Liberty DL-HDM44AS-H2 Matrix Switch Auto Down Scaling Owner's Manual

Contents

Liberty DL-HDM44AS-H2 Matrix Switch Auto Down Scaling

Important Safety Instructions

- Please completely read and verify you understand all instructions in this manual before operating this equipment.
- Keep these instructions in a safe, accessible place for future reference.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water.
- Clean only with a dry cloth.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Use only accessories specified or recommended by Intelix.
- Explanation of graphical symbols:
- Lightning bolt/flash symbol: the lightning bolt/flash and arrowhead within an equilateral triangle symbol is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product enclosure which may be of sufficient magnitude to constitute a risk of shock to a person or persons.
- Exclamation point symbol: the exclamation point within an equilateral triangle symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.
- **WARNING:** TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE, AND OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHOULD NOT BE PLACED ON THIS APPARATUS.
- Use the mains plug to disconnect the apparatus from the mains.
- THE MAINS PLUG OF THE POWER CORD MUST REMAIN READILY ACCESSIBLE.
- Do not defeat the safety purpose of polarized or grounding-type plugs. A polarized plug has two blades one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for the replacement of your obsolete outlet. Caution! To reduce the risk of electrical shock, the grounding of the center pin of this plug must be maintained.
- Protect the power cord from being walked on or pinched particularly at the plugs, convenience receptacles, and the point where they exit from the apparatus.
- Do not block the air ventilation openings. Only mount the equipment per Intelix’s instructions.
- Use only with the cart, stand, table, or rack specified by Intelix or sold with the equipment. When/if a cart is used, use caution when moving the cart/equipment combination to avoid injury from tip-over.
- Unplug this apparatus during lightning storms or when unused for long periods.
- Caution! Shock Hazard. Do not open the unit.
- Refer to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as a power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

Product Overview

The DL-HDM44AS-H2 is a 4×4 compact HDMI matrix switcher with support for HDMI 2.0 including resolutions up

to 4K60 4:4:4. It features not only basic functions like cross-point switching and control (IR, RS232, LAN), but also advanced functions like auto-downscaling for each HDMI output when it is connected to 1080P display. There’re S/PDIF audio breakout for each HDMI output, so as to provide more audio feeds to multi-zone audio system.

PACKAGE CONTENTS

- DL-HDM44AS-H2 HDMI 2.0b Auto Switcher
- (1) IR Remote
- (1) IR Receiver Cable
- (1) Phoenix Male Connector
- (1) DC 12V power supply with US, UK, EU, & AU power adapter plugs
- (4) Mounting brackets with mounting screws

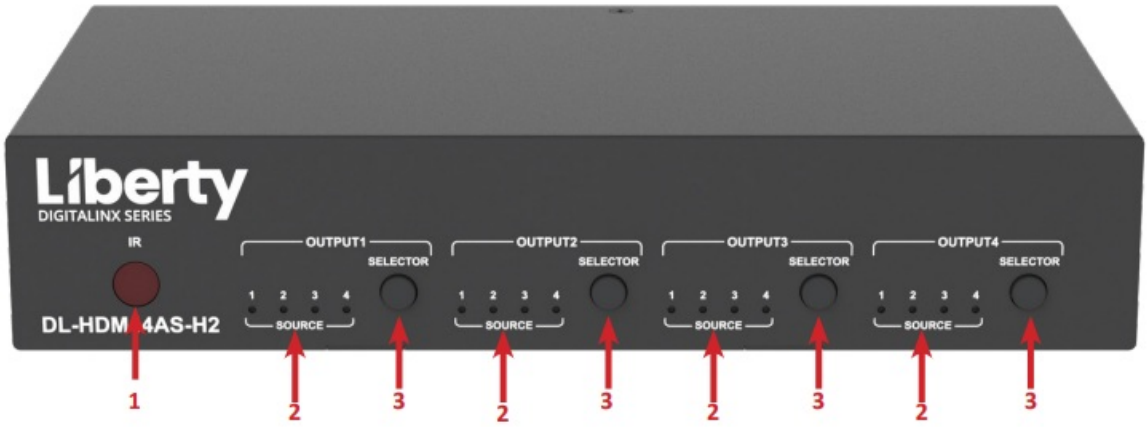
Features

4 HDMI Inputs and 4 HDMI Outputs.

- All HDMI inputs and outputs support HDMI with HOR formats including HOR 10, HLG, and DOLBY VISION up to 4K@60 4:4:4.
- HDCP 2.2 compliant.
- With a built-in 4K-1080P down-scaler for each HDMI Output, the matrix can downscale 4K@60Hz 4:4:4 to 1080P@60 4:4:4. 4K down-scaler can work automatically when the matrix is connected to 1080P display and can be set to ON/OFF by API commands and web UI.
- Each HDMI oull)ut has a digital audio breakout and supports formats up to 5.1 CH compressed and 2CH PCM audio.
- Supports smart EDID, each input can be assigned to smart EDID mode.
- Supports EDID presets, EDID copy, and EDID write. By default, each input EDID is set as 4K@60 4:4:4 HOR with 5.1CH encoded audio.
- Supports audio mute, four S/PDIF outputs can be muted separately by API commands.
- Supports upgrading firmware via both micro-USB and web UI.
- Rich control options, including RS232, IR, LAN (Telnet & Web UI), and front panel buttons.

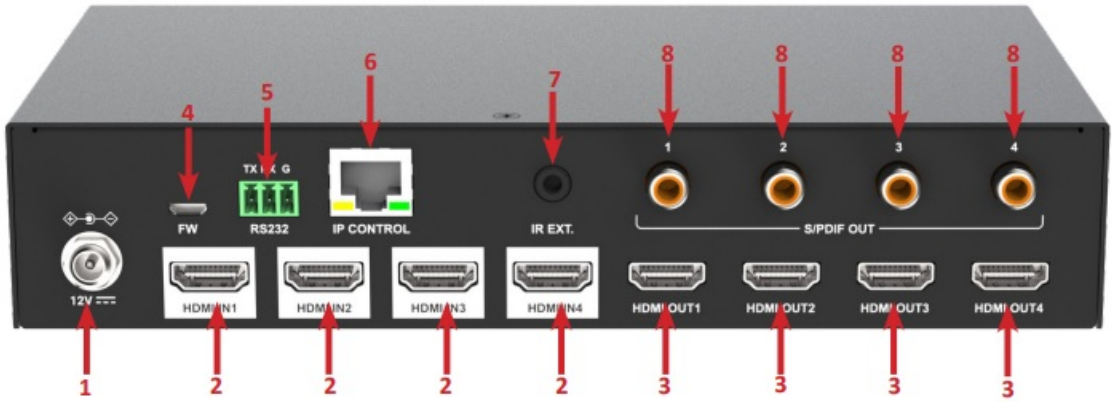
Front and Rear Panel View

FRONT VIEW



1. **IR Window** – Receive IR signals.
2. **INPUT LED (1-4)** – On: The current HDMI input is selected. Off: The current HDMI input is not selected.
3. **OUTPUT** – Click to select input source for OUTPUT.

REAR VIEW



1. DC 12V – Connect the DC 12V power adapter which is provided.
2. HDMI IN 1-4 – Connect to HDMI sources such as Blu-ray Player.
3. HDMI OUT 1-4 – HDMI output to connect to displays
4. FW – Micro USB port for firmware update
5. RS232 – 3 pin female Phoenix port for serial control
6. LAN – Connect to local area network for web UI control or telnet control
7. IR EXT. – Connect IR receiver to remote out IR
8. S/PDIF OUT 1-4 – Digital de-embedded audio output from HDMI OUT 1-4.

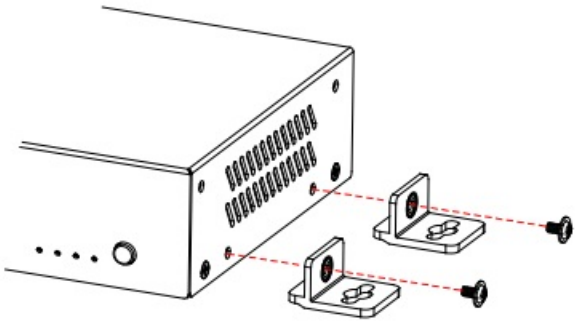
Installation Instructions

QUICK START

1. Mount the switcher
2. Connect displays
3. Connect audio output (optional)
4. Connect control (optional)

5. Apply power

MOUNT THE SWITCHER
At least 2 inches of free air space is required on both sides of the DL-HDM44AS-H2 for proper side ventilation.
Avoid mounting the DL-HDM44AS-H2 near a power amplifier or any other source of significant heat.
Attach the included mounting brackets to the DL-HDM44AS-H2 as shown below. Then mount the unit the structure.



CONNECTING A DISPLAY

HDMI Inputs / Outputs 1-4
Connect the display device to any of the HDMI outputs on the DL-HDM44AS-H2 using an HDMI cable that is less than or equal to 5 meters in length. Connect HDMI Sources to the HDMI Inputs 1-4

CONNECT AUDIO OUTPUT
Connect a compatible Coax audio cable to the S/PDIF audio output port of the DL-HDM44AS-H2. The DL-HDM44AS-H2 supports PCM 2.0, Dolby digital and DTS up to 5.1 .

CONNECTING CONTROL

RS232 Control
Using the supplied RS232 Male Phoenix connector

- Connect a control system or PC for RS232 control
- Before executing the API command through the RS232 serial connection, please ensure the RS232 interface of the device and the control PC are configured correctly.
- Device RS232 Commands can be found later in this manual

Parameters	Value
Baud Rate	115200 bps
Data Bits	8 bits
Parity	None
Stop Bits	1 bit
Flow Control	None

IR Remote Control (Optional)
Connect the IR receiver to the IR input port of the DL-S41-H2, the IR remote is used for input switching and it also can be used to control source and display devices based on CEC control. To use this feature with a compatible CEC source and display, turn on the CEC option in the source and display menu options.

Note: CEC performance may differ for various sources and displays and not all remote functions may be supported by third-party source and display manufacturers.

for your target output.

4. To cycle through multiple inputs for your target output, press the previous (◄) or next (►) button.

Virtual IR Code Supported by Default (Matrix Switching Code):

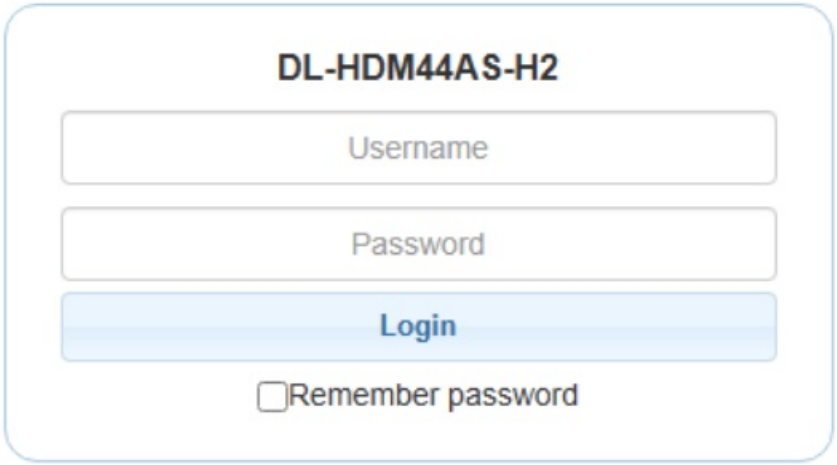
Code	IN1	IN2	IN 3	IN 4
OUT 1	0X80	0X81	0X82	0X83
OUT 2	0X90	0X91	0X92	0X93
OUT 3	0XA0	0XA1	0XA2	0XA3
OUT 4	0XB0	0XB1	0XB2	0XB3

LAN (Web UI/Telnet)
Connect IP port of the switcher to a local area network with DHCP server.

Web UI Control
The Web UI designed for the matrix is available for switching control, and general and advanced settings. The Web UI is accessible through a browser with the latest version, e.g., Chrome, Firefox, Safari, Opera, IE10+, etc.

Access the Web Interface

1. Connect the IP Control port of the matrix to the Ethernet switch and connect your PC to the same network.
   Note: The IP mode of the matrix is DHCP, please ensure the Ethernet switch is connected to a DHCP server.
2. Use the tool such as SmartSetGUI to search the IP address of the device or send an API command to get IP address.
3. Input the IP address in your browser and press Enter to enter the login page.
4. Enter the username and password in the following login page, then click “Login”. The default username and password are both “admin”.



Web Interface Introduction
The main screen includes General and Advanced Setting.

General
The General Page includes: Switch, EDID, EDID Read, CEC, Audio Mute, HDCP, Preset, Scaler.

(1) Switch

Switch

Outputs/Inputs	INPUT 1	INPUT 2	INPUT 3	INPUT 4
OUTPUT 1				
OUTPUT 2				
OUTPUT 3				
OUTPUT 4				
ALL				

The Switch section manages the distribution of input sources to output displays. By default, input 1 corresponds to Output 1, Input 2 corresponds to Output 2, Input (n) corresponds to Output (n), n = 1, 2, 3, 4. Click the button in the table to select the input for the output display (the button turns from white to green once the selection is done). ALL: Click to switch INPUT (n) for all OUTPUTs.

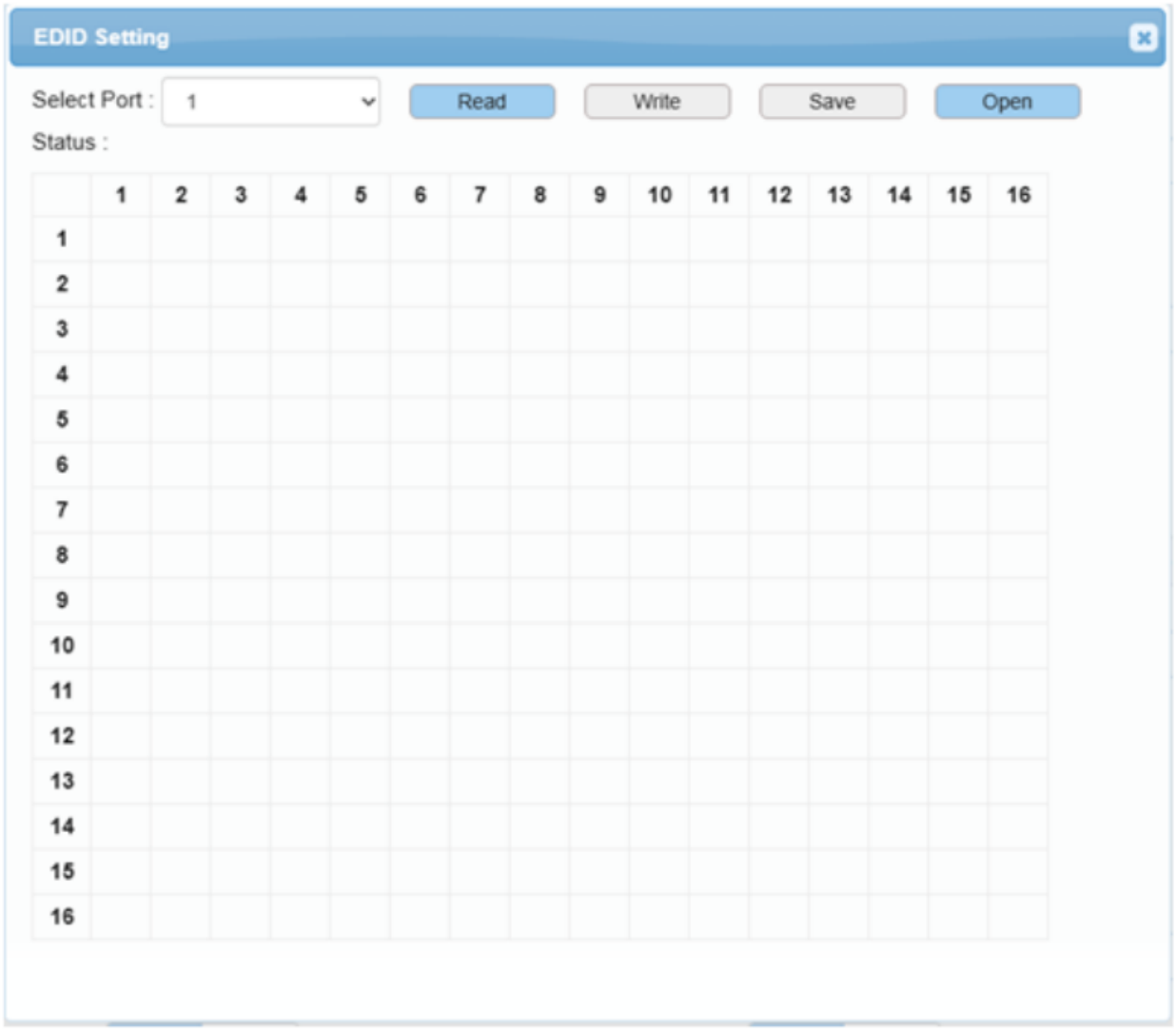
EDIT

This section allows you to configure EDID settings of each input port. Select the item from the drop-down menu, then click “Apply” to take effect.

Note: If EDID copy fails, the input EDID will be 4K@30Hz 2.0ch audio. By default, input EDID is set as 4K@60Hz 5.1ch audio With HDR.

EDID Read

Click “Enter” to open the EDID Setting page.



- **Select Port**: Click from the drop-down menu to choose an Output/Input port (1-4) for EDID setting.
- **Read:** Click to read the EDID of the Output port you choose.
- **Write:** Click to write the read EDID of the Output port or the uploaded EDID to the selected Input. You can choose an input port in “Select Port” to write.
- **Save:** Click to save the read EDID of the output as a bin file to a desired location.
- **Open:** Click to upload an EDID file from your local PC. Then you can choose an input port in “Select Port” and click “Write” to write the uploaded EDID information to the selected input.

CEC

- Output Port: Select one OUTPUT (1-4) port or all from the drop-down menu to control.
  Note: When Output port is set to “all”, tlhe Auto CEC and Delay Time (min) settings are disabled.
- Manual (ON/OFF): Click “ON/OFF” button to power on/off the CEC-enabled display immediately.
- Auto CEC: Click “ON/OFF” button to set Auto CEC control enable/disable. The default setting is “ON”.
- Delay Time (min): Click the up/down arrow to set the time for the display to power off automatically when no signal is present. Then click “Apply” to take effect. For example, if Auto control is set as on and the time is set to 2 minutes, click “Apply”, the output display will power off automatically when there’s no signal at the display for 2 minutes.

Audio Mute

This section allows you to set Audio output (1-4) to mute/unmute.

All: Set all audio output (1-4) to mute/unmute. The default setting is unmute.

Note: The S/PDIF OUT 1-4 is following the audio output of HDMI OUT.

HDCP

HDCP Support allows you to enable or disable HDCP compatibility of each input. By default, HDCP Support is switched ON at each input and content protected by HDCP standard will be received.

Preset

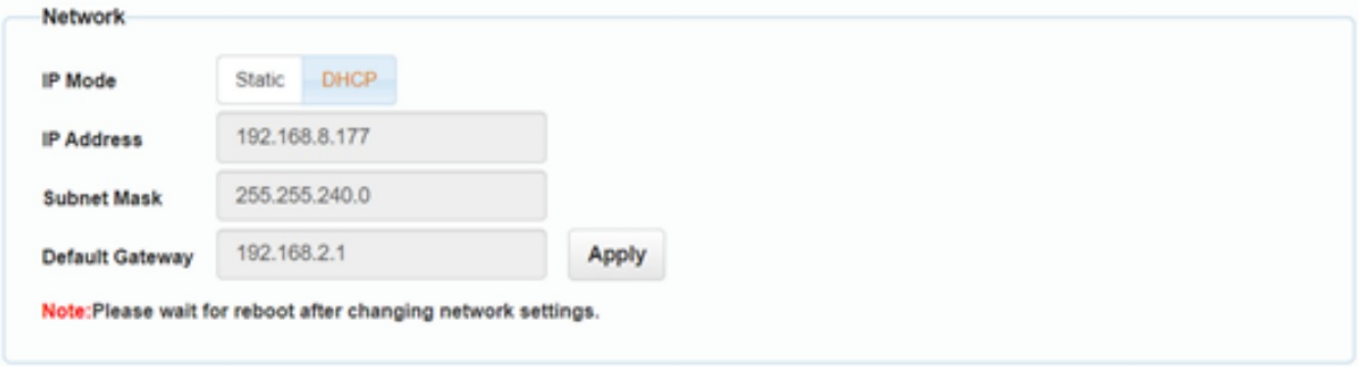
The Preset section saves or loads the General settings to or from the matrix.

Scaler

The Scaler section used to set the scaler function of each output port to ON/OFF. The default setting is ON.

Advanced
The Advanced page includes the network, Login Password, Custom Web UI Logo, WEB Firmware Upgrade, ARM Firmware Upgrade, MCU Firmware Upgrade, System, and Firmware Version.

Network
The network is used to toggle between dynamic and static IP addressing.

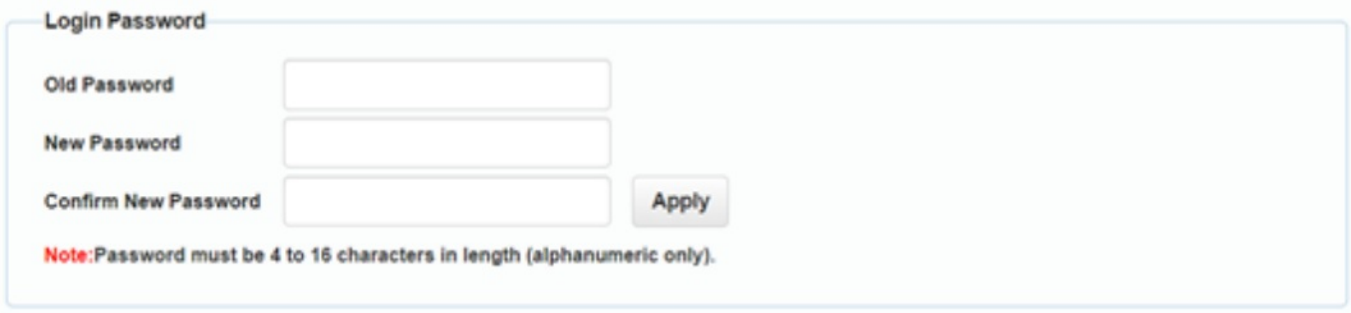


- **DHCP:** When enabled, the IP address of the Matrix is assigned automatically by the DHCP server connected.
- **Static:** When enabled, set up the IP address manually
- **Apply:** Click to enable the network setting. The default setting is DHCP.

Note

- When “Static” is selected, please ensure your PC is in the same network segment as the Matrix, i.e., the IP address of your PC should be set as 192.168.xxx.xxx (xis suggested among 2 to 253).
- Please wait for about 30s for the Matrix’s LAN module to reboot and reconnect after the network setting is changed

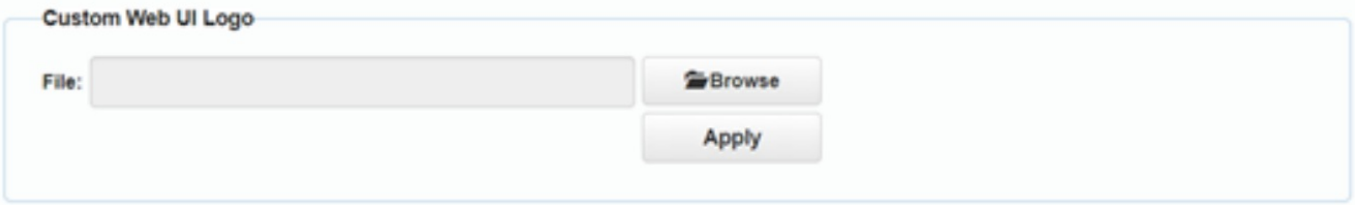
Login Password
This section allows you to change login password



The default password is “admin”.

- **Apply:** Click to save the changes.
- **Note:** The new password must be 4 to 16 characters in length (alphanumeric only).

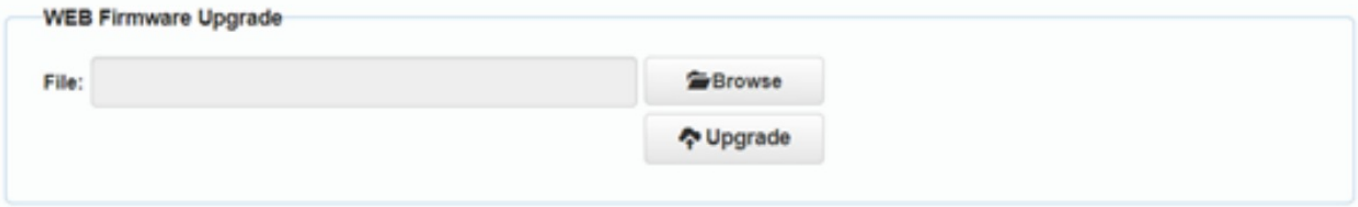
Custom Web UI Logo
Custom Web UI Logo allows you to create your own logo for the Web UI you are using



To create a customized Web UI logo:

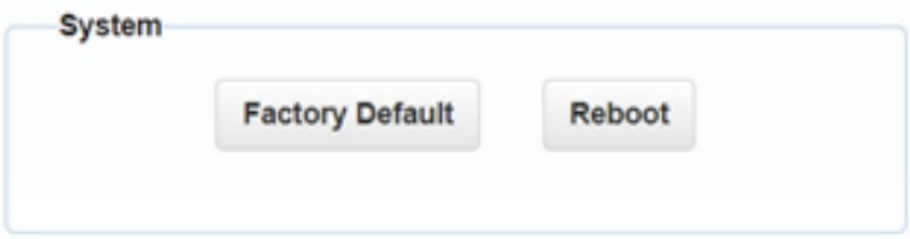
1. Click “Browse button to browse the LOGO file.
2. Click “Apply”, When the operation is successful, the new logo will appear on the upper left corner of the screen and the login page.

WEB Firmware Upgrade



1. Click “Browse for the update file.
2. Click “Update” to start the Web UI upgrade
3. The matrix LAN Module will update and reboot automatically when Web UI 1s are completed. Please wait for about 3Us and then refresh and log in again
   Note: DO NOT disconnect the matrix during the update process.

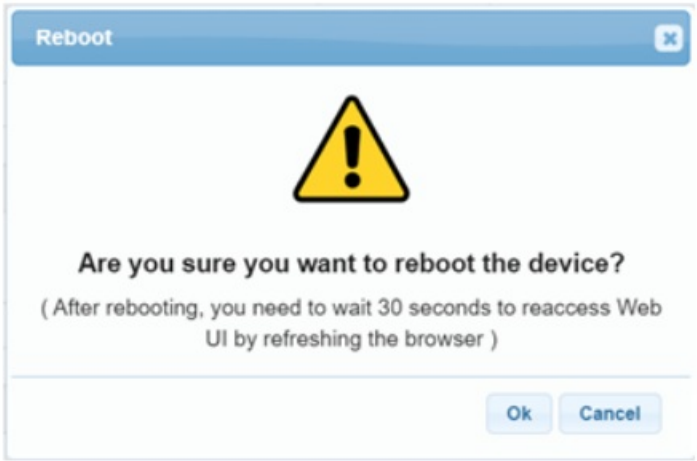
System
This section allows you to reset the device to factory default settings or reboot the device.

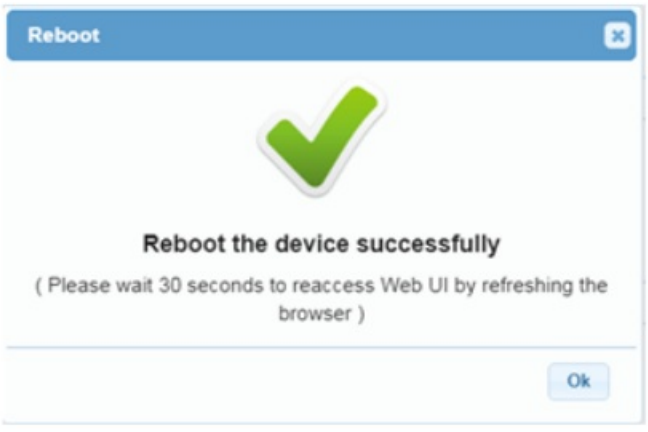


To reset the device to factory default settings: Click the “Factory Default” icon, and the following window will pop up, click “Ok” to reset the device to factory default.

Note: Please wait about 30 seconds to re-access Web UI by refreshing the browser.

To reboot the device: Click the “Reboot” icon, and the following window will pop up, click “Ok” to reboot the device.





Note: Please wait about 30 seconds to re-access Web UI by refreshing the browser.

RS232 Control Commands

RS232 Settings: 9600 baud, 8 Data bits, 1 Stop bit, Parity = None TCP/IP Settings: User-defined IP address (default IP address:192.168.0.178), port 23 There are no spaces between any of the characters in the command string. The commands are case sensitive The commands are case-sensitive. All commands below are in ASCII and all strings and responses end in a carriage return (hex 0D) and a line feed (hex 0A).

- <CR> = Carriage return (Hex 0D)
- <LF> = Line Feed (Hex 0A)

HDCP Management Commands

Description	Command	Examples
Turns HDCP support ON/OFF *[p]* on matrix input port *[i]*	SET HDCP IN *[i]* *[p]* *[i]* = *[01-04]* *[p]* = *[on, off]*	*Command:* *SET HDCP IN 01 on<CR><LF>* *Response:* *HDCP IN 01 on<CR><LF>*
Query HDCP support status of matrix input port *[i]*	GET HDCP IN *[i]* *[i]* = *01-04*	*Command:* *GET HDCP IN 01<CR><LF>* *Response:* *HDCP IN 01* *on<CR><LF>*
Matrix Routing Commands		
Set input *[i]* to output *[o]* route	SET *[i]* *[o]* *[i]* = *[01-04]* *[o]* = *[01-04]*	*Command:* *SET 04 02<CR><LF>* *Response:* *04>02<CR><LF>*
Query a specific output port *[o]* route	GET *[o]* *[o]* = *[01-04]*	*Command:* *GET 02<CR><LF>* *Response:* *02>01<CR><LF>*

Set an input *[i]* route to all outputs	SET *[i]* *ALL<CR><LF>* *[i] = [01-04]*	*Command:* *SET 02 ALL<CR><LF>* *Response:* *02>01<CR><LF>* *02>02<CR><LF>* *02>03<CR><LF>* *02>04<CR><LF>*
Query routing status of all inputs to all outputs	GET ALL<CR><LF>	*Command:* *GET ALL<CR><LF>* *Response:* *01>01<CR><LF>* *02>02<CR><LF>* *03>03<CR><LF>* *04>04<CR><LF>*
System Commands		
Saves a matrix state to one of three memory locations *{p}*	SAVE *{p}* *{p} = [01-03]*	*Command:* *SAVE 02<CR><LF>* *Response:* *PRESET SAVED<CR><LF>*
Loads a matrix state from one of three memory locations *{p}*	LOAD *{p}* *{p} = [01-03]*	*Command:* *LOAD 02<CR><LF>* *Response:* *AUDIOMP* hdmi1 audioout1<CR><LF> *AUDIOMP* hdmi1 audioout2<CR><LF> *AUDIOMP* hdmi1 audioout3<CR><LF> *AUDIOMP* hdmi1 audioout4<CR><LF>

Restores the matrix to factory defaults	RST	*Command:* *RST<CR><LF>* *Response:* *RESTORING FACTORY DEFAULTS<CR><LF>*
System Reboot	REBOOT	*Command:* *REBOOT<CR><LF>* *Response:* *Reboot the device<CR><LF>*
Switch to Standby Mode	STANDBY	*Command:* *STANDBY<CR><LF>* *Response:* *STANDBY!<CR><LF>*
Switch to Wake Mode	WAKE	*Command:* *WAKE<CR><LF>* *Response:* *WAKE!<CR><LF>*
Get Standby Status	GET STANDBY	*Command:* *GET STANDBY<CR><LF>* *Response:* *STANDBY!<CR><LF>*

GET IP address	**Command:** GET IPADDR<CR><LF> **Return:** IPADDR xx.xx.xx.xx<CR><LF> **Description:** GET IP address	**Command:** GET IPADDR<CR><LF> **Return:** IPADDR 1 92.168.11.243<CR><LF>
Get the API list	**Command:** help<CR><LF> **Return:** xxxx **Description:** Get the API list	**Command:** help<CR><LF> **Return:** xxxx **Description:** Get the API list
Set Input EDID	**Command:** SET EDID *in prm*<CR><LF> **Return:** EDID *in prm*<CR><LF> **Parameter:** *in* = {hdmiin1, hdmiin2...hdmiin8}; prm = {1 ~27} 1: Copy form hdmi output 1 2: Copy form hdmi output 2 ... 8: Copy form hdmi output 8 9: Fixed 4K60 7.1CH Encoded Audio with HDR; 10:Fixed 4K60 5.1CH Encoded Audio with HDR; 11: Fixed 4K60 2.0CH PCM Audio with HDR; 12: Fixed 4K60 2.0CH PCM Audio with SDR; 13: Fixed 4K30 7.1CH Encoded Audio with HDR; 14: Fixed 4K30 5.1CH Encoded Audio with HDR; 15: Fixed 4K30 2.0CH PCM Audio with HDR; 16: Fixed 4K30 2.0CH PCM	**Command:** SET EDID hdmi*in1* *13*<CR><LF> **Return:** EDID hdmi*in1* *13*<CR><LF> **Description:** Set in1 EDID Fixed 4K30 7.1CH Encoded Audio with HDR

Get All Input EDID status	**Command:** GET EDID *all* <CR><LF> **Return:** EDID *in prm*<CR> EDID *in prm*<CR> EDID *in prm*<CR><LF> ..... **Parameter:** *in* = {hdmiin1, hdmiin2...hdmiin8}; prm = {1 ~27} 1: Copy form hdmi output 1 2: Copy form hdmi output 2 ... 8: Copy form hdmi output 8 9: Fixed 4K60 7.1CH Encoded Audio with HDR;	**Command:** GET EDID *all* <CR><LF> **Return:** EDID hdmiin1 *01*<CR> EDID hdmiin2 *02*<CR> EDID hdmiin3 *03*<CR><LF> ..... **Description:** Get all input EDID Status
Get one input EDID Status	**Command:** GET EDID *in* <CR><LF> **Return:** EDID *in prm*<CR><LF> **Parameter:** *in* = {hdmiin1, hdmiin2....hdmiin8}; prm = {1 ~27} 1: Copy form hdmi output 1 2: Copy form hdmi output 2 ... 8: Copy form hdmi output 8 9: Fixed 4K60 7.1CH Encoded Audio with HDR; 10:Fixed 4K60 5.1CH Encoded Audio with HDR; 11: Fixed 4K60 2.0CH PCM Audio with HDR; 12: Fixed 4K60 2.0CH PCM Audio with SDR; 13: Fixed 4K30 7.1CH Encoded Audio with HDR; 14: Fixed 4K30 5.1CH Encoded Audio with HDR; 15: Fixed 4K30 2.0CH PCM Audio with HDR; 16: Fixed 4K30 2.0CH PCM Audio with SDR; 17: Fixed 1080p@60Hz 7.1CH Encoded Audio with HDR; 18: Fixed 1080p@60Hz 5.1CH Encoded Audio with HDR; 19: Fixed 1080p@60Hz 2.0CH PCM Audio with HDR; 20: Fixed 1080p@60Hz 2.0CH PCM Audio with SDR; 21: Fixed 4K60 7.1CH Encoded Audio with SDR; 22: Fixed 4K60 5.1CH	**Command:** GET EDID hdmiin1<CR><LF> **Return:** EDID hdmiin1 *13*<CR><LF> **Description:** Get in1 edid status, and the status is Fixed 4K30 7.1CH Encoded Audio with HDR
	Encoded Audio with SDR; 23: Fixed 4K30 7.1CH	

Technical Specifications

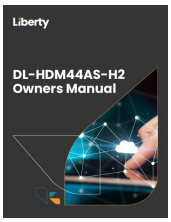
VIDEO	
Video Inputs	(4) HDMI
Video Input Connector	(4) HDMI type A
Input Video Signal	HDMI
Video Output	(1) HDMI
Video Output Connector	(1) HDMI type A
Output Video Signal	HDMI
Input Resolutions Supported	Up to 3840 x 2160 @ 60Hz, 4:4:4, 8bit color depth
Standards	Compliant with HDMI 2.0b & HDCP2.2
AUDIO	
Supported output formats	PCM 2.0
Audio Output	Stereo analog
Audio Output Connector	(1) 3.5mm TRS audio jack
Audio Output Impedance	70 Ohms
Frequency Response	20Hz~20K Hz
HDMI Supported Video, Audio	
Control Port / Connector	(1) IR / 3.5mm connector (1) RS232 / 3.5mm connector
Cable Construction	
System Bandwidth	18Gbps
Operating Temperature	-10C ~ +55C
Storage Temperature	-25C ~ +70C
Humidity	10% ~ 90%
Power Supply	Input:100V~240V AC; Output: 5V DC 1A
Power Consumption	5 watts
Dimension (W*H*D)	194mm * 12mm * 81mm / 7.6” * .47” * 3.2”
Weight	180g / .4 lbs
Warranty	5 years
Certification	CE, FCC, RoHS

- Country of Origin Taiwan (TAA Compliant)

Thank you for your purchase.
For Technical Support please call our toll-free number at **800-530-8998** or email us at **supportlibav@libav.com**.

- www.libav.com
- 800-530-8998

Documents / Resources

	Liberty DL-HDM44AS-H2 Matrix Switch Auto Down Scaling [pdf] Owner's Manual DL-HDM44AS-H2 Matrix Switch Auto Down Scaling, DL-HDM44AS-H2, Matrix Switch Auto Down Scaling, Switch Auto Down Scaling, Auto Down Scaling, Down Scaling, Scaling

References

- User Manual