User Manual

# HDBT-662

## 6 Input Dual Zone HDBaseT Distribution Amplifier

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The SY-HDBT-662 is a six input distribution amplifier with dual output zones. Available inputs are four HDMI inputs, one DisplayPort input and one VGA input. Each of the two output zones provides a local HDMI output and three HDBaseT outputs, the input source for these zones are independently selectable from either the front panel buttons, using RS232 commands or the Ethernet port.

# Features

- Four HDMI inputs, one DisplayPort input and one VGA input
- HDMI input 1 supports up to HDCP 2.2
- Two output zones each with a local HDMI output and three HDBaseT outputs
- Illuminated front panel buttons for each input and output combination
- RS232 or Ethernet control
- Separate RS232 port for the HDBaseT outputs
- IR control to or from the remote location via the HDBaseT outputs

# Connectors and Controls

## Front


| Button Group | Description |
|---|---|
| **ZONE 1** | Press the desired button to select that input to the ZONE 1 output group |
| **ZONE 2** | Press the desired button to select that input to the ZONE 1 output group |

## Rear


| Connector | Description |
|---|---|
| **48V DC PSU Input** | 48V DC power supply input |
| **Audio** | Audio input for VGA input |
| **VGA** | VGA input connector |
| **DP** | DisplayPort connector |
| **HDMI 1 – HMDI 4** | HDMI Inputs |
| **ZONE 1 – HDMI** | Local HDMI output for Zone 1 |
| **ZONE 1 – HDBT 1-3** | Three remote HDBaseT outputs for Zone 1 |
| **ZONE 2 – HDMI** | Local HDMI output for Zone 2 |
| **ZONE 2 – HDBT 1-3** | Three remote HDBaseT outputs for Zone 2 |
| **Audio Out – Zone 1** | Audio output from the selected input for Zone 1 |
| **Audio Out – Zone 2** | Audio output from the selected input for Zone 2 |
| **Control – RS232** | RS232 signals for the HDBaseT ports in both Zones |
| **Control – RS232 CTL** | RS232 signals for controlling the HDBT-662 |
| **Control – Ethernet** | Ethernet port for controlling the HDBT-662 |
| **Control – Input Select** | Allows selection of any input to either Zone 1 or Zone 2 |
| **IR IN – Zone 1** | IR input from IR EYE for Zone 1 HDBaseT outputs |
| **IR IN – Zone 2** | IR input from IR EYE for Zone 2 HDBaseT outputs |
| **IR OUT – Zone 1** | IR output from Zone 1 HDBaseT receivers |
| **IR OUT – Zone 2** | IR output from Zone 2 HDBaseT receivers |

| Connector | Description |
|---|---|
| **SERVICE** | For use by Service personnel only |

# Using the SY-HDBT-662

Up to four HDMI sources, one DisplayPort source and one VGA source may be connected to the SY-HDBT-662. Each of these inputs can be independently selected to the two output zones. The output connectors in a single Zone will all show the same input signal, but each output Zone can show different inputs.

For example, the HDMI and HDBaseT outputs in Zone 1 can all be showing HDMI input 2, while the HDMI and HDBaseT outputs in Zone 2 are showing HDMI input 4.

The Zone 1 L+R Audio Output will output the audio from the selected input for Zone 1, and the Zone 2 L+R Audio Output will output the audio from the selected input for Zone 2. So, using the above example, Zone 1 Audio Out will have the de-embedded audio from HDMI input 2, and Zone 2 Audio Out will have the de-embedded audio from HDMI input 4.

The input selection to each Zone may done using any of the following control methods:

- Front Panel buttons
- RS232 commands
- Ethernet port
- I/O Control

RS232 and IR control signals can also be passed between the HDBT-662 and the connected HDBaseT receivers.

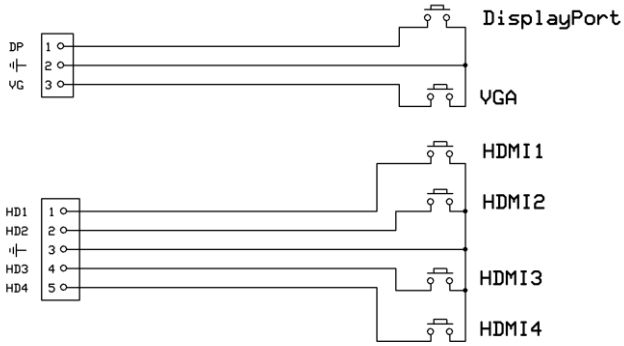
## Front Panel LED Indications

The front panel selection LEDs (and those on the external switch box, if fitted) provide feedback on the input signal status:

- A valid input signal is indicated by a solid LED
- A no signal state is indicated by a flashing LED

## Using an External Switches

The SY-HDBT-662 has an interface for Input selection, using simple external Push Button switches, as shown in the following schematic:




For each connector, pin 1 is left-most when viewed from the rear of the HDBT-662.

An LED can be used in parallel with each switch, mirroring the input selection status as per front panel (FP). Any input selection (from FP, external PB switches, RS232) is accordingly reflected on all FP LEDs, External PB switches/LEDs, and the RS232.

The output that is controlled by the external switch can be set using an RS232 command. The available settings are: Zone 1 only; Zone 2 only or both Zone 1 and Zone 2 together.

An additional feature provided by this external keypad is that each time the DP and VG buttons are pressed simultaneously, the controlled output Zone toggles between controlling Zone 1 only, controlling Zone 2 only, or controlling both Zones together. The controlled output Zone setting is indicated by all the button LEDs of the Zone lighting up briefly when the VG and DP buttons are released.

# RS232-CTL Commands

All RS232 commands are sent with the following settings:

57600 baud, 8 data bits, no parity and one stop bit.

Commands are not case sensitive, but must always be followed by a carriage-return (0x0d). All spaces are optional, but are shown in the command tables for clarification.

All response messages are in uppercase and provide an acknowledgement of the command or reply with the requested data. All responses are terminated with a carriage-return & line-feed sequence (0x0d 0x0a).

## *System Settings*

| Command | Description |
|---|---|
| H | Get a list of all available commands |
| STA | Get a verbose list of all current system settings |
| GET STA | Get a short list of the current system settings |
| SET ADDR xx | Set the system address to xx |
| GET ADDR | Set the system address |
| SET HIP aaa.bbb.ccc.ddd | Set a new Host IP address |
| GET HIP | Get the current Host IP address (default: 192.168.1.239) |
| SET RIP aaa.bbb.ccc.ddd | Set a new router IP address |
| GET RIP | Get the current Router IP address (default: 192.168.1.239) |
| SET NMK aaa.bbb.ccc.ddd | Set a new network mask |
| GET NMK | Get the current network mask (default: 255.255.255.0) |
| SET TCP nn | Set a new TCP port number |
| GET TCP | Get the current TCP port number (default: 23) |
| SET DHCP x | Set the DHCP status, where x is 0 = OFF (Static IP) and 1 = ON |
| GET DHCP | Get the current DHCP status |

## *Video Settings*

| Command | Description |
|---|---|
| SET OUTx VS INy | Set the output x to input y.<br>Where x is: 0 input y is selected to both output zones<br>1 for zone outputs, or 2 for Zone 2 outputs<br>Where y is: 1 – 4 (HDMI 1 – 4), 5, (DisplayPort), or 6 (VGA) |
| GET OUTx VS | Get the currently selected input for output zone x (1 or 2) |

## *Audio Settings*

| Command | Description |
|---|---|
| SET OUTx EXA EN | Enable the external audio for output zone x (1 or 2) |
| SET OUTx EXA DIS | Disable the external audio for output zone x (1 or 2) |
| GET OUTx EXA | Get the status of the external audio for output zone x (1 or 2) |

## *EDID Commands*

| Command | Description |
|---|---|
| SET INx EDID y | Set the HDMI or DisplayPort input EDID to setting y – see Default EDID Settings in the table below.<br>Where x is: 1 – 4 (HDMI 1 – 4) or 5 (DisplayPort) |
| SET IN6 EDID y | Set the VGA input EDID to setting y – see Default EDID Settings in the table below |
| GET INx EDID | Get the index number for the current EDID setting for input x<br>Where x is: 1 – 4 (HDMI 1 – 4), 5 (DisplayPort), or 6 (VGA) |
| SET INx EDID CY OUTy | Copy the display EDID from output y to input x<br>Where x is: 1 – 4 (HDMI 1 – 4), 5 (DisplayPort), or 6 (VGA)<br>and y is: 1 (Zone 1 output), or 2 (Zone 2 output) |
| SET INx EDID Uy DATAz | Copy EDID data z to User Memory y for input x.<br>Please note: to ensure proper operation of the HDBT-662 and the video source, the EDID values for parameter z must be a valid EDID data block of either 128 or 256 bytes. (VGA normally requires 128 bytes, but HDMI and DisplayPort must have 256 bytes of EDID data). |
| GET INx EDID y DATA | Get the EDID data for setting y used by input x<br>Where x is: 1 – 4 (HDMI 1 – 4), or 5 (DisplayPort)<br>and y is the index value given below in the Default EDID Settings table |
| GET IN6 EDID y DATA | Get the EDID data for setting y used by the VGA input<br>and y is the VGA index value given below in the Default EDID Settings table |
| GET OUTx EDID DATA | Get the EDID data for the display device connected to the SY-HDBT-70SR receiver |

## Back Panel PB Input Selection

| Command | Description |
|---|---|
| SET BP SEL BUTx | Set rear panel I/O for source switching to HDMI, HDBaseT or Both |
| GET BP SEL BUT | Get the current rear panel I/O control mode |

## EDID Settings

Please note that the HDMI, DisplayPort and VGA inputs have the following differences:

| Input | HDMI & DisplayPort | VGA |
|---|---|---|
| Default EDID Settings | 24 | 1 |
| User EDID Memories | 3 | 3 |

## Default EDID Settings

The following values are permitted for the `y` value in the `SET INx EDID y` and `SET INx EDID y` commands.

| Y value | IN1 – 4 (HDM1 – HDMI4I) / IN5 (DisplayPort) | IN6 (VGA) |
|---|---|---|
| **0** | 1080P 2Ch audio (PCM) | VGA 1080p |
| **1** | 1080P 6Ch audio | USER1 EDID Memory |
| **2** | 1080P 8Ch audio | USER2 EDID Memory |
| **3** | 1080P 3D 2Ch audio (PCM) | USER3 EDID Memory |
| **4** | 1080P 3D 6Ch audio | Not valid |
| **5** | 1080P 3D 8Ch audio | Not valid |
| **6** | 4K 30Hz 3D 2Ch audio (PCM) | Not valid |
| **7** | 4K 30Hz 3D 6Ch audio | Not valid |
| **8** | 4K 30Hz 3D 8Ch audio | Not valid |
| **9** | 4K 60Hz (Y420) 3D 2Ch audio (PCM) | Not valid |
| **10** | 4K 60Hz (Y420) 3D 6Ch audio | Not valid |
| **11** | 4K 60Hz (Y420) 3D 8Ch audio | Not valid |
| **12** | 1080P 2Ch audio (PCM) HDR | Not valid |
| **13** | 1080P 6Ch audio HDR | Not valid |
| **14** | 1080P 8Ch audio HDR | Not valid |
| **15** | 1080P 3D 2Ch audio (PCM) HDR | Not valid |
| **16** | 1080P 3D 6Ch audio HDR | Not valid |
| **17** | 1080P 3D 8Ch audio HDR | Not valid |
| **18** | 4K 30Hz 3D 2Ch audio (PCM) HDR | Not valid |
| **19** | 4K 30Hz 3D 6Ch audio HDR | Not valid |
| **20** | 4K 30Hz 3D 8Ch audio HDR | Not valid |
| **21** | 4K 60Hz (Y420) 3D 2Ch audio (PCM) HDR | Not valid |
| **22** | 4K 60Hz (Y420) 3D 6Ch audio HDR | Not valid |
| **23** | 4K 60Hz (Y420) 3D 8Ch audio HDR | Not valid |
| **24** | USER1 EDID memory | Not valid |
| **25** | USER2 EDID Memory | Not valid |
| **26** | USER3 EDID Memory | Not valid |

## RS232-CTL to Remote HDBT Commands

| Command | Description |
|---|---|
| `SET SEPM x EN/DIS` | Set data (8bit, no parity, 1 stop) Baud rate, and Enable or Disable RS232 communications<br>x is: 0 = 57600 1 = 1200 2 = 2400 3 = 4800 4 = 9600<br>5 = 14400 6 = 19200 7 = 38400 8 = 56000 9 = 115200 |
| `GET SEPM` | Get RS232 Enable/Disable state |
| `SET BPSEL HDBTx` | Set HDBaseT output x to the RS232_CTL port for RS232 pass through<br>Where x is: 1 – 3 for Zone 1 HDBaseT outputs 1 to 3, or<br>4 – 6 for Zone 2 HDBaseT outputs 1 to 3 |
| `GET BPSEL HDBT` | Get the current HDBaseT output that is set for RS232 pass-through |

## IR Code Setup

| RS232 Command | Command Details |
|---|---|
| `SET IR SYS xx yy` | Set IR System Code<br>Where xx and yy define a 16-bit address, each in the range [00-FF] (Factory default is 00 FF) |
| `SET IR OUTx INy CODE zz` | Set selection IR Data Code {x[1~2], y[1~6], zz[00~FF]}<br>Define the IR data code to select the inputs and outputs:<br>Output x is: **1** = Zone 1 output, or **2** = Zone 2 output<br>Input y is: **1** - **4** = HDMI inputs 1 to 4<br>**5** = DisplayPort input<br>**6** = VGA input<br>Data value zz is a unique value for the specified input and output combination.<br>Default IR values are: Local Remote<br>HDMI 1 Input 0x80 0x90<br>HDMI 2 Input 0x82 0x92<br>HDMI 3 Input 0x84 0x94<br>HDMI 4 Input 0x86 0x96<br>DisplayPort Input 0x88 0x98<br>VGA Input 0x8a 0x9a |
| `GET IR SYS` | Get the current IR System Address Code |
| `GET IR OUTx INy CODE` | Get IR Data Code for {x[0~2], y[1~6]}<br>x[0~2] 0 = Both outputs, 1 = Zone 1 output, 2 = Zone 2 output<br>y[1~6] 1 - 4 = inputs HDMI 1 to 4, 5 = DP, 6 = VGA |
| `SET IR ALL EN/DIS` | Use Enable mode to set Zone 1 IR IN to output to both Zone 1 and Zone 2<br>Use Disable to set Zone 1 IR IN to output only to Zone 1 |

# Using the Web Interface

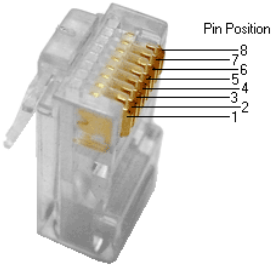
The SY-HDBT-662 also has a built-in web interface that can also be used to control the unit for input selections, EDID settings and network management. The default IP settings are:

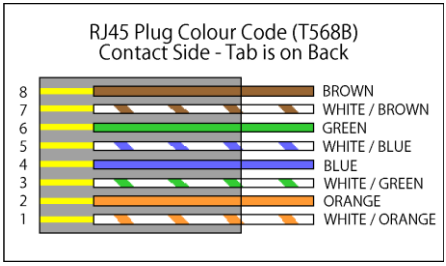
| | |
|---|---|
| Host IP: | 192.168.1.239 |
| Gateway: | 192.168.1.1 |
| Network mask: | 255.255.255.0 |
| TCP Port: | 23 |
| DHCP: | Off |

These settings can also be used to send the RS232 commands over a LAN connection with the sender set up as a TCP Client.

# RJ45 Wiring

Both connectors must be wired identically.




HDBT will not pass through any Ethernet device, the HDBT port on the SY-MFT21 must be connected directly to the HDBT port on the SY-HDBT-70SR.

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.

# Specifications

| Items | Description |
|---|---|
| **HDMI / DisplayPort Video Input/output** | VESA and SMPTE 480p to 2160p (4K UHD) with 3D. (All resolutions to: 4096x2160p @60Hz 4:2:0 8bit, 3840x2160p @30Hz 4:4:4 8bit)<br>All PC resolutions to 1920x1200 |
| **VGA Video Input** | The following VGA resolutions are supported:<br>800x600, 1024x768, 1280x768, 1280x800, 1280x1024, 1400x1050, 1600x1200, 1920x1080 and 1920x1200. |
| **HDMI Audio Input/output** | Pass through: All HDMI audio formats including Dolby D (TrueHD) / DTS (HD-Master Audio) / PCM.<br>Channel count: from 2-8 (2.0 to 7.1)<br>Sample rates: 32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz and 192 kHz |
| **De-embedded Audio out** | PCM 2.0 channel from HDBT output, onto 3 pin Phoenix connector.<br>Stereo L/R, 0.7V Rms – 20Hz-20KHz |
| **Power Supply** | 48V DC @ 2.0A max. |
| **Power Consumption** | 17.3W with one receiver (add 6.5W per additional receiver)<br>50W max. (all HDBaseT outputs in use) |
| **HDBaseT Outputs** | Max 70m (230feet) of cat6a, @ 1080p. HDMI video, RS232, IR control, PoC<br>PoC is available only when SY-HDBT-SLIM-70SR is detected on the HDBT output. |
| **Control** | RS232 & IR Full function bi-directional pass-though<br>RS232-CTL port – 57,600 Baud, no Parity, 1 Stop bit |
| **Dimensions** | 438 x 225 x 44mm (19in x 1U rack mounting) |
| **Case Material** | Steel chassis |
| **Weight** | 3 kg |

## 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.

## NOTES

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