ATTACHMENT E.

- USER'S MANUAL -

Hyundai Plasma Display

PD421
User's Guide

IMPORTANT TIPS

Image Retention effect —

Image retention effect could be seen if still picture is continuously displayed for a certain period of time as a feature of Plasma display panel.

To avoid this effect, use the product with reduced brightness and contrast especially when a still image is displayed for long time. (example:contrast 75, brightness 50)

Once Image retention is created, change the mode into Video mode which displays more motions. This can help to reduce Image retention effect but cannot completely eliminate once it occurs. Especially, when a fixed pattern is frequently used, screen's brightness may be worsened. *(For more details, see the page 25)*

Pixel Defect —

Plasma panel is made of a group of refined pixels (cells). When the Panel has 99.9% of pixels approved, that is normal product. Therefore, please do not think it is a faulty product if some pixels of a panel flickers or off all the time.

U.S.A.

U.S.FEDERAL COMMUNICATIONS COMMISSION
RADIO FREQUENCY INTERFERENCE STATEMENT
INFORMATION TO THE USER

NOTE : This equipment has been tested and found to comply with the limits for a
        Class B digital device pursuant to Part 15 of the FCC Rules.
These limits are designed to provide reasonable protection against harmful
interference in a residential installation.
This equipment generates, uses, and can radiate radio frequency energy and, if
not installed and used in accordance with the instructions, may cause harmful
interference to radio communications.
However, there is no guarantee that interference will not occur in a particular
installation.
If this equipment does cause harmful interference to radio or television reception,
which can be determined by turning the equipment off and on, the user is
encouraged to try to correct the interference by one or more of the following
measures:

• Reorient or relocate the receiving antenna.
• Increase the separation between the equipment and receiver.
• Connect the equipment into an outlet of a circuit different from that to which
  the receiver is connected.
• Consult the dealer or an experienced radio/TV technician for assistance.

Changes or modification not expressly approved by the party responsible for
compliance could void the user's authority to operate the equipment.
Connecting of peripherals requires the use of grounded shielded signal cables.

# Contents

Safety Precaution

**The contents of this section are provided for the safety of users and their property.
Please read the contents before using.**

Safety instructions are divided into "warning" and "alert". Their meanings are as follows.

⚠ This pictorial sign is used when a caution is needed on a potentially dangerous items and operations.

⚠ **Warning :** When there is a possibility of serious injury or death upon violation of the displayed instruction.

⚠ **Alert :** When there is a possibility of slight injury or product damage upon violation of the displayed instruction.
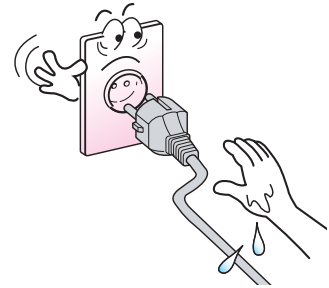
⚠ Warning

Firmly plus the power cord so that it does not pull out.
- Unstable connection may cause fire.
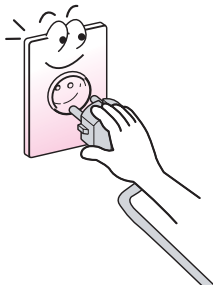
Do not use damaged power cord or plug, or loose outlet.
- They may cause electric shock or fire.
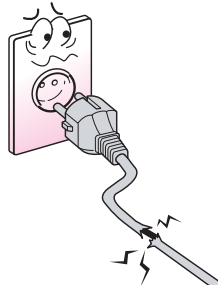
Never touch power plug with wet hand.
- They may cause electrocution.

Do not put water bowl, vase, candle, bug repellant smoke, cigarette, small metal palette, or heavy thing on a PDP.
- It may cause electric shock or fire and also heavy things may cause injury when it falls.
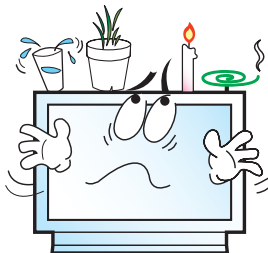
Do not install in a place where there are oil, smoke, or humidity, or where water is sprinkled or in a car.
- They may cause electric shock or fire.
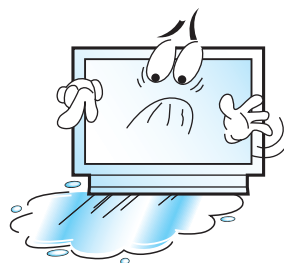
Do not install on an unstable place or small support.
- If a child touch a PDP on such place while playing, PDP may fall and injury the child.

Do not use or store flammable spray or inflammables in a place near a PDP.
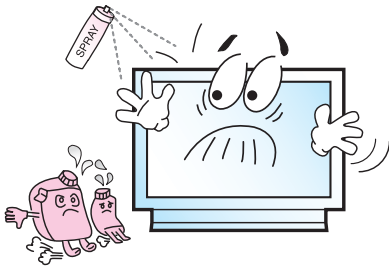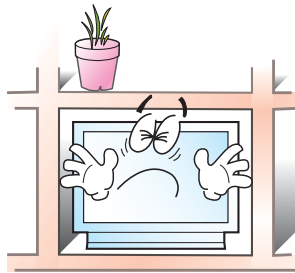
– They may cause explosion or fire.

Do not install a PDP in a bookshelf, closet, or a place where air is not well circulated.

– Fire may be caused due to the rise of internal temperature.

Bend an antenna line downward on a point where the line pass through from outdoor to indoor so that rainwater may not penetrate indoor.

– If raindrop gets into a PDP, fire or electric shock may be caused.
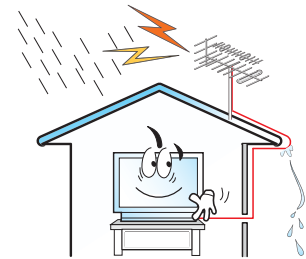
Never separate, fix, or modify at user's discretion.

– When there is a need for fixing, call a service center. Fire or electric shock may be caused.

Do not put a metallic object like chopstick, wire, or puncher or inflammables like paper or a match in a vent, headphone jack, or AV jacks of PDP.

– Electric shock or fire may be caused.

When a PDP produces abnormal noise, burning smell, or smoke, unplug the PDP immediately and call a service center.

– Electric shock or fire may be caused.
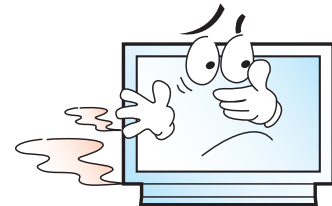
⚠ Warning

Unplug when you do not use your PDP for long time.

– If dust is stacked on a PDP, electric shock or fire may be caused from heat, fire, or deterioration of insulation.

When moving a PDP, 2 or more people are advised to carry it.

– Injury or damage may be caused when a PDP falls.
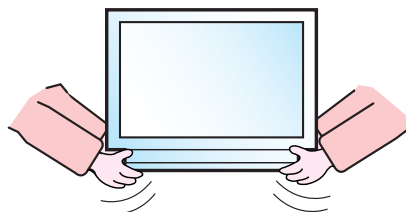
Consult a service center or customer service for inside cleaning about once a year.

– When dust is collected inside a PDP for long time, fire or malfunction may be caused.

Contents of the Package

To purchase additional parts, consult a distributor or selling agent.

Remote Control/2 Batteries
(1.5V AA)
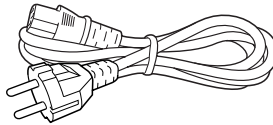
Power cord
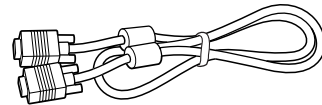
PC signal cable
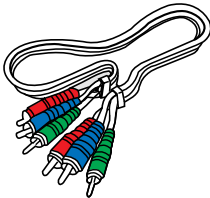
Component(Y, Pb, Pr) Cable
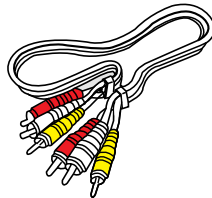
Composite(Video & Audio) cable
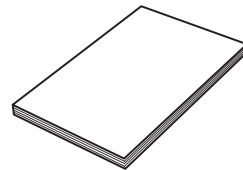
User's Guide

Separately Sold Products

If you want to purchase separately sold products, consult a service center, electronics shops, or parts seller.
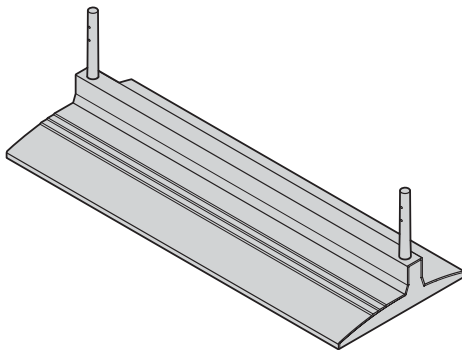
Desk type stand

Desk type speaker
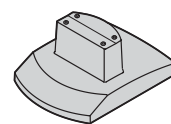
Desk type speaker stand
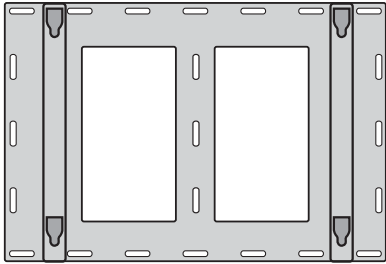
Fixed wall mount frame
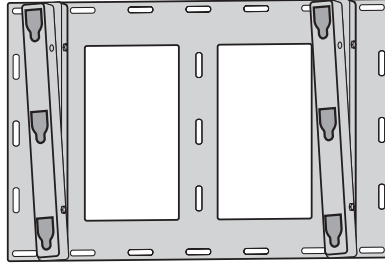
Adjustable wall mount frame
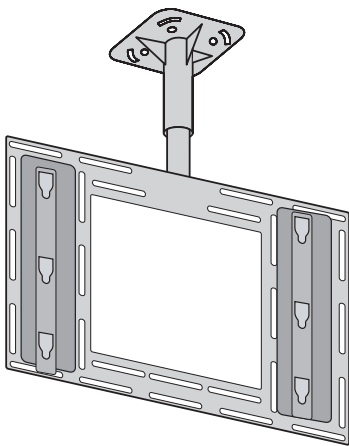
Ceiling mount frame
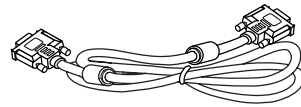
DVI PC video(digital) cable
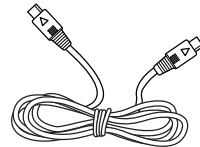
S-video cable

Parts Names and Functions

Front View
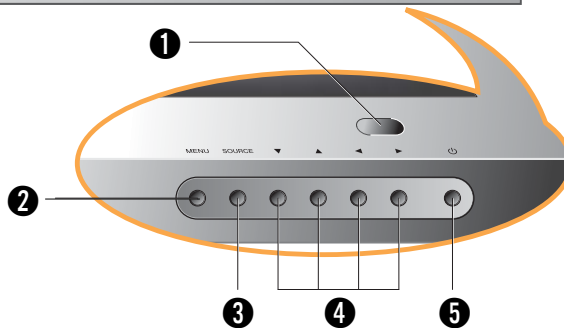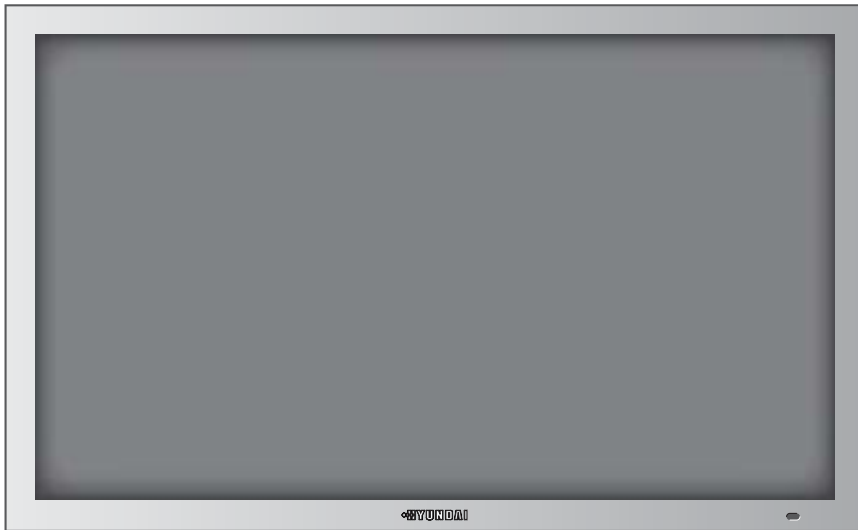
❶ **Remote sensor and power LED.**
Point the remote control toward here. It displays standby or operation status.

❷ **Menu button**
Use this button to display or exit from menus.

❸ **Source button(Page 11~14)**
Use this button to switch among inputs connected to PDP.
PC, DVI, DTV, DVD, S-VIDEO, VIDEO, SCART are sequentially chosen.

❹ **▲▼◀▶buttons**
Use these buttons to select menu items and to make adjustments.
When no menu is displayed, you can use the ◀▶buttons to adjust the volume level.

❺ **Power button:**
Use this button to turn on or off a PDP

Rear View
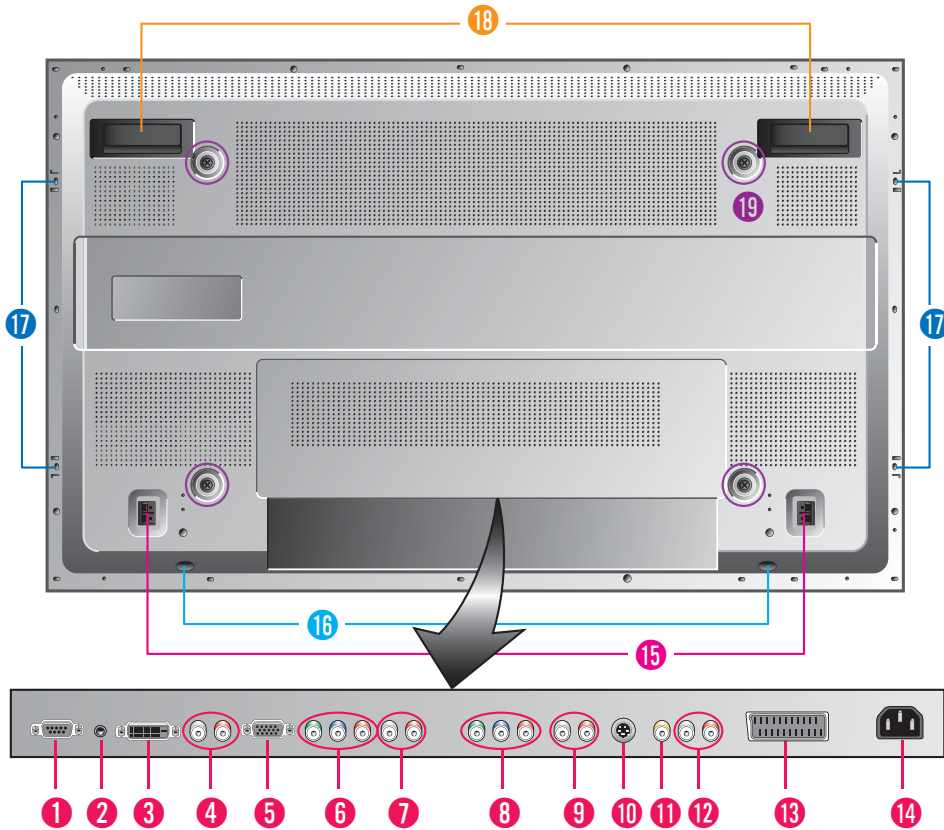
① **RS-232 input terminal**
Connect to the RS-232 terminal of a PC for the service check.
*For the control method using this terminal, consult an authorized Hyundai PDP dealer.

② **Phone Jack**
Extend an RS-232 input.

③ **DVI input terminal(Page 14)**
Connect to the video output terminal of a PC.
*Provided the PC has a digital output terminal.

④ **PC audio input terminal**
Connect to the audio output terminal of a PC.

⑤ **D-SUB input terminal**
Connect to the video output terminal of a PC.

⑥ **Component input terminal for DTV(Page 13)**
Connect to the Component output terminal of DTV receiver for Digital broadcast.

⑦ **Audio input terminal for DTV**
Connect to the audio output terminal of DTV receiver.

⑧ **Component input terminal for DVD(Page 12)**
Connect to the Component output terminal of DVD player.

⑨ **Audio input terminal for DVD**
Connect to the audio output terminal of DVD player.

⑩ **S-video input terminal(Page 11)**
Use this for the better video quality than video input terminal.

⑪ **Video Composite input terminal for VCR**
Connect to the Composite Video output terminal of VCR or DVD player.

⑫ **Audio input terminal for VCR**
Connect this when S-video or Composite Video inputs.

⑬ **SCART input terminal**
For Composite Video inputs and audio inputs used in the European area.

⑭ **Power input terminal**
Power cord is connected here.

⑮ **Speaker terminal**
⑯ **Stand assembly**
⑰ **Speaker assembly**
⑱ **Carrying handles**
⑲ **Screw hole for fixing on a wall**

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Remote Control

PICTURE

⑳ ⑲ ⑳

MUTE ⑥ — ① POWER/STANDBY

MUTE   POWER/STANDBY

PICTURE

SOUND   STILL

SOUND ⑱ — ② STILL

ASPECT RATIO ⑰ — ③ MENU

ASPECT   MENU

— ④ SELECT/ADJUST

SLEEP   INFO

SLEEP ⑯ — ⑤ INFO

— ⑥ MUTE

MUTE

VOL ⑦ — ⑦ VOL

VOL▼   ▲VOL

— ⑧ INPUT SOURCE

PC AUTO ⑮

PC AUTO   INPUT SOURCE

MODE ⑭ — ⑨ SOURCE(MULTI SCREEN)

PIP ON/OFF   MODE   SOURCE

PIP ON/OFF ⑬

P
I
P

POSITION   SIZE   SWAP

POSITION ⑫ — ⑩ SWAP

1   2   3

— ⑪ SIZE

4   5   6

NOT USED ⑳

7   8   9

*   0   #

•HYUNDAI
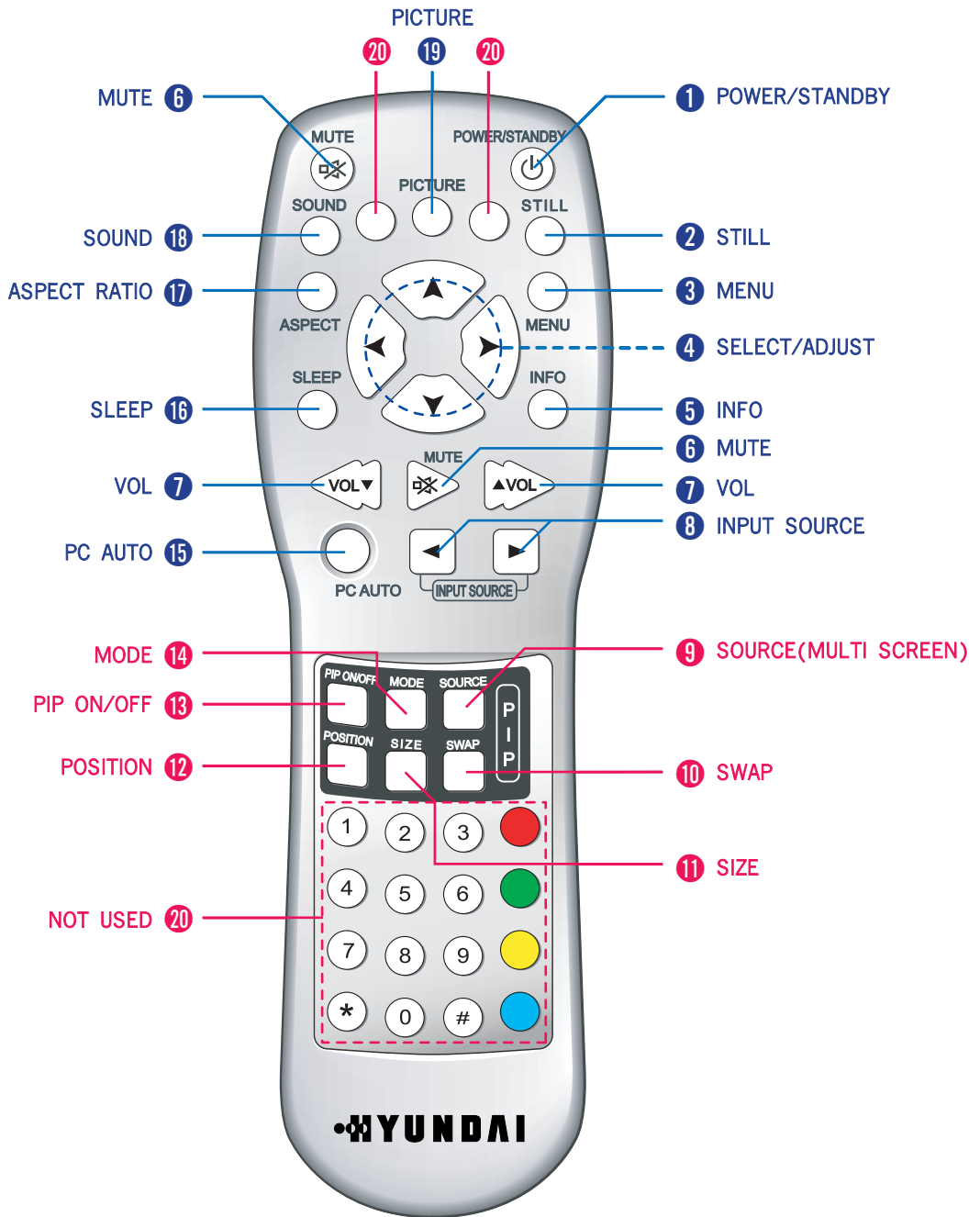
1 POWER/STANDBY
Power ON and OFF the product.

2 STILL
Hold a picture.

3 MENU
Display or exit from menu.

4 SELECT/ADJUST BUTTONS
Select or adjust each item of menu.

5 INFO
For the information such as picture mode, resolution, and so forth.

6 MUTE
Make no sound.

7 VOL
Control volume.

8 INPUT SOURCE
Select input wanted among inputs connected to PDP

9 SOURCE(MULTI SCREEN)
Select input signals of Sub picture.

10 SWAP
Switch main picture and Sub picture.

11 SIZE
Change the size of Sub picture.

12 POSITION
Change the position of Sub picture.

13 PIP(PICTURE IN PICTURE) ON/OFF
Watch more than one picture at once.

14 MODE
Multi picture or Dual picture is in use.

15 PC AUTO
Automatically adjust setting according to the frequency and resolution selected in a PC mode.

16 SLEEP
Turn off a PDP after a preset time.

17 ASPECT RATIO
Change the size of picture.

18 SOUND
Select the status of sound.

19 PICTURE
Select a mode of picture.

20 The buttons are reserved for functions coming with later models and do not currently operate.

How to Insert Batteries in a Remote Control
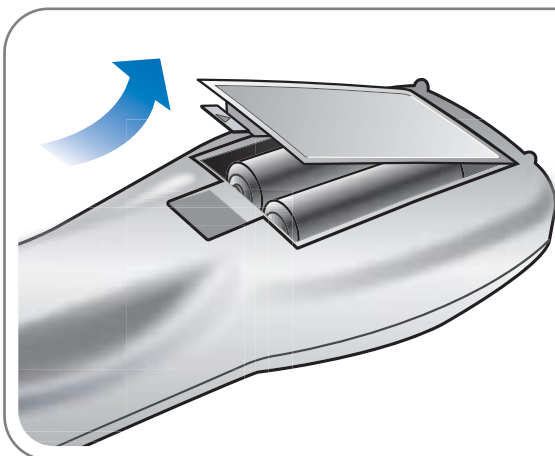
1. Press and hold △ part and push to open cover.

2. Insert batteries with proper polarities of + and - .

3. Use the remote control with cover closed.

*Battery type : 1.5V/UM-3(AA/R06)

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Connections

Connecting VCR, Cable/Satellite Receiver

Connection Method

1 Connect Video/S-Video cable between Video/S-Video output terminal of VCR or Cable/Satellite receiver and Video/S-Video input terminal of PDP.
(Connect cables and terminal in the same colors)

2 Connect Audio cable (left:white color, right:red color) between Audio output terminal of VCR or cable/satellite receiver and Audio input terminal of PDP.
(Connect cables and terminal in the same colors)

VCR/Cable Receiver

ANT IN   (R)   (L)   ANT OUT
VIDEO S-VIDEO   AUDIO

S-VIDEO   VIDEO COMPOSITE   SCART   AC IN
VIDEO   (L) AUDIO (R)

POWER Cable

AUDIO Cable

S-VIDEO Cable

VIDEO Cable

How to Watch

1 Turn on the PDP and press [◄] [►] of remote control to select either Video or S-video.
INPUT SOURCE

● You can select ⇔ PC ⇔ DVI ⇔ DTV ⇔ DVD ⇔ S-VIDEO ⇔ VIDEO ⇔ SCART ⇔ in order.

2 VCR play : Turn on the VCR and insert a tape and play it.
Cable/Satellite receiver play : Turn on the receiver and select a channel.

● Read a user manual of VCR, Cable/Satellite Receiver for more details.

TIP Use S-video cables for better picture quality.

CONNECTIONS

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Connecting a DVD player

Connection Method

1 Connect video cables(Y, Pb, Pr) between output terminals(Y, Pb, Pr) of DVD player and the input terminals(Y, Pb, Pr) of Component(480i) on the rear of PDP.
(Connect cables and terminal in the same colors)

2 Connect Audio cable between Audio output terminal of DVD player and Audio input terminal for DVD Audio on the rear of PDP.
(Connect cables and terminal in the same colors)

When DVD player supports the progressive scan(480p), connect to the Y, Pb, Pr input terminals for DTV on the rear of PDP.

DVD Player

DVD COMPONENT(480i)   S-VIDEO   VIDEO COMPOSITE
Y   Pb   Pr   (L)-AUDIO-(R)   VIDEO   (L)-AUDIO-(R)   SCART

AUDIO   VIDEO   COMPONENT VIDEO   S-VIDEO

VIDEO(Y, Pb, Pr) Cable

AUDIO Cable
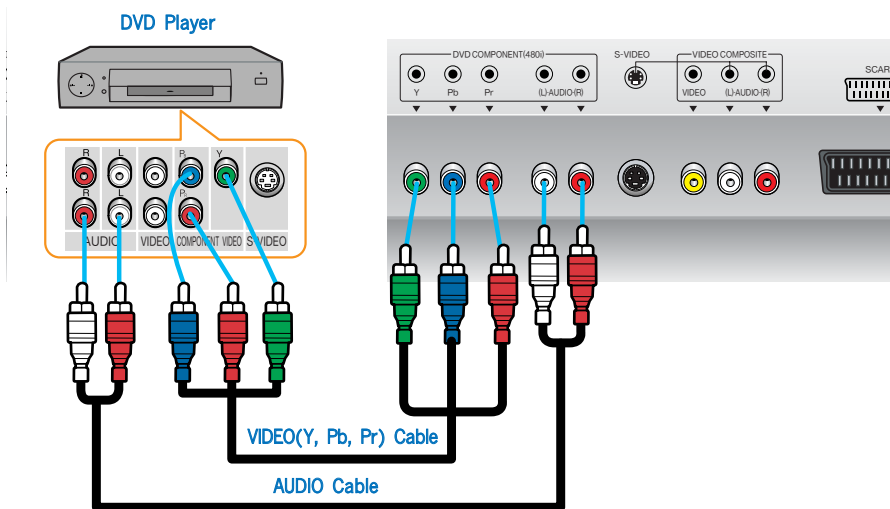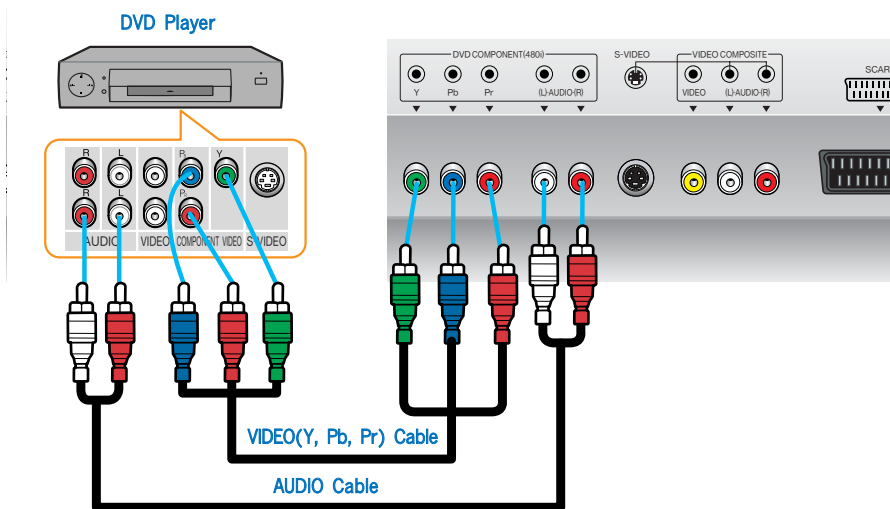
How to watch

1 Turn on the PDP and press [◄] [►] **INPUT SOURCE** of remote control to select DVD.

● You can select ⇔ PC ⇔ DVI ⇔ DTV ⇔ DVD ⇔ S-VIDEO ⇔ VIDEO ⇔ SCART ⇔ in order.

2 Turn on a DVD player and use it.

● Read the user manual of DVD player for more details.

TIP Output terminal mark(Y, Pb, and Pr) of DVD player may be written as Y, B-Y, R-Y/Y-Cb-Cr /Y-Pb-Pr. (It depends on DVD player)

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Connecting DTV(Digital Broadcast) Receiver

Connection Method

1 Connect video cables(Y, Pb, Pr) between output terminals(Y, Pb, Pr) of DTV Receiver and the input terminals(Y, Pb, Pr) of Component(480p/720p/1080i) on the rear of PDP. (Connect cables and terminal in the same colors)

2 Connect Audio cable between Audio output terminal of DTV Receiver and Audio input terminal for DTV Audio on the rear of PDP. (Connect cables and terminal in the same colors)

VIDEO(Y, Pb, Pr) Cable

AUDIO Cable

How to Watch

1 Turn on the PDP and press [◄] [►] of remote control to select DTV.

INPUT SOURCE

● You can select ⇔ PC ⇔ DVI ⇔ DTV ⇔ DVD ⇔ S-VIDEO ⇔ VIDEO ⇔ SCART ⇔ in order.

2 Turn on the DTV receiver and use it.

● Read the user manual for DTV receiver for more details.

TIP To watch digital broadcast, you have to separately purchase a digital set-top box and connect it to PDP.

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Connecting to a PC(DVI, D-SUB)

Connection Method

1 Connect PC signal cable(15 pins D-sub) between output terminal of PC and the D-sub input terminal of a PDP. In case of DVI(Digital) cable, connect it between output terminal for DVI(DIGITAL) of PC and input terminal for DVI of PDP.

2 Connect Audio cable between Audio output terminal of PC and Audio input terminal for PC of PDP. (Connect cables and terminal in the same colors)

AUDIO Cable

DVI Cable(DIGITAL)

D-SUB Cable(15pin)

When Using As a PC Monitor

1 Turn on the PDP and press ◄ ► INPUT SOURCE of remote control to select PC.

● You can select ⇔ PC ⇔ DVI ⇔ DTV ⇔ DVD ⇔ S-VIDEO ⇔ VIDEO ⇔ SCART ⇔ in order.

2 Turn on the PC and use it. (Refer to page 15 on the back for the supported resolutions for PC)

● When using DVI, select DVI to press Source button.

TIP DVI cable provides better picture quality.
This product supports plug-and-play function.
We recommend the above method if the satellite receiver supports DTV signal
with DVI(Digital) and D-sub(15 pin) cable for the better quality picture.

CONNECTIONS

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Resolutions Supported in PC

Resolution	Horizontal frequency	Vertical frequency
640 x 350	31.47	70.09
	37.86	85.08
640 x 480	31.47	59.94
	37.86	72.80
	37.50	75.00
	43.27	85.01
720 x 400	31.47	70.08
800 x 600	37.88	60.32
	48.08	72.18
	46.88	75.00
	53.67	85.06
832 x 624	49.72	74.55
1024 x 768	48.36	60.00
	60.02	75.03
	68.68	85.00

* Recommend Resolution is 800x600@60Hz

Connections

Connecting VCR, Cable/Satellite Receiver

Connection Method

1 Connect Video/S-Video cable between Video/S-Video output terminal of VCR or Cable/Satellite receiver and Video/S-Video input terminal of PDP.
(Connect cables and terminal in the same colors)

2 Connect Audio cable (left:white color, right:red color) between Audio output terminal of VCR or cable/satellite receiver and Audio input terminal of PDP.
(Connect cables and terminal in the same colors)

How to Watch

1 Turn on the PDP and press ◄ ► (INPUT SOURCE) of remote control to select either Video or S-video.

● You can select ⇔ PC ⇔ DVI ⇔ DTV ⇔ DVD ⇔ S-VIDEO ⇔ VIDEO ⇔ SCART ⇔ in order.

2 VCR play : Turn on the VCR and insert a tape and play it.
Cable/Satellite receiver play : Turn on the receiver and select a channel.

● Read a user manual of VCR, Cable/Satellite Receiver for more details.

TIP Use S-video cables for better picture quality.

Connecting DTV(Digital Broadcast) Receiver

Connection Method

1 Connect video cables(Y, Pb, Pr) between output terminals(Y, Pb, Pr) of DTV Receiver and the input terminals(Y, Pb, Pr) of Component(480p/720p/1080i) on the rear of PDP. (Connect cables and terminal in the same colors)

2 Connect Audio cable between Audio output terminal of DTV Receiver and Audio input terminal for DTV Audio on the rear of PDP. (Connect cables and terminal in the same colors)

DTV Receiver

VIDEO(Y, Pb, Pr) Cable

AUDIO Cable

How to Watch

1 Turn on the PDP and press [◀] [▶] INPUT SOURCE of remote control to select DTV.

● You can select ⇔ PC ⇔ DVI ⇔ DTV ⇔ DVD ⇔ S-VIDEO ⇔ VIDEO ⇔ SCART ⇔ in order.

2 Turn on the DTV receiver and use it.

● Read the user manual for DTV receiver for more details.

TIP To watch digital broadcast, you have to separately purchase a digital set-top box and connect it to PDP.

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Connecting to a PC(DVI, D-SUB)

Connection Method

1 Connect PC signal cable(15 pins D-sub) between output terminal of PC and the D-sub input terminal of a PDP. In case of DVI(Digital) cable, connect it between output terminal for DVI(DIGITAL) of PC and input terminal for DVI of PDP.

2 Connect Audio cable between Audio output terminal of PC and Audio input terminal for PC of PDP. (Connect cables and terminal in the same colors)

AUDIO Cable

DVI Cable(DIGITAL)

D-SUB Cable(15pin)

When Using As a PC Monitor

1 Turn on the PDP and press [◄] [►] of remote control to select PC.
INPUT SOURCE

● You can select ⇔ PC ⇔ DVI ⇔ DTV ⇔ DVD ⇔ S-VIDEO ⇔ VIDEO ⇔ SCART ⇔ in order.

2 Turn on the PC and use it. (Refer to page 15 on the back for the supported resolutions for PC)

● When using DVI, select DVI to press Source button.

TIP
DVI cable provides better picture quality.
This product supports plug-and-play function.
We recommend the above method if the satellite receiver supports DTV signal
with DVI(Digital) and D-sub(15 pin) cable for the better quality picture.

Resolutions Supported in PC

Resolution	Horizontal frequency	Vertical frequency
640 x 350	31.47	70.09
	37.86	85.08
640 x 480	31.47	59.94
	37.86	72.80
	37.50	75.00
	43.27	85.01
720 x 400	31.47	70.08
800 x 600	37.88	60.32
	48.08	72.18
	46.88	75.00
	53.67	85.06
832 x 624	49.72	74.55
1024 x 768	48.36	60.00
	60.02	75.03
	68.68	85.00

* Recommend Resolution is 800x600@60Hz

Applications

How to Select Picture Mode

Users can adjust picture mode automatically according to the input mode (VIDEO, S- VIDEO, DVD, SCART, DTV).

Press Menu button.
Menu items appear on the screen.

MENU

MENU
PICTURE
SOUND
FUNCTION
OSD
TIME

↕ MOVE ◆ SELECT ◼ MENU
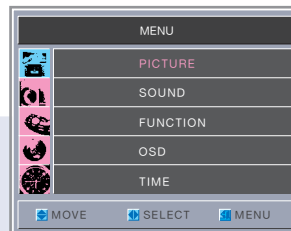
1 **Press Up and Down button to move to "Picture".**

2 **Press Left and Right button.**
Picture menu appears.

PICTURE	
MODE	STANDARD
CONTRAST	+090
BRIGHTNESS	+080
SHARPNESS	+050
COLOR	+050
TINT	+050

↕ MOVE ◆ SELECT ◼ MENU
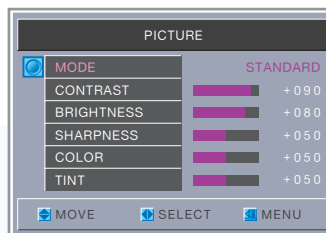
3 Press Left and Right button, then the menu changes in order below.

⇨ Standard ⇨ Day ⇨ Movie ⇨ Night ⇨ User ⇨

MENU

Press Menu button after the setting is done, and Menu goes to the previous menu. If the button is pressed repeatedly, the menu disappears.

STANDARD : For general contents. It fits most video contents.

DYNAMIC : For a clear display.

MOVIE : For movies.

MILD : For a soft display.

USER : When the user wants to set the values ➡ see the next page

How To Directly Select Picture Mode : Press PICTURE **button.**

- Users can select Standard ⇨ Dynamic ⇨ Movie ⇨ Mild ⇨ User when the input mode is DTV, DVD, VIDEO, S-VIDEO, or SCRAT.

- Users can select Standard ⇨ Low(Text mode) ⇨ High(movie) ⇨ User when the ⇨ input mode is for PC or DVI.

TIP The mode may be changed into the user's mode if the user adjusts contrast, brightness, sharpness, color, tint at standard, dynamic, movie, or mild mode.

APPLICATIONS

How to Set the User Picture

Users can manually adjust the picture in their own ways.

MENU

Press Menu button.
Menu items appear on the screen.

MENU	
	PICTURE
	SOUND
	FUNCTION
	OSD
	TIME
⬌ MOVE	⬍ SELECT	◻ MENU

1
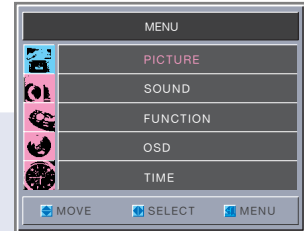
Press Up and Down buttons to move to "Picture".
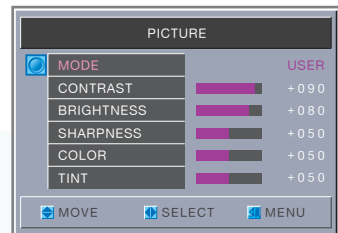
2

Press Left and Right button.
Picture menu appears.

PICTURE	
MODE	USER
CONTRAST	+090
BRIGHTNESS	+080
SHARPNESS	+050
COLOR	+050
TINT	+050
⬍ MOVE	⬌ SELECT	◻ MENU

3

Press Left and Right button till the menu changes into [User].

4

Press Up and Down button to choose Item.

5

Press Left and Right button to adjust.

MENU

Press the menu button after the setting is done, and the menu goes to the previous menu. If the button is pressed repeatedly, the menu disappears.

CONTRAST : Adjust the brightness and darkness of object and background.

BRIGHTNESS : Adjust the brightness of the entire picture.

SHARPNESS : Adjust clarity of outline of objects.

COLOR : Adjust colors into deeper or lighter colors.

TINT : Adjust colors naturally.

TIP

Setting of Color and Tint is not supported in PC and DTV input modes.

APPLICATIONS

18

How to Select Sound Mode

Users can adjust sound mode automatically as users want.
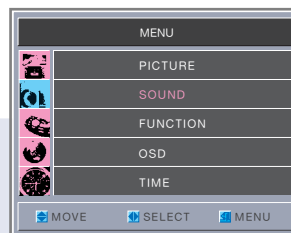
MENU

Press Menu button.
Menu items appear on the screen.

MENU	
	PICTURE
	SOUND
	FUNCTION
	OSD
	TIME
MOVE	SELECT	MENU

1

Press Up and Down buttons to move to "Sound".

2

Press Left and Right button.
Sound menu appears.

SOUND	
MODE	STANDARD
VOLUME	+010
TREBLE	+050
BASS	+050
BALANCE	+ 00
STEREO	MONO
MOVE	SELECT	MENU

3
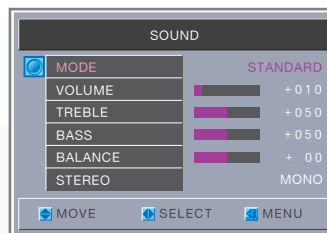
Press Left and Right button, then the menu changes in order below.

Standard ⇨ Music ⇨ Movie ⇨ News ⇨ User ⇨

MENU

Press the menu button after the setting is done, and the menu goes to the previous menu. If the button is pressed repeatedly, the menu disappears.

STANDARD : For the general sound. This fits most audio contents.

MUSIC : For enjoying original sound.

MOVIE : For grandiose sound.

NEWS : For the clear sound.

USER : When the user wants to set the values ➡ see the next page

How To Directly Select Sound Mode : Press SOUND **button.**

Users can select Standard ⇨ Music ⇨ Movie ⇨ News ⇨ User in order.

TIP
The mode may be changed into the user's mode if the user adjusts volume/treble/bass/balance in Standard/Music/Movie/News modes.

How To Set the User Sound

Users can manually adjust the sound in their own ways.
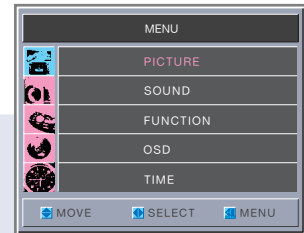
MENU

Press Menu button.
Menu items appear on the screen.

	MENU
	PICTURE
	SOUND
	FUNCTION
	OSD
	TIME

MOVE   SELECT   MENU

1

Press Up and Down buttons to move to "Sound".

2

Press Left and Right button.
Sound menu appears.

SOUND	
MODE	USER
VOLUME	+010
TREBLE	+050
BASS	+050
BALANCE	+ 00
STEREO	MONO

MOVE   SELECT   MENU

3

Press Left and Right button till the menu changes into [User].

4
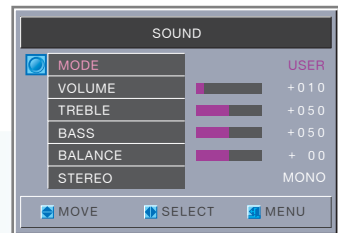
Press Up and Down button to choose an item.

5

Press Left and Right button to adjust.

MENU

Press the menu button after the setting is done, and the menu goes to the previous menu. If the button is pressed repeatedly, the menu disappears.

VOLUME : Adjust the volume.

TREBLE : Adjust the tone of volume.

BASS : Adjust the bass of the volume.

BALANCE : Adjusts the balance of left and right speakers.

STEREO : Choose Stereo or Mono.

How To Select the Aspect Ratio

Users can adjust Aspect Ratio as users want.
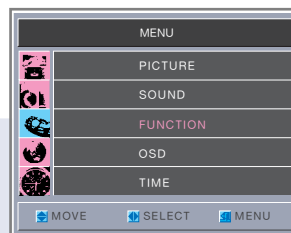
○ MENU

Press Menu button.
Menu items appear on the screen.

MENU
PICTURE
SOUND
FUNCTION
OSD
TIME

◆MOVE ◆SELECT ◆MENU

1

Press Up and Down buttons to move to "Function".

2

Press Left and Right button.
Function menu appears.

FUNCTION
ASPECT RATIO
COLOR TEMP
INFORMATION
IMAGE ADJUST
KEY LOCK
MULTI SCREEN

◆MOVE ◆SELECT ◆MENU

3
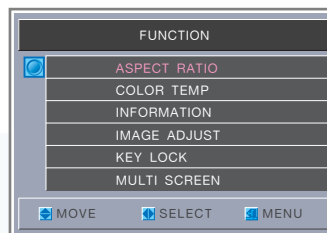
Press Left and Right button.
Aspect Ratio menu appears.

ASPECT RATIO
ASPECT   WIDE

◆MOVE ◆SELECT ◆MENU
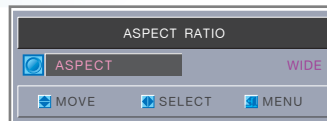
Press Left and Right button, then the menu changes in order below.

⇨ Wide ⇦ Normal ⇨ Panorama ⇨ Zoom1 ⇨ Zoom2 ⇨

○ MENU

Press the menu button after the setting is done, and the menu goes to the previous menu. If the button is pressed repeatedly, the menu disappears.

WIDE : General broadcast picture is adjusted to 16:9.

NORMAL : General picture size.

PANORAMA : Picture size for panorama video.

ZOOM1 : Zoom in 16:9 in vertical direction.

ZOOM2 : It moves the Zoom1 picture a little upward so that the sub title may be seen.

APPLICATIONS

How To Directly Select Aspect Ratio : Press ○ button.
ASPECT

Setting Aspect Ratio depends on the input mode. Supported modes are as follows.

- Under VIDEO, S-VIDEO, DVD inputs: Users can select Wide ⇔ Normal ⇔ Panorama ⇔ Zoom1 ⇔ Zoom 2 in order.

- Under DTV input: Users can select Wide ⇔ Zoom1 ⇔ Zoom2 in order.

- Under PC input: Users can select Wid ⇔ Normal in order.

WIDE

General broadcast picture is adjusted to 16:9.

NORMAL

General picture size.

PANORAMA

Picture size for panorama video.

ZOOM1

Zoom in 16:9 in vertical direction.

ZOOM2

It moves the Zoom1 picture a little upward so that the bottom portion may be seen.

Sub Title

APPLICATIONS

22

How To Select Color Temperature

Users can adjust Color as users want.

MENU

Press Menu button.
Menu items appear on the screen.

MENU
PICTURE
SOUND
FUNCTION
OSD
TIME
MOVE   SELECT   MENU

1

Press Up and Down buttons to move to "Function".

2

Press Left and Right button.
Function menu appears.

FUNCTION
ASPECT RATIO
COLOR TEMP
INFORMATION
IMAGE ADJUST
KEY LOCK
MULTI SCREEN
MOVE   SELECT   MENU

3
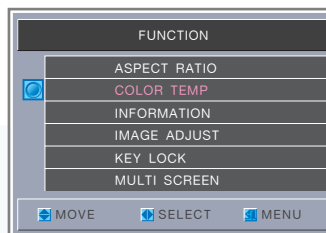
Press Left and Right button till the menu changes into [Color Temp].

4

Press Left and Right button.
Color Temp menu appears.

COLOR TEMP	
COLOR	STANDARD
MOVE SELECT MENU	

5
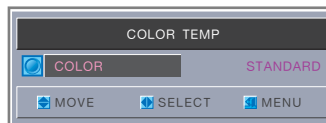
Press Left and Right button, then Mode changes in order below.
⇨ Standard ⇨ Cool ⇨ Warm ⇨

MENU

Press the menu button after the setting is done, and the menu goes to the previous menu. If the button is pressed repeatedly, the menu disappears.

STANDARD : Colors for general picture.

COOL : Cool colors with bluish tone.
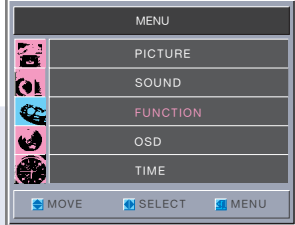
WARM : Warm colors with reddish tone.

How To Know Picture Information

It displays input signal, mode, and aspect ratio.
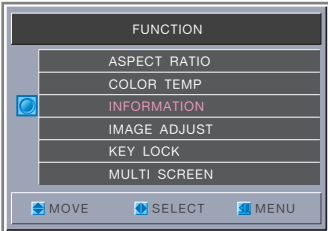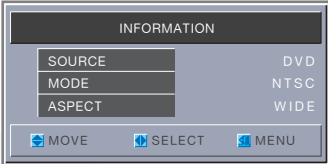
MENU

Press Menu button.
Menu items appear on the screen.

MENU
PICTURE
SOUND
FUNCTION
OSD
TIME

MOVE   SELECT   MENU

1

Press Up and Down buttons to move to "Function".

2

Press Left and Right button.
Function menu appears.

FUNCTION
ASPECT RATIO
COLOR TEMP
INFORMATION
IMAGE ADJUST
KEY LOCK
MULTI SCREEN

MOVE   SELECT   MENU

3

Press Left and Right button till the menu changes into [INFORMATION].

4

Press Left and Right button.
Input signal, mode, and aspect ratio appear.

INFORMATION	
SOURCE	DVD
MODE	NTSC
ASPECT	WIDE

MOVE   SELECT   MENU

MENU

Press the menu button after the setting is done, and the menu goes to the previous menu. If the button is pressed repeatedly, the menu disappears.

INPUT SIGNAL : Information on selected input signal.

MODE : Information on the picture send/receive modes.

ASPECT RATIO : Information on the picture size.

How To Directly Select Picture Information : Press   INFO   button.

The user can immediately check the input signal and mode information.

APPLICATIONS

24

How To Adjust Image

This is to reduce image retention or noise.

Press Menu button.
Menu items appear on the screen.

MENU

MENU
PICTURE
SOUND
FUNCTION
OSD
TIME

MOVE   SELECT   MENU

1 **Press Up and Down buttons to move to "Function".**

2 **Press Left and Right button.**
Function menu appears.

FUNCTION
ASPECT RATIO
COLOR TEMP
INFORMATION
IMAGE ADJUST
KEY LOCK
MULTI SCREEN

MOVE   SELECT   MENU
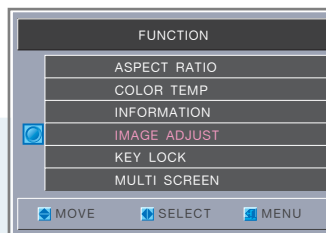
3 **Press Up and Down button till the menu changes into [Image Adjust].**

4 **Press Left and Right button.**
Image Adjust menu appears.
Under PC input mode, see step 4 of the next page.

IMAGE ADJUST	
PIXEL SHIFT	ON
NOISE REDUCE	+000

MOVE   SELECT   MENU
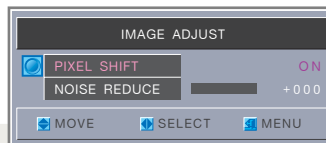
5 **Press Up and Down buttons to choose an item.**

6 **Press Left and Right button to ON/OFF.**

MENU

Press the menu button after the setting is done, and the menu goes to the previous menu. If the button is pressed repeatedly, the menu disappears.

PIXEL SHIFT : This is to avoid the screen from being burned in.

NOISE REDUCE : Eliminate noise created by unclear input signals.
            (Sharpness may be decreased when this function is used)

TIP
- Noise Reduce is not supported in PC and DTV input modes.
- When Pixel Shift is OFF, the mode becomes Auto Track and the picture may flicker.

How To Adjust Image[Under PC Input Mode]

Same as the steps 1 to 3 in the previous page.

```
                    IMAGE ADJUST
         H POSITION              +00
         V POSITION              +00
         FRRQUENCY               +000
         PHASE                   +00
         PIXEL SHIFT             OFF
         AUTO TRACK              +050
         MOVE        SELECT      MENU
```

4 **Press Left and Right buttons.**
Image Adjust menu appears.
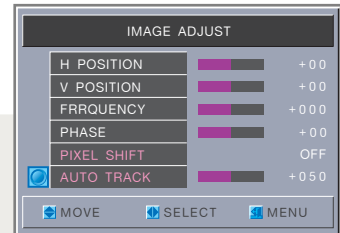
5 **Press Up and Down button to select an item.**

6 **Press Left and Right buttons to adjust.**

MENU Press the menu button after the setting is done, and the menu goes to the previous menu. If the button is pressed repeatedly, the menu disappears.

HORIZONTAL POSITION : to adjust the horizontal position of the picture.
VERTICAL POSITION : to adjust the vertical position of the picture.
FREQUENCY : to adjust to reduce the noise on the picture.
PHASE : to adjust to eliminate the shake of picture.
PIXEL SHIFT : It moves pixels to prevent partial image retention.
AUTO TRACK : Horizontal/vertical positions are automatically adjusted.

How To Directly Select Auto Track : Press ◯ **button.**
                                              PC AUTO

Automatically adjust Horizontal/Vertical position of picture.

TIP
- This function is not provided in DVI input mode.
- When executing PC AUTO, optimum picture can be obtained if the setting is made under the full pattern.

APPLICATIONS

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How To Set Key-Lock

This is to lock the control buttons on the bottom of PDP.

MENU

Press Menu button.
Menu items appear on the screen.

MENU	
PICTURE	
SOUND	
FUNCTION	
OSD	
TIME	

MOVE   SELECT   MENU

1

Press Up and Down buttons to move to "Function".

2

Press Left and Right button.
Function menu appears.

FUNCTION	
ASPECT RATIO	
COLOR TEMP	
INFORMATION	
IMAGE ADJUST	
KEY LOCK	
MULTI SCREEN	

MOVE   SELECT   MENU

3
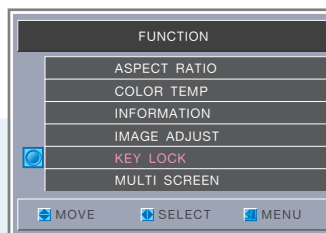
Press Up and Down button till the menu changes into [Key Lock].

4

Press Left and Right button to ON/OFF.

KEY LOCK	
KEY LOCK	OFF

MOVE   SELECT   MENU
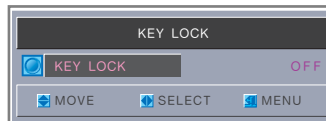
MENU

After the information is viewed, press the menu button and the menu returns to the previous menu. If the button is pressed repeatedly, menu disappears.

OFF : When you use the buttons on the bottom of PDP and a remote control at once.

ON : When you use a remote control only.

APPLICATIONS

TIP   If the power is turned off and on, or when the power supply is cut off, key-lock function is automatically off.

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How To Set Multi-Screen [Mode]

This is to set PIP(Picture In Picture) mode or Twin mode.

Press Menu button.
Menu items appear on the screen.
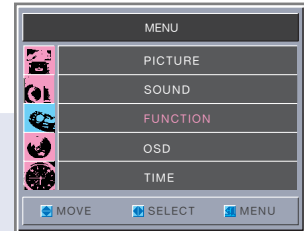
MENU

| MENU |
| PICTURE |
| SOUND |
| FUNCTION |
| OSD |
| TIME |
| MOVE   SELECT   MENU |

1 **Press Up and Down buttons to move to "Function".**

2 **Press Left and Right button.**
Function menu appears.

| FUNCTION |
| ASPECT RATIO |
| COLOR TEMP |
| INFORMATION |
| IMAGE ADJUST |
| KEY LOCK |
| MULTI SCREEN |
| MOVE   SELECT   MENU |
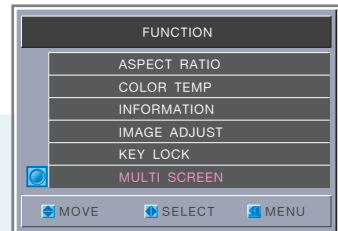
3 **Press Up and Down button till the menu changes into [Multi Screen].**

4 Press Left and Right button, then the menu changes in order below.

⇨ OFF ⇨ PIP ⇨ TWIN ⇨

After setting this, go to step 5 to set the Input signal.

MULTI SCREEN	
MODE	PIP
SOURCE	S-VIDEO
POSITION	RIGHT TOP
SIZE	LARGE
MOVE SELECT MENU	
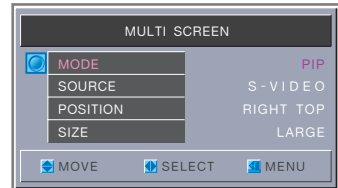
PIP : To watch the Sub screen in a main screen at once.

TWIN : To watch two screens in half and half.

〈 PIP 〉   〈 TWIN 〉

APPLICATIONS

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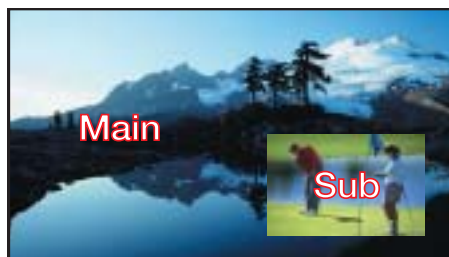
How To Set Multi-Screen [Input Source/Position/Size]

This is to set the input signal, location, and size of the Sub picture. Ex) Under PC, DVI, and DTV input mode.

5 **Press Up and Down buttons to move to [Source].**

MULTI SCREEN	
MODE	PIP
SOURCE	S-VIDEO
POSITION	RIGHT TOP
SIZE	LARGE
◆ MOVE ◆ SELECT ◀ MENU	
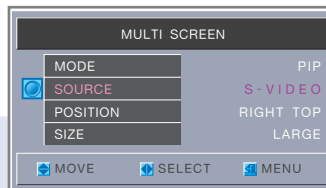
6 Press Left and Right button, then menu changes in order below.

⇨ OFF ⇨ DVD ⇨ S-VIDEO ⇨ VIDEO ⇨ SCART ⇨

In case of PIP mode, go to step 7 if you need to set the [position] of Sub picture.

7 **Press Up and Down buttons to move to [Position].**

MULTI SCREEN	
MODE	PIP
SOURCE	S-VIDEO
POSITION	RIGHT TOP
SIZE	LARGE
◆ MOVE ◆ SELECT ◀ MENU	
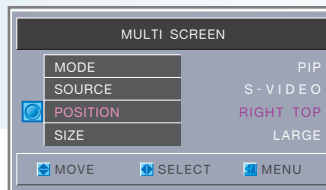
8 Press Left and Right button, then the menu changes in order below.

⇨ Right bottom ⇨ Right top ⇨ Left Top ⇨ Left bottom ⇨

After setting the Position, go to step 9 if you need to set the [Size] of Sub picture.

9 **Press Up and Down buttons to move to [Size].**

MULTI SCREEN	
MODE	PIP
SOURCE	S-VIDEO
POSITION	RIGHT TOP
SIZE	LARGE
◆ MOVE ◆ SELECT ◀ MENU	
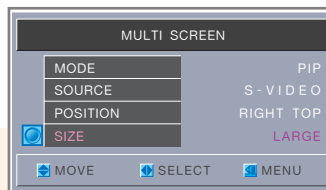
10 **Press Left and Right buttons to increase or reduce the size.**

MENU

After setting is done, press the menu button to return to the previous menu. If the button is pressed repeatedly, the menu disappears.

How To Directly Start Multi Screen : Press ☐ button.

- To ON/OFF the Multi-screen function.

How To Directly Select Multi Screen : Press [MODE] **button.**

To watch PIP/TWIN ways.

How To Directly Select Sub picture Input : Press [SOURCE] **button.**

To select the Input source of Sub picture.

How To Directly Select the Position of Sub picture : Press [POSITION] **button.**

To select the Position of Sub picture.(Right bottom ⟺ Right top ⟺Left top ⟺Left bottom).

How To Directly Select Sub picture Size : Press [SIZE] **button.**

To adjust the Size of Sub picture.

How To Swap Main Picture and Sub Picture : Press [SWAP] **button.**

To swap the Main picture and sub picture.
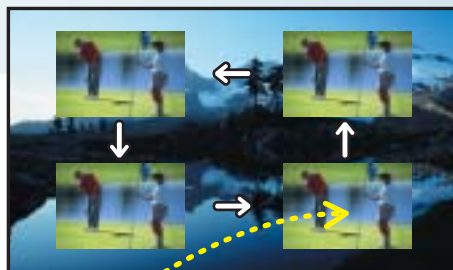
▶ Adjust the location in PIP

Adjust the size in PIP ▶

TIP

When the main picture is PC, DVI, or DTV input modes, Sub picture support DVD, S-VIDEO, VIDEO, and SCART. When the main picture is DVD, S-VIDEO, VIDEO or SCART input mode, Sub picture supports all input modes.

● Main and sub pictures cannot have the same input source.

30

Still Function

The user can temporarily stop the playing picture.

Press Still button.

Playing picture is stopped.
- Under multi-screen mode(PIP, TWIN), the main picture stops.

STILL

To deselect Still function.

Press Still button once more.

TIP   When Still Function continues for more than 5 minutes, picture becomes darker.
If you press Still button once more at this time, picture returns to the normal brightness.

How To Set OSD [On Screen Display]

This is to set the language, display time, and DPMS (power saving) on OSD [On Screen Display].

MENU

Press menu button.
Menu items appear on the screen.

MENU
PICTURE
SOUND
FUNCTION
OSD
TIME

MOVE   SELECT   MENU

1
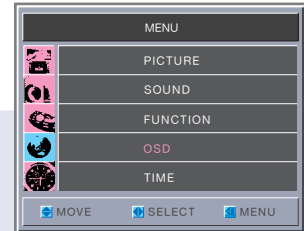
Press Up and Down buttons to move to [OSD].

2

Press Left and Right button, then the menu changes in order below.
English → French → German → Spanish
→ Italian → Korean

OSD	
LANGUAGE	ENGLISH
DISPLAY TIME	15
DPMS	OFF

MOVE   SELECT   MENU

3

Press Up and Down button till the mode changes into [Display Time].

4

Press Left and Right button, then the menu changes in order below.
→ 5secs → 10secs → 15secs → 20secs
→ 30secs → 40secs → 50secs → 60secs

OSD	
LANGUAGE	ENGLISH
DISPLAY TIME	15
DPMS	OFF

MOVE   SELECT   MENU

5

Press Up and Down buttons to move to [DPMS].

6

Press Left and Right button to ON/OFF.

OSD	
LANGUAGE	ENGLISH
DISPLAY TIME	15
DPMS	OFF

MOVE   SELECT   MENU

MENU

Press the menu button after the setting is done, and the menu goes to the previous menu. If the button is pressed repeatedly, the menu disappears.

APPLICATIONS

TIP   DPMS (power saving) only operates in PC input mode and separate sync.
* Display Time: The time that OSD menu is displayed on the screen.

How To Set the Clock

Ex) To set to 6:30 pm,

Press menu button.
Menu items appear on the screen.

MENU

	MENU
	PICTURE
	SOUND
	FUNCTION
	OSD
	TIME
MOVE	SELECT	MENU

1 **Press Up and Down buttons to move to [Time].**

2 **Press Left and Right button.**
Time menu appears.
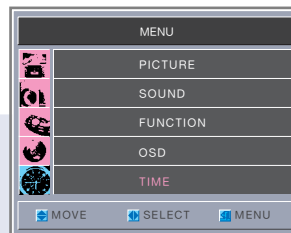**Press one more time.**
It moves to "hour" unit.

TIME		
CLOCK	0 6 : - -	AM
ON TIME	- - : - -	AM OFF
OFF TIME	- - : - -	AM OFF
SLEEP		OFF
RUN TIME	0 0 : 0 0	OFF
MOVE	SELECT	MENU
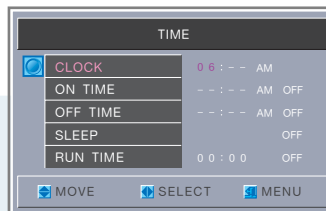
3 **Press Up and Down buttons to set to "06".**

4 **Press Left and Right buttons to move to "minute" unit.**

TIME		
CLOCK	0 6 : 3 0	AM
ON TIME	- - : - -	AM OFF
OFF TIME	- - : - -	AM OFF
SLEEP		OFF
RUN TIME	0 0 : 0 0	OFF
MOVE	SELECT	MENU

5 **Press Up and Down buttons to set to "30".**

6 **Press Left and Right buttons to move to AM/PM.**

TIME		
CLOCK	0 6 : 3 0	PM
ON TIME	- - : - -	AM OFF
OFF TIME	- - : - -	AM OFF
SLEEP		OFF
RUN TIME	0 0 : 0 0	OFF
MOVE	SELECT	MENU
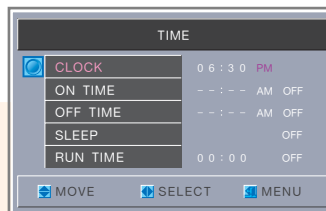
7 **Press Up and Down buttons to set to "PM".**

If the user needs to set [On Time/Off Time], move to step 8 on the *next page.*

TIP When the power supply AC main power is cut off, the clock is reset to the value before the Time set.

How To Set On Time/Off Time

This is to turn on and off at the time the user set.
Ex) If the user wants to set 12:30 pm as the turn on or turn off time,

8   Press Up and Down buttons to move to [Turn On/Turn Off time].

	TIME		
CLOCK	0 6 : 3 0	AM	
ON TIME	1 2 : – –	AM	OFF
OFF TIME	– – : – –	AM	OFF
SLEEP			OFF
RUN TIME	0 0 : 0 0		OFF

MOVE   SELECT   MENU

9   Press Left and Right buttons to move to "hour" unit.

10   Press Up and Down buttons to set to "12".

	TIME		
CLOCK	0 6 : 3 0	AM	
ON TIME	1 2 : 3 0	AM	OFF
OFF TIME	– – : – –	AM	OFF
SLEEP			OFF
RUN TIME	0 0 : 0 0		OFF

MOVE   SELECT   MENU

11   Press Left and Right buttons to move to "minute" unit.

12   Press Up and Down buttons to set to "30".

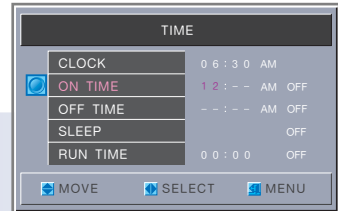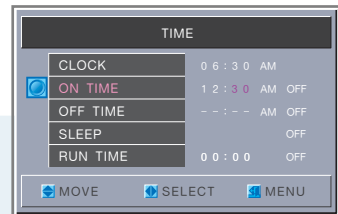|	TIME		
CLOCK	0 6 : 3 0	AM	
ON TIME	1 2 : 3 0	PM	OFF
OFF TIME	– – : – –	AM	OFF
SLEEP			OFF
RUN TIME	0 0 : 0 0		OFF

MOVE   SELECT   MENU
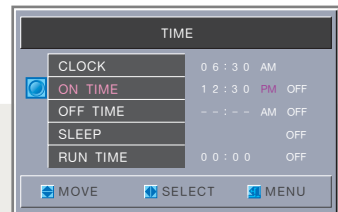
13   Press Left and Right buttons to move to "AM/PM".

14   Press Up and Down buttons to set to "PM".

	TIME		
CLOCK	0 6 : 3 0	AM	
ON TIME	1 2 : 3 0	PM	ON
OFF TIME	– – : – –	AM	OFF
SLEEP			OFF
RUN TIME	0 0 : 0 0		OFF

MOVE   SELECT   MENU
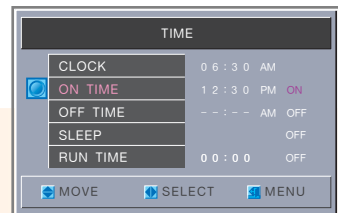
15   Press Left and Right buttons to move to ON/OFF.

16   Press Up and Down buttons to select "ON".

If [Sleep Timer] setting is needed, go to step 17 on the next page.

TIP   Firstly, Set the clock.
When the turn on/turn off time are set, Power LED is changed into green and flickers.
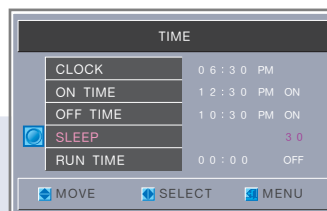
APPLICATIONS

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How to Set Sleep/Run Time

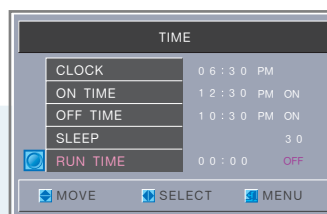This is to automatically turn off at the preset time and shows the view time.

17 Press Up and Down buttons to move to [Sleep].

TIME		
CLOCK	0 6 : 3 0	PM
ON TIME	1 2 : 3 0	PM ON
OFF TIME	1 0 : 3 0	PM ON
SLEEP	3 0	
RUN TIME	0 0 : 0 0	OFF
MOVE	SELECT	MENU

18 Press Left and Right button, then the menu changes in order below. (Unit: minute).
⇨ Cancel ⇨ 30 ⇨ 60 ⇨ 120 ⇨ 240 ⇨

If [Run Time] setting is needed, move to step 19.

TIME		
CLOCK	0 6 : 3 0	PM
ON TIME	1 2 : 3 0	PM ON
OFF TIME	1 0 : 3 0	PM ON
SLEEP	3 0	
RUN TIME	0 0 : 0 0	OFF
MOVE	SELECT	MENU

19 Press Up and Down buttons to move to [Run Time].

20 Press Left and Right buttons to select ON/OFF.

MENU After setting is done, press the menu button to return to the previous menu. If the button is pressed repeatedly, the menu disappears.

SLEEP

How To Directly Start Sleep : Press ⬡ button.

- Press Sleep button, then the setting changes in order below.
⇨ Cancel ⇨ 30 ⇨ 60 ⇨ 120 ⇨ 240 ⇨

TIP One minute before the preset sleep time, "Power off in a minute" message shows.
When the Sleep time is ON, Power LED turns into green and flickers.

APPLICATIONS

Service

Cleaning and Caring

Managing Appearance

Wipe with soft dry clothes.

Do not use inflammables like Benzene or Thinner, or wet clothes.
Do not scratch the panel of PDP with a fingernail or pointed object.
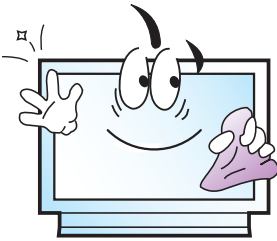
Picture Management

Put glass cleaner on a clean cloth and mop on the picture.

Never use Acetone, Benzene, or thinner.

Cleaning Inside

When inside needs to be cleaned, consult a service center or distribution agent where the item is purchased.

Cleaning is more effective when it is done before humid monsoon season.

Troubleshooting

SYMPTOM	POSSIBLE SOLUTION
Neither picture nor sound comes up.	· Check whether power is on. · Check whether the power is cut or whether power cord is properly connected. · Try to plug another product's power cord to the outlet the PDP is plugged into.
Picture is OK but sound does not come out.	· Try to press volume up/volume down buttons of remote control.
Remote control does not operate.	· Check whether there is a blocking object between the remote control and PDP. · Check whether batteries are inserted with proper polarities(+, -). · When the batteries are worn out, replace with new ones. (Page8)
Picture turns on slowly after power is on.	· This symptom is not a malfunction. This delay is not to show the noise on the picture while turn-on. However, if the picture does not turns on more than 5 minutes after power on, call a service center.
Colors do not show.	· Select Color button and press Up button. (Page18)
Vertical and horizontal lines and web patterns briefly appear on the picture and shake.	· Since the symptom may be caused by strong jamming from high frequency electronic equipments or other TV electric waves, stop using cordless phone, hair dryer, or electric drill.
One speaker does not produce sound.	· Select sound balance and make proper adjustment. (Page20) · Check the speaker connection cables.
Strange noises are heard.	· Ticking noise during or after watching is a phenomena caused due to the ambient environment like humidity and temperature combined with the characteristics of plastic products. Noise heard when you turn ON/OFF is a phenomenon made when signal is abruptly provided or disconnected to and from the PDP panel. Neither symptom is a malfunction.

SERVICE

Product Specifications

MODEL	PD421
Width(mm)	1030
Height(mm)	631(Excluding stand), 717(Including stand)
Depth(mm)	79
Weight(kg)	32(With Package), 26(Net Product)
Power	AC 100 ~ 240V 50/60Hz
Pixel	Horizontal 852 x Vertical 480 DOT
Colors	16,770,000 colors(256 colors for each R, G, B)
Use Temperature	$0^0 \sim 40^0 C$
Use Humidity	Below 80%

ImageQuest