



USER MANUAL
DUX-SCL
HDMI SCALER



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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.

INTRODUCTIONS



DUX-SCL is an HDMI Scaler allowing users to match native resolutions of their displays and is designed to use with standard displays, HDMI Matrix switchers, etc., where HDMI is used.

DUX-SCL accepts input resolutions from 800 x 600 to 1920 x 1200 (VESA) and 480p to 2160p (SMPTE) and supports output resolution 1280 x 768, 1280 x 800, 1920 x 1200, 3840 x 2160 and Auto Scaler (VESA) and 1280 x 720P, 1920 x 1080P (SMPTE). Such variety of output resolution options provide users more freedom while adjusting their video signal for the best result.

DUX-SCL installs a SCALER switch for manual adjustment of output resolutions. When connected to a control PC through RS232, the device can be controlled through API command.

DUX-SCL is ideal for applications where high quality video scaling or 4K-1080P down-scaling is required due to the mix use of displays in different aspect ratio or preferred timing. Seamless switching is realizable while DUX-SCL is working with DUX-8C or DUX-8D HDMI Matrix.

Features

- HDMI Input and Output both support up to 4K@60Hz 4:4:4 8bit.
- HDCP 2.2 compliant.
- Supports scaling output adjustment by SCALER DIP switch.
- Seamless switching when using with DUX-8C or DUX-8D Matrix.

PACKING LIST

- 1 x DUX-SCL
- 1 x Power Adapter (12 VDC, 1.5A)
- 1 x Phoenix Male Connector (3.5 mm, 3-pin)
- 2 x Mounting Brackets
- 1 x User Manual

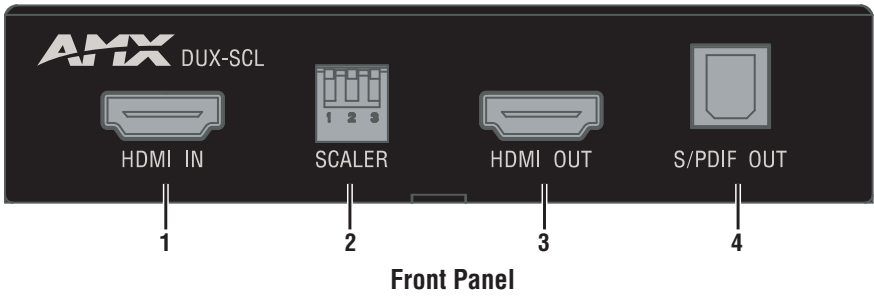
SPECIFICATIONS

Technical	
Input	1 x HDMI IN
Input Signal Type	TMDS
Input Resolution	- VESA: 800x600⁸, 1024x768⁸, 1280x768⁸, 1280x800⁸, 1280x960⁸, 1280x1024⁸, 1360x768⁸, 1366x768⁸, 1440x900⁸, 1600x900⁸, 1600x1200⁸, 1680x1050⁸, 1920x1200⁸ - SMPTE: 720x480P^{7,8}, 720x576P⁶, 1280x720P^{6,7,8}, 1920x1080P^{6,7,8}, 3840x2160P^{2,3,5,6,8}, 4096x2160P^{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;
Input Video Level	0.5-1.2 V p-p
Output	1 x HDMI OUT
Output Signal Type	HDMI: TMDS
Audio Output	S/PDIF OUT
Audio Format	LPCM 2.0, Dolby 2.0, Dolby 5.1;
Output Resolution	- VESA: 1280x768⁸, 1280x800⁸, 1920x1200⁸, 3840x2160^{5,8}, and Auto Scaler - SMPTE: 1280x720P⁸, 1920x1080P⁸ 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;
Video Impedance	100 Ω
Maximum Pixel Clock	594 MHz
Control	
Control Method	RS232

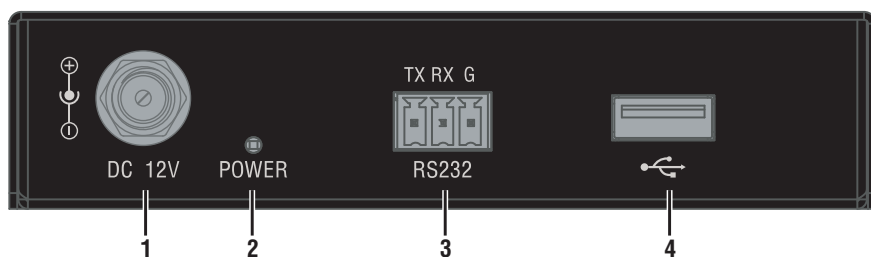
General

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
Power Supply	12 VDC 1.5A
Power Consumption	8 W (Max.)
ESD Protection	Human-body model: • ±8 kV (Air-gap discharge) • ±4 kV (Contact discharge)
Dimension (W × H × D)	110 mm × 25 mm × 150.1 mm
Weight	0.5 kg
Certification	CE, FCC

PANEL OVERVIEW



Item	Name	Description
1	HDMI IN	Connects to an HDMI source device.
2	SCALER SWITCH	Adjusts the Output scaling.
3	HDMI OUT	Connects to an HDMI display device.
4	S/PDIF OUT	Connects to an audio system for digital audio signal output.



Rear Panel

Item	Name	Description
1	DC 12V	Connects the Power Adapter provided.
2	POWER LED	On: DUX-SCL is powered on. Off: DUX-SCL is powered off.
3	RS232	For RS232 serial communication or firmware upgrading.
4	USB Connector	Connects to a flash drive for upgrading.

SCALER SWITCH

DUX-SCL installs a “SCALER” Switch for manual adjustment of the scaling output.

By default, the SCALER Switch is in “Auto Scaler” position (all switches are set to 000 or upward). Users are allowed to set DUX-SCL to desired scaling output resolution by using the SCALER Switch.



DIP SWITCH			SCALING OUTPUT RESOLUTION
0	0	0	Auto Scaler (Default)
0	0	1	3840 x 2160@60Hz
0	1	0	3840 x 2160@30Hz
0	1	1	1920 x 1080@60Hz
1	0	0	1920 x 1200@60Hz
1	0	1	1280 x 800@60Hz
1	1	0	1280 x 720@60Hz
1	1	1	1024 x 768@60Hz

INSTALL HARDWARE

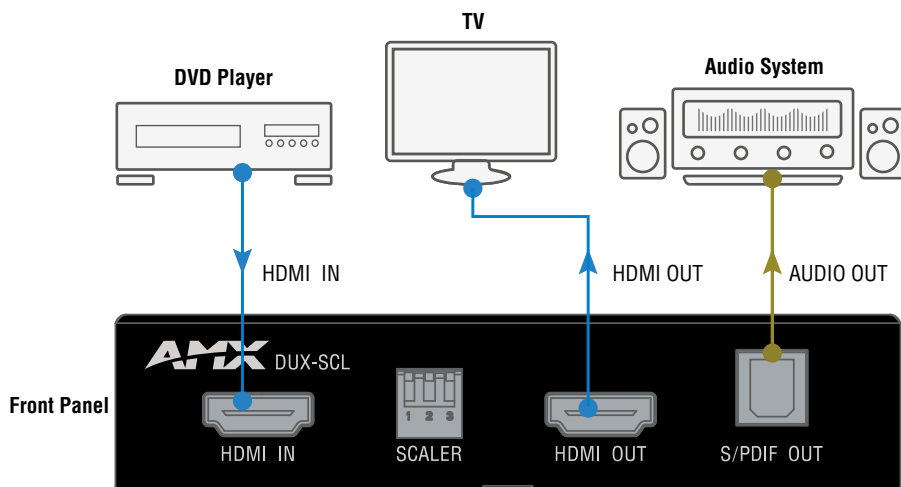


WARNING:

- Before installation, disconnect the power supplies of all the devices.
- Please use quality cables and accessories specified or provided by the manufacturer.
- During installation, connect and disconnect cables with caution.

To install DUX-SCL (See “Application Example: System Wiring”):

1. Connect DUX-SCL’s **HDMI IN** to an HDMI input source (e.g. DVD player, game console, satellite/cable TV, media server, etc.).
2. Connect DUX-SCL’s **HDMI OUT** to an HDMI output display (e.g. TV screen) or an HDMI Matrix (e.g. DUX-8C).
3. If audio output is needed, connect DUX-SCL’s S/PDIF to an audio system.
4. Connect the included Power Adapter to DUX-SCL.
5. Power on all the devices and start operation.



Application Example: Sytem Wiring

RS232 CONTROL

DUX-SCL comes with a RS232 port which accepts API commands for controlling or firmware upgrading of the unit.

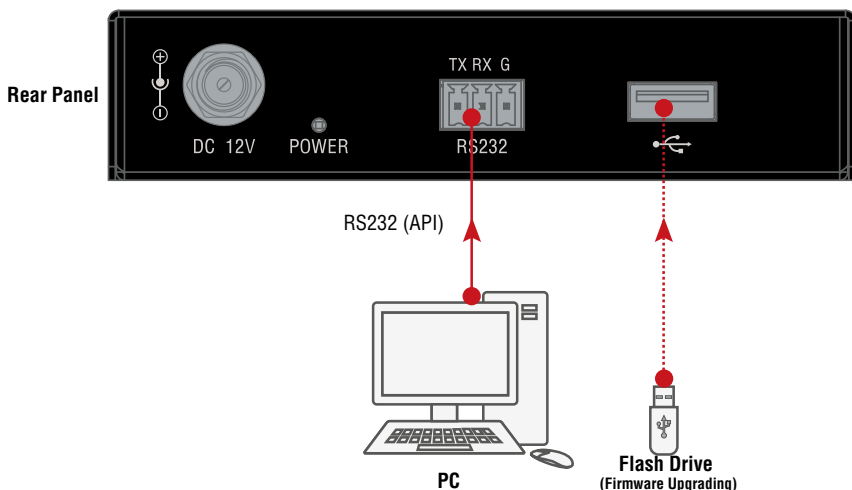
Connect a control PC to the RS232 port on the rear panel, configure the RS232 interface of DUX-SCL and the control PC correctly, then you can send API commands to the device over a professional serial interface software to start controlling or firmware upgrading.

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

A whole list of API Commands for controlling DUX-SCL is available in Appendix.

To upgrade firmware:

1. Download firmware upgrading execution software (please contact the product manufacturer or your local dealer) to a flash drive;
2. Connect the flash drive to the USB port;
3. Send Command (See Command 8 in “Appendix: API COMMAND”) through CommUart Assistant to upgrade;
4. When the upgrading is successful, power cycle the device.



TROUBLESHOOTING

1. Why the Power LED is off?

- Check that all the devices are on.
- Check that all the cables are qualified and connected properly.

2. Why the display connected to DUX-SCL shows no picture?

- Check that all the devices are on.
- Check that all the cables are qualified and connected properly.
- Check that the display works properly, and that the source device has normal signals output.
- Ensure that the display device supports HDCP.
- Check that your display device is switched to the correct source input mode.
- Check that no compatibility issue exists between DUX-SCL and the display. If so, replace the display with other models.
- Check that the SCALER Switch is set to the right position. For more information, please see SCALER SWITCH.

3. Why the display connected to DUX-SCL shows snow or mosaic?

- Check that all the cables are qualified and connected properly.
- Check that the source input device has no such problem as snow, mosaic or with a damaged disc. If so, replace with another qualified input source.
- Check that no compatibility issue exists between DUX-SCL and the display. If so, replace the display with qualified models.

APPENDIX: API COMMAND SET

IDX	Function Description	More Details	
		Syntax	Example
1	To execute a sink power by CEC	Command: CSP#T Return: CSP#T Description: CECPWR_ONOFF will control sink power on or off. SP#: #={0, 1} 0 : OFF 1 : ON	Command: CSP1T Return: CSP1T Description: Execute the sink power on
2	To define a sink power by CEC automatically	Command: CSPA#T Return: CSPA#T Description: SPA#: #={0, 1} 0 : Disable 1 : Enable	Command: CSPA1T Return: CSPA1T Description: Enable to control the sink power by CEC automatically
3	To define a Delay Time to execute a sink power off when no active signal	Command: CD#SPT Return: CD#SPT Description: CECAUTO_DELAY is short for CEC auto Power Delay Timing D#: #={0-30min}	Command: CD5SPT Return: CD5SPT Description: Define Delay 5 minutes to control the sink power off when no active signal

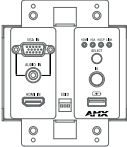
IDX	Function Description	More Details	
		Syntax	Example
4	To verify output resolution	Command: SRT Return: SRT(#) Description: R#: # = {1~17, 101~117} 1 : Fix 3840x2160@60 2 : Fix 3840x2160@30 3 : Fix 1920x1200@60 4 : Fix 1920x1080@60 5 : Fix 1280x720@60 6 : Fix 1600x1200@60 7 : Fix 1280x800@60 8 : Fix 1024x768@60 101 : Auto 3840x2160@60 102 : Auto 3840x2160@30 103 : Auto 1920x1200@60 104 : Auto 1920x1080@60 105 : Auto 1280x720@60 106 : Auto 1600x1200@60 107 : Auto 1280x800@60 108 : Auto 1024x768@60 Auto (preferred native timing of the display)	Command: SRT Return: SRT(1) or SRT(101) Description: Output resolution is Fix 3840x2160@60 or Auto 3840x2160@60
5	To reset system setting	Command: ~SYSR! Return: ~SYSR! Description: Reset system setting	Command: ~SYSR! Return: ~SYSR! Description: Reset system settings
6	To cause a warm reboot	Command: ~APP! Return: ~APP! Description: Cause a warm reboot	Command: ~APP! Return: ~APP! Description: Cause a warm reboot
7	To determine the system's Application Code version	Command: ~VER! Return: ~VER!(^^^) Description: Determine the system's Application Code version	Command: ~VER! Return: ~VER!(1.0) Description: The system's version is 1.0

IDX	Function Description	More Details	
		Syntax	Example
8	To upgrade the system's Application Code	Command: ~UPG! Return: ~UPG! Description: Upgrade the system's Application Code	Command: ~UPG! Return: ~UPG! Description: Upgrade the system's Application Code
9	To set UART baudrate	Command: CUB#T Return: CUB#T Description: UB#: # = {1~3} 1 : 9600 2 : 57600 3 : 115200	Command: CUB1T Return: CUB1T Description: Set UART baudrate to 9600
10	To set UART end char	Command: CUE#T Return: CUE#T Parameter: UE#: # = {1~4} 1 : NULL 2 : 0X0D 3 : 0X0A 4 : 0X0D 0X0A Description: Set UART endchar	Command: CUE1T Return: CUE1T Description: Set UART end char to null
11	To verify UART end char	Command: SUET Return: SUET(#) Parameter: # : # = {1~4} 1 : NULL 2 : 0X0D 3 : 0X0A 4 : 0X0D 0X0A Description: Get UART end char	Command: SUET Return: SUET(1) Description: UART end char is null

IDX	Function Description	More Details	
		Syntax	Example
12	To config UART CMD of Power ON	Command: CDON# # #T Return: CDON# # #T Description: # : # = {00 ~ FF} # # # : string of HEX	Command: CDON00 01 0AT Return: CDON00 01 0AT Description: Config UART CMD of Power ON is 0X00 0X01 0X0A
13	To verify UART CMD of Power ON	Command: SDONT Return: SDONT(# # #) Description: # : # = {00 ~ FF} # # # : string of HEX	Command: SDONT Return: SDONT(00 01 0A) Description: UART CMD of Power ON is 0X00 0X01 0X0A
14	To config UART CMD of Standby	Command: CDOF# # #T Return: CDOF# # #T Description: # : # = {00 ~ FF} # # # : string of HEX	Command: CDOF00 01 0AT Return: CDOF00 01 0AT Description: Config UART CMD of Standby 0X00 0X01 0X0A
15	To verify UART CMD of Standby	Command: SDOFT Return: SDOFT(# # #) Description: # : # = {00 ~ FF} # # # : string of HEX	Command: SDOFT Return: SDOFT(00 01 0A) Description: UART CMD of Standby is 0X00 0X01 0X0A
16	To config UART Auto Power Enable/Disable	Command: CDFG#T Return: CDFG#T Description: DFG# : # = {0, 1} 0 : Disable 1 : Enable	Command: CDFG1T Return: CDFG1T Description: Config UART Auto Power Enable

IDX	Function Description	More Details	
		Syntax	Example
17	To set Input EDID	Command: CE#T Return: CE#T Description: E# : # = {1 ~ 15} 1 : 3840x2160@60_2ch 2 : 3840x2160@30_2ch 3 : 1920x1200@60_2ch 4 : 1920x1080@60_2ch 5 : 1280x800@60_2ch 6 : 1280x720@60_2ch 7 : 1024x768@60_2ch 8 : 3840x2160@60_6ch 9 : 3840x2160@30_6ch 10 : 1920x1200@60_6ch 11 : 1920x1080@60_6ch 12 : 1280x800@60_6ch 13 : 1280x720@60_6ch 14 : 1024x768@60_6ch 15: copy	Command: CE1T Return: CE1T Description: Set input Fix EDID max timing 3840x2160@60_2ch

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	HDMI scaling receiver up to 4K@60Hz 4:4:4	
DUX-SRX	HDMI 1.4 & VGA over HDBT TX up to 100m	
DUX-SRX-WP	HDMI 1.4 & VGA over HDBT wall-plate TX up to 100 m	



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03.2017