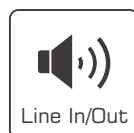




Thunder

Excellent Non-Line-Of-Sight Transmission Performance



EU Environmental Protection

Waste electrical products should not be disposed of with household waste. Please recycle where facilities exist. Check with you local authority or retailer for recycling advice.



SHENZHEN CRYSTAL VIDEO TECHNOLOGY CO.,LTD

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USER MANUAL

This user manual applies to:
Transmitter: 7074/7074A
Receiver: 3074/3074A

Version: 1.0
2020.09.18

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Thank you for choosing CVW's professional wireless HD audio and video transmission product. Read the following precautions carefully before using this product:

- * Do not use this product for a long time in the sun or dusty place.
- * Be sure to use this product within the temperature and humidity ranges.
- * Do not operate the product under vibration or strong magnetic fields.
- * Do not put conductive materials in the product vents.
- * Do not open the product yourself without the guidance of our professionals.
- * Before power-on, make sure that the adapter input voltage is AC110V-220V, and that the output voltage and current meet the product specifications.
- * Before power-on, make sure that the antenna is installed.

About This Manual

This Manual details the product specifications, instructions for use, precautions, and troubleshooting. Read the Manual carefully before using the product. If you have any questions or difficulties in using this product, contact the Company or the seller in time.

Product Features

Thunder is a wireless HD video transmission device with Tally and camera PTZ control, non-line-of-sight transmission features, supporting up to 1080P/60Hz video resolution. This system is based on 1.4Ghz 7074+3074 700/800MHz (7074A+3074A) wireless network technology for transmission. Image processing is performed using H.264 coding-decoding technology, and thus the images are clearer and the latency is lower. It can be widely used in live events, concerts, sporting events, education, churches, etc.

Brief Introduction

High-quality low-latency video footage

This product supports HD-SDI&3G-SDI input and output as well as HDMI full-HD input and output, with the highest resolution of 1080P/60Hz. With the use of H.264 coding-decoding technology with high compression ratio and high definition, the images have high definition, and the latency is as low as 70ms.

V-Mount battery, NP-F battery and non-line-of-sight transmission features

This product is designed based on 1.4Ghz wireless network technology. The lower frequency makes it have better penetrating characteristics and can be transmitted under non-line-of-sight conditions, and this frequency is not easy to be interfered by the external environment.

Point-to-point mode and streaming mode

This product supports switching between two operating modes, namely point-to-point mode and RTSP streaming mode. In point-to-point mode, the video output interface is HDMI or SDI. In RTSP streaming mode, the video streaming interface is RJ45 network interface. There are more options for different applications.

RS232 transparent transmission

This product supports RS232 transparent transmission, which is convenient for users to control the transmitting terminal through the device at the receiving terminal, such as the PTZ.

Packing List

The following items are included in the product package.

NPF-Type



Transmitter *1



Antenna *2



SDI cable *1



Double Ball Head
Arm Mount *1



Power supply
cable *1



Receiver *1



Antenna *2



SDI cable *1



Power adapter
(12V/2A) *1

V-Mount



Transmitter *1



Antenna *2



SDI cable *1



Double Ball Head
Arm Mount *1



Power supply
cable *1



Receiver *1



Antenna *2



SDI cable *1



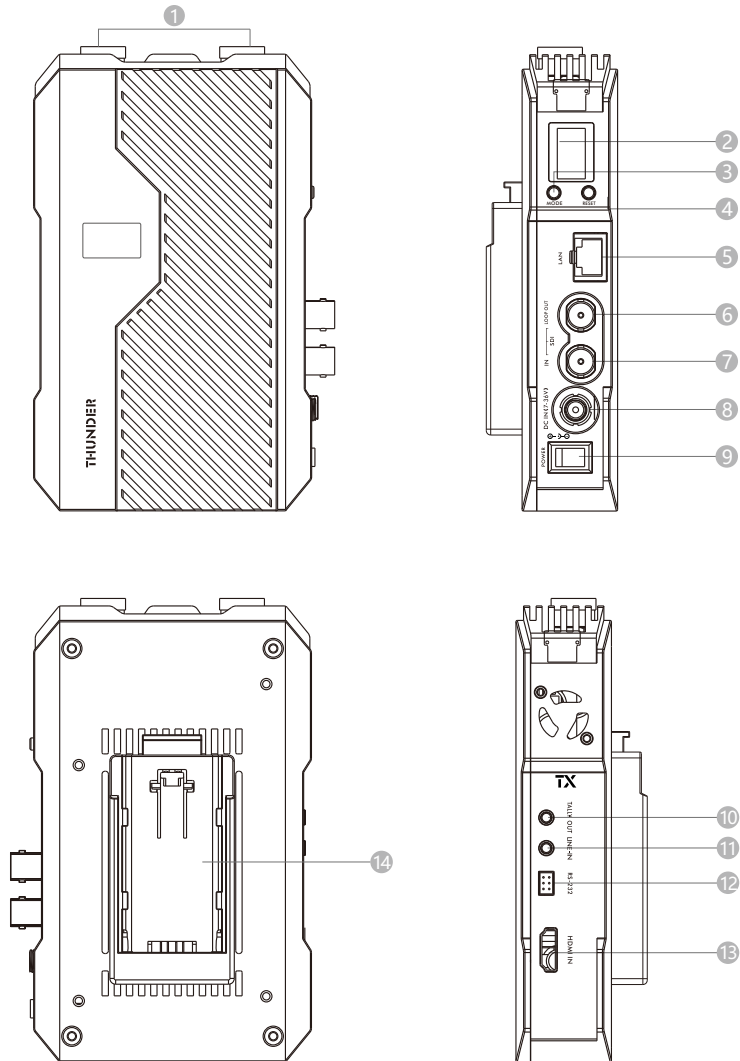
Power adapter
(12V/2A) *1

Note: The transmitter and receiver are equipped with a SONY NPF battery plate.

Note: The transmitter and receiver are equipped with a V-Mount battery plate; In addition, the transmitter will be equipped with a V-mount support plate.

Structure & Interface

TX: 7074(NPF-type)

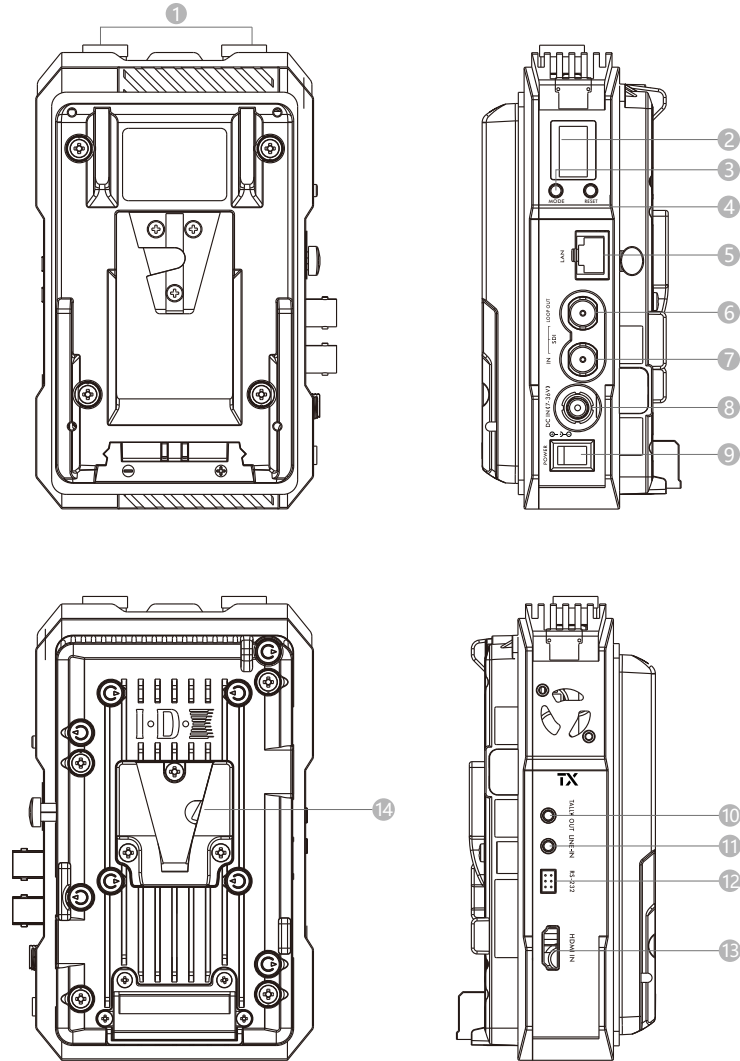


- ① Antenna Interface ② OLED Display ③ MODE ④ RESET ⑤ LAN
- ⑥ SDI LOOP Out ⑦ SDI In ⑧ DC-IN ⑨ Power Switch ⑩ Tally out
- ⑪ LINE In ⑫ RS232 ⑬ HDMI In ⑭ NP-F Battery Interface

Transmitter Key Operation

Button	Operation	Description
MODE	Channel switching: Press and hold the “MODE” button for about 3s.	Only 800M (7074A+3074A) item is valid. After switching the channel, the machine needs to be manually restarted to take effect. Besides, the transmitter and receiver need to be switched to the same channel to connect.
	Switching between RTSP mode and point-to-point mode: Press and hold the “MODE” button for about 6s. Note: Defaults to point-to-point mode.	When switching to streaming mode, the word “RTSP” will be displayed on the OLED display, and the product will enter streaming mode.
RESET	Switching between external audio mode and embedded audio mode: Press and hold the “RESET” button for about 3s.	External audio mode: MIC icon on; Embedded audio mode: MIC icon off.
	Restart of the coding-decoding board: Press and hold the “RESET” button for about 6s.	During the restart of the coding-decoding board, the “RESET” string will always be displayed on the OLED display, and the string will disappear after the restart.

TX: 7074(V-mount)

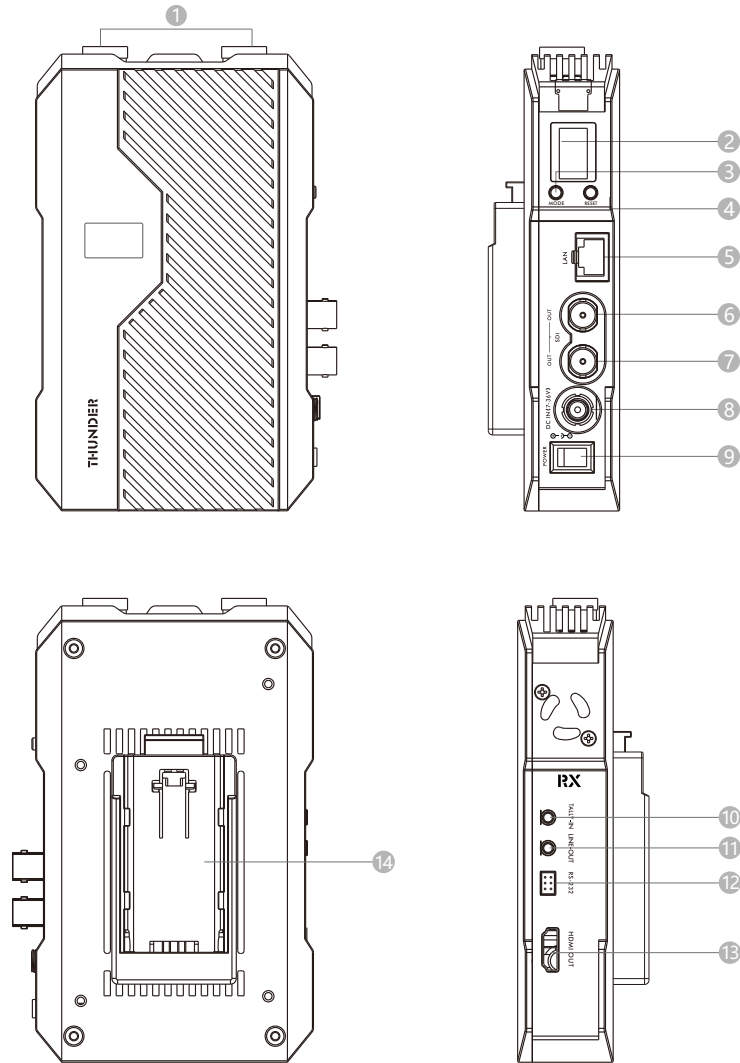


- 1 Antenna Interface 2 OLED Display 3 MODE 4 RESET 5 LAN
- 6 SDI LOOP Out 7 SDI In 8 DC-IN 9 Power Switch 10 Tally out
- 11 LINE In 12 RS232 13 HDMI In 14 V-mount

Transmitter Key Operation

Button	Operation	Description
MODE	Channel switching: Press and hold the “MODE” button for about 3s.	Only 800M (7074A+3074A) item is valid. After switching the channel, the machine needs to be manually restarted to take effect. Besides, the transmitter and receiver need to be switched to the same channel to connect.
	Switching between RTSP mode and point-to-point mode: Press and hold the “MODE” button for about 6s. Note: Defaults to point-to-point mode.	When switching to streaming mode, the word “RTSP” will be displayed on the OLED display, and the product will enter streaming mode.
RESET	Switching between external audio mode and embedded audio mode: Press and hold the “RESET” button for about 3s.	External audio mode: MIC icon on; Embedded audio mode: MIC icon off.
	Restart of the coding-decoding board: Press and hold the “RESET” button for about 6s.	During the restart of the coding-decoding board, the “RESET” string will always be displayed on the OLED display, and the string will disappear after the restart.

RX: 3074(NPF-type)

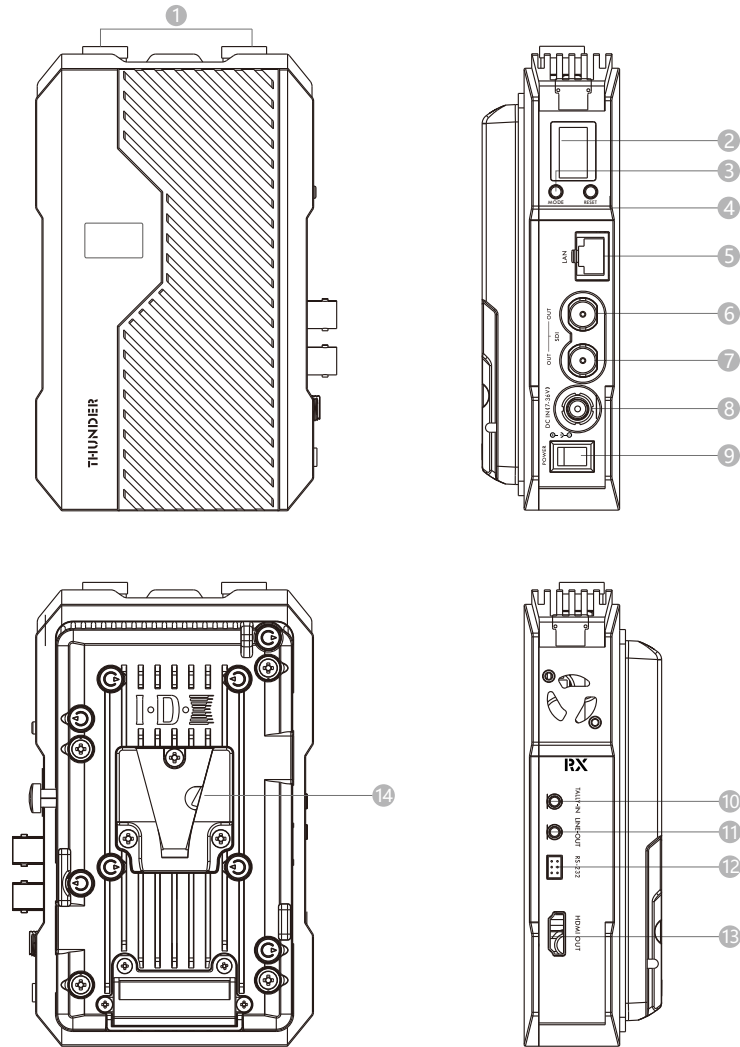


- ① Antenna Interface ② OLED Display ③ MODE ④ RESET ⑤ LAN
- ⑥ SDI Out ⑦ SDI Out ⑧ DC-IN ⑨ Power Switch ⑩ Tally In
- ⑪ Line out ⑫ RS232 ⑬ HDMI Out ⑭ NP-F Battery Interface

Receiver Key Operation

Button	Operation	Description
MODE	Channel switching: Press and hold the “MODE” button for about 3s.	Only 800M (7074A+3074A) item is valid. After switching the channel, the machine needs to be manually restarted to take effect. Besides, the transmitter and receiver need to be switched to the same channel to connect.
RESET	Restart of the coding-decoding board: Press and hold the “RESET” button for about 6s.	During the restart of the coding-decoding board, the “RESET” string will always be displayed on the OLED display, and the string will disappear after the restart.

RX: 3074(V-mount)



- ① Antenna Interface ② OLED Display ③ MODE ④ RESET ⑤ LAN
- ⑥ SDI Out ⑦ SDI Out ⑧ DC-IN ⑨ Power Switch ⑩ Tally In
- ⑪ Line out ⑫ RS232 ⑬ HDMI Out ⑭ V-mount

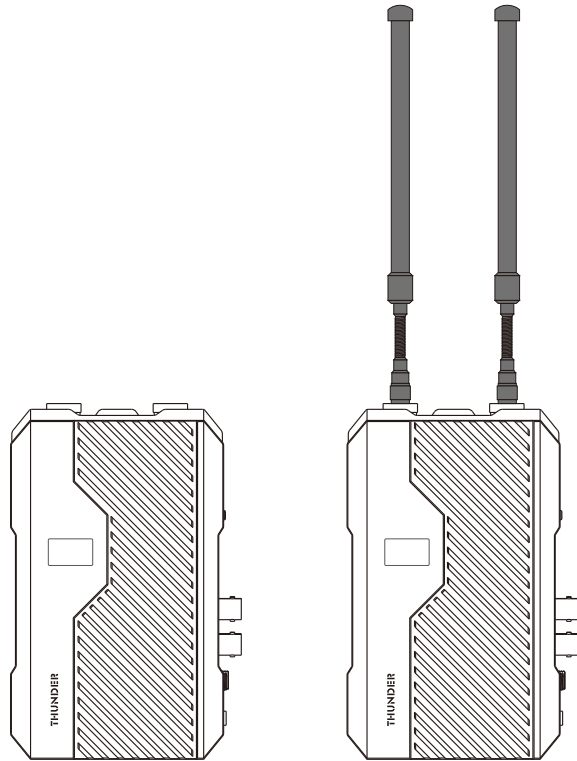
Receiver Key Operation

Button	Operation	Description
MODE	Channel switching: Press and hold the “MODE” button for about 3s.	Only 800M (7074A+3074A) item is valid. After switching the channel, the machine needs to be manually restarted to take effect. Besides, the transmitter and receiver need to be switched to the same channel to connect.
RESET	Restart of the coding-decoding board: Press and hold the “RESET” button for about 6s.	During the restart of the coding-decoding board, the “RESET” string will always be displayed on the OLED display, and the string will disappear after the restart.

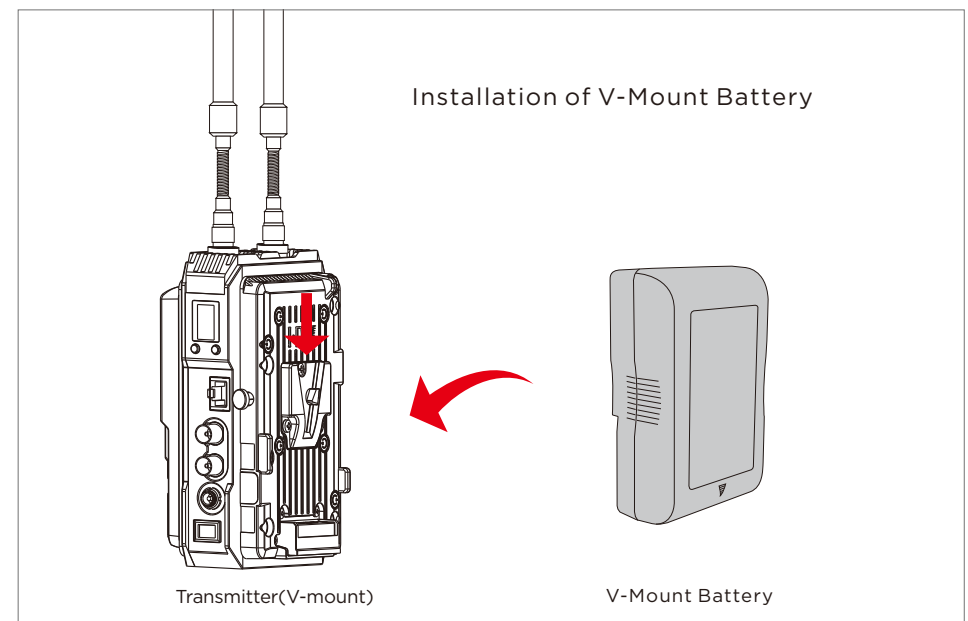
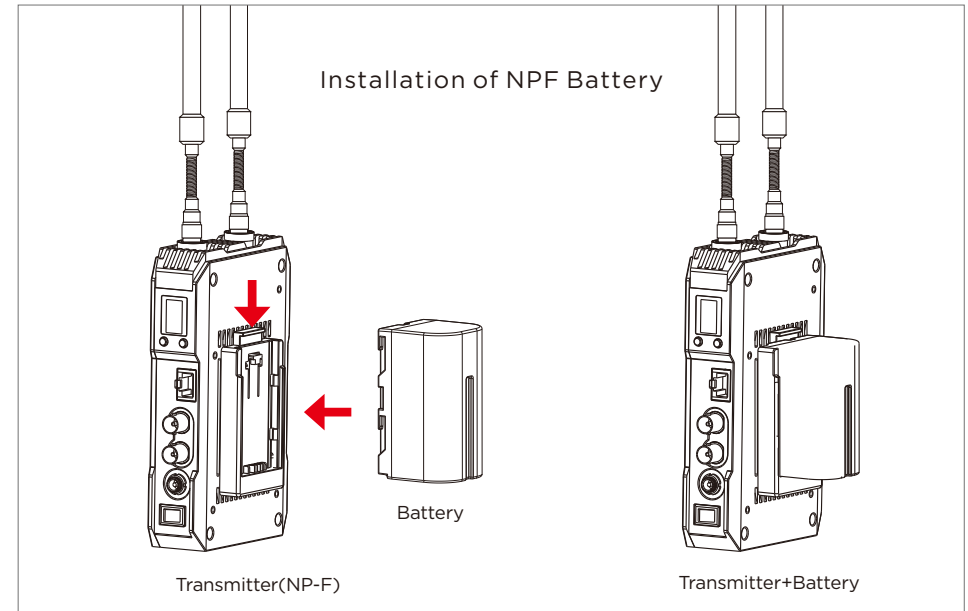
Product Installation

For Transmitter

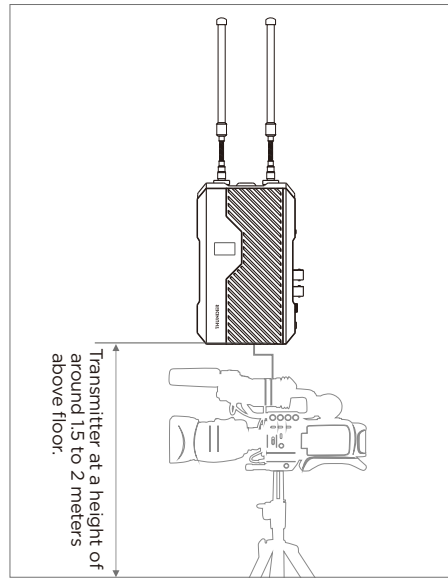
1. Please install all the antennas on the transmitter (as shown in the picture).



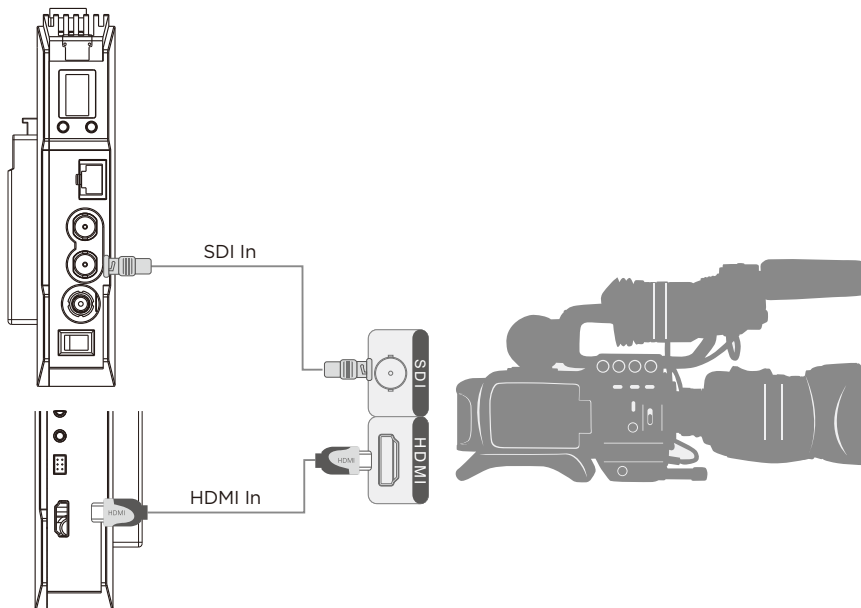
2. If using battery, equip to the transmitter (as shown in the picture).



3. Please fix the transmitter via the screw at the bottom or the V-mount at the back, and place it at a height of around 1.5 to 2 meters above floor (as shown in the picture).

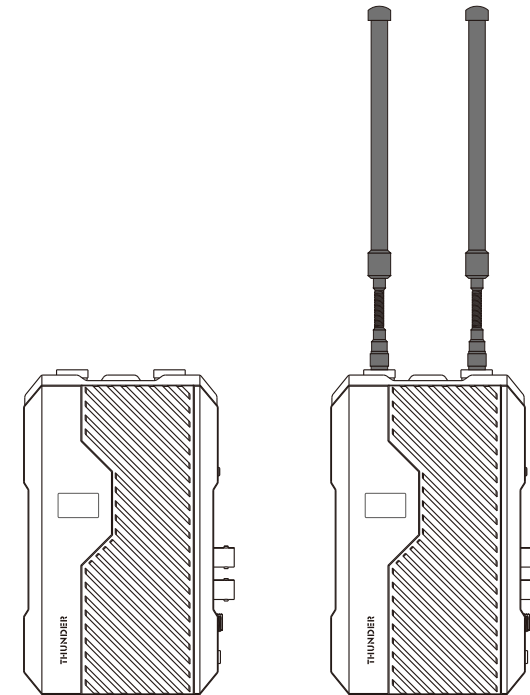


4. Please connect the transmitter and camera with SDI or HDMI cable (as shown in the picture).

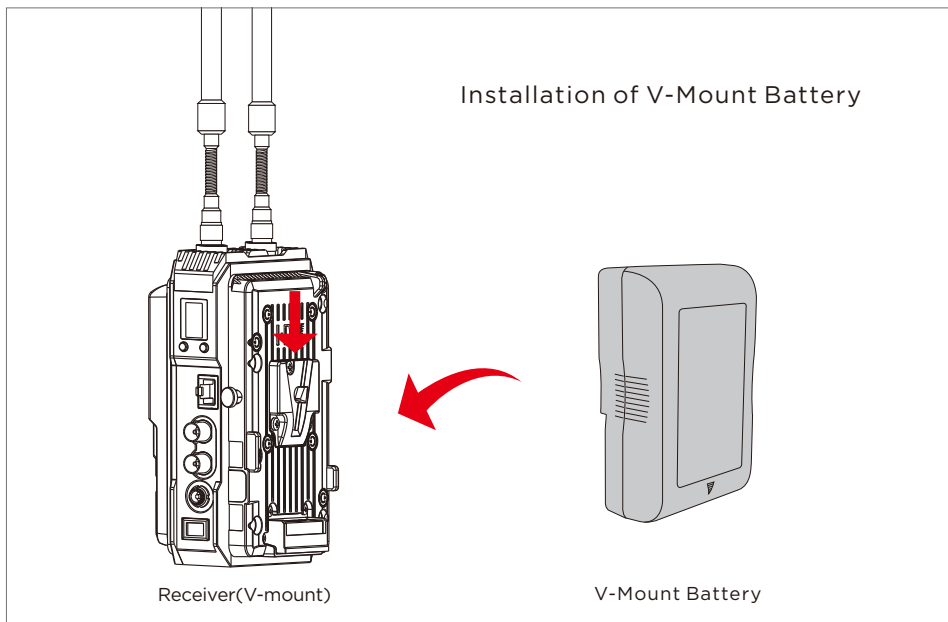
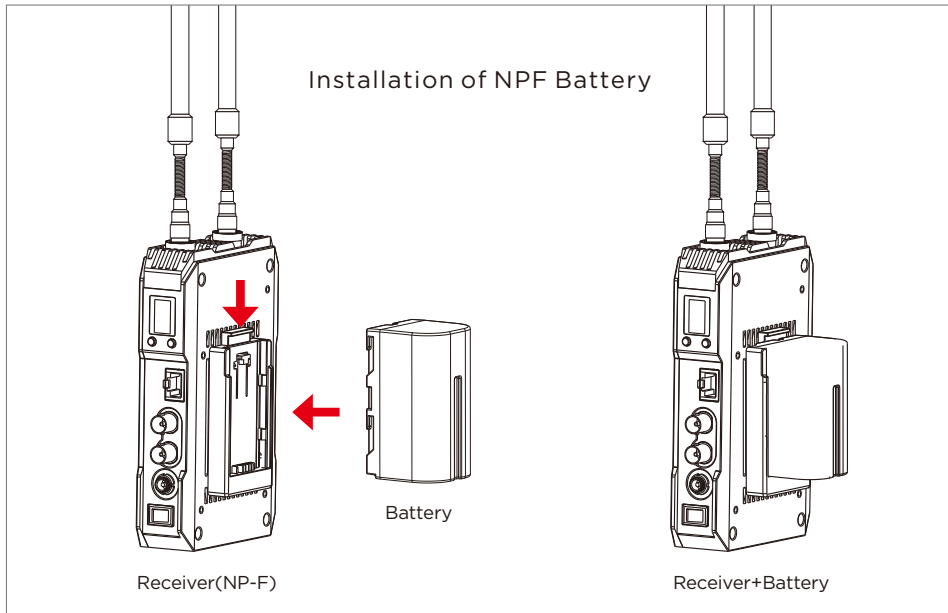


For Receiver

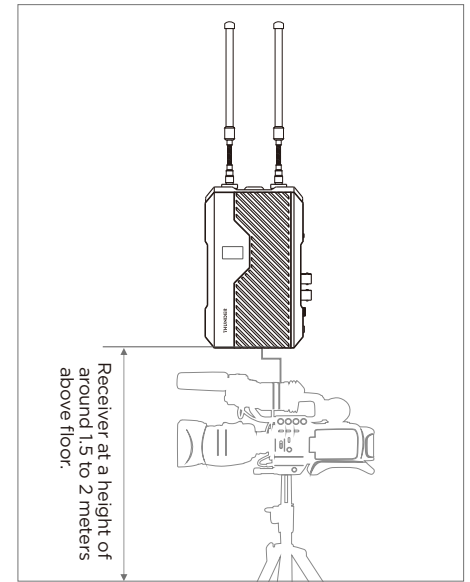
1. Please install all the antennas on the transmitter and place it upright (as shown in the picture).



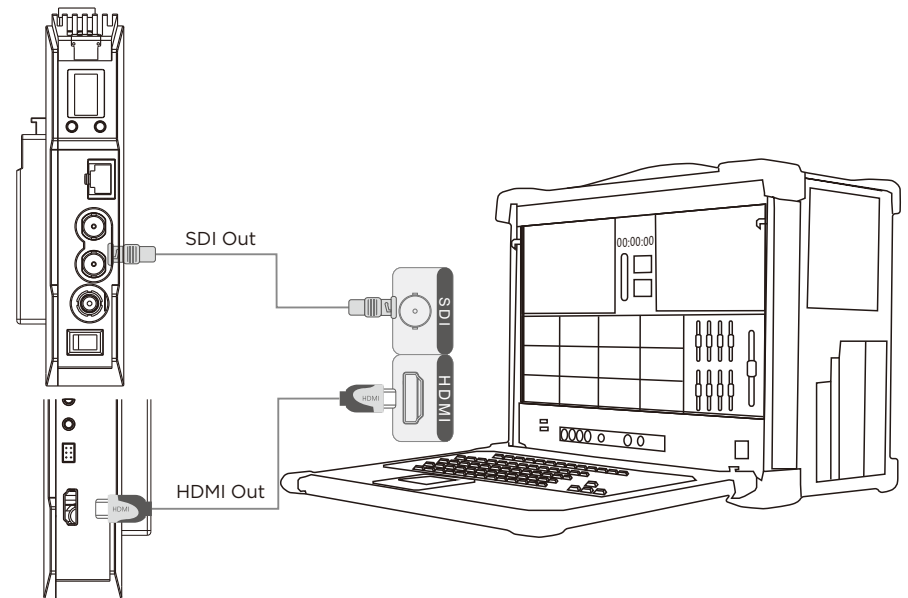
2. If using battery, equip to the receiver (as shown in the picture).



3. Please fix the transmitter via the screw at the bottom or the V-mount at the back, and place it at a height of around 1.5 to 2 meters above floor (as shown in the picture).



4. Please connect the receiver and camera with SDI or HDMI cable (as shown in the picture).



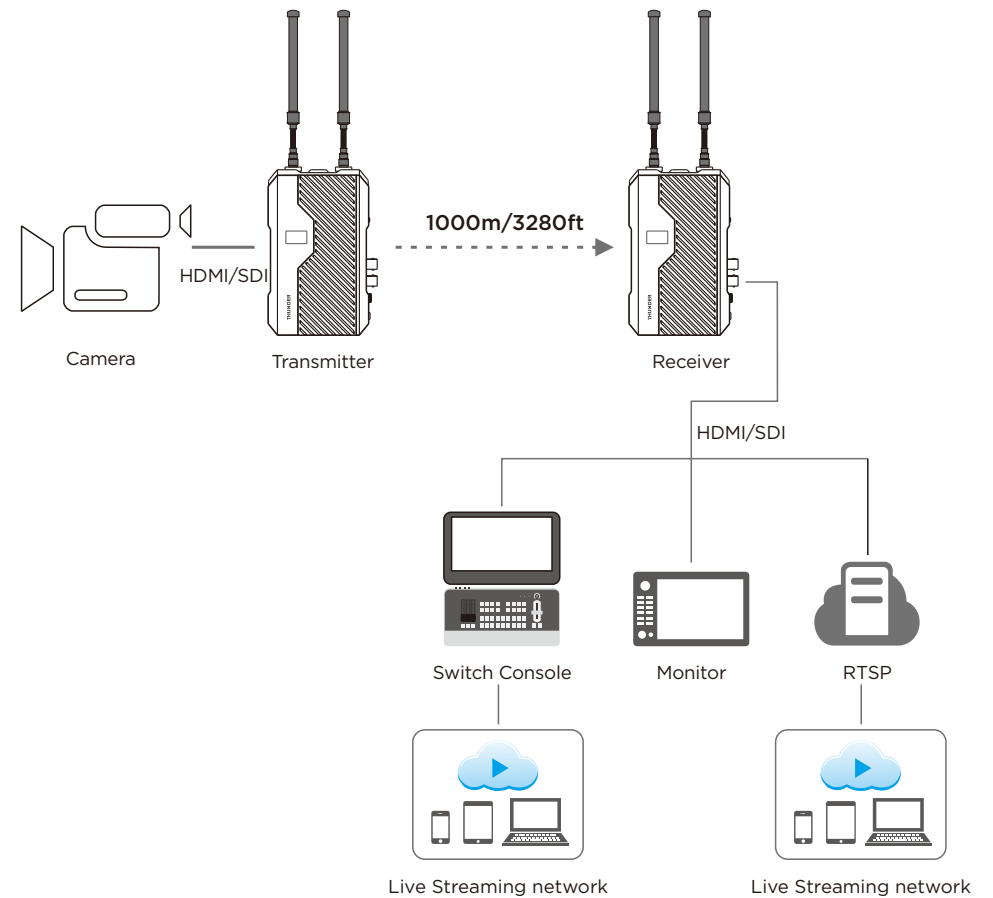
Power the Devices

- Power the transmitter and receiver with DC adapter or battery.
- The receiver's OLED screen will display "connecting to transmitter" before the wireless connection is built .
- The receiver's OLED screen will display "link up with transmitter, please check video source". Once the connection between the transmitter and the receiver is built successfully. Video will appear on the monitor within a few seconds. It is estimated that it will take 1 minute from powering on the product to displaying the real-time image.

Application Mode

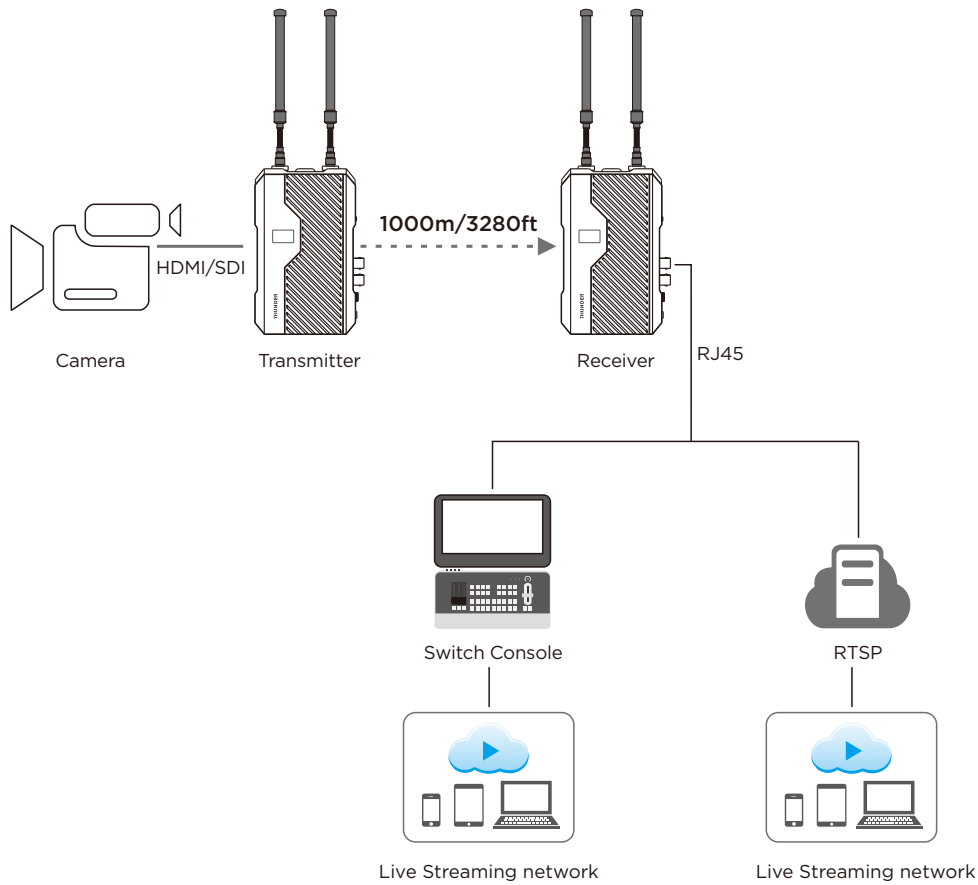
Point-to-point mode

In point-to-point mode, the video source is sent to the transmitter via HDMI or SDI. The receiver will transmits the video signal to display device via HDMI or SDI.



Streaming mode

- In streaming mode, the video source is sent to the transmitter via HDMI or SDI.
- The receiver receives the video signal from the transmitter and send it to the Switch Console/PC via RJ45 port.

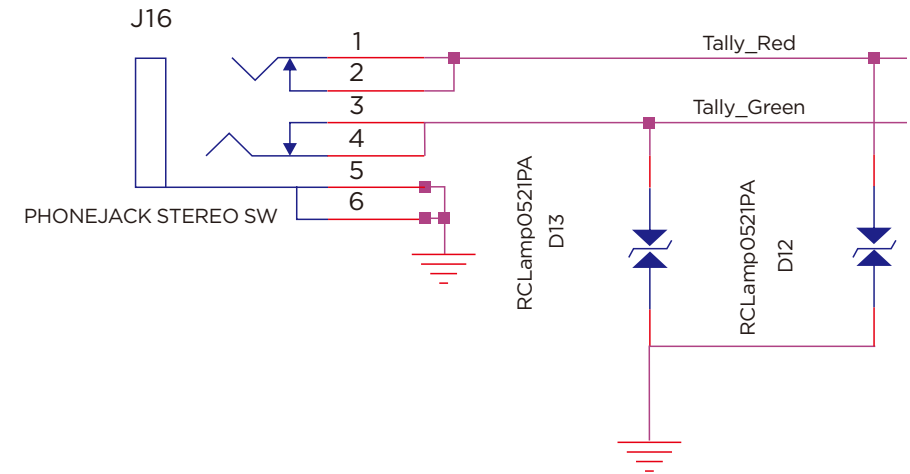


Functional Instructions

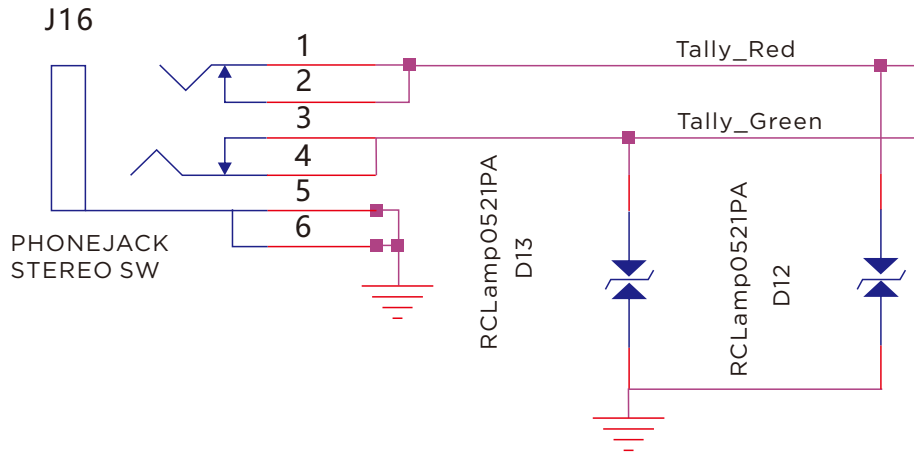
Tally function

- The Tally port is a standard 3.5mm headphone port.
- Low level is Effective trigger signal to the receiver. The Tally light will illuminate once the receiver's Tally input receives low-level signal.

Tally Light Output Interface:



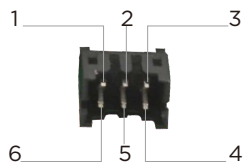
Tally Input Interface:



RS232/RS422 transparent transmission

Description:

This interface defaults to RS232 function. For RS422 function, contact the sales staff in advance for customized information!



Pin No	RS232		RS422	
	Name	Description	Name	Description
1	NC	NC	RXD-	Receive data RX-
2	P12V	No voltage output by default (Reserve 12V voltage output)	P12V	No voltage output by default (Reserve 12V voltage output)
3	NC	NC	TXD-	Transmit data TX-
4	TXD	Transmit data TX	TXD+	Transmit data TX+
5	GND	Ground	GND	Ground
6	RXD	Receive data RX	RXD+	Receive data RX+

Attached: Baud rate settings

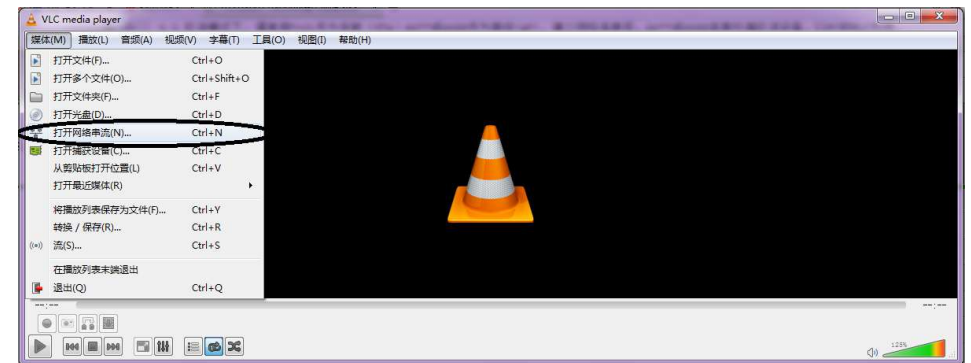
Log in to the backplane parameter settings page to change the baud rate settings: (For specific operating steps, refer to "Video Parameter Settings")

Streaming Function

When using the functions in streaming mode, the transmitter needs to switch to streaming mode. At this time, the word "RTSP" is displayed on the transmitter's OLED display, the SDI and HDMI at the receiver have no video output, and the image is transmitted to the streaming media software through the LAN port of the receiver for decoding display. The streaming mode depends on software decoding. Comply with lots of streaming media software. The following is an example of common VLC streaming media software: After the transmitter and receiver establish a network connection, the transmitter network indicator is always on, the receiver network connection is normal; the transmitter is connected to the HDMI or SDI video source, and the receiver's network port is connected to the streaming device.

Take the VLC of the PC as an example. After running VLC, select to turn on the network stream. Fill in the address "rtsp://corresponding transmitter encoding board IP address/media/live/0". Click "Play" to start streaming.

Note that the transmitter must be connected to the video source, and the IP address of the terminal streaming device (such as a computer) must be the same network segment as the IP address of the encoding board. Otherwise, the streaming will fail.





Video Parameter Settings

Keep the computer connected to the receiver through LAN port, and keep the receiver connected with transmitter normally.

Open internet browser, and enter transmitter's encoder or receiver's decoder IP address in the address bar to enter the parameter settings page.

Transmitter:

Configuration Menu

Version:CM7074 V3.24

IP ETHADDR

192.168.1.110 → Transmitter IP address(Can be changed)

GROUP

2222 → Transmitter ID (four devices correspond to 1111, 2222, 3333 and 4444, respectively)

Point to Point Bitrate

12000 Range(1000-25000) → Transmission bitrate

RTSP Bitrate

4000 Range(1000-15000) → RTSP streaming bitrate

SDI Audio Mode 0 1

Serial Baud Rate 2400 9600 19200 38400 57600 115200 → Serial baud rate

File Upload: 未选择任何文件 (Select A Local File)

Save the configuration and then reboot... 软件升级: ① 选择文件 ② 点击保存

②

Receiver:

Configuration Menu

Version:CM3074 V3.24_edid_off → Software version

IP ETHADDR

192.168.1.120 → Decoder IP address

GROUP

2222 → Corresponding transmitter ID (1111/2222/3333/4444)

LATENCY_MODE

1

Serial Baud Rate 2400 9600 19200 38400 57600 115200 → Serial baud rate

File Upload: 未选择任何文件 (Select A Local File) → Software upgrade

Save the configuration and then reboot... 软件升级: ① 选择文件 ② 点击保存

② → Click Save to complete the upgrade

Product Specifications

ITEM	TX:7074/7074A	RX:3074/3074A
Frequency	1.4GHz(7074+3074) 800MHz/700MHz(7074A+3074A)	
Antenna	Two antennas 2x2 MIMO	
Transmission Distance	1000m/3300ft	
Transmission Delay	70ms	
Video bitrate	1-15Mbps	
Streaming transmission protocol	RTSP	
Video Format	SDI: SMPTE 296M 720p50,720p59.94,720p60 SMPTE 274M 1080i50,1080i59.94,1080i60,1080p23.98,1080p24,1080p25,1080p29.97,1080p30 SMPTE424M 1080p50,1080p59.94,1080p60 HDMI : 720p50,720p59.94,720p60 1080i50,1080i59.94,1080i60,1080p23.98,1080p24,1080p25,1080p29.97,1080p30,1080p50,1080p59.94,1080p60	
Audio Format	SDI/HDMI embedded audio PCM sampling rate : 48KHz, 16bit	
Power consumption	Approx. 12W for transmitters Approx. 7W for receivers.	
Operating voltage	7-36V	
Temperature	-10-50°C	

Cautions

1. Environmental factors that affect wireless transmission

The following scenarios, which may result in pauses or noises, can be problematic for the device.

- a. Walls, large metal plates can pose a problem for the device. Avoid them if possible or place the device in an optimal spot.
- b. In crowded space, it is highly recommended to place the transmitter in a higher position, approximately 1.5-2.5 meters and the receiver 2-3 meters above the ground.
- c. Do not place the transmitter or the receiver inside any metal enclosure, which will severely affect transmission. If such case is inevitable, please at least extend the antenna out of the enclosure.

2. Cabling

- a. Please note that the HDMI ports are not hot pluggable.
- b. Preferably, please first try connecting the receiver to the video source, and receiver to monitor both via HDMI cable.

3. Device installation

- a. Please make sure you install the antennas first before you set up the device to avoid damage.
- b. Adjust the antennas out to 45° angle and achieve the best gain.
- c. Please make sure antennas are properly installed before powering on the device.

■ Troubleshooting

1. Mosaic or lagging on the screen

Please confirm if the following conditions have already occurred:

- a. The transmitter is set up on a camera or handle, it should be 1.5-2m above the ground, and the photographer's body should not obstruct the antenna's cylinder. The receiver should be set up 2m or more above the ground.
- b. The antenna is tightened.

2. Black screen

- a. Check to see if "connecting to transmitter" or "link connected to transmitter, please check video source" appears on the screen. If, instead, "link connected to transmitter, please check video source" appears, please make sure the transmitter is properly connected to the corresponding SDI/HDMI cable.
- b. If blank or black screen appears after resolution switch, please disconnect and reconnect the HDMI cable to the transmitter or the receiver.

3. No output when the transmitter and the switch are connected

Check the signal strength and video symbol on the OLED screen of both the transmitter and the receiver. They are not connected if the signal

strength symbol does not appear. Check by following the instructions in Section 16.1. If the signal strength symbol does appear but the VIDEO symbol doesn't, please check the video source and the corresponding SDI/HDMI cables; If both symbols appear, but the switch goes black or blank, please check the SDI/HDMI cable between the receiver and the switch, change the resolution to 1080i 50 or 720p 50 to see if it is normal. You can also check by connecting the SDI/HDMI cable to other monitor to see if it is normal.

4. Green flicker in output

Make sure the HDMI ports of both the transmitter and receiver are secured or tightly connected. Make sure the HDMI port of the camera is also properly connected. If it is still not solved, please replace the HDMI cables.