

ESC/VP

(EPSON Standard Code for Visual Products)

Level 5

for

EMP/ELP-8000/8100/9000/9100

EMP/ELP-500/700/710/7350/7250/5350

Reference Manual

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SEIKO EPSON CORPORATION

VD Design Group 1

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1. Packet

The sending and receiving packets are as follows.

1.1. Standalone Command

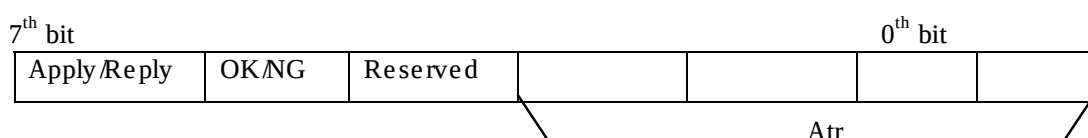
The Standalone command is a command form which controls the projector or PC during Standalone. All the commands during Standalone(except downloading and uploading) start at ESC (0x1B). The command structure is as follows.

ESC	SIZE	Atr	Group	Item	Parameter	CS
-----	------	-----	-------	------	-----------	----

ESC = 0x1B(1byte)

Size = Size of a command packet (specifies a number of data from ESC to CS) (1byte)

Atr = Represents the attribute as an attribute code. (1byte)



7th bit Apply/Reply = Apply: 0, Reply: 1

6th bit OK/NG = OK: 0, NG: 1

(This is only set when the 7th is Reply. For Apply, it is always set 0.)

3rd to 0th bit Atr = Represents an attribute of the Apply command.

Apply command

Attribute	Code	Caption
Set	0x01	Sets a value.
Get	0x02	Gets the value currently set.
Initialize	0x03	Initializes a value.
Set Multi Data	0x09	Sets the data of multiple bytes.
Get Multi Data	0x0A	Gets the data of multiple bytes.

Reply Command

Sync.	Attribute Code	Caption
Return packet for setting (OK)	0x81	Indicates that the set command received was analyzed correctly.
Return packet for setting (NG)	0xC1	Indicates that the set command received was not analyzed correctly.
Return packet for getting (OK)	0x82	Indicates that the get command received was analyzed correctly.
Return packet for getting (NG)	0xC2	Indicates that the get command received was not analyzed correctly.
Return packet for initializing (OK)	0x83	Indicates that the initialize command received was analyzed correctly.
Return packet for initializing (NG)	0xC3	Indicates that the initialize command received was not analyzed correctly.

Group = Represents the functional classification as classification codes.

Functional Classification	Code	Functional Classification	Code
Special Control	0x00	Custom	0x07
Screen Control	0x01	H/W Control	0x08
Sound Control	0x02	Flash ROM	0x09
PC Contro	0x03	Reserved for System	0x0E
Video Control	0x04	Reserved for System	0x0F
Display Control	0x05	Stack Control	0x10
Option	0x06		

Item = Represents the function as the function codes.

CS = (Check Sum)'s Calculation Method

Two's complement which is the sum of 1 byte data from Size to Data.

[E.g.] Command ESC 7 1 0 2 A

7+ 1 + 0 + 2 + A = 14 Two's complement = 0xEC

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1.2. • Response code

Indicates whether it is normal communication or abnormal communication.

When the data packets is received correctly, the slave returns the master ACK(0x06). If it is abnormal, the slave returns the master NAK(0x15). The cause of abnormal could be a check sum error of the data packet, inequality of data size or abnormal status on the slave side.

1.3. • Return Packet

Indicates whether the data transfer is completed normally or abnormally.

When the data packet is analyzed correctly, the slave sends the master the ESC/VP command which indicates that the data packet was analyzed correctly. If it is abnormal or an error arises in the communication between the projectors during Stack, the slave returns master the ESC/VP command which indicates the data packet was not analyzed correctly. The cause of abnormal could be impreciseness of Parameter.

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1.4. Stack Command

Stack command is a command form which is used for controlling the projector or PC during Stack, downloading or uploading. All the commands used for Stack, downloading, uploading start at 0x1D. The command structure is as follows.

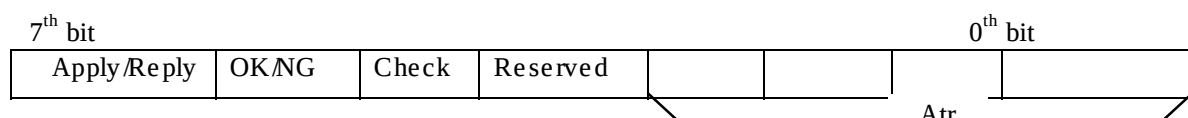
(※ The reason why the stack command is used for downloading and uploading: Since its size is set 2byte, greater amount of data than the standalone command can be transferred once.)

1D	Size	Atr	FromTo	Group	Item	Parameter	CS
----	------	-----	--------	-------	------	-----------	----

1D = 0x1D (1 byte)

Size = Size of a command packet (Specifies a number of the data from 1D to CS)(2byte)

Atr = Represents the attribute as an attribute code. (1byte)



7th bit Apply/Reply = Apply: 0, Reply = 1

6th bit OK/NG = OK: 0, NG: 1(This bit is set only when the 7 bit is Reply. It is always set 0 for Apply.)

5th bit Check = Indicates whether to make an availability check for the all the projector during Stack broadcast. (As this bit is used only in the interior of the projector, it is always set 0 in the communication between the projector and PC.)

Check:1
Not check:0

3rd bit to 0th bit Atr = Indicates the attribute of Apply command.

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• Apply Command

Attribute	Code	Caption
Set	0x01	Sets a value.
Broadcast(with Sync.) Setting check	0x21	Checks if the broadcast (with Sync) is available(to be set). (Projector only)
Get	0x02	Get the current value.
Initialize	0x03	Initializes a value.
Broadcast(with Sync) Initializing check	0x23	Checks if the broadcast(with Sync) can be initialized. (Projector only)

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• Reply Command

Attribute	Code	Caption
Return packet for setting(OK)	0 x 81	Indicates the set command received was analyzed correctly.
Return packet for setting (NG)	0 x C1	Indicates the set command received was not analyzed correctly.
Return packet(OK) for the broadcast setting check (with Sync).	0 x A1	Indicates the broadcast setting(with sync.)check command received was analyzed correctly. (Projector only)
Return packet(NG) for the broadcast setting check(with Sync).	0 x E1	Indicates the broadcast (with sync.)setting check command received was not analyzed correctly. (Projector only)
Return packet for getting(OK)	0 x 82	Indicates the get command received was analyzed correctly.
Return packet for getting(NG)	0 x C 2	Indicates the get command received was not analyzed correctly.
Return packet for initializing (OK)	0 x 83	Indicates the initialize command received was analyzed correctly.
Return packet for initializing (NG)	0 x C3	Indicates the initialize command received was not analyzed correctly.
Return packet for initializing broadcast (OK)	0 x A3	Indicates the broadcast(with sync.) initializing check command was analyzed correctly. (Projector only)
Return packet(OK) for the broadcast initializing check (with Sync).	0 x E 3	Indicates the broadcast (with sync.)initializing check command was not analyzed correctly. (Projector only)
Return packet for EROM group (OK)	0 x 84	Indicates multiple data command received was analyzed correctly.
Return packet for EROM group (NG)	0 x C4	Indicates multiple data command received was not analyzed correctly.

FT = Specifies the sending and receiving ends of the FromTo command. (1 byte)
Indicates sending end between 7th and 4th bit and receiving end between 3rd to 0th bit.

PC: 0

The master projector or a projector during Standalone : 1

The slave projector : 2 to 8

Broadcast : F

Group = Represents the functions as the classification codes. (1 byte)

The classification codes are the same as those of the Standalone command.

Item = Represents the functions with the function codes. (1 byte)

CS = Check sum (1 byte)

The calculation method is the same as the one for the Standalone command.

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2. Function Classification

2.1. Function classification

ESC/VP Function Classifications and their codes are as shown below.

Special Control	0x00
Screen Control	0x01
Audio Control	0x02
PC Control	0x03
Video Control	0x04
Display Control	0x05
Option	0x06
Custom	0x07
HW Control	0x08
Flash ROM	0x09
Reserved for system	0x0E
Reserved for system	0x0F
Stack Control	0x10

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2.2. Group outline for each function

Group Outline for each function is as shown below.

0x00 Special Control

Performs switching and resetting the operating mode.

0x01 Screen Control

Controls the display screen.

0x02 Audio Control

Controls the audio.

0x03 PC Screen Control

Controls PC's image quality.

0x04 Video Control

Controls Video's image quality.

0x05 Display Control

Controls the display.

0x06 Option

Sets the additional functions for the whole projector.

0x07 Custom

Sets the additional functions that user can program.

0x08 Hardware Control

Controls the hardware directly.

To perform this, users need to transfer the operating mode to the circuit adjust mode.

0x09 Flash ROM Control

Controls Flash ROM during rewriting Flash ROM (the download mode) and reading the contents of Flash ROM (the upload mode).

0x10 Stack Control

Performs various kinds of controls of Stack.

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2.3.Functions

ESC/VP functions and the classification code for those are as follows.

Operating Mode:	All the operating mode	●
	Normal mode, application mode only	○
	Circuit Adjust mode only	★
	Upload/download mode only	☆

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Classification	Code	Functions	Code	Operating Mode
Special Control	0x00	Operating mode	0x00	●
		Menu mode	0x01	○
		Initialize	0x02	○
		Power	0x03	○
		Product ID	0x04	○
		Software version	0x05	○
		Communication rate	0x06	○
		Initialize all	0x07	○
		Reserved	0x08	
		Lamp on	0x09	○
		Key	0x0A	○
		Reserved	0x0B	
		Get temperature data	0x0C	○
		Get Color palette	0x0D	○
		Reserved	0x0E	
		Set point + & -	0x0F	○
		Cursor Speed	0x10	○
		Password	0x11	○
		Error Information	0x12	○
		Administrator Log on	0x13	○
		Administrator Log off	0x14	○
Screen	0x01	Input source	0x00	○
		Input mode	0x01	○
		Freeze	0x02	○
		A/V Mute	0x03	○
		Reserved	0x04	
Audio	0x02	Volume	0x00	○
		Reserved	0x01	
		Reserved	0x02	
		Reserved	0x03	
		Reserved	0x04	
		3D Sound	0x05	○
		Bass	0x06	○
		Treble	0x07	○
		SRS SPACE	0x08	○
		SRS CENTER	0x09	○

PC Contro	0x03	Brightness	0x00	○
		Contrast	0x01	○
		Sync.	0x02	○
		Tracking	0x03	○
		Get tracking base	0x04	○
		Fix mouse /serial port	0x05	○
		Color Red	0x06	○
		Color Green	0x07	○
		Color Blue	0x08	○
		Reserved	0x09	
		Get PC Frequency	0x0A	○
		Get Resolution	0x0B	○
		Reserved	0x0C	
		Sharpness	0x0D	○
		Resolution	0x0E	○
		Preset	0x0F	○
		Sync.	0x10	○
		Preset state	0x11	○
Video Control	0x04	Brightness	0x00	○
		Contrast	0x01	○
		Sharpness	0x02	○
		Color	0x03	○
		Tint	0x04	○
		Video mode	0x05	○
Display Control	0x05	Horizontal Position	0x00	○
		Vertical Position	0x01	○
		Rear Proj.	0x02	○
		Ceiling	0x03	○
		Color Temperature	0x04	○
		Reserved	0x05	○
		Reserved	0x06	
		Reserved	0x07	
		Black Level	0x08	
		White Level	0x09	○
		Auto color temperature	0x0A	○

Option	0x06	Language	0x00	☐
		Power save	0x01	☐
		Reserved	0x02	
		Source Prompt	0x03	☐
		Blank	0x04	☐
		Reserved	0x05	
		Reserved	0x06	
		Reserved	0x07	
		Set user gamma	0x08	☐
		BNC	0x09	☐
		Reserved	0x0A	
		Reserved	0x0B	
		Driver board brightness	0x0C	☐
		Driver board contrast	0x0D	☐
		Driver board sub contrast	0x0E	☐
		Keystone	0x0F	☐
		Startup screen	0x10	☐
		Message	0x11	☐
		Set DPMS	0x12	☐
Custom	0x07	Effect key	0x00	☐
		Reserved	0x01	
		Reserved	0x02	
		Reserved	0x03	
		Effect	0x05	☐
		Reserved	0x06	
		Reserved	0x07	
		Pin P	0x08	☐

H/W Control	0x08	I2C	0x00	★
		Memory	0x01	★
		PW	0x02	★
		Reserved	0x03	★
		Reserved	0x04	
		Key Code	0x05	★
		Reserved	0x06	
		Reserved	0x07	
		Reserved	0x08	
		ICS1522	0x09	★
		Video Amp. Auto Setup	0x0A	★
		Reserved	0x0B	
		No Gamma	0x0C	★
		Lamp on/off	0x0D	★
		Memory word access	0x0E	★
		I/O port	0x0F	★
		Video Amp. Auto Setup	0x10	★
		E2PROM Initialize all	0x11	★
		Reset	0x12	★
		E2PROM Control	0x13	★
Flash ROM	0x09	Clear area	0x00	☆
		Specify Upload	0x01	☆
		FROM Data	0x02	☆
		Reserved	0x03	
		Reserved	0x04	
		Complete downloading	0x05	☆
		Complete uploading	0x06	☆
Stack Control	0x10	Check Sack state	0x00	○
		Check Stack	0x01	○
		Reserved	0x02	
		Reserved	0x03	
		Lock /Unlock	0x04	○
		Lamp state during Stack	0x05	○

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2.4. Possible setting range

The possible setting range for each command is as shown below.

Classification	Code	Function	Code	EMP-8000/9000	
				Min.	Max.
Special Control	0x00	Operating mode	0x00	00	05
		Menu mode	0x01	00	01
		Reset	0x02	-	-
		Power	0x03	00	01
		Product ID	0x04	-	-
		Software version	0x05	-	-
		Communication rate	0x06	00	03
		Initialize all	0x07	-	-
		Reserved	0x08	-	-
		Lamp hour	0x09	-	-
		Key	0x0A	-	-
		Reserved	0x0B	-	-
		Set point +&-	0x0C	-	-
		Get temperature data	0x0D	-	-
		Get color palette	0x0E	-	-
		Reserved	0x0F	-	-
		Cursor Speed	0x10	00	02
		Password	0x11	-	-
		Error information	0x12	-	-
		Administrator Log on	0x13	-	-
		Administrator Log off	0x14	-	-
Screen Control	0x01	Input source	0x00	-	-
		Input mode	0x01	-	-
		Freeze	0x02	00	01
		A/V Mute	0x03	00	01
		Reserved	0x04	-	-
Audio Control	0x02	Volume	0x00	0	1F
		Reserved	0x01	-	-
		Reserved	0x02	-	-
		Reserved	0x03	00	01
		Reserved	0x04	-	-
		Reserved	0x05	-	-
		Bass	0x06	FA	6
		Treble	0x07	FA	6
		SRS SPACE	0x08	0	6
		SRS CENTER	0x09	0	6

PC Control	0x03	Brightness	0x00	D0	30
		Contrast	0x01	C0	40
		Sync.	0x02	0	3F
		Tracking	0x03	80	7F
		Tracking base	0x04	-	-
		Fix Mouse /Serial port	0x05	-	-
		Color Red	0x06	D0	30
		Color Green	0x07	D0	30
		Color Blue	0x08	D0	30
		Reserved	0x09	-	-
		Get PC Frequency	0x0A	-	-
		Get Input Resolution	0x0B	-	-
		Reserved	0x0C	-	-
		Sharpness	0x0D	FD	3
		Input Resolution	0x0E	-	-
		Preset	0x0F	-	-
		SYNC.	0x10	00	01
		Preset state	0x11	-	-
Video Control	0x04	Brightness	0x00	F4	C
		Contrast	0x01	F4	C
		Sharpness	0x02	FD	3
		Color	0x03	F4	C
		Tint	0x04	F4	C
		Video Mode	0x05	00	03
Display Control	0x05	Horizontal Position	0x00	80	7F
		Vertical Position	0x01	80	7F
		Rear Proj.	0x02	00	01
		Ceiling	0x03	00	01
		Color Temperature	0x04	-8	16
		Reserved	0x05	-	-
		Reserved	0x06	-	-
		Reserved	0x07	-	-
		Black Level	0x08	TBD	TBD
		White Level	0x09	TBD	TBD
		Auto Color temperature	0x0A	00	01

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Option	0x06	Language	0x00	00	06
		Power save	0x01	00	3C
		Reserved	0x02	-	-
		Source prompt	0x03	00	01
		Blank	0x04	00	02
		Reserved	0x05	-	-
		Reserved	0x06	-	-
		Reserved	0x07	-	-
		Set user gamma	0x08	-	-
		BNC	0x09	-	-
		Reserved	0x0A	-	-
		Reserved	0x0B	-	-
		Driver board brightness	0x0C	401	3FF
		Driver board contrast	0x0C	80	7F
		Driver board sub contrast	0x0D	80	7F
		Keystone	0x0f	TDB	TBD
		Startup screen	0x10	00	01
		Message	0x11	00	02
		DPMS	0x12	00	01
Custom	0x07	Effect Key	0x00	01	05
		Reserved	0x01	-	-
		Reserved	0x02	-	-
		Reserved	0x03	-	-
		Effec	0x05	-	-
		Reserved	0x06	-	-
		Reserved	0x07	-	-
		P in P	0x08	-	-
H/W Control	0x08	12c	0x00	-	-
		Memory	0x01	-	-
		PW	0x02	-	-
		Reserved	0x03	-	-
		Reserved	0x04	-	-
		Key code	0x05	-	-
		Reserved	0x06	-	-
		Reserved	0x07	-	-
		Reserved	0x08	-	-
		ICS1522	0x09	-	-
		Video Amp. Auto Setup	0x0A	-	-
		Reserved	0x0B	-	-
		No Gamma	0x0C	00	01
		Lamp on/off	0x0D	00	01
		Memory Word access	0x0E	-	-
		I/O port	0x0F	-	-
		Video Amp. Auto Setup	0x10	-	-
		E2PROM Initialize all	0x11	-	-
		Reset	0x12	-	-
		E2PROM control	0x13	-	-

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Flash ROM	0x09	Clear Area	0x00	-	-
		Upload	0x01	-	-
		FROM Data	0x02	-	-
		Reserved	0x03	-	-
		Reserved	0x04	-	-
		Complete downloading	0x05	-	-
		Complete uploading	0x06	-	-
Stack Control	0x10	Check Stack state	0x00	-	-
		Check Stack	0x01	-	-
		Reserved	0x02	-	-
		Reserved	0x03	-	-
		Lock /Unlock	0x04	-	-
		Lamp state during stack	0x05	-	-

3.Mode Transfer

3.1.Transferring mode

EPSON projectors have 4 operating modes. These modes can freely transfer each other by issuing a mode transfer command.

However, since transferring to the Data download and Adjust mode for FROM enables the program and data operation inside of the projector, users should not issue the transfer command for those modes. Explanations are given to each mode as follows.

Normal mode

When the projector power is turned on, it goes into the normal mode. During this mode, users can input the remote control, key pad and control code. However, sending the control code, H/W control command and flash ROM control command, does not make the projector perform those controls. In addition, the effect key command of the custom cannot be issued from this projector during this mode.

Application mode

Enables to control the projector itself from the application. During this mode, you can input the remote control, key pad, and control code. However, the projector doesn't control even sending H/W control command and flash ROM command to the projector.

Circuit Adjust mode

Changes the various kinds of set points in the projector. During this mode, the remote control and key pad are not available. The control code only controls the H/W control command and projector mode transfer command. In addition, the effect key command of the custom cannot be issued from this projector during this mode.

Download mode

This mode is for rewriting the data in Flash ROM in the projector.

Download mode is used to rewrite the data in flash ROM contained in the projector.

When transferred to this mode, remote control and keypad are not available. Only the flash ROM and projector transfer commands can be controlled. In addition, the effect key command of the custom cannot be issued from this projector during this mode.

There are two kinds of download modes. One is User logo download, and the other is Program download.

Upload Mode

Upload mode is used to read the data in flash ROM contained in the projector.

When transferred to this mode, remote control and keypad are not available.

Users can control only flash ROM control and projector transfer commands.

Also, the effect key command of Custom is not issued from the projector in this mode.

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4.Control Code

4.1.Special Control

Operating mode (Group : 0 Item : 0)

Setting operating mode

[Function] Sets the projecto 's operating mode.

- Apply

[Form] < Hexadecimal > 1B 07 01 00 00 Parameter CS

[Parameter]

Parameter to the setting operating mode specifies the data correspond to the various kinds of operating mode.

1. Possible setting data :

Normal mode	:	00
Application mode	:	01
Download mode	:	02 (User Logo)
Upload mode	:	03 (User Logo)
Circuit Adjust mode	:	04
Program Download mode	:	05 (Program)

- Reply

[Form] < Hexadecimal > 1B 06 81 00 00 CS o

1B 06 C1 00 00 CS

[Parameter] No parameter

1B 07 01 00 00 Parameter CS ACK 1B 06 81 00 00 CS ACK

Getting Operating mode

[Function] Gets the present projecto 's operating mode.

- Apply
 - [Form] < Hexadecimal > 1B 06 02 00 00 CS
 - [Parameter] No parameter
- Reply
 - [Form] < Hexadecimal > 1B 07 82 00 00 Parameter CS o
 - 1B 06 C2 00 00 CS
 - [Parameter] Same as the setting operation mode.

1B 06 02 00 00 CS ACK 1B 07 82 00 00 Parameter CS ACK

Menu mode (Group : 0 Item : 1)

Setting menu mode

[Function] Sets the projecto 's menu mode.

- Apply

[Form] < Hexadecimal > 1B 07 01 00 01 Parameter CS

[Parameter]

Parameter to the menu mode specifies the data corresponds to the menu ON/OFF

Possible setting data :

Display Mode : 00

Menu Mode : 01

- Reply

[Form] < Hexadecimal > 1B 06 81 00 01 CS o

1B 06 C1 00 01 CS

[Parameter] No parameter

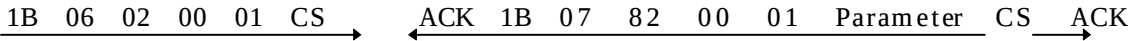
1B 07 01 00 01 Parameter CS → ← ACK 1B 06 81 00 01 CS ACK →

Getting Menu mode

[Function] Gets the present Menu state.

- Apply
[Form] < Hexadecimal > 1B 06 02 00 01 C S
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 82 00 01 Parameter CS o
 1B 06 C2 00 01
[Parameter] Returns the present Menu state.



Projector Reset (Group : 0 Item : 2)

Reset

[Function] Resets the projector.
Executes the software reset . (Initializing the program counter.)

- Apply
[Form] < Hexadecimal> 1B 06 01 00 02 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal> 1B 06 81 00 02 CS o
1B 06 C1 00 02 CS
[Parameter] No parameter

1B 06 01 00 02 CS ← ACK 1B 06 81 00 02 CS ACK →

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Power (Group : 0 Item : 3)

Setting Power ON/OF (Information)
[Function] Turns the projector power on or off

- Apply
[Form] < Hexadecimal > 1B 07 01 00 03 Parameter CS
[Parameter]

Parameter to the setting power specifies the data corresponds to ON/OF.

Possible setting data :

Power OFF	: 00 (Set/Notice)
Power ON	: 01 (Set/Notice)
Suspend	: 02 (Notice)
During Startup	: 10 (Notice)
Cool down	: 11 (Notice)
System fault	: 20 (Notice)

- Reply
[Form] < Hexadecimal > 1B 06 81 00 03 CS o
1B 06 C1 00 03 CS
[Parameter] No parameter

1B 07 01 00 03 Parameter CS ACK 1B 06 81 00 03 CS ACK

※Although setting 02 and later in parameter and sending command to the projector, returns NG in replay. 02 and later are available just for informing from the projector.

Getting Power State

[Function] Gets the present projector Power State.

- Apply

[Form] < Hexadecimal > 1B 06 02 00 03 CS

[Parameter] No parameter

- Reply

[Form] < Hexadecimal > 1B 07 82 00 03 Parameter CS o

1B 06 C2 00 03 CS

[Parameter]

Returns the present projector Power state.

Power OFF : 00

Power On : 01

Suspend : 02

During Startup : 10

Cool Down : 11

System fault : 20

1B 06 02 00 03 CS → ← ACK 1B 07 82 00 03 Parameter CS → ACK

State of System fault :

This is abnormal state such as a bus error, extraordinary circuit (fan or sensor).

They can be reset by Power-On-Reset.

Definition for Startup Transaction :

While in the Stand-by state, completes initializing the device during the period of pressing the power key, lamp on, and goes into the warm up state.(4 seconds after the lamp on.)

You cannot send the commands such as ESC/VP volume(Group:0x02Item:0x00) during Startup.

Cool Down : The while from turning on the power key and until going into the Stand-by.

Suspend : The projector is at the state of suspend.

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Product ID (Group : 0 Item : 4)

Getting product ID

[Function] Gets a product ID.

- Apply
 - [Form] <Hexadecimal> 1B 06 02 00 04 CS
 - [Parameter] No parameter
- Reply
 - [Form] < Hexadecimal> 1B 0A 82 00 04 Parameter C6r
1B 06 C2 00 04 CS
 - [Parameter] Returns the product ID.
 - Series name (2 bytes)
 - Code (2 bytes)

The series names are as shown below.

- 1) 1st byte : Resolution
 - VGA :10 SXGA2(1280x960):41
 - SVGA :20 SXGA3(1280x1024):42
 - XGA :30 SXGA4(1366x1024):43
 - SXGA1(1152x864):40 UXGA : 50
- 2) 2nd byte : model name
 - EMP-9000 : 10
 - EMP-8000 : 11
 - EMP-7350 : 20
 - EMP-7250 : 21
 - EMP-5350 : 22

1B 06 02 00 04 CS ← ACK 1B 0A 82 00 04 Parameter CS → ACK

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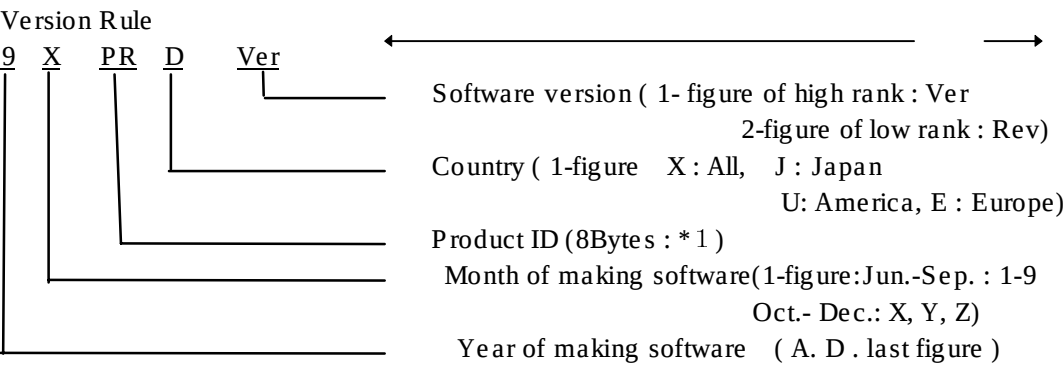
Software Version (Group : 0 Item : 5)

Getting software version

[Function] Gets the software version.

- Apply
[Form] < Hexadecimal > 1B 06 02 00 05 CS
[Parameter] No Parameter
- Reply
[Form] < Hexadecimal > 1B 19 82 00 05 Parameter CS or
1B 06 C2 00 05 CS
[Parameter] Returns the software version.

1B 06 02 00 05 CS ACK 1B 14 82 00 05 Parameter CS ACK



※ 1 . Product ID : This is a same as the 0-4 product ID. However the content is the same as SCOLL..

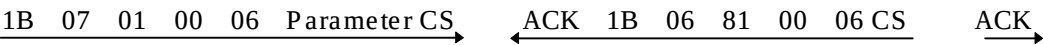
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Communication rate (Group : 0 Item : 6)

Setting Communication rate

Function] Sets the serial communication rate.

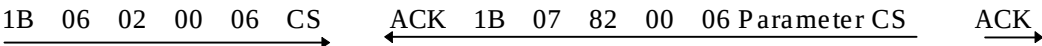
- Apply
[Form] <Hexadecimal> 1B 07 01 00 06 Parameter CS
[Parameter]
Parameter to the setting communication rate specifies the data correspond to the communication rate.
Possible setting data:
9600bps : 00
19500bps : 01
38400bps : 02
57600bps : 03
- Reply
[Function] < Hexadecimal> 1B 06 81 00 06 CS or
1B 06 C1 00 06 CS
[Parameter] No Parameter



Getting Communication rate

[Function] Gets the present communication rate.

- Apply
[Form] < Hexadecimal > 1B 06 02 00 06 C S
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 82 00 06 Parameter CS o
1B 06 C2 00 06 CS
[Parameter] Returns the present communication rate.

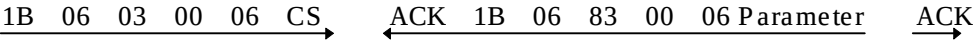


Initializing Communication rate

[Function] Initializes the communication rate.

- Apply
[Form] < Hexadecimal > 1B 06 03 00 06 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 83 00 06 Parameter CS o
1B 06 C3 00 06 CS
[Parameter] Returns the initialized communication rate.

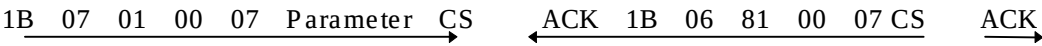


Initialize all (Group : 0 Item : 7)

Initialize all

[Function] Initializes all the functions.

- Apply
 - [Form] <Hexadecimal> 1B 07 01 00 07 Parameter 00
 - [Parameter]
 - Start : 00
 - Complete : 01
- Reply
 - [Form] <Hexadecimal> 1B 07 01 00 07 Parameter 00
1B 06 C1 00 07 CS
 - [Parameter] No parameter



※When the initialization has been performed from the projector, parameter 00 at the start and parameter 01 at the end are set and this command will be sent.
When performing the initialization to the projector, sets 00 on demand and nothing has to be sent at the end.

Lamp Hour (Group : 0 Item : 9)

Getting Lamp hour
[Function] Gets the present lamp hour.

- Apply
 [Form] < Hexadecimal > 1B 06 02 00 09 CS
 [Parameter] No parameter

- Reply
 [Form] <Hexadecimal > 1B 08 82 00 09 Parameter CS or
 1B 06 C2 00 09 CS
 [Parameter]
 Returns the present lamp hour (in hours) (2bytes)

1B 06 02 00 09 CS ACK 1B 08 82 00 09 Parameter CS ACK

Key Operation (Group : 0 Item : A)

Setting Key operation

[Function] Sets the key code assigned to buttons and executes the functions assigned.

● Apply

[Form] <Hexadecimal> 1B 0B 01 00 0A Parameter CS

[Parameter] Parameter to the setting key operation specifies key codes customized to buttons.

Key codes :(5bytes)

Reserved	: 0000000001	Computer -P	: 0000100000
Computer	: 0000000002	Video - P	: 0000200000
Video	: 0000000004	Reserved	: 0000400000
Resize	: 0000000008	Reserved	: 0000800000
Freeze	: 0000000010	Up	: 0001000000
Shift	: 0000000020	Down	: 0002000000
A/V Mute	: 0000000040	Left	: 0004000000
Help	: 0000000080	Right	: 0008000000
Auto	: 00 00000100	Mouse left click	: 0010000000
Power	: 0000000200	Mouse right click	: 0020000000
Source	: 0000000400	Zoo +	: 0040000000
BNC	: 0000000800	Zoom -	: 0080000000
S-Video	: 0000001000	BNC	: 0100000000
Volume +	: 0000002000	P in P	: 0200000000
Volume -	: 0000004000	Preset	: 0400000000
Sync +	: 0000008000	F1	: 0800000000
Sync -	: 0000010000	F2	: 1000000000
Tracking +	: 0000020000	F3	: 2000000000
Tracking -	: 0000040000	F4	: 4000000000
Menu	: 0000080000	F5	: 8000000000

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● Reply

[Form]< Hexadecimal> 1B 06 81 00 0A CS o
1B 06 C1 00 0A CS

[Parameter] No parameter

1B 0B 01 00 0A Parameter CS ACK 1B 06 81 00 0A CS ACK

Getting Temperature data (Group : 0 Item : C)

Projector temperature

[Function] Gets the temperature which each sensor in the projector indicates.

The number of the temperature to get differs according to the projectors.

- Apply

[Form] < Hexadecimal > 1B 07 02 00 0C Parameter CS

[Parameter]

0x10 : LM75-1 (PW364)
 0x11 : LM75-2 (LM2202)
 0x12 : LM75-2 (AD9483)
 0x13 : LM75-2 (TA1270)
 0x14 : LM75-2 (LH)
 0x20 : Thermistor1(LN)
 0x21 : Thermistor2(LH)
 0x22 : Thermistor3(OS)
 0x23 : Thermistor4(PBS)
 0x80 : Gets the temperature state

- Reply

[Form] < Hexadecimal > 1B 08 82 00 0C Parameter CS o
 1B 06 C2 00 0C CS

[Parameter]

When the Apply parameter is the getting the temperature (LM75)(0x10 to 0x14).

00h or **80h (stores the temperature in hexadecimal.)

When it is **00h, the first decimal place of the temperature is 0 (**.0).

When it is **80h, the first decimal place of the temperature is 5 (**.5).

When the Apply parameter is the thermistor temperature (0x20 to 0x23),

00h (stores the temperature in hexadecimal.)

When the Apply parameter is in the getting temperature state (0x80).

Upper byte : Operating state Lower byte : Temperature state

0x00 : Stand-by	0x00 : Fan halt
0x01 : Warm-up	0x02 : Fan in low-rev
0x02 : Running	0x03 : Fan in middle-rev
0x03 : Suspend	0x04 : Fan in high and middle-rev
0x04 : Cool-down	0x05 : Fan in high-rev
0x05 : Idle	0x06 : High temperature warning
0x06 : System fault	0x08 : High temperature
0x07 : Circuit Adjust	0x01, 0x07 : Reserved

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1B 07 02 00 0C Parameter CS ← ACK 1B 08 82 00 0C Parameter CS → ACK

Getting Color palette (Group : 0 Item : D)

Getting Color palette data

[Function] Gets the color palette data used for the projecto 's OSD menu.

- Apply
[Form] < Hexadecimal > 1B 06 02 00 0D CS
[Parameter] No parameter
- Reply
[Form]< Hexadecimal > 1B 36 82 00 0D Parameter CS or
1B 06 C2 00 0D CS
[Parameter] Returns the value of Color palette.
The values of Color palette are stored in the following order. (48 bytes in all)

Pallet 0 : R (1byte)
Pallet 0 : G
Pallet 0 : B
Pallet 0 : R
Pallet 1 : G
Pallet 1 : B
:
Pallet 15 : R
Pallet 15 : G
Pallet 15 : B

1B 06 02 00 0D CS ACK 1B 36 82 00 0D Parameter CS ACK

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Set point + - (Group : 0 Item : F)

Specifying the set point plus or minus.

[Function] Sets the plus or minus of set point for the item specified by parameter.

● Apply

[Form] <Hexadecimal> 1B 10 01 00 0F Parameter CS

[Parameter]

Group of the entry to set plus or minus (1 byte)

Item of the entry to set plus or minus (1 byte)

Specifying plus or minus (8 byte)

Specifying plus or minus are stored in the following order. (48 bytes in all)

Master

Slave1

Slave2

:

Slave7

1: plus 0:minus

※ Except the data of projector specified at Ft, data is invalid during stack .
(Broadcast is only the exception.)

During Stack, and except only the broadcast, those data other than the
projector specified in FT are invalid.

※Only Master is available during Standalone.

● Reply

[Form] <Hexadecimal> 1B 10 81 00 0F Parameter CS o

1B 06 C1 00 0F CS

[Parameter]

Group of the entry to set plus or minus (1 byte)

Item of the entry to set plus or minus (1 byte)

Result of plus or minus (8 bytes)

Specifying plus or minus are stored in the following order. (48 bytes in all)

Master

Slave1

Slave2

:

Slave7

1: plus 0:minus

※ Except the data of projector specified at Ft, data is invalid during stack .
(Broadcast is only the exception.)

During Stack, and except only the broadcast, those data other than the
projector specified in FT are invalid.

※Only Master is available during Standalone.

1B 10 01 00 0F Parameter CS ← ACK 1B 10 81 00 0F Parameter CS → ACK

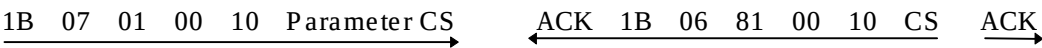
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Cursor Speed (Group : 0 Item : 10)

Setting cursor speed
[Function] Sets the cursor speed.

- Apply
[Form] < Hexadecimal > 1B 07 01 00 10 Parameter CS
[Parameter]
Possible setting data:
Low :0x00
Medium :0x01
High :0x02

- Reply
[Form] < Hexadecimal > 1B 06 81 00 10 CS o
1B 06 C1 00 10 CS
[Parameter] No Parameter



Getting Cursor Speed

[Function] Gets the present cursor speed.

- Apply
[Form] < Hexadecimal > 1B 06 02 00 10 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 82 00 10 Parameter CS or
1B 06 C2 00 10 CS
[Parameter] Returns the present cursor speed.

1B 06 02 00 10 CS ← ACK 1B 07 82 00 10 Parameter CS ACK →

Initializing Cursor Speed

[Function] Initializes the cursor seed.

- Apply
[Form] < Hexadecimal > 1B 06 03 00 10 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 83 00 10 Parameter CS or
1B 06 C3 00 10 CS
[Parameter] Returns the cursor speed initialized.

1B 06 03 00 10 CS ← ACK 1B 07 83 00 10 Parameter CS ACK →

Password (Group : 0 Item : 11)

Setting password

[Function] Sets a password for an installer only use.

- Apply

[Function]<Hexadecimal>
 1B 10 01 00 11 Parameter CS

[Parameter]
 Password: ASCII 16 letters
 - Reply

[Form] < Hexadecimal >
 1B 06 81 00 11 CS or
 1B 06 C1 00 11 CS

[Parameter] No parameter

1B 10 01 00 11 Parameter CS
ACK 1B 06 81 00 10 CS
ACK

※NG is sent in reply when it is not logged on (User 0-13) by an administrator.
※When the password which you set was within 16 letter, padding NULL(0x00) is done.

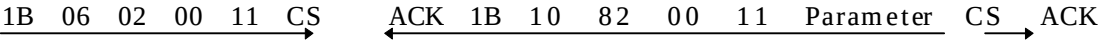
Getting password

[Function] Gets the present password.

- Apply
[Form] < Hexadecimal > 1B 06 02 00 11 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 10 82 00 11 Parameter CS o
 1B 06 C2 00 11 CS

[Parameter] Returns the present password.
When there is no password set, returns null(0x00).

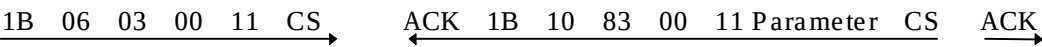


Initializing Password

[Function] Initializes a password.

- Apply
[Form] < Hexadecimal > 1B 06 03 00 11 CS
[Parameter] No parameter

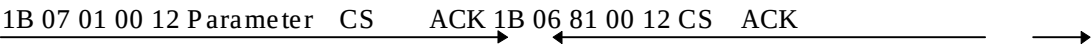
- Reply
[Form] < Hexadecimal > 1B 06 83 00 11 Parameter CS or
 1B 06 C3 00 11 CS
[Parameter] Returns the password initialized.
※ After initializing, the password will be null (0x00).



※NG is sent in reply when it is not logged on (User 0-13) by an administrator.

Error information (Group :0 Item :12)

- Error information
- [Function] Informs the error information of the projector.
- Apply
 - [Form] < Hexadecimal > 1B 07 01 00 12 Parameter CS
 - [Parameter]
 - The contents as shown below are set with OR
 - 0x01 : Fan problem
 - 0x02 : Lamp fuse problem
 - 0x04 : Internal temperature is abnormally high.
 - 0x08 : Lamp life expectancy is closed to end.
 - 0x10 : Lamp life
 - 0x20 : Lamp problem
 - 0x40 : Other failures
 - 0x80 : Stack failure
 - 0x00 : No error or error is cancelled.
 - Reply
 - [Form] < Hexadecimal > 1B 06 81 00 12 CS o
 - 1B 06 C1 00 12 CS
 - [Parameter] No parameter



Get Error information

[Function] Gets the information of the error which has presently occurred.

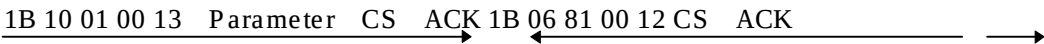
- Apply
 - [Form] < Hexadecimal > 1B 06 02 00 12 CS
 - [Parameter] No parameter
- Reply
 - [Form] < Hexadecimal > 1B 07 82 11 12 Parameter CS o
 - 1B 06 C2 00 11 CS
 - [Parameter] Refer to the preceding paragraph.

1B 06 02 00 12 CS ACK 1B 07 82 00 12 Parameter CS ACK

Administrator Log on (Group :0 Item :13)

- Administrator Log on
- [Function] By logging on as an administrator, the administrator -only commands such as Password (0 - 11) and Lock/Unlock (10 - 4) become available.
- Apply
[Form] < Hexadecimal > 1B 10 01 00 13 Parameter CS
[Parameter]
Password : ASCII 16letters
 - Reply
[Form] < Hexadecimal > 1B 06 81 00 13 CS o
1B 06 C1 00 13 CS

[Parameter] No parameter
- ※ Returns NG when the password is not effective.



※ After using this command, you must use the 0-14 [User Log off]

Administrator Log off (Group : 0 Item : 14)

- Administrator Log off
- [Function] By logging off as a administrator, the administrator-only commands such as Password (0- 11) and Lock/Unlock (10- 4) become invalid.
- Apply

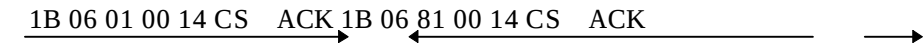
[Form] < Hexadecimal > 1B 06 01 00 14 CS

[Parameter] No parameter
 - Reply

[Form] < Hexadecimal > 1B 06 81 00 14 CS o

1B 06 C1 00 14 CS

[Parameter] No parameter



4.2.

Screen Control

Input Source (Group : 1 Item : 0)

Adjusting Input Source

[Function] Sets an input source

● Apply

[Form] < Hexadecimal > 1B 07 01 01 00 Parameter CS

[Parameter] Parameter to the adjusting input source specifies the data corresponded to input sources.

Possible setting data :

PC1 : 0x10
PC2 : 0x11
Reserved : 0x20
Video(RCA Input fix) : 0x21
Video(SInput fix) : 0x22
BNC(RGB) : 0x30
BNC(YCrCb) : 0x40

● Reply

[Form] < Hexadecimal > 1B 06 81 01 00 CS or
1B 06 C1 01 00 CS

[Parameter] No parameter

1B 07 01 01 00 Parameter CS ACK 1B 06 81 01 00 CS ACK

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Getting Input Source

[Function] Gets the present input source.

- Apply
[Form] < Hexadecimal > 1B 06 02 01 00 CS
[Parameter] No parameter

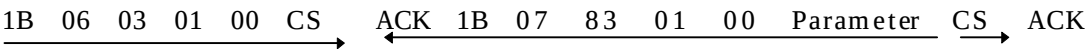
- Reply
[Form] < Hexadecimal > 1B 07 82 01 00 Parameter CS or
 1B 06 C2 01 00 CS
[Parameter] Returns the present input source.

1B 06 02 01 00 CS ACK 1B 07 82 01 00 Parameter CS ACK

Initializing Input Source

[Function] Initializes the input source.

- Apply
[Form] < Hexadecimal > 1B 06 03 01 00 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 83 01 00 Parameter CS o
1B 06 C3 01 00 CS
[Parameter] Returns the input source initialized.



Input mode (Group : 1 Item : 1)

- Informing the present input mode.
- Apply

[Form] < Hexadecimal > 1B 07 01 01 01 Parameter CS

[Parameter]

Mode name Mode number

No mode : 00

PC : 01

NTSC : E0

NTSC4.43 : E1

PAL : E2

PALN : E3

PALM : E4

PAL60 : E5

SECAM : E6

NTSC50 : E7

YCrCb(50Hz) : E8

YCrCb(60Hz) : E9

Not Supported : D0
 - Reply

[Form] < Hexadecimal > 1B 06 81 01 01 CS o

1B 06 C1 01 01 CS

[Parameter] No parameter

1B 07 01 01 01 Parameter CS ACK 1B 06 81 01 01 CS ACK →

Getting Input mode

[Function] Gets the present input mode.

- Apply

[Form] < Hexadecimal > 1B 06 02 01 01 CS

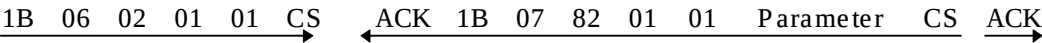
[Parameter] No parameter
- Reply

[Form] < Hexadecimal > 1B 07 82 01 01 Parameter CS o

1B 06 C2 01 01 CS

[Parameter] Returns the present input mode.

Mode name	Mode number
No mode	: 00
PC	: 01
NTSC	: E0
NTSC4.43	: E1
PAL	: E2
PALN	: E3
PALM	: E4
PAL60	: E5
SECAM	: E6
NTSC50	: E7
YCrCb(50Hz)	: E8
YCrCb(60Hz)	: E9
Not Supported	: D0

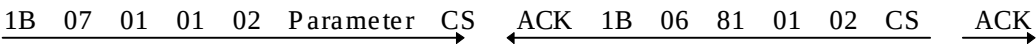


Freeze (Group : 1 Item : 2)

Setting Freeze state

[Function] Sets or cancels freeze state.

- Apply
 - [Form] < Hexadecimal > 1B 07 01 01 02 Parameter CS
 - [Parameter] Parameter to the setting freeze state specifies the data corresponded to
ON/OFF
Possible setting data :
OFF: 0 0
ON: 0 1
- Reply
 - [Form] < Hexadecimal > 1B 06 81 01 02 CS o
 1B 06 C1 01 02 CS
 - [Parameter] No parameter



Getting Freeze state

[Function] Gets the present freeze state.

- Apply
[Form] < Hexadecimal > 1B 06 02 01 02 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 82 01 02 Parameter CS o
 1B 06 C2 01 02 CS
[Parameter] Returns the present freeze state.

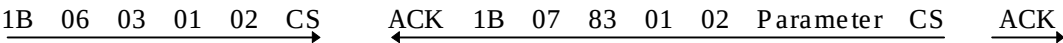
1B 06 02 01 02 CS → ← ACK 1B 07 82 01 02 Parameter CS → ACK

Initializing Freeze state

[Function] Initializes freeze state.

- Apply
[Form] < Hexadecimal > 1B 06 03 01 02 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 83 01 02 Parameter CS or
 1B 06 C3 01 02 CS
[Parameter] Returns the freeze state initialized.



A/V Mute (Group: 1 Item: 3)

Setting A /V Mute State

[Function] Sets or cancels A /V Mute state.

- Apply
[Form] < Hexadecimal > 1B 07 01 01 03 Parameter CS
[Parameter] Parameter to the setting A/V Mute state specifies the data corresponded to ON/OFF
Possible setting data:
OFF : 0 0
ON : 0 1

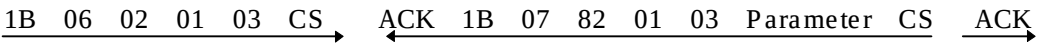
- Reply
[Form] < Hexadecimal > 1B 06 81 01 03 CS o
1B 06 C1 01 03 CS
[Parameter] No parameter

1B 07 01 01 03 Parameter CS ACK 1B 06 81 01 03 CS ACK

Getting A /V Mute State

- Apply
[Form] < Hexadecimal > 1B 06 02 01 03 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 82 01 03 Parameter CS or
 1B 06 C2 01 03 CS
[Parameter] Returns the present A /V Mute state.

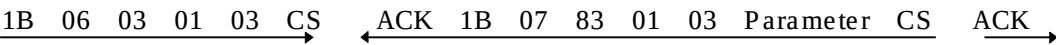


Initializing A /V Mute State

[Function] Initializes the A /V Mute state.

- Apply
[Form] < Hexadecimal > 1B 06 03 01 03 CS
[Parameter] No parameter

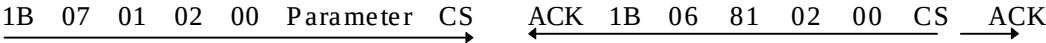
- Reply
[Form] < Hexadecimal > 1B 07 83 01 03 Parameter CS or
 1B 06 C3 01 03 CS
[Parameter] Returns the present A/V mute state.



4.3.Audio Control

Volume (Group : 2 Item : 0)

- Adjusting Volume
- [Function] Sets volume for the audio input presently selected.
- Apply
[Form] < Hexadecimal > 1B 07 01 02 00 Parameter CS
[Parameter] Parameter to the adjusting volume specifies the volume value to set.
 - Reply
[Form] < Hexadecimal > 1B 06 81 02 00 CS o
 1B 06 C1 02 00 CS
[Parameter] No parameter

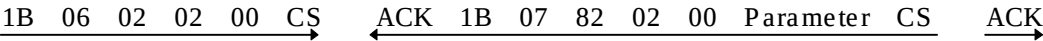


Getting Volume Value

[Function] Gets the present volume value.

- Apply
[Form] < Hexadecimal > 1B 06 02 02 00 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 82 02 00 Parameter CS or
1B 06 C2 02 00 CS
[Parameter] Returns the present volume value.



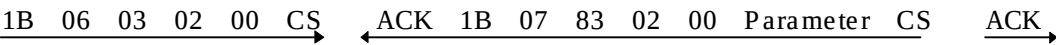
Initializing Volume Value

[Function] Initializes volume values.

- Apply
[Form] < Hexadecimal > 1B 06 03 02 00 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 83 02 00 Parameter CS or
 1B 06 C3 02 00 CS

[Parameter] Returns the volume value initialized.



3D Sound (Group : 2 Item : 5)

Adjusting 3D Sound
[Function] Sets the effect of 3D sound to the audio input presently provided.

- Apply
[Form] < Hexadecimal > 1B 07 01 02 05 Parameter CS
[Parameter] Parameter to the 3D sound specifies the effect of 3D sound to set.
- Reply
[Form] < Hexadecimal > 1B 06 81 02 05 CS o
1B 06 C1 02 05 CS
[Parameter] No parameter

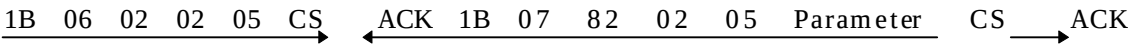
1B 07 01 02 05 Parameter CS

ACK 1B 06 81 02 05 CS

ACK

Getting 3D Sound
[Function] Gets the present 3D sound value.

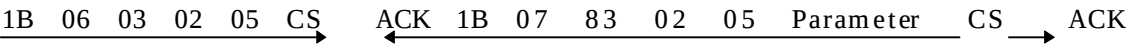
- Apply
[Form] < Hexadecimal > 1B 06 02 02 05 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 82 02 05 Parameter CS o
1B 06 C2 02 05 CS
[Parameter] Returns the present 3D sound value.



Initializing 3D Sound

[Function] Initializes the present 3D sound value.

- Apply
 - [Form] < Hexadecimal > 1B 06 03 02 05 CS
 - [Parameter] No parameter
- Reply
 - [Form] < Hexadecimal > 1B 07 83 02 05 Parameter CS o
 - 1B 06 C2 02 05 CS
 - [Parameter] Returns the present 3D sound value.



Bass (Group : 2 Item : 6)

Adjusting Bass Value

[Functions] Sets bass value to the audio input presently provided.

- Apply
[Form] < Hexadecimal > 1B 07 01 02 06 parameter CS
[Parameter] Parameter to the adjusting bass value specifies tone values to set.
- Reply
[Form] < Hexadecimal > 1B 06 81 02 06 CS or
1B 06 C1 02 06 CS
[Parameter] No parameter

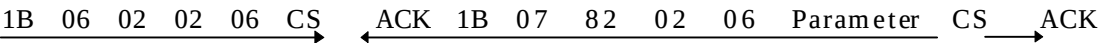
1B 07 01 02 06 Parameter CS ACK 1B 06 81 02 06 CS ACK

Getting Bass Value

[Function] Gets the present tone value.

- Apply
[Form] < Hexadecimal > 1B 06 02 02 06 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 82 02 06 Parameter CS o
1B 06 C2 02 06 CS
[Parameter] Returns the present bass value.

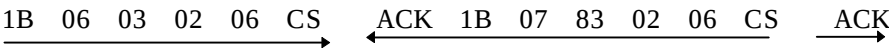


Initializing Bass Value

[Function] Initializes bass values.

- Apply
[Form] < Hexadecimal > 1B 06 03 02 06 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 83 02 06 Parameter CS or
1B 06 C3 02 06 CS
[Parameter] Returns the bass value initialized.



Treble (Group 2 Item : 7)

Adjusting Treble Value

[Function] Adjusts treble values to the audio input presently provided.

- Apply
[Form] < Hexadecimal > 1B 07 01 02 07 Parameter CS
[Parameter] Parameter to the adjusting treble specifies tone volumes to set.
- Reply
[Form] < Hexadecimal > 1B 06 81 02 07 CS or
1B 06 C1 02 07 CS
[Parameter] No parameter

1B 07 01 02 07 Parameter CS → ← ACK 1B 06 81 02 07 CS → ACK

Getting Treble Value

[Function] Gets the present treble value.

- Apply

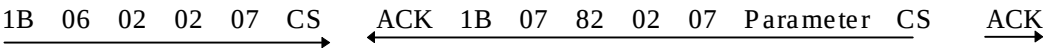
[Form] < Hexadecimal > 1B 06 02 02 07 CS

[Parameter] No parameter

- Reply

[Function]<Hexadecimal> 1B 07 82 02 07 Parameter CS or
1B 07 C2 02 07 CS

[Parameter] Returns the present treble value.



Initializing Treble Value

[Function] Initializes treble values.

- Apply
[Form] < Hexadecimal > 1B 06 03 02 07 CS o
[Parameter] No parameter
- Reply
[Form] < Hexadecimal> 1B 07 83 02 07 Parameter CS o
1B 06 C3 02 07 CS
[Parameter] Returns the treble value initialized.

1B 06 03 02 07 CS → ← ACK 1B 07 83 02 07 Parameter CS → ACK

SRS SPACE (Group : 2 Item : 8)

- Adjusting SRS SPACE Value
- [Function] Adjusts the SRS SPACE value corresponded to the audio input presently provided.
- Apply
 [Form] < Hexadecimal > 1B 07 01 02 08 Parameter CS
 [Parameter] Parameter to the adjusting SRS SPACE specifies SRS SPACE values to set.
 - Reply
 [Form] < Hexadecimal > 1B 06 81 02 08 CS or
 1B 06 C1 02 08 CS
 [Parameter] No parameter

1B 07 01 02 08 Parameter CS

ACK 1B 06 81 02 08 CS

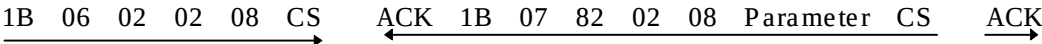
ACK

Getting SRS SPACE Value

[Function] Gets the present SRS SPACE value.

- Apply
[Form] < Hexadecimal > 1B 06 02 02 08 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 82 02 08 Parameter CS or
1B 06 C2 02 08 CS
[Parameter] Returns the present SRS SPACE value.

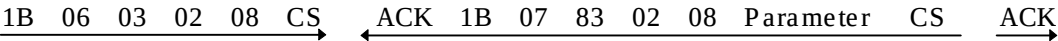


Initializing SRS SPACE Value

[Function] Initializes SRS SPACE values.

- Apply
[Form] < Hexadecimal > 1B 06 03 02 08 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 83 02 08 Parameter CS or
 1B 06 C3 02 08 CS
[Parameter] Returns the SRS SPACE value initialized.



SRS CENTER (Group : 2 Item : 9)

- Adjusting SRS CENTER Value
- [Function] Adjusts SRS CENTER value corresponded to the audio input presently provided.
- Apply
[Form] < Hexadecimal > 1B 07 01 02 09 Parameter CS
[Parameter] Parameter to the adjusting SRS CENTER specifies SRS CENTER value to set.
 - Reply
[Form] < Hexadecimal > 1B 06 81 02 09 CS o
1B 06 C1 02 09 CS
[Parameter] No parameter

1B 07 01 02 09 Parameter CS ACK 1B 06 81 02 09 CS ACK

Getting SRS CENTER Value

[Function] Gets the present SRS CENTER value.

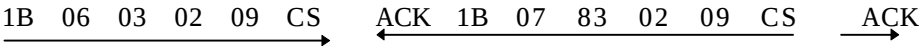
- Apply
[Form] < Hexadecimal > 1B 06 02 02 09 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 82 02 09 Parameter CS or
1B 06 C2 02 09 CS
[Parameter] Returns the present SRS CENTER value.

1B 06 02 02 09 CS ACK 1B 07 82 02 09 Parameter CS ACK

Initializing SRS CENTER Value

[Function] Initializes SRS CENTER values.

- Apply
[Form] < Hexadecimal > 1B 06 03 02 09 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 83 02 09 Parameter CS o
1B 06 C3 02 09 CS
[Parameter] Returns the SRS CENTER value initialized.



4.4.PC Contro

Brightness (Group : 3 Item : 0)

- Adjusting Brightness Value
- [Function] Sets brightness for the screen.
- Apply
 - [Form] < Hexadecimal > 1B 07 01 03 00 Parameter CS
 - [Parameter] Parameter to the adjusting brightness specifies brightness values to set.
-
- Reply
 - [Form] < Hexadecimal > 1B 06 81 03 00 CS or
 - 1B 06 C1 03 00 CS
 - [Parameter] No parameter

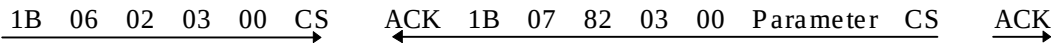
1B 07 01 03 00 Parameter CS ← ACK 1B 06 81 03 00 CS → ACK

Getting Brightness Value

[Function] Gets the present brightness.

- Apply
[Form] < Hexadecimal > 1B 06 02 03 00 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 82 03 00 Parameter CS or
 1B 06 C2 03 00 CS
[Parameter] Returns the present brightness value.



Initializing Brightness Value

[Function] Initializes brightness for the screen.

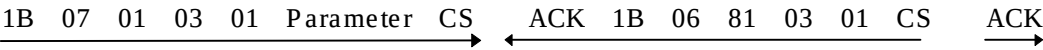
- Apply
[Form] < Hexadecimal > 1B 06 03 03 00 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 83 03 00 Parameter CS or
1B 06 C3 03 00 CS
[Parameter] Returns the brightness initialized.

1B 06 03 03 00 CS ACK 1B 07 83 03 00 CS ACK

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Contrast (Group : 3 Item : 1)

- Adjusting Contrast Value
- [Function] Adjusts contrast for the screen.
- Apply
[Form] < Hexadecimal > 1B 07 01 03 01 Parameter CS
[Parameter] Parameter to the adjusting contrast specifies the contrast values to set.
 - Reply
[Form] < Hexadecimal > 1B 06 81 03 01 CS or
1B 06 C1 03 01 CS
[Parameter] No parameter



Getting Contrast Value

[Function] Gets the present contrast value.

- Apply
[Form] < Hexadecimal > 1B 06 02 03 01 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 82 03 01 Parameter CS or
1B 06 C2 03 01 CS
[Parameter] Returns the present contrast value.

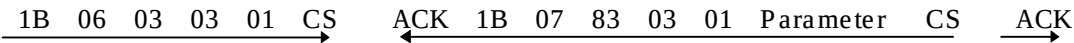
1B 06 02 03 01 CS ← ACK 1B 07 82 03 01 Parameter CS → ACK

Initializing Contrast

[Function] Initializes contrast values for the screen.

- Apply
[Form] < Hexadecimal > 1B 06 03 03 01 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 83 03 01 Parameter CS or
 1B 06 C3 03 01 CS
[Parameter] Returns the contrast value initialized.



Sync (Group : 3 Item : 2)

Adjusting Sync

[Function] Sets a phase for a sampling clock.

- Apply
[Form] < Hexadecimal > 1B 07 01 03 02 Parameter CS
[Parameter] Parameter to the adjusting sync specifies sync values to set.
- Reply
[Form] < Hexadecimal > 1B 06 81 03 02 CS or
1B 06 C1 03 02 CS
[Parameter] No parameter

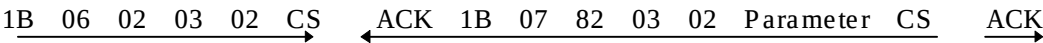
1B 07 01 03 02 Parameter CS → ← ACK 1B 06 81 03 02 CS → ACK

Getting Sync Value

[Function] Gets the present sync value.

- Apply
[Form] < Hexadecimal > 1B 06 02 03 02 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 82 03 02 Parameter CS or
1B 06 C2 03 02 CS
[Parameter] Returns the present sync value.

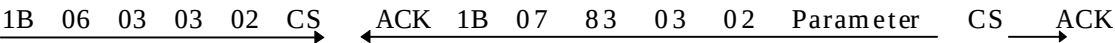


Initializing Sync Value

[Function] Initializes the sync value.

- Apply
[Form] < Hexadecimal > 1B 06 03 03 02 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 83 03 02 Parameter CS o
1B 06 C3 03 02 CS
[Parameter] Returns the sync value initialized.



Tracking (Group : 3 Item : 3)

- Adjusting Tracking
- [Function] Adjusts number of sample for input signal.
- Apply
[Form] < Hexadecimal > 1B 07 01 03 03 Parameter CS
[Parameter] Parameter to the adjusting tracking value specifies the tracking value to set.
 - Reply
[Form] < Hexadecimal > 1B 06 81 03 03 CS or
1B 06 C1 03 03 CS
[Parameter] No parameter

1B 07 01 03 03 Parameter CS ACK 1B 06 81 03 03 CS ACK

Getting Tracking

[Function] Gets the present tracking value.

- Apply
[Form] < Hexadecimal > 1B 06 02 03 03 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 08 82 03 03 Parameter CS or
 1B 06 C2 03 03 CS
[Parameter] Returns the present tracking value.

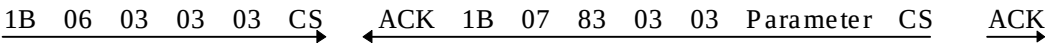
1B 06 02 03 03 CS → ← ACK 1B 08 82 03 03 Parameter CS ACK

Initializing Tracking Value

[Function] Initializes tracking values.

- Apply
[Form] < Hexadecimal > 1B 06 03 03 03 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 83 03 03 Parameter CS or
1B 06 C3 03 03 CS
[Parameter] Returns the tracking value initialized.



Informing Tracking Base

- Apply

[Parameter] Returns the present tracking base.

- [Form] < Hexadecimal > 1B 06 81 03 04 CS o

[Parameter] No parameter

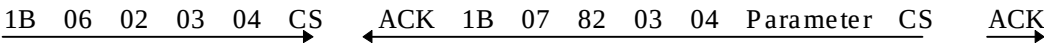
1B 07 01 03 04 Parameter CS ACK 1B 06 81 03 04 CS ACK

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Getting Tracking Base

[Function] Gets the present tracking base.

- Apply
[Form] < Hexadecimal > 1B 06 02 03 04 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 82 03 04 Parameter CS o
1B 06 C2 03 04 CS
[Parameter] Returns the present tracking base.



Mouse/Serial Port Fixed (Group : 3 Item : 5)

- Mouse / Serial Port Fixed
- [Function] Sets to fix mouse /serial port.
- Apply

[Form] < Hexadecimal > 1B 07 01 03 05 Parameter CS

[Parameter]Parameter to the setting muse /serial fixed specifies the data corresponded to ports.

Possible setting data :

Not Fixed : 00

PC1 : 01

PC2 : 02
 - Reply

[Form] < Hexadecimal > 1B 06 81 03 05 CS or
 1B 06 C1 03 05 CS

[Parameter] No parameter

1B 07 01 03 05 Parameter CS ← ACK 1B 06 81 03 05 CS ACK →

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Getting Mouse /Serial Port Fixed State

[Function] Gets the present mouse/serial port fixed state.

- Apply
[Form] < Hexadecimal > 1B 06 02 03 05 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 82 03 05 Parameter CS or
1B 06 C2 03 05 CS
[Parameter] Returns the present muse/serial fixed state.

1B 06 02 03 05 CS ACK 1B 07 82 03 05 Parameter CS ACK



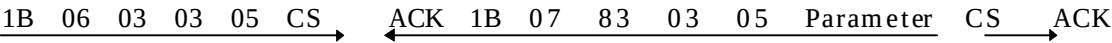
Initializing Mouse /Serial Fixed state

[Function] Initializes mouse /serial port fixed state.

- Apply
[Form] < Hexadecimal > 1B 06 03 03 05 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 83 03 05 Parameter CS or
 1B 06 C3 03 05 CS

[Parameter] Returns the muse /serial port fixed state initialized.



Color Red Level (Group : 3 Item : 6)

- Adjusting Red Level
- [Function] Sets red level for the screen of the input source presently provided.
- Apply
[Form] < Hexadecimal > 1B 07 01 03 06 Parameter CS
[Parameter] Parameter to the adjusting read level specifies red level values to set.
 - Reply
[Form] < Hexadecimal > 1B 06 81 03 06 CS or
1B 06 C1 03 06 CS
[Parameter] No parameter

1B 07 01 03 06 Parameter CS

ACK 1B 06 81 03 06 CS

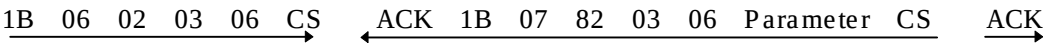
ACK

Getting Red Level Value

[Function] Gets the red level value to the input source presently provided.

- Apply
[Form] < Hexadecimal > 1B 06 02 03 06 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 82 03 06 Parameter CS or
1B 06 C2 03 06 CS
[Parameter] Returns the present red level value.

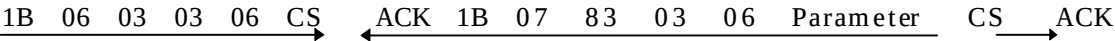


Initializing Red Level value

[Function] Initializes the red level value to the input source presently provided.

- Apply
[Form] < Hexadecimal > 1B 06 03 03 06 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 83 03 06 Parameter CS o
 1B 06 C3 03 06 CS
[Parameter] Returns the red level value initialized.



Color Green Level (Group : 3 Item : 7)

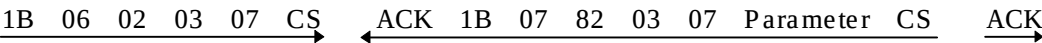
- Adjusting Green Level
- [Function] Sets green level for the screen of the input source presently provided.
- Apply
[Form] < Hexadecimal > 1B 07 01 03 07 Parameter CS
[Parameter] Parameter to the adjusting green level specifies green level values to set.
 - Reply
[Form] < Hexadecimal > 1B 06 81 03 07 CS or
1B 06 C1 03 07 CS
[Parameter] No parameter

1B 07 01 03 07 Parameter CS ACK 1B 06 81 03 07 CS ACK

Getting Green Level Value

[Function] Gets the green level value to the input source presently provided.

- Apply
[From]<Hexadecimal> 1B 06 02 03 07 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 82 03 07 Parameter CS or
1B 06 C2 03 07 CS
[Parameter] Returns the present green level value.



Initializing Green Level Value

[Function] Initializes the green level value to the input source presently provided.

- Apply

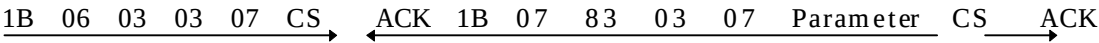
[Form] < Hexadecimal > 1B 06 03 03 07 CS

[Parameter] No parameter
- Reply

[Form] < Hexadecimal > 1B 07 83 03 07 Parameter CS o

1B 06 C3 03 07 CS

[Parameter] Returns the green level value initialized.



Color Blue Level (Group : 3 Item : 8)

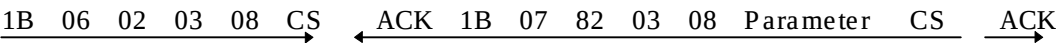
- Adjusting Blue Level
- [Function] Sets blue level for the screen of the input source presently provided.
- Apply
[Form] < Hexadecimal > 1B 07 01 03 08 Parameter CS
[Parameter] Parameter to the adjusting blue level specifies blue level values to set.
 - Reply
[Form] < Hexadecimal > 1B 06 81 03 08 CS or
1B 06 C1 03 08 CS
[Parameter] No parameter

1B 07 01 03 08 Parameter CS ← ACK 1B 06 81 03 08 CS → ACK

Getting Blue Level Value

[Function] Gets the blue level value to the input source presently provided.

- Apply
[Form] < Hexadecimal > 1B 06 02 03 08 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 82 03 08 Parameter CS or
1B 06 C2 03 08 CS
[Parameter] Returns the present blue level value.

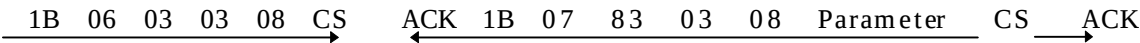


Initializing Blue level Value

[Function] Initializes blue level values to the input source presently provided.

- Apply
[Form] < Hexadecimal > 1B 06 03 03 08 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 83 03 08 Parameter CS o
 1B 06 C3 03 08 CS
[Parameter] Returns the blue level value initialized.



PC Frequency (Group : 3 Item : A)

Informing PC frequency

[Function] Informs the horizontal and vertical frequency for the PC mode presently selected.

● Apply

[Form] < Hexadecimal > 1B 0E 01 03 0A Parameter CS

[Parameter] Returns the horizontal and vertical frequency.

● Reply

[Form] < Hexadecimal > 1B 06 81 03 0A CS o
 1B 06 C1 03 0A CS

[Parameter] No parameter

Frequency:

- The format for frequency data is as shown below.

Horizontal frequency	Vertical frequency
-------------------------	-----------------------

Returns 4-byte respectively as an integral number in order of the horizontal frequency to vertical frequency. After converted, the unit for the horizontal frequency becomes KHz, and the unit for the vertical frequency becomes Hz (includes 2-figure of a decimal point.)

When outputting video and no-signal, both frequency returns 0(zero).

1B 0E 01 03 0A Parameter CS ACK 1B 06 81 03 0A CS ACK

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Getting PC Frequency

[Function] Gets the horizontal and vertical frequency for the PC mode presently selected.

- Apply
[Form] < Hexadecimal > 1B 06 02 03 0A CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 0E 82 03 0A Parameter CS o
1B 06 C2 03 0A CS
[Parameter] Returns the horizontal and vertical frequency.

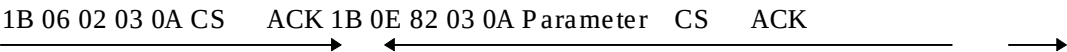
Frequency:

- The format for frequency data is as shown below.

Horizontal frequency	Vertical frequency
-------------------------	-----------------------

Returns 4-byte respectively as an integral number in order of the horizontal frequency to vertical frequency. After converted, the unit for the horizontal frequency becomes KHz, and the unit for the vertical frequency becomes Hz (includes 2-figure of a decimal point.)

When outputting video and no-signal, both frequency returns 0(zero).



Input Resolution (Group : 3 Item : B)

- Informing Input Resolution
- [Function] Informs the horizontal and vertical frequency for the PC mode presently provided.
- Apply

[Form] < Hexadecimal > 1B 0E 01 03 0B Parameter CS

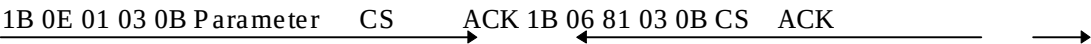
[Parameter] HorizontalResolution (1Word)

VerticalResolution (1Word)
 - Reply

[Form] < Hexadecimal > 1B 06 81 03 0B CS o

1B 06 C1 03 0B CS

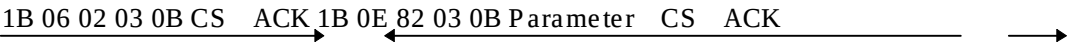
[Parameter] No parameter



Getting Input resolution

[Function] Gets the horizontal and vertical resolution for the PC mode presently provided.

- Apply
[Form] < Hexadecimal > 1B 06 02 03 0B CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 0E 82 03 0B Parameter CS o
1B 06 C2 03 0B CS
[Parameter] HorizontalResolution (1Word)
VerticalResolution (1Word)



Sharpness (Group : 3 Item : D)

Adjusting Sharpness

[Function] Adjusts sharpness for the screen.

- Apply
[Form] < Hexadecimal > 1B 07 01 03 0D Parameter CS
[Parameter] Parameter to the adjusting sharpness specifies the sharpness value to set.

- Reply
[Form] < Hexadecimal > 1B 06 81 03 0D CS o
 1B 06 C1 03 0D CS
[Parameter] No parameter

1B 07 01 03 0D Parameter CS ACK

1B 06 81 03 0D CS ACK

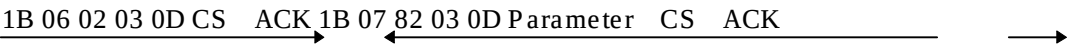
→

Getting Sharpness Value

[Function] Gets the present sharpness value.

- Apply
[Form] < Hexadecimal > 1B 06 02 03 0D CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 82 03 0D Parameter CS o
1B 06 C2 03 0D CS
[Parameter] Returns the present sharpness value.



Initializing Sharpness Value

[Function] Initializes sharpness values.

- Apply
[Form] < Hexadecimal > 1B 06 03 03 0D CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 83 03 0D Parameter CS o
1B 06 C3 03 0D CS
[Parameter] Returns the sharpness value initialized.

1B 06 03 03 0D CS ACK 1B 07 83 03 0D Parameter CS ACK →

Input Resolution (Group : 3 Item : E)

Setting Input Resolution

[Function] Sets the input resolution.

- Apply

[Form] < Hexadecimal > 1B 08 01 03 0E Parameter CS

[Parameter]

Resolution (1Byte)

Resolution

AUTO:0x00

NTSC(I):0x01

PAL(I):0x02

1024x768(I):0x03

1120x750(I):0x04

1280x1024(I):0x05

1600x1200(I):0x06

1920x1034(I):0x07

1920x1080(I):0x08

640x350:0x09

640x400:0x0a

640x480 MAC13:0x0b

480P:0x0c

720x350:0x0d

720x400:0x0e

800x600:0x0f

MAC16:0x10

960x720:0x11

720P:0x12

1024x480:0x13

1024x600:0x14

1024x768:0x15

MAC19:0x16

1024x1024:0x17

1152x864:0x18

MAC21:0x19

1152x900:0x1a

1280x960:0x1b

1280x1024:0x1c

1600x1024:0x1d

1600x1200:0x1e

1600x1280:0x1f

1920x1080:0x20

Preset 1 :0x80

Preset 2 :0x81

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Preset 3 :0x82
Preset 4 :0x83
Preset 5 :0x84

※Presets which are not registered cannot be set. Returns NG in reply.

- Reply
[Form] < Hexadecimal > 1B 06 81 03 0E CS o
1B 06 C1 03 0E CS
[Parameter] No parameter

1B 08 01 03 0E Parameter CS ACK 1B 06 81 03 0E CS ACK →

Getting Input Resolution

[Function] Gets the present input resolution.

- Apply
[Form] < Hexadecimal > 1B 06 02 03 0E CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 08 82 03 0E Parameter CS o
1B 06 C2 03 0E CS
[Parameter] Returns the present input resolution.
※Same as the setting.



Initializing Input Resolution

[Function] Initializes the input resolution.

- Apply

[Form] < Hexadecimal > 1B 06 03 03 0E CS

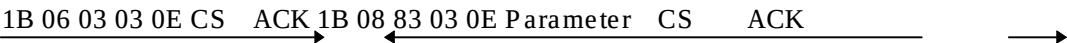
[Parameter] No parameter

- Reply

[Form] < Hexadecimal > 1B 08 83 03 0E Parameter CS o
1B 06 C3 03 0E CS

[Parameter] Returns the input resolution initialized.

※Same as the setting.



Preset Entry (Group : 3 Item : F)

Setting Preset

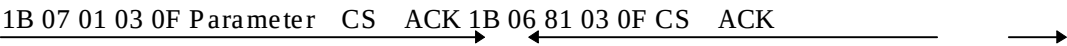
[Function] Sets Presets.

- Apply
[Form] < Hexadecimal > 1B 07 01 03 0F Parameter CS
[Parameter]

Preset Number (1Byte)
Preset 1 :0x00
Preset 2 :0x01
Preset 3 :0x02
Preset 4 :0x03
Preset 5 :0x04

※Entries the present mode as Preset by this command.

- Reply
[Form] < Hexadecimal > 1B 06 81 03 0F CS o
 1B 06 C1 03 0F CS
[Parameter] No parameter

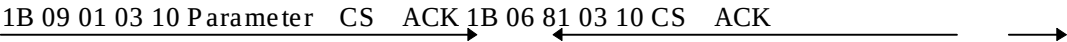


Sync Polarity (Group : 3 Item : 10)

Informing SYNC.
[Function] Informs the present Sync Polarity and Sync Attribute.

- Apply
[Form] < Hexadecimal > 1B 09 01 03 10 Parameter CS
[Parameter]
 Sync polarity(H) :01(Positive) 00(Negative)
 Sync polarity(V) :01(Positive) 00(Negative)
 Sync attribute :00(Separate SYNC)
 01(SYNConGreen)
 02(Composite SYNC)

● Reply
[Form] < Hexadecimal > 1B 06 81 03 10 CS o
 1B 06 C1 03 10 CS
[Parameter] No parameter



Getting Sync Polarity

- [Function] Gets the present Sync polarity and Sync attribute.
- Apply

[Form] < Hexadecimal > 1B 06 02 03 10 CS

[Parameter] No parameter
- Reply

[Form] < Hexadecimal > 1B 09 82 03 10 Parameter CS o

1B 06 C2 03 10 CS

[Parameter]

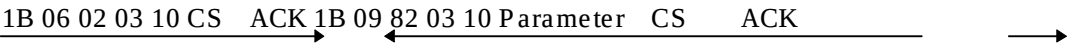
Sync polarity(H) :01(Positive) 00(Negative)

Sync polarity(V) :01(Positive) 00(Negative)

Sync attribute :00(Separate SYNC)

01(SYNConGreen)

02(Composite SYNC)



Preset State (Group : 3 Item : 11)

Setting Preset State

[Function] Sets Preset state.

- Apply
[Form] < Hexadecimal > 1B 47 01 03 11 Parameter CS
[Parameter] Returns the present Preset in the following order. (65Bytes)

Preset 1	Horizontal resolution
	Vertical resolution
	Frequency
	Tracking
	Horizontal position
	Vertical position
	Sync
Preset 2	Horizontal resolution
	Vertical resolution
	Frequency
	Tracking
	Horizontal position
	Vertical position
	Sync
Preset 5	:
	:
	Horizontal resolution
	Vertical resolution
	Frequency
	Tracking
	Horizontal position
	Vertical position
	Sync

Horizontal resolution, Vertical resolution : 2-byte binary for each
Frequency : 4-byte binary (Same as 3-A)
Tracking : 2-byte binary
Horizontal position : 2-byte binary
Vertical position : 2-byte binary
Sync : 1 byte binary

※Returns 0xFFFF for the horizontal resolution when Preset is not entered.

- Reply

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[Form] < Hexadecimal > 1B 06 81 03 11 CS o
1B 06 C1 03 11 CS
[Parameter] No parameter

1B 47 01 03 11 Parameter CS ← ACK 1B 06 81 03 11 CS → ACK

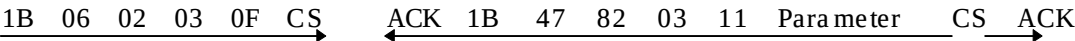
Getting Preset State

[Function] Gets the present Preset State.

- Apply
[Form] < Hexadecimal > 1B 06 02 03 11 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 47 82 03 11 Parameter CS o
1B 06 C2 03 11 CS
[Parameter] Returns the present Preset in the following order. (71Bytes)
Preset 1 Horizontal resolution
Vertical resolution
Frequency
Tracking
Horizontal position
Vertical position
Sync
Preset 2 Horizontal resolution
Vertical resolution
Frequency
Tracking
Horizontal position
Vertical position
Sync
:
:
Preset 5 Horizontal resolution
Vertical resolution
Frequency
Tracking
Horizontal position
Vertical position
Syn
Horizontal resolution, Vertical resolution : 2-byte binary for each
Frequency : 4-byte binary (Same as 3-A)
Tracking : 2-byte binary
Horizontal position : 2-byte binary
Vertical position : 2-byte binary
Sync : 1 byte binary

※Returns 0xFFFF for the horizontal resolution when the Preset is not entered.



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Initializing Preset State

- [Function] Initializes all the Preset States.
- Apply

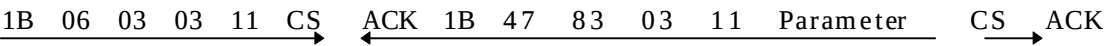
[Form] < Hexadecimal > 1B 06 03 03 11 CS

[Parameter] No parameter
 - Reply

[Form] < Hexadecimal > 1B 47 83 03 11 Parameter CS o

1B 06 C3 03 11 CS

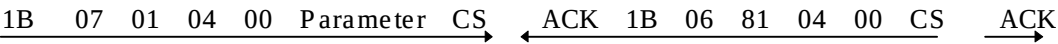
[Parameter] Returns the Preset initialized. (45 Bytes)



4.5.Video Control

Brightness (Group : 4 Item : 0)

- Adjusting Brightness Value
- [Function] Adjusts the brightness for the screen.
- Apply
[Form] < Hexadecimal > 1B 07 01 04 00 Parameter CS
[Parameter] Parameter to the adjusting brightness specifies brightness values to set.
 - Reply
[Form] < Hexadecimal > 1B 06 81 04 00 CS or
1B 06 C1 04 00 CS
[Parameter] No parameter



Getting Brightness Value

[Function] Gets the present brightness value.

- Apply
[Form] < Hexadecimal > 1B 06 02 04 00 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 82 04 00 Parameter CS or
1B 06 C2 04 00 CS
[Parameter] Returns the present brightness value.

1B 06 02 04 00 CS ACK 1B 07 82 04 00 Parameter CS ACK

Initializing Brightness Value

[Function] Initializes brightness values.

- Apply
[Form] < Hexadecimal > 1B 06 03 04 00 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 83 04 00 Parameter CS or
 1B 06 C3 04 00 CS
[Parameter] Returns the brightness initialized.

1B 06 03 04 00 CS ACK 1B 07 83 04 00 Parameter CS ACK

Contrast (Group : 4 Item : 1)

Adjusting Contrast

[Form] Sets the contrast for the screen.

- Apply
[Form] < Hexadecimal > 1B 07 01 04 01 Parameter CS
[Parameter] Parameter to the adjusting contrast specifies contrast values to set.
- Reply
[Form] < Hexadecimal > 1B 06 81 04 01 CS or
1B 06 C1 04 01 CS
[Parameter] No parameter

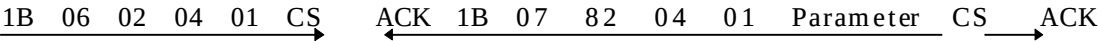
1B 07 01 04 01 Parameter CS ACK 1B 06 81 04 01 CS ACK

Getting Contrast Value

[Function] Gets the present contrast value.

- Apply
[Form] < Hexadecimal > 1B 06 02 04 01 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 82 04 01 Parameter CS o
1B 06 C2 04 01 CS
[Parameter] Returns the present contrast value.



Initializes Contrast Value

[Function] Initializes contrast values.

- Apply

[Form] < Hexadecimal > 1B 06 03 04 01 CS

[Parameter] No parameter
- Reply

[Form] < Hexadecimal > 1B 07 83 04 01 Parameter CS or

1B 06 C3 04 01 CS

[Parameter] Returns the contrast value initialized.

1B 06 03 04 01 CS

← ACK 1B 07 83 04 01 Parameter CS

ACK

Sharpness (Group : 4 Item : 2)

Adjusting Sharpness

[Function] Sets sharpness for the screen.

- Apply
[Form] < Hexadecimal > 1B 07 01 04 02 Parameter CS
[Parameter] Parameter to the adjusting sharpness specifies sharpness values to set.
- Reply
[Form] < Hexadecimal > 1B 06 81 04 02 CS or
1B 06 C1 04 02 CS
[Parameter] No parameter

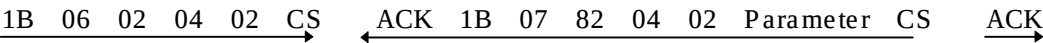
1B 07 01 04 02 Parameter CS ACK 1B 06 81 04 02 CS ACK

Getting Sharpness Value

[Function] Gets the present sharpness value.

- Apply
[Form] < Hexadecimal > 1B 06 02 04 02 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 82 04 02 Parameter CS or
1B 06 C2 04 02 CS
[Parameter] Returns the present sharpness value.



Initializing Sharpness

[Function] Initializes sharpness value.

- Apply
[Form] < Hexadecimal > 1B 06 03 04 02 CS
[Parameter] No parameter

- Reply
[Form] <Hexadecimal > 1B 07 83 04 02 Parameter CS or
 1B 06 C3 04 02 CS
[Parameter] Returns the sharpness value initialized.

1B 06 03 04 02 CS ACK 1B 07 83 04 02 Parameter CS ACK

Saturation (Group : 4 Item : 3)

- Adjusting Saturation
- [Function] Adjusts saturation for the screen.
- Apply
[Form] < Hexadecimal > 1B 07 01 04 03 Parameter CS
[Parameter] Parameter to the adjusting saturation specifies saturation values to set.
 - Reply
[Form] < Hexadecimal > 1B 06 81 04 03 CS or
1B 06 C1 04 03 CS
[Parameter] No parameter

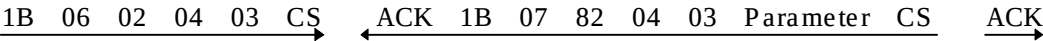
1B 07 01 04 03 Parameter CS ACK 1B 06 81 04 03 CS ACK

Getting Saturation Value

[Function] Gets the present saturation value.

- Apply
[Form] < Hexadecimal > 1B 06 02 04 03 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 82 04 03 Parameter CS or
 1B 06 C2 04 03 CS
[Parameter] Returns the present saturation value.



Initializing Saturation

[Function] Initializes saturation values.

- Apply
[Form] < Hexadecimal > 1B 06 03 04 03 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 83 04 03 Parameter CS or
 1B 06 C3 04 03 CS
[Parameter] Returns the saturation value initialized.

1B 06 03 04 03 CS → ← ACK 1B 07 83 04 03 Parameter CS ACK →

Tint (Group : 4 Item : 4)

Adjusting Tint
[Function] Adjusts tint for the screen.

- Apply
[Form] < Hexadecimal > 1B 07 01 04 04 Parameter CS
[Parameter] Parameter to the adjusting tint specifies tint values to set.
- Reply
[Form] < Hexadecimal > 1B 06 81 04 04 CS or
1B 06 C1 04 04 CS
[Parameter] No parameter

1B 07 01 04 04 Parameter CS ACK 1B 06 81 04 04 CS ACK

Getting Tint

[Function] Gets the present tint value.

- Apply
[Form] < Hexadecimal > 1B 06 02 04 04 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 82 04 04 Parameter CS or
 1B 06 C2 04 04 CS
[Parameter] Returns the present tint value.

1B 06 02 04 04 CS ← ACK 1B 07 82 04 04 Parameter CS ACK →

Initializing Tint

[Function] Initializes tint values.

- Apply

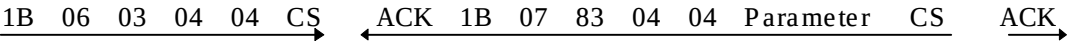
[Form] < Hexadecimal > 1B 06 03 04 04 CS

[Parameter] No parameter
- Reply

[Form] < Hexadecimal > 1B 07 83 04 04 Parameter CS or

1B 06 C3 04 04 CS

[Parameter] No parameter



Video Mode (Group : 4 Item : 5)

Setting Video Mode

[Function] Sets signal method for video input.

- Apply
 - [Form] < Hexadecimal > 1B 07 01 04 05 Parameter CS
 - [Parameter] Parameter to the setting video mode specifies the data corresponded to video mode to set.
Possible setting data:
AUTO : 00
NTSC : 01
NTSC-4.43 : 02
PAL : 03
PALN : 04
PALM : 05
PAL60 : 06
SECAM : 07
NTSC50 : 08
- Reply
 - [Form] < Hexadecimal > 1B 06 81 04 05 CS or
1B 06 C1 04 05 CS
 - [Parameter] No parameter

1B 07 01 04 05 Parameter CS ACK 1B 06 81 04 05 CS ACK

Getting Video Mode

[Function] Gets the present video mode.

- Apply
[Form] < Hexadecimal > 1B 06 02 04 05 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 82 04 05 Parameter CS or
1B 06 C2 04 05 CS
[Parameter] Returns the present video mode.

1B 06 02 04 05 CS → ← ACK 1B 07 82 04 05 Parameter CS → ACK

Initializing Video Mode

[Function] Initializes video mode.

- Apply
[Form] < Hexadecimal > 1B 06 03 04 05 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 83 04 05 Parameter CS or
1B 06 C3 04 05 CS
[Parameter] Returns the video mode initialized.

1B 06 03 04 05 CS → ← ACK 1B 07 83 04 05 Parameter CS → ACK

4.6.Display Control

Horizontal Position (Group : 5 Item : 0)

- Adjusting Horizontal Position
- [Function] Sets horizontal position for the screen.
- Apply
[Form] < Hexadecimal > 1B 08 01 05 00 Parameter CS
[Parameter] Parameter to the adjusting horizontal position specifies horizontal positions to set.
 - Reply
[Form] < Hexadecimal > 1B 06 81 05 00 CS or
1B 06 C1 05 00 CS
[Parameter] No parameter

1B 08 01 05 00 Parameter CS ACK 1B 06 81 05 00 CS ACK

Getting Horizontal Position

[Function] Gets the present horizontal position.

- Apply
[Form] < Hexadecimal > 1B 06 02 05 00 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 08 82 05 00 Parameter CS o
1B 06 C2 05 00 CS
[Parameter] Returns the present horizontal position.

1B 06 02 05 00 CS ACK 1B 08 82 05 00 Parameter CS ACK

Initializes Horizontal Position

[Function] Initializes horizontal position.

- Apply
[Form] < Hexadecimal > 1B 06 03 05 00 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 08 83 05 00 Parameter CS or
1B 06 C3 05 00 CS
[Parameter] Returns the horizontal position initialized.

1B 06 03 05 00 CS → ← ACK 1B 08 83 05 00 Parameter CS → ACK

Vertical Position (Group : 5 Item : 1)

- Adjusting Vertical Position
- [Function] Sets vertical position for the screen.
- Apply
[Form] < Hexadecimal > 1B 08 01 05 01 Parameter CS
[Parameter] Parameter to the adjusting vertical position specifies vertical position to set.
 - Reply
[Form] < Hexadecimal > 1B 06 81 05 01 CS or
1B 06 C1 05 01 CS
[Parameter] No parameter

1B 08 01 05 01 Parameter CS

ACK 1B 06 81 05 01 CS

ACK

Getting Vertical Position

[Function] Gets the present vertical position.

- Apply
[Form] < Hexadecimal > 1B 06 02 05 01 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 08 82 05 01 Parameter CS or
1B 06 C2 05 01 CS
[Parameter] Returns the present vertical position.

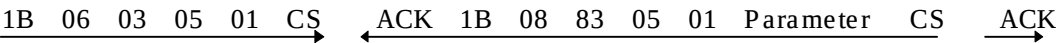
1B 06 02 05 01 CS ACK 1B 08 82 05 01 Parameter CS ACK

Initializing Vertical Position

[Function] Initializes vertical positions.

- Apply
[Form] < Hexadecimal > 1B 06 03 05 01 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 06 83 05 01 Parameter CS or
 1B 06 C3 05 01 CS
[Parameter] Returns the vertical position initialized.



Rear Proj (Group : 5 Item : 2)

Setting Rear Proj

[Function] Sets the rear projection.

- Apply
[Form] < Hexadecimal > 1B 07 01 05 02 Parameter CS
[Parameter] Parameter to the setting rear proj. specifies the data corresponded to
 ON/OFF of the rear proj.
Possible setting data :
 FF: 00
 ON : 01

- Reply
[Form] < Hexadecimal > 1B 06 81 05 02 CS or
 1B 06 C1 05 02 CS
[Parameter] No parameter

1B 07 01 05 02 Parameter CS ACK 1B 06 81 05 02 CS ACK

Getting Rear Proj. State

[Function] Gets the present rear projection state.

- Apply
[Form] < Hexadecimal > 1B 06 02 05 02 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 82 05 02 Parameter CS or
1B 06 C2 05 02 CS
[Parameter] Returns the present rear projection state.

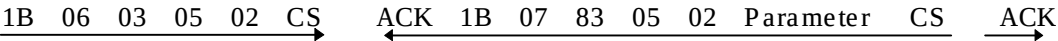
1B 06 02 05 02 CS → ← ACK 1B 07 82 05 02 Parameter CS → ACK →

Initializing Rear Proj.

[Function] Initializes the rear projection.

- Apply
[Form] < Hexadecimal > 1B 06 03 05 02 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 83 05 02 Parameter CS or
 1B 06 C3 05 02 CS
[Parameter] Returns the rear projection initialized.



Ceiling (Group : 5 Item : 3)

Adjusting Ceiling

[Function] Sets the ceiling projection.

- Apply
[Form] < Hexadecimal > 1B 07 01 05 03 Parameter CS
[Parameter] Parameter to the setting ceiling specifies the data corresponded to ON/OFF of the ceiling
Possible setting data:
OFF: 00
ON : 01
- Reply
[Form] < Hexadecimal > 1B 06 81 05 03 CS or
1B 06 C1 05 03 CS
[Parameter] No parameter

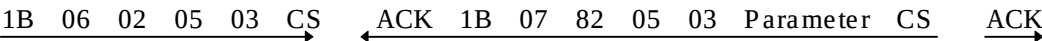
1B 07 01 05 03 Parameter CS ACK 1B 06 81 05 03 CS ACK

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Getting Ceiling State

[Function] Gets the present ceiling state.

- Apply
[Form] < Hexadecimal > 1B 06 02 05 03 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 82 05 03 Parameter CS or
1B 06 82 05 03 CS
[Parameter] Returns the present ceiling state.

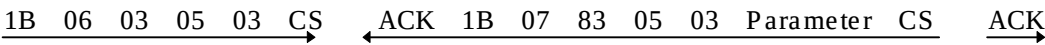


Initializing Ceiling

[Function] Initializes the ceiling projection.

- Apply
[Form] < Hexadecimal > 1B 06 03 05 03 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 83 05 03 Parameter CS o
 1B 06 C3 05 03 CS
[Parameter] Returns the ceiling value initialized.



Color Temp (Group : 5 Item : 4)

Specifying Color Temp

[Function] Sets the color temperature for the screen of input source presently provided.

- Apply
[Form] < Hexadecimal > 1B 07 01 05 04 Parameter CS
[Parameter] Parameter to the setting color temperature specifies the color temperature to set.
- Reply
[Form] < Hexadecimal > 1B 06 81 05 04 CS or
1B 06 C1 05 04 CS
[Parameter] No parameter

1B 07 01 05 04 Parameter CS → ACK 1B 06 81 05 04 CS → ACK

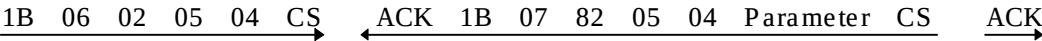
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Getting Color Temp

[Function] Gets the present color temperature.

- Apply
[Form] < Hexadecimal > 1B 06 02 05 04 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 82 05 04 Parameter CS or
 1B 06 C2 05 04 CS
[Parameter] Returns the present color temperature.

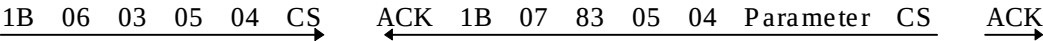


Initializing Color Temp

[Function] Initializes the color temperature.

- Apply
[Form] < Hexadecimal > 1B 06 03 05 04 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 83 05 04 Parameter CS or
 1B 06 C3 05 04 CS
[Parameter] Returns the color temperature initialized.



Setting Black Level (Group : 5 Item : 8)

Adjusting Black Level

[Function] Adjusts the black level set point.

- Apply
[Form] < Hexadecimal > 1B 07 01 05 08 Parameter CS
[Parameter] Specifies the black level value.

- Reply
[Form] < Hexadecimal > 1B 06 81 05 08 CS or
 1B 06 C1 06 13 CS
[Parameter] No parameter.

1B 07 01 05 08 Parameter CS

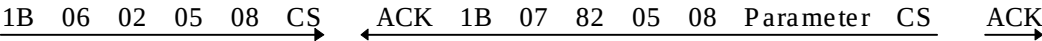
← ACK 1B 06 81 05 08 CS ACK →

Getting Black Level

[Function] Gets the present black level set point.

- Apply
[Form] < Hexadecimal > 1B 06 02 05 08 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 82 05 08 Parameter CS o
1B 06 C2 05 08 CS
[Parameter] Returns the black level set point.

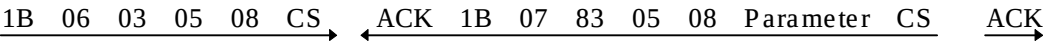


Initializing Black Level

[Function] Initializes the black level set point.

- Apply
[Form] < Hexadecimal > 1B 06 03 05 08 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 83 05 08 Parameter CS or
 1B 06 C3 05 08 CS
[Parameter] Returns the black level set point initialized.



Setting White Level (Group : 5 Item : 9)

Adjusting White Level

[Function] Adjusts white level.

- Apply

[Form] < Hexadecimal > 1B 07 01 05 09 Parameter CS

[Parameter] Specifies white level values.
- Reply

[Form] < Hexadecimal > 1B 06 81 05 09 CS o

1B 06 C1 05 09 CS

[Parameter] No parameter

1B 07 01 05 09 Parameter CS

ACK 1B 06 81 05 09 CS

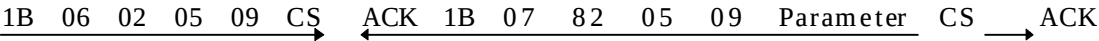
ACK

Getting White Level

[Function] Gets the present white level set point.

- Apply
[Form] < Hexadecimal > 1B 06 02 05 09 CS
[Parameter] No parameter

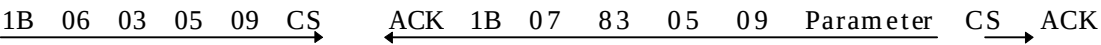
- Reply
[Form] < Hexadecimal > 1B 07 82 05 09 Parameter CS o
1B 06 C2 05 09 CS
[Parameter] Returns the white level set point.



Initializing White Level

[Function] Initializes white level set points.

- Apply
[Form] < Hexadecimal > 1B 06 03 05 09 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 83 05 09 Parameter CS o
1B 06 C3 05 09 CS
[Parameter] Returns the white level set point initialized.



Auto Color Temperature (Group : 5 Item : A)

Setting auto color temperature
[Function] Switches Auto/Manual of the color temperature.

- Apply
[Form] < Hexadecimal > 1B 07 01 05 0A Parameter CS
[Parameter]
Auto : 00
Manual : 01

- Reply
[Form] < Hexadecimal > 1B 06 81 05 0A CS o
1B 06 C1 05 0A CS
[Parameter] No parameter

1B 07 01 05 0A Parameter CS ACK 1B 06 81 05 0A CS ACK

Getting auto color temperature

[Function] Get Auto/Manual of the present color temperature.

- Apply
[Form] < Hexadecimal > 1B 06 02 05 0A CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 82 05 0A Parameter CS o
1B 06 C2 05 0A CS
[Parameter] Same as the preceding paragraph.

1B 06 02 05 0A CS ACK 1B 07 82 05 0A Parameter CS ACK

Initializing auto color temperature

[Function] Initializes Auto Manual of the color temperature.

- Apply
[Form] < Hexadecimal > 1B 06 03 05 0A CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 83 05 0A Parameter CS o
 1B 06 C3 05 0A CS
[Parameter] Gets the color temperature auto-set point initialized.

1B 06 03 05 0A CS

ACK 1B 07 83 05 0A Parameter CS

ACK

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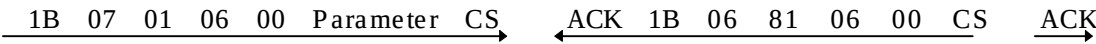
Language (Group : 6 Item : 0)

Setting language

[Function] Specifies a language to display menu.

- Apply
[Form] < Hexadecimal > 1B 07 01 06 00 Parameter CS
[Parameter] Parameter to the setting language specifies the data corresponded to each language.
Possible setting data:
Japanese :00
English :01
French :02
German :03
Italian :04
Spanish :05
Portuguese :06
Chinese :07

- Reply
[Form] < Hexadecimal > 1B 06 81 06 00 CS or
1B 06 C1 06 00 CS
[Parameter] No parameter



Getting Language

[Function] Gets the present language.

- Apply
[Form] < Hexadecimal > 1B 06 02 06 00 CS
[Parameter] No parameter

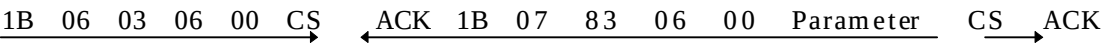
- Reply
[Form] < Hexadecimal > 1B 07 82 06 00 Parameter CS o
1B 06 C2 06 00 CS
[Parameter] Returns the present language.

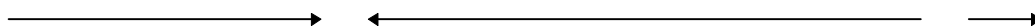
1B 06 02 06 00 CS → ← ACK 1B 07 82 06 00 Parameter CS → ACK

Initializing language

[Function] Initializes the present language.

- Apply
 - [Form] < Hexadecimal > 1B 06 03 06 00 CS
 - [Parameter] No parameter
- Reply
 - [Form] < Hexadecimal > 1B 07 83 06 00 Parameter CS o
 - 1B 06 C3 06 00 CS
 - [Parameter] Returns the language initialized.





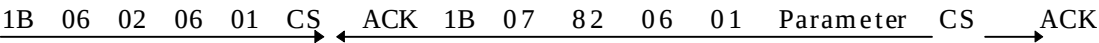
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Getting Power Save State

[Function] Gets the present power save state.

- Apply
[Form] < Hexadecimal > 1B 06 02 06 01 CS
[Parameter] No parameter

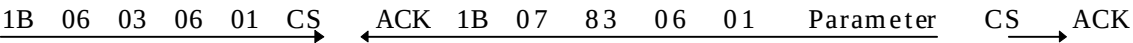
- Reply
[Form] < Hexadecimal > 1B 07 82 06 01 Parameter CS o
1B 06 C2 06 01 CS
[Parameter] Returns the present power save state.



Initializing Power Save State

[Function] Initializes the power save state.

- Apply
[Form] < Hexadecimal > 1B 06 03 06 01 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 83 06 01 Parameter CS o
1B 06 C3 06 01 CS
[Parameter] Returns the power save state initialized.



Source Prompt (Group : 6 Item : 3)

Setting Source Prompt

[Function] Specifies the display of the input source when selecting the input source.

- Apply

[Form] < Hexadecimal > 1B 07 01 06 03 Parameter CS

[Parameter] Parameter to the setting source prompt specifies the data corresponded to ON/OFF

Possible setting data:

OFF : 00

ON : 01
- Reply

[Form] < Hexadecimal > 1B 06 81 06 03 CS o

1B 06 C1 06 03 CS

[Parameter] No parameter

1B 07 01 06 03 Parameter CS

← ACK 1B 06 81 06 03 CS → ACK

Getting Source prompt state

[Function] Gets the present source prompt.

- Apply
[Form] < Hexadecimal > 1B 06 02 06 03 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 82 06 03 Parameter CS o
1B 06 C2 06 03 CS
[Parameter] Returns the present source prompt state.

1B 06 02 06 03 CS → ACK 1B 07 82 06 03 Parameter CS → ACK

Initializing Source Prompt State

[Function] Initializes source prompt state.

- Apply
[Form] < Hexadecimal > 1B 06 03 06 03 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 83 06 03 Parameter CS o
1B 06 C3 06 03 CS
[Parameter] Returns the source prompt state initialized.

1B 06 03 06 03 CS → ← ACK 1B 07 83 06 03 Parameter CS → ACK

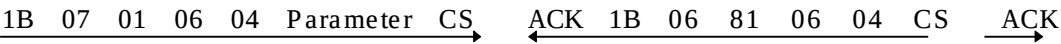
Blank (Group : 6 Item : 4)

Setting Blank Color
[Function] Specifies a color for the blank screen.

- Apply
[Form] < Hexadecimal > 1B 07 01 06 04 Parameter CS
[Parameter] Parameter to the blank specifies the data corresponded to the blank colors.

Possible setting data :
Black : 00
Blue : 01
User Logo : 02

- Reply
[Form] < Hexadecimal > 1B 06 81 06 04 CS o
1B 06 C1 06 04 CS
[Parameter] No parameter

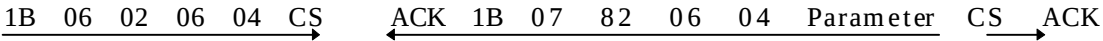


Getting Blank Color

[Function] Gets the present blank color.

- Apply
[Form] < Hexadecimal > 1B 06 02 06 04 CS
[Parameter] No parameter

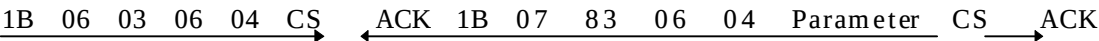
- Reply
[Form] < Hexadecimal > 1B 07 82 06 04 Parameter CS o
1B 06 C2 06 04 CS
[Parameter] Returns the present blank color.



Initializing Blank Color

[Function] Initializes the blank colors.

- Apply
[Form] < Hexadecimal > 1B 06 03 06 04 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 83 06 04 Parameter CS o
1B 06 C3 06 04 CS
[Parameter] Returns the present color of the blank.



User Gamma (Group : 6 Item : 8)

Setting User Gamma

[Function] Sets user gamma data. The gamma data is reflected right after transferred all the data. However, while a blank screen is displayed, the gamma data is reflected just after the blank screen is canceled.

- Apply
[Form] < Hexadecimal > 1B 07 01 06 08 Parameter CS
[Parameter] Parameter to user gamma specifies the gamma data to set.
EMP-8000/9000
Standard : 00
Natural : 01
Dynamic : 02
- Reply
[Form] < Hexadecimal > 1B 06 81 06 08 CS o
1B 06 C1 06 08 CS
[Parameter] No parameter

1B 07 01 06 08 Parameter CS ← ACK 1B 06 81 06 08 CS → ACK

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Getting User Gamma

[Function] Gets user gamma data. The data to get is a ideal gamma data presently set in the firmware.

- Apply
[Form] < Hexadecimal > 1B 06 02 06 08 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 82 06 08 Parameter CS o
1B 06 C2 06 08 CS
[Parameter] Returns the present gamma set point.

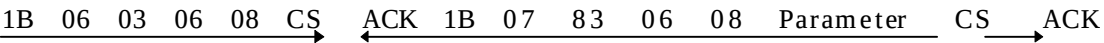
1B 06 02 06 08 CS → ← ACK 1B 07 82 06 08 Parameter CS → ACK

Initializing User Gamma

[Function] Initializes the user gamma set on the projector.

- Apply
[Form] < Hexadecimal > 1B 06 03 06 08 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 83 06 08 Parameter CS o
1B 06 C3 06 08 CS
[Parameter] Returns the gamma set point initialized.



BNC Input Source Type (Group : 6 Item : 9)

Setting BNC Input Source Type
[Function] Selects a type of input source for the BNC terminal.

- Apply
[Form] < Hexadecimal > 1B 07 01 06 09 Parameter CS
[Parameter]
Possible setting data:
00: RGB
01: YCrBr

- Reply
[Form] < Hexadecimal > 1B 06 81 06 09 CS o
1B 06 C1 06 09 CS
[Parameter] No parameter

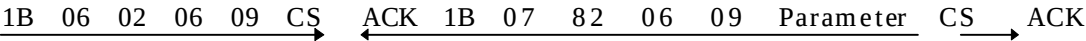
1B 07 01 06 09 Parameter CS ← ACK 1B 06 81 06 09 CS → ACK

Getting BNC Input Source Type

[Function] Gets a type of input source for the BNC terminal.

- Apply
[Form] < Hexadecimal > 1B 06 02 06 09 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 82 06 09 Parameter CS o
 1B 06 C2 06 09 CS
[Parameter] Returns the present input source for the BNC terminal.



Initializing BNC Input Source Type

[Function] Initializes a type of input source for the BNC terminal.

- Apply
[Form] < Hexadecimal > 1B 06 03 06 09 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 83 06 09 Parameter CS o
1B 06 C3 06 09 CS
[Parameter] Returns a type of input source initialized for the BNC terminal.

1B 06 03 06 09 CS → ← ACK 1B 07 83 06 09 Parameter CS → ACK

Driver Board Brightness (Group : 6 Item : C)

Adjusting Driver Board Brightness Value
[Function] Adjusts the brightness values of the driver board.

- Apply
[Form] < Hexadecimal > 1B 08 01 06 0C Parameter CS
[Parameter] Parameter to the driver board brightness specifies the brightness values to set.
- Reply
[Form] < Hexadecimal > 1B 06 81 06 0C CS o
1B 06 C1 06 0C CS
[Parameter] No parameter

1B 08 01 06 0C Parameter CS → ACK 1B 06 81 06 0C CS → ACK

Getting Driver Board Brightness

[Function] Gets the present brightness of the driver board.

- Apply
[Form] < Hexadecimal > 1B 06 02 06 0C CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 08 82 06 0C Parameter CS o
1B 06 C2 06 0C CS
[Parameter] Returns the present brightness value of the driver board.

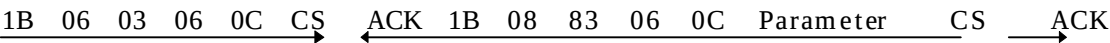
1B 06 02 06 0C CS → ← ACK 1B 08 82 06 0C Parameter CS → ACK

Initializing Driver Board Brightness

[Function] Initializes brightness values of the driver board set in the projector.

- Apply
[Form] < Hexadecimal > 1B 06 03 06 0C CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 08 83 06 0C Parameter CS o
1B 06 C3 06 0C CS
[Parameter] Returns the initialized brightness value of the driver board.



Driver Board Contrast (Group : 6 Item : D)

Adjusting Driver Board Contrast

[Function] Adjusts contrast values of the driver board.

- Apply
[Form] < Hexadecimal > 1B 07 01 06 0D Parameter CS
[Parameter] Parameter to the driver board contrast specifies contrast values to set.
- Reply
[Form] < Hexadecimal > 1B 06 81 06 0D CS o
1B 06 C1 06 0D CS
[Parameter] No parameter

1B 07 01 06 0D Parameter CS → ← ACK 1B 06 81 06 0D CS ACK →

Getting Driver Board Contrast

[Function] Gets the present contrast value of driver board.

- Apply
[Form] < Hexadecimal > 1B 06 02 06 0D CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 82 06 0D Parameter CS o
1B 06 C2 06 0D CS
[Parameter] Returns the present contrast value of driver board.

1B 06 02 06 0D CS → ← ACK 1B 07 82 06 0D Parameter CS → ACK

Initializing Driver Board Contrast

[Function] Initializes contrast values of the driver board set in the projector.

- Apply
[Form] < Hexadecimal > 1B 06 03 06 0D CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 83 06 0D Parameter CS o
1B 06 C3 06 0D CS
[Parameter] Returns the contrast value of the driver board initialized.

1B 06 03 06 0D CS → ← ACK 1B 07 83 06 0D Parameter CS → ACK

Driver Board Sub contrast (Group : 6 Item : E)

Adjusting Driver Board Sub contrast Value

[Function] Adjusts sub contrast values of the driver board.

- Apply
 - [Form] < Hexadecimal > 1B 08 01 06 0E Parameter CS
 - [Parameter] Parameter to the driver board sub contrast specifies the sub contrast color (RGB) and set point to set.
 - P1:Colors to set
 - 00:Red
 - 01:Green
 - 02:Blue
 - P2:Set point
- Reply
 - [Form] < Hexadecimal > 1B 06 81 06 0E CS o
 - 1B 06 C1 06 0E CS
 - [Parameter] No parameter

1B 08 01 06 0E Parameter CS ACK 1B 06 81 06 0E CS ACK

Getting Driver Board Sub Contrast

[Function] Gets the present sub contrast value for driver board.

- Apply

[Form] < Hexadecimal > 1B 07 02 06 0E Parameter CS

[Parameter] Parameter to the getting driver board sub contrast specifies sub contrast color(RGB) to set.
- Reply

[Form] < Hexadecimal > 1B 08 82 06 0E Parameter CS o

1B 06 C2 06 0E CS

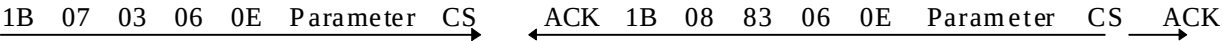
[Parameter] Returns the present sub contrast value of the driver board.

1B 07 02 06 0E Parameter CS → ACK ← 1B 08 82 06 0E Parameter CS → ACK

Initializing Driver Board Sub contrast

[Function] Initializes the driver board sub contrast value (all the colors) set in the projector.

- Apply
[Form] < Hexadecimal > 1B 07 03 06 0E Parameter CS
[Parameter] Specifies the sub contrast color (RGB) to initialize.
- Reply
[Form] < Hexadecimal > 1B 08 83 06 0E Parameter CS o
1B 06 C3 06 0E CS
[Parameter] Returns the present value of the sub contrast color for the driver board initialized.



Key Stone (Group : 6 Item : F)

Adjusting Keystone

[Function] Adjusts keystone values.

- Apply
[Form] < Hexadecimal > 1B 07 01 06 0F Parameter CS
[Parameter] Specifies keystone values.
- Reply
[Form] < Hexadecimal > 1B 06 81 06 0F CS o
1B 06 C1 06 0F CS
[Parameter] No parameter

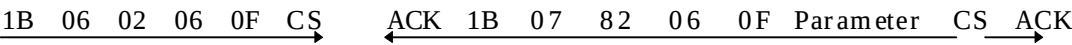
1B 07 01 06 0F Parameter → CS ← ACK 1B 06 81 06 0F CS → ACK

※ 0.1 per unit parameter.

Getting Keystone

[Function] Gets the present keystone value.

- Apply
[Form] < Hexadecimal > 1B 06 02 06 0F CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 82 06 0F Parameter CS o
1B 06 C2 06 0F CS
[Parameter] Returns the keystone value.



Initializing Keystone Value

[Function] Initializes keystone values.

- Apply

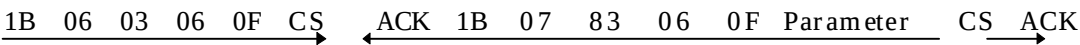
[Form] < Hexadecimal > 1B 06 03 06 0F CS

[Parameter] No parameter
- Reply

[Form] < Hexadecimal > 1B 07 83 06 0F Parameter CS o

1B 06 C3 06 0F CS

[Parameter] Returns the keystone value.



Start up Screen (Group : 6 Item : 10)

Adjusting Startup Screen Value
[Function] Adjusts the startup screen values.

- Apply
[Form] < Hexadecimal > 1B 07 01 06 10 Parameter CS
[Parameter]
Display :1
Non-display :0
- Reply
[Form] < Hexadecimal > 1B 06 81 06 10 CS o
1B 06 C1 06 10 CS
[Parameter] No parameter

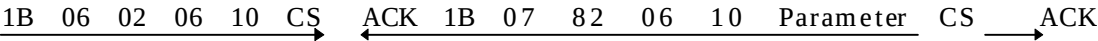
1B 07 01 06 10 Parameter CS → ACK ← 1B 06 81 06 10 CS → ACK

Getting Startup Screen Value

[Function] Gets the present startup screen values.

- Apply
[Form] < Hexadecimal > 1B 06 02 06 10 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 82 06 10 Parameter CS o
 1B 06 C2 06 10 CS
[Parameter] Returns the start up screen value.



Initializing Startup Screen Value

[Function] Initializes the startup screen values.

- Apply
[Form] < Hexadecimal > 1B 06 03 06 10 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 83 06 10 Parameter CS o
1B 06 C3 06 10 CS
[Parameter] Returns the startup screen initialized.

1B 06 03 06 10 CS → ← ACK 1B 07 83 06 10 Parameter CS → ACK

Message (Group : 6 Item : 11)

Adjusting Message setting
[Function] Adjusts the operation during No Signal.

- Apply
[Form] < Hexadecimal > 1B 07 01 06 11 Parameter CS
[Parameter]
Non-display :0x00
Logo :0x01
Black :0x02
Blue :0x03
- Reply
[Form] < Hexadecimal > 1B 06 81 06 11 CS o
1B 06 C1 06 11 CS
[Parameter] No parameter

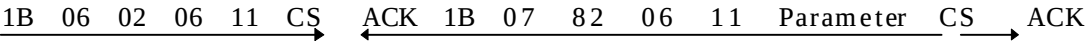
1B 07 01 06 11 Parameter CS → ← ACK 1B 06 81 06 11 CS → ACK

Getting Message Set point

[Function] Gets the present message set point.

- Apply
[Form] < Hexadecimal > 1B 06 02 06 11 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 82 06 11 Parameter CS o
 1B 06 C2 06 11 CS
[Parameter] Returns the same value as the message setting.

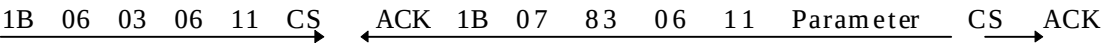


Initializing Message Set point

[Function] Initializes the message set points.

- Apply
[Form] < Hexadecimal > 1B 06 03 06 11 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 83 06 11 Parameter CS o
1B 06 C3 06 11 CS
[Parameter] Returns the initialized value of the message setting.



DPMS Setting (Group : 6 Item : 12)

Adjusting DPMS setting
[Function] Adjusts DPMS.

- Apply
[Form] < Hexadecimal > 1B 07 01 06 12 Parameter CS
[Parameter]
DPMS OFF : 00
DPMS ON : 01
- Reply
[Form] < Hexadecimal > 1B 06 81 06 12 CS o
1B 06 C1 06 12 CS

[Parameter] No parameter

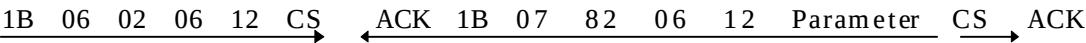
1B 07 01 06 12 Parameter CS ← ACK 1B 06 81 06 12 CS → ACK

Getting DPMS Set point

[Function] Gets the present DPMS set point.

- Apply
[Form] < Hexadecimal > 1B 06 02 06 12 CS
[Parameter] No parameter

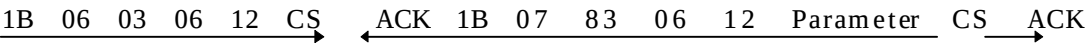
- Reply
[Form] < Hexadecimal > 1B 07 82 06 12 Parameter CS o
1B 06 C2 06 12 CS
[Parameter] Returns the same value as the DPM setting.



Initializing DPMS Set Point

[Function] Initializes DPMS set points.

- Apply
[Form] < Hexadecimal > 1B 06 03 06 12 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 07 83 06 12 Parameter CS o
1B 06 C3 06 12 CS
[Parameter] Returns the DPMS set point initialized.



4.8.Custom

Effect Key (Group : 7 Item : 0)

Effect Key

[Function] Shows the effect key which is pressed.

- Apply

[Form] < Hexadecimal > 1B 07 01 07 00 Parameter CS

[Parameter] Parameter to the effect key code specifies the data corresponded to effect keys.
Possible setting data :

Effect 1 key :01

Effect 2 key :02

Effect 3 key :03

Effect 4 key :04

Effect 5 key :05

- Reply

[Form] < Hexadecimal > 1B 06 81 07 00 CS o
1B 06 C1 07 00 CS

[Parameter] No parameter

1B 07 01 07 00 Parameter CS → ← ACK 1B 06 81 07 00 CS → ACK

Effect Function (Group : 7 Item : 5)

Setting Attribute for each Effect function

[Function] Sets the attribute for each effect function.

- Apply

[Form] < Hexadecimal > 1B 0B 01 07 05 Parameter CS

[Parameter] Parameter to each effect function specifies the attribute data.

Possible setting data :

(P1)

Setting set number (1Byte) : (00 to 02)

(P2)

(P3)

Cursor stamp	: 00	Shape	: 00
Square	: 01	Zoom Rate	: 01
Reserved	: 02	Color	: 02
Marker	: 03	Width	: 03
Free Line	: 04	Track Shape	: 04
Clear	: 80		
Cursor speed	: A0		

※ P1 is invalid when P2 is [Square] or [Marker].

(P4,P5)

Width : 0002h to 0094h

Zoom rate (100%) : 0000

Zoom rate(200%) : 0001

Zoom rate(300%) : 0002

Color (Cyan) : 0000

Color (Blue) : 0001

Color (Red) : 0002

Color (Green) : 0003

Color (Yellow) : 0004

Color (Magenta) : 0005

Color (White) : 0006

Color (Orange) : 0007

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Cursor speed (L) :0000
Cursor speed (M) :0001
Cursor speed(H) :0002

Track Shape (OFF) : 0000
Track Shape (ON) : 0001

- Reply
[Form] < Hexadecimal > 1B 06 81 07 05 CS o
 1B 06 C1 07 05 CS
[Parameter] No parameter

1B 0A 01 07 05 Parameter CS ACK 1B 06 81 07 05 CS ACK

Getting Attribute for each Effect functio

[Function] Gets attribute for the present effect function.

- Apply
[Form] < Hexadecimal > 1B 09 02 07 05 Parameter CS
[Parameter] Sets the attribute data for the effect you want to get.

(P1)			
Setting set number (1Byte) : (00 to 02)			
(P2)		(P3)	
Cursor stamp	: 00	Shape	: 00
Square	: 01	Zoom Rate	: 01
Reserved	: 02	Color	: 02
Marker	: 03	Width	: 03
Free Line	: 04	Track Shape	: 04
Clear	: 80		
Cursor speed	: A0		

※ P1 is invalid when P2 is [Square] or [Marker].

- Reply
[Form] < Hexadecimal > 1B 0B 82 07 05 Parameter CS o
1B 06 C2 07 05 CS
[Parameter] Returns the attribute for the present effect function specified.

1B 09 02 07 05 Parameter CS ACK 1B 0A 82 07 05 Parameter CS ACK

Initializing Attribute for each Effect function

[Function] Initializes the attribute for each effect function.

- Apply
[Form] < Hexadecimal > 1B 09 03 07 05 Parameter (P1, P2, P3) CS
[Parameter] Sets the attribute data for the effect you want to initialize.
- Reply
[Form] < Hexadecimal > 1B 0B 83 07 05 Parameter CS o
1B 06 C3 07 05 CS
[Parameter] Returns the initialized attribute for the present effect function specified.

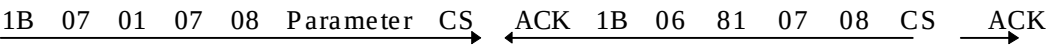
1B 09 03 07 05 Parameter CS → ← ACK 1B 0B 83 07 05 Parameter CS → ACK

P in P(Group : 7 Item : 8)

Setting P in P

[Function] Sets P in P.

- Apply
 - [Form] < Hexadecimal > 1B 07 01 07 08 Parameter CS
 - [Parameter]
 - Picture Source (1 Byte)
 - Composite video: 0x00
 - S-Video: 0x01
- Reply
 - [Form] < Hexadecimal > 1B 06 81 07 08 CS o
 - 1B 06 C1 07 08 CS
 - [Parameter] No parameter

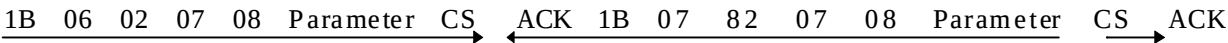


Getting P in P

[Function] Gets P in P setting

- Apply
[Form] < Hexadecimal > 1B 06 02 07 08 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 82 07 08 Parameter CS o
1B 06 C2 07 08 CS
[Parameter] Same as the P in P setting.

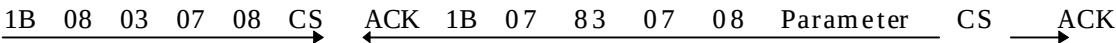


Initializing P in P

[Function] Initializes P in P setting.

- Apply
[Form] < Hexadecimal > 1B 06 03 07 08 CS
[Parameter] No parameter

- Reply
[Form] < Hexadecimal > 1B 07 83 07 08 Parameter CS o
1B 06 C3 07 08 CS
[Parameter] Returns the P in P setting initialized.



Getting Hardware State from I²C Bus[Function] Gets the hardware state from I²C bus.

● Apply

[Form] < Hexadecimal > 1B Size 02 08 00 Parameter CS

[Parameter] Parameter to the getting hardware state specifies operation of I²C bus.When you want to get a value from each device, combine the following I²C bus operation as referring the I²C bus communication type for device.I²C Bus Movement :

Start condition : 00

Stop condition : 0F

1 byte Reading (Response bit ACK) : 01

1 byte Reading (Response bit NAK) : 02

1 byte Writing (Slave address, Data address etc.) : 03

1 byte after the preceding is write data.

Specified byte reading : 04

1 byte after the preceding is specified number of byte.

Specified byte writing : 05

1 byte after the preceding is specified number of byte.

Further data follows the preceding is write data.

Reading specified byte (Last response bit ACK) : 06

1 byte after the preceding is specified number of byte.

Reading specified byte (Last response bit NAK) : 07

1 byte after the preceding is specified number of byte.

● Reply

[Form] < Hexadecimal > 1B Size 82 08 00 Parameter CS or

1B 06 C2 08 00 CS

[Parameter] Returns the data from I²C bus.

1B ** 02 08 00 Parameter CS → ACK 1B ** 82 08 00 Parameter CS → ACK

ex) 1B 0D 02 08 00 03 ** 03 ** 03 ** 020F

 ↓ ↓ ↓

 Writing slave address Sub address Reading Slave address

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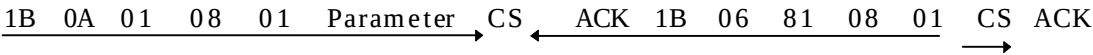
Memory (Group : 8 Item : 1)

Setting Memory Data (1 Byte)

[Function] Writes 1 byte data into memory.

- Apply
[Form] < Hexadecimal > 1B 0A 01 08 01 Parameter CS
[Parameter] Parameter to the setting memory specifies the address to write data to and the data to Memory.
 Address : 3 byte
 Set data : 1byte

- Reply
[Form] < Hexadecimal > 1B 06 81 08 01 CS or
 1B 06 C1 08 01 CS
[Parameter] No parameter



[Function] Gets the value of 1 byte memory.

- Address: 3bytes

- [Parameter] Returns data of the address specified.

1B 09 02 08 01 Parameter CS → ACK 1B 07 82 08 01 Parameter CS → ACK

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Setting Plural Byte Data of Memory

[Function] Writes plural byte data into the memory.

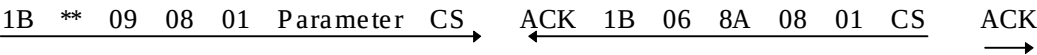
- Apply
[Form] < Hexadecimal > 1B Size 09 08 01 Parameter CS

Up to 128 bytes can be set at once.

[Parameter] Parameter to the setting memory specifies the address to write data, number of data and the set data to memory.

Address : 3bytes
Number of data : 1byte(Max:128)
Setting data : nbyte

- Reply
[Form] < Hexadecimal > 1B 06 8A 08 01 CS or
 1B 06 CA 08 01 CS
[Parameter] No parameter



Getting Plural Byte Data for Memory

[Function] Gets plural bytes for memory value.

- Apply
[Form] < Hexadecimal > 1B 0A 0A 08 01 Parameter CS

Up to 128 bytes can be set at once.

[Parameter] Parameter to the getting memory data specifies the address to get data and number of data.

Address : 3byte
Number of Data : 1byte(Max:128)

- Reply
[Form] < Hexadecimal > 1B Size 8A 08 01 Parameter CS o
1B 06 CA 08 01 CS
[Parameter] Returns the number of data from the address specified.

Address : 3byte
Number of Data : 1byte(Max:128)
Setting Data : nbyte



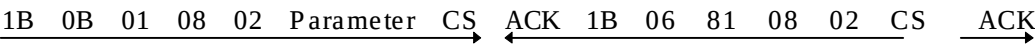
PW (Group : 8 Item : 2)

- Setting PW data (2 Bytes)
- [Function] Controls PW. (Sets 1 byte data to the register of PW.)
- Apply
- [Function] <Hexadecimal> 1B 0B 01 08 02 Parameter CS
- [Parameter] Parameter to the PW specifies the PW top address and setting data for PW.

PW top address : 3bytes

PW setting data : 2bytes

- Reply
- [Form] < Hexadecimal > 1B 06 81 08 02 CS o
- 1B 06 C1 08 02 CS
- [Parameter] No parameter

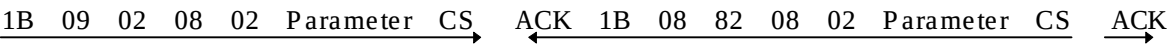


Getting PW Data

[Function] Gets values of PW.

- Apply
[Form] < Hexadecimal > 1B 09 02 08 02 Parameter CS
[Parameter] Parameter to the getting PW data specifies top address data.
 PW top address :3byte

- Reply
[Form] < Hexadecimal > 1B 08 82 08 01 Parameter CS or
 1B 08 C2 08 01 CS
[Parameter] PWData (2 Bytes)



Key Code (Group : 8 Item : 5)

Getting Key Code

[Function] Gets key codes of the keys.

● Apply

[Form] < Hexadecimal > 1B 06 02 08 05 CS

[Parameter] No parameter

● Reply

[Form] < Hexadecimal > 1B 0B 82 08 05 Parameter CS or
1B 06 C2 08 05 CS

[Parameter] Returns a key code of the key presently being pressed. Since each key is displayed as 1 bit, when more than two keys are pressed at the same time, returns logical sum data of the two key codes. If no key is pressed, returns 0.

Key codes : (5byte)

reserved	: 0000000001	reserved	: 0000100000
Computer	: 0000000002	reserved	: 0000200000
Video	: 0000000004	reserved	: 0000400000
Resize	: 0000000008	reserved	: 0000800000
reserved	: 0000000010	reserved	: 0001000000
Shift	: 0000000020	reserved	: 0002000000
A/V Mute	: 0000000040	reserved	: 0004000000
Help	: 0000000080	reserved	: 0008000000
Auto/Enter	: 0000000100	reserved	: 0010000000
Power	: 0000000200	reserved	: 0020000000
reserved	: 0000000400	reserved	: 0040000000
reserved	: 0000000800	reserved	: 0080000000
reserved	: 0000001000	ESC	: 0100000000
Volume+	: 0000002000	reserved	: 0200000000
Volume -	: 0000004000	reserved	: 0400000000
Sync+	: 0000008000	reserved	: 0800000000
Sync-	: 0000010000	reserved	: 1000000000
Tracking+	: 0000020000	reserved	: 2000000000
Tracking-	: 0000040000	reserved	: 4000000000
Menu	: 0000080000	reserved	: 8000000000

1B 06 02 08 05 CS ACK 1B 0B 82 08 05 Parameter CS ACK

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ICS 1522(Group : 8 Item : 9)

Setting ISC1522 Data

[Function] Writes data into the register specified.

- Apply

[Form] < Hexadecimal > 1B Size 01 08 09 Parameter CS

[Parameter] Parameter to the setting ICS 1522 data specifies number of register and setting data.

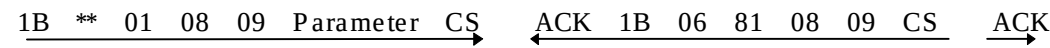
Register number : 1 byte (0 to 8)

Setting data : 1 byte
- Reply

[Form] < Hexadecimal > 1B 06 81 08 09 CS or

1B 06 C1 08 09 CS

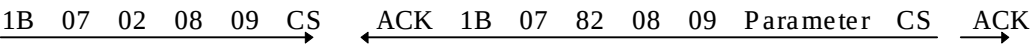
[Parameter] No parameter



Getting ICS1522 Data

[Function] Gets the register value of ICS 1522 specified.

- Apply
[Form] < Hexadecimal > 1B 07 02 08 09 Parameter CS
[Parameter] Parameter to the getting ICS1522 data specifies register number.
 Register number : 1 byte (0 to 8)
- Reply
[Form] < Hexadecimal > 1B 07 82 08 09 Parameter CS or
 1B 06 C2 08 09 CS
[Parameter] Returns the data of register number specified.



Adjusting Video Amp(Board Test)(Group : 8 Item : A)

- Adjusting video amplifier. (Board Test)
- [Function] Adjusts the video amplifier automatically for the board test.
- Apply

[Form] < Hexadecimal > 1B 06 01 08 0A CS

[Parameter] No parameter
 - Reply

[Form] < Hexadecimal > 1B 06 81 08 0A CS o

1B 06 C1 08 0A CS

[Parameter] No parameter

1B 06 01 08 0A CS → ← ACK 1B 06 81 08 0A CS → ACK

No Gamma (Group : 8 Item : C)

Setting No Gamma
[Function] Controls digital gamma correction.

- Apply
[Form] < Hexadecimal > 1B 07 01 08 0C Parameter CS
[Parameter]
Possible setting data:
Without : 00
With : 01
- Reply
[Form] < Hexadecimal > 1B 06 81 08 0C CS or
1B 06 C1 08 0C CS
[Parameter] No parameter

1B 07 01 08 0C Parameter CS → ← ACK 1B 06 81 08 0C CS → ACK

Lamp ON/ OFF (Group : 8 Item : D)

Setting Lamp ON/OFF

[Function] Sets lamp ON/OFF

- Apply
 - [Form] < Hexadecimal > 1B 07 01 08 0D Parameter CS
 - [Parameter] Parameter to the setting lamp ON/OFF specifies the data corresponded to lamp ON/OFF
 - Possible setting data:
 - Lamp ON : 01
 - Lamp OFF 00

- Reply
 - [Form] < Hexadecimal > 1B 06 81 08 0D CS o
 - 1B 06 C1 08 0D CS
 - [Parameter] No parameter

1B 07 01 08 0D Parameter CS ACK 1B 06 81 08 0D CS ACK

Memory Word Access (Group : 8 Item : E)

Setting Memory Data (1 Word)

[Function] Writes 1 word data into memory.

- Apply

[Form] < Hexadecimal > 1B 0B 01 08 0E Parameter CS

[Parameter] Parameter to the setting memory data specifies the address to write into data and setting data to memory.

Address : 3bytes

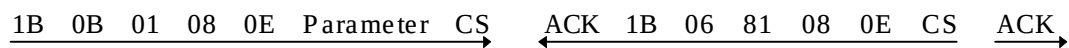
Setting data : 1word

- Reply

[Form] < Hexadecimal >	1B	06	81	08	0E	CS	0
	1B	06	C1	08	0E	CS	

1B 06 C1 08 0E CS

[Parameter] No parameter



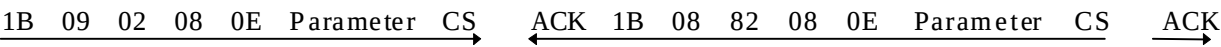
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Getting Memory Word (1 Word)

[Function] Gets the value of 1 word memory.

- Apply
[Form] < Hexadecimal > 1B 09 02 08 0E Parameter CS
[Parameter] Parameter to the getting memory data specifies addresses.
Address: 3 bytes

- Reply
[Form] < Hexadecimal > 1B 08 82 08 0E Parameter CS or
1B 06 C2 08 0E CS
[Parameter] Returns the data of address specified. (1 Word)



I/O Port (Group : 8 Item : F)

Setting I/O Port Data

[Function] Writes the data into the I/O port specified.

- Apply

[Form] < Hexadecimal > 1B 08 01 08 0F Parameter CS

[Parameter] Parameter to the setting I/O port data specifies register numbers and setting data.

Port Number : 1byte

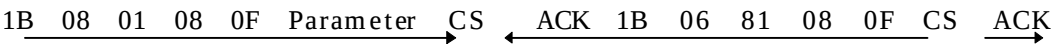
Setting data : 1byte(0x00 or 0x01)

- Reply

[Form] < Hexadecimal > 1B 06 81 08 0F CS o

1B 06 C1 08 0F CS

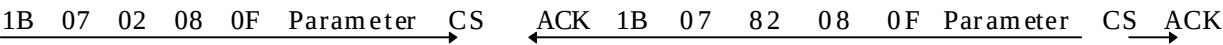
[Parameter] No parameter



Getting I/O Port Data

[Function] Gets the value of I/O port specified.

- Apply
[Form] < Hexadecimal > 1B 07 02 08 0F Parameter CS
[Parameter] Parameter to the getting I/O port data specifies port number.
- Reply
[Form] < Hexadecimal > 1B 07 82 08 0F Parameter CS or
1B 06 C2 08 0F CS
[Parameter] Returns the data of I/O port specified.



Adjusting Video Amp. (Product Test) (Group : 8 Item : 10)

- Adjusting Video Amp. (Product Test)
- [Function] Adjusts the video amplifier automatically for the product test.
- Apply
[Form] < Hexadecimal > 1B 06 01 08 10 CS
[Parameter] No parameter
 - Reply
[Form] < Hexadecimal > 1B 06 81 08 10 CS or
1B 06 C1 08 10 CS
[Parameter] No parameter

1B 06 01 08 10 CS ACK 1B 06 81 08 10 CS ACK

Initializing E2PROM (Group : 8 Item : 11)

Initializing E2 PROM

[Function] Initializes E2PROM

- Apply
[Form] < Hexadecimal > 1B 06 01 08 11 CS
[Parameter] No parameter
- Reply
[Form] < Hexadecimal > 1B 06 81 08 11 CS or
1B 06 C1 08 11 CS

1B 06 01 08 11 CS → ← ACK 1B 06 81 08 11 CS → ACK

Reset (Group : 8 Item : 12)

- Reset
- [Function] Resets the projector and sets to the state of cold start.
- Apply

[Form] < Hexadecimal > 1B 06 01 08 12 CS

[Parameter] No parameter
 - Reply

[Form] < Hexadecimal > 1B 06 81 08 12 CS or
1B 06 C1 08 12 CS

[Parameter] No parameter

1B 06 01 08 12 CS → ACK 1B 06 81 08 12 CS → ACK →

Controlling E2PROM (Group : 8 Item : 13)

Setting E2PROM data

[Function] Writing plural bytes data to memory or writing the specified data to the status register.

※This command is available only for U2 or later models.

● Apply

[Form] < Hexadecimal > 1B Size 01 08 13 Parameter CS

[Parameter] There are two kinds of parameters to the setting E2PROM data.

1) Writing data

Write command : 1 byte (02h)

Address : 2 byte

Number of data : 1 byte (MAX : 128)

Setting data : nByte

2) Writing to Status register

Write command to the Status register : 1 byte (01h)

Setting data : 1 byte

● Reply

[Form] < Hexadecimal > 1B 06 81 08 12 CS or

1B 06 C1 08 12 CS

[Parameter] No parameter

1B Size 01 08 13 Parameter CS ← ACK 1B 06 81 08 13 CS ACK →

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Getting E2PROM data

[Function] Reads plural bytes data from memory or data from the status register .

- Apply

[Form] < Hexadecimal > 1B 0A 0A 08 13 Parameter CS

[Parameter] There are two kinds of parameters to the setting E2PROM data.

- 1) Reading data

Read command : 1 byte (03h)

Address : 2 bytes

Number of data : 1 byte (MAX : 128)

- 2) Reading from the Status register

Read command for the Status register : 1 byte (05h)

- Reply

[Form] < Hexadecimal > 1B Size 8A 08 13 Parameter CS or

1B 06 CA 08 13 CS

[Parameter] There are two kinds of parameters to the getting E2PROM data.

- 1) Reading data

Read command : 2 bytes

Address : 1 byte (MAX : 128)

Number of data : 1 byte (MAX : 128)

- 2) Reading from the Status register

Read command to the Status register : 1 byte

1B Size 01 08 13 Parameter CS → ← ACK 1B 06 81 08 13 CS → ACK

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4.10.Flash ROM Contro

Area Clear (Group : 9 Item : 0)

- Area Clear
- [Function] Clears the area of Flash ROM to download. Used for rewriting the Flash ROM from PC.
- Apply

[Form] < Hexadecimal > 1B Size 01 09 00 Parameter CS

[Parameter] Parameter to the area clear specifies the top address of ROM area to clear.
 - Reply

[Form] < Hexadecimal > 1B 06 81 09 00 CS o

1B 06 C1 09 00 CS

[Parameter] No parameter

1B ** 01 09 00 Parameter CS ACK 1B 06 81 09 00 CS ACK

Specifying Upload (Group : 9 Item : 1)

Specifying upload

[Function] Specifies Flash ROM area to upload.

- Apply

[Form] < Hexadecimal >

1D 000B 01 01 09 01 Parameter CS

※ From PC to Master

[Parameter]

Upload area address (3 bytes)
- Reply

[Form] < Hexadecimal >

1D Size 81 10 09 01 Parameter CS or

1D 06 C1 10 09 01 CS

[Parameter] Stores Flash ROM data address and data.

Address (0 x 000000 to 0 x FFFFFFFF) : 3 bytes

Data : Nbyte

1D 000B 01 01 09 01 Parameter CS

→

←

ACK 1D **** 81 10 09 01 Parameter CS

→

ACK

FROM Data (Group : 9 Item : 2)

- FROM Data
- [Function] The following format is for downloading of Flash ROM.
- Apply
 - [Form] < Hexadecimal > 1D Size 01 01 09 02 Parameter CS
 - [Parameter] Parameter to the FROM Data specifies address and data for Flash ROM.
Address(0 x 000000 to 0 x FFFFFFFF) : 3bytes
Data: Nbyte
 - Reply
 - [From] < Hexadecimal > 1D 0007 84 10 09 02 CS or
1D 0007 C4 10 09 02 CS
 - [Parameter] No parameter

1D ** 01 01 09 02 Parameter CS → ← ACK 1D 0007 84 10 09 02 Parameter CS → ACK

Download termination (Group : 9 Item : 5)

Setting Download Termination

[Function] Informs that the downloading data to FROM has completed.

- Apply
 - [Form] < Hexadecimal > 1B 07 01 09 05 Parameter CS
 - [Parameter] Parameter to the setting download termination specifies whether download is succeeded or failed(Mainly cancelled halfway through).
Download Succeeded : 00
Download Failed : 01
- Reply
 - [Form] < Hexadecimal > 1B 06 81 09 05 CS or
1B 06 C1 09 05 CS
 - [Parameter] No parameter

1B 07 01 09 05 Parameter CS ACK 1B 06 81 09 05 CS ACK

Upload Termination (Group : 9 Item : 6)

Setting Upload Termination

[Function] Informs that the uploading data to FROM has completed.

- Apply
[Form] < Hexadecimal > 1B 07 01 09 06 Parameter CS
[Parameter] Parameter to the setting upload termination specifies whether upload is succeeded or failed(mainly cancelled halfway through).
Upload Succeeded : 00
Upload Failed : 01
- Reply
[Form] < Hexadecimal > 1B 06 81 09 06 CS or
1B 06 C1 09 06 CS
[Parameter] No parameter

1B 07 01 09 06 Parameter CS ACK 1B 06 81 09 06 CS ACK

4.11.Stack Contro

Checking Stack State (Group : 10 Item : 0)

Getting Stack State

[Function] Gets the present stack state for the projector.

- Apply
 - [Form] < Hexadecimal > 1D 0009 02 01 10 00 Parameter CS
 - [Parameter]
Number Counter (used only among projectors)(1 byte)
- Reply
 - [Form] < Hexadecimal > 1D 0011 82 10 10 00 Parameter CS or
1D 0008 C2 10 10 00 CS
 - [Parameter]
Projector linked state (1 byte)
All the projectors information (8 projectors : 1 bytes for each
16 bytes in total)

State 1 (4 bits)

0x01:Standalone
0x02:Stack
0x03:Waiting stack establishment
0x04:Virtual Standalone
0x00:Invalidity

State 2 (4 bits)

0x01:Master
0x02 to 0x08:Slave 1to Slave 7

1D 0009 02 01 10 00 Parameter CS → ACK 1D 0011 82 10 10 00 Parameter CS → ACK

Defining Stack (Group : 10 Item : 1)

Defining Stack

[Function] Defines the present stack state for the projector.

- Apply
 - [Form] < Hexadecimal > 1D 000A 01 12 10 01 Parameter CS
 - ※ From Master projector to Slave 1 projector
 - [Parameter] Number Counter (used among the projectors)(1 Bytes)
 - Defined Information 1: Stack defined
 - 0: Stack cancelled
- Reply
 - [Form] < Hexadecimal > 1D 0008 81 21 10 01 CS or 1D 0008 C1 21 10 01 CS
 - ※ From Slave 1 projector to Master projector
 - [Parameter] No parameter

1D 000A 01 12 10 01 Parameter → CS ← ACK 1D 0008 81 21 10 01 → CS ACK

Lock / Unlock (Group : 10 Item : 4)

Specifying Lock /Unlock

[Function] Sets lock/unlock of the entry specified by parameter.

● Apply

[Form] < Hexadecimal > 1B 0A 01 10 04 Parameter CS

[Parameter]

Group of the entry to lock /unlock. (1 byte)

Item of the entry to lock/unlock. (1 byte)

Effect classification (1 byte)

Specifying lock/unlock (1 byte)

1: Lock

0: Unlock

※ Lock for each initialization menu is sets Group and Item as shown below.

	Group	Item
Adjusting Video	0xFF	0x00
Adjusting Audio	0xFF	0x01
Effect	0xFF	0x02
Setting	0xFF	0x03
Advanced	0xFF	0x04
User logo	0xFE	0x00
About	0xFE	0x01

※ Effect classification of parameter can only be used for the lock/unlock for Effect.

Cursor/ Stamp	0x00
Square	0x01
Marker	0x02
Free line	0x03
Cursor speed	0x04

● Reply

[Form] < Hexadecimal > 1B 0A 01 10 04 Parameter CS o
 1B 06 C1 10 04 CS

[Parameter]

Group of the entry locked /unlocked. (1 byte)

Item of the entry locked/unlocked. (1 byte)

Parameter (1 byte)

Result of lock/unlock.

Parameter stores the result of each projector in 1 byte.

MSB is for Master. Then, stores Slave 1, Slave 2... and up to Slave 7.

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- 1: Lock0: Unlock
- ※ During Stack(except broadcast), bits other than those which are of the projectors specified by FT are invalid.
- ※ 1 bit on the MSB side is available during Standalone.



※This command returns NG in reply when it is not logged on(Use 0-13)by an administrator.

Getting Lock/Unlock

- [Function] Gets lock/unlock of the items specified by parameter.
- Apply

[Form] <Hexadecimal> 1B 09 02 10 04 Parameter CS

[Parameter]

Group of the entry to get lock/unlock (1 byte)

Item of the entry to get lock /unlock (1 byte)
- Reply

[Form] < Hexadecimal > 1B 0A 82 10 04 Parameter CS or
1B 06 C2 10 04 CS

[Parameter]

Group of the entry locked/unlocked. (1byte)

Items of the entry locked/unlocked (1 byte)

The result of lock/unlock (1 byte)

Parameter stores a result of each projector into 1 byte.

MSB for Master . Slave 1 , Slave 2 , , , ,and up to Slave 7

1 : lock 0 : unlock
- ※ During Stack(except broadcast), bits other than those which are of the projectors specified by FT are invalid.
- ※ 1 bit on the MSB side is available during Standalone.

