

User's Manual



RH144

**4 x 4 MultiView
HDMI Matrix**

Version : 1.21

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Thanks for purchasing RH144 4 x 4 MultiView HDMI Matrix. With our highly reliable and quality product, you can enjoy countless benefits by using this device.

Introduction

RH144, 4 x 4 MultiView HDMI Matrix is the only complete independent HDMI system that arrange four HDMI multimedia sources and dynamically exhibit them on 4 displays in various mode. Each source can be independently scale. Switching do not have delays or black screen. It is the ideal solution for A/V Switching, Splitting, or Broadcasting.

Features

- Complete independent video wall system with 6 video mode selection with 8 video configuration programmable memory.
- Dynamically and smooth scaling of up to 4 inputs
- Select any of the input to be display up to 4 monitors
- Change mode and scaling with no delays
- Intuitive mode operation by front panel Push Buttons, OSD, or IR Remote Control
- Full HD Digital Video resolution can support up to 1920 x 1200 to give a combine total of 4K x 2K video resolution
- Support Locking HDMI cables
- Sturdy metal rack-mountable casing designed for 1U application
- Optional IR remote control Unit accessories or Ethernet access available

Specification

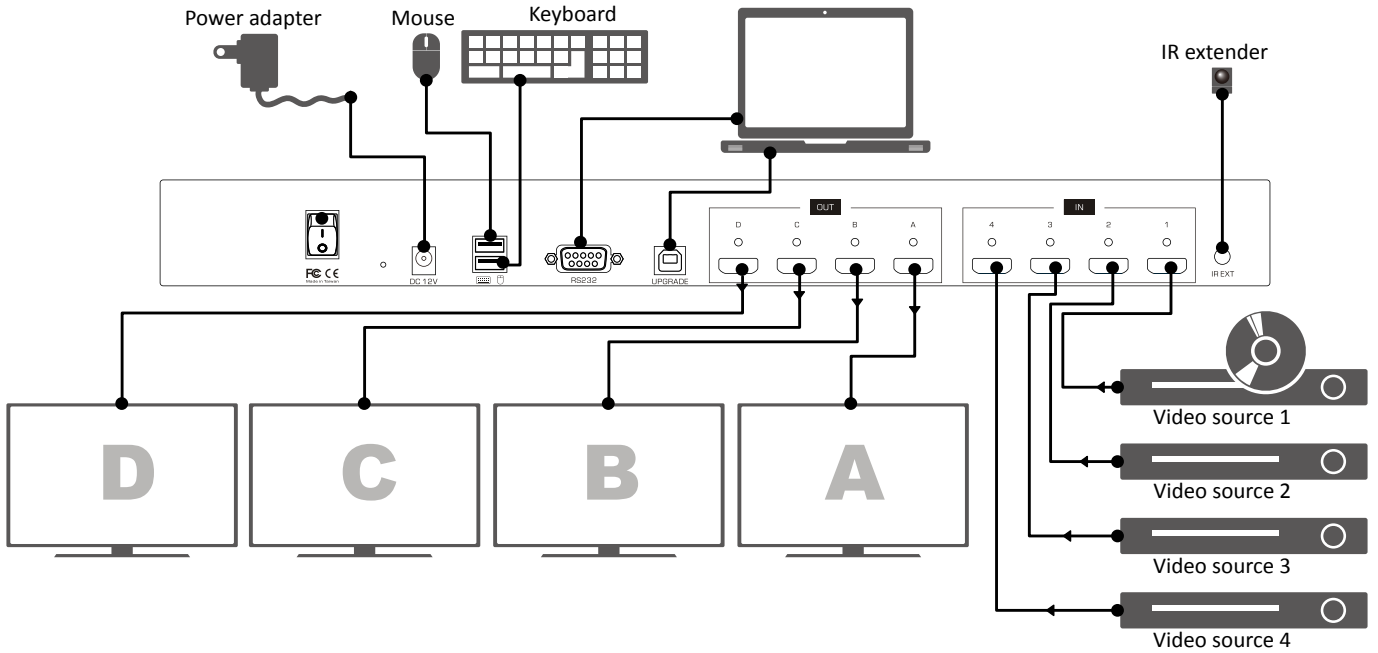
Model No.	RH144
Video In	4 x HDMI Type A Female (Lockable)
Video Out	4 x HDMI Type A Female (Lockable)
RS232	1 x DB9, Female
IR	1 x Receiver and 1 x IR Extender (3.5mm Earphone Jack)
LEDs	16 fixed + 24 switch
Switch/Button	24 x Momentary Switch 1 x Power Switch
Video Resolution	Full HD or 1920 x 1200
Operation Temperature	0 ~ 40°C
Storage Temperature	-20 ~ 60°C
Humidity	0~90% RH, Non-condensing
Weight	2.1 Kg
Dimension(L x W x H)	437 x 205 x 43 mm
Housing	Metal enclosure
Power Adapter	DC 12V
Safety / Emission	FCC, CE

Package contents

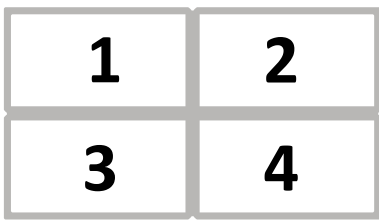
- RH144 unit x1
- Power adapter x1
- User manual x1
- IR extender x1
- RS-232 cable x1
- Remote control x1

Connection diagram

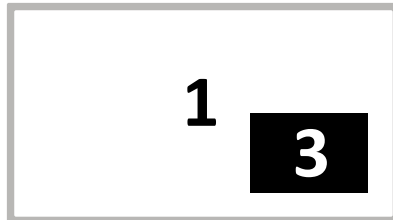
The diagram illustrated here is an example, the actual application may vary. All illustrated computer, accessories and monitors are not included in the package, it is for reference only. Make sure all the devices and peripherals are connected appropriately before using this unit.



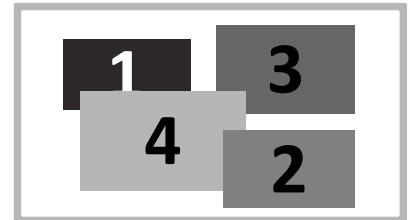
6 modes diagram



Matrix mode



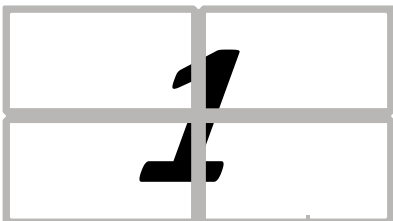
PIP mode



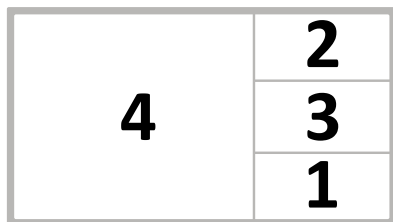
Windows mode



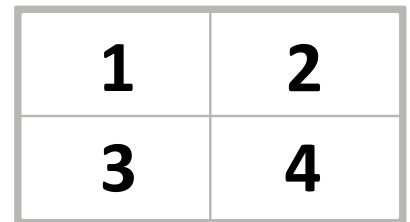
or



Video wall mode



PAP mode



Quadview mode

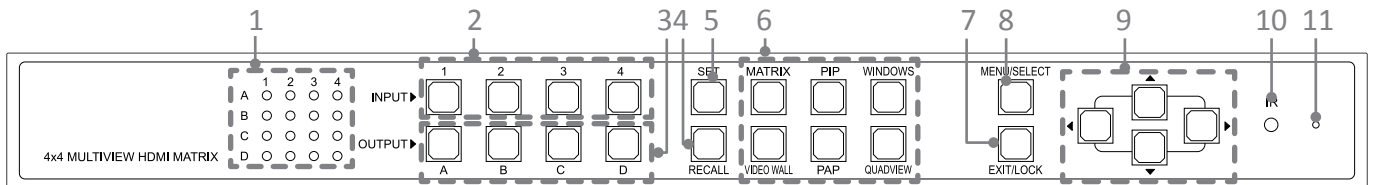
Operation

Various operations are available from this unit, select your preferred operation as follows:

1. Push buttons.
2. Display mode menu.
3. Keyboard.
4. IR remote control.
5. RS-232 control.

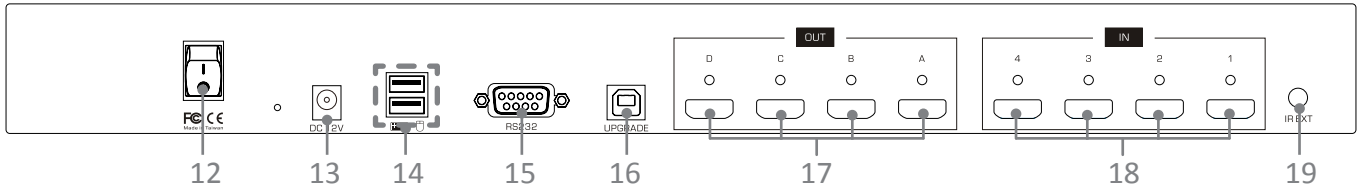
1. Parts and push buttons

Front panel



No.	Item	Description
1	LED indicators	Indicate the status of display. For example, if the LEDs are illuminated with 3 and C, it means the monitor C is playing back the source from No.3 input.
2	INPUT	Choose the desired source from 1~4, and then press the corresponding button. For more details, refer to the chapter of Mode descriptions.
3	OUTPUT	Choose the desired display from A~D, and then press the corresponding button. For more details, refer to the chapter of Mode descriptions.
4	Recall	Recall the customized setting configured from SET button. Press to light up the buttons (1~4 and A~D), and then select the desired setting to recall.
5	SET*	Save the customized input and output up to 8 settings. <ol style="list-style-type: none"> 1. Select a desired mode by pressing MATRIX/PIP/WINDOWS/VIDEO WALL/PAP/QUADVIEW button. 2. Set a preferred input source(1~4) and output display(A~D). 3. Press SET button, then all the buttons of input(1~4) and output(A~D) will be flashed. 4. Press a preferred button(1~4 and A~D) to save the setting to the memory of unit.
6	MATRIX/PIP/WINDOWS/VIDEO WALL/PAP/QUADVIEW	Select the desired mode you wish to display, and the pressed button will be illuminated.
7	Exit/ Lock	<ul style="list-style-type: none"> ■ Press to exit the OSD menu. ■ Press to lock all the buttons on the unit, or press it again to unlock. ■ Press and hold this button, then turn on the power of switch to restore the default resolution (1024x768).
8	Menu/ Select	<ul style="list-style-type: none"> ■ Press to bring up the OSD menu. ■ Select a desired option on the menu. ■ Press and hold this button, then turn on the power of switch to restore the system to factory default settings.
9	▲ ▼ ◀ ▶ (Cursor buttons)	Press to navigate the OSD menu.
10	IR receiver	Receive the signals from bundled remote control.
11	Reset pin hole	Use a paperclip to reset this unit if necessary.

Rear panel



No.	Item	Description
12	Power switch	Press to power on/off the unit.
13	Power jack	Connect to the power adapter (DC 12V).
14	USB Type A receptacles	Connect to USB keyboard and mouse.
15	RS-232 connector	Connect to a computer or RS-232 device.
16	USB Type B receptacles	Connect to a computer for updating firmware*.
17	HDMI OUT A~D	Connect to HDMI displays.
18	HDMI IN 1~4	Connect to HDMI source devices.
19	IR EXT	Extend ability of remote control using 3.5mm jack extension cable.

*** Firmware update**

To update the firmware, please follow the steps below:

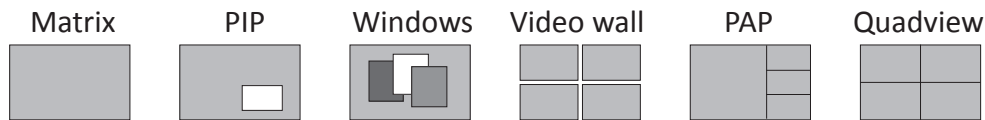
1. Press the power switch to turn off the power.
2. Press and hold the **SET** button, then turn the power switch to on. The **SET** button will be blinked rapidly.
3. Plug the USB cable into the USB Type B receptacles. The procedure of updating will be started.
4. Once the procedure of updating has been completed, a reminder message will be appeared on the screen and the blinking of **SET** button will be stopped.

Please contact local dealer or distributor if you have trouble updating the firmware.

2. Display mode menu

The display mode menu is a way of control using mouse. Please follow the steps below to select a desired mode, input and output.

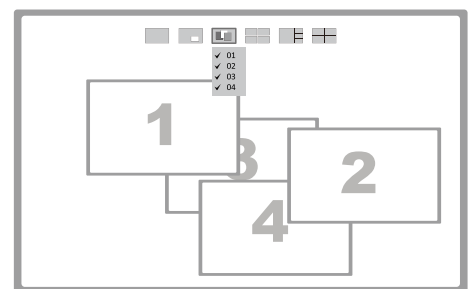
1. Simply click the mouse wheel anywhere on the screen to bring up the display mode menu.



2. Point the preferred mode to bring up the drop down menu. The selected mode will be highlighted by red color, and the corresponding options will be shown on the drop d0own menu.

3. Left click to tick the desired option or left click again to cancel. In Windows mode, left click to turn on or off the windows.

4. To exit the display mode menu, press mouse wheel again.



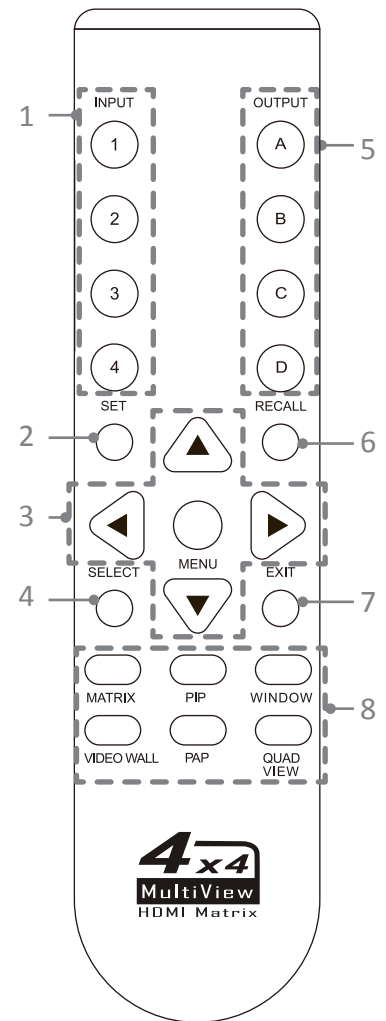
Example: Windows mode

3. Keyboard hotkeys

Command	Hotkeys	Description
Menu/Select	Enter	<ul style="list-style-type: none"> ■ Press to bring up the OSD menu. ■ Select a desired option on the menu.
Up/Down/Left/Right	↑ / ↓ / ← / → (Cursor buttons)	Press to move the cursor up, down, left and right on the menu.
Exit	Esc	Press to exit the OSD menu.
Mode selection	F1~F6	Press to switch a preferred mode. F1: Matrix F2: PIP F3: Windows F4: Video Wall F5: PAP F6: Quadview
Matrix	1~4, A~D	Press to switch to Matrix mode. The hotkey of Matrix mode is consisted with 2 keystrokes. For example, to monitor source 2 on display B, you can press 2 and then press B.
PIP	1~4/ALT	<ul style="list-style-type: none"> ■ Press to switch between different source on the main display. ■ To switch between different subordinate display, press ALT+1~4.
Windows	1~4/ALT	<ul style="list-style-type: none"> ■ Press to display the source on top layer. ■ To turn on/off the source display, press ALT+1~4.
Video wall	1~4	Select the desired source.
PAP	1~4	Select the source to playback on the main display.
Quadview	1~4	Select the desired source.

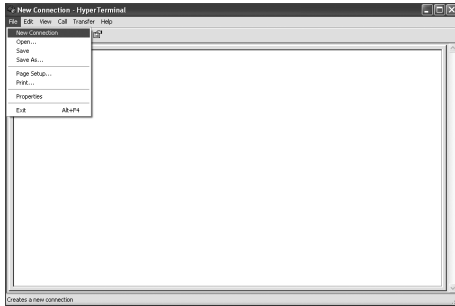
4. IR remote control

No.	Item	Description
1	INPUT	Press to select the desired source.
2	Set	Save the customized input and output up to 8 settings. 1. Select a desired mode by pressing MATRIX/ PIP/WINDOWS/VIDEO WALL/PAP/ QUADVIEW button. 2. Set a preferred input source(1~4) and output display(A~D). 3. Press SET button, then all the buttons of input(1~4) and output(A~D) on the unit will be flashed. 4. Press a preferred button(1~4 and A~D) to save the setting to the memory of unit.
3	▲ / ▼ / ◀ / ▶ (Cursor buttons)	Press to move the cursor up, down, left and right on the menu.
4	Select	Select a desired option on the menu.
5	OUTPUT	Press to select the desired display.
6	Recall	Recall the customized setting. Press to light up the buttons (1~4 and A~D) of unit, and then select the preferred mode to recall.
7	Exit	Press to exit the OSD menu.
8	MATRIX/PIP/ WINDOWS/ VIDEO WALL/PAP/ QUADVIEW	Select the desired mode you wish to display.

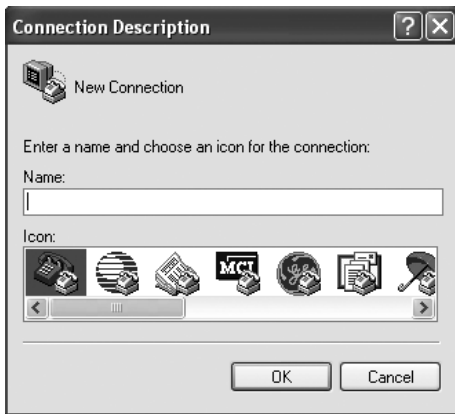


5. RS232 Control

1. Connect RH144 to a PC using RS232 cable.
2. Open **Hyper Terminal** and create a new connection.
Program > Accessories > Communications > Hyper Terminal > New Connection



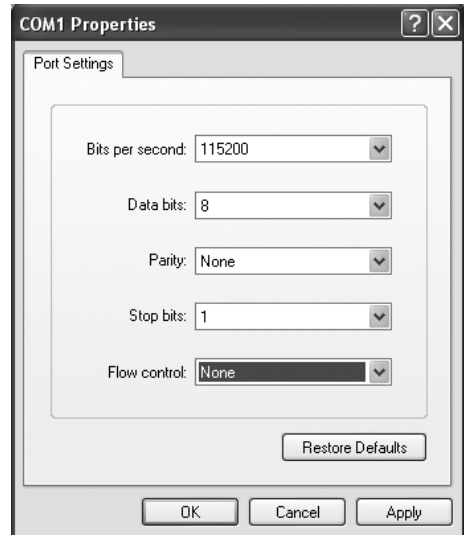
3. Enter a preferred name, and then click **OK**.



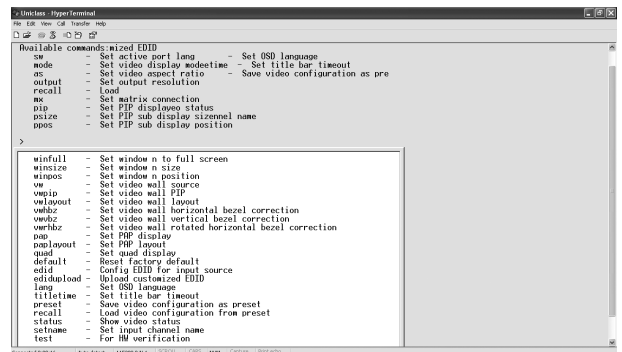
4. Select **Connect using to COM+X** (X is the port which connected to RH144).



5. Enter the following data to each option, then press **Apply > OK**.
Bits per second: 115200
Date bits: 8
Parity: None
Stop bits: 1
Flow control: None

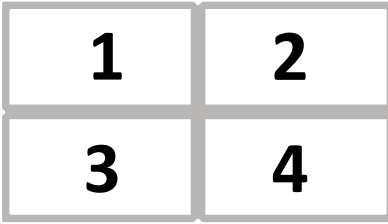


6. The window of Hyper Terminal will appear after completing the settings. To enter commands, press **Enter**. For more command details, refer to the list next page or enter **"help"** in Hyper Terminal for reference.



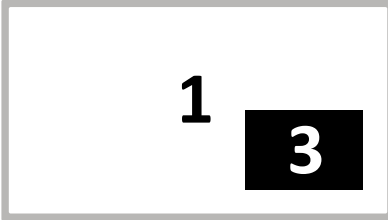
Command	Description	Parameter
sw [n]	Switch active port	n: source 1~4
mode [n]	Switch video display mode	n: (1) Matrix (2) PIP (3) Windows, (4) Video wall (5)PAP (6) Quad
as [n]	Change video aspect ratio	n: (1) Fill Screen (2) Keep Ratio
output [id] [n]	Set output resolution	id: display A~D n: (1)Auto (2) 1920x1080 (3) 1280x720
pip [n]	Switch to PIP mode	n: source 1~4
mx [id] [n]	Switch to Matrix mode	id: display A~D n: source 1~4
psize [w] [h]	Set size of PIP sub display	w: width of sub display (unit: pixel) h: height of sub display (unit: pixel)
ppos [x] [y]	Set position of PIP sub display	x: x-axis of sub display (unit: pixel) y: y-axis of sub display (unit: pixel)
win [n]	Move the window "n" to top	n: source 1~4
winoff [n]	Disable the window "n"	n: source 1~4
winon [n]	Enable the window "n"	n: source 1~4
winfull [n]	Display the window "n" in full screen	n: source 1~4
winsize [src] [w] [h]	Set the size of window "n"	Src: source 1~4 w: width of window "n" (unit: pixel) h: height of window "n" (unit: pixel)
winpos [src] [x] [y]	Set position of window	Src: source 1~4 x: x-axis of window (unit: pixel) y: y-axis of window (unit: pixel)
vw [n]	Switch to video wall	n: source 1~4
vwpip [id][n]	Set pip of video wall	id: display A~D, 0 = restore to video wall n: source 1~4
vwlayout [n]	Set layout of video wall	n:1~3 n: (1) 2x2 (2) 1x3 rottated left (3) 1x3 rottated right
vwhbz [n]	Set horizontal bezel correction of video wall	n: 0~40
vwbz [n]	Set vertical bezel correction of video wall	n: 0~40
vwrhbz [n]	Set rotated horizontal bezel correction of video wall	n: 0~40
pap [n]	Switch to PAP mode	n: source 1~4
paplayout [n]	Set layout of PAP	n: 1~4 n: (1) Right (2) Left (3) Top (4) Bottom
quad [n]	Switch to quadview mode	n: source 1~4
default	Restore to the factory default	
edid [src] [n]	Config EDID of input source	src: source 1~4 n: 1~8, (1) Auto (2) Monitor A (3) Monitor B (4) Monitor C (5) Monitor D (6) 1920x1080 (7) 1280x720 (8) Custom
edidupload	Upload customized EDID	
lang [n]	Select language of OSD	n: 1~2, (1) English (2) Chinese
titletime [n]	Set timeout of title bar	n: 1~8, (1) 05 (2) 10 (3) 15 (4) 20 (5) 25 (6) 30 (7) off (8) 00
preset [n]	Config customized settings of video	n: settings 1~4
recall [n]	Load the settings from preset	n: settings 1~4
status	Display the status of video	
setname [ch] [name]	Set channel name of input	ch: source 1~4 name: 1~16 ascii text

Mode descriptions



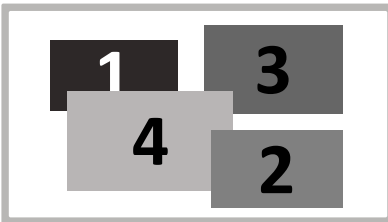
Matrix mode: Viewing video sources up to 4 displays.

- Press 1~4 to select the video source, press A~D to select the display.
- To distinguish the input source or output display, refer to the LED indicators on the front panel of unit.



PIP mode: Viewing main image with 1 subordinate image in smaller window.

- Press 1~4 to select the video source of main image.
- Press A~D to select the video source of subordinate image.
- Flexible local the subordinate image and zoom control features are available in this mode. The subordinate image can be positioned anywhere using mouse to drag and drop. To enlarge/reduce the subordinate image, drag the subordinate near a corner using mouse.
- Double click the subordinate image to swap between main and subordinate image.



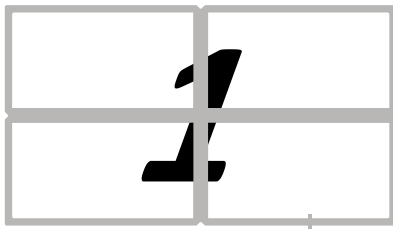
Windows mode: All video sources can be viewed simultaneously with various window sizes and positions.

- Press 1~4 to select the audio source and locate the window to the top.
- Press A~D to turn on/off the windows.
- Click the preferred windows to overlap other windows by mouse.
- All windows can be positioned anywhere using mouse to drag and drop. Windows size can be changed as well, drag the preferred window near a corner using mouse.
- Double click left button of mouse to display the desired window in full screen. To exit the full screen display, double click left button of mouse again. Note that other windows still remain at same position, which is normal.



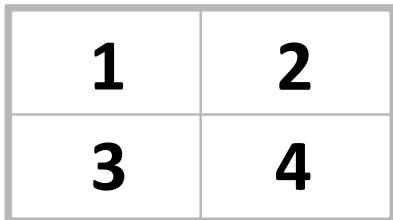
Video wall mode: Viewing the selected video source on multiple displays as one. The images can be configured in 2x2 or 1x3 mode.

- Press 1~4 to select the desired video source.
- Viewing angle may not be the same when placing the display in portrait and landscape orientation due to different technology of display. Typically, the viewing angle of portrait orientation has poor visual performance, compared with landscape orientation. Please beware the location and lighting before assembling the video wall.



PAB mode: Viewing main image with 3 subordinate images in smaller windows.

- Press 1~4 to select the video source of main image.

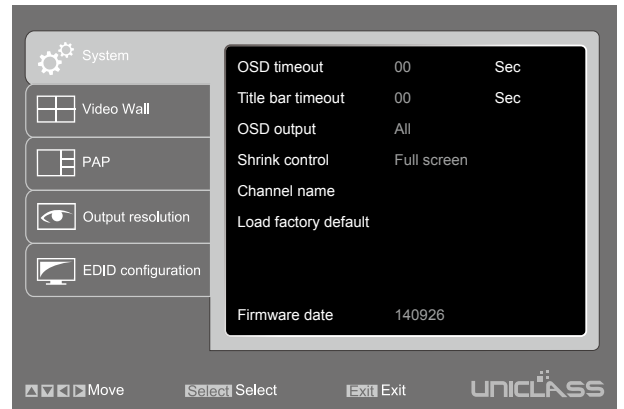


Quadview mode: Viewing video sources in a display.

- Press 1~4 to switch audio channel.

Settings

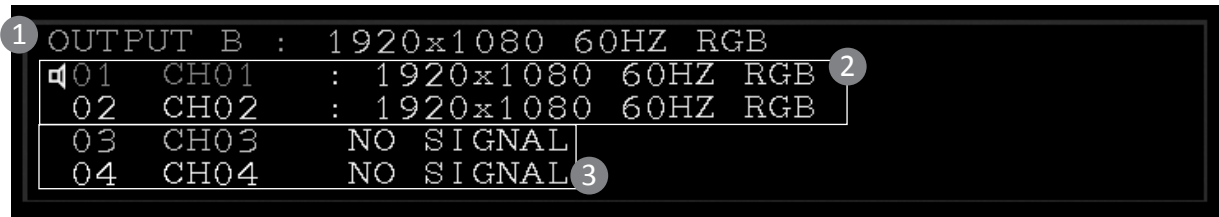
1. To bring up the setting menu, press **Enter** button on the keyboard or **MENU/SELECT** button on the front panel of unit or remote control.
2. Press **▲/▼** button to move the cursor, press **◀/▶** to select the desired option, and then press **MENU/SELECT** to confirm the selection.




Item	Options	Description
System	OSD timeout	Setup the timeout of OSD.
	Title bar timeout	Setup the timeout of title bar.
	OSD output	Output OSD to all displays or display A only.
	Shrink control	Select Full screen to fill the entire screen. The screen may be stretched. Select Keep ratio to remain the original aspect ratios. The black bars may appear on top-bottom or left-right sides of screen.
	Channel name	Change the name of video source using uppercase, lowercase or digits up to 16 characters.
	Load factory default	Restore to the factory default.
	Firmware date	Display the version of firmware.
Video Wall	Layout	Select a preferred video wall layout.
	Bezel	Adjust the compensation for bezel between panels.
PAP	Layout	Select a preferred PAP layout.
Output resolution	Output A/B/C/D	Specify a display and set the desired output resolution. By default, the resolution of all displays will be set to the best resolution of display A. Resolutions can be set individually for each display only in Matrix mode.
EDID Configuration		Select a preferred EDID of display for input source.

Title bar information

Once the display title bar function has been enabled (refer to **Setting** page), the related information will be listed on the upper left of screen. The image below is an example for explanation; the actual application is depending on your connection.



- 1 The monitor is showing the image from Output B, and the output resolution is 1920x1080 @60Hz.
- 2 Image sources have been connected to channel 1 and 2 respectively, and both inputted resolutions are 1920x1080 @60Hz. The icon of  indicates the audio is outputted from this channel.
- 3 There is no source connected to this input.

Resolution

The tablets below show the input and output resolutions of RH144, if there is a problem of abnormal display or no video, suggest using a more standard display mode from the list.

Input Resolution	Refresh rates (HZ)
640x480	50/59/60/72/75
720x480 (720P)	56/59/60/72/75
720x576 (576P)	50/60/70/72/75
800X600	56/60/70/72/75
1024X768	60/70/72/75
1152X864	50/69/60/75
1280x600	50/59/60
1280X720 (720P)	50/59/60/75
1280X768	50/59/60/75
1280X800	50/59/60/75
1280X960	50/59/60
1280X1024	50/59/60/75
1360x768	50/59/60/75
1366x768	50/59/60/75
1440X1050	50/59/60
1440X900	50/59/60/70/75
1600x900	50/59/60
1600x1024	59/60
1600X1200	50/60
1680x1050	59/60
1920X1080i	25/29/30
1920X1080 (1080P)	50/59/60
1920X1200	50/60

Output Resolution	Refresh rates (HZ)
1024X768	60
1280X800	60
1280X1024	60
1360x768	60
1600X1200	60
1680x1050	60
1920X1200	60
720P	50/60
1080P	24/30/50/60

Technical support

Please contact with your local distributor for more information or technical support.

FCC / CE Statements

FCC Statement : This equipment has been tested and found to comply with the regulations for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this User Guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case, the user will be required to correct the interference at his/her own expense.

CE Statement : This is a Class B product in a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.



RoHS Compliant

