



4:1 HDMI/VGA/DP Switching Extender with Scaling Receiver, Relay Triggering and HDCP 2.2

EX-SW-0401-H2-PRO

SW-510-TX | SW-515-RX

Application Programming Interface

Document Revision:	1.2
Document Date:	November 2020
Supported Firmware:	1.0.0 or higher

Contents

1. Overview.....	3
1.1 Before You Begin	3
2. Wiring and Communication Configuration.....	4
2.1 RS-232 Connections.....	4
2.2 Serial and IP Settings.....	4
2.3 Command Overview.....	4
3. Controlling the Switcher and Connected Devices	5
3.1 Switching Inputs	5
Switching Input to Output	5
Powering On and Off Displays.....	5
Triggering Relay On and Off (Projector Screen Up/Down)	5
4. Configuring the Switch	6
4.1 Configuring a Static IP Address	6
4.2 Configuring Video	6
Configuring Input EDIDs.....	6
Enable/Disable HDCP Support.....	6
4.3 Configuring Device Switching Modes	7
Auto Switch Mode	7
Key Lock Function Enable/Disable	7
4.4 Configuring Relays.....	7
Relay mode.....	7
Relay Timing	7
4.5 Configuring CEC	8
CEC Auto Power ON/OFF.....	8
CEC Power Delay Time	8
4.6 Configuring the Serial Port and Command Structure	9
Serial Port Baudrate	9
Serial Port Data Type	9
Serial Command End Character	9
Edit Serial Command in ASCII String	9
Edit Serial Command in HEX String.....	9
5. Troubleshooting	10
Query Input Signal Status	10
Query Unit Firmware Version	10
Reboot Device.....	10
Restore Factory Defaults	10
Query Command List (Help)	10
6. Contacting Technical Support.....	11
7. Document Revision History.....	11
Publication Disclaimer.....	12

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.

- EX-SW-0401-H2-PRO, SW-510-TX or SW-515-RX..... ☐
- Control System and Control System Documentation ☐
- PC or Mac for Configuring Product and Telnet Communications..... ☐
- Visit the Product Page on [WyreStorm.com](https://www.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 its entirety before running or terminating the wires to ensure proper operation and to avoid damaging equipment.

2.1 Connection Requirements

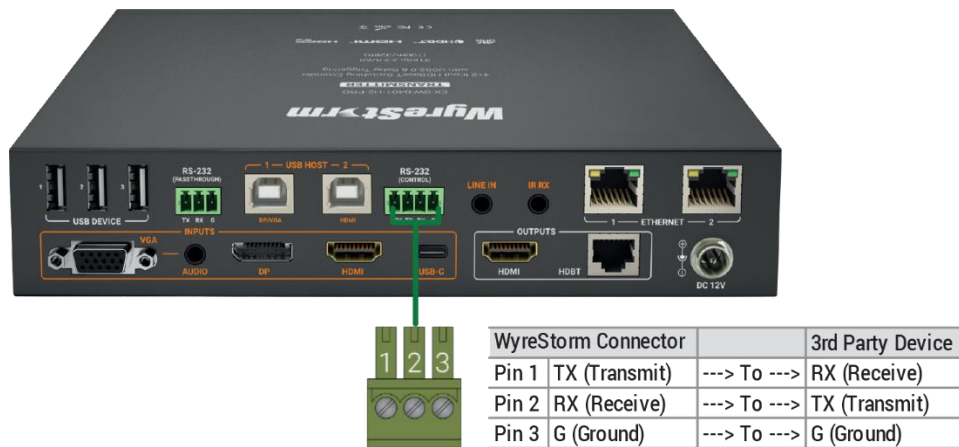
The SW-510-TX and SW-515-RX are the TX/RX from the EX-SW-0401-H2-PRO. The same API is used for both SKUs. However, there are some differences to make note of.

- The SW-510-TX does not contain a web server. Therefore, only RS-232 control of the switcher is possible.
- The SW-515-RX does contain a web server, Therefore, both LAN and RS-232 control is possible.
- If connecting the SW-510-TX and SW-515-RX together over HDBaseT then RS232 or LAN can be used to control both the TX and RX. However, in this scenario you must connect your control system to the SW-515-RX.

Important! If you are using the SW-510-TX or SW-515-RX as a standalone product - make note of the API requirements when specifying the output device. For example, when switching an input - you're required to include whether the switching command should be sent to the TX (510) or the RX (515).

2.2 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 functionality to ensure that the correct connections can be made.



2.2 Serial and IP Settings

Baud rate:	115200
Data Bits:	8bits
Parity:	None
Stop Bits:	1bit
Flow Control:	None
Default IP Address:	192.168.11.43
Default IP Port:	23

2.3 Command Overview

Command Type:	ASCII
Key Words:	Case Sensitive
[Prm]:	optional parameters
[Input]:	Video Input (HDMI/HDBaseT/DP/VGA)
[Output]	Output Device (TX/RX)
Command termination:	<CR><LF>

3. Controlling the Switcher and Connected Devices

3.1 Switching Inputs

Switching Input to Output

Select Input and Output Mapping

SET SW [Input] [Output]<CR><LF>

Response: SW [Input] all<CR><LF>

Example: SET SW TXHDMI RX<CR><LF>

Response: SW TXHDMI RX<CR><LF>

[Input]=VGA | DP | TXHDMI | USB-C | RXHDBT | RXHDMI1 | RXHDMI2

[Output]=RX | TX

Query Selected Output Mapping

GET MP [Output]<CR><LF>

Response: MP GET [Input] [Output]<CR><LF>

Example: GET MP RX<CR><LF>

Response: MP TXHDMI RX<CR><LF>

Powering On and Off Displays

IMPORTANT! Command Requirements

- This command only functions over RS-232 and cannot be used when controlling a display via IP
- The display section of the web UI must be configured for display baud rate and contain commands entered into **Power On Code** and **Power Off Code** listed under **Display Control Commands**.

Set CEC Power On/Off

SET CEC_FN [Prm]<CR><LF>

Response: CEC_FN [Prm]<CR><LF>

Example: SET CEC_FN on<CR><LF>

Response: CEC_FN on<CR><LF>

[Prm] = on | off

Triggering Relay On and Off (Projector Screen Up/Down)

SET PROSCCR_LR [Prm]<CR><LF>

Response: PROSCCR_LR [Prm]<CR><LF>

Example: SET PROSCCR_LR lowering<CR><LF>

Response: PROSCCR_LR lowering <CR><LF>

[Prm] = lowering | raising

4. Configuring the Switch

4.1 Configuring a Static IP Address

By default, the switcher is set to a static IP of 192.168.11.043. We recommend changing this as it shared with other WyreStorm products and may cause improper communication if left unchanged. Connect to the RX via RS-232 and send the following command to set the IP address.

Note: The following commands can only be sent to the receivers (RX) RS-232 port.

Set Static IP Address

SET STATIC IPADDR [IP Address] [Netmask]<CR><LF>

Example: SET IPADDR STATIC 192.168.11.243 255.255.255.0 <CR><LF>

Response: IPADDR STATIC 192.168.11.243 255.255.255.0 <CR><LF>

Set DHCP IP Address

SET DHCP IPADDR<CR><LF>

Example: SET DHCP IPADDR<CR><LF>

Response: DHCP<CR><LF>

Query IP Address

GET IPADDR<CR><LF>

Response: IPADDR xx.xx.xx.xx<CR><LF>

Example: GET IPADDR<CR><LF>

Response: IPADDR 192.168.11.243<CR><LF>

4.2 Configuring Video

Configuring Input EDIDs

By default, all inputs are set to an EDID of 1920x1080@60Hz 2CH. However, this can be configured to suit the installation.

Set Input EDID SET EDID [Input] [Resolution]<CR><LF> Example: SET EDID TXHDMI 1920x1080@60Hz<CR><LF> Response: EDID TXHDMI 1920x1080@60Hz<CR><LF>	[Input]=VGA DP TXHDMI USBC RXHDMI1 RXHDMI2 [Resolution]=	
	VGA Input	HDMI DP USB-C Inputs
Query Input EDID GET EDID [Input]<CR><LF> Example: GET EDID TXHDMI<CR><LF> Response: EDID TXHDMI 1920x1080@60Hz<CR><LF>	1024x768@60Hz 2CH	1024x768@60Hz 2CH
	1280x768@60Hz	1280x720@60Hz
	1360x768@60Hz	1360x768@60Hz
	1440x900@60Hz	1440x900@60Hz
	1600x900@60Hz	1600x900@60Hz
	1680x1050@60Hz	1680x1050@60Hz
	1920x1080@60Hz	1920x1080@60Hz
	1920x1200@60Hz	3840x2160@30Hz

Enable/Disable HDCP Support

Set HDCP Support On/Off

SET HDCP_S [Input] [Prm]<CR><LF>

Response: HDCP_S [Input] [Prm]<CR><LF>

Example: SET HDCP_S TXHDMI on<CR><LF>

Response: HDCP_S TXHDMI on<CR><LF>

Query HDCP Support On/Off Status

GET HDCP_S [Input]<CR><LF>

Response: HDCP_S [Input] [Prm]<CR><LF>

Example: GET HDCP_S TXHDMI <CR><LF>

Response: HDCP_S TXHDMI on <CR><LF>

[Input]= TXHDMI | USBC | RXHDMI1 | RXHDMI2
[Prm]=on | off

4.3 Configuring Device Switching Modes

Auto Switch Mode

Enable/Disable Auto Switch Mode
SET AUTOSW_FN [Prm]<CR><LF>
Response: AUTOSW_FN [Prm]<CR><LF>
Example: SET AUTOSW_FN on<CR><LF>
Response: AUTOSW_FN on<CR><LF>
[Prm] = on | off

Query Auto Switch Mode Status
GET AUTOSW_FN<CR><LF>
Response: AUTOSW_FN [Prm]<CR><LF>
Example: GET AUTOSW_FN<CR><LF>
Response: AUTOSW_FN on<CR><LF>

Key Lock Function Enable/Disable

Enable/Disable Key Lock
SET KEY_FN [Prm]<CR><LF>
Response: KEY_FN [Prm]<CR><LF>
Example: SET KEY_FN on <CR><LF>
Response: KEY_FN on<CR><LF>
[Prm] = on | off

Query Auto Switch Mode Status
GET KEY_FN<CR><LF>
Response: KEY_FN [Prm]<CR><LF>
Example: GET KEY_FN<CR><LF>
Response: KEY_FN on<CR><LF>

4.4 Configuring Relays

Relay mode

Set Relay Mode
SET RELAY_M [Prm]<CR><LF>
Response: RELAY_M SET [Prm]<CR><LF>
Example: SET RELAY_M latch<CR><LF>
Response: RELAY_M latch<CR><LF>
[Prm] = latch | momentary

Query Relay Mode
GET RELAY_M rx<CR><LF>
Response: RELAY_M GET [Prm]<CR><LF>
Example: GET RELAY_M<CR><LF>
Response: RELAY_M latch<CR><LF>

Relay Timing

Set Momentary Time
SET MOM_T [Prm]<CR><LF>
Response: MOM_T [Prm]<CR><LF>
Example: SET MOM_T 8<CR><LF>
Response: MOM_T 8<CR><LF>
[Prm] = 1 ~ 10 // seconds | default is 3s

Query Momentary Time
GET MOM_T<CR><LF>
Response: MOM_T [Prm]<CR><LF>
Example: GET MOM_T<CR><LF>
Response: MOM_T 8<CR><LF>

4.5 Configuring CEC

CEC Auto Power ON/OFF

Set CEC AUTO POWER ON/OFF

SET DISPAUTO_FN [Prm] rx<CR><LF>

Response: DISPAUTO_FN [Prm] rx<CR><LF>

Example: SET DISPAUTO_FN on<CR><LF>

Response: DISPAUTO_FN on<CR><LF>

[Prm] = on | off

Query CEC AUTO POWER ON/OFF

GET DISPAUTO_FN<CR><LF>

Response: DISPAUTO_FN GET [Prm]<CR><LF>

Example: GET DISPAUTO_FN<CR><LF>

Response: DISPAUTO_FN GET on<CR><LF>

CEC Power Delay Time

Set CEC POWER Delay Time

SET AUTOCEC_D [Prm]<CR><LF>

Response: AUTOCEC_D [Prm]<CR><LF>

[Prm] = 1~30 In Minutes with a default of 2min

Example: SET AUTOCEC_D 2<CR><LF>

Response: AUTOCEC_D SET 2<CR><LF>

4.6 Configuring the Serial Port and Command Structure

Note: Conditions on sending commands exist based on how the devices will be used in a system.

- When used together as a TX and RX commands can only be sent to the RX.
- When TX is used with a different HDBT receiver commands can only be sent to the TX.

Serial Port Baudrate

Set Serial Port Baudrate
SET UART_B [Prm]<CR><LF>
Response: UART_B SET [Prm]<CR><LF>
Example: SET UART_B 115200<CR><LF>
Response: UART_B SET 115200<CR><LF>
[Prm] = 9600 | 19200 | 38400 | 57600 | 115200
//[PRM] is the baudrate.

Query Serial Port Baudrate
GET UART_B<CR><LF>
Response: UART_B GET [Prm]<CR><LF>
Example: GET UART_B<CR><LF>
Response: UART_B 115200<CR><LF>

Serial Port Data Type

Set Serial Data Type
SET UART_T [Prm]<CR><LF>
Response: SET UART_T [Prm]<CR><LF>
Example: SET UART_T string<CR><LF>
Response: UART_T string<CR><LF>
[Prm] = string | hex
//str in [Prm] = ASCII string

Query Serial Data Type
GET UART_T<CR><LF>
Response: UART_T GET [Prm]<CR><LF>
Example: GET UART_T<CR><LF>
Response: UART_T string<CR><LF>

Serial Command End Character

Set Serial Command End Character
SET UART_E [Prm]<CR><LF>
Response: UART_E [Prm]<CR><LF>
Example: SET UART_E crlf<CR><LF>
Response: UART_E crlf<CR><LF>
[Prm] = null | cr | lf | crlf
cr: carriage Response, ascii code is 0x0D.
lf: line feed, ascii code is 0x0A.

Query Serial Command End Character
GET UART_E<CR><LF>
Response: UART_E [Prm]<CR><LF>
Example: GET UART_E<CR><LF>
Response: UART_E crlf<CR><LF>

Edit Serial Command in ASCII String

Set Serial Command ASCII String
SET UART_STR [Prm1] [Prm2]<CR><LF>
Response: UART_STR [Prm1] [Prm2]<CR><LF>
Example: SET UART_STR on xxxx<CR><LF>
Response: UART_STR on xxxx<CR><LF>
[Prm1] = poweron | poweroff
[Prm2] = xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
//PRM2 is the original command according to device guidelines

Edit Serial Command in HEX String

Set Serial Command HEX String
SET UART_HEX [Prm] [Hex String]<CR><LF>
Response: UART_HEX SET [Prm] [Hex String] <CR><LF>
Example: SET UART_HEX poweron 31 32 33 34 35 36<CR><LF>
Response: UART_HEX SET poweron 31 32 33 34 35 36<CR><LF>
[Prm] = poweron | poweroff
[Hex String] = Hex string up to 64bytes
// [Hex1] | [Hex2] ~ is ascii string in hex value.
For example, string "123", convert to correct format string is "31 32 33".

5. Troubleshooting

Query Input Signal Status

GET SIG_S<CR><LF>

Response: [Input] [Prm]<CR><LF>

Example: GET SIG_S RXHDBT<CR><LF>

Response: SIG_S RXHDBT Have Signal<CR><LF>

[Input]=VGA | DP | TXHDMI | USBC | RXHDBT | RXHDMI1 | RXHDMI2

[Output]=RX | TX [Prm] = NO Signal | Have Signal

Query Unit Firmware Version

GET VER<CR><LF>

Response: [Prm]<CR><LF>

Example: GET VER<CR><LF>

Response:

VER MCU 1.2 tx<CR><LF>

VER ARM 1.4 tx<CR><LF>

[Prm] =x.x// according to actual firmware version

Reboot Device

APP<CR><LF>

Response: APP<CR><LF>

Example: APP<CR><LF>

Response: APP<CR><LF>

Restore Factory Defaults

SYSR<CR><LF>

Response: SYSR<CR><LF>

Example: SYSR<CR><LF>

Response: SYSR<CR><LF>

Query Command List (Help)

HELP<CR><LF>

Response: HELP<CR><LF>

[Command List]

Example: HELP<CR><LF>

Response: HELP<CR><LF>

[Command List]

[Command List]=

[00]SET AUTOSW_FN prm <CR> <LF>(To set the auto switch on/off)

[01] GET AUTOSW_FN <CR> <LF>(To verify the auto switch status)

[02] SET KEY_FN prm <CR> <LF>(To set key lock on/off)

[03] GET KEY_FN <CR> <LF>(To verify the key lock status)

[04] SET SW in out<CR> <LF>(To execute a switch)

[05] SET SW in all<CR> <LF>(To execute a switch)

[06] GET MP out<CR> <LF>(To verify switch status)

[07] GET SIG_S in<CR> <LF>(To verify input signal status)

[08] SET CEC_FN prm<CR> <LF>(To execute a display control on/off)

[09] SET DISPAUTO_FN prm <CR> <LF>(To define the display control automatically)

[10] GET DISPAUTO_FN <CR> <LF>(To verify the display control Status)

[11] SET AUTOCEC_D prm<CR> <LF>(To define a delay time to control the display off when no signal)

[12]GET VER ALL <CR> <LF>(Get all firmware version)

[13] SET UART_B prm<CR> <LF>(To set UART baud rate)

[14] GET UART_B<CR> <LF>(To get UART baud rate)

[15] SET UART_E prm<CR> <LF>(To set UART end character)

6. Contacting Technical Support

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

Phone: UK: +44 (0) 1793 230 343 | ROW: 844.280.WYRE (9973)

Contact Request: <http://wyrestorm.com/contact-tech-support>

7. Document Revision History

v1.2 – November 2020	
All Sections	Updated to include SW-510-TX and SW-515-RX
v1.1 – February 2019	
Various	General formatting and content cleanup
Controlling the Switcher and Connected Devices	• Moved to before configuration and renamed • Moved Powering On and Off displays from Configuring CEC Section and renamed • Added important note about using display power commands • Moved Triggering Relay On and Off from Relay section and renamed • Corrected typo for Triggering Relay command SET PROSCR_LR
v1.0 – October 2018	
All Sections	Initial Release of Document

Publication Disclaimer

The material contained in this document consists of information that is the sole property of WyreStorm. This document is intended to provide information to allow interfacing to the relevant WyreStorm equipment by third party products.

WYRESTORM IS NOT RESPONSIBLE FOR MALFUNCTIONS AND/OR THE IN-OPERABILITY WHICH MAY BE CAUSED BY THE APPLICATION OF THIS INFORMATION, WHETHER EXPECTED OR NOT.

WyreStorm reserves the right to change software, control codes and specifications without notice.

WyreStorm will not be liable for any use of this information or any changes it may make to those products. The use of this information constitutes an agreement by the user to these limitations and exclusions.



WyreStorm Technical Support

UK:- +44 (0) 1793 230 343

US/ROW: +1 844-280-WYRE (9973)

Email: support@wyrestorm.com

WyreStorm Offices

North America: 23 Wood Road, Round Lake, NY 12151

Tel: +1 518-289-1293

EMEA: Unit 22, Ergo Business Park, Swindon, Wiltshire, SN3 3JW, UK

Tel: +44 (0) 1793 230 343

WyreStorm Technologies reserves the right to change the physical appearance or technical specification of this product at any time. Visit wyrestorm.com for the latest product information.