USER MANUAL

DUX-TX
DUX-RX
HDMI EXTENDER

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.

Introduction

DUX-TX Transmitter and DUX-RX Receiver is a pair of HDMI extenders used to extend HDMI signals up to 100 meters (1080p) or 70 meters (4K) over a single CatX cable.

Through PoE, one single power supply to DUX-TX Transmitter will be able to power both DUX-TX Transmitter and DUX-RX Receiver. Via IR pass-through, you can either control the source from the display location or the display from the source location. The Ethernet ports of the HDMI extenders can be routed for network communication. The HDMI extenders also allow RS232 control via pass-through over a single CatX cable.

The DUX-TX and DUX-RX HDMI extenders are ideal for applications at homes, offices, digital entertainment centers, control centers, conference rooms, schools and corporate training environments, which require distribution of an HDMI source signal to a single HDMI display over a long distance.

Features

- Slim appearance, space saving and easy-to-install.
- For 1080p signal, supports HDMI input and output cables up to 15 meters.
- For 4k@30Hz signal, supports HDMI input cable up to 10 meters and HDMI output cable up to 15meters.
- HD signal transmission up to 100 meters (1080p) or 70 meters (4K) via a single CatX cable.
- Single CatX cable solution, including transmission of HD Audio/Video, IR control, RS232 pass-through, Ethernet and PoE (DUX-TX to DUX-RX).
- Fully compliant with HDMI 1.4, and compatible with HDMI 2.0 (4K@60Hz 4:2:0).
- HDCP 2.2 compliant.
- Bi-directional IR control from source or display location.
- RS232 port for firmware upgrading and serial communication.
- Ethernet ports of DUX-TX and DUX-RX can be routed for network communication.
- Universal power supply of high reliability and energy efficiency for reduced operation cost.

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

Packing List

DUX-TX Transmitter

- 1 x DUX-TX Transmitter
- 1 x Power Adapter (12 VDC,1.5A)
- 1 x Phoenix Male Connector (3.5 mm, 2 pins)
- 1 x Phoenix Male Connector (3.5 mm, 3 pins)
- 1 x IR Emitter
- 1 x Broadband IR Receiver (30 KHz ~ 50 KHz)
- 2 x Mounting Brackets
- 1 x User Manual

DUX-RX Receiver

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

Specifications - DUX-TX Transmitter

Technical	
Input	1 x HDMI IN
Input Signal Type	TMDS
Input Resolution Support	4K, 1080p, 1080i, 720p, 576p, 480p, 576i, 480i
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 Support	4K, 1080p, 1080i, 720p, 576p, 480p, 576i, 480i
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	≤11.8 W (pair)
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
Net Weight	400 g
Dimension (W × H × D)	173 mm × 18 mm × 94.8 mm (6.82" × 0.71" × 3.74")
Certification	CE, FCC

Specifications - DUX-RX Receiver

Technical	
Input	1 x HDBT IN
Input Signal Type	HDBT
Input Resolution Support	4K, 1080p, 1080i, 720p, 576p, 480p, 576i, 480i
Input Video Level	0.5-1.2 V p-p
Input DDC Signal	5 V p-p
Output	1 x HDMI OUT
Output Signal Type	TMDS
Output Resolution Support	4K, 1080p, 1080i, 720p, 576p, 480p, 576i, 480i
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	≤11.8 W (pair)
ESD Protection	Human-body model: • ±8 kV (Air-gap discharge) • ±4 kV (Contact discharge)
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Net Weight	400 g
Dimension (W × H × D)	173 mm × 18 mm × 94.8 mm (6.82" × 0.71" × 3.74")
Certification	CE, FCC

Cable Specifications (Straight-through Ethernet cable of T568B is recommended)

Cable Type	Range	Supported Video
Cat5e/6	100 m	1080p, 60Hz, 36 bpp
	70 m	1080P, 60Hz, 48 bpp
Cat6a/7	100 m	1080P, 60Hz, 3D 4K, 30Hz

Panel - DUX-TX Transmitter

Fig 1: DUX-TX - Front Panel

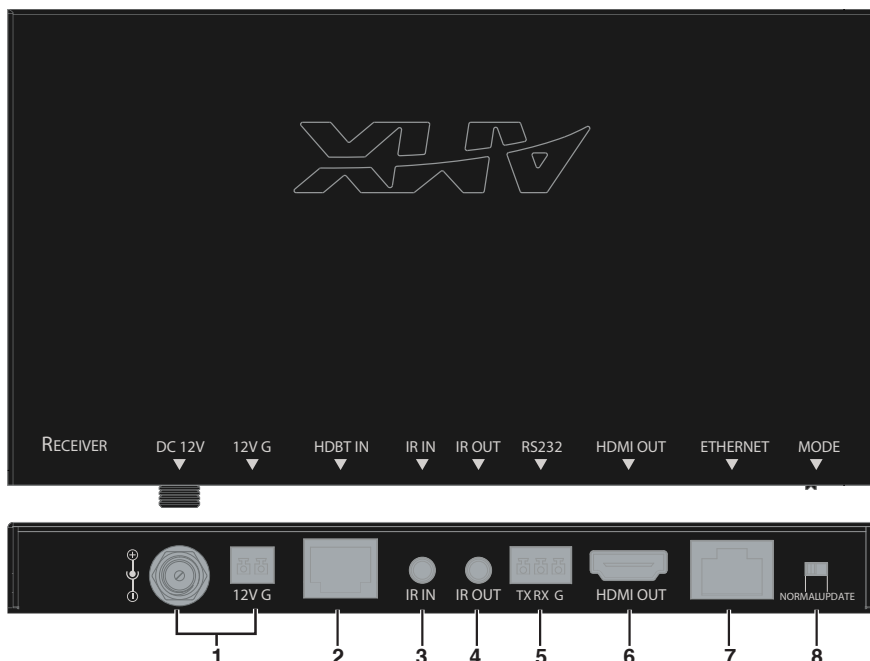| Item	Name	Description
1	POWER LED	**On**: DUX-TX is powered on. **Off**: DUX-TX is powered off.
2	STATUS LED	**Blinking**: DUX-TX is working properly. **Off**: DUX-TX is not working properly.
3	HDCP LED	**On**: HDCP video is being transmitted. **Blinking**: Non-HDCP video is being transmitted. **Off**: No HDMI signal.
4	LINK LED	**On**: DUX-TX and DUX-RX are linked. **Off / Blinking**: No link or link error.

Fig 2: DUX-TX - Rear Panel

Item	Name	Description
1	DC 12V	Connects the power adapter provided. If DUX-TX is connected to a power supply, DUX-RX can be powered by DUX-TX through PoE. DUX-TX and DUX-RX can also be powered individually.
2	HDBT OUT	Connects to DUX-RX using a CatX cable.
3	IR IN	Connects the Broadband IR Receiver provided.
4	IR OUT	Connects the IR Emitter provided.
5	RS232	For firmware upgrading or serial communication.
6	HDMI IN	Connects to an HDMI source using an HDMI cable.
7	ETHERNET	• When HDBT ports of DUX-TX and DUX-RX are connected, connect either (1) DUX-TX to a network access point (e.g. a router) via its Ethernet port and DUX-RX to a network terminal device (e.g. a PC) via its Ethernet port, or (2) DUX-TX to a network terminal device (e.g. a PC) via its Ethernet port and DUX-RX to a network access point (e.g. a router). Then the terminal device can access to the network by passing through both DUX-TX and DUX-RX. • Amber LED=Speed; Green LED=Link/Activity.
8	MODE	**NORMAL (Default Setting)** • RS232 signal can be passed through. • DUX-TX cannot be upgraded. **UPDATE (Only used for firmware upgrading)** • DUX-TX can be upgraded. • RS232 signal cannot be passed through.

Panel - DUX-RX Receiver

Fig 3: DUX-RX - Front Panel

Item	Name	Description
1	POWER LED	**On**: DUX-RX is powered on. **Off**: DUX-RX is powered off.
2	STATUS LED	**Blinking**: DUX-RX is working properly. **Off**: DUX-RX is not working properly.
3	HDCP LED	**On**: HDCP video is being transmitted. **Blinking**: Non-HDCP video is being transmitted. **Off**: No HDMI signal.
4	LINK LED	**On**: DUX-TX and DUX-RX are linked. **Off / Blinking**: No link or link error.

Fig 4: DUX-RX - Rear Panel

Item	Name	Description
1	DC 12V	Connects the power adapter provided. If DUX-TX is connected to a power supply, DUX-RX can be powered by DUX-TX through PoE. DUX-TX and DUX-RX can also be power individually.
2	HDBT IN	Connects to DUX-TX using a CatX cable.
3	IR IN	Connects the Broadband IR Receiver provided.
4	IR OUT	Connects the IR Emitter provided.
5	RS232	For firmware upgrading or serial communication.
6	HDMI OUT	Connects to a display using an HDMI cable.
7	ETHERNET	• When HDBT ports of DUX-TX and DUX-RX are connected, connect either (1) DUX-RX to a network access point (e.g. a router) via its Ethernet port and DUX-TX to a network terminal device (e.g. a PC) via its Ethernet port, or (2) DUX-RX to a network terminal device (e.g. a PC) via its Ethernet port and DUX-TX to a network access point (e.g. a router). Then the terminal device can access to the network by passing through both DUX-TX and DUX-RX. • Amber LED=Speed; Green LED=Link/Activity.
8	MODE	**NORMAL (Default Setting)** • RS232 signal can be passed through. • DUX-RX cannot be upgraded. **UPDATE (Only used for firmware upgrading)** • DUX-RX can be upgraded. • RS232 signal cannot be passed through.

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-TX and DUX-RX (See Fig 5: Installation Instruction Chart on Page 13):

1. Connect a source device (e.g. a DVD player) to DUX-TX's **HDMI IN** port via an HDMI cable.

2. Connect a display device (e.g. a TV) to DUX-RX's **HDMI OUT** port via an HDMI cable.

3. Connect an IR Emitter to **IR OUT** port of DUX-TX and a broadband IR Receiver to **IR IN** port of DUX-TX.

4. Connect a broadband IR Receiver to **IR IN** port of DUX-TX and an IR Emitter to **IR OUT** port of DUX-RX.

5. Connect DUX-TX's **HDBT OUT** port to DUX-RX's **HDBT IN** port via a CatX cable.

6. Connect the power adapter to DUX-TX, then connect the adapter to a power supply. (DUX-TX and DUX-RX can be connected to power individually.)

7. Power on all the units and start operation.

Note: When all set, check the LED indicators of both DUX-TX and DUX-RX. For LED indication, please refer to page 08 and 10.

Fig 5: Installation Instruction Chart

Operate with IR

IR pass-through function allows you to control the source from the display location or the display from source location.

Control the Display

To control the display (e.g. a TV) from the source location (e.g. a DVD Player):

1. Connect a broadband IR Receiver to **IR IN** port of DUX-TX ;

2. Connect an IR Emitter to **IR OUT** port of DUX-RX.
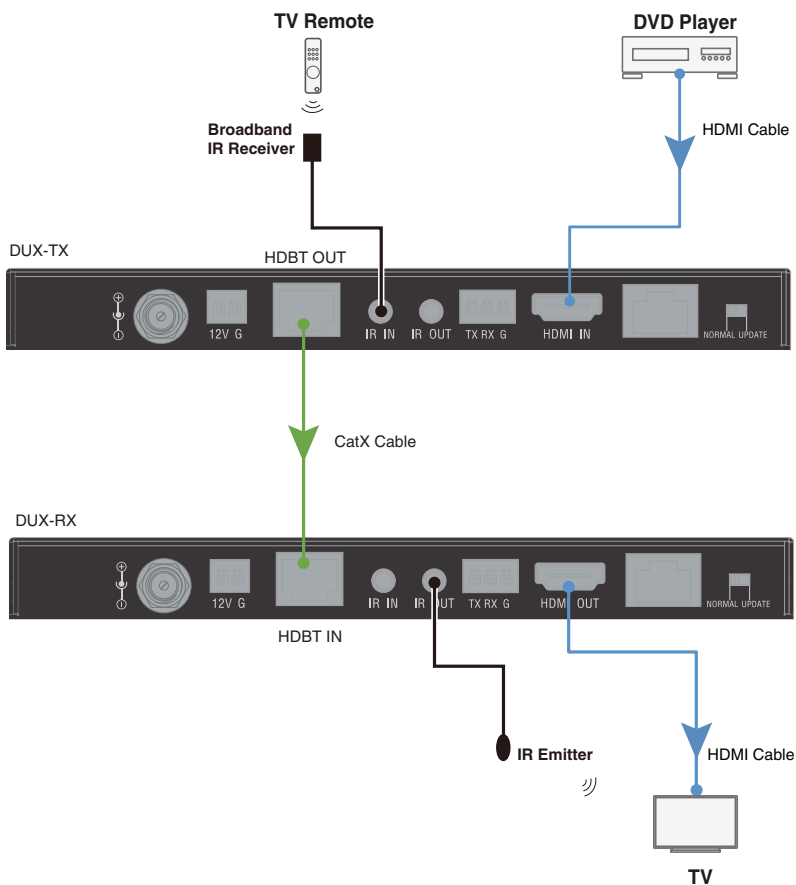
When all set, the display can be controlled at the source end through a display remote.

Fig 6: Application Example - Control the Display

Control the Source

To control the souce (e.g. a DVD Player) from the display location (e.g. a TV):

1. Connect an IR Emitter to **IR OUT** port of DUX-TX;

2. Connect a broadband IR Receiver to **IR IN** port of DUX-RX.

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

Fig 7: Application Example - Control the Source

Operate with RS232

RS232 Pinout

The following figure shows the RS232 pinout. Please connect with Phoenix Connectors provided.

RS232

Fig 8: RS232 Pinout

RS232 for Firmware Upgrading

RS232 port of DUX-TX and DUX-RX can be used for firmware upgrading.

To upgrade firmware of DUX-TX or DUX-RX:

1. Download firmware upgrading execution software (please contact the product manufacturer or your local dealer) to your PC;

2. Swith the "MODE" to "UPDATE";

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.

NOTE: DUX-TX and DUX-RX must be upgraded individually.

Fig 9: RS232 for Firmware Upgrading

RS232 for Serial Communication

RS232 port of DUX-TX and DUX-RX can also be used for serial communication.

To start serial communications between DUX-TX and DUX-RX:

1.   Connect a RS232 Master (or Client) Device to **RS232** port of DUX-TX using a RS232 cable;

2.   Connect a RS232 Client (or Master) Device to **RS232** port of DUX-RX using a RS232 cable;

3.   Connect **HDBT OUT** of DUX-TX and **HDBT IN** of DUX-RX using a CatX cable. When all set, serial communication can be realized between the two RS232 devices.

Fig 10: Application Example - RS232 for Serial Communication

![AMX by HARMAN logo]

Troubleshooting

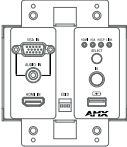| **1. Why the Power LED is off?** |
| :--- |
| • Check that all the devices are on. |
| • Check that all the cables are qualified and connected properly. |
| **2. Why the Link LED is off or blinking?** |
| • Check that all the devices are on. |
| • Check that all the cables are qualified and connected properly. |
| • Check that the length of CatX cable is less than 100 meters (1080P) or 70 meters (4K). For more information, see Cable Specifications in Specifications. |
| **3. Why the display connected to the DUX-RX 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 length of CatX cable is less than 100 meters (1080P) or 70 meters (4K). For more information, see Cable Specifications in Specifications. |
| • Ensure the length of HDMI cables: when transmitting 1080p signal, HDMI input and output cables should be less than 15 meters; when transmitting 4k@30Hz signal, HDMI input cable should be less than 10 meters, HDMI output cable less than 15 meters. For more information, see Cable Specifications in Specifications. |
| • Check that your display device is switched to the correct source input mode, for example, switching to HDMI 1 if HDMI 1 interface is connected to DUX-RX via an HDMI cable. |
| • Check that no compatibility issue exists between DUX-RX and the display. If so, replace the display with other models. |
| **4. Why the display connected to the DUX-RX 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 normal input source. |
| • Check that no compatibility issue exists between DUX-RX and the display. If so, replace the display with other models. |

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	

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