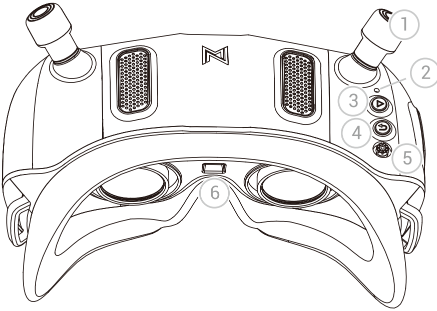
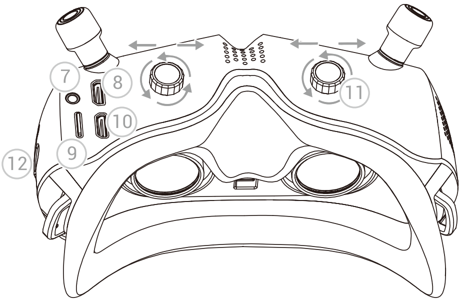
# AVATAR HD GOGGLES X

## Quick Start Guide

V1.2

## Introduction





1: 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. Press and hold for 5 seconds to switch to CVBS analog signal and HDMI input mode, It can be switched cyclically)

5: 5D Button
(Toggle the button to scroll through the menu. Press the button to confirm)

6: Proximity Sensor
(Detects whether the user is wearing the goggles and automatically turns the screen on or off)

7: AV-IN Port
(5 Pin 3.5mm Audio Port)

8: HDMI Input

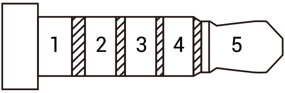
9: Micro SD Card Slot

10: HDMI Output
(HDMI output is not supported when Goggles is set to 1080p high frame rate)

11: IPD Adjusters
(Adjust pupil distance and diopter)

12: Power Port
(Voltage range 7V-26V, DC 5.5*2.1)

# AV-IN Port Definition



1. GND
2. CVBS (Connect to Analog Receiver Video Signal)
3. RX
4. TX
5. NC

# 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, AvatarX_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

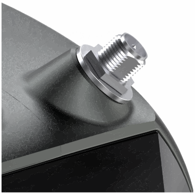
| Goggles Buzzer Status | |
|---|---|
| Link state | DI.... DI.... DI.... DI.... |
| Upgrade firmware | DI...... DI...... DI...... DI—— |
| Upgrade failed<br>(No SD card or firmware detected) | DI.. DI.. DI.. DI.. |
| Boot failure<br>(Reboot or re–upgrade) | DI.. DI...... DI.. DI...... |

# Operating channel

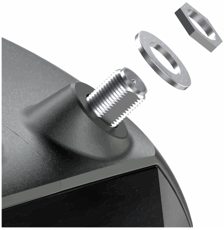
| Central frequency(MHz) | Channel1 | Channel2 | Channel3 | Channel4 | Channel5 | Channel6 | Channel7 | Channel8 |
|---|---|---|---|---|---|---|---|---|
| FCC | 5660 | 5695 | 5735 | 5770 | 5805 | 5878 | 5914 | 5839 |
| CE/SRRC | 5735 | 5770 | 5805 | - | - | - | - | 5839 |
| MIC | 5665 | 5705 | - | - | - | - | - | 5750 |

Make sure you fully understand and abide by local laws and regulations before using this product. An amateur radio license may be needed in FCC regions when using channels 1,2,6or 7, as they are amateur frequency bands. 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.

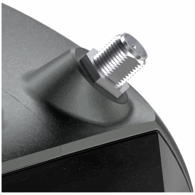
# Installation of third-party antennas



1、
Turn counterclockwise to remove the antenna.



2、
Turn counterclockwise to remove the nut and remove the circular washer.



3、
Turn mounting nut clockwise. Install a third–party antenna.

# Precautions

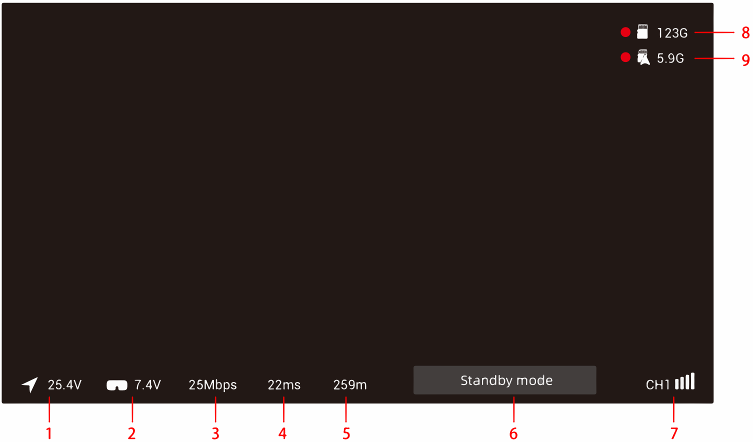
1. This is a sophisticated product. Failure to operate this product in a safe and responsible manner could result in injury or damage to the product or other property. It must be operated with caution and common sense and requires some basic mechanical knowledge.
2. Before powering on, please install all antennas to avoid damage to components.
3. When using HDMI output, Please make sure the monitor supports the set resolution and frame rate, otherwise it will cause abnormal display.
4. HDMI output is not supported when goggles are set to 1080p high frame rate
5. The transmit power of VTX and Goggles is only 10mW when the standby mode is on.
6. 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.

7. It is recommended to upgrade VTX and Goggles to the latest firmware before first use.

# 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 amplification。

### 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.

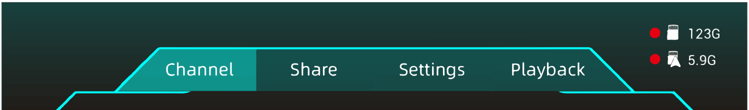
### 8-Goggles SD card status:

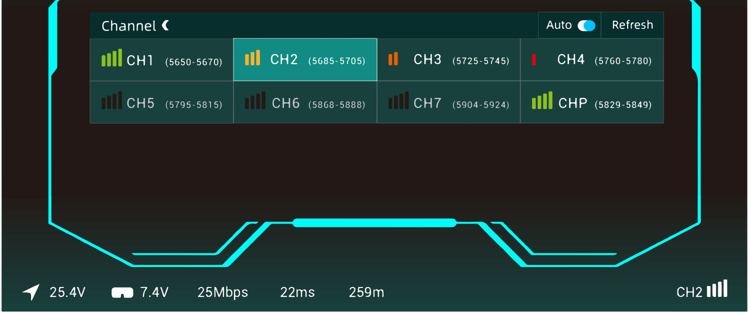
Display the status and remaining capacity of the Goggles SD card. When recording, the red circle flashes to prompt, the status of the SD card not detected is displayed as NO SD, and the status of the memory is full is displayed as –.

### 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



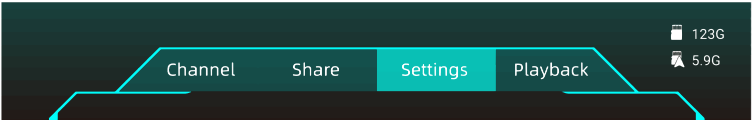


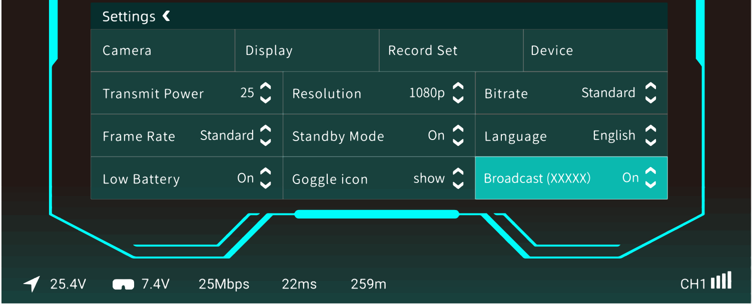
1、Display the interference situation of each channel. The signal strength is divided into 4 grids, 3 grids, 2 grids, 1 grid, and a space. The signal display space is occupied and cannot be selected. The white stroke is the selection box. Press the middle button to confirm the current channel and highlight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

## Menu Settings-3





| | | | | | |
|---|---|---|---|---|---|
| Transmit Power | 25 | Resolution | 1080p | Bitrate | Standard |
| Frame Rate | Standard | Standby Mode | On | Language | English |
| Low Battery | On | Goggle icon | show | Broadcast (XXXXX) | On |

### 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:
Standard frame rate and high frame rate can be selected to obtain different time–lapse experiences.

### 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.

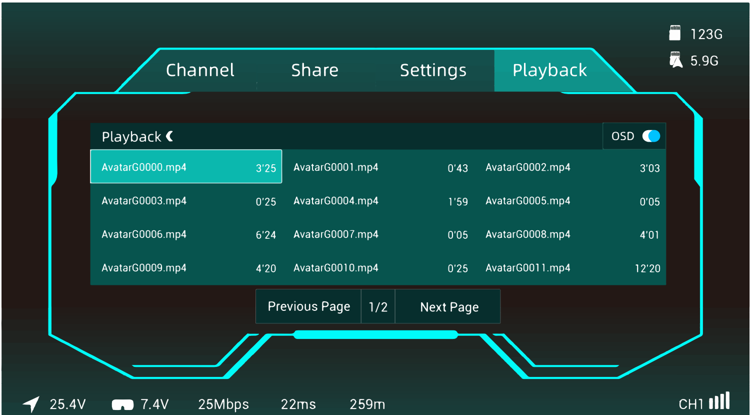
### 12-Goggle icon:

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.

## Menu Playback-4



| | | | | | |
|---|---|---|---|---|---|
| AvatarG0000.mp4 | 3'25 | AvatarG0001.mp4 | 0'43 | AvatarG0002.mp4 | 3'03 |
| AvatarG0003.mp4 | 0'25 | AvatarG0004.mp4 | 1'59 | AvatarG0005.mp4 | 0'05 |
| AvatarG0006.mp4 | 6'24 | AvatarG0007.mp4 | 0'05 | AvatarG0008.mp4 | 4'01 |
| AvatarG0009.mp4 | 4'20 | AvatarG0010.mp4 | 0'25 | AvatarG0011.mp4 | 12'20 |

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 VRX 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

| Model | Avatar HD Goggles X |
|---|---|
| Communication Frequency | 5.725-5.850GHz |
| Transmitter Power(EIRP) | FCC:<30dBm; CE:<14dBm; SRRC:<20dBm; MIC:<25dBm |
| I/O Interface | HDMI Out, HDMI Input, 5Pin 3.5mm Audio Port, DC5.5*2.1mm Port, Micro SD Card Slot, |
| Transmission Resolution | 1080p100fps, 1080p60fps, 720p100fps, 720p60fps |
| Code Rate | Max 50 Mbps |
| Min. Latency | Average 22ms |
| Average Gain | 1.5dBi |
| Polarization | LHCP |
| Transmission Distance | ＞4km |
| Channel | 8 |
| Screen Resolution | 1920*1080/100Hz |
| Screen Material | OLED |
| IPD Mechanical Range | 57mm-72mm |
| Adjustable Focus Range | ＋2.0 to－6.0 Diopter |
| FOV | 50° |
| Power Input | 7V-26V(2S-6S) |
| SD card | Support 256G |
| System | Avatar HD system |
| WIFI | |

| | |
|---|---|
| Protocol | IEEE 802.11b/g/n/ax |
| Communication Frequency | 2.4GHz |
| Transmitter Power(EIRP) | ＜20dBm |
| Bluetooth | |
| Protocol | BLE 5.2 |
| Transmitter Power(EIRP) | ＜8dBm |

## CADDXFPV SUPPORT

email: support@caddxfpv.com