CHRISTIE

# E Series 675/775 Serial Commands Technical Reference Information

# INTRODUCTION

This document describes the serial protocol, consisting of ASCII text messages, used to control the E Series 675/775 projectors.

## CONNECTION AND USE

Once you have connected your computer to either the RS232 IN port or to the ETHERNET port on a projector, you can remotely access projector controls and image setups, issue commands or queries, and receive replies.

### Setting up RS232 communication

Connect the projector and host using a null standard cable with 9-pin female to the host, and 9-pin female to the projector. Pin 2 connects to pin 3, pin 3 connects to pin 2 and pin 5 connects to pin 5.

### RS232 Communication parameters

Supported RS232 settings:

| PARAMETER | DATA |
|---|---|
| Baud Rate Default | 115200 |
| Parity | None |
| Data Bits | 8 |
| Stop Bits | 1 |
| Flow Control | None |

**NOTE:** *Use direct connections from laptops and desktops. Docking ports of certain laptops have had issues with software upgrades*

# MESSAGE FORMAT

1. For all commands, a space may be entered between the code and the number. Example (PXT50), without a space, can also be entered as (PXT 50), with a space. Both are valid.
2. A modifier can be added to some commands to allow the value to be incremental or decremented, without having to enter an absolute value. Modifier “n” goes to “next value” and modifier “p” goes to “previous value”.

   For example: The OVS Overscan command allows the values:

   (OVS0) : OFF

   (OVS1) : ZOOM

   (OVS2) : CROP

   If the current setting is “Off”, then after (OVS n) is processed, the value will be set to “Zoom”. If the current setting is “Crop”, then after (OVS p) is processed, the value will be set to “Zoom”.

Messages can be one of three types:

- 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 - The projector returns the data in response to a request or as confirmation of a command.

All “remote control” information passes in and out of the projector as a simple text message consisting of a three letter command code, an optional four letter subcode and any related data. Optional features (message acknowledges) can be included. Regardless of message type or origin, all messages use the same basic format outlined in *Table 1 Message Formats*.

**Table 1 Message Formats**

| SOURCE | MESSAGE FORMAT | FUNCTION | EXAMPLES |
|---|---|---|---|
| From Controller | (Code Data) | SET (set contrast to 50) | (CON500) or (CON 500) |
| | (Code+Subcode Data) | SET (set source 1 name to “VGA BOX 1”) | (SNS+SRC1 “VGA BOX 1”) |
| From Controller | (Code ?) | REQUEST (what is current contrast?) | (CON?) or (CON ?) |
| | (Code+Subcode ?) | REQUEST (what is lamp 1 hours?) | (LIF+LP1H?) |
| From Projector | (Code Data) | REPLY (contrast is 50) | (CON!50) |
| | (Code+Subcode Data) | REPLY (LMP 1 HOURS IS 534) | (LIF+LP1H!534) |

## BASIC MESSAGE STRUCTURE

The following component fields comprise a standard ASCII message. Optional fields, such as extra characters for special modes, restrictions or added functionality, are shown in italics, with the exception of Notes.

- **START AND END OF MESSAGE:** Every message begins with the left “(“character and ends with the right “)“character. NOTE: *If the start character is received before an end character of the previous message, the partial (previous) message is discarded.*
- **PREFIX CHARACTERS (OPTIONAL):** For acknowledgement that the projector has responded, and/or to maximize message integrity, insert a special character before the 3-character function code: # - Full Acknowledgment, which will cause an echo of the message as a reply to be sent back from the projector

when it has finished processing the message. Note that requesting an acknowledgement serves no purpose when included in a request message, since the acknowledgement will be redundant to the actual reply from the projector.

- **FUNCTION CODE:** The projector function you wish to work with, such as contrast, is represented by a three-character ASCII code (A-Z, upper or lower case). This function code appears immediately after the leading "("that starts the message. In messages sent to the projector that do not have a subcode, a space between the function code and the first parameter (or special character) is optional.
- **+SUBCODE:** The projector function you wish to work with may have one or more subcodes that will allow you to select a specific source 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 "+" character to separate the code and subcode. If there is no subcode, the "+" is also omitted. In messages sent to the projector that do have a subcode, a space between the subcode and the first parameter (or special character) is optional.
- R**EQUEST/REPLY SYMBOLS:** If the controller is requesting information from the projector, a "?" question mark appears directly after the function code. If the projector is replying, a "!" exclamation mark appears directly after the function code. For set messages to the projector, neither of these characters appear — data directly follows the code and subcode.

## MESSAGE ERRORS

If a command cannot be performed (e.g. syntax error), you will receive a descriptive error indicating the problem. For example: (ITP) - (65535 00000 ERR00005 "ITP: Too Few Parameters")

# SIZE & POSITION COMMANDS

| (SZP) SIZE PRESETS | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values. | |
| DESCRIPTION OF USE<br>Display an image with the detected size, or resize the image by maximizing either the height, width or both, or resize to the maximum size possible while keeping the original aspect ratio. | |
| EXAMPLES:<br>(SZP0) : Auto - Display with the detected size. (Default setting)<br>(SZP1) : Native - Display in its native resolution.<br>(SZP2) : 4:3 - Retain 4:3 aspect ratio.<br>(SZP3) : LetterBox - Display with the black borders on the top and bottom.<br>(SZP4) : Full Size - Fill the screen (regardless of the source).<br>(SZP5) : Full Width - Fill display width and keep aspect ratio.<br>(SZP6) : Full Height - Fill display height and keep aspect ratio. | |

| (OVS) OVER SCAN | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values. | |
| DESCRIPTION OF USE<br>Controls how edges of the input image are framed and removes noise from around the image. | |
| EXAMPLES:<br>(OVS0) : OFF<br>(OVS1) : ZOOM<br>(OVS2) : CROP | |

| (PXT) PIXEL TRACK | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Steady flickering or several soft vertical stripes or bands across the entire image indicates poor pixel tracking. Proper pixel<br>tracking ensures that the image quality is consistent across the screen, the aspect ratio is maintained, and that the pixel phase can be optimized. This setting adjusts the number of pixel clocks per horizontal sync in the range 0-100. Default value is 50. Applies only to analog RGB signals. | |
| EXAMPLES:<br>(PXT50) | |

| (PXP) PIXEL PHASE | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Adjusts the phase of the pixel clock created for analog inputs in the range 0 to100. Default value is 50. | |
| EXAMPLES:<br>(PXP50) | |

| (HOR) HORZ POSITION | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Moves the starting point of the input capture. When applying this function, some of the active area will be blanked. Increasing the value moves the active image to the right. Valid range is 0 to 100. Default value is 50. | |
| EXAMPLES:<br>(HOR50) | |

| (VRT) VERT POSITION | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Moves the starting point of the input capture. When applying this function, some of the active area will be blanked. Increasing the value moves the active region up. Valid range is 0 to 100. Default value is 50. | |
| EXAMPLES:<br>(VRT50) | |

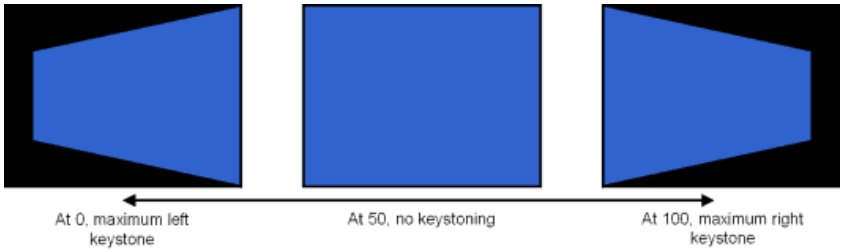
| (DZH) DIGITAL HORZ ZOOM | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Change the size of projector's display area horizontally. If the display area has been resized by this setting, it can be moved by changing the Digital Horz Shift and Digital Vert Shift settings. Valid range is 50%-400%. Default value is 100. | |
| EXAMPLES:<br>(DZH100) | |

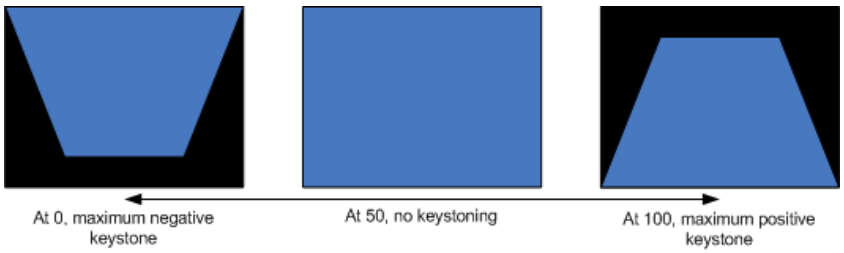
| (DZV) DIGITAL HORZ ZOOM | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Change the size of projector's display area vertically. If the display area has been resized by this setting, it can be moved by changing the Digital Horz Shift and Digital Vert Shift settings. Valid range is 50%-400%. Default value is 100. | |
| EXAMPLES:<br>(DZV100) | |

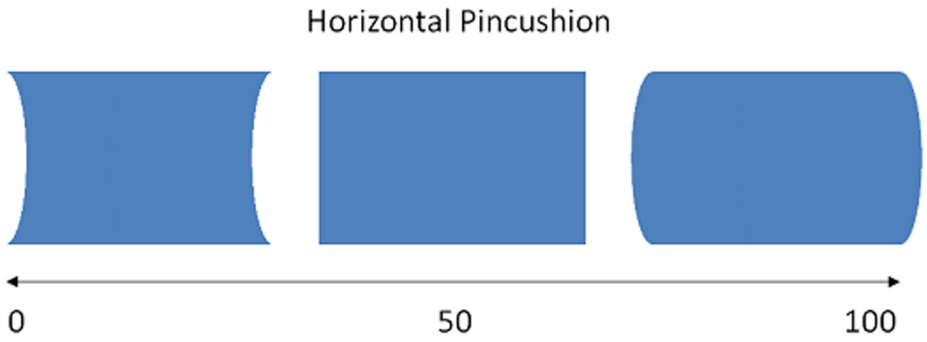
| (DSH) DIGITAL HORZ SHIFT | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Valid range for horizontal position is 0 to 100:<br>At 0 the display area is moved as far as possible to the left, at 50 the display area is horizontally centered, and at 100 the display area is moved as far as possible to the right. The image must be “zoomed out” (Digital Zoom) before this function can be used. “Digital Horz Shift” will be disabled if Digital Zoom has not been applied. Default value is 50. | |
| EXAMPLES:<br>(DSH50) | |

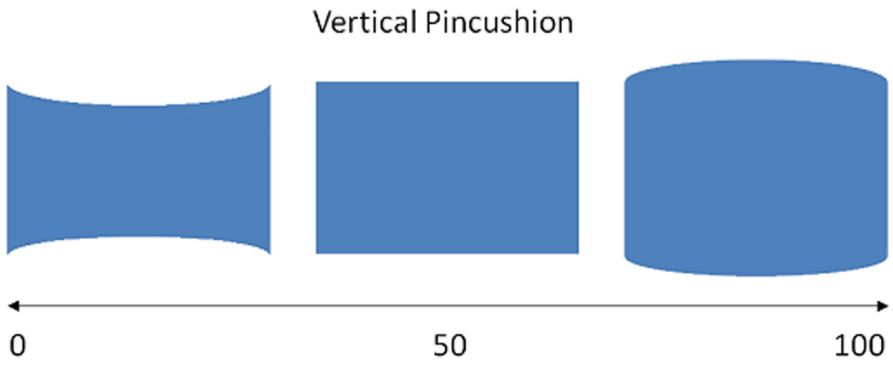
| (DSV) DIGITAL VERT SHIFT | READ/WRITE: WRITE ONLY |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Valid range for vertical position is 0 to 100:<br>At 0 the display area is moved as far as possible to the top, at 50 the display area is vertically centered, and at 100 the display area is moved as far as possible to the bottom. The image must be “zoomed out” (Digital Zoom) before this function can be used. “Digital Horz Shift” will be disabled if Digital Zoom has not been applied. Default value is 50. | |
| EXAMPLES:<br>(DSV50) | |

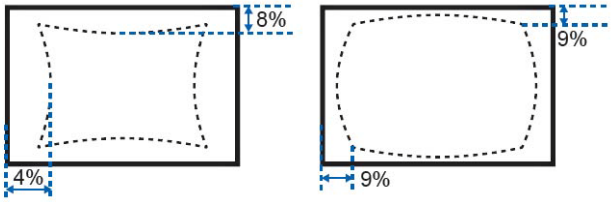
| (WRP+SLCT) GEOMETRY CORRECTION | READ/WRITE: R/W |
|---|---|
| SUBCODE<br>SLCT | |
| DESCRIPTION OF USE<br>Select the type of Geometry Correction to be applied to the image:<br>"Off/Basic" are available options when the optional Dual Processor Warp Module is not installed, and "Off/Basic/Curve/Rotate" are available options when the optional Dual Processor Warp Module is installed.<br>- Off: No geometry correction is applied to the image.<br>- Basic: When Warp Module is not installed, keystone and pincushion can be adjusted. When Warp Module is installed, keystone, pincushion/barrel and 4-corner can be adjusted.<br>- Curve: When Warp Module is installed, curve and 4-corner can be adjusted. Not available without the warp module.<br>- Rotate: When Warp Module is installed, rotate and 4-corner can be adjusted. Not available without the warp module. | |
| EXAMPLES:<br>(WRP+SLCT 1) Enable basic settings | |

| (WRP+HKST) HORZ KEYSTONE | READ/WRITE: R/W |
|---|---|
| SUBCODE<br>HKST | |
| DESCRIPTION OF USE<br>Horizontal keystone : corrects the distortion created when the projected image is to the left or right of the lens axis and increasing this value increases right keystoning:<br>  <br><br>Without Warp Module, valid range is 0-100, and default value is 50. With Warp Module, valid range is 0-20 and default value is 10. | |
| EXAMPLES:<br>(WRP+HKST 50) | |

| (WRP+VKST) VERT KEYSTONE | READ/WRITE: R/W |
|---|---|
| SUBCODE<br>VKST | |
| DESCRIPTION OF USE<br>Vertical keystone corrects the distortion created when the projected image is above or below the lens axis, and increasing this value increases positive keystoning:<br>  <br><br>Without Warp Module, valid range is 0-100, and default value is 50. With Warp Module, valid range is 0-20 and default value is 10. | |
| EXAMPLES:<br>(WRP+VKST 50) | |

| (HPC) HORZONTAL PINCUSHION | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Horizontal pincushion adjusts horizontal distortion. Valid range is 0 to 100. Default value is 50.<br>  <br><br>This function is available when no Warp Module is installed. When a Warp Module is installed, the Pincushion/Barrel function should be used. | |
| EXAMPLES:<br>(HPC50) | |

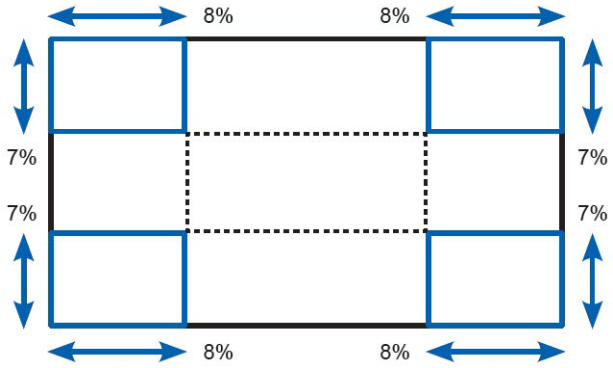
| (VPC) VERTICAL PINCUSHION | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Vertical pincushion adjusts vertical distortion. Valid range is 0 to 100. Default value is 50.<br>  <br><br>This function is available when no Warp Module is installed. When a Warp Module is installed, the Pincushion/Barrel function should be used. | |
| EXAMPLES:<br>(VPC50) | |

| (PCB) PINCUSHION/BARREL | READ/WRITE: WRITE ONLY |
|---|---|
| SUBCODE<br><No Sub code> Adjust Pincushion/Barrel | |
| DESCRIPTION OF USE<br>Allow for correction for slight curved distortion resulting from the lens or projection surface. This function is only available when the optional Dual Processor Warp Module is installed. Valid range is 0-20 and default is 10. The maximum effective adjustment limits are as follows:<br>  <br> | |
| EXAMPLES:<br>(PCB20) | |

| (CNR) 4-CORNER GEOMETRY CORRECTION | READ/WRITE: WRITE ONLY |
|---|---|

SUBCODE
TLCX Top Left Horizontal adjustment
TLCY Top Left Vertical adjustment
TRCX Top Right Horizontal adjustment
TRCY Top Right Vertical adjustment
BLCX Bottom Left Horizontal adjustment
BLCY Bottom Left Vertical adjustment
BRCX Bottom Right Horizontal adjustment
BRCY Bottom Right Vertical adjustment

DESCRIPTION OF USE
Allow the image to be squeezed to fit an area defined by moving each of the four corners' x and y position. This function is only available when the optional Dual Processor Warp Module is installed. Valid range for Horizontal adjustment is 0-190 and for Vertical adjustment is 0-100. Default values are 0. The maximum effective adjustment limits are as follows:

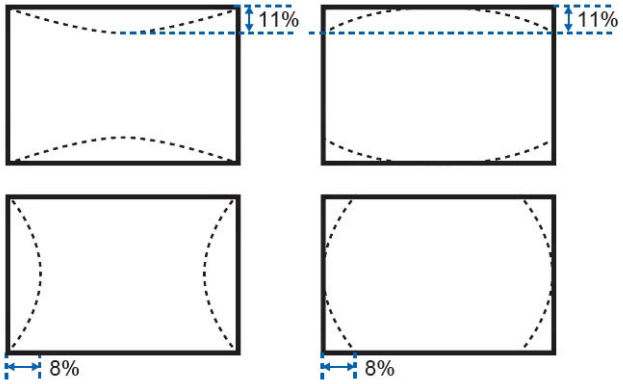



EXAMPLES:
(CNR+TLCZ 20)

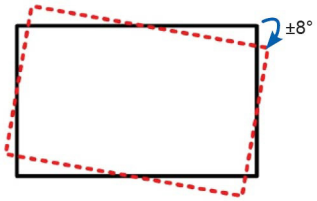
| (CRV) CURVE GEOMETRY CORRECTION | READ/WRITE: WRITE ONLY |
|---|---|

SUBCODE
TARC Top Arc
BARC Bottom Arc
LARC Left Arc
RARC Right Arc

DESCRIPTION OF USE
Allow for symmetrical correction of a constant radius horizontal or vertical curve by modifying the top and bottom of the image only. Compound curves are not supported. The projector should be mounted perpendicular to the chord of the curve within the offset limitation of the lens used (ideally on axis). No tilt correction.
This function is only available when the optional Dual Processor Warp Module is installed.
Valid range for curve adjustment is 0-800. Default values are 400. The maximum effective adjustment limits are as follows:




EXAMPLES:
(CRV+TARC 20)

| (ROT) ROTATION GEOMETRY CORRECTION | READ/WRITE: WRITE ONLY |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Allow an image to be rotated - most commonly to level the image. While the image is rotated, the software can crop any content that begins to fall off the panel. The function will not automatically scale the image down to prevent cropping. If scaling is required, the digital zoom function can be used, independently of the rotation function.<br>This function is only available when the optional Dual Processor Warp Module is installed.<br>Valid range is 0-20. Default value is 10. The maximum effective adjustment limits are as follows:<br>  <br> | |
| EXAMPLES:<br>(AIM1) | |

| (AIM) AUTO IMAGE | READ/WRITE: WRITE ONLY |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Forces the projector to reacquire and lock to the input signal. This is useful when signal quality is marginal. “Normal mode” can support all of the 4:3 input sources. “Wide mode” can support all of the 16:9 input source and most of the 4:3 input source. For 4:3 input sources not recognized by “Wide mode” (example 1400 x 1050), perform Auto Image using “normal mode”. | |
| EXAMPLES:<br>(AIM1) | |

# IMAGE SETTING COMMANDS

| (BRT) BRIGHTNESS | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Adjusts the overall black level of the projected image by applying an offset to the input image. Valid range is 0-100. Default value is 50. | |
| EXAMPLES:<br>(BRT50) | |

| (CON) CONTRAST | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Adjusts the overall white level of the projected image by applying a gain to the input image. This will adjust the degree of difference between the lightest and darkest parts of the picture. Valid range is 0-100. Default value is 50. | |
| EXAMPLES:<br>(CON50) | |

| (CSP) COLOR SPACE | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values. | |
| DESCRIPTION OF USE<br>Select a color space that has been specifically tuned for the input signal.<br>Useful only for analog signals and certain digital sources. Default value is ‘Auto’. | |
| EXAMPLES:<br>(CSP0) : RGB<br>(CSP1) : REC709<br>(CSP2) : REC601<br>(CSP3) : RGB Video<br>(CSP4) : Auto | |

| (DTL) DETAIL | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values. | |
| DESCRIPTION OF USE<br>Applies a predefined sharpness setting to the current input signal. This adjusts the overall detail of the projected image. Default value is ‘Normal’. | |
| EXAMPLES:<br>(DTL0) : Maximum<br>(DTL1) : High<br>(DTL2) : Normal<br>(DTL3) : Low<br>(DTL4) : Minimum | |

| (CLR) COLOR | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Adjusts the color saturation of analog video sources. Valid range is 0 to 100. Default value is 50. | |
| EXAMPLES:<br>(CLR50) | |

| (TNT) TINT | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Adjusts the red/green balance of analog video NTSC sources. Valid range is 0 to 100. Default value is 50. | |
| EXAMPLES:<br>(TNT50) | |

| (NRD) NOISE REDUCTION | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Reduces temporal and/or spatial noise in the image. Valid range is 0 to 100. Default value is 0. | |
| EXAMPLES:<br>(NRD50) | |

| (FTC) FLESH TONE CORRECTION | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Controls the amount of flesh tone correction applied to the image. Valid range is 0 to 100. Default value is 0. | |
| EXAMPLES:<br>(FTC50) | |

| (VBL) VIDEO BLACK LEVEL | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values | |
| DESCRIPTION OF USE<br>When ‘On’, the projector will analyze the current input image and calculate an offset value which is then added to the Analog to Digital converter black level value. This ensures optimum black level for each analog source. | |
| EXAMPLES:<br>(VBL0) : IRE off.<br>(VBL1) : IRE on. | |

| (FMD) DETECT FILM | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values. | |
| DESCRIPTION OF USE<br>Controls film mode detection. This determines whether the original source of the input video was film (progressive) or video (interlaced), by analyzing motion in the video. This information allows the projector to correctly display fields from interlaced sources. Default value is ‘Off’. | |
| EXAMPLES:<br>(FMD0) : Detect film OFF<br>(FMD1) : Detect film ON | |

| (CLC) CLOSED CAPTIONS | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values. | |
| DESCRIPTION OF USE<br>Controls closed caption display while audio is muted. If this setting is not off, audio is not muted. The source is NTSC and contains captions on the selected channel, so the projector will display caption text overlaid on the image. Default value is ‘Off’. | |
| EXAMPLES:<br>(CLC0) : off<br>(CLC1) : CC1<br>(CLC2) : CC2 | |

| (ROG) RED GAIN | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Adjust the gain of the red channel of the image. It will also affect the white of the image. Applies to VGA/Component signals only. Valid range is 0-100. Default value is 50. | |
| EXAMPLES:<br>(ROG50) | |

| (GOG) GREEN GAIN | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Adjust the gain of the green channel of the image. It will also affect the white of the image. Applies to VGA/Component signals only. Valid range is 0-100. Default value is 50. | |
| EXAMPLES:<br>(GOG50) | |

| (BOG) BLUE GAIN | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Adjust the gain of the blue channel of the image. It will also affect the white of the image. Applies to VGA/Component signals only. Valid range is 0-100. Default value is 50. | |
| EXAMPLES:<br>(BOG50) | |

| (ROO) RED OFFSET | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Adjust the offset of the red channel of the image. It will also affect the black and white of the image. Applies to VGA/Component signals only.Valid range is 0-100. Default value is 50. | |
| EXAMPLES:<br>(ROO50) | |

| (GOO) GREEN OFFSET | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Adjust the offset of the green channel of the image. It will also affect the black and the white of the image. Applies to VGA/Component signals only. Valid range is 0-100. Default value is 50. | |
| EXAMPLES:<br>(GOO50) | |

| (BOO) BLUE OFFSET | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Adjust the offset of the blue channel of the image. It will also affect the black and white of the image. Applies to VGA/Component signals only. Valid range is 0-100. Default value is 50. | |
| EXAMPLES:<br>(BOO50) | |

| (SYT) SYNC THRESHOLD | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Adjusts the sync threshold for sync-on-green (SOG) signals. This controls the voltage at which a negative pulse is determined to be a sync instead of active video. The setting is needed anytime the active video source places its sync on the green/luma channel. Valid range is 0 to 100. Default is 50. | |
| EXAMPLES:<br>(SYT50) | |

| (GOR) RGB GAIN/OFFSET RESET | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Reset the Red, Green and Blue gain and offset values. | |
| EXAMPLES:<br>(GOR1): Reset RGB Gain/Offset settings. | |

| (PST) PICTURE SETTING | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code>: Set picture setting<br>USER : Store current settings to User Mode. Allows modifiers “n” and “p” for selecting “next” and “previous” values. | |
| DESCRIPTION OF USE<br>Changing this setting updates values of picture-related settings (for the current source only) to a set of predefined values. It will optimize the projector for displaying images under certain conditions, such as presentation, video, bright, whiteboard, blackboard, beige wall and user definable preset. It will affect Gamma, Sharpness, White Peaking, Overscan, Brightness, Contrast, Color, Tint, Red Gain, Green Gain, Blue Gain, Red Offset, Green Offset, Blue Offset. | |
| EXAMPLES:<br>(PST0) : Presentation<br>(PST1) : Video<br>(PST2) : Bright<br>(PST3) : Whiteboard<br>(PST4) : Blackboard<br>(PST5) : Beige Wall<br>(PST6) : User<br><br>(PST+USER1) : Store current settings to User Mode. | |

| (DIM) DYNAMICBLACK | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values | |
| DESCRIPTION OF USE<br>When switched ‘On’, the aperture will constantly adjust based on the amount of black in the current scene. Default value is 'Off' | |
| EXAMPLES:<br>(DIM0) : DynamicBlack off.<br>(DIM1) : DynamicBlack on. | |

| (FRZ) IMAGE FREEZE | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>“n” and “p” for selecting “next” and “previous” values | |
| DESCRIPTION OF USE<br>Pause the screen image. | |
| EXAMPLES:<br>(FRZ 1) Freeze the image | |

| (BGC) GAMMA CURVE | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values. | |
| DESCRIPTION OF USE<br>Selects gamma correction curve. | |
| EXAMPLES:<br>(BGC0) : Video<br>(BGC1) : Film<br>(BGC2) : Bright<br>(BGC3) : CRT | |

| (BCL) BRILLIANTCOLOR | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Produce an expanded on-screen color spectrum that delivers enhanced color saturation for bright, true-to-life images. It will increase image brightness but reduce overall color accuracy. | |
| EXAMPLES:<br>(BCL0) : Normal Look<br>(BCL1) : Bright Look | |

| (WPK) WHITE PEAKING | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Increase the brightness of whites that are near 100%. Applies to video sources only. Valid range is 0-100. | |
| EXAMPLES:<br>(WPK50) | |

| (CCI) COLOR TEMPERATURE | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values. | |
| DESCRIPTION OF USE<br>Applies a predefined color temperature to the input signal | |
| EXAMPLES:<br>(CCI0) : Warmest<br>(CCI1) : Warm<br>(CCI2) : Cool<br>(CCI3) : Bright | |

| (EDG) EDGE ENHANCEMENT | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values | |
| DESCRIPTION OF USE<br>Apply edge enhancement. | |
| EXAMPLES:<br>(EDG0): off.<br>(EDG1): normal.<br>(EDG2): Maximum. | |

| (CWS) COLOR WHEEL SPEED | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values. | |
| DESCRIPTION OF USE<br>Setting Color Wheel speed to 2 x or 3x setting. | |
| EXAMPLES:<br>(CWS0) : Set Color Wheel speed to 2x setting.<br>(CWS1) : Set Color Wheel speed to 3x setting. | |

| (HSG) COLOR ENHANCEMENT | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Apply one of the 2 preset color enhancement modes. | |
| EXAMPLES:<br>(HSG 1) | |

# CONFIGURATION COMMANDS

| (LOC) LOCAL SETTINGS | READ/WRITE: R/W |
|---|---|
| SUBCODE<br>LANG – Language<br>Allows modifiers “n” and “p” for selecting “next” and “previous” values. | |
| DESCRIPTION OF USE<br>Controls which language to display in the OSD. | |
| EXAMPLES:<br>(LOC+LANG 0) – set the language to English<br>(LOC+LANG 1) – set the language to Chinese<br>(LOC+LANG 2) – set the language to French<br>(LOC+LANG 3) – set the language to German<br>(LOC+LANG 4) – set the language to Italian<br>(LOC+LANG 5) – set the language to Japanese<br>(LOC+LANG 6) – set the language to Korean<br>(LOC+LANG 7) – set the language to Russian<br>(LOC+LANG 8) – set the language to Spanish | |

| (FCS) FOCUS<br>(ZOM) ZOOM | READ/WRITE: WRITE ONLY |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values. | |
| DESCRIPTION OF USE<br>Adjust the lens focus or zoom offset.<br>Or use modifier “n” to increase value by 1 or “p” to decrease value by 1. | |
| EXAMPLES:<br>(FCS n) to increase focus by 1<br>(ZOM p) to decrease zoom by 1 | |

| (LVO) LENS SHIFT VERTICAL<br>(LHO) LENS SHIFT HORIZONTAL | READ/WRITE: WRITE ONLY |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values. | |
| DESCRIPTION OF USE<br>Adjust the lens vertical or horizontal offset.<br>Or use modifier “n” to increase value by 1 or “p” to decrease value by 1. | |
| EXAMPLES:<br>(LVO n) to increase vertical position by 1<br>(LHO p) to decrease horizontal position by 1 | |

| (LCB+LOCK) LOCK LENS MOTORS | READ/WRITE: R/W |
|---|---|
| SUBCODE<br>LOCK: Lock the Zoom, Focus, Horizontal and Vertical Lens motors.<br>Allows modifiers “n” and “p” for selecting “next” and “previous” values. | |
| DESCRIPTION OF USE<br>Select the function to prevent all lens motors from moving. It will effectively lock out any changes and, override all other lens features. This is useful to prevent lens position changes. Default value is ‘Allow’ movement. | |
| EXAMPLES:<br>(LCB+LOCK0) : Allow<br>(LCB+LOCK1) : Locked | |

| (LCB+HOME) LENS CENTER CALIBRATION | READ/WRITE: WRITE ONLY |
|---|---|
| SUBCODE<br>HOME: Move to center | |
| DESCRIPTION OF USE<br>Calibrates the lens and then returns the lens to horizontal and vertical home position. Focus and Zoom are not affected. | |
| EXAMPLES:<br>(LCB+HOME1) | |

| (CEL) CEILING MOUNT SETTING | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Change the orientation of the image for ceiling-mounted projectors. When set to ‘On’, the image will be turned upside-down. When set to 'Auto', the projector will automatically sense the orientation of the projector. | |
| EXAMPLES:<br>(CEL0) : Ceiling mount off.<br>(CEL1) : Ceiling mount on.<br>(CEL2) : Auto. | |

| (SOR) REAR PROJECTION | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Reverse the image so that the image can be projected from behind a translucent screen. | |
| EXAMPLES:<br>(SOR0) : Off.<br>(SOR1) : On. | |

| (MSH) MENU SHIFT HORIZONTAL<br>(MSV) MENU SHIFT VERTICAL | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Adjusts the location of on-screen menus and messages. Valid range is 0 to 100. Default value is 0. | |
| EXAMPLES:<br>(MSH0) - Set horizontal position of menu to left position.<br>(MSV50) - Set vertical position of menu to center position. | |

| (MBE) SHOW MESSAGES ( MESSAGE BOX ENABLE) | READ/WRITE: R/W |
|---|---|
| SUBCODE<br>USER<br>Allows modifiers “n” and “p” for selecting “next” and “previous” values. | |
| DESCRIPTION OF USE<br>Controls whether or not the projector displays OSD messages (e.g. source name when searching or changing source, slider when changing keystone, etc.). Default value is ‘On’. | |
| EXAMPLES:<br>(MBE+USER0) : OFF<br>(MBE+USER1) : ON | |

| (OST) MENU TRANSPARENCY | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Controls amount of transparency of the OSD (for menu and messages). Valid range is 0 to 90. Default value is 0 (not transparent). | |
| EXAMPLES:<br>(OST0) | |

| (SPS) SPLASH SCREEN SETUP | READ/WRITE: R/W |
|---|---|
| SUBCODE<br>SLCT<br>Allows modifiers “n” and “p” for selecting “next” and “previous” values. | |
| DESCRIPTION OF USE<br>Choose which splash screen is to be used when no image or test pattern is displayed. Default value is ‘Factory Logo’. | |
| EXAMPLES:<br>(SPS+SLCT0) : Factory Logo<br>(SPS+SLCT 1) : Blue<br>(SPS+SLCT 2) : Black<br>(SPS+SLCT 3) : White | |

| (PIV) PIN PROTECT | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>The PIN (personal Identification Number) allows you to password protect the projector. Once the PIN feature is enabled, the PIN must be entered before an image can be projected. | |
| EXAMPLES:<br>(PIV"XXXXX") : if XXXXX Password is correct, the Pin protect function Toggles. | |
| Note: XXXXX is number from 0 to 9 | |

| (PCG) CHANGE PIN | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Change the PIN (Personal Identification Number). Default PIN is '12345'. | |
| EXAMPLES:<br>(PCG"OOOOO,NNNNN")<br>OOOOO means old password.<br>NNNNN means new password. | |
| Note: XXXXX is number from 0 to 9 | |

| (PWR+STBM) STANDBY MODE | READ/WRITE: R/W |
|---|---|
| SUBCODE<br>STBM<br>Allows modifiers "n" and "p" for selecting "next" and "previous" values. | |
| DESCRIPTION OF USE<br>Standby Modes are:<br>• 0.5W Mode: when this mode has been selected, the power consumption is under 0.5W (to meet EUP regulation) and only the Keypad gets power. The system cannot power on via "UART/WEB/USB".<br>•Communication Mode: when this mode has been selected, the power consumption is approximately 20W, and both the Keypad and processor are powered. The system can power on via "UART/WEB/USB". | |
| EXAMPLES:<br>(PWR+STBM0) : 0.5W mode<br>(PWR+STBM1) : Communication. | |

| (APW) AUTO POWER ON | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values. | |
| DESCRIPTION OF USE<br>Enables and disables the projector’s automatic power on (allows the projector to be turned on using a wall switch). When this mode been selected, the system will power on automatically and skip standby mode when AC power is applied. Default value is ‘Off’. | |
| EXAMPLES:<br>(APW0) : OFF<br>(APW1) : ON | |

| (ASH) AUTO SHUTDOWN | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values. | |
| DESCRIPTION OF USE<br>If the projector is in the Search state for longer than the set time without detecting an active signal, it automatically powers down to ‘Standby Mode’. | |
| EXAMPLES:<br>Default value is Off/Never<br>(ASH0) turns off auto shutdown mode (same as never)<br>(ASH1) 5 MIN<br>(ASH2) 10 MIN<br>(ASH3) 15 MIN<br>(ASH4) 20 MIN<br>(ASH5) 25 MIN<br>(ASH6) 30 MIN | |

| (SLP) SLEEP TIMER | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> enables or disables sleep mode.<br>Allows modifiers “n” and “p” for selecting “next” and “previous” values. | |
| DESCRIPTION OF USE<br>Allows the projector to automatically power off after it has been on for a specified amount of time. Timer starts when projector is powered on (or when sleep timer auto power off is canceled). Auto power off occurs whether or not a source is being displayed. | |
| EXAMPLES:<br>(SLP0) : OFF.<br>(SLP1) : 2 Hrs.<br>(SLP2) : 4 Hrs.<br>(SLP3) : 6 Hrs.<br>Default value is Off/Never | |

| (HAT) HIGH ALTITUDE | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values | |
| DESCRIPTION OF USE<br>Modify the fan speeds for high altitude. | |
| EXAMPLES:<br>(HAT0): High Altitude off.<br>(HAT1): High Altitude on. | |

| (NET) NETWORK | READ/WRITE: R/W |
|---|---|
| SUBCODE<br>DHCP - Turn DHCP On/Off.<br>ETH0 - IP address<br>SUB0 - Subnet mask<br>GATE - Default gateway<br>HOST – Projector name<br>MAC0 - MAC Address<br>SHOW - Show Network Messages - Turn Messages On/Off.<br>RSTR - Restart network<br>RSET - Network Factory Reset - The Projector Name, LAN IP, WLAN IP, and SNMP settings will be reset. | |
| DESCRIPTION OF USE<br>Modify the network settings or return network settings back to their factory default values. | |
| EXAMPLES:<br>(NET+DHCP0)<br>(NET+HOST”DWU670-E”)<br>(NET+MAC0”00:E0:47:01:02:3C”)<br>(NET+SHOW1)<br>(NET+ETH0”192.168.000.001”)<br>(NET+RSTR1)<br>(NET+SUB0”255.255.255.000”) | |

| (NTW) WIRELESS NETWORK | READ/WRITE: R/W |
|---|---|
| SUBCODE<br>SLCT - Enable wireless LAN<br>ETH0 - IP address<br>SUB0 - Subnet mask<br>GATE - Default gateway<br>MAC0 - MAC Address | |
| DESCRIPTION OF USE<br>Modify the wireless network settings. | |
| EXAMPLES:<br>(NET+SLCT1)<br>(NET+MAC0”00:E0:47:01:02:3C”)<br>(NET+ETH0”192.168.000.001”)<br>(NET+SUB0”255.255.255.000”) | |

| (BDR) SERIAL PORT BAUD RATE | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values | |
| DESCRIPTION OF USE<br>Selects the serial port baud rate. Default value is ‘115200’. | |
| EXAMPLES:<br>(BDR0) : 2400.<br>(BDR1) : 4800.<br>(BDR2) : 9600.<br>(BDR3) : 14400<br>(BDR4) : 19200.<br>(BDR5) : 38400.<br>(BDR6) : 57600.<br>(BDR7) : 115200.<br>(BDR8) : 1200. | |

| (SEC) SERIAL PORT ECHO | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values | |
| DESCRIPTION OF USE<br>Controls whether the serial port echoes characters. Default value is ‘Off’. | |
| EXAMPLES:<br>(SEC0) : OFF.<br>(SEC1) : ON | |

| (ADR PROJECTOR ADDRESS | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Set the projector address (0-9). The projector will respond to an IR remote set either to the same address as the projector or to an IR remote set to address 0. 0 is the default and universal address. The address of the IR remote must be set using the PROJ key on the remote. | |
| EXAMPLES:<br>(ADR 6) | |

| (EBL) EDGE BLENDING | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>SLCT : Enable/disable blending<br>MRKR : Enable/disable marker<br>GRID : Enable/disable grid test pattern<br>COLR: Select solid color test pattern<br>TOPW : Set top blend width<br>BTMW : Set bottom blend width<br>LFTW : Set left blend width<br>RHTW : Set right blend width<br>BLOF : Set blend area brightness offset<br>NBOF : Set non-blend area brightness offset<br>BGAM : Set blend area gamma drop off curve | |
| DESCRIPTION OF USE<br>Adjust blend widths and settings to left, right, top and/or bottom sides to create a seamless multi-projector stitched image. This function is only available when a Dual Processing Warp Module is installed. | |
| EXAMPLES:<br>(EBL+SLCT 1) : Enable blending<br>(EBL+MRKR 1) : Enable marker frame<br>(EBL+GRID 2) : Enable red grid test pattern (0=Off, 1=White, 2=Red, 3=Green, 4=Blue)<br>(EBL+COLR 2) : Select red solid color test pattern (0=Off, 1=White, 2=Red, 3=Green, 4=Blue)<br>(EBL+TOPW 200) : Set top blend width to 200 pixels (0-half output height)<br>(EBL+BLOF 1000) : Set blend area brightness offset (0-2000)<br>(EBL+NBOF 1000) : Set non-blend area brightness offset (0-2000)<br>(EBL+BGAM 300) : Set blend area gamma drop off curve (70-300) | |

| (CCA) COLOR MATCHING | READ/WRITE: R/W |
|---|---|
| SUBCODE<br>MTRA : Meter Adjustment enable<br>MTTP : Enable Auto Test pattern for meter adjustment items<br>RDMI : Measured data - Intensity of red<br>RDMX : Measured data - x coordinate of red<br>RDMY : Measured data - y coordinate of red<br>GNMI : Measured data - Intensity of green<br>GNMX : Measured data - x coordinate of green<br>GNMY : Measured data - y coordinate of green<br>BLMI : Measured data - Intensity of blue<br>BLMX : Measured data - x coordinate of blue<br>BLMY : Measured data - y coordinate of blue<br>WHMI : Measured data - Intensity of white<br>WHMX : Measured data - x coordinate of white<br>WHMY : Measured data - y coordinate of white<br>RDDG : Target data - Gain of red<br>RDDX : Target data - x coordinate of red<br>RDDY : Target data - y coordinate of red<br>GNDG : Target data - Gain of green<br>GNDX : Target data - x coordinate of green<br>GNDY : Target data - y coordinate of green<br>BLDG : Target data - Gain of blue<br>BLDX : Target data - x coordinate of blue<br>BLDY : Target data - y coordinate of blue<br>WHDG : Target data - Gain of white<br>WHDX : Target data - x coordinate of white<br>WHDY : Target data - y coordinate of white<br>MANA : Manual Adjustment enable<br>MNTP : Enable Auto Test pattern for manual adjustment items<br>ROFR : Manual adjustment - red part of red<br>GOFR : Manual adjustment - green part of red<br>BOFR : Manual adjustment - blue part of red<br>GOFG : Manual adjustment - green part of green<br>ROFG : Manual adjustment - red part of green<br>BOFG : Manual adjustment - blue part of green<br>BOFB : Manual adjustment - blue part of blue<br>ROFB : Manual adjustment - red part of blue<br>GOFB : Manual adjustment - green part of blue<br>ROFW : Manual adjustment - red part of white<br>GOFW : Manual adjustment - green part of white<br>BOFW : Manual adjustment - blue part of white | |
| DESCRIPTION OF USE<br>Use Color Matching by Meter Adjustment or by Manual Adjustment to define the precise hue of each primary color component (red, CCAgreen, blue and white) | |
| EXAMPLES:<br>(CCA+MTRA 1) Enable meter adjustment<br>(CCA+MNTP 1) Enable automatic test patterns for manual adjustment<br>(CCA+RDMI 453) Set measured intensity of red to 453 | |

| (HKS) HOT-KEY SETTINGS | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values | |
| DESCRIPTION OF USE<br>Assign a different function to the ‘Hot-key’ on the IR remote. Choose a function that does not have a dedicated button, allowing you to quickly and easily use that chosen function. | |
| EXAMPLES:<br>(HKS0) : Blank Screen.<br>(HKS1) : Aspect Ratio.<br>(HKS2) : Freeze Screen.<br>(HKS3) : Projector Info.<br>(HKS4) : Overscan<br>(HKS5) : Closed Captions. | |

# LAMP COMMANDS

| (LPM) LAMP MODE | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Select Constant Power mode or Constant Intensity mode.<br>If set to Constant power mode, the power value must be selected in LPP.<br>If set to Constant Intensity mode, the intensity value must be selected in LPI.<br>Note: Constant Intensity mode cannot be used if the Light Sensor has not been calibrated. | |
| EXAMPLES:<br>(LPM0) Set lamps to constant power mode | |

| (LPP) LAMP POWER | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Set the lamp power for Constant Power mode.<br>For DHD675-E and DWU675-E models, adjustment is 5 Watts per step and default value is 330W.<br>For DHD775-E and DWU775-E models, adjustment is 7 Watts per step and default value is 350W. | |
| EXAMPLES: | |
| DHD675-E and DWU675-E:<br>(LPP0) : 280w<br>(LPP1) : 285w<br>(LPP2) : 290w<br>(LPP3) :295w<br>(LPP4) : 300w<br>(LPP5) :305w<br>(LPP6) : 310w<br>(LPP7) :315w<br>(LPP8) : 320w.<br>(LPP9) :325w<br>(LPP10) : 330w | DHD775-E and DWU775-E:<br>(LPP0) : 280w<br>(LPP1) : 287w<br>(LPP2) : 294w<br>(LPP3) :301w<br>(LPP4) : 308w<br>(LPP5) :315w<br>(LPP6) : 322w<br>(LPP7) :329w<br>(LPP8) : 336w.<br>(LPP9) : 343w<br>(LPP10) : 350w |

| (LPI) LAMP INTENSITY | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Set the value for the Constant Intensity to maintain Constant brightness.<br>A light sensor is used to monitor the light level and will apply more power as the lamp brightness decays naturally over time until it reaches maximum power. The light sensor needs to be calibrated when you replace a lamp or "Reset Lamp Hours". Valid range is 0 to 10 and default value is 7. | |
| EXAMPLES:<br>(LPI 5) | |

| (LOP) CURRENT LAMP | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values | |
| DESCRIPTION OF USE<br>Controls which lamp(s) are in use. | |
| EXAMPLES:<br>(LOP1) : Only Lamp 1 lit.<br>(LOP2) : Only Lamp 2 lit.<br>(LOP0) : Both Lamps lit. | |

| (WSP) ECO / WHISPER MODE | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values | |
| DESCRIPTION OF USE<br>Switch to ‘ECO Mode’. When ECO Mode is enabled, the projector will switch to single lamp mode, will adjust to the lowest fan speed and will switch the lamp power to the minimum setting in order to be in the quietest mode possible. | |
| EXAMPLES:<br>(WSP0): Off.<br>(WSP1): Lamp1.<br>(WSP2): Lamp2.<br>(WSP3): Auto. | |

| (LSF) LAMP AUTO SWITCH | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code>: Control when the projector switches between lamps.Allows modifiers “n” and “p” for selecting “next” and “previous” values<br>TIME : Set number of hours for Lamp Auto Switch. | |
| DESCRIPTION OF USE<br>Controls when the projector switches between lamps. | |
| EXAMPLES:<br>(LSF0) : Only switch lamps if a lamp fails.<br>(LSF1) : Switch lamps every time the projector is powered on (also switch if a lamp fails).<br>(LSF2) : Switch lamps after the current lamp has operated for the indicated number of hours (also switch if a lamp fails).<br>(LSF+TIME120) : Set the Lamp Auto Switch number hours to be 120 when selected item is “After N Hours”. | |

| (LIF) LAMP INFO | READ/WRITE: READ ONLY |
|---|---|
| SUBCODE<br>LP1H : Get Lamp 1 Hours<br>LP2H : Get Lamp 2 Hours<br>LPTH : Get Total Hours All Lamps. i.e. total projector hours | |
| DESCRIPTION OF USE<br>Display current lamp hour usage. | |
| EXAMPLES:<br>(LIF+LP1H?) | |

| (LPL) LAMP LIFE WARNING | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Set the number of lamp hours of usage at which a warning must be given. When that number of hours is reached on either lamp, a warning message will be displayed at power on, indicating that the lamp should be changed.<br>This is a user settable limit only, and does not guarantee any number of hours for lamp life. This control has no bearing on lamp warranty and is not tied to actual lamp life in any way. The default is 0, which means that the feature is off and no warning will be generated. | |
| EXAMPLES:<br>(LPL1500) | |

| (LPC) RESET LAMP HOURS | READ/WRITE: WRITE ONLY |
|---|---|
| SUBCODE<br>LMP1 : Reset Lamp1 Hours.<br>LMP2 : Reset Lamp2 Hours.<br>BOTH : Reset both Lamps hours. | |
| DESCRIPTION OF USE<br>Reset Lamp hours for both or Lamp1 or Lamp2. | |
| EXAMPLES:<br>(LPC+LMP11) : Reset Lamp 1 Hours.<br>(LPC+LAMP21) : Reset Lamp 2 Hours.<br>(LPC+BOTH1) : Reset both lamps hours. | |

| (LLC) LIGHT SENSOR CALIBRATION | READ/WRITE: WRITE ONLY |
|---|---|
| SUBCODE<br><No Sub code> Calibrate Light Sensor<br>STAT : Read calibration status of the light sensor. | |
| DESCRIPTION OF USE<br>Calibrate the Light Sensor for use with the Constant Intensity lamp mode,<br>which allows the projector to be set for constant brightness. If the Light Sensor has not been calibrated, Constant Intensity mode will be disabled. Light Sensor calibration should be repeated when new lamps are installed. | |
| EXAMPLES:<br>(LLC 1) : Calibrate Light Sensor.<br>(LLC+STAT?)  (LLC! 1) : Ask status, result indicates light sensor is calibrated. | |

# INPUT SWITCHING & PIP COMMANDS

| (SIN) INPUT/SOURCE CHANGE FUNCTIONS | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> select the input to be displayed in the Main image.<br>(MAIN #) : select the input to be displayed in the Main image.<br>(PIIP #) : select the input to be displayed in the PIP image. | |
| DESCRIPTION OF USE<br>Change source directly. | |
| EXAMPLES:<br>(SIN1) VGA<br>(SIN2) BNC<br>(SIN3) HDMI 1<br>(SIN4) HDMI 2<br>(SIN5)<br>(SIN6) DisplayPort<br>(SIN7) Component<br>(SIN8) S-Video<br>(SIN9) Composite<br>(SIN10) Christie Presenter<br>(SIN11) Card Reader<br>(SIN12) Mini USB | |

| (PIP) PIP/PBP FUNCTIONS | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Enable or Disable PIP/PBP. Default value is ‘Disabled’. | |
| EXAMPLES:<br>(PIP 0) : Disable PIP/PBP<br>(PIP 1) : Enable PIP/PBP | |

| (PPS) PIP/PBP SWAP | READ/WRITE: WRITE ONLY |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Swap MAIN and PIP sources. | |
| EXAMPLES:<br>(PPS1) : Swap MAIN and PIP sources. | |

| (PHS) PIP/PBP SIZE | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Select the PIP/PBP size. | |
| EXAMPLES:<br>(PHS0) : Small size.<br>(PHS1) : Medium size.<br>(PHS2) : Large size. | |
| NOTE:<br>Refer to Appendix 1. | |

| (PPP) PIP/PBP LAYOUT | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Set the location of the PIP/PBP image. | |
| EXAMPLES:<br>(PPP0) : PBP, Main left.<br>(PPP1) : PBP, Main Top.<br>(PPP2) : PBP, Main right.<br>(PPP3) : PBP, Main bottom.<br>(PPP4) : PIP-Bottom Right.<br>(PPP5) : PIP-Bottom Left.<br>(PPP6) : PIP-Top Left.<br>(PPP7) : PIP-Top Right. | |
| NOTE:<br>Refer to Appendix 1. | |

| (TMG) TIMING DETECT MODE | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values | |
| DESCRIPTION OF USE<br>Select timing detection mode to wide or normal. It is used to support additional PC timings. When the projected picture is not completed, this function is used to adjust the picture. “Normal mode” can support all of the 4:3 input sources. “Wide mode” can support all of the 16:9 input source & most of the 4:3 input source. For those 4:3 input sources not recognized by "Wide mode" (example 1400 x 1050), perform Auto Image using “normal mode”. | |
| EXAMPLES:<br>(TMG0) : Normal<br>(TMG1) : Wide | |

| (MIF) MAIN (SINGLE) SOURCE INFO | READ/WRITE: READ ONLY |
|---|---|
| SUBCODE<br>ACTS : Get Active Source<br>SGFT : Get Signal Format<br>APRT : Get Aspect Ratio.<br>RESL : Get Resolution.<br>VREF : Get Vert Refresh.<br>HREF : Get Horz Refresh.<br>PIXC : Get Pixel Clock.<br>SYNC : Get SYNC Type<br>CLSP : Get Color Space. | |
| DESCRIPTION OF USE<br>Shows the setting of the current source of the main image. | |
| EXAMPLES:<br>(MIF+RESL?) - Return the main image resolution. | |

| (SIF) SECONDARY SOURCE INFO | READ/WRITE: READ ONLY |
|---|---|
| SUBCODE<br>ACTS : Get Active Source<br>SGFT : Get Signal Format<br>APRT : Get Aspect Ratio.<br>RESL : Get Resolution.<br>VREF : Get Vert Refresh.<br>HREF : Get Horz Refresh.<br>PIXC : Get Pixel Clock.<br>SYNC : Get SYNC Type<br>CLSP : Get Color Space. | |
| DESCRIPTION OF USE<br>Show the settings of the current source in the PIP/PBP image. This is only valid when PIP/PBP is enabled. | |
| EXAMPLES:<br>(SIF+RESL?) - Return the resolution of the PIP Image. | |

| (ESH) ENABLE MAIN SOURCE HOT KEY | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub Code> | |
| DESCRIPTION OF USE<br>Enable the hot key(0,9) to select source directly. | |
| EXAMPLES:<br>(ESH0) : ON<br>(ESH1) : OFF | |

| (MHK) MAIN SOURCE HOT-KEY SETTINGS | READ/WRITE: R/W |
|---|---|
| SUBCODE<br>VGA1 : Set a number key to be hot-key for VGA1.<br>BNC1 : Set a number key to be hot-key for BNC<br>HDM1 : Set a number key to be hot-key for HDMI1<br>HDM2 : Set a number key to be hot-key for HDMI2<br>CON1 : Set a number key to be hot-key for Component<br>SVDO : Set a number key to be hot-key for S-Video<br>COPS : Set a number key to be hot-key for Composite<br>DPRT : Set a numbered key to be hot-key for Display Port<br>NTWD : Set a numbered key to be hot-key for the Christie Presenter Network Display<br>CRDR: Set a numbered key to be hot-key for the Card Reader<br>USBM : Set a numbered key to be hot-key for the Mini USB | |
| DESCRIPTION OF USE<br>Allows the assignment of a Hot-key to a particular source. | |
| EXAMPLES:<br>(MHK+VGA18) : Set number 8 to be hot-key for VGA1. | |

| (SKS) SOURCE KEY FUNCTION SETTING READ/WRITE: READ ONLY |
| --- |
| SUBCODE<br><No Sub Code> |
| DESCRIPTION OF USE<br>Assign a different function to the source Hot-key. The default function is ‘List all sources’. |
| EXAMPLES:<br>Function of the key to:<br>(SKS0) : Change source.<br>(SKS1) : List all of Sources.<br>(SKS2) : Change source with Auto |

# MISCELLANEOUS COMMANDS

| (ITP) TEST PATTERN | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values | |
| DESCRIPTION OF USE<br>Display a test Pattern. Some test patterns are only available when logged-in as a Service user. Note that when switching away from the Grid or Color Bars test patterns, the switch may take up to 18 seconds as these are special non-standard test patterns. | |
| EXAMPLES:<br>(ITP0) : OFF<br>(ITP1) : Grid<br>(ITP2) : White<br>(ITP3) : Black<br>(ITP4) : Checkerboard<br>(ITP5) Color bars<br>(ITP6) : Red(Service mode only)<br>(ITP7) : Green(Service mode only)<br>(ITP8) : Blue(Service mode only)<br>(ITP9) : Yellow(Service mode only)<br>(ITP10) : Magenta(Service mode only)<br>(ITP11) : Cyan(Service mode only) | |

| (SST) PROJECTOR STATUS | READ/WRITE: READ ONLY |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Status query command. | |
| EXAMPLES:<br>(SST?)<br>Returns a series of responses as below items.<br>(SST!000 "DWU670-E" "Model Name")<br>(SST!001 "UC100712345" "Serial Number")<br>(SST!002 "1920x1200" "Native Resolution")<br>(SST!003 "HDMI 1" "Main Input")<br>(SST!004 "Digital" "Main Signal Format")<br>(SST!005 "148.5MHz" "Main Pixel")<br>(SST!006 "Separate" "Main Sync Type")<br>(SST!007 "67.7kHz" "Main Horz Refresh")<br>(SST!008 "60.0Hz" "Main Vert Refresh")<br>(SST!009 "HDMI 2" "PIP / PBP Input")<br>(SST!010 "Digital" "PIP / PBP Signal Format")<br>(SST!011 "135.2MHz" "PIP / PBP Pixel Clock")<br>(SST!012 "Separate" "PIP / PBP Sync Type")<br>(SST!013 "62.7kHz" "PIP / PBP Horz Refresh")<br>(SST!014 "60.0Hz" "PIP / PBP Vert Refresh")<br>(SST!015 "330 W" "Lamp Power Setting")<br>(SST!016 "Lamp 2" "Current Lamp")<br>(SST!017 "10 Hours" "Lamp 1 Hours")<br>(SST!018 "15 Hours" "Lamp 2 Hours")<br>(SST!019 "0.5W Mode" "Standby Mode")<br>(SST!020 "Allow" "Lens Lock Setting")<br>(SST!021 "192.168.1.10" "IP Address")<br>(SST!022 "On" "DHCP")<br>(SST!023 "24C" "System Temperature")<br>(SST!024 "V30, A27, B21")<br>(SST!025 "--END--" "") | |

# SERVICE COMMANDS

| (CWI) COLOR WHEEL INDEX SETTING | READ/WRITE: R/W |
|---|---|
| SUBCODE<br>SPX2 : Set up color wheel index for 2x speed.<br>SPX3 : Set up color wheel index for 3x speed. | |
| DESCRIPTION OF USE<br>Color wheel index setting for 2x or 3x speed. | |
| EXAMPLES:<br>(CWI+SPX2 26) | |
| Note: This command only working with service mode is “on”. | |

| (PIF) PROJECTOR INFO | READ/WRITE: READ ONLY |
|---|---|
| SUBCODE<br>MDLN : Get Model Name<br>SNUM : Get Serial-Number.<br>NERS : Get Native Resolution.<br>FWVS : Get FW version.<br>CFVS : Get Configuration.<br>BCVS : Get Boot Code Version. | |
| DESCRIPTION OF USE<br>Displays read-only projector information. This function is only available when logged in as a ‘Service‘ user. | |
| EXAMPLES:<br>(PIF+MDLN?) | |

| (DEF) FACTORY DEFAULTS | READ/WRITE: WRITE ONLY |
|---|---|
| SUBCODE<br><No sub-code> | |
| DESCRIPTION OF USE<br>Returns all settings back to “new out of the box” configuration.<br>The number 111 must be sent with the command to prevent accidental use of this command. This function is only available when logged in as a ‘Service’ user. | |
| EXAMPLES:<br>(DEF 111) | |

| (UID) ENTER SERVICE CODE | READ/WRITE: WRITE ONLY |
|---|---|
| SUBCODE<br><No Sub Code> | |
| DESCRIPTION OF USE<br>Enter Service code to set the projector to ‘Service Mode’.<br>There are some service functions that will only work when in ‘Service Mode’.<br>The ‘Service Mode’ is turned ‘Off’ when the projector is powered ‘Off’. Format of the command is (UID “username,password”). | |
| EXAMPLES:<br>(UID”service,service”) | |

| (ERR) ERROR LOG | READ/WRITE: WRITE ONLY |
|---|---|
| SUBCODE<br><No Sub Code> Show log<br>CLEAR : Clear log | |
| DESCRIPTION OF USE<br>Show or clear the projector error log. | |
| EXAMPLES:<br>(ERR?) show the log<br>(ERR+CLEAR1) clear the log | |

| (MDT) MODE ADJUSTMENT | READ/WRITE: WRITE ONLY |
|---|---|
| SUBCODE<br>HPOS : Horizontal position offset<br>VPOS : Vertical position offset<br>SAVE : Save the settings<br>CLEAR : Clear the settings | |
| DESCRIPTION OF USE<br>Fine tune the H and V start position for a signal in the EDID timing table and record the values in the system to override the timing table. The settings must be “Saved to Record” before exiting the menu, or they will be lost. To revert to original timing table settings, each setting must be manually cleared. Factory Defaults will not clear these override settings. | |
| EXAMPLES:<br>(MDT?)<br>(MDT+HPOS123)<br>(MDT+SAVE1)<br>(MDT+CLEAR1) | |

# FUNCTIONS USED ONLY BY SERIAL COMMAND

| (SIV) E SERIES SERIAL COMMAND VERSION | READ/WRITE: READ ONLY |
|---|---|
| SUBCODE<br><No Sub Code> | |
| DESCRIPTION OF USE<br>Get E Series serial command version. | |
| EXAMPLES:<br>(SIV?) | |

| (LCE) LAST SERIAL COMMAND ERROR | READ/WRITE: READ ONLY |
|---|---|
| SUBCODE<br><No Sub Code> | |
| DESCRIPTION OF USE<br>Get last serial command error. | |
| EXAMPLES:<br>(LCE?) | |

| (LSE) GET LAST SYSTEM ERROR | READ/WRITE: READ ONLY |
|---|---|
| SUBCODE<br><No Sub Code> | |
| DESCRIPTION OF USE<br>Get last system ERROR.(Lamp fail or fan fail or…….) | |
| EXAMPLES:<br>LSE=1: The lamp did not strike after 5 attemps.<br>LSE=3: Lamp went out unexpectedly.<br>LSE=4: Fan failure.<br>LSE=5: Over temperature. | |

| (PWR) POWER ON/OFF | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values | |
| DESCRIPTION OF USE<br>Power on/off projector. Power On will switch the projector from ‘Standby Mode’ to ‘Lamps On’. Power Off will switch the projector back to ‘Standby Mode’. | |
| EXAMPLES:<br>(PWR0) : Power off projector.<br>(PWR1) : Power on projector. | |

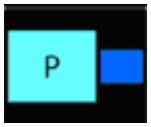
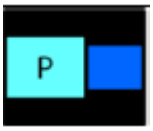
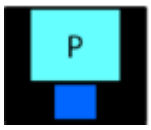
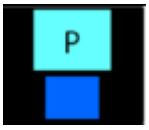
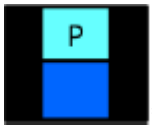
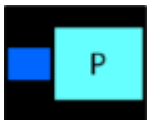
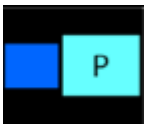
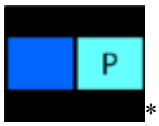
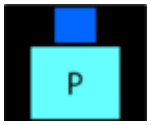
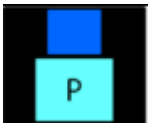
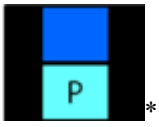
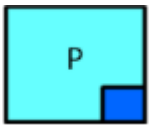
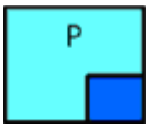
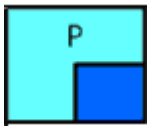
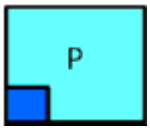
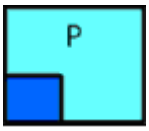
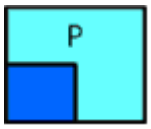
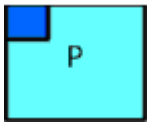
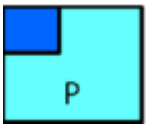
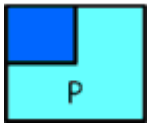
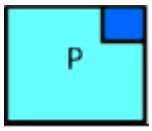
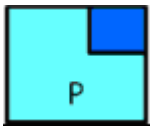
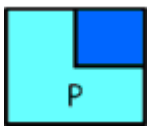
| (SNS) SOURCE NAME SETTING | READ/WRITE: R/W |
|---|---|
| SUBCODE<br>SRC0 : Set new source name for VGA1 input.<br>SRC1 : Set new source name for VGA2 input.<br>SRC2 : Set new source name for BNC input.<br>SRC3 : Set new source name for HDMI1 input.<br>SRC4 : Set new source name for HDMI2 input.<br>SRC5 : Set new source name for Component input.<br>SRC6 : Set new source name for S-Video input.<br>SRC7 : Set new source name for Video input. | |
| DESCRIPTION OF USE<br>Change the source name to a user-defined name. | |
| EXAMPLES:<br>(SNS+SRC1”WUXGA”) : change the source name “VGA1” to “WUXGA” | |

| (KEY) KEY-CODE ENTRY SETTING | READ/WRITE: WRITE ONLY |
|---|---|
| SUBCODE<br><No Sub code> | |
| DESCRIPTION OF USE<br>Used by manufacturing and service. Sends key codes to the projector, which should respond as if the key was pressed on the keypad or remote.<br>See Sonic Infrared Key-code Specification(Appendix-2) | |
| EXAMPLES:<br>(KEY17) : Send menu key to projector, the projector will show menu on OSD. | |

| (SHU) SHUTTER ON/OFF CONTROL | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values | |
| DESCRIPTION OF USE<br>Open or close the shutter. | |
| EXAMPLES:<br>(SHU0) : Open/Sutter off.<br>(SHU1) : Closed/Sutter on.<Displayed black screen> | |

| (OSD) OSD SHOW/HIDE | READ/WRITE: R/W |
|---|---|
| SUBCODE<br><No Sub code><br>Allows modifiers “n” and “p” for selecting “next” and “previous” values | |
| DESCRIPTION OF USE<br>Disable or enable the OSD. If the menu is displayed and the OSD is disabled, the OSD will disappear. When it is enabled again, the menu will reappear at the same position that it was before being disabled. This is unlike exiting from the menu on the OSD, which always returns to the first menu position (item 1 in the Main menu). | |
| EXAMPLES:<br>(OSD0): Hide.<br>(OSD1): Show. | |

# APPENDIX-1

| PIP/PBP LAYOUT | PIP/PBP SIZE | | |
|---|---|---|---|
| | Small | Medium | Large |
| | Note: 'P' indicates primary source region (lighter color) | | |
| PBP, Main Left |  |  |  |
| PBP, Main Top |  |  |  * |
| PBP, Main Right |  |  |  * |
| PBP, Main Bottom |  |  |  * |
| PIP-Bottom Right |  |  |  |
| PIP-Bottom Left |  |  |  |
| PIP-Top Left |  |  |  |
| PIP-Top Right |  |  |  |

***Both source regions are the same size.**

# APPENDIX-2

## IR REMOTE KEYCODES

The (KEY) command uses decimal values.

The Following are issues when using the (KEY) COMMAND:

1. Enter key works in the menu but in a drop down menu it will not select an item.
2. Exit key works in the menu but in a drop down menu it will exit out of that specific menu instead of just the drop down menu.

| REMOTE BUTTON | KEYCODE (DECIMAL) |
|---|---|
| ON (Power) | 57 |
| Standby (Power Off) | 58 |
| INFO | 66 |
| AUTO | 47 |
| 1 | 26 |
| 2 | 27 |
| 3 | 28 |
| 4 | 29 |
| 5 | 30 |
| 6 | 31 |
| 7 | 32 |
| 8 | 33 |
| 9 | 34 |
| HELP | 35 |
| 0 | 36 |
| HOT KEY | 65 |
| MENU | 19 |
| TEST | 1 |
| SHUTTER | 2 |
| EXIT | 20 |
| UP | 38 |
| RIGHT | 41 |
| DOWN | 42 |
| LEFT | 39 |
| ENTER | 40 |

| REMOTE BUTTON | KEYCODE (DECIMAL) |
|---|---|
| INPUT | 48 |
| OSD | 49 |
| CONTRAST | 24 |
| BRIGHT | 25 |
| FOCUS_LEFT | 5 |
| FOCUS_RIGHT | 6 |
| PROJ | 22 |
| GAMMA | 23 |
| ZOOM- | 9 |
| ZOOM+ | 10 |
| KEYSTONE H-LEFT | 69 |
| KEYSTONE H-RIGHT | 70 |
| LENS H-LEFT | 13 |
| LENS H-RIGHT | 14 |
| KEYSTONE V-UP | 71 |
| KEYSTONE V-DOWN | 72 |
| LENS V-UP | 18 |
| LENS V-DOWN | 17 |
| PIP/POP | 15 |
| SIZE | 67 |
| LAYOUT | 68 |
| SWAP | 43 |