# 8x8 HDMI Matrix Switch with 3D over CAT-5 with IR Pass-Through

Model #: SW-HDM3D-C5-8X8

# Table of Contents

# 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 Avenview SW-HDM3D-C5-8X8 HDMI Matrix Switch with 3D over CAT-5 with IR Pass-Through has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the SW-HDM3D-C5-8X8 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.

## 1.4    Introduction

The Avenview SW-HDM3D-C5-8X8, HDMI Matrix Switch with 3D over CAT-5 with IR Pass-Through provides the most flexible and cost effective solution in the market to route high definition video sources plus multi-channel (up to 7.1 channel) digital audio from any of the four HDMI sources to the remote displays at the same time. Through low cost Cat-5/5e/6 LAN cables, not only high quality video and audio can be transmitted to the display sites, but also users can switch among four HDMI sources using the push-in button or remote control. With single power design at the source site, each remote module is easily installed without power supply. Furthermore, the built-in IR extension function makes users at display site access the DVD player, PS3 or any HDMI supported devices directly.

# SW-HDM3D-C5-8X8

720p/1080i = 50m (165 feet) **CAT5**
720p/1080i = 55m (200 feet) **CAT6**
1080p = 30m (130 feet) **CAT5**
1080p = 40m (165 feet) **CAT6**



**CABLE INDEX**

| | |
|---|---|
| Output | (blue) |
| Input / Source | (red) |
| S/PDIF | (yellow) |
| Audio | (black) |
| RS-232 | (green) |
| IR | (gray) |
| CAT-5 / CAT-6 | (cyan) |
| DVI Loop | (orange) |
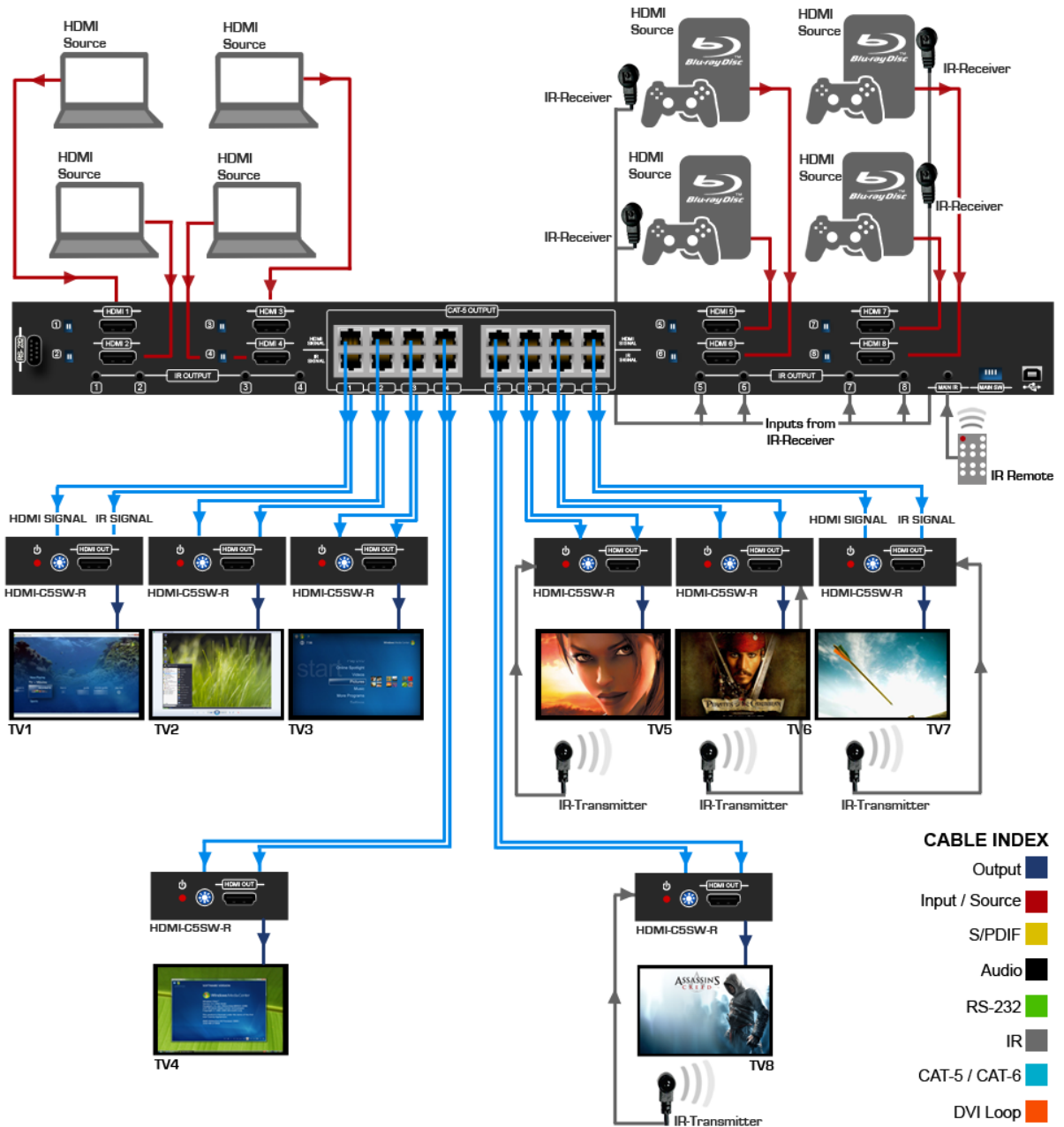
- Silicon Image chipset embedded for best quality, compatibility and reliability
- Support HDMI Deep Color & full 3D
- HDCP compliant
- Allows any source to be displayed on multiple displays at the same time
- Allows any HDMI display to view any HDMI source at any time
- Supports 7.1 channel digital audio
- Supports default HDMI EDID and learns the EDID of displays
- The matrix master can switch every output channels to any HDMI inputs by push-in button, IR remote control, or RS-232 control
- Allows controlling local HDMI sources such as DVD and TiVo by attached IR extender from remote receiver to matrix master
- Allows to control matrix master through IR remote control at remote receiver's site
- Extends video signal up to 35m (115 feet) over CAT5e at 1080p and likely longer with better HDMI source device, better grade HDMI display, and better quality solid CAT6 cable
- Easy installation with rack-mounting and wall-mounting designs for master and receiver respectively
- Fast response time – 2~5 seconds for channel

## 1.5    Package Contents

Before you start the installation of the converter, please check the package contents.

- SW-HDM3D-C5-8X8              x 1
- HDM3D-C5SW-R                 x 8
- IR Transmitter              x 8
- IR Receiver                x 1
- IR Remote Control          x 1
- Rackmounting Ear           x 2
- Power Adapter (+5VDC, 4A)    x 1
- User's Manual              x 1

## 1.6    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 optical cable. It can cause malfunction.

## 1.7    Panel Description
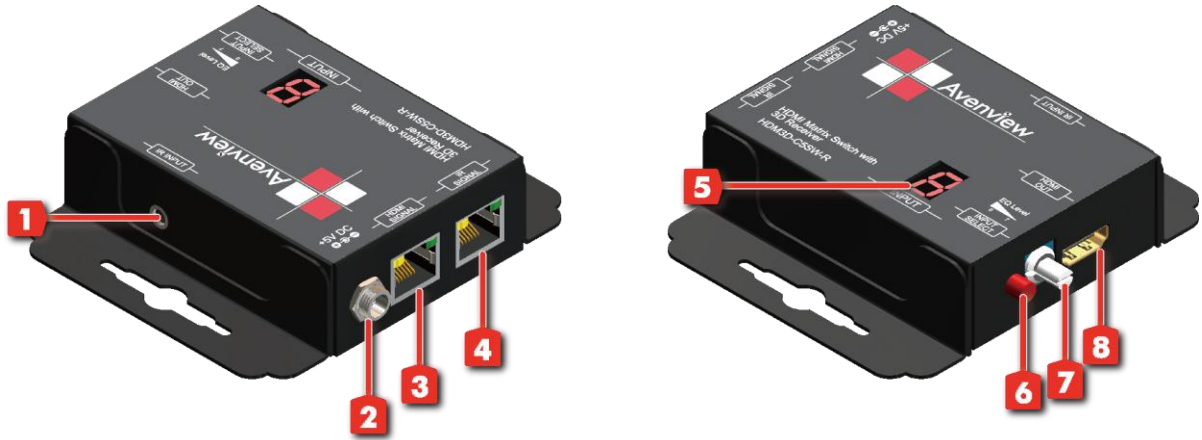
### 1.7.1 SW-HDM3D-C5-8X8 Front Panel
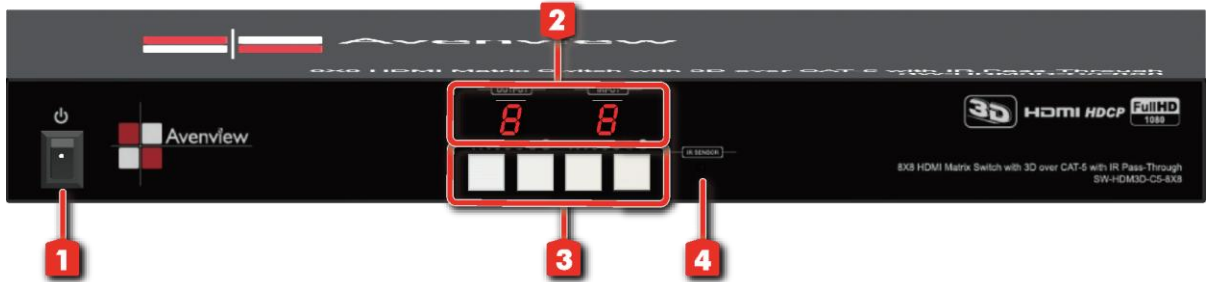


| | |
|---|---|
| 1.  **Power:** Power Control | 2.  **Seven Segment LED Indicators:** LED display for output ports and input channels |
| 3.  **Front Panel Push Buttons:** Front panel push buttons used to select the number of input source and display channel | 4.  **IR SENSOR:** IR sensor for receiving the IR commands from the IR remote |

### 1.7.2 SW-HDM3D-C5-8X8 Rear Panel
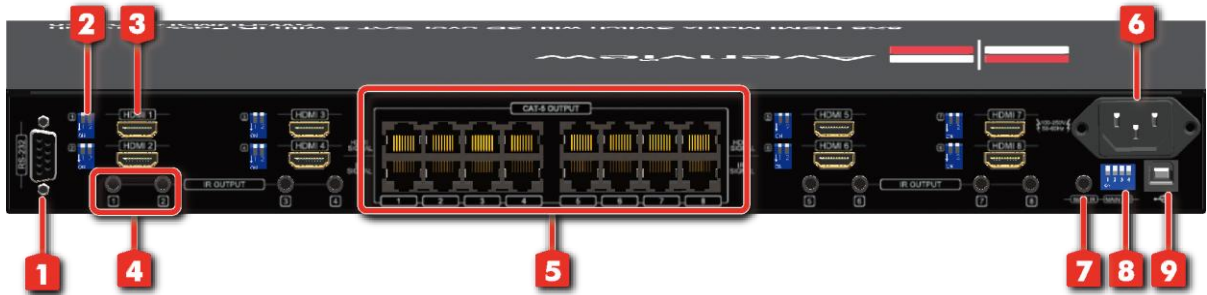


| | |
|---|---|
| 1.  **RS232:** RS-232 control port | 2.  **SW 1-8:** DIP Switch |
| 3.  **HDMI 1 – 8:** HDMI Inputs | 4.  **IR OUTPUT 1 – 8:** 3.5mm IR blaster socket for individual HDMI source control |
| 5.  **CAT-5 OUTPUT:** RJ-45 outputs for each output channel | 6.  **AC Power:** 100-250V |
| 7.  **MAIN IR:** 3.5mm IR blaster socket for HDMI source control on all 8 inputs s | 8.  **MAIN SW:** DIP switches |
| 9.  **USB:** HDMI local output | |

## 1.7.3 HDM3D-C5SW-R



| 1. | **IR INPUT:** Plug in IR receiver. | 2. | **+5V DC:** Spare power jack for over 60m transmission when the RX may need external power to work. |
|---|---|---|---|
| 3. | **HDMI SIGNAL:** Plug in the CAT5 connected to the respective **A/V SIGNAL** port on the SW-HDM3D-C5-8X8 | 4. | **IR SIGNAL:** Plug in the CAT5 connected to the respective **CHANNEL CONTROL** port on the SW-HDM3D-C5-8X8 |
| 5. | **INPUT :** Display the current showing HDMI source channel | 6. | **INPUT SELECT:** Push button for switching input source channel in sequential order |
| 7. | **EQ Level:** Adjust the 8-level equalization control to the received HDMI signals. The HDMI signal level varies from 0 (strongest) to 7 (weakest) for respective transmission length from longest possible range to short distance. Please adjust the signal level from 7 to 0 and stop turning the rotary switch whenever the audio/video is playing normally. Inappropriate signal level setting may cause overpowering issue that would shorten the product life significantly! | 8. | **HDMI OUT:** Connect to HDTV with a HDMI cable |

### 1.7.4 Dip Switch for EDID & Audio Settings (SW1 – SW8)

| DIP Switch Position | | Video | Audio | Description |
|---|---|---|---|---|
| PIN # 1 | PIN # 2 | | | |
| OFF ⬆ | OFF ⬆ | 1080p | Surround | **Default Mode 1**[1]**:** EDID up to 1080p video & surround sound audio output up to 7.1ch (DTS-HD Master & Dolby TrueHD) |
| OFF ⬆ | ON ⬇ | Up to 1080p | Stereo[2] | **Default Mode 2:** EDID up to 1080p video and stereo audio for basic compatibility among HDTVs |
| ON ⬇ | OFF ⬆ | Up to 720p/1080i | Stereo | **Safe Mode**[3]**:** EDID up to 720p/1080i video and stereo audio for basic compatibility among HDTVs |
| ON ⬇ | ON ⬇ | Bypass[4] | Bypass[4] | **EDID Learning Mode**[5]**:** for learning EDID from the display while playing any received HDMI audio format |

1  *Factory default setting of [SW1]-[SW8] is pin-1 at OFF [ ⬆ ] & pin-2 at OFF [ ⬆ ] for 1080p video and surround sound audio.*

2  *If the HDTV shows video but without audio, please try to set audio mode to stereo.*

3  *If you encounter any unsolved audio/video output problem during system installation, please turn any [SW1]-[SW8] to pin-1 at ON [ ⬇ ] & pin-2 at OFF [ ⬆ ] for safe mode to select the system EDID up to 720p(1080i) video and stereo audio for system check. However, the safe mode cannot be initiated if your HDMI source is set to enforce 1080p output. In this case, please reconfigure your HDMI source to all resolution output for troubleshooting.*

4  *Bypass means the matrix will maintain playing the original format of HDMI signals in video and perhaps audio. By setting at this mode, the users may encounter compatibility issue among different kinds of HDMI sources and displays. If you cannot get the audio and/or video output normally at the system installation, please change the DIP switch setting to default mode or even safe mode to verify the functionality of the device.*

5  *To learn the EDID of HDMI display for respective HDMI source devices, please see the [EDID Learning] section in the next page for more information*

### 1.7.5 SW Main Dip Switch for Firmware Update

| DIP Switch Position | | PIN # 1 | PIN # 2 | PIN # 3 | PIN # 4 |
|---|---|---|---|---|---|
| **Normal Operation Mode [via RS-232 port][6]** | | OFF ⬆ | OFF ⬆ | OFF ⬆ | OFF ⬆ |
| **Firmware Update Mode[7]** | **Block A [main]** | ON ⬇ | OFF ⬆ | OFF ⬆ | OFF ⬆ |
| | **Block B [remote]** | ON ⬇ | OFF ⬆ | ON ⬇ | OFF ⬆ |
| | **Block C [HDMI]** | ON ⬇ | ON ⬇ | OFF ⬆ | OFF ⬆ |

6    *Factory default for **SW Main** is pin#1-OFF [⬆], pin#2-OFF [⬆], pin#3-OFF [⬆], & pin#4-OFF [⬆]. PLEASE MAINTAIN THIS SETTING AT ANYTIME FOR REGULAR USE VIA RS-232 CONTROL!*

7    ***Sequence for firmware update***

   ***WARNING!***

   ***[Firmware update only can be done via RS-232 port and connection to PC set at COM1)***

   *[1].  Power off the Matrix unit. Execute the firmware update program on your PC via COM1 port connection to the RS-232 port of the Matrix unit.*

   *[2].  Set the pin#1 of **[SW Main]** at ON [⬇] for firmware update mode.*

   *[3].  Set pin#2 and pin#3 at respective positions to assign which Block to be updated.*

   *[4].  Power on the Matrix unit. The firmware update program should begin this update sequence automatically. If not, please check the RS-232 connection status between PC and Matrix unit.*

   *[5].  After the OK message shows up to indicate the firmware update sequence for designated Block is complete, please turn off the Matrix unit.*

   *[6].  Repeat step 3 ~ step6 if you want to update the firmware of the remaining Blocks.*

   *[7].  Set the [SW Main] switch position to Normal Operation Mode.*

   *[8].  Power on the Matrix unit.*

## 1.8    IR Control Patch
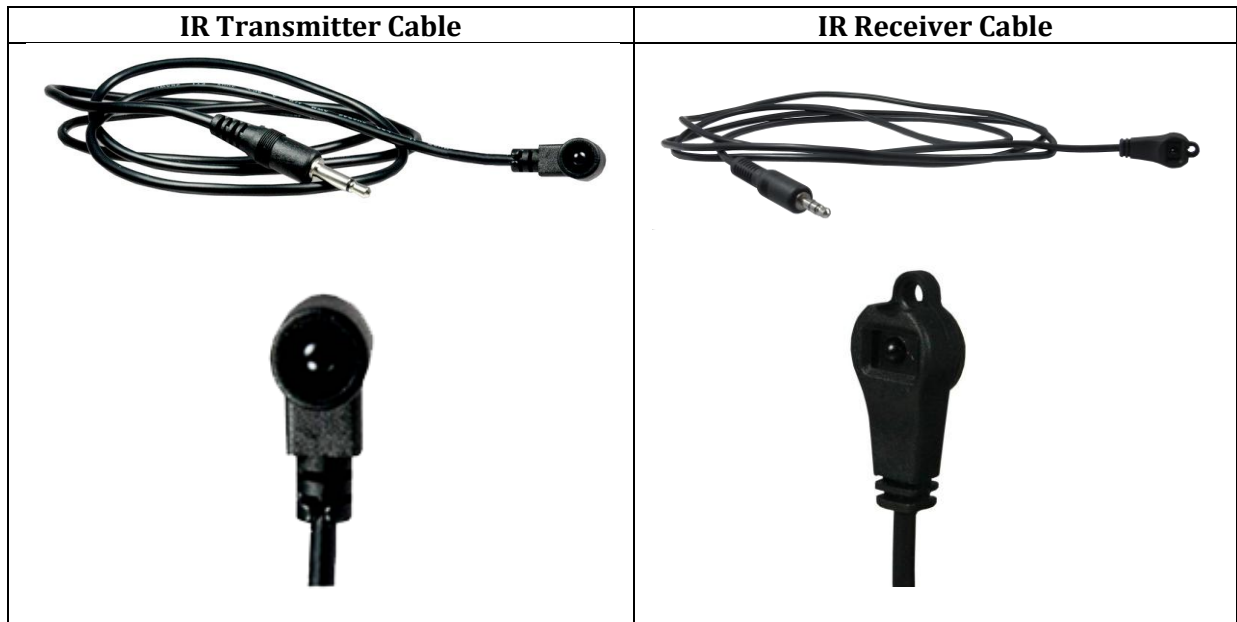
| IR Transmitter Cable | IR Receiver Cable |
|---|---|
|  |  |

| IR Main | The default location for IR emitter extension cable to transmit all IR command signals received from any of the four remote receivers to all of the HDMI sources. |
|---|---|
| IR1 | IR emitter extension cable connected here can only transmit IR command signals from the remote receivers that are setting at the input channel 1. |
| IR2 | IR emitter extension cable connected here can only transmit IR command signals from the remote receivers that are setting at the input channel 2. |
| IR3 | IR emitter extension cable connected here can only transmit IR command signals from the remote receivers that are setting at the input channel 3. |
| IR4 | IR emitter extension cable connected here can only transmit IR command signals from the remote receivers that are setting at the input channel 4. |

## 1.9 Installation (SW-HDM3D-C5-8X8)

To setup Avenview SW-HDM3D-C5-8X8 follow these steps for connecting to a device:

1.      Connect all sources to HDMI Inputs on the 8X8 HDMI over CAT5 Matrix Switch (SW-HDM3D-C5-8X8)
2.      Connect each DDC output on the SW-HDM3D-C5-8X8 to respective DDC input on the remote receiver HDM3D-C5SW-R
3.      Connect each TMDS output on the SW-HDM3D-C5-8X8 to respective TMDS input on the remote receiver HDM3D-C5SW-R
4.      Connect IR emitter cable to the SW-HDM3D-C5-8X8 and direct the IR emitter to the build-in IR receiver of the sources
5.      Connect the +5V 6A DC power supply to the SW-HDM3D-C5-8X8
6.      Power on all HDMI sources
7.      Power on the SW-HDM3D-C5-8X8

# 1.10   Operation and IR Control

## 1.10.1 Source Side

### 1.10.1.1 Method A: Push Button

1. Use the "**+**" or "**—**" channel button on output port to select which port to be changed.

   "**+**": change selected output port in ascending order

   "**—**": change selected output port in descending order

2. Push the "**+**" or "**—**" channel button on Input channel to select the HDMI input source you want to display on this selected output port in step 1 in sequential order. Once you reach the desired input channel you want to display on this selected output port, leave it and the setting will be effective in a few seconds.

### 1.10.1.2 Method B: IR Remote Control

Firstly please push one of the INPUT buttons to choose which HDMI input source you are going to setup. After that, you can have multiple outputs playing the same content from the selected INPUT #1-#8 by pushing the corresponding OUTPUT buttons. The setting will be effective in a couple of seconds.

| | |
|---|---|
| INPUT 1 | HDMI input port #1 |
| INPUT 2 | HDMI input port #2 |
| INPUT 3 | HDMI input port #3 |
| INPUT 4 | HDMI input port #4 |
| INPUT 5 | HDMI input port #5 |
| INPUT 6 | HDMI input port #6 |
| INPUT 7 | HDMI input port #7 |
| INPUT 8 | HDMI input port #8 |
| OUTPUT 1 | HDMI output port #1 |
| OUTPUT 2 | HDMI output port #2 |
| OUTPUT 3 | HDMI output port #3 |
| OUTPUT 4 | HDMI output port #4 |
| OUTPUT 5 | HDMI output port #5 |
| OUTPUT 6 | HDMI output port #6 |
| OUTPUT 7 | HDMI output port #7 |
| OUTPUT 8 | HDMI output port #8 |
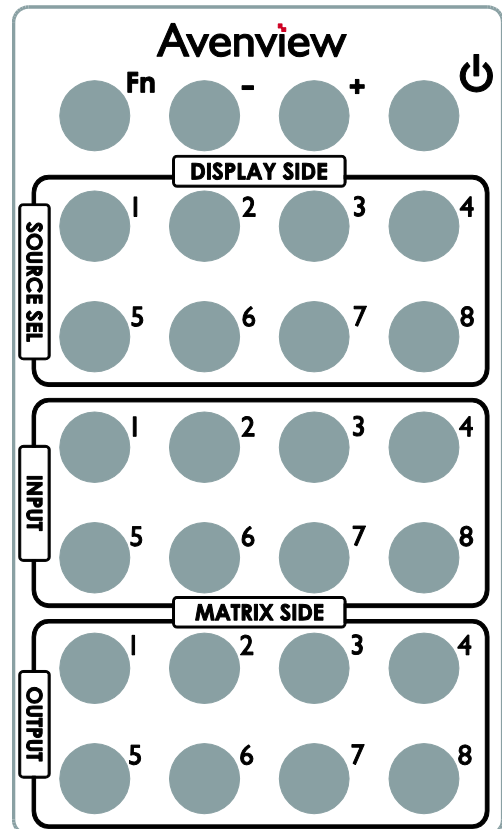
### 1.10.2 Display Side

#### 1.10.2.1 Method A: Push Button

Press the INPUT SELECT push button to switch the input source on the respective output port connected to the matrix receiver in sequential order. The selected input source will be displayed on the LED of INPUT CHANNEL.

#### 1.10.2.2 Method B: IR Remote Control for Switching Input Channels

Please decide which input channel to be selected by pressing Source Selection 1 to Source Selection 8. Or you can use left ◄ and right +► button to enter IR control mode and select the input channel in ascending and descending order respectively. The setting will be effective in a couple of seconds.

| | |
|---|---|
| ◄ | Switch input port in descending order* |
| +► | Switch input port in ascending order* |
| SOURCE SEL. 1 | Switch the display channel at the remote site to input port 1 |
| SOURCE SEL. 2 | Switch the display channel at the remote site to input port 2 |
| SOURCE SEL. 3 | Switch the display channel at the remote site to input port 3 |
| SOURCE SEL. 4 | Switch the display channel at the remote site to input port 4 |
| SOURCE SEL. 5 | Switch the display channel at the remote site to input port 5 |
| SOURCE SEL. 6 | Switch the display channel at the remote site to input port 6 |
| SOURCE SEL. 7 | Switch the display channel at the remote site to input port 7 |
| SOURCE SEL. 8 | Switch the display channel at the remote site to input port 8 |
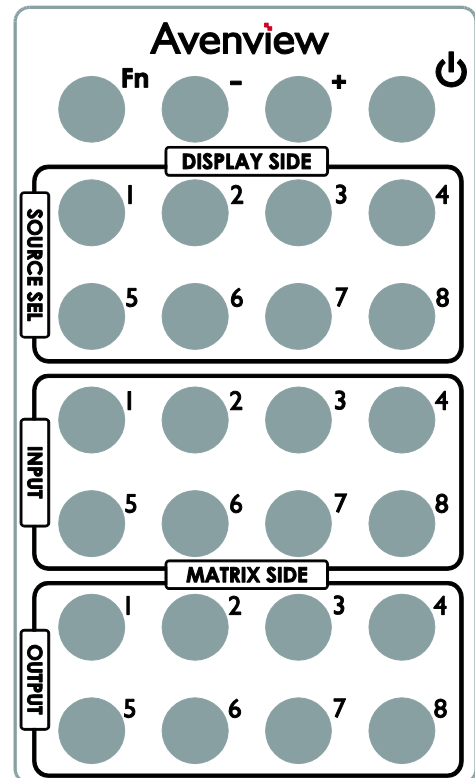
Note

Right ( +► ) button to switch input source in ascending order (1, 2, 3, 4, 5, 6, 7, 8, 1, 2, ......)

Left ( ◄ ) button to switch input source in descending order (1, 8, 7, 6, 5, 4, 3, 2, 1, 2, ......)

#### 1.10.2.3 Method C: IR Remote Control for Controlling the HDMI Sources

Users can use the corresponding IR remote to control respective DVD player or any HDMI compliant devices including SW-HDM3D-C5-8X8 itself with IR control at any display site.

## 1.11  RS232 Serial Port Control
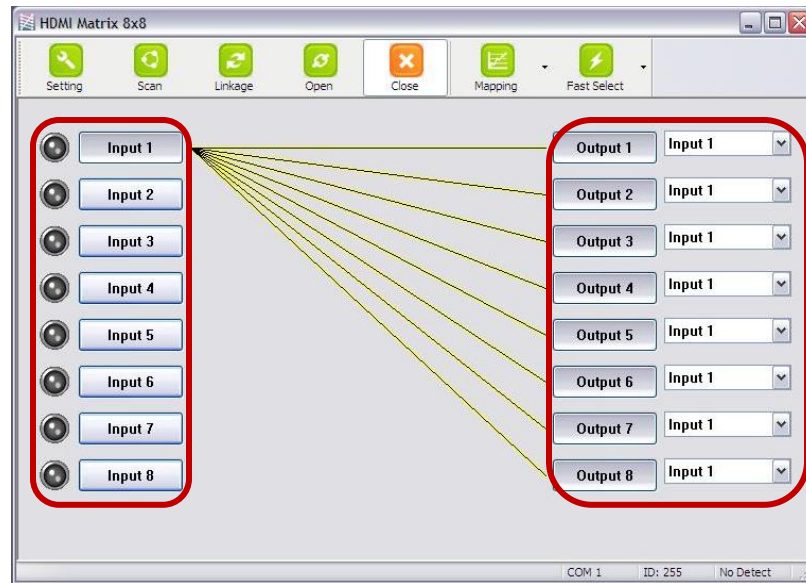


**Scan:**

Press Scan button, the machine will scan the all com port and show them.

Select the RS232 serial port connected to the machine. And set device ID 255 is for all device.

Only the same device id or 255 can get the command you sent.

Press OK. Get the new status from the machine you select.



**Setting:**

Press Get button to read back device ID.

Press Set button to write device ID.

**Linkage:** Press Linkage button to read back all status

**Open / Close :** Press this button to Close or Open COM Port.

**Mapping Button:**

Select All Output:
   Select "set all output", then select the source on main menu.
   You can quickly set all output to the same source.

Unselect All Output:
   Release output selection.

Select Input1~8-Output:
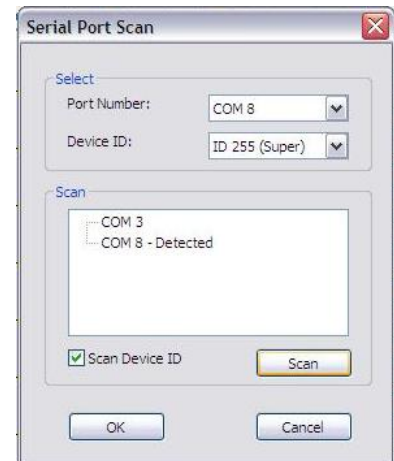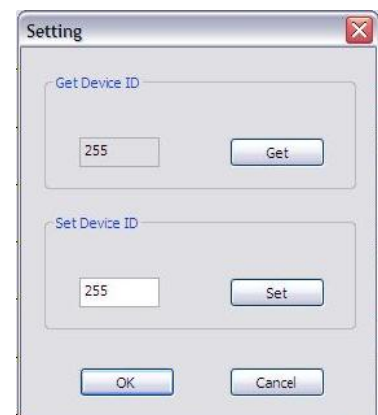   Select Input Source. Then select the output port icon.

For example:
   Select input source 1. Then select output port one and two. The
   video and audio will be send to port one and two.
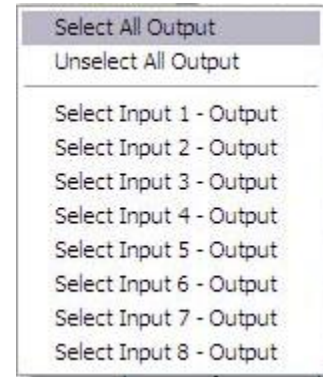
**Fast Select Button:**

Press **Fast select** button. Quick setting.
   Input one ➡ Output Port one
   Input two ➡Output Port two
              …..
Press Fast select pull down menu.
Select Input Num-Output Num
   Input source #1 ➡ Output port #1
   Input source #2 ➡ Output port #2
              …..
Select Input* - All Output

      Send the same source to all output.

**Output Port:**
Pull down menu and select which source to be sent to this output port.

**One by one setting**

On main menu screen.
First select input source. Then select the output ports which you want to
send the video and audio from this source. When you select the input
source, the source will change to gray. When you select the output port
one by one, the selected output port will change to gray.
The linking line will change to yellow.

**Group setting**

First select output ports one by one. Then select the input source. The selected output ports change the setting at the same time.

**By using Terminal:**

Baud rate:           9600
Data length:         8bit
Parity check:        No
Stop bit:            1

## 1.11.1RS232 Commands

| COMMAND | ACTION | COMMAND | ACTION | COMMAND | ACTION |
|---------|--------|---------|--------|---------|--------|
| ST | System Status* | C5 | Output C select Input5 | F3 | Output F select Input3 |
| VR | Firmware Version | C6 | Output C select Input6 | F4 | Output F select Input4 |
| A1 | Output A select Input1 | C7 | Output C select Input7 | F5 | Output F select Input5 |
| A2 | Output A select Input2 | C8 | Output C select Input8 | F6 | Output F select Input6 |
| A3 | Output A select Input3 | D1 | Output D select Input1 | F7 | Output F select Input7 |
| A4 | Output A select Input4 | D2 | Output D select Input2 | F8 | Output F select Input8 |
| A5 | Output A select Input5 | D3 | Output D select Input3 | G1 | Output G select Input1 |
| A6 | Output A select Input6 | D4 | Output D select Input4 | G2 | Output G select Input2 |
| A7 | Output A select Input7 | D5 | Output D select Input5 | G3 | Output G select Input3 |
| A8 | Output A select Input8 | D6 | Output D select Input6 | G4 | Output G select Input4 |
| B1 | Output B select Input1 | D7 | Output D select Input7 | G5 | Output G select Input5 |
| B2 | Output B select Input2 | D8 | Output D select Input8 | G6 | Output G select Input6 |
| B3 | Output B select Input3 | E1 | Output E select Input1 | G7 | Output G select Input7 |
| B4 | Output B select Input4 | E2 | Output E select Input2 | G8 | Output G select Input8 |
| B5 | Output B select Input5 | E3 | Output E select Input3 | H1 | Output H select Input1 |
| B6 | Output B select Input6 | E4 | Output E select Input4 | H2 | Output H select Input2 |
| B7 | Output B select Input7 | E5 | Output E select Input5 | H3 | Output H select Input3 |
| B8 | Output B select Input8 | E6 | Output E select Input6 | H4 | Output H select Input4 |
| C1 | Output C select Input1 | E7 | Output E select Input7 | H5 | Output H select Input5 |
| C2 | Output C select Input2 | E8 | Output E select Input8 | H6 | Output H select Input6 |
| C3 | Output C select Input3 | F1 | Output F select Input1 | H7 | Output H select Input7 |
| C4 | Output C select Input4 | F2 | Output F select Input2 | H8 | Output H select Input8 |

## Section 2: Specifications

| Item | Description | |
|---|---|---|
| **Units** | SW-HDM3D-C5-8X8 | HDM3D-C5SW-R |
| **Unit Description** | 8x8 HDMI Matrix Switch with 3D over CAT-5 with IR Pass-Through | HDMI Matrix Switch with 3D Receiver |
| **HDMI Compliance** | Support HDMI Deep Color & full 3D | |
| **HDCP Compliance** | Yes | |
| **Video Bandwidth** | Single Link 225 MHz (6.75Gbps) | |
| **Supported Resolutions** | 480i / 480p / 720p / 1080i / 1080p60 | |
| **Resolution and Distance** | **Full HD:** (1080p) ~ 35meter (115feet) (CAT5e) / 40meter (130feet) (CAT6) **HD:** (720p/1080i) ~ 50meter (165feet) (CAT5e) / 55meter (180feet) (CAT6) | |
| **Audio Support** | Surround Sound (up to 7.1 Ch) or Stereo Digital Audio | |
| **Equalization** | N/A | 8 Level Digital Control |
| **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) <br> - Core chipset — ±8kV | |
| **Input** | 8 x HDMI <br> 1 x RS232 | 1 x RJ45 TMDS <br> 1 x RJ45 DDC <br> 1 x IR Socket for IR Receiver |
| **Output** | 8 x RJ45 HDMI Signal <br> 8 x RJ45 IR Control <br> 9 x IR Socket for IR Transmitter | 1 x HDMI |
| **HDMI Input Selection** | Push Button / IR Remote / RS232 | Push Button / IR Remote |
| **HDMI Source Control** | Through IR Control Path from IR Receiver | |
| **HDMI Connector** | Type A (19 pin female) | |
| **RJ45 Connector** | WE/SS 8P8C with 2 LED indicators | |
| **RS232 Connector** | DE-9 (9-pin D-sub Female) | |
| **DIP Switch** | Yes | - |
| **Dimensions (L x W x H)** | 17" x 11.4" x 1.7" | 3.3" x 3.5" x 1" |
| **Power Supply** | AC Power 100-250V | Most not required |
| **Power Consumption** | 60 Watt (max) | 1.5 Watt (max) <br> provided by SW-HDM3D-C5-8X8 |

*Environmental*

| | | |
|---|---|---|
| **Operating Temperature** | 32˚ ~ 104˚F (0˚ to 40˚C) | |
| **Storage Tempearture** | -4˚ ~ 140˚F (-20˚ ~ 60˚C) | |
| **Relative Humidity** | 20~90% RH (no condensation) | |

# Notice

1. *If the DVI or HDMI device requires the EDID information, please use EDID Reader/Writer to retrieve and provide DVI/HDMI EDID information.*

2. *All HDMI over CAT5 transmission distances are measured using Belden 1583A CAT5e 125MHz LAN cable and ASTRODESIGN Video Signal Generator VG-859C.3*

3. *The transmission length is largely affected by the type of LAN cables, the type of HDMI sources, and the type of HDMI display. The testing result shows solid LAN cables (usually in bulk cable 300m or 1000ft form) can transmit a lot longer signals than stranded LAN cables (usually in patch cord form). Shielded STP cables are better suit than unshielded UTP cables. A solid UTP CAT5e cable shows longer transmission length than stranded STP CAT6 cable. For long extension users, solid LAN cables are your only choice.*

4. *EIA/TIA-568-B termination (T568B) for LAN cables is recommended for better performance.*

5. *To reduce the interference among the unshielded twisted pairs of wires in LAN cable, you can use shielded LAN cables to improve EMI problems, which is worsen in long transmission.*

6. *Because the quality of the LAN 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 LAN cables. For resolution greater than 1080i or 1280x1024, a CAT6 cable is recommended.*

7. *If your HDMI display has multiple HDMI inputs, it is found that the first HDMI input [HDMI input #1] generally can produce better transmission performance among all HDMI inputs.*

**Disclaimer**

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