

4K HDR HDBaseT Extender with IR & RS-232
B-660-EXT-444-40

BINARY

INSTALLATION MANUAL



1. IMPORTANT SAFETY INSTRUCTIONS

To reduce the risk of fire or electric shock, read and follow all instructions and warnings in this manual. Keep this manual for future reference.

2. Do not expose this apparatus to rain or moisture. Do not expose this equipment to dripping or splashing, and ensure that no objects filled with liquids, such as vases, are placed on the equipment. Do not use this apparatus near water.
3. Do not remove cover. No user serviceable parts inside.
4. Clean only with a dry cloth.
5. Do not block any ventilation openings. Install according to manufacturer's instructions.
6. Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.
7. Do not override the safety purpose of the polarized or grounding plug. A polarized plug has two blades, one of which is wider than the other. A grounding plug has two matching blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
8. Protect the power cord from being walked on or pinched, particularly at the plug end and where the power cord is attached to the apparatus.
9. Only use attachments and accessories specified by the manufacturer.
10. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when the power supply cord or plug is damaged, liquid has been spilled on or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, the apparatus does not operate normally, or it has been dropped.
11. To completely disconnect this equipment from power, disconnect the power supply cord from the power outlet.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



FCC WARNINGS

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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1. PRODUCT OVERVIEW

B-660-EXT-444-40 is a 4K HDMI extender with 4K@60Hz 4:4:4 8bit including DCI 4K (4096 x 2160), and HDCP 2.2 compatibility. It can transmit 1080P signals up to 60m/197ft and 4K@60Hz signals up to 35m/115ft via Cat 5e/6 cable, and transmit 1080P signals up to 70m/230ft and 4K@60Hz signals up to 40m/131ft via Cat 6a/7 cable,

B-660-EXT-444-40 supports bi-directional IR pass through, CEC pass through and RS-232 pass through. With bi-directional PoC supported, only one power adapter is needed. It offers the added benefit of an incredibly low-profile for a greatly reduced form factor behind the screen for even more convenience and ease of installation at the display zone.

Two independent 4-pin Video and Audio EDID DIP Switches can provide varieties of EDID combinations to fit the needs of installation and operation environment. 4-pin Function DIP Switch can provide a variety of configurations and upgrading requirements to fit the multiple different application scenarios.

2. FEATURES

- Supports resolutions up to 4K@60Hz 4:4:4 8bit and HDCP 2.2.
- Supports HDR (High Dynamic Range), including HDR 10, HDR 10+, HLG and Dolby Vision (only up to 4K@30Hz).
- Over a Cat 5e/6 cable, HDBT transmits 4K@60Hz 4:4:4 8bit up to 35m/115ft, and 1080P up to 60m/200ft; Over a Cat 6a/7 cable, HDBT transmits 4K@60Hz 4:4:4 8bit up to 40m/130ft, and 1080P up to 70m/230ft.
- Supports DIP Switches to configure EDID, IR and RS-232 functions.
- Supports CEC pass through.
- Supports bi-directional IR pass-through and RS-232 pass through
- Bi-directional PoC, one power adapter at either transmitter or receiver side can power both units.

3. PACKAGE CONTENTS

- 1 x B-660-EXT-444-40 Extender
- 1 x DC 18V Power Adapter with US Pins
- 4 x Mounting Brackets (with Screws)
- 4 x Drywall Screws
- 8 x Rubber Feet
- 2 x HDBaseT Sticker
- 2 x Power Cord Sticker

4. DEVICE LAYOUT

4.1. B-660-EXT-444-40 Transmitter

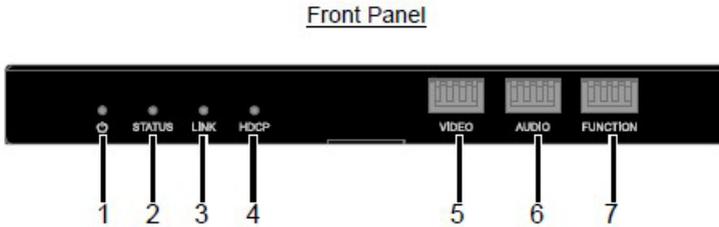


FIGURE 1: Transmitter Layout

1. POWER LED

On/Off: The transmitter is powered on/off.

2. STATUS LED

Blinking: The transmitter is working properly.

Off: The transmitter is not working properly.

3. LINK LED

On: HDBT link is normal.

Off: No HDBT link.

4. HDCP LED

On: HDCP signal is being transmitted.

Blinking: No-HDCP signal is being transmitted.

Off: No signal is being transmitted.

5. VIDEO

Video EDID DIP Switch. More information, see EDID DIP Switch Section.

6. AUDIO

Audio EDID DIP Switch. More information, see EDID DIP Switch Section.

7. FUNCTION

Function DIP Switch. More information, see Function DIP Switch Section.

4.2. B-660-EXT-444-40 Transmitter



1. +18V DC

Connect the 18V power cord provided.

2. HDBT OUT

Connect to the receiver via a Cat x cable.

3. IR Receiver

Connect to an IR receiver cable.

4. IR Flasher

Connect to an IR emitter cable.

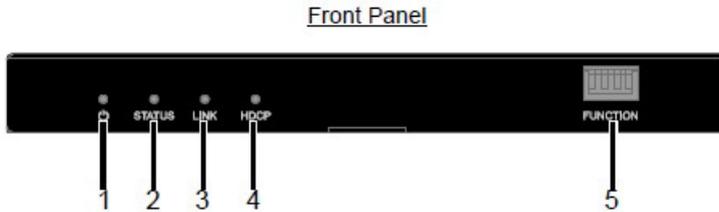
5. RS-232

RJ45 port. Connect to a RS-232 control device such as a PC for RS-232 pass through or firmware upgrade.

6. HDMI IN

Connect to an HDMI source device.

4.3. B-660-EXT-444-40 Receiver



1. POWER LED

On/Off: The transmitter is powered on/off.

2. STATUS LED

Blinking: The transmitter is working properly.

Off: The transmitter is not working properly.

3. LINK LED

On: HDBT link is normal.

Off: No HDBT link.

4. HDCP LED

On: HDCP signal is being received.

Blinking: No-HDCP signal is being received.

Off: No signal is being received.

5. FUNCTION

Function DIP Switch. More information, see Function DIP Switch Section.

4.4. B-660-EXT-444-40 Receiver

Rear Panel



FIGURE 4: Receiver Layout

1. +18V DC

Connect the 18V power cord provided.

2. HDBT IN

Connect to the transmitter via a Category cable.

3. IR Receiver

Connect to an IR receiver cable.

4. IR Flasher

Connect to an IR emitter cable.

5. RS-232

RJ45 port. Connect to a RS-232 control device such as a PC for RS-232 pass through or firmware upgrade.

6. HDMI OUT

Connect to an HDMI display.

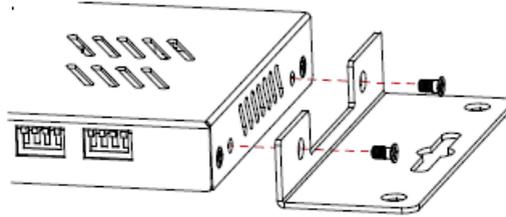
5. INSTALLATION & WIRING

Installation

B-660-EXT-444-40 can be placed on a solid and stable surface or installed on a standard equipment rack.

Steps to install the matrix on an equipment rack:

1. Attach the installation bracket to the enclosure using the screws provided in the package separately.
2. The bracket is attached to the enclosure as shown.



3. Repeat steps 1-2 for the other side of the transmitter.
4. Mount and affix the transmitter in the rack mount with the mounting screws.
5. Repeat steps 1-4 to install the receiver.

5.1 Wiring

Warnings:

- Before wiring, disconnect the power from all devices.
- During wiring, connect and disconnect the cables gently.

Steps for device wiring:

1. Connect HDMI IN

Connect the HDMI sources (such as PC, Blu-ray player, Apple TV, 4K media player, etc) to the HDMI IN of the transmitter.

2. Connect HDBT OUT

Connect HDBT OUT of the transmitter to HDBT IN of the receiver with Cat 5e/6/7 cables.

3. Connect HDMI OUT

Connect HDMI display device (such as TV, projector, LED/LCD display) to the HDMI OUT of the receiver.

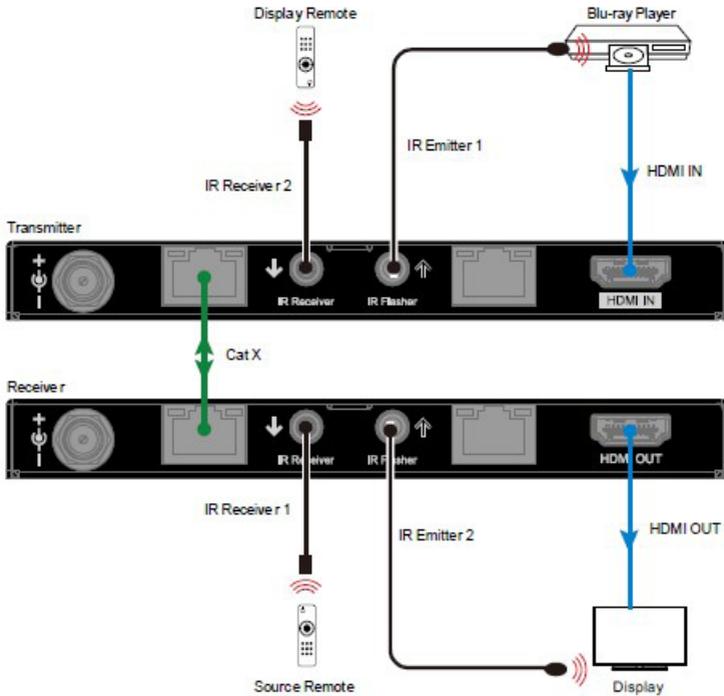
4. Connect for additional control options:

- IR Pass Through: Connect IR emitter cable to IR Flasher port or IR receiver cable to IR Receiver port of the transmitter, and connect IR receiver cable to IR Receiver port or IR emitter cable to IR Flasher port of the receiver. The source remote can control the source on the receiver side or the display remote can control the display on the transmitter side.

- RS-232 Pass Through: Set pin2 of Function DIP Switch to select RS-232 connection mode, and ensure the Pin3 and Pin4 of Function DIP Switch are set to “0” position simultaneously (see “Function DIP Switch” Section), connect control devices such as PC to RS-232 ports of transmitter and receiver to realize RS-232 pass through (More information, see RS-232 Pass Through section).

5. Connect the DC 18V power cord provided.

6. Power on all attached devices.



6. EDID DIP SWITCH

EDID is configured by Video and Audio DIP Switch. The default setting is Auto, please referring to the following table to configure.



Video		DIP Switch Position			
EDID	Resolution	1	2	3	4
0	Auto (Default)	Up	Up	Up	Up
1	1080P SDR	Up	Up	Up	Down
2	1080P HDR	Up	Up	Down	Up
3	4K@30 SDR	Up	Up	Down	Down
4	4K@30 HDR	Up	Down	Up	Up
5	4K@60 4:2:0 SDR	Up	Down	Up	Down
6	4K@60 HDR	Up	Down	Down	Down

Audio		DIP Switch Position			
EDID	Resolution	1	2	3	4
0	Auto (Default)	Up	Up	Up	Up
1	2CH (PCM)	Up	Up	Up	Down
2	6CH	Up	Up	Down	Up
3	8CH	Up	Up	Down	Down

7. FUNCTION DIP SWITCH

IR and RS-232 functions can be configured by Function DIP Switch. The default setting is "0000" (Up, Up, Up, Up), please refer to the following table to configure.



4-Pin				Up:0, Down: 1
1	2	3	4	Function
0/1	-	-	-	0: IR 12V off; 1: IR 12V on
-	0/1	-	-	0: DTE (RS-232) 1: DCE (RS-232)
-	-	0/1	-	00: Normal (RS-232) 10: System FW update
-	-	-	0/1	01: HDBT FW update 11: Reserved

Pin1 is set to "0", IR Receiver port can not supply 12V power outward, when set to "1", IR Receiver port can supply 12V power outward. Transmitter and receiver are configured separately.

Pin2 is set to "0", RS-232 serial DTE mode. Pin2 is set to "1", RS-232 serial DCE mode. Set the connection mode according to the devices used. Transmitter and receiver are configured separately.

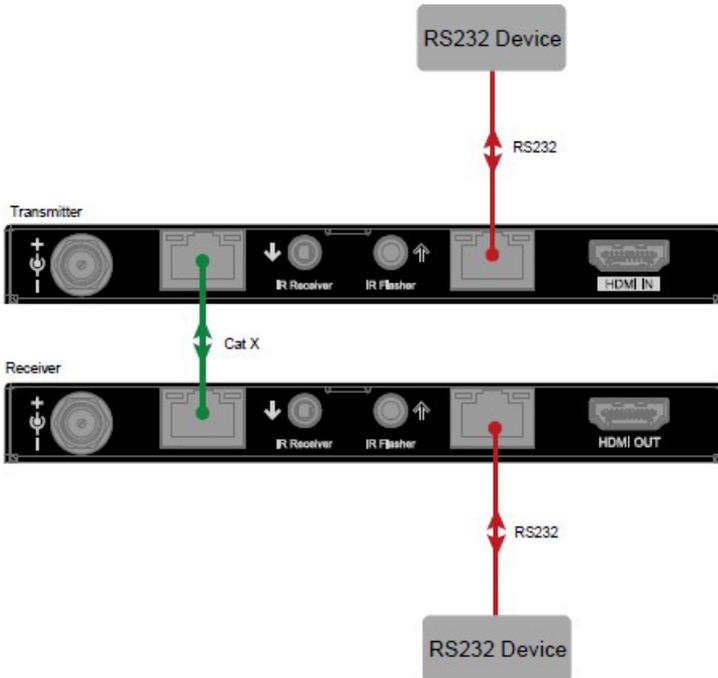
Pin3 and Pin4 are set to "0" simultaneously, RS-232 port realizes the function of pass through. Pin3 and Pin4 are set to "10", connect to a PC to upgrade ST/BV6336 chip. Pin3 and Pin4 are set to "01", use Valens tool to upgrade Valens chip.

8. RS-232 PASSTHROUGH

RS-232 ports can be used for bi-directional RS-232 signal pass through between the transmitter and receiver.

Set pin2 of Function DIP Switch to "0" or "1" to select RS-232 connection mode (DTE or DCE), set pin3 and pin4 of Function DIP Switch to "00" (see Function DIP Switch section), connect RS-232 control devices (such as PC) to RS-232 ports of transmitter and receiver. See the below picture:

Note: If the selected RS-232 connection mode is not enabled, please set to another mode.



9. SPECIFICATIONS

Technical	
Input/Output Port	Transmitter: 1 x HDMI IN, 1 x HDBT OUT, 1 x IR Receiver, 1 x IR Flasher, 1 x RS-232 (RJ45), 1 x DC 18V IN Receiver: 1 x HDMI OUT, 1 x HDBT IN, 1 x IR Receiver, 1 x IR Flasher, 1 x RS-232 (RJ45), 1 x DC 18V IN
Input/Output Signal Type	HDMI with 4K@60Hz YUV 4:4:4, HDCP 2.2, including DCI 4K (4090x2160)
Input/Output Resolution Supported	VESA: 800x600, 1024x768, 1280x768, 1280x800, 1280x960, 1280x1024, 1360x768, 1366x768, 1440x900, 1600x900, 1600x1200, 1680x1050, 1920x1200, 2560x1440, 2560x1600 SMPTE: 1280x720P6,7,8, 1080i6,7,8, 1920x1080P1,2,3,4,5,6,7,8, 3840x2160P2,3,5,6,8, 4096x2160P2,3,5,6,8 1 = at 23.98 Hz, 2 = at 24 Hz, 3 = at 25 Hz, 4 = at 29.97 Hz, 5 = at 30 Hz, 6 = at 50 Hz, 7 = at 59.94 Hz, 8 = 60 Hz, 9 = 75 Hz
Audio Format	HDMI IN/OUT: Fully supports audio formats in HDMI 2.0 specification, including PCM 2.0/5.1/7.1, Dolby TrueHD, Dolby Atmos, DTS-HD Master Audio and DTS:X
Maximum Data Rate	HDMI IN & HDMI OUT: 18Gbps
Control Method	IR, RS-232, CEC, DIP Switches

General	
Operating Temperature	-10°C to 50°C/263°F to 323°F (Indoor) -20°C to 60°C/253°F to 333°F (Outdoor)
Storage Temperature	-20°C to 70°C (-4°F to 158°F)
Humidity	10% to 90%, non-condensing
ESD Protection	Human-body Model: ±15kV (Air-gap discharge)
Power Supply	DC 18V 1.3A
Power Consumption (Max)	Receiver is powered by transmitter: 16.47W Transmitter is powered by receiver: 14.55W Transmitter and receiver are powered separately: Transmitter: 5.71W, Receiver: 8.46W

General	
Device Dimension (W x H x D)	142mm x 15.4mm x 85mm/5.59" x 0.61" x 3.35" (Without mounting brackets)
Product Weight	0.32kg/0.71lb

9.1 Transmission Distance

Note: Straight-through category cable wired to T568B standard is recommended.

Cable Type	Range	Supported Video
Cat 5e/6	60m/200ft	Up to 1080P@60Hz 36bpp
Cat 6a/7	70m/230ft	
Cat 5e/6	35m/115ft	1080P@60Hz 48bpp 4K@30Hz 24bpp
Cat 6a/7	40m/130ft	4K@60 4:2:0 24bpp 4K@60 4:4:4 24bpp
HDMI	Input/Output: 15m/50ft	1080P@60Hz 24bpp
	Input: 5m/16ft Output: 10m/33ft	4K@30Hz 4:4:4 24bpp 4K@60Hz 4:2:0 24bpp
	Input: 3m/10ft Output: 10m/33ft	4K@60Hz 4:4:4 24bpp

10. WARRANTY

Find details of the product's Limited Warranty and other safety, patent, and legal resources at snapone.com/legal or request a paper copy from Customer Service at **866.424.4489**.

11. SUPPORT

For chat and telephone, visit tech.control4.com/s/contactsupport

• Email: TechSupport@SnapOne.com • Visit tech.control4.com for discussions, instructional videos, news, and more.

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