satson®

User Manual

HDMI-EXT-0106C

HDMI extender over single cat.X

Full HD 1080 · WUXGA 1920×1200 · CE · FC · RoHS Compliance · Blu-ray 3D READY · x.v.Color · dts-HD High Resolution Audio · DOLBY TRUE HD · HDCP · HDMI · dvi digital visual interface · 7.1 CH AUDIO · CAT.5e/6/7 SINGLE PATENTED

rev: 110407

Made in Taiwan

Safety and Notice

The **HDMI-EXT-0106C** **HDMI extender over single cat.X** has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the **HDMI-EXT-0106C** 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.

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INTRODUCTION

The **HDMI-EXT-0106C HDMI extender over single cat.X** boosts up your video/audio transmission distance up to 60m (200ft) in HDTV 1080i format, 40m (130ft) in HDTV 1080p format, and 20m (65ft) in HDTV 1080p with 36-bit color depth. HDMI-EXT-0106C also supports the most advanced 3D video format complaint with HDMI 1.4 specification and therefore guarantees the highest 3D video compatibility on the market. With only one cost effective Cat.5/5e/6 cable, users can readily extend HDTV sources from DVD players, Blu-ray Disc player, PS3, PC, and any other kinds of sources compliant with TMDS to distant display monitors including HDMI/DVI enabled TV sets or LCD PC monitors. This flexibility makes HDCP compliant DVD players or PS3 transmit utmost high quality video and audio with a greater distance at the minimal cost, when integrating several components apart.

The HDMI-EXT-0106C includes two units: transmitting unit HDMI-EXT-0106C-TX and receiving unit HDMI-EXT-0106C-RX. The transmitting unit is used to capture the input HDMI/DVI signals and carry the signals via one cost effective Cat.5/5e/6 cable. The receiving unit is responsible for equalizing the transmitted HDMI signal. The transmission distance between the sending and receiving units can be up to 60m (200ft) at HD 720p or 1080i; or 40m (130ft) at Full HD 1080p. With an 8-level equalization rotary control on the receiving unit, users can adjust the equalization strength to the received HDMI signals accordingly, and therefore optimize the transmission distance between source and destination.

FEATURES

- HDMI 1.3a compliant [3D video]
- Extends the transmission up to 60m (200ft) from the HDMI source at HD 1080i or 720p 24-bit color
- Extends the transmission up to 40m (130ft) from the HDMI source at Full HD 1080p 24-bit color
- Extends the transmission length up to 20m (65ft) from the HDMI sources under Full HD resolution (1080p at 36-bit color depth)
- HDCP 1.1 compliant
- Minimizes the cable skew by adjustable 8-level equalization control
- Pure unaltered uncompressed 7.1ch digital HDMI over Cat.5/5e/6 cable transmission
- DTS-HD and Dolby TrueHD high bit rate audio support
- Allows cascading
- Wall mounting housing design for easy and robust installation
- Perfectly integrated with other HDMI over CAT5 series products

The claimed transmission distance here is subject to the grade of installed cable(s), source device and display.

For over CAT5/COAX transmission, the cable(s) has to be solid, not stranded. Any keystone jack along the transmission path will kill the transmission performance significantly!

SPECIFICATIONS

Model Name		HDMI-EXT-0106C	
Technical		**HDMI-EXT-0106C [TX]**	**HDMI-EXT-0106C [RX]**
Role of usage		Transmitter [Tx]	Receiver [Rx]
HDMI compliance		High Speed HDMI - Deep Color & Full 3D support	
HDCP compliance		Yes	
Video bandwidth		Single-link 225MHz [6.75Gbps]	
Video support		480i / 480p / 720p / 1080i / 1080p60 up to 36-bit color	
HDMI over UTP transmission [24-bit]		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		8-level digital control at RX	
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 RJ-45	1x HDMI
HDMI connector		Type A [19-pin female]	
RJ-45 connector		WE/SS 8P8C with 2 LED indicators	
Rotary switch		Mode	Signal level
Mechanical			
Housing		Metal enclosure	
Dimensions [L x W x H]	Model	[TX/RX] 91 x 60 x 26mm [3.6" x 2.4" x 1"]	
	Package	270 x 175 x 80mm [10.6" x 6.9" x 3.1"]	
	Carton	450 x 370 x 300mm [1'6" x 1'3" x 11.8"]	
Weight	Model	200g [7 oz]	196g [6.9 oz]
	Package	900g [2 lbs]	
Fixedness		Wall-mounting case with screws	
Power supply		5V 2A DC	
Power consumption		4 Watt [max]	1.5 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]	

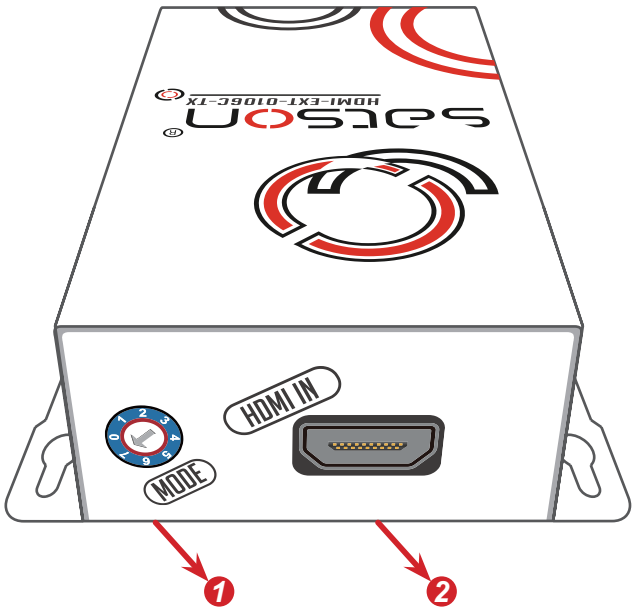
PACKAGE CONTENTS

- 1x HDMI-EXT-0106C [TX & RX]
- 2x DC 5V 2A wall wart
- 1x User Manual

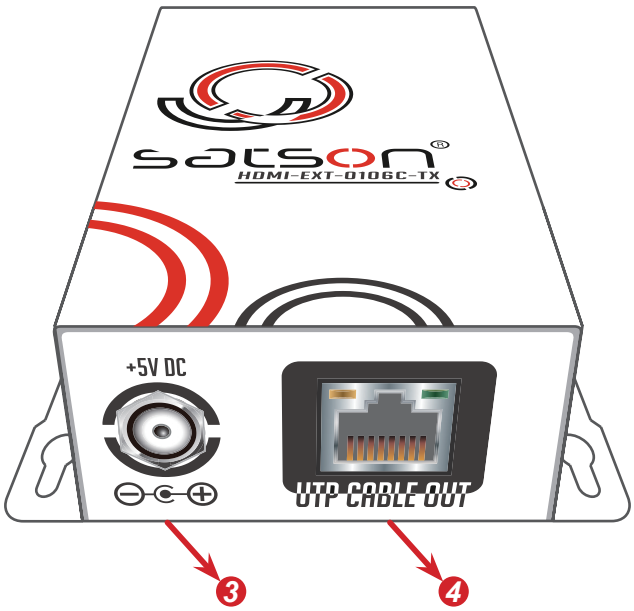
PANEL DESCRIPTIONS

Transmitting unit ► HDMI-EXT-0106C-TX

Input Panel



Output Panel



❶ **MODE:**

0 = [Video] –2D / Full-HD 24bit 1080p@60 [Audio] – up to 7.1ch surround sound
1 = [Video] –2D / Full-HD 24bit 1080p@60 [Audio] – up to 2.0ch surround sound
2 = [Video] –2D / Full-HD 36bit 1080p@60 [Audio] – up to 7.1ch surround sound
3 = [Video] –2D / Full-HD 36bit 1080p@60 [Audio] – up to 2.0ch surround sound
4 = [Video] –2D / HD 24bit (1080p@30)(1080i@60)(720p@60) [Audio] – up to 7.1ch surround sound
5 = [Video] –2D / HD 24bit (1080p@30)(1080i@60)(720p@60) [Audio] – up to 2.0ch surround sound
6 = [Video] –3D / Full-HD 36bit (1080p@60) [Audio] – up to 2.0ch surround sound
7 = [EDID Learning Mode] – learns EDID from the display

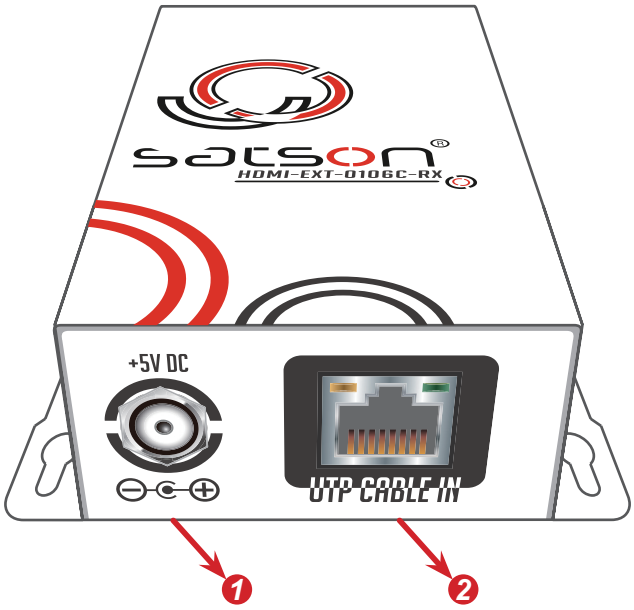
❷ **HDMI IN:** Connect to a HDMI source with a HDMI male-male cable

❸ **+5V DC:** Connect to 5V DC power supply

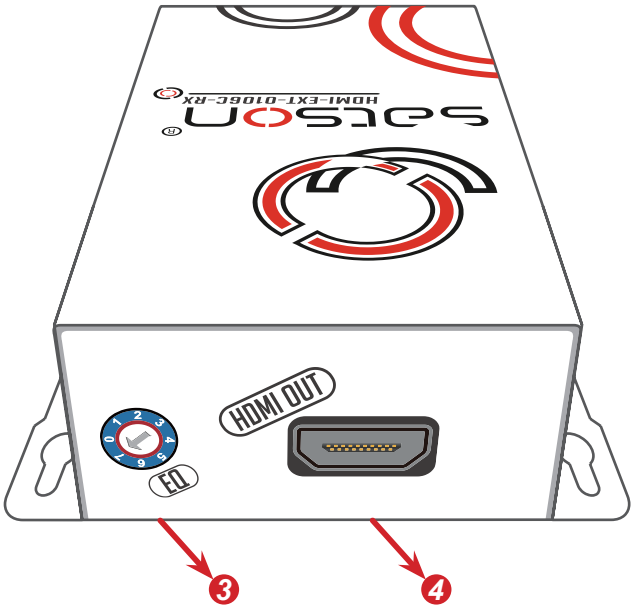
❹ **UTP CABLE OUT:** Plug in a Cat.5/5e/6 cable that needs to be linked to the receiving unit HDMI-EXT-0106C-RX

Receiving unit ► HDMI-EXT-0106C-RX

Input Panel

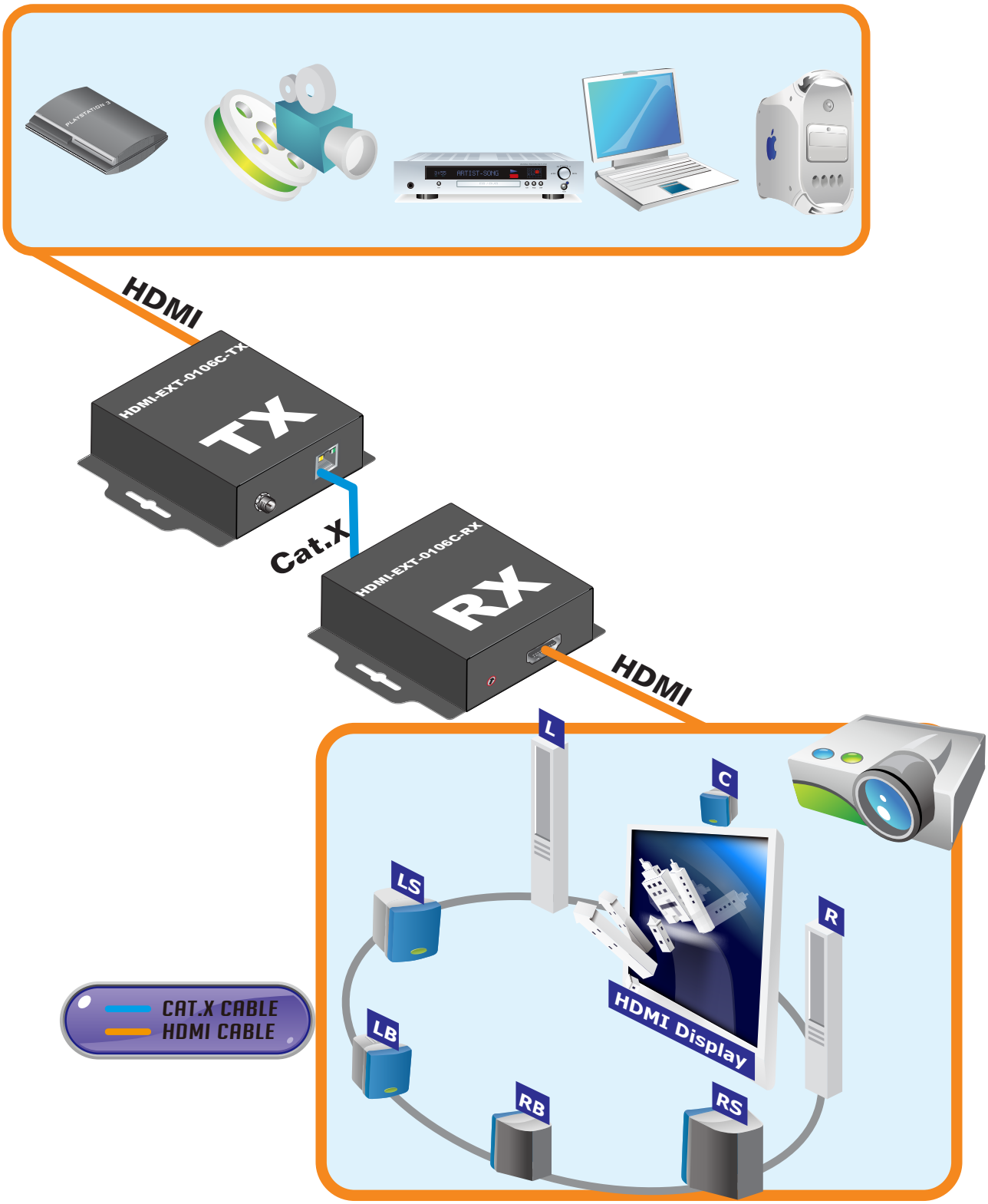


Output Panel



1. **+5V DC:** Connect to 5V DC power supply unit.
2. **UTP CABLE IN:** Plug in a Cat-5/5e/6 cable that needs to be linked to the transmitting unit HDMI-EXT-0106C-TX
3. **EQ:** Adjust the 8-level signal equalization control to the received HDMI signals. The HDMI signal level varies from 0 (strongest) to 7 (weakest) for respective transmission length from longest possible range to short distance. Dial the Signal Level from 7 to 0 and stop turning the rotary switch whenever the audio/video is playing normally. Inappropriate signal level setting may cause overpowering issues that would shorten the product's life significantly!
4. **HDMI OUT:** Connect to a HDMI display with a HDMI male-male cable

CONNECTION DIAGRAM



HARDWARE INSTALLATION

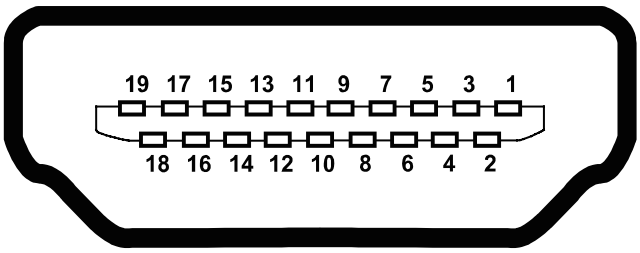
1. Connect a HDMI or DVI source (such as a Blu-ray Disc player) to the transmitting unit HDMI-EXT-0106C-TX.
2. Connect a HDMI or DVI display (such as a LCD TV) to the receiving unit HDMI-EXT-0106C-RX.
3. Connect a Cat-5/5e/6 cable between the transmitting and receiving units.
4. Make sure this Cat-5/5e/6 cable is tightly connected and not loose.
5. Plug in 5V DC power supply unit to the power jack of the receiving unit HDMI-EXT-0106C-RX.
6. Plug in 5V DC power supply unit to the power jack of the transmitting unit HDMI-EXT-0106C-TX.
7. **If you see flickering or blinking image on the display, please adjust the rotary control switch to improve the cable skew. 0 stands for the strongest HDMI signal level for longest possible transmission length while 7 stands for the weakest HDMI signal level for short transmission length. Please adjust the signal level from 7 to 0 and stop turning the rotary switch whenever the audio/video is playing normally. Inappropriate signal level setting may cause overpowering issue that would shorten the product life significantly!**

EDID LEARNING

1. Turn off HDMI-EXT-0106C-TX and disconnect the Cat.5/5e/6 between HDMI-EXT-0106C-TX and HDMI-EXT-0106C-RX.
2. Connect the HDMI display to "**HDMI IN**" on the HDMI-EXT-0106C-TX with a HDMI cable.
3. Set "**MODE**" on the transmitting unit HDMI-EXT-0106C-TX at **7**.
4. Turn on the HDMI-EXT-0106C-TX.
5. The LED on the RJ45 of HDMI-EXT-0106C-TX will dim and light again, which indicates the EDID learning procedure is complete.
6. Unplug the HDMI cable from the display and follow the instruction in [Hardware Installation] to set up the HDMI-EXT-0106C and enjoy the experience.

PIN DEFINITION

HDMI

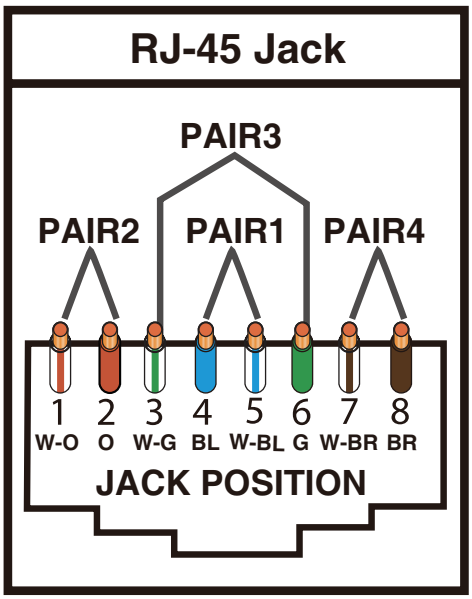


Type A (Receptacle) HDMI

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	+5V 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)		

CAT5 [RJ45]

Data Link TIA/EIA-568-B		
PIN	Color	Function
1	W-O	TX0-
2	O	TX0+
3	W-G	TX1-
4	BL	TX2-
5	W-BL	TX2+
6	G	TX1+
7	W-BR	TXC-
8	BR	TXC+



NOTICE

1. When adjusting the signal level on the receiver unit, please dial the rotary control switch from 7 to 0 and stop turning the rotary switch whenever the audio/video is playing normally. Inappropriate signal level setting may cause overpowering issue that would shorten the product life significantly!
2. 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.
3. All HDMI over CAT5 transmission distances are measured using Belden 1583A CAT5e 125MHz UTP cable and ASTRODESIGN Video Signal Generator VG-859C & VG-870B.
4. 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.
5. EIA/TIA-568-B termination (T568B) for Cat-5/5e/6 cables is recommended.
6. 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.
7. 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.
8. 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

Performance rating		Type of category 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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