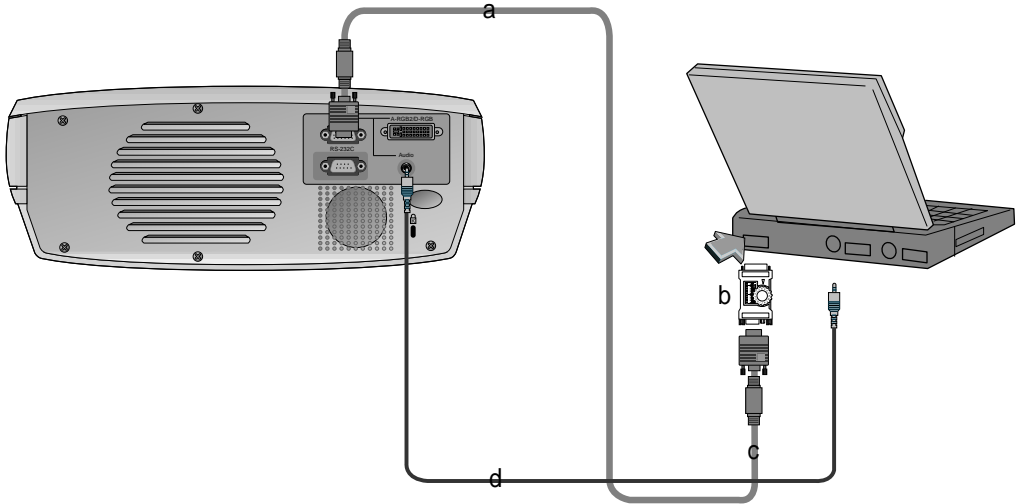# Connecting to a Macintosh PowerBook
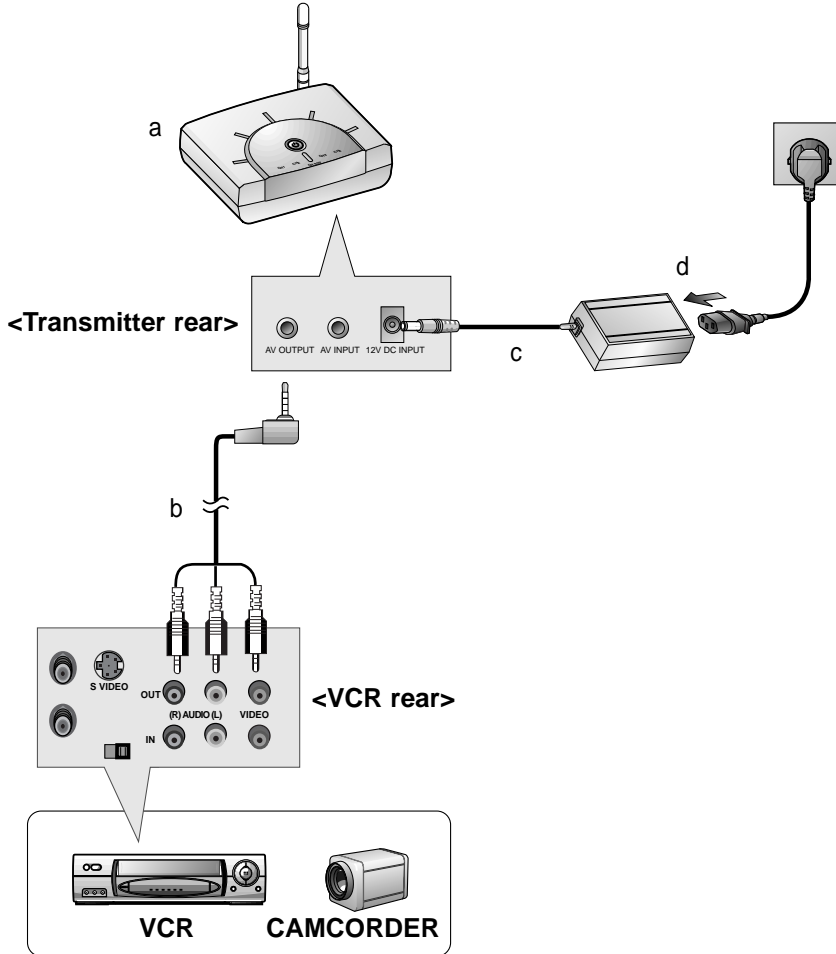
**< How to connect >**

a. Connect computer cable to **A-RGB1** of the projector.

b. Set the adjusting number and letter of the Macintosh desktop adaptor in accordance with the resolution you want to use and connect the adaptor to the Macintosh. (Refer to page 29 ~ 30)

c. Connect the computer cable to the Macintosh desktop adaptor.

d. Connect the audio cable of PC (LINE OUT sound port) to **Audio** of the projector.

# Connecting to a wireless transmitter (option)

- When connecting the wireless transmitter with external equipments, match the colors of connecting ports (Video - yellow, Audio(L) - white, Audio(R) -red).
- If you have a mono VCR, connect the audio cable from the VCR to the AV input of the wireless AV transmitter.
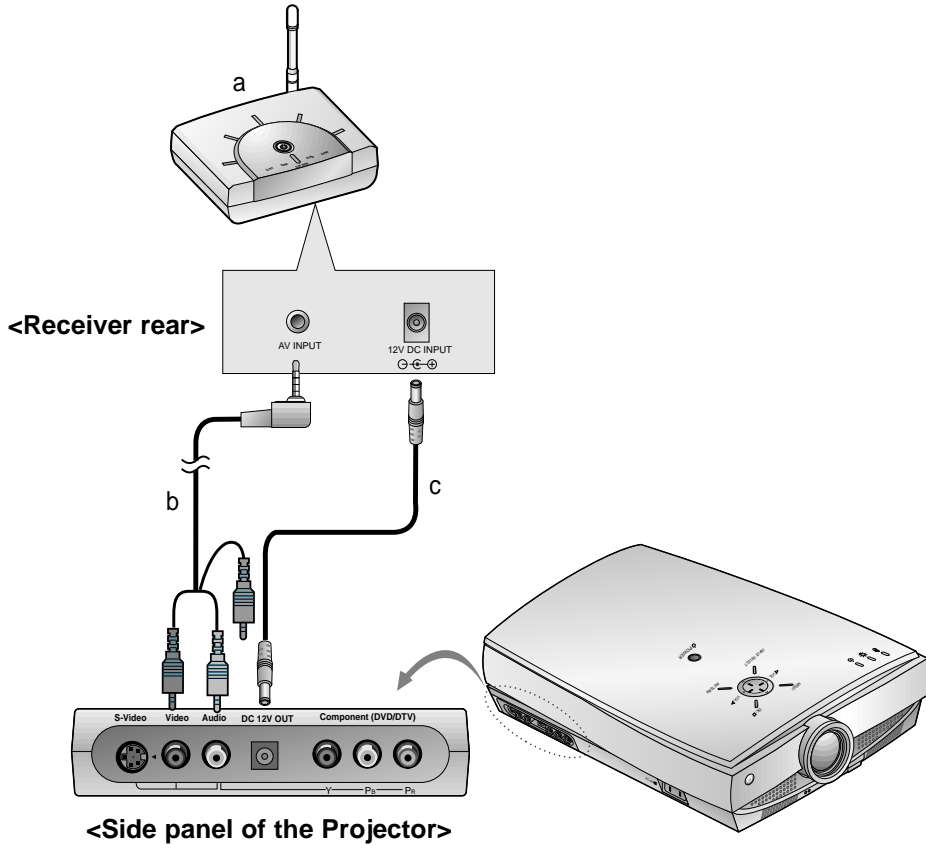- See the wireless transmitter-receiver operating guide for installation and connection etc.



**< How to connect >**

a. Turn the power button of a transmitter on, and adjust desired channel with channel button and place the wireless AV transmitter toward the wireless receiver.

b. Connect the output ports of the VCR to the AV OUTPUT port of the wireless AV transmitter.

c. Connect the adaptor to the DC input of the wireless AV transmitter .

d. Connect the power plug to the wall outlet socket after connecting the power cord to the adaptor.

# Connecting to a wireless receiver (option)

• When connecting the wireless receiver with external equipments, match the colors of connecting ports (Video - yellow, Audio(L) - white).

a

**<Receiver rear>**

AV INPUT     12V DC INPUT

b          c

**S-Video    Video    Audio    DC 12V OUT    Component (DVD/DTV)**

Y        P$_B$       P$_R$

**<Side panel of the Projector>**

## < How to connect >

a. Turn the power button of a receiver on, and adjust channel number same to the channel number of a transmitter with the channel button. Place the wireless AV receiver toward the wireless transmitter.

b. Connect the AV input ports of the projector to the AV INPUT port of the receiver.

c. Connect the DC output of the projector to DC input of the wireless receiver with DC cable.

# Connecting to a Video Source

* You can connect a VTR, a camcorder, a LDP or any other compatible video image source to the projector.
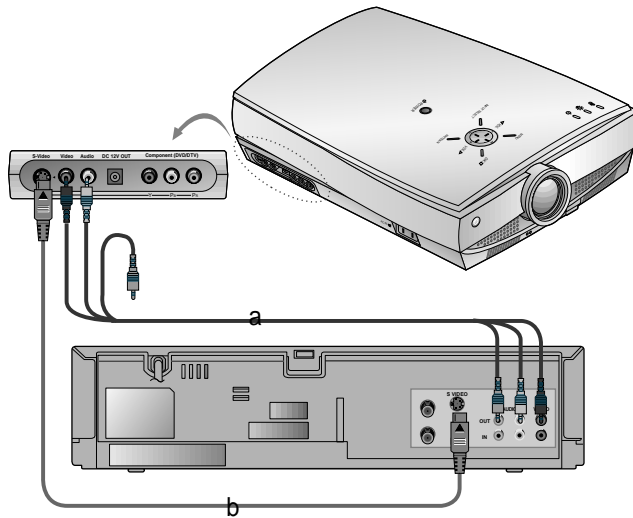


## < How to connect 1 >

a.  Connect the AV input ports of the projector to the output ports of the A/V source with A/V cables. If you connect the Audio(R) of external equipment with projector, you can't hear the sound. The video cable is yellow and the left audio is white and right audio is red.
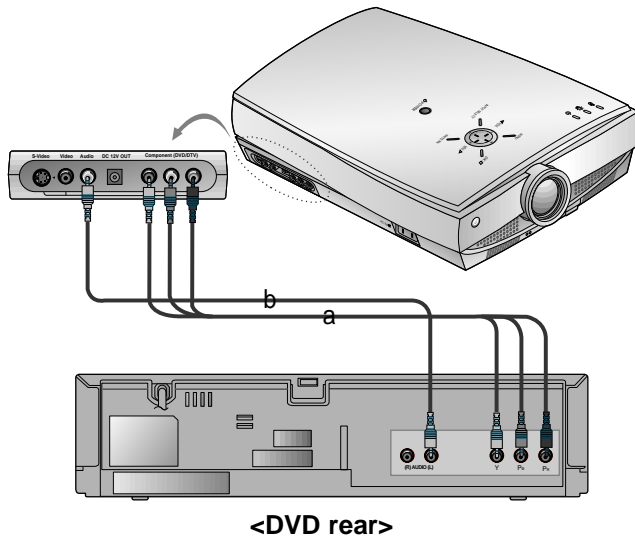
## < How to connect 2 >

b.  Connect S-Video input port of the projector to S-Video output port of A/V source with S-Video cable. Connect the Audio input ports of the projector to the output ports of the A/V source with Audio cable.
    * You can get better picture quality when connecting S-Video source to the projector.

# Connecting to a DVD

\* The outputs(Y, P<sub>B</sub>, P<sub>R</sub>) of the DVD might be labeled as Y, Pb, Pr / Y, B-Y, R-Y / Y, Cb, Cr according to the equipments.

**\<DVD rear\>**
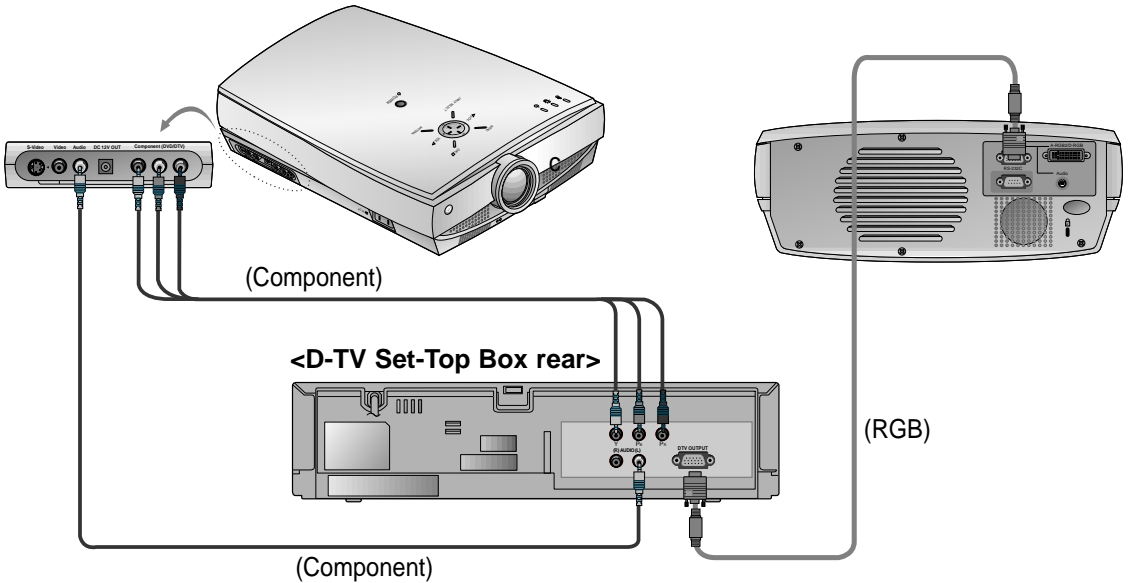
## < How to connect >

a.   Connect the **Component (DVD/DTV)** ports (**Y**, **P<sub>B</sub>**, **P<sub>R</sub>**) of the projector to the Video output ports (**Y**, **P<sub>B</sub>**, **P<sub>R</sub>**) of the DVD.

b.   Connect the **Audio** port of the projector to the Audio output port (**L**) of the DVD.

c.   Use a DVD with Component 480i(576i)/480p mode.

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# Connecting to a D-TV Set-Top Box

* To receive D-TV programmes, it is necessary to purchase a D-TV receiver (Set-Top Box) and connect it to the projector.
* Please refer to the owner's manual of the D-TV Set-Top Box for the connection between LCD projector and D-TV Set-Top Box.
* Use a D-TV receiver with DTV 720p/1080i mode.



(Component)

**<D-TV Set-Top Box rear>**

(RGB)

(Component)

## < How to connect-In case of connecting RGB>

a.   Connect computer cable to **A-RGB1** of the projector.
     * If the Set-Top Box has DVI output, use DVI cable.

b.   Use a DTV receiver with DTV 720p/1080i mode.

## < How to connect-In case of connecting Component>

a.   Connect the **Component (DVD/DTV)** ports (**Y**, **P$_B$**, **P$_R$**) of the projector to the Video output ports (**Y**, **P$_B$**, **P$_R$**) of the D-TV Set-Top Box.

b.   Connect the **Audio** port of the projector to the Audio output port (**L**) of the D-TV Set-Top Box.

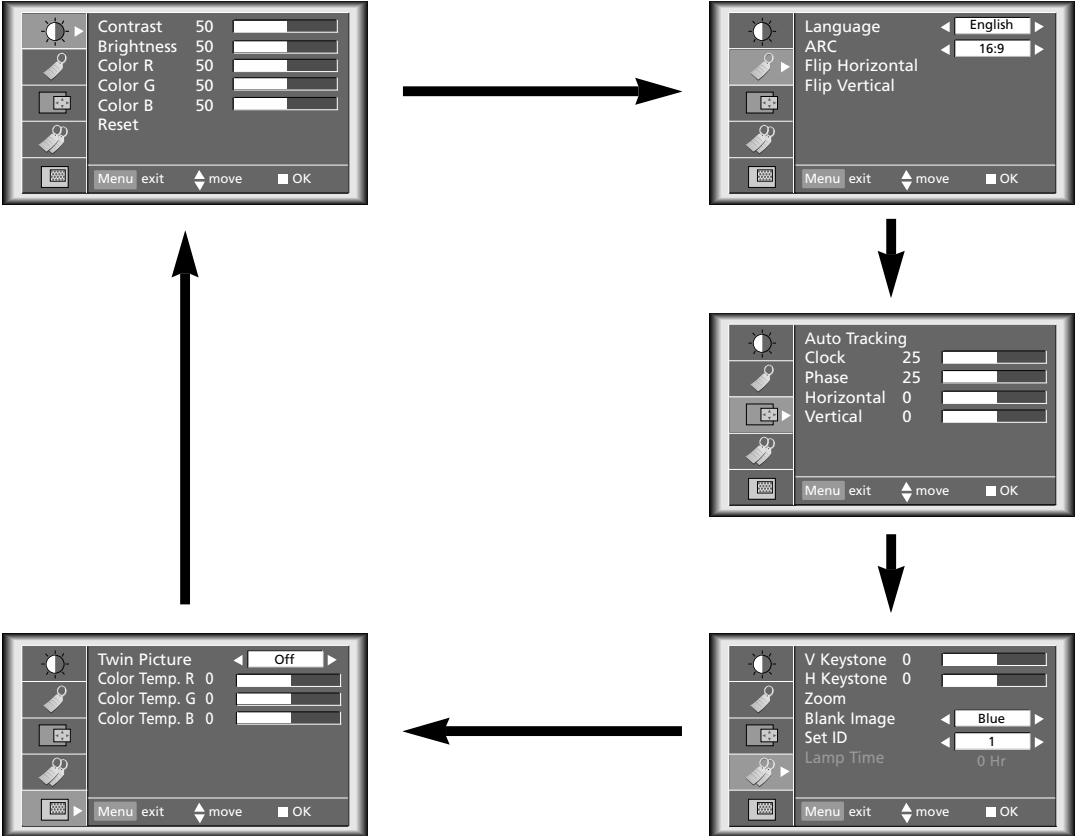c.   Use a DTV receiver with DTV 480p/720p/1080i mode.

# Function checking

* If there is no input signal, Menu will not display on screen.
* This operating guide explains operation of A-RGB1 mode mainly.

**1** Press the **MENU** button to show a menu on screen.

**2** Press the ▲, ▼ button to select a menu.
● Each press will cycle through the different menus as shown below.

| | | |
|---|---|---|
| Contrast | 50 | |
| Brightness | 50 | |
| Color R | 50 | |
| Color G | 50 | |
| Color B | 50 | |
| Reset | | |

Menu exit    ↕ move    ■ OK

| | | |
|---|---|---|
| Language | ◄ English ► | |
| ARC | ◄ 16:9 ► | |
| Flip Horizontal | | |
| Flip Vertical | | |

Menu exit    ↕ move    ■ OK

| | | |
|---|---|---|
| Auto Tracking | | |
| Clock | 25 | |
| Phase | 25 | |
| Horizontal | 0 | |
| Vertical | 0 | |

Menu exit    ↕ move    ■ OK

| | | |
|---|---|---|
| V Keystone | 0 | |
| H Keystone | 0 | |
| Zoom | | |
| Blank Image | ◄ Blue ► | |
| Set ID | ◄ 1 ► | |
| Lamp Time | 0 Hr | |

Menu exit    ↕ move    ■ OK

| | | |
|---|---|---|
| Twin Picture | ◄ Off ► | |
| Color Temp. R | 0 | |
| Color Temp. G | 0 | |
| Color Temp. B | 0 | |

Menu exit    ↕ move    ■ OK

**3** Press the **OK (■)** button and then press the ▲, ▼ or **VOLUME (◄, ►)** buttons to select a feature you want to use.

● To finish the menu display, press the **MENU** button.

* In Video and S-Video mode and Component(480i(576i)), D-RGB mode 🖼 menu is not displayed.
* Only A-RGB1, A-RGB2, Component(480p, 720p, 1080i) mode displays [**Horizontal**], [**Vertical**] in 🖼 menu
* The sub menus of ☼ menu in Video and S-Video mode and Component mode are different from those in the RGB mode. (Refer to page 52).
* [**Color R**], [**Color G**], [**Color B**] : Use only for the A-RGB1 and the A-RGB2 modes. [**Color R**], [**Color G**], [**Color B**] items are used to adjust the R/G/B color levels when the RGB analog input signal has improper R/G/B signal levels.

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# Using Still function

**1**    Press the **STILL** button.

\* You can freeze the input image.



&lt;Moving Image&gt;                 &lt;Still Image&gt;
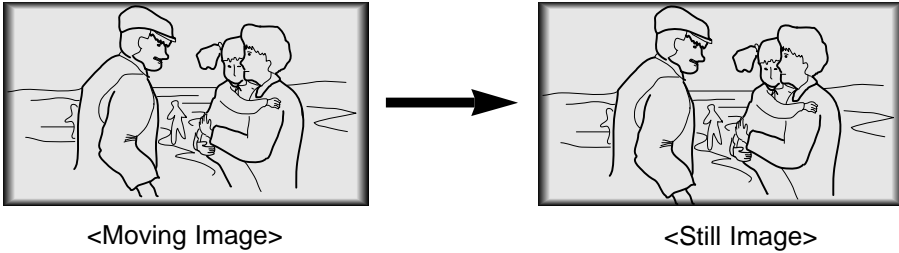
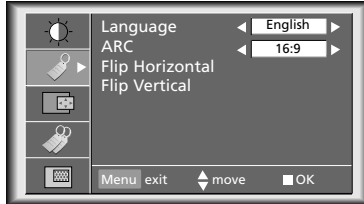**2**    To finish this function, press the any button again.

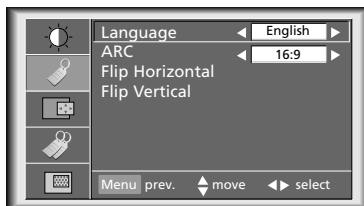\* The STILL function would release automatically after about 10 minutes.

# Selecting language

**1** Press the **MENU** button and then use ▲ / ▼ button to select the  menu.

```
┌─────────────────────────────────────┐
│ ☼    Language      ◄ │ English │ ►  │
│ ✎ ►  ARC           ◄ │  16:9   │ ►  │
│      Flip Horizontal                │
│      Flip Vertical                  │
│ ▦                                   │
│ ✏                                   │
│ ▨    Menu exit   ⬍ move    ■ OK     │
└─────────────────────────────────────┘
```

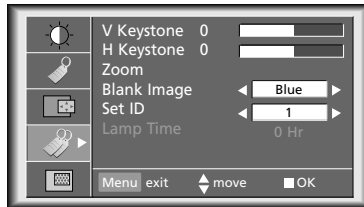**2** Press the **OK** (■) button and then use ▲ / ▼ button to select [**Language**] item.

**3** Press the **VOLUME** (◄, ►) button to select the language you want to use.

● On-Screen-Display(OSD) is marked in the selected language from this point.
● To finish menu display, press the **MENU** button.

```
┌─────────────────────────────────────┐
│ ☼    Language      ◄ │ English │ ►  │
│ ✎    ARC           ◄ │  16:9   │ ►  │
│      Flip Horizontal                │
│      Flip Vertical                  │
│ ▦                                   │
│ ✏                                   │
│ ▨    Menu prev.   ⬍ move  ◄► select │
└─────────────────────────────────────┘
```

# Checking lamp time

**1** Press the **MENU** button and then use ▲ / ▼ button to select the ✎ menu.

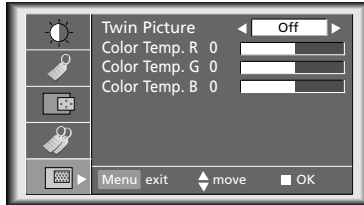| | | |
|---|---|---|
| ☼ | V Keystone 0 | ▬▬▬▬▬ |
| | H Keystone 0 | ▬▬▬▬▬ |
| ✎ | Zoom | |
| | Blank Image | ◄ Blue ► |
| ▣ | Set ID | ◄ 1 ► |
| ✎ ► | Lamp Time | 0 Hr |
| ▦ | Menu exit ⬍ move ■OK | |

● You can see the used lamp time.
● When projector lamp is reaching the end of its life(over 1500 hours), the lamp indicator will be turned red and the projector will display "Replace the Lamp" on screen.
● The OSD, "Replace the Lamp" is displayed 10 seconds from the first power on.
● The lamp warning LED illuminates red continuously in case of excessing of lamp time.
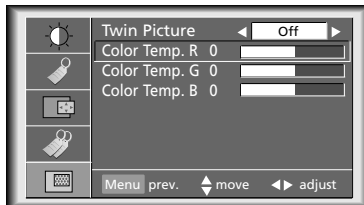
# Manual Color Temperature Control

* You can adjust red, green, or blue to any color temperature you prefer.

**1** Press the **MENU** button and then use ▲ / ▼ button to select the 🔲 menu.

```
Twin Picture        ◄   Off   ►
Color Temp. R  0    ▭▭▭▭▭▭
Color Temp. G  0    ▭▭▭▭▭▭
Color Temp. B  0    ▭▭▭▭▭▭

Menu exit    ⬍ move    ■ OK
```

**2** Press the **OK** (■) button and then use ▲ / ▼ button to select a color.

```
Twin Picture        ◄   Off   ►
Color Temp. R  0    ▭▭▭▭▭▭
Color Temp. G  0    ▭▭▭▭▭▭
Color Temp. B  0    ▭▭▭▭▭▭

Menu prev.    ⬍ move    ◄► adjust
```

**3** Use the **VOLUME** (◄, ►) button to make appropriate adjustments.

● The adjustment range of [**Color Temp. R**], [**Color Temp. G**] and [**Color Temp. B**] is -50 ~ +50.

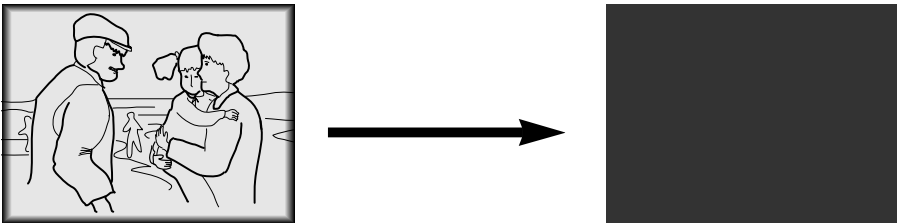● To exit the menu display, press the **MENU** button.

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# Using Blank function

* This function may be effective if you need to get attention of the audience during presentations, meetings or briefings.

**1** Press the **BLANK** button.

* The screen turns off to a background color and sound also turns off.
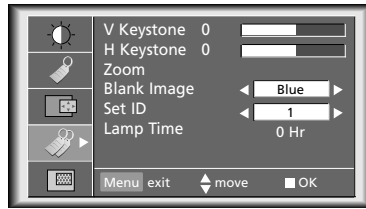* You can choose the background color. Refer to page 43.

**2** Press any buttons to cancel the blank function.

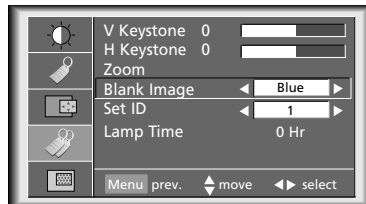* On exiting the blank status sound also is restored.

## Selecting Blank Image color

**1** Press the **MENU** button and then use ▲ / ▼ button to select the 🖋 menu.

```
┌─────────────────────────────────────┐
│ ☼  V Keystone   0   ▭▬▬▬▬            │
│    H Keystone   0   ▭▬▬▬▬            │
│ 🖋 Zoom                              │
│    Blank Image    ◄   Blue   ►       │
│ 🖼 Set ID         ◄     1    ►       │
│    Lamp Time          0 Hr           │
│ 🖋▶                                  │
│ ⌨  Menu exit   ⬍ move    ■ OK        │
└─────────────────────────────────────┘
```

**2** Press the **OK** (■) button and then use ▲ / ▼ button to select [**Blank Image**] item.

**3** Press the **VOLUME** (◄, ►) button to select the color you want to use.

● Background color will be changed to the selected Blank function color from this point.
● To exit menu display, press the **MENU** button.

```
┌─────────────────────────────────────┐
│ ☼  V Keystone   0   ▭▬▬▬▬            │
│    H Keystone   0   ▭▬▬▬▬            │
│ 🖋 Zoom                              │
│    Blank Image    ◄   Blue   ►       │
│ 🖼 Set ID         ◄     1    ►       │
│ 🖋 Lamp Time          0 Hr           │
│ ⌨  Menu prev.   ⬍ move   ◄► select   │
└─────────────────────────────────────┘
```
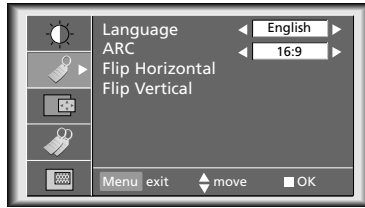
# Using Flip Horizontal / Vertical function

## Flip Horizontal Function

* This function reverses the left and the right side of the projected image. Use this function when projecting from behind onto a transparent screen being viewed from the opposite side.

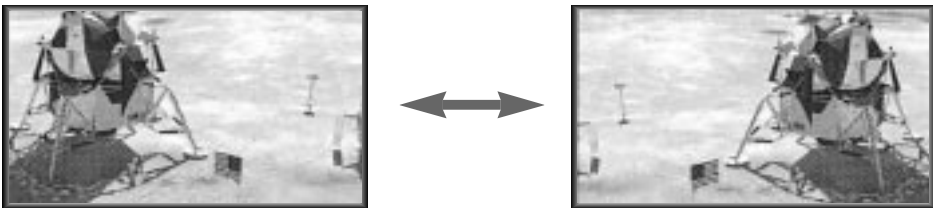**1** Press the **MENU** button and then use ▲ / ▼ button to select the ✐ menu.

```
┌────────────────────────────────┐
│ ☼   Language        ◄ English ► │
│     ARC            ◄  16:9   ►  │
│ ✐ ►  Flip Horizontal           │
│     Flip Vertical              │
│ ▣▣                             │
│ ✐✐                             │
│ ▦   Menu exit   ⬍ move   ■ OK   │
└────────────────────────────────┘
```

**2** Press the **OK** (■) button and then use ▲ / ▼ button to select [**Flip Horizontal**] item.

```
┌────────────────────────────────┐
│ ☼   Language        ◄ English ► │
│     ARC            ◄  16:9   ►  │
│ ✐   Flip Horizontal Press OK to Flip │
│     Flip Vertical              │
│ ▣▣                             │
│ ✐✐                             │
│ ▦   Menu prev   ⬍ move   ■ OK   │
└────────────────────────────────┘
```

**3** Press the **OK**(■) button to see reversed image.

● Each time you press the button, the image will be reversed.
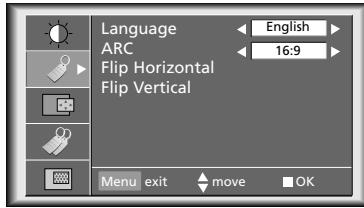● To finish menu display, press the **MENU** button.

# Flip Vertical Function

\* This function reverses the upper and the lower side of the projected image.
\* When you hang the projector upside down from the ceiling for using, you need to reverse all the sides(left, right, upper, lower) of the image.

**1** Press the **MENU** button and then use ▲ / ▼ button to select the ✏ menu.

| ☼ | Language | ◄ | English | ► |
|---|---|---|---|---|
| ✏ ► | ARC | ◄ | 16:9 | ► |
| | Flip Horizontal | | | |
| ▣ | Flip Vertical | | | |
| ✏ | | | | |
| ▦ | Menu exit ♦ move ■ OK | | | |

**2** Press the **OK** (■) button and then use ▲ / ▼ button to select [**Flip Horizontal**] item.

| ☼ | Language | ◄ | English | ► |
|---|---|---|---|---|
| ✏ | ARC | ◄ | 16:9 | ► |
| | Flip Horizontal | | | |
| ▣ | Flip Vertical | Press OK to Flip | | |
| ✏ | | | | |
| ▦ | Menu prev ♦ move ■ OK | | | |

**3** Press the **OK**(■) button to see reversed image.

● Each time you press the button, the image will be reversed.
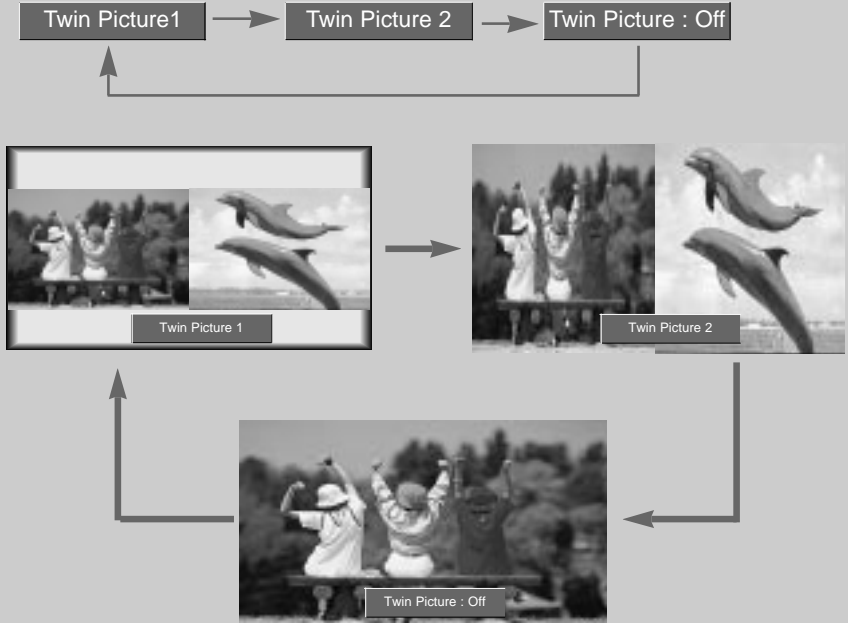● To finish menu display, press the **MENU** button.



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# Twin Picture function

## How to use twin picture

TWIN PICTURE

Press the **TWIN PICTURE** button to select desired with picture.

Twin Picture1 → Twin Picture 2 → Twin Picture : Off

Twin Picture 1

Twin Picture 2

Twin Picture : Off

● You can use this function by using the **MENU** button.
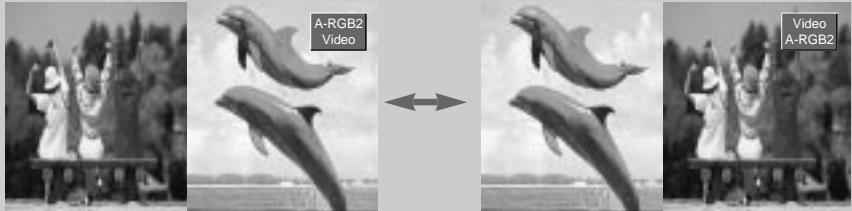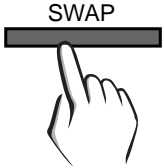
## Input select of the sub picture

SUB INPUT

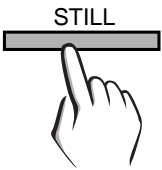Press the **SUB INPUT** button to select the input source of sub picture.

◄► select ■OK

◄ A-RGB1 ►

## Changing the picture of main and sub picture

Press the **SWAP** button in twin picture mode.

SWAP

A-RGB2
Video

↔

Video
A-RGB2

## Using Still function in twin picture mode.

STILL

Press the **STILL** button in twin picture mode.

| Main Still | ◄ | Off | ► |
| Sub Still | ◄ | Off | ► |
| ■ exit | ◄► select | | |

● You can cancel this function directly by selecting [Off] in menu.
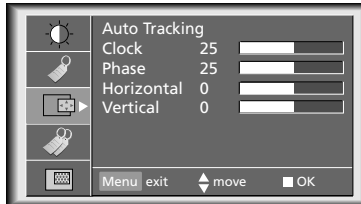
● The STILL function is cancelled when changing the input signal.
  [Main Still] is cancelled when changing the input signal with **INPUT SELECT**
  button and [Sub Still] is cancelled when changing the input signal with
  **SUB INPUT** button. That is, [Main/Sub Still] work separately.

● The STILL function would release automatically after about 10 minutes.
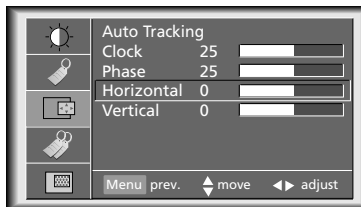
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# Adjusting screen display

\* If the image size does not fit the screen in accordance with the input source, set the position of the image by selecting Horizontal / Vertical position.(For A-RGB1, A-RGB2, Component 480p/720p/1080i)

**1**  Press the **MENU** button and then use ▲ / ▼ button to select the 🔲 menu.

| | Auto Tracking | |
|---|---|---|
| | Clock | 25 |
| | Phase | 25 |
| | Horizontal | 0 |
| | Vertical | 0 |
| | | |
| | Menu exit  ↕ move  ■ OK | |

**2**  Press the **OK** (■) button and then use ▲ / ▼ button to select [**Horizontal**] or [**Vertical**] item.

| | Auto Tracking | |
|---|---|---|
| | Clock | 25 |
| | Phase | 25 |
| | Horizontal | 0 |
| | Vertical | 0 |
| | | |
| | Menu prev.  ↕ move  ◄► adjust | |

**3**  Press the **VOLUME** (◄, ►) button to adjust the screen condition as you want.

●  [**Horizontal**], [**Vertical**] are adjusted from -50 to +50.

●  To exit the menu display, press the **MENU** button.

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# Using Keystone function

* **Keystone** function adjusts the upper and lower width of the projected image to prevent the image from being a trapezoid shape. Use this function when the screen or the projector is slanted and cannot make an ideal projection angle.
* Only use the **Keystone** function when you can't get the best angle of projection, because it may cause a blazing fire of the screen.

**1** Press the **KEYSTONE** button.

```
V Keystone   0  [▭▭▭▭▭    ]
H Keystone   0  [▭▭▭▭▭    ]
   ■ exit          ◄► adjust
```

**2** Press the ▲ / ▼ button to select [**V Keystone**] or [**H Keystone**] item.

**3** Press the **VOLUME** (◄, ►) button to adjust the screen condition as you want.

● [**Keystone**] are adjusted from -50 to +50.

● Adjustment range of H/V Keystone may not work until -50 ~ +50 because they are interlocked.

● To exit the menu display, press the **OK** (■) button.

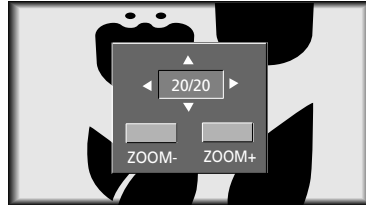● You can also use this function by using the **MENU** button.

# Using Zoom function

* This function works only in RGB mode.

**1** Press the **ZOOM -** or **ZOOM +** button.
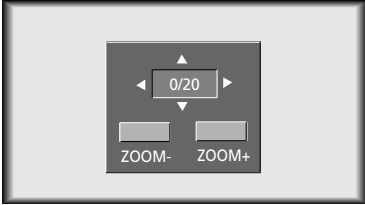


**2** Press the **ZOOM -** or **ZOOM +** button to adjust the zoom level.
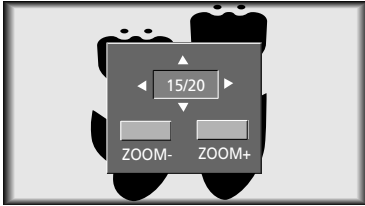


**3** Move to the position you want to see the enlarged screen by moving press the **VOLUME** (◄, ►) , ▲, ▼ button.

**4** Press the **OK** (■) or **ARC** button to finish the zoom function.

* This function doesn't work in Video, S-Video, Component mode.
* You can use this function by using the **MENU** button.
* In the zoom mode, you can adjust horizontal / vertical position with the
   **VOLUME** (◄, ►) , ▲, ▼ button during displaying zoom OSD.

# Using ARC function

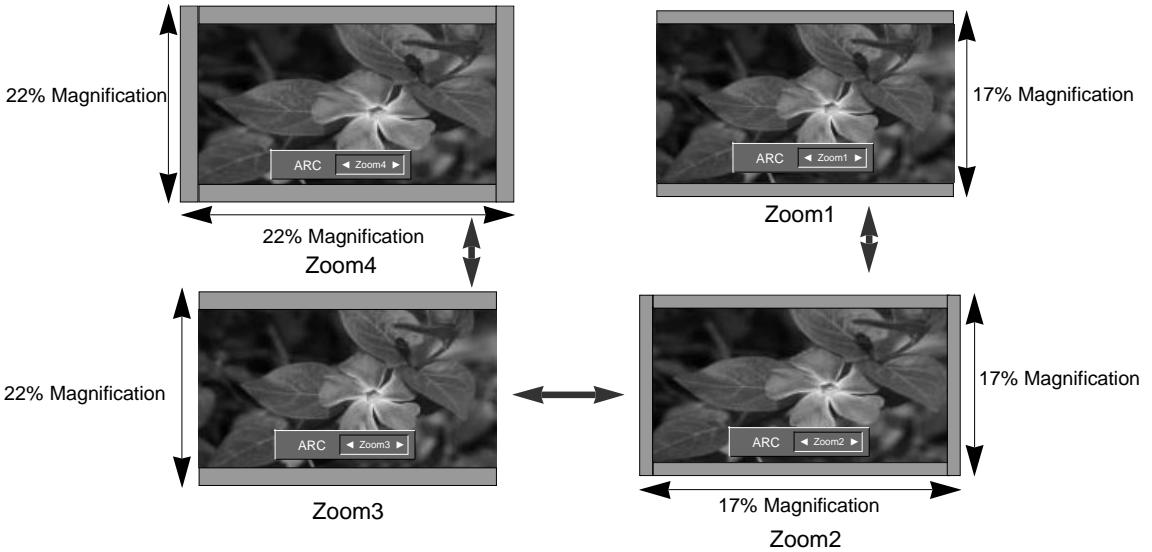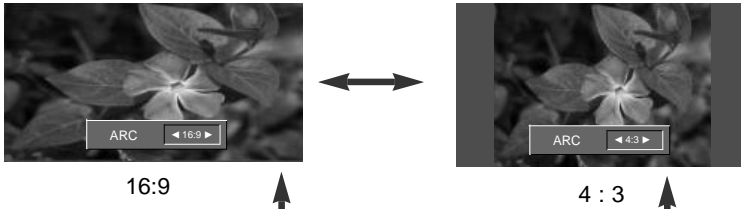* With HD input (720p,1080i) mode, you can select 16:9 picture format only.

**1** Press the **ARC** button.

Each press of the button changes the display as below.

< A-RGB1/A-RGB2/D-RGB mode >

ARC ◄ 16:9 ►   ⟷   ARC ◄ 4:3 ►

16:9                    4 : 3

< Video/S-Video/Component(480i(576i), 480p) mode >

ARC ◄ 16:9 ►   ⟷   ARC ◄ 4:3 ►

16:9                    4 : 3

22% Magnification — ARC ◄ Zoom4 ►

22% Magnification
Zoom4

17% Magnification — ARC ◄ Zoom1 ►

Zoom1

22% Magnification — ARC ◄ Zoom3 ►

Zoom3

17% Magnification — ARC ◄ Zoom2 ►

17% Magnification
Zoom2

**POSITION-ING**

**\* Zoom1**
Choose when you want to evenly stretch the normal picture vertically (about 17% for original picture format). Some of top and bottom portions of the picture will be deleted. But black bars appear at top and bottom of screen for some input source.

**\* Zoom2**
Choose when you want to evenly stretch the normal picture vertically and horizontally (about 17% for original picture format) and to remove the screen distortion of Zoom1.

**\* Zoom3**
Choose when you want to evenly stretch the normal picture vertically (about 22% for original picture format).

**\* Zoom4**
Choose when you want to evenly stretch the normal picture vertically and horizontally (about 22% for original picture format) and to remove the screen distortion of Zoom3.
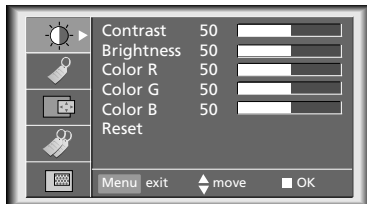
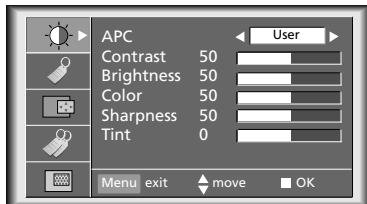\* You can also use this function by using the **MENU** button.

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# Adjusting Video

**1** Press the **MENU** button and move the ▲ / ▼ button up or down to select each ☼ menu.

< RGB mode >                < Video, S-Video, Component mode >           < Twin picture mode >

| ☼ ▶ | Contrast | 50 | |
| | Brightness | 50 | |
| | Color R | 50 | |
| | Color G | 50 | |
| | Color B | 50 | |
| | Reset | | |
| | Menu exit ⬍ move ■ OK |

| ☼ ▶ | APC | ◀ User ▶ |
| | Contrast | 50 |
| | Brightness | 50 |
| | Color | 50 |
| | Sharpness | 50 |
| | Tint | 0 |
| | Menu exit ⬍ move ■ OK |

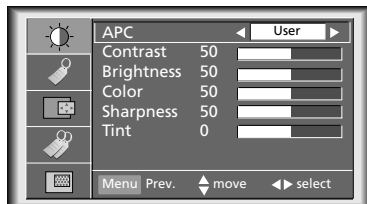| ☼ ▶ | Contrast | 50 | |
| | Brightness | 50 | |
| | Reset | | |
| | Menu exit ⬍ move ■ OK |

**2** Press the **OK** (■) button.

< RGB mode >                < Video, S-Video, Component mode >           < Twin picture mode >

| ☼ | Contrast | 50 | |
| | Brightness | 50 | |
| | Color R | 50 | |
| | Color G | 50 | |
| | Color B | 50 | |
| | Reset | | |
| | Menu Prev. ⬍ move ◀▶ adjust |

| ☼ | APC | ◀ User ▶ |
| | Contrast | 50 |
| | Brightness | 50 |
| | Color | 50 |
| | Sharpness | 50 |
| | Tint | 0 |
| | Menu Prev. ⬍ move ◀▶ select |

| ☼ | Contrast | 50 | |
| | Brightness | 50 | |
| | Reset | | |
| | Menu Prev. ⬍ move ◀▶ adjust |

**3** Press the ▲ / ▼ button up or down to select a video item you want to adjust.

**4** Press the **VOLUME** (◀, ▶) button to adjust the selected video item as you want.

● You can only adjust [**Contrast**] and [**Brightness**] of ☼ menu in Twin picture mode. In Twin picture mode, adjustment for [**Contrast**] and [**Brightness**] doesn't effect other input sources. Adjustments apply to main and sub picture simultaneously.
● Each adjustment of ☼ menu options don't effect other input source. As required, re-adjust ☼ menu options for the following input source : Video/S-Video/Component(480i(576i)), Component(480p, 720p, 1080i)
● To restore the original image condition after changing it, press **OK** (■) button after selecting [**Reset**] item.
● In the broadcasting system NTSC, the picture item **Tint** is displayed and adjusted.
● To finish menu display, press the **MENU** button.

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## APC (Auto Picture Control)

* Use APC to set the projector for the best picture appearance.
* This function doesn't work in RGB mode.

**1** Press the **APC** button.

```
APC    ◄ User ►
```

**2** Each press of the **APC** button changes the screen as shown below.

```
User  ◄──►  Clear  ◄──►  Soft
  ▲                        ▲
  └────────────────────────┘
```
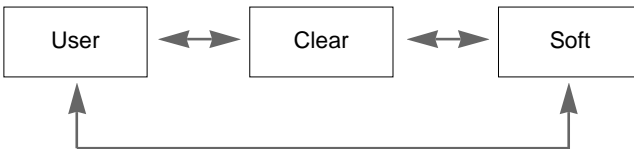
* You can also use this function by using the **MENU** button.
  (Video/S-Video/Component mode)

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# Using Tracking function

## Auto Tracking Function

* **Auto Tracking Function**
  This function assures you of getting the best video quality by automatically adjusting the difference of horizontal size and synchronization of the image.
  Auto Tracking function works in Analog RGB(A-RGB1, A-RGB2) input only.

**1** Press the **AUTO TRACKING** button.

```
                    Auto Tracking
```

* Image positioning and synchronization are automatically adjusted.

---

**2** Adjust [**Clock**] or [**Phase**] in 🔲 menu after operation of [**Auto Tracking**] if you want to get better picture quality in accordance with diverse Analog RGB(A-RGB1, A-RGB2) input modes.
In certain circumstances, you can't get the best picture quality only with auto-correction.
(Refer to page 55.)

---

* You can also use this function by using the **MENU** button.(Only in Analog RGB mode)
* For best results, perform this function while displaying a still image.

# Clock / Phase Function

* **Clock Function**
 This function adjusts the horizontal width of the projected image to get the image to fit on the screen size.
* **Phase Function**
 This function is for the detailed adjustment of the clock function.
* It's available to adjust [Clock], [Phase] in Analog RGB mode only.

**1** Press the **MENU** button and then use ▲ / ▼ button to select the 🔲 menu.

| | Auto Tracking | |
|---|---|---|
| | Clock | 25 |
| | Phase | 25 |
| | Horizontal | 0 |
| | Vertical | 0 |
| | Menu exit ♦ move ■ OK | |
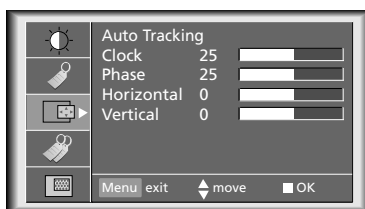
**2** Press the **OK** (■) button and then use ▲ / ▼ button to select [**Clock**] or [**Phase**] item.

| | Auto Tracking | |
|---|---|---|
| | Clock | 25 |
| | Phase | 25 |
| | Horizontal | 0 |
| | Vertical | 0 |
| | Menu prev. ♦ move ◄► adjust | |
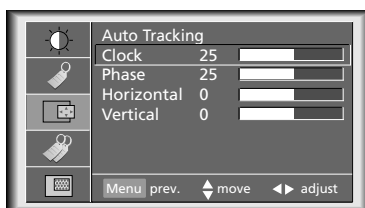
**3** Press the **VOLUME** (◄, ►) button to adjust the screen condition.

● To exit the menu display, press the **MENU** button.

# External control device setup

* Connect the RS-232C input jack to an external control device (such as a computer or an A/V control system) and control the Projector's functions externally.
* When you connect a control(RS-232C) cable to this projector, use a control cable with a ferrite core attached. If you do not do this, this projector will not conform to mandatory CISPR22(EN55022) standards.

## SET ID

• Use this function to specify projector ID number.

**1** Press the **MENU** button and then use ▲ / ▼ button to select the ✍ menu.

| | V Keystone | 0 | |
|---|---|---|---|
| | H Keystone | 0 | |
| | Zoom | | |
| | Blank Image | ◄ | Blue | ► |
| | Set ID | ◄ | 1 | ► |
| | Lamp Time | | 0 Hr |

Menu exit　▲▼ move　■ OK
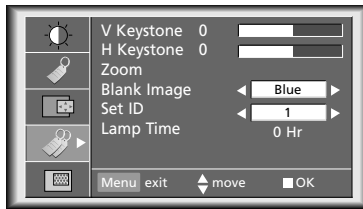
**2** Press the **OK** (■) button and then use ▲ / ▼ button to select [**Set ID**] item.

**3** Press the **VOLUME** (◄, ►) button to adjust Set ID to choose the desired projector ID number.

● The adjustment range of **Set ID** is 1~99.
● If projector have specified ID number, the choosed projector operates only.
● To exit the menu display, press the **MENU** button.

| | V Keystone | 0 | |
|---|---|---|---|
| | H Keystone | 0 | |
| | Zoom | | |
| | Blank Image | ◄ | Blue | ► |
| | Set ID | ◄ | 1 | ► |
| | Lamp Time | | 0 Hr |

Menu prev.　▲▼ move　◄► select
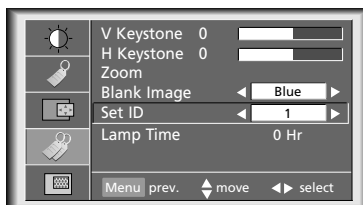
# How to connect external control equipment

- Connect the serial port of the PC to the RS-232C jack on the projector back panel.
- RS-232C cable is not supplied with the projector.
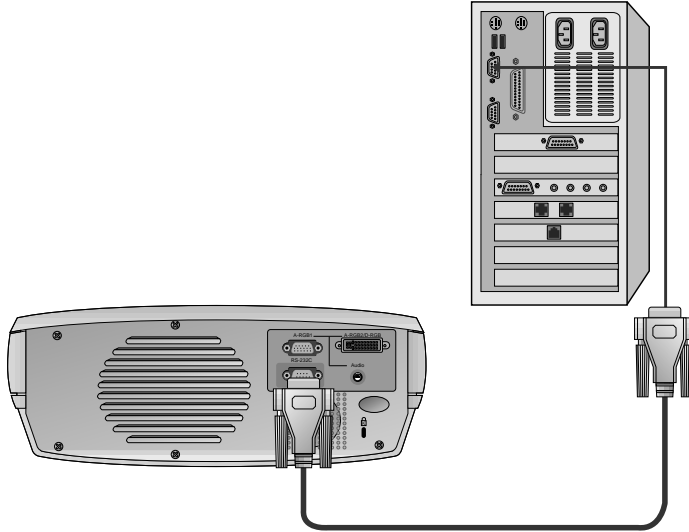


- Use the RS232C cable to control the projector externally (Refer to Fig.1).

<Fig.1, RS-232 Interface Cable>



| | Male (-) | | | Female (-) | |
|---|---|---|---|---|---|
| RXD | 2 | | 3 | TXD |
| TXD | 3 | | 2 | RXD |
| GND | 5 | | 5 | GND |
| DTR | 4 | | 4 | DTR |
| DSR | 6 | | 6 | DSR |
| RTS | 7 | | 7 | RTS |
| CTS | 8 | | 8 | CTS |
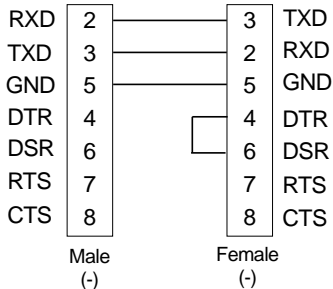
* 1, 9 Pin No Connection

### Communication Parameter Setup

- Baud Rate : 19200 bps(UART)
- Data Length : 8 bit
- Parity : none
- Stop bit : 1 bit
- Flow Control : none
- Communication code : ASCII code

# External control device setup

## Command Reference List

|  | Command1 | Command2-1 | Command2-2 | SET ID Data(Hexa) | Data(Hexa) |
|---|---|---|---|---|---|
| 01. Power | k | 0 | 0 | 00~63 | 00, 01 |
| 02. Input Select | k | 0 | 1 | 00~63 | 00~05 |
| 03. Aspect Ratio | k | 0 | 2 | 00~63 | 00~05 |
| 04. Screen Mute | k | 0 | 3 | 00~63 | 00, 01 |
| 05. Sub Input Select | k | 0 | 4 | 00~63 | 00~05 |
| 06. Contrast | k | 3 | 0 | 00~63 | 00~64 |
| 07. Brightness | k | 3 | 1 | 00~63 | 00~64 |
| 08. Color | k | 3 | 2 | 00~63 | 00~64 |
| 09. Tint | k | 3 | 3 | 00~63 | 00~64 |
| 10. Sharpness | k | 3 | 4 | 00~63 | 00~64 |
| 11. Color R | k | 3 | 6 | 00~63 | 00~64 |
| 12. Color G | k | 3 | 7 | 00~63 | 00~64 |
| 13. Color B | k | 3 | 8 | 00~63 | 00~64 |
| 14. Color Temp. R | k | 3 | 9 | 00~63 | 00~64 |
| 15. Color Temp. G | k | 3 | a | 00~63 | 00~64 |
| 16. Color Temp. B | k | 3 | b | 00~63 | 00~64 |
| 17. Twin Picture Mode Select | k | 4 | 1 | 00~63 | 00, 01, 02 |
| 18. Volume Mute | k | 5 | 4 | 00~63 | 00, 01 |
| 19. Volume Control | k | 5 | 0 | 00~63 | 00~64 |
| 20. OSD Lock mode | k | 9 | 0 | 00~63 | 00, 01 |
| 21. Remote Control Lock mode | k | 9 | 1 | 00~63 | 00, 01 |

## ❑ Communication Protocol

### 1. Transmission

[Command1][Command2-1][Command2-2][ ][Set ID][ ][Data][Cr]

* [Command 1]     : To classify factory adjustment mode or user adjustment mode.(ASCII code, 1 Character)
* [Command 2-1]  : Group classification code to control set.(ASCII code, 1 Character)
  ➔ Shortening Key Group :0, Video Group : 3, Twin Picture Group : 4, Audio Group:5, Others : 9
* [Command 2-2] : To control projector set.
* [Set ID]            : You can adjust the set ID to choose desired projector ID number in special menu. See previous page.
  Adjustment range is 1 ~ 99. When selecting Set ID '0', every connected projector set is controlled.
* [DATA]            : To transmit command data. Transmit 2 character when organized ASCII code.
  * Transmit 'FF' data to read status of command.
* [Cr]                : Carriage Return
  ASCII code '0x0D'
* [ ]                  : ASCII code character correspond to "Space Bar" which is in order to classify command set ID and Data.

[Command2-1][Command2-2][ ][Set ID][ ][OK][Data][X]

* The Projector transmits ACK (acknowledgement) based on this format when receiving normal data. At this time, if the data is
  data read mode, it indicates present status data. If the data is data write mode, it returns the data of the PC computer.

### 2. Error Acknowledge

[Command2-1][Command2-2][ ][Set ID][ ][NG][Data][X]

* The Projector transmits ACK (acknowledgement) based on this format when receiving abnormal data from non-viable
  functions or communication errors.

Data : [01] : illegal code(This command is not supported.)
         [02] : not support function(This function doesn't work.)
         [03] : wait more time(Try again a few minute later.)

## 01. Power (Command2-1:0, Command2-2:0)

➜ To control Power On/Off of the Projector.

*Transmission*

| [k] [0] [0] [Set ID] [ ] [Data] [Cr] |
|---|

Data     00 : Power Off
          01 : Power On

*Ack*

| [0] [0] [ ] [Set ID] [ ] [OK] [Data] [X] |
|---|

Data     00 : Power Off
          01 : Power On

➜ To show Power On/Off status.

*Transmission*

| [k] [0] [0] [ ] [Set ID] [ ] [FF] [Cr] |
|---|

*Ack*

| [0] [0] [ ] [Set ID] [ ] [OK] [Data] [X] |
|---|

Data     00 : Power Off
          01 : Power On

* In like manner, if other functions transmit 'FF' data based on this format, Acknowledgement data feed back presents status about each function.

## 02. Input Select (Command2-1:0, Command2-2:1)

➜ To select input source for the Set.

*Transmission*

| [k] [0] [1] [ ] [Set ID] [ ] [Data] [Cr] |
|---|

Data   00 : A-RGB1   01 : A-RGB2   02 : D-RGB
       03 : Video     04 : S-Video   05 : Component

*Ack*

| [0] [1] [ ] [Set ID] [ ] [OK] [Data] [X] |
|---|

Data   00 : A-RGB1   01 : A-RGB2   02 : D-RGB
       03 : Video     04 : S-Video   05 : Component

## 03. Aspect Ratio (Command2-1:0, Command2-2:2)

➜ To adjust the screen format.

*Transmission*

| [k] [0] [2] [ ] [Set ID] [ ] [Data] [Cr] |
|---|

Data   00 : Wide Screen(16:9)    01 : Normal Screen( 4:3)
       02 : Zoom 1               03 : Zoom 2
       04 : Zoom 3               05 : Zoom 4

*Ack*

| [0] [2] [ ] [Set ID] [ ] [OK] [Data] [X] |
|---|

Data   00 : Wide Screen(16:9)    01 : Normal Screen( 4:3)
       02 : Zoom 1               03 : Zoom 2
       04 : Zoom 3               05 : Zoom 4

* Using the PC input, you select either 16:9 or 4:3 screen aspect ratio.
* Screen size function doesn't work with HD signal.
* Zoom1~Zoom4 mode works only with Video/S-Video/ Component(480i(576i), 480p) input.

## 04. Screen Mute (Command2-1:0, Command2-2:3)

➜ To select screen mute on/off.

*Transmission*

| [k] [0] [3] [ ] [Set ID] [ ] [Data] [Cr] |
|---|

Data     01 : Screen Mute On (Picture Off)
          00 : Screen Mute Off (Picture On)

*Ack*

| [0] [3] [ ] [Set ID] [ ] [OK] [Data] [X] |
|---|

Data     01 : Screen Mute On (Picture Off)
          00 : Screen Mute Off (Picture On)

## 05. Sub Input Select
### (Command2-1:0, Command2-2:4)

➜ To select input source for sub picture.

*Transmission*

| [k] [0] [4] [ ] [Set ID] [ ] [Data] [Cr] |
|---|

Data   00 : A-RGB1   01 : A-RGB2   02 : D-RGB
       03 : Video      04 : S-Video   05 : Component

*Ack*

| [0] [4] [ ] [Set ID] [ ] [OK] [Data] [X] |
|---|

Data   00 : A-RGB1   01 : A-RGB2   02 : D-RGB
       03 : Video      04 : S-Video   05 : Component

## 06. Contrast (Command2-1:3, Command2-2:0)

→ To adjust screen contrast.

### Transmission

[k] [3] [0] [ ] [Set ID] [ ] [Data] [Cr]

Data    Min : 00 ~ Max : 64
* Refer to 'Real data mapping 1'.
* Always marks data value with Hexadecimal.
  That is, marks with two-place Hexadecimal
  while writing and read data is also marked with
  Hexadecimal value.

### Ack

[3] [0] [ ] [Set ID] [ ] [OK] [Data] [X]

Data    Min : 00 ~ Max : 64

## 07. Brightness (Command2-1:3, Command2-2:1)

→ To adjust screen brightness.

### Transmission

[k] [3] [1] [ ] [Set ID] [ ] [Data] [Cr]

Data    Min : 00 ~ Max : 64
* Refer to 'Real data mapping 1'.
* Always marks data value with Hexadecimal.
  That is, marks with two-place Hexadecimal
  while writing and read data is also marked with
  Hexadecimal value.

### Ack

[3] [1] [ ] [Set ID] [ ] [OK] [Data] [X]

Data    Min : 00 ~ Max : 64

## 08. Color (Command2-1:3, Command2-2:2)

→ To adjust the screen color.

### Transmission

[k] [3] [2] [ ] [Set ID] [ ] [Data] [Cr]

Data    Min : 00 ~ Max : 64
* Refer to 'Real data mapping 1'.
* Always marks data value with Hexadecimal.
  That is, marks with two-place Hexadecimal
  while writing and read data is also marked with
  Hexadecimal value.

### Ack

[3] [2] [ ] [Set ID] [ ] [OK] [Data] [X]

Data    Min : 00 ~ Max : 64

## 9. Tint (Command2-1:3, Command2-2:3)

→ To adjust the screen tint.

### Transmission

[k] [3] [3] [ ] [Set ID] [ ] [Data] [Cr]

Data    Red : 00 ~ Green : 64
* Refer to 'Real data mapping2'.
* Always marks data value with Hexadecimal.
  That is, marks with two-place Hexadecimal
  while writing and read data is also marked with
  Hexadecimal value.

### Ack

[3] [3] [ ] [Set ID] [ ] [OK] [Data] [X]

Data    Red : 00 ~ Green : 64

```
* Real data mapping 1          * Real data mapping 2

  0  : Step 0                     0  : Step -50
  ⋮                               ⋮
  A  : Step 10                    32 : Step 0
  ⋮                               ⋮
  F  : Step 15                    64 : Step 50
  10 : Step 16
  ⋮
  64 : Step 100
```

* This is a Hexadecimal number data.

## 10. Sharpness (Command2-1:3, Command2-2:4)

→ To adjust the screen sharpness.
### Transmission

[k] [3] [4] [ ] [Set ID] [ ] [Data] [Cr]

Data    Min : 00 ~ Max : 64
* Refer to 'Real data mapping 1'.
* Always marks data value with Hexadecimal.
  That is, marks with two-place Hexadecimal
  while writing and read data is also marked with
  Hexadecimal value.

### Ack

[3] [4] [ ] [Set ID] [ ] [OK] [Data] [X]

Data    Min : 00 ~ Max : 64

## 11. Color R Adjustment
## (Command2-1:3, Command2-2:6)

➔ To adjust red in color temperature.

*Transmission*

[k] [3] [6] [ ] [Set ID] [ ] [Data] [Cr]

Data     Min : 00 ~ Max : 64
* Refer to 'Real data mapping 1'.
* Always marks data value with Hexadecimal.
  That is, marks with two-place Hexadecimal
  while writing and read data is also marked with
  Hexadecimal value.

*Ack*

[3] [6] [ ] [Set ID] [ ] [OK] [Data] [X]

Data     Min : 00 ~ Max : 64


## 12. Color G Adjustment
## (Command2-1:3, Command2-2:7)

➔ To adjust green in color temperature.

*Transmission*

[k] [3] [7] [ ] [Set ID] [ ] [Data] [Cr]

Data     Min : 00 ~ Max : 64
* Refer to 'Real data mapping 1'.
* Always marks data value with Hexadecimal.
  That is, marks with two-place Hexadecimal
  while writing and read data is also marked with
  Hexadecimal value.

*Ack*

[3] [7] [ ] [Set ID] [ ] [OK] [Data] [X]

Data     Min : 00 ~ Max : 64


## 13. Color B Adjustment
## (Command2-1:3, Command2-2:8)

➔ To adjust blue in color temperature.

*Transmission*

[k] [3] [8] [ ] [Set ID] [ ] [Data] [Cr]

Data     Min : 00 ~ Max : 64
* Refer to 'Real data mapping 1'.
* Always marks data value with Hexadecimal.
  That is, marks with two-place Hexadecimal
  while writing and read data is also marked with
  Hexadecimal value.

*Ack*

[3] [8] [ ] [Set ID] [ ] [OK] [Data] [X]

Data     Min : 00 ~ Max : 64


## 14. Color Temp. R
## (Command2-1:3, Command2-2:9)

➔ Adjust the color temperature R of LCD part.

*Transmission*

[k] [3] [9] [ ] [Set ID] [ ] [Data] [Cr]

Data     Min : 00 ~ Max : 64
* Refer to 'Real data mapping 1'.
* Always marks data value with Hexadecimal.
  That is, marks with two-place Hexadecimal
  while writing and read data is also marked with
  Hexadecimal value.

*Ack*

[3] [9] [ ] [Set ID] [ ] [OK] [Data] [X]

Data     Min : 00 ~ Max : 64


## 15. Color Temp. G
## (Command2-1:3, Command2-2:a)

➔ Adjust the color temperature G of LCD part.

*Transmission*

[k] [3] [a] [ ] [Set ID] [ ] [Data] [Cr]

Data     Min : 00 ~ Max : 64
* Refer to 'Real data mapping 1'.
* Always marks data value with Hexadecimal.
  That is, marks with two-place Hexadecimal
  while writing and read data is also marked with
  Hexadecimal value.

*Ack*

[3] [a] [ ] [Set ID] [ ] [OK] [Data] [X]

Data     Min : 00 ~ Max : 64


## 16. Color Temp. B
## (Command2-1:3, Command2-2:b)

➔ Adjust the color temperature B of LCD part.

*Transmission*

[k] [3] [b] [ ] [Set ID] [ ] [Data] [Cr]

Data     Min : 00 ~ Max : 64
* Refer to 'Real data mapping 1'.
* Always marks data value with Hexadecimal.
  That is, marks with two-place Hexadecimal
  while writing and read data is also marked with
  Hexadecimal value.

*Ack*

[3] [b] [ ] [Set ID] [ ] [OK] [Data] [X]

Data     Min : 00 ~ Max : 64

## 17. Twin Picture Mode Select
### (Command2-1:4, Command2-2:1)

➜ To control the twin picture.

*Transmission*

| [k] [4] [1] [ ] [Set ID] [ ] [Data] [Cr] |
|---|

Data   00 : FULL   01 : TWIN 1   02 : TWIN 2

*Ack*

| [4] [1] [ ] [Set ID] [ ] [OK] [Data] [X] |
|---|

Data   00 : FULL   01 : TWIN 1   02 : TWIN 2

## 18. Volume Mute (Command2-1:5, Command2-2:4)

➜ To control volume mute on/off.

*Transmission*

| [k] [5] [4] [ ] [Set ID] [ ] [Data] [Cr] |
|---|

Data   00 :  Volume Mute On (Volume Off)
       01 :  Volume Mute Off (Volume On)

*Ack*

| [5] [4] [ ] [Set ID] [ ] [OK] [Data] [X] |
|---|

Data   00 :  Volume Mute On (Volume Off)
       01 :  Volume Mute Off (Volume On)

## 19. Volume Control (Command2-1:5, Command2-2:0)

➜ To adjust volume.

*Transmission*

| [k] [5] [0] [ ] [Set ID] [ ] [Data] [Cr] |
|---|

Data    Min : 00 ~ Max : 64
∗ Refer to 'Real data mapping 1'.
* Always marks data value with Hexadecimal.
  That is, marks with two-place Hexadecimal
  while writing and read data is also marked with
  Hexadecimal value.

*Ack*

| [5] [0] [ ] [Set ID] [ ] [OK] [Data] [X] |
|---|

Data    Min : 00 ~ Max : 64

## 20. OSD Lock mode
### (Command2-1:9, Command2-2:0)

➜ This function operates Local Keypad and
   Remote control Lock so that only Power button
   on Local Keypad works with "OSD Lock On".

*Transmission*

| [k] [9] [0] [ ] [Set ID] [ ] [Data] [Cr] |
|---|

Data     00 : OSD Lock Mode Off
         01 : OSD Lock Mode On

*Ack*

| [9] [0] [ ] [Set ID] [ ] [OK] [Data] [X] |
|---|

Data     00 : OSD Lock Mode Off
         01 : OSD Lock Mode On

## 21. Remote Control Lock mode
### (Command2-1:9, Command2-2:1)

➜ To lock the front panel controls on the
   projector and remote control.

*Transmission*

| [k] [9] [1] [ ] [Set ID] [ ] [Data] [Cr] |
|---|

Data     00 : Remote Control Lock Off
         01 : Remote Control Lock On

*Ack*

| [9] [1] [ ] [Set ID] [ ] [OK] [Data] [X] |
|---|

Data     00 : Remote Control Lock Off
         01 : Remote Control Lock On

* If you're not use the remote control, set this mode.

# Supported Monitor Display

\* The projector displays the best image quality at a resolution of 1280x720 pixels.
  To display other resolution images, the projector compresses or expands it to 1280x720.
  The following table lists the display formats supported by the projector.

| Sources | | Format | Vertical Freq.(Hz) | Horizontal Freq. (kHz) |
|---|---|---|---|---|
| VGAEGA | | 640X350 | 70.090Hz | 31.468kHz |
| | | 640X350 | 85.080Hz | 37.861kHz |
| PC98 / VGA text | | 640X400 | 70.090Hz | 31.468kHz |
| | | 640X400 | 85.080Hz | 37.861kHz |
| | | 720X400 | 70.082Hz | 31.469kHz |
| | | 720X400 | 85.039Hz | 37.927kHz |
| VGA | | 640X480 | 59.940Hz | 31.469kHz |
| | | 640X480 | 66.667Hz | 35.00kHz |
| | | 640X480 | 72.800Hz | 37.861kHz |
| | | 640X480 | 75.00Hz | 37.500kHz |
| | | 640X480 | 85.008Hz | 43.269kHz |
| SVGA | | 800X600 | 56.250Hz | 35.156kHz |
| | | 800X600 | 60.317Hz | 37.879kHz |
| | | 800X600 | 72.188Hz | 48.077kHz |
| | | 800X600 | 75.00Hz | 46.875kHz |
| | | 800X600 | 85.061Hz | 53.674kHz |
| XGA | | 1024X768 | 60.004Hz | 48.363kHz |
| | | 1024X768 | 70.069Hz | 56.476kHz |
| | | 1024X768 | 75.029Hz | 60.023kHz |
| SXGA | | 1152X864 | 60.053Hz | 54.348kHz |
| | | 1280X960 | 60.00Hz | 60.00kHz |
| | | 1280X1024 | 60.020Hz | 63.981kHz |
| MAC | 16¥ | 832X624 | 74.550Hz | 49.725kHz |
| | 19¥ | 1024X768 | 60.004Hz | 48.363kHz |
| | | 1024X768 | 75.029Hz | 60.241kHz |

\* If the projector does not support the input signal, "Out of Range" message appears on the screen.
\* The projector supports DDC1/2B type as Plug & Play function.(Auto recognition of PC monitor)
\* The Synchronization input form for horizontal and vertical frequencies are Separate, Composite and SOG.
\* According to PC, the optimum vertical frequency may not be displayed up to the optimum frequency of set in
  'Registration information(Display registration information)'.(ex, The optimum vertical frequency may be displayed
  up to 75Hz or under in the resolution of 640X480 or 800X600.)

INFORMA-
TION

# Maintenance

* The projector needs little maintenance. You should keep the lens clean because any dirt or stains may appear on the screen. You will also need to clean the air filter attached at the bottom of the projector periodically because a clogged air filter prevents proper ventilation that is necessary to cool the projector and prevents it from overheating. If any parts need to be replaced, contact your dealer.  When cleaning any part of the projector, always turn the power off and unplug the projector first.

## Cleaning the lens

Clean the lens whenever you notice dirt or dust on the surface of it. Wipe the lens surface gently with an air spray or a soft, dry lint-free cloth.

To remove dirt or stains on the lens, moisten a soft cloth with water and a neutral detergent and wipe the lens surface gently.

## Cleaning the Projector Case

To clean the projector case, first unplug the power cable. To remove dirt or dust, wipe the casing with a soft, dry, lint-free cloth. To remove stubborn dirt or stains, moisten a soft cloth with water and a neutral detergent and then wipe the casing.
Do not use alcohol, benzene, thinners or other chemical detergents as these can cause the casing to be warped.

## Cleaning the Air Filter

The air filter, which is located at the bottom of the projector, should be cleaned after every 100 hours' use.
If it is not cleaned periodically, it can become clogged with dust and prevent the projector from being ventilated properly. This may cause overheating and damage of the projector.

To clean the air filter :
1. Switch the projector off and unplug the power cable from the wall socket.
2. Stand the projector on it's side so that the handle can be at the top, and you can easily access the air filter.
3. Push the opening tip of the air filter cover and remove the cover.
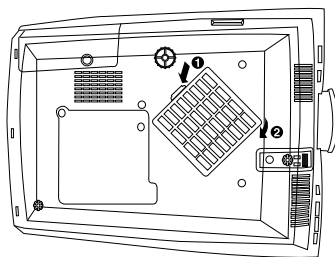


4. The air filter is inside the cover. To clean the filter, use a small vacuum cleaner designed for computers or other office equipment. If not, you may use a dry, lint-free cloth. If it is difficult to remove dirt or the filter is torn, contact your dealer or the service center to replace it.
5. Close the filter cover after cleaning.
6. Plug the power cable back into the wall socket.

# Memo

# Memo

# Specifications

| MODEL | RL-JA20 |
|---|---|
| LCD panel size | 0.87 inches |
| resolution | 1280(Horizontal) x 720(Vertical)pixel |
| screen size | 1.01~5.08m(40~200 inches) |
| remote control distance | 12m |
| speaker system | 3W |
| horizontal / vertical ratio | 16:9(horizontal:vertical) |
| zoom ratio | 1:1.3 |
| Video compatibility | NTSC/PAL/SECAM/NTSC4.43/PAL-M/PAL-N |
| Power | AC 100 - 240V~50/60Hz |
| height | 158mm(including front foot) |
| breadth | 344mm |
| length | 448.6mm(including lens) |
| weight | 4.2kg |

## Operating Condition

### temperature

In operation : 32~95°F(0°C~35°C)
In storage and transit : -4~140°F(-20°C~60°C)

### humidity

In operation : 0~ 80% relative humidity by dry hygrometer
Not in operation : 0 ~ 90% relative humidity by dry hygrometer

## Projection Lamp

### lamp model

AJ-LA60

### power consumption

210W

P/NO : 3828VA0360B@(373-026H)