DXE-CAT-S2-4K

HDMI HDBaseT CAT Extender 183m (600ft)

SAFETY INSTRUCTIONS

Please review the following safety precautions. If this is the first time using this model, then read this manual before installing or using the product. If the product is not functioning properly, please contact your local dealer or Aurora for further instructions.

⚡ The lightning symbol in the triangle is used to alert you to the presence of dangerous voltage inside the product that may be sufficient to constitute a risk of electric shock to anyone opening the case. It is also used to indicate improper installation or handling of the product that could damage the electrical system in the product or in other equipment attached to the product.

⚠ The exclamation point in the triangle is used to alert you to important operating and maintenance instructions. Failure to follow these instructions could result in injury to you or damage to the product.

⚡ Be careful with electricity:

- **Power outlet**: To prevent electric shock, be sure the electrical plug used on the product power cord matches the electrical outlet used to supply power to the Aurora product. Use only the power adapter and power connection cables designed for this unit.
- **Power cord**: Be sure the power cord is routed so that it will not be stepped on or pinched by heavy items.
- **Lightning**: For protection from lightning or when the product is left unattended for a long period, disconnect it from the power source.

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⚠ Also follow these precautions:

- **Ventilation**: Do not block the ventilation slots if applicable on the product or place any heavy object on top of it.
  Blocking the air flow could cause damage. Arrange components so that air can flow freely. Ensure that there is adequate ventilation if the product is placed in a stand or cabinet. Put the product in a properly ventilated area, away from direct sunlight or any source of heat.
- **Overheating**: Avoid stacking the Aurora product on top of a hot component such as a power amplifier.
- **Risk of Fire**: Do not place unit on top of any easily combustible material, such as carpet or fabric.
- **Proper Connections**: Be sure all cables and equipment are connected to the unit as described in this manual.
- **Object Entry**: To avoid electric shock, never stick anything in the slots on the case or remove the cover.
- **Water Exposure**: To reduce the risk of fire or electric shock, do not expose to rain or moisture.
- **Cleaning**: Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- **ESD**: Handle this unit with proper ESD care. Failure to do so can result in failure.

FCC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference.
(2) This device must accept any interferences received, including interference that may cause undesired operation.

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Trademarks
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TABLE OF CONTENTS

PACKAGE CONTENTS

Please make sure the following items are included within your package. Contact your dealer if any items are missing or damaged.

- DXE-CAT-RX2-4K x 1
- DXE-CAT-TX2-4K x 1
- DXE-CAT-E1 Wall / Desk Mount Ears with Screws x 4
- PS0080-1 24V DC Power Adapter x 1

Optional Accessories

- IR Receiver CA0062-1
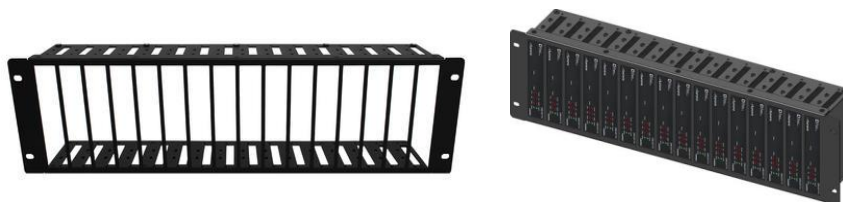
- IR Emitter CA0061-1

- IR Blaster CA0049-1

- RS-232 Adaptor (3.5mm TRS to FEMALE DB9 2-TX 3-RX) CA0052-F2T3R
- RS-232 Adaptor (3.5mm TRS to FEMALE DB9 3-TX 2-RX) CA0052-F3T2R
- RS-232 Adaptor (3.5mm TRS to MALE DB9 2-TX 3-RX) CA0052-M2T3R
- RS-232 Adaptor (3.5mm TRS to MALE DB9 3-TX 2-RX) CA0052-M3T2R

- Rack Mount 3RU (Holds 16 units) DXE-CAT-RK3 (Blanks available DXE-CAT-RK3B)

Note: Go to www.auroramm.com for latest manual and firmware

INTRODUCTION

About

The DXE-CAT-S2-4K is part of the growing Digital Xtreme Series. This product is different than the typical CAT extender found on the market today as it not only breaks the price barrier but the feature and usability aspects as well. All connectors are on one side to make wiring cleaner and rack mounting easier. Having the ability to power the device with the choice of transmit or receive reduces the installation time and keeps things neat. An industry first is Aurora's exclusive Flex-Power™ Power-Over-Ethernet circuit (Patents Pending), which allows both the transmitter and receiver to be powered without the need of any wall supplies.

Being able to go the distance is important too, and HDBaseT technology helps achieve that. With a single CAT cable, the DXE-CAT can go up to 328ft 4K 30Hz or 1080p 60Hz 48bit color depth, 500ft 1080p 60Hz 24bit (CAT 6), and 600ft 1080p 60Hz 24bit (CAT 6A Shielded) depending on model and cable. In addition, the RS-232, IR, & LAN can be sent over the same cable bi-directionally.

Features

◆ **Transmit HDMI up to 4K 30Hz/1080p 60Hz 48bit 328ft over one CAT 5e/6/7 cable***

◆ **Transmit HDMI up to 1080p 60Hz 24bit 500ft over one CAT 6 cable***

◆ **Transmit HDMI up to 1080p 60Hz 24bit 600ft over one CAT 6A Shielded cable (Extended Range Firmware Required)***

◆ **Supports 4K 30Hz UHD & HDMI 3D**

◆ **HDCP Compliant**

◆ **All connectors on one side for easier installation**

◆ **Bi-directional RS-232 & IR & LAN**

◆ **Power both units from TX or RX side with wall power supply (HDBaseT POE)**

◆ **LAN POE (Power-Over-Ethernet) can power both TX & RX without wall supplies (*Patents Pending)***

◆ **Status LED for all connections on front**

◆ **Various mounting options**

* Refer to Technical Specifications Section.

Warning: Do not plug RJ-45 HDBaseT output to non-HDBaseT complaint devices or damage may occur to either product.

Front & Rear Panel DXE-CAT-TX2-4K

Front LED Indicators

- IR Out – Blinks when emitting IR to device from IR Port. It is normal to be lit if nothing is plug into IR port.
- IR In – Blinks when receiving IR from IR port. It is normal to be lit if nothing is plug into IR port.
- TX – RS-232 Transmit. Blinking rate and intensity will vary with baud rate.
- RX – RS-232 Receive. Blinking rate and intensity will vary with baud rate.
- HDBT – Lights when HDBaseT RJ-45 has proper connection between an RX/TX pair. Blinks when in sleep mode.
- HDMI – Will light solid if HDMI is plugged in on both RX/TX and HDCP is present. If no HDCP LED will blink.
- POWER – Lights green when power is present.
- STATUS – Will blink steady if unit is working properly.

Front Pin-hole buttons

- Reset – Use paper clip or similar object to reset unit by pushing into hole.
- Setup – For DXE-CAT-TX2-4KL model only. Not used for DXE-CAT-TX2-4K

Rear Connections

- 24V DC – Power connector for 15 watt 24VDC power supply. Note only 1 supply is required to power both units. Either side can send power to the other unit. Note if LAN POE is utilized the 24VDC supply is not required.
- IR – Plug the IR receiver or emitter into this port. It will auto detect the mode of operation required.
- RS-232 – Connect RS-232 device up to 115k baud.
- HDBaseT – Connect CAT 5e/6/7 cable. Shield cable is not necessary unless the environment has a lot of electrically noise.
- HDMI Input – Plug HDMI cable from source device like a Blu-ray player. Note the HDMI cable should be rated for the bandwidth you are using.
- LAN1/2 – 10/100 LAN connection. LAN1 can use POE from a POE switch to power both the RX and TX units.

Note: Some POE switch do not supply the full 15.4watts per port. Verify the total power rating of the switch. It should be at least 15.4W x (number of ports).

Front & Rear Panel DXE-CAT-RX2-4K

Front LED Indicators

- IR Out – Blinks when emitting IR to device from IR Port. It is normal to be lit if nothing is plug into IR port.
- IR In – Blinks when receiving IR from IR port. It is normal to be lit if nothing is plug into IR port.
- TX – RS-232 Transmit. Blinking rate and intensity will vary with baud rate.
- RX – RS-232 Receive. Blinking rate and intensity will vary with baud rate.
- HDBT – Lights when HDBaseT RJ-45 has proper connection between an RX/TX pair. Blinks when in sleep mode.
- HDMI – Will light solid if HDMI is plugged in on both RX/TX and HDCP is present. If no HDCP LED will blink.
- POWER – Lights green when power is present.
- STATUS – Will blink steady if unit is working properly.

Front Pin-hole buttons

- Reset – Use paper clip or similar object to reset unit by pushing into hole.
- Setup – For DXE-CAT-TX2-4KL model only. Not used for DXE-CAT-RX2-4K.

Rear Connections

- 24V DC – Power connector for 15 watt 24VDC power supply. Note only 1 supply is required to power both units. Either side can send power to the other unit. Note if LAN POE is utilized the 24VDC supply is not required.
- IR – Plug the IR receiver or emitter into this port. It will auto detect the mode of operation required.
- RS-232 – Connect RS-232 device up to 115k baud.
- HDBaseT – Connect CAT 5e/6/7 cable. Shield cable is not necessary unless the environment has a lot of electrically noise.
- HDMI Output – Plug HDMI cable from destination device like an LCD display. Note the HDMI cable should be rated for the bandwidth you are using.
- LAN1/2 – 10/100 LAN connection. LAN1 can use POE from a POE switch to power both the RX and TX units.

Note: Some POE switch do not supply the full 15.4watts per port. Verify the total power rating of the switch. It should be at least 15.4W x (number of ports).

IR EXTENDERS

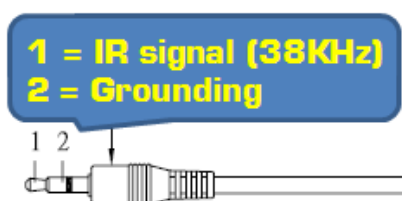### IR Blaster   IR Receiver

IR Connections

The DXE-CAT Series has the ability to auto detect on the IR port if a receiver or a blaster / emitter is connected.

IR Blaster / Emitter: Plug in an IR blaster to emit all IR command signals received from the IR receiver to control the associated devices with built-in IR sensor
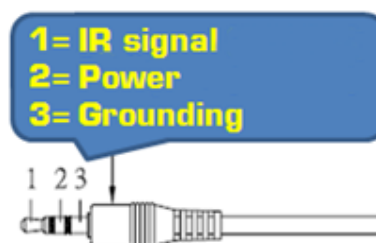
IR Receiver: Plug in an IR receiver to receive all IR command signals from the IR remote controls of the associated devices. Note if you are not using an approved Aurora branded receiver make certain you do not exceed the 5v signal level limitation as some devices use 12v. Also, IR Receiver must bet 30K-60KHz inverted 5V signal. Failure to do so will result in damage.

IR Jack Pinout

IR Blaster   IR Receiver

1 = IR signal (38KHz)
2 = Grounding

1 2

1= IR signal
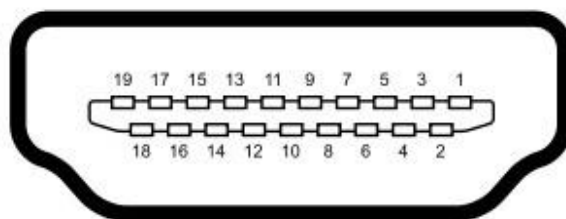**2= Power**
3= Grounding

1 2 3

Emitters must be mono plug or have ring and sleeve tied to ground.
Receivers must be stereo plug. Ring is 5v power. If using another brand receiver, note carrier frequency must be present, IR signal inverted, and IR signal cannot exceed 5v or damage to port may occur.

CONNECTOR PIN DEFINITION

HDMI

Type A (Receptacle) HDMI

Pin 1	TMDS Data2+	Pin 8	TMDS Data0 Shield	Pin 15	SCL
Pin 2	TMDS Data2 Shield	Pin 9	TMDS Data0–	Pin 16	SDA
Pin 3	TMDS Data2–	Pin 10	TMDS Clock+	Pin 17	DDC/CEC Ground
Pin 4	TMDS Data1+	Pin 11	TMDS Clock Shield	Pin 18	+5 V Power
Pin 5	TMDS Data1 Shield	Pin 12	TMDS Clock–	Pin 19	Hot Plug Detect
Pin 6	TMDS Data1–	Pin 13	CEC		
Pin 7	TMDS Data0+	Pin 14	Reserved (N.C. on device)		

CAT5e/6/7

T568A and T568B Wiring

Pin	T568A Pair	T568B Pair	Wire	T568A Color	T568B Color	Pins on plug face (socket is reversed)
1	3	2	tip	white/green stripe	white/orange stripe	
2	3	2	ring	green solid	orange solid	
3	2	3	tip	white/orange stripe	white/green stripe	
4	1	1	ring	blue solid	blue solid	
5	1	1	tip	white/blue stripe	white/blue stripe	
6	2	3	ring	orange solid	green solid	
7	4	4	tip	white/brown stripe	white/brown stripe	
8	4	4	ring	brown solid	brown solid	

Pin Position
8
7
6
5
4
3
2
1

APPENDIX 1   Troubleshooting

Problem	Solution
1. No Video Signal.	a. Check that the power plug is properly inserted into a functioning power outlet. b. Make certain source is on. c. Verify pin-out of connector at each end.
2. LED is not lit	a. Check 24v power supply is plugged in. b. Check to see if Wall supply is plugged into wall outlet. c. Make certain wall outlet has power.
3. LAN POE not working	a. Verify the POE switch total power is adequate. Some POE switch power ratings cannot supply the full 15.4 watts per port. Make certain to multiply the amount of ports by 15.4watts and compare to the switches total spec.
4. IR not working	a. Verify using proper emitter or receiver to specifications outlined. Use Aurora branded accessories for best results.
5. DXE-CAT-RX-4K is very warm	b. This is normal. HDBaseT receivers do run very warm when signal is applied. You will note the transmitter runs much cooler.
6. Intermittent Noise in image	a. Exceeding recommend distance relative to cable specification b. Use shielded cable. Sometimes external devices like radio transmitters can interfere with HDBT signals. Even though the DXE-CAT series will work with non-shielded cabling we recommend its usage for best performance.

1.   All transmission distances are measured using West Penn cable as per Appendix 3. The transmission distance is defined as the distance between the video source and the display.

2.   To reduce the interference among the unshielded twisted pairs of wires in UTP cable, you can use shielded STP cables to improve EMI problems, which is worsen in long transmission.

Warning: Do not plug RJ-45 HDBaseT output to non-HDBaseT compliant devices or damage may occur to either product.

APPENDIX 2   Technical Specifications

Model Name	DXE-CAT
Technical	**DXE-CAT-S2-4K**
Distance	328ft 100m – 1080p 60Hz 24 & 36bit CAT 5e/6/6a/7 328ft 100m – 4K 30Hz/1080p 60Hz 48bit CAT 6a/7 230ft 70m – 4K 30Hz/1080p 60Hz 48bit CAT 5e/6/6a/7 500ft 152m - 1080p 60Hz 24bit (Long Reach Mode) CAT 6 600ft 183m - 1080p 60Hz 24bit (Long Reach Mode) CAT 6A CAT 5e/6 will achieve 328ft 100m for pixel clock <=225MHz CAT 5e/6 will achieve 230ft 70m for pixel clock >225MHz CAT 6a/7 will achieve 328ft 100m for pixel clock >225MHz
Max Resolution	4K 30Hz, 1080p 60Hz,1920 x 1200 60Hz
Color Depth	24bit 5e/6/6a/7, 36bit 5e/6, 48bit 5e/6/6a/7
RS-232	300 - 115kbps
IR without LXC	30K-60KHz
LAN	2 - 10/100
LAN POE	Port 1
HDMI	3D, HDCP Compliant
Front LED Status	Power, Status, HDMI, HDBaseT, RS-232 TX/RX, IR In/Out
Front Selections	Reset
LAN Connectors	Dual 8P8C with 2 LED indicators each
HDBaseT Connector	RJ-45 WE/SS 8P8C
RS-232 Connector	3.5mm TRS TX- TIP, RX- Ring, GND- Sleeve
IR Connector	3.5mm TRS (Auto Sensing Direction for Blaster or Receiver) Signal- TIP, 5V- Ring, GND- Sleeve
HDMI Connector	Type A 19 pin
Power Connector	Diameter1.35mm ID, 3.5mm OD
Mechanical	**DXE-CAT**
Housing	Black Aluminum enclosure
Dimensions [L x W x H]	120mm x 77mm x 27.94mm [4.72" x 3.03" x 1.1"]
Weight	395g [14 oz] TX / 395g [14 oz] RX
Mounting	Wall-mounting & Rack Mounting
Power supply	24 .65A DC (Only 1 required on either TX or RX)
Power consumption	5 Watts (TX) 7 Watts (Rx) [max]
Operation temperature	0~40°C [32~104°F]
Storage temperature	-20~60°C [-4~140°F]
Relative humidity	20~90% RH [no condensation]
Package Contents	1x DXE-CAT-TX2 1x DXE-CAT-RX2 1x PS0080-1 24V DC 15 Watt Wall Supply

	4 x DXE-CAT-E1 Wall / Desk Mount Ears with Screws
Options	IR Receiver 30K-60KHz (CA0062-1) IR Emitter (CA0061-1)

Specifications subject to change without notice.

APPENDIX 3   Cabling

Aurora extender products have been tested utilizing shielded cabling. Although our products will work fine without shielded cable it is highly recommended for environmental reasons as the signals are high frequency and can radiate as well as be susceptible to external frequencies and possibly cause noise or disruption in the image. Unshielded cabling will work fine in a conduits as it will provide the shielding. We have found not all cable is created equal even though they appear similar. This can affect distance and overall performance. Below is a list of cables that have been officially tested with our products by the manufacturer of the cable.

West Penn Wire

CAT 6 Shielded - HDBaseT Certified - Only in Black
4246F – CMR, 254246F – CMP (Plenum)

CAT 6a Shielded HDBaseT Certified - Only in Black
4246AF – CMR, 254246AF – CMP (Plenum)

Both CAT 6 and CAT 6a Shielded Cables utilized a Modular Plug Kit:
90170-BI - Includes: 100 Connectors, 100 Boots, Crimp Tool, External round Crimp Tool, Strip Tool

CAT 6 Unshielded - Colors
4246 – CMR, 254246 - CMP (Plenum)
Connector: 32-6EZP

CAT5e Shielded - Blue or Gray
4245F – CMR, 254245F - CMP (Plenum)
Connector: 32-EZSTP

CAT 5e Unshielded- 12 Colors
4245-CMR, 254245 - CMP (Plenum)
Connectors: 32-EZP

APPENDIX 4   Warranty

Limited 3 Year Warranty

Aurora Multimedia Corp. ("Manufacturer") warrants that this product is free of defects in both materials and workmanship for a period of 3 years as defined herein for parts and labor from date of purchase. This Limited Warranty covers products purchased in the year of 2009 and after. Motorized mechanical parts (Hard Drives, DVD, etc), mechanical parts (buttons, doors, etc), remotes and cables are covered for a period of 1 year. Touch screen displays are covered for 1 year; touch screen overlay components are covered for 90 days. Supplied batteries are not covered by this warranty. During the warranty period, and upon proof of purchase, the product will be repaired or replaced (with same or similar model) at our option without charge for parts or labor for the specified product lifetime warranty period.

This warranty shall not apply if any of the following:

    A. The product has been damaged by negligence, accident, lightning, water, act-of-God or mishandling; or,

    B. The product has not been operated in accordance with procedures specified in operating instructions: or,

    C. The product has been repaired and or altered by other than manufacturer or authorized service center; or,

    D. The product's original serial number has been modified or removed: or,

    E. External equipment other than supplied by manufacturer, in determination of manufacturer, shall have affected the performance, safety or reliability of the product.

    F. Part(s) are no longer available for product.

In the event that the product needs repair or replacement during the specified warranty period, product should be shipped back to Manufacturer at Purchaser's expense. Repaired or replaced product shall be returned to Purchaser by standard shipping methods at Manufacturer's discretion. Express shipping will be at the expense of the Purchaser. If Purchaser resides outside the contiguous US, return shipping shall be at Purchaser's expense.

No other warranty, express or implied other than Manufacturer's shall apply.

Manufacturer does not assume any responsibility for consequential damages, expenses or loss of revenue or property, inconvenience or interruption in operation experienced by the customer due to a malfunction of the purchased equipment. No warranty service performed on any product shall extend the applicable warranty period. This warranty does not cover damage to the equipment during shipping and Manufacturer assumes no responsibility for such damage.

Aurora Multimedia Corp.

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