

**1.65" Full HD**

**LC-HDT10**

<b>BASIC SERIAL FUNCTIONAL SPECIFICATION</b>
--

**SANYO Electric CO., Ltd.**  
**Consumer Group AV Solutions Company**  
**Projector Business Unit**

## 1.65" Full HD

## Basic Serial Command Functional Specification

LC-HDT10

## Software Engineering

## REV.

DATE \_\_\_\_\_

## CHANGE DOCUMENT

**2003.10.29**

Published as new

[illegible]

**- CONTENTS -**

- 1. Overview**
- 2. Serial Interface Specification**
  - 2.1 transfer Specification**
  - 2.2 Connection**
- 3. Notes for Communication**
- 4. Functional Execution Command Table**
- 5. Status Read Command Table**
- 6. Functional Execution Command Table**
  - 6.1 Format**
  - 6.2 Command Pipelining**
  - 6.3 Transfer Example**
  - 6.4 Operation Requirements**
  - 6.5 Power ON Command**
  - 6.6 Power OFF Command**
  - 6.7 INPUT 1 COMMAND**
  - 6.8 INPUT 2 COMMAND**
  - 6.9 INPUT 3 COMMAND**
  - 6.10 INPUT 4 COMMAND**
  - 6.11 VOLUME + COMMAND**
  - 6.12 VOLUME – COMMAND**
  - 6.13 SOUND MUTE ON COMMAND**
  - 6.14 SOUND MUTE OFF COMMAND**
  - 6.15 VIDEO MUTE ON COMMAND**
  - 6.16 VIDEO MUTE OFF COMMAND**
  - 6.17 SCREEN NORMAL SIZE COMMAND**
  - 6.18 SCREEN FULL SIZE COMMAND**
  - 6.19 MENU ON COMMAND**
  - 6.20 MENU OFF COMMAND**
  - 6.21 DISPLAY CLEAR COMMAND**
  - 6.22 IMAGE COMMAND**
  - 6.23 POINTER RIGHT COMMAND**
  - 6.24 POINTER LEFT COMMAND**
  - 6.25 POINTER UP COMMAND**
  - 6.26 POINTER DOWN COMMNAD**
  - 6.27 ENTER COMMAND**
  - 6.28 FREEZE ON COMMAND**
  - 6.29 FREEZE OFF COMMNAD**
  - 6.30 ZOOM + COMMAND**

- 6.31 ZOOM – COMMAND
- 6.32 FOCUS + COMMAND
- 6.33 FOCUS- COMMAND
- 6.34 LENS SHIFT UP COMMAND
- 6.35 LENS SHIFT DOWN COMMAND
- 6.36 LENS SHIFT LEFT COMMAND
- 6.37 LENS SHIFT RIGHT COMMAND
- 6.38 FULL LMAP MODE SET COMMAND
- 6.39 HALF LAMP MODE 1 SET COMMAND
- 6.40 HALF LAMP MODE 2 SET COMMAND
- 6.41 AUTO PC ADJ.COMMAND
- 7. Status Read Command
  - 7.1 Format
  - 7.2 Transfer Example
  - 7.3 Status Read Command
  - 7.4 Input Mode read Command
  - 7.5 Lamp Time Read Command
  - 7.6 Setting Read Command
  - 7.7 Temp Read Command
  - 7.8 Lamp Mode Read Command
  - 7.9 PC Type Read Command
  - 7.10 Status 2 Read Command
- 8. Command with Address Specification
  - 8.1 Overview
  - 8.2 Functional Execution Command with address
  - 8.3 Status Read Command with Address

## 1. Overview

- 1.1 This specification defines projector control commands for LC-HDT10 (1.65" Full HD 4-lamp Model).
- 1.2 The projector control commands are for controlling projector through RS232C from a computer.
- 1.3 When using commands with address, see 8.

## 2. Serial Interface Specification

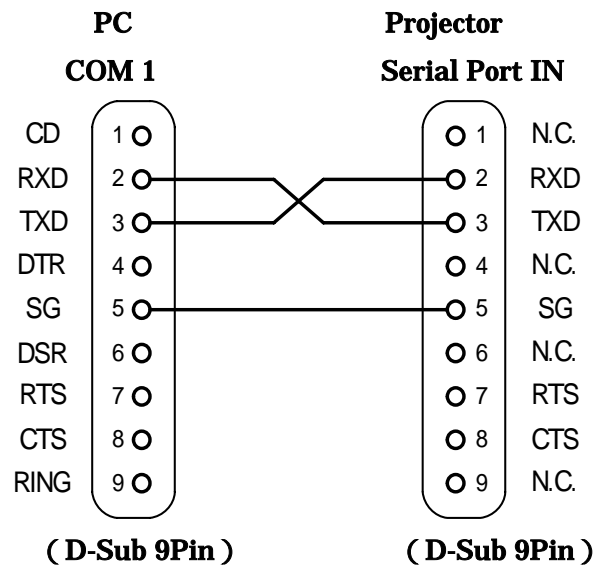
### 2.1 Transfer Specification

	Specification
Shynchro system	Asynchronous
Transmission Speed	9600 / 19200
Data Length	8 bit
Parity	None
Stop Bit	1
Flow Control	None

1. Transfer rate: initial setting value is 19200
2. Transfer rate can be changed by service Mode

### 2.2 Connection

Dedicated serial cable that comes with the projector must be used for a connection to a computer and a projector.



Connect COM port of computer to SERIAL PORT IN of COM Port.

COM Port (COM1 or COM2) of computer is specified by control software of computer.

### 3 . Notes for Communication

- 3.1 The projector command is defined one command/one line that starts "C" and ends carriage return (0x0D).
- 3.2 When the projector receives the carriage return, it starts decoding.
- 3.3 There are two types of command, functional execution commands and state read commands.  
Example of Functional Execution Command: "C05"[CR]  
Example of State Read Command: "CR0"[CR]
- 3.4 It clears information of buffer as below.
  - 3.4.1 When the projector receives LF (0x1A) or EOF.
  - 3.4.2 When it takes more than one second to receive one command. (until the projector receives the carriage return since the projector has received the first data.)
- 3.5 When control command pipelining, after the response, wait interval of time as below.
  - 3.5.1 [Volume+/-] [ZOOM UP/DOWN] [FOCUS UP/DOWN] [LENS SHIF  
UP/DOWN/LEFT/RIGHT] command...100ms
  - 3.5.2 Other commands...500ms
- 3.6 When status read command pipelining, after the response, wait at least 500ms.
- 3.7 Do not issue any command before receiving response except there is no response for 5 seconds.
- 3.8 It takes about 7 seconds for internal initialization after plugging in AC. During this time, it cannot process command. Do not issue any commands.
- 3.9 For 7 seconds after POWER ON from STANDBY, it receives the response to accept, but it does not carry out the command. However, the status read commands are carried out after 500 ms when receiving the response for accept.
- 3.10 About Count Down and the performance after cooling down: During Count Down after Power ON or Cooling Down after Power OFF, it receives response to accept, but it does not carry out.
- 3.11 The performance for switching input: It takes 5 seconds to switch input after receiving the command. During this time, even if it receives commands to accept, it does not carry them out. However, status read commands are carried out after 500ms since it receives switching input command to accept.
- 3.12 The number of character of response for status read commands depends on commands.  
Please see [10-3] status read command and [status table].
- 3.13 Characters for commands must be Capital (A - Z).

**4. Functional Execution Command Table**

Command	Item	Command	Item
C00	POWER ON	C3A	POINTER RIGHT
C01	POWER OFF ( Quick Power OFF )	C3B	POINTER LEFT
C05	Input 1	C3C	POINTER UP
C06	Input 2	C3D	POINTER DOWN
C07	Input 3	C3F	ENTER
C08	Input 4	C43	FREEZE ON
C09	VOLUME +	C44	FREEZE OFF
C0A	VOLUME -	C46	Zoom -
C0B	AUDIO MUTE ON	C47	Zoom +
C0C	AUDIO MUTE OFF	C4A	Focus -
C0D	VIDEO MUTE ON	C4B	Focus +
C0E	VIDEO MUTE OFF	C5D	Lens Shift Up
C0F	Screen Normal size	C5E	Lens Shift Down
C10	Screen Full size	C5F	Lens Shift Left
C1C	MENU ON	C60	Lens Shift Right
C1D	MENU OFF	C70	Full Lamp Mode ( 4 Lamp )
C1E	DISPLAY CLEAR	C71	Half Lamp Mode ( 2 Lamp:1-4 )
C27	IMAGE ( Toggle )	C72	Half Lamp Mode ( 2 Lamp:2-3 )
		C89	AUTO PC ADJ

**5. Status Read Command Table**

Command	Function	
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 Table

### 6.1 Format

PC issues a command below format

"C" COMMAND [CR]

Command: 2 characters (See Functional Execution Command Table)

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

[ACK] [CR]:(0x06,0x0D)When received functional execution commands.

"?" [CR]: When cannot read received data

### 6.2 When the command pipelining is needed

\*When some functions need command pipelining, the performance is the same as the remote control's performance.

\*System: issue any commands every 100ms after receiving response

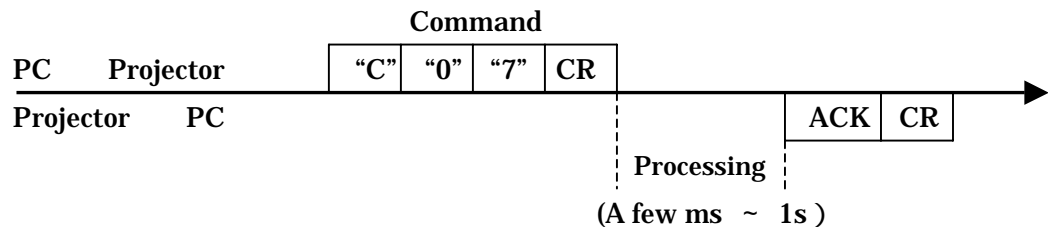
\*When receiving the same command continuously with 120ms, the function is executed for 120ms form the moment.

\*When receiving the same command continuously, with 120ms, the function is executed for 120ms form the moment.

\*When the projector receives other incoming commands within 120ms, the execution of pipelining is stopped.

### 6.3 Transfer Example

Change to video Mode with Basic Command.





## 6.4 Operation Requirements

When the projector's status is in this below, functional execution commands are limited.

(Status Read Command is available in this status.)

Projector Status	Available Functional Execution Commands
Standby Mode	C00: POWER ON
Processing Countdown	C00: POWER ON
Processing Cooling Down	NONE
Cooling Down Due to Abnormal Temperature	NONE
Abnormal Temperature Status	NONE
Processing Mode Change	NONE
Processing Power Save&Cooling Down	C00: POWER ON C01: POWER OFF

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

## 6.5 POWER ON COMMAND

COMMAND	"C00" [CR]	
Detail	Power ON When already Power ON, no need to do. When sending this command during processing Count Down, Count Down is terminated.	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

## 6.6 POWER OFF COMMAND (QUICK Power OFF)

COMMAND	"C01" [CR]	
Detail	Power OFF (Stand By) When Power OFF with ON-OFF button of the projector or the remote control, "Power OFF" will be displayed. However, as soon as this command is sent, Quick Power OFF is executed.	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

## 6.7 INPUT 1 COMMAND

COMMAND	"C05" [CR]	
Detail	Select Slot 1 input. Note9) When there is no card inserted to Slot 1, it does not execute it.	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.8 INPUT 2 COMMAND**

COMMAND	"C06" [CR]	
Detail	Select Slot 2 input. Note9) When there is no card inserted to Slot 2, it does not execute it.	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.9 INPUT 3 COMMAND**

COMMAND	"C07" [CR]	
Detail	Select Slot 3 input. Note9) When there is no card inserted to Slot 2, it does not execute it.	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.10 INPUT 4 COMMAND**

COMMAND	"C08" [CR]	
Detail	Select Slot 4 input. Note9) When there is no card inserted to Slot 2, it does not execute it.	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.11 VOLUME+ COMMAND**

COMMAND	"C09" [CR]	
Detail	Volume Up This Command works same as "VOLUME +" of the projector and the remote control.	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.12 VOLUME- COMMAND**

COMMAND	"C0A" [CR]	
Detail	Volume Down This Command works same as "VOLUME +" of the projector and the remote control	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.13 SOUND MUTE ON COMMAND**

COMMAND	"C0B" [CR]	
Detail	Sound Mute ON This command works same as "MUTE" of the projector and the remote control, but this command does not work for MUTE OFF.	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.14 SOUND MUTE OFF COMMAND**

COMMAND	"C0C" [CR]	
Detail	Sound Mute OFF This command works the same as "MUTE" of the Remote Control button for MUTE OFF, but does not work for "MUTE ON"	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.15 VIDEO MUTE ON COMMAND**

COMMAND	"C0D" [CR]	
Detail	VIDEO MUTE ON This command works same as "NO SHOW" of the remote control, but does not work for "NO SHOW OFF".	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.16 VIDEO MUTE OFF COMMAND**

COMMAND	"C0E" [CR]	
Detail	VIDEO MUTE OFF This command works the same as "NO SHOW" of remote control button for VIDEO MUTE OFF, but does not work for No Show ON".	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.17 SCREEN NORMAL SIZE COMMAND**

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

**6.18 SCREEN FULL SIZE COMMAND**

COMMAND	"C10" [CR]	
Detail	Set screen size to FULL.	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.19 MENU ON COMMAND**

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

**6.20 MENU OFF COMMAND**

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

**6.21 DISPLAY CLEAR COMMAND**

COMMAND	"C1E" [CR]	
Detail	Clear the On Screen Display Clear the On screen Display unconditionally	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.22 IMAGE COMMAND**

COMMAND	"C27" [CR]	
Detail	Switch Image setting status. This command works the same as the remote control's "Image" button or the key on the projector body.	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.23 POINTER RIGHT COMMAND**

COMMAND	"C3A" [CR]	
Detail	Move Pointer to right On Screen Display. This command works the same as the remote control's ">".	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.24 POINTER LEFT COMMAND**

COMMAND	"C3B" [CR]	
Detail	Move Pointer to left On Screen Display Menu. This command works the same as the remote control's "<".	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.25 POINTER UP COMMAND**

COMMAND	"C3C" [CR]	
Detail	Move Pointer to UP On Screen Display This command works the same as the remote controls "UP" button.	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.26 POINTER DOWN COMMAND**

COMMAND	"C3D" [CR]	
Detail	Move Pointer to Down On Screen Display This command works the same as the remote controls "DOWN" button.	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.27 ENTER COMMAND**

COMMAND	"C3 F" [CR]	
Detail	This command works the same as the remote control's "SELECT" button.	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.28 FREEZE ON COMMAND**

COMMAND	"C43" [CR]	
Detail	Make the screen Freeze. This command works the same as the remote control's FREEZE" button not for Freeze OFF but for Freeze ON	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.29 FREEZE OFF COMMAND**

COMMAND	"C44" [CR]	
Detail	Return to Freeze OFF screen. This command works the same as the remote control's "FREEZE" button for Freeze off.	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.30 ZOOM + COMMAND**

COMMAND	"C47" [CR]	
Detail	Make the screen image bigger. This command works the same as the remote control's "ZOOM UP"	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.31 ZOOM – COMMAND**

COMMAND	"C46" [CR]	
Detail	M the screen image smaller. This command works the same as the remote control's "ZOOM DOWN" button.	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.32 FOCUS + COMMAND**

COMMAND	"C4B" [CR]	
Detail	Focus on the screen image (sharp and clear) with a long- focal- length ( ) (the lens direction is backward) This command works the same as the remote control's "FOCUS UP" button.	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.33 FOCUS – COMMAND**

COMMAND	"C4A" [CR]	
Detail	Focus on the screen image (sharp and clear) with a short- focal- length (the lens direction is forward) This command works the same as the remote control's "FOCUS DOWN" button.	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.34 LENS SHIFT UP COMMAND**

COMMAND	"C5D" [CR]	
Detail	Pan down the screen image	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.35 LENS SHIFT DOWN COMMAND**

COMMAND	"C5E" [CR]	
Detail	Tilt down the screen image	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.36 LENS SHIFT LEFT COMMAND**

COMMAND	"C5F" [CR]	
Detail	Pan left the screen image.	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.37 LENS SHIFT RIGHT COMMAND**

COMMAND	"C5F" [CR]	
Detail	Pan right the screen image.	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.38 FULL LAMP MODE SET COMMAND**

COMMAND	"C70" [CR]	
Detail	Set all lamps to ON. When switching to 2 lamps from all lamps or all lamps from 2 lamps, it is unable to switch for 90 seconds to prepare.	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.39 HALF LAMP MODE 1 SET COMMAND**

COMMAND	"C71" [CR]	
Detail	Set to HALF LAMP MODE ( 2 lamp Mode ) The lamps are No.1 & No.4. Usually, when setting HALF LAMP MODE, the projector automatically chooses lamps, but when using command, No1 & No.4 are first chosen. When switching to HALF LAMP MODE from FULL LAMP MODE or to FULL LAMP MODE from HALF LAMP MODE, it is unable to switch for 90 seconds for preparation.	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.40 HALF LAMP MODE 2 SET COMMAND**

COMMAND	"C72" [CR]	
Detail	Set to HALF LAMP MODE ( 2 lamp Mode ) The lamps are No.2 & No.3. Usually, when setting HALF LAMP MODE, the projector automatically chooses lamps, but when using command, No1 & No.4 are first chosen. When switching to HALF LAMP MODE from FULL LAMP MODE or to FULL LAMP MODE from HALF LAMP MODE, it is unable to switch for 90 seconds for preparation.	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

**6.41 AUTO PC ADJ.COMMAND**

COMMAND	"C89" [CR]	
Detail	Execute Auto PC Adj. command This command works the same as a remote control's "AUTO PC ADJ." button. While Auto PC Adj. is working and a computer issues another command, Auto PC Adj. Stops.	
Response	Acceptable	[ACK] [CR]
	Unacceptable	"?" [CR]

## 7 Status Read Command

### 7.16 Format

7.16.1 A PC issues commands in format as below.

**"CR" COMMAND [CR]**

COMMAND :character (See Status Read Command Table)

7.16.2 When a projector receives the appropriate command, it returns a character line as the required data.

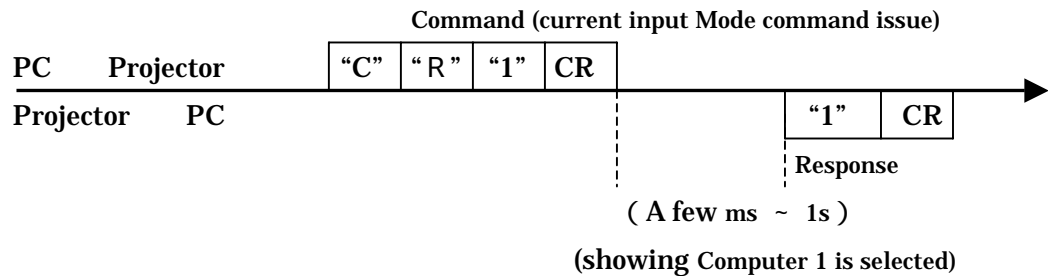
**Required Data [CR]**

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

7.16.3 When receiving data cannot be decode, the projector returns, "?" [CR].

### 7.17 Transfer Example

Get input Mode for the projector by basic commands.



### 7.18 Status Read COMMAND

COMMAND	"CR0" [CR]	
Detail	Get the projector status	
Response	Acceptable	"%1" [CR]
	%1	"00" = POWER ON "80" = STANDBY "40" = Processing Count Down "20" = Processing Cooling Down "10" = Power Failure "28" = Processing cooling down due to abnormal temperature "02" = Invalid RS232C Command "24" = Processing Power Save&Cooling Down "04" = Power Save
	Unacceptable	"?" [CR]

#### 【Details for Response】

##### 7.17.1 "00" [CR]

Status: POWER ON

Normal image is on a screen.



**7.17.2 “80” [CR]**

Status: STAND BY

When the status is STAND BY, Status Read Commands are always acceptable, but Functional Execution Commands are not acceptable except Power ON Command.

**7.17.3 “40” [CR]**

Status: Processing Count Down

When “Display” in Setting Menu is ON and Power ON is executed, it starts processing Count Down

This count down status ends after 60 seconds and move to Power ON status.

During this process, control commands except Power ON Command (“CC00”)[CR] are unacceptable. When Power ON Command is executed, processing Count Down is terminated and the status moves to Power ON.

Also, when “Display” OFF in the setting menu is set, processing Count Down is skipped and the status moves to Power ON quickly.

**7.17.4 “20” [CR]**

Status: Cooling

When status is Power ON, and Power OFF Command is executed, it moves to cooling status.

This cooling status automatically moves on to Stan By after the lamp turns off and the fan spin for about 90seconds. During this time, control commands are invalid.

**7.17.5 “10” [CR]**

Status: Abnormal power supply voltage

When the power supply voltage inside the projector reaches abnormal power supply voltage, the power will be automatically turned off. The projector returns “10”[CR] and cooling fan is also stopped at the time. FAN also stops. After 90 seconds, it moves to Standby status like cooling status. The response returns to “80” after moving to “Standby”.

**7.17.6 “28” [CR]**

Status: Processing Cooling Down because of critical temperature.

When the temperature inside a projector is out of the operating temperature, it automatically starts cooling down. Response “28”[CR].

Even if the temperature is processing low during this process, the cooling down stays and the response command “28” stays.

**7.17.7 “02” [CR]**

RS232C Commands are invalid.

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

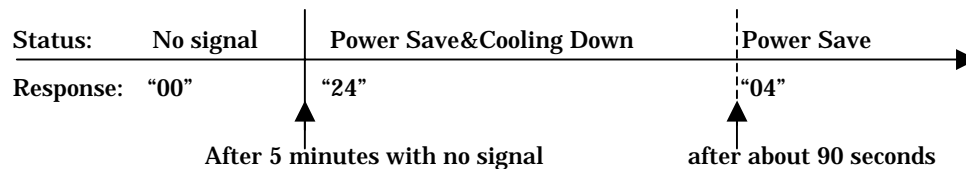
**7.17.8 “24” [CR]**

Status: Processing Power Save&Cooling Down

When the power management function in the setting menu and after 5 minutes with no signal, it turns off lamps and goes to Power Save & Cooling Down. ( During this time, the green LED on the projector is off. )

At this time, control command is invalid

After 90 seconds with Power Save & Cooling Down, it goes to Power Save.(Green LED blinks)

**7.17.9 “04” [CR]**

Power Save

Power Management Function is set to ON in the setting menu, and when there is no signal for 5 minutes, the status goes to Power Save through Power Save&Cooling Down.

Control commands as below are available in this status.

Power ON COMMAND: "C00 [CR] .....move on the status of power on

..Power OFF COMMAND: "C01"[CR] .....move on the status of stand by

Moving on to the status of Power On is the same action as moving on to the Power On from the status of normal stand by.

**7.18 Input Mode Read COMMAND**

COMMAND	"CR1" [CR]	
Detail	Get selected Input No.	
Response	Acceptable	"%1" [CR]
	%1	"1" = Input1 (Slot 1) is selected. "2" = Input2 (Slot 2) is selected. "3" = Input3 (Slot 3) is selected. "4" = Input4 (Slot 4) is selected
	Unacceptable	"?" [CR]

**7.19 Lamp Time Read COMMAND**

COMMAND	"CR3" [CR]	
Detail	Get total lamp running hours.	
Response	Acceptable	"%1_%2_%3_%4" [CR]
	%1,%2 %3,%4	There is lamp 1 data, once space, lamp 2 data, and one space.... %1 = lamp No.1 %2 = lamp No.2 %3 = lamp No.3 %4 = lamp No.4 Ex: "0410_0410_0410_0410" [CR] ..... Lamp No.1 = 410 Hours Lamp No.2 = 410 Hours Lamp No.3 = 410 Hours LampNo.4 = 410 Hours
	Unacceptable	"?" [CR]

**7.20 Setting Read COMMAND**

COMMAND	"CR4" [CR]	
Detail	Get setting status for screen such as Ceiling/Rear.	
Response	Acceptable	"%1" [CR]
	%1	"11" [CR] = Normal Screen Setting "10" [CR] = Rotation around the horizontal setting (Rear & Ceiling ON) "01" [CR] = Rotation around the horizontal setting Rear ON) "00" [CR] = Vertical and right-and left (four directions) reversal setting (status: Ceiling ON)
	Unacceptable	"?" [CR]

**7.21 Temp Read COMMAND**

COMMAND	"CR6" [CR]	
Detail	Get the temperature inside a projector. When some temperature sensors are installed in the projector, it is possible to know the temperature all at once.	
Response	Acceptable	"%1_%2" [CR]
	%1 %2	%1 = Temperature, sensor 1 %2 = Temperature, sensor 2 Temperature data form shows as 00.0. When the temperature sinks to -, the first character is "-" like "-05.5" [CR]. When cannot return the temperature data due to hardware problems, the first character is "E" like"E00.0" [CR]. When the status is Stand BY or it is 10 seconds after Power On, depend on projectors, temperature may approach critical temperature due to ballast lamp's residual heat. So, when the status is Stand By or it is 10 seconds after Power On, the process for the abnormal temperature is not executed. The temperature data is " ----" at the time. When some temperature sensors are installed, the projector sends command continuously. "_31.5_35.2" [CR] There is the first sensor's information, and after one space, there is the second sensor's information.
	Unacceptable	"?" [CR]

**7.22 Lamp Mode Read COMMAND**

COMMAND	"CR7" [CR]	
Detail	Get lamp Mode for a projector. When some lamp failure occurs, get the information.	
Response	Acceptable	"%1" [CR]
	%1	Ex: "0F" [CR] First digit indicates the lamp Mode. 0 = 4 lamp Mode 1 = 2 lamp Mode ( Lamp No.1&No. 4 ) 2 = 2 lamp Mode (Lamp No.2&No.3) Second digit indicates if the lamp is on or not.  Ex: 0 = All off 1 = No.1 is ON, the rest is OFF 2 = No.2 is ON, the rest is OFF 4 = No.3 is ON, the rest is OFF 8 = No.4 is ON, the rest is OFF 3 = No.1 & No.2 are ON, the rest OFF 5 = No.1 & No.3 are ON, the rest OFF 9 = No.1 & No.4 are ON, the rest OFF 6 = No.2 & No.3 are ON, the rest OFF A= No.2 & No.4 are ON, the rest OFF C= No.3 & No.4 are ON, the rest OFF 7= No.1 & No.2&No.3 are ON, the rest OFF B= No.1 & No.2&No.4 are ON, the rest OFF D= No.1 & No.3&No.4 are ON, the rest OFF E= No.2 & No.3&No.4 are ON, the rest OFF F= ALL OFF
	Unacceptable	"?" [CR]

**7.23 PC Type Read COMMAND**

COMMAND	"CR9" [CR]	
Detail	Get current displayed PC Type.	
Response	Acceptable	"%1" [CR]
	%1	"Standby"..... Stand by "AV_Mode"..... AV Mode Table such as "UXGA_1" .... Pc Mode "Mode1 ~ 20" ..... Mode1 ~ 20 "Go_PC_adj." ..... Auto "No_signal"..... No signal
	Unacceptable	"?" [CR]

**7.24 Status 2 Read COMMAND**

COMMAND	"CRA [CR]	
Detail	Get Video Mute & Volume mute status	
Response	Acceptable	"%1" [CR]
	%1	"00".....Normal "01".....No Show "02".....Mute On "03".....No Show & Mute On "8*".....No signal
	Unacceptable	"?" [CR]

## 8 COMMAND with Address Specification

### 8.1 Overview

- 8.1.1 Commands with address are to control multiple projectors by one computer.
- 8.1.2 The command with address is defined one command/one line that starts "A" and ends carriage return (0x0D).
- 8.1.3 When a projector receives carriage return (0x0D), it starts decoding.
- 8.1.4 This Command is represented Basic Command or Expand Command with address such as "A001".

(Ex) Functional Execution Command

"A001C05"[CR]

(Ex) Status Read Command

"A001CR0"[CR]

- 8.1.5 There is a function that can set up the projector address.
  - Default setting is "N o . 001"
  - Possible range is "001" to "999"
- 8.1.6 It clears the received buffer in this case as below.
  - When receiving LF ( 0x0A ) or EOF ( 0x1A )
  - When it takes more than one second to receive one command.

( Since the projector has received the first data "C", when it takes more than 1 second until the projector receives a carriage return (0x0D), it clears information of buffer. )
- 8.1.7 Wait at least 60 ms for the response

### 8.2 Functional Execution Command with address

#### 8.2.1 Format

1. Issue command from PC as below

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

or

"A" **Address** "CF" **COMMAND** " \_ " **Parameter** [CR]

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

When using "FFF" as the address, all projectors are available

Command: Character line ( See Basic Command or Expand Command )

2. The only appropriate projectors decode received commands, and when it is ready to receive next commands, it returns the response.

[ACK][CR]:When receiving functional execution command( 0x06, 0x0D )

"?" [CR]: When receiving unclear data

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

8.2.2 When needs command pipelining, the operation is the same as the remote control.

- (1) PC issues commands every 100ms
- (2) When receiving appropriate commands, projector executes the commands in 120ms.
- (3) When receiving the same command in 120ms, the projector executes them next in 120ms
- (4) When there is no command after 120 ms, the execution stops.
- (5) When receiving other commands in 120ms, the execution stops.

### 8.3 Status Read Command with Address

#### 8.3.1 Format

1. PC issues commands as below

**"A" Address "CR" COMMAND [CR]**

or

**"A" Address "CR" COMMAND [CR]**

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

Command: Character line (See Basic Command or Expand Command)

2. When only appropriate projector decodes received command, and returns the character line as the required data.

**Required Data [CR]**

Required Data: Character Line ( See Basic Status Read Command )

3. When received an undecodable data

**Returns "?" [CR]**

When receiving unclear data, it returns "?" [CR]