Installation Guide

for

SY-HDBT-14S

4K HDBT Splitter 1x4 with PoC

SY-HDBT-14S

Introduction

Introduction to SY-HDBT-14S

The SY-HDBT-14S is an HDBT Splitter accepts 1 HDMI input and distributes to up to 4 HDBT outputs, plus 1 HDMI local output. The HDMI output socket can be used to monitor local devices or cascade with additional splitter.

The SY-HDBT-14S can handle uncompressed 4K (max) HDMI, IR, and RS232 signals to be transmitted over a single CAT5e/6 cable. It supports transmission of 4k signal up to 40m or 1080p signal up to 70m. The SY-HDBT-14S is simultaneously handle of bi-directional IR control, RS232 control, EDID management and PoC. If required, the HDMI local output can cascade the HDMI signal up to 4 times using additional SY-HDBT-14S units.
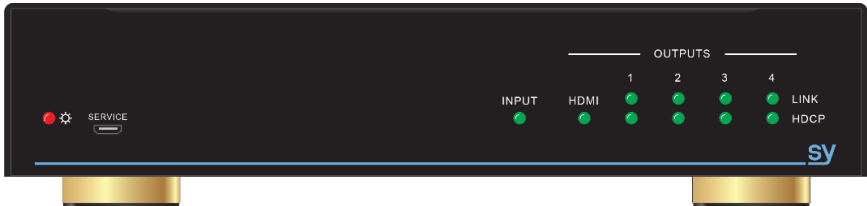
SY-HDBT-70PR receivers are recommended to utilize the full function of the HDBT outputs of this device.

Features

- Compliant with HDMI 1.4 & 3D
- Transmits 4k x 2k signal up to 40m or 1080p signal up to 70m
- Supports PoC
- Supports bi-directional IR control
- Supports RS232 control
- Real-time display of operating status via LED indicators
- Supports EDID configuration, 5 built-in types in total
- Supports cascading via HDMI OUT, IR Loop and RS232 Loop
- HDMI can cascade by using up to 4 additional SY-HDBT-14S devices

SY-HDBT-14S

Panel Description

Front Panel

Name	Description
Power indicator	Illuminates red when powered on
SERVICE	USB port, used for firmware updates.
INPUT	Indicates the presence of an HDMI input signal.
HDMI LED	Indicates the HDMI and HDCP status of the input signal: Flashing when HDMI signal is sent without HDCP Solid when HDMI signal is sent with HDCP Off when no HDMI signal is present
LINK LEDs	Indicate link status for each of the four HDBT sockets.
HDCP LEDs	Indicates the HDMI and HDCP status of the input signal: Flashing when HDMI signal is sent without HDCP Solid when HDMI signla is sent with HDCP Off when no HDMI signal is present

SY-HDBT-14S

Rear Panel

| Name	Description
HDMI INPUT	Connect to the HDMI source device such as DVD / Blue-ray
OUTPUTS	**HDMI:** Connect to a HDMI display or cascade HDMI AV signal to other displays by connecting to the HDMI INPUT port of the other SY-HDBT-14S **HDBT:** HDBT output ports with PoC, 4 in total, connect with IR receivers to transmit HDMI signal
IR	**IN:** Connect with IR Receiver to receive IR signal from IR Emitter. **LOOP:** Cascade IR control signal to another HDBT Splitter by connecting to its IR IN socket **OUT:** Connect with IR emitter to emit the IR signal received from the receiver side.
ID PRESET	Assign the RS232 ID for SY-HDBT-14S to identify each unit in a cascade system, the value varies from 0~F (0 to 15 in decimal). After assigning the RS232 ID, restart SY-HDBT-14S for stable performance.
RS232	**IN:** connect with control device through 3-pin captive cable **LOOP:** cascade RS232 control signal to another splitter by connecting to its RS232 IN port **Note:** Please set the communication protocol parameters correctly, and send RS232 commands referring to the instructions in *RS232* Control
EDID DIP Switchers	4-way EDID DIP switches, Set the switches to change EDID data as detailed in *EDID Management*.
DC 24V	Plug a 24V DC power adapter into this socket and tighten the screw.

SY-HDBT-14S

System Connection

Usage Precautions

System should be installed in a clean environment and with adequate ventilation, temperature and humidity control.

All power switches, plugs, sockets and power cables must be insulated and safety approved.
All devices should be connected before power on.

System Diagram
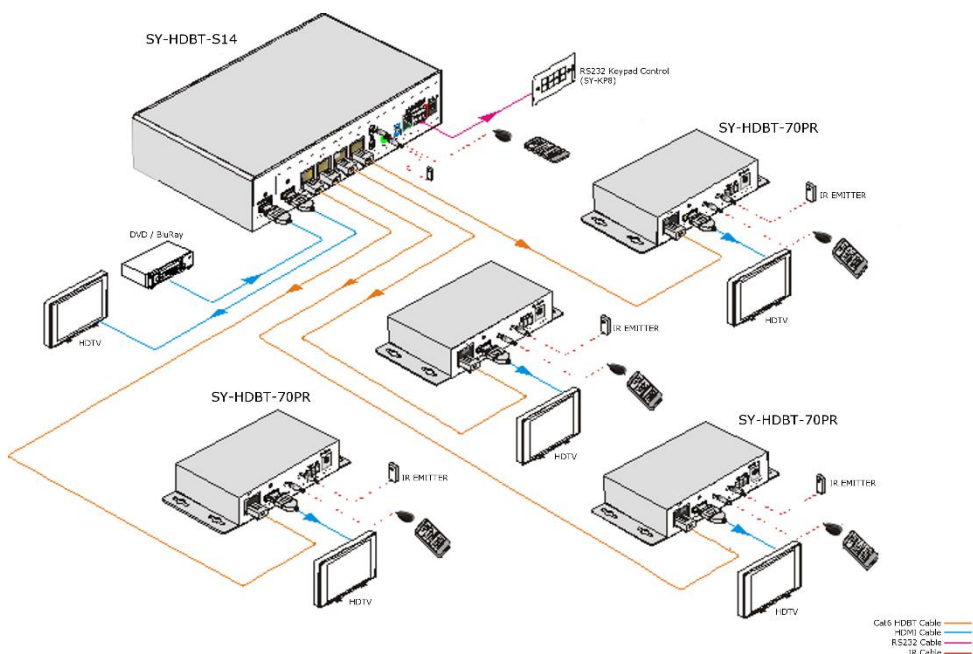
Connection Procedure

- Connect an HDMI source device (e.g. Blue-ray DVD) to the HDMI INPUT socket of the SY-HDBT-14S using an HDMI cable.
- Connect a HDMI display to HDMI OUTPUT socket of SY-HDBT-14S using an HDMI cable.
- Connect the SY-HDBT-70PR receiver(s) to the HDBT output port(s) using cat6 cabling.
- Connect a control device (e.g. PC) to the RS232 IN port of SY-HDBT-14S or SY-HDBT-70PR (bi-directional RS232 control from either end is possible).

SY-HDBT-14S

- If you want to cascade RS232 signal among several SY-HDBT-14S, connect the RS232 LOOP socket from one of them and the RS232 IN socket of the next until all SY-HDBT-14S have been connected. Please note that the RS232 ID switch on each unit must be set to a different value (position).
- Connect an IR Receiver to the IR IN port, and an IR Emitter to the IR OUT port. The IR signal can be transmitted bi-directionally between SY-HDBT-14S and SY-HDBT-70PR(s).
- If you want to cascade the IR signal among several SY-HDBT-14S, connect the IR LOOP socket of one of them and the IR IN socket of the next until all SY-HDBT-14S have been connected.
- Connect a DC 24V power adapter to the power port of SY-HDBT-14S, SY-HDBT-70PR is powered by the SY-HDBT-14S using PoC.

Cascade Connection

Cascade AV Signal

The HDMI source signal can be cascaded to more displays by connecting the HDMI OUT from one unit to the HDMI IN of the next unit. The HDMI signal sent to the first SY-HDBT-14S is now sent to the other SY-HDBT-14S devices. Cascading in this manner is limited to no more than four extra devices.

Cascade Control Signal

The SY-HDBT-14S supports control cascading via IR LOOP/ RS232 LOOP to enable signal loop output. Users can choose one or multiple cascade methods according to their specified needs.
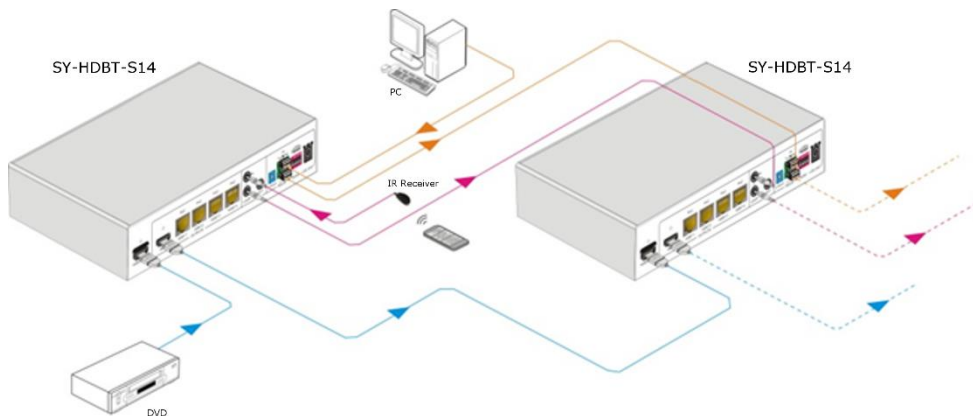
Cascade through IR Loop

Connect the IR LOOP socket of the first SY-HDBT-14S to the IR IN socket of the next until all SY-HDBT-14S have been connected. Sending IR signals to the IR Receiver connected to the first SY-HDBT-14S will control all cascaded SY-HDBT-14S.

SY-HDBT-14S

Cascade through RS232 Loop

Connect the RS232 LOOP socket of the first SY-HDBT-14S and the RS232 IN socket of the next until all SY-HDBT-14S have been connected. Sending RS232 commands will now control all cascaded SY-HDBT-14S synchronously.

Note: To identify each SY-HDBT-14S in cascading, each unit must have a unique ID setting on their respective RS232 ID rotary switches. This value is used to ensure that the RS232 commands are sent via the correct HDBT port.

Cat6 Cable Connection

The cat6 cable to the SY-HDBT-70PR receivers must be a straight-through cable. The connections can be either T568A or T568B, but both sides must be the same.

RJ-45 Wiring

Both connectors must be wired identically.
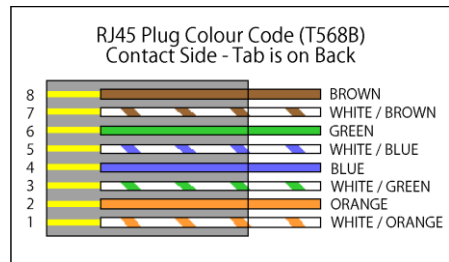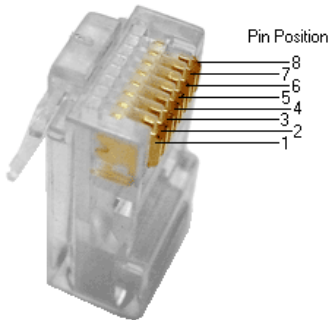
HDBT will not pass through any Ethernet device, the HDBT port on the SY-HDBT-70PT must be connected directly to the HDBT port on the SY-HDBT-70PR.

Please do make sure that the Cat6 cable uses 4 pairs of 23AWG solid copper wires.   Do not use inferior copper clad cables as these exhibit high resistances.

SY-HDBT-14S

Control Modes

The SY-HDBT-14S can be used in many applications, such as digital signage, monitoring, conference rooms, television, education, command & control centres and smart home installations, etc.
The SY-HDBT-14S can be controlled via IR, RS232 commands and also provides EDID management.

IR Control

The SY-HDBT-14S has an IR IN port and an IR OUT port, enabling bi-directional IR transmission. With an IR receiver connected to the IR IN port users can control SY-HDBT-14S far-end device locally or control local devices from the remote location using the corresponding IR remote control.

Control Far-End Device from Local Location

The following diagram shows the connections for controlling either the SY-HDBT-14S or a far-end display device locally using the corresponding IR remote control.
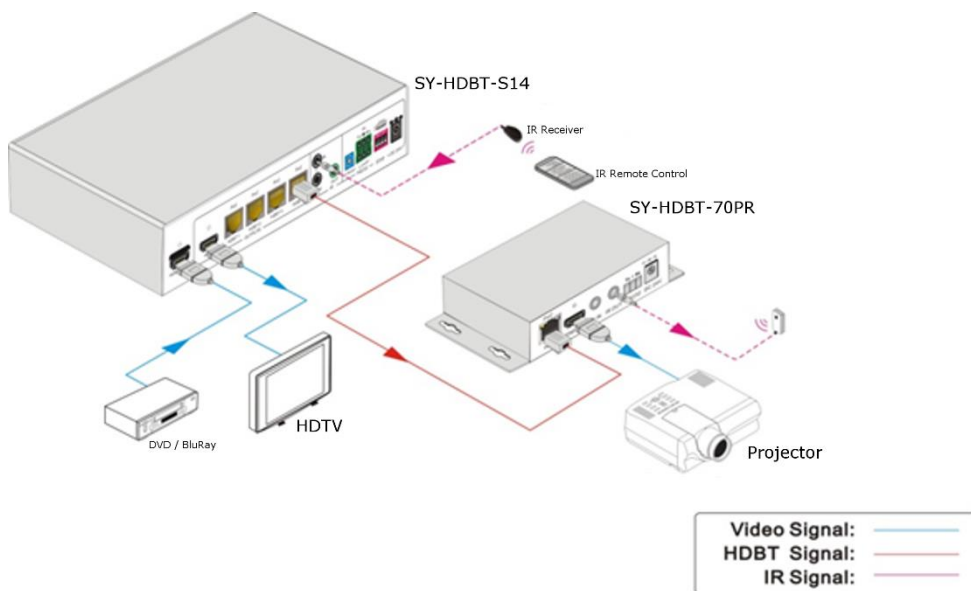

Figure 4- 1 Control Far-End Device from Local Location

SY-HDBT-14S

Control Local Device from Remote Location

The following diagram shows the connections for controlling the SY-HDBT-14S or local HDMI source from the remote location using the corresponding IR remote control.
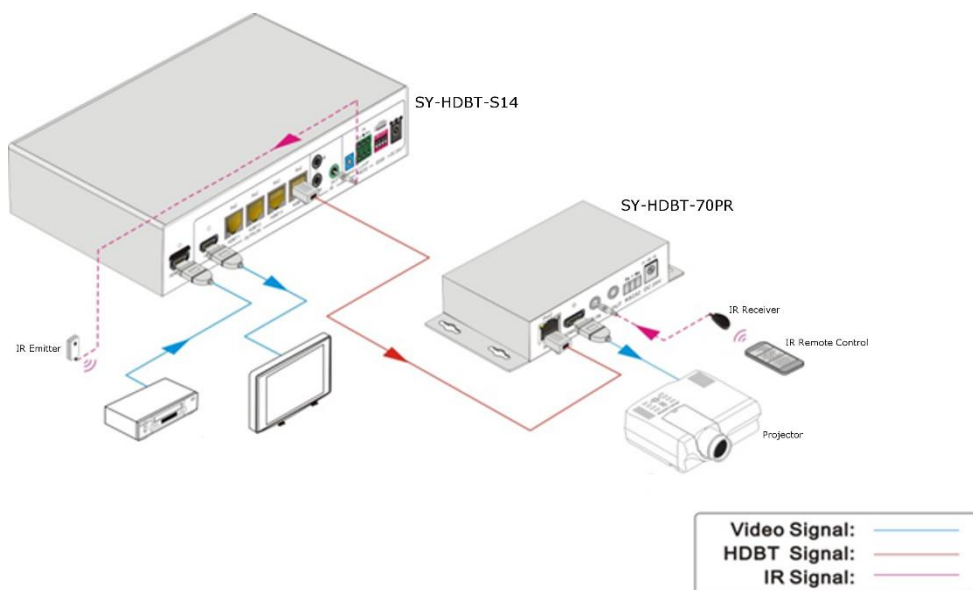

Figure 4- 2 Control Local Device from Remote Location

SY-HDBT-14S

RS232 Control

Connect the RS232 ports of SY-HDBT-14S and SY-HDBT-70PR to the RS232 controller and the controlled device as required. The SY-HDBT-14S can control any third-party RS232 device connected either to the SY-HDBT-70PR or from local RS232 port of the SY-HDBT-14S.

Note: SY-HDBT-14S can only control third-party devices that use the following baud rates: 2400, 4800, 9600, 19200, 38400, 57600 and 115200. All these must have no parity, one stop bit and no hardware flow control settings.

Basic Settings

The following RS232 commands provide control of the SY-HDBT-14S from a PC, laptop or programmable control panel. The RS232 settings are: **9600 baud, 8 bits, no parity, and 1 stop bit**.

All response values given in the following table are examples only. The actual response values will reflect the changes that the transmitted RS232 command has just made.

The RS232 commands are case-sensitive and all numerical values are in decimal only.

All the punctuation characters shown in the RS232 command are part of the command and must be included when sending the command.

RS232 Communication Commands

Command	Function	Feedback Example
`EDIDUpgrade[x][y].`	Upgrade EDID data via serial port; [X]: unit ID, varies from 00~15; [Y]: serial number of embedded EDID, varies from 0~4 (correspond to embedded EDID 1~5 separately). Note: When the unit ID is changed, please reboot the unit before sending this command.	`WAIT[sp]FOR[sp]` `EDID[sp]FILE[cr][lf]`
`[X][Y][Q1][,Q2]$[Z]`	Send command to several HDBT outputs port synchronously [X]: unit ID, varies from 00~15; [Y]: baud rate number for the third party device baud rate, from 1~7 (see the table below);	

SY-HDBT-14S

Command	Function	Feedback Example
	[Q]: serial number of the HDBT output port, from 1~4; [Z]: command to be sent.	
[X][Y][0]$[Z]	Send command to several HDBT output synchronously; [X]: unit ID, varies from 00~15; [Y]: serial number of third party's baud rate, varies from 1~7; [Z]: command to be sent.	
OFF[X][Y1],[Y2],[Y3].	Switch off several outputs of a splitter; [X]: unit ID, varies from 00~15; [Y]: serial number of output port, the value can be 1~5 (1 corresponds to the HDMI output port, 2~5 correspond to HDBT OUT 1~4 separately.)	OFF[sp]1,[sp]2,[sp]3[cr][lf]
OFF[X][0].	Switch off all the outputs of a splitter; [X]: unit ID, varies from 00~15.	OFF[sp]All[cr][lf]
ON[X][Y1],[Y2],[Y3].	Switch on several outputs of a splitter; [X]: unit ID, varies from 00~15; [Y]: serial number of output port, the value can be 1~5 (1 corresponds to the HDMI output port, 2~5 correspond to HDBT OUT 1~4 separately.)	On[sp]1,[sp]2,[sp]3[cr][lf]
ON[X][0].	Switch on all outputs of a splitter; [X]: unit ID, varies from 00~15.	On[sp]All[cr][lf]

SY-HDBT-14S

Note:

In above commands, "["and "]" are symbols for easy reading and are not sent during in actual operation.

Type in the complete commands including ending full-stop symbol (.) where it appears in the command given in the above table.

To control the third party via RS232 commands users should provide the correct serial number value for the device's baud rate in the command. The following table lists the available baud rates and the number value that must be given in the command:

Baud Rate	No.
2400	1
4800	2
9600	3
19200	4
38400	5
57600	6
115200	7

EDID Management

The SY-HDBT-14S has a 4-way EDID DIP switch. In the following table, "1" stands for "On", "0" stands for "Off". Set the switches to change the EDID data as given in the following table:

Switch Settings	EDID information
0000	Auto pass-through
0001	1080p 2D
0010	1080p 3D
0011	720p 2D
0100	720p 3D
0101	DVI 1920x1080

With the factory default setting of all off, the SY-HDBT-14S will pass through the EDID signals directly, input & output device process the signal automatically.

The EDID data can be upgraded via the serial port using the command EDIDUpgrade[x][y]. This command upgrades each of the 5 embedded EDID data sets separately. This is done by sending the RS232 command to the SY-HDBT-14S unit and then sending a binary image file containing the new EDID data. This file must only contain valid EDID information blocks to ensure continued operation of the installation.

SY-HDBT-14S

Specification

Items	Description
Video Input/output	VESA and SMPTE 480p to 2160p(4K) With 3D Bit depth: 16, 20, 24
Audio Input/output	All HDMI audio formats including Dolby D (TrueHD)/ DTS (HD-Master Audio)/ PCM Channel count: from 2-8 (2.0 to 7.1) Sample rates: 32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz and 192 kHz
Power Supply	24V DC @ 2.5A max.
Power Consumption	14.4W with one receiver, add 8W for each addition receiver.
HDBT	70m (230feet) with HDMI video, RS232 & IR control, PoC supports SY-HDBT-70PR
Control	RS232 & IR Full function pass though; RS232 port ID selectable for cascading;
Dimensions	220 x 148 x 44mm (half rack wide)
Raw Materials	Aluminium chassis
Installation	Standard Rack size, provided with removable ears for mounting under table, or on wall
Weight	550g

Troubleshooting & Maintenance

Problems	Causes	Solutions
Color losing or no video signal output in HDMI display	The connecting cables may not be connected correctly or it may be broken.	Check that the cables are connected correctly and are in working condition.
No HDMI signal output in SY-HDBT-14S while local HDMI input is in normal working state		
Cannot control SY-HDBT-14S by control device through RS232 port	Wrong RS232 communication parameters	Make sure the RS232 communication parameters are correct.
	SY-HDBT-14S is broken	Send it to authorized dealer for repair.
Static becomes stronger when connecting the video connectors	Bad grounding	Check the grounding and make sure it is connected well.

SY-HDBT-14S

Safety Instructions

To ensure reliable operation of these 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 the equipment should only be carried out by qualified professionals as these products contain sensitive devices that may be damaged by any mistreatment.

5. Only use these products in a dry environment. Do not allow any liquids or harmful chemicals to come into contact with these products.

6. Due to the weight and physical size of some of these matrix switchers, correct Manual Handling and Lifting procedures should be observed at all times while handling these products in order to minimise the risk of injury.

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. Online registration of this product is required to activate the full three year extended warranty. 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.

Notes:

Notes: