



500M WIRELESS HDMI/SDI VIDEO TRANSMISSION SYSTEM

MANUAL BOOK



■ Trademarks

Ghost-Eye Wireless Video Transmission Systems™ are trademarks of Cine Gears Inc. Web Interface.

■ Statement of Conditions

In the interest of improving internal design, operational function, and/or reliability, Cine Gears Inc. reserves the right to make changes to the products described in this document without notice.

Cine Gears Inc. does not assume any liability that may occur due to the use or application of the product(s) or circuit layout(s) described herein.

■ FCC Compliance Notice: Radio Frequency Notice

The device has met the FCC 15.247 requirement. In order to comply with the FCC RF exposure requirement, the user must keep 20cm away from the antenna.

This device 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 device 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 device 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.

■ Information to the user

The user's manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. In cases where the manual is provided only in a form other than paper, such as on a computer disk or over the Internet, the information required by this section may be included in the manual in that alternative form, provided the user can reasonably be expected to have the capability to access information in that form.

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■ About the User Manual

- Please read this manual carefully before you use this product and retain it properly for future reference.
- If there is any question or difficulty about the operation of product, please feel free to contact us or the dealer.
- The company reserves the authority to modify the instruction manuals.

■ Brief Introduction

As the widely use of live broadcasting , many problems about wiring appear, such as the high cost and short life time of the cable. Further, some other factors affect the user experience of live broadcast, such as the insufficient cable protection and the tread by crowded people, which will lead to the poor cable transmission capability or even to accident. Ghosteye 500M provides you more convenient and safer solution for live broadcasting. With the advantage of long distance transmission, plug-and-play usage, it can satisfy your various indoor and out door shooting requirements. With addition of its free cable wiring needed, it will bring much safer and more professional experience to you!

■ Features

- The product with its transmission distance of up to 500 meters can meet the demands of film shooting, television broadcasting, live events, large conference, etc.
- The product delivers uncompressed real-time 1080P/60Hz full HD video (4:2:2, 10bit).
- Support HDMI, HD-SDI, 3G-SDI.
- Full hardware design, plug & play;
- 5.1G-5.9G, Support manual setting for channel switching and broadcast mode.
- Support SDI time code transmission (time code format: ATC_VITC, ATC_LTC).
- Support SDI camera recording trigger function (Start/Stop Flag) transmission.
- Comply with EDID 1.1 , Support HDMI 1.3.
- Support AES128 bit encryption.

Specification

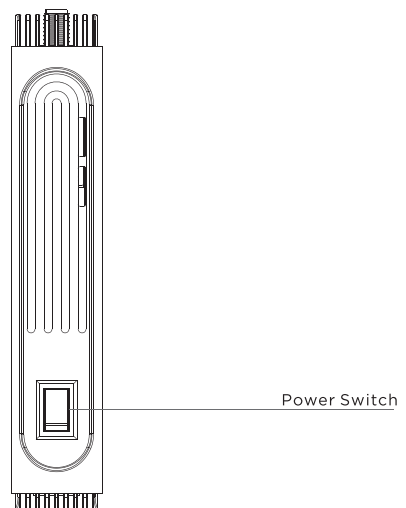
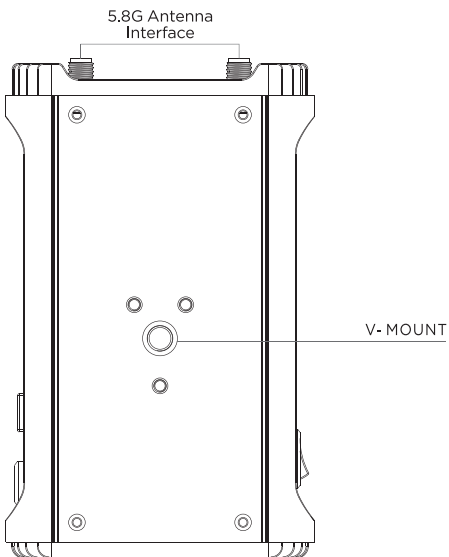
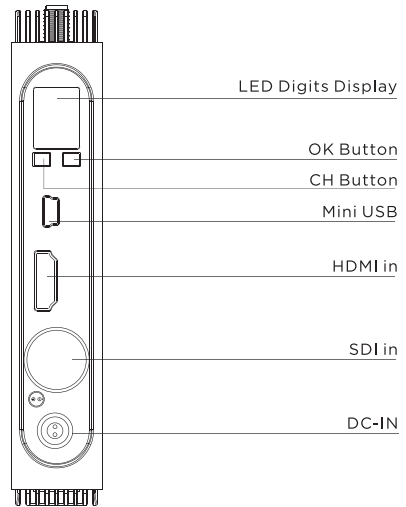
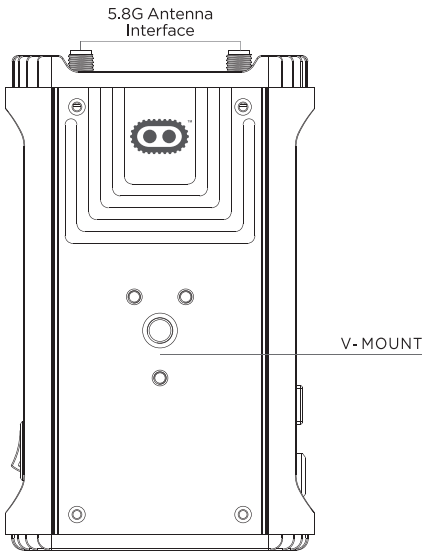
Item	Specification
Frequency	5.1~5.9GHz
Bandwidth	40MHz
Video Formats	1080P 23.98/24/25/30/50/60 1080psf 23.98/24/25 1080i 50/59.94/60 720P 50/59.94/60 576P 576i 480p 480i
Audio Formats	PCM
Time Code	ATC_VITC ATC_LTC
Transmission distance	Up to 500m
Transmitter	
Antenna	External antenna * 2
Transmission Power	17dBm
Interface	HDMI input, SDI input, Mini-USB, Lemo(OB/2pin) DC in, Antenna RPSMA, Power switch
Mechanical Interface	V-mount, 1/4" fixing screw hole
LED Digits Display	Working channel number
Working Voltage	7V~ 36V
Power Consumption	<8W
Size(mm)	126*78*23mm
Temperature	-10~ 50°C(Working) ; -40~80°C (Storage)
Receiver	
Antenna	External antenna *5
Receiver Sensitivity	-70dBm
Interface	HDMI output, SDI output, Mini-USB, Lemo(2pin) DC in, Antenna RPSMA, Power switch
Mechanical Interface	V-mount, 1/4" fixing screw hole
LED Digits Display	Display the working channel
Working Voltage	7V~ 36V
Power Consumption	< 7W
Size(mm)	150*98*23mm
Temperature	-10~ 50°C(Working) ; -40~80°C (Storage)

* As the product's continuous improvement, the performance, design and specifications are subject to minus change without prior notice.

Interface Information

Transmitter Interface

TX

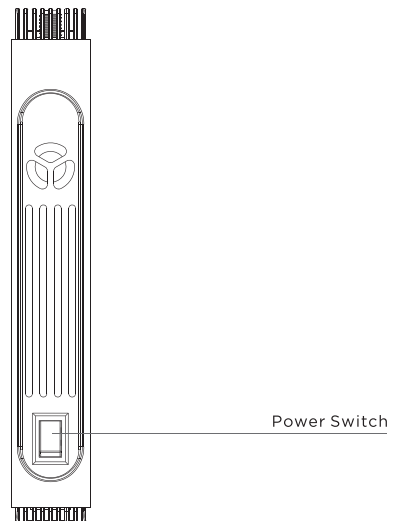
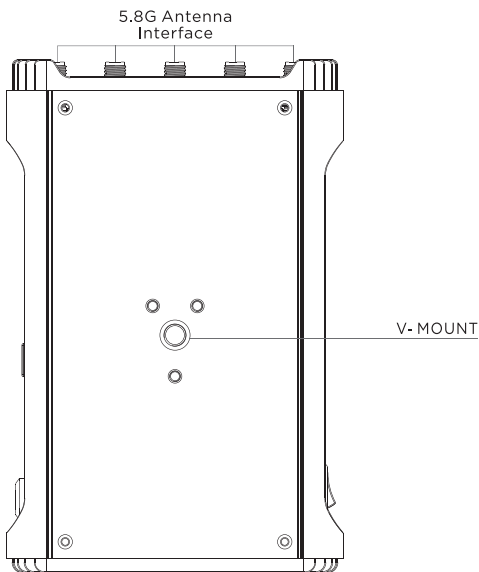
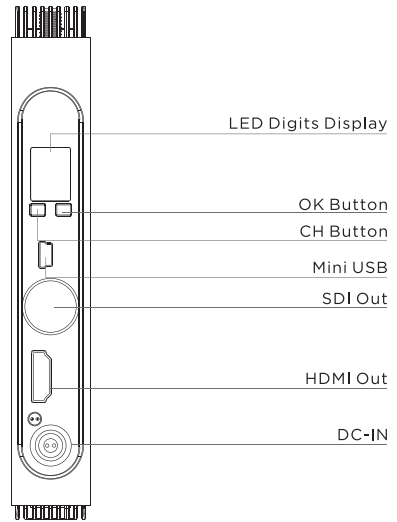
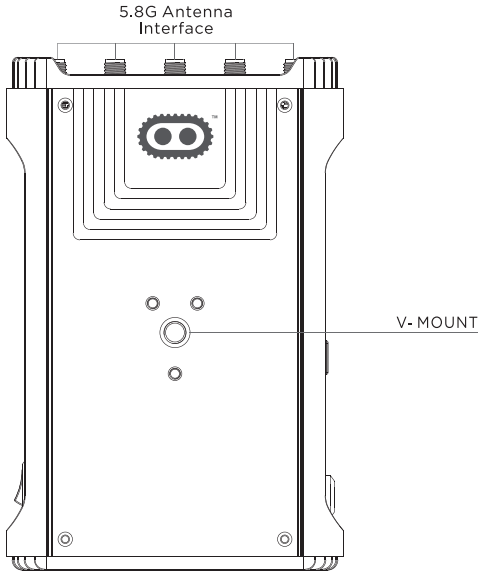


Transmitter Interface Description

Item	Specification
LED Digits Display	Display the working channel 1-9, A(10), b(11)
OK Button	Confirm the function selection
CH Button	Switch the working channel
Mini USB	Be used for software upgrading
HDMI IN	HDMI IN
SDI IN	SDI IN
DC-IN	Power input interface (LEMO): support 7V to 36V (Notice: please confirm the polarity before you plugging in the power supply.)
5.8G Antenna Connector	Connect with RP-SMA antenna
V-MOUNT	Support installation of V-mount devices
Sony F-Type Battery Plate	Be used for installing external Sony F-type battery
Power Switch	Power ON/OFF

Receiver Interface

RX



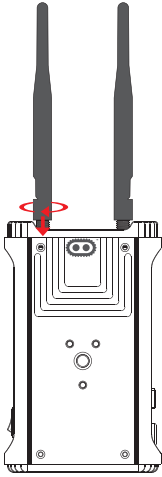
Receiver Interface Description

Item	Specification
LED Digits Display	Display the working channel 1-9, A(10), b(11)
OK Button (Dual-function button)	Confirm the function selection/Switching between normal mode and enhanced anti-interference mode
CH Button	Switch the working channel
Mini USB	Be used for software upgrading
HDMI OUT	HDMI OUT
SDI OUT	SDI OUT
DC-IN	Power input interface (LEMO): support 7V to 36V (Notice: please confirm the polarity before you plugging in the power supply.)
5.8G Antenna Connector	Connect with RP-SMA antenna
V-MOUNT	Support installation of V-mount devices
Sony F-Type Battery Plate	Be used for installing external Sony F-type battery
Power Switch	Power ON/OFF

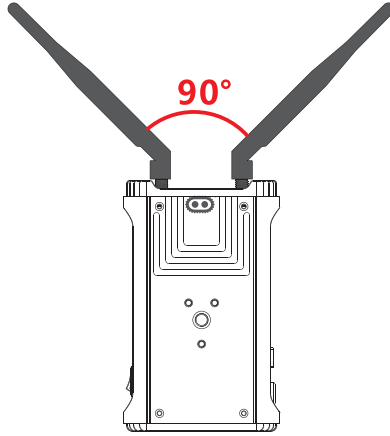
Product Installation

Transmitter Installation Steps:

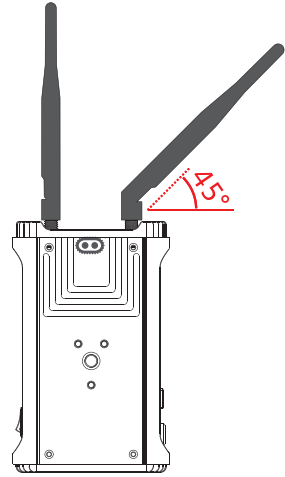
1. Fix the antennas and adjust their angles as shown in the figure below.
(For details, please refer to the transmission distance description.)



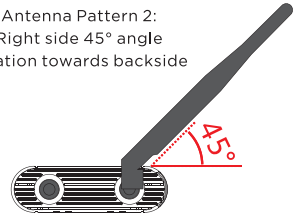
Notice: please rotate the golden mental part of the antenna to fasten the antenna.



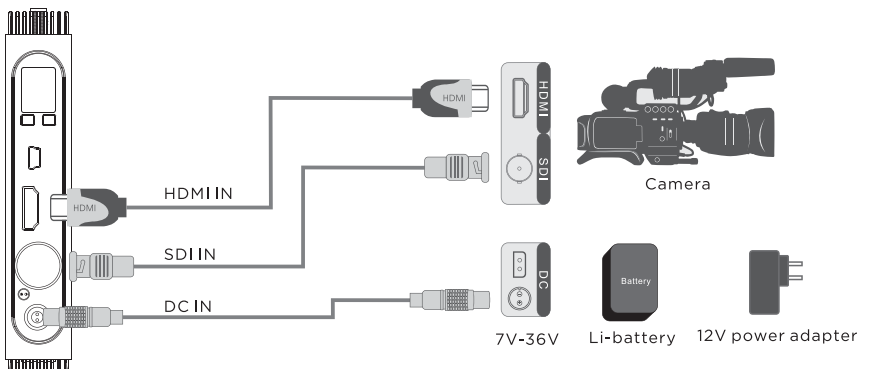
Antenna Pattern 1:
90° angle in the same plane



Antenna Pattern 2:
Right side 45° angle
rotation towards backside

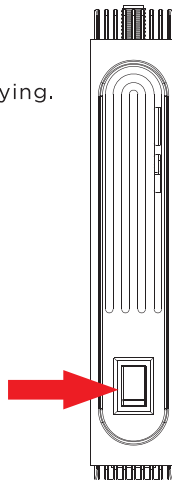


2. Connect Tx with the camera via corresponding power cable and HD video cables as shown in the figure below.

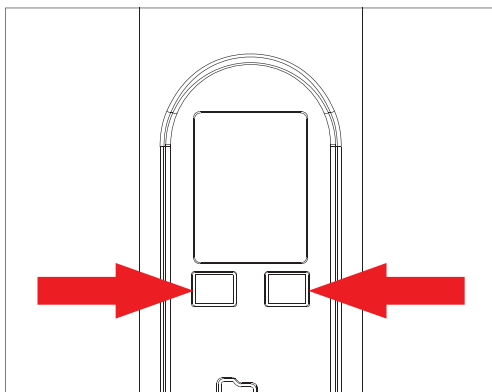


3. Turn on the power switch to start power supplying.

Power Switch: ON turn on
OFF turn off



4. Press “CH” button to select the corresponding working channel of receiver and then press “OK” button for confirmation. The LED digits display will display one of the characters from 1 ~ 9, A and b when the video signal of device is normal. (TX and RX use same default working channel)



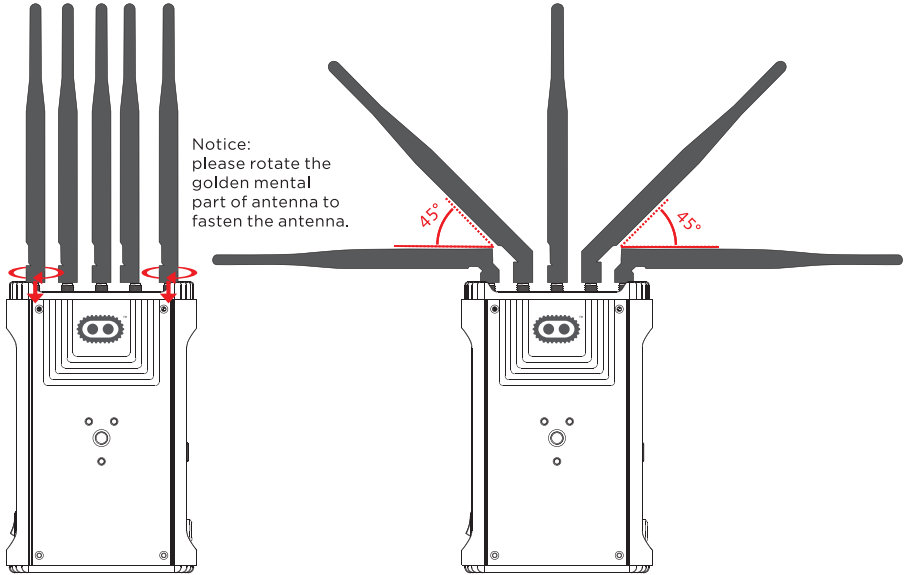
5. The transmitter supports manually switching the SDI audio input mode by long pressing “OK” button. (Notice: This function is only valid for SDI audio input and won't affect the HDMI audio input.)The default value of SDI audio input mode is 0 and the decimal point will be set to be non-bright under this mode; long press “OK” key button for more than 3 seconds, and then the LED digits display will display SDI audio input mode as 1 while the decimal point will be bright.

Audio input mode 0: adopt internal SDI clock signal of TX

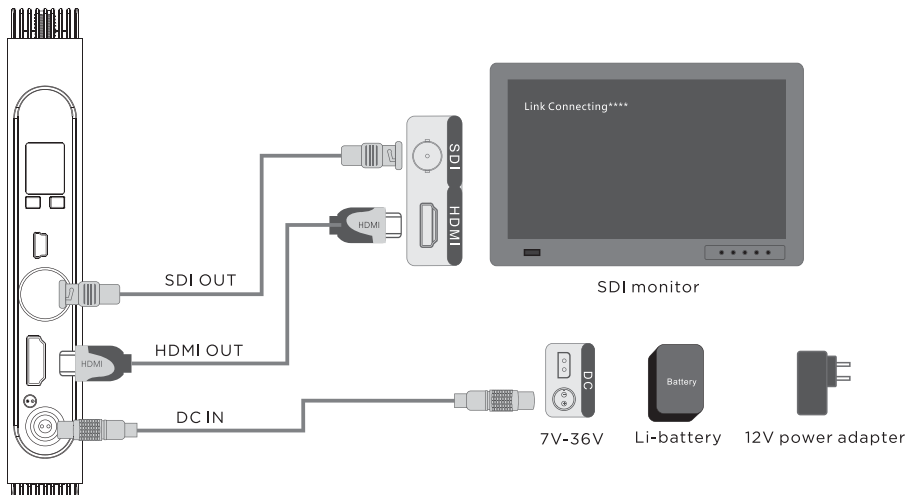
Audio input mode 1: adopt SDI clock signal of SDI input signal

Receiver Installation Steps:

1. Fix the antennas and adjust their angles as shown in the figure below.

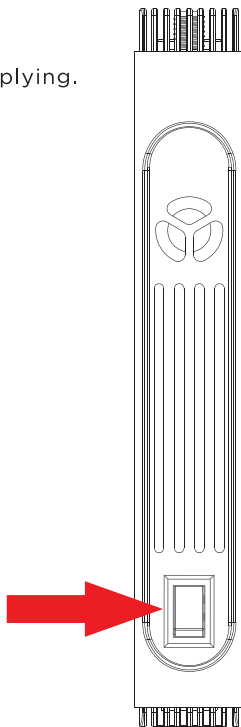


2. Connect RX with the monitor via corresponding power cable and HD video cables as shown in the figure below.

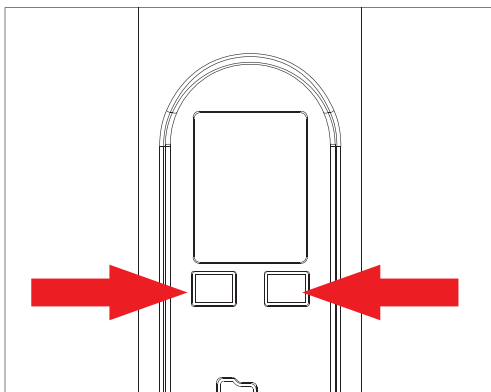


3. Turn on the power switch to start power supplying.

Power Switch: ON turn on
OFF turn off



4. Press “CH” button to select the corresponding working channel of receiver and then press “OK” button for confirmation. The LED digits display will display one of the characters from 1 - 9, A and b when the video signal of device is normal; the monitor will display the image from camera simultaneously.



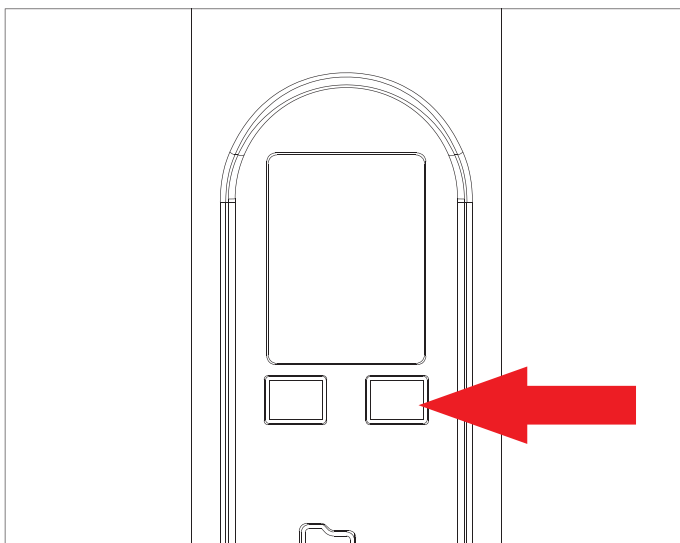
5. RX supports switching between normal mode and enhanced anti-interference mode according to transmission distance and interference level

a) Switch from normal mode to enhanced anti-interference mode: long press “OK” for longer than 3 seconds to enter enhanced anti-interference mode, and decimal point of digital tube (indicator) starts to flash slowly.

b) Switch from enhanced anti-interference mode to normal mode: long press “OK” for longer than 3 seconds to enter normal mode, and decimal point of the digital tube(indicator) goes out

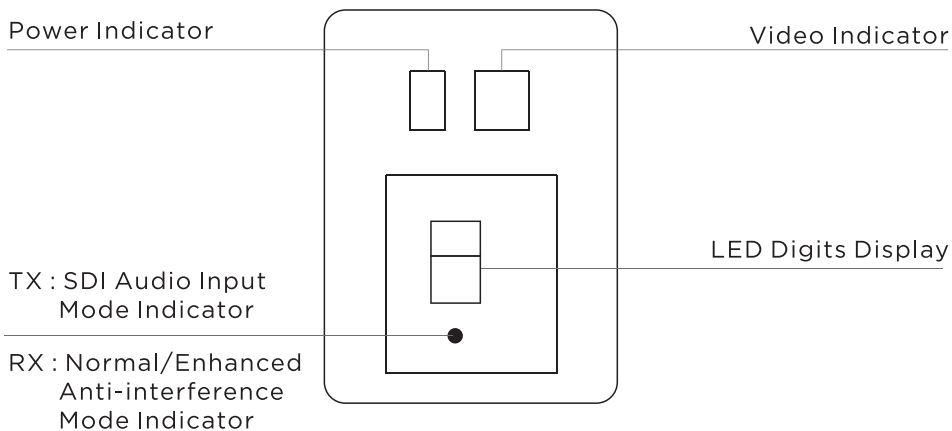
c) Normal mode is default setting, supporting memory function, so RX will enter last mode after reboot.

(Normal mode is recommended for long-distance transmission scenario; enhanced anti-interference mode is recommended for short-distance transmission and strong interference scenario)



■ LED Digits Display description

LED Digits Display Status



Transmitter

LED Digits Display: Channel 1 ~ 9, A(10), b(11)

Video Indicator: Red: HDMI input; Yellow: SDI input

Power Indicator: Illuminate in working mode

SDI Audio Input Mode Indicator:

Decimal point light is off: SDI Audio Input Mode 0

Decimal point light is on: SDI Audio Input Mode 1

Receiver

LED Digits Display: Channel 1 ~ 9, A, b

Video Indicator: HDMI and SDI outputs are enabled together, there are two status of the indicator

- 1: Red and Yellow light together: RX receives the signal from TX normally, and HDMI and SDI outputs are working together
- 2: No light: No output signals via HDMI and SDI ports

Power Indicator: Flash slowly when the network is not connected. Light on normally when the network is connected.

Normal/Enhanced Anti-interference Mode Indicator :

Decimal point light is off : normal mode

Decimal point light flashes slowly: enhanced anti-interference mode

■ Support Full PSF resolution

Support Full PSF resolution

25PSF in = 25 PSF out	23.98P in=23.98P out
29.97PSF=29.97PSF out	24P in=24P out
30PSF in = 30PSF out	25P in=25P out
	29.97P in=29.97P out
	30P in=30P out
50i in = 50i out	
59.94i in = 59.94i out	
60i in = 60i out	

■ Application Recommendations

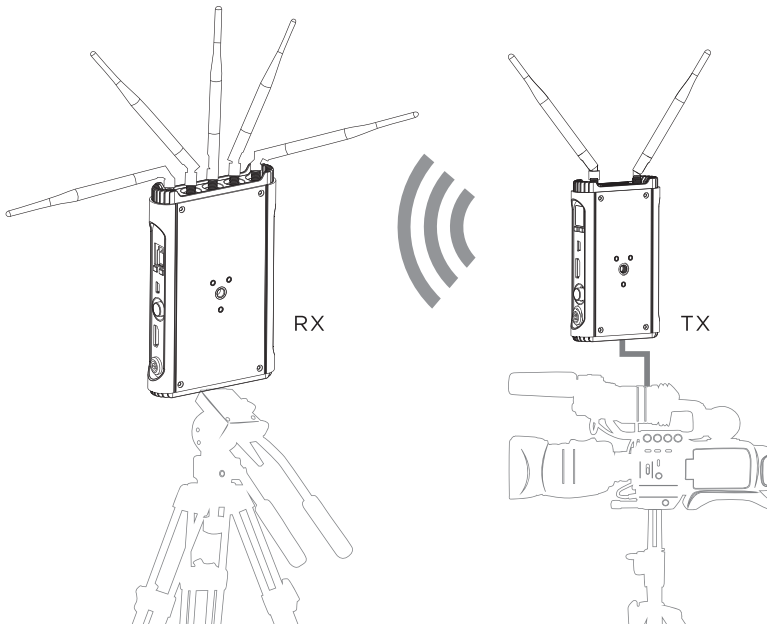
Application Recommendations

In order to reach the best performance of wireless transmission, we recommend to meet the requirements as follows:

1. The vertical height of TX and RX should be same and more than 1.5m
2. TX and Rx are working under the condition of line of sight distance
3. Plane of TX antennas toward plane of RX antennas face-to-face

1.Recommended Installation Method under Ideal Position

Make receiver to stand vertically; adjust antennas to a fan-shaped arrangement;
Make transmitter to stand vertically; adjust antennas to 90° angle in the same plane.

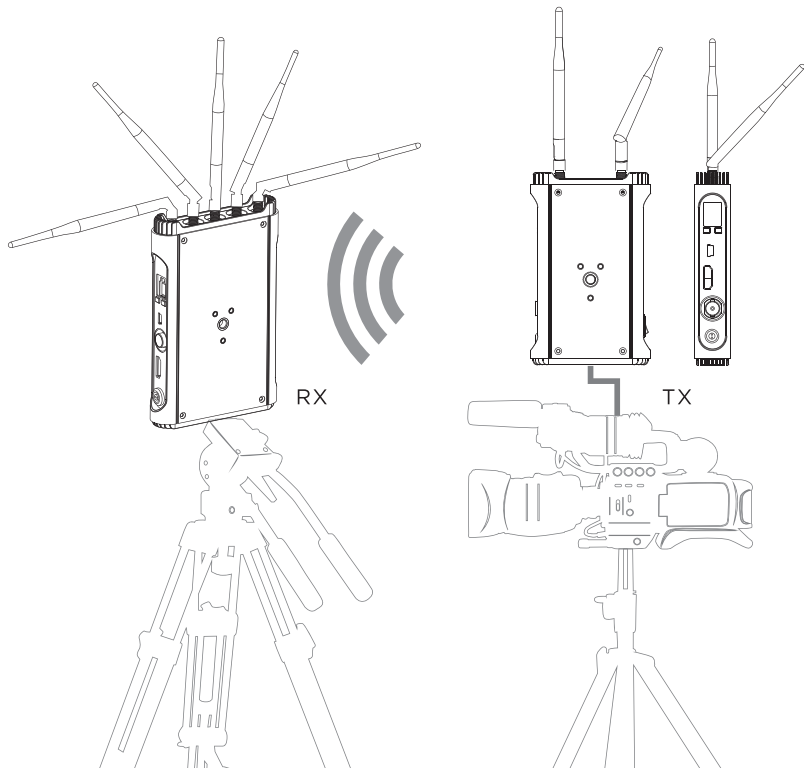


2.Recommended Installation Method under Non-ideal Position

When the front side of the transmitter is not able to face to the receiver,
Please make receiver to stand vertically; adjust antennas to a fan-shaped arrangement;

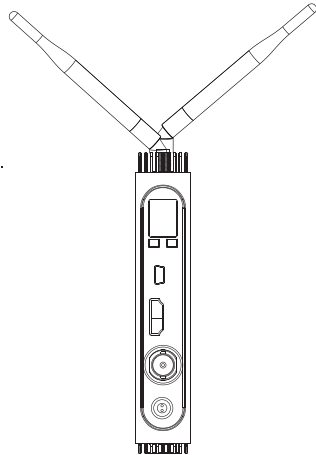
Make transmitter to stand vertically; adjust the right side of the 2 transmitter antennas towards backside by 45°.

Antenna Pattern 2:
Right side 45° angle
rotation towards backside



3. Recommended Installation Method under Non-ideal Position

When the front side of the transmitter is not able to face to the receiver, please try to adjust the direction of transmitter antennas to make sure that the formative fan-shaped arrangement can face to the receiver for best signal transmission. As shown in the right figure:



- ★ Because TX and RX are working on ISM band, wireless transmission performance is relevant with level of interference intensity. If transmission performance declines, we recommend to switch the wireless channel of TX and RX simultaneously for improvement of transmission performance

Trouble shooting

	Troubles & Possible Reasons:	Solutions:
OSD Information on TV	Display“Link Connecting”	
	Transmitter is not electrified.	Power on transmitter.
	Transmitter or receiver is not placed erectly.	Place the TX or RX onto the base and replace them erectly.
	The transmitter and receiver are too far away.	Move the receiver closer to the transmitter.
	Several solid wall partition TX and RX.	Reduce the number of solid walls between TX and RX.
	There are too many obstacles between TX and RX.	Move the receiver closer to the transmitter.
	Haven't matched the code of TX and RX.	Rematch the code of transmitter and receiver.
	There is other transmitter which is under working condition near the receiver.	Power off other independent transmitter, place the receiver away from the other sources of interference.
	No Video Signal received	
	Transmitter and video source are not connected.	Connect the transmitter to video source by SDI/HDMI cable.
	The video source is turned OFF.	Power ON the video source.
	Video source were NOT switched to SDI/HDMI output.	Switch the Video source to SDI/HDMI output.
	Bad contact of cable of transmitter	Remove and then re-plug the cable of transmitter
	Abnormal working of transmitter	Reboot the transmitter.
	Problem with cable between TX and video source	Change the SDI/HDMI cable.
Player NOT support the output resolution format.	Switch the output video resolution to other modes.	
The TV/Monitor NOT support HDCP authentication.	Replaced with HDCP-certified TV/Monitor.	
Image	No signal input to Receiver or TV/Monitor	
	Receiver is turned OFF.	Power on receiver.
	Receiver and TV are not connected.	Connect receiver to TV/Monitor via SDI/HDMI cable.
	TV/Monitor NOT switched to SDI/HDMI input.	Switch TV/Monitor to SDI/HDMI input.
	Bad contact of the cable of receiver or TV/monitor	Remove then re-plug the SDI/HDMI cable.
	TV/Monitor turn into standby mode	Switch the TV/Monitor to normal operation mode.
	Abnormal working of receiver.	Reboot the receiver.
	No image appear on TV/Monitor	
	Bad contact of receiver or cable.	Re-plug the cable of the receiver or TV/Monitor
	Abnormal working of receiver	Reboot the receiver
Receiver failure	Please contact your retailer	

Trouble shooting

	Troubles & Possible Reasons:	Solutions:
Image	Abnormal color on TV screen	
	Bad contact of cable of receiver or TV/monitor.	Unplug and then plug the HDMI cable of the receiver or TV.
	Bad contact of cable of transmitter or video source.	Unplug and then plug the HDMI cable of the TX and player.
	Abnormal working of transmitter or receiver	Reboot the transmitter and receiver.
Audio	Image displayed, No audio	
	Video source mute	Turn on the audio of video source
	Volume too low	Turn up the audio of video source
	Audio format not supported	Switch the format of video source output
	Something wrong with transmitter/ receiver	Restart the transmission kit

FCC Statement

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.

To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example use only shielded interface cables when connecting to computer or peripheral devices).

FCC Radiation Exposure Statement

This equipment complies with FCC RF 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.

This equipment complies with part 15 of the FCC Rules.

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.

Cautions

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user authority to operate the equipment.

■ Terms and Conditions

Congratulations on purchasing your new CINEGEARS product. Please read this manual carefully before using the product. By using this product, you hereby agree to this disclaimer and signify that you have read it in full. You agree that you are responsible for your own conduct and any content created while using CINEGEARS products, and for any consequence thereof. You agree to use this product only for purposes that are proper and in accordance with local regulations, terms and any applicable polices and guidelines.

By reading this disclaimer, you also agree:

1. Any part of this disclaimer is subject to change without prior notice. Refer to WWW.CINEGEARS.COM for the latest version.
2. CINEGEARS reserves the right of final interpretation of this disclaimer.

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Cine Gears Inc. is an industry leading company that designs and manufactures digital wireless follow focus systems, lens control systems, camera motion control systems and accessories for film and broadcast industry. As a big believer in the power of creativity and ideas, we designed the Pegasus cablecam, the wireless motor drive that integrated a built in wireless transmitter, and the wireless finger wheel controller. The Cine Gears Inc. wireless lens control system has the international CE certification on all its equipment. Cine Gears lens control system can achieve the finest minutia of focus pulling, with extreme accuracy and control. This very same technology is what drives the Pegasus for ultra-smooth, highly controlled, programmed movement.

We have been working from Vancouver, B.C. for five years and our equipment has been used on hundreds of movies. Filmmakers of all experience levels will benefit greatly from a simple, professional, and well rounded follow focus system. The Single Axis and Multi Axis models provide greater ease, with less crew, and less wires. You can achieve professional film quality scenes on a shoestring budget. Camera operators, assistant camera operators, and jib operators can use the wireless follow focus to attain that perfect shot.

Customer Support



If you encounter any issues with any of our products please contact us directly via the details provided below. **DO NOT CONTACT THE RETAIL STORE.**

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