

RACEPIT

Flight Controller

USER MANUAL



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Features

- STM32F405 main chip
- MPU6000 Gyroscope
- Built-in connector for 4-in-1 ESC as well as solder pads
- Built-in power switch for VTX, support 5V & Vbat
- Built-in Camera switcher
- Built-in 16MB Blackbox flash
- Full 6 UARTs for Simultaneous Connections of Runcam Device, GPS, CRSF Rx, Bluetooth and others
- Work with 5V or Vbat input
- High quality 5V 2A BEC w/2S 6S voltage input range
- Built-in Inverter for S.BUS & S.PORT
- Integrated Silicone Damper for maximum FC functionality

Pinouts





Dimensions



Connections Overview





Connections

*<u>WARNING</u>: FC can support up to 6S, but make sure that other devices connected to VBAT also supports it.

Connect with Receivers

Spektrum Rx:

Identifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	115200 🔻		Disabled • AUTO •	Disabled AUTO	Disabled AUTO
UART1	115200 •		Disabled • AUTO •	Disabled AUTO	Disabled • AUTO •
UART2	115200 •		Disabled • AUTO •	Disabled AUTO	Disabled • AUTO •
UART3	115200 🔻		Disabled • AUTO •	Disabled V AUTO V	Disabled • AUTO •
UART4	115200 •		Disabled v AUTO v	Disabled AUTO	Disabled • AUTO •
UART5	115200 🔻		Disabled • AUTO •	Disabled V AUTO V	Disabled • AUTO •
UART6	115200 •		Disabled v AUTO v	Disabled V AUTO V	Disabled • AUTO •

Receiver

Serial-based receiver (SPEKSAT, 5 *

Receiver Mode

Note: Remember to configure a Serial Port (via Ports tab) and choose a Serial Receiver Provider when using RX_SERIAL feature.

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SPEKTRUM2048

Serial Receiver Provider

CONNECT RACEPIT WITH Spektrum Receiver





FrSky XSR Rx:

Note: If **telemetry** is not working with the FC, please **update the firmware** for the Rx **SBUS protocol**

Identifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	115200 🔻		Disabled v AUTO v	Disabled V AUTO V	Disabled V AUTO V
UART1	115200 🔻		Disabled v AUTO v	Disabled • AUTO •	Disabled T AUTO T
UART2	115200 🔻		Disabled • AUTO •	Disabled • AUTO •	Disabled v AUTO v
UART3	115200 🔻		Disabled v AUTO v	Disabled • AUTO •	Disabled T AUTO T
UART4	115200 🔻		Disabled • AUTO •	Disabled • AUTO •	Disabled v AUTO v
UART5	115200 🔻		SmartPort V AUTO V	Disabled • AUTO •	Disabled v AUTO v
UART6	115200 •		Disabled v AUTO v	Disabled • AUTO •	Disabled v AUTO v

Receiver

Serial-based receiver (SPEKSAT, 5 *

Receiver Mode

Note: Remember to configure a Serial Port (via Ports tab) and choose a Serial Receiver Provider when using RX_SERIAL feature.

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SBUS

Serial Receiver Provider

CONNECT RACEPIT WITH XSR FrSky RECEIVER





FrSky R-XSR Micro Rx:

Note: If telemetry is not working with the FC, please update the firmware for the Rx SBUS protocol

Identifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	115200 🔻		Disabled v AUTO v	Disabled • AUTO •	Disabled • AUTO •
UART1	115200 🔻		Disabled v AUTO v	Disabled v AUTO v	Disabled v AUTO v
UART2	115200 🔻		Disabled T AUTO T	Disabled • AUTO •	Disabled v AUTO v
UART3	115200 🔻		Disabled • AUTO •	Disabled • AUTO •	Disabled v AUTO v
UART4	115200 ¥		Disabled • AUTO •	Disabled • AUTO •	Disabled v AUTO v
UART5	115200 🔻		SmartPort AUTO	Disabled • AUTO •	Disabled v AUTO v
UART6	115200 ¥		Disabled AUTO	Disabled • AUTO •	Disabled v AUTO v



CONNECT RACEPIT WITH R-XSR FrSky Receiver





F.Port protocol

*Note: Make sure your Rx is running F.Port protocol firmware, R-XSR Firmware: 190311

Link download Firmware:

https://www.frsky-rc.com/wp-content/uploads/Downloads/Firmware/R- XSR/FW-RXSR-FPORT-190311.zip

Identifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	115200 🔻		Disabled v AUTO v	Disabled • AUTO •	Disabled v AUTO v
UART1	115200 🔻		Disabled • AUTO •	Disabled • AUTO •	Disabled • AUTO •
UART2	115200 🔻		Disabled v AUTO v	Disabled • AUTO •	Disabled v AUTO v
UART3	115200 🔻		Disabled • AUTO •	Disabled • AUTO •	Disabled v AUTO v
UART4	115200 •		Disabled v AUTO v	Disabled • AUTO •	Disabled v AUTO v
UART5	115200 •		Disabled v AUTO v	Disabled • AUTO •	Disabled v AUTO v
UART6	115200 •		Disabled v AUTO v	Disabled • AUTO •	Disabled v AUTO v

Receiver
Serial-based receiver (SPEKSAT, 5 Receiver Mode
Note : Remember to configure a Serial Port (via Ports tab) and choose a Serial Receiver Provider when using RX_SERIAL feature.
FrSky FPort ▼ Serial Receiver Provider

CONNECT RACEPIT WITH R-XSR FrSky Receiver





Disabled

▼ AUTO ▼

UART1	115200 🔻		Disabled v AUTO v	Disabled • AUTO •	Disabled • AUTO •		
UART2	115200 🔻		Disabled v AUTO v	Disabled • AUTO •	Disabled • AUTO •		
UART3	115200 🔻		Disabled v AUTO v	Disabled • AUTO •	Disabled • AUTO •		
UART4	115200 •		Disabled v AUTO v	Disabled • AUTO •	Disabled • AUTO •		
UART5	115200 🔻		Disabled v AUTO v	Disabled • AUTO •	Disabled • AUTO •		
UART6	115200 🔻		Disabled v AUTO v	Disabled • AUTO •	Disabled • AUTO •		
Receiver							
Serial-based receiver (SPEKSAT, S ▼ Receiver Mode							
Note: Remember to configure a Serial Port (via Ports tab) and choose a Serial Receiver Provider when using RX_SERIAL feature.							

Disabled V AUTO V

Disabled V AUTO V

***** TBS Crossfire Nano Rx:

115200 🔻

Configuration/MSP Serial Rx

CONNECT RACEPIT WITH TBS CROSSFIRE NANO RX

Serial Receiver Provider

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Identifier

USB VCP

CRSF



Connect with Video Transmitters

Build-in power switch for VTX:



<u>Note</u>: From factory, the VTX power jumper is set to always ON, desolder the jumper to use the power switch.

Stealth Long Range 5.8GHz VTX:

Identifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	115200 🔻		Disabled v AUTO v	Disabled V AUTO V	Disabled • AUTO •
UART1	115200 •		Disabled • AUTO •	Disabled V AUTO V	Disabled • AUTO •
UART2	115200 •		Disabled • AUTO •	Disabled V AUTO V	Disabled • AUTO •
UART3	115200 •		Disabled • AUTO •	Disabled V AUTO V	Disabled • AUTO •
UART4	115200 •		Disabled • AUTO •	Disabled • AUTO •	IRC Tramp ▼ AUTO ▼
UART5	115200 🔻		Disabled V AUTO V	Disabled V AUTO V	Disabled • AUTO •
UART6	115200 •		Disabled v AUTO v	Disabled V AUTO V	Disabled v AUTO v





• 051							
ldentifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals		
USB VCP	115200 🔻		Disabled • AUTO •	Disabled V AUTO V	Disabled v AUTO v		
UART1	115200 •		Disabled • AUTO •	Disabled V AUTO V	Disabled v AUTO v		
UART2	115200 •		Disabled • AUTO •	Disabled V AUTO V	Disabled v AUTO v		
UART3	115200 🔻		Disabled • AUTO •	Disabled V AUTO V	Disabled v AUTO v		
UART4	115200 •		Disabled v AUTO v	Disabled V AUTO V	IRC Tramp • AUTO •		
UART5	115200 •		Disabled v AUTO v	Disabled V AUTO V	Disabled v AUTO v		
UART6	115200 •		Disabled v AUTO v	Disabled V AUTO V	Disabled • AUTO •		

Using Tramp HV VTX:



Using TBS Unify Pro 5G8 HV SE VTX:

ldentifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	115200 🔻		Disabled • AUTO •	Disabled V AUTO V	Disabled • AUTO •
UART1	115200 •		Disabled v AUTO v	Disabled V AUTO V	Disabled • AUTO •
UART2	115200 •		Disabled v AUTO v	Disabled V AUTO V	Disabled v AUTO v
UART3	115200 •		Disabled v AUTO v	Disabled V AUTO V	Disabled v AUTO v
UART4	115200 •		Disabled v AUTO v	Disabled V AUTO V	TBS SmartAuc • AUTO •
UART5	115200 •		Disabled v AUTO v	Disabled V AUTO V	Disabled v AUTO v
UART6	115200 •		Disabled v AUTO v	Disabled V AUTO V	Disabled • AUTO •



TBS UNIFY PRO 5G8 HV SE (MMCX)



ldentifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	115200 🔻		Disabled v AUTO v	Disabled • AUTO •	Disabled • AUTO •
UART1	115200 🔻		Disabled v AUTO v	Disabled • AUTO •	Disabled • AUTO •
UART2	115200 🔻		Disabled v AUTO v	Disabled • AUTO •	Disabled • AUTO •
UART3	115200 •		Disabled v AUTO v	Disabled • AUTO •	Disabled • AUTO •
UART4	115200 🔻		Disabled v AUTO v	Disabled • AUTO •	TBS SmartAuc V AUTO V
UART5	115200 •		Disabled v AUTO v	Disabled • AUTO •	Disabled v AUTO v
UART6	115200 •		Disabled v AUTO v	Disabled V AUTO V	Disabled • AUTO •





TBS UNIFY PRO NANO 5G8

Using TBS Unify Pro 5G8 HV Race 2 VTX:

Identifier	Configuration/MSP	Serial Rx	Telemetry Output	Sensor Input	Peripherals
USB VCP	115200 🔻		Disabled v AUTO v	Disabled • AUTO •	Disabled • AUTO •
UART1	115200 •		Disabled v AUTO v	Disabled • AUTO •	Disabled • AUTO •
UART2	115200 🔻		Disabled v AUTO v	Disabled • AUTO •	Disabled • AUTO •
UART3	115200 •		Disabled v AUTO v	Disabled • AUTO •	Disabled • AUTO •
UART4	115200 🔻		Disabled v AUTO v	Disabled • AUTO •	TBS SmartAuc AUTO
UART5	115200 🔻		Disabled v AUTO v	Disabled • AUTO •	Disabled • AUTO •
UART6	115200 •		Disabled v AUTO v	Disabled V AUTO V	Disabled • AUTO •



TBS UNIFY PRO 5G8 HV - RACE 2



Camera Connections

Built-in Camera switcher:



<u>Note:</u> When USER2 is not enabled, the VTX will get the video signal from Camera 1, and when using dual cameras they need to be powered from VBat (not on 5 volt)



***** Using with FOXEER (Arrow Mini, Arrow Micro, Monster)



Using with Caddx SDR2 Plus Race



Bluetooth Connection

Identifier Configuration/MSP		Serial Rx	Telemetry Output	Sensor Input	Peripherals		
USB VCP	115200 🔻		Disabled v AUTO v	Disabled • AUTO •	Disabled • AUTO •		
UART1	115200 •		Disabled v AUTO v	Disabled V AUTO V	Disabled v AUTO v		
UART2	115200 •		Disabled • AUTO •	Disabled V AUTO V	Disabled • AUTO •		
JART3	115200 •		Disabled v AUTO v	Disabled V AUTO V	Disabled v AUTO v		
JART4	115200 •		Disabled • AUTO •	Disabled V AUTO V	Disabled v AUTO v		
JART5	115200 •		Disabled v AUTO v	Disabled V AUTO V	Disabled v AUTO v		
JART6	115200 🔻		Disabled v AUTO v	Disabled V AUTO V	Disabled v AUTO v		





How to use Speedy Bee App

- Step 1: Open Speedy Bee App.
- Step 2: Tap to start scanning.
- **Step 3:** Select the Bluetooth name.
- **Step 4:** Configure the Flight Controller.

uil VN Mobifore ♥ 15:40		all VN Spo	Mobifone 🗢 15:41 @ 76% 📼 zady Bazz 🕢 Talk to us	al VN ope	Mobilione ♥ 15:41 zacdy Baa	76% Disconnect
×	Welcome to Speedy Bee	₹	Device list page			No detailest torp tourd
4		S.	Other BLE Peripherals			
я			Unnamed	1	Setup	
			DOCK-KING	¥	Pitch -25.7 deg Roll 13.7 deg	is, offset: 0.0 degre
	-		TEST	٠	10	26
			♪			
			Racepit	⊕		
				ф ф	Info Arming Disable Flags	3, 8, 17
	Tap to start scanning			•-	No valid receiver s	ignal is detected
	1.1.1(0182)		Refresh Cancel		Calibrate Accelerometer	

Connect with ESC 4 in 1

<u>*WARNING</u>: FC can support up to 6S, but make sure that other devices connected to VBAT also supports it.

JST SH 1.0mm with 10 or 8 pin connectors is included. Insert the wires in the order that matches your ESC.





Hobbywing XRotor Micro 45A 3-6S:





✤ AIKON AK32 55A 3-6S:





***** DALRC ENGINE 40A Pro 3-5S:





***** T-Motor F45A 32bit 6S:





Holybro Tekko32 35A 3-6S:





Holybro Tekko32F3 Metal 65A 4-6S:





✤ Anniversary Special Edition Racerstar REV35 35A 3-6S:





SucceX 60A V2 Plus 4-5S:





Tips How to flash firmware for Racepit



Step 1: Hold Boot button on FC and plug into PC via USB cable to go into DFU mode

- Step 2: Turn on Full chip erase
- Step 3: Select target FF_RACEPIT
- Step 4: Choose new FW version for Flight Controller
- Step 5: Click Load Firmware [Online] to download FW
- Step 6: Click Flash Firmware to flash FW for Flight Controller

Guideline configuration OSD with BetaFlight

- Step 1: Connect FC with computer via USB cable.
- Step 2: Open Betaflight Configurator.



Betaflight



Step 3: Click **Connect** on **Betaflight** interface then go to **OSD** tab. Enable the elements that you wish to use and drag them to a desired position on the preview display.



Step 4: After configuring OSD please click Save to save your configuration.

How to access camera settings by Transmitter

Stick command:

- THROTTLE MIDDLE
- YAW RIGHT
- PITCH MIDDLE
- ROLL MIDDLE



To navigate through menu:

- PITCH/ROLL sticks are used to navigate
- YAW stick is used to adjust / change values





How to access Betaflight OSD by Transmitter

Stick command:

• THROTTLE MIDDLE + YAW LEFT + PITCH FULL + ROLL MIDDLE



To navigate through menu:

- PITCH/ROLL sticks are used to navigate
- YAW stick is used to adjust / change values

×	
MAIN	
> P R O F I L E	>
FEATURES	>
0 S D	>
FC ·FW INFO	>
MISC	>
EXIT	
SAVE · EXIT	
SAVE ·REBOOT	

VTx configuration by Transmitter

From **Betaflight OSD** menu use stick go to: Main menu > Features





• Select SA if using TBS Unify Pro VTx



• Select TR if using Stealth Long Range VTx or Tramp HV VTx



STEALTH LONG RANGE VTX

TRAMP HV VTX

PIDs tuning on Betaflight OSD

From Betaflight OSD menu use stick go to: Main menu > Profile > PID

PID		1	
> R O L L	P		40
ROLL	1		40
ROLL	D		30
PITCH	P		58
PITCH	1		50
PITCH	D		35
YAW	P		70
YAW	0		45
YAW	D		20
BACK			





Thanks for using our product