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# **HD Portable COFDM Mobile Video wireless transmission system**

## **Operate Guide**

## One: Product Features:

- Highly integrated, modular design
- Adopt COFDM modulation technology, H.264 image coding technology
- Can transmit one 1080P HDMI signal and one unidirectional data up to 230400Kbps
- Low latency, the minimum end-to-end latency is 350ms
- All-round communication, not afraid of building walls
- High-speed travel-to-travel communication,
- Transmitter heat sink type aluminum case, shockproof and impact resistant
- Non-line-of-sight (NLOS) mobile transmission, the transmission distance of 2W power is not less than 30 kilometers under the condition of no interference, the transmission distance of 5W power is not less than 50 kilometers, and the transmission distance of 10W power is not less than 80 kilometers
- The maximum moving speed can reach 600Km/hour (measured)
- Synchronous reception of audio and video signals, high-definition HDMI1080P multi-format optional, standard-definition output DVD image quality
- The receiver can realize video recording and backup functions
- 128-bit AES encryption and decryption
- Can provide full customization

## Two: product application:

This product is mainly used in technical reconnaissance and evidence collection of public security and safety inspection departments, real-time picture transmission of drones and unmanned ships, radio and television broadcasting, broadcasting live broadcasting: broadcasting field, sports broadcasting, social news、 **aerial live**、 studio, mountaineering expeditions and more. It is suitable for real-time mobile transmission of high-quality images in various complex environments such as urban areas, seas, and mountains.

## Three: parameter indicators

### 1: Transmitter (only standardized pictures, except for customization)



1 W Tx

5W Tx



10W Tx

**Product parameters:**

Modulation	COFDM
Operating Voltage	DC11V~DC17V
Working current	1W: ≤1.3A DC12V, 5W: ≤2.5A DC12V, 10W: ≤5.2A DC12V,
control interface	Standard RS232 interface, 8 data bits, 1 stop bit, even parity, baud rate: 19200
transparent data interface	One-way transparent serial port transmission, 8 data bits, 1 stop bit, support odd parity, even parity, wireless parity, baud rate: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200、230400
Encryption	Support 128-bit encryption
modulation mapping	QPSK (4QAM)、16QAM、64QAM
forward error correction	1/2 2/3 3/4 5/6 7/8
guard interval	1/32 1/16 1/8 1/4
Number of carriers	2k

frequency bandwidth	2/3/4/5/6/7/8M adjustable
transport stream	2000kbs~20000kbs adjustable
transmit power	1W/5W/10W
transmission frequency	Any frequency can be customized, the frequency is continuously adjustable, the adjustable range is $\pm 20$ MHz, and the step is 1MHz
Power flatness	Less than 0.2dB in 10MHz band
Shoulder ratio	The shoulder-to-shoulder ratio is better than -28dB at full power output
second harmonic	$\leq -45$ dB
MORE	32dB
input video	720x480 60I(NTSC), 720x576 50I(PAL), 720 50P, 720 60P, 1080 50I, 1080 60I, 1080 24P, 1080 25P, 1080 30P, 1080 50P, various modes are adaptive.
HD interface	HDMI
video encoding format	H.264
Protection standard	All-aluminum radiator type chassis, anti-corrosion, shock-proof design
Overall size	102*80*30mm (1w) / 102*90*30mm (5W) / 188*47*34mm (10W) / 228*55*40mm (20W)
Total Weight	$\leq 0.20$ KG (1W) / $\leq 0.27$ KG (5W) $\leq 1.5$ KG (10W) $\leq 2$ KG (20W)

## 2: Receiver



### Product parameters:

Portable multi-bandwidth HD receiver parameters	
Receive frequency range	170-860MHz VHF&UHF
frequency bandwidth	2/3/4/5/6/7/8MHz, optional
RF input level	-94dBm~-15dBm (at 8M bandwidth)/-98dBm~-15dBm (at 2M bandwidth)
RF input impedance	50 ohms
RF input connector	N head
Demodulation method	COFDM
Constellation way	QPSK, 16QAM, 64QAM (optional)
forward error correction	1/2, 2/3, 3/4, 5/6, 7/8 (optional)
Number of carriers	2k,
guard interval	1/32, 1/16, 1/8, 1/4 (optional)
video decoding	MPEG-2MP@ML/H. 264
screen aspect ratio	4:3 16:9
Video output image	720*576@8MHz 1080P@60P、50P、50I、30P、
audio output mode	Stereo unbalanced 300/ 200mv
Audio output	2Audio output + 2Video output
Operating Voltage	AC220V/DC12V <0.4A
Operating temperature	-20°C~+50°C
physical dimension	136*115*35mm non-standard all-aluminum shell
equipment weight	0.35Kg

## Four: Instructions for use

### 1: Transmitter

#### (1) Functional area description

"ANT": Transmitting antenna interface, please connect the antenna before power on

"HDMI": High-definition video input interface, input below 1080/50P

"Ctrl": Transmitter tuner connection interface

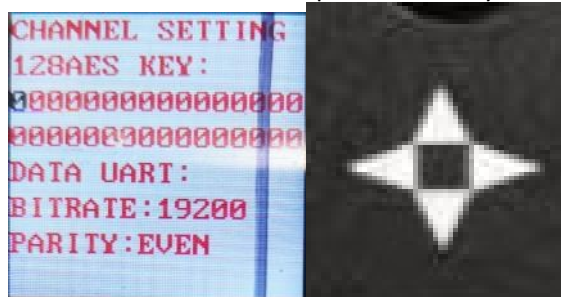
"DC 12V": DC12V power input port. "+" is the positive pole of the power supply, "-" is the negative pole of the power supply

"DC": Power indicator light, when the light is always on, it means that the power input of the transmitting module is normal

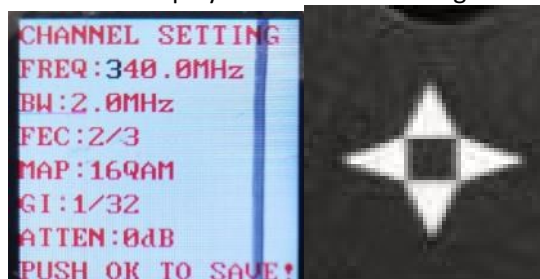
"TS": Video input detection indicator light, this light is always on to indicate video input and normal encoding

#### (2) Parameter Configuration Description

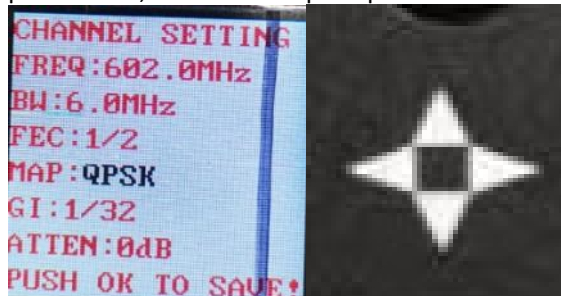
Connect the transmitter parameter adjuster, press the "MENU/OK" key to enter the menu, the encryption key and data serial port parameters are displayed first, press the left or right key to move the cursor, and the up and down keys to adjust the parameters



After the parameter setting is completed, press "MENU/OK" to enter the next menu, and the interface is displayed as shown in the figure



Press the left or right key to move the cursor, press the up or down key to adjust the required parameters, the interface prompts as shown in the figure



After all parameter settings are completed, press the "MENU/OK" key to confirm, and the display will be as shown in the figure.

```

CHANNEL SETTING
FREQ:602.0MHz
BW:6.0MHz
FEC:1/2
MAP:QPSK
GI:1/32
atten:0dB
PLS WAITING.....

```

After the setting is completed, the parameters are written successfully, and the display is as shown in the figure

```

BOARD PARAMETER
FREQ:602.0MHz
BW:6.0MHz
FEC:1/2 GI:1/32
MAP:QPSK
ATTEN:0dB
UART:19200 EVNE
CHANNEL LOCKED

```

### (3) General Troubleshooting

- a: The light is off after the power is turned on: Check whether the power input meets the standard
- b: "TS" indicator light is off: Check the video input connection cable, check whether the video input format conforms, check whether the camera is interfered (you can judge by holding the antenna with your hand).
- C: The temperature of the transmitter is very low: check whether the current is normal (the deviation can be  $\pm 0.2A$  within the standard current).
- d: Three lights are always on, and one of them is super bright: it means that the transmitter has failed the detection, and you can try to power off and restart (uncommon)

## 2: Receiver

### (1) Functional area description

- "RF in1" "RF in2": receiving antenna interface, it is recommended to connect the antenna and then turn on the power switch, because the static electricity of the human body may cause the receiver to crash.
- "HDMI": Video output interface, the output video format can be adjusted through the "HDMI" menu on the control panel.
- "DC 12V": Power input interface, please strictly follow the power supply voltage requirements, and overvoltage input is strictly prohibited
- "ON/OFF": power switch.
- "USB": video storage interface, when the U disk is inserted, press the "EXIT" button to start the video recording, after the recording is successful, the video display will display the video recording time, and the stored file name is "TS".

## (2) LCD parameter description

### a: CH01 UNLOCKED (LCKED)

"CH01" means the channel number of the receiver, "UNLOCKED" means the received signal is unlocked, and "LCKED" means the signal is locked. "CH00" of the receiver is the initial writing channel, and the default channel corresponding to the normal operation of the transmitter is "CH001"

### b: FREQ: 602.0MHz

"602.0MHz" is the receiving frequency of the receiver, this frequency must be consistent with the frequency set by the transmitter, otherwise the receiver will not search or receive the signal from the transmitter

### c: BW:6.0MHz

"BW" bandwidth, as shown in the figure, "BW:MHz" is understood as the RF bandwidth is 6MHz, this bandwidth must be consistent with the bandwidth set by the transmitter, otherwise the receiver will search or cannot receive the signal from the transmitter

### d: FEC:1/2

"FEC: 1/2" is the channel error correction, this parameter synchronizes the parameters set by the transmitter, and the receiver cannot be modified

### e: GI:1/32

"GI:1/32" is the channel guard interval, this parameter is set by the transmitter synchronously, and the receiver cannot be modified

### f:MAP:QPSK

"MAP:QPSK" is the modulation mapping, this parameter number is set by the transmitter synchronously, and the receiver cannot be modified

### g: SNR:0.0dB(SNR:15.0dB)

"SNR: 15.0dB" is the signal quality (that is, the signal-to-noise ratio, the larger the value, the better). When "0.0dB" is displayed, the signal quality is 0, and the receiver will not be able to lock

"(SNR:15.0dB)" means the receiving signal-to-noise ratio is greater than 15dB. In the "QPSK" modulation mapping state, as long as the signal-to-noise ratio is greater than 6dB, the receiver can lock

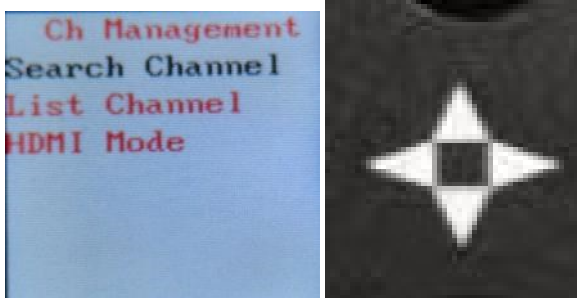
### h:PW: -72.1dBm (PW:-72.1)

PW is the received signal strength, (reference level value), the farther the transceiver end is relative to the distance, the weaker the signal strength is, and the larger the displayed value is, when the transmitter is not turned on, if the signal strength of the receiver is greater than -90dBm (such as -79.7dBm), it can be considered as adjacent frequency interference

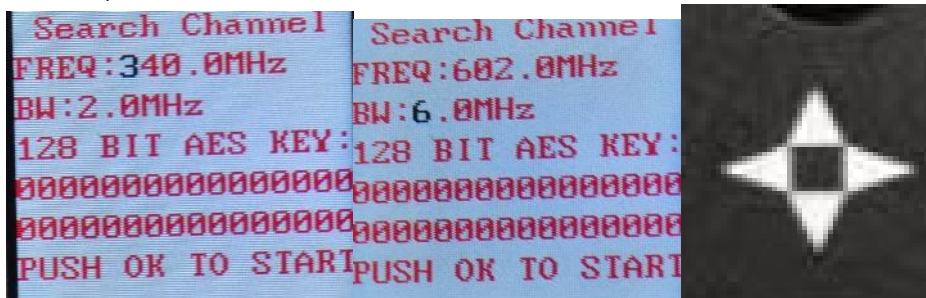
## (3) Parameter Configuration Description

Power on the receiver, press the "MENU/OK" button to enter the menu, the first display is the menu of adjustable parameters, if you search for a specified frequency, directly press the "MENU/OK" button to enter the menu; if you want to remove the channel, press Press down to select "ListanbulChannel", and then press "MENU/OK" to enter the menu operation; if you need to change the video output format, move the cursor to the "HDMI Mode" menu, press "MENU/OK" to enter, and select the video to be output After formatting, press the "MENU/OK" key to confirm.





The frequency search method is as follows. After entering the frequency setting menu, the interface is displayed as shown in the figure. Press the left or right key to move the cursor, press the up or down key to adjust the frequency, RF bandwidth, and secret key that match the transmitter, and press "MENU /OK" key to search. Note that the transmitter must be turned on at this time, otherwise the receiver will not be able to lock because it cannot find the signal.



When the search is completed, press "MENU/OK" to confirm, and the channel is saved in the register of the assistant board, as shown in the figure. To save the channel to the receiver register, press the "MENU/OK" key and the right key at the same time.



**After the receiver parameter setting is completed, the functions of the panel keys are as follows**

**"↑""↓": each individually selectable receiver channel  
"CH\*\*"**

**"←""→": You can choose to view the hidden parameters of the receiver**

**"EXIT": start and stop recording**

#### (4) Video function

Insert the storage device into the "USB" interface of the receiver, press the "EXIT" button to start recording, and a blue recording time box will appear on the upper left corner of the video display as shown below



#### (5) General Troubleshooting

a: The value after the receiver displays "-" is very low (Tx is not turned on): It means that the current channel has serious electromagnetic interference, and the normal value is -90- -100.

b: Cannot record video: check the U disk or replace the U disk.

C: No signal received: Check whether the channel frequency is consistent with the transmitter.

d: No video output: Check the connection line, power off and restart to check whether there is a boot interface.