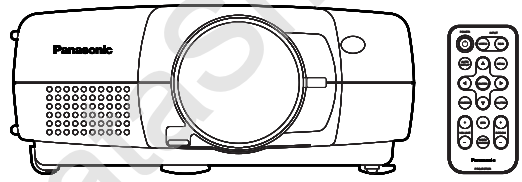
Panasonic

LCD Projector **Commercial Use**

Operating Instructions

Model No. **PT-L711XU**
PT-L701XU
PT-L511XU
PT-L501XU



Note:

- At this service manual, it mentions only the Operating Instructions of PT-L711XU/L701XU/L511XU/L501XU as the representative of PT-L712E/L702E/L512E/L502E and PT-U1X90/U1X80/U1S90/U1S80.
- Because some pages in the user instruction manual are used for this chapter without change, note that the page numbers shown in the sentences of this chapter are those of the user instruction manual.

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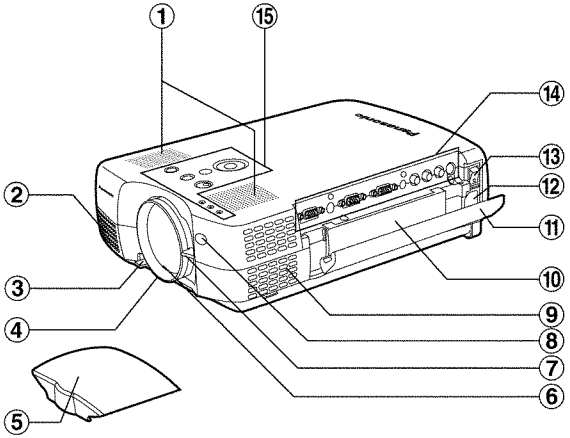
Location and function of each part

Projector <Top, right and front>



① Stereo speakers

② Air inlet port
Do not cover this port.

③ Leg adjuster button
(pages 12 and 23)
This button is used to unlock the front adjustable leg. Press to adjust the angle of tilt of the projector.

④ Focus ring
(pages 22 and 23)

⑤ Lens cover

⑥ Projection lens

⑦ Zoom knob
(page 23)

⑧ Remote control signal receptor
(page 16)

⑨ Air filter
(page 42)

⑩ Card remote control unit holder
(page 15)

⑪ Carrying handle
When the handle is retracted, it covers the connector panel.

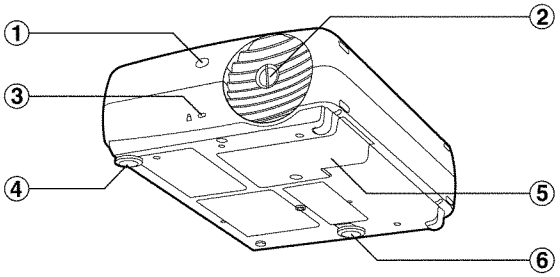
⑫ Power input socket (AC IN)
(page 22)
The accessory power cord is connected here.
Do not use any power cord other than the accessory power cord.

⑬ MAIN POWER switch
(pages 22 and 23)

⑭ Connector panel
(page 13)
Extend the carrying handle to use the terminal board.

⑮ Projector control panel
(page 14)

Projector <Back and bottom>



①Remote control signal receptor (page 16)

②Air outlet
You can turn the knob in the center of the air outlet to change the direction of air flow before turning on the power.

CAUTION

The air outlet will be hot during use and immediately after use.

- Burns may result if you touch the air outlet while it is hot.

③Security lock
This can be used to connect a commercially-available theft-prevention cable (manufactured by Kensington). This security lock is compatible with the Microsaver Security System from Kensington. Contact details for this company are given below.
Kensington Technology Group
ACCO Brands Inc.
2855 Campus Drive
San Mateo, CA 94403
Tel (650)572-2700
Fax (650)572-9675
http://www.kensington.com/
http://www.gravis.com/

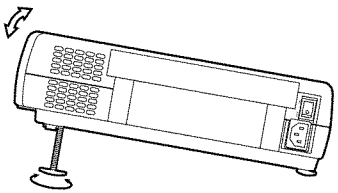
④Rear adjustable leg (page 23, refer to illustration at right)

⑤Lamp unit holder (page 43)

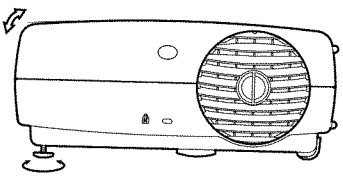
⑥Front adjustable leg (page 23, refer to illustration below)

Adjusting the angle of tilt

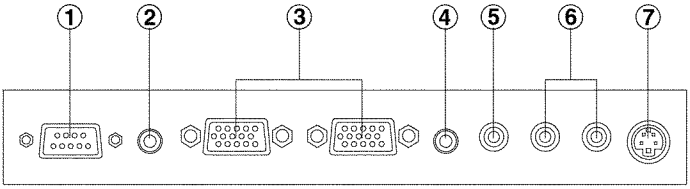
Adjusting the forward/back angle of tilt
Turn the front adjustable leg to the left or right to adjust the tilt. Furthermore, the front adjustable leg can be moved in and out freely when the adjuster button is pressed.



Adjusting the left/right angle of tilt
Turn the rear adjustable leg to the left or right to adjust the tilt.



<Connector panel>



① SERIAL connector
(pages 18, 19 and 32)
This connector is used to connect a personal computer to the projector in order to externally control the projector. (RS-232C compatible)

② AUDIO OUT jack
(pages 18 and 19)
This jack is used to output the audio signals which are input to the projector. If audio equipment is connected to this jack, no sound will be output from the built-in speakers.

③ RGB1 IN/RGB2 IN connectors
(pages 18 and 19)
These connectors are used to input RGB signals and $Y P_B P_R$ signals.

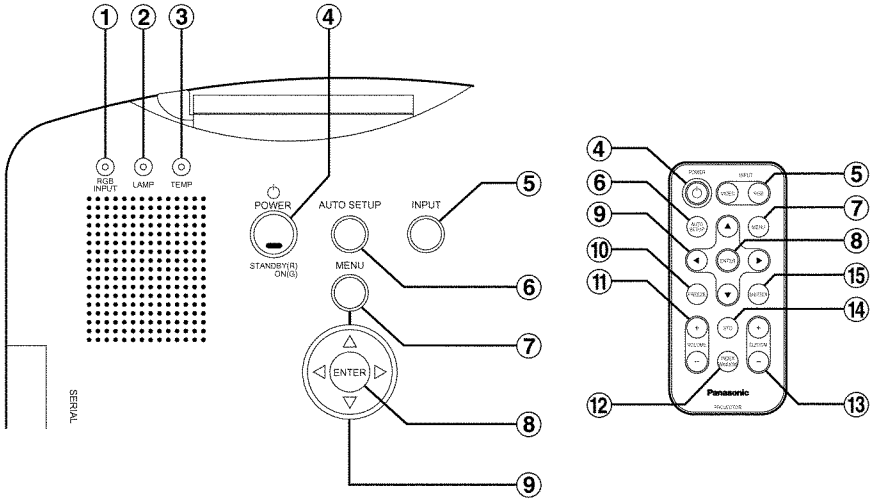
④ RGB AUDIO IN jack
(pages 18 and 19)
Only one system is provided, so connect the appropriate connector when using RGB1 or RGB2.

⑤ VIDEO IN jack
(page 18)
This jack is used to input video signals from a video equipment such as a video deck.

⑥ AUDIO IN L-R (for VIDEO/S-VIDEO) jacks
(page 18)
Only one system is provided, so connect the appropriate connector when using VIDEO or S-VIDEO.

⑦ S-VIDEO IN connector
(pages 18 and 31)
This connector is used to input signals from a S-VIDEO-compatible equipment such as a video deck. The connector is S1 signal compatible, and it automatically switches between 16:9 and 4:3 aspect ratios in accordance with the type of signal being input.

<Projector control panel and remote control unit>



① RGB INPUT indicator
(page 24)
This indicator shows whether a signal is being input to the RGB input connectors (RGB 1 IN/RGB2 IN). When an input signal is detected, the indicator illuminates.

② LAMP indicator
(page 40)
This indicator illuminates when it is time to replace the lamp unit. It flashes if a circuit abnormality is detected.

③ TEMP indicator
(page 40)
This indicator illuminates if an abnormally high temperature is detected inside the projector. If the temperature rises above a certain level, the power supply will be turned off automatically and the indicator will illuminate or flash.

④ POWER button
(pages 22 and 23)
The POWER button on the projector's control panel has a built-in indicator. This indicator illuminates red when the MAIN POWER switch is turned on (standby mode), and illuminates green when the power is turned on and a picture starts to be projected.

⑤ Input select (INPUT, RGB, VIDEO) buttons
(page 22)

⑥ AUTO SETUP button
(pages 23 and 24)
If this button is pressed while a picture is being projected, the projection settings will be adjusted automatically in accordance with the signal being input. ("AUTO SETUP" will appear on the screen during adjustment.) If "AUTO KEYSTN" in the OPTION menu is set to "ON", the angle of tilt of the

projector will be automatically detected and adjusted in order to correct any keystone distortion.

⑦ **MENU button**
(pages 25 and 26)
This button is used to display menu screens. When a menu screen is being displayed, it can be used to return to a previous screen or to clear the screen.

⑧ **ENTER button**
(page 26)
This button is used to accept and to activate items selected in the on-screen menus.

⑨ **Arrow (▲, ▼, ◄ and ►) buttons**
(page 26)
These buttons are used to select and adjust items in the on-screen menu screens.

⑩ **FREEZE button**
(page 27)
This button is used to momentarily freeze the image so that a still picture is displayed.

⑪ **VOLUME +/- buttons**
These buttons are used to adjust the volume of the sound output by the projector's built-in speakers. Refer to page 25 for details on how to adjust the volume using the buttons on the projector control panel.

⑫ **INDEX WINDOW button**
(page 34)
This button can be used to split the image projection area into a still image and a moving image.

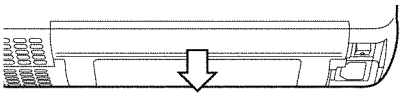
⑬ **D.ZOOM +/- buttons**
(page 28)
These buttons are used to enlarge certain portions of the projected image.

⑭ **STD (standard) button**
(page 27)
This button is used to reset the projector adjustment values to the factory default settings.

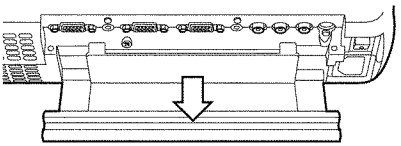
⑮ **SHUTTER button**
(page 35)
This button is used to momentarily turn off the picture and sound.

Storing the card remote control unit

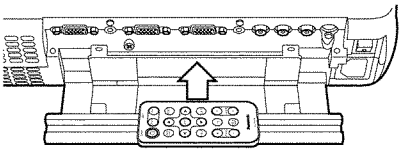
① **Extend the carrying handle.**



② **Open the card remote control unit holder.**



③ **Place the remote control unit inside.**



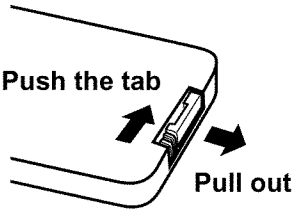
④ **Close the card remote control unit holder and retract the carrying handle.**

Using the remote control unit

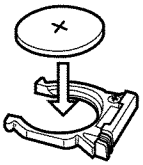
Inserting the battery

Insert the lithium battery which is supplied with the remote control unit, making sure that the polarities are correct.

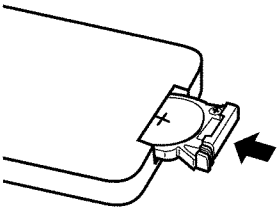
①While pushing the battery holder tab to the right, pull out the battery holder.



②Insert the battery into the battery holder so that the + side is facing upward.



③Insert the battery holder.



NOTE:

- Do not drop the remote control unit.
- Keep the remote control unit away from liquids.
- Remove the battery if not using the remote control unit for long periods.
- Use only CR2025 batteries as replacement batteries.

Operating range

If the remote control unit is held so that it is facing directly in front of the front or rear remote control signal receptors, the operating range is within approximately 7 m (23´) from the surfaces of the receptors. Furthermore, the remote control unit can be operated from an angle of ±30 ° to the left or right and ±15 ° above or below the receptors.

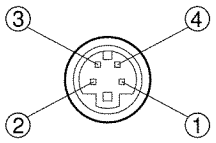
NOTE:

- If there are any obstacles in between the remote control unit and the receptors, the remote control unit may not operate correctly.
- If strong light is allowed to shine onto the remote control signal receptor, correct remote control operation may not be possible. Place the projector as far away from light sources as possible.
- If facing the remote control unit toward the screen to operate the projector, the operating range of the remote control unit will be limited by the amount of light reflection loss caused by the characteristics of the screen used.

Connections

Notes on connections

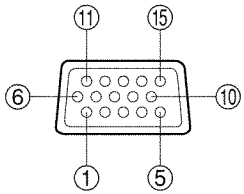
- Read the instruction manual for each system component carefully before connecting it.
- Turn off the power supply for all components before making any connections.
- If the cables necessary for connecting a component to the system are not included with the component or available as an option, you may need to fashion a cable to suit the component concerned.
- If there is a lot of jitter in the video signal which is input from the video source, the picture on the screen may flicker. In such cases, it will be necessary to connect a TBC (time base corrector).
- The projector has built-in speakers. However, you will need to connect a separate audio system to the AUDIO OUT jack if your needs specify high sound volumes. No sound will come out of the projector's built-in speakers while the AUDIO OUT jack is being used.
- It may not be possible to connect some types of computer. Refer to the list of compatible signals on page 50.
- The pin layout and signal names for the S-VIDEO IN connector are shown below.



External view

Pin No.	Signal
①	Ground (Luminance signal)
②	Ground (Color signal)
③	Luminance signal
④	Color signal

- The pin layout and signal names for the RGB/YPBPR (RGB1 IN/RGB2 IN) connector are shown below.

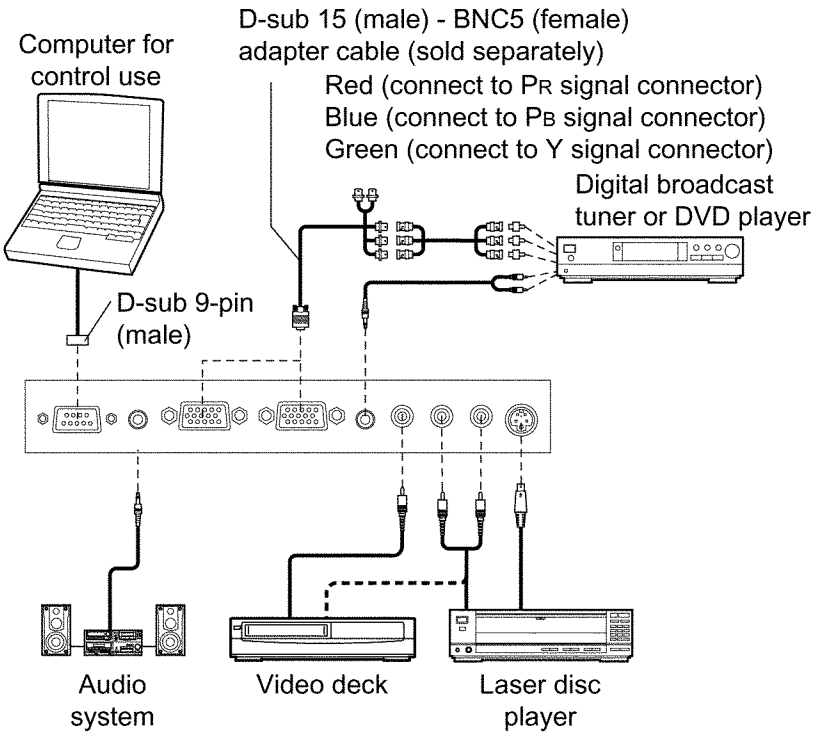


External view

Pin No.	Signal
①	R/PR
②	G/G·SYNC/Y
③	B/PB
⑫	SDA
⑬	HD/SYNC
⑭	VD
⑮	SCL

Pin ⑨ is spare.
Pins ④–⑧, ⑩ and ⑪ are for ground.
Pins ⑫ and ⑮ functions are only valid when supported by the computer

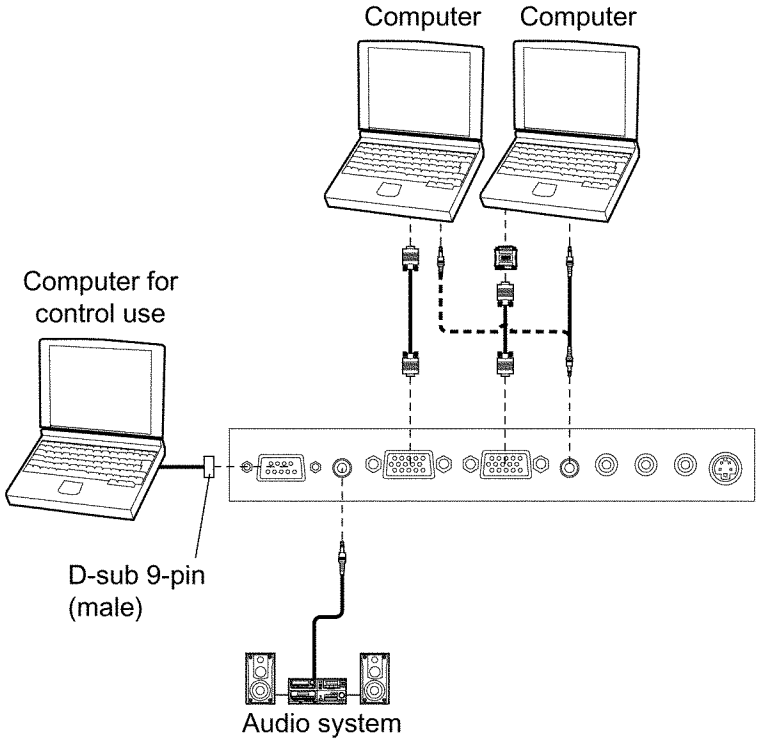
Example of connecting with video equipments



NOTE:

- Only one audio system circuit is available for the AUDIO IN L-R jacks for S-VIDEO/VIDEO signals, so if you wish to change the audio input source, you will need to remove and insert the appropriate plugs.
- Only one audio system circuit is available for the RGB AUDIO IN jacks, so if you wish to change the audio input source, you will need to remove and insert the appropriate plugs.
- If an audio system is connected to the AUDIO OUT jack, the sound volume balance can be controlled by the remote control unit which is supplied with the projector.
- If the video signal source is connected using a cable with a BNC connector plug, use a BNC/RCA adapter (sold separately) to convert the cable end to an RCA plug-type jack.
- Refer to page 50 for a list of compatible YPBPR signals which can be input to the projector.
- If the signal cables are disconnected or if the power supply for the computer or video deck is turned off while the digital zoom or index window functions are being used, these functions will be cancelled.

Example of connecting with computers



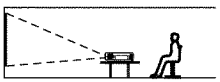
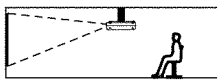
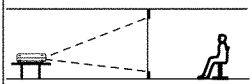
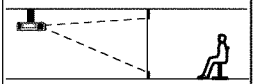
NOTE:

- If the MAIN POWER switch for the projector is turned off, it's better to shut down the computer also.
- Refer to the list of compatible signals on page 50 for the types of RGB signals which can be input to the projector by connecting a computer.
- Only one audio system circuit is available for the RGB AUDIO IN jacks, so if you wish to change the audio input source, you will need to remove and insert the appropriate plugs.

Setting-up

Projection methods

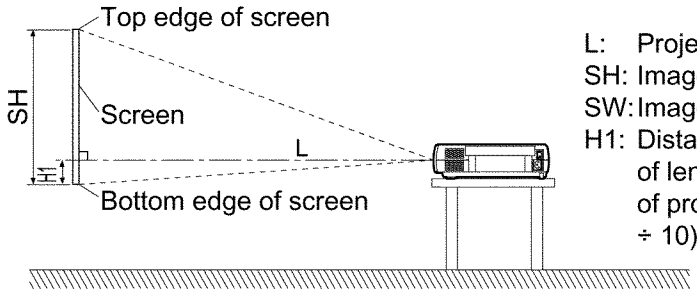
The projector can be set up so that any one of the following four projection methods are used. Select whichever projection method matches the setting-up method. (The projection method can be set from the Option menu. Refer to page 37 for details.)

		DESK/CEILING	
		DESK	CEILING
FRONT/REAR	FRONT	 (Factory default setting)	
	REAR		

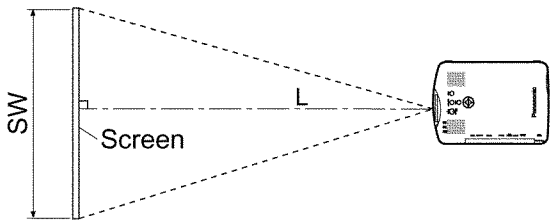
NOTE:

- You will need to purchase the separate ceiling bracket (ET-PK701) when using the ceiling installation method.

Projector position



L: Projection distance
SH: Image height
SW: Image width
H1: Distance from center of lens to bottom edge of projected image (SH ÷ 10)



Projection distances

Screen size (4:3)			Projection distance (L)		Height position (H1)
Diagonal length	Height (SH)	Width (SW)	Wide (LW)	Telephoto (LT)	
0.76 m(30″)	0.46 m(1′6″)	0.61 m(2′)		1.15 m(3′9″)	0.05 m(1-13/16″)
1.01 m(40″)	0.61 m(2′)	0.81 m(2′8″)	1.18 m(3′10″)	1.51 m(4′11″)	0.06 m(2-13/32″)
1.27 m(50″)	0.76 m(2′6″)	1.02 m(3′4″)	1.49 m(4′10″)	1.90 m(6′2″)	0.08 m(3″)
1.52 m(60″)	0.91 m(3′)	1.22 m(4′)	1.80 m(5′10″)	2.29 m(7′6″)	0.09 m(3-19/32″)
1.77 m(70″)	1.07 m(3′6″)	1.42 m(4′8″)	2.12 m(6′11″)	2.68 m(8′9″)	0.11 m(4- 6/32″)
2.03 m(80″)	1.22 m(4′)	1.63 m(5′4″)	2.43 m(7′11″)	3.08 m(10′1″)	0.12 m(4-26/32″)
2.28 m(90″)	1.37 m(4′6″)	1.83 m(6′)	2.74 m(8′11″)	3.47 m(11′4″)	0.14 m(5-13/32″)
2.54 m(100″)	1.52 m(5′)	2.03 m(6′8″)	3.05 m(10′)	3.86 m(12′7″)	0.15 m(6″)
3.81 m(150″)	2.29 m(7′6″)	3.05 m(10′)	4.61 m(15′1″)	5.83 m(19′1″)	0.23 m(9″)
5.08 m(200″)	3.05 m(10′)	4.06 m(13′4″)	6.17 m(20′2″)	7.79 m(25′6″)	0.31 m(12″)
6.35 m(250″)	3.81 m(12′6″)	5.08 m(16′8″)	7.73 m(25′4″)	9.75 m(31′11″)	0.38 m(15″)
7.62 m(300″)	4.57 m(15′)	6.10 m(20′)	9.29 m(30′5″)	11.72 m(38′5″)	0.46 m(18″)

Setting-up dimensions which are not given in the above table can be calculated using the formulas below.
If the screen size (diagonal) is SD (m), then the following formula is first used to obtain the screen width (SW).

SW = SD x 4 ÷ 5

The value for SW obtained above can then be used with the following functions to calculate the projection distance for the wide lens position (LW) and the projection distance for the telephoto lens position (LT).

LW = 1.535 x SW - 0.068

LT = 1.933 x SW - 0.066

For 16:9 aspect ratios, the following formula can be used to calculate the screen width (SW).

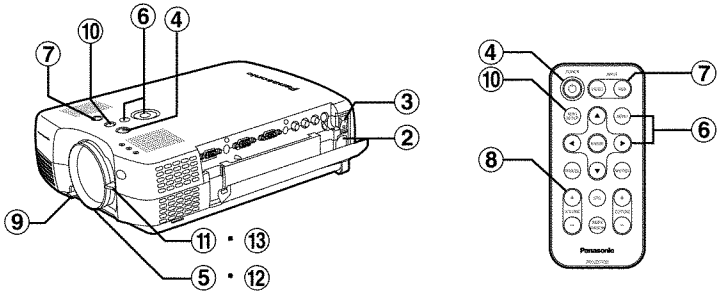
SW = SD x 16 ÷ $\sqrt{337}$

NOTE:

- The dimensions in the table above and the values obtained from the above formulas may contain slight errors.
- It is recommended that you use the projection distance for the wide lens position (except in cases where the diagonal picture size is 0.762 m [30″]).

Starting to use

Turning on the power



① Remove the lens cover.

② Connect the accessory power cord to a 100 V–240 V AC (50 Hz/60 Hz) power supply.

③ Press the MAIN POWER switch to the "|" side to turn on the power.
The POWER button on the projector will illuminate red. You can check whether a signal is being input or not by checking the status of the RGB INPUT indicator. Refer to page 24.

④ Press the POWER button on the projector or remote control unit.
The POWER button on the projector will flash green. After a short period, the button will illuminate green, and a picture will be projected.

⑤ Turn the focus ring to make broad adjustments to the picture focus.

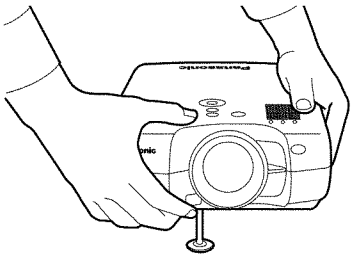
⑥ Set the projection method. (pages 20 and 37)

⑦ Press the input select (INPUT, RGB, VIDEO) buttons on the projector or remote control unit to select the input signal.
The input signal selected will change as shown in the table below each time an input select button is pressed.

Projector	**INPUT**	RGB1(Y_PB_PR1)	→	RGB2(Y_PB_PR2)
		↑		↓
		S-VIDEO	←	VIDEO
Remote control unit	**RGB**	RGB1(Y_PB_PR1)	↔	RGB2(Y_PB_PR2)
	VIDEO	S-VIDEO	↔	VIDEO

⑧ Press the VOLUME +/- buttons on the remote control unit to adjust the volume.
Refer to page 25 for details on how to adjust the volume using the buttons on the projector control panel.

⑨ **While pressing the adjuster button, adjust the forward/back angle of tilt of the projector.**



NOTE:

- If the projected picture is tilted to the right or left, turn the rear adjuster leg underneath the projector to the left or right. Refer to page 12.

⑩ **Press the AUTO SETUP button on the projector or remote control unit.**

⑪ **Turn the zoom knob so that the size of the picture matches the size of the screen.**
Repeat steps ⑨ to ⑪ until the screen and the picture match.

⑫ **Turn the focus ring to adjust the picture focus.**

⑬ **Turn the zoom knob once more so that the size of the picture matches the size of the screen.**

Turning off the power

① **Press and hold the POWER button on the projector or remote control unit for 0.5 seconds, or press it twice.**
The lamp unit will switch off and the picture will stop being projected. (The POWER button on the projector will illuminate orange.)

② **Wait until the POWER button on the projector illuminates red (until the cooling fan stops).**
Never turn off the MAIN POWER switch, disconnect the power cord or shut off the mains power supply until the cooling fan stops.

③ **Press the MAIN POWER switch to the "O" side to turn off the power.**

NOTE:

- After the power is turned off, the lamp unit will take some time to cool down. If you turn the power back on again before the lamp unit has cooled down, the lamp unit may not turn on immediately, but it will turn on automatically after a short period. (During this time, the POWER button on the projector will flash orange.)
- When the projector is in standby mode (the POWER button on the projector is illuminated red), the projector will still draw a maximum 10 W of power, even when the cooling fan has stopped.
- If the MAIN POWER switch is accidentally turned off while the projector is being used, the lamp unit may not turn on immediately after the power is turned back on. In such cases, the lamp unit will turn back on automatically after a short period. (During this time, the POWER button on the projector will flash green.)
- A tinkling sound may be heard while the power indicator is turned off, but this is not a sign of a malfunction.

About the RGB INPUT monitor

The RGB input monitor can be used to check whether an RGB/YPBPR signal is being input. Refer to the table below for details.

RGB INPUT monitor status	Power supply status	
	Standby	On (projecting)
Illuminated	A signal is being input to either the RGB1 IN or RGB2 IN connector.	A signal is being input to the connector selected using the input select buttons.
Switched off	No signal is being input to either the RGB1 IN or RGB2 IN connector.	No signal is being input to the connector selected using the input select buttons.

About the automatic setup function

If you press the AUTO SETUP button, the items given in the table below will be set automatically. The setting details change according to the signal which is being input. Refer to the table below for details.

	Horizontal/ vertical position	Dot clock/ clock phase	Auto RGB input select/Auto YPBPR select	Automatic keystone correction
VIDEO/ S-VIDEO				Yes
YPBPR			Yes	
UXGA	Yes	No	Yes	
Signal other than above	Yes			

NOTE:

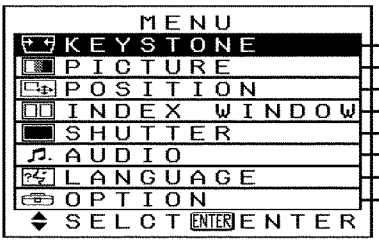
- If the edges of the projected picture are indistinct, or if a dark picture is being projected, the automatic setup processing may stop automatically before it is complete. If this happens, project a different picture and then press the AUTO SETUP button once more, or make the above adjustments manually.
- If you would like to make further adjustments to the picture, use the menu commands which are listed on the next and subsequent pages.

On-screen menus

Menu screens

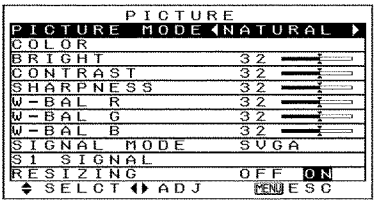
The various settings and adjustments for this projector can be carried out by selecting the operations from on-screen menus.
The general arrangement of these menus is shown below.

MAIN MENU

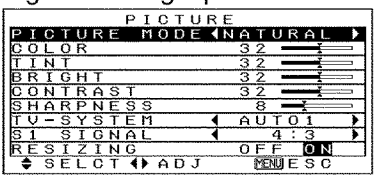


Keystone correction (page 29)

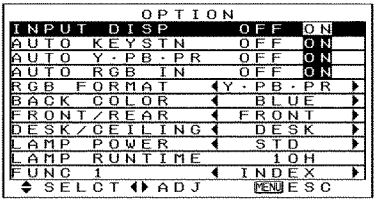
PICTURE menu (page 30)
When an RGB/YPBPR signal is being input



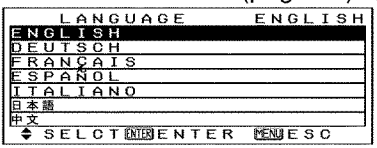
When an S-VIDEO/VIDEO signal is being input



OPTION menu (page 36)



LANGUAGE menu (page 35)

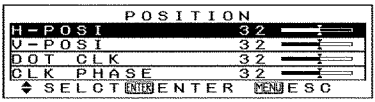


Volume adjustment
Press the ENTER button, and then press the ◀ and ▶ buttons to adjust the volume.

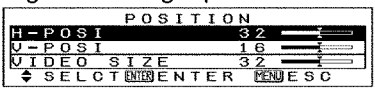
SHUTTER function (page 35)

INDEX WINDOW function (page 34)

POSITION menu (page 33)
When an RGB/YPBPR signal is being input



When an S-VIDEO/VIDEO signal is being input

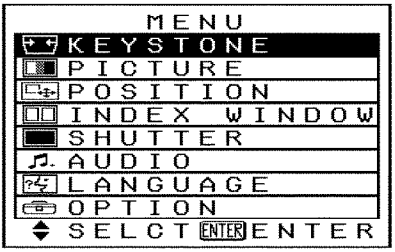


NOTE:

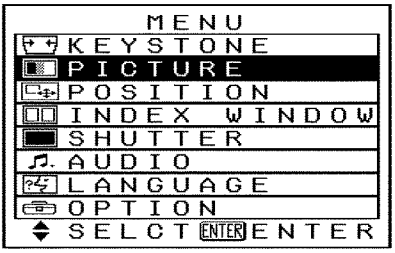
- Keystone distortion of the on-screen display will not be corrected.

Menu operation guide

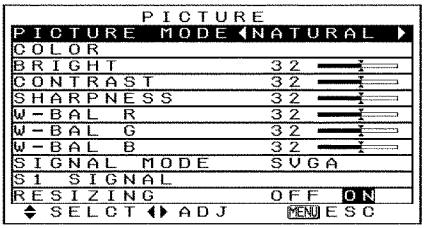
①Press the MENU button.
The MAIN MENU screen will be displayed.



②Press the ▲ or ▼ arrow buttons to select an item.
Selected items will be displayed in yellow.



③Press the ENTER button to accept the selection.
The selected menu screen or adjustment screen will then be displayed.
(Example: PICTURE menu)



④Press the ▲ or ▼ buttons to select an item, and then press the ◄ or ► buttons to change or adjust the setting.
An individual adjustment screen such as the one shown below will be displayed for bar-scale items.

White character display of on-screen items

This projector has unadjustable items and unusable functions depending on the signal being input. When an item cannot be adjusted or a function cannot be used, the corresponding on-screen menu display appears in white characters, and the item or function will not work even if the ENTER button is pressed.

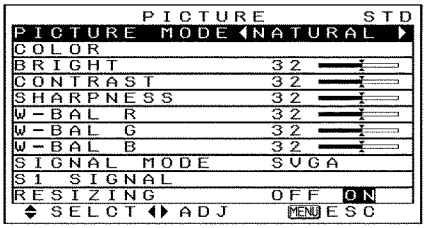
Returning to the previous screen

If you press the MENU button while a menu screen is being displayed, the display will return to the previous screen.
If you press the MENU button while the MAIN MENU screen is being displayed, the MAIN MENU screen will be cleared.

Returning a setting to the factory default

If you press the STD (standard) button on the remote control unit, you can return settings to the factory default settings. However, the operation of this function varies depending on which screen is being displayed.

- When a menu screen is being displayed



All items displayed will be returned to their factory default settings, and "STD" will be displayed in the top-right corner of the screen.

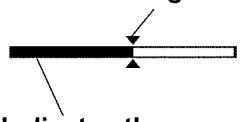
- When an individual adjustment screen is being displayed

Only the item displayed will be returned to the factory default setting, and the bar scale will appear green.

NOTE:

- Triangle symbols above and below a menu bar indicate the factory default setting. Items which do not have these triangle symbols cannot be returned to the factory default setting.

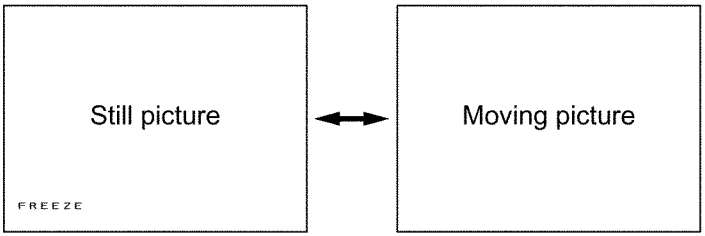
Indicates the standard factory default setting



Indicates the current adjustment value

Using the freeze function

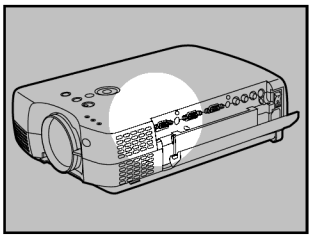
The picture will alternate between a still picture and a moving picture each time the FREEZE button on the remote control unit is pressed.



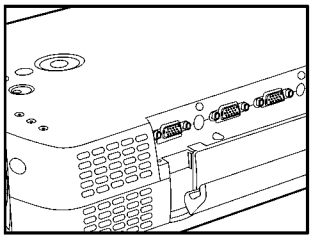
Using the D.ZOOM (digital zoom) function

This function lets you enlarge a single section of the picture. Furthermore, the spot display mode which is used to select the section which is to be enlarged can also be used when making presentations.

① **Press a D.ZOOM +/- button.**
The projector will change to spot display mode.



② **Use the ▲, ▼, ◄ and ► buttons to move the spot to the section which you would like to enlarge, and then press the ENTER button.**
The area around the spot will then be enlarged to twice the normal size.



③ **Use the D.ZOOM +/- buttons to change the enlargement ratio.**
The enlargement ratio can be changed within the range of x1 to x3, in steps of 0.1.

④ **Press the MENU button to return to the normal screen.**
The projector will not return to spot display mode at this time. To return to spot display mode, clear the enlarged picture display from the screen and then press a D.ZOOM +/- button again.

NOTE:

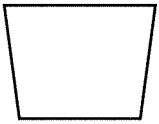
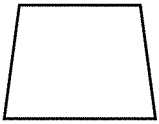
- This function can only be used when using the remote control unit.
- If the type of signal being input changes while the digital zoom function is being used, the digital zoom function will be cancelled.

Correcting keystone distortion

Keystone distortion is corrected automatically when the projector's automatic setup function is used, but this correction will not apply if the screen itself is tilted. In such cases, you can correct the keystone distortion manually with the following procedure.

① Select "KEYSTONE" from the MAIN MENU screen, and then press the ENTER button.

② Press the ◄ or ► buttons to correct the keystone distortion.

Picture condition	Operation
	Press the ► button.
	Press the ◄ button.

③ Press the MENU button to return to the previous screen.

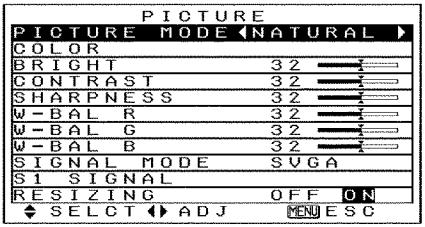
NOTE:

- If you press the AUTO SETUP button after correcting the keystone distortion manually, the automatic keystone correction function will operate and the corrected picture will return to its previous incorrect condition. To prevent this from happening, you can set "AUTO KEYSTN" in the OPTION menu to "OFF".
- Keystone distortion can be corrected to ±30° of the angle of tilt for the projector. However, the greater the correction amount, the more the picture quality will deteriorate, and the harder it will become to achieve a good level of focus. To obtain the best picture quality, set up the projector and screen in such a way that the amount of keystone correction required is as minimal as possible.
- The picture size will also change when correction of keystone distortion is carried out.

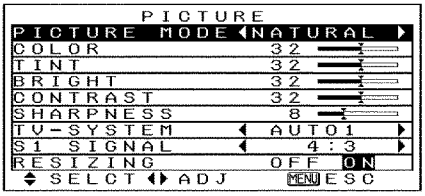
Adjusting the picture

Use the ▲ and ▼ buttons on the projector or remote control unit to select an item, and then use the ◄ and ► buttons to change the setting for that item.
For items with bar scales, press the ENTER button or the ◄ or ► buttons to display the adjustment screen, and then use the ◄ or ► buttons to make the adjustment.

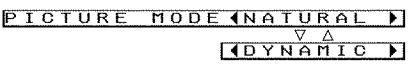
When an RGB/YPBPR signal is being input



When an S-VIDEO/VIDEO signal is being input



PICTURE MODE



This setting lets you adjust the picture quality in accordance with the video source and the conditions in the room to make the picture easier to see.
Select "NATURAL" to view the picture at standard brightness, and select "DYNAMIC" when viewing the picture in brighter environments.

COLOR

(S-VIDEO/VIDEO/YPBPR only)
Press the ► button to make the color more vivid in tone, and press the ◄ button to make the color more pastel in tone.

TINT

(NTSC/NTSC 4.43 only)
This adjusts the flesh tones in the picture. Press the ► button to make flesh tones more greenish, and press the ◄ button to make the flesh tones more reddish.

BRIGHT

This adjusts the darker areas (black areas) in the picture. Press the ◄ button if dark areas are too solid (for example, if hair is difficult to see), and press the ► button if black areas are too light (grey rather than black).

CONTRAST

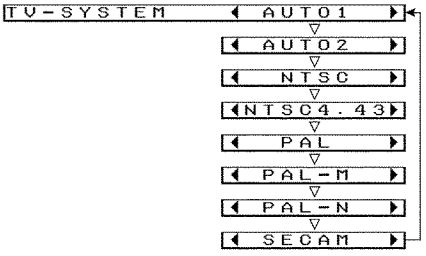
This adjusts the contrast of the picture. Press the ► button to make the picture brighter, and press the ◄ button to make the picture darker. (Adjust the BRIGHT setting first if required before adjusting the CONTRAST setting.)

SHARPNESS

Press the ► button to make the picture details sharper, and press the ◄ button to make the picture details softer.

TV SYSTEM

(S-VIDEO/VIDEO only)



AUTO1 The projector automatically distinguishes between NTSC/NTSC 4.43/PAL/SECAM signals.

AUTO2 The projector automatically distinguishes between NTSC/PAL-M/PAL-N signals.

This should normally be set to "AUTO1" or "AUTO2". If the signal is of such poor quality that the correct format cannot be automatically distinguished, change the setting manually to the required TV system.

WHITE BALANCE R/G/B

(RGB only)

This is used to adjust the white areas of the picture if they appear colorised.

Press the ◄ button to make the selected color lighter.

Press the ► button to make the selected color stronger.

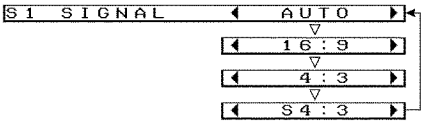
DISPLAY MODE

(RGB/YPBPR only)

This displays the type of signal which is currently being projected. Refer to the table on page 50 for details on each type of signal.

S1 SIGNAL

This setting is only valid for S-VIDEO/VIDEO signals and YPBPR signals in NTSC (480i), 480p and PAL (625i) format.



AUTO (S-VIDEO only) When an S1 video signal is input to the S-VIDEO terminal, the aspect ratio is changed automatically to project a 16:9 picture.

16:9 The picture is compressed to a ratio of 16:9 and projected.

4:3 The input signal is projected without change.

S4:3 The size of the input signal is compressed to 75% and projected. (This is useful for projecting a picture with a 4:3 aspect ratio onto a 16:9 screen.)

S1 video signals

- S1 video signals are a type of video signal with an aspect ratio of 16:9 which include a detector signal. This detector signal is output by some sources such as wide-vision video decks. If the AUTO setting above is selected, this projector will recognise the detector signal and automatically switch the aspect ratio to 16:9 in order to project the picture.

NOTE:

- This projector is equipped with an aspect ratio selection function. However, if a mode which does not match the aspect ratio of the input signal is selected, it may affect the quality of viewing of the original picture. Keep this in mind when selecting the aspect ratio.
- If using this projector in places such as cafes or hotels with the aim of displaying programs for viewing for a commercial purpose or for public presentation, note that if the aspect ratio (16:9) selection function is used to change the aspect ratio of the screen picture, you may be infringing the rights of the original copyright owner for that program under copyright protection laws.
- If a normal (4:3) picture which was not originally intended for wide-screen viewing is projected onto a wide screen, distortion may occur around the edges of the picture so that part of the picture is no longer visible. Such programs should be viewed in 4:3 mode to give proper consideration to the aims and intentions of the original program's creator.

RESIZING

This should normally be set to "ON". (This setting is only for signals which have lower resolutions than the LCD panels. Refer to page 50 for details.)

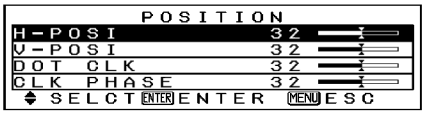
ON — The pixel resolution of the input signal is converted to the same resolution as the LCD panels before being projected. For signals with lower resolutions, gaps in the pixels are automatically interpolated into the picture before it is projected. This may sometimes cause problems with the quality of the picture.

OFF — The picture signal is projected at its original resolution, with no pixel conversion. The projected picture will be smaller than normal, so adjust the zoom setting or move the projector forwards or backwards to adjust the picture size if necessary.

Adjusting the position

Use the ▲ and ▼ buttons on the projector or remote control unit to select an item, then press the ENTER button or the ◄ or ► buttons to display the adjustment screen, and then use the ◄ or ► buttons to make the adjustment.

When an RGB/YPBPR signal is being input



When an S-VIDEO/VIDEO signal is being input

HORIZONTAL POSITION

Press the ◄ button to move the picture to the left, and press the ► button to move the picture to the right.

VERTICAL POSITION

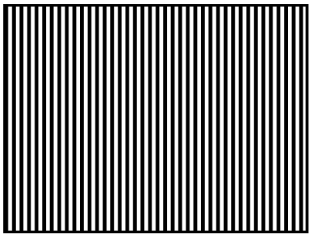
Press the ◄ button to move the picture down, and press the ► button to move the picture up.

VIDEO SIZE

(S-VIDEO/VIDEO only)
Press the ◄ button to make the picture smaller, and press the ► button to make the picture larger.

DOT CLOCK

(RGB only)
Periodic striped pattern interference (noise) may occur when a striped pattern such as the one below is projected. If this happens, use the ◄ and ► buttons to adjust so that any such noise is minimised.



CLOCK PHASE

(RGB only)
Adjust the DOT CLOCK setting first before carrying out this adjustment. Use the ◄ and ► buttons to adjust so that the noise level is least noticeable.

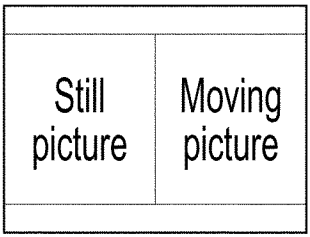
NOTE:

- When an UXGA signal is being projected, interference may not be completely eliminated when the DOT CLOCK and CLOCK PHASE adjustments are carried out.

Using the INDEX WINDOW function

This function lets you store a picture which is being projected into memory, so that you can display a still picture and a moving picture on the screen.

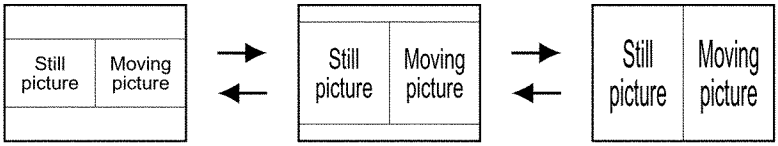
① Press the INDEX WINDOW button.
You can also select INDEX WINDOW from the MAIN MENU screen and then press the ENTER button.



NOTE:

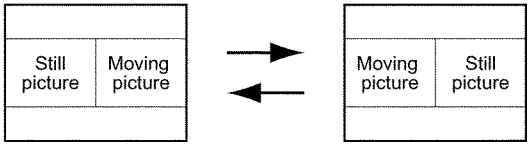
- The screen aspect ratio will become 2:3, and the ratio of the height of the picture to its width will become 1.5 times the normal ratio.

② Use the ▲ and ▼ buttons to set the screen height.
The vertical height can be set to one of three heights: x1, x1.5 and x2.



x1 x1.5 (Normal) x2

③ Use the ◄ and ► buttons to switch between the still picture screen (left) and moving picture screen (right).



④ Press the ENTER button to store the picture in memory.

NOTE:

- When the screen size is changed, the picture's aspect ratio will also change. Make sure that you fully understand the notes on S1 signals which are given on page 32 before using the index window function.
- When steps ② and ③ are carried out, the memory will be reset and a new picture will be stored in memory.

Using the shutter function

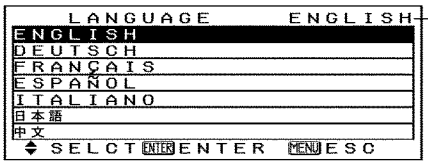
The shutter function can be used to momentarily turn off the picture and sound from the projector when the projector is not being used for short periods of time, such as during breaks in meetings or when carrying out preparation. The projector uses less power in shutter mode than it does in normal projection mode.

① **Press the SHUTTER button on the remote control unit.**
You can also select SHUTTER from the MAIN MENU screen and then press the ENTER button.

② **Press any button on either the projector or remote control unit to return to normal operating mode.**

Changing the display language

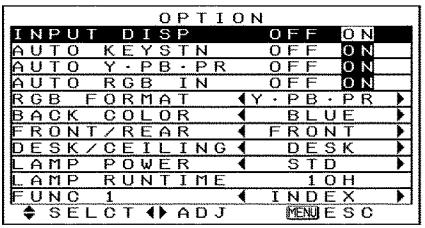
Use the ▲ and ▼ buttons on the projector or remote control unit to select a language, then press the ENTER button to accept the setting.



Indicates the language which is currently set

Option settings

Use the ▲ and ▼ buttons on the projector or remote control unit to select an item, then press the ◄ or ► buttons to change the setting.



SCREEN DISPLAY

ON The signal name is displayed in the top-right corner of the screen when the input signal is changed.

OFF Use this setting when you do not want the signal name to be displayed.

AUTO KEYSTN

This should normally be set to ON.

ON During automatic setup, the angle of tilt of the projector is detected and keystone distortion is corrected automatically.

OFF Use this setting when you do not want automatic keystone correction to be carried out during automatic setup, such as when the screen itself is at an angle.

AUTO Y·PB·PR

Input signal	AUTO Y·PB·PR	
	ON	OFF
HDTV (1080i)	RGB or YPBPR is selected automatically depending on the synchronising signal status.	RGB format setting becomes valid
Other	RGB or YPBPR is selected automatically depending on the synchronising signal status.	

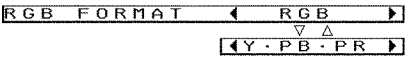
AUTO RGB IN

This should normally be set to ON.

ON During automatic setup, the projector selects whichever one of the RGB1 IN or RGB2 IN connectors has a signal being input, and uses that signal for projection. (If a picture is being projected, the signal source is not automatically changed.)

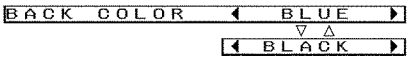
OFF Use this setting when you do not want the signal source to be changed automatically during automatic setup.

RGB FORMAT



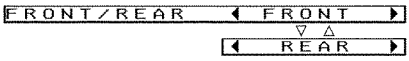
This setting is only valid when an HDTV (1080i) signal is being input and "AUTO Y·PB·PR" is set to OFF.

BACK COLOR



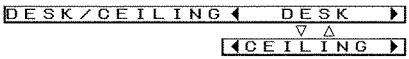
This sets the color which is projected onto the screen when no signal is being input to the projector.

FRONT/REAR



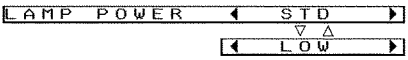
This setting should be changed in accordance with the projector setting-up method.
Set to "FRONT" when using a normal reflective screen with the projector positioned in front of the screen, and set to "REAR" when using a translucent screen with the projector positioned behind the screen.

DESK/CEILING



This setting should be changed in accordance with the projector setting-up method.
Set to "DESK" when setting up the projector on a desk or similar, and set to "CEILING" when suspending the projector from the ceiling using the ceiling bracket which is sold separately.

LAMP POWER



This setting changes the lamp brightness. When set to "LOW", the luminance of the lamp is reduced, but the projector uses less power, and the operating noise is also reduced. This can help to extend the lamp's operating life. If using the projector in small rooms where high luminance is not required, it is recommended that you set the LAMP POWER to "LOW".

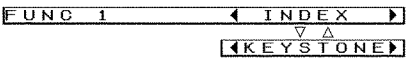
LAMP TIME

This setting displays the usage time for the lamp unit which is currently being used.

NOTE:

- The lamp's operating life varies depending on the usage conditions (such as the LAMP POWER setting and the number of times the power is turned on and off).

FUNC 1



This assigns a function to the F1 button of the ET-RM100 full function remote control unit (sold separately).

INDEX

- Functions in the same way as the INDEX WINDOW button on the accessory card remote control unit. (page 34)

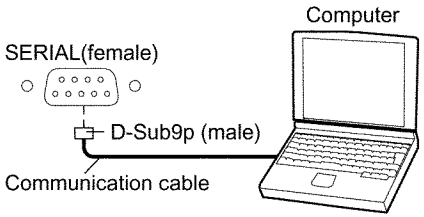
KEYSTONE

- Functions in the same way as when "KEYSTONE" is selected from the MAIN MENU screen. (page 29)

Using the SERIAL connector

The serial connector which is on the side connector panel of the projector conforms to the RS-232C interface specification, so that the projector can be controlled by a personal computer which is connected to this connector.

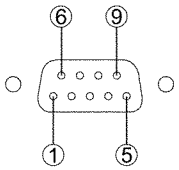
Connection



NOTE:

- Use a proper communication cable which is suitable for the personal computer to connect the serial connector and the personal computer.

Pin layout and signal names for SERIAL connector



D-SUB 9-pin connector seen from outside

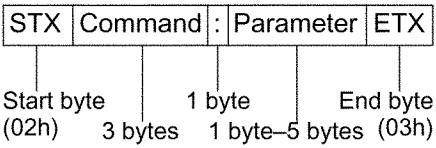
Pin No.	Signal name	Contents
①		NC
②	TXD	Transmitted data
③	RXD	Received data
④		Connected internally
⑤	GND	
⑥		NC
⑦	CTS	Connected internally
⑧	RTS	
⑨		NC

Communications settings

Signal level	RS-232C
Sync. method	Asynchronous
Baud rate	9600 bps
Parity	None
Character length	8 bits
Stop bit	1 bit
X parameter	None
S parameter	None

Basic format

The data sent from the computer to the projector is transmitted in the fromat shown below.



NOTE:

- If sending multiple commands, check that a response has been received from the projector for one command before sending the next command.
- When a command which does not require parameters is sent, the colon (:) is not required.
- If an incorrect command is sent from the personal computer, the "ER401" command will be sent from the projector to the personal computer.

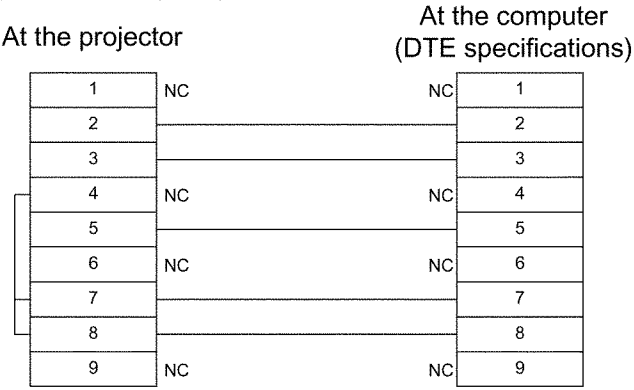
Control commands

The commands which the personal computer can use to control the projector are shown in the following table.

Command	Control Contents	Remarks
PON	Power ON	In standby mode, all commands other than the PON command are ignored. ● The PON command is ignored during lamp ON control. ● If a PON command is received while the cooling fan is operating after the lamp has switched off, the lamp is not turned back on again straight away, in order to protect the lamp.
POF	Power OFF	
AVL	Volume	Parameter 000–063(Adjustment value 0–63)
IIS	Input signal selection	Parameter VID=VIDEO SVD=S-VIDEO RG1=RGB1(YPBPR1) RG2=RGB2(YPBPR2)
ORF	RGB format selection	Parameter 0=RGB 1=YPBPR
Q$S	Lamp ON condition query	Parameter 0 = Standby 1 = Lamp ON control active 2 = Lamp ON 3 = Lamp OFF control active

Cable specifications

(When connected to a personal computer)



Indicators

There are two indicators on the control panel of the projector which give information about the operating condition of the projector. These indicators illuminate or flash to warn you about problems that have occurred inside the projector, so if you notice that one of the indicators is on, turn off the power and check the table below for the cause of the problem.

TEMP indicator			
Indicator display	Illuminated (red) (Lamp unit on)	Flashing (red) (Lamp unit off)	Illuminated (red) (Lamp unit off)
Problem	The internal projector temperature is too high.	The lamp has turned off automatically (the projector is in standby mode) because the internal temperature has risen to an abnormally high level.	The lamp has turned off automatically (the projector is in standby mode) because the internal temperature has risen to an abnormally high level, or because an abnormally rapid temperature variation occurred.
Possible cause	• The ventilation holes may be covered. • The ambient temperature in the place of use may be too high. • The air filter may be blocked.		
Remedy	• Uncover the ventilation holes. • Set up the projector in a place where the temperature is between 0 °C (32 °F) and 40 °C (104 °F) and the humidity is between 20% and 80% (with no condensation). • Turn off the MAIN POWER switch by following the procedure on page 23, and then clean the air filter (refer to page 42).		

LAMP indicator			
Indicator display	Illuminated (red)	Flashing (red)	
Problem	It is nearly time to replace the lamp unit.	An abnormality has been detected in the lamp circuit.	
Possible cause	• Does "REPLACE LAMP" appear on the screen after the projector is turned on?	• The power may have been turned on immediately after it was turned off.	• There may be an abnormality in the lamp circuit.
Remedy	• This occurs when the operation time for the lamp unit is nearing 1800 hours. (when LAMP POWER has been set to "STD") Ask your dealer or an Authorised Service Center to replace the lamp unit.	• Wait for a while until the lamp unit cools down before turning the power back on again.	• Turn off the MAIN POWER switch by following the procedure given on page 23, and then contact an Authorised Service Center.

NOTE:

- Be sure to turn off the MAIN POWER switch by following the procedure given in "Turning off the power" on page 23 before carrying out any of the procedures in the "Remedy" column.
- If the main power turns off after the TEMP indicator starts flashing, it means that an abnormality has occurred. Please contact an Authorised Service Center so that the necessary repairs can be made.

Cleaning and replacing the air filter

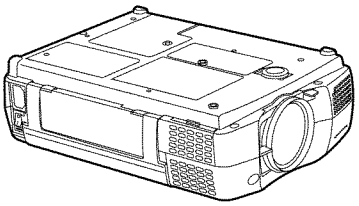
If the air filter becomes clogged with dust, the internal temperature of the projector will rise, the TEMP indicator will flash and the projector power will turn off. **The air filter should be cleaned every 100 hours of use,** depending on the location where the projector is being used.

Cleaning procedure

① Turn off the MAIN POWER switch and disconnect the power cord plug from the wall outlet.

Turn off the MAIN POWER switch according to the procedure given in "Turning off the power" on page 23 before disconnecting the plug from the wall outlet.

② Gently turn the projector upside down.

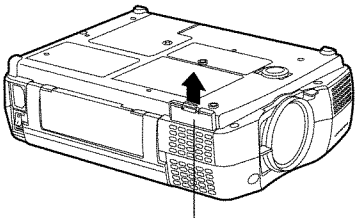


NOTE:

- Place the projector on top of a soft cloth so that it will not become scratched.

③ Remove the air filter.

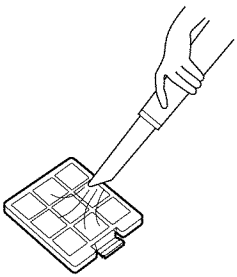
Put your fingernails under the air filter and pull the air filter out of the projector.



Air filter

④ Clean the air filter.

Use a vacuum cleaner to clean off any accumulated dust.



NOTE:

- Be careful not to let the air filter get sucked into the vacuum cleaner.

⑤ Install the air filter.

NOTE:

- Be sure to install the air filter cover before using the projector. If the projector is used without the air filter cover installed, dust and other foreign particles will be drawn into the projector, and malfunctions will result.
- If the dust cannot be removed by cleaning, it is time to replace the air filter. Please consult your dealer. Furthermore, if the lamp unit is being replaced, replace the air filter at this time also.

Replacing the lamp unit

Caution

The lamp unit should only be replaced by a qualified technician.

The lamp cover will be hot after use.

- Burns may result if you touch the lamp cover while it is hot.

Notes on replacing the lamp unit

- Take extreme care when handling the removed lamp unit, as it contains gas under high pressure and can easily become damaged if it is struck against hard objects or dropped.
- The old lamp unit may shatter if it is handled roughly after removal. Ask an authorised waste disposal agency to dispose of the old lamp unit.
- A Phillips screwdriver is necessary for removing the lamp unit. Make sure that your hands are not slippery when using the screwdriver.

NOTE:

- The projector is not supplied with a replacement lamp unit. Please ask your dealer for details. Lamp unit product no.: **ET-LA702**

CAUTION:

- Do not use any lamp unit other than the one with the product number indicated above.

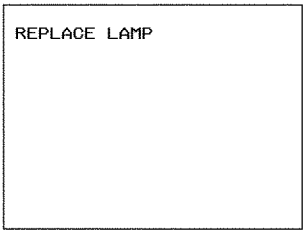
Lamp unit replacement period

The lamp used as the light source for this projector is a consumable part. The normal operating life of the lamp unit is about 2000 hours, however the lamp unit may stop projecting before 2000 hours of operation is reached, depending on the characteristics of the lamp and also on the conditions under which the lamp is being used. (If the lamp is turned on and off very frequently, or if the waiting period between turning it off and turning it back on again is too short, it may cause the operating life of the lamp unit to be shortened.) It is recommended that you always have a replacement lamp unit ready for use if needed. Furthermore, the operating life can be extended by setting LAMP POWER in the OPTION menu to "LOW".

If the lamp is not replaced after the cumulative usage time has passed 1800 hours (when LAMP POWER has been set to "STD"), the power will automatically turn off and the projector will switch to standby mode when the cumulative usage time reaches 2000 hours. If you turn the power back on after this 2000-hour mark has been exceeded, the projector will automatically switch to standby mode again after approximately 10 minutes.

Screen display once cumulative usage time exceeds 1800 hours

If you continue to use the lamp unit after 1800 hours of total usage time have passed (when LAMP POWER has been set to "STD"), the LAMP indicator will illuminate, even when the projector is in standby mode. The on-screen display shown at right will appear as a reminder to replace the lamp unit 10 minutes before the power is due to turn off automatically. This display will continue to appear until a button such as the MENU button or the VOLUME +/- buttons is pressed.



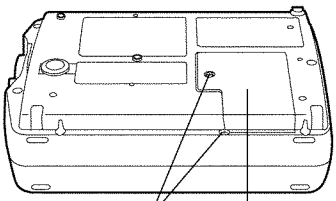
Lamp unit replacement procedure

NOTE:

- If the lamp usage time has passed 2000 hours (when LAMP POWER has been set to "STD"), the projector will switch to standby mode after approximately 10 minutes of operation. The steps on the next page should thus be completed within 10 minutes.

① Turn off the MAIN POWER switch according to the procedure given in "Turning off the power" on page 23, and then disconnect the power cord plug from the wall outlet and check that the area around the lamp unit has cooled down.

② Use a Phillips screwdriver to turn the lamp unit cover fixing screws at the bottom of the projector, and then remove the lamp unit cover from the projector.

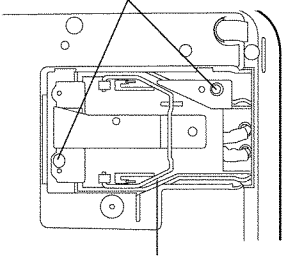


Lamp unit cover fixing screws

Lamp unit cover

③ Use a Phillips screwdriver to loosen the two lamp unit fixing screws until the screws turn freely. Then hold the handle of the lamp unit and gently pull it out from the projector.

Lamp unit fixing screws



Handle

Caution

The lamp unit will be hot after it has been used.

- You might get burned if you touch it while it is still hot.

④ Insert the new lamp unit while making sure that the direction of insertion is correct, and then use a Phillips screwdriver to securely tighten the lamp unit fixing screws.

⑤ **Install the lamp unit cover, and then use a Phillips screwdriver to securely tighten the lamp unit cover fixing screws.**

NOTE:

- Be sure to install the lamp unit and the lamp unit cover securely. If they are not securely installed, it may cause the protection circuit to operate so that the power cannot be turned on.

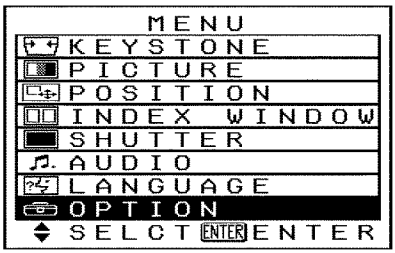
⑥ **Insert the power cord plug into the wall outlet and then press the MAIN POWER switch.**

NOTE:

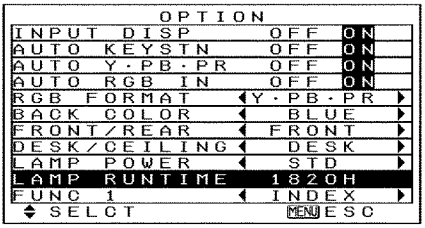
- If the POWER button on the projector does not illuminate red when the MAIN POWER switch is turned on, turn the MAIN POWER switch off again and check that the lamp unit and the lamp unit cover are securely installed. Then turn the MAIN POWER switch back on.

⑦ **Press the POWER button so that a picture is projected onto the screen.**

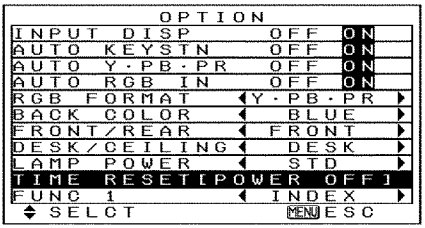
⑧ **Press the MENU button to display the MAIN MENU screen, and then press the ▲ and ▼ buttons to move the cursor to select "OPTION".**



⑨ **Press the ENTER button to display the OPTION screen, and then use the ▲ and ▼ buttons to select LAMP TIME.**



⑩ **Press and hold the ENTER button on the control panel of the projector for approximately 3 seconds.**



The "LAMP TIME" will change to "TIME RESET [POWER OFF]".

NOTE:

- This operation will not work if the ENTER button on the remote control unit is pressed.
- If the MENU button is pressed, the lamp time resetting screen will be cancelled.

⑪ **Press and hold the POWER button for 0.5 seconds or press it twice to turn off the power.** This will reset the cumulative usage time for the lamp unit to zero.

Appendix

List of compatible signals

Mode	Display resolution (dots)*1	Scanning frequency		Dot clock frequency (MHz)	Picture quality*2		Resizing*3		Format
		H (kHz)	V (Hz)		L711 L701	L511 L501	L711 L701	L511 L501	
NTSC/M-NTSC/PAL-M	768 x 480i	15.734	59.940		A	A	OK	OK	Video/S-Video
PAL/PAL-N/SECAM	768 x 576i	15.625	50.000		A	A	OK	OK	Video/S-Video
HDTV	1 920 x 1 080i	33.750	60.000	74.250	A	A			YPBPR/RGB
720P	1 280 x 720	45.000	60.000	74.250	A	A			YPBPR
VGA400	640 x 400	24.825	56.422	21.052	A	A	OK	OK	RGB
	640 x 400	31.469	70.086	25.175	A	A	OK	OK	RGB
VGA480	640 x 480	31.469	59.940	25.175	A	A	OK	OK	RGB
	640 x 480	35.000	66.667	30.240	A	A	OK	OK	RGB
	640 x 480	37.861	72.809	31.500	A	A	OK	OK	RGB
	640 x 480	37.500	75.000	31.500	A	A	OK	OK	RGB
	640 x 480	43.269	85.008	36.000	A	A	OK	OK	RGB
SVGA	800 x 600	32.118	51.144	33.660	A	AA	OK		RGB
	800 x 600	35.156	56.250	36.000	A	AA	OK		RGB
	800 x 600	37.879	60.317	40.000	A	AA	OK		RGB
	800 x 600	48.077	72.188	50.000	A	AA	OK		RGB
	800 x 600	46.875	75.000	49.500	A	AA	OK		RGB
	800 x 600	53.674	85.061	56.250	A	AA	OK		RGB
MAC16	832 x 624	49.725	74.550	57.283	A	A	OK		RGB
XGA	1 024 x 768	48.363	60.004	65.000	AA	A			RGB
	1 024 x 768	56.476	70.069	75.000	AA	A			RGB
	1 024 x 768	60.023	75.029	78.750	AA	A			RGB
	1 024 x 768	65.549	81.630	86.000	AA	A			RGB
	1 024 x 768	68.678	84.997	94.500	AA	A			RGB
	1 024 x 768i	35.520	86.952	44.897	AA	A			RGB
	1 024 x 768	80.030	100.038	105.000	AA	A			RGB
	1 024 x 768	96.726	120.000	130.000	AA	C			RGB
MXGA	1 120 x 760	50.108	60.153	78.569	A	A			RGB
	1 152 x 864	63.995	71.184	94.200	A	A			RGB
	1 152 x 864	67.500	74.917	108.000	A	A			RGB
	1 152 x 864	76.705	85.038	121.500	A	C			RGB
MAC21	1 152 x 870	68.681	75.062	100.000	A	C			RGB
SXGA	1 280 x 1 024	52.350	50.000	87.948	A	A			RGB
	1 280 x 1 024	63.981	60.020	108.000	A	A			RGB
	1 280 x 1 024	72.338	66.304	125.000	A	C			RGB
	1 280 x 1 024	78.160	71.970	135.060	A	C			RGB
	1 280 x 1 024	79.977	75.025	135.001	A	C			RGB
	1 280 x 1 024i	46.433	86.872	78.750	A	C			RGB
	1 280 x 1 024i	47.600	89.055	80.730	A	C			RGB
UXGA	1 600 x 1 200	75.000	60.000	162.000	B	C			RGB
	1 600 x 1 200	87.500	70.000	189.000	B	C			RGB
	1 600 x 1 200	93.750	75.000	202.500	B	C			RGB
480i	720 x 480i	15.734	59.940	13.500	A	A	OK	OK	YPBPR
625i	720 x 576i	15.625	50.000	13.500	A	A	OK	OK	YPBPR
480p	720 x 483	31.469	59.940	27.000	A	A	OK	OK	YPBPR