

# EXPAND SERIAL COMMAND FUNCTIONAL SPECIFICATIONS

PLC-XF46

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**1. Overview**

- This Functional Specification defines communication with Network board for PLC-XF46.
- Commands are designed to communicate with Network board, but most commands are also available to remote-control a projector through RS-232C from a computer. Therefore, commands are defined as Expand Serial Commands.
- The operation by some commands depends on Optional Board installed in Input Slot of the projector.
- This document assumes that Option Boards are installed.

**2. Serial Interface Specification**

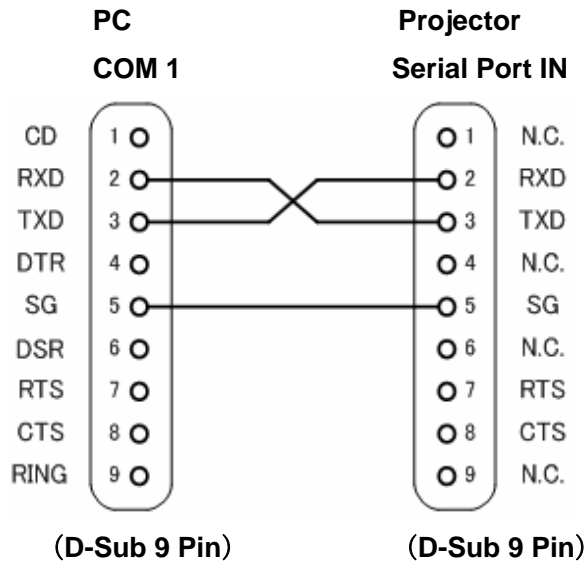
**2.1 Transfer Specification**

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

- 1) Transmission Speed: initial setting value is 19200
- 2) Transmission Speed can be changed in Service Mode

**2.2 Connection**

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



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

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

### 3. Notes for communication

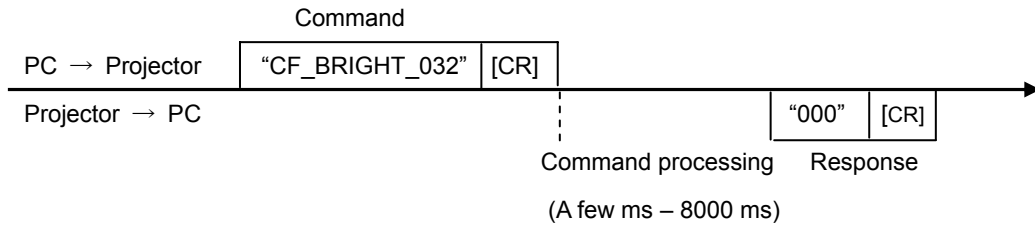
- Expand Serial Command is defined as a single command per line that starts with “C” and ends with carriage return (0x0D).
- When a projector receives carriage return (0x0D), it starts decoding.
- There are two types of commands as below:

Example of Functional Execution Command: “CF\_BRIGHT\_032” [CR]

Example of Status Read Command: “CR\_BRIGHT” [CR]

Note) “\_” indicates a space

- It clears the information of buffer in the following cases:
  - when the projector receives LF (0x0A) or EOF (0x1A).
  - when it takes more than one second to receive a single command  
(Until receiving the carriage return after the reception of the first data)
- The projector processes the command and returns the response within a few ms to 8000 ms after the reception of the command. When several commands are sent in succession, do not send another command unless the response to the previous command has been returned. Need to confirm that the processing of the current command has been completed and returned the response before sending another command.



Note) when the computer sends another command before the previous response has been returned, the projector may not operate properly.

Note) when the current command processing has not completed, another command process can not be accepted by the projector

Normally it is less than 1000ms for the completion of receiving a command and returning the response, but it takes more than 1000ms for some Functional Execution Commands as listed 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 (concurrent execution)
CF_INPUT2	Select Input 2 and Signal
CF_INPUT3	Select Input 3 and Signal
CF_INPUT4	Select Input 4 and Signal
CF_IMAGEADJ	Reset/Store for Image Adjustment

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. Notation

- Data from a controller to a projector is represented as COMMAND, and data from a projector to a controller in response to the incoming command is represented as RESPONSE.
- [CR]: Carriage Return Code  
The command ends with carriage return code.  
The response also ends with carriage return code.
- \_ : Space Code  
All space code is indicated by (\_).
- %1: Parameter included in command  
When there is more than one parameter, they are represented as %2, %3...

## 5. Functional Execution Command Table

### 5.1 Image Command Table

Execute command	Item
CF_BRIGHT_%1[CR]	Set value of Brightness
CF_CONT_%1[CR]	Set value of Contrast
CF_COLOR_%1[CR]	Set value of Color
CF_TINT_%1[CR]	Set value of Tint
CF_SHARP_%1[CR]	Set value of Sharpness
CF_GAMMA_%1[CR]	Set value of Gamma
CF_WBAL-R_%1[CR]	Set Red value of White Balance
CF_WBAL-G_%1[CR]	Set Green value of White Balance
CF_WBAL-B_%1[CR]	Set Blue value of White Balance
CF_COLTEMP_%1[CR]	Set level of Color Temperature
CF_NZRED_%1[CR]	Set ON/OFF of Noise reduction
CF_PROGV_%1[CR]	Set mode of Progressive scan
CF_IMAGE_%1[CR]	Set Image mode
CF_IMAGEADJ_%1[CR]	Set Store/Reset of values in Image Adjustment

### 5.2 PC Control Command Table

Execute command	Item
CF_FSYNC_%1[CR]	Set value of Fine Sync
CF_TDOTS_%1[CR]	Set value of Total Dots
CF_CLAMP_%1[CR]	Set value of Clamp
CF_H-POS_%1[CR]	Set value of Horizontal Position
CF_V-POS_%1[CR]	Set value of Vertical Position
CF_DDOTS_%1[CR]	Set value of Display Dots
CF_DLINE_%1[CR]	Set value of Display Line
CF_SETPCADJ_%1[CR]	Apply values set in PC Adjust menu to screen image
CF_ORGMODE_%1[CR]	Specify the original signal for the selected PC mode
CF_PCSTORE_%1[CR]	Store current setting values in PC Adjust menu to Mode %1

### 5.3 Input Control Command Table

Execute command	Item
CF_INPUT_%1[CR]	Select Input
CF_SOURCE_%1[CR]	Select Source of selected Input
CF_INPUT1_%1[CR]	Select Input1 and also set input source to %1
CF_INPUT2_%1[CR]	Select Input2 and also set input source to %1
CF_INPUT3_%1[CR]	Select Input3 and also set input source to %1
CF_INPUT4_%1[CR]	Select Input4 and also set input source to %1
CF_SYSTEM_%1[CR]	Select System in Video input mode

#### 5.4 Screen Command Table

Execute command	Item
CF_SCREEN_%1[CR]	Select Screen size
CF_FLSCREEN_%1[CR]	Set ON/OFF of Full Screen mode
CF_TRUE_%1[CR]	Set ON/ OFF of True mode
CF_DZCENT_%1[CR]	Cancel Digital Zoom mode
CF_KEYSTONE_%1[CR]	Set Keystone correction

#### 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)
CF_AUTOLAMPCTRL_%1[CR]	Switch dimmer function levels of Normal/Auto/Eco

#### 5.6 Setting Command Table

Execute command	Item
CF_BBACK_1[CR]	Set ON/OFF of Blue Back function
CF_DISP_%1[CR]	Set ON/OFF of On Screen Display
CF_LOGO_%1[CR]	Set ON/OFF of Logo
CF_CEIL_%1[CR]	Set ON/OFF of Ceiling
CF_REAR_%1[CR]	Set ON/OFF of Rear
CF_RCODE_%1[CR]	Select Remote Control Code
CF_LANG_%1[CR]	Select language for OSD
CF_ON-STA_%1[CR]	Set ON/OFF of Power ON Start
CF_P-MANE_%1[CR]	Set ON/OFF of Power Management
CF_FANSPEED_%1[CR]	Select Fan Speed
CF_KEYDIS_%1[CR]	Set limitation of RC/KEY control
CF_FDEFAULT_%1[CR]	Return the settings to Factory Default status

## 6. Status Read Command Table

### 6.1 Image Status Read Command Table

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

### 6.2 PC Status Read Command Table

Status read command	Item
CR_FSYNC [CR]	Get setting value of Fine Sync
CR_TDOTS [CR]	Get setting value of Total Dots
CR_CLAMP [CR]	Get setting value of Clamp
CR_H-POS [CR]	Get setting value of Horizontal Position
CR_V-POS [CR]	Get setting value of Vertical Position
CR_DDOTS [CR]	Get setting value of Display Dots
CR_DLINE [CR]	Get setting value of Display Line
CR_SETPCADJ [CR]	Get currently displayed signal
CR_ORGMODE [CR]	Get the original signal of the mode adjusted in PC Adj.
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 currently selected signal. In Auto mode, it returns a result by Auto detection.

#### 6.4 Input Status Read Command Table

Status read command	Item
CR_INPUT [CR]	Get selected Input
CR_SOURCE [CR]	Get selected 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_SRCINP4 [CR]	Get selected source for Input 4
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_NMSLOT4 [CR]	Get a card name inserted to Input 4
CR_IDSLLOT1 [CR]	Get ID information of Input 1
CR_IDSLLOT2 [CR]	Get ID information of Input 2
CR_IDSLLOT3 [CR]	Get ID information of Input 3
CR_IDSLLOT4 [CR]	Get ID information of Input 4

#### 6.5 Screen Status Read Command Table

Status read command	Item
CR_FLSCREEN [CR]	Get ON/OFF setting status of Full screen mode
CR_SCREEN [CR]	Get selected screen size

#### 6.6 Lamp Status Read Command Table

Status read command	Item
CR_LAMPREPL [CR]	Get information on Lamp replacement time
CR_LAMPMODE [CR]	Get selected Lamp mode
CR_AUTOLAMPCONTROL[CR]	Get setting status of dimmer function level.
CR_LAMPSTS [CR]	Get Lamp lighting 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 Setting Status Read Command Table

Status read command	Item
CR_BBACK [CR]	Get setting status of Blue Back
CR_DISP [CR]	Get setting status of Display
CR_LOGO [CR]	Get setting status of Logo
CR_RCODE [CR]	Get selected Remote Control Code
CR_LANG [CR]	Get selected language
CR_ON-STA [CR]	Get setting status of ON Start
CR_P-MANE [CR]	Get setting status of Power management
CR_FANSPEED [CR]	Get selected Fan Control Speed
CR_KEYDIS [CR]	Get ssetting status of RC/KEY control limitation

### 6.8 Other Status Read Command Table

Status read command	Item
CR_PRESSURE [CR]	Get Air Pressure data
CR_SIGNAL [CR]	Get status of signal existence
CR_VMUTE [CR]	Get setting status of No Show
CR_FREEZE [CR]	Get setting status of Freeze
CR_PTIMER [CR]	Get operating status of P-Timer
CR_KEYSTONE [CR]	Get setting status of Keystone correction
CR_INFPPFAIL [CR]	Get information on Power Failure
CR_TEMPWARN [CR]	Get temperature status whether it is close to abnormal level or not
CR_TEMPFAIL [CR]	Get temperature in abnormal temperature status

### 7. Error Code Table

Error Code	Contents
?	-When the received data cannot be decoded -Parameter designation error (wrong digit number, including invalid value, etc.)
000	Normal reception (This is "Not" error)
101	Specified function is not available in the selected mode
102	Specified value is out of range (Not reflected)
103	Command mismatched to Hardware (the command is for Optional function which is not implemented)

## 8. Functional Execution Command

### 8.1 Format

1) PC issues a command in the format below:

**Pattern1:** "CF\_ Command" [CR]

**Pattern2:** "CF\_ Command " %1 [CR]

CF\_: Header

Command: String

%1: Parameter (String)

\_: Space (To separate Command and Parameter)

2) The projector decodes the received command and when it gets ready to receive another 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]

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

### 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

When the projector status is in the status below, Functional Execution Commands are limited  
(Status Read Commands are available in following status)

Projector Status	Available Functional Execution Command
In Standby Mode	C00: POWER ON
Count Down in process	C00: POWER ON (Countdown is terminated)
Cooling Down in process	NONE (No Execution)
Cooling Down in process due to abnormal temperature	NONE (No Execution)
In Abnormal Temperature	NONE (No Execution)
Power Failure (60 seconds after Power failed)	NONE (No Execution)
Power Saving Cooling Down in process	NONE (No Execution)
In Power Saving status	C00: POWER ON C01: POWER OFF

Note) An appropriate error code is returned when the projector receives other command. In the above status.

## 8.4 Image Command

### 8.4.1 CF\_BRIGHT Command

Command	"CF_BRIGHT_%1" [CR]	
%1	"000-063" ----- Directly specify setting value of Brightness "UP" ----- Increment setting value of Brightness by 1 "DN" ----- Decrement setting value of Brightness by 1	
Details	Set user controlled value of Brightness. (Available only in the normal Power ON status) The value set by this command is not stored in the projector's memory. Therefore, when the power is turned to ALL OFF status, the value returns to the original setting. (It is stored 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 specify setting value of Contrast "UP" ----- Increment setting value of Contrast by 1 "DN" ----- Decrement setting value of Contrast by 1	
Details	Set user controlled value of Contrast. (Available only in the normal Power ON status) The value set by this command is not stored in the projector. Therefore, when the power is turned to ALL OFF status, the value returns to the original setting. (It is stored 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 specify setting value of Color "UP" ----- Increment setting value of Color by 1 "DN" ----- Decrement setting value of Color by 1	
Details	Set user controlled value of Color. (Available only in the normal Power ON status) The value set by this command is not stored in the projector's memory. Therefore, when the power is turned to ALL OFF status, the value returns to the original setting. (It is stored 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 specify setting value of Tint "UP" ----- Increment setting value of Tint by 1 "DN" ----- Decrement setting value of Tint by 1	
Details	Set user controlled value of Tint (Available only in the normal Power ON status) The value set by this command is not stored in the projector's memory. Therefore, when the power is turned to ALL OFF status, the value returns to the original setting. (It is stored 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 specify setting value of Sharpness. "UP"----- Increment setting value of Sharpness by 1 "DN"----- Decrement setting value of Sharpness by 1	
Details	Set user controlled value of Sharpness. (Available only in the normal Power ON status) The value set by this command is not stored in the projector's memory. Therefore, when the power is turned to ALL OFF status, the value returns to the original setting. (It is stored 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 specify setting value of Gamma "UP"----- Increment setting value of Gamma by 1 "DN"----- Decrement setting value of Gamma by 1	
Details	Set user controlled value of Gamma. (Available only in the normal Power ON status) The value set by this command is not stored in the projector's memory. Therefore, when the power is turned to ALL OFF status, the value returns to the original setting. (It is stored 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 specify value of Color selected in %1 of White Balance. "UP"----- Increment setting value of Color specified in %1 of White Balance by 1 "DN"----- Decrement setting value of Color specified in %1 of White Balance by 1	
Details	Set value of Color specified in %1 of White Balance (Available only in the normal Power ON status) The value set by this command is not stored in the projector's memory. Therefore, when the power is turned to ALL OFF status, the value returns to the original setting. (It is stored in Standby mode.)	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

### 8.4.8 CF\_COLTEMP Command

Command	"CF_COLTEMP_%1" [CR]	
%1	"000" – "003"	
Details	<p>Set Color Temperature (Available only in the normal Power ON status)</p> <p>000: XLOW 001: LOW 002: MID 003: HIGH</p> <p>The value set by this command is not stored in the projector's memory. Therefore, when the power is turned to ALL OFF status, the value returns to the original setting. (It is stored in Standby mode.)</p>	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

### 8.4.9 CF\_NZRED Command

Command	"CF_NZRED_%1" [CR]	
%1	<p>"ON" -----Set Noise Reduction to ON "OFF" ----- Set Noise Reduction to OFF</p>	
Details	<p>Set or Cancel Noise Reduction. (Available only in the normal Power ON status)</p> <p>The value set by this command is not stored in the projector's memory. Therefore, when the power is turned to ALL OFF status, the value returns to the original setting. (It is stored in Standby mode.)</p>	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

### 8.4.10 CF\_PROGV Command

Command	"CF_PROGV_%1" [CR]	
%1	<p>"ON" ----- Set Progressive scan to ON "OFF" ----- Set Progressive scan to OFF</p>	
Details	<p>Set or Cancel Progressive scan. (Valid only when it is in the normal Power ON status.)</p> <p>The value set by this command is not stored in the projector's memory. Therefore, when the power is turned to ALL OFF status, the value returns to the original setting. (It is stored in Standby mode.)</p>	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

### 8.4.11 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) "IMAGE1" ----- Image1 (values adjusted and stored by user) "IMAGE2" ----- Image2 (values adjusted and stored by user) "IMAGE3" ----- Image3 (values adjusted and stored by user) "IMAGE4" ----- Image4 (values adjusted and stored by user)	
Details	Select Image mode. (Valid only when it is in the normal Power ON status.) Parameter "IMAGE1" to "IMAGE4" corresponds to "Image1" to "Image4" displayed in projector OSD menu on selecting Image. The value set by this command is stored in EEPROM so that the setting can remain effective even after the power is turned to ALL OFF status.	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

### 8.4.12 CF\_IMAGEADJ Command

Command	"CF_IMAGEADJ_%1"[CR]	
%1	"RST"----- Reset adjusted value for the Image "STR1"---- Store current adjusted value to Image 1 "STR2"---- Store current adjusted value to Image 2 "STR3"---- Store current adjusted value to Image 3 "STR4"---- Store current adjusted value to Image 4	
Details	Reset or Store adjusted value for Image. (Available only in the normal Power ON status) "STR1"- "STR4" corresponds to "Image1"- "Image4" displayed in projector OSD menu on selecting "Store" for adjusted value of Image. The setting value set in "Image1" to "Image4" is stored and can be retrieved when turning on the projector again after the power is turned to ALL OFF status.	
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 specify setting value of Fine Sync "UP" ----- Increment setting value of Fine Sync by 1 "DN" ----- Decrement setting value of Fine Sync by 1	
Details	Set value of Fine Sync in PC signal (Available only in the normal Power ON status) The value set by this command is not stored in the projector's memory. Therefore, when the power is turned to ALL OFF status, the value returns to the original setting. (It is stored in Standby mode.) Note: When %1 parameter is directly specified, this command and "CF_SETPCADJ" command are both required in order to reflect the setting to the projected image.	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

### 8.5.2 CF\_TDOTS Command

Command	"CF_TDOTS_%1" [CR]	
%1	"nnnn - 9999" ----- Directly specify setting value of Total Dots "nnnn" indicates minimum value, which is current (Display Dots + Position H) value "UP" ----- Increment setting value of Total Dots by 1 "DN" ----- Decrement setting value of Total Dots by 1	
Details	Set value of Total Dots in PC signal (Available only in the normal Power ON status) The value set by this command is not stored in the projector's memory. Therefore, when the power is turned to ALL OFF status, the value returns to the original setting. (It is stored in Standby mode.) Note: When %1 parameter is directly specified, this command and "CF_SETPCADJ" command are both required in order to reflect the setting to the projected image.	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

### 8.5.3 CF\_CLAMP Command

Command	"CF_CLAMP_%1" [CR]	
%1	"0000-0127" ----- Directly specify setting value of Clamp "UP" ----- Increment setting value of Clamp by 1 "DN" ----- Decrement setting value of Clamp by 1	
Details	Set Clamp value in PC signal. (Available only in the normal Power ON status) The value set by this command will not be stored in the projector's memory. Therefore, when the power is turned to ALL OFF status, the value returns to the original setting. (It is stored in Standby mode.) Note: When %1 parameter is directly specified, this command and "CF_SETPCADJ" command are both required in order to reflect the setting to the projected image.	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

### 8.5.4 CF\_H-POS Command

Command	"CF_H-POS_%1" [CR]	
%1	"0000-nnnn" ----- Directly specify setting value of Horizontal Position "nnnn" indicates maximum value, which is current value of (Total Dots - Display Dots) "UP" ----- Increment setting value of Horizontal Position by 1 "DN" ----- Decrement setting value of Horizontal Position by 1	
Details	Set value of Horizontal Position in PC signal (Available only in the normal Power ON status) The value set by this command is not stored in the projector's memory. Therefore, when the power is turned to ALL OFF status, the value returns to the original setting. (It is stored in Standby mode.) Note: When %1 parameter is directly specified, this command and "CF_SETPCADJ" command are both required in order to reflect the setting to the projected image.	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

### 8.5.5 CF\_V-POS Command

Command	"CF_V-POS_%1" [CR]	
%1	"0000-nnnn" ----- Directly specify setting value of Vertical Position "nnnn" indicates maximum value, which is current (Total Line – Display Line) value "UP" ----- Increment setting value of Vertical Position by 1 "DN" ----- Decrement setting value of Vertical Position by 1	
Details	Set Vertical Position value in PC signal (Available only in the normal Power ON status) The value set by this command is not stored in the projector's memory. Therefore, when the power is turned to ALL OFF status, the value returns to the original setting. (It is stored in Standby mode.) Note: When %1 parameter is directly specified, this command and "CF_SETPCADJ" command are both required in order to reflect the setting to the projected image.	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

### 8.5.6 CF\_DLINE Command

Command	"CF_DLINE_%1" [CR]	
%1	"0100-nnnn" ----- Directly specify setting value of Display Line "nnnn" indicates maximum value, which is current value of (Total Line - Position V). "UP" ----- Increment setting value of Display Line by 1 "DN" ----- Decrement setting value of Display line by 1	
Details	Set setting value of Display Line in PC signal (Available only in the normal Power ON status) The value set by this command is not be stored in the projector's memory. Therefore, when the power is turned to ALL OFF status, the value returns to the original setting. (It is stored in Standby mode.) Note: When %1 parameter is directly specified, this command and "CF_SETPCADJ" command are both required in order to reflect the setting to the projected image.	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

### 8.5.7 CF\_DDOTS Command

Command	"CF_DDOTS_%1" [CR]	
%1	"0100-nnnn" ----- Directly specify setting value of Display Dots "nnnn" indicates maximum value, which is current value of (Total Dots - Position H). "UP" ----- Increment setting value of Display Dots by 1 "DN" ----- Decrement setting value of Display Dots by 1	
Details	Set Display Dots value in PC signal. (Available only in the normal Power ON status) The value set by this command is not stored in the projector's memory. Therefore, when the power is turned to ALL OFF status, the value returns to the original setting. (It is stored in Standby mode.) Note: When %1 parameter is directly specified, this command and "CF_SETPCADJ" command are both required in order to reflect the setting to the projected image.	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

### 8.5.8 CF\_SETDISPADJ Command

Command	"CF_SETPCADJ_%1" [CR]	
%1	"XGA1", "HDTV1080", "MODE1" .....Etc.	
Details	Input is PC	<p>Apply values set in PC Adjust Menu to the projected image. Specifying setting value directly by the following PC Adjust related commands does not immediately reflect them on projected image, while issuing this command after these commands triggers the reflection. (Avable only in the normal Power ON status)</p> <p>.....CF_FSYNC                      .....CF_TDOTS                      .....CF_CLAMP                      .....CF_H-POS                      .....CF_V-POS                      .....CF_DLINE                      .....CF_DDOTS                      .....CF_FLSCREEN</p> <p>Note1) When "EXTn-EXTnn" (nn represents number) is specified in %1, "EXT" is displayed in "SYSTEM" menu (only when Network board is provided).</p>
	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	<p>Select original signal of the mode adjusted in PC Adjust menu. (Valid only when in the normal Power ON status.) This command is used to determine the settings inside the projector such as wheather passing PC signal through IP mechanism or not.</p>
	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	<p>"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</p>	
Details	Input is PC	<p>Store the current PC Adjust status (each parameter such as Total dots) to Mode1- Mode5. (Valid only when only in the normal Power ON status.) This command works the same way as storing to Mode1-Mode5 in PC Adjust menu.</p>
	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 "4" ----- Select Input 4	
Details	Select Input (Only valid when it is in the normal Power ON status.) This command works the same way 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 signal	"DIGITAL" ----- Select DVI Input "ANALOG" ----- Select Analog Input
	Input is Video signal	"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 "SDI1" ----- Select SDI 1 Input "SDI2" ----- Select SDI 2 Input "SCART" ----- Select SCART Input "HDCP" ----- Select HDCP Input
Details	Select source of the currently selected Input. (Valid only when 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\_INPUT1~4 Command

Command	"CF_INPUT%1_%2" [CR]	
%1	"1" ----- Specify Input 1 "2" ----- Specify Input 2 "3" ----- Specify Input 3 "4" ----- Specify Input 4	
%2	"DIGITAL" ----- Select DVI Input (Computer signal) "ANALOG" ----- Select Analog Input (Computer signal) "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 "SDI1" ----- Select SDI 1 Input "SDI2" ----- Select SDI 2 Input "SCART" ----- Select SCART Input "HDCP" ----- Select HDCP Input	
Details	Select Input specified by %1, and also Source specified by %2 concurrently. (Valid only when 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 signal	<p>This command is not available in this model. However MODE can be forced to change.</p> <p>"MODE1" ----- Select MODE 1                      "MODE2" ----- Select MODE 2                      "MODE3" ----- Select MODE 3                      "MODE4" ----- Select MODE 4                      "MODE5" ----- Select MODE 5</p>
	Input is Video signal	<p>"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</p>
Details	<p>Select system of the currently selected Input. (Valid only when 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. Note) "NTSC", "NTSC4.43", "PAL", "SECAM", "PAL-M", "PAL-N" are available only when VIDEO or S-VIDEO is selected for Input. "1080I", "1080I60", "1080I50", "1035I", "720P", "575P", "480P", "575I", "480I" are available only when Y,PB/Cb,Pr/Cr is selected for Input.</p>	
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 signal	<p>"NORMAL" ----- Select 4:3 screen display                      "WIDE" ----- Select 16:9 screen display                      "TRUE" ----- Select the original size screen display                      "DZOOM□UP" ----- Expand image size by Digital Zoom                      "DZOOM□DN" ----- Compress image size by Digital Zoom</p>
	Input is Video signal	<p>"NORMAL" ----- Select 4:3 screen display                      "WIDE" ----- Select 16:9 screen display</p>
Details	<p>Select screen size. (Valid only when 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. Note) "NORMAL" &amp; "WIDE" are valid only in the 4:3 input signals; invalid in the 16:9 wide signals.</p>	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

### 8.7.2 CF\_FLSCREEN Command

Command	"CF_FLSCREEN_%1" [CR]	
%1	"ON" ----- Set Full Screen mode to ON. "OFF" ----- Set Full Screen mode to OFF	
Details	Input is PC signal	Set/Cancel Full Screen mode. (Valid only when in the normal Power ON status.) The value set by this command is stored in EEPROM so that the setting can remain effective even after the power is turned to ALL OFF status. (It is stored in Standby mode.) Note) Sending this command does not immediately reflect the setting value to the on-screen image. To reflect them, the issue of CF_SETPCADJ Command is required.
	Input is Video signal	N/A
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

### 8.7.3 CF\_TRUE Command

Command	"CF_TRUE_%1" [CR]	
%1	"ON" ----- Set True mode to ON "OFF" ----- Set True mode to OFF	
Details	Set/Cancel True mode. (Valid only when in the normal Power ON status and Computer Inputs are 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 mode. (Valid only when 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 specify 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 the correction level of Keystone distortion. (Valid only when in the normal Power ON status.) When the value reaches the correction limit, the projector accepts the command but does not execute it. When directly specifying Keystone level, "Keystone -" reduces the lower part and "Keystone +" reduces the upper part of image. "_000" sets the keystone correction to OFF.	
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=1-4) ----- Reset lamp 1-4 running time	
Details	Reset running time of the lamp specified in "n". (Valid only 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 lamp mode to 4-lamp (FULL) "HALF" ----- Set lamp mode to 2-lamp (HALF)	
Details	Select Lamp mode. (Valid only when in the normal Power ON status.) The value set by this command is stored in EEPROM and the setting remains effective after the power is turned to ALL OFF status.	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

### 8.8.3 CF\_AUTOLAMPCTRL Command

Command	"CF_AUTOLAMPCTRL_%1" [CR]	
%1	"NORMAL" ----- Set lamp control mode to NORMAL "ECO" ----- Set lamp control mode to ECO "AUTO" ----- Set lamp control mode to AUTO	
Details	Select Lamp control mode. (Valid only when in the normal Power ON status.) The value set by this command is stored in EEPROM and the setting remains effective after the power is turned to ALL OFF status.	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

## 8.9 Setting Command

### 8.9.1 CF\_BBACK Command

Command	"CF_BBACK_1" [CR]	
%1	"ON" ----- Set Blue Back to ON "OFF" ----- Set Blue Back to OFF	
Details	Set/Cancel Blue Back. (Valid only when in the normal Power ON status.) The status set by this command is stored in EEPROM and the setting remains effective after the power is turned to ALL OFF status.	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

### 8.9.2 CF\_DISP Command

Command	"CF_DISP_%1" [CR]	
%1	"ON" ----- Set Display to ON "OFF" ----- Set Display to OFF	
Details	Set/Cancel Display. (Valid only when in the normal Power ON status.) The value set by this command is stored in EEPROM and the setting remains effective after the power is turned to ALL OFF status.	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

### 8.9.3 CF\_LOGO Command

Command	"CF_LOGO_%1" [CR]	
%1	"ON" ----- Set Logo to ON "OFF" ----- Set Logo to OFF	
Details	Set/Cancel Logo. (Valid only when in the normal Power ON status.) The status set by this command is stored in EEPROM and the setting remains effective after the power is turned to ALL OFF status.	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

### 8.9.4 CF\_CEIL Command

Command	"CF_CEIL_%1" [CR]	
%1	"ON" ----- Set Ceiling to ON "OFF" ----- Set Ceiling to OFF	
Details	Set/Cancel Ceiling. (Valid only when in the normal Power ON status.) When Ceiling is set to ON, image is left/right as well as top/bottom reversed. The status set by this command is stored in EEPROM and the setting remains effective after the power is turned to ALL OFF status.	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

### 8.9.5 CF\_REAR Command

Command	"CF_REAR_%1" [CR]	
%1	"ON" ----- Set Rear to ON "OFF" ----- Set Rear to OFF	
Details	Set/Cancel Rear. (Valid only when in the normal Power ON status.) When Rear is set to ON, image is left/right reversed. The status set by this command is stored in EEPROM and the setting remains effective after the power is turned to ALL OFF status.	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

### 8.9.6 CF\_RCODE Command

Command	"CF_RCODE_%1" [CR]	
%1	"001"- "008" ----- Select Code1-Code8	
Details	Select Remote Control Code (Valid only when in the normal Power ON status) The status set by this command is stored in EEPROM and the setting remains effective after the power is turned to ALL OFF status.	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

### 8.9.7 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	Select language for OSD. (Valid only when in the normal Power ON status.) The language set by this command is stored in EEPROM and the setting remains effective after the power is turned to ALL OFF status.	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

### 8.9.8 CF\_ON-STA Command

Command	"CF_ON-STA_%1" [CR]	
%1	"ON" ----- Set Power On Start to ON "OFF" ----- Set Power On Start to OFF	
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 the setting remains effective after the power is turned to ALL OFF status.	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

### 8.9.9 CF\_P-MANE Command

Command	"CF_P-MANE_%1" [CR]	
%1	"ON" ----- Set Power Management to ON "OFF" ----- Set Power Management to OFF	
Details	Set/Cancel Power Management. (Valid only when in the normal Power ON status.) The status set by this command is stored in EEPROM and the setting remains effective after the power is turned to ALL OFF status.	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

### 8.9.10 CF\_FANSPEED Command

Command	"CF_FANSPEED_%1" [CR]	
%1	"MAX" ----- Select Maximum speed of Fan Control "NOR" ----- Select Normal speed of Fan Control	
Details	Switch Fan Control Speed. (Valid only when in the normal Power ON status.) The status set by this command is stored in EEPROM and the setting remains effective after the power is turned to ALL OFF status.	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

### 8.9.11 CF\_KEYDIS Command

Command	"CF_KEYDIS_%1" [CR]	
%1	"NONE" ----- RC & KEY are valid "RC" ----- RC is invalid "KEY" ----- KEY is invalid	
Details	Set the limitation of RC/KEY use (Valid only when in the normal Power ON status)	
Response	Acceptable	"000" [CR]
	Unacceptable	"Error Code" [CR]

### 8.9.12 CF\_FDEFAULT Command

Command	"CF_FDEFAULT_%1" [CR]	
%1	"RST"	
Details	Return the settings to Factory Default status (Valid only when 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 in the format below:

**“CR\_Command” [CR]**

Command: String

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

**“000\_” %1 [CR]**

%1: required Information (a data string. Refer to [Basic Status Read Command Table])

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

### 9.2 Transfer Example

Getting total dots of the projector by Expand Serial Commands

PC → PJ: “CR\_TDOTS” [CR]

PC ← PJ: “000\_1344” [CR]

### 9.3 Image Status Read Commands

#### 9.3.1 CR\_BRIGHT Command

Command	"CR_BRIGHT" [CR]	
Details	Get user controlled value of Brightness	
Response	Acceptable	"000_%1" [CR]
	%1	"000" – "063"
	Unacceptable	"?" [CR]

#### 9.3.2 CR\_CONT Command

Command	"CR_CONT" [CR]	
Details	Get user controlled value of Contrast	
Response	Acceptable	"000_%1" [CR]
	%1	"000" – "063"
	Unacceptable	"?" [CR]

#### 9.3.3 CR\_COLOR Command

Command	"CR_COLOR" [CR]	
Details	Get user controlled value of Color	
Response	Acceptable	"000_%1" [CR]
	%1	"000" – "063"
	Unacceptable	"?" [CR]

#### 9.3.4 CR\_TINT Command

Command	"CR_TINT" CR]	
Details	Get user controlled value of Tint	
Response	Acceptable	"000_%1" [CR]
	%1	"000" – "063"
	Unacceptable	"Error Code" [CR] -----When command is invalid in the given condition (such as being selected input) "?" [CR] ----- When unknown command is received

#### 9.3.5 CR\_SHARP Command

Command	"CR_SHARP" [CR]	
Details	Get user controlled value of Sharpness	
Response	Acceptable	"000_%1" [CR]
	%1	"000" – "031"
	Unacceptable	"?" [CR]

### 9.3.6 CR\_GAMMA Command

Command	"CR_GAMMA" [CR]	
Details	Get user controlled value of Gamma	
Response	Acceptable	"000_%1" [CR]
	%1	"000" – "015"
	Unacceptable	"?" [CR]

### 9.3.7 CR\_WBAL-R Command

Command	"CR_WBAL-R" [CR]	
Details	Get user controlled Red value of White Balance	
Response	Acceptable	"000_%1" [CR]
	%1	"000" – "063"
	Unacceptable	"?" [CR]

### 9.3.8 CR\_WBAL-G Command

Command	"CR_WBAL-G" [CR]	
Details	Get user controlled Green value of White Balance	
Response	Acceptable	"000_%1" [CR]
	%1	"000" – "063"
	Unacceptable	"?" [CR]

### 9.3.9 CR\_WBAL-B Command

Command	"CR_WBAL-B" [CR]	
Details	Get user controlled Blue value of White Balance	
Response	Acceptable	"000_%1" [CR]
	%1	"000" – "063"
	Unacceptable	"?" [CR]

### 9.3.10 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	"?" [CR]

### 9.3.11 CR\_NZRED Command

Command	"CR_NZRED" [CR]	
Details	Get Noise Reduction setting status	
Response	Acceptable	"000_%1" [CR]
	%1	"ON" ----- Noise Reduction is ON "OFF" ----- Noise Reduction is OFF
	Unacceptable	"?" [CR]

### 9.3.12 CR\_PROGV Command

Command	"CR_PROGV" [CR]	
Details	Get Progressive scan setting status	
Response	Acceptable	"000_%1" [CR]
	%1	"ON" ----- Progressive scan is ON "OFF" ----- Progressive scan is OFF
	Unacceptable	"?" [CR]

### 9.3.13 CR\_IMAGE Command

Command	"CR_IMAGE" [CR]	
Details	Get image setting status. The Required data "IMAGE1" – "IMAGE4" corresponds to "Image1" – "Image4" displayed when selecting Image on OSD Menu.	
Response	Acceptable	"000_%1" [CR]
	%1	"STAND" ----- Standard "REAL" ----- Real "CINEMA" ----- Cinema "IMAGE1" ----- Image 1 "IMAGE2" ----- Image 2 "IMAGE3" ----- Image 3 "IMAGE4" ----- Image 4
	Unacceptable	"Error Code" [CR] ----- When command is invalid in the given condition (such as being selected input) "?" [CR] ----- When unknown command is received

### 9.3.14 CR\_IMGGMD Command

Command	"CR_IMGGMD" [CR]	
Details	Get setting status of Standard/Real/Cinema in Image Gamma	
Response	Acceptable	"000_%1" [CR]
	%1	"STD" ----- Standard "REL" ----- Real "CNM" ----- Cinema
	Unacceptable	"?" [CR]

## 9.4 PC Status Read Commands

### 9.4.1 CR\_FSYNC Command

Command	"CR_FSYNC" [CR]	
Details	Get value of Fine Sync	
Response	Acceptable	"000_%1" [CR]
	%1	"0000" – "0031"
	Unacceptable	"Error Code" [CR] ----- When command is invalid in the given condition (such as being selected input) "?" [CR] ----- When unknown command is received

### 9.4.2 CR\_TDOTS Command

Command	"CR_TDOTS" [CR]	
Details	Get value of Total Dots	
Response	Acceptable	"000_%1" [CR]
	%1	"nnnn" – "9999" (nnnn = Display Dots + Horizontal Position)
	Unacceptable	"Error Code" [CR] ----- When command is invalid in the given condition (such as being selected input) "?" [CR] ----- When unknown command is received

### 9.4.3 CR\_CLAMP Command

Command	"CR_CLAMP" [CR]	
Details	Get value of Clamp	
Response	Acceptable	"000_%1" [CR]
	%1	"0000" – "0127"
	Unacceptable	"Error Code" [CR] ----- When command is invalid in the given condition (such as being selected input) "?" [CR] ----- When unknown command is received

### 9.4.4 CR\_H-POS Command

Command	"CR_H-POS" [CR]	
Details	Get value of Horizontal Position	
Response	Acceptable	"000_%1" [CR]
	%1	"0000" – "nnnn" (nnnn = Total Dots - Display Dots)
	Unacceptable	"Error Code" [CR] ----- When command is invalid in the given condition (such as being selected input) "?" [CR] ----- When unknown command is received

### 9.4.5 CR\_V-POS Command

Command	"CR_V-POS" [CR]	
Details	Get value of Vertical Position	
Response	Acceptable	"000_%1" [CR]
	%1	"0000" – " nnnn" (nnnn = Total Line - Display Line)
	Unacceptable	"Error Code" [CR] ----- When command is invalid in the given condition (such as being selected input) "?" [CR] ----- When unknown command is received

### 9.4.6 CR\_DLINE Command

Command	"CR_DLINE" [CR]	
Details	Get value of Display Line	
Response	Acceptable	"000_%1" [CR]
	%1	"0100" – " nnnn" (nnnn = Total Line –Vertical Position value)
	Unacceptable	"Error Code" [CR] ----- When command is invalid in the given condition (such as being selected input) "?" [CR] ----- When unknown command is received

### 9.4.7 CR\_DDOTS Command

Command	"CR_DDOTS" [CR]	
Details	Get value of Display Dots	
Response	Acceptable	"000_%1" [CR]
	%1	"0100"- "nnnn" (nnnn = Total Dots – Horizontal Position value)
	Unacceptable	"Error Code" [CR] ----- When command is invalid in the given condition (such as being selected input) "?" [CR] ----- When unknown command is received

### 9.4.8 CR\_SETPCADJ Command

Command	"CR_SETPCADJ" [CR]	
Details	Get PC signal for current system	
Response	Acceptable	"000_%1" [CR]
	%1	"XGA1" "HDTV1080" "MODE1"..... Etc.
	Unacceptable	"?" [CR]

### 9.4.9 CR\_ORGMODE Command

Command	"CR_ORGMODE" [CR]	
Details	Get the original signal of currently selected mode that is adjusted in PC Adjust menu. Unless MODE1-MODE5 is selected, get the current signal. This command is used to determine the settings inside the projector such as whether passing PC signal through IP or not.	
Response	Acceptable	"000_%1" [CR]
	%1	"XGA1" "HDTV1080".....Etc
	Unacceptable	"?" [CR]

### 9.4.10 CR\_PCSTORE Command

Command	"CR_PCSTORE" [CR]	
Details	Get Free or Stored status of MODE1 - 5 in PC Adjust Data consists of 5 bytes and each byte represents Mode1 - 5.(F:Free, S:Stored)	
Response	Acceptable	"000_%1" [CR]
	%1	"FFFF"----- ALL Free "SFFF"----- Mode1 is "Stored", others are "Free" : "FFFS"----- Mode5 is "Stored", others are "Free" "SSSS"----- ALL Stored
	Unacceptable	"?" [CR]

## 9.5 Video Status Read Command

### 9.5.1 CR\_SERSYS Command

Command	"CR_SERSYS" [CR]	
Details	Get currently selected signal. Value only 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	"?" [CR]

## 9.6 Input Read Command

### 9.6.1 CR\_INPUT Command

Command	"CR_INPUT" [CR]	
Details	Get selected INPUT No.	
Response	Acceptable	"000_%1" [CR]
	%1	"1" - "4"
	Unacceptable	"?" [CR]

**9.6.2 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 "SDI" ----- SDI Input is selected "SDI1" ----- DF-SDI1 Input is selected "SDI2" ----- DF-SDI2 Input is selected "HDCP" ----- HDCP Input is selected "SCART" ----- SCART Input is selected "BLANK" ----- without Source
	Unacceptable	"Error Code" [CR] ----- When command is invalid in the given condition (such as being selected input) "?" [CR] ----- When unknown command is received

**9.6.3 CR\_SYSTEM Command**

Command	"CR_SYSTEM" [CR]		
Details	Get selected System		
Response	Acceptable	"000_%1" [CR]	
	%1	Input is PC signal	This command is not available in this model.
		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] ----- When command is invalid in the given condition (such as being selected input) "?" [CR] ----- When unknown command is received	

### 9.6.4 CR\_SRCINP1 Command

Command	"CR_SRCINP1" [CR]	
Details	Get Source of Input1	
Response	Acceptable	"000_%1" [CR]
	%1	"DIGITAL" ----- in Computer mode "ANALOG" ----- in Computer mode "VIDEO" ----- in Video mode "S-VIDEO" ----- in Video mode "YC" ----- in Video mode "YPBPR" ----- in Component mode "YCBCR" ----- in Video mode "HD-SDI" ----- in HD-SDI mode "SDI" ----- in SDI mode "SDI1" ----- in DF-SDI1 mode "SDI2" ----- in DF-SDI2 mode "HDCP" ----- in HDCP mode "SCART" ----- in SCART mode "BLANK" ----- There is no input source "NOCARD" ----- There is no board inserted
	Unacceptable	"?" [CR]

### 9.6.5 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	"?" [CR]

### 9.6.6 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	"?" [CR]

### 9.6.7 CR\_SRCINP4 Command

Command	"CR_SRCINP3" [CR]	
Details	Get Source of Input 4	
Response	Acceptable	"000_%1" [CR]
	%1	The same data as CR_SRCINP1
	Unacceptable	"?" [CR]

### 9.6.8 CR\_HMSLOT Command

Command	"CR_HMSLOT" [CR]	
Details	Get the total number of Inputs	
Response	Acceptable	"000_%1" [CR]
	%1	"004"
	Unacceptable	"?" [CR]

### 9.6.9 CR\_NMSLOT1 Command

Command	"CR_NMSLOT1" [CR]	
Details	Get the board name inserted to Input 1	
Response	Acceptable	"000_%1" [CR]
	%1	"VIDEO" ----- Video board "VGA" ----- VGA D-Sub board "NETWORK" ----- NETWORK board "5BNC" ----- Component board "DVI" ----- DVI board "HD-SDI" ----- HD-SDI board "SD-SDI" ----- SD-SDI board "DUAL-SDI" ----- HD&SD-SDI board "HDCP-DVI" ----- HDCP&DVI board "NOTERMIAL" ----- There is no board inserted
	Unacceptable	"?" [CR]

### 9.6.10 CR\_NMSLOT2 Command

Command	"CR_NMSLOT2" [CR]	
Details	Get the board name inserted to Input 2	
Response	Acceptable	"000_%1" [CR]
	%1	The same data as CR_NMSLOT1
	Unacceptable	"?" [CR]

### 9.6.11 CR\_NMSLOT3 Command

Command	"CR_NMSLOT3" [CR]	
Details	Get the board name inserted to Input 3	
Response	Acceptable	"000_%1" [CR]
	%1	The same data as CR_NMSLOT1
	Unacceptable	"?" [CR]

### 9.6.12 CR\_NMSLOT4 Command

Command	"CR_NMSLOT4" [CR]	
Details	Get the board name inserted to Input 3	
Response	Acceptable	"000_%1" [CR]
	%1	The same data as CR_NMSLOT1
	Unacceptable	"?" [CR]



### 9.6.16 CR\_IDSLOT4 Command

Command	"CR_IDSLOT4" [CR]	
Details	Get ID information on Input 4. This command is to recognize the inserted slot board and specify the valid Input source.	
Response	Acceptable	"000_%1" [CR]
	%1	The same as CR_IDSLOT1
	Unacceptable	"?" [CR]

## 9.7 Screen Status Read Commands

### 9.7.1 CR\_FLSCREEN Command

Command	"CR_FLSCREEN" [CR]	
Details	Get Full Screen setting status (ON/OFF)	
Response	Acceptable	"000_%1" [CR]
	%1	"ON" ----- Full Screen is set to ON. "OFF" ----- Full Screen is set to OFF.
	Unacceptable	"Error Code" [CR] ----- When command is invalid in the given condition (such as being selected input) "?" [CR] ----- When unknown command is received

### 9.7.2 CR\_SCREEN Command

Command	"CR_SCREEN" [CR]	
Details	Get currently selected screen image size	
Response	Acceptable	"000_%1" [CR]
	%1	"NORMAL" ----- Normal mode is selected. "WIDE" ----- Wide mode (16:9) is selected.
	Unacceptable	"Error Code" [CR] ----- When command is invalid in the given condition (such as being selected input) "?" [CR] ----- When unknown command is received

## 9.8 Lamp Status Read Commands

### 9.8.1 CR\_LAMPREPL Command

Command	"CR_LAMPREPL" [CR]	
Details	Get the information of Lamp Replacement time	
Response	Acceptable	"000_%1" [CR]
	%1	"4****" 4 ----- indicates 4 lamps are used in this model. * ----- indicates the status of each lamp in lamp number order. "Y" means the lamp operating time is over the shreshold for lamp replacement, and "N" means it has not reached to. e.g. "4NYYN" ----- This indicates it is 4-lamp system, and Lamp #1 & #4 has not been reached to the replacement time while #2 & #3 should be replaced.
	Unacceptable	"?" [CR]

### 9.8.2 CR\_LAMPMODE Command

Command	"CR_LAMPMODE" [CR]	
Details	Get Lamp mode setting status	
Response	Acceptable	"000_%1" [CR]
	%1	"FULL" ----- Lamp mode is set to 4-lamp (FULL) "HALF" ----- Lamp mode is set to 2-lamp (HALF)
	Unacceptable	"?" [CR]

### 9.8.3 CR\_AUTOLAMPCTRL Command

Command	"CR_AUTOLAMPCTRL" [CR]	
Details	Get selected Lamp control mode	
Response	Acceptable	"000_%1" [CR]
	%1	"NORMAL" ----- NORMAL is selected. "ECO" ----- ECO is selected. "AUTO" ----- AUTO is selected.
	Unacceptable	"Error Code" [CR]

### 9.8.4 CR\_LAMPSTS Command

Command	"CR_LAMPSTS" [CR]	
Details	Get the information of Lamp lighting status	
Response	Acceptable	"000_%1" [CR]
	%1	"4****" The first character indicates 4 lamps are used in this model. The following characters indicate each lamp status in lamp number order as showed below. "I" ----- Lamp is ON "O" ----- Lamp is OFF "X" ----- Lamp Failure e.g. "4IOXI" ----- This indicates it is 4-lamp system, Lamp #1 & #4 is ON, #2 is OFF and #3 is in the failure status.
	Unacceptable	"?" [CR]

### 9.8.5 CR\_INFLAMP Command

Command	"CR_INFLAMP" [CR]	
Details	Get Lamp mode switching status	
Response	Acceptable	"000_%1" [CR]
	%1	"NML" ----- in Normal status (lamp switching operation is not active.) "CNG" ----- during lamp switching operation
	Unacceptable	"?" [CR]

### 9.8.6 CR\_PROJH Command

Command	"CR_PROJH" [CR]	
Details	Get total running time of projector (in hours)	
Response	Acceptable	"000_%1" [CR]
	%1	"0000000" – "0065535"
	Unacceptable	"?" [CR]

### 9.8.7 CR\_HMLAMP Command

Command	"CR_HMLAMP" [CR]	
Details	Get total lamp number	
Response	Acceptable	"000_%1" [CR]
	%1	"004"
	Unacceptable	"?" [CR]

## 9.9 Setting Status Read Commands

### 9.9.1 CR\_BBACK Command

Command	"CR_BBACK" [CR]	
Details	Get Blue Back setting status	
Response	Acceptable	"000_%1" [CR]
	%1	"ON" -----Blue Back is set to ON. "OFF" ----- Blue Back is set to OFF.
	Unacceptable	"?" [CR]

### 9.9.2 CR\_DISP Command

Command	"CR_DISP" [CR]	
Details	Get Display setting status	
Response	Acceptable	"000_%1" [CR]
	%1	"ON" ----- Display is set to ON. "OFF" ----- Display is set to OFF.
	Unacceptable	"?" [CR]

### 9.9.3 CR\_LOGO Command

Command	"CR_LOGO" [CR]	
Details	Get Logo setting status	
Response	Acceptable	"000_%1" [CR]
	%1	"ON" ----- Logo is set to ON. "OFF" ----- Logo is set to OFF.
	Unacceptable	"?" [CR]

### 9.9.4 CR\_RCODE Command

Command	"CR_RCODE" [CR]	
Details	Get currently selected Remote Control code	
Response	Acceptable	"000_%1" [CR]
	%1	"001" ----- Code1 "002" ----- Code2 : "007" ----- Code7 "008" ----- Code8
	Unacceptable	"?" [CR]

### 9.9.5 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	"?" [CR]

### 9.9.6 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 to ON. "OFF" ----- Power ON Start is set to OFF.
	Unacceptable	"?" [CR]

### 9.9.7 CR\_P-MANE Command

Command	"CR_P-MANE" [CR]	
Details	Get Power management setting status	
Response	Acceptable	"000_%1" [CR]
	%1	"ON" ----- Power Management is set to ON. "OFF" ----- Power Management is set to OFF.
	Unacceptable	"?" [CR]

### 9.9.8 CR\_FANSPEED Command

Command	"CR_FANSPEED" [CR]	
Details	Get currently selected Fan Control Speed	
Response	Acceptable	"000_%1" [CR]
	%1	"MAX" ----- Max speed of Fan Control is selected "NOR" ----- Normal speed of Fan Control is selected
	Unacceptable	"?" [CR]

### 9.9.9 CR\_KEYDIS Command

Command	"CR_KEYDIS" [CR]	
Details	Get setting status of RC/KEY use limitation (valid or invalid)	
Response	Acceptable	"000_%1" [CR]
	%1	"NONE" ----- RC & KEY are valid "RC" ----- RC is invalid "KEY" ----- KEY is invalid
	Unacceptable	"?" [CR]

## 9.10 Other Status Read Commands

### 9.10.1 CR\_PRESSURE Command

Command	"CR_PRESSURE" [CR]	
Details	Get value from Air Pressure sensor. Following is the formula to work out Air Pressure from the given value ("Vn" represents the value): <b>Air Pressure (hPa) = (5*Vn / 1024 - 0.204) / 0.00459 + 150</b> The accuracy of this value is +/-2%	
Response	Acceptable	"000_%1" [CR]
	%1	"0000" - "1023"
	Unacceptable	"?" [CR]

### 9.10.2 CR\_SIGNAL Command

Command	"CR_SIGNAL" [CR]	
Details	Get status if there is any signal or not	
Response	Acceptable	"000_%1" [CR]
	%1	"ON" ----- There is signal "OFF" ----- There is no signal
	Unacceptable	"?" [CR]

### 9.10.3 CR\_VMUTE Command

Command	"CR_VMUTE" [CR]	
Details	Get No Show setting status	
Response	Acceptable	"000_%1" [CR]
	%1	"ON" ----- No Show is set to ON. "OFF" ----- No Show is set to OFF.
	Unacceptable	"?" [CR]

### 9.10.4 CR\_FREEZE Command

Command	"CR_FREEZE" [CR]	
Details	Get Freeze setting status	
Response	Acceptable	"000_%1" [CR]
	%1	"ON" ----- Freeze is set to ON. "OFF" ----- Freeze is set to OFF.
	Unacceptable	"?" [CR]

### 9.10.5 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 ongoing. "STOP" ----- Presentation Timer is paused. "OFF" ----- Presentation Timer is not active.
	Unacceptable	"?" [CR]

### 9.10.6 CR\_KEYSTONE Command

Command	"CR_KEYSTONE" [CR]	
Details	Get current correction level Keystone distortion. The returned value "0" indicates Keystone correction is OFF. "Keystone -" reduces the lower part of the image and "Keystone +" reduces the upper part of the image.	
Response	Acceptable	"000_%1" [CR]
	%1	"-127 - 127"
	Unacceptable	"?" [CR]

### 9.10.7 CR\_INFPFAIL Command

Command	"CR_INFPFAIL" [CR]	
Details	Get the power failure status (Normal/Fail) at each check point. Data consists of HEX values for 48 bits. Power Failure check points are 32 points in Main Unit, 8 in Sub Power Unit, and 8 in Current Sensor and others. For Main Unit and Sub Power Unit, each bit corresponds to their check point and indicates the status of "Normal/Abnormal" according to "HI/LO" logic. Normal ---- HI (1) Power Failure ---- LO (0)	
Response	Acceptable	"000_%1" [CR]
	%1	"*****" Expressed in hexadecimal digit of binary 48 bits. Bit 47-16 (32bits) indicates the status of check point No.1-32 in Main Unit. Bits 15-8 (8bits) indicates the status of check point No1-8 in Power Unit. Bits 7-0 (8bits) indicates the status of Current Sensor and others.
	Unacceptable	"?" [CR]

**9.10.8 CR\_TEMPWARN Command**

Command	"CR_TEMPWARN" [CR]	
Details	Get the information about the temperature inside the projector (close to the abnormal or in the abnormal status/in the safe temperature level/abnormal status is not detected). It is possible to get the information about more than one sensors all at once if it is applicable.	
Response	Acceptable	"000_%1" [CR]
	%1	<p>"* *"</p> <p>_</p> <p>Sensor 1 data comes first, and then one space, after that sensor 2 data is followed. Each data is as below: "W"--- in or close to the abnormal temp. (Warning Temp.) "S"--- in the safe level of temperature (Safe Temp.) "N"--- the given sensor does not detect abnormal temp.</p> <p>e.g. "S_W" [CR] indicates that the temperature detected at Sensor 1 is in the safe level while Sensor 2 in the abnormal temperature.</p>
	Unacceptable	"?" [CR]

**9.10.9 CR\_TEMPFAIL Command**

Command	"CR_TEMPFAIL" [CR]	
Details	Get the temperature inside the projector when the abnormal status occurs. It is possible to get the temperatures for more than one sensores all at once if it is applicable.	
Response	Acceptable	"000_%1" [CR]
	%1	<p>e.g. "_31.5F"[CR]</p> <p>_ indicates a space. When the temperature goes under 0, the first character is "-", not a space, as in "-05.5F". With more than one temperature sensors installed, projector returns the responses for each sensor in a row.</p> <p>e.g. "_31.5F_35.2S" [CR]</p> <p>The first data indicates sensor 1 data, then one space, and sensor 2 data is followed. Last character in each data indicates the sensor's status. In the abnormal temperature ----- "F" In the safe level of temperature ----- "S" Neither in or close to the abnormal temp. ----- "N"</p> <p>The second example above indicates that the temperature detected by sensor 1 is 31.5 which means in the abnormal temperature, and at sensor 2 is 32.5 degrees which is in the safe temperature.</p> <p>When the abnormal temperature status is not occurred the data should be "_00.0S". When the projector is reset, "_00.0S" is set. Every time abnormal temperature status is detected, it renews the data and returns it. It only returns the renewed data of the latest abnormal temperature and the previous data is cleared.</p>
	Unacceptable	"?" [CR]

## 10. Command with Address Specification

### 10.1. Overview

- Commands with address are used to remote control more than one projector through RS-232C by a computer.
- The command with address is defined as a single command per line that starts with "A" and ends with carriage return (0x0D).
- When a projector receives carriage return (0x0D), it starts decoding.
- The address such as "A001" is prefixed to the Basic Serial Command or Expand Serial Command already mentioned.

e.g.) Functional Execution Command: "A001C05" [CR]

e.g.) Status Read Command: "A001CR0" [CR]

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

Initial setting value is "No.001"

Available range of the value is "001" to "999"

- It clears the data in the receive buffer in the following cases.
  - When receiving LF (0x0A) or EOF (0x1A)
  - When it takes more than one second to receive a single command.(Until receiving carriage return after the reception of the first data)

## 10.2. Functional Execution Command with address

### 10.2.1. Format

1) PC issues a command in the format 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: string (Refer to Basic and Expand Serial Command)

2) The only projector with the appropriate address decodes the received command, and when it is ready to receive the 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 the address is "FFF", the projector 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) Sending-side system issues commands every 100ms
- 2) When receiving an applicable command, the function is executed repeatedly for 120ms.
- 3) When receiving the same command in a row within 120ms, the function is repeatedly executed for another 120ms from the moment of the second command reception.
- 4) When there is no incoming command after 120ms, the execution of pipelining is stopped.
- 5) When the projector receives other command within 120ms, the execution of pipelining is stopped.

### 10.3. Status Read Command with Address

#### 10.3.1. Format

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

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

or

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

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

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

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

**Required Data [CR]**

Required Data: String (Refer to Basic Status Read Commands)

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