



MATEKSYS

Video Transmitter 5.8G VTX-mini

QUICK START GUIDE

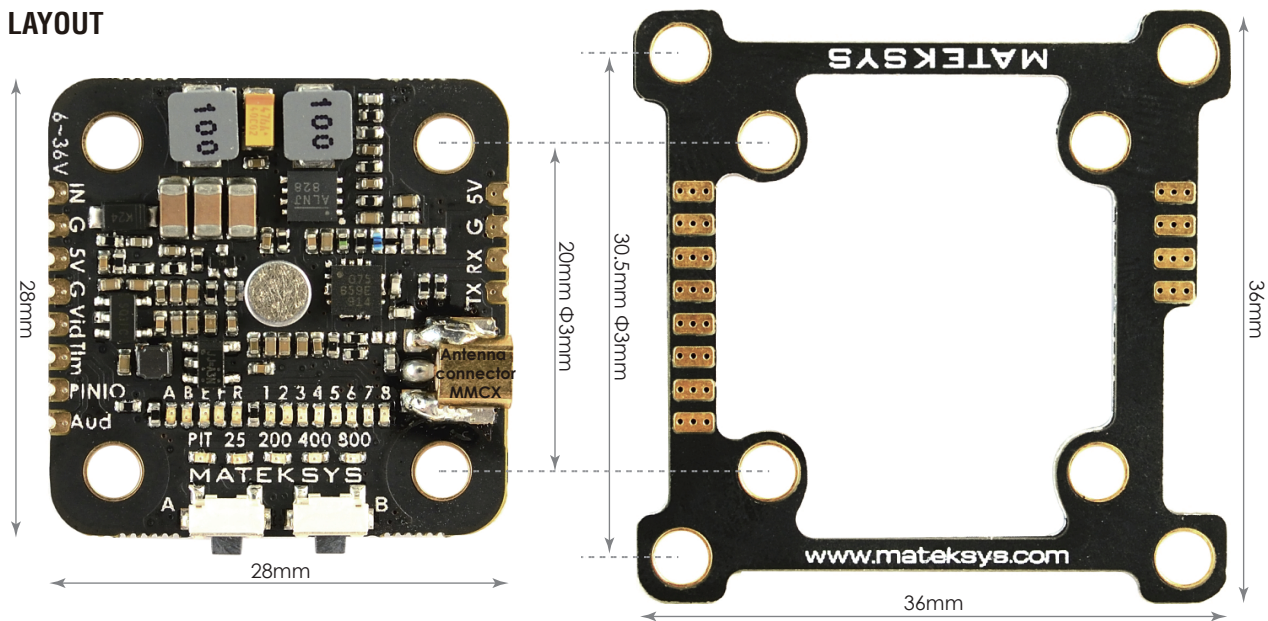
40CH(A/B/E/F/R Band), E4 & E8 are disabled by default.
Any Frequency/band can be disabled or enabled by CLI command
Variable Output Power: PIT, 25, 200, 400, 800mW
Button control and LED indicators
CMS control(Tramp protocol) via FC Uart _Tx
Switchable VTX input power via FC PINIO
Constant full frequency band power
Clean powerup and frequency switching
Built-in microphone
Upgradeable firmware
Convertible 20 to 30mm mounting

Input voltage: 6~36V(2~8S LiPo)
5V Output: 1A for Camera or FC
Power Consumption: 3.5W@ 800mW
Video Input Impedance: 75 Ohm
Audio Subcarrier Frequency: 6.5 MHz
RF Connector: MMCX
Video Format: NTSC/PAL

Weight: 4.5g (VTX-mini only, w/o antenna)
Size1: 28*28*4mm w/20mm_Φ3mm mounting
Size2: 36*36*5mm w/30.5mm_Φ3mm mounting

Includes
1x 5.8G Video transmitter VTX-mini
1x MMCX 5.8G whip antenna, 8cm
1x 20mm to 30.5mm conversion plate

LAYOUT



IN: 6~36V DC (2~8S LiPo)

G: Ground

5V: on board 5V regulator, output 1A for camera and FC.

Vid: Video signal

Tlm: CMS control(Tramp protocol) via FC Uart_TX

PINIO: VTX power switch via FC PINIO

Aud: Audio(A6.5) input, on board microphone share this rail.

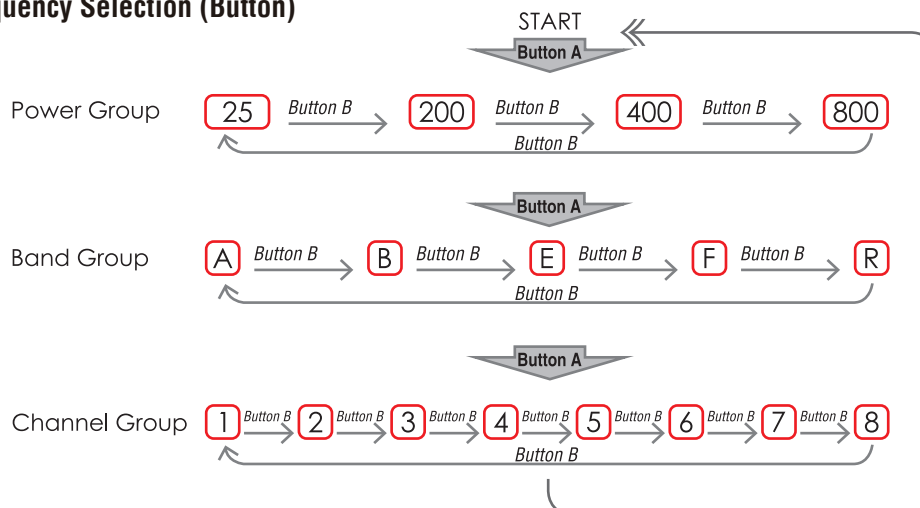
TX/RX: for flashing firmware and VTX firmware setting

Frequency Table (MHz)

OSD	LED	1	2	3	4	5	6	7	8
BOSCAM A	A	5865	5845	5825	5805	5785	5765	5745	5725
BOSCAM B	B	5733	5752	5771	5790	5809	5828	5847	5866
BOSCAM E	E	5705	5685	5665	5645	5885	5905	5925	5945
FatShark	F	5740	5760	5780	5800	5820	5840	5860	5880
Raceband	R	5658	5695	5732	5769	5806	5843	5880	5917

*** E4(5645) & E8(5945) are disabled by default.

Frequency Selection (Button)



Press Button A to select the Group, Press B to select parameters in each Group.

When LED blinks, Group & parameter can be changed

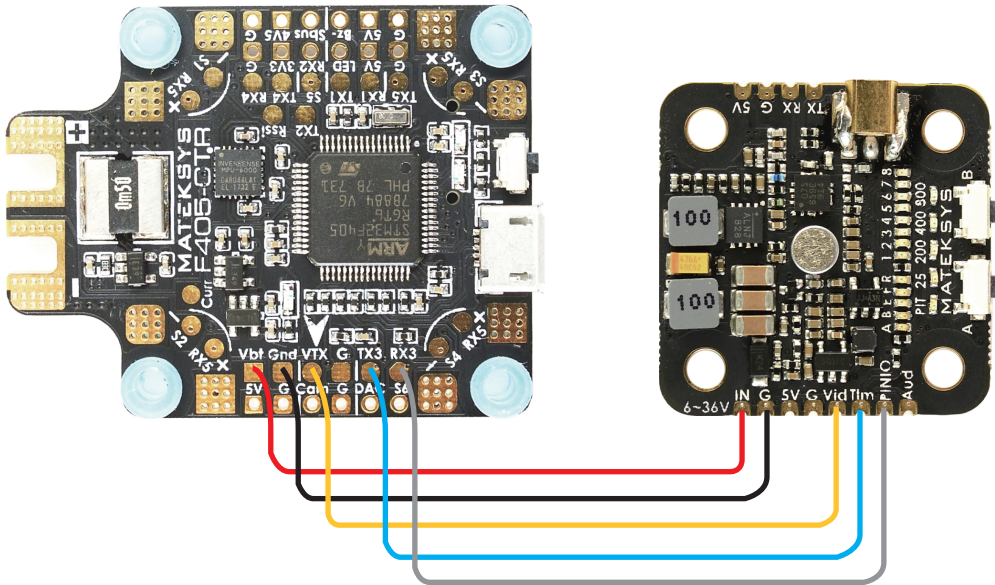
New Frequency & Power will be saved if no button action within 5 seconds.

The VTX remains the current frequency until new setting is saved.

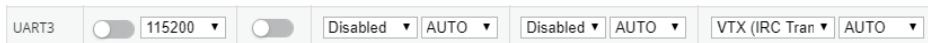
PIT mode: Press B to enter PIT mode(1mw output), Pit LED blinks

Press B again to quit PIT mode

PINIO Power switch



Any unused RX/TX/motor/PWM pad can be remapped for PINIO in BetaFlight
e.g. F405-CTR TX3 is used for CMS control, connect PINIO pad to RX3 of F405-CTR



CLI [resource](#) to locate RX3 pin name

RX3 pin is **C11**

then

[resource SERIAL_RX 3 none](#)

[resource PINIO 1 C11](#)

[set pinio_box = 40](#)

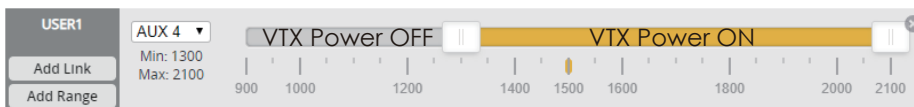
[save](#)

```
resource SDCARD_CS 1 C01
resource PINIO 1 C11
resource FLASH_CS 1 C00
```

```
# resource
resource BEEPER 1 C13
resource MOTOR 1 C06
resource MOTOR 2 C07
resource MOTOR 3 C08
resource MOTOR 4 C09
resource MOTOR 5 A15
resource MOTOR 6 A08
resource MOTOR 7 B08
resource PPM 1 A03
resource PWM 1 A00
resource PWM 2 A01
resource PWM 3 A02
resource LED_STRIP 1 B06
resource SERIAL_TX 1 A09
resource SERIAL_TX 2 A02
resource SERIAL_TX 3 C10
resource SERIAL_TX 4 A00
resource SERIAL_TX 5 C12
resource SERIAL_RX 1 A10
resource SERIAL_RX 2 A03
resource SERIAL_RX 3 C11
resource SERIAL_RX 4 A01
resource SERIAL_RX 5 D02
```

Go to modes tab and assign an AUX channel to the USER1 mode. Click **SAVE**.

Flip the switch and test



Tips

If FC has PINIO power switch built-in, e.g. F722-SE, F722-mini, no need to use this VTX PINIO function.

VTX PINIO would cut 5V output, so don't power your FC via VTX 5V pad if you want to use this function.

CMS control

Protocol: Tramp(TR)

*** CMS would override the button control if CMS control is enabled.

TR power level vs VTX power level

TR PIT -- VTX PIT

TR 25 -- VTX 25mw

TR 100 -- VTX 200mw

TR 200 -- VTX 200mw

TR 400 -- VTX 400mw

TR 600 -- VTX 800mw

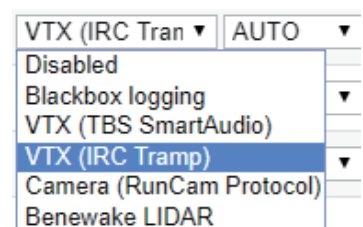
CLI

[vtx_low_power_disarm = OFF](#)

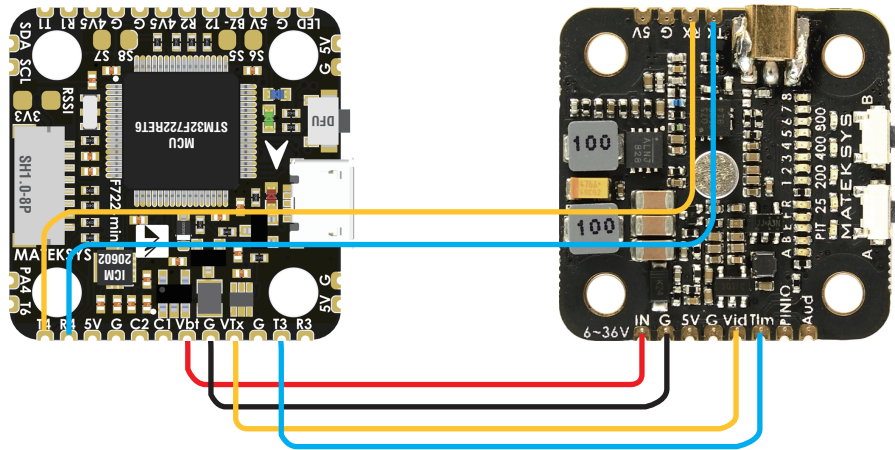
Allowed values: OFF, ON, UNTIL_FIRST_ARM

If ON and the flight controller is disarmed, the video transmitter output power will be set to 25mw

Otherwise, the video transmitter output power will be set to the configured value.



VTX CLI command



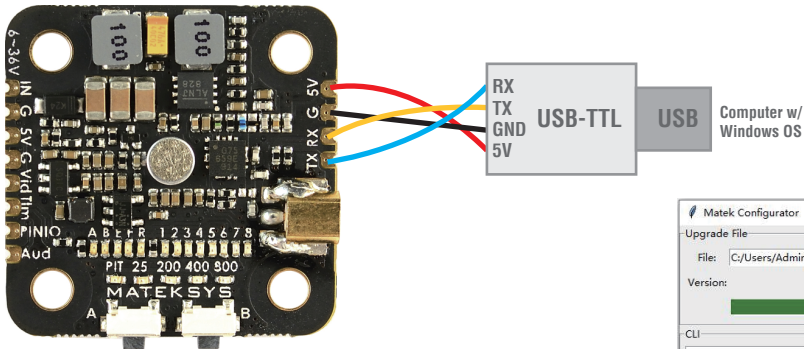
1. Connect VTX TX/RX to one of FC UART
VTX RX to FC TX, VTX TX to FC RX, Common ground
2. Connect FC USB to your computer
3. Connect FC to BF configurator
4. Power ON VTX
5. Type Serialpassthrough code in CLI & press the keyboard "Enter"
If using the FC UART1, Type "`Serialpassthrough 0 115200`"
.....
If using the FC UART6, Type "`Serialpassthrough 5 115200`"
- *** Following command is in VTX firmware,
It is not related to BF command
6. Type "`help`" after FC forward the port
7. Type "`config list`" to check VTX setting
E4_5645 and E8_5945 are disabled by default
8. Type "`set freq 5645 = enable`" to enable E4
Type "`set freq 5945 = enable`" to enable E8
9. You can also enable/disable whole band
e.g. "`set band A = disable`"
10. If Freq/band is disabled, button control will jump over it.
11. Unplug USB & battery,
Serialpassthrough mode will be invalid.

```
# serialpassthrough 3 115200
Port1: 3
Port2: 20
Port1 opened, baud = 115200.
Forwarding, power cycle to exit.
CLI - Help:
version
status
reboot
config list
set freq xxxx = cmd (xxxx is freq value, cmd is 'enable' or 'disable')
set band x = cmd (x is 'A','B','E','F','R', cmd is 'enable' or 'disable')
config defaults
Config list:
Band = 3; CH = 5; Freq = 5840; Power = 800
Boscam A : 5865 5845 5825 5805 5785 5765 5745 5725
Boscam B : 5733 5752 5771 5790 5809 5828 5847 5866
Boscam E : 5705 5685 5665 5645 5625 5605 5585 5565
FatShark : 5740 5760 5780 5800 5820 5840 5860 5880
RaceBand : 5658 5695 5732 5769 5806 5843 5880 5917
```

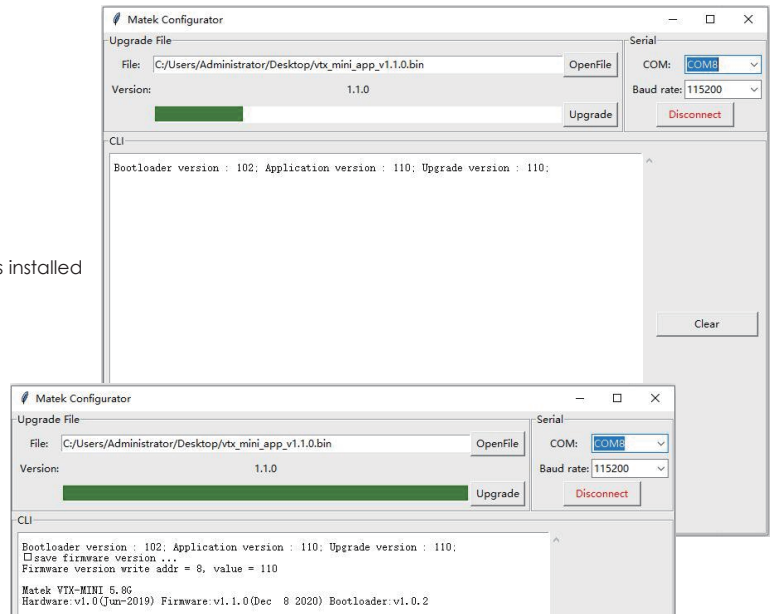
```
Freq 5645 is enabled
Save new config ...
Freq 5945 is enabled
Save new config ...
Band 0 is disabled
Save new config ...
Config list:
Band = 3; CH = 5; Freq = 5840; Power = 800
Boscam A : 0 0 0 0 0 0 0 0
Boscam B : 5733 5752 5771 5790 5809 5828 5847 5866
Boscam E : 5705 5685 5665 5645 5625 5605 5585 5565
FatShark : 5740 5760 5780 5800 5820 5840 5860 5880
RaceBand : 5658 5695 5732 5769 5806 5843 5880 5917
```


Firmware Update

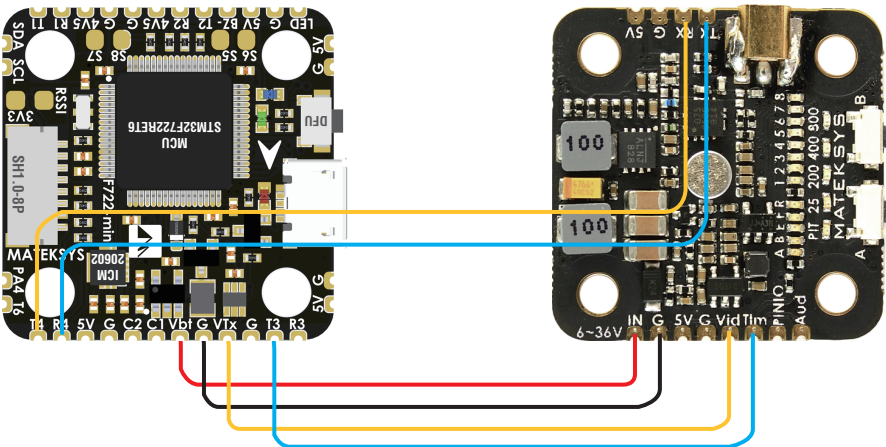
USB-TTL module



1. Set VTX power output to 25mW
2. Connect VTX(5V/G/RX/TX) to USB-TTL module(5V/G/TX/RX)
3. Connect USB to your computer, make sure USB-TTL PC driver is installed
4. open **MatekConfigurator.exe**
5. select COM port of your USB-TTL module
6. Click "Connect"
7. Once connected. CLI will display "Bootloader version:....."
8. Click "OpenFile", then select "vtx_mini_app_v1.x.x.bin"
9. Click "Upgrade"
10. Once new firmware is uploaded, new firmware version will display in CLI



FC Serialpassthrough



1. Connect VTX_RX to FC spare UART_TX,
VTX_TX to FC spare UART_RX
VTX power(IN and G) to power source on FC
2. Connect FC USB to your computer
3. Connect FC to Betaflight configurator
4. Power ON VTX
5. Type Serialpassthrough code in CLI & press keyboard "Enter"
If using FC UART1, Type "**Serialpassthrough 0 115200**"
.....
If using FC UART6, Type "**Serialpassthrough 5 115200**"
6. Keep USB connected to PC, Disconnect Flight controller from configurator
7. open **MatekConfigurator.exe**
8. select COM port of your Flight controller
9. Click "Connect"
10. Once connected. CLI will display VTX "Bootloader version:....."
11. Click "OpenFile", then select "vtx_mini_app_v1.x.x.bin"
12. Click "Upgrade"
13. Once new firmware is uploaded, new firmware version will display in CLI
15. Power cycle to exit Serialpassthrough

```
# serialpassthrough 3 115200
Port1: 3
Port2: 20
Port1 opened, baud = 115200.
Forwarding, power cycle to exit.
```