

MultiSync MT1035

LCD Projector

User's Manual

IMPORTANT INFORMATION

Precautions

Please read this manual carefully before using your NEC MultiSync MT1035 LCD Projector and keep the manual handy for future reference.

Your serial number is located under the name plate label on the right side of your MultiSync MT1035 . Record it here:

CAUTION



**LASER RADIATION-
DO NOT STARE INTO BEAM**

**WAVE LENGTH: 645 nm (640-660 nm)
MAX. OUTPUT: 1 mW
CLASS II LASER PRODUCT**

WARNING

TO PREVENT FIRE OR SHOCK, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE. DO NOT USE THIS UNIT'S GROUNDED PLUG WITH AN EXTENSION CORD OR IN AN OUTLET UNLESS ALL THREE PRONGS CAN BE FULLY INSERTED. DO NOT OPEN THE CABINET. THERE ARE HIGH-VOLTAGE COMPONENTS INSIDE. ALL SERVICING MUST BE DONE BY QUALIFIED NEC SERVICE PERSONNEL.

CAUTION

To turn off main power, be sure to remove the plug from power outlet. The power outlet socket should be installed as near to the equipment as possible, and should be easily accessible.

CAUTION

TO PREVENT SHOCK, DO NOT OPEN THE CABINET. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED NEC SERVICE PERSONNEL.



This symbol warns the user that uninsulated voltage within the unit may be sufficient to cause electrical shock. Therefore, it is dangerous to make any kind of contact with any part inside of the unit.



This symbol alerts the user that important information concerning the operation and maintenance of this unit has been provided. The information should be read carefully to avoid problems.

Important Safeguards

These safety instructions are to ensure the long life of your LCD projector and to prevent fire and shock. Please read them carefully and heed all warnings.

Installation

1. For best results, use your LCD projector in a darkened room.
2. Place the projector on a flat, level surface in a dry area away from dust and moisture.
3. Do not place your LCD projector in direct sunlight, near heaters or heat radiating appliances.
4. Exposure to direct sunlight, smoke or steam can harm internal components.
5. Handle your LCD projector carefully. Dropping or jarring can damage internal components.
6. Do not place heavy objects on top of the LCD projector.
7. If installing the LCD projector on the ceiling:
 - a. The ceiling must be strong enough to support the LCD projector and the installation must be in accordance with any local building codes.
 - b. The LCD projector must be installed by qualified NEC service personnel.

Power Supply

1. The LCD projector is designed to operate on a power supply of 100-120 or 220-240 V 50/60 Hz AC. Ensure that your power supply fits this requirement before attempting to use your LCD projector.
2. Handle the power cable carefully and avoid excessive bending. A damaged cord can cause electric shock or fire.
3. If the LCD projector is not to be used for an extended period of time, disconnect the plug from the power outlet.

Cleaning

1. Unplug the LCD projector before cleaning.
2. Clean the cabinet periodically with a damp cloth. If heavily soiled, use a mild detergent. Never use strong detergents or solvents such as alcohol or thinner.
3. Use a blower or lens paper to clean the lens, and be careful not to scratch or mar the lens.
4. Clean the air filter with a vacuum cleaner after every 100 hours of operation.
 - a. Clean the outside of the filter with a vacuum cleaner.
 - b. Do not use water or any other liquid to clean the air filter.
 - c. Do not operate your LCD projector without the air filter.

Lamp Replacement

- Perform lamp replacement in accordance with the instructions on page E-37.
- Be sure to replace the lamp when the Status light comes on. If you continue to use the lamp after 2000 hours of use, the lamp bulb may shatter, and pieces of glass may be scattered in the lamp case. Do not touch them as the pieces of glass may cause injury. If this happens, contact your NEC dealer for lamp replacement.
- Allow a minimum of ONE minute to elapse between turning the lamp off and on. High voltage is applied to the lamp immediately when the power is turned on. Therefore turning the power off and quickly back on may shorten the life of your lamp and result in damage to your LCD projector.

Fire and Shock Precautions

1. Ensure that there is sufficient ventilation and that vents are unobstructed to prevent the build-up of heat inside your LCD projector. Allow at least 3 inches (10cm) of space between your LCD projector and a wall.
 2. Prevent foreign objects such as paper clips and bits of paper from falling into your LCD projector. Do not attempt to retrieve any objects that might fall into your projector. Do not insert any metal objects such as a wire or screwdriver into your LCD project. If something should fall into your projector, disconnect it immediately and have the object removed by a qualified NEC service person.
 3. Do not place any liquids on top of your LCD projector.
- **Do not look into the lens while the projector is on. Serious damage to your eyes could result.**
 - **Do not look into the laser pointer while it is on and do not point the laser beam at another person. Serious injury could result.**

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1 INTRODUCTION

This section introduces you to your new MultiSync MT1035 (XGA) LCD Projector, provides a list of materials that comes with your projector and describes the features and controls.

Congratulations On Your Purchase Of The MultiSync MT1035 LCD Projector

The MultiSync MT1035 is one of the very best LCD projectors available today. The multiple LCD panels enable you to project precise images up to 320 inches (812.8 cm) across (measured diagonally) from your PC or Macintosh computer (desktop or notebook), VCR, DVD player, document camera, or even a laser disc player.

You can use the projector on a tabletop or cart, you can permanently mount it on a ceiling*¹, or you can use MultiSync MT1035 LCD Projector to project images from behind the screen. The remote control can be used wirelessly or with a cable, and you can even use the remote control with the built-in remote mouse receiver to operate the mouse on your PC or Mac. But best of all, the MultiSync MT1035 is an NEC LCD projector. That means you can depend on years of reliable performance and crystal-clear presentations!

Features you'll enjoy:

- Simple set up and operation.
 - Hot air blown from the vents does not bother the audience during your presentation since the vents are located on the front.
 - A high-performance 150 watt short arc high pressure lamp that delivers 1300 ANSI lumens and an operating lamp life is 2000 hours.
 - A wireless remote control that operates the projector from any angle.
 - A laser pointer that's built into the remote control.
 - The power zoom control enables you to adjust the image to be between 63.5 and 812.8 cm (measured diagonally).
 - Keystone correction allows you to correct trapezoidal distortion so that the image is square.
 - White balance control allows you to adjust the brightness and contrast for each RGB color.
 - You can choose between video modes depending on your source: "normal" for a typical picture, "natural" for true color reproduction, and "camera" for use with a document camera or low APL picture.
 - The optional MT Viewer kit allows you to start your presentation even when a PC is not available at the site.
 - The "image capture" enables you to use the entire picture as a background image or to create slides (optional MT Viewer required).
 - An image can be projected from in front or behind a screen, and the projector can even be installed on the ceiling.
- NEC Technologies' exclusive AccuBlend™ intelligent pixel blending technology - an extremely accurate image compression technology - offers a crisp image with SXGA (1280 × 1024) resolution*². You can select any point on the screen with the pointer and enlarge the selected area.
 - Supports most IBM VGA, SVGA, XGA, SXGA(with AccuBlend)*², Macintosh, or any other RGB signals within a horizontal frequency range of 15.625 to 85 kHz and a vertical frequency range of 50 to 85 Hz. This includes NTSC, PAL, SECAM and NTSC4.43 standard video signals.

Note: Composite video standards are as follows:

NTSC: U.S. TV standard for video in U.S. and Canada.

PAL: TV standard used in western Europe.

SECAM: TV standard used in France and Eastern Europe.

NTSC4.43: TV standard used in Middle East countries.

How Do You Get Started?

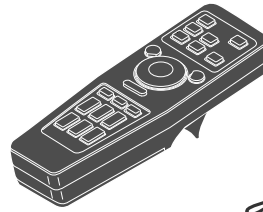
The fastest way to get started is to take your time and do everything right the first time. Take a few minutes now to review the manual. This may save you hours later on. At the beginning of each section of the manual you'll find an overview. If the section doesn't apply, you can skip it.

What's In The Box?

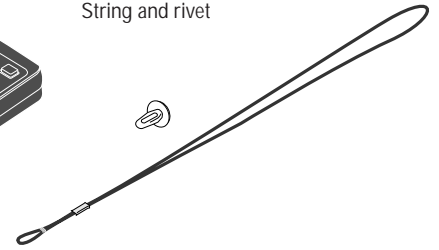
Make sure your box contains everything listed. If any pieces are missing, contact your dealer. Please save the original box and packing materials if you ever need to ship your MultiSync MT1035 LCD Projector.

- NEC MultiSync MT1035 LCD Projector
- Remote Control With Built-In Laser Pointer And Cables
- Mouse Adapter for IBM PS/2 and Mac
- Serial Cable
- Signal Cable (15-Pin Mini D-Sub To 15-Pin Mini D-Sub Connector)
- Pin Adapter for Macintosh
- Power Cable
- Two AA Batteries
- User's Manual
- String and Rivet

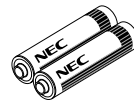
Remote control



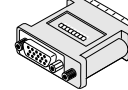
String and rivet



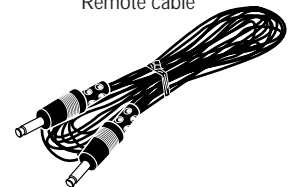
Batteries (AA x 2)



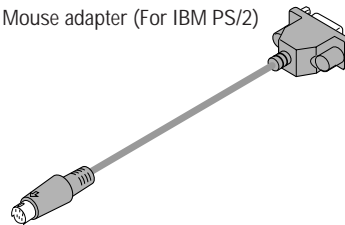
Pin adapter for Macintosh



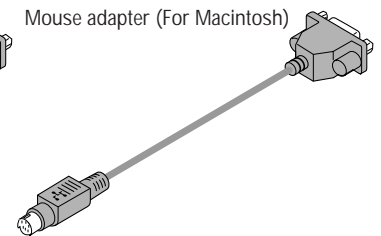
Remote cable



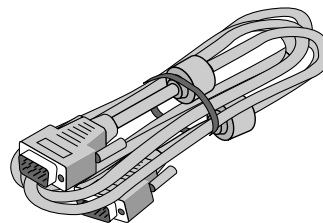
Mouse adapter (For IBM PS/2)



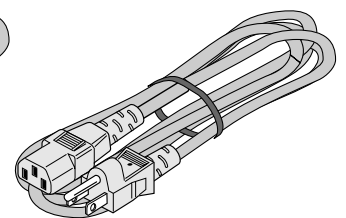
Mouse adapter (For Macintosh)



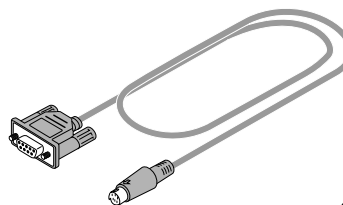
Signal cable
(15-Pin Mini D-Sub To 15-Pin Mini D-Sub connector)



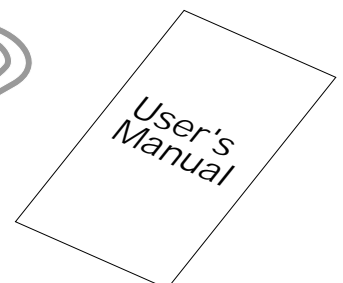
Power cable



Serial cable

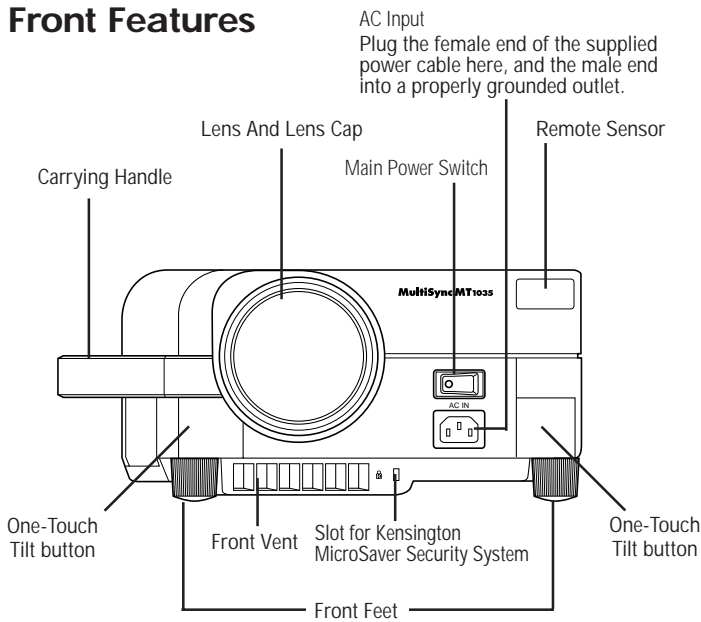


User's manual

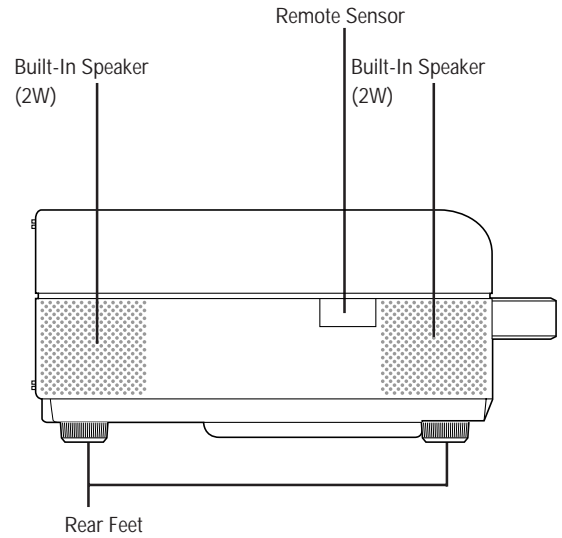


Getting To Know Your MultiSync MT1035 LCD Projector

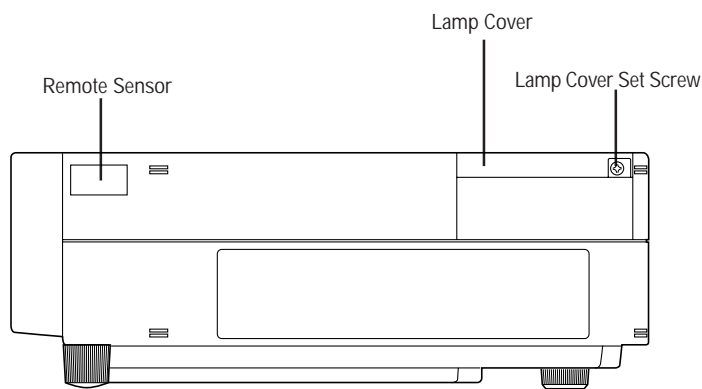
Front Features



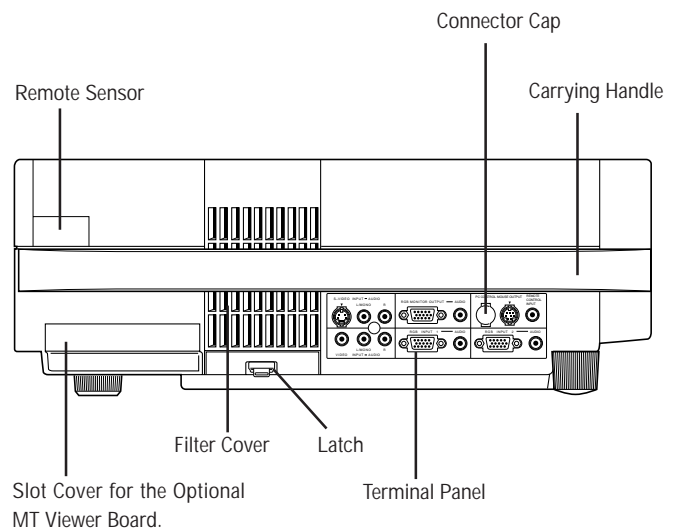
Rear Features



Right Side Features



Left Side Features



Top Features

1 Power Button

Use this button to turn the power on and off when the Main Power Switch is on and the LCD projector is in standby.

2 Menu Button

Displays the on- screen menu.

3 Select (▲▼◀▶) / (+)(-) Buttons

Select: After you press the "Menu" button, use the ▲ or ▼ button to select the menu icon of the item you wish to adjust.

(+)(-): Use these buttons while you' re in the Image Adjust mode to change the level of a selected menu item. These buttons are also used to set an item in the Power or Settings menus.

4 Enter Button

Executes your menu selection.

5 (+) (-) Zoom Buttons

Press the (+) button to make the image larger; press (-) to make the image smaller.

6 (+) (-) Focus Buttons

Press the (+) or (-) buttons to focus an image.

7 Power Indicator

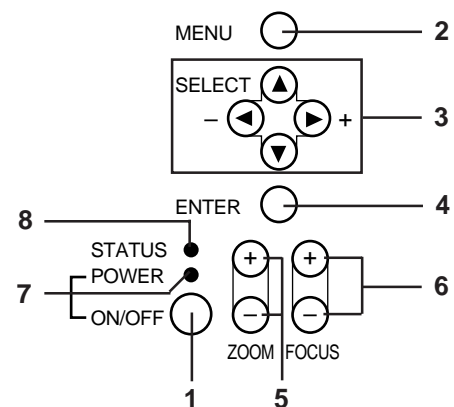
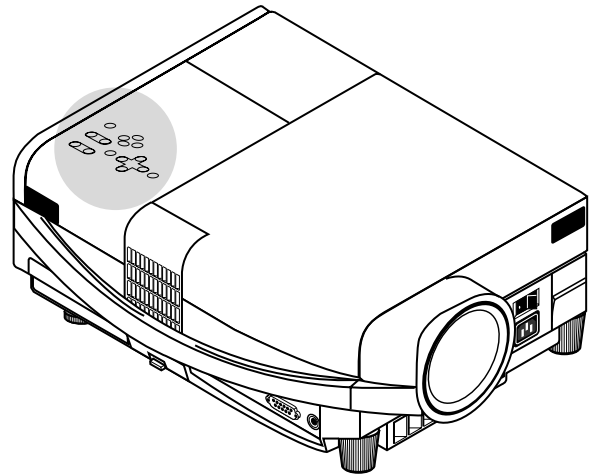
When this indicator is green, the LCD projector is on; when the indicator is amber, it is standing by.

8 Status Indicator

When this is lit red continually, it's warning you that the projection lamp has exceed 2000 hours of service. After this light appears, it is advisable to replace the projection lamp as soon as possible.(See page E-37)

In addition the message "LAMP USAGE XX HOURS" appears continually when the on-screen menu is not displayed.

If this light blinks red rapidly, it indicates that either the lamp cover or filter cover is not attached properly. See the Status Light Messages on page E-39 for more details.



Terminal Panel Features

This panel is located on the left side and is where you connect your cables.

1 S-Video Input

Here is where you connect the S-Video input from an external source like a VCR.

Left Channel/Mono Audio Input Jack

This is your left channel audio input for stereo sound coming from S-Video equipment or audio system. This also serves as your monaural audio input.

Right Channel Audio Input Jack

This is your right channel audio input for stereo sound.

NOTE: S-Video provides more vivid color and higher resolution than the traditional composite video format.

2 Video Input

Connect a VCR, DVD player, laser disc player, or document camera here to project video.

Left Channel/Mono Audio Input Jack

This is your left channel audio input for stereo sound coming from video equipment or audio system. This also serves as your monaural audio input.

Right Channel Audio Input Jack

This is your right channel audio input for stereo sound.

3 RGB Monitor Output Connector (Mini D-Sub 15 pin)

You can use this connector to loop your computer image to an external monitor from either the RGB 1 or RGB 2 input source.

Audio Output Mini Jack

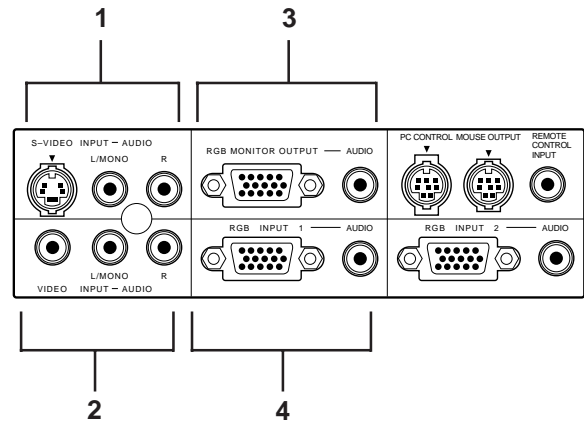
Connect additional external speakers here to listen to audio coming from your computer, Video or S-Video input.

4 RGB Input 1 Connector (Mini D-Sub 15 pin)

Connect your PC or other RGB equipment such as IBM or compatible computers. Use the signal cable that's supplied to connect to a PC. Or connect a Macintosh or compatible computer here using the signal cable and the pin adapter that is supplied.

RGB 1 Audio Input Mini Jack

This is where you connect RGB audio output from a computer or another RGB source.



5 RGB Input 2 Connector (Mini D-Sub 15 pin)

Connect a Macintosh or compatible computer here using the signal cable and the monitor adapter that is supplied. Or connect your PC or other RGB equipment such as IBM or compatible computers. Use the signal cable that is supplied to connect to a PC.

RGB 2 Audio Input Mini Jack

This is where you connect a second RGB audio output from a computer or another RGB source.

6 PC Control Port

Use this port to connect your PC to control the MultiSync MT1035 Projector. This enables you to use your PC and serial communication protocol to control the projector. If you are writing your own program, command references are on page E-45.

A cap is put on the port at the factory. Remove the cap when using the port.

7 Mouse Output Port


Use this port to operate your computer's mouse functions from the NEC MultiSync MT1035 remote control. When your computer is connected here, the remote sensors on the LCD projector cabinet will receive your mouse commands.

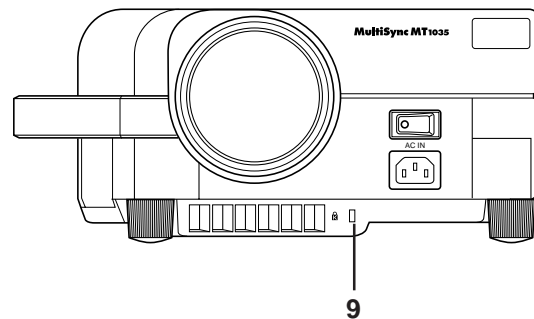
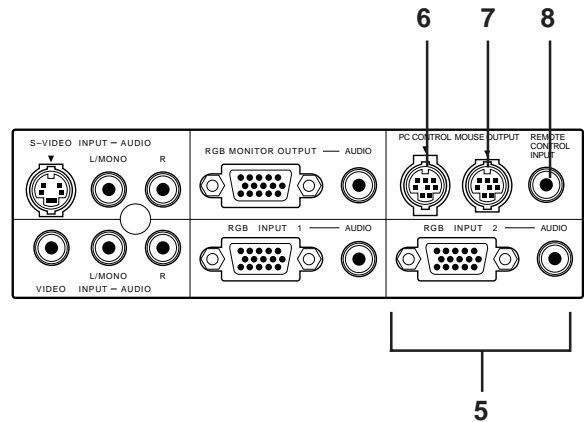
8 Remote Control Jack

Connect your remote control cable here for wired operation.

9 Built-in Security Slot ()

This security slot supports the MicroSaver® Security System.

MicroSaver® is a registered trademark of Kensington Microware Inc. The logo  is trademarked and owned by Kensington Microware Inc.



Remote Control Features

You can use your remote control with the cable or wireless to operate your MultiSync MT1035 LCD Projector. With the mouse output port connected to your computer, you can also use the projector's remote control to operate your computer's mouse wireless. (See page E-25 to connect your computer to the mouse output port.)

If you want to use your remote control with the cable, connect one end of the cable to the jack on the remote control and the other end to the Terminal Panel.

NOTE: *If you are using a Macintosh computer, you can click either the right or left button to activate the mouse.*

1 Left Click Button

Use this button to enter your menu selection. It works the same as the "Enter" button on the cabinet.

2 Laser Pointer

Beams a laser light when "Laser" button is pressed.

3 Infrared Transmitter

Direct the remote control toward the remote sensor on the projector cabinet.

4 LED

Flashes when any button is pressed.

5 Power On And Off

If your main power switch is turned on, you can use this button to turn your MultiSync MT1035 LCD Projector on and off.

6 Video Button

Press to select an NTSC, PAL, SECAM or NTSC4.43 compatible video source from a VCR, DVD player, laser disc player or document camera.

7 S-Video Button

Press to select an S-Video source from a VCR.

8 RGB 1 Button

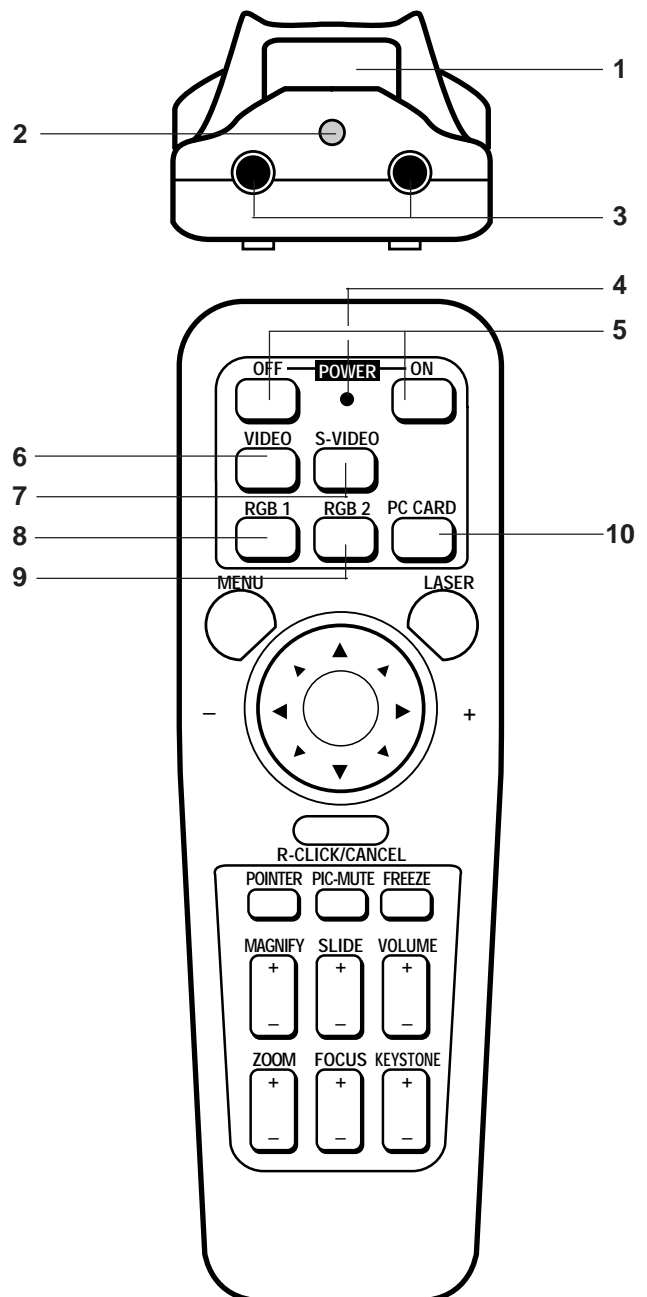
Press to select a video source from a computer connected to your RGB 1 port.

9 RGB 2 Button

Press to select a video source from a computer connected to your RGB 2 port.

10 PC Card Button

Press to display a slide from the flash memory card inserted in the PC card slot of your LCD projector. (You must first install the optional MT Viewer board into your LCD projector.)



11 Laser Button

Press and hold this button to activate the laser pointer. When lit, you can use the laser to draw your audience's attention to a red dot that you can place on any object within 10 m.

12 Menu Button

Use this button to call up the On-Screen Menu so you can adjust and set the image. After you press this button, it will light up. During this time you can use the mouse pad and right/left click buttons to make menu selections.

If no buttons are pressed within 10 seconds while it illuminates, the light goes out. To return to the main menu from a submenu, press this button again.

13 Mouse Pad(▲▼◀▶/+-)

Works as a mouse for your projected computer image. This pad is also used to adjust position.

This pad selects the submenu you want to adjust. (See page E-27.)

After you make your on-screen menu selection, use this pad to adjust the level up or down. (See page E-27.)

14 Right Click/Cancel Button

Press this button to exit "Menus" or "Pointer."

15 Freeze Button

This button will freeze a picture. Press again to resume motion.

16 Picture Mute Button

This button turns off the image for a short period of time. Press again to restore the image.

17 Pointer Button

Use this button to move your Pointer icon to the area you want on the screen, then press the Magnify button on the remote control to enlarge the selected area on the screen.

When you're finished, the "Pointer" button will remain lit for 10 seconds.

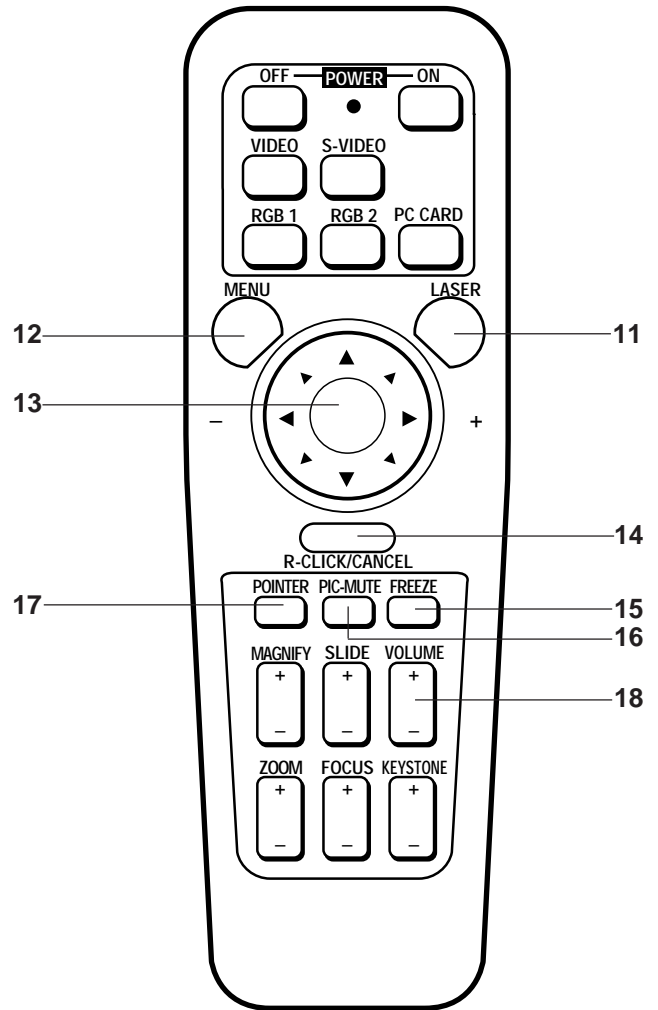
NOTE:

* Eight kinds of Pointers (icons) are available. You can select one from the Settings Menu. The magnifying glass icon is selected at the factory. See page E-32 for more details.

* With the Pointer button pressed, the Mouse Pad is used to move the picture.

18 Volume Button

Press (+) to increase the volume and (-) to decrease it.



19 Slide Button

Press (+) to advance the next file or slide and (-) to return to the previous file or slide. (the optional MT Viewer board required)

20 Magnify Button

Use the (+) or (-) button to adjust the image size up to 400%. When the Pointer is displayed, the magnified image is displayed at the center of the Pointer. When the Pointer is not displayed, the magnified image is displayed at the center of the screen.

21 Keystone Button

Press the (+) or (-) button to correct the keystone (trapezoidal) distortion, and make the image square.

22 Focus Button

Press the (+) or (-) button to adjust the focus.

23 Zoom Button

Press the (+) button to zoom in and the (-) button to zoom out.

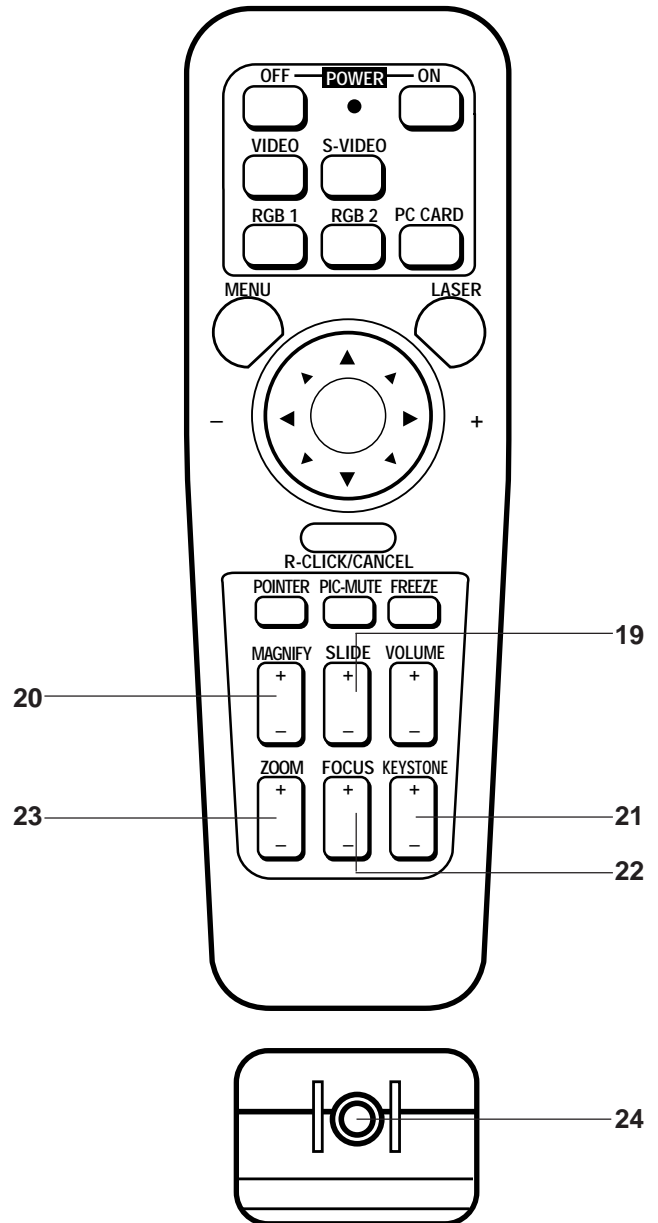
24 Remote Jack

Connect your remote control cable here for wired operation.

NOTE: You cannot use Menu and Pointer at the same time.

Remote Control Precautions

- Do not look into the laser pointer while it is on.
- Do not point the laser beam at a person.
- When the cable is connected to the remote control, it will not work in the wireless mode.
- Handle the remote control carefully.
- If the remote control gets wet, wipe it dry immediately.
- Avoid excessive heat and humidity.
- If you will not be using the remote control for a long time, remove the batteries.
- Do not mix new and old or different types of batteries.



2 INSTALLATION

This section describes how to set up your MultiSync MT1035 LCD projector and how to connect video and audio sources.

Setting Up Your MultiSync MT1035 LCD Projector

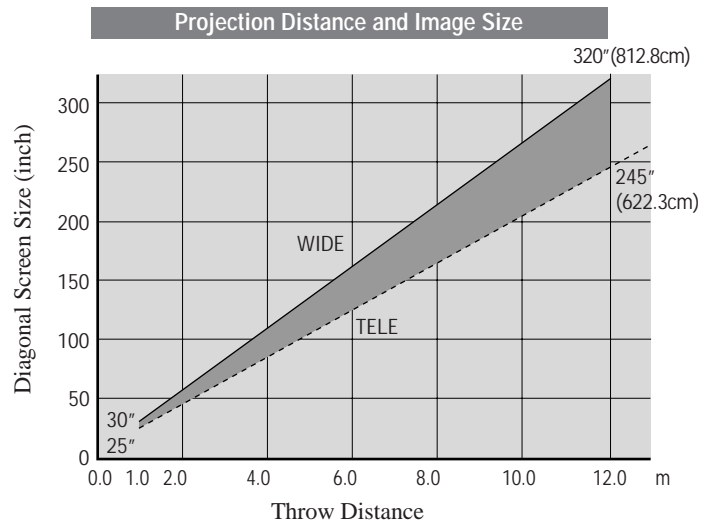
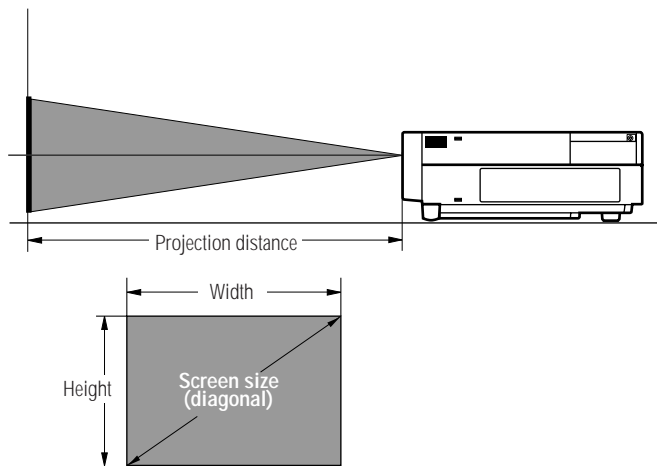
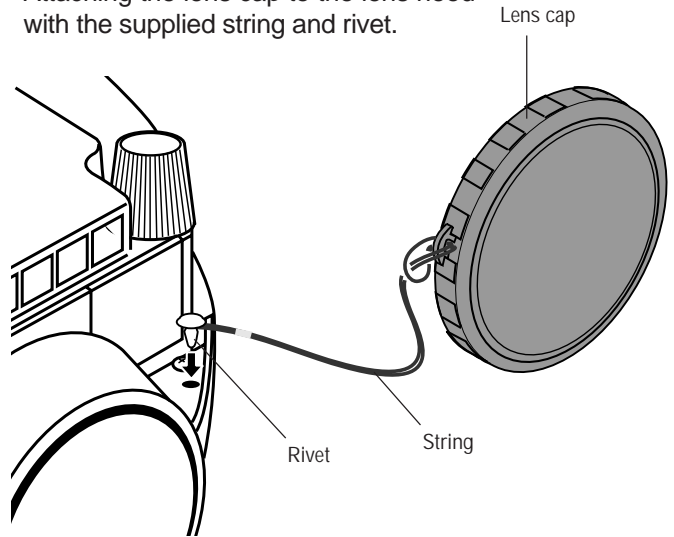
Your MultiSync MT1035 LCD Projector is simple to set up and use. But before you get started, you must first:

1. Determine the image size
2. Set up a screen or select a non-glossy white wall onto which you can project your image.

Carrying The LCD Projector Always carry your LCD projector by the handle. Ensure that the power cord and any other cables connecting to video sources are disconnected before moving the projector. When moving the projector or when it is not in use, cover the lens with the lens cap.

Selecting A Location The further your LCD projector is from the screen or wall, the larger the image. The minimum size the image can be is approximately 0.64 m (25") measured diagonally when the projector is roughly 1.0 m from the wall or screen. The largest the image can be is 8.1 m (320") when the projector is about 12.0 m from the wall or screen.

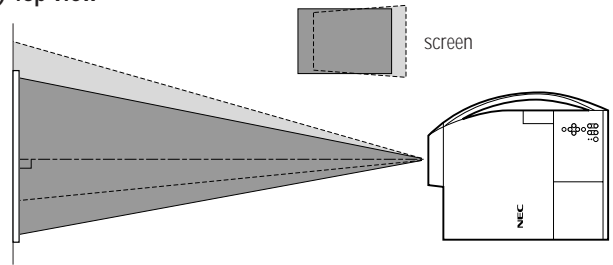
Attaching the lens cap to the lens hood with the supplied string and rivet.



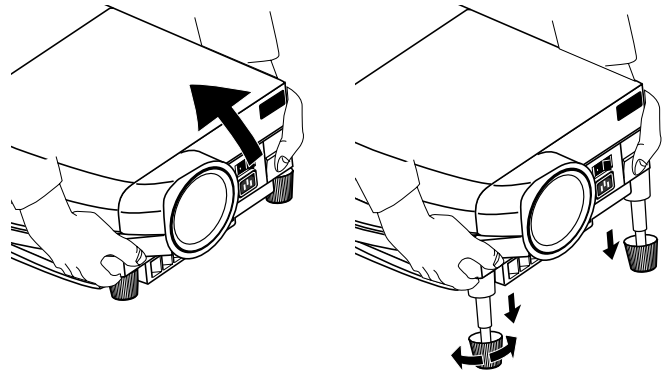
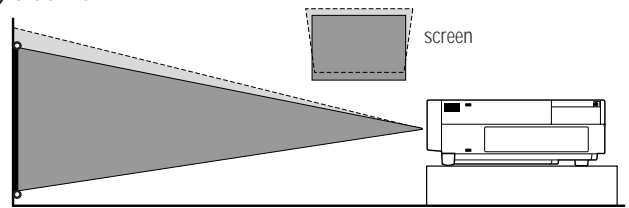
Using A Tabletop Or Cart

1. Place your LCD projector on a flat level surface at the optimal distance from the screen or wall so you realize the size image you want. (Avoid having bright room lighting or sun light directly on the screen or wall where you'll be projecting the image.)
2. Connect the power cable, remove the lens cap and turn the projector on. (If no input signal is available, the projector will display a background image.)
3. Ensure that the projector is square to the screen.
4. Move the projector left or right to center the image horizontally on the screen. (A)
5. To center the image vertically (B), lift the front edge of the projector and press the buttons on the front of the projector, just above the feet, to release the one-touch tilt feet. (There is approximately 10.5° of up and down adjustment for the front of the projector.)
6. If a trapezoidal distortion appears on the screen, use the **KEYSTONE** button on the remote control or select **Keystone** from the menu to correct the distortion.
If necessary, adjust the front or rear feet so that the lens surface is parallel to the screen. If you use the projector with the screen tilted, the picture will be distorted. Each of the rear feet height can be changed up to 4 mm.
7. Increase or reduce the size of the projected image by pressing the "Zoom" (+) or (-) buttons on the remote control or top of the cabinet.

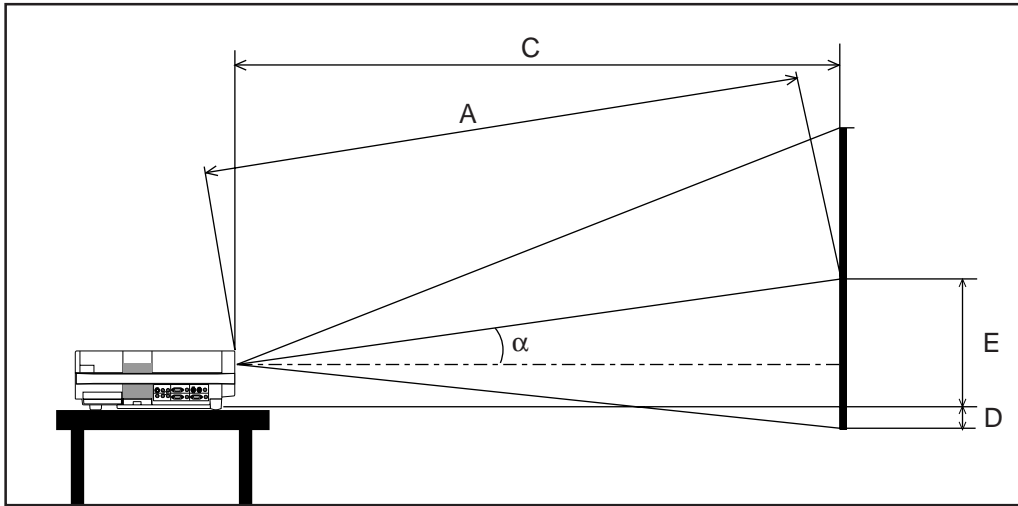
(A) Top view



(B) Side view



Distance Chart



Formulas (mm)

H inch = Horizontal Screen Width

$M=1.25H/33.02$ (Projection magnification)

$A=C/\cos\alpha$

C (WIDE)= $49.2 \times M - 72.789$

C (TELE)= C (WIDE) $\times 1.31$

$D=1.982 \times M+91.9$

$E=91.9+7.69M$

- A : Distance between the lens and the screen center
- C : Horizontal throw distance between the screen surface and the lens
- D : Vertical distance between the projector bottom and the bottom of image
- E : Vertical distance between the projector bottom and the screen center

Standard Zoom Lens (Wide)

α	Degree	9.3	9.1	9.1	9.0	9.0	9.0	9.0	8.9	8.9	8.9	8.9	8.9	8.9
β (sin= α)		0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.1622
γ (cos= α)		0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.988
Screen Size H-Width	inch	32	48	56	64	72	80	96	120	144	160	192	216	240
4 : 3 Diagonal	inch	40	60	70	80	90	100	120	150	180	200	240	270	300
A	mm	1471	2242	2628	3013	3399	3785	4556	5713	6870	7641	9184	10341	11498
C	mm	1452	2214	2595	2976	3357	3738	4500	5644	6787	7549	9074	10217	11360
D	mm	-33	-3	11	26	41	56	85	129	174	203	262	306	350.5
E	mm	327	444	503	561	620	679	796	972	1148	1265	1500	1676	1852

Standard Zoom Lens (Tele)

α	Degree	7.1	7.0	7.0	7.0	7.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
β (sin= α)		0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
γ (cos= α)		0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Screen Size H-Width	inch	32	48	56	64	72	80	96	120	144	160	192	216	240
4 : 3 Diagonal	inch	40	60	70	80	90	100	120	150	180	200	240	270	300
A	mm	1902	2900	3399	3898	4397	4896	5893	7390	8887	9885	11881	13378	14875
C	mm	1887	2878	3373	3869	4364	4860	5851	7337	8823	9814	11796	13282	14768
D	mm	-33	-3	11	26	41	56	85	129	174	203	262	306	351
E	mm	327	444	503	561	620	679	796	972	1148	1265	1500	1676	1852

WARNING

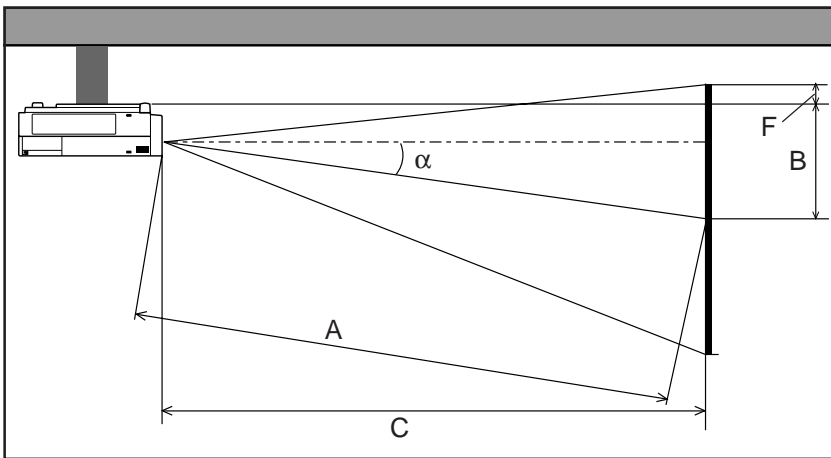
- Only use your LCD projector on a solid, level surface. If the projector falls to the ground, you can be injured and the projector severely damaged.
- Do not use the LCD projector where temperatures vary greatly. The projector must be used at temperatures between 0°C and 40°C.
- Do not expose the LCD projector to moisture, dust, or smoke. This will harm the screen image.
- Ensure that you have adequate ventilation around your LCD projector so heat can dissipate. Do not cover the vents on the side or the front of the projector.

Ceiling Installation

Installing your MultiSync MT1035 LCD Projector on the ceiling must be done by a qualified technician. Contact your NEC dealer for more information.

Do not attempt to install the projector yourself.

NOTE : Distances may vary $\pm 5\%$.



Formulas (mm)

H inch = Horizontal Screen Width

$M = 1.25H / 33.02$ (Projection magnification)

$A = C / \cos \alpha$

$B = 84.3 + 7.69M$

$C \text{ (WIDE)} = 49.2M - 72.789$

$C \text{ (TELE)} = C \text{ (WIDE)} \times 1.31$

$F = 1.982M - 84.3$

A : Distance between the lens and the screen center

B : Vertical distance between the top of the optional ceiling mount and the screen center

C : Horizontal throw distance between the screen surface and the lens

F : Vertical distance between the projector bottom and the top of image

Standard Zoom Lens (Wide)

α	Degree	9.3	9.1	9.1	9.0	9.0	9.0	9.0	8.9	8.9	8.9	8.9	8.9	8.9
β (sin= α)		0.17	0.17	0.17	0.17	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
γ (cos= α)		0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Screen Size H-Width	inch	32	48	56	64	72	80	96	120	144	160	192	216	240
4 : 3 Diagonal	inch	40	60	70	80	90	100	120	150	180	200	240	270	300
A	mm	1471	2242	2628	3013	3399	3785	4556	5713	6870	7641	9184	10341	11498
C	mm	1452	2214	2595	2976	3357	3738	4500	5644	6787	7549	9074	10217	11360
F	mm	-33	-4	11	25	40	55	84	128	172	201	260	304	348
B	mm	319	436	495	554	612	671	788	964	1141	1258	1493	1669	1845

Standard Zoom Lens (Tele)

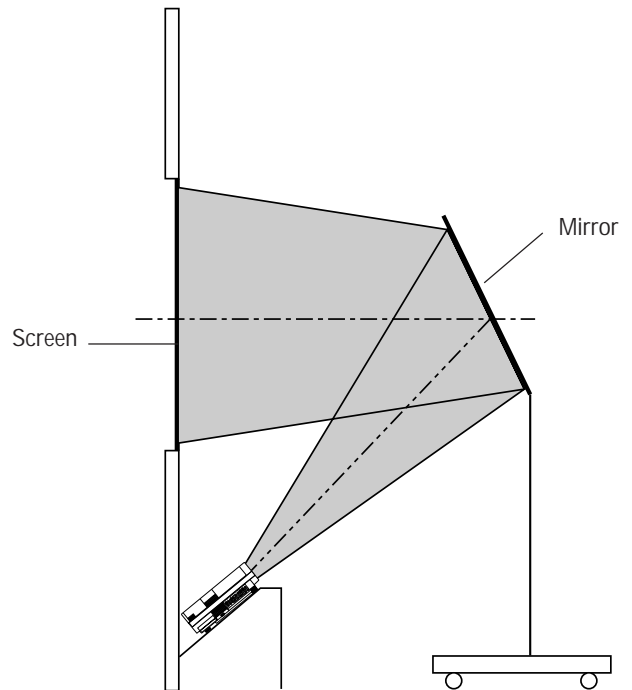
α	Degree	7.1	7.0	7.0	7.0	7.0	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9
β (sin= α)		0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
γ (cos= α)		0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Screen Size H-Width	inch	32	48	56	64	72	80	96	120	144	160	192	216	240
4 : 3 Diagonal	inch	40	60	70	80	90	100	120	150	180	200	240	270	300
A	mm	1902	2900	3399	3898	4397	4896	5893	7390	8887	9885	11881	13378	14875
C	mm	1887	2878	3373	3869	4364	4860	5851	7337	8823	9814	11796	13282	14768
F	mm	-26	6	21	36	51	66	96	141	186	216	276	321	366
B	mm	319	436	495	554	612	671	788	964	1141	1258	1493	1669	1845

If your projector is mounted on the ceiling and your image is upside down, use the “Menu” and “Select” buttons on your projector cabinet or (▲) (▼) buttons on your remote control to correct the orientation. (See page E-32.)

Reflecting The Image

Using a mirror to reflect your LCD projector's image enables you to enjoy a much larger image. Contact your NEC dealer if you need a mirror.

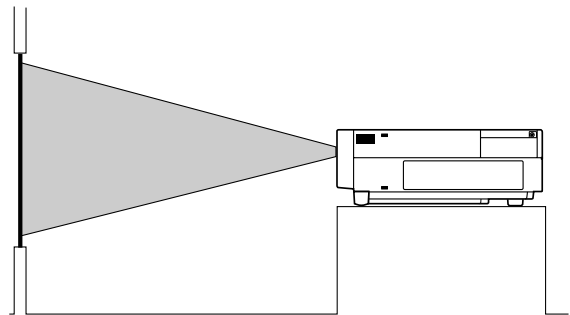
If you're using a mirror and your image is inverted, use the “Menu” and “Select” buttons on your projector cabinet or (▲) (▼) buttons on your remote control to correct the orientation. (See page E-32.)



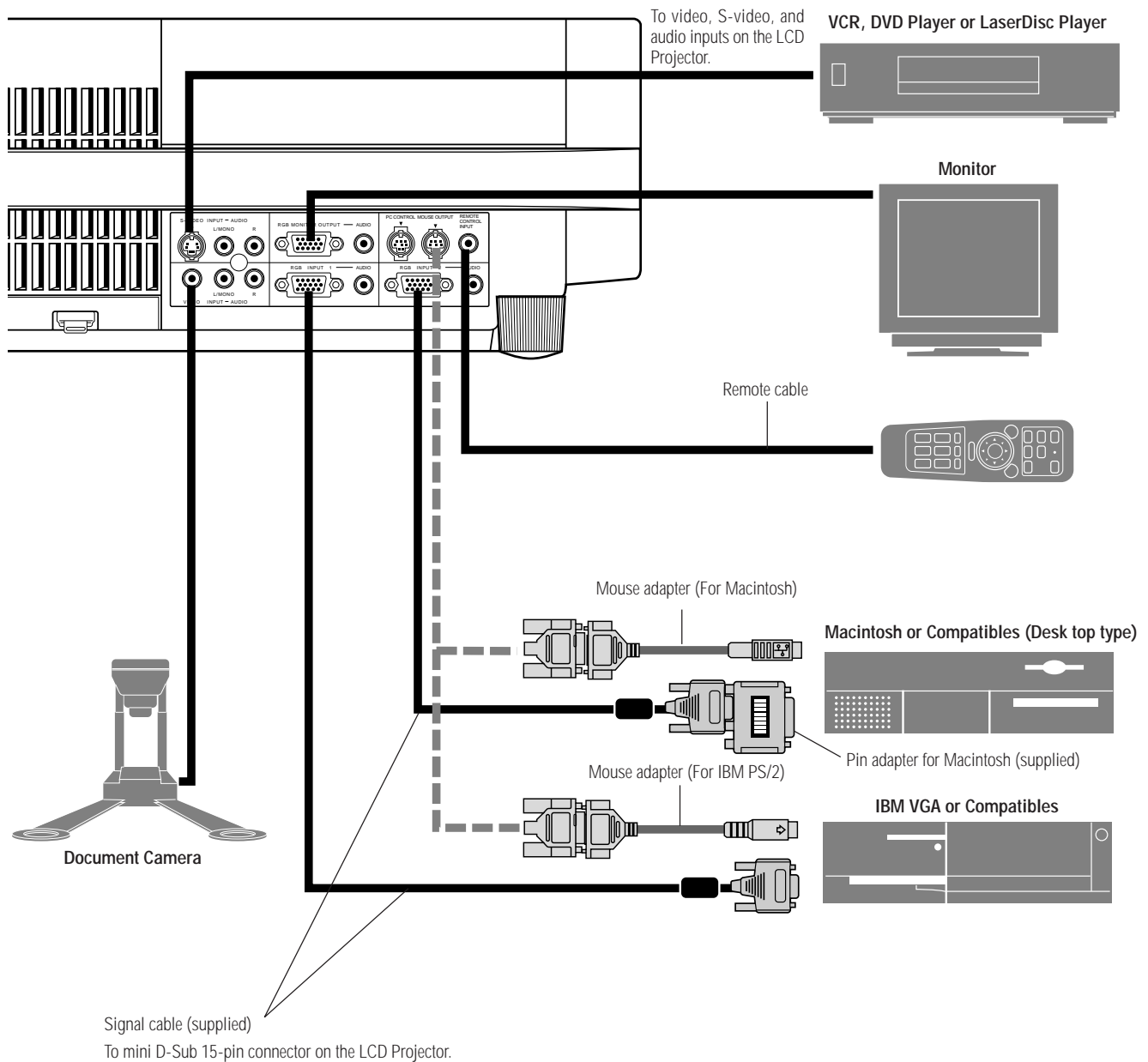
Rear Screen Projection

You can use your MultiSync MT1035 LCD projector to project an image from the rear onto a transparent screen. The distance the projector must be from the screen is the same as if you were projecting the image from the front. Contact your NEC dealer if you need a transparent screen.

If you're projecting the image from the rear and your image is inverted, use the “Menu” and “Select” buttons on your projector cabinet or (▲) (▼) buttons on your remote control to correct the image. (See page E-32.)



Wiring Diagram



Remote Control Guideline

1. Plug the serial cable with the mouse output port of the projector into your computer's mouse port and restart your computer to gain remote mouse control.
2. When using the remote control's built-in infrared mouse on a laptop computer, the laptop's mouse, trackball or trackpad will be disabled. Disconnect the serial cable from the mouse output port and restart your computer to regain trackball or trackpad mouse control.
3. If the screen goes blank while using your remote control, it may be the result of the computer's screen-saver or power management software.
4. If you accidentally hit the OFF button on the remote control, wait one full minute and then press the ON button to resume.

Connecting Your PC Or Macintosh Computer

Connecting your PC or Macintosh computer to your MultiSync MT1035 (XGA) Projector will enable you to project your computer's screen image for an impressive presentation. All of these following display standards are supported:

VGA 640×480 for graphics	VGA 640×400 for graphics
VGA 640×350 for graphics	VGA 720×400 for text
VGA 720×350 for text	SuperVGA 800×600
Macintosh at 640×480	Macintosh at 832×624
XGA1024×768	Macintosh at 1024×768
SXGA1280×1024 (AccuBlend)	

To connect to a PC, Macintosh or computer equipped with an XGA/SVGA /VGA adapter or compatible graphics adapter, simply:

1. Turn off the power to your projector and computer.
2. If your PC does not support XGA/SVGA/VGA you will need to install an XGA/SVGA/VGA graphics board. Consult your computer's owner's manual for your XGA/SVGA/VGA configuration. If you need to install a new board, see the manual that comes with your new graphics board for installation instructions.
3. Use the signal cable that's supplied to connect your PC or Macintosh computer to the projector. For a Macintosh, use the supplied pin adapter to connect to your Mac's video port.
4. Turn on the projector and the computer.
5. If the projector goes blank after a period of inactivity, it may be caused by a screen saver installed on the computer you've connected to the projector.

When using a Macintosh with the MT1035, set the DIP switches of the supplied pin adapter according to your resolution. After setting, restart your Macintosh.

See the following pages for setting of the DIP switches.

- When using with a Macintosh, XGA/VGA/SVGA (1024×768) is recommended if your Macintosh supports this mode.
- When using with a Macintosh PowerBook, output may not be set to 1024×768 unless "mirroring" is off on your PowerBook. Refer to owner's manual supplied with your Macintosh computer for mirroring.

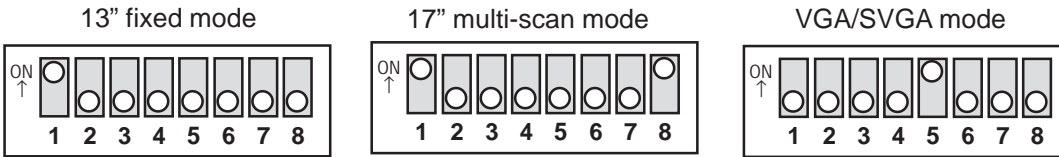
NOTE: A Video Adapter cable manufactured by Apple Computer is needed for a PowerBook which does not have a mini D-Sub 15-pin connector.

Settings for Monitor Mode

Number of DIP switch	S1	S2	S3	S4	S5	S6	S7	S8
	Monitor size							
15" multi-scan mode /16"-13"	ON				ON			
17" multi-scan mode /19"-13"	ON							ON
19" multi-scan mode /21"-13"	ON						ON	
13" fixed mode /640×480	ON							
VGA/SVGA mode					ON			
16" fixed mode /832×624						ON		
19" fixed mode /1024×768				ON				

NOTE: For settings other than display modes supported by your Macintosh and MT1035, use of the DIP switch may bounce a image slightly or may display nothing. If this happens, set the DIP switch to the 13" fixed mode and then restart your Macintosh. After that, restore to a displayable mode and then restart the Macintosh again. Make sure that the MT1035 and your Macintosh are connected with the pin adapter and the supplied signal cable (mini D-Sub 15-pin connector) and then restart your Macintosh.

Examples of DIP switch setting



NOTE: Refer to your computer's owner's manual for more information about your computer's video output requirements and any special identification or configuring your projector's image and monitor may require.

Settings for Macintosh Adapter

Macintosh models applied	Setting Mode (Fixed resolution)	Setting required to be selected resolution on Mac after restarting.
Desktop type and PowerBook with 800 × 600 LCD panel	16" fixed mode (output is 832 × 624)	Set to VGA/SVGA (800 × 600)
PowerBook with 640 × 480 LCD panel	13" fixed mode (output is 640 × 480)	Set to 17" multi-scan mode (640 × 480)
Desktop type with AccuBlend	19" fixed mode (output is 1024 × 768)	Set to 17" multi-scan mode (1024 × 768)

Changing Video Resolutions

Depending on your computer's graphic capability, you may be able to select one of several resolutions. Generally a computer—either a PC or Macintosh— with 1 meg. of memory will run:

640 × 480 at 16.7 million colors (24 bit Truecolor)

800 × 600 at 65 thousand colors.

1024 × 768 at 256 colors.

As the resolution increases, the number of colors you can run decreases. With 2 meg. of memory a computer will run:

640 × 480 at 16.7 million colors (24 bit Truecolor).

800 × 600 at 16.7 million colors (24 bit Truecolor).

1024 × 768 at 65 thousand colors.

1280 × 1024 at 256 colors.

Windows 95

There are two methods you can use to change your resolution.

Method 1

1. Move your cursor to the background image and click.
2. In the "Properties" menu, select "Settings."
3. Change your resolution and click "OK."
4. You may be asked to reboot for the changes to take affect, or you' ll get a message that "Windows is about to resize your display." You' ll be asked if you want to keep your settings. Select "Yes."

Method 2

1. Click on your "My Computer" icon.
2. Open "Control Panel" and select "Display."
3. Change your resolution and click "OK." after the new resolution is selected.
4. You may be asked to reboot for the changes to take affect, or you' ll get a message that "Windows is about to resize your display." You' ll be asked if you want to keep your settings. Select "Yes."

Windows 3.1

1. Click on the "Main" icon and open "Control Panel."
2. Select "Change System Settings" and click on "Option."
3. Choose "Change Display Settings."
4. Select the resolution you want.
5. Choose the current drive or another.
6. Restart Windows for the changes to take affect.

Macintosh

1. Under the Apple menu, select "Control Panels" and open "Monitors."
2. Click and open "Options."
3. Select your new resolution and click "OK."

If you have an NEC monitor connected to your Macintosh, you may have a "DPI-On-The-Fly" extension that enables you to change your resolution directly. The "DPI-On-The-Fly" icon is under your Apple menu.

Notebook Computers And Resolution Standards

NEC projectors are designed to project industry standardized video such as VESA (Video Electronics Standards Association) or VGA (Video Graphics Array). Notebook computers do not use industry standards. They use whatever timing is necessary to match their local LCD display. The end result is typically not standards. By turning off your notebook's display, the timing parameters are a bit more like the real VESA or VGA signal.

For an optimal projected image with a notebook computer, it is recommended that you use the Auto mode. This feature is useful when an XGA image (1024 × 768) is displaying with a notebook computer supported by SXGA (1280 × 1024) and when an SVGA image (800 × 600) is displaying with a notebook computer supported by XGA (1024 × 768). See Source Menu on page E-28 for more information.

Connecting Your Document Camera

You can connect your MultiSync MT1035 LCD Projector to a document camera. To do so, simply:

1. Turn off the power to your LCD projector and document camera.
2. Use a standard video cable to connect your document camera to the Video input on your projector.
3. Turn on the LCD projector and the document camera.

NOTE: Refer to your document camera's owner's manual for more information about your camera's video output requirements.

Connecting Your VCR Or Laser Disc Player

Use common RCA cables (not provided) to connect your VCR or laser disc player to your MultiSync MT1035 LCD Projector. To make these connections, simply:

1. Turn off the power to your LCD projector and VCR or laser disc player.
2. Connect one end of your RCA cable to the video output connector on the back of your VCR or laser disc player, connect the other end to the Video input on your projector. Use standard RCA audio patch cords to connect the audio from your VCR or laser disc player to your projector (if your VCR or laser disc player has this capability). Be careful to keep your right and left channel connections correct for stereo sound.
3. Turn on the LCD projector and the VCR or laser disc player.

NOTE: Refer to your VCR or laser disc player owner's manual for more information about your equipment's video output requirements.

Connecting An External Monitor

You can connect a separate, external monitor to your LCD projector to simultaneously view on a monitor the image you're projecting. To do so:

1. Turn off the power to your LCD projector, monitor and computer, document camera or video source.
2. Use a 15-pin cable to connect your monitor to the RGB Monitor Output (Mini D-Sub 15 pin) connector on your LCD projector.
3. Turn on the LCD projector, monitor and the computer, document camera or video source.

Connecting Your Computer to the Mouse Output Port

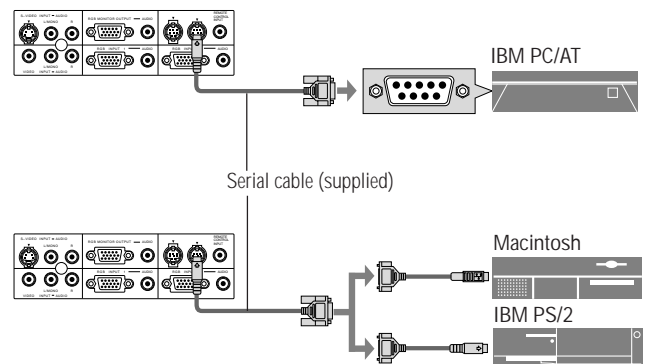
The built-in remote mouse receiver enables you to operate your computer's mouse functions from the NEC MultiSync MT1035 remote control. It is a great convenience for clicking through your computer-generated presentations.

To connect the mouse output port:

1. Turn off your computer.
2. For PCs: Remove your current mouse and connect the serial cable from the mouse output to your PC's mouse port. (Use the 6-pin adapter for connecting to a PS/2 computer.)

For Macintosh: Remove your current mouse from your computer, attach the Macintosh adapter to the mouse output port's serial cable, and connect the LCD Projector to your mouse port.

3. When the built-in remote mouse receiver is available, it will disable your regular mouse, disconnect the serial cable and restart your computer.



3 OPERATION

This section describes how to select a computer or video source and how to adjust the picture and sound.

General Controls Before you turn on your MultiSync MT1035 LCD Projector, ensure that the computer or video source is turned on and that your lens cap is removed.

1. **Turn On The LCD Projector** The main power switch is on the front panel of the MultiSync MT1035 LCD Projector. By turning this switch on, the projector will go into its standby mode and the power light will glow amber. Only after you press the "On" button on the remote control or projector cabinet will the power light turn to green and the projector become ready to use.

***NOTE:** To turn the LCD projector on and off with just the front panel switch, use the menu and enable the "auto start" feature. (See page E-31.)*

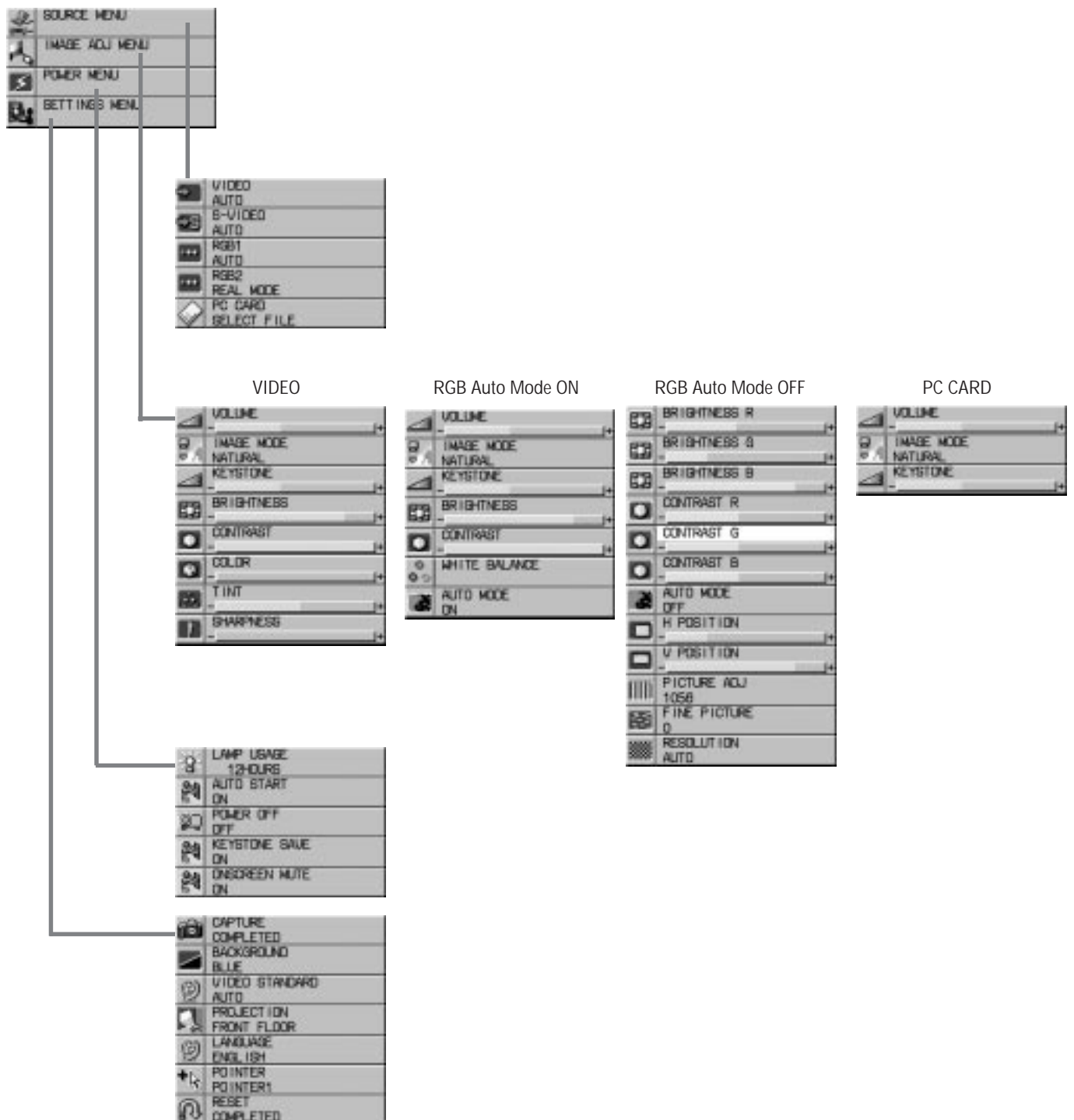
2. **Select The Computer, Video Source Or "Presentation Viewer"** Press the "Video" (VCR, document camera, or laser disc player), "S-video", "RGB 1" or "RGB 2" (computer) or PC CARD button on the remote control to display the image. Or press the "Menu" button on the cabinet and use the icons to select your video source: "Video", "S-Video", "RGB 1", "RGB 2" or "PC CARD".
3. **Adjust The Image Size** Press the "Zoom" button (+) or (-) on the remote control or projector cabinet to make the image larger or smaller.
4. **Focus** Press the "Focus" button (+) or (-) on the remote control or projector cabinet to focus the image.
5. **Turning Off The Projector** First press the "off" button on the remote control or the projector cabinet. The power light will glow amber. Then turn off the main power switch on the front panel. The power light will go out.

IMPORTANT:

- The LCD projector should be unplugged if it will not to be used for an extended period.
- To turn off the image briefly (five minutes or less), use the "Picture Mute" button instead of turning the projector off and on.
- The LCD projector will display a black or blue image if no input signal is present.
- Do not turn the LCD projector off and then immediately back on. The projector needs to cool for a minute before it can be restarted.

Using The Menus

1. Press the "Menu" button on the remote control or projector cabinet to display the Main Menu.
2. Press the "Select" button on the projector cabinet or (▲) (▼) buttons on your remote control to highlight the menu for the item you want to adjust.
3. Press the "Enter" button on the projector cabinet or the "Left Click" button on the remote control to select a submenu or item.
4. Adjust the level or turn the selected item on or off by using the "Mouse pad" (+) or (-) buttons on the remote control or "Select" (+) or (-) buttons on the cabinet. The on-screen gauge will show you the amount of increase or decrease. [The (+) button is "on" and (-) is "off".]
5. The change is stored until you adjust it again.
6. Repeat steps 2-5 to adjust an additional item, or press "Right-Click" on your remote control to quit the menu display.



Menu Descriptions & Functions

Source Menu



Enables you to select a video source such as a VCR, DVD player, laser disc player, computer or document camera depending on what is connected to your inputs. Press the "Select" button on the projector cabinet or (▲) (▼) buttons on your remote control to highlight the menu for the item you want to adjust



Video

Selects what is connected to your Video input-VCR, laser disc player, DVD player, or document camera.

S-Video

Selects what is connected to your S-Video input-VCR, DVD player, or laser disc player.

RGB 1

Selects the computer connected to your RGB 1 input.

RGB 2

Selects the computer connected to your RGB 2 input.

***NOTE:** Normally select the Auto mode so that the LCD projector automatically can select the appropriate resolution mode for your RGB source.*

If you want to finely adjust the image or if the LCD projector fails to select the appropriate resolution mode for the RGB source, turn the Auto mode off and select the Real mode on the Resolution item.

PC CARD

This feature enables you to make a presentation using the Viewer function with the optional MT Viewer board (VK-MT) installed.

Press the Mouse pad (+) or (-) buttons to select "Start" for the image you want to display first and "Select File" for the file you want to select or "Select Slide" for the image you want to slide.

Image Adjustment Menu



Provides access to controls for your image and sound. Use the "Select" button on the projector cabinet or (▲) (▼) buttons on your remote control to highlight the menu for the item you want to adjust.

The volume, image mode, keystone, brightness, contrast, color, tint and sharpness controls are available for Video or S-Video sources.

The volume, image mode, keystone, brightness, contrast, white balance and auto mode controls are available for RGB 1 or RGB 2 sources.

The volume, image mode and keystone controls are available for PC CARD.

Volume

Use the Mouse pad (+) or (-) buttons to adjust the volume.

Image Mode*

VIDEO/S-VIDEO Use the Mouse pad (+) or (-) buttons to choose "Normal" for a regular picture, "Natural" for true color reproduction, or "Document Camera" for a document camera or other low APL picture.

RGB/ PC CARD Use the Mouse pad (+) or (-) buttons to choose "Normal" when in a lighted room and "Natural 1&2" when in a darkened room. 1 for better flesh tone; 2 for true reproduction of middle tones.

Keystone

Use the Mouse pad (+) or (-) buttons to correct the keystone (trapezoidal) distortion to make the top of the screen longer or shorter to be the same as the bottom.

NOTE: The maximum keystone angle that can be corrected is 23 degrees, including the optical offset 8 degrees.

NOTE: To save your keystone changes, select "Keystone Save" from the Power Menu.

Brightness

Use the Mouse pad (+) or (-) buttons to adjust the brightness.

Contrast

Use the Mouse pad (+) or (-) buttons to adjust the contrast.

Color**

Use the Mouse pad (+) or (-) buttons to adjust the color.

Tint**

Use the Mouse pad (+) or (-) buttons to adjust the tint.

Sharpness**

Use the Mouse pad (+) or (-) buttons to adjust the sharpness.



White Balance***

Use the Mouse pad (+) or (-) buttons to adjust the white balance. Brightness for each color (RGB) is used to adjust the black level of the screen; Contrast for each color (RGB) to adjust the white level of the screen.

Auto Mode***

Use the Mouse pad (+) button to turn this feature on so "Horizontal Position", "Vertical Position", "Picture Adjustment", "Fine Picture" and "Resolution" are made automatically. Usually set to ON.

When the Auto mode is turned off with the Mouse pad (-) button is turned off, you can adjust/set "Horizontal Position", "Vertical Position", "Picture Adjustment", "Fine Picture" and "Resolution" manually.

Horizontal Position***(when Auto Mode is off)

Use the Mouse pad (+) button to move the image right; (-) to move it left. This adjustment is made automatically when the Auto mode is turned on.

Vertical Position***(when Auto Mode is off)

Use the Mouse pad (+) button to move the image up; (-) to move it down. This adjustment is made automatically when the Auto mode is turned on.

Picture Adjustment ***(when Auto Mode is off)

Use this icon with the "Fine Picture Adjustment" to fine tune the computer image or to remove any vertical banding that might appear. This function adjusts the clock frequencies that eliminate the horizontal banding in the image. Press the Mouse pad (+) and (-) buttons until the banding disappears. This adjustment may be necessary when you connect your computer for the first time. This adjustment is made automatically when the Auto mode is turned on.

Fine Picture ***(when Auto Mode is off)

Use this icon to adjust the clock phase or to reduce video noise, dot interference or cross talk. (This is evident when part of your image appears to be shimmering.) Use the Mouse pad (+) and (-) buttons to adjust the image. Use the Fine Adjustment only after the Picture Adjustment is complete. This adjustment is made automatically when the Auto Mode is turned on.

Resolution*** (when Auto Mode is off)

When "Auto mode" is selected, the LCD projector automatically determines the best resolution for the current RGB input signal to project an image using NEC's AccuBlend Intelligent Pixel Blending Technology.

Use the Mouse pad (-) button to turn off the Auto mode feature to enable the Resolution feature. Selecting "Real" allows you to project a source in the real resolution (in the under scan mode) if:

- * the LCD projector fails to determine automatically.
- * you want to fine adjust an item such as phase.
- * you want to project signals other than those with an aspect ratio 4 to 3.

NOTE: Even when you are in the Real mode, an SXGA image is displayed with AccuBlend Intelligent Pixel Blending Technology.

NOTE:

- ★ The Document Camera mode will not work with an RGB source.
 - ★★ Color, Tint, Sharpness and Image Mode controls will not work with an RGB source or PC Card. The Tint control will work with a PAL or SECAM source.
 - ★★★ Horizontal and Vertical position controls, White Balance, Picture, Fine Picture and Auto Mode adjustments will not work with a Video, S-Video source or PC card.
-

Power Menu



Provides access to Lamp Usage information and the Auto Start and Power Management features. Use the "Select" button on the projector cabinet or (▲) (▼) buttons on your remote control to access a submenu. Then press the Mouse pad (+) or (-) to choose a specific option.



Lamp Usage

This tells you how long the lamp has been in operation. It is recommended that you replace a lamp after 2000 hours of service. After you install a new lamp, select this icon and press and hold the "Power On" button on the remote control for ten seconds to reset the lamp clock back to zero.

***NOTE:** The projector will turn off and go into stand by mode after 2100 hours of service. If this happens, press the "Power Off" button on the remote control for ten seconds to reset the lamp clock back to zero. Do this only after replacing the lamp.*

Auto Start

Turns the LCD projector on automatically when the main power switch is turned on. This eliminates the need to always use the "Power" button on the remote control or projector cabinet. Press the Mouse pad (+) to turn this feature on and (-) to turn it off.

Power Management

When "Power Off" is on and there is no RGB video input for five minutes or more, the projector will automatically turn itself off. Press the Mouse pad (+) to turn this feature on and (-) to turn it off. This feature does not work with Video or S-Video sources.

Keystone Save

This enables you to save your current keystone settings. Saving your change once affects all sources. Use the Mouse pad (+) button to turn the feature on so you save the keystone adjustments; (-) to turn the feature off so you can cancel them.

On Screen Mute

Use the Mouse pad (+) button to turn off the on screen ; (-) to restore it. The On screen Mute feature is valid for turning on and switching inputs only.

Settings Menu



Enables you to set preferences and other operating options. Use the “Select” button on the projector cabinet or (▲) (▼) buttons on your remote control to access the submenu you want.



Capture (with the optional viewer board installed only)

When the Capture is selected, press "Enter" on the projector cabinet or Left Click button on the remote control to display "Execute" and "capture" an image from a source that is currently being displayed.

When capturing is completed, "Completed" is displayed under the Capture icon.

Unless a flash memory card is inserted into the slot of the viewer board, "No Card" is displayed. This means that the Capture feature is not available. The "Card Error" display means that the free space of the flash memory card is insufficient for saving images. Make more space available on the card by erasing unwanted images with your PC. The number of images that can be captured depends on the size of the flash memory card.

NOTE: Be sure not to turn off the power or remove the flash memory card unless "Completed" is displayed. Doing so could cause a loss of the data in the flash memory card or damage to the card itself.

Background

Use this feature to display a black or blue screen when no signal is available. Press the Mouse pad (+) or (-) buttons to choose the back screen you want. Press "Enter" on the cabinet or the "Left Click" on your remote control to save your change.

Video Standard

This feature enables you to select composite video standards M_NTSC manually. Normally select "Auto".

Use the Mouse pad (+) or (-) buttons to choose M_NTSC. Press "Enter" on the cabinet or the "Left Click" on your remote control to save your change.

Projection

This reorients your image for your type of projection. Press the Mouse pad (+) or (-) button until it is correct. Press “ENTER” on the cabinet or the “Left Click” on your remote control to save your change. The options are: front floor projection, rear ceiling projection, rear floor projection, and front ceiling projection.

Language

Use the Mouse pad (+) or (-) to choose one of six languages for on-screen instructions. Press “ENTER” on the cabinet or the “Left Click” on your remote control to save your change. The options are: English, German, French, Italian, Spanish and Swedish.

Pointer

This enables you to select from eight different Pointer icons for the "Pointer" button on your remote control. The magnifying glass pointer is selected at the factory. Use the Mouse pad (+) or (-) buttons to choose one of the eight Pointer icons. Press "Enter" on the cabinet or the "Left Click" on your remote control to save your change. After moving your Pointer icon to the area you want on the screen, press the Magnify button on the remote control to enlarge the selected area on the screen.

Reset

Changes all adjustments to the factory preset levels for each source individually. To activate, you must hold down the Mouse pad (+) button on the cabinet or remote control for at least two seconds. The adjustments that will be reset are white balance, horizontal and vertical control, picture and fine picture adjustment (for the current source only), white balance, brightness, contrast, color, tint, and sharpness.



Using the Viewer function

If you use the Viewer function on the LCD projector, you must first install the optional MT Viewer board (VK-MT) in the LCD projector and set up the exclusive software included with the VK-MT kit.

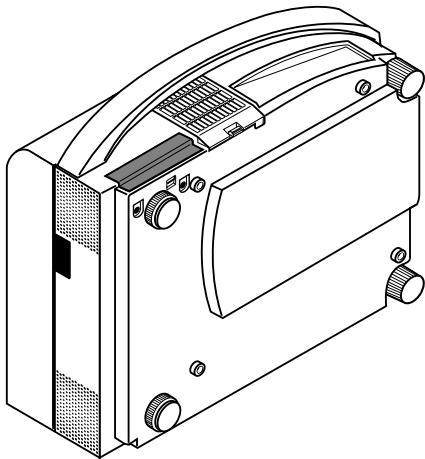
See the user's manual included with the VK-MT for installing and uninstalling the software.

Mounting the Optional MT Viewer Board

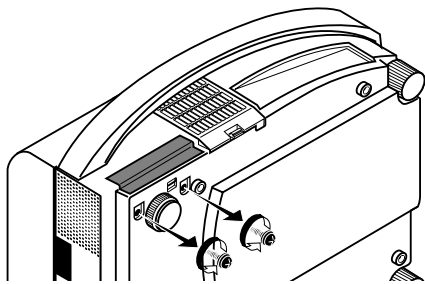
To install the Viewer board:

1. Set the LCD projector on end with the carrying handle up.

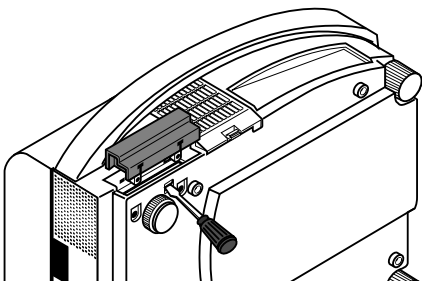
NOTE: Be sure to unplug the LCD projector before installing the Viewer board.



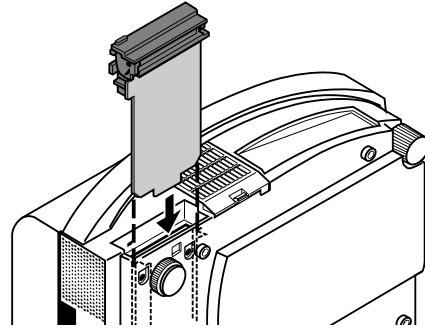
2. Remove the two screws from the bottom.



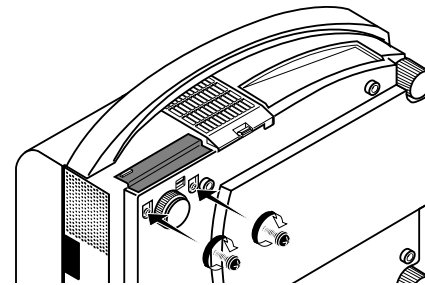
3. Remove the slot cover by pushing up on the catch of the cover with a flat-head screwdriver until you feel it detach.



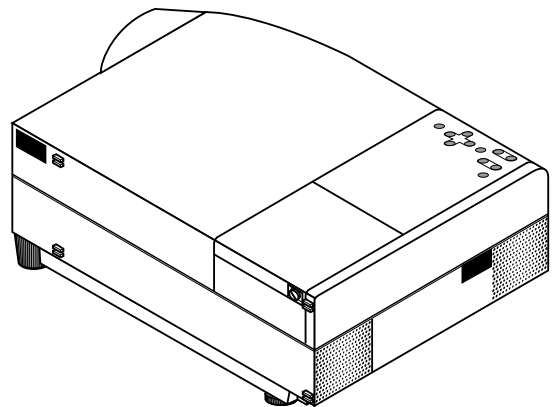
4. Insert the optional viewer board into the slot. Be sure to push the board until the board is securely fitted.



5. Secure the board in place with the two screws that you removed in step 2.



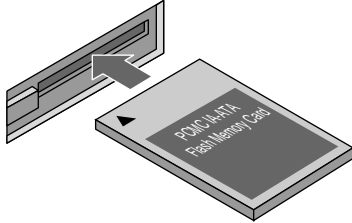
6. Put the LCD projector back in the original position.



Projecting Slides

Orientation of flash memory card insertion

The flash memory card has a front and a back side and the flash memory card is designed to be inserted in only one orientation. The card is designed so that it cannot be inserted in reverse, but trying to insert it forcefully might break the pins inside the slot or ruin the flash memory card slot. See the flash memory card manual for information about the orientation of the flash memory card.



* The type of flash memory card required for use in the LCD projector is a Type II PCMCIA-ATA flash memory card (not supplied). Never use other types of PC card than this. Doing so can break the slot or ruin the PC card.

To Project the Slides (the presentation materials)

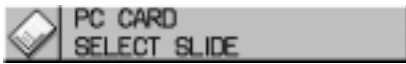
1. Insert a flash memory card into the PC card slot.
- * To eject the flash memory card, press the Eject button.

NOTE: Should the card be difficult to insert, do not forcefully push the card in.

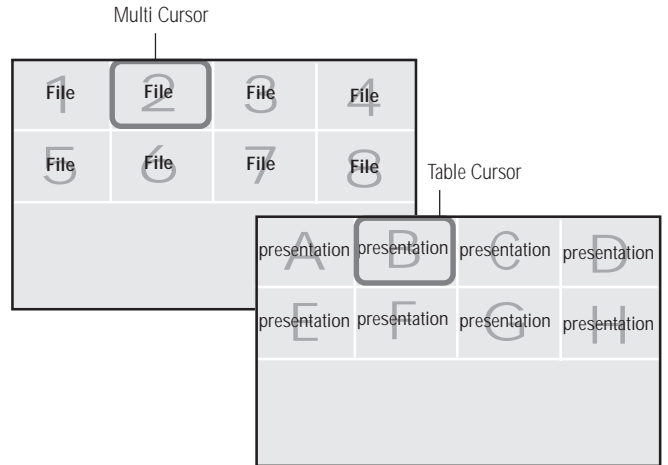
2. Select the PC card as a source.
- * Press the Menu button on the remote control or projector cabinet and select "PC CARD" from the Source menu.



- * If there is no flash memory card in the card slot, the LCD projector displays a blue back or black back image.
3. Select "Select File" or "Select Slide".
 - * Use the Mouse pad (+) or (-) button on the remote control to select "Select File" or "Select Slide".



4. Select a file or a slide.
Use the Mouse pad (+) or (-) button on the remote control to select the file or slide you want to display and press the Enter button on the cabinet or the Left Click button on the remote control. See the following pages for more details.



* The selected file or slide will be displayed.

NOTE: If you select "Start" and press the Enter button on the cabinet or the Left Click button on the remote control, the slides will be looped. To use the Start feature, you must first set on the software included with the MT Viewer board.

NOTE: The Mouse pad (+) or (-) button is valid only when the Menu button is lit.

Selecting a File from a List of Files

* The Viewer feature allows you to store one or more presentation materials in a single flash memory card. Each material is referred to as a "file" or "slide".

To select a file from a list of files

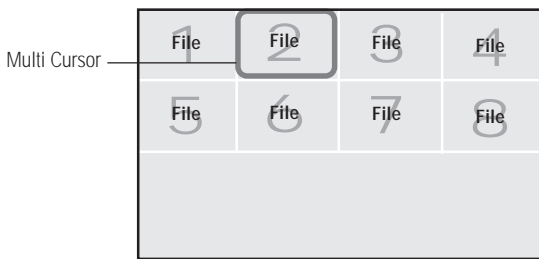
1. Press the Menu button on the remote control or cabinet to select "PC Card".



2. Use the Mouse pad (+) or (-) button on the remote control to select "Select File" and press the "Enter" button on the cabinet or the Left Click button on the remote control.



3. Use the Mouse pad (+) or (-) button on the remote control to move the Multi-Cursor (blue box) to the file you want to display a slide from, and press the Enter button on the cabinet or the Left Click button on the remote control.



* This will display the first slide of the selected file.

NOTE: A maximum of 16 indexes can be switched with "Select File". The last displayed file, which is always exclusively for use of Capture, will be displayed during capturing only. When 17 or more indexes exist in the flash memory card and you wish to display them, move the index to be displayed to the beginning of the file indexes with "Editing file indexes" under "Files" of the software for Viewer.

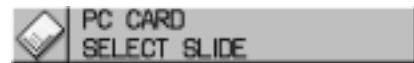
Selecting a Slide from a List of Slides (Table)

To select a slide from a list of slides

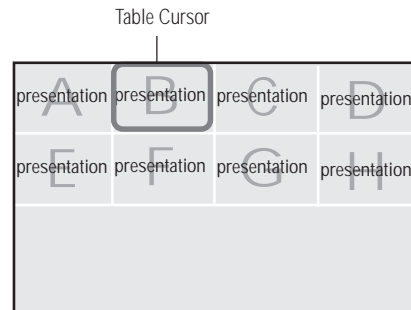
1. Press the Menu button on the remote control or cabinet to select "PC Card".



2. Use the Mouse pad (+) or (-) button on the remote control to select "Select Slide" and press the "Enter" button on the cabinet or the Left Click button on the remote control.



3. Use the Mouse pad (+) or (-) button on the remote control to move the Table-Cursor (yellow box) to the slide you want to display and press the Enter button on the cabinet or the Left Click button on the remote control.



* This will display the selected slide.

NOTE: The Slide (+) and (-) button on the remote control can be also used to select a file or slide, or to turn pages.

Switching Slides

To switch slides, press "SLIDE +" or "SLIDE -" button. This will cancel the Auto Play mode. To set the Auto Play mode, press the Menu button to select "Start" from the Source menu and press the Enter button on the cabinet or the Left Click button on the remote control. This is valid only when the Auto Play mode is selected. See more information about "Auto Play mode" for the Help file included with the Viewer board.

- * SLIDE- returns to the previous slide.
- SLIDE+ advances to the next slide.

NOTE: Editing tasks such as deleting the data inside the flash memory card cannot be accomplished with the LCD projector. Use the exclusive software on your PC for this purpose. If you accidentally delete data required for playback, playing back the data is not possible.

Effect Sound

The Viewer function allows you to play back effect sound for the slide.

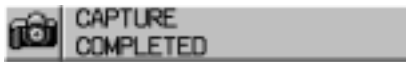
Playing back effect sound can be accomplished during the switching slides or files only. To use this feature, you must first specify the effect sound with the supplied software. You can adjust volume by using the Volume button.

Capturing the currently displayed screen image

The Viewer feature allows you to capture a screen image and store it to a flash memory card.

To capture a screen image and store it to a flash memory card; Select "Capture" from the Settings menu and press the Enter button on the cabinet or Left Click button on the remote control.

- * To view the captured image

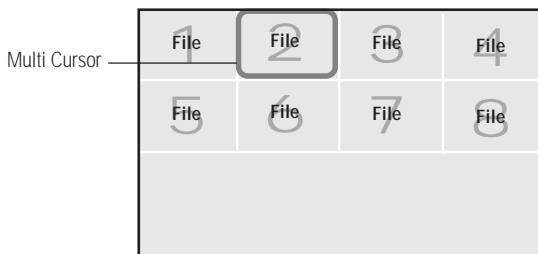


1. Select "Select File" from the Source menu and display a list of files.

- * A thumbnail (reduced image) of the first captured image will be displayed.



2. Use the Mouse pad (+) button to move the Multi-Cursor (blue box) to the last file and press the Enter button on the cabinet or the Left Click button on the remote control.



- * This will display the image you captured first.

NOTE: The menu indicating that capturing is now performing will be displayed during capturing. During this time do not remove the flash memory card nor turn off the power of the LCD projector. Doing so may destroy the data of the flash memory card.

- * When the flash memory card becomes full, replace a new one.
-

Projecting Pictures a Digital Camera Took

Playing back on the LCD projector is possible if a picture meets one of the following requirements:

- * A picture that can be stored to an MS-DOS-formatted ATA flash memory card
- * A picture that can be stored as a compatible format

The on-board Viewer searches for the directory on the card to recognize a JPEG or BMP format image as slide. Directories to be searched for are up to two level from the root directory and must be less than 16 directories. Although only switching folders and slides is possible, special effects and displaying a list is not possible.

NOTE:

- * Up to 128 images can be recognized as slides for one directory.
 - * To use special effects, read images from a flash memory card and edit them using the supplied software, then store them to another flash memory card.
 - * If you store indexes to the flash memory card for your digital camera using the supplied software, images taken with the digital camera cannot be viewed on the Viewer. So preparing flash memory cards for a digital camera and Viewer respectively is recommended.
-

4 MAINTENANCE

This section describes the simple maintenance procedures you should follow to replace the lamp, clean or replace the filter, and replace the batteries in the remote control.

Replacing The Lamp

After your lamp has been operating for 2000 hours or longer, the "status" light in the cabinet will go on. Even though the lamp may still be working, replace it at 2000 hours to maintain optimal projector performance.

⚠ CAUTION

- DO NOT TOUCH THE LAMP immediately after it has been used. It will be extremely hot. Allow at least one hour for the lamp to cool before handling.
- DO NOT REMOVE ANY SCREWS except the lamp cover set screw and two lamp case screws. You could receive an electric shock.
- Turn off the main power to the projector and disconnect the power cord. Allow at least one hour for the lamp to cool.
- The projector will turn off and go into stand by mode after 2100 hours of service. If this happens, be sure to replace the lamp. If you continue to use the lamp after 2000 hours of use, the lamp bulb may shatter, and pieces of glass may be scattered in the lamp case. Do not touch them as the pieces of glass may cause injury. If this happens, contact your NEC dealer for lamp replacement.

To replace the lamp:

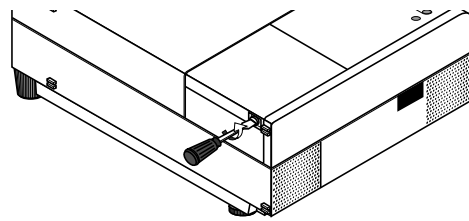
1. Loosen the single screw that secures the lamp housing cover and remove the cover.
2. Loosen the two screws securing the lamp case.
3. Remove the lamp by pulling out the complete assembly.
4. Install a new lamp case assembly and secure it in place with the two screws.

⚠ **CAUTION:** Do not use a lamp other than the NEC replacement lamp. Order this from your NEC dealer using your projector's model number.

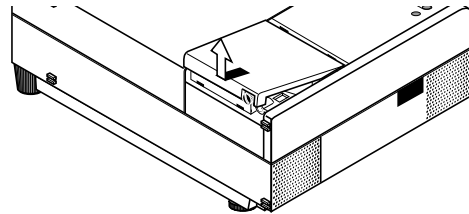
5. Reattach the lamp cover and tighten the single screw.
6. After you install a new lamp, select the lamp Usage icon and press and hold the "Power On" button on the remote control for ten seconds to reset the lamp time clock to zero.

NOTE: If resetting the lamp clock back to zero after 2100 hours of service, press the "Power Off" (not "Power On") button on the remote control for ten seconds.

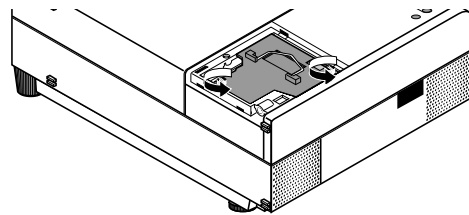
NOTE: When you replace the lamp, it is also wise to replace the filter. The filter comes in the same package with your replacement lamp.



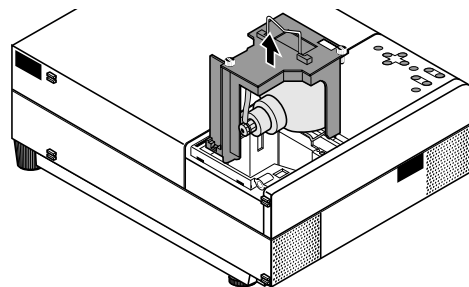
Step 1A



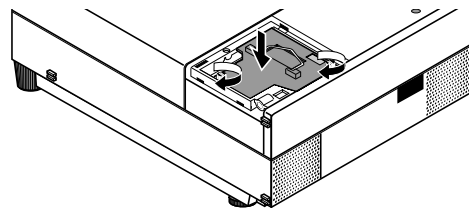
Step 1B



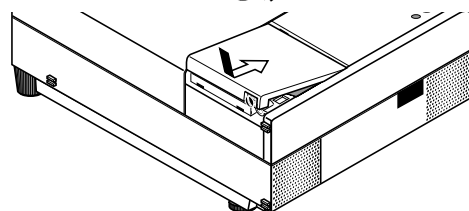
Step 2



Step 3



Step 4



Step 5

Cleaning Or Replacing The Filter

The air-filter sponge keeps the inside of the MultiSync MT1035 LCD Projector free from dust or dirt and should be cleaned after every 100 hours of operation (more often in dusty conditions). If the filter is dirty or clogged, your projector may overheat.

NOTE: *Clean your filter after every 100 hours of operation.*

CAUTION

- Turn off the main power and unplug the projector before replacing the filter.
- Only clean the outside of the filter cover with a vacuum cleaner.
- Do not attempt to operate the projector without a filter cover.
- Your LCD projector will not operate unless the filter cover is installed correctly.

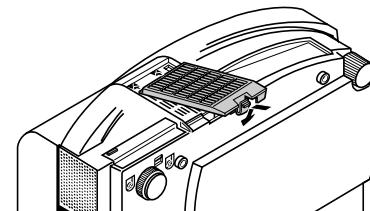
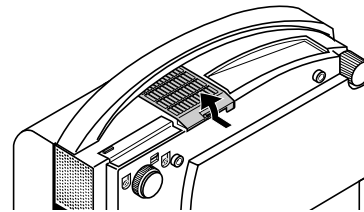
To clean the air-filter:

Vacuum the filter through the filter cover.

To replace the air-filter:

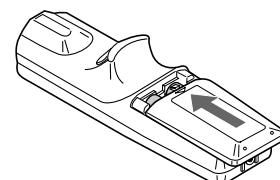
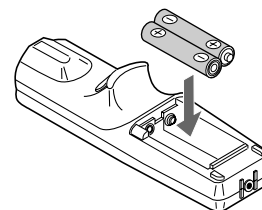
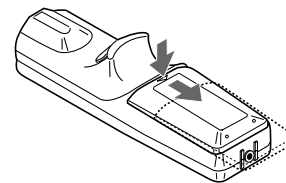
1. Remove the filter cover by pushing up on the catch of the cover with a flat-head screwdriver until you feel it detach.
2. Reinstall the new filter cover.

NOTE: *Do not detach the sponge from the filter cover. Do not wash the filter cover with soap and water. Soap and water will damage the filter membrane. Before replacing the filter cover, remove dust and dirt from the projector cabinet. Keep out dust and dirt during filter replacement.*



Remote Control Battery Installation

1. Press firmly and slide the battery cover off.
2. Remove both old batteries and install new ones (AA). Ensure that you have the batteries' polarity (+/-) aligned correctly.
3. Slip the cover back over the batteries until it snaps into place.



5 TROUBLESHOOTING

This section helps you resolve problems you may encounter while setting up or using your MultiSync MT1035 LCD Projector.

Status Light Messages

Condition	Status
OFF	■ Normal
On continually	■ The projector lamp has exceeded 2000 hours of operation and should be replaced.
Blinking very rapidly (On and off in a cycle of 1 sec.)	■ Either the lamp cover or filter cover is not fastened properly. Check each and reattach them if necessary.
Blinking slowly (On and off in a cycle of 8 sec.)	■ The cooling fan has stopped. Contact your NEC dealer for service.
Blinking very slowly (On and off in a cycle of 12 sec.)	■ The lamp is not turned on. <ul style="list-style-type: none">• The projector was turned off and back on too quickly. Turn off the projector, wait one minute, then turn the projector back on. Or the lamp is burnt out.

Common Problems & Solutions

Problem	Check These Items
Does not turn on	<ul style="list-style-type: none"> • Check that the cord is plugged in and that the power switch on the front panel is on. • Ensure that the filter cover is installed correctly. (See page E-38.) • Check to see if the projector has overheated or the lamp usage exceeds 2100 hours. If there is insufficient ventilation around the projector or if the room where you're presenting is particularly warm, move the projector to a cooler location. Check the filter and clean it if necessary.
No picture	<ul style="list-style-type: none"> • Use the menu icons to select your source (Video, S-Video, RGB1, 2 or PC Card). (See page E-28.) • Ensure your cables are connected properly. • Use icons to adjust the brightness and contrast. • Remove the lens cap. • Reset the settings or adjustments to factory preset levels using the RESET icon on the Settings Menu.
Image isn't square to the screen	<ul style="list-style-type: none"> • Reposition the projector to improve its angle to the screen. • Use the keystone icon or the keystone button to correct the keystone distortion.
Picture is blurred	<ul style="list-style-type: none"> • Adjust the focus. (See page E-8 or E-13.) • Reposition the projector to improve its angle to the screen. • Ensure that the distance between the projector and screen is within the adjustment range of the lens.
Image is scrolling vertically, horizontally or both	<ul style="list-style-type: none"> • Use icons to select the source you want to input. • Make sure the recalled Custom Memory supports the current input signal.
Remote control does not work	<ul style="list-style-type: none"> • Install new batteries. (See page E-38.) • Make sure there are no obstacles between you and the projector. • Stand within 7m of the projector.
Status indicator is lit or blinking	See the Status Light message chart on page E-39.
Cross color in RGB mode	If "Auto Mode" is off, turn it on. If "Auto Mode" is on, turn it off and adjust the image with the Picture Adjustment icon and Fine Picture Adjustment icon.

When using the Viewer function

Problem	Check These Items
No picture	<ul style="list-style-type: none"> • Is the viewer board seated in the LCD projector completely? • Is "PC CARD" selected from the Source menu? • Is the flash memory card seated in the card slot completely? • Are slide data being transferred to the flash memory card? • Have the contents of the flash memory card been destroyed?
Part of a slide is not displayed	<ul style="list-style-type: none"> • While an image with over 1024 × 768 dots is projected, several lines of information will be lost. Use the supplied software to change the image to 1024 × 768 dots in size.
No effect sound	<ul style="list-style-type: none"> • Is the sound volume set to the minimum level?

6 SPECIFICATIONS

This section provides technical information about the MultiSync MT1035 LCD Projector's performance.

Model Number MT1035G

Optical

LCD Panel	1.3", p-Si TFT active-matrix, 1024×768 dots with Micro Lens Array
Lens	Power zoom, power focus F 2.0 f =48 – 63 mm
Lamp	New short arc high pressure lamp 150 W
Image Size	25-320 inches (63.5-812.8 cm) diagonal
Projection Distance	1.0 – 12.0 m
Light Output	1300 ANSI lumens
Contrast Ratio	300 : 1
Color Temperature	9,000 ± 1500 Kelvin

Electrical

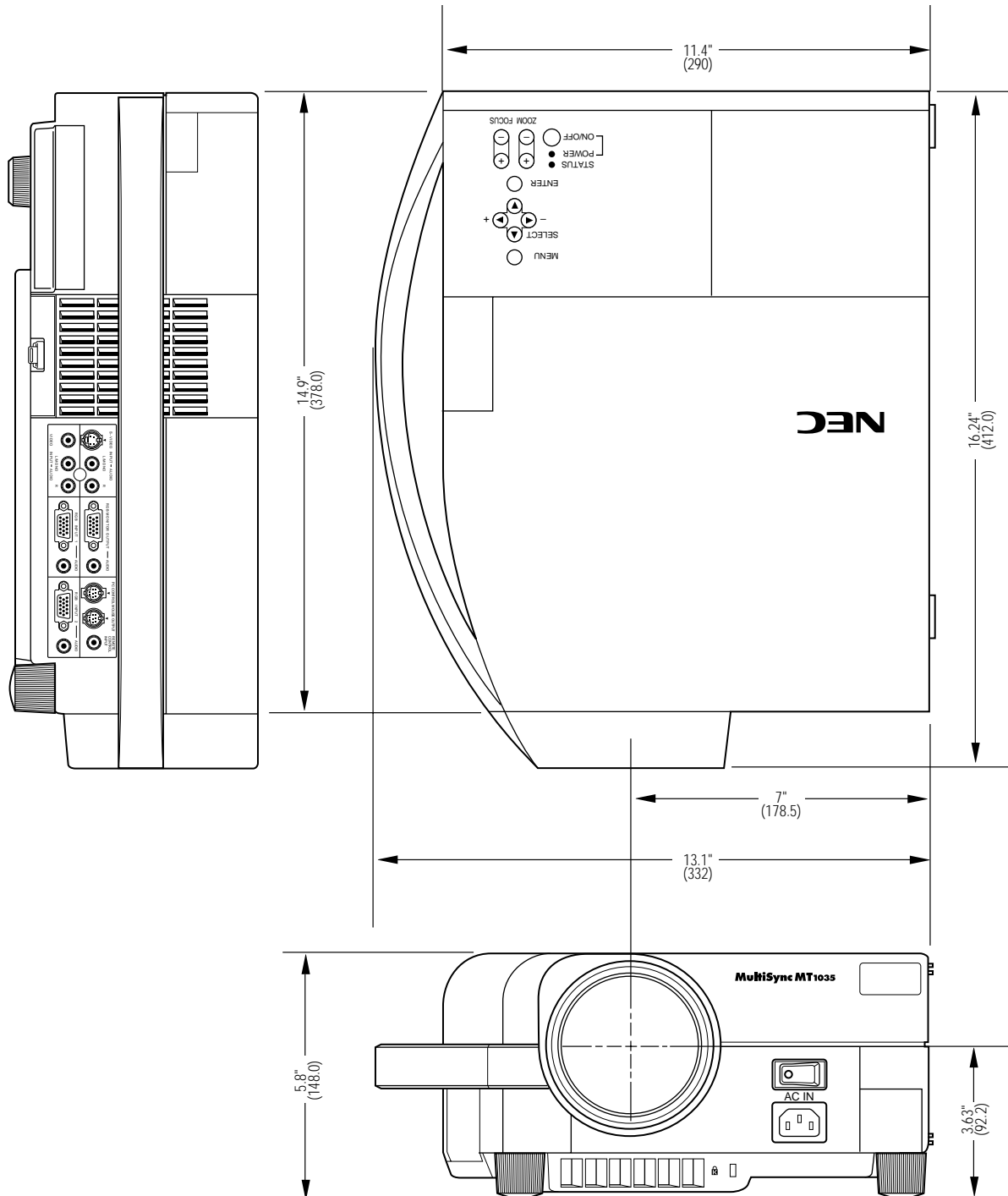
Inputs	Video (NTSC / PAL / SECAM / NTSC4.43) RGB (H : 15 – 85 kHz, V : 50 – 85 Hz)
Video Bandwidth	RGB: 80 MHz
Color Reproduction	Full color, 16.7 million colors simultaneously.
Horizontal Resolution	550 TV lines at S-Video : NTSC, 350 TV lines : PAL / SECAM / NTSC 4.43 RGB 1024 dots horizontal, 768 dots vertical
Power Requirement	100 – 120 / 220 – 240 VAC, 50 / 60 Hz
Input Current	3.5 A / 1.5A

Mechanical

Dimensions	13.2" (W)×5.8" (H)×16.2" (D) 33.5 cm (W)×14.8 cm (H)×41.2 cm (D)
Net Weight	16.8 lbs / 7.6 kg
Operational Temperatures	LCD projector: 0° to 40°C, 20 – 80% humidity Remote control: 0° to 60°C Remote mouse receiver: 0° to 60°C
Regulations	Meets EMC Directive (EN55022, EN61000-3-2, EN61000-3-3, EN50082-1) Meets Low Voltage Directive (EN60950, TÜV GS Approved)



Cabinet Dimensions

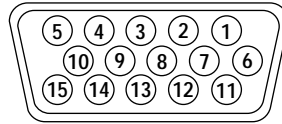


D-Sub Pin Assignments

PC 15-Pin mini D-Sub

Pin No.	Signal to be connected
1	Red
2	Green
3	Blue
4	GND
5	GND
6	Red GND
7	Green GND
8	Blue GND
9	No Connection
10	Digital GND
11	GND
12	No Connection
13	Horizontal Sync
14	Vertical Sync
15	No Connection

PC 15-Pin mini D-Sub



Timing Chart

Y/N	Signal	Resolution	Refresh Rate (Hz)	F.H. (kHz)	Dot Clk(MHz)
Y	NTSC	640×480	60	15.734	-
Y	PAL	768×576	50	15.625	-
Y	SECAM	768×576	50	15.625	-
Y	VESA	640×350	85.08	37.86	31.5
Y	IBM	640×400	70	31.47	25.175
Y	VESA	640×400	85.08	37.86	31.5
Y	MAC	640×400	66	35	30.24
Y	VESA	640×480	59.94	31.47	25.175
Y	IBM	640×480	60	31.47	25.175
Y	MAC	640×480	60	31.47	25.175
Y	MAC	640×480	66.7	34.97	31.334
Y	MAC	640×480	66.67	35	30.24
Y	VESA	640×480	72.81	37.86	31.5
Y	VESA	640×480	75	37.5	31.5
Y	IBM	640×480	75	39.375	31.49
Y	VESA	640×480	85.01	43.269	36
Y	IBM	720×350	70.09	31.469	28.322
Y	IBM	720×400	70.09	31.4469	28.322
Y	VESA	720×400	85.04	37.927	40
Y	IBM	720×350	87.85	39.44	35.5
Y	IBM	720×400	87.7	39.375	35.5
Y	VESA	800×600	56.25	35.16	36
Y	VESA	800×600	60.32	37.879	40
Y	VESA	800×600	72.19	48.077	50
Y	VESA	800×600	75	46.88	49.5
Y	VESA	800×600	85.06	53.674	56.25
Y	MAC	832×624	74.55	49.725	57.283
N	VESA	1024×768	43interlace	35.5	44.9
Y	VESA	1024×768	60	48.363	65
Y	VESA	1024×768	70.07	57.476	75
Y	IBM	1024×768	72.03	58.131	79
Y	MAC	1024×768	74.93	60.241	80
Y	VESA	1024×768	75.03	60.023	78.75
Y	VESA	1024×768	85	68.677	94.5
Y	SGI	1024×768	60.4	49.7	70
#	MAC	1152×870	75.6	68.7	100
#	SUN	1152×900	69.95	61.769	92.94
#	SGI	1152×900	76.05	71.736	105.6
#	SGI	1280×1024	60	63.9	107.35
#	VESA	1280×1024	60.04	64.286	108
#	MAC	1280×1024	69.89	74.882	118.5
#	HP	1280×1024	72.01	78.125	135
#	VESA	1280×1024	75.03	79.976	135
#	SUN	1280×1024	76.11	81.13	135

1152×870, # 1152×900 and # 1280×1024 images are compressed into 1024×768

PC Control Command Reference

Command Codes

No.	Function	Code	Data	Description
01	Video	03H	No	Same as remote
02	RGB1	04H	No	Same as remote
03	RGB2	05H	No	Same as remote
04	S-VIDEO	C6H	No	Same as remote
05	PC CARD	27H	No	Same as remote (available only when the Viewer board is installed)
06	Power On	08H	No	Same as remote (See NOTE on page E-46)
07	Power Off	14H	No	Same as remote
08	Picture Mute	47H	No	Same as remote
09	Onscreen Mute	11H	No	
10	Power Zoom W	09H	No	Same as remote
11	Power Zoom T	0AH	No	Same as remote
12	Power Focus +	0BH	No	Same as remote
13	Power Focus -	0CH	No	Same as remote
14	Reset	43H	No	(Resets immediately after returning ACK)
15	Freeze	4CH	No	Same as remote
16	Slide +	4BH	No	Same as remote (available only when PC CARD is selected)
17	Slide -	20H	No	Same as remote (available only when PC CARD is selected)
18	Front Floor	33H	No	
19	Front Ceiling	34H	No	
20	Rear Floor	35H	No	
21	Rear Ceiling	36H	No	
22	Auto Start On	19H	No	
23	Auto Start Off	1AH	No	
24	Image mode Select	1EH	Yes	0 to 2 at Video, 3 to 5 at the others
25	Power Management On		15H	No
26	Power Management Off		16H	No
27	Brightness		60H	Yes 0 to 63
28	Contrast		62H	Yes 0 to 63
29	Color		64H	Yes 0 to 63
30	Tint		66H	Yes -32 to +31(E0 to 1F)
31	Sharpness		68H	Yes 0 to 3
32	Audio Volume		6AH	Yes 0 to 63
33	Picture Adj		70H	Yes* 768 to 1279 (2 byte code)
34	Fine Picture		6EH	Yes 0 to 31
35	H Position		72H	Yes -64 to +63 (C0 to 3F)
36	V Position		74H	Yes -32 to +31 (E0 to 1F)
37	Lamp Reset		3FH	No
38	Language Select		3DH	Yes 00:English, 01:German, 02:French, 03:Italian, 04:Spanish, 05:Swedish
39	White Balance			
	Sub Brightness	R	75	Yes 0 to 7FH
		G	76	Yes 0 to 7FH
		B	77	Yes 0 to 7FH
	Sub Contrast	R	78	Yes 0 to 7FH
		G	79	Yes 0 to 7FH
		B	7A	Yes 0 to 7FH
40	Pointer Select		7F	Yes 0 to 7
41	Video System		61	Yes 0 to 2 (available only when VIDEO is selected)

These commands are subject to change without notice.

*(Low-order data) (High-order data) CSUM

CSUM = Checksum is a low-order digit of the sum from the Code to the immediately preceding data.

Cable Connection

Communication Protocol

Baud rate:	9600 bps
Data length:	8 bits
Parity:	No parity
Stop bit:	One bit
X on/off:	None
Communications procedure:	Full duplex

If the CPU of the LCD projector has received the data correctly, it returns an ACK(C5H). If the received data is not correct, the CPU returns a NAK(CAH), then the following status:

Receiving success:	C5
Receiving failure:	CA Err
Err 01:	Command Error (command not supported)
Err 02:	Checksum Error
Err 03:	Busy (command not acceptable)
Err 04:	Parameter Error (parameter data abnormal)

NOTE: If failing in powering-on, the CPU returns the following NAKs:

CA Err 1

Err 1 8X (Apply the corresponding bit.)

- Bit 0: Either filter panel or lamp cover is not attached correctly
- Bit 1: Fan stoppage
- Bit 2: Overheated
- Bit 3: Lamp lighting failure

