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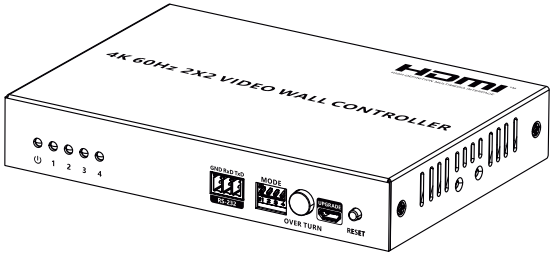
User Manual

# 4K@60Hz 2x2 VIDEO WALL CONTROLLER




HIGH-DEFINITION MULTIMEDIA INTERFACE

## • Important Safety Instructions

1. To prevent electric shock, please ensure that all devices are properly grounded.
2. Do not place this device near or over a radiator or heat register, or where it is exposed to direct sunlight.
3. Do not expose this device to rain or place it near water. Any liquid that goes into the device may cause a failure, fire, or electric shock.
4. Do not place the device on an uneven or unstable surface. The device may fall resulting in a malfunction.
5. Never insert anything metallic into the open parts of this device. This may cause a danger of electric shock.
6. If a third-party power supply is used, please ensure that the power supply specifications meet the product requirements.

## • Introduction

This product is a 4K@60Hz 1-in-4-out video wall controller, supports one HDMI source input and four HDMI outputs. Supports 1x1/1x2/1x3/1x4/2x1/3x1/4x1/2x2 splicing modes, which can be set by RS-232 or dip switch. The product can flexibly adapt to different installation requirements, which can be widely used in security monitoring, rail transit, broadcasting, smart cities, home theatre, training and other fields.

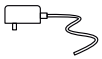
## • Features

1. Supports 1 HDMI signal input and 4 HDMI signal output.
2. Supports up to 3840x2160@60Hz resolution, downwards compatible.
3. Supports a variety of splicing modes, such as 1x1/1x2/1x3/1x4/2x1/3x1/4x1/2x2, etc.
4. Supports dip switch switching splicing mode.

5. Supports RS-232 control instruction to set splicing mode.
6. Supports 3.5mm left/right channel audio output.
7. Supports 180-degree rotation of HDMI1/2 display image in 2x1/2x2 mode (when the upper displays installed upside down).
8. Firmware upgrading via micro USB port.
9. Lightning protection, surge protection, ESD protection.
10. Plug and play, no need to install drivers.

## • Package Contents

Controller x1



Power Adapter 12V/2A x1

User manual x1

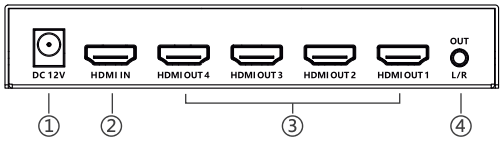
Mounting ear x2

Screw x6

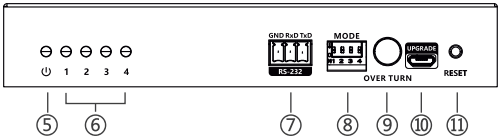
Grounding screw x1

Terminal Block x1

## • Panel Description



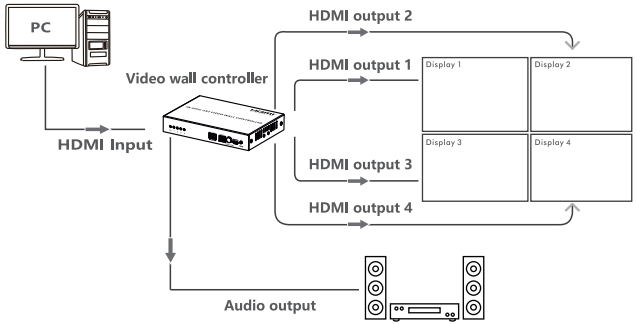



| | | |
|---|---|---|
| ① | DC12V Power input | Connect with DC 12V/2A power adapter |
| ② | HDMI signal input | Connect HDMI signal source |
| ③ | HDMI signal output x4 | Connect with HDMI splicing display devices |
| ④ | L/R audio output | Separate output of HDMI signal source audio |
| ⑤ | Power light | 1) Steady on: The power is on, and stable signal input<br>2) Slow flash: No HDMI signal transmission<br>3) Quick flash: The factory settings have been restored |
| ⑥ | HDMI signal light x4 | Corresponding to 4 HDMI outputs respectively, the indicator light of normal signal transmission is always on |
| ⑦ | RS-232 | Connect the computer for command control<br>Baud rate: 9600, Only when the dip switch is set to '1111', the mode can be switched through RS-232 |
| ⑧ | Mode switch | Switch splicing mode |
| ⑨ | Over turn button | Image rotation in 2x1/2x2 mode.<br>Controlled by a button; press once to flip, then again to restore, control cycling with memory function. |
| ⑩ | Micro-USB port | Used for device firmware upgrading |
| ⑪ | Reset | 1) Press to restart the video wall controller;<br>2) Press and hold for 5 seconds to restore factory settings (wait until the power indicator is quick flashing to release) |

## • Installation Procedures

### 1. Connection Diagrams




### 2. Connection Instructions

1) Connect the controller with the signal source and splicing screen through HDMI cable.
2) According to the number of splicing screens, the matching splicing mode can be selected by dip switch.
3) When using RS-232, the dialing code should be set to ‘1111’, and different splicing modes can be switched through the serial port instruction.
4) If you need to output signal source audio independently, please connect the speaker or power amplifier with a 3.5mm audio cable.
5) Connect the power supply, and the product starts to work.



### 3. RS-232 control

Insert the terminal into the controller and connect it to external equipment. The three pins are GND/RXD/TXD, and the splicing mode can be set by RS-232 instruction. The default is as follows:

Baud rate: 9600

Date bits: 8

Stop bits: 1

Parity: None

| Control command | Functional description |
|---|---|
| ES XX On\n | ‘XX’ indicates the corresponding HDMI port, which can be turned on or off.<br>From right to left, the HDMI ports are: HDMI: 01,02,03,04<br>All means all HDMI ports |
| ES XX Off\n | |
| ES XXXX\n | ‘XXXX’ means splicing mode<br>0000——1x1; 0001——2x1; 0010——1x2; 0011——3x1;<br>0100——1x3; 0101——4x1; 0110——2x2; 0111——1x4;<br>1000——1x1(1080P input)/2x2(4K input) |
| Reset\n | Reset, device restart |
| Recover\n | Restore the factory settings and read the current dialing status by default (The unused dipswitch status defaults to 0000 mode) |
| Status\n | Status information printing<br>Status:<br>Baud 9600<br>ES 01 OK<br>ES 02 OK<br>ES 03 FAIL<br>ES 04 FAIL<br>ES 001 OK |
| Baud XX\n | ‘XX’ represents the baud rate value<br>9600（default）,19200, 38400,57600,115200 |
| **Example** | |
| **Control command 1** | **ES 04 On\n** |

| | | |
|---|---|---|
| Functional details | Open the '04' HDMI port | |
| Return value | Received successfully | ES 04 On OK |
| | Received unsuccessful | ES 04 On FAIL |
| **Control command 2** | **ES All Off\n** | |
| Functional details | Close all HDMI ports | |
| Return value | Received successfully | ES All Off OK |
| | Received unsuccessful | ES All Off FAIL |
| **Control command 3** | **ES 0001\n** | |
| Functional details | Select 2 x 1 splicing mode | |
| Return value | Received successfully | ES 0001 OK |
| | Received unsuccessful | ES 0001 FAIL |
| **Control command 4** | **Reset\n** | |
| Functional details | Reset device restart | |
| Return value | Received successfully | Reset OK |
| | Received unsuccessful | Reset FAIL |
| **Control command 5** | **Baud 19200\n** | |
| Functional details | Baud 19200 OK | |
| Return value | Received successfully | Baud 19200 OK |
| | Received unsuccessful | Baud 19200 FAIL |

**Remarks:**

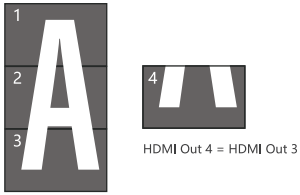
1) '\n' Newline character.
2) The splicing mode can be switched by RS-232 or dip switch. Only when the dip switch is set to '1111', switching splicing mode via RS-232 instruction.
3) 2x2 Display Rotation Modes:
   ①When the dip switch is in position "0110", enter the control command ES201\n to realize 180-degree rotation of HDMI1/HDMI2 display image , and then enter the control command ES 200\n to resume;
   ② When the dip switch is in position "1111", enter the control command ES 0110\n to switch to 2x2 mode, then input the control command ES 201\n to realize 180-degree rotation of HDMI1/HDMI2 display image, and enter the control command ES 200\n to resume;
4) 2x1 Display Rotation Modes:
   ① When the dip switch is in position "0001", enter the control command ES201\n to realize 180-degree rotation of HDMI1/HDMI2 display image , and then enter the control command ES 200\n to resume;
   ② When the dip switch is in position "1111", enter the control command ES 0001\n to switch to 2x1 mode, then input the control command ES 201\n to realize 180-degree rotation of HDMI1 display image, and enter the control command ES 200\n to resume;
5) When the dip switch is in position '1111', the display shows the picture in the splicing mode determined by RS-232 control; otherwise, the display shows the image in the mode set by the dip switch. The unused dipswitch defaults to position '0000'; when the dip switch is in position '1111', the last serial command setting mode is shown with the memory function following the serial command setting.

## 4. DIP Switch

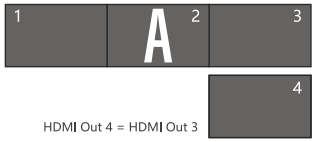
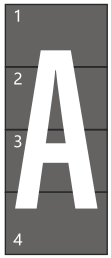
Built-in 8 splicing mode can be switched by dip switch, and the default is '0000' .


Switch UP : use the Arabic numeral "1" to represent


Switch DOWN : use the Arabic numeral "0" to represent

| Dip switch state | | | | Splicing mode | |
|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | | |
| 0 | 0 | 0 | 0 | 1x1 |  |
| 0 | 0 | 0 | 1 | 2x1 vertically |  |
| 0 | 0 | 1 | 0 | 1x2 horizontally |  |
| 0 | 0 | 1 | 1 | 3x1 vertically |  HDMI Out 4 = HDMI Out 3 |



| | | | | | |
|---|---|---|---|---|---|
| 0 | 1 | 0 | 0 | 1x3 horizontally |  HDMI Out 4 = HDMI Out 3 |
| 0 | 1 | 0 | 1 | 4x1 vertically |  |
| 0 | 1 | 1 | 0 | 2x2 vertically |  |
| 0 | 1 | 1 | 1 | 1x4 horizontally |  |

Note:

1. When the dip switch is set to "1000" mode, if the input is 4K signal, the output will be the original screen with 1080P resolution (in 2x2 mode);
2. When the dip switch is set to "1000" mode, if the input is 1080P signal, the output resolution will be 1080P (in 1x1 mode);
3. The unused dipswitch status defaults to 0000 mode;
4. If the input resolution is 3840x2160@60/50Hz and the dial code is 0001, 0010, 0011, the output resolution will be 3840x2160@30/25Hz.

## • FAQ

Q: Picture quality is not fluent and stable?

A: 1) Please check and make sure all HDMI cables are connected well.

2) Try to connect the source device to display device directly, or change to another source device for a try to see the picture quality.

Q: Monitor does not show image, black screen?

A: 1) Please check whether the signal source output resolution is the supported by the product.

2) Please check whether the HDMI cable is firmly connected and plug the HDMI cable again.

3) Please check whether the HDMI output is turned off by using RS-232 command.

Q: NO response when using RS-232 control to send instructions to switch splicing modes?

A: 1) Only when the dip switch is set to '1111' can it be switched by RS-232 instruction.

2) Confirm whether the baud rate of the product is consistent with the settings of the serial port tool, the default baud rate of the product is 9600.



## • Specification

| Items | | Description |
|---|---|---|
| Video signal | HDMI Input | 1x HDMI |
| | HDMI Output | 4x HDMI |
| | Compatibility | HDMI 2.0 |
| | | HDCP 1.4/HDCP 2.0 |
| | Resolutions | input:<br>3840x2160@60/50/30/25/24Hz;<br>1080P@60/50/30/25/24Hz<br>output:<br>up to 3840x2160@60Hz |
| Video signal | 3.5mm Output | LPCM 2.0 |
| | HDMI Output | Dolby Digital 5.1CH /DTS 5.1CH/LPCM 2.0 |
| Splice Settings | Mode | 1x1/1x2/1x3/1x4/2x1/3x1/4x1/2x2 |
| | DIP Switch | |
| | RS-232 (GND/ RxD/TxD) | Default baud rate: 9600<br>Only when the dip switch is set to '1111' can the splicing mode be switched by RS-232 instruction |
| Power | Power Supply | DC12V/2A |
| | Power Consumption | ＜9W |
| Operating Environment | Working temperature | -20℃~60℃ |
| | Storage temperature | -30℃~70℃ |
| | Humidity | 0~90%RH (No condensation) |
| Physical Properties | Housing | Iron |
| | Weight | 514g |
| Physical Properties | Color | Black |
| | Dimensions | 148.5(L)*103.0(W)*25.0(H)mm |

| | |
|---|---|
| **Protection** | ESD protection<br>1a Contact discharge level 2 (±4KV)<br>1b Air discharge level 3 (±8KV)<br>Implementation of the standard: IEC61000-4-2 |
| | Lightning protection, Surge protection |