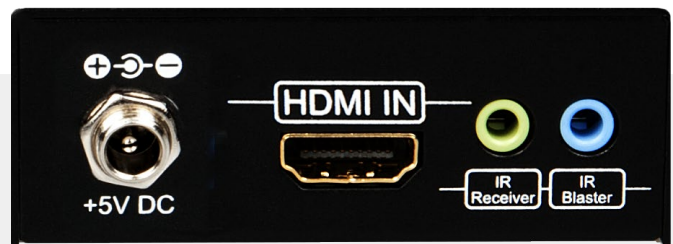




AV Connectivity, Distribution And Beyond...

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

HDBaseT HDMI Extender Set Single CAT5/6 with Bi-Directional IR



Model #: HBT-C6IR-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 HBT-C6IP-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 HBT-C6IR-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
	<p>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.</p>
	<p>DO NOT TAMPER WITH THE UNIT. DOING SO WILL VOID THE WARRANTY AND CONTINUED USE OF THE PRODUCT.</p>
	<p>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.</p>
	<p>⚠ WARNING</p> <p>Read & understand user guide before using this device.</p> <p>Failure to follow the proper installation instructions could result in damage to the product and preventing expected results.</p>



2. INTRODUCTION

The Avenview HBT-C6IP-SET HDMI Extender over Single CAT5/CAT6 embedded with HDBaseT Lite Technology which supports:

Video Signals: 4K2K@30, 3D, Deep Color, and Full HD 1080p 48-bit color depth.

Audio Signals: Lossless Multi-channel audio formats (DTS-HD Master Audio, Dolby TrueHD).

Data Signals: Bi-Directional IR signals 20 KHz to 60 KHz over CAT5/6 from third party IR Senders.

This device was designed extend your video/audio sources that are compliant with TMDS and HDCP over single twisted pair CAT5/6 to 60m -198ft (1080p 48-bit) and 40m-130ft (4K@30) to your HDMI or DVI display monitors.

The HBT-C6IR-SET includes (2) two units: Transmitting unit (Tx) HBT-C6IR-S and Receiving unit (Rx) HBT-C6IR-R. The Tx is designed to capture the input HDMI / DVI video/audio/data signals with IR control packets then transmits both signals over Single CAT5/6 cable. The Rx is responsible for equalizing the transmitted HDMI signal and reconstructing the IR signals to the appropriate device for control via its 10G transmission.

- HDBaseT-Lite technology
- HDMI 4K2K@30, Full HD1080p, Deep Color & 3D
- Supports default resolutions 480p,720p1080p and HDCP & EDID Bypass
- Extends up to 60m (198ft) (1080p)
- Extends up to 40m (130ft) (4K@30)
- Lossless Multi-channel audio formats (DTS-HD Master Audio, Dolby TrueHD, Dolby True HD)
- EC support to control supported devices for common user controls via HDMI
- Auto Equalization built –in to ensure the high quality video/audio is transmitted
- Support Bi-Directional IR signals 20 KHz to 60 KHz
- Supports CEC (Consumer Electronic Control)
- Wall mounting housing design for easy and robust installation





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	HBT-C6IP-SET	X 1	
2	POWER ADAPTER (+5V 2A 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.



2.3 APPLICATION DIAGRAM

HBT-C6IR-SET

HBT-C6IR-R

1080p60 = 60m (198 feet) CAT6
4K2K@30 = 25m (82 feet) CAT6

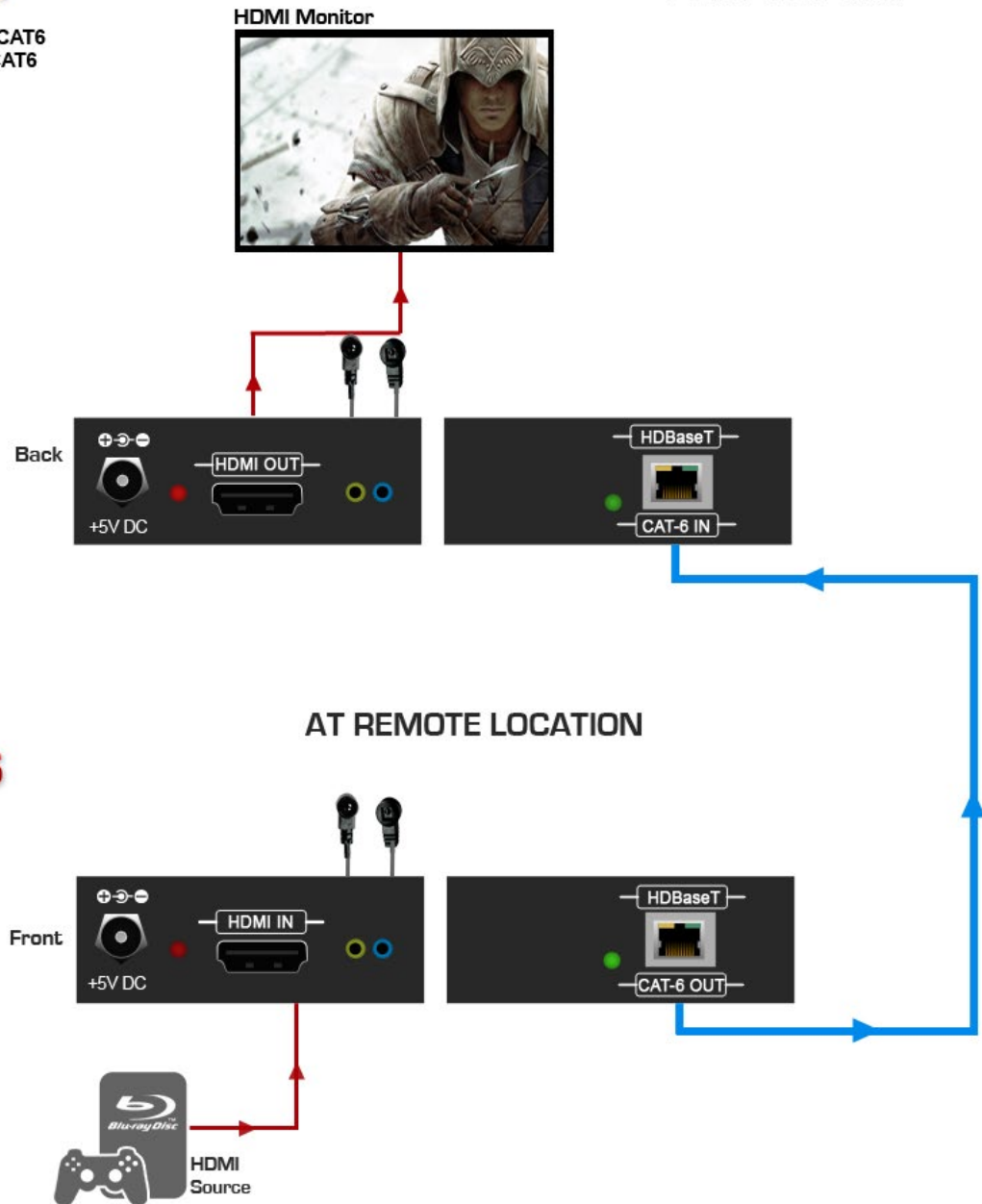
CABLE INDEX

■ Input / Output

■ CAT-5e / CAT-6

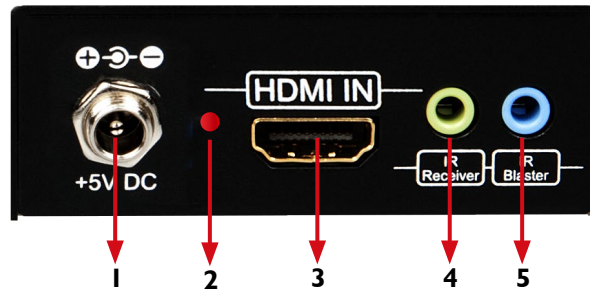
Application Diagram 1

POINT TO POINT



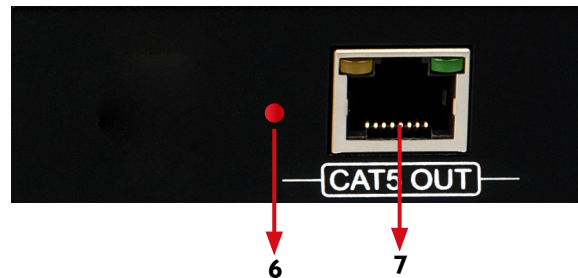
2.4 PANEL DESCRIPTION

2.4.1 INPUT PANEL (Receiver, HBT-C6IP-SET) Front



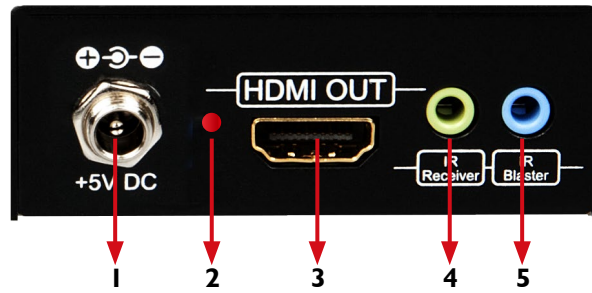
1. POWER: 5V DC Locking Screw jack	2. LED: Power Indicator
3. HDMI IN: HD Source INPUT to extend with Male to Male Cable.	4. IR BLASTER: 3.5mm Female input NOTE: Only plug in the IR Sender Jack
5. IR RECEIVER: 3.5mm Female input NOTE: Only plug in the IR Receiver Jack	

2.4.2 INPUT PANEL (Receiver, HBT-C6IP-SET) Rear



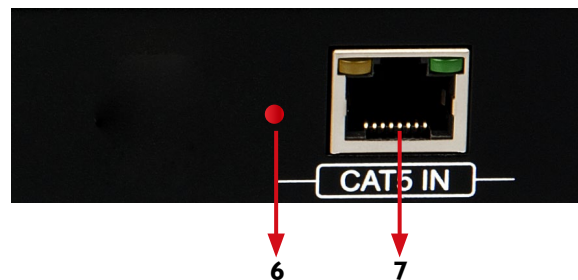
6. LED: Indicator when the (HBT-C6IR-S) TX is connected and communicating with the (HBT-C6IR-R) RX via CAT5/6	7. RJ45 Out: Only Plug In CAT5/6 that will be connected to the HBT-C6IR-R
--	--

2.4.3 INPUT PANEL (Receiver, HBT-C6IP-SET) Front



1. POWER: 5V DC Locking Screw jack	2. LED: Power Indicator
3. HDMI OUT: Video/Audio OUTPUT to any HD Display with Male to Male Cable	4. IR BLASTER: 3.5mm Female input NOTE: Only plug in the IR Sender Jack
5. IR RECEIVER: 3.5mm Female input NOTE: Only plug in the IR Receiver Jack	

2.4.4 INPUT PANEL (Receiver, HBT-C6IP-SET) Rear



6. LED: Indicator when the (HBT-C6IR-S) TX is connected and communicating with the (HBT-C6IR-R) RX via CAT5/6	7. RJ45 Out: RJ45 with CAT5/6 cable connection from the Tx HBT-C6IR-S
--	--

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 (HBT-C6IP-SET)

To setup Avenview HBT-C6IP-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 HBT-C6IP-S
3. Connect HBT-C6IP-R with a CAT5E/CAT6 cable with shielded ends, then connect to display with HDMI cable.
4. Plug in 5V 2A 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@30 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.

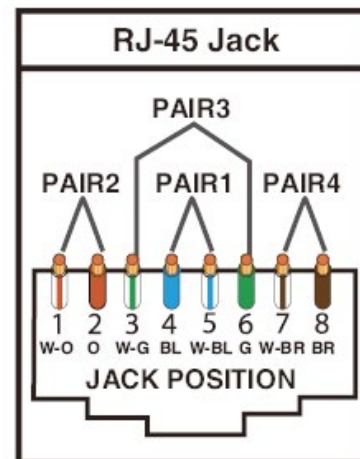
Note

Additional info on Guidelines to Test & Troubleshoot HDBaseT Systems

Can be retrieved from our website under the category Downloads for this product HBT-C6IR-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	HBT-C6IP-S	HBT-C6IP-R
UNIT DESCRIPTION	HDMI Transmitter	HDMI Receiver
HDMI COMPLIANCE	HDBaseT Lite	
HDCP	Yes	
VIDEO BANDWIDTH	Single-link 340MHz [10.2Gbps]	
SUPPORTED RESOLUTIONS	480i / 480p / 720p / 1080i / 1080p60 / 4K@30	
RESOLUTION AND DISTANCE @ 8-BIT	Full HD: (1080p) ~ 60meter (198feet) (CAT5e/6) 4K@30: (3840 pixels × 2160) ~ 40meter (130feet) (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 mini-USB	1x RJ-45 HDBaseT 1x 3.5mm 1x mini-USB
OUTPUT	1x RJ-45 HDBaseT 1x 3.5mm	1x HDMI 1x 3.5mm
HDMI CONNECTOR	Type A (19 pin female)	
RJ45 CONNECTOR	WE/SS 8P8C with 2 LED indicators	
USB CONNECTOR	Mini B	
3.5MM CONNECTOR	IR receiver / IR blaster	IR receiver / IR blaster
DIMENSIONS (L X W X H)	3" x 3.5" x 1"	3" x 3.5" x 1"
WEIGHT	0.5lbs	0.5lbs
POWER SUPPLY	5V 2A 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 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.





AV Connectivity, Distribution And Beyond...

TECHNICAL SUPPORT

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