

herelink

User Manual



Hardware Parameter

2). Technical Specifications

Air Unit and Controller Hardware Information:
Processor: SoC - Pinecone S1
AP: 4 x large core, Cortex A53, 2.2GHz
 4 x small core, Cortex A53, 1.4GHz
GPU: 4 core, Mali-T860
SDR: A7 + DSP
Storage: Air Unit LPDDR3 1GB, Controller LPDDR3 2GB
Air Unit/Controller: EMMC 4GB
Transmission Range: FCC20km, CE/SRRRC 12km
Latency: Min 110ms
Resolution: 720p@30fps, 1080p@30/60fps
Frequency Band: 2.4GHz ISM
Receive sensitivity: -99dBm@20MHz BW
Interference recovery: < 1s

HERELINK Air Unit

Model:HX4-06210
 Brand: HERELINK

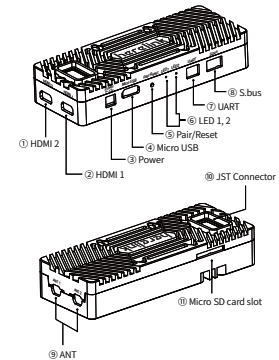
Interfaces:

- HDMI 2: Micro HDMI, for video input
- HDMI 1: Micro HDMI, for video input (preferred)
- Power: 7V-12V max (3s Lipo supported) power input
- Micro USB: For debug or upgrade, support OTG
- Pair/Reset: For pairing and reset
- LED 1, 2: To indicate pairing status and transmission status
- UART: 3.3V / 5V UART

- S.bus: Two 3.3V RC output
- ANT 1, 2: IMCC, for signal transmission and communication
- JST Connector
- Micro SD card slot

Housing: Aluminum **Weight:** 95g (w. antennas)
Dimension: 78.5x30x15mm (w/o antennas)
Antenna: 2 x omni-directional antennas (2dB)
Signal Bandwidth: 20MHz/10MHz
Power Consumption: < 4W

1. Air Unit Status Indication and Buttons
LED 1 (left)
Steady Green Light: Receiving HDMI1 signal
Steady Red Light: Receiving HDMI2 signal
Steady Yellow Light: Receiving flight control data signal
Changing Green-Red Light: Receiving two video signals
Changing Green-Yellow-Red Light: Receiving two video signals and flight controller signal
No Light: Receiving no valid video signal or flight controller signal
LED 2 (right)
Flashing Green Light: Pairing
Steady Green Light: Receiving valid controller signal, and power is normal
Steady Yellow Light: Unpaired/no valid signal received
Flashing Red Light: Unstable power
No Light: Air unit is not powered

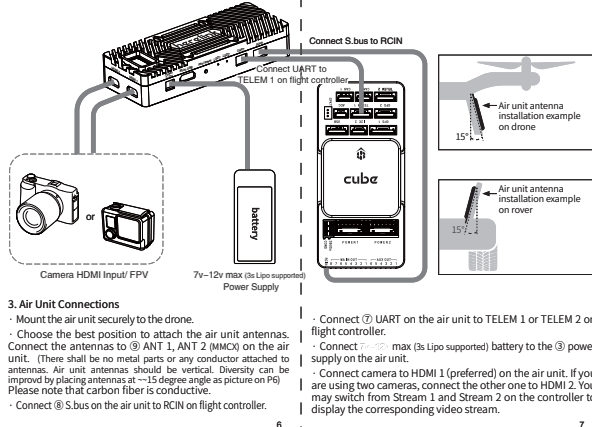


2. HERELINK Air Unit Set V1.1 Interfaces Definition

Power	Pin #	Name	Description
1	1	Power	Power IN 7V-12V max (3s Lipo supported)
2	2	GND	Ground pin

UART	Pin #	Name	Description
1	1	RXD	RX of air module 3.3V / 5V TTL
2	2	TXD	TX of air module 3.3V / 5V TTL
3	3	GND	Ground pin

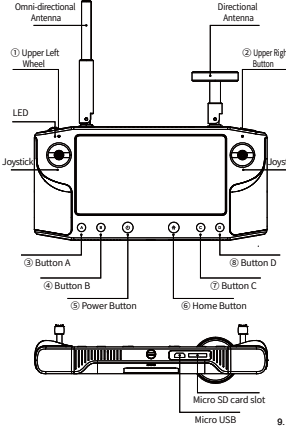
S.bus	Pin #	Name	Description
1	1	S.bus out 1	RC output
2	2	GND	Ground pin
3	3	RSVD	For future use
4	4	GND	Ground pin



HERELINK Controller Unit

Model:HX4-06211
 Brand:HERELINK
Frequency:
 SRD for 10MHz: 2409MHz-2459MHz@8.86 dBm ERP
 SRD for 20MHz: 2412MHz-2462MHz@8.23 dBm ERP
 5180-5320MHz@9.29 dBm ERP
 5500-5700MHz@8.48 dBm ERP
 5745-5825MHz@8.08 dBm ERP
Housing: Plastic **Weight:** 516g (w. antennas)
Dimensions: 217x106.5x31mm (w/o antennas, jysticks)
Screen: 5.46 inch, 1080P, 16 million colors, capacitive touch screen
Audio: 1 x built-in speaker, 2 x built-in microphone
Remote control: 2 x joystick, 1 x wheel, 6 x button (w. backlight), 1 x upper right button
Communication: WIFI/GPS 2.4GHz on the controller side
LED: 2 x tricolor LED (left, right)
Interface: 1 x MicroUSB, 1 x Micro SD card slot (extendable to max 64GB)
Antenna: 1 x detachable directional (5dB), 1 x detachable omni-directional (2dB), built-in WiFi antenna, built-in GPS antenna, external GPS antenna interface
Power: 4950mAh built-in Lipo Battery
Charging: Support micro USB 5V 2A charging
Power consumption: < 4W average (With transmission on, medium screen brightness, WiFi off, GPS off)

1. Controller LEDs/Buttons/Interfaces
Controller Buttons



- Upper Left Wheel: Control gimbal
 - Upper Right Button: Take photo (configurable)
 - Button A: N/A (configurable)
 - Button B: Return to previous page (configurable)
 - Power Button: Power on/off and unlock screen
 - Home Button: Return to the ground control station
 - Button C: N/A (configurable)
 - Button D: N/A (configurable)
- Controller LED (Left)**
 Flashing Red Light: Critical battery power
 Steady Red Light: Low battery power
 Steady Yellow Light: Medium battery power
 Steady Green Light: Sufficient battery power
- Controller Interface**
 Default interface for the controller is QGC
 To disconnect drone, slide down system menu and turn on airplane mode. To connect drone, slide down system menu and turn off airplane mode.
 To restart QGC, please click "Settings - Application - QGC" to start the app. Then press the Home button to complete the restart.
2. Controller Antenna Assembly and Disassembly
 - To assemble the antenna, plug the omni-directional antenna into the top left hole of the controller and rotate to align. Then press and rotate clockwise lock.
 - Plug the directional antenna into the top right hole of the controller and rotate to align. Then press and rotate clockwise to lock.
 - Disassemble antennas by pressing and rotating counter-clockwise. Then they can be pulled out. (Left is for omni-directional antenna; right is for directional antenna)

Pairing Air Unit and Controller

- 1). Controller and Air Unit Pairing Instruction**
Initial Pairing:
 1. Power on and unlock the controller. A warning will be shown as below:

 2. At the same time within 30s, long press the [Pair/Reset] button for 3s on the air unit to make the air unit enter pairing mode (air unit [Pair/Reset] is as shown below):

 3. Wait and observe QGC on the controller side. If pairing is successful, it will pop up calibrate succeed. Click [OK] to complete the code matching process. If calibrate failed pops up, please restart the process.

Re-pairing:

- Click on [Q] icon on the controller
 - Click [D2D Info] to enter pairing UI
 - Click [Calibrate] to start pairing
-
- Then repeat Step2 and Step3 of "Initial Pairing"
- 2). Getting Video Stream to Work**
 1. After pairing is completed, the air unit and the controller are connected successfully. Connect the air unit HDMI, turn on 1080P video input source in "Video Stream Settings" (refers to P12). The video will be displayed at the lower left corner of QGC. Click the video frame to display in full screen.
 2. Problems that may arise during transmission

Q1: Why is there no video transmission after the camera is connected to Herelink via HDMI? Meanwhile the controller screen shows "WAITING FOR VIDEO" and video stream at the upper right corner is changing around a few kbps?
Solution: Check if HDMI output resolution is 1080P (QGC resolution setting must be consistent with camera resolution setting). Please also check HDMI connection, or replace the HDMI cable with a new one.

Q2: The link rate in the upper right corner display 0kbps. Re-pair or restart machine.

- 3). Video Stream Settings**
 Click on the airplane icon at the upper left corner and select [Video Stream] from the drop-down menu on the right.

 ① **Rate:** Configure link rate (related to environment and current working mode)
 ② **Stream 1:** HDMI 1 (closer to power supply interface)
 ③ **Stream 2:** HDMI 2
 ④ **Enable Stream:** Turn on/off video display
 ⑤ **1080P Video:** Choose between video resolution. When the radio button is on: 1080P; off: 720P

⑥ **Grid Lines:** Grids on video display
 ⑦ **Record Stream:** Recording switch
Video storage directory:
 PC: This PC\Optimus\Internal shared storage\QGroundControl\Video
 Herelink Controller: Storage\Explore\Optimus\QGroundControl\Video
Screenshots:
 Press Power button + D button at the same time.
Screen storage directory:
 PC: This PC\Optimus\Internal shared storage\Pictures\Screenshots
 Herelink Controller: Storage\Explore\Optimus\Pictures\Screenshots

- 4). D2d Info Settings**
 Click on Q icon in the upper left corner and select D2d Info X axis: Frequency. Red line represents the current working frequency. Y-axis: SNR (signal-to-noise ratio). The larger the value is, the smaller the interference is.

 ① **Upstream working bandwidth:**
 UL_14M / UL_10M / UL_20M
 20M for less interference scenarios and long distances. 14M for multiple interference scenarios.

② **Downstream working bandwidth:**
 DL_10M / DL_20M
 20M for less interference scenarios and long distances. 10M for multiple interference scenarios.

- ③ Current working frequency**
- ④ Current working bandwidth SNR value**
- ⑤ Confirm current setting**
- ⑥ Manual Mode (Frequency Configurable Mode):**
 User select working frequency according to the current environment.
 Click Manual Mode, it will pop up "succeed". Then enter the target frequency manually in the red box as shown below, or touch the graph to select. Click OK to confirm.

 Manual input frequency range is as follows:
 - Upstream working bandwidth 10M corresponds to 47050-47785
 - Downstream working bandwidth 20M corresponds to 47100-47735

After setting, UI will pop up "succeed". This means target frequency value, which is 4775L, has been set.
 (This value is for reference only, the actual working frequency should be set according to the environment of its own use)

⑦ **Auto Mode (Frequency Hopping Mode):**
 It is recommended to work in this mode to automatically select the best working frequency.

Important Notes
 1. If you connected a GoPro 6 Black and disconnect it before video is connected to the air unit, the hot swap may result in no video output from GoPro. It is suggested to restart your GoPro or place the GoPro upside down to have the image back.
 2. Air unit power input: 5V - 12.6V max (3s Lipo supported). Any power range above that will burn the device.
 3. The temperature will rise when the air unit is connected with the controller. Temperature of the air unit can be checked on the controller side, and should be lower than 70 degrees.
 (If temperature rose over 70 degrees, installing a fan should be considered.)

FAQs
 1. Can language on the controller be switched?
 The system language can be switched in slide down menu, but QGC is default as English and cannot be switched.
 2. Why aren't the LEDs lit, even though the air unit are properly correctly connected?
 Check the power input. It should be 5V - 12.6V max (3s Lipo supported) and battery should have been charged.
 3. Why can't I connect to 2.4GHz WiFi?
 Currently, Herelink only enables 5.8GHz WiFi for internet connection. Therefore, to load maps, you will need to connect to a 5.8GHz WiFi network.

Warning
 Caution: The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules and Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:
 (1) This device may not cause harmful interference.
 (2) This device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR de l'Industrie Canada applicables aux appareils radio exempts de licence.
 L'exploitation est autorisée aux deux conditions suivantes:
 (1) l'appareil ne doit pas produire de brouillage, et
 (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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.

FCC & IC Radiation Exposure Statement:
 This equipment complies with FCC and Canada radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Déclaration d'IC sur l'exposition aux radiations:
 Cet équipement est conforme aux limites d'exposition aux radiations définies par le Canada pour des environnements non contrôlés.
 Cet émetteur ne doit pas être installé au même endroit ni utilisé avec une autre antenne ou un autre émetteur.

For Air Unit
 This equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body. Cet équipement doit être installé et utilisé à une distance minimum de 20 cm entre l'antenne et votre corps.

CUBEPILOT PTY. LTD.
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 Hexadrome SAS
 ZA La Sagne, 99 Chem. de la Borie, 43330 Saint-Fereol-d'Auroux, France
 5G wifi indoor use only

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