

# FAT SHARK

## RC VISION SYSTEMS

**DOMINATOR HD3  
MODEL FSV1076**

**USER MANUAL**



**Revision A 11/01/2016**

For more product information, please visit:

[www.fatshark.com](http://www.fatshark.com)

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## Introduction

Congratulations on purchasing the Fat Shark DominatorHD3 modular SVGA FPV goggles with integrated DVR for analog recording. To ensure your continued enjoyment, please take the time to read through this operating manual thoroughly before using.

## Product Compatibility

The DominatorHD3 has been designed to adhere to established video standards and is compatible with any product also adhering to accepted video standards. Due to the high number of different manufacturers and variation in quality, it's impossible for us to have tested with every product combination and some troubleshooting may be required if mix/matching components. The Dominator HD3 has been thoroughly tested with ImmersionRC gear. For best results and no compatibility issues, Fat Shark recommends ImmersionRC gear for your accessory products.

### ***IMPORTANT!!!! Product Warning!!!!***

***DO NOT LEAVE HEADSET EXPOSED TO DIRECT SUNLIGHT. SUNLIGHT WILL MAGNIFY THROUGH THEOPTICS AND BURN HOLES IN THE LCD COLOR FILTER (appears as white open areas).***

***THIS WILL NOT BE COVERED BY WARRANTY. KEEP GOGGLES IN PROTECTIVE CASE WHEN NOT IN USE.***

# Product Contents

**Carry Case**



**DominatorHD3 Headset  
w/ Face Plate**



**7.4V, 1800mAh Li-po Battery  
w/ LED Indicator**



**Battery Discharge Adapter**



**AV Cable (2003)**



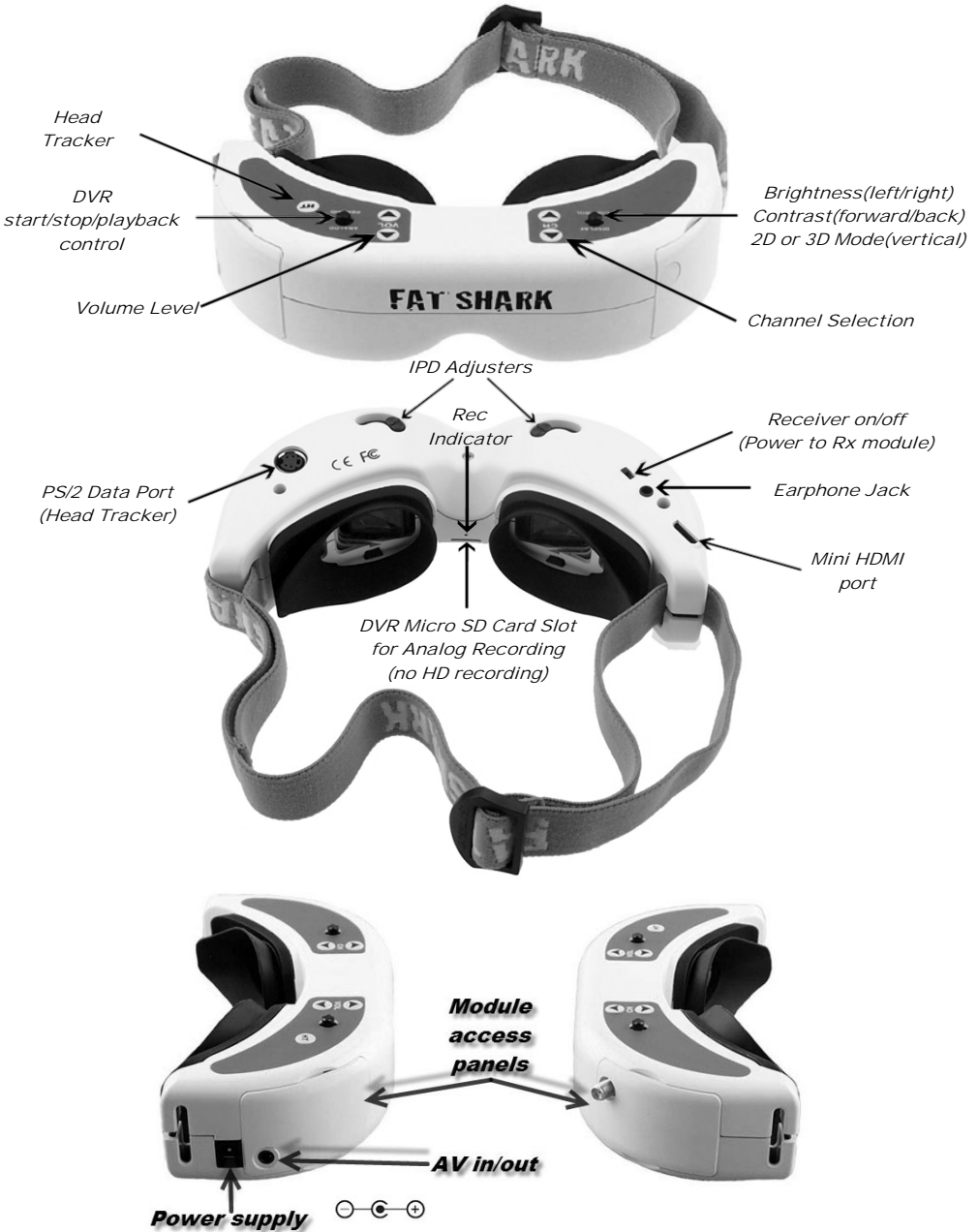
**Mini to Mini HDMI Cable  
w/ Adapters**



**Quick Start Manual**



# Controls Diagram



# Headset Operation

## Controls

**Brightness/contrast control:** pressing left and right increases/decreases display contrast. Press forward/back increases/decreases brightness.

**Display mode selection:** Vertically depressing the contrast/brightness button scrolls through the following modes: Analog 2D/ Analog 3D/HDMI 2D/ HDMI 3D. OSD indicates mode.

**Channel select:** Pressing channel up/down buttons will cause the channel to incrementally increase/decrease from channels 1 to 8 (see relevant receiver module for channel map). Audio beep on channel change. A long beep sounds on channel top and bottom limits.

**Low battery warning:** Audio warning if input voltage drops below 6.8V

**Volume control:** each press of button increments volume up or down. Standard earphones can be used with the Dominator HD3.

**Head tracker:** (refer to online Trinity documentation at <http://fatshark.helpscoutdocs.com/>)

**RX power switch:** The RX module power is independently controlled via this switch. If a module is inserted, but desired video source is via the AV cable; the RX module needs to be turned off to avoid image conflict.

**DVR control:** Connect AV cable to AV out port on right side of headset. Connect recording device to cables and set up as per manufacturer directions.

## DVR Operation

1. SD card **MUST** be formatted before use to ensure stable recording.

2. DVR is for analog recording only, no HD recording.

3. Do not place alternative files that you want to keep into the DVR. The DVR may not recognize the file space and write over your files. Use dedicated SD card.

### Recording:

After powering goggles, turn on DVR by depressing vertically and holding the DVR control button for 1 full second (**long press**).

RED LED should now show solid.

Ensure SD card is inserted and **short press** to start recording (RED LED will slowly FLASH (~2 times/second). Single beep on record start.

**Short press** again stops recording (turns to solid RED LED). Double beep on record stop.

### Playback

Note: requires turning off external receiver and removing any other AVin sources (to not conflict with menu navigation OSD).

After turning on DVR and in stop record mode (SOLD RED LED) depress and hold DVR button for 1 second (**long press**) to enter menu.

### Menu Navigation

**Playback** (press right to enter)

Now can see: Preview shot with file number

press **up/down** to change file number

press **right** to play

**Up/down** controls playback speed/direction

**Right press** pause/play

**Left press**, back to main menu

**Format** (press right to enter)

Execute (press right)

**Record** (press right)

Now can see:

**default** (no recording until press the button to start)

**auto start** (auto start recording when power on)

**auto start continuous** (auto start recording when power on and overwrite the file if space is full)

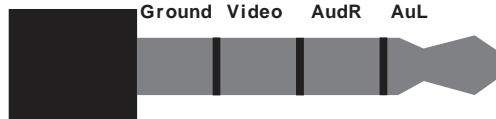
press **up/down** to select the recording mode

press **right to enter** to confirm

Pressing **left** from main menu exits menu

## AV Cable Pinout

**3.5mm AV Connector:** Yellow: Video,  
White: Audio Left, Red: Audio Right



## HDMI Input

The HDMI port can be connected to HDMI devices via a Mini to Mini HDMI cable (adapters also included). Best to first connect to the HDMI device then apply the power from the battery (allow the HDMI device to initiate using power supplied through the cable by the host device before powering goggles). Disconnect battery when switching between devices to clear the settings.

Note (1): Most HDMI connectivity issues are due to either incorrect monitor settings or faulty HDMI cable. Before assuming the HDMI is defective, try with alternative HDMI sources and alternative cables.

Note (2): Receiver needs to be powered off in HDMI mode to prevent conflicting signals being sent to the display.

## Powering Options

If multiple power sources are supplied at same time (i.e. Futaba radio and head strap battery) the headset will draw power from the highest voltage.

## ezUHF TX/JR Module

ImmersionRC's ezUHF transmitter and JR transmitter module can supply power (and head tracking control) to the Dominator HD3 goggle via a minDIN cable (included with the ezUHF).

## Futaba Radio

The Dominator HD3 can be powered off a Futaba radio via the Data Cable.

Note: Best to upgrade the Futaba radio to a 3S 2200mAh radio lipo pack for this type of connection as the headset will cause extra drain on the transmitter battery pack. A normal NiMh radio battery will not have sufficient battery life for safe flying.

## Base Station

Use the AV cable to connect the video/audio.

AV cable has Y splitter with male and female DC head to share power with the external RX supply (up to 13V). We do not recommend powering the goggles off RC packs without our Safety Shield (see accessories) as RC packs have no current limiting circuitry to prevent fires caused from shorts.

## 1800mA Battery Pack

The Fat Shark 1800mAh pack with a row of stylish blue LED indicators allows you to visually check its remaining capacity (4 levels) to prevent a sudden power/vision lost. Large 1800mAh capacity pretty much lets you fly all day. It seats securely in the headset strap pocket. The soft silicone battery cable extends out of the top of the pack to avoid contact with head strap. Barrel connector cable features high strand count wire for flexibility and long life. Wire stress is minimized by the additional rubber gasket around the cable exit. Balancing circuit is already built inside, for charging, only need to connect the barrel connector via the supplied adapter cable to RC charger.



Note: this battery can still be charged via the barrel connector with the original Fat Shark headset battery charger.

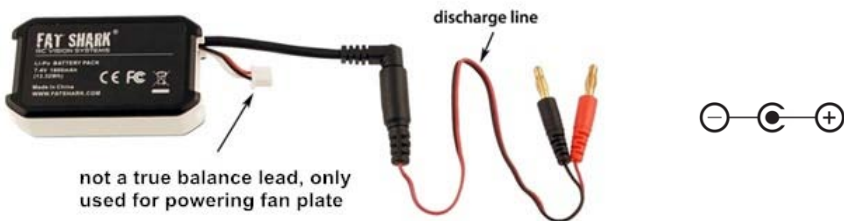
## Battery Charging

This lithium polymer battery pack is equipped with an internal cell balancing circuit that allows the battery to be charged from standard RC battery chargers. Charge the battery by connecting the barrel connector via the supplied adapter cable and setting the charger for 7.4V, 1800mAh Li-Po, 1A (1C). Some RC chargers require a balance lead connector to be connected to the charger, or else the charging attempt will result in an error. **The balance lead on the battery is not a true balance lead and is only used for powering the optional fan faceplate.** To charge this battery set your LiPo charger to Fast Charge mode, which usually disables the balance lead requirement (set at 7.4V – 2cell - maximum 1.8A).

On some LiPo chargers none of the above procedures will work. In that case please contact support for alternate charging options at: [support@fatshark.com](mailto:support@fatshark.com)

**Note:** If battery becomes fully discharged or shorted, an internal safety circuit will trip. To reset the battery, tap 9V direct to the barrel connector via the discharge adapter cable's banana connector. This will instantly reset the battery and it can be recharged as normal.

Connection to Standard RC Chargers



### General Lithium Polymer safety and handling instructions:

- NEVER balance charge this battery.
- NEVER leave a LiPo battery unattended while being charged or discharged
- ALWAYS monitor the battery and charger during the entire charging process.
- ALWAYS charge LiPo batteries in a fireproof location.
- ALWAYS have a lithium approved "class D type" fire extinguisher available.
- NEVER charge LiPo batteries at currents greater than the "1C" rating of the

battery ("C" equals the rated capacity of the battery).

- NEVER continue to charge LiPo batteries if the charger fails to recognize full charge. Overheating or swelling of the LiPo cells is an indication of a problem and the battery should be disconnected from the charger immediately and placed in a fireproof location
- ALWAYS discontinue charging or discharging a LiPo immediately if at any time you see smoke or the battery starting to swell up and leave it in a safe fireproof location for approximately 30 minutes.

## Accessories

### Trinity Head Tracker



**Head Tracker Installation**

Refer to head tracker module manual for up to date and detailed menu setup instructions. For individual radio setup instructions please visit our head tracking support forum at [www.FPVlab.com](http://www.FPVlab.com) Forum: Sponsors Gate/Fat Shark/Head tracker radio support.

### Receiver Modules (1.3G/2.4G/5.8G)



**Remove door panel**  
**Remove hole plug**

**Insert RX module**  
**Align pins to connector**

**Snap door panel back into place**

**Door panel will hold Rx module snug.**

Refer to module manuals for frequency chart.

**Note: Dominator HD3only guarantees compatibility with NexwaveRF modules (Fat Shark/ImmersionRC)**



## Diopter Lens

For near sighted users, diopter lens insert sets are available that include -2, -4 and -6 dpt. Peel off rubber eye cups and insert into slots seated in front of the lens. Replace rubber.



## SpiroNET Circular Polarized Antenna

The best performance enhancement for your dollar. SpiroNET circular polarized antennae are manufactured to machine tolerances and final tested with top end RF equipment for the best performing CP antenna on the market.

CP antennae naturally reject multipathing (biggest cause of 5G8 video breakup) and have no mismatch polarization when your aircraft banks – resulting in no rude range losses during acrobatic flight.



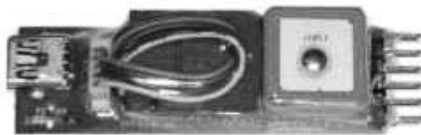
## Tiny Telemetry from ImmersionRC

Conventional OSDs offer a host of features, some of which you don't need if you're just flying FPV around your local field or have a small and light FPV plane that can't really carry a full OSD. All you really want in those cases is for your tracking antenna to point at the plane accurately and have GPS positional data along with vital statistics such as battery voltage and current consumption.

TinyTelemetry is a minimal GPS locator that sends EzTelemetry data for the EzAntennaTracker down one of the audio channels on the audio/video transmitter. The EzAntennaTracker will then track the plane and offer battery statistics on its LCD display as well as other telemetry data such as positional info etc.

The new v2.0 EzAntennaTracker will also offer audible warnings for battery voltage and total current consumption.

The Tiny Telemetry plugs into the transmitter's dongle power supply located on the back of the transmitter.



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# Specifications

## Headset Specifications:

### Optics:

FOV (field of view):	42 degrees diagonal
Type:	plastic optics
Interpupillary Distance (IPD):	59 to 69 mm (adjustable)
Optional Diopter Lens Inserts:	-2, -4, -6 dpt

### Display:

800 X 600 (SVGA) LCD  
Polarized LED backlight  
NTCS/PAL auto selecting  
Side/Side 3D

### Audio:

Stereo

### User Controls:

Channel Selection  
Volume Control  
Mode Selection (*Wired/Wireless*)  
Display Control  
DVR Control  
HT Control

### Electrical:

Power Supply:	7 - 13 V (2S/3S supply – fan plate only accepts 2S input)
Power Consumption:	440mA wireless/ 250mA direct mode (no RX) (@7.4V nominal)
RF Modules (Optional):	Infinite channel support on multiple bands
Head Tracker (Optional):	Modular (sold separately)
Analog DVR:	MicroSD support to 32 GB Record Rate: 6Mbps (MJPG compression, 30 fps, AVI) File playback (native recording, no codec support) Upgradeable via SD card

### Battery:

7.4V, 1.8A (13.32Wh)

### Interface:

3.5mm AV in/out port  
Power in port  
3.5mm 3p earphone port  
MiniDIN4 data port (head tracking)  
MicroSD  
Mini HDMI (720p 50/60 Hz, 16 to 9 display ratio)  
RF module port

### Mechanical:

Dimensions:	Ergonomic molded headset w/ adjustable headband 169.2 x 80 x 45.5 mm
Weight:	152 g

### Package size:

742.5g, 21x 14 x 11cm

## Operational Advice

- **For best performance**, select a channel that has the least amount of interference. While the transmitter is turned OFF, turn on the video headset and look at the screen as you check each channel. Clear channels will have a consistent static background. Channels with interference will have horizontal static lines.
- **Always perform a range test before flying.** This includes AV and RC controls. Some RC receivers can be affected by the proximity of other electronic devices particularly the AV TX.
- Try to space out your components as much as possible to avoid interference to your RC control range (keep stuff away from RX)
- Until experienced, practice flying in a familiar area to avoid becoming disorientated.
- Due to antenna characteristics, there is a “null” in line with antenna direction. You may experience excessive video breakup when flying overhead
- 5.8GHz signal strength drops off very fast (2.4 GHz is more gradual). If using 5.8GHz, stay safely within solid AV range.
- **For maximum distance** it is very important that a clear line of sight exists between the transmitter and the video headset. 2 of the worst causes of interference are human bodies and reinforced concrete.
- Place your TX antenna in open area in a vertical orientation
- **Multipathing** (reflections off buildings/ tall objects) causes signal cancellation and result in broken video. Fly in open areas away from buildings or other tall structures (i.e. barns, hills).
- The headset may become warm to touch during use particularly in the top center region. This is normal. If you are unsure, run the headset for 30 minutes fully powered before flying to ensure normal operation.
- Even if you don't require any license to operate this device, you are still legally responsible for operating in a responsible manner.

## Technical Support

**Documentation/ troubleshooting:** <http://fatshark.helpscoutdocs.com/>

**Forum:** [www.fpvlab.com](http://www.fpvlab.com) (SPONSORS GATE/ FAT SHARK/SUPPORT)

**Support:**[support@fatshark.com](mailto:support@fatshark.com)

**Note support should be attempted in the following manner. Initial enquiries to Fat Shark support will expect you to have exhausted the online and retailer resources:**

- 1) Research Fat Shark helpdocs.
- 2) Research FPV Lab forum for relevant posts.
- 3) Post on Forum if can't find answer.
- 4) Contact retailer for support.
- 5) email Fat Shark support.

## Trouble Shooting

Observation	Possible Cause/Solution
No image, display is completely dark	- No power supplied. Check power connections.
No image, display is glowing dark grey	- If using wireless module, turn on RX power on bottom of headset. - If using AV in cable, check video source. - Ensure TX is on and camera connections solid
Lots of interference lines (horizontal lines) with 2.4Ghz receiver	- Choose a cleaner channel. - Change to 5.8Ghz AV - Check correct frequency antenna is used
Poor image, dark or not enough contrast	- Adjust display with contrast/brightness button
Lots of interference lines (horizontal lines) when using 5.8Ghz receiver	Check to see if cause is harmonic interference from 2.4Ghz RC controller (turn radio on/off). - Use CH1 on TX/headset (Ch1 not affected by 2.4Ghz) - check correct frequency antenna is used
Head tracker not working (no response or beeping)	- Ensure module pins are aligned correctly into headset socket
Short range	- Ensure correct antenna are installed - Check for other sources of interference - Ensure transmitter has clear LOS to headset. Test in wide open area, away from any obstructions
Short range (con't)	- Ensure that a compatible antenna is installed. 2.4Ghz must use a 2.4Ghz antenna and 5.8Ghz must use a 5.8Ghz antenna - do not use other manufacture antenna, they may be dual band or may be reverse SMA (no center pin to connect to receiver)
White dots on LCD display	You were careless and left goggles exposed to sun. Sun burnt off LCD color filter.
Lens fogs up	Cooler optical lens are heated by your humid face causing condensation. - Power anti-fog mini fan on faceplate from headset battery, each time press the button can run 8-10m.
Head tracker does not work (can enter menu)	- Radio doesn't support selective trainer function - Settings incorrect - Trainer switch on RC controller not activated - In Pause mode
Head tracker drifts or has excessive error correction (jumpy)	- Operating inside so compass sensor not correct (use outside) - RC radio interfering with compass sensor (keep RC controller antenna away from headset) - Standing near large metal object (such as a car)

## Warranty

The system can be exchanged for a new unit within 7 days for any manufacturing defects if returned in new condition. The video headset will be warranted for repair for 2 years if no signs of excessive use. Buyer will be responsible for shipping costs. If beyond the warranty period we will provide repair services.