HITACHI

Liquid Crystal Projector

Model name

CP-L540E/CP-L550E
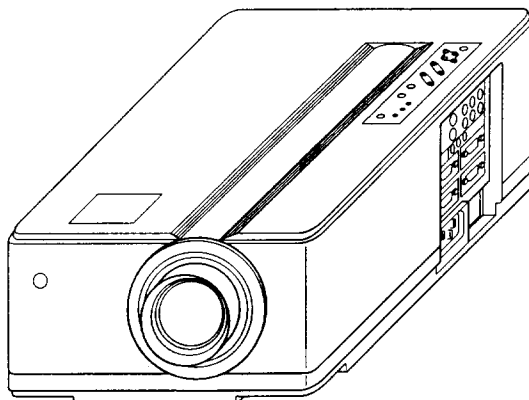
OPERATING GUIDE

Thank you very much for purchasing this Hitachi Liquid Crystal Projector.
Please read this operating guide to use correctly. After reading this manual, keep it carefully for future reference.

Outline

This Liquid Crystal Projector can display various computer signals and NTSC / PAL / SECAM video signals.

Features

(1) High brightness

A highly efficient optical system with a metal halide lampensures high brightness.

(2) High resolution

Three separate high-definition liquid crystal panels are used for the R, G and B signals.

(3) Compact size, light weight for portability

(4) RGB output terminal

(5) RS-232C Communication

Can be controlled from the computer.

(6) Power zoom and power focus functions

Contents   Page

Before use

⚠ FOR THE CUSTOMERS IN U.K

THIS PRODUCT IS SUPPLIED WITH A TWO PIN MAINS PLUG FOR USE IN MAINLAND EUROPE. FOR THE U.K PLEASE REFER TO THE NOTES ON THIS PAGE.

IMPORTANT FOR UNITED KINGDOM

WORDING FOR CLASS I EQUIPMENT INSTRUCTION BOOKS AND LABELS

The mains lead on this equipment is supplied with a moulded plug incorporating a fuse, the value of which is indicated on the pin face of the plug. Should the fuse need to be replaced, an ASTA or BSI approved BS 1362 fuse must be used of the same rating. If the fuse cover is detachable never use the plug with the cover omitted. If a replacement fuse cover is required, ensure it is of the same colour as that visible on the pin face of the plug. Fuse covers are available from your dealer.

DO NOT cut off the mains plug from this equipment. If the plug fitted is not suitable for the power points in your home or the cable is too short to reach a power point, then obtain an appropriate safety approved extension lead or consult your dealer.

Should it be necessary to change the mains plugs, this must be carried out by a competent person, preferable a qualified electrician.

If there is no alternative to cutting off the mains plug, ensure that you dispose of it immediately, having first removed the fuse, to avoid a possible shock hazard by inadvertent connection to the mains supply.

WARNING : THIS EQUIPMENT MUST BE EARTHED

IMPORTANT:

The wires in the mains lead are coloured in accordance with the following code:

Green and Yellow = Earth, Blue = Neutral, Brown = Live.

Green & Yellow to Earth ———————— Brown to Live

—————— Fuse

Blue to Neutral ——————

————— Cord Clamp
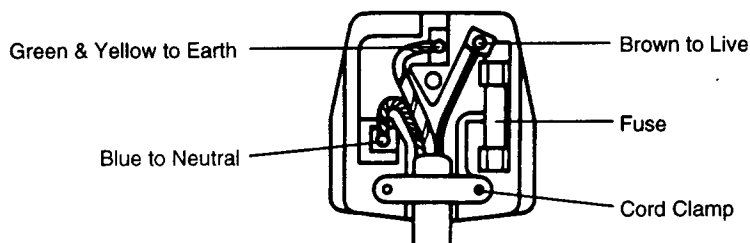
As these colours may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured Green and Yellow must be connected to the terminal in the plug which is marked with the letter E or by the earth symbol ⏚ or coloured Green or Green and Yellow.

The wire coloured Blue must be connected to the terminal marked with the letter N or coloured BLUE or BLACK. The wire coloured BROWN must be connected to the terminal marked with the letter L or coloured BROWN or RED.

〔Safety precaution〕

⚠Warning

■ Do not install this unit in an unstable place.

Avoid placing it in an unstable place such as weak base, inclined floor, etc. This may cause it to drop or fall over, resulting in injury.

■ Do not open the cabinet.

Do not open the cabinet. There are high voltage parts inside the cabinet and this may cause an electric shock. Ask your dealer to check inside and adjust and repair the unit.

Electric shock hazard

Prohibition of disassembly

■ Do not remodel this unit.

Do not remodel this unit. It may cause a fire, electric shock, etc.

Prohibition

■ Do not use this in a bathroom, etc.

Do not use this unit in a bathroom, etc. This may cause a fire, electric shock, etc.

Do not use near water

■ Do not look directly at the lens when the lamp is lit.

Do not look directly at the lens when the lamp is lit. Since a strong light is used, it could damage your vision, etc. Especially pay attention if children are present.

■ Do not use power supplies other than that specified.

Do not use this unit with a power voltage other than specified power supply voltage. It may cause a fire, electric shock, etc.

⚠Warning

■ If any abnormality occurs.

● When there is an abnormal smell or smoke, if you use this unit as it is, this could cause a fire or electric shock, etc. When an abnormality is found, immediately turn off the power switch and pull out the power plug from the power outlet. Check that there is no smoke, etc., then contact your dealer to repair the unit. Do not repair it yourself as it is very dangerous.

● Do not use this unit as it is after trouble has occurred, such as "No picture", "No sound", "Abnormal sound", etc. This may cause a fire,

Pull out the power plug from the power outlet.

electric shock, etc. In this case, immediately turn off the power switch and disconnect the power plug, then contact your dealer to repair the unit.

● If water, etc. enters inside the unit, turn off the power switch of the unit first and disconnect the power plug and then contact your dealer. If you use it as it is, it may cause a fire, electric shock, etc.

■ Do not insert any foreign object.

● Do not insert a metal or flammable object inside through the ventilation holes, etc. This may cause a fire, electric shock, etc.

● If foreign matter enters inside, turn the power switch off and disconnect the power plug from the power outlet and contact your dealer. If you use as it is, it may cause a fire, electric shock, etc. Be careful especially if children could **Pull out the power** touch the unit. **plug from the power outlet.**

■ Do not apply any shock.

If you drop this unit or if the cabinet is broken, turn off the power switch, disconnect the power plug and contact your

■ Do not put a container, etc.
with liquid on this unit.

Do not put a vase, flowerpot, cosmetic container, medicine or water and small metal objects on this unit. If liquid spills and enter inside the unit, it may cause a fire, electric shock, etc.

■ Be careful in handling the power cord.

● Do not scratch, damage or process the power cord. Do not bend it forcibly. Also do not put a heavy object on it, do not heat it and do not pull it. If you do, the power cord may be damaged and it may cause a fire, electric shock, etc.

· Do not pull the cord.
· Do not put a heavy object on it.
· Do not damage the cord.
· Do not put it near a heating device.

● Be careful that this unit is not placed on the power cord. The power cord may be damaged and it may cause a fire, electric shock, etc. If the cord is covered with a carpet, etc. a heavy object may be put on it without your realizing it.

● If the cord is damaged (core wire is exposed, disconnected, etc.), ask your dealer to replace it. It may cause a fire, electric shock, etc.

● Check that no dirt adheres to the power plug and fully insert without any play. If dirt adheres or the connection is incomplete, it may cause a fire, electric shock, etc.

⚠ Caution

■ Do not step on this unit or do not put a heavy object on it.

● Do not step on this unit. Especially pay attention if children are present. If you do, the unit may fall over or may be broken causing an injury.

● Do not put a heavy object on this unit. If you do, the unit may fall due to its imbalance or it may drop, causing an injury.

■ Do not block the ventilation holes.

Do not block the ventilation holes. If the ventilation holes are blocked, the heat inside may build up and it may cause a fire. Do not use this unit in the following ways: On its side. In a poorly ventilated, narrow place. On a carpet or bedspread. Covered with a tablecloth. Place this unit so that the ventilation holes are kept 10cm or more away from the wall.

■ Cleaning

Be sure to pull out the power plug from the power outlet for safety when cleaning.

Pull out the power plug from the power outlet.

■ Do not place this unit in a moist or dusty place.

● Do not place this unit in a moist or dusty place. It may cause a fire, electric shock, etc.

● Do not place this unit where it would be exposed to soot or steam, near a cooking stove or humidifier, etc. It may cause a fire, electric shock, etc.

■ Set the caster stoppers.

When this unit is installed on the table with casters, set the caster stoppers. If the table moves, it may fall over, causing an injury.

■ Handle the power cord carefully.

● Do not bring the power cord near a heating device. The shield of the cord may melt and it may cause a fire, electric shock, etc.

● Do not insert/disconnect the power plug with wet hands. It may cause an electric shock.

● When the power plug is to be disconnected, do not pull the power cord. The power cord may be damaged and it may cause a fire, electric shock, etc. Be sure to hold the power plug.

■ Use of batteries.

● Do not use batteries not specified for this unit. Do not use new batteries mixed together with old ones. This may cause a fire, injury due to burst of battery, liquid leakage.

● When inserting batteries in this unit, pay attention to the direction of the ⊕ and ⊖ polarity indications and insert the batteries correctly. If the polarities are confused, it may cause injury or damage near the unit due to burst batteries, liquid leakage, etc.

■ When you are not going to use for a long time.

When you are not going use this unit for a long time because you are going on a trip, etc., be sure to pull out the power plug from the power outlet for safety. And also apply cover to the lens so that the lens is not damaged.

Pull out the power plug from the power outlet.

⚠ Caution

■ Use of batteries.

● Do not use batteries not specified for this unit. Do not use new batteries mixed together with old ones. This may cause a fire, injury due to burst of battery, liquid leakage.

● When inserting batteries in this unit, pay attention to the direction of the $\oplus$ and $\ominus$ polarity indications and insert the batteries correctly. If the polarities are confused, it may cause injury or damage near the unit due to burst batteries, liquid leakage, etc.

■ When you are not going to use for a long time.

When you are not going use this unit for a long time because you are going on a trip, etc., be sure to pull out the power plug from the power outlet for safety. And also apply cover to the lens so that the lens is not damaged.

Pull out the power plug from the power outlet.

■ Clean inside the unit at least once two years.

Ask your dealer to clean inside the unit at least once two years . If the unit is left with too much dust inside as it is for a long this without cleaning, it may cause a fire. Especially it is effective to clean before the rainy season starts. Consult your dealer for the cost of the cleaning the inside the unit.

■ Caution when carrying it .

When this unit is to be moved, apply a cover to the lens and be sure to disconnect the power plug from the power outlet and check that all external connection cords are removed before moving it. If not, the cord may be damaged and it may cause a fire, electric shock, etc.

Pull out the power plug from the power outlet.

[General cautions]
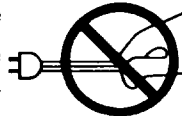
■ Do not place this unit where it gets hot.

Be careful since if you place the unit outdoors, in a place exposed to direct sunlight or near a heating device, the cabinet and parts could be affected.

■ Volume.

Use at the proper volume level so that it does not bother persons in the neighborhood. Especially, since the sound is likely to carry well at the night even at a low volume, consider the neighborhood to a good living environment.

■ Cleaning the lens.

To clean the lens, use a generally-available lens cleaning tissue (used for cleaning lens of camera, glasses, etc.). Be careful not to scratch the lens with a hard object.

■ Cleaning the cabinet .

● Since many plastic materials are used on the surface of the cabinet, if the surface is cleaned using benzene, thinner, etc., it may change in quality or the coating may be peeled off. Avoid using chemicals.

● When a chemically-teated cloth is used, follow the cautions that come with the cloth.

● Do not spray a volatile agent such as insecticide on the unit. Do not leave a rubber or vinyl object touching the cabinet for a long time. It may cause the cabinet to change in quality or the coating to peel off.

● Clean the dirt from the cabinet and operation panel by dusting lightly with a soft cloth. If the dirt is conspicuous, wipe off with a cloth moistened with detergent diluted with water, then wipe off with a dry soft cloth.

■ Rest your eyes occasionally

Names and functions of each part

Main unit

Cooling fan (discharge side)

Handle

Speaker

Lens

Remote control sensor

Cooling fan (suction side)
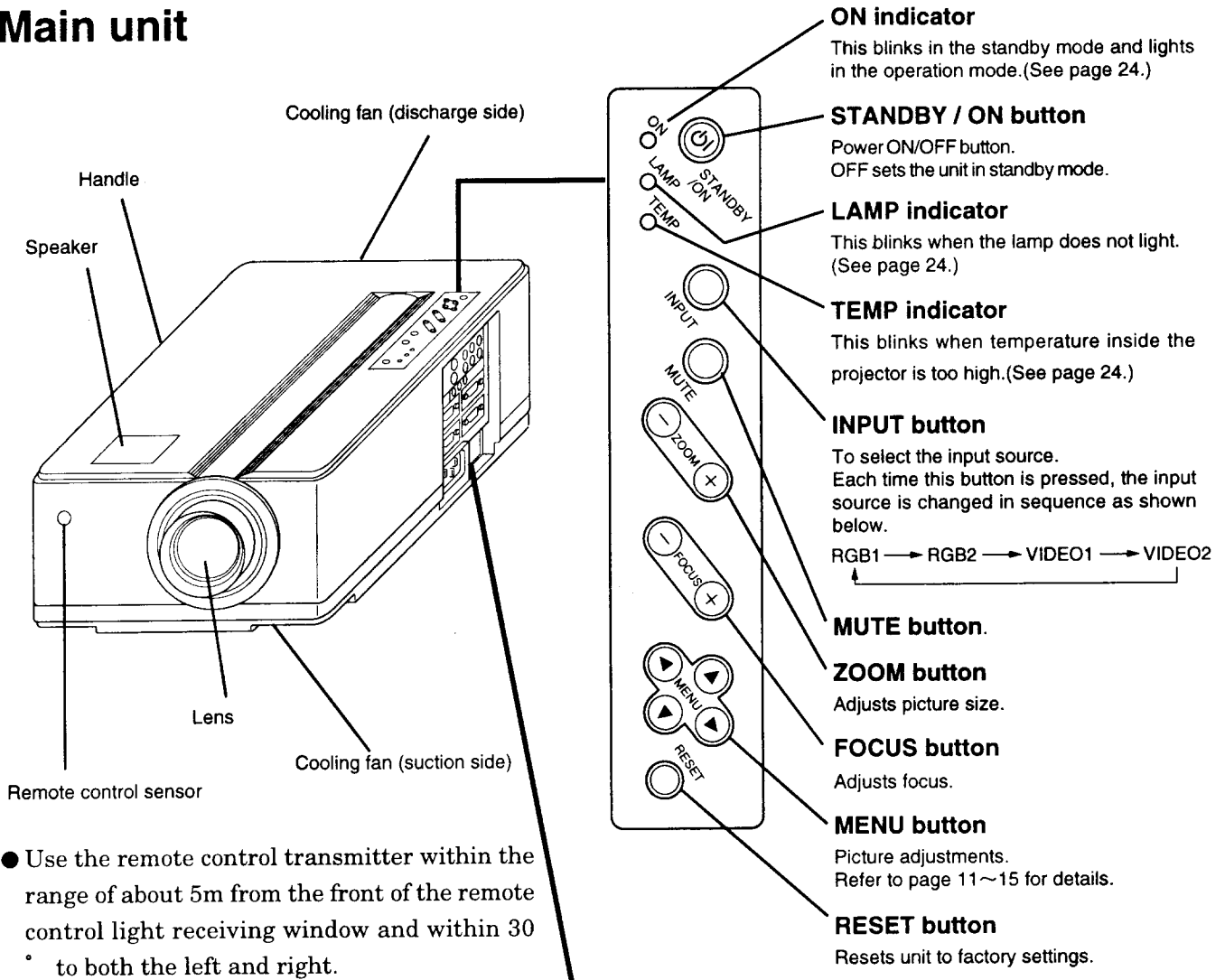
● Use the remote control transmitter within the range of about 5m from the front of the remote control light receiving window and within 30 ° to both the left and right.

ON indicator
This blinks in the standby mode and lights in the operation mode.(See page 24.)

STANDBY / ON button
Power ON/OFF button.
OFF sets the unit in standby mode.

LAMP indicator
This blinks when the lamp does not light. (See page 24.)

TEMP indicator
This blinks when temperature inside the projector is too high.(See page 24.)

INPUT button
To select the input source.
Each time this button is pressed, the input source is changed in sequence as shown below.
RGB1 ⟶ RGB2 ⟶ VIDEO1 ⟶ VIDEO2

MUTE button.

ZOOM button
Adjusts picture size.

FOCUS button
Adjusts focus.

MENU button
Picture adjustments.
Refer to page 11～15 for details.

RESET button
Resets unit to factory settings.

VIDEO input terminal
S-VIDEO input terminal
    Mini DIN-4pin connector (1/2)
VIDEO input terminal
    RCA Jack (1/2)
AUDIO L/R input terminal
    RCA Jack (1/2)

RGB input terminal
RGB input terminal
    D sub 15pin shrink terminal (1/2)
AUDIO input terminal
    Stereo mini jack (1/2)

When a monaural sound signal is to be input, connect it to the AUDIO L input terminal.
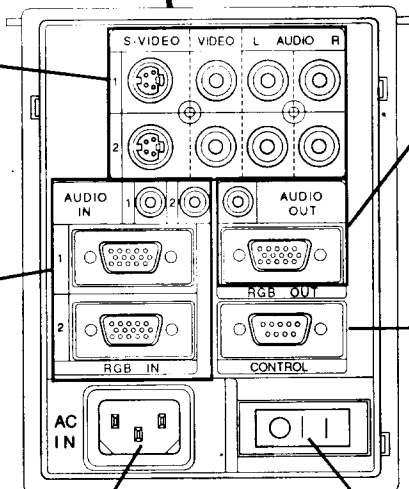
RGB output terminal
RGB output terminal
    D sub 15pin shrink terminal
AUDIO output terminal (RGB/VIDEO)
    Stereo mini jack

CONTROL terminal
    D sub 9pin terminal

AC IN socket
Connect the provided power cord.

MAIN POWER switch
Main power ON/OFF switch.

Names and functions of each part (continued)

Remote control transmitter

MENU STICK SWITCH
When displays the on-screen menus, selects or adjusts the menu items.
When removes the on-screen menus, works as the mouse included left button.

STANDBY / ON button
Power ON/OFF button.
OFF sets the unit in standby mode.

RESET / RIGHT button
When displays the on-screen menus, resets the menu item to factory settings.
When removes the on-screen menus, works as right quick button.

ZOOM button
Adjusts picture size.

MENU ON / OFF button
Displays or removes the on-screen menus.

TIMER ON / OFF button
Displays or removes the time setting menu item TIMER.
When the blank screen is displayed, TIMER can not be displayed.
(See page 15.)

FOCUS button
Adjusts focus.

VOLUME button
Adjusts volume.

BLANK ON / OFF button
The blank screen which is displayed by pressing BLANK will be revealed by MENU STICK SWITCH.
(See page 14.)

MUTE button

INPUT SEARCH button
Searches the input source.

INPUT SELECT button
Selects the input source.

How to insert batteries Insert the provided batteries (R6P or SUM-3) into the remote control transmitter.

1 Remove the battery compartment cover.

Slide the battery compartment cover in the direction of the arrow while pressing slightly down on it.
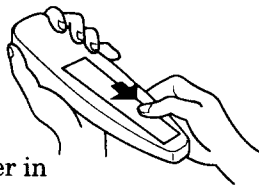
2 Insert the batteries as illustrated inside the battery compartment.
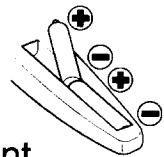
3 Replace the cover.

⚠Caution Cautions on use of batteries

● Do not use batteries not specified for this unit. Also do not use old and new batteries together. It may cause a fire, injury due to burst of battery or liquid leakage.

● When inserting batteries, pay attention to the direction of the ⊕ and ⊖ polarity indications and insert the batteries correctly. If the polarities are confused, it may cause injury or damage near the

Caution Cautions on use

● Do not drop the remote control transmitter or apply any shock to it.

● Do not let the remote control transmitter get wet and do not put it on a wet object. It may cause a malfunction.

● If you are not going to use it for a long time, remove the batteries from the remote control transmitter.

● If operation of the remote control becomes difficult, replace the batteries.

Installation

Example of the liquid crystal projector and screen installation

Determine picture size and projection distance as illustrated below.

Screen | View from the top |

| View from the side |

Lens center

b

a
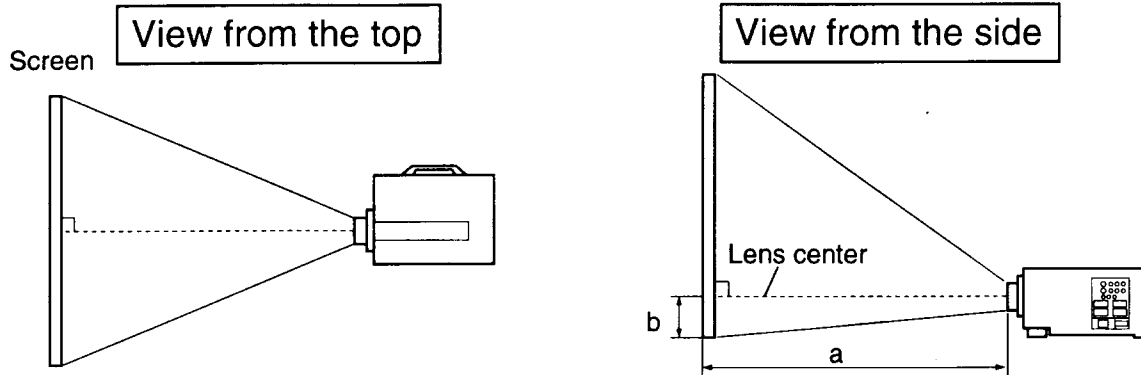
Screen	a		b
	Minimum	Maximum	
1.0m	1.4m	2.2m	9cm
1.5m	2.1m	3.4m	13cm
2.0m	2.8m	4.5m	17cm
2.5m	3.5m	5.7m	22cm
3.0m	4.2m	6.8m	26cm
3.8m	5.3m	8.6m	33cm
5.0m	7.1m	11.5m	44cm

a : Distance from the projector to the screen

b : Length from the center of the lens to the bottom of the picture

How to use foot adjusters

Adjust the projection position using the foot adjusters at the bottom of the projector.

| View from the front |

| View from the side |

unlock ◄—   —► lock
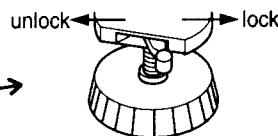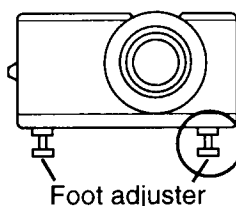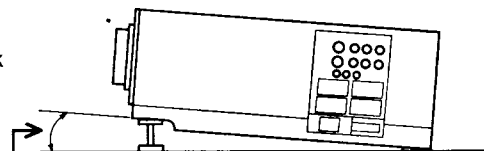
Foot adjuster

└─ A viewing angle of 1˚~7˚ can be changed.

1. Lift up the projector, unlock the foot adjusters.
2. Adjust a viewing angle, and then lock the foot adjusters complete.
3. To adjust the angle slightly, revolve the foot adjusters.

⚠Caution Do not unlock the foot adjusters while you do not support the projector, to avoid falling of the projector and causing an injury.

Do not revolve the foot adjusters by force, the foot adjusters is damaged.

If the foot adjusters do not lock completely, move the foot adjusters a little before locking.

Basic operations

To project the picture

```
2    6  3  4
```
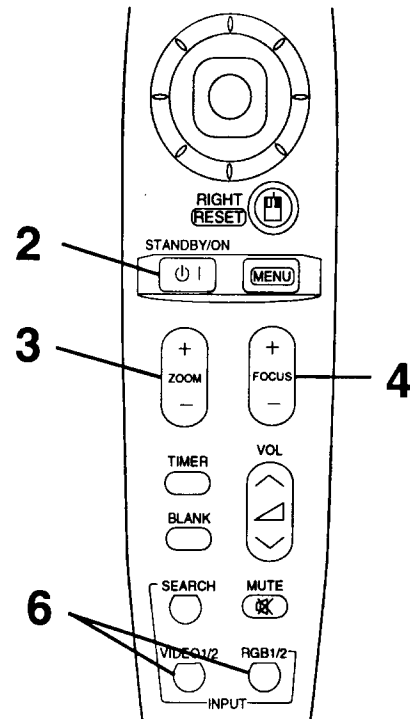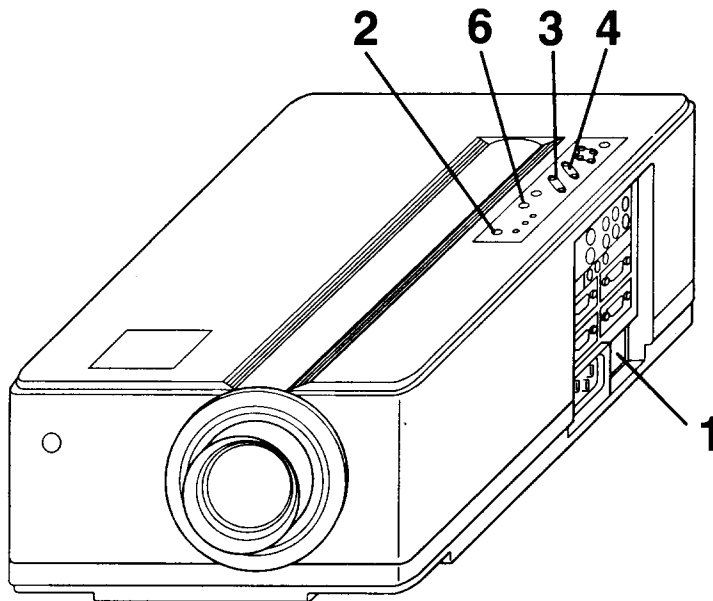
1 Turn the MAIN POWER switch of the projector on.[I : ON]

● The ON indicator will light up orange.

2 Press the STANDBY/ON button.

● The ON indicator blinks (green) and then lights (green).
● The ON indicator will blink green during warm-up and light up.

3 Adjust the picture size using the ZOOM button.

4 Adjust the focus using the FOCUS button.

(1) Press the FOCUS button. The on-screen display shown on the right
    appears.
(2) Adjust the focus so that the picture is clear using the FOCUS button.

| +++ FOCUS +++ |

5 Power on all connected equipment.

The method of connecting various equipment, see on the page 16~18.

6 Press the INPUT button or the INPUT SELECT (VIDEO or RGB) button to select the source of the signal to be projected on the screen.

Example on-screen display

● The selected signal input is displayed at the bottom right of the screen.

| RGB 1 |

Basic operations (continued)

To turn off the power
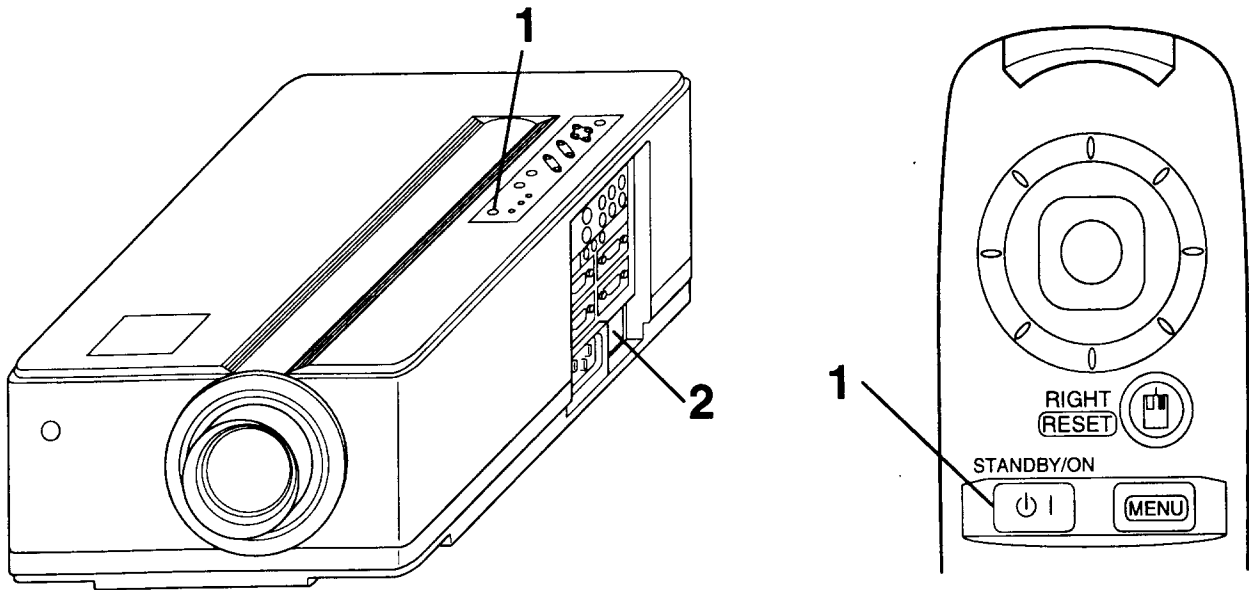
1 **Press the STANDBY/ON button, for 1 second.**

- The ON indicator lights up orange and the lamp turns off. (About 1 minute later), the fan stops and the indicator blinks orange.
- Press the STANDBY/ON button for short time (less than 1 second), the projector do not set in standby mode.

2 **Turn the MAIN POWER switch of the projector off.**
[○ : OFF]

Caution Do not turn off the MAIN POWER switch before pressing the STANDBY / ON button.
After the STANDBY/ON button is pressed, the fan rotates for about 1 minute to cool the projector.

Adjustments and functions

1, 2

2

1

RIGHT
(RESET)

STANDBY/ON

MENU

1

---
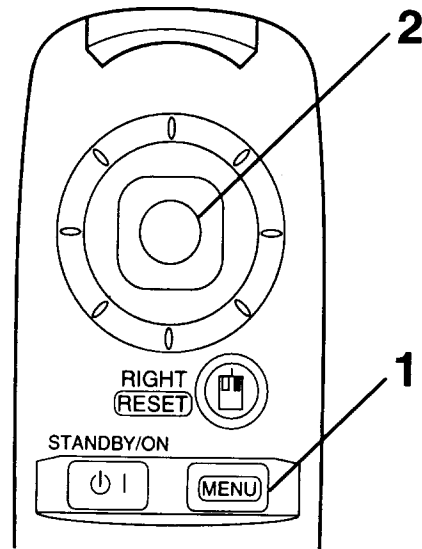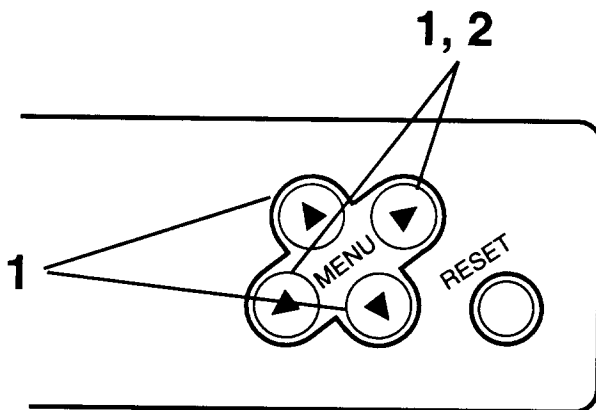
1 Press the MENU (⊕⊙⊙⊙) buttons or the NENU ON / OFF button.

● On-screen menus are displayed on the screen.

---

2 Select the menu to be adjusted using the MENU (⊙⊙) buttons or MENU STICK SWITCH.

● Menu displayed in green is selected.

---

3 Select the item to be adjusted using the MENU (⊕⊙⊙⊙) buttons or MENU STICK SWITCH.

● Item displayed in green can be adjusted.

Memory function

Individual memory functions are provided for the VIDEO1, VIDEO2, RGB1 and RGB2 input terminals. Adjustments are saved after power off.

To return to the initial setting

● Select the menu item to return to the initial setting.
● Press the RESET button.
● Select the DEFAULT (To select the CANCEL is not changed).

● Select the adjustment item to return to the initial setting.
● Press the RESET button.

SETUP INPUT IMAGE OPT.

VOL
BRI
CON
SHA
COL
TIN

RESET 'SETUP'

☐ DEFAULT
■ CANCEL
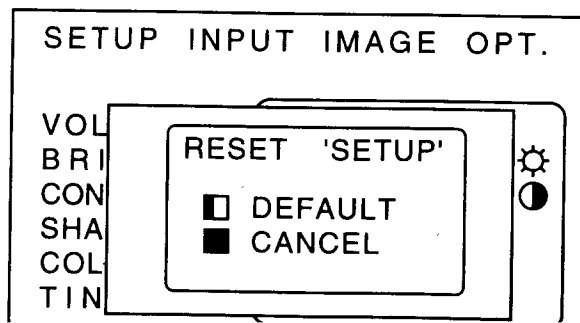
Adjustments and functions (continued)

SET UP

The menu SET UP serves for the change of parameters inflvencing the picture and for the move picture position.

RGB signal input

```
SETUP  INPUT  IMAGE  OPT.

VOLUME      [████    ]
BRIGHT      [█████  ]  ☼
CONTRAST    [█████  ]  ◑
V. POSIT       121      ▣
H. POSIT        57      ▣
H. PHASE         7
H. SIZE        800      ↔
```

VIDEO signal input

```
SETUP  INPUT  IMAGE  OPT.

VOLUME      [███    ]
BRIGHT      [█████  ]  ☼
CONTRAST    [█████  ]  ◑
SHARPNESS   [███    ]
COLOR       [███    ]
TINT        [████   ]
```
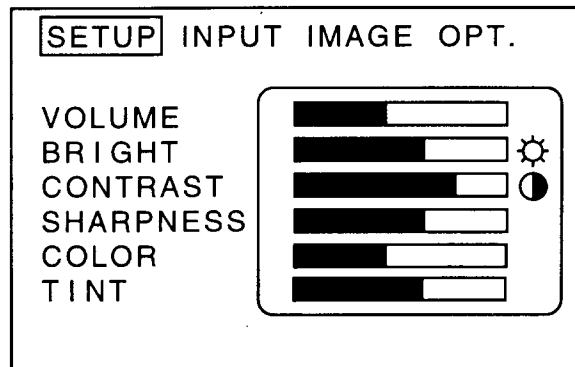
Adjustment Item	Details of adjustment
VOLUME	Decrease ◄——► Increase
BRIGHT (BRIGHTNESS)	Dark ◄——► Bright
CONTRAST	Lower ◄——► Higher
SHARPNESS	Soft ◄——► Sharp
COLOR	Less ◄——► More
TINT	Red ◄——► Green
V. POSIT (V. POSITION)	Moves the picture up or down.
H. POSIT (H. POSITION)	Moves the picture left or right.
H. PHASE	Decreases the picture flicker.
H. SIZE	Widens or Narrows the horizontal size of the picture.

(Caution) • TINT cannot be adjusted with a PAL, SECAM video signal input.
• TINT, COLOR and SHARPNESS cannot be adjusted with an RGB signal input.
• V.POSIT, H.POSIT, H.PHASE and H.SIZE cannot be adjusted with a VIDEO signal input.

Adjustments and functions (continued)

INPUT

The menu INPUT serves for the selection of input source.

```
SETUP  [INPUT]  IMAGE  OPT.

        ☐  RGB1
        ■  RGB2
        ☐  VIDEO1▶
        ☐  VIDEO2▶
        ☐  TEST
           PATTERN
```

```
SETUP  [INPUT]  IMAGE  OPT.

        ☐  RGB1
        ☐  RGB2                ─SYSTEM─
        ■  VIDEO1▶────────┐ ■  AUTO
        ☐  VIDEO2▶         ├☐  NTSC
        ☐  TEST            ├☐  PAL
           PATTERN         └☐  SECAM
```
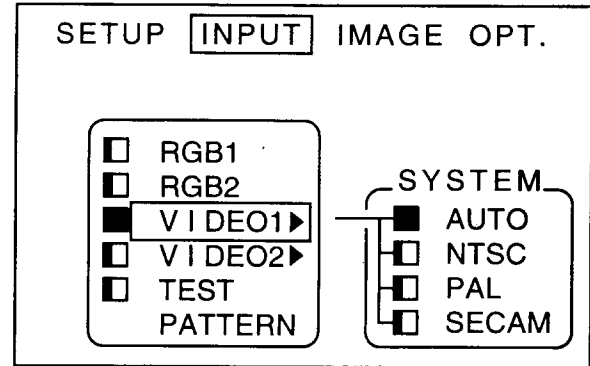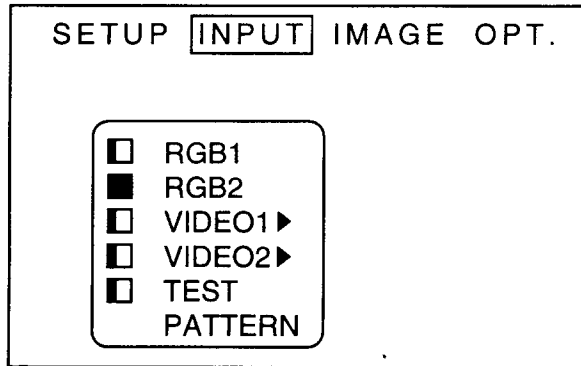
Adjustment Item	Details of adjustment
RGB 1	Selects the RGB 1 terminal.
RGB 2	Selects the RGB 2 terminal.
VIDEO 1	Selects the VIDEO 1 terminal.
VIDEO 2	Selects the VIDEO 2 terminal.
TEST PATTERN	Selects the TEST PATTERN. (Start up screen).
SYSTEM	Selects the video signal systems.

IMAGE

The menu IMAGE serves for the picture invertion.

```
SETUP  INPUT  [IMAGE]  OPT.

           MIRROR      ▶
           BLANK       ▶
           REVEAL      ▶
           MENU  SIZE  ▶
           MESSAGE     ▶
```

```
SETUP  INPUT  [IMAGE]  OPT.

   MIRROR  ■  NORMAL
           ☐  H : INVERT
           ☐  V : INVERT
           ☐  H&V :
                  INVERT
```

```
SETUP  INPUT  [IMAGE]  OPT.

   BLANK  ☐  WHITE
          ■  BLUE
          ☐  BLACK
```

```
SETUP  INPUT  [IMAGE]  OPT.

   REVEAL  ■  FAST
           ☐  ↑
           ☐  MEDIUM
           ☐  ↓
           ☐  SLOW
```
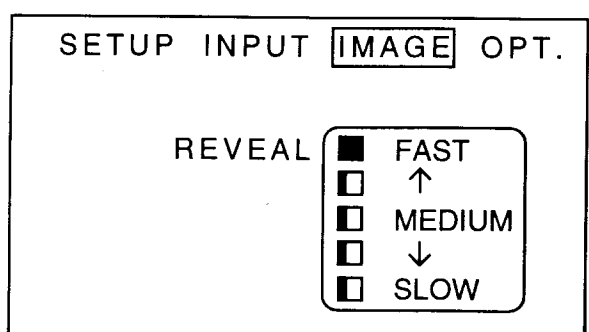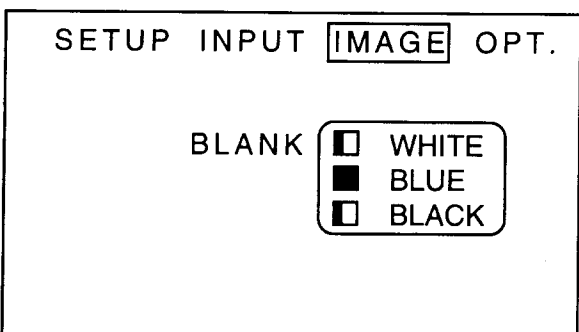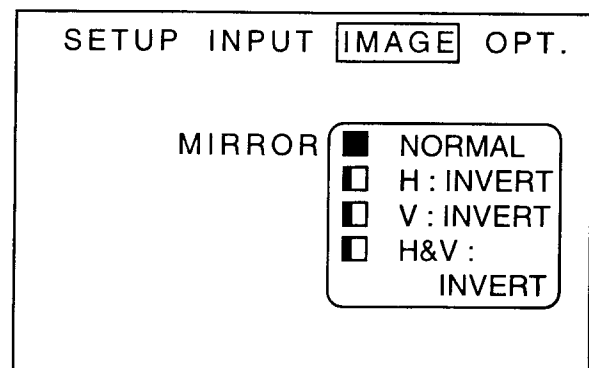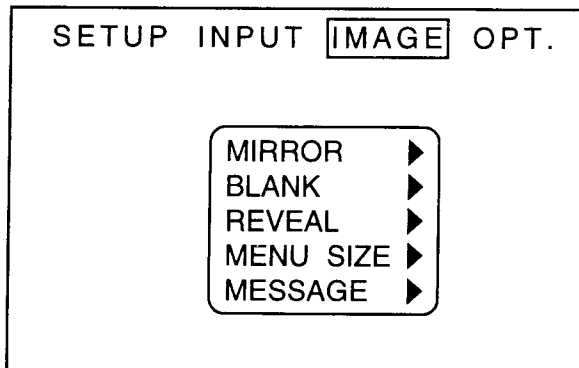
Adjustments and functions (continued)

```
┌─────────────────────────────────┐
│  SETUP  INPUT  IMAGE  OPT.       │
│                                  │
│                                  │
│            ┌──────────────┐      │
│  MENU SIZE │ □   LARGE     │     │
│            │ ■   SMALL     │     │
│            └──────────────┘      │
│                                  │
│                                  │
└─────────────────────────────────┘
```

```
┌─────────────────────────────────┐
│  SETUP  INPUT  IMAGE  OPT.       │
│                                  │
│                                  │
│          ┌──────────────┐        │
│  MESSAGE │ □  TURN ON    │       │
│          │ ■  TURN OFF   │       │
│          └──────────────┘        │
│                                  │
│                                  │
└─────────────────────────────────┘
```

Adjustment Item	Details of adjustment
MIRROR	Inverts the picture horizontally or vertically. H : INVERT　Inverts the picture horizontally. V : INVERT　Inverts the picture vertically. H & V : INVERT　Inverts the picture horizontally and vertically.
BLANK	Selects the blank color.
REVEAL	Selects the speed of revelation.
MENU SIZE	Changes on-screen menu size.
MESSAGE	Turn off the on-screen message. (FOCUS, selected source, etc)

OPT

The menu OPT. allows you to control commutication function.

```
┌─────────────────────────────────┐
│  SETUP  INPUT  IMAGE  OPT.       │
│                                  │
│                                  │
│          ┌──────────────┐        │
│          │ COM. SPEED ▶ │        │
│          │ COM. BITS  ▶ │        │
│          │ MOUSE      ▶ │        │
│          │ TIMER      ▶ │        │
│          │ LANGUAGE   ▶ │        │
│          │ AUTO OFF   ▶ │        │
│          └──────────────┘        │
│                                  │
└─────────────────────────────────┘
```

Adjustments and functions (continued)

```
┌─────────────────────────────────────┐
│ SETUP  INPUT  IMAGE  [OPT.]          │
│                                      │
│                  ┌──────────────┐    │
│   COM. SPEED     │ ■    1200    │    │
│        (bps)     │   (MOUSE)    │    │
│                  │ ☐    2400    │    │
│                  │ ☐    4800    │    │
│                  │ ☐    9600    │    │
│                  │ ☐   19200    │    │
│                  └──────────────┘    │
└─────────────────────────────────────┘
```

```
┌─────────────────────────────────────┐
│ SETUP  INPUT  IMAGE  [OPT.]          │
│                                      │
│                  ┌──────────────┐    │
│   COM. BITS      │ ■    7N1     │    │
│                  │   (MOUSE)    │    │
│                  │ ☐    8N1     │    │
│                  └──────────────┘    │
└─────────────────────────────────────┘
```

```
┌─────────────────────────────────────┐
│ SETUP  INPUT  IMAGE  [OPT.]          │
│                                      │
│                  ┌──────────────┐    │
│      MOUSE       │ ■  FAST      │    │
│                  │ ☐   ↑        │    │
│                  │ ☐  MEDIUM    │    │
│                  │ ☐   ↓        │    │
│                  │ ☐  SLOW      │    │
│                  └──────────────┘    │
└─────────────────────────────────────┘
```

```
┌─────────────────────────────────────┐
│ SETUP  INPUT  IMAGE  [OPT.]          │
│                                      │
│                    ┌──────────┐      │
│                    │    ↑     │      │
│         TIMER      │  10 min. │      │
│                    │    ↓     │      │
│                    └──────────┘      │
└─────────────────────────────────────┘
```

```
┌─────────────────────────────────────┐
│ SETUP  INPUT  IMAGE  [OPT.]          │
│                                      │
│  LANGUAGE ─┬─ ■  ENGLISH             │
│            ├─ ☐  FRANÇAIS            │
│            ├─ ☐  DEUTSCH             │
│            ├─ ☐  ESPAÑOL             │
│            ├─ ☐  ITALIANO            │
│            ├─ ☐  NORSK               │
│            └─ ☐  NEDERLANDS          │
└─────────────────────────────────────┘
```

```
┌─────────────────────────────────────┐
│ SETUP  INPUT  IMAGE  [OPT.]          │
│                                      │
│                    ┌──────────┐      │
│                    │    ↑     │      │
│      AUTO OFF      │   0 min. │      │
│                    │  STOP    │      │
│                    └──────────┘      │
└─────────────────────────────────────┘
```

Adjustment Item	Details of adjustment
COM. SPEED	Selects the data speed of transmission.
COM. BITS	Selects the data format of transmission. 7N1... 7 data-bits, No parity, 1 stop bit. 8N1... 8 data-bits, No parity, 1 stop bit.
MOUSE	Selects the speed of mouse movement.
TIMER	Sets the minutes of timer.
LANGUAGE	Selects the language on-screen menu. (English, Francais, Deutsch, Espanol, Italiano, Norsk, Nederlands)
AUTO OFF	Selects the power off timing since input source is off.

Connection to the video signal terminals

1. Input signal

S-VIDEO signal		Luminance signal 1.0Vp-p, 75 Ω termination Chrominance signal 0.286Vp-p(burst signal), 75 Ω termination
VIDEO signal		1.0Vp-p, 75 Ω termination
AUDIO signal	Input	200mVrms, 20k Ω below (MAX 3.0Vp-p)
	Output	0~200mVrms, 1k Ω

2. Signal input terminal
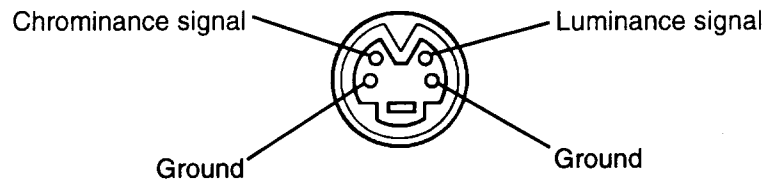
S VIDEO input (Mini DIN4-pin)

Caution) Video input signal terminals have priority in the following order.
① S-VIDEO input terminal ② RCA jack input terminal

Connection to the RGB signal terminal

1. Input / output signal

Video signal		Analog 0.7Vp-p 75 Ω termination (Positive polarity)
Horizontal sync signal		TTL level (Positive/negative polarity)
Vertical sync signal		TTL level (Positive/negative polarity)
Composite sync signal		TTL level
Audio signal	Input	200mVrms, 20k Ω below (MAX 3.0Vp-p)
	Output	0~200mVrms, 1k Ω

2. Signal input / output terminal

1	Video signal (Red)	9	N.C
2	Video signal (Green)	10	Ground
3	Video signal (Blue)	11	Ground
4	N.C	12	N.C
5	N.C	13	Horizontal/Composite sync signal
6	Ground (for R)	14	Vertical sync signal
7	Ground (for G)	15	N.C
8	Ground (for B)		
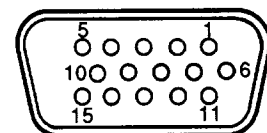
D-sub 15pin shrink terminal

Connection to the RGB signal terminal(continued)

3. Example of computer signal

Computer / signal source	Resolution H × V	fH (kHz)	fV (Hz)	Sync Signal	Interlaced / Non-interlaced	Note
15kHz RGB (NTSC)	——	15.7	60	H,V composite	Interlaced	
VGA-1 (IBM compatible)	640 × 350	31.5	70	H,V separate · H : Positive V : Negative	Non-interlaced	
VGA-2 (IBM compatible)	640 × 400	31.5	70	H,V separate H : Negative V : Positive	Non-interlaced	
VGA-3 (IBM compatible)	640 × 480	31.5	60	H,V separate H : Negative V : Negative	Non-interlaced	
Macintosh13inch mode (Apple)	640 × 480	35.0	66.7	H,V separate H,V composite	Non-interlaced	
VESA 72Hz standards	640 × 480	37.9	72	H,V separate H : Negative V : Negative	Non-interlaced	
SVGA (VESA 60Hz)	800 × 600	37.9	60	H,V separate H : Positive V : Positive	Non-interlaced	640 × 480 Compressed

SVGA can not be displayed complete resolution and some lines may be missing, because resolution is compressed 640 × 480.
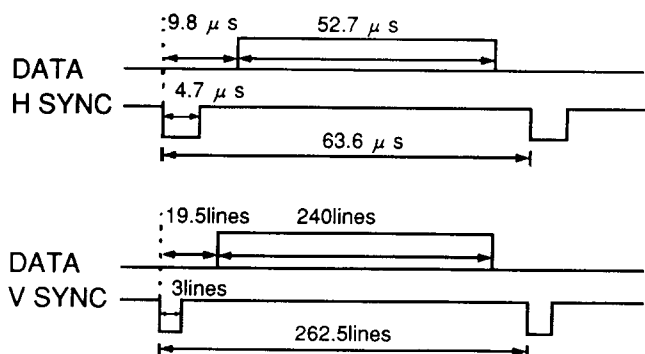
(Caution) Some input source may not be displayed properly because they are not compatible with the projector.

4. Initial set signals
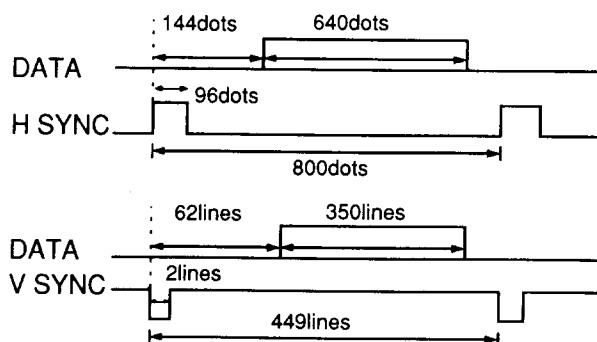
The following signals are initially set. The settings may be different depending on the computer type. In this case, adjust the settings referring to pages 11, 12.
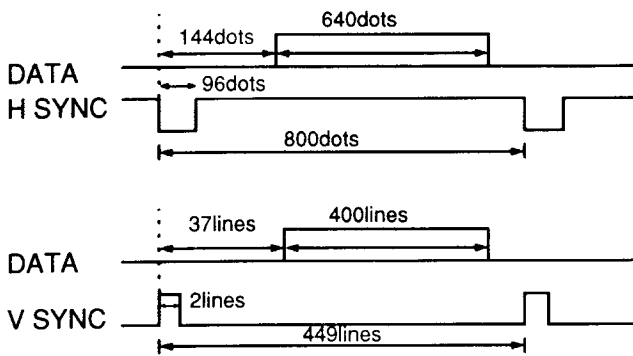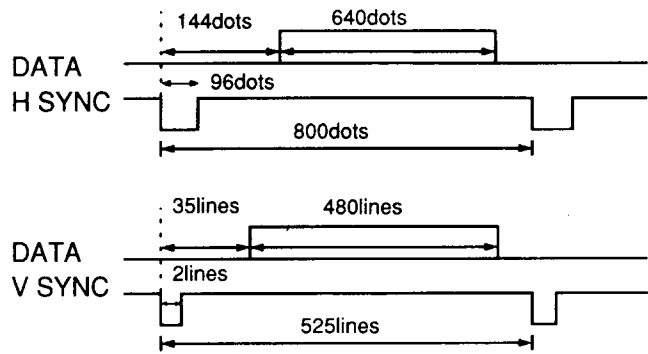
(1) 15kHz RGB(NTSC)

(2) VGA-1

DATA
H SYNC
:9.8 μs 52.7 μs
' 4.7 μs
63.6 μs

DATA
V SYNC
:19.5lines 240lines
3lines
262.5lines

DATA
H SYNC
: 144dots 640dots
96dots
800dots

DATA
V SYNC
: 62lines 350lines
2lines
449lines

Connection to the RGB signal terminal(continued)

(3) VGA-2

DATA
H SYNC

144dots | 640dots
96dots
800dots

DATA
V SYNC

37lines | 400lines
2lines
449lines

(4) VGA-3

DATA
H SYNC

144dots | 640dots
96dots
800dots

DATA
V SYNC

35lines | 480lines
2lines
525lines

(5) Macintosh13inch mode

DATA
H SYNC

160dots | 640dots
64dots
864dots

DATA
V SYNC

42lines | 480lines
3lines
525lines

(6) VESA 72Hz standards.

DATA
H SYNC

168dots | 640dots
40dots
832dots

DATA
V SYNC

31lines | 480lines
3lines
520lines

(7) SVGA (VESA 60Hz)

DATA
H SYNC

216dots | 800dots
128dots
1056dots

DATA
V SYNC

27lines | 600lines
4lines
628lines

5. Connection to the computer

Turn off the power of both the projector and computer before connecting. Connect the computer to the RGB terminal of the projector using an appropriate cable.

Refer to the chart below for cable types.

Name	Type	Computer	Connector type	
VGA cable	SC-200I	IBM PC/AT compatible	Dsub15pin shrink — Dsub15pin shrink	Provided
MAC adaptor cable	SC-A25I	Apple Macintosh	Dsub15pin shrink — Dsub15pin	Provided

Connection to the control signal terminal

This projector can be controlled by the computer.

Connects the cable for control terminal of the projector and sirial interface terminal of the computer.

1. Control signal

RS232C

2. Connect to the computer

Mouse emulation and communication

Computer			Projector	
CD	1		1	CD
RD	2		2	RD
TD	3		3	TD
DTR	4		4	NC
GND	5		5	GND
DSR	6		6	NC
RTS	7		7	NC
CTS	8		8	NC
RI	9		9	NC

Cross cable

Mouse emulation only

Computer	Projector
RD 2 —— 3 TD
RTS 7 ⌐
CTS 8 ⌐ —— 1 CD

Communication only

Computer	Projector
RD 2 —— 3 TD
TD 3 —— 2 RD

> **Caution** Turn off the power of both the projector and computer before connecting.
> Connect the computer to the control terminal of the projector using a provided cross cable.
> Refer to the instruction manual of each device before connecting.

3. Mouse emulation

(1) Connect the projector and the serial mouse terminal of computer (installed the serial mouse driver) using an appropriate cable, while the projector and the computer are turn off.

(2) Turn on the computer.

(3) Turn on the projector.

(4) Set mouse emulation mode. (See page 11, 15)

        COM. SPEED.... 1200

        COM. BITS........ 7N1

(5) Start mouse emulation mode.

        If can not start mouse emulation, reset the computer. (with soft reset or reset swith)

4. Communication

(1) Connect the projector and computer using an appropriate cable.

(2) Turn on the computer and after computer is setting up, turn on the projector.

(3) The computer sends "set cobe MOUSE 00h".

(4) Start communication.

Connection to the control signal terminal (continued)

5. Control command code
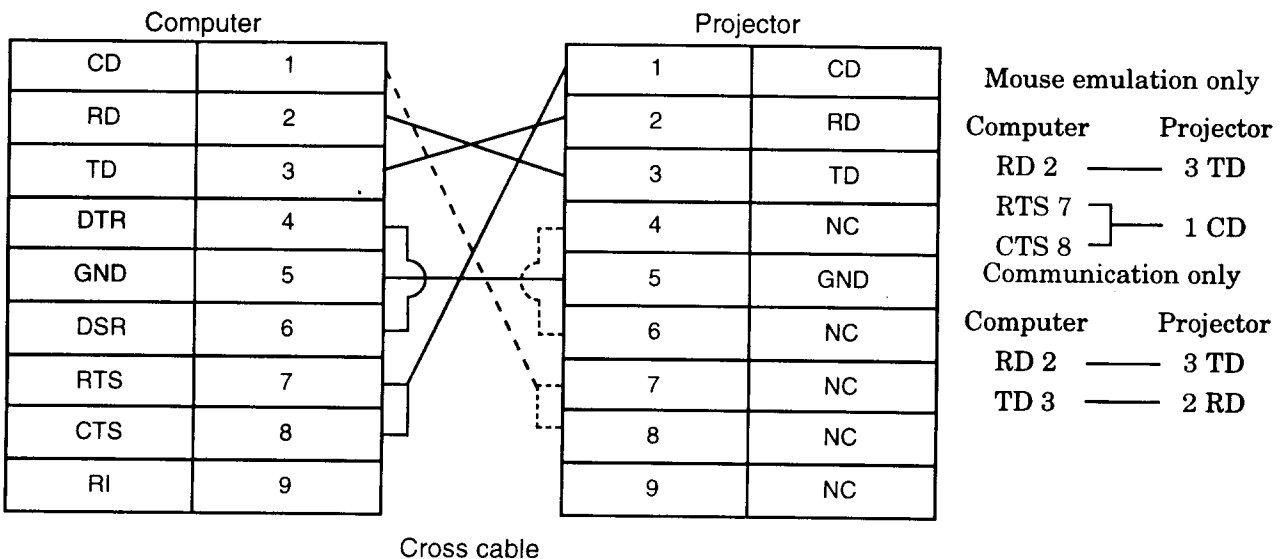
Command is consisted of 2 command bytes and following data bytes.

1-st byte indicates the kinds of commands and the length of command.

'0xH' : Error-reply   Projector sends to PC.

'1xH' : Command reply   Projector sends to PC.

'2xH' : Ask command   PC sends to Projector.

'3xH' : Set command   PC sends to Projector.

'4xH' : Default set command   PC sends to Projector

'5xH' - 'FxH' : Reserved

'x' indicates the length of data bytes.

2-nd byte indicates the command code 'yy' as command table.

Data table shows the data byte.

Control command table

Item	Projector→PC Reply code			PC→Projector Ask code		Set code			Default code	
	1st	2nd	data	1st	2nd	1st	2nd	data	1st	2nd
MOUSE	11h	05h	+1	20h	05h	31h	05h	+1	40h	05h
COMMUNICATE	11h	06h	+1	20h	06h	31h	06h	+1	40h	06h
POWER	11h	11h	+1	20h	11h	31h	11h	+1	——	——
ZOOM	11h	12h	+1	——	——	31h	12h	+1	——	——
FOCUS	11h	13h	+1	——	——	31h	13h	+1	——	——
MIRROR	11h	14h	+1	20h	14h	31h	14h	+1	40h	14h
INPUT	11h	21h	+1	20h	21h	31h	21h	+1	40h	21h
(VIDEO)SYSTEM	12h	22h	+2	20h	22h	32h	22h	+2	40h	22h
VOLUME	11h	23h	+1	20h	23h	31h	23h	+1	40h	23h
MUTE	11h	24h	+1	20h	24h	31h	24h	+1	40h	24h
BRIGHT	13h	31h	+3	20h	31h	33h	31h	+3	40h	31h
CONTRAST	13h	32h	+3	20h	32h	33h	32h	+3	40h	32h
COLOR	13h	33h	+3	20h	33h	33h	33h	+3	40h	33h
TINT	13h	34h	+3	20h	34h	33h	34h	+3	40h	34h
SHARPNESS	13h	35h	+3	20h	35h	33h	35h	+3	40h	35h
H. PHASE	13h	37h	+3	20h	37h	33h	37h	+3	40h	37h
H. POSIT	14h	38h	+4	20h	38h	34h	38h	+4	40h	38h
H. SIZE	14h	36h	+4	20h	36h	34h	36h	+4	40h	36h
V. POSIT	14h	3Ah	+4	20h	3Ah	34h	3Ah	+4	40h	3Ah
BLANK	11h	41h	+1	20h	41h	31h	41h	+1	40h	41h
REVEAL	11h	42h	+1	20h	42h	31h	42h	+1	——	——

Ask code .... Ask the state of projector.

                 Projector returns the state data.

Set code .... Change the state of projector.

                 Projector changes to set code data, and returns the changed data.

Default code .... Order to reset the factory settings.

                 Projector resets and returns default data.

Connection to the control signal terminal (continued)

The procedure of getting the Projector status.

(1)PC sends the command '20H'+'yyH' to Projector.

(2)Projector reply the command '1xH'+'yyH'+data bytes.

The procedure of setting the Projector status

(1)PC sends the command '3xH'+'yyH'+data bytes.

(2)Projector changes it's status.

(3)Projector reply the command '1xH'+'yyH'+data bytes which indicate status.

> (Caution) (3) data bytes is not always same as (1) data bytes.
> If projector cannot realize the status of (1) data bytes, projector set the proper status and reply this new setting data bytes or projector reply the error reply '0xH'+'yyH'+data bytes same as (1).

The procedure of default setting the Projector status

(1)PC sends the command '40H'+'yyH'

(2)Projector changes it's status to default setting.

(3)Projector reply the command '1xH'+'yyH'+data bytes which indicate default.

> (Caution) If projector replys '4Dh', (before command code, etc.) PC ignores '4Dh'

The example of command error

(1)PC sends the command '2xH' , '3xH' or '4xH'+'yyH'+data bytes.

(2)Projector doesn't understand (1) code.

(3)Projector reply the command '00H'+'yyH'

The example of data error

(1)PC sends the command '2xH' , '3xH' or '4xH'+'yyH'+data bytes.

(2)Projector doesn't understand (1) data bytes.

(3)Projector reply the command '0xH'+'yyH'+data bytes same as (1)

The example of framing error

(1)Projector detect framing error.

(2)Projector changes to 1200bps 7N1 if it does't 1200bps 7N1.

(3)Projector replys '70H'+'70H' 10 times, every 1 second.

(4)When projector receives '70H'+'70H', it replys '12H'+'03H'+'01H'+'00H'.

The interval of command bytes and data bytes

(1)The interval of bytes exceeds 500mS.

(2)Projector replys '70H'+'70H'.

(3)Projector wait 1 second for the PC's any command.

(4)If there is no command from the PC, projector treat as framing error.

> (Caution) • The interval of command bytes and data bytes must be over 1 mS and under 500mS. If it is under 1mS, it may be treat as framing error.
> • The interval of Reply code and other codes must be over 40mS.

# Connection to the control signal terminal (continued)

Control data table

Item	Data code
MOUSE	00h=stop mouse emulation. 01~7Fh=start mouse emulation and set 7N1, 1200bps. 01(slow) ~ 7F(fast)
COMMUNICATE	0Xh=8N1 1Xh=7N1 X0h=1200bps, X1h=2400bps, X2h=4800bps, X3h=9600bps, X4h=19200bps
POWER	1Eh=Power off, 1Fh=Power on
ZOOM	01~3Fh=Zoom +, 41~7Fh=Zoom - 01,04(short) ~ 3F,7F(long)
FOCUS	01~3Fh=Focus +, 41~7Fh=Focus - 01,04(short) ~ 3F,7F(long)
MIRROR	00h=Normal, 01h=H:Invert, 02h=V:Invert, 03h=H & V:Invert
INPUT	11h=VIDEO1, 12h=VIDEO2, 21h=RGB1, 22h=RGB2
VIDEO SYSTEM	00h 00h=Auto, 00h 01h=NTSC 00h 02h=PAL, 00h 03h=SECAM
VOLUME	00h (min) ~ 7Fh (max)
MUTE	00h=Mute off, 01h=Mute on
BRIGHT	00h 00h 00h (dark) ~ 00h 00h 7Fh (brite)
CONTRAST	00h 00h 00h (lower) ~ 00h 00h 7Fh (higher)
COLOR	00h 00h 00h (less) ~ 00h 00h 7Fh (more)
TINT	00h 00h 00h (red) ~ 00h 00h 7Fh (green)
SHARPNESS	00h 00h 00h (soft) ~ 00h 00h 7Fh (sharp)
H. PHASE	00h 00h 00h ~ 00h 00h 0Fh
H. POSIT	00h 00h 00h 00h (left) ~ 00h 00h 7Fh 00h (right)
H. SIZE	00h 00h 02h 06h (narrow) ~ 00h 00h 68h 07h (wide)
V. POSIT	00h 00h 00h 00h (up) ~ 00h 00h 7Fh 00h (down)

BLANK	0Xh=Blank off
	1Xh=Blank on
	  bit0 0=Blue off, 1=Blue on, bit1 0=Green off, 1=Green on
	  bit2 0=Red off, 1=Red on, bit3 0=Not change, 1=Change

REVEAL	X1h=Reveal down, X4h=Reveal right, X=0 (slow) ~ 7 (fast)

Caution) If PC sends the undefined command code or data code, Projector can not guarantee operation.

Example of system setup

Connecting various equipment.

AC Outlet

VTR with S-VHS out

VTR, etc

Computer (Note type)

Computer(Desk type)

CRT Display
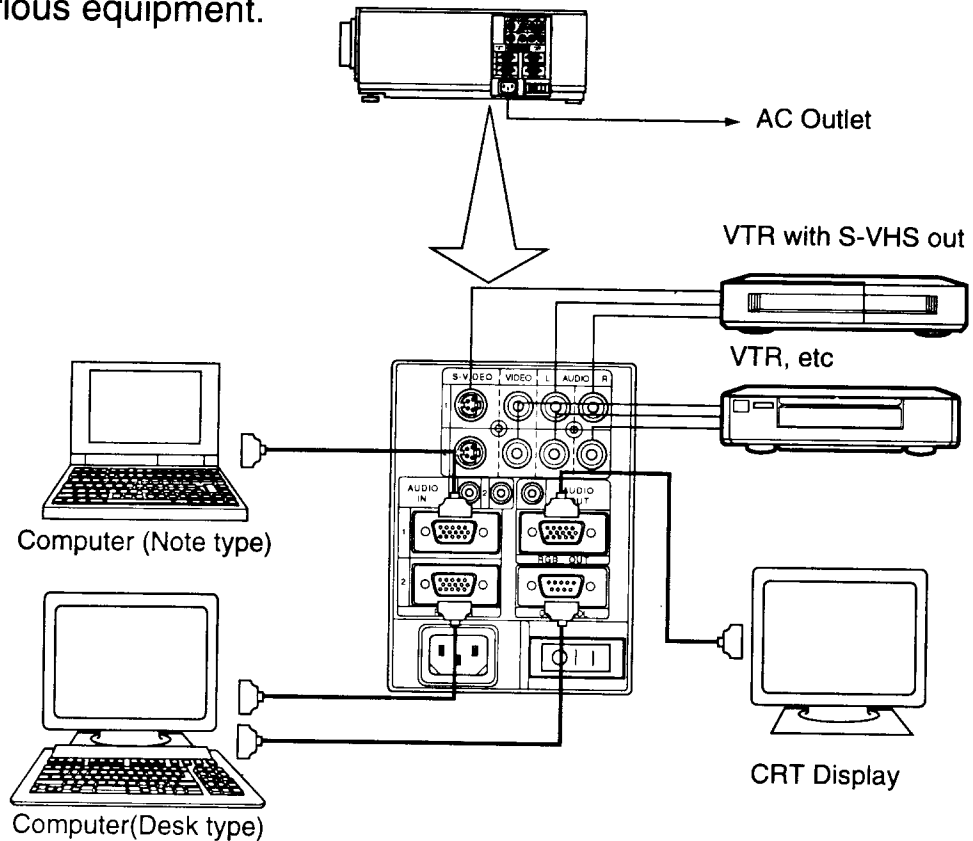
Caution) Turn power off to all devices before connecting.
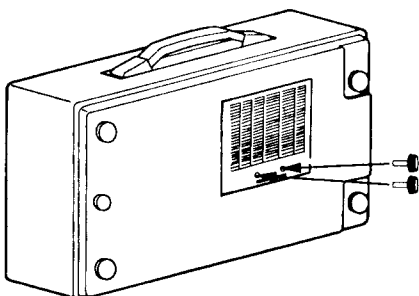Refer to the instruction manual of each device before connecting.

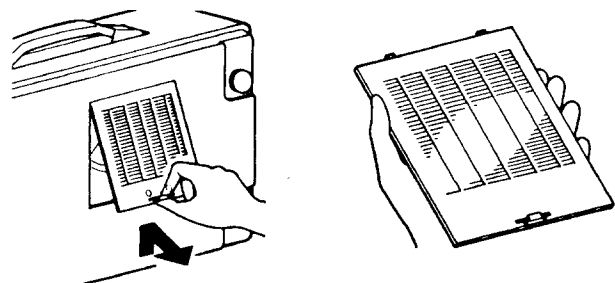# Cleaning the air filter

Clean the air filter about every 100 hours.

1 Turn off the MAIN POWER switch of the projector and pull out the power cord.

2 Remove the air filter from the bottom.

① Remove 2 screws.

② Remove the air filter.

Cleaning the air filter (continued)

3 Clean the air filter using a vacuum cleaner.

If dirt is still present, wipe the air filter with a cloth moistened with water or neutral detergent and wipe with a dry cloth.

4 Re-install the air filter.

(Caution) If air filter is stutted with dust, etc., protection circuit will turn the power off.

Lamp

The following symptoms may indicate a worn lamp :
- A dark picture.
- LAMP indicator lights up red.

The lamp should be replaced, contact your dealer. (Estimated operating time is approximately 1500 hours)

Also LAMP indicator will light when the lamp becomes too hot.
Turn off the power and let the projector cool for 20 minutes.
Turn on. If LAMP indicator still lights up red, contact your dealer.

Message table

On-screen display

The following messages are displayed on the screen.

NO SIGNAL IS DETECTED	Signal is not input.
SYNC IS OUT OF RANGE	The horizontal frequency of the input signal exceeds the range of the projector, it cannot be displayed.

Indicator display

The ON indicator, LAMP indicator and TEMP indicator will light or blink in the following cases.

	Indicator status	Meaning	Remedy
ON indicator	Lights orange	Standby mode	————
	Blinks green	During warming up	————
	Lights green	During operation	————
	Blinks orange	During cooling down	————
LAMP indicator	Lights red	Lamp cannot light	Cool projector by power off for 20 minutes.
	Blinks red	Air filter detached	Reseat the air filter.
TEMP indicator	Lights red	Temperature inside too high	Correctly reinstall so as not to block ventilation holes.
	Blinks red	Cooling fan accidented	————

When you think something wrong

Check the following again before asking for service.

If the trouble cannot be recovered, consult your dealer.

Phenomena	Cause	Check point	Page
Power cannot be turned on.	● The Main power is not turned on. ● The power cord is disconnected.	● Turn the MAIN POWER switch on. ● Insert the power cord into an AC socket.	P9 P6
No picture and sound	● The setting of the input source is not correct. ● Wiring to the projector is not correct.	● Set the correct input using the input select button of the projector or the remote control. ● Connect the cable correctly.	P6,P7 P6,P23
Only picture is displayed with no sound	● Wiring to the projector is not correct. ● The volume is set to minimum. ● The unit enters the mute mode.	● Connect the cable correctly. ● Press the VOL button. ● Press the MUTE button.	P6,P23 P7 P6,P7
Only sound is heard without a picture	● Wiring to the projector is not correct. ● The brightness is set fully to the dark side.	● Connect the cable correctly. ● Press the MENU button and select BRIGHT and press the ⊙ button.	P6,P23 P11,P12
Color is weak and tint is incorrect	The color and tint have been adjusted incorrectly.	Adjust the color and tint correctly.	P11,P12
Picture is dark	● The brightness and contrast has been adjusted incorrectly. ● The lamp has not been adjusted.	● Adjust the brightness and contrast correctly. ● Replace the lamp with a new one.	P11,P12 P24
Picture is not clear	Focus is not matched.	Adjust the focus.	P9
LAMP indicator lights red.	Trouble with the lamp.	Turn off the power and leave for 20 minutes ; then turn the power on again.	P24
TEMP indicator lights red.	Inside the projector too hot.	Do not block the venational holes.	P4,P24
LAMP indicator blinks red.	Air filter detached.	Reseat the air filter.	P23,P24

A bright dot may be seen in the picture. This is a phenomena according to the liquid crystal and is

Specifications •All specifications are subject to change without notice.

Product name		Liquid crystal projector
Model name		CP-L540E/CP-L550E
Display system		3sheets of liquid crystal panels, 3 primary color lights shutter system
Liquid crystal panel	Panel size	33mm (1.3inches)
	Drive system	TFT active matrix
	Number of pixels	311,696 pixels (V484 × H644)
Lens		Zoom lens F=3.0 ~ 3.8 f=46.5~74.4mm
Lamp		Metal halide lamp 250W
Speaker		Max. 3W (monaural)
Power supply		AC100 ~ 120V, 5A / AC220 ~ 240V, 2A
Power consumption		360W
Usable temperature range		0 ~ 35°C
Dimensions		320(W) × 170(H) × 460(D) mm
Weight		11kg
Input/ Output terminal	Video signal input terminal	S VIDEO : Mini DIN4-pin terminal VIDEO : RCA Jack terminal AUDIO : RCA Jack terminal
	RGB input/output signal terminal	RGB signal : D-sub15pin shrink terminal AUDIO : Stereo mini jack
	Control terminal	D-sub9pin terminal
Accessories		Remote control .... 1 VGA cable .... 1 Power cord .... 1 Video/Audio cable .... 1 MAC adaptor cable .... 1 CONTROL cable(RS232C) .... 1 Batteries R6P(or SUM-3) 2

Dimension diagram

All dimensions shown in mm.