

Installation Guide

SY-HDBT-ARC70 Extender Set

with
HDMI, IR, RS232, ARC and Power
over 70m of cat6 Cable



HDBaseT HDMI+ARC Extenders

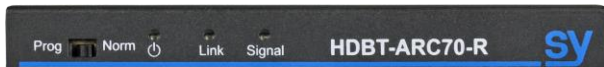
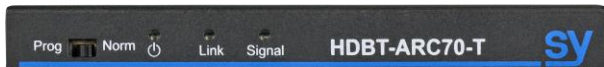
The **SY-HDBT-SLIM-ARC70-T** and **SY-HDBT-ARC70-R** HDBaseT transmitter & Receiver pair can broadcast 1080p HDMI with two-way IR control, bi-directional RS232 data, audio and power over 70m of cat6 cable with perfect quality. The maximum distance reduces to 40m when using 4k HDMI signals. These extenders are suited to a wide range of applications in the AV industry, digital signage and at home.

Features

- Extends 1080p HDMI and data up to 70m with HDCP support and HDMI 2.0 compatibility
- Extends 4k HDMI and data up to 40m with HDCP support and HDMI 2.0 compatibility
- ARC is supported from the receiver HDMI port to the transmitter HDMI port
- Supports both analogue L/R or digital S/PDIF audio from the receiver to the transmitter only
- Only one 48V DC power supply required (at the Transmitter or Receiver)
- 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)
- Supports 3D and CEC

Connectors and Controls

Front



Name	Transmitter	Receiver
PROG/NORM SWITCH	Programming or Normal Operating Mode switch	
POWER LED	Red LED indicates that the unit is powered	
LINK LED	Blue LED indicates the cable link status between the transmitter and receiver units	
SIGNAL LED	Blue LED to indicate that the HDMI signal is present at the HDMI connector	

Rear



Name	Transmitter	Receiver
POWER	48V DC power supply input	
IR OUT	Output to IR emitter (3.5mm Jack)	
IR IN	Input from IR detector (3.5mm stereo Jack)	
HDMI	HDMI input from HDMI source	HDMI output to HDMI display
RJ45	HDBaseT and PoC over Cat6	
Amber LED	Indicates the data transfer status	
Green LED	Indicates the cable link status	
TosLink / L+R	Optical or Analogue audio output	Optical or Analogue audio input
RS232	Transmit and Receive signals for RS232 control Also includes RTS/CTS handshake control	

Using the HDBT HDMI Extenders

HDMI Extender

Connect a HDMI source to the HDMI IN socket on the HDBT-ARC70-T and connect a HDMI display to the HDMI OUT socket on the HDBT-ARC70-R. Connect a Cat6 UTP cable to the HDBT sockets of both the transmitter and receiver units. Connect the 48V power supply to either the Transmitter or the Receiver unit.

Status LEDs

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 LINK LED is green on the RJ45 connector and blue on the front of the HDBT-ARC70 unit.

The amber STATUS LED on the RJ45 connector indicates that the HDBaseT signal is being transferred between the transmitter and the receiver.

The blue SIGNAL LED on the front of the HDBT-ARC70 indicates the following:

- **For the transmitter** – HDMI data is being received from the HDMI source.
- **For the Receiver** – HDMI data is being sent to the display device.

The SIGNAL 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 SIGNAL 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-70R or the SY-HDBT-70T 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.

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 or RTS/CTS as required. The MODE switch on both the extender units must be set to Norm to allow RS232 control signals to pass between them. All standard RS232 baud rates up to 115.2 K baud are supported without needing to set any switches or special configuration options.

The RS232 port also supports RTS/CTS flow control using the RT/CT connections. If RTS/CTS flow control is not required, then the RT/CT connections could be used as a second RS232 port.

ARC, S/PDIF and Stereo Audio (L/R)

These extenders also support ARC from the receiver to the transmitter for sending the off-air broadcast audio signal down to an ARC sound receiver. The ARC70 set will automatically select one of the following three audio modes:

1. **HDMI ARC** – ARC mode is selected when the 3.5mm jack sockets are left unused.
2. **S/PDIF** – Optical audio mode is selected when the 3.5mm jack socket detects that an optical fibre is connected.
3. **Stereo Analogue Audio** – Analogue audio is selected when the 3.5mm jack socket detects that a jack plug is connected.

PoC

The SY-HDBT-70 Extender set have a Power over Cable (PoC) capability, allowing both the Transmitter and Receiver units to be powered using only one power supply. The set can be powered from either the Transmitter side or the Receiver side.

For best results, use only solid copper cat6 cables.

Mode Switch

The MODE switch should be set to Norm to permit transmission of RS232 signals between the two extenders. The Prog setting is only used when either the SY-HDBT-ARC70-T or the SY-HDBT-ARC70-R require a field upgrade.

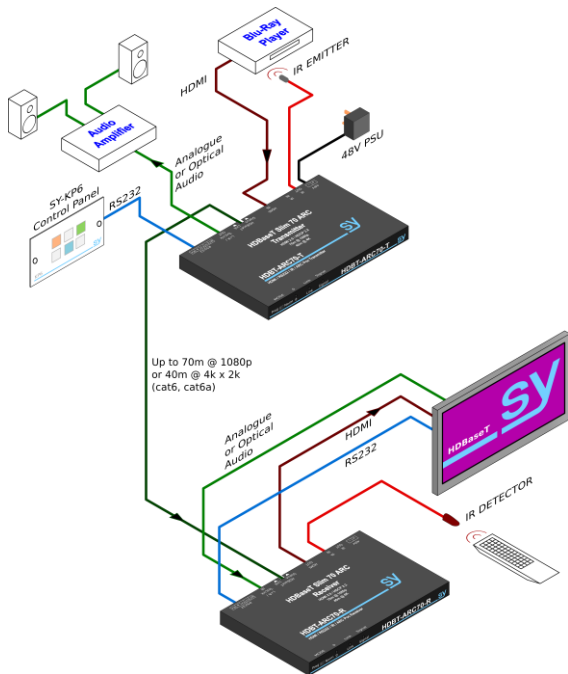


Figure 1 - Configuration Example

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
HDCP Standard	HDCP 1.4 and HDCP 2.2
Audio Return Channel	Auto selects HDMI ARC, Toslink or Analogue L/R
Link Transmission Distance	Up to 70 metres @ 1080p or 40m @ 4K with Power over Cable (PoC)
IR Control	38kHz carrier frequency for any control protocol
RS232	Supports Tx, Rx, RTS and CTS – any RS232 baud rate up to 115.2 Kb
Power Supply	48V DC @ 0.5A
Power Consumption	SY-HDBT-ARC70 Set: 7.7 W max

Environmental

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

Physical

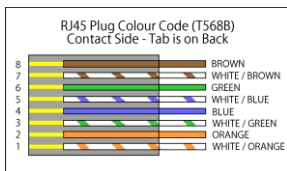
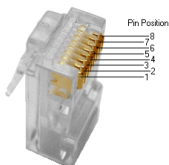
Dimensions (W x H x D)	109 x 12 x 70 mm	
Weight	SY-HDBT-ARC70-T: 155 g	SY-HDBT-ARC70-R: 163 g

Supported 4K Resolution Settings

Frames / Second	Colour Depth (bits)	Max Chroma Subsampling	Gb/s
24	8	4:4:4	7.13
24	10	4:4:4	8.91
24	12	4:2:2	7.13
25	8	4:4:4	7.43
25	10	4:4:4	9.28
25	12	4:2:2	7.43
30	8	4:4:4	8.91
30	10	4:2:2	7.43
30	12	4:2:2	8.91
50	8	4:2:2	9.90
50	10	4:2:2	9.28
60	8	4:2:0	8.91

RJ-45 Wiring

Both connectors must be wired identically.



HDBaseT signals will not pass through any Ethernet device, the HDBaseT port on the SY-HDBT-70T must be connected directly to the HDBaseT port on the SY-HDBT-70R.

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 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.