J-TECH DIGITAL JTD-2921 HDMI or DP 3×3 4K HDMI Video Wall Controller and Multi Viewer User Manual

JTD-2921 HDMI or DP 3×3 4K HDMI Video Wall Controller and Multi-Viewer User Manual

5 Input | 3×3 video wall w/ rotation
JTD-2921 | JTECH-VWM90

Contents

Product Overview

1.1 Product Features

JTECH-VWM90 is an Ultra-HD Rotary Splicer Video Wall controller by J-Tech Digital. It supports 4 HDMI inputs (1 HDMI Port supports 4K@60Hz, 3 HDMI Ports support 4K@30Hz), 1 DP input (4K@60Hz), 9 HDMI outputs (1080P@60Hz), and 1 DP local loop out. There is support for multiple splicing modes, such as horizontal screen, vertical screen, and 2×2, and the unit supports large-scale cascading and parallel use in form of loop-out. The unit can open 4 windows on the whole screen at once, and support multiple window-opening modes such as single screen, PIP double screen, double screen, and 4 picture segmentation.

The inputs support full-screen rotation of 90° (only supported in single-picture mode), and the output supports 180° rotation of the first line (only supported when the stitching mode is two lines).

The input source doesn't need to be compressed, and there is no stretching or deformation ensuring that the picture is clear.

The unit utilizes low power consumption and is energy-saving. Conductive heat dissipation is used internally without any external heat dissipating measures making the reliability of the unit extremely high.

JTECH-VWM90 utilizes a 40nm high-end programmable FPGA chip, full hardware real-time processing architecture resulting in ultra-fast processing speed without delay.

1.2 Specifications

Product Name	JTECH-VWM90
Input Max. Pixel FPS	600MHz
Input Max. Resolution	3840*2160@60hz
DP Port Count & Version	1 Port Display Port 1.2
HDMI Input Port Count & Version	1 Port HDMI 2.0 I 3 Ports HDMI 1.4
Output Max. Pixel FPS	165MHz
Output Max. Resolution	1920*1080@60Hz
HDMI Output Port Count & Version	9 Ports HDMI 1.4
Loop-out Port & Version	1 Port Display Port 1.2

Audio Output	3.5mm Headphone
Control Method	Remote Control, RS232 Serial Port (Can be looped out)
Factory Default Resolution	HDMI: 3840*2160@60Hz DP: 3840*2160@60Hz
Custom Resolution Support	Yes
Default IP Address	192.168.1.192
Default WebGUI Password	admin
Operating Temperature	0°C — 50°C I 32°F — 122°F
Power Consumption	12W
Power Supply	12V@2A AC-DC
Weight	1.85lbs
Size	270mm * 122.5mm * 20mm 10.63″ * 4.82″ * 0.79″
Included Accessories	1 x DP Cable 11 x Power Adapter I 1 x Remote Contro l
Warranty	One Year

Operation Instructions

2.1 Product Panel Description

JTECH-VWM90 – rear panel

A. RS232 Control Loop Out – Used in cascade mode to loop out RS232 commands to the next device
B. Network Interface – TCP network protocol used for the control system to issue instructions to control the device (Default IP Address: 192.168.1.192 | Default Web Login Password: admin1)
C. RS232 Input – Used to issue RS232 commands to the device
D. DIP Switch (Board ID) – Indicates the ID of the current device in cascade mode. For detailed settings, see Note 1 below
E. IR Port – Used for receiving remote control signals. Needs an external IR receiver
F, G, H, I – 4 HDMI input ports. Input Port “I” supports 4K@60Hz maximum resolution, while ports “F/G/H” support a maximum 4K@30Hz. The LED lights next to each HDMI interface indicates an active signal input

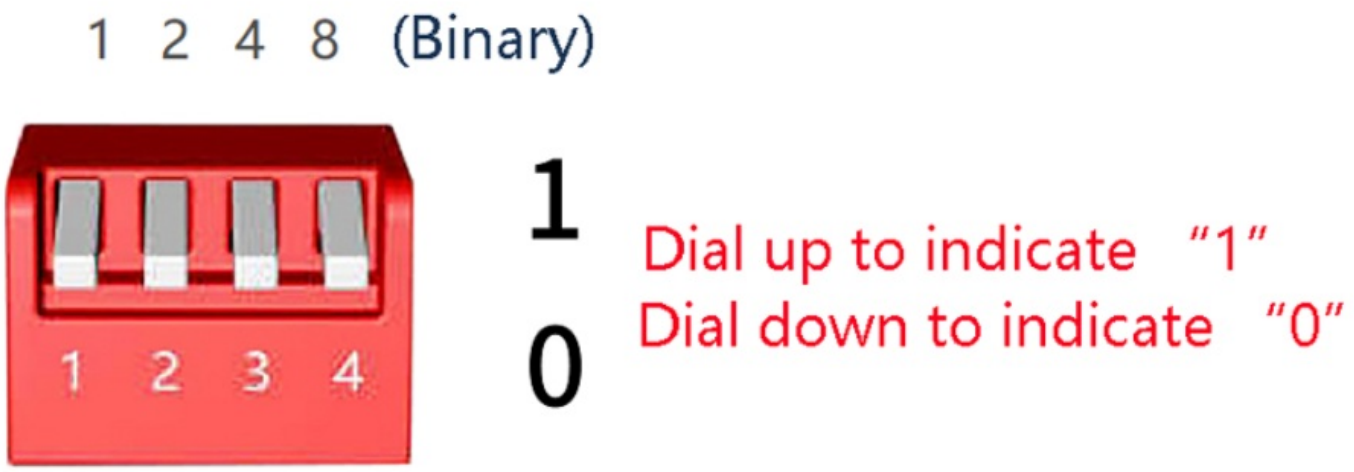
J. 1 DP input interface. Supports 4K@60Hz
K. 3.5mm Audio out interface for external audio devices
L. DP local loop-out. When multiple devices are cascaded, this port acts as the DP input source for other JTECH-VWM90 devices. The LED light next to this interface indicates that there is a loop-out signal output (In single-screen mode, the loop-out follows the selection of the input source channel to switch. In non-single screen mode, only the loop-out DP signal is supported)
M. Power switch

JTECH-VWM90 – rear panel

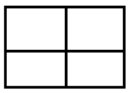
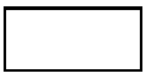
N. Power Interface – Connect to the provided 12V@2A AC-DC power supply. The LED indicator next to the interface is an indicator of the device receiving power
O – W. 9 HDMI output ports. The LED lights next to each HDMI interface indicate an active output signal

Note 1: The DIP switch, when cascading, will indicate the ID number of the current device which is set in binary.

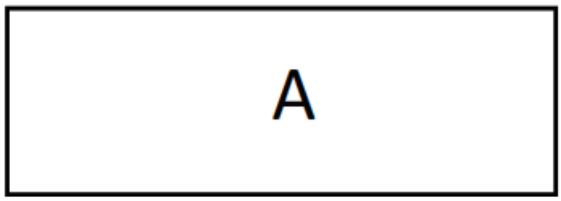
ID number	**Binary**	**ID number**	**Binary**
Device 1	1000	Device 9	1001
Device 2	100	Device 10	101
Device 3	1100	Device 11	1101
Device 4	10	Device 12	11
Device 5	1010	Device 13	1011
Device 6	110	Device 14	111
Device 7	1110	Device 15	1111
Device 8	1		



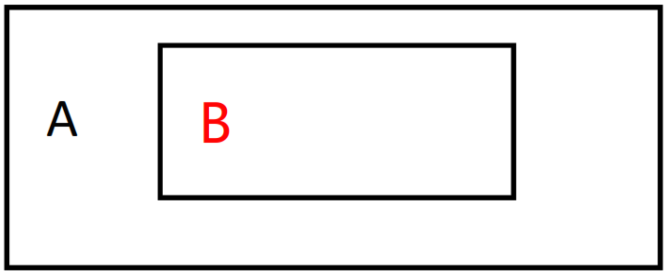
2.2 Remote Control Button Guide

Ent	Confirm Key
Esc	Escape Key
Row	Set Splicing Mode: Row (Range 1-16)
Col	Set Splicing Mode: Column (Range 1-16)
Win	Window: The number of each screen (window) in “whole screen”. See Note 2 at the end of this table for details
Src	Source: Enter the number of the source, 1 for HDMI. 2 for DP
+	Cooperation ↔↕ Zoom] to realize the function of ‘move left / right / zoom in / zoom out’ of small window in picture
–	Cooperation ↔↕ Zoom] to realize the function of ‘move left / right / zoom in / zoom out of s mall window in picture
↔↕ zoom	Picture in picture Menu to move small window left & right Menu to move the small window up & down Menu t o zoom in & out for the small window
	Four Pictures (Select the input source displayed on the screen through the [Win! Src) butto n
	Double Screen: Left & Right → up & down (Select the input source displayed on the screen through the [Win / Src] button
	Single screen rotation HDMI 1 → HDMI 2 → HDMI 3 –< HDMI 4 → DP
R90°	Rotate the whole input image 90 ° (only in the case of a single image)
R180°	First line output image rotated 180 ° (only in case of 2 lines)
Clone	Clone mode: copy display (1×1) for each output port

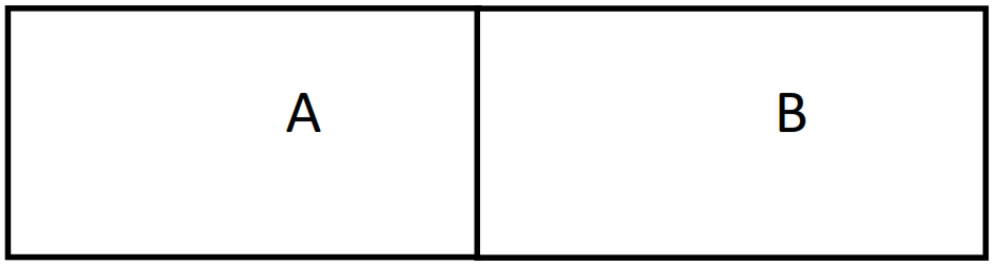
Note 2: [Win] key meaning: The number of each screen (window) in the “whole screen”, the corresponding position is as follows:
Single Screen Mode: There is only one screen, and the value is fixed as number 1, as shown below:



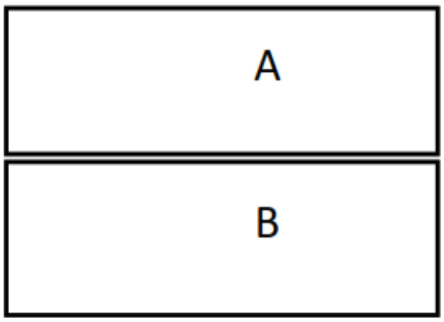
Double Picture (PIP Mode): The face value of the large picture is No.1, and the value of the small picture no. 2 as shown below:



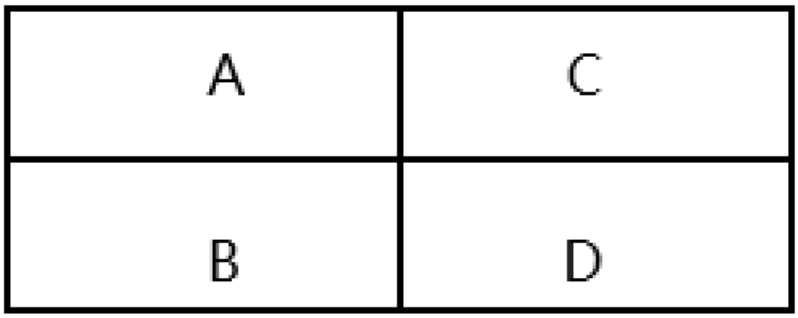
Double Picture (Left Right Mode): The left screen value is No.1, and the right screen value is No.2 as shown below:



Double Picture (Up Down Mode): The upper screen value is No.1, and the lower screen value is No. 2 as shown below:



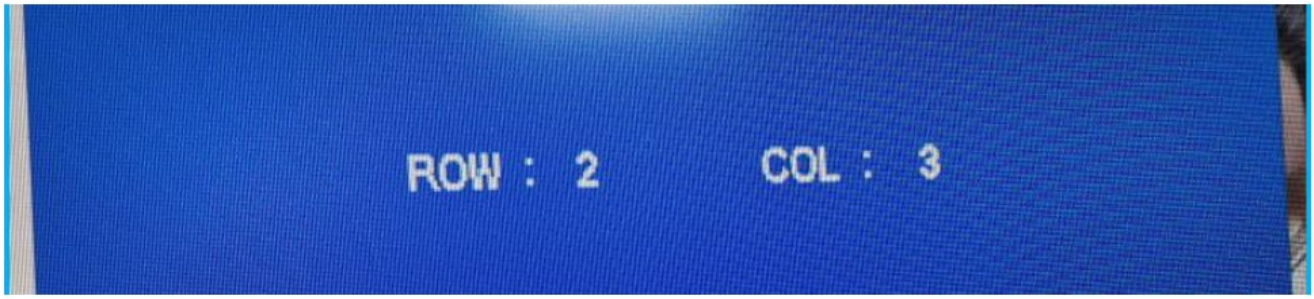
Four Screen Mode: The value of the upper left screen is No. 1. The value of the lower left screen is No.2. The value of the upper right screen is No. 3. The value of the lower right screen is No.4, as shown below:



2.3 Remote Control Operation Instructions

The adjustment of the following two groups of parameters needs to press the [Ent] confirmation key to take effect, and the [Esc] cancel key can be pressed when the parameter set needs to be canceled.

1. [ROW, COL] is a group to adjust the output splicing mode. You can confirm the value by viewing the OSD display information in the upper left corner of the whole screen. For example: if you need to adjust to 2×3 (two rows and three columns) splicing mode, you need to set [row] to 2, and [COL] to
   3. Press [Ent] to confirm, and then the splicing mode will be changed to 2×3.



2. [Src, Win] is a group. The purpose is to arbitrarily specify the input source channel of each screen (window) in the “whole screen”. You can confirm the value by viewing the OSD display information in the “upper left corner of the whole screen”.

For example: Currently, it is [▭] PIP mode, HDMI is displayed in a large screen window and DP is displayed in a small screen window by default. If you need to adjust the large screen window to DP and the small screen window to HDMI, Then you need to set [Win] to “1”(window No. 1 means large screen window), [Src] is “2” (2 means DP input) After pressing the [Ent] confirmation key The large screen window can be switched to DP signal source.Set Win to “2” window No. 1 means small screen window set Src to “1” 2 means HDMI input After pressing the [Ent] confirmation key The small screen window can be switched to HDMI signal source.

2.4 RS232 Control (Serial Port Instructions)
Parameter Settings:
Baud Rate: 9600bps
Data Bit: 8 bits
Stop Bit: 1 bit
Parity: None

Function	Byte 1 cmd head	Byte 2 cmd type	Byte 3 cmd_datal	Byte 4 cmd_data2	Byte 5 Check_sum
Splicing Mode	0x66	Ox01	Row	Col	Byte 1 + Byte 2 + Byte 3 + Byte 4
Rotate 90°	0x66	0x02	Rotate90	Ox00	Byte 1 + Byte 2 + Byte 3 + Byte 4
Rotate 180°	0x66	0x03	Rotate180	Ox00	Byte 1 + Byte 2 + Byte 3 + Byte 4
Multi-Picture Mode	0x66	0x04	Mode	Ox00	Byte 1 + Byte 2 + Byte 3 + Byte 4
Multi-Picture Window specifying input source	0x66	0x05	Window Sel	Source Channel	Byte 1 + Byte 2 + Byte 3 + Byte 4
PIP small window position	0x66	0x06	Position	Ox00	Byte 1 + Byte 2 + Byte 3 + Byte 4
PIP small window size	0x66	0x07	Size	Ox00	Byte 1 + Byte 2 + Byte 3 + Byte 4

2.5 Description of Serial Port Instruction set:

- [Row]: Stitching mode: row [Col]: Stitching mode: Column
- [Rotate90]: Rotate 90°, 0: do not rotate, 1: rotate (only supported in single-screen mode)
- [Rotate180]: Rotate 180°, 0: do not rotate, 1: rotate (only supported in stitching mode behavior 2)
- [Mode]: Multi-picture mode: 0: single screen, 1: around the double screen, 2: four picture segmentation, 3: PIP double screen, 4: double screen up and down
- [WindowSel]: Window selection, the value depends on the setting of multi-screen mode: [Mode]=0, WindowSel=0 (current screen)

[Mode]=1, WindowSel=0 (left picture), WindowSel=1 (right picture)

[Mode]=2, WindowSel=0 (upper left screen), WindowSel=1 (lower left screen)

WindowSel=2 (upper right screen), WindowSel=3 (lower right screen)

[Mode]=3, WindowSel=0 (large picture), WindowSel=1 (small picture)

[Mode]=4, WindowSel=0 (upper screen), WindowSel=1 (lower screen)

[SourceChannel]: Input source channel selection: 0 is HDM I, 1 is HDMI 2, 2 is HDMI 3,3 is HDMI 4,4 is DP 5.

- [Position]: Choose the position of the small window in the picture-in-picture mode: 0: center, 1: upper left corner, 2: upper right corner, 3bottom left corner, 4: Bottom right corner (only supported in PIP double screen mode)
- [Size]: Choose the size of the small window in the picture-in-picture mode: 0~10, The larger the value, the larger the window supported in PIP double screen mode).

Product Connection Diagram

3.1 Instructions for a single unit

Taking 3×3 as an example: Front panel wiring diagram

3×3 mode front panel wiring diagram (5760×3240@60Hz)

The Board ID of the DIP switch on the front panel of the current device needs to be set at:

1

0

Dial up to indicate "1"

Dial down to indicate "0"

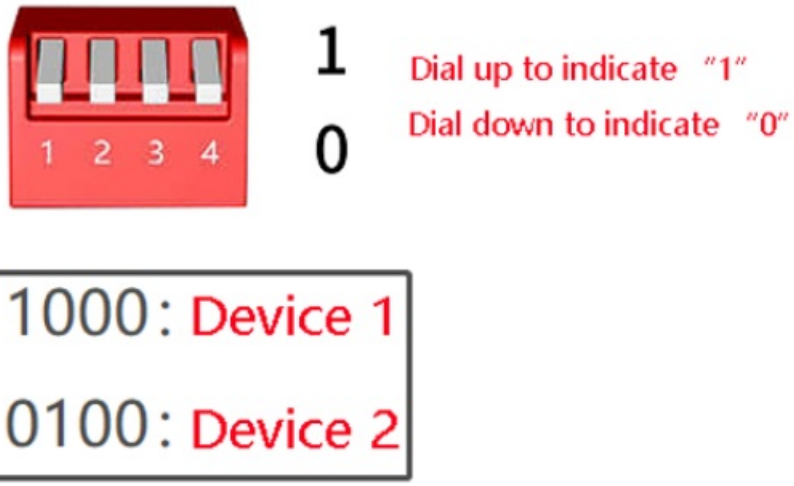
1000: Device 1

3.2 Instructions for cascading two units

Take the output 3×6 image as an example: front panel wiring diagram

3x6 mode front panel wiring diagram (5760x6480@60Hz)

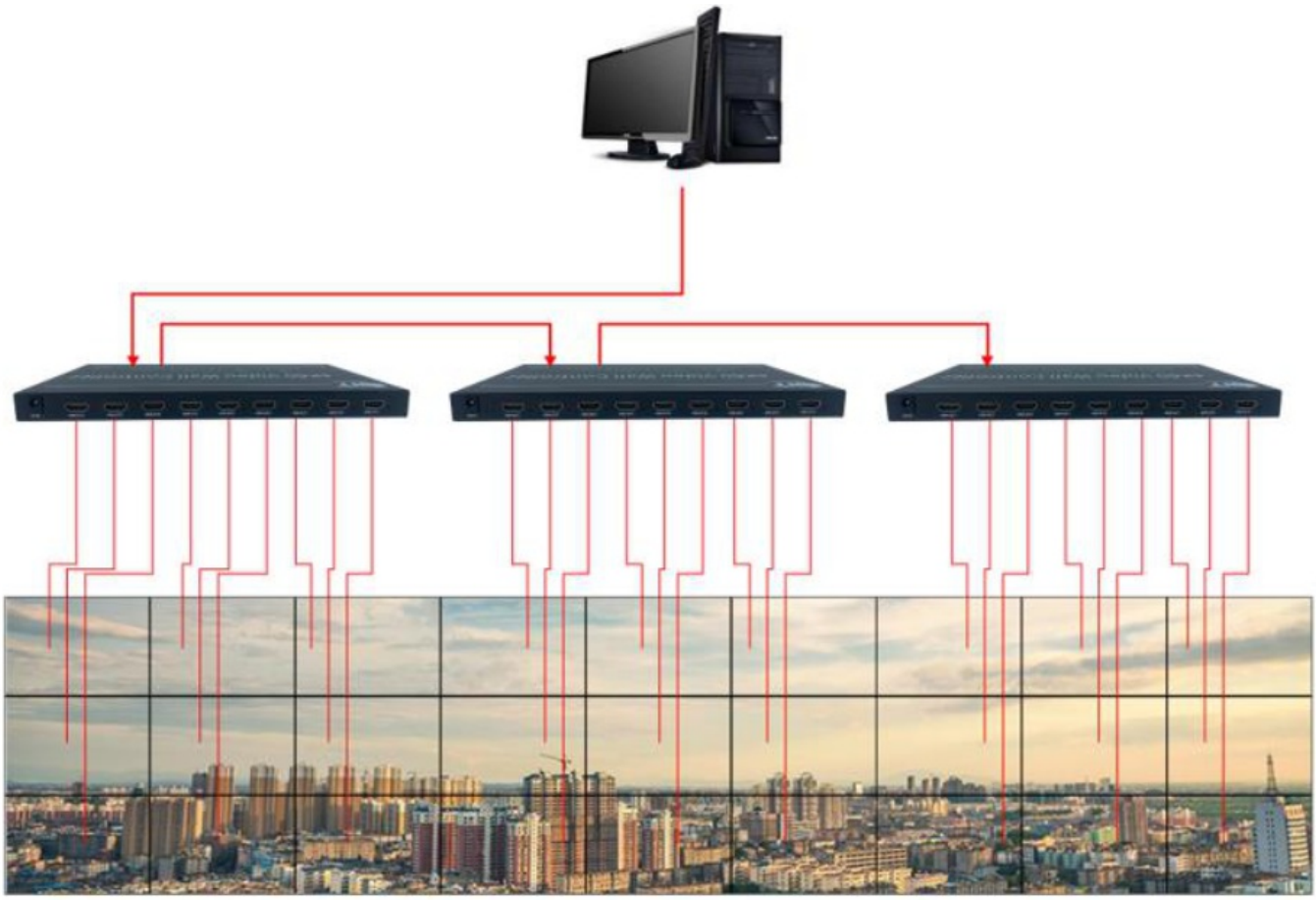
When cascading, the board ID of the 1 / 2 front panel dial switch of the device needs to be set:



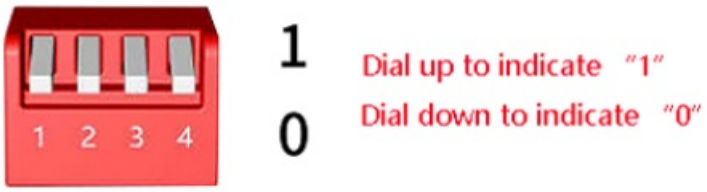
Note: When the devices are cascaded, the image rank (MxN rank) must be the same.

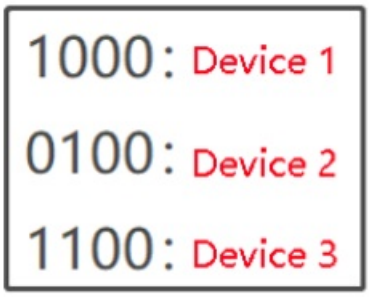
3.3 Instructions for cascading three units

Take the output of 3×9 as an example:

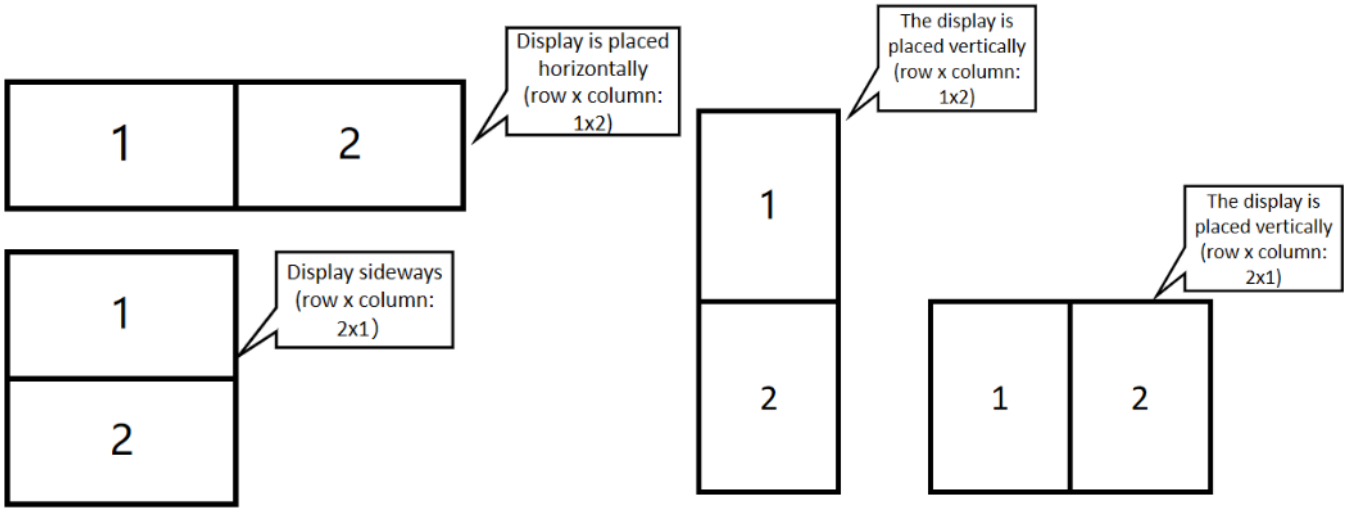


When cascading, the board ID of the 1 / 2 / 3 front panel dial switch of the devices needs to be set:





3.2 Definition of Rows and Columns



Supported Resolutions

Note: The support of equal scale mode and resolution is not limited to the following tables.
Table 1: Equal proportion mode supported by video card application

Mode	Full-Screen Input Resolution	Full-Screen Output Resolution	Single Screen Resolution
1×2	3840×1080@30Hz	3840×1080@60 Hz	1920×1080@60Hz
1×3	3840×720@30Hz	5760×1080@60 Hz	1920×1080@60Hz
1×4	3840×540@60Hz	7680×1080©60 Hz	1920×1080@60Hz
1×5	3840×432@60Hz	9600×1080@60 Hz	1920×1080@60Hz
1×6	3840×360@60Hz	11520×1080@60 Hz	1920×1080@60Hz
2×1	1920×2160@30Hz	1920×2160@60 Hz	1920×1080@60Hz
2×2	3840×2160@30Hz	3840×2160©60 Hz	1920×1080@60Hz
2×3	3840×1440@30Hz	5760×2160@60 Hz	1920×1080@60Hz
2×4	4096×1152@30Hz	7680×2160@60Hz	1280×720@60Hz
3×1	1920×3240@30Hz	1920×3240©60 Hz	1920×1080@60Hz
3×2	2816×2376@30Hz	3840×3240@60Hz	1920×1080@60Hz
3×3	3840×2160@30Hz	3840×2160@60Hz	1280×720@60Hz
4×1	1776×3996@30Hz	1920×4320@60Hz	1920×1080@60Hz
4×2	2560×2880@30Hz	2560×2880@60Hz	1280×720@60Hz
5×1	1408×3960@30Hz	1920×5400©60Hz	1920×1080@60Hz
6×1	1184×3996@30Hz	1920×6480©60Hz	1920×1080@60Hz
7×1	992×3906@30Hz	1280×5040@60Hz	1280×720@60Hz
8×1	880×3960@30Hz	1280×5760@60Hz	1280×720@60Hz
9×1	784×3969@30Hz	1280×6480@60Hz	1280×720@60Hz

Table 2: JTECH-VWM90 Cascade Mode-Supported Resolution Summary

Mode	Full-Screen Input Resolution	Full-Screen Output Resolution	Single Screen Resolution
2×5	4080×918@30Hz	6440×1440@60Hz	1280×720@60Hz
2×6	4080×765@30Hz	7680×1440@60Hz	1280×720@60Hz
2×8	4096×576@30Hz	10240×1440@60Hz	1280×720@60Hz
2×10	4032×504@30Hz	12800×1440@60Hz	1280×720@60Hz
2×12	4032×378@30Hz	15360×1440@60Hz	1280×720@60Hz
3×4	4096×1728@30Hz	5120×2160@60Hz	1280×720@60Hz
3×5	4080×1377@30Hz	6400×2160@60Hz	1280×720@60Hz
3×6	4032×1134@30Hz	7680×2160@60Hz	1280×720@60Hz
3×8	4096×864@30Hz	10240×2160@60Hz	1280×720@60Hz
4×4	4096×2304@30Hz	5120×2880@60Hz	1280×720@60Hz
4×5	4080×1836@30Hz	6400×2880@60Hz	1280×720@60Hz
4×6	4032×1512@30Hz	7680×2880@60Hz	1280×720@60Hz
5×2	2048×2880@30Hz	2560×3600@60Hz	1280×720@60Hz
5×3	3024×2835@30Hz	3840×3600@60Hz	1280×720@60Hz
5×4	3008×2115@30Hz	5120×3600@60Hz	1280×720@60Hz
5×5	4080×2295@30Hz	6400×3600@60Hz	1280×720@60Hz
6×2	1920×3240@30Hz	2560×4320@60Hz	1280×720@60Hz
6×3	2640×2970@30Hz	3840×4320@60Hz	1280×720@60Hz
6×4	3072×2592@30Hz	5120×4320@60Hz	1280×720@60Hz
8×3	2160×3240@30Hz	3840×5760@60Hz	1280×720@60Hz

Common Problems

1. What is the output resolution of the loop-out interface?
   If the loop-out interface of the first device outputs a 3840×2160 resolution, the resolution of the DP input signal of the second device is 3840×2160 resolution.
2. Sometimes, the dialing code or remote-control switch does not respond.
   Because the setup involves resolution switching, it takes a certain time (1s). If the display does not meet expectations, it can be restored by power off again.
3. Is there a flash line in cascade mode?
   Please use the DP cable provided by the manufacturer to connect the cascaded DP port.
4. What is the order of the output screen?
   Top to bottom left to right.
5. There are errors in the remote control when cascading. Some devices respond to the remote control

commands normally, and some devices don't.

It is recommended to put the equipment together when using the remote control in cascade.

6. How to recover when an error occurs?

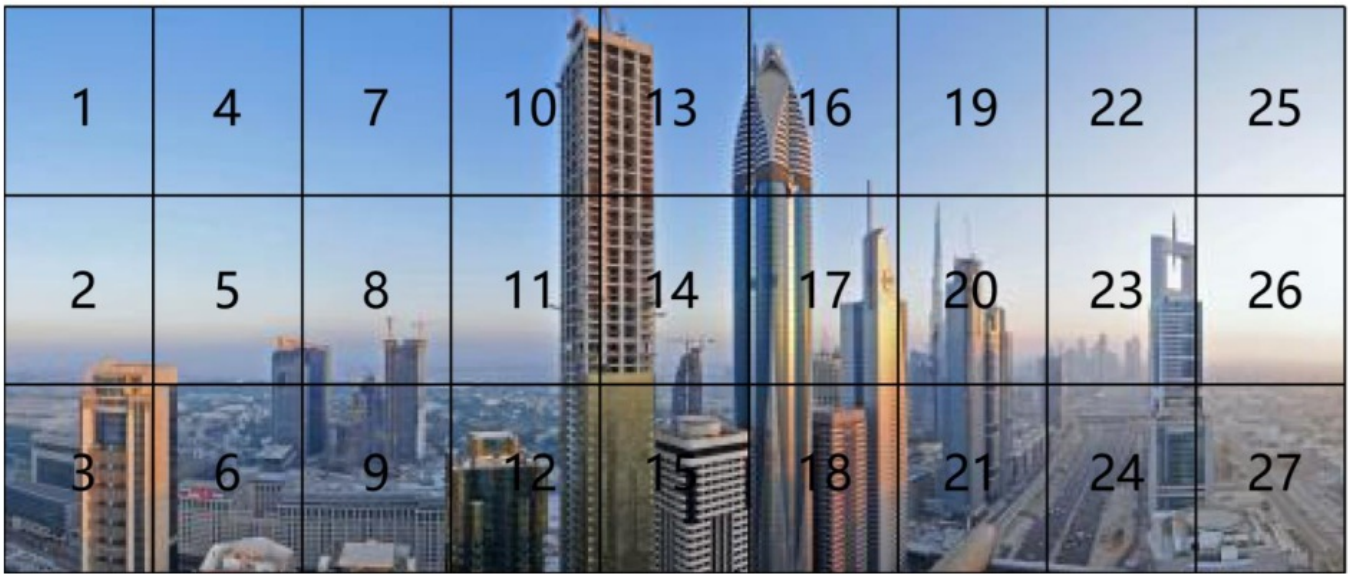
   Press the clone key, then press the [ ] key. Return to [output copy mode, input single picture] status. When the cascade device settings are synchronized, continue with other settings.

7. What is the default IP address and web login password?

   The default IP address is 192.168.1.192 and the default web login password is admin1

Appendix

When the image is not rotated, the output interface is first up and then down, first left and then right. Please refer to the picture below showing 3×9 mode:



When the image is rotated 90°, the output interface is first up and then down, first left and then right as shown below in the 2×9 example:

Product Service

1. Damage requiring service: The unit should be serviced by qualified service personnel if:

   (a) The DC power supply cord or AC adapter has been damaged;

   (b) Objects or liquids have gotten into the unit;

(c) The unit has been exposed to rain;

(d) The unit does not operate normally or exhibits a marked change in performance;

(e) The unit has been dropped or the cabinet damaged.

2. Servicing Personnel: Do not attempt to service the unit beyond that described in these operating instructions. Refer all other servicing to authorized servicing personnel.
3. Replacement Parts: When parts need replacing, ensure that the servicer uses parts specified by the manufacturer or parts that have the same characteristics as the original parts.
   Unauthorized substitutes may result in fire, electric shock, or other hazards.
4. Safety check: After repairs or service, ask the servicer to perform safety checks to confirm that the unit is in proper working condition.

Warranty

If your product does not work properly because of a defect in materials of workmanship, our company (referred to as “the warrantor”) will, for the length of the period indicated below, “Parts (1) Year, Labor (90) Days”, which starts with the date of original purchase (“Limited Warranty Period”), at its option either (a) repair your product with new or refurbished parts, or (b) replace it with a new or a refurbished product. The decision to repair or replace will be made by the warrantor.
During the “Labor” limited warranty period, there will be no charge for labor. During the “Parts” warranty period, there will be no charge for parts. You must mail in your product during the warranty period. This Limited Warranty is extended only to the original purchaser and only covers products purchased as new. A purchase receipt or other proof of original purchase date is required for Limited Warranty service.

Mail-In Service

When shipping the unit, carefully pack and send it prepaid, adequately insured, and preferably in the original carton. Include a letter detailing the complaint and provide a daytime phone and/or email address where you can be reached.

Limited Warranty Limits and Exclusions

This Limited Warranty ONLY COVERS failures due to defects in material or workmanship and DOES NOT COVER normal wear and tear or cosmetic damage. The Limited Warranty ALSO DOES NOT COVER damages which occurred in shipment or failures which are caused by products not supplied by warrantor, or failures which result from accidents, misuse, abuse, neglect, mishandling, misapplication, alteration, faulty installation, set-up adjustments, misadjustment of consumer controls, improper maintenance, power line surge, lightning damage, modification, or service by anyone other than a Factory Service Center or other Authorized Servicer, or damage that is attributed to acts of God.
THERE ARE NO EXPRESS WARRANTIES EXCEPT AS LISTED UNDER “LIMITED WARRANTY COVERAGE”. THE WARRANTOR IS NOT LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THIS PRODUCT OR ARISING OUT OF ANY BREACH OF THIS WARRANTY. (As examples, this excludes damages for lost time, cost of having someone remove or re-install an installed unit if applicable, travel to and from the service, loss of or damage to media or images, data, or other recorded content. The items listed are not exclusive, but are for illustration only.) PARTS AND SERVICES, WHICH ARE NOT COVERED BY THIS LIMITED WARRANTY, ARE YOUR RESPONSIBILITY.

Extended Warranty

With the registration of supported J-Tech Digital products, you extend the current warranty by 6 months. This extension is added to the warranty that starts at the purchase date of the device supported. Total product warranty with the extended period will equate to a total of 18 months of warranty from the date of purchase.
For extended warranties to be accepted, all warranty extensions must be claimed within 30 days of purchasing the

eligible J-Tech Digital product. Extensions attempted to be claimed outside of the 30-day window will not be accepted. Visit www.jtechdigital.com to register your extended warranty.

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Documents / Resources

	[J-TECH DIGITAL JTD-2921 HDMI or DP 3x3 4K HDMI Video Wall Controller and Multi Viewer] [pdf] User Manual JTD-2921, JTECH-VWM90, HDMI or DP 3x3 4K HDMI Video Wall Controller and Multi Viewer, JTD-2921 HDMI or DP 3x3 4K HDMI Video Wall Controller and Multi Viewer, DP 3x3 4K HDMI Video Wall Controller and Multi Viewer, HDMI Video Wall Controller and Multi Viewer, Video Wall Controller and Multi Viewer, Wall Controller and Multi Viewer, Controller and Multi Viewer

References

- J-Tech Digital ® Official Site | Professional AV Solution Provider