

BLACKBIRD™



4K 8x8 HDBaseT™ Matrix with 6 Receivers

PN 39670 < RS-232 GUIDE

INTRODUCTION

This Blackbird™ device can be controlled by a computer using an RS-232 serial connection and by issuing commands using RS-232 control software.

CONNECTION

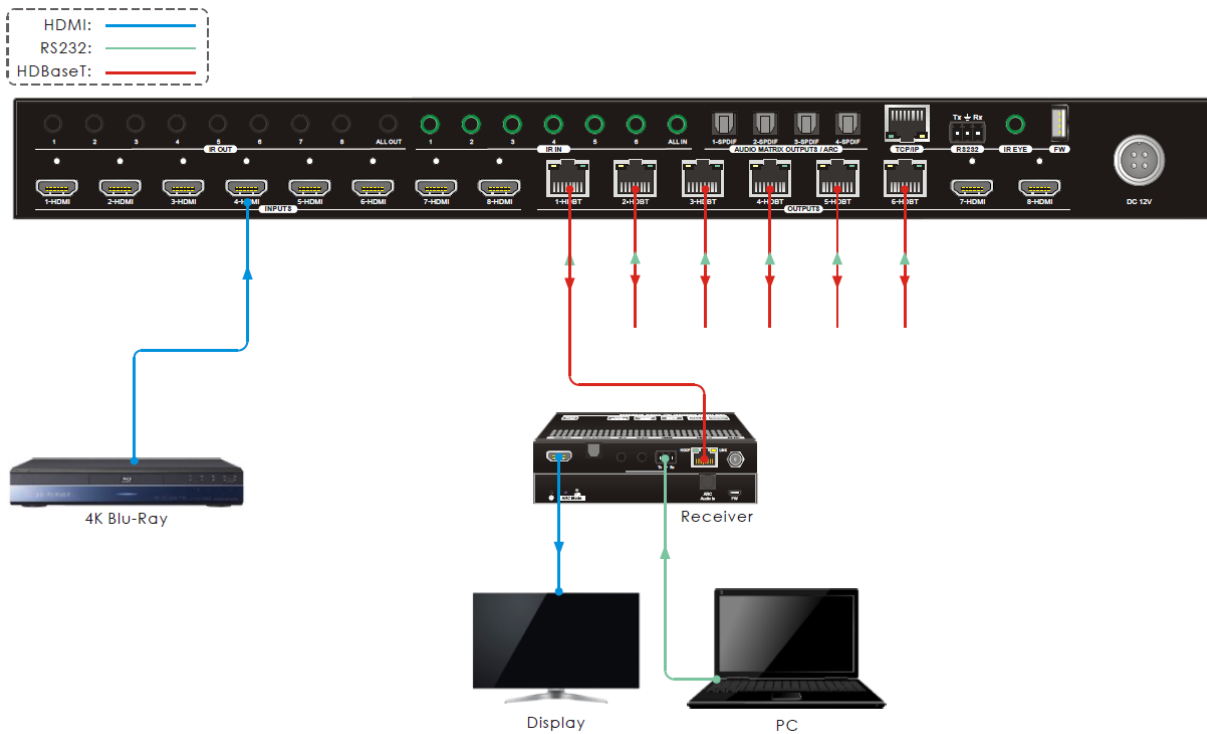
This device includes a **3-pin to DB-9** RS-232 cable, which is used to connect your PC to the matrix or one of the receivers to allow for matrix control. You can also control of third party devices connected to the matrix or one of the receivers. If your PC lacks a DB-9 serial port, you will need to use a USB to Serial adapter cable (available separately P/N 3726). Refer to the full *User's Manual* for connection details.

Controlling the Matrix with a PC Connected to the Matrix



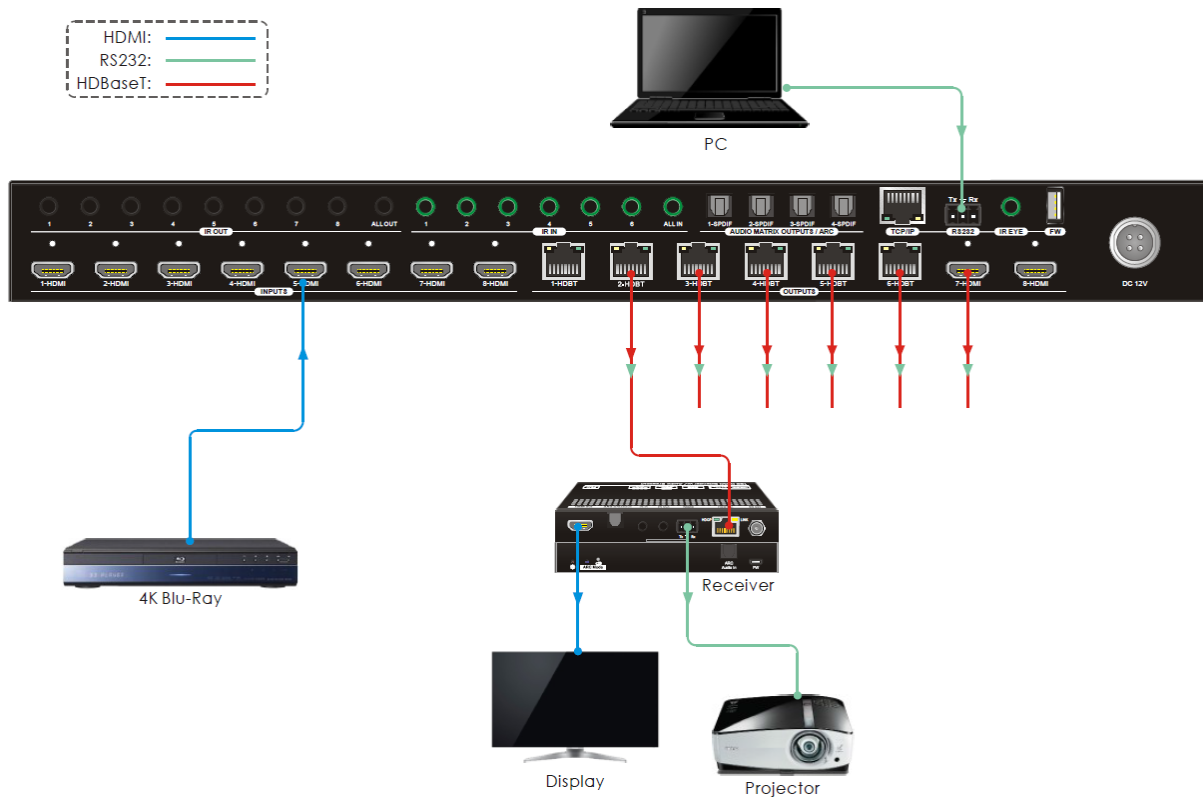
- Plug one end of the included RS-232 cable into the **RS232** connector on the matrix rear panel, then plug the other end into an available COM port on your PC.

Controlling the Matrix with a PC Connected to a Receiver



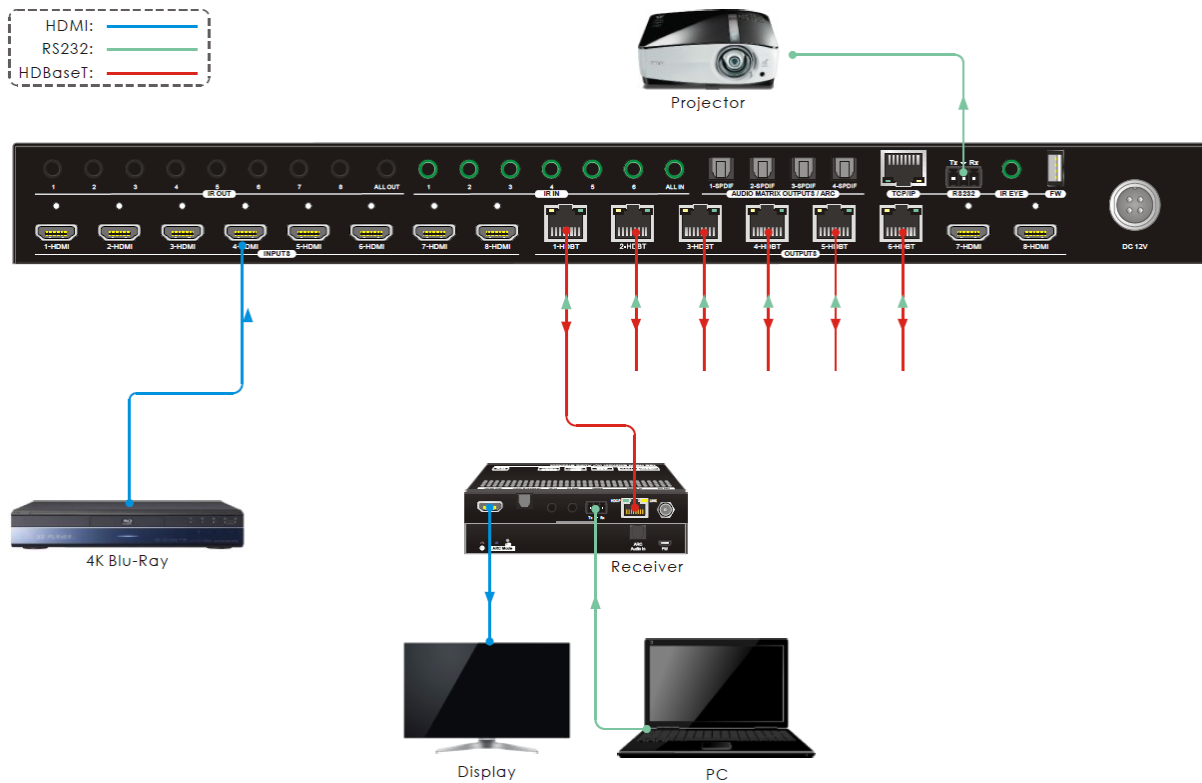
1. Plug one end of the included RS-232 cable into the **RS232** connector on one of the receivers, then plug the other end into an available COM port on your PC.
2. Using RS-232 control software, send the **RS232RCMxxON.** command to enable remote RS-232 control, where xx=00 for all HDBaseT™ receivers or 01-06 for an individual receiver. Refer to the *RS-232 COMMANDS* section for command details.

Controlling a Remote Third-Party Device with a PC Connected to the Matrix



1. Plug one end of the included RS-232 cable into the **RS232** connector on the matrix rear panel, then plug the other end into an available COM port on your PC.
2. Plug one end of a second RS-232 cable (not included) in the **RS232** connector on one of the receivers, then plug the other end into the RS-232 control connector on your third-party device.

Control a Local Third-Party Device with a PC Connected to a Receiver



1. Plug one end of the included RS-232 cable into the **RS232** connector on one of the receivers, then plug the other end into an available COM port on your PC.
2. Plug one end of a second RS-232 cable (not included) in the **RS232** connector on the matrix, then plug the other end into the RS-232 control connector on your third-party device.
3. Using RS-232 control software, send the **RS232RCMxxON.** command to enable remote RS-232 control, where xx=00 for all HDBaseT™ receivers or 01-06 for an individual receiver. Refer to the *RS-232 COMMANDS* section for command details.

SOFTWARE

Web GUI RS-232 Control

You can issue RS-232 commands using the **RS232** tab of the built-in Web GUI system. Refer to the full *User's Manual* for connection details to use this interface.

Switching Audio Configuration CEC **RS232** Interface Network Access

☒ Local ☐ HDBT

Baud Rate: 9600 ▼

Command Ending: NULL ▼

Command: xxxxxx

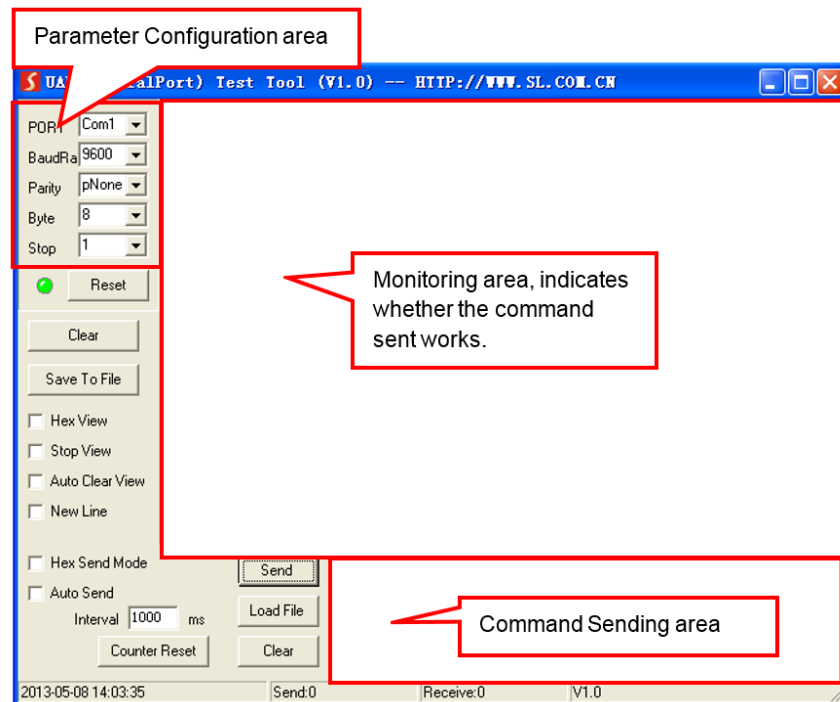
39670

- Click the **Local** radio button to send RS-232 commands to the matrix.
- Click the **HEX** button to specify that your RS-232 command will be in hex format or click the **ASCII** button to specify that your RS-232 command will be in ASCII format.
- Use the pull-down list box next to the **Baud Rate** label to select the speed at which your RS-232 command is sent. You can select **2400, 4800, 9600, 19200, 38400, 57600, and 115200** baud.
- Use the pull-down list box next to the **Command Ending** label to select the termination for your RS-232 command. You can select **NULL, CR, LF, or CR+LF**.
- Type your RS-232 command into the **Command** field, then click the **Send** button to send the command using the selected format, baud rate, and termination settings. See the *RS-232 COMMANDS* section for a list of valid RS-232 commands.
- Click the **Cancel** button at any time to clear any unsent command.

- Click the **HDBT** radio button to send RS-232 commands to one of the HDBaseT™ receivers to control a connected third-party device.
- Click one of the radio buttons in the **Port** section to select which HDBaseT receiver will receive the RS-232 command.
- Click the **HEX** button to specify that your RS-232 command will be in hex format or click the **ASCII** button to specify that your RS-232 command will be in ASCII format.
- Use the pull-down list box next to the **Baud Rate** label to select the speed at which your RS-232 command is sent. You can select **2400**, **4800**, **9600**, **19200**, **38400**, **57600**, and **115200** baud.
- Use the pull-down list box next to the **Command Ending** label to select the termination for your RS-232 command. You can select **NULL**, **CR**, **LF**, or **CR+LF**.
- Type your RS-232 command into the **Command** field, then click the **Send** button to send the command using the selected format, baud rate, and termination settings. See the *RS-232 COMMANDS* section for a list of valid RS-232 commands.
- Click the **Cancel** button at any time to clear any unsent command.

RS-232 Control Software

Other than the built-in Web GUI interface, this device does not include custom RS-232 control software. If you wish to control this device from your PC using an RS-232 connection, you will need to use a third party RS-232 control software package, such as **CommWatch.exe**, whose interface is depicted below.



Set the communications parameters to the following:

Baud Rate: 9600

Data Bits: 8

Stop Bits: 1

Parity Bits: None

RS-232 COMMANDS

The following guidelines apply to the RS-232 control commands.

1. The brackets [and] in the commands are for clarity purposes to make the variable more obvious. Do not type these symbols when typing the commands.
2. Other than the brackets, type in all commands exactly as they appear. They are case sensitive and require the trailing period (.) or semicolon (;) as part of the command.
3. Disconnect all HDBaseT™ receivers from the matrix/transmitter prior to performing any of the upgrade commands.

System Settings		
Command	Description	Feedback Example
PowerON.	Turns the system on.	Power ON! HDBT 01 Power ON! HDBT 02 Power ON! HDBT 03 Power ON! HDBT 04 Power ON! HDBT 05 Power ON! HDBT 06 Power ON! Front Panel UnLock!
PowerOFF.	Turns the system off.	Power OFF!
/*Name.	Displays the system name.	39670
/*Type.	Displays the system model.	HDBaseT Matrix
/^Version.	Displays the firmware and video driver versions.	V1.0.0 CPLD:V1.0.0 VideoDriverVersion:V1.0.0

Command	Description	Feedback Example
RST.	Resets the matrix to the factory default values.	Factory Default! System Initialization..... HDBaseT Matrix 39670 V1.0.0 Power ON!
Lock.	Locks the front panel buttons.	Front Panel Locked!
Unlock.	Unlocks the front panel buttons.	Front Panel UnLock!
GetGuiIP.	Displays the GUI IP address.	GUI_IP:192.168.0.178!
SetGuiIP:xxx.xxx.xxx.xxx	Sets the GUI IP to xxx.xxx.xxx.xxx.	SetGuiIP:192.168.0.178!
Baudrate115200.	Sets the baud rate of the matrix to 115200 baud.	Set Local RS232 Baudrate Is 115200!
Baudrate57600.	Sets the baud rate of the matrix to 57600 baud.	Set Local RS232 Baudrate Is 57600!
Baudrate38400.	Sets the baud rate of the matrix to 38400 baud.	Set Local RS232 Baudrate Is 38400!
Baudrate19200.	Sets the baud rate of the matrix to 19200 baud.	Set Local RS232 Baudrate Is 19200!
Baudrate9600.	Sets the baud rate of the matrix to 9600 baud.	Set Local RS232 Baudrate Is 9600!
IRFVON.	Enable IR switching to follow video switching.	IR Follow Video ON!
IRFVOFF.	Disable IR switching to follow video switching.	IR Follow Video OFF!

Command	Description	Feedback Example
PHDBT[xx]:ON	Turns on the Power over Cable (PoC) feature for HDBT output [xx]. [xx]=00~06, where 00 represents all HDBT outputs.	Example: PHDBT00:ON Feedback: HDBT 01 Power ON! HDBT 02 Power ON! HDBT 03 Power ON! HDBT 04 Power ON! HDBT 05 Power ON! HDBT 06 Power ON!
PHDBT[xx]:OFF.	Turns off the Power over Cable (PoC) feature for HDBT output [xx]. [xx]=00~06, where 00 represents all HDBT outputs.	Example: PHDBT00:OFF. Feedback: HDBT 01 Power OFF! HDBT 02 Power OFF! HDBT 03 Power OFF! HDBT 04 Power OFF! HDBT 05 Power OFF! HDBT 06 Power OFF!
STA_PHDBT.	Displays the Power over Cable (PoC) status of the HDBT outputs.	HDBT 01 Power ON! HDBT 02 Power ON! HDBT 03 Power OFF! HDBT 04 Power ON! HDBT 05 Power ON! HDBT 06 Power OFF!

Command	Description	Feedback Example
RS232RCM[xx]ON.	Enables RS-232 remote control mode for HDBT output [xx] to allow for control of the matrix from the HDBaseT™ receiver [xx]. [xx]=00~06, where 00 represents all HDBT outputs.	Example: RS232RCM00ON. Feedback: RS232 Remote 01 Control MCU ON! RS232 Remote 02 Control MCU ON! RS232 Remote 03 Control MCU ON! RS232 Remote 04 Control MCU ON! RS232 Remote 05 Control MCU ON! RS232 Remote 06 Control MCU ON!
RS232RCM[xx]OFF.	Disables RS-232 remote control mode for HDBT output [xx] to allow for control of the matrix from the HDBaseT™ receiver [xx]. [xx]=00~06, where 00 represents all HDBT outputs.	Example: RS232RCM00OFF. Feedback: RS232 Remote 01 Control MCU OFF! RS232 Remote 02 Control MCU OFF! RS232 Remote 03 Control MCU OFF! RS232 Remote 04 Control MCU OFF! RS232 Remote 05 Control MCU OFF! RS232 Remote 06 Control MCU OFF!

Command	Description	Feedback Example
STA_RS232RCM.	Displays the RS-232 remote control mode status.	RS232 Remote 01 Control MCU OFF! RS232 Remote 02 Control MCU ON! RS232 Remote 03 Control MCU ON! RS232 Remote 04 Control MCU ON! RS232 Remote 05 Control MCU OFF! RS232 Remote 06 Control MCU OFF!
IRRCM[xx]ON.	Enables IR remote control mode for HDBT output [xx] to control the matrix using the included IR remote control from the HDBase™ receiver locations. [xx]=00~06, where 00 represents all HDBT outputs.	Example: IRRCM00ON. Feedback: IR Remote 01 Control MCU ON! IR Remote 02 Control MCU ON! IR Remote 03 Control MCU ON! IR Remote 04 Control MCU ON! IR Remote 05 Control MCU ON! IR Remote 06 Control MCU ON!

Command	Description	Feedback Example
IRRCM[xx]OFF.	Disables IR remote control mode for HDBT output [xx] to control the matrix using the included IR remote control from the HDBaseT™ receiver locations. [xx]=00~06, where 00 represents all HDBT outputs.	Example: IRRCM00OFF. Feedback: IR Remote 01 Control MCU OFF! IR Remote 02 Control MCU OFF! IR Remote 03 Control MCU OFF! IR Remote 04 Control MCU OFF! IR Remote 05 Control MCU OFF! IR Remote 06 Control MCU OFF!
STA_IRRCM.	Displays the IR remote control mode status.	IR Remote 01 Control MCU OFF! IR Remote 02 Control MCU ON! IR Remote 03 Control MCU ON! IR Remote 04 Control MCU ON! IR Remote 05 Control MCU OFF! IR Remote 06 Control MCU ON!

Command	Description	Feedback Example
@OUT[xx].	Turns on output [xx]. [xx]=00~08, where 00 represents all outputs.	Example: @OUT00. Turn ON Output 01! Turn ON Output 02! Turn ON Output 03! Turn ON Output 04! Turn ON Output 05! Turn ON Output 06! Turn ON Output 07! Turn ON Output 08!
\$OUT[xx].	Turns off output [xx]. [xx]=00~08, where 00 represents all outputs.	Example: \$OUT00. Feedback: Turn OFF Output 01! Turn OFF Output 02! Turn OFF Output 03! Turn OFF Output 04! Turn OFF Output 05! Turn OFF Output 06! Turn OFF Output 07! Turn OFF Output 08!
STA.	Displays the system status.	GUI OR RS232 Query Status: HDBaseT Matrix 39670 V1.0.0 Power ON!

Command	Description	Feedback Example
STA_POUT.	Displays the status of all outputs.	Turn ON Output 01! Turn ON Output 02! Turn OFF Output 03! Turn OFF Output 04! Turn ON Output 05! Turn ON Output 06! Turn OFF Output 07! Turn ON Output 08!
STA_IN.	Displays the connection status of all HDMI® inputs.	IN 1 2 3 4 5 6 7 8 LINK Y N N Y Y Y Y Y
STA_OUT.	Displays the connection status of all HDMI and HDBT outputs.	OUT 1 2 3 4 5 6 7 8 LINK Y N N Y Y Y Y Y
Signal Switching		
OUT[xx]:[yy].	Switch video input [yy] to video output [xx]. [xx]=00~08, where 00 represents all outputs. [yy]=01~08.	Example: OUT01:03. Feedback: Output 01 Switch To In 03! Local 03 IR Out Switch To Remote 01 IR IN!
STA_VIDEO.	Displays the selected input for each output.	Output 01 Switch To In 03! Output 02 Switch To In 07! Output 03 Switch To In 03! Output 04 Switch To In 01! Output 05 Switch To In 02! Output 06 Switch To In 08! Output 07 Switch To In 04! Output 08 Switch To In 04!

Command	Description	Feedback Example
IR[xx]:[yy].	Switches remote IR IN [yy] to local IR OUT [xx]. [xx]=01~08. [yy]=00~06, where 00 represents all remote IR IN ports.	Example: IR01:03. Feedback: Local 01 IR Out Switch To Remote 03 IR IN!
STA_IR.	Displays the IR switching status.	IR Follow Video OFF! Local 01 IR Out Switch To Remote 01 IR IN! Local 01 IR Out Switch To Remote 02 IR IN! Local 01 IR Out Switch To Remote 03 IR IN! Local 01 IR Out Switch To Remote 04 IR IN! Local 01 IR Out Switch To Remote 05 IR IN! Local 01 IR Out Switch To Remote 06 IR IN!
PresetSave[xx].	Saves the current switching layout to preset [xx]. [xx]=01~09.	Example: PresetSave09. Feedback: Preset 09 Sta: Out 01 In 01! Out 02 In 04! Out 03 In 05! Out 04 In 04! Out 05 In 06! Out 06 In 03! Out 07 In 06! Out 08 In 08!

Command	Description	Feedback Example
PresetRecall[xx].	Loads the switching layout for preset [xx]. [xx]=01~09.	Example: PresetRecall09. Feedback: Output 01 Switch To In 01! Output 02 Switch To In 04! Output 03 Switch To In 05! Output 04 Switch To In 04! SPDIF Out 03 Switch To Video Out 04! Output 05 Switch To In 06! Output 06 Switch To In 03! Output 07 Switch To In 06! Output 08 Switch To In 08!
PresetSta[xx].	Displays the switching layout for preset [xx]. [xx]=01~09.	Example: PresetSta06. Feedback: Preset 06 Sta: Out 01 In 01! Out 02 In 01! Out 03 In 03! Out 04 In 04! Out 05 In 03! Out 06 In 03! Out 07 In 06! Out 08 In 05!

Audio Settings		
Command	Description	Feedback Example
SPDIF[xx]:[yy].	Selects audio source [yy] for SPDIF audio output [xx]. [xx]=00~08, where 00 represents all SPDIF audio outputs. [yy]=01~22. [yy]=01~08 represents Input 1~8. [yy]=09~16 represents Output 1~8. [yy]=17~22 represents ARC on Output 1~6.	Example: SPDIF01:04. Feedback: SPDIF Out 01 Switch To Video In 04!
STA_SPDIF.	Displays the S/PDIF audio status.	SPDIF Out 01 Switch To Video In 01! SPDIF Out 02 Switch to ARC 03! SPDIF Out 03 Switch to Video Out 04! SPDIF Out 04 Switch to ARC 06!

EDID® Management		
EDIDMInit.	Resets the EDID® of all inputs to the factory default setting.	All Input EDID Set Default!
EDIDUpgrade[xx].	Upgrades the EDID® data of input port [xx]. [xx]=00~08 or U, where 00 represents all inputs and U instructs to upload a user-defined EDID. When the command is applied the system prompts to upload the EDID file (.bin). The operation will be cancelled after 10 seconds. Please disconnect the HDBT connection before sending the command to ensure the data can be successfully received.	256 9600bps Input XX/User Define EDID Upgrade OK BY RS232 Or GUI!

Command	Description	Feedback Example
EDID/[xx]/[yy].	Assign embedded EDID® [yy] to input [xx]. [xx]=00~08, where 00 represents all inputs. [yy]=01~09, where: 01=1920x1080@60Hz, 8-bit Stereo Audio 02=1920x1080@60Hz 8-bit High Definition Audio 03=3840x2160@30Hz 8-bit Stereo Audio 04=3840x2160@30Hz Deep Color High Definition Audio 05=3840x2160@60Hz 4:2:0 Deep Color Stereo Audio 06=3840x2160@60Hz Deep Color Stereo Audio 07=3840x2160@60Hz Deep Color High Definition Audio 08=3840x2160@60Hz Deep Color HDR LPCM 6-channel Audio 09=User-defined EDID®	Example: EDID/03/01. Feedback: Input 03 EDID Upgrade OK By 01 Internal EDID!
EDIDGOUT[xx].	Displays the EDID data from output [xx]. [xx]=01~08.	Example: EDIDGOUT04. Feedback:

Command	Description	Feedback Example
EDIDM[xx]B[yy].	Copies the EDID® data of output [xx] to input [yy]. [xx]=01~08. [yy]=00~08, where 00 represents all inputs.	Example: EDIDM04B01. Feedback: Input 01 EDID Upgrade OF By 04 EXT EDID!
EDIDSTA[xx].	Displays the EDID status of input [xx]. [xx]=00~08, where 00 represents all inputs.	Example: EDIDSTA00. Feedback: Input 01 EDID From 01 Internal EDID! Input 02 EDID From 02 Internal EDID! Input 07 EDID From 06 Internal EDID! Input 08 EDID From User Define EDID!
HDCP™ Management		
HDCP[xx]MAT.	The HDCP™ content of output [xx] follows the HDCP version of the connected display. [xx]=00~08 where 00 represents all outputs.	Example: HDCP00MAT. Feedback: OUT 01 HDCP MAT Display! OUT 02 HDCP MAT Display! OUT 03 HDCP MAT Display! OUT 04 HDCP MAT Display! OUT 05 HDCP MAT Display! OUT 06 HDCP MAT Display! OUT 07 HDCP MAT Display! OUT 08 HDCP MAT Display!

Command	Description	Feedback Example
HDCP[xx]PAS.	Sets the HDCP™ mode of output [xx] to Passive. The HDCP content of output [xx] automatically follows the HDCP version of the source device. [xx]=00~08, where 00 represents all outputs.	Example: HDCP00PAS. Feedback: OUT 01 HDCP PASSIVE! OUT 02 HDCP PASSIVE! OUT 03 HDCP PASSIVE! OUT 04 HDCP PASSIVE! OUT 05 HDCP PASSIVE! OUT 06 HDCP PASSIVE! OUT 07 HDCP PASSIVE! OUT 08 HDCP PASSIVE!
HDCP[xx]BYP.	Sets the HDCP mode of output [xx] to Active. If the input video has HDCP content, the HDCP version of the HDMI® output is HDCP 1.4 for broader video compatibility. If the input video has no HDCP content, the HDMI output has no HDCP, either. [xx]=00~08 where 00 represents all outputs.	Example: HDCP00BYP. Feedback: OUT 01 HDCP BYPASS! OUT 02 HDCP BYPASS! OUT 03 HDCP BYPASS! OUT 04 HDCP BYPASS! OUT 05 HDCP BYPASS! OUT 06 HDCP BYPASS! OUT 07 HDCP BYPASS! OUT 08 HDCP BYPASS!
STA_HDCP.	Displays the HDCP mode of all outputs.	OUT 01 HDCP PASSIVE! OUT 02 HDCP PASSIVE! OUT 03 HDCP MAT DISPLAY! OUT 04 HDCP BYPASS! OUT 05 HDCP BYPASS! OUT 06 HDCP BYPASS! OUT 07 HDCP BYPASS! OUT 08 HDCP BYPASS!

Third Party Device Control		
Command	Description	Feedback Example
/+[x]/[yy]:xxx.	Sends the ASCII command xxx at baud rate [x] to control the remote third-party device connected to the HDBaseT™ receiver connected to HDBT output [yy]. xxx=ASCII string. [x]=1~7 represents the baud rate of the third-party device. [x]=1, the baud rate is 2400 [x]=2, the baud rate is 4800 [x]=3, the baud rate is 9600 [x]=4, the baud rate is 19200 [x]=5, the baud rate is 38400 [x]=6, the baud rate is 57600 [x]=7, the baud rate is 115200 [yy]=00~06 where 00 represents all HDBT outputs.	Example: +3/01:123456. Sends the ASCII command 123456 at 9600 baud to the third-party device connected to the HDBaseT receiver connected to HDBT output port 1.

Command	Description	Feedback Example
CMDON/+<i>[x]</i>/<i>[yy]</i>:<i>xxx</i>.	When the matrix is powered on, automatically sends the ASCII command xxx at baud rate [x] to the third-party device connected to the HDBaseT™ receiver connected to HDBT output [yy]. xxx=ASCII string. [x]=1~7 represents the baud rate of the third-party device. [x]=1, the baud rate is 2400 [x]=2, the baud rate is 4800 [x]=3, the baud rate is 9600 [x]=4, the baud rate is 19200 [x]=5, the baud rate is 38400 [x]=6, the baud rate is 57600 [x]=7, the baud rate is 115200 [yy]=00~06 where 00 represents all HDBT outputs.	Example: CMDON/+3/01:123456. Automatically sends the ASCII command 123456 at 9600 baud to the HDBaseT receiver connected to HDBT output 1 when the matrix is powered on.

Command	Description	Feedback Example
CMDOFF/+<i>[x]</i>/<i>[yy]</i>:<i>xxx</i>.	When the matrix is powered off, automatically sends the ASCII command xxx at baud rate [x] to the third-party device connected to the HDBaseT™ receiver connected to HDBT output [yy]. xxx=ASCII string. [x]=1~7 represents the baud rate of the third-party device. [x]=1, the baud rate is 2400 [x]=2, the baud rate is 4800 [x]=3, the baud rate is 9600 [x]=4, the baud rate is 19200 [x]=5, the baud rate is 38400 [x]=6, the baud rate is 57600 [x]=7, the baud rate is 115200 [yy]=00~06 where 00 represents all HDBT outputs.	Example: CMDOFF/+3/01:123456. Automatically sends the ASCII command 123456 at 9600 baud to the HDBaseT receiver connected to HDBT output 1 when the matrix is powered off.

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TECHNOLOGY AT PRICES THAT MAKE SENSE

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