

User Manual

SY-MUHD-44 and SY-MUHD-88

**4x4 HDMI 4K Matrix
8x8 HDMI 4K Matrix**

SY-MUHD-44 & SY-MUHD-88

The SY MUHD-44 and MUHD-88 are 4x4 and 8x8 true HDMI matrix switchers respectively, supporting HDMI2.0, HDCP2.2 and up to 4K video resolution and 9GHz bandwidth. They allow any source (BluRay player, HD DVD player, satellite receiver, game station, etc.) to be shown on any of the displays simultaneously, no matter whether the source is HDCP compliant or not.

These matrix switchers equalize and amplify the output to ensure the HDMI signal can be transmitted through a long cable without loss of quality.

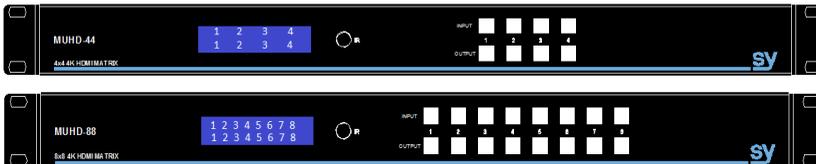
The SY MUHD-44 and MUHD-88 offer solutions for digital entertainment centres, HDTV retail, show sites, data centre control, information distribution, conference room presentation, school and corporate training environments, and may more.

Features

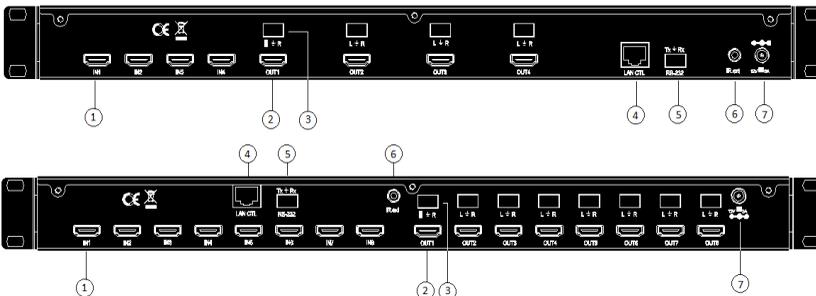
- HDMI 2.0 (9 GHz), HDCP2.2 compliant
- De-embedded Stereo audio per output (3 pin screw terminals)
- Easy to use: Install in seconds, Simple interface, Feature rich, Powerful EDID management
- Allows range of HDMI source devices to be independently switched to multiple HDMI monitors, HDTVs, or projectors
- The outputs can show the same or different sources at the same time, regardless of the source being HDCP compliant or not
- Supports high definition resolutions 4K/60, 4K/30, 1080P, 1080i, 720P and standard video format
- Four control mode options: Front panel, IR (Front panel or using IR extension kit), RS232, Ethernet

Panel Descriptions

Front



Rear



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- ① HDMI input ports
- ② HDMI output ports
- ③ Analogue audio output
- ④ Ethernet control
- ⑤ RS23 for control
- ⑥ IR port (for external IR receiver)
- ⑦ DC power input

Installation

- 1) Connect the HDMI input sources to SY-MUHD-44 /88
- 2) Connect the HDMI outputs to SY-MUHD-44 /88
- 3) Power on the required input sources
- 4) Connect the power supply into the SY-MUHD-44 and turn on the displays
- 5) Use the remote control or the front panel push buttons to choose input to output source selection

*Insert and remove HDMI cables carefully to avoid damaging the HDMI connectors on the matrix switchers.

Operation

Front Panel Control

The SY-MUHD-44 and SY-MUHD-88 front panel controls allow for the selection of the inputs to the various outputs. First press a button on the OUTPUT row to choose the output port, then press a button on the INPUT row to select the input signal for the selected output. (Output, then Input)

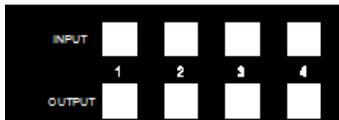


Figure 1 - MUHD-44 Front Panel Controls

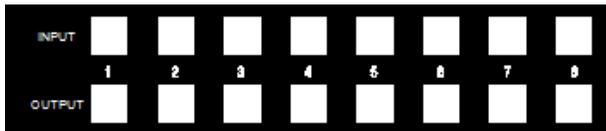


Figure 2 - MUHD-88 Front Panel Controls

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Local IR Control

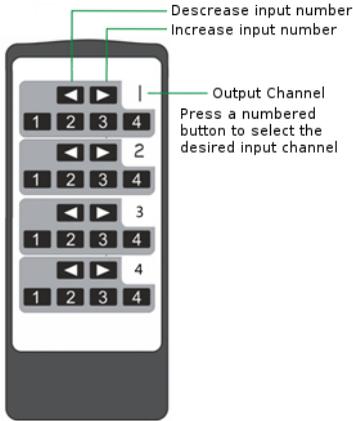


Figure 3 - MUHD-44 IR Control

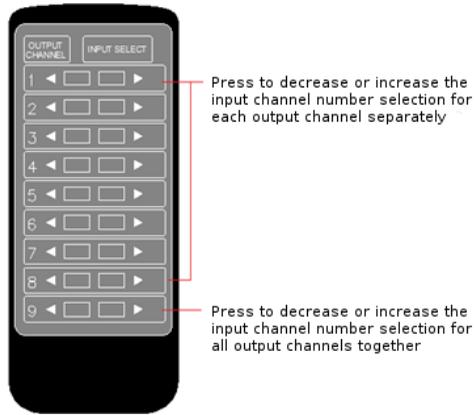


Figure 4 - MUHD-88 IR Control

The HDMI routing of the matrix can also be controlled by using the IR remote supplied with the product.

The left arrow button decrements to the next lower input port, and the right arrow increments to the next input port.

The IR remote controller for the SY-MUDH-44 also allows direct selection of the inputs for each output.

The IR remote control for the SY-MUHD-88 allows the user to increase or decrease all eight of the inputs source selections simultaneously with a single button press.



The supplied IR receiver cable can be used to provide a different receiver position. Simply plug the cable into the IR Ext socket on the rear of the matrix switcher.

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EDID Setting

The matrix switcher has 12 built-in factory defined EDID setting, and three user programmable EDID memories. The user EDID memories are independent to each input and can therefore be set differently for each input. The matrix switcher can also be set to use the EDID information from any of the output display devices.

To change the EDID setting, press and hold any INPUT button for 3 seconds and the LCD display will show the current EDID setting for that input channel.

The EDID setting will be one of the following:

- 1: 1080P 2CH (PCM)
- 2: 1080P audio 5.1
- 3: 1080P audio 7.1
- 4: 1080P 3D 2CH (PCM)
- 5: 1080P 3D audio 5.1
- 6: 1080P 3D audio 7.1
- 7: 4K30Hz 3D 2CH (PCM)
- 8: 4K30Hz 3D audio 5.1
- 9: 4K30Hz 3D audio 7.1
- 10: 4K60Hz (Y420) 3D 2CH (PCM)
- 11: 4K60Hz (Y420) 3D audio 5.1
- 12: 4K60Hz (Y420) 3D audio 7.1
- USER EDID 1
- USER EDID 2
- USER EDID 3
- EDID from output 1
- EDID from output 2
- EDID from output 3
- EDID from output 4

The first twelve EDID settings are factory set and cannot be altered. The three USER EDID memories can only be programmed using RS232 commands. The EDID from any output can be programmed either using the front panel controls as described below, or by using RS232 commands. Each input presents its currently selected EDID setting to the HDMI source device, therefore only one EDID setting is active at any instant for an input, but this setting can be different for each input.

The following is an example of how to change the EDID setting for input 3:

User Action	LCD Text after User Action
Press and hold button 3 for 3 seconds.	
Click button 3 to step to the next EDID setting. (This step can be repeated until the desired EDID setting is displayed)	

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Press and hold button 3 for 3 seconds to save the setting.

[3] | SETTING
EDID | SUCCESS

When the LCD shows the following text, or similar:

[3] | EDID FROM
EDID | OUTPUT1

Then pressing and holding button 3 for three seconds will make the matrix switcher read the EDID from the display device connected to the selected HDMI output and save it to the input chosen as the first step in the above table.

Please always be aware that the EDID setting of each input is independent and that, therefore, each input may need to be programmed separately.

Display IP Information

Press and hold buttons 3 and 4 for three seconds to display the current IP settings. The screen will change every three seconds to display the next IP setting, but will always begin with the current IP address of the matrix:

HOST IP:
192.168.001.239

In order to prevent potential IP problems arising, most of the IP settings can only be programmed using RS232 commands.

Changing the DHCP Setting

Press and hold buttons 1 and 3 for three seconds to change the DHCP setting. The LCD will show the new DHCP setting:

DHCP
ON

or

DHCP
OFF

Setting the Cascading Mode

When the cascading mode is enabled the matrix will not read the EDID or Hot Plug Status from any display device and will always output the HDMI signal. This mode should only be enabled if the installation is experiencing some HDMI problems and enabling this mode solves the problem. If the problems persist when the cascading mode is enabled then there may be a handshaking issue between the matrix and the display device.

The cascade mode is enabled when the LCD shows the following:

Cascading Mode
ENABLE

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RS232 Commands

The SY-MUHD-44 and SY-MUHD-88 can also be controlled using RS232 commands, and some configuration settings can only be performed using RS232 commands. The same commands can sent to the matrix via the Ethernet, as IP commands.

The serial port settings should be set to: 57600,n,8,1 (baud: 57600, no parity, 8 data bits and 1 stop bit) with no handshaking.

In each of the following RS232 command the ↵ symbol represents the carriage-return character (0x0d). Where shown for a particular command, the square brackets [] are required for that command.

The commands normally reply with the same command that was sent, but with the fist character pointing left: e.g. the command: >@WVSO [1] I [2] ↵ gives the command response: <@WVSO [1] I [2] ↵

Video Selection Commands

Change the input and output signal routing: Where x is the input number and y is the output number.	>@WVSO [y] I [x] ↵
Set input x to all outputs	>@WVSOA [x] ↵
Turn output y off	>@WVSO [y] OFF ↵
Turn output y on	>@WVSO [y] ON ↵

External (De-Embedded) Audio Commands

Enable external (de-embedded) audio for output y	>@WASO [y] E EN ↵
Disable external (de-embedded) audio for output y	>@WASO [y] E DIS ↵
Enable All external (de-embedded) audio outputs	>@WASOAEON ↵
Disable All external (de-embedded) audio for outputs	>@WASOAEOFF ↵

EDID Commands

Read the current EDID information from input x ⁽³⁾	>@R8010 [x] ↵
Read the current EDID information from output y ⁽³⁾	>@R8011 [y] ↵
Set input x to EDID from output y	>@WECO [y] I [x] ↵
Set All inputs to EDID from output y	>@WECO [y] A ↵
Set input x to Default EDID n – ($n = 1$ to 12)	>@WECD [n] I [x] ↵
Set All inputs to Default EDID n – ($n = 1$ to 12)	>@WECD [n] A ↵
Set input x to User EDID n – ($n = 1$ to 3)	>@WECU [n] I [x] ↵
Set All inputs to Default EDID n – ($n = 1$ to 3)	>@WECU [n] A ↵
Read EDID from output y and write to User EDID n of input x – ($n = 1$ to 3)	>@WEWI [x] U [n] O [y] ↵
Read EDID from output y and write to User EDID n of All inputs – ($n = 1$ to 3)	>@WEWIAU [n] O [y] ↵

Set Cascading Mode

Turn cascading mode on	>@WSDBGEN ↵
Turn cascading mode off	>@WSDBGDIS ↵

IP Set-Up Commands

Set the Host IP address of the matrix switcher (Default: 192.168.001.239)	>@WIPH xxx.xxx.xxx.xxx↓
Set the subnet mask (Default: 255.255.255.000)	>@WIPN xxx.xxx.xxx.xxx↓
Set the Router IP address (Default: 192.168.001.001)	>@WIPR xxx.xxx.xxx.xxx↓
Set the TCP/IP port number (Default: 23)	>@WIPH zzzzz↓
Set DHCP on	>@WIPDP ON↓
Set DHCP off	>@WIPDP OFF↓

Get Status Information

Output a report giving the current status of the matrix switcher ⁽²⁾	>@RSTA↓
Read the input connection status ⁽⁴⁾	>@R8001↓
Read the output connection status ⁽⁴⁾	>@R8002↓
Read input HDCP status ⁽⁴⁾	>@R8003↓
Read output HDCP status ⁽⁴⁾	>@R8004↓
Read output channel settings ⁽⁴⁾	>@R8006↓
Read output On/Off states ⁽⁴⁾	>@R8007↓
Read External (de-embedded) audio status ⁽⁴⁾	>@R8008↓
Read input EDID setting ⁽⁴⁾	>@R8009↓
Read all network settings ⁽⁵⁾	>@R8012↓
Read cascade mode status ⁽⁴⁾	>@R8017↓

Other Commands

Power off the matrix switcher (enter standby mode)	>@WSPF↓
Power off the matrix switcher (exit standby mode)	>@WSPN↓
Help, list all available commands ⁽²⁾	>@RH↓
Reset to factory defaults	>@WSDF↓

Notes:

- (1) This command generate a large report giving detailed information about the current status of the matrix switcher.
- (2) This command lists all the commands that the matrix switcher supports.
- (3) These EDID commands output an ASCII data block that lists the values of the requested EDID data values in hexadecimal notation.
- (4) These commands respond with a short message, usually one line, giving the requested information.
- (5) The IP status command will respond with all the current IP settings: Host IP address, Subnet mask, Router IP address, TCP/IP port number and the DHCP setting.

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Specifications

Parameter	SY-MUHD-44	SY-MUHD-88
HDMI Inputs	4	8
HDMI Outputs	4	8
Analogue audio outputs (Stereo)	4	8
Weight (Main Unit)	2.1kg	2.4kg
Input Video Signal	0.5-1.0 volts p-p	
Input DDC Signal	5 volts p-p (TTL)	
Signalling Rate	3.0Gbit/s per channel	
Video Format Supported	DTV/HDTV: 4K60/4k30/1080P/1080i/720P/576P/480 P/576i/480i	
Output Video	HDMI2.0 and HDMI 1.4	
Audio Format Supported (HDMI)	DTS-HD, Dolby trueHD	
Maximum Transmission Distance	Less than 15m	
Communication Ports	RS232, IR, Ethernet	
RS232 Settings	Baud rate: 57600 Data bits: 8 Parity: None Stop bits: 1 Handshaking: None	
Supply voltage	12V DC	
Power Consumption	15W (Max.)	
Operating Temperature Range	0 to +35°C (32 to +95°F)	
Operating Humidity Range	15 to 90 %RH (non-condensing)	
Dimensions	L440 x W256 x H42 mm L17.3"xW10"xH1.65" 19" Rack height: 1U	

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Safety Instructions

To ensure reliable operation of these product as well as protecting the safety of any person using or handling these devices while powered, please observe the following instructions.

1. Use the power supplies provided. If an alternate supply is required, check Voltage, polarity and that it has sufficient power to supply the device it is connected to.
2. Do not operate these products outside the specified temperature and humidity range given in the above specifications.
3. Ensure there is adequate ventilation to allow this product to operate efficiently.
4. Repair of the equipment should only be carried out by qualified professionals as these products contain sensitive devices that may be damaged by any mistreatment.
5. Only use these products in a dry environment. Do not allow any liquids or harmful chemicals to come into contact with these products.
6. Due to the weight and physical size of some of these matrix switchers, correct Manual Handling and Lifting procedures should be observed at all times while handling these products in order to minimise the risk of injury.

After Sales Service

1. Should you experience any problems while using this product, firstly refer to the Troubleshooting section in this manual before contacting SY Technical Support.
2. When calling SY Technical Support, the following information should be provided:
 - Product name and model number
 - Product serial number
 - Details of the fault and any conditions under which the fault occurs.
3. This product has a two year standard warranty, beginning from the date of purchase as stated on the sales invoice. Online registration of this product is required to activate the full three year extended warranty. For full details please refer to our Terms and Conditions.
4. SY Product warranty is automatically void under any of the following conditions:
 - The product is already outside of its warranty period
 - Damage to the product due to incorrect usage or storage
 - Damage caused by unauthorised repairs
 - Damage caused by mistreatment of the product
5. Please direct any questions or problems you may have to your local dealer before contacting SY Electronics.



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NOTES:

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