

Installation Guide

SY-HDBT-SLIM-100S Extender Set

with
HDMI, Ethernet, IR, RS232 and Power
over 100m of cat6 Cable



HDBaseT HDMI Extenders

The **SY-HDBT-SLIM-100ST** and **SY-HDBT-SLIM-100SR** HDBT transmitter / receiver pair will transmit up to 4k HDMI, two-way IR control, bi-directional RS232 data, Ethernet data and power over a single cat6 cable with perfect quality. The maximum distance is dependent on the resolution and the full 100m can be achieved with 1080p HDMI signals. This maximum distance reduces to 70m for 4k HDMI signals. These extenders will suit a wide range of applications in the AV industry, digital signage and at home.

Features

- Extends 1080p HDMI and data up to 100m with HDCP support and HDMI 2.0 compatibility
- Extends 4k HDMI and data up to 70m with HDCP support and HDMI 2.0 compatibility
- Provides transmission of IR and RS232 control signals over the same cable in both directions
- Status indicators for Link, HDMI and HDCP
- Supports all HDMI resolutions up to 4K x 2K (including: 1080p, 1080i, ..., 480p and 480i)
- Two-port Ethernet hub on both the transmitter and the receiver
- Supports 3D and CEC
- Only one 48V DC power supply required (at the Transmitter or Receiver)

Connectors and Controls

Front



Name	Transmitter	Receiver
MODE SWITCH	Set to Oper to use normal RS232 communications Set to Prog to perform field upgrades	
POWER LED	Red when unit is powered	
STATUS LED	Blue STATUS LED indicating that the unit is operating	
LINK LED	Blue LINK LED indicating the cable link status between the transmitter and receiver units	
HDCP LED	Blue HDCP LED indicating both the presence of an HDMI signal and its HDCP Status Off: No HDMI signal Flashing: HDMI signal with no HDCP On: HDMI signal with HDCP	

Rear



Name	Transmitter	Receiver
Ethernet 1 Ethernet 2	Two-port Ethernet hub for sending IP data between the units	
HDMI	HDMI input from HDMI source	HDMI output to HDMI display
RS232	RS232 Tx and Rx for sending RS232 data between the units	
IR OUT	IR output to an IR emitter	
IR IN	IR input from an IR detector (IR-Eye)	
HDBaseT	RJ45 Connector for HDBaseT data between the two units	
48V DC IN	48V DC PSU input	

Using the HDBT HDMI Extenders

HDMI Extender

Connect a HDMI source to the HDMI IN socket on the HDBT-100ST and connect a HDMI display to the HDMI OUT socket on the HDBT-100SR. Connect a Cat6 UTP cable to the HDBaseT sockets of both the transmitter and receiver units. Connect the 48V Power supply to either the Transmitter or the Receiver unit.

Status LEDs

The POWER LED indicates that the unit is powered up.

The STATUS LED indicates that the unit is operating.

The LINK LED indicates the link status of the transmitter and receiver units, solid ON for a successful link and off when a link cannot be established.

The HDCP LED on the transmitter indicates that HDMI data is being received from the HDMI source for the transmitter or to the HDMI display device for the receiver. The HDCP LED also indicates the HDCP status of the HDMI signal, it will flash on both units whenever HDCP is not present and will remain ON whenever HDCP is present.

The HDCP LED will remain OFF for any of the following conditions:

1. The HDMI source is not outputting data, the HDMI cable is either not connected or it is faulty.
2. The HDMI display is not connected or powered up, or the HDMI cable is faulty.
3. The HDMI display is not set to use its HDMI input.

IR – Dual Bidirectional

To use the IR Extender option, point your IR remote control device at the IR detector connected to the IR IN socket of either the SY-HDBT-100SR or the SY-HDBT-100ST as required. An IR emitter must also be connected to the corresponding transmitter or receiver IR OUT socket. Locate the IR emitter close to the device you wish to control. All IR control functions are now possible from the remote location.

The following diagrams show the IR IN and IR OUT wiring, please note that the IR signal for the SY-HDBT-100S Extender set must have the IR carrier present at the IR IN connector to ensure that the correct carrier frequency is presented to the output connector at the other end of the Cat6 link.

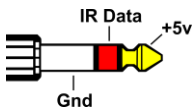


Figure 1 - IR In Wiring

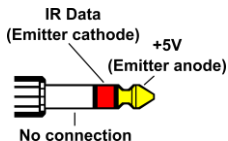


Figure 2 - IR Out Wiring

RS232 - Bidirectional

To use the RS232 Extender option, connect the RS232 equipment to the RS232 terminal blocks with the cables provided and ensure that any RS232 handshake modes are set to none. The MODE switch on both the extender units must be set to Oper to permit RS232 control between them. The SY-HDBT-100S Extender set supports all standard RS232 baud rates up to 115.2 K baud without setting any switches or special configuration options.

When connecting to other RS232 equipment, be sure that the Tx and Rx connections are wired correctly. In most situations the Tx of one RS232 port should connect to the Rx of the other RS232 port, and the RS232 ground connection is always required.

Ethernet – Bidirectional

The Slim 100 Extender set also support transfer of IP data between the two units as they both feature a two-port Ethernet hub the permits the two-way transfer of IP data between the two units.

PoC

The Slim 100 Extender set has a Power over Cable (PoC) capability, allowing both the Transmitter and Receiver units to be powered using only one PSU. The set can be powered from either the Transmitter side or the Receiver side.

For best results, use only solid copper cat6 cables for the cabling between the Transmitter and the Receiver units.

Mode Switch

The MODE switch should be set to **Oper** to permit transmission of RS232 signals between the two extenders. The **Prog** setting is only used should the SY-HDBT-SLIM-100ST or the SY-HDBT-SLIM-100ST require a field upgrade.

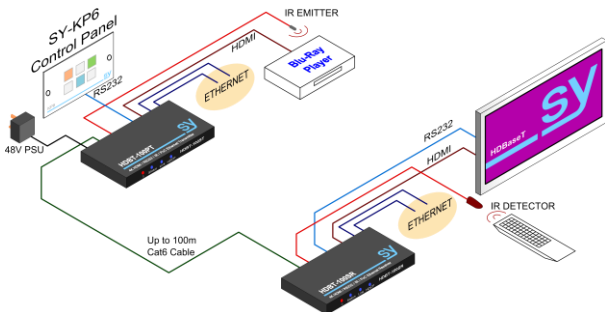


Figure 3 - Configuration Example

Specifications

General

HDMI Resolutions	480i, 480p, 720i, 720p, 1080i, 1080p, 1920 x 1200, 4K x 2K
HDMI Standard	HDMI 2.0 supported
HDMI Link Mode	HDBT, synchronous switching
Link Transmission Distance	Up to 100 metres @ 1080p or 70m @ 4K with Power over Cable (PoC)
IR Control	Any control protocol, IR carrier signal must be present at IR IN connector.
RS232	Supports Tx and Rx only – any RS232 baud rate up to 115.2 Kb
Power Supply	48V DC @ 0.5A
Power Consumption	SY-HDBT-SLIM-100S Set: 7.5 W max

Environmental

Operating Temperature	0 – 40 °C
Operating Humidity	5 – 90% RH (non-condensing)

Physical

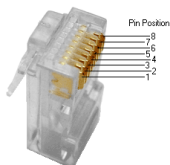
Dimensions (W x H x D)	158 x 12 x 87 mm	
Weight	SY-HDBT-100ST: 320 g	SY-HDBT-100SR: 330 g

Supported 4K Resolution Settings

Colour Depth (bits)	Chroma Subsampling	Frames / Second	Gb/s
8	4:4:4	24	7.13
8	4:4:4	25	7.43
8	4:4:4	30	8.91
8	4:2:0	50	7.43
8	4:2:0	60	8.91
10	4:4:4	24	8.91
10	4:4:4	25	9.28
10	4:2:0	50	9.28
12	4:2:2	24	7.13
12	4:2:2	25	7.43
12	4:2:2	50	8.91

RJ-45 Wiring

Both connectors must be wired identically.



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

HDBaseT signals will not pass through any Ethernet device, the HDBaseT port on the SY-HDBT-100ST must be connected directly to the HDBaseT port on the SY-HDBT-100SR.

Always ensure that the Cat6 cable uses 4 pairs of 23AWG solid copper wires. Do not use inferior copper clad cables as these exhibit higher resistances.

Safety Instructions

To ensure reliable operation of these products 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, as these products generate heat while operating.
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.

After Sales Service

1. Should you experience any problems while using these products, 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. These products have a two year standard warranty, beginning from the date of purchase as stated on the sales invoice. Online registration of these products 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.