sy

User Manual

VWP24-18G / VWP29-18G

Dual input HDMI 2.0
18G VIDEO WALL PROCESSORS

Contents

Thank you for purchasing the Video-Wall Processor.

This Video-Wall processor is designed with the professional AV installers in mind. The many extensive features assist in system integration, validation and maintenance. Please carefully read this manual prior to installation and keep for future reference. You can download further supporting documentations from our web site (sy.co.uk)

Installation precautions

This product has special circuitry to protect it against moderate surges and static discharges. However, to ensure reliable operation and long service life, it is important to take the necessary precautions against any spikes, surges, lightening and static discharges.

Place the unit away from heat sources and allow adequate ventilation.

High quality High-Speed HDMI 2.0 cables (such as SY Stealth range) are highly recommended. As much as possible cables should be routed away from any noisy sources and avoiding long runs in close proximity to mains cables.

VWP24/VWP29 are HDMI 2.0 Video Wall controllers with 2 HDMI inputs, 2 HDMI loop outs and 4/9 HDMI scaling outputs respectively for video wall processing. The de-embedded audio is available as S/PDIF (optical Mini-Toslink) / analogue L/R audio, as well as a balanced L+R analogue audio outputs.

VWP24/VW29 support an RS232 pass through feature to allow the connection of several units a daisy chain or cascade configuration.

Features

- Supports all resolutions up to HDMI 2.0 (4K60 4:4:) and HDCP2.2
- 2x HDMI 2.0 inputs and 2x HDMI loop outs
- Full scaler per output: Scale Up/Down to any resolutions up to 4K60 4:4:4 (18G)
- Daisy chain or Cascade connections for large Video Walls (up to 8x8)
- Supports display splicing and 180° image rotation
- Audio de-embed – Balanced L+R, L/R, Optical Mini-Toslink
- RS232 and TCP/IP control
- Support CEC control to the display by SY-PCTools or RS232 commands

Connectors and Controls
Front
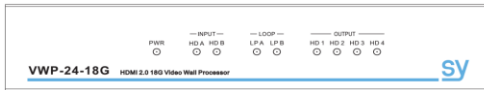
Name	Description
PWR-LED	Lit when the unit is powered
HD A-LED	Active HDMI A input
HD B-LED	Active HDMI B input
LP A-LED	Lit when Loop out A is connected
LP B-LED	Lit when Loop out B is connected
HD 1…9-LED	Lit when the corresponding HDMI out is connected

Rear
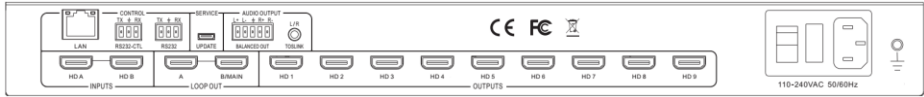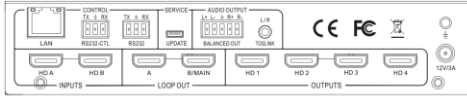
| Name	Description
LAN	RJ45 control port for operation by TCP/IP
RS232-CTL	External RS232 control, Baud Rate: 57600 Data Bits: 8 Parity: None Stop Bits: 1
RS232	To bypass RS232-CTL commands to next unit
UPDATE	Firmware upgrade
Balanced Audio out	5 way phoenix Jacket, 20Hz – 20kHz, 1.5Vrms max
Mini Toslink	• L+R Audio Output 3.5mm Stereo Jack. 20Hz – 20kHz, 1.5Vrms max • Optical S/PDIF Audio Output
HD A	HDMI A input
HD B	HDMI B input
LOOP OUT A	Bypass HDMI A signal to downstream
LOOP OUT B/MAIN	Bypass HD B or HD A signal to downstream – configured by RS232 / LAN command
HD 1…HD 4 **HD 1…HD 9**	HDMI scaling outputs for video wall display
DC2.1 **IEC C14**	VWP-24-18G: 12V/3A DC power input VWP-29-18G: 110-240V Mains input – 2A Fuse

Using the VWP24 and VWP29

Connect the desired video sources to VWP24 or VWP29 input HD A or HD B connectors and the desired output video wall display devices to HD1…HD9 HDMI output connector. VWP24/VWP29 units can be cascaded together (or Daisy chained) to create any size video wall (8x8 max).

The PC Tool facilitates easy set up and operation. The units can be controlled via LAN or RS232 connection. Up to 10 VW layout configurations can be saved and recalled as required.

VWP24 and VWP29 PC tool

Switch tab on the PC tool

1. PC tool connection with UART or Network
2. Select input source for each scaling output port
3. All Set function, select HD A or B to all the scaling output
4. Select input source for B/MAIN output port
5. Select audio source for balanced audio output and Mini Toslink output
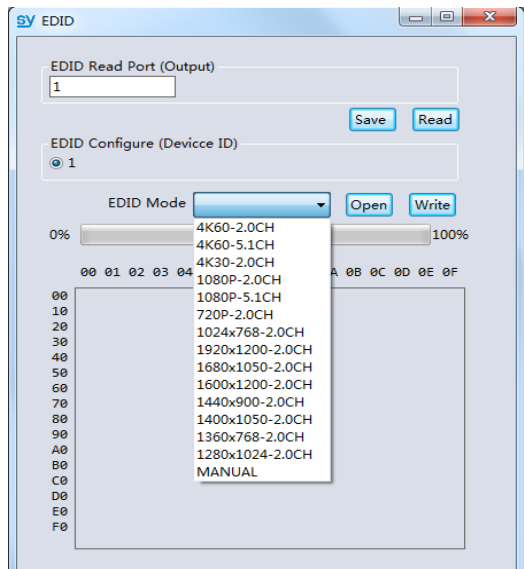6. EDID configure
7. Reset
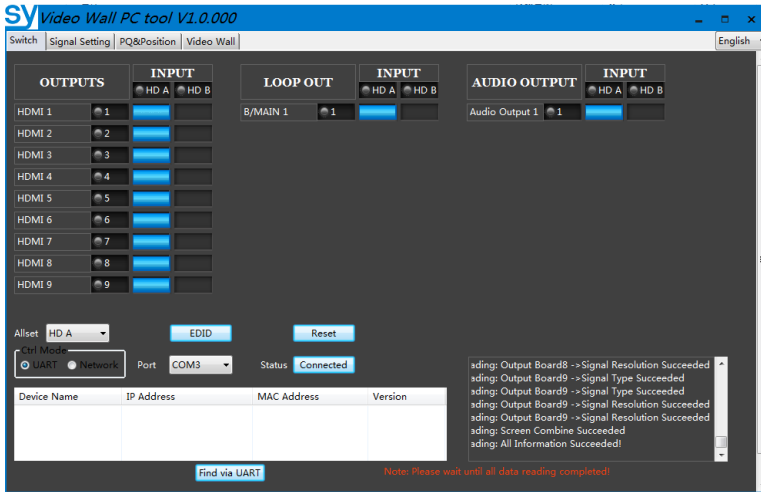
EDID management

The display EDID can be read from each HDMI output and saved as a binary (*.bin) file.

An existing EDID file can be opened and written to either the HDMI A or the HDMI B input port as **Manual EDID** for that input.

The user can select from a pre-defined EDID setting and set the HDMI A and B input ports to that setting.

The Manual EDID option is normally used only after an EDID binary image has been written to that location.

The Predefine EDID options are as follows:

• 4K60 -2.0CH (default)	• 1920x1200 -2.0CH
• 4K60 -5.1CH	• 1680x1050 -2.0CH
• 4K30 -2.0CH	• 1600x1200 -2.0CH
• 4K30 -5.1CH	• 1440x900 -2.0CH
• 1080P60 -2.0CH	• 1400x1050 -2.0CH
• 1080P60 -5.1CH	• 1360x768 -2.0CH
• 720P60 -2.0CH	• 1280x1024 -2.0CH
• 1024x768P -2.0CH	• MANUAL

Signal Setting tab on the PC tool

This tab allows the user to read each input port resolution and set each output scaling setting.
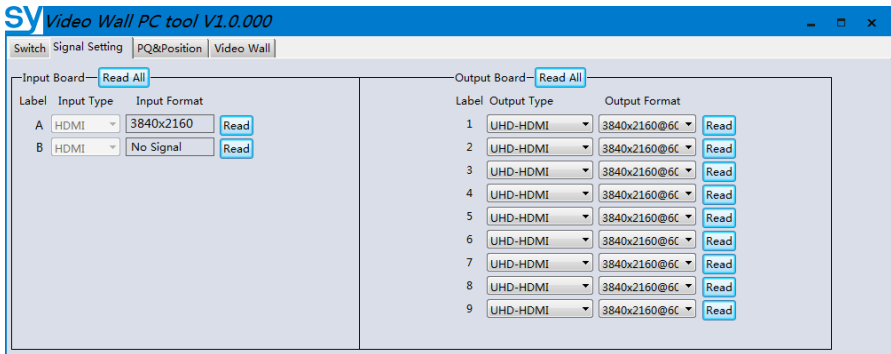

Available output resolutions:

Number	Output Resolution Setting	Number	Output Resolution Setting
1	3840x2160p 60Hz	9	1440x1050 60Hz
2	3840x2160p 50Hz	10	1366x768 60Hz
3	3840x2160p 30Hz	11	1360x768 60Hz
4	3840x2160p 25Hz	12	1280x1024 60Hz
5	1920x1200 60Hz	13	1280x768 60Hz
6	1920x1080p 60Hz	14	1280x720p 60Hz
7	1920x1080p 50Hz	15	1280x720p 50Hz
8	1600x1200 60Hz	16	1024x768 60Hz

Please Note: 3840x2160 25/30Hz can only be used for stand-alone display, not for video wall.
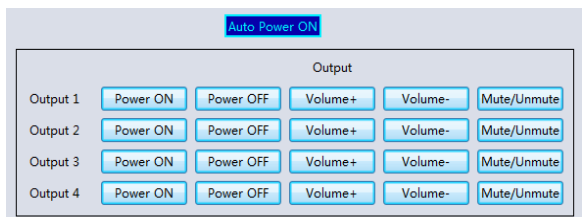
PQ tab on the PC tool

Each output port settings can be fine-tuned if required.

It is strongly recommended that these values always use the default setting of 50/50/50/50, as it may be difficult to achieve colour matching between all the outputs.
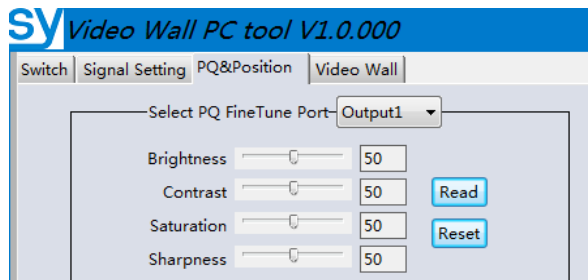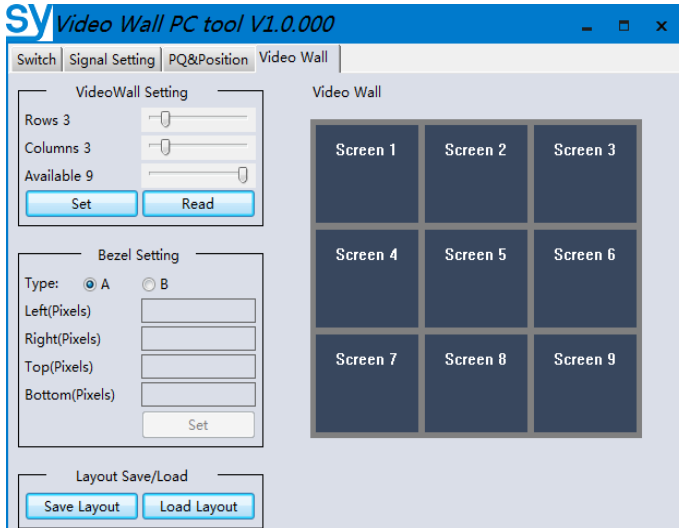

CEC tab on the PC tool

This tab provides CEC control of the display / sound-bar settings.

Video Wall tab on the PC tool

The Video Wall tab is used to configure a group of outputs to function as a video wall.

1. Use the Video Wall Setting controls to change how the displays are arranged on the Video Wall tab:
   a. Adjust the Rows and Columns sliders to change the displayed screen arrangement to permit proper Drag-and-Select of the desired screens for the video wall.
   b. Change the Available slider to set how many outputs will be used for the Video Wall.
   c. Click the **Set** button to change the Screen configuration on the Video Wall tab.

2. Use the left mouse button to drag-select the screens that will be set for video wall mode. The selected screens will be shown as bright blue.

3. Use the right mouse button to open a menu.

4. Select **Screen Stitching** from the menu to program the video wall mode. The selected screens will now be shown as bright green.

5. To change the displayed image: right-click on the respective Screen window to open the pop-up menu and select the desired input from the **Input Select** menu option.

Repeating steps 2 to 5 above with a different set of outputs allows the creation of a second video wall. However, changing the **Rows**, **Columns** and **Available** sliders will automatically delete the current video wall set up when the **Set** button is clicked.

The following example shows a more unusual video wall set-up of two video walls with 1x3 and 2x2 configurations:
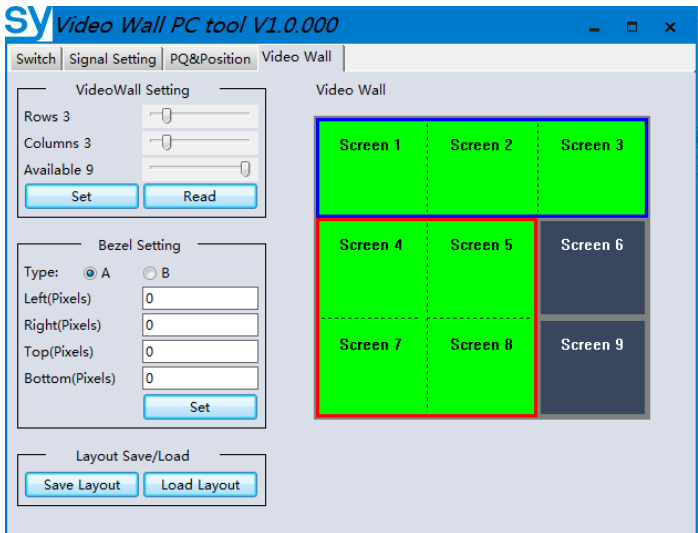
Screens 6 and 9 can be used as single screen displays, as they are not part of the video wall set.

Bezel Setting

The Bezel Setting section allows the entry of values to compensate for the display bezel thickness. These values may be entered either as pixels (Type A) or as millimetres (Type B).

Type A Bezel Settings

The image size will be adjusted to allow for the number of pixels entered in each of the entry boxes. Click the **Set** button view the effect of the new values.

Type B Bezel Settings

The image size will be adjusted to allow for the Inner and Outer display dimensions as entered in each of the entry boxes. Click the **Set** button view the effect of the new values.

Bezel Compensation

The following images demonstrate the effect of not having bezel compensation and what a correctly configured bezel compensation settings should produce:
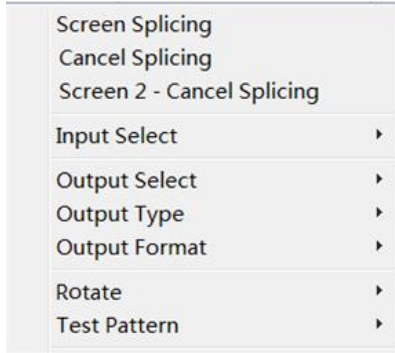

No Bezel Compensation

Correct Bezel Compensation

Video Wall Context Menu

Right clicking on any of the screen icons will display the following context menu:

Screen Stitching	This option stitches and connects the selected screens into a video wall configuration.
Cancel Stitching	Return the Video Wall configuration to normal individual outputs.
Screen x – Cancel Stitching	Removes a single screen x from the video wall, which allows it to display another image within the video wall configuration, as shown in this example: Video Wall display with bezel compensation and different full frame image on display 3
Input Select	Use the sub-menu to select the input to display on the video wall or the secondary input image shown in the above example.
Output Select	This option is only available for any screen that is not assigned to a video wall mode.
Output Type	Use the submenu to set the HDCP options for that output.
Rotate	Two sub options: OFF (default – No rotation), ON (Rotate image). Select **ON**: 180° image rotation of the selected screen
Test Pattern	Each output can display Colour Bar pattern at the selected resolution.

Layout Save/Load

The Save Scene/Layout and Load Scene/Layout buttons allow a video wall configuration to be saved or recalled at any time. When saving, each Scene can optionally be given a name to identify that video-wall scene setup.

Up to 10 configurations (pre-sets), each with their own name can be saved or recalled.

These Pre-set configurations can also be recalled using RS232 command.

Daisy chain and Cascade mode

VWP24 / VWP29 support daisy chain and cascade modes, enabling large VW configurations (up to 8x8).

To control the units, following RS232 connection can be used (For example, 3 VWP29 units connection)
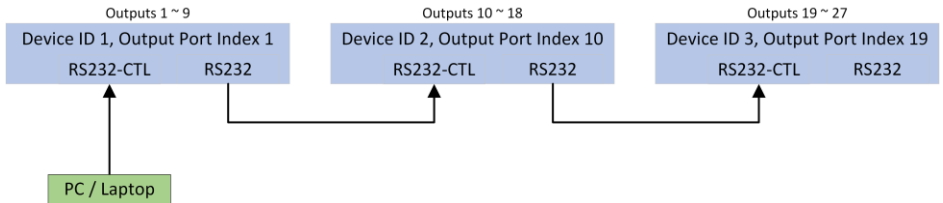
To build daisy chain or cascade connection, user need separately configure each unit Device ID and First output port index first by its own LAN or RS232-CTL port

The first unit device ID should be set 1, and its first output index should be set to 1

The second unit device ID should be set 2, and its first output index should be set 10 (if the first unit is VWP29) or 5 (if the first unit is VWP24)

The third unit device ID should be set 3, and its first output index should be set 19 (if there are total 18 output ports, 2x VWP29, before this unit) or 14 (if there are total 13 output ports, 1x VWP29 and 1x VWP24 before this unit).

1. Set Device ID and First output index
   Connect the PC tool with VWP24/VWP29, press **Ctrl**+**Shift**+**F2** on the PC (some laptops may also need the **Fn** key to use the function keys), and turn to video wall tab, user can set the parameters in the Device Setting section located at the left lower corner:
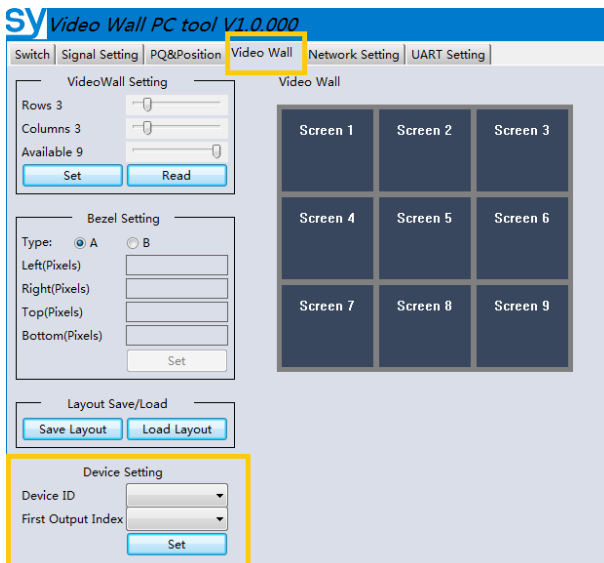
Following is the PC Tool status when a **VWP29** and a **VWP24** are connected together (the first unit is the VWP29)
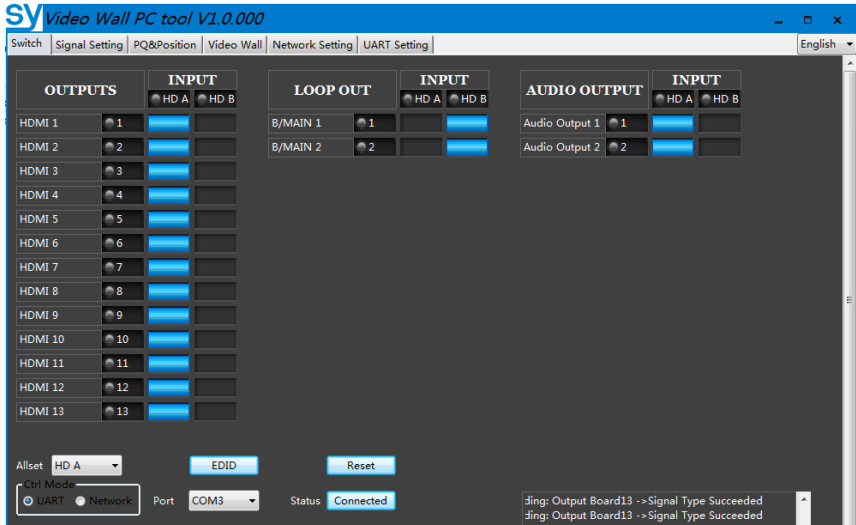
There are total 13 scaling output ports, all these ports can be used for splicing.
There are two B/MAIN and two Audio output selections for unit 1 and unit 2.
With Daisy chain or cascade connection, user can get following video walls

LAN and RS232 Control Commands

All the ASCII commands given in this section use the following RS232 port settings:

Baud Rate:	57600
Data Bits:	8
Parity:	None
Stop Bits:	1

All the ASCII RS232 commands given in this section can also be sent to the LAN port using the following settings:

Default IP Address:	192.168.0.247
Default Network Mask:	255.255.255.0
Default Gateway:	192.168.0.1
Default TCP Port:	23 – Telnet

Notes:

1. All commands in this section are always terminated with the ASCII carriage-return character, 0x0d. This is represented by the ↵ symbol in each command.
2. All responses are always terminated with the ASCII carriage-return and line-feed sequence (0x0d 0x0a).
3. All spaces shown in the command are required. Lowercase letters are used as value placement indicators, the required value or identifier is given in the **Details** panel for each command.

Video Selections

The following commands are used to make video selections:

Command	Details
SET INx VIDEO OUTy↵	Select Input x to Output y Where: **x** is in the either 1 or 2 for inputs A or B **y** is in the range 1 to 4 for VWP24 outputs, or 1 to 9 for VWP29 outputs.
SET INx VIDEO ALL↵	Select Input **x** to All Outputs Where: **x** is in the either 1 or 2 for inputs A or B

Examples:

SET IN1 VIDEO OUT2↵	OUT2 VIDEO IN1↵
SET IN2 VIDEO ALL↵	ALL VIDEO IN2↵

Preset Save and Recall

The following commands are used Save or Recall presets for the video configuration:

Command	Details
SET SYS ROUTE-MODE z↵	Save the current video configuration to preset memory z Where: **z** is in the range 1 to 10 for presets 1 to 10
GET SYS ROUTE-MODE z↵	Set the Video Wall to pre-set z Where: **z** is in the range 1 to 10

Examples:

SET SYS ROUTE-MODE 3↵	SYS ROUTE_MODE 3↵
GET SYS ROUTE-MODE 7↵	SYS ROUTE_MODE 7↵

Test Pattern

The following commands are used to enable of disable the test pattern for each output:

Command	Details
SET OUTy TSP ON↵	Enable the test pattern for Output y Where: **y** is in the range 1 to 4 for VWP24 outputs, or 1 to 9 for VWP29 outputs.
SET OUTy TSP OFF↵	Disable the test pattern for Output y Where: **y** is in the range 1 to 4 for VWP24 outputs, or 1 to 9 for VWP29 outputs.
GET OUTy TSP↵	Read the test pattern setting for Output y Where: **y** is in the range 1 to 4 for VWP24 outputs, or 1 to 9 for VWP29 outputs.

Examples:

SET OUT2 TSP ON↵	OUT2 TSP ON↵
GET OUT5 TSP↵	OUT5 TSP OFF↵

DAISY-CHAIN MODE EXAMPLE

HDMI Sources

Unit 1
VWP24-18G

| HD A | HD B | | LP A | LP B | | HD 1 | HD 2 | HD 3 | HD 4 |

4 x HDMI

Unit 2
VWP24-18G

| HD A | HD B | | LP A | LP B | | HD 1 | HD 2 | HD 3 | HD 4 |

4 x HDMI

Unit 3
VWP24-18G

| HD A | HD B | | LP A | LP B | | HD 1 | HD 2 | HD 3 | HD 4 |

4 x HDMI

Unit 4
VWP24-18G

| HD A | HD B | | LP A | LP B | | HD 1 | HD 2 | HD 3 | HD 4 |

4 x HDMI

4x4 VIDEO WALL CONNECTION LAYOUT

HD 1	HD 2	HD 1	HD 2
HD 3	HD 4	HD 3	HD 4
HD 1	HD 2	HD 1	HD 2
HD 3	HD 4	HD 3	HD 4
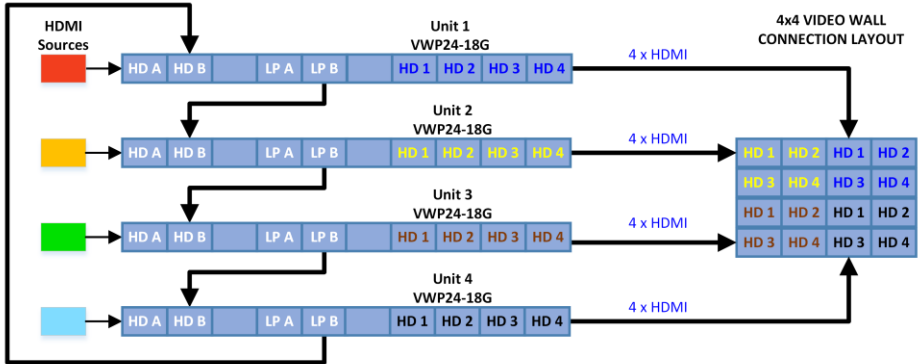
POSSIBLE VIDEO WALL IMAGE LAYOUT EXAMPLES

Single Image Video Wall

4x2 / 2x2 / 2x2
Or
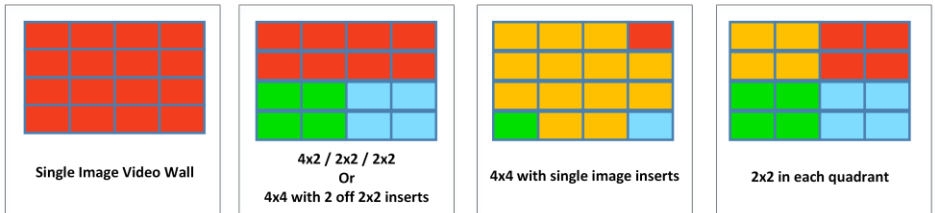4x4 with 2 off 2x2 inserts

4x4 with single image inserts

2x2 in each quadrant

CASCADE MODE EXAMPLE

HDMI Sources

Unit 1
VWP29-18G

| HD A | HD B | | LP A | LP B | | HD 1 | HD 2 | HD 3 | HD 4 | HD 5 | HD 6 | HD 7 | HD 8 | HD 9 |

9 x HDMI

Unit 2
VWP29-18G

| HD A | HD B | | LP A | LP B | | HD 1 | HD 2 | HD 3 | HD 4 | HD 5 | HD 6 | HD 7 | HD 8 | HD 9 |

7 x HDMI

4x4 VIDEO WALL CONNECTOIN LAYOUT

HD 1	HD 2	HD 3	HD 4
HD 5	HD 6	HD 7	HD 8
HD 9	HD 1	HD 2	HD 3
HD 4	HD 5	HD 6	HD 7

Each display can show a single image from either source

| HD 9 | | HD 8 |

Single Image Video Wall

4x4 wall with 2x2 wall inserted

4x4 wall with single image inserted

Specifications

General

HDMI Version	HDMI 2.0,18Gbps
HDCP Compliance	HDCP 2.2 and HDCP 1.4
RS232-CTL (Tx, Rx)	57600 baud, 8 data bits, 1 stop bit, no parity
RS232 (Pass-Through – Tx, Rx)	Any baud rate to maximum of 115200.

Video and Audio

Input Video Formats Supported	4096x2160p 24/25/30/50/60Hz 1400x1050 60Hz 3840x2160p 24/25/30/50/60Hz 1366x768 60Hz 1080p 24/25/30/50/60Hz 1360x768 60Hz 1080i 50/60Hz 1280x1024 60Hz 1920x1200 60Hz 1280x960 60Hz 1680x1050 60Hz 1280x800 60Hz 1600x1200 60Hz 1024x768 60Hz 1440x900 60Hz 1280x720p 50/60Hz
Output Scaled Resolutions	3840x2160p 60Hz 1440x1050 60Hz 3840x2160p 50Hz 1366x768 60Hz 3840x2160p 30Hz 1360x768 60Hz 3840x2160p 25Hz 1280x1024 60Hz 1920x1200 60Hz 1280x768 60Hz 1920x1080p 60Hz 1280x720p 60Hz 1920x1080p 50Hz 1280x720p 50Hz 1600x1200 60Hz 1024x768 60Hz
Audio Format Supported	2.0 channel ,5.1 channel LPCM, Dolby, AC3, DTS

Power Supply

Power Consumption	VWP24-18G: 40W Max. VWP29-18G: 70W Max.
Supply Voltage	110-240 VAC

Environmental and Physical

Operating Temperature Range	0 to +40°C (+32 to +104 °F)
Operating Humidity Range	10 to 90 % RH (non-condensing)
Dimensions (L x W x H)	VWP24-18G: 218 x 146 x 43 mm VWP29-18G: 430 x 220 x 44 mm
Weight (Unit only)	VWP24-18G: 2kg VWP29-18G: 5kg

Package Contents

Item	Qty
VWP24-18G or VWP29-18G unit	1
12V/3A adapter (VWP-24 only)	1
AC Power cord (IEC C13) – (VWP-29 only)	1
5 pin female captive screw connector	1
3 pin female captive screw connector	2
User Manual	1

Safety Instructions

To ensure reliable operation of this product as well as protecting the safety of any person using or handling these devices while powered, please observe the following instructions.

1. Do not operate these products outside the specified temperature and humidity range given in the above specifications.

2. Ensure that these products are adequately ventilated to allow them to operate efficiently as these products do generate heat during normal operation.

3. Repair of the equipment should only be carried out by qualified professionals as these products contain sensitive devices that may be damaged by any mistreatment.

4. Only use this product in a dry environment. Do not allow any liquids or harmful chemicals to come into contact with this product.

After Sales Service

1. Should you experience any problems while using this product, firstly refer to the Troubleshooting section in this manual before contacting SY Technical Support.

2. When calling SY Technical Support, the following information should be provided:

   - Product name and model number
   - Product serial number
   - Details of the fault and any conditions under which the fault occurs.

3. This product has a two years standard warranty, beginning from the date of purchase as stated on the sales invoice. For full details please refer to our Terms and Conditions.

4. SY Product warranty is automatically void under any of the following conditions:

   - The product is already outside of its warranty period
   - Damage to the product due to incorrect usage or storage
   - Damage caused by unauthorised repairs
   - Damage caused by mistreatment of the product

5. Please direct any questions or problems you may have to your local dealer before contacting SY Electronics.