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VIDEO WALLS VIDEO PROCESSORS
VIDEO MATRIX SWITCHES
EXTENDERS SPLITTERS WIRELESS
CABLES & ACCESSORIES

HDMI HDBaseT CAT5/6/7 Extender Set with Bi-directional/IR/RS-23/PoC



Model #: HBT2-C6BPOC-SET

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Product Application & Market Sectors



Corporate



House Of Worship



Military



Residential



Education



Industrial



Medical



Aviation



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SECTION I: GETTING STARTED

I.1 IMPORTANT SAFEGUARDS

Please read all of these instructions carefully before you use the device. Save this manual for future reference.

What the warranty does not cover

- Any product, on which the serial number has been defaced, modified or removed.
- Damage, deterioration or malfunction resulting from:
- Accident, misuse, neglect, fire, water, lightning, or other acts of nature, unauthorized product modification, or failure to follow instructions supplied with the product.
- Repair or attempted repair by anyone not authorized by us.
- Any damage of the product due to shipment.
- Removal or installation of the product.
- Causes external to the product, such as electric power fluctuation or failure.
- Use of supplies or parts not meeting our specifications.
- Normal wear and tear.
- Any other causes which does not relate to a product defect.
- Removal, installation, and set-up service charges.

I.2 SAFETY INSTRUCTIONS

The HBT2-C6BPOC-SET, HDMI HDBaseT Extender SET has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the HBT2-C6BPOC-SET should be used with care. Read the following safety instructions to protect yourself from possible injury and to minimize the risk of damage to the unit.





- ⚠ Do not dismantle the housing or modify the module.
- ⚠ Dismantling the housing or modifying the module may result in electrical shock or burn.
- ⚠ Refer all servicing to qualified service personnel.
- ⚠ Do not attempt to service this product yourself as opening or removing housing may expose you to dangerous voltage or other hazards
- ⚠ Keep the module away from liquids.
- ⚠ Spillage into the housing may result in fire, electrical shock, or equipment damage. If an object or liquid falls or spills on to the housing, unplug the module immediately.
- ⚠ Have the module checked by a qualified service engineer before using it again.
- ⚠ Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.



1.3 REGULATORY NOTICES FEDERAL COMMUNICATIONS COMMISSION (FCC)

This equipment has been tested and found to comply with Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

Any changes or modifications made to this equipment may void the user's authority to operate this equipment.

Warning symbols	Description
	ONLY USE THE PROVIDED POWER CABLE OR POWER ADAPTER SUPPLIED. DO NOT TAMPER WITH THE ELECTRICAL PARTS. THIS MAY RESULT IN ELECTRICAL SHOCK OR BURN.
	DO NOT TAMPER WITH THE UNIT. DOING SO WILL VOID THE WARRANTY AND CONTINUED USE OF THE PRODUCT.
	THE VIDEO BOARDS ARE VERY SENSITIVE TO STATIC. PLEASE ENSURE IF RACK MOUNTED OR INSTALLED ON A SURFACE, IT SHOULD BE IN A GROUNDED ENVIROMENT.
	<div>⚠ WARNING</div> <div>Read & understand user guide before using this device.</div> <div>Failure to follow the proper installation instructions could result in damage to the product and preventing expected results.</div>

2. INTRODUCTION

The Avenview HBT2-C6BPOC-SET HDMI HDBaseT CAT5/6/7 Extender SET extends 4K@60 high definition video, multi-channel digital audio, data formats IR/RS232 and POC up to 100m (330ft) to any display over Cat5e/6.

This unique model allows 4K 4:4:4 chroma sampling input to be displayed as 4K 4:2:0 at 8 bits so that it can be extended uninterruptibly over long Cat5e/6 cables.

Video Signals: 4K2K@60 (Ultra HD), 3D, 8/10/12 Deep Color, and Full HD 1080p@60 Hz/48-bit color depth.

Audio signals: Uncompressed 7.1ch digital

Data Signals: Bi-Directional IR signals 30 KHz to 50 KHz and RS-232 over CAT5/6.

The HBT2-C6BPOC-SET includes two (2) units: Sending unit (TX) HBT2-C6BPOC-S and Receiving unit (RX) HBT2-C6BPOC-R with one (1) UTP output port which allows the user to extend video, audio and data signals up to 100m (330ft). The HBT2-C6BPOC-SET also allows bi-directional IR control and RS-232 connected to the TX unit, allowing the users to use any IR remote and third party RS-232 control at the monitor side. The HBT2-C6POE-SET offers the most convenient solution for extending an application over long distances with A/V transmission @ 10G.

Features

- Input: HDMI with 3D & 4K2K@60 (Y4:4:4), 1080p, HDCP 2.2 and DVI compliant.
- Distance: Full HD 1080p up to 100m (330ft) from the HDMI source 48-bit and 4K2K@60 up to 80m (264ft).
- Support PoC (Power over Cable) power either units from TX or RX side with one 24V power supply only.
- Supports HDCP 2.2 & EDID Bypass.
- Supports CEC bypass.
- Audi Supported: 7.1CH, Dolby TrueHD, Dolby Digital Plus and DTS-HD Master Audio.
- Support full frequency IR signal from 20KHz to 60KHz.
- Bi-directional IR pass-through.
- 3D support: Follow by Display / TV's EDID.
- Full Duplex RS-232 control up to 115,200 bps.
- Wall mounting bracket included.




NOTE

The QUALITY and TRANSMISSION of the video signals depends on the characteristics and quality of the UTP 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.



2.1 PACKAGE CONTENTS

Before you start the installation of the Extender/Splitter, please check the package contents.

1	HBT2-C6BPOC-SET ICLUDES: HBT2-C6BPOC-S (TX) X 1 HBT2-C6BPOC-R (RX) X 1	
2	POWER ADAPTER (24V 1.5A DC) X 1	
3	USER'S MANUAL X 1	

2.2 BEFORE INSTALLATION

- Put the product in an even and stable location. If the product falls down or drops, it may cause an injury or malfunction.
- Don't place the product in too high temperature (over 50°C), too low temperature (under 0°C) or high humidity.
- Use the DC power adapter with correct specifications. If inappropriate power supply is used then it may cause a fire.
- Do not twist or pull by force ends of the UTP cable. It can cause malfunction.



To achieve best results with our HBT2-C6BPOC-SET we highly recommend a premium quality 26 or 24 AWG HDMI cable with the below specifications to maintain signal integrity and distances.

- Length: 5m (16ft) to 15m (50ft)
- Bandwidth: 10.2 Gbps data transfer rate
- Supports Resolution: Up to 3840x2160 @ 60Hz and 4096x2160 @ 60Hz, 1080p @ 24/50/60Hz/3D
- Conductor gauge: 26 / 24 AWG
- Deep Color
- 3D Capable
- CEC
- Ethernet Channel
- Audio Return Channel
- Connector 1: HDMI (Type A) Male
- Connector 2: HDMI (Type A) Male



2.3 APPLICATION DIAGRAM

HBT2-C6BPOC-SET

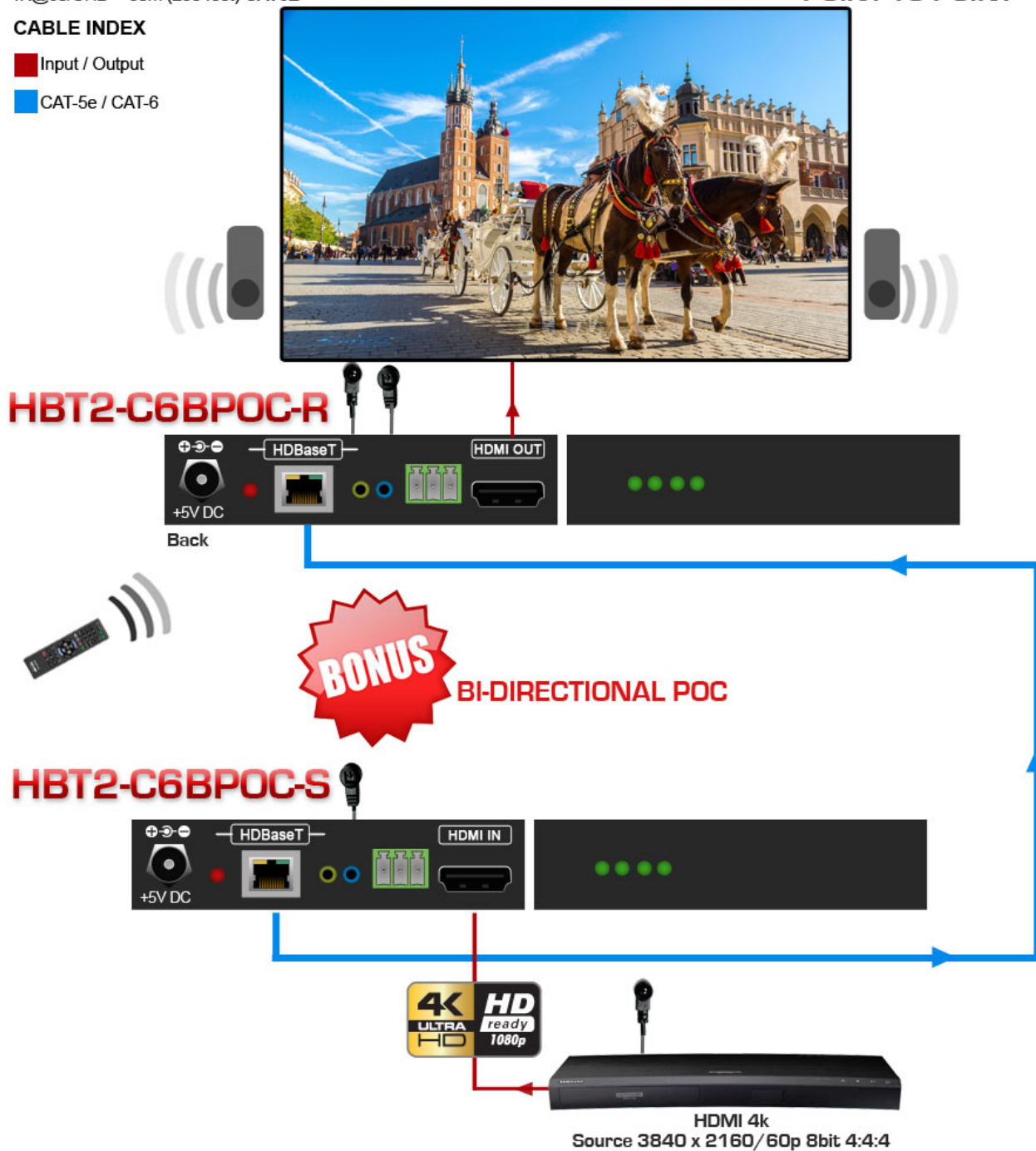
1080p60 = 100m (330 feet) CAT6E
4K@60/UHD = 80m (230 feet) CAT6E

CABLE INDEX

- Input / Output
- CAT-5e / CAT-6

Application Diagram 1

POINT TO POINT



2.4 PANEL DESCRIPTION

2.4.1 INPUT PANEL (Transmitter, HBT2-C6BPOC-S) Front



1. LED LIGHTS:

- POWER LED: Steady LED light ON
- STATUS LED: Blinking LED Light indicates
- LINK LED: Always ON LED light indicates link is established
- HDCP LED: HDCP ON - Always ON LED Light
HDCP OFF - LED light blinking

2.4.2 INPUT PANEL (Transmitter, HBT2-C6BPOC-S) Rear



2. **POWER JACK:** Power supply connection

3. **CAT5/6:** Connect UTP cable for transmitting video, audio , data and POC upto 100m to the Receiver unit.

4. **IR EXTENDER:** Plug the IR Extender cable for IR signal being received. Place IR Extender within direct line of site with the IR Remote.

5. **IR BLASTER:** Plug the IR Blaster cable for IR signal being transmitted. Place IR Blaster within direct site of the device being controlled.

6. **RS-232:** Connect to a device that has the ability to send control commands (PC or laptop via D-Sub 9-pin male cable)

7. **HDMI IN:** Connect HDMI source Max 35ft via HDMI Cable Blu-ray player or Digital player



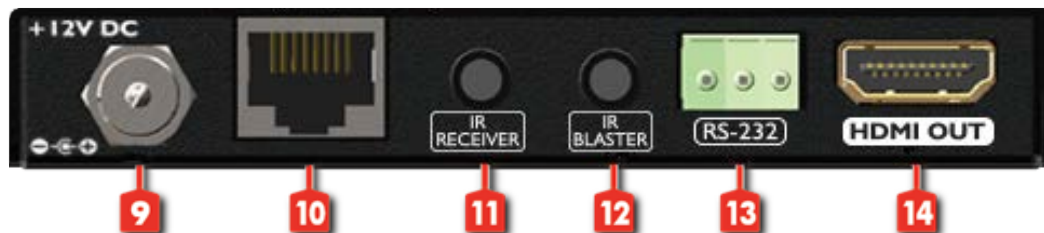
2.4.3 INPUT PANEL (Receiver, HBT2-C6BPOC-R) Front



8. LED LIGHTS:

- POWER LED: Steady LED light ON
- STATUS LED: Blinking LED Light indicates
- LINK LED: Always ON LED light indicates link is established
- HDCP LED: HDCP ON - Always ON LED Light
HDCP OFF - LED light blinking

2.4.4 INPUT PANEL (Receiver, HBT2-C6BPOC-R) Rear



9. **POWER JACK:** Power supply connection

10. **CAT5/6:** Connect UTP cable for receiving video, audio , data and POC upto 100m from the Transmitter unit.

11. **IR EXTENDER:** Plug the IR Extender cable for IR signal being received. Place IR Extender within direct line of site with the IR Remote.

12. **IR BLASTER:** Plug the IR Blaster cable for IR signal being transmitted. Place IR Blaster within direct site of the device being controlled.

13. **RS-232:** Connect to a device that has the ability to send control commands (PC or laptop via D-Sub 9-pin male cable)

14. **HDMI OUT:** Connect to HDMI Display/ Monitor



3. IR EXTENDERS

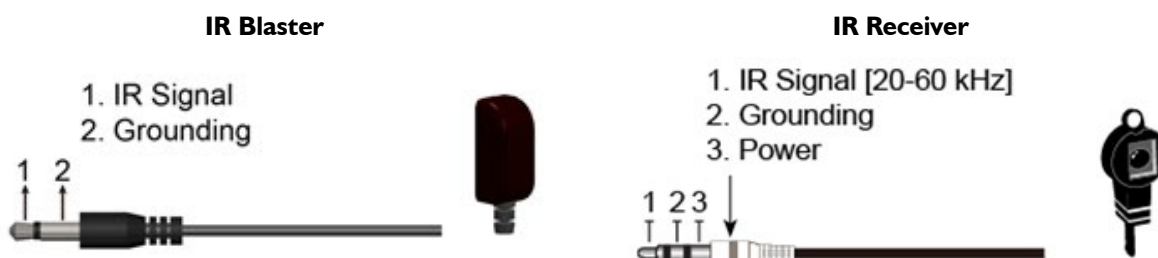


IR Sockets

IR BLASTER: plug in the IR blaster to emit all IR command signals received from the IR receiver from the other end to control the devices corresponding to the IR signals.

IR RECEIVER: plug in the IR receiver to receive all IR command signals from the IR remote controls of the corresponding devices.

Definition of IR 3.5mm Jack



WARNING

NOTE: Incorrect placement of IR Blaster and IR Receiver into the extender may result in the failure of the IR extenders.

Please check carefully before plugging in the IR extender to the respective IR sockets.

It is clearly marked and color coded
BLUE: IR BLASTER **GREEN:** IR RECEIVER

WARRANTY WILL NOT COVER THE DAMAGE.

4. INSTALLATION (HBT2-C6BPOC-SET)

To setup Avenview HBT2-C6BPOC-SET please follow these steps for connecting to a device:

1. Turn off all devices including monitors / TV
2. Connect to a HDMI source (such as a Blu-Ray Disc player) to the Transmitter HBT2-C6BPOC-S
3. Connect HBT2-C6BPOC-R with a CAT5E/CAT6 cable with shielded ends, then connect to display with HDMI cable.
4. Plug in 24V 1.5A DC Power (supplied).
5. Power on the HDMI display
6. Power on HDMI Sources.

5. GENERAL TROUBLESHOOTING

PROBLEM	POSSIBLE SOLUTION
NO IMAGE	<ul style="list-style-type: none">• Check if connection to the source and the display are correct.• Ensure that display device supports 480p, 720p and 1080p 4K@60 resolution• Terminated to 568B standard with Shielded Ends Recommended• High Quality CAT5/6 Cable helps signal transmission• Please use the supplied power supply• Check LED Link light see (Section 3 Panel Description)
SCREEN DEFECTS APPEAR	<ul style="list-style-type: none">• This product supports up to 1080p and 4K@30 resolution.• Check the HDMI connection• If outputting from a PC. Check the maximum resolution range of the graphics card.• Check all connections are seated properly
SET-TOP BOX NO PICTURE	<ul style="list-style-type: none">• HDBaseT and HDMI 1.3 standards support CLOCK STRETCHING for i2c buss protocol• Example set top boxes like Scientific Atlantic results no picture. This can be resolved by swapping out the box for a newer version that supports HDMI 1.3 not HDMI 1.2
NO INFRARED COMMUNICATION	<ul style="list-style-type: none">• Ensure the UTP cable is run within the wall away from EMI and High Voltage power Lines.• Please check manual of device to ensure proper placement of IR Blaster on IR EYE.• Some LED /Plasma TV have EMI interference with the IR receiver, please place the IR Rx 3-6" away from Screen











RECOMMENDED TEST	
END-TO-END TESTING	HDBaseT system, a final end-to-end test of all the A/V components should take place. These tests include checking the HDMI stream at the far end (sink end), the clock rate, frame compare, video pattern, audio, EDID and HDCP with Quantum 780 (recommended)
PASSIVE MONITORING:	Passive monitoring enables an integrator to view the HDCP transactions, EDID exchange, as well as the connection events between the actual devices in the network.

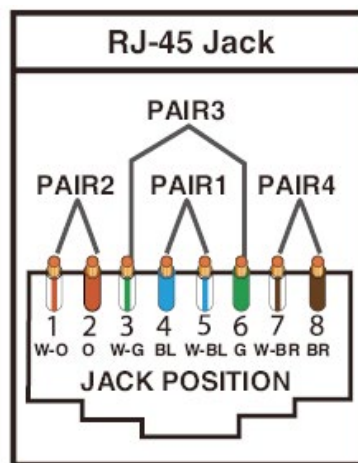
Note

Additional info on Guidelines to Test & Troubleshoot HDBaseT Systems

Can be retrieved from our website under the category Downloads for this product HBT-C6BPOC-SET

6. CABLE SPECIFICATION

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+



PERFORMANCE GUIDE FOR HDMI OVER CATEGORY CABLE TRANSMISSION

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		



7. SPECIFICATIONS

ITEM	DESCRIPTION	
UNITS	HBT2-C6BPOC-S	HBT2-C6BPOC-R
UNIT DESCRIPTION	HDMI Transmitter	HDMI Receiver
HDMI COMPLIANCE	HDMI, full 3D & 4K2K@60	
HDCP	2.2	
VIDEO BANDWIDTH	Single-link 340MHz [10.2Gbps]	
INPUT RESOLUTIONS	480i / 480p / 720p / 1080i / 1080p60 / 3840x2160 4K@60 (Y444)	
OUTPUT RESOLUTIONS	480i / 480p / 720p / 1080i / 1080p60 / 3840x2160 4K@60 (Y420)	
RESOLUTION AND DISTANCE @ 8-BIT	Full HD: (1080p) ~ 100meter (328feet) (CAT5e/6) 4K@60: (3840 pixels × 2160) ~ 80meter (264 feet) (CAT5e/6)	
AUDIO SUPPORT	Lossless Multi-channel audio formats (DTS-HD Master Audio, Dolby TrueHD, Dolby True HD)	
INPUT TMDS SIGNAL	1.2 Volts (peak-to-peak)	
INPUT DDC SIGNAL	5 Volts (peak-to-peak, TTL)	
ESD PROTECTION	- Human body model — ±19kV (air-gap discharge) & ±12kV (contact discharge) - Core chipset — ±8kV	
INPUT	1x HDMI 1x 3.5mm 1x RS 232	1x RJ 45 HDBaseT 1x 3.5mm 1x RS 232
OUTPUT	1x RJ 45 HDBaseT 1x 3.5mm 1x RS 232	1x HDMI 1x 3.5mm 1x RS 232
HDMI CONNECTOR	Type A (19 pin female)	
RJ45 CONNECTOR	WE/SS 8P8C with 2 LED indicators 3 pin	
RS-232 SUPPORT	Phoenix connector 115,200 bps	
3.5MM CONNECTOR	IR receiver / IR blaster	IR receiver / IR blaster
DIMENSIONS (L X W X H)	3.9" x 2.9" x 0.6"	3.9" x 2.9" x 0.6"
WEIGHT	0.35lbs	0.35lbs
POWER SUPPLY	24V 1.5A DC	
POWER CONSUMPTION	3 Watt (max)	7 Watt (max)

ENVIRONMENTAL

OPERATING TEMPERATURE	32° ~ 104°F (0° to 40°C)
STORAGE TEMPERATURE	-4° ~ 140°F (-20° ~ 60°C)
RELATIVE HUMIDITY	20~90% RH (no condensation)



NOTICE

1. All HDMI over CAT5 transmission distances are measured using Belden CAT6A (625MHz), 4-Pair, U/UTP-Unshielded, Riser-CMR, Premise Horizontal Cable, 23 AWG Solid Bare Copper Conductors, Polyolefin Insulation, Patented Double-H spline, Ripcord, PVC Jacket using Quantum 980 signal HDMI Video Generator Module Video Pattern Testing.
2. The transmission length is largely affected by the type of category cables, also the type of HDMI sources, and the type of HDMI display. The testing result shows solid UTP cables (usually in the form of 300m or 1000ft bulk cable) can transmit a lot longer signals than stranded UTP cables (usually in the form of patch cords). Shielded STP connectors are better suit than unshielded UTP connectors. A solid UTP CAT5e/6e/6A cable shows longer transmission length than stranded STP CAT6 cable. For long extension users, solid cables are your only choice.
3. EIA/TIA-568-B termination (T568B) for category cables is recommended for better performance.
4. To reduce the interference among the unshielded twisted pairs of wires in category cable, you can use shielded STP cables with shielded connector to improve EMI problems, which occurs in long transmission.
5. Because the quality of the category cables has the major effects in how long transmission distance will be made and how good is the received display, the actual transmission length is subject to your category cables. For resolution greater than 1080i or 1280x1024, a solid CAT6 cable is the only viable choice.





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TECHNICAL SUPPORT

CONTACT US



Phone: 1 (866) 508 0269



Email: support@avenview.com



USA Head Office Avenview Corp. 275 Woodward Avenue Kenmore, NY 14217

USA Head Office

Avenview Corp.
1100 Military Road
Kenmore, NY 14217
Ph: (866) 508 0269
Fax: (866) 387 8764 Email:
info@avenview.com

Canada Sales Office

Avenview
151 Esna Park Drive, Units 11 & 12
Markham, Ontario, L3R3B1
Phone: 1.905.907.0525
Fax: 1.866.387.8764
Email: info@avenview.com

Avenview Europe

Avenview Europe
Demkaweg 11
3555 HW Utrecht
Netherlands
Phone: +31(0)85 2100 613
Email: info@avenview.eu

Avenview Hong Kong

Unit 8, 6/f., Kwai Cheong Centre,
50 Kwai Cheong Road,
Kwai Chung, N.T.
Hong kong
Phone: 852.3575.9585
Email: wenxi@avenview.com

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