

FAI F9A-C CLASS APPROVED

BALKIN

SKYBALL

USER MANUAL

Ver2.0



Inimitable, overwhelming flight performance.

Using a transmitting and receiving system.

The FHSS type receiver can be installed using the SBUS expansion port.
ELRS receiver compatible (firmware version 3.3 or higher).

 **HELSEL**



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1. Cautions (Use with caution, see below)

※ (Be sure to remove the countersunk screws on the BALKIN before assembly. The countersunk screws are to secure the centerframe during transportation and are not an assembly part).

TIP : During assembly, the top and bottom shells can be temporarily secured by tightening the four screws that are already joined, and then tightening the remaining screws to make it easier to join the top and bottom shells.

※ Do not put your hands inside the shell before the propellers come to a complete stop.

※ Do not fly toward people or animals when operating the drone.

※ Long hair can get caught in spinning propellers and be dangerous.

Wear a hat or tie it back when flying.

※ When removing a mounted shell, first disconnect the BALKIN battery or remove the propellers.

※ When replacing the drone battery, store the controller securely to prevent others from accidentally activating it.

※ The BALKIN is designed for indoor flying.

※ Recommended for ages 14 and up.

- The drone may become uncontrollable if you leave the signal control range of the controller.

- Be careful not to deviate from the line of sight when operating.

- Flying outdoors in windy conditions may cause deterioration. We recommend flying indoors.

Beware of shock

※ In Altitude Hold flight mode, hard impacts are the reason for the weakening of the altitude hold function. Repeated hard impacts can cause a rapid altitude gain or loss of control in flight.

- Switch to leveling mode or recalibrate the IMU.

- If the power is low, it will not flip.

- When charging the battery, discontinue use and discard any batteries that swell.

- BALKIN uses a 2S (7.4V) lithium polymer battery.

2. Product development overview

BALKIN was developed to promote a new family-oriented esports concept that allows students and their families, who are often drowning in mobile and online games and neglecting outdoor activities, to plan strategies, communicate, and play games.

to strategize, communicate, and play games while immersed in mobile and online gaming.

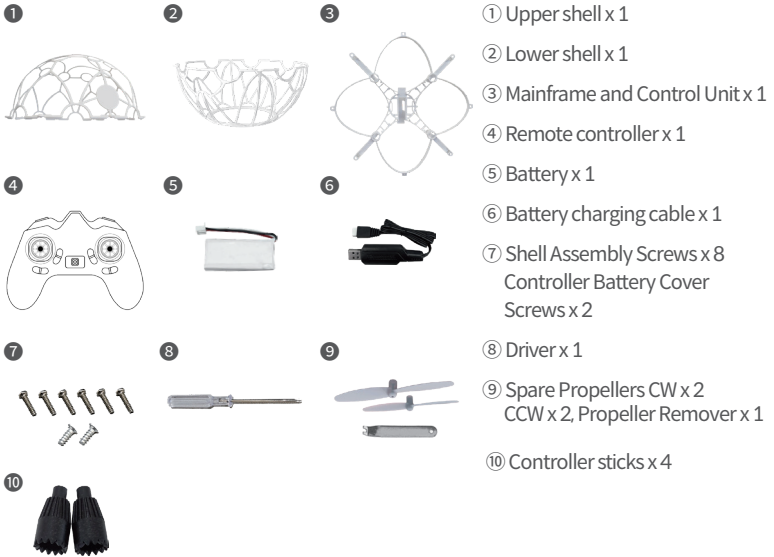
BALKIN has a circular, flexible, and sturdy structure, and by applying the owl principle, the drone always remains stable, even if it lands abnormally. The internal equipment is protected by the circular sphere shape, allowing intense crashes and extreme matches to proceed smoothly.

In addition, BALKIN is an attractive drone that provides a satisfying experience for everyone from beginners to professionals. With BALKIN, users own a gaming tool that allows them to create and enjoy a variety of game rules.

3. Product characteristics

1. a power button has been added to the front panel for safe use of the product.
2. Pressing the front power button three times activates the transceiver binding process, making it easier to bind a new transmitter.
3. Multiple drones can be flown simultaneously by solving the problem of unbinding due to radio confusion that occurred when many drones were flown in one place at the same time. (The maximum number of simultaneous flights can be checked on the Hesel homepage at www.hesel.co.kr).
4. A separate SBUS receiver connector is available to install your own transceiver. Receivers of FHSS, ELRS (receiver version 3.3 or higher) can be installed, and it is possible to use more drones simultaneously than the existing number of simultaneous use without interference.
5. Battery reverse current protection function works to protect the circuit when the positive pole is reversed.
6. a function to protect the circuit when the motor is forced to stop due to an external load is activated.
7. two LEDs mounted on the tail make it easy to identify the tail during flight, making it easier to fly.
8. the LEDs mounted on the flight control unit can be selected from 8 different colors to identify the player's position during the game.
9. In addition to the basic white color, red and blue shells can be purchased separately.
10. For quick reaction in case of emergency, the throttle stick can be set to the lowest position in Mode 2 and can be stopped immediately by pressing the upper left button.

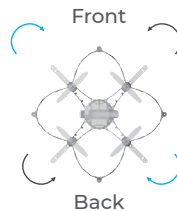
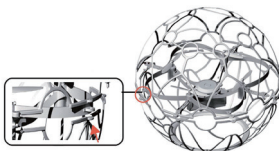
4. Product composition



5. Assembly method

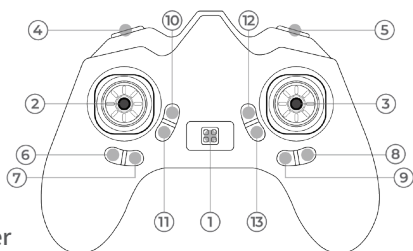
Insert the upper shell of the BALKIN as shown, and tighten with the provided screws to complete the assembly of the sphere.

(Be sure to remove the countersunk screws securing the BALKIN before assembly. These screws are for securing the centerframe during transportation and are not an assembly part. Tip: When assembling, temporarily secure the upper and lower shells by tightening the four screws already installed. After temporarily securing the upper and lower shells, tightening the remaining screws will make assembly easier).



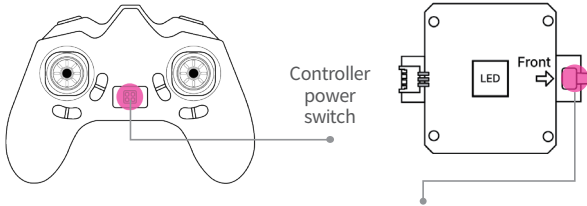
*Propeller direction notation

6. How to use



STEP. 01 Remote controller

No.	Name	Function
01	ON/OFF	ON, OFF
02	Left Stick	Rudder (left and right rotation) and throttle (altitude gain and loss)
03	Right Stick	Ailerons (side-to-side movement), elevator (forward and backward)
04	One-touch take off landing /stop flight	Short: Takeoff Long: Emergency Stop
05	Speed control	The buzzer on the controller sounds. 1: low speed, 2: medium speed, 3: high speed
06	Flip	Press the Flip key and point the right stick in a direction to flip in that direction.
07	Front view function	Automatically recover front-facing if front-facing is incorrect.
08	Trim Right	When hovering, press to adjust as BALKIN automatically moves to the left.
09	Left Trim	When hovering, press to adjust as BALKIN automatically moves to the right.
10	Altitude Hold / Horizontal Hold Mode	Switching from altitude hold mode to horizontal mode Horizontal mode does not have altitude hold. Be careful with throttle control when switching modes.
11	Change LED color	8 color conversions
12	Forward Trim	When hovering, press to control the BALKIN as it automatically moves backward.
13	Reverse Trim	When hovering, press to control the BALKIN as it automatically moves forward.
1+5	Change Mode 1	Change to right throttle mode. (Default: Mode 2)
	Stop the motor	Holding the throttle at the lowest level and simultaneously actuating the emergency stop button (4) will stop the motor.

STEP. 02 How to power on and use

- Turn on the controller switch first, then press and hold the button on the front of the canopy for 3 seconds to power on the BALKIN.

* Powering on the BALKIN before the controller can cause malfunctions and unbinding.

- Do not power off the controller until the flight is completely over.
- If you turn off the controller during flight, or if the controller automatically turns off due to low battery, the BALKIN can spin out of control.
- When replacing the battery in the BALKIN, please do so with the controller turned on.

- When you are completely finished flying, first disconnect the BALKIN's battery to power it down, then turn off the controller.
- When the controller's battery is low, the controller beeps.

STEP. 02 - a Controller binding

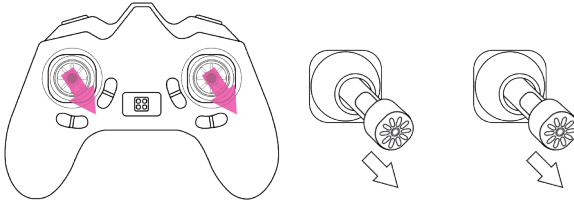


- Power on the BALKIN first, then press the black button on the front of the BALKIN 3 times in short bursts. The LED will blink and enter the pairing standby state.
- At this point, power on the controller, position the sticks as shown above, and the LED will stop blinking and beep to indicate successful pairing.
- If you initially use the included controller, you do not need to re-pair it.
- If you are using multiple BALKINs at the same time, be sure to pair them separately.
- If the LED on the BALKIN remains blinking, reconnect it to the controller using the method above.

STEP. 02 - b How to use SBUS - FHSS, ELRS receiver compatible (firmware version 3.3 or later)

A separate SBUS receiver can be used by connecting the receiver to the SBUS port on the bottom of the flight controller (using a micro JST 1.25mm 3-pin cable).

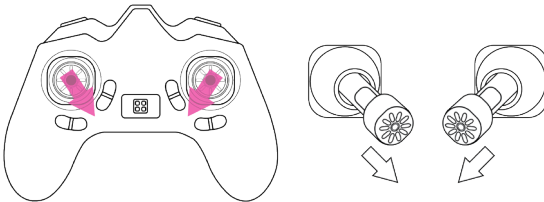
STEP. 03 IMU Calibration



**** We recommend calibrating the IMU every time before take off.**

Place the BALKIN horizontally and simultaneously lower the left and right sticks to the lower right corner to enter IMU calibration. The BALKIN LEDs will flash, hold the sticks for 3 seconds, the controller will buzz and the LEDs will stop flashing, which means calibration is complete.

STEP. 04 How to start



With the controller and BALKIN connected, position the controller stick as shown in the photo above and hold it for about 2 seconds to start the motor turning. When the control stick returns to neutral, move the throttle stick up or press the one-touch take off button (see STEP.09) to take off.

TIP It is recommended to take off in altitude hold mode and switch to leveling mode as needed. (Takeoff in leveling mode is not recommended.) See STEP. 08

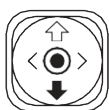
STEP. 05 Setting and changing remote controller mode.
(Default : Mode 2)

The controller will beep when powered on. (Mode 2: Beep)

Mode 2 Features: Left (Up/Down), Right (Forward/Reverse)

Mode 1 Features: Left (Forward/Reverse), Right (Up/Down)

Left Stick



Rising



Descending

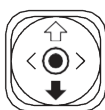


Turn left

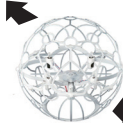


Turn right

Right Stick



Forward



Reverse



Left

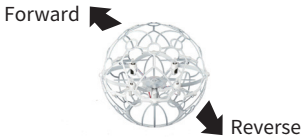


Right

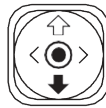
STEP. 05 - a How to change modes and set Mode1 after the change.

When you connect the battery to the BALKIN and turn it on while holding down the controller power button and the upper right speed control button together, you will hear three rapid beeps (Mode 1: Beep x 3) and the control mode will change to Mode 1. After the flight, power cycle the controller to return to the default mode, Mode 2.

Left Stick



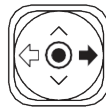
Right Stick



Rising



Descending



STEP. 06 How to stop the motors

: There are three ways to stop the motor.
(Mode 2 Description)

A



Motor stop function

To stop the BALKIN, in Mode 2, lower the left stick to the lowest position and simultaneously press the one-touch takeoff and landing button (4) to activate the motor stop function.

(Only the default controller is available)

B

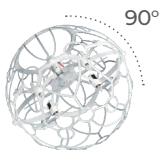


Emergency stop function

To emergency stop the BALKIN, position the left stick at 7 o'clock and the right stick at 5 o'clock for at least 1 second to trigger the emergency stop function.

(Caution: Falling from a high altitude poses a risk of product damage.)

C



If the BALKIN is at an angle of 90° or more, it will automatically shut off for safety.

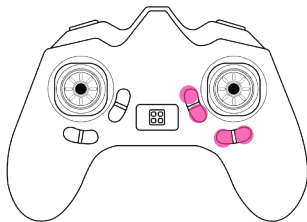
This may be triggered if the drone is impacted during a match using the BALKIN. This is not a malfunction and should be restarted.

TIP

After 5 minutes of inactivity, the power saving feature will automatically turn off the controller and drone.

STEP. 07 Adjusting trim

When hovering press the down key to adjust the trim if the drone is moving in a certain direction.



Move Right Trim Button (8) - to move left

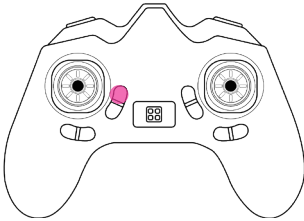
Move Left Trim Button (9) - to move right

Forward trim button (12) - moves backward

Backward trim button (13) - to move forward

STEP. 08 Change flight mode

*You can change flight modes mid-flight. Press switch 10 to change.



Altitude mode

The BALKIN uses a barometric pressure sensor to maintain altitude. You can increase and decrease altitude by adjusting the throttle stick.

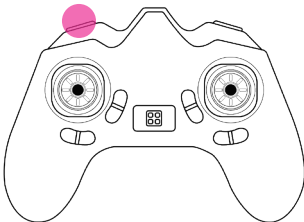
Horizon mode

Once in this mode, the BALKIN will remain in leveling mode and will not maintain altitude. (In leveling mode, the BALKIN will climb when the throttle stick is placed in neutral.)

* Be careful with the throttle when switching modes.

STEP. 09 One-touch takeoff and landing mode

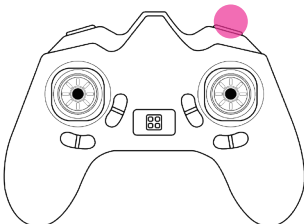
*Only works in high Altitude mode.



- After starting the BALKIN, press the take-off and landing button (4) once, the controller will beep and the BALKIN will automatically take off and hover at a height of about 1 meter.

- Press the take-off and landing button (4) again briefly, the controller will beep and the BALKIN will automatically land in its current position and turn off the power.

STEP. 10 3-speed control



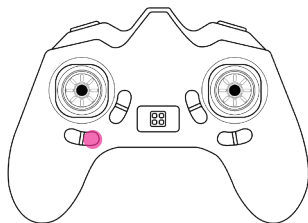
Buzzer once: Low speed

Buzzer twice: Medium speed

Buzzer 3 times: High speed

During flight, you can change the flight speed using the speed control key (5) on the remote controller, and a sound will sound when you change it.

STEP. 11 Front view function

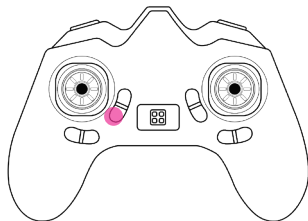


The front view function can be turned on and off by pressing the button (7). (Default OFF) If the aircraft crashes and the rudder reverses while the function is on, it will automatically recover to the initially set front orientation.

The direction the aircraft is facing when first powered on is recognized as the front, and the front orientation can be reset by IMU calibration or power reconnection.

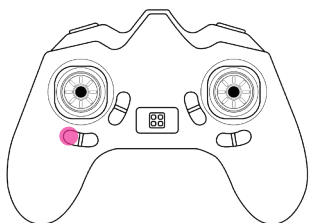
* This function is turned off by pressing the button again or by cycling the power.

STEP. 12 LED color change



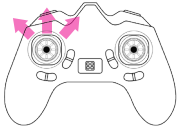
Under the center cover of the BALKIN is a variable LED light, and by pressing the color switch button (11), you can sequentially change the color of the drone's LEDs. (Rainbow, Blue, Red, Green, Pink, Sky, Yellow, White)

STEP. 13 Flip mode



BALKIN can flip forward, backward, left, and right. Press the flip button (6) and point the right stick in a direction to flip in that direction.

STEP. 14 Turtle function



When BALKIN is upside down, in mode 2, if you move the left stick to the top, such as 11 o'clock, 12 o'clock, 1 o'clock, etc., it will return to the upright position.

STEP. 15 Low voltage alarms

Primary Low Voltage Alarm (Low Power): Tail lights will flash multiple times, three times per second.

Secondary low voltage alarm (Low power): Tail lights flash several times per second, forced landing, no longer able to fly, and unable to restart.

When the secondary low voltage alarm sounds, turn off the drone and immediately disconnect the battery to cool down before charging. Charging while the battery is overheating may cause fire or damage the battery charger. If the battery is not immediately removed and the drone is left turned on, the battery cannot be reused and cannot be repaired or exchanged.

STEP. 16 Battery charging method



Battery



Battery charging cable



Charging the battery	When you connect the battery to the battery charging cable, the green light on the far right blinks.
Fully charged	Connect the battery to the battery charging cable so that the rightmost green light is on when fully charged.

1



Plug the battery charger cable into a power source, then connect the battery and battery charger cable.

2



When the battery is fully charged, the lights will all be on, as shown in the image above.



Battery precautions

*Use the battery and charger after cooling them down.

*Battery and charger failures caused by incorrect use cannot be repaired.

7. FAQ

The remote controller does not turn on.	If the batteries are not installed correctly, the remote controller will not power on.	Check whether the battery is installed correctly according to the + and - marks on the battery compartment, or try again with a new battery.
	Remote controller power failure.	Please check and apply for A/S.
	If the remote controller is not turned on.	Position the power button to ON.
The BALKIN won't start.	Check battery connection.	Check the battery connections, and make sure they are connected in the correct orientation.
	Check whether the distance to the remote controller is within the limit.	Fly within a 200M radius. We recommend flying within sight in an unobstructed indoor environment.
	Make sure the controller is not binding	Check the remote controller, check the remote controller binding method in the manual, and try to reconnect.
Start/Stop/IMU calibration cannot be performed	Make sure you are in Altitude mode.	Turn on Altitude mode.
	If the remote controller is not turned on.	Turn on the remote controller and rebind it.
Altitude is not maintained	Temporary operational failure due to excessive shock	Perform IMU calibration again.
	Make sure you are in altitude mode.	Turn on altitude mode.
	Altimeter failure	Please check and apply for A/S.
Soar up in altitude mode	Check if the propellers are damaged.	Check and replace the propellers.
	Temporary operational failure due to excessive shock	Turn the power off and on and try again.
Balkin's flight Performance is strange.	If the screw is loose.	Tighten without shaking
	Damage to central bracket.	Check and replace.
	If the propellers are severely damaged or installed in the wrong direction.	Check and replace.

The motor does not rotate.	Motor damage	Please check and apply for A/S.
Each switch does not work.	Poor contact condition of switch.	Please check and apply for A/S.
The Balkin is not rising.	Low battery.	Replace the Balkin's battery.
	The remote controller's battery is low.	Replace the remote controller's batteries.
The motor doesn't stop	Pull the throttle stick all the way.	Position the throttle stick to the lowest position and press the motor stop button (4) simultaneously.
	Turn off the engine in altitude mode.	Switch to Altitude Hold and turn off the motors

8. SPEC

Size	200*200*180 (mm)
Weight	77g(Without battery) / 99g(With battery)
Battery	7.4V 450mAh 2S 25C LiPo battery
MTOW	99g
Flight time	Approximately 6 minutes (based on hovering)
Distance	Distance: Within 100m Height: Within 20m

This manual may be changed to improve performance, and the latest updates can be found at <https://www.helselgroup.com/support>.

HELSEL Official Website

<http://www.helsel.co.kr>

<http://www.helselgroup.com>

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