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OR-44VWC
4x4 Video Wall Control Matrix

/// **OPERATION MANUAL**

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SAFETY PRECAUTIONS

Please read all instructions before attempting to unpack, install or operate this equipment and before connecting the power supply.

Please keep the following in mind as you unpack and install this equipment:

- Always follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Never spill liquid of any kind on or into this product.
- Never push an object of any kind into this product through any openings or empty slots in the unit, as you may damage parts inside the unit.
- Do not attach the power supply cabling to building surfaces.
- Use only the supplied power supply unit (PSU). Do not use the PSU if it is damaged.
- Do not allow anything to rest on the power cabling or allow any weight to be placed upon it or any person walk on it.
- To protect the unit from overheating, do not block any vents or openings in the unit housing that provide ventilation and allow for sufficient space for air to circulate around the unit.

REVISION HISTORY

VERSION NO.	DATE	SUMMARY OF CHANGE
v1.00	18/11/2013	First release

CONTENTS

1. INTRODUCTION

The OR-44VWC is an advanced HDMI seamless matrix switcher that can be easily configured and controlled for three different output modes (Matrix, Dual, and Video Wall) for a variety of install applications. Matrix mode routes the source signals to output displays as a regular matrix does, allowing the user to send any source content to any screen independently.

Dual mode allows 2 sets of 2 selected sources to be shown on designated output displays (2 displays as a set) on POP (Picture on Picture) display.

Video Wall mode extends a selected source to all 4 output displays as one. This solution supports full range of video resolutions up to WUXGA@60 (RB) or 1080p, and audio formats up to 7.1CH LPCM at 192 kHz sampling rate. Control is via IR, remote control, Telnet (IP), RS-232 or front panel buttons.

2. APPLICATIONS

▰ Broadcasting control room

▰ Surveillance control room

▰ Public advertisement displays

▰ HDMI Input extending

▰ Video Wall Systems

3. PACKAGE CONTENTS

▰ 1× 4 by 4 HDMI Seamless Matrix Switcher

▰ 1× Remote Control (CR-125)

▰ Software CD Driver (Optional)

▰ 1×12V/3 A DC Power Adaptor
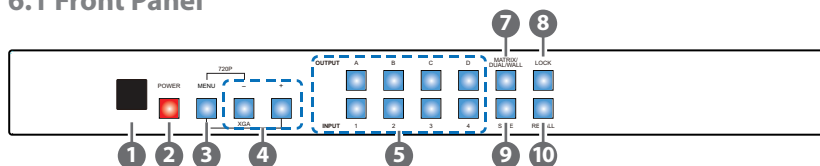
▰ Operation Manual

4. SYSTEM REQUIREMENTS

Input source equipment such as DVD/Blu-ray players or any video signal and PC/Notebook devices and output HD TV/monitor.

5. FEATURES

▰ Seamlessly switches any input signal to any output display, supporting full HDMI Matrix functionalities

▰ Supports 8/10/12 bit Deep Colour

▰ Selects 2 input signals to be simultaneously displayed on 2 grouped HDMI displays (Dual A and Dual B) featuring POP (Picture On Picture)

▰ Displays any input signal on a 2x2 Video Wall as a full image, with Bezel Correction

▰ Control via IR (Remote), RS-232 or IP (Telnet), on-panel buttons or OSD menu

▰ 8 Screen Setting Hot Keys for ease of use

▰ Input resolution supports VGA to WUXGA (RB) or 480i to 1080p; output resolution supports 480p to 1080p

▰ Audio supports up to LPCM 7.1CH at 192 kHz sampling rate

▰ Supports 2.25Gbps Frequency Clock per channel (225MHz Clock Rate)

▰ 19" Rack Mount Casing

6. OPERATION CONTROLS AND FUNCTIONS

6.1 Front Panel

1 IR Window: Accepts the IR signal from the supplied remote control.

2 Power: Press to turn the unit ON or to put it into standby mode.

Factory default: Press and hold the Power while connecting the power supply to reset the system to the default settings.

3 MENU: Press this button to bring up the On-screen Display (OSD) menu on screen.

Press the "MENU" button simultaneously with the "−" button to immediately switch the output resolution to 720p@60Hz.

Press the "MENU" button with simultaneously "+" button to immediately switch the output resolution to XGA (1024×768@60 Hz).

4 −/+ Buttons: Press these buttons to navigate down/up the OSD then press the "MENU" button to confirm.

5 CHANNEL INPUT 1~4 and CHANNEL OUTPUT A~D:

Matrix mode:

i. Press the "Matrix/Dual/Wall" button to switch to Matrix mode. The LED will stay lit when in this mode.

ii. Press an output from A~D and then press the corresponding input (from 1~4). For example: press output A then press input 1, output A will switch to input 1 and display the signal. The setting for each output must be set individually.

Dual mode: Combines 2 sources to be presented on each of the HDMI outputs (Dual A and Dual B).

i. Press "Matrix/Dual/Wall" button to switch to Dual mode. The LED will turn off when in this mode.

ii. Press the "A" or "B" output buttons and then press the required input (1 or 2). For example: press the output "A" button then press the input 1 button, output A will display the video from input 1 on the left side of the screen, then press the output "B" button and

then press the button for input 2, output "A" will display the video from input 2 on the right side of the screen. The video image will be identical for both output A and B.

iii.Dual Group A are outputs A and B combined, Dual group B are outputs C and D combined. Each group will output the same image simultaneously.

iv.Press button A or B for 3 seconds to switch the audio for Dual Group A between output A or B.

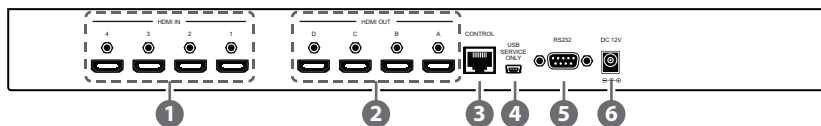v.Press button C or D for 3 seconds to switch the audio for Dual Group B between output C or D.

TV Wall mode:

i. Press the "Matrix/Dual/Wall" button to switch to the TV Wall mode. The LED will blink constantly while in this mode.

ii.Press input 1~4 to select a source to output to 4 displays (e.g. a 2 by 2 Video wall). The audio will be on output A only.

6 **MATRIX/DUAL/WALL:** Press to switch between Matrix mode, Dual mode and TV Wall mode. When in Matrix mode the LED will be lit constantly, when in DUAL mode the LED will not be lit and when in TV Wall mode the LED will blink.

7 **LOCK:** Press once to lock the keypad and remote control, press and hold for 3 seconds to release the lock function.

8 **SAVE:** To save the customized input and output settings.

– Press "Matrix/Dual/Wall" button to select the desired mode.

– Press each output channel A~D and then press corresponding input channel 1~4 as required.

– Press "SAVE", the input 1~4 LEDs will light at the same time, then press one of the input 1,2,3 or 4 buttons to save the settings to the system memory.

For example: Select Matrix mode, press output A then press input 4, then press "SAVE". This will correspond to the remote control FAV.1~FAV.4 buttons.

9 **RECALL:** When in Matrix, Dual or Wall mode, press the "RECALL" button, the input channel 1~4 LEDs will light at the same time. Select by pressing input channel 1,2,3 or 4 (or FAV1~4 on the remote control) to recall the customized screen settings.

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6.2 Rear Panel

1 HDMI IN 1~4:

Connect to HDMI source devices such as DVD/Blu-ray players or PCs/Laptops.

2 HDMI OUT 1~4:

Connect with HDMI equipped displays such as HDTVs/Monitors.

3 Control:

Connect to an active network for telnet control (Please refer to Section 6.6 for RS-232/Telnet).

4 USB SERVICE ONLY:

Reserved for manufacturer use only.

5 RS-232:

Connect to a PC/Laptop or RS-232 control system with a D-Sub 15pin cable to control the device with RS-232 commands (Please refer to Section 6.6 for RS-232/Telnet).
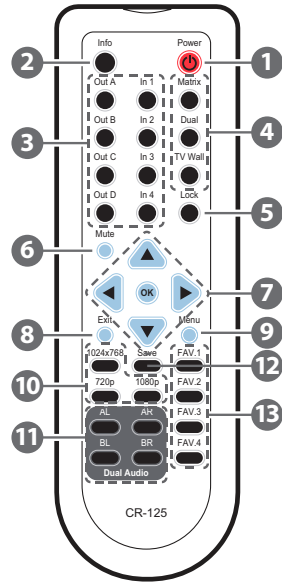
6 DC 12V:

Connect the 12V DC power supply to the unit and plug the adaptor into an AC outlet.
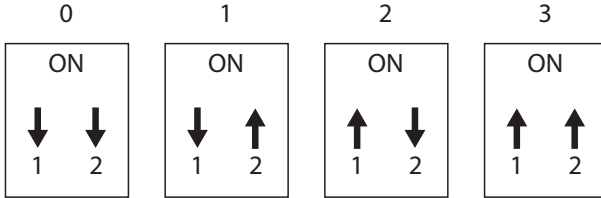
6.3 Remote Control

1 Power: Press to turn the unit ON or to put it into standby mode.

2 Info: Press this button to show the device's firmware version.

3 Out A~D and In 1~4: Press output A~D and then press input 1~4 to assign the display input. For example: press Out A then press In 1, output A will display the video from input 1.

4 MATRIX/DUAL/WALL: Press to switch between Matrix mode, Dual mode and TV Wall mode.

5 Lock: Press once to lock the keypad and remote control, press again and hold for 3 seconds to release the lock function.

6 Mute: Press this button to mute the audio from the HDMI output.

7 ▲/▼/◄/►/OK: Press these buttons to navigate the OSD menu and press OK to enter or confirm the settings.

8 Exit: Press this button to exit the OSD menu or the OSD settings.

9 Menu: Press this button to enter into the OSD menu.

10 1024x768/720p/1080p: Press the required button to switch to that resolution.

11 AL/AR/BL/BR: When in Dual mode, press these hot keys to switch the audio channel to the Left or Right side for Dual A and Dual B groups.

12 SAVE: To save the customized input and output settings.

– Press "Matrix/Dual/Wall" button to select the desired mode.

– Press each output channel A~D and then press corresponding input channel 1~4 as required.

– Press "SAVE", the input 1~4 LEDs will light at the same time, then press one of the input 1,2,3 or 4 buttons to save the settings to the system memory.

For example: Select Matrix mode, press output A then press input 4, then press "SAVE".

13 FAV.1~FAV.4: Press favorite key (1~4) to bring up the customized saved screen settings.

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6.4 Remote Control Dip Switch

Open the Remote control back cover to adjust the dip-switch settings (ON/OFF) to match the IR address setting in the OSD menu. Default setting is 0.

0	1	2	3
ON	ON	ON	ON
↓ ↓	↓ ↑	↑ ↓	↑ ↑
1 2	1 2	1 2	1 2

6.5 RS-232 Protocols

OR-44VWC	
PIN	Assignment
1	NC
2	TxD
3	RxD
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

Remote Controller (PC)	
PIN	Definition
1	NC
2	RxD
3	TxD
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

Baud Rate: 115200bps
Data Bit: 8 bits
Parity: None
Flow Control: None
Stop Bit: 1

6.6 RS-232 & Telnet Commands

Commands will be not executed unless followed with a carriage return (0x0D). Commands are case-sensitive.

Command	Active	OR-44VWC Return
AUA001	Dual A Audio channel in Left side	AUA001
AUA002	Dual A Audio channel in Right side	AUA002
AUA999	Check Dual A audio channel status	AUA???
AUB001	Dual B Audio channel in Left side	AUB001
AUB002	Dual B Audio channel in Right side	AUB002
AUB999	Check Dual B audio channel status	AUB???
AUD000	Audio output Off	AUD000
AUD001	Audio output On	AUD001
AUD999	Check audio on/off status	AUD???
AUE000	Audio EDID is LPCM 2CH	AUE000
AUE001	Audio EDID is LPCM 6CH	AUE001
AUE002	Audio EDID is LPCM 8CH	AUE002
AUE003	Audio EDID is BITSTREAM	AUE003
AUE004	Audio EDID is HD	AUE004
AUE999	Check audio EDID setting	AUE???
BEZ000	Bezel Correction OFF	BEZ000
BEZ001	Bezel Correction ON	BEZ001
BEZ999	Check bezel correction on/off status	BEZ???
BEH???	Horizontal (H) Bezel correction???=000 ~ Maximum	BEH???
BEH998	Check the current Horizontal(H) Bezel correction Maximum value	BEH???
BEH999	Check the current Horizontal(H) Bezel correction setting value	BEH???

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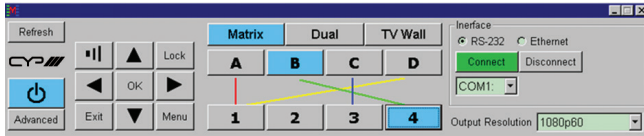| Command	Active	OR-44VWC Return
BEV???	Vertical (V) Bezel correction???=000 ~ Maximum	BEV???
BEV998	Check the current Vertical(V) Bezel correction Maximum value	BEV???
BEV999	Check the current Vertical(V) Bezel correction setting value	BEV???
BRI???	Setting Brightness	No response
	???=000~100 for matrix mode	
	???=(000~100)+200*(OUT No.-1) for dual/tv wall mode	
	For example: OUT B set the Brightness value to 57 =(57)+200*(2-1) = 257	
BRI99?	Check current Brightness value	BRI???
	99?=999 for matrix mode	
	99?=991~994=OUT1~4 for dual/tv wall mode	
CAL???	RECALL FAV. ???=001~004=FAV.1~4	CAL???
CON???	Setting Contrast	No response
CON999	Command setting same as Brightness(BRI)	CON???
EGW999	RS232 only, check current Ethernet Gateway Address	aaa.bbb.ccc.ddd
EIP999	RS232 only, check current Ethernet IP Address	aaa.bbb.ccc.ddd
EMK999	RS232 only, check current Ethernet Subnet Mask Address	aaa.bbb.ccc.ddd
HUE???	Setting HUE	No response
HUE999	Command setting same as Brightness (BRI)	HUE???
INP???	INPUT selection???=001~004=IN 1~4	INP???

Command	Active	OR-44VWC Return
	Execute OUT???	
INP999	Check current INPUT	INP???
LCK000	Un-lock	LCK000
LCK001	Lock	LCK001
LCK999	Check current Lock/un-lock status	LCK???
MNE001	OSD Menu EXIT	No response
MND001	OSD Menu DOWN	No response
MNL001	OSD Menu LEFT (-)	No response
MNO001	OSD Menu OK	No response
MNR001	OSD Menu RIGHT (+)	No response
MNU001	OSD Menu UP	No response
MNX001	OSD Menu	No response
MOD001	Matrix mode	MOD001
MOD002	Dual mode	MOD002
MOD003	TV Wall mode	MOD003
MOD999	Check current output mode status	MOD???
OUT???	OUTPUT selection???=001~004=OUT A~D	OUT???
OUT999	Check current OUTPUT	OUT???
PWR000	Power Off(Standby)	PWR000
PWR001	Power On	PWR001
PWR999	Check current power status	PWR???
RES???	Output resolution???=001~ ...corresponding osd menu list	RES???
RES999	Check current output resolution	RES???
RST001	Factory Reset	RST001

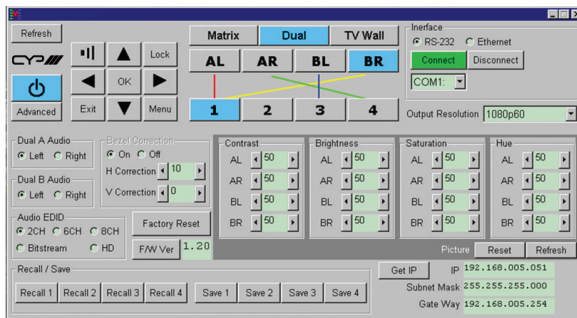| Command	Active	OR-44VWC Return
RST002	Picture Reset	RST002
SAT???	Setting Saturation	No response
SAT999	Command setting same as Brightness (BRI)	SAT???
SAV???	SAVE FAV. ???=001~004=FAV.1~4	SAV???
VER999	Check firmware version	VER??? Example: VER110=V1.1

6.7 RS-232 & Telnet control

Using PC software or Hyper terminal to configure the setting. This software application can be downloaded from the product website.

Simple control panel:

Full-function control panel:

6.8 Telnet Setting

The device can be controlled through Telnet over TCP/IP. Use Port 23 for Telnet communication. The Telnet connection settings can be checked via the OSD menu or via RS-232 commands.

6.9 OSD MENU

Main Menu		Sub Menu	Adjustments	Default
PICTURE (*1)	ALL	CONTRAST	0 ~ 100	50
		BRIGHTNESS	0 ~ 100	50
		SATURATION	0 ~ 100	50
		HUE	0 ~ 100	50
	DUAL	DUAL AL		
		DUAL AR		
		DUAL BL		
		DUAL BR		
	TV WALL	OUT A		
		OUT B		
		OUT C		
		OUT D		
	D/T	RESET		
	ALL	RESET ALL		
		EXIT		

Main Menu	Sub Menu	Adjustments	Default
OUTPUT RESOLUTION	480p, 576p, 720p50, 720p60, 1080i50(***2**), 1080i60, 1080p24, 1080p50, 1080p60, 1024x768, 1280x800, 1280x1024, 1366x768, 1440x900, 1600x900, 1600x1200, 1680x1050, 1920x1200		720p60
	EXIT		
AUDIO EDID (***3**)	LPCM 2CH, LPCM 6CH, LPCM 8CH, BITSTREAM, HD		LPCM 2CH
	EXIT		
OSD SETTINGS	POSITION	LEFT T, RIGHT T, LEFT B, RIGHT B	LEFT T
	H OFFSET	0 ~ 20	10
	V OFFSET	0 ~ 20	10
	TRANSPARENCY	0 ~ 9	4
	MENU TIMEOUT	5 ~ 50, OFF(***4**)	8
	INFO.TIMEOUT	5 ~ 50, OFF	8
	INFO.DISPLAY	ON, OFF	ON
	BRIEF INFO	ON, OFF	OFF
	EXIT		

Main Menu	Sub Menu	Adjustments	Default
HDCP	INPUT(*5)	ACCEPT, NOT ACCEPT	ACCEPT
	OUTPUT(*6)	FOLLOW INPUT, ALWAYS ON	FOLLOW INPUT
	EXIT		
BEZEL CORRECTION (*7)	CORRECTION	ON, OFF	OFF
	H CORRECTION	0 ~ by output resolution	0
	V CORRECTION	0 ~ by output resolution	0
	EXIT		
RECALL / SAVE (*8)	RECALL	CANCEL, FAV.1 ~ 4	CANCEL
	SAVE	CANCEL, FAV.1 ~ 4	CANCEL
	EXIT		
ETHERNET	IP MODE	DHCP, STATIC	DHCP
	STATIC SET	IP, MASK, GATE	IP
	BYTE1		192
	BYTE2		168
	BYTE3		5
	BYTE4		155
	RE-LINK(*9)		
	TIMEOUT (Min.)(*10)	5~60, OFF	10
	EXIT		
OTHERS	IR ADDRESS(*11)	0 ~ 3	0
	EXIT		

Main Menu	Sub Menu	Adjustments	Default
FACTORY DEFAULT EXIT	YES, NO		NO
	EXIT		
INFORMATION (*12)	IN/OUT RESOLUTION, SOURCE HDCP/ AUDIO, OUT MODE, FIRMWARE VER		
	EXIT		
EXIT			

Note:

*1 Picture:

In Matrix mode, the settings for all four pictures are adjusted simultaneously.

In Dual/TV Wall mode, the settings for each picture can adjusted individually and the last memory feature is supported individually .

*2 Output:

Matrix mode only supports 1080i@50Hz and 1080i@60Hz

*3 AUDIO EDID:

Embedded EDID for input audio:

LPCM 2CH = LPCM 2CH

LPCM 6CH = LPCM 2CH/ 6CH

LPCM 8CH = LPCM 2HC/ 6CH/ 8CH

BITSTREAM = LPCM 2CH, AC3, DTS

HD = LPCM 2CH/ 6CH/ 8CH, AC3, DTS, Dolby Digital Plus, DTS-HD

*4 TIMEOUT:

When switched to OFF, MENU and INFO will continue showing on the screen

*5 HDCP INPUT:

ACCEPT: Supports HDCP encrypted source (default setting)

NOT ACCEPT: Does not support HDCP encrypted source. For example: Apple TV.

*6 HDCP OUTPUT:

FOLLOW INPUT: If the source has HDCP encryption the output will support HDCP. If the source does not have HDCP encryption the output will not support HDCP. If, when in Dual mode, either input (Left or Right) supports HDCP, the output will be HDCP encrypted.

ALWAYS ON: When in this mode, all connected TV/Monitors need to support HDCP in order to avoid switching the sources from non-HDCP to HDCP, or flashing or blank image.

*7 BEZEL CORRECTION:

TV Wall mode only. After adjustment the settings are stored in the last memory function.

*8 SAVE/RECALL:

To SAVE or RECALL the input/output settings, the system supports last memory function to save all the setting.

*9 Ethernet RE-LINK:

After the setup, use the RE-LINK option in the OSD menu to re-connect the system again.

*9 Ethernet TIMEOUT:

Select OFF to cancel the time out function. When no telnet commands are received within the time limit set in the TIMEOUT setting the telnet system will be terminated.
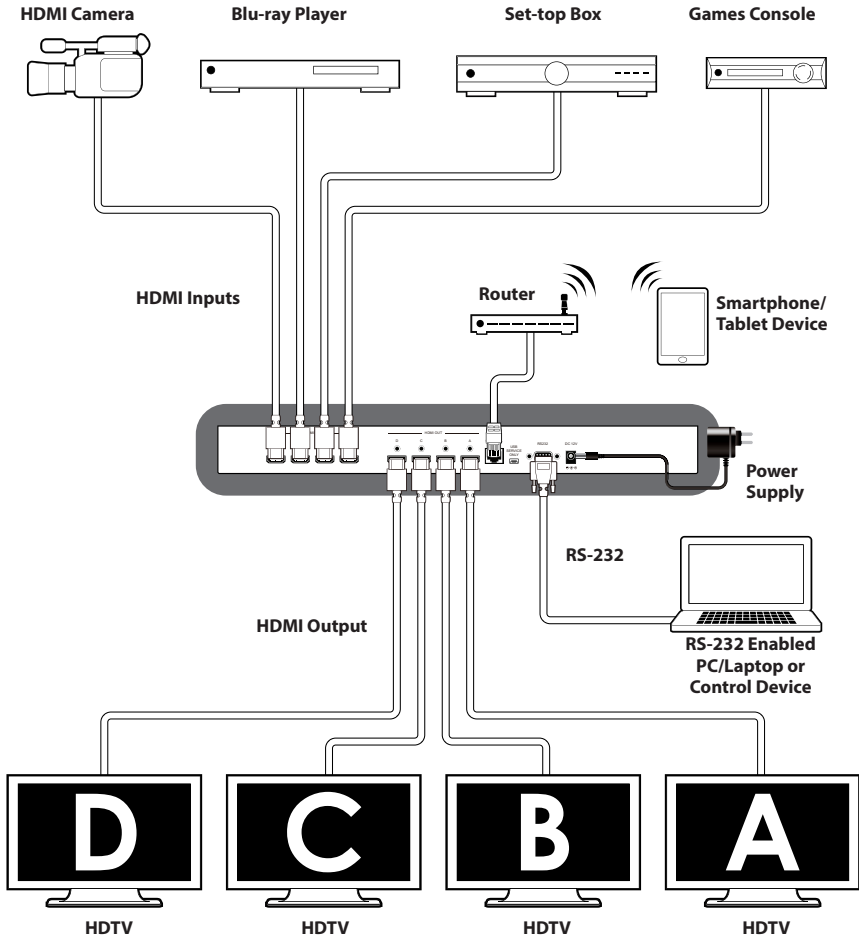
*10 IR ADDRESS:

This setting should correspond to the dip switch setting on the IR remote control (please refer to section 6.4).
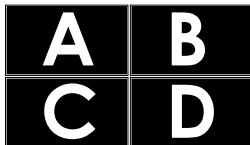
*11 INFORMATION:

Shows the settings/information for the Input/Output/Audio/Mode/Firmware version.
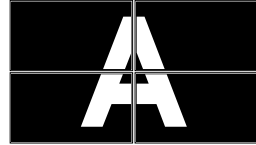
7. CONNECTION DIAGRAM

HDMI Camera   **Blu-ray Player**   **Set-top Box**   **Games Console**

HDMI Inputs

Router

Smartphone/ Tablet Device

Power Supply

RS-232

HDMI Output

RS-232 Enabled PC/Laptop or Control Device

D   C   B   A

HDTV   **HDTV**   **HDTV**   **HDTV**

Screen Configurations

A	B
C	D

Matrix Mode

AD	AD
CD	CD

Dual Mode

A

TV Wall Mode

8. SPECIFICATIONS

8.1 Technical Specifications

Video Bandwidth	225 MHz/6.75 Gbps
Input port	4x HDMI (Female type)
	1xUSB (Service only)
Output port	4 x HDMI (Female type)
Power Supply	12V/3A DC (US/EU standards, CE/FCC/UL certified)
ESD Protection	Human body model:
	±8 kV (air-gap discharge)
	±4 kV (contact discharge)
Dimensions (mm)	432(W) x 172(D) x 44(H)
Weight(g)	2200
Chassis Material	Aluminum
Colour	Black
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)
Power Consumption	N/A

8.2 Input Support Timing

Support Timing
480i@59
480p@60
576i@50
576p@50
720p@25,30,50,60,
1080i@50,60
1080p@24,25,30,50,60
640x480@60,72,75,85
720x400@70
800x600@56,60,72,75,85
1024x768@60,70,75,85
1152x864@70,75
1280x720@60cvt
1280x768@60RB,60,75
1280x800@60RB,60,75
1280x1024@60,60cvt,75
1360x768@60
1366x768@60RB,60
1400x1050@60RB,60
1440x900@60RB,60,75
1600x900@60RB
1600x1200@60
1680x1050@60RB,60
1920x1200@60RB

8.3 Output Support Timing

Support Timing	
480p60	1024x768@60
576p50	1280x800@60
720p50	1280x1024@60
720p60	1366x768@60
1080i50 (Matrix Mode Only)	1440x900@60
1080i60 (Matrix Mode Only)	1600x900@60RB
1080p24	1600x1200@60
1080p50	1680x1050@60
1080p60	1920x1200@60RB

9. ACRONYMS

ACRONYM	COMPLETE TERM
CAT5e	Category 5 Cable
CAT6	Category 6 cable
CEC	Consumer Electronics Control
DVI	Digital Visual Interface
HDCP	High-bandwidth Digital content protection
HDMI	High Definition Multimedia Interface
IR	Infrared