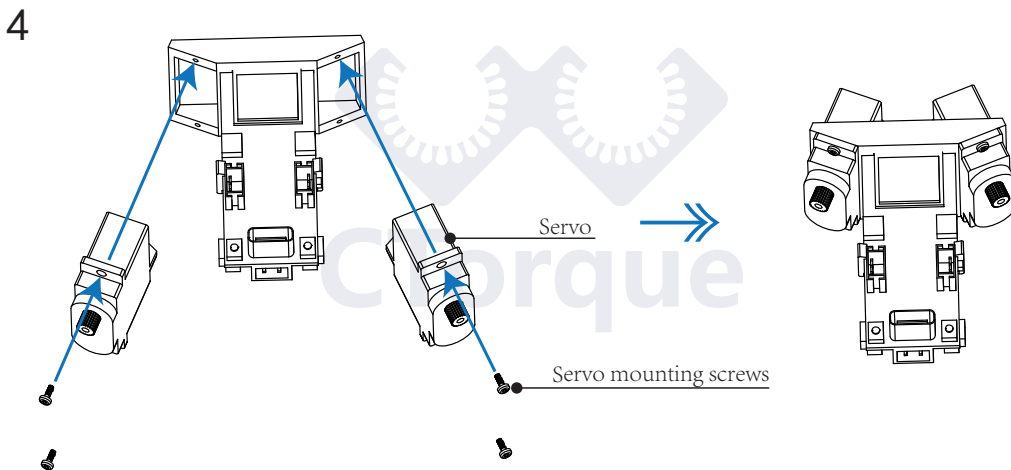
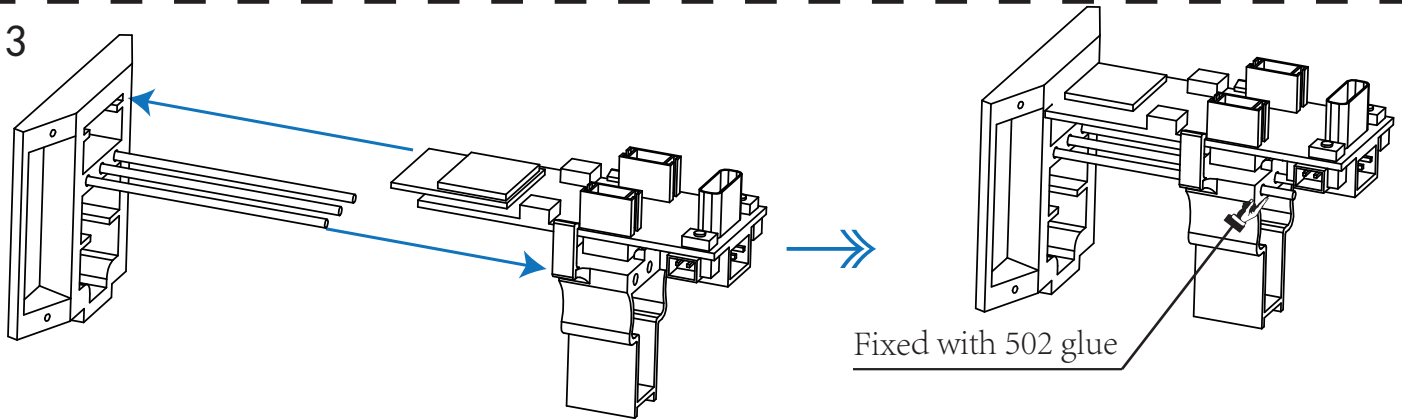
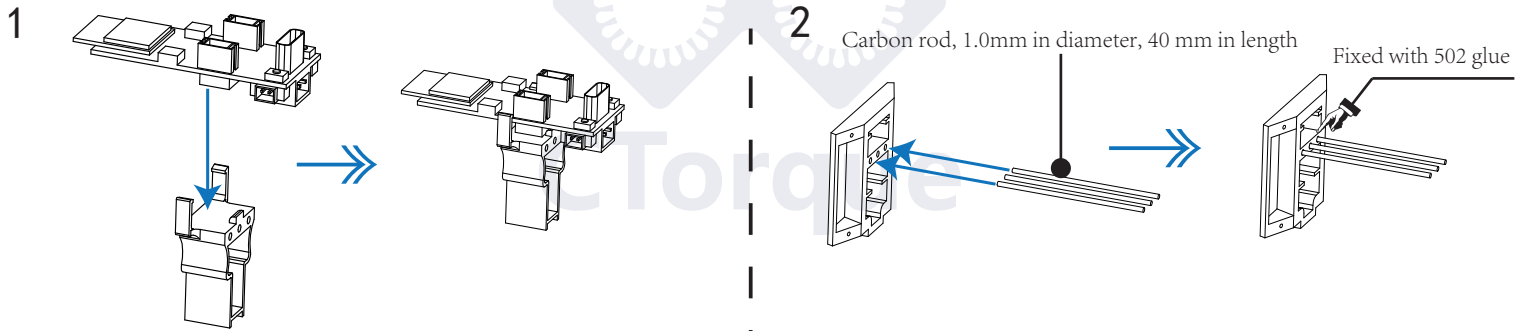
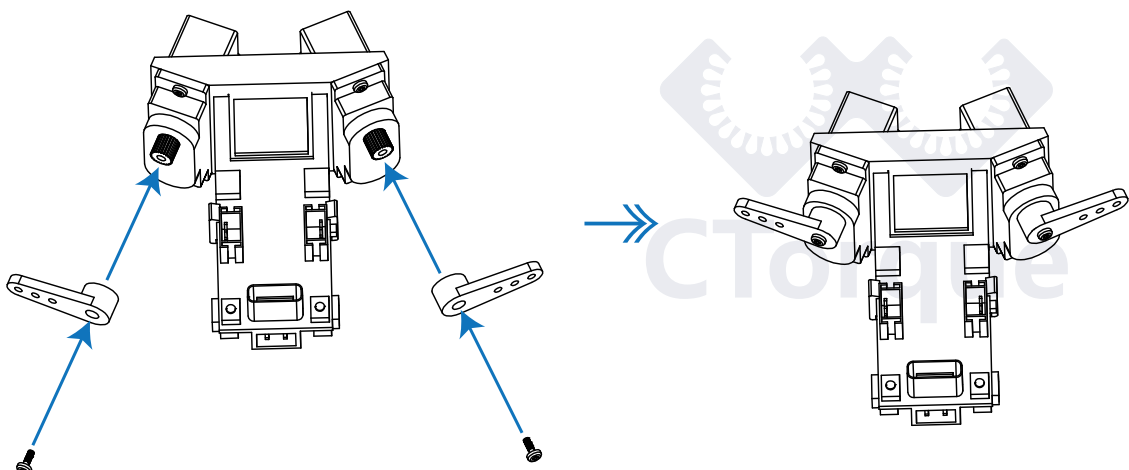


Bionic Butterfly Assembly Tutorial

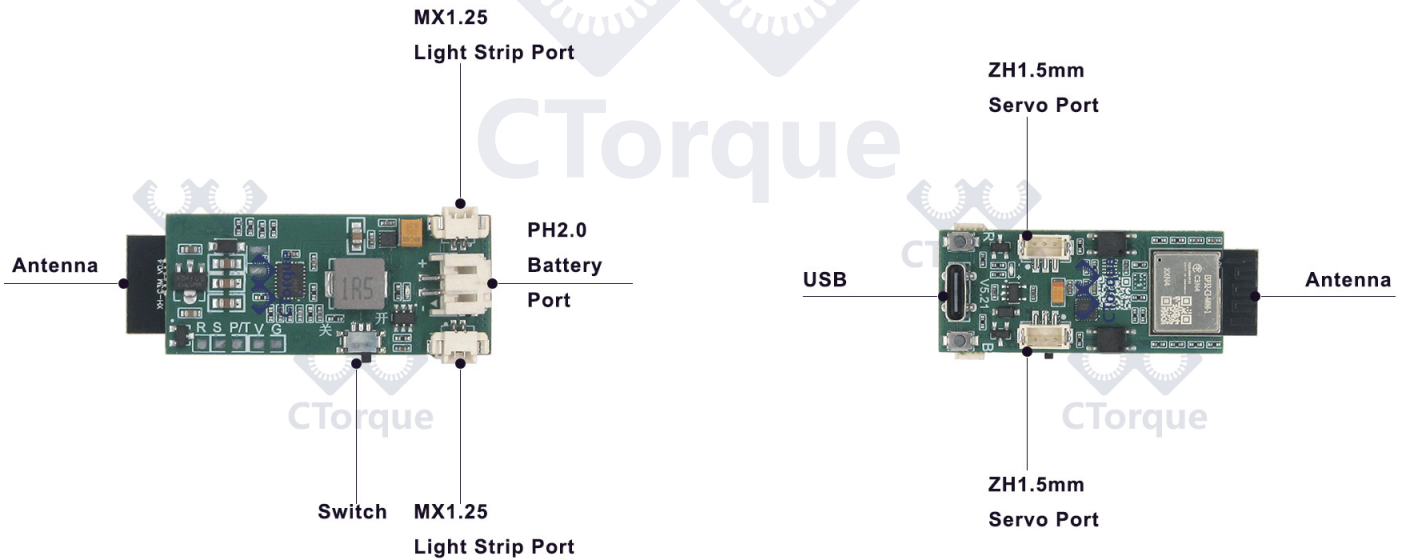


5 Please power on first to let the servo automatically center itself, then install the metal servo arm.

Install the servo arms on both sides as horizontally as possible.



User Manual for CTorque V5 Bionic Butterfly



Flight Controller Introduction

Parameter Introduction

Flight Controller Power Supply: 1S, 300~530mAh

Flight Controller Communication Protocol: ERLS/PPM/ESPNOW/WiFi

The **R** key on the flight controller is the reset button, and the **B** key is the function button.

Operation is recommended indoors or in outdoor environments with gentle wind only.

After connecting the battery to the flight controller, the indicator light will flash rapidly for 3 seconds, during which the controller is in ****communication protocol selection mode****.

Within these 3 seconds, ****single-press the B button**** to cycle through different protocols.

Once you have selected the desired protocol, ****double-press the B button**** to confirm and enter that protocol.

- Slow Flash: ERLS Mode
- Fast Flash: PPM
- Long On & Short Off: SBUS
- Short On & Long Off: ESPNOW
- Constant On: WiFi (Difficult to Control for Beginners)

LED Indicator Status during flight:

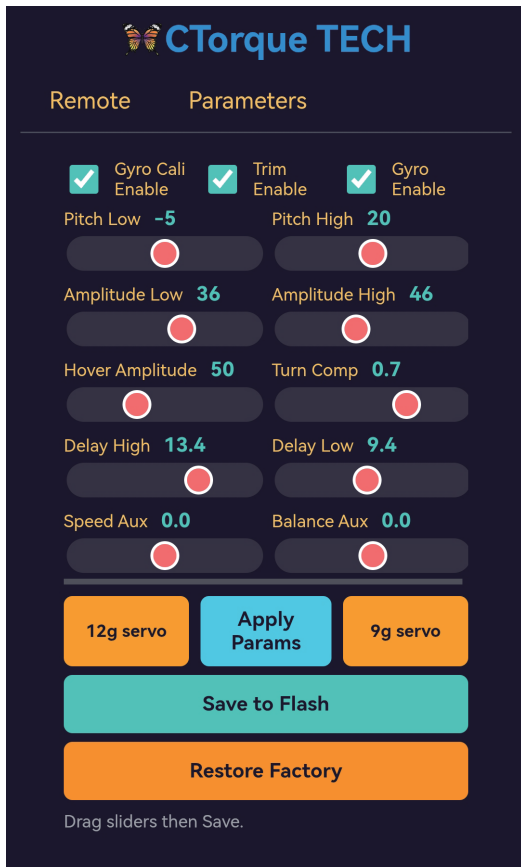
1. Solid light: Battery is fully charged.
2. Flashing light: Low battery; please recharge the battery.

Selecting the Flight Controller Communication Protocol via Mobile Parameter Adjustment Interface

1. Download the ****Edge**** browser on your mobile phone.
2. Turn on the flight controller; it will automatically enter WiFi mode.
Alternatively, double-press the **B** button within 2 seconds after powering on the flight controller to activate WiFi mode.
3. Connect your phone to the flight controller's WiFi:
 - WiFi Name: ButterflyController
 - Password: 12345678
4. After connecting to the flight controller's Wi-Fi, open the Edge browser and enter ****192.168.4.1**** in the address bar to access the mobile control interface. The password for the parameter adjustment interface is ****123456****.

- Select your desired control protocol from the **Protocol** dropdown menu on the parameter adjustment page.
- Click **Save to Flash** to save your settings.
- Press the **R** button on the flight controller. After rebooting, it will automatically run the selected protocol.

Introduction to Mobile Parameter Tuning



Gyro Cali Enable : Gyro Calibration Enable Switch

Trim Enable : Servo Arm Trim Switch

Gyro Enable : Enable Gyro Switch

Pitch Low : Minimum Pitch Angle

Pitch High : Maximum Pitch Angle

Amplitude Low : Minimum Servo Arm Amplitude

Amplitude High : Maximum Servo Arm Amplitude

Hover Amplitude : Amplitude of the lower wings during butterfly hover stunts.

Adjusting this value allows the butterfly to achieve stable hovering.

Turn Comp : Butterfly Turn Height Compensation.

Adjusting this parameter prevents the butterfly from losing altitude during turns.

Delay High : Maximum Throttle Travel

Delay Low : Minimum Throttle Travel

Speed Aux : Forward Speed Adjustment

Balance Aux : Butterfly Yaw Trim. Set to a negative value if the butterfly drifts right, and to a positive value if it drifts left.

Under the ELRS/PPM communication protocols, ensure that the remote control travel range is set to the standard 1000–2000. Otherwise, the butterfly cannot be controlled.

Introduction to Remote Control Channel Functions Under ELRS/PPM Protocols

Channel 1: Direction

Channel 2: Pitch

Channel 3: Throttle

Channel 4: Servo arm frequency trim

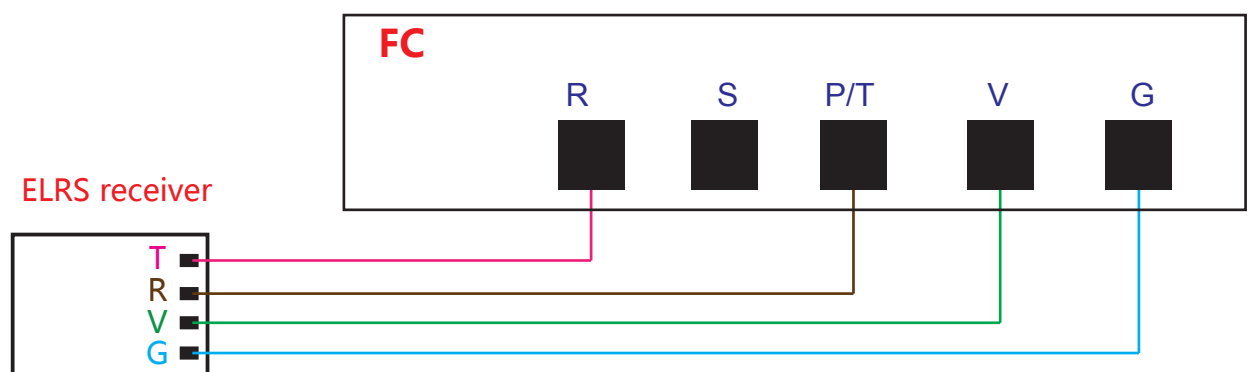
Channel 5: Servo arm center trim switch

Channel 6: Arm switch

Channel 7: Three positions correspond to self-stabilization, flip, and hover respectively

Channel 8: Toggle once to change LED state (solid on, solid off, flashing, breathing)(Battery level must be above 10%)

1. Operation Steps for ELRS Mode



ELRS wiring diagram

- (1) Solder the ELRS receiver according to the wiring diagram.
- (2) Power on the flight controller, pair the receiver with the remote control following the receiver pairing tutorial, then disconnect the battery after successful pairing.
- (3) Place the butterfly horizontally, connect the battery to the flight controller, and single-press the **B** button within 3 seconds to switch the communication protocol.
- (4) When the indicator light flashes slowly, double-press the **B** button to confirm, and the flight controller will enter ELRS protocol mode.
- (5) Arm the flight controller, and you can control the butterfly flight with the remote control.
- (6) Each time the battery is connected, the indicator light flashes slowly 3 times, indicating that the system is about to start pre-power-on self-test and gyroscope calibration. Keep the flight controller (butterfly) placed horizontally on a flat surface during gyro calibration.
- (7) Special reminder: If you are not skilled at hand-launching the butterfly, support its body with a vertical pole while ensuring the wings can flap freely — this will make takeoff much easier to control.
- (8) Before the first flight, trim the servo arm angle. Enable Channel 5, use Channel 1 and 2 to adjust the servo arms to a horizontal position, then disable Channel 5.

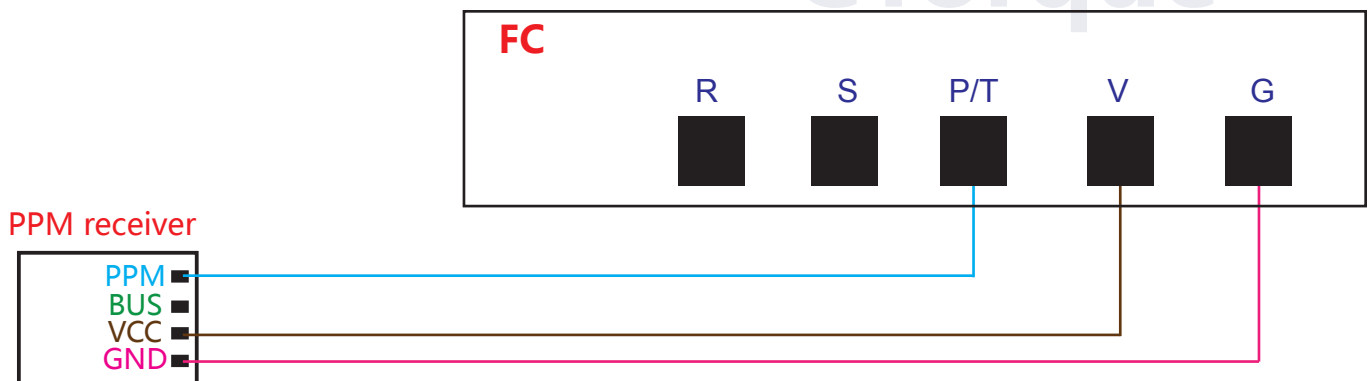
Flip Stunt Control

- (1) Toggle Channel 7 to enter Fix1 Flip Stunt mode.
- (2) Push the Channel 1 and 2 joysticks to top-left, bottom-left, top-right, bottom-right positions, corresponding to four flip attitudes respectively.

Altitude Hold Mode Control

1. Toggle Channel 7 to enter **Fix2 Altitude Hold & Hover** mode.
2. Pull Channel 1 to the **bottom** to activate hover; push Channel 1 to the **top** to exit hover.
3. If the butterfly still climbs or descends in hover mode, stop flying and adjust the **Hover Amplitude** parameter via your mobile phone until it hovers stably.

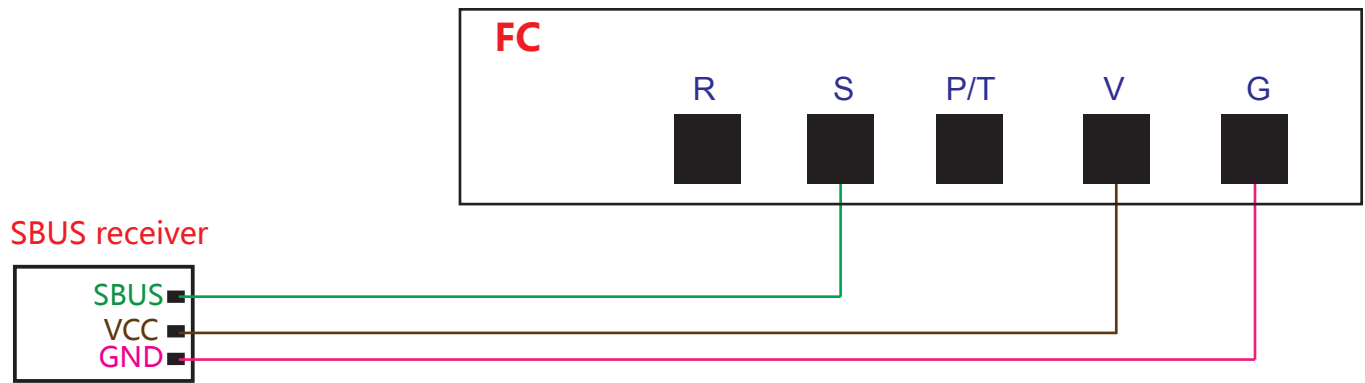
2. Operation Steps for PPM Mode



PPM wiring diagram

- (1) Solder the PPM receiver according to the wiring diagram.
- (2) Power on the flight controller, pair the receiver with the remote control following the receiver pairing tutorial, then disconnect the battery after pairing is complete.
- (3) Place the butterfly on a flat surface, connect the battery to the flight controller, and single-press the **B** button within 3 seconds to switch the communication protocol.
- (4) When the indicator light flashes rapidly, double-press the **B** button, and the flight controller will enter PPM control mode.
- (5) Arm the flight controller, and you can control the butterfly flight with the remote control.
- (6) Each time the battery is connected, the indicator light flashes slowly 3 times to signal that the system is about to perform pre-power-on self-test and gyroscope calibration. Keep the flight controller (butterfly) placed horizontally on the ground during gyro calibration.
- (7) Special reminder: If you are not proficient in hand-launching the butterfly, support its body with a vertical pole while ensuring the wings can flap freely, which will make takeoff much easier to control.
- (8) Before the first flight, trim the angle of the servo arms. Enable Channel 5, use Channel 1 and 2 to adjust the servo arms to a horizontal position, then disable Channel 5.

3. Operation Steps for SBUS Mode



SBUS Mode Operation Steps

- (1) Solder the **SBUS** receiver according to the wiring diagram.
- (2) Power on the flight controller, pair the receiver with the remote control following the receiver pairing tutorial, then disconnect the battery after successful pairing.
- (3) Place the butterfly on a flat surface, connect the battery to the flight controller, and single-press the **B** button within 3 seconds to switch the communication protocol.
- (4) When the indicator light shows **long on and short off**, double-press the BOOT button, and the flight controller will enter SBUS control mode.
- (5) Arm the flight controller, and you can control the butterfly flight with the remote control.
- (6) Each time the battery is connected, the indicator light flashes slowly 3 times, indicating that the system is about to perform pre-power-on self-test and gyroscope calibration. Keep the flight controller (butterfly) placed horizontally on the ground during gyro calibration.
- (7) Special reminder: If you are not proficient in hand-launching the butterfly, support its body with a vertical pole while ensuring the wings can flap freely, which will make takeoff much easier to control.
- (8) Before the first flight, trim the angle of the servo arms. Enable Channel 5, use Channel 1 and 2 to adjust the servo arms to a horizontal position, then disable Channel 5.

4. Operation Steps for WiFi Mode

- (1) Download the **Edge browser** on your mobile phone.
- (2) Connect the battery to the flight controller, and single-press the **B button** within 3 seconds to switch the control mode.
- (3) When the indicator light stays **solid on**, double-press the B button, and the flight controller will enter WiFi control mode.
- (4) Turn on WiFi on your phone, find **ButterflyController** and connect to it.
WiFi password: 12345678
- (5) Open the Edge browser, enter the URL: **192.168.4.1**, and you will enter the remote control interface.
- (6) Each time the battery is connected, the indicator light flashes slowly three times, indicating that the system is about to perform pre-power-on self-test and gyroscope calibration.
During gyroscope calibration, place the flight controller (butterfly) horizontally on the ground.

BATTERY
88%

PITCH
-7.76°

ROLL
6.54°

YAW
0.00°



Stick

Hold

Throttle/Direction

WiFi Name
ButterflyC

Protocol
WiFi

Save

Trim

Mode

Lock

LED

0

0

1

2

Amplitude

BATTERY : flight controller battery level

PITCH : butterfly pitch angle

ROLL : butterfly roll angle

YAW : yaw angle during butterfly flight

Stick : Throttle button centering switch

WiFi Name : You can change the WiFi name.

Protocol : Selectable flight controller control protocols

Trim: Servo arm trim button

Mode: 0 represents self-stabilization mode,
1 represents flip mode,
and 2 represents hover mode.

Lock : Control lock switch

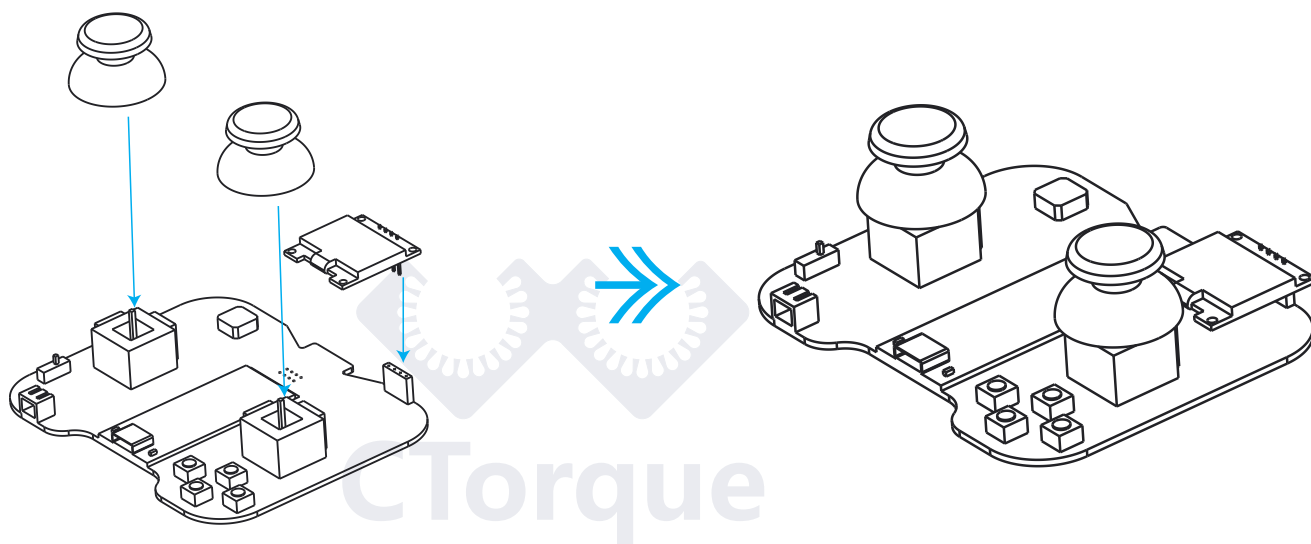
LED : Control switch for light strip modes: always on,
flashing, breathing, off

Amplitude : Servo arm pitch angle control

5. ESP-NOW Mode

Installation & Initial Frequency Pairing Instructions

Before use, install the display screen as shown in the diagram.



Charging Function Instructions

(1) Turn on the remote control.

(2) Single-press the ****X**** button within 2 seconds

(the screen displays: Select Mode Press X Charge Mode Time:1S).

Select Mode:

Press X

Charge Mode

Time: 1s

(3) The remote control will enter sleep mode, Simply switch the toggle back to the OFF position to charge the remote control battery.

Entering

Charge Mode

Initial Pairing

(1) Turn on the ESPNOW remote control. After waiting 2 seconds, the screen displays:

****Press button to enter pairing Mode Waiting...****. Press the **X** button once, and the remote control will enter pairing mode. Please complete the following steps within 60 seconds.

Press button
to enter
pairing Mode
Waiting...

Pairing Mode

Waiting...

Time:60s

(2) Power on the flight controller, and press the **B** button once within 3 seconds to switch the communication protocol.

(3) When the indicator light shows ****short on and long off****, double-press the **B** button. The flight controller will enter **ESPNOW** communication protocol.

(4) When the indicator light on the flight controller stops flashing, it means ESPNOW mode is activated. Press and hold the **B** button on the flight controller to enter pairing mode.

(5) Wait for the flight controller to pair with the remote control automatically.

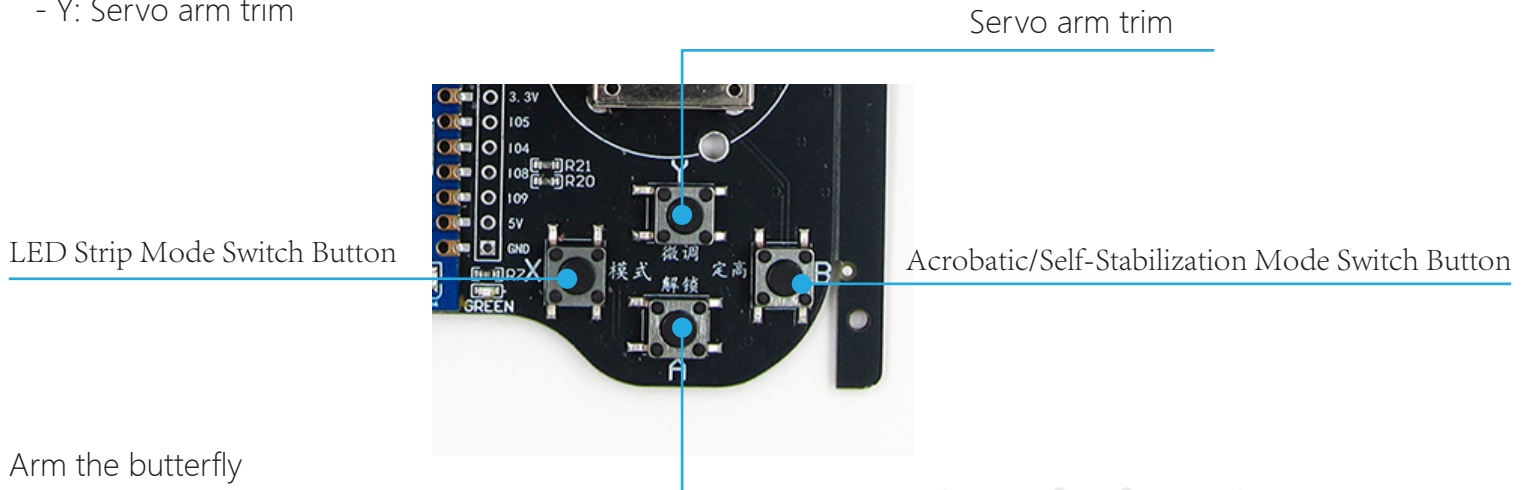
****Pairing Success**** on the remote screen means pairing is complete. The remote will restart automatically and is ready for use after rebooting.

Pairing
Success!

(6) If pairing fails, please repeat the above steps.

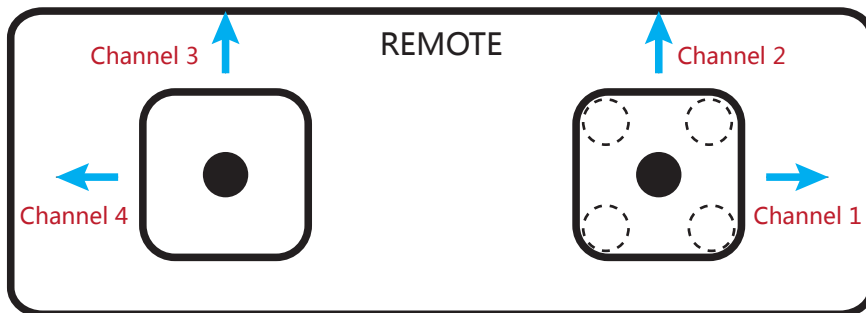
Button Function Introduction

- X: Double-click to switch the light strip mode
- A: Arm the butterfly
- B: Single-click to cycle among three flight modes (Fix0 Normal Self-stabilization / Fix1 Flip Stunt / Fix2 Altitude Hold & Hover)
- Y: Servo arm trim



Fix1 Flip Stunt Control:

1. Press the **B** button on the remote control to enter ****Fix1 Flip Stunt**** mode.
2. Push the right joystick to ****top-left, bottom-left, top-right, bottom-right**** positions, corresponding to four flip attitudes respectively.



#Altitude Hold Mode Control

1. Press the **B** button on the remote to enter ****Fix2 Altitude Hold & Hover**** mode.
2. Pull the right joystick all the way down to activate hover; push the right joystick all the way up to exit hover.
3. If the butterfly still climbs or descends in hover mode, stop flying and adjust the ****Hover Amplitude**** parameter via your mobile phone until it hovers stably.

