

OWNER'S MANUAL Digital Signage LCD Display







Please read these safety precautions carefully before using the display.

Warning Failure to follow those warnings may result in death, serious injury or damage to the display or other property.

Electrical Power Related Precautions

/ Marning

Use only the power cord supplied with the unit or another manufacturer's authorized cord.

- Failure to do so may result in fire or electrical shock or damage to the display.

- Use only a properly grounded plug and receptacle.
 - If you do not, you may be electrocuted or injured. Or the display might be damaged.
- Do not use a damaged or loose plug.

- This may cause electrical shock or fire.

Operate the display only from a power source (i.e. voltage) indicated in the product specification.

In the presence of thunder and lightning, never touch the power cord and signal cable because it can be very dangerous.

- It can cause electric shock.

Do not connect several extension cords, electrical appliances or electrical heaters to a single outlet. Use a power bar with a grounding terminal designed for exclusive use with the display.

- A fire can break out due to overheating.

- Do not touch the power plug with wet hands. Additionally, if the cord pin is wet or covered with dust, dry the power plug completely or wipe dust off before plugging in the cord.
 - You may be electrocuted due to excess moisture.
- If you do not intend to use the display for a long time, unplug the power cord from the display.
 Covering dust can cause a fire, or insulation deterioration can cause electric leakage, electric shock
- Insert the power plug firmly so it cannot come loose.

- A loose connection can cause fire. Hold the plug when pulling out the power cord.

Do not pull the plug out by the wire. Do not bend the power cord with excessive force or put heavy objects on the power cord.

- The power line can be damaged, which may cause electric shock or fire.

- Do not insert metal or other conductive materials into the display openings. Additionally, do not touch the power cord right after plugging the cable into the wall input terminal.
 - You may be electrocuted.

or fire.

- The power supply cord is used as the main disconnection device. The socket-outlet shall be installed near the equipment and shall be easily accessible.
- Do not unplug the power cord while the display is in use.
 - Electrical shock can damage the product.
- As long as this unit is connected to the AC wall outlet, it is not disconnected from the AC power source even if the unit is turned off.

⁻ Otherwise, the display can be damaged, fire can occur or you may be electrocuted. If you are not sure what type of power supply you have, consult a certified electrician.

Precautions in Installing the Display

\land Warning

- Keep away from heat sources like heaters or open flames.
 - Electrical shock, fire, malfunction or deformation may occur.
- Keep the packing anti-moisture material or vinyl packing out of the reach of children.
 - Anti-moisture material is harmful if swallowed. If swallowed by mistake, force the patient to vomit and visit the nearest hospital. Additionally, vinyl packing can cause suffocation. Keep it out of the reach of children.
- Do not put heavy objects on the display or sit upon it.

- If the display collapses or is dropped, you may be injured. Children must pay particular attention.

- Do not leave the power or signal cable where someone can trip over it.
 - The passerby can falter, which can cause electrical shock, fire, display breakdown, or injury.
- Install the display in a neat and dry place. Do not use near water.
 - Dust or moisture can cause electrical shock, fire, or display damage.
- Do not add accessories that have not been designed for this display.
- If you smell smoke or other odors or hear a strange sound from the display, unplug the power cord and contact Customer Service (Please refer to the label on the rear cover).
 - If you continue to use without taking proper measures, electrical shock or fire can occur.
- If you dropped the display or the case is broken, turn off the display and unplug the power cord.

- If you continue to use without taking proper measures, electrical shock or fire can occur. Contact Customer Service (Please refer to the label on the rear cover).

- Do not drop an object on or apply impact to the display. Do not throw any toys or objects at the display.
 - It can cause injury to humans, problems to the display, and damage the display.
- Keep out of reach of children and do not place toys near the display.
- Make sure the display ventilation hole is not blocked. Install the display more than 10cm away from the wall.
 - If you install the display too close to the wall, it may be deformed or fire can break out due to internal heat build-up.
- Do not cover the display with cloth or other material (eg. plastic) while plugged in.

- The display can be deformed or fire can break out due to internal overheating.

- Place the display on a flat and stable surface that is large enough to support the display.
 If the display is dropped, you may be injured or the display may be broken.
- Install the display where no Electromagnetic Interference occurs.
- Keep the display away from direct sunlight.
 - The display can be damaged.
- Do not place the display on the floor.
 - Small children and others may trip over it.

Precautions in Moving the Display

🕂 Warning

- Make sure to turn off the display.
 - You may be electrocuted or the display can be damaged.
- Make sure to remove all cables before moving the display.

- You may be electrocuted or the display can be damaged.

Do not shock the display when moving it.

- You may be electrocuted or the display can be damaged.

- Make sure the display faces forward and hold it with both hands to move.
 If you drop the display, the damaged display can cause electric shock or fire.
- Do not place the display face down.
 - This may damage the display.

Precautions in Using/Cleaning the Display

\land Warning

- Do not attempt to disassemble, repair, or modify the display yourself.
 - Fire or electric shock can occur.
 - Contact Customer Service (Please refer to the label on the rear cover) for repair.
- When cleaning the display, unplug the power cord and scrub gently with a soft cloth to prevent scratching. Do not clean with a wet cloth or spray water or other liquids directly onto the display. An electric shock may occur. (Do not use chemicals such as benzene, paint thinners, or alcohol)
- Keep the display away from water.
 - Fire or electric shock accident can occur.
- Avoid high temperatures and humidity.
- Do not put or store flammable substances near the display.
 - There is a danger of explosion or fire.
- Keep the display clean at all times.
- Do not press on the display with a hand or sharp object such as nail, pencil or pen, or make a scratch on it.
- Keep proper distance from the display and rest from time-to-time.
 - Your vision may be impaired if you look at the display too closely or for too long.
- Keep small accessories out of the reach of children.
- Leaving a fixed image on the display for a long time may cause damage to the display and cause image retention. Make sure to use a screen saver on the display. Burn-in and related problems are not covered by the warranty on this display.
- Spray water onto a soft cloth 2 to 4 times, and use it to clean the front frame; wipe in one direction only. Too much moisture may cause staining.



On Disposal (Only, Hg lamp used Display)

- The fluorescent lamp used in this display contains a small amount of mercury.
- Do not dispose of this display with general household waste.
- Disposal of this display must be carried out in accordance to the regulations of your local authority.

Precautions for Image Sticking

To optimize display lifetime and function, pay attention on the following operation usages:

- Normal operating condition
 - Operating Temperature: 0°C to 40°C
 - Operating Ambient Humidity: 10% to 90%
 - Display Pattern: dynamic pattern (real display)

Note: Long-term static display can cause image sticking.

Operating usages under abnormal condition

- a. Ambient condition
 - Well-ventilated place is recommended to set up the system.
- b. Power and screen saver
 - Periodical power-off or screen saver is needed after long-term display.

Operating usages to protect against image sticking due to long-term static display

- a. Suitable operating time
 - Under 18 hours a day.
- b. Static information display recommended to use with moving image
 - Cycling display between 5 minutes information (static) display and 10 seconds moving image.
- c. Background and character (image) color change
 - Use different colors for background and character, respectively.
 - Change colors themselves periodically.
- d. Avoid combination of background and character with large different luminance

Note:

- 1) Abnormal condition just means conditions except normal condition.
- 2) Black image or moving image is strongly recommended as a screen saver.

Accessories

Included Accessories

Thank you for your purchase. Ensure that the following accessories are included with your display. If an accessory is missing, please contact the dealer where you purchased the display.

The accessories included may differ from the images shown below.



Portrait Mode

To change the display orientation to Portrait mode, rotate the display counterclockwise as shown below.



Using the Remote Control









- 1. Open the battery cover.
- 2. Install the batteries matching the correct polarity.
 - Install two 1.5V AAA batteries.
- 3. Close the battery cover.
 - Dispose the used batteries in the recycle bin to prevent environmental pollution.

Name and Function of the Parts

* The image shown in the user's guide could be different from the actual image.

Front View



No.	Item	Description
1	Light sensor/ IR Receiver	Used to detect the current level of visible light in the surrounding environment. Receive incoming remote control commands.
2	Power indicator	Indicate power on or sleep mode status. - Power on: Green LED lights up. - Sleep mode: Amber LED lights up. - Power off: LED off.

Name and Function of the Parts

Rear View



No.	Item	Description
1	AC Switch	Switch the power supply on/off.
2	AC Power Input Connector	Connect the power cord.
3	AC Power Output Connector	Connect the AC power output.
4	HDMI Port	 Connect an HDMI equipment or an HDMI-DVI adapter cable to devices such as a DVD player or set-top box. HDMI Supports High Definition input and HDCP (High-bandwidth Digital Content Protection). Some devices require HDCP in order to display HD signals.
5	DVI Port	Connect an DVI cable to devices such as a DVD player or set-top box.
6	RGB Port	Connect to a PC VGA port.
7	Audio system	Connect External Audio System or headphones.
8	RS-232C Serial Ports	Connect several displays with serial port.

Connecting to External Devices

Recommended Connection, Resolution & Picture Mode

HDMI Connection, 1080p or 1920x1080@60Hz, dynamic

HDMI Connection (480p/576p/720p/1080i/1080p)

HDMI supports high definition input and HDCP (High-bandwidth Digital Content Protection). Some devices require HDCP in order to display HD signals.



PC Connection

Check that the computer, display, and the peripherals are turned off. Then, connect the signal input cable.

A. Connecting with an HDMI Signal Input Cable



Connecting to External Devices

B. Connecting with a DVI Signal Input Cable



Rear side of the display

C. Connecting with a D-sub(VGA) Signal Input Cable



Power Connection



Connecting to External Devices

VESA FDMI Wall Mounting

This display supports a VESA FDMI compliant mounting interface. These mounts are purchased separately. Refer to the instructions included with the wall mount for more info.

The handles are designed for carrying.

Model Name	VESA-compatible wall bracket (WxH)	Mount holes number
PS-420W	200 x 200 mm	4
PS-470W	400 x 200 mm	4



Screen Adjustment Options (using the Control Panel)



No.	Item	Description
0	Power switch	Turn the display on/off.
2	Input	Switch the input source.
3	Menu	Display/hide the OSD (on-screen display) menu or return to the previous menu.
4	Down/Up	Select menu item (move up/down).
5	Right/Left	Adjust the settings (increase/decrease the value), change the option, control the tuning bar, or enter the submenu.
6	Auto/OK	Synchronize the display automatically. (only for RGB PC connection)
		Enter the submenu, activate the tuning bar, or confirm selection/setting.
7	Power	Turn the display on from standby or off to standby.

Menu Options

PICTURE			
	PICTURE MODE		►
	BRIGHTNESS		50
	CONTRAST		51
	SHARPNESS		1
	BACKLIGHT		55
1	COLOR TEMPERATURE		•

lcon	Menu	Description
50	PICTURE	Adjust and refine the picture displayed on your display based on ambient room light and personal preferences.
()	SOUND	Adjust the audio settings.
‡	SETUP	Adjust the general settings such as OSD language, OSD rotation, and etc.
i	INFORMATION	Display the system information of the display.

Note OSD (On Screen Display)

The OSD function enables you to adjust the screen status conveniently since it provides graphical presentation.

OSD Indicator for Control Panel

For HDMI/DVI Source:





lcon	Item	Description
Ċ	Power	Turn on/off the display set.
AUTO	AUTO	Perform AUTO function (Only VGA source).
OK	ок	Enter next form.Exit from tuning bar.Activate the tuning bar.
	Left	Decrease the values.Activate the tuning bar.Change the options.
	Right	Increase the values.Enter next form.Change the options.Activate the tuning bar.
	Up	Move the focus vertically.Change the selected item.
	Down	Move the focus vertically.Change the selected item.
	Menu	Display user menu.Return to last form.Exit user menu.
Ļ	Input	Switch input sources.

Note

If icons are colored in gray, the system is in a state such that those keys are not active.

Adjusting On-Screen Display (OSD) Settings



(*operation using the remote control)

1	Press the MENU button to display the OSD menu.
2	Use the \blacktriangle/∇ button to select the main menu.
3	Press the OK or ▶ button to enter the selected menu screen.
4	Use the \blacktriangle/∇ button to select the menu item.
5	Press the OK or ▶ button to enter the submenu.
6	Use the \triangleleft button to adjust the setting/select the option.
7	Use the OK button to confirm the setting.
8	Press the MENU button to return to the previous menu/exit the OSD menu.

Adjusting the Screen Automatically

When the display is connected to the computer using the VGA cable, press the **Auto/OK** button on the control panel to synchronize the display automatically. The optimal screen setting will be selected to suit the current mode. If the adjustment is not satisfactory, you can adjust the screen manually.

Adjusting Screen Color

PICTURE				
	PICTURE MODE	•	MILD	
1				

PICTURE Select a preset view option optimized for different viewing conditions.

- **DYNAMIC**: This mode is normally used in department store, Backlight and Sharpness is set to its maximum value. Saturation of Color becomes high. You can see very bright, clear, and sharp image.
 - NORMAL: This mode shows normal and natural image.
 - **MILD**: This mode is normally used in movie. Soft image can be seen in this mode. The picture is somewhat darker than other mode.
 - USER: User can use the user-defined settings as they wish.



BRIGHTNESS: Adjust the brightness setting.

CONTRAST: Adjust the difference between the light and dark levels in the picture.

SHARPNESS: Adjust the sharpness of the edges of elements in the picture.

BACKLIGHT: Adjust the backlight that affects the overall brilliance of the picture.

Note

MODE

If the 'PICTURE MODE' setting in the PICTURE menu is set to DYNAMIC, NORMAL, or MILD, the subsequent menus (BRIGHTNESS, CONTRAST, SHARPNESS, and BACKLIGHT) will be automatically set.



Adjusting Screen Color



COLOR TEMPERATURE Adjust color settings.

- **COOL**: Select this option to adjust color setting to slightly purplish white.
- **MEDIUM**: Select this option to adjust color setting to slightly bluish white.
- **WARM**: Select this option to adjust color setting to slightly reddish white.
- USER: Select this option to use the user-defined settings.



RED/GREEN/BLUE: Set your own color levels.

Adjusting Screen Color



DCR Adjust the brightness of the display to maximize the picture quality.

- **BLACK** Adjust the contrast and the brightness of the display according to the black level of the screen.
 - (only for HDMI connection)
- VGA Adjust the PC display.
- ADJUST (I only for RGB PC connection)

PICTURE		
	AUTO ADJUST	
_ »		
*		
i		

- AUTO ADJUST: Synchronize the display automatically.
- H POSITION: Move the screen position horizontally.
- **V POSITION**: Move the screen position vertically.
- **CLOCK**: Minimize any vertical bars or stripes visible on the screen background. The horizontal screen size will also change.
- **PHASE**: Adjust the focus of the display. This item allows you to remove any horizontal noise and clear or sharpen the image of characters.

PICTURE Reset all **PICTURE** settings to the factory default settings. **RESET**

Adjusting Sound Settings

RESET



- **BALANCE** Use this function to balance sound from the left and right speakers.
- AVC If this Auto Volume Control (AVC) feature is enabled, the system will automatically adjust the uneven sound volumes across all signals to the most appropriate level.
- **VOLUME** Use this function to adjust the volume control of headphone and earphone.

20

SOUND Reset all **SOUND** settings to the factory default settings.

Selecting the Options



OSD LANGUAGE	Set the on-screen display language.
OSD ROTATION	Set the OSD menu display orientation.
OVERSCAN	Overscan function removes the noise in a video image.
	(only for HDMI-VIDEO connection)
	- When ON is selected, the image size is reduced to prevent noise.
	 When OFF is selected, the original image size is maintained regardless of noise.
ID SETUP	Assign a unique Set ID NO (name assignment) to each display when several displays are connected (via RS-232C) for display.
KEY LOCK	Enable or disable the Key Lock feature that can prevent unauthorized viewing/operation.
	If this function is enabled, long press the MENU button to unlock it.
SCREEN SAFE	Enable or disable the screen saver feature that can prevent image- sticking.
	- The white and black screens flash alternately every second.
	- Disable this function when the image-sticking is disappeared.
POWER INDICATOR	Enable or disable the power indicator on the front of the display when the display is turned on.
DPMS	Set the power saving mode to on/off.

Selecting the Options

- ABC If this Auto Brightness Control (ABC) feature is enabled, the system will automatically adjust the display brightness signals based on ambient room light.
- **FAIL OVER** Automatically detect the input connection and set its selection priority.



If this feature is enabled (the **AUTO DETECT** is set to **ON**), you can set the priority of the input source selection when there is more than one input signal.

FACTORYReturn the display parameters on all menus to the factory defaultRESETsettings.

Viewing Display Information



Set ID	Display the assigned ID.
F/W Version	Display the firmware version.

Sub Version Display sub firmware version.

InputShow the information about resolution of the image which isResolutioncurrently being displayed on the screen.

Troubleshooting

No image is displayed								
• Is the power cord connected?	 See if the power cord is properly connected to the outlet. 							
• Is the power indicator light on?	 See if the power switch is turned on. 							
 Power is on, power indicator is blue but the screen appears extremely dark. 	Adjust brightness and contrast again.Backlight may need repair.							
Is the power indicator amber?	 If the display is in power saving mode, move the mouse or press any key. 							
	 Turn both devices off and then back on. 							
 Does the 'NO SIGNAL' message appear? 	• The signal cable between PC and display is not connected. Check the signal cable.							
	 Press INPUT on the remote control to check the input signal. 							

The screen im	age looks abnormal
Is the screen positioned?	 D-SUB analog signal –Press AUTO on the control panel to automatically select the optimal screen status that fits the current mode. If the adjustment is not satisfactory, use the OSD Position menu.
Do thin lines appear in the background?	 D-SUB analog signal –Press AUTO on the control panel to automatically select the optimal screen status that fits the current mode. If the adjustment is not satisfactory, use the Clock OSD menu.
 Power is on, power indicator is blue but the screen appears extremely dark. 	 D-SUB analog signal –Press AUTO on the control panel to automatically select the optimal screen status that fits the current mode. If the adjustment is not satisfactory, use the OSD Phase menu.

Troubleshooting

(After-image ap	opears on the screen
	• After-image appears when the previous image changed.	• If you display a fixed image for a long time, the pixels may be damaged quickly.
/		Use the screen-saver function.

Screen color is abnormal									
 Screen has poor color resolution (16 colors). 	 Set the number of color to more than 24 bits (true color). Select Control Panel –Display–Settings–Color Table menu in Windows. 								
 Screen color is unstable or mono-colored. 	 Check the connection status of the signal cable or re-insert the PC video card. 								
Do black spots appear on the screen?	 Several pixels (red, green, white, or black color) may appear on the screen, which can be attributable to the unique characteristics of the LCD Panel. This is not a malfunction of the LCD. 								

If any of above instructions does not work, follow the instructions: [1] Press MENU > SETUP > Factory Reset.

- [2] Remove the AC power cord and wait for 10 seconds.
- [3] Connect the AC power cord and turn on the display.

Specifications

The product specifications can change without prior notice for product improvement.

LCD Panel	Display Pixels Active Screen Size (diagonal) Pixel Pitch	1920 (H) x 1080 (V) [PS-420W]: 42.02 inches (1067.31mm) [PS-470W]: 46.96 inches (1192.87mm) [PS-420W]: 0.4845 (H) x 0.4845(V) (mm) [PS-470W]: 0.5415(H) x 0.5415 (V) (mm)						
	Rated Voltage	AC100-240 (-	+/- 10%) Vac at 50/60Hz					
	Power Consumption	On Mode	[PS-420W] : 135 W (Typ.) [PS-470W] : 170 W (Typ.)					
		Sleep Mode	\leq 0.5 W (RGB) / 0.5 W (HDMI/DVI)					
Power		Off Mode 1	\leq 0.5 W (RGB) / 0.5 W (HDMI/DVI) *Power off by using the Remote Control or Control Panel.					
		Off Mode 2	= 0 W					
			*Power off by using the AC Power Switch.					
		Maximum	[PS-420W]: 165 W [PS-470W]: 225 W					
Dimensions &	+							
Weight	Dimensions (Width x Height x Depth)							
	[PS-420W]:101.3cm (39.88") x 60.6cm (23.86") x 8.45cm (3.33")							
	[PS-470W]:112.56cm (44.31") x 67.1cm (26.4") x 8.76cm (3.45")							
	Net Weight							
	[PS-420W]:13.60kg (29.9 [PS-470W]:17.66kg (38.9	981b) 931b)						
Video Signal	Max. Resolution	RGB/HDMI/D	0VI: 1920 x 1080 @60 Hz					
Input Connector		HDMI/DVI(digital), RGB (VGA), RS-232C						
Environmental	Operational Condition	Temperature:	0°C to 40°C, Humidity: 10% to 90%					
Conditions	Storage Condition	Temperature:	-20°C to 60°C, Humidity: 5% to 90%					

Specifications

Remark

VGA

VESA

VESA

VESA

VESA

CEA

Ρ

Ρ

146.25

148.5

Mode Resolution Refresh Horizontal Vertical Horizontal Vertical Pixel Rate No. rate (Hz) Frequency Frequency Sync Sync (MHz) (KHz) (Hz) Polarity Polarity (TTL) (TTL) 1 640 x 480 60 31.469 59.941 Ν Ν 25.175 2 800 x 600 60 37.879 60.317 Ρ Ρ 40 Ν 3 1024 x 768 60 48.363 60.004 Ν 65 Ρ Ρ 4 1280 x 1024 60 63.981 60.02 108

59.954

60

Ν

Р

HDMI – Preset Mode

1680 x 1050

1920 x 1080

5

*6

Mode No.	Resolution
1	480p
2	576p
3	720p
4	1080i
5	1080p

60

60

65.29

67.5

PC Mode (DVI/RGB) – Preset Mode

Power Indicator

Mode	Device
On Mode	Blue
Sleep Mode	Amber
Off Mode	-

Daisy Chain Connection

Use this method to connect several displays to a single PC. You can control several displays at a time by connecting them to a single PC.

Connecting the cable

Connect the RS-232C cable as shown in the illustration.

* The RS-232C protocol is used for communication between the PC and display. You can turn the display on/off or adjust the OSD menu from your PC. RS-232C cable (not included)



*Maximum of Daisy Chain: 4 pcs

RS-232C Configurations

2-Wire Configurations (Not Standard)

PD (RS-232C In)

PC (or PD RS-232C Out)



\bigcirc			DB 9 Pin Male			
5 9	Ρ	in No.	Designation Description	Input/Output		
•	1	DCD	Data carrier detect	Input		
•	2	RxD	Receive data	Input Output		
• 6	3	TxD	Transmit data			
$\overline{0}$	4 DTR 5 GND		Data terminal ready	Output		
			Ground	-		
	6	DSR	Data set ready	Input		
	7 RTS 8 CTS		Request to send	Output		
			Clear to send	Input		
	9	RI	Incoming call	Input		

Communication Parameter

- ⇒ Baud Rate: 9600
- ⇒ Data Length: 8 Bit
- ➡ Parity Bit: None
- Stop Bit: 1 Bit
- ⇒ Flow Control: None
- ⇒ Communication Code: Hex Code
- ⇒ Use a DB 9 Pin Cable

HDMI CEC Connection

With Consumer Electronics Control (CEC) feature, you can command and control two or more CEC-enabled boxes, that are connected through HDMI, by using only one of their remote controls. (e.g. controlling a television set, set-top box and DVD player using only the remote control of the display).

Connecting the cable

Connect the HDMI cable as shown in the illustration.



Display

*Not support HDMI splitter or Daisy Chain connection, only support PC-Display 1:1 control.

HDMI CEC statement

Term	Description
One Touch Play	Turning on the HDMI source device cause the connected Display to be turned on and switch to HDMI Input automatically.
Routing Control	Switch (Remote control or Front key) Display Input to HDMI will cause the HDMI source device to be turned on.
System Standby	Turning off the Display will cause the HDMI Devices in the CEC net to be turned off.

RS-232C Protocol

Normal Function

⇒ Protocol (data format).

		Heade	er (5	bytes)		Payload (4 bytes)				Checksum (1byte)
command	Prefix code #0	Prefix code #1	Set ID	Payload Type	# of payload bytes	Command	data #0	data #1	data #2	CS #0
Set Power	0xCC	0x33		0	4	0x10	0 : 0ff 1 : On	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set Power	0xCC	0x55		0	4	0x10	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload
Set Input Source	0xCC	0x33		0	4	0x11	0x30 : VGA1 0x40 : DVI1 0x50 : HDMI1	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Input Source	0xCC	0x55		0	4	0x11	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload
Read Input Source	0xCC	0x33		1	4	0x11	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Input Source	0xCC	0x55		1	4	0x11	0xE0 : OK 0xE1 : NG	0x30 : VGA1 0x40 : DVI1 0x50 : HDMI1	reserved (0xFF)	Header XOR Payload
Set Screen Mute	0xCC	0x33		0	4	0x12	0 : mute off 1 : mute on	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set Screen Mute	0xCC	0x55		0	4	0x12	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload
Read Screen Mute	0xCC	0x33		1	4	0x12	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Screen Mute	0xCC	0x55		1	4	0x12	0xE0 : OK 0xE1 : NG	0 : mute off 1 : mute on	reserved (0xFF)	
Set Fail Over	0xCC	0x33		0	4	0x13	0 : off Other : ON 1 : HDMI, DVI, Dsub 2 : HDMI, Dsub, DVI 3 : DVI, HDMI, Dsub 4 : DVI, Dsub, HDMI 5 : Dsub, HDMI, DVI 6 : Dsub, DVI, HDMI	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set Fail Over	0xCC	0x55		0	4	0x13	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload

Controlling the Multiple Product

		Heade	er (5	bytes)		Payload (4 bytes)				Checksum (1byte)
command	Prefix code #0	Prefix code #1	Set ID	Payload Type	# of payload bytes	Command	data #0	data #1	data #2	CS #0
Read Fail Over	0xCC	0x33		1	4	0x13	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Fail Over	0xCC	0x55		1	4	0x13	0xE0 : OK 0xE1 : NG	0 : off Other : ON 1 : HDMI, DVI, Dsub 2 : HDMI, Dsub, DVI 3 : DVI, HDMI, Dsub, HDMI 5 : Dsub, HDMI 5 : Dsub, DVI 6 : Dsub, DVI, HDMI	reserved (0xFF)	Header XOR Payload
Set Remote Controller Key	0xCC	0x33		0	4	0x14	0x08 : POWER 0x43 : MENU 0x0B : INPUT 0x40 : UP 0x41 : DOWN 0x07 : LEFT 0x06 : RIGHT	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set Remote Controller Key	0xCC	0x55		0	4	0x14	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload
Read Abnomal State	0xCC	0x33		1	4	0x17	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload

Controlling the Multiple Product

		Heade	er (5	bytes)		Payload (4 bytes)				Checksum (1byte)
command	Prefix code #0	Prefix code #1	Set ID	Payload Type	# of payload bytes	Command	data #0	data #1	data #2	CS #0
Ack Read Abnormal State	0xCC	0x55		1	4	0x17	0xE0 : OK 0xE1 : NG	0 : Normal (power on and signal exist) 1 : No Signal (power on) 2 : Turn off by remote controller 3 : Turn off by local key 4 : Turn off by RS-232C function	reserved (0xFF)	Header XOR Payload
Read Lamp fault State	0xCC	0x33		1	4	0x18	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Lamp fault State	0xCC	0x55		1	4	0x18	0xE0 : OK 0xE1 : NG	0 : lamp fault 1 : lamp OK	reserved (0xFF)	Header XOR Payload
Set DCR	0xCC	0x33		0	4	0xA0	0 : Off 1 : On	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set DCR	0xCC	0x55		0	4	0xA0	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload
Read DCR	0xCC	0x33		1	4	0xA1	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read DCR	0xCC	0x55		1	4	0xA1	0xE0 : OK 0xE1 : NG	0 : Off 1 : On	reserved (0xFF)	Header XOR Payload
Read Sub Version	0xCC	0x33		1	4	0xA2	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Sub Version	0xCC	0x55		1	4	0xA2	0xE0 : OK 0xE1 : NG	(Version No.)	reserved (0xFF)	Header XOR Payload
Read Input Resolution	0xCC	0x33		1	4	0xA3	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Input Resolution	0xCC	0x55		1	4	0xA3	Hwidth bit(11:4)	bit(7:4) Hwidth bit(3:0) bit(3:0) Vheight bit(11:8)	Vheight bit(7:0)	Header XOR Payload
Read Lamp on time	0xCC	0x33		1	4	0xA4	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Lamp on time	0xCC	0x55		1	4	0xA4	0xE0 : OK 0xE1 : Ng	lapm on time high bit(15:8)	lapm on time low bit(7:0)	Header XOR Payload

Controlling the Multiple Product

		Heade	er (5	bytes)			Payload	(4 bytes)		Checksum (1byte)
command	Prefix code #0	Prefix code #1	Set ID	Payload Type	# of payload bytes	Command	data #0	data #1	data #2	CS #0
Set CEC	0xCC	0x33		0	4	0xA5	0 : Off 1 : On	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set CEC	0xCC	0x55		0	4	0xA5	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload
Read CEC	0xCC	0x33		1	4	0xA6	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read CEC	0xCC	0x55		1	4	0xA6	0xE0 : OK 0xE1 : NG	0 : Off 1 : On	reserved (0xFF)	Header XOR Payload

A4

Controlling the Multiple Product

MENU function (PICTURE)

⇒ Protocol (data format).

		Heade	r (5	bytes)				Checksum (1byte)		
command	Prefix code #0	Prefix code #1	Set ID	Payload Type	# of payload bytes	Command	data #0	data #1	data #2	CS #0
Set Picture Mode	0xCC	0x33		0	4	0x30	0 : Dynamic 1 : Normal 2 : Mild 3 : User	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set Picture Mode	0xCC	0x55		0	4	0x30	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload
Read Picture Mode	0xCC	0x33		1	4	0x30	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Picture Mode	0xCC	0x55		1	4	0x30	0xE0 : OK 0xE1 : NG	0 : Dynamic 1 : Normal 2 : Mild 3 : User	reserved (0xFF)	Header XOR Payload
Set Brightness	0xCC	0x33		0	4	0x31	0~100	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set Brightness	0xCC	0x55		0	4	0x31	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload
Read Brightness	0xCC	0x33		1	4	0x31	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Brightness	0xCC	0x55		1	4	0x31	0xE0 : OK 0xE1 : NG	0~100	reserved (0xFF)	Header XOR Payload
Set Contrast	0xCC	0x33		0	4	0x32	0~100	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set Contrast	0xCC	0x55		0	4	0x32	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload
Read Contrast	0xCC	0x33		1	4	0x32	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Contrast	0xCC	0x55		1	4	0x32	0xE0 : OK 0xE1 : NG	0~100	reserved (0xFF)	Header XOR Pavload
Set Sharpness	0xCC	0x33		0	4	0x33	0~4	reserved (0x00)	reserved (0x00)	Header XOR Pavload
Ack Set Sharpness	0xCC	0x55		0	4	0x33	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Pavload
Read	0xCC	0x33		1	4	0x33	reserved	reserved	reserved	Header XOR Payload
Ack Read	0xCC	0x55		1	4	0x33	0xE0 : OK	0~4	reserved	Header XOR Payload
Set	0xCC	0x33		0	4	0x34	0~100	reserved	reserved	Header XOR Payload
Ack Set	0xCC	0x55		0	4	0x34	0xE0 : OK	reserved	reserved	Header XOR Payload
Read	0xCC	0x33		1	4	0x34	reserved	reserved	reserved	Header XOR Payload
Ack Read	0xCC	0x55		1	4	0x34	0xE0 : OK	0~100	reserved	Header XOR
Set Color Temp Mode	0xCC	0x33		0	4	0x35	0 : Cool 1 : Medium 2 : Warm 3 : User	reserved (0x00)	reserved (0x00)	Header XOR Payload

Controlling the Multiple Product

command #0Prefix code #1Prefix code #1Set IDPayload TypeCommand bytesdata #0data #1data #2CS #0Ack Set Color Temp Mode0xCC0x55040x350xE0 : OK 0xE1 : NGreserved (0xFF)reserved (0xFF)reserved (0xFF)reserved PayloadRead Color Temp Mode0xCC0x33140x35reserved (0x00)reserved (0x00)reserved (0x00)reserved (0x00)reserved (0x00)reserved (0x00)Header XOR PayloadAck Read Color Temp Mode0xCC0x55140x350xE0 : OK 0xE1 : NG0 : Cool 1 : Medium 3 : Userreserved (0x00)Header XOR PayloadSet Color Temp Red0xCC0x33040x360 ~ 255reserved (0x00)reserved (0x00)reserved (0x00)Header XOR PayloadSet Color Temp Red0xCC0x33040x360 ~ 255reserved (0x00)reserved (0x00)Header XOR PayloadRead Color Temp Red0xCC0x33140x360xE0 : OK (0x01)reserved (0x00)reserved (0x00)Header XOR PayloadRead Color Temp Red0xCC0x33140x360xE0 : OK (0x00)reserved (0x00)reserved (0x00)PayloadAck Read Color Temp Red0xCC0x55140x360xE0 : OK (0x00)0x25reserved (0x00)<			Heade	er (5	bytes)		Payload (4 bytes)				Checksum		
command#0#1IDTypebytesCommanddata #0data #0data #1data #2CS #0Ack Set Color Temp Mode0xCC0x55040x350xE0 : OK 0xE1 : NGreserved (0xFF)reserved (0xFF)reserved (0x00)reserved <td></td> <td>Prefix code</td> <td>Prefix code</td> <td>Set</td> <td>Pavload</td> <td># of pavload</td> <td></td> <td colspan="6"></td>		Prefix code	Prefix code	Set	Pavload	# of pavload							
Ack Set Color Temp Mode0xCC0x55040x350xE0 : OK Ox51 : NGreserved 	command	#0	#1	ID	Туре	bytes	Command	data #0	data #1	data #2	CS #0		
ModeNodeNameNameNameNameNameNameNameNameRead Color Temp Mode0xCC0x33140x35reserved (0x00)reserved (0x00)reserved (0x00)reserved (0x00)Header XOR PayloadAck Read Color Temp Mode0xCC0x55140x350xE0 : OK 0xE1 : NG0 : Cool 1 : Medium 2 : Warm 3 : Userreserved (0xFF)Header XOR PayloadSet Color Temp Red0xCC0x33040x360 ~ 255reserved (0x00)reserved (0x00)Header XOR PayloadAck Set Color Temp Red0xCC0x55040x360xE0 : OK 0xE1 : NGreserved (0xFF)Header XOR PayloadRead Color Temp Red0xCC0x33140x36reserved (0x00)reserved (0xFF)Header XOR PayloadRead Color Temp Red0xCC0x33140x36reserved (0x00)reserved (0xFF)reserved PayloadRead Color Color Temp Red0xCC0x55140x360xE0 : OK (0x00)0 ~ 255reserved (0xFF)Header XOR PayloadRead Color Color Temp0xCC0x55140x360xE0 : OK (0x00)0 ~ 255reserved (0xFF)Header XOR PayloadRead Color Color Temp0x55140x360xE0 : OK (0x01)0 ~ 255reserved (0xFF)Header XOR Payload </td <td>Ack Set Color Temp</td> <td>0xCC</td> <td>0x55</td> <td></td> <td>0</td> <td>4</td> <td>0x35</td> <td>0xE0 : OK 0xE1 : NG</td> <td>reserved (0xFF)</td> <td>reserved (0xFF)</td> <td>Header XOR Pavload</td>	Ack Set Color Temp	0xCC	0x55		0	4	0x35	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Pavload		
Read Color Temp Mode0xCC0x33140x35reserved (0x00)reserved (0x00)reserved (0x00)reserved (0x00)Header XOR PayloadAck Read Color Temp Mode0xCC0x55140x350xE0 : OK 0xE1 : NG0 : Cool 1 : Medium 2 : Warm 3 : User0 : Cool (0xFF)reserved PayloadHeader XOR 	Mode								(0,4,1)	(0/11.7)	. ayiouu		
Mode(0x00)(0x00)(0x00)(0x00)PayloadAck Read Color Temp Mode0xCC0x55140x350xE0 : OK 0xE1 : NG0 : Cool 1 : Medium (0xFF)reserved (0xFF)Header XOR PayloadSet Color Temp Red0xCC0x33040x360 ~ 255reserved (0x00)reserved (0x00)Header XOR PayloadAck Set Color Temp Red0xCC0x55040x360 ~ 255reserved (0x00)reserved (0xFF)Header XOR PayloadRead Color Temp Red0xCC0x33140x36reserved (0x00)reserved (0xFF)reserved (0xFF)Header XOR PayloadRead Color Temp Red0xCC0x55140x36reserved (0x00)reserved (0x00)reserved (0xFF)Header XOR PayloadRead Color Color Temp Red0xCC0x55140x360xE0 : OK (0xE1 : NG0 ~ 255reserved reserved (0xFF)Header XOR PayloadRead Color Color Temp0x55140x360xE0 : OK (0xE1 : NG0 ~ 255reserved reserved (0xFF)Header XOR Payload	Read Color	0xCC	0x33		1	4	0x35	reserved	reserved	reserved	Header XOR		
Ack Read Color Temp Mode0xCC0x55140x350xE0 : OK 0xE1 : NG0 : Cool 1 : Medium 2 : Warm 3 : Userreserved (0xFF)Header XOR PayloadSet Color Temp Red0xCC0x33040x360 ~ 255reserved (0x00)reserved (0x00)Header XOR PayloadAck Set Color Temp Red0xCC0x55040x360xE0 : OK 0x26reserved (0xFF)reserved (0x00)Header XOR PayloadRead Color Temp Red0xCC0x33140x36reserved (0xFF)reserved (0xFF)reserved PayloadRead Color Temp Red0xCC0x55140x36reserved (0x00)reserved (0x00)reserved (0x00)Header XOR PayloadRead Color Temp Red0xCC0x55140x36oxE0 : OK (0xE1 : NG0 ~ 255reserved (0xFF)Header XOR PayloadAck Read Color Temp0x55140x360xE0 : OK (0xE1 : NG0 ~ 255reserved (0xFF)Header XOR Payload	Mode							(0x00)	(0x00)	(0x00)	Payload		
Color Temp Mode0xCC0x33040x360 ~ 255reserved (0x00)reserved (0x00)PayloadSet Color Temp Red0xCC0x33040x360 ~ 255reserved (0x00)rese	Ack Read	0xCC	0x55		1	4	0x35	0xE0 : OK	0 : Cool	reserved	Header XOR		
Indec Image: Set Color Temp Red 0xCC 0x33 0 4 0x36 0 ~ 255 reserved (0x00) reserved (0xFF) Reader XOR Read 0xCC 0x33 1 4 0x36 reserved (0x00) reserved (0xFF) reserved (0xFF) Payload Read 0xCC 0x33 1 4 0x36 reserved (0x00) reserved (0x00) Payload Ack Read 0xCC 0x55 1 4 0x36 0xE0 : OK (0x00) 0 ~ 255 reserved (0x00) Payload Ack Read 0xCC 0x55 1 4 0x36 0xE0 : OK (0xE1 : NG) 0 ~ 255 reserved (0xFF) Payload Ded 0x26 0xE1 : NG 0x26 : OK (0xFF) 0 ~ 255 reserved (0xFF) Payload	Color Temp							0xE1 : NG	1 : Medium 2 · Warm	(0xFF)	Payload		
Set Color Temp Red0xCC0x33040x360 ~ 255reserved (0x00)reserved (0x00)Header XOR 	Mode								3 : User				
Ack Set Color Temp Red0xCC0x55040x36 00xE0 : OK 0xE1 : NG(0x00)Payload PayloadRead Color Temp Red0xCC0x33140x36reserved (0xFF)reserved (0xFF)reserved (0xFF)reserved (0xFF)Header XOR PayloadRead Color Temp Red0xCC0x33140x36reserved (0x00)reserved (0x00)reserved (0x00)reserved (0x00)Header XOR PayloadAck Read Color Temp0x55140x360xE0 : OK 0xE1 : NG0 ~ 255reserved (0xFF)Header XOR Payload	Set Color	0xCC	0x33		0	4	0x36	0 ~ 255	reserved	reserved	Header XOR		
Color Temp RedOxE1 : NG(0xFF)(0xFF)PayloadRead Color Temp Red0xCC0x33140x36reserved (0x00)reserved (0x00)reserved (0x00)reserved (0x00)Header XOR PayloadAck Read Color Temp0xCC0x55140x360xE0 : OK 0xE1 : NG0 ~ 255reserved (0xFF)Header XOR Payload	Ack Set	0xCC	0x55		0	4	0x36	0xE0 : OK	(0x00) reserved	(UXUU) reserved	Header XOR		
Red Output Output Output Output Output Read Color Temp Red 0xCC 0x33 1 4 0x36 reserved (0x00) reserved (0x00) reserved (0x00) reserved (0x00) Header XOR Payload Ack Read 0xCC 0x55 1 4 0x36 0xE0 : OK 0xE1 : NG 0 ~ 255 reserved reserved Header XOR Payload	Color Temp	0.000	0,000		Ĵ		0,100	0xE1 : NG	(0xFF)	(0xFF)	Payload		
Tead Color OxSS T 4 OxSS Teserved Tes	Red Read Color	0×00	0,22		1		0,26	recorned	record	record	Hoodor VOP		
Ack Read 0xCC 0x55 1 4 0x36 0xE0 : OK 0 ~ 255 reserved Header XOR Color Temp 0 0 0 0 0 255 Payload	Temp Red	UXCC	0x33			4	0x36	(0x00)	(0x00)	(0x00)	Payload		
Color Temp OxE1 : NG (0xFF) Payload	Ack Read	0xCC	0x55		1	4	0x36	0xE0 : OK	0 ~ 255	reserved	Header XOR		
	Color Temp							0xE1 : NG		(0xFF)	Payload		
Set Color 0xCC 0x33 0 4 0x37 0 ~ 255 reserved reserved Header XOR	Set Color	0xCC	0x33		0	4	0x37	0 ~ 255	reserved	reserved	Header XOR		
Temp (0x00) (0x00) Payload	Temp								(0x00)	(0x00)	Payload		
Ack Set 0xCC 0x55 0 4 0x37 0xE0 : 0K reserved reserved Header XOR	Ack Set	0xCC	0x55		0	4	0x37	0xE0 : OK	reserved	reserved	Header XOR		
Color Temp 0xE1 : NG (0xFF) (0xFF) Payload	Color Temp							0xE1 : NG	(0xFF)	(0xFF)	Payload		
Green Part Color Ov22 1 1 4 Ov27 reconcider reconcider VOP	Green Bood Color	0×00	0,22	<u> </u>	1	4	0,27	record	record	record	Hoodor VOP		
Temp (0x00) (0x00) Payload	Temp	0,000	0x33		1	4	0x37	(0x00)	(0x00)	(0x00)	Payload		
Green	Green												
Ack Read 0xCC 0x55 1 4 0x37 0xE0 : OK 0 ~ 255 reserved Header XOR	Ack Read	0xCC	0x55		1	4	0x37	0xE0 : OK 0xE1 : NG	0 ~ 255	reserved (0xFF)	Header XOR Pavload		
Green	Green							0xE1.HG			l'ayload		
Set Color 0xCC 0x33 0 4 0x38 0 ~ 255 reserved reserved Header XOR	Set Color	0xCC	0x33		0	4	0x38	0 ~ 255	reserved	reserved	Header XOR		
Ack Set 0xCC 0x55 0 4 0x38 0xE0 · OK reserved reserved Header XOB	Ack Set	0xCC	0x55		0	4	0x38	0xE0 : OK	(0x00) reserved	(0x00) reserved	Payload Header XOB		
Color Temp OxE1 : NG (0xFF) Payload	Color Temp	0,100	UNCC		Ŭ		0,100	0xE1 : NG	(0xFF)	(0xFF)	Payload		
Blue	Blue Bood Color	0×00	0,22		1		0,29	record	record	record	Hoodor VOP		
Temp Blue (0x00) (0x00) (0x00) Payload	Temp Blue	0,000	0x33		1	4	0x30	(0x00)	(0x00)	(0x00)	Payload		
Ack Read 0xCC 0x55 1 4 0x38 0xE0 : OK 0 ~ 255 reserved Header XOR	Ack Read	0xCC	0x55		1	4	0x38	0xE0 : OK	0 ~ 255	reserved	Header XOR		
Color Temp 0xE1 : NG (0xFF) Payload	Color Temp							0xE1 : NG		(0xFF)	Payload		
Set Black 0xCC 0x33 0 4 0x39 0 : Low reserved reserved Header XOR	Set Black	0xCC	0x33		0	4	0x39	0 : Low	reserved	reserved	Header XOR		
Level 1 : High (0x00) (0x00) Payload	Level							1 : High	(0x00)	(0x00)	Payload		
Ack Set 0xCC 0x55 0 4 0x39 0xE0 : OK reserved reserved Header XOR Black Level 0xE1 : NG (0xFF) (0xFF) Payload	Ack Set Black Level	0xCC	0x55		0	4	0x39	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload		
Read Black 0xCC 0x33 1 4 0x39 reserved reserved Header XOR	Read Black	0xCC	0x33		1	4	0x39	reserved	reserved	reserved	Header XOR		
Level (0x00) (0x00) (0x00) Payload	Level	0×00	0755	<u> </u>	1	4	0x20	(0x00)	(0x00)	(0x00)	Payload		
Black Level 0x35 0xE0 0x55 0xE0 0x55 0xE0 0x55 0xE0 0xE0	Black Level	0,00	0,00			4	0729	0xE1 : NG	1 : High	(0xFF)	Payload		
Set VGA 0xCC 0x33 0 4 0x3A reserved reserved Header XOR	Set VGA	0xCC	0x33		0	4	0x3A	reserved	reserved	reserved	Header XOR		
Adjust Auto (0x00) (0x00) Payload	Adjust Auto							(0x00)	(0x00)	(0x00)	Payload		

A6

Controlling the Multiple Product

		Heade	r (5	bytes)				Checksum (1byte)		
command	Prefix code #0	Prefix code #1	Set ID	Payload Type	# of payload bytes	Command	data #0	data #1	data #2	CS #0
Ack Set VGA Adjust Auto Mode	0xCC	0x55		0	4	0x3A	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload
Set VGA Adjust H Position	0xCC	0x33		0	4	0x3B	0~100	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set VGA adjust H Position	0xCC	0x55		0	4	0x3B	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload
Read VGA Adjust H Position	0xCC	0x33		1	4	0x3B	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read VGA Adjust H Position	0xCC	0x55		1	4	0x3B	0xE0 : OK 0xE1 : NG	1~100	reserved (0xFF)	Header XOR Payload
Set VGA Adjust V Position	0xCC	0x33		0	4	0x3C	0~100	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set VGA Adjust V Position	0xCC	0x55		0	4	0x3C	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload
Read VGA Adjust V Position	0xCC	0x33		1	4	0x3C	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read VGA Adjust V Position	0xCC	0x55		1	4	0x3C	0xE0 : OK 0xE1 : NG	1~100	reserved (0xFF)	Header XOR Payload
Set VGA Adjust Clock	0xCC	0x33		0	4	0x3D	0~100	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set VGA Adjust Clock	0xCC	0x55		0	4	0x3D	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload
Read VGA Adjust Clock	0xCC	0x33		1	4	0x3D	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read VGA Adjust Clock	0xCC	0x55		1	4	0x3D	0xE0 : OK 0xE1 : NG	1~100	reserved (0xFF)	Header XOR Payload
Set VGA Adjust Phase	0xCC	0x33		0	4	0x3E	0~100	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set VGA Adjust Phase	0xCC	0x55		0	4	0x3E	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload
Read VGA Adjust Phase	0xCC	0x33		1	4	0x3E	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read VGA Adjust Phase	0xCC	0x55		1	4	0x3E	0xE0 : OK 0xE1 : NG	1~100	reserved (0xFF)	Header XOR Payload
Set Picture Reset	0xCC	0x33		0	4	0x3F	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set Picture Reset	0xCC	0x55		0	4	0x3F	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload

Controlling the Multiple Product

MENU function (SOUND)

⇒ Protocol (data format).

		Heade	r (5	bytes)				Checksum (1byte)		
command	Prefix code #0	Prefix code #1	Set ID	Payload Type	# of payload bytes	Command	data #0	data #1	data #2	CS #0
Set Balance	0xCC	0x33		0	4	0x56	0 : L50 ~ 49 : L1 50 : 0 51 : R1 ~ 100 : R50	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set Balance	0xCC	0x55		0	4	0x56	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload
Read Balance	0xCC	0x33		1	4	0x56	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Balance	0xCC	0x55		1	4	0x56	0xE0 : OK 0xE1 : NG	0 : L50 ~ 49 : L1 50 : 0 51 : R1 ~ 100 : R50	reserved (0xFF)	Header XOR Payload
Set AVC	0xCC	0x33		0	4	0x57	0 : Off 1 : On	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set AVC	0xCC	0x55		0	4	0x57	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload
Read AVC	0xCC	0x33		1	4	0x57	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read AVC	0xCC	0x55		1	4	0x57	0xE0 : OK 0xE1 : NG	0 : Off 1 : On	reserved (0xFF)	Header XOR Payload
Set Volume	0xCC	0x33		0	4	0x58	0~100	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set Volume	0xCC	0x55		0	4	0x58	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload
Read Volume	0xCC	0x33		1	4	0x58	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Volume	0xCC	0x55		1	4	0x58	0xE0 : OK 0xE1 : NG	0~100	reserved (0xFF)	Header XOR Payload
Set Sound Reset	0xCC	0x33		0	4	0x59	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set Sound Reset	0xCC	0x55		0	4	0x59	0xE0 : OK 0xE1 : NG	(0xFF)	(0xFF)	Header XOR Payload

Controlling the Multiple Product

MENU function (SETUP)

⇒ Protocol (data format).

		Heade	er (5	bytes)				Checksum (1byte)		
command	Prefix code #0	Prefix code #1	Set ID	Payload Type	# of payload bytes	Command	data #0	data #1	data #2	CS #0
Set OSD Language	0xCC	0x33		0	4	0x70	0 : English 1 : Spanish 2 : French 3 : Italian 4 : Deutsch 5 : Polski 6 : Portuques 7 : Chinese 8 : Japanese 9 : Korean	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set OSD Language	0xCC	0x55		0	4	0x70	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload
Read OSD Language	0xCC	0x33		1	4	0x70	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read OSD Language	0xCC	0x55		1	4	0x70	0xE0 : OK 0xE1 : NG	0 : English 1 : Spanish 2 : French 3 : Italian 4 : Deutsch 5 : Polski 6 : Portuques 7 : Chinese 8 : Japanese 9 : Korean	reserved (0xFF)	Header XOR Payload
Set OSD Rotation	0xCC	0x33		0	4	0x71	0 : Landscape 1 : Portrait	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set OSD Rotation	0xCC	0x55		0	4	0x71	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload
Read OSD Rotation	0xCC	0x33		1	4	0x71	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read OSD Rotation	0xCC	0x55		1	4	0x71	0xE0 : OK 0xE1 : NG	0 : Landscape 1 : Portrait	reserved (0xFF)	Header XOR Payload
Set Overscan	0xCC	0x33		0	4	0x72	0 : Off 1 : On	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set Overscan	0xCC	0x55		0	4	0x72	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload
Read Overscan	0xCC	0x33		1	4	0x72	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Overscan	0xCC	0x55		1	4	0x72	0xE0 : OK 0xE1 : NG	0 : Off 1 : On	reserved (0xFF)	Header XOR Payload
Set ID Setup	0xCC	0x33		0	4	0x73	1~100	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set ID Setup	0xCC	0x55		0	4	0x73	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload

Controlling the Multiple Product

		Heade	er (5	bytes)				Checksum (1byte)		
command	Prefix code #0	Prefix code #1	Set ID	Payload Type	# of payload bytes	Command	data #0	data #1	data #2	CS #0
Set Key Lock	0xCC	0x33		0	4	0x74	0 : Off (Front key unlock) 1 : On (Front key lock)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set Key Lock	0xCC	0x55		0	4	0x74	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload
Read Key Lock	0xCC	0x33		1	4	0x74	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Key Lock	0xCC	0x55		1	4	0x74	0xE0 : OK 0xE1 : NG	0 : Off (Front key unlock) 1 : On (Front key lock)	reserved (0xFF)	Header XOR Payload
Set Screen Safe	0xCC	0x33		0	4	0x75	0 : Off 1 : On	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set Screen Safe	0xCC	0x55		0	4	0x75	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload
Read Screen Safe	0xCC	0x33		1	4	0x75	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Screen Safe	0xCC	0x55		1	4	0x75	0xE0 : OK 0xE1 : NG	0 : Off 1 : On	reserved (0xFF)	Header XOR Payload
Set Power Indicator	0xCC	0x33		0	4	0x76	0 : Off 1 : On	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set Power Indicator	0xCC	0x55		0	4	0x76	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload
Read Power Indicator	0xCC	0x33		1	4	0x76	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Power Indicator	0xCC	0x55		1	4	0x76	0xE0 : OK 0xE1 : NG	0 : Off 1 : On	reserved (0xFF)	Header XOR Payload
Set DPMS	0xCC	0x33		0	4	0x77	0 : Off 1 : On	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set DPMS	0xCC	0x55		0	4	0x77	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload
Read DPMS	0xCC	0x33		1	4	0x77	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read DPMS	0xCC	0x55		1	4	0x77	0xE0 : OK 0xE1 : NG	0 : Off 1 : On	reserved (0xFF)	Header XOR Payload
Set ABC	0xCC	0x33		0	4	0x78	0 : Off 1 : On	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set ABC	0xCC	0x55		0	4	0x78	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload
Read ABC	0xCC	0x33		1	4	0x78	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read ABC	0xCC	0x55		1	4	0x78	0xE0 : OK 0xE1 : NG	0 : Off 1 : On	reserved (0xFF)	Header XOR Payload
Set Factory Reset	0xCC	0x33		0	4	0x79	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload

Controlling the Multiple Product

		Heade	er (5	bytes)				Checksum (1byte)		
command	Prefix code #0	Prefix code #1	Set ID	Payload Type	# of payload bytes	Command	data #0	data #1	data #2	CS #0
Ack Set Factory Reset	0xCC	0x55		0	4	0x79	0xE0 : OK 0xE1 : NG	reserved (0xFF)	reserved (0xFF)	Header XOR Payload

MENU function (INFORMATION)

⇒ Protocol (data format).

		Heade	er (5 l	oytes)				Checksum (1byte)		
command	Prefix code #0	Prefix code #1	Set ID	Payload Type	# of payload bytes	Command	data #0	data #1	data #2	CS #0
Read Set ID	0xCC	0x33		1	4	0x90	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Set ID	0xCC	0x55		1	4	0x90	0xE0 : OK 0xE1 : NG	1~100	reserved (0xFF)	Header XOR Payload
Read F/W Version	0xCC	0x33		1	4	0x91	reserved (0x00)	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read F/W Version	0xCC	0x55		1	4	0x91	0xE0 : OK 0xE1 : NG	F/WLeft part	F/W Right part	Header XOR Payload

RS232C CheckSum

		Heade	er (5 k	oytes)				Checksum (1byte)		
command	Prefix code #0	Prefix code #1	Set ID	Payload Type	# of payload bytes	Command	data #0	data #1	data #2	CS #0
Set Power	0xCC	0x33		0	4	0x10	0 : 0ff 1 : On	reserved (0x00)	reserved (0x00)	Header XOR Payload

Х	Y	0
0	0	0
0	1	1
1	0	1
1	1	0
	XOR	ERSOURCE.NE

We can make CheckSum with Header (5 bytes) and Payload(4 bytes).

(Prefix code#0) XOR (Prefix code#1) XOR (Set ID) XOR (Command Payload Type) XOR
(# of Payload bytes) XOR (Command) XOR (data #0) XOR (data #1) XOR (data#2) =
CheckSum

For example:

(0xCC) XOR (0x33) XOR (0x01 = Set ID) XOR (0x00) XOR (0x04) XOR (0x10) XOR (0x01 = ON) XOR (0x00) XOR (0x00) = 0xEB

, A1[.]

HDMI CEC Protocol

Normal Function

⇒ Vendor Specific Data.

			Vendor Specific Data						
	OPCODE	VENDOR ID	Head	er (2 bytes)	Payload (fixe	d bytes : 3	bytes)	Checksum (1byte)	
command	Vendor Command With ID	VENDOR ID (3bytes)	Set ID	Payload Type	Command	data #0	data #1	CS #0	
Set Power	0xA0	0x3C 0xE6 0x24		0	0x10	0 : 0ff 1 : On	reserved (0x00)	Header XOR Payload	
Ack Set Power	0xA0	0x3C 0xE6 0x24		4	0x10	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload	
Set Input Source	0xA0	0x3C 0xE6 0x24		0	0x11	0x30 : VGA1 0x40 : DVI1 0x50 : HDMI1	reserved (0x00)	Header XOR Payload	
Ack Input Source	0xA0	0x3C 0xE6 0x24		4	0x11	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Pavload	
Read Input Source	0xA0	0x3C 0xE6 0x24		1	0x11	reserved (0x00)	reserved (0x00)	Header XOR Payload	
Ack Read Input Source	0xA0	0x3C 0xE6 0x24		5	0x11	0xE0 : OK 0xE1 : NG	0x30 : VGA1 0x40 : DVI1 0x50 : HDMI1	Header XOR Payload	
Set Screen Mute	0xA0	0x3C 0xE6 0x24		0	0x12	0 : mute off 1 : mute on	reserved (0x00)	Header XOR Payload	
Ack Set Screen Mute	0xA0	0x3C 0xE6 0x24		4	0x12	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload	
Read Screen Mute	0xA0	0x3C 0xE6 0x24		1	0x12	reserved (0x00)	reserved (0x00)	Header XOR Payload	
Ack Read Screen Mute	0xA0	0x3C 0xE6 0x24		5	0x12	0xE0 : OK 0xE1 : NG	0 : mute off 1 : mute on		
Set Fail Over	0xA0	0x3C 0xE6 0x24		0	0x13	0 : off Other : ON 1 : HDMI, DVI, Dsub 2 : HDMI, Dsub, DVI 3 : DVI, HDMI, Dsub 4 : DVI, Dsub, HDMI 5 : Dsub, HDMI, DVI 6 : Dsub, DVI, HDMI	reserved (0x00)	Header XOR Payload	
Ack Set Fail Over	0xA0	0x3C 0xE6 0x24		0	0x13	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload	

A12

			Vendor Specific Data					
	OPCODE	VENDOR ID	Head	er (2 bytes)	Payload (fixe	d bytes : 3	bytes)	Checksum (1byte)
command	Vendor Command With ID	VENDOR ID (3bytes)	Set ID	Payload Type	Command	data #0	data #1	CS #0
Read Fail Over	0xA0	0x3C 0xE6 0x24		1	0x13	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Fail Over	0xA0	0x3C 0xE6 0x24		1	0x13	0xE0 : OK 0xE1 : NG	0 : off Other : ON 1 : HDMI, DVI, Dsub 2 : HDMI, Dsub, DVI 3 : DVI, HDMI, Dsub 4 : DVI, Dsub, HDMI 5 : Dsub, HDMI, DVI 6 : Dsub, DVI, HDMI	Header XOR Payload
Set Remote Controller Key	0xA0	0x3C 0xE6 0x24		0	0x14	0x08 : POWER 0x43 : MENU 0x0B : INPUT 0x40 : UP 0x41 : DOWN 0x07 : LEFT 0x06 : RIGHT	reserved (0x00)	Header XOR Payload
Ack Set Remote Controller Key	0xA0	0x3C 0xE6 0x24		4	0x14	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Read Abnomal State	0xA0	0x3C 0xE6 0x24		1	0x17	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Abnormal State	0xA0	0x3C 0xE6 0x24		5	0x17	0xE0 : OK 0xE1 : NG	0 : Normal (power on and signal exist) 1 : No Signal (power on) 2 : Turn off by remote controller 3 : Turn off by local key 4 : Turn off by RS-232C function	Header XOR Payload
Read Lamp fault State	0xA0	0x3C 0xE6 0x24		1	0x18	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Lamp fault State	0xA0	0x3C 0xE6 0x24		5	0x18	0xE0 : OK 0xE1 : NG	0 : lamp fault 1 : lamp OK	Header XOR Payload

A13

			Vendor Specific Data					
	OPCODE	VENDOR ID	Head	er (2 bytes)	Payload (fixe	d bytes : 3	bytes)	Checksum (1byte)
command	Vendor Command With ID	VENDOR ID (3bytes)	Set ID	Payload Type	Command	data #0	data #1	CS #0
Set DCR	0xA0	0x3C 0xE6 0x24		0	0xA0	0 : Off 1 : On	reserved (0x00)	Header XOR Payload
Ack Set DCR	0xA0	0x3C 0xE6 0x24		4	0xA0	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Read DCR	0xA0	0x3C 0xE6 0x24		1	0xA1	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read DCR	0xA0	0x3C 0xE6 0x24		5	0xA1	0xE0 : OK 0xE1 : NG	0 : Off 1 : On	Header XOR Payload
Read Sub Version	0xA0	0x3C 0xE6 0x24		1	0xA2	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Sub Version	0xA0	0x3C 0xE6 0x24		5	0xA2	0xE0 : OK 0xE1 : NG	(Version No.)	Header XOR Payload
Read Input Resolution	0xA0	0x3C 0xE6 0x24		1	0xA3	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack 1 Read Input Resolution	0xA0	0x3C 0xE6 0x24		5	0xA3	Hwidth high bit(15:8)	Hwidth low bit(7:0)	Header XOR Payload
Ack 2 Read Input Resolution	0xA0	0x3C 0xE6 0x24		5	0xA3	Vhight high bit(15:8)	Vheight low bit(7:0)	Header XOR Payload
Read Lamp on time	0xA0	0x3C 0xE6 0x24		1	0xA4	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack 1 Read Lamp on time	0xA0	0x3C 0xE6 0x24		5	0xA4	lamp on time high bit(15:8)	lamp on time high bit(7:0)	Header XOR Payload
Set RS232	0xA0	0x3C 0xE6 0x24		0	0xA5	0xA5	0 : Off 1 : On	Header XOR Payload
Ack Set RS232	0xA0	0x3C 0xE6 0x24		4	0xA5	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Read RS232	0xA0	0x3C 0xE6 0x24		1	0xA6	0xA6	reserved (0x00)	Header XOR Payload
Ack Read RS232	0xA0	0x3C 0xE6 0x24		5	0xA6	0xE0 : OK 0xE1 : NG	0 : Off 1 : On	Header XOR Payload

MENU function (PICTURE)

⇒ Vendor Specific Data.

			Vendor Specific Data					
	OPCODE	VENDOR ID	He	ader (2 bytes)	Payload (fi	xed bytes	3 bytes)	Checksum (1byte)
command	Vendor Command With ID	VENDOR ID (3bytes)	Set ID	Payload Type	Command	data #0	data #1	CS #0
Set Picture Mode	0xA0	0x3C 0xE6 0x24		0	0x30	0 : Dynamic 1 : Normal 2 : Mild 3 : User	reserved (0x00)	Header XOR Payload
Ack Set Picture Mode	0xA0	0x3C 0xE6 0x24		4	0x30	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Read Picture Mode	0xA0	0x3C 0xE6 0x24		1	0x30	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Picture Mode	0xA0	0x3C 0xE6 0x24		5	0x30	0xE0 : OK 0xE1 : NG	0 : Dynamic 1 : Normal 2 : Mild 3 : User	Header XOR Payload
Set Brightness	0xA0	0x3C 0xE6 0x24		0	0x31	0~100	reserved (0x00)	Header XOR Payload
Ack Set Brightness	0xA0	0x3C 0xE6 0x24		4	0x31	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Read Brightness	0xA0	0x3C 0xE6 0x24		1	0x31	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Brightness	0xA0	0x3C 0xE6 0x24		5	0x31	0xE0 : OK 0xE1 : NG	0~100	Header XOR Payload
Set Contrast	0xA0	0x3C 0xE6 0x24		0	0x32	0~100	reserved (0x00)	Header XOR Payload
Ack Set Contrast	0xA0	0x3C 0xE6 0x24		4	0x32	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Read Contrast	0xA0	0x3C 0xE6 0x24		1	0x32	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Contrast	0xA0	0x3C 0xE6 0x24		5	0x32	0xE0 : OK 0xE1 : NG	0~100	Header XOR Payload
Set Sharpness	0xA0	0x3C 0xE6 0x24		0	0x33	0-4	reserved (0x00)	Header XOR Payload
Ack Set Sharpness	0xA0	0x3C 0xE6 0x24		4	0x33	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Read Sharpness	0xA0	0x3C 0xE6 0x24		1	0x33	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Sharpness	0xA0	0x3C 0xE6 0x24		5	0x33	0xE0 : OK 0xE1 : NG	0~100	Header XOR Payload
Set Backlight	0xA0	0x3C 0xE6 0x24		0	0x34	0~100	reserved (0x00)	Header XOR Payload
Ack Set Backlight	0xA0	0x3C 0xE6 0x24		4	0x34	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Read Backlight	0xA0	0x3C 0xE6 0x24		1	0x34	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Backlight	0xA0	0x3C 0xE6 0x24		5	0x34	0xE0 : OK 0xE1 : NG	0~100	Header XOR Payload

			Vendor Specific Data					
	OPCODE	VENDOR ID	Не	ader (2 bytes)	Payload (fix	ked bytes :	3 bytes)	Checksum (1byte)
command	Vendor Command With ID	VENDOR ID (3bytes)	Set ID	Payload Type	Command	data #0	data #1	CS #0
Set Color Temp Mode	0xA0	0x3C 0xE6 0x24		0	0x35	0 : Cool 1 : Medium 2 : Warm 3 : User	reserved (0x00)	Header XOR Payload
Ack Set Color Temp Mode	0xA0	0x3C 0xE6 0x24		4	0x35	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Read Color Temp Mode	0xA0	0x3C 0xE6 0x24		1	0x35	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Color Temp Mode	0xA0	0x3C 0xE6 0x24		5	0x35	0xE0 : OK 0xE1 : NG	0 : Cool 1 : Medium 2 : Warm 3 : User	Header XOR Payload
Set Color Temp Red	0xA0	0x3C 0xE6 0x24		0	0x36	0~255	reserved (0x00)	Header XOR Payload
Ack Set Color Temp Red	0xA0	0x3C 0xE6 0x24		4	0x36	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Read Color Temp Red	0xA0	0x3C 0xE6 0x24		1	0x36	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Color Temp Red	0xA0	0x3C 0xE6 0x24		5	0x36	0xE0 : OK 0xE1 : NG	0 ~ 255	Header XOR Payload
Set Color Temp Green	0xA0	0x3C 0xE6 0x24		0	0x37	0~255	reserved (0x00)	Header XOR Payload
Ack Set Color Temp Green	0xA0	0x3C 0xE6 0x24		4	0x37	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Read Color Temp Green	0xA0	0x3C 0xE6 0x24		1	0x37	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Color Temp Green	0xA0	0x3C 0xE6 0x24		5	0x37	0xE0 : OK 0xE1 : NG	0 ~ 255	Header XOR Payload
Set Color Temp Blue	0xA0	0x3C 0xE6 0x24		0	0x38	0~255	reserved (0x00)	Header XOR Payload
Ack Set Color Temp Blue	0xA0	0x3C 0xE6 0x24		4	0x38	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Read Color Temp Blue	0xA0	0x3C 0xE6 0x24		1	0x38	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Color Temp Blue	0xA0	0x3C 0xE6 0x24		5	0x38	0xE0 : OK 0xE1 : NG	0 ~ 255	Header XOR Payload
Set Black Level	0xA0	0x3C 0xE6 0x24		0	0x39	0 : Low 1 : High	reserved (0x00)	Header XOR Payload
Ack Set Black Level	0xA0	0x3C 0xE6 0x24		4	0x39	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Read Black Level	0xA0	0x3C 0xE6 0x24		1	0x39	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Black Level	0xA0	0x3C 0xE6 0x24		5	0x39	0xE0 : OK 0xE1 : NG	0 : Low 1 : High	Header XOR Payload
Set VGA Adjust Auto Mode	0xA0	0x3C 0xE6 0x24		0	0x3A	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set VGA Adjust Auto Mode	0xA0	0x3C 0xE6 0x24		4	0x3A	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Set VGA Adjust H Position	0xA0	0x3C 0xE6 0x24		0	0x3B	0~100	reserved (0x00)	Header XOR Payload
Ack Set VGA adjust H Position	0xA0	0x3C 0xE6 0x24		4	0x3B	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload

			Vendor Specific Data					
	OPCODE	VENDOR ID	Не	ader (2 bytes)	Payload (fiz	ked bytes :	3 bytes)	Checksum (1byte)
command	Vendor Command With ID	VENDOR ID (3bytes)	Set ID	Payload Type	Command	data #0	data #1	CS #0
Read VGA Adjust H Position	0xA0	0x3C 0xE6 0x24		1	0x3B	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read VGA Adjust H Position	0xA0	0x3C 0xE6 0x24		5	0x3B	0xE0 : OK 0xE1 : NG	0~100	Header XOR Payload
Set VGA Adjust V Position	0xA0	0x3C 0xE6 0x24		0	0x3C	0~100	reserved (0x00)	Header XOR Payload
Ack Set VGA Adjust V Position	0xA0	0x3C 0xE6 0x24		4	0x3C	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Read VGA Adjust V Position	0xA0	0x3C 0xE6 0x24		1	0x3C	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read VGA Adjust V Position	0xA0	0x3C 0xE6 0x24		5	0x3C	0xE0 : OK 0xE1 : NG	0~100	Header XOR Payload
Set VGA Adjust Clock	0xA0	0x3C 0xE6 0x24		0	0x3D	0~100	reserved (0x00)	Header XOR Payload
Ack Set VGA Adjust Clock	0xA0	0x3C 0xE6 0x24		4	0x3D	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Read VGA Adjust Clock	0xA0	0x3C 0xE6 0x24		1	0x3D	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read VGA Adjust Clock	0xA0	0x3C 0xE6 0x24		5	0x3D	0xE0 : OK 0xE1 : NG	0~100	Header XOR Payload
Set VGA Adjust Phase	0xA0	0x3C 0xE6 0x24		0	0x3E	0~100	reserved (0x00)	Header XOR Payload
Ack Set VGA Adjust Phase	0xA0	0x3C 0xE6 0x24		4	0x3E	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Read VGA Adjust Phase	0xA0	0x3C 0xE6 0x24		1	0x3E	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read VGA Adjust Phase	0xA0	0x3C 0xE6 0x24		5	0x3E	0xE0 : OK 0xE1 : NG	0~100	Header XOR Payload
Set Picture Reset	0xA0	0x3C 0xE6 0x24		0	0x3F	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set Picture Reset	0xA0	0x3C 0xE6 0x24		4	0x3F	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload

MENU function (SOUND)

⇒ Vendor Specific Data.

			Vendor Specific Data					
	OPCODE	VENDOR ID	Hea	ader (2 bytes)	Payload (fix	ed bytes :	3 bytes)	Checksum (1byte)
command	Vendor Command With ID	VENDOR ID (3bytes)	Set ID	Payload Type	Command	data #0	data #1	CS #0
Set Balance	0xA0	0x3C 0xE6 0x24		0	0x56	0 : L50 ~ 49 : L1 50 : 0 51 : R1 ~ 100 : R50	reserved (0x00)	Header XOR Payload
Ack Set Balance	0xA0	0x3C 0xE6 0x24		4	0x56	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Read Balance	0xA0	0x3C 0xE6 0x24		1	0x56	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Balance	0xA0	0x3C 0xE6 0x24		5	0x56	0xE0 : OK 0xE1 : NG	0 : L50 ~ 49 : L1 50 : 0 51 : R1 ~ 100 : R50	Header XOR Payload
Set AVC	0xA0	0x3C 0xE6 0x24		0	0x57	0 : Off 1 : On	reserved (0x00)	Header XOR Payload
Ack Set AVC	0xA0	0x3C 0xE6 0x24		4	0x57	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Read AVC	0xA0	0x3C 0xE6 0x24		1	0x57	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read AVC	0xA0	0x3C 0xE6 0x24		5	0x57	0xE0 : OK 0xE1 : NG	0 : Off 1 : On	Header XOR Payload
Set Volume	0xA0	0x3C 0xE6 0x24		0	0x58	0~100	reserved (0x00)	Header XOR Payload
Ack Set Volume	0xA0	0x3C 0xE6 0x24		4	0x58	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Read Volume	0xA0	0x3C 0xE6 0x24		1	0x58	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Volume	0xA0	0x3C 0xE6 0x24		5	0x58	0xE0 : OK 0xE1 : NG	0~100	Header XOR Payload
Set Sound Reset	0xA0	0x3C 0xE6 0x24		0	0x59	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set Sound Reset	0xA0	0x3C 0xE6 0x24		4	0x59	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload

MENU function (SETUP)

⇒ Vendor Specific Data.

			Vendor Specific Data					
	OPCODE	VENDOR ID	He	eader (2 bytes)	Payload (fix	ced bytes :	3 bytes)	Checksum (1byte)
command	Vendor Command With ID	VENDOR ID (3bytes)	Set ID	Payload Type	Command	data #0	data #1	CS #0
Set OSD Language	0xA0	0x3C 0xE6 0x24		0	0x70	0 : English 1 : Spanish 2 : French 3 : Italian 4 : Deutsch 5 : Polski 6 : Portuques 7 : Chinese 8 : Japanese 9 : Korean	reserved (0x00)	Header XOR Payload
Ack Set OSD Language	0xA0	0x3C 0xE6 0x24		4	0x70	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Read OSD Language	0xA0	0x3C 0xE6 0x24		1	0x70	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read OSD Language	0xA0	0x3C 0xE6 0x24		5	0x70	0xE0 : OK 0xE1 : NG	0 : English 1 : Spanish 2 : French 3 : Italian 4 : Deutsch 5 : Polski 6 : Portuques 7 : Chinese 8 : Japanese 9 : Korean	Header XOR Payload
Set OSD Rotation	0xA0	0x3C 0xE6 0x24		0	0x71	0 : Landscape 1 : Portrait	reserved (0x00)	Header XOR Payload
Ack Set OSD Botation	0xA0	0x3C 0xE6		4	0x71	0xE0 : OK	reserved	Header XOR
Read OSD Rotation	0xA0	0x3C 0xE6 0x24		1	0x71	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read OSD Rotation	0xA0	0x3C 0xE6 0x24		5	0x71	0xE0 : OK 0xE1 : NG	0 : Landscape 1 : Portrait	Header XOR Payload
Set Overscan	0xA0	0x3C 0xE6 0x24		0	0x72	0 : Off 1 : On	reserved (0x00)	Header XOR Payload
Ack Set Overscan	0xA0	0x3C 0xE6 0x24		4	0x72	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Read Overscan	0xA0	0x3C 0xE6 0x24		1	0x72	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Overscan	0xA0	0x3C 0xE6 0x24		5	0x72	0xE0 : OK 0xE1 : NG	0 : Off 1 : On	Header XOR Pavload
Set ID Setup	0xA0	0x3C 0xE6 0x24		0	0x73	1~100	reserved (0x00)	Header XOR Payload
Ack Set ID Setup	0xA0	0x3C 0xE6 0x24		4	0x73	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload

			Vendor Specific Data					
	OPCODE	VENDOR ID	He	eader (2 bytes)	Payload (fix	ked bytes :	3 bytes)	Checksum (1byte)
command	Vendor Command With ID	VENDOR ID (3bytes)	Set ID	Payload Type	Command	data #0	data #1	CS #0
Set Key Lock	0xA0	0x3C 0xE6 0x24		0	0x74	0 : Off (Front key unlock) 1 : On (Front key lock)	reserved (0x00)	Header XOR Payload
Ack Set Key Lock	0xA0	0x3C 0xE6 0x24		4	0x74	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Read Key Lock	0xA0	0x3C 0xE6 0x24		1	0x74	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Key Lock	0xA0	0x3C 0xE6 0x24		5	0x74	0xE0 : OK 0xE1 : NG	0 : Off (Front key unlock) 1 : On (Front key lock)	Header XOR Payload
Set Screen Safe	0xA0	0x3C 0xE6 0x24		0	0x75	0 : Off 1 : On	reserved (0x00)	Header XOR Payload
Ack Set Screen Safe	0xA0	0x3C 0xE6 0x24		4	0x75	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Read Screen Safe	0xA0	0x3C 0xE6 0x24		1	0x75	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Screen Safe	0xA0	0x3C 0xE6 0x24		5	0x75	0xE0 : OK 0xE1 : NG	0 : Off 1 : On	Header XOR Payload
Set Power Indicator	0xA0	0x3C 0xE6 0x24		0	0x76	0 : Off 1 : On	reserved (0x00)	Header XOR Payload
Ack Set Power Indicator	0xA0	0x3C 0xE6 0x24		4	0x76	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Read Power Indicator	0xA0	0x3C 0xE6 0x24		1	0x76	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Power Indicator	0xA0	0x3C 0xE6 0x24		5	0x76	0xE0 : OK 0xE1 : NG	0 : Off 1 : On	Header XOR Payload
Set DPMS	0xA0	0x3C 0xE6 0x24		0	0x77	0 : Off 1 : On	reserved (0x00)	Header XOR Payload
Ack Set DPMS	0xA0	0x3C 0xE6 0x24		4	0x77	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Read DPMS	0xA0	0x3C 0xE6 0x24		1	0x77	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read DPMS	0xA0	0x3C 0xE6 0x24		5	0x77	0xE0 : OK 0xE1 : NG	0 : Off 1 : On	Header XOR Payload
Set ABC	0xA0	0x3C 0xE6 0x24		0	0x78	0 : Off 1 : On	reserved (0x00)	Header XOR Payload
Ack Set ABC	0xA0	0x3C 0xE6 0x24		4	0x78	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload
Read ABC	0xA0	0x3C 0xE6 0x24		1	0x78	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read ABC	0xA0	0x3C 0xE6 0x24		5	0x78	0xE0 : OK 0xE1 : NG	0 : Off 1 : On	Header XOR Pavload
Set Factory Reset	0xA0	0x3C 0xE6 0x24		0	0x79	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Set Factory Reset	0xA0	0x3C 0xE6 0x24		4	0x79	0xE0 : OK 0xE1 : NG	reserved (0xFF)	Header XOR Payload

MENU function (INFORMATION)

⇒ Vendor Specific Data.

	OPCODE	VENDOR ID	He	eader (2 bytes)	Payload (fixe	Checksum (1byte)		
command	Vendor Command With ID	VENDOR ID (3bytes)	Set ID	Payload Type	Command	data #0	data #1	CS #0
Read Set ID	0xA0	0x3C 0xE6 0x24		1	0x90	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read Set ID	0xA0	0x3C 0xE6 0x24		5	0x90	0xE0 : OK 0xE1 : NG	1~100	Header XOR Payload
Read F/W Version	0xA0	0x3C 0xE6 0x24		1	0x91	reserved (0x00)	reserved (0x00)	Header XOR Payload
Ack Read F/W Version	0xA0	0x3C 0xE6 0x24		5	0x91	F/WLeft part	F/WRight part	Header XOR Payload

HDMI CEC CheckSum

					a			
	OPCODE	VENDOR ID	Head	er (2 bytes)	Payload (fixed bytes : 3 bytes)		Checksum (1byte)	
command	Vendor Command With ID	VENDOR ID (3bytes)	Set ID	Payload Type	Command	data #0	data #1	CS #0
Set Power	0xA0	0x3C 0xE6 0x24		0	0x10	0 : 0ff 1 : On	reserved (0x00)	Header XOR Pavload

Х	Υ	0
0	0	0
0	1	1
1	0	1
1	1	0
	XOR	ERSOURCE.NE

We can make CheckSum with Vendor Specific Data.

(Set ID) XOR (Payload Type) XOR (Command) XOR (Data #0) XOR (Data #1) = CheckSum

For example:

(0x01) XOR (0x00) XOR (0xA0) XOR (0x00) XOR (0x00) = 0xA1

A2

Make sure to read the Safety Precautions before using the product.

Keep the Owner's Manual(CD) in an accessible place for future reference.

The model and serial number of the SET is located on the back and one side of the SET. Record it below should you ever need service.

ENERGY STAR is a set of power-saving guidelines issued by the U.S.Environmental Protection Agency(EPA).



This product qualifies for ENERGY STAR in the "factory default" setting and this is the setting in which power savings will be achieved. Changing the factory default picture setting or enabling other features will increase power consumption that could exceed the limits necessary to qualify for Energy Star rating.

Temporary noise is normal when powering ON or OFF this device.

MODEL

SERIAL _