

# **BASIC SERIAL COMMAND SPECIFICATIONS**

LC-XB40N

Ver 0.01

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#### 1. Overview

- 1.1. These specifications define projector control commands for LC-XB40N (0.8" XGA ).
- 1.2. The projector control commands are used to remotely control a projector through RS-232C from a computer.

#### 2. Serial Interface Specifications

#### 2.1. Transfer Specifications

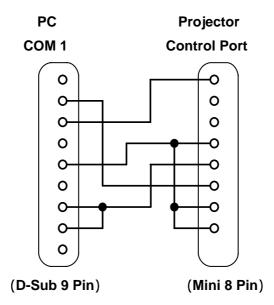
| Item               | Specifications |
|--------------------|----------------|
| Synchronous system | Asynchronous   |
| Transmission Speed | 9600 / 19200   |
| Data Length        | 8 bit          |
| Parity             | N/A            |
| Stop Bit           | 1              |
| Flow Control       | N/A            |

1) Transmission speed: initial setting value is 19200.

2) Transmission speed can be changed in service mode.

#### 2.2. Connection

Dedicated serial cable must be used for connection to a computer and a projector.



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#### 3. Notes for Communication

- 1.1. The projector control command is defined as one command/one line that starts with "C" and ends with carriage return (0x0D).
- 2.2. There are two types of Commands: Functional Execution Commands and Status Read Commands.

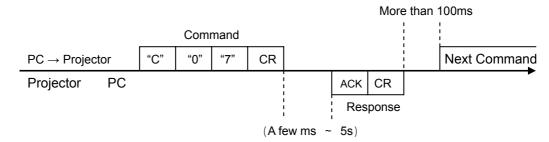
Example of Functional Execution Command: "C05" [CR]

Example of Status Read Command: "CR0" [CR]

3.3. When it takes more than one second to receive one command, it does not operate.

The information of buffer is cleared when it takes more than one second to receive carriage return (0x0D) after the projector receives the first data "C".

4.4. For Command pipelining, wait for the interval of 100ms after receiving a response.



3.4.1. When a command is issued before receiving a response, the function is not executed properly.

3.4.2. Except for when there is no Response for more than 5 seconds.

- 5.5. It takes <u>about 5 seconds</u> for internal initialization after plugging in AC power. During this time, it cannot process commands. Do not issue any command.
- 6.6. The number of characters of response to Status Read Commands depends on commands. Please see [7. Status Read Commands].
- 7.7. Characters for commands must be Capital (A Z).

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#### 4. Functional Execution Command Table

| Command | Item                           | Command | Item                       |
|---------|--------------------------------|---------|----------------------------|
| C00     | POWER ON                       | C20     | BRIGHTNESS +               |
| C01     | POWER OFF<br>(Quick Power OFF) | C21     | BRIGHTNESS -               |
| C02     | POWER OFF                      | C22     |                            |
| C03     |                                | C23     |                            |
| C04     |                                | C24     | Computer 2 Component       |
| C05     | Computer 1 (Digital)           | C25     | Computer 2 RGB             |
| C06     | Computer 2                     | C26     | Computer 2 Scart           |
| C07     | Video                          | C27     | IMAGE (Toggle)             |
| C08     |                                | C28     | ON START Enable            |
| C09     | VOLUME +                       | C29     | ON START Disable           |
| C0A     | VOLUME -                       | C2A     | Power Management Ready     |
| C0B     | AUDIO MUTE ON                  | C2B     | Power Management OFF       |
| COC     | AUDIO MUTE OFF                 | C2C     |                            |
| COD     | VIDEO MUTE ON                  | C2D     |                            |
| C0E     | VIDEO MUTE OFF                 | C2E     | Power Management Shut down |
| C0F     | Screen Normal size(4:3)        | C2F     |                            |
| C10     | Screen Wide size(16:9)         | C30     | D.ZOOM +                   |
| C11     | Image Standard                 | C31     | D.ZOOM -                   |
| C12     | Image Real                     | C32     | Video Auto                 |
| C13     | Image Cinema                   | C33     | Video Video                |
| C14     | Image 1                        | C34     | Video S-video              |
| C15     | Image 2                        | C35     |                            |
| C16     | Image 3                        | C36     |                            |
| C17     | Image 4                        | C37     |                            |
| C18     | Blackboard                     | C38     |                            |
| C19     | Dynamic                        | C39     |                            |
| C1A     |                                | C3A     | POINTER RIGHT              |
| C1B     |                                | C3B     | POINTER LEFT               |
| C1C     | MENU ON                        | C3C     | POINTER UP                 |
| C1D     | MENU OFF                       | C3D     | POINTER DOWN               |
| C1E     | DISPLAY CLEAR                  | C3E     |                            |
| C1F     |                                | C3F     | ENTER                      |

means no function.

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| Command | Item                        | Command | Item               |
|---------|-----------------------------|---------|--------------------|
| C40     |                             | C80     |                    |
| C41     |                             | C81     | Input WIRED        |
| C42     |                             | C82     | Input WIRELESS     |
| C43     | FREEZE ON                   | C83     | Input VIEWER       |
| C44     | FREEZE OFF                  | C84     |                    |
| C45     |                             | C85     |                    |
| C46     |                             | C86     |                    |
| C47     |                             | C87     |                    |
| C48     |                             | C88     |                    |
| C49     |                             | C89     | Auto PC ADJ.       |
| C4A     |                             | C8A     | PRESENTATION TIMER |
| C4B     |                             | C8B     |                    |
| C4C     |                             | C8C     |                    |
| C4D     |                             | C8D     |                    |
| C4E     |                             | C8E     | KEYSTONE           |
| C4F     |                             | C8F     | KEYSTONE           |
| C50     | Computer 1 Analog RGB       | C90     |                    |
| C51     |                             | C91     |                    |
| C52     | Computer 1 DVI (PC Digital) | C92     |                    |
| C53     | Computer 1 DVI (AV HDCP)    | C93     |                    |
| C54     |                             | C94     |                    |
| C55     |                             | C95     |                    |
| C56     |                             | C96     |                    |
| C57     |                             | C97     |                    |
| C58     |                             | C98     |                    |
| C59     | Page UP                     | C99     |                    |
| C5A     | Page DOWN                   | C9A     |                    |
| C5B     |                             | C9B     |                    |
| C5C     |                             | C9C     |                    |
| C5D     |                             | C9D     |                    |
| C5E     |                             | C9E     |                    |
| C5F     |                             | C9F     |                    |

means no function.

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#### 5. Status Read Command Table

| Command | Item                           | Memo |
|---------|--------------------------------|------|
| CR0     | Status Read                    |      |
| CR1     | Input Mode Read                |      |
| CR2     |                                |      |
| CR3     | (Corresponding) Lamp Time Read |      |
| CR4     | Setting Read                   |      |
| CR5     |                                |      |
| CR6     | Temp Read                      |      |
| CR7     |                                |      |
| CR8     |                                |      |
| CR9     |                                |      |
| CRA     |                                |      |
| CRB     |                                |      |
| CRC     |                                |      |

means no function.

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#### 6. Functional Execution Command

#### 6.1. Format

6.1.1. PC issues a command in format as below.

#### "C" COMMAND [CR]

Command: two characters (See Basic Functional Execution Command Table)

6.1.2. A projector changes received data to decode and returns a result after being ready to receive next command.

[ACK][CR]: (0x06, 0x0D) When received Functional Execution Commands.

6.1.3. "?"[CR]: When the received data cannot be decoded.

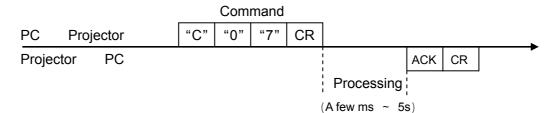
#### 6.2. Command Pipelining

When some functions need the command pipelining, the performance is the same as that of the remote control;

- 6.2.1. System: issues any command every 100 ms.
- 6.2.2. When receiving the appropriate command, the function is executed for 120 ms from the moment.
- 6.2.3. When receiving the same command continuously within 120 ms, the function is executed for another 120 ms from the moment.
- 6.2.4. When there is no incoming command after 120 ms, the execution of pipelining is stopped.
- 6.2.5. When the projector receives other incoming commands within 120ms, the execution of pipelining is stopped.

#### 6.3. Transfer Example

Switch the projector to video mode with Basic Command.



| <b></b> |      |       |      |   |
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# 6.4. Operation Requirements

When the projector's status in this below, Functional Execution Commands are limited.

| Projector Status                         | Available Functional Execution Commands |
|--|---|
| Standby Mode                             | C00: POWER ON                           |
|  | C00: POWER ON Countdown is terminated   |
| Countdown in process                     | C01: POWER OFF                          |
|  | C02: POWER OFF Countdown is terminated  |
| Cooling Down in process                  | NONE                                    |
| Cooling Down due to Abnormal Temperature | NONE                                    |
| Abnormal Temperature Status              | NONE                                    |
| Power Save / Cooling Down in process     | NONE                                    |
| Power Save Status                        | C00: POWER ON                           |
| rower Save Status                        | C01: POWER OFF                          |

Note) When the status is as above, even if the projector receives other commands,

it returns [ACK] [CR].

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#### 6.5. POWER ON Command

| Command  | "C00" [CR]   |   |
|----------|--------------|---|
| Detail   |              | Power is ON, nothing is done.<br>this command during processing Countdown, Countdown is |
| Response | Acceptable   | [ACK] [CR]  |
| Response | Unacceptable | " ? "[CR]   |

## 6.6. POWER OFF Command (Quick Power OFF)

| Command  | "C01" [CR]   |            |
|----------|--|------------|
| Detail   | Power OFF (Standby)<br>When Power is OFF with ON/STAND-BY button of the projector and remote<br>control, "Power OFF?" is displayed. However, as soon as this command is sent<br>Quick Power OFF is executed. |            |
| Response | Acceptable   | [ACK] [CR] |
| Response | Unacceptable   | " ? "[CR]  |

# 6.7. POWER OFF Command

| Command  | "C02" [CR]   |  |
|----------|--|--|
| Detail   | of the projector<br>Once this com<br>again while it is | andby).<br>operates the same Power OFF function as ON/STAND-BY button<br>and remote control.<br>mand is sent, "Power OFF?" is displayed. If this command is sent<br>displayed, Power OFF is executed.<br>this command during Countdown, Countdown is terminated. |
| Response | Acceptable   | [ACK] [CR]   |
| Response | Unacceptable   | " ? "[CR]  |

#### 6.8. Computer 1 (Digital) Command

| Command  | "C05" [CR]     |                     |  |
|----------|----------------|---------------------|--|
| Detail   | Select Compute | er 1(Digital) Input |  |
| Response | Acceptable     | [ACK] [CR]          |  |
| Response | Unacceptable   | " ? "[CR]           |  |

#### 6.9. Computer 2 Command

| Command  | "C06" [CR]     | "C06" [CR] |  |  |
|----------|----------------|------------|--|--|
| Detail   | Select Compute | er2 Input  |  |  |
| Response | Acceptable     | [ACK] [CR] |  |  |
|          | Unacceptable   | " ? "[CR]  |  |  |

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|--|--|--|------|-------|------|----|

#### 6.10. Video Command

| Command  | "C07" [CR]      | "C07" [CR] |  |  |
|----------|-----------------|------------|--|--|
| Detail   | Select Video In | put        |  |  |
| Pesnonse | Acceptable      | [ACK] [CR] |  |  |
| Response | Unacceptable    | " ? "[CR]  |  |  |

# 6.11. VOLUME + Command

| Command  | "C09" [CR]                                    |   |  |  |  |  |
|----------|---|---|--|--|--|--|
| Detail   | Volume Up.<br>This command<br>remote control. | This command operates the same way as "VOLUME+" button of the projector and |  |  |  |  |
| Response | Acceptable                                    | [ACK] [CR]  |  |  |  |  |
| Перопзе  | Unacceptable                                  | " ? "[CR]   |  |  |  |  |

# 6.12. VOLUME – Command

| Command  | "C0A" [CR]                                     |   |  |  |  |
|----------|--|---|--|--|--|
| Detail   | Volume Down<br>This command<br>remote control. | This command operates the same way as "VOLUME-" button of the projector and |  |  |  |
| Response | Acceptable                                     | [ACK] [CR]  |  |  |  |
| Response | Unacceptable                                   | " ? "[CR]   |  |  |  |

#### 6.13. AUDIO MUTE ON Command

| Command  | "C0B" [CR]   |  |
|----------|--------------|--|
| Detail   |              | N.<br>works the same way as "MUTE" button of the remote control for<br>loes not work for Mute OFF. |
| Response | Acceptable   | [ACK] [CR]   |
| Response | Unacceptable | " ? "[CR]  |

# 6.14. AUDIO MUTE OFF Command

| Command  | "C0C" [CR]   |  |
|----------|--------------|--|
| Detail   |              | FF.<br>works the same way as "MUTE" button of the remote control for<br>does not work for Mute ON. |
| Response | Acceptable   | [ACK] [CR]   |
| Пезропзе | Unacceptable | " ? "[CR]  |

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## 6.15. VIDEO MUTE ON Command

| Command  | "C0D"[CR]    |   |  |  |  |
|----------|--------------|---|--|--|--|
| Detail   | This command | Video Mute ON.<br>This command works the same way as "NO SHOW" button of the remote control<br>for No Show ON, but does not work for No Show OFF. |  |  |  |
| Response | Acceptable   | [ACK] [CR]  |  |  |  |
| Response | Unacceptable | " ? "[CR]   |  |  |  |

# 6.16. VIDEO MUTE OFF Command

| Command  | "C0E" [CR]   |  |  |  |  |
|----------|--------------|--|--|--|--|
| Detail   | This command | Video Mute OFF.<br>This command works the same way as "NO SHOW" button of remote control for<br>No Show OFF, but does not work for No Show ON. |  |  |  |
| Response | Acceptable   | [ACK] [CR]   |  |  |  |
| Response | Unacceptable | " ? "[CR]  |  |  |  |

# 6.17. Screen Normal size Command

| Command  | "C0F" [CR]   |   |  |  |  |
|----------|--------------|---|--|--|--|
| Detail   |              | et screen size to Normal (4:3).<br>his command is invalid while D.Zoom. |  |  |  |
| Response | Acceptable   | [ACK] [CR]  |  |  |  |
|          | Unacceptable | " ? "[CR]   |  |  |  |

#### 6.18. Screen Wide size Command

| Command  | "C10" [CR]   |  |  |  |  |
|----------|--------------|--|--|--|--|
| Detail   |              | et screen size to Wide (16:9).<br>his command is invalid while D.Zoom. |  |  |  |
| Response | Acceptable   | [ACK] [CR]   |  |  |  |
|          | Unacceptable | " ? "[CR]  |  |  |  |

## 6.19. Image Standard Command

| Command  | "C11" [CR]      | C11" [CR]     |  |  |  |
|----------|-----------------|---------------|--|--|--|
| Detail   | Set image to St | tandard mode. |  |  |  |
| Response | Acceptable      | [ACK] [CR]    |  |  |  |
|          | Unacceptable    | " ? "[CR]     |  |  |  |

# 6.20. Image Real Command

| Command  | "C12" [CR]     | C12" [CR]  |  |  |  |
|----------|----------------|------------|--|--|--|
| Detail   | Set image to R | eal mode.  |  |  |  |
| Response | Acceptable     | [ACK] [CR] |  |  |  |
|          | Unacceptable   | " ? "[CR]  |  |  |  |

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#### 6.21. Image Cinema Command

| Command  | "C13" [CR]     |             |
|----------|----------------|-------------|
| Detail   | Set image to C | inema mode. |
| Response | Acceptable     | [ACK] [CR]  |
|          | Unacceptable   | " ? "[CR]   |

# 6.22. Image1 Command

| Command  | "C14" [CR]      |             |
|----------|-----------------|-------------|
| Detail   | Set image to Im | nage1 mode. |
| Response | Acceptable      | [ACK] [CR]  |
|          | Unacceptable    | " ? "[CR]   |

#### 6.23. Image2 Command

| Command  | "C15" [CR]      |             |
|----------|-----------------|-------------|
| Detail   | Set image to In | nage2 mode. |
| Response | Acceptable      | [ACK] [CR]  |
|          | Unacceptable    | " ? "[CR]   |

# 6.24. Image3 Command

| Command  | "C16" [CR]      |             |  |
|----------|-----------------|-------------|--|
| Detail   | Set image to In | nage3 mode. |  |
| Response | Acceptable      | [ACK] [CR]  |  |
|          | Unacceptable    | " ? "[CR]   |  |

# 6.25. Image4 Command

| Command  | "C17" [CR]      |                           |  |
|----------|-----------------|---------------------------|--|
| Detail   | Set image to In | Set image to Image4 mode. |  |
| Response | Acceptable      | [ACK] [CR]                |  |
|          | Unacceptable    | " ? "[CR]                 |  |

## 6.26. Image Blackboard (Green) Command

| Command  | "C18" [CR]     |                         |
|----------|----------------|-------------------------|
| Detail   | Set image to B | lackboard (Green) mode. |
| Response | Acceptable     | [ACK] [CR]              |
|          | Unacceptable   | " ? "[CR]               |

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## 6.27. Image Dynamic Command

| Command  | "C19" [CR]      |             |  |
|----------|-----------------|-------------|--|
| Detail   | Set image to Dy | namic mode. |  |
| Response | Acceptable      | [ACK] [CR]  |  |
|          | Unacceptable    | " ? "[CR]   |  |

# 6.28. MENU ON Command

| Command  | "C1C" [CR]     |                   |
|----------|----------------|-------------------|
| Detail   | Display On-Scr | een Display Menu. |
| Response | Acceptable     | [ACK] [CR]        |
|          | Unacceptable   | " ? "[CR]         |

## 6.29. MENU OFF Command

| Command  | "C1D" [CR]    |                 |  |
|----------|---------------|-----------------|--|
| Detail   | Hide On-Scree | n Display Menu. |  |
| Response | Acceptable    | [ACK] [CR]      |  |
|          | Unacceptable  | " ? "[CR]       |  |

# 6.30. DISPLAY CLEAR Command

| Command  | "C1E" [CR]   |            |  |
|----------|--|------------|--|
| Detail   | Hide On-Screen Display.<br>Hide On-Screen Display unconditionally. |            |  |
| Response | Acceptable   | [ACK] [CR] |  |
|          | Unacceptable   | " ? "[CR]  |  |

#### 6.31. BRIGHTNESS + Command

| Command  | "C20" [CR]      |                  |  |
|----------|-----------------|------------------|--|
| Detail   | Brightness of U | lser Control +1. |  |
| Response | Acceptable      | [ACK] [CR]       |  |
|          | Unacceptable    | " ? "[CR]        |  |

# 6.32. BRIGHTNESS - Command

| Command  | "C21" [CR]                     |            |  |
|----------|--------------------------------|------------|--|
| Detail   | Brightness of User Control –1. |            |  |
| Response | Acceptable                     | [ACK] [CR] |  |
| Response | Unacceptable                   | " ? "[CR]  |  |

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#### 6.33. Computer 2 Component Command

| Command  | "C24"[CR]                            |            |  |
|----------|--------------------------------------|------------|--|
| Detail   | Select Component input in Computer2. |            |  |
| Response | Acceptable                           | [ACK] [CR] |  |
| Response | Unacceptable                         | " ? "[CR]  |  |

## 6.34. Computer 2 RGB Command

| Command  | "C25"[CR]                      |            |  |
|----------|--------------------------------|------------|--|
| Detail   | Select RGB input in Computer2. |            |  |
| Response | Acceptable                     | [ACK] [CR] |  |
| Response | Unacceptable                   | " ? "[CR]  |  |

## 6.35. Computer 2 SCART Command

| Command  | "C26"[CR]                        |            |  |
|----------|----------------------------------|------------|--|
| Detail   | Select Scart input in Computer2. |            |  |
| Response | Acceptable                       | [ACK] [CR] |  |
| Response | Unacceptable                     | " ? "[CR]  |  |

## 6.36. IMAGE (Toggle) Command

| Command                        | "C27"[CR]    |  |  |  |
|--------------------------------|--------------|--|--|--|
| Detail                         | 0            | Switch Image Setting status.<br>This command works the same way as "IMAGE" button of the remote control. |  |  |
| Response Acceptable [ACK] [CR] |              | [ACK] [CR]   |  |  |
| Response                       | Unacceptable | " ? "[CR]  |  |  |

## 6.37. ON START Setting Command

| Command  | "C28" [CR]   |            |  |
|----------|--|------------|--|
| Detail   | Enable Power ON Start.<br>This status is stored in EEPROM and retained regardless of Power OFF/ON. |            |  |
| Response | Acceptable   | [ACK] [CR] |  |
| Response | Unacceptable   | " ? "[CR]  |  |

#### 6.38. ON START Cancel Command

| Command  | "C29" [CR]  | "C29" [CR] |  |  |
|----------|---|------------|--|--|
| Detail   | Disable Power ON Start.<br>This status is stored in EEPROM and retained regardless of Power OFF/ON. |            |  |  |
| Response | Acceptable  | [ACK] [CR] |  |  |
| Response | Unacceptable  | " ? "[CR]  |  |  |

| - | - | -    | -     | -    |    |
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#### 6.39. Power Management Ready Command

| Command                        | "C2A" [CR]   | "C2A" [CR]  |  |  |
|--------------------------------|--------------|---|--|--|
| Detail                         |              | Set Power Management to Ready mode.<br>This status is stored in EEPROM and retained regardless of Power ON/OFF. |  |  |
| Response Acceptable [ACK] [CR] |              | [ACK] [CR]  |  |  |
| Response                       | Unacceptable | " ? "[CR]   |  |  |

#### 6.40. Power Management OFF Command

| Command                        | "C2B" [CR]   |   |  |  |
|--------------------------------|--------------|---|--|--|
| Detail                         |              | Set Power Management to OFF mode.<br>This status is stored in EEPROM and retained regardless of Power ON/OFF. |  |  |
| Response Acceptable [ACK] [CR] |              | [ACK] [CR]  |  |  |
| Response                       | Unacceptable | " ? "[CR]   |  |  |

## 6.41. Power Management Shut down Command

| Command  | "C2E" [CR]   |   |  |  |
|----------|--------------|---|--|--|
| Detail   |              | Set Power Management to Shut down mode.<br>This status is stored in EEPROM and retained regardless of Power OFF/ON. |  |  |
| Response | Acceptable   | [ACK] [CR]  |  |  |
| Response | Unacceptable | " ? "[CR]   |  |  |

## 6.42. D.ZOOM + Command

| Command  | "C30" [CR]   |            |  |
|----------|--|------------|--|
| Detail   | Enter Digital Zoom mode and expand image size.<br>This command works the same way as "D.ZOOM " button of the remote control. |            |  |
| Response | Acceptable   | [ACK] [CR] |  |
| Response | Unacceptable   | " ? "[CR]  |  |

#### 6.43. D.ZOOM – Command

| Command  | "C31" [CR]   |  |  |
|----------|--------------|--|--|
| Detail   | -            | Enter Digital Zoom mode and reduce image size.<br>This command works the same as "D.ZOOM " button of the remote control. |  |
| Response | Acceptable   | [ACK] [CR]   |  |
| Response | Unacceptable | " ? "[CR]  |  |

## 6.44. Video Auto Command

| Command  | "C32" [CR]                  |            |
|----------|-----------------------------|------------|
| Detail   | Select Auto input in Video. |            |
| Response | Acceptable                  | [ACK] [CR] |
|          | Unacceptable                | " ? "[CR]  |

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#### 6.45. Video Video Command

| Command  | "C33" [CR]      |                              |  |
|----------|-----------------|------------------------------|--|
| Detail   | Select Video in | Select Video input in Video. |  |
| Response | Acceptable      | [ACK] [CR]                   |  |
| Response | Unacceptable    | " ? "[CR]                    |  |

## 6.46. Video S-Video Command

| Command  | "C34" [CR]     |                                |  |
|----------|----------------|--------------------------------|--|
| Detail   | Select S-Video | Select S-Video input in Video. |  |
| Response | Acceptable     | [ACK] [CR]                     |  |
| Response | Unacceptable   | " ? "[CR]                      |  |

## 6.47. POINTER RIGHT Command

| Command  | "C3A" [CR]   | "C3A" [CR] |  |  |
|----------|--|------------|--|--|
| Detail   | Move the Pointer of On-Screen Display Menu to the right.<br>This command works differently from the pointer ">" of the projector and has no<br>function of Volume +. |            |  |  |
| Response | Acceptable   | [ACK] [CR] |  |  |
| Response | Unacceptable   | " ? "[CR]  |  |  |

#### 6.48. POINTER LEFT Command

| Command  | "C3B" [CR]   | "C3B" [CR] |  |
|----------|--|------------|--|
| Detail   | Move the Pointer of On-Screen Display Menu to the left.<br>This command works differently from the pointer "<" of the projector and has no function of Volume +. |            |  |
| Response | Acceptable   | [ACK] [CR] |  |
| Response | Unacceptable   | " ? "[CR]  |  |

## 6.49. POINTER UP Command

| Command  | "C3C" [CR]  |            |
|----------|---|------------|
| Detail   | Move up the Pointer of On-Screen Display Menu.<br>This command works the same way as the pointer "" of the projector. |            |
| Response | Acceptable  | [ACK] [CR] |
| Response | Unacceptable  | " ? "[CR]  |

#### 6.50. POINTER DOWN Command

| Command  | "C3D" [CR]  | "C3D" [CR] |  |  |
|----------|---|------------|--|--|
| Detail   | Move down the Pointer of On-Screen Display Menu.<br>This command works the same way as the pointer "" of the projector. |            |  |  |
| Response | Acceptable  | [ACK] [CR] |  |  |
| Response | Unacceptable  | " ? "[CR]  |  |  |

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#### 6.51. ENTER Command

| Command  | "C3F" [CR]  |            |  |
|----------|---|------------|--|
| Detail   | This command works the same way as "SELECT" button of the projector and remote control. |            |  |
| Response | Acceptable  | [ACK] [CR] |  |
| Response | Unacceptable  | " ? "[CR]  |  |

## 6.52. FREEZE ON Command

| Command  | "C43" [CR]  |            |  |
|----------|---|------------|--|
| Detail   | Freeze on-screen image.<br>This command works the same way as "FREEZE" button of the remote control for<br>Freeze ON, but does not work for Freeze OFF. |            |  |
| Response | Acceptable  | [ACK] [CR] |  |
| Response | Unacceptable  | " ? "[CR]  |  |

#### 6.53. FREEZE OFF Command

| Command  | "C44" [CR]  |            |  |
|----------|---|------------|--|
| Detail   | Cancel Freeze mode.<br>This command works the same way as "FREEZE" button of the remote control for<br>Freeze OFF, but does not work for Freeze ON. |            |  |
| Response | Acceptable  | [ACK] [CR] |  |
| Пезропзе | Unacceptable  | " ? "[CR]  |  |

# 6.54. Computer 1 Analog RGB Command

| Command  | "C50" [CR]                             |            |  |
|----------|--|------------|--|
| Detail   | Select Analog RGB in Computer 1 input. |            |  |
| Response | Acceptable                             | [ACK] [CR] |  |
|          | Unacceptable                           | " ? "[CR]  |  |

# 6.55. Computer 1 DVI (PC Digital) Command

| Command  | "C52" [CR]                                     |            |  |
|----------|--|------------|--|
| Detail   | Select DVI (PC Digital) in Computer 1 input 1. |            |  |
| Response | Acceptable                                     | [ACK] [CR] |  |
|          | Unacceptable                                   | " ? "[CR]  |  |

# 6.56. Computer 1 DVI (AV HDCP) Command

| Command  | "C53" [CR]                                |            |
|----------|---|------------|
| Detail   | Select DVI (AV HDCP) in Computer 1 input. |            |
| Response | Acceptable                                | [ACK] [CR] |
|          | Unacceptable                              | " ? "[CR]  |

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#### 6.57. PAGE UP Command

| Command  | "C59" [CR]  |            |  |
|----------|---|------------|--|
| Detail   | Send the signal "Page Up" to PC when PC is connected to projector by USB. |            |  |
| Response | Acceptable  | [ACK] [CR] |  |
|          | Unacceptable  | " ? "[CR]  |  |

# 6.58. PAGE DOWN Command

| Command  | "C5A" [CR]  |            |  |
|----------|---|------------|--|
| Detail   | Send the signal "Page Down" to PC when PC is connected to projector by USB. |            |  |
| Response | Acceptable  | [ACK] [CR] |  |
|          | Unacceptable  | " ? "[CR]  |  |

## 6.59. INPUT WIRED Command

| Command  | "C81" [CR]         |            |
|----------|--------------------|------------|
| Detail   | Select WIRED Input |            |
| Response | Acceptable         | [ACK] [CR] |
|          | Unacceptable       | " ? "[CR]  |

## 6.60. INPUT WIRELESS Command

| Command  | "C82" [CR]            |            |
|----------|-----------------------|------------|
| Detail   | Select WIRELESS Input |            |
| Response | Acceptable            | [ACK] [CR] |
|          | Unacceptable          | " ? "[CR]  |

#### 6.61. INPUT VIEWER Command

| Command  | "C83" [CR]          |            |
|----------|---------------------|------------|
| Detail   | Select VIEWER Input |            |
| Response | Acceptable          | [ACK] [CR] |
|          | Unacceptable        | " ? "[CR]  |

### 6.62. AUTO PC ADJ. Command

| Command  | "C89" [CR]  |            |  |
|----------|---|------------|--|
| Detail   | Execute Auto PC Adj. function.<br>This command works the same way as "AUTO PC ADJ." button of the remote<br>control.<br>Sending the command during Auto PC Adj. operation stops the operation. This is<br>the same operation as "AUTO PC" button of the remote control. |            |  |
| Response | Acceptable  | [ACK] [CR] |  |
| Response | Unacceptable  | " ? "[CR]  |  |

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|--|---|--|------|-------|------|----|

## 6.63. PRESENTATION TIMER Command

| Command  | "C8A" [CR]  | "C8A" [CR] |  |  |  |
|----------|---|------------|--|--|--|
| Detail   | Execute Presentation Timer.<br>This command works the same way as "P-TIMER" button of the remote control. |            |  |  |  |
| Response | Acceptable  | [ACK] [CR] |  |  |  |
| Response | Unacceptable  | " ? "[CR]  |  |  |  |

## 6.64. KEYSTONE Command

| Command  | "C8E" [CR]   |            |  |  |
|----------|--|------------|--|--|
| Detail   | Correct keystone distortion by reducing upper part of image. |            |  |  |
| Response | Acceptable   | [ACK] [CR] |  |  |
|          | Unacceptable   | " ? "[CR]  |  |  |

#### 6.65. KEYSTONE Command

| Command  | "C8F" [CR]   |            |  |  |
|--|--------------|------------|--|--|
| Detail Correct keystone distortion by reducing down part of image. |              |            |  |  |
| Response   | Acceptable   | [ACK] [CR] |  |  |
|  | Unacceptable | " ? "[CR]  |  |  |

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#### 7. Status Read Command

#### 7.1. Format

7.1.1. PC issues commands in format as below;

#### "CR" Command [CR]

Command : 1 character ( See Basic Status Read Command Table )

7.1.2. When a projector receives the appropriate command, it returns a character line as the

required data.

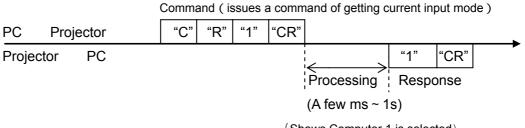
Required Data [CR]

Required Data : A character line ( See Basic Status Read Command Table )

7.1.3. When the received data cannot be decoded, the projector returns "?" [CR].

#### 7.2. Transfer Example

Get input mode for projector with basic commands



(Shows Computer 1 is selected)

| - |      |       | _    | -  |
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#### 7.3. Status Read Command

| Command  | "CR0" [CR]      | "CR0" [CR]  |  |  |  |  |  |
|----------|-----------------|---|--|--|--|--|--|
| Detail   | Get the project | Get the projector's operating status  |  |  |  |  |  |
|          | Acceptable      | "%1" [CR]   |  |  |  |  |  |
| Response | %1              | <ul> <li>"00" = Power ON</li> <li>"80" = Standby</li> <li>"40" = Countdown in process</li> <li>"20" = Cooling Down in process</li> <li>"10" = Power Failure</li> <li>"28" = Cooling Down in process due to Temperature Anomaly</li> <li>"88" = Coming back after Temperature Anomaly</li> <li>"24" = Power Save/Cooling Down in process</li> <li>"04" = Power Save</li> </ul> |  |  |  |  |  |
|          | Unacceptable    | "?" [CR]  |  |  |  |  |  |

#### [Details of Response]

# 7.3.1. "00" [CR]

Status : Power ON

Normal image is on the screen.

#### 7.3.2. "80" [CR]

Status: Standby

When the status is Standby, Status Read Commands are always acceptable, but Functional Execution Commands are not acceptable except POWER ON Command.

#### 7.3.3. "40" [CR]

Status: Countdown in process

When "Display" in Setting Menu is ON and POWER ON is executed, it starts Countdown.

When "Display" in Setting Menu is OFF, processing Countdown is not executed and the status quickly moves to Power ON.

#### 7.3.4. "20" [CR]

Status: Cooling Down in process

When the status is Power ON, and POWER OFF Command ("C01"[CR]) is executed, it moves to Cooling Down status.

This status automatically moves to Standby after lamp turns off and the fan spin finishes after about 90 seconds. The fan spin time depends on a model.

This function is used to cool down the lamps and other optical parts and is quite important for projector's reliability.

During this time, Functional Execution Commands are invalid.

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#### 7.3.5. "10" [CR]

Status: Power Failure

When the power supply voltage inside the projector reaches abnormal status, the projector is automatically turned off. The projector returns "10"[CR], which shows it moves to Power OFF status due to power failure. Fan also stops unlike Cooling Down status.

#### 7.3.6. "28" [CR]

Status: Cooling Down in process due to Temperature Anomaly

When the inside temperature is out of the operating temperature, it automatically starts Cooling Down. Response for this status is "28"[CR].

Even if the temperature decreases during this process, Cooling Down is executed.

#### 7.3.7. "88"[CR]

Status: Coming back after temperature anomaly

When the status moves to Standby after Cooling Down due to temperature anomaly, it returns "88" [CR].

This shows that the status turns to Standby because of abnormal temperature.

This status maintains until next operation is done. When Power On is executed, the information of temperature anomaly is canceled and normal operation is executed.

#### 7.3.8. "24"[CR]

Status: Processing Power Save / Cooling Down

Power management function in Setting menu works and the status goes to Power Save / Cooling Down.

During this time, Functional Execution Commands are invalid (not executed).

This status moves to Power Save at set hours after the operation of Cooling Down.

| Status: No signal | Power Save / Cooling Down | Power Save         |
|-------------------|---------------------------|--------------------|
| Response∶ "00"    | "24"                      | "04"               |
| 5 minutes v       | vith no signal After a    | T<br>about 90 sec. |

#### 7.3.9. "04"[CR]

Status: Power Save

This shows that it moves to Power Save status by Power management function in Setting menu.

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# 7.4. Input Mode Read Command

| Command  | "CR1" [CR]                 |   |  |  |  |  |
|----------|----------------------------|---|--|--|--|--|
| Detail   | Get the selected Input No. |   |  |  |  |  |
|          | Acceptable                 | "%1" [CR]   |  |  |  |  |
| Response | %1                         | "1" = Computer 1 is selected<br>"2" = Computer 2 is selected<br>"3" = Video is selected<br>"4" = Wired is selected<br>"5" = Wireless/Viewer is selected |  |  |  |  |
|          | Unacceptable               | "?" [CR]  |  |  |  |  |

# 7.5. Lamp Time Read Command

| Command  | "CR3" [CR]  | "CR3" [CR]   |  |  |  |  |
|----------|---|--|--|--|--|--|
| Detail   | Get the total lamp running hours (corresponding value). |  |  |  |  |  |
|          | Acceptable  | "%1" [CR]  |  |  |  |  |
| Response | %1  | Shows the time period with 5 digits numbers.<br>Example: "00410"[CR] ····shows 410 hours |  |  |  |  |
|          | Unacceptable  | "?" [CR]   |  |  |  |  |

# 7.6. Setting Read Command

| Command  | "CR4" [CR]  |  |  |  |  |
|----------|---|--|--|--|--|
| Detail   | Get the screen setting status such as Ceiling / Rear. |  |  |  |  |
| Response | Acceptable  | "%1" [CR]  |  |  |  |
|          | %1  | "11"[CR] = Normal Screen Setting<br>"10"[CR] = Picture is top/bottom reversed.<br>(Status: Rear & Ceiling ON)<br>"01"[CR] = Picture is left/right reversed. (Status: Rear ON)<br>"00"[CR] = Picture is top/bottom and left/right reversed.<br>(Status: Ceiling ON) |  |  |  |
|          | Unacceptable  | "?" [CR]   |  |  |  |

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# 7.7. Temp Read Command

| Command  | "CR6" [CR]  |  |  |  |  |
|----------|---|--|--|--|--|
| Detail   | Get the temperature data inside the projector.<br>With some temperature sensors installed in the projector, it is possible to get all<br>the temperature at once. |  |  |  |  |
|          | Acceptable  | "%1_%2_%3" [CR]  |  |  |  |
| Response | %1<br>%2<br>%3  | %1 = Temperature of sensor 1<br>%2 = Temperature of sensor 2<br>%3 = Temperature of sensor 3<br>Temperature data is shown as "00.0".<br>When the temperature goes down to -, the first character<br>becomes "-" instead of a space, like "-05.5" [CR].<br>When no temperature data can be returned due to hardware<br>problems, the first character becomes "E" like"E00.0" [CR].<br>When several temperature sensors are equipped, Responses are<br>returned continuously.<br>"_31.535.233.4"[CR]<br>The first data is sensor 1, then one space, and the data of sensor<br>2 follows. |  |  |  |
|          | Unacceptable  | " ? "[CR]  |  |  |  |

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