



Control Your Video

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VIDEO MATRIX SWITCHES
EXTENDERS SPLITTERS WIRELESS
CABLES & ACCESSORIES

16 x 16 HDBaseT Modular CAT5/6/7 Matrix with Bi-Directional IR/POE/Ethernet Control & Local Out



Model #: MSW-HBT-C6POE-16X16E

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Corporate



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TABLE OF CONTENTS

1.	GETTING STARTED	1
1.1	IMPORTANT SAFE GUARDS.....	1
1.2	SAFETY INSTRUCTIONS.....	1
1.3	REGULATORY NOTICES FEDERAL COMMUNICATIONS COMMISSION (FCC).....	4
2.	INTRODUCTION AND FEATURES	3
2.1	PACKAGE CONTENTS	4
2.2	OPERATION CONTROLS AND FUNCTION	5
2.2.1	FRONT PANEL	5
2.2.2	REAR PANEL	6
2.3	RS-232 PROTOCOLS.....	7
3.	APPLICATION DIAGRAM.....	8
4.	SPECIFICATIONS	9
	SW-HBT-HDM8IN-MOD 8 ports HDMI input module.....	10
	SW-HBT-DVI8IN-MOD 8 ports DVI input module	10
	SW-HBT-VGA8IN-MO 8 ports VGA Input module 8 ports DVI input module.....	11
	SW-HBT-DVI8OUT-MOD 8 ports DVI output module.....	11
	SW-HBT8O3P-MOD 8 ports HDBaseT output module	12
	SW-HBT8O4P-MOD 8 ports HDBaseT output module	12
5.	GENERAL TROUBLESHOOTING	13
6.	CAT5E/6/7 CABLE SPECIFICATION	14



SECTION I: GETTING STARTED

I.1 IMPORTANT SAFE GUARDS

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

HBT-C6POE-16x16E HDBaseT Modular Matrix Switcher has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the HBT-C6POE-SP8 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 Modularized Matrix series are designed to route the signal of 16 sources to any connected 16 displays (*or up to 8 sources to 8 displays for the 8x8E model*), providing resolution up to full HD 1080p and WUXGA 1920x1200 @60Hz(RB). Besides the regular matrix functionality, the matrix models are very attractive to the integrators because of their great flexibility, with the most advanced modularization design these models can be setup as a matrix of HDMI, DVI-D, CAT5e/6/7, VGA or their any combinations (count with eight, for example, a matrix with 8-HDMI-IN/8-DVI-IN and 8-HDMI-OUT/8-DVI-OUT), all you need to do is to swap the input or output modules as you wish. Refers to section 8 for available module boards.

FEATURESS

- HDMI, HDCP 1.1 and DVI 1.0 compliant;
- Changeable input and output boards;
- Input and output module types can be mixed and added in increment of 8 from 8x8 up to 16x16 with HDMI, DVI, CAT5e/6/7 and VGA interfaces;
- Supports LP CM 7.1CH, Dolby TrueHD, Dolby Digital plus and DTS-HD;
- Master Audio transmission;
- Supports a wide range of PC and HDTV resolutions from VGA to WUXGA and 480i to 1080p;
- Supports RS-232, Telnet and Web GUI controls;
- Supports redundant power supply;
- HDMI cable length with a resolution 1080p/8bits & 12bits the Input/Output source can be 15m/15m(8bits) and 10/10m(12bits) away
- EDID modes:
 - a. Standard mode: factory Default;
 - b. Automatic mode: Taking EDID from the lowest output port;
 - c. Manual mode: Can assign any output to any input port;
- CAT5e/6/7 cable length with a resolution 1080p/8bits&12bits the Input/Output source can be 100m/100m away;
- 4play convergence: Video, Audio, PoE & Control (IR & RS-232);
- 3play convergence: Video, Audio & Control (IR & RS-232).



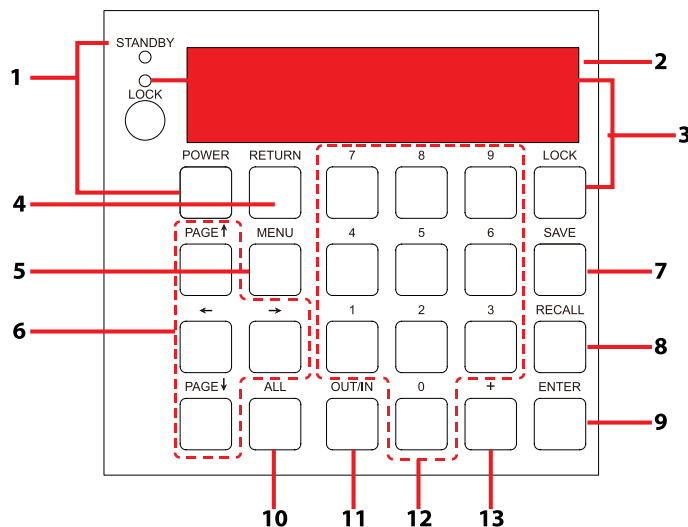
2.1 PACKAGE CONTENTS

1	ENCLOSURE OF MODULARIZED 16X16 MATRIX (INCLUDING CONTROL BOARD, & POWER)	X1	
2	INPUT MODULE BOARD OF HDMI/DVI/CAT5E/6/7 OR VGA (<i>Customizable</i>)	X 2	
	OUTPUT MODULE BOARD OF HDMI/DVI/CAT5E/6/7 (<i>Customizable</i>)	X 2	
3	POWER CORD	X 2	
4	USER 'S MANUAL	X1	



2.2 OPERATION CONTROLS AND FUNCTIONS

2.2.1 FRONT PANEL (MSW-HBT-C6POE-16x16E)

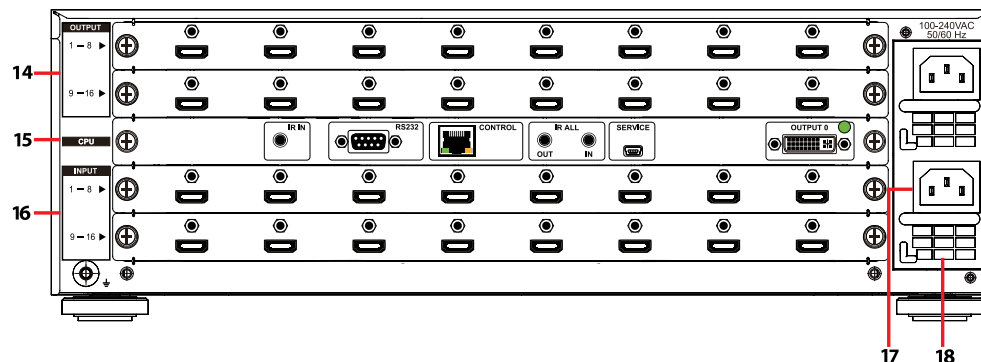


1. POWER BUTTON & LED: power On device with first press or second press to activate standby mode			
2. LCM: Displays the user selected settings and to allow unit setup functions when Menu is pressed. Display also Input / Output info			
3. LOCK button & LED: press this button to lock all the function buttons on panel. The LED will illuminate, to unlock press it again.			
4. RETURN: press this button to return back/exit the current selection.			
5. MENU: press this button to enter into the menu selections of A. EDID	A. EDID		
	1. Auto EDID: Base on the first connected output TV/Display's EDID from 1 ~ 16 ports.	2. Standard EDID: use the built-in EDID which supports video up to 1080p@60/ WUXGA@60RB and audio supports ports 1p CM 2CH.	3. Manual EDID: Support independent EDID by appoint input and output ports.
	B. IP		
	1. IP address	2. Netmask	3. Gateway



C. Temperature	
1. Temperature 1	2. Temperature 2
these figures shows the temperature of the device inside.	
D. LCM Contrast Range from 1 ~4	
6. PAGE: This button allows the user to navigate through the different page info displayed.	
7. SAVE: Saves the preset settings of the I/O. 3 preset save spaces available.	
8. RECALL: press this button to recall from the saving settings of 1 ~3.	
9. ENTER: To Confirm or Enter the selection	
10. All: select all outputs source.	
11. OUT/IN: Select input source to displaying on output display. The sequence should be OUT/IN —> number(s) for out-put source —> OUT/IN —>a number for input display —>Enter.	
12. 0~9: press these numbers when selecting input output ports.	
13. + : When selecting more than one output for an input selection. This button works correspondingly with OUT/IN buttons only.	

2.2.2 REAR PANEL (MSW-HBT-C6POE-16x16E)



14. OUTPUT 1 ~ 16: Connect to HD or 3D screens /monitors with HDMI cables up to 16 displays.	
15. CPU	A. RS-232: Connect with D-Sub 9-pin cable from the PC/Laptop device for RS-232 control over the Matrix or the connected device(s).
	B. CONTROL : Connect to an active network line for LAN serving and Telnet/Web GUI control.
	C. IR OUT/IN: Reserved.
	D. SERVICE: This port is reserved for firmware update only.
	E. OUTPUT 0: Connect to DVI/HDMI (with DVI to HDMI adaptor) screen/monitor for local output monitoring
16. INPUT 1 ~ 16: Connect to source equipment such Blu-ray/Set Top Box players up to 16 sets with HDMI cables.	
17. POWER & POWER Supply: The device will automatically turns ON when power is supplied.	
18. VENTILATION FAN: This fan will automatically turns ON when the device is switch to ON. Do not block this port of the device or cover it with any object. please allow adequate space around the unit for air circulation.	



2.3 RS-232 PROTOCOLS

SW-HBT-C6POE-16x16E	
PIN	Definition
1	NC
2	TxD
3	RxD
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

Third Party RS-232 Controller	
PIN	Definition
1	NC
2	RxD
3	TxD
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

Baud Rate: 19200bps

Data Bit: 8 bits

Parity: None

Stop Bit: 1

Flow Control: None

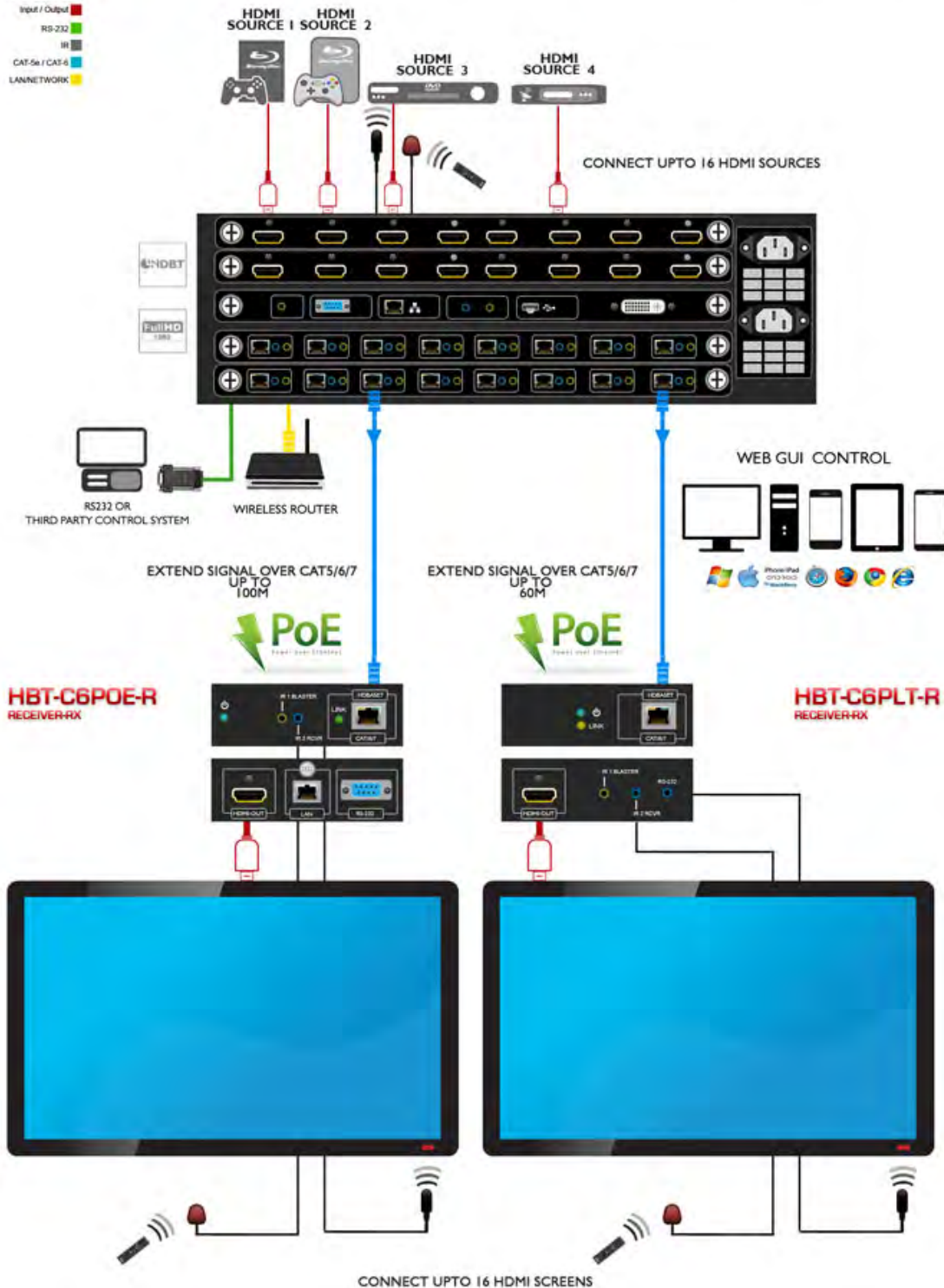


3. APPLICATION DIAGRAM

SW-HBT-C6POE-16x16E

1080p(1920x1080) = 100m (330 feet) CAT6E 250MHz

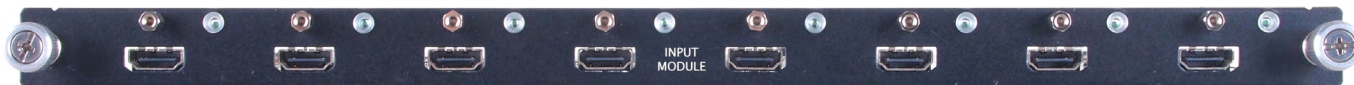
CABLE INDEX
 Input / Output
 RS-232
 IR
 CAT-5e / CAT-6
 LAN/NETWORK



4. SPECIFICATIONS

ITEM	DESCRIPTION
UNITS	MSW-HBT-C6POE-16X16E
UNIT DESCRIPTION	HDBaseT HDMI Modular Matrix Switcher with IR/RS232/POE
HDCP	YES
VIDEO BANDWIDTH	Depending on Cards Range from 225 MHz (6.25Gbps)300 MHz (10.2Gbps)25-340MHz
SUPPORTED RESOLUTIONS	480i~1080p@50/60 (1920x1080), 1080p@24, 3D
AUDIO SUPPORT	LPCM 7.1CH, Dolby TrueHD, Dolby Digital Plus and DTS-HD Master Audio
HDMI IN CABLE M/M	15m/1080p@8-bit or 6m/1080p@12-bit
ESD PROTECTION	Human body model — $\pm 8\text{kV}$ (air-gap discharge) & $\pm 4\text{kV}$ (contact discharge)
INPUT	16 x HDMI or DVI or CAT5e/6/7 or VGA 1 x 3.5mm (RS-232) 2 x 3.5mm (IR Receiver) 1 x RJ45
OUTPUT	16 x HDMI or DVI or CAT5e/6/7 1 x 3.5mm (IR Blaster) 1 x DVI/HDMI Local Output
HDMI CABLE I/O DISTANCE	15m/8-bits, 10m/12-bits
HDMI CONNECTOR	Type A (19 pin female)
IR FREQUENCY	30~50kHz
DIMENSIONS (L X W X H)	482mm (W) x 484mm (D) x 145mm (H)
NET WEIGHT	32 lbs
POWER SUPPLY	2 x AC 110~240V (US/EU Standards, CE/FCC/UL Certified)
POWER CONSUMPTION	65 W (PoE) or 62 W (Not PoE)
ENVIRONMENTAL	
OPERATING TEMPERATURE	32° ~ 104°F (0° to 40°C)
STORAGE TEMPERATURE	-4° ~ 140°F (-20° ~ 60°C)
RELATIVE HUMIDITY	20~90% RH (non-condensing)





SW-HBT-HDM8IN-MOD 8 ports HDMI input module

Video Bandwidth	225MHz/6.75Gbps
Input ports	8 * HDMI
Video resolutions	PC: VGA ~WUXGA@60RB HD: 480i~1080p
Audio transmission	LPIP CM7.1CH, Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio (32~192KHz Fs sample rate)



SW-HBT-DVI8IN-MOD 8 ports DVI input module

Video Bandwidth	225MHz/6.75Gbps
Input ports	8 * DVI
Video resolutions	PC: VGA ~WUXGA@60RB HD: 480i~1080p
Audio transmission	LPCM 7.1CH, Dolby TrueHD, Dolby Digital plus, LPCM 7.1CH, Dolby TrueHD, Dolby Digital plus)



SW-HBT-VGA8IN-MO 8 ports VGA Input module 8 ports DVI input module

Input ports	8 * VGA, 8 * 2.5mm Audio phone jack
Video resolutions	PC: VGA ~WUXGA@60RB
Audio transmission	LPCM 7.1CH, Dolby TrueHD, Dolby Digital plus, DTS-HD Master Audio (32~192KHz fs sample rate)



SW-HBT-DVI8OUT-MOD 8 ports DVI output module

Video Bandwidth	225MHz/6.75Gbps
Input ports	8 * DVI
Video resolutions	pC: VGA ~Wu XGA@60RB HD: 480i~1080p
Audio transmission	lp CM7.1CH, Dolby TrueHD, Dolby Digital plus, DTS-HD Master Audio (32~192KHz f s sample rate)



SW-HBT8O3P-MOD 8 ports HDBaseT output module

Video Bandwidth	225MHz/6.25Gbps
Features	Support HDBaseT/IR/RS232
Output ports	8 * CAT5e/6, 8 * IR Extender, 8 * IR Blaster
Video resolutions	PC: VGA ~ WUXGA HD: 480i~1080p
IR Frequency	30~50Hz
Audio transmission	LPCM 7.1CH, Dolby TrueHD, Dolby Digital plus, DTS-HD Master Audio (32~192KHz Fs sample rate)



SW-HBT8O4P-MOD 8 ports HDBaseT output module

Video Bandwidth	300MHz/10.2Gbps
Features	Support HDBaseT/poE/IR/RS232
Output ports	8 * CAT5e/6, 8 * IR Extender, 8 * IR Blaster
IR Frequency	30~50Hz
Video resolutions	PC: VGA ~ WUXGA HD: 480i~1080p
Audio transmission	LPCM 7.1CH, Dolby TrueHD, Dolby Digital plus, DTS-HD Master Audio (32~192KHz FS sample rate)



5. GENERAL TROUBLESHOOTING

PROBLEM	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 resolution • Terminated to 568B standard with Shielded Ends Recommended • High Quality CAT5/6/7 Cable helps signal transmission • Please use the supplied power supply-DC 24V/6.25A DC • Check LED Link light see (Section 3 Panel Description) • Check LED Sync light see (Section 3 Panel Description)
EDID ISSUE	<ul style="list-style-type: none"> • EDID MODE-TV: The default factory setting is on TV. The unit will detect the 1st CAT5e/6/7 output's EDID. • The 1st CAT5e/6/7 output is the preferred port according to which the unit will detect all output's EDID and Transmit the signal that all outputs can accept. • EDID MODE-STD: Switch to STD to use built-in EDID if the display has No Image. STD EDID's video at 1080p@60Hz and audio at LPCM 2CH.
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 Extender, 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 SW-HBT-C6-POE-16X16E



6. CAT5E/6/7 CABLE SPECIFICATIONS

Cable Distance - SW-HBT8O3P-MOD 8 ports HDBaseT output module

Cable Type	Range	Pixel Clock Rate	Video Data Rate	Supported Video
CAT5e/6/7	60 m	<=225 MHz	<=5.3 Gbps (HD Video)	u p to 1080p, 60 Hz, 36 bits, 3D (data rates lower than 5.3 Gbps or below 225 MHz TMDS clock).
	40 m	>225 MHz	> 5.3 Gbps (u ltra HD Video)	4K2K, 30Hz video, formats (<i>HBT4K-C6POE model</i>)

Cable Distance - SW-HBT8O4P-MOD 8 ports HDBaseT output module

Cable Type	Range	Pixel Clock Rate	Video Data Rate	Supported Video
CAT5e/6/7	100 m	<=225 MHz	<=5.3 Gbps (HD Video)	u p to 1080p, 60 Hz, 36 bits, 3D (data rates lower than 5.3 Gbps or below 225 MHz TMDS clock).
	70 m	>225 MHz	> 5.3 Gbps (u ltra HD Video)	4K2K, 30Hz video, formats (<i>HBT4K-C6POE model</i>)



Avenview Warranty Certificate

AVENVIEW CORP. ("Avenview") warrants Avenview-branded product(s) contained in the original packaging against defects in materials and workmanship when used normally in accordance with Avenview's enclosed manual guidelines for a period of THREE (3) YEARS from the date of original retail purchase - Warranty Period. Avenview's published guidelines include but are not limited to information contained in technical specifications, user manuals and service communications.

LABOR: During the Warranty Period of THREE (3) YEARS, Avenview will repair or replace the product(s) at no cost using new or used parts equivalent to novel performance and reliability if the product(s) is determined to have abide by Avenview's published guidelines. Cost of Labor applicable to product(s) after Warranty Period. For labor costs, please contact support@avenview.com.

PARTS: During the Warranty Period of THREE (3) YEARS, Avenview will supply new or rebuilt replacements in exchange for defective parts of the product(s) at no cost if the product(s) is determined to have abide by Avenview's published guidelines. Cost of Parts applicable to product(s) after Warranty Period. For part(s) costs, please contact support@avenview.com.

To obtain Warranty: (a) proof of purchase in the form of a bill of sale or receipted invoice reflecting that the registered product(s) is within warranty period must be presented to obtain warranty service; (b) product(s) must be registered at time of purchase. Failure to do so will result in applicable parts and labor charges. Returning product(s) must be shipped in Avenview's original packaging or in packaging pertaining equal degree of protection to Avenview's. Both Avenview and purchaser are responsible for freight charges and brokerages when shipping the product(s) to the receiver.

NOT COVERED BY THIS WARRANTY

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