USER MANUAL

DUX-8D

8×8 HDMI Matrix

- 4K@60Hz 4:4:4 18Gbps
- De-Embedded Audio
- Four HDBT Output

TABLE OF CONTENTS

IMPORTANT SAFETY INSTRUCTIONS

NOTE: We reserve the right to change the content from time to time without notice.

WARNINGS: To reduce the risk of fire, electric shock or product damage, please observe the following Safety Instructions while installing and operating the product:

Do not expose this apparatus to rain, moisture, dripping or splashing. No objects filled with liquids, such as vases, shall be placed on the apparatus.

Do not install or place this unit in a bookcase, built-in cabinet or in another confined space. Ensure the unit is well ventilated.

To prevent risk of electric shock or fire hazard due to overheating, do not obstruct the unit's ventilation openings with newspapers, tablecloths, curtains, and similar items.

Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

Do not place sources of naked flames, such as lighted candles, on the unit.

Clean this apparatus only with dry cloth.

Unplug this apparatus during lightning storms or when unused for long periods of time.

Protect the power cord from being walked on or pinched particularly at plugs.

Only use attachments/accessories specified by the manufacturer.

Refer all servicing to qualified service personnel.

1. INTRODUCTION

DUX-8D HDMI Matrix, or the Matrix, comes with HDMI 2.0 and HDCP 2.2 compatibility, and allows eight sources to be switched to eight local displays through HDMI outputs and four remote displays through HDBT outputs (Four HDBT Outputs mirror HDMI Outputs 1-4). DUX-8D also provides analog audio de-embedding for every HDMI output.

DUX-8D allows control through front panel buttons, IR Remote, RS232 and LAN (for Telnet API or Web UI control). Independent DIP switch is also provided for advanced EDID management.

Designed for 1U rackmount and stand-alone installation, DUX-8D offers the convenience of future-ready Ultra HD A/V switching and distribution solution, and the reliability of cutting-edge HDMI 2.0 and HDCP 2.2 compatibility.

Features

- HDMI Inputs and Outputs support up to 4K@60Hz 4:4:4 8bit.
- HDBT Outputs support up to 4K@60Hz 4:2:0 8bit.
- HDBT transmits 4K@60Hz 4:2:0 8bit signal up to 70 meters, 1080P signal up to 100 meters via a Cat5e/6 cable.
- HDBT transmits 4K@60Hz 4:2:0 8bit signal up to 100 meters, 1080P signal up to 100 meters via a Cat6a/7 cable.
- Fully compliant with HDMI 2.0.
- HDCP 2.2 compliant.
- Supports 4K HDR.
- Supports analog audio de-embedding for each HDMI output.
- Four HDBT Outputs mirror HDMI Outputs 1-4.
- Supports front panel, IR, RS232 and LAN (Telnet API & Web UI) control options.
- Supports IR pass-through and RS232 pass-through.
- Independent DIP switch for advanced EDID management.

2. PACKING LIST

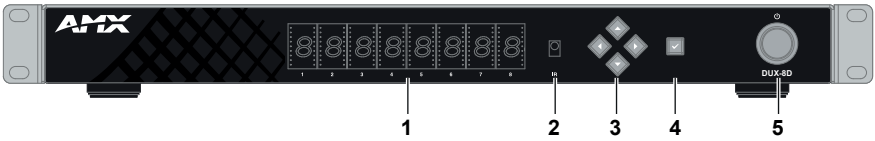
- 1 x DUX-8D
- 1 x AC Power Cord
- 1 x IR Remote Handset (38 kHz)
- 1 x IR Receiver Cable (38 kHz)
- 4 x Broadband IR Receiver (30 - 50 kHz)
- 1 x USB to UART Cable
- 8 x Phoenix Male Connectors (3.5 mm, 3 pins)
- 4 x Phoenix Male Connectors (3.81 mm, 3 pins)
- 4 x Earphone cable with Phoenix Female Connectors (3.81 mm, 3 pins)
- 2 x Mounting Brackets
- 1 x User Manual

3. SPECIFICATIONS

Technical	
Input / Output Connections	8 x HDMI IN 8 x HDMI OUT 8 x AUDIO OUT 4 x IR IN. 4 x RS232 Jack Port 4 x HDBT OUT 1 x IR EXT. 1 x LAN 1 x RS232 DB9 Port 1 x EDID DIP Switch 1 x AC IN
Input / Output Video Type	HDMI 2.0 HDCP 2.2
Input / Output Resolution	800x600[8], 1024x768[8], 1280x720[6,8], 1280x768[8], 1280x800[8], 1280x960[8], 1280x1024[8], 1360x768[8], 1366x768[8], 1440x900[8], 1600x900[8], 1600x1200[8], 1680x1050[8], 1920x1080[6,8], 1920x1200[8], 3840x2160P[2,3,5,6,8] ,4096x2160[2,3,5,6,8] 1 = @ 23.98 Hz, 2 = @ 24 Hz, 3 = @ 25 Hz, 4 = @ 29.97 Hz, 5 = @ 30 Hz, 6 = @ 50 Hz, 7 = @ 59.94 Hz, 8 = @ 60 Hz
Audio Format	• HDMI: Support all known HDMI audio formats including PCM, Dolby Digital, Dolby Digital Plus, Dolby TrueHD, Dolby Atmos, DTS-HD Master Audio and DTS:X; • Phoenix Audio Out: PCM 2.0;
Control	
Control Methods	IR, Front panel, RS232, LAN (Telnet API & Web UI)
General	
Operating Temperature & RH	32°F ~ 113°F (0°C ~ 45°C), 10% ~ 90% (non-condensing)
Storage Temperature & RH	-4°F ~ 140°F (-20°C ~ 70°C), 10% ~ 90% (non-condensing)
ESD Protection	Human-body model: ±8kV (air-gap discharge) ±4kV (contact discharge)
Power Supply	AC 100~240V 50/60Hz
Power Consumption	1018p: 80W 4K: 100W
Dimensions (W x H x D)	482.6mm x 323.5mm x 43.5mm (With mounting brackets)/ 440mm x 323.5mm x 43.5mm (Without mounting brackets)
Weight	3.98kg
Rack Space Required	1U
Certification	CE, FCC

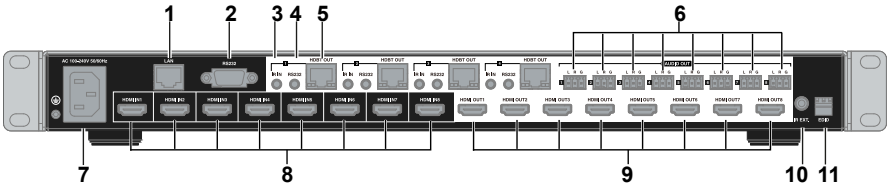
4. PANEL OVERVIEW

4.1 Front Panel



Item	Name	Description
1	Output Channel Indicator	Indicates input for output port 1-8.
2	IR	Receives signals from IR Remote.
3	Selection Buttons (White LED)	Selects input and output channels. • Left/Right: selects output channels. • Up/Down: selects input channels.
4	Enter Button (White LED)	Press to implement the input and output selection.
5	Power Switch	Turns on/off the Matrix.

4.2 Rear Panel



Item	Name	Description
1	LAN	Uses RJ45 port. Connects to a control system for Web UI and Telnet control.
2	RS232	Uses DB9 port. Connects to a control system for RS232 pass-through.
3	IR IN 1-4	Connects the Broadband IR Receiver Cable provided.
4	RS232 1-4	Uses a 3.5 mm jack socket. Connects the earphone cable provided.
5	HDBT OUT 1-4	Uses RJ45 port. Connects to a receiver via a CatX cable.
6	AUDIO OUT 1-8	Audio de-embedded output. Uses Phoenix female conntors for L/R analog audio output.
7	AC	Connects the power cord provided. Accepts AC power of 100~240V 50/60Hz.
8	HDMI IN 1-8	Connects to HDMI sources.
9	HDMI OUT 1-8	Connects to HDMI display devices.
10	IR EXT.	IR extension port. Connects the IR Receiver Cable provided.
11	EDID	Uses DIP Switch for EDID management.

5. INSTALLATION AND WIRING

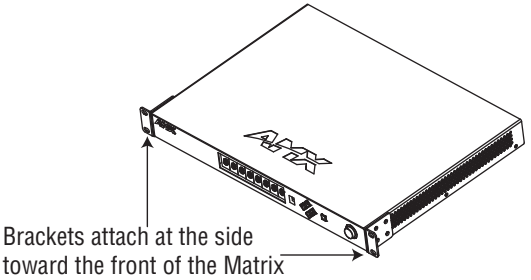
5.1 Installation

CAUTION: Before installation, please ensure the Matrix is disconnected from the power source.

DUX-8D occupies 1U space and can be placed on a solid and stable surface or installed on a standard equipment rack.

To install the Matrix on an equipment rack:

1. Discharge any static electricity from your body by touching a grounded metal object.
2. Position and install the mounting brackets using the mounting screws provided.



3. Install the Matrix in the mounting rack by using the mounting screws to affix the Matrix to the rack.
4. Connect any applicable wires to the device. (For detailed information of wiring, please refer to 5.3 Wiring.)

CAUTION: DO NOT place other units directly on top of the Matrix when it is rack mounted, as this will place excessive strain on the mounting brackets.

CAUTION: When adopting rackmouting, distribute the units evenly. Otherwise, hazardous conditions may be caused by an uneven weight distribution.

CAUTION: Reliable earthing of rack-mounted equipment should be maintained.

5.2 Ventilation

ALWAYS ensure the Matrix is adequately ventilated. Do not block any ventilation openings. Sufficient airflow must be achieved (by convention or force-air cooling) to satisfy the ventilation requirements of all the equipment installed within the rack.

NOTE: The maximum operating temperature of the Matrix is 45°C (113°F).

NOTE: The Matrix shall not be installed in enclosed spaces. It is recommended that you leave 1U space above the Matrix when you install it in a rack.

5.3 Wiring

NOTE: Please use cables provided by the manufacturer and high-quality cables recommended by the manufacturer.

WARNING: Please ensure all the units are DISCONNECTED from power before setting up. Otherwise, circuitry damage or physical injury may be caused.

To complete wiring of the Matrix (Please see "System Wiring" on Page 10) :

1. Connect HDMI IN: Connect HDMI IN 1-8 of the Matrix to 4K or HD source devices (e.g. laptop, Blu-Ray player, game console, satellite/cable TV, music streaming device, etc.).
2. Connect HDMI OUT: Connect HDMI OUT 1-8 of the Matrix to HDMI IN of 4K or HD displays or scalers (e.g. DUX-SCL).
3. Connect HDBT OUT (for long-distance signal transmission): Connect HDBT OUT 1-4 of the Matrix to Receivers (e.g. DUX-RX or DUX-SRX).
4. Connect AUDIO OUT: Connect AUDIO OUT 1-8 of the Matrix to audio devices (e.g. audio amplifier).
5. Connect for additional control options:

   a) IR control: The IR Remote provided is for controlling the Matrix through infrared signal. If IR extension is required, connect the IR Receiver Cable provided to the IR EXT port of the Matrix and position the receiver eye in a place accessible to the Matrix Remote.

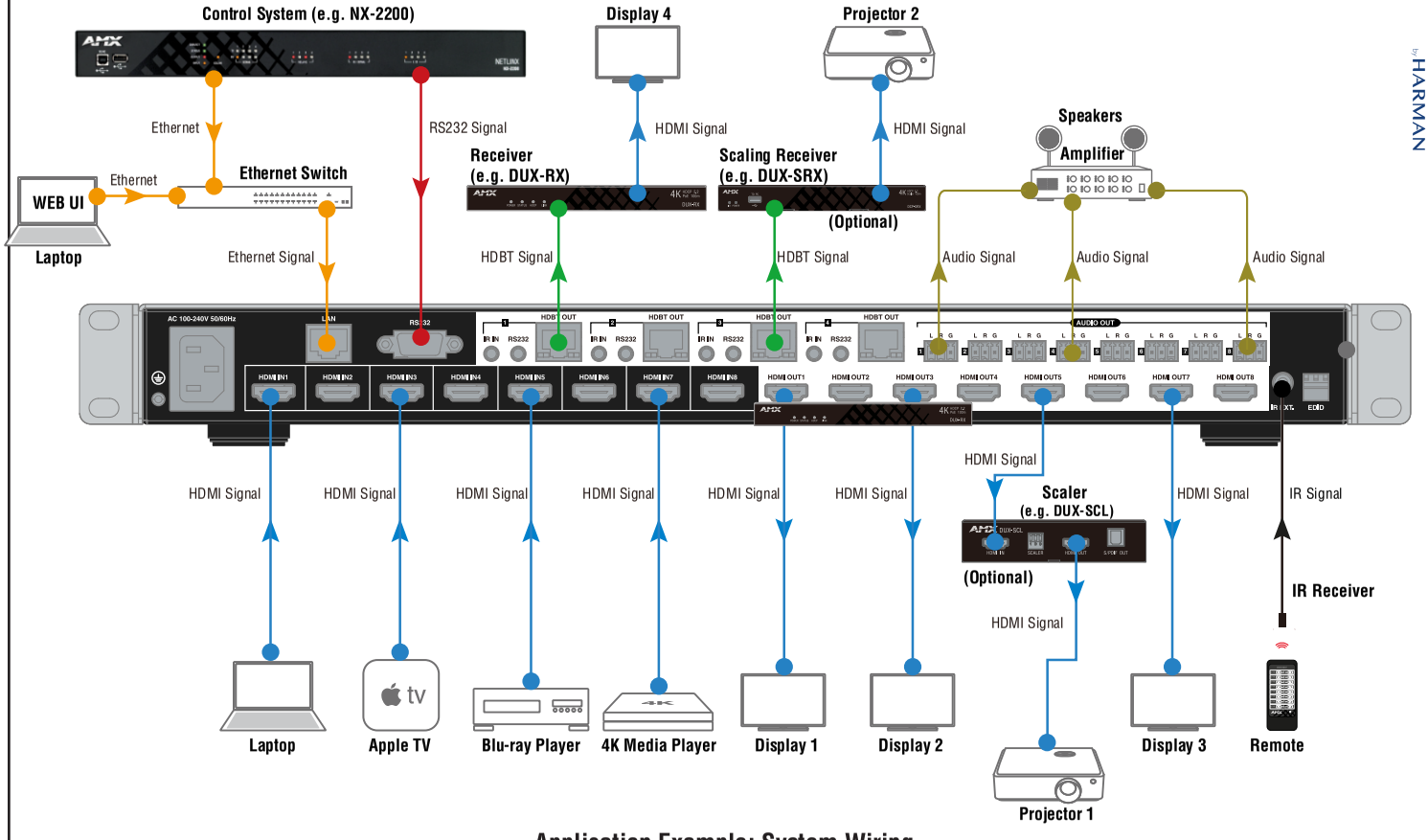
   b) LAN control (through Web UI or Telnet): Connect the Matrix to the same network as the control laptop or control system (e.g. NX-2200) via its LAN port.

   c) RS232 control: Connect a control laptop or control system (e.g. NX-2200) to RS232 port of the Matrix.
6. Power on: Connect the AC power cord provided and switch on the power button. The Matrix is ready for operation when the front panel LEDs shows the model name.

NOTE: ALWAYS power off the Matrix before plugging or unplugging any cables.

NOTE: Please follow the "LAST ON FIRST OFF" rule when turning on and off the system.

Now you can switch between sources and displays by using the Matrix through either IR Remote, front panel, RS232 or LAN. For detailed control instructions, please refer to Chapter 6 "CONTROL OF THE MATRIX".



Application Example: System Wiring

6. CONTROL OF THE MATRIX

DUX-8D HDMI Matrix is designed with ease of connection and control in mind. When the Matrix is connected and powered on, you can choose the optimal way to control the unit at your convenience, either through Front Panel, IR Remote (IR Receiver can be connected when the Matrix is less accessible), LAN (for Web UI or Telnet) or RS232.

The following chapters will explain the basic instructions of the above control methods.

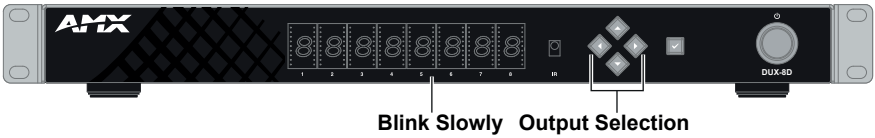
6.1 Front Panel Control

Basic switch of input sources to output displays can be achieved by using front panel controls.

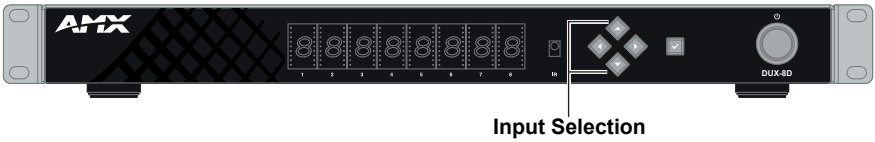
Power on the Matrix and wait till the front panel LED shows the model name. Then the Matrix is ready for operation. Now you can select input source for each output.

To select input source for output display:

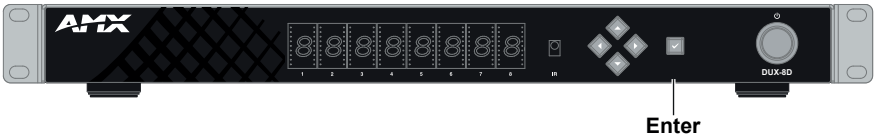
1. Press the Left (◁) or Right (▷) button to select output channel. The LED blinks to show the selected output channel.



2. Press the Up (△) or Down (▽) button to select input channel. If the LED shows "--", the output is closed.



3. Press the Enter (✓) button to confirm the selection. When the selection takes effect the LED stops blinking.



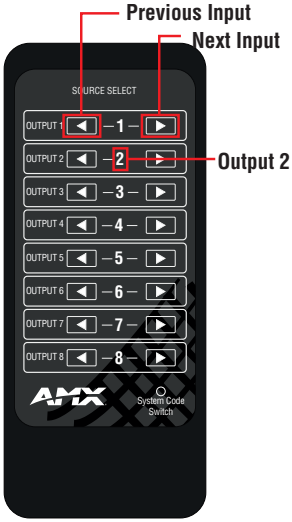
TIP: Long press the Enter (✓)button, the LED will display "V 12", which is the module version of the LED screen.

6.2 IR Control

DUX-8D HDMI Matrix can be controlled by the IR Remote provided. Point the Remote directly to the Matrix, now you can select input source for each output display.

If IR extension is required, connect the IR Receiver to the IR EXT port at the rear panel of the Matrix and ensure the receiver eye is accessible to the Remote.

Please note the IR receiving window on the front panel will remain active when IR Receiver is connected to the Matrix.



To select input source for output display:

1. Select the target output display from the MATRIX column (1-8).
2. Point the Remote to the "IR" on the Matrix' front panel or the IR Receiver connected to the "IR EXT." on the rear panel.
3. Press the Previous (◀) or Next (▶) button to select the desired input source.

System Code Switch

The IR Remote provided with the Matrix is shipped in "**00**" IR system code. In the event the Remote's IR signal interferes with other IR devices, e.g. TV, DVD player, the Remote can be switched to "**4E**" code by pressing the System Code Switch on the Remote panel. At the same time, you may redefine the IR system code of the Matrix using the API command (please refer to Index 16 & 17 API command in "Appendix 1: API Command").

Short press to change the System Code of the IR Remote.

6.3 LAN Control (via Web UI)

When connected to a LAN, DUX-8D can be controlled through Telnet or a Web UI specifically designed. For advanced users who opt to control via Telnet. API command set for Telnet control is available in “Appendix 1: API Command”. For users prefer intuitive control, the Web UI will be the option.

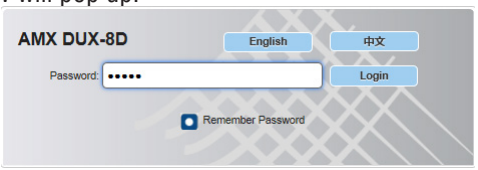
The Web UI designed for the Matrix allows basic controls and advanced settings of the device. The Web UI can be accessed through a modern browser, e.g. Chrome, Safari, Firefox, Opera, IE10+, etc.

DUX-8D comes with a default IP address of **192.168.10.254**. Subnet mask is **255.255.0.0**.

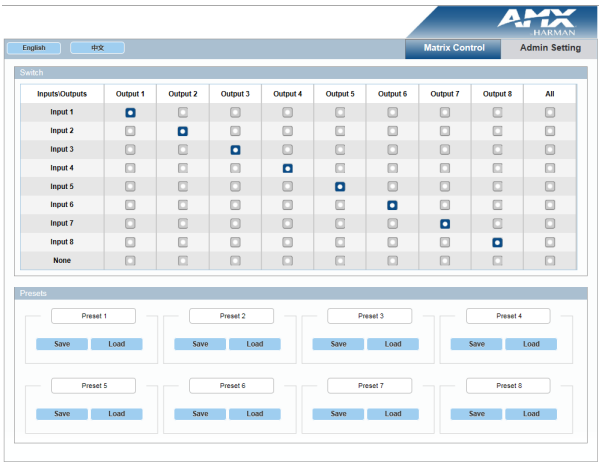
Default login password for Web UI is “**admin**”.

To get access to Web UI:

1. Connect the LAN port of the Matrix to your PC using a straight UTP cable.
2. Set your PC to the same network segment as the Matrix, e.g. 192.168.10.xxx.
3. Enter the Matrix’s IP address **192.168.10.254** in your browser and press enter. The following window will pop up.



4. Choose the language you wish to use: English or Chinese.
5. Enter password (default password: **admin**) and click Login to enter the main screen of Web UI.



The Web Ui main screen is comprised by Matrix Control and Admin Setting pages.

The Matrix Control is used for basic setting of the Matrix: input and output Switch and Presets save and load.

The Admin Setting is designed for advanced controls, e.g. CEC Setting, EDID Setting, HDCP Support, Port Naming, Preset Name, etc.

6.3.1 MATRIX CONTROL

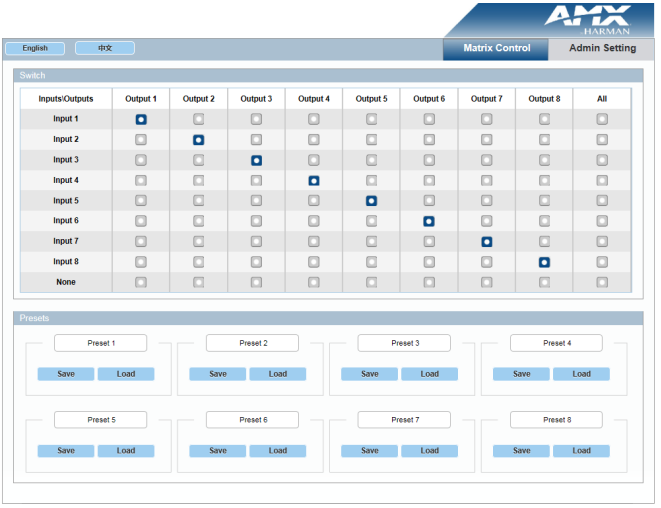
The Matrix Control page is used to perform the following functions:

- Switch
- Preset

1) SWITCH

The Switch section manages distribution of input source to output displays. Click the switch button (○ turns to ◉) to select the input source for the output display.

- **All:** one input is routed to all outputs.
- **None:** None input is routed to the output (or the output is turned off).



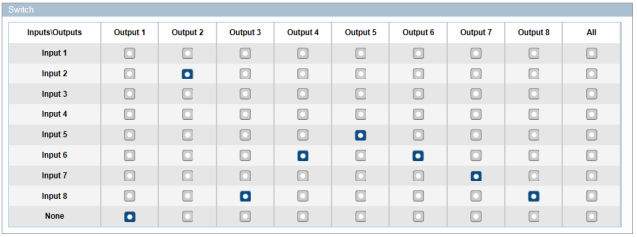
2) Preset

The Presets section saves or loads the input/output switch settings to or from the Matrix.

- **Save:** Input/output settings in the Switch section are saved.
- **Load:** Preset already saved is loaded.

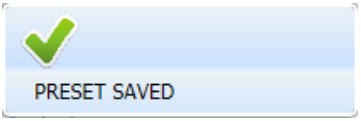
To save a Switch to Preset 1:

1. Complete the input and output setting in the Switch section.



2. Click "Save" in "Preset 1".

3. The following window pops up in the upper right corner to show the preset is successfully saved.



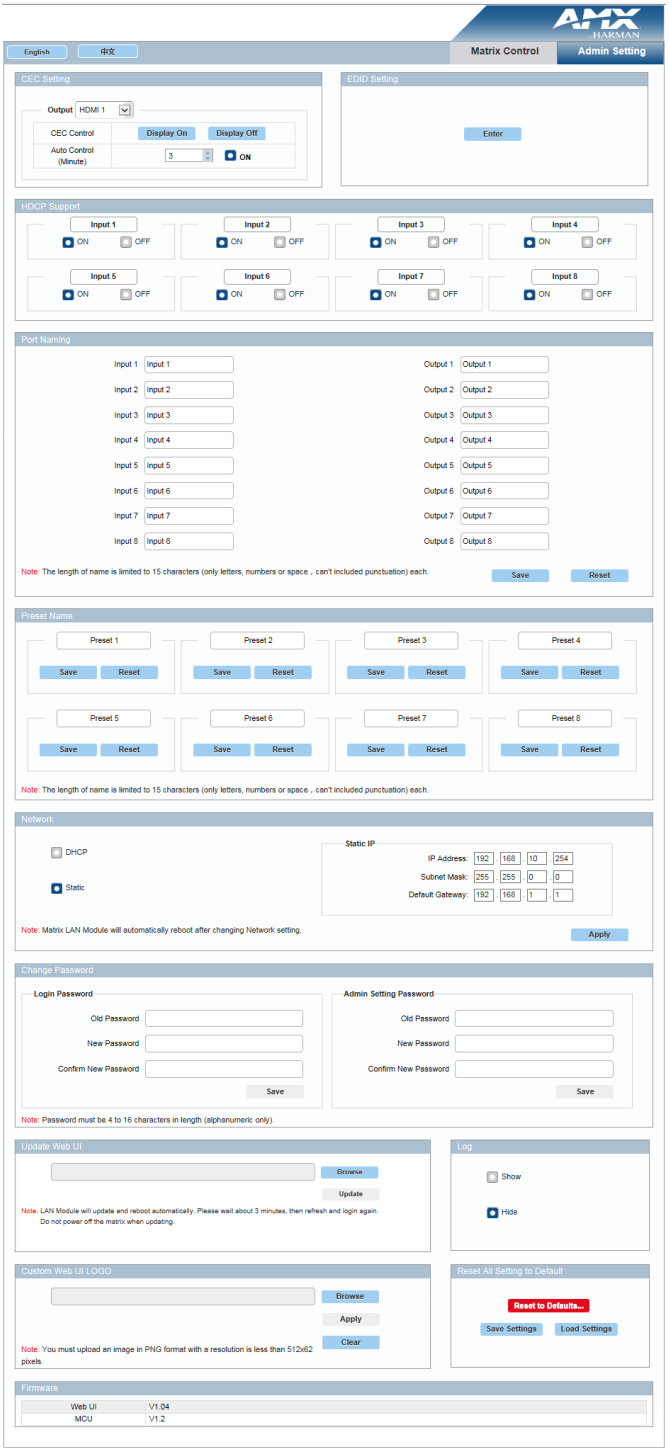
6.3.2 Admin Setting

The Admin Setting page is used for advanced control of the following functions:

- CEC Setting
- EDID Setting
- HDCP Support
- Port Naming
- Preset Name
- Network
- Change Password
- Update Web UI
- LOG
- Custom Web UI LOGO
- Reset All Setting to Default
- Firmware

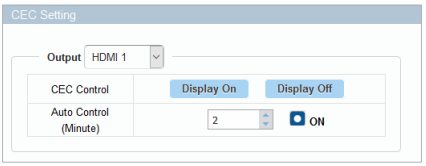
To enter the Admin Setting page:

1. Click “Admin Setting” tag on the upper right corner of the page;
2. Enter the password (default password: **123456**).
3. You will be navigated to the main page of Admin Setting.


English
中文
Matrix Control
Admin Setting
CEC Setting
Output HDMI 1
CEC Control
Display On
Display Off
Auto Control (Minute)
3
ON
EDID Setting
Enter
HDCP Support
Input 1
Input 2
Input 3
Input 4
Input 5
Input 6
Input 7
Input 8
ON
OFF
Port Naming
Input 1 Input 1
Input 2 Input 2
Input 3 Input 3
Input 4 Input 4
Input 5 Input 5
Input 6 Input 6
Input 7 Input 7
Input 8 Input 8
Output 1 Output 1
Output 2 Output 2
Output 3 Output 3
Output 4 Output 4
Output 5 Output 5
Output 6 Output 6
Output 7 Output 7
Output 8 Output 8
Note: The length of name is limited to 15 characters (only letters, numbers or space , can't included punctuation) each.
Save
Reset
Preset Name
Preset 1
Preset 2
Preset 3
Preset 4
Preset 5
Preset 6
Preset 7
Preset 8
Save
Reset
Note: The length of name is limited to 15 characters (only letters, numbers or space , can't included punctuation) each.
Network
DHCP
Static
Static IP
IP Address: 192 168 10 254
Subnet Mask: 255 255 0 0
Default Gateway: 192 168 1 1
Note: Matrix LAN Module will automatically reboot after changing Network setting.
Apply
Change Password
Login Password
Old Password
New Password
Confirm New Password
Save
Admin Setting Password
Old Password
New Password
Confirm New Password
Save
Note: Password must be 4 to 16 characters in length (alphanumeric only).
Update Web UI
Browse
Update
Note: LAN Module will update and reboot automatically. Please wait about 3 minutes, then refresh and login again.
Do not power off the matrix when updating.
Log
Show
Hide
Custom Web UI LOGO
Browse
Apply
Clear
Note: You must upload an image in PNG format with a resolution is less than 512x62 pixels.
Reset All Setting to Default
Reset to Defaults...
Save Settings
Load Settings
Firmware
Web UI V1.04
MCU V1.2

1) CEC Setting

CEC Setting allows you to control CEC-enabled devices connected to the Matrix through HDMI, without the need of touching the device.



- **Output:** click the drop-down menu to select the output you wish to set up.
- **Display On:** click to power on the display connected to the output selected.
- **Display Off:** click to power off the display connected to the output selected.
- **Auto Control (Minute):** click the up/down arrow to set the time for the display to power off automatically when no signal is present. For example, if the time is set to 2 minutes, the output display will power off automatically when there's no signal at the display for 2 minutes.
- **ON/OFF:** click to enable or disable the CEC Auto Control.

NOTE:

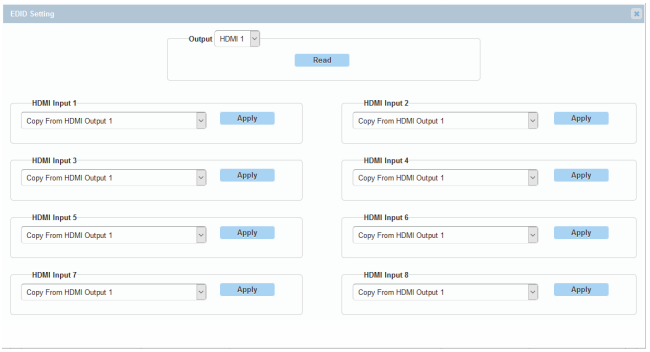
1) CEC Setting is valid only when the display connected is CEC-enabled.

2) Time range for Auto Control is 0-30 minutes.

2) EDID Setting

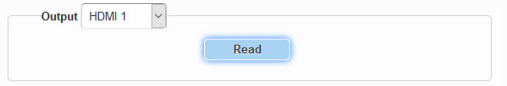
EDID Setting allows you to access and configure EDID setting of each input port.

To configure the EDID setting of any input port through Web UI, please ensure the EDID DIP switch at rear panel of the Matrix is set at "**000**" (or up position). For more information, please refer to EDID MANAGEMENT on Page 30.

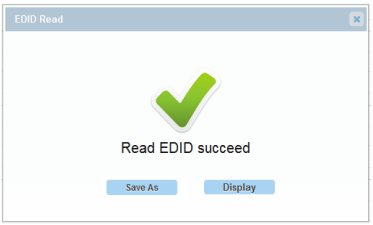


To set up the EDID setting for HDMI input channel:

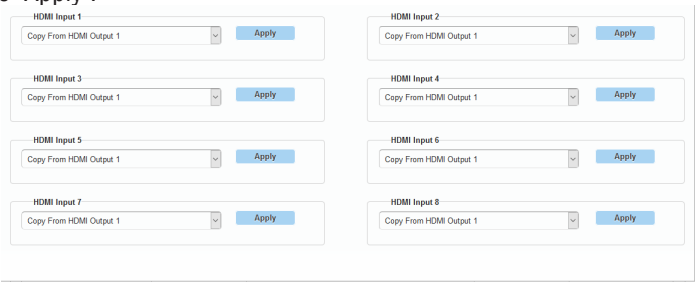
1. Select the desired the HDMI output and click to “Read” its EDID setting.



2. Click to save the EDID information read.

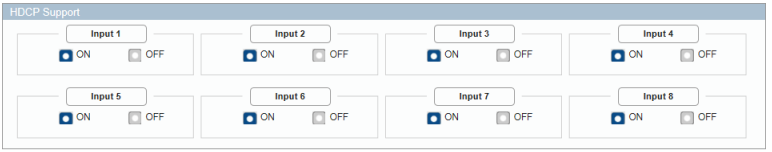


3. Go to the target HDMI Input and select the settings from its drop-down menu, then click to "Apply".



3) HDCP Support

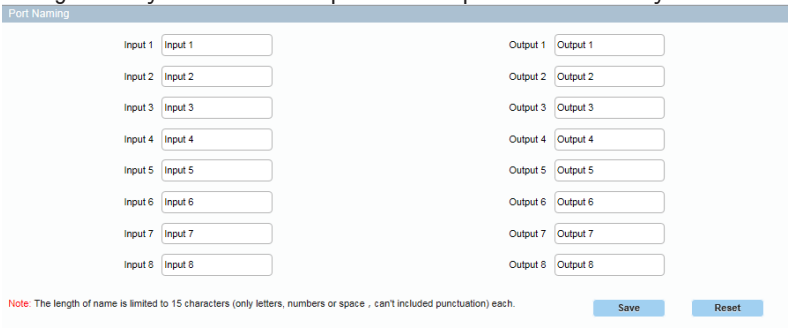
HDCP Support allows you to enable or disable HDCP compatibility of each input. By default, HDCP Support is switched ON at each input and content protected by HDCP standard will be received.



- **ON:** click to switch on the HDCP Support for the desired input.
- **OFF:** click to switch off the HDCP Support for the desired input.

4) Port Naming

Port Naming allows you to redefine inputs and outputs to names easy to remember.

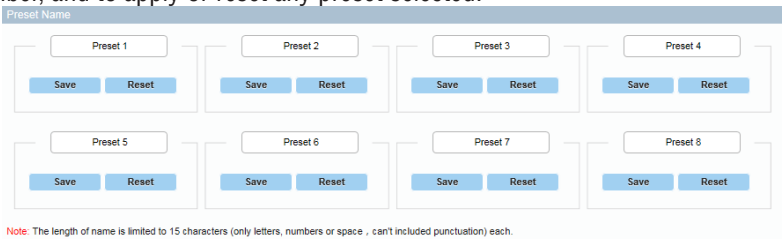


- **Save:** click to save and apply all the changes.
- **Reset:** click to reset all the changes.

NOTE: The length of each port name shall not exceed 15 characters and can include letters, numbers, space and Chinese characters.

5) Preset Name

Preset Name allows you to change a preset name to one that is easy to identify or remember, and to apply or reset any preset selected.



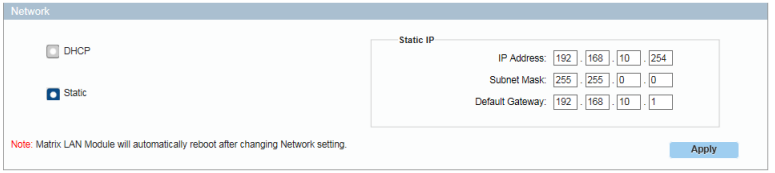
- **Save:** click to save the preset name change.
- **Reset:** click to reset the preset changes.

NOTE: The length of each preset name shall not exceed 15 characters and can include letters, numbers, space and Chinese characters.

6) Network

Network is used to toggle between the dynamic and static IP addressing. The default IP address of the Matrix is **192.168.10.254**.

- **DHCP:** when enabled, the IP address of the Matrix is assigned automatically by the DHCP server connected.
- **Static:** when the Matrix fails to obtain or detect an IP address from the network it's connected, select "Static" to set up the IP address manually. By default, the IP address of the Matrix is **192.168.10.254**.



- **Apply:** click to enable the network setting.

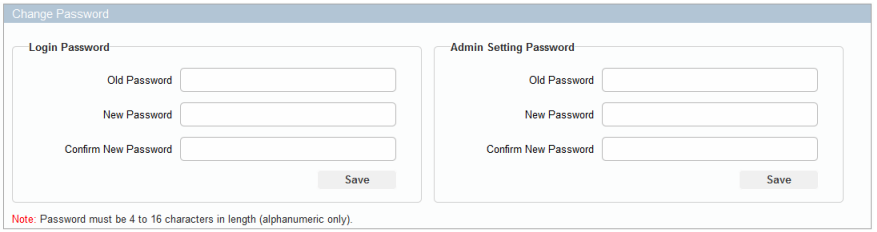
NOTE:

1) 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 192.168.10.xxx.

2) Please wait for 2-3 minutes for the Matrix's LAN module to reboot and reconnect after the network setting is changed.

7) Change Password

Change Password is where the Login password and/or Admin Setting Password to be changed. Default Login password is **admin**. Default Admin Setting password is **123456**.



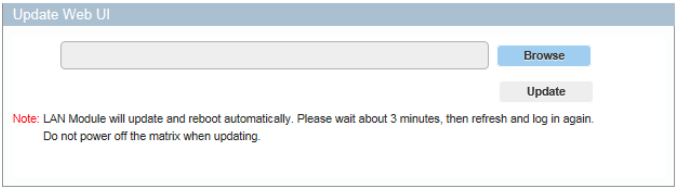
- **Save:** click to save the changes made.

NOTE: The new password must contain 4 to 16 characters (alphanumeric only).

TIP: If you have forgotten any of the passwords, use API command (Command 21 in “Appendix 1: API COMMAND”) to reset the Matrix to factory default settings.

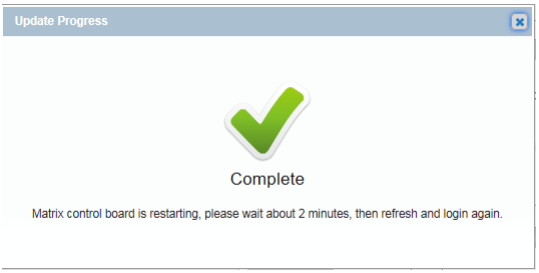
8) Update Web UI

Update Web UI section is used to update your Web UI to the latest version. For latest version Web UI, please contact the product manufacturer or your local dealer.



To update Web UI:

1. Click to “Browse” for the bin file.
2. Click the “Update” button to start the Web UI upgrading.
3. The following window will pop up to indicate the upgrading is successful.



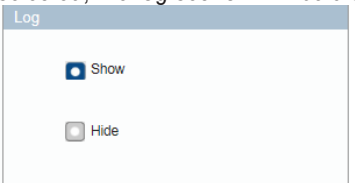
NOTE:

1) The Matrix’s LAN module will update and reboot automatically when Web UI update is completed. Please wait for about 2-3 minutes, then refresh and log in again.

2) Please do not power off the Matrix during the process.

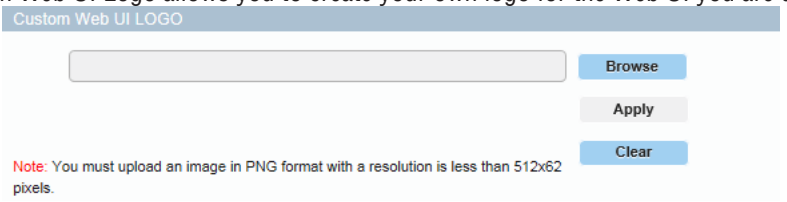
9) Log

In the Log section, you can select to “SHOW” or “HIDE” the Wed UI setting change records. When “SHOW” is selected, the log section will be displayed on the page.



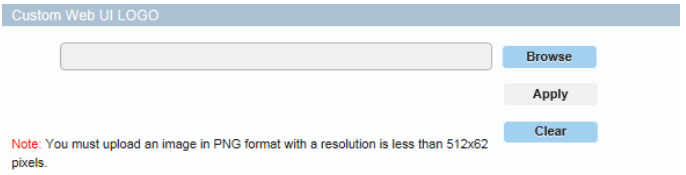
10) Custom Web UI Logo

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

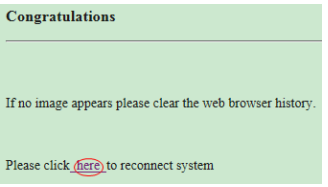


To create customized Web UI Logo:

1. Click to "Browse" for the new logo file.



2. Click to “Apply”, the following window may appear. Click “Here” to reconnect the system.

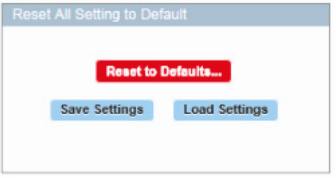


3. When completed the new logo will appear on the upper left corner of the screen.

NOTE: The new logo used should be in PNG format and less than 512*62 pixels.

11) Reset All Settings to Default

Reset All Setting to Default is the section where a setting can be saved to or loaded from a local PC and restore all the settings of the Matrix to factory default.

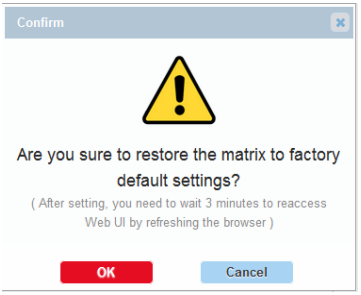


- **Save Settings:** click to save current settings as a setting file to be saved in PC.
- **Load Settings:** click to load a setting file (excluding network and password settings) from PC to the Matrix.

To reset the Matrix to dafault settings:

1. Click “Reset to Defaults” highlighted in RED.

2. Click “OK” to proceed.



NOTE: When the reset is successful, all the Matrix settings will be restored to factory default and the Matrix will reboot automatically. Please wait for about 3 minutes until the reboot is done.

12) Firmware

Firmware section is for you to obtain information of the current firmware in use.

6.4 RS232 Control

Advanced users may also choose to control the Matrix through RS232 serial communication. A USB-UART cable is provided to connect a control PC or control system (e.g. NX-2200) to the Matrix. API command for RS232 control is available in "Appendix 1: API COMMAND". A professional RS232 serial interface software (e.g. Serial Assist) may be needed as well.

Before executing the API command through RS232 serial connection, please ensure the RS232 interface of the Matrix and the control PC are configured correctly.

Parameters	Value
Baud Rate	9600 bps
Data bits	8 bits
Parity	None
Stop bits	1 bit
Flow control	None

Command String Response Examples

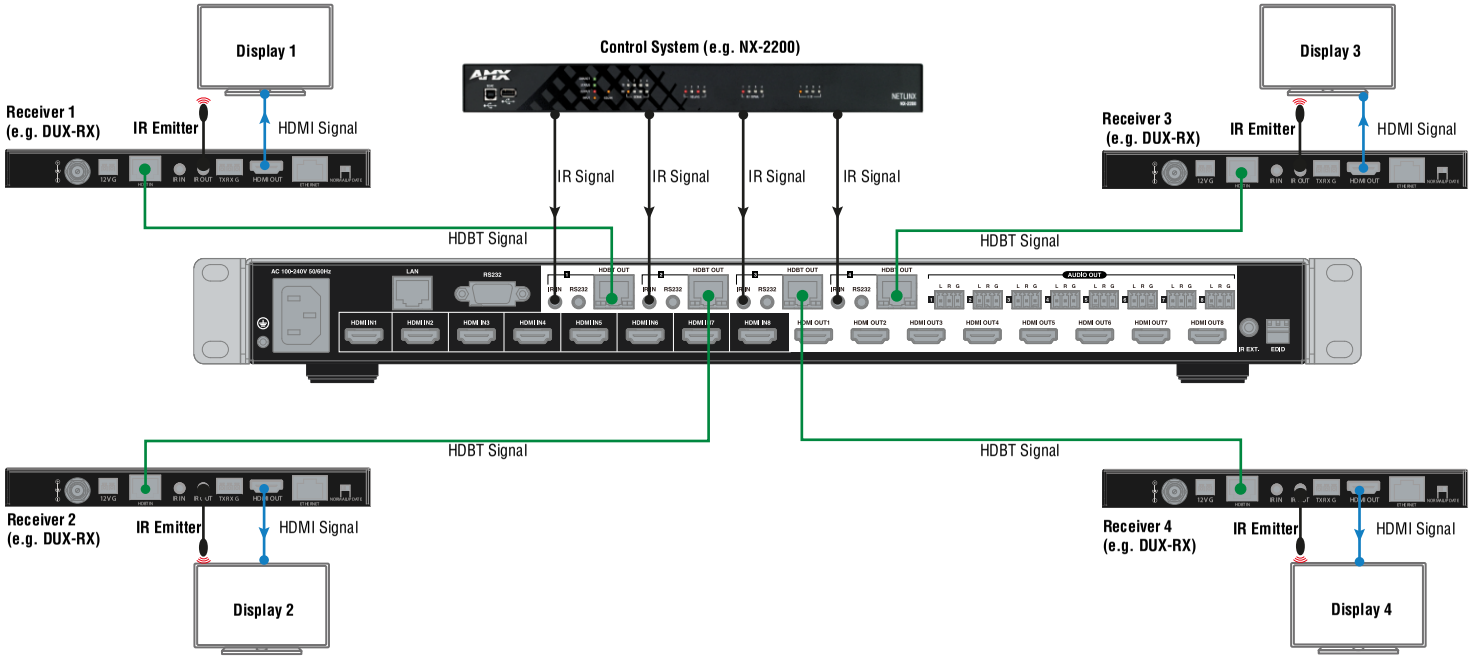
Command	Response	Explanation of Response
CI3O5T	CI3O5T	The command was successfully executed.
CI3T	CI3?	The command was not executed because the output number was not included.
CI3O9T	CI3O9X	The command was not executed because the system does not have an Output 9.

7. IR PASS-THROUGH

DUX-8D's four IR IN ports can be connected directly with Broadband IR Receivers or a control system like NX-2200 for IR pass-through.

To set up for IR pass-through (please refer to the set-up chart next page):

1. Connect IR IN: Connect Braodband IR Receivers or a control system (e.g. NX-2200) to IR IN 1-4 of the Matrix.
2. Connect HDBT OUT to Receivers: Connect HDBT OUT 1-4 of the Matrix to Receivers (e.g. DUX-RX).
3. Connect Displays to Receivers: Connect a Display to each Receiver via HDMI.
4. Connect IR Emitters to Receivers.
5. When all set, the Displays can be controlled via IR pass-through function.



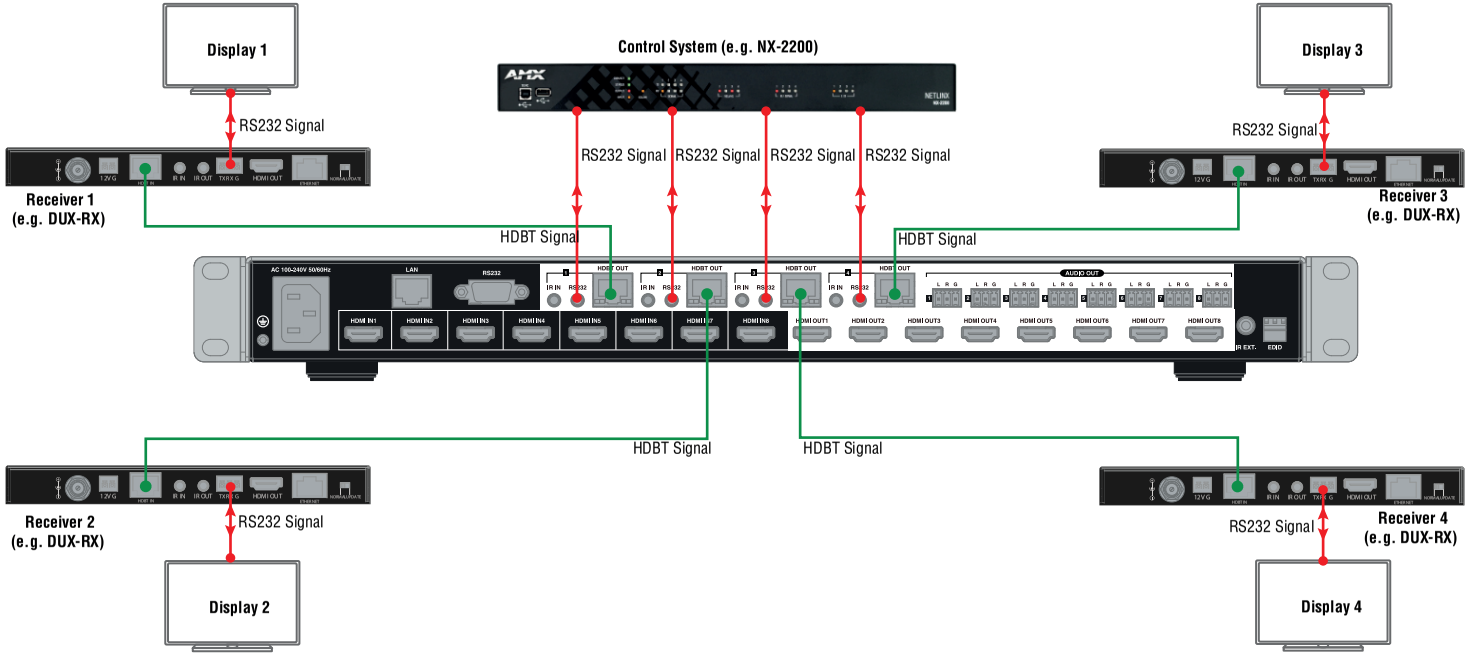
Application Example: Set-up for IR Pass-through

8. RS232 PASS-THROUGH

DUX-8D installs four RS232 ports in the HDBT OUT section which can be used for RS232 bi-directional pass-through.

To set up for IR pass-through (please refer to the set-up chart next page):

1. Connect RS232: Connect a control system (e.g. NX-2200) to RS232 1-4 of the Matrix.
2. Connect HDBT OUT to Receivers: Connect HDBT OUT 1-4 of the Matrix to Receivers (e.g. DUX-RX).
3. Connect Displays to Receivers: Connect a Display to each Receiver via RS232.
4. When all set, RS232 signal can be passed through the Matrix bi-directionally.



Application Example: Set-up for RS232 Pass-through

9. EDID MANAGEMENT

EDID (Extended Display Identification Data) is a data structure provided by a digital display to describe its capabilities to a video source. DUX-8D HDMI Matrix features an EDID management that can be used when the EDID setting's does not meet the installation requirements.

By default, the EDID DIP switch is set in **Smart EDID** position, i.e. all the three switches are set to 1 or down position).

Should any device communication or compatibility issues be encountered during installation, please refer to the table below and set up the DIP switches manually.

DIP			Function
0	0	0	EDID controlled by Front Panel, Web UI and API
0	0	1	4K@60Hz 2.0ch audio With HDR (Smart EDID OFF)
0	1	0	4K@30Hz 7.1ch audio With HDR (Smart EDID OFF)
0	1	1	4K@30Hz 5.1ch audio With HDR (Smart EDID OFF)
1	0	0	4K@30Hz 2.0ch audio With HDR (Smart EDID OFF)
1	0	1	4K@30Hz/8bit only 2.0ch audio Without HDR (Smart EDID OFF)
1	1	0	1080P@60Hz 2.0ch audio (Smart EDID OFF)
1	1	1	Smart EDID ON (Default)

Copy EDID Settings Using Front Panel Controls

Using the front panel controls, you can copy HDMI Output EDID settings to the desired HDMI Input. For instance, to copy HDMI Output 1's EDID settings to HDMI Input 2:

1. Toggle the EDID DIP switch to 000.
2. Press the selection buttons on the front panel to select Input 2 for Output1, then the LED blinks.
3. Long press the Enter (✓) button for 5 seconds. When the LED indicates "CPY OK", the EDID copying is successful. Otherwise, the "CPY FAIL" will be displayed.

NOTE:

1) If a HDMI Output and its mirrored HDBT Output are connected to displays at the same time, the Matrix will only copy EDID of the display connected to HDBT Output.

2) If the EDID copying failed through Web UI or front panel operation, the Input's EDID will be replaced by [4k@30Hz/8bit only without 4:2:0 2.0ch audio without HDR].

APPENDIX 1: API COMMAND

IDX	Function	Command	Example	Action
1	To execute a switch	**CL#I#O#T** I#: #= {0 ~8 } O#: #= {1~8, ALL}	**Command:** CL0I2O8T **Return:** CL0I2O8T	Switches Input 2 to Output 8 on Level 0
			Command: CL0I2O2 4 8T **Return:** CL0I2O2 4 8T	Switches input 2 to Outputs 2, 4, 8 on Level 0
			Command: CI2O8T **Return:** CI2O8T	Switches Input 2 to Output 8 on the default level (normally Level 0)
			Command: CL0I2O4:8T **Return:** CL0I2O4:8T	Switches Input 2 to Outputs 4,5,6,7,8 on Level 0
			Command: CL0I2O1:3 5 7:8T **Return:** CL0I2O1:3 5 7:8T	Switches Input 2 to Outputs 1,2,3,5,7,8 on Level 0
			Command: CL0I2OALLT // CL0I2O1:8T **Return:** CL0I2OALLT	Switches Input 2 to All Outputs
			Command: CI0O8T **Return:** CI0O8T	Disconnects output 8 (Switches none input to Output 8)
		CL#O#I#T I#: #={0 ~8 } O#: #={1~8, ALL}	**Command:** CO8I2T **Return:** CO8I2T	Switches Input 2 to Output 8 on Level 0
			Command: CO2 4 8I2T **Return:** CO2 4 8I2T	Switches input 2 to Output 2,4,8 on Level 0

IDX	Function	Command	Example	Action
1	To execute a switch	**CL#O#I#T** I#: #={0 ~8 } O#: #={1~8, ALL}	**Command:** CO8I2T **Return:** CO8I2T	Switches Input 2 to Output 8 on the default level (normally Level 0)
			Command: CO4:8I2T **Return:** CO4:8I2T	Switches Input 2 to Outputs 4,5,6,7,8 on Level 0
			Command: CO1:3 5 7:8I2T **Return:** CO1:3 5 7:8I2T	Switches Input 2 to Outputs 1,2,3,5,7,8 on Level 0
			Command: COALLI2T **Return:** COALLI2T	Switches Input 2 to All Outputs
			Command: CO8I0T **Return:** CO8I0T	Disconnects output 8 (Switches none input to Output 8)
2	To verify signal status	**SL#O#T** O#: #={1~8}	**Command:** SO4T **Return:** SO4T(6)	Output 4 is connected to input 6 on Level 0
			Command: SO8T **Return:** SO8T( )	Output 8 is not connected to an input on Level 0
		SL#I#T I#: #={1~8}	**Command:** SI4T **Return:** SI4T(1 2 6)	Input 4 is routed to outputs 1,2, and 6 on Level 0
			Command: SI8T **Return:** SI8T( )	input 8 is not routed to an output on Level 0

IDX	Function	Command	Example	Action
3	To define a global preset	**RR#T** #: 1-8	**Command:** RR1T **Return:** RR1T	Define the current system state as Global Preset 1
4	To execute a global preset	**R#T**	**Command:** R1T **Return:** SO1T(6)SO2T(6)SO3T(6)SO4T(6)SO5T(6)SO6T(6)SO7T(6) SO8T(6)	Executes Global Preset 1
5	To execute a sink power by CEC	**CL#O#SP#T** O#: #={1~12, ALL}; // 1~8 hdmi1-hdmi8 outputs; // 9~12 hdbt1-hdbt4 outputs SP#: #={0, 1}	**Command:** CO3SP1T **Return:** CO3SP1T	Executes the sink connected to output 3 power on
			Command: CO3SP0T **Return:** CO3SP0T	Executes the sink connected to output 3 power off
6	To define a sink power by CEC automatically	**CL#O#SPA#T** O#: #={1~12, ALL}; //1~8 hdmi1-hdmi8 outputs; //9~12 hdbt1-hdbt4 outputs SPA#: #={0, 1}	**Command:** CO3SPA1T **Return:** CO3SPA1T	Enable control the sink that connected to output 3 power by CEC automatically on Level 0
			Command: CO3SPA0T **Return:** CO3SPA0T	Disable control the sink that connected to output 3 power by CEC automatically on Level 0
7	To verify a sink power controlled Status	**SL#O#SPAT** O#: #={1~12}; // 1~8 hdmi1-hdmi8 outputs; // 9~12 hdbt1-hdbt4 SPA#: #={0, 1}	**Command:** SO3SPAT **Return:** SO3SPAT(1)	Output 3 is able to control power by CEC automatically
			Command: SO3SPAT **Return:** SO3SPAT(0)	Output 3 is disable to control power by CEC automatically

IDX	Function	Command	Example	Action
8	To define a Delay Time to execute a sink power off when no active signal	**CL#O#D#SPT** O#: #={1~12, ALL}; // 1~8 hdmi1-hdmi8 outputs; //9~12 hdbt1-hdbt4 outputs D#: #={0~30MIN}	**Command:** CO3D5SPT **Return:** CO3D5SPT	Define Delay 3 minutes to control the sink that connected to output 3 power off when no active signal
9	To verify Delay Time to execute a sink power off when no active signal	**SL#O#DSPT** O#: #={1~12}; // 1~8 hdmi1-hdmi8 outputs; // 9~12 hdbt1-hdbt4	**Command:** SO3DSPT **Return:** SO3DSPT(5)	
10	To Set Input HDCP support ON/OFF	**CL#I#DCP#T** I#: {1~8, ALL}; DCP#: {0,1} // 0: OFF; 1:ON	**Command:** CI5DCP1T **Return:** CI5DCP1T	Set Input 5 HDCP support ON
11	To Verify Input HDCP support Status	**SL#I#DCPT** I#: {1~8}; DCP#: {0,1} // 0: OFF; 1:ON	**Command:** SI5DCPT **Return:** SI5DCPT(1)	Set Input 5 HDCP support ON
12	To Verify EDID Dip Status	**SDIPT** DIP#: {0-7} // 0 ---> Smart, // 1 ---> 1080P60Hz_2Ch, // 2 ---> 4K30Hz_2Ch_ Without420_HDR, // 3 ---> 4K30Hz_2Ch_ HDR, // 4 ---> 4K30Hz_6Ch_ HDR, // 5 ---> 4K30Hz_8Ch_ HDR, // 6 ---> 4K60Hz_2Ch_ HDR, // 7 ---> Customize,	**Command:** SDIPT **Return:** SDIPT(2)	

IDX	Function	Command	Example	Action
13	To Set input EDID	**CL#I#E#T** I#: #={1~8,ALL}; E#: {1~20} 1 : Copy form hdmi output 1 2 : Copy form hdmi output 2 ... 8 : Copy form hdmi output 8 9 : Copy form hdbt output 1 10 : Copy form hdbt output 2 11: Copy form hdbt output 3 12 : Copy form hdbt output 4 13 : Fix 4K@60Hz 2.0ch audio With HDR 14 : Fix 4K@30Hz 7.1ch audio With HDR 15 : Fix 4K@30Hz 5.1ch audio With HDR 16 : Fix 4K@30Hz 2.0ch audio With HDR 17 : Fix 4K@30Hz/8bit only 2.0ch audio Without HDR 18 : 1080P@60Hz 2.0ch audio 19 : Smart EDID 20: EDID Write	**Command:** CI5E1T **Return:** CI5E1T Specially: **Command:** CI5E20T00FFFFFF.... **Return:** CI5E20T --- ok or CI5E20X --- err	Copy EDID form HDMI output 1 to input 5

IDX	Function	Command	Example	Action
14	To Verify input EDID	**SL#I#ET** I#: {1~8}; E#: {1~20} 1 : Copy form hdmi output 1 2 : Copy form hdmi output 2 ... 8 : Copy form hdmi output 8 9 : Copy form hdbt output 1 10 : Copy form hdbt output 2 11 : Copy form hdbt output 3 12 : Copy form hdbt output 4 13 : Fix 4K@60Hz 2.0ch audio With HDR 14 : Fix 4K@30Hz 7.1ch audio With HDR 15 : Fix 4K@30Hz 5.1ch audio With HDR 16 : Fix 4K@30Hz 2.0ch audio With HDR 17 : Fix 4K@30Hz/8bit only 2.0ch audio Without HDR 18 : 1080P@60Hz 2.0ch audio 19: Smart EDID 20: EDID Write	**Command:** SI5ET **Return:** SI5ET(1)	The EDID of the Input 5 is copied from HDMI output 1

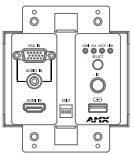
15	To get Output EDID	**RL#O#ET**
		O#: {1~12};
		// 1~8 hdmi1-hdmi8 outputs;
		// 9~12 hdbt1-hdbt4 outputs
			Command:
			RO2ET
			
			Return:
			Success:
			RO2ET(XX…XX) //Return 512 characters consecutive
			Failure:
			RO2EX	

16	To define IR System Code	**CIR#T** IR#: {1, 2, 3} 1: supports 0x00 and 0x4E 2: supports 0x00; 3: supports 0x4E;	**Command:** CIR2T **Return:** CIR2T	
17	To Verify IR System Code	**SIRT** IR#: {1, 2, 3} 1: supports 0x00 and 0x4E 2: supports 0x00; 3: supports 0x4E;	**Command:** SIRT **Return:** SIRT(2)	

IDX	Function	Command	Example	Action
18	To Verify Commands list	**~HELP!**	**Command:** ~HELP! **Return:** ~HELP![01] CL#I#O#T(To execute a switch) [02] CL#O#I#T(To execute a switch) [03] SL#O#T(To verify signal status) [04] SL#I#T(To verify signal status) [05] RR#T(To define a global preset) [06] R#T(To execute a global preset) [07] CL#O#SP#T(To execute a sink power by cec) [08] CL#O#SPA#T(To define a sink power by cec automatically) [09] SL#O#SPA#T(To verify a sink power controlled Status) [10] CL#O#D#SPT(To define a Delay Time to execute a sink power off when on active signal) [11] SL#O#DSPT(To verify Delay Time to execute a sink power off when on active signal) [12] CL#I#DCP#T(To set Input HDCP support ON or OFF) [13] SL#I#DCPT(To verify Input HDCP support Status) [14] SDIPT(To verify EDID Dip Status) [15] CL#I#E#T(To set input EDID) [16] SL#I#ET(To verify input EDID) [17] RL#O#ET(To get Output EDID) [18] CIR#T(To define IR System Code) [19] SIRT(To verify IR System Code) [20] ~HELP!(To verify Commands list) [21] ~VER!(To determine the system's Application Code version) [22] ~APP!(To cause a warm reboot) [23] ~SYSR!(To reset system setting)	
19	To determine the system's Application Code version	**~VER!**	**Command:** ~VER! **Return:** ~VER!(AMX DUX-8D #.#) e.g.: ~VER!(AMX DUX-8D 1.0)	

IDX	Function	Command	Example	Action
20	To cause a warm reboot	**~APP!**	**Command:** ~APP! **Return:** ~APP!	
21	To reset system setting	**~SYSR!**	**Command:** ~SYSR! **Return:** ~SYSR!	

AMX DUX SERIES

DUX-8C	Compact 8x8 HDMI 2.0 matrix switcher for video signals up to 4K@60Hz 4:4:4 (bandwidth 18 Gbps)	
DUX-8D	Dual output 8x8 HDMI 2.0 matrix switcher with 4 mirrored HDBT outputs for video signals up to 4K@60Hz 4:4:4 (bandwidth 18 Gbps)	
DUX-TX	HDMI 1.4 over HDBT TX up to 100m	
DUX-RX	HDMI 1.4 over HDBT RX up to 100m	
DUX-TX-70	HDMI 1.4 over HDBT TX up to 70m	
DUX-RX-70	HDMI 1.4 over HDBT RX up to 70m	
DUX-SCL	HDMI scaler up to 4K@60Hz 4:4:4	
DUX-SRX	HDBT scaling receiver up to 4K@60Hz 4:4:4	
DUX-MTX	HDMI 1.4 & VGA over HDBT TX up to 100m	
DUX-MTX-WP	HDMI 1.4 & VGA over HDBT wall-plate TX up to 100 m	

3000 RESEARCH DRIVE, RICHARDSON, TX 75082

AMX.com | 800.222.0193 | 469.624.8000 | +1.469.624.7400 | fax 469.624.7153

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