USER MANUAL

DUX-12F

Flexible Modular Matrix Switcher
Support up to 4K@60Hz 4:4:4 8bit
Top Speed Seamless Switching



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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

AMX developed DUX-12F flexible modular matrix switcher to realize seamless switching of small-scale 4K/UHD video distribution system. Designed to be used with DUX Series single-channel HDMI and HDBaseT input and output boards, DUX-12F provides flexible switching solutions from 1x11 to 11x1 and supports 4K/UHD video signal with HDCP 2.2 compliant.

DUX-12F has embedded 4K/UHD scalers for each output with auto-scaling, and also comes with advanced EDID management to offset conflicts between screens and ensure output of highest resolution compatible to all connected displays.

DUX-12F allows control through front panel buttons, IR Remote, RS232, Web UI or Telnet API commands. The embedded Web UI provides an intuitive tool for easy and quick setup and configuration of an AV installation projects.

Designed for 3U rackmount and stand-alone installation, DUX-12F offers all the convenience, connectivity and versatility expected for a commercial or residential AV environment.

Features

- 12 board slots for flexible input/output combination (from 1x11 to 11x1).
- Independent embedded scaler for each output supports auto scaling up to 4K@60Hz 4:4:4 8bit.
- Top speed seamless switching of 4K/UHD video signals.
- HDCP 2.2 compliant.
- HDMI inputs and outputs support up to 4K@60Hz 4:4:4 8bit.
- HDBaseT inputs and outputs support up to 4K@60Hz 4:2:0 8bit, 4K@30Hz 4:4:4 8bit.
- Transmits 4K@60Hz 4:2:0 8bit signal and 1080P@60Hz 4:4:4 8bit signal up to 100 meters via Cat6a/7 cable.
- Transmits 4K@60Hz 4:2:0 8bit signal up to 70 meters and 1080P@60Hz 4:4:4 8bit signal up to 100 meters via Cat5e/6 cable.
- Analog audio embedding for each input. Analog and digital audio de-embedding for each output.
- Supports Ethernet routing to each HDBaseT input and output.
- Control through front panel buttons, IR, RS232 and LAN (Web UI & Telnet).
- Advanced EDID Management.

2. PACKING LIST

- 1 x DUX-12F
- 1 x IR Remote Handset
- 1 x AC Power Cord
- 1 x IR Receiver (38KHz)
- 1 x USB to UART Cable
- 2 x Mounting Brackets
- 1 x User Manual

3. SPECIFICATIONS

The following specifications are based on a 8x4 DUX-12F installed with
- 6 x DUX-F-I-HDMIs (HDMI input board),
- 2 x DUX-F-I-HDBTs (HDBaseT input board),
- 2 x DUX-F-O-HDMIs (HDMI output board), and
- 2 x DUX-F-O-HDBTs (HDBaseT output board).

For more information about the DUX Series HDMI and HDBaseT input and output boards, please refer to their respective technical document.

Technical	
Input / Output Connections	• 6 x HDMI IN • 2 x HDBT IN (with 2 x IR IN and 2 x RS232) • 8 x AUDIO IN (Analog audio ports) • 2 x HDMI OUT • 2 x HDBT OUT (with 2 x IR IN and 2 x RS232) • 4 x AUDIO OUT (including digital and analog audio ports) • 1 x LAN • 1 x RS232 • 1 x IR EXT. • 1 x EDID DIP Switch • 1 x AC IN
Input / Output Video Type	HDMI / HDBaseT
Input Resolution Supported	• VESA: 800x600[8], 1024x768[8], 1280x768[8], 1280x800[8], 1280x960[8], 1280x1024[8], 1360x768[8], 1366x768[8], 1440x900[8], 1600x900[8], 1600x1200[8], 1680x1050[8], 1920x1200[8], 2048x1152[8], 3840x2160[2,3,5,8], 4096x2160[2,3,5,8]. • SMPTE: 720x480P[7,8], 720x576P[6], 1280x720P[6,7,8], 1920x1080P[6,7,8]. 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
Input Audio Format	• HDMI IN: PCM 2.0, Dolby 2.0, Dolby 5.1. • Analog AUDIO IN: PCM 2.0.
Output Resolution Supported	• VESA: 1024x768[8], 1280x800[8], 1600x1200[8], 1920x1200[8], 3840x2160[5], 3840x2160[8],and Auto Scaler • SMPTE: 1280x720[8], 1920x1080[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

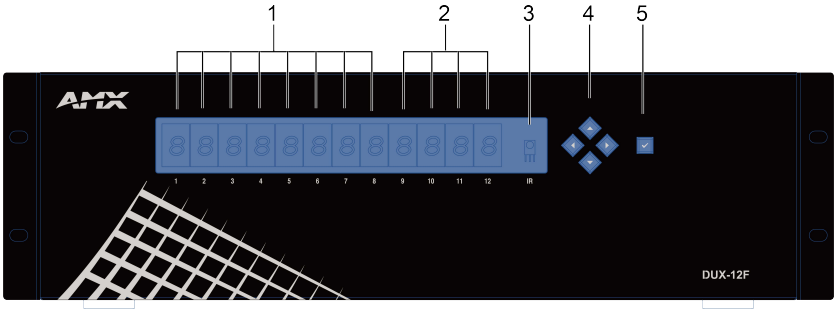
Output Audio Format	• HDMI OUT: PCM 2.0, Dolby 2.0, Dolby 5.1. • Digital AUDIO OUT: PCM 2.0, Dolby 2.0, Dolby 5.1. • Analog AUDIO OUT: PCM 2.0.
Control	
Control Method	• IR • Front panel • RS232 • LAN (Telnet API & Web UI)
General	
Operating Temperature / RH	32°F ~ 113°F (0°C ~ 45°C), 10% ~ 90%, non-condensing
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	1080p: 130.5W; 4K: 135.6W
Dimensions (W x H x D)	440mm x 433.7mm x 132.5mm (without mounting brackets)
Weight	10.9kg
Rack Space Required	3U
Certification	CE, FCC

4. PANEL OVERVIEW

The following panel instructions are based on a 8x4 DUX-12F installed with
- 6 x DUX-F-I-HDMIs (HDMI input board),
- 2 x DUX-F-I-HDBTs (HDBaseT input board),
- 2 x DUX-F-O-HDMIs (HDMI output board), and
- 2 x DUX-F-O-HDBTs (HDBaseT output board).

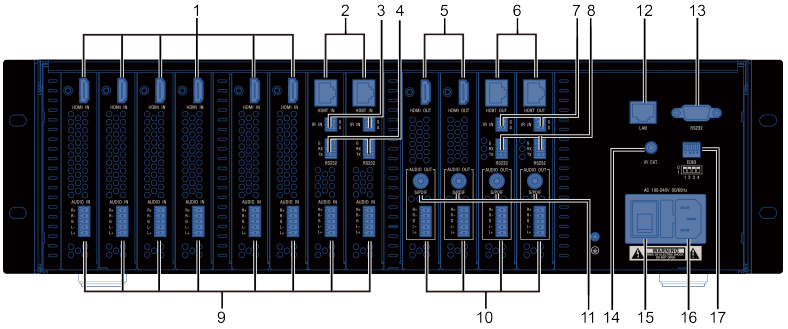
For more information about these HDMI and HDBaseT input and output boards, please refer to their respective technical document.

4.1 Front Panel



No.	Name	Description
1	Input Channel Indicators (1-8)	Reserved.
2	Output Channel Indicators (9-12)	Indicates input channel selected for each output (1-4).
3	IR	Receives signal from IR Remote.
4	Selection Buttons	Selects input and output channels: • Left / Right: selects output channels. • Up / Down: selects input channels.
5	Enter Button	Press to implement the input and output selection.

4.2 Rear Panel



No.	Name	Description
1	HDMI IN	Connect this port to an HDMI source.
2	HDBT IN	Connect this RJ-45 connector to an HDBaseT transmitter via a CatX cable.
3	IR IN	Connect this 2-pin Phoenix female connector to an IR Receiver.
4	RS232	Connect this 3-pin Phoenix female connector to a control system for RS232 input pass-through.
5	HDMI OUT	Connects to an HDMI display device.
6	HDBT OUT	Connect this RJ-45 connector to an HDBaseT receiver via a CatX cable.
7	IR IN	Connect this 2-pin Phoenix female connector to an IR Receiver.
8	RS232	Connect this 3-pin Phoenix female connector to a control system for RS232 output pass-through.
9	AUDIO IN	Connect this 5-pin Phoenix female connector to balanced stereo audio input signal embedded to the HDMI/HDBT input.
10	AUDIO OUT	Connect this 5-pin Phoenix female connector to balanced stereo audio output signal de-embedded from the HDMI/HDBT output.
11	AUDIO OUT	Connect this S/PDIF connector to digital audio output signal de-embedded from the HDMI/HDBT output.
12	LAN	Connect this RJ-45 connector to a control system for Web UI or Telnet API control.

13	RS232	Uses a DB9 connector to connect a control system for Telnet API control.
14	IR EXT.	IR extension port. Plug in an IR Receiver to control the device.
15	Power Switch	Press to power on or off the device.
16	Power Input	Connect this input to power supply using the power cord provided. Power requirement: 100~240VAC 50/60Hz.
17	EDID	For EDID management. (For more information, please go to "**9. EDID MANAGEMENT**").

5. INSTALLING AND WIRING

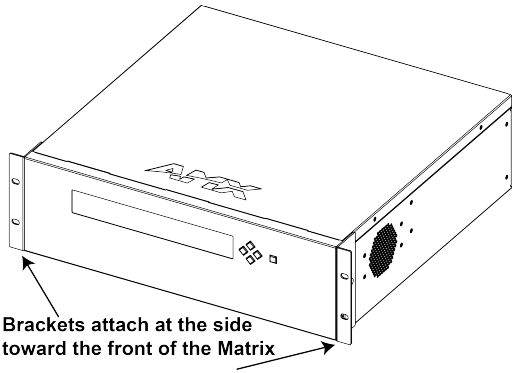
5.1 Installing DUX-12F

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

DUX-12F Switching Matrix occupies 3U 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 provided to the front panel.



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 Matrix. (For detailed information of wiring, please refer to "**5.4 Wiring**".)

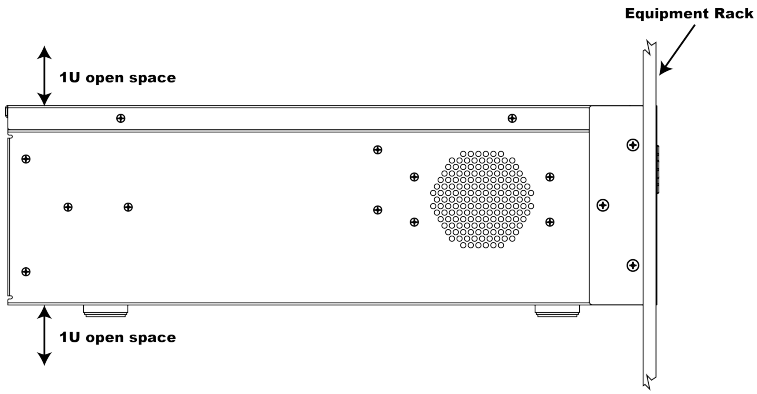
CAUTION: DO NOT place other units directly on top of the Matrix when it is rack mounted, as this will place excessive strain on the mounting brackets.

CAUTION: When adopting rackmouting, distribute all the devices 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 Installing Input and Output Boards

With a DUX-12F, you may build up a switching system of up to 11 (inputs) x 1 (output) or 1 (input) x 11 (outputs) by a combined use of the DUX Series HDMI / HDBaseT input and output boards. (For more information about these HDMI and HDBaseT input and output boards, please refer to their respective technical document.)

The basic rule below should be followed while installing the DUX Series HDMI / HDBaseT input and output boards to the DUX-12F:

If the quantity of input boards (including HDMI & HDBT input boards) is M, the quantity of output boards (including HDMI & HDBT output boards) is N (M≤11, N≤11, M+N≤12), then

1) Insert all the input boards to slot 1 to M of the Matrix;
2) Insert all the output boards to slot M+1 to M+N of the Matrix.



For instance, to install a DUX-12F with 6 x DUX-F-I-HDMIs (HDMI input board), 2 x DUX-F-I-HDBTs (HDBaseT input board), 2 x DUX-F-O-HDMIs (HDMI output board), and 2 x DUX-F-O-HDBTs (HDBaseT output board):

1) Insert all the DUX-F-I-HDMIs and DUX-F-I-HDBTs to slot 1 to 8;
2) Insert all the DUX-F-O-HDMIs and DUX-F-O-HDBTs to slot 9 to 12.

5.4 Wiring

After successful installation of HDMI and HDBaseT input and output boards, all the devices can be connected to the DUX-12F.

The wiring guidance below is based on a 8x4 DUX-12F Switching Matrix installed with

- 6 x DUX-F-I-HDMIs (HDMI input board),
- 2 x DUX-F-I-HDBTs (HDBaseT input board),
- 2 x DUX-F-O-HDMIs (HDMI output board), and
- 2 x DUX-F-O-HDBTs (HDBaseT output board).



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



WARNING: Please ensure all the devices are DISCONNECTED from power before setting up and making any wiring changes. Otherwise, circuitry damage or physical injury may be caused.

To complete wiring of the Matrix (Please refer to "**DUX-12F WIRING CHART**" on page 15) :

1. Connect HDMI IN: Connect 4K or HD source devices (e.g. laptop, Blu-ray player, game console, satellite/cable TV, music streaming device, CCTV, etc.) to the HDMI IN ports.

2. Connect HDBT IN: Connect HDBT transmitters to the HDBT IN ports.

3. Connect AUDIO IN: Connect audio source devices (e.g. mixer & microphone, DVD player, etc.) to the analog AUDIO IN ports.

4. Connect HDMI OUT: Connect 4K or HD display devices to the HDMI OUT ports.

5. Connect HDBT OUT: Connect HDBT receivers to the HDBT OUT ports.

6. Connect AUDIO OUT: Connect audio playback devices (e.g. amplifier &

speaker system) to the digital or analog AUDIO OUT ports.

7. Connect for control. Please select one of the following control methods.
   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 APi Command): Connect the Matrix to the same network as the control PC or control system (e.g. NX-2200) via its LAN port.
   c) RS232 control: Connect a control PC or control system (e.g. NX-2200) to RS232 port of the Matrix.

8. Power on: Connect the AC power cord provided and switch on the Matrix by pressing the power button (on the front panel). The front panel LEDs will display the model name of "--DUX--12F--" , then show "1 1 1 1 1 1 1 1 1 0 0 0 0" and "1 2 3 4 5 6 7 8 9 10 11 12" alternately.

9. Get ready for operation: When the LEDs 9-12 show the individual input (1-8) selected for each output (1-4) (Note: if the Matrix is operated for the first time, the LEDs 9-12 show "1 2 3 4"), the Matrix is ready for operation.

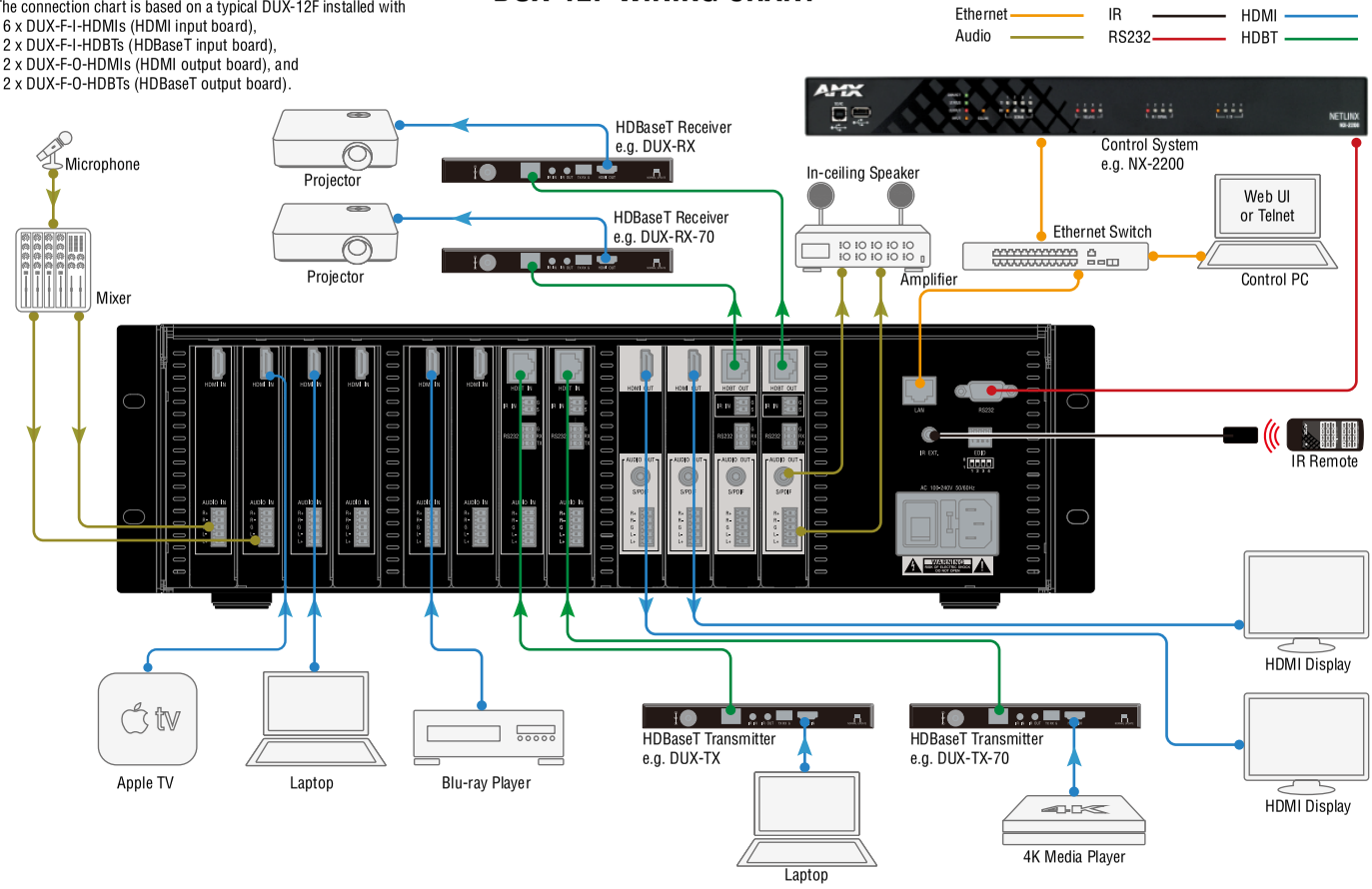
NOTE: ALWAYS power off the Matrix before plugging or unplugging any cables.

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 "**6. CONTROLLING**".

DUX-12F WIRING CHART

The connection chart is based on a typical DUX-12F installed with
- 6 x DUX-F-I-HDMIs (HDMI input board),
- 2 x DUX-F-I-HDBTs (HDBaseT input board),
- 2 x DUX-F-O-HDMIs (HDMI output board), and
- 2 x DUX-F-O-HDBTs (HDBaseT output board).



6. CONTROLLING

DUX-12F Switching 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 and are based on a 8x4 DUX-12F Switching Matrix installed with

- 6 x DUX-F-I-HDMIs (HDMI input board),
- 2 x DUX-F-I-HDBTs (HDBaseT input board),
- 2 x DUX-F-O-HDMIs (HDMI output board), and
- 2 x DUX-F-O-HDBTs (HDBaseT output board).

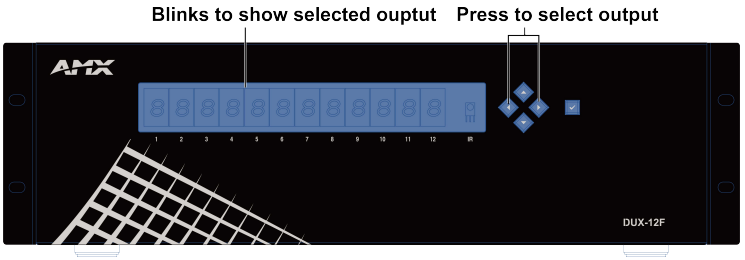
6.1 Control through Front Panel

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

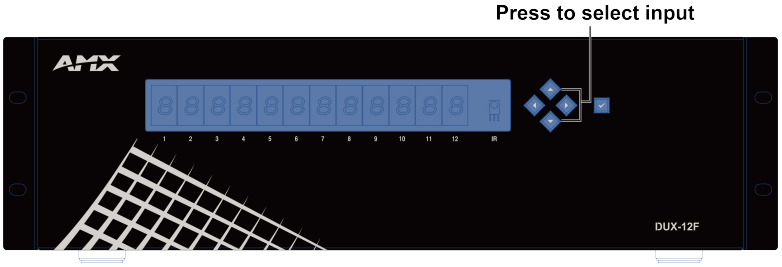
Power on the Matrix and wait till the Matrix is ready for operation. Now you can select input source for each output.

To select an input for each output:

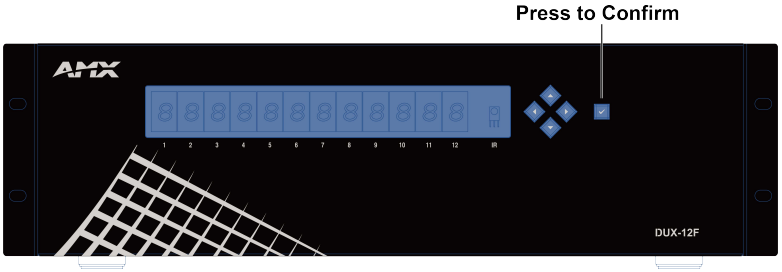
1. Press the Left (◁) or Right (▷) button to select output channel. The LED blinks to show the selected output channel.



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.

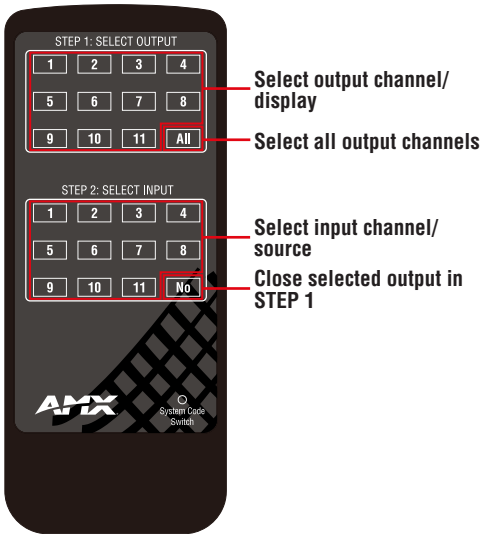


6.2 Control through IR Remote

DUX-12F Switching Matrix can be controlled by the IR Remote provided. Point the IR Remote directly to the Matrix's IR receiving window (3 @ Front Panel on page 8), you can select input source for each output.

If IR extension is required, connect the IR Receiver to the IR EXT (14 @ Rear Panel on page 9) of the Matrix and ensure the receiver eye is accessible to the Remote.

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



To select an input source for an output display:

1. Select the target output channel / display from "STEP 1" or press "All" to select all outputs. The front panel LED flashes to indicate the selected output.

2. Select the target input channel / source from "STEP 2" for the select output(s) or press "No" to turn off the output selected. The flashing LED shows the selected input or "-" in solid state.

CASE

For instance, upon installation of a 8x4 DUX-12F Switching Matrix installed with 6 x DUX-F-I-HDMIs (HDMI input board), 2 x DUX-F-I-HDBTs (HDBaseT input board), 2 x DUX-F-O-HDMIs (HDMI output board), and 2 x DUX-F-O-HDBTs (HDBaseT output board), to select input 2 for output 1:

1) Press "1" from "STEP 1", then the front panel LED 9 flashes.
2) Press "2" from "STEP 2", the the LED 9 shows "2" in solid state.

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 short-pressing the System Code Switch button. At the same time, you may redefine the IR system code of the Matrix using the API command (please refer to 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-12F can be controlled through either Telnet or the tailor-designed Web UI. For advanced users who opt to control via Telnet, API command set is available in "**Appendix 1: API Command**". For users who 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 Matrix and can be accessed through a modern browser, e.g. Chrome, Safari, Firefox, Opera, IE10+, etc.

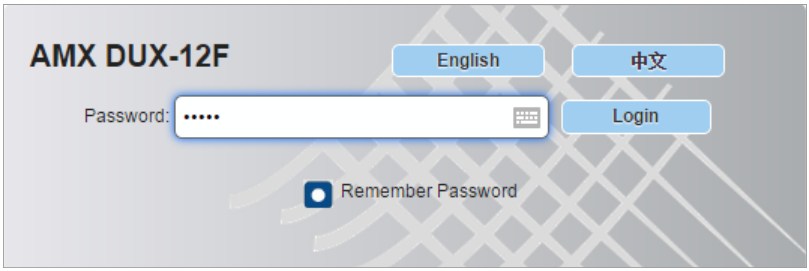
DUX-12F comes with a default IP address of **192.168.10.254** and Subnet mask of **255.255.0.0**. Default login password for Web UI is "**admin**".

To get access to Web UI:

3. Connect the LAN port of the Matrix to your PC using a straight UTP cable.

4. Set your PC to the same network segment as the Matrix, e.g. 192.168.10.xxx.

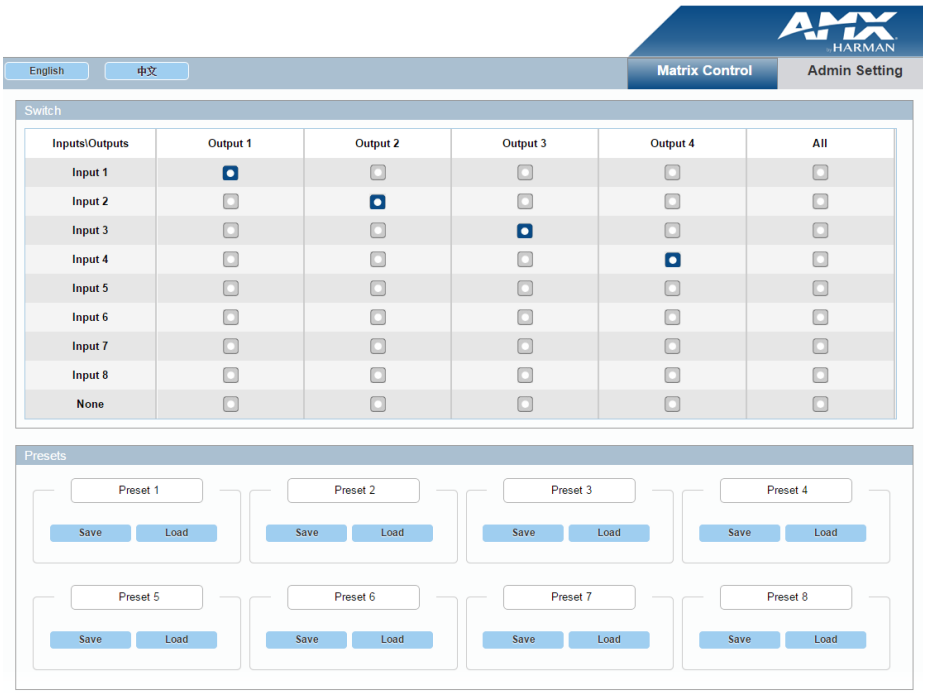
5. Enter the Matrix's IP address **192.168.10.254** in your browser and press enter. The following window will pop up.



Login Window

6. Choose the language you wish to use: English or Chinese.

7. Enter password (default password: **admin**) and click Login to enter the main page of Web UI.



Main Page of Web UI

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

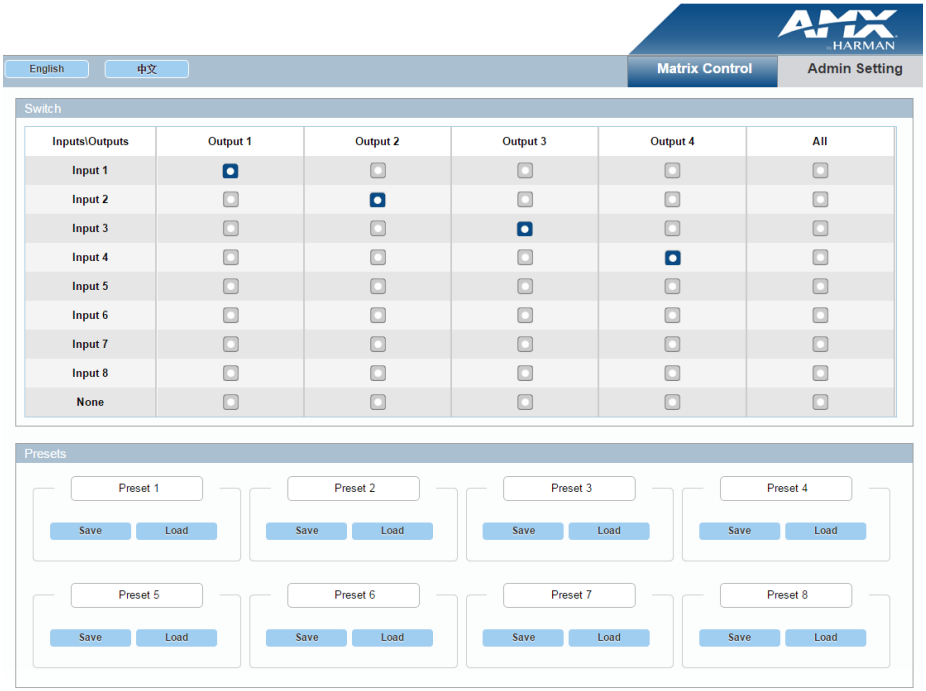
The Matrix Control is used for basic setting of the Matrix: input and output Switch and Preset save and load.

The Admin Setting is designed for advanced controls, e.g. CEC Setting, EDID Setting, Resolution Setting, Audio Input Setting, Port Naming, Preset Name, ect.

6.3.1 MATRIX CONTROL

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

- Switch
- Preset

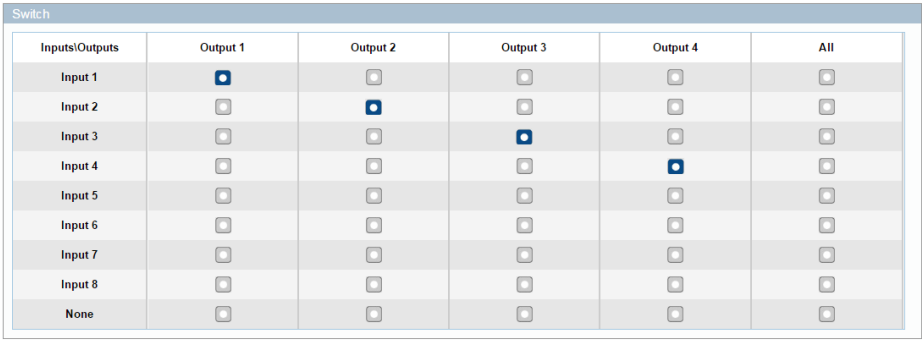


Matrix Control Page

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).

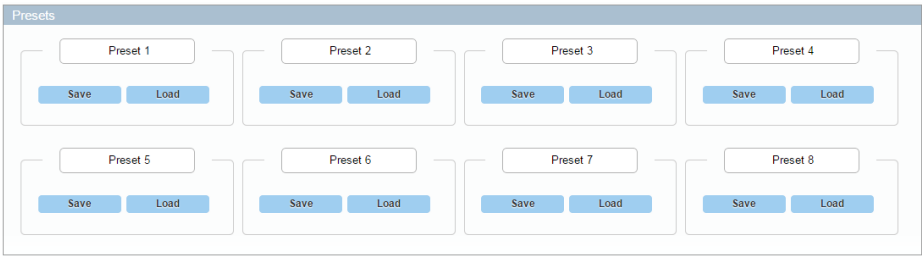


Switch Section

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.

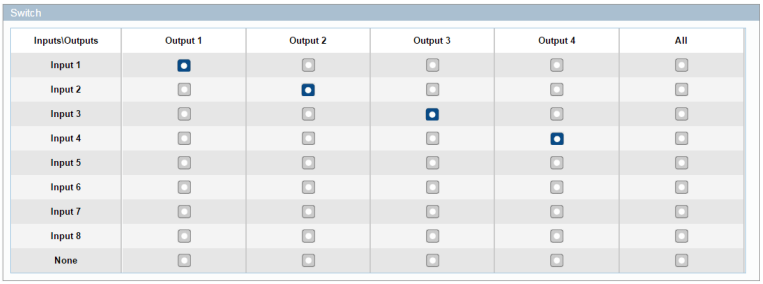


Preset Section



To save a Switch to Preset 1:

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



9. Click "Save" in "Preset 1".



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



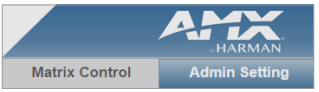
6.3.2 ADMIN SETTING

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

- CEC Setting
- EDID Setting
- Resolution Setting
- Audio Input Setting
- Port Naming
- Preset Name
- Network
- Change Password
- Update Web UI
- Log
- Custom Web UI Logo
- Reset All Settings to Default
- Firmware

To enter the Admin Setting page:

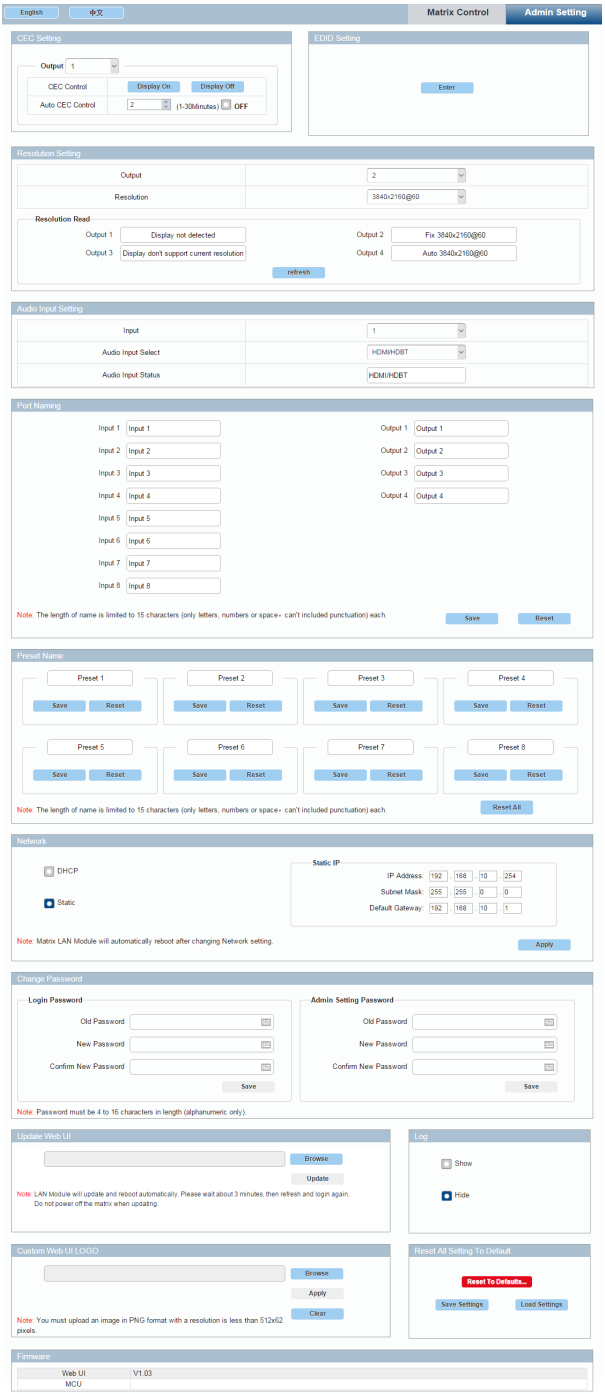
11. Click “Admin Setting” tag on the upper right corner of the page;



12. Enter the password (default password: **123456**).



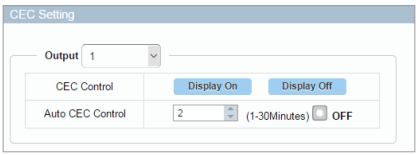
13. You will be navigated to the main page of Admin Setting.



Admin Setting Page

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.



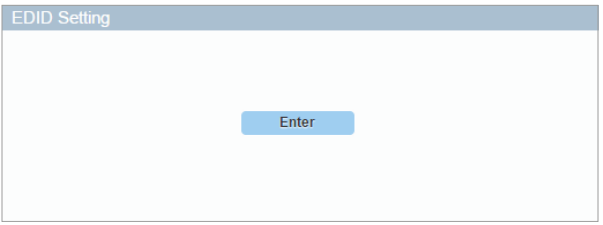
- **Output:** click the drop-down menu to select the output.
- **Display On:** click to power on the display connected to the output selected.
- **Display Off:** click to power off the display connected to the output selected.
- **Auto Control:** click the up/down arrow to set the time for the display 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

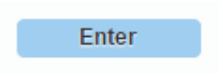
Click "Enter" to access into the EDID Setting section, where you can configure EDID setting of each input.



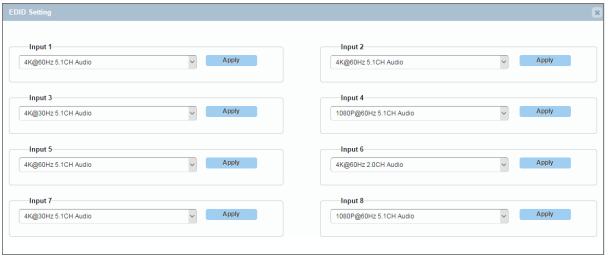
To configure the EDID setting of any input through Web UI, please ensure the EDID DIP switch at rear panel of the Matrix is set to "0000" (or up position). For more information, please refer to "**9. EDID MANAGEMENT**".

To set up the EDID setting for an input channel:

1. Click "Enter" to enter the EDID Setting section.



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



NOTE:

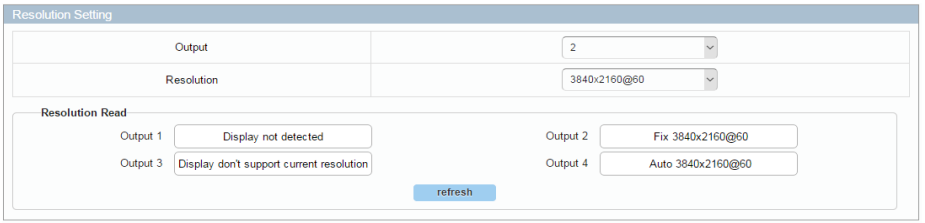
1) The EDID DIP Switch on the rear panel of the Matrix must be set to "0000" (or up position). Otherwise the EDID setting is not configurable (the "Apply" buttons will be greyed out Apply) through the Web UI.

2) For HDMI input channels, the Matrix provides six EDID setting options: 4K@60Hz 5.1CH Audio, 4K@60Hz 2.0CH Audio, 4K@30Hz 5.1CH Audio, 4K@30Hz 2.0CH Audio, 1080P@60Hz 5.1CH Audio, and 1080P@60Hz 2.0CH Audio.

3) For HDBaseT input channels, the Matrix provides four EDID setting options: 4K@30Hz 5.1CH Audio, 4K@30Hz 2.0CH Audio, 1080P@60Hz 5.1CH Audio, and 1080P@60Hz 2.0CH Audio.

3) Resolution Setting

Resolution Setting is where resolution can be set for each output channel.



- **Output:** click the drop-down menu to select the output.
- **Resolution:** click the drop-down menu to select the desired resolution for

the output. Resolution options include 3840x2160@60, 3840x2160@30, 1920x1200@60, 1920x1080@60, 1280x720@60, 1600x1200@60, 1280x800@60, 1024x768@60, and Auto.

- **Refresh:** click to refresh resolution value of each output.

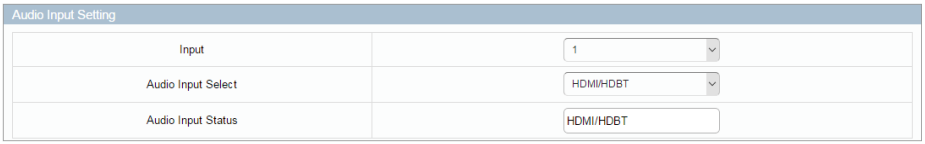
NOTE:

The Resolution Refresh section shows the results of refresh:

1) If the display connected to the output supports the selected resolution, the output will show "Fix" with selected resolution value, like Output 2.
2) If the display connected to the output fails to be detected, the output will show "Display not detected", like Output 1.
3) If the display connected to the output fails to support the selected resolution, the output will show " Display doesn't support current resolution", like Output 3.
4) If the output is set to "Auto", the output will then show "Auto" with detected resolution value, like Output 4.

4) Audio Input Setting

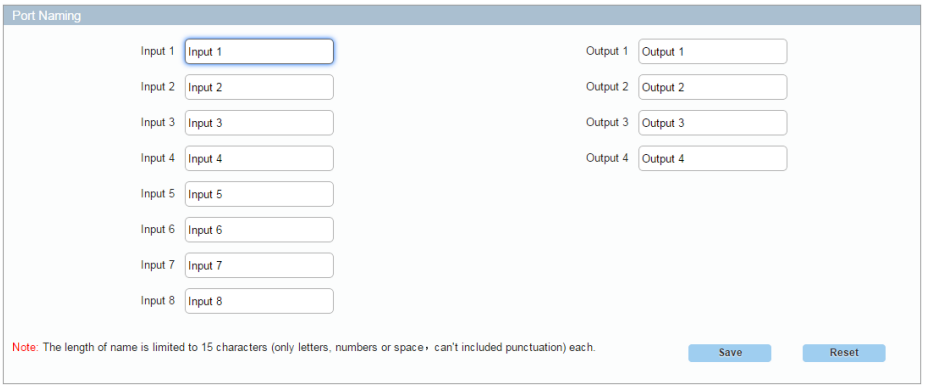
Audio Input Setting is used to set up the audio input signal for each input.



- **Input:** click the drop-down menu to select the input channel you desire to set up.
- **Audio Input Select:** click the drop-down menu to select the audio input source. Options include HDMI/HDBT and AUDIO IN.
- **Audio Input Status:** will change based on the Audio Input Select. Options include HDMI/HDBT and AUDIO IN.

5) Port Naming

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

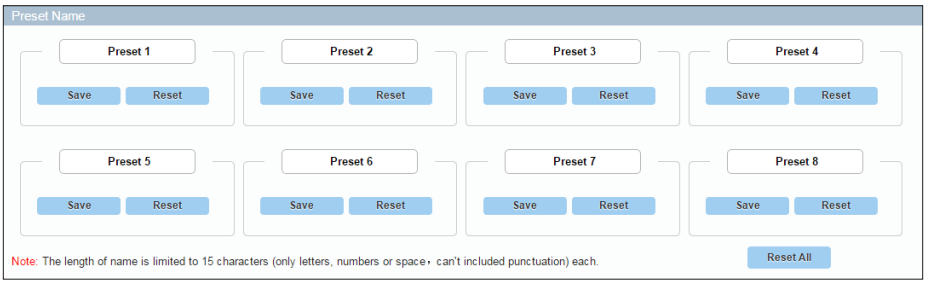


- **Save:** click to save and apply all the changes.
- **Reset:** click to reset all the changes.

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

6) 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.

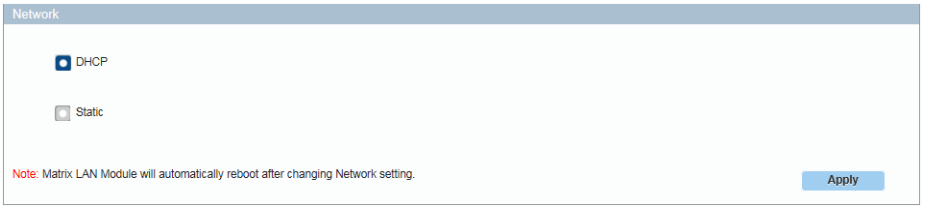


- **Save:** click to save the preset name change.
- **Reset:** click to reset the preset changes.

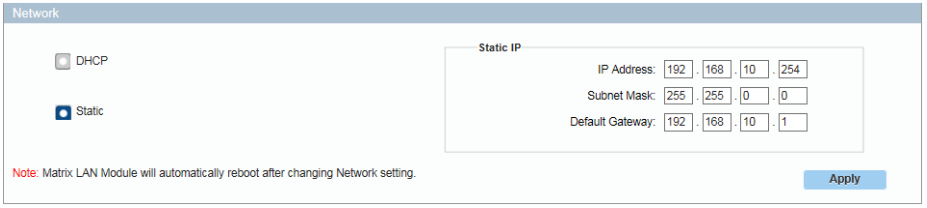
NOTE: The length of each preset name shall not exceed 15 characters and can include letters, numbers, space and Chinese characters.

7) 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 connected, select "Static" to set up the IP address manually. By default, the IP address of the Matrix is **192.168.10.254**.



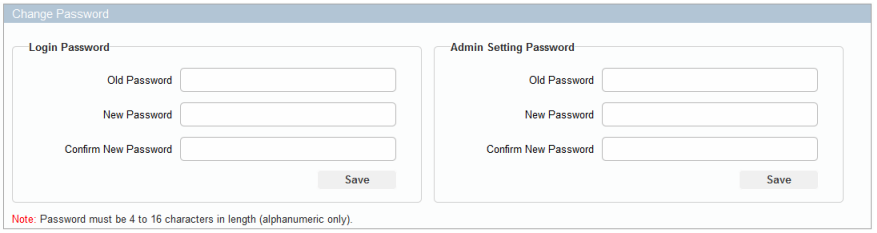
- **Apply:** click to enable the network setting.

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.

8) 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**.



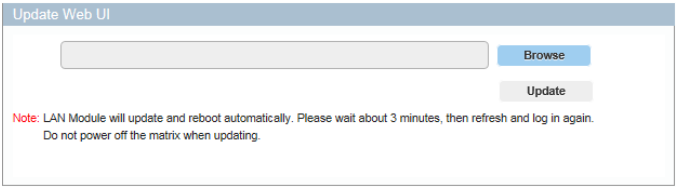
- **Save:** click to save the changes made.

NOTE: New passwords must contain 4 to 16 characters (alphanumeric only).

TIP: If you have forgotten any of the passwords, use API command (Command 19 in "**Appendix 1: API COMMAND**") to reset the Matrix to factory default settings.

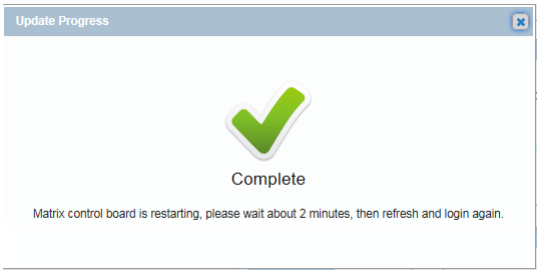
9) Update Web UI

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



To update Web UI:

3. Click to "Browse" for the bin file.
4. Click the "Update" button to start upgrading.
5. 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 upgrading 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 of upgrading.

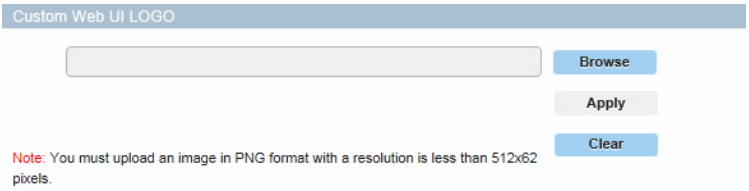
10) Log

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.



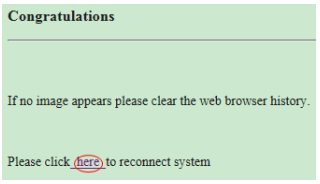
11) Custom Web UI Logo

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



To customize a Web UI Logo:

3. Click to "Browse" for the new logo file, then click to "Apply".
4. The following window will appear. Click “Here” to reconnect the system.



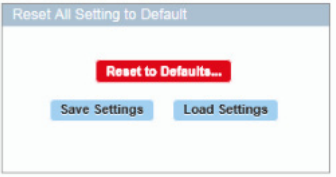
5. When completed the new logo will appear on the upper left corner of the screen.



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

12) 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.
- **Load Settings:** click to load a setting file to the Matrix.

To reset the Matrix to dafault settings:

6. Click "Reset to Defaults" highlighted in RED.



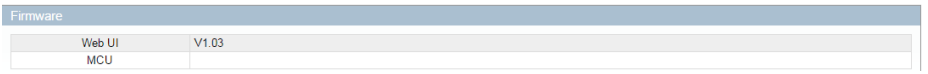
7. Click "OK" to proceed.



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 before you reconnect to Web UI.

13) 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

The following examples are based on a 8x4 DUX-12F installed with

- 6 x DUX-F-I-HDMIs (HDMI input board),
- 2 x DUX-F-I-HDBTs (HDBaseT input board),
- 2 x DUX-F-O-HDMIs (HDMI output board), and
- 2 x DUX-F-O-HDBTs (HDBaseT output board).

Command	Response	Explanation of Response
CI3O4T	CI3O4T	The command was successfully executed.
CI3T	CI3?	The command was not executed because the output number was not included.
CI3O5T	CI3O5X	The command was not executed because the system does not have Output 5.

For a complete list of API commands of the 8x4 Matrix, please go to "**Appendix 1: API COMMAND**".

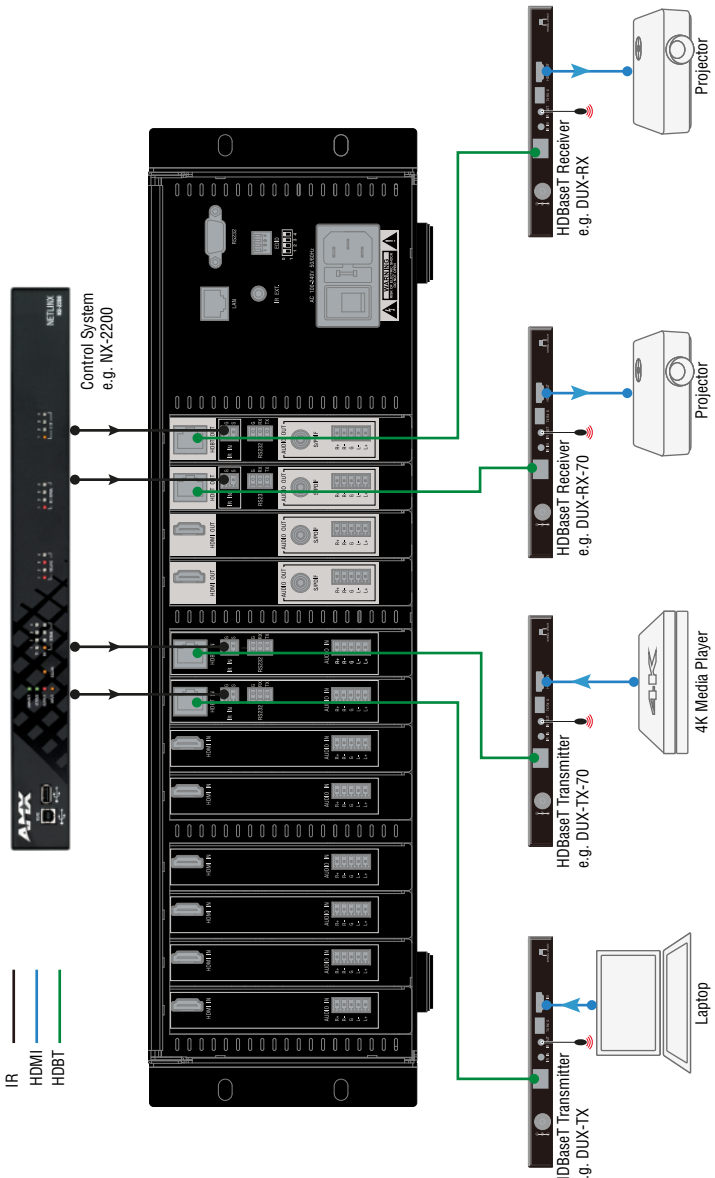
7. IR PASSTHROUGH

DUX-12's 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 chart next page):

1. Connect IR IN: Connect Broadband IR Receivers or a control system (e.g. NX-2200) to IR IN ports of the Matrix.
2. Connect HDBT IN to HDBaseT transmitters: Connect HDBT IN ports of the Matrix to HDBaseT transmitters (e.g. DUX-TX).
3. Connect HDBT OUT to HDBaseT receivers: Connect HDBT OUT ports of the Matrix to HDBaseT receivers (e.g. DUX-RX).
4. Connect source devices to HDBaseT transmitters: Connect a source device to each HDBaseT transmitter.
5. Connect displays to HDBaseT receivers: Connect a display to each HDBaseT receiver.
6. Connect IR Emitters to HDBaseT transmitters and receivers.
7. When all set, the source devices and displays can be controlled via IR pass-through the HDBT.

DUX-12F IR PASS-THROUGH



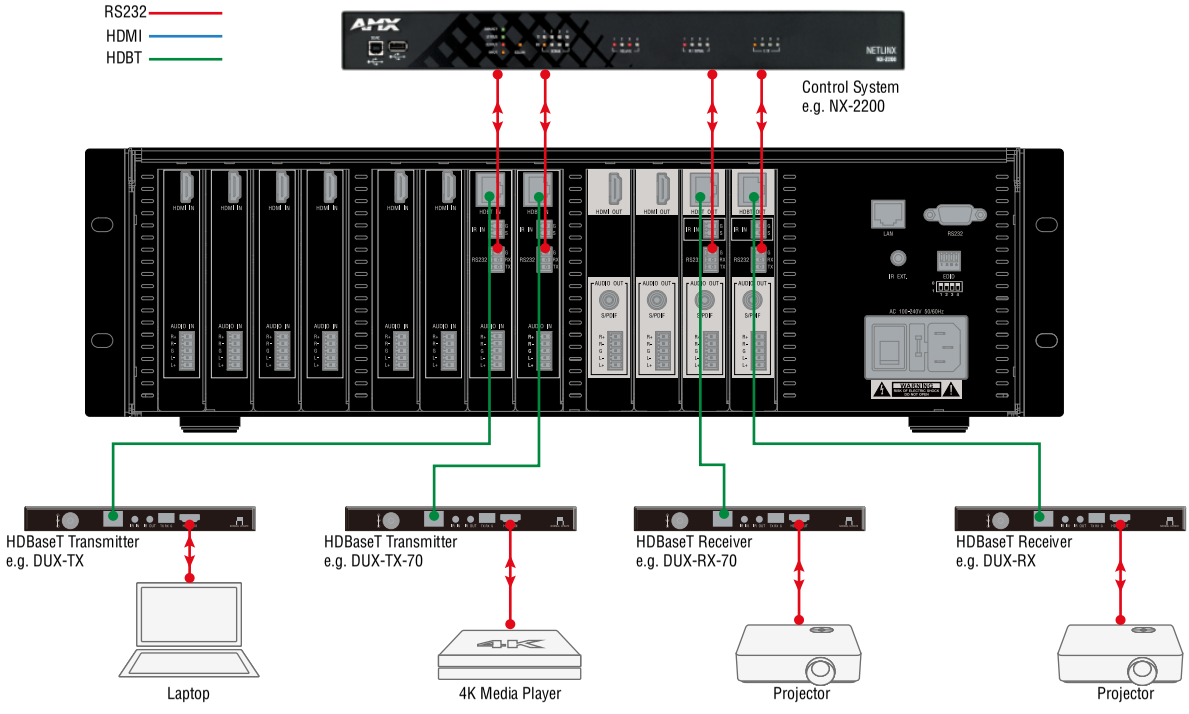
8. RS232 PASSTHROUGH

DUX-12F supports RS232 bi-directional pass through via its HDBT IN or HDBT OUT ports.

To set up for RS232 pass-through (please refer to the chart next page):

1. Connect RS232: Connect a control system (e.g. NX-2200) to RS232 ports of the Matrix.
2. Connect HDBT IN to HDBaseT transmitters: Connect HDBT IN ports of the Matrix to HDBaseT transmitters (e.g. DUX-TX).
3. Connect HDBT OUT to HDBaseT receivers: Connect HDBT OUT ports of the Matrix to HDBaseT receivers (e.g. DUX-RX).
4. Connect source devices to HDBaseT transmitters: Connect a source device to each HDBaseT transmitter via RS232.
5. Connect displays to HDBaseT receivers: Connect a display to each HDBaseT receiver via RS232.
6. When all set, RS232 signal can be passed through the Matrix bi-directionally.

DUX-12F 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-12F features an EDID management that can be used when the EDID setting's does not meet the installation requirements.



Default: 0000

By default, the EDID DIP switch (at the rear panel) is set to "0000" or up 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				HDMI IN	HDBT IN
0	0	0	0	EDID controlled by Web UI and API (default)	
0	0	0	1	4K@60Hz 4:4:4 8bit 5.1ch audio	4K@30Hz 4:4:4 8bit 5.1ch audio
0	0	1	0	4K@60Hz 4:4:4 8bit 2.0ch audio	4K@30Hz 4:4:4 8bit 2.0ch audio
0	0	1	1	4K@30Hz 4:4:4 8bit 5.1ch audio	
0	1	0	0	4K@30Hz 4:4:4 8bit 2.0ch audio	
0	1	0	1	1080p@60Hz 4:4:4 8bit 5.1ch audio	
0	1	1	0	1080p@60Hz 4:4:4 8bit 2.0ch audio	
Others				Reserved	

NOTE:

1) Setting of the EDID DIP switch at the rear panel applies to all inputs available.

2) Setting of the EDID through Web UI or API (EDID DIP switch is set to "0000") applies only to each chosed input.

APPENDIX 1: API COMMAND

The following API commands are based on a 8x4 DUX-12F Switching Matrix installed with

- 6 x DUX-F-I-HDMIs (HDMI input board),
- 2 x DUX-F-I-HDBTs (HDBaseT input board),
- 2 x DUX-F-O-HDMIs (HDMI output board), and
- 2 x DUX-F-O-HDBTs (HDBaseT output board).

IDX	Function	Command	Example
1	To execute a switch	**Command:** CL#I#O#T **Return:** CL#I#O#T **Description:** L#: #={0, 1} or "L" is omitted I#: #={0 ~ 8 } O#: # = {1 ~ 4, ALL}	**Command:** CL0I2O4T **Return:** CL0I2O4T **Description:** Switch Input 2 to Output 4 on Level 0
			Command: CL0I2O1 2 4T **Return:** CL0I2O1 2 4T **Description:** Switch Input 2 to Output 1,2 and 4 on Level 0
			Command: CI2O4T **Return:** CI2O4T **Description:** Switch Input 2 to Output 4 on the default level (normally Level 0)
			Command: CL0I2O1:3T **Return:** CL0I2O1:3T **Description:** Switch Input 2 to Output 1,2 and 3 on Level 0
			Command: CL0I2O1:2 4T **Return:** CL0I2O1:2 4T **Description:** Switch Input 2 to Output 1,2 and 4 on Level 0

IDX	Function	Command	Example
1	To execute a switch	**Command:** CL#I#O#T **Return:** CL#I#O#T **Description:** L#: #={0, 1} or "L" is omitted I#: #={0 ~ 8 } O#: # = {1 ~ 4, ALL}	**Command:** CL0I2OALLT **Return:** CL0I2OALLT **Description:** Switch Input 2 to all Outputs
			Command: CI0O4T **Return:** CI0O4T **Description:** Disconnect Output 4 (or switch none input to Output 4)
		Command: CL#O#I#T **Return:** CL#O#I#T **Description:** L#: #={0, 1} or "L" is omitted I#: #={0 ~ 8 } O#: # = {1 ~ 4, ALL}	**Command:** CO4I2T **Return:** CO4I2T **Description:** Switch Input 2 to Output 4 on Level 0
			Command: CO1 2 4I2T **Return:** CO1 2 4I2T **Description:** Switch Input 2 to Output 1,2 and 4 on Level 0
			Command: CO4I2T **Return:** CO4I2T **Description:** Switch Input 2 to Output 4 on the default level (normally Level 0)
			Command: CO1:3I2T **Return:** CO1:3I2T **Description:** Switch Input 2 to Output 1,2 and 3 on Level 0

IDX	Function	Command	Example
1	To execute a switch	**Command:** CL#O#I#T **Return:** CL#O#I#T **Description:** L#: #={0, 1} or "L" is omitted I#: #={0 ~ 8 } O#: # = {1 ~ 4, ALL}	**Command:** CO1:2 4I2T **Return:** CO1:2 4I2T **Description:** Switch Input 2 to Output 1,2 and 4 on Level 0
			Command: COALLI2T **Return:** COALLI2T **Description:** Switch Input 2 to all Outputs
			Command: CO4I0T **Return:** CO4I0T **Description:** Disconnect Output 4 (or switch none input to Output 4)
2	To verify signal status	**Command:** SL#O#T **Return:** SL#O#T(#) **Description:** L#: #={0, 1} or "L" is omitted O#: # = {1~4} (#): # = {1 ~ 8 or NULL}	**Command:** SO4T **Return:** SO4T(6) **Description:** Output 4 is connected to Input 6 on Level 0
			Command: SO2T **Return:** SO2T( ) **Description:** Output 2 is not connected to any input on Level 0

IDX	Function	Command	Example
2	To verify signal status	**Command:** SL#I#T **Return:** SL#I#T(#) **Description:** L#: #={0, 1} or “L” is omitted I#: # = {1~8}	**Command:** SI4T **Return:** SI4T(1 2 4) **Description:** Input 4 is routed to Output 1,2, and 4 on Level 0 **Command:** SI8T **Return:** SI8T( ) **Description:** Intput 8 is not routed to any output on Level 0
3	To define a global preset	**Command:** RR#T **Return:** RR#T **Description:** R#: # = {1~8}	**Command:** RR1T **Return:** RR1T **Description:** Define the current system state as Global Preset 1
4	To execute a global preset	**Command:** R#T **Return:** SO1T(x)SO2T(x)SO3T(x)SO4T(x) **Description:** R#: # = {1~8} x: # = {1~8} // input channel	**Command:** R1T **Return:** SO1T(6)SO2T(6)SO3T(6)SO4T(6) **Description:** Execute Global Preset 1

5	To execute an Audio Input selection	**Command:**
		CL#I#A#T
		
		Return:
		CL#I#A#T
		
		Description:
		L#: #={0, 1} or “L” is omitted
		I#: #={1 ~ 8 }
		A#: # = {1 , 2}
		{
		1: Audio from HDMI input;
		2: Audio from S/PDIF input
		}
			Command:
			CI1A1T
			
			Return:
			CI1A1T
			
			Description:
			Select audio from HDMI input for Input1

IDX	Function	Command	Example

6	To verify Audio Input status	**Command:**
		SL#I#AT
		
		Return:
		SL#I#AT(#)
		
		Description:
		L#: #={0, 1} or “L” is omitted
		I#: #={1~ 8 }
		(#): # = {1 ,2}
		{
		1: Audio from HDMI input;
		2: Audio from S/PDIF input
		}
			Command:
			SI1AT
			
			Return:
			SI1AT(1)
			
			Description:
			Audio of Input 1 is from HDMI input.

7	To set output resolution	**Command:**
		CL#O#R#T
		
		Return:
		CL#O#R#T
		
		Description:
		L#: #={0, 1} or “L” is omitted
		O#: # = {1~4}
		R#: # = {1~9}
		{
		1 : 3840x2160@60
		2 : 3840x2160@30
		3 : 1920x1200@60
		4 : 1920x1080@60
		5 : 1280x720@60
		6 : 1600x1200@60
		7 : 1280x800@60
		8 : 1024x768@60
		9 : AUTO(preferred native timing of the display)
		}
			Command:
			CO1R1T
			
			Return:
			CO1R1T
			
			Description:
			Set Output 1 resolution to 3840x2160@60.

IDX	Function	Command	Example

8	To verify output resolution	**Command:**
		SL#O#RT
		
		Return:
		SL#O#RT(value)
		
		Description:
		L#: #={0, 1} or “L” is omitted
		O#: # = {1~4};
		value = = {1~8, 101~108}
		{
		NULL: Display not detected
		0: Display doesn't support current selected resolution
		1 : Fix 3840x2160@60
		2 : Fix 3840x2160@30
		… …
		7 : Fix 1280x800@60
		8 : Fix 1024x768@60
		101 : Auto 3840x2160@60
		… …
		108 : Auto 1024x768@60
		}
		Auto (preferred native timing of the display)
			Command:
			SO1RT
			
			Return:
			SO1RT(101)
			
			Description:
			Resolution of Output 1 is Auto 3840x2160@60

9	To execute a sink power by cec	**Command:** CL#O#SP#T **Return:** CL#SP#T **Description:** L#: #={0, 1} or “L” is omitted O#: # = {1~4}; SP# : # = {0, 1} // {0, 1}:{off, on}	**Command:** CO3SP1T **Return:** CO3SP1T **Description:** Execute to power on the sink connected to Output 3 by cec
10	To define a sink power by cec automatically	**Command:** CL#O#SPA#T **Return:** CL#O#SPA#T **Description:** L#: #={0, 1} or “L” is omitted O#: # = {1~4}; SPA# : # = {0, 1} // {0, 1}:{off, on}	**Command:** CO3SPA1T **Return:** CO3SPA1T **Description:** Enable cec auto control of the sink connected to Output 3 of Level 0

IDX	Function	Command	Example
11	To verify a sink power control status	**Command:** SL#O#SPAT **Return:** SL#O#SPAT(value) **Description:** L#: #={0, 1} or “L” is omitted O#: # = {1~4}; value = {0, 1} // {0, 1}:{off, on}	**Command:** SO3SPAT **Return:** SO3SPAT(1) **Description:** Output 3 is in cec auto control
12	To define a Delay Time to power off a sink when no active signal	**Command:** CL#O#D#SPT **Return:** CL#O#D#SPT **Description:** L#: #={0, 1} or “L” is omitted O#: # = {1~4}; D# : # = {1, …30}	**Command:** CO1D2SPT **Return:** CO1D2SPT **Description:** Define Delay Time of 2 minutes to power off the sink connected to Output 1 when no active signal
13	To verify Delay Time of powering off a sink when no active signal	**Command:** SL#O#DSPT **Return:** SL#O#DSPT(value) **Description:** L#: #={0, 1} or “L” is omitted O#: # = {1~4}; value = {1, …30}	**Command:** SO3DSPT **Return:** SO3DSPT(2) **Description:** Delay Time of CEC Auto Control is 2 min.

14	To verify EDID Dip Status	**Command:**
		SL#DIPT
		
		Return:
		SL#DIPT(value)
		
		Description:
		L#: #={0, 1} or “L” is omitted;
		value = {0, …15}
		{
		0 : EDID controlled by Web UI and API
		1 : 4K@60Hz 4:4:4 8bit 5.1ch audio
		2 : 4K@60Hz 4:4:4 8bit 2.0ch audio
		3 : 4K@30Hz 4:4:4 8bit 5.1ch audio
		4 : 4K@30Hz 4:4:4 8bit 2.0ch audio
		5 : 1080p@60Hz 4:4:4 8bit 5.1ch audio
		6 : 1080p@60Hz 4:4:4 8bit 2.0ch audio
		7...15 : Customize,
		};
			Command:
			SDIPT
			
			Return:
			SDIPT(0)
			
			Description:
			The EDID Dip status is 0, i.e. the EDID setting can be controlled by Web UI and API.

IDX	Function	Command	Example

15	To set input EDID	**Command:**
		CL#I#E#T
		
		Return:
		CL#I#E#T
		
		Description:
		L#: #={0, 1} or "L" is omitted;
		I#: # = {1~8};
		E#: # = {1~6}
		{
		1 : 4K@60Hz 4:4:4 8bit 5.1ch audio
		2 : 4K@60Hz 4:4:4 8bit 2.0ch audio
		3 : 4K@30Hz 4:4:4 8bit 5.1ch audio
		4 : 4K@30Hz 4:4:4 8bit 2.0ch audio
		5 : 1080p@60Hz 4:4:4 8bit 5.1ch audio
		6 : 1080p@60Hz 4:4:4 8bit 2.0ch audio
		}
			Command:
			CI1E1T
			
			Return:
			CI1E1T
			
			Description:
			Set fix EDID(4K@60Hz 4:4:4 8bit 5.1ch audio) for Input 1

16	To verify input EDID	**Command:**
		SL#I#ET
		
		Return:
		SL#I#ET(value)
		
		Description:
		L#: #={0, 1} or "L" is omitted;
		I#: # = {1~8};
		value = {1~6}
		{
		1 : 4K@60Hz 4:4:4 8bit 5.1ch audio
		2 : 4K@60Hz 4:4:4 8bit 2.0ch audio
		3 : 4K@30Hz 4:4:4 8bit 5.1ch audio
		4 : 4K@30Hz 4:4:4 8bit 2.0ch audio
		5 : 1080p@60Hz 4:4:4 8bit 5.1ch audio
		6 : 1080p@60Hz 4:4:4 8bit 2.0ch audio
		}
			Command:
			SI1ET
			
			Return:
			SI1ET(1)
			
			Description:
			The EDID of Input 1 is fix EDID(4K@60Hz 4:4:4 8bit 5.1ch audio)

17	To define IR SystemCode	**Command:**
		CL#IR#T
		
		Return:
		CL#IR#T
		
		Description:
		L#: #={0, 1} or "L" is omitted;
		IR#: # = {1~3};
		{
		1: supports 0x00,0x4E;
		2: support 0x00 only
		3: support 0x4Eonly
		}
			Command:
			CIR2T
			
			Return:
			CIR2T
			
			Description:
			Define 0x00 as IR SystemCode

IDX	Function	Command	Example

18	To verify IR SystemCode	**Command:**
		SL#IRT
		
		Return:
		SL#IRT(value)
		
		Description:
		L#: #={0, 1} or "L" is omitted;
		value = {1~3};
		{
		1: support 0x00,0x4E;
		2: support 0x00 only
		3: support 0x4Eonly
		}
			Command:
			SIRT
			
			Return:
			SIRT(2)
			
			Description:
			IR SystemCode supports 0x00 only

19	To reset system setting	**Command:** ~SYSR! **Return:** ~SYSR! **Description:** Reset system setting.	**Command:** ~SYSR! **Return:** ~SYSR! **Description:** Reset system setting.
20	To cause a warm reboot	**Command:** ~APP! **Return:** ~APP! **Description:** Cause a warm reboot.	**Command:** ~APP! **Return:** ~APP! **Description:** Cause a warm reboot.
21	To determine the system's Application Code version	**Command:** ~VER! **Return:** ~VER!(^^^)	**Command:** ~VER! **Return:** ~VER!(AMX DUX-12F #.#) e.g.: ~VER!(AMX DUX-12F 1.0)
22	To upgrade the system's Application Code	**Command:** ~UPG! **Return:** ~UPG!	**Command:** ~UPG! **Return:** ~UPG!

IDX	Function	Command	Example
23	To verify Command list	**Command:** ~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] CL#I#A#T(To execute a Audio Input selection) [06] R#T(To verify Audio Input status) [07] RR#T(To define a global preset) [08] SL#I#AT(To execute a global preset) [09] CL#O#SP#T(To execute a sink power by cec) [10] CL#O#SPA#T(To define a sink power by cec automatically) [11] SL#O#SPA#T(To verify a sink power controlled Status) [12] CL#O#D#SPT(To define a Delay Time to execute a sink power off when on active signal) [13] SL#O#DSPT(To verify Delay Time to execute a sink power off when on active signal) [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] CL#O#R#T(To set output resolution) [18] SO#RT(To verify output resolution) [19] CIR#T(To define IR System Code) [20] SIRT(To verify IR System Code) [21] ~HELP!(To verify Commands list) [22] ~VER!(To determine the system's Application Code version) [23] ~UPG!(To upgrade the system's Application Code) [24] ~APP!(To cause a warm reboot) [25] ~SYSR!(To reset system setting)



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