

ASCU-2 PRO Mark-II
For Ver.-2 gearboxes

**make it
PRO!**

3 YEARS WORLDWIDE WARRANTY

INSTALLATION AND USER MANUAL

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

ASCU PRO! AIRSOFT SMART CONTROL UNIT

The ASCU PRO is designed with focus to provide the highest durability on the field, and simplicity of install and use.

We designed the PRO with the same approach as real-steel guns are build. So no Bluetooth and smartphones here! You can't connect a real-steel M4 or AK to a USB or smartphone - they are operated only by the safety lever and the trigger, so we did the same with the ASCU-PRO! You can set any of its functions on the field without even taking your gloves off.

The ASCU PRO is the smallest unit on the market, and it packs all functions that will give you the complete realism in functionality of your AEG replica. With the PRO, we have added a smart self-calibrating Pre-Cocking function, that will automatically find the best setting for your build. Mark-II version is optimized for Brushless and classic motors.

Designed for all Version 2 gearboxes and ICS split gearbox.

- Single board control unit with processor and MOSFET
- Cycle detection with Active Brake- mechanical.
- Safe/Single/Auto (4 preset options)
- Pre-cocking: Self-calibrating to optimal setting for you setup.
- Extremely fast SEMI shots: 25 in 1 second.
- Safety: mechanical (provided with your AEG manufacturer)
- Short circuit protection: TSCP* (Total Short Circuit Protection)
- Maximum supply voltage: 15 V
- Max burst load: 240 A
- Battery compatibility: all DC batteries available up to 15V
- Battery connector: T-connector (new standard for airsoft)
- Wires 16 AWG with strong heat resistant PTFE insulation.

All ASCU boards are designed and manufactured in EU with strict quality control.

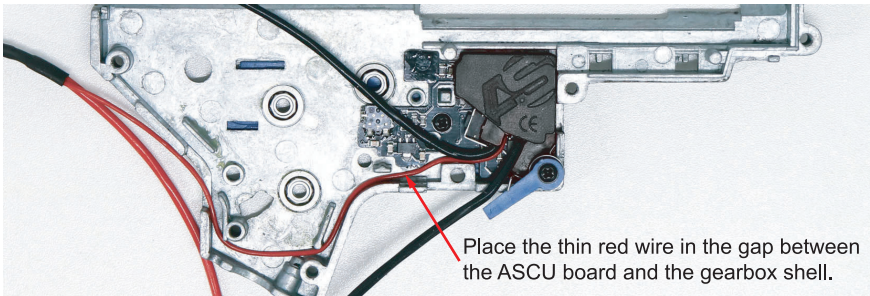
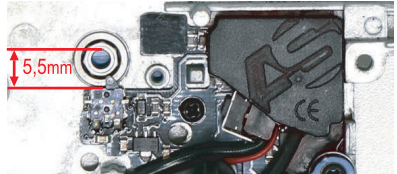
***TSCP will detect a short-circuit any time from the moment the battery is connected to the moment it is disconnected. The system checks for short-circuit: 1- on battery connection; 2- every time the trigger is pressed; 3-when motor spins. If short-circuit or overload is detected the system will immediately kill all processes and shut down the system. To reset the unit, the battery has to be disconnected and reconnected. ASCU will resume normal function once the short-circuit is fixed.**

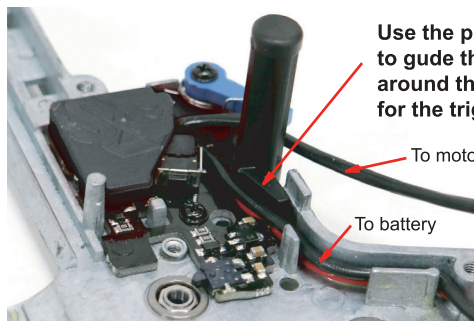
INSTALLATION STEPS

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, the anti-reversal latch and the trigger. Unscrew the switch assembly and remove it together with the wiring. Remove the cut-off lever.
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.
4. On the place of the original trigger switch, place the ASCU board.
5. Fix the board so that the cut-off switch sits 5,5 to 6 mm from the far end of the whole in the bushing as shown on the picture.

Fasten using the screw from the original switch assembly.





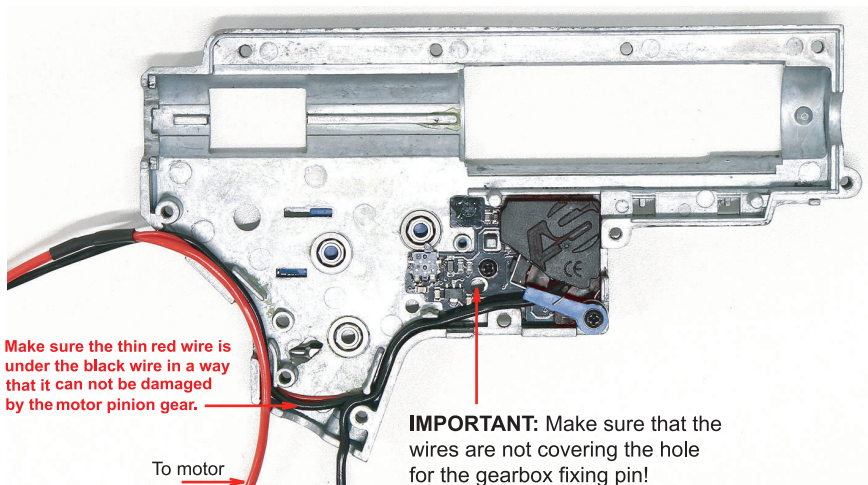
Use the provided tool to guide the wires around the opening for the trigger

To motor

To battery

The wires must sit as low as possible in a way they do not stay on the way of the trigger or the safety lever

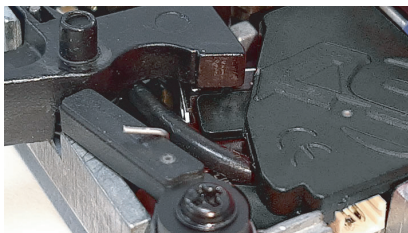
6. Pick the Black wire connecting the ASCU to the battery connector, and place it in the wire channel of the gearbox shell, over the thin wire. Make sure that both wires are clear from the gearbox pin wheel and the trigger area. Place the remaining wires as shown.



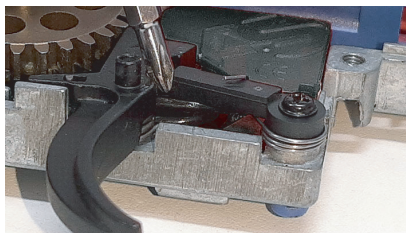
Make sure the thin red wire is under the black wire in a way that it can not be damaged by the motor pinion gear.

To motor

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

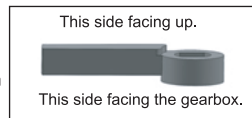


7. Install the trigger and check the wire clearance under the trigger. If needed push the wires down with a dull tool. The trigger has to move without rubbing into the wire.



8. Check the clearance of the inner safety lever it has to move freely. If needed change with the provided with the kit safety lever as it provides more clearance.

9. Test if the safety lever blocks the trigger properly when risen. The trigger should not engage the trigger switch on the ASCU when the safety lever is up.



10. Apply lube the gears and axis and install them back together with the ARL.

NOTE: Shimming under the sector gear should not be higher than 0.6 mm

WARNING! When installing the sector gear make sure the cam is facing 12 o'clock. Otherwise it can damage the cut-off switch on installation.

11. Reinstall the cylinder assembly together with the piston and the tappet plate. Reconnect the tappet plate spring. Reinstall the trigger with its spring.

12. 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.**

13. Close the gearbox.

14. Install the original selector plate or the one provided with your ASCU kit. Choose the one that works best with your AEG.

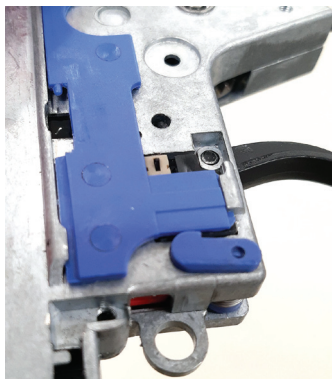
15. Move the selector plate forward and backward to check if it moves freely and if the trigger is blocked and released properly.

MAKE SURE THAT THE SELECTOR PLATE DOES NOT CATCH AND BREAK THE SELECTOR SWITCH.

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 you connect properly to (+) of the motor to the RED wire and the (-) of the motor to the BLACK wire.

!!! When closing the motor cap be careful not to damage the insulation of the wire plugs!

!!! Make sure to adjust the motor tension correctly.

Connect the a battery to test the functionality of the AEG.

► **Make sure motor height is optimal.**

► **Make sure the Safety works and no shot can be made when engaged.**

READ BEFORE USING YOUR AEG WITH ASCU!

ASCU audio signals:

- 1 short signal – AEG is ready for use.
- 1 long signal – Battery depleted or overload.
- 2 long signals – Short-circuit detected.

Choosing trigger mode for the Full Auto position:

1. Disconnect the battery
2. Set the fire selector lever to Full Auto
3. Connect the battery and pull the trigger before 3 seconds run out. The ASCU will make 4 fast short beeps to confirm that it is in Program Mode.
4. The ASCU will emit a sequence of short beep signals:
 - 1 beep: Standard mode: 3-rnd burst at tap and full auto on hold.
 - 2 beeps: Full Auto.
 - 3 beeps: 3 round burst.
 - 4 beeps: Semi only.
5. After you hear the desired number, pull the trigger and the mode will be selected. A beep will confirm the selection and that the AEG is now ready for use.

PRE-COCKING:

With pre-cocking function the ASCU will leave the piston and main spring pre-loaded after each shot in when SEMI is selected. When the trigger is pressed the piston will be released instantly and after the shot they will be pre-cocked for the next shot. This gives a very realistic instant trigger reaction to your AEG. Pre-cocking works only on SEMI mode, FULL AUTO remains standard.

After extensive tests we have chosen 60% Pre-Cocking to be the best setting for fast trigger response without additional stress on the motor and battery. Any higher precocking % leads to excess load and wear of your AEG components and Battery.

To activate Pre-cocking:

MAKE SURE THE GUN IS POINTED AT A SAFE DIRECTION AND THERE IS NO MAGAZINE IN AND NO BB IN THE HOP-UP CHAMBER DURING THAT PROCEDURE!

1. Disconnect the battery.
2. Set the fire selector lever on SEMI position.
3. Connect the battery and pull the trigger before 3 seconds run out. The ASCU will make 4 fast short beeps to confirm that it is in Program Mode.
4. Make 2 shots to auto-calibrate the Pre-cocking, or just hold the trigger after battery connection.
5. After the 2 shots release the trigger and a single beep will confirm the AEG is ready for use.

To deactivate the Pre-cocking:

1. Disconnect the battery.
2. Set the fire selector lever on SEMI position.
3. Connect the battery and pull the trigger before 3 seconds run out. The ASCU will make 1 short beep.
4. Pull the trigger.
5. A single beep will confirm the pre-cocking is deactivated AEG is ready for use.

NOTE: Do not store your AEG with Pre-Cocked piston as this will soften your main spring overtime and you will lose BB energy. Make a Full auto shot before disconnecting the battery for storage or transportation in order to release the piston from its pre-cocked position.

**NEVER TRANSPORT OR STORE YOUR AEG
WITH A CONNECTED BATTERY!**

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 beep signal.	Bad battery or AEG cable plug	Check the plugs.
	Bad or no connection of one of the wires with the motor Short circuit of wires.	Check the motor connections with the black and red 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.	The trigger is not reaching the trigger switch. _____ or Broken trigger switch	Check trigger installation. _____ 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 sector gear cam is not activating the cutt-off switch _____ or broken switch	Check Sector gear shimming if it is not too high. _____ Send to AS service.
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 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

TEST MODE:

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

Can be used to check the Sector Gear to Cutt-off switch engagement during installation.

To enter in this mode you must have access to the Cutt-Off Switch on the ASCU:

To enter in Test Mode:

1. Connect the wires to the motor. (hold the motor tight in hand to prevent jumping on rotation).
2. Now connect the battery. You have 3 seconds in which time you have to push the cut-off sensor once. If you do this properly (and cut-off sensor works), you must hear a 2 short beeps.

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

- Push cut-off switch , you have to hear beep while holding; (no beep means that switch is not working)
- On the back of the ECU board you will find the fire-selector switch. Push the selector switch, you have to hear a beep. (no buzz sound means the switch is not working)
- Press the trigger switch, the motor will start spinning until the trigger switch is released (no motor spinning means that trigger switch is not working).

To exit of test mode just disconnect battery. If you detect a problem with your ASCU please contact Airsoft Systems Support at support@airsoftsystems.com

WARRANTY

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

Keep your invoice with as a proof of date of purchase.

WARRANTY VOID IF the ASCU is modified by the user, or any of its parts are damaged due to improper use or bad installation.

RETURN AND REPLACEMENT:

All defective units must be returned to Airsoft Systems or their distributor together with the purchase invoice:

Replacement units will be returned within 45 days from the date they are received in Airsoft Systems 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.

factory address:

AIRSOFT SYSTEMS LTD.

4 Iliensko Shose

1220 Sofia

Bulgaria



DISCLAIMER:

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.**

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