Technical Reference

020-103316-02

# Christie TruLife+

## Serial Commands

CHRISTIE®

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# Content

# Communicating with Christie TruLife+

Understand the information and procedures for communicating with Christie TruLife+ from a remote location.

You can communicate with the projector through the RS232 IN port or the Ethernet port. When connecting the projector to a computer, use a direct connection. Docking ports can cause software upgrade failures.

## Model names

This guide applies to the following models.

- Griffyn 4K32-RGB

## Product documentation

For installation, setup, and user information, see the product documentation available on the Christie website. Read all instructions before using or servicing this product.

1. Access the documentation from the Christie website:
   - Go to this URL: *http://bit.ly/3powZic* or *https://www.christiedigital.com/products/projectors/all-projectors/*.
   - Scan the QR code using a QR code reader app on a smartphone or tablet.

   
2. Select the projector series.
3. On the product page, select the model and switch to the **Downloads** tab.

## Technical support

Technical support for Christie Enterprise products is available at:

- North and South America: +1-800-221-8025 or *Support.Americas@christiedigital.com*
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# Connection and use

Once you have connected your computer to either the RS232 IN port (depending on which standard is supported by your computer) or to the Ethernet port on Christie TruLife+, you can remotely access controls and image setups, issue commands or queries, and receive replies.

Use these bidirectional messages to:

- Control multiple projectors
- Obtain a projector's status report
- Diagnose performance problems

Refer to the User Manual provided with the projector for all cable requirements and other connection details.

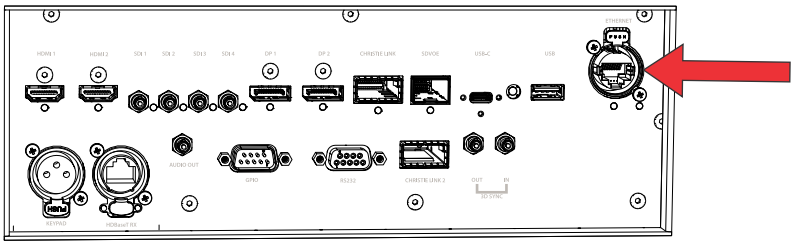
Some commands are operational only when projector is powered up.

## Connecting to a computer or server with 10/100/1000 base-T Ethernet

Communicate with a remote computer, server, or an existing network using a RJ-45 cable.

The port located on the Video Input panel uses Christie-proprietary protocol or Art-Net control protocol and is intended for Christie accessories or automation controllers only.

1. Use an RJ-45 cable to connect the Ethernet hub or switch to the Ethernet port, located on the projector Video Input panel.



2. When using the Christie serial protocol over Ethernet, connect to port 3002.
3. For applications or equipment using serial communications, use the Christie-proprietary serial protocol or Art-Net protocol to communicate with the Ethernet port on the Video Input panel.

## Configuring the RS232 port

Configure the RS232 port to send Christie serial commands using a standard RS232 serial cable.

1. Select **Menu** > **Communications** > **Projector Communication**.
2. Use the down arrow to select **Baud Rate**.
3. Select the appropriate baud rate and select **Enter**.
4. Use the down arrow to select **Network Routing**.
5. Select the type network routing appropriate for your projector and select **Enter**.

## Setting up the Ethernet

Ethernet is setup to obtain an IP address automatically if a DHCP server is on the network, modify IP settings, or manually enter an address.

Christie recommends using the Ethernet port on the Video Input panel as the HDBaseT port is limited to 100 Mb/s.

You cannot change the IP settings using the web interface.

1. From the display panel, use the arrow keys to select **IP Settings**.
2. To set the type of network, select **DHCP** or **Static**.
3. If you selected Static, manually enter the network information for the **IP Address**, **Subnet**, and **Gateway**.
4. Select **Apply** and select **Enter**.
5. Select **MENU** > **Communications** > **Network Settings**.
6. Select **Device name**.
7. Use the up and down keys to enter the name of the projector.
8. Select **Enter**.

# Understanding message format

Commands sent to and from Christie TruLife+ are formatted as simple text messages consisting of a three letter command code, an optional four letter subcode, and optional data.

| Source | Format | Function | Example |
|---|---|---|---|
| From controller | (Code Data) | SET (set power on) | `(PWR1) or (PWR 1)` |
| | (Code+Subcode Data) | SET (set input port configuration) | `(SIN+PORT 1)` |
| | (Code ?) | REQUEST (what is current power state?) | `(PWR?) or (PWR ?)` |
| | (Code+Subcode ?) | REQUEST (what is current input port configuration?) | `(SIN+PORT?)` |
| From projector | (Code Data) | REPLY (power state is 1 "On") | `(PWR!001 "On")` |

| Source | Format | Function | Example |
|---|---|---|---|
| | (Code+Subcode Data) | REPLY (input port configuration is 1 "One-Port") | `(SIN+PORT!001 "One-Port")` |

Generally, most commands include 0 or 1 data fields or parameters. Where applicable, a message may expand to include additional parameters of related details.

The smallest step size for any parameter is always 1. For some controls (such as Size) the value displayed on the screen has a decimal point (for example, 0.200 to 4.000). In this case, the values used for the serial communications is an integer value (for example, 200 to 4000), not the decimal value seen on the screen.

### Available message types

| Message type | Description |
|---|---|
| Set | A command to set a projector parameter at a specific level, such as changing the brightness. |
| Request | A request for information, such as what is the current brightness setting. |
| Reply | Returns the data in response to a request or as confirmation of a command. |

# Basic message structure

Understand the component fields that comprise a standard ASCII message.

| Components | Description |
|---|---|
| Start and end of message | Every message begins with the left bracket character and ends with the right bracket character.<br>If the start character is received before an end character of the previous message, the partial (previous) message is discarded. |
| Prefix characters (optional) | To acknowledge that Christie TruLife+ has responded, and/or maximize message integrity, insert one or two special characters before the three-character function code:<br>• $ (Simple Acknowledgment)—Causes a dollar sign ($) character to be sent from Christie TruLife+ when it has finished processing the message.<br>• # (Full Acknowledgment)—Causes an echo of the message as a reply to be sent from Christie TruLife+ when it has finished processing the message.<br>• & (Checksum)—Allows a checksum to be put as the last parameter in the message for verification at Christie TruLife+. |
| Function code | The Christie TruLife+ function you want to work with, such as channel selection or gamma, is represented by a three-character ASCII code (A-Z, upper or lower case). This function code appears immediately after the leading bracket that starts the message. In messages sent to Christie TruLife+ that do not have a subcode, a space between the function code and the first parameter (or special character) is optional. |
| +Subcode | The Christie TruLife+ function you want to work with may have one or more subcodes that allow you to select a specific source, image, channel or subfunction. |

| Components | Description |
|---|---|
| | The subcode is represented by a four-character ASCII code (A-Z, upper or lower case, and 0-9). This subcode appears immediately after the function code, with a plus sign (+) character to separate the code and subcode. If there is no subcode, the plus sign (+) is also omitted. In messages sent to Christie TruLife+ that have a subcode, a space between the subcode and the first parameter (or special character) is optional. |
| Request/reply symbols | If the controller is requesting information from Christie TruLife+, a question mark (?) appears directly after the function code. If Christie TruLife+ is replying, an exclamation mark (!) appears directly after the function code. For set messages to Christie TruLife+, neither of these characters appear—data directly follows the code and subcode.<br>A request for information is represented by a question mark (?) that appears directly after the function code. A reply is represented by an exclamation mark (!) that appears directly after the function code or subcode, if one is provided. The first parameter located after the exclamation mark (!) reply character cannot have a space, for example (PWR!000). |
| Data | The value for a given Christie TruLife+ state, such as on or off, appears in ASCII-decimal format directly after the request/reply symbol. You can add an optional space after the symbol—such as before the data—in a set message, but data in replies follow the exclamation mark (!) symbol without a space. Other details to remember about data:<br>• All values returned by Christie TruLife+ (reply messages) have a fixed length, regardless of the actual value. For a specific parameter, the length is always the same (for example, contrast is always returned as three characters, Christie TruLife+ number is always returned as five characters). The minimum parameter size is three characters. Values less than the predefined size are padded with leading zeros as needed. Parameters which have negative signs are zero padded after the negative sign, and have one less digit to make space for the sign.<br>• Data in set messages to Christie TruLife+ do not require padding with zeros.<br>• Within each message, multiple parameters of data must be separated by one space character.<br>• Text parameters such as channel names are enclosed in double quotes following the data, as in Name. |
| Text parameters | Most data is simply a numerical value; however, some messages also require text. For example, a channel naming message typically includes a text-based name—enclose this text in double quotation marks, as in "Tilt the Wagon". Use all characters as required except for special characters—these require a two-character combination. |

### Related information

*Special characters for text* (on page 11)
*Maximizing message integrity* (on page 13)

## Special characters for text

To use special characters in the API commands, you must use a two-character combination.

| Special character | Two-character combination | Description |
|---|---|---|
| ” | \” | Double quotation mark |
| \ | \\ | Backslash |
| ( | \( | Left bracket |
| ) | \) | Right bracket |
| Line break | \n | New line—If the text can be displayed on more than one line, this sets the line break. |
| Send arbitrary code | \h## | Sends one arbitrary code defined by the two hexadecimal digits ##. |

# Sample messages and their meaning

For a more detailed understanding of messages and their meaning, review the provided sample messages.

## Sample messages for a single projector

Messages can be sent and received for a single projector.

| Message format | Function | Example |
|---|---|---|
| (Code Data) | SET Power on | `(PWR 1)` |
| (Code+Subcode Data) | SET input port configuration | `(SIN+PORT 1)` |
| (Code?) | REQUEST (what is current power state?) | `(PWR?)` |
| (Code+Subcode?) | REQUEST (what is current input port configuration?) | `(SIN+PORT?)` |
| (Code!Data) | REPLY (power state is 1 "on") | `(PWR!001 "On")` |
| (Code+Subcode!Data) | REPLY (input port configuration is 1 "One-Port") | `(SIN+PORT!001 "One-Port")` |
| ($Code Data) | SET AND ACKNOWLEDGE MESSAGE (change test pattern and request acknowledge) | `($ITP 1)` |
| $ | REPLY with acknowledgment (from projector) | `$` |

## Sample messages for querying a projector

Messages to query a list, enabled state, and minimum/maximum values can be sent and received for a projector.

| Options | Function | Example |
|---|---|---|
| Query a list | QUERY test pattern options | (ITP?L) |
| | REPLY test pattern options | (ITP!L001 001 00000 "Off")<br>(ITP!L001 001 00001 "Grid")<br>(ITP!L001 001 00002 "Gray Scale 16")<br>(ITP!L001 001 00003 "Flat White")<br>(ITP!L001 001 00004 "Flat Gray")<br>...<br>(ITP!L000 001 00024 "Flare")<br>(ITP!L111 "--END--") |
| Query enabled state | QUERY test pattern enabled state | (ITP?E) |
| | REPLY test pattern (enabled) | (ITP!E000) |
| | REPLY test pattern (disabled) | (ITP!E001) |
| Query minimum/maximum | QUERY gamma slider minimum/ maximum | (GAM?M) |
| | REPLY gamma minimum/maximum | (GAM!M1000 3000) |

# What is sent in a message

Although you send and read messages as strings of ASCII characters, the actual message travels as a sequence of bytes. Each character in this sequence requires one byte.

The following example illustrates a lamp limit is 2000 hours reply from the projector.

| ASCII = | ( | L | P | L | ! | 2 | 0 | 0 | 0 | ) |
|---|---|---|---|---|---|---|---|---|---|---|
| HEX = | 0x28 | 0x4 | 0x50 | 0x28 | 0x21 | 0x32 | 0x30 | 0x30 | 0x30 | 0x29 |

# Maximizing message integrity

For additional reassurance and/or maximum message integrity, insert one or two special characters.

| Message requirement | Description |
|---|---|
| Acknowledgments | For assurance from Christie TruLife+ (or group of projectors) that a set message has been processed, request an acknowledgment.<br>The acknowledgment is returned after the message has been received and fully executed by Christie TruLife+ (such as in the case of a source switch it is not sent until the switch is complete). If the message cannot be executed for some reason (such as invalid parameters, time-out, and so on) a NAK is returned instead (not-acknowledge). Requesting an acknowledgment serves no purpose when included in a request message, as the acknowledgment is redundant to the actual reply from Christie TruLife+. However, if requested, the dollar sign ($) acknowledgment from Christie TruLife+ follows the reply.<br>There are two types of acknowledgments:<br>• Simple Acknowledgments—Insert a dollar sign ($) character just after the start code bracket. This only returns a $. This only returns a dollar sign ($) on success, or a caret (^) on failure (NAK).<br>• Full Acknowledgments—Insert a hash (#) character just after the start code bracket. This returns the message sent, as a reply.<br>This is a quick way to confirm success with set messages and is useful with long distance communication links or where the projectors and/or images are not visible from the controller. Acknowledgments can also be a type of flow control. |
| Checksums | For maximum message integrity, add a checksum character ampersand (&) just after the start code bracket. You must also include the correct checksum total (0-255) just before the end code bracket. Make sure to add a space before the calculated checksum to separate it from the last data parameter:<br>The checksum is the low byte of the sum of the ASCII values of all characters between the start bracket and the beginning of the checksum, but not including either. It does include the space in front of the checksum.<br>Calculate the checksum for the above set contrast to 64 command as follows:<br>CHECKSUM EXAMPLE = & + c + o + n + 6 + 4 + ‘space’<br>= 26h+63h +6Fh +6E h +36h +$34h +$20h<br>= 01F0h<br>= F0h when only the low byte is used<br>= 240<br>Christie TruLife+ collects all of the message bytes as defined in the first byte of the message, then creates its own checksum value for comparison with the checksum included in the controller’s message. If the values match, the message is considered to have been correctly received; otherwise, the message is discarded.<br>Note the following:<br>• h indicates a hex number.<br>• If a request message has a checksum, so does the reply.<br>• If using both acknowledge and checksum, either character can occur first. |

# Error messages

If a command cannot be performed, a descriptive error identifying the problem appears.

For example, the following message indicates a syntax error:

```
(ITP) - (65535 00000 ERR00005 "ITP: Too Few Parameters")
```

## Descriptive error

The following error codes indicate a problem if a command cannot be performed.

| Error code | Description | Error code | Description |
|---|---|---|---|
| 3 | Invalid parameter | 105 | Disabled control |
| 4 | Too many parameters | 106 | Invalid language |
| 5 | Too few parameters | 107 | Exceeded list size |
| 6 | Channel not found | 110 | Communication timeout |
| 7 | Command not executed | 111 | Communications failure |
| 8 | Checksum error | 112 | Failed to set hardware |
| 9 | Unknown request | 113 | Bad file |
| 10 | Error receiving serial data | 114 | Memory failure |
| 101 | Control not found | 115 | Not implemented |
| 102 | Subcontrol not found | 116 | Invalid security |
| 103 | Wrong control type | 117 | Invalid access group |
| 104 | Invalid value | 118 | System busy - Try again later |

# Flow control

Normally messages can be sent to the projector before processing of earlier messages is complete—Christie TruLife+ stores messages in a buffer until ready to process. However, if a series of messages is sent, Christie TruLife+ may not be able to process them as fast as they arrive and the buffer becomes full.

If this happens, Christie TruLife+ sends the 13h (Xoff) code to instruct the controller (or any devices preparing to transmit) to cease transmission. At this point, the controller must respond immediately and send no more than 10 extra characters or they may be lost (such as, Christie TruLife+ can accommodate the receipt of up to 10 more bytes after it sends 13h (Xoff)). When the buffer is once again available, Christie TruLife+ sends a 11h (Xon) command to resume transmission.

Xon and Xoff controls apply to both directions of communication. Christie TruLife+ does not send more than three characters after it has received a 13h (Xoff) code.

# Serial API commands

The Christie TruLife+ commands can be used to modify product settings.

## ADR–Projector Address

Sets or queries the device address.

This command also helps to identify where a response or asynchronous message originates from. Generally, this command is used for projectors that are daisy-chained together using the RS232 style communication.

### Commands

| Command | Description | Values |
|---|---|---|
| ADR? | Checks the current projector address. (Read-only) | — |
| ADR <value> | Sets the projector address to <value>. (Saved value) | 0 to 999<br>65535 = Reserved broadcast address |

### Examples

| |
|---|
| Set all devices to address 0:<br>`(65535 ADR 0)` |
| Set first device at address 0 to address to 5:<br>`(0 ADR 5)` |
| Query address for all devices and return results to address 1001:<br>`(65535 1001ADR?)`<br>Result:<br>`(01001 00005ADR!005)` |

# APW–Auto Power On

Automatically powers up the projector to the on state if the projector was on when the AC power was lost.

## Commands

| Command | Description | Values |
|---|---|---|
| APW <0 \| 1> | Automatically powers up the projector to the on state. (Saved value) | 0 = Disables auto power up<br>1 = Enables auto power up |

## Examples

| |
|---|
| Turn off auto power:<br>`(APW 0)` |
| Turn on auto power:<br>`(APW 1)` |

### Related information

*PWR–Power* (on page 48)

# BDR–Baud Rate

Sets the baud rate for a serial communications port.

## Commands

| Command | Description | Values |
|---|---|---|
| BDR+PRTA? | Returns the baud rate for the RS232-IN port. (Read-only) | — |
| BDR+PRTA <value> | Sets the baud rate for the RS232-IN port. This command requires service level access. (Saved value) | 1 = 2400<br>2 = 9600<br>3 = 19200<br>4 = 38400<br>5 = 57600<br>6 = 115200 (Default baud rate on each port) |

## Examples

| |
|---|
| Verify that RS232-IN is set to 115200 bits per second:<br>`(BDR+PRTA?)` |

| |
|---|
| Result:<br>`(BDR+PRTA!006 "115200")` |
| Set the baud rate on port A to 115200 bits per second:<br>`(BDR+PRTA 6)` |

# BGC–Gamma Function

Applies a predefined gamma transfer function to the image.

### Commands

| Command | Description | Values |
|---|---|---|
| BGC <value> | Applies a predefined gamma transfer function to the image. This command is only available if the video electronics are on. (Saved value) | 0 = Auto Detect (Default)<br>1 = sRGB<br>2 = Power Law Function<br>3 = Classic<br>4 = ITU-R BT.1886<br>6 = HDR/PQ (SMPTEST 2048)<br>7 = Raw PQ clipped at GAM +PQWL level<br>100 = First custom table |

### Examples

| |
|---|
| Select the sRGB gamma transfer function:<br>`(BGC 1)` |
| Select a Power Law function with a 2.6 exponent:<br>`(BGC 2)`<br>Result:<br>`(GAM 2600)` |

#### Related information

*GAM–Gamma Power Value* (on page 35)

# CAV–Video Input Configuration

Selects the video input configuration mode used by the video processing path of the CAVE board.

This command selects the scaler FPGA image loaded, which is responsible for providing the video inputs. When selecting from the options, the FPGA is reloaded and may take 15 to 20 seconds to complete.

### Commands

| Command | Description | Values |
|---|---|---|
| | | — |
| CAV+MODE <value> | Determines which FPGA image to load into the scaler, which defines the input structure supported by the system. (Saved value) | 0 = DP mode (Default)<br>1 = SDVoE mode |

### Examples

Select the DisplayPort mode for the CAVE scaler FPGA:

```
(CAV+MODE 0)
```

# CCA–Color Adjustment

Configures the color adjustments for the projector.

Use this command to also set the native colors for the projector.

### Commands

| Command | Description | Values |
|---|---|---|
| CCA+COPY <value> | Copies the values from one of the other pre-defined color tables into the custom color table. This command is only available if video electronics are on. | 0 = Max Drives<br>1 = Color Temperature<br>2 = HD Video (ITU-RBT.709)<br>5 = DCI P3<br>6 = DCI P3 (D65)<br>7 = ITU-R BT.2020 |
| CCA+CTMP <value> | Sets the color temperature of the projector.<br>This command is only available if the video electronics are on, the projector is configured to use Color Temperature for its color table, and Color Temperature is selected. (Saved value) | 3200 to 9300<br>6500 (Default) |
| CCA+SLCT <value> | Sets the color table. This command is only available if the video electronics are on. (Saved value) | 1 = Color Temperature—Selects color adjustments based on a color temperature<br>2 = HD Video (ITU-R BT.709)<br>3 = Custom settings<br>4 = Auto Detect (Default)<br>5 = DCI P3 color gamut<br>6 = DCI P3 (D65)<br>7 = ITU-R BT.2020 |

| Command | Description | Values |
|---|---|---|
| CCA+RDCX <x coordinate for red><br>CCA+RDCY <y coordinate for red><br>CCA+GNCX <x coordinate for green><br>CCA+GNCY <y coordinate for green><br>CCA+BLCX <x coordinate for blue><br>CCA+BLCY <y coordinate for blue><br>CCA+WHCX <x coordinate for white><br>CCA+WHCY <y coordinate for white> | Defines a custom color table using x,y coordinates, scaled by a factor of 10,000. For example, an x value of 3350 corresponds to x=0.3350 in the CIE 1931 chromaticity scale.<br>This command is only available if the video electronics are on and Custom is selected. (Saved value) | The valid range for each value depends on which of the red/green/blue point is being adjusted. |
| CCA+GOFR <green of red saturation value><br>CCA+BOFR <blue of red saturation value><br>CCA+ROFG <red of green saturation value><br>CCA+BOFG <blue of green saturation value><br>CCA+ROFB <red of blue saturation value><br>CCA+GOFB <green of blue saturation value> | Defines a custom color table using saturation values.<br>Each control represents a percentage of each native RGB component needed to produce a target RGB space.<br>This command is only available if the video electronics are on and Custom is selected. (Saved value) | -1000 to 1000, where 1000 = 100%<br>A negative value reduces the influence of the component by scaling up the other two components. |
| CCA+ROFR <red of red saturation value><br>CCA+GOFG <green of green saturation value><br>CCA+BOFB <blue of blue saturation value> | Defines a custom color table using saturation values.<br>Each control represents a percentage of each native RGB component needed to produce a target RGB space.<br>• Red of red is equivalent to red of white.<br>• Green of green is equivalent to green of white.<br>• Blue of blue is equivalent to blue of white.<br>This command is only available if the video electronics are on and Custom is selected. (Saved value) | 0 to 1000, where 1000 = 100% |
| CCA+ROFW <red of white saturation value><br>CCA+GOFW <green of white saturation value> | Defines a custom color table using saturation values. Each control represents a percentage of each native RGB component needed to produce a target RGB space. | 0 to 1000, where 1000 = 100% |

| Command | Description | Values |
|---|---|---|
| CCA+BOFW <blue of white saturation value> | This command is only available if the video electronics are on and Custom is selected. (Saved value) | |
| CCA+RDPX <x coordinate for red><br>CCA+RDPY <y coordinate for red><br>CCA+GNPX <x coordinate for green><br>CCA+GNPY <y coordinate for green><br>CCA+BLPX <x coordinate for blue><br>CCA+BLPY <y coordinate for blue><br>CCA+WHPX <x coordinate for white><br>CCA+WHPY <y coordinate for white> | Sets the native color primaries for the projector using the x,y coordinate form, scaled by a factor of 10,000. For example, an x value of 3350 corresponds to x=0.3350 in the CIE 1931 chromaticity scale.<br>This command is only available if the video electronics are on and Max Drives is selected. It is only available to a service user. | The valid range for each value depends on which of the red, green, blue, or white point is being adjusted. |
| CCA+RSET | Resets the native color primary settings to their defaults.<br>If primary settings have not been saved (CCA+SAVE), this resets the primary settings to hard-coded defaults.<br>This command is only available if video electronics are on. It is only available to a service user. | — |
| CCA+SAVE | Saves the current primary settings (for example, CCA+RDPX, and so on) as the new default color primary settings.<br>Save these settings after calibrating the color primaries (such as measuring the primary x,y coordinates using a spectroradiometer or similar equipment).<br>This command is only available if video electronics are on. It is only available to a service user. | — |

## Examples

| |
|---|
| Use a custom color table:<br>`(CCA+SLCT 3)` |
| Reset values to "HD Video (ITU-R BT.709)”:<br>`(CCA+COPY 2)` |
| Change the x-coordinate of the custom color table to 0.6753: |

| |
|---|
| (CCA+RDCX 6753) |
| Save the current color primary settings as the new calibrated defaults:<br>(CCA+SAVE) |
| Reset the color primary settings to the saved calibrated defaults:<br>(CCA+RSET) |

# CHA–Channel

Changes the current channel.

## Commands

| Command | Description | Values |
|---|---|---|
| CCA?L | Returns a list of available channels. (Read-only) | — |
| CCA <channel> | Selects a specified channel.<br>This command is only available if the video electronics are on. (Saved value) | 600 = One-Port HDMI0<br>610 = One-Port HDMI1<br>602 = One-Port HDBaseT<br>603 = One-Port DP0<br>604 = One-Port DP1<br>605 = One-Port DP2<br>606 = One-Port SDI0<br>607 = One-Port SDI1<br>608 = One-Port SDI2<br>609 = One-Port SD13<br>610 = One-Port MP<br>611 = One-Port SDVOE<br>612 = Christie Link A<br>613 = Christie Link B<br>620 = Two-Port HDMI<br>621 = Two-Port DP<br>622 = Four-Port SDI |

## Examples

| |
|---|
| Retrieve the list of available channels:<br>(CCA?L)<br>Return:<br>CHA!L000 000 00000 "")<br>(CHA!L001 001 00600 "One-Port HDMI0")<br>(CHA!L001 001 00601 "One-Port HDMI1") |

```
(CHA!L001 001 00602 "One-Port [HDBaseT]")
(CHA!L001 001 00603 "One-Port DP0")
(CHA!L001 001 00604 "One-Port DP1")
(CHA!L001 001 00605 "One-Port DP2")
(CHA!L001 001 00606 "One-Port SDI0")
(CHA!L001 001 00607 "One-Port SDI1")
(CHA!L001 001 00608 "One-Port SDI2")
(CHA!L001 001 00609 "One-Port SDI3")
(CHA!L001 001 00610 "One-Port MP")
(CHA!L001 001 00611 "One-Port SDVOE")
(CHA!L001 001 00612 "Christie Link [A]")
(CHA!L001 001 00613 "Christie Link [B]")
(CHA!L001 001 00620 "Two-Port HDMI")
(CHA!L001 001 00621 "Two-Port DP")
(CHA!L001 001 00622 "Four-Port SDI")
(CHA!L001 001 00632 "One-Port, Dual-Input 3D L:SDI0,R:SDI1")
(CHA!L001 001 00633 "One-Port, Dual-Input 3D L:SDI2,R:SDI3")
(CHA!L111 "--END--")
```

Select a Four-Port input configuration using slots 1 and 2:

```
(CCA 622)
```

# CLE–Color Enable

Enables specific colors in the video path.

## Commands

| Command | Description | Values |
|---|---|---|
| CLE <color> | Enables specific colors in the video path. This command is only available if video electronics are on. | 0 = White<br>1 = Red<br>2 = Green<br>3 = Blue<br>4 = Yellow<br>5 = Cyan<br>6 = Magenta |

## Examples

Display the red portion of image only:

```
(CLE 1)
```

| |
|---|
| Display the blue portion of image only:<br>`(CLE 3)` |

# CSP–Color Space Selection

Changes the color space of the active signal for all inputs on the screen.

### Commands

| Command | Description | Values |
|---|---|---|
| CSP <color space> | Changes the color space of the active signal on the screen. This command is only available if video electronics are on. (Saved value) | 0 = Auto Detect—Uses the detected colorspace in the active signal (Default)<br>1 = RGB—full range<br>2 = YCbCr HDTV (ITU-R BT.709)<br>3 = RGB—limited range<br>4 = YCbCr HDTV—expanded range<br>5 = YCbCr JPEG—full range<br>6 = YCbCr UHDTV (ITU-R BT.2020)<br>7 = YCbCr UHDTV (ITU-R BT.2020)—full range<br>8 = XYZ |

### Examples

| |
|---|
| Set the color space to RGB (full range) irrespective of which channel is selected:<br>`(CSP 1)` |
| Set the projector to always automatically detect the color space:<br>`(CSP 0)` |

# CUC–1D Color Uniformity

Sets up 1D color uniformity on the projector after taking measurements of each of the color primaries.

To take measurements of each of the color primaries at points (15, 2, 5, 8, and 16), use a spectroradiometer such as the PR-655. Once the measurements are taken, enter the values into the projector using this serial command. For more information on color uniformity, refer to *Christie TruLife + User Guide (P/N: 020-103315-XX)*.

### Commands

| Command | Description | Values |
|---|---|---|
| CUC+HabL <luminance> | Sets the measured luminance values at the specific points along the line. This command is used when CUC +SLCT is set to 1. | a = The point being measured (1 to 5) |

| Command | Description | Values |
|---|---|---|
| | | b = The color being measured (R/G/B)<br>luminance = The luminance value measured at the specified point |
| CUC+HabX <measurement> | Sets the measured color reading along the line. | a = The point being measured (1 to 5)<br>b = The color being measured (R/G/B)<br>measurement = The X coordinate of the color value |
| CUC+HabY <measurement> | Sets the measured color reading along the line. | a = The point being measured (1 to 5)<br>b = The color being measured (R/G/B)<br>measurement = The Y coordinate of the color value |
| CUC+SLCT <0 \| 1 \| 2> | Enables or disables color uniformity. | 0 = Disables 1D color uniformity (Default)<br>1 = Enables 1D color uniformity<br>2 = Custom color uniformity from file |

## Examples

| |
|---|
| Enable 1D color uniformity:<br>`(CUC+SLCT 1)` |
| Disable 1D color uniformity:<br>`(CUC+SLCT 0)` |
| Set the luminance value for red at point 2:<br>`(CUC+H2RL 5322)` |
| Set the x value for blue at point 5:<br>`(CUC+H5BX 6798)` |
| Set the y value for red at point 5:<br>`(CUC+H5RY 3196)` |
| Set the measured green values at point 5:<br>`(CUC+H5GL 5322)`<br>`(CUC+H5GX 6798)`<br>`(CUC+H5GY 3196)` |

# DEF–Factory Defaults

Resets Christie TruLife+ to its factory default values.

Note the following about this command:

- Resets the network settings to be DHCP enabled.
- Deletes all user profiles, warps, and blends.

### Commands

| Command | Description | Values |
|---|---|---|
| DEF 111 | Restores all settings to the factory defaults.<br>To prevent accidental use of this command, the number 111 must follow the command. | 111 |

### Examples

| |
|---|
| Reset Christie TruLife+ to factory defaults:<br>`(DEF 111)` |

# DMX–DMX/ArtNet

Configure DMX/Art-Net settings.

### Commands

| Command | Description | Values |
|---|---|---|
| DMX+CHAN <value> | Sets the base channel for Art-Net. | 1 to 488<br>1 (Default) |
| DMX+ENBL <value> | Enables or disables the Art-Net interface. | 0 = Disables the Art-Net interface (Default)<br>1 = Enables the Art-Net interface |
| DMX+NETS <value> | Configures the Art-Net network. | 0 to 127<br>0 (Default) |
| DMX+SUBN <value> | Sets the Art-Net subnet. | 0 to 15<br>0 (Default) |
| DMX+UNVS <value> | Configures the Art-Net universe number. | 0 to 15<br>0 (Default) |

### Examples

| |
|---|
| Set the Art-Net base channel to 300:<br>`(DMX+CHAN 300)` |

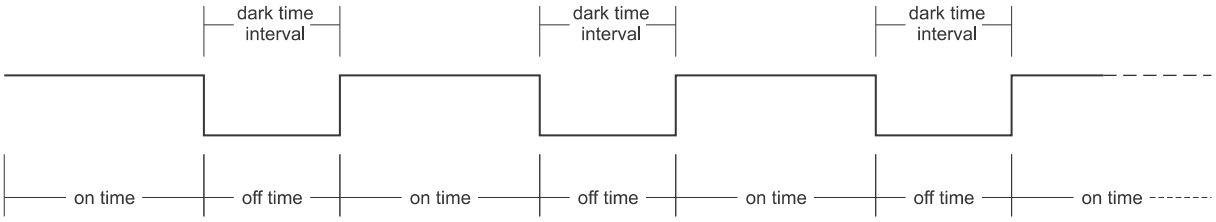
Set the Art-Net universe to 7:

```
(DMX+UNVS 7)
```

# DRK–3D Dark Interval

Controls the time between frames when no image is being projected to the screen.

**Only applies to:** Models with the Mirage license applied




## Commands

| Command | Description | Values |
|---|---|---|
| DRK <value> | Configures how much time (in microseconds) the DMDs stay off between frames. (Saved value)<br>Enabled when the selected signal is a 3D signal and 3D mode is enabled. | 250µs to 3000µs<br>690µs (Default) |

## Examples

Set the dark time interval to 2300µs:

```
(DRK 2300)
```

# DTL–Sharpness

Adjusts the sharpness of scaled video to alter the amount of visible detail.

This command does not affect unscaled video.

## Commands

| Command | Description | Values |
|---|---|---|
| DTL <value> | Adjusts the sharpness of scaled video to alter the amount of visible detail. This command is only available if video electronics are on. (Saved value) | 0 to 49 = Softens the image<br>50 = Applies a moderate amount of filtering to the image (Default)<br>51 to 100 = Sharpens the image |

### Examples

| |
|---|
| Apply a moderate amount of filtering to the image:<br>`(DTL 50)` |

# EBB–Black Level Blending

Selects the black level blend to use on the projector.

Use Christie Twist Pro, Twist Premium, or Mystique to add black level blends to the projector.

### Commands

| Command | Description | Values |
|---|---|---|
| EBB+SLCT?L | Retrieves a list of available black level blends. (Read-only) | — |
| EBB+SLCT <value> | Selects the black level blend to use on the projector. This command is only available if video electronics are on. (Saved value) | 0 = Turns off black level blending (Default)<br>1 to 4 = Selects one of the four black level blends, if available<br>11 = Selects basic black level blending (built-in projector black level blending) |

### Examples

| |
|---|
| Turn off black level blending:<br>`(EBB+SLCT 0)` |
| Retrieve a list of black level blends:<br>`(EBB+SLCT?L)` |
| Select the second black level blend from the list of available blends:<br>`(EBB+SLCT 2)` |

# EBL–Edge Blending Select

By default, edge blends are not on the projector. Use Christie Twist Pro, Twist Premium, or Mystique to add edge blends to the projector.

### Commands

| Command | Description | Values |
|---|---|---|
| EBL+SLCT?L | Retrieves a list of available edge blends. (Read-only) | — |

| Command | Description | Values |
|---|---|---|
| EBL+SLCT <value> | Selects the edge blend to use on the projector. This command is only available if video electronics are on. (Saved value) | 0 = Turns off edge blending<br>1 to 4 = Selects one of the four edge blends, if available<br>11 = Selects basic edge blending (built-in projector edge blending) |

### Examples

| |
|---|
| Turn off edge blending:<br>`(EBL+SLCT 0)` |
| Retrieve a list of edge blends:<br>`(EBL+SLCT?L)` |
| Select the second edge blend from the list of available blends:<br>`(EBL+SLCT 2)` |

# EDO–EDID Override

Configures which EDID is presented using inputs that support EDIDs (such as DisplayPort, HDMI, DVI, and so on).

Use this command to configure what Christie TruLife+ advertises regarding the type of signals it accepts. This command does not need to be set to accept a particular type of signal.

### Commands

| Command | Description | Values |
|---|---|---|
| EDO <rate> | Defines the expected frame rate regardless of the active window size of the signal. This command is only available if video electronics are on. (Saved value) | 24<br>25<br>30<br>50<br>60 (Default)<br>120 (Available with 3D license applied) |
| EDO+ADVN <0 \| 1> | Selects the default and legacy EDID mode. | 0 = Selects legacy EDID mode<br>1 = Selects default EDID mode |

### Examples

| |
|---|
| Define the expected frame rate to be 24:<br>`(EDO 24)` |
| Define the expected frame rate to be 60:<br>`(EDO 60)` |

# EME–Enable Asynchronous Serial Messages

Enables or disables the asynchronous serial messages that the projector occasionally transmits.

### Commands

| Command | Description | Values |
|---|---|---|
| EME <0 \| 1> | Enables or disables asynchronous serial messages. (Saved value) | 0 = Disables all asynchronous FYI/ERR serial messages<br>1 = Enables asynchronous FYI/ERR serial messages (Default) |

### Examples

| |
|---|
| Disable all asynchronous serial messages:<br>`(EME 0)` |
| Enable all asynchronous serial messages:<br>`(EME 1)` |

# ETP–Engine Test Pattern

Enables or disables the engine diagnostic test patterns.

### Commands

| Command | Description | Values |
|---|---|---|
| ETP <index> | Enables the engine diagnostic test patterns, indicated by the <index> parameter. This command is only available if video electronics are on. | 0 = Flat Black<br>1 = Green<br>2 = Red<br>3 = Blue<br>4 = White<br>5 = 8x8 Green Checker<br>6 = 8x8 Red Checker<br>7 = 8x8 Blue Checker<br>8 = 8x8 White Checker<br>9 = Convergence Border & Cross (Green)<br>10 = Convergence Border & Cross (Red)<br>11 = Convergence Border & Cross (Blue)<br>12 = Convergence Border & Cross (White)<br>13 = Convergence Border & Cross (Multi-color)<br>14 = Convergence Border & Square (Green)<br>15 = Convergence Border & Square (Red) |

| Command | Description | Values |
|---|---|---|
| | | 16 = Convergence Border & Square (Blue)<br>17 = Top Blue, Bottom Black<br>18 = Left Blue, Right Black<br>19 = Top Green, Bottom Black<br>20 = Left Green, Right Black<br>21 = Top Red, Bottom Black<br>22 = Left Red, Right Black<br>29 = Convergence Border & Cross (Multi-color2)<br>45 = Convergence Border & Cross (Multi-color3)<br>235 = Moving Circles (Green)<br>236 = Moving Circles (Red)<br>237 = Moving Circles (Blue)<br>238 = Color Bars<br>239 = Edge Blend Grid (Green)<br>240 = Edge Blend Grid (Red)<br>241 = Edge Blend Grid (Blue)<br>242 = Edge Blend Grid (White)<br>243 = 17 Point<br>244 = Magenta<br>245 = Cyan<br>246 = Yellow<br>247 = Diagonal Lines<br>248 = Dark Segmented Ramp<br>249 = Bright Segmented Ramp<br>255 = Off |

## Examples

| |
|---|
| Enable the Flat Black test pattern:<br>`(ETP 0)` |
| Enable the Edge Blend Grid (Green) test pattern:<br>`(ETP 239)` |

# EVT–Event Manager

Retrieves a list of log messages for the current AC cycle from the projector.

## Commands

| Command | Description | Values |
|---|---|---|
| EVT | Returns all events starting from the most recent event on the projector back to AC start. (Read-only) | — |
| EVT <max> | Returns a set number of events starting from the most recent event on the projector going back to AC start. (Read-only) | max = Maximum number of events to return |
| EVT <start timestamp> | Returns all events from <start timestamp> back to current time. (Read-only) | start timestamp = String in the following format:<br>yyyy = mm-dd hh:mm:ss |
| EVT <start timestamp> <end timestamp> | Returns all events between two specific timestamps. (Read-only) | start timestamp = String in the following format:<br>yyyy = mm-dd hh:mm:ss<br>end timestamp = String in the following format:<br>yyyy = mm-dd hh:mm:ss |

## Examples

Retrieve all events since last AC start:

```
(EVT)
```

Result:

```
(EVT!000 "2013-03-17 04:47:18.340" "OK" "Setting Time to 06:47:17")
(EVT!002 "2013-03-17 04:01:13.855" "Error" "(SST+TEMP?002) Air Intake Temperature
(Temp 2) = Communication fault (shutdown)")
(EVT!003 "2013-03-17 04:01:13.824" "Error" "(SST+TEMP?000) Integrator Rod Temperature
(Temp 1) = Communication fault (shutdown)")
(EVT!"--END--")
```

Retrieve two most recent events:

```
(EVT 2)
```

Result:

```
(EVT!002 "2013-03-17 04:01:13.855" "Error" "(SST+TEMP?002) Air Intake Temperature
(Temp 2) = Communication fault (shutdown)")
(EVT!000 "2013-03-17 04:47:18.340" "OK" "Setting Time to 06:47:17")
(EVT!"--END--")
```

Retrieve all events from a specific point in time until now:

```
(EVT "2013-03-17 04:01:13")
```

Result:

```
(EVT!000 "2013-03-17 04:47:18.340" "OK" "Setting Time to 06:47:17")
(EVT!002 "2013-03-17 04:01:13.855" "Error" "(SST+TEMP?002) Air Intake Temperature (Temp 2) = Communication fault (shutdown)")
(EVT!003 "2013-03-17 04:01:13.824" "Error" "(SST+TEMP?000) Integrator Rod Temperature (Temp 1) = Communication fault (shutdown)")
(EVT!"--END--")
```

Retrieve all events between two specific points in time:

```
(EVT "2013-03-17 04:01:08" "2013-03-17 04:01:12")
```

Result:

```
(EVT!004 "2013-03-17 04:01:12.663" "Error" "(SST+TEMP?000) Integrator Rod Temperature (Temp 1) = Communication fault (shutdown)")
(EVT!"--END--")
```

# FCS–Lens Focus Position Adjustment

Sets the lens focus to an absolute position.

This command is only enabled when the projector is on.

### Commands

| Command | Description | Values |
|---|---|---|
| FCS?m | Returns the minimum/maximum range of the zoom axis based on the last lens calibration performed. The returned range is persistent across AC cycles. (Read-only) | — |
| FCS <position> | Adjusts the lens focus to the specified position. | position = A numeric value subject to the range returned in FCS?m |

### Examples

Move lens focus to position 500:

```
(FCS 500)
```

# FMD–Film Mode Detect

Enables or disables film motion detection.

### Commands

| Command | Description | Values |
|---|---|---|
| FMD <0 \| 1> | Enables or disables automatic film mode (cadence). If disabled, it forces de-interlacing instead.<br>This command is only available if video electronics are on and the signal is interlaced. (Saved value) | 0 = Turns off film mode detection<br>1 = Turns on film mode detection (Default) |

### Examples

| |
|---|
| Enable film mode detection:<br>`(FMD 1)` |

# FRD–Frame Delay

Sets the delay between the input sync timing and the output sync timing.

The actual delay can vary based on the amount of processing applied to the image.

### Commands

| Command | Description | Values |
|---|---|---|
| FRD <delay> | Sets the frame delay, measured in 1/1000ths of a frame (based on the input frame rate). This command is only available if video electronics are on. (Saved value) | 1000 to 3000<br>2000 = 2 frames (Default) |
| FRD+STAT? | Returns the actual frame delay in 1/1000ths of a frame. This value may be higher than the required delay as the minimum allowed delay differs for each of the various channel configurations. (Read-only) | — |
| FRD+TIME? | Returns a string representation of the actual frame delay, in milliseconds. If 3D processing is used, the left and right eye delay may be different from each other and each delay is reported individually. (Read-only)<br>Note: This representation in milliseconds is approximate and is for reference only. | — |

### Examples

| |
|---|
| Query the actual frame delay:<br>`(FRD+STAT?)`<br>Result:<br>`(FRD+STAT!1250)` |
| Query the actual frame delay, in microseconds:<br>`(FRD+TIME?)`<br>Result: |

| |
|---|
| (FRD+TIME!"33.33") |
| Set the frame delay to 2.25 frames:<br>(FRD 2250) |
| Set the frame delay to 1.1 frames:<br>(FRD 1100) |

**Examples for models with Mirage license applied**

| |
|---|
| Query the actual frame delay:<br>(FRD+STAT?)<br>Result:<br>(FRD+STAT!1250) |
| Query the actual frame delay, in microseconds:<br>(FRD+TIME?)<br>Result:<br>(FRD+TIME!"33.33") |
| Query the actual frame delay for a Dual-Input 3D configuration, in microseconds:<br>(FRD+TIME?)<br>Result:<br>(FRD+TIME!"33.33 (L), 41.67 (R)") |
| Set the frame delay to 1.1 frames:<br>(FRD 1100) |
| Set the frame delay to 2.25 frames:<br>(FRD 2250) |

# FRZ–Image Freeze

Freezes the active video or test pattern to allow a detailed examination of a single frame of an otherwise moving image.

## Commands

| Command | Description | Values |
|---|---|---|
| FRZ <0 \| 1> | Freezes the active video or test pattern. This command is only available if video electronics are on. | 0 = Disables freezing of current video (Default)<br>1 = Freezes the current video |

## Examples

| |
|---|
| Freeze the image:<br>(FRZ 1) |

# GAM–Gamma Power Value

Defines the exponent used in a standard Power Law function.

This command is only available if the base gamma curve is set to Power Law function.

### Commands

| Command | Description | Values |
|---|---|---|
| GAM <exponent> | Sets the exponent for the Power Law function used for the gamma transfer function. This command is only available if video electronics are on. (Saved value) | 1000 to 3000<br>2200 (Default) |
| GAM+MAXL | Adjusts the maximum screen luminance, used by the ITU-R BT.1886 setting. | 100 to 2000<br>1000 (Default) |
| GAM+MINL | Adjusts the minimum screen luminance, used by the ITU-R BT.1886 setting. | 0 to 1000<br>10 (Default) |
| GAM+PQWL <value> | Adjusts the PQ curve white level when the BGC–Gamma Function command is set to 7. | 50 to 2000<br>1000 (Default) |
| GAM+SLOP <value> | Defines the slope of the linear section at the bottom of the curve. This command is only available if video electronics are on. (Saved value) | 1 to 100<br>1 (Default) |

### Examples

| |
|---|
| Set the base gamma curve function to 2.6:<br>`(GAM 2600)` |
| Set the base gamma curve function to 1.0:<br>`(GAM 1000)` |

#### Related information

*BGC–Gamma Function* (on page 17)
*BGC–Gamma Function* (on page 17)

# GIO–General Purpose Input/Output

Controls or monitors the state of the general purpose inputs and outputs.

The pins reserved for 12V and ground cannot be read, set, or configured. For a mapping of the IO pins to the physical connector pins, refer to the *Christie TruLife+ User Guide (P/N: 020-103315-XX)*.

### Commands

| Command | Description | Values |
|---|---|---|
| GIO+CNFG? | Returns the direction for the individual pins. | — |

| Command | Description | Values |
|---|---|---|
| GIO+CNFG "<xxxxxxx>" | Sets the direction for the individual pins to input or outputs. | I = Input<br>O = Output<br>X = No change |
| GIO+STAT? | Returns the status of all inputs. (Read-only) | — |
| GIO+STAT "<xxxxxxx>" | Gets the state of all inputs or sets the state of all outputs.<br>This command is only available if video electronics are on. (Saved value) | H = High<br>L = Low<br>X = No change |

### Examples

| |
|---|
| Get the status of all the inputs:<br>`(GIO+STAT?)`<br>Result:<br>`(GIO+STAT!"LLLLLLL")`<br>All inputs are low. |
| Set the status of the general purpose outputs:<br>`(GIO+STAT "HXLHLLL")`<br>Result:<br>Pins 1 and 4 are set to high; pin 2 has no change; Pins 2, 5, 6, and 7 are set to low. |
| Get the direction for the individual pins:<br>`(GIO+CNFG?)`<br>Result:<br>`(GIO+CONFG!"IIIIIII")` |
| Set pins 1, 2, and 6 to input and set pins 3, 4,5, and 7 to output:<br>`(GIO+CNFG "II000I0")` |
| Set pins 1 and 2 to output and ignore the rest:<br>`(GIO+CNFG "00XXXXX")` |

# ITP–Test Pattern

Displays a test pattern.

### Commands

| Command | Description | Values |
|---|---|---|
| ITP <index> | Enables or disables test patterns.<br>This command is only available if video electronics are on. | 0 = Off (Default)<br>1 = Grid<br>2 = Grey Scale 16<br>3 = Flat White |

| Command | Description | Values |
|---|---|---|
| | | 4 = Flat Grey<br>5 = Flat Black<br>6 = Checker<br>7 = 17 Point<br>8 = Edge Blend<br>9 = Color Bars<br>10 = Multi Color<br>11 = RGBW Ramp<br>12 = Horizontal Ramp<br>13 = Vertical Ramp<br>14 = Diagonal Ramp<br>15 = Square Grid<br>16 = Diagonal Grid<br>17 = Maximum Activity<br>18 = Prism/Convergence<br>19 = FLIR<br>20 = Focus Fidelity<br>21 = Boresight<br>22 = Convergence<br>23 = Integrator Rod<br>26 = CTF (Horizontal)<br>27 = CTF (Vertical)<br>100± = Downloaded |
| ITP+FREQ <value> | Sets the frequency at which the internal test patterns are displayed.<br>This command is only available if video electronics are on. | 2300 to 50000<br>6000 (Default) |
| ITP+GRDC <0 \| 1> | Enables multi-color or white-on-black grids for the Square Grid or Diagonal Grid test patterns.<br>This command is only available if video electronics are on. | 0 = White-on-black<br>1 = Multi-color (Default) |
| ITP+GRDM <0 \| 1> | Enables moving or static grid for the Square Grid or Diagonal Grid test patterns.<br>This command is only available if video electronics are on. | 0 = Static (Default)<br>1 = Moving |
| ITP+GRDP <pitch> | Defines the spacing between lines used for the Square Grid and Diagonal Grid test patterns.<br>This command is only available if video electronics are on. | 2 to 127<br>32 (Default) |
| ITP+GREY <grey level> | Defines the shade of grey for the Flat Grey test pattern.<br>This command is only available if video electronics are on. | 0 to 4095<br>2048 (Default) |

| Command | Description | Values |
|---|---|---|
| ITP+RMPL <grey level> | Defines the starting (top/left) grey-level used for the Horizontal Ramp, Vertical Ramp, and Diagonal Ramp test patterns.<br>This setting has no effect when the ramp is moving (such as ITP+RMPM is non-zero).<br>This command is only available if video electronics are on. | 0 to 4095<br>0 (Default) |
| ITP+RMPM <speed> | Defines the motion speed used for the Horizontal Ramp, Vertical Ramp, and Diagonal Ramp test patterns.<br>This command is only available if video electronics are on. | 0 to 100<br>0 (Default) |
| ITP+RMPS <slope> | Defines the slope used for the Horizontal Ramp, Vertical Ramp, and Diagonal Ramp test patterns.<br>This command is only available if video electronics are on. | -10 to 10<br>1 (Default) |

### Examples

| |
|---|
| Disable test patterns:<br>`(ITP 0)` |
| Set the test pattern to the grid pattern:<br>`(ITP 1)` |
| Enable a moving grid test pattern:<br>`(ITP+GRDM 1)` |

# KEN–Keypad Enable

Enables or disables the IR or wired keypad sensors.

### Commands

| Command | Description | Values |
|---|---|---|
| KEN+FRNT <0 \| 1> | Enables or disables the IR keypad sensor. (Saved value) | 0 = Disables the front IR keypad sensor<br>1 = Enables the front IR keypad sensor (Default) |
| KEN+REAR <0 \| 1> | Enables or disables the rear IR keypad sensor. (Saved value) | 0 = Disables the rear IR keypad sensor<br>1 = Enables the rear IR keypad sensor (Default) |
| KEN+WIRE? | Returns the current wired jack enabled state. (Read-only) | — |
| KEN+WIRE <0 \| 1> | Enables or disables the wired keypad sensor. (Saved value) | 0 = Disables the wired keypad jack<br>1 = Enables the wired keypad jack (Default) |

### Examples

| |
|---|
| Get the current wired jack enabled state:<br>`(KEN+WIRE?)` |
| Disable the front IR sensor:<br>`(KEN+FRNT 0)` |
| Disable the rear IR sensor:<br>`(KEN+REAR 1)` |

# LAS–Light & Output Settings

Configures the laser drive levels and uses the projector's LiteLOC™ feature.

### Commands

| Command | Description | Values |
|---|---|---|
| LAS+BLUP <value> | Sets the drive level of the blue lasers. The actual value sent to the laser rack is reduced based on the Master Laser Power.<br>Expressed as percentage with one decimal point. | 0 to 1000, where 1000 = 100%<br>635 (Default) |
| LAS+CSRX? | Returns the color sensor X reading. (Read-only) | — |
| LAS+CSRY? | Returns the color sensor Y reading. (Read-only) | — |
| LAS+CSRZ? | Returns the color sensor Z reading. (Read-only) | — |
| LAS+EBLU <0 \| 1> | Enables or disables the blue lasers. | 0 = Disables the blue lasers<br>1 = Enables the blue lasers (Default) |
| LAS+EGRN <0 \| 1> | Enables or disables the green lasers. | 0 = Disables the green lasers<br>1 = Enables the green lasers (Default) |
| LAS+ERED <0 \| 1> | Enables or disables the red lasers. | 0 = Disables the red lasers<br>1 = Enables the red lasers (Default) |
| LAS+GRNP <value> | Sets the drive level of the green lasers. The actual value sent to the laser rack is reduced based on the Master Laser Power. (Saved value)<br>Expressed as percentage with 1 decimal point. | 0 to 1000, where 1000 = 100%<br>615 (Default) |
| LAS+MAXA <value> | Configures the projector to operate correctly up to the specified maximum ambient temperature in Celsius. (Saved value) | 0 to 50<br>35 (Default) |

| Command | Description | Values |
|---|---|---|
| LAS+MAXH <value> | Sets the expected relative humidity in percent of the environment where the projector is operating. (Saved value)<br>This is only applicable if the projector is running LiteLOC™ with User mode active. | 0 to 100<br>80 (Default) |
| LAS+MODE <value> | Enables or disables LiteLOC. | 0 = LiteLOC 1 (deprecated)<br>1 = Disables LiteLOC<br>2 = LiteLOC 2 (deprecated)<br>3 = Enables LiteLOC |
| LAS+POWR <value> | Adjusts the overall output of the lasers while maintaining the overall ratio of power between each color. (Saved value)<br>Expressed as percentage with one decimal point. | 0 to 1000, where 1000 = 100%<br>750 (Default) |
| LAS+REDP <value> | Sets the drive level of the red lasers. The actual value sent to the laser rack is reduced based on the Master Laser Power. (Saved value)<br>Expressed as percentage with one decimal point. | 0 to 1000, where 1000 = 100%<br>820 (Default) |
| LAS+UDEC <value> | Enables either automatic or manual setting of LiteLOC user defined environmental controls. (Saved value)<br>The manual selection allows user selection of LAS+MAXA and LAS+MAXH values. | 0 = Automatic—the software calculates the maximum ambient and humidity conditions (Default)<br>1 = Manual selection—allows for more user tuning in LiteLOC |
| LAS+WHTX <value> | Defines the white x color target value. The value is expressed with four decimal points. (Saved value) | 2500 to 4500, where 4500 = 0.4500<br>3127 (Default) |
| LAS+WHTY <value> | Defines the white y color target value. The value is expressed with four decimal points. (Saved value) | 2500 to 4500, where 4500 = 0.4500<br>3290 (Default) |

## Examples

| |
|---|
| Enable LiteLOC:<br>`(LAS+MODE 0)` |
| Disable the green laser:<br>`(LAS+EGRN 0)` |
| Change the red laser drive level to 100%:<br>`(LAS+REDP 1000)` |
| Return the color sensor Z reading:<br>`(LAS+CSRZ?)` |
| Set the expected maximum ambient temperature to 25°C: |

| |
|---|
| (LAS+MAXA 25) |
| Adjust the overall output of the lasers to 80%:<br>(LAS+POWR 800) |

# LCB–Lens Motor Calibration

Calibrates all of the lens motors.

This command is only enabled when the projector is on.

### Commands

| Command | Description | Values |
|---|---|---|
| LCB 1 | Runs calibration on all lens motors. | 1 |
| LCB+HOME | Moves all lens motors back to the center flag for each axis and sets their respective positions to 0. | — |
| LCB+LOCK <0 \| 1> | Locks all lens motors preventing the lens from moving. This overrides all other lens functions. | 0 = Unlocks motors (Default)<br>1 = Locks motors |
| LCB+ZOMR <0 \| 1> | Programs the lens connector board lens (LCBL) to indicate that the lens is motorized or non-motorized. | 0 = Lens does not have a zoom (Default)<br>1 = Lens has a zoom motor |
| LCB+ZOOM 1 | Calibrates the zoom motor. | 1 |

### Examples

| |
|---|
| Start calibration:<br>(LCB 1) |
| Move the lens back to the home position:<br>(LCB+HOME) |

# LHO–Lens Horizontal Position Adjustment

Sets the lens horizontal location to an absolute position.

This command is only available when the projector is on.

### Commands

| Command | Description | Values |
|---|---|---|
| LHO?m | Returns the minimum and maximum range of the zoom axis based on the last lens calibration performed. The returned range is persistent across AC cycles. (Read-only) | — |

| Command | Description | Values |
|---|---|---|
| LHO <position> | Adjusts the horizontal location of the lens to the specified position. | position = Numeric value subject to the range returned in LHO?m |

### Examples

Move the lens to position 500 on the horizontal axis:

```
(LHO 500)
```

# LMV–Lens Move

Adjusts all aspects of the lens position using a single command.

It can also be used to move the lens to a relative position or to start and stop the motors arbitrarily. This command is only enabled when the projector is on.

### Commands

| Command | Description | Values |
|---|---|---|
| LMV <horizontal> <vertical> <zoom> <focus> | Moves the lens to an absolute position as specified by each of the four arguments. | Minimum and maximum of each axis = Dependent on the projector and the installed lens<br>See projector mechanical specifications for details. |
| LMV+HSTP <relative steps> | Moves the horizontal motor a relative number of steps. | negative steps = Moves the display left<br>positive steps = Moves the display right |
| LMV+VSTP <relative steps> | Moves the vertical motor a relative number of steps. | negative steps = Moves the display down<br>positive steps = Moves the display up |
| LMV+FSTP <relative steps> | Moves the focus motor a relative number of steps. | negative steps = Focuses outward<br>positive steps = Focuses inward |
| LMV+ZSTP <relative steps> | Moves the zoom motor a relative number of steps. | negative steps = Makes the display smaller<br>positive steps = Makes the display larger |
| LMV+HRUN <-1 \| 0 \| 1> | Starts and stops the horizontal motor. | -1 = Moves the display left<br>0 = Stops the motor<br>1 = Moves the display right |
| LMV+VRUN <-1 \| 0 \| 1> | Starts and stops the vertical motor. | -1 = Moves the display down<br>0 = Stops the motor<br>1 = Moves the display up |
| LMV+FRUN <-1 \| 0 \| 1> | Starts and stops the focus motor. | -1 = Moves the display outward<br>0 = Stops the motor<br>1 = Moves the display inward |

| Command | Description | Values |
|---|---|---|
| LMV+ZRUN <-1 \| 0 \| 1> | Starts and stops the zoom motor. | -1 = Makes the display smaller<br>0 = Stops the motor<br>1 = Makes the display larger |

### Examples

| |
|---|
| Set the lens to H:1000, V:1500, Z:500, F:500:<br>`(LMV 1000 1500 500 500)` |
| Start to move horizontal motor toward positive max position:<br>`(LMV+HRUN 1)` |
| Stop the vertical motor:<br>`(LMV+VRUN 0)` |
| Start moving the zoom motor towards the negative max position:<br>`(LMV+ZRUN -1)` |
| Move the horizontal motor 45 steps in the positive direction:<br>`(LMV+HSTP 45)` |

# LOC–Localization Settings

Sets the localization options such as language and display options for temperature units.

### Commands

| Command | Description | Values |
|---|---|---|
| LOC+LANG? | Returns the language used by the selected display. (Read-only) | — |
| LOC+LANG <value> | Sets the system language. | 0 = English (Default)<br>1 = French<br>2 = German<br>3 = Spanish<br>4 = Italian<br>5 = Chinese (Simplified)<br>6 = Japanese<br>7 = Korean<br>8 = Russian |
| LOC+TEMP? | Returns the temperature units used by the selected display. (Read-only) | — |
| LOC+TEMP <0 \| 1> | Sets the temperature units. | 0 = Celsius (Default)<br>1 = Fahrenheit |

### Examples

| |
|---|
| Get the language:<br>`(LOC+LANG?)`<br>Result:<br>`(LOC+LANG!001)` |
| Set the language to French:<br>`(LOC+LANG 1)` |
| Set the temperature to Fahrenheit:<br>`(LOC+TEMP 1)` |

# LVO–Lens Vertical Position Adjustment

Sets the lens vertical location to an absolute position.

This command is only enabled when the projector is on.

### Commands

| Command | Description | Values |
|---|---|---|
| LVO?m | Returns the minimum and maximum range of the vertical axis based on the last lens calibration performed. The returned range is persistent across AC cycles. (Read-only) | — |
| LVO <position> | Adjusts the vertical location of the lens to the specified position. (Saved value) | position = A numeric valuethat is subject to the range returned in LVO?m |

### Examples

| |
|---|
| Move the lens to position 500 on the vertical axis:<br>`(LVO 500)` |

# MSP–OSD Menu Position Presets

Sets the default menu position on the screen.

### Commands

| Command | Description | Values |
|---|---|---|
| MSP? | Returns the current on-screen display position preset. (Read-only) | — |
| MSP <value> | Changes the location of the on-screen display. | 0 = Top left (Default)<br>1 = Top center |

| Command | Description | Values |
|---|---|---|
| | | 2 = Top right<br>3 = Center left<br>4 = Center<br>5 = Center right<br>6 = Bottom left<br>7 = Bottom center<br>8 = Bottom right |

### Examples

| |
|---|
| Get current menu position preset:<br>`(MSP?)` |
| Set the on-screen display position to the top left corner of the screen:<br>`(MSP 0)` |

# NET–Network Setup

Modifies the network setup for this device.

By default, DHCP support is turned on.

### Commands

| Command | Description | Values |
|---|---|---|
| NET "<ip>" "<subnet>" "<gateway>" | Sets the projector network settings as specified. (Saved value) | All three arguments are strings and the gateway is optional. |
| NET+DGRP "<group>" | Sets the device group name for the projector. (Saved value)<br>This can help simplify broadcast searching by organizing projectors into groups, particularly if a large number of projectors are on the same local network. | group = Group name for the projector |
| NET+DHCP 1 | Enables DHCP. To turn off DHCP support, switch to a static IP by using the base command. (Saved value) | 1 |
| NET+ETH0? | Returns the projector IP address. (Read-only) | — |
| NET+GATE? | Returns the projector gateway address. (Read-only) | — |
| NET+HOST "<name>" | Sets the name for the projector. (Saved value)<br>With this set, devices on the same network subnet as the projector can connect to it using the name: <name>.local. | name = Name for the projector |
| NET+MAC0? | Returns the MAC address of the Ethernet port. (Read-only) | — |

| Command | Description | Values |
|---|---|---|
| NET+PORT? | Returns the TCP port used for the Christie serial protocol over Ethernet. (Read-only) | 1024 to 49151 (with some exceptions)<br>3003 = Reserved on the projector and cannot be used for the Christie serial protocol |
| NET+SUB0? | Returns the projector netmask. (Read-only) | — |

### Examples

| |
|---|
| Set the static IP address to 192.168.1.100, with a netmask of 255.255.255.0, and no gateway:<br>`(NET "192.168.1.100" "255.255.255.0")` |
| Turn on DHCP support:<br>`(NET+DHCP 1)` |

# OSD–On Screen Display

Displays or hides the on-screen display.

### Commands

| Command | Description | Values |
|---|---|---|
| OSD? | Returns the status of the on-screen display. (Read-only) | — |
| OSD <0 \| 1> | Enables or disables the on-screen display. | 0 = Hides the on-screen display<br>1 = Displays the on-screen display (Default) |

### Examples

| |
|---|
| Get the current state of the on-screen display:<br>`(OSD?)` |
| Hide the on-screen display:<br>`(OSD 0)` |

# OTR–Output Resolution

Returns the maximum number of columns and rows for the display.

### Commands

| Command | Description | Values |
|---|---|---|
| OTR? | Returns the output resolution. (Read-only) | — |
| OTR+HRES? | Returns the maximum number of columns for the display. (Read-only) | — |
| OTR+VRES? | Returns the maximum number of rows for the display. (Read-only) | — |

### Examples

| |
|---|
| Get the current output resolution:<br>`(OTR?)` |
| Get maximum number of vertical rows:<br>`(OTR+VRES?)` |

# PNG–Ping

Returns basic projector information to the user, including the type of device and main software version.

### Commands

| Command | Description | Values |
|---|---|---|
| PNG? | Returns basic projector information (Read-only):<br><type> <major> <minor> <build><br>where:<br>• <major>, <minor>, <build> = Software version | <type> valid values:<br>70 = Core5 |

# PRO–Profile

Allows selection of a local profile on the projector.

### Commands

| Command | Description | Values |
|---|---|---|
| PRO?L | Returns the list of available local profiles. (Read-only) | — |

| Command | Description | Values |
|---|---|---|
| PRO x | Selects local profile x and applies the profile to the projector.<br>Selecting an empty profile does not do anything. | 0 = Default<br>1 = <custom 1><br>2 = <custom 2><br>...<br>10 = <custom 410 |

### Examples

| |
|---|
| Apply the default profile to the projector:<br>`(PRO 0)` |
| Apply custom profile 3 to the projector:<br>`(PRO 3)` |

# PWR–Power

Changes the power state of the product.

### Commands

| Command | Description | Values |
|---|---|---|
| PWR? | Returns the current power state of the projector. (Read-only) | 000 = Standby<br>001 = On<br>010 = Cooling down<br>011 = Warming up |
| PWR <0 \| 1> | Turns the projector on or off. | 0 = Turns the projector off<br>1 = Turns the projector on |
| PWR+ELEC <0 \| 1> | Keeps video electronics on in standby, regardless of laser state. (Saved value) | 0 = Disables electronics override (Default)<br>1 = Enables electronics override |

### Examples

| |
|---|
| Return the power setting for the projector:<br>`(PWR?)`<br>`(PWR!000 "Power Off")` |
| Turn off the projector:<br>`(PWR 0)` |
| Turn on the projector:<br>`(PWR 1)` |

# RAL–Remote Access Level

Sets the default remote serial protocol access level for any of the serial ports.

### Commands

| Command | Description | Values |
|---|---|---|
| RAL <value> | Sets the access level on all Ethernet port. (Saved value) | 0 = No Access—Disables the port<br>1 = Login Required—Sets read-only access until a separate login is performed<br>2 = Free Access—Executes commands at the operator level unless a separate login is performed (Default) |
| RAL+PRTA <value> | Sets the access level for the RS232 port. (Saved value) | |

### Examples

Set port to Login Required:

```
(RAL+PRTA 1)
```

# SDI–SDI Payload Overrride

Overrides the SMPTE 352M payload for HBMIC-SDI inputs.

This setting applies to all HBMIC-SDI inputs in the system (such as, not per input).

### Commands

| Command | Description | Values |
|---|---|---|
| SDI <value> | Changes the HBMIC-SDI payload override setting. This command is only available if the video electronics are on. (Saved value) | 0 = Auto Detect (Default)<br>1 = Custom<br>2 = 3G-A 1080p60<br>3 = 3G-A 1080p59.94<br>4 = 3G-A 1080p50<br>5 = 3G-A 2K60<br>6 = 3G-A 2K59.94<br>7 = 3G-A 2K50 |
| SDI+PAYL "<custom string>" | Defines the customized SMPTE 352M payload as a 4-byte hex string when the SDI command is set to custom. For more details, contact Christie Technical Support.<br>This command is only available if the video electronics are on. (Saved value) | custom string = 4-byte hex string in big-endian order:<br>"<b0><b1><b2><b3>" |

### Examples

| |
|---|
| Set the SDI payload to the pre-defined 3G-A 1080p59.94 option:<br>`(SDI 3)` |
| Set the SDI payload to a custom entry, for example 1080p23.98.4:2:2:<br>`(SDI 1)`<br>`(SDI+PAYL "04C20500")` |

# SHU–Shutter

Opens and closes the shutter.

### Commands

| Command | Description | Values |
|---|---|---|
| SHU? | Gets the state of the shutter. (Read-only) | — |
| SHU <0 \| 1> | Opens or closes the shutter. | 0 = Opens the shutter<br>1 = Closes the shutter (Default) |

### Examples

| |
|---|
| Get the state of the shutter:<br>`(SHU?)`<br>Result:<br>`(SHU!0)`<br>Indicates the shutter is open. |
| Open the shutter:<br>`(SHU 0)` |
| Close the shutter:<br>`(SHU 1)` |

# SIN–Select Input

Selects the active input.

### Commands

| Command | Description | Values |
|---|---|---|
| SIN?L | Returns a list of available inputs to select based on the selected port configuration. (Read-only) | — |

| Command | Description | Values |
|---|---|---|
| SIN <input> | Selects a set of inputs based on the selected port configuration. This command is only available if video electronics are on. (Saved value) | input = Subject to the range returned in SIN?L |
| SIN+PORT <config> | Select an input port configuration to use. This command is only available if video electronics are on. (Saved value) | 1 = One-Port (Default)<br>2 = Two-Port<br>4 = Four-Port Quadrants<br>5 = One-Port, Dual-Input 3D—Applies to models with Mirage license only |

## Examples

Use one port to display an image:

```
(SIN+PORT 1)
```

Use four SDI to display a Four-Port Quadrant image:

```
(SIN+PORT 4)
```

Result:

```
($SIN 1)
```

Try to select an unavailable input:

```
(SIN+PORT 4)
```

Result:

```
($SIN 4)
```

Display one-port input list:

```
(SIN+PORT 1)
(SIN?L)
```

Result:

```
(SIN!L001 000 0000 "None")
(SIN!L001 000 0001 "One-Port HDMI0")
(SIN!L001 000 0002 "One-Port HDMI1")
(SIN!L001 000 0003 "One-Port [HDBaseT]")
(SIN!L001 000 0004 "One-Port DP0")
(SIN!L001 000 0005 "One-Port DP1")
(SIN!L001 000 0006 "One-Port SDI0")
(SIN!L001 000 0007 "One-Port SDI1")
(SIN!L001 000 0008 "One-Port SDI2")
(SIN!L001 000 0009 "One-Port SDI3")
(SIN!L001 000 00010 "Christie Link [A]")
(SIN!L001 000 00011 "Christie Link [B]")
(SIN!L111 "--END--")
```

Display one-port dual-input 3D list:

```
(SIN+PORT 5)
(SIN?L)
```

Result:

```
(SIN!L001 000 0000 "None")
(SIN!L001 001 0001 "One-Port Dual-Input 3D L:SDI0,R:SDI1")
(SIN!L001 001 0002 "One-Port Dual-Input 3D L:SDI2,R:SDI3")
(SIN!L001 001 0003 "One-Port Dual-Input 3D L:HDMI0,R:HDMI1")
(SIN!L001 001 0004 "One-Port Dual-Input 3D L:DP0,R:DP1")
(SIN!L001 000 0005 "Christie Link [B]")
(SIN!L001 000 0006 "Christie Link [A]")
(SIN!L111 "--END--")
```

# SNM–SNMP Configuration

Configures SNMP support for the projector.

### Commands

| Command | Description | Values |
|---|---|---|
| SNM+LAMP <0 \| 1> | Enables or disables light source faults SNMP trap. | 0 = Disables light source faults<br>1 = Enables light source faults (Default) |
| SNM+LIFE <0 \| 1> | Enables or disables light source life limit warnings SNMP trap. | 0 = Disables light source life limit warnings<br>1 = Enables light source life limits (Default) |
| SNM+POWR <0 \| 1> | Enables or disables power state changes SNMP trap. | 0 = Disables power state changes<br>1 = Enables power state changes (Default) |
| SNM+READ "<name>" | Sets the SNMP Read community name. | name = String value, maximum 32 characters<br>Default name = private |
| SNM+SIGN <0 \| 1> | Enables or disables video signal changes SNMP trap. | 0 = Disables video signal changes<br>1 = Enables video signal changes (Default) |
| SNM+STAL <0 \| 1> | Enables or disables fan/cooling faults SNMP trap. | 0 = Disables fan/cooling faults<br>1 = Enables fan/cooling faults (Default) |
| SNM+TIP1 "<IP address>"<br>SNM+TIP2 "<IP address>"<br>SNM+TIP3 "<IP address>" | Sets up to three IP addresses for traps to be sent. | IP address = String value<br>0.0.0.0 disables notifications (Default) |
| SNM+THRM <0 \| 1> | Enables or disables temperature faults SNP trap. | 0 = Disables temperature faults<br>1 = Enables temperature faults (Default) |

### Examples

| |
|---|
| Set the SNMP read community name to public:<br>`(SNM+READ "public")` |
| Configure one of the client IPs to receive traps:<br>`(SNM+TIP1 "192.168.1.25")` |
| Disable power state traps:<br>`(SNM+POWR 0)` |

# SOR–Screen Orientation

Selects the orientation of the displayed image.

### Commands

| Command | Description | Values |
|---|---|---|
| SOR <value> | Changes the orientation of the displayed image. This command is only available if video electronics are on. (Saved value) | 0 = Front projection (Default)<br>1 = Rear projection<br>2 = Front projection inverted<br>3 = Rear projection inverted |

### Examples

| |
|---|
| Turn on rear projection:<br>`(SOR 1)` |
| Turn on front projection inverted:<br>`(SOR 2)` |

# SPS–Splash Screen

Changes the characteristics of the displayed splash screen when no signal is present.

### Commands

| Command | Description | Values |
|---|---|---|
| SPS+COLR <value> | Changes the background color of the splash screen. This command is only available when video electronics are on. (Saved value) | 1 = Red<br>2 = Green<br>3 = Blue<br>7 = Black (Default) |

### Examples

Set the splash screen to blue:

```
(SPS+COLR 3)
```

# SST–Status

Returns status information about the projector in read-only mode.

For more information about the status groups, items, and their states, see the *Christie TruLife+ Status System Guide (P/N: 020-103327-XX)*.

### Commands

| Command | Description | Values |
|---|---|---|
| SST? | Returns all status items. (Read-only)<br>Each item is listed in the following format:<br>(SST+<group>!<index> <state> "<value>" "<description>") | group = Provides the four letter identifier of the Status System group the item belongs to<br>index = Indicates the index value of the status item within the group<br>state = Indicates the condition of the status item:<br>000 = No errors or warnings<br>001 = Warning<br>002 = Error<br>value = Presents the value of the status item<br>description = Provides the descriptive name of the status item |
| SST+<group>? | Returns all status items within the specified four-letter group identifier. | |
| SST+<group>? <index> | Returns a specific status item within the specified four-letter group identifier. (Read-only) | |

### Examples

Display the temperatures:

```
(SST+TEMP?)
```

Result:

```
...
(SST+TEMP!000 000 "21 °C" "Integrator Rod Temperature (Temp 1)")
(SST+TEMP!002 000 "21 °C" "Air Intake Temperature (Temp 2)")
(SST+TEMP!003 000 "21 °C" "Lamp Exhaust Temperature (Temp 3)")
(SST+TEMP!020 000 "28 °C" "Environmental Board Temperature") ...
```

Return item 20 of the temperature group:

```
(SST+TEMP?20)
```

Result:

```
SST+TEMP!020 000 "28 °C" "Environmental Board Temperature"
```

# SZP–Resize Presets

Changes the aspect ratio of the display.

### Commands

| Command | Description | Values |
|---|---|---|
| SZP <value> | Changes the aspect ratio of the display. This command is only available if video electronics are on. (Saved value) | 0 = Allows the projector to determine when to scale video (Default)<br>1 = No resizing<br>2 = Full size (stretch horizontally and vertically)<br>3 = Full width (stretch horizontally)<br>4 = Full height (stretch vertically) |

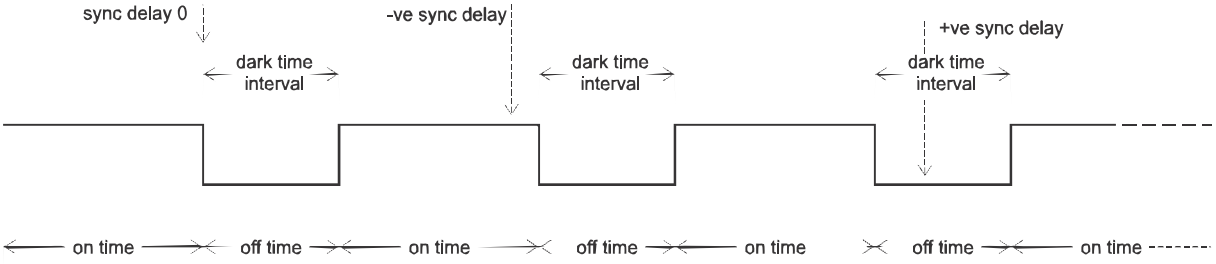
### Examples

| |
|---|
| Allow the projector to determine when to scale video:<br>`(SZP 0)` |
| Disable scaling the video:<br>`(SZP 1)` |
| Stretch the video horizontally:<br>`(SZP 3)` |

# TDD–3D Sync Delay

Configures where the sync pulse occurs in relation to the transition from on time to off time in the DMDs, in microseconds.

**Only applies to:** Models with the Mirage license applied




### Commands

| Command | Description | Values |
|---|---|---|
| TDD? | Returns the 3D emitter delay value on main video. (Read-only) | — |

| Command | Description | Values |
|---|---|---|
| TDD <value> | Configures where the sync pulse occurs. (Saved value)<br>Enabled when the selected signal is a 3D signal, 3D mode is enabled, and 3D Sync Out is set to Emitter. | 0 = Lines up the sync pulse with the transition (Default)<br>Negative value = Configures the sync pulse to be slightly before the transition<br>Positive value = Configures the sync pulse to be slightly after the transition |

### Examples

| |
|---|
| Return the 3D emitter delay value on main video:<br>`(TDD?)` |
| Set 3D emitter delay to 20.00 milliseconds on main video:<br>`(TDD 2000)` |

# TDM–3D Mode

Controls when input signals are processed as 3D or not.

**Only applies to:** Models with the Mirage license applied

### Commands

| Command | Description | Values |
|---|---|---|
| TDM <mode> | Controls when input signals are processed as 3D or not. (Saved value) | 0 = Turns off 3D processing for direct input signals. Has no effect when a Dual Input 3D port configuration is selected. Useful for displaying 2D 120Hz signal. It prevents a `Missing External 3D Synch SPC-2145` event from occurring.<br>1 = Automatically determines whether to enable 3D processing or not. When input signals are 60Hz or less, no frame doubling or tripling occurs unless a Dual Input 3D channel is selected. (Default)<br>2 = Configures the projector to enable 3D processing where possible. Frame doubling occurs when input signals are 60Hz. Frame tripling occurs when input signals are 48-50Hz.<br>3 = Side-by-Side 3D<br>5 = Top-and-Bottom 3D<br>6 = Frame Packing 3D |

### Examples

| |
|---|
| Turn off 3D processing for direct input signals:<br>`(TDM 0)` |
| Automatically determine whether to enable 3D processing or not:<br>`(TDM 1)` |
| Configure the projector to enable 3D processing where possible:<br>`(TDM 2)` |

# TDN–Invert 3D Input

Inverts the left and right eye frames.

**Only applies to:** Models with the Mirage license applied

### Commands

| Command | Description | Values |
|---|---|---|
| TDN <0 \| 1> | Inverts left and right eye frames. (Saved value)<br>Enabled when the selected signal is a 3D signal and the 3D mode is enabled. | 0 = Leaves the left and right eye frames in their default order (Default)<br>1 = Reverses the order of the left and right eye frames |

### Examples

| |
|---|
| Return the 3D input inversion value on main video:<br>`(TDN?)` |
| Set 3D input inversion to inverted on main video:<br>`(TDN 0)` |

# TDO–3D Sync Out

Configures the 3D Sync OUT port for either an emitter or for another downstream projector.

**Only applies to:** Models with the Mirage license applied

### Commands

| Command | Description | Values |
|---|---|---|
| TDO? | Returns the 3D Sync Out value on main video. (Read-only) | — |
| TDO <0 \| 1> | Configures the 3D Sync OUT port. (Saved value) | 0 = Configures the 3D Sync OUT port to be fed directly to a 3D emitter, including any |

| Command | Description | Values |
|---|---|---|
| | Enabled when the selected signal is a 3D signal and 3D mode is enabled. | 3D sync delay and/or sync inversion (Default)<br>1 = Configures the 3D Sync OUT port to be fed to another downstream projector, without including any 3D sync delay or inversion |

### Examples

| |
|---|
| Return the 3D Sync Out value on main video:<br>`(TDO?)` |
| Set 3D Sync Out to Off on main video:<br>`(TDO 0)` |
| Set 3D Sync Out to To Emitter:<br>`(TDO 1)` |

### Related information

*TDD–3D Sync Delay* (on page 55)
*TDN–Invert 3D Input* (on page 57)

# TDT–3D Test Pattern

Enables or disables a 3D test pattern.

**Only applies to:** Models with the Mirage license applied

### Commands

| Command | Description | Values |
|---|---|---|
| TDT <0 \| 1> | Enables or disables the 3D test pattern. | 0 = Disables the 3D test pattern<br>1 = Enables the 3D test pattern |

### Examples

| |
|---|
| Disable 3D test pattern:<br>`(TDT 0)` |
| Enable 3D test pattern:<br>`(TDT 1)` |

# THM–Video Thumbnails

Enables or disables the video thumbnails.

### Commands

| Command | Description | Values |
|---|---|---|
| THM <0 \| 1> | Enables or disables the video thumbnails. | 0 = Turns off video thumbnails<br>1 = Turns on video thumbnails (Default) |

### Examples

| |
|---|
| Disable the video thumbnails:<br>`(THM 0)` |
| Enable the video thumbnails:<br>`(THM 1)` |

# TMC–Thermal Management Control

Selects the thermal (fan control) management strategy.

Use the fan control profile to balance noise compared to brightness depending on projection needs.

### Commands

| Command | Description | Values |
|---|---|---|
| TMC+MODE ? | Returns the fan control profile in use. (Read-only) | — |
| TMC+MODE <value> | Selects the fan control profile. (Saved value) | • 0 = Standard—The projector attempts to achieve a balance between low noise and brightness performance by adjusting fan speed with regards to ambient temperature and requested brightness. (Default)<br>• 1 = Quiet—The projector achieves the lowest noise at the possible expense of brightness performance. |

### Examples

| |
|---|
| Return the fan control profile in use:<br>`(TMC+MODE ?)`<br>Result:<br>`(TMC+MODE! "Standard")` |

| |
|---|
| Achieve the lowest noise possible:<br>`(TMC+MODE 1)` |

# TMD–Time and Date

Sets the date and time in the real-time clock.

### Commands

| Command | Description | Values |
|---|---|---|
| TMD+DATE <date> | Sets the date for the clock. | <date> = String in the following format:<br>YYYY/MM/DD |
| TMD+TIME <time> | Sets the time for the clock. | <time> = String in the following format:<br>hh:mm:ss |

### Examples

| |
|---|
| Set the date to January 17th, 2020:<br>`(TMD+DATE "2020/01/17")`<br>Result:<br>`(65535 00000 FYI00916 "Setting Date to 2020/01/17")` |
| Get the local time:<br>`(TMD+TIME?)`<br>Result:<br>`(TMD+TIME! "19:45:23")` |
| Set the time to 3pm:<br>`(TMD+TIME "15:00:00")`<br>Result:<br>`(65535 00000 FYI00916 "Setting Time to 15:00:00")` |

# UID–User ID

Changes the access level of the currently connected session.

### Commands

| Command | Description | Values |
|---|---|---|
| UID "<username>" "<password>" | Logs in using the specified user name and password. | username = String value<br>password = String value |

### Examples

| |
|---|
| Display the current logged in user and their access level:<br>`(UID?)` |
| Log out the current user:<br>`(UID)` |
| Log in as service using the default password:<br>`(UID "user" "user")` |

# WRP–Warp Selection

Selects the warp map to use on the projector.

### Commands

| Command | Description | Values |
|---|---|---|
| WRP+KGAN? | Returns if gain compensation is enabled or disabled when 2D keystone is applied. (Read-only) | — |
| WRP+KGAN <value> | Enables or disables gain compensation when 2D keystone is applied. | 0 = Disables gain compensation (Default)<br>1 = Enables gain compensation |
| WRP+SLCT?L | Retrieves a list of available warp maps. (Read-only) | — |
| WRP+SLCT <value> | Changes the warp map to use on the projector. This command is only available if video electronics are on. (Saved value) | 0 = Turns off warping<br>1 to 4 = Selects one of four warp maps, if available<br>11 = 2D keystone |

### Examples

| |
|---|
| Disable warping:<br>`(WRP+SLCT 0)` |
| Select the third warp map:<br>`(WRP+SLCT 3)` |
| Retrieve a list of available warp maps:<br>`(WRP+SLCT?L)` |

# ZOM–Lens Zoom Position Adjustment

Sets the lens zoom.

This command requires a zoom motor on the lens for it to work and is only available when the projector is on.

## Commands

| Command | Description | Values |
|---|---|---|
| ZOM?m | Returns the current minimum and maximum values for the zoom position based on the last lens calibration performed. The returned range is persistent across AC cycles. (Read-only) | — |
| ZOM <position> | Adjusts the lens zoom to the specified position. The position is persistent across AC cycles. (Save value) | position = Numeric value subject to the range returned in ZOM?m |

## Examples

| |
|---|
| Get the current minimum and maximum values for the zoom axis:<br>`(ZOM?m)`<br>Result:<br>`(ZOM!M-2400 900)` |
| Move the lens to position 500 for the zoom motor:<br>`(ZOM 500)` |

# Asynchronous messages

The projector can generate some asynchronous messages.

The following lists examples of each message, including why and when they are generated. Bolded and underlined text indicates a fixed part of the message.

| Type | Message | Description |
|---|---|---|
| Date/Time | (**65535 00000 FYI00916** "Setting Date to 2018/05/20") | Generated when the date or time are changed, respectively. |
| | (**65535 00000 FYI00916** "Setting Time to 00:00:00") | |
| Factory defaults | (**65535 00000 FYI00919** "All settings have been restored to their factory defaults. Reboot is required to take effect.") | Generated when a factory default has been performed on the projector. |
| Networking | (**65535 00000 FYI00915** "Configured network: IP:192.168.228.6 Mask:255.255.252.0 Gateway:192.168.228.1") | Generated when the network settings have changed. Network settings can change due to a number of specific events such as:<br>• Operator changes the network settings (through any of the standard interfaces).<br>• DHCP lease is renewed.<br>• Network cable was unplugged or plugged in. |
| Status | (**65535 00000 FYI00000** "(SST+LAMP?001) Lamp Hours = 00:00 (h:m)") | Generated when a status item changes from:<br>• An error or warning state to an OK state.<br>• An OK or error state to a warning state.<br>• An OK or warning state to an error state. |
| | (**65535 00000 ERR00000** "System Warning: (SST+LAMP?001) Lamp Hours = N/A") | |
| | (**65535 00000 ERR00000** "System Error: (SST+VERS?003) Image Processor HW Version = Detection Fault") | |

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