H2X Matrix Switcher API

MX-1010-HDBT-H2X | MX-1616-HDBT-H2X

Application Programming Interface

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1. Overview

The following document contains the Application Program Interface (API) commands to control the SW-0501-HDBT and SW-1001-HDBT presentation switchers via serial and IP commands. Read this document in its entirety before starting any communication with the product.

1.1 Before You Begin

Verify that the following items are on hand and that all documentation is reviewed before continuing.

MX-1010-HDBT-H2X or MX-1616-HDBT-H2X ☐

Control System and Control System Documentation ☐

PC or Mac for Configuring Product and Telnet Communications ☐

Network Connection with Network Passwords ☐

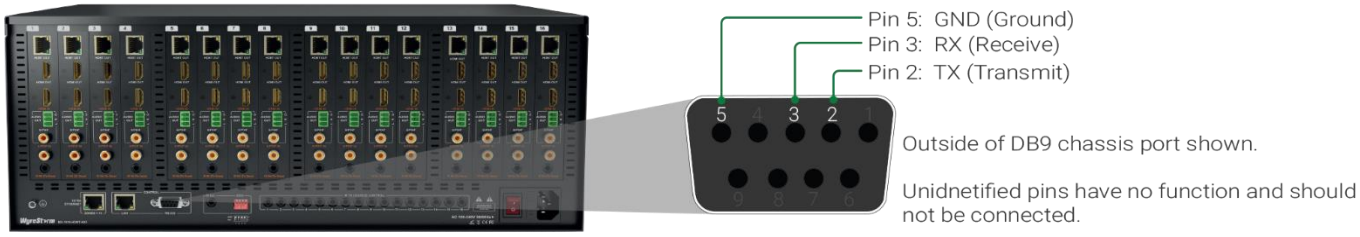
Visit the Product Page on WyreStorm.com to download firmware and additional product information ☐

2. Wiring and Communication Configuration

WyreStorm recommends that all wiring for the installation is run and terminated prior to making connections to the switcher. Read through this section in this entirety before running or terminating the wires to ensure proper operation and to avoid damaging equipment.

2.1 RS-232 Connections

The following wiring diagrams show the pinouts for the switcher. While not shown, connect the TX (transmit) to RX (receive) pins at the control system or PC side of the cable. Most control systems and computers are configured for Digital Terminal Equipment (DTE) where pin 2 is RX and pin 3 is TX This can vary from device to device, refer to the documentation for the connected device for pin functionally to ensure that the connect connections can be made.



2.2 Serial and IP Settings

Baud rate:	57600
Data Bits:	8bits
Parity:	None
Stop Bits:	1bit
Flow Control:	None
Default IP Address:	192.168.11.143
Default IP Port:	23

3. Command Elements

Command Type: ASCII

Key Words are Case Sensitive

prm = optional parameters

in = Video Input (HDMI/HDBaseT)

out = Video Output (HDMI/HDBaseT)

aout = Audio Output

Command termination requires <CR/LF>

Example: SET AUTOCEC_D *out prm* <CR/LF>

4. Matrix Function Commands

4.1 Audio/Video Output Control

Video Switching

Action	Command	Parameters
Switch Video Input to Output	Command: SET SW *in out*<CR/LF> Return: SW *in# out#*<CR/LF> Example: Send Input 2 to Output 6 SET SW *in2 out6*<CR/LF> Returns: SW *in2 out6*<CR/LF>	in = {in1~in16} out = {out1~out16, all}
Query Video Input Mapping	Command: GET MP *out*<CR/LF> Return: MP *in# out#*<CR/LF> Example: Input 2 sent to Output 6 MP *in2* <CR/LF> Returns: MP *in2 out6*<CR/LF>	in = {in1~in16} out = {out1~out16, all}

Audio Switching

Action	Command	Parameters
Switch Audio Input to Output	Command: SET AUDIOSW *in out*<CR/LF> Return: AUDIOSW *in# out#*<CR/LF> Example: Send S/PDIF Audio 2 to Audio Out 6 SET AUDIOSW *spdif2 audioout6*<CR/LF> Returns: AUDIOSW *spdif2 audioout6*<CR/LF>	in = {hdmi1~hdmi16, spdif1~spdif16, arc1~arc16} out = {audioout1~audioout16, all}
Query Audio Input Mapping	Command: GET AUDIOMP *out*<CR/LF> Return: AUDIOMP *in out*<CR/LF> Example: S/PDIF Audio 2 sent to Audio Out 6 AUDIOMP *spdif2 audioout6*<CR/LF> Returns: AUDIOSW *spdif2 audioout6*<CR/LF>	in = {hdmi1~hdmi16, spdif1~spdif16, arc1~arc16} out = {audioout1~audioout16, all}

Audio Output Volume Control

Action	Command	Parameters
Adjust Volume	Command: SET VOLGAIN_DATA *aout prm*<CR/LF> Return: VOLGAIN_DATA *aout prm*<CR/LF> Example: Set volume of audio out 10 to -5 SET VOLGAIN_DATA *audioout10 -5*<CR/LF> Returns: VOLGAIN_DATA *audioout10 -5*<CR/LF>	aout = {audioout1~audioout16, all} prm = {-10~10} // -10 = -10dB, 10 = 10dB, default value is 0 dB.
Query Current Volume Level	Command: GET VOLGAIN_DATA *aout*<CR/LF> Return: VOLGAIN_DATA *aout prm*<CR/LF> Example: Volume of audio out10 set to -5 VOLGAIN_DATA *audioout10*<CR/LF> Returns: VOLGAIN_DATA *audioout10 -5*<CR/LF>	aout = {audioout1~audioout16, all} prm = {-10~10} // -10 = -10dB, 10 = 10dB, default value is 0 dB.
Mute Audio	Command: SET MUTE *aout prm*<CR/LF> Return: MUTE *aout prm*<CR/LF> Example: Mute audio out 10 SET MUTE *audioout10 on*<CR/LF> Returns: MUTE *audioout10 on*<CR/LF>	aout = {spdifout1~spdifout16, audioout1~audioout16, all} prm = {on, off} // on means mute; off means unmute.
Query Current Audio Mute State	Command: GET MUTE *aout*<CR/LF> Return: MUTE AOUT *prm*<CR/LF> Example: Audio out 10 is muted MUTE *audioout10*<CR/LF> Returns: MUTE *audioout10 on*<CR/LF>	aout = {spdifout1~spdifout16, audioout1~audioout16, all} prm = {on, off} // on means mute; off means unmute.

Audio Delay Configuration

Action	Command	Parameters
Set Audio Output Delay Time	Command: SET AUDIO_D *aout prm*<CR/LF> Return: AUDIO_D *aout prm*<CR/LF> Example: Set Audio Out 10 to 50ms AUDIO_D *audioout10 50*<CR/LF> Returns: AUDIO_D *audioout10 50*	aout = {audioout1~audioout16, all} prm = {0~500} // prm numbers are in milliseconds (ms) with default wait time of 2 minutes, entering a 0 will set no delay.
Query Audio Output Delay Time	Command: GET AUDIO_D *aout*<CR/LF> Return: AUDIO_D *aout prm*<CR/LF> Example: Query delay on Audio Out 10 GET AUDIO_D *audioout10*<CR/LF> Returns: AUDIO_D *audioout10 50*	aout = {audioout1~audioout16, all} prm = {0~500} // prm numbers are in milliseconds (ms) with default wait time of 2 minutes, entering a 0 will set no delay.

Audio Output EQ

Action	Command	Parameters
Enable EQ	Command: SET EQ_FN *aout prm*<CR/LF> Return: EQ_FN *aout prm*<CR/LF> Example: Enable EQ on Audio Out 10 SET EQ_FN *audioout10 on*<CR/LF> Returns: EQ_FN *audioout10 on*<CR/LF>	aout = {audioout1~audioout16, all} prm = {on, off}; // on means enable, off means bypassed.
Query EQ Function Status (On/Off)	Command: GET EQ_FN *aout*<CR/LF> Return: EQ_FN *aout*<CR/LF> Example: EQ on Audio Out 10 is enabled GET EQ_FN *audioout10*<CR/LF> Returns: EQ_FN *audioout10 on*<CR/LF>	aout = {audioout1, audioout2,...audioout16, all} prm = {on, off} // on means enabled, off means bypassed.

Set Audio Out EQ Level	Command: SET AUDIO_EQ *out freq gain*<CR/LF>
	Return: AUDIO_EQ *out freq gain*<CR/LF>
	
	Example: EQ frequency 500 on Audio Out 10 to 5db
	SET AUDIO_EQ *audioout10 500 5*<CR/LF>
	Returns: AUDIO_EQ *audioout10 500 5*<CR/LF>
		aout = {audioout1~audioout16, all}
		freq = {31, 62, 125, 250, 500, 2000, 4000, 8000, 16000}
		// frequencies are in Hz, 62=62Hz, 8000=8kHz
		gain={-10~10} // gain is in db, -10=-10db, 10=10db

Query Audio Out EQ Level	Command: GET AUDIO_EQ *out freq*<CR/LF>
	Return: AUDIO_EQ *out freq gain*<CR/LF>
	
	Example: Query EQ frequency and gain of Audio Out 10
	GET AUDIO_EQ *audioout10* <CR/LF>
	Returns: AUDIO_EQ *audioout10 500 5*<CR/LF>
		aout = {audioout1~audioout16, all}
		freq = {31, 62, 125, 250, 500, 2000, 4000, 8000, 16000}
		// frequencies are in Hz, 62=62Hz, 8000=8kHz
		gain={-10~10} // gain is in db, -10=-10db, 10=10db

Scene Save and Recall

Action	Command	Parameters
Save Scene	Command: SAVE PRESET *prm*<CR/LF> Return: PRESET *prm*<CR/LF> Example: Save current audio and video settings to scene 5 SAVE PRESET *5*<CR/LF> Returns: PRESET *5*<CR/LF>	prm = {1~20}
Recall Scene	Command: RESTORE PRESET *prm*<CR/LF> Return: PRESET *prm*<CR/LF> Example: Recall audio and video settings stored in scene 5. RESTORE PRESET *5*<CR/LF> Returns: PRESET *5*<CR/LF>	prm = {1~20}

4.2 Display Power Control

Action	API Command Reference	Parameters
Power Display On/off	Command: SET CEC_PWR *out prm*<CR/LF> Return: CEC_PWR *out prm*<CR/LF> Example: Power on display on HDBT Out 10 SET CEC_PWR *hdbt10 on*<CR/LF> Returns: CEC_PWR *hdbt10 on*<CR/LF>	prm = {on, off} out = {hdmiout1~hdmiout16, hdbtout1~hdbtout16, all} // all includes hdmiout1~hdmiout16 and hdbtout1~hdbtout16
Query CEC Power Status	Command: GET CEC_PWR *out*<CR/LF> Return: CEC_PWR *out prm*<CR/LF> Example: Display on HDBT Out 10 is On CEC_PWR *hdbt10*<CR/LF> Retrurns: CEC_PWR *hdbt10 on*<CR/LF>	prm = {on, off} out = {hdmiout1~hdmiout16, hdbtout1~hdbtout16, all} // all includes hdmiout1~hdmiout16 and hdbtout1~hdbtout16
Set CEC Power Delay Time	Command: SET AUTOCEC_D *out prm*<CR/LF> Return: AUTOCEC_D *out prm*<CR/LF> Example: Set delay time of HDBT 5 to 1 minute SET AUTOCEC_D *hdbt5 1*<CR/LF> Returns: AUTOCEC_D *hdbt5 1*	prm = {0~30} // prm numbers are in minutes with default wait time of 2 minutes, entering a 0 will power off the display immediately if there is no active signal.
Query CEC Power Delay Time	Command: GET AUTOCEC_D *out prm*<CR/LF> Return: AUTOCEC_D *out prm*<CR/LF> Example: Delay time of display on HDBT 5 set to 1 minute GET AUTOCEC_D *hdbt5*<CR/LF> Returns: AUTOCEC_D *hdbt5 1*	prm = {0~30} // prm numbers are in minutes with default wait time of 2 minutes, 0 will power off the display immediately if there is no active signal.

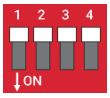
5. Matrix Configuration

5.1 Input/Output Specific Functions

HDCP Configuration

Action	Command	Parameters
Set Input HDCP On/Off	Command: SET HDCP_S *in prm*<CR/LF> Return: HDCP_S *in prm*<CR/LF> Example: Turn On HDCP for input 5 SET HDCP_S *5 on*<CR/LF> Returns: HDCP_S *5 on*<CR/LF>	in = {in1~in16, all} prm = {on, off}
Query Input HDCP Status	Command: GET HDCP_S *in*<CR/LF> Return: HDCP_S *in prm*<CR/LF> Example: Query HDCP status for input 5 GET HDCP_S *5*<CR/LF> Returns: HDCP_S *5 on*<CR/LF>	in = {in1~in16, all} prm = {on, off}

EDID Configuration

Action	Command	Parameters
Note: The following settings require that the rear panel dipswitches are set to Front Panel, Web UI or API EDID Control {1111}.		
Query EDID Dip Switch Statius	Command: GET EDID_DIP<CR/LF> Return: EDID_DIP *prm*<CR/LF> Example: Query HDCP dip switch status GET EDID_DIP<CR/LF> Returns: EDID_DIP *10*<CR/LF>	prm = {0~15}
Set Input EDID	Command: SET EDID *in prm*<CR/LF> Return: EDID *in prm*<CR/LF> Example: Set input 5 to 4K@30 5.1ch HDR SET EDID *in5 23*<CR/LF> Returns: EDID *in5 23*<CR/LF>	in = {in1~in16, all} prm = {00~31} 00~15: Copy form output # 16: Fix 1080P 2ch 17: Fix 1080P 5.1 18: Fix 1080P 7.1 19: Fix 4K@30 2ch 8bit 20: Fix 4K@30 5.1 21: Fix 4K@30 7.1 22: Fix 4K@30 2ch HDR 23: Fix 4K@30 5.1ch HDR 24: Fix 4K@30 7.1ch HDR 25: Fix 4K@60 2ch 26: Fix 4K@60 5.1 27: Fix 4K@60 7.1 28: Fix 1920x1200 2ch 29: Fix 1920x1200 with no audio 30: Smart EDID
Query All Inputs EDID status	Command: GET EDID *all*<CR/LF> Return: EDID *in prm*<CR> EDID *in prm*<CR> ~ EDID *in prm*<CR/LF> Example: Query HDCP status for all inputs GET EDID *all*<CR/LF> Returns: EDID *in1 22*<CR> EDID *in2 16*<CR> ~ EDID *in16 23*<CR/LF>	in = {in1~in16, all} prm = {00~31} 00~15: Copy form output # 16: Fix 1080P 2ch 17: Fix 1080P 5.1 18: Fix 1080P 7.1 19: Fix 4K@30 2ch 8bit 20: Fix 4K@30 5.1 21: Fix 4K@30 7.1 22: Fix 4K@30 2ch HDR 23: Fix 4K@30 5.1ch HDR 24: Fix 4K@30 7.1ch HDR 25: Fix 4K@60 2ch 26: Fix 4K@60 5.1 27: Fix 4K@60 7.1 28: Fix 1920x1200 2ch 29: Fix 1920x1200 with no audio 30: Smart EDID

5.2 Global Matrix Functions

IR Call Back Enable/Disable

Action	Command	Parameters
Set IR Call Back Control	Command: SET IRBACK_FN *prm* <CR/LF> Return: IRBACK_FN *prm* <CR/LF> Example: Turn On IR Call Back SET IRBACK_FN *on* <CR/LF> Returns: IRBACK_FN *on* <CR/LF>	prm = {on, off}
Query IR Call Back Status	Command: GET IRBACK_FN <CR/LF> Return: IRBACK_FN *prm* <CR/LF> Example: IR Call Back is On GET IRBACK_FN<CR/LF> Returns: IRBACK_FN *on* <CR/LF>	prm = {on, off}

Long Reach Cable Mode

Action	Command	Parameters
Used to extend the reach of HDBT when problems occur on longer cable runs.		
Set Long Reach mode on/off	Command: SET LR_FN *prm1 prm2*<CR/LF> Return: LR_FN *prm1 prm2*<CR/LF> Example: Turn on Long Reach Mode SET LR_FN *hdbtall on*<CR/LF> Returns: LR_FN *hdbtall on*<CR/LF>	prm1 = {hdbtall} prm2 = {on, off}
Query Long Reach mode status	Command: GET LR_FN *prm1* <CR/LF> Return: LR_FN *prm1 prm2*<CR/LF> Example: Long Reach Mode is On GET LR_FN *hdbtall*<CR/LF> Returns: LR_FN *hdbtall on*<CR/LF>	prm1 = {hdbtall} prm2 = {on, off}

IR System Codes

Action	Command	Parameters
Allows for the use of 4E codes in addition to the standard 00 codes. This should only be used when IR from 3rd party devices interferes with the operation of the matrix.		
Set IR System Codes	Command: SET IR_SYSCODE *prm1*<CR/LF> Return: IR_SYSCODE *prm1*<CR/LF> Example: Set IR Systems codes to 4E. SET IR_SYSCODE *4E*<CR/LF> Returns: IR_SYSCODE *4E*<CR/LF>	prm1 = {00, 4E, all} //all allows the matrix to respond to 00 and 4E code sets. Note that the remote included with the matrix will need to be set to send 4E commands when 4E is selected.
Query IR System Codes	Command: GET IR_SYSCODE <CR/LF> Return: IR_SYSCODE *prm1*<CR/LF> Example: IR System Codes set to 4E GET IR_SYSCODE <CR/LF> Returns: IR_SYSCODE *4E*<CR/LF>	prm1 = {00, 4E, all} //all allows the matrix to respond to 00 and 4E code sets. Note that the remote included with the matrix will need to be set to send 4E commands when 4E is selected.

Matrix Switching Mode

Action	Command	Parameters
Allows for adjust of the switching time between input selection and when the image appears on the display. This should only be used if there is an issue with the operation of matrix switching.		
Set Matrix Switching Mode	Command: SET SW_M *prm* <CR/LF> Return: SW_M *prm* <CR/LF> Example: Set switching mode to normal. SET SW_M *normal* <CR/LF> Returns: SW_M *normal*<CR/LF>	prm = {normal, quick}
Query Matrix Switching Mode	Command: GET SW_M <CR/LF> Return: SW_M *prm* <CR/LF> Example: Switching Mode set to normal. GET SW_M <CR/LF> Returns: SW_M *normal*<CR/LF>	prm = {normal, quick}

AVR Priority Mode (Theater Zone Locking)

Action	Command	Parameters
Allows for setting AVR Priority mode remotely when an AVR is connected to the matrix in a particular zone.		
Set AVR Priority Mode for an output.	Command: SET ZONE_LOCK *out prm* <CR/LF> Return: ZONE_LOCK *out prm* <CR/LF> Example: Turn on AVR priority mode for output 10. SET ZONE_LOCK *hdbt10 on* <CR/LF> Returns: ZONE_LOCK *hdbt10 on*<CR/LF>	Prm1 = {hdmiout1~hdmiout16, hdbtout1~hdbtout16, all} Prm2 = {on, off}
Query AVR Priority Mode status for an output.	Command: GET ZONE_LOCK *out* <CR/LF> Return: ZONE_LOCK *out prm* <CR/LF> Example: AVR priority mode for output 10 is On. SET ZONE_LOCK *hdbt10* <CR/LF> Returns: ZONE_LOCK *hdbt10 on*<CR/LF>	Prm1 = {hdmiout1~hdmiout16, hdbtout1~hdbtout16, all} Prm2 = {on, off}

5.1 Diagnostic Troubleshooting

Cable Connections and Link Quality

Action	Command	Parameters
Query Input Cable Connection Status	Command: GET CABLEC_IN *prm1*<CR/LF> Return: CABLEC_IN *prm1 prm2*<CR/LF> Example: Cable for input 1 is connected. GET CABLEC_IN *in1*<CR/LF> Returns: CABLEC_IN *in1 good*<CR/LF>	Prm1 = {in1~in16, all} Prm2 = {connected, not connected}
Query Output Cable Connection Status	Command: GET CABLEC_IN *prm1*<CR/LF> Return: CABLEC_IN *prm1 prm2*<CR/LF> Example: HDBaseT cable for output 10 is connected. GET CABLEC_IN *hdbtout10*<CR/LF> Returns: CABLEC_IN *in10 connected*<CR/LF>	Prm1 = {hdmiout1~hdmiout16, hdbtout1~hdbtout16, all} Prm2 = {connected, not connected}
Query HDBaseT Input Link Quality	Command: GET HDBTL_IN *prm1*<CR/LF> Return: HDBTL_IN *prm1 prm2*<CR/LF> Example: HDBaseT link quality is 80% for input 10. GET HDBTL_IN *hdbtin10*<CR/LF> Returns: HDBTL_IN *hdbtin10 8*<CR/LF>	Prm1 = { hdbtin1~hdbtin16, all} Prm2 = {1~10, no link}
Query HDBaseT Output Link Quality	Command: GET HDBTL_OUT *prm1*<CR/LF> Return: HDBTL_OUT *prm1 prm2*<CR/LF> Example: HDBaseT link quality is 80% for output 10. GET HDBTL_OUT *hdbtout10*<CR/LF> Returns: HDBTL_OUT *hdbtout10 8*<CR/LF>	Prm1 = { hdbtout1~hdbtout16, all} Prm2 = {1~10, no link}

Matrix Card and Internal Component Status

Action	Command	Parameters
Query Card Connection Status	Command: GET CARD_C *prm1*<CR/LF> Return: CARD_C *prm1 prm2*<CR/LF> Example: Card in slot 10 connected. GET CARD_C *10*<CR/LF> Returns: CARD_C *slot10 connected*<CR/LF>	Prm1 = {Slot1~slot16, all} Prm2 = {connected, not connected}
Query Card Type	Command: GET CARD_T *prm1*<CR/LF> Return: CARD_T *prm1 prm2*<CR/LF> Example: Card in slot 10 is HDBaseT. GET CARD_T *10*<CR/LF> Returns: CARD_T *slot10 hdbt*<CR/LF>	Prm1 = {Slot1~slot16, all} Prm2 = {hdmi,hdbt}
Query Card Communication Status With Motherboard	Command: GET CARD_COM *prm1*<CR/LF> Return: CARD_COM *prm1 prm2*<CR/LF> Example: Card in slot 10 is communicating with the motherboard. GET CARD_COM *10*<CR/LF> Returns: CARD_COM *slot10 good*<CR/LF>	Prm1 = {slot1~slot16, all} Prm2 = {good, none}
Query Board/Card Status	Command: GET CARD_S *prm1*<CR/LF> Return: CARD_S *prm1 prm2*<CR/LF> Example: Card in slot 10 is functioning properly. GET CARD_S *10*<CR/LF> Returns: CARD_S *slot10 good*<CR/LF>	Prm1 = {mainboard, card1~card16, all} Prm2 = {good, none}
Query Fan Status	Command: GET FANS *prm1*<CR/LF> Return: FANS *prm1 prm2*<CR/LF> Example: HDBaseT link quality is 80% for output 10. GET FANS *hdbtout10*<CR/LF> Returns: FANS *hdbtout10 8*<CR/LF>	Prm1 = { fan1~fan4, all} Prm2 = {working, unworking}

6. Contacting Technical Support

Should further clarification of the content of this manual or assistance on troubleshooting be required, please contact WyreStorm technical support.

Phone: UK: +44 (0) 1793 230 343 | ROW: 844.280.WYRE (9973)
Email: Support@WyreStorm.com
On Line Chat (Accessible through website): http://WyreStorm.com/Contact-Tech-Support

7. Revision History

v1 - 170606 - June 2017

Section	Update
All	Original Release

Publication Disclaimer

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