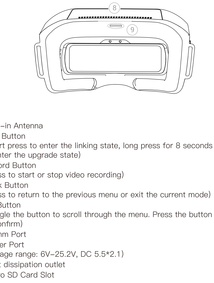
AVATAR GOGGLES L

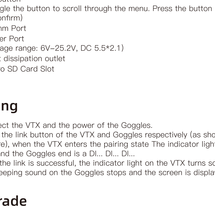
Quick Start Guide

V1.2

Introduction

This product is a wireless image transmission head-mounted display device, compatible with Avatar HD System series air unit products, and can achieve long-distance、low-latency、high-definition wireless image transmission. In the document, the terms VTX, Air unit, etc. refer to Avatar image transmission camera products. In the document, the terms VRX, Goggles, etc. refer to Avatar image transmission display products.





1: Built-in Antenna
2: Link Button
(Short press to enter the linking state, long press for 8 seconds to enter the upgrade state)
3: Record Button
(Press to start or stop video recording)
4: Back Button
(Press to return to the previous menu or exit the current mode)
5: SD Button
(Toggle the button to scroll through the menu. Press the button to confirm)
6: 3.5mm Port
7: Power Port
(Voltage range: 6V-25.2V, DC 5.5*2.1)
8: Heat dissipation outlet
9: Micro SD Card Slot

Linking

1. Connect the VTX and the power of the Goggles.
2. Press the link button of the VTX and Goggles respectively (as shown in the picture), when the VTX enters the pairing state The indicator light turns red, and the Goggles end is a Di... Di... Di...
3. After the link is successful, the indicator light on the VTX turns solid green, the beeping sound on the Goggles stops and the screen is displayed.

Upgrade

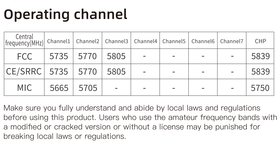
Please go to the official website to download the upgrade firmware, AvatarLite_Gnd_X.X.X.img is the Goggles file, copy it to the SD card, be careful not to change the file name.

1. Copy the upgrade file to the root directory of the SD card, connect to the power supply and wait for the device to initialize (delete the old firmware file first if there in one).
2. Press and hold the link button on the Goggles for 8 seconds, and the Goggles automatically restart and emit a beep...beep...beeper sound. (Do not power off during the upgrade process, the upgrade time on the goggle is about 6 minutes)
3. After the upgrade is successful,and the beeping sound stops after the Goggles beeps for 5 seconds.

Status indication

Goggles Buzzer Status	
Link state	Di..... Di..... Di..... Di.....
Upgrade firmware	Di..... Di..... Di..... Di———
Upgrade failed (No SD card or firmware detected)	Di.. Di.. Di.. Di..
Boot failure (Reboot or re-upgrade)	Di.. Di..... Di.. Di.....

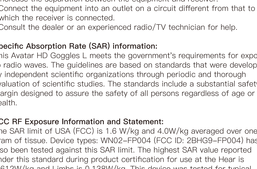
Head tracking upgrade



1、Use the CH340X upgrade board to connect the 3.5mm port of the Goggles L and the PC. Please go to www.caddxfpv.com to download the CwHeadTracker.exe software and firmware.

2、Open the CwHeadTracker.exe software and power on the Goggles L.

3、Select the correct COM port, click Start Debug, click Open, and select the CwHeadTracker_V*.*.ugf firmware in the same file.



4、Click Upgrade and wait for the progress bar to complete before the upgrade is successful.

⚠ • The GM gimbal needs to upgrade its firmware simultaneously. Please refer to the manual of the corresponding product for the upgrade operation.

3.5mm Port Definition

1. GND
2. NC
3. Head tracking upgrade port
4. PPM (Head tracking output)

Precautions

1. This is a sophisticated product. Failure to operate this product in a safe and responsible manner could result in injury or damage to the product or other property. It must be operated with caution and common sense and requires some basic mechanical knowledge.
2. The transmit power of VTX and Goggles is only 10mW when the standby mode is on.
3. There are up to eight channels for the goggles depending on the region (FCC: eight, CE/SRRC: four, MIC: three). Each channel has a bandwidth of 20 MHz. The public channel is 8, which is the default channel when the equipment is powered on. The channel can be changed manually to avoid interference from other devices.
4. It is recommended to upgrade VTX and Goggles to the latest firmware before first use.

Operating channel

Central frequency(MHz)	Channel1	Channel2	Channel3	Channel4	Channel5	Channel6	Channel7	CHP
FCC	5735	5770	5805	-	-	-	-	5839
CE/SRRC	5735	5770	5805	-	-	-	-	5839
MIC	5665	5705	-	-	-	-	-	5750

Make sure you fully understand and abide by local laws and regulations before using this product. Users who use the amateur frequency bands with a modified or cracked version or without a license may be punished for breaking local laws or regulations.

FCC Warning

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

–Reorient or relocate the receiving antenna.
–Increase the separation between the equipment and receiver.
–Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
–Consult the dealer or an experienced radio/TV technician for help.

Specific Absorption Rate (SAR) information:
This Avatar HD Goggles L meets the government's requirements for exposure to radio waves. The guidelines are based on standards that were developed by independent scientific organizations through periodic and thorough evaluation of scientific studies. The standards include a substantial safety margin designed to assure the safety of all persons regardless of age or health.

FCC RF Exposure Information and Statement:
The SAR limit of USA (FCC) is 1.6 W/kg and 4.0W/kg averaged over one gram of tissue. Device types: WN02-FP004 (FCC ID: 2BHGB-FP004) has also been tested against this SAR limit. The highest SAR value reported under this standard during product certification for use at the Hear is 0.612W/kg and Limbs is 0.138W/kg. This device was tested for typical body-worn operations with the back of the Goggles kept 0mm from the body. To maintain compliance with FCC RF exposure requirements, use accessories that maintain a 0mm separation distance between the user's body and the back of the Goggles. The use of belt clips, holsters and similar accessories should not contain metallic components in its assembly. The use of accessories that do not satisfy these requirements may not comply with FCC RF exposure requirements, and should be avoided.

Body-worn Operation:
This device was tested for typical body-worn operations. To comply with RF exposure requirements, a minimum separation distance of 0mm must be maintained between the user's body and the Goggles, including the antenna. Third-party belt-clips, holsters, and similar accessories used by this device should not contain any metallic components. Body-worn accessories that do not meet these requirements may not comply with RF exposure requirements and should be avoided. Use only the supplied or an approved antenna.

Software interface

Main interface-1

1-VTX input voltage:
Detect VTX voltage, intelligently identify the voltage of 2, 3, 4, 6 string LiPo batteries, alarm when a single battery is lower than 3.5V, and alarm in red font when the voltage is too low.

2-Goggles input voltage:
Detect Goggles low battery alarm, intelligently identify the voltage of 2, 3, 4, 6 string LiPo batteries, alarm when a single battery is lower than 3.5V, red font and buzzer alarm when the voltage is too low.

3-Real-time bit rate
Display real-time transmission code rate, two display modes of 25.0Mbps and 50.0Mbps.

4-Time delay:
Displays the total delay from the transmission of images captured by the VTX camera to the ground end.

5-Ranging mode:
The function of calculating the transmission distance from Goggles to VTX according to the wireless transmission delay, the signal is interfered will lead to error signification,.

6-Status prompt:
The text prompts information that needs attention in the current state.

7-Current channel:
Display the current setting channel, the signal grid has 5 states, 4 grids, 3 grids, 2 grids, 1 grid, and blank.

8-Goggles SD card status:
Display the status and remaining capacity of the Goggles SD card. When recording, the red circle flashes to prompt, the status of the SD card not detected is displayed as NO SD, and the status of the memory is full is displayed as –.

9-VTX storage status:
Display the status and remaining capacity of the VTX storage, When recording, the red circle flashes to prompt, the status of the storage not detected is displayed as NO SD, and the status of the memory is full is displayed as –.

Menu Channel-2

1、Display the interference situation of each channel. The signal strength is divided into 4 grids, 3 grids, 2 grids, 1 grid, and a space. The signal display space is occupied and cannot be selected. The white stroke is the selection box. Press the middle button to confirm the current channel and highlight it.

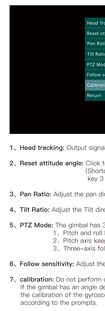
2、Channel working logic: When switching between standard bit rate and high bit rate, the current channel will be set to CHP, and the channel needs to be reselected. CHP is a public channel, which is easy to be interfered and is not recommended for flight work; Auto is a channel that automatically refreshes the signal interference situation of all channels; Refresh is the channel of manual refresh.

3、Channel display of each country: FCC standard displays 8 channels (CH1/2/3/4/5/6/7/8), CE/SRRC standard displays 4 channels (CH1/2/3/P), MIC standard displays 3 channels (CH1/2/P). Only in FCC mode, the high bit rate mode can be turned on, and the 8 channels become 4 channels CH1, CH2, CH3, CHP.

Share Channel-3

1、When the broadcast option is turned on in the menu settings Broadcast XXXXX , The VTX unique ID number is in brackets, Other Avatar VRX devices can receive the local image transmission through share mode.

Menu Settings-4



1-Camera:
The adjustable contents of the camera are scene preset, EV value, saturation, sharpness, white balance, rotate, ratio, 3D DNR, Shutter, and Max ISOsettings.

2-Display:
Display adjustable content is Debug, brightness, focalization mode, custom OSD, OSD position, font upgrade, custom font, viewfinder, viewfinder edit settings.

3-Record set:
The recording can be adjusted as VTX REC resolution, REC device, takeoff REC, REC loop, format SD card, format VTX, Built-in EIS, REC Time, REC Format, Color, Saturation, Sharpness.

4-Device:
The adjustable contents of the device are buzzer volume, Ranging mode, Weak signal, Reset all, Device information, Instruction, and Switch mode.

5-Transmit Power:
The default transmit power can be 25mW, 200mW, 500mW, 700mW.

6-Resolution:
The resolution can choose 720P and 1080P.

7-Bitrate:
Standard bit rate and high bit rate can be selected to obtain different image quality, and high bit rate can only be enabled in FCC mode.

8-Frame Rate:
The standard frame rate is equal to 60fps.

9-Standby Mode:
When in standby mode, the transmission power of VTX terminal and Goggles terminal is 10dbm, and the current set transmission power will be output only after exiting standby mode or turning off the standby mode switch. Turning on the standby mode requires the air unit serial port to be correctly connected to the flight controller. When the goggles receive the drone's unlock signal, it will automatically exit the standby mode. If there is no flight controller support, you can choose to turn off this function.

10-Language:
Language switching English/中文.

11-Low Battery:
Detect Goggles low battery alarm, intelligently identify the voltage of 2, 3, 4, 6 string LiPo batteries, alarm when a single battery is lower than 3.5V, red font and buzzer alarm when the voltage is too low.

12-Goggle Icon:
You can choose to display or hide the icons on the main menu interface.

13-Broadcast:
After turning on the broadcast switch, others can receive your video transmission through the Avatar system, The 6 characters in brackets are the unique identification number of VTX.

Head Tracking-5

1、**Head tracking:** Output signal selection, you can choose ppm or PTZ.

2、**Reset attitude angle:** Click to reset the gimbal to the neutral point. (Shortcut key operation, quickly click the return key 3 times on the main interface)

3、**Pan Ratio:** Adjust the pan direction to follow ratio.

4、**Tilt Ratio:** Adjust the Tilt direction to follow ratio.

5、**PTZ Mode:** The gimbal has 3 working modes to choose from.
1. Pitch and roll keep level, yaw axis follows.
2. Pitch axis keeps level, roll axis and yaw axis follow.
3. Three-axis follow.

6、**Follow sensitivity:** Adjust the gimbal response speed.

7、**calibration:** Do not perform calibration under normal circumstances. If the gimbal has an angle deviation for a long time, please complete the calibration of the gyroscope, accelerometer, and magnetometer according to the prompts.

8、**Return:** Exit the head tracking menu.

Menu Playback-6

1、The OSD switch can be turned on or off. When it is turned on, the flight control OSD information (if any) and the flight information of the main interface will be superimposed on the playing video interface. When the selection box stays in the video list, press and hold the Goggles confirmation key to open the multi-selection function, and the menu box will display function settings (delete, select all , cancel), press the return key again to exit the multi-selection mode.

2、On the playback interface, click the middle button to pause/play, and the left and right arrow keys to adjust rewind/fast forward

Specifications

Name	Goggles L
Communication Frequency	5.725-5.850GHz
Transmitter Power(EIRP)	FCC:<30dBm; CE:<14dBm; SRRC:<20dBm; MIC:<25dBm
I/O Interface	4Pin 3.5mm Plug, DC5.5*2.1mm Micro SD Card Slot,
Gyro	Nine-axis gyroscope
Transmission Resolution	1080p60fps, 720p60fps
Code Rate	Max 50 Mbps
Min. Latency	Average 32ms
Average Gain	7dBi
Polarization	LHCP
Transmission Distance	>4km
Channel	8
Screen Resolution	1920*1080/60Hz
Screen Material	LCD
Screen Size	4.5 Inch
Power Input	6V-25.2V(2S-6S)
SD card	Support 256G
System	Avatar HD system

CADDXFPV SUPPORT
email: support@caddxfpv.com