

# WolfPack 4K 60 Hz 4:4:4 HDMI Over IP Matrix Switch Transceiver

HDTVHDNE9300M



## User Manual

VER 1.0

# Thank you for purchasing this product

For optimum performance and safety, please read these instructions carefully before connecting, operating or adjusting this product. Please keep this manual for future reference.

## Surge protection device recommended

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lightning strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the life of your equipment.

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# 1. Introduction

This WolfPack 4K 60 Hz transceiver is an All-In-One AV over IP solution that supports fiber and copper, and supports automatic switching between two options, the copper has a higher priority. This product provides highest-quality and ultra-low latency audio/video extension over a standard 1G Network Switch, and the transmission distance is up to 328ft/100m. It supports seamless switching, video wall, multiview and KVM seat management functions. Flexible transceiver design (one box can be set to encoder or decoder) is much convenient in a real installation site and inventory control.

In encoder mode, it supports one HDMI 2.0 input and one HDMI loop out, with analog audio embedding/de-embedding function. In decoder mode, it supports one HDMI 2.0 decoding output, with analog audio de-embedding function. The encoder supports H.264 video preview stream.

The system is based on Linux for software development, providing flexible control methods. The best digital audio and video processing management solution is created using technologies such as audio and video processing, networking, visualization and centralized control, and full network distribution. It is committed to quickly establish a high-performance, reliable and easy-to-use visualization application platform for users. Based on distributed interconnection, a comprehensive visualization solution is built that integrates audio and video comprehensive management, matrix switching, splicing and fusion, window roaming, KVM collaborative management, POE power supply application.

# 2. Features

- ☆ HDMI 2.0b, HDCP 2.2 compliant
- ☆ Support video resolution up to 4K60Hz (4:4:4), 18Gbps video bandwidth
- ☆ Audio formats support LPCM 2.0CH 48kHz
- ☆ Integrated design of encoder and decoder, supporting fiber and copper
- ☆ Support window roaming function: a unit as decoder can process up to 16 signals, enabling arbitrary windowing, roaming, overlaying, and splicing
- ☆ KVM seat management (one-to-one & one-to-many), supporting one person manages multiple PCs
- ☆ Universal H.264/265 protocol, supporting IPC access and seamless integration with security camera products
- ☆ Support high definition background image (both video and picture are available), as well as multi-screen splicing display
- ☆ Support scrolling subtitles and character overlay

- ☆ Support point-to-point signal extension
- ☆ Support signal distribution, multicast mode, matrix and video wall functions over a 1G Network Switch
- ☆ Integrated central control function over RS-232, APP on portable devices available
- ☆ Support user rights management
- ☆ Flexible control via KVM, APP and Control Server
- ☆ Standard POE supported (802.3af Class 3, PD mode)
- ☆ Encoder supports HDMI local loop out
- ☆ Encoder supports audio embedding and de-embedding function
- ☆ Comprehensive visual interaction mode, signal source, large screen status, scene preview and environmental visualization control

### 3. Package Contents

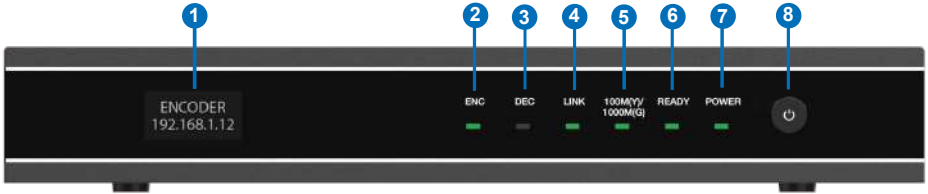
- ① 1 x H.264/H.265 4K60 AV over IP Transceiver
- ② 2 x 6pin-3.81mm Phoenix Connector (male)
- ③ 1 x 3pin-3.81mm Phoenix Connector (male)
- ④ 1 x 12V 2.5A Locking Power Supply
- ⑤ 2 x Mounting Ear
- ⑥ 4 x Machine Screw (M3\*4)
- ⑦ 1 x User Manual

## 4. Specifications

| Technical                  |  |
|----------------------------|--|
| HDMI Compliance            | HDMI 2.0b  |
| HDCP Compliance            | HDCP 2.2   |
| Video Compression Standard | H.264/H.265  |
| Video Bandwidth            | 18Gbps   |
| Network Port               | 1000M Base-T (supporting POE)  |
| Video Resolution           | 1024x768~3840x2160@60Hz<br>( <b>Note:</b> The decoder supports custom resolution output.)  |
| Color Space                | RGB 4:4:4, YCbCr 4:4:4/4:2:2/4:2:0   |
| Color Depth                | 8/10/12bit   |
| Encoding Sampling Rate     | 48KHz  |
| HDMI Audio Formats         | LPCM 2.0CH, 16bit, 48k   |
| Analog Audio Formats       | Left and right stereo analog audio   |
| ESD Protection             | Human-body Model:<br>±8kV (Air-gap discharge) , ±4kV (Contact discharge)   |
| Connection                 |  |
| Input                      | 1 x HDMI IN [Type A, 19-pin female]<br>2 x AUDIO IN [3-pin phoenix connector, stereo balanced linear interface]  |
| Output                     | 1 x HDMI OUT [Type A, 19-pin female]<br>2 x AUDIO OUT [3-pin phoenix connector, stereo balanced linear interface]  |
| Control                    | 1 x LAN (POE) [RJ45, supporting POE]<br>1 x RS-232 [3-pin phoenix connector]<br>1 x USB HOST [Type B, 4-pin female]<br>2 x USB DEVICE [Type A, 4-pin female]<br>1 x SFP [Fiber slot] |
| Mechanical                 |  |
| Housing                    | Metal Enclosure  |
| Color                      | Black  |
| Dimensions                 | 204mm [W] × 131.5mm [D] × 30mm [H]   |
| Weight                     | 760g   |
| Power Supply               | Input: AC 100 - 240V 50/60Hz<br>Output: DC 12V/2.5A<br>(US/EU standards, CE/FCC/UL certified)  |
| Power Consumption          | Encoder: 10.22W; Decoder: 7.04W  |
| Operating Temperature      | 0°C ~ 40°C / 32°F ~ 104°F  |
| Storage Temperature        | -20°C ~ 60°C / -4°F ~ 140°F  |
| Relative Humidity          | 20~90% RH (non-condensing)   |

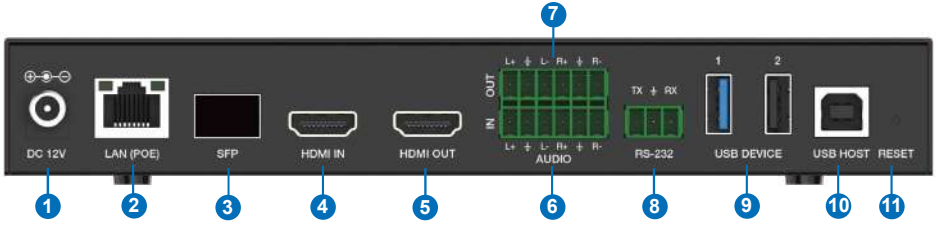
# 5. Operation Controls and Functions

## 5.1 Front Panel



| No. | Name                 | Function Description   |
|-----|----------------------|--|
| 1   | OLED display screen  | The name and IP address of the device will be displayed after the device is turned on. The screen will go off after 90 seconds.  |
| 2   | ENC LED              | When the device is in Encoder mode, the green ENC LED is on.   |
| 3   | DEC LED              | When the device is in Decoder mode, the green DEC LED is on.   |
| 4   | LINK LED             | When the network is connected normally, the green LINK LED flashes.  |
| 5   | 100M(Y)/1000M(G) LED | Network connection rate indicator: <ul style="list-style-type: none"> <li>When the device is connected to a 100M network, the yellow indicator is on.</li> <li>When the device is connected to a 1000M network, the green indicator is on.</li> </ul>  |
| 6   | READY LED            | <ul style="list-style-type: none"> <li>When the system is running normally and no fault occurs, the green LED is on.</li> <li>When the device is in standby mode, the green LED is on.</li> <li>When a fault occurs while the system is running, the green LED flashes at a frequency of 1Hz.</li> </ul>   |
| 7   | POWER LED            | <ul style="list-style-type: none"> <li>When the device is working normally, the green POWER LED is on.</li> <li>When the device is in standby mode or powered off, the green POWER LED is off.</li> </ul>  |
| 8   | Power button         | <p>The power button supports power-off memory function.</p> <ol style="list-style-type: none"> <li>When the device is working normally, power off and power on the device again, it will enter the system directly and work normally.</li> <li>When the device is in standby mode, power off and power on the device again, it will enter the standby mode automatically. Then short press the power button to turn on the device.</li> <li>When the device is working normally, short press the power button to view the current encoder/decoder mode and IP address on the OLED display screen; press and hold the power button for more than 2 seconds to turn off the device.</li> </ol> |

## 5.2 Rear Panel

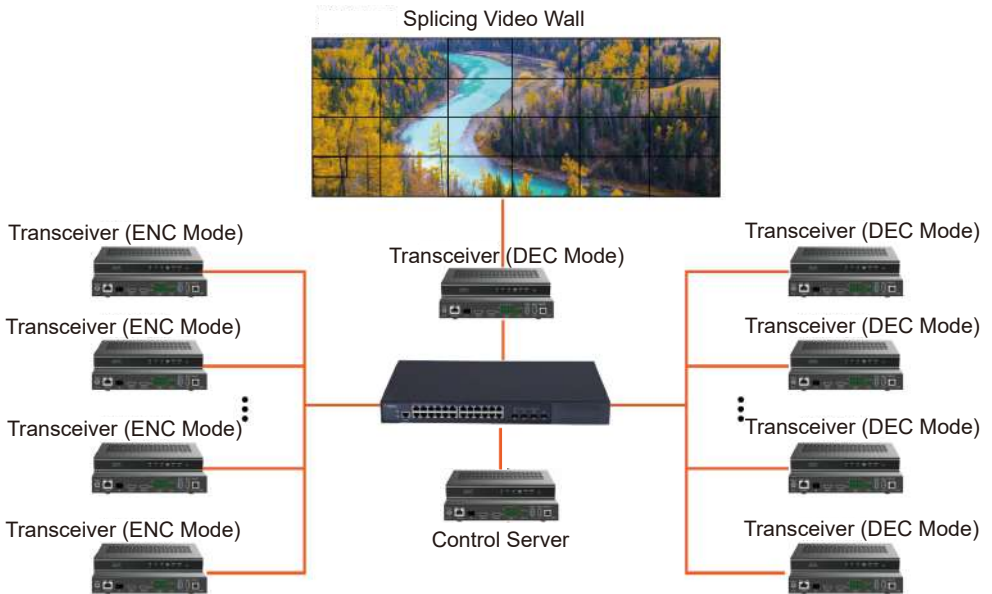


| No. | Name           | Function Description   |
|-----|----------------|--|
| 1   | DC 12V         | DC 12V/2.5A power input port.<br><b>Note:</b> The device can be powered via two methods:<br>① Local DC 12V power supply<br>② POE from Network Switch. Device acts as PD mode.<br>When the two power supply modes are used at the same time, the local DC 12V power supply is preferred.                                  |
| 2   | LAN (POE) port | 1G copper port, supporting POE power supply.   |
| 3   | SFP port       | 1G fiber port, connected to Switch for video transmission.   |
| 4   | HDMI IN port   | HDMI signal input port, connected to HDMI signal source device such as PC or PS4 with HDMI cable.  |
| 5   | HDMI OUT port  | HDMI signal output port, connected to HDMI display device such as TV or monitor with HDMI cable.   |
| 6   | AUDIO IN port  | Stereo balanced line input port, connected to audio source device through 6pin-3.81mm phoenix connector.   |
| 7   | AUDIO OUT port | Stereo balanced line output port, connected to audio amplifier device through 6pin-3.81mm phoenix connector.   |
| 8   | RS-232 port    | RS-232 serial port, relay RS-232 command transmission from the Control Server.   |
| 9   | USB DEVICE     | USB device ports, connected to keyboard and mouse in DEC mode.   |
| 10  | USB HOST       | USB Host port, connected to computer in ENC mode.  |
| 11  | RESET button   | System reset button.<br><ul style="list-style-type: none"> <li>Long press this button for 5 seconds and reboot the device manually, the system will be restored to the factory default setting.</li> <li>Long press this button for 15 seconds, the software will be restored to the factory default version.</li> </ul> |

## 6. Main Functions and Characteristics

### 6.1 More Stable Architecture for AV over IP

- H.264/265 codec  
Standard H.264/H.265 video encoding and processing technology, with high image quality, small bandwidth and low latency.
- Signal distribution, switching, extension and matrix mode  
Equipped with Gigabit Switch, unlimited device quantity.  
Arbitrary switching, extension, audio independent switching, audio and video asynchronous switching, etc.
- Seamless integration of H.264/265 encoding and decoding for security camera



### 6.2 High Quality Image

- 4Kx2K@60 4:4:4 image  
True 4K ultra-high image resolution, supporting ultra high resolution point-to-point display.
- HDMI 2.0b  
Comply with the HDMI 2.0b standard, enjoy the high-definition visual feast of a large screen cinema.
- Adapt to all types of screens  
Synchronization within 100  $\mu$  s., supporting all types of display terminals, including LCD screen splicing, small pitch LED, etc. Output resolution can be customized. Support output grouping management and input signal source sharing.

### 6.3 Seamless Switching

- Instant switching

The image switches seamlessly and instantaneously without black screen, flash screen, jitter or tearing. The visual experience is smooth.



Traditional switching with black screen



Seamless switching



Instant switching with smooth visual experience

### 6.4 Integrated Design, Excellent Performance

- Integrated design of encoder and decoder

The integrated design of encoder and decoder, convenient for stock management, install and maintain.

- Good compatibility

Support IPC access. Directly connect and decode all kinds of IPC such as Hikvision, Dahua and Yushi in the network to display on the wall.

Support the PTZ control of the camera.

It is suitable for multi-platform docking in large system, realizing unified management and scheduling of multi-system.

### 6.5 Video Wall

- Video wall function

High-performance splicing processing capability, perfect splicing in both horizontal and vertical directions.

- Video signal processing

Adopt top-notch image processing chips for acquisition, encoding, transmission, decoding and frame synchronization. Ensure that each video signal has no frame loss or lag, and can withstand the test of fast moving video.

Support high definition background image.

## 6.6 Free Window Display Output

- Free output display

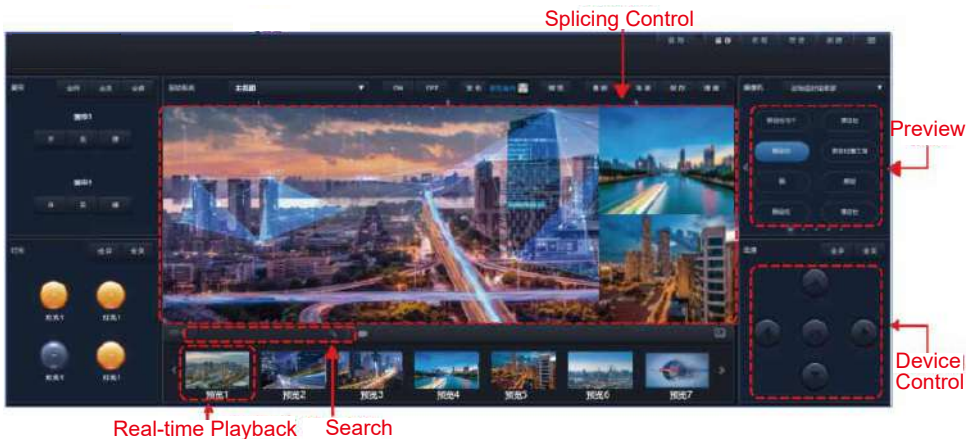
A single screen can process up to 16 signals, enabling arbitrary windowing, roaming, overlaying and splicing.



## 6.7 Visual Display Control

- Video preview, visual management

Comprehensive visual interaction mode, signal source, large screen status, scene preview and environmental visualization control. Real time preview of all video signal images, real-time preview of large screen images, full touch operation mode, drag, stretch, and click to complete complex system management.



- Environment and equipment control  
To achieve comprehensive integrated control of third-party lighting system, camera monitoring, alarm system equipment, display and other controllable equipment.

## 6.8 Subtitle/Banner/Logo Display Output

- Supports scrolling subtitles, input/output character overlay, LED bar screen, and scrolling subtitle display.  
You can freely define the font, color, size and position of overlay characters.

## 6.9 KVM Collaborative Management

- Signal push management  
KVM collaborative management can push the current signal to other personnel and large screens for quick collaborative scheduling.
- Visual takeover  
The system supports shortcut keys and OSD menu, which can quickly realize the functions of signal switching, push, control, etc., so as to achieve centralized control.
- Flexible collaborative communication system  
The system supports seat operators to communicate through text chat, multi-party language communication, and other methods.  
Support seat operators to speak at the meeting.
- Seat roaming  
A single display can achieve 1/4/9/16 split screen display.
- One person with multiple machines, one machine with multiple screens  
The seat operator can control multiple PCs through a set of mouse and keyboard, and a single PC can be spliced and displayed on multiple displays.
- Man-machine separation  
All PCs are centrally managed in the computer room, achieving real-time operation and remote control.



## 6.10 Safe and Reliable System

- USB secure transmission system (optional function)  
The seat operator can access the U flash drive, Ukey and other devices, and communicate with any computer within the front-end authority, using fiber transmission and physical isolation method to ensure the security of information transmission.
- File transmission security (optional function)  
The seat node can be inserted into a USB flash drive to achieve bi-directional file copying function between the seat and any computer within the front-end authority, improving the work efficiency of the seat operator.
- Data security  
Access authorization, data filtering, and purification of the operating environment.

## 6.11 Additional Practical Functions

- RS-232 relay command  
Connected to PC or control system for RS-232 relay control command.
- HDMI loop out  
Convenient for signal cascading or connecting to local signal monitoring equipment.
- POE power supply  
Reduce construction wiring and reduce costs.
- Audio embedding and de-embedding  
With audio embedding and de-embedding function, it is convenient for users to use audio signal processing for various purposes.

## 6.12 Control Diversity

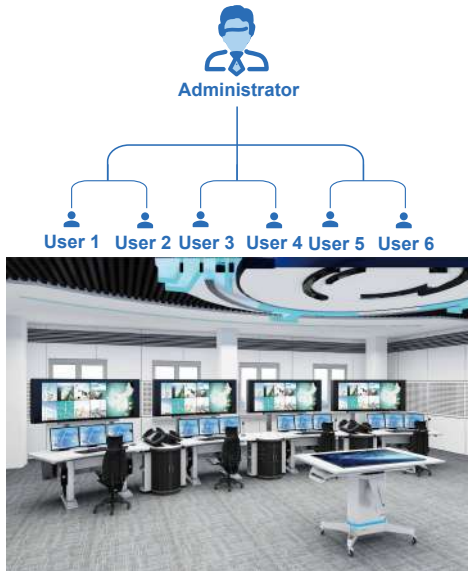
- Integrated central control function  
Flexible control via front panel buttons, RS-232, TCP/IP or APP, with touch control operation function.
- Customized scene mode  
Set up scenes, one-click call, and quickly build a customized scene mode based on customer needs.

## 6.13 Multi-level User Rights Management

- Supports hierarchical management of user rights and simultaneous online management of multiple users

Fully meets customers' multi-level management needs for rights and match the business management process. Through the IP distribution, systematic, scientific and rigorous right management mechanism, the hierarchical and grouped rights are defined and allocated to form a detailed right list, so that the rights and responsibilities are clearly defined.

The account follows the person and can move according to the user's login position, ensuring that responsibility is assigned to the person.



# 7. Application Example

