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The following projector manual has not been modified or altered in any way.

3M

MP8647
Multimedia Projector

Operator's Guide

MP8647 Projecteur multimedia - Guide de L' opérateur

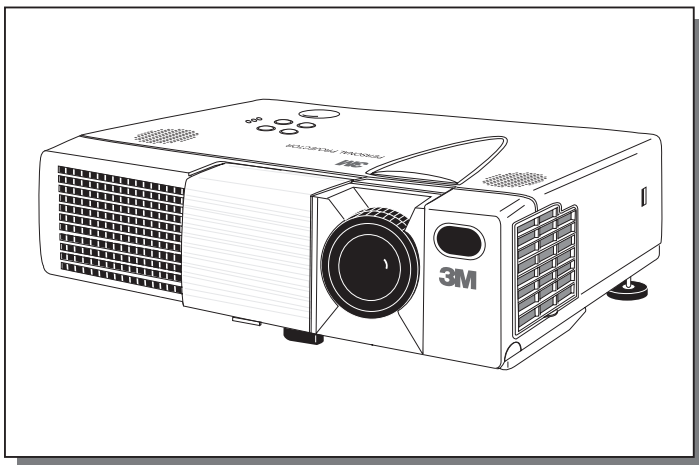MP8647 Multimedia-Projektor - Benutzerhandbuch

MP8647 Proyector de Multimedia - Guía del usuario

MP8647 Proiettore Multimediale - Guida dell' operatore

MP8647 Multimedia Projector - Gebruiksaanwijzing

MP8647 Projector dos Multimedia - Guia da operador

MP8647 Multimedia Projektør- Brukerhåndbok

Intended Use Statement

Before operating this machine, please read the Operator's Guide and Product Safety Guide thoroughly. The 3M™ Multimedia Projectors are designed, built, and tested for use indoors, using 3M lamps, 3M ceiling mount hardware, and nominal local voltages. The use of other replacement lamps, outdoor operation, or different voltages have not been tested and could damage the projector peripheral equipment and/or create a potentially unsafe operating condition. 3M Multimedia projectors are designed to operate in a normal office environment.

- 16° to 29°C (60° to 85° F)
- 10-80 % RH (without condensation)
- 0-1828 m (0-6000 feet) above sea level

The ambient operating environment should be free of airborne smoke, grease, oil and other contaminates that can affect the operation or performance of the projector.

Use of this product in adverse conditions will void the product warranty.

Multimedia Projector

Operator's Guide

Thank you for purchasing this liquid crystal projector.

⚠ **WARNING** • **Please read the accompanying manual "Product Safety Guide" and this "Operator's Guide" thoroughly to ensure correct usage through understanding. After reading, store this instruction manual in a safe place for future reference.**

NOTE • The information in this manual is subject to change without notice.

• The manufacturer assumes no responsibility for any errors that may appear in this manual

• The reproduction, transmission or use of this document or contents is not permitted without express written authority.

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CONTENTS

FEATURES

This liquid crystal projector is used to project various computer signals as well as NTSC / PAL / SECAM video signals onto a screen. Little space is required for installation and large images can easily be realized.

Outstanding Brightness

The UHB lamp and high-efficiency optical system assure a high level of brightness.

Partial Magnification Function

Interesting parts of images can be magnified for closer viewing.

Distortion Correction Function

Distortion-free images are quickly available.

BEFORE USE

Contents of package

Make sure all of the following items are included in the package. If anything is missing, please contact your dealer.

| NOTE | • Keep the original packing material for future reshipment.
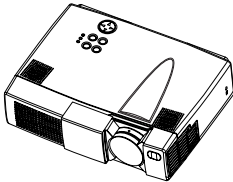
Projector

Power Cord x 3
(US, UK, Europe)
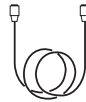
S-Video Cable
(Mini DIN4-pin)
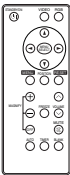
Remote Control
Transmitter
containing Battery
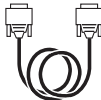
RGB Cable
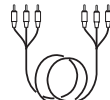
Video/Audio Cable
(with white lead)

Operator's Guide
Product Safety Guide
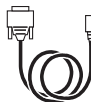
Mouse cable
(PS/2)

Handle

BEFORE USE (continued)

Part Names

Speaker

Zoom Knob
Focus Ring

Handle Hook

Remote Control Sensor

Power Switch

Lens

AC Inlet
(to the Power Cord)

Slide Lens Door

Foot Adjuster

Ventilation Openings
(Intake)

**FRONT/LEFT VIEW OF
THE PROJECTOR**

Control Panel (Refer to P.9 "OPERATIONS")

STANDBY/ON Button
MUTE Button

INPUT Button
LAMP Indicator
TEMP Indicator
POWER Indicator
RESET Button
MENU Button

Foot Adjuster Button

Air Filter and Intake
(for the Cooling Fan)

Ventilation Openings
(exhaust)

Rear Foot Adjuster

**REAR/RIGHT VIEW OF
THE PROJECTOR**

Terminal Panel
(Refer below)

S-VIDEO Terminal

Remote Control Sensor

VIDEO IN Terminal

RGB IN 1 Terminal

AUDIO IN L Terminal

RGB IN 2 Terminal

AUDIO IN R Terminal

AUDIO IN 1 Terminal

CONTROL Terminal

AUDIO IN 2 Terminal

RGB OUT Terminal

AUDIO OUT Terminal

USB Terminal

TERMINAL PANEL

BEFORE USE (continued)

Part Names (continued)

STANDBY/ON Button

Ⓐ Ⓥ ◄ ► Button

| | Used to operate the mouse shift function . |

MENU Button

MAGNIFY ⊕ Button

MAGNIFY ⊖ Button

MAGNIFY (OFF) Button

AUTO Button

TIMER Button

Battery Holder

STANDBY/ON   VIDEO RGB

MENU SELECT

MENU POSITION RESET

MAGNIFY   FREEZE VOLUME

OFF   MUTE

AUTO TIMER BLANK

VIDEO Button

RGB Button

MENU SELECT Button

| | Used to click the left mouse button. |

POSITION Button

RESET Button

| | Used to click the right mouse button. |

VOLUME ⌃ Button

VOLUME ⌄ Button

FREEZE Button

MUTE Button

BLANK Button

REMOTE CONTROL TRANSMITTER
  (Refer to P.9 "OPERATIONS")

These functions work when the mouse control function is activated. Remember, the POSITION, BLANK ON and MENU ON functions disable the mouse control function.

NOTE   To prevent any malfunction;
• Do not exert excessive physical force on the remote control transmitter. Take care not to drop.
• Do not place the heavy objects on the remote control transmitter.
• Do not wet the remote control transmitter or place it on any wet object.
• Do not place the remote control transmitter close to the cooling fan of the projector.
• Do not disassemble the remote control transmitter in case of malfunction. Please send to a servicing dealer.

BEFORE USE (continued)

Loading the Battery

First Loading:

In original packing, the battery is installed in the battery holder of the remote control transmitter with protection film(the transparent filmsome of which is inside the battery holder). Pull out the protection film to load the battery.

Replacing:

1. See the reverse side of the remote control transmitter.
2. Pinch the groove and pull out battery holder as the drawing right.
3. Remove the worn battery.
4. Install the new battery (3V micro lithium battery type no.CR2025) with "+" side facing.
5. Push in and click the battery holder.

"+" side

Pull out

Battery Holder

⚠ **CAUTION • Use only the specified batteries with this remote control transmitter. Also, do not mix new and old batteri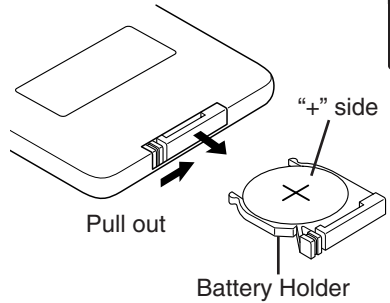es. This could cause battery cracking or leakage, which could result in fire or personal injury. • When loading the batteries, make sure the plus and minus terminals are correctly oriented as indicated in the remote control transmitter. Incorrect orientation could cause battery cracking or leakage, which could result in personal injury or pollution of the surrounding environment. • When you dispose the battery, you should obey the law in the relative area or country. • Keep the battery away from children and pets. • When not to be used for an extended period, remove the batteries from the remote control transmitter.**

NOTE Replace the batteries when remote control transmitter operation becomes difficult.

Fixing the Handle

Fix the enclosed handle if you need.

1. Raise up the handle hook, and pass one end of the handle through the hole of handle hook.
2. Buckle the end of the handle, as the right drawing.
3. Fix the other end of the handle to the other handle hook in the same way.

1

2
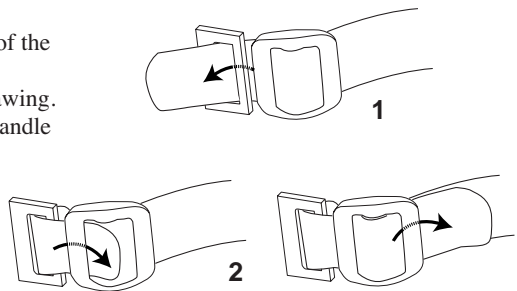
⚠ **CAUTION Make sure the handle is fixed before carrying the projector with the handle. If the projector should be dropped from the handle should be off, it could result in an injury, and continued use could result in fire or electrical shock. Do not flourish the projector with the handle.**

INSTALLATION

Installation of the Projector and Screen

Refer to the drawing and table below for determining the screen size and projection distance.

The projection distances shown in the table below are for full size (800 x 600 dots)

a: Distance from the projector to the screen. (±10%)

Screen

Top View

Lens center

a

Side View

Table 1 Installation Reference

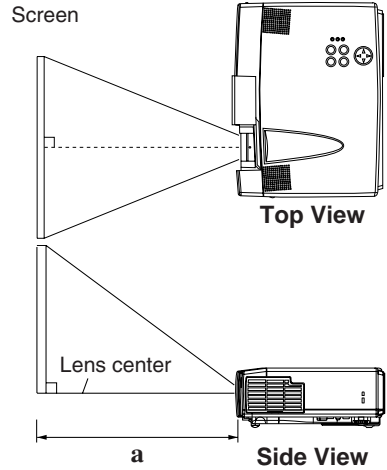| Screen size [inches (m)]	a [inches (m)]	
	Min.	Max.
40 (1.0)	65 (1.7)	78 (2.0)
60 (1.5)	98 (2.5)	117 (3.0)
80 (2.0)	131 (3.3)	157 (4.0)
100 (2.5)	163 (4.1)	196 (5.0)
120 (3.0)	196 (5.0)	236 (6.0)
150 (3.8)	246 (6.2)	295 (7.5)
200 (5.0)	328 (8.3)	394 (10.0)

⚠ **CAUTION** • **Install the projector in a suitable environment according to instructions of the accompanying manual "Product Safety Guide" and this manual.**
• **Please basically use liquid crystal projector at the horizontal position. If you use liquid crystal projector by the lens up position, the lens down position and the side up position, this may cause the heat inside to build up and cause damage. Be especially careful not to install it with ventilation holes blocked.**
• **Do not install LCD projector in smoke effected environment. Smoke residue may buildup on critical parts (i.e.LCD panel, Lens Assy etc.).**

Angle Adjustment

Use the foot adjusters on the bottom of the projector to adjust the projection angle. It is variable within 0˚ to 9˚ approximately.

1. Lift up the front side of the projector, and pressing the foot adjuster button, adjust the projection angle.
2. Release the button to lock at the desired angle.
3. Use the rear foot adjuster to adjust the left-right slope. Do not force the foot adjuster screws. This could damage the adjusters or cause the lock to fail.
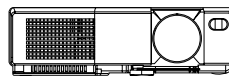
Foot Adjuster
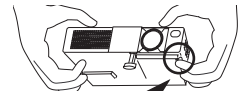
Press the foot adjuster button

9˚
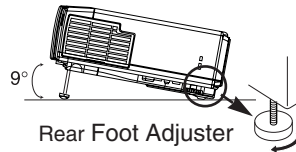
Rear Foot Adjuster

Variable within the range of approximately 0˚-9˚

⚠ **CAUTION** • **Do not release the foot adjuster button unless the projector is being held; otherwise, the projector could overturn or fingers could get caught and cause personal injury.**

INSTALLATION (continued)

Cabling

Refer to the table below for connecting each terminal of the projector to a device.

Table 2. Cabling

Function	Terminal	Cable
Analog RGB input	**RGB IN 1**	Accessory RGB cable or optional RGB cable with D-sub 15-pin shrink jack and inch thread screws
	RGB IN 2	
Analog RGB output	**RGB OUT**	
Audio input (from the computer)	**AUDIO IN 1** (interlocked with RGB IN 1)	Optional audio cable with stereo mini jack
	AUDIO IN 2 (interlocked with RGB IN 2)	
PS/2 mouse control	**CONTROL**	Accessory PS/2 mouse cable
ADB mouse control		Optional ADB mouse cable
Serial mouse control		Optional Serial mouse cable
RS-232C communication		Optional RS-232C cable
USB mouse control	**USB**	Optional USB cable
S-video input	**S-VIDEO**	Accessory S-video cable with mini DIN 4-pin jack
Video input	**VIDEO IN**	Accessory video/audio cable
Audio input (from video equipment)	**AUDIO IN L**	Accessory video/audio cable or optional audio cable with RCA jack
	AUDIO IN R	
Audio output	**AUDIO OUT**	Optional audio cable with stereo mini jack

⚠ **CAUTION • Incorrect connecting could result in fire or electrical shock. Please read this manual and the separate "Product Safety Guide".**
• Before connecting, turn off to all devices to be connected, except for the USB cable.
• The cables may have to be used with the core set to the projector side. Use the cables which are included with the projector or specified.

NOTE • Before connecting, read instruction manuals of the devices to be connected, and make sure that the projector is compatible with the device.
• Secure the screws on the connectors and tighten.
• For some RGB input modes, the optional Mac adapter is necessary.
• Some computers may have multiple display screen modes. Use of some of these modes will not be possible with this projector.
• Refer to the "TECNICAL" section for the pin assignment of connectors and RS-232C communication data.

INSTALLATION (continued)

Power Connection

Use the correct power cord depending on the power outlet to be used.

Connect the AC inlet of the projector to the power outlet firmly by the power cord.

⚠ **CAUTION • Be carful in handling the power cord according to instructions of the accompanying manual "Product Safety Guide" and this manual.**
• Connect the power cord firmly. Avoid using a loose, unsound outlet or failed contact .

Example of system setup

Video tape recorder with S jack

Video tape recorder

Computer (notebook type)

RGB Cable

RS-232C Cable

Computer (desktop type)

Speaker (with amplifier)

Display monitor
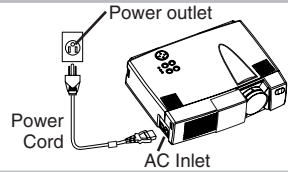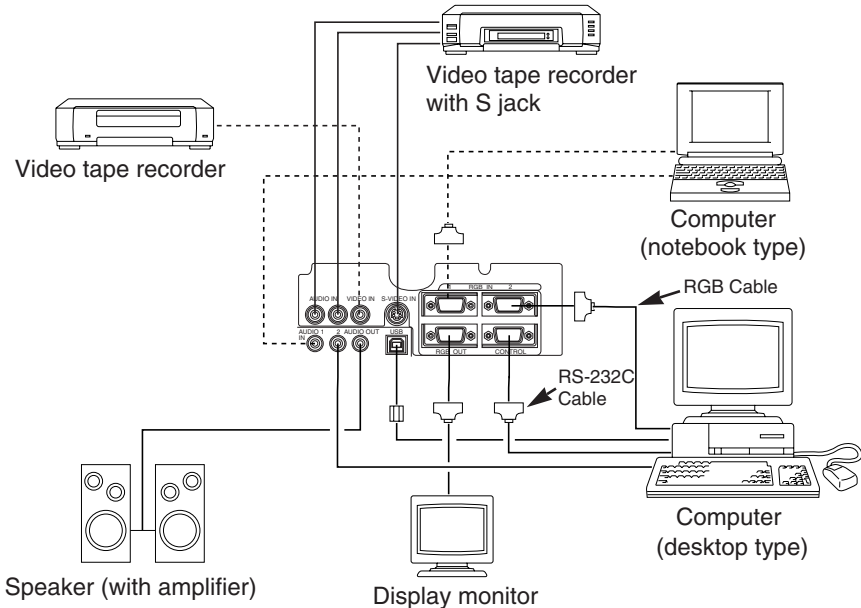
NOTE • When connecting with a notebook computer, set the proper RGB external image output (setting CRT display or simultaneous display of LCD and CRT). Please read instruction manual of the notebook for more information.

Plug & Play

This projector is VESA DDC 1/2B compatible. Plug & play is possible by connecting to a computer that is VESA DDC (Display Data Channel) compatible.

Please use this function by connecting the accessory RGB cable with RGB IN 1 terminal (DDC 1/2B compatible). Plug & play may not operate by other connections.

NOTE • Plug & play is a system configured with peripheral equipment including a computer, display and an operating system.

• This projector is recognized as a plug & play monitor. Use the standard display drivers.

• Plug & play may not operate by the computer to connect. Plug & play will not operate in the connection with Apple computer.

ENGLISH-8

OPERATIONS

POWER Indicator

STANDBY/ON Button

STANDBY/
ON Button

Zoom Knob

Focus Ring

Slide Lens Door
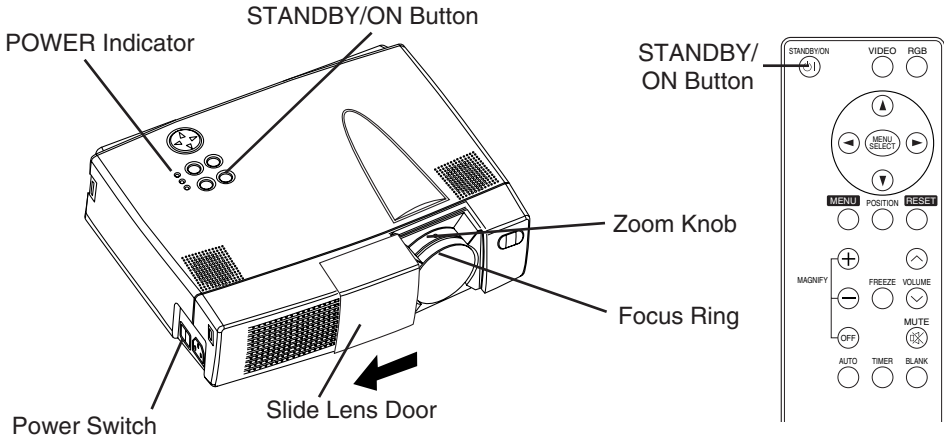
Power Switch

Power ON

1. Check that the power cord is connected correctly.
2. Set the power switch to [|]. The standby mode is selected, and the POWER indicator is turned to orange.
3. Press the STANDBY/ON button ⊕ on the control panel or the remote control transmitter. Warm-up begins and the POWER indicator blinks in green.
4. The POWER indicator ceases blinking and turns to green when power is on. Open the Slide Lens Door.
5. Adjust picture size using the ZOOM knob.
6. Adjust focus using the FOCUS ring .

Power OFF

1. Press the STANDBY/ON button ⊕ on the control panel or the remote control transmitter for approximately two second. The projector lamp is extinguished and lamp cooling begins. The POWER indicator blinks orange during lamp cooling. Pressing the STANDBY/ON button ⊕ has no effect while the POWER indicator is blinking.
2. The system assumes the Standby mode when cooling is complete, and the POWER indicator ceases blinking and changes to orange. Check that the indicator is orange and set the Power switch to [O].
3. The POWER indicator is extinguished when power is off. Do not forget to close the Slide Lens Door.

⚠ **WARNING • Please read this manual, and the separate "Product Safety Guide" thoroughly before using the equipment. Always ensure that the equipment is used safely.**

NOTE • Except in emergencies, do not turn off unless the POWER indicator is orange as it will reduce the life of the projector lamp.
• To prevent any troble, turn on/off the projector when the computer or video tape recorder is OFF. Providing a RS-232C cable is connected, turn on the computer before the projector.

OPERATIONS (continued)

Basic Operation

The basic operations shown in Table 3 is performed from the supplied remote control transmitter or the projector control panel. Items indicated by (*) may be used from the control panel.

Table 3 . Basic Operation

Item	Description
INPUT SELECT	**Select Input Signal** (*) **:** Press the INPUT button. RGB IN 1 → RGB IN 2 → VIDEO → S-VIDEO (→ RGB IN 1) **Select RGB Input :** Press the RGB button. VIDEO/S-VIDEO/ → RGB IN 1/RGB IN 2 RGB IN 1 → RGB IN 2 → DIGITAL (→ RGB IN 1) **Select Video Input :** Press the VIDEO button. RGB IN 1/RGB IN 2 ↔ VIDEO/S-VIDEO VIDEO ↔ S-VIDEO • The selected signal name is displayed for approximately 3 seconds when the input signal is changed.
POSITION	**Set/Clear Position Adjustment Mode :** Press the POSITION button. The [▱] icon is displayed in the POSITION mode. **Image Position Adjustment:** Press the ◁, ▷, ▵ and ▿ buttons in the POSITION mode. • Valid only in the MAGNIFY mode with a video signal is input. • After approximately 10 seconds of inactivity the [▱] icon is extinguished and the POSITION mode is cleared automatically. • ◁, ▷, ▵ and ▿ buttons may operate as the mouse control button. Refer to page 4.
RESET (*)	**Initialize Each Item :** Select an item and press the RESET button. **Initialize Position Adjustment :** Press the RESET button and the POSITION mode. This function is valid only when RGB signal is input. • Valid except for the VOLUME, LANGUAGE and H PHASE. • The RESET button may operate as the mouse control button. Refer to page 4.
MAGNIFY	**Set MAGNIFY Mode :** Press the MAGNIFY ⊕ button. **Move Magnified Area :** Run the POSITION in the MAGNIFY mode. **Adjust Magnification :** Press the MAGNIFY ⊕ / ⊖ button in MAGNIFY mode. **Clear MAGNIFY Mode :** Press the MAGNIFY ⊙ button. • The MAGNIFY mode is cleared by running or setting the AUTO, ASPECT, INPUT SELECT or VIDEO, or by changing the input signal.
FREEZE	**Set/Clear FREEZE Mode :** Press the FREEZE button. The [❚❚] icon is displayed, and the image frozen, in the FREEZE mode. • The FREEZE mode is cleared by running or setting POSITION, VOLUME, MUTE, Automatic Adjustment, BLANK ON/OFF, or MENU ON/OFF, or by changing the input signal. • Do not forget to clear frozen static images.

NOTE • Use the remote control transmitter at a distance of approximately 3m from the sensor on the front of the projector, and within a range of 30° left-right. Strong light and obstacles will interfere with operation of the remote control transmitter.

OPERATIONS (continued)

ENGLISH

Items indicated by (*) may be used from the control panel.

Table 3. Basic Operation (continued)

Item	Description
VOLUME	**Volume Adjustment :** Press the VOLUME ⊙ / ⊙ button.
MUTE (*)	**Set/Clear Mute Mode :** Press the MUTE button. No sound is heard in the MUTE mode.
AUTO	**Automatic Adjustment at RGB Input :** Press the AUTO button. Horizontal position(H.POSIT), vertical position (V.POSIT),clock phase (H.PHASE), and horizontal size(H.SIZE) are automatically adjusted. Use with the window at maximum size in the application display. **Automatic Adjustment at Video Input :** Press the AUTO button. A signal type appropriate for the input signal is selected automatically. Valid only when AUTO is set for VIDEO on the menu. • This operation requires approximately 10 seconds. It may not function correctly with some input signals.
TIMER ON/OFF	**Timer Start/Stop:** Press the TIMER button. Count-down and display by the minute from the initial value (1~99) set in TIMER on the Options menu to 0. • The timer is not displayed in the BLANK MODE or FREEZE MODE.
BLANK ON/OFF	**Set/Clear Blank Mode:** Press the BLANK button. No image is displayed in the Blank mode. The screen color is as set in BLANK on the Image menu.
MENU ON/OFF (*)	**Menu Display Start/Stop:** Press the MENU button. • The menu display is terminated automatically after approximately 10 seconds of inactivity.
MENU SELECT	**Select Menu Type:** Press the MENU SELECT button. Allows the user to select the normal menu or the single menu. Only the selected item is displayed on the single menu, and other items are displayed with the ⓐ and ⓥ buttons as with the normal menu. • Valid only when the Setup menu is used. Push the MENU SELECT button after selecting items such as "BRIGHTNESS". • The MENU SELECT button may operate as the mouse control button. Refer to page 4. **Normal menu** (MENU SELECT) **Single menu**

OPERATIONS (continued)

Setup Menu

The following adjustments and settings are possible when SETUP is selected at the top of the menu. Part of the Setup menu differs between RGB input and video input. Select an item with the ⓐ and ⓥ buttons, and start operation. Use the Single menu to reduce menu size (see Table 3, MENU SELECT).

SETUP	INPUT	IMAGE	OPT.
BRIGHT			0
CONTRAST			-2
V POSIT			100
H POSIT			100
H PHASE			+1
H SIZE			800
COLOR BAL R			0
COLOR BAL B			0
ASPECT			

RGB IN 1
RGB IN 2

SETUP	INPUT	IMAGE	OPT.
BRIGHT			0
CONTRAST			+1
SHARPNESS			+1
COLOR			0
TINT			0
COLOR BAL R			0
COLOR BAL B			0
ASPECT			
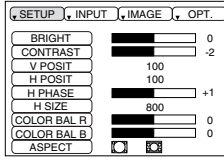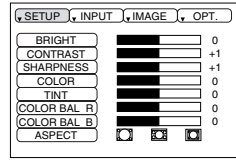
VIDEO
S-VIDEO

Table 4. Setup Menu

Item	Description	RGB IN 1 RGB IN 2	VIDEO S-VIDEO
BRIGHT	**Adjustment:** Dark ⊙ ↔ Light ⊙	✔	✔
CONTRAST	**Adjustment:** Weak ⊙ ↔ Strong ⊙	✔	✔
V POSIT	**Adjustment:** Down ⊙ ↔ Up ⊙	✔	-
H POSIT	**Adjustment:** Left ⊙ ↔ Right ⊙	✔	-
H PHASE	**Adjustment:** Left ⊙ ↔ Right ⊙ • Adjust to eliminate flicker.	✔	-
H SIZE	**Adjustment:** Small ⊙ ↔ Large ⊙ • The image may not be displayed correctly if the horizontal size is excessive. In such cases, press the RESET button, and initialize the horizontal size.	✔	-
SHARPNESS	**Adjustment:** Soft ⊙ ↔ Clear ⊙	-	✔
COLOR	**Adjustment:** Light ⊙ ↔ Dark ⊙	-	✔
TINT	**Adjustment:** Red ⊙ ↔ Green ⊙ • Valid only when NTSC or NTSC 4.43 signal is received.	-	✔
COLOR BAL R	**Adjustment:** Light ⊙ ↔ Dark ⊙	✔	✔
COLOR BAL B	**Adjustment:** Light ⊙ ↔ Dark ⊙	✔	✔
ASPECT	**Select Image Aspect Ratio :** 4:3[▢] ⊙ ↔ ⊙ 16:9[▢] **Select Position of Image:** Press the ⓥ button while 16:9[▢] is selected. Center → ⓥ Down → ⓥ Up (→ Center ⓥ)	✔	-
ASPECT	**Select Image Aspect Ratio:** 4:3[▢] ⊙ ↔ ⊙ 16:9[▢] ⊙ ↔ ⊙ 4:3 small[▢] **Select Position of Image :** Press the ⓥ button while 16:9[▢] / 4:3 small[▢] is selected. Center → ⓥ Down → ⓥ Up (→ Center ⓥ) • 4:3 small may not be displayed correctly with some input signals.	-	✔

OPERATIONS (continued)

Input Menu

The following functions are available when INPUT is selected on the menu. Select an item with the ⓐ and ⓥ buttons, and start or stop operation with the ⊙ and ⊙ buttons. The function indicated (**) are effective on video input mode only, not on RGB input mode, except in the P.IN P. window on RGB input mode.

SETUP	INPUT	IMAGE	OPT.
RGB		fH:38kHz
VIDEO ▸		fV:60Hz
AUTO		
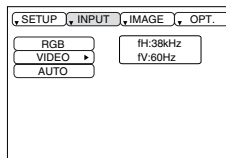
Table 5. Input Menu

Item	Description
RGB	**Displays RGB Input Frequency:** Displays the horizontal and vertical sync signal frequencies for RGB input. • Valid only at RGB input.
VIDEO (**)	**Select Video Signal Type:** Select the signal type with the ⓐ and ⓥ buttons. Select NTSC, PAL, SECAM, NTSC4.43, M-PAL, or N-PAL as appropriate for the input signal. The selection of AUTO enables and executes the function AUTO (Automatic Adjustment at Video Input), except for the N-PAL input. • Use this function when the image becomes unstable (eg. the image becomes irregular, or lacks color) at VIDEO/S-VIDEO input. • Automatic Adjustment requires approximately 10 seconds. It may not function correctly with some input signals. Pressing the AUTO button in this case may correct this problem except for the N-PAL input.
AUTO	**Automatic Adjustment at RGB Input:** Select the EXECUTE with the ⓐ button. Horizontal position (H.POSIT), vertical position (V.POSIT), clock phase (H.PHASE), and horizontal size (H.SIZE) are automatically adjusted. Use with the window at maximum size in the application display. **Automatic Adjustment at Video Input:** Select the EXECUTE with the ⓐ button. A signal type appropriate for the input signal is selected automatically when EXECUTE is selected automatically. Valid only when AUTO is set for VIDEO on the menu. • This operation requires approximately 10 seconds. It may not function correctly with some input signals. Pressing the AUTO button in this case may correct this problem. • This function is the same as for the AUTO function in Basic operation.

OPERATIONS (continued)

Image Menu

The following adjustments and settings are available when IMAGE is selected on the menu. Select an item with the ⒶandⓋ buttons, and start operation.
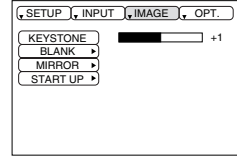
Table 6. Image Menu

Item	Description
KEYSTONE	**Keystone Adjustment:** Reduce size of bottom of image ⊙ ↔ Reduce size of top of image ⊙ • When this function is activated, the image may not be displayed correctly with some input signals.
BLANK	**Select Blank Screen Color:** Select color with the ⊙ and ⊙ buttons. • The image is cleared when the BLANK mode is set with BLANK ON, or when there is no signal, and the entire screen is displayed in the selected color.
MIRROR	**Operation Start/Stop:** Press the ⊙ or ⊙ button. **Select Mirror Status:** Select mirror status with Ⓐ and Ⓥ buttons.
START UP	**Operation Start/Stop:** Press the ⊙ or ⊙ button. **Setup Initial Screen Display:** Select TURN ON with the Ⓐ button. **Clear Initial Screen Display:** Select TURN OFF with the Ⓥ button. • Note that if TURN OFF is selected the blank screen is displayed in blue when there is no signal.

OPERATIONS (continued)

Options Menu

The following adjustments and settings are available when OPT. is selected on the menu. Select an item with the ⊕ and ⊙ buttons, and start operation.
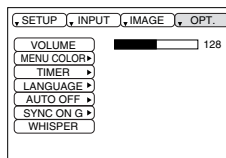
Table 7. Options Menu

Item	Description
VOLUME	**Volume Adjustment:** Reduce VOLUME ⊙ ↔ Increase VOLUME ⊙
MENU COLOR	**Select Menu Background Color:** Select with the ⊙ and ⊙ buttons.
TIMER	**Operation start/stop:** Press the ⊙ or ⊙ button. **Setup initial timer value:** Set 1~99 minutes with the ⊕ and ⊙ buttons.
LANGUAGE	**Operation Start/Stop:** Press the ⊙ or ⊙ button. **Select Menu Display Language:** Select with the ⊕ and ⊙ buttons.
AUTO OFF	**Operation Start/Stop:** Press the ⊙ or ⊙ button. **Set AUTO OFF:** Set 1~99 minutes with the ⊕ and ⊙ buttons. The system automatically enters the standby mode when a signal is not received for the set time. **Clear AUTO OFF:** Select STOP (0 min.) with the ⊙ button. When STOP is selected the system does not enter the standby mode even if no signal is received.
SYNC ON G	**Operation Start/Stop:** Press the ⊙ or ⊙ button. **SYNC ON G Valid:** Select TURN ON with the ⊕ button. **SYNC ON G Invalid:** Select TURN OFF with the ⊙ button. • May not be displayed correctly with some input signals when SYNC ON G is valid. In such cases, remove the signal connector so that no signal is received, set SYNC ON G to invalid, and reconnect the signal.

OPERATIONS (continued)

No Signal Menu

The same adjustments and settings are available with the Image and Options menus when the MENU button is pressed during display of the "NO INPUT IS DETECTED ON ***" or "SYNC IS OUT OF RANGE ON ***" message while no signal is received.

VOLUME	▬▬▬▬▬	40
KEYSTONE	▬▬▬	+1
BLANK ▸		
MIRROR ▸		
START UP ▸		
MENU COLOR ▸		
TIMER ▸		
LANGUAGE ▸		
AUTO OFF ▸		
SYNC ON G ▸		
WHISPER		
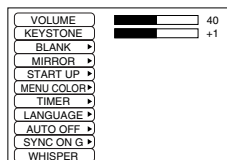
Table 8. No Signal Menu

Item	Description
VOLUME	**Volume Adjustment:** Reduce VOLUME ⊙ ↔ Increase VOLUME ⊙ • When this function is used, audio input is automatically switched to video. The audio input can be switched by moving the DISK PAD left and right during the display of the volume adjustment bar. The volume adjustment bar is displayed by pressing VOLUME ⊙ or VOLUME ⊙ button.
KEYSTONE	**Keystone Adjustment:** Reduce the size of bottom of image ⊙ ↔ Reduce the size of top of image ⊙
BLANK	**Select Blank Screen Color:** Select the color with the ⊙ and ⊙ buttons. • When the blank mode is set with BLANK ON, by absence of a signal, or by input of a non-standard signal, the image is cleared and the complete screen is displayed in the selected color.
MIRROR	**Operation Start/Stop:** Press the ⊙ or ⊙ button. **Select Mirror Status:** Select the mirror status with the ⊙ and ⊙ buttons.
START UP	**Operation Start/Stop:** Press the ⊙ or ⊙ button. **Setup Initial Screen Display:** Select the TURN ON with the ⊙ button. **Clear Initial Screen Display:** Select the TURN OFF with the ⊙ button. • Note that if TURN OFF is selected the blank screen is displayed in blue when there is no signal.
MENU COLOR	**Select Menu Background Color:** Select the color with the ⊙ and ⊙ buttons.
TIMER	**Operation start/stop:** Press the ⊙ or ⊙ button. **Setup initial timer value:** Set 1~99 minutes with the ⊙ and ⊙ buttons.
LANGUAGE	**Operation Start/Stop:** Press the ⊙ or ⊙ button. **Select Menu Display Language:** Select the language with the ⊙ and ⊙ buttons.
AUTO OFF	**Operation start/stop:** Press the ⊙ or ⊙ button. **Set AUTO OFF:** Set 1~99 minutes with the ⊙ and ⊙ buttons. The system automatically enters the standby mode when a signal is not received for the set time. **Clear AUTO OFF:** Select the STOP (0 min.) with the ⊙ button. When the STOP is selected the system does not enter the standby mode even if no signal is received.
SYNC ON G	**Operation Start/Stop:** Press the ⊙ or ⊙ button. **SYNC ON G Valid:** Select the TURN ON with the ⊙ button. **SYNC ON G Invalid:** Select the TURN OFF with the ⊙ button. • May not be displayed correctly with some input signals when the SYNC ON G is valid. In such cases, remove the signal connector so that no signal is received, set the SYNC ON G to invalid, and reconnect the signal.

MAINTENANCE

Lamp

**HIGH VOLTAGE
HIGH TEMPERATURE
HIGH PRESSURE**

Contact your dealer before replacing the lamp.

For the optional lamp, see the item "Accessories" of P.24.

Before replacing the lamp, switch power OFF, remove the power cord from the power outlet, and wait approximately 45 minutes until the lamp has cooled. The lamp may explode if handled at high temperatures.

⚠ **WARNING • For disposal of used lamp, treat according to the instruction of community authorities.**

• Since the lamp is made of glass, do not apply shock to it and do not scratch it.

• Also, do not use old lamp. This could also cause explosion of the lamp.

• If it is probable that the lamp has exploded (explosive sound is heard), disconnect the power plug from the power outlet and ask your dealer to replace lamp. The lamp is covered by front glass , but, in rare cases, the reflector and the inside of the projector may be damaged by scattered broken pieces of glass, and broken pieces could cause injury when being handled.

• Do not use the projector with the lamp cover removed.

Lamp

Reflector   Front glasss
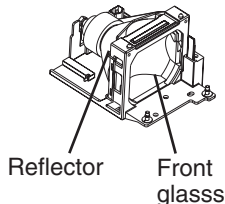
Lamp Life

Projector lamps have a finite life. The image will become darker, and hues will become weaker, after a lamp has been used for a long period of time.

Replace the lamp if the LAMP indicator is red, or the CHANGE THE LAMP message appears when the projector is switched ON. See Table 9 of P.20 and Table 10 of P.21.

NOTE • The LAMP indicator is also red when the lamp unit reaches high temperature. Before replacing the lamp, switch power OFF, wait approximately 20 minutes, and switch power ON again. If the LAMP indicator is still red, replace the lamp.

MAINTENANCE (continued)

Replacing the Lamp

1. Switch the projector OFF, remove the power cord from the power outlet, and wait at least 45 minutes for the unit to cool.
2. Prepare a new lamp.
3. Check that the projector has cooled sufficiently, and gently turn it upside down.
4. Loosen the two screws as shown in the diagram, and remove the lamp cover.
5. Loosen the three screws, and gently remove the lamp while holding the grips. Touching the inside of the lamp case may result in uneven coloring.
6. Install the new lamp and tighten the three screws firmly. Also steadily push the opposite side of the screwed lamp into the unit.
7. Replace the lamp cover in position and tighten the two screws firmly.
8. Gently turn the projector right-side up.
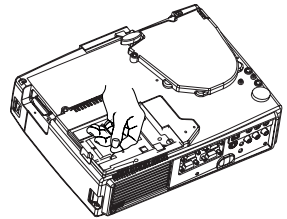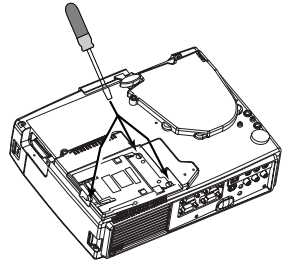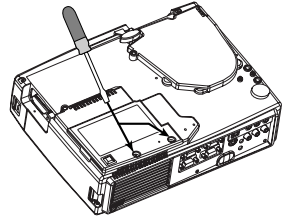
⚠ **CAUTION • Ensure that screws are tightened properly. Screws not tightened fully may result in injury or accidents.**
• Do not use the projector with the lamp cover removed.

Resetting the Lamp Timer

Reset the lamp timer after replacing the lamp. When the lamp has been replaced after the LAMP indicator is red, or the CHANGE THE LAMP message is displayed, complete the following operation within 10 minutes of switching power ON. The power will be turned off automatically in over 10 minutes.

1. Switch power ON, and press the TIMER button on the remote control transmitter, or the RESET ⊖ button on the control panel, for approximately three seconds. The 'LAMP xxxx hr' message will appear on the lamp timer on the bottom of the screen.
2. Press the MENU button on the remote control transmitter, or the RESET button on the control panel, while the lamp timer is displayed. The 'LAMP xxxx □ → 0 ■ CANCEL' message will then appear.
3. Press the ◁ and select 0, and wait until the timer display is cleared.

 NOTE • Do not reset the lamp timer without replacing the lamp. Reset the lamp timer always when replacing the lamp. The message functions will not operate properly if the lamp timer is not reset correctly.

MAINTENANCE (continued)

Air Filter Maintenance

The air filter should be cleaned as described below at intervals of approximately 100 hours.

1. Switch the projector power supply OFF, and remove the power cord from the power outlet.
2. Clean the air filter with a vacuum cleaner.

⚠ **CAUTION** • **Switch power OFF and remove the power cord from the power outlet before beginning maintenance work. Please read the separate "Product Safety Guide" thoroughly to ensure that maintenance is performed correctly.**
• **Replace the air filter if contamination cannot be removed, or if it is damaged. Contact your dealer in such case. For the optional air filter, see the item "Accessories" of P.24.**
• **Do not use the equipment with the air filter removed.**
• **When the air filter is clogged with dust etc. the power supply is switched OFF automatically to prevent the temperature rising inside the projector.**

Other Maintenance

Maintenance Inside the Equipment

For safety reasons, ensure that the equipment is cleaned and checked by the dealer once every two years. Maintaining the equipment by yourself is dangerous.

Cleaning the Lens

Gently wipe the lens with lens cleaning paper. Do not touch the lens with your hands.

Cleaning the Cabinet and Remote control transmitter

Gently wipe with a soft cloth. If dirt and stains etc. are not easily removed, use a soft cloth dampened with water, or water and a neutral detergent, and wipe dry with a soft, dry cloth.

⚠ **CAUTION** • **Switch power OFF and remove the power cord from the power outlet before beginning maintenance work. Please read the separate "Product Safety Guide" thoroughly to ensure that maintenance is performed correctly.**
• **Do not use detergents or chemicals other than those noted above (e.g. benzene or thinners).**
• **Do not use cleaning sprays.**
• **Do not rub with hard materials, or tap the equipment.**

TROUBLESHOOTING

Service Infomation

For product infomation, product assistance, service infomation, or to order accessories, please call:

    In U.S. or Canada : 1-800-328-1371
    In other locations, contact your local 3M sales office.

OSD Message

The messages as described below may appear on the screen at power ON. Take the appropriate measures when such messages appears.

Table 9. OSD Messages

Message	Contents
CHANGE THE LAMP AFTER REPLACING LAMP, RESET THE LAMP TIME. *1)	The message shown at left appears after the lamp has been used for more than 1700 hours. The lamp is approaching the end of its life. Power is switched OFF automatically when the lamp reaches the end of its life. Prepare a new lamp for installation. Always reset the lamp timer after replacing the lamp.
CHANGE THE LAMP AFTER REPLACING LAMP, RESET THE LAMP TIME. THE POWER WILL TURN OFF AFTER ** hr. *1)	The lamp will reach the end of its life in ** hours. Power will be switched OFF automatically in ** hours. Replace the lamp as shown in P.17~18 "Lamp". Always reset the lamp timer after replacing the lamp.
CHANGE THE LAMP AFTER REPLACING LAMP, RESET THE LAMP TIME. THE POWER WILL TURN OFF AFTER 0 hr.	The lamp has reached the end of its life. Power will be switched OFF in a few minutes. Switch power OFF immediately and replace the lamp as shown in P.17~18 "Lamp". Always reset the lamp timer after replacing the lamp.
NO INPUT IS DETECTED ON ***	No input signal found. Check signal input connections and signal sources.
SYNC IS OUT OF RANGE ON ***	The horizontal or vertical frequency of the input signal is not within the specified range. Check the specifications of the equipment and the signal source.
CHECK THE AIR FLOW	The internal temperature has risen. Switch power OFF, and wait 20 minutes until the equipment cools. Check the following and Switch power ON again. • Are the ventilation openings blocked? • Is the air filter dirty? • Is the ambient temperature in excess of 35°C?

 NOTE   *1) This message is cleared automatically after approximately 3 minutes, and appears every time power is switched ON.

TROUBLESHOOTING (continued)

Indicators Message

The POWER indicator, LAMP indicator, and TEMP indicator are lit and blank as follows. Take the appropriate measures.

ENGLISH

Table 10. Indicators Message

POWER indicator	LAMP indicator	TEMP indicator	Contents
Lights orange	Turns off	Turns off	The Standby mode has been set.
Blinks green	Turns off	Turns off	Warming up. Please wait.
Lights green	Turns off	Turns off	ON. Normal operation possible.
Blinks orange	Turns off	Turns off	Cooling. Please wait.
Lights red	Lights red	Turns off	Lamp is not lit. The interior of the equipment may be too hot. Switch power OFF, wait 20 minutes until the equipment cools, and check whether the ventilation openings are blocked, whether the air filter is dirty, or whether the ambient temperature exceeds 35 °C. And switch power ON again. Replace the lamp if the same problem occurs.
Lights red	Blinks red	Turns off	Lamp or lamp cover is not found, or hasn't been fitted in correctly. Switch power OFF, and wait for 45 minutes until the equipment cools. Check fitting of the lamp and lamp cover, and switch power ON again. Contact your dealer if the same problem occurs again.
Lights red	Turns off	Blinks red	The cooling fan is not operating. Switch power OFF, and wait for 20 minutes until the equipment cools. Check for foreign matters in the fan, and switch power ON again. Contact your dealer if the same problem occurs again.
Lights red	Turns off	Lights red	The interior of the equipment is too hot. *2) Switch power OFF, and wait for 20 minutes until the equipment cools. Check whether the ventilation openings are blocked, whether the air filter is dirty, or whether the ambient temperature exceeds 35 °C. Then switch power ON again. Contact your dealer if the same problem occurs again.

NOTE   *2) When the internal temperature becomes excessive power is switched OFF automatically for safety reasons, and the indicator is extinguished. Set the power switch to [O] and wait for 20 minutes until the equipment has cooled sufficiently.

TROUBLESHOOTING (continued)

Symptom

Before requesting repair, check in accordance with the following chart. If the situation cannot be corrected, then contact your dealer.

Table 11. Symptom

Symptom	Possible cause	Remedy	Page
The power is not turned on.	The main power switch is not turned on.	Turn on the main power switch.	8,9
	The power cord is disconnected.	Plug the power cord into an AC power outlet.	
No video or audio.	The input is not correctly set.	Use the projector or remote control transmitter to set.	10
	No signal input.	Connect correctly.	7,8
Video is present but no audio.	The projector is not correctly connected.	Connect correctly.	7,8
	The volume is set to minimum.	Press VOLUME ⊙ on the remote control or display the menu screen and adjust the volume.	11,15
	Mute is turned on.	Press the MUTE ⊛ button.	11
Audio is present but no video.	The projector is not correctly connected.	Connect correctly.	7,8
	The brightness is set to minimum.	Select BRIGHT with the MENU button and the press the ⊙ button.	12
	The lens cap is still attached.	Remove the lens cap.	9
Colors are pale and color matching is poor.	Color density and color matching are not correctly adjusted.	Adjust the video.	12
Images are dark.	Brightness and contrast are not correctly adjusted.	Adjust the video.	12
	The lamp is nearing the end of its service life.	Replace with a new lamp.	17
Images are blurred.	Focus or H PHASE is out of adjustment.	Adjust the focus or H PHASE.	9,12

SPECIFICATIONS

Table 12. Specifications

Item		Specification
Product name		Liquid crystal projector
Liquid crystal panel	Panel size	2.3 cm (0.9 type)
	Drive system	TFT active matrix
	Pixels	480,000 pixels (800 horizontal x 600 vertical)
Lens		Zoom lens F=1.7 ~ 2.0 f=37.5 ~ 45.1 mm
Lamp		160 W UHB
Speaker		1.0 W + 1.0W (Stereo)
Power supply		AC100 ~ 120V, 2.8A / AC220 ~ 240V, 1.2A
Power consumption		250W
Temperature range		0 ~ 35°C (Operating)
Size		298 (W) x 94.6 (H) x 228 (D) mm
Weight (mass)		3.25 kg
RGB signal input	RGB IN 1/2	Video: Analog 0.7Vp-p, 75Ω terminator (positive) H/V. sync.: TTL level (positive/negative) Composite sync.: TTL level D-sub 15-pin shrink jack
	AUDIO IN 1/2	200mVrms, 50 kΩ (max. 3.0Vp-p) Stereo mini jack
Video signal input	VIDEO IN	1.0Vp-p, 75Ω terminator RCA jack
	S-VIDEO IN	Brightness signal: 1.0Vp-p, 75Ω terminator Color signal: 0.286Vp-p (burst signal), 75Ω terminator Mini DIN 4-pin jack
	AUDIO IN R/L	200mVrms, 50 kΩ (max. 3.0Vp-p) RCA jack
Signal output	RGB OUT	Video: Analog 0.7Vp-p, 75Ω output impedance (positive) H/V. sync.: TTL level (positive/negative) Composite sync.: TTL level D-sub 15-pin shrink jack
	AUDIO OUT	200mVrms, output impedance 1 kΩ (max. 3.0Vp-p) Stereo mini jack
Control functions	CONTROL	D-sub 15-pin shrink plug
	USB	USB jack (B type)

NOTE • This specifications are subject to change without notice.

ACCESSORIES

Acccessories..**Part Number**
      UHB lamp, 160W 78-6969-9260-7
      Air Filter..78-8118-8896-1
      Power cable (US) DY-0205-1356-9
      Power cable (UK) DY-0205-1355-1
      Power cable (Europe) DY-0205-1354-4
      S-Video cable..78-8118-3238-1
      RGB cable...78-8118-8708-8
      Video/audio cable..78-8118-3234-0
      Mouse cable (PS/2)...78-8118-8105-7
      Remote control transmitter..78-8118-8652-8
      Handle...78-8118-8673-4

Not Included with Basic Packet...**Part Number**
      Ceiling mount 78-6969-9261-5
      Adjustable height suspension 78-6969-8312-7
      Shipping case..78-6969-9259-9
      Soft carry case 78-6969-9203-7
      Deluxe leather carry case 78-6969-9144-3
      Stereo mini jack cable...78-8118-8290-7
      Mouse cable (ADB)...78-8118-8106-5
      Mouse cable (Serial) 78-8118-8107-3
      Mouse cable (USB)...78-8118-8186-7
      RS-232C control cable...78-8118-3312-4
      Mac adapter 78-8118-3308-2

How to Order
Please order these parts through your dealer, or contact 3M Customer Service at the following number :
     In U.S. or Canada : **1-800-328-1371**
     In other locations,contact your local 3M sales office.

TECHNICAL

Dimension Diagram

228

298

76

76.5

94.6

54

Unit : mm
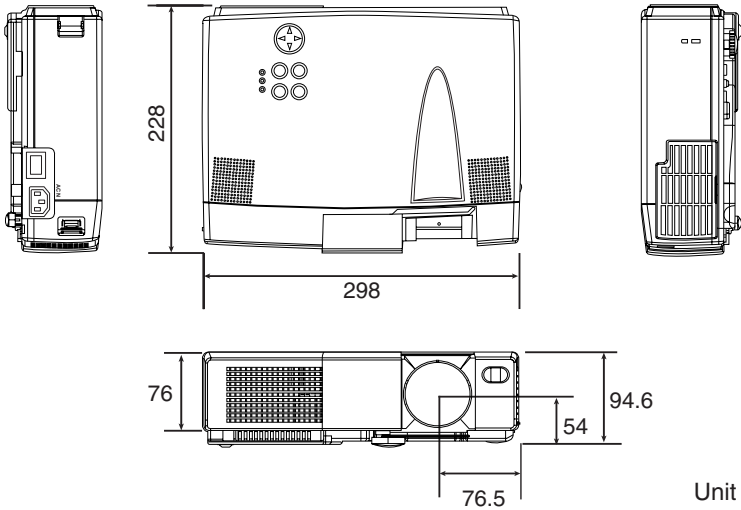
Signal Connector Pin Assignment

1. D-sub 15-pin Shrink Connector (RGB IN 1/RGB IN 2/RGB OUT)

Pin No	Signal	Pin No	Signal	Pin No	Signal
1	Video input Red	9	-	15	RGB IN 1: SCL(DDC)
2	Video input Green	10	Ground		RGB IN 2: -
3	Video input Blue	11	-		RGB OUT: -
4	-	12	RGB IN 1: SDA(DDC)		
5	Ground		RGB IN 2: -		
6	Ground Red		RGB OUT: -		
7	Ground Green	13	H. sync./ Composite sync.		
8	Ground Blue	14	Vertical sync		

⑤ ④ ③ ② ①
⑩ ⑨ ⑧ ⑦ ⑥
⑮ ⑭ ⑬ ⑫ ⑪
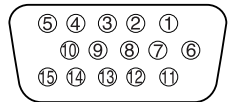
2. Mini Din 4-pin Connector (S-VIDEO)

Pin No	Signal
1	Color:0.286Vp-p (NTSC, burst signal),75Ω terminator 0.3Vp-p (PAL/SECAM, burst signal),75Ω terminator
2	Brightness:1.0Vp-p, 75Ω terminator
3	Ground
4	Ground

① ②
③ ④
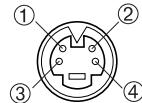
TECHNICAL (continued)

Example of computer signal

Resolution H × V	fH (kHz)	fV (Hz)	Rating	Signal mode	Display mode
720 × 400	37.9	85.0	VESA	TEXT	Zoom in
640 × 480	31.5	59.9	VESA	VGA (60Hz)	Zoom in
640 × 480	35.0	66.7		Mac13"mode	Zoom in
640 × 480	37.9	72.8	VESA	VGA (72Hz)	Zoom in
640 × 480	37.5	75.0	VESA	VGA (75Hz)	Zoom in
640 × 480	43.3	85.0	VESA	VGA (85Hz)	Zoom in
800 × 600	35.2	56.3	VESA	SVGA (56Hz)	
800 × 600	37.9	60.3	VESA	SVGA (60Hz)	
800 × 600	48.1	72.2	VESA	SVGA (72Hz)	
800 × 600	46.9	75.0	VESA	SVGA (75Hz)	
800 × 600	53.7	85.1	VESA	SVGA (85Hz)	
832 × 624	49.7	74.5		Mac16"mode	Zoom out
1024 × 768	48.4	60.0	VESA	XGA (60Hz)	Zoom out
1024 × 768	56.5	70.1	VESA	XGA (70Hz)	Zoom out
1024 × 768	60.0	75.0	VESA	XGA (75Hz)	Zoom out
1024 × 768	68.7	85.0	VESA	XGA (85Hz)	Zoom out
1280 × 1024	64.0	60.0	VESA	SXGA (60Hz)	Zoom out *

NOTE • Some computers may have multiple display screen modes. Use of some of these modes will not be possible with this projector.
• Be sure to check jack type, signal level, timing and resolution before connecting this projector to a computer.
• Depending on the input signal, full-size display may not be possible in some cases. Refer to the number of display pixels above.
* It becomes the simple display of thinning out data.

TECHNICAL (continued)

Initial set signals

The following signals are used for the initial settings.
The signal timing of some computer models may be different. In such case, refer to adjust the
V.POSIT and H.POSIT of the menu.

Back porch b   Front porch d   Back porch b   Front porch d

Display interval c   Display interval c

DATA   DATA

HSYNC   Sync a   VSYNC   Sync a
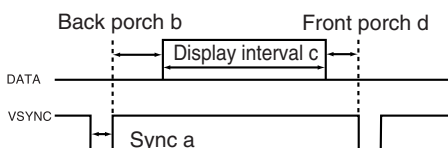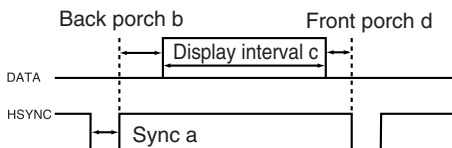
Computer / Signal	Horizontal signal timing (μs)				Computer / Signal	Vertical signal timimg (lines)			
	a	b	c	d		a	b	c	d
TEXT	2.0	3.0	20.3	1.0	TEXT	3	42	400	1
VGA (60Hz)	3.8	1.9	25.4	0.6	VGA (60Hz)	2	33	480	10
Mac 13"mode	2.1	3.2	21.2	2.1	Mac 13"mode	3	39	480	3
VGA (72Hz)	1.3	3.8	20.3	1.0	VGA (72Hz)	3	28	480	9
VGA (75Hz)	2.0	3.8	20.3	0.5	VGA (75Hz)	3	16	480	1
VGA (85Hz)	1.6	2.2	17.8	1.6	VGA (85Hz)	3	25	480	1
SVGA (56Hz)	2.0	3.6	22.2	0.7	SVGA (56Hz)	2	22	600	1
SVGA (60Hz)	3.2	2.2	20.0	1.0	SVGA (60Hz)	4	23	600	1
SVGA (72Hz)	2.4	1.3	16.0	1.1	SVGA (72Hz)	6	23	600	37
SVGA (75Hz)	1.6	3.2	16.2	0.3	SVGA (75Hz)	3	21	600	1
SVGA (85Hz)	1.1	2.7	14.2	0.6	SVGA (85Hz)	3	27	600	1
Mac 16"mode	1.1	3.9	14.5	0.6	Mac 16"mode	3	39	624	1
XGA (60Hz)	2.1	2.5	15.8	0.4	XGA (60Hz)	6	29	768	3
XGA (70Hz)	1.8	1.9	13.7	0.3	XGA (70Hz)	6	29	768	3
XGA (75Hz)	1.2	2.2	13.0	0.2	XGA (75Hz)	3	28	768	1
XGA (85Hz)	1.0	2.2	10.8	0.5	XGA (85Hz)	3	36	768	1
1280×1024 (60Hz)	1.0	2.3	11.9	0.4	1280×1024 (60Hz)	3	38	1024	1

TECHNICAL (continued)

Connection to the Mouse Control

1. PS/2, ADB or Serial Mouse

(1) Turn off the projector and computer, and connect the two units with the appropriate cable. For PS/2 mouse control (for IBM and compatible), use the enclosed mouse cable. For others, consult your dealer.

(2) Disconnect the USB cable from the projector if it is connected. Then turn on the projector.

(3) Turn on the computer.

(4) Start the mouse function. If the mouse has not been started, reboot the computer (soft reboot or reboot buttons). Refer to the descriptions of "DISC PAD" and "MOUSE/RIGHT button" of page 4.

2. USB Mouse

(1) Connect the projector and computer with a suitable commercially available USB cable. Consult your dealer to get the cable, if you need.

(2) Start the mouse function. Refer to the descriptions of "DISC PAD" and "MOUSE/RIGHT button" of page 4.

> **NOTE** • Before connecting, read the instruction manuals of the devices to be connected.
> • In the case of notebook type computers with an internal pointing device, the mouse control function will not work unless the internal pointing device is disabled. In such case, disable the internal pointing device and change the BIOS setting to select an external mouse before the operations described in (1) to (4) above.
> Also, some computers may not have a utility program to operate a mouse.
> Refer to the computer hardware manual for detail.

PS/2 Mouse
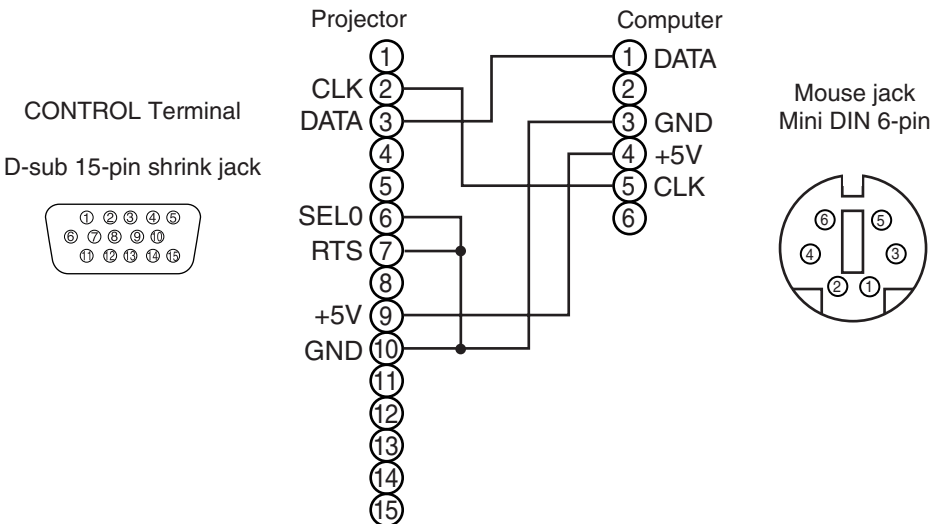
TECHNICAL (continued)

ADB Mouse

Projector   Computer

CONTROL Terminal

D-sub 15-pin shrink jack

Projector		Computer
	1	1 ADB
	2	2 (POWER ON)
DATA	3	3 +5V
	4	4 GND
	5	
	6	
RTS	7	
	8	
+5V	9	
GND	10	
	11	
	12	
	13	
	14	
	15	

Mouse jack
Mini DIN 4-pin

Serial Mouse

Projector   Computer

CONTROL Terminal

D-sub 15-pin shrink jack

Projector		Computer
	1	1 CD
	2	2 RD
	3	3 TD
	4	4 DTR
	5	5 GND
SEL0	6	6 DSR
RTS	7	7 RTS
	8	8 CTS
	9	9 RI
GND	10	
	11	
	12	
	13	
TD	14	
	15	

Mouse jack
D-sub 9-pin

USB Mouse

USB jack
(B type)

Projector   Computer

Projector			Computer
+5V	1	1	+5V
−DATA	2	2	−DATA
+DATA	3	3	+DATA
GND	4	4	GND

USB cable

USB jack
(A type)

1 2 3 4

TECHNICAL (continued)

RS-232C communication

(1) Turn off the projector and computer power supplies and connect with the RS-232C cable.

(2) Turn on the computer power supply and after the computer has started up, turn on the projector power supply.
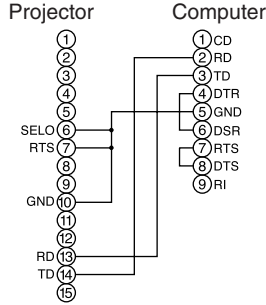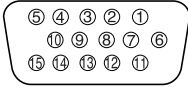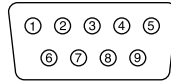
Communications setting

19200bps, 8N1

1 Protocol

Consist of header (7 bytes) + command data (6 bytes).

2 Header

BE + EF + 03 + 06 + 00 + CRC_low + CRC_high
CRC_low : Lower byte of CRC flag for command data.
CRC_high : Upper byte of CRC flag for command data.

3 Command data

Command data chart

byte_0	byte_1	byte_2	byte_3	byte_4	byte_5
Action		Type		Setting code	
low	high	low	high	low	high

Action (byte_0 - 1)

Action	Classification	Content
1	SET	Change setting to desired value.
2	GET	Read projector internal setup value.
4	INCREMENT	Increment setup value by 1.
5	DECREMENT	Decrement setup value by 1.
6	EXECUTE	Run a command.

TECHNICAL - 30

TECHNICAL (continued)

Requesting projector status (Get command)

(1) Send the request code Header + Command data ('02H'+'00H'+ type (2 bytes) +'00H'+'00H') from the computer to the projector.
(2) The projector returns the response code '1DH'+ data (2 bytes) to the computer.

Changing the projector settings (Set command)

(1) Send the setting code Header + Command data ('01H'+'00H'+ type (2 bytes) + setting code (2 bytes)) from the computer to the projector.
(2) The projector changes the setting based on the above setting code.
(3) The projector returns the response code '06H' to the computer.

Using the projector default settings (Reset Command)

(1) The computer sends the default setting code Header + Command data ('06H'+'00H'+ type (2 bytes) +'00H'+'00H') to the projector.
(2) The projector changes the specified setting to the default value.
(3) The projector returns the response code '06H' to the computer.

Increasing the projector setting value (Increment command)

(1) The computer sends the increment code Header + Command data ('04H'+'00H'+ type (2 bytes) +'00H'+'00H') to the projector.
(2) The projector in creases the setting value on the above setting code.
(3) The projector returns the response code '06H' to the computer.

Decreasing the projector setting value (Decrement command)

(1) The computer sends the decrement code Header + Command data ('05H'+'00H'+ type (2 bytes) +'00H' + '00H') to the projector.
(2) The projector decreases the setting value on the above setting code.
(3) The projector returns the response code '06H' to the computer.

When a command sent by the projector cannot be understood by the computer

When the command sent by the projector cannot be understood, the error command '15H' is returned by the computer. Some times, the projector ignores RS-232C commands during other works. If the error command '15H' is returned, please send the same command again.

When data sent by the projector cannot be practice

When the command sent by the projector cannot be practiced, the the error code '1cH' +'xxxxH' is returned.
When the data length is greater than indicated by the data length code, the projector will ignore the excess data code.
Conversely, when the data length is shorter than indicated by the data length code, an error code will be returned to the projector.

NOTE   • Operation cannot be guaranteed when the projector receives an undefined command or data.
• Provide an interval of at least 40ms between the response code and any other code.
• The projector outputs test data when the power supply is switched ON, and when the lamp is lit. Ignore this data.
• Commands are not accepted during warm-up.

TECHNICAL (continued)

Command data chart

Names	Operation type		Header				Command data		
						CRC	Action	Type	Setting code
Blank Color	Set	Red	BE EF	03	06 00	3B D3	01 00	00 30	00 00
		Orange	BE EF	03	06 00	AB D2	01 00	00 30	01 00
		Green	BE EF	03	06 00	5B D2	01 00	00 30	02 00
		Blue	BE EF	03	06 00	CB D3	01 00	00 30	03 00
		Purple	BE EF	03	06 00	FB D1	01 00	00 30	04 00
		White	BE EF	03	06 00	6B D0	01 00	00 30	05 00
		Black	BE EF	03	06 00	9B D0	01 00	00 30	06 00
	Get		BE EF	03	06 00	08 D3	02 00	00 30	00 00
Mirror	Set	Normal	BE EF	03	06 00	C7 D2	01 00	01 30	00 00
		H Inverse	BE EF	03	06 00	57 D3	01 00	01 30	01 00
		V Inverse	BE EF	03	06 00	A7 D3	01 00	01 30	02 00
		H&V Inverse	BE EF	03	06 00	37 D2	01 00	01 30	03 00
	Get		BE EF	03	06 00	F4 D2	02 00	01 30	00 00
Freeze	Set	Normal	BE EF	03	06 00	83 D2	01 00	02 30	00 00
		Freeze	BE EF	03	06 00	13 D3	01 00	02 30	01 00
	Get		BE EF	03	06 00	B0 D2	02 00	02 30	00 00
Menu Color	Set	Red	BE EF	03	06 00	7F D3	01 00	03 30	00 00
		Orange	BE EF	03	06 00	EF D2	01 00	03 30	01 00
		Green	BE EF	03	06 00	1F D2	01 00	03 30	02 00
		Blub	BE EF	03	06 00	8F D3	01 00	03 30	03 00
		Purple	BE EF	03	06 00	BF D1	01 00	03 30	04 00
		Transparent	BE EF	03	06 00	2F D0	01 00	03 30	05 00
		Gray	BE EF	03	06 00	DF D0	01 00	03 30	06 00
	Get		BE EF	03	06 00	4C D3	02 00	03 30	00 00
Startup	Set	Turn ON	BE EF	03	06 00	0B D2	01 00	04 30	00 00
		Turn OFF	BE EF	03	06 00	9B D3	01 00	04 30	01 00
	Get		BE EF	03	06 00	38 D2	02 00	04 30	00 00
Language	Set	English	BE EF	03	06 00	F7 D3	01 00	05 30	00 00
		Français	BE EF	03	06 00	67 D2	01 00	05 30	01 00
		Deutsch	BE EF	03	06 00	97 D2	01 00	05 30	02 00
		Español	BE EF	03	06 00	07 D3	01 00	05 30	03 00
		Italiano	BE EF	03	06 00	37 D1	01 00	05 30	04 00
		Norsk	BE EF	03	06 00	A7 D0	01 00	05 30	05 00
		Nederlands	BE EF	03	06 00	57 D0	01 00	05 30	06 00
		Português	BE EF	03	06 00	C7 D1	01 00	05 30	07 00
		Japanese	BE EF	03	06 00	37 D4	01 00	05 30	08 00
	Get		BE EF	03	06 00	C4 D3	02 00	05 30	00 00

TECHNICAL (continued)

Command data chart

Names	Operation type		Header			Command data		
					CRC	Action	Type	Setting code
Magnify	Get		BE EF	03 06 00	7C D2	02 00	07 30	00 00
	Increment		BE EF	03 06 00	1A D2	04 00	07 30	00 00
	Decrement		BE EF	03 06 00	CB D3	05 00	07 30	00 00
Timer	Get		BE EF	03 06 00	08 86	02 00	10 31	00 00
	Increment		BE EF	03 06 00	CE 86	04 00	10 31	00 00
	Decrement		BE EF	03 06 00	BF 87	05 00	10 31	00 00
Auto off	Get		BE EF	03 06 00	08 86	02 00	10 31	00 00
	Increment		BE EF	03 06 00	6E 86	04 00	10 31	00 00
	Decrement		BE EF	03 06 00	BF 87	05 00	10 31	00 00
Brightness Reset	Execute		BE EF	03 06 00	58 D3	06 00	00 70	00 00
Contrast Reset	Execute		BE EF	03 06 00	A4 D2	06 00	01 70	00 00
V.Position Reset	Execute		BE EF	03 06 00	E0 D2	06 00	02 70	00 00
H.Position Reset	Execute		BE EF	03 06 00	IC D3	06 00	03 70	00 00
H.Size Reset	Execute		BE EF	03 06 00	68 D2	06 00	04 70	00 00
Color Balance R Reset	Execute		BE EF	03 06 00	94 D3	06 00	05 70	00 00
Color Balance B Reset	Execute		BE EF	03 06 00	D0 D3	06 00	06 70	00 00
Aspect Reset	Execute		BE EF	03 06 00	2C D2	06 00	07 70	00 00
Video Format Reset	Execute		BE EF	03 06 00	38 D1	06 00	08 70	00 00
Sharpness Reset	Execute		BE EF	03 06 00	C4 D0	06 00	09 70	00 00
Color Reset	Execute		BE EF	03 06 00	80 D0	06 00	0A 70	00 00
Tint Reset	Execute		BE EF	03 06 00	7C D1	06 00	0B 70	00 00
Keystone Reset	Execute		BE EF	03 06 00	08 D0	06 00	0C 70	00 00
Mirror Reset	Execute		BE EF	03 06 00	F4 D1	06 00	0D 70	00 00
Blank Color Reset	Execute		BE EF	03 06 00	B0 D1	06 00	0E 70	00 00
Startup Reset	Execute		BE EF	03 06 00	4C D0	06 00	0F 70	00 00
Auto	Execute		BE EF	03 06 00	91 D0	06 00	0A 20	00 00
Blank on/off	Set	off	BE EF	03 06 00	FB D8	01 00	20 30	00 00
		on	BE EF	03 06 00	6B D9	01 00	20 30	01 00
	Get		BE EF	03 06 00	C8 D8	02 00	20 30	00 00
Timer on/off	Set	off	BE EF	03 06 00	07 D9	01 00	21 30	00 00
		on	BE EF	03 06 00	97 D8	01 00	21 30	01 00
	Get		BE EF	03 06 00	34 D9	02 00	21 30	00 00
Error Status	Get		BE EF	03 06 00	D9 D8	02 00	20 60	00 00

(Example of Return)

00 00	01 00	02 00	03 00
(Normal)	(Cover-error)	(Fan-error)	(Lamp-error)

04 00	05 00	06 00
(Temp-error)	(Air flow-error)	(Lamp-Time-over)

TECHNICAL

TECHNICAL (continued)

Command data chart

Names	Operation type		Header				CRC	Command data		
								Action	Type	Setting code
Power	Set	OFF	BE EF	03	06 00		2A D3	01 00	00 60	00 00
		ON	BE EF	03	06 00		BA D2	01 00	00 60	01 00
	Get		BE EF	03	06 00		19 D3	02 00	00 60	00 00
Input Source	Set	RGB1	BE EF	03	06 00		FE D2	01 00	00 20	00 00
		RGB2	BE EF	03	06 00		3E D0	01 00	00 20	04 00
		Video	BE EF	03	06 00		6E D3	01 00	00 20	01 00
		SVideo	BE EF	03	06 00		9E D3	01 00	00 20	02 00
	Get		BE EF	03	06 00		CD D2	02 00	00 20	00 00
Volume	Get		BE EF	03	06 00		31 D3	02 00	01 20	00 00
	Increment		BE EF	03	06 00		57 D3	04 00	01 20	00 00
	Decrement		BE EF	03	06 00		86 D2	05 00	01 20	00 00
Mute	Set	Normal	BE EF	03	06 00		46 D3	01 00	02 20	00 00
		Mute	BE EF	03	06 00		D6 D2	01 00	02 20	01 00
	Get		BE EF	03	06 00		75 D3	02 00	02 20	00 00
Brightness	Get		BE EF	03	06 00		89 D2	02 00	03 20	00 00
	Increment		BE EF	03	06 00		EF D2	04 00	03 20	00 00
	Decrement		BE EF	03	06 00		3E D3	05 00	03 20	00 00
Contrast	Get		BE EF	03	06 00		FD D3	02 00	04 20	00 00
	Increment		BE EF	03	06 00		9B D3	04 00	04 20	00 00
	Decrement		BE EF	03	06 00		4A D2	05 00	04 20	00 00
Color Balance R	Get		BE EF	03	06 00		01 D2	02 00	05 20	00 00
	Increment		BE EF	03	06 00		67 D2	04 00	05 20	00 00
	Decrement		BE EF	03	06 00		B6 D3	05 00	05 20	00 00
Color Balance B	Get		BE EF	03	06 00		45 D2	02 00	06 20	00 00
	Increment		BE EF	03	06 00		23 D2	04 00	06 20	00 00
	Decrement		BE EF	03	06 00		F2 D3	05 00	06 20	00 00
Keystone	Get		BE EF	03	06 00		B9 D3	02 00	07 20	00 00
	Increment		BE EF	03	06 00		DF D3	04 00	07 20	00 00
	Decrement		BE EF	03	06 00		0E D2	05 00	07 20	00 00
Aspect	Set	4:3	BE EF	03	06 00		9E D0	01 00	08 20	00 00
		16:9	BE EF	03	06 00		0E D1	01 00	08 20	01 00
		Small	BE EF	03	06 00		FE D1	01 00	08 20	02 00
	Get		BE EF	03	06 00		AD D0	02 00	08 20	00 00
Display Position at 16 : 9 or Small	Set	Default	BE EF	03	06 00		62 D1	01 00	09 20	00 00
		Bottom	BE EF	03	06 00		F2 D0	01 00	09 20	01 00
		Top	BE EF	03	06 00		02 D0	01 00	09 20	02 00
	Get		BE EF	03	06 00		51 D1	02 00	09 20	00 00

TECHNICAL (continued)

Command data chart

Names	Operation type		Header			CRC	Command data		
							Action	Type	Setting code
V.Position	Get		BE EF	03	06 00	0D 83	02 00	00 21	00 00
	Increment		BE EF	03	06 00	6B 83	04 00	00 21	00 00
	Decrement		BE EF	03	06 00	BA 82	05 00	00 21	00 00
H.Position	Get		BE EF	03	06 00	F1 82	02 00	01 21	00 00
	Increment		BE EF	03	06 00	97 82	04 00	01 21	00 00
	Decrement		BE EF	03	06 00	46 83	05 00	01 21	00 00
H.Size	Get		BE EF	03	06 00	B5 82	02 00	02 21	00 00
	Increment		BE EF	03	06 00	D3 82	04 00	02 21	00 00
	Decrement		BE EF	03	06 00	02 83	05 00	02 21	00 00
H.Phase	Get		BE EF	03	06 00	49 83	02 00	03 21	00 00
	Increment		BE EF	03	06 00	2F 83	04 00	03 21	00 00
	Decrement		BE EF	03	06 00	FE 82	05 00	03 21	00 00
Sharpness	Get		BE EF	03	06 00	F1 72	02 00	01 22	00 00
	Increment		BE EF	03	06 00	97 72	04 00	01 22	00 00
	Decrement		BE EF	03	06 00	46 73	05 00	01 22	00 00
Color	Get		BE EF	03	06 00	B5 72	02 00	02 22	00 00
	Increment		BE EF	03	06 00	D3 72	04 00	02 22	00 00
	Decrement		BE EF	03	06 00	02 73	05 00	02 22	00 00
Tint	Get		BE EF	03	06 00	49 73	02 00	03 22	00 00
	Increment		BE EF	03	06 00	2F 73	04 00	03 22	00 00
	Decrement		BE EF	03	06 00	FE 72	05 00	03 22	00 00
Video Format	Set	Auto	BE EF	03	06 00	9E 75	01 00	00 22	0A 00
		NTSC	BE EF	03	06 00	FE 71	01 00	00 22	04 00
		PAL	BE EF	03	06 00	6E 70	01 00	00 22	05 00
		SECAM	BE EF	03	06 00	6E 75	01 00	00 22	09 00
		NTSC 4.43	BE EF	03	06 00	5E 72	01 00	00 22	02 00
		M-PAL	BE EF	03	06 00	FE 74	01 00	00 22	08 00
		N-PAL	BE EF	03	06 00	0E 71	01 00	00 22	07 00
	Get		BE EF	03	06 00	0D 73	02 00	00 22	00 00

Intended Use

Before operating this machine, please read this entire manual thoroughly. The 3M™ Multimedia Projectors are designed, built, and tested for use indoors, using 3M lamps, 3M ceiling mount hardware, and nominal local voltages.

The use of other replacement lamps, outdoor operation, or different voltages has not been tested and could damage the projector peripheral equipment and/or create a potentially unsafe operating condition.

3M Multimedia projectors and Wall Display Systems are designed to operate in a normal office environment.
• 16° to 29°C (60° to 85° F)
• 10- 80 %RH (without condensation)
• 0- 1828 m (0-6000 feet) above sea level

The ambient operating environment should be free of airborne smoke, grease, oil and other contaminates that can affect the operation or performance of the projector.

Use of this product in adverse conditions will void the product warranty.

Let us help you make the most of your next presentation. We offer everything from presentation supplies to tips for better meetings. And we're the only transparency manufacturer that offers a recycling program for your used transparencies. For late-breaking news, handy reference and free product samples, call us toll-free in the continental United States and Canada, 24 hours a day, or visit our Internet Website.

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