Mirage WQ-L

Serial Command Guide

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Table of Contents

Serial Commands

ABL–Array Bright Color LOC

This command is used to set parameters that control how the Array Bright/ColorLOC feature operates. From this control you enable the mode in which you want to operate the feature: target brightness, target gamut, update intervals, and other miscellaneous parameters. This command is persistent, and saves the "synchronize to this projector" operation between power-ups.

Parameters

- **Control Group**: Preference
- **Subclass**: Power Up
- **Access Level**: Operator

Subcodes

Subcode	Description	Values
ABI+DEVC	Use to set the ArrayLOC networking device.	-
ABL+DEVC 0	Set the networking device to the ArrayLoc network. The second Ethernet port on the projector will be used to broadcast ArrayLoc packets.	-
ABL+DEVC 1	Set the networking device to the Control network. The first Ethernet port on the projector will be used to broadcast ArrayLoc packets. This port is also use to control the projector over the network.	-
MODE	Enable Array Bright/ColorLOC	0 = Disabled 1 = Enabled
BRGP	Brightness Group. Identifies a subset of all projectors in the array to be used in the Array BCLOC algorithm. May be used to provide multiple groups of projectors with different color targets.	0-9999
BRTG	Brightness Target. Sets the target brightness that the projectors in the array brightness group should meet.	Range is 0-40,000
MINB	Minimum Brightness. Sets the minimum brightness, as a percentage of target brightness, that the projector will display if it is capable.	Range is 0-100%
MING	Minimum Gamut. Sets the minimum gamut, as a percentage of the target gamut, that the projector will display if it is capable.	Range is 0-100%
ALBV	When set, all projectors in brightness group will use this projectors settings. **Note:** A group can synchronize to only one projector. Setting ABL+ABLV on any projector in a group to make that projector the master projector releases the setting from any previous master projector in the group.	0 = OFF (normal) 1 = synchronize to group
DEVC	Specifies the ethernet port used for transfer of ColorLOC data. When selected will use the Control Network port rather than default ArrayLOC Network port.	0 = ArrayLOC network 1 = Control network
WENA	(FUTURE USE). Enable warnings associated with Bright/ColorLOC.	0 = Disable 1 = Enable
WBTH	(FUTURE USE). Sets the brightness threshold at which a warning is issued when warnings are enabled.	0-100%
WGTH	(FUTURE USE). Sets the gamut threshold at which a warning is issued when warnings are enabled.	0-100%

Subcode	Description	Values
IRTG	(FUTURE USE). IR Brightness Target. Sets the target brightness that the projectors in the array brightness group should meet.	0-1000
SKEY	Synchronize remote control keystrokes, test pattern and color enable amongst array projectors	0 = Independent 1 = Synchronized
SFRD	Synchronize frame delay amongst array projectors.	0 = Independent 1 = Synchronized
AFRD	Sets the array frame delay parameter. Applies to all projectors in array if SFRD is set to Synchronized	-
AFRS	Read-only control reports smallest frame delay value in array that will not generate tearing artifacts	-
SRGB	Synchronize RGB Brightness setting amongst array projectors.	0 = Independent 1 = Synchronized
SACF	Synchronize AccuFrame setting amongst array projectors.	0 = Independent 1 = Synchronized
SCLE	Synchronize Color Enable setting amongst array projectors.	0 = Independent 1 = Synchronized
SITP	Synchronize Test Pattern setting amongst array projectors.	0 = Independent 1 = Synchronized

Examples

Enable Array Bright/ColorLOC.
```
ABL+MODE1
```

Disable Array Bright/ColorLOC.
```
ABL+MODE2
```

Set the brightness group to 2.
```
ABL+BRGP 2
```

Set the brightness target to 400 Lumens.
```
ABL+BRTG 400
```

ACE–Auto Color Enable

Automatically select Color Enable based on the control being adjusted. If enabled, this control allows the projector to automatically change the color enable control. This is an unsaved control, which can only be set when powered On.

Parameters

- **Control Group**: Preference

- **Subclass**: Power Up
- **Access Level**: Operator

Examples

Disable Auto Color.
```
ACE 0
```

Enable Auto Color.
```
ACE 1
```

ADR–Address

Sets the projector address to target commands to a specific projector when communicating using the Christie Serial Protocol. 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.

Parameters

- **Control Group**: Preference
- **Subclass**: Power Down
- **Access Level**: Operator

Subcodes

Subcode	Description	Values
ADR <value>	Sets the projector address to <value>.	0 to 999 The reserved broadcast address is 65535.

Examples

Set all devices to address 0.
```
65535 ADR 0
```

Set first device at address 0 to address to 5.
```
0 ADR 5
```

Query address for all devices and return results to address 1001.
```
65535 1001ADR?
```
These results are displayed:
```
01001 00005ADR!005
```

APJ–Active Projector

Temporarily enable or disable the IR and wired keypad Inputs to a specific projector in a network of projectors. When a projector is disabled, the only key that works is PROJ. The next time the projector is powered up again, it reverts to fully enabled. The built-in keypad is always fully functional. This control does not overwrite the Front IR, Back IR and Wired Keypad settings.

Set 0 to temporarily disable keypad access to this projector.

Parameters

- **Control Group**: Input
- **Subclass**: Power Down
- **Access Level**: Operator

Examples

Is the projector keypad active or not.
```
APJ?
```

Projector is active (keypads are enabled).
```
APJ 1
```

Projector is not active (keypads are temporarily disabled).
```
APJ 0
```

APW–Auto Power Up

When the A/C switch is turned ON, the projector will automatically change from Stand-by Mode to Power ON Mode. The projector will switch the lamp(s) on without waiting for further user actions.

Set to 1 to enable.

Parameters

- **Control Group**: Preference
- **Subclass**: Power Down
- **Access Level**: Operator

Examples

Projector will remain in Standby Mode until the user presses the power key.
```
APW 0
```

Projector will auto power up when A/C power is switched On.
```
APW 1
```

ASH–Auto Shutdown

When Auto Shutdown Mode has been selected, and no projector activity has been seen for the activation time-out period, the projector enters a Power Saving mode in which the lamps dim and the shutter closes. If this condition persists for an additional time-out period the projector automatically goes to standby. The presence of any activity within this is combined interval cancels Auto Shutdown and returns the projector to normal operation.

Enable or disable Auto Shutdown Operation.

Parameters

- **Control Group**: Saved
- **Subclass**: Power Down
- **Access Level**: Operator

Subcodes

Subcode	Description	Values
SBTO	Set the uninterrupted time-out period that must elapse before projector enters Standby Mode (The second time-out period or Standby time-out).	-
ALTO	Set the uninterrupted time-out period that must elapse time of activity loss until Auto Shutdown is activated (The first time-out period or Activation time-out).	-

Examples

Turns ON Auto Shutdown Mode.
```
ASH 1
```

Turns OFF Auto Shutdown Mode.
```
ASH 0
```

Sets standby time-out to 10 minutes.
```
ASH+SBTO 10
```

Sets source activity loss time-out to 10 minutes.
```
ASH+ALTO 10
```

BDR–Baud Rate

Sets the baud rate for a serial communications port. The default communications settings for all ports is eight data bits, no parity.

Parameters

- **Control Group**: Preference
- **Subclass**: Power Down
- **Access Level**: Advanced

Subcodes

Subcode	Description	Values
PRTA	Sets the baud rate on port A (RS232 IN).	For RS232 IN and RS232 OUT, the default is 115200. For RS422, the default is 19200. Valid baud rates, with the values to select them, are: 0 = 1200
PRTB	Sets the baud rate on port B (RS232 OUT).	1 = 2400 2 = 9600
PRTC	Sets the baud rate on port C (RS422).	3 = 19200 4 = 38400 5 = 57600 6 = 115200

Examples

Set baud rate on port A to 115200 bits per second.
```
BDR+PRTA 6
```

Get baud rate.
```
BDR+PRTA?
```
This result is displayed:
```
BDR+PRTA!"115200"
```

BGF–Base Gamma Function

Defines the gamma power curve to be used when the Gamma table value is set to 'Gamma Function'. This value, combined with Gamma Slope setting, determines the Gamma table to be used. The curve is generally a power curve with a small linear segment at the bottom defined by the slope.

Parameters

- **Control Group**: Input
- **Subclass**: Power Up
- **Access Level**: Operator

Subcodes

Subcode	Description	Values
MAIN	Set the base gamma curve for main video.	The valid range is 100-300, where 100 is 1.0 linear and 300 is a 3.00 power curve.
SECD	Set the base gamma curve for video.	

Examples

Set the base Gamma Function to 1.0 for main video.
```
BGF 100
```

Set the base Gamma Function to 3.0 for main video.
```
BGF+MAIN 300
```

BGS–Base Gamma Slope

Defines the slope to be used for the base custom Gamma table in the small linear section at the bottom of the curve. This slope can be used to bring the low level blacks in the image in or out. This slope, combined with the Gamma function, defines the custom Gamma table.

Parameters

- **Control Group**: Input
- **Subclass**: Power Up
- **Access Level**: Operator

Subcodes

Subcode	Description	Values
MAIN	Set the base gamma curve for main video.	The valid range is 50-200, where 50 is a slope of 0.5 and 200 is a slope of 2.00.
SECD	Set the base gamma curve for video.	

Examples

Set the base gamma slope to 1.0 for main video.
```
BGS 100
```

Set the base gamma slope to 2.0 for main video.
```
BGS+MAIN 200
```

BKY–Broadcast Key Mode

Toggle Broadcast Key Mode to select whether all key presses received by the projector are relayed to all other projectors on the network.

Set to 1 to enable.

Parameters

- **Control Group**: Preference
- **Subclass**: Power Down
- **Access Level**: Operator

Examples

Get current Broadcast key state.
```
BKY?
```

Enable Broadcast Key.
```
BKY 1
```

Disable Broadcast Key.
```
BKY 0
```

CLE–Color Enable

This control allows the three primary colors (red, green, and blue) to be turned ON or OFF separately. It is used to look at the colors one at a time or in pairs when doing convergence, light measurements, etc.

Parameters

- **Control Group**: Unsaved
- **Subclass**: Power Up
- **Access Level**: Operator

Subcodes

Subcode	Description	Values
CLE <color>	Enables specific colors in the video path.	0 = White (all colors on) 1 = Red 2 = Green 3 = Blue 4 = Yellow (red and green on) 5 = Cyan (green and blue on) 6 = Magenta (red and blue on)

Examples

Display red portion of image only.
```
CLE 1
```

Display green and blue portion of image only.
```
CLE 5
```

Display image normally (all primaries).
```
CLE 0
```

DLG–Data Logging

Set data logging level. There are three levels for data logging:

0 = Minimal logging of activities. Logging system errors, warnings and events, for example power ON/OFF, lamp ON/OFF, user login/logout.

1 = Normal logging. Most activities logged—errors, warnings, events, and other info.

2 = Debug logging. All activities are logged.

Parameters

- **Control Group**: Preference
- **Subclass**: Power Down
- **Access Level**: Operator

Examples

Get current logging level.
`DLG?`
These results are displayed:
`DLG!001`

Set current logging level to 1.
`DLG 1`

DRK–3D Dark Interval

Controls the time between frames when no image is being projected to the screen. Used for 3D applications to determine the time that the shutter mechanism has to open or close between fields. Keep at default value of zero for all other applications. Increasing this control will reduce the peak brightness of the image.

Parameters

- **Control Group**: Preference

- **Subclass**: Power Up

- **Access Level**: Operator

Examples

Set 3D dark interval to 0 on main video
`DRK 0`

Set 3D dark interval to 3.00 milliseconds
`DRK 300`

Set the dark time interval to 2300µs:
(DRK 2300)

EBL–Edge Blending

This serial command controls edge blending settings.

Parameters

- **Control Group**: Configuration/Preference

- **Subclass**: Power Up

- **Access Level**: Operator

Subcodes

Subcode	Description	Values
SLCT	Select edge blending mode.	0 = disabled 2 to 17 = select TWIST edge blending maps

Examples

Edge blending disabled.
```
EBL+SLCT0
```

Use TWIST edge blending map #1.
```
EBL+SLCT2
```

ESM–Enable Stealth Mode

Stealth mode extinguishes status LEDs on the projector. Typically this is used in simulation environments where extraneous light would detract from the scenario (when the scene involves IR).

Parameters

- **Control Group**: Preference
- **Subclass**: Power Down
- **Access Level**: Operator

Examples

Report the stealth mode value.
```
ESM?
```

Enable stealth mode.
```
ESM 1
```

FLE–Frame Lock Enable

This controls which input is used to control the output frame timing. When set to Lock, output image frames are locked to the main input. When set to Lock Secondary, the output is locked to the secondary input (provided one is present).

Parameters

- **Control Group**: Saved
- **Subclass**: Power Down
- **Access Level**: Operator

Examples

Get frame lock enabled status.
```
FLE ?
```

Lock out put to the main input.
```
FLE 1
```

Lock output to the secondary input.
```
FLE 2
```

FLW–Serial Flow Control

Set the flow control for a serial communications port.

Parameters

- **Control Group**: Preference
- **Subclass**: Power Down
- **Access Level**: Advanced

Subcodes

Subcode	Description	Values
PRTA	Set the mode on port A.(RS232 In)	-
PRTB	Set the mode on port A. (RS232 Out)	-
PRTC	Set the mode on port C. (RS422)	-

Examples

Get flow control
FLW+PRTA?
These results are displayed:
(FLW+PRTA!001 "Software")

Set no flow control on port A.
FLW+PRTA 0

Set flow control on port A to software.
FLW+PRTA 1

FRD–Frame Delay

Delays the output signal timing relative to the Input signal timing by a fraction of a frame, and up to one frame. The value used is a 1/1000th of a frame. For example, 1000 equals one frame.

See *FLE–Frame Lock Enable* on page 106

Parameters

- **Control Group**: Preference
- **Subclass**: Power Up
- **Access Level**: Operator

Subcodes

Subcode	Description	Values
STAT?	Retrieve the actual minimum frame delay.	

Examples

Retrieve actual minimum frame delay.
FRD+STAT?

Delay 0.5 frames.
FRD 500

GAM–Gamma Correction

The Gamma Correction control is used to correct ambient conditions affecting the display.

The Gamma control affects the shape of the curve determining what grey shades are displayed for a given amount of signal Input between minimum (black) and maximum (white). This is done by performing a linear transform from the user selected gamma setting.

The normal point is 0, meaning the selected gamma table is used unaltered. If there is a lot of ambient light, the image can become washed out, making it difficult or impossible to see details in dark areas. Increasing the gamma correction setting can compensate for this by transforming the curve towards a gamma of 1.0. Decreasing the control shall transform the gamma towards a gamma of 3.0.

See *BGC–Base Gamma Curve* on page 33

See *BGS–Base Gamma Slope* on page 39

See *BGF–Base Gamma Function* on page 36

Parameters

- **Control Group**: Preference
- **Subclass**: Power Up
- **Access Level**: Operator

Examples

Returns current gamma curve.
GAM?

Set gamma to 1.0 curve.
GAM 100

GIO–General Purpose Input/Output

Control or monitor the state of the General Purpose Inputs and Outputs.

The strings have one character for each hardware connector pin, and from left to right, correspond to the pin numbers 2,3,4,6,7,8,9. (Pin 1 is 12V and Pin 5 is Ground—they cannot be read, set or configured).

A low state (or value of 0) is read on an Input pin if the circuit attached to the pin is open. A high state (or value of 1) is read on an Input pin if the circuit attached to the pin is shorted to ground. This corresponds to a switch closing event.

Parameters

- **Control Group**: Configuration
- **Subclass**: Power Down
- **Access Level**: Advanced

Subcodes

Subcode	Description	Values
CNFG	Set the direction for the individual pins to inputs or outputs.	-
STAT	Get the state of all inputs, or set the state of all outputs.	-

Examples

Get status of all the Inputs.
GIO+STAT?
These results are displayed:
(GIO+STAT!"0000000") - All inputs are low.

Set status of the GPOs - 2 high, 3 no change, 4 Low, 6 High, 7 Low, 8 Low, 9 Low.
GIO+STAT "1x01000"

Set status of the GPOs - 2 Pulse high, 6 Pulse Low. Use interval of 500 ms for each.
GIO+STAT "hxxlxxx" 500

Set pins 2, 3 and 8 to Input, 4, 6, 7 and 9 to Output.
GIO+CNFG "IIOOOIO"

HLP–Serial Help

Query a list of all available serial commands, with brief descriptions and current enabled states. Request entire command Help listing, or list for a single command.

Parameters

- **Control Group**: Unsaved

- **Subclass**: Power Down

- **Access Level**: Operator

Examples

Retrieve entire command Help listing.
```
HLP?
```

Retrieve all subcodes/descriptions/enables for BRT control.
```
HLP? "BRT"
```

HLT–Projector Health (HLT)

Any system health errors are placed on the troubleshooting queue. The queue, which contains the problems and a suggested solution for each one, is read-only. All problems in the queue are read using their index number, which starts from 0.

Problems are assigned priorities:

1 = Critical—Results in failure to operate or shutdown.

2 = High—Results in significant loss of functionality but the projector may continue to run.

3 = Low—Results in minor loss of functionality which will not seriously affect projector.

Parameters

- **Control Group**: Unsaved

- **Subclass**: Power Down

- **Access Level**: Operator

Subcodes

Subcode	Description	Values
LSOL	List solutions.	-
LALL	List one or all problems and solutions.	-

Examples

Returns all queued problems.
`HLT?`

Returns problem index 3 in the queue.
`HLT? 3`

Returns the solution hint for problem index 4 in the queue.
`HLT+LSOL? 4`

Returns all queued problems and their solutions.
`HLT+LALL?`

Returns problem index 3 and its solution.
`HLT+LALL? 3`

ITG–Test Pattern Grey

Specify the grey level to use for the Grey flat field internal test pattern. This command is only available while the grey test pattern is being displayed.

The level defaults to 512 on power up, and the range is 0-1023.

Parameters

- **Control Group**: Unsaved
- **Subclass**: Power Up
- **Access Level**: Operator

Examples

Set test pattern grey to mid point.
`ITG 512`

ITP–Internal Test Pattern

Display a predefined test pattern on the display.

Parameters

- **Control Group**: Unsaved

- **Subclass**: Power Up

- **Access Level**: Operator

Subcodes

Subcode	Description	Values
(ITP <pattern>)	Displays a tests pattern on the display.	These are the available options: • 1 - None • 2 - Grid • 3 - Greyscale 16 • 4 - White • 5 - Flat Grey • 6 - Black • 7 - Checker • 8 - 13 Point • 9 - Color Bars • 10 - Edge Blend • 11 - High Frequency • 12 - Gradient Blur • 13 - Red • 14 - Green • 15 - Blue

Examples

Disable test patterns - revert to previous Input signal.
```
ITP 0
```

Set test pattern to the grid pattern.
```
ITP 1
```

KEN–Keypad IR Sensor Disable

Enable or disable the IR or wired keypad sensors. You cannot disable the keypad that is currently being used.

Parameters

- **Control Group**: Preference
- **Subclass**: Power Down
- **Access Level**: Operator

Subcodes

Subcode	Description	Values
FRNT	Enable or disable the IR keypad sensor.	Set to 1 to enable the front IR keypad sensor, 0 to disable.
WIRE	Enable or disable the wired keypad sensor.	Set to 1 to enable the wired keypad jack, 0 to disable.

Examples

Get current wired jack enabled state.
KEN+WIRE?

Disable front IR sensor.
KEN+FRNT 0

LOC–Localization Language

Set or return the language displayed on the user interface and on-screen display.

Parameters

- **Control Group**: Preference
- **Subclass**: Power Down
- **Access Level**: Administrator

Subcodes

Subcode	Description	Values
LANG	Sets the system language.	0 - English 1 - French 2 - German 3 - Spanish 4 - Italian 5 - Chinese 6 - Japanese 7 - Korean
TEMP	Set the temperature units.	0 - Celsius 1 - Fahrenheit

Examples

Set language to French.
```
(LOC+LANG 1)
```

Get language.
```
(LOC+LANG ?)
```

Set temperature to Fahrenheit.
```
(LOC+TEMP 1)
```

MDE–Serial Mode

Set the mode for a serial communications port. Settings such as bits, parity and stop bits are grouped together into one selection.

Parameters

- **Control Group**: Preference
- **Subclass**: Power Down
- **Access Level**: Advanced

Subcodes

Subcode	Description	Values
PRTA	Set the mode on port A (RS232 IN).	-
PRTB	Set the mode on port B (RS232 OUT).	-
PRTC	Set the mode on port C (RS422).	-

Examples

Set mode on port A to 8-bit, no parity, 1 stop bit.
(MDE+PRTA "8N1")

Set mode on port A to 7-bit, even parity, 1 stop bit.
(MDE+PRTA "7E1")

Set mode on port A to 7-bit, odd parity, 1 stop bit.
(MDE+PRTA "7O1")

Get mode (MDE+PRTA!"8N1").
(MDE+PRTA?)

Network Setup (NET)

Subcodes

Subcode	Description	Values
DOMA	Description of Use Set the domain name	-
ETH0	Set the IP address for the first ethernet controller.	-
GATE	Set the network gateway.	-
HOST	Set the host name.	-
MAC0	Gets the MAC address of the first ethernet controller.	-
PORT	Set the PORT number.	-
SUB0	Set the network subnet mask for the first ethernet controller.	-

Examples

Set new IP address on the first ethernet controller.
`(NET+ETH0 "192.168.1.35")`

Set the gateway.
`(NET+GATE "192.168.0.1")`

Set the subnet mask on the first ethernet controller.
`(NET+SUB0 "255.255.255.0")`

Set the host name.
`(NET+HOST "MyHostName")`

Set the domain name.
`(NET+DOMA "MyDomainName")`

Get IP address from first controller. (NET+ETH0! "192.168.1.35").
`(NET+ETH0 ?)`

Get IP address from second controller. (NET+ETH1! "192.168.1.36").
`(NET+ETH1 ?)`

Get MAC address from first controller. (NET+MAC0! "00:12:3F:7B:76:B4").
`(NET+MAC0 ?)`

Get default gateway. (NET+GATE! "192.168.0.1").
`(NET+GATE ?)`

Set the Port number.
`(NET+PORT 3002)`

Get the Port number. (NET+PORT! 3002).
`(NET+PORT ?)`

Network Routing (NTR)

Set routing for ASCII messages used to enable or disable daisy chaining.

- 0 = RS232, RS422 & Ethernet communications are all separate from one another

- 1 = RS422 port(s) is/are connected to the RS232 network

- 2 = The Ethernet port is connected to the RS232 network

- 3 = RS232, RS422 & Ethernet are all connected to each other

Parameters

- **Control Group**: Preference

- **Subclass**: Power Down

- **Access Level**: Operator

Examples

List routing options.
```
(NTR?L)
```

Set routing so that each connection is routed separately.
```
(NTR 0)
```

Set routing to full daisy-chaining.
```
(NTR 3)
```

Projector Color Adjustment (PCA)

Allows ArrayLOC projector-specific color adjustments to be set.

Parameters

- **Control Group**: Preference
- **Subclass**: Power Down
- **Access Level**: Operator

Subcodes

Subcode	Description	Values
ROxR	Adjusts the red part of red.	Range 1 - 2000. Expressed with one decimal point (Range is 0.1 - 200.0).
GOxR	Adjusts the green part of red.	Range -1000 - 1000. Expressed with one decimal point (Range is -100.0 - 100.0).
BOxR	Adjusts the blue part of red.	Range -1000 - 1000. Expressed with one decimal point (Range is -100.0 - 100.0).
ROxG	Adjusts the red part of green.	Range -1000 - 1000. Expressed with one decimal point (Range is -100.0 - 100.0).
GOxG	Adjusts the green part of green.	Range 1 - 2000. Expressed with one decimal point (Range is 0.1 - 200.0).
BOxG	Adjusts the blue part of green.	Range -1000 - 1000. Expressed with one decimal point (Range is -100.0 - 100.0).
ROxB	Adjusts the red part of blue.	Range -1000 - 1000. Expressed with one decimal point (Range is -100.0 - 100.0).
GOxB	Adjusts the green part of blue.	Range -1000 - 1000. Expressed with one decimal point (Range is -100.0 - 100.0).
BOxB	Adjusts the blue part of blue.	Range 1 - 2000. Expressed with one decimal point (Range is 0.1 - 200.0).
ROxW	Adjusts the red part of white.	Range 1 - 2000. Expressed with one decimal (Range is 0.1 - 200.0).
GOxW	Adjusts the green part of white.	Range 1 - 2000. Expressed with one decimal (Range is 0.1 - 200.0).
BOxW	Adjusts the blue part of white.	Range 1 - 2000. Expressed with one decimal (Range is 0.1 - 200.0).
CLRA	Clear the current adjustments.	-
RSTL	Reset the current adjustment to factory defaults.	-
RSTA	Reset all adjustments to factory defaults.	-
SAVE	Saves current set of adjustments as factory defaults.	-
WBAJ	White Brightness Adjustment	-
COPY	Copy data setting from a referenced table to the selected one.	-

The small 'x' represents the color table being edited. Replace 'x' with the following:

S	SD table (Read Only)	1	User table 1
H	HD table (Read Only)	2	User table 2

M	Max drives (Read Only)	3	User table 3
E	Rec 709/EBU (Read Only)	4	User table 4
F	Factory drives (Read Only)	C	Current user table

Projector Hours (PJH)

Reports the number of hours elapsed on the projector. This control is read-only.

Parameters

- **Control Group**: Unsaved
- **Subclass**: Power Down
- **Access Level**: Operator

Example

Returns hours elapsed on projector.
`(PJH?)`

PING (PNG)

Returns basic projector information to the user which includes the type of device & main software version.

Note that 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 here. The return parameters are: Type, Major, Minor, Beta. The beta value is optional meaning it is an engineering build and has not been validated.

List of devices: 40 = ACT, 41 = Cinema, 42 = CinemaMini, 43 = Media Block, 44 = Mobius, 45 = Entero/StIM, 52 = StIM™ WQ.

Parameters

- **Control Group**: Configuration
- **Subclass**: Power down
- **Access Level**: Status

Example

```
Send a ping
(PNG?)
(PNG!41 001 000 234) Indicates 'Cinema' type, software: 1 major, 0 minor, 234 beta.
(IRC+IRGB 1)
```

Swap (PPS)

This control swaps the current main and Inputs. It will swap the Inputs regardless if there are valid signals on either of the Inputs.

Parameters

- **Control Group**: Preference
- **Subclass**: Power Up
- **Access Level**: Operator

Example

```
Swap inputs.
(PPS)
```

Serial Port (PRT)

Gets the current serial port being used, or gets a list of all serial ports available on the device.

Parameters

- **Control Group**: Preference
- **Subclass**: Power Down
- **Access Level**: Status

Example

Gets current serial port.
`(PRT ?)`

Get a list of ports.
`(PRT ?L)`

Power (PWR)

Get or Set the power state of the projector. Possible values include:

- 0 - Power-OFF
- 1 - Power-ON
- 10 - Projector is cooling down. (Read-only)
- 11 - Projector is warming up. (Read-only)

Parameters

- **Control Group**: Preference
- **Subclass:** Power Down
- **Access Level:** Operator

Examples

Get projector power status.
`(PWR ?)`

Turn the LEDs and all electrical power On.
`(PWR1)`

Set the projector to Standby mode.
`(PWR0)`

Advanced Color Setting (RGB)

Adjusts native projector color space by adjusting the LED power levels. This can be used when ColorLOC is disabled or if ColorLOC is running in Native or Fixed mode. Care should be exercised when adjusting these settings as it is possible to overdrive the LEDs and may cause the projector to perform a safety shutdown.

Parameters

- **Control Group**: Preference
- **Subclass**: Power Up
- **Access Level**: Operator

Subcodes

Subcode	Description	Values
CLRM	Description of Use Color Mode.	1 = Native 2 = EBU 3 = User preset 1 4 = User preset 2 5 = User preset 3 6 = User preset 4
ROFR	Red part of red	(0-4095)
GOFG	Green part of green	(0-4095)
BOFB	Blue part of blue	(0-4095)
RGBB	Controls overall brightness of LEDs	(0-1000) percentage with one decimal place
COPY	Copies color mode settings from an existing preset to the current preset.	1 = Copy from Native 2 = Copy from EBU 3 = Copy from User 1 4 = Copy from User 2 5 = Copy from User 3 6 = Copy from User 4

Example

Set Red of Red value.
```
(RGB+ROFR 128)
```

Get Blue of Blue value.
```
(RGB+BOFB ?)
```

Set overall brightness to 50%.
```
(RGB+RGBB 500)
```

Select user preset 2.
```
(RGB+CLRM 4)
```

Copy EBU preset values to current preset.
```
(RGB+COPY 2)
```

Real Time Events (RTE)

Real time events allow custom user actions to occur based on a system trigger. There are various triggers in the system such as power up, input change, errors, or based on time. Time can be absolute, (e.g. 12:00:00 on December 25, 2008) or relative (e.g. 5 hours and 30 minutes from now).

Special Function keys can also be used as a trigger. An example would be pressing `Func+1` on the remote. Events can also be connected to external hardware triggers via the General Purpose IO port (GPIO).

Parameters

- **Control Group**: Preference
- **Subclass**: Power Up
- **Access Level**: Operator

Events:

- Single Occurrence Events:

  `(RTE T YYYY/MM/DD HH:MM:SS S "description" "command")`

- Daily Occurring Event:

  `(RTE T YYYY/MM/DD HH:MM:SS YYYY/MM/DD D R "description" "command")`

  Where the first date and time is the start date and occurrence time. The second date is the end date.

  `R` is the "Repeat Every" interval i.e. repeat every R days

- Weekly Occurring Event:

  `(RTE T YYYY/MM/DD HH:MM:SS YYYY/MM/DD W R "D" "description" "command")`

  Where the first date and time is the start date and occurrence time. The second date is the end date.

  `R` is the "Repeat Every" interval i.e. repeat every R weeks

  `D` is the weekday or weekdays that the command should run on:

  > M = Monday
  >
  > W = Wednesday
  >
  > F = Friday
  >
  > Tu = Tuesday
  >
  > Th = Thursday
  >
  > S = Saturday
  >
  > Su = Sunday

  For example, "`MT`" will run on Monday and Tuesday "`TTh`" will run on Tuesday and Thursday "`MTWFSSu`" will run on Monday, Tuesday, Wednesday, Friday, Saturday, and Sunday

- Monthly Occurring Event:

  `(RTE T YYYY/MM/DD HH:MM:SS YYYY/MM/DD M R "description" "command")`

  Where the first date and time is the start date and occurrence time. The second date is the end date.

  `R` is the "Repeat Every" interval i.e. repeat on the same date every R months

  If there are not 31 days in the next run cycle month, the event will not run in that month.

- Function Key Events:

`(RTE F K "description" "command")`, where K = the specific function key (1-5, 7-9). Key 6 is reserved and cannot be used.

- System Events:

  `(RTE S E T "description" "command")`, where E is the event to respond to:

  > 0 = Boot Up

  > 1 = Power ON/OFF

  > T = 0 (Either a Power ON or OFF event)

  > T = 1 (Power ON only)

  > T = 2 (Power OFF only)

  > 2 = Any System Error

  > 3 = Good Signal

  > 4 = No Signal

  > 5 = Input Change

- GPIO Events:

  `(RTE G "AAAAAAA" "description" "command")`

  where A is GPIO Input for each pin:

  `= X` (don't care)

  `= H` (when pin is high) - See *GIO–General Purpose Input/Output* on page 119.

  `= L` (when pin is low) - See *GIO–General Purpose Input/Output* on page 119.

- Delete All Events:

  `(RTE X *)`

- Delete a single event:

  `(RTE X A)`, where A is the event to be deleted (0-??)

Examples

Single Occurrence Events
- Close the shutter at 11:48:00 on December 25, 2008
  `(RTE T 2008/12/25 11:48:00 S "description" "(LSH 1)")`

Daily Occurring Event
- Power on the projector every day at 23:00:00, starting from January 1, 2009 until February 1, 2009
  `(RTE T 2009/01/01 23:00:00 2009/02/01 D 1 "description" "(PWR 1)")`

- Power on the projector every other day at 23:00:00, starting from January 1, 2009 until February 1, 2009
  `(RTE T 2009/01/01 23:00:00 2009/02/01 D 2 "description" "(PWR 1)")`

- Power on the projector every fifth day at 23:00:00, starting from January 1, 2009 until February 1, 2009
  `(RTE T 2009/01/01 23:00:00 2009/02/01 D 5 "description" "(PWR 1)")`

Weekly Occurring Event
- Power off the projector every week, on Saturday and Sunday at 23:00:00, starting from January 1, 2009 until March 1, 2009 (inclusive)
  `(RTE T 2009/01/01 23:00:00 2009/03/01 W 1 "SSu" "description" "(PWR 0)")`

- Power on the projector every other week, on every weekday at 23:00:00, starting from January 1, 2009 until March 1, 2009 (inclusive)
  `(RTE T 2009/01/01 23:00:00 2009/03/01 W 2 "MTWThF" "description" "(PWR 1)")`
- Power on the projector every fifth week, on every weekday at 23:00:00, starting from January 1, 2009 until March 1, 2009 (inclusive)
  `(RTE T 2009/01/01 23:00:00 2009/03/01 W 5 "MTWThF" "description" "(PWR 1)")`

Monthly Occurring Event
- Power off the projector on the 1st day of every month at 23:00:00, starting January 1, 2009 until January 1, 2010 (inclusive)
  `(RTE T 2009/01/1 23:00:00 2010/01/01 M 1 "description" "(PWR 0)")`
- Power off the projector on the 12th day of every 12 months at 23:00:00, starting January 12, 2009 until January 1, 2010 (inclusive)
  `(RTE T 2009/01/10 23:00:00 2010/01/01 M 12 "description" "(PWR 0)")`
- Power off the projector every other month on day 31 starting January 31, 2009 until January 1, 2010 (inclusive)
  `(RTE T 2009/01/31 23:00:00 2010/01/01 M 2 "description" "(PWR 0)")`

Function Key Events
- Open the shutter if Func+1 is pressed on the remote.
  `(RTE F 1 "description" "(LSH 0)")`
- Close the shutter if Func+2 is pressed on the remote.
  `(RTE F 2 "description" "(LSH 1)")`

System Events
- Change color to cyan when system powers up.
  `(RTE S 1 1 "description" "(CLE 5)")`

GPIO Events
- Turn ON the projector if we receive any GPIO Input.
  `(RTE G "XXXXXXX" "description" "(PWR 1)")`
- Turn ON the projector if we receive any GPIO Input.
  `(RTE G "" "description" "(PWR 1)")`
- Turn ON the projector if we receive any GPIO Input.
  `(RTE G "XX" "description" "(PWR 1)")`
- Turn OFF the projector if pin 6 is set to low and pin 7 is high.
  `(RTE G "XXXXXLH" "description" "(PWR 0)")`
- Freeze the image if pins 1 and 2 are set to high.
  `(RTE G "HH" "description" "(FRZ 0)")`
- Freeze the image if pins 3,4,7 are set to high.
  `(RTE G "XXHHXXH" "description" "(FRZ 0)")`
- Freeze the image if pins 1,2 are set to Low and pin 3 is set to high.
  `(RTE G "LLHXX" "description" "(FRZ 0)")`
- Freeze the image if pins 1,2 are set to Low and pin 3 is set to high.
  `(RTE G "LLH" "description" "(FRZ 0)")`

SIN–Select Input

Selects the active input. The projector has two input DVI connectors and two video paths. This control assigns which video path uses which DVI input. The parameter value designates interface followed by a 1. To select DVI 1 use 11. To select DVI 2 use 21.

Parameters

- **Control Group**: Preference

- **Subclass**: Power Down

- **Access Level**: Operator

Subcodes

Subcode	Description
MAIN	Set the active Input for the main video.
SECD	Set the active Input for the secondary video.

Example

Set main video to DVI connector 1.
```
(SIN 11)
```

Set main video to DVI connector 2.
```
(SIN 21)
```

Set secondary video to DVI connector 1.
```
(SIN+SECD 11)
```

Report which DVI connector routes secondary input.
```
(SIN+SECD ?)
```

Screen Orientation (SOR)

Selects the orientation of the displayed image. It can be displayed normally, inverted horizontally, inverted vertically, or inverted in both directions, as required by the projector installation. Valid values are:

- 0 = Front Projection

- 1 = Rear Projection

- 2 = Front Projection Inverted

- 3 = Rear Projection Inverted

Parameters

- **Control Group**: Preference

- **Subclass**: Power Up

- **Access Level**: Operator

Example

Set image orientation to Front projection.
```
(SOR 0)
```

Status (SST)

Returns status information about the projector.

Parameters

- **Control Group**: Preference
- **Subclass**: Power Down
- **Access Level**: Status

Subcodes

Subcode	Description
ALRM	Returns a summary of any active alarms.
CONF	Returns configuration data - model, sn, build date, etc.
COOL	Returns cooling data - cooling fans, air flow, etc.
HLTH	Returns system health.
LAMP	Returns LAMP operational data.
SIGN	Returns signal data - freq, etc.
SYST	Returns system data - power, hours of use, shutter open, etc.
TEMP	Returns temperature data.
VERS	Returns version numbers.

Examples

Return the projector status
`(SST+ALRM?)`
returns
`(SST+ALRM!000 002 "101" "Prism temperature")`
where parameters are P1=index number, P2=error level, P3=value, P4=description.
Error level is 0=no errors or warnings, 1=warning, 2=error, 3=error and warning.

TCS—Target Color Space

This command is used to set the ArrayLOC target gamut.

Parameters

- **Control Group**: Preference
- **Subclass**: Power Up

- **Access Level**: Operator

Subcodes

Subcode	Description	Values
SLCT	Selects the color space preset.	0 = Max drives (M) 1 = EBU (E) 2 = SD Video (S) 3 = HD Video (H) 4 = Factory (F) 5 = User 1 (1) 6 = User 2 (2) 7 = User 3 (3) 8 = User 4 (4)
RDxX	Adjusts the x coordinate of the red color point	0 - 800 with three decimal places
RDxY	Adjusts the y coordinate of the red color point	0 - 800 with three decimal places
GNxX	Adjusts the x coordinate of the green color point	0 - 800 with three decimal places
GNxY	Adjusts the y coordinate of the green color point	0 - 800 with three decimal places
BLxX	Adjusts the x coordinate of the blue color point	0 - 800 with three decimal places
BLxY	Adjusts the y coordinate of the blue color point	0 - 800 with three decimal places
COPY	Copy gamut settings from preset to current.	0-8 for source preset
CCAP	Read-only field which returns string that gives relationship between projector capability and the color target.	-

Several preset color spaces are provided in addition to four user setting gamuts. The control subcodes provide access to all the presets. Due to the large number of sub-codes they are not all listed. Instead a simple substitution for the small 'x' is made, according to the following table:

M	Max drives, read only	1	User 1
E	EBU, read only	2	User 2
S	SD Video, read only	3	User 3
H	HD Video, read only	4	User 4
F	Factory, read only	C	Alias to selected table

Example

Select EBU color gamut as target.
```
(TCS+SLCT 1)
```

Set current Target gamut red x point to 0.290.
```
(TCS+RDCX 290)
```

Return value of EBU preset blue y point.
```
(TCS+BLEY ?)
```

Copy settings from HD Video to current.
```
(TCS+COPY 3)
```

TDD–3D Emitter Delay

Adjust the output 3D emitter delay to match the active glasses to the L/R frames of the projector. Proper adjustment of this delay will eliminate cross talk and odd colors caused by timing differences between the glasses and the projected image. The user specified delay is added after sync locking.

Parameters

- **Control Group**: Preference
- **Subclass**: Power Up
- **Access Level**: Operator

Examples

Set 3D Emitter Delay to 20.00 milliseconds on main video.
```
TDD 2000
```

Returns the 3D Emitter Delay value on main video.
```
TDD?
```

3D SYNC INPUT (TDI)

The 3D sync signal is generated by the 3D source to ensure left/right eye content is synchronized to the projector and to the user. The 3D Stereo cable has 2 inputs for right eye - left eye signals. This control specifies which of the 2 right-left eye input signals on the cable is active.

It is important to ensure that the correct 3D sync input is selected (either Input A or Input B) with each 3D signal source. If there is no external sync, then choose None and the sync will be generated internally. This allows the content to be displayed, however, there is a 50% chance that the content will be displayed with the left/right eyes swapped or inverted. This function is not used in Interleaved 3D mode as each eye gets a dedicated input and no 3D sync input is required.

Parameters

- **Control Group**: Preference
- **Subclass**: Power Up
- **Access Level**: Operator

Examples

Set 3D Sync Input to 'A' on main video.
```
TDI 0
```

Returns the 3D Sync Input value on main video.
```
TDI?
```

3D Mode (TDM)

Select the 3D mode:

- Off—3D operation is disabled.

- Dual Input 3D—Content from two independent 48-60Hz "passive" frame locked sources are interleaved into a native 96-120Hz native frame rate. This requires an optional input module and both signals must be from the same signal type.

Parameters

- **Control Group**: Preference
- **Subclass**: Power Up
- **Access Level**: Operator

Examples

Returns the 3D Mode value on main video.
```
TDM?
```

Set 3D Mode to 'Off' on main video.
```
TDM  0
```

Set 3D Mode to 'Dual Input 3D'.
```
TDM  3
```

Invert 3D Input (TDN)

Adjust the output 3D emitter delay to match the active glasses to the L/R frames of the projector. Proper adjustment of this delay eliminates cross talk and odd colors caused by timing differences between the glasses and the projected image. The user specified delay is added after sync locking.

Parameters

- **Control Group**: Preference
- **Subclass**: Power Up
- **Access Level**: Operator

Examples

Return the 3D input inversion value on main video.
```
TDN?
```

Set 3D input inversion to 'inverted' on main video.
```
TDN  0
```

3D Sync Out (TDO)

Defines if the 3D Sync is output and controls how it is processed. Typically only the last projector in the 3D Stereo cable chain is connected to the emitter and should specify "To Emitter". All Other projectors should select "To Next Input" if other projectors are used in the chain.

Parameters

- **Control Group**: Preference
- **Subclass**: Power Up
- **Access Level**: Operator

Examples

Returns the 3D Sync Out value on main video.
`TDO?`

Set 3D Sync Out to 'Off' on main video.
`TDO 0`

Set 3D Sync Out to 'To Emitter'.
`TDO 1`

3D Test Pattern (TDT)

Enables a test pattern suitable for confirming 3D. Different patterns are displayed for L and R eyes. If ghosting is occurring the emitter delay and dark time controls may be used to help correct the situation.

Parameters

- **Control Group**: Unsaved
- **Subclass**: Power Up
- **Access Level**: Operator

Examples

Disable 3D test pattern.
`TDT 0`

Enable 3D test pattern.
`TDO 1`

TMD—Time and Date

Set the display time and date.

Parameters

- **Control Group**: Preference
- **Subclass**: Power Down
- **Access Level**: Admin

Subcodes

Subcode	Description
(TMD?)	Returns the time and date.
(TMD+TIME hh:mm:ss)	Sets the local time in a 24 hour clock format.
(TMD+DATE yy/mm/dd)	Sets the date with the format yyyy/mm/dd.
(TMD+FULL yy/mm/dd hh:mm:ss)	Sets the time and date.

TPE—Test Pattern Enable

Automatically select White test pattern based on the control being adjusted. Certain controls that deal with color settings will enable a white test pattern when entering WebUI menus and disable when exiting the menu. This control defines whether this happens. There are some situations where the user may not want to automatically go to a white test pattern when the WebUI menu is selected, for example if they have specific content that they wish to evaluate.

0 = Disable automatic test pattern

1 = Enable automatic test pattern

Parameters

- **Control Group**: Preference
- **Subclass**: Power Up
- **Access Level**: Operator

Examples

Disable test pattern.
(TPE 0)

Report state of test pattern enable.
(TPE ?)

TWP—Target White Point

This command is used to set the ArrayLOC target white-point.

Parameters

- **Control Group**: Preference
- **Subclass**: Power Up

- **Access Level**: Operator

Subcodes

Subcode	Description	Values
SLCT	Selects the white point.	0 = 3200K (D93) 5 = 9300K 1 = 5000K (D50) 6 = User 1 3 = 6500K (D65) 7 = User 2 4 = 7500K (D75) 8 = User 3 9 = User 4
RDxX	Adjusts the x coordinate of the white color point.	0 - 800 with three decimal places
RDxY	Adjusts the y coordinate of the white color point.	0 - 800 with three decimal places
GNxX	Sets user set color temperature and adjusts the white point x and y coordinates. Available for user settings if SWxT is set to 1.	-
GNxY	Selects whether user presets are generated from white point values or from a color temperature value.	0 = white point values 1 = color temperature value
COPY	Copy gamut settings from preset to current.	-

Several preset white points are provided in addition to four user setting white points. The control subcodes provide access to all the presets. Due to the large number of sub-codes they are not all listed. Instead a simple substitution for the small 'x' is made, according to the following table:

0	3200K	**5**	User 1
1	5000K (D50)	**6**	User 2
2	6500K (D65)	**7**	User 3
3	7500K (D75)	**8**	User 4
4	9300K (D93)	**C**	Current

Examples

Select User setting 1.
`(TWP+SLCT 5)`

Set User 2 target white x point to 0.290.
`(TWP+WH6X 290)`

Return value of 6500K setting white y point.
`(TWP+WH2Y ?)`

Derive x and y from color temperature setting.
`(TWP+SWCT 1)`

Set color temperature to 8000K.
`(TWP+WHCT 8000)`

Copy settings from 9300K to current.
`(TWP+COPY 4)`

UID–User ID

Allows users to login to the serial interface.

Parameters

- **Control Group**: Preference
- **Subclass**: Power Up
- **Access Level**: None

Subcodes

Subcode	Description	Values
(UID?)	Returns the current access level.	-
(UID username password)	Logs in with the username and password. Do not add quotation marks or spaces.	-
(UID)	Resets the log in to the default settings.	Default access settings: • Web interface—guest—can only run the UID command. • On screen display—user—additional access privileges can be configured through the OSD interface. • TCP—guest—can only run the UID command. • Serial—user—additional access privileges can be configured through the UID command.

Examples

Login as service using the default password
(UID "service" "service")

WRP–Warp Selection (WRP)

This serial command controls warping settings.

Parameters

- **Control Group**: Configuration/Preference
- **Subclass**: Power Up
- **Access Level**: Operator

Subcodes

Subcode	Description	Values
WRP+SLCT?L	Retrieve a list of available warp maps.	-
WRP+SLCT <value>	Changes the warp map to use on the projector.	0 = Turn off warping 2 to 17 = select TWIST warp maps

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