EXPAND SERIAL COMMAND

FUNCTIONAL SPECIFICATIONS

LC-W4

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

CONTENTS

1. Overview

1.1 This Functional Specification defines communication functions such as Network card for LC-W4.

1.2 Compatible to all versions of Farmware of the projector.

1.3 Commands are used to communicate with Network cards, but most commands are used to remote control a projector through RS-232C from a computer. That's why commands are defined as Expand Serial Commands.

1.4 The operation of some commands depends on Optional Board installed in Inputs. Commands are supposed to be used with the Option Board installed.

2. Serial Interface Specification

2.1 Transfer Specification

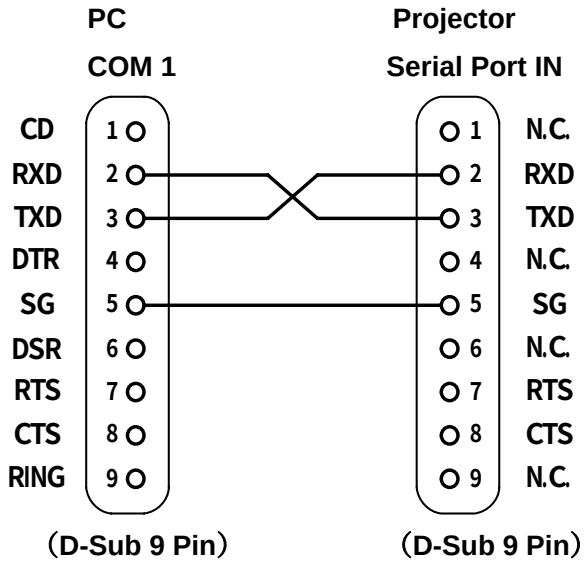
Items	Specification
Synchronoun System	Asynchronous
Transmission Speed	9600 / 19200
Data Length	8 bit
Parity	N/A
Stop Bit	1
Flow Control	N/A

Note1) Transmission Speed: initial setting value is 19200

Note2) Transmission Speed can be changed in Service Mode

2.2 Connection

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



Connect COM port of a computer to SERIAL PORT IN of a projector.

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

3. Notes for communication

3.1 Expand Serial Command is defined as one command / one line that starts with “C” and ends with carriage return (0x0D).

3.2 When a projector receives carriage return (0x0D), it starts decoding.

3.3 There are two types of commands as below:

-Example of Functional Execution Command: ”CF_BRIGHT_032” [CR]

- Example of Status Read Command: “CR_BRIGHT” [CR]

Note) “_” means a space

3.4 It clears the information of buffer as below:

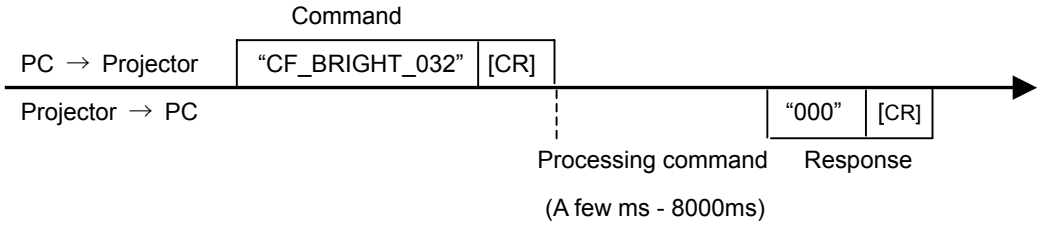
1) When the projector receives LF (0x0A) or EOF (0x1A).

2) When it takes more than one second to receive one command – when it takes more than one second to receive carriage return (0x0D) since the projector has received the first data “C”.

3.5 The projector processes the command and returns the response in a few ms to 8000ms after it receives the command.

When excecuting the command pipelining, it must wait sending next command until the computer receives the response.

Need to make sure that the command processing is done and receives the response before sending next command.



Note) When the computer sends next command before receiving the response, the projector may not operate properly.

Note) Next command may not be accepted in the case the current command processing has not finished.

3.5.1 It takes less than 1s from receiving a command to sending a response, but it takes more than 1s to process some Functional Execution Commands as below:

Command	Item
CF_IMAGE	Select Image Mode
CF_INPUT	Select Input
CF_SCREEN	Select Screen Size
CF_SYSTEM	Select System
CF_INPUT1	Select Input 1 and Signal
CF_INPUT2	Select Input 2 and Signal
CF_INPUT3	Select Input 3 and Signal
CF_IMAGEADJ	Reset/Store for Image Adjustment

3.5.2 It takes about 8 seconds for internal initialization after plugging in AC power. During this time it cannot process commands. Do not issue any command.

4. Name Definition

4.1 Data from a controller to a projector is represented as COMMAND, and data from a projector to a controller for the incoming command is represented as RESPONSE.

4.2 [CR]: Carriage Return Code

The command ends with carriage return code.

Response command also ends with carriage return code.

4.3 _: Space Code

All space code is indicated by (_).

4.4 %1: Parameter in command

When there are some parameters, they are defined as %2, %3…

5. Functional Execution Command Table

5.1 Image Command Table

Execute command	Item
CF_BRIGHT_%1[CR]	Set Brightness value
CF_CONT_%1[CR]	Set Contrast value
CF_COLOR_%1[CR]	Set Color value
CF_TINT_%1[CR]	Set Tint value
CF_SHARP_%1[CR]	Set Sharpness value
CF_GAMMA_%1[CR]	Set Gamma value
CF_WBAL-R_%1[CR]	Set White Balance Red value
CF_WBAL-G_%1[CR]	Set White Balance Green value
CF_WBAL-B_%1[CR]	Set White Balance Blue value
CF_COLTEMP_%1[CR]	Set Color Temp. value
CF_DENHCR_%1[CR]	Set Detail Enhancer value of Faroudja
CF_NZRED_%1[CR]	Set/Cancel Noise reduction
CF_PROGV_%1[CR]	Set/Cancel Progressive
CF_IMAGE_%1[CR]	Set Image Mode
CF_IMAGEADJ_%1[CR]	Reset/Store for Image Adjustment

5.2 PC Control Command Table

Execute command	Item
CF_FSYNC_%1[CR]	Set Fine Sync value
CF_TDOTS_%1[CR]	Set Total Dots value
CF_CLAMP_%1[CR]	Set Clamp value
CF_H-POS_%1[CR]	Set Horizontal Position value
CF_V-POS_%1[CR]	Set Vertical Position value
CF_DDOTS_%1[CR]	Set Display Dots value
CF_DLINE_%1[CR]	Set Display Line value
CF_SETPCADJ_%1[CR]	Execute the setting value in PC adjustment menu to show up on the screen
CF_ORGMODE_%1[CR]	Select original signal that is specified by PC Mode
CF_PCSTORE_%1[CR]	Store the setting value in PC adjustment menu to Mode1 - Mode5

5.3 Input Control Command Table

Execute command	Item
CF_INPUT_%1[CR]	Select Input
CF_SOURCE_%1[CR]	Select Input Source
CF_INPUT1_%1[CR]	Select Input 1 and also set Input %1
CF_INPUT2_%1[CR]	Select Input 2 and also set Input %1
CF_INPUT3_%1[CR]	Select Input 3 and also set Input %1
CF_SYSTEM_%1[CR]	Select System

5.4 Screen Command Table

Execute command	Item
CF_SCREEN_%1[CR]	Select Screen size
CF_FLSCREN_%1[CR]	Set/Cancel Full Screen
CF_TRUE _%1[CR]	Set/Cancel True
CF_DZCENT _%1[CR]	Cancel Digital Zoom mode
CF_KEYSTONE _%1[CR]	Set Keystone

5.5 Lamp Command Table

Execute command	Item
CF_LAMPH_%1[CR]	Reset total running time for each lamp
CF_LAMPMODE_%1[CR]	Select lamp mode (Full/Half)

5.6 Sound Command Table

Execute command	Item
CF_VOLUME_%1[CR]	Set Volume value
CF_BASS_%1[CR]	Set Bass value
CF_TREBLE_%1[CR]	Set Treble value
CF_BLTINSP_%1[CR]	Set Built-In Speaker ON/OFF

5.7 Setting Command Table

Execute command	Item
CF_BBACK_1[CR]	Set Blue Back function
CF_DISP_%1[CR]	Set Display function
CF_LOGO_%1[CR]	Set Logo function
CF_CEIL_%1[CR]	Set Ceiling function
CF_REAR_%1[CR]	Set Rear Function
CF_RCODE_%1[CR]	Select Remote Control Reception Code
CF_LANG_%1[CR]	Select OSD language
CF_ON-STA_%1[CR]	Set Power ON Start Function
CF_P-MANE_%1[CR]	Set Power Management function
CF_P-MANETIME_%1[CR]	Set Power Management time
CF_FANSPEED_%1[CR]	Select Fan Control Speed
CF_KEYDIS_%1[CR]	Prohibit RC/KEY
CF_FDEFAULT_%1[CR]	Set Factory Default setting value

6. Status Read Command Table

6.1 Image Status Read Command Table

Status read command	Item
CR_BRIGHT [CR]	Get Brightness value
CR_CONT [CR]	Get Contrast value
CR_COLOR [CR]	Get Color value
CR_TINT [CR]	Get Tint value
CR_SHARP [CR]	Get Sharpness value
CR_GAMMA [CR]	Get Gamma value
CR_WBAL-R [CR]	White Balance Red value
CR_WBAL-G [CR]	White Balance Green value
CR_WBAL-B [CR]	White Balance Blue value
CR_COLTEMP [CR]	Get Color temperature setting status
CR_DENHCR [CR]	Get Detail Enhancer value of Faroudja
CR_NZRED [CR]	Get Noise reduction setting status
CR_PROGV [CR]	Get Progressive setting status
CR_IMAGE [CR]	Get selected Image status
CR_IMGGMD [CR]	Get Image Gamma setting value

6.2 PC Status Read Command Table

Status read command	Item
CR_FSYNC [CR]	Get Fine Sync setting value
CR_TDOTS [CR]	Get Total Dots setting value
CR_CLAMP [CR]	Get Clamp setting value
CR_H-POS [CR]	Get Horizontal Position setting value
CR_V-POS [CR]	Get Vertical Position setting value
CR_DDOTS [CR]	Get Display Dots setting value
CR_DLINE [CR]	Get Display Line setting value
CR_SETPCADJ [CR]	Get current PC signal for PC display status
CR_ORGMODE [CR]	Get the original signal for PC Mode
CR_PCSTORE [CR]	Get Free or Stored status for PC Adj. Mode 1-5

6.3 Video Status Read Command Table

Status read command	Item
CR_SERSYS [CR]	Get selected current signal. When it is in Auto Mode, it returns a result by Auto detect.

6.4 Input Status Read Command Table

Status read command	Item
CR_INPUT [CR]	Get selected Input No.
CR_SOURCE [CR]	Get selected Input Source
CR_SYSTEM [CR]	Get selected System in Video Input mode
CR_SRCINP1 [CR]	Get selected source for Input 1
CR_SRCINP2 [CR]	Get selected source for Input 2
CR_SRCINP3 [CR]	Get selected source for Input 3
CR_HMSLOT [CR]	Get the total number of inputs
CR_NMSLOT1 [CR]	Get a card name inserted to Input 1
CR_NMSLOT2 [CR]	Get a card name inserted to Input 2
CR_NMSLOT3 [CR]	Get a card name inserted to Input 3
CR_IDSLOT1 [CR]	Get ID for Input 1
CR_IDSLOT2 [CR]	Get ID for Input 2
CR_IDSLOT3 [CR]	Get ID for Input 3

6.5 Screen Status Read Command Table

Status read command	Item
CR_FLSCREN [CR]	Get Full Screen mode setting status
CR_SCREEN [CR]	Get selected screen size

6.6 Lamp Status Read Command Table

Status read command	Item
CR_LAMPREPL [CR]	Get the information on Lamp replacement time
CR_LAMPMODE [CR]	Get Lamp mode status
CR_LAMPSTS [CR]	Get Lamp status
CR_INFLAMP [CR]	Get Lamp switching status
CR_PROJH [CR]	Get the projector total running time
CR_HMLAMP [CR]	Get the total number of lamps

6.7 Sound Status Read Command Table

Status read command	Item
CR_VOLUME [CR]	Get Volume value
CR_MUTE [CR]	Get Sound Mute setting status
CR_BASS [CR]	Get Bass value
CR_TREBLE [CR]	Get Treble value
CR_BLTINSP [CR]	Get Built-In Speaker setting status

6.8 Setting Status Read Command Table

Status read command	Item
CR_BBACK [CR]	Get Blue Back setting status
CR_DISP [CR]	Get Display setting status
CR_LOGO [CR]	Get Logo setting status
CR_RCODE [CR]	Get selected Remote Control Code
CR_LANG [CR]	Get selected language
CR_ON-STA [CR]	Get ON Start setting status
CR_P-MANE [CR]	Get Power Management setting status
CR_P-MANETIME [CR]	Get setting time for Power Management
CR_FANSPEED [CR]	Get selected Fan Control Speed
CR_KEYDIS [CR]	Get RC/KEY prohibit status

6.9 Other Status Read Command Table

Status read command	Item
CR_PRESSURE [CR]	Get Air Pressure data
CR_SIGNAL [CR]	Get Signal status if there is a signal or not
CR_VMUTE [CR]	Get No Show setting status
CR_FREEZE [CR]	Get Freeze setting Status
CR_PTIMER [CR]	Get Presentation Timer operating status
CR_INFPFAIL [CR]	Get information on Power Failure
CR_TEMPWARN [CR]	Get temperature status if sensors are exceeding abnormal temperature or not
CR_TEMPFAIL [CR]	Get temperature when sensors approaches abnormal temperature

7. Error Code Table

Error Code	Contents
?	-When receiving undecodable data -Parameter determination error (digit number error, invalid value etc.)
101	The function is not available in the selected mode
102	Selected value is out of range (Not reflected)
103	Command mismatched to the Hardware

8. Functional Execution Command

8.1 Format

1) PC issues a command as below:

Pattern1: "CF_Command" [CR]

Pattern2: "CF_Command_" %1 [CR]

CF_: Header

Command: Character line

%1: Parameter (Character line)

_: Space (To separate Command and Parameter)

2) The projector decodes the received command and when it is ready to receive next command, it returns the response.

"000" [CR]: (0x06, 0x0D) When receiving Functional Execution Command

"nnn" [CR]: Except "000", when it cannot execute commands for any specific reason.

For detail, refer to [7. Error Code Table]

3) When the received data cannot be decoded, the projector returns **"?" [CR]**

8.2 Transfer Example

When setting projector's total dots to 1344 by expand command.

PC → PJ: "CF_TDOTS_1344" [CR]

PC ← PJ: "000" [CR] ---------- Acceptable

8.3 Operation Requirements

Functional Execution Command is limited when the projector status is as below.

However, Status Read Command is effective under these conditions.

Projector Status	Available Functional Execution Command
Standby Mode	C00: POWER ON
Processing Countdown	C00: POWER ON (Terminate Count Down)
Processing Cooling Down	N/A
Cooling Down due to abnormal temperature	N/A
Abnormal Temperature	N/A
Power Failure (60 seconds after Power failed)	N/A
Processing Power Management / Cooling Down	N/A
Processing Power Management	C00: POWER ON C01: POWER OFF

Note) When the projector receives other commands in the above status, it returns error code to show the status.

8.4 Image Command

8.4.1 CF_ BRIGHT Command

Command	“CF_BRIGHT_%1” [CR]	
%1	“000-063” ---------- Directly select Brightness setting value “UP” ---------- Current setting value +1 “DN” ---------- Current setting value -1	
Details	Set Brightness value of user control. (Only valid when it is in the normal Power ON status.) The value set by this command will not be saved to the projector. Therefore, when ALL is OFF, the value returns to the original setting. (It stays in Standby mode.)	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.4.2 CF_CONT Command

Command	“CF_CONT_%1” [CR]	
%1	“000-063” ---------- Directly select contrast setting value “UP” ---------- Current setting value +1 “DN” ---------- Current setting value -1	
Details	Set Contrast value of user control. (Only valid when it is in the normal Power ON status.) The value set by this command will not be saved to the projector. Therefore, when ALL is OFF, the value returns to the original setting. (It stays in Standby mode.)	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.4.3 CF_COLOR Command

Command	“CF_COLOR_%1” [CR]	
%1	“000-063” ---------- Directly select Color setting value “UP” ---------- Current setting value +1 “DN” ---------- Current setting value -1	
Details	Set Color value of user control. (Only valid when it is in the normal Power ON status.) The value set by this command will not be saved to the projector. Therefore, when ALL is OFF, the value returns to the original setting. (It stays in Standby mode.)	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.4.4 CF_TINT Command

Command	“CF_TINT_%1” [CR]	
%1	“000-063” ---------- Directly select Tint setting value “UP” ---------- Current setting value +1 “DN” ---------- Current setting value -1	
Details	Set Tint value of user control. (Only valid when it is in the normal Power ON status.) The value set by this command will not be saved to the projector. Therefore, when ALL is OFF, the value returns to the original setting. (It stays in Standby mode.)	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.4.5 CF_SHARP Command

Command	“CF_SHARP_%1” [CR]	
%1	“000-015” ---------- Directly select Sharpness setting value “UP” ---------- Current setting value +1 “DN” ---------- Current setting value -1	
Details	Set Sharpness value of user control. (Only valid when it is in the normal Power ON status.) The value set by this command will not be saved to the projector. Therefore, when ALL is OFF, the value returns to the original setting. (It stays in Standby mode.)	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.4.6 CF_GAMMA Command

Command	“CF_GAMMA_%1” [CR]	
%1	“000-015” ---------- Directly select Gamma setting value “UP” ---------- Current setting value +1 “DN” ---------- Current setting value -1	
Details	Set Gamma value of user control. (Only valid when it is in the normal Power ON status.) The value set by this command will not be saved to the projector. Therefore, when ALL is OFF, the value returns to the original setting. (It stays in Standby mode.)	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.4.7 CF_WBAL- Command

Command	“CF_WBAL-%1_%2” [CR]	
%1	“R” ---------- RED “G” ---------- GREEN “B” ---------- BLUE	
%2	“000-063” ------ Directly select color value specified by White Balance %1 “UP” ---------- Color value specified by White Balance %1 +1 “DN” ---------- Color value specified by White Balance %1 -1	
Details	Set Color value specified by White Balance %1 of user control. (Only valid when it is in the normal Power ON status.) The value set by this command will not be saved to the projector. Therefore, when ALL is OFF, the value returns to the original setting. (It stays in Standby mode.)	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.4.8 CF_COLTEMP Command

Command	“CF_COLTEMP_%1” [CR]	
%1	“000” ---------- Xlow “001” ---------- Low “002” ---------- Mid “003” ---------- High	
Details	Set Color Temp. (Only valid when it is in the normal Power ON status.) The value set by this command will not be saved to the projector. Therefore, when ALL is OFF, the value returns to the original setting. (It stays in Standby mode.)	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.4.9 CF_DENHCR Command

Command	“CF_DENHCR_%1” [CR]	
%1	“000”-”015” ---------- Directly set Detail Enhancer value “UP” ---------- Current setting value +1 “DN” ---------- Current setting value -1	
Details	Set Detail Enhancer value for Faroudja Input. (Only valid when it is in the normal Power ON status.) The value set by this command will not be saved to the projector. Therefore, when ALL is OFF, the value returns to the original setting. (It stays in Standby mode.)	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.4.10 CF_NZRED Command

Command	“CF_NZRED_%1” [CR]	
%1	“ON” ---------- Select Noise Reduction “OFF” ---------- Cancel Noise Reduction	
Details	Set/Cancel Noise Reduction. (Only valid when it is in the normal Power ON status.) The value set by this command will not be saved to the projector. Therefore, when ALL is OFF, the value returns to the original setting. (It stays in Standby mode.)	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.4.11 CF_PROGV Command

Command	“CF_PROGV_%1” [CR]	
%1	“ON” ---------- Select Progressive scan “OFF” ---------- Cancel Progressive scan	
Details	Set/Cancel Progressive scan. (Only valid when it is in the normal Power ON status.) The value set by this command will not be saved to the projector. Therefore, when ALL is OFF, the value returns to the original setting. (It stays in Standby mode.)	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.4.12 CF_IMAGE Command

Command	“CF_IMAGE__%1” [CR]	
%1	“STAND” ---------- Standard (Image adjustment value is set to factory default) “REAL” ---------- Real (Fixed value to display graphic image with natural tone) “CINEMA” --------- Cinema (Fixed value to focus on tone reproduction for movie) “CUSTOM1” ---------- Image1 (the value set and stored by a user) “CUSTOM2” ---------- Image2 (the value set and stored by a user) “CUSTOM3” ---------- Image3 (the value set and stored by a user) “CUSTOM4” ---------- Image4 (the value set and stored by a user)	
Details	Select Image mode. (Valid only when it is in the normal Power ON status.) Parameter “CUSTOM1” to “CUSTOM4” is the same as “Image1” to “Image4” displayed when selecting Image on OSD menu. The value set by this command is stored in EEPROM and its setting is effective after ALL is OFF.	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.4.13 CF_IMAGEADJ Command

Command	“CF_IMAGEADJ_%1”[CR]	
%1	“RST”------ Reset Image adjustment “STR1”---- Store current image adjustment to Image1 “STR2”---- Store current image adjustment to Image2 “STR3”---- Store current image adjustment to Image3 “STR4”---- Store current image adjustment to Image4	
Details	Reset/Store image adjustment. (Only valid when it is in the normal Power ON status.) “STR1”-”STR10” is the same as “Image1”-”Image10” displayed when selecting “Store” for image adjustment on OSD menu. The setting value set in “Image1” to “Image10” is stored and can be loaded when turning on again after ALL is OFF.	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.5 PC Control Command

8.5.1 CF_FSYNC Command

Command	"CF_FSYNC_%1" [CR]	
%1	"0000-0031" ---------- Directly select Fine Sync setting value "UP" ---------- Current setting value +1 "DN" ---------- Current setting value -1	
Details	Set Fine Sync value of PC signal. (Only valid when it is in the normal Power ON status.) The value set by this command will not be saved to the projector. Therefore, when ALL is OFF, the value returns to the original setting. (It stays in Standby mode.) **Note: When %1 is directly specified, the setting value cannot be reflected on the screen only with this command. To show up on the image, issue CF_SETPCADJ Command.**	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

8.5.2 CF_TDOTS Command

Command	"CF_TDOTS_%1" [CR]	
%1	"nnnn-9999" ---------- Directly select Total Dots setting value "nnnn" represents minimum value and should be current Display Dots value + Horizontal Position value "UP" ---------- Current setting value +1 "DN" ---------- Current setting value -1	
Details	Set Total Dots value of PC signal. (Only valid when it is in the normal Power ON status.) The value set by this command will not be saved to the projector. Therefore, when ALL is OFF, the value returns to the original setting. (It stays in Standby mode.) **Note: When %1 is directly specified, the setting value cannot be reflected on the screen only with this command. To show up on the image, issue CF_SETPCADJ Command.**	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

8.5.3 CF_CLAMP Command

Command	"CF_CLAMP_%1" [CR]	
%1	"0000-0127" ---------- Directly select Clamp setting value "UP" ---------- Current setting value +1 "DN" ---------- Current Setting value -1	
Details	Set Clamp value for PC signal. (Only valid when it is in the normal Power ON status.) The value set by this command will not be saved to the projector. Therefore, when ALL is OFF, the value returns to the original setting. (It stays in Standby mode.) **Note: When %1 is directly specified, the setting value cannot be reflected on the screen only with this command. To show up on the image, issue CF_SETPCADJ Command.**	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

8.5.4 CF_H-POS Command

Command	"CF_HPOS_%1" [CR]	
%1	"0000-nnnn" ---------- Directly select Horizontal Position setting value "nnnn" represents maximum value and should be current Total Dots value - Display Dots value "UP" ---------- Current setting value +1 "DN" ---------- Current setting value -1	
Details	Set Horizontal Position value of PC signal. (Only valid when it is in the normal Power ON status.) The value set by this command will not be saved to the projector. Therefore, when ALL is OFF, the value returns to the original setting. (It stays in Standby mode.) **Note: When %1 is directly specified, the setting value cannot be reflected on the screen only with this command. To show up on the image, issue CF_SETPCADJ Command.**	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

8.5.5 CF_V-POS Command

Command	"CF_VPOS_%1" [CR]	
%1	"0000-nnnn" ---------- Directly select Vertical Position setting value "nnnn" represents maximum value and should be current Total Line value – Display Line value "UP" ---------- Current setting value +1 "DN" ---------- Current setting value -1	
Details	Set Vertical Position value of PC signal. (Only valid when it is in the normal Power ON status.) The value set by this command will not be saved to the projector. Therefore, when ALL is OFF, the value returns to the original setting. (It stays in Standby Mode.) **Note: When %1 is directly specified, the setting value cannot be reflected on the screen only with this command. To show up on the image, issue CF_SETPCADJ Command.**	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

8.5.6 CF_DLINE Command

Command	"CF_DLINE_%1" [CR]	
%1	"0100-nnnn" ---------- Directly select Display Line setting value "nnnn" represents maximum value and should be current Total Line value – Vertical Position value "UP" ---------- Current setting value +1 "DN" ---------- Curretn setting value -1	
Details	Set Display Line value of PC signal. (Only valid when it is in the normal Power ON status.) The value set by this command will not be saved to the projector. Therefore, when ALL is OFF, the value returns to the original setting. (It stays in Standby mode.) **Note: When %1 is directly specified, the setting value cannot be reflected on the screen only with this command. To show up on the image, issue CF_SETPCADJ Command.**	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

8.5.7 CF_DDOTS Command

Command	"CF_DDOTS_%1" [CR]	
%1	"0100-nnnn" ---------- Directly select Display Dots setting value "nnnn" represents maximum value and should be current Total Dots value - Horizontal Position value "UP" ---------- Current setting value +1 "DN" ---------- Current setting value -1	
Details	Set Display Dots value of PC signal. (Only valid when it is in the normal Power ON status.) The value set by this command will not be saved to the projector. Therefore, when ALL is OFF, the value returns to the original setting. (It stays in Standby mode.) **Note: When %1 is directly specified, the setting value cannot be reflected on the screen only with this command. To show up on the image, issue CF_SETPCADJ Command.**	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

8.5.8 CF_SETDISPADJ Command

Command	"CF_SETPCADJ_%1" [CR]	
%1	"XGA1" "HDTV1080" "MODE1" "EXT6" .....Etc.	
Details	Input is PC	Execute the setting value in PC Adjust menu to show up on the screen. When %1 of PC Adjust Commands (Eight commands as below) is directly set by value, they will not be executed. This command "CF_SETPCADJ_%1" is to execute the setting value. (Only valid when it is in the normal Power ON status.) .....CF_FSYNC .....CF_TDOTS .....CF_CLAMP .....CF_H-POS .....CF_V-POS .....CF_DLINE .....CF_DDOTS .....CF_FLSCREN Note1) When %1 is EXTn-EXTnn (nn represents number), system display is EXT.
	Input is Video	N/A
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

8.5.9 CF_ORGMODE Command

Command	"CF_ORGMODE_%1" [CR]	
%1	"XGA1","HDTV1080"..... Etc	
Details	Input is PC	Select original mode of the mode set in PC Adjust menu. This command is used to make inside setting for Projector such as receiving PC signal through IP or not. (Only valid when it is in the normal Power ON status.)
	Input is Video	N/A
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

8.5.10 CF_PCSTORE Command

Command	“CF_PCSTORE_%1” [CR]	
%1	“MODE1” ---------- Store current PC Adjust status to Mode1 “MODE2” ---------- Store current PC Adjust status to Mode2 “MODE3” ---------- Store current PC Adjust status to Mode3 “MODE4” ---------- Store current PC Adjust status to Mode4 “MODE5” ---------- Store current PC Adjust status to Mode5	
Details	Input is PC	Store the current PC Adjust status (each parameter status such as Total dots) to Mode1- Mode5. This command operates the same as storing to Mode1-Mode5 in PC Adjust menu. (Only valid when it is in the normal Power ON status.)
	Input is Video	N/A
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.6 Input Control Command

8.6.1 CF_INPUT Command

Command	“CF_INPUT_%1” [CR]	
%1	“1” ---------- Select Input 1 “2” ---------- Select Input 2 “3” ---------- Select Input 3	
Details	Select Input (Only valid when it is in the normal Power ON status.) The operation is the same as “INPUT” button of the projector and remote control.	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.6.2 CF_SOURCE Command

Command	“CF_SOURCE_%1” [CR]	
%1	Input is PC	“DIGITAL” ---------- Select DVI Input of computer “ANALOG” ---------- Select Analog Input of computer
	Input is Video	“VIDEO” ---------- Select Composite Video Input “S-VIDEO” ---------- Select S-Video input “YC” ---------- Select Y/C Input “YPBPR” ---------- Select Y/Pb/Pr Input “YCBCR” ---------- Select Y/Cb/Cr Input “HD-SDI” ---------- Select HD-SDI Input “SD-SDI” ---------- Select SD-SDI Input
Details	Select source of currently selected Input. (Only valid when it is in the normal Power ON status.) When selected Input does not meet the requirement for the specified %1, return “101” [CR] and the command is not executed.	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.6.3 CF_INPUT1~3 Command

Command	"CF_INPUT%1_%2" [CR]	
%1	"1" ---------- Specify Input 1 "2" ---------- Specify Input 2 "3" ---------- Specify Input 3	
%2	"DIGITAL" ---------- Select DVI Input of computer "ANALOG" ---------- Select Analog Input of computer "VIDEO" ---------- Select Composite Video Input "YPBPR" ---------- Select Y/Pb/Pr Input "YCBCR" ---------- Select Y/Cb/Cr Input "S-VIDEO" ---------- Select S-Video Input "YC" ---------- Select Y/C Input "HD-SDI" ---------- Select HD-SDI Input	
Details	Select Input specified by %1, and also select Source specified by %2. (Only valid when it is in the normal Power ON status.)	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

8.6.4 CF_SYSTEM Command

Command	"CF_SYSTEM_%1" [CR]	
%1	Input is PC	"MODE1" ---------- Select MODE 1 "MODE2" ---------- Select MODE 2 "MODE3" ---------- Select MODE 3 "MODE4" ---------- Select MODE 4 "MODE5" ---------- Select MODE 5
	Input is Video	"AUTO" ---------- Select System" Auto" "NTSC" ---------- Select NTSC "NTSC443" ---------- Select NTSC4.43 "PAL" ---------- Select PAL "SECAM" ---------- Select SECAM "PAL-M" ---------- Select PAL-M "PAL-N" ---------- Select PAL-N "1080I60" ---------- Select 1080i 60Hz "1080I50" ---------- Select 1080i 50Hz "1035I" ---------- Select 1035i "720P" ---------- Select 720p "575P" ---------- Select 575p "480P" ---------- Select 480p "575I" ---------- Select 575i "480I" ---------- Select 480i
Details	Select system of currently selected Input. (Only valid when it is in the normal Power ON status.) When selected Input does not meet the requirement for the specified %1, return "101" [CR] and the command is not executed. Note1) "NTSC", "NTSC4.43", "PAL", "SECAM", "PAL-M", "PAL-N" are available only when VIDEO or S-VIDEO is selected for Input. Note2) "1080I", "1080I60", "1080I50", "1035I", "720P", "575P", "480P", "575I", "480I" are available only when Y,PB/Cb,Pr/Cr is selected for Input.	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

8.7 Screen Control Command

8.7.1 CF_SCREEN Command

Command	“CF_SCREEN_%1” [CR]	
%1	Input is PC	“NORMAL” ---------- Select Normal size (4:3) “FULL” ---------- Select Fullsize (16:9) “TRUE” ---------- Select True size “DZOOM□UP” ---------- Expand image size by Digital Zoom “DZOOM□DN” ---------- Compress image size by Digital Zoom
	Input is Video	“NORMAL” ---------- Select Normal size (4:3) “FULL” ---------- Select Full size (16:9) “ZOOM” ---------- Select Zoom size “WZOOM” ---------- Select Natural Wide size
Details	Select screen size. (Only valid when it is in the normal Power ON status.) When selected Input does not meet the requirement for the specified %1, return “101” [CR] and the command is not executed.	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.7.2 CF_FLSCREN Command

Command	“CF_FLSCREN _%1” [CR]	
%1	“ON” ---------- Select Full Screen size “OFF” ---------- Cancel Full Screen size	
Details	Input is PC	Set/Cancel Full Screen. (Only valid when it is in the normal Power ON status.) The value set by this command will not be saved to the projector. Therefore, when ALL is OFF, the value returns to the original setting. (It stays in Standby mode.) **Note: When %1 is directly specified, the setting value cannot be reflected on the screen only with this command. To show up on the image, issue CF_SETPCADJ Command.**
	Input is Video	N / A
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.7.3 CF_TRUE Command

Command	“CF_TRUE _%1” [CR]	
%1	“ON” ---------- Select True “OFF” ---------- Cancel True	
Details	Set/Cancel True. (Only valid when it is in the normal Power ON status and Input for Computer is selected.)	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.7.4 CF_DZCENT Command

Command	“CF_DZCENT_%1” [CR]	
%1	“CENT” ---------- Cancel Digital Zoom (CENT: “CENTER”)	
Details	Cancel Digital Zoom function. (Only valid when it is in the normal Power ON status and Input for Computer is selected.)	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.7.5 CF_KEYSTONE Command

Command	“CF_KEYSTONE _%1” [CR]	
%1	“_127” ~ “□127” ----- Directly select Keystone setting value “UP” ---------- Correct Keystone distortion to reduce upper part of image “FUP” ---------- Correct Keystone distortion to reduce upper part largely “DN” ---------- Correct Keystone distortion to reduce lower part of image “FDN” ---------- Correct Keystone distortion to reduce lower part largely “RST” ---------- Set Keystone to OFF	
Details	Change Keystone distortion correction. (Only valid when it is in the normal Power ON status.) When it reaches the correction limit, it accepts the command but does not execute it. When directly selecting Keystone status, “Keystone –” reduces the lower part and “Keystone +” reduces the upper part of image. Set Keystone status OFF with “□000”.	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.8 Lamp Command

8.8.1 CF_LAMPH Command

Command	“CF_LAMPH_%1” [CR]	
%1	“RSTn” (n=1-2) ---------- Reset lamp 1-2 running time	
Details	Reset lamp 1-2 running time. (Only valid when it is in the normal Power ON status.)	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.8.2 CF_LAMPMODE Command

Command	“CF_LAMPMODE_%1” [CR]	
%1	“FULL” ---------- Set 2-lamp mode status “HALF” ---------- Set 1-lamp mode status	
Details	Select Lamp mode. (Only valid when it is in the normal Power ON status.) The value set by this command is stored in EEPROM and its setting is effective after ALL is OFF. “FULL” mode means 2 lamps are ON. “HALF” mode means 1 lamp is ON and the lamp is automatically set. (The lamp with less total running time is chosen.)	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.9 Sound Command

8.9.1 CF_VOLUME Command

Command	“CF_VOLUME_%1” [CR]	
%1	“000-063” ---------- Directly select Volume setting value “UP” ---------- Current setting value +1 “DN” ---------- Current setting value -1	
Details	Set Volume value. (Only valid when it is in the normal Power ON status.) Besides the same operation of Volume UP/DOWN as the remote control, it directly set Volume value. When setting Volume value, the Sound Mute ON status is canceled just like the remote control operation. The value set by this command is stored in the projector.	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.9.2 CF_BASS Command

Command	“CF_BASS_%1” [CR]	
%1	“000” - “063” ---------- Directly select Bass (Audio) setting value “UP” ---------- Current setting value +1 “DN” ---------- Current setting value -1	
Details	Set Bass (Audio) value (Only valid in the normal Power ON status)	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.9.3 CF_TREBLE Command

Command	“CF_TREBLE_%1” [CR]	
%1	“000” - “063” ---------- Directly select Treble (Audio) setting value “UP” ---------- Current setting value +1 “DN” ---------- Current setting value -1	
Details	Set Treble (Audio) setting value (Only valid when it is in the normal Power ON status)	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.9.4 CF_BLTINSP Command

Command	“CF_BLTINSP_%1” [CR]	
%1	“ON” ---------- Select Built-In Speaker “OFF” ---------- Cancel Built-In Speaker	
Details	Set/Cancel Built-In Speaker (Only valid when it is in the normal Power ON status)	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.10 Setting Command

8.10.1 CF_BBACK Command

Command	“CF_BBACK_1” [CR]	
%1	“ON” ---------- Select Blue Back “OFF” ---------- Cancel Blue Back	
Details	Set/Cancel Blue Back. (Only valid when it is in the normal Power ON status.) The status set by this command is stored in EEPROM and its setting is effective after ALL is OFF.	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.10.2 CF_DISP Command

Command	“CF_DISP_%1” [CR]	
%1	“ON” ---------- Select Display “OFF” ---------- Cancel Display	
Details	Set/Cancel Display. (Only valid when it is in the normal Power ON status.) The value set by this command is stored in EEPROM and its setting is effective after ALL is OFF.	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.10.3 CF_LOGO Command

Command	“CF_LOGO_%1” [CR]	
%1	“ON” ---------- Select Logo “OFF” ---------- Cancel Logo	
Details	Set/Cancel Logo. (Only valid when it is in the normal Power ON status.) The status set by this command is stored in EEPROM and its setting is effective after ALL is OFF.	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.10.4 CF_CEIL Command

Command	“CF_CEIL_%1” [CR]	
%1	“ON” ---------- Select Ceiling “OFF” ---------- Cancel Ceiling	
Details	Set/Cancel Ceiling. (Only valid when it is in the normal Power ON status.) The status set by this command is stored in EEPROM and its setting is effective after ALL is OFF.	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.10.5 CF_REAR Command

Command	“CF_REAR_%1” [CR]	
%1	“ON” ---------- Select Rear “OFF” ---------- Cancel Rear	
Details	Set/Cancel Rear. (Only valid when it is in the normal Power ON status.) When Rear is ON, image is left/right reversed. The status set by this command is stored in EEPROM and its setting is effective after ALL is OFF.	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.10.6 CF_RCODE Command

Command	“CF_RCODE_%1” [CR]	
%1	“001”-”008” ---------- Select Code1-Code8	
Details	Select Remote Control Code (Only valid when it is in the normal Power ON status) The status set by this command is stored in EEPROM and its setting is effective after ALL is OFF.	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.10.7 CF_LANG Command

Command	“CF_LANG_%1” [CR]	
%1	“ENG” ---------- Select ENGLISH “DEU” ---------- Select German “FRA” ---------- Select French “ITA” ---------- Select Italian “ESP” ---------- Select Spanish “POR” ---------- Select Portuguese “NED” ---------- Select Dutch “SVE” ---------- Select Swedish “JPN” ---------- Select Japanese “CHI” ---------- Select Chinese “KOR” ---------- Select Korean “RUS” ---------- Select Russian	
Details	Set language for OSD. (Only valid when it is in the normal Power ON status.) The language set by this command is stored in EEPROM and its setting is effective after ALL is OFF.	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.10.8 CF_ON-STA Command

Command	“CF_ON-STA_%1” [CR]	
%1	“ON” ---------- Select Power On Start “OFF” ---------- Cancel Power On Start	
Details	Set/Cancel Power ON Start (Only valid when it is in the normal Power ON status) The status set by this command is stored in EEPROM and its setting is effective after ALL is OFF.	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.10.9 CF_P-MANE Command

Command	“CF_P-MANE_%1” [CR]	
%1	“OFF” ---------- Set Power Management to OFF “READY” ---------- Set Power Management to Ready “SHUT DOWN” ---------- Set Power Management to Shut Down mode	
Details	Set/Cancel Power Management. (Only valid when it is in the normal Power ON status.) The status set by this command is stored in EEPROM and its setting is effective after ALL is OFF.	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.10.10 CF_P-MANETIME Command

Command	“CF_P-MANETIME_%1” [CR]	
%1	“01”-”30” ---------- Directly select setting time by the minute “UP” ---------- Plus one minute “DN” ---------- Minus one minute	
Details	Set Power Management time. (Only valid when it is in the normal Power ON status.) The status set by this command is stored in EEPROM and its setting is effective after ALL is OFF.	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.10.11 CF_FANSPEED Command

Command	“CF_FANSPEED_%1” [CR]	
%1	“MAX” ---------- Select Maximum Fan Control Speed “NOR” ---------- Select Normal Fan Control Speed	
Details	Switch Fan Control Speed. (Only valid when it is in the normal Power ON status.) The status set by this command is stored in EEPROM and its setting is effective after ALL is OFF.	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.10.12 CF_KEYDIS Command

Command	“CF_KEYDIS_%1” [CR]	
%1	“NONE” ---------- RC & KEY are valid “RC” ---------- RC is invalid “KEY” ---------- KEY is invalid	
Details	Set a ban on the use of RC/KEY (Only valid when it is in the normal Power ON status)	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

8.10.13 CF_FDEFAULT Command

Command	“CF_FDEFAULT_%1” [CR]	
%1	“RST”	
Details	Set to Factory Default (Only valid when it is in the normal Power ON status)	
Response	Acceptable	“000” [CR]
	Unacceptable	“Error Code” [CR]

9. Status Read Command

9.1 Format

1) PC issues a command as below:

“CR_Command” [CR]

Command: Character Line

2) When the projector receives the appropriate command, it returns a character line as the required Data.

“000_” %1 [CR]

%1: Required Data (Character line. Refer to [Basic Status Read Command Table])

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

9.2 Transfer Example

Get total dots of the projector by Expand Serial Commands

PC → PJ: “CR_TODOTS” [CR]

PC ← PJ: “000_1344” [CR]

9.3 Operation Condition

Basically it should be always executed when Power is ON. (It should be executed in Standby mode or in the Power management operation)

9.4 Image Status Read Commands

9.4.1 CR_BRIGHT Command

Command	“CR_BRIGHT” [CR]	
Details	Get Brightness value of user control	
Response	Acceptable	“000_%1” [CR]
	%1	“000” – “063”
	Unacceptable	“Error Code” [CR]

9.4.2 CR_CONT Command

Command	“CR_CONT” [CR]	
Details	Get Contrast value of user control	
Response	Acceptable	“000_%1” [CR]
	%1	“000” – “063”
	Unacceptable	“Error Code” [CR]

9.4.3 CR_COLOR Command

Command	“CR_COLOR” [CR]	
Details	Get Color value of user control	
Response	Acceptable	“000_%1” [CR]
	%1	“000” – “063”
	Unacceptable	“Error Code” [CR]

9.4.4 CR_TINT Command

Command	“CR_TINT” CR]	
Details	Get Tint value of user control	
Response	Acceptable	“000_%1” [CR]
	%1	“000” – “063”
	Unacceptable	“Error Code” [CR] ----------Invalid condition such as Input “?” [CR] ---------- When receiving unclear command

9.4.5 CR_SHARP Command

Command	“CR_SHARP” [CR]	
Details	Get Sharpness value of user control	
Response	Acceptable	“000_%1” [CR]
	%1	“000” – “031”
	Unacceptable	“Error Code” [CR]

9.4.6 CR_GAMMA Command

Command	“CR_GAMMA” [CR]	
Details	Get Gamma value of user control	
Response	Acceptable	“000_%1” [CR]
	%1	“000” – “015”
	Unacceptable	“Error Code” [CR]

9.4.7 CR_WBAL-R Command

Command	“CR_WBAL-R” [CR]	
Details	Get White Balance Red value of user control	
Response	Acceptable	“000_%1” [CR]
	%1	“000” – “063”
	Unacceptable	“Error Code” [CR]

9.4.8 CR_WBAL-G Command

Command	“CR_WBAL-G” [CR]	
Details	Get White Balance Green value of user control	
Response	Acceptable	“000_%1” [CR]
	%1	“000” – “063”
	Unacceptable	“Error Code” [CR]

9.4.9 CR_WBAL-B Command

Command	“CR_WBAL-B” [CR]	
Details	Get White Balance Blue value of user control	
Response	Acceptable	“000_%1” [CR]
	%1	“000” – “063”
	Unacceptable	“Error Code” [CR]

9.4.10 CR_COLTEMP Command

Command	“CR_COLTEMP” [CR]	
Details	Get Color Temp. setting status	
Response	Acceptable	“000_%1” [CR]
	%1	“000” ---------- Xlow “001” ---------- Low “002” ---------- Mid “003” ---------- High “BLANK” ---- OSD Menu is blank (Neither of Xlow / Low / Mid / High)
	Unacceptable	“Error Code” [CR]

9.4.11 CR_DENHCR Command

Command	“CR_DENHCR” [CR]	
Details	Get Detail Enhancer setting value for Faroudja Input	
Response	Acceptable	“000_%1” [CR]
	%1	“000” – “015”
	Unacceptable	“Error Code” [CR]

9.4.12 CR_NZRED Command

Command	“CR_NZRED” [CR]	
Details	Get Noise Reduction setting status	
Response	Acceptable	“000_%1” [CR]
	%1	“ON” ---------- Noise Reduction is set “OFF” ---------- Noise Reduction is canceled
	Unacceptable	“Error Code” [CR]

9.4.13 CR_PROGV Command

Command	“CR_PROGV” [CR]	
Details	Get Progressive scan setting status	
Response	Acceptable	“000_%1” [CR]
	%1	“ON” ---------- Progressive scan is set “OFF” ---------- Progressive scan is canceled
	Unacceptable	“Error Code” [CR]

9.4.14 CR_IMAGE Command

Command	“CR_IMAGE” [CR]	
Details	Get image setting status. The Required data “CUSTOM1” – “CUSTOM4” equal to “Image1” – “Image4” displayed when selecting Image on OSD Menu.	
Response	Acceptable	“000_%1” [CR]
	%1	“STAND” ---------- Standard “REAL” ----------Real “CINEMA” ---------- Cinema “CUSTOM1” ---------- Image 1 “CUSTOM2” ---------- Image 2 “CUSTOM3” ---------- Image 3 “CUSTOM4” ---------- Image 4
	Unacceptable	“Error Code” [CR] ---------- Invalid condition such as Input “?” [CR] ---------- When receiving unclear command

9.4.15 CR_IMGGMD Command

Command	“CR_IMGGMD” [CR]	
Details	Get Standard/Real/Cinema of Image Gamma setting status	
Response	Acceptable	“000_%1” [CR]
	%1	“STD” ---------- Standard “REL” ---------- Real “CNM” ---------- Cinema
	Unacceptable	“Error Code” [CR]

9.5 PC Status Read Commands

9.5.1 CR_FSYNC Command

Command	“CR_FSYNC” [CR]	
Details	Get Fine Sync value	
Response	Acceptable	“000_%1” [CR]
	%1	“0000” – “0031”
	Unacceptable	“Error Code” [CR] ---------- Invalid condition such as Input “?” [CR] ---------- When receiving unclear command

9.5.2 CR_TDOTS Command

Command	“CR_TDOTS” [CR]	
Details	Get Total Dots value	
Response	Acceptable	“000_%1” [CR]
	%1	“nnnn” – “ 9999” (nnnn = Display Dots + Horizontal Position)
	Unacceptable	“Error Code” [CR] ----------Invalid condition such as Input “?” [CR] ---------- When receiving unclear command

9.5.3 CR_CLAMP Command

Command	“CR_CLAMP” [CR]	
Details	Get Clamp value	
Response	Acceptable	“000_%1” [CR]
	%1	“0000” – “ 0127”
	Unacceptable	“Error Code” [CR] ----------Invalid condition such as Input “?” [CR] ---------- When receiving unclear command

9.5.4 CR_H-POS Command

Command	“CR_H-POS” [CR]	
Details	Get Horizontal Position value	
Response	Acceptable	“000_%1” [CR]
	%1	“0000” – “ nnnn” (nnnn = Total Dots - Display Dots)
	Unacceptable	“Error Code” [CR] ---------- Invalid condition such as Input “?” [CR] ---------- When receiving unclear command

9.5.5 CR_V-POS Command

Command	“CR_V-POS” [CR]	
Details	Get Vertical Position value	
Response	Acceptable	“000_%1” [CR]
	%1	“0000” – “ nnnn” (nnnn = Total Line - Display Line)
	Unacceptable	“Error Code” [CR] ---------- Invalid condition such as Input “?” [CR] ---------- When receiving unclear command

9.5.6 CR_DLINE Command

Command	“CR_DLINE” [CR]	
Details	Get Display Line value	
Response	Acceptable	“000_%1” [CR]
	%1	“0100” – “ nnnn” (nnnn = Total Line –Vertical Position value)
	Unacceptable	“Error Code” [CR] ---------- Invalid condition such as Input “?” [CR] ---------- When receiving unclear command

9.5.7 CR_DDOTS Command

Command	“CR_DDOTS” [CR]	
Details	Get Display Dots value	
Response	Acceptable	“000_%1” [CR]
	%1	“0100”-”nnnn” (nnnn = Total Dots – Horizontal Position value)
	Unacceptable	“Error Code” [CR] ---------- Invalid condition such as Input “?” [CR] ---------- When receiving unclear command

9.5.8 CR_SETPCADJ Command

Command	“CR_SETPCADJ” [CR]	
Details	Get PC signal for current system	
Response	Acceptable	“000_%1” [CR]
	%1	“XGA1” “HDTV1080” “MODE1” “EXT6”..... Etc.
	Unacceptable	“Error Code” [CR]

9.5.9 CR_ORGMODE Command

Command	“CR_ORGMODE” [CR]	
Details	Get the original signal of currently selected mode that is set in PC Adjust menu. When MODE1-MODE5 is not selected, get the current signal. This command is to determine the inside setting of the projector such as passing PC signal through IP or not.	
Response	Acceptable	“000_%1” [CR]
	%1	“XGA1” “HDTV1080”.....Etc
	Unacceptable	“Error Code” [CR]

9.5.10 CR_PCSTORE Command

Command	“CR_PCSTORE” [CR]	
Details	Get Free or Stored status of MODE1 - MODE5 for PC Adjust menu Each data represents Mode1 - Mode5 orderly by 5 bytes. (F:Free, S:Stored)	
Response	Acceptable	“000_%1” [CR]
	%1	“FFFFF”---------- ALL Free “SFFFF”---------- Mode1 is “Stored”, others are “Free” : “FFFFS” ---------- Mode5 is “Stored”, others are “Free” “SSSSS” ---------- ALL Stored
	Unacceptable	“Error Code” [CR]

9.6 Video Status Read Command

9.6.1 CR_SERSYS Command

Command	“CR_SERSYS” [CR]	
Details	Get currently selected signal. Only valid when Input is video. (Invalid when Input is computer)	
Response	Acceptable	“000_%1” [CR]
	%1	“1080I60”---------- 1080i 60Hz “1080I50” ---------- 1080i 50Hz “1035I” ---------- 1035i “720P” ---------- 720p “575P” ---------- 575p “480P” ---------- 480p “575I” ---------- 575i (includes composite signal such as PAL) “480I” ----------480i (includes composite signal such as NTSC) “NO□SIGNAL” ---------- There is no signal
	Unacceptable	“Error Code” [CR]

9.7 Input Read Command

9.7.1 CR_INPUT Command

Command	“CR_INPUT” [CR]	
Details	Get selected INPUT No.	
Response	Acceptable	“000_%1” [CR]
	%1	“1” – “3”
	Unacceptable	“Error Code” [CR]

9.7.2 CR_SOURCE Command

Command	“CR_SOURCE” [CR]	
Details	Get selected Source	
Response	Acceptable	“000_%1” [CR]
	%1	“DIGITAL” ---------- DVI Input is selected “ANALOG ---------- ANALOG RGB is selected “VIDEO” ---------- Video Input is selected “S-VIDEO” ---------- S-VIDEO Input is selected “YC” ---------- Y/C Input is selected “YPBPR” ---------- Y/Pb/Pr Input is selected “YCBCR” ---------- Y/Cb/Cr Input is selected “HD-SDI” ---------- HD-SDI Input is selected “BLANK” ---------- Mode status without Source
	Unacceptable	“Error Code” [CR] ---------- Invalid condition such as Input “?” [CR] ---------- When receiving unclear command

9.7.3 CR_SYSTEM Command

Command	“CR_SYSTEM” [CR]		
Details	Get selected System		
Response	Acceptable		“000_%1” [CR]
	%1	Input is PC	“MODE1” “MODE2” “MODE3” “MODE4” “MODE5”
		Input is Video	“AUTO” ---------- Auto is selected “NTSC” ---------- NTSC is selected “NTSC443” ---------- NTSC4.43 is selected “PAL” ---------- PAL is selected “SECAM” ---------- SECAM is selected “PAL-M” ---------- PAL-M is selected “PAL-N” ---------- PAL-N is selected “1080I60” ---------- 1080i60Hz is selected “1080I50” ---------- 1080i50Hz is selected “1035I” ---------- 1035i is selected “720P ---------- 720p is selected “575P” ---------- 575p is selected “480P” ---------- 480p is selected “575I” ---------- 575i is selected “480I” ---------- 480i is selected
	Unacceptable		“Error Code” [CR] ---------- Invalid condition such as Input “?” [CR] ---------- When receiving unclear command

9.7.4 CR_SRCINP1 Command

Command	“CR_SRCINP1” [CR]	
Details	Get Source of Input1	
Response	Acceptable	“000_%1” [CR]
	%1	“DIGITAL” ---------- Computer mode status “ANALOG”“ ---------- Computer mode status “VIDEO” ---------- Video mode status “S-VIDEO” ---------- Video mode status “YC” ---------- Video mode status “YPBPR” ---------- Video mode status “YCBCR” ---------- Video mode status “HD-SDI” ---------- Video mode status “BLANK” ---------- There is no source “NOCARD” ---------- There is no card inserted
	Unacceptable	“Error Code” [CR]

9.7.5 CR_SRCINP2 Command

Command	“CR_SRCINP2” [CR]	
Details	Get Source of Input 2	
Response	Acceptable	“000_%1” [CR]
	%1	The same data as CR□SRCINP1
	Unacceptable	“Error Code” [CR]

9.7.6 CR_SRCINP3 Command

Command	“CR_SRCINP3” [CR]	
Details	Get Source of Input 3	
Response	Acceptable	“000_%1” [CR]
	%1	The same data as CR□SRCINP1
	Unacceptable	“Error Code” [CR]

9.7.7 CR_HMSLOT Command

Command	“CR_HMSLOT” [CR]	
Details	Get the number of Inputs	
Response	Acceptable	“000_%1” [CR]
	%1	“003”
	Unacceptable	“Error Code” [CR]

9.7.8 CR_NMSLOT1 Command

Command	“CR_NMSLOT1” [CR]	
Details	Get a card name inserted to Input 1	
Response	Acceptable	“000_%1” [CR]
	%1	“VIDEO” ---------- Video Card “VGA” ---------- VGA D-Sub Card “Progressive” ---------- Faroudja Card “NETWORK” ---------- Network Card “5BNC ---------- Component Card “DVI” ---------- DVI Card “HDCP-DVI” ---------- HDCP-DVI Card “HD-SDI” ---------- HD-SDI Card “SD-SDI” ---------- SD-SDI Card “NOTERMINAL” ---------- There is no card inserted
	Unacceptable	“Error Code” [CR]

9.7.9 CR_NMSLOT2 Command

Command	“CR_NMSLOT2” [CR]	
Details	Get a card name inserted to Input 2	
Response	Acceptable	“000_%1” [CR]
	%1	The same data as CR□NMSLOT1
	Unacceptable	“Error Code” [CR]

9.7.10 CR_NMSLOT3 Command

Command	“CR_NMSLOT3” [CR]	
Details	Get a card name inserted to Input 3	
Response	Acceptable	“000_%1” [CR]
	%1	The same data as CR□NMSLOT1
	Unacceptable	“Error Code” [CR]

9.7.11 CR_IDSLOT1 Command

Command	“CR_IDSLOT1” [CR]	
Details	Get ID information on Input 1. This command is to recognize the inserted card and specify the valid Input source.	
Response	Acceptable	“000_%1” [CR]
	%1	“00” ---------- Video Card Valid Input Source: VIDEO, YC, S-VIDEO “01” ---------- D-sub Card Valid Input Source: ANALOG “02” ---------- Faroudja Card Valid Input Source: VIDEO, YC, S-VIDEO, YCBCR “03” ----------LAN Card Valid Input Source: NONE (BLANK) “04” ---------- Component Card Valid Input Source: ANALOG, YPBPR “05” ---------- DVI Card Valid Input Source: DIGITAL, ANALOG “06” ---------- HD-SDI Card Valid Input Source: HD-SDI “07” ---------- DUAL-SDI Card Valid Input Source: SDI1, SDI2 “08” ---------- HDCP-DVI Card Valid Input Source: DIGITAL, ANALOG, HDCP, SCART “99” ---------- No Card inserted
	Unacceptable	“Error Code” [CR]

9.7.12 CR_IDSLOT2 Command

Command	“CR_IDSLOT2” [CR]	
Details	Get ID information on Input 2. This command is to recognize the inserted card and specify the valid Input source.	
Response	Acceptable	“000_%1” [CR]
	%1	The same as CR□IDSLOT1
	Unacceptable	“Error Code” [CR]

9.7.13 CR_IDSLOT3 Command

Command	“CR_IDSLOT3” [CR]	
Details	Get ID information on Input 3. This command is to recognize the inserted card and specify the valid Input source.	
Response	Acceptable	“000_%1” [CR]
	%1	The same as CR□IDSLOT1
	Unacceptable	“Error Code” [CR]

9.8 Screen Status Read Commands

9.8.1 CR_FLSCREN Command

Command	“CR_FLSCREN” [CR]	
Details	Get screen size status if it is set to Full Screen	
Response	Acceptable	“000_%1” [CR]
	%1	“ON” ---------- Full Screen is selected “OFF” ---------- Full Screen is not selected
	Unacceptable	“Error Code” [CR] ---------- Invalid condition such as Input “?” [CR] ---------- Command

9.8.2 CR_SCREEN Command

Command	“CR_SCREEN” [CR]	
Details	Get selected screen image size	
Response	Acceptable	“000_%1” [CR]
	%1	“NORMAL” ---------- Normal size (4:3) is selected “FULL” ---------- Wide size (16:9) is selected ”ZOOM” ---------- Zoom size is selected “WZOOM” ---------- Natural Wide size is selected
	Unacceptable	“Error Code” [CR] ---------- Invalid condition such as Input “?” [CR] ---------- Command

9.9 Lamp Status Read Commands

9.9.1 CR_LAMPREPL Command

Command	“CR_LAMPREPL” [CR]	
Details	Get the information of Lamp Replacement time	
Response	Acceptable	“000_%1” [CR]
	%1	“2**” 2 ---------- shows 2 lamps are used * ---------- shows the status for each lamp orderly. “Y”means over lamp replacement time, and “N” means inside lamp replacement time. EX: “2YN” ---------- 2-lamp system, need to replace a lamp for Lamp No.1, but do not need for Lamp No.2.
	Unacceptable	“Error Code” [CR]

9.9.2 CR_LAMPMODE Command

Command	“CR_LAMPMODE” [CR]	
Details	Get Lamp mode setting status	
Response	Acceptable	“000_%1” [CR]
	%1	“FULL” ---------- 2-Lamp mode is selected “HALF” ---------- 1-Lamp mode is selected
	Unacceptable	“Error Code” [CR]

9.9.3 CR_LAMPSTS Command

Command	"CR_LAMPSTS" [CR]	
Details	Get Lamp status	
Response	Acceptable	"000_%1" [CR]
	%1	"2**" The first character shows 2-lamp system. The second and third characters show the lamp status orderly as below: "I" ---------- Lamp is ON "O" ---------- Lamp is OFF "X" ---------- Lamp Failure EX: "2IO" ---------- 2-lamp system, Lamp No.1 is ON and Lamp No.2 is OFF
	Unacceptable	"Error Code" [CR]

9.9.4 CR_INFLAMP Command

Command	"CR_INFLAMP" [CR]	
Details	Get Lamp mode switching status	
Response	Acceptable	"000_%1" [CR]
	%1	"NML" ---------- Normal (not switching lamp) "CNG" ---------- Ready to switch lamp
	Unacceptable	"Error Code" [CR]

9.9.5 CR_PROJH Command

Command	"CR_PROJH" [CR]	
Details	Get the total running time of the projector by hour (h)	
Response	Acceptable	"000_%1" [CR]
	%1	"0000000" – "0099999"
	Unacceptable	"Error Code" [CR]

9.9.6 CR_HMLAMP Command

Command	"CR_HMLAMP" [CR]	
Details	Get the total number of lamps	
Response	Acceptable	"000_%1" [CR]
	%1	"002"
	Unacceptable	"Error Code" [CR]

9.10 Sound Status Read Commands

9.10.1 CR_VOLUME Command

Command	“CR_VOLUME” [CR]	
Details	Get Volume value of user control	
Response	Acceptable	“000_%1” [CR]
	%1	“000” – “063”
	Unacceptable	“Error Code” [CR]

9.10.2 CR_MUTE Command

Command	“CR_MUTE” [CR]	
Details	Get Sound Mute setting status	
Response	Acceptable	“000_%1” [CR]
	%1	“ON” ---------- Sound Mute is set “OFF” ---------- Sound Mute is canceled
	Unacceptable	“Error Code” [CR]

9.10.3 CR_BASS Command

Command	“CR_BASS” [CR]	
Details	Get Bass (Audio) setting value	
Response	Acceptable	“000_%1” [CR]
	%1	“000” – “063”
	Unacceptable	“Error Code” [CR]

9.10.4 CR_TREBLE Command

Command	“CR_TREBLE” [CR]	
Details	Get Treble (Audio) setting value	
Response	Acceptable	“000_%1” [CR]
	%1	“000” – “063”
	Unacceptable	“Error Code” [CR]

9.10.5 CR_BLTINSP Command

Command	“CR_BLTINSP” [CR]	
Details	Get Built-In Speaker setting status	
Response	Acceptable	“000_%1” [CR]
	%1	“ON” ---------- Built-In Speaker is set “OFF” ---------- Built-In Speaker is canceled
	Unacceptable	“Error Code” [CR]

9.11 Setting Status Read Commands

9.11.1 CR_BBACK Command

Command	“CR_BBACK” [CR]	
Details	Get Blue Back setting status	
Response	Acceptable	“000_%1” [CR]
	%1	“ON” ---------- Blue Back is set “OFF” ---------- Blue Back is canceled
	Unacceptable	“Error Code” [CR]

9.11.2 CR_DISP Command

Command	“CR_DISP” [CR]	
Details	Get Display setting status	
Response	Acceptable	“000_%1” [CR]
	%1	“ON” ---------- Display is set “OFF” ---------- Display is canceled
	Unacceptable	“Error Code” [CR]

9.11.3 CR_LOGO Command

Command	“CR_LOGO” [CR]	
Details	Get Logo setting status	
Response	Acceptable	“000_%1” [CR]
	%1	“ON” ---------- Logo is set “OFF” ---------- Logo is canceled
	Unacceptable	“Error Code” [CR]

9.11.4 CR_RCODE Command

Command	“CR_RCODE” [CR]	
Details	Get selected Remote Control mode status	
Response	Acceptable	“000_%1” [CR]
	%1	“001” ---------- Code1 “002” ---------- Code2 : “007” ---------- Code7 “008” ---------- Code8
	Unacceptable	“Error Code” [CR]

9.11.5 CR_LANG Command

Command	“CR_LANG” [CR]	
Details	Get selected language	
Response	Acceptable	“000_%1” [CR]
	%1	“ENG” ---------- English is selected “DEU” ---------- German is selected “FRA” ---------- French is selected “ITA” ---------- Italian is selected “ESP” ---------- Spanish is selected “POR” ---------- Portuguese is selected “NED” ---------- Dutch is selected “SVE” ---------- Swedish is selected “CHI” ---------- Chinese is selected “KOR” ---------- Korean is selected “JPN” ---------- Japanese is selected “RUS” ---------- Russian is selected
	Unacceptable	“Error Code” [CR]

9.11.6 CR_ON-STA Command

Command	“CR_ON-STA” [CR]	
Details	Get Power ON Start setting status	
Response	Acceptable	“000_%1” [CR]
	%1	“ON” ---------- Power ON Start is set “OFF” ---------- Power ON Start is canceled
	Unacceptable	“Error Code” [CR]

9.11.7 CR_P-MANE Command

Command	“CR_P-MANE” [CR]	
Details	Get Power management setting status	
Response	Acceptable	“000_%1” [CR]
	%1	“OFF” ---------- Power Management is set to OFF “READY” ---------- Power Management is set to Ready “SHUTDOWN” ---------- Power Management is set to Shut Down
	Unacceptable	“Error Code” [CR]

9.11.8 CR_P-MANETIME Command

Command	“CR_P-MAETIME” [CR]	
Details	Get time setting to start Power Management	
Response	Acceptable	“000_%1” [CR]
	%1	“001” – “030” ---------- 1 minute to 30 minutes
	Unacceptable	“Error Code” [CR]

9.11.9 CR_FANSPEED Command

Command	“CR_FANSPEED” [CR]	
Details	Get selected Fan Control Speed	
Response	Acceptable	“000_%1” [CR]
	%1	“MAX” ---------- Fan Control Speed is Max “NOR” ---------- Fan Control Speed is Normal
	Unacceptable	“Error Code” [CR]

9.11.10 CR_KEYDIS Command

Command	“CR_KEYDIS” [CR]	
Details	Get RC/KEY prohibit status (valid or invalid)	
Response	Acceptable	“000_%1” [CR]
	%1	“NONE” ---------- RC & KEY are valid “RC” ---------- RC is invalid “KEY” ---------- KEY is invalid
	Unacceptable	“Error Code” [CR]

9.12 Other Status Read Commands

9.12.1 CR_PRESSURE Command

Command	“CR_PRESSURE” [CR]	
Details	Get Air Pressure value Here is the formula as below (“Vn” represents the value): **Air Pressure (hPa) = (5*Vn / 1024 – 0.204) / 0.00459 + 150** This obtains accuracy of +/-2%	
Response	Acceptable	“000_%1” [CR]
	%1	“0000” – “1023”
	Unacceptable	“Error Code” [CR]

9.12.2 CR_SIGNAL Command

Command	“CR_SIGNAL” [CR]	
Details	Get Signal status if there is a signal or not	
Response	Acceptable	“000_%1” [CR]
	%1	“ON” ---------- There is a signal “OFF” ---------- There is no signal
	Unacceptable	“Error Code” [CR]

9.12.3 CR_VMUTE Command

Command	“CR_VMUTE” [CR]	
Details	Get No Show setting status	
Response	Acceptable	“000_%1” [CR]
	%1	“ON” ---------- No Show is set “OFF” ---------- No Show is canceled
	Unacceptable	“Error Code” [CR]

9.12.4 CR_FREEZE Command

Command	“CR_FREEZE” [CR]	
Details	Get Freeze setting status	
Response	Acceptable	“000_%1” [CR]
	%1	“ON” ---------- Freeze is set “OFF” ---------- Freeze is canceled
	Unacceptable	“Error Code” [CR]

9.12.5 CR_P-TIMER Command

Command	“CR_P-TIMER” [CR]	
Details	Get Presentation Timer operating status	
Response	Acceptable	“000_%1” [CR]
	%1	“ON” ---------- Presentation Timer is ON ”STOP” ---------- Presentation Timer is stopped “OFF” ---------- Presentation Timer is OFF
	Unacceptable	“Error Code” [CR]

9.12.6 CR_KEYSTONE Command

Command	“CR_KEYSTONE” [CR]	
Details	Get current Keystone status “Keystone –” reduces the left part of the image and “Keystone +” reduces the right part of the image. Set Keystone status OFF with “0”. For reference: the case of Vertical Keystone “Keystone –” reduces the lower part of the image and “Keystone +” reduces the upper part of the image.	
Response	Acceptable	“000_%1” [CR]
	%1	“-48 - 48” For reference: the case of Vertical Keystone “-63 – 63”
	Unacceptable	“Error Code” [CR]

9.12.7 CR_INFPFAIL Command

Command	“CR_INFPFAIL” [CR]	
Details	Get the Power Failure information at the detecting points. Data is indicated by 32 bits hexadecimal (HEX) data. Power Failure checkpoints are 16 in Main Unit, 8 in Sub Power Unit, 8 not in use. Each bit corresponds to the error point and indicates “Normal/Abnormal” information by the “HI/LO” logic. Normal ----- HI (1) Power Failure ----- LO (0)	
Response	Acceptable	“000_%1” [CR]
	%1	“# # # # # # # #” Represents hexadecimal digit of 32 Bits as an 8-digit character line. 31-16 Bits (16Bits) indicates the status of Main Unit No.1-16 15-8 Bits (8Bits) indicates the status of Sub Power Unit No.1-8 7-0 Bits (8Bits) are not in use (All status is shown as “FF”) EX: “000000FF” ------ All power is failed “000100FF” ------ Main Unit No.1 is normal, others are failed “000200FF” ------ Main Unit No.2 is normal, others are failed “000300FF” ------ Main Unit No.1-2 are normal, others failed “FFFE00FF” ----- Main Unit No.2-16 are normal, others failed “FFFF00FF” ----- Main Unit No.1-16 are normal, others failed “000001FF” ------ Sub Power Unit No.1 is normal, others failed “0000FFFF” ------ Sub Power Unit No.1-8 normal, others failed “FFFFFFFF” ------ All power is normal
	Unacceptable	“Error Code” [CR]

9.12.8 CR_TEMPWARN Command

Command	“CR_TEMPWARN” [CR]	
Details	Get the temperature inside a projector if the sensors are being or approaching abnormal temperature. It is possible to get all sensors’ temperatures with some sensors installed.	
Response	Acceptable	“000_%1” [CR]
	%1	“#□#” There is sensor 1 data, one space, and sensor 2 data. Each data is as below: “W”--- being or approaching abnormal temp. (Warning Temp.) “S”--- Sensor temp. is safe (Safe Temp.) “N”--- Sensor detects no abnormal temp. Ex: “S□W”[CR] indicates that sensor 1 is safe temperature, and sensor 2 is exceeding abnormal temperature.
	Unacceptable	“Error Code” [CR]

9.12.9 CR_TEMPFAIL Command

Command	“CR_TEMPFAIL” [CR]	
Details	Get the temperature inside a projector when abnormal temperature occurs. It is possible to get all temperatures at once with some sensors installed.	
Response	Acceptable	“000_%1” [CR]
	%1	(Ex.) “□31.5F”[CR] □ indicates a space. When the temperature sinks to -, the first character is “-” like “-05.5F”[CR]. When some temperature sensors installed in a projector, it returns response continuously. (Ex.) “□31.5F□□35.2S” [CR] There is sensor 1 data, one space, and sensor 2 data. The last character indicates the sensor’s status. Abnormal temperature ---------- “F” Sensor temperature is safe ---------- “S” Sensor detects no abnormal temp. --------- “N” The example shows that sensor 1 indicates 31.5 degrees and is abnormal temperature, and sensor 2 indicates 32.5 degrees and is safe temperature. When the temperature is safe, the data will be “□00.0S”. When the projector is reset, “□00.0S” is set, and every time abnormal temperature occurs, it renews the data and returns it. In short, it only returns the renewed data of the latest abnormal temperature and the previous data is deleted.
	Unacceptable	“Error Code” [CR]

10. Command with Address Specification

10.1. Overview

10.1.1. Commands with address are used to remote control multiple projectors through RS-232C by one computer.

10.1.2. The command with address is defined as one command/one line that starts with “A” and ends with carriage return (0x0D).

10.1.3. When a projector receives carriage return (0x0D), it starts decoding.

10.1.4. This command is represented as Basic Serial Command or Expand Serial Command with address such as “A001”.

(Ex.) Functional Execution Command: “A001C05” [CR]

(Ex.) Status Read Command: “A001CR0” [CR]

10.1.5. Projector has the function to set up its address in Service mode.

Initial setting is “No.001”

Possible range is “001” to “999”

10.1.6. 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.

(When it takes more than 1 second to receive carriage return since the projector has received the first data.)

10.1.7. Wait the interval up to 60ms for the response.

10.2. Functional Execution Command with address

10.2.1. Format

1) PC issues a command in format as below:

"A" Address "C" Command [CR]

or

"A" Address "CF_" Command "_" Parameter [CR]

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

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

Command: Character line (Refer to Basic and Expand Serial Command)

2) The only projector with the appropriate address decodes the received commands, and when it is ready to receive next command, it returns the response.

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

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

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

10.2.2. When the command pipelining is needed

When it needs command pipelining, the operation is the same as the remote control as below:

1) PC issues commands every 100ms
2) When receiving the appropriate command, it executes the function for 120ms continuously.
3) When receiving the same command in 120ms repeatedly, it continues to execute the function for another 120ms.
4) When there is no command after 120ms, the execution is stopped.
5) When receiving other commands in 120ms, the execution is stopped.

10.3. Status Read Command with Address

10.3.1. Format

1) PC issues a command in format as below:

“A” Address “CR” Command [CR]

or

“A” Address “CR_” Command [CR]

Address: 3-digit number (“001” – “999”)

Command: Character line (Refer to Basic and Expand Serial Commands)

2) The only projector with appropriate address decodes the received commands and returns the character line as the required data.

Required Data [CR]

Required Data: Character line (Refer to Basic Status Read Commands)

3) When the received data cannot be decoded, it returns **“ ? “ [CR]**