User Manual

SY-MUHDBT-44P

SY-MUHDBT-88P

HDMI 4K UHD Matrix Switchers

with

HDBT PoC Outputs

4 HDMI in to 4 HDBT + 2 mirrored HDMI out

8 HDMI in to 8 HDBT + 4 mirrored HDMI out

4K UHD

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The SY-MUHDBT-44P is a 4 HDMI input matrix switcher with 4 HDBT outputs, 2 local HDMI outputs and 4 stereo de-embedded audio outputs.

The SY-MUHDBT-88P is an 8 HDMI input matrix switcher with 8 HDBT outputs, 4 local HDMI outputs and 8 stereo de-embedded audio outputs.

Each HDBaseT output can transmit HDMI video, IR & RS232 together with PoC over a single cat5e/6/6a to the remote receiver.

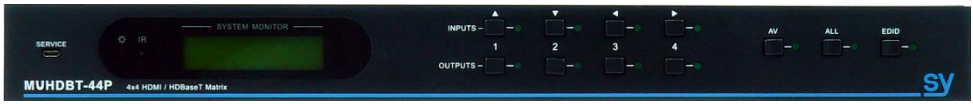
Both these matrix switchers provide performance in control and transmission, and may be used in a number of different installation scenarios, for example, with computers, for monitoring purposes, large screen displays, conference systems, televised education, bank security institutions, etc.

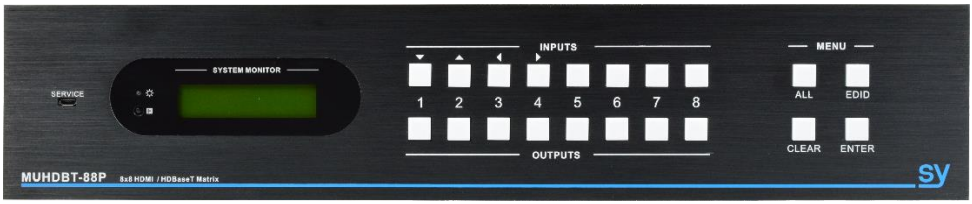
Features

- Supports HDMI 1.4a — 4K2K 4:4:4 @30Hz, 1080p@60Hz & 1080p 3D, DVI 1.0 compliant
- HDCP Compliant and DVI compatible
- Powerful EDID & HDCP management
- HDMI, IR, RS232 & PoC over a single Cat6a to 70m @1080P and 40m @ 4K UHD
- Supports PoC, providing power for all the receivers connected to the HDBT outputs.
- Supports multiple control methods: front panel, RS232, IR and optional TCP/IP control.
- Multiple EDID management
- Comprehensive LCD menu — output resolutions, connection, switching & HDCP status.
- RS232 and IP control interfaces

Connectors and Controls

Front





Name	Description
Service	Micro USB port for updating firmware.
Power Indicator	Red when power on.
IR	Receive IR signals sent from IR remote.
SYSTEM MONITOR	Display real-time operation status.
INPUTS	Input channel selection and Menu navigation buttons
OUTPUTS	Output channel selection buttons
ALL	Selects an input to appear on all outputs together
EDID	EDID management button: Enable input port to manually capture and learn the EDID data of output devices.
CLEAR	Cancels the current command, if ENTER has not been pressed.
ENTER	Confirms the desired command, or press and hold for 3 seconds to enter in to the Inquiry mode.

Rear

Name	Description
IR OUT	4/8 in total, connects to an IR transmitter to send the IR signal received from the HDBT remote receivers.
HDMI	HDMI input ports, 4/8 in total.
IR IN	Connect with IR receiver, 4/8 in total, correspond to the 4/8 IR OUTs, cannot be switched separately. It makes up an IR bi-directional transmission with the IR OUT on the corresponding far-end receiver.
RS232	3-way captive connectors, 4/8 in total, corresponding to 4/8 output sources. Communicates with the RS232 port on the corresponding HDBT receiver.
AUDIO	HDMI de-embedded stereo audio outputs (3-way captive connectors), 4/8 in total.
S/PDIF	4x De- embedded digital coax output (MUHDBT-44P only)
HDMI	Local HDMI output for HDMI Inputs 1 to 2/4. Connect to HDMI output devices for local monitoring.
HDBaseT	Output extension to remote Slim 70 receiver (SY-HDBT-70SR), with PoC.
RS232	Serial port for controlling the matrix.
IR ALL IN / Master IR	IR control signal input from an IR receiver (eye). The IR signal is sent to all 4/8 receivers simultaneously.
TCP/IP	TCP/IP port for LAN control of the Matrix Switcher (Optional Extra – not fitted as standard)
IR EYE	Connect an IR receiver to use the IR remote control the MUHDBT-44/88P.
Power	MUHDBT-44P: 24V DC external PSU MUHDBT-88P: 110V or 240V AC power
GROUND	Connect to earth to ensure the unit is well grounded.

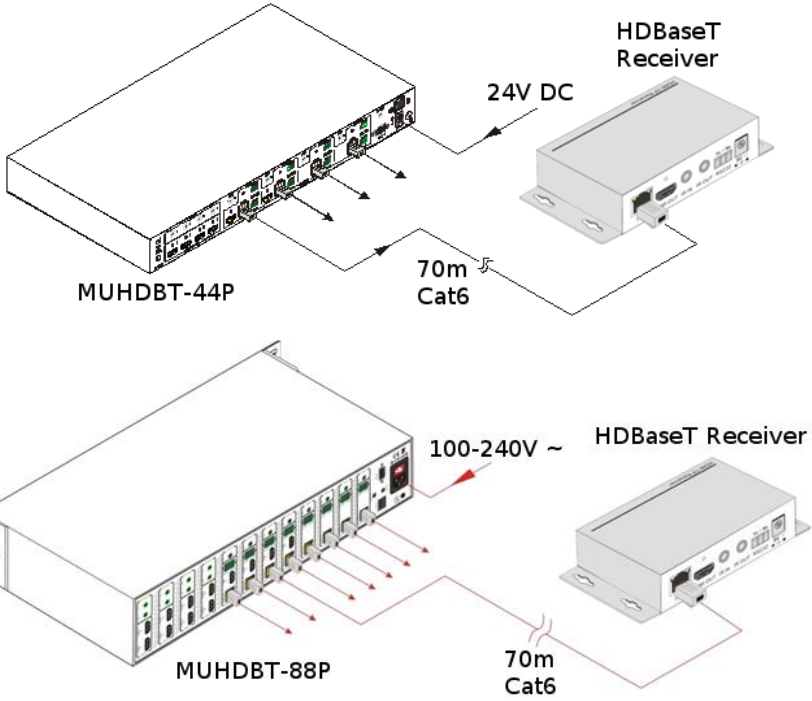
Connecting to the Matrix Switchers

Note:

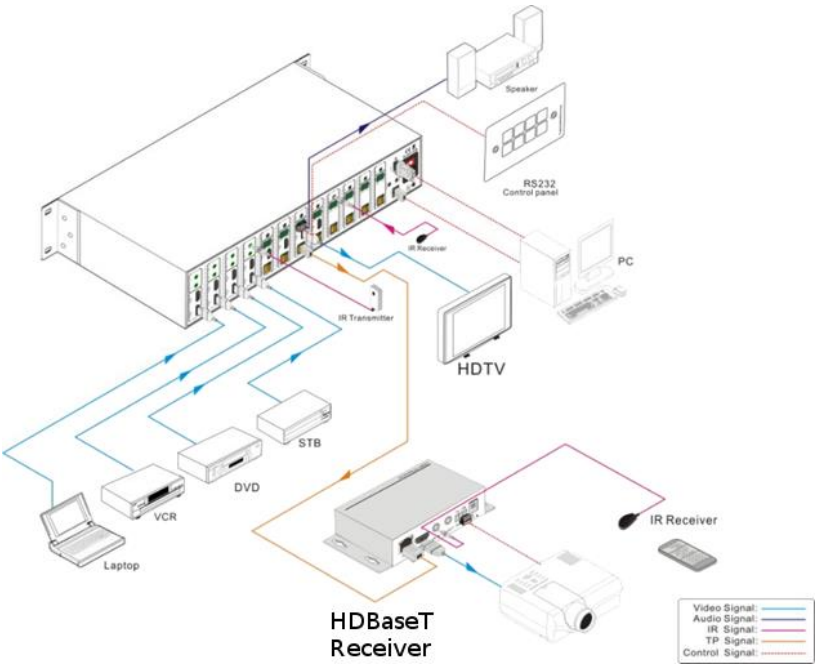
The following connection diagrams show the SY-MUHDBT-88P, the connections to the SY-MUHDBT-44P can be done in a similar manner.

Connection with SY-HDBT-70SR

These Matrix Switchers are designed to work with SY HDBaseT receivers to extend the transmission distance up to 70m @ 1080p (40m @ 4K), providing PoC (no PSU is not required at remote end). Simply connect the MUHDBT-44/88P HDBT output ports to Slim 70 Rx (SY-HDBT-70SR), using Cat5e/6a cable. The first 2/4 outputs also provide mirrored local HDMI outputs for local displays, if required.



Connection Diagram



Connection Procedure

For the following, **matrix switcher** may refer to the MUHDBT-44P or the MUHDBT-88P, unless otherwise specified.

1. Connect HDMI sources (e.g. Blu-ray) to HDMI inputs of the with HDMI cables.
2. Connect HDMI displays (e.g. HDTV) to HDMI outputs of the matrix switcher with HDMI cables.
3. Connect speakers/earphones to AUDIO output ports (3-way captive screw connectors).
4. Connect the HDBT port of HDBT receiver and the matrix switcher with Cat5e/6/6a cable.
5. Connect the RS232 port (9 pin female D) of the matrix switcher with control device, e.g. a PC.
6. Connect the RS232 port of controlled device to any RS232 port (3p captive screw connector) of the matrix switcher. The control signal can be transmitted bi-directionally through the receiver.
7. The matrix switcher can be controlled from its IR remote control either via its built-in IR receiver or through the IR EYE port using the supplied IR receiver.

   IR signals can also be transmitted bi-directionally through the HDBaseT receivers, this also allows the matrix switcher to be controlled from the remote location.
8. For the SY-MUHDBT-44P, connect the 24V DC PSU.
   For SY-MUHDBT-88P, connect a 100V~240V AC power cable.

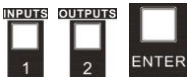
System Operations

Front Panel Button Control

Whenever a command is accepted the indicators of all the buttons pressed will blink three times then they will go off. If the command fails, the indicators will go off immediately without blinking.

Input to output selections

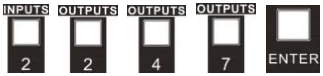
Operation: **INPUT** + **OUTPUT** + **ENTER**
Example: Input 1 to Output 2:



Note: In the factory default state, all the IR OUTs correspond with their respective HDMI INPUTS. When you connect a HDMI input to an output, the IR OUT will be switched at the same time.

Connecting a single input to several outputs

Operation: **INPUT** + **OUTPUT** + **OUTPUT** +… + **ENTER**
Example: Switch input 2 to outputs 2, 4, and 7



Connecting an input to all outputs

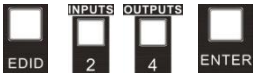
Operation: **INPUT** + **ALL** + **ENTER**
Example: Convert Input 1 to all outputs

EDID Data Transfer

Please note that the HDBT output will always take priority over the HDMI output when using the EDID setting commands. Disconnect the cable from the HDBT output if you need to read the EDID from the HDMI output.

To copy the EDID data from a single output port to only one input port:

Operation: **EDID** + **INPUT** + **OUTPUT** + **ENTER**.
Example: Input 2 reads EDID data from output 4



To copy the EDID data from a single output port to all input ports:

Operation: **EDID**, **ALL** + **OUTPUT** + **ENTER**
Example: All input ports read EDID data from output

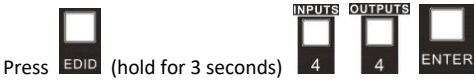
Predefined EDID Settings

There are six types of embedded EDID data as shown below. Select one type of EDID data as the new EDID setting.

OUTPUT Button	Default Resolution	Digital Audio	3D Capable
1	1080p	PCM2.0	Yes
2	1080p	5.1	Yes
3	1080p	PCM2.0	No
4	1080p	5.1	No
5	3840 x 2160 30Hz	PCM2.0	No
6	3840 x 2160 30Hz	PCM2.0	No

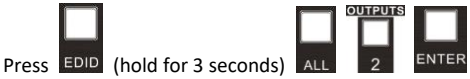
Set a Predefined EDID Setting for One Input Port

Operation: Press **EDID** for 3 seconds to enter the EDID setting mode, **INPUTS** + **OUTPUTS** + **ENTER**.
Example: Set the EDID data of INPUT 4 to the fourth predefined EDID data type – 1080p 5.1ch:



Set a Predefined EDID Setting for All Input Ports

Operation: Press **EDID** for 3 seconds to enter the EDID setting mode, **ALL** + **OUTPUTS** + **ENTER**.
Example: Set the EDID data of all input ports to the second predefined EDID data type – 1080p 3D 5.1ch:



Inquiry Modes

Check status

Press and hold the **ENTER** button for 3 seconds to activate the system inquiry menu on the front panel LCD. Use Left and Right direction buttons to navigate checking the previous or next item respectively.

Function Items	Example	Description
Check the connection status of inputs	In 1 2 3 4 Connect Y Y Y Y	Y means the corresponding input port is connected to a source device, N means it is not.
Check the connection status of outputs	Out 1 2 3 4 Connect Y Y N N	Y means the corresponding output port is connected to a sink device, N means it is not.
Correspondence between inputs and outputs	Out 1 2 3 4 Input 1 2 3 3	Shows the connection stats of the inputs and outputs.
Check if the input is with HDCP	In 1 2 3 4 HDCP Y Y Y N	Y means the input signal has HDCP, N means it does not.
Check if the output is with HDCP	Out 1 2 3 4 HDCP Y Y Y N	Y means the output signal has HDCP, N means it does not.
Check the output resolution	Resolution Out 1 1920x1080	Use the ▲▼ buttons to check the selected resolution for each output.

Output Check

Press any output button to check its corresponding input status. For example, to check which input is connected to output 2, press Output 2 button, the LCD screen displays:

```
AV:  1-> 2
IR:  1-> 2
```

Also the indicators of the Input 1 and Output 2 buttons will turn on for 3 seconds. Showing that input 1 if connected to output 2.

Clear Button

If you decide you do not wish to carry out a command, press the **CLEAR** button to cancel the operation. The matrix will not perform the command and will remain in its previous state.

IR Control

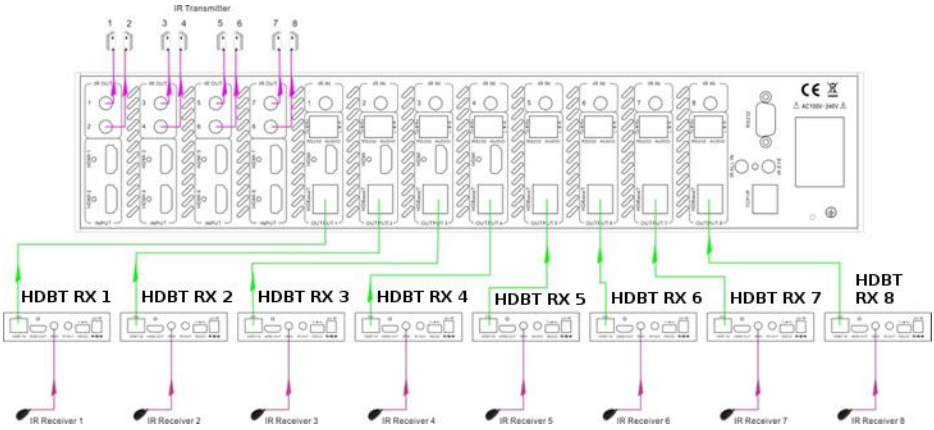
By using IR & HDBT transmission technology, the MUHDBT-44P / MUHDBT-88P matrix switchers provide the following features:

- Control of the remote output device from the location of the MUHDBT-44P/88P.
- Control of the local input/output device from the remote location.
- Control the MUHDBT-44P / MUHDBT-88P either locally or remotely.

IR Operations

IR Matrix Switching

The IR OUT ports on the matrix and the IR IN ports on the far-end receivers make up an IR matrix:



Control Local Devices or the MUHDBT-88P Remotely

The IR signal is sent to the corresponding IR remote, where it is transferred from the HDBT receiver to the matrix via the Cat6 cable and then to the IR OUT port where it is received by controlled device.

Switching Operation

Each of the IR IN ports normally correspond with their respective HDMI input ports by default. This can be changed by using the following method:

Sending the command: [x1]R[x2]. (See **RS232 Control**)

[x1] is the desired IR OUT port of the matrix, the IR transmitter connected to this port can be placed at IR receiving area of output device or in front of the MUHDBT-44/88P itself.
[x2] is the desired output channel number of the MUHDBT-44/88P. There must be a HDBT receiver with an IR detector connected.

Example: Send the RS232 command **3R2.** to transfer the received IR signal from zone 2 to IR OUT port 3.

Note: If all the 8 (or 4) IR input signal channels to switched to the same IR out channel, simultaneous control of the 8 (or 4) far-end IR receivers is not possible.

IR Carrier Enforcing

Factory Default

a) The received IR signal can only be transferred to the IR OUT port of the matrix only if the IR receiver connected with HDBaseT receiver also has an IR carrier signal.

b) The received IR signal can only be transferred to the IR OUT port of the matrix only if the IR receiver connected with **IR ALL IN** port of the matrix also has an IR carrier signal.

If the IR receiver connected to the IR IN of the HDBT receiver or the IR ALL IN port of the matrix does not have an IR carrier, then send the RS232 command **%0901.** to force the infrared carrier to be present on the IR OUT ports.

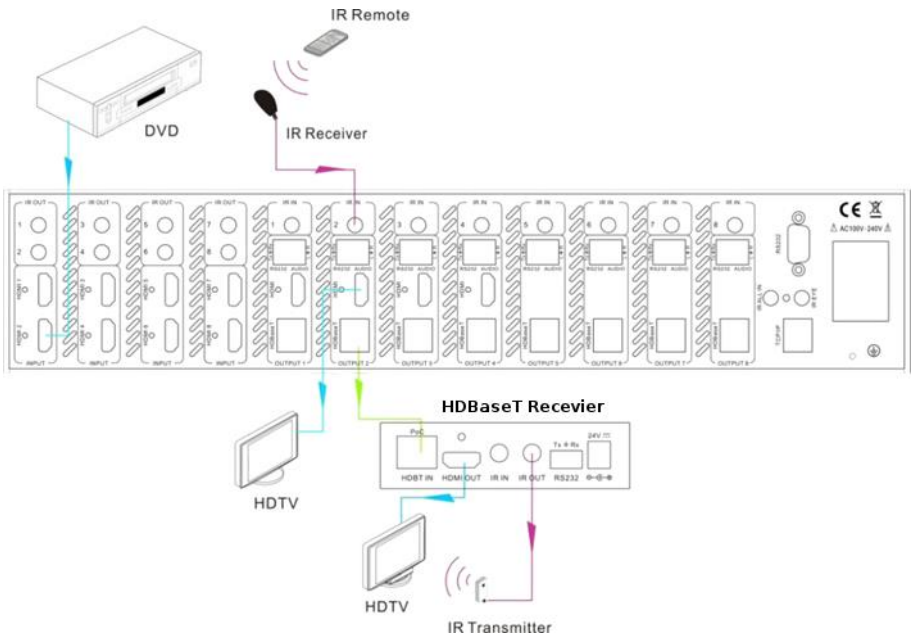
IR control setting

Control far-end output device from local

When you need to control a remote display from the matrix location, the IR receiver used must have the IR carrier signal present.

The IR signal is transferred to the corresponding IR OUT port on the HDBT receiver which must have an IR emitter connected.

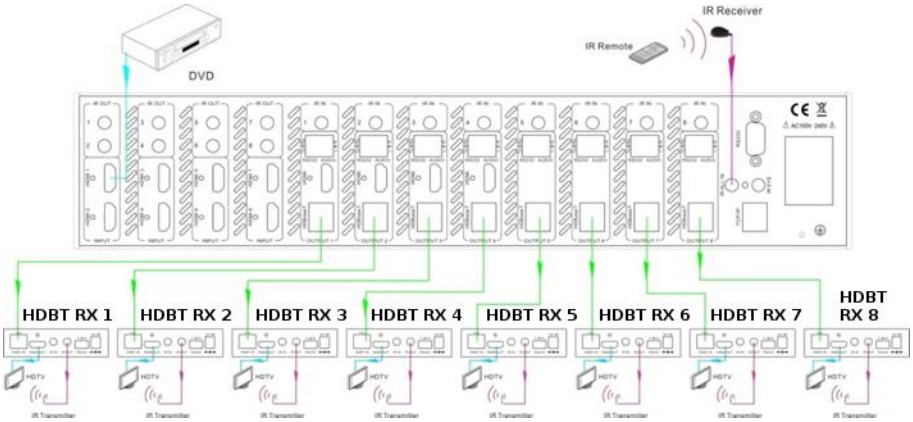
When the IR receiver (eye) is connected to IR ALL IN port, the IR signal is simultaneously sent to all HDBT receivers, each of which must have an R transmitter attached, as shown below:



Control far-end device from Local

Control far-end device through IR ALL IN port

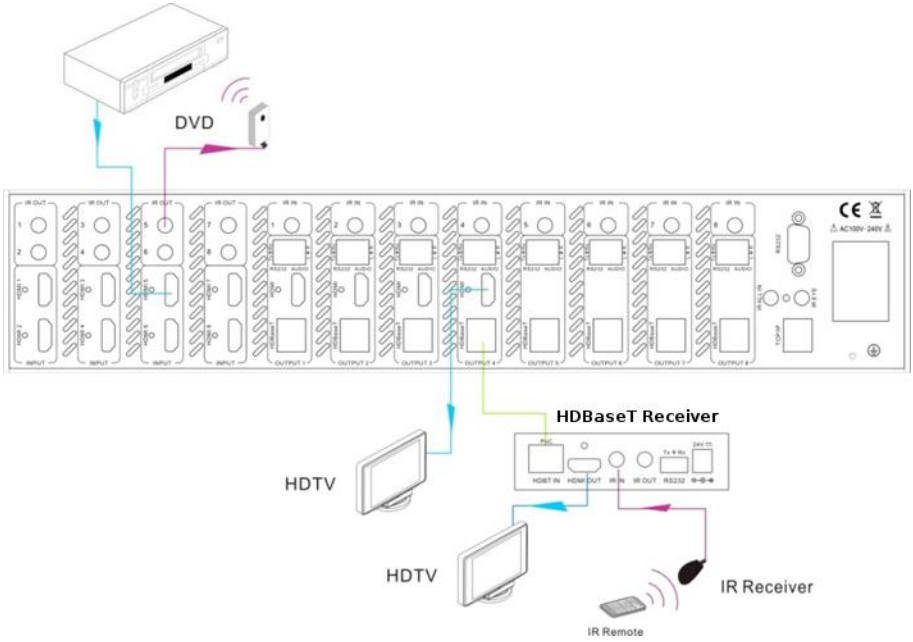
The IR signal received from IR ALL IN port will be transmitted to all the far-end HDBT receivers connected to HDBT ports of the MUHDBT-44P / MUHDBT-88P. See as below:



Control far-end device through IR ALL IN port

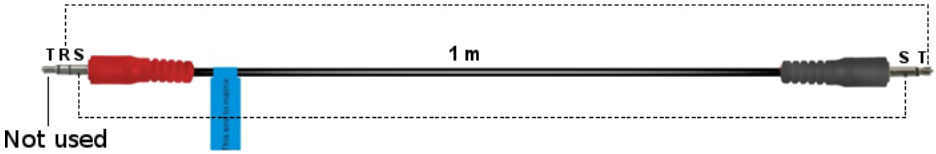
Control local device from remote

The user can control a local device such as a video player, the HDBT 8x8 matrix etc. from the remote location. In this case, the IR signal received from the HDBT receiver will be transmitted to the corresponding IR OUT port of the MUHDBT-44/88P, as shown below:



Control by a Third-party IR Control Device

Use the included 1m IR converting cable (see below) by connecting the red **3 pole** end to IR input port of the MUHDBT-44/88P and the black **2 pole** end to the IR output port of the third-party control device. The IR signal is now transmitted via the cable to the matrix switcher and then to the remote output device.



RS232 Control

RS232 Commands

When controlling either the MUHDBT-44P or the MUHDBT-88P, the serial port settings for all RS232 commands is:

Baud rate: 9600 Data bit: 8 Stop bit: 1 Parity bit: none

All the RS232 commands given in the following table apply to moth the MUHDBT-44P and the MUHDBT-88P, unless stated otherwise.

Command Code	Function
/*Type;	Get information about the matrix type.
/%Lock;	Lock the matrix front panel buttons.
/%Unlock;	Unlock the matrix front panel buttons.
/^Version;	Get the installed firmware version.
/:MessageOff;	Turn off the verbose command feedback from the serial port. Only simple responses will be output, such as: **Switch OK!**
/:MessageOn;	Turn on the verbose feedback command from the serial port.
Demo.	Activate the "Demo" mode. This mode switches between all the video inputs and outputs with an interval of two seconds. Any new action or command will cancel this Demo mode.
Undo.	Cancel the previous operation.
[x]All.	Transfer signals from the input channel [x] to all output channels
All#.	Transfer all input signals to the corresponding output channels respectively like 1->1, 2->2…
All$.	Switch off all the output channels.
[x]#.	Transfer input channel [x] signals to corresponding output channel [x].
[x]$.	Switch off the output channel [x].
[x]@.	Switch on the output channel [x].
All@.	Switch on all output channels.
[x]V[y].	Transfer the video signal from the input channel [x] to the output channel [y].
[x]B[y].	Transfer the AV and IR signal from the input channel [x] to the output channel [y].
Status[x].	Check the status of the output channel [x]
Status.	Inquire the input channel to the output channels one by one.
Save[Y].	Save present operation to the pre-set command [Y]. Y= 0 to 9.
Recall[Y].	Recall the preset command [Y].
Clear[Y].	Clear the preset command [Y].

PWON.	Work in normal mode.
PWOFF.	Enter into standby mode and cut off power supply to HDBT receivers.
STANDBY.	Enter into standby mode. (Do not cut off the supply to HDBT receivers, press other buttons or send other commands to start.)
/%[Y]/[X]:[Z].	HDCP management command. [Y] is the input (value: I) or output (value: O). [X] is the port number. To change all ports together, set the value of [X] to ALL. [Z] is for the HDCP status (value: 1 or 0). [Y] [Z] I 1 sets the input port to HDCP enabled. O 1 sets the output port to HDCP enabled. I 0 sets the input port HDCP disabled. O 0 sets the output port to HDCP disabled.
[x]R[y].	Transfer the IR signal from input channel [x] to output channel [y].
DigitAudioON[x].	Enable HDMI audio output of port x. [X]= 1, 2, 3, 4, 5, 6, 7, 8, enable the specified port. [X]= 9, enable all the ports. (5 for MUHDBT-44P)
DigitAudioOFF[x].	Disable HDMI audio output of port x. [X]= 1, 2, 3, 4, 5, 6, 7, 8 - disable the specified port. [X]= 9, enable all the ports. (5 for MUHDBT-44P)
/+[Y]/[X]:******.	Send RS232 control commands between PC and HDBT receiver. 1. [Y] is for RS232 port on the HDBT receiver, as indicated below The value of [Y] has the following meanings: **Port** / **MUHDBT-44P** / **MUHDBT-88P** 1 / 1, A or E / 1, A or I 2 / 2, B or F / 2, B or J 3 / 3, C or H / 3, C or K 4 / 4, D or H / 4, D or L 5 / — / 5, E or M 6 / — / 6, F or N 7 / — / 7, G or O 8 / — / 8, H or P All / 5 / 9 More detailed information is given on pages 16 & 17. 2. [X] is the baud rate (Value ranges from 1 to 7 — 1 = 2400, 2 =4800, 3 = 9600, 4 = 19200, 5= 38400, 6 = 57600 7 = 115200 3. ***** represents the data up to a maximum of 48 bytes. 4. The final "." must be at the end of the command. The "." symbol is allowed within the control command but the last one must always be at the end of the command being sent to the matrix switcher.
EDIDH[x]B[y].	Read the EDID from output port [x] to input port [y]. If the EDID data is valid and the audio part does not support PCM mode, then force it to support PCM mode only. If the EDID data is not valid, then set it to a default valid EDID data.
EDIDPCM[x].	Set the audio part of input port [x] to PCM format in EDID database.
EDIDG[x].	Get EDID data from the output port and display the output port number of X.
EDIDMInit.	Recover the factory default EDID data.
EDIDM[X]B[Y].	Manual EDID switching. Enable input[Y] to read the EDID data of output[X]. If the EDID data is not valid, then set it as valid EDID data.
EDID/[x]/[y].	Set the built-in EDID data of input port [x] to type [y]. The value of [y] is 1, 2, 3, or 4. The EDID data types are as stated above.
EDIDUpgrade[x].	Upgrade EDID data via the RS232 port. [x] = input port. X = 9, means to upgrade all input ports. When the switcher receives the command, it will show a message to prompt you to

	send EDID file (.bin file). Operations will be cancelled after 10 seconds. Remove all connections to the HDBT ports before using this command.
UpgradeIntEDID[x].	Select one of the built-in EDID data blocks for upgrade. There are 4 built-in EDID data blocks: x = 1 1080P, 2D, PCM2.0 x = 2 1080P, 2D, 5.1 (audio) x = 3 1080P, 3D, PCM2.0 x = 4 1080P, 3D, 5.1 (audio) When the switcher gets the command, it will show a message requesting an EDID file (.bin file). This command will self-cancel after 10 seconds.
%0801.	Automatic HDCP management. If the input has HDCP, so does the output.
%0900.	Set as infrared carrier following mode.
%0901.	Set as infrared carrier enforcing mode.
%0911.	Reset to factory default.
%9951.	Check the command sent by port 1 when PWON.
%9952.	Check the command sent by port 2 when PWON.
%9953.	Check the command sent by port 3 when PWON.
%9954.	Check the command sent by port 4 when PWON.
%9955.	**MUHDBT-44P –** Check the command sent by port 1 when PWOFF. **MUHDBT-88P –** Check the command sent by port 5 when PWON.
%9956.	**MUHDBT-44P –** Check the command sent by port 2 when PWOFF. **MUHDBT-88P –** Check the command sent by port 6 when PWON.
%9957.	**MUHDBT-44P –** Check the command sent by port 3 when PWOFF. **MUHDBT-88P –** Check the command sent by port 7 when PWON.
%9958.	**MUHDBT-44P –** Check the command sent by port 4 when PWOFF. **MUHDBT-88P –** Check the command sent by port 8 when PWON.
%9941.	**MUHDBT-88P** – Check the command sent by port 1 when PWOFF.
%9942.	**MUHDBT-88P** – Check the command sent by port 2 when PWOFF.
%9943.	**MUHDBT-88P** – Check the command sent by port 3 when PWOFF.
%9944.	**MUHDBT-88P** – Check the command sent by port 4 when PWOFF.
%9945.	**MUHDBT-88P** – Check the command sent by port 5 when PWOFF.
%9946.	**MUHDBT-88P** – Check the command sent by port 6 when PWOFF.
%9947.	**MUHDBT-88P** – Check the command sent by port 7 when PWOFF.
%9948.	**MUHDBT-88P** – Check the command sent by port 8 when PWOFF.
%9961.	Check the system locking status.
%9962.	Check the status while in standby mode.
%9963.	Check the working mode of infrared carrier.
%9964.	Check the IP address.
%9971.	Check the connection status of the inputs.
%9972.	Check the connection status of the outputs.
%9973.	Check the HDCP status of the inputs.
%9974.	Check the HDCP status of the outputs.
%9975.	Check the switching status.
%9976.	Check the output resolution.
%9977.	Check the status of digital audio of output channels.
%9978.	Check the HDCP status of the input ports.

Notes:

1) Please disconnect all the cat5e/cat6 cables connected to the HDBaseT outputs before sending the **EDIDUpgrade[X].**

RS232 command.

2) For all the commands given in the above table, the symbols [and] are only to indicate the position of the command values and are not needed in the actual command.

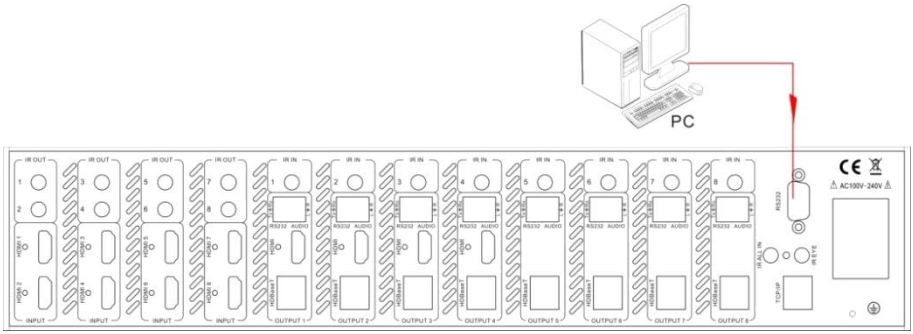
3) Every command must end with the punctuation character as shown in the above table.

4) Type the command carefully as they are case-sensitive.

Controlling the MUHDBT-44/88P from a PC

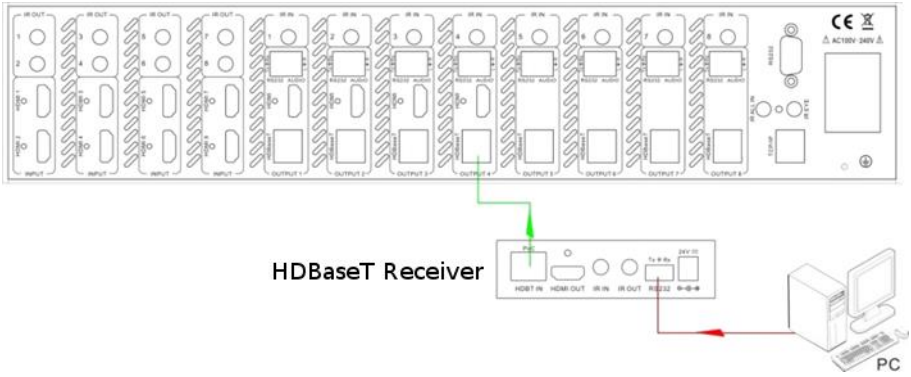
To control the MUHDBT-44P / MUHDBT-88P from a PC, you need to connect its 9 pin female RS232 port to the RS232 port of the PC, or connect to the RS232 port of any one of the HDBT receivers to the PC (the RS232 command transmits to the MUHDBT-44/88P via the Cat6 cable). By using RS232 control software and with the right communication settings, you are able to control the MUHDBT-44/88P.

Local Control of theMUHDBT-44P or MUHDBT-88P



Control the MUHDBT-88P from local

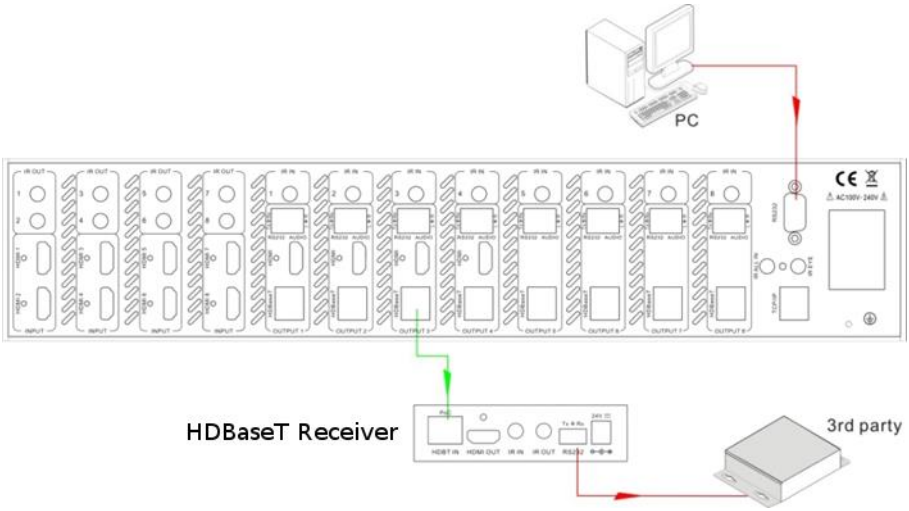
Control the MUHDBT-44P or MUHDBT-88P from Remote Location



Control the MUHDBT-88P from remote

Control 3rd-Party Device from Local Control Port

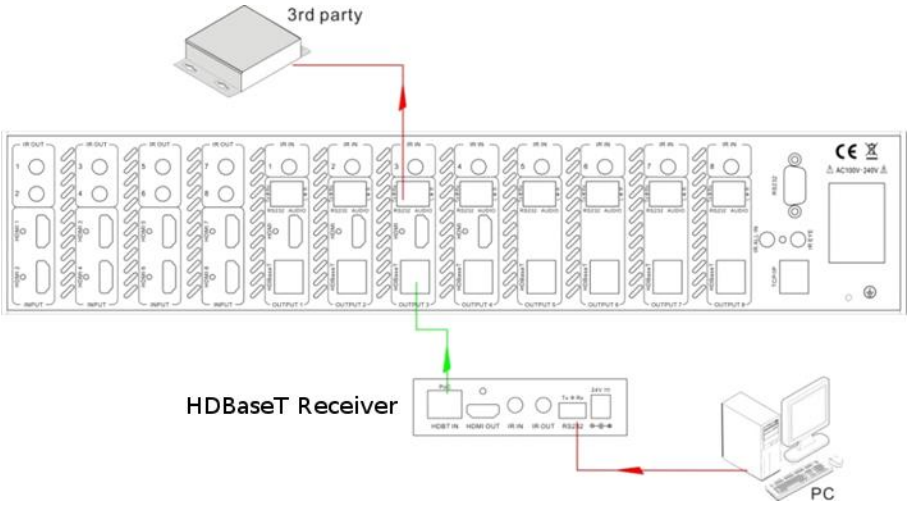
Connect the 9 pin female RS232 port of the MUHDBT-88P with PC, by using the RS232 command **`/+[Y]/[X]:******.`**, you are able to control the 3rd-party device connected with the HDBT receiver. Please refer to the detailed command descriptions in **RS232 Control**.



Control 3rd-party Device through 9 pin female RS232 port

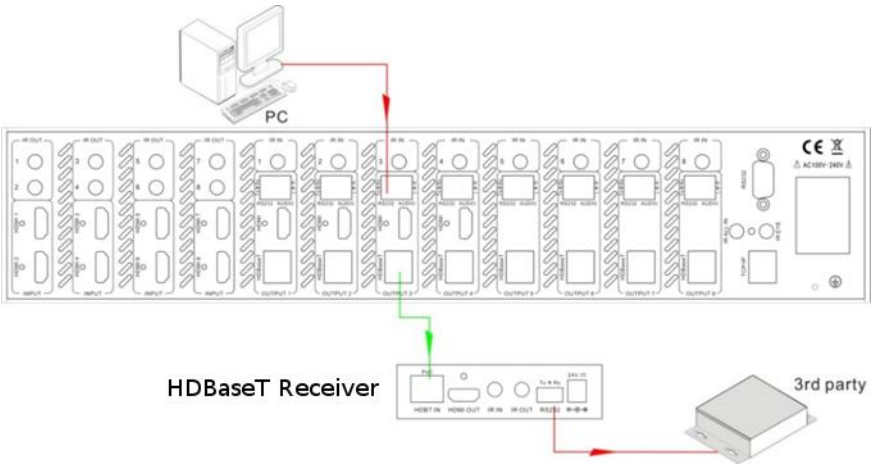
Control 3rd-Party Device from Remote Location

By connecting the 3-way captive screw RS232 port on the HDBT receiver to a PC (or the controlled device), the RS232 signal can be transmitted bi-directionally.



Control Far-end Device from Local Output Group Port

Connect the RS232 (3-way captive screw) port in any zone to PC, and connect the controlled RS232 device (3rd party device) to the corresponding HDBT receiver that is on the same zone as the PC, see below:



Sending RS232 Control Commands between PC and HDBT Receiver

The RS232 command `/+[Y]/[X]:******.` allows the transfer of RS232 commands from the PC to the SY-HDBT-70SR receiver. This command provides three modes that determine when the RS232 commands are actually sent:

1. Immediately
2. When the PWON. command is received by the SY-MUHDBT-44/88P
3. When the PWOFF command is received by the SY-MUHDBT-44/88P

1. Sending an RS232 Command Directly to a Remote Location

To send a command to the remote location with immediate effect, the [Y] parameter in the above command must be:

MUHDBT-44P	MUHDBT-88P
In the range `1` to `4` for outputs 1 to 4, or `5` to send the command to all outputs.	In the range `1` to `8` for outputs 1 to 8, or `9` to send the command to all outputs.

2. Setting an RS232 Command to be sent when the PWON Command is received

To program a command that will be sent to the remote location only when the PWON command is received, the `[Y]` parameter in the above command must be:

MUHDBT-44P	MUHDBT-88P
In the range `A` to `D` for outputs 1 to 4	In the range `A` to `H` for outputs 1 to 8

3. Setting an RS232 Command to be sent when the PWOFF Command is received

To program a command that will be sent to the remote location only when the PWOFF command is received, the `[Y]` parameter in the above command must be:

MUHDBT-44P	MUHDBT-88P
In the range `E` to `H` for outputs 1 to 4 respectively	In the range `I` to `P` for outputs 1 to 8 respectively

HDBaseT Receiver Baud Rate and Control Command Length

For each of the above three methods, the baud rate at which the actual control command is sent from the HDBaseT receiver is set by the `[X]` parameter:

[X]	Baud Rate
1	2400
2	4800
3	9600
4	19200
5	38400
6	57600
7	115200

The actual control command length (represented by ******) is limited to a maximum of 48 bytes. There must always be a full-stop character at the end of this command.

Command Examples

The following three Epson projector commands can be sent to the SY-MUHDBT-44/88P. Each command given in the following table will be sent from the HDBaseT receiver on output channel 2 with a baud rate of 9600.

1. Select the first HDMI input on the Epson Projector (SOURCE 30↙) with immediate effect.
2. Send a Power On command (PWR ON↙) to the Epson Projector when the Matrix Switcher receives the RS232 command **PWON.**
3. Send a Power Off command (PWR OFF↙) to the Epson Projector when the Matrix Switcher receives the RS232 command **PWOFF.**

No.	Command sent to SY-MUHDBT-44P	Command sent to SY-MUHDBT-88P	The command is processed:	Command sent by HDBaseT Receiver
1.	/+2/3:SOURCE 30↙.	/+2/3:SOURCE 30↙.	Immediately	SOURCE 30↙
2.	/+B/3:PWR ON↙.	/+B/3:PWR ON↙.	Only when the **PWON.** command is received by SY-MUHDBT-44/88P	PWR ON↙
3.	/+F/3:PWR OFF↙.	/+J/3:PWR OFF↙.	Only when the **PWOFF.** command is received by SY-MUHDBT-44/88P	PWR OFF↙

In each of the above command examples, the ↙ character represents the single-byte carriage-return character, 0x0d.

TCP/IP Control (Optional Extra)

The MUHDBT-44P and MUHDBT-88P matrix switchers may also be controlled using the TCP/IP port, if it is fitted. The default IP settings are:

IP Address: 169.254.83.89
Subnet Mask: 255.255.0.0

Specifications

SY-MUHDBT-44P

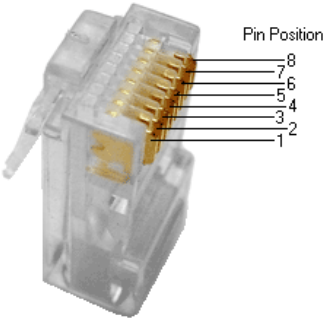
Video Inputs	4 x HDMI (Type A)
Video Outputs	4 x HDBaseT (RJ45) and 2 x HDMI (Type A)
Cat6 Cable Length	Up to 70 m @ 1080P, 40m @4K 4:4:4 30Hz (or 4K 4:2:0 60Hz)
Video Standards	HDMI (or DVI-D with converter cable)
Video Input Resolution	Up to 4K2K 4:2:0 @ 60Hz, 1080p @ 60Hz or 1080p 3D
HDCP Compliance	Supports HDCP 1.4a, auto and manual HDCP management
EDID Management	Built-in EDID data and manual EDID management
IR Inputs	4 (one per HDBaseT channel), 1 x IR Eye & 1 x Master IR
IR Outputs	4 (one per HDBaseT channel)
Audio Output	Stereo Analog (3 pin captive screw) and Digital Coax S/PDIF
Control Interfaces	4 x RS232 (one per HDBaseT channel), 1 x RS232 control and 1 x IP (optional)
Power Supply	24V DC 2.5A
Power Consumption	Fully Loaded: 48 W Unloaded: 20 W
Temperature	0 ~ + 45 ℃
Humidity	10 ~ 90% non-condensing
Weight	2.0 kg
Dimensions (W x H x D)	483 x 44 x 380 mm (1U rack mounting)

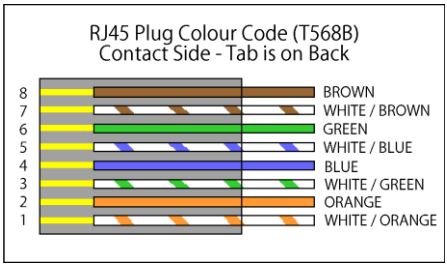
SY-MUHDBT-88P

Video Inputs	8 x HDMI (Type A)
Video Outputs	8 x HDBaseT (RJ45) and 4 x HDMI (Type A)
Cat6 Cable Length	Up to 70 m @ 1080P, 40m @4K 4:4:4 30Hz (or 4K 4:2:0 60Hz)
Video Standards	HDMI (or DVI-D with converter cable)
Video Input Resolution	Up to 4K2K 4:2:0 @ 60Hz, 1080p @ 60Hz or 1080p 3D
HDCP Compliance	Supports HDCP 1.4a, auto and manual HDCP management
EDID Management	Built-in EDID data and manual EDID management
IR Inputs	8 (one per HDBaseT channel), 1 x IR Eye & 1 x IR All
IR Outputs	8 (one per HDBaseT channel)
Audio Output	Stereo Analog (3 pin captive screw)
Control Interfaces	8 x RS232 (one per HDBaseT channel), 1 x RS232 control and 1 x IP (optional)
Power Supply	110V ~ 240V AC, 50 / 60 Hz
Power Consumption	Fully Loaded: 120 W Unloaded: 60 W
Temperature	0 ~ + 45 ℃
Humidity	10 ~ 90% non-condensing
Weight	5.6 kg
Dimensions (W x H x D)	483 x 88 x 380 mm (2U rack mounting)

RJ45 Wiring

Both connectors must be wired identically, to T568B standard.





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 & Maintenance

Loss of colour or no video signal output	Check that the cables are properly connected and are not damaged.
EDID management is not working correctly	Check the HDMI cable.
The screen remains blank screen when switching	Check that the display supports the resolution of the video source. Switch again or use the EDID management to manually set the resolution of the video source to a compatible output resolution. Check if there is a signal at the input. Check if there is a signal at the output. Check for damage to the cables or a loose connection. Try another cable to see if the fault clears. Check that the output port number matches the same as that being selected. If it is still the same after the above checking, maybe there is something wrong in the switcher. Please send it to the dealer for repairing.

RS232 control is not controlling the switcher	Check the COM port number in the software, also make sure the COM port is operating, the communication protocol is correct and that the RS232 cable is correctly wired.
The switcher cannot be controlled through the RS232 port, front panel buttons or by the IR remote	The unit may be faulty. Please return it to your dealer for repair.
Static electricity is observed when connecting the video or audio cables	This is most likely due to bad grounding, please check the grounding scheme and make sure it is properly connected, otherwise damage may be caused to the switcher.

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 supply provided. If an alternate supply is required, check the 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.