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DS-MSC

Individual Screen Controller (for use with 3rd party HDMI screens)

//// **OPERATION MANUAL**

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Version 1.1

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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
v2.00	10/07/2019	Updated Format/Diagrams

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1. INTRODUCTION

The Multi-Screen Video Wall Control System is ideal for advertising, entertainment and information display. The device allows users to display HDMI or PC sources to multiple LCD monitors, while thanks to the built-in RS-232 control you are able to fully customise the LCD panels giving you complete control over 2×2, 3×3, 4×4 and 5×5 video walls.

The device has a built-in PC to HDMI scaler, which allows the inputted PC video signal to be integrated and converted to a digital HDMI signal output to the video wall. There is a pair of additional audio L/R RCA connectors for the user to output analogue audio (de-embedded from the HDMI source, or routed from the analogue audio input) to local speakers. Further, the IR remote and the RS-232 control allow users control from anywhere they wish.

2. APPLICATIONS

/// TV video wall control

/// Matrix video wall control

/// Retail Display video wall control

/// Gaming video wall control

/// Movie video wall control

/// Advertising video wall

3. PACKAGE CONTENTS

/// Multi-Screen Video Wall Control System

/// 1×IR Remote Control

/// 1×IR Extender

/// RS-232 Cable

/// 5 V/3.6 A DC Power Adaptor

/// Operation Manual

4. SYSTEM REQUIREMENTS

- HDMI or PC splitter/matrix with source signal and connection cables, display device such as TVs/monitors with connection cables.
- RS-232 level-shift board (optional)

## 5. FEATURES

- Supports 6 or more video wall combinations of H×V: 2×2 (4 monitors), 3×2 (6 monitors), 3×3 (9 monitors), 4×3 (12 monitors),4×4 (16 monitors) and 5×5 (25 monitors)
- Supports both HDMI and PC (with audio) sources
- Resolution support up to 1080p Full HD
- Uses RS-232 cables to cascade to each connected device to remotely control each monitor with a single setting
- Supports external IR receiver for IR remote control
- HDMI, HDCP, and DVI compliant

Note: Requires an HDMI or PC (with audio) signal splitter to distribute the video/audio signal to each connected device.

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6. OPERATION CONTROLS AND FUNCTIONS

6.1 Front Panel
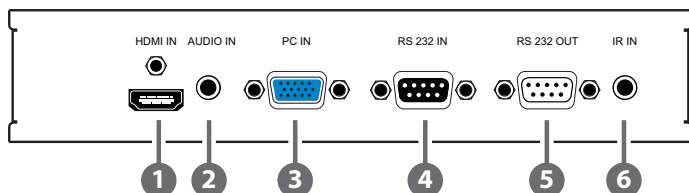
1 HDMI IN

Connect to an HDMI splitter or matrix which is distributing the source signal.

2 AUDIO IN

Connect to the audio source with a 3.5 mm mini-jack cable.

3 PC IN

Connect to PC/RGB splitter or matrix which is distributing the source signal.

4 RS-232 IN

Connect a PC or RS-232 control system to the first device of the video wall system for RS-232 control. Starting from the second device of the video wall system connect to the 'RS-232 OUT' of the previous device.

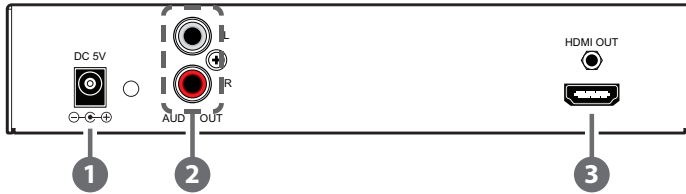*Note: For RS-232 control, a special level-shift board is required (optional accessory).*

5 RS-232 OUT

Connect to the next video wall control system's 'RS-232 IN'.

6 IR IN

Connect to the supplied IR extender to receive the IR signal of the device's remote controller only.

6.2 Rear Panel

1 DC 5V

Connect the supplied power adaptor to an AC wall outlet. When the power is plugged in the device will automatically power ON.

2 L/R AUDIO OUT

Connect this de-embedded audio signal with RCA cables to the active speaker or to the display's audio input.

3 HDMI OUT

Connect to the display's HDMI input.

6.3 OSD Menu

MAIN MENU	**PICTURE MENU**	STANDARD	ON/OFF
		R OFFSET	0~255 (118)
		G OFFSET	0~255 (116)
		B OFFSET	0~255 (118)
		R GAIN	0~255 (098)
		G GAIN	0~255 (098)
		B GAIN	0~255 (098)
		CONTRAST	0~63 (50)
		BRIGHTNESS	0~63 (40)
	SETUP MENU	LANGUAGE	ENG / T.CHINESE (ENG)
		HDMI SOUND	ON/OFF (ON)
		STANDARD	ON/OFF (ON)
		H POSITION START	000~385*2
		V POSITION START	000~53*2
		H ZOOM SIZE	000~255 (0)
		V ZOOM SIZE	000~255 (0)
		H Blanking Edit	0~255 (20)
		V Blanking Edit	0~255 (20)
		TV Option Width	1~15 (1)
		TV Option Height	1~15 (1)

Note:

1. *The 'PICTURE MENU' allows users to adjust a single monitor's setting while the 'SETUP MENU' will adjust all monitors.*

2. *It is suggested to set the 'SETUP MENU's 'STANDARD' option to ON after a change of the timings to obtain the optimum position.*

PICTURE MENU

- **STANDARD:** Setting to ON will allow the system to set the picture menu to the default value as indicated in the brackets.

- **R/G/B OFFSET:** This option is to set a single display's R/G/B brightness values.

- **R/G/B GAIN:** This option is to increase or decrease the R/G/B color values of single display.

- **CONTRAST:** This option is to set the single display's color contrast.

- **BRIGHTNESS:** This option is to set the single display's brightness setting.

SETUP MENU

- **LANGUAGE:** There are two language options available in the OSD menu, English and Traditional Chinese.

- **HDMI SOUND:** This option is to set the HDMI output audio ON or OFF.

- **STANDARD:** Setting this option to ON will force the system to set all the options in the the setup menu to the default value (as indicated in the brackets).

- **H/V POSITION START:** These options are to set the total value of the vertical and horizontal value of the TV wall.

- **H/V ZOOM SIZE:** These options are to set the total value of the vertical and horizontal zoom in and zoom out size of the TV wall.

- **H/V BLANKING EDIT:** These options are to set the total value of the vertical and horizontal value of the blanking area of the TV wall.

- **TV OPTION WIDTH:** This option is to set the number of TVs/displays that are to be on the horizontal line of the TV wall.

- **TV OPTION HEIGHT:** This option is to set the number of TVs/displays that are to be on the vertical line of the TV wall.

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6.4 Remote Control

1 **POWER*:** Press this button to switch on the device(s). All the connected Video Wall System Control device(s) will switch ON.

2 **POWER OFF*:** Press this button to switch off the device. All the connected Video Wall System Control device(s) will switch OFF.

3 **SINGLE*:** Press this button to set the image that is displayed on all connected TVs/monitors to be identical.

4 **FULL*:** There are 6 options of setting an image to be displayed on TV/monitor: 2×2, 3×3, 4×4, 3×2, 4×3 and 5×5.

5 **▲▼◀▶&OK**: Press the arrow buttons to select and adjust the OSD menu and its values or to select the display. Press OK to confirm the selection and all the displays will be adjusted simultaneously. If OK is not pressed only the first display will be adjusted to the selected value.

6 **MENU*:** Press this button to enter the OSD menu. When the setting is selected and confirmed all the output displays will automatically change to the selected settings.

7 **RETURN*:** Press this button to return to the previous layer of OSD menu selection or to exit the OSD menu.

8 **HDMI*:** Press this hot key to directly select the HDMI input source(HDMI IN).

9 **U/OVER*:** Press this key to adjust the screen when the image is overscanning or underscanning.

10 **720P*:** Press this hot key to switch the output resolution to 720p@60

11 **1080P*:** Press this hot key to switch the output resolution to 1080p@60.

12 **VGA*:** Press this hot key to directly select the PC input source (PC IN).

13 **OPTION*:** Press this key to switch to the special setting of the display image set up by the TV Option's Width & Height.
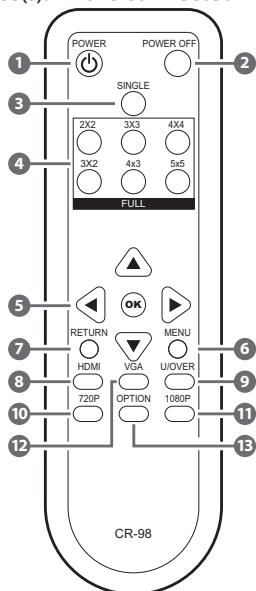
Indicates Functions that will automatically adjust all monitors at once.

6.5 RS-232 Pin Definition

RS-232 IN			RS-232 OUT	
Pin 1	NC		**Pin 1**	NC
Pin 2	TxD		**Pin 2**	RxD
Pin 3	RxD		**Pin 3**	TxD
Pin 4	NC	→	**Pin 4**	NC
Pin 5	GND	←	**Pin 5**	GND
Pin 6	NC		**Pin 6**	NC
Pin 7	Connect to Pin 8		**Pin 7**	Connect to Pin 8
Pin 8	Connect to Pin 7		**Pin 8**	Connect to Pin 7
Pin 9	NC		**Pin 9**	NC

Baud Rate: 19200 bps
Data bit: 8-bit
Parity: None
Stop Bit: 1-bit
Flow Control: None

6.6 RS-232 Commands

COMMAND	ACTION
0x23 0x53 0x30 0x30 0x31 0x23	POWER ON
0x23 0x53 0x30 0x30 0x30 0x23	POWER OFF
0x23 0x43 0x30 0x30 0x30 0x23	UNDER SCAN
0x23 0x43 0x30 0x30 0x31 0x23	OVER SCAN
0x23 0x43 0x52 0xWH 0x00 0x23	*Note**
0xEF 0x05 0xD7 0xC0 0x22 0x07 0xEE	Change to HDMI
0xEF 0x05 0xD0 0xC0 0x22 0x00 0xEE	Change to PC

Note: WH are the TV Option's Width and Height. W & H can be indicated from 1~9 & A~F where '11' means a single panel TV wall, 22 means a 2×2 TV wall and so on up to FF being the setting for a 15×15 TV wall.

7. CONNECTION DIAGRAM
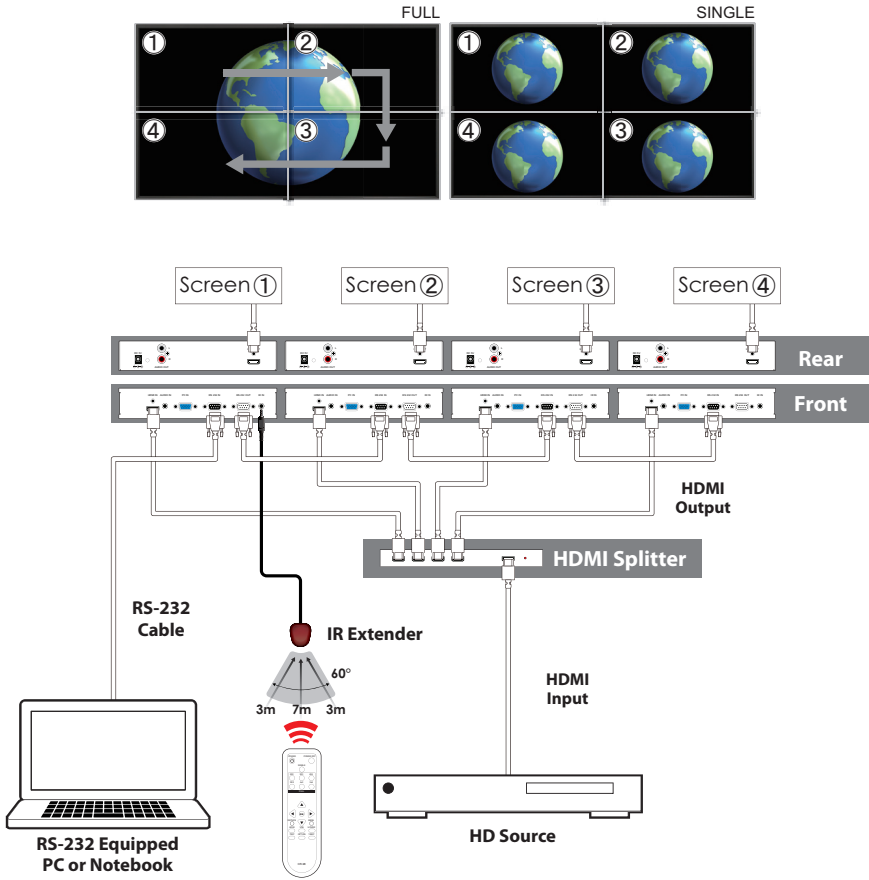
1. Connect the HDMI source (such as DVD or PS3) into the 'HDMI IN' of the HDMI splitter and connect the 'HDMI OUT' from the splitter to the Video Wall Control System(s) respectively. Connect each Control System HDMI output port to each TV/ monitor's HDMI input port. The display sequence should be from top left to right and from second right to left. For more details please refer to the diagram opposite.

2. The IR receiver must be connected to the first Video Wall Control System's IR input port. Connect the RS-232 output port of the first Video Wall Control System to the RS-232 input port of the second system and so on. (The upper left will be the first LCD monitor of the connection diagram opposite).

   Note: The display sequence is from top left to right and from second right to left and so on in sequence.

8. SPECIFICATIONS

Input Ports	1×HDMI, 1×PC, 1×RS-232 (Female connector), 1×IR, 1×L/R (3.5 mm Phone Jack)
Output Ports	1×HDMI, 1×RS-232 (Male connector), 1×L/R (RCA connector)
IR Frequency	38 kHz
IR Cable Distance	3 metres
Input Resolution Supports	PC: VGA~SXGA, 1080p@60
	HDMI: 480p~1080p
Output Resolution	HDMI: 720p & 1080p
Supports Audio Format	LPCM 2CH
Power Supply	5 V/3.6 A DC (US/EU standards, CE/FCC/UL Certified)
ESD Protection	Human body model:
	±8 kV (air-gap discharge)
	±4 kV (contact discharge)
Dimensions	200 mm (W)×155 mm (D)×45 mm (H)
Weight	815 g
Chassis Material	Metal
Silkscreen Color	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	15.5 W

9. ACRONYMS

ACRONYM	COMPLETE TERM
HDMI	High Definition Multimedia Interface
IR	Infrared