BETAFPV Cetus X Brushless Quadcopter User Manual

Contents

BETAFPV Cetus X Brushless Quadcopter

Product Information

The product is a CetusX Brushless Quadcopter that comes with a variety of accessories. The box contents include 2 BT2.0 450mAh 1S Lipo batteries, 1 BT2.0 battery charger and voltage tester, 1 USB Type-C adapter, 4 Gemfan 2020 4-blades prop (spare set), 1 prop removal tool, and 1 Phillips screwdriver.

Preflight Checks

1. Check all parts are included according to the product checklist. Ensure all parts are intact and the frame is undamaged.
2. Ensure that propellers and motors are installed correctly and stably.
3. Ensure that propellers do not scratch against frame ducts and motor spins smoothly.
4. Ensure the batteries (of the quadcopter, remote control radio transmitter, and FPV goggles) are fully charged.
5. Be sure the pilot is familiar with all flight controls. (Refer Remote Control Radio Transmitter).
6. Always keep a safe distance in all directions around the quadcopter (1 meter or more) when having a test-flight. Operate the quadcopter carefully in open space.

Binding the Quadcopter

Ensure that your remote control radio transmitter is on the same protocol with CetusX, which has all the channels preset beforehand (default channel map is AETR1234). The following demonstrations are based on CetusX Quadcopter and LiteRadio2 SE (Mode2 Left Stick Throttle), both settings being on default.

For ELRS 2.4G receiver version, the steps are as follows

1. Ensure the radio controller is on ExpressLRS 2.4G version 2 protocol.
2. Power on the quadcopter and wait for its system to load completely.
3. Gently press the button on the quadcopter with a screwdriver, and the green LED will change from slow flashing to fast flashing.
4. Power on the remote control radio transmitter and wait for it to complete initializing.

5. Gently press the BIND button on the back of the remote control with a screwdriver, and LED of the remote control will flash red quickly.
6. If the binding is successful, the quadcopter green LED light will turn flash to solid green.

For Frsky 2.4G receiver version, the steps are as follows

1. Ensure the radio controller is on Frsky 2.4G D8 protocol.
2. Power on the quadcopter and wait for its system to load completely.
3. Gently press the button on the quadcopter with a screwdriver, and the green LED will change from slow flashing to solid on.
4. Power on the remote control radio transmitter and wait for it to complete initializing.
5. Gently press the BIND button on the back of the remote controller with a screwdriver, and the LED of the remote control will flash red quickly.
6. If the binding is successful, the quadcopter green LED light will turn from solid on to flashing slow.
7. Power on the CetusX and radio controller again, if green LED on the FC board is on solid, which means bind is successful and the connection is functional.

Note: It is ExpressLRS 2 protocol on the CetusX flight controller. The radio controller with ExpressLRS 1 or ExpressLRS 3 protocol will be incompatible. After one successful binding, the connection will be automatically complete when restarting the quadcopter or remote control radio transmitter. Re-bind for each flight is not needed.

VTX Frequency and Power Switching

- The CetusX (Betaflight Version) uses M04VTX with a maximum power of 400mW. Changing frequency and output power value through buttons is not supported by this VTX, which requires OSD Menu of Betaflight Configurator. First of all, access/operate OSD setting menu. The position of joysticks to access the OSD setting menu is as shown below. The throttle joystick is moved to the left-center and the direction joystick towards the upward center at the same time.
- **Caution:** Make sure the quadcopter is disarmed before accessing the OSD menu.
- After entering the OSD menu, the following menu interface will appear on the goggles screen. The OSD menu cursor can be controlled by the direction joystick to operate the OSD interface:

Product List

- 1 x Cetus X Brushless Quadcopter

Box Contents

- 2 x BT2.0 450 mAh 1S Lipo Battery
- 1 x BT2.0 Battery Charger and Voltage Tester
- 1 x USB Type-C Adapter
- 4 x Gemfan 2020 4-Blades Prop (Spare Set)
- 1 x Prop Removal Tool
- 1 x Phillips Screwdriver

Preflight Checks

- Check all parts are included according to product check-list. Ensure all parts are intact and the frame undamaged.
- Ensure that propellers and motors are installed correctly and stably.
- Ensure that propellers do not scratch against frame ducts and motors spin smoot
- Ensure batteries (of quadcopter, remote control radio transmitter, and FPV goggle are fully charged.
- Be sure pilot is familiar with all flight controls. (Refer "Remote Control Radio Transmitter").
- Always keep a safe distance in all directions around the quadcopter (1 meter or m when having a test-flight. Operate the quadcopter carefully in open space.

Binding the Quadcopter

- Ensure that your remote control radio transmitter is on the same protocol with Cetus X, which has all the channels preset beforehand (default channel maps is AETR1234).
- The following demonstrations are based on Cetus X Quadcopter and LiteRadio 2 SE (Mode 2
- Left Stick Throttle), both settings being on default.

For ELRS 2.4G receiver version, the steps are as follows:

Ensure the radio controller is on ExpressLRS 2.4G version 2 protocol.

- Power on the quadcopter and wait for its system to load completely.
- Gently press the button on the quadcopter with a screwdriver, and the green LED will change from slow flashing to fast flashing.
- Power on the remote control radio transmitter, and wait for it to complete initializing.
- Gently press the BIND button on the back of the remote control with a screwdriver, and
- LED of the remote control will flash red quickly.
- If the binding is successful, quadcopter green LED light will turn flash to solid green.
- For Frsky 2.4G receiver version, the steps are as follows:

Ensure the radio controller is on Frsky 2.4G D8 protocol.

- Power on the quadcopter and wait for its system to load completely.
- Gently press the button on the quadcopter with a screwdriver, and the green LED will change from slow flashing to solid on.
- Power on the remote control radio transmitter, and wait for it to complete initializing.
- Gently press the BIND button on the back of the remote controller with a screwdriver, a the LED of the remote control will flash red quickly.
- If the binding is successful, quadcopter green LED light will turn from solid on to flashing slow.
- Power on the Cetus X and radio controller again, if green LED on the FC board is on so which means bind is successful and the connecton is functional.
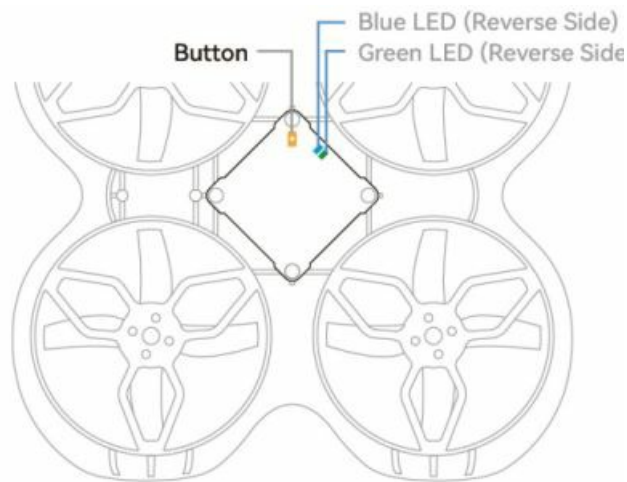
Button — Blue LED (Reverse Side) / Green LED (Reverse Side)

- **Note:** It is ExpressLRS 2 protocol on the Cetus X flight controller. The radio controller with ExpressLRS 1 or ExpressLRS 3 protocol will be incompatible.
- **Note:** After one successful binding, connection will be automatically complete when restart the quadcopter or remote control radio transmitter. Re-bind for each flight is no need.

Frequency and Power Switching

- The Cetus X (Betaflight Version) uses M04 VTX with a maximum power of 400mW. Changing frequency and output power value through buttons is not supported by this VTX, which requires OSD Menu of Betaflight Configurator.
- First of all, access/operate OSD setting menu.
- The position of joysticks to access the OSD setting menu is as shown below. The throttle joystick is moved to the left-center and the direction joystick towards the upward center at the same time.
- **Caution:** Make sure the quadcopter is disarmed before accessing the OSD menu.

← Throttle Joystick Left   ↑ Direction Joystick Up
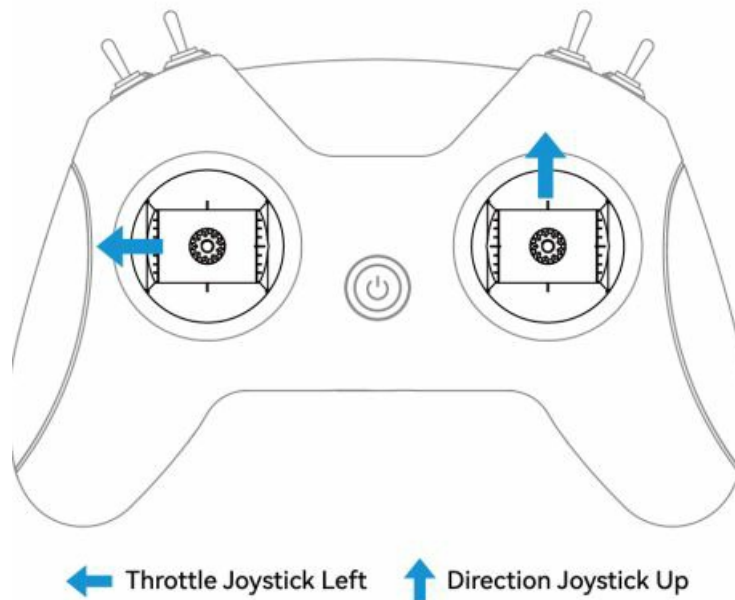
- After entering the OSD menu, the following menu interface will appear on the goggle screen.

```
- - MAIN - -
  > PROFILE
    FEATURES
    OSD
    FC&FW INEO
    MISC
    SAVE/EXIT
```

- The OSD menu cursor can be controlled by the direction joystick to operate the OSD interface:
- **Up:** move the cursor up
- **Down:** move the cursor down
- **Right:** confirm/modify selection

Joystick up: Cursor Move up   Joystick down: Cursor Move down   Joystick right: Modification/Confirmation
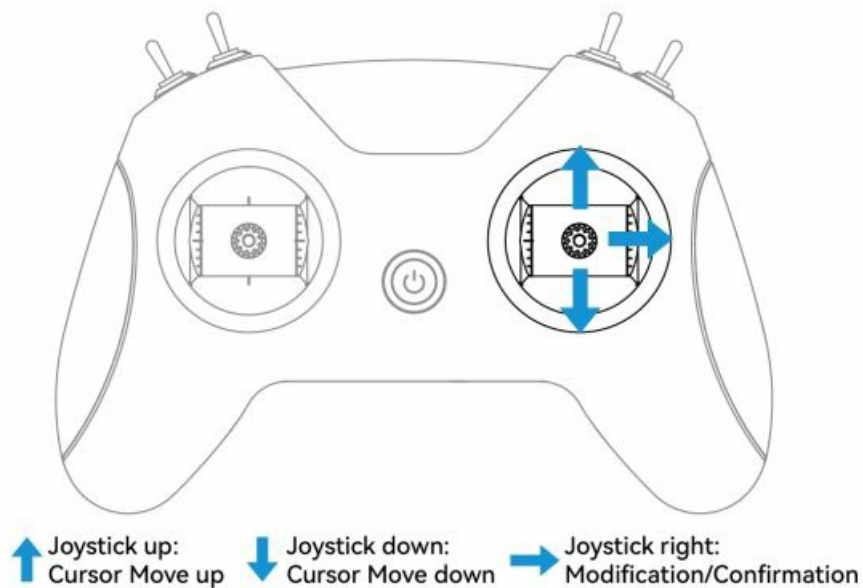
- **Frequency Switching Channel**: FEATURES->VTX->BAND FEATURES->VTX->CHAN
- **Power Switching Channel:** FEATURES->VTX->POWER

```
- SMARTAUDIO -
F R2 5695 350
> BAND                    RACEBAND
  CHAN                           2
  (FREO)                      5695
  POWER                        350
  PIT                          OFF
  SAVE                           >
  CONFIG                         >
  BACK
```

- **Note:** After changing the frequency or the power, Please switch "SAVE" on the VTX page to make it effective.
- **Note:** After switching the power to above 100mW, Please do not keep powering on the quadcopter for over 1 minute. The overheated VTX may cause damage.

Betaflight Configuration

- Parameters of all quadcopter are calibrated before delivery, which means customers need not to repeat this procedure. The only preparation before a flight is to bind the remote control and quadcopter.
- It is recommended to master the basics of Betaflight Configurator and Betaflight firmware before configuring the quadcopter.
- The FC assembled in Cetus X (Betaflight Version) is F4 1S 12A AIO(SPI ELRS 2.4G / SPI Frsky 2.4G).

- The configuration of the SPI ELRS 2.4G receiver is shown as below:

- The configuration of the SPI Frsky 2.4G receiver is shown as below (default Frsky D8):

- Set receiver's channel as AETR1234, with throttle lowest value being 1050. If the lowest value of radio controller is being set above 1050, arming will be invalid. Exact setting is shown below:

- Default settings of air mode is shown as below:
- **AUX1 Arm**/**Disarm** Quadcopter
- **AUX2 Flight** Modes of Quadcopter configured with Horizon Mode and Angle Mode
- **AUX3 Turtle** Mode

- The default firmware and configurations of Cetus X (Betaflight Version) are shown as below if customers need reset:
- **Betaflight Flight Controller** Firmware and BB51 BLHeli_S ESC Firmware:
  https://support.betafpv.com/hc/en-us/articles/9436686257945-Firmware-for-F4-1S-12AFC-ELRS-V2-2
- **Betaflight CLI Configuration: https://support.betafpv.com/hc/en-us/articles/9436959532825-CLI-for-Cetus-X**

Documents / Resources

[BETAFPV Cetus X Brushless Quadcopter](#) [pdf] User Manual

F4 1S 12A Flight Controller, 1103 11000KV Motor, M04 VTX, C04 FPV Camera, Cetus X Brushless Quadcopter, Cetus X Quadcopter, Brushless Quadcopter, Quadcopter