BUMBLEBEE

ExpressLRS

Quick start manual

Cyan Blue

Platinum White

Lily Pink

Deco Yellow

Cold Purple

Mint Green

Introduction

Thank you for purchasing the jumper. Bumblebee Radio system. Please read this instruction manualcarefully before use to ensure correct and safe use. Due to version upgrades,there have beenchanges. The information contained in this manual is subject to change without notice. Many radio control models are equipped with powerful motors and sharp spinning propellers. Please exercise caution when working on models. Ensure power is disconnected from yourmodels and remove propellers when performing maintenance.Do not operate the Bumblebee radio system under the following conditions.

- During bad weather or high wind conditions such as rain, hail, snow, storms, or electromagnetic events.
- During any conditions of limited visibility.
- In areas where people, property, powerlines, roads, vehicles or animals may be present.
- If you are feeling tired or unwell or under the influence of drugs or alcohol.
- If the radio or model appears to be damaged or not functioning correctly.
- In areas of high 2.4ghz interference or in locations where the use of 2.4ghz radios is prohibited.
- When the battery of the Bumblebee or the model is too low to function

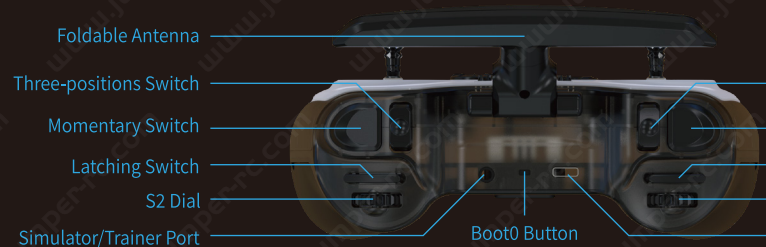
OpenTX / EdgeTX is an experimental firmware. No warranty or implied warranty is given as to the quality and reliability of this firmware.
The Rc model can cause serious injury or even death if not handled properly. if you decide to use OpenTX / EdgeTX firmware, you will be solely responsible for your model.
Any injury or damage caused by the use of OpenTX / EdgeTX firmware. The author of OpenTX/ EdgeTX is not responsible for it. Pleaseuse it with caution.

OpenTX firmware can be found at https://github.com/opentx
EdgeTX firmware can be found at https://edge-tx.org
Built-in ELRS (ExpressLRS) RF module firmware can be found at
https://expresslrs.github.io/web-flasher/

Note: the colors of the product are subject to the actual item, as there may be slight color differences due to printing.

Manual contents

Radio System Overview



Note: In order to prevent Bumblebee from entering DFU mode during charging and to reduce the probability of firmware loss during charging, Bumblebee is equipped with a separate Boot0 button. To enter DFU mode, shut down the radio, press and hold the Boot0 button, and then connect the USB cable.

First Boot:

Long press the power button. Before entering the main interface, the system will check the position of the throttle stick and switch and other startup conditions. If the startup conditions are not met, there will be a corresponding error prompt. The user needs to clear or press any key to skip.

EEprom Warning:

Bad EEprom data. Press any key to let the radio automatically format and storage to create new remote control data files.

Switch Warning:

This is a warning that a switch on the radio -control is not in the default position. (The default setting is that all switch directions are up)

Throttle warning:

This is a warning that the throttle is not at the lowest position when the radio is turned on. You can set the throttle stick to the lowest position or press any key to skip. You can also turn off the throttle state option in the MODEL SETUP menu.

Failsafe Not set Warning:

This is a warning that the radio- control is not set for fail-safe.

Alarms Warning:

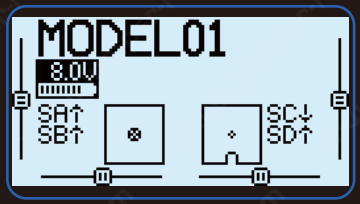
A similar warning will appear if the sound mode of the remote control settings page is set to mute.

SD card Warning:

This warning will appear if the version of the SD card file used does not match the firmware version. (SD card contents also need to be updated at the same time as upgrading firmware)

RSSI Warning:

This is a warning that the Disable alarms are set.



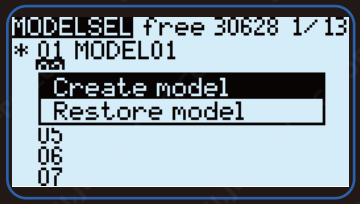
Main screen Display:

The default screen is as below, and the user can press the (PAGE) key to display different interfaces.

Model Setup and selection:

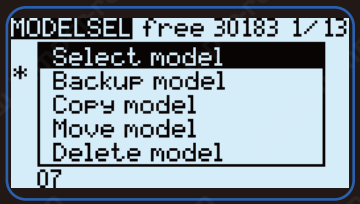
In the main interface, press the SYS button to get into the model select menu

The Model Select menu allows the user to select the active model and allows the user to create, copy, move or delete a model. By selecting the "Create model" option, the new model guide (the script required by the guide is in the SD card) will be launched. The user will be leading through the basic control setup, if you choose not to use it, just press RTN Keys to manually set the model.



To create a model, press and hold the ENT key to show the menu, select create model, press ENT

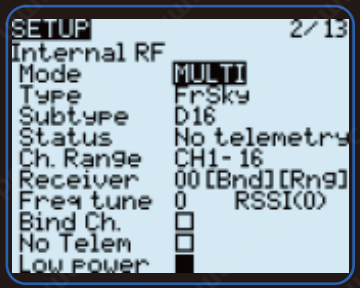
With the plane, delta, and multiaxial options, the guide will check with you questions about model configuration. And make basic settings for users. The final step of the guide confirms the channel assignment for the model



If the user prefers manual setup, press RTN to exit the guide .
Use the menu wheel to select the one you want to make with the model, long-press the ENT key to select the Select model to switch it.

Binding and Frequency Tunning:

Short press the SYs button, then use the scroll wheel to select 2/13



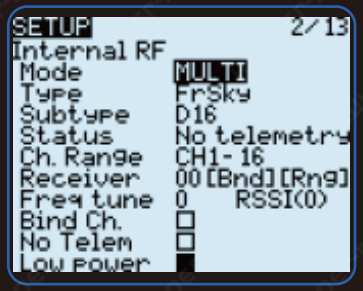
Internal RF:

Mode: The transmission mode of the internal RF. It must be compatible with the receiver. Otherwise, it will not be able to bind.

OFF:Turn off the internal RF module

Type: Select the type of protocol

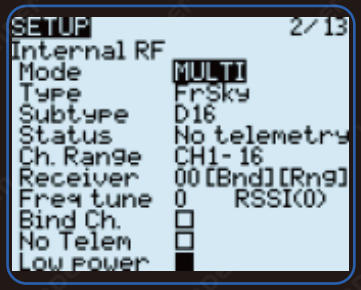
Subtype: Select the subtype of the protocol



Status:Display the status of the multi-protocol module (Normally it shows the firmware version of the multi-protocol module)

Ch.Range:Set up the channel range.(D16 mode transmits data at every 9ms, 8 channels at a time, 16 channels will take 18ms, so removing unnecessary channels can reduce the latency)

Receiver:Normallyit is the receiver model. lt can be changed manually. lf the model is moved or copied, it will not be changed. lf the manual setting or copy/move steps cause the receiver with the same number to have 2 or more models, a warning window will pop up. lt is up to the user to decide whether it needs to be modified



Freqtune: Frequency tuning. Certain protocols require tuning for optimal performance. in some cases, tuning is required in order for the protocol to bind, Frequency Tuning is specific to each MULTI-Module, and is due to very small variations in the RF components.

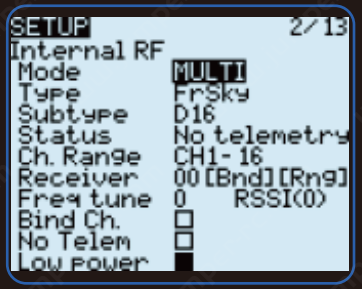
Frequency Tuning is always recommended, but especially when:

1.It is difficult to bind to the receiver, or the connection is weak or intermittent

2.The control range is very short

3.Telemetry data is not received or (for telemetry-enabledreceivers only)

Completing the Frequency Tuning Procedure ensures that the radio and receiver will have the strongest possible connection . If you change the frequency tuning value it is best to re-bindthe receiver(s)



The default value of Freqtune is "0". If the receiver does not bind, we can change the value to either +30 or -30 and try to bind again. If binding is still unsuccessful, continue to try higher and lower values in steps of plus or minus 30 until the bind succeeds.

Once the receiver is bound you can proceed with Fine Tuning.

After the binding succeeds, kkeep the receiver 2 meters awayfrom the radio and don't move any of them.

Return to the RF Freg. fine-tune option. Lower the value until the radio loses the connection with the receiver. Record the value (TUNE MIN). Raise the value so that the connection is restored, then continue to raise it until the radio loses the connection with the receiver again. Record the value (TUNE MAX).Calculate the median between the two valueS (TUNE MIN+TUNE MAX)/2=TUNE MEDIAN. Set RF Freg. fine-tune to the median value.

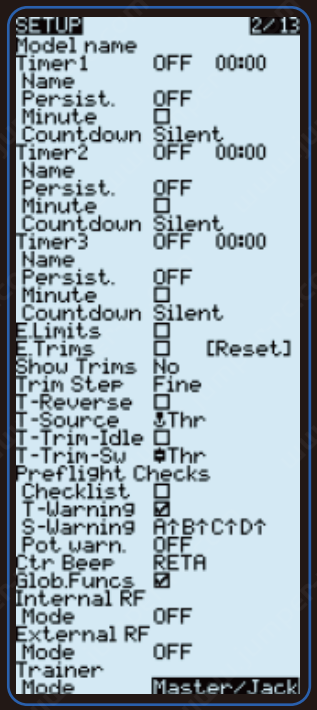
For example

Connection is lost at 60 and -60, then the Freqtune number is(-60+60)/2=0

Connection is lost at 20 and -80, then the Fregtune number is (-80+20)/2=30

Model setup:

The model setup covers all the required preliminary setups. setups.The Model Setup page contains the following features:



1.Defines the model's name

2.Up to 3 fully programmable timers that can count up or down

3.Extended limits allow setting servo movement limits up to 125%

4.Extended trims allows trims to cover the full stick rangeinstead of +/-25%

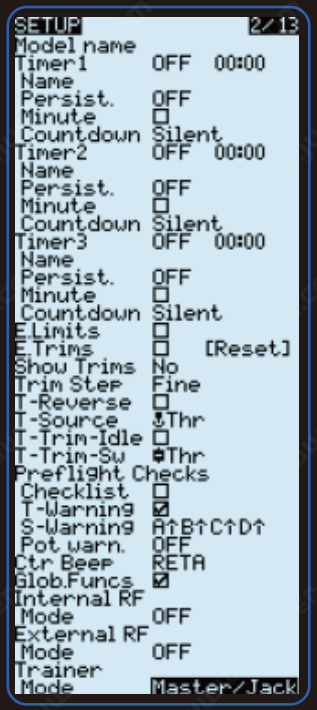
5.Trim step sets the precision of trim clicks

6.Throttle reverse: Ensures correct operation of throttle-based timers and functions for people who like having full throttle with the stick down

7.Throttle source defines what triggers the THx functions ofthe timers.

Model Setup:

The model setup covers all the required preliminary setups. setups.The Model setup page contains the following features:



8.Throttle trim: IC engine mode, where trim only affects the idle part of the throw without touching the full-throttle point

9.Throttle Warning: will warn you if the throttle stick is not at idle when the radio is powered up or a model is loaded

10.Preflight checks: display checklist, throttle state, switch positions, pot positions

11.Center beep: Makes a beep when the selected control(s) pass the center point

12.internal RF module setting

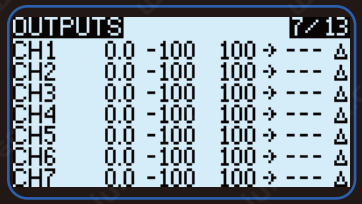
13.External RF module setting

14.Trainer mode setting

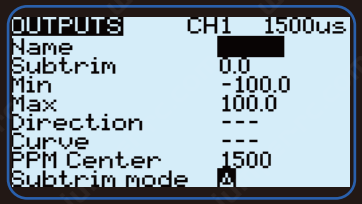
Press the sYs button and use the scroll wheel to select the model you want to set (after selecting the model name, there will be a * logo before the model name)Then press the PAGE key to enter the Model Setup page

Outputs (center adjustment, servo reverse setting):

Short press the SYS button and then use the scroll wheel to select the 7/13 page



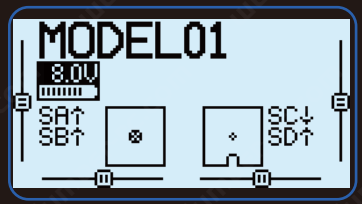
Select the channel
you want to set up



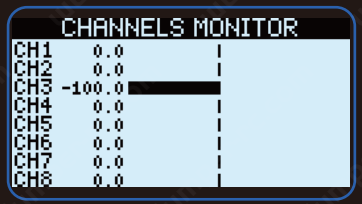
center adjustment
Low and high limits setting
Subtrim behavior

Channel Monitor:

press the "page" button in the main interface you can switch input and output monitor



Input monitor



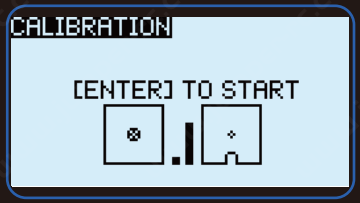
Output monitor

Set the default gimbal mode:

Bumblebee is set to MODE2 (the left-hand throttle) out of the factory. The user can change the mode by himself by reversing the gimbals, and then long-press the "SYS" key to enter the "RADIO SETUP" page, turn to the bottom to "mode" and select the corresponding mode

Calibrating Gimbals (Gimbals have been calibrated when it was out of the factory. No need to re-do the calibration unless it is necessary):

Press and hold SYs button, scroll to the HARDWARE page. Go to the "Sticks[calibration] " page to start gimbal and wheel calilbration Attn: Do not put too much force during the calibration process to avoid affecting the calibration accuracy, Move slightly during the calibration process.



press ENT to start calibration

place all the gimbals, knobs, and side sliders in the middle position,and then press the ENT key

move all the gimbals, knobs, and side sliders to their respective maximum and minimum positions ,and then press the ENT key to complete the calibration

Battery and charging:

Please use two 18650 batteries under the same brand and model (with the same interna resistance) to power the Bumblebee. Make sure that the anode and cathode are not reversedwhen inserting the battery, Bumblebee has a built-in USB charging function, You can connect theradio to a USB to charge the battery.Charging indicator: the green light flashes when theradio is not inserted with batteries; the green light is always on when the battery is charging;the green light is off when the charging is complete.

Attn: When the battery is installed in the Bumblebee for the first time, please keep the battery voltage consistent to reduce the burden on the voltage balance circuit.

Firmware Update:

There are two ways to update EdgeTX firmware.

1.Update firmware by EdgeTX companion. (For more details, please refer to Bumblebee Manual)

2.Update firmware via SD card (If passed over 1version, please use the first method to update)

if your device is not in the Windows system, please use the 2nd method. This is a BOOTLOADER function designed by the EdgeTX developer team, efficient and simple. The upgrade requires two steps. Firstly, copy the firmware downloaded from EdgeTX website to the SD card "FIRMWARE" folder. Secondly find the firmware file you just copied in the remote control SD card, long-press the ENT key to upgrade the bootloader (as shown below)

After booting, select the Write Firmware option and select the corresponding firmware to upgrade

Press the trim buttons inward and turn on the radio

Upgrading the Built-in ELRS (ExpressLRS) RF Module Firmware

Open https://expresslrs.github.io/web-flasher/ to use the web flashing tool.

Version: Select the required firmware version under "Version."

Vendor: Choose the hardware vendor under "Vendor."

Device Type: Select the frequency used by the RF module (2.4GHz or 900MHz(915MHz)) and whether the device is a transmitter or receiver under "Device Type."

Device Model: Choose the corresponding hardware model under "Device Model."

Adjustment instructions for gimbal stick height

1. Remove the gimbal stick ends locking screw.
2. Turning the gimbal stick ends clockwise will shorten the gimbal stick length. Turning it counterclockwise will lengthen the gimbal stick.
3. After adjusting the gimbal stick length, hold the gimbal stick end with your hand and tighten the locking screw.

Warning: The gimbal of the radio controller is a precision device. Excessive force when turning the gimbal stick end may cause the gimbal shaft to come off and become damaged.
Do not turn the gimbal head before removing the locking screw!

JUMPER
TECHNOLOGY
LIMITED