INSTALLATION AND USER MANUAL

AIRSOFT SYSTEMS

www.airsoftsystems.com

# ASCU2 Gen.5

FOR GEARBOX VER. 2

**ATTENTION! PLEASE READ CAREFULLY THIS INSTRUCTION AND USER MANUAL BEFORE YOU PROCEED WITH THE INSTALLATION OF THE ASCU.**

# AIRSOFT SMART CONTROL UNIT (ASCU) GEN. 5

**WARNING! Please read carefully this Instruction manual before proceeding with the instalation. We strongly recommend that the ASCU to be installed by an experienced airsoft technician.**

The ASCU is a electronic module which when installed in an airsoft electric gun, drastically improves the way the gearbox cycles and the realism in imitating the functions of a real weapon.

The ASCU system monitors the operation of the AEG in any time, and no matter how fast you tap the trigger, the AEG will always complete the full cycle, no matter if you shoot in Semi or Full Auto mode.

The ASCU has an integrated Low Drain Protection. LiPo, NiMH, and NiCd batteries from 7,4 V to 12 V can be used safely. The ASCU automatically recognizes the battery type and voltage, even if the battery is not fully charged.

**The use of high quality motor with the ASCU is highly recommended.**
**The use of high quality battery with the ASCU is highly recommended.**
**Do not use old and damaged batteries!**

**11.1V or 12V Battery is recommended!**
**7.4V to 8.4V Battery to be used only with M90 up to M100 springs.**

The ASCU will stop the AEG firing if any mechanical problem occurs to the gears in the AEG, which protects the internals of the gearbox from further damage.

The ASCU Gen.4 is easy to install in all AEGs with Ver.2 gearbox. In most of the models there is no need for any modification of the original parts of the airsoft rifle, nevertheless some models may need some minor and easy to do, modifications of some parts in order make the installation easier.

**The ASCU kit includes:**
- ECU board + Mosfet Board with Wires
- Selector Plate
- Cut-Off Lever
- Instruction Manual

**Tools needed:**
- Set of Philips screwdrivers.

## ASCU INSTALLATION STEPS

***Before installation check on www.airsoftsystems.com for any updates!**

**WARNING! If you are not familiar with the AEG's gearbox internals and you do not have good gearbox repair experience, please do not proceed with the installation and turn to your nearest airsoft service.**

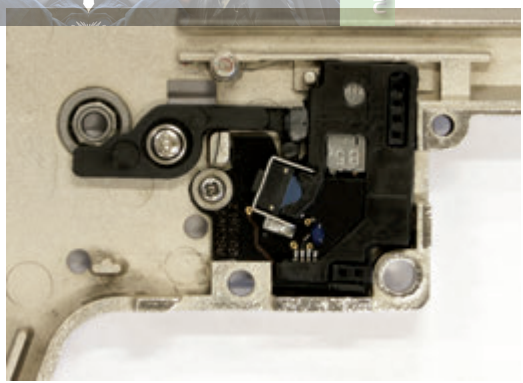
**1.** Remove the gearbox from your gun following the standard procedures for your model.

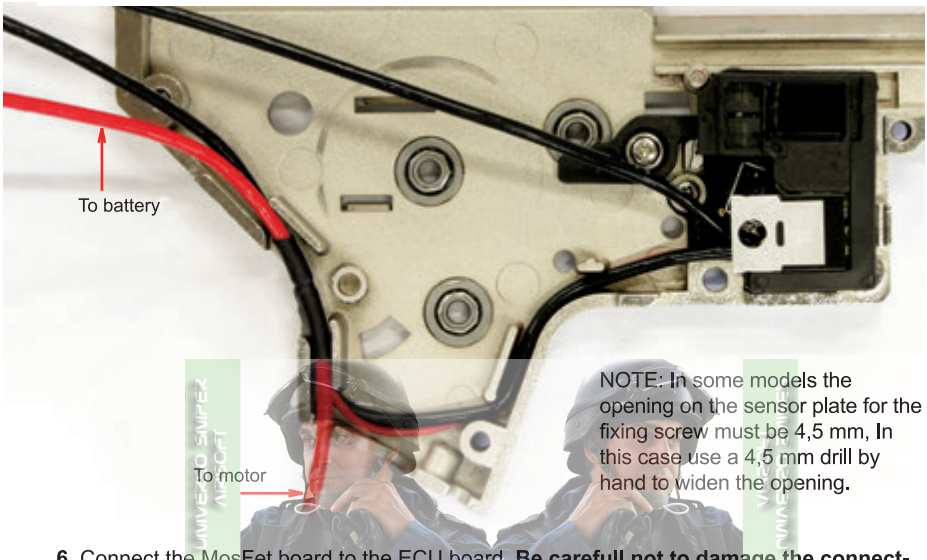
**2.** Open the gearbox and remove the cylinder together with the piston and the spring. Remove the gears and the anti-reversal latch, the trigger and the selector plate. Unscrew and remove both parts of the safety lever. Unscrew the switch assembly and remove it together with the wiring.

**3.** At this point check the gearbox shell for any sharp edges in the way of the wires. If there are any, round them with a small file. Clean the gearbox shell from any dirt and grit. Check also the receiver for any sharp edges in the wires way, and if there are any, round them with a small file. All sharp edges in the wires way must be rounded because they can cut through the wires insulation and damage the ASCU.

**4.** Remove the cut-off lever, and replace it with the polymer cut-off lever provided with your ASCU2 Gen.4

**5.** Separate the ECU and the Mosfet of the ASCU. In the place of the original switch group put the ECU Board. Be careful to place the cutoff lever under the lever of the cut-of sensor - exactly as shown on the picture below. Fix the Sensor Unit by screwing back the screw that was used for the original switch assembly.





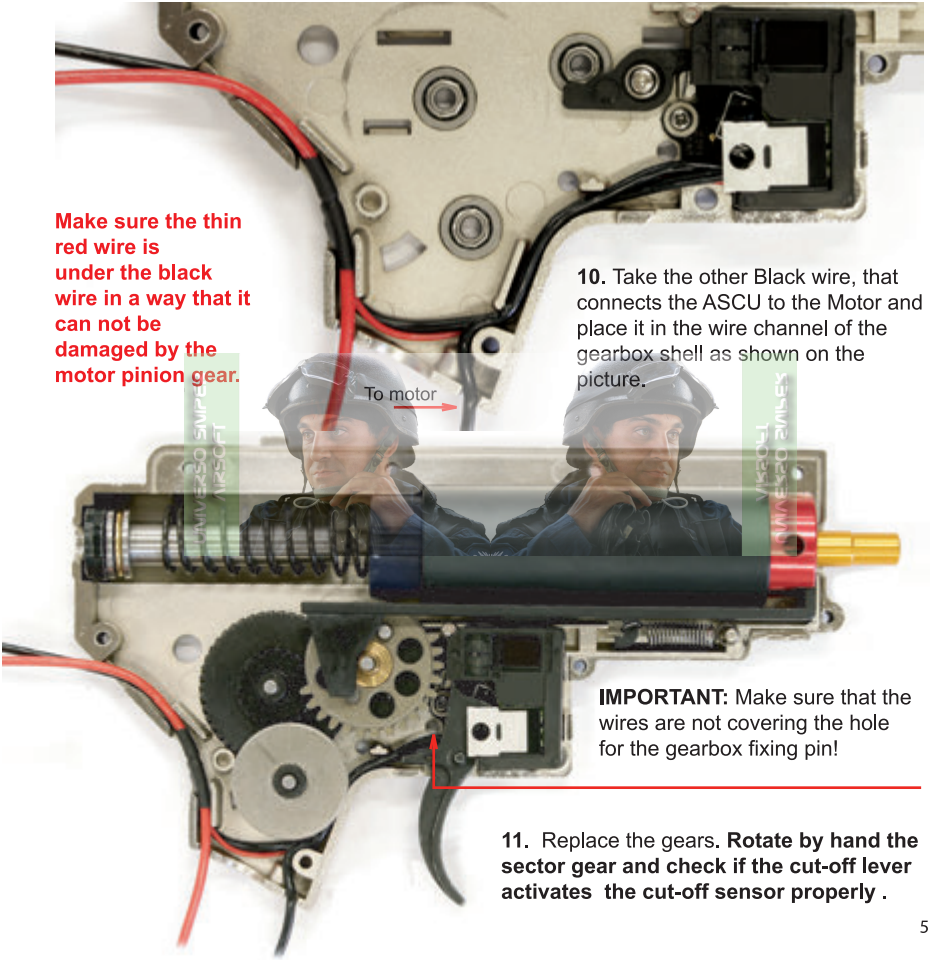

**6.** Connect the MosFet board to the ECU board. **Be carefull not to damage the connecting pins.**

**7.** Place the thin wire in the wire channel in the gearbox shell exactly as shown on the picture.

**8.** Pick the Black wire connecting the ASCU to the battery connector, and place it in the wire channel of the gearbox shell, over the thin wire. Make sure that both wires are cleran from the gearbox pin whole and the trigger area.

**9.** Place the Red wire in the wire channel over the Black wire as shown on the picture. Be carefull not to damage the insulating black thermo shrink on the Red wire.

*** Keep wires as close as possible to the gearbox wall in the area where the pinion (motor) gear sits.**




**10.** Take the other Black wire, that connects the ASCU to the Motor and place it in the wire channel of the gearbox shell as shown on the picture.

**IMPORTANT:** Make sure that the wires are not covering the hole for the gearbox fixing pin!

**11.** Replace the gears. **Rotate by hand the sector gear and check if the cut-off lever activates the cut-off sensor properly .**

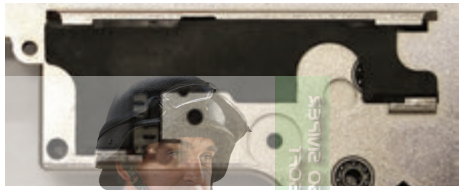
**WARNING! Do NOT reinstall the anti-reversal latch and the trigger safety lever! You do not need them anymore.**
***Anti-reversal latch may be reinstalled if a set-up of low power motor with low power spring, or High Speed motor with low power spring is used.**

**12.** Reinstall the cylinder assembly together with the piston and the tappet plate. Reconnect the tappet plate spring. Replace the trigger with its spring.

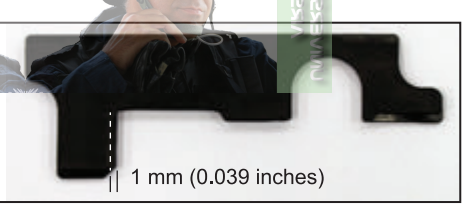
**13.** Insert the main spring and the spring guide. **Check again that all wires are in place and the hole for the receiver pin is clear.**

**14.** Close the gearbox.

**15.** Install the Selector Plate provided with your ASCU.



*For ICS M4 /M16 split gearbox cut exactly 1 mm from the selector plate as shown on the picture.




**16.** Insert the gearbox in the lower receiver. **Check the opening for the gearbox pin for any obstructions and if it is properly aligned. Replace the gearbox pin.**

**17.** Install the grip and the motor. **Make sure to adjust the motor tension correctly.**

**WARNING! If changing the Tamiya connector to Deans /T-connector/ make sure to keep the correct polarity. If the polarity is switched the ASCU will burn instantly and this will not be covered by the warranty. Using Deans /T-connector/ is recommended.**

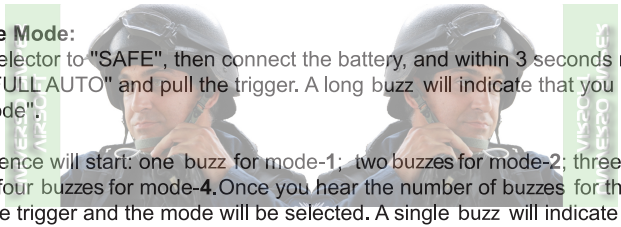
READ BEFORE USING YOUR AEG WITH ASCU!

# AIRSOFT SMART CONTROL UNIT
# USER MANUAL

**The ASCU has 4 selectable modes of function:**
1. Single fire + Combined 3 round Burst and Full Auto. (Factory setting)
2. Single Fire + Full Auto
3. Single Fire + 3 round Burst
4. Single Fire only.

**CHOOSING BETWEEN MODES:**

**Coosing Fire Mode:**
Set the fire selector to "SAFE", then connect the battery, and within 3 seconds move the fire selector to "FULL AUTO" and pull the trigger. A long buzz will indicate that you are now in "Program mode".



A buzz sequence will start: one buzz for mode-1; two buzzes for mode-2; three buzzes for mode-**3** and four buzzes for mode-**4.** Once you hear the number of buzzes for the desired mode, pull the trigger and the mode will be selected. A single buzz will indicate that the mode has been selected and the AEG is ready to operate.
The ASCU will remember the last chosen mode and will keep it until another mode is selected. Disconnecting of the battery does not affect the selected mode.

**Choosing Hop-Up Mode:**

The ASCU is ready to work together with the ASHU with Empty Magazine Detecting function. The second program mode is used when the Hop-Up unit is installed in order to activate it. The ASCU is factory preset to work without it.

If you have the ASHU installed then you need to enter in the second program mode to activate it.

**In order to engage the Empty Magazine Detection Function the ASHU has to be installed.**

The hop-up mode can be switched ON and OFF.

To change setting (from OFF to ON and from ON to OFF):
1. Remove the magazine and Disconnect the battery.
2. Set Fire selector to SAFE .
3. Connect the battery and immediately (within 3 seconds) push the Bolt Catch lever.
4. A buzz will indicate the choice is set.


**1. Set the fire selector to "SAFE"**, then connect the Battery.
After 3 seconds a single buzz signal will indicate that the battery is connected and the AEG is ready for use. **Do not pull the trigger before the beep!**

**2.** When the fire selector lever is on "SAFE" the AEG will not fire when the trigger is pulled.

**3.** When the fire selector lever is on "SEMI" the AEG will fire a single shot each time the trigger is pulled.

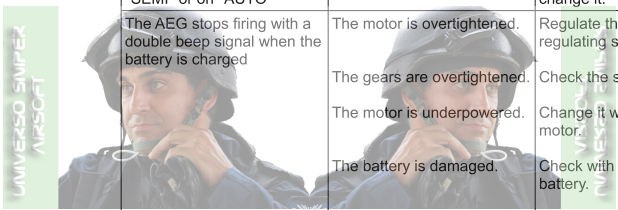
**4.** When the fire selector lever is on "AUTO" and the trigger is pulled the AEG will fire fully automatic until the trigger is released, or 3 round burst ,or a single shot, dependent on which fire program mode the ASCU is set.

**5.** When the battery is depleted, the AEG will stop firing and you will hear a double buzz signal. Change the battery with a charged one.

## TOUBLESHOOTING

The ASCU is designed to monitor the parameters in which your AEG works in. If by any reason mechanical or electrical failure the AEG does not work within the normal parameters, the ASCU will stop it and inform you for that with a double beep signal.

| Malfunction | Possible reason | What to do |
|---|---|---|
| When battery is connected there is no a peep signal. | Bad battery or AEG cable plug | Check the plugs. |
| | Bad or no connection of one of the wires with the motor | Check the motor connections with the black and red wires |
| | Short circuit of wires. | Check all wires. After the short-circuit is fixed the ASCU will resume normal function |
| When the fire selector is on "SEMI" or "AUTO" the AEG wont fire. | Broken trigger or selector switch. | Send to AS service. |
| The AEG makes only few automatic shots and stops, no matter if the selector is on "SEMI" or on "AUTO" | The cutoff lever is not moving, or not installed properly, or broken. | Check the cutoff lever. If it is not moving freely ad lubricant if it is damaged - change it. |
| The AEG stops firing with a double beep signal when the battery is charged | The motor is overtightened. | Regulate the motor regulating screw |
| | The gears are overtightened. | Check the shimming. |
| | The motor is underpowered. | Change it with more powerful motor. |
| | The battery is damaged. | Check with another charged battery. |
| | A broken or worn gear. | Change the gear. |
| The gears backspin after the shot. | Weak motor magnets. | Change the motor with one with stronger magnets.<br><br>If there is no option to change the motor, install back the anti-reversal latch. |
| The wires get hot during firing | Loose connection to motor or battery. | Check all wire connections. |
| | Bad battery. | Change the battery. |
| | Bad Motor. | Change the motor. |



**Technical support at: info@airsoftsystems.com**

**For any other problems send your AEG to the nearest authorized service.**
For complete list of authorized services check on *www.airsoftsystems.com*
**For updates and other information check on www.airsoftsystems.com**

## ASCU2 TEST MODE:

**This version of ASCU has a test mode which can be used to diagnose if all of its commponents are working or there is a damaged component.**

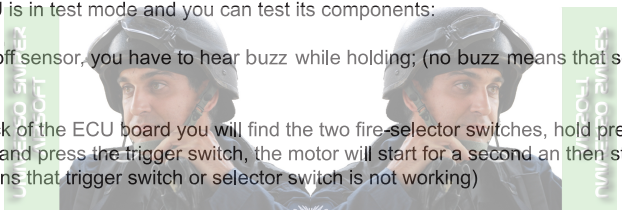
**1.** To enter in this mode you must take the ASCU completely out of the gearbox.

**2.** Connect both boards to each other and then connect the motor. (hold the motor tight in hand to prevent jumping on rotation).

**3.** Now connect the battery. You have 3 seconds in which time you have to push up the lever of the cut-off sensor once. If you do this properly (and cut-off sensor works), you must hear a 3 long buzzes.

**4.** Now ASCU is in test mode and you can test its components:

**5.** Push cut-off sensor, you have to hear buzz while holding; (no buzz means that sensor is not working)



**6.** On the back of the ECU board you will find the two fire-selector switches, hold pressed the upper switch and press the trigger switch, the motor will start for a second an then stop. (no motor spinning means that trigger switch or selector switch is not working)

**7.** Hold both selector switches on back of the ECU board and press the trigger switch, the motor will start spinnig untill the trigger switch is released (no motor spinning means that trigger switch or selector switch is not working).

**8 .** Connect terminals of hop-up sensor connector with some kind of conductor and you have to hear a buzz while holding; (no buzz means that sensor is not working)

**9.** To exit of test mode just disconnect battery.

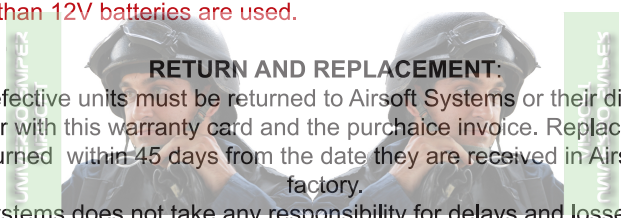
**If you detect a problem with your ASCU please contact Airsoft Systems Support at info@airsoftsystems.com and they will give you instructions how to proceed.**

# WARRANTY

The ASCU has a 36 months warranty for product defects from the date of the purchaice. All ASCU with production defect will be replaced by Airsoft Systems.

**Keep your invoice with this Warranty Card as a proof of date of purchaice.**

**WARRANTY VOID IF:** the ASCU is:
- modified by the user, or any of its parts is damaged due to bad installation.
- wires are cut or with damaged insulation.
- has traces of bad handling,
- if higher than 12V batteries are used.



**RETURN AND REPLACEMENT**:

All defective units must be returned to Airsoft Systems or their distributor toghether with this warranty card and the purchaice invoice. Replacement units will be returned within 45 days from the date they are received in Airsoft System's factory.

Airsoft Systems does not take any responsibility for delays and losses due to the post or courier services. Shipping back replacement units by mail / post service without insurance is free of charge. Shipping back replacement units by courier express service with insurance will be charged.

Owners name:

Date of instalation:

Authorized service signature and stamp:

**DISCLAMER:**
**Manufacturer / distributor assumes no liability or responsibility of any injury, damage of any type, third party liability, diminished value or any other type of claim raised by the user, their collaterals, assigns and or agents of this product. By using this product the user accepts all personal and legal liability of any type listed under the UCC and all state regulatory agencies where applicable.**


**This Product is manufactured in Bulgaria (EU)**
**by Airsoft Systems Ltd.**
**15 Kremikovsko Shose**
**1839 Sofia**
**Bulgaria.**

CE

RoHS
2002/95/EC