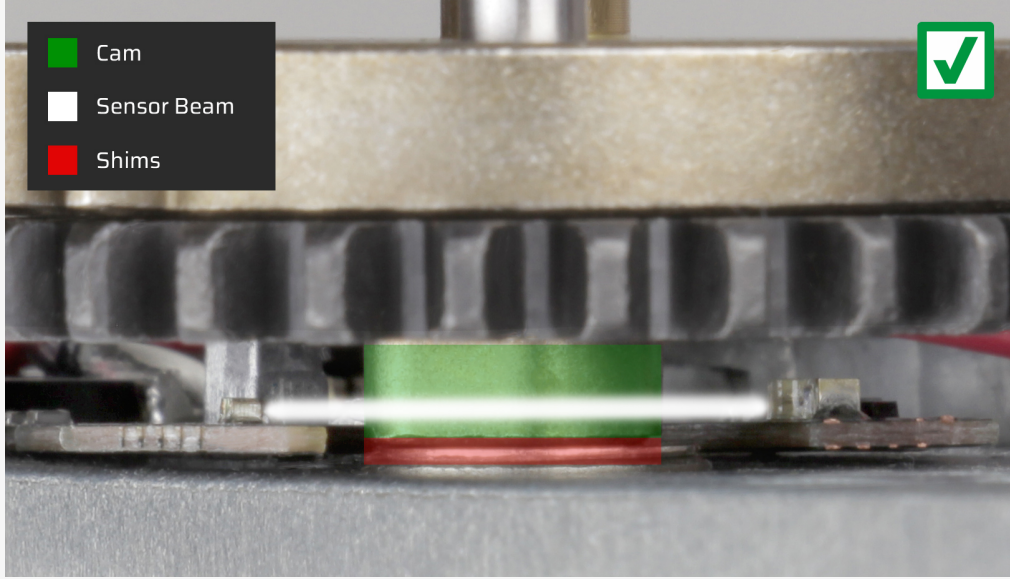
17. Mount the trigger without the spring. Do not pull the trigger when the gearbox is open. Close the gearbox. When the gearbox is closed, carefully check if the trigger can move smoothly and is not touching any ASTER II Bluetooth® components.

18. Mount the sector gear, the trigger with the spring. Make sure that the gear is not touching ASTER II Bluetooth®.



Note

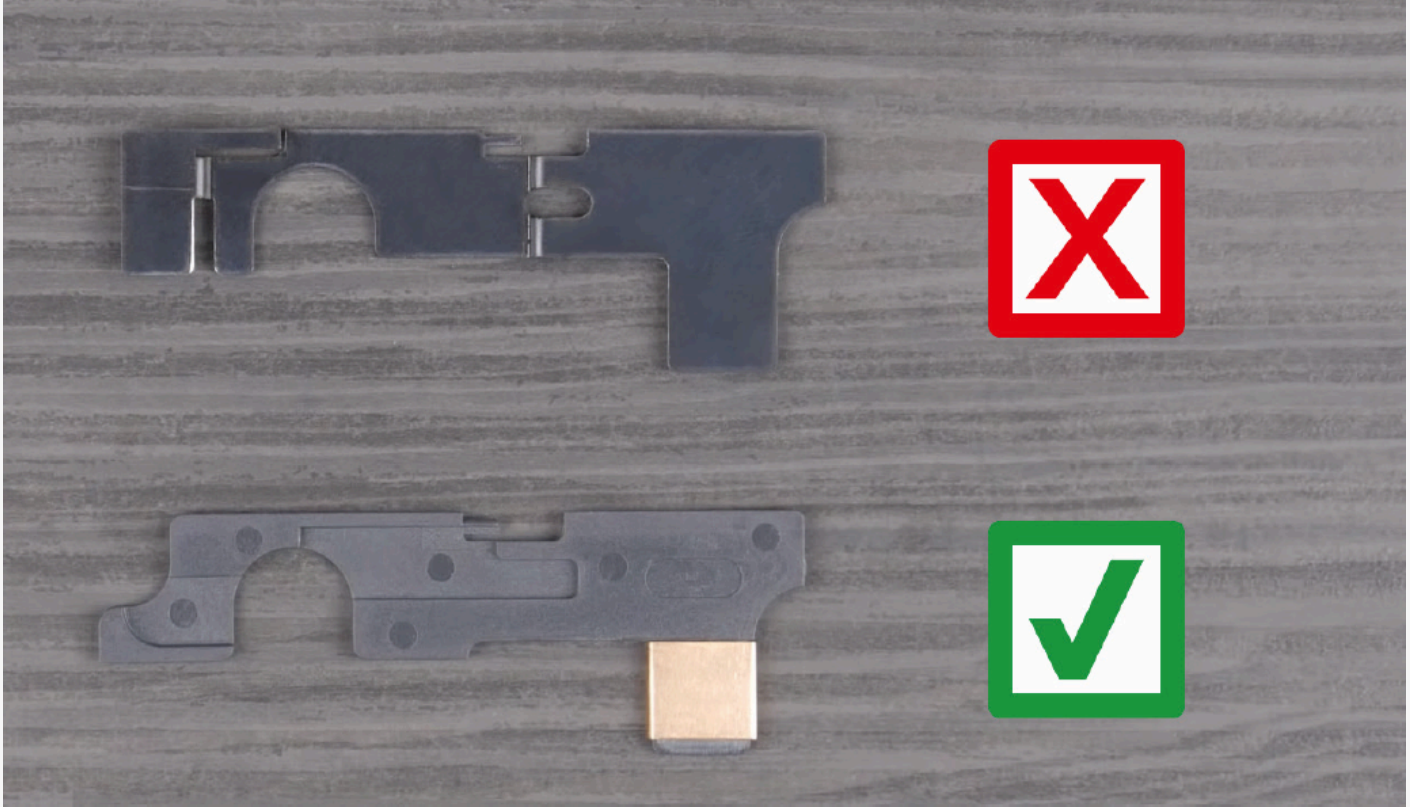
The placement of the sector gear sensor is very important. Make sure that the gear cam sensor detects the cam correctly.



19. Close the gearbox. Tighten the two screws on the top part of the gearbox case.



20. Prepare the selector plate. If the selector plate does not have a copper connector, you need to modify it. The black surface does not reflect light, so sensors will not work properly.

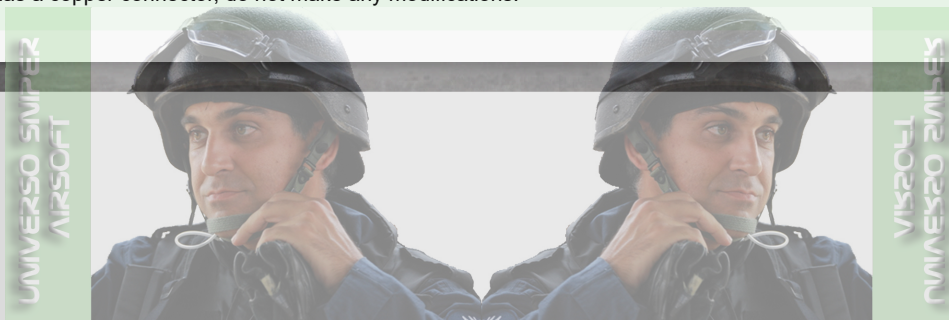


21. In order to modify the black plate, use a sticker from the INSTALLATION KIT. Try the sticker with the thinner black line first.



Note

If the selector plate has a copper connector, do not make any modifications.

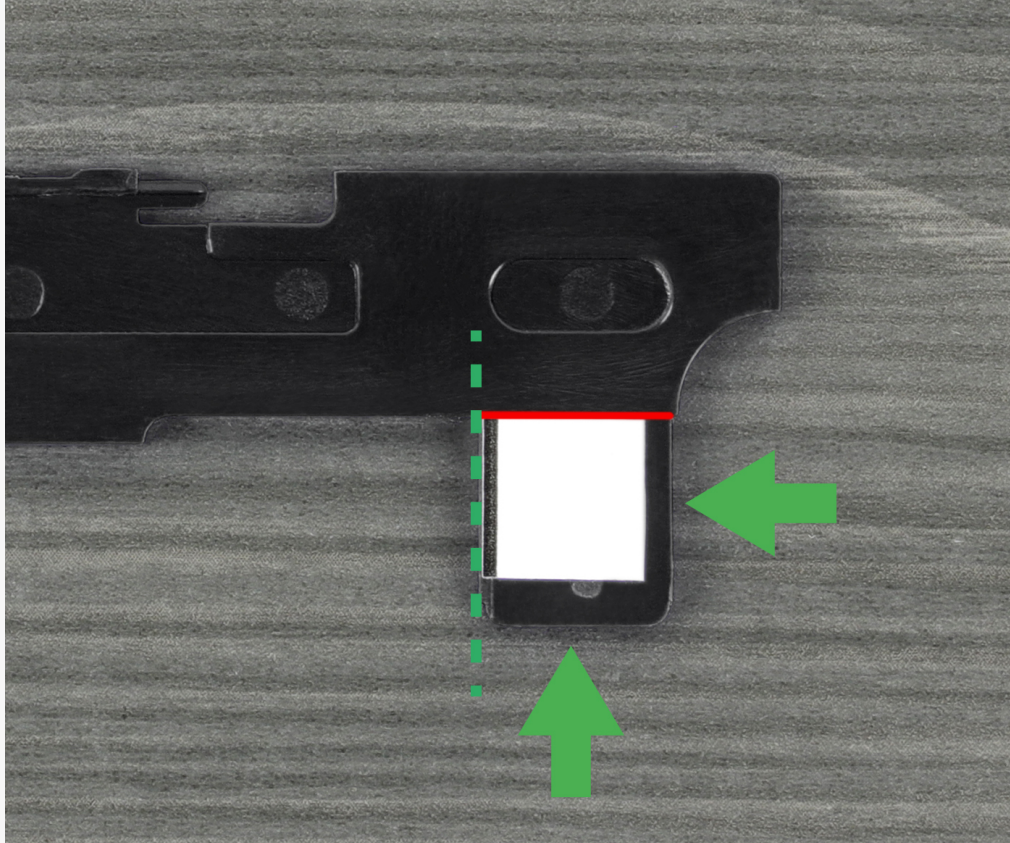


22. The black plate after modification. Sticker location is crucial. Carefully align it to the left-hand side.



Note

Sticker position is crucial. Make sure to align the sticker exactly **to the left edge and the top red line**. The INSTALLATION KIT contains 3 different sticker types. First, use the one with the thinner black line. If you are not able to calibrate the selector, try the other ones.



23. Install the selector plate.



Sensor Diagnostic Mode

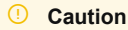


Note

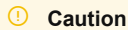
In order to activate the sensor diagnostics mode, ASTER II Bluetooth® must be in **factory preset state** (no trigger and selector calibration). Otherwise, you must **restore factory settings** via GCS or via trigger.

**Note**

The ASTER II Bluetooth® **does not have** an RGB LED. Sensor diagnostic communication is conveyed via **engine vibration**. Connect the unit to the motor before connecting the battery.

**Caution**

Secure the motor in such a way that it does not cause damage to the user's body or health. You can leave it in the motor grip or if you have a vise or carpenter's clamp, you can fasten it to your table.

**Caution**

In order for the test to be carried out correctly, it is necessary that it is performed on the target correctly installed parts:

- shimmed gears – for the purpose of the test, a sector gear is sufficient
- target screw-adjusted trigger – if adjustable
- target selector plate with a white sticker in place.

Failure to comply with the above points may result in passing the diagnostic test, however, the system may malfunction in the assembled replica!

The first step in installing **ASTER II Bluetooth®** is verifying that the sensors correctly detect the sector gear, trigger and fire selector. Sensor diagnostic mode is available in **ASTER II Bluetooth® firmware versions v0.2-01 or later**. It allows you to detect sensor malfunctions even before the **gearbox** is completely assembled.

Prepare:

- gearbox skeleton
- ASTER II Bluetooth® including the mounting screw
- sector gear
- trigger together with the spring
- selector plate
- 2 screws to assemble the gearbox skeleton
- battery
- motor

Installation procedure:

1. Install the **ASTER II Bluetooth®**, **sector gear** and **trigger** in the **gearbox shell**
2. Screw the **gearbox shell** together with at least two screws
3. Install the **selector plate**
4. **Secure motor**, e.g. with a carpenter's clamp
5. Connect the **ASTER II Bluetooth®** to the **motor**

**Sensor diagnostic test run:**

1. Connect the motor to ASTER II Bluetooth®. **The motor must be secured**, e.g. with a **clamp**.
2. **Connect the power supply** to **ASTER II Bluetooth®** and make sure that the system **is not calibrated**. If the system is calibrated, **restore factory settings**.
3. Within **5 seconds** of connecting the power supply, make a **full rotation of the sector gear**. If the unit detects a change on the sensor of the gear, you will hear a **high tone vibration** (1kHz).
4. Detection of gear rotation **starts the diagnostic test**. You can proceed to test the remaining sensors.
5. Pull the trigger several times **in its full range of its movement**. Each time you pull it in, you should hear a **mid-tone vibration** (800Hz), which indicates that the trigger sensor is working properly.
6. Move the selector plate **in its full range of its movement**. Each time you move it in, you should hear a low-tone (500Hz) vibration, which indicates that the trigger sensor is working properly.
7. After checking all sensors, **disconnect the power supply**. Disconnecting the power supply means exiting the **Sensor Diagnostic Mode**.

**Note**

The **gear sensor test** must be performed **first**. Gear movement starts the **sensor diagnostic test**.

**Note**

Once the **sensor diagnostic test** is started, the sensors can be tested **any number of times** and **in any order**.

**Note**

Each detected change on the **cam**, **trigger** or **selector** sensors triggers a separate vibration.

**Note**

To exit the **diagnostic mode**, **disconnect the battery**.

**Note**

In the sensor diagnostic mode, the system can be connected to the GCS application. Calibration of the trigger or selector with the GCS application exits the sensor diagnostic mode.

**Caution**

If vibration is not activated during the test of any of the sensors, this means that the relevant sensor is not working properly.

**Caution**

If, within **5 seconds** of connecting the battery, the **gear sensor does not detect a change** (cam-break), a vibration will be started, indicating that the selector and trigger are not calibrated. The system will resume **normal operation**. To perform the diagnostic test again, it is necessary to disconnect and reconnect the battery.

Example of a successfully completed test after the installation procedure:

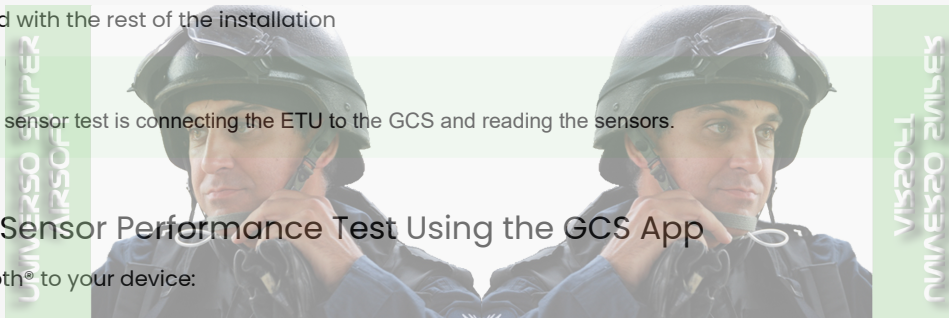
1. Connect the battery
2. Turn the gear so that it makes several turns – **high** tone vibration (1kHz)
3. Pull the trigger several times in its full range of movement – **medium** tone vibration (800Hz)
4. Move the selector plate in its full range of movement – **low** tone vibration (500Hz)
5. You can now proceed with the rest of the installation

**Note**

An alternative to this sensor test is connecting the ETU to the GCS and reading the sensors.

Calibration and Sensor Performance Test Using the GCS App

Connect ASTER II Bluetooth® to your device:





GCS

Windows™ | macOS™
Android™ | iOS™

2. Start **Bluetooth**® communication on your device
3. Connect the battery to ASTER II Bluetooth®
4. Launch the GCS app and confirm all the required approvals
5. Tap "+" on the **Dashboard** of the app
6. In the list of devices, locate your ASTER II Bluetooth® – if it is not found, drag the screen down to refresh or tap **Refresh Scan**
7. Enter the **PIN** code found on the included stickers
8. Update the ASTER II Bluetooth® firmware
9. It is recommended to restore the factory settings after each firmware update
10. Choose the type of replica you want to use – **AEG** or **HPA**

25. Check gear tooth detection by the unit sensors: Go to **General**.

Rotate the gears slowly. Keep in mind that ASTER II Bluetooth® reads the sensors much quicker than GCS.



GATE GCS User



ASTER II

EXPERT

Dashboard

Pinned

General

Trigger

Selector

Magazine

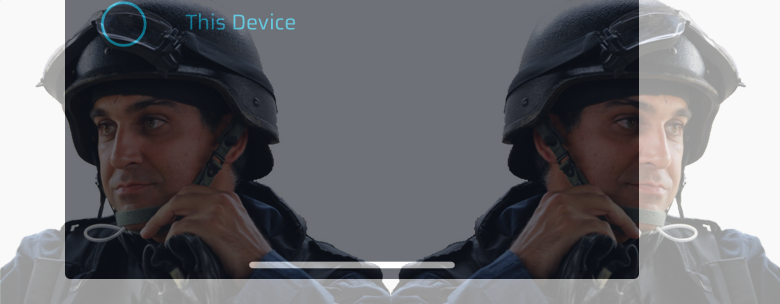
Telemetry

Diagnostics

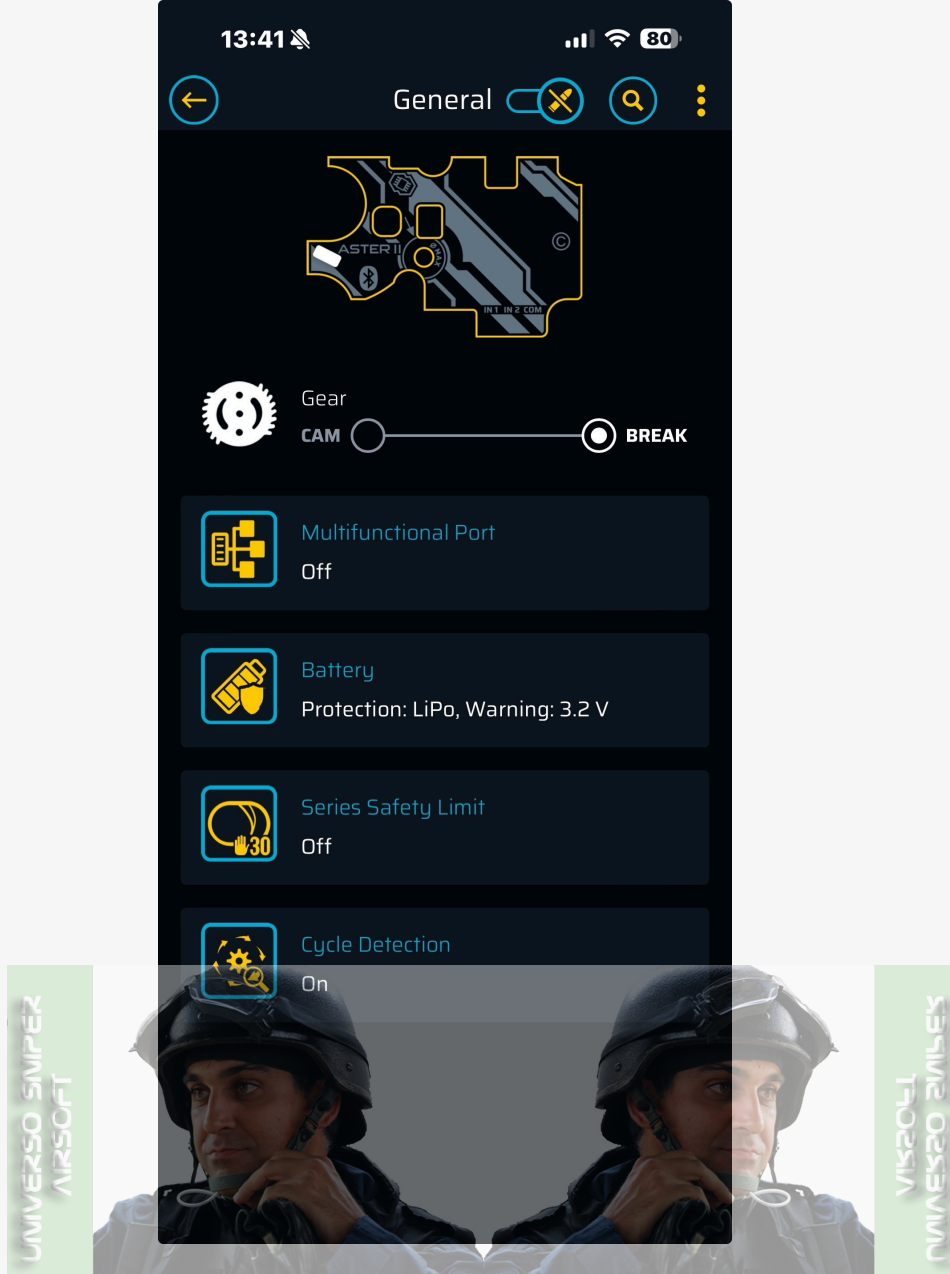
Virtual STATUS

ASG Calculator

UNIVERSO SIMPER
AIRSOFT



UNIVERSO SIMPER
AIRSOFT



26. Check trigger sensitivity:
In GCS, go to the **Trigger** tab. Perform the first trigger calibration.



GATE GCS User



ASTER II

EXPERT

Dashboard

Pinned

General

Trigger

Selector

Magazine

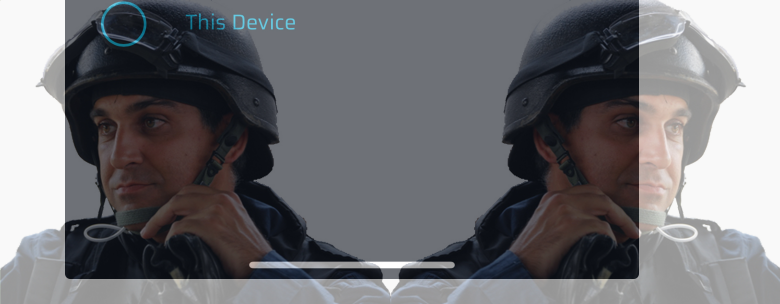
Telemetry

Diagnostics

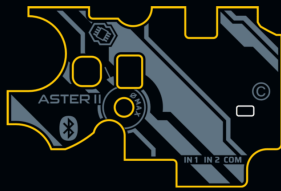
Virtual STATUS

ASG Calculator

UNIVERSO SIMPER
AIRSOFT



UNIVERSO SIMPER
AIRSOFT



Trigger Preferences

Your trigger is not working correctly
Please calibrate it now

Recalibrate



Pre-Cocking

Off



ROF Control

Off



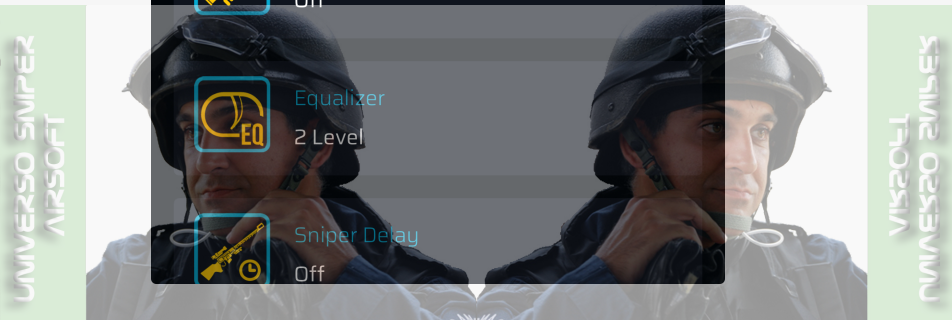
Equalizer

2 Level



Sniper Delay

Off





Calibration



Choose your trigger type



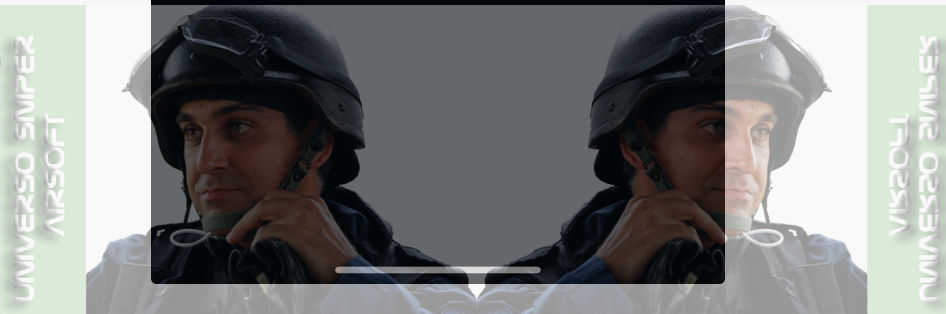
Regular Trigger

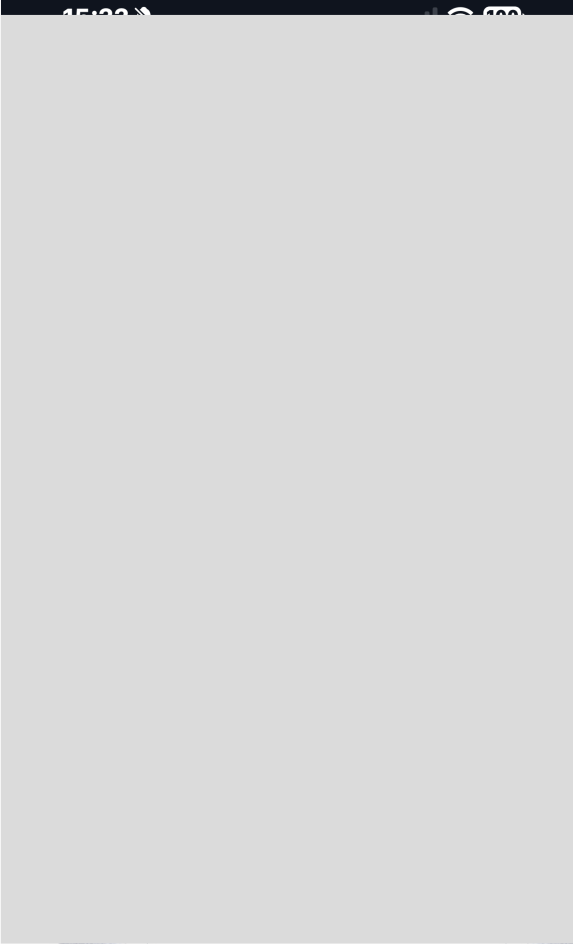


GATE Quantum Trigger



Next





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Calibration

Correct calibration is crucial. Generally, you only need to calibrate the trigger once, however, should an issue occur, you can always recalibrate it.



Release the trigger and press Next

Next

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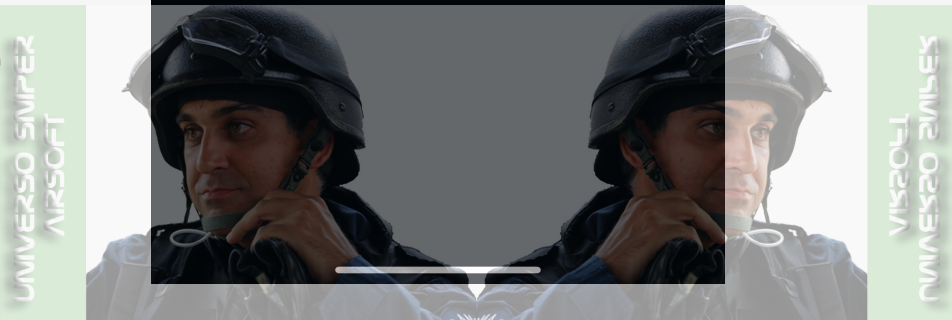
UNIVERSO SIMPER
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Calibration



Please wait...

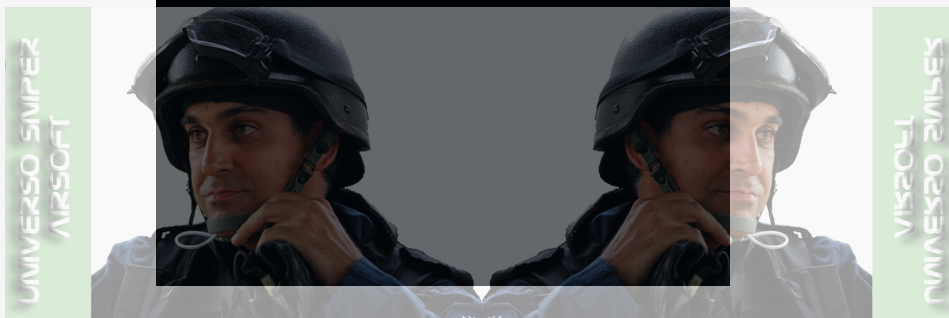




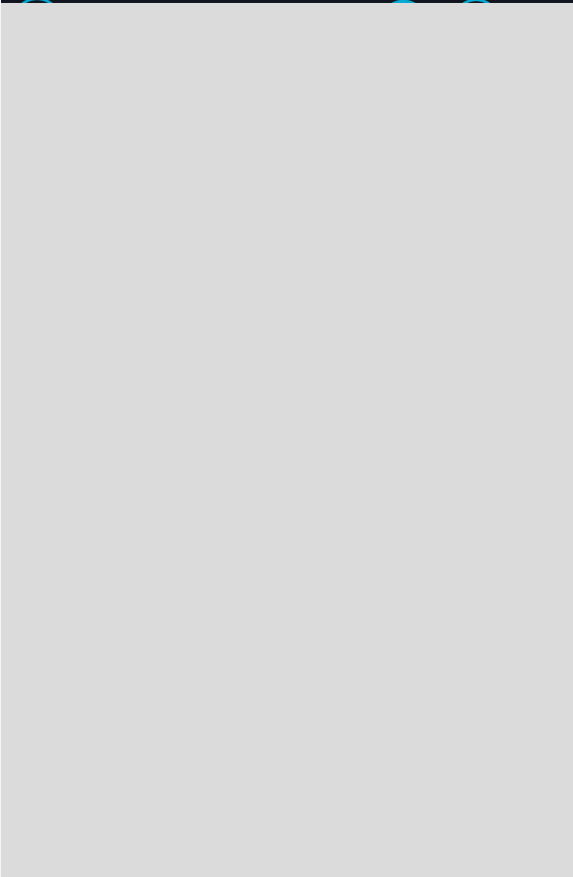
Trigger Calibration complete

181 Trigger sensitivity levels detected

OK



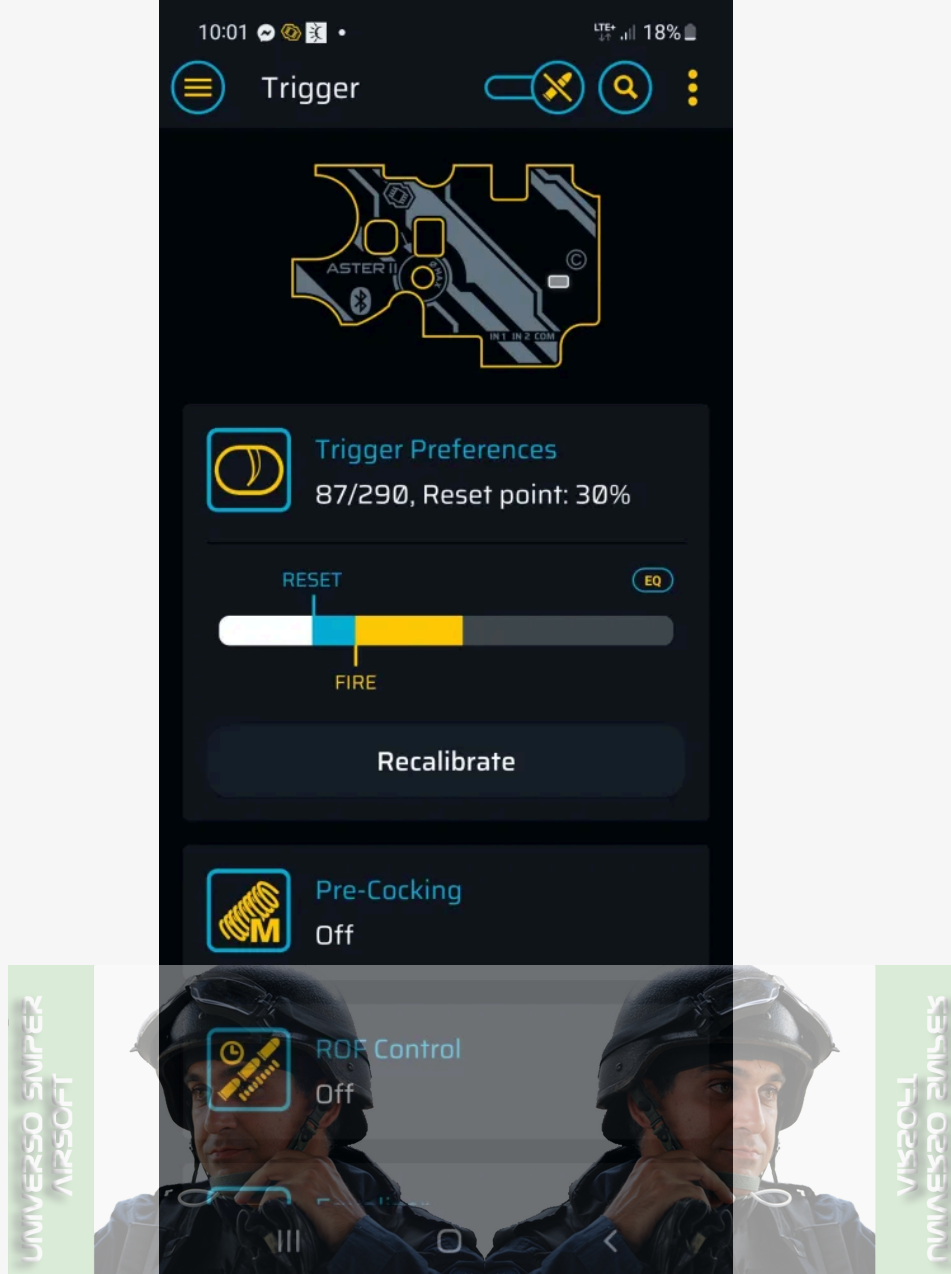
Slowly pull the trigger. The sensor indicator should move with the extent to which the trigger is pulled.



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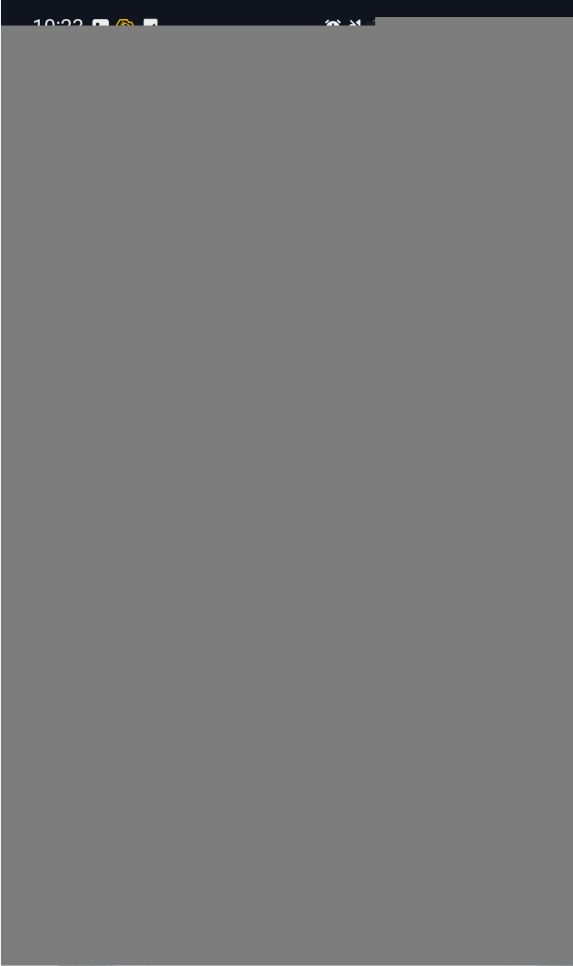
27. Check fire selector sensor calibration:

In GCS, go to the **Selector** tab. Perform the first calibration of the selector sensor.



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UNIVERSO VISOR



UNIVERSO SIMPER
AIRSOFT



UNIVERSO SIMPER
AIRSOFT



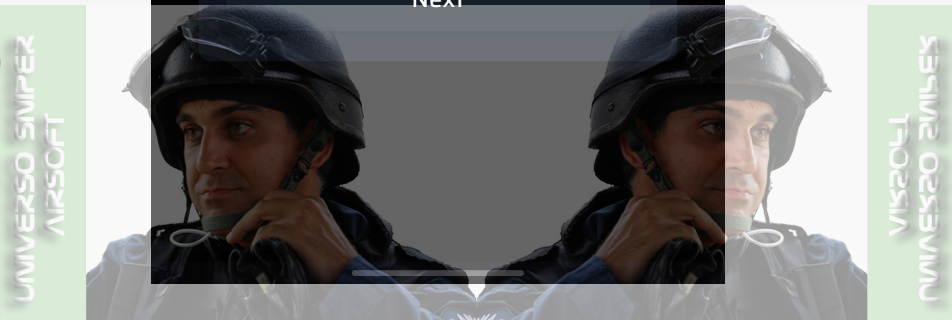
Selector Calibration

Switch Selector to SAFE and press Next

SEMI



Next





Selector Calibration

Switch Selector to SEMI and press Next

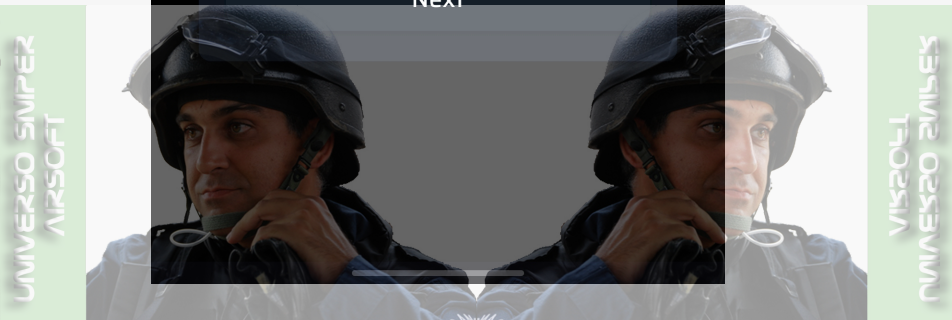
SEMI

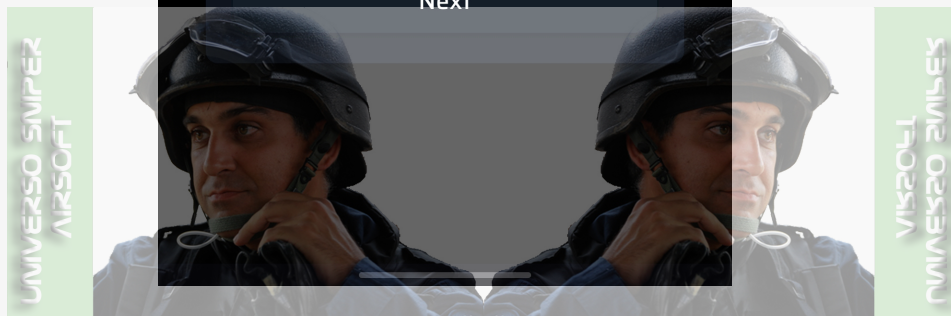
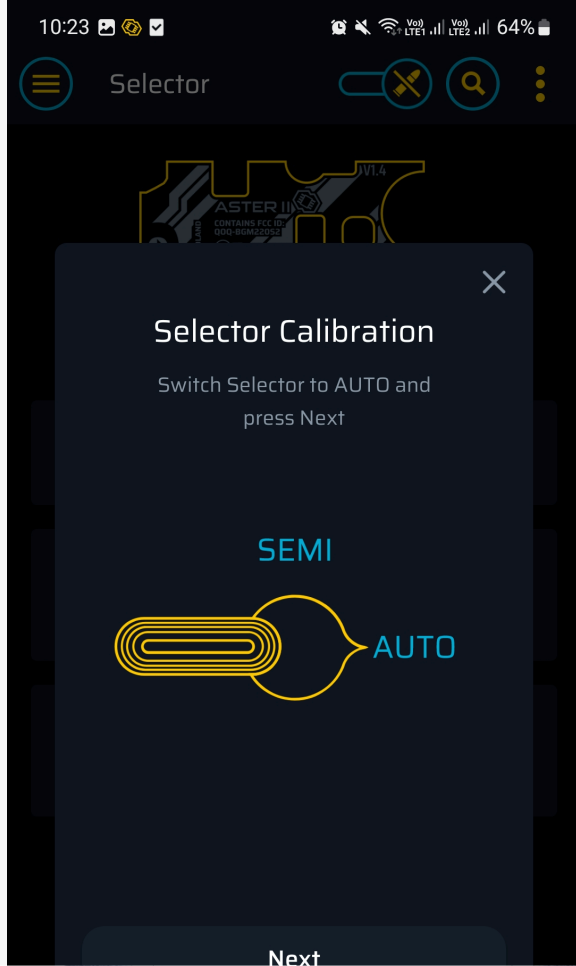
SAFE



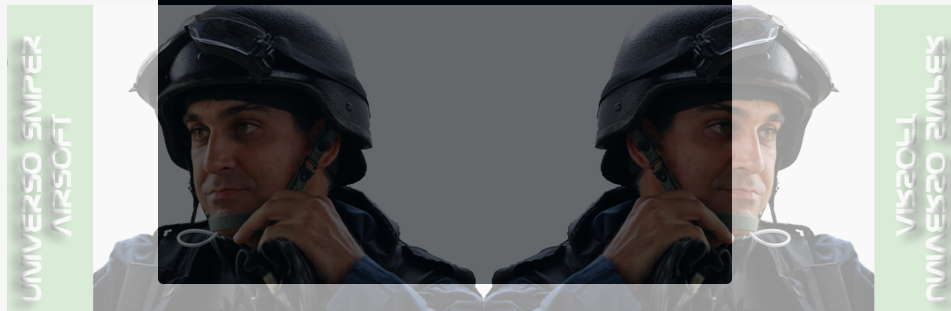
AUTO

Next

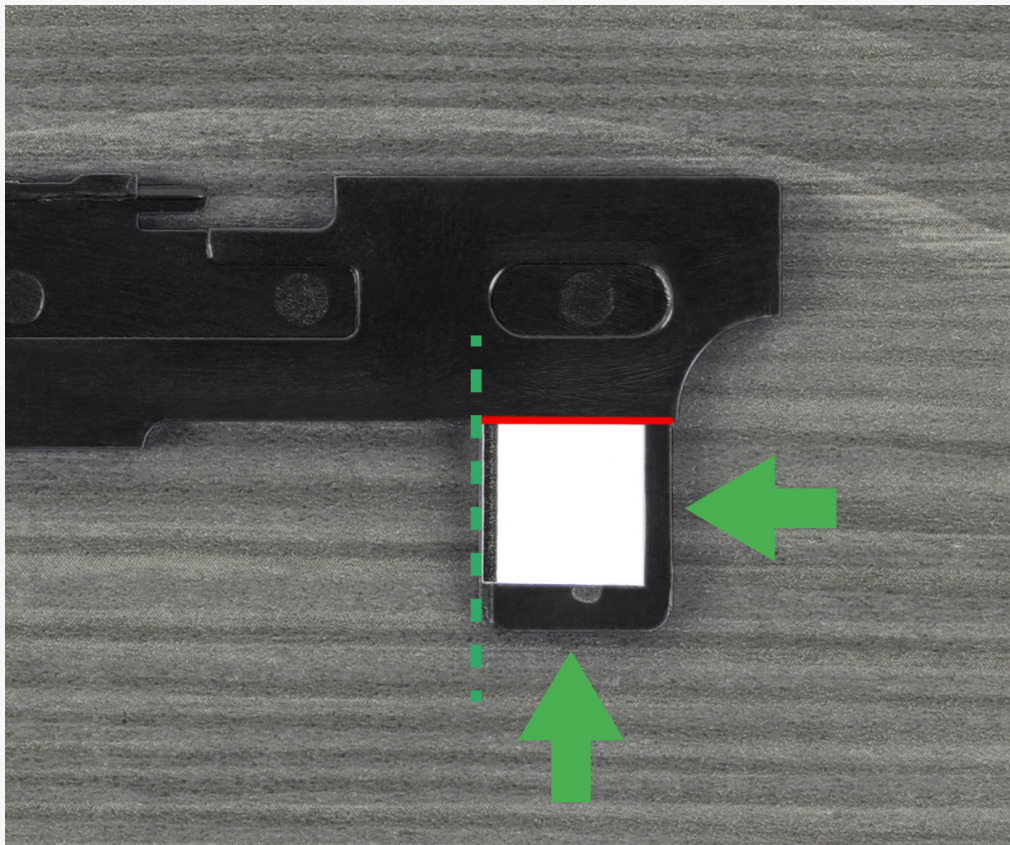




Move the selector plate to see if ASTER II Bluetooth® detects SAFE, SEMI and AUTO. You will notice changes in the marked areas.



If the sensor does not function correctly, you need to modify the selector plate with another sticker as mentioned above in steps 20-21 and shown below:



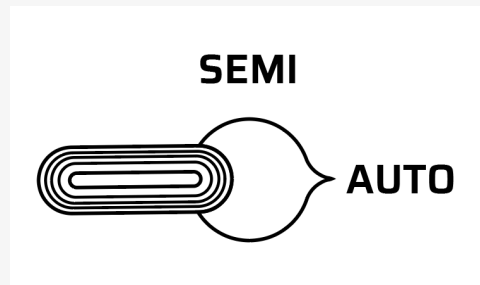
28. If all the sensors are working flawlessly, you can assemble the gearbox. Do not use too much grease. In a critical situation, excessive grease may cover sensors.

Caution
After assembling the entire replica, recalibrate the trigger and selector sensors.

Note
The first few shots are calibration shots. ASTER II Bluetooth® adjusts to the gearbox configuration. To readjust the ASTER II Bluetooth®, you must restore factory settings. This is necessary if, for example, you are replacing the motor.

Calibration via Trigger and Selector

Note
During calibration, remember to pull the trigger completely each time (until you feel resistance).



1. If your ASTER II Bluetooth® is brand new, go to step 2. If not, restore factory settings as described in **Restoring Factory Settings** below and then go to step 2.
2. To calibrate ASTER II Bluetooth®, plug in the battery. You will hear 3 low frequency vibrations indicating lack of calibration error.
3. Switch the selector to AUTO.
4. Pull the trigger twice and wait for a confirmation vibration.
5. Then, switch the selector to SEMI.
6. Pull the trigger once and wait for a confirmation vibration.
7. Switch the selector to SAFE.
8. Wait for a confirmation vibration. Now ASTER II Bluetooth® is fully calibrated and ready to use.*

*If there is a problem during calibration, you will hear a short high and mid frequency vibration. Then, you should disconnect, reconnect the battery, and repeat the calibration using the trigger and selector.

Installation of Accessories

Bolt-Catch & Magazine Sensor Set

Note
The magazine and bolt-catch sensor for the ASTER II Bluetooth® V2 gearbox drop-in ETU mosfet AEG is a separate accessory that is not included.

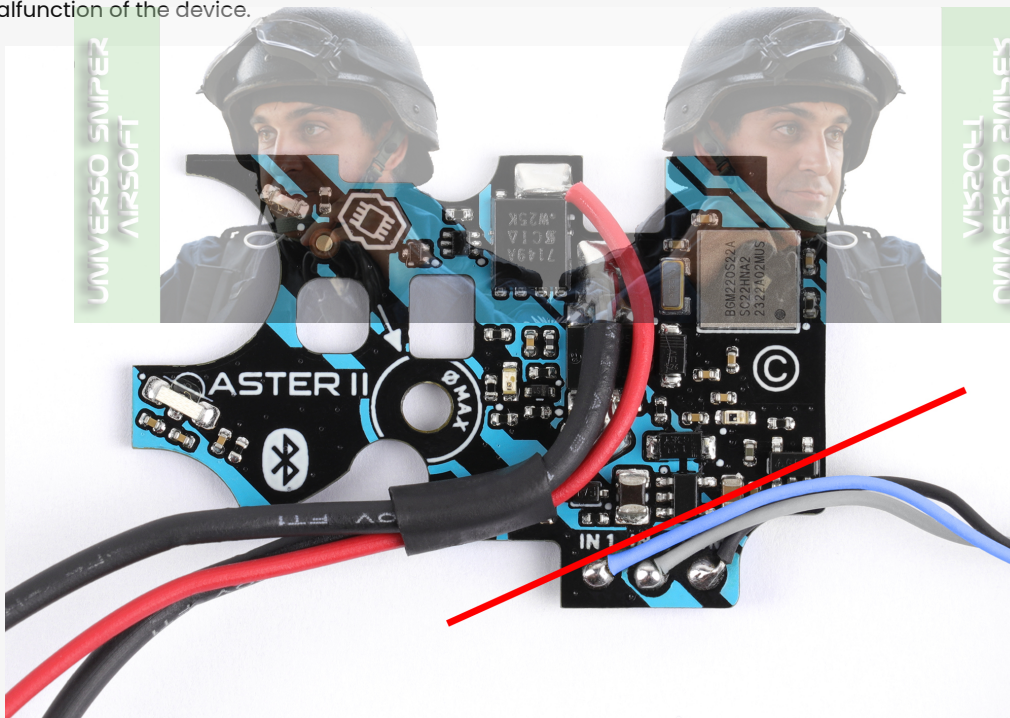
To connect the magazine and bolt-catch sensor to ASTER II Bluetooth® you will need to solder wires to the solder fields provided on the PCB.



ⓘ Caution

In order to connect this accessory, you will need a soldering iron (1.5 mm soldering tip) and basic skills in wire soldering. If you do not have the necessary equipment and experience, we recommend that you outsource this activity to a specialist (ASG replica service/GMS service). Improperly carried out soldering process can lead to permanent damage to the circuit, and this will void the warranty.

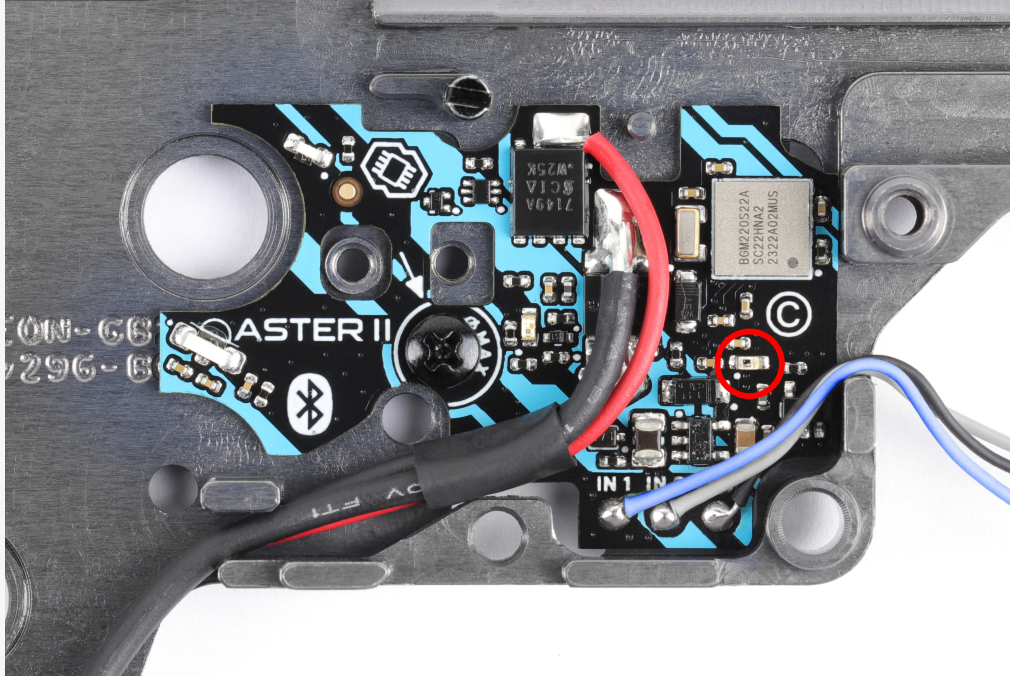
1. Place ASTER II Bluetooth® on a level and clean surface (BATTERY MUST BE DISCONNECTED). You can place a heavier object (such as a book) on the circuit to stabilize it while soldering.
2. Solder the wires of the magazine sensor and bolt-catch, paying special attention to the order of the wires (blue – **IN1**, gray – **IN2**, black – **COM**) and the angle of soldering (marked in the photo below) to the fields, which will make it easier to position the wires correctly. It is important that once soldering is done, there is no possibility of a short circuit between the fields. Otherwise this can lead to malfunction of the device.



ⓘ Caution

When soldering cables, do not touch the circuit with a soldering iron for more than three seconds, as this may damage the product.

3. After soldering the wires, we recommend protecting their exposed parts with a clear varnish.
4. Screw the ASTER II Bluetooth® to the gearbox shell according to the guidelines in the manual. Route the magazine sensor and bolt-catch wires to the outside of the gearbox as shown in the photo below – as close to the gearbox wall as possible. Make sure that the wires do not obstruct the trigger sensor marked below.



5. Close the gearbox case and make sure that the case does not pinch the sensor cables. Constricting the cables will cause permanent damage to this accessory.



6. Remove the protective film from the bolt-catch button plate taking care not to damage the adhesive layer.



7. Degrease the bolt-catch lever and glue the button to it where it is shown in the following photo.

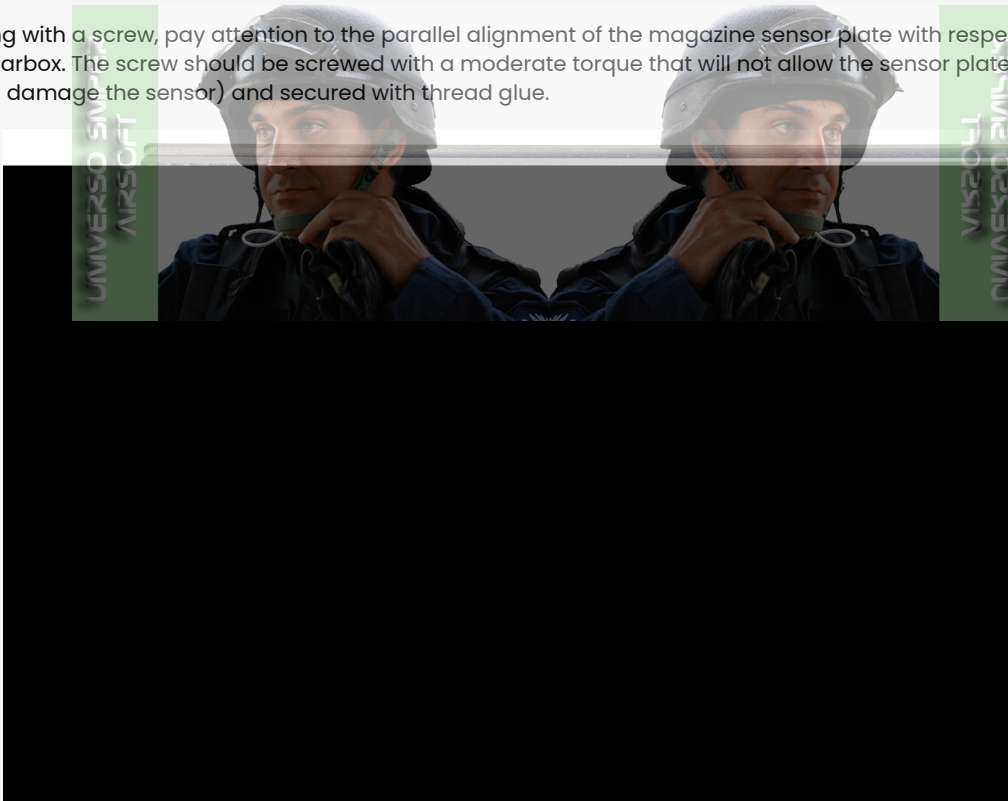


✔ **Note**

You can install the magazine sensor in two ways:

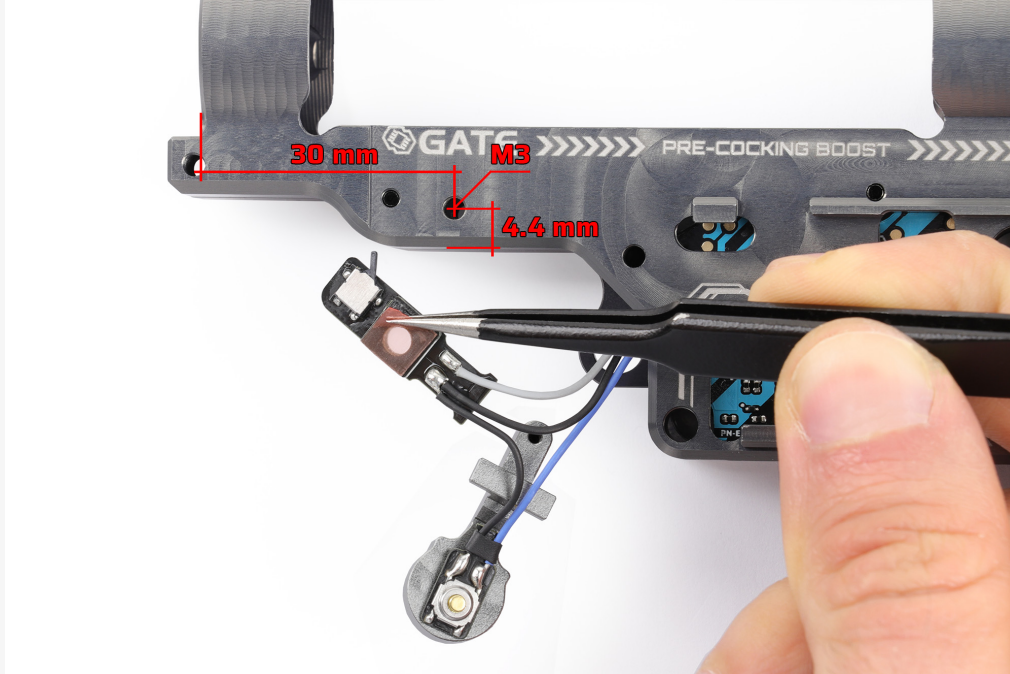
- using an M3 screw – in EON and Retro Arms shells
- using adhesive film

8. When mounting with a screw, pay attention to the parallel alignment of the magazine sensor plate with respect to the bottom edge of the gearbox. The screw should be screwed with a moderate torque that will not allow the sensor plate to rotate (overtightening can damage the sensor) and secured with thread glue.



✔ **Note**

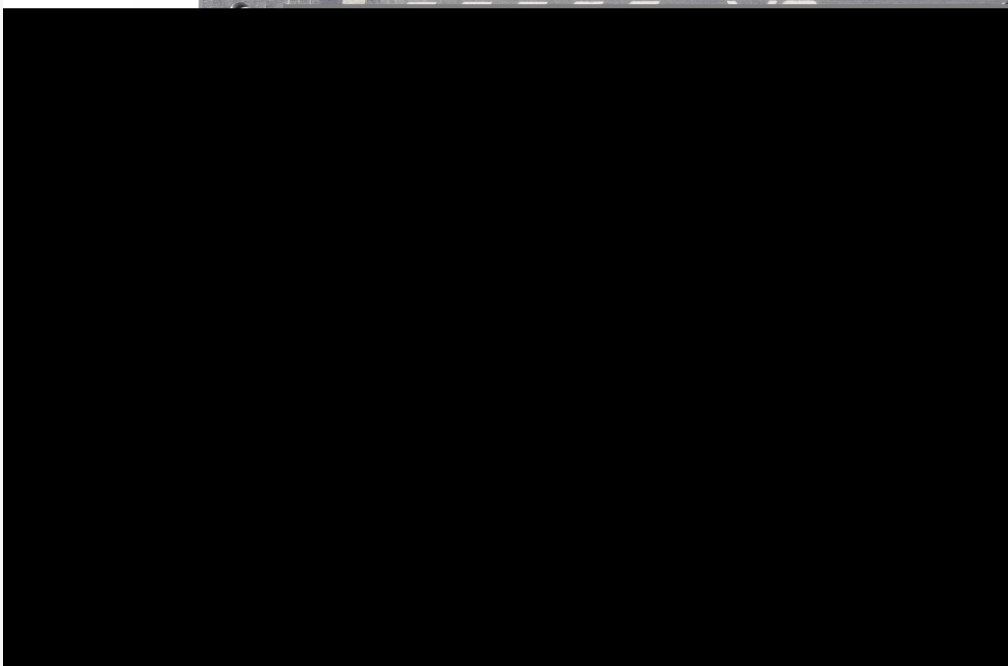
If your shell does not have a threaded opening at this point, you can either make one based on the dimensions below or use glue film.



9. If installing with an adhesive film, first apply it to a degreased (preferably with isopropyl alcohol) magazine sensor taking care not to damage the adhesive layer.



10. Degrease the gearbox in the gluing area, peel off the second protective layer from the adhesive film and glue the magazine sensor in the place shown in the following photo. **Align the plate to the bottom of the gearbox.**



Magazine Compatibility

The magazine sensor only supports magazines with a full flat top surface. Magazines with longer side panels may not work properly. If you have such magazines, we suggest a solution to ensure compatibility with the sensor. Place a 2 mm shim on the lower surface of the magazine, enabling the sensor to work properly. You can cut the shim yourself – the best dimensions are 20 x 5 x 2 mm. Stick it where shown in the photo below.



Multifunctional Port Activation in GCS

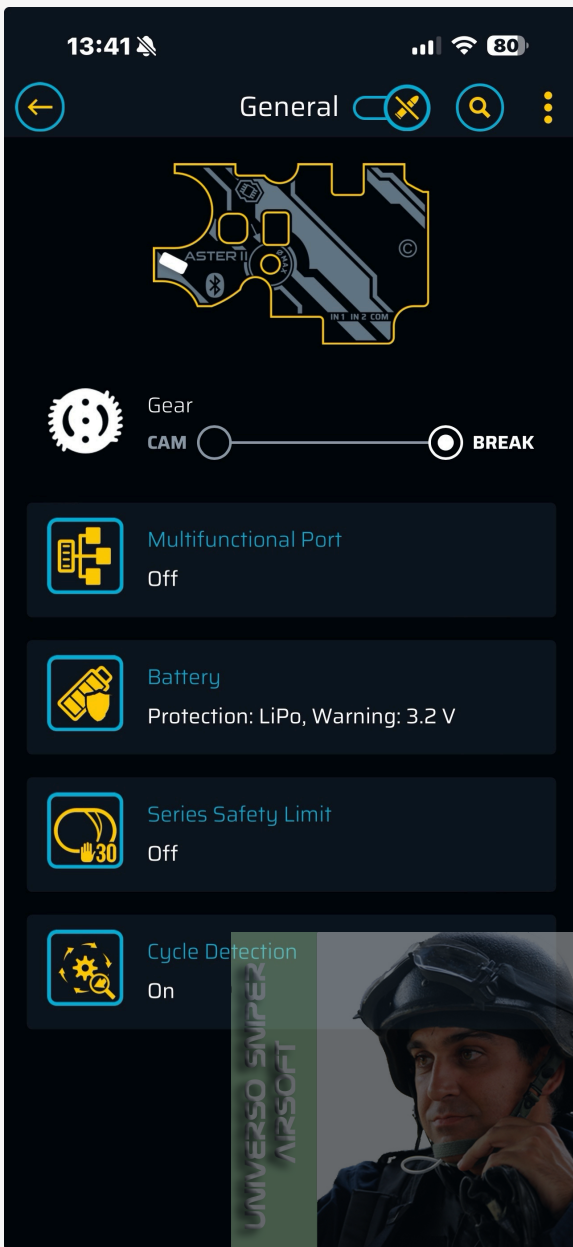


Windows™ | macOS™
Android™ | iOS™

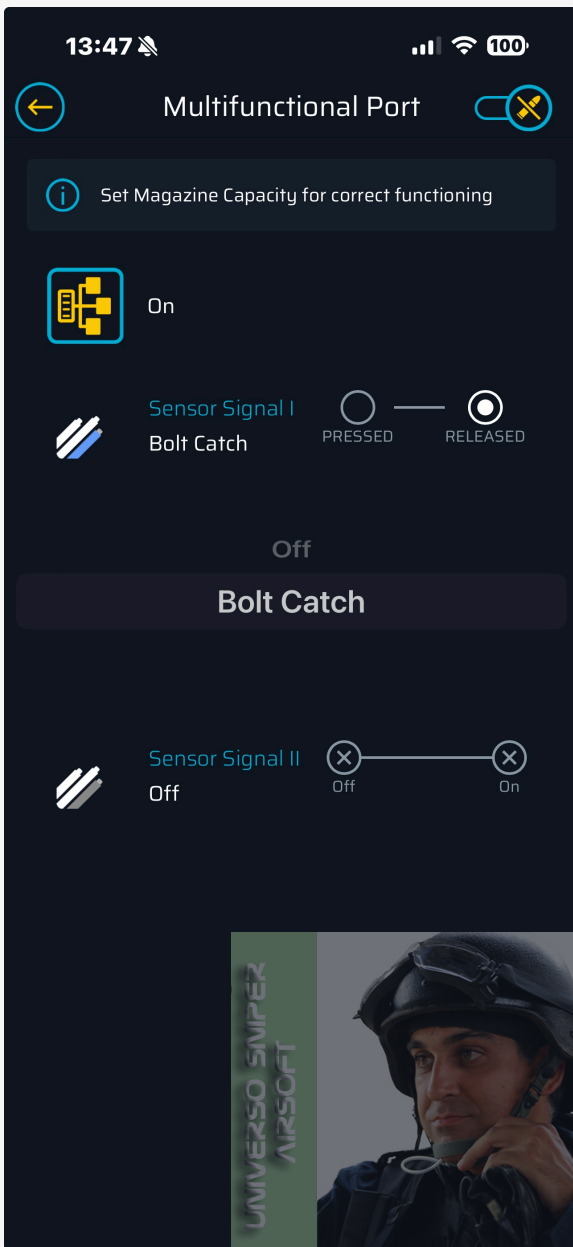
2. Start **Bluetooth**® communication on your device
3. Connect the battery to ASTER II Bluetooth®
4. Launch the GCS app and confirm all the required approvals
5. Tap "+" on the **Dashboard** of the app
6. In the list of devices, locate your ASTER II Bluetooth® – if it is not found, drag the screen down to refresh or tap **Refresh Scan**
7. Enter the **PIN** code found on the included stickers
8. Update the ASTER II Bluetooth® firmware



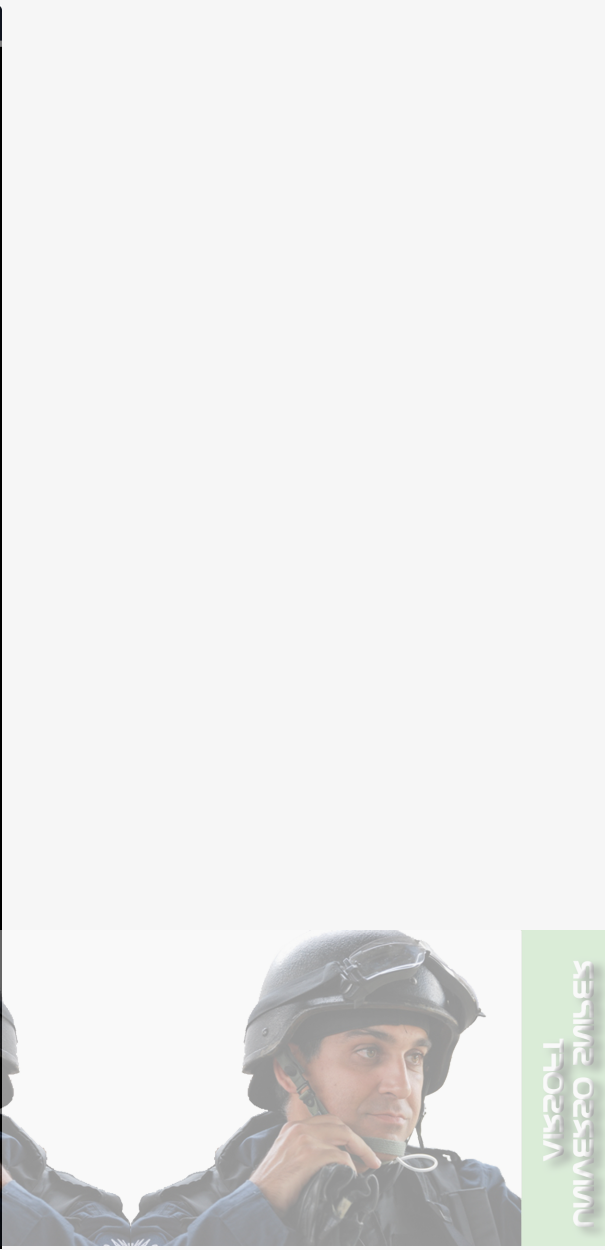
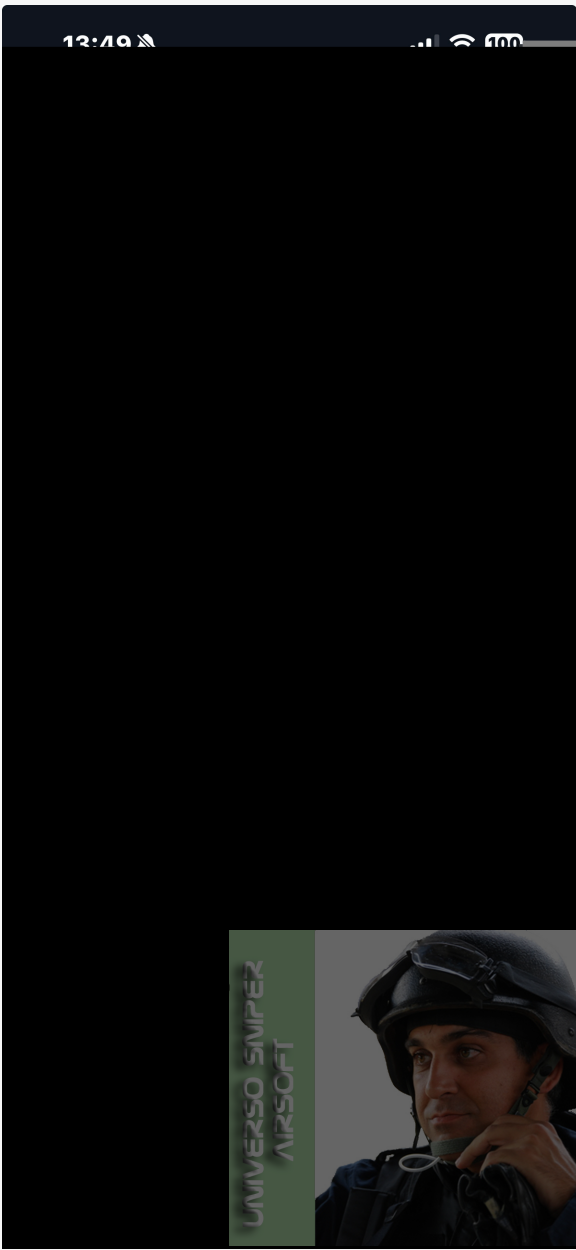
9. Go to the **General** tab and select **Multifunctional Port**



10. Tap **Sensor Signal I** and select **Bolt-Catch** if you want to use the bolt-catch button.



11. Tap **Sensor Signal II** and select **Magazine** if you want to use the magazine sensor.

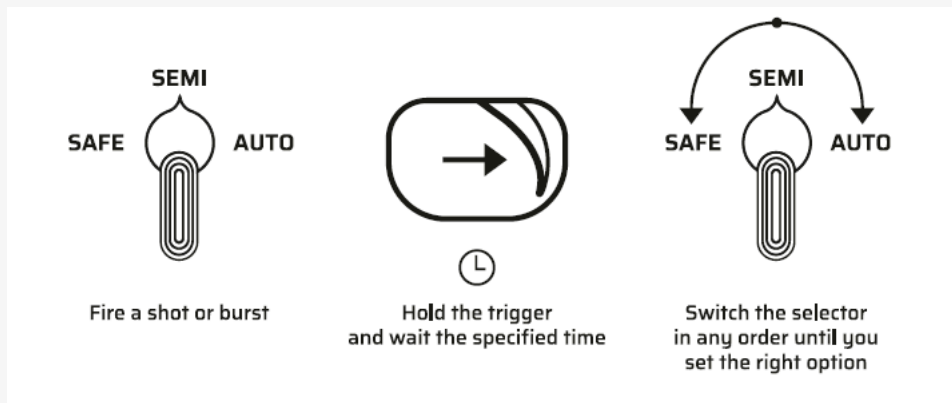


12. Turn on **Magazine Mode Simulation** in the **Magazine** tab and set the appropriate magazine capacity.



Quick Access Menu

Pre-Cocking



You can access **Pre-Cocking** using a shortcut without connecting the unit to the GCS app. In GCS, go to **Trigger>Pre-Cocking>Switch Mode via Selector** and use the toggle button to activate this function.

1. Fire a shot on SEMI, BURST or pull the trigger while in SAFE mode (only if the safety lever has been removed) **and do not release the trigger.**

2. Switch the selector within 2 s. There is a single low frequency vibration.

3. Switch the selector in any order to change between the options indicated by vibrations:

- a. 1 low vibration – Pre-Cocking Off
- b. 2 low vibrations – Pre-Cocking Auto
- c. 3 low vibrations – Pre-Cocking Manual

4. Release the trigger to save the selected mode.

Available options for Pre-Cocking	Low frequency vibrations
Off	1
Auto	2
Manual*	3

By releasing the trigger, you exit the function confirming it.

*If defined in GCS

Forcing Piston Release after Firing with Pre-Cocking Enabled

1. Press the trigger in SEMI or BINARY mode and wait for the firing cycle to end – do not release the trigger.
2. After 1.5 s, a high, medium, high, medium, high, medium frequency audible message will be triggered.
3. Releasing the trigger after the sound message is equivalent to firing without Pre-Cocking. The piston remains in the rest position.

Note

Releasing the piston to the rest position does not mean that Pre-Cocking mode is deactivated. Each subsequent shot after pressing the trigger will be made with the piston cocked according to the selected Pre-Cocking mode.

Alternative SAFE mode

If the user has configured the selector so that SAFE mode is not assigned to any selector position, the user can activate SAFE mode at any time by doing the following:

1. Set the selector lever to SAFE
2. Change the selector position to SEMI
3. Return to SAFE position again.

Caution

Note that the above sequence must be performed within 0.5 s. Activation of SAFE mode will be confirmed by a short low tone vibration. The SAFE mode is deactivated when the fire selector position is changed.

Restoring Factory Settings in the GCS App

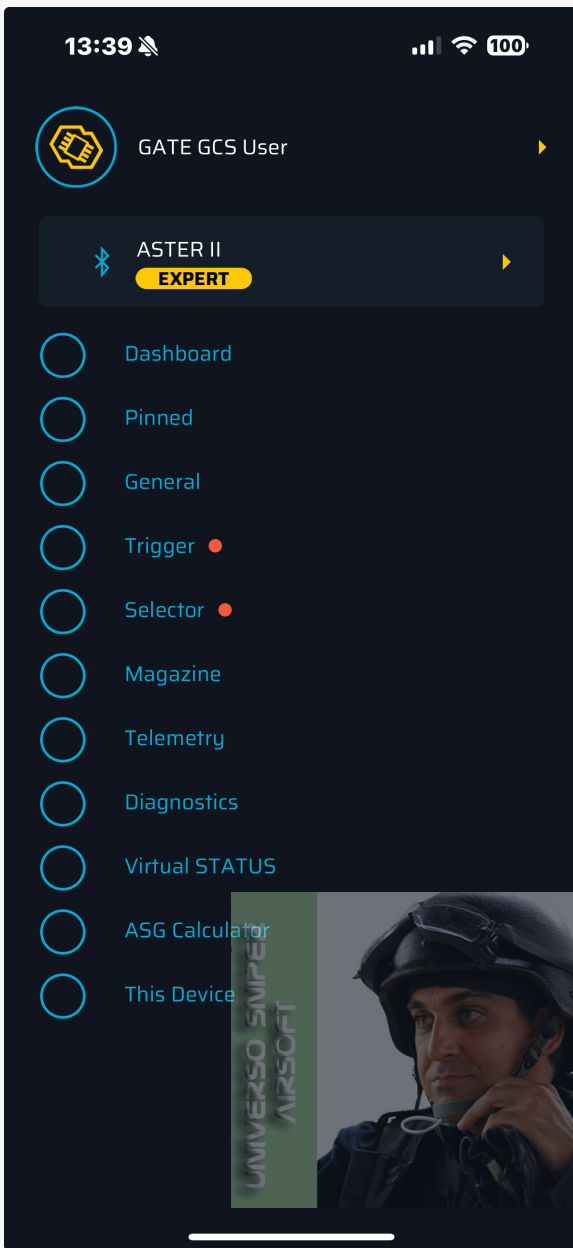
Note

Restoring the factory settings results in resetting the default settings, erasing adaptations, calibration of the trigger sensor and fire selector as well as statistical data.

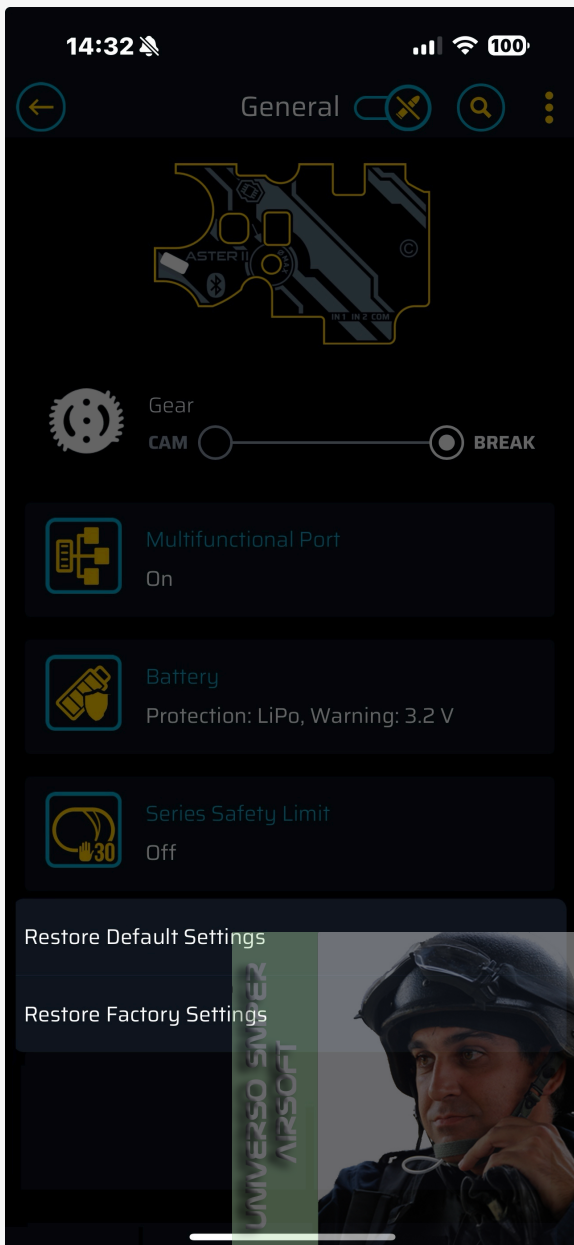
Factory settings can be restored when the ASTER II Bluetooth® is connected to the GCS app. Follow the steps below:

1. Launch the GCS app and connect the selected ASTER II Bluetooth® device to it.

2. Go to the **General** tab.



3. Open the menu in the upper right corner and select **Restore factory settings**.



Restoring Factory Settings without the GCS App

1. Disconnect the battery
2. Pull and do not release the trigger
3. While the trigger is pulled, connect the battery (ignore the warning vibration)
4. Hold the trigger for 10 seconds until you hear 2 vibrations confirming the reset
5. Release the trigger

✓ Informacja

The trigger must be pulled throughout the entire operation – from connecting the battery to sounding the vibration.

Restoring Default Settings in the GCS App

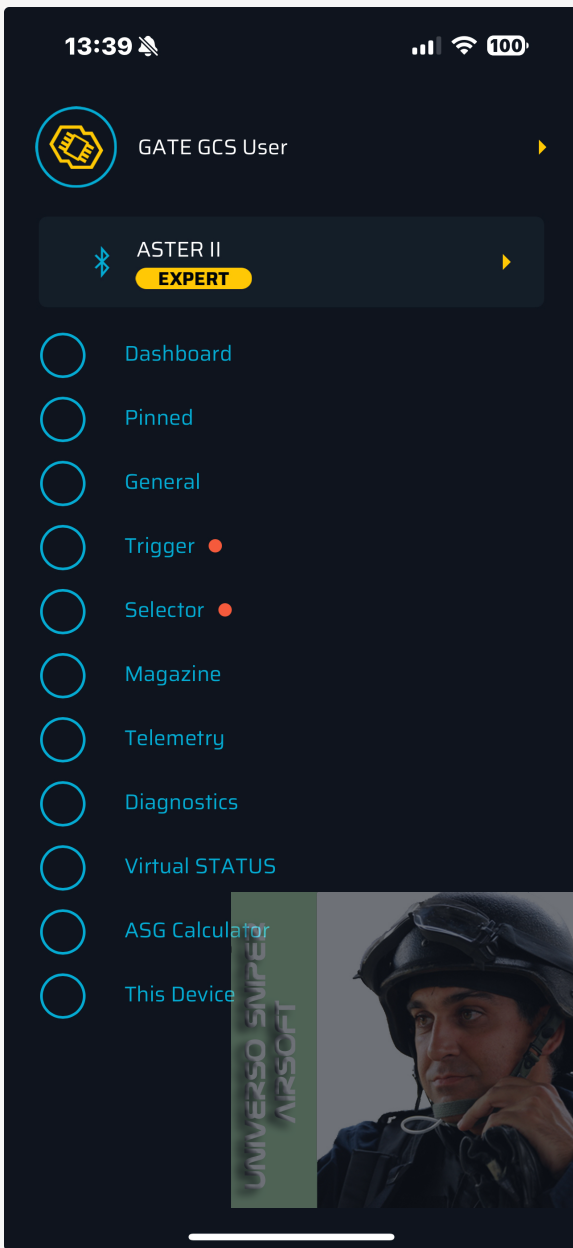
✓ Note

Restoring the default settings results in resetting your personal settings. This action **does not** erase adaptations, calibration of the trigger sensor and fire selector or statistical data.

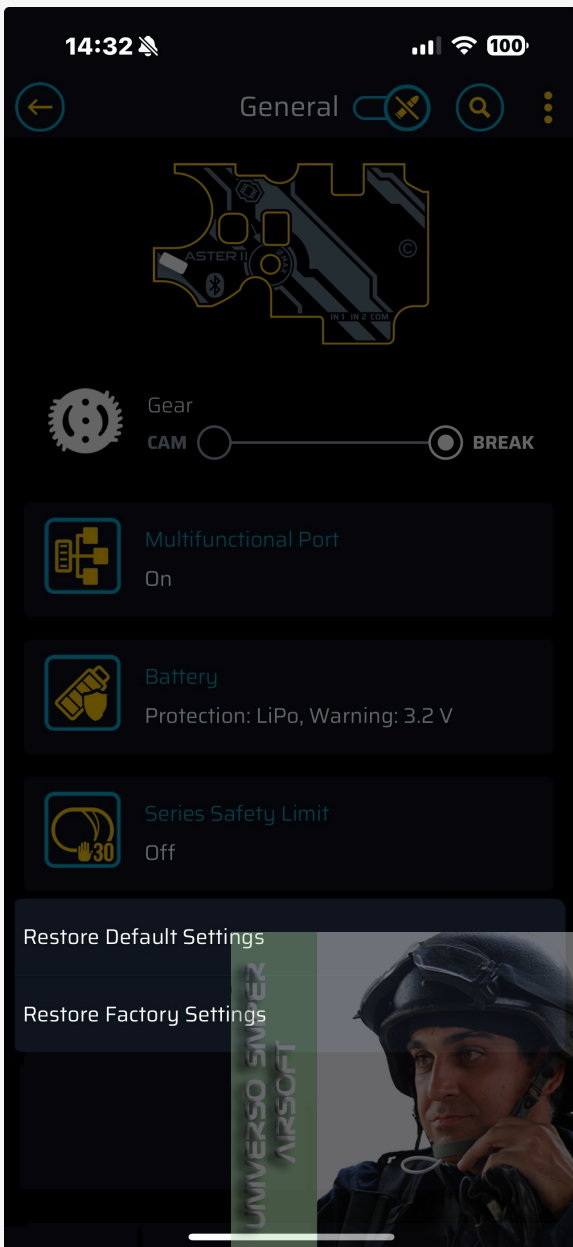
Default settings can be restored only when ASTER II Bluetooth® is connected to the GCS app. Follow the steps below:

1. Launch the GCS app and connect the selected ASTER II Bluetooth® device to it.

2. Go to the **General** tab.



3. Open the menu in the upper right corner and select **Restore default settings**.









Troubleshooting

Low Battery Warnings

When activated in GCS, you are warned 5 times before the battery is discharged. Each warning is communicated by 3 vibrations: High → Mid → High.

Vibrations after Connecting the Battery

ASTER II Bluetooth® can detect the number of battery cells automatically. If you activate this function, vibrations start once the battery is connected. Remember to always check if your ASTER II Bluetooth® detects the correct number of battery cells.

Vibrations after connecting the battery	Explanation
1 short high frequency 	Cell detection error
2 short high frequency 	Two cells detected
3 short high frequency 	Three cells detected
4 short high, 1 long low frequency 	The voltage is too high
3 short low frequency 	Lack of trigger or selector calibration
4 short low frequency 	Trigger error: after connecting the battery, ASTER detected a trigger position where a shot may be fired

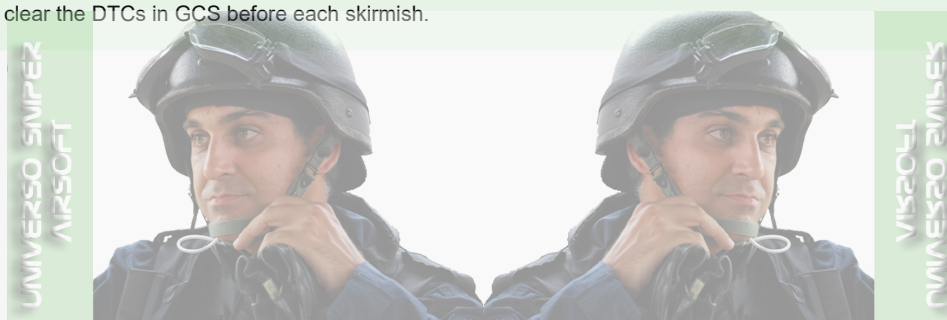
Diagnostic Trouble Codes

Diagnostic Trouble Codes (DTC) enable detecting basic malfunctions and problems with your replica or ASTER II Bluetooth®. You are notified of the main errors by vibrations. DTCs can be read and cleared in the DTC menu in GCS.

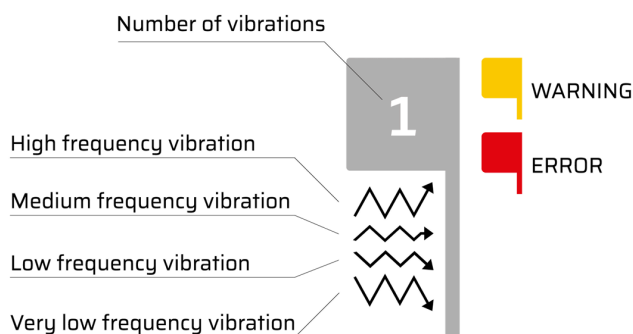


Note

It is good practice to clear the DTCs in GCS before each skirmish.



Diagnostic Trouble Codes – ASTER II Bluetooth® V2 gearbox drop-in ETU mosfet AEG



No errors

No errors detected. Enjoy airsofting

3

Under Voltage Protection 1 (UVP1)

Protection against battery over-discharge (battery protection) activated

What happened:

1. Discharged battery
2. Battery type or number of battery cells set incorrectly

What to do:

1. Charge the battery
2. Set the correct battery type or number of battery cells

Under Voltage Protection 1 (UVP1 Warning)

Warning against battery over-discharge

What happened:

1. Discharged battery
2. Battery type or number of battery cells set incorrectly

What to do:

1. Charge the battery
2. Set the correct battery type or number of battery cells

Under Voltage Protection 2 (UVP2)

Voltage has dropped below a critical level for your device to work properly

What happened:

1. Discharged battery
2. The battery is worn out and there is excessive internal resistance
3. Inadequate battery type for the current AEG configuration
4. Excessive electrical resistance between your device and the battery
5. Motor too strong for the connected battery
6. Motor connection short circuit
7. Jammed motor
8. Damaged motor

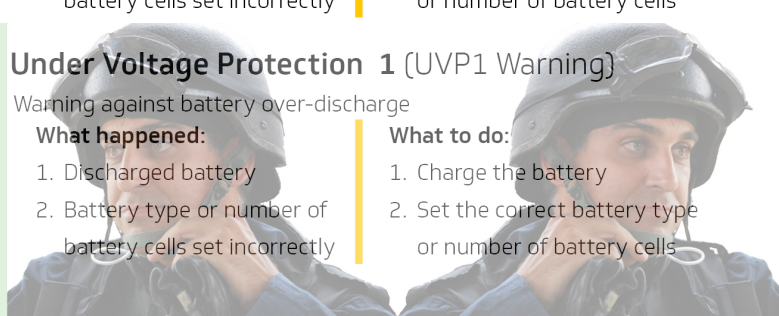
What to do:

1. Charge the battery
2. Replace battery
3. Use a battery with more capacity or higher voltage
4. We recommend using a battery with a Deans-T connector; if you need to use an adaptor, check the quality
5. Use standard or high-torque motors instead of high-speed ones
6. Check and fix motor wire insulation
7. Unjam the motor
8. Replace the motor

Under Voltage Protection 3 (UVP3)

Protection against battery over-discharge (battery protection) activated immediately after connecting the battery

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What happened:

1. The number of cells is different from the number set in GCS
2. Discharged battery

What to do:

1. Set the same number of cells in GCS as in the battery
2. Charge the battery

5**Over Voltage Protection (OVP)**

Voltage exceeding a critical level for your device to work properly

**What happened:**

1. Connected battery type not supported by the unit

What to do:

1. Replace the battery

Over Voltage Protection for an HPA replica (OVP_HPA)

Voltage exceeding a critical level for your device to work properly

What happened:

1. Connected battery type not supported by the unit

What to do:

1. Replace the battery – use maximum two cells

1**Over Current Protection Type 1 (OCP1)**

Excessive current detected – overcurrent protection activated

**What happened:**

1. Motor connection short circuit
2. Motor or gearbox jammed
3. Motor damaged

What to do:

1. Check and fix motor wire insulation
2. Unjam the motor or gearbox
3. Replace motor

Over Current Protection Type 2 (OCP2)

Excessive current detected – overcurrent protection activated

**What happened:**

1. Motor connection short circuit
2. Motor or gearbox jammed
3. Motor damaged
4. Battery voltage too high for the current motor

What to do:

1. Check and fix motor wire insulation
2. Unjam the motor or gearbox
3. Replace motor
4. Replace the battery

Short Circuit Protection (SCP)

Current over 220 A detected – short circuit protection activated

What happened:

1. Motor connection short circuit
2. Motor or gearbox jammed
3. Motor damaged

What to do:

1. Check and fix motor wire insulation
2. Unjam the motor or gearbox
3. Replace motor

Overload (OVL)

Too high load. The load limit was exceeded

What happened:

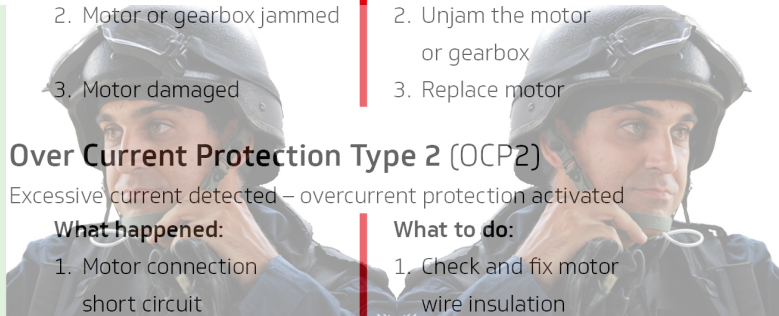
1. BASIC and ADVANCED firmware edition is dedicated to mid-tuned guns

What to do:

1. Use a high-torque motor and gears
2. Upgrade firmware to EXPERT

Over Temperature Protection (TEMP)

Excessive device temperature – over-temperature protection activated

What happened:**What to do:**

1. The outside temperature is too high in relation to the requirements of your AEG
2. Frequent short circuits and device electrical overloads

1. Wait until the temperature drops

Under Temperature Protection (MIN TEMP)

Temperature below a critical level for your device to work properly

What happened:

1. The outside temperature is too low in relation to the requirements of your AEG

What to do:

1. Wait until the temperature increases

4

Gear Not Detected (GEAR)

ETU did not detect any movement of the sector gear

What happened:

1. Dirty sector gear sensor
2. Jammed sector gear
3. Damaged sector gear sensor
4. Damaged motor

What to do:

1. Clean sector gear sensor; inspect the sensor using GCS; alternatively set Cycle detection to OFF
2. Check the condition of the gears
3. Set Cycle Detection to OFF (you will retain minimal replica functionality) and contact us: <https://help.gatee.eu/page/contact>
4. Replace the motor

Motor Disconnected (MOTOR DISC)

ETU did not detect the motor

What happened:

1. Motor not connected
2. Brushes worn out
3. Damaged motor

What to do:

1. Check wiring and motor connectors, connect the motor
2. Replace brushes
3. Replace the motor

1

Gear Sensor Overexposed (GEAR-OE)

Gear Sensor Overexposed

What happened:

1. Too much external light reaching the gear sensor

What to do:

1. Cover the gearbox against external light

3

Series Safety Limit (SSL)

Series Safety Limit activated

What happened:

1. The function is active in GCS
2. The allowed limit of shots in a series has been exceeded

What to do:

1. Increase the limit of shots in GCS
2. Disable function in GCS

1

Selector Error (SEL-ERR)

Selector Error

What happened:

1. Badly calibrated selector
2. Outside light reaching selector sensor

What to do:

1. Perform selector calibration
2. Insert the gearbox into the body

3. Selector plate not reflecting light

3. Modify the selector plate using the sticker from the INSTALLATION KIT

Switched Selector (SEL-SW)

The selector has switched during a shot

What happened:

1. The selector was switched deliberately during a shot
2. Sensors detect switching the selector at the edge of a selector position

What to do:

1. Inspect selector sensors; if the switch takes place near one of the three selector positions (SAFE, SEMI or AUTO), you must modify the selector plate

1

Selector Sensor Overexposed (SEL-OE)

Selector Sensor Overexposed



What happened:

1. Too much external light reaching the selector sensor

What to do:

1. Cover the gearbox against external light

3

Selector not Calibrated (SEL-CAL)

Selector Calibration not Performed



What happened:

1. Selector calibration not Performed

What to do:

1. Calibrate the selector

4

Trigger Error (TRIG-ERR)

A pulled trigger detected when connecting the battery



What happened:

1. Trigger pulled while connecting the battery
2. Trigger sensitivity set too high
3. Dirty trigger sensors
4. Badly calibrated trigger
5. Trigger sensor covered by wires

What to do:

1. Release the trigger
2. Using GCS set a lower trigger sensitivity
3. Clean the trigger sensors
4. Check the routing of the wires inside the gearbox
5. Perform trigger calibration

1

Trigger Sensor Overexposed (TRIG-OE)

Trigger Sensor Overexposed



What happened:

1. Too much external light reaching the trigger sensor

What to do:

1. Cover the gearbox against external light

3

Trigger Not Calibrated (TRIG-CAL)

Trigger Calibration Not Performed



What happened:

1. Trigger Calibration Not Performed

What to do:

1. Calibrate the trigger

Main Transistors Error (FET1 (E01))

Main Transistors Error

What happened:

1. Device Internal Error

What to do:

1. Clear the DTC

2. Unplug your device from the battery and wait 10 s
3. Connect your device to the battery and wait again 10 s
4. Check the DTC again
 - if the error persists, contact us: <https://help.gatee.eu/page/contact>

Brake Transistor Error (FET2 (E02))

Brake Transistor Error

What happened:

1. Device Internal Error

What to do:

1. Clear the DTC
2. Unplug your device from the battery and wait 10s
3. Connect your device to the battery and wait again 10s
4. Check the DTC again
 - if the error persists, contact us: <https://help.gatee.eu/page/contact>

Voltage Measurement Error (VME1 (E03))

Voltage Measurement Error

What happened:

1. Device Internal Error

What to do:

1. Clear the DTC
2. Unplug your device from the battery and wait 10s
3. Connect your device to the battery and wait again 10s
4. Check the DTC again
 - if the error persists, contact us: <https://help.gatee.eu/page/contact>

Temperature Sensor Error (TSE (E04))

Temperature Sensor Error

What happened:

1. Device Internal Error

What to do:

1. Clear the DTC
2. Unplug your device from the battery and wait 10s
3. Connect your device to the battery and wait again 10s
4. Check the DTC again
 - if the error persists, contact us: <https://help.gatee.eu/page/contact>

Current Sensor Error (CSE (E05))

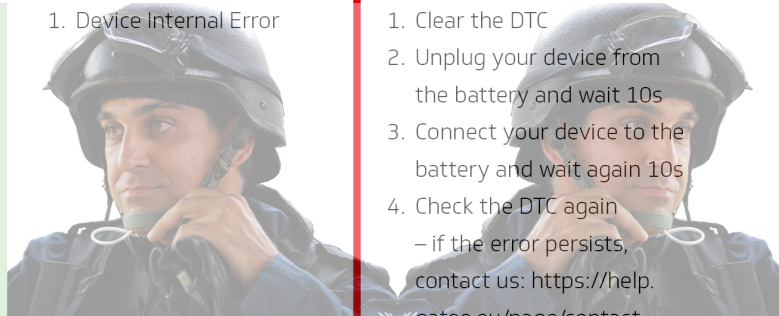
Current Sensor Error

What happened:

1. Device Internal Error

What to do:

1. Clear the DTC
2. Unplug your device from the battery and wait 10s
3. Connect your device to the battery and wait again 10s
4. Check the DTC again
 - if the error persists, contact us: <https://help.gatee.eu/page/contact>



Motor Sensor Error (MSE)

Motor Sensor Error

What happened:

1. Device Internal Error

What to do:

1. Clear the DTC
2. Unplug your device from the battery and wait 10s
3. Connect your device to the battery and wait again 10s
4. Check the DTC again
 - if the error persists, contact us: <https://help.gatee.eu/page/contact>

Self-Test Failure (SELF)

The device failed on self-test

What happened:

1. Device Internal Error
2. Always activated with other Device Internal Errors

What to do:

1. Clear the DTC
2. Unplug your device from the battery and wait 10s
3. Connect your device to the battery and wait again 10s
4. Check the DTC again
 - if the error persists, contact us: <https://help.gatee.eu/page/contact>

Configuration Error (CFG)

Configuration Error

What happened:

1. The firmware was upgraded
2. Device Internal Error

What to do:

1. Restore factory settings
2. Install the newest firmware
3. Clear the DTC
4. Unplug your device from the battery and wait 10s
5. Connect your device to the battery and wait again 10s
6. Check the DTC again
 - if the error persists, contact us: <https://help.gatee.eu/page/contact>

Endless Loop (FEL)

Incorrect ETU operation – Information about activation of protection against entering an endless ETU reset loop

What happened:

1. Firmware update not uploaded correctly or firmware not working properly or corrupted ETU memory

What to do:

1. Clear the DTC
2. Restore factory settings
3. Unplug your device from the battery
4. Connect your device to the battery and wait 10 s
5. Check the DTC again
 - if the error persists, downgrade the firmware to the previous version

6. Check the DTC again – if the error persists, contact us

Technical Specifications

The design and production of the device is based on harmonized standards.

Supply Voltage Range [AEG]	3.75–12.9 VDC
Supply Voltage Range [HPA]	5–8.6 VDC
Rated Current	30 A
Current Consumption	20 mA
Low Power Mode	130 μ A
Connectivity	Bluetooth® 5.2 Low Energy
Dimensions (Length x Width x Thickness)	43.8 mm x 28.7 mm x 5.5 mm
Finished Product Weight	23.4 g
Operating Temperature Range	min. -15° C, max. +50° C
Relative Humidity	\leq 80%

Legal Notice

Please read the Legal Notice before operating your device and keep it for future reference. This document contains important terms and conditions with respect to your device. By using this device, you accept these terms and conditions.

Exclusion of Liability

GATE Enterprise sp. z o.o. sp. k. is not liable for any damages, injuries or accidents of any kind resulting from the use of this product or airsoft gun with the product installed, including (but not limited to) incidental or special damages to airsoft gun, airsoft gun parts, batteries and gearbox internals.

Disclaimer

GATE Enterprise sp. z o.o. sp. k. takes no responsibility regarding compliance of the product with the requirements of any law, rule or airsoft restrictions pertaining thereto.

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GATE Limited Warranty Policy

GATE Enterprise sp. z o.o. sp. k. warrants that its Product is free from manufacturing and material defects at the date of purchase and for a period of two (2) years from the date of purchase and it is nonextendable. This Limited Warranty is conditioned upon proper use of Product by Purchaser.

This Limited Warranty is valid provided that the owner provides a proof of purchase and properly completed warranty form.

This Limited Warranty does not cover: (a) defects or damage (e.g. mechanical, thermal or chemical) resulting from accident, misuse (misinterpretation of the instructions), abuse, neglect, unusual physical, electrical or electromechanical stress, water immersion, repairs or structural modification of any part of Product, or (b) the Product that has its serial number removed or made illegible; (c) defects or damage from improper operation, maintenance or installation, (d) installation of the products.

Requests for warranty are processed as soon as possible, not exceeding seven (7) working days. The company's obligation under this Limited Warranty shall be limited to providing replacement of parts only.

The color of the product may vary slightly depending on the batch.

Product Disposal Instructions

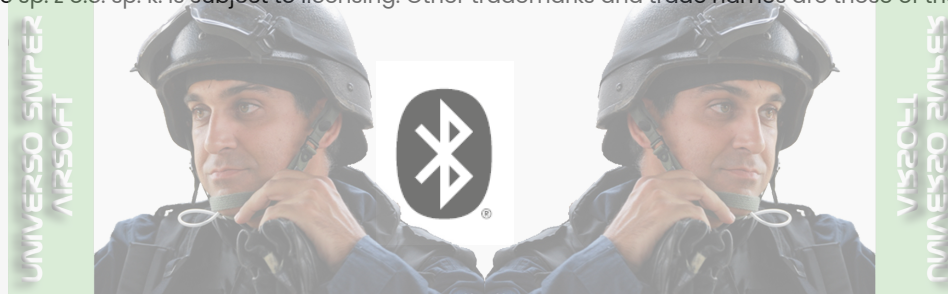
The symbol shown here means that the product is classified as Electrical or Electronic Equipment and should not be disposed with other household and commercial waste at the end of its working life. The Waste of Electrical and Electronic Equipment (WEEE Directive 2012/19/EU) has been put in place to recycle products using best available recovery and recycling techniques to minimize the impact on the environment. Purchasers shall take any old electrical equipment to waste recycling public centres or points of sale.



Certificates and Regulations

Bluetooth® Trademark Attribution

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Product Compliance

Declaration of Conformity

GATE Enterprise sp. z o.o. sp. k. hereby declare under our sole responsibility that GATE ASTER II Bluetooth® is in conformity with the essential requirements of the following directives: 2014/53/UE, 2011/65/UE.



Product Compliance Regarding the Use of the BGM220S Module

The BGM220S modules have been tested against the relevant harmonized standards and are in conformity with the essential requirements and other relevant requirements of the Radio Equipment Directive (RED) (2014/53/EU)

This device complies with FCC's e-CFR Title 47, Part 15, Subpart C, Section 15.247 (and related relevant parts of the ANSI C63.10.2013 standard) when operating with the embedded antenna or with the antenna type(s) listed in 11.1.1 Qualified Antennas. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and

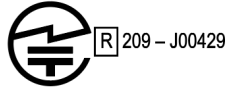
2. This device must accept any interference received, including interference that may cause undesirable operation. Any changes or modifications not expressly approved by Silicon Labs could void the user's authority to operate the equipment

This radio transmitter (IC: 5123A-BGM220S for the BGM220S12A and IC: 5123A-BGM220S2 for the BGM220S22A) has been approved by Innovation, Science and Economic Development Canada (ISED Canada, formerly Industry Canada) to operate with the embedded antenna and with the antenna type(s) listed in 11.1.1 Qualified Antennas, with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain listed, are strictly prohibited for use with this device. This device complies with ISED's license-exempt RSS standards. Operation is subject to the following two conditions:

1. This device may not cause interference; and
2. This device must accept any interference, including interference that may cause undesired operation of the device

Contains a radio module

当該機器には電波法に基づく、技術基準適合証明等を受けた特定無線設備を装着している。



This device contains
FCC ID: QOQ-BGM220S2
IC: 5123A-BGM220S2

Contient le module transmetteur: 5123A-BGM220S

当該機器には電波法に基づく、技術基準適合証明等を受けた特定無線設備を装着している。

This equipment operates on a secondary basis and, consequently, must accept harmful interference, including from stations of the same kind, and may not cause harmful interference to systems operating on a primary basis.

The BGM220S22A are certified in Japan with certification number 209-J00429.

The BGM220S22A modules have a RF certification for import and use in South-Korea. Certification number is: R-R-BGT-BGM220S2. The BGM220S modules come at launch with a pre-qualified Bluetooth Low Energy RF-PHY Tested Component having Declaration ID of D044526 and QDID of 155407, and having a listing date of 2020-09-04.

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👍 Aún no le ha gustado a nadie