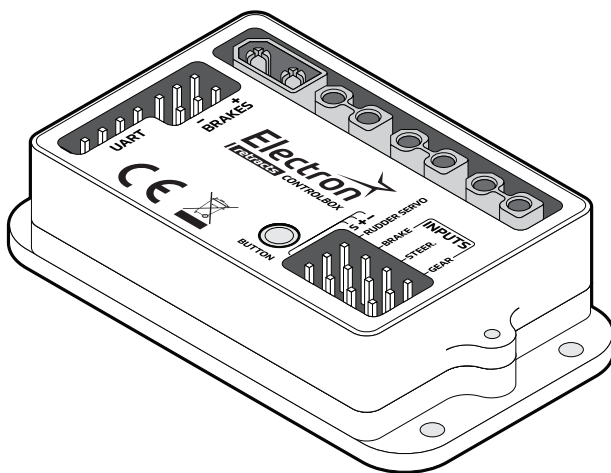




ControlBox

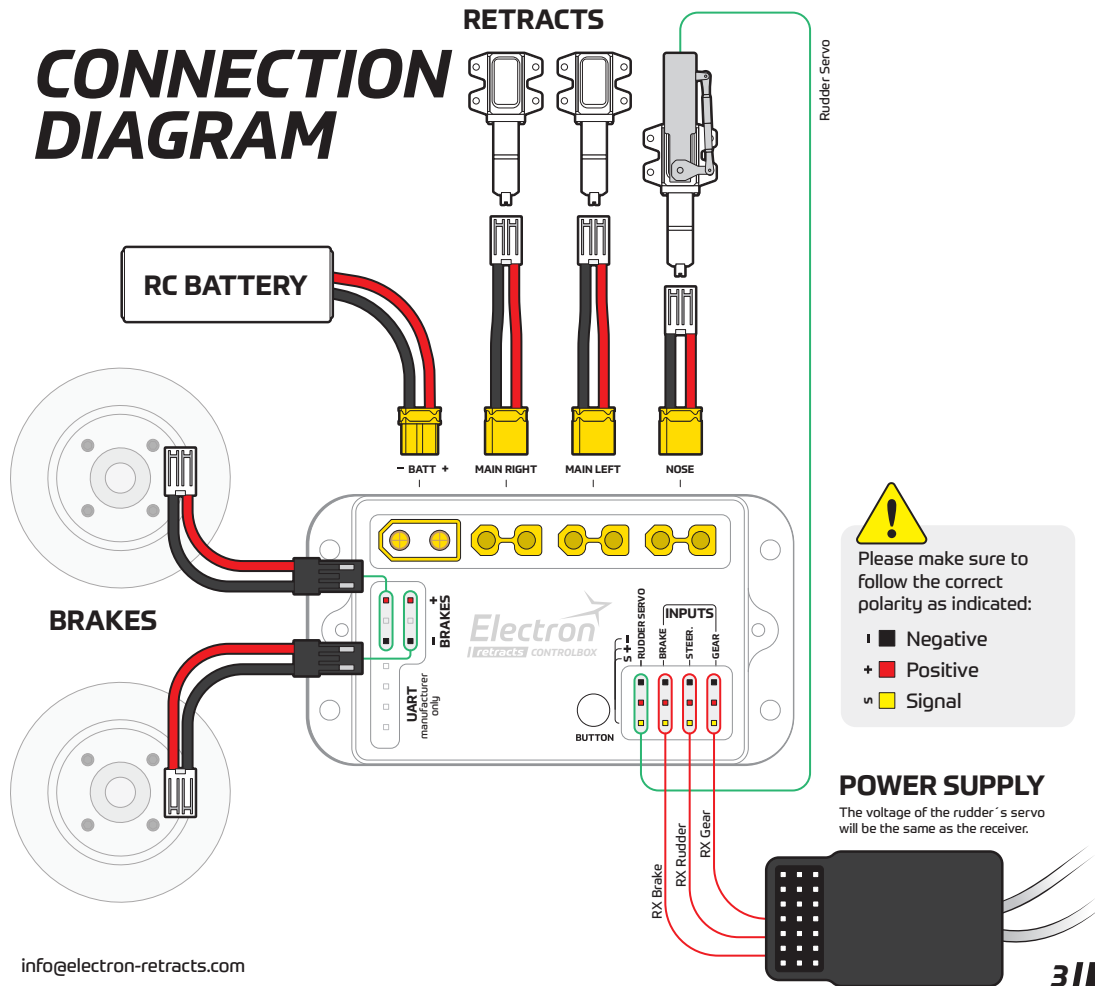
USER MANUAL AND INSTALLATION INSTRUCTIONS

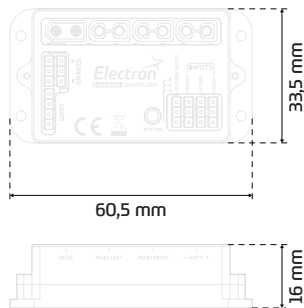


Contents

	PAGE
Part A: Connection diagram	3
Part B: Step by step connection	
Retracts connection	5
Brakes connection	6
Steering Servo connection	7
Input channels connection	8
Power supply	9
Part C: Set up controller	11
Enter programming mode	12
Landing gear configuration	12
Set the position of the brakes	13
Position of the center wheel	14
Manual operation	15
Battery monitoring	15

CONNECTION DIAGRAM





Dimensions (mm)	60,5 x 33,5 x 16
Weight (g)	35
Input Voltage	Check the voltage required for your retract
Input receiver Voltage	Up to 9 V
Inputs	• GEAR signal input (PWM) • BRAKE signal input (PWM) • STEERING signal input (PWM) • Battery Input (XT-30 male socket) • UART port (for manufacturer use ONLY)
Outputs	• 3x Retract outputs (XT-30 female socket) • 2x Brake outputs (JR-servo female socket) • 1x Steering Servo output (JR-servo female socket)
Max. current per output	8A

We highly encourage to check the manual provided with your landing gear, which contains first use warnings and a connection diagram, before you begin to install your landing gear and use the ControlBox.

ORIENTATION AND PLACEMENT

The ControlBox doesn't required to be oriented towards an specific direction from your model, and it's not mandatory for it to be placed on a flat surface.

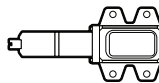
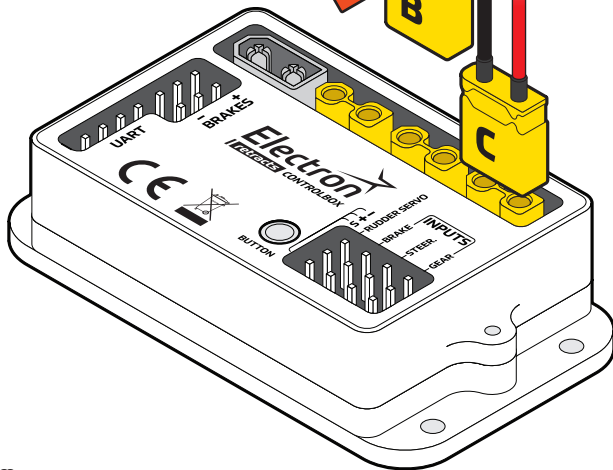
We recommend installing the ControlBox in a location that allows for the shortest possible connections with retracts and brakes. The connection wires can be as long as required, however if you use extension wires, use wires of at least the same gauge/section as the ones provided with your landing gear, to avoid voltage drops. The less length and amount of wiring used, the better.

Retracts

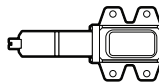
STEP 1

Connect the retract wires to the Gear Outputs. There are three gear outputs, indicated in one of the sides of the ControlBox as “Nose”, “MainL” and “MainR”, and they correspond to the nose/front retract, main/wing left and right retracts, respectively.

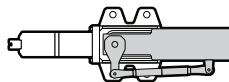
Since the landing gear sets and the ControlBox are provided with wires, you don't have to worry about the polarity, as the XT-30U connectors have a form factor that prevents incorrect connections.



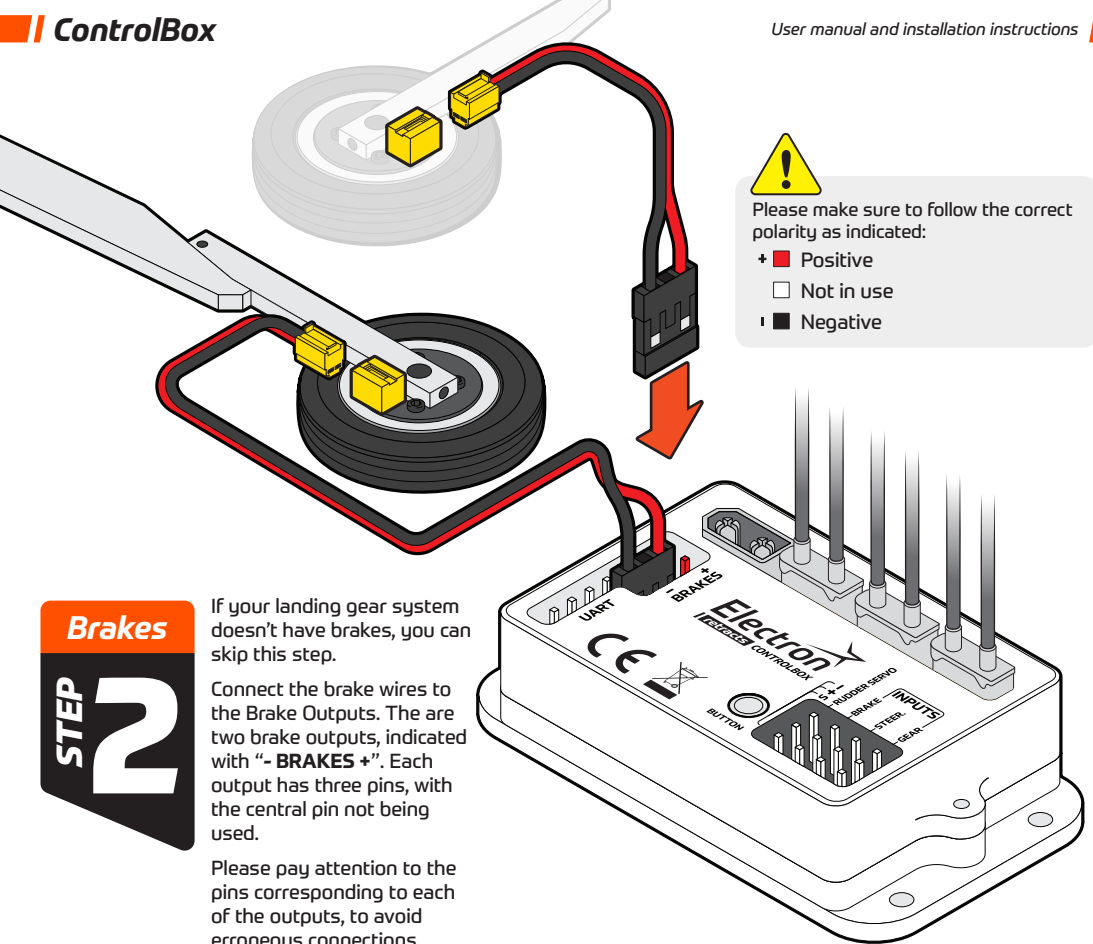
A Main right retract



B Main left retract



C Nose retract



Steering
ServoSTEP
3

STEERING SERVO

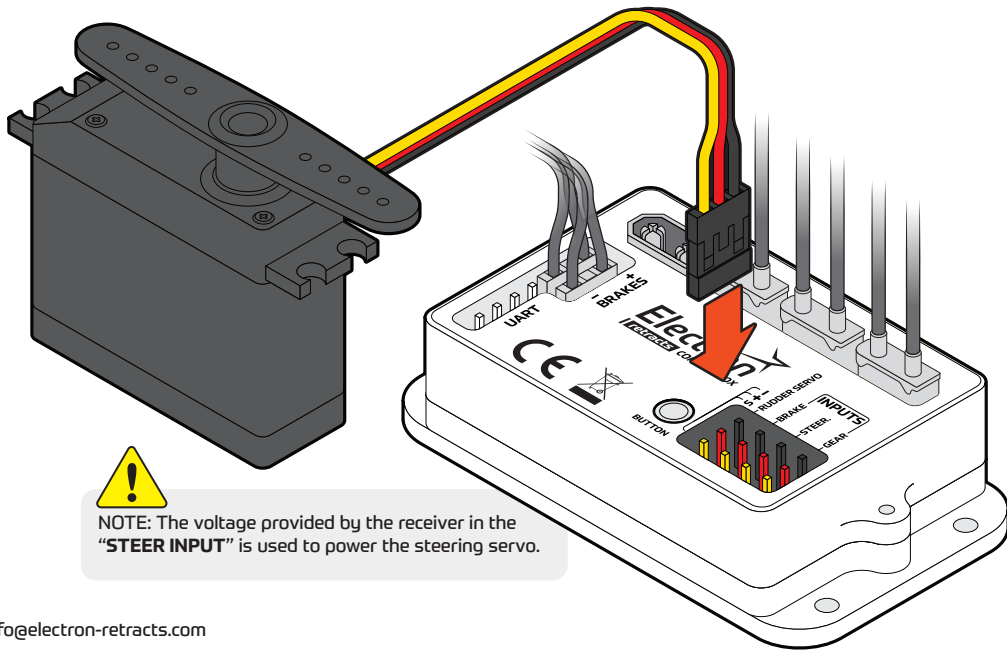
If your landing gear system doesn't have a steering servo, you can skip this step.

Connect the steering servo wire to the Rudder servo Output.

We highly recommend to operate the steering servo via the ControlBox, as opposed to directly controlling the servo from the receiver.

This could cause the servo to move at the wrong time, damaging or blocking the landing gear.

The ControlBox guarantees that the steering servo remains centered and blocked when the retracts are in their retracted position and whilst the retracts are in movement; which is especially important if using the Coupling System for steering.



Input

STEP 4

INPUT CHANNELS CONNECTION

Connect the radio inputs from your receiver to the ControlBox.

There are three PWM radio inputs. The polarity of these inputs is indicated in the ControlBox.

NOTE: The voltage provided by the receiver can't be higher than 9 V, and it should be the same on all of signal inputs.



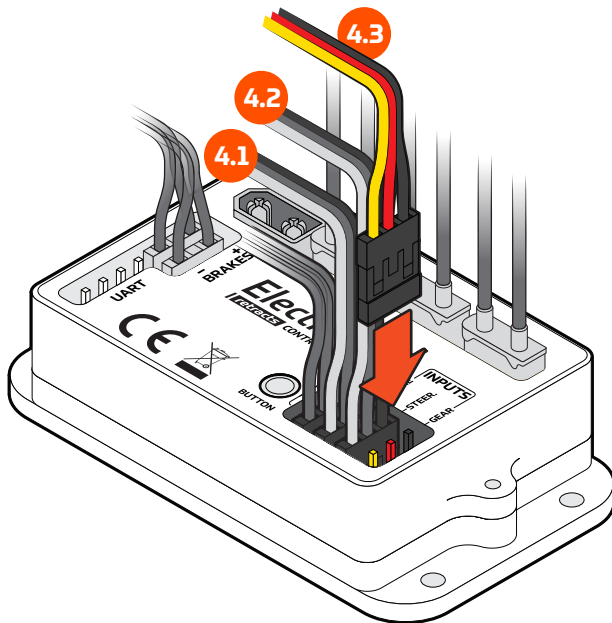
Please make sure to follow the correct polarity as indicated:

- Negative
- + ■ Positive
- Signal

4.1 CONNECT BRAKE

4.2 CONNECT STEERING

4.3 CONNECT GEAR INPUT



Power
SupplySTEP
5

CONNECT POWER BATTERY

The ControlBox has a battery input (XT-30u female connector). The XT-30u female connector for the battery is provided with the landing gear set. The battery provides power to the retracts and the brakes only. The ControlBox itself is powered with the voltage provided by the receiver in Gear Input. Make sure to check the polarity of the battery connector when preparing your battery.

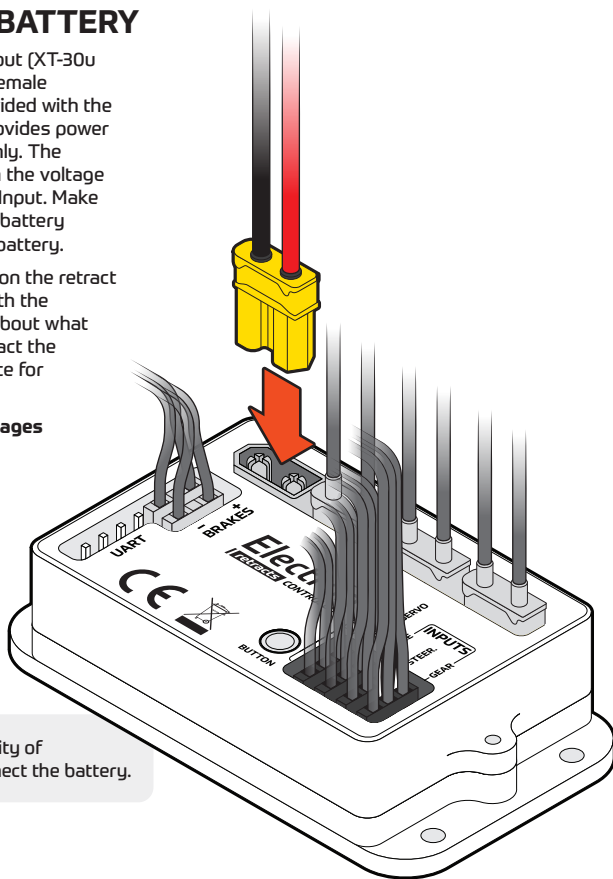
The battery voltage will depend on the retract type and version that will use with the ControlBox. If you have doubts about what voltage is adequate, please contact the Electron Retracts technical service for assistance.

The table below details the voltages required for each retract type.

MODEL	BATTERY TYPE (VOLTAGE)
ER-30 Classic	2S LiPo (7,4 V)
ER-40 Classic	
ER-50 Classic	3S LiPo (11,1 V)
ER-50 NG	



Double check the polarity of everything before connect the battery.



SET UP CONTROLLER

Once you have made all the connections, we will proceed to set up the Control Box entering programming mode, during this process, we will set some values for:

- Landing gear retracted/deployed
- Minimum/maximum brake
- Position of the center steering wheel



IMPORTANT!

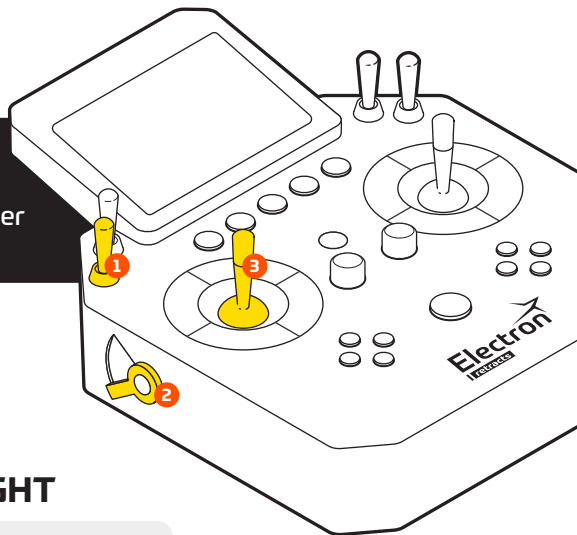
We highly recommend to perform the programming of the ControlBox with the battery disconnected, to avoid any unexpected movements of the landing gear. All that it required for the programming, are the input signals from the receiver.



Before you start, check the settings for the radio channels that you will use for the gear, brakes and steering. Make sure none of them are limited, the signals should range from -100% to +100%, otherwise the programming could be unsuccessful.

SET UP CONTROLLER

In the example we are going to use switch 1 to control the landing gear, wheel 2 to control the brakes and controller 3 for the front wheel.



MEANING OF THE FLASHING LIGHT

- One blink: Programming mode started, set landing gear retracted position.
- Two blinks: Set landing gear deployed position.
- Three blinks: Set minimum brake position.
- Four blinks: Set maximum brake position.
- Five blinks: Establish centered position of the servo.
- Blue and red flashing: Programming error.
- Red flashing: Battery error.
 - The battery is not connected to the ControBox.
 - The battery is not correct for the retract model used (page 9).

Set up

STEP 6

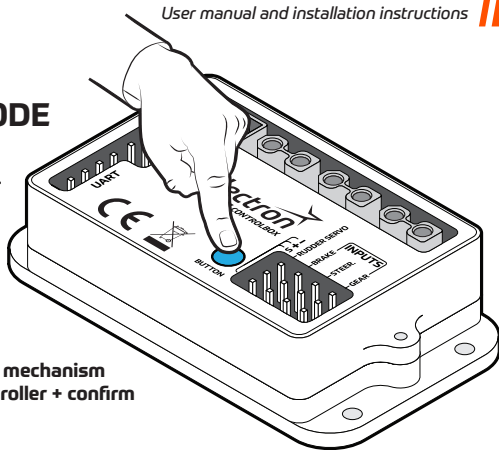
ENTER PROGRAMMING MODE

With everything connected and off, we press and hold the Control Box programming button.

Without releasing the programming button, we turn on the radio receiver. Once turned on we can release the Control Box button and we will be in programming mode.

The programming button will flash blue with a single flash that will repeat continuously.

The configuration process is very simple, the mechanism of operation is always the same: set the controller + confirm on the button.



6.1 SET POSITION WHEN LANDING GEAR IS RETRACTED

6.1.1 Select the switch position chosen to control the landing gear when it is retracted.

6.1.2 Then press the setup button to confirm and move to the next step.



6.2 SET POSITION WHEN LANDING GEAR IS DEPLOYED

6.2.1 Selects the switch position chosen to control the landing gear when deployed.

6.2.2 Then press the setup button to confirm and move to the next step.



SET THE POSITION OF THE BRAKES

In this step we are going to establish minimum and the maximum force of the brake.



6.3 SET MINIMUM BRAKE POSITION

6.3.1 Set the position for the brake to the minimum.

6.3.2 Then press the setup button to confirm and move to the next step.



6.4 SET MAXIMUM BRAKE POSITION

6.4.1 Set the switch position for maximum braking.

6.4.2 Then press the setup button to confirm and move to the next step.

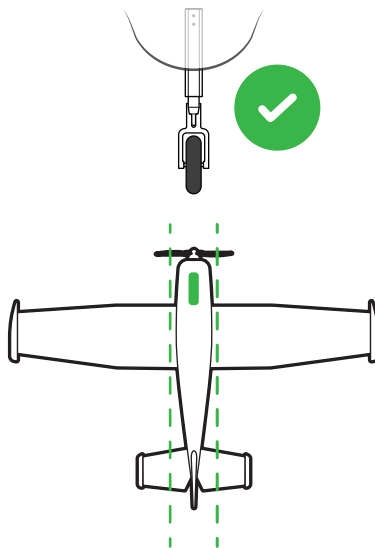
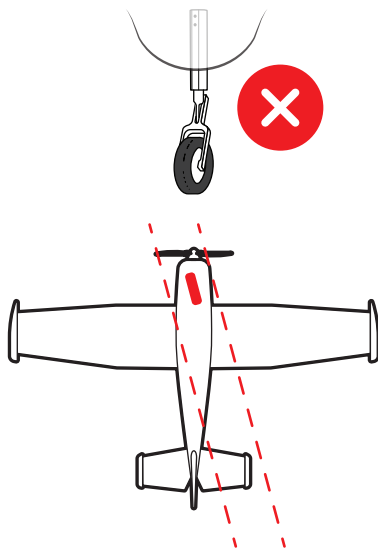
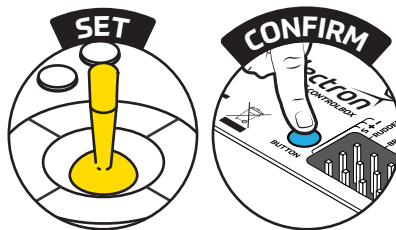


POSITION OF THE CENTER WHEEL



6.5 SET POSITION OF STEER WHEEL

Please notice, If your, it's extremely important that the center position is as accurate as possible, to ensure the proper coupling of the steering mechanism.



NEW!

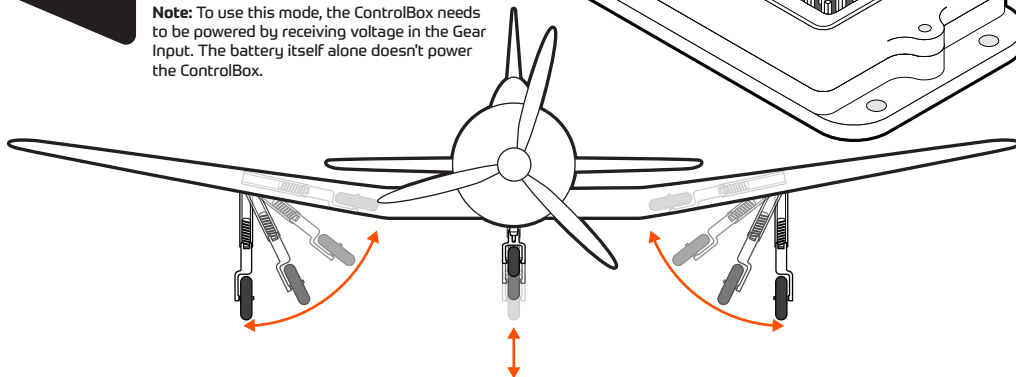
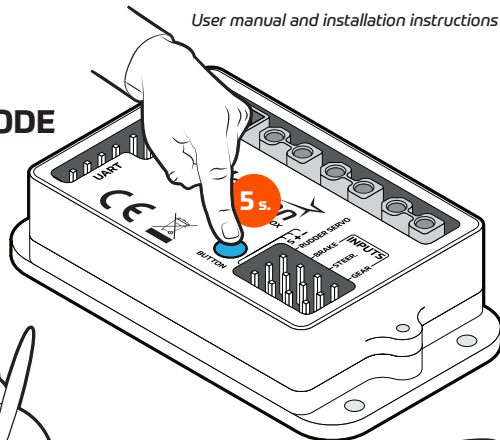


MANUAL OPERATION MODE

The ControlBox features a manual operation mode, to deploy or retract the landing gear system.

To operate the gear manually, press and hold the ControlBox button for 5 seconds.

Note: To use this mode, the ControlBox needs to be powered by receiving voltage in the Gear Input. The battery itself alone doesn't power the ControlBox.



NEW!



BATTERY MONITORING MEANING OF THE FLASHING LIGHT

The ControlBox has a continuous battery monitoring mode, to detect if the battery we are using is the correct one for our retract model, or the battery is low.

- Steady red light: **Low battery**, charge the battery.
- Red flashing: Battery error.
 - The battery is not connected to the ControlBox.
 - The battery is not correct for the retract model used (page 9).





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