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## 3:1 HDMI/VGA/DP Switching Extender with Scaling Receiver, Relay Triggering and HDCP 2.2

EX-SW-0301-H2

### Application Programming Interface

Document Revision:	1.1
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Supported Firmware:	1.0.0 or higher

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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.

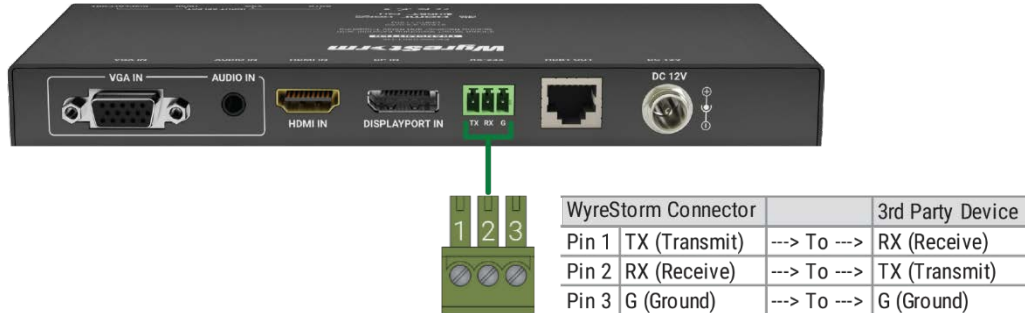
- EX-SW-0301-H2.....
- Control System and Control System Documentation .....
- PC or Mac for Configuring Product and Telnet Communications.....
- Visit the Product Page on [WyreStorm.com](http://WyreStorm.com) to download firmware and additional product information .....

## 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 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

## 3. Command Overview

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

## 4. Switch Configuration

### 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.

---

Set Static IP Address  
SET IPADDR STATIC ip4addr [IP Address] netmask [Netmask]<CR><LF>  
Example: SET IPADDR STATIC ip4addr 192.168.11.243 netmask 255.255.255.0 <CR><LF>  
Response: IPADDR STATIC ip4addr 192.168.11.243 netmask 255.255.255.0 <CR><LF>

Query IP Address  
GET IPADDR<CR><LF>  
Response: IPADDR STATIC ip4addr xx.xx.xx.xx netmask xx.xx.xx.xx <CR><LF>  
Example: GET IPADDR<CR><LF>  
Response: IPADDR STATIC ip4addr 192.168.11.243 netmask 255.255.255.0 <CR><LF>

**Note:** This command can only be sent to the receivers (RX) RS-232 port.

---

### 4.2 Configuring Video

#### Configuring RX Output Resolution

By default, the RX is set to Auto Scale to the resolution of the connected display. However, this can be configured to suit the installation.

---

<b>Set Output Resolution</b> SET RES all [Resolution] rx<CR><LF> Example: SET RES all Fix:1920x1200@60 rx<CR><LF> Response: RES SET all Fix:1920x1200@60 rx<CR><LF>	[Resolution]= AutoScaler Fix:1024x768@60 Fix:1280x720@60 Fix:1280x800@60 Fix:1280x1024@60 Fix:1920x1080@60 Fix:1920x1200@60 Fix:3840x2160@30 Fix:3840x2160@60
<b>Query Output Resolution</b> GET RES_OUT all rx<CR><LF> Example: GET RES_OUT all rx<CR><LF> Response: RES GET all Fix:1920x1200@60 rx<CR><LF>	AutoScaler Fix:1024x768@60 Fix:1280x720@60 Fix:1280x800@60 Fix:1280x1024@60 Fix:1920x1080@60 Fix:1920x1200@60 Fix:3840x2160@30 Fix:3840x2160@60 Auto:[Resolution]   Resolution=Scaled resolution based of connected display

---

#### 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.

---

<b>Set Input EDID</b> SET EDID [Input] [Resolution]<CR><LF> Example: SET EDID hdmi_tx 1920x1080@60Hz<CR><LF> Response: EDID SET hdmi_tx 1920x1080@60Hz<CR><LF>	[Input]=hdmi_tx   dp_tx   vga_tx   hdbt_rx   hdmi_rx [Resolution]= 3840x2160@30Hz/1920x1200@60Hz 1920x1080@60Hz 1680x1050@60Hz 1600x900@60Hz 1440x900@60Hz 1360x768@60Hz 1280x720@60Hz 1024x768@60Hz
<b>Query Input EDID</b> GET EDID [Input]<CR><LF> Example: GET EDID hdmi_tx<CR><LF> Response EDID GET hdmi_tx 1920x1080@60Hz <CR><LF>	

---

## Enable/Disable HDCP Support

---

### Set HDCP Support On/Off

SET HDCP\_S [Input] [Prm]<CR><LF>  
Response: HDCP\_S SET [Input] [Prm]<CR><LF>  
Example: SET HDCP\_S hdmi\_tx on<CR><LF>  
Response: HDCP\_S SET hdmi\_tx on<CR><LF>

[Input]= hdmi\_tx | hdbt\_rx | hdmi\_rx  
[Prm]=on | off

### Query HDCP Support On/Off Status

GET HDCP\_S [Input]<CR><LF>  
Response: HDCP\_S GET [Input] [Prm]<CR><LF>  
Example: GET HDCP\_S hdmi\_tx<CR><LF>  
Response: HDCP\_S GET hdmi\_tx on<CR><LF>

---

## Query Current HDCP Support Level

---

GET HDCP\_IN [Input]<CR><LF>  
Response: GET HDCP\_IN GET [Input] [Prm]<CR><LF>  
Example: SET HDCP\_S hdmi\_tx<CR><LF>  
Response: HDCP\_IN GET hdmi\_tx hdc1.4 tx<CR><LF>

[Input]= hdmi\_tx | dp\_tx | vga\_tx | hdbt\_rx | hdmi\_rx  
[Prm]= hdc1.4 | hdc2.2 | off

---

## 4.3 Configuring Device Switching

### Default Device (TX/RX)

---

Set Default Device  
SET DEFDEVICE [Device]<CR><LF>  
Response: DEFDEVICE SET [Device]<CR><LF>  
Example: SET DEFDEVICE tx<CR><LF>  
Response: DEFDEVICE SET tx<CR><LF>

[Device] = tx | rx

Query Default Device  
GET DEFDEVICE<CR><LF>  
Response: DEFDEVICE GET [Device]<CR><LF>  
Example: GET DEFDEVICE<CR><LF>  
Response: DEFDEVICE GET tx<CR><LF>

---

### Auto Switch Mode

---

Enable/Disable Auto Switch Mode  
SET AUTOSW\_FN [Prm] [Device]<CR><LF>  
Response: AUTOSW\_FN SET [Prm] [Device]<CR><LF>  
Example: SET AUTOSW\_FN on tx<CR><LF>  
Response: AUTOSW\_FN SET on tx<CR><LF>

[Prm] = on | off  
[Device] = tx | rx | all

Query Auto Switch Mode Status  
GET AUTOSW\_FN [Device]<CR><LF>  
Response: AUTOSW\_FN GET [Prm] [Device]<CR><LF>  
Example: SET AUTOSW\_FN on tx<CR><LF>  
Response: AUTOSW\_FN SET on tx<CR><LF>

---

## 4.4 Configuring Relays

### Relay Power

---

SET RELAY\_PWR [Prm] rx<CR><LF>  
Response: RELAY\_PWR SET [Prm] rx<CR><LF>  
Example: SET RELAY\_PWR on rx<CR><LF>  
Response: RELAY\_PWR SET on rx<CR><LF>

[Prm] = on | off

---

### Relay mode

---

Set Relay Mode  
SET RELAY\_M [Prm] rx<CR><LF>  
Response: RELAY\_M SET [Prm] [Device]<CR><LF>  
Example: SET RELAY\_M latch rx<CR><LF>  
Response: RELAY\_M SET latch rx<CR><LF>

[Prm] = latch | momentary

Query Relay Mode  
GET RELAY\_M rx<CR><LF>  
Response: RELAY\_M GET [Prm] [Device]<CR><LF>  
Example: GET RELAY\_M rx<CR><LF>  
Response: RELAY\_M GET latch rx<CR><LF>

---

## Relay Timing

---

Set Momentary Time

SET MOMENT\_T [Prm] rx<CR><LF>

Response: MOMENT\_T SET [Prm] [Device]<CR><LF>

Example: SET MOMENT\_T 8 rx<CR><LF>

Response: MOMENT\_T SET 8 rx<CR><LF>

[Prm] = 1 ~ 10 // seconds | default is 3s

Query Momentary Time

GET MOMENT\_T rx <CR><LF>

Response: MOMENT\_T GET [Prm] rx<CR><LF>

Example: GET MOMENT\_T rx<CR><LF>

Response: MOMENT\_T GET 8 rx<CR><LF>

---

## 4.5 Configuring CEC

### CEC Power On/Off

---

Set CEC Power On/Off

SET CEC\_PWR all [Prm] rx<CR><LF>

Response: CEC\_PWR SET all [Prm] [Device]<CR><LF>

Example: SET CEC\_PWR all on rx<CR><LF>

Response: CEC\_PWR SET all on rx<CR><LF>

[Prm] = on | off

---

### CEC AUTO POWER ON/OFF

---

Set CEC AUTO POWER ON/OFF

SET AUTOCEC\_FN all [Prm] rx<CR><LF>

Response: AUTOCEC\_FN SET all [Prm] rx<CR><LF>

Example: SET AUTOCEC\_FN all on tx<CR><LF>

Response: AUTOCEC\_FN SET all on tx<CR><LF>

[Prm] = on | off

Query CEC AUTO POWER ON/OFF

GET AUTOCEC\_FN all rx<CR><LF>

Response: AUTOCEC\_FN GET all [Prm] rx<CR><LF>

Example: GET AUTOCEC\_FN all rx<CR><LF>

Response: AUTOCEC\_FN GET all on rx<CR><LF>

---

### CEC POWER Delay Time

---

Set CEC POWER Delay Time

SET AUTOCEC\_D all [Prm] rx<CR><LF>

Response: AUTOCEC\_D SET all [Prm] rx<CR><LF>

Example: SET AUTOCEC\_D all 2 rx<CR><LF>

Response: AUTOCEC\_D SET all 2 rx<CR><LF>

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

Query CEC POWER Delay Time Status

GET AUTOCEC\_D all rx<CR><LF>

Response: AUTOCEC\_D GET all [Prm] rx<CR><LF>

Example: GET AUTOCEC\_D all rx<CR><LF>

Response: AUTOCEC\_D GET all 2 rx<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 Properties

Set Serial Port Properties

```
SET UART_INFO [Prm] dev<CR><LF>
```

Response: UART\_INFO SET [Prm] dev<CR><LF>

Example: SET UART\_INFO 115200 tx<CR><LF>

Response: UART\_INFO SET 115200 tx<CR><LF>

[Prm] = 9600 | 38400 | 57600 | 115200

//[PRM] is the baudrate.

Query Serial Port Properties

```
GET UART_INFO rx<CR><LF>
```

Response: UART\_INFO GET [Prm] rx<CR><LF>

Example: GET UART\_INFO rx<CR><LF>

Response: UART\_INFO GET 115200 rx<CR><LF>

---

### Serial Port Data Type

Set Serial Data Type

```
SET UART_DATATYPE [Prm] rx<CR><LF>
```

Response: SET UART\_DATATYPE [Prm] rx<CR><LF>

Example: SET UART\_DATATYPE str rx<CR><LF>

Response: UART\_DATATYPE SET str rx<CR><LF>

[Prm] = str | hex

//str in [Prm] = ASCII string

Query Serial Data Type

```
GET UART_DATATYPE rx<CR><LF>
```

Response: UART\_DATATYPE GET [Prm] rx<CR><LF>

Example: GET UART\_DATATYPE rx<CR><LF>

Response: UART\_DATATYPE GET str rx<CR><LF>

---

### Serial Command End Character

Set Serial Command End Character

```
SET UART_E [Prm] rx<CR><LF>
```

Response: UART\_E SET [Prm] rx<CR><LF>

Example: SET UART\_E crlf rx<CR><LF>

Response: UART\_E SET crlf rx<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 rx<CR><LF>
```

Response: UART\_E GET [Prm] rx<CR><LF>

Example: GET UART\_E rx<CR><LF>

Response: UART\_E GET crlf rx<CR><LF>

---

### Edit Serial Command in ASCII String

Set Serial Command ASCII String

```
SET UART_STR [Prm1] [Prm2]<CR><LF>
```

Response: UART\_STR SET [Prm1] [Prm2]<CR><LF>

Example: SET UART\_STR on xxxx<CR><LF>

Response: UART\_STR SET on xxxx<CR><LF>

[Prm1] = on | off

[Prm2] = xx

//PRM2 is the original command according to device guidelines

Query Serial Command ASCII String

```
GET UART_STR [Prm1]<CR><LF>
```

Response: UART\_STR GET [Prm1] [Prm2]<CR><LF>

Example: GET UART\_STR on<CR><LF>

Response: UART\_STR GET on xxxx<CR><LF>

---

### 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 on 31 32 33 34 35 36<CR><LF>

Response: UART\_HEX SET on 31 32 33 34 35 36<CR><LF>

[Prm] = on | off

[Hex String] = Hex string up to 64bytes

// [Hex1] | [Hex2] | ... is ascii string of hex value. For example, string "123", convert to correct format string is "31 32 33".

Query Serial Command HEX String

```
GET UART_HEX [Prm1]<CR><LF>
```

Response: UART\_HEX GET [Prm1] [Hex1] [Hex2] hex3 .... <CR><LF>

Example: GET UART\_HEX on<CR><LF>

Response: UART\_HEX GET on xx xx xx xx ....<CR><LF>

---



## Configure Serial Power On/Off for Display

---

SET UART\_PWR all [Prm] rx<CR><LF>

Response: UART\_PWR SET all [Prm] rx<CR><LF>

Example: SET UART\_PWR all on rx<CR><LF>

Response: UART\_PWR SET all on rx<CR><LF>

---

[Prm] = on | off

## Configure Serial Auto Power On/Off for Display

---

Set Serial Auto Power On/Off

SET UARTPWR\_FN all [Prm] rx<CR><LF>

Response: UARTPWR\_FN SET all [Prm] rx<CR><LF>

Example: SET UARTPWR\_FN all on rx<CR><LF>

Response: UARTPWR\_FN SET all on rx<CR><LF>

---

[Prm] = on | off

Query Serial Auto Power On/Off

GET UARTPWR\_FN all dev<CR><LF>

Response: UARTPWR\_FN GET all [Prm] rx<CR><LF>

Example: GET UARTPWR\_FN all rx<CR><LF>

Response: UARTPWR\_FN GET all on rx<CR><LF>

---

## Configure Serial Power Delay Time

---

Set Serial Power Delay Time

SET UARTPWR\_D all [Prm] rx<CR><LF>

Response: UARTPWR\_D SET all [Prm] rx<CR><LF>

Example: SET UARTPWR\_D all 2 rx<CR><LF>

Response: UARTPWR\_D SET all 2 rx<CR><LF>

---

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

Query Serial Power Delay Time

GET UARTPWR\_D all dev<CR><LF>

Response: UARTPWR\_D GET all [Prm] rx<CR><LF>

Example: GET UARTPWR\_D all rx<CR><LF>

Response: UARTPWR\_D GET all 2 rx<CR><LF>

---

Note: Setting the UART POWER Delay Time via RS232 allows the sink to be powered off at a specific period of time when there's no source input and be powered on immediately once detecting an input.

---

## 5. Switching Inputs

---

Select Input Mapping

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

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

Example: SET SW hdmi\_tx all<CR><LF>

Response: SW SET hdmi\_tx all<CR><LF>

[Input]= hdmi\_tx | dp\_tx | vga\_tx | hdbt\_rx | hdmi\_rx

Query Selected Input Mapping

GET MP all<CR><LF>

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

Example: GET MP all<CR><LF>

Response: MP GET hdmi\_tx all<CR><LF>

---

## 6. Troubleshooting

### Query Firmware Version

---

GET VER [Target] [Device]<CR><LF>

Response: VER GET [Target] [Prm] [Device]<CR><LF>

Example: GET VER all tx<CR><LF>

Response:

VER GET MCU 1.2 tx<CR><LF>

VER GET ARM 1.4 tx<CR><LF>

---

[Device] = tx | rx | all

[Target]=all | MCU | ARM

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

### Reboot Device

---

SET RESET [Device]<CR><LF>

Response: RESET SET [Device]<CR><LF>

Example: SET RESET tx<CR><LF>

Response: RESET SET tx<CR><LF>

---

[Device] = tx | rx | all

### Restore Factory Defaults

---

SET RESET [Device]<CR><LF>

Response: RESET SET [Device]<CR><LF>

Example: SET RESET tx<CR><LF>

Response: RESET SET tx<CR><LF>

---

[Device] = tx | rx | all

## 7. 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>

## 8. Revision History

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v1.1 – June 2018

All Sections	Commands updated to proper syntax to match the current FW.
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v1.0 – May 2018

All Sections	Initial Release of Document
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## Publication Disclaimer

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