

# **EIKI**

## **BASIC SERIAL COMMAND FUNCTIONAL SPECIFICATIONS**

**LC-XT9**

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**1 Overview**

- This specification defines projector control commands for LC-XT9.
- The projector control commands are designed to remote-control a projector through RS-232C from a computer.
- Refer to [8. Command with Address Specification] when using commands with address.

**2 Serial Interface Specification**

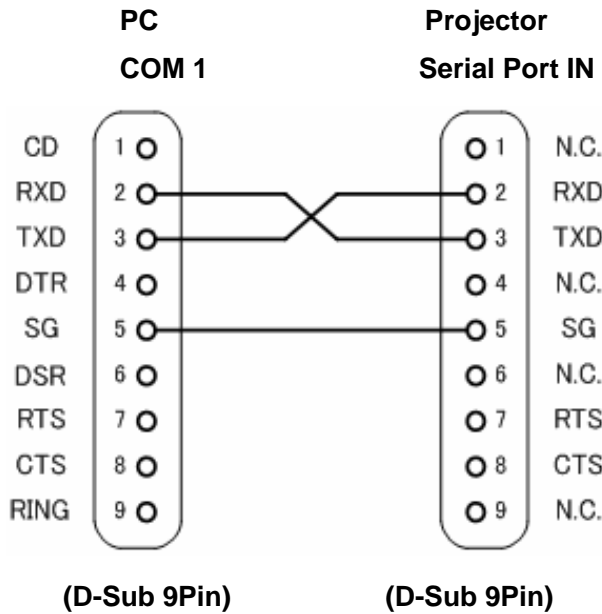
**2.1 Transfer Specification**

| Items              | 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 cables that come with a projector must be used for the connection to a computer and the projector.



Connect COM port of the computer to SERIAL PORT IN of the projector.  
 COM Port (COM1 or COM2) of a computer is specified by control software of the computer.

### 3 Notes for Communication

- The projector command is defined one command per line that starts “C” and ends carriage return (0x0D).
- When the projector receives the carriage return, it starts decoding.
- There are two types of command, Functional Execution Commands and Status Read Commands.  
Example of Functional Execution Command: “C05” [CR]  
Example of Status Read Command: “CR0” [CR]
- It clears the information of buffer in the following cases.
  - When the projector receives LF (0x0A) or EOF (0x1A9).
  - When it takes more than one second to receive a single command.  
(Until receiving the carriage return after the reception of the first data.)
- When pipelining control commands, allow interval time as below after the reception of response,.
  - 1) [ZOOM UP/DOWN] [FOCUS UP/DOWN] [LENS SHIF UP/DOWN/LEFT/RIGHT] commands...100ms
  - 2) Other commands...500ms
- When pipelining Status Read command, allow at least 500ms of interval time after the response.
- Do not issue any command before receiving the response except the case that there is no response for 5 seconds.
- It takes about 7 seconds for internal initialization after plugging in AC. During this time, it cannot process command. Do not issue any commands.
- For 7 seconds after starting POWER ON in the status of STANDBY, the projector returns “Acceptable” response, but it does not carry out the command. Status Read commands are carried out in 500 ms after the “Acceptable” response is returned.
- About the behavior during Count Down and Cooling Down operation; in the period of the Count Down operation after Power ON or Cooling Down after Power OFF, “Acceptable” response is returned, but the command is not carried out except for Status Read command.
- About the behavior during switching inputs; it takes 5 seconds to switch inputs after receiving the command. During this period, even if another command is received, it is not carried out although returning “Acceptable” response. However, Status Read commands are carried out in 500 ms after the “Acceptable” response is returned.
- The length of the returned value for Status Read command in successful operation depends on the command.
- The characters for commands must be in uppercase (A - Z). Those in lowercase can not be used

**4 FUNCTIONAL Execution Command Table**

| Command | Item                               | Command | Item                 |
|---------|------------------------------------|---------|----------------------|
| C00     | POWER ON                           | C43     | FREEZE ON            |
| C01     | POWER OFF<br>(Immediate POWER OFF) | C44     | FREEZE OFF           |
| C05     | INPUT 1                            | C46     | ZOOM -               |
| C06     | INPUT 2                            | C47     | ZOOM +               |
| C07     | INPUT 3                            | C4A     | FOUCS -              |
| C08     | INPUT 4                            | C4B     | FOUCS +              |
| C0D     | VIDEO MUTE ON                      | C5D     | LENS SHIFT +         |
| C0E     | VIDEO MUTE OFF                     | C5E     | LENS SHIFT -         |
| C0F     | REGULAR VIDEO IMAGE (4:3)          | C5F     | LENS SHIFT LEFT      |
| C10     | WIDE VIDEO IMAGE (16:9)            | C60     | LENS SHIFT RIGHT     |
| C1C     | MENU ON                            | C70     | FULL LAMP MODE SET   |
| C1D     | MENU OFF                           | C71     | HALF LAMP MODE 1 SET |
| C1E     | DISPLAY CLEAR                      | C72     | HALF LMAP MODE 2 SET |
| C27     | IMAGE                              | C89     | AUTO PC ADJ.         |
| C30     | D.ZOOM +                           | C8A     | PRESENTATION TIMER   |
| C31     | D.ZOOM -                           | C8E     | KEYSTONE +           |
| C3A     | POINITER RIGHT                     | C8F     | KEYSTONE -           |
| C3B     | POINITER LEFT                      |         |                      |
| C3C     | POINITER UP                        |         |                      |
| C3D     | POINITER DOWN                      |         |                      |
| C3F     | ENTER                              |         |                      |

**5 Status Read Command Table**

| Command | Item            |
|---------|-----------------|
| CR0     | Status Read     |
| CR1     | Input Mode Read |
| CR3     | Lamp Time Read  |
| CR4     | Setting Read    |
| CR6     | Temp. Read      |
| CR7     | Lamp Mode Read  |
| CR9     | PC Type Read    |
| CRA     | Status 2 Read   |

## 6 Functional Execution Command

### 6.1 Format

1) PC issues a command in the format below:

“C” Command [CR]

Command: two characters (Refer to Functional Execution Command Table)

2) A projector decodes the received data and returns the result after getting ready to receive another command.

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

“?” [CR]: When the received data cannot be decoded

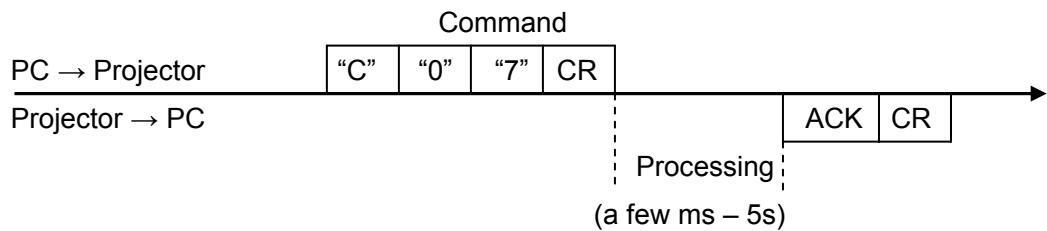
### 6.2 Command Pipelining

Functions which need command pipelining follow the rule below.

- Sender system issues any command every 100ms.
- When receiving the applicable command, the function is executed for 120ms from the moment.
- When receiving the same command in succession within 120ms, the function is executed for another 120ms from the moment.
- When there is no incoming command after 120ms, the execution of pipelining is stopped.
- When the projector receives incoming other command within 120ms, the execution of pipelining is stopped.

### 6.3 Transfer Example

Changing input to INPUT3 with Basic Command.



## 6.4 Operation Requirements

When the projector is in the status below, Functional Execution Commands are limited.

(Status Read Commands are available in following status)

| Projector Status                                    | Available Functional Execution Commands |
|---|---|
| In Standby mode                                     | C00: POWER ON                           |
| Count Down in process                               | C00: POWER ON (Countdown is terminated) |
| Cooling Down in process                             | NONE (No Execution)                     |
| Cooling Down in process due to abnormal temperature | NONE (No Execution)                     |
| In Abnormal Temperature                             | NONE (No Execution)                     |
| On switching modes                                  | NONE (No Execution)                     |
| Power Saving Cooling Down in process                | NONE (No Execution)                     |
| In Power Saving status                              | C00: POWER ON<br>C01: POWER OFF         |

Note) In the above status, it returns **[ACK] [CR]** even if the projector receives other commands,



**6.5 POWER ON Command**

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

**6.6 POWER OFF Command (Immediate POWER OFF)**

|          |   |            |
|----------|---|------------|
| COMMAND  | "C01" [CR]  |            |
| Detail   | Power OFF (Standby)<br>When Power is turned OFF with ON-OFF button of the projector and remote control, "Power OFF" is displayed. In contrast, this command executes immediately Power OFF. |            |
| Response | Acceptable  | [ACK] [CR] |
|          | Unacceptable  | "?" [CR]   |

**6.7 INPUT 1 Command**

|          |   |            |
|----------|---|------------|
| COMMAND  | "C05" [CR]  |            |
| Detail   | Select Input 1<br>Note) When there is no board inserted to Input 1, it is not executed. |            |
| Response | Acceptable  | [ACK] [CR] |
|          | Unacceptable  | "?" [CR]   |

**6.8 INPUT 2 Command**

|          |   |            |
|----------|---|------------|
| COMMAND  | "C06" [CR]  |            |
| Detail   | Select Input 2<br>Note) When there is no board inserted to Input 2, it is not executed. |            |
| Response | Acceptable  | [ACK] [CR] |
|          | Unacceptable  | "?" [CR]   |

**6.9 INPUT 3 Command**

|          |   |            |
|----------|---|------------|
| COMMAND  | "C07" [CR]  |            |
| Detail   | Select Input 3<br>Note) When there is no board inserted to Input 3, it is not executed. |            |
| Response | Acceptable  | [ACK] [CR] |
|          | Unacceptable  | "?" [CR]   |

**6.10 INPUT 4 Command**

|          |   |            |
|----------|---|------------|
| COMMAND  | "C08" [CR]  |            |
| Detail   | Select Input 3<br>Note) When there is no board inserted to Input 3, it is not executed. |            |
| Response | Acceptable  | [ACK] [CR] |
|          | Unacceptable  | "?" [CR]   |

**6.11 VIDEO MUTE ON Command**

|          |  |            |
|----------|--|------------|
| COMMAND  | "C0D" [CR]   |            |
| Detail   | Video Mute ON<br>This command works the same way as "NO SHOW" button of the remote control, but it works only for turning on, not for turning off No Show. |            |
| Response | Acceptable   | [ACK] [CR] |
|          | Unacceptable   | "?" [CR]   |

**6.12 VIDEO MUTE OFF Command**

|          |   |            |
|----------|---|------------|
| COMMAND  | "C0E" [CR]  |            |
| Detail   | Video Mute OFF<br>This command works the same way as "NO SHOW" button of remote control, but it works only for turning off, not for turning on No Show. |            |
| Response | Acceptable  | [ACK] [CR] |
|          | Unacceptable  | "?" [CR]   |

**6.13 REGULAR VIDEO IMAGE Command**

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

**6.14 WIDE VIDEO IMAGE Command**

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

**6.15 MENU ON Command**

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

**6.16 MENU OFF Command**

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

**6.17 DISPLAY CLEAR Command**

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

**6.18 IMAGE Command**

|          |                      |            |
|----------|----------------------|------------|
| COMMAND  | "C27" [CR]           |            |
| Detail   | Switch Image setting |            |
| Response | Acceptable           | [ACK] [CR] |
|          | Unacceptable         | "?" [CR]   |

**6.19 D.ZOOM + Command**

|          |  |            |
|----------|--|------------|
| COMMAND  | "C30" [CR]                                     |            |
| Detail   | Enter Digital Zoom mode and expand image size. |            |
| Response | Acceptable                                     | [ACK] [CR] |
|          | Unacceptable                                   | "?" [CR]   |

**6.20 D.ZOOM – Command**

|          |   |            |
|----------|---|------------|
| COMMAND  | "C31" [CR]                                      |            |
| Detail   | Enter Digital Zoom mode and compress image size |            |
| Response | Acceptable                                      | [ACK] [CR] |
|          | Unacceptable                                    | "?" [CR]   |

**6.21 POINTER RIGHT Command**

|          |   |            |
|----------|---|------------|
| COMMAND  | "C3A" [CR]  |            |
| Detail   | Move Pointer of On Screen Display Menu to the right<br>This command works the same way as "▶" button of the projector and remote control. |            |
| Response | Acceptable  | [ACK] [CR] |
|          | Unacceptable  | "?" [CR]   |

**6.22 POINTER LEFT Command**

|          |  |            |
|----------|--|------------|
| COMMAND  | "C3B" [CR]   |            |
| Detail   | Move Pointer of On Screen Display Menu to the left<br>This command works the same way as "◀" button of the projector and remote control. |            |
| Response | Acceptable   | [ACK] [CR] |
|          | Unacceptable   | "?" [CR]   |

**6.23 POINTER UP Command**

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

**6.24 POINTER DOWN Command**

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

**6.25 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]   |

**6.26 FREEZE ON Command**

|          |   |            |
|----------|---|------------|
| COMMAND  | "C43" [CR]  |            |
| Detail   | Freeze on-screen picture<br>This command works the same way as "FREEZE" button of the remote control, but it works only for turning on, not for turning off Freeze. |            |
| Response | Acceptable  | [ACK] [CR] |
|          | Unacceptable  | "?" [CR]   |

**6.27 FREEZE OFF Command**

|          |   |            |
|----------|---|------------|
| COMMAND  | "C44" [CR]  |            |
| Detail   | Cancel Freeze function<br>This command works the same way as "FREEZE" button of the remote control, but it works only for turning off, not for turning on Freeze. |            |
| Response | Acceptable  | [ACK] [CR] |
|          | Unacceptable  | "?" [CR]   |

**6.28 ZOOM + Command**

|          |  |            |
|----------|--|------------|
| COMMAND  | "C47" [CR]   |            |
| Detail   | Make screen image larger<br>This command works the same way as "Z ▲" button of the projector and remote control. |            |
| Response | Acceptable   | [ACK] [CR] |
|          | Unacceptable   | "?" [CR]   |

**6.29 ZOOM – COMMAND**

|          |   |            |
|----------|---|------------|
| COMMAND  | "C46" [CR]  |            |
| Detail   | Make screen image smaller<br>This command works the same as "Z ▼" button of the projector and remote control. |            |
| Response | Acceptable  | [ACK] [CR] |
|          | Unacceptable  | "?" [CR]   |

**6.30 FOCUS + Command**

|          |   |            |
|----------|---|------------|
| COMMAND  | "C4B" [CR]  |            |
| Detail   | Adjust focus of screen image (sharp and clear) with a long-focal-length ( )<br>(The lens direction is backward)<br>This command works the same way as "F ▲" button of the projector and remote control. |            |
| Response | Acceptable  | [ACK] [CR] |
|          | Unacceptable  | "?" [CR]   |

**6.31 FOCUS – Command**

|          |   |            |
|----------|---|------------|
| COMMAND  | "C4A" [CR]  |            |
| Detail   | Adjust focus of screen image (sharp and clear) with a short-focal-length<br>(The lens direction is forward)<br>This command works the same way as "F ▼" button of the projector and remote control. |            |
| Response | Acceptable  | [ACK] [CR] |
|          | Unacceptable  | "?" [CR]   |

**6.32 LENS SHIFT UP Command**

|          |                          |            |
|----------|--------------------------|------------|
| COMMAND  | "C5D" [CR]               |            |
| Detail   | Move screen image upward |            |
| Response | Acceptable               | [ACK] [CR] |
|          | Unacceptable             | "?" [CR]   |

**6.33 LENS SHIFT DOWN Command**

|          |                            |            |
|----------|----------------------------|------------|
| COMMAND  | "C5E" [CR]                 |            |
| Detail   | Move screen image downward |            |
| Response | Acceptable                 | [ACK] [CR] |
|          | Unacceptable               | "?" [CR]   |

**6.34 LENS SHIFT LEFT Command**

|          |                                |            |
|----------|--------------------------------|------------|
| COMMAND  | "C5F" [CR]                     |            |
| Detail   | Move screen image to the left. |            |
| Response | Acceptable                     | [ACK] [CR] |
|          | Unacceptable                   | "?" [CR]   |

**6.35 LENS SHIFT RIGHT Command**

|          |                                 |            |
|----------|---------------------------------|------------|
| COMMAND  | "C60" [CR]                      |            |
| Detail   | Move screen image to the right. |            |
| Response | Acceptable                      | [ACK] [CR] |
|          | Unacceptable                    | "?" [CR]   |

**6.36 FULL LAMP MODE SET Command**

|          |  |            |
|----------|--|------------|
| COMMAND  | "C70" [CR]   |            |
| Detail   | Set to FULL LAMP mode with all 4 lamps ON.<br>When switching from 4-lamp mode to 2-lamp mode then to 4-lamp again, or switching from 2-lamp to 4-lamp then to 2-lamp again, it is unable to switch for 90 seconds for the light preparation. |            |
| Response | Acceptable   | [ACK] [CR] |
|          | Unacceptable   | "?" [CR]   |

**6.37 HALF LAMP MODE 1 SET Command**

|          |  |            |
|----------|--|------------|
| COMMAND  | "C71" [CR]   |            |
| Detail   | Set to HALF LAMP mode in which 2 lamps are ON.<br>The lamp No.1 & 4 are set to ON.<br>Usually when setting HALF LAMP Mode, the projector automatically chooses lamps, but this command, Lamp No.1 & 4 are chosen.<br>When switching to 2-lamp from 4-lamp then to 4-lamp mode again, or switching to 4-lamp from 2-lamp then to 2-lamp again, it is unable to switch for 90 seconds for the light preparation. |            |
| Response | Acceptable   | [ACK] [CR] |
|          | Unacceptable   | "?" [CR]   |

**6.38 HALF LAMP MODE 2 SET Command**

|          |   |            |
|----------|---|------------|
| COMMAND  | "C72" [CR]  |            |
| Detail   | Set to HALF LAMP Mode (1 lamp mode)<br>The lamp No.2 & 3 are set to ON.<br>Usually, when setting HALF LAMP Mode, the projector automatically chooses lamps, but with this command, Lamp No.2 & 3 are chosen.<br>When switching to 2-lamp from 4-lamp then to 4-lamp again, or switching to 4-lamp from 2-lamp then to 2-lamp mode again, it is unable to switch for 90 seconds for the light preparation. |            |
| Response | Acceptable  | [ACK] [CR] |
|          | Unacceptable  | "?" [CR]   |

**6.39 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 projector and remote control.<br>When this command is received during Auto PC Adj. operation, the operation is stopped. |            |
| Response | Acceptable   | [ACK] [CR] |
|          | Unacceptable   | "?" [CR]   |

**6.40 PRESENTATION TIMER Command**

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

**6.41 KEYSTONE + Command**

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

**6.42 KEYSTONE – Command**

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

## 7 Status Read Command

### 7.1 Format

- 1) PC issues a command in the format below:

“CR” **Command** [CR]

Command: Single character (Refer to Status Read Command Table)

- 2) When a projector receives the appropriate command, it returns the required information as a data string.

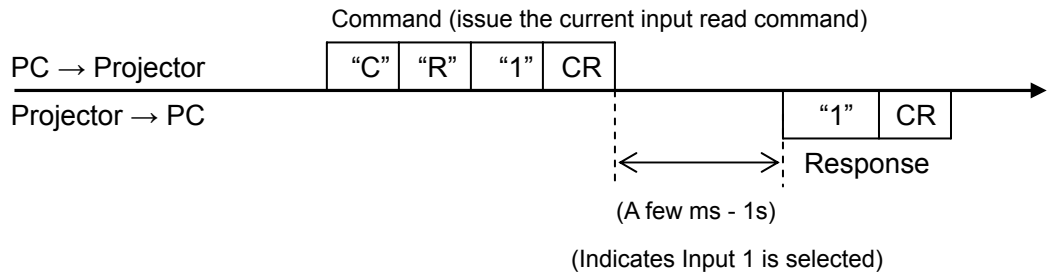
**Required Data** [CR]

Required Data: String (Refer to Status Read Command Table)

- 3) When the received data cannot be decoded, the projector returns “?” [CR].

### 7.2 Transfer Example

Get the selected input for the projector by Basic Commands.





### 7.3 Status Read Command

|          |                          |  |
|----------|--------------------------|--|
| COMMAND  | "CR0" [CR]               |  |
| Detail   | Get the projector 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 due to Abnormal Temperature in process<br>"02" = Cannot accept RS-232C Command<br>"24" = Power Management Cooling Down in process<br>"04" = Power Management status<br>"21" = Cooling Down in process after Off due to lamp failure<br>"81" = Standby after Cooling Down due to lamp failure |
|          | 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 Functional Execution Commands are not accepted except POWER ON Command.
- **"40" [CR]**  
 Status: Countdown in process  
 When "Display" in Setting menu is set to ON, execution of Power ON operation brings into Countdown status.  
 When "Display" in Setting menu is set to OFF, the status jumps to Power ON without Countdown operation.
- **"20" [CR]**  
 Status: Cooling Down in process  
 Execution of POWER OFF Command ("C01" [CR]) in power on status brings into Cooling Down status.  
 This status automatically moves to Standby when the lamp is turned off and the fan spin finishes after about 90 seconds (the time of spinning fan depends on models).  
 During this time, Functional Execution Commands are not accepted.

- **“10” [CR]**

Status: Power Failure

When the power supply voltage inside the projector reaches abnormal level, the status automatically moves to Power OFF.

The projector returns “10” [CR], which indicates the status moves to Power OFF due to power failure. Fan also stops.

This status continues for the same period (90 seconds approx.) of the Cooling Down operation when Power OFF executed, and then moved to Standby.

- **“28” [CR]**

Status: Cooling Down due to Abnormal Temperature in process

When the internal temperature rises abnormally, it automatically starts Cooling Down process. Response value for this status is “28” [CR].

Even if the temperature comes down during this process, the given Cooling Down process is executed and it moves to Standby mode.

- **“02” [CR]**

Status: RS-232C Commands cannot be accepted

When receiving this response, re-send Status Read Command.

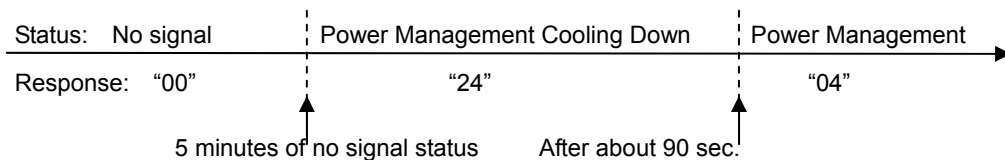
- **“24” [CR]**

Status: Power Management Cooling Down in process.

When Power Management function in Setting menu is set to ON, continuous 5 minutes of no signal status leads to turning off lamps and starting Cooling Down operation (Green LED on the projector body is turned off).

During this period, any Functional Execution Command cannot be accepted.

The Power Management Cooling Down operation continues about 90 seconds, then the status moves to Power Management.



- **“04” [CR]**

Status: Power Management

This indicates it has moved to Power Management status according to the setting of Power Management function in Setting menu.

- **“21” [CR]**

Status: Cooling Down in process after turned off due to lamp failure

When a projector is turned off because of lamp failure, it automatically starts Cooling Down operation, in which the projector returns “21” [CR].

- **“81” [CR]**

Status: Standby after Cooling Down due to lamp failure

This value is returned when Cooling Down operation due to lamp failure has been completed and the status has been moved to Standby. The status is kept until the next operation starts.

### 7.4 Input Mode Read Command

|          |                              |  |
|----------|------------------------------|--|
| COMMAND  | "CR1" [CR]                   |  |
| Detail   | Get currently selected Input |  |
| 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 |
|          | Unacceptable                 | "?" [CR]   |

### 7.5 Lamp Time Read Command

|          |                              |  |
|----------|------------------------------|--|
| COMMAND  | "CR3" [CR]                   |  |
| Detail   | Get total lamp running hours |  |
| Response | Acceptable                   | "%1_%2_%3_%4" [CR]   |
|          | %1, %2                       | Each lamp data follows in sequence with one space between each of them.<br>%1 = lamp No.1<br>%2 = lamp No.2<br>%3 = lamp No.3<br>%4 = lamp No.4<br>eg: "0410_0410_0410_0410" [CR]<br>.... → Lamp No.1 = 410 Hours<br>Lamp No.2 = 410 Hours<br>Lamp No.3 = 410 Hours<br>Lamp No.4 = 410 Hours<br><br>Note;<br>-each data shall be 4 digits.<br>-"9999" is returned for 10000 hours or more. |
|          | Unacceptable                 | "?" [CR]   |

### 7.6 Setting Read Command

|          |  |   |
|----------|--|---|
| COMMAND  | "CR4" [CR]                                 |   |
| Detail   | Get screen setting status of 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]  |

## 7.7 Temp Read Command

|          |  |   |
|----------|--|---|
| COMMAND  | "CR6" [CR]   |   |
| Detail   | Get the temperature information inside projector<br>With more than one temperature sensors installed in the projector, it is possible to get all temperatures at once. |   |
| Response | Acceptable   | "%1_%2" [CR]  |
|          | %1<br>%2   | <p>%1 = temperature at Sensor 1<br/>%2 = temperature at Sensor 2</p> <p>Temperature data is expressed as "00.0".<br/>When the temperature goes under 0, the first character is "-" like "-05.5" [CR].<br/>When no temperature data returns due to hardware problems the first character is "E" like "E00.0" [CR].<br/>In Standby or during a few seconds after Power ON operation, the process for abnormal temperature is not executed, where the temperature data is "_ _ _ _".<br/>With more than one temperature sensors installed, the projector returns the values in series.<br/>"_ 31.5_ 35.2" [CR]<br/>Each sensor data follows in sequence with one space between each of them.</p> |
|          | Unacceptable   | "?" [CR]  |

## 7.8 Lamp Mode Read Command

|          |   |   |
|----------|---|---|
| COMMAND  | "CR7" [CR]  |   |
| Detail   | Get current Lamp Mode in the multiple-lamp projector.<br>When there is any fail lamp, also can get the information about. |   |
| Response | Acceptable  | "%1" [CR]   |
|          | %1  | <p>eg: "0F"[CR]<br/>The first digit indicates Lamp Mode.<br/>0 = 4-lamp Mode<br/>1 = 2-lamp Mode (Lamp No.1-2 used)<br/>2 = 2-lamp Mode (Lamp No.3-4 used)</p> <p>The second digit indicates if the lamp is ON or OFF.<br/>Data is shown as "0-9" and "A-F", which is discribed in 4-bit data.<br/>Assign each bit for each lamp data.<br/>eg: 0 = ALL is OFF<br/>1 = No.1 is ON, the other is OFF<br/>2 = No.2 is ON, the other is OFF<br/>4 = No.3 is ON, the other is OFF<br/>8 = No.4 is ON, the other is OFF<br/>3 = No.1 and No.2 are ON, the others are OFF<br/>5 = No.1 and No.3 are ON, the others are OFF<br/>9 = No.1 and No.4 are ON, the other are OFF<br/>6 = No.2 and No.3 are ON, the other are OFF<br/>A = No.2 and No.4 are ON, the other are OFF<br/>C = No.3 and No.4 are ON, the other are OFF<br/>7 = No.1, No.2 and No.3 are ON, the other is OFF<br/>B = No.1, No.2 and No.4 are ON, the other is OFF<br/>D = No.1, No.3 and No.4 are ON, the other is OFF<br/>E = No.2, No.3 and No.4 are ON, the other is OFF<br/>F = ALL is ON</p> |
|          | Unacceptable  | "?" [CR]  |



## 8 Command with Address Specification

### 8.1 Overview

- Commands with address are used to control more than one projector remotely through RS-232C by a single computer.
- The command with address is defined as a single command per line that starts with "A" and ends with carriage return (0x0D).
- When a projector receives carriage return (0x0D), it starts decoding.
- The address such as "A001" is prefixed to the Basic Serial Command or Expand Serial Command already mentioned.
  - e.g.) Functional Execution Command: "A001C05" [CR]
  - e.g.) Status Read Command: "A001CR0" [CR]
- Projector has the function to set up its own address in Service mode.
  - Initial setting is "No. 001"
  - Available range of the value is "001" to "999"
- It clears the data in the receive buffer under following conditions.
  - When receiving LF (0x0A) or EOF (0x1A).
  - When it takes more than one second to receive a single command.  
(Until receiving a carriage return after the reception of the first data.)

## 8.2 Functional Execution Command with address

### 8.2.1 Format

- 1) PC issues a command in the format below:

**"A" Address "C" Command [CR]**

or

**"C" Address "CF\_" Command "\_" Parameter [CR]**

Address: 3-digit number ("001"- "999")

Commands with "FFF" as the address are valid to all projectors.

Command: String (Refer to Basic and Expand Serial Commands)

- 2) The only projector that have the address number matching with the one included in the received data decodes the command, and when it gets ready to receive another command, it returns the response.

**[ACK] [CR]:** When receiving Functional Execution Command (0x06, 0x0D)

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

However, when the address is "FFF", the projector executes the function but does not return any response.

### 8.2.2 When the command pipelining is needed

Functions which need command pipelining follow the rule below.

- Sending-side system issues commands every 100 ms
- When receiving an applicable command, the function is executed repeatedly for 120 ms .
- When receiving the same command in a row within 120 ms, the function is repeatedly executed for another 120 ms from the moment.
- When there is no incoming command after 120 ms, the execution of pipelining is stopped.
- When the projector receives other command within 120 ms, the execution of pipelining is stopped.



### 8.3 Status Read Command with Address

#### 8.3.1 Format

1) PC issues a command in the format below:

**"A" Address "CR" Command [CR]**

or

**"A" Address "CR\_" Command [CR]**

Address: 3-digit number ("001"- "999")

Command: String (Refer to Basic and Expand Serial Commands)

2) The only projectors that have the address matching with the one in the received data decode the command, and it returns required data.

**Required Data [CR]**

Required Data: String (Refer to Basic Status Read Command Table)

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