

Installation Guide

SY-MS51 and SY-MS51-AP

Scaling Presentation Switcher



3 HDMI, 2 VGA (RGBHV, YPbPr or Composite Video) inputs –
Simultaneous HDMI & HDBT outputs

SY-MS51 / SY-MS51-AP

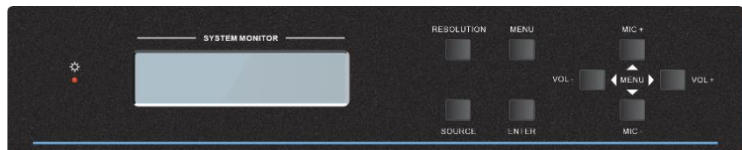
The SY-MS51 and SY-MS51-AP are 5 input scaling Presentation video switchers with 3 HDMI inputs and 2 VGA inputs. The SY-MS51 provides a local HDMI output whilst the SY-MS51-AP provides both a local HDMI output and a PoC HDBT output. These switchers can scale the output to one of seven selectable resolutions allowing the video output to match virtually any display device. The switcher can also be controlled manually from the front panel or from the included IR remote controller or through the RS232 interface.

Features

- 3 HDMI video inputs
- 2 VGA video inputs
- One HDMI video output
- One HDBT PoC output, up to 70m (SY-MS51-AP only)
- Manual switching from front panel or remote RS232 key pad
- RS232 control to or from the remote location (SY-MS51-AP only)
- Auto input selection mode
- IR remote control for video switching
- RS232 control for video switching
- HDMI 1.3 compatible with HDCP and CEC

Connectors and Controls

Front



Name	Description
Power LED	Unit powered
System Monitor	LCD display for operational mode and menu options
Resolution	Press to change the displayed output resolution Press and hold for more than 8 seconds to select Manual or Auto Resolution modes
Source	Press to select the next available input Press and hold for more than 8 seconds to select Manual or Auto Switching modes
Menu	Press to activate the on-screen menu Press and hold for more than 8 seconds to enable the firmware update procedure
Enter	Used in menu mode to make a selection
▲ / Mic+	Increase the mic / line volume - up direction button in menu mode
▼ / Mic-	Decrease the mic / line volume - down direction button in menu mode
▶ / Vol+	Increase the audio output volume - left direction button in menu mode
◀ / Vol-	Decrease the audio output volume - right direction button in menu mode



Figure 1 - SY-MS51 Rear Panel

Rear

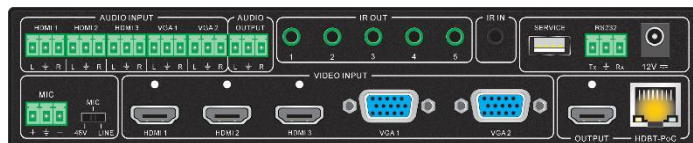


Figure 2 - SY-MS51-AP Rear Panel

The following connectors are available on both the SY-MS51 and the SY-MS51-AP

Name	Description
Audio Inputs	Audio inputs
Audio Output	Audio output from selected input signal
Mic	Microphone or Line input
Mic selection switch	Select 48V phantom power mic, unpowered mic or line level mode
Video Inputs	3 HDMI inputs and 2 VGA inputs
HDMI Output	HDMI output for local display device
Service	USB port for firmware updates only
RS232	RS232 port for local control commands and remote control commands
+12V	+12V DC input – centre positive

The following connectors are only available on the SY-MS51-AP:

HDBT PoC	HDBT output for remote display
IR Out	Outputs for IR emitters located close to the image source devices
IR In	Input from IR sensor for controlling image sources

The HDBT output also provides power for the remote SY-HDBT-70PR receiver (PoC). This HDBT receiver also has an IR sensor that can pass IR control commands to the IR outputs on the SY-MS51-AP Scaler switcher.

Using the HDMI Video Switcher

Connect up to 3 HDMI video sources to the HDMI INPUT connectors and up to 2 VGA sources to the VGA connectors. Connect an HDMI cable from the HDMI output to an HDMI display device. The HDBT-PoC output from SY-MS51-AP provides additional simultaneous HDMI signal to a remote display as far as 70m using the SY-HDBT-70PR receiver (cat6 cabling).

Whenever the SY-MS51 or SY-MS51-AP is powered up, it will restart in the last state it had before being switched off.

Manual Selection Mode

To use Manual selection mode, the System Monitor LCD must be displaying MANUAL after the current input selection. If the System Monitor is displaying AUTO, then press and hold the SOURCE button for more than **8 seconds** to turn off the Auto mode before making manual selections. Manual selection are made by briefly pressing the SOURCE button until the desired input is selected.

The selection sequence is: HDMI 1, HDMI 2, HDMI 3, VGA1 then VGA2.

Manual input selection can also be done by using the IR remote control or by sending the respective RS232 selection command detailed in RS232 Control Commands below.

Auto Selection Mode

The SY-MS51 / SY-MS51-AP has an automatic input selection mode. The auto selection mode ensures that there will be an image shown on the HDMI display device whenever an input source cable is removed, provided that there is still at least one functioning HDMI or VGA input signal still connected.

To enable the auto selection mode, press the SOURCE button for more than **8 seconds**, until the System Monitor text changes from MANUAL to AUTO. In this mode the SY-MS51 / SY-MS51-AP behave in the following manner:

1. It will automatically select to the next highest available input whenever the currently selected input source stops providing a signal.
2. When a new signal appears at any input, that input is automatically selected.
3. If the signal for a non-selected input is stopped, the unit will switch to the first lowest numbered input that has a valid signal.

Manual selection is not possible while the System Monitor LCD is displaying AUTO. To return to manual switching mode you must press the SOURCE button for more than **8 seconds** until the System Monitor LCD changes from AUTO to MANUAL.

Auto selection can also be activated by using the AUTO button in the INPUT SOURCE section of the IR remote control or by sending the RS232 selection command detailed in RS232 Control Commands below.

Auto Resolution Mode

Pressing the Resolution button for more than 8 seconds instructs the SY-MS51 or SY-MS51-AP to read the EDID information from the remote display, if present, or from the local display if there is no remote display. If the display has a compatible default timing resolution that matches one of the MS51 resolutions then that will be the output resolution chosen, otherwise the output resolution remains unchanged.

In manual mode the output resolution is set by briefly pressing the Resolution button repeatedly until the desired output resolution is displayed on the System Monitor LCD.

SY-MS51 / SY-MS51-AP

IR Remote Control

The SY-MS51 and the SY-MS51-AP is supplied with a remote control key pad that allows the operator to change the input selection provided that there is a direct line of sight to the IR detector that is connected to the IR IN connector on the back of the SY-MS51 or the SY-MS51-AP unit. Simply make your selection from the IR remote key pad.

Mic / Line Input Mode Selection

The SY-MS51 and SY-MS51-AP both have a Mic / Line input connector that can be used for balanced or unbalanced audio signals. Be sure to set the mode switch correctly for the intended signal source.

- 48V should only be used for phantom powered condenser type microphones
- Mic should be used for dynamic or self-powered condenser microphones
- Line should be used for line level signals

For unbalanced signal sources, connect the unused input terminal to the central ground terminal.

RS232 Control Location

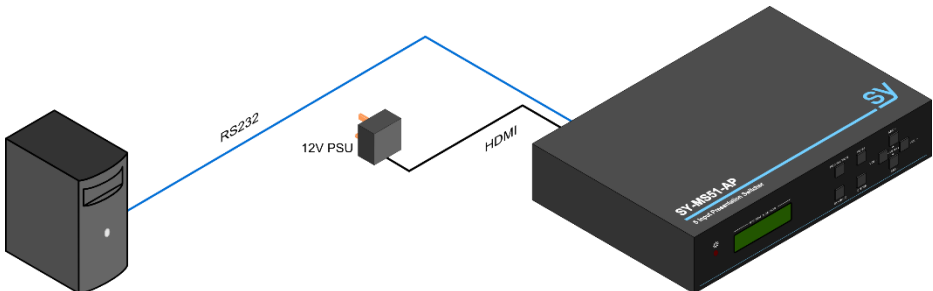
The SY-MS51 can only be controlled from its location, whereas the SY-MS51-AP can be controlled using RS232 commands from either the location where the switcher is located, or from the location where the SY-HDBT-70PR receiver is located. Three RS232 control modes are available for controlling the SY-MS51-AP. Note that transmission of RS232 commands through the SY-HDBT-70PR is only possible when using the SY-MS51-AP switcher.

1. Local RS232 control with no control of a third-party device at the remote location, connected to the SY-HDBT-70PR.
2. Local RS232 control with RS232 control of a third-party device at the remote location, connected to the SY-HDBT-70PR.
3. RS232 control of the SY-MS51-AP from the remote location via the SY-HDBT-70PR.

Configuring for Local RS232 Control

Without RS232 Control of a Third-Party Device

The diagram below shows the RS232 connection for local control of the **SY-MS51** or **SY-MS51-AP**. This configuration does not allow the transmission of RS232 commands to a remote device.

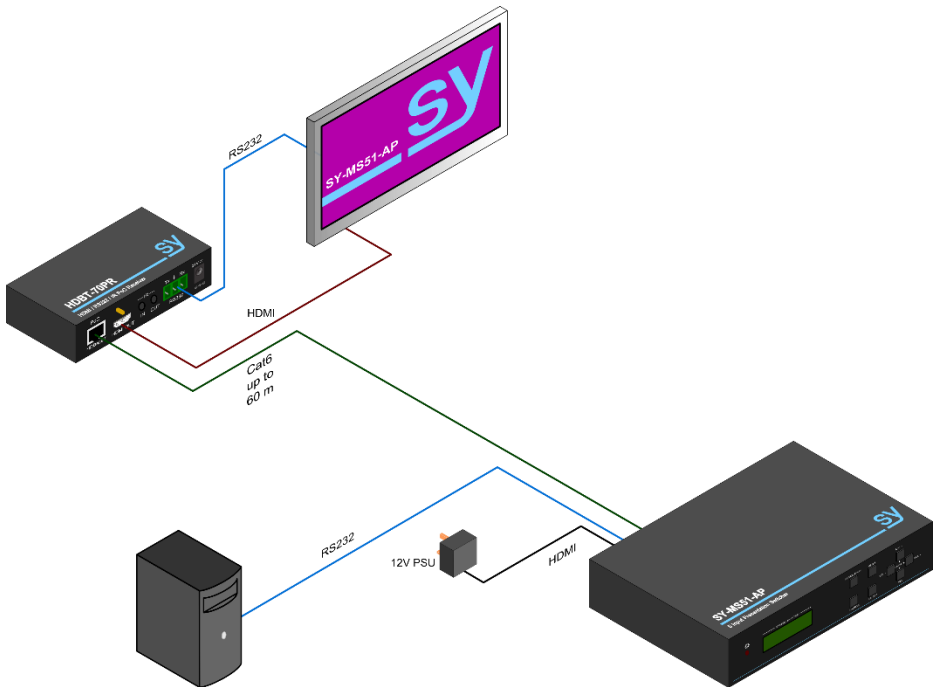


SY-MS51 / SY-MS51-AP

1. Connect the RS232 controller to the RS232 connector on the SY-MS51 or SY-MS51-AP.
2. Send the RS232 command 50788% to the SY-MS51 or SY-MS51-AP.
3. Send RS232 commands to control the swither (see the **RS232 Control Commands** section).

With RS232 Control of a Third-Party Device

The diagram below shows the RS232 connection for local control of the SY-MS51-AP. This configuration also allows the transmission of RS232 commands to a remote device (the HDMI display device in this example) connected to the SY-HDBT-70PR. This RS232 configuration is the factory default setting for the SY-MS51-AP.



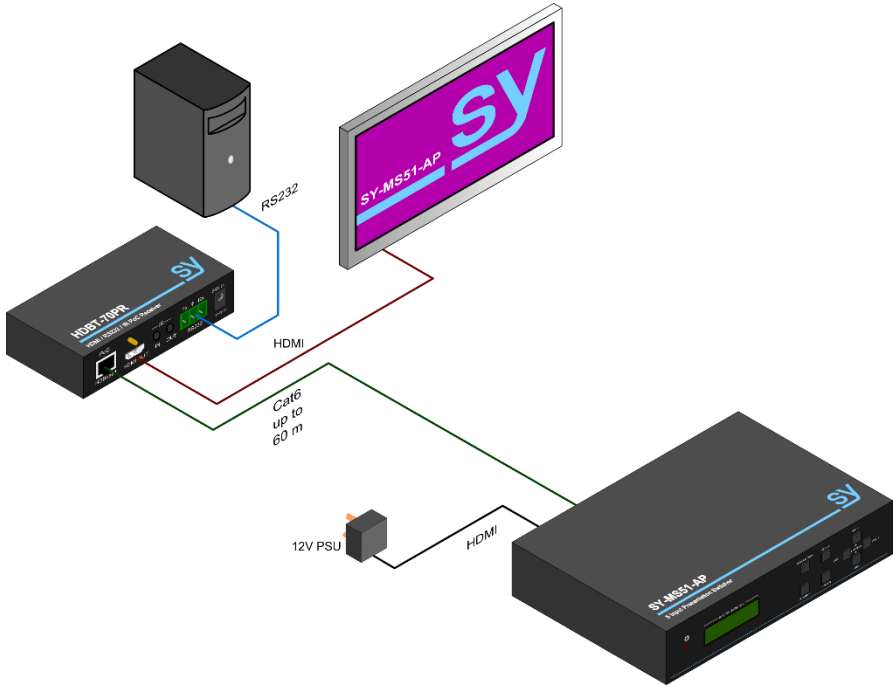
1. Connect the RS232 controller to the RS232 connector on the SY-MS51-AP.
2. Send the RS232 command 50787% to the SY-MS51-AP.
3. Send RS232 commands to control the swither – see the **RS232 Control Commands** section.

Configuring for Remote RS232 Control

The diagram below shows the RS232 connection for control of the SY-MS51-AP from a remote location. This configuration does not allow the transmission of RS232 commands to a remote device.

SY-MS51 / SY-MS51-AP

1. Connect the RS232 controller to the RS232 connector on the SY-HDBT-70PR connected to the SY-MS51-AP.
2. Send the RS232 command 50788% to the SY-HDBT-70PR.
3. Send RS232 commands to control the swither – see the **RS232 Control Commands** section.



RS232 Control Commands

The following RS232 commands provide control of the SY-MS51 / SY-MS51-AP from a PC, laptop or programmable control panel. The RS232 settings are: 9600 baud, 8 bits, no parity, and 1 stop bit.

Action	Command	Response
Input Selection		
Select input HDMI 1	50701%	switch[spc]to[spc]hdmi1[spc][cr][lf]
Select input HDMI 2	50702%	switch[spc]to[spc]hdmi2[spc][cr][lf]
Select input HDMI 3	50703%	switch[spc]to[spc]hdmi3[spc][cr][lf]
Select input VGA 1	50704%	switch[spc]to[spc]vga1[spc][cr][lf]
Select input VGA 2	50705%	switch[spc]to[spc]vga2[spc][cr][lf]

SY-MS51 / SY-MS51-AP

Action	Command	Response
Enable Auto Selection Mode	50785%	Open [spc] Source [spc] Auto [spc] [cr] [lf]
HDMI Audio and HDCP Options		
Enable HDMI embedded audio output	50648%	Digital [spc] Sound [spc] Output : [spc] Enable [spc] [cr] [lf]
Disable HDMI embedded audio output	50649%	Digital [spc] Sound [spc] Output : [spc] Disable [spc] [cr] [lf]
Use HDMI 1 Embedded Audio	50706%	HDMI1 [spc] AUDIO [spc] [cr] [lf]
Use External Audio 1 input	50707%	LINE1 [spc] AUDIO [spc] [cr] [lf]
Use HDMI 2 Embedded Audio	50708%	HDMI2 [spc] AUDIO [spc] [cr] [lf]
Use External Audio 2 input	50709%	LINE2 [spc] AUDIO [spc] [cr] [lf]
Use HDMI 3 Embedded Audio	50710%	HDMI3 [spc] AUDIO [spc] [cr] [lf]
Use External Audio 3 input	50711%	LINE3 [spc] AUDIO [spc] [cr] [lf]
Enable HDCP	50793%	HDMI [spc] OUT [spc] HDCP [spc] On [spc] [cr] [lf]
Disable HDCP	50794%	HDMI [spc] OUT [spc] HDCP [spc] Off [spc] [cr] [lf]
Output Resolution		
Set output resolution to 1360x768 HD	50619%	Resolution: 1360*768 [spc] [cr] [lf]
Set output resolution to 1920x1200 WUXGA	50620%	Resolution: 1920*1200 [spc] [cr] [lf]
Set output resolution to 1600x1200 UXGA	50621%	Resolution: 1600*1200 [spc] [cr] [lf]
Set output resolution to 1024x768 XGA	50626%	Resolution: 1024*768 [spc] [cr] [lf]
Set output resolution to 1280x720 720P	50627%	Resolution: 1280*720 [spc] [cr] [lf]
Set output resolution to 1280x800 WXGA	50628%	Resolution: 1280*800 [spc] [cr] [lf]
Set output resolution to 1920x1080 HD	50629%	Resolution: 1360*768 [spc] [cr] [lf]
Use Auto Resolution	50782%	See below for the full response text.
RS232 Control Location		
Control SY-MS51 from local RS232 controller	50787%	Pc [spc] control [spc] far [spc] end [spc] [cr] [lf]
Control SY-MS51 from both local and remote RS232 controllers	50788%	Far [spc] end [spc] control [spc] 51T [spc] [cr] [lf]

SY-MS51 / SY-MS51-AP

Action	Command	Response
Audio Control Commands		
Mute Line & Mic audio	50720%	LINE [spc]Mute [spc]On [spc] [cr] [lf] MIC [spc]Mute [spc]On [spc] [cr] [lf]
Unmute Line & Mic audio	50721%	LINE [spc]Mute [spc]Off [spc] [cr] [lf] MIC [spc]Mute [spc]Off [spc] [cr] [lf]
Mute Mic audio	50722%	LINE [spc]Mute [spc]On [spc] [cr] [lf]
Unmute Mic audio	50723%	LINE [spc]Mute [spc]Off [spc] [cr] [lf]
Mute Line audio	50600%	LINE [spc]Mute [spc]On [spc] [cr] [lf]
Unmute Line audio	50601%	LINE [spc]Mute [spc]Off [spc] [cr] [lf]
Increase Mic volume	50724%	MicVolume [spc]++ [spc] [cr] [lf]
Decrease Mic volume	50725%	MicVolume [spc]-- [spc] [cr] [lf]
Set Mic Volume to XX (Range from 00 to 60)	508XX%	MIC [spc]Volume : [spc]XX [spc] [cr] [lf]
Increase Line volume	50602%	LINE [spc]Volume : [spc]XX [spc] [cr] [lf]
Decrease Line volume	50603%	LINE [spc]Volume : [spc]XX [spc] [cr] [lf]
Set Line volume to XX (Range from 00 to 60)	501XX%	LINE [spc]Volume : [spc]XX [spc] [cr] [lf]
CEC Commands		
Enable CEC	50686%	Enable [spc]HDMI [spc]CEC [cr] [lf]
Disable CEC	50687%	Disable [spc]HDMI [spc]CEC [cr] [lf]
Play & Pause	50901%	CEC [spc]cmd : [spc]play&pause [cr] [lf]
Stop	50902%	CEC [spc]cmd : [spc]stop [cr] [lf]
Menu	50903%	CEC [spc]cmd : [spc]menu [cr] [lf]
Rewind	50904%	CEC [spc]cmd : [spc]rev [cr] [lf]
Fast Forward	50905%	CEC [spc]cmd : [spc]fwd [cr] [lf]
Up	50906%	CEC [spc]cmd : [spc]up [cr] [lf]
Down	50907%	CEC [spc]cmd : [spc]down [cr] [lf]
Left	50908%	CEC [spc]cmd : [spc]left [cr] [lf]
Right	50909%	CEC [spc]cmd : [spc]right [cr] [lf]
Confirm command	50910%	CEC [spc]cmd : [spc]select [cr] [lf]
Exit command	50911%	CEC [spc]cmd : [spc]exit [cr] [lf]
EDID Commands		
Restore default EDID	50767%	EDID : [sp]initial [cr] [lf]
Bypass EDID (from output to selected input)	50768%	EDID : [sp]bypass [cr] [lf]
Upload custom EDID	50769%	Please [sp]send [sp]edid [sp]data [sp]within [sp]10 secs! [cr] [lf]

SY-MS51 / SY-MS51-AP

Action	Command	Response
Return EDID status	50770%	One of the following: EDID: [sp] initial [cr] [lf] EDID: [sp] bypass [cr] [lf] EDID: [sp] user [cr] [lf]
Standby commands		
Go to standby mode	50797%	Go [sp] to [sp] standby! [cr] [lf]
Wake up from standby	50697%	Wake [sp] up! [cr] [lf]

Notes:

- The actual response will always reflect the true response to the RS232 command.
- Auto Selection mode is automatically disabled when a manual selection command is sent.
- The [spc], [cr] and [lf] represent the single ASCII character value for the 'space', 'carriage return' and 'line feed' respectively.
- This list only details the most commonly used commands, for a complete set of RS232 please visit www.sy.co.uk and download the following document: **Complete RS232 Command List for SY-MS51 and SY-MS51-AP.pdf**.
- The full response message to the Auto Resolution command is as follows:

```

modify [spc] input [spc] hdmi [spc] preferred [spc] timing [cr] [lf]
rotarySwitch==57 [cr] [lf]
Manage [spc] HDMI [spc] input [spc] with [spc] preferred [spc] timing [cr] [lf]
timing [spc] table=[1] [cr] [lf]
Resolution: [spc] [h]x[v] [cr] [lf]
  
```

Where [h] and [v] represent the chosen horizontal and vertical resolution values.

Specifications

General

HDMI Resolutions	480i, 480p, 720i, 720p, 1080i, 1080p, 1920 x 1200
HDMI Standard	HDMI 1.3 with HDCP and CEC
VGA Inputs	RGBHV, YPbPr or Composite video
Power Supply	12V DC
Power Consumption	8 W max (not including SY-HDBT-70PR)
RS232	9600, 8 data bits, 1 stop bit, no parity – No handshaking

CEC mode can be enabled or disabled using the RS232 commands detailed above.

Environmental

Operating Temperature	0 - 40 °C non condensing
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Physical

Dimensions (W x H x D)	220 x 44 x 148 mm
Weight	700 g

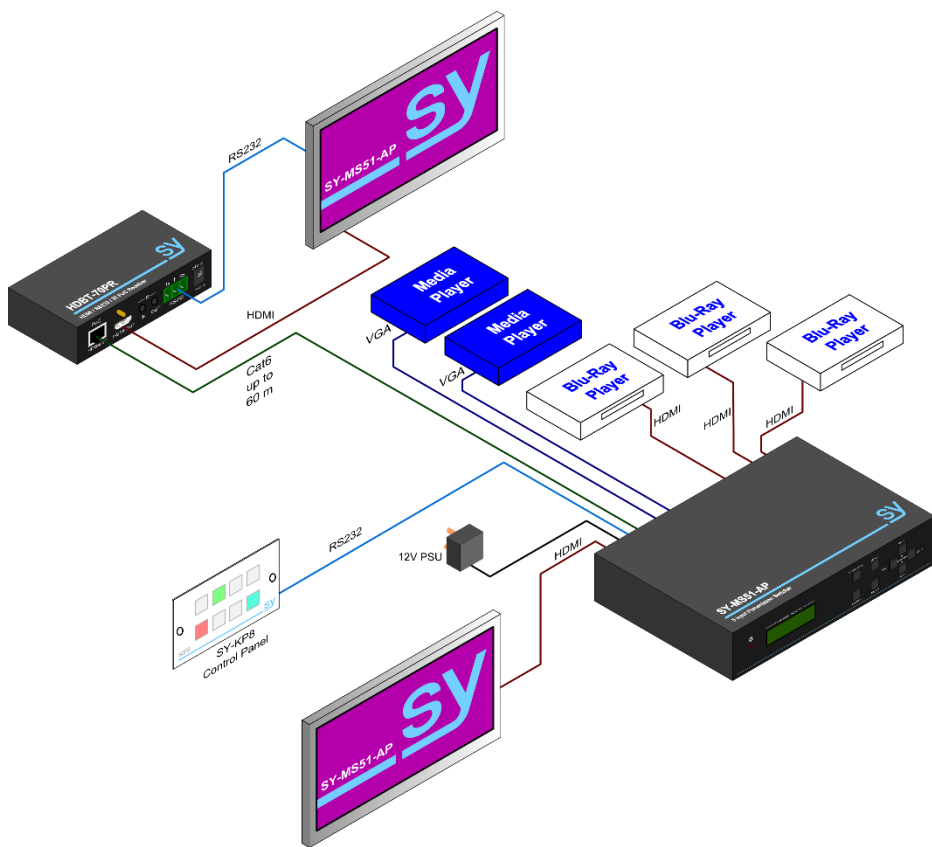


Figure 3 – SY-MS51-AP Connection Diagram

The SY-MS51 is connected likewise, but without the cat6 cable, the SY-HDBT-70PR and the remote display device.

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 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. 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.