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Communicating with the projector

Understand the information and procedures for communicating with the projector from a remote location.

Models

This guide applies to the following models.
- CP4450-RGB

Product documentation

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

To access the documentation from the Christie website:
- Scan the QR code using a QR code reader app on a smartphone or tablet.

Related documentation

Additional information on the projector is available in the following documents.
Connecting to the projector Ethernet port

Communicate with the projector through the Ethernet port.
1. Connect an Ethernet cable to the projector from your computer.
2. Setup the correct IP for the projector on your computer.
3. On the TCP software, use port 5000.
4. Start sending serial commands.

Correct command formatting

Add a space between the code and the number when entering commands.
For example, PWR1 can be entered as PWR 1.

Understanding message format

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

<table>
<thead>
<tr>
<th>Source</th>
<th>Format</th>
<th>Function</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>From controller</td>
<td>(Code Data)</td>
<td>SET (set lamp power to 80%)</td>
<td>(LPP80) or (LPP 80)</td>
</tr>
<tr>
<td></td>
<td>(Code+Subcode Data)</td>
<td>SET (set the lamp file for the channel &quot;Media Block Flat&quot;)</td>
<td>(LPF+CHAN &quot;Media Block Flat&quot;)</td>
</tr>
<tr>
<td></td>
<td>(Code ?)</td>
<td>REQUEST (what is the current test pattern)</td>
<td>(ITP?) or (ITP ?)</td>
</tr>
<tr>
<td></td>
<td>(Code+Subcode ?)</td>
<td>REQUEST (what is the current time?)</td>
<td>(TMD+TIME?)</td>
</tr>
<tr>
<td>From projector</td>
<td>(Code Data)</td>
<td>REPLY (current test pattern is DC2k Framing Green)</td>
<td>(ITP!&quot;DC2K Framing Green&quot;)</td>
</tr>
<tr>
<td></td>
<td>(Code+Subcode Data)</td>
<td>REPLY (current time is 12:18:49)</td>
<td>(TMD+TIME! &quot;12:18:49&quot;)</td>
</tr>
</tbody>
</table>

Generally, Set and Reply messages have the same data in the same format, and Requests do not contain any data.

The smallest step size for any parameter is always 1. For some controls, the value displayed on the screen is a percentage, while the actual hardware has a range of 0 to 255. In such cases, the value used for the serial communication is 0 to 255, not the percentage value seen on the screen. For example, 0 equates to 0%, 128 equates to 50.2%, 255 equates to 100%.

Available message types

<table>
<thead>
<tr>
<th>Message type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set</td>
<td>A command to set a projector parameter at a specific level, such as changing the brightness.</td>
</tr>
</tbody>
</table>
**Basic message structure**

Understand the component fields that comprise a standard ASCII message.

<table>
<thead>
<tr>
<th>Components</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start and end of message</td>
<td>Every message begins with the left bracket character and ends with the right bracket character. If the start character is received before an end character of the previous message, the partial (previous) message is discarded.</td>
</tr>
<tr>
<td>Function code</td>
<td>The CineLife+ function you want to work with 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 CineLife+ that do not have a subcode, a space between the function code and the first parameter (or special character) is optional.</td>
</tr>
<tr>
<td>+Subcode</td>
<td>The CineLife+ function you want to work with may have one or more subcodes that allow you to select a specific or subfunction. 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 CineLife+ that have a subcode, a space between the subcode and the first parameter (or special character) is optional.</td>
</tr>
<tr>
<td>Request/reply symbols</td>
<td>If the controller is requesting information from CineLife+, a question mark (?) appears directly after the function code. If CineLife+ is replying, an exclamation mark (!) appears directly after the function code. For set messages to CineLife+, neither of these characters appear—data directly follows the code and subcode. 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)).</td>
</tr>
<tr>
<td>Data</td>
<td>The value for a given CineLife+ 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: All values returned by CineLife+ (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, CineLife+ 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.</td>
</tr>
</tbody>
</table>
Components | Description
---|---
| • Data in set messages to CineLife+ do not require padding with zeros.
| • Within each message, multiple parameters of data must be separated by one space character.
| • 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, the time command requires time to be provided in text enclosed in double quotation mark, as in "19:45:23". Use all characters as required except for special characters—these require a two-character combination.

**Special characters for text**

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

<table>
<thead>
<tr>
<th>Special character</th>
<th>Two-character combination</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;</td>
<td>&quot;</td>
<td>Double quotation mark</td>
</tr>
<tr>
<td>\</td>
<td>\</td>
<td>Backslash</td>
</tr>
<tr>
<td>(</td>
<td>\</td>
<td>Left bracket</td>
</tr>
<tr>
<td>)</td>
<td>\</td>
<td>Right bracket</td>
</tr>
<tr>
<td>Line break</td>
<td>\n</td>
<td>New line—If the text can be displayed on more than one line, this sets the line break.</td>
</tr>
<tr>
<td>Send arbitrary code</td>
<td>\h##</td>
<td>Sends one arbitrary code defined by the two hexadecimal digits ##.</td>
</tr>
</tbody>
</table>

**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")
The serial commands can be used to modify product settings. This document provides a list of all available CineLife+™ serial commands. Depending on the projector you are working with, some commands may not be available.

**AUT—Automation**

Executes a macro from a script.

**Parameters**
- **Access level**: Operator
- **Power level (minimum)**: Power Down

**Commands**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUT+EXEC &quot;&lt;script&gt;&quot; &quot;&lt;macro&gt;&quot;</td>
<td>Executes the specified macro from the specified script.</td>
<td>script = Script to run the macro macro = Macro to execute</td>
</tr>
</tbody>
</table>

**Examples**

To execute the MyMacro1 macro from the MyScript script:

(AUT+EXEC "MyScript" "MyMacro1")

To execute the MyMacro macro from the MyMacro script:

(AUT+EXEC "MyMacro")
**CHA–Channel**

Selects the channel configuration.

**Parameters**

- **Access level:** Operator
- **Power level (minimum):** Power Up

**Commands**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHA?</td>
<td>Returns the active channel name. (Read-only)</td>
<td>—</td>
</tr>
<tr>
<td>CHA &quot;&lt;value&gt;&quot;</td>
<td>Sets the channel configuration.</td>
<td>value = Channel name</td>
</tr>
<tr>
<td></td>
<td>By default, the projector has the following</td>
<td>By default, the projector has the following</td>
</tr>
<tr>
<td></td>
<td>channels:</td>
<td>channels:</td>
</tr>
<tr>
<td></td>
<td>Media Block Flat</td>
<td>Media Block Flat</td>
</tr>
<tr>
<td></td>
<td>Media Block Scope</td>
<td>Media Block Scope</td>
</tr>
<tr>
<td></td>
<td>HDMI A</td>
<td>HDMI A</td>
</tr>
<tr>
<td></td>
<td>HDMI B</td>
<td>HDMI B</td>
</tr>
<tr>
<td></td>
<td>HDMI 3D LR</td>
<td>HDMI 3D LR</td>
</tr>
</tbody>
</table>

**Examples**

- **Return the active channel name:**
  
  (CHA?)
  
  **Result:**
  
  (CHA! "Media Block Flat")

- **Set the channel to Media Block Flat:**
  
  (CHA "Media Block Flat")

**FCS–Focus Lens Position Adjustment**

Adjusts the lens to a specific focus position with a specified direction.

In most cases the active lens file is the one specified by the current channel. If a user selects a different lens file in the user interface ILS File Setup panel, the selected lens file becomes active. That file may be different than the one specified by the current channel.

**Parameters**

- **Access level:** Operator
• **Power level (minimum):** Power Up

**Commands**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>FCS?</td>
<td>Returns the current motor position and direction.</td>
<td>—</td>
</tr>
<tr>
<td>FCS &lt;position&gt;</td>
<td>Moves the lens mount to a specified focus position with a specified direction</td>
<td>position = Numeric value</td>
</tr>
<tr>
<td>FCS+MOVR &lt;step&gt;</td>
<td>Moves the motor a given number of steps relative to the current location.</td>
<td>step = Numeric value</td>
</tr>
<tr>
<td>FCS+STOP</td>
<td>Stops the motor.</td>
<td>—</td>
</tr>
<tr>
<td>FCS+STRT</td>
<td>Starts the motor moving in a specified direction.</td>
<td>-1 = Negative approach</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = Positive approach</td>
</tr>
</tbody>
</table>

**Examples**

Return current motor position and direction:

```
(FCS?)
```

Move lens to position 500 at focus motor with a positive approach:

```
(FCS 500 1)
```

Move lens to position 500 at focus motor with a negative approach:

```
(FCS 500 -1)
```

Move the motor 200 steps in a positive direction:

```
(FCS+MOVR 200)
```

Move the motor 100 steps in a negative direction:

```
(FCS+MOVR -100)
```

Stop the motor:

```
(FCS+STOP)
```

Start the motor moving in a positive direction:

```
(FCS+STRT 1)
```

**GAM—Gamma Control**

Gets or sets the gamma file, which describes the gamma response curve for the source signal.

The gamma control and files are set when the PIU command is off.

**Parameters**

- **Access level:** Installer
- **Power level (minimum):** Power Up
Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAM?</td>
<td>Returns the active gamma file. (Read-only)</td>
<td>—</td>
</tr>
<tr>
<td>GAM?L</td>
<td>Returns a list of all available gamma files. (Read-only)</td>
<td>—</td>
</tr>
<tr>
<td>GAM &quot;&lt;file&gt;&quot;</td>
<td>Sets the gamma file for the active channel.</td>
<td>file = Subject to the range returned in GAM?L</td>
</tr>
<tr>
<td>GAM+CHAN? &quot;&lt;channel&gt;&quot;</td>
<td>Gets the gamma file for the specified channel. (Read-only)</td>
<td>channel = The name of a specific channel</td>
</tr>
</tbody>
</table>
| GAM+CHAN "<channel>" "<file>" | Sets the gamma file for the specified channel. | channel = The name of a specific channel  
file = Subject to the range returned in GAM?L |

Examples

Return the active gamma file:
(GAM?)
Result:
(GAM! "Gamma 2.6")

Return a list of all available gamma files:
(GAM?L)
Result:
(GAM!L001 001 000 "Gamma 2.4")
(GAM!L001 001 001 "Gamma 2.6")
...

Set the specified gamma file for the active channel:
(GAM "Gamma 2.4")

Set the gamma file of the active channel to index 1 from a previous listing:
(GAM 1)

Return the gamma file used by the specified channel:
(GAM+CHAN? "Media Block Flat")
Result:
(GAM+CHAN! "Gamma 2.6")

Set the gamma file for the specified channel to the specified file:
(GAM+CHAN "Media Block Flat" "Gamma 2.4")

Set the gamma file for the specified channel to the specified file at index 1 from the previous listing:
(GAM+CHAN "Media Block Flat" 1)
HLP–Serial Help

Queries a list of all available serial commands, with brief descriptions and current enabled states.

Parameters

- **Access level:** None
- **Power level (minimum):** Power Down

### Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>HLP?</td>
<td>Requests entire command help listing. (Read-only)</td>
<td>—</td>
</tr>
<tr>
<td>HLP? &quot;&lt;command&gt;&quot;</td>
<td>Requests help list for a single command. (Read-only)</td>
<td>—</td>
</tr>
</tbody>
</table>

### Examples

Retrieve entire command help listing:

(HLP?)

Retrieve all parameters and descriptions for PWR command:

(HLP? "PWR")

---

ILF–ILS File

Gets or sets the active or specified channel intelligent lens system (ILS) file.

Parameters

- **Access level:** Installer
- **Power level (minimum):** Power Up

### Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>ILF?</td>
<td>Returns the ILS file in use by the system. (Read-only)</td>
<td>—</td>
</tr>
<tr>
<td>ILF?L</td>
<td>Returns a list of all available ILS files. (Read-only)</td>
<td>—</td>
</tr>
<tr>
<td>ILF &quot;&lt;file&gt;&quot;</td>
<td>Sets the active ILS file.</td>
<td>file = Subject to the range returned in ILF?L</td>
</tr>
<tr>
<td>ILF+CHAN? &quot;&lt;channel&gt;&quot;</td>
<td>Returns the ILS file used by the specified channel. (Read-only)</td>
<td>channel = Name of a valid channel</td>
</tr>
</tbody>
</table>
### Command Description Values

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>ILF+CHAN &quot;&lt;file&gt;&quot; &quot;&lt;channel&gt;&quot;</td>
<td>Sets the ILS file for the specified channel. file = Name of a valid ILS file channel = Name of a valid channel</td>
<td></td>
</tr>
</tbody>
</table>

### Examples

Return the ILS file in use by the system:

```(ILF?)```
Result:

```(ILF! "ILS Scope")```

Return a list of all available ILS files:

```(ILF?L)```
Result:

```(ILF!L001 001 000 "ILS Scope") (ILF!L001 001 001 "ILS Flat") ...```  

Set the active ILS file:

```(ILF "ILS Flat")```  

Set the ILS Flat file as the ILS file for the specified channel:

```(ILF+CHAN "Media Block Flat" "ILS Flat")```  

### ILS–ILS Setup

Calibrates and resets the intelligent lens system (ILS).

#### Parameters

- **Access level:** Operator
- **Power level (minimum):** Power Up

#### Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>ILS+CALB 1</td>
<td>Performs a full calibration on the ILS.</td>
<td>1</td>
</tr>
<tr>
<td>ILS+CSTS?</td>
<td>Returns the status of the calibration. (Read-only) 0 = Completed. 1 = In progress.</td>
<td>—</td>
</tr>
</tbody>
</table>
### ILS+ENAB?
Indicates if the ILS is enabled (1) or disabled (0). (Read-only)

### ILS+INST?
Indicates if the ILS is installed (1) or not (0). (Read-only)

### ILS+RSET
Performs a reset on the lens motor.

### ILS+RSTS?
Returns the status of the motor reset. (Read-only)

- 0 = Complete
- 1 = In progress

## Examples

Perform a full calibration of all axes of the lens system:

```
(ILS+CALB 1)
```

Perform a reset of all axes of the lens:

```
(ILS+RSET 1)
```

Return the status of the calibration:

```
(ILS+CSTS?)
```

Result:

```
(ILS+CSTS! 0)
```

Return the status of the motor reset:

```
(ILS+RSTS?)
```

Result:

```
(ILS+RSTS! 1)
```

Return the status of the ILS installed:

```
(ILS+INST?)
```

Return the status of the ILS enabled:

```
(ILS+ENAB?)
```

## INR–Interrogator

Initiates an interrogator.

### Parameters
- **Access level:** Operator
- **Power level (minimum):** Power Up

### Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>INR 1</td>
<td>Initiates an interrogator.</td>
<td>1</td>
</tr>
</tbody>
</table>
Examples

Initiate an interrogator:
(INR 1)

ITP–Test Pattern

Displays a test pattern.

Parameters

- **Access level:** Advanced
- **Power level (minimum):** Power Up

Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITP?</td>
<td>Returns the name of the current test pattern. If 0 is returned, no test pattern is used. (Read-only)</td>
<td>—</td>
</tr>
<tr>
<td>ITP?L</td>
<td>Returns a list of all available test patterns. (Read-only)</td>
<td>—</td>
</tr>
<tr>
<td>ITP &quot;&lt;pattern&gt;&quot;</td>
<td>Displays a test pattern on the display. pattern = Number or string subject to the range returned in ITP?L</td>
<td>pattern = Number or string subject to the range returned in ITP?L</td>
</tr>
<tr>
<td>ITP+FULL &lt;0</td>
<td>1&gt;</td>
<td>Sets the test pattern to full screen size. 0 = Uses the active channel screen file 1 = Uses full screen size</td>
</tr>
<tr>
<td>ITP+KEEP 1</td>
<td>Retains the test pattern when changing channels.</td>
<td>1</td>
</tr>
</tbody>
</table>

Examples

Get the current test pattern:
(ITP?)

Use a string to set the test pattern:
(ITP "DC2K Framing Green")

Use a number to set the test pattern:
(ITP 4)

Use the full screen size:
(ITP+FULL 1)

Use the active channel screen file:
(ITP+FULL 0)
LHO–Lens Horizontal Position Adjustment

Adjusts the lens offset to a specific horizontal position with a specified direction.

In most cases the active lens is specified by the current channel. If a user selects a different lens file in the ILS File Setup panel of the user interface, the selected lens file becomes active. This file may be different from the one specified by the current channel.

Parameters

- **Access level:** Operator
- **Power level (minimum):** Power Up

Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LHO &lt;position&gt;</td>
<td>Moves the lens mount to a specified horizontal position with a specified direction.</td>
<td>position = Numeric value</td>
</tr>
</tbody>
</table>
| LHO+STRT     | Starts the motor moving in a specified direction.         | -1 = Negative approach  
                   |                                                          | 1 = Positive approach |
| LHO+STOP     | Stops the motor.                                         | —                       |
| LHO LHO+MOVR <step> | Moves the motor a given number of steps based on the current location. | step = Numeric value |

Examples

- Return current motor position along the horizontal axis and direction:
  
  ```
  (LHO?)
  ```

- Move lens to position 500 along the horizontal axis with a positive approach:
  
  ```
  (LHO 500 1)
  ```

- Move lens to position 500 along the horizontal axis with a negative approach:
  
  ```
  (LHO 500 -1)
  ```

- Move the motor 100 steps in a negative direction:
  
  ```
  (LHO+MOVR -100)
  ```

- Move the motor 200 steps in a positive direction:
  
  ```
  (LHO+MOVR 200)
  ```

- Stop the motor:
  
  ```
  (LHO+STOP)
  ```

- Start the motor moving in a positive direction:
  
  ```
  (LHO+STRT 1)
  ```
LPF–Lamp File

Gets or sets the lamp file for the active or specified channel.

Parameters

- **Access level:** Installer
- **Power level (minimum):** Power Up

Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPF?</td>
<td>Returns the lamp file in use by the active channel. (Read-only)</td>
<td>—</td>
</tr>
<tr>
<td>LPF?L</td>
<td>Returns a list of all available lamp files. (Read-only)</td>
<td>—</td>
</tr>
<tr>
<td>LPF &quot;&lt;lamp file&gt;&quot;</td>
<td>Sets the lamp file for the active channel.</td>
<td>lamp file = Subject to the range returned in LPF? or LPF?L</td>
</tr>
<tr>
<td>LPF+CHAN? &quot;&lt;channel&gt;&quot;</td>
<td>Returns the lamp file used by a specified channel. (Read-only)</td>
<td>channel = The name of a specific channel</td>
</tr>
<tr>
<td>LPF+CHAN &quot;&lt;channel&gt;&quot; &quot;&lt;lamp file&gt;&quot;</td>
<td>Sets the lamp file for a specified channel.</td>
<td>channel = The name of a specific channel lamp file = Subject to the range returned in LPF?L</td>
</tr>
</tbody>
</table>

Examples

Return the lamp file in use by the active channel:

```
(LPFF?)
Result:
(LPFF! "Default3D")
```

Return a list of all available lamp files:

```
(LPFF?L)
Result:
(LPFF!L001 001 000 "Default")
(LPFF!L001 001 001 "Default3D")
...
```

Set the lamp file at index 1 for the active channel:

```
(LPFF 1)
```

Set the lamp file Default for the active channel:

```
(LPFF "Default")
```

Return the lamp file used by the specified channel:

```
(LPFF+CHAN? "Media Block Flat")
```
Result:
(LP+F+CHAN! "Default")

Set the lamp file at index 1 to the specified channel:
(LP+F+CHAN "Media Block Flat" 1)

Set the lamp file Default to the specified channel:
(LP+F+CHAN "Media Block Flat" "Default")

LPM–Lamp Mode

Enables or disables LiteLoc and sets its sensor level.

Parameters

- **Access Level**: Operator
- **Power level (minimum)**: Power Up

Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPM?</td>
<td>Returns the lamp mode for the active lamp file.  (Read-only)</td>
<td>—</td>
</tr>
<tr>
<td>LPM &lt;value&gt;</td>
<td>Sets LiteLoc sensor level for the active lamp file.</td>
<td>value = Numeric value</td>
</tr>
<tr>
<td>LPM &lt;0</td>
<td>1&gt;</td>
<td>Enables or disables LiteLoc for the active lamp file.</td>
</tr>
</tbody>
</table>

Examples

Return the lamp mode for the active lamp file:
(LP?M?)

Result:
(LP+M! "0 080")

Where 0 indicates LiteLoc is disabled and the sensor level is set to 80.

Enable LiteLoc and set its sensor level to 60:
(LP+M 1 60)

LVO–Lens Vertical Position Adjustment

Adjusts the lens offset to a specific vertical position with a specified direction.

In most cases the active lens is specified by the current channel. If a user selects a different lens file in the ILS File Setup panel of the user interface, the selected lens file becomes active. This file may be different from the one specified by the current channel.
### Parameters
- **Access level:** Operator
- **Power level (minimum):** Power Up

### Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>LVO?</td>
<td>Returns the current motor position along the vertical axis and direction. (Read-only)</td>
<td>—</td>
</tr>
<tr>
<td>LVO &lt;position&gt; &lt;1</td>
<td>-1&gt;</td>
<td>position = Numeric value</td>
</tr>
<tr>
<td></td>
<td>Moves the lens mount to a specified vertical position with a specified direction.</td>
<td>-1 = Negative approach</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 = Positive approach</td>
</tr>
<tr>
<td>LVO+MOVR &lt;step&gt;</td>
<td>Moves the motor a given number of steps based on the current location.</td>
<td>step = Numeric value</td>
</tr>
<tr>
<td>LVO+STOP</td>
<td>Stops the motor.</td>
<td>—</td>
</tr>
<tr>
<td>LVO+STRT &lt;1</td>
<td>-1&gt;</td>
<td>-1 = Negative approach</td>
</tr>
<tr>
<td></td>
<td>Starts the motor moving in a specified direction.</td>
<td>1 = Positive approach</td>
</tr>
</tbody>
</table>

### Examples

Return current motor position along the vertical axis and direction:

(LVO?)

Move lens to position 500 along the vertical axis with a positive approach:

(LVO 500 1)

Move lens to position 500 along the vertical axis with a negative approach:

(LVO 500 -1)

Move the motor 100 steps in a negative direction:

(LVO+MOVR -100)

Move the motor 200 steps in a positive direction:

(LVO+MOVR 200)

Stop the motor:

(LVO+STOP)

Start the motor moving in a positive direction:

(LVO+STRT 1)

### MCG—Measured Color Gamut

Gets or sets the measured color gamut (MCGD) file and measured values.

Data values are divided by 10000 when using the +DATA subcode.
Parameters

- **Access level:** Installer
- **Power level (minimum):** Power Up

Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCG?</td>
<td>Returns the active MCGD file. (Read-only)</td>
<td>—</td>
</tr>
<tr>
<td>MCG?L</td>
<td>Returns a list of all available MCGD files. (Read-only)</td>
<td>—</td>
</tr>
<tr>
<td>MCG &quot;&lt;value&gt;&quot;</td>
<td>Sets the MCGD file to the specified file for the active channel.</td>
<td>value = Subject to the range returned in MCG?L</td>
</tr>
<tr>
<td>MCG+CHAN? &quot;&lt;channel&gt;&quot;</td>
<td>Returns the MCGD file for the specified channel. (Read-only)</td>
<td>channel = Name of a specific channel</td>
</tr>
</tbody>
</table>
| MCG+CHAN "<channel>" "<value>" | Sets the MCGD file for the specified channel. | channel = Name of a specific channel  
value = Subject to the range returned in MCG?L |
| MCG+DATA?    | Returns the MCGD measurement values for the active channel. (Read-only)     | —                                                                     |
| MCG+DATA <redx> <redy> <greenx> <greeny> <bluex> <bluey> <whitex> <whitey> <blackx> <blacky> | Sets the MCG measurement values for red, green, blue, white, and black. | redx = Red x MCG measurement value  
redy = Red y MCG measurement value  
greenx = Green x MCG measurement value  
greeny = Green y MCG measurement value  
bluex = Blue x MCG measurement value  
bluey = Blue y MCG measurement value  
whitex = White x MCG measurement value  
whitey = White y MCG measurement value  
blackx = Black x MCG measurement value  
blacky = Black y MCG measurement value |
| MCG+SAVE "<value>" | Saves the active MCGD values to the specified file. If the file already exists, the contents are overwritten; otherwise, a new file is created. | value = MCG file name |
Examples

Return the active MCGD file:
(MCG?)
Result:
(MCG! "Nominal")

Return a list of all available MCGD files:
(MCG?L)
Result:
(MCG!L001 001 000 "Nominal")
(MCG!L001 001 001 "Nominal v2")
...

Set the MCGD file for the active channel:
(MCG "Nominal v2")

Set the MCGD file at index 1 from a previous listing for the active channel:
(MCG 1)

Return the MCGD file for the specified channel:
(MCG+CHAN? "Media Block Flat")
Result:
(MCG+CHAN! "Nominal")

Set the MCGD file for the specified channel to the specified file:
(MCG+CHAN "Media Block Flat" "Nominal v2")

Set the MCGD file for the specified channel to the specified file at index 1 from a previous listing:
(MCG+CHAN "Media Block Flat" 1)

Return the MCGD measurement values for the active channel:
(MCG+DATA?)
Result:
(MCG+DATA! 0006800 0003200 0002650 0006900 0001500 0000600 0003140 0003510 0000000 0000000)

Set the active MCGD measured values:
(MCG+DATA 0006800 0003200 0002650 0006900 0001500 0000600 0003140 0003510 0000000 0000000)

Save the active MCGD measurement values to the specified file:
(MCG+SAVE "filename")

MSG–User Message

Displays a message on the touch panel or writes a message to the projector logs.
The message on the touch panel appears in a popup window, which the operator can acknowledge.
Parameters

- **Access level**: Operator
- **Power level (minimum)**: Power Down

Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSG+LOGE</td>
<td>Writes a message to the error log.</td>
<td>message = Text string containing 128 characters or less</td>
</tr>
<tr>
<td>MSG+LOGN</td>
<td>Writes a message to the notice log.</td>
<td>message = Text string containing 128 characters or less</td>
</tr>
<tr>
<td>MSG+LOGW</td>
<td>Writes a message to the warning log.</td>
<td>message = Text string containing 128 characters or less</td>
</tr>
<tr>
<td>MSG+USER</td>
<td>Displays a message on the touch panel.</td>
<td>message = Text string containing 128 characters or less</td>
</tr>
</tbody>
</table>

Examples

Display Hello World! on the touch panel:

```
(MSG+USER "Hello World!"
```

Write Hello World! as an error in the projector logs:

```
(MSG+LOGE "Hello World!"
```

**PNG–Ping**

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

Some devices have multiple CPUs, each with its own software version. Only the software version of what is considered to be the master CPU, is returned.

Parameters

- **Access level**: None
- **Power level (minimum)**: Power Down

Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNG?</td>
<td>Returns basic projector information. (Read-only)</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>&lt;type&gt; &lt;major&gt; &lt;minor&gt; &lt;beta&gt;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• &lt;type&gt; = 60 indicates a Series 3 cinema projector</td>
<td></td>
</tr>
<tr>
<td>Command</td>
<td>Description</td>
<td>Values</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
<td>--------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• &lt;major&gt;, &lt;minor&gt;, &lt;build&gt; = Software version</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• &lt;beta&gt; = Indicates it is an engineering build and has not been validated</td>
</tr>
<tr>
<td>PNG+BILD</td>
<td>Returns the package version (build number).</td>
<td>—</td>
</tr>
</tbody>
</table>

**Examples**

Send a ping:

(PNG?)

Result:

(PNG!60 001 000 234)

Indicates Series 3 cinema projector type, software: 1 major, 0 minor, 234 beta.

Determine build number:

(PNG+BILD?)

Result:

(PNG+BILD!00044)

Indicates build number 44.

**PWR—Power**

Changes the power state of the product.

**Parameters**

- **Access Level:** Operator
- **Power level (minimum):** Power Down

**Commands**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>PWR?</td>
<td>Returns the current power state of the projector. (Read-only)</td>
<td>—</td>
</tr>
</tbody>
</table>
| PWR <mode> | Changes the power mode. | 0 = Turns the projector on and the light source off  
1 = Turns the projector and light source on  
3 = Sets the projector to standby mode  
10 = Cool down lamp—projector stays in cooling down mode for 10 minutes after the light source is turned off (Read-only)  
11 = Warm up—middle status between standby and full power mode (Read-only) |
## Command Description Values

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>PWR+COOL?</td>
<td>Returns the status of the current cooling down timer. (Read-only)</td>
<td>—</td>
</tr>
<tr>
<td>PWR+STAT?</td>
<td>Returns the status of the current power state. (Read-only)</td>
<td>—</td>
</tr>
</tbody>
</table>

### Examples

Return the target power state from the latest command sent to the projector:

(PWR?)

Turn the projector on and the light source off:

(PWR 0)

Turn on the projector and light source:

(PWR 1)

Set the projector to standby mode:

(PWR 3)

Return the time remaining (in seconds) for cooling down mode:

(PWR+COOL?)

Return the projector power status:

(PWR+STAT?)

---

### SHU–Shutter

Opens and closes the shutter.

**Parameters**

- **Access level**: Operator
- **Power level (minimum)**: Power Up

**Commands**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHU?</td>
<td>Gets the state of the shutter. (Read-only)</td>
<td>—</td>
</tr>
</tbody>
</table>
| SHU <0 | 1>          | Opens or closes the shutter.                                                | 0 = Opens the shutter  
                                          |                                                 | 1 = Closes the shutter                          |

### Examples

Get the state of the shutter:
Indicates the shutter is open.

Open the shutter:
(SHU 0)

Close the shutter:
(SHU 1)

**SST—System Status**

Retrieves the various system status groups.

To retrieve a single item, include the item index number (SST+SUBCODE?yy) where yy is the index number of the item. The response to each command is a single message for each item, with the format:

(SST+SUBCODE!yyy zzz "Status Text" "Status Description")

where

- yyy is the item index number
- zzz is the alert condition (0=Unknown, 1=OK, 2=Warning, 3=Critical Error, 4=Sensor Failure)

**Parameters**

- **Access level:** None
- **Power level (minimum):** Power Down

**Commands**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>SST?</td>
<td>Returns information on all status groups, with one message per item. (Read-only)</td>
<td>Where parameters are: P1 = Index number, P2 = Error level, P3 = Value, P4 = Description</td>
</tr>
<tr>
<td>SST+ALRM?</td>
<td>Returns a summary of any active alarms. (Read-only)</td>
<td>Error level is: 0 = No errors or warnings, 1 = Warning, 2 = Critical error, 3 = Unknown</td>
</tr>
<tr>
<td>SST+COOL?</td>
<td>Returns cooling data—cooling fans, air flow, and so on. (Read-only)</td>
<td></td>
</tr>
<tr>
<td>SST+INTE?</td>
<td>Returns interlock data. (Read-only)</td>
<td></td>
</tr>
<tr>
<td>SST+LAMP?</td>
<td>Returns lamp operational data. (Read-only)</td>
<td></td>
</tr>
<tr>
<td>SST+LENS?</td>
<td>Returns lens data. (Read-only)</td>
<td></td>
</tr>
<tr>
<td>SST+NTWK?</td>
<td>Returns network configuration. (Read-only)</td>
<td></td>
</tr>
<tr>
<td>SST+SECU?</td>
<td>Returns security data. (Read-only)</td>
<td></td>
</tr>
<tr>
<td>SST+SERI?</td>
<td>Returns serial numbers. (Read-only)</td>
<td></td>
</tr>
</tbody>
</table>
### Command Description Values

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>SST+SYST?</td>
<td>Returns system data—power, hours of use, shutter open, and so on. (Read-only)</td>
<td></td>
</tr>
<tr>
<td>SST+TEMP?</td>
<td>Returns temperature data. (Read-only)</td>
<td></td>
</tr>
<tr>
<td>SST+VERS?</td>
<td>Returns version numbers. (Read-only)</td>
<td></td>
</tr>
<tr>
<td>SST+VIDO?</td>
<td>Returns video related data. (Read-only)</td>
<td></td>
</tr>
</tbody>
</table>

### TCG—Target Color Gamut

Gets or sets the target color gamut file (TCGD).

The TCGD file describes the chosen output colorimetry from the projector.

#### Parameters

- **Access level:** Installer
- **Power level (minimum):** Power Up

#### Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCG?</td>
<td>Returns the active TCGD file. (Read-only)</td>
<td>—</td>
</tr>
<tr>
<td>TCG?L</td>
<td>Returns a list of all available TCGD files. (Read-only)</td>
<td>—</td>
</tr>
<tr>
<td>TCG &quot;&lt;file&gt;&quot;</td>
<td>Sets the TCGD file to the specified file for the active channel.</td>
<td>file = Subject to the range returned in TCG?L</td>
</tr>
<tr>
<td>TCG+CHAN? &quot;&lt;channel&gt;&quot;</td>
<td>Returns the TCGD file for the specified channel.</td>
<td>channel = Name of a specific channel</td>
</tr>
<tr>
<td>TCG+CHAN &quot;&lt;channel&gt;&quot; &quot;&lt;file&gt;&quot;</td>
<td>Sets the TCGD file for the specified channel.</td>
<td>channel = Name of a specific channel, file = Subject to the range returned in TCG?L</td>
</tr>
</tbody>
</table>

#### Examples

**Return the active TCGD file:**

(TCG?)

**Result:**

(TCG! "Rec. 709")

**Return a list of all available TCGD files:**

(TCG?L)

**Result:**

(TCG!L001 001 000 "Rec. 709")
Set the TCGD file for the active channel to the specified file:
(TCG "P7v1")

Set the TCGD file of the active channel to index 1 from a previous listing:
(TCG 1)

Return the TCGD file used by the specified channel:
(TCG+CHAN? "Media Block Flat")
Result:
(TCG+CHAN! "DC28 DCI XYZE 314 351")

Set the TCGD file for the specified channel to the specified file:
(TCG+CHAN "Media Block Flat" "Rec. 709")

Set the TCGD file for the specified channel to the specified file at index 1 from a previous listing:
(TCG+CHAN "Media Block Flat" 1)

**TMD–Time and Date**

Sets the time zone and Daylight Saving Time, and reads the time and date.

**Commands**

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMD+DATE?</td>
<td>Returns the date in the format yyyy-mm-dd. (Read-only)</td>
<td>—</td>
</tr>
<tr>
<td>TMD+DSTA?</td>
<td>Returns the status of Daylight Saving Time. (Read-only)</td>
<td>—</td>
</tr>
</tbody>
</table>
| TMD+DSTA <0 | 1>          | Enables or disables the Daylight Saving Time. | 0 = Disables Daylight Saving Time  
                                                                                                         1 = Enables Daylight Saving Time |
| TMD+TIME?     | Returns the time in the format hh:mm:ss. (Read-only) | —                                     |
| TMD+TOFF      | Sets the SM time offset in seconds.               | +/- 300 seconds                       |

**Examples**

Return the date:
(TMD+DATE?)
Result:
(TMD+DATE! "2014-08-21")

Return the status of Daylight Saving Time:
(TMD+DSTA?)

Disable Daylight Saving Time:
Return the local time:

\[(\text{TMD+TIME)?}\]

Result:

\[(\text{TMD+TIME! "12:18:49"})\]

Adjust the SM clock by 120 seconds:

\[(\text{TMD+TOFF 120})\]

## UID–User ID

Allows users to log into the serial interface.

### Parameters

- **Access level**: None
- **Power level (minimum)**: Power Down

### Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>UID?</td>
<td>Returns the current logged in user and their access level. (Read-only)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The following are valid access permissions:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 = None</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 = SNMP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20 = Operator</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30 = Manager</td>
<td></td>
</tr>
<tr>
<td></td>
<td>40 = Installer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>50 = Marriage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>60 = Service</td>
<td></td>
</tr>
<tr>
<td></td>
<td>70 = Engineering</td>
<td></td>
</tr>
<tr>
<td></td>
<td>80 = Factory</td>
<td></td>
</tr>
</tbody>
</table>

- **UID <username> <password>**
  - Logs in with the username and password.
  - `username = String value`
  - `password = String value`

- **UID**
  - Logs out the current user. This also happens when a new user logs in.
  - `—`

### Examples

Display the current logged in user and their access level:
Log out the current user:

```
(UIID)
```

Log in as service using the default password:

```
/UIID "service" "service"
```

---

## ZOM–Lens Zoom Position Adjustment

Sets the lens zoom.

In most cases the active lens is specified by the current channel. If a user selects a different lens file in the ILS File Setup panel of the user interface, the selected lens file becomes active. This file may be different from the one specified by the current channel.

### Parameters

- **Access Level**: Operator
- **Power level (minimum)**: Power Up

### Commands

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZOM?</td>
<td>Returns the current zoom motor position and direction. (Read-only)</td>
<td></td>
</tr>
<tr>
<td>ZOM &lt;position&gt;</td>
<td>Moves the lens mount to a specified zoom position.</td>
<td>position = Numeric value</td>
</tr>
<tr>
<td>ZOM+MOVR &lt;step&gt;</td>
<td>Moves the motor a given number of steps based on the current location.</td>
<td>step = Numeric value</td>
</tr>
<tr>
<td>ZOM+STOP</td>
<td>Stops the motor.</td>
<td>—</td>
</tr>
</tbody>
</table>
| ZOM+STRT <1 | Starts the motor moving in a specified direction.          | -1 = Negative approach  
|              |                                                            | 1 = Positive approach                           |

### Examples

- Return current Zoom motor position and direction:
  
  ```
  (ZOM?)
  ```

- Move Zoom to position 500 with a positive approach:
  
  ```
  (ZOM 500 1)
  ```

- Move Zoom to position 500 with a negative approach:
  
  ```
  (ZOM 500 -1)
  ```

- Move the motor 200 steps in a positive direction:
  
  ```
  (ZOM+MOVR 200)
  ```
<table>
<thead>
<tr>
<th><strong>Move the motor 100 steps in a negative direction:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>(ZOM+MOVR ~100)</td>
</tr>
<tr>
<td><strong>Stop the motor:</strong></td>
</tr>
<tr>
<td>(ZOM+STOP)</td>
</tr>
<tr>
<td><strong>Start the motor moving in a positive direction:</strong></td>
</tr>
<tr>
<td>(ZOM+STRT 1)</td>
</tr>
</tbody>
</table>
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