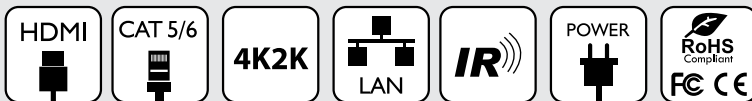




Control Your Video

**VIDEO WALLS VIDEO PROCESSORS  
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-HBT4K-C6-16X16E**

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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

MSW-HBT4K-C6-16X16E 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 MSW-HBT4K-C6-16X16E 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><b>⚠ WARNING</b></p>
	<p>Read &amp; 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 Modularized Matrix series are designed to route the signal of 16 sources to any connected 16 displays, providing resolutions of Ultra HD 1080p (1920 x 1080) / 4Kx2K (3840 x 2160) and WUXGA (1920x1200@60HzRB). 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-DVIOUT),all you need to do is to swap the input or output modules as you wish. Refers to section 8 for available module boards..

- HDMI, HDCP 1.1 and DVI 1.0 compliant;
- Interchangeable 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 LPCM 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 or 4Kx2K;
- 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;
- CAT5e/6/7 cable length with a resolution 1080p/8bits&12bits the Input/Output source can be 100m/100m 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
- HDBaseT 5Play™ convergence: Video, Audio, PoE, Ethernet & Control (IR & RS-232).



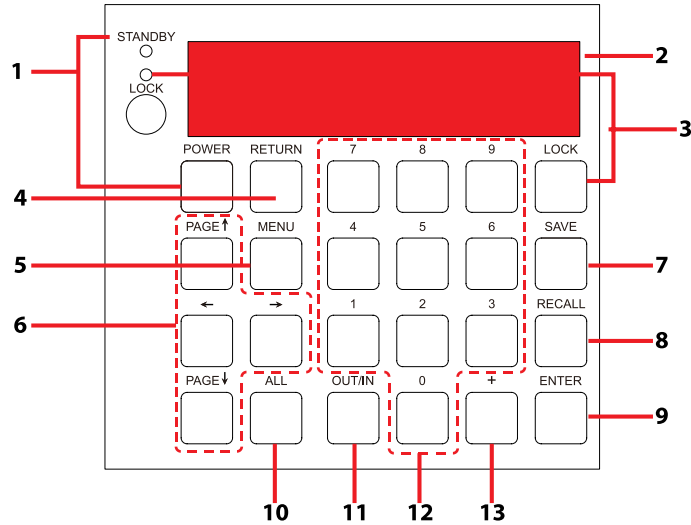
## 2.1 PACKAGE CONTENTS

1	ENCLOSURE OF MODULARIZED 16X16 MATRIX (INCLUDING CONTROL BOARD & POWER) X1	
2	INPUT MODULE BOARD OF HDMI/DVI/CAT5E/6/7 OR VGA(OPTIONAL) X2	
	OUTPUT MODULE BOARD OF HDMI/DVI/CAT5E/6/7 (OPTIONAL) X2	
	POWER CORD X2	
	USER'S MANUAL X1	



## 2.2 OPERATION CONTROLS AND FUNCTIONS

### 2.2.1 FRONT PANEL



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/WUX-GA@60RB and audio supports LPCM 2CH.
	3. Manual EDID: Support independent EDID by appoint input and output ports.	
	B. IP	
1. IP address,	2. Netmask,	3. Gateway.





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

## 2.2.3 Rear Panel



<b>1. OUTPUT 1~16:</b> Connect to HD or 3D TV/monitors with HDMI cables up to 16 displays.	
<b>2. CPU</b>	<b>A.</b> 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>B.</b> CONTROL: Connect to an active network line for LAN serving and Telnet/Web GUI control.
	<b>C.</b> IR OUT/IN: Reserved.
	<b>D.</b> SERVICE: This port is reserved for firmware update only.
	<b>E.</b> OUTPUT 0: Connect to DVI/HDMI (with DVI to HDMI adaptor) screen/monitor for local output monitoring
<b>3. INPUT 1~16:</b> Connect to source equipment such Blu-ray/Set Top Box players up to 16 sets with HDMI cables.	
<b>4. POWER &amp; POWER Supply:</b> The device will automatically turns ON when power is supplied.	
<b>5. Ventilation Fan:</b> 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.	



## 2.4 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





## 4.

## SPECIFICATIONS

ITEM	DESCRIPTION
UNITS	<b>SW-HBT4K-C6-16X16E</b>
UNIT DESCRIPTION	4K HDBaseT Modular HDMI Matrix Switcher with IR/RS232/POE/4k2k support
HDCP	YES
LAN / ETHERNET	100Mbps
VIDEO BANDWIDTH	300 MHz (10.2Gbps)
SUPPORTED RESOLUTIONS (Based on Card Module Installed)	480i~1080p@50/60, 1080p@24, 3D 4K@30 Up to Ultra HD (3840x2160@24/25/30Hz) 4K2K-(4096x2160@24Hz)
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 — ±8kV (air-gap discharge) & ±4kV (contact discharge)
INPUT	16 x HDMI or DVI or CAT5e/6/7 or VGA
OUTPUT	16 x HDMI or DVI or CAT5e/6/7
RS 232	Supported
HDMI CONNECTOR	Type A (19 pin female)
IR FREQUENCY	30~50kHz
DIMENSIONS (L X W X H)	19.1" x 19" x 5.7" 484 mm (L) x 482 mm (W) x 145mm (H)
NET WEIGHT	31 lbs
POWER SUPPLY	2 x AC 110~240V (US/EU standards, CE/FCC/UL certified)
POWER CONSUMPTION	220 W
<b>ENVIRONMENTAL</b>	
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

<b>video Bandwidth</b>	225MHz/6.75Gbps
<b>Input ports</b>	8 * HDMI
<b>video resolutions</b>	PC: VGA ~WUXGA@60RB HD: 480i~1080p
<b>Audio transmission</b>	LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio (32~192KHz Fs sample rate)



### SW-HBT-DvI8IN-MOD 8 ports DVI input module

<b>video Bandwidth</b>	225MHz/6.75Gbps
<b>Input ports</b>	8 * DVI
<b>video resolutions</b>	PC: VGA ~WUXGA@60RB HD: 480i~1080p
<b>Audio transmission</b>	LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, rate)





### SW-HBT-v GA8IN-MO 8 ports v GA Input module 8 ports Dv I input module

<b>Input ports</b>	8 * VGA, 8 * 2.5mm Audio phone jack
<b>v ideo resolutions</b>	PC: VGA ~WUXGA@60RB
<b>Audio transmission</b>	LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio (32~192KHz Fs sample rate)



### SW-HBT-Dv I8OUT-MOD 8 ports Dv I output module

<b>v ideo Bandwidth</b>	225MHz/6.75Gbps
<b>Input ports</b>	8 * DVI
<b>v ideo resolutions</b>	PC: VGA ~WUXGA@60RB HD: 480i~1080p
<b>Audio transmission</b>	LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio (32~192KHz Fs sample rate)





### SW-HBT8O3P-MOD 8 ports HDBaseT output module

<b>video Bandwidth</b>	225MHz/6.25Gbps
<b>Features</b>	Support HDBaseT/IR/RS232
<b>Output ports</b>	8 * CAT5e/6, 8 * IR Extender, 8 * IR Blaster
<b>video resolutions</b>	PC: VGA ~ WUXGA HD: 480i~1080p
<b>IR Frequency</b>	30~50Hz
<b>Audio transmission</b>	LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio (32~192KHz Fs sample rate)



### SW-HBT8O4P-MOD 8 ports HDBaseT output module

<b>video Bandwidth</b>	300MHz/10.2Gbps
<b>Features</b>	Support HDBaseT/PoE/IR/RS232
<b>Output ports</b>	8 * CAT5e/6, 8 * IR Extender, 8 * IR Blaster
<b>IR Frequency</b>	30~50Hz
<b>video resolutions</b>	PC: VGA ~ WUXGA HD: 480i~1080p
<b>Audio transmission</b>	LPCM7.1CH, Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio (32~192KHz Fs sample rate)



## 5. GENERAL TROUBLESHOOTING

PROBLEM	SOLUTION
<b>NO IMAGE</b>	<ul style="list-style-type: none"> <li>• Check if connection to the source and the display are correct.</li> <li>• Ensure that display device supports 480p, 720p and 1080p 4K@30 resolution</li> <li>• Terminated to 568B standard with Shielded Ends Recommended</li> <li>• High Quality CAT5/6/7 Cable helps signal transmission</li> <li>• Please use the supplied power supply-DC 24V/6.25A DC</li> <li>• Check LED Link light see (Section 3 Panel Description)</li> <li>• Check LED Sync light see (Section 3 Panel Description)</li> </ul>
<b>EDID ISSUE</b>	<ul style="list-style-type: none"> <li>• <b>EDID MODE-TV:</b> The default factory setting is on TV. The unit will detect the 1st CAT5e/6/7 output's EDID. When obtained a (4K2K) Ultra HD 3840x2160 EDID the signal is transmitted.</li> <li>• If the 1st CAT5e/6/7 output is without a Ultra HD 3840x2160 EDID the unit will detect all output's EDID and Transmit the signal that all outputs can accept.</li> <li>• <b>EDID MODE-STD:</b> 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.</li> </ul>
<b>Set-Top Box No Picture</b>	<ul style="list-style-type: none"> <li>• HDBaseT and HDMI 1.3 standards support CLOCK STRETCHING for i2c buss protocol</li> <li>• 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</li> </ul>
<b>NO Infrared Communication</b>	<ul style="list-style-type: none"> <li>• Ensure the UTP cable is run within the wall away from EMI and High Voltage power Lines.</li> <li>• Please check manual of device to ensure proper placement of IR Blaster on IR EYE.</li> <li>• Some LED /Plasma TV have EMI interference with the IR Extender, please place the IR Rx 3-6" away from Screen</li> </ul>
Recommended TEST	
<b>End-to-End Testing</b>	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)
<b>Passive Monitoring:</b>	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-HBT4K-C6-4X4E





**COUT-8CvL-3PLAy 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)	Up 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 (Ultra HD Video)	4K2K, 30Hz video, formats

**COUT-8Cv-4PLAy & COUT-8Cv-5PLAy 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)	Up 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 (Ultra HD Video)	4K2K, 30Hz video, formats



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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](mailto: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](mailto: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.

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