CONNEX ProSight

Installation and Operation Guide

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Safety

Safety Instructions

- Do not open the HD transmitter or HD receiver enclosures. There are no user-serviceable parts inside. Refer servicing to qualified service personnel only. The use of controls, adjustments or procedures other than those specified in this user guide may result in exposure to shock and/or electrical or mechanical hazards.
- Do not immerse the units in water.
- Always disconnect a unit's power by disconnecting the main plug.
- Clean with a dry cloth only.
- Keep powered on units at least 20 cm away from your body.
- Do not expose the units to moisture or excessive heat. Unit operating temperature is 32^0F-113^0F (0^0C- 40^0C).
- Unplug the units during lightning storms and long storage periods.
- **For CONNEX ProSight receiver only –** the provided power supply is for indoor use only.
- Use only the supplied accessories or those recommended on the AMIMON website. Accessories (including cables) must not be replaced, as this may affect performance or functionality, or damage the unit. We highly recommend that you use the provided AMIMON cables. If an alternate cable is used, make sure that it is of the highest quality.
- Do not use the product if there is any physical damage to the enclosure.
- **For CONNEX ProSight transmitter only –** it is normal for the transmitter to become slightly hot during use. However, if the enclosure's temperature becomes too hot to touch, turn the transmitter off and contact support.
- Do not let the product come into contact with corrosive materials.
- Do not let the product come into contact with fire.

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Potential Hazards

The CONNEX ProSight HD transmitter and HD receiver contain HD wireless video module devices that should be operated according to the same rules and limitations applicable to normal HD wireless video module devices. Do not operate the units in environments that may be susceptible to radio interference resulting in danger, specifically:

- **Areas where prohibited by law –** follow any special rules and regulations and obey all signs and notices. Always ensure that the unit is turned off (the LED is not lit) when instructed to do so or whenever it may cause interference or danger.
- **Where an explosive atmosphere may be present –** do not operate the CONNEX ProSight unit in any area where a potentially explosive atmosphere may exist. Sparks in such areas could cause an explosion or fire, resulting in bodily injury or even death. Be aware and comply with all signs and instructions.
- **It is inadvisable to operate the CONNEX ProSight unit while at a refueling point or service station –** users are reminded to observe restrictions on the use of radio equipment in fuel depots (fuel storage and distribution areas), chemical plants or where blasting operations are in progress.
- **Areas with a potentially explosive atmosphere are often, but not always, clearly marked –** potential locations can include gas stations, below deck on boats, chemical transfer or storage facilities, vehicles using liquefied petroleum gas (such as propane or butane), areas where the air contains chemicals or particles (such as grain, dust or metal powders), and any other area where it would normally be advisable to turn off a vehicle's engine.
- **Near medical and life support equipment –** do not operate the CONNEX ProSight unit in any area where medical equipment or life support equipment is in use, or near any equipment that may be susceptible to any form of radio interference. As the CONNEX ProSight unit may transmit signals that could interfere with this equipment, the host communications device must be turned off in such areas.

For more information, visit www.AMIMON.com.

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Introduction to CONNEX ProSight

Overview

CONNEX ProSight is the missing link needed in a new era in FPV racing. CONNEX ProSight transforms FPV drones into a completely new kind of immersive experience for beginners and experts alike.

CONNEX ProSight delivers unparalleled vision performance with delay-free wireless transmission. Its superior image quality combined with ease of installation, smooth configuration and improved multi-pilot flying experience, provides unmatched usability.

CONNEX ProSight consists of the following components:

- HD receiver (see HD Receiver Accessories)
- HD transmitter (see HD Transmitter Accessories)
- HD HDR (High Dynamic Range) camera

CONNEX ProSight is designed to work with a ProSight recorder.

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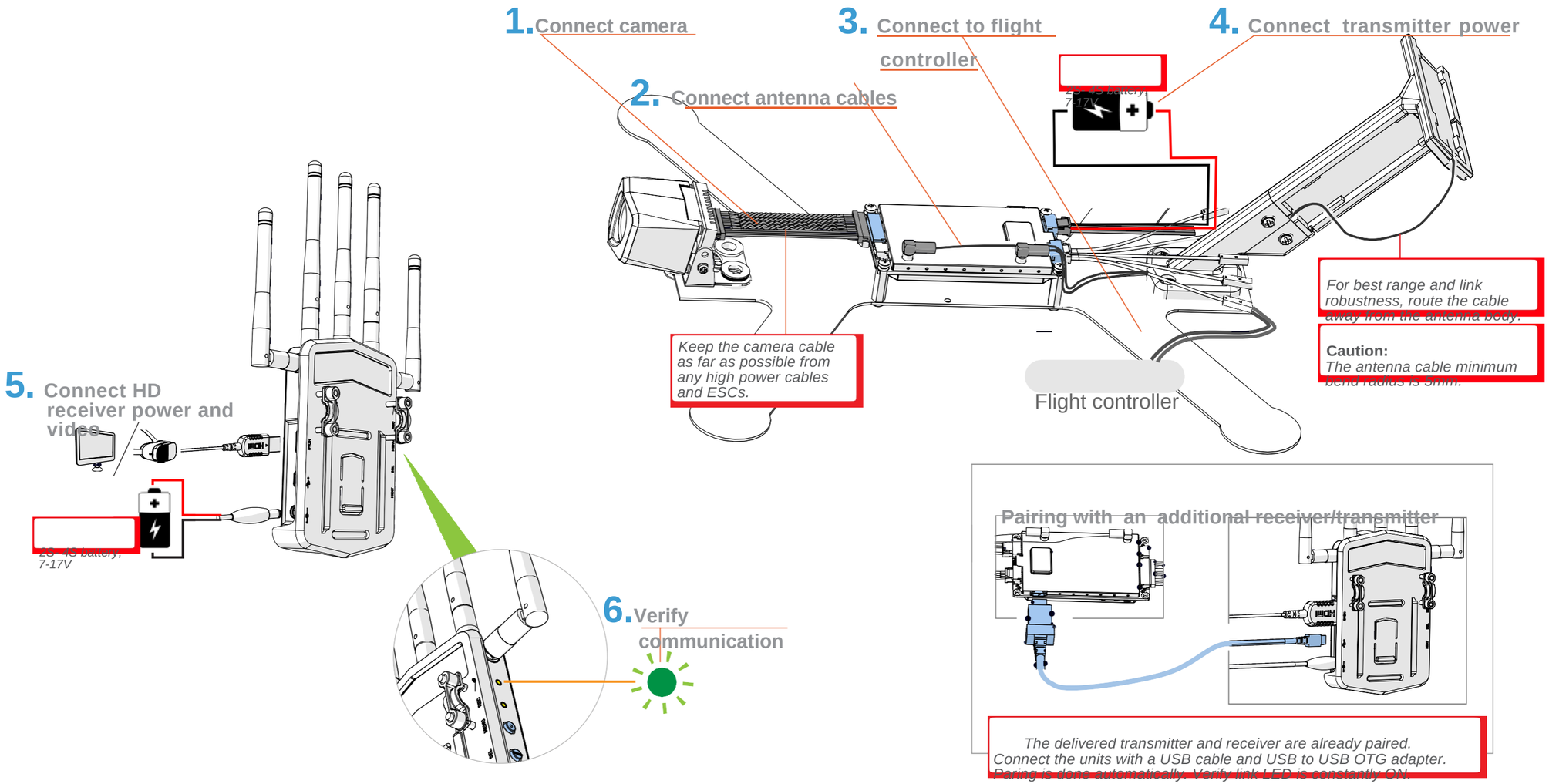

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Opening the Package

Verify that the ProSight package contains the following items:

- HD receiver
- HD transmitter
- HD HDR camera, mount and dampers
- Spacers and screws
- All cables and antennas as detailed in the following sections

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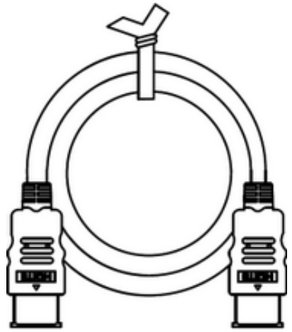
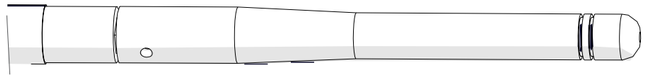
HD Receiver Accessories

Name	Description	
HDMI Cable AMN_CBL_036A	HD receiver Standard HDMI Cable (Type A to Type A) Connects the HD receiver to a video monitor or FPV goggles.	
HD Receiver Power Cable AMN_CBL_038A	A non-splitter cable (DC Jack to XT-60 connector). Connects between the HD receiver power port and a power source.	
HD Receiver Antennas AMN_ACC_002	5 antennas, connected to the HD receiver.	
Micro USB Cable AMN_CBL_034A	Standard Micro USB cable for software upgrading. This cable can be used for the HD receiver and the HD transmitter.	
OTG Cable AMN_CBL_060	Connects the HD transmitter and the HD receiver for the pairing process (see Pairing HD Transmitter and Receiver)	

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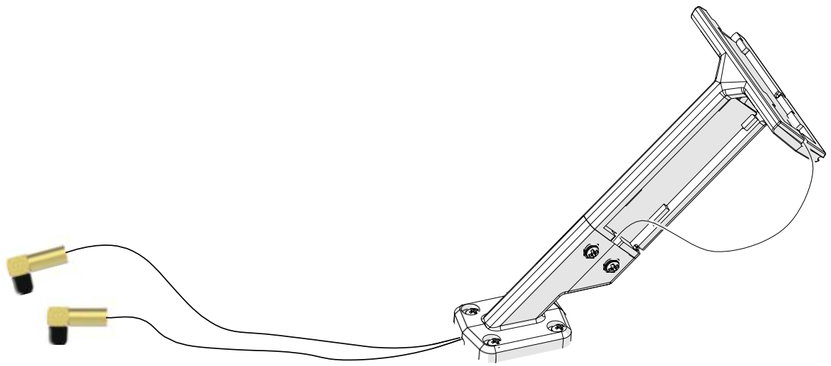
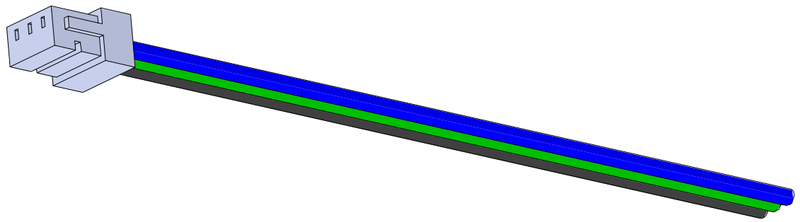
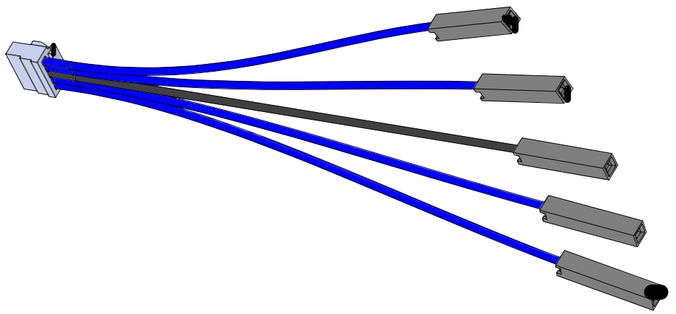
HD Transmitter Accessories

Name	Description	
HD Transmitter Antennas AMC_ACC_018	2 antennas, pre-assembled in the antenna bracket, connected to the HD transmitter.	
CC3D Telemetry Cable AMN_CBL_66	Connects the flight controller and the HD transmitter.	
Naze Telemetry Cable AMN_CBL_71	A split telemetry cable, connects the HD transmitter and the Naze flight controller.	

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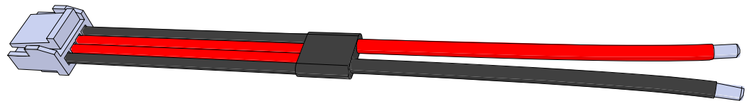
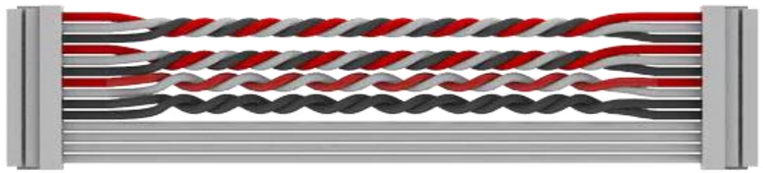
Name	Description	
HD Transmitter Power Cable AMN_CBL_030A	Connects the HD transmitter to an external power source.	
Camera Cable AMN_CBL_65	Connects the camera and the HD transmitter.	

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Installing the Units

The following sections describe the mechanical installation and wiring of ProSight system parts:

- Connecting Components to Drone
- Installing the HD Receiver
- Wiring the HD Receiver

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Connecting Components to Drone

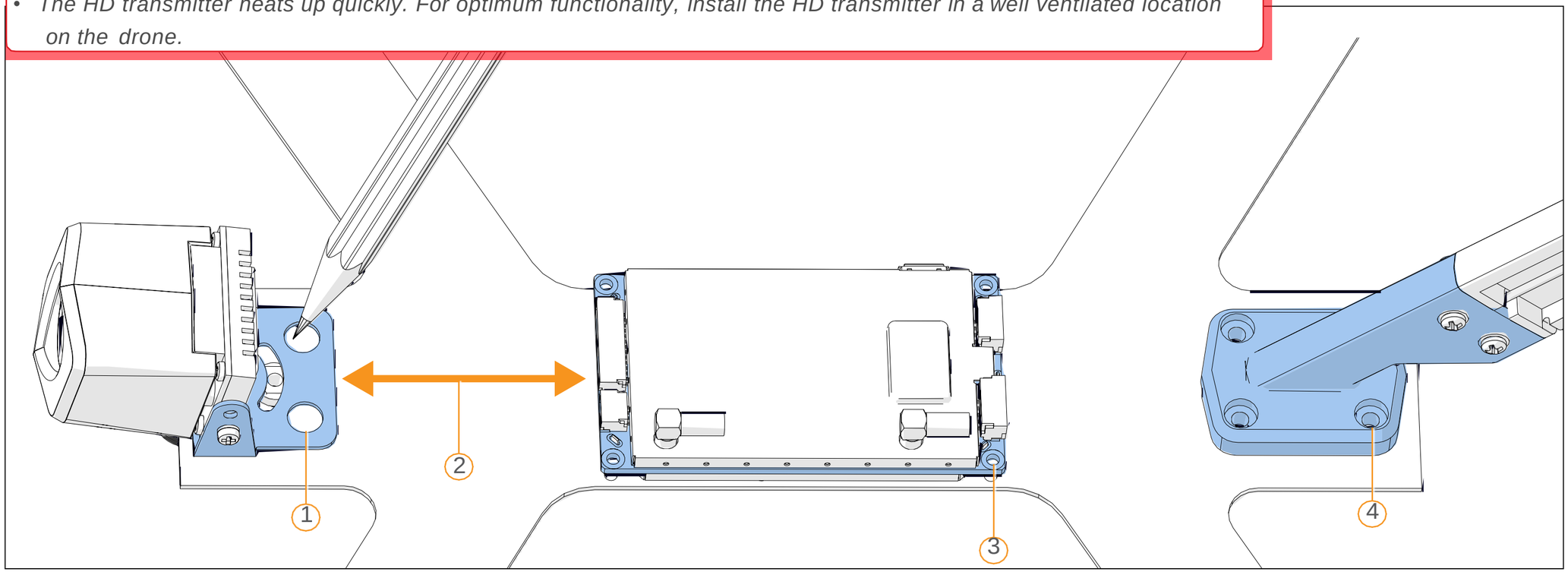
Preparing the Mounting Plate

Mark mounting holes for the following components:

- **Camera (1) –** 3 holes
- **Transmitter (3) –** 4 holes
- **Antenna (4) –** 4 holes

Notes:

- *Consider the Camera Cable length (2 3/4inch / 7cm) between the camera and the transmitter (2).*
- *The HD transmitter heats up quickly. For optimum functionality, install the HD transmitter in a well ventilated location on the drone.*



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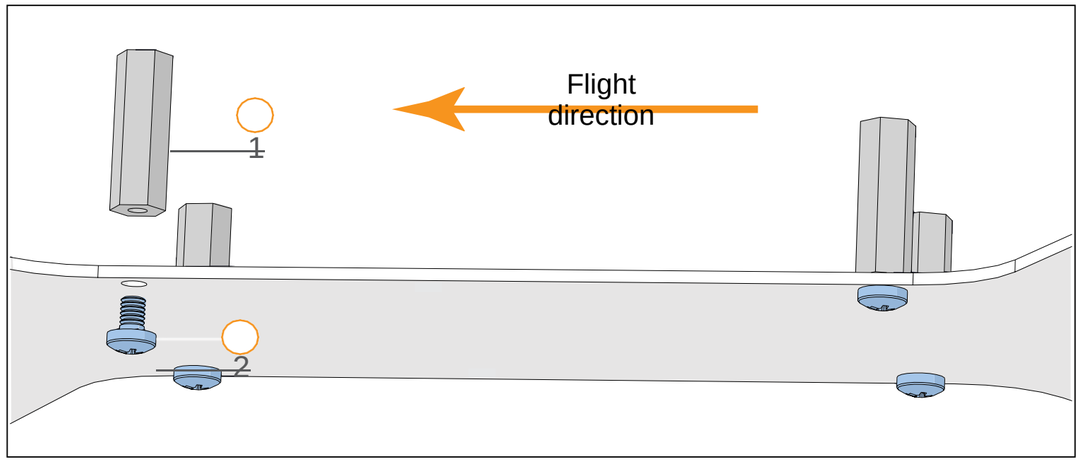
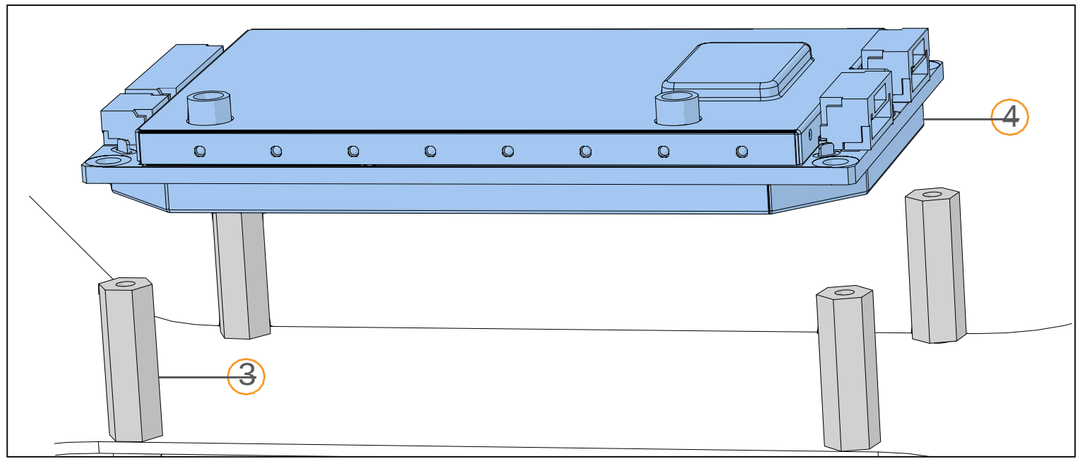
Attaching the HD Transmitter

The following procedure describes HD transmitter installation.

1. Connect the 4 mounting bases (1) to the mounting plate using 4 screws (2).



2. Place the HD transmitter (4) on the 4 mounting bases (3).



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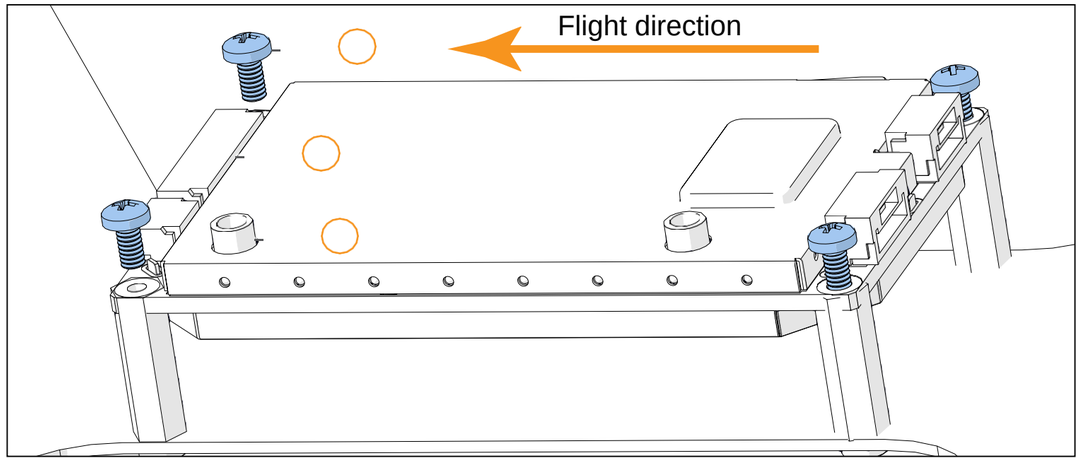
3. Connect the HD transmitter to the mounting bases using 4 screws (1).

Note:

Notice the transmitter orientation. The video connector (2) should face the camera and the antenna sockets (3) must remain exposed.



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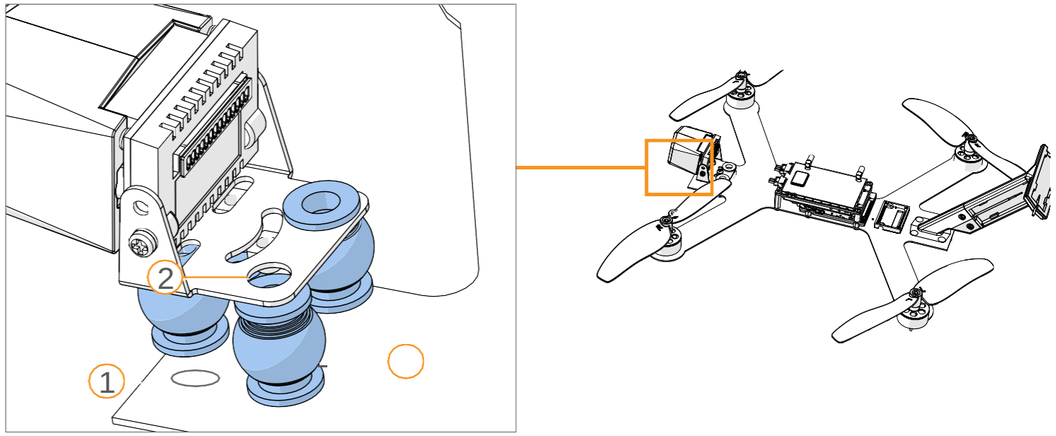
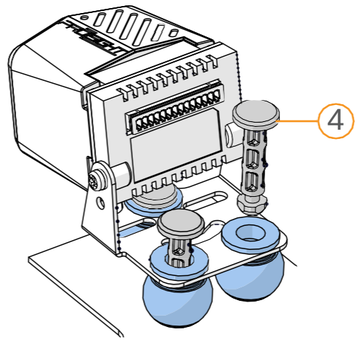
Mounting the Camera

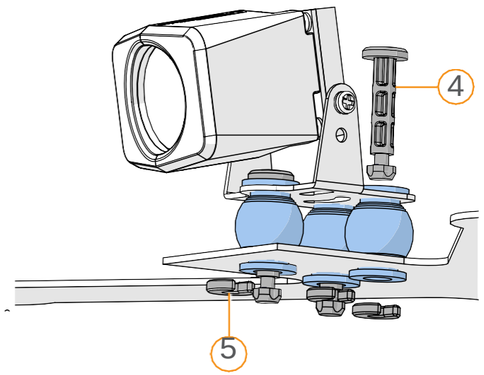
Mount the camera on the front of the drone mounting plate.
The rubber vibration dampers serve as shock absorbers and help reduce the “Jello” effect in the incoming video.

1. Insert the rubber dampers (3) through the mounting holes in the camera base (2) and in the drone mounting plate (1).



2. Secure the damper pins (4) and locking clips (5).





Tip:
The camera can be installed using screws instead of dampers.

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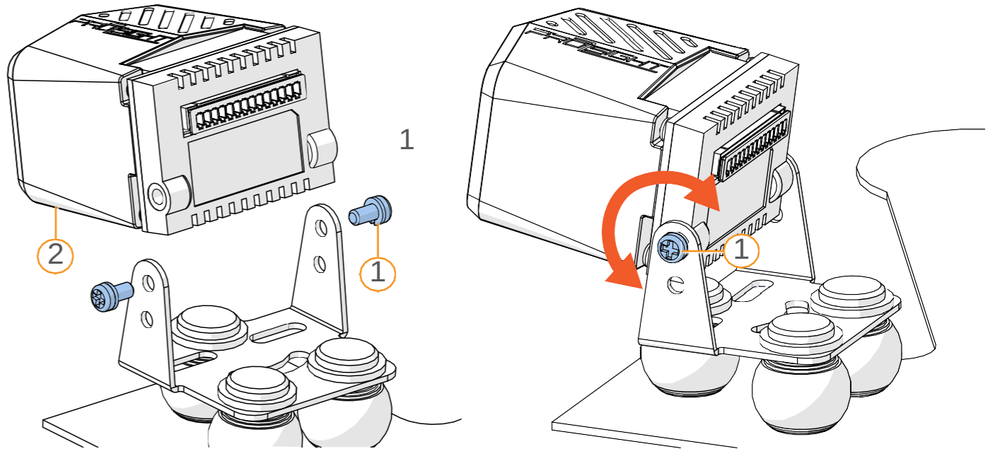
The camera can be adjusted or flipped:

3. Release the two screws (1).

4. Set the angle of the camera or flip it 180^0, and fasten the two screws (1).

> ***Tip:***
> *The camera image can also be flipped by applying an OSD command (see Flipping the Camera Image).*



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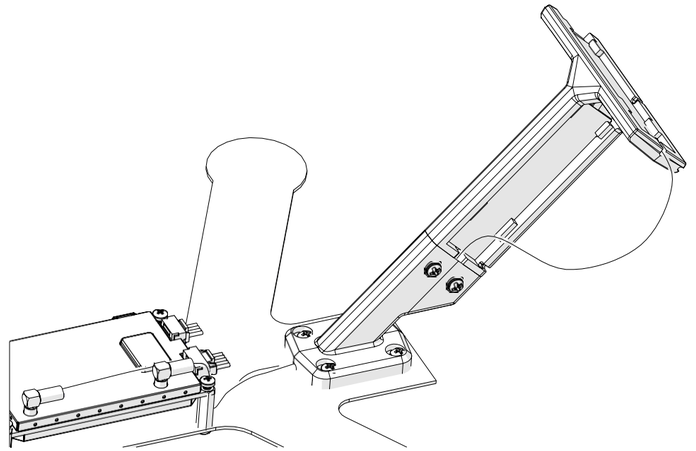
Wiring and Installing the Antenna

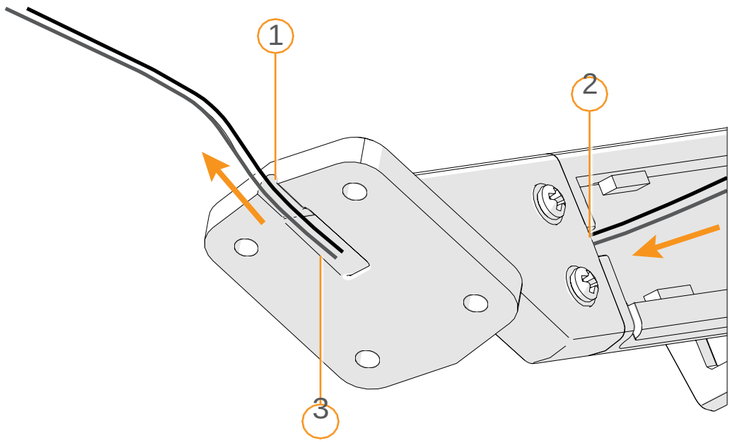
This section reviews the tasks associated with installing and wiring the HD Transmitter Antennas.



> ***Tip:***
> *If you decide to design your own antenna fixture, we recommend following the CONNEX ProSight Antenna Guidelines 1.0.*

A- Connecting the Antenna to the Drone

1. Verify the antenna cables (1) are inserted in the base groove (3).



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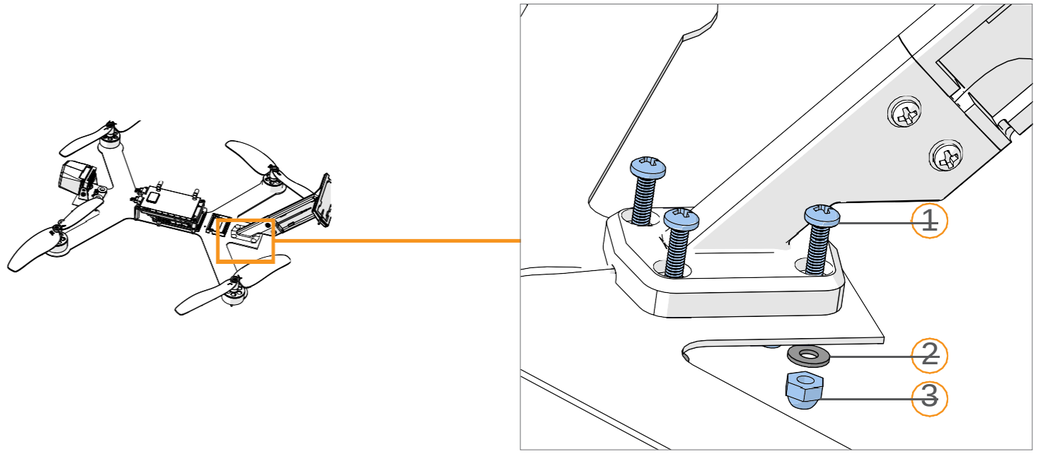
2. Place the antenna on the rear side of the drone mounting plate.

3. Fasten the antenna base to the drone with four screws (1) using washers (2) and nuts (3).

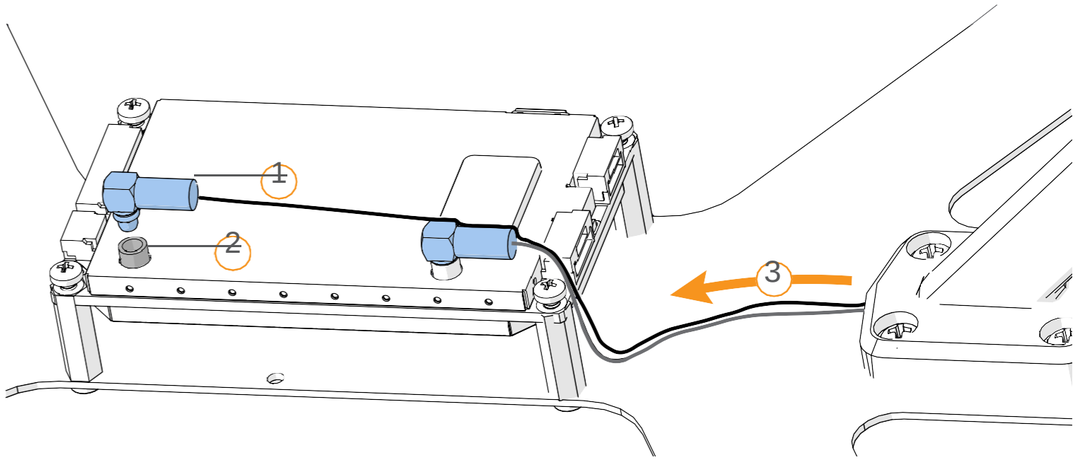


Tip:

The antenna can be connected to the drone using zip ties instead of screws.

B- Connecting Antenna to HD Transmitter

1. Route the antenna cables from the base of the antenna holder to the HD transmitter (3).
2. Connect the two HD Transmitter Antennas (1) to the coax sockets (2).
3. Secure the antenna cables.



Note:

Be sure the antenna cable loop is maintained. The cable's minimum bend radius is 5mm.

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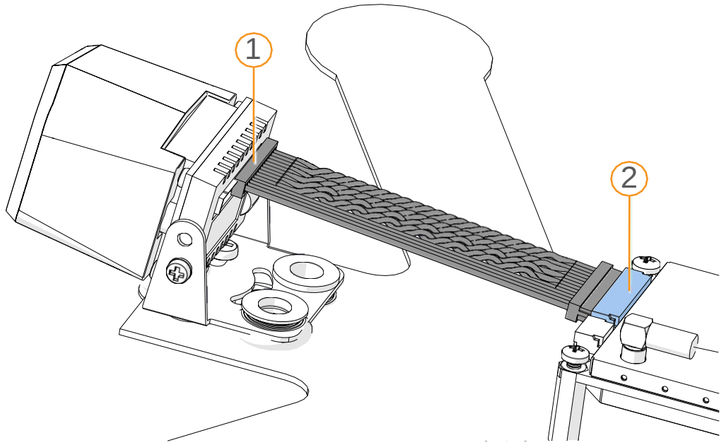
Wiring the HD Transmitter

This section reviews the tasks associated with wiring the HD transmitter.

A- Connecting to Camera

Connect the Camera Cable to the HD transmitter video input port (2) and the other end to the camera video output port (1).



Note:

Keep the camera cable as far as possible from any high power cables and ESCs.

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B- Connecting to Flight Controller

Wiring the Telemetry Cable

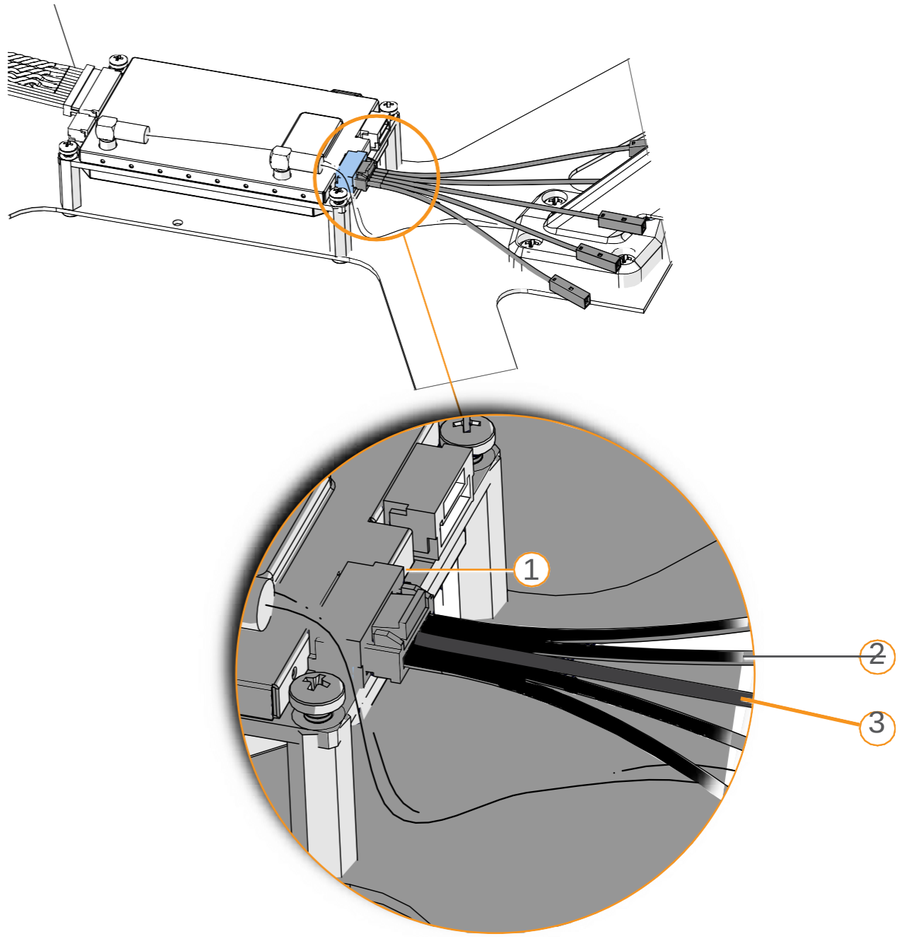
Connect the CC3D Telemetry Cable or the Naze Telemetry Cable to the HD transmitter telemetry port (1) and the other end as to the flight controller as follows:

- Connect the fourth wire (2) to the flight controller UART Tx port.
- Connect the third wire (3) to the flight controller UART GND port.

Tips:

The HD transmitter can connect to any flight controller with a MAVLink output port.

Obtain your own cable to connect a flight controller which is not Naze nor CC3D. .



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Configuring a Flight Controller that Runs CleanFlight

Note:

The flight controller must support MAVLink.

The flight controller has a specific UART port that supports MAVLink. To receive telemetry information from the flight controller, the MAVLink port needs to be configured through CleanFlight as follows:

1. Connect MAVLink to the appropriate UART (MAVLink output port) of the flight controller .
2. Burn the CleanFlight (version 1.13 and above).
3. Open the CleanFlight configurator and connect to **Flight Controller**.
4. Under **Other Features**, enable **TELEMETRY**.
5. Press **Save and Reboot**.
6. Go to **CLI**.
7. Write **serial** to see all available serial ports. Ports 0,1 and 2 are HW UART.
8. Write the following line: **serial 1 256 115200 57600 57600 115200**.
   - **1 –** is the HW UART port
   - **256 –** will cause the FC to use MAVLink on port 31
   - **57600 –** is the UART's baudrate
9. Type **save** to save and reboot.

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OSD Information Delivered from the Flight Controller

Telemetry information delivered from the flight controller includes:

- **Flight duration –** time starts counting when the drone is armed
- **Heading**
  - » **When GPS is available –** displays heading
  - » **When GPS is unavailable –** displays yaw
- **Battery capacity –** only if there is a current sensor
- **Flight controller mode**

Tip:

For more information on telemetry data, see Setting OSD Overlays, or visit the FAQ on the Amimon website.

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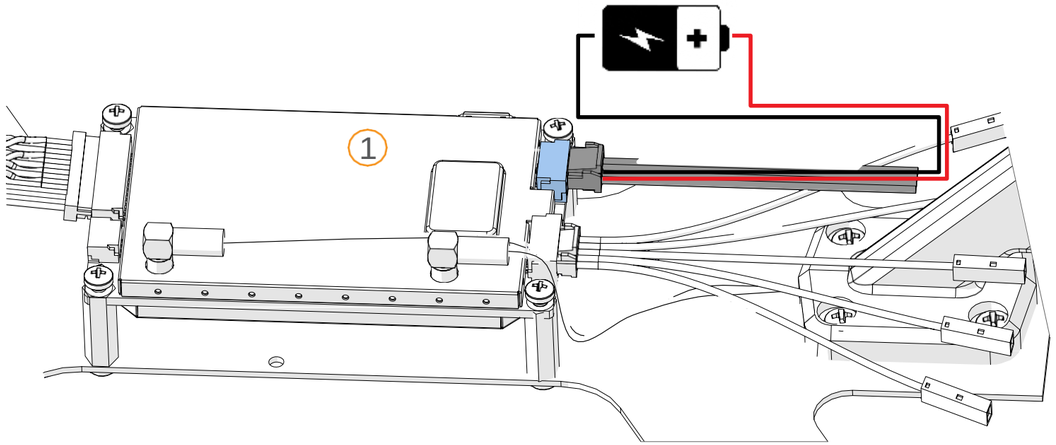
C- Connecting to a Power Source

Connect the HD Transmitter Power Cable to the HD transmitter power socket (1) and the other end to the power source.



Notes:

- *Be sure to connect the red wire to the positive pole and the black wire to the negative pole of the power source.*
- *The HD transmitter can be connected directly to the battery. It is compatible with 7V to 17V, or 2S to 4S batteries.*

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Installing the HD Receiver

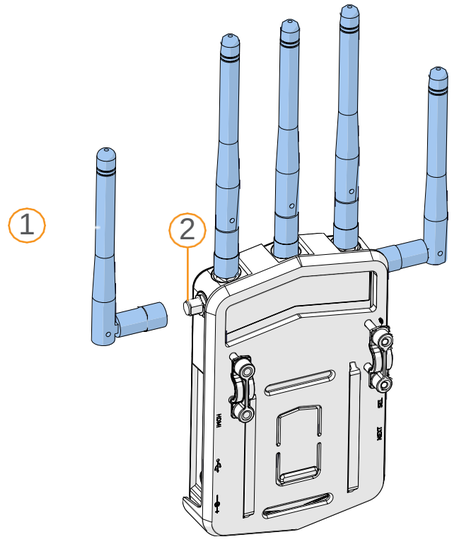
This section reviews the tasks associated with installing the HD receiver.

A- Connecting Antennas

To connect the HD Receiver Antennas to the HD receiver:

1. Connect the five antennas (1) to the five antenna connectors (2).

2. To avoid interference, place the HD receiver Antennas as far as possible from other transceiver devices, especially transmitters in the 5 GHz band.



Notes:

- *For configuration purposes: the distance between the receiver and its paired transmitter should be 1–10 meters.*
- *When using multiple ProSight units in the same area:*
  - *The distance between two adjacent receivers should be at least one meter.*
  - *To avoid interference, verify that the distance between your receiver and other transmitters is at least four meters.*

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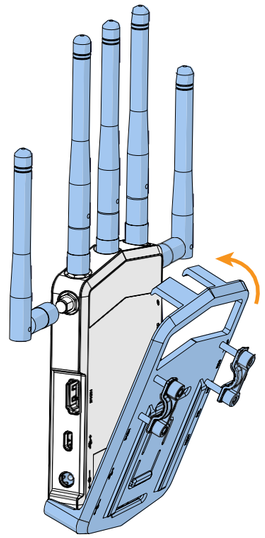
B- Connecting the HD Receiver Case

Fasten the case to the HD receiver.



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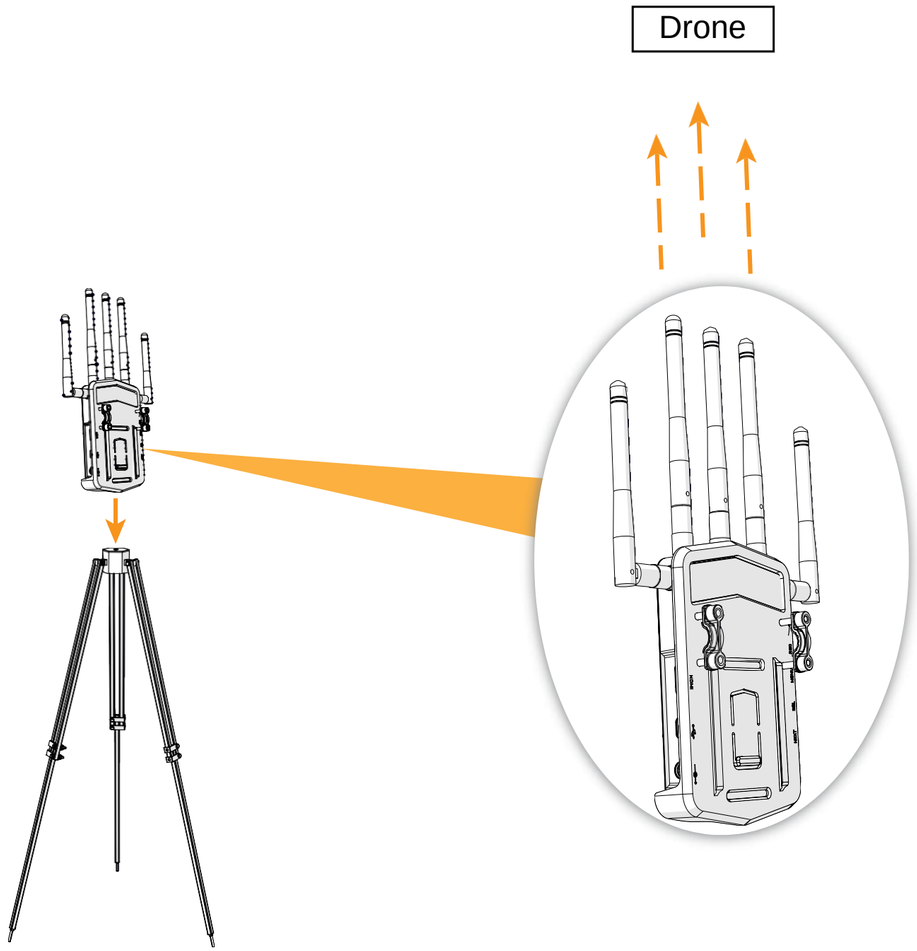
C- Mounting the HD Receiver

1. Place the HD receiver as high as possible on a tripod, pole or any other mounting device. A height of 2 meters off the ground is optimal.

2. Place the HD receiver so that its antennas are facing upwards in the general direction of the drone's flight.



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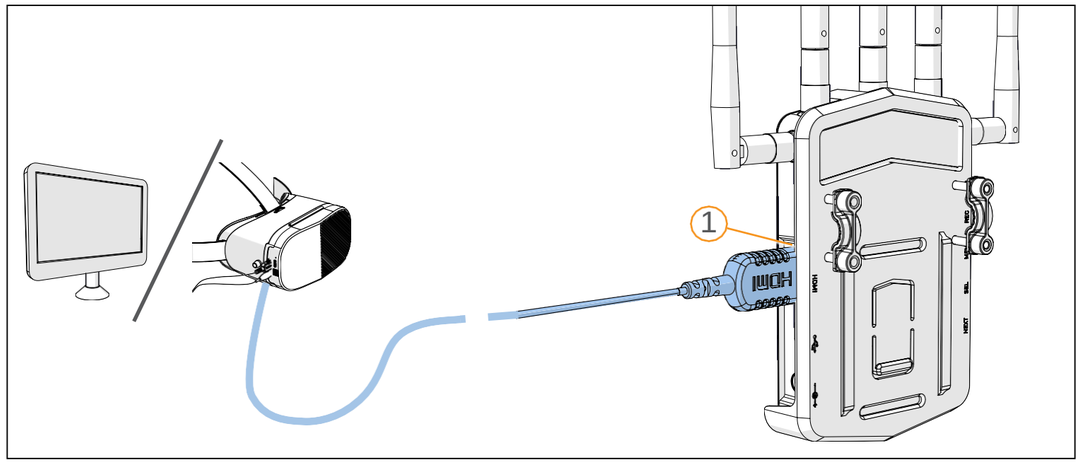
Wiring the HD Receiver

This section describes the required wiring for the HD receiver.

A- Connecting to FPV Goggles/Monitor

To display the received video, connect the HDMI Cable to the HD receiver HDMI port (1) and the other end to the FPV goggles/monitor HDMI port.



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B- Connecting to Power

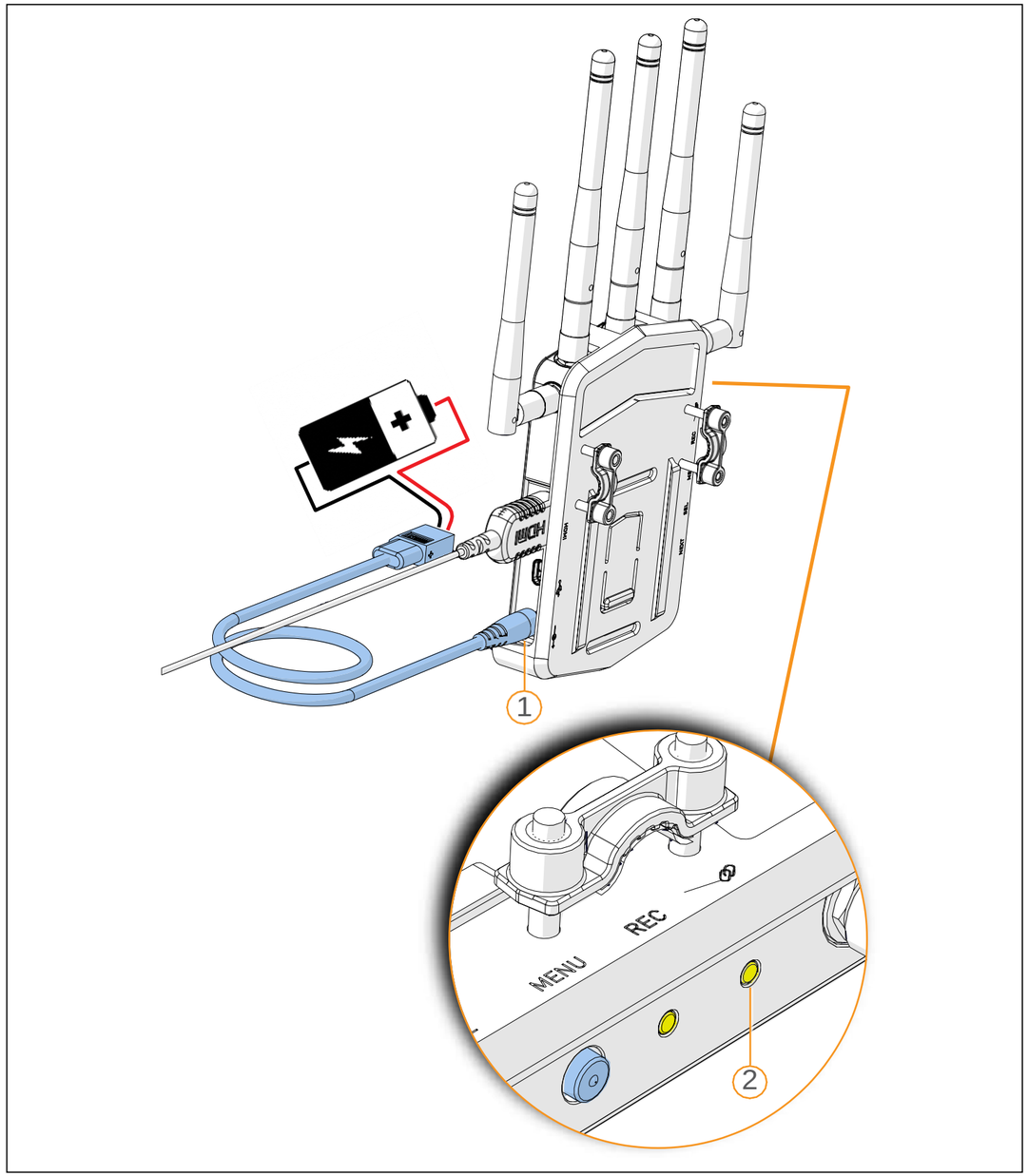
To connect the HD receiver to a power source:

1. Connect the HD Receiver Power Cable to the HD receiver power port (1) and the other end to a power source.

Tips:

- *The HD receiver can be connected directly to the battery.*
- *The HD receiver is compatible with 7V to 17V, or 2S to 4S batteries.*

2. Verify that the Network LED (2) on the HD receiver blinks for a few seconds and then stays lit.



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Operating the Units

The following sections describe the basic functions of the CONNEX ProSight:

- Pairing HD Transmitter and Receiver
- OSD Control

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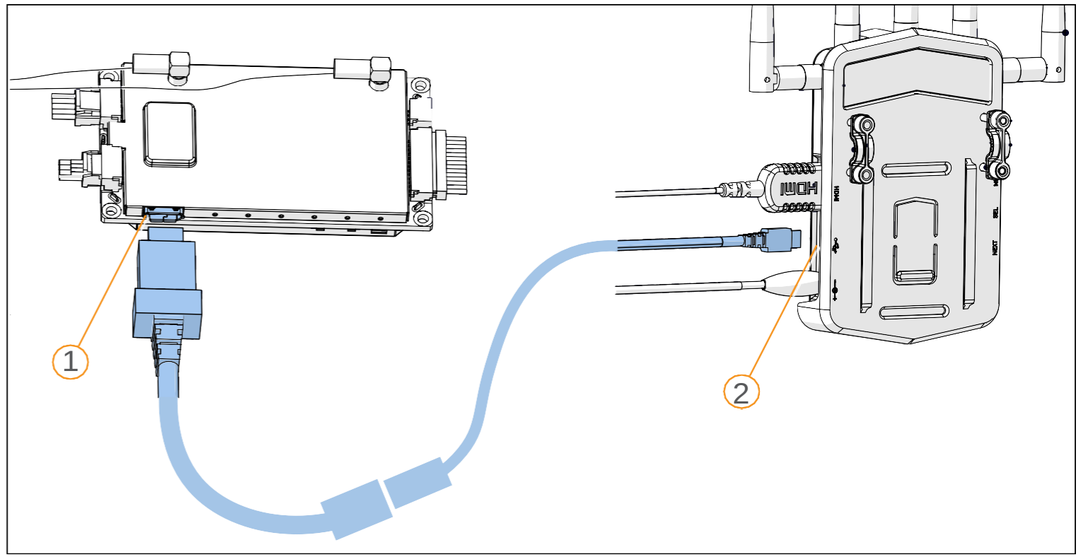
Pairing HD Transmitter and Receiver

This section describes the procedure for pairing an HD receiver with an HD transmitter.

CONNEX ProSight units are already paired when delivered. The pairing process is required when connecting to an unpaired HD transmitter for the first time.

1. Verify that both HD transmitter and HD receiver are powered on.
2. Connect the Micro USB Cable and the OTG Cable between the HD transmitter Micro USB port (1) and the HD receiver Micro USB port (2).



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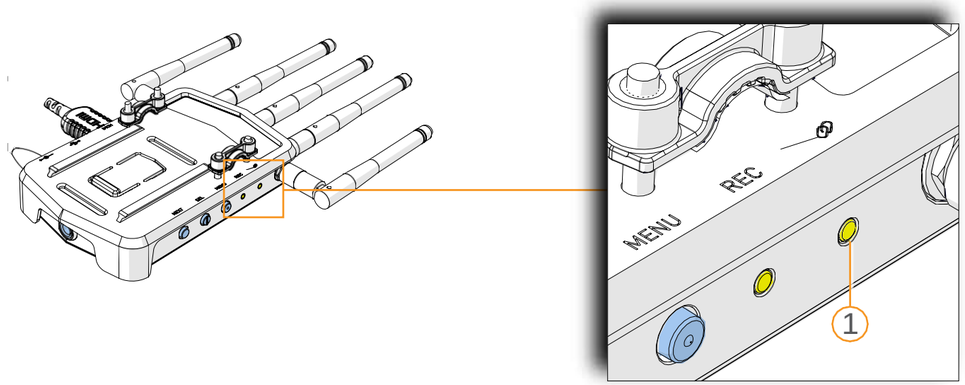
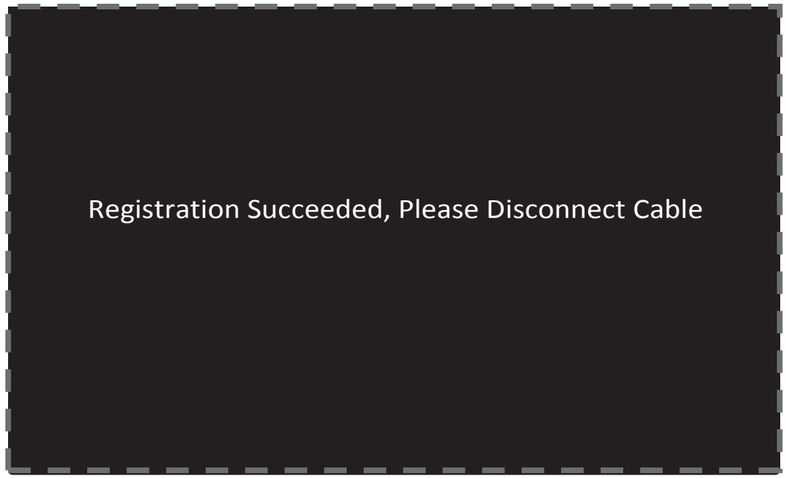
3. Verify that the Network LED (1) on the HD receiver blinks for a few seconds and is lit constantly when pairing is completed. This process takes a few seconds.



After successful pairing, the following message appears on the screen: **Registration Succeeded, Please Disconnect Cable**.



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OSD Control

Unit configuration is performed via the on-screen display (OSD) setup menu.
The following section describes OSD control and functionality.

Prerequisite

- Verify that the HD receiver is powered on.
- Verify that the HD receiver is paired with the HD transmitter (see Pairing HD Transmitter and Receiver).
- Verify that the monitor or FPV goggles are connected to the HD receiver and are powered on.
- Verify that the HD transmitter is powered on in order for all functions to be available.

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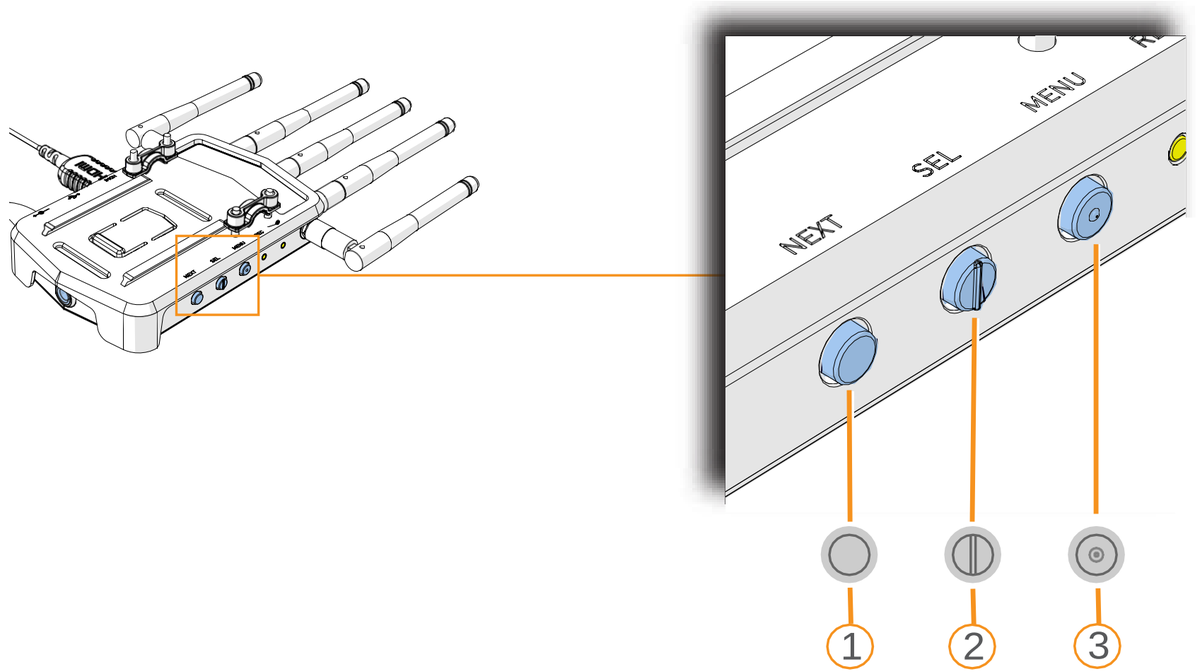
Navigating in OSD Menus

Use the following buttons on the HD receiver are used for navigating through the OSD menu options:

- **NEXT (1)**
- **SEL (2)**
- **MENU (3)**



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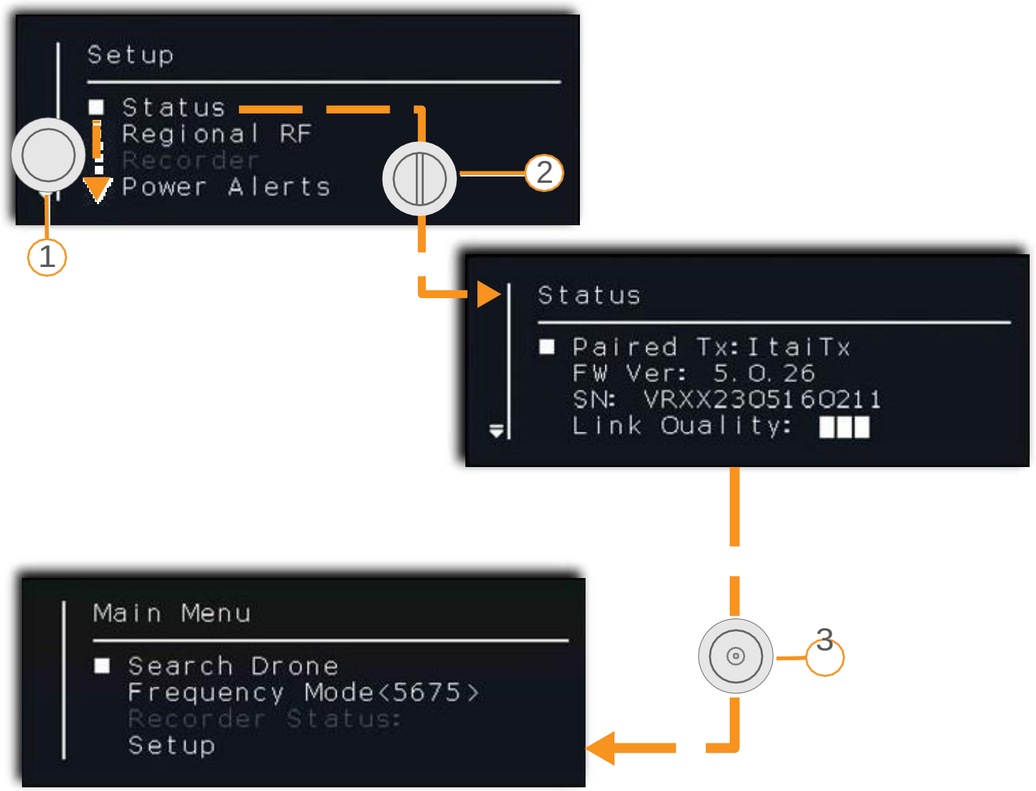
HD receiver button functionality:

- **NEXT (1) –** moves the cursor between menu options.
- **SEL (2) –** selects the marked option.
- **MENU (3) –** displays the main menu or turns the OSD menu on the main menu OFF.

> ***Tip:***
> *Navigation can be done using the mobile device (see Configuration Using ProSight Mobile Application).*



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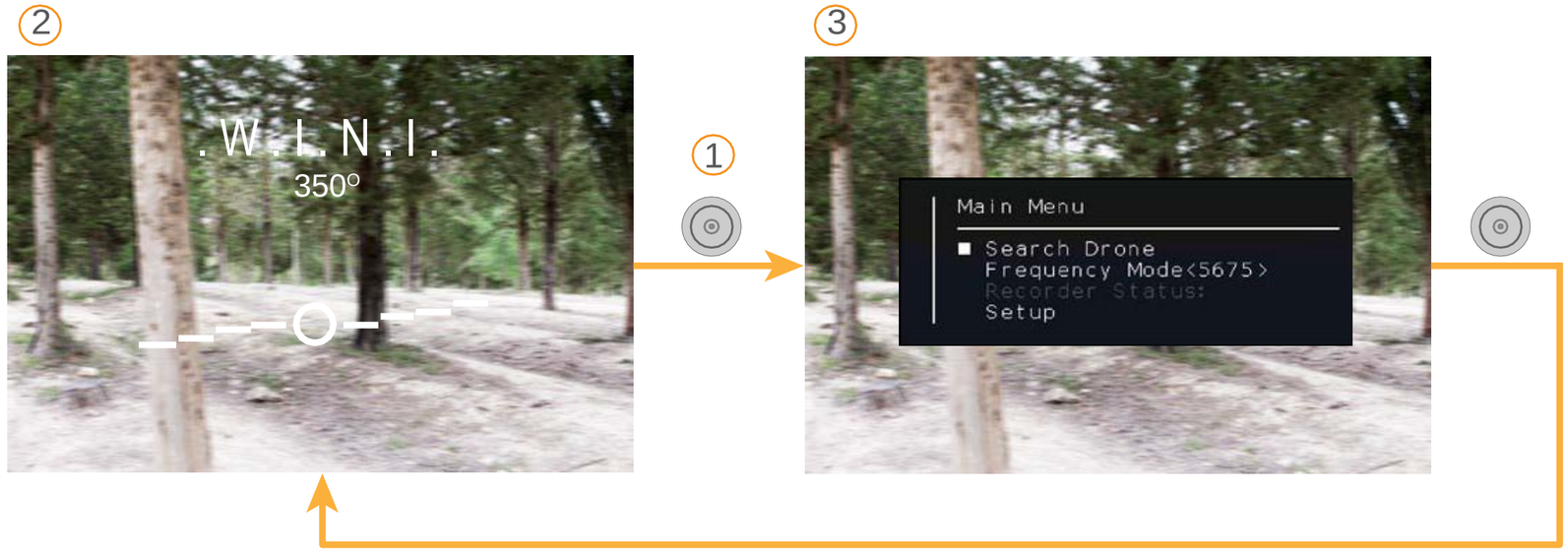
Switching between OSD Modes

Clicking the MENU button (1) toggles between the following OSD display modes:

- **OSD Telemetry (2) –** displays the selected OSD viewing mode (see Setting OSD Overlays)
- **OSD Menu (3) –** initiates OSD programming and displays the Main Menu



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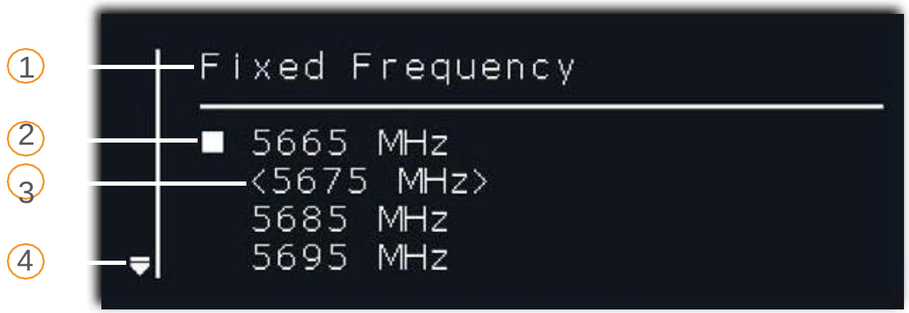
OSD Menu Interface

A typical menu interface includes the following:

- **Menu title line (1)**
- **Menu items –** up to 4 items can be displayed at a time.
  - » **Cursor (2) –** indicates a selection point. Use the **Next** button to move down the list, and the SEL button to select a menu option or a parameter.
  - » **Active parameter (3) –** indicates the current selected parameter.
- **Scroll bar (4) –** appears when there are more than 4 menu items on a list.



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Main Menu

The main menu includes the following sub-menus:

- **Search Drone –** enables Connecting to Transmitter
- **Frequency Mode –** enables Frequency Management
- **Recorder Status –** displays the status of the recorder (grayed out when the recorder is not connected)
- **Setup –** enables settings configuration (see Setup Menu)

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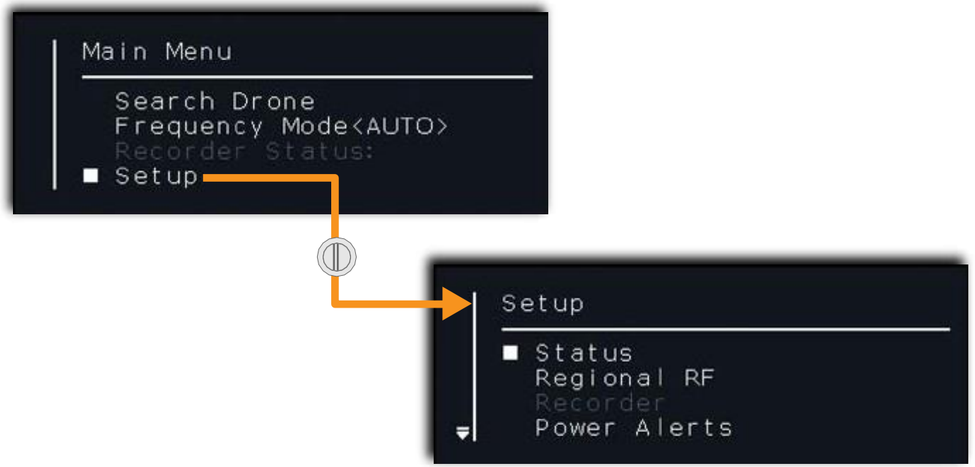
Setup Menu

To display the Setup menu, select Main Menu **> Setup**.

The setup menu enables the following functions:

- » Viewing Status
- » Setting Regional RF
- » Selecting Battery Type
- » Setting Power Alert Threshold
- » Setting OSD Overlays
- » Managing Bluetooth Communication
- » Flipping the Camera Image
- » Setting Video Mode



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Connecting to Transmitter

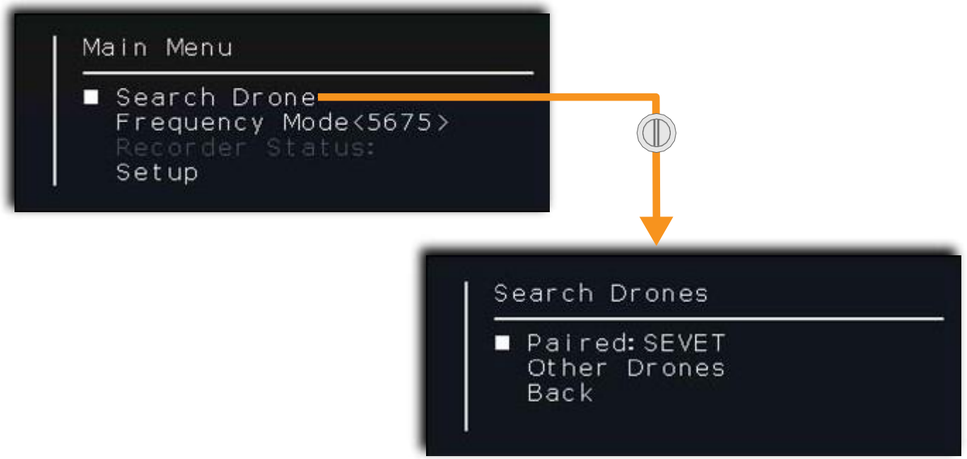
This section reviews the tasks associated with connecting to the paired HD transmitter (located on your drone) or to transmitters on other drones.

Connecting to My Drone:

To connect to your paired HD transmitter:

1. Select Main Menu **> Search Drone**

2. Select **Paired: [Transmitter Name]** to connect the HD receiver to the paired HD transmitter.



Tips:

- *Select* **Back** *to return to the* Main Menu*.*
- *If the HD receiver and HD transmitter are not paired, see* Pairing HD Transmitter and Receiver*.*
- *The HD receiver automatically connects to its paired transmitter upon power on (there is no need for OSD selection).*

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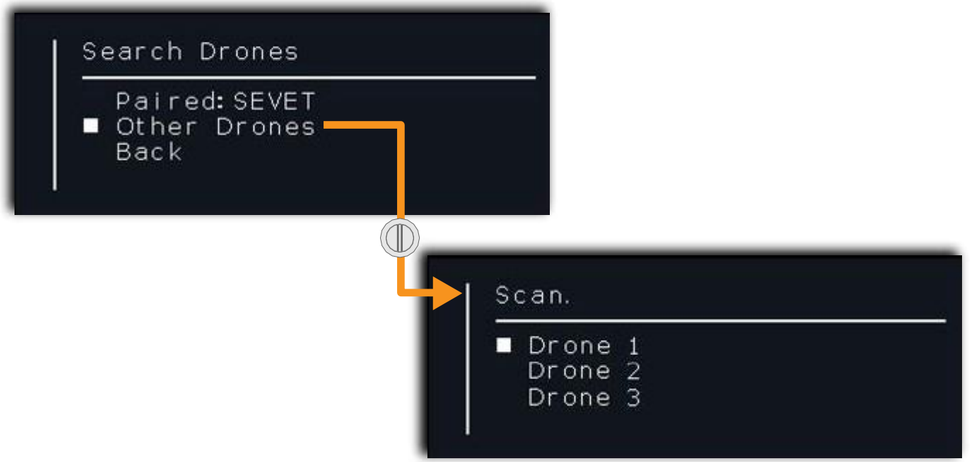
Connecting to Other Drones

To connect as a viewer to an HD transmitter located on another drone:

1. Select Main Menu **> Search Drone > Other Drones**.
2. Select an HD transmitter from the displayed list of available drones.



Tips:

- *Unavailable transmitters are grayed out.*
- *Select* **Back** *to return to the* Main Menu*.*
- *When connection to the HD transmitter is lost, the following message appears on the screen:* **Searching for [Transmitter Name]**.

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Frequency Management

CONNEX ProSight is a digital system, allowing bi-directional communication between the HD transmitter and its paired HD receiver. When the HD receiver is connected to a transmitter as a viewer (see Connecting to Other Drones), frequency management is disabled.

Frequency management is performed on the HD receiver, in one of the following ways:

- Selecting Frequency Mode via OSD
- Frequency Management using the mobile application

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Selecting Frequency Mode via OSD

> ***Tip:***
> *Frequency management is possible only when the HD receiver is connected to its paired HD transmitter.*

To select frequency mode:

1. Select Main Menu **> Frequency Mode**.

2. Select one of the following modes:

- Auto
- Fixed:
  - » ProSight Bands
  - » Fixed frequency

For more information on frequency management, see CONNEX ProSight Frequency Management.

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Auto

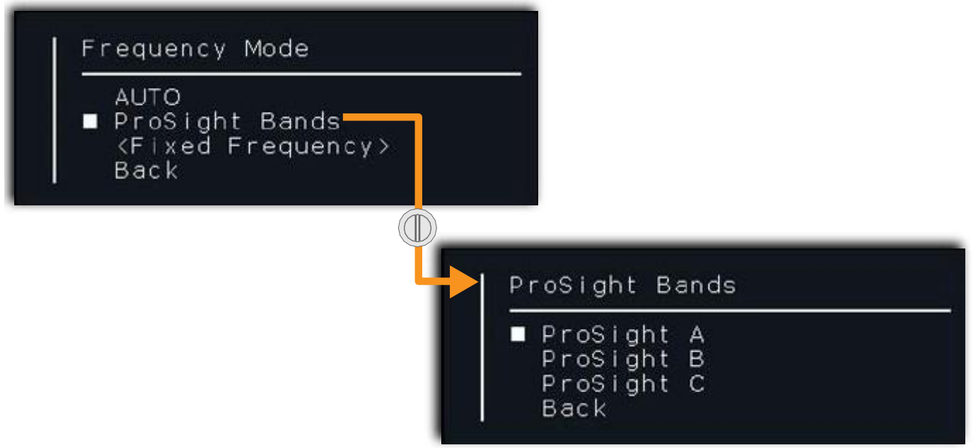
In Auto mode, the system constantly searches for the optimal frequency. When the system detects interference with the current frequency, it instructs both the transmitter and receiver to seamlessly switch to an alternative frequency. This change is done instantly, without any visual effect or video degradation.

Fixed

Fixed frequency includes two options, as follows.

ProSight Bands

This mode enables selecting a race set.
Each set consists of two frequencies within the DFS (Dynamic Frequency Selection) spectrum.
The system scans to verify that there is no interference with other broadcasting devices and will switch between the two frequencies when required.



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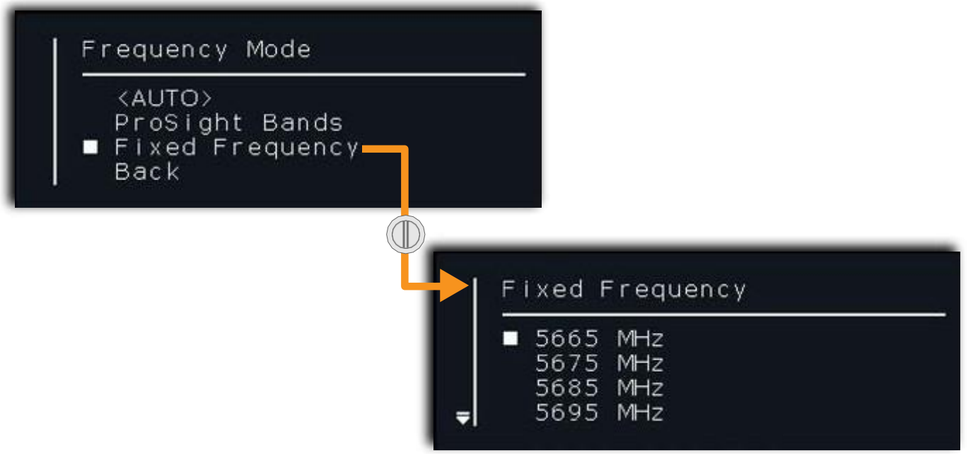
Fixed frequency

This option enables selecting from a list of frequencies (the list changes according to region).
Once a certain frequency is selected, the HD transmitter uses the selected frequency only.
In this mode, the system does not change its frequency, even when communication is lost nor when if it detects interference with other systems.
To select a fixed frequency:

1. Select Main Menu **> Frequency Mode > Fixed Frequency**.

2. Select a frequency from the displayed list.



> ***Tip:***
> *Select* **Back** *to return to the* Main Menu.

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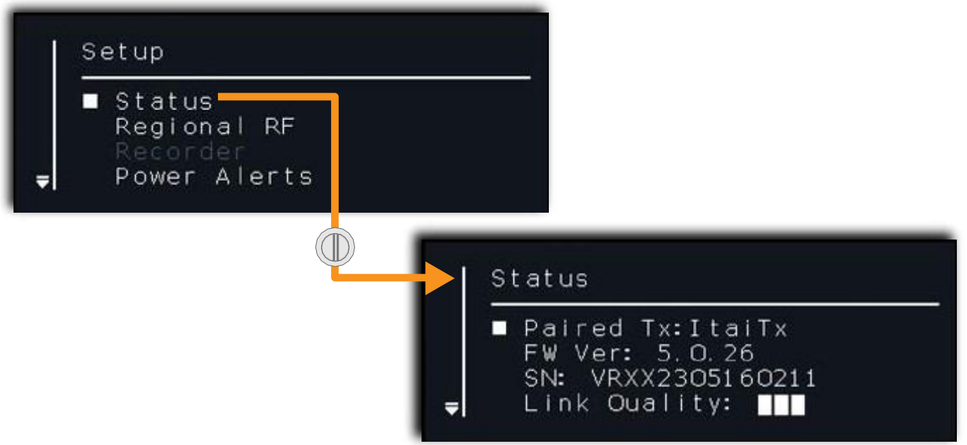
Setup Menu Options

Viewing Status

To view the communication status, select Main Menu > Setup > **Status**.
The Status menu opens, displaying the following information:

- **Paired Tx –** the name of the paired transmitter
- **FW Ver –** the current installed firmware version
- **SN –** HD receiver serial number
- **Link Quality –** the quality of the connection to the HD transmitter



Tip:

Select **Back** *to return to the* Main Menu.

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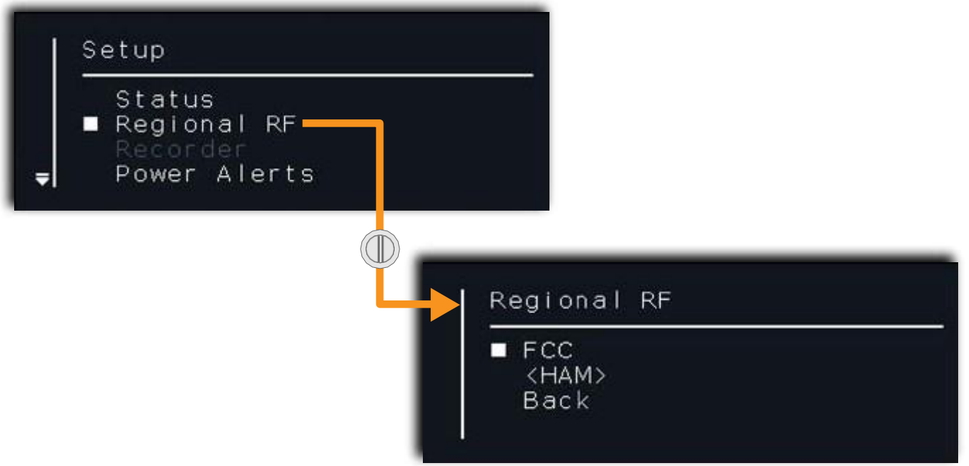
Setting Regional RF

To select a regional radio frequency mode:

1. Select Main Menu > Setup > **Regional RF**.
2. Select a mode from the displayed list.

   For the full Regional RF mode list according to location, see Regional Frequency Specifications.



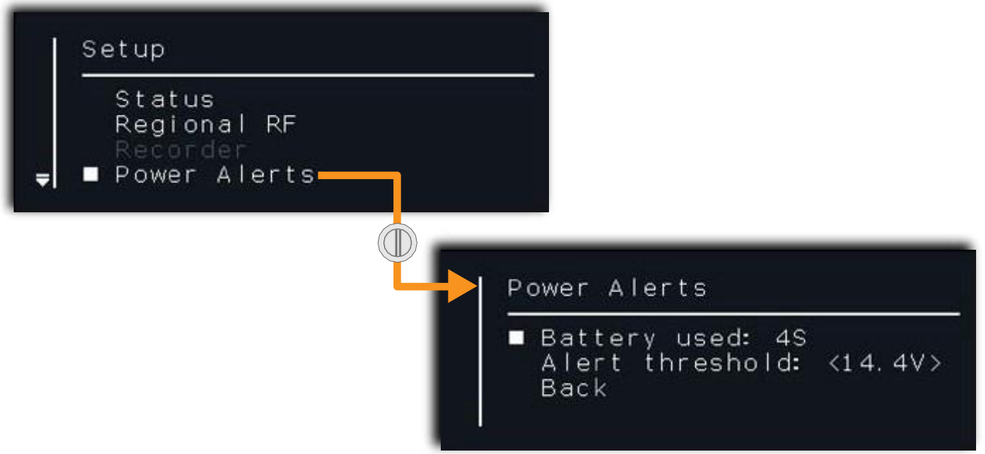
Tips:

- *Select* **Back** *to return to the* Main Menu.
- *It is the responsibility of the user to change the Regional RF settings and to adhere to local regulation.*

Selecting Battery Type

To select battery type:

1. Select Main Menu > Setup > **Battery used**.
2. From the displayed list, select the battery type you are using.



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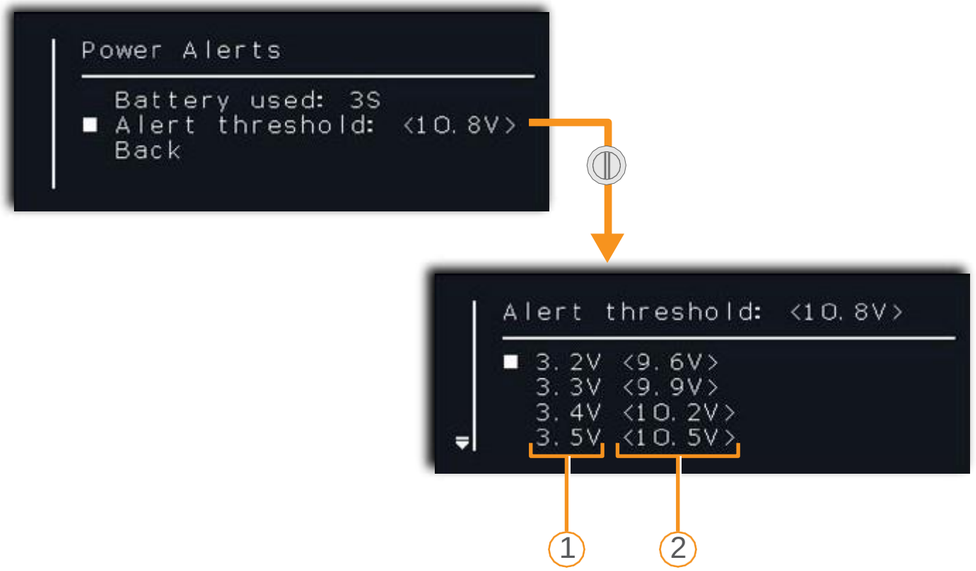
Setting Power Alert Threshold

To manage battery power and to set the power alert threshold:

1. Select Main Menu > Setup > **Power Alerts**.

   The displayed list changes according to the used battery settings. Each cell voltage is shown (1), and the total battery voltage is displayed in brackets (2).

2. Select the alert threshold from the displayed list according to the battery manufacturer's instructions.



Tip:

Select **Back** *to return to the* Main Menu.

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Setting OSD Overlays

This section reviews the overlay displayed on top of the video image. The overlay is selected for the following communication modes:

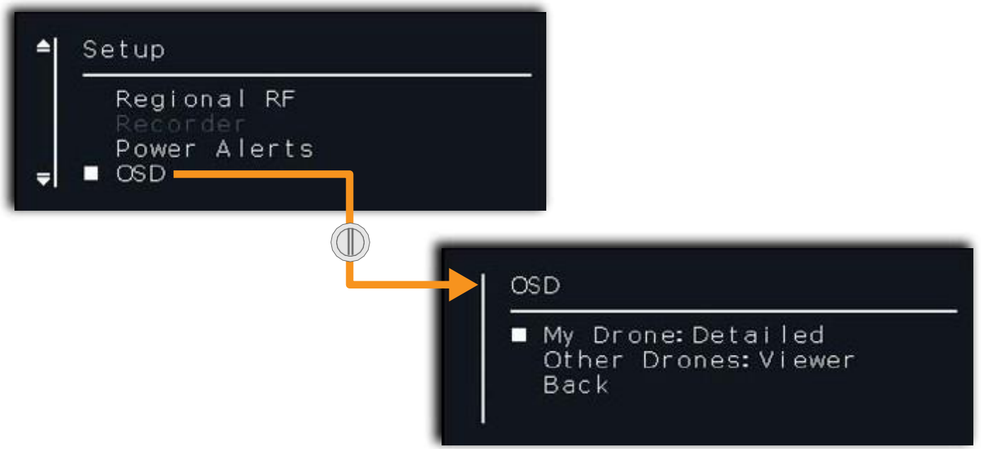
- **My drone –** when connected to the paired drone
- **Other drone –** when connected to other drones as a viewer

Selecting My Drone Overlay

To set the viewing mode for the paired drone:

1. Select Main Menu **>** Setup **> OSD > My drone.**
2. Use the SEL button to toggle between the following overlays**:**

- Detailed Overlay
- Race Overlay
- Viewer Overlay
- No Overlay



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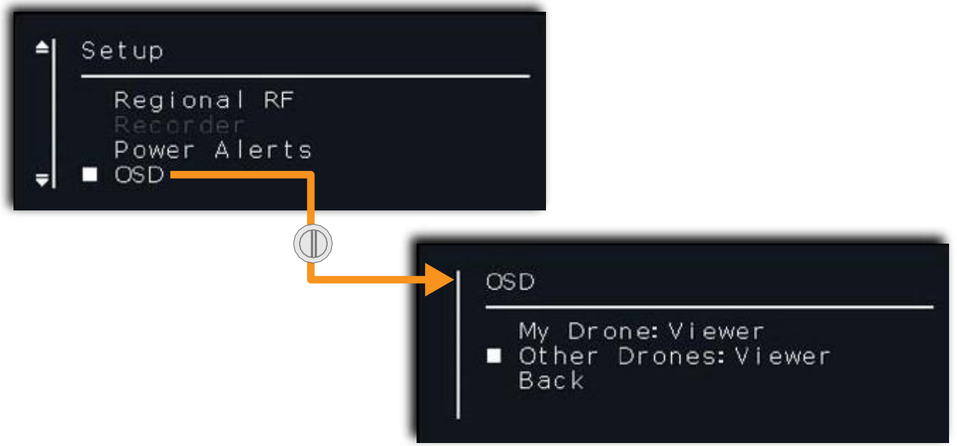
Selecting Viewer Overlay

To set the viewing mode when connected as a viewer:

1. Select Main Menu > Setup > **OSD > Other drone**.

2. Use the SEL button to toggle between the following overlays:.

- Detailed Overlay
- Race Overlay
- Viewer Overlay
- No Overlay



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Detailed Overlay

The Detailed overlay displays the following information on top of the live video:

- **Transmitter name (1)**
- **Frequency mode (2)**
- **Signal level (3) –** there are three levels:
  - » – best signal
  - » – signal is weakening
  - » – it is recommended to bring the drone closer to the receiver
- **Battery voltage (4) –** blinks and turns red if the measured voltage is below the predefined threshold (see Setting Power Alert Threshold)
- **Flight duration (5) –** counts the flight time in seconds. Count start time depends on the following:
  - » When the HD transmitter telemetry port is connected to the flight controller, time starts counting when the drone is armed.
  - » When the telemetry port is not connected, time starts counting once the drone is powered on.

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Race Overlay

The race overlay displays the following information on top of the live video:

- Flight duration (1)
- Battery voltage (2)

Viewer Overlay

The viewer overlay displays the following information on top of the live video:

- Transmitter name (1)
- ProSight logo (2)

No Overlay

This selection displays no overlay on top of the live video.

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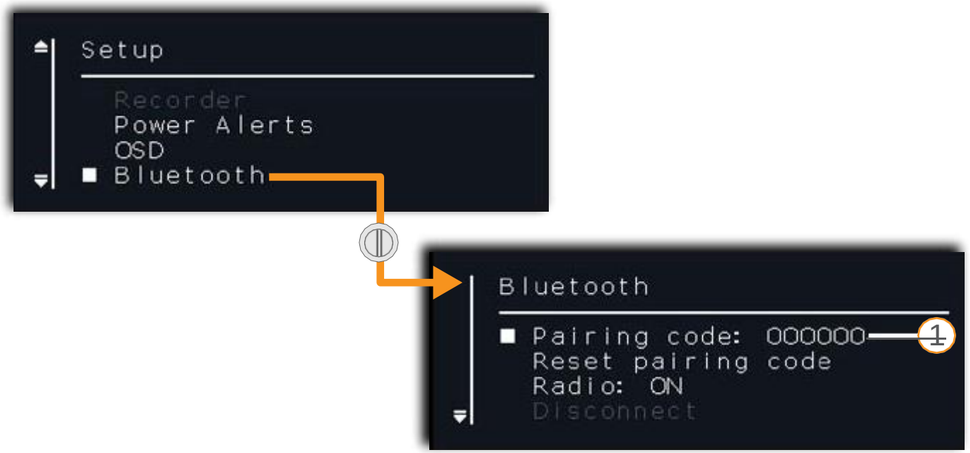
Managing Bluetooth Communication

Viewing Bluetooth Pairing Code

The bluetooth pairing code is used to connect to the HD receiver or the HD transmitter with a mobile device via bluetooth.
To view the code, select Main Menu > Setup > **Bluetooth**.
The code is displayed in the Bluetooth menu under **Pairing Code** (1).
For pairing using the ProSight Mobile Application, see Pairing with a Receiver via Bluetooth.

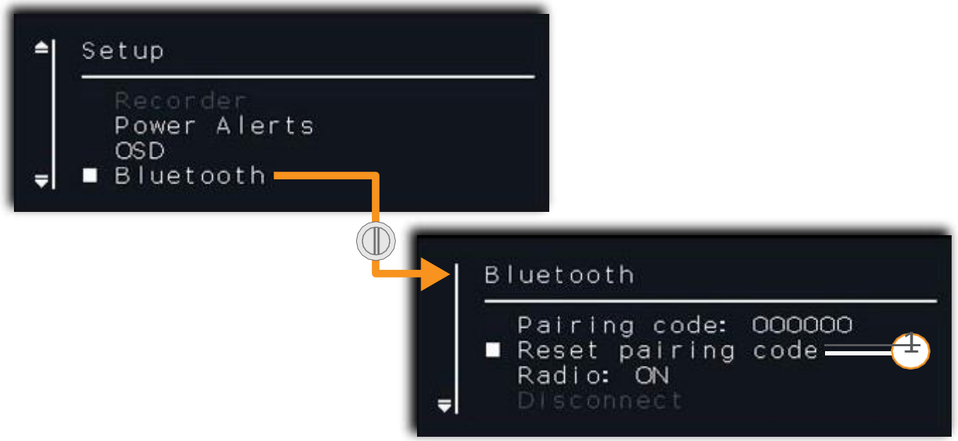


Resetting Bluetooth Pairing Code

Select Main Menu > Setup > **Bluetooth > Reset Pairing Code**.
The system generates a new random six-digit code. The new code is displayed in the Bluetooth menu under Pairing Code (1).

Tips:

- *The default Bluetooth code is* **000000**.
- *Select* **Back** *to return to the* Main Menu.



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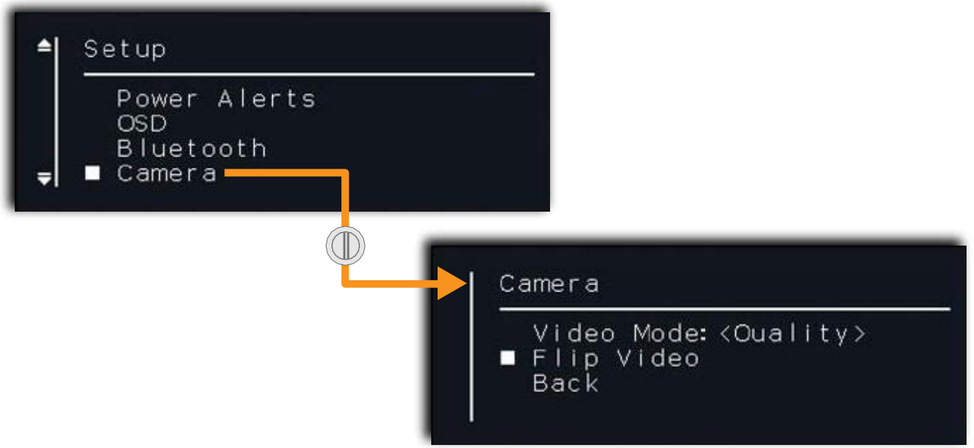
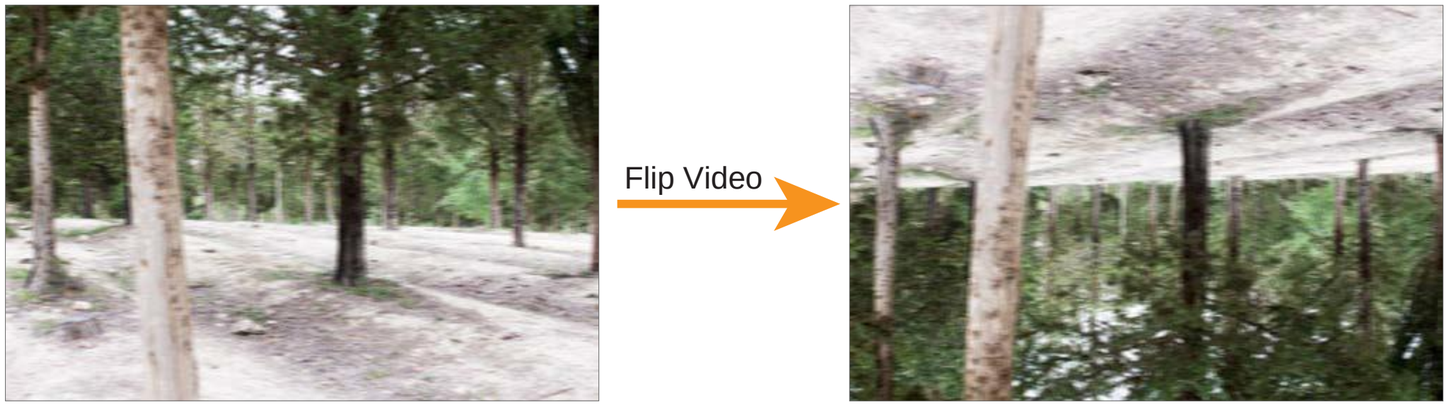
Flipping the Camera Image

This option is relevant when the camera is installed upside down.
To flip the displayed video vertically 180˚, select Main Menu > Setup > **Camera > Flip Video.** Each selection of the **Flip Video** option, flips the image 180˚.



> ***Tip:***
> *Select* **Back** *to return to the* Main Menu.



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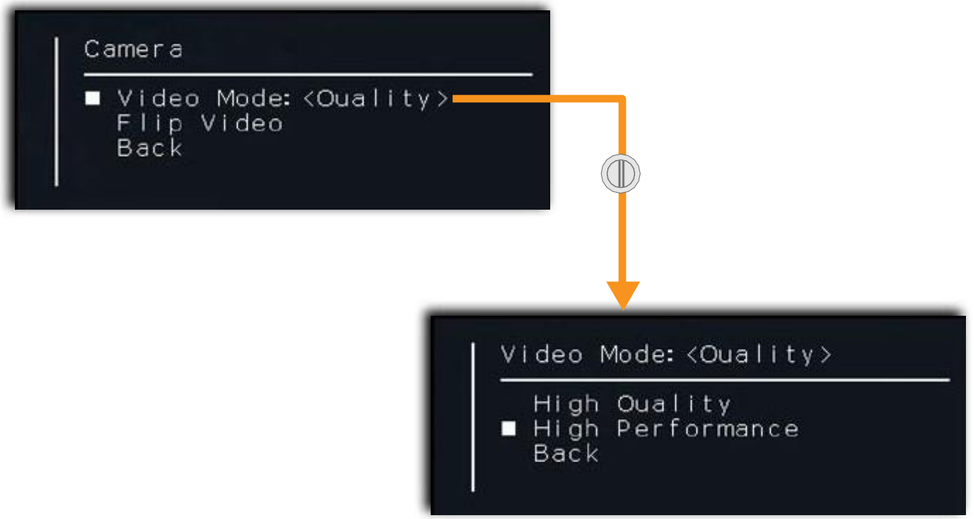
Setting Video Mode

1. Select Main Menu **>** Setup **> Camera > Video Mode**.
2. Select one of the following modes:
   - **High Quality –** 720p 30 HD video
   - **High Performance –** 720i 60 HD video

For more information on video modes, see High Quality Mode and High Performance Mode.



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Configuration Using ProSight Desktop Application

This chapter describes the CONNEX ProSight mobile application and includes:

- Installing the Desktop Application
- Connecting to the HD Transmitter and Receiver
- Upgrading Firmware
- Editing Device Name
- Restoring Factory Configuration Settings

Prerequisite

The ProSight desktop application supports OSX (MAC) or Windows 7 and up.

Installing the Desktop Application

Download the CONNEX ProSight desktop application from the Amimon website.

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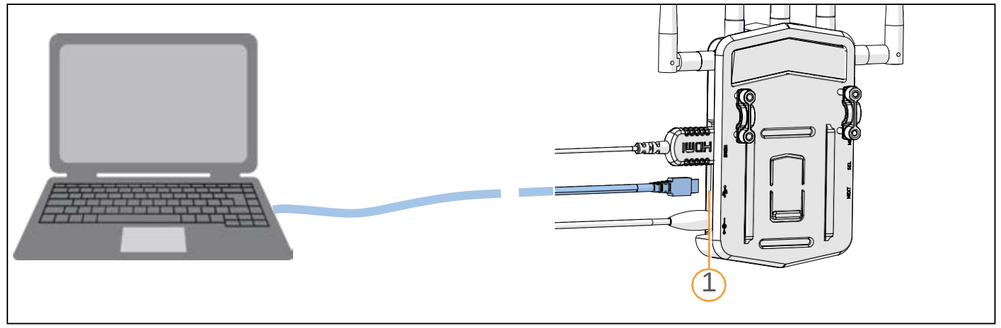
Connecting to the HD Transmitter and Receiver

Start the ProSight desktop application.

When starting the application, and before communication is established, the application displays a **NO USB CONNECTION** message.

Connect the Micro USB Cable between the HD receiver micro USB port (1) and the computer USB port. The application's main screen opens.



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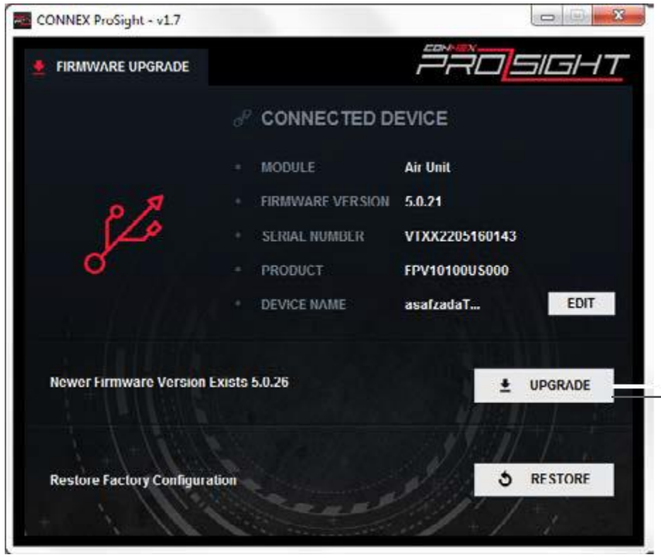
Upgrading Firmware

> **Tip:**
> *Before performing firmware upgrade, connect to the Internet.*

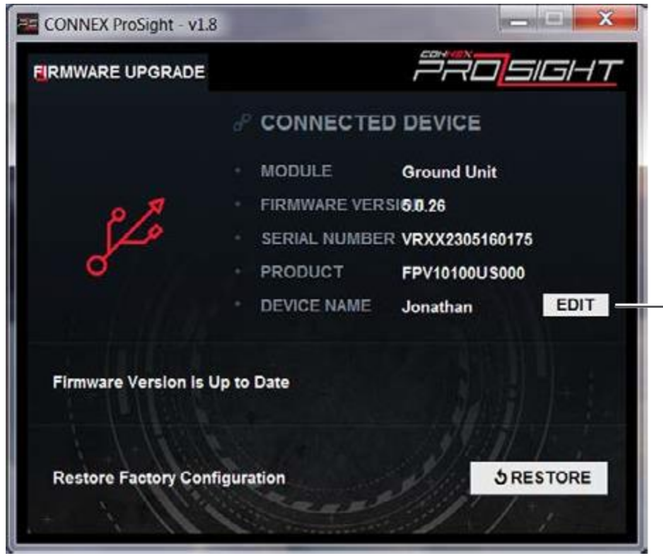
When a newer firmware version is available, the PGRADE button (1) appears.

To upgrade the firmware of the connected ProSight device, click the PGRADE button (1). The firmware upgrade process is performed automatically to the latest firmware version.



Editing Device Name

Click the DIT button (1) to edit the device name.



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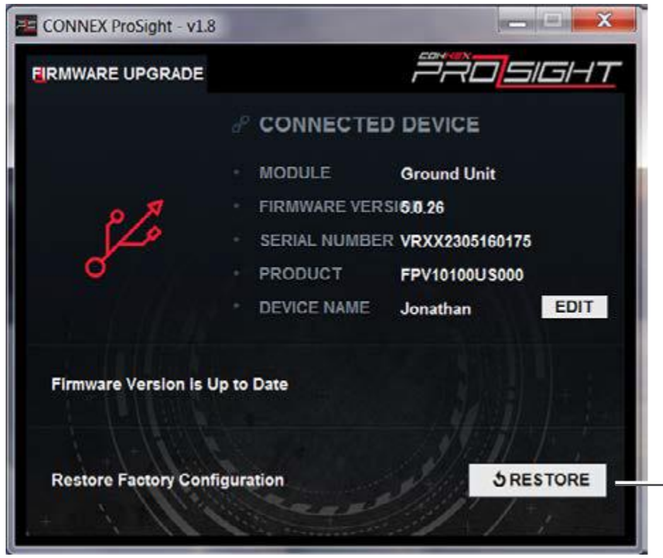
Restoring Factory Configuration Settings

To revert to the default factory settings, click the ESTORE button (1).



A dialog box is displayed. Click K to revert to factory configuration.

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Configuration Using ProSight Mobile Application

CONNEX ProSight can be configured using the CONNEX RMT mobile application. This chapter describes the mobile application and includes:

- Home Screen Overview
- Viewing Device Parameters
- Main Menu Options

Initial Setup

1. Download the CONNEX RMT application from the relevant application store:

- **For iOS –** iTunes
- **For Android –** Google Play

2. Install the application on your mobile device.

3. Start the ProSight application. The application home screen is displayed (see Home Screen Overview).

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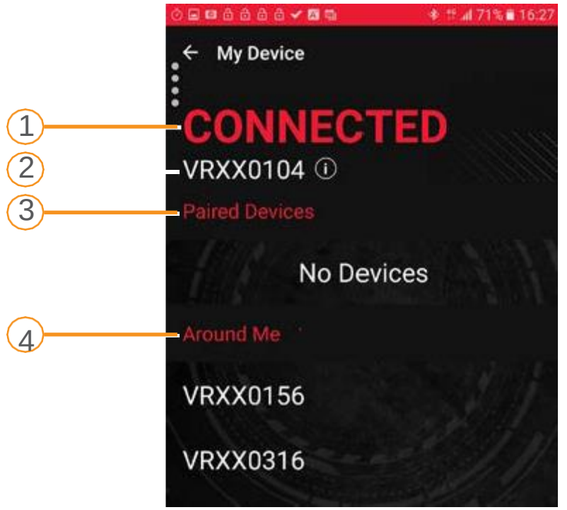
Home Screen Overview

The following information is displayed on the home screen:

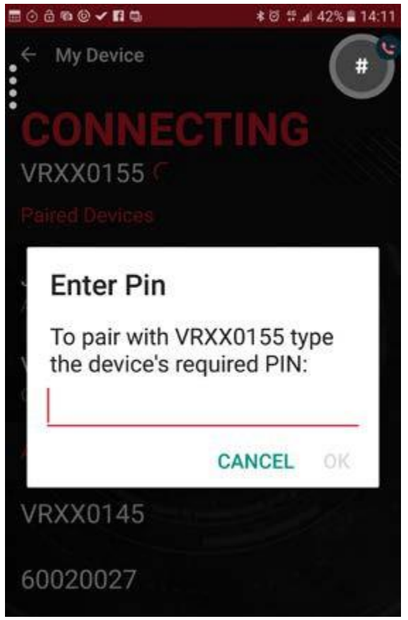
- **Connection status (1)**
- **Paired HD receiver name (2) –** tap the information icon ⓘ next to the receiver name to display the device parameters (see Viewing Device Parameters).
- **Paired Devices (3) –** list of receivers that have been paired for bluetooth communication in the past
- **Around Me (4) –** list of other CONNEX ProSight receivers in the area. Selecting a device that is not already paired requires entering a pairing code (see Viewing Bluetooth Pairing Code).



Pairing with a Receiver via Bluetooth

This section shows how to initiate first communication between a mobile device and the HD receiver.

1. Verify that bluetooth on your mobile device is On.
2. Select a device from the **Around Me** list (see Home Screen Overview). The system displays a message, asking to enter a pin code.
3. Enter the bluetooth pairing code that appears in the Bluetooth OSD menu and click K (see Viewing Bluetooth Pairing Code).



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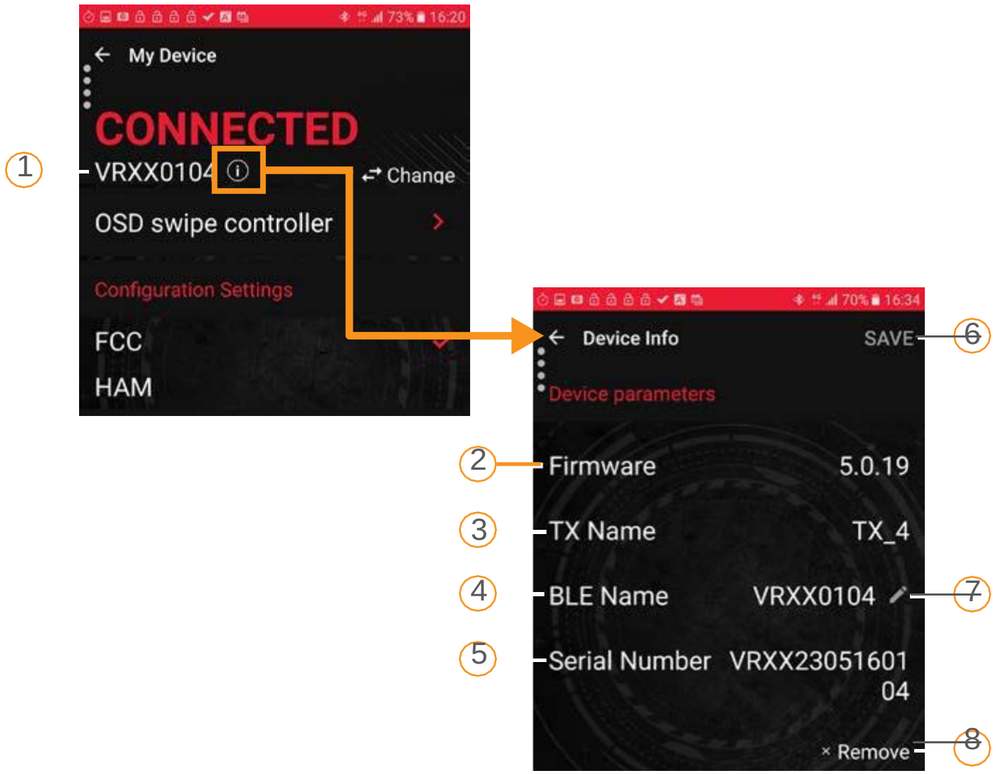
Viewing Device Parameters

Tapping on the information icon ⓘ next to the receiver name (1) displays the following device parameters:

- **Firmware (2) –** HD receiver firmware version.
- **TX Name (3) –** HD transmitter name.
- **BLE Name (4) –** Bluetooth Low Energy HD receiver name. Click the Edit icon ✎ (7) to edit the BLE name.
- **Serial Number (5) –** HD receiver serial number.
- Click SAVE (6) to save the changes and return to the main menu.
- Click REMOVE (8) to delete the device from the Paired Devices list.



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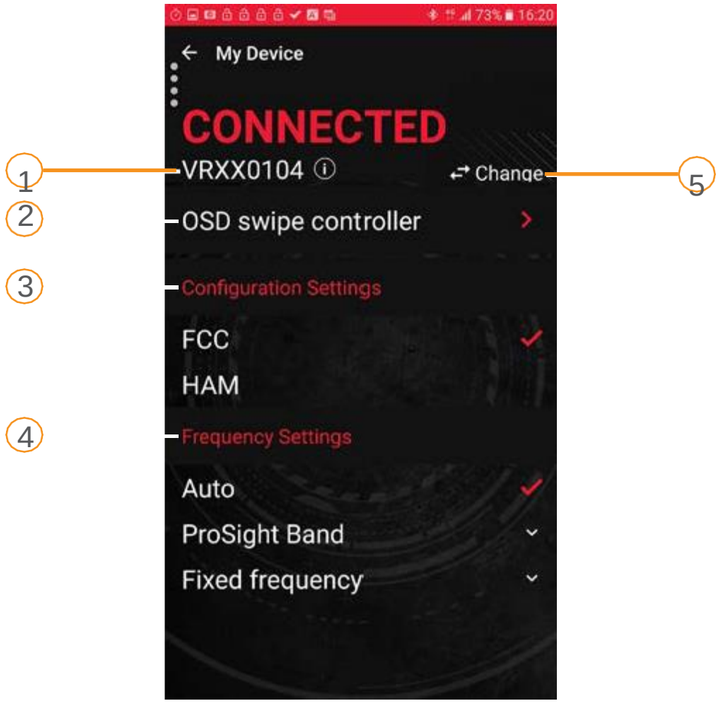
Main Menu Options

The name of the connected unit (1) appears at the top of the Main Menu.
The Main Menu includes the following:

- **OSD Swipe Controller (2) –** enables controlling the On-Screen Display on the connected monitor or FPV goggles (see Using the OSD Swipe Controller).
- **Configuration Settings (3) –** enables selecting a regional RF mode.
- **Frequency Settings (4) –** enables selecting a frequency mode (see Frequency Management).

Tip:
Click the HANGE button (5) to connect to a different unit.



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Using the OSD Swipe Controller

The OSD Swipe Controller enables controlling and navigating in the OSD on the connected monitor or FPV goggles (see Navigating in OSD Menus). The application swipe commands replace the need to use the HD receiver control buttons (see Navigating in OSD Menus).
Use the following swipe options:

- **Swiping right –**
  - » Functions like the MENU button: starts the OSD display or selects a menu option.
  - » Functions like the SEL button when in a menu.
- **Swiping down –** functions like the NEXT button: scrolls down the OSD menu.
- **Swiping left –** functions like selecting the Back option: returns to the previous screen.

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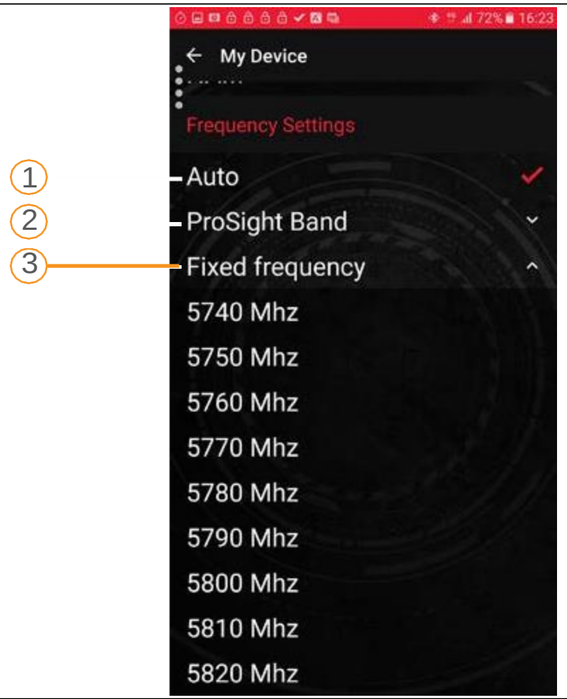
Frequency Management

> ***Tip:***
> *Frequency management is available only when the HD receiver is connected to its paired HD transmitter.*

To set the frequency mode, tap one of the following modes:

- **Auto (1) –** constantly searches for the optimal frequency.
- **Fixed –**
  - » **ProSight Bands (2) –** enables selecting a race set. Each set consists of two frequencies within the DFS spectrum. The system scans to verify that there is no interference with other devices and will switch between the two frequencies when required.
  - » **Fixed frequency (3) –** lists fixed frequencies for manual selection. Once a certain frequency is selected, the HD transmitter uses only the selected frequency.

For more information on Frequency Management, see CONNEX ProSight Frequency Management.



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Specifications

CONNEX ProSight

- Supported LOS range of 1000ft without any range limitation
- Advanced High-Definition spectator viewing mode
- Receiver Unit outputs standard 720p60 over HDMI for reducing motion blur
- Compatible with all popular HDMI based Goggles/monitor
- Digitally paired transmitter to receiver for crosstalk free flight

HD Transmitter

- Up to 26mS video latency from Camera lens to HD Receiver HDMI output
- **Power consumption –** ~4.1Watt
- **Power input –** 7v-17v; support 2S to 4S batteries
- **Antennas –** two external MMCX connectors
- **Dimensions –** 70mm x 36.5mm x 7.2mm
- **Weight –** 32 gr
- **UX: LEDs –** status indication only
- **Interfaces –**
  - Power in (4 pins)
  - Power out to the camera & recorder
  - **Micro USB –** Connection to application; Wired pairing
  - UART for Telemetry
  - **Proprietary MIPI (14 pin Right-Angle, JST SM20B-SRSS) –** HD Video input
- Environmental:
  - **Operating –** -10° to 50° C
  - **Operating humidity –** 10% - 90%
  - **Storage –** -10° to 75° C

Camera

- Advanced High-Dynamic-Range Support (115dB)
- HD 720P30 / 720i60 resolution
- FPV Optimized for Outdoor and Indoor flights
- **Dimensions –** 28mm x 20mm x 27mm
- 105 degrees FOV with pre-focused lens (the lens can be replaced, although this is not recommended)
- Compatible with ProSight HD transmitter Only
- Power up from ProSight HD transmitter
- **Weight –** 13gr (6g camera + 7g lens)

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HD Receiver

- Power consumption ~5Watt
- Power input: 7v-17v; Support 2S to 4S batteries; Reverse polarity protected
- **Antennas –** 5 antennas (short SMA connectors)
- **Dimensions –** 117mm x 75mm x 17mm
- **Weight –** 134 gr
- **UX –**
  - **2 LEDs –** status indication only
  - **3 push button –** for OSD control
- Interfaces
  - Power supply jack
  - **Micro USB –** Connection to application; Wired pairing
  - **HDMI out –** Type A female
  - Bluetooth for application management control
- **Environmental –**
- **Operating –** -10° to 50° C
- **Operating humidity –** 10% - 90%
- **Storage –** -10° to 75° C

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ProSight Delay-Free HD Camera

The CONNEX ProSight Delay-Free HD camera is optimized for both indoor and outdoor flights, featuring advanced High-Dynamic-Range sensor, allowing high-definition, delay-free, crystal clear video.

High-Definition 115dB HDR Delay-Free Camera

The CONNEX ProSight HD camera is equipped with a 115dB high dynamic range 1/3” sensor, with 4.2 micron pixels’ size, allowing HD video capture (1280x720 pixels).
The CMOS HDR camera allows for both indoor and outdoor flights, with a 2.8mm HD rated lens with IR filter, providing a 105-degree field of view (FOV). The camera is compatible with other S-Mount lenses, allowing the FOV to be changed.

Tip:
The provided lens includes a pre-installed IR filter.

High Quality Mode and High Performance Mode

The ProSight HD camera supports two operational modes, High Performance Mode and Image Quality Mode. Modes are selectable using the system OSD (see Setting Video Mode). The pilot may choose the mode that best fits their personal preference, environment and specific flight scenarios:

	High Performance Mode	**Image Quality Mode**
Camera Resolution	720i60	720p30
Latency	< 9 mSec	< 26 mSec
Rx Output Resolution	720p60	720p60

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Technology and Output

The ProSight HD camera is connected to the ProSight transmitter via a MIPI interface. This is an HD dedicated video interface with no additional processing delay between the camera and the transmitter.

Both the HD transmitter and the HD receiver utilize enhanced MIMO technology. Video is transmitted over two transmitting antennas and received by five receiving antennas. It is then decoded from a 5GHz RF signal to a standard HDMI video signal.

In order to comply with all popular HDMI based VR goggles and screens, the HD receiver up-converts the incoming 720p HD video stream, creating a 720p60 HD video output. The receiver has been tested with all popular VR goggles in today's market.

Size Factor Flexibility and Setup

The CONNEX ProSight camera is a CMOS sensor based camera which allows the smallest form factor combined with best performance. The camera uses a rolling shutter which requires a stable platform or mechanical system dampening.

The basic ProSight includes two types of vibration dampers: a porch like element and a camera protective case. Both solutions have been tested and proven to provide best results.

For camera installation instructions, see Mounting the Camera.

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CONNEX ProSight Antenna Guidelines

We recommend following these guidelines when using a CONNEX ProSight antenna array or designing your own array.
For HD transmitter antenna installation instructions, see Wiring and Installing the Antenna.

Full 5GHZ Frequency Band Support

ProSight antennas are designed to cover the full span of the 5GHz unlicensed band, between 5150MHz and 5925MHz without degradation at any of the sub-bands.

Tip:
Analog systems usually utilize the sub-band of 5600MHZ to 5900MHz, hence their antennas are designed to function best at these frequencies. This is also the case with most circular antennas.

Antenna Configuration

CONNEX ProSight uses MIMO (Multiple Input and Multiple Output) and diversity technology. The ProSight HD transmitter uses two transmitting antennas, and the ProSight HD receiver uses five receiving antennas.
The RF beam of the ProSight transmitting antennas is both horizontally and vertically omnidirectional and that of the receiving antenna is vertically omnidirectional.
The RF link should remain stable as long as at least one of the transmitting antenna beams is pointing towards the receiving antennas.
To achieve optimal configuration for a robust and stable link of a maneuvering drone it is recommended that the two transmitting antennas be placed at 90 degrees to each other and that all five receiving antenna be positioned straight up. This configuration best ensures that at least one transmitting antenna will be in a (almost) vertical position towards the HD receiver antennas during the drone's maneuvers.

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Line of Sight

RF signals are obstructed, absorbed and reflected by physical obstacles on their path. Best performance of the drone can be achieved by using a clear line of sight setup. However, the drone's body can be an obstacle to the RF signal, if placed between the transmitting and receiving antennas. To prevent this, we recommend that:

- Transmitting antennas be placed at least 3 cm (1.2 inch) away (usually above) from the body to reduce possible signal obstruction.
- Transmitting antennas be placed at the rear of the drone. Quads tend to tilt forward, so most of the flight time the antennas will be at the highest point, and therefore less obstructed by the drone's body.
- CONNEX ProSight antennas should be installed 33 degrees back from the vertical position. This allows the antennas to be vertical during most of the flight time (producing the best antenna pattern), while the drone tilts forward. This configuration also allows for stable transmission when rolling the drone.
- **Avoid any metal or cables near the antennas –** place the antenna's RF cable as far as possible from the antenna's body.

Tip:
Other materials (including plastic) which are covering/connected to the antenna, may affect the antenna's performance.

Platform Considerations

- The CONNEX ProSight link is bi-directional, full-duplex, meaning the HD transmitter antennas also receive data from the ProSight HD receiver. Placing other transmitting antennas in close proximity to the ProSight HD transmitter antennas is not recommended.
- The antennas' RF cables are securely connected to the ProSight HD transmitter. We recommend securing the RF cables so that they will not be detached from the ProSight HD transmitter in the event of a collision or crash.
- When folding the RF cables to secure them to the drone (with zip ties or glue), roll the cables with a minimal 5mm radius to avoid damage to the internal conductive wire.

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CONNEX ProSight Frequency Management

Frequency Management Tools

The ProSight frequency management scheme was designed to observe four constraints:

- Regulatory requirements - regional settings and HAM license
- User ease of use
- Coexistence with other analog and digital systems
- Environmental usage: Indoor or Outdoor

Ease of Use

CONNEX ProSight is a digital system, allowing bi-directional communication between the ProSight HD transmitter and the ProSight HD receiver. The user manages frequency configuration and operating modes by setting them on the HD receiver. Configuration is performed using either:

- OSD menus, controlled by buttons on the side of the receiver.
- Through a dedicated mobile application, using a wireless bluetooth connection (iOS or Android platform).
- The transmitter is fully controlled by the receiver, which sets its operating frequencies and regional settings.

The CONNEX ProSight supports two modes of operation:

- **Automatic mode –** used for casual operation by a single or limited number of pilots without the need for manual frequency management. Each system senses the spectrum and determines the optimal frequency to work on.
- **Fixed mode –** when racing with multiple pilots, each pilot can set their system to use a specific pre-defined frequency. The frequency list depends on regional settings and is listed at the end of this appendix.

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Automatic Frequency Selection

When using **Auto** mode, the system automatically selects the most suitable channel to work on from all available frequencies.

- The number of available frequencies varies according to regulations and sub region settings.
- The system constantly monitors in-channel interferences, and if detected, it will instruct both the transmitter and the receiver to seamlessly transfer to an alternative vacant frequency.
- Channel hopping is instantaneous, in between video frames, and has no visual effect or video degradation.

Manual Frequency Selection

The **Fixed Frequency** mode provides an organized group or race manager with greater control and management possibilities. In this mode, the user explicitly selects the frequency of the channel to be used by each ProSight System.

- Fixed mode enables mixed heats involving both analog SD and digital HD drones.
- In this mode, the system will NOT change its frequency, even if it detects interference from other systems.
- In order to have multiple simultaneous channels, the center frequencies of the systems must be at least 20MHz apart. The available channels are listed in a set of actual frequency number and predefined channel sets, named “ProSight Channel Sets”.

ProSight Channel Set is a list of available operating channels. Regulations require that each of these channels includes a specific and an alternate frequency. The ProSight Channel Set was designed to comply with DFS regulations.
DFS “Dynamic Frequency Selection” requirement is enforced to ensure that channel sensing and avoidance capabilities are used to detect radar activity (usually meteorology radars).
By complying with the DFS requirement, the CONNEX ProSight System can use a larger set of frequencies, which would otherwise be restricted.

Tips:

- *Analog systems are restricted from using the DFS bands*
- *In order to comply with EU regulation, EU systems will change their frequency, even in* **Manual** *mode, when interference is detected.*

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Regional Frequency Specifications

The ProSight system operates over the full span of the 5GHz unlicensed band. Ranging from 5150MHz to 5925MHz, the system has a total of 62 different center frequencies to operate on.

ProSight systems are shipped with regional settings that meet the regulatory requirements of the region they are sold in.

The receiver system can be configured to operate in several modes depending on the regulations applicable in a specific region. Allowed frequencies are listed below:

Area	Available Modes
US and Canada	• FCC • HAM
EU	• In-Door • Air-to-Ground (SRD)
Australia	• In-Door • Out-Door
Japan	ATV
Korea	Out-Door
China	In-Door

Notes for specific regional settings:

- **SRD regulation –** max transmit power is 25mW
- **HAM regulation –** max transmit power is 200mW
- **Other regional settings –** max transmit power is 200mW

Tip:

All ProSight systems are certified to comply with regional regulation.

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Recommended Regional Frequency Setting For Optimal Performance

Region	Available Channels	Max Links	Recommended center frequencies								
US FCC	**12**	**8**	Pro-A	Pro-B	Pro-C	5740	5760	5780	5800	5820	
US HAM	**27**	**16**	Pro-A	Pro-B	Pro-C	5665	5685	5705	5740	5760	5780
			5800	5820	5840	5860	5880	5900	5920		
EU SRD	**13**	**7**	5740	5760	5780	5800	5820	5840	5860		
EU Indoor	**12**	**8**	5175	5195	5215	5235	Pro-A	Pro-B	Pro-C	Pro-D	
China Indoor	**19**	**11**	5175	5195	5215	5235	Pro-A	Pro-B	5740	5760	5780
			5800	5820							
Japan ATV	**6**	**4**	5700	5745	5780	5800					
Japan (US HAM)	**24**	**16**	5665	5685	5705	5740	5760	5780	5800	5820	5840
			5860	5880	5900	5920					
Korea Outdoor	**12**	**8**	Pro-A	Pro-B	Pro-C	Pro-D	5740	5760	5780	5800	
Australia Indoor	**23**	**14**	5155	5175	5195	5215	5235	Pro-A	Pro-B	Pro-C	Pro-D
			5740	5760	5780	5800	5820				
Australia Outdoor	**13**	**9**	Pro-A	Pro-B	Pro-C	Pro-D	5740	5760	5780	5800	5820