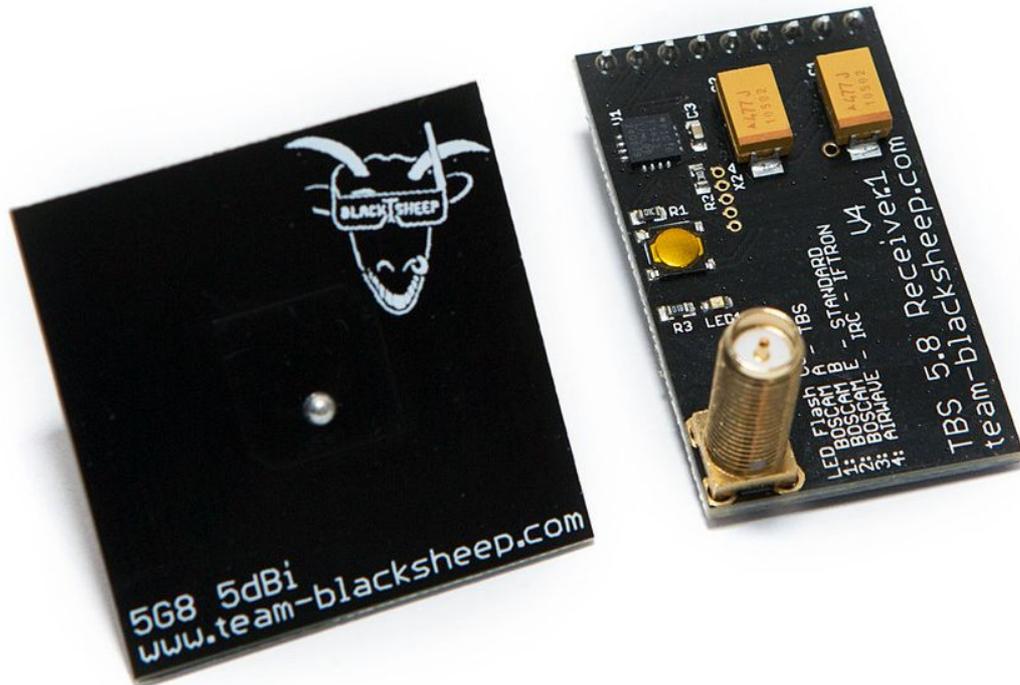

TBS Dominator 5G8 Receiver

Integrated video receiver for Fatshark Dominator fpv goggles. Compatible with Dominator, Dominator V2 and Dominator HD

Revision 2015-05-23



The TBS DOMINATOR 5G8 video receiver is the only receiver you'll ever need for your video goggles. Tiny form factor, low power consumption and support for all channels on the 5G8 band. In the latest revision there is a high-speed channel-scan feature. Toggle UP and DOWN channel on your Dominators in quick sequence to activate the scan mode. Repeat until the desired video feed shows up. Simple, fast and effective.

Key features

- 40-channel compatibility across 5 bands, 8 channels each
- Channel scan trigger
- Included 5dBi circular polarized patch antenna designed by IBCrazy (Video Aerial Systems LLC)
- Serial input protocol to access functions (for our DIY folks!)



Table of Contents

[Specifications](#)

[Channel & Band Selection](#)

[Channel Scan](#)

[Things to note:](#)

[Supported Frequency Table](#)

[Serial Communication](#)

[UART Protocol](#)

[Available commands:](#)

[Declaration of Conformity](#)

[FCC Information](#)

[FCC Label Compliance Statement](#)

[RF Exposure Statement](#)

[Good practices](#)



Specifications

Input voltage:	3.5 - 5V
Channels:	40Ch, 5640MHz - 5950MHz
Channel selectors:	Toggle bands with button on board, 3-pin dipswitch for channels
Antenna connector:	RP-SMA Female
Working temperature:	0 - 40°C
Dimensions:	25 (H) x 42 (W) mm
Weight:	11.0g; 20.5g including antenna
Kit contents:	1x TBS DOMINATOR 5G8 Receiver 1x 5dBi patch antenna



Channel & Band Selection

The Fatshark Dominator goggles allow you to toggle between 8 channels in a single band. Our Dominator RX module has an additional button that can be used to toggle between bands. An LED indicates which band you are in with flashes (1 flash for band 1, 2 flashes for band 2, you get the idea :). The flash codes indicate the following bands, for a list of supported frequency check out the [supported frequency table](#).

1. Band A (Team BlackSheep)
2. Band B
3. Band E (various brands)
4. Airwave (ImmersionRC / Fatshark)
5. Race Band



Channel Scan

A new feature introduced in the V1.3 of the Dominator 5G8 Receiver is the ability to scan across channels. A quick UP/DOWN channel toggle activates the scan mode. The algorithm searches for a video signal and stops once it has found one. This channel is also stored in memory until you toggle channels on your Fatshark goggles. The scan will first go through the currently active band and will only switch to the next higher band if either no active channel feature is found, or the scan feature is toggled twice within 7 seconds of finishing the previous scan.

Things to note:

- UP/DOWN combo does not work when you're on Channel 8 in your Fatshark goggles
- The band and channel selected may not exactly match your band and channel of your transmitter, but it may be 1-2MHz off. Always verify that you are on the right band. A small hole in the receiver cover gives you visual access to the flashing LED.

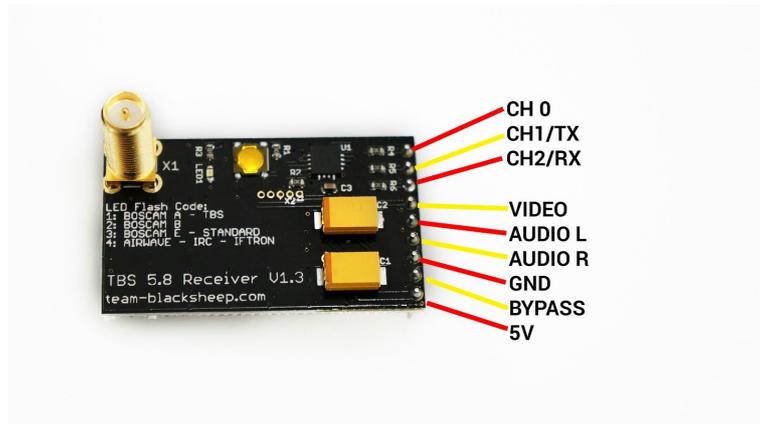


Supported Frequency Table

	1 - Band A	2 - Band B	3 - Band E	4 - Airwave	5 - Race
CH1	5865	5733	5705	5740	5658
CH2	5845	5752	5685	5760	5695
CH3	5825	5771	5665	5780	5732
CH4	5805	5790	5645	5800	5769
CH5	5785	5809	5885	5820	5806
CH6	5765	5828	5905	5840	5843
CH7	5745	5847	5925	5860	5880
CH8	5725	5866	5945	5880	5917

Serial Communication

The Dominator 5G8 Rx can be “remote-controlled” from a separate device via UART. Instead of connecting a dipswitch to the CH1/CH2/CH3 pins, a serial communication can be used. This makes sense if you are planning to use our modular receiver in your own projects such as custom ground-stations. Please refer to the pinout of the module below.



On startup, the Dominator receiver will wait for 1 second and listen for a UART command. If there is no UART input during that time, the PIN mode will be used (e.g. Fatshark Dominator, analog dipswitch).

To activate UART, send the command (0x01). The LED will turn ON and OFF every 500 milliseconds waiting for user instructions.



UART Protocol

Type: USART 9600bps 8n1

Message contents:

- START CODE: 2 bytes (0xAA 0x55)
- LENGTH: 1 byte
- COMMAND: 1 byte
- END CODE: 1 byte (0x0D)

Available commands:

Action	Command	Example
Turn on UART mode	(0x01)	0xAA 0x55 0x03 0x01 0x0D
Turn off UART mode	(0x02)	0xAA 0x55 0x03 0x02 0x0D
Go to Previous Channel	(0x03)	0xAA 0x55 0x03 0x03 0x0D
Go to Next Channel	(0x04)	0xAA 0x55 0x03 0x04 0x0D
Scan Channel	(0x05)	0xAA 0x55 0x03 0x05 0x0D
Set Channel (0-31, add 0x80). Ex. 0x82 is channel 2.	(0x06)	0xAA 0x55 0x04 0x06 0x82 0x0D
Set Frequency (Freq 5865 in ASCII). Frequency support range is 5640 – 5950 MHz.	(0x07)	0xAA 0x55 0x07 0x07 0x35 0x38 0x36 0x35 0x0D
Get Current Channel and RSSI	(0x08)	0xAA 0x55 0x03 0x07 0x0D <i>The RX will return ASCII "RSSI: XXXX Channel: XX"</i>



Declaration of Conformity



EC - DECLARATION OF CONFIRMITY

We affirm that the electrical equipment manufactured by us complies with the requirements of the EC Council Directive on electromagnetic compatibility 2004/108/EC

Manufacturer:

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Description of the appliance:

5.8 GHz Video Tx/Rx

Trade name and model of appliance:

TBS Dominator Rx (5G8) (A-RX58-DOMIN)

Applicable Standard (s):

- EN55022:2010 EN61000-3-2:2006+A1:2009+A2:2009
- EN55024:2010 EN61000-3-3:2008

Assumption of conformity is based on the application of the harmonized standards and, when applicable or required, a European Community notified body certification, as shown in the attached schedule.

February 27, 2015



Raphael Piker, CEO
TBS Avionics Co Ltd.

FCC Information

FCC Label Compliance Statement

Operation is subject to the following three conditions:

1. This device may not cause harmful interference
2. This device must accept any interference received including interference that may cause undesired operation.
3. The operator of this device needs to have a valid HAM license

RF Exposure Statement

This device has been evaluated to meet the FCC RF exposure requirement when used in combination with the genuine TBS CORE accessoires and operated with a minimum distance of 20 cm between the antenna and your body.



Good practices

We have compiled a list of all of practices which have been tried and tested in countless environments and situations by the TBS crew and other experienced FPV pilots.

Follow these simple rules, even if rumors on the internet suggest otherwise, and you will have success in FPV.

- Start with the bare essentials and add equipment one step at a time, after each new equipment was added to proper range- and stress tests.
- Do not fly with a video system that is capable of outperforming your R/C system in terms of range.
- Do not fly with a R/C frequency higher than the video frequency (e.g. 2.4GHz R/C, 900MHz video).
- Monitor the vitals of your plane (R/C link and battery). Flying with a digital R/C link without RSSI is dangerous.
- Do not use 2.4GHz R/C unless you fly well within its range limits, in noise-free environments and always within LOS. Since this is most likely never the case, it is recommended to not use 2.4GHz R/C systems for longer range FPV.
- Do not fly at the limits of video, if you see noise in your picture, turn around and buy a higher-gain receiver antenna before going out further.
- Shielded wires or twisted cables only, anything else picks up RF noise and can cause problems.
- When using powerful R/C transmitters, make sure your groundstation equipment is properly shielded.
- Adding Return-To-Home (RTH) to an unreliable system does not increase the chances of getting your plane back. Work on making your system reliable without RTH first, then add RTH as an additional safety measure if you must.
- Avoid powering the VTx directly from battery, step-up or step-down the voltage and provide a constant level of power to your VTx. Make sure your VTx runs until your battery dies.
- Do not power your camera directly unless it works along the complete voltage range of your battery. Step-up or step-down the voltage and provide a constant level of power to your camera. Make sure your camera runs until your battery dies.
- A single battery system is safer than using two dedicated batteries for R/C and FPV. Two batteries in parallel even further mitigate sources of failure.
- For maximum video range and "law compatibility", use 2.4GHz video with high-gain antennas.
- When flying with R/C buddies that fly on 2.4GHz, or when flying in cities, it is perfectly possible to use 2.4GHz video provided you stick to the channels that do not lie in their band (CH5 to CH8 for Lawmate systems, available from TBS).
- Do not use diversity video receivers as a replacement for pointing your antennas, diversity should be used to mitigate polarization issues.



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- Improving the antenna gain on the receiver end is better than increasing the output power (except in RF-noisy areas). More tx power causes more issues with RF on your plane. 500mW is plenty of power!
 - Try to achieve as much separation of the VTx and R/C receiver as possible to lower the RF noise floor and EMI interference.
 - Do not buy the cheapest equipment unless it is proven to work reliably (e.g. parts falling off, multitudes of bug fix firmware updates, community hacks and mods are a good indicator of poor quality and something you do NOT want to buy for a safe system). Do due diligence and some research before sending your aircraft skyward.

Manual designed by ivc.no, written by TBS.

