External Control Protocol Reference Manual
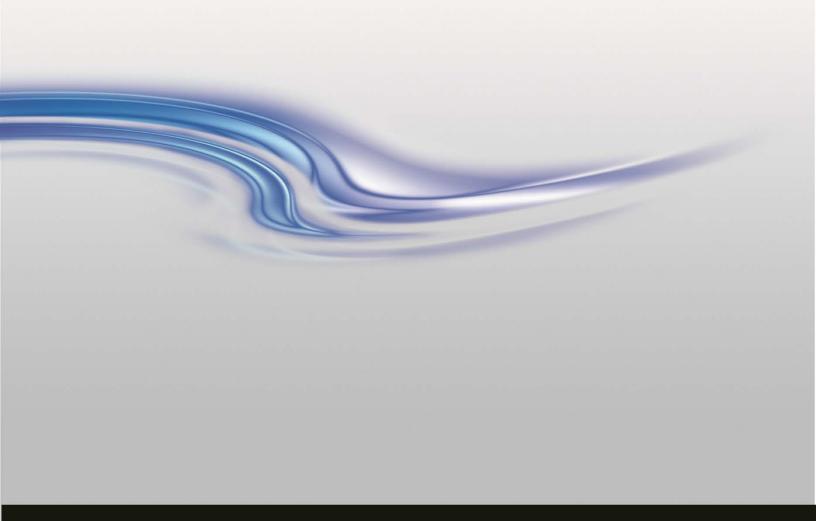
020-102884-01

Terra XY Switcher API

Revision History

Date	Version	Revision	Description
09/11/18	1	1	First release.

NOTICES

Content

Terra XY Switcher API

This document describes the interface control protocol commands for remote access to the Terra XY Switcher.

Reference and Related Documents

Access the latest documentation from the Christie website at http://bit.ly/TerraDownloads

Additional information is available in the following documents:

- Terra Installation and Setup Guide for Controlled Systems (020-102804-*nn*)
- Terra Installation and Setup Guide for Transmitters and the Receivers (020-102814-*nn*)
- Terra Product Safety Guide (020-102786-*nn*)
- Terra User Manual (020-102838-*nn*)
- Terra XY Switcher User Manual (020-102883-*nn*)
- Terra JSON API Reference Manual (020-102837-*nn*)

Transport and Framing

There are several transport methods allowed for this protocol. Message framing varies by transport protocol. All commands should respond within 15 seconds (round trip) unless otherwise specified.

TCP

The baseline communication method will be TCP. Each session will consist of one TCP session.

Port 23457 is the TCP/IP port used for communications.

Messages must be framed using the CRLF characters. That is, messages must be separated by the {0x0D, 0x0A} characters. Any data before the two null characters that is not valid is an invalid message and will generate an error message.

All results will end with a greater than sign (>).

Flow control is handled by TCP. When the TCP stream is broken, any pending registrations/notifications are cleared.

Serial Port (COM1)

Communication can be used over a serial port link via the COM1 port on the controller. The communication parameters must be set as follows:

Baud Rate	9600
Parity	None
StopBits	1
DataBits	8
Handshake	None

Other than the hardware link, all messaging is identical to that of TCP.

All results will end with a CRLF.

Commands

Commands are in the basic format of <CommandID>:<Command>. Exceptions are noted.

A successfully processed command will typically return 0. Additional return information will be listed in the *Sample Results* sections.

A command that fails to process will return <ErrorCode>.

Document Conventions

This document uses the following formatting conventions:

Square brackets ([ ]) enclose text that is included in a command output.

Summary of Commands

The following is a summary of commands:

Command	Description	Command ID
AssignIndex	Assigns an index to a device.	2
Close	Closes the connection. ⓘ Close commands are ignored for RS232 connections.	0
GetError	Gets the error associated with an error code.	99
Leave	Clears one or more destinations.	5
Ping	Pings the devices and returns success if the server receives the command.	8
QueryDevice	Gets routing for a device.	6
QueryDeviceName	Gets the name of one or more devices.	7
Switch	Routes HDMI, HDMI Audio, Audio, RS232, Infrared, I2S_Audio, and USB from one source to one or more destinations.	1

Close

Closes the remote connection.

Command ID

0

Formats

0:	Closes the connection.
Close	Closes the connection.
Exit	Closes the connection.

Parameters

None.

Response Format

None.

Examples

	TX/RX Data	Description
Command	0:	Sends a request to close the connection.
Response	0>	Command was executed successfully.
Command	close	Sends a request to close the connection.
Response	0>	Command was executed successfully.
Command	exit	Sends a request to close the connection.
Response	0>	Command was executed successfully.

Switch

Routes HDMI, HDMI Audio, Audio, RS232, Infrared, I2S_Audio, and USB from one TX to one or more RXs.

Command ID

1

Format

1:<Types>!<Source>@<Destinations>	Routes <Types> from <Source> to <Destinations>.
<Types>!<Source>@<Destinations>	Routes <Types> from <Source> to <Destinations>.
<Source>@<Destinations>	Routes HDMI and HDMI Audio from <Source> to <Destinations>.

Parameters

Types	0	All
	1	HDMI
	2	HDMI Audio
	3	Audio
	4	RS232
	5	Infrared
	6	I2S_Audio
	7	USB
Source	Device index for the TX.	
Destination	Device index for the RX.	

Response Format

Success	0>
Failure	[ErrorCode]>

Examples

	TX/RX Data	Description
Command	1:3!2@3,5	Requests the routing of audio from TX 2 to RX 3 and RX 5.
Response	0>	Command was executed successfully.
Command	1,4!5@1,2	Requests the routing of HDMI and RS232 from TX 5 to RX 1 and RX 2.
Response	0>	Command was executed successfully.
Command	2@4,2	Requests the routing of HDMI and HDMI Audio from TX 2 to RX 4 and RX 2.
Response	0>	Command was executed successfully.

Assign Index

Assigns an index to a device.

Command ID

2

Format

2:<DeviceType>!<OldIndex>#<NewIndex>

Parameters

DeviceType	1 – TX 2 – RX
OldIndex	The current index number for the device.
NewIndex	The new index number for the device.

Response Format

Success	0>
Failure	[ErrorCode]>

Examples

	TX/RX Data	Description
Command	2:1!4#9	Requests changing the index of the TX with index 4 to 9.
Response	0>	Command was executed successfully.

Leave

Clears one or more destinations that were applied with the Switch command.

Command ID

5

Format

5:<Types>!<Source>@<Destinations>	Removes <Types> of <Source> from <Destinations>.
5:<Source>@<Destinations>	Removes HDMI and HDMI Audio of <Source> from <Destinations>.

Parameters

Destinations	Device index.	
Types	0	All
	1	HDMI
	2	HDMI Audio
	3	Audio
	4	RS232
	5	Infrared
	6	I2S_Audio
	7	USB
Source	Device index for the TX.	
Destination	Device index for one or more RXs.	

Response Format

Success	0>
Failure	[ErrorCode]>

Examples

	TX/RX Data	Description
Command	1:1!1@1	Requests the routing of HDMI video from TX index 1 to RX index 1.
Response	0>	Command was executed successfully.
Command	5:1!1@1	Requests the removal of the HDMI video that is routed from TX index 1 to RX index 1.
Response	0>	Command was executed successfully.
Command	5:4,7!1@1,4	Requests the clearing of the RS232 and USB routings on TX1 that are currently routing from RX with index 1 and 4.
Response	0>	Command was executed successfully.
Command	5:2@3,5,8	Requests the clearing of the HDMI and HDMI Audio routings on TX2 that are currently routing from RX with index 3, 5, and 8.
Response	0>	Command was executed successfully.

Query Device

Gets routing for a device.

Command ID

6

Format

6:<DeviceType>@<Index>

Parameters

DeviceType	1 - TX 2 – RX
Index	Index number of the RX / TX device being queried.

Response Format

Success	Returns 0|[Types:Index]> if successful. [Types:Index] is a semicolon delimited list of the routes. Available routes are:

	1	Video
	2	Audio
	3	USB
	4	RS232
	5	Infrared

Indices are separated by a comma.

Failure	[ErrorCode]>

Example

	TX/RX Data	Description
Command	6:1@3	Requests the routing for the TX device with index 3.
Response	0|1:1,2;3:3>	Routes of Video to RX with indices of 1 and 2 and USB to RX with index 3 for the specified TX with index 3.

Query Device Name

Gets the name of one or more devices.

i	Delimiter characters (; or ,) in device names (for example: HiDef;2) will be encoded as follows:

Character	Encoded Text
;	%3B
,	%2C

Command ID

7

Format

7:	Query all device names.
7:<DeviceType>	Query all transmitter or receiver names.
7:<DeviceType>@<Index>	Query for a specific transmitter or receiver name.

Parameters

DeviceType	1 - TX
	2 - RX
Index	Index number of the device.

Response Format

Success	Returns 0|1:<Index,Name>|2:<Index,Name> <Types:Index> is a semicolon delimited list of index and name pairs with a comma between them.

1	list of TX
2	list of RX

i	Querying for only one device type will exclude the list of the other type.

Failure	[ErrorCode]>

Examples

	TX/RX Data	Description
Command	7:	Requests a list of all device names and their associated index number.
Response	0|1:1%2CChromeCast%3B2% 2CCableTV%3B3%2CPC|2:1% 2CBottomLeft%3B2%2CBotto mRight%3B3%2CTopRight%3B 4%2CTopLeft>	Returns a list of all device names and their associated index number.
Command	7:1@3	Requests the index and name of the TX with index 3.
Response	0|1:3%2CPC>	Returns the index and name of the TX with index 3.
Command	7:1	Requests a list of all TX names and their associated index number.
Response	0|1:1%2CChromeCast%3B2% 2C CableTV%3B3%2CPC>	Returns a list of all TX names and their associated index number.

Ping

Pings the server and returns success if the server receives the command.

Command ID

8

Format

8:

Parameters

None.

Response Format

Success	0>
Failure	[ErrorCode]>

Examples

	TX/RX Data	Description
Command	8:	Sends a request to ping the server.
Response	0>	Command was executed successfully.

Get Error

Gets the error description associated with an error code. Successful Get Error commands will return a result of <ErrorCode>|<ErrorMessage>|<VerboseErrorMessage>.

Command ID

99

Format

99:<ErrorCode>

Parameters

ErrorCode	Error code number.

Response Format

Success	[ErrorCode]|[ErrorMessage]|[VerboseErrorMessage]>
Failure	[ErrorCode]>

Examples

	TX/RX Data	Description
Command	99:4	Requests details for error code 4.
Response	4|Unsupported routing|Supported Routing is 0 (All), 1 (HDMI), 2 (HDMI_AUDIO), 3 (AUDIO), 4 (RS232), 5 (INFRARED), 6 (I2S_AUDIO), 7 (USB)>	Returns the details for error code 4.

Error codes

1	InvalidErrorCode
2	InvalidCommand
3	InvalidSwitchStructure
4	InvalidRouting
5	InvalidSource
6	InvalidDestination
7	InvalidAssignIndexStructure
8	InvalidDeviceType
9	InvalidDeviceOldIndex
10	InvalidDeviceNewIndex
11	InvalidRecallLayoutStructure
12	InvalidLayoutIndex
13	InvalidLeaveStructure
14	InvalidQueryDeviceStructure
15	InvalidQueryDeviceNameStructure
16	InvalidIndex
99	InternalError

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