Avenview

Control Your Video

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

4K@60 HDMI/Audio over CAT5e/6/7 Extender with 48V PoE

HDMI 2.0 | 4K 60HZ 4:2:0 ULTRA HD | AUDIO | HDMI | IR | HD ready 1080p | RoHS Compliant | FC CE

Model #: HBT2-C6POH-SET

Product Application & Market Sectors


Corporate


House Of Worship


Military


Residential


Education


Industrial


Medical


Aviation

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SECTION 1: GETTING STARTED

1.1 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.

1.2 SAFETY INSTRUCTIONS

The HBT2-C6POH-SET, HDMI Extender over Signal CAT5/6 with HDBaseT-Lite Technology has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the HBT2-C6POH-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.

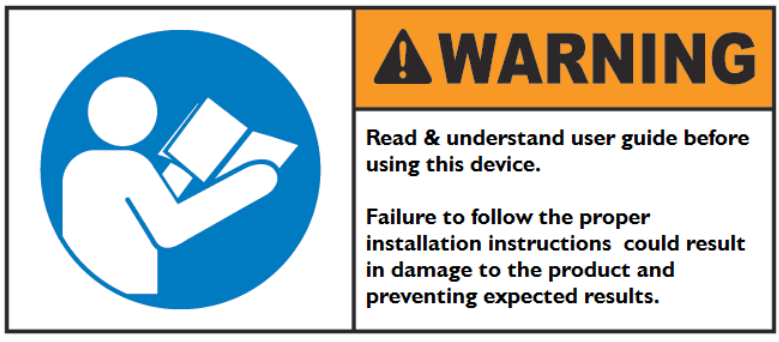
- ⚠ Do not dismantle the housing or modify the module.
- ⚠ Dismantling the housing or modifying the module may result in electrical shock or burn.
- ⚠ Refer all servicing to qualified service personnel.
- ⚠ Do not attempt to service this product yourself as opening or removing housing may expose you 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.



2. INTRODUCTION

Avenview HBT2-C6POH-SET HDMI and Audio over Single CAT5e/6/7 Transmitter and Receiver set can send uncompressed audio/video data over single CAT5e/6/7 cable up to 100m. It has the added benefit of control through built-in RS-232 and IR ports. With LAN ports allowing network connection and external digital and analog audio capability that gives users the convenience of additional audio connection. The 48V PoE design can power the Receiver (Rx) from the Transmitter (Tx), eliminating the need for a separate power supply for the Receiver. Also, the ultra-thin mechanical designs allow flexibility mounting position saving more space.

FEATURES:

- Supports HDBaseT 2.0 specification over a single CAT6/7 cable up to
- 100m/328ft and CAT5e cable up to 90m/295ft;
- HDMI (with 3D & 4K2K@60 -YUV420 support), HDCP 2.2 and DVI compatible;
- HDBaseT 5Play™ convergence: High-Definition (HD) Video and Audio, 100BaseT Ethernet, PoE and Control (Bidirectional IR/RS-232 pass-through);
- Supports pass-through of HD audio formats: LPCM 2/5.1/7.1CH, Dolby Digital 2/5.1CH, Dolby Digital Plus, Dolby TrueHD, Dolby Atmos and DTSHD Master Audio;
- Supports optical sampling rate up to 48kHz;
- Supports Ethernet network connection;
- Supports external analog and digital audio transmission;
- Supports RS-232 baud rate from 110~115200bps.

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-POH-SET	X 1	
2	POWER ADAPTER (+48V 0.83A DC)	X 2	
3	IR EXTENDER	X 1	
4	IR BLASTER	X 1	
5	BLUE PHOENIX (Power)	X 1	
6	PHOENIX CONTACT	X 2	
7	MOUNTING BRACKETS	X2	
8	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.

2.3 APPLICATION DIAGRAM

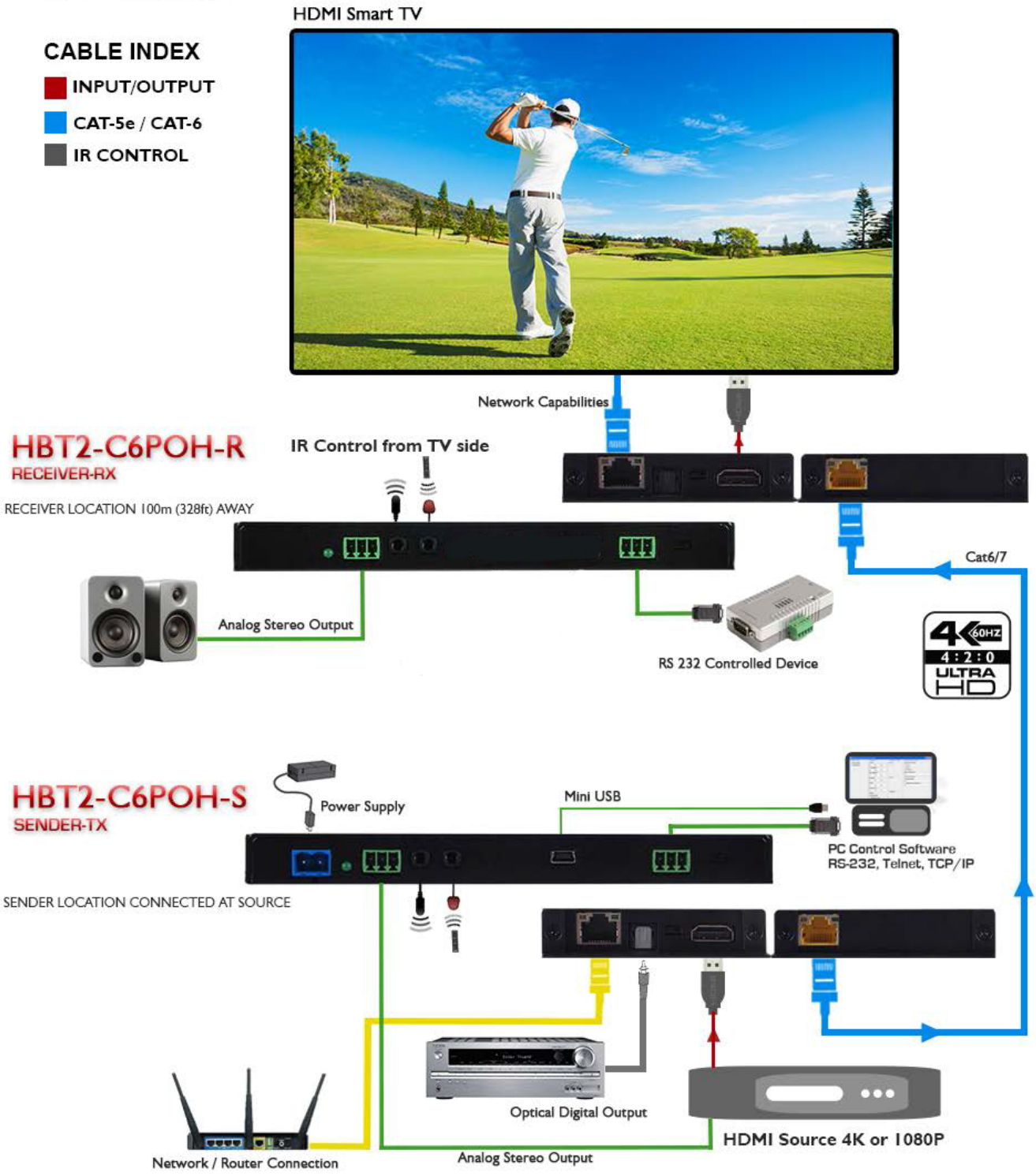
HBT2-C6POH-SET

CAT5e = 90m (295 feet)
CAT6/7 = 100m (328 feet)

POINT TO POINT

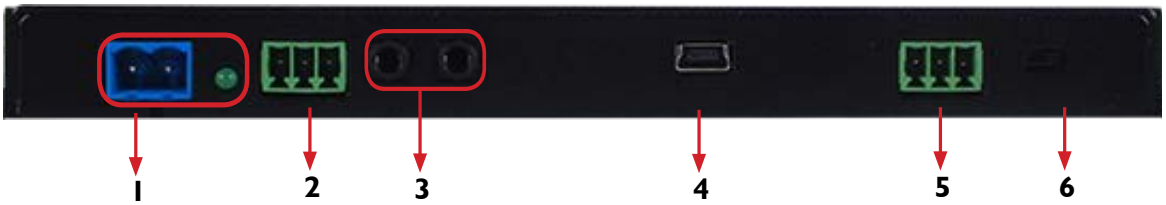
CABLE INDEX

- **INPUT/OUTPUT**
- **CAT-5e / CAT-6**
- **IR CONTROL**



2.4 PANEL DESCRIPTION

2.4.1 Input Panel (Transmitter, HBT2-C6POH-S) Front



1. **DC 48V and POWER LED:** Plug the 48V DC power supply into the unit and connect the adaptor to an AC outlet. Green LED will illuminate.	2. **AUDIO IN L/R:** Connect to audio source such as PC or CD player for audio signal sending to Receiver's AUDIO OUT L/R.
3. **IR IN 2:** Connect to the supplied IR Extender cable for IR signal reception.	4. **USB:** Connect from PC or Laptop for data transmit to or control from the Receiver's USB slots.
5. **RS-232 IN TX/RX:** Connect to a PC or Laptop with USB to RS 232 cable for the transmission of RS-232 commands. For receiving command from Receiver side, the TX and RX pin must be reversed.	6. **SWITCH:** This is reserved for firmware update use only. Switch this deep switch to left for firmware update use, under normal operation, leave the switch on right.

2.4.2 Input Panel (Transmitter, HBT2-C6POH-S) Side

1. **LAN:** Connect to an internet or network connection. Yellow LED illuminates representing link with Receiver is established, Blinking irregularly indicates link error.	2. **OPT. OUT:** Connect to speaker/amplifier for audio signal output from Receiver's OPTICAL IN.
3. **ARC OUT OFF/ON SWITCH:** Audio Return Channel on/off switch*.	4. **HDMI IN:** Connect to HDMI source device such as a DVD or Blu-ray player.
5. **CAT5e/6/7 OUT:** Connect to the Receiver unit with a single CAT5e/6/7 cable for transmission of all data signals. Green LED will illuminate to indicate PoE activated.	

Note:

**When ARC switch to ON, depending on the connected devices of the HDMI OUT & Optical in, the ARC input/output transmission distance may vary. It is recommended to use a 2 meters cable to ensure the best audio quality.*

2.4.3 Input Panel (Receiver, HBT2-POE-R) Front

1. **AUDIO OUT L/R:** Connect to speaker with RCA input for audio signal output.	2. **IR IN 1:** Connect to the supplied IR Extender cable for IR signal reception.
3. **IR OUT 2:** Connect to the supplied IR Blaster cable for IR signal transmission.	4. **RS-232 OUT TX/RX:** Allows control of receiver using RS-232 commands. For sending command to Transmitter side, the TX and RX pin must be reversed.
5. **SWITCH:** This is reserved for firmware update use only. Switch this deep switch to left for firmware update use, under normal operation, leave the switch on right.	

2.4.4 Input Panel (Receiver, HBT2-C6POH-R) Side

1. **LAN:** Connect to PC/Laptop with active internet connection. Yellow LED illuminates representing link with Receiver is established, Blinking irregularly indicates link error.	2. **OPT. IN:** Connect to source such as DVD Player or Cable box for audio signal transmission to Transmitter's OPTICAL OUT.
3. **ARC IN or OPT. IN SWITCH:** Switch this switch to select ARC channel. Switch to ARC IN to use HDMI OUT's audio or switch to Optical IN to use Optical audio.*.	4. **HDMI OUT:** Connect to HDMI source device such as a DVD or Blu-ray player.
5. **CAT5e/6/7 IN:** Connect to the Transmiter unit with a single CAT5e/6/7 cable for transmission of all data signals. Green LED will illuminate to indicate PoE activated.	

Note:

**When ARC switch to ON, depending on the connected devices of the HDMI OUT & Optical in, the ARC input/output transmission distance may vary. It is recommended to use a 2 meters cable to ensure the best audio quality.*

3. IR EXTENDERS

IR Blaster **IR Receiver**

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

IR Blaster **IR Receiver**

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.

WARRANTY DOES NOT COVER ANY DAMAGE CAUSED BY MISUSE

4. INSTALLATION (HBT2-C6POH-SET)

To setup Avenview HBT2-C6POH-SET please follow these steps for connecting to a device:

1. Turn off all devices including monitors / TV.
2. Connect HDMI source (such as a Blu-Ray player) to the Transmitter HBT2-C6POH-S.
3. Connect transmitter to HBT2-C6POH-R with a CAT5E/CAT6 cable with shielded ends, then connect to display with HDMI cable.
4. Plug in the supplied 5V 2A DC Power adapter at the Trasmitter unit HBT2-C6POH-S.
5. Power on the HDMI display.
6. Power on HDMI Sources.

Power supply cord should be connected as follows:
(-) Black Cord
(+) White Cord

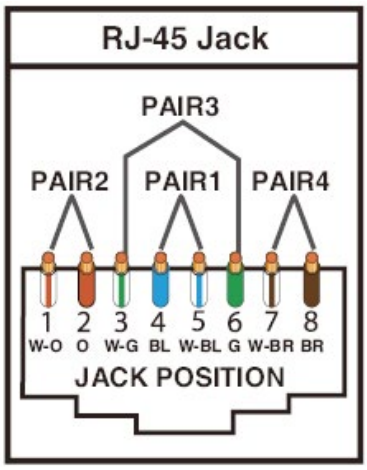
5. GENERAL TROUBLESHOOTING

PROBLEM	POSSIBLE SOLUTION
NO IMAGE	• 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
SCREEN DEFECTS APPEAR	• This product supports up to 1080p and 4K@60 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
NO INFRARED COMMUNICATION	• 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.

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
MODEL	HBT2-C6POH-SET
MODEL DESCRIPTION	4K@60 HDMI/Audio over CAT5e/6/7 Extender with 48V PoE
HDMI COMPLIANCE	2.0
HDCP	2.2
VIDEO BANDWIDTH	340 MHz/10.2 Gbps2.22.0
SUPPORTED RESOLUTIONS	Cat5e/6/7: 100 m - Up to 1080p@60 Hz Cat5e: 90 m - 4K2K@30/60Hz Cat6/7: 100 m - 4K2K@30/60 Hz
AUDIO SUPPORT	LPCM 2CH,6CH,8CH/AC3/DTS/Dolby Digital Plus/ TruHD & DTS-HD
INPUT PORTS (TX)	1×HDMI, 1×USB, 1×L/R (Terminal Block), 1×LAN,1×IR Extender, 1×RS-232 (Terminal Block)
OUTPUT PORTS (TX)	1×CAT5e/6/7, 1×Optical, 1×IR Blaster
INPUT PORTS (RX)	1×CAT5e/6/7, 1×Optical, 1×IR Extender
OUTPUT PORTS (RX)	1×HDMI, 1×L/R (Terminal Block), 1×LAN, 1×IR Blaster,1×RS-232 (Terminal Block)
BAUD RATE	Up to 115200 bps
HDMI CONNECTOR	Type A (19 pin female)
RJ45 CONNECTOR	WE/SS 8P8C with 2 LED indicators
AUDIO RETURN	Audio Return Channel
DIMENSIONS (L x W x H)	3.1 " W x 7" D x 0.6" H
WEIGHT	0.7lbs
POWER SUPPLY	48V/0.83A DC (US/EU standards, CE/FCC/UL certified)
POWER CONSUMPTION	17 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 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.*

Avenview

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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
Office Avenview Corp.
275 Woodward Avenue
Kenmore, NY14217
Phone: +1.716.218.4100
Fax: +1.866.387-8764
Email: info@avenview.com

Canada Sales
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