



HDMI-SPL-2201C

HDMI-SPL-2202C

HDMI 1.3 over Single CAT5 1x2 Splitter

User Manual



HDMI-SPL-2201C



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Made in Taiwan



Safety and Notice

The **HDMI-SPL-2201C& HDMI-SPL-2202C 1x2 HDMI 1.3 over Single CAT5 Splitter** has been tested for conformity to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the HDMI-SPL-2201C & HDMI-SPL-2202C 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.

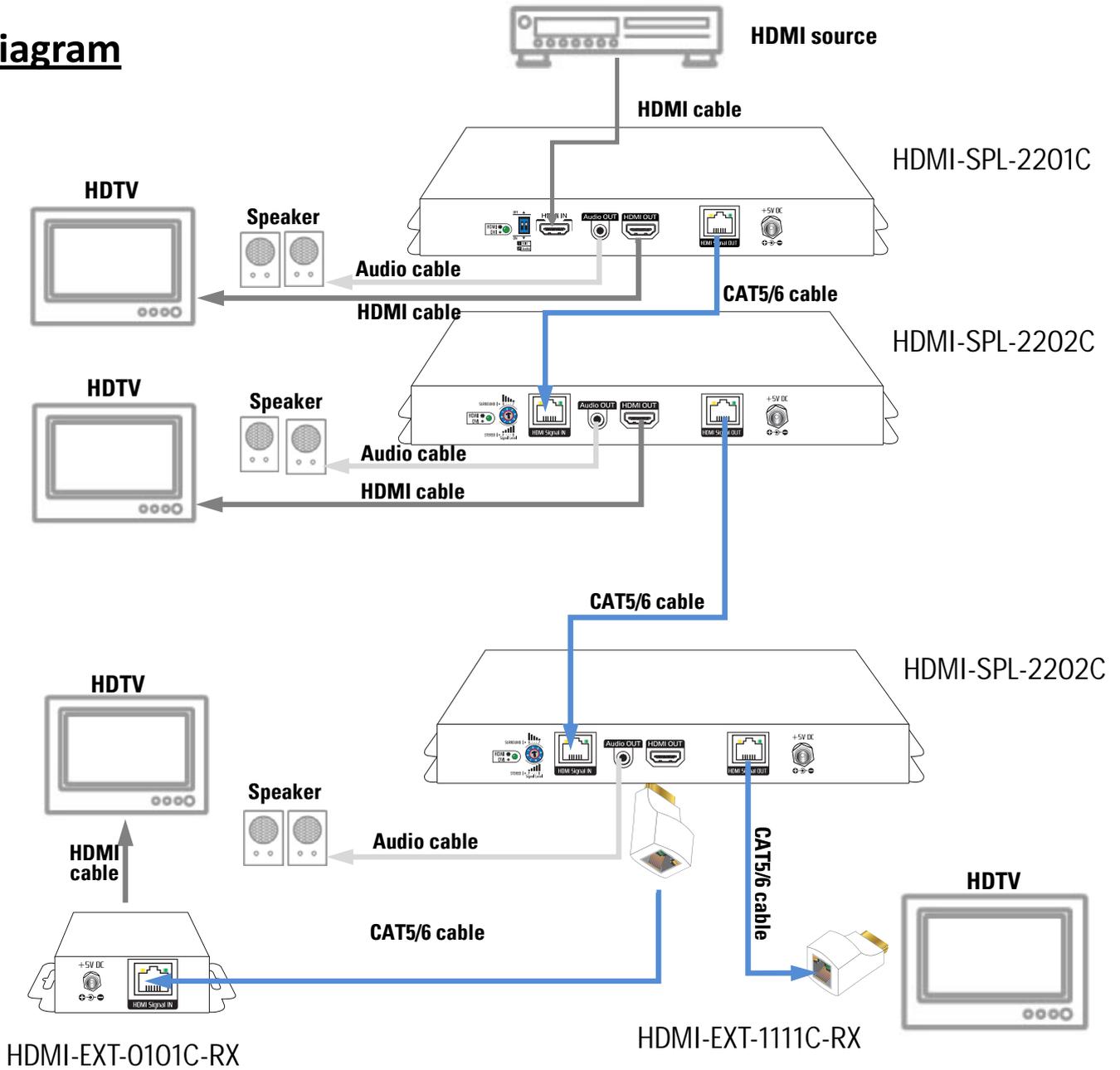
- Follow all instructions and warnings marked on this unit.
- Do not attempt to service this unit yourself, except where explained in this manual.
- Provide proper ventilation and air circulation and do not use near water.
- Keep objects that might damage the device and assure that the placement of this 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.



Introduction

The **1x2 HDMI 1.3 over Single CAT5** Splitter 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 cascable, allowing you to extend HDMI or DVI compliant displays almost anywhere.

Diagram



Features

- State-of-the-art Silicon Image (founder of HDMI) chipset embedded for upmost compatibility and reliability
- HDMI 1.3 compliant
- HDCP compliant
- Regenerates the HDMI signal
- Supports audio output
- Supports default HDMI EDID and has the ability to learn the EDID of displays
- Extends up to 15m of input HDMI cable
- Extends up to 15m of output HDMI cable
- Extends up to 60m (720p / 1080i) of output CAT5/6 cable
- Extends up to 40m (1080p) of output CAT5/6 cable
- Minimize the cable skew by adjustable 8-level equalization control
- Pure unaltered uncompressed 7.1ch digital HDMI over CAT5/6 cable transmission
- Allows cascading
- Perfectly integrated with other HDMI over CAT5 series products
- Wall mountable



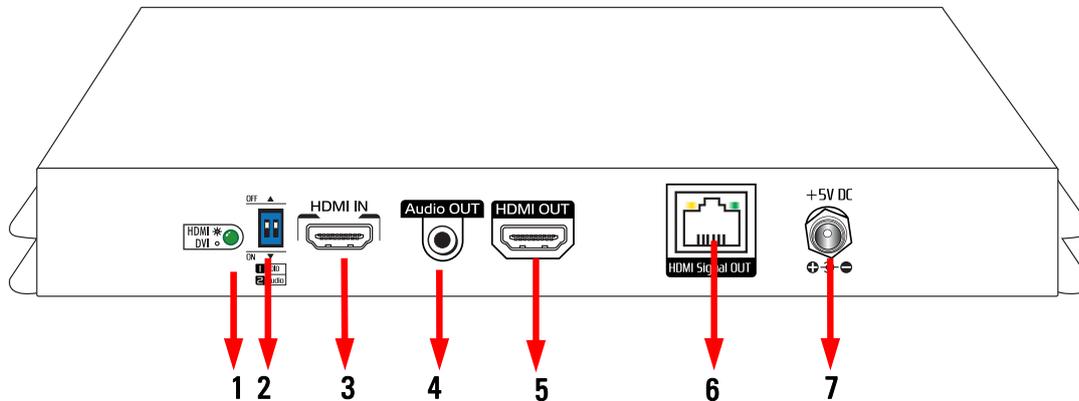
The length depends on the characteristics and quality of the cables. Higher resolutions and longer transmission distances require low skew cables (<25ns/100m) for best performance. Unshielded CAT6 with metal RJ-45 connectors is recommended.

Technical Specifications and Package Content

Model Name	HDMI-SPL-2201C	HDMI-SPL-2202C
Technical		
Role of usage	1x2 distribution amplifier (splitter)	
	Transmitter [TX]	Transceiver [TRX]
HDMI compliance	HDMI 1.3	
HDCP compliance	Yes	
Video bandwidth	Single-link 225MHz [6.75Gbps]	
Video support	480i / 480p / 720p / 1080i / 1080p60 36-bit color depth	
Transmission	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	
Signal equalization	None	8-level digital rotary control
Input TMDS signal	1.2 Volts [peak-to-peak]	
Input DDC signal	5 Volts [peak-to-peak, TTL]	
ESD protection	[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	1x HDMI	1x RJ-45
Output	1x HDMI 1x RJ-45 1x 3.5mm audio socket	1x HDMI 1x RJ-45 1x 3.5mm audio socket
HDMI connector	Type A [19-pin female]	
RJ-45 connector	WE/SS 8P8C with 2 LED indicators	
3.5mm connector	Earphone jack for stereo audio	
DIP switch	2-pin DIP	None
Rotary control switch	None	Adjustable 8-level signal equalization
Mechanical		
HDMI-SPL-2201C		
HDMI-SPL-2202C		
Housing	Metal enclosure	
Dimensions [L x W x H]	Model	108 x 210 x 27mm
	Package	200 x 330 x 95mm
	Carton	495 x 440 x 380mm
Weight	Model	525g
	Package	980g
Fixedness	Wall-mounting case	
Power supply	5V 4A DC	
Power consumption	3 Watts [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-2201C or HDMI-SPL-2202C 1x 5V power adapter 1x User Manual	

Panel Descriptions

HDMI-SPL-2201C 1x2 HDMI 1.3 over Single CAT5 Splitter



1. Input signal format indicator [bright: HDMI signal, dim: DVI signal]
2. DIP switch [see table below]
3. **HDMI IN:** Connect a HDMI source with a HDMI M-M cable here
4. **Audio OUT:** Plug in a local speaker here
5. **HDMI OUT:** Connect to a HDMI display with a HDMI M-M cable here
6. **HDMI Signal OUT:** Link to SP-5012 for cascading; or link to HDMI-EXT-0101C-RX or HDMI-EXT-1111C-RX to another HDMI display with a Cat-5/5e/6 cable
7. **+5V DC:** Connect to 5V 4A DC power supply

DIP Switch for EDID & Audio/Video settings

DIP Switch Position		Video	Audio	Description
Pin#1	Pin#2			
OFF [▲]	OFF [▲]	Up to 1080p	Stereo ¹	Default Mode² – Up to 1080p & stereo audio output for most HDTVs
OFF [▲]	ON [▼]	Up to 720p/1080i	Stereo	Safe Mode³ – Enforce the system output at 720p/1080i video and stereo audio for basic compatibility among HDTVs
ON [▼]	OFF [▲]	Bypass ⁴	Bypass ⁴	EDID Learning Mode⁵ – for learning EDID from the display while playing any received HDMI audio format
ON [▼]	ON [▼]	Bypass	Stereo	EDID Learning & Stereo Mode⁵ – for learning EDID from the display while enforcing stereo output if any HDTV cannot play surround sound normally



Note

¹ If the HDTV shows video but without audio, please try to set audio mode to stereo.

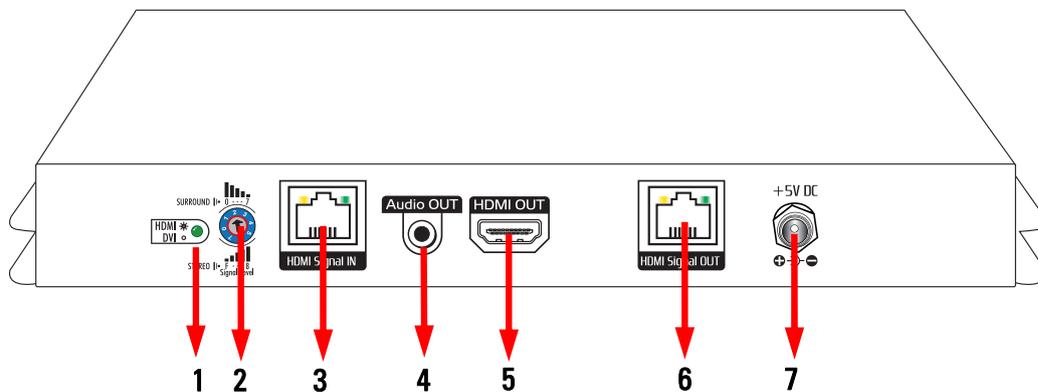
² Factory default: Pin#1-OFF[↑], Pin#2- OFF[↑] for 1080p with stereo.

³ If you encounter any unsolved audio/video output problem during system installation, please turn to Safe Mode (Pin#1-OFF[↑] & Pin#2-ON[↓]) to enforce the most compatible 720p stereo output for system check.

⁴ Bypass means the matrix 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.

⁵ Set Pin#1 at ON[↓] first then connect the HDMI Input to HDTV through a HDMI cable. Wait for 20 seconds. The EDID learning procedure will be finished. If you want to learn the EDID from another HDTV, you must set Pin#1 at OFF first and repeat this procedure.

HDMI-SPL-2202C 1x2 HDMI 1.3 over Single CAT5 Cascading Splitter



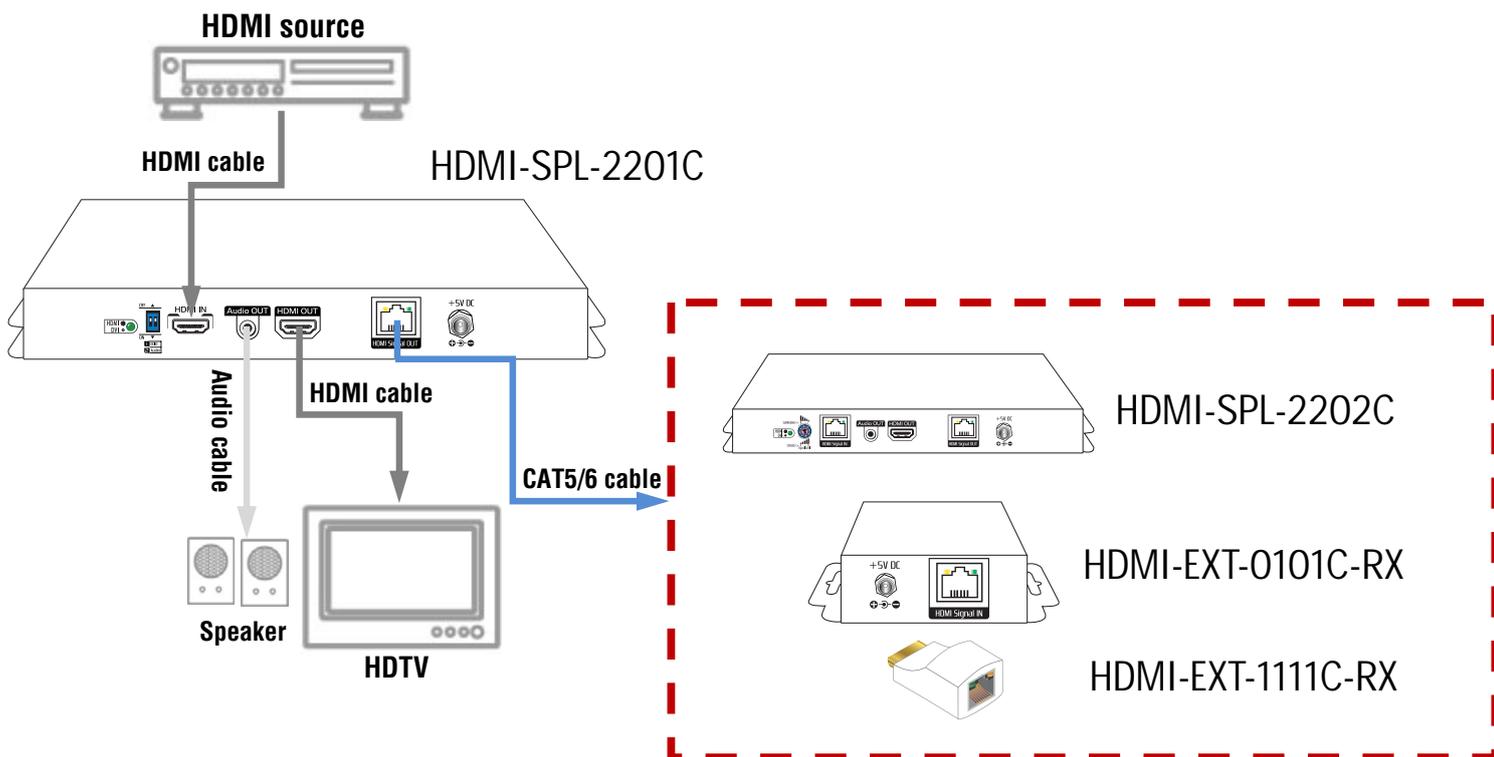
1. Input signal format indicator [bright: HDMI signal, dim: DVI signal]
2. 16-level rotary control: Adjust the 16-level equalization control corresponding to the transmission distance of receiving HDMI signals. For surround sound audio output, please adjust from 0-to-7 (longest-to-shortest transmission length). For stereo audio output, please adjust from 8-to-F (longest-to-shortest transmission length). It is recommended to adjust from 7-to-0 or from F-to-8 to find the optimal visual experience.
3. **HDMI Signal IN:** Link to HDMI-EXT-0101C-TX, HDMI-SPL-2201C, HDMI-SPL-2202C or HDMI-SPL-2208C with a Cat-5/5e/6 cable
4. **Audio OUT:** Plug in a local speaker here
5. **HDMI OUT:** Connect to a local HDMI display with a HDMI male-male cable here; or link to another HDMI-SPL-2201C, HDMI-SPL-2108C or HDMI-SPL-2208C for cascading
6. **HDMI Signal OUT:** Link to another HDMI-SPL-2202C or HDMI-SPL-2208C for cascading; or link to CV-735 or CV-715s to another HDMI display with a Cat-5/5e/6 cable
7. **+5V DC:** Connect to 5V 4A DC power supply

Hardware Installation

HDMI-SPL-2201C

Extends HDMI signals to next cascading device with one local display

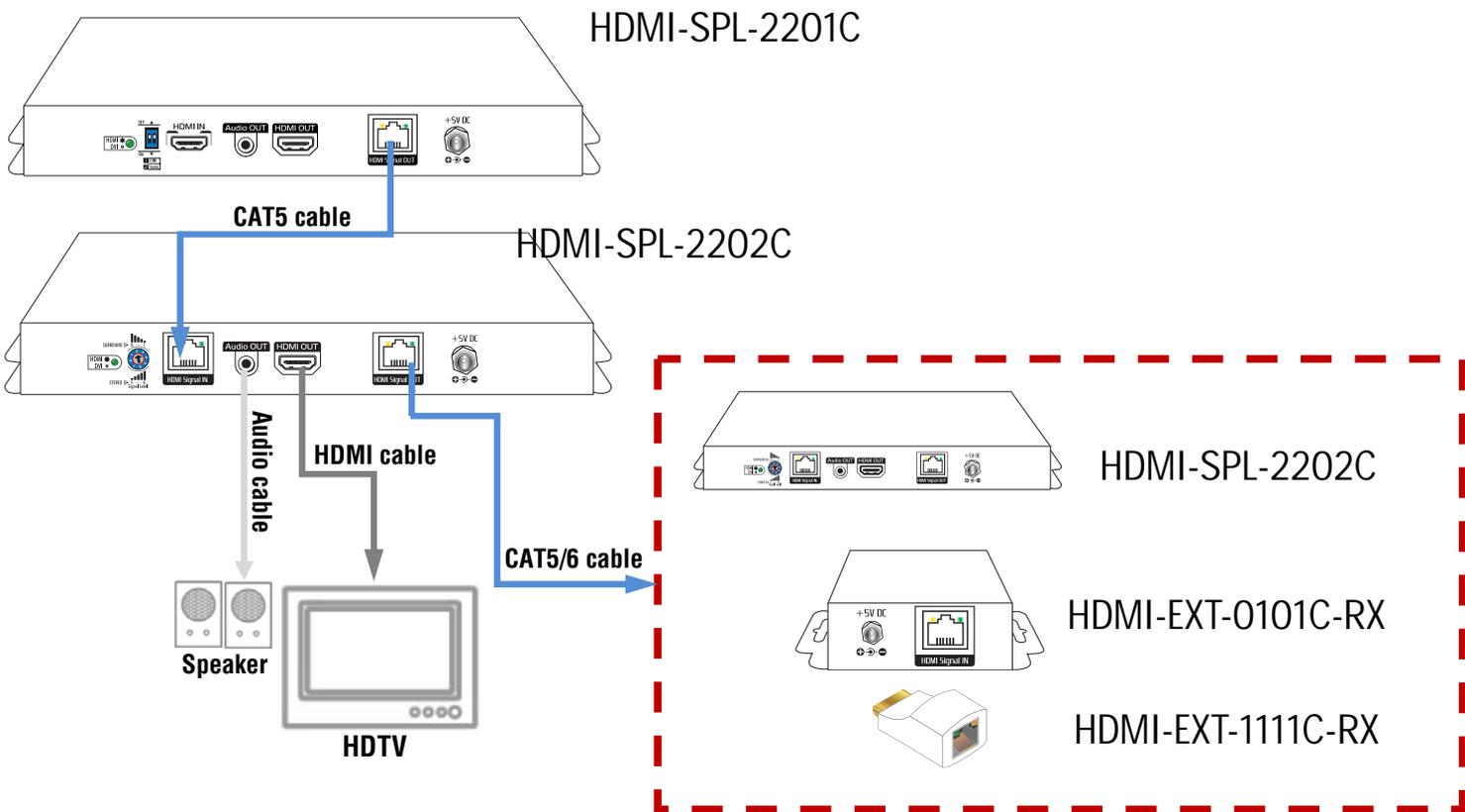
1. Switch off all devices, including monitors.
2. Connect a local HDMI display to the HDMI out of the HDMI-SPL-2201C and then connect a speaker to the 3.5mm audio socket.
3. Connect to a HDMI source (such as a Blu-Ray Disc player)
4. Connect HDMI-SPL-2201C to HDMI-SPL-2202C (for cascading), to HDMI-EXT-0101C-RX (to HDTV at long range), or HDMI-EXT-1111C-RX (to HDTV at mid range) via RJ-45 Out by a CAT5 cable.
5. Plug in 5V 4A DC power supply.
6. Power on the HDTV.
7. Power on the HDMI source.



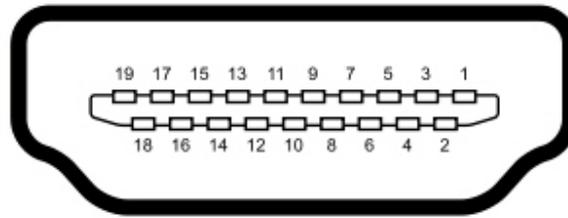
HDMI-SPL-2202C

Relays HDMI signals to next cascading device with one local display

1. Switch off all devices, including monitors.
2. Connect a local HDMI display to the HDMI Out of the HDMI-SPL-2202C and then connect a speaker to the 3.5mm audio socket.
3. Connect to HDMI-SPL-2202C via RJ-45 in by a CAT5 cable.
4. Connect to next HDMI-SPL-2202C (for cascading), to HDMI-EXT-0101C-RX (to HDTV at long range), or HDMI-EXT-1111C-RX (to HDTV at mid range) via RJ-45 out by a CAT5 cable.
5. Plug in 5V 4A DC power supply.
6. Power on the HDTV.



HDMI & RJ-45 Pin Definition



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)		

T568A and T568B Wiring

Pin	T568A Pair	T568B Pair	Wire	T568A Color	T568B Color	Pins on plug face (socket is reversed)
1	3	2	tip	white/green stripe	white/orange stripe	<p>Pin Position</p> <p>8 7 6 5 4 3 2 1</p>
2	3	2	ring	green solid	orange solid	
3	2	3	tip	white/orange stripe	white/green stripe	
4	1	1	ring	blue solid	blue solid	
5	1	1	tip	white/blue stripe	white/blue stripe	
6	2	3	ring	orange solid	green solid	
7	4	4	tip	white/brown stripe	white/brown stripe	
8	4	4	ring	brown solid	brown solid	

Pair of Cat-5/5e/6 Cable	Definition
	TX0-
	TX0+
	TX1-
	TX2-
	TX2+
	TX1+
	TXC-
	TXC+

1. If the DVI or HDMI device requires the EDID information, please use EDID Reader/Writer to retrieve and provide DVI or HDMI display EDID information.
2. All HDMI over CAT5 transmission distances are measured using Belden 1583A CAT5e 125MHz UTP cable and ASTRODESIGN Video Signal Generator VG-859C.
3. The transmission length is largely affected by the type of Cat-5/5e/6 cables, the type of HDMI sources, and the type of HDMI display. The testing result shows solid UTP cables (usually in the form of 300m [1,000ft] bulk cables) can transmit a lot longer signals than stranded UTP cables (usually in the form of fixed length patch cords). Shielded STP cables are better suited than unshielded UTP cables. A solid UTP Cat-5e cable shows longer transmission range than stranded STP Cat-6 cable. For long extension applications, solid UTP/STP cables are the only viable choice.
4. EIA/TIA-568-B termination (T568B) for Cat-5/5e/6 cables is recommended for better performance.
5. To reduce the interference among the unshielded twisted pairs of wires in Cat-5/5e/6 cable, one can use shielded STP cables to improve EMI problems, which is worsen in long transmission.
6. Because the quality of the CAT5/6 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 Cat-5/5e/6 cables. For desired resolutions greater than 1080i or 1280x1024, a Cat-6 cable is recommended.
7. 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 CAT5/6 Cable Transmission

Performance rating		Type of CAT5/6 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		

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