HDMI-SPL-2108C

2x8 HDMI 1.3 over Single CAT5 Distribution Amplifier

User Manual

Full HD 1080

HDMI™
HIGH-DEFINITION MULTIMEDIA INTERFACE
HDCP™
HIGH-DEFINITION CONTENT PROTECTION

7.1 CH AUDIO

CAT-5e/6/7 SINGLE PATENTED

RoHS Compliance

FC

CE

Made in Taiwan

Safety and Notice

The **HDMI-SPL-2108C 2x8 HDMI 1.3 over Single CAT5 Distribution Amplifier** has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the HDMI-SPL-2108C should be used with care. Please read and follow the safety instructions to protect yourself from possible injury and to minimize the risk of damage to the unit.

● Follow all instructions and warnings marked on this unit.

● Do not attempt to service this unit yourself, except where explained in this manual.

● Provide proper ventilation and air circulation and do not use near water.

● Keep objects that might damage the device and assure that the placement of this unit is on a stable surface.

● Use only the power adapter and power cords and connection cables designed for this unit.

● Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.

The **HDMI-SPL-2108C 2x8 HDMI 1.3 over Single CAT5 Distribution Amplifier** provides the most flexible solution by which the high definition video and high quality audio can be transmitted to different locations over a long distance. The devices are cascadable, allowing you to extend HDMI compliant displays almost anywhere. Installed with a 2x1 HDMI 1.3 compliant switch, one of the input HDMI sources can be duplicated and distributed to up to 8 HDMI enable displays through cost effective Cat-5/5e cables and RJ-45 to HDMI mini-extenders (HDMI-EXT-1111C-RX). With the built in equalization, the input HDMI cable can be extended up to 20 meters long under Full HD, and make the overall transmission distance superior than regular HDMI splitters or matrix switches in the market.

Features

- State-of-the-art Silicon Image (founder of HDMI) chipset embedded for upmost compatibility and reliability

- HDMI 1.3c compliant

- HDCP compliant

- Regenerates the HDMI signal

- Acts as a 2x1 HDMI switch plus a 1x8 HDMI over CAT5 splitter

- Supports default HDMI EDID and has the ability to learn the EDID of displays

- Extends up to 20m of input HDMI cable

- Extends up to 60m of output CAT-5/5e/6 UTP cable under HD (720p / 1080i)

- Extends up to 40m of output CAT-5/5e/6 UTP cable under Full HD (1080p)

- Pure unaltered uncompressed 7.1ch digital HDMI over UTP cable transmission

- Allows cascading

- Perfectly integrated with other HDMI over CAT5 series products
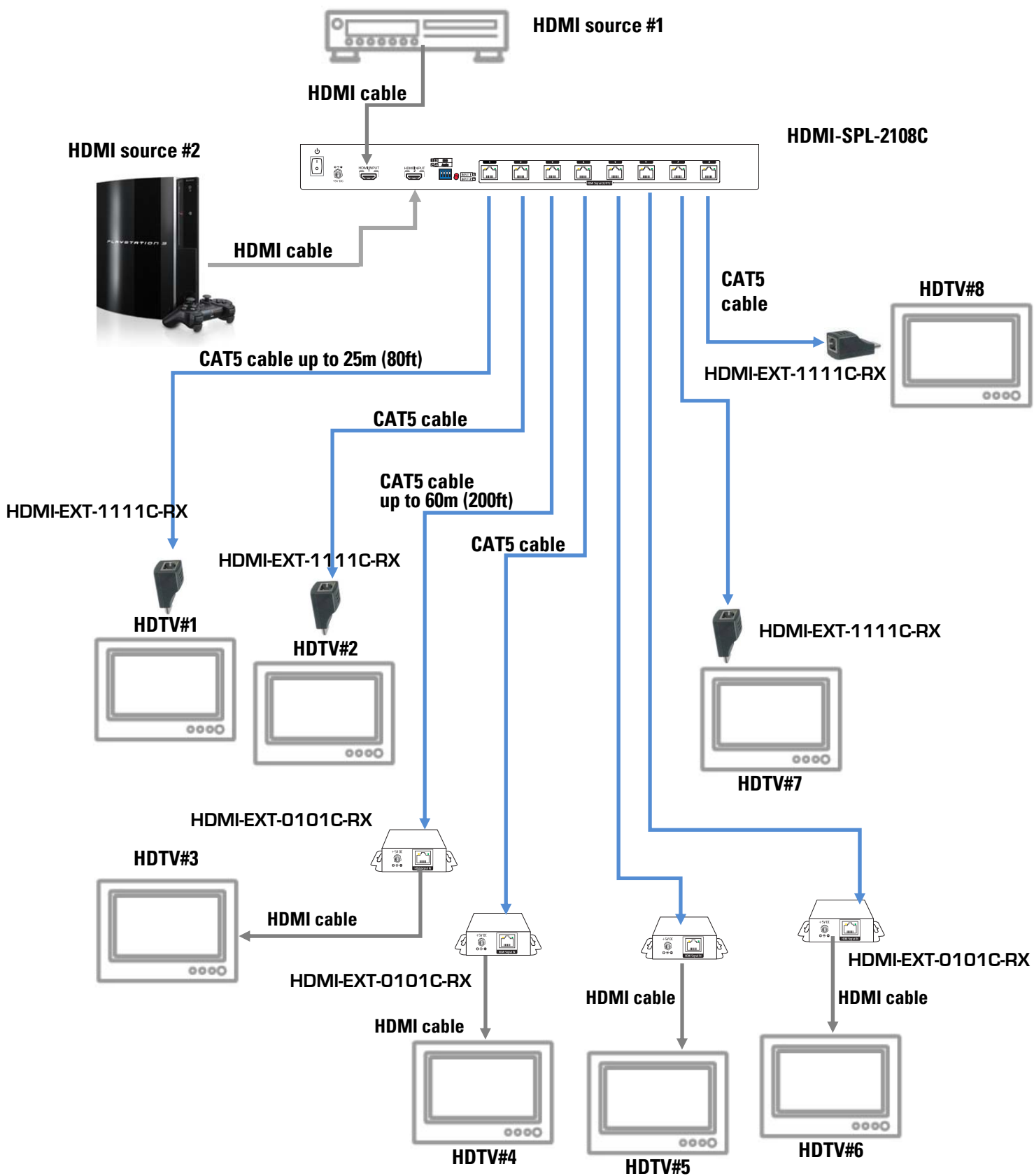
- 1RU rack mountable

> *The length depends on the characteristics and quality of the cables. Higher resolutions and longer transmission distances require low skew cables (<25ns/100m) for best performance. Unshielded CAT6 with metal RJ-45 connectors is recommended.*
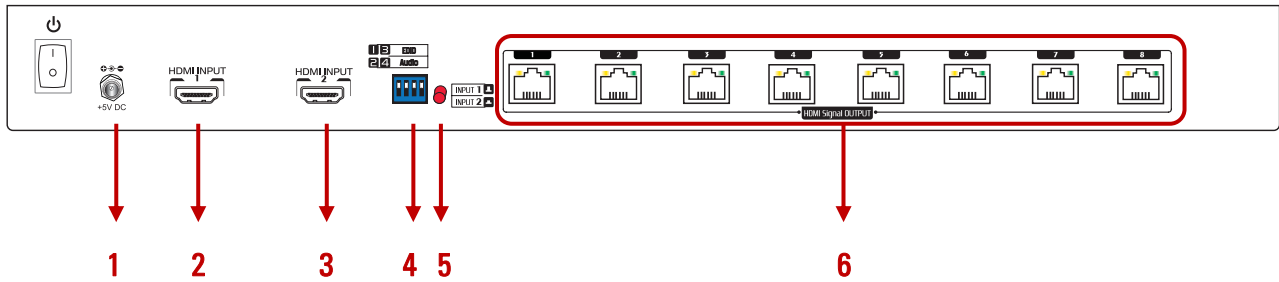
Specifications & Package Contents

Model Name	HDMI-SPL-2108C	HDMI-EXT-0101C-RX	HDMI-EXT-1111C-RX
Technical			
Role of usage	2x8 distribution amplifier Transmitter [TX]	Receiver [long range RX]	Receiver [short range RX]
HDMI compliance	HDMI 1.3c		
HDCP compliance	Yes		
Video bandwidth	Single-link 225MHz [6.75Gbps]		
Video support	480i / 480p / 720p / 1080i / 1080p60		
HDMI transmission over LAN cable	Full HD (1080p): 40m (130ft) [CAT5e] / 50m (165ft) [CAT6] HD (720p/1080i): 50m (165ft) [CAT5e] / 60m (200ft) [CAT6]		
Audio support	Surround sound (up to 7.1ch) or stereo digital audio		
Equalization	Built-in	Adjustable 8-level digital	None
Input TMDS signal	1.2 Volts [peak-to-peak]		
Input DDC signal	5 Volts [peak-to-peak, TTL]		
ESD protection [HDMI-SPL-2108C]	[1] Human body model — ±19kV [air-gap discharge] & ±12kV [contact discharge] [2] Core chipset — ±8kV		
PCB stack-up	4-layer board [impedance control — differential 100Ω; single 50Ω]		
Input	2x HDMI	1x RJ-45	1x RJ-45
Output	8x RJ-45	1x HDMI	1x HDMI
HDMI connector	Type A [19-pin female]	Type A [19-pin female]	Type A [19-pin male]
RJ-45 connector	WE/SS 8P8C with 2 LED indicators		
DIP switch [HDMI-SPL-2108C]	4-pin for EDID learning and audio setting modes		
Rotary control switch	None	HDMI signal level	None
Mechanical	**HDMI-SPL-2108C**	**HDMI-EXT-0101C-RX**	**HDMI-EXT-1111C-RX**
Housing	Metal case	Metal case	Plastic mold
Dimensions [L x W x H] — Model	438 x 158 x 44mm	93 x 90 x 25mm	25 x 45 x 20mm
Dimensions [L x W x H] — Package	230 x 545 x 110mm	175 x 270 x 80mm	115 x 170 x 40mm
Dimensions [L x W x H] — Carton	580 x 570 x 260mm	450 x 370 x 300mm	370 x 450 x 300mm
Weight — Model	1.4kg	175g	22g
Weight — Package	2.2kg	475g	90g
Fixedness	1RU rack-mount with ears	Wall-mounting case with screws	Direct plug-in
Power supply	5V 4A DC	5V 2A DC	None
Power consumption	13 Watts [max]	1 Watt [max]	0.5 Watt [max]
Operation temperature	0~40°C [32~104°F]		
Storage temperature	-20~60°C [-4~140°F]		
Relative humidity	20~90% RH [no condensation]		
Package Contents	1x HDMI-SPL-2108C 2x Rack-mounting ears 1x 5V power adapter 1x User Manual	1x HDMI-EXT-0101C-RX 1x 5V power adapter 1x User Manual	1x HDMI-EXT-1111C-RX 1x User Manual

HDMI source #1

HDMI cable

HDMI-SPL-2108C

HDMI source #2

HDMI cable

CAT5 cable up to 25m (80ft)

CAT5 cable

CAT5 cable
up to 60m (200ft)

CAT5 cable

CAT5
cable

HDTV#8

HDMI-EXT-1111C-RX

HDMI-EXT-1111C-RX

HDMI-EXT-1111C-RX

HDMI-EXT-1111C-RX

HDTV#1

HDTV#2

HDTV#7

HDMI-EXT-0101C-RX

HDTV#3

HDMI cable

HDMI-EXT-0101C-RX

HDMI-EXT-0101C-RX

HDMI cable

HDMI cable

HDMI cable

HDMI cable

HDTV#4

HDTV#5

HDTV#6

HDMI-SPL-2108C

1. **+5V DC**: Power jack for 5V DC

2. **HDMI INPUT 1**: Connect to one HDMI source here

3. **HDMI INPUT 2**: Connect to another HDMI source here

4. **EDID & Audio**: DIP Switch (see more detail in the next section)

5. Push-in button for switching between **HDMI INPUT 1** and **HDMI INPUT 2**

6. **HDMI Signal OUTPUT 1–8**: Link to each HDMI display via a Cat-5/5e/6 cable with a HDMI over CAT5 receiver HDMI-EXT-0101C-RX or HDMI-EXT-1111C-RX

DIP Switch Position[1]		Video	Audio	Description
Pin-1	Pin-2			
Pin-3	Pin-4			
OFF [⬆]	OFF [⬆]	Up to 1080p	Stereo[2]	**Default Mode[3]** – Up to 1080p & stereo audio output for most HDTVs
OFF [⬆]	ON [⬇]	Up to 720p/1080i	Stereo	**Safe Mode[4] –** Enforce the system output at 720p/1080i video and stereo audio for basic compatibility among HDTV
ON [⬇]	OFF [⬆]	Bypass[5]	Bypass[5]	**EDID Learning[6] Mode** – for learning EDID from the display while playing any received HDMI audio format
ON [⬇]	ON [⬇]	Bypass	Stereo	**EDID Learning[6] & Stereo Mode** – for learning EDID from the display while enforcing stereo output if any HDTV cannot play surround sound normally

Note

[1] *Pin-1 and pin-2 are for HDMI INPUT 1; while pin-3 and pin-4 are for HDMI INPUT 2*

[2] *If the HDTV shows video but without audio, please set audio mode to stereo.*

[3] *Factory default setting is pin-1 at OFF[⬆], pin-2 at OFF[⬆], pin-3 at OFF[⬆] & pin-4 at OFF[⬆] for 1080p with stereo.*

[4] *If you encounter any unsolved audio/video output problem during system installation, please dial the DIP switch to pin-1 at OFF[⬆], pin-2 at ON[⬇], pin-3 at OFF[⬆], & pin-4 at ON[⬇] for safe mode to enforce the most compatible 720p stereo output for system check. However, the safe mode cannot be initiated if your HDMI sources are set to enforce 1080p output. In this case, please reconfigure your HDMI source to all resolution output for troubleshooting.*

[5] *Bypass means this device will maintain playing the original format of HDMI signals in video and perhaps audio. By setting at this mode, the users may encounter compatibility issue among different kinds of HDMI sources and displays. If you cannot get the audio and/or video output normally at the system installation, please change the DIP switch setting to default mode or even safe mode to verify the functionality of the device.*

[6] *To learn the EDID of HDMI display for respective HDMI source devices, set (pin-1 and/or pin-3) at ON[⬇] first then connect the HDTV sets to respective HDMI inputs via HDMI cables. Then please wait for 20 seconds for completing the EDID learning procedure. If you want to learn the EDID from another HDTV, you must set pin-1 and/or pin-3) at OFF[⬆] first and repeat this procedure all over again.*

Function Key	Function Description
POWER	Turn on/off HDMI over CAT5e/6/7 transmission on all eight output ports
➕▶	Switch to the other channel from either **HDMI INPUT 1** or **HDMI INPUT 2** that is in play
◀	Switch to the other channel from either **HDMI INPUT 1** or **HDMI INPUT 2** that is in play
SOURCE SELECT 1	Select **HDMI INPUT 1** to be the input source
SOURCE SELECT 2	Select **HDMI INPUT 2** to be the input source
F1	Mute on/off (audio off, video on) on all eight output ports
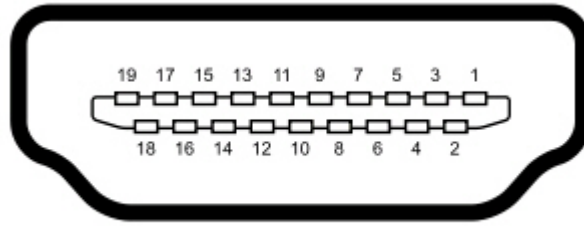
Type A (Receptacle) HDMI

Pin 1	TMDS Data2+	Pin 8	TMDS Data0 Shield	Pin 15	SCL
Pin 2	TMDS Data2 Shield	Pin 9	TMDS Data0–	Pin 16	SDA
Pin 3	TMDS Data2–	Pin 10	TMDS Clock+	Pin 17	DDC/CEC Ground
Pin 4	TMDS Data1+	Pin 11	TMDS Clock Shield	Pin 18	+5 V Power
Pin 5	TMDS Data1 Shield	Pin 12	TMDS Clock–	Pin 19	Hot Plug Detect
Pin 6	TMDS Data1–	Pin 13	CEC		
Pin 7	TMDS Data0+	Pin 14	Reserved (N.C. on device)		

Hardware Installation

Broadcasts HDMI signals to eight remote displays from either of two HDMI sources

1. Turn off all devices, including sources and displays.

2. Connect HDMI sources (such as a Blu-ray Disc player) to the **HDMI INPUT 1** port and/or **HDMI INPUT 2** port.

3. Connect the receivers (HDMI-EXT-0101C-RX or HDMI-EXT-1111C-RX) via Cat-5/5e/6 cables to each **HDMI Signal OUTPUT** port.

4. Plug in 5V 4A DC power supply.

5. Power on the HDMI displays.

6. Power on the HDMI source devices.

1. If the DVI or HDMI device requires the EDID information, please use EDID Reader/Writer to retrieve and provide DVI/HDMI EDID information.

2. All HDMI over CAT5 transmission distances are measured using Belden CAT5e 125MHz LAN cable and ASTRODESIGN Video Signal Generator VG-859C.

3. The transmission length is largely affected by the type of LAN cables, the type of HDMI sources, and the type of HDMI display. The testing result shows solid LAN cables (usually in bulk cable 300m/1000ft form) can transmit a lot longer signals than stranded LAN cables (usually in patch cord form). Shielded STP cables are better suited than unshielded UTP cables. A solid UTP CAT5e cable shows longer transmission range than stranded STP CAT6 cable. For long extension users, solid LAN cables are the only viable choice.

4. EIA/TIA-568-B termination (T568B) for LAN cables is recommended for better performance.

5. To reduce the interference among the unshielded twisted pairs of wires in LAN cable, one can use shielded LAN cables to improve EMI problems, which is worsen in long transmission.

6. Because the quality of the LAN cables has the major effect on how long the transmission limit can achieve and how good is the received picture quality, the actual transmission range is subject to one's choice of LAN cables. For desired resolutions

7.

8. greater than 1080i or 1280x1024, a Cat-6 cable is recommended.

9. If your HDMI display has multiple HDMI inputs, it is found that the first HDMI input [HDMI input #1] generally can produce better transmission performance among all HDMI inputs.

Performance Guide for HDMI over LAN Cable Transmission

Performance rating		Type of LAN cable		
Wiring	**Shielding**	**CAT5**	**CAT5e**	**CAT6**
Solid	Unshielded (UTP)	★★★	★★★★	★★★★★
	Shielded (STP)	★★★	★★★	★★★★
Stranded	Unshielded (UTP)	★	★★	★★
	Shielded (STP)	★	★	★★
Termination		Please use **EIA/TIA-568-B** termination (**T568B**) at any time		