



USER MANUAL

DUX-MTX

100-METER HDBT EXTENDER TRANSMITTER



TABLE OF CONTENT

IMPORTANT SAFETY INSTRUCTIONS	03
INTRODUCTION	04
PACKING LIST	05
SPECIFICATIONS	06
CABLE SPECIFICATIONS	07
PANEL OVERVIEW	08
CONFIG SWITCH	10
EDID SWITCH	11
INSTALL HARDWARE	12
OPERATE WITH IR	14
Control the Display	14
Control the Source	15
OPERATE WITH RS232	16
RS232 Pinout	16
RS232 for Firmware Upgrading	16
RS232 for Serial Communication	17
TROUBLESHOOTING	18

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-MTX is an HDBT Extender Transmitter accommodating both VGA and HDMI Inputs and is able to transmit 1080P@60Hz with 48 bit Deep Color HD Audio up to 100m/328ft and Ultra HD 4K signal up to 70m/230ft.

DUX-MTX features an automatic switching between VGA Input and HDMI Input, with HDMI Input enjoying the priority when both Inputs are active.

A/V transmission, bi-directional IR and RS232 control and Ethernet pass-through over one signal Cat6a/7 cable provides an added level of convenience. A CONFIG Switch allows users to quick change its operation mode for data transmission or firmware upgrading. An EDID Switch is also available for immediate EDID setting adjustment while communication or compatibility becomes an issue.

Fully compliant with HDMI 1.4, compatible with HDMI 2.0 and HDCP 2.2, DUX-MTX offers an excellent solution to commercial or residential environments where switching between VGA and HDMI over distance is required.

Features

- Capable of HDBT transmissions:
 - Via Cat5e/6 cable:
 - Up to 70m/230ft: 4K@30Hz YUV 4:4:4 24bit or 4K@60Hz YUV 4:2:0 24bit
 - Up to 100m/328ft: 1080p@60Hz 36bit
 - Via Cat6a/7 cables:
 - Up to 100m/328ft: 4K@30Hz YUV 4:4:4 24bit or 4K@60Hz YUV 4:2:0 24bit
 - Up to 100m/328ft: 1080p@60Hz 48bit
- Auto-switching between VGA and HDMI Inputs with HDMI IN enjoying higher priority when both inputs are connected.
- Fully compliant with HDMI 1.4, and compatible with HDMI 2.0(4K@60Hz 4:2:0)
- HDCP 2.2 compliant.
- EDID management for VGA Input
- A/V transmission, Ethernet, bi-directional IR & RS232 pass-through over HDBT
- Switchable RS232 for firmware upgrading



NOTE: The actual signal transmission distance depends on signal resolution and cable quality.

PACKING LIST

- 1 x DUX-MTX
- 1 x Power Adapter (12 VDC, 1.5A)
- 1 x Phoenix Male Connector (3.5 mm, 3-pin)
- 1 x IR Emitter
- 1 x Broadband IR Receiver (30 kHz - 50 kHz)
- 2 x Mounting Brackets
- 1 x User Manual

SPECIFICATIONS

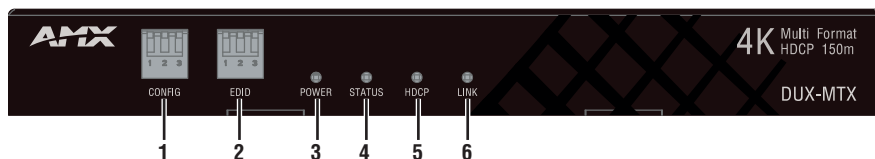
Technical	
Input	1 x HDMI IN 1 x VGA IN 1 x AUDIO IN
Input Signal Type	HDMI: TMDS
Input Resolution	- HDMI: Up to 4K@60Hz YUV 4:2:0 - VGA: Up to 1920 x 1200@60Hz
Audio Input	Analog Stereo Audio: 1 x 3.5mm mini jack
Audio Format	- HDMI: Multichannel digital audio supporting up to 7.1 DTS Master HD and DolbyTrue HD - VGA: Stereo
Input Video Level	0.5-1.2 V p-p
Input DDC Signal	5 V p-p
Output	1 x HDBT OUT
Output Signal Type	HDBT
Output Resolution	Up to 4K@60Hz YUV 4:2:0
Video Impedance	100 Ω
Maximum Pixel Clock	297 MHz
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	≤19.2 W
ESD Protection	Human-body model: ±8 kV (Air-gap discharge) ±4 kV (Contact discharge)
Surge Protection	Voltage: ±1 kV
Electrical Fast Transient/Burst	- Data communication cord: 1 kV - Power core: 2 kV
Dimension (W × H × D)	173 mm × 21 mm × 94.8 mm
Weight	0.46 kg
Certification	CE, FCC

CABLE SPECIFICATIONS

To ensure best performance of DUX-MTX, please use stright-through Category cables wired to T568B standard and a Receiver device which also supports 100-meter transmission.

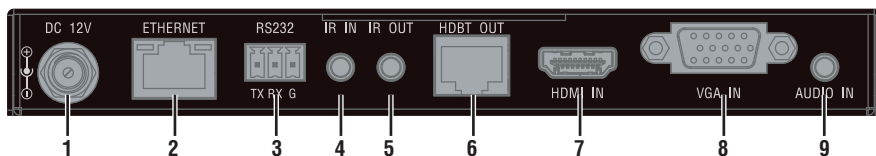
Cable Type	Range	Supported Video
Cat5e/6	100m/328ft	1080p@60Hz 36bit
	70m/230ft	1080p@60Hz 3D 4K@30Hz YUV4:4:4 4K@60Hz YUV4:2:0
Cat6a/7	100m/328ft	1080p@60Hz 36bit 1080p@60Hz 48bit 1080p@60Hz 3D 4K@30Hz YUV4:4:4 4K@60Hz YUV4:2:0

PANEL OVERVIEW



Front Panel

Item	Name	Description
1	CONFIG SWITCH	Used to set for RS232 pass-through (default setting), MCU and HDBT upgrading or enable / disable the Long Reach Mode. (For more information, please refer to CONFIG SWITCH.)
2	EDID SWITCH	Used to adjust the EDID setting. (default setting: VGA IN 1920*1080.) (For more information, please refer to EDID MANAGEMENT.)
3	POWER LED	On: DUX-MTX is powered on. Off: DUX-MTX is powered off.
4	STATUS LED	Blinking: DUX-MTX is working properly. Off: DUX-MTX is not working properly.
5	HDCP LED	On: HDCP video is being transmitted. Blinking: Non-HDCP video is being transmitted. Off: No HDMI signal.
6	LINK LED	On: HDBT OUT is linked. Off / Blinking: HDBT OUT is not linked or there is a link error.



Rear Panel

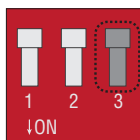
Item	Name	Description
1	DC 12V	Connects the power adapter provided.
2	ETHERNET	Connects to an Ethernet device.
3	RS232	For RS232 pass-through or firmware upgrading.
4	IR IN	Connects the Broadband IR Receiver provided.
5	IR OUT	Connects the IR Emitter provided.
6	HDBT OUT	Connects to a HDBT Receiver via a CatX cable.
7	HDMI IN	Connects to an HDMI source.
8	VGA IN	Connects to a VGA source.
9	AUDIO IN	Used with VGA source for audio signal input.

CONFIG SWITCH

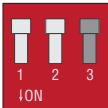
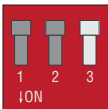
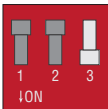
CONFIG Switch is used to set the device for RS232 pass-through, MCU and HDBT upgrading or to enable/disable its Long Read Mode.

Long Reach Mode extends the device's transmission distance of specific video signals (up to 1080p@60Hz 24bit) up to 150m/492ft.

NOTE: The Switch marked in GREY can be set to any position.

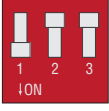
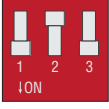
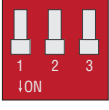


The Switch marked in GREY can be set to any position.

SWITCH SETTING	MODE
	RS232 Pass-through (Default)
	MCU Upgrading
	HDBT Upgrading
	Long Reach Mode OFF
	Long Reach Mode ON

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-MTX features an EDID management that can be used when its EDID setting's does not meet the installation requirements. By default, the EDID Switch is set for 1920 x 1080 VGA input.

SWITCH SETTING	MODE	
	For VGA Input	Fix 1280 x 800 as Native Video
	For VGA Input	Fix 1920 x 1200 as Native Video
	For VGA Input	Fix 1920 x 1080 as Native Video (Default)
	For VGA Input	Fix 1280 x 720 as Native Video
	For VGA Input	Fix 1024 x 768 as Native Video
	For VGA Input	Fix 800 x 600 as Native Video
	For VGA Input	Reserved for future use
	For VGA Input	Reserved for future use
N/A	For HDMI Input	Copy from detected sink



NOTE: To take effect the EDID settings, unplug and plug the VGA cable.

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.

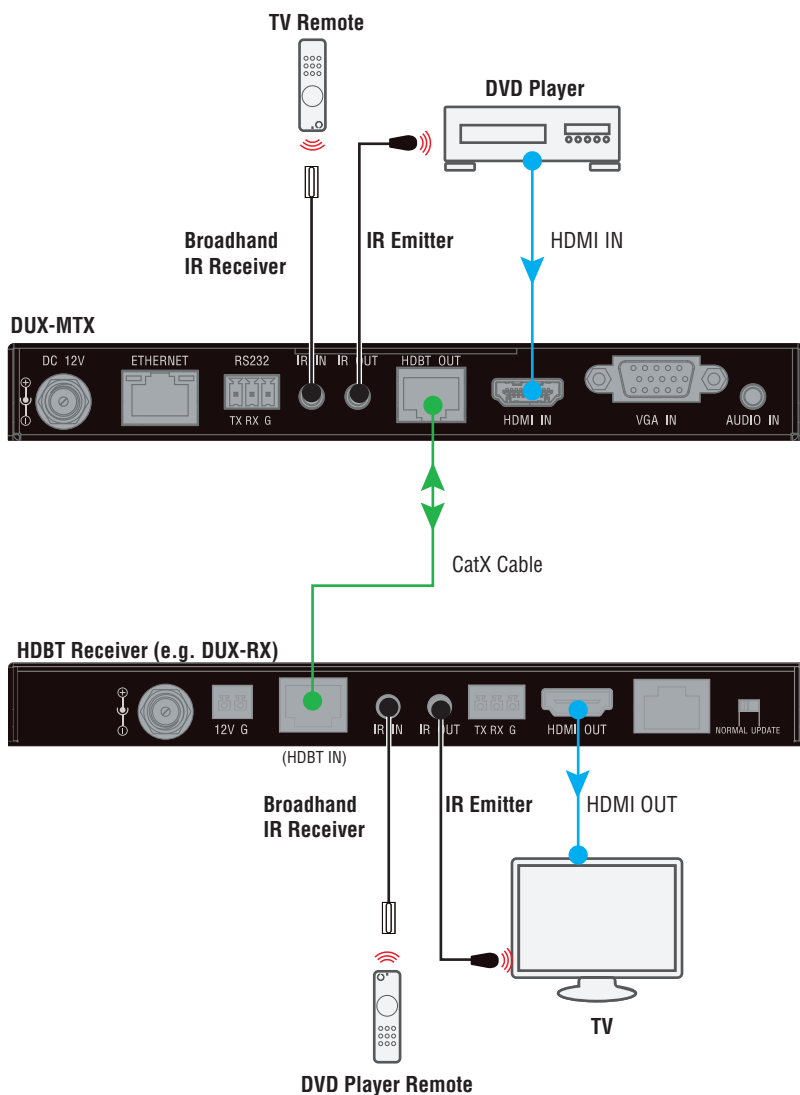
To install DUX-MTX (See Application Example: System Wiring on Page 13):

1. Connect DUX-MTX's **HDMI IN** or **VGA IN** to an HDMI or VGA input source (e.g. Blu-ray player, game console, satellite/cable TV, computer, media server, etc.) through a quality HDMI or VGA cable. (**AUDIO IN** may also be connected when VGA IN is in use.)
2. Connect DUX-MTX's **HDBT OUT** to an HDBT Receiver (e.g. DUX-RX) via a high-quality CatX cable.
3. Connect an HDMI display device (e.g. TV or projector) to HDMI OUT of the HDBT Receiver.
4. Connect IR Broadband Receiver to **IR IN** and IR Emitter to **IR OUT** of DUX-MTX.
5. Connect IR Broadband Receiver to **IR IN** and IR Emitter to **IR OUT** of the HDBT Receiver.
6. Connect the included power adapter to DUX-MTX.
7. Power on all the devices and start operation.



NOTE:

- 1) When transmitting an Ultra HD signal, please ensure all the source and display devices are 4K compatible by checking their respective input and output compatibility.
- 2) 70m/230ft @4K or 100m/328ft @1080p are maximum transmission distances realizable when DUX-MTX and other devices are in perfect conditions and the straight cable runs with no electrical interference, bends, kinks, patch panels or wall outlets, etc. If any of these turns to be an issue in your installation, transmission distance will be affected.
- 3) When all set, check the LED indicators of DUX-MTX. For LED indication, please refer to page 08.



Application Example: System Wiring

OPERATE WITH IR

DUX-MTX allows IR pass-through over HDBaseT. Hence, you can either control the source from the display location or control the display from the source location.

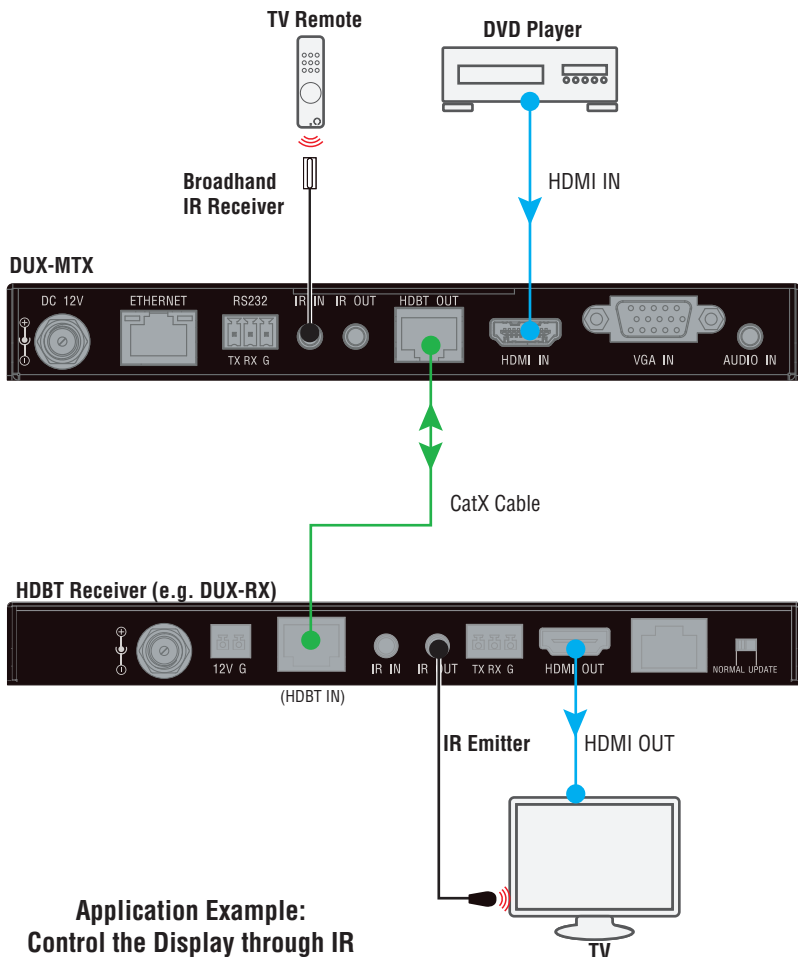
To realize such function, an HDBT Receiver like DUX-RX needs to be installed.

Control the Display

To control the display from the source:

1. Connect Broadband IR Receiver to **IR IN** of DUX-MTX;
2. Connect IR Emitter to **IR OUT** of DUX-RX.

When all set, the display can be controlled at the source end through a display remote.

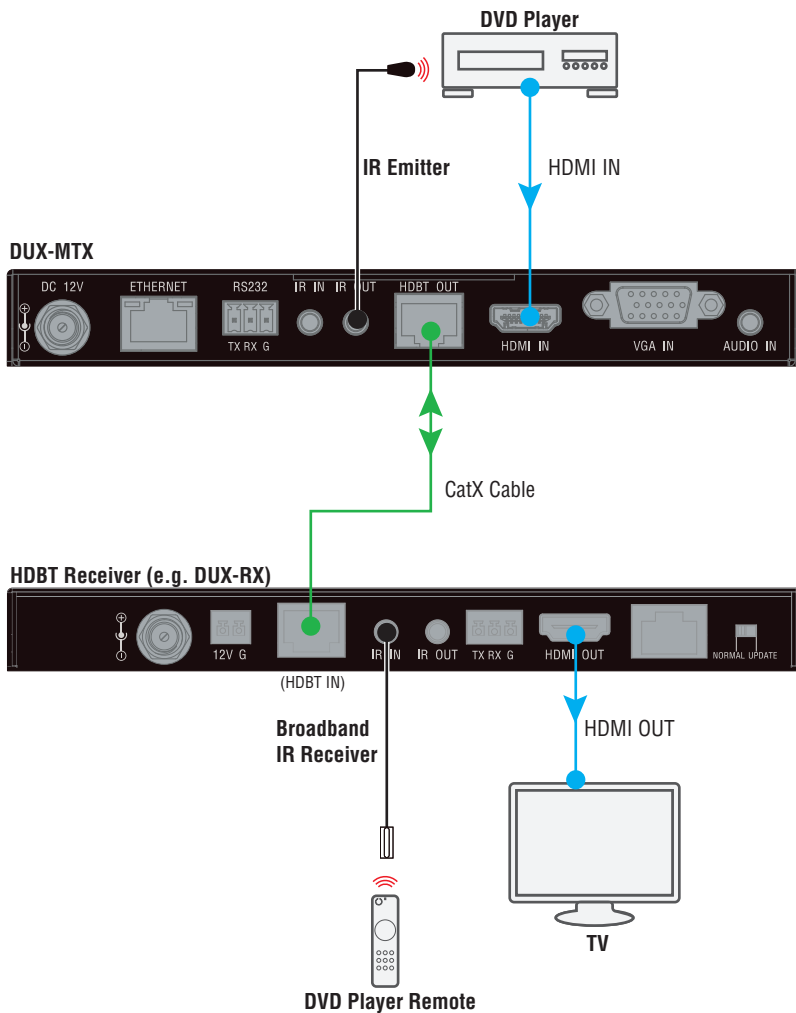


Control the Source

To control the source from the display:

1. Connect IR Emitter to **IR OUT** of DUX-MTX;
2. Connect Broadband IR Receiver to **IR IN** of DUX-RX.

When all set, the source can be controlled at the display location through a source device remote.

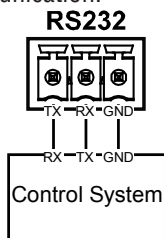


Application Example: Control the Source through IR

OPERATE WITH RS232

RS232 Pinout

DUX-MTX installs a RS232 port at its rear panel and accepts Phoenix connector for firmware upgrading or serial communication.

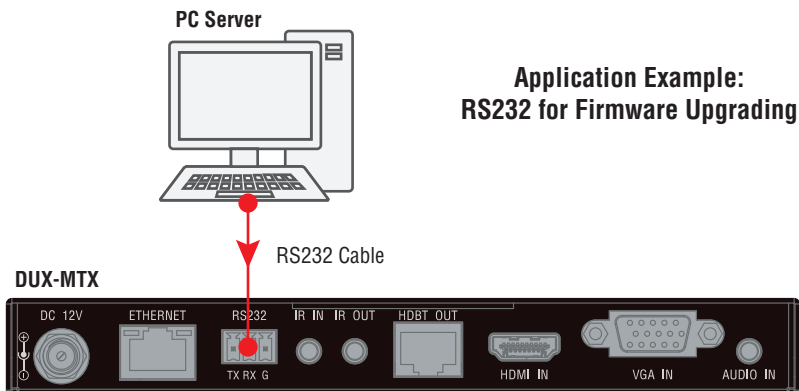


RS232 for Firmware Upgrading

RS232 port of DUX-MTX can be used for firmware upgrading.

To upgrade firmware of DUX-MTX:

1. Download firmware upgrading execution software (please contact the product manufacturer or your local dealer) to your PC;
2. Switch CONFIG Switch to “MCU Upgrading” or “HDBT Upgrading” mode (Depends on the chip you are going to upgrade. More information about CONFIG Switch is provided on Page 10 “CONFIG SWITCH”.);
3. Connect your PC to RS232 port using a RS232 Cable;
4. Click to run the execution software;
5. When the upgrading is successful, power cycle the device.

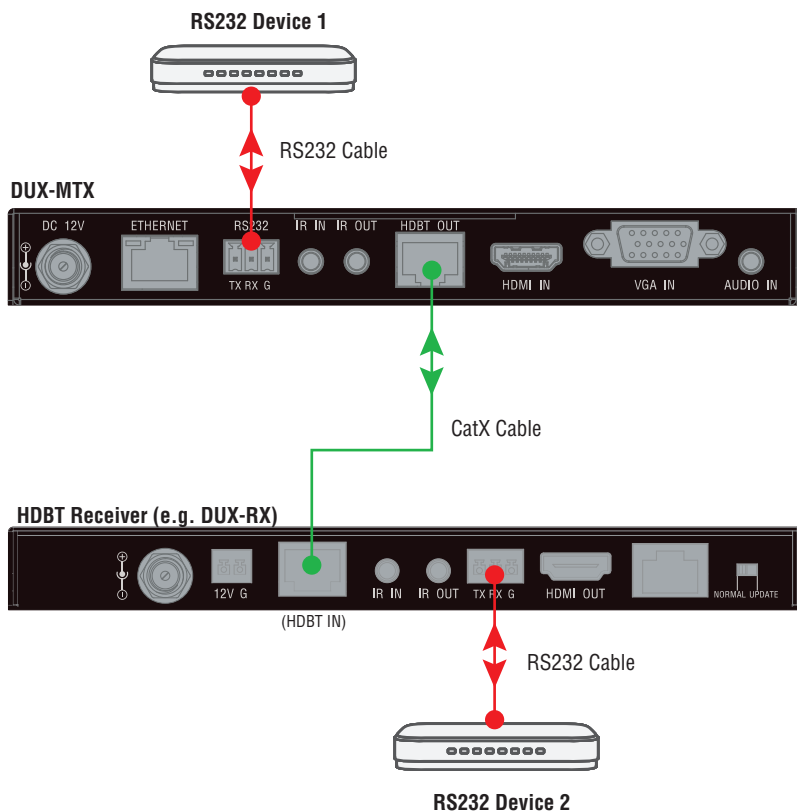


RS232 for Serial Communication

RS232 port of DUX-MTX can also be used for serial communication while working with a Receiver device like DUX-RX.

To start serial communications between DUX-MTX and a Receiver device (e.g. DUX-RX):

1. Switch CONFIG Switch to “RS232 Pass-through” mode (See Page 10 “CONFIG SWITCH”.);
2. Connect a RS232 Device (RS232 Device 1) to **RS232** port of DUX-MTX using a RS232 cable;
3. Connect another RS232 Device (RS232 Device 2) to **RS232** port of the Receiver using a RS232 cable;
4. Connect **HDBT OUT** of DUX-MTX and **HDBT IN** of the Receiver using a CatX cable.
5. When all set, the RS232 Device 1 can be controlled at RS232 Device 2 or vice versa.



Application Example: RS232 for Serial Communications

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 Link LED is off or blinking?

- Check that all the devices are on.
- Check that all the cables are qualified and connected properly.
- Check that the CatX cable used complies with the recommended specifications. For more information, see CABLE SPECIFICATIONS.

3. Why the display connected to the Receiver device shows no picture?

- Check that all the devices are on.
- Check that all the cables are qualified and connected properly.
- Check that the Link LED is steady on. For more information, see Q2 above.
- Check that the display works properly, and that the source device has normal signals output.
- Ensure that the display device supports HDCP.
- Ensure the CatX cable and the HDMI cables used complies with the recommended specifications. For more information, see CABLE SPECIFICATIONS.
- Check that your display device is switched to the correct source input mode.
- Check that no compatibility issue exists between the Receiver and the display. If so, replace the display with other models.
- When VGA input source is connected, check if the EDID Switch is in the correct position. For more information, see EDID MANAGEMENT.

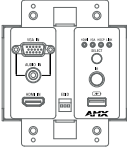
4. Why the display connected to the Receiver shows snow or mosaic?

- Check that all the cables are qualified and connected properly.
- Check that Ethernet cables are Cat5e/6 or higher gauge.
- 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 the Receiver and the display. If so, replace the display with qualified models.

5. Why the firmware upgrading failed?

- Check that the CONFIG Switch is in the correct mode (MCU or HDBT Upgrading mode).
- Ensure you run the correct upgrading execution software through your PC.
- Check that your PC is well-connected to the RS232 port of DUX-MTX via high-quality RS232 cable.

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-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	



© 2017 Harman. All rights reserved. ENZO, NetLinx, AMX, AV FOR AN IT WORLD, HARMAN, and their respective logos are registered trademarks of HARMAN. Oracle, Java and any other company or brand name referenced may be trademarks/registered trademarks of their respective companies.

AMX does not assume responsibility for errors or omissions. AMX also reserves the right to alter specifications without prior notice at any time.

The AMX Warranty and Return Policy and related documents can be viewed/downloaded at www.amx.com.

3000 RESEARCH DRIVE, RICHARDSON, TX 75082

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

03.2017