Introduction

Congratulations on purchasing the Fat Shark Teleporter V5 headset with amazing digital head tracking to simulate pan/tilt on a fixed camera (head tracker can alternatively control a pan/tilt camera through a supporting radio). To ensure your continued enjoyment, please take the time to thoroughly read through this operating manual before using.

Product Compatibility

The Teleporter 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 Teleporter 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 THE OPTICS AND BURN HOLES IN THE LCD COLOR FILTER. THIS WILL NOT BE COVERED BY WARRANTY. KEEP GOGGLES IN PROTECTIVE CASE WHEN NOT IN USE.
Product contents

Carry case

Teleporter Headset

5G8 Antenna (TX, RX)

Battery (and discharge lead)

Lens cloth

Manual
Controls Diagram

Display control: pressing left and right increases/decreases display contrast. Press forward/back increases/decreases brightness.
Head Tracker control:

Long Press: Activate/deactivate digital head tracking. Depressing display control button (long press, vertical axis) toggles head tracker mode. On power up is normal (no zoom) and the display will show entire camera image. On HT digital mode, the image will zoom in and image will digitally pan and tilt in response to head motion.


Note analog head tracking output is always on.

RX power switch: The receiver module power is controlled by this switch. If viewing video source via the AV cable; the RX module needs to be turned off to avoid image conflict.

Channel select: Pressing channel up/down buttons will cause the channel to incrementally increase/decrease. Audio beep sounds on channel change. A long beep sounds on channel top and bottom limits.

Note: Fat Shark only guarantees compatibility with Fat Shark or ImmersionRC transmitters.

CH1: 5740 MHz  CH2: 5760 MHz  CH3: 5780 MHz  CH4: 5800 Mhz  CH5: 5820 MHz  CH6: 5840 Mhz  CH7: 5860 MHz

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 Teleporter (not included).

Head Tracking Menu Navigation

To enter head tracking menu, hold head tracker button while inserting battery and immediately release the button after barrel insertion. Note that reversing pan/tilt direction will affect digital head tracking as well.

Beep code Mode
1 short beep: P/T on ch 5/6
2 short beep: P/T on ch 6/7
3 short beep: P/T on ch 7/8
4 short beep: reverse pan direction
5 short beep: Reverse tilt direction
1 long beep: Adjust servo center point*
1 short beep: Restore factory defaults
2 long beep: no selection made, automatically exits menu

* Press HT button to gain manual control of the camera with the headset. Adjust camera to desired center position by moving headset and press button to set new camera center. Note that if your servos are not near the center point before adjusting, the servo travel may be limited.

For a complete and up to date list of compatible RC radios and their setup, a head tracking sticky thread is maintained at www.FPVlab.com under SPONSORS GATE/FAT SHARK

Operation notes:

Head tracker analog tracking is always on. It is not recommended to use analog and digital head tracking simultaneously due to the doubling of motion (digital + analog).
AV in/out Port

RCA Connector: Yellow: Video, White: Audio Left, Red: Audio Right

Recording Video

Connect AV cable to AV out port on right side of headset. Connect recording device to cables and set up as per manufacturer directions. Note: Cables pins are not all the same (see above chart), be sure to connect to headset using the included cable.

Using an external receiver:

Use the AV cable to connect headset to the RCA AV port of external devices. To share the base station power supply with your goggles, pick up a 3m Dominator AV cable accessory from your retailer. Note; internal receiver must be shut off to properly display external AV.

Battery Charging

The 7.4V lithium polymer battery pack is equipped with a 3 pole balance charger lead that allows the battery to be charged off standard RC battery pack chargers (not included). Follow your charger instructions for setting up for 1A 7.4V Li-po. Some chargers require a discharge cable to be connected (not included – accessory). Do not exceed 1A charging current.

Note (1): If the charger fails to announce charge complete, but is showing battery voltage at 8.4V, the charge can be considered finished. Note (2): If battery becomes fully discharged or accidentally 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 (black = GND, red = 9V). This will instantly reset the battery and it can be recharged as normal.
General Lithium Polymer safety and handling instructions:
• 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

Downlink Overview (Camera, TX, Power)

Downlink system comes preassembled and tested for plug/play with your aircraft. Simply connect the balance lead of your 2S, 3S or 4S (7.4V - 16V) RC battery to provide power to your Fat Shark Downlink and you are ready to fly.

The handy balance lead filters RC servo and motor noise from your RC pack for a crisp, clear image.

Transmitter

Channel select chart:

<table>
<thead>
<tr>
<th>Channel</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ch1 5740 MHz</td>
<td>On</td>
<td>On</td>
<td>On</td>
<td>N/A</td>
</tr>
<tr>
<td>Ch2 5760 MHz</td>
<td>Off</td>
<td>On</td>
<td>On</td>
<td>N/A</td>
</tr>
<tr>
<td>Ch3 5780 MHz</td>
<td>On</td>
<td>Off</td>
<td>On</td>
<td>N/A</td>
</tr>
<tr>
<td>Ch4 5800 MHz</td>
<td>Off</td>
<td>Off</td>
<td>On</td>
<td>N/A</td>
</tr>
<tr>
<td>Ch5 5820 MHz</td>
<td>On</td>
<td>On</td>
<td>Off</td>
<td>N/A</td>
</tr>
<tr>
<td>Ch6 5840 MHz</td>
<td>Off</td>
<td>On</td>
<td>Off</td>
<td>N/A</td>
</tr>
<tr>
<td>Ch7 5860 MHz</td>
<td>On</td>
<td>Off</td>
<td>Off</td>
<td>N/A</td>
</tr>
</tbody>
</table>
WARNING: DO NOT POWER TRANSMITTER WITHOUT ANTENNA ATTACHED. NO ANTENNA LOAD WILL DESTROY RF AMPLIFIER – NOT COVERED BY WARRANTY
Small white connector on back of transmitter is for ImmersionRC Tiny Telemetry. See accessories.

700TVL CMOS on pan / tilt
3.6mm lens for wide angle 97 degree FOV; ideal for pan/tilt camera piloting. Camera is NTSC/PAL selectable (NTSC default, remove jumper on back for PAL). Plugs camera directly into TX via included cable (pre assembled).

Diopter lens
For near sighted users, diopter lens insert sets are available that include -2, -4 and -6 dpt.
Fat Shark

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RC Vision Systems

Specifications

Headset Specifications

Optics:
- FOV 25 degrees diagonal
- Interpupillary (IPD) distance: 63.5mm (fixed)
- Optional diopter lens inserts available in -2, -4, -6 dpt

Audio:
- Stereo

User Controls:
- Channel selection
- Contrast/brightness
- Head tracker reset
- Volume adjustment

Electrical:
- Power supply, 7-13V (2S/3S supply)
- Power consumption: 200/350mA (direct/wireless)

Battery:
- 7.4V lithium polymer with safety circuit

System:
- NTSC/PAL auto select
- Interlaced only (not support progressive scan)

Mechanical:
- Ergonomic molded shape with adjustable headband
- Rubber eye cups for ambient light reduction.
- Weight: 163g

Display
- Two full color micro QVGA LCD's (320 X 240 lines)
- Resolution 230,000 pixels per eye

Head Tracker
- 9DOF 2-axis head tracker
- Digital and Analog control
- 8ch PPM analog output

Receiver
- 5.8Ghz 7ch

Interface
- 3.5mm 4p AV in/out port
- Power in port
- 3.5mm 3p Earphone port
- MiniDIN head tracker data port
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.

- **If using on a quad or multicopter type aerial vehicle** you pretty much have to upgrade to the SpiroNET circular polarized antenna to get any decent range and good video link. Dipoles are suitable for foam planes.

- **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)

- Ensure your transmitter antenna has clear line of sight from the aircraft. Try to get the antenna out and away from the body.

- 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, 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. Two 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). Multipathing can be solved by upgrading to SpiroNET antenna.

- **5.8Ghz AV with 2.4Ghz RC controllers:** 2.4Ghz may cause harmonic interference on Ch2 – Ch7 of the 5.8Ghz AV (Ch1 not affected). The headset has been equipped with a high pass filter that will allow the system to work with CE certified 2.4Ghz RC controllers. However, the filtering may be insufficient to remove noise from overpowered non CE certified controllers. If you experience interference from your RC radio, change the AV channel to channel 1.

- Although you don’t require any license to operate this device, you are still legally responsible for operating in a responsible manner.
# Trouble shooting

<table>
<thead>
<tr>
<th>Observation</th>
<th>Possible cause/solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>No image, display is completely dark</td>
<td>- No power supplied. Check power connections.</td>
</tr>
</tbody>
</table>
| 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 |
| Static on all channels | TX has no power. Check to ensure TX LED is lit. |
| No image on one channel, static on the rest. | Tx is working normal. Camera is not connected or lens cap left on |
| Lots of interference lines (horizontal lines) | - Choose a cleaner channel. |
| 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 |
| Battery DOA | Low voltage switch tripped, read notes (2) in battery section |
| Battery won’t charge | Low voltage switch tripped, read notes (2) in battery section disengaged from socket (open and reseat). |
| Short range | - Ensure 5.8Ghz antenna was 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. 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. |

# Warranty

The system can be exchanged for a new unit within 30 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.

Your 1st point of contact for all warranty issues is your retailer. We also run a support forum for all technical issues at:

http://fpvlab.com/ SPONSORS GATE/ FAT SHARK

Post your questions there and they will be answered by our technical staff or peers.