



User Manual

SY-HDBT-131EC SET

4K HDMI to HDBaseT Splitter

1 HDMI In to 3 HDBaseT Outputs and 1 HDMI Output
Audio De-Embedding to Balance and Unbalanced Outputs

4K UHD with PoC & Bi-Directional IR Support

70m @ 1080p
40m @ 4K2K (60Hz 4:2:0)

Introduction

The SY-HDBT-131EC Set is a professional 4K HDBaseT Distribution Splitter 3 with HDBaseT outputs and a local HDMI output. This splitter is supplied with HDBaseT receivers and accessories. Only one PSU is required as all the receivers are powered over the cat6 (PoC).

The HDMI input is distributed to the local HDMI output and each of the three HDBaseT outputs. The HDBaseT outputs are designed to function with the SY-HDBT-EC receiver.

The HDBT-131EC can deliver 4K video up to 40m, or 1080p up to 70m and provides power to each receiver via their own cat6a cable. Good quality cat6/6a cabling is recommended for best performance and sustained signal quality.

This splitter is HDCP 1.4 and HDCP 2.2 compliant, with intelligent EDID management.

Features

- Handles all resolutions to 4K2K@60Hz 4:2:0 (1080p, 3D, ...) in and out
- Transmits 4K2K video for up to 8m via the local HDMI port
- Transmits 4K2K video HDBaseT to 40m or 1080p to 70m, using single cat6 cable
- The HDBaseT Receivers are PoC powered by the HDBaseT splitter
- Supports HDMI1.4, HDCP1.4/2.2, with auto detection
- Support bi-directional IR control
- LED indicators show current video signal status
- EDID management
- Firmware upgrade through Micro USB port
- Easy installation

Connections	SY-MUBT-44EC
HDMI Inputs	1
HDMI Outputs	1
HDBaseT Outputs	3
HDBT-EC Receivers	3
IR IN	3
IR IN ALL	1
IR OUT	1
IR LOOP OUT	1
Stereo Balanced Analog Audio	L (+/-) & R (+/-)
Stereo Unbalanced Analog Audio	L & R

Product Appearance

4K HDMI to HDBaseT Splitter

Front Panel



Name	Description
Power LED	OFF: No power RED: DC power present
HDMI IN LED	OFF: No power GREEN: HDMI Input signal is present
HDMI OUT LED	OFF: No power GREEN: HDMI Output signal is present
EDID Selection Switch	Select between Lo-Res, Default, Hi-Res modes
Service	USB port for service use only

Rear Panel



Name	Description
HDMI INPUT	1 x Type A female HDMI input port
HDMI OUTPUT	1 x Type A female HDMI output port
HDBT OUT	3 x RJ45 with status LEDs
IR IN	3 x IR IN: Connect an IR receiver as required. Each IR input is associated with the corresponding HDBaseT output.
L/R OUT	1 x 3.5 mm stereo jack Unbalanced Stereo de-embedded audio output
BALANCED OUT	Balanced Stereo de-embedded audio output
IR ALL IN / LOOP IN	1 x IR input routed to all HDBaseT outputs
IR OUT	1 x IR OUT: Plug in the IR Emitter and attach to the front of the Source. This then emits the IR signals received from the HDBaseT Receiver.
IR LOOP OUT	1 x IR LOOP OUT: 3.5mm mini jack for connecting the IR LOOP IN port of next splitter to achieve IR cascading function.
DC 24V	24V DC power input (2.71A max)

HDBaseT Receiver

The SY-HDBT-EC receivers should only be used SY-HDBT-131EC or with any –EC product range, such as SY-MUBT-44EC / SY- MUBT-88EC switchers or with the SY-HDBT-70EC transmitter. Connecting a receiver to any other equipment may harm the receiver or prevent all its features from operating fully.

Front



Name	Description
HDMI OUT	Connect to HDMI display.
IR IN	Plug in the IR receiver, this will receive the IR signals from the RCU and send through to the HDBaseT splitter and then control the desired source.
IR OUT	Plug in the IR emitter and attached to the front of the display, this will send the IR signals form the HDBaseT splitter to control the display which is connected to the HDMI OUT port.

Rear



Name	Description
DC 12V	12V DC power input – not required when powered via the cat6 cable
Power Indicator	OFF: No power; RED: DC power present (PoC).
TP IN	Connect the RJ45 cable from the HDBaseT splitter to this input. The RJ45 socket has two status indicators. HDCP: HDCP compliance indicator OFF: No HDMI traffic (no picture) Solid green: HDMI signal is with HDCP Blinking green: HDMI signal is without HDCP LINK: HDBT Link status indicator. OFF: No Link Solid yellow: Link Successful Blinking yellow: Link Error

Important

The products described in this manual must only be connected to other product in the SY EC range. Do **NOT** connect the HDBaseT connections to any other network or any other HDBaseT device. Connecting these HDBaseT devices to other networks or HDBaseT devices may result in permanent damage. Connection to other non PoC HDBaseT inputs, such as some projectors and monitors, is allowed.

System Connection

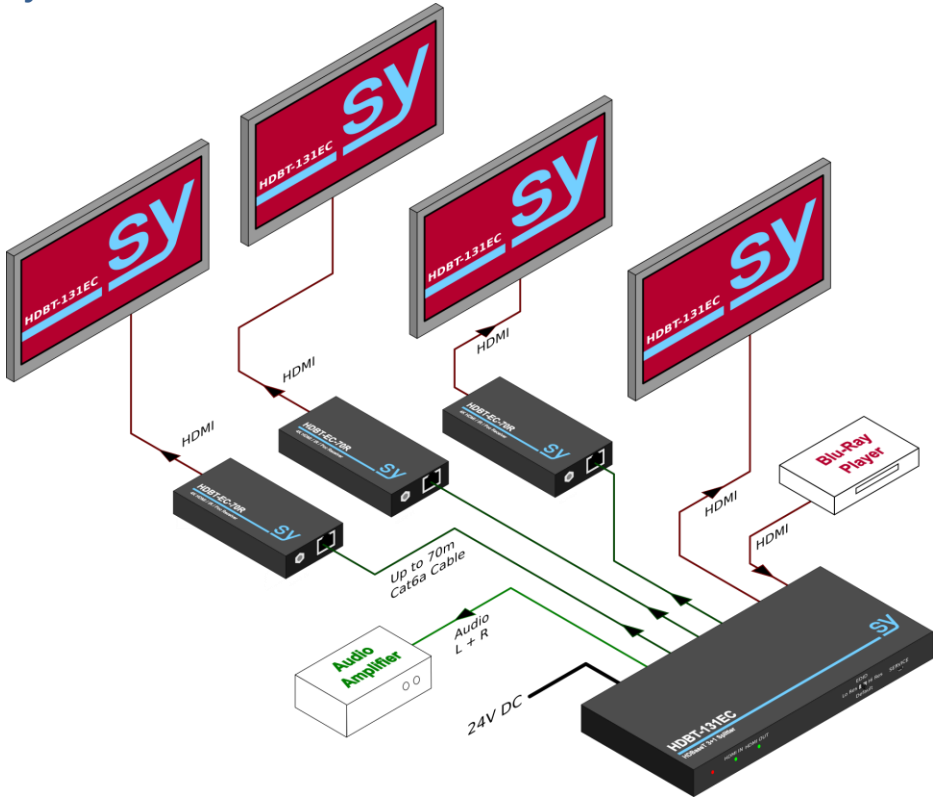


Figure 1 - HDBT-131EC System Configuration Example

Connection Procedure

The following steps are the connections required for any installation:

1. Connect the HDMI source to the HDMI input port of the SY-HDBT-131EC using a good quality HDMI cable.
2. Connect the cat5e/6/6a cables between the SY-HDBT-131EC and HDBaseT receivers via good quality RJ45 cat5e/6/6a cable. This cable must connect directly between the SY-HDBT-131EC and the respective HDBaseT receiver.
3. Connect a display device to the HDMI output port on each of the SY-HDBT-131EC HDBaseT receivers using an HDMI cable.
4. Connect a display device to the local HDMI output port on the using an HDMI cable.
5. Connect the 24V DC power supply adapter and tighten to secure. For the MUBT-44/88EC an IEC mains cable is connected directly to the HDBaseT splitter. Once all components have been connected and the installation is completed, switch on the supply.

Notes: When using IR receivers connected to IR IN, the IR carrier must be present. Do not use IR detectors that remove the IR carrier signal.

Using the SY-HDBT-131EC

The HDMI input signal is distributed to all the HDBaseT outputs and the local HDMI output.

The two front panel LEDs provide indication of the input and local output HDMI signals:

- The HDMI IN LED will light only when a valid HDMI signal is detected at the HDMI IN connector.
- The HDMI OUT LED will only light when a HDMI sink is connected to the HDMI OUT connector and the HDMI signal is being transmitted to the HDMI sink.

Both these LEDs also provide indication of the HDCP status is detailed in the following table:

LED State	Meaning
Off	No HDMI signal is present
Flashing	An HDMI signal is present with no HDCP
On	An HDMI signal is present with HDCP

IR Connectors

The IR ALL IN / IR LOOP IN will relay the received IR signal to all the HDBaseT outputs, whereas the IR IN connectors associated with each HDBaseT output will only relay the IR signal to its respective receiver. The IR LOOP IN is normally connected to the IR LOOP OUT of another SY-HDBT-131EC when two or more units, up to a maximum of five, are connected in a cascade mode while using only a single IR detector at start of the cascade connection:



The IR OUT connector will output the IR signals received from any of the HDBaseT receivers, so as to allow control of a source from any of the remote receivers.

EDID Mode Switch

The EDID switch has three positions to cater for different situations:

1. **Lo-Res**
The HDBT-131EC will combine the EDID tables from all the connected displays and ensure that the lowest resolution is available for use.
2. **Default**
A default built-in EDID is presented to the HDMI source device that will allow resolutions up to 4K @ 60Hz.
3. **Hi-Res**
The HDBT-131EC will combine the EDID tables from all the connected displays and ensure that the highest resolution is available for use.

This switch should always be set such that all the HDMI sink device are able to display an image.

Specifications

4K HDMI to HDBaseT Splitter

Video Input	
Input Connector	1 x Female HDMI Type A
HDMI Standard	Support 4K@60 4:2:0 & HDCP2.2 and is backward compatible with all previous standards.

Video Output	
Output Connectors	1 x Female HDMI Type A 3 x Female RJ45(with LED indicators)
HDMI Standard	Supports 4K@60 4:2:0 & HDCP1.4/2.2 and is backward compatible with all previous standards.

Video General	
Video Signal	HDMI (or DVI-D)
Transmission Distance (cat6a)	1080P@60Hz ≤70m 4K2K@60Hz ≤40m
Resolution	VESA and SMPTE 480p to 2160p (4K UHD) with 3D. (All resolutions to: 4096x2160p @60Hz 4:2:0 8bit, 3840x2160p @30Hz 4:4:4 8bit) All PC resolutions to 1920x1200
EDID Management	In-built EDID data and manual EDID management
Gain	0 dB
Bandwidth	10.2Gbit/s
Switching Speed	200ns (Max.)

Audio General	
Output Signal	Stereo audio in both balanced and unbalanced modes
Frequency Response	20Hz ~ 20KHz
Output Connector	1 x L&R (3.5mm stereo jack) 1 x L+/L- & R+/R- Balanced stereo out (5 way screw terminal)

Controls	
Panel Control	Three position EDID mode switch
IR Control	4 x IR IN, 1 x IR OUT (wideband carrier 28-60KHz)
IR Control Connectors	1 x 3.5mm jack sockets

General	
Power Supply	24V DC 2.71A
Power Consumption	14.4W with one receiver
Temperature	0 ~ +45°C
Reference Humidity	10 ~ 90%
Dimension (W*H*D)	260 mm x 21.0mm x 100.0 mm
Net weight	450 g

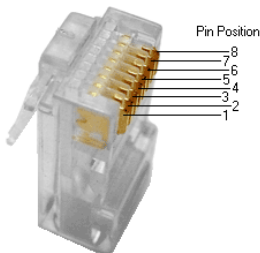
HDBaseT Receiver

Input & Output	
Input	HDBaseT
Input Connector	1 x Female RJ45 (with LED indicators)
Output	1 x HDMI Type A
Output Connector	Female HDMI
IR Control	1 x IR IN & 1 x IR OUT (wideband carrier 28-60KHz)
IR Control Connectors	3.5mm jack sockets

General	
Resolution Range	All HDMI resolutions up to 4Kx2K@60Hz 4:2:0 (or 30Hz 4:4:4)
Transmission Mode	HDBaseT
Transmission Distance	1080P@60Hz ≤70m 4Kx2K@60Hz ≤40m
Bandwidth	10.2Gbps
HDMI Standard	Support HDMI1.4 and HDCP1.4/2.2
Temperature	0 ~ +45°C
Humidity	10 ~ 90%
Power Supply	Powered by 4K HDMI to HDBaseT Splitter
Dimension (W*H*D)	74mm x16mm x 120mm
Net Weight	280g

RJ45 Wiring

Both connectors must be wired identically, to T568B standard.



RJ45 Plug Colour Code (T568B)	
Contact Side - Tab is on Back	
8	BROWN
7	WHITE / BROWN
6	GREEN
5	WHITE / BLUE
4	BLUE
3	WHITE / GREEN
2	ORANGE
1	WHITE / ORANGE

Note:

You may use cat5e, cat6 UTP (cat6 preferred) in conjunction with the HDBaseT output; however for best performance use cat6a or cat7 (particularly in electrically noisy environments). The maximum distances & transmission performance for HDMI and HDBT may be compromised by cable quality, patch panels, poor termination, wall plates, cable kinks and electrical interferences. Generally ensure the cat cable is solid copper core of 23AWG (avoid CCA type), in one straight run (avoid/minimise patches) and avoid close proximity to any noisy electrical sources.

Troubleshooting and Maintenance

Problems	Causes	Solutions
Loss of colour or no video signal output to HDMI display	The connecting cables may not be connected correctly or it may be broken.	Check whether the cables are connected correctly and in working condition.
No HDMI signal output while local HDMI input is working normally		
Static electricity when connecting the video connectors	Bad grounding	Check the grounding and ensure it is properly connected.
Link LED not lit	Poor cat5e/6/6a cable connection	Check the terminations / integrity of the cat5e/6/6a cable
	Broken or damaged cat5e/6/6a cable	Use a cable checker to confirm the connectivity of all the conductors in the cat5e/6/6a cable
HDCP LED not lit	Missing HDMI signal	Check that the HDMI input cable is properly connected to the HDMI IN socket
	HDMI sink is not active or turned off	Check that the HDMI input of the HDMI sink device is selected and that the HDMI sink device is turned on

Always confirm that all HDMI source and sink device are powered and able to send / receive an HDMI signal.

Always confirm that the SY-HDBT-131EC Splitter and the SY-HDBT-EC receivers are all powered and displaying the correct status LED indications.

Note that the SY-HDBT-EC receivers are normally powered from the SY-HDBT-131EC Splitter via the ca6a/6/5e cable and do not require their own 12V DC power supply connection.

Safety Instructions

To ensure reliable operation of this product as well as protecting the safety of any person using or handling these devices while powered, please observe the following instructions.

1. Use the power supplies provided. If an alternate supply is required, check Voltage, polarity and that it has sufficient power to supply the device it is connected to.
2. Do not operate either of these products outside the specified temperature and humidity range given in the above specifications.
3. Ensure there is adequate ventilation to allow this product to operate efficiently.
4. Repair of this equipment should only be carried out by qualified professionals as this product contains sensitive devices that may be damaged by any mistreatment.
5. Only use this product in a dry environment. Do not allow any liquids or harmful chemicals to come into contact with this product.

After Sales Service

1. Should you experience any problems while using this product, firstly refer to the Troubleshooting section in this manual before contacting SY Technical Support.
2. When calling SY Technical Support, the following information should be provided:
 - Product name and model number
 - Product serial number
 - Details of the fault and any conditions under which the fault occurs.
3. This product has a two year standard warranty, beginning from the date of purchase as stated on the sales invoice. For full details please refer to our Terms and Conditions.
4. SY Product warranty is automatically void under any of the following conditions:
 - The product is already outside of its warranty period
 - Damage to the product due to incorrect usage or storage
 - Damage caused by unauthorised repairs
 - Damage caused by mistreatment of the product
5. Please direct any questions or problems you may have to your local dealer before contacting SY Electronics.