



4KHDR
HDCP2.2



QU-28S-4K22

2 to 8 HDMI Distribution Amplifier
(4K, HDCP2.2, HDMI2.0)

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	24/05/1018	First release

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1. INTRODUCTION

This 4K UHD Switching Splitter with HDCP 2.2 is an advanced solution providing high performance audio and video support including HDR and other features defined by the HDMI 2.0a specification. 4K UHD HDMI video sources, up to and including 4K@60Hz (4:4:4, 8-bit) as well as 10/12-bit sources with HDR, are able to be passed along to the 8 outputs. Pass-through of multiple digital audio formats such as LPCM 7.1, Bitstream and advanced HD Bitstream with audio sampling rates up to 192kHz are also supported. An independent HDCP management engine for each output ensures stable HDCP performance.

This splitter also includes a special “Group Mode” which allows the unit to function as two independent 1×4 splitters. When Group Mode is enabled, each of the 2 HDMI inputs are routed to their own discrete set of 4 outputs.

When a mixture of displays with different specifications are connected, each output can be configured to scale 4K to 1080p or apply colour space conversion (4:4:4 to 4:2:0), as appropriate. Support for the CEC “active source” command to periodically reset input selection on CEC-compatible connected displays is also included. This unit provides an intuitive set of front panel controls with an OSD as well as RS-232 control options.

2. APPLICATIONS

- /// Classroom and Lecture Hall Presentations
- /// Showrooms and Demo Rooms
- /// Hotel Lobby information Displays
- /// Public Commercial Displays

3. PACKAGE CONTENTS

- /// 1×HDMI Splitter
- /// 1×5V/3A DC Power Adapter
- /// 1×Terminal Block (3-Pin) to RS-232 (9-Pin D-Sub) Cable
- /// 1×Operation Manual

4. SYSTEM REQUIREMENTS

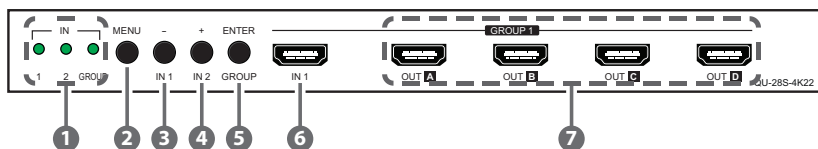
- /// HDMI source equipment such as media players, video game consoles or set-top boxes.
- /// HDMI receiving equipment such as HDTVs, monitors or audio amplifiers.
- /// The use of "Premium High Speed HDMI" cables is highly recommended.

5. FEATURES

- /// HDMI with HDR, 3D & 4K@60Hz support, DVI 1.0 compatible
- /// HDCP 2.2 and HDCP 1.x compliant
- /// Supports up to 4K UHD (18Gbps, 4K@50/60Hz 4:4:4, 8-bit) video signals
- /// 8 output HDMI splitter with 2 selectable inputs and automatic input switching support
- /// Special "Group Mode" allows the unit to function as two independent 1x4 splitters in a single box
- /// Supports current 10-bit and 12-bit HDR (High Dynamic Range) formats
- /// Supports pass-through of LPCM 7.1, Bitstream and advanced HD Bitstream audio formats
- /// Per-output, selectable, 4K to 1080p down-scaling/colour space conversion (4:4:4 to 4:2:0)
- /// Independent HDCP management engine for each output ensures stable performance
- /// Supports eight internal EDIDs, eight external EDIDs copied from connected devices, and two user provided EDIDs
- /// Support for the CEC "active source" command to periodically reset input selection on CEC-compatible connected displays
- /// Controllable via front-panel buttons with OSD and RS-232

6. OPERATION CONTROLS AND FUNCTIONS

6.1 Front Panel



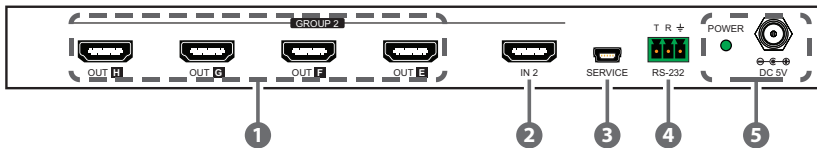
- 1 IN LEDs:** The behavior of these LEDs depend on if Group Mode has been enabled or not.
- A Group Mode Off**
IN 1~2: The illuminated LED indicates which source is currently selected.
GROUP: This LED will remain off.
- B Group Mode On**
IN 1~2: These LEDs will illuminate to indicate that a live source has been detected on the associated input port. If no source is detected the LED will remain off.
GROUP: This LED will illuminate.
Note: When the front panel is locked, all 3 LEDs will blink after any button press.
- 2 MENU:** Press to enter the OSD menu, or to back out from menu items.
Note: Press and hold the “MENU” button for 3 seconds while connecting the power supply to reset all settings to the factory defaults.
- 3 – & IN 1:** Press to move down or adjust selections within OSD menus. When not in the OSD menu, press this button to switch to Input 1.
Note: Pressing “MENU” and “–” together will force Input 1 to use the Internal “FHD, 2CH” EDID.
- 4 + & IN 2:** Press to move up or adjust selections within OSD menus. When not in the OSD menu, press this button to switch to Input 2.
Note: Pressing “MENU” and “+” together will force Input 2 to use the Internal “FHD, 2CH” EDID.
- 5 ENTER & GROUP:** Press to confirm a selection within the OSD or to go deeper into a menu item. When not in the OSD menu, press this button to toggle Group Mode on and off.

Note: Press and hold the “MENU” and “ENTER” buttons together for 3 seconds to lock or unlock the front panel.

- ⑥ **IN 1:** Connect to HDMI source equipment such as a media player, game console or set-top box.
- ⑦ **OUT A~D:** Connect to HDMI TVs, monitors or amplifiers for digital video and audio output.

Note: When Group Mode is active, these outputs will display Input 1.

6.2 Rear Panel



- ① **OUT E~H:** Connect to HDMI TVs, monitors or amplifiers for digital video and audio output.
Note: When Group Mode is active, these outputs will display Input 2.
- ② **IN 2:** Connect to HDMI source equipment such as a media player, game console or set-top box.
- ③ **SERVICE:** This port is reserved for firmware update use only.
- ④ **RS-232:** Connect directly to a PC, laptop or other serial control device with a 3-pin adapter cable to send RS-232 commands to control the unit.
- ⑤ **POWER LED & DC 5V:** Plug the 5V DC power adapter into this port and connect it to an AC wall outlet for power. The LED will illuminate to indicate the unit is on and receiving power.

6.3 OSD Menu

All primary functions of this unit can be controlled by using the OSD (On Screen Display) which is activated by pressing the Menu button on the front of the unit. Use the + (PLUS), – (MINUS), and ENTER buttons to navigate the OSD menu. Press the Menu button to back out from any menu item and then press it again to close the menu.

MAIN MENU
Input Switch
Input Information
Output 4K Converter
Output Information
EDID Control
HDCP Control
CEC Control
Remote Control
OSD Setting
System Setting

The individual functions of the OSD will be introduced in the following section. Items marked in **BOLD** are the factory default settings.

MAIN MENU	LEVEL 2	LEVEL 3
Input Switch	Switch to	INPUT 1
		Input 2
	Auto Switch	On
		OFF
	Group Mode	On
		OFF

1 Switch to: Select the input to display when Group Mode is disabled.

Note: Selecting an Input when Group Mode is turned on will disable Group Mode.

- ② **Auto Switch:** Enable or disable the auto switch function.

Note: Auto Switch only works when Group Mode is disabled.

- ③ **Group Mode:** Enable or disable Group Mode.

MAIN MENU	LEVEL 2	LEVEL 3
Input Information	In1~2	[Detailed Source Information]
	Name	
	Fmt	
	Reso	
	Freq	
	Depth	
	Colour	
	HDCP	
	Audio	
	HDR	

- ① **In1~2:** Show the current input's vendor name based on the source's info-frame data.

Note: Not all devices will provide this information.

- ② **Name:** Show the current input's product name based on the source's info-frame data.

Note: Not all devices will provide this information.

- ③ **Fmt:** Show the video format of the current input.

- ④ **Reso:** Show the resolution and framerate of the current input.

- ⑤ **Freq:** Show the signal frequency of the current input.

- ⑥ **Depth:** Show the colour bit-depth of the current input.

- ⑦ **Colour:** Show the colour space of the current input.

- ⑨ **HDCP:** Show the HDCP status of the current input.

- ⑨ **Audio:** Show the audio format of the current input.

- ⑩ **HDR:** Show the HDR status of the current input.

MAIN MENU	LEVEL 2	LEVEL 3
Output 4K Converter	All	Bypass
		To YUV420
		To 1080p
		AUTO
	Out A~H	Bypass
		To YUV420
		To 1080p
		AUTO

- ① **All:** Sets the 4K conversion mode for all outputs. Setting this to bypass will disable the 4K conversion function.

Note: Making changes to this setting will overwrite the individual output's settings.

- ② **Out A~H:** Sets the 4K conversion mode to use for each output individually.

Note: 4K conversion is only available with 4K sources. Due to a chipset limitation, 4K sources using the 4:2:2 colour space may display with incorrect colours when scaled to 1080p.

MAIN MENU	LEVEL 2	LEVEL 3
Output Information	Out A~H	[Output Details]

- ① **Out A~H:** Show the connection status, resolution and framerate for each output.

MAIN MENU	LEVEL 2	LEVEL 3
EDID Control	In 1	INT FHD 2CH
		Int FHD MCH
		Int UHD 2CH
		Int UHD MCH
		Int UHD+ 2CH
		Int UHD+ MCH
		Int HDR 2CH

MAIN MENU	LEVEL 2	LEVEL 3
EDID Control	In 1	Int HDR MCH
		User 1
		User 2
		Copy Out A
		Copy Out B
		Copy Out C
		Copy Out D
		Copy Out E
		Copy Out F
		Copy Out G
		Copy Out H
	In 2	INT FHD 2CH
		Int FHD MCH
		Int UHD 2CH
		Int UHD MCH
		Int UHD+ 2CH
		Int UHD+ MCH
		Int HDR 2CH
		Int HDR MCH
		User 1
		User 2
		Copy Out A
		Copy Out B
		Copy Out C
		Copy Out D
		Copy Out E
		Copy Out F
		Copy Out G
Copy Out H		

MAIN MENU	LEVEL 2	LEVEL 3
EDID Control	Vndr	[Detailed EDID Information]
	Name	
	Reso	
	Freq	
	Depth	
	YCbCr	
	HDR	

- 1 In 1:** Assign the selected EDID to Input 1.
Note: Changing the EDID may result in the source changing resolutions and blanking the output for a couple seconds.
- 2 In 2:** Assign the selected EDID to Input 2.
Note: Changing the EDID may result in the source changing resolutions and blanking the output for a couple seconds.
- 3 Vndr:** Show the vendor name from the EDID used with the current Input.
- 4 Name:** Show the monitor name from the EDID used with the current Input.
- 5 Reso:** Show the maximum supported resolution from the EDID used with the current Input.
- 6 Freq:** Show the maximum supported frequency from the EDID used with the current Input.
- 7 Depth:** Show the maximum supported bit-depth from the EDID used with the current Input.
- 8 YCbCr:** Show the colour spaces supported by the EDID used with the current Input.
- 9 HDR:** Show if HDR is supported by the EDID used with the current Input.

MAIN MENU	LEVEL 2	LEVEL 3
HDCP Control	In 1	Apple Mode
		Refer Source
		REFER SINK
	In 2	Apple Mode
		Refer Source
		REFER SINK
	Out A~H	[HDCP Status Information]

- ❶ **In 1:** Sets the HDCP mode to use with Input 1.
- ❷ **In 2:** Sets the HDCP mode to use with Input 1.
- ❸ **Out A~H:** Show the current HDCP status of each Output (A~H).

MAIN MENU	LEVEL 2	LEVEL 3
CEC Control	Auto Active	On
		OFF
	Auto Standby	On
		OFF
	Out A~H	[CEC Address Information]

- ❶ **Auto Active:** Enable or disable sending the CEC “active source” command to connected displays every 10 minutes.
Note: The connected display must support the CEC “active source” command.
- ❷ **Auto Standby:** Enable or disable sending the CEC “standby” command to connected displays if there has been no live input source detected for more than 10 minutes.
Note: The connected display must support the CEC “standby” command.
- ❸ **Out A~H:** Shows the CEC address of each connected display.

MAIN MENU	LEVEL 2	LEVEL 3
Remote Control	Link With	Off
		Out A~H [OUT A]
	Hot Key	On
		OFF
[Button and Hot Key Assignment]		

1 Link With: Select the display to accept CEC remote control commands from to control the unit or disable the functionality. The selected display's remote control can be used to navigate this unit's OSD menu using the remote's red, green, yellow and blue buttons by assigning them to the functions of the unit's front panel MENU, MINUS, PLUS, and ENTER buttons.

Note: Requires a compatible remote control and display.

2 Hot Key: Enables or disables support for the additional front panel hot key functionality that is used when not in the OSD (IN 1, IN 2, and GROUP).

3 Button and Hot Key Assignment: Lists how each of the coloured buttons on the TV's remote will be assigned if the Remote Control function is enabled.

MAIN MENU	LEVEL 2	LEVEL 3
OSD Setting	Timeout	Never
		1~60 [30]
	Horizontal	0~100 [2]
	Vertical	0~100 [3]
	Transparency	0~7 [3]
	Contrast	0~1 [0]
	Panel Colour	Red
	Green	
	Blue	
	GRAY	
OSD Setting	Font Colour	Black
		White
		Red
		Green
		BLUE
		Yellow
		Cyan
		Magenta
	Free Run	No
		Red
		Green
		BLUE
		Black
		Colour
	Default	NO
Yes		

- ① **Timeout:** Set the OSD menu timeout in seconds or disable the timeout.
- ② **Horizontal:** Set the OSD menu's horizontal position.
- ③ **Vertical:** Set the OSD menu's vertical position.
- ④ **Transparency:** Set the OSD menu's transparency level.
- ⑤ **Contrast:** Set the OSD menu contrast mode.
- ⑥ **Panel Colour:** Set the OSD menu's panel colour.
- ⑦ **Font Colour:** Set the OSD menu's font colour.
- ⑧ **Free Run:** Set the Free Run colour to display when no source is detected. Selecting "Colour" will show a colour bar pattern. Selecting "No" will disable the Free Run function.
- ⑨ **Default:** Reset the OSD configuration settings to their factory defaults.

MAIN MENU	LEVEL 2	LEVEL 3
System Setting	VID	[Vendor ID]
	PID	[Product ID]
	SN	[Serial Number]
	FW Ver	[Firmware Version]
	Factory Reset	NO
		Yes
	Software Control	OFF
		On

- ① **VID:** Show the unit's Vendor ID.
- ② **PID:** Show the unit's Product ID.
- ③ **SN:** Show the unit's Serial Number.
- ④ **FW Ver:** Show the unit's current firmware version.
- ⑤ **Factory Reset:** Reset the unit's configuration to the factory defaults.
- ⑥ **Software Control:** Enable or disable RS-232 support for connecting to the EDID Management Software. (See section 6.6)

Note: Enabling this function will disable normal RS-232 control of the unit.

6.4 RS-232 Control

UNIT		PC	
Pin	Pinout	Pin	Pinout
		1	
1	Tx	2	Rx
2	Rx	3	Tx
		4	
3	GND	5	GND
		6	
		7	
		8	
		9	

SERIAL PORT SETTINGS	
Baud Rate	19200
Data Bits	8
Parity Bit	None
Stop Bits	1
Flow Control	None

6.5 RS-232 Commands

COMMAND
DESCRIPTION & PARAMETERS
System Commands
?↵
Show the full command list.
HELP↵
Show the full command list.
HELP N1↵
Show details about a specific command. N1 = {Command} [Base RS-232 Command]
GET MODEL NAME↵
Show the unit's model name.
GET FW VER↵
Show the unit's current firmware version.
SET SYSTEM REBOOT↵
Reboot the unit.
SET DESCRIPTION N1↵
Set the description/name of the unit. N1 = {Unit Name} [Alphanumeric, 64 chars max]
GET DESCRIPTION↵
Show the unit's current description/name.
SET KEYLOCK N1↵
Enable or disable the front panel key lock. Available values for N1 : ON [Enable Key Lock] OFF [Disable Key Lock]

COMMAND
DESCRIPTION & PARAMETERS
GET KEYLOCK ↵
Show the current front panel key lock status.
SET OSD DEFAULT ↵
Reset the OSD configuration to the factory defaults.
SET FACTORY DEFAULT ↵
Reset all configurations to the factory defaults.
Input Commands
GET IN PORT NUMBER ↵
Report the number of inputs supported by the unit.
GET IN TYPE LIST ↵
List the video format supported by each Input.
GET IN N1 FORMAT ↵
Show Input N1's video format.
N1 = 1 ~ 2 [Input Port]
Valid response values are:
0 [Not Active]
1 [DVI Mode]
2 [HDMI Mode]
GET IN N1 Colour SPACE ↵
Show Input N1's current colour space.
N1 = 1 ~ 2 [Input Port]
Valid response values are:
0 [Not Active]
1 [RGB]
2 [YUV 4:4:4]
3 [YUV 4:2:2]
4 [YUV 4:2:0]

COMMAND
DESCRIPTION & PARAMETERS
GET IN N1 Colour DEPTH ↵
Show Input N1's current colour bit depth. N1 = 1 ~ 2 [Input Port] Valid response values are: 0 [Not Active] 8 [8-bit] 10 [10-bit] 12 [12-bit] 16 [16-bit]
GET IN N1 TIMING ↵
Show Input N1's current resolution and timing. N1 = 1 ~ 2 [Input Port] <i>Note: Only works with a currently displayed Input.</i>
SET IN N1 HDCP MODE N2 ↵
Set Input N1's HDCP mode to N2. N1 = 1 ~ 2 [Input Port]
Available settings for N2 : 0 [Apple Mode] 1 [Refer to Source] 2 [Refer to Sink]
GET IN N1 HDCP MODE ↵
Get Input N1's current HDCP mode. N1 = 1 ~ 2 [Input Port]

COMMAND	
DESCRIPTION & PARAMETERS	
GET IN N1 HDCP STATUS ←	
Get Input N1's current HDCP status.	
N1 = 1 ~ 2	[Input Port]
Valid response values are:	
0	[No HDCP]
1	[HDCP 1.4]
2	[HDCP 2.2]
SET IN N1 EDID N2 ←	
Assign EDID N2 to be used with Input N1.	
N1 = 1 ~ 2	[Input Port]
Available values for N2 :	
1	[Int FHD 2CH]
2	[Int FHD Multi-CH]
3	[Int UHD 2CH]
4	[Int UHD Multi-CH]
5	[Int UHD+ 2CH]
6	[Int UHD+ Multi-CH]
7	[Int HDR 2CH]
8	[Int HDR Multi-CH]
9	[User EDID 1]
10	[User EDID 2]
11	[Copy Output A]
12	[Copy Output B]
13	[Copy Output C]
14	[Copy Output D]
15	[Copy Output E]
16	[Copy Output F]
17	[Copy Output G]
18	[Copy Output H]

COMMAND
DESCRIPTION & PARAMETERS
GET IN N1 EDID ←
Show Input N1's current EDID mode. N1 = 1 ~ 2 [Input Port]
GET IN N1 EDID DATA ←
Show the raw hex data for the EDID currently assigned to Input N1. N1 = 1 ~ 2 [Input Port]
GET IN N1 EDID INFORMATION ←
Show a description of the EDID assigned to Input N1. N1 = 1 ~ 2 [Input Port]
Output Commands
GET OUT PORT NUMBER ←
Report the number of outputs supported by the unit.
GET OUT TYPE LIST ←
Show the video format supported by each output.
SET OUT ROUTE N1 ←
Route Input N1 to all Outputs. N1 = 1 ~ 2 [Input Port] <i>Note: Setting this will disable Group Mode.</i>
GET OUT ROUTE ←
Show the current video routing source.
SET OUT AUTO SWITCH N1 ←
Enable or disable automatic input source switching. Available values for N1 : ON [Auto Switch Enabled] OFF [Auto Switch Disabled] <i>Note: Only active when Group Mode is disabled.</i>

COMMAND
DESCRIPTION & PARAMETERS
GET OUT AUTO SWITCH ↵
Shows the current automatic input source switching setting.
SET OUT GROUP MODE N1 ↵
Enable or disable Group Mode. Available values for N1 : ON [Group Mode Enabled] OFF [Group Mode Disabled]
GET OUT GROUP MODE ↵
Show the current Group Mode setting
SET OUT N1 CONVERT N2 ↵
Sets the 4K source conversion mode to use on Output N1. N1 = A ~ H [Output Port] Available values for N2 : 0 [Bypass, No Conversion] 1 [Convert to YUV 4:2:0] 2 [Convert to 1080p] 3 [Auto Conversion] <i>Note: 4K conversion is only available with 4K sources.</i>
GET OUT N1 CONVERT ↵
Show the 4K source conversion mode used by Output N1. N1 = A ~ H [Output Port]
GET OUT N1 HPD ↵
Show the current hot-plug status of Output N1. N1 = A ~ H [Output Port]
GET OUT N1 RSENSE ↵
Show the current receiver sense status of Output N1. N1 = A ~ H [Output Port]

COMMAND	
DESCRIPTION & PARAMETERS	
GET OUT N1 HDCP STATUS ↵	
<p>Show the current HDCP status of Output N1.</p> <p>N1 = A ~ H [Output Port]</p> <p>Valid response values are:</p> <p>0 [No HDCP]</p> <p>1 [HDCP 1.4 Active]</p> <p>2 [HDCP 2.2 Active]</p> <p>3 [HDCP 1.4 Retrying]</p> <p>4 [HDCP 2.2 Retrying]</p>	
GET OUT N1 EDID DATA ↵	
<p>Show the raw hex data of the EDID read from Output N1.</p> <p>N1 = A ~ H [Output Port]</p>	
GET OUT N1 EDID INFORMATION ↵	
<p>Show a description of the EDID read from Output N1.</p> <p>N1 = A ~ H [Output Port]</p>	
User EDID Commands	
GET USER EDID NUMBER ↵	
<p>Show the number of User EDIDs supported by the unit.</p>	
SET USER N1 EDID DATA N2 ↵	
<p>Update the contents of User EDID N1 with new raw hex data.</p> <p>N1 = 1 ~ 2 [User EDID Number]</p> <p>N2 = {Hex Data} [Raw EDID Hex Data]</p>	
GET USER N1 EDID DATA ↵	
<p>Show the raw hex data of the EDID stored in User EDID N1.</p> <p>N1 = 1 ~ 2 [User EDID Number]</p>	

COMMAND
DESCRIPTION & PARAMETERS
GET USER N1 EDID INFORMATION ←↵
Show a description of the EDID stored in User EDID N1. N1 = 1 ~ 2 [User EDID Number]
OSD Commands
SET OSD TIMEOUT N1 ←↵
Set the OSD timeout value. Available values for N1 : 0 [No Timeout] 1 ~ 60 [Timeout in Seconds]
GET OSD TIMEOUT ←↵
Show the current OSD timeout value.
SET OSD HORIZONTAL N1 ←↵
Set the OSD menu's horizontal position. N1 = 0 ~ 100 [Horizontal Position]
GET OSD HORIZONTAL ←↵
Show the OSD menu's current horizontal position. N1 = 0 ~ 100 [Vertical Position]
SET OSD VERTICAL N1 ←↵
Set the OSD menu's vertical position.
GET OSD VERTICAL ←↵
Show the OSD menu's current vertical position.
SET OSD TRANSPARENCY N1 ←↵
Set the OSD menu's transparency level. Available values for N1 : 0 [Fully Opaque] 1 ~ 6 [Levels of Transparency] 7 [Fully Transparent]

COMMAND	
DESCRIPTION & PARAMETERS	
GET OSD TRANSPARENCY ←	
Show the OSD menu's current transparency level.	
SET OSD CONTRAST N ←	
Set the OSD menu's contrast level. Available values for N1 :	
0	[High Contrast]
1	[Low Contrast]
GET OSD CONTRAST ←	
Show the OSD menu's current contrast level.	
SET OSD PANEL Colour N1 ←	
Set the OSD menu's background colour. Available values for N1 :	
1	[Red]
2	[Green]
3	[Blue]
4	[Gray]
GET OSD PANEL Colour ←	
Show the OSD menu's current background colour.	
SET OSD FONT Colour N1 ←	
Set the OSD menu's font colour. Available values for N1 :	
1	[Black]
2	[White]
3	[Red]
4	[Green]
5	[Blue]
6	[Yellow]
7	[Cyan]
8	[Magenta]

COMMAND												
DESCRIPTION & PARAMETERS												
GET OSD FONT Colour ←												
Show the OSD menu's current font colour.												
SET OSD FREERUN Colour N1 ←												
<p>Set the Free Run mode and the colour used when the input signal is lost and Free Run is active.</p> <p>Available values for N1:</p> <table> <tr> <td>0</td> <td>[Free Run Disabled]</td> </tr> <tr> <td>1</td> <td>[Red]</td> </tr> <tr> <td>2</td> <td>[Green]</td> </tr> <tr> <td>3</td> <td>[Blue]</td> </tr> <tr> <td>4</td> <td>[Black]</td> </tr> <tr> <td>5</td> <td>[Colour Bars]</td> </tr> </table>	0	[Free Run Disabled]	1	[Red]	2	[Green]	3	[Blue]	4	[Black]	5	[Colour Bars]
0	[Free Run Disabled]											
1	[Red]											
2	[Green]											
3	[Blue]											
4	[Black]											
5	[Colour Bars]											
GET OSD FREERUN Colour ←												
Show the current Free Run colour setting.												
CEC Commands												
SET CEC AUTO ACTIVE N1 ←												
<p>Enable or disable sending the CEC "active source" command to connected displays every 10 minutes.</p> <p>Available values for N1:</p> <table> <tr> <td>ON</td> <td>[Enable Active Source]</td> </tr> <tr> <td>OFF</td> <td>[Disable Active Source]</td> </tr> </table> <p><i>Note: The connected display must support the CEC "active source" command.</i></p>	ON	[Enable Active Source]	OFF	[Disable Active Source]								
ON	[Enable Active Source]											
OFF	[Disable Active Source]											

COMMAND
DESCRIPTION & PARAMETERS
GET CEC AUTO ACTIVE ↵
Show the current CEC Active Source setting.
SET CEC AUTO STANDBY N1 ↵
<p>Enable or disable sending the CEC “standby” command to connected displays if there has been no live input source detected for more than 10 minutes.</p> <p>Available values for N1:</p> <p>ON [Enable Auto Standby] OFF [Disable Auto Standby]</p> <p><i>Note: The connected display must support the CEC “standby” command.</i></p>
GET CEC AUTO STANDBY ↵
Show the current CEC Auto Standby setting.
SET CEC REMOTE LINK N1 ↵
<p>Select the display/output to accept CEC remote control commands from to control the unit, or disable the feature.</p> <p>Available values for N1:</p> <p>OFF [Disable Feature] A ~ H [Enabled Output Port]</p> <p><i>Note: Requires a compatible remote control and display.</i></p>
GET CEC REMOTE LINK ↵
Show the current CEC Remote Link setting.

Note: Commands will not be executed unless followed by a carriage return. Commands are not case-sensitive.

6.6 EDID Management

This unit uses an EDID Management application which allows the user to copy the EDID from an attached display, edit an existing EDID file stored on the PC or create a basic EDID from scratch. The EDID can then be uploaded to the unit for use. Please obtain the EDID Management software from your authorised dealer and save it in a directory where you can easily find it.

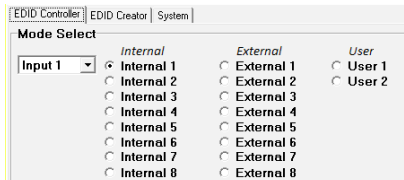
Before connecting the unit to your PC, please install the EDID Management software. After the installation has successfully completed an icon for it will appear on the windows desktop. Launch the software by double-clicking on the icon and the EDID Management device detection window will open up on your screen.



After launching the software, power the unit on and then connect it to the PC/laptop using an RS-232 cable. Click on the “Search” button and any detected units will be displayed in the list. Clicking on a detected unit will open the EDID Management window.

6.6.1. EDID Controller

Mode Select: Under the “EDID Controller” tab the user may select the EDID to be sent to the selected HDMI input from 8 Internal, 8 External (bypass) or 2 User EDID options. When a new EDID is selected, the EDID used by the unit will change immediately.



Save/Upload/Analysis: EDIDs may also be saved, uploaded or analysed.



- **Save:** Any EDID from the unit or a connected HDMI display can be saved to your PC as a *.bin file by selecting the EDID source from the drop-down menu and then clicking the “Save” icon.
- **Upload:** Previously saved EDID files (*.bin format) can be re-uploaded into any of the “User” EDID slots by selecting the User EDID to replace from the dropdown and then clicking the “Upload” icon. Before accepting the upload, the software will check and verify that the EDID’s header and checksum values are acceptable.
- **Analysis:** To analyse any EDID stored within the unit, select the EDID to view from the dropdown and click on the “Analysis” icon. From the Analyser window it is possible to open the currently analysed EDID in the “EDID Creator” by clicking the “Edit” button.

EDID Information	
EDID Header :	Good
EDID Checksum :	Good
Content Format :	HDMI
Manufacturer Name :	STD
Monitor Name :	SPLITTER
Max Resolution :	1080p@60Hz
Max Color Depth :	8bit
Support 3D :	No
Support YUV420 :	No
Support SCDC :	No
Support 600MHz :	No
Support HDR :	No
Audio Formats :	2PCM.
Audio Max Channel :	2CH
CEC Address :	1000

6.6.2. EDID Creator

Select: Click on the “EDID Creator” tab to begin designing a new EDID from scratch (select the “New” icon), to modify an existing EDID stored on the PC as a *.bin file (select the “Load” icon) or to edit an EDID copied from the unit via the EDID Analyser’s edit option.





- Selecting “New” will automatically populate the various EDID fields with basic information that can be easily edited to match the user’s preferences.
- Clicking on the “Load” icon will open a file load window and after the *.bin file has been selected and loaded the EDID fields will be populated with the information from that file. The same will happen when the EDID is copied from the “EDID Analyser” window.



Edit: The following tabs provide access to a wide range of EDID information which can be edited:

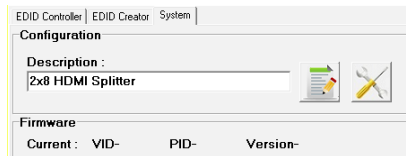
Descriptor	PC Timing	SD/HD/UHD	Audio1	Audio2	Color Space	Others
Manufacturer Name :	NEW		3 Letters Limited.			
Monitor Name :	BrandNewEdd		13 Letters Limited.			
Product Code :	0		65535 Limited.			
Serial Number :	0		4 Billion Limited.			
Manufacture Year :	2018		1990~2245 Limited.			
Manufacture Week :	11		53 Limited.			

- **Descriptor:** This tab allows for the editing of various description and information fields within the EDID file such as Manufacturer Name, Monitor Name, etc.
- **PC Timing & SD/HD/UHD:** These tabs allow for the selection of the resolutions and refresh rates that the EDID will report as supported.
- **Audio1 & Audio2:** These tabs allow for the selection of which audio formats, audio frequencies, channels and speaker locations are supported.
- **Colour Space:** This tab allows for the selection of which colour formats and bit depths are supported, including BT.2020 and HDR support options.
- **Others:** This tab contains options for supporting 3D and defining the CEC Address.

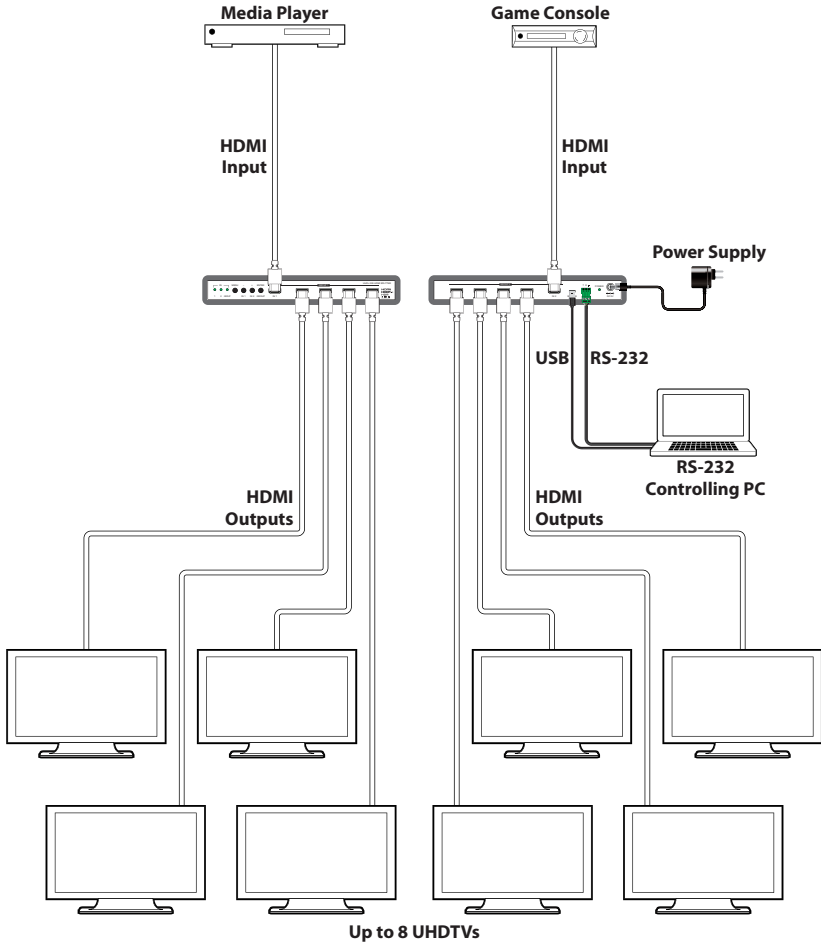
Once the user is finished editing or creating an EDID it can be saved to a *.bin file locally or uploaded directly to the unit using the “Save”  and “Upload”  icons respectively.

6.6.3. System

Configuration & Firmware: Select the “System” tab to edit the software’s description (select the “Rename”  icon), to reset the unit to factory defaults (select the “Reset”  icon) and to view the unit’s current hardware and firmware version information.



7. CONNECTION DIAGRAM



8. SPECIFICATIONS

8.1 Technical Specifications

HDMI Bandwidth	600MHz/18Gbps
Input Ports	2×HDMI
Output Ports	8×HDMI
Control Interfaces	1×RS-232 [3-pin Terminal Block] 1×USB [Mini-B]
HDMI Cable Distance	3m, 4K@60Hz (YUV 4:4:4, 8-bit) 5m, 4K@30Hz (8-bit) 10m, 1080p@60Hz (12-bit) 15m, 1080p@60Hz (8-bit)
Power Supply	5V/3A DC (US/EU standards, CE/FCC/UL certified)
ESD Protection	Human Body Model: ±8kV (Air Discharge) ±4kV (Contact Discharge)
Dimensions	240mm×24mm×103mm (W×H×D) [Case Only] 240mm×25mm×103mm (W×H×D) [All Inclusive]
Weight	616g
Chassis Material	Metal
Silkscreen 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	9.57W

8.2 Video Specifications

Resolutions/Timing (Hz)	Support		Can Convert to 1080p	Can Convert to 4:2:0
	In	Out		
640×480p@60	✓	✓	✗	✗
640×480p@72	✓	✓	✗	✗
640×480p@75	✓	✓	✗	✗
640×480p@85	✓	✓	✗	✗
720×400p@70	✓	✓	✗	✗
720×400p@85	✓	✓	✗	✗
720×480i@59	✓	✓	✗	✗
720×480i@60	✓	✓	✗	✗
720×480p@59	✓	✓	✗	✗
720×480p@60	✓	✓	✗	✗
720×576i@50	✓	✓	✗	✗
720×576p@50	✓	✓	✗	✗
800×600p@56	✓	✓	✗	✗
800×600p@60	✓	✓	✗	✗
800×600p@72	✓	✓	✗	✗
800×600p@75	✓	✓	✗	✗
800×600p@85	✓	✓	✗	✗
848×480p@60	✓	✓	✗	✗
1024×768p@60	✓	✓	✗	✗
1024×768p@70	✓	✓	✗	✗
1024×768p@75	✓	✓	✗	✗
1024×768p@85	✓	✓	✗	✗
1152×864p@70	✓	✓	✗	✗
1152×864p@75	✓	✓	✗	✗

Resolutions/Timing (Hz)	Support		Can Convert to 1080p	Can Convert to 4:2:0
	In	Out		
1152x864p@85	✓	✓	✗	✗
1280x720p@23	✗	✗	✗	✗
1280x720p@24	✗	✗	✗	✗
1280x720p@25	✓	✓	✗	✗
1280x720p@29	✓	✓	✗	✗
1280x720p@30	✓	✓	✗	✗
1280x720p@50	✓	✓	✗	✗
1280x720p@59	✓	✓	✗	✗
1280x720p@60	✓	✓	✗	✗
1280x768p@60	✓	✓	✗	✗
1280x768p@60 (RB)	✓	✓	✗	✗
1280x768p@75	✓	✓	✗	✗
1280x768p@85	✓	✓	✗	✗
1280x800p@60	✓	✓	✗	✗
1280x800p@60 (RB)	✓	✓	✗	✗
1280x800p@75	✓	✓	✗	✗
1280x800p@85	✓	✓	✗	✗
1280x960p@60	✓	✓	✗	✗
1280x960p@85	✓	✓	✗	✗
1280x1024p@60	✓	✓	✗	✗
1280x1024p@75	✓	✓	✗	✗
1280x1024p@85	✓	✓	✗	✗
1360x768p@60	✓	✓	✗	✗
1366x768p@60 (RB)	✓	✓	✗	✗
1366x768p@60	✓	✓	✗	✗

Resolutions/Timing (Hz)	Support		Can Convert to 1080p	Can Convert to 4:2:0
	In	Out		
1400×1050p@60	✓	✓	✗	✗
1400×1050p@60 (RB)	✓	✓	✗	✗
1440×900p@60	✓	✓	✗	✗
1440×900p@60 (RB)	✓	✓	✗	✗
1440×900p@75	✓	✓	✗	✗
1600×900p@60 (RB)	✓	✓	✗	✗
1600×1200p@50	✗	✗	✗	✗
1600×1200p@60	✓	✓	✗	✗
1600×1200p@65	✓	✓	✗	✗
1600×1200p@70	✓	✓	✗	✗
1600×1200p@75	✓	✓	✗	✗
1600×1200p@85	✓	✓	✗	✗
1680×1050p@60	✓	✓	✗	✗
1680×1050p@60 (RB)	✓	✓	✗	✗
1920×1080p@23	✓	✓	✗	✗
1920×1080p@24	✓	✓	✗	✗
1920×1080p@25	✓	✓	✗	✗
1920×1080p@29	✓	✓	✗	✗
1920×1080p@30	✓	✓	✗	✗
1920×1080p@50	✓	✓	✗	✗
1920×1080p@59	✓	✓	✗	✗
1920×1080p@60	✓	✓	✗	✗
1920×1080i@50	✓	✓	✗	✗
1920×1080i@59	✓	✓	✗	✗
1920×1080i@60	✓	✓	✗	✗

Resolutions/Timing (Hz)	Support		Can Convert to 1080p	Can Convert to 4:2:0
	In	Out		
1920×1200p@60 (RB)	✓	✓	✗	✗
2560×1600p@60 (RB)	✗	✗	✗	✗
2048×1080p@23	✓	✓	✗	✗
2048×1080p@24	✓	✓	✗	✗
2048×1080p@25	✓	✓	✗	✗
2048×1080p@29	✓	✓	✗	✗
2048×1080p@30	✓	✓	✗	✗
2048×1080p@50	✓	✓	✗	✗
2048×1080p@59	✓	✓	✗	✗
2048×1080p@60	✓	✓	✗	✗
3840×2160p@23 (4:2:2)	✓	✓	✓	✗
3840×2160p@24 (4:2:2)	✓	✓	✓	✗
3840×2160p@25 (4:2:2)	✓	✓	✓	✗
3840×2160p@29 (4:2:2)	✓	✓	✓	✗
3840×2160p@30 (4:2:2)	✓	✓	✓	✗
3840×2160p@50 (4:2:0)	✓	✓	✓	✗
3840×2160p@59 (4:2:0)	✓	✓	✓	✗
3840×2160p@60 (4:2:0)	✓	✓	✓	✗
3840×2160p@23 (4:4:4)	✓	✓	✓	✗
3840×2160p@24 (4:4:4)	✓	✓	✓	✗
3840×2160p@25 (4:4:4)	✓	✓	✓	✗
3840×2160p@29 (4:4:4)	✓	✓	✓	✗
3840×2160p@30 (4:4:4)	✓	✓	✓	✗
3840×2160p@50 (4:4:4)	✓	✓	✓	✓
3840×2160p@59 (4:4:4)	✓	✓	✓	✓

Resolutions/Timing (Hz)	Support		Can Convert to 1080p	Can Convert to 4:2:0
	In	Out		
3840×2160p@60 (4:4:4)	✓	✓	✓	✓
4096×2160p@23 (4:2:2)	✓	✓	✓	✗
4096×2160p@24 (4:2:2)	✓	✓	✓	✗
4096×2160p@25 (4:2:2)	✓	✓	✓	✗
4096×2160p@29 (4:2:2)	✓	✓	✓	✗
4096×2160p@30 (4:2:2)	✓	✓	✓	✗
4096×2160p@50 (4:2:0)	✓	✓	✓	✗
4096×2160p@59 (4:2:0)	✓	✓	✓	✗
4096×2160p@60 (4:2:0)	✓	✓	✓	✗
4096×2160p@23 (4:4:4)	✓	✓	✓	✗
4096×2160p@24 (4:4:4)	✓	✓	✓	✗
4096×2160p@25 (4:4:4)	✓	✓	✓	✗
4096×2160p@29 (4:4:4)	✓	✓	✓	✗
4096×2160p@30 (4:4:4)	✓	✓	✓	✗
4096×2160p@50 (4:4:4)	✓	✓	✓	✓
4096×2160p@59 (4:4:4)	✓	✓	✓	✓
4096×2160p@60 (4:4:4)	✓	✓	✓	✓

9. ACRONYMS

ACRONYM	COMPLETE TERM
CEC	Consumer Electronics Control
DVI	Digital Visual Interface
EDID	Extended Display Identification Data
HD	High-Definition
HDCP	High-bandwidth Digital Content Protection
HDMI	High-Definition Multimedia Interface
HDR	High Dynamic Range
LPCM	Linear Pulse-Code Modulation
UHD	Ultra-High-Definition
USB	Universal Serial Bus
VGA	Video Graphics Array (640×480@60Hz)
WUXGA	Wide Ultra Extended Graphics Array (1920×1200@60Hz)



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