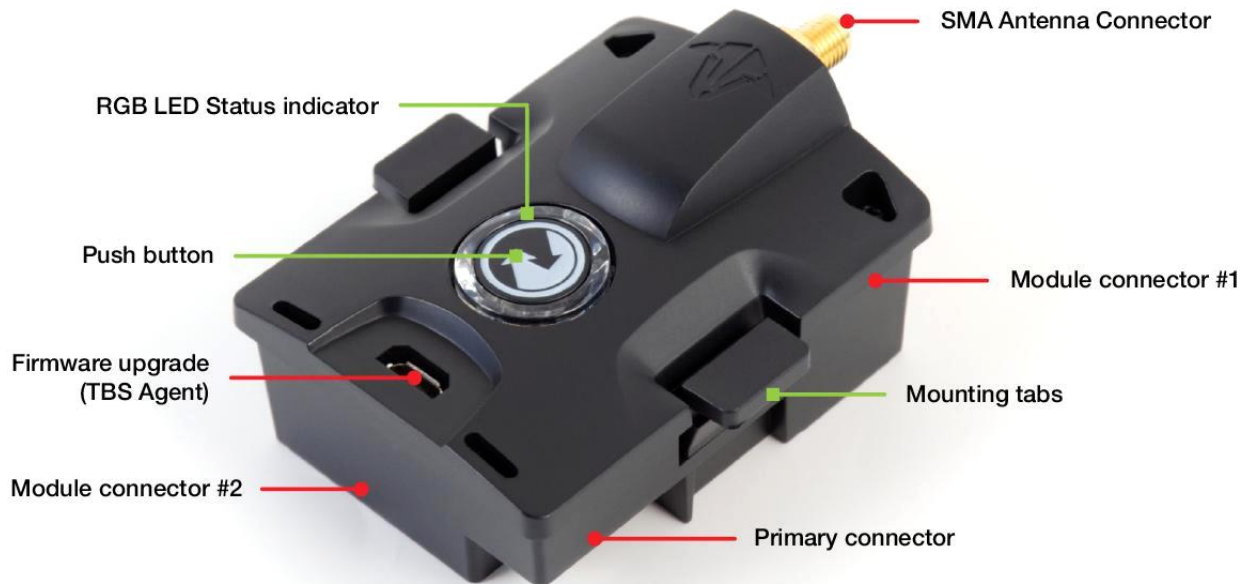



# Quick-Start Guide - TBS CROSSFIRE Micro TX


Revision 2017-08-23





The CROSSFIRE Micro TX has a standard JR-form factor and works with any radio that supports PPM-stream and/or TBS CRSF-format output. Transmitter power is selectable between 25mW and 100mW, and TX status is shown using a RGB LED lite behind the push button. Frequency band 868 MHz and 915 MHz are supported.



## Push button functionality

If there is no link (LED pulsing orange 

- Long press: Toggle frequency between 868 MHz and 915 MHz. Once changed it will blink white 1x for 868 MHz and 2x for 915 MHz.
- Short press: Enter bind-mode (LED blinking green .

If the receivers needs to be updated it will start blinking blue (). Press the button again to confirm. The update will start and the LED will be solid blue () until the update is complete. Once update is complete the LED will turn solid green () or orange (.

If there is a link (LED solid green  or orange 

- Long press: Set failsafe

Configuration of the internal settings (region, output power, dynamic power, and operation mode) and receiver configuration (output mapping, channel mapping ect. ) is done via any remote supporting CRSF (TBS TANGO, OpenTX ect.) remote. The TBS CROSSFIRE Micro RX V2 comes with CH1: PPM, CH2-CH4 PWM default settings.



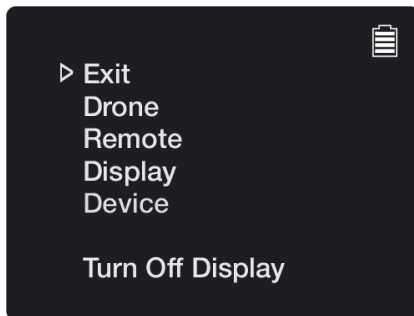
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## Configuration

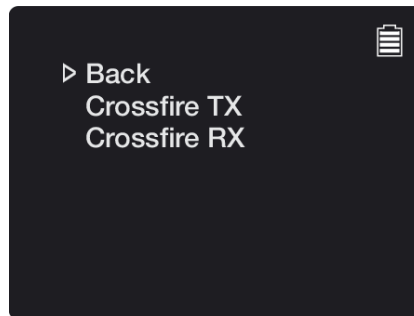
### TBS TANGO remote

The easiest way to setup and configure the TBS CROSSFIRE Micro TX is via our TBS TANGO remote. Simply plug in into the back of the remote and bring up the configuration menu by holding the rocker-scroller for 3 seconds, and go to the Device sub-menu.

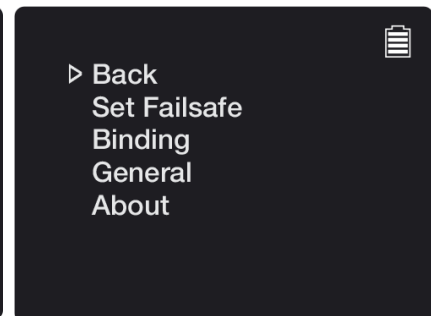
The changes are stored internally on the transmitter module, so if you do not own a TANGO remote (or OpenTX radio), you can borrow one for a minute to make the necessary changes and then pop it out.



Enter the configuration menu by  
Holding the jog-scroller for 3  
seconds



Select Device and the detected  
CROSSFIRE modules will be listed  
(note the receiver is also present)



Pick the "Crossfire TX" module to  
find a listing of all the available  
modes and changeable settings

This method is also available on the standard transmitter module.

### OpenTX and LUA scripts

The CROSSFIRE allows bidirectional communication, that means the radio display interface (currently only OpenTX radios supported) can be used to remotely configure any TBS device (currently CROSSFIRE, CORE PRO) over the BST connection.

The following requirements must be fulfilled to be able to use this feature:

- Any OpenTX radio (any Taranis, Horus) with OpenTX 2.2.x or higher
  - Nightly builds provided in the "News" section at <http://www.open-tx.org/>
- TBS CROSSFIRE LUA script package on root of SD card
  - Currently provided at <http://downloads.open-tx.org/2.2/nightly/sdcard/>
- TBS CROSSFIRE TX/RX V1.62 or higher
- TBS CORE PRO/FPVision V1.70 or higher
- TBS CORE PRO with SmartAudio (purchased after 07/2015) - for UNIFY PRO control

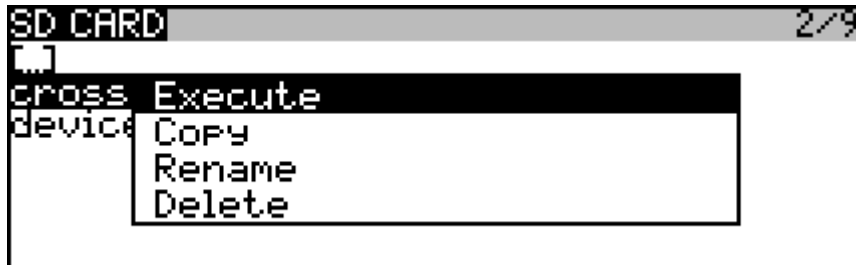


Connect the devices as normal via BST cables and make sure the CROSSFIRE radio link is up and running.

On the radio, press and hold the "Menu" button to bring up the "Radio setup". Press "Page" to go to page 2 "SD Card".



Move to the "CROSSFIRE" directory and open it. Press and hold "Enter" on the "crossfire.lua" file, select "Execute" to open the script. The device.lua file is not meant to be executed.



All the supported TBS devices that is connected via BST to the CROSSFIRE RX will show up immediately, e.g. "TBS CROSSFIRE TX", "TBS CROSSFIRE Diversity RX" or "TBS CORE PRO". Pick either to change the settings. Note: the CORE PRO will not show up of the standard POWERCUBE is connected, disconnect it first from BST.

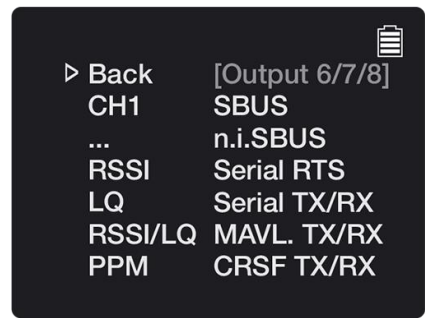
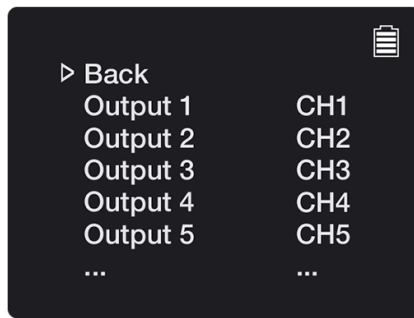
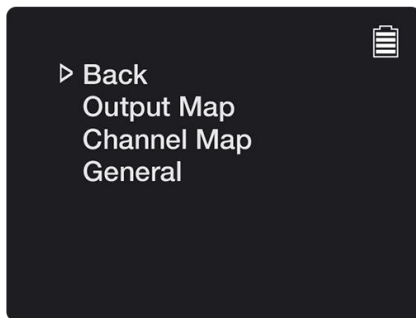


The changes will be committed once you leave the settings page.



## Output SBUS, CRSF or PPM on receiver

By selecting the “Crossfire RX” / “TBS CROSSFIRE RX” or “TBS CROSSFIRE Diversity RX” in the configuration menu, you can change the output mapping, including the signal format on each pin (SBUS, CRSF, PPM).



Enter the configuration menu and This lays out all the physical pins under “Crossfire RX”, pick “Output Map” and their source signal format.

Pick a output to change. PPM can be selected in all channels, while SBUS, CRSF and Serial is restricted to output 6, 7 and 8.

## Difference between SBUS and CRSF

SBUS is a high frequency one way communication protocol, up to 150 updates per second (Hz). While our TBS CRSF (CROSSFIRE) is a two-way, low-latency, error detection, communication protocol which allows uplink- and model-telemetry (via BST to RX) to be carried back to the remote control.

At the moment the CRSF protocol is supported by the following flight controllers (FC):

- KISS
- Betaflight
- Raceflight
- iNav

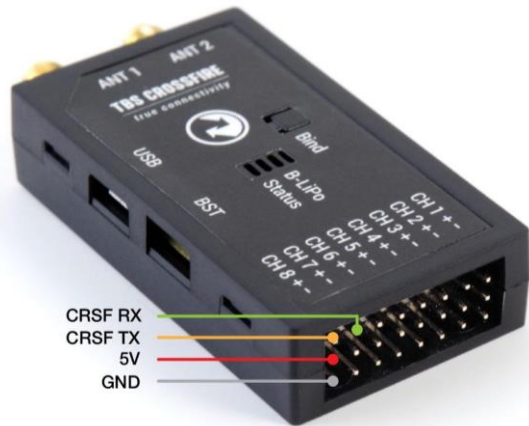
## Wiring CRSF to flight controller

Since the CRSF protocol is serial, it has to be connected to a free serial/UART port on a supported flight controller. On the COLIBRI RACE it must be UART3. If you use the POWERCUBE with FPVision, you can use also use UART2. The pin-out and wiring layout is shown in the following table.

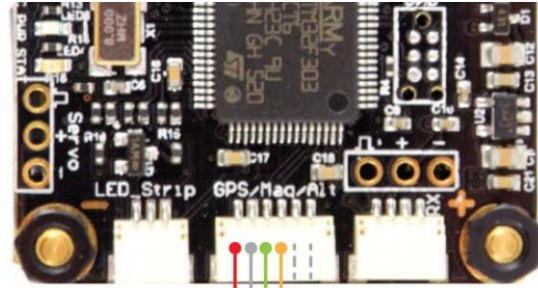
CROSSFIRE MICRO V1 RX	CROSSFIRE MICRO V2 RX	CROSSFIRE DIVERSITY RX		Clean-/BetaFlight Serial port (COLIBRI or other)
Ch./Pin 1 TX	Ch./Pin 1 TX, 5V, GND	Ch./Pin 8 TX, 5V, GND	⇒	UART2 or 3 RX, 5V, GND
Not available	Ch./Pin 2 RX only	Ch./Pin 7 RX only	⇐	UART2 or 3 TX



Make sure you also configure the “Output Map” on the receiver to output CRSF RX on output 7 and CRSF TX on output 8.



*Diversity RX*



*COLIBRI FC*

To use the CROSSFIRE Micro Receiver V2, you have to use the expander board to easily get to the pins for channel 1 and 2 required for CRSF communication.

In addition to the CRSF serial connection, you might want to connect BST (BlackSheep Telemetry) between the CROSSFIRE RX and COLIBRI to provide extra telemetry and make changes remotely on the CORE PRO (if connected) or FPVision (if part of the POWERCUBE).

CROSSFIRE RX	BST ⇒	CORE PRO	BST ⇒	POWERCUBE standard	INT. →	COLIBRI FC
CROSSFIRE RX	BST ⇒		BST ⇒	POWERCUBE FPVision	INT. →	COLIBRI FC

Manual written and designed by ivc.no in cooperation with TBS.

