

# **BASIC SERIAL COMMAND SPECIFICATIONS**

**EIKI**

**LC-XGC500AL**

**Ver.1.00**

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## 1. Overview

- These specifications define projector control commands for LC-XGC500AL.
- The projector control commands are used to control a projector through RS-232C from a computer.

## 2. Serial Interface Specification

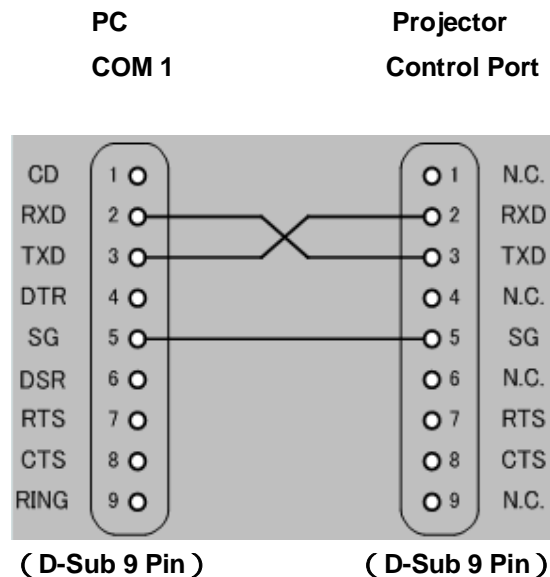
### 2.1. Transfer Specification

| Item               | Specification |
|--------------------|---------------|
| Synchronous system | Asynchronous  |
| Transmission Speed | 9600 / 19200  |
| Data Length        | 8 bits        |
| Parity             | None          |
| Stop Bit           | 1             |
| Flow Control       | None          |

- 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 the connection between computer and projector.



### 3. Notes for Communication

- The projector command is defined as one command per line that starts with "C" and ends with carriage return (0x0D).
- When carriage return (0x0D) is received, decoding starts.
- There are two types of commands; Functional Execution Commands which function in a way comparable to remote and console keys and Status Read Commands which get basic statuses of projector.

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

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

- In the cases below, it clears information of receive buffer.
  - 1) When LF (0x0A) and EOF (0x1A) are received
  - 2) When it takes more than a second to receive one command (until the projector receives carriage return since it has received the first data)
- or the pipelining of Functional Execution Command, allow the following interval time after receiving return value.
  - 1) Commands "VOLUME +/-", "ZOOM UP/DOWN", "FOCUS UP/DOWN" and "LENS-SHIFT UP/DOWN/RIGHT" --> 100ms
  - 2) Other commands --> 500ms
- For the pipelining of Status Read Command, allow more than 500 ms of interval time after reception of return value.
- Do not send any subsequent command before reception of return value; however this is not the case when no response is returned after more than 5 seconds.
- It takes about 7 seconds for internal initialization after plugging in AC power. During this time, it cannot process commands. Do not issue any command.
- During 7 seconds after powering on in Standby mode, when the command for internal initialization or lamp lighting is received, ACK value is returned but the function is not executed. However, for Status Read Command, the function is executed in 500 ms after receiving ACK value for POWER ON command.
- During countdown and cooling operations:

During countdown operation after execution of power-on, as well as during cooling operation after execution of power-off, ACK value is returned but the function is not executed when command is received.
- On switching INPUT:

During 5 seconds after switching action has started in response to reception of INPUT switching command, ACK value is returned but the function is not executed when command is received. However, for Status Read Command, the function is executed in 500 ms after receiving ACK value for INPUT switching command.
- The number of characters indicating successful reception of command varies according to the command. Please see [7. Status Read Command].
- Characters used for commands must be Capital (A - Z).

## 4. Functional Execution Command Table

| Command | Item                        | Command | Item                       |
|---------|-----------------------------|---------|----------------------------|
| C00     | POWER ON                    | C20     | BRIGHTNESS +               |
| C01     | POWER OFF (QUICK POWER OFF) | C21     | BRIGHTNESS -               |
| C02     | POWER OFF                   | C22     | ---                        |
| C03     | ---                         | C23     | INPUT 2 VIDEO              |
| C04     | ---                         | C24     | INPUT 2 Y,Pb/Cb,Pr/Cr      |
| C05     | INPUT 1                     | C25     | INPUT 2 RGB                |
| C06     | INPUT 2                     | C26     | ---                        |
| C07     | INPUT 3                     | C27     | IMAGE                      |
| C08     | NETWORK                     | C28     | ON START Enable            |
| C09     | VOLUME +                    | C29     | ON START Disable           |
| C0A     | VOLUME -                    | C2A     | POWER MANAGEMENT READY     |
| C0B     | SOUND MUTE ON               | C2B     | POWER MANAGEMENT OFF       |
| C0C     | SOUND MUTE OFF              | C2C     | ---                        |
| C0D     | 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     | ---                         | C31     | D.ZOOM -                   |
| C12     | ---                         | C32     | ---                        |
| C13     | ---                         | C33     | INPUT 3 VIDEO              |
| C14     | ---                         | C34     | INPUT 3 S-VIDEO            |
| C15     | ---                         | C35     | ---                        |
| C16     | ---                         | C36     | ---                        |
| C17     | ---                         | C37     | ---                        |
| C18     | ---                         | C38     | ---                        |
| C19     | ---                         | 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”.

## LC-XGC500AL Basic Serial Command Functional Specifications

| Command | Item                     | Command | Item               |
|---------|--------------------------|---------|--------------------|
| C40     | ---                      | C80     | ---                |
| C41     | ---                      | C81     | ---                |
| C42     | ---                      | C82     | ---                |
| C43     | FREEZE ON                | C83     | ---                |
| C44     | FREEZE OFF               | C84     | ---                |
| C45     | ---                      | C85     | ---                |
| C46     | ZOOM -                   | C86     | ---                |
| C47     | ZOOM +                   | C87     | ---                |
| C48     | ---                      | C88     | ---                |
| C49     | ---                      | C89     | AUTO PC ADJ        |
| C4A     | FOCUS -                  | C8A     | PRESENTATION TIMER |
| C4B     | FOCUS +                  | C8B     | ---                |
| C4C     | ---                      | C8C     | ---                |
| C4D     | ---                      | C8D     | ---                |
| C4E     | ---                      | C8E     | KEYSTONE ↑         |
| C4F     | ---                      | C8F     | KEYSTONE ↓         |
| C50     | INPUT 1 ANALOG RGB       | C90     | KEYSTONE →         |
| C51     | INPUT 1 SCART            | C91     | KEYSTONE ←         |
| C52     | INPUT 1 DVI (PC DIGITAL) | C92     | ---                |
| C53     | INPUT 1 DVI (AV HDCP)    | C93     | ---                |
| C54     | ---                      | C94     | ---                |
| C55     | ---                      | C95     | ---                |
| C56     | ---                      | C96     | ---                |
| C57     | ---                      | C97     | ---                |
| C58     | ---                      | C98     | ---                |
| C59     | ---                      | C99     | ---                |
| C5A     | ---                      | C9A     | ---                |
| C5B     | ---                      | C9B     | ---                |
| C5C     | ---                      | C9C     | ---                |
| C5D     | Lens Shift Up            | C9D     | ---                |
| C5E     | Lens Shift Down          | C9E     | ---                |
| C5F     | Lens Shift Left          | C9F     | ---                |
| C60     | Lens Shift Right         |         |                    |

“---” means “No Function”

### 5. Status Read Command Table

| Command | Item            | Note |
|---------|-----------------|------|
| CR0     | STATUS READ     |      |
| CR1     | INPUT MODE READ |      |
| CR2     | ---             |      |
| CR3     | LAMP TIME READ  |      |
| CR4     | SETTING READ    |      |
| CR5     | ---             |      |
| CR6     | TEMP READ       |      |
| CR7     | LAMP MODE READ  |      |
| CRC     | ---             |      |

“---” means “No Function”.



## 6. Functional Execution Command

### 6.1 Format

- PC issues a command in the following format:

**"C" Command [CR]**

Command: two characters (See Functional Execution Command Table)

- Projector decodes the received data and returns the result when getting ready to receive the next command.

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

- When received data cannot be decoded, **"?" [CR]** is returned.

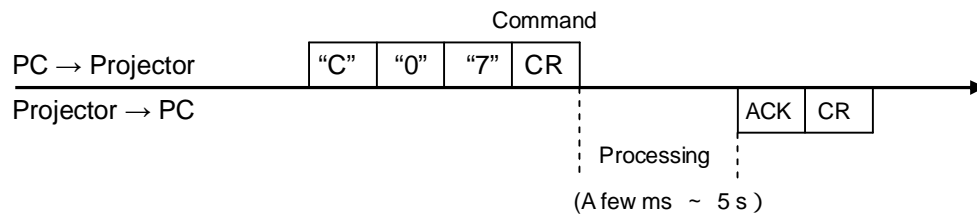
### 6.2 When the command pipelining is needed

In the case of the function requiring command pipelining, such as "Volume +/-" and "Zoom +/-", operation should follow the same way as in remote control:

- 1) Sending-side system issues commands every 100 ms after receiving the return value.
- 2) When receiving an applicable command, the function is executed for 120 ms from the moment.
- 3) When receiving the same command in sequence within 120 ms, the function is executed for another 120 ms from the moment of the second command reception.
- 4) When any other command is not received after 120 ms, the execution of pipelining is stopped.
- 5) When Projector receives another command within 120 ms, the execution of pipelining is stopped.

### 6.3 Transfer Example

Change Projector mode to Video with Basic Command.



## 6.4 Operation Requirements

In the following status of projector, Available Functional Execution Commands are limited.

| Projector Status  | Available Functional Execution Commands   |
|---|---|
| Standby Mode  | C00: POWER ON   |
| Countdown in process  | C00: POWER ON → Countdown is terminated<br>C01: POWER OFF<br>C02: POWER OFF → Countdown is terminated<br>C46: ZOOM -<br>C47: ZOOM +<br>C4A: FOCUS -<br>C4B: FOCUS +<br>C5D: LENS SHIFT UP<br>C5E: LENS SHIFT DOWN<br>C5F: LENS SHIFT LEFT<br>C60: LENS SHIFT RIGHT<br><br>When ZOOM+/-, FOCUS +/-, LENS SHIFTUP/DOWN/LEFT/RIGHT are executed during Countdown is in process, POINTER Command become effective, and ZOOM/FOCUS/LENS SHIFT become enable to control by POINTER Command.<br>(*POINTER Command: C3A/CA3B/C3C/C3D) |
| Cooling Down in process   | NONE (No Execution)   |
| Cooling Down due to Abnormal Temperature                        | NONE (No Execution)   |
| Abnormal Temperature Status                                     | NONE (No Execution)   |
| Abnormal Power Status   | NONE (No Execution)   |
| Abnormal Filter Status  | NONE (No Execution)   |
| Power-Save Cooling Down in process                              | NONE (No Execution)   |
| Power Save Status   | C00: POWER ON<br>C01: POWER OFF   |
| Cooling Down in process after OFF operation due to Lamp Failure | NONE (No Execution)   |

Note) in above status, the projector returns **[ACK] [CR]** even if it receives the other command.

**6.5 POWER ON Command**

|          |   |            |
|----------|---|------------|
| Command  | "C00" [CR]  |            |
| Detail   | Power ON<br>When already Power is ON, no operation is started.<br>When sending this command during Countdown in process, Countdown is terminated. |            |
| Response | Acceptable  | [ACK] [CR] |
|          | Unacceptable  | "?" [CR]   |

**6.6 POWER OFF Command (Quick POWER OFF)**

|          |   |            |
|----------|---|------------|
| Command  | "C01" [CR]  |            |
| Detail   | Power OFF (Standby)<br>This command executes Quick Power OFF operation without displaying "Power OFF?" message, which is displayed when Power is turned OFF with button of the projector or remote control. |            |
| Response | Acceptable  | [ACK] [CR] |
|          | Unacceptable  | "?" [CR]   |

**6.7 POWER OFF Command**

|          |   |            |
|----------|---|------------|
| Command  | "C02" [CR]  |            |
| Detail   | Power OFF (Standby)<br>This command works the same way as when Power is OFF with STAND-BY button of the remote control.<br>(When the command is sent once, "Power OFF?" message is displayed. If this command is sent again while "Power OFF?" message is displayed, Power OFF operation is executed.)<br>When sending this command during Countdown in process, Countdown is terminated. |            |
| Response | Acceptable  | [ACK] [CR] |
|          | Unacceptable  | "?" [CR]   |

**6.8 INPUT 1 Command**

|          |  |            |
|----------|--|------------|
| Command  | "C05" [CR]   |            |
| Detail   | Select Input 1. This command works differently from the command by "Input 1" key of the remote control. When Input 1 has been already selected, this command does not execute the source switching; just for switching to Input 1. |            |
| Response | Acceptable   | [ACK] [CR] |
|          | Unacceptable   | "?" [CR]   |

**6.9 INPUT 2 Command**

|          |  |            |
|----------|--|------------|
| Command  | "C06" [CR]   |            |
| Detail   | Select Input 2. This command works differently from the command by "Input 2" key of the remote control. When Input 2 has been selected, this command does not execute the source switching; just for switching to Input 2. |            |
| Response | Acceptable   | [ACK] [CR] |
|          | Unacceptable   | "?" [CR]   |

**6.10 INPUT 3 Command**

|          |  |            |
|----------|--|------------|
| Command  | "C07" [CR]   |            |
| Detail   | Select Input 3. This command works differently from the command by "Input 3" key of the remote control. When Input 3 has been selected, this command does not execute the source switching; just for switching to Input 3. |            |
| Response | Acceptable   | [ACK] [CR] |
|          | Unacceptable   | "?" [CR]   |

**6.11 NETWORK Command**

|          |                      |            |
|----------|----------------------|------------|
| Command  | "C08" [CR]           |            |
| Detail   | Select Network Input |            |
| Response | Acceptable           | [ACK] [CR] |
|          | Unacceptable         | "?" [CR]   |

**6.12 VOLUME + Command**

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

**6.13 VOLUME – Command**

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

**6.14 SOUND MUTE ON Command**

|          |   |            |
|----------|---|------------|
| Command  | "C0B" [CR]  |            |
| Detail   | Sound Mute ON.<br>This command works the same way as "MUTE" button of the remote control for Mute ON, but does not work for Mute OFF. |            |
| Response | Acceptable  | [ACK] [CR] |
|          | Unacceptable  | " ? "[CR]  |

**6.15 SOUND MUTE OFF Command**

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

**6.16 VIDEO MUTE ON Command**

|          |  |            |
|----------|--|------------|
| Command  | "C0D" [CR]   |            |
| Detail   | Video Mute ON<br>This command works the same way as "SHUTTER" button of the remote control for SHUTTER CLOSE, but does not work for SHUTTER OPEN |            |
| Response | Acceptable   | [ACK] [CR] |
|          | Unacceptable   | "?" [CR]   |

**6.17 VIDEO MUTE OFF Command**

|          |   |            |
|----------|---|------------|
| Command  | "C0E" [CR]  |            |
| Detail   | Video Mute OFF<br>This command works the same way as "SHUTTER" button of remote control for SHUTTER OPEN, but does not work for SHUTTER CLOSE |            |
| Response | Acceptable  | [ACK] [CR] |
|          | Unacceptable  | "?" [CR]   |

**6.18 SCREEN NORMAL SIZE Command**

|          |                                 |            |
|----------|---------------------------------|------------|
| Command  | "C0F" [CR]                      |            |
| Detail   | Set screen size to Normal (4:3) |            |
| Response | Acceptable                      | [ACK] [CR] |
|          | Unacceptable                    | "?" [CR]   |

**6.19 SCREEN WIDE SIZE Command**

|          |                                |            |
|----------|--------------------------------|------------|
| Command  | "C10" [CR]                     |            |
| Detail   | Set screen size to Wide (16:9) |            |
| Response | Acceptable                     | [ACK] [CR] |
|          | Unacceptable                   | "?" [CR]   |

**6.20 MENU ON Command**

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

**6.21 MENU OFF Command**

|          |                              |            |
|----------|------------------------------|------------|
| Command  | "C1D" [CR]                   |            |
| Detail   | Clear On-Screen Display Menu |            |
| Response | Acceptable                   | [ACK] [CR] |
|          | Unacceptable                 | "?" [CR]   |

**6.22 DISPLAY CLEAR Command**

|          |  |            |
|----------|--|------------|
| Command  | "C1E" [CR]                                   |            |
| Detail   | Clear On-screen Display under all conditions |            |
| Response | Acceptable                                   | [ACK] [CR] |
|          | Unacceptable                                 | "?" [CR]   |

**6.23 BRIGHTNESS + Command**

|          |  |            |
|----------|--|------------|
| Command  | "C20" [CR]   |            |
| Detail   | Increment Brightness by 1 according to user control. |            |
| Response | Acceptable   | [ACK] [CR] |
|          | Unacceptable   | "?" [CR]   |

**6.24 BRIGHTNESS - Command**

|          |  |            |
|----------|--|------------|
| Command  | "C21" [CR]   |            |
| Detail   | Decrement Brightness by 1 according to user control. |            |
| Response | Acceptable   | [ACK] [CR] |
|          | Unacceptable   | "?" [CR]   |

**6.25 INPUT 2 VIDEO Command**

|          |                               |            |
|----------|-------------------------------|------------|
| Command  | "C23" [CR]                    |            |
| Detail   | Select Video input in Input 2 |            |
| Response | Acceptable                    | [ACK] [CR] |
|          | Unacceptable                  | "?" [CR]   |

**6.26 INPUT 2 Y,Pb/Cb,Pr/Cr Command**

|          |   |            |
|----------|---|------------|
| Command  | "C24" [CR]                              |            |
| Detail   | Select Y, Pb/Cb, Pr/Cr input in Input 2 |            |
| Response | Acceptable                              | [ACK] [CR] |
|          | Unacceptable                            | "?" [CR]   |

**6.27 INPUT 2 RGB Command**

|          |                             |            |
|----------|-----------------------------|------------|
| Command  | "C25" [CR]                  |            |
| Detail   | Select RGB input in Input 2 |            |
| Response | Acceptable                  | [ACK] [CR] |
|          | Unacceptable                | "?" [CR]   |

**6.28 IMAGE Command**

|          |   |            |
|----------|---|------------|
| Command  | "C27" [CR]  |            |
| Detail   | Switch Image Setting status. Previous Image mode is displayed for 4 seconds by receiving first command. Image Mode gets switched by receiving another command while the display is on the screen. |            |
| Response | Acceptable  | [ACK] [CR] |
|          | Unacceptable  | "?" [CR]   |

**6.29 ON START SET Command**

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

**6.30 ON START CANCEL Command**

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

**6.31 POWER MANAGEMENT READY Command**

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

**6.32 POWER MANAGEMENT CANCEL Command**

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

**6.33 POWER MANAGEMENT SHUTDOWN Command**

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

**6.34 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] |
|          | Unacceptable   | "?" [CR]   |

**6.35 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] |
|          | Unacceptable   | "?" [CR]   |

**6.36 INPUT 3 VIDEO Command**

|          |                               |            |
|----------|-------------------------------|------------|
| Command  | "C33" [CR]                    |            |
| Detail   | Select Video input in Input 3 |            |
| Response | Acceptable                    | [ACK] [CR] |
|          | Unacceptable                  | "?" [CR]   |

**6.37 INPUT 3 S-VIDEO Command**

|          |                                 |            |
|----------|---------------------------------|------------|
| Command  | "C34" [CR]                      |            |
| Detail   | Select S-Video input in Input 3 |            |
| Response | Acceptable                      | [ACK] [CR] |
|          | Unacceptable                    | "?" [CR]   |

**6.38 POINTER RIGHT Command**

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

**6.39 POINTER LEFT Command**

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

**6.40 POINTER UP Command**

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



**6.41 POINTER DOWN Command**

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

**6.42 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] |
|          | Unacceptable  | "?" [CR]   |

**6.43 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 Freeze ON, but does not work for Freeze OFF. |            |
| Response | Acceptable  | [ACK] [CR] |
|          | Unacceptable  | "?" [CR]   |

**6.44 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 Freeze Off, but does not work for Freeze ON. |            |
| Response | Acceptable  | [ACK] [CR] |
|          | Unacceptable  | "?" [CR]   |

**6.45 ZOOM + Command**

|          |  |            |
|----------|--|------------|
| Command  | "C47" [CR]   |            |
| Detail   | Expand image size<br>This command works the same way as "ZOOM ▲" button of the remote control. |            |
| Response | Acceptable   | [ACK] [CR] |
|          | Unacceptable   | "?" [CR]   |

**6.46 ZOOM - Command**

|          |  |            |
|----------|--|------------|
| Command  | "C46" [CR]   |            |
| Detail   | Reduce image size<br>This command works the same way as "ZOOM ▼" button of the remote control. |            |
| Response | Acceptable   | [ACK] [CR] |
|          | Unacceptable   | "?" [CR]   |

**6.47 FOCUS + Command**

|          |   |            |
|----------|---|------------|
| Command  | "C4B" [CR]  |            |
| Detail   | Adjust on-screen focus by making focal length longer. (The lens moves backward)<br>This command works the same way as "FOCUS ▲" button of the remote control. |            |
| Response | Acceptable  | [ACK] [CR] |
|          | Unacceptable  | "?" [CR]   |

**6.48 FOCUS - Command**

|          |   |            |
|----------|---|------------|
| Command  | "C4A" [CR]  |            |
| Detail   | Adjust on-screen focus by making focal length shorter. (The lens moves forward)<br>This command works the same way as "FOCUS ▼" button of the remote control. |            |
| Response | Acceptable  | [ACK] [CR] |
|          | Unacceptable  | "?" [CR]   |

**6.49 INPUT 1 ANALOG RGB Command**

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

**6.50 INPUT 1 SCART Command**

|          |                               |            |
|----------|-------------------------------|------------|
| Command  | "C51" [CR]                    |            |
| Detail   | Select SCART input in Input 1 |            |
| Response | Acceptable                    | [ACK] [CR] |
|          | Unacceptable                  | "?" [CR]   |

**6.51 INPUT 1 DVI (PC DIGITAL) Command**

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

**6.52 INPUT 1 DVI (AV HDCP) Command**

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

**6.53 LENS SHIFT UP Command**

|          |                              |            |
|----------|------------------------------|------------|
| Command  | "C5D" [CR]                   |            |
| Detail   | Move projection area upward. |            |
| Response | Acceptable                   | [ACK] [CR] |
|          | Unacceptable                 | "?" [CR]   |

**6.54 LENS SHIFT DOWN Command**

|          |                                |            |
|----------|--------------------------------|------------|
| Command  | "C5E" [CR]                     |            |
| Detail   | Move projection area downward. |            |
| Response | Acceptable                     | [ACK] [CR] |
|          | Unacceptable                   | "?" [CR]   |

**6.55 LENS SHIFT LEFT Command**

|          |                                |            |
|----------|--------------------------------|------------|
| Command  | "C5F" [CR]                     |            |
| Detail   | Move projection area leftward. |            |
| Response | Acceptable                     | [ACK] [CR] |
|          | Unacceptable                   | "?" [CR]   |

**6.56 LENS SHIFT RIGHT Command**

|          |                                 |            |
|----------|---------------------------------|------------|
| Command  | "C60" [CR]                      |            |
| Detail   | Move projection area rightward. |            |
| Response | Acceptable                      | [ACK] [CR] |
|          | Unacceptable                    | "?" [CR]   |

**6.57 AUTO PC ADJ. Command**

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

**6.58 PRESENTATION TIMER Command**

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

**6.59 KEYSTONE ↑ Command**

|          |  |            |
|----------|--|------------|
| Command  | "C8E" [CR]   |            |
| Detail   | Correct keystone distortion by reducing upper part of image. This command invokes both operations of keystone distortion correction and OSD display, regardless of whether the "KEYSTONE" OSD has been already displayed or not. |            |
| Response | Acceptable   | [ACK] [CR] |
|          | Unacceptable   | "?" [CR]   |

**6.60 KEYSTONE ↓ Command**

|          |  |            |
|----------|--|------------|
| Command  | "C8F" [CR]   |            |
| Detail   | Correct keystone distortion by reducing lower part of image. This command invokes both operations of keystone distortion correction and OSD display, regardless of whether the "KEYSTONE" OSD has been already displayed or not. |            |
| Response | Acceptable   | [ACK] [CR] |
|          | Unacceptable   | "?" [CR]   |

**6.61 KEYSTONE → Command**

|          |  |            |
|----------|--|------------|
| Command  | "C90" [CR]   |            |
| Detail   | Correct keystone distortion by reducing right part of image. This command invokes both operations of keystone distortion correction and OSD display, regardless of whether the "KEYSTONE" OSD has been already displayed or not. |            |
| Response | Acceptable   | [ACK] [CR] |
|          | Unacceptable   | "?" [CR]   |

**6.62 KEYSTONE ← Command**

|          |   |            |
|----------|---|------------|
| Command  | "C91" [CR]  |            |
| Detail   | Correct keystone distortion by reducing left part of image. This command invokes both operations of keystone distortion correction and OSD display, regardless of whether the "KEYSTONE" OSD has been already displayed or not. |            |
| Response | Acceptable  | [ACK] [CR] |
|          | Unacceptable  | "?" [CR]   |

## 7 Status Read Command

### 7.1 Format

- PC issues a command in the following format.

**"CR"** **Command** **[CR]**

Command: one character (See Status Read Command Table)

- When projector receives an appropriate command, it returns the required data in string.

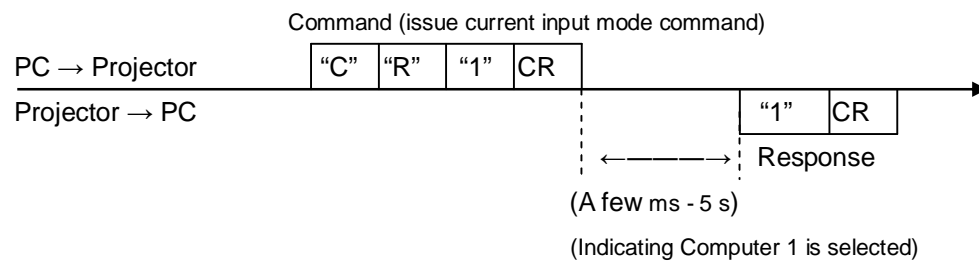
**Required Data** **[CR]**

Required Data: string (See Status Read Command Table)

- When the received data cannot be decoded, the projector returns "?" **[CR]** is returned.

### 7.2 Transfer Example

Getting Input mode information of projector by basic commands.



### 7.3 Operation Requirements

Status Read commands are invalid when the projector is in standby under Eco mode.

## 7.4 Status Read Command

|          |                                      |   |
|----------|--------------------------------------|---|
| Command  | "CR0" [CR]                           |   |
| Detail   | Get the projector's operating status |   |
| Response | Acceptable                           | "%1" [CR]   |
|          | %1                                   | "00" = Power ON<br>"80" = Standby<br>"40" = Countdown in process<br>"20" = Cooling Down in process<br>"10" = Power Failure<br>"28" = Cooling Down in process due to Abnormal Temperature<br>"88" = Standby after Cooling Down due to Abnormal Temperature<br>"24" = Power-Save Cooling Down in process<br>"04" = Power Save<br>"21" = Cooling Down in process after OFF due to Lamp Failure<br>"81" = Standby after Cooling Down due to Lamp Failure<br>"2C" = Cooling Down in process after Power Off due to Shutter management<br>"8C" = Standby after Cooling Down due to Shutter management |
|          | Unacceptable                         | "?" [CR]  |

### 【Details for Response】

- **"00" [CR]**

Status: Power ON

Normal image is on-screen.

- **"80" [CR]**

Status: Standby

When the status is Standby, Status Read Commands are always accepted, but any Functional Execution Commands are not accepted except for POWER ON command.

- **"40" [CR]**

Status: Countdown in process

When "Display" in Setting Menu is set to ON, Countdown operation is started by execution of POWER ON; while "Display" in Setting Menu is set to OFF, the status moves directly to Power ON without Countdown operation.

- **"20" [CR]**

Status: Cooling Down in process

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

When lamp turns off and about 90 seconds of fan spinning finishes, the above status automatically moves to Standby (The fan spinning time depends on models.)

This function is intended to cool down lamps and other optical parts, and is quite important for projector's reliability. During this time, any Functional Execution Command is invalid.

- **“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 indicates it enters Power OFF status due to Power Failure. In this case Fan also stops unlike Cooling Down status.

Abnormal power supply voltage includes;

- Filter abnormal status /
- Shutter abnormal status

- **“28” [CR]**

Status: Cooling Down in process due to Abnormal Temperature

When the inside temperature rises abnormally high, it automatically starts Cooling Down operation. The projector returns “28” [CR].

Even if the temperature goes down during this process, the given Cooling Down process is conducted.

- **“88” [CR]**

Status: Standby after Cooling Down due to Abnormal Temperature

When the status becomes Standby after the temperature goes down by Cooling Down operation invoked due to Abnormal Temperature, the projector returns “88” [CR]. This indicates Abnormal Temperature caused turning to Standby status.

This status continues until the next operation is started; when Power On is executed, the projector clears the information of Abnormal Temperature and normal operation starts.

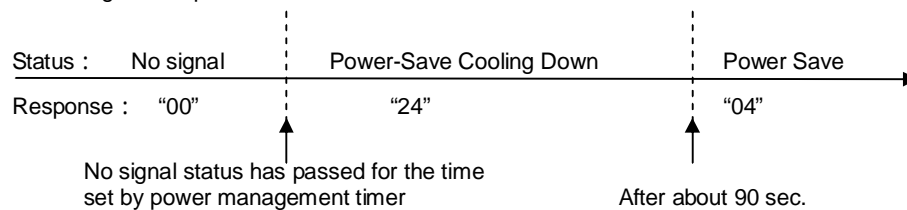
- **“24” [CR]**

Status: Power-Save Cooling Down in process

This indicates Power Management in the Setting menu is enabled and Power-Save Cooling Down operation is in process.

During this time, any Functional Execution Command is invalid.

In this Power-Save Cooling Down function, the status moves to Power Save after the given Cooling down operation.



- **“04” [CR]**

Status: Power Save

This indicates it moves to Power-Save status by Power Management function as set in the Setting menu.

- **“21” [CR]**

Status: Cooling Down in process after OFF due to Lamp Failure

When the projector is turned off due to lamp failure, it automatically starts Cooling Down operation. The projector returns “21” [CR]. “21” [CR] has been kept during Cooling Down operation.

- **“81” [CR]**

Status: Standby after Cooling Down due to Lamp Failure

The projector has recovered from Lamp Failure status. When the projector enters Standby status after Cooling Down operation invoked due to lamp failure, it returns “81”. This indicates the status turns to Standby due to lamp failure. This status continues until the next operation is started; when Power On is executed, the projector clears the information of Lamp Failure and normal operation starts.

- **“2C” [CR]**

Status: Cooling Down in process due to Shutter management function

This indicates it has moved to Cooling down status according to the setting of Shutter Management function in setting menu. During this time, Functional Execution Commands are not accepted.

- **“8C” [CR]**

Status: Standby after Cooling Down due to Shutter management function.

This value is returned when Cooling Down operation due to Shutter management has been completed and the status has been moved to Standby. The status is kept until the next operation starts. When projector is turned on again, it cancels the last status and starts normal operation.



**7.5 Input Mode Read Command**

|          |                                  |  |
|----------|----------------------------------|--|
| Command  | "CR1" [CR]                       |  |
| Detail   | Get currently selected Input No. |  |
| Response | Acceptable                       | "%1" [CR]  |
|          | %1                               | "1" = Input 1 is selected.<br>"2" = Input 2 is selected.<br>"3" = Input 3 is selected.<br>"4" = Input 4 is selected.(only for Networking-capable models) |
|          | Unacceptable                     | "?" [CR]   |

**7.6 Lamp Time Read Command**

|          |                               |   |
|----------|-------------------------------|---|
| Command  | "CR3" [CR]                    |   |
| Detail   | Get total lamp running hours. |   |
| Response | Acceptable                    | "%1_%2" [CR]  |
|          | %1                            | Each lamp data follows in sequence with one space between each of them.<br>%1 = lamp No.1<br>%2 = lamp No.2<br>ex; "00410_00410" [CR]<br>----> Lamp No.1 = 410 Hours<br>Lamp No.2 = 410 Hours<br><br>Note;<br>-each data shall be 5 digits. |
|          | Unacceptable                  | "?" [CR]  |

**7.7 Setting Read Command**

|          |   |  |
|----------|---|--|
| Command  | "CR4" [CR]                                      |  |
| Detail   | Get 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. (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. (Status: Ceiling ON) |
|          | Unacceptable                                    | "?" [CR]   |

### 7.8 Temp Read Command

|          |   |   |
|----------|---|---|
| Command  | "CR6" [CR]  |   |
| Detail   | Get the information of temperature inside a projector.<br>With several built-in temperature sensors, it can get all the temperatures at once. |   |
| Response | Acceptable  | "%1 _ %2 _ %3" [CR]   |
|          | %1<br>%2<br>%3  | %1 = Temp. of sensor 1<br>%2 = Temp. of sensor 2<br>%3 = Temp. of sensor 3<br>Temperature data basic format is "_00.0". ("_" indicates a space)<br>When the temperature goes under 0, it starts with "-" instead of a space like "-05.5" [CR].<br>When no temperature data returns due to hardware problems, it starts with "E" like "E00.0" [CR].<br>With several built-in temperature sensors, the projector returns the values in succession.<br>"_31.5 _ 35.2 33.4" [CR]<br>The first sensor's data is followed by one space and afterwards the second sensor's data. |
|          | Unacceptable  | "?" [CR]  |

### 7.9 Lamp Mode Read Command

|          |  |   |
|----------|--|---|
| Command  | "CR7" [CR]   |   |
| Detail   | Get lamp mode.<br>In the projector with single lamp, get ON/OFF status of the lamp |   |
| Response | Acceptable   | "%1" [CR]   |
|          | %1   | "00" [CR] = Lamp is ON.<br>"01" [CR] = Lamp is OFF. |
|          | Unacceptable   | "?" [CR]  |