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QUICK SET UP

SVGA DLP PROJECTOR

ENGLISH

SETTING UP

POWER OFF (1)

Switch off all equipment before connecting.

COMPUTER (2)

Connect the computer to the COMPUTER input using the SVGA cable and applicable computer and monitor adapters if needed.

VIDEO (3)

Connect video, using the AV cable, to the VIDEO and SOUND inputs. Use a SCART adapter if necessary.

MOUSE (4)

Connect the mouse cable to the MOUSE connector of the projector. Use an applicable mouse adapter at the computer end.

MAINS (5)

Connect the power cords to the various equipment.

POWER ON (6)

First switch on the projector, then the source equipment to facilitate correct recognition of the projector as a peripheral unit to the computer.

USE

ZOOM , FOCUS AND POSITION

Zoom the lens for image size desired, focus the lens for an optically sharp image and tilt the unit using the integral adjustable feet to position the image on screen.

WIDTH

Invoke the menu and select SETUP, then FREQUENCY. Use a patterned background and adjust until the pattern is stable all over the screen.

STABILITY

In SETUP, select TUNE to stabilize the image.

SCALING

If desired, press the SCALE button to fit the image to the full screen.

POSITION

In SETUP, select POSITION to fit the image within the screen borders.

CONTRAST AND BRIGHTNESS

Adjust CONTRAST and BRIGHTNESS as preferred.

COLOR , TINT AND SHARPNESS

In the menu, select PICTURE, then adjust COLOR, TINT (NTSC only) and SHARPNESS as desired.

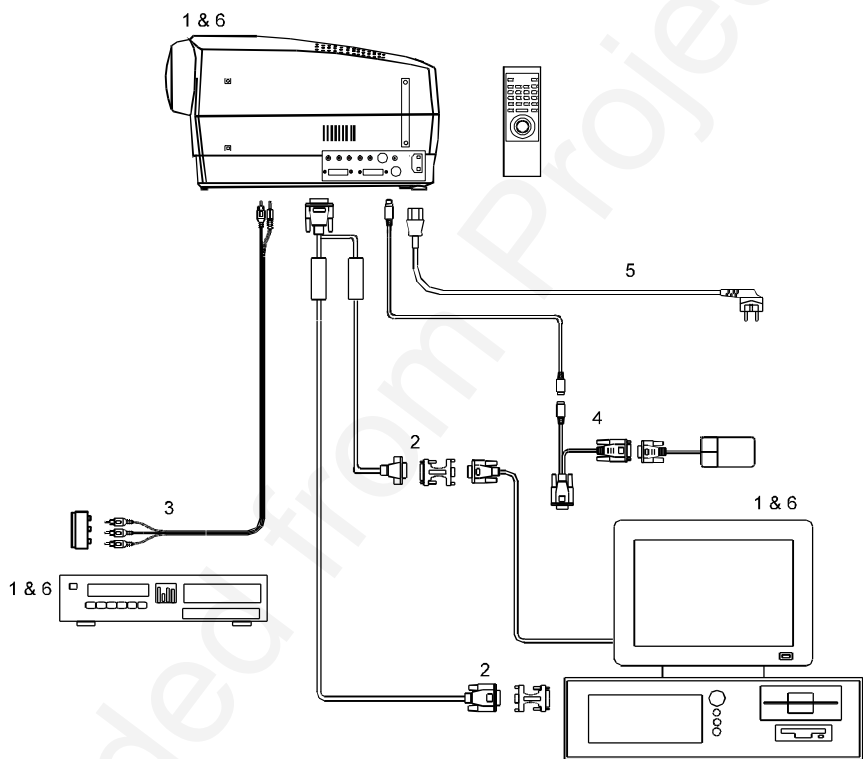


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The information contained in this User Guide is preliminary, and the products described herein are subjected to change without prior notice.

1 SYMBOL DESCRIPTIONS



DANGEROUS VOLTAGE

This symbol indicates the presence of high voltages inside the product. High voltages may constitute electric shock and may be lethal.



WARNING

This symbol alerts the user of important operating, maintenance (servicing) and safety-related instructions.



HOT

This symbol indicates hot surfaces, i.e. fan ventilation grill.



NOTE

This symbol is used to highlight specific information for the user.

2 SAFETY INSTRUCTIONS

The following list of instructions is provided to ensure safe and risk free use and operation of the projector. Failing to read and follow these instructions may void any warranties and may also cause personal injury and material damage.

1. **READ INSTRUCTIONS.** All safety and operating instructions should be read before the projector is operated.
2. **RETAIN INSTRUCTIONS.** The safety and operating instructions should be retained for future reference.
3. **HEED WARNINGS.** All warnings on the projector and in the User Guide should be adhered to. If ignored, use of this projector may cause death, injury or material damage.
4. **CABLES AND CORDS.** Use only original cables and cords as supplied with the projector or as optional accessories. Using third party cables that may look identical may lead to material damage and personal injury, as the internal wiring in the cables may be different.
5. **LAMP LIFE. See the Technical Data section for lamp life time.** The high pressure lamp may explode if improperly used. When the lamp life time is exceeded, the projector will fail to turn on the lamp, **and a red indicator (ALARM) on the projector will light up.** Change lamp with an identical spare part as described elsewhere in this User Guide.
6. **LAMP BEAM.** Do not look directly into the projector or lens when operating the projector. The lamp emits rays of strong light which may cause eye injury and/or sunburns.
7. **WATER AND MOISTURE.** The projector is designed for indoor use only and should not be used near water and moisture.
8. **CARTS AND STANDS.** Place the projector on a stable, hard surface in a manner that does not obstruct ventilation ports and openings in the projector housing. Unstable carts, stands, tables and other arrangements may cause the projector to fall, which may cause serious injury to people and/or damaging the projector and other material.

9. **CEILING MOUNTING.** When mounting the projector in the ceiling, always ensure that all screws, bolts and other fixing devices of the ceiling mount hardware are securely in place and tighten. Use only well dimensioned ceiling mounts specified for this projector and from a renowned supplier. Connect the projector to a switched mains power supply, and switch off when not in use, for maximum protection against fire. Switching off using the remote control only puts the projector in a standby (sleep) mode with live internal voltages.
10. **VENTILATION.** Slots and openings in the projector housing are provided for ventilation. Periodically vacuum the air inlets (from the outside of the ventilation grilles) as needed. To ensure reliable operation of the projector and protection from overheating, do not block or cover slots or openings in any way. Do not insert any foreign objects or instruments into the slots and openings, as this may block the ventilation fans. Do not place the projector on a soft surface (carpet etc.). Never install the projector in an enclosed unit unless it is properly ventilated by a separate cooling system.
11. **HEAT.** The projector should be situated away from heat sources such as sunlight, radiators, stoves or other strong heat sources. Do not operate the projector outside the maximum temperature specifications.
12. **OBJECT OR LIQUID ENTRY.** Care should be taken so that objects are not put or do not fall into the projector housing. Be careful not to spill liquids that may flow into the projector interior. Do not insert metal or flammable objects into the projector.
13. **POWER SOURCES.** The projector must only be connected to proper electrical voltage as marked on the projector body, on the label at the power inlet. The projector should be connected to the electrical outlet using a power cord compatible with the local electrical voltage. Never operate the projector outside the electrical voltage specification. If you are unsure about the type of electrical service at your location, please consult your dealer or local power company.
14. **POWER CORD PROTECTION.** Power cords should be routed so that they are not likely to be walked on, pinched or unduly bent by items placed upon or against them. Pay particular attention to cords and cables at the point where they exit from the projector.

15. **GROUNDING OR POLARIZATION.** Precautions should be taken so that grounding or polarization of the projector is maintained. Do not use a three prong to a two prong adapter.
16. **ELECTRICAL SHOCK.** To reduce the risk of electrical shock, do not open the unit. Refer all servicing to authorized personnel only.
17. **CLEANING.** The projector should be cleaned only as recommended, see the Maintenance section. Disconnect the power cord from the power outlet before cleaning. Do not use liquid, spray or aerosol cleaners.
18. **NON-USE PERIODS.** The power cord of the projector should be unplugged from the outlet when left unused for a long period of time.
19. **LAMP REPLACEMENT.** Replace projection lamp with same type and rating as shown in the Technical Data section. Allow unit to cool down before replacement.
20. **SERVICING.** The user should not attempt to perform unusual or technical service to the projector. Do not open the unit, except for the lamp replacement door. Refer all servicing to authorized personnel only. Replace damaged cords or cables with original replacement parts only.
21. **DAMAGE REQUIRING SERVICE.** The projector should be serviced by authorized personnel when:
 - objects have fallen, or liquid spilled, into the projector
 - the projector has been exposed to water or moisture
 - the projector does not appear to operate normally (fan not working, noise, smell, smoke, heat etc.)
 - the projector has been dropped or damaged
22. **ABNORMALITY.** If you detect any abnormal smell or smoke, immediately turn off the power switch. Disconnect the power plug from the inlet to prevent fire or electrical shock.
23. **LIFTING AND MOVING.** Let the projector cool down before moving. Disconnect the power cord and all other cables. Carry the unit by the handle provided. The projector should preferably be transported in a suitable case.

3 INTRODUCTION

Thank you for purchasing this state of the art SVGA full color projector!

For long and lasting, safe and secure operation, please read this user guide, and follow the instructions given. Failing to do so may cause product failure that could void any warranties given, and in some cases be harmful and dangerous to people.

For the experienced user, a quick set-up guide is included at the beginning of this manual.

Please retain this user guide for future reference.



All references to video/video interface/video connections made in this document, only applies to the multimedia version of the SVGA DLP Projector.

4 MAIN FEATURES

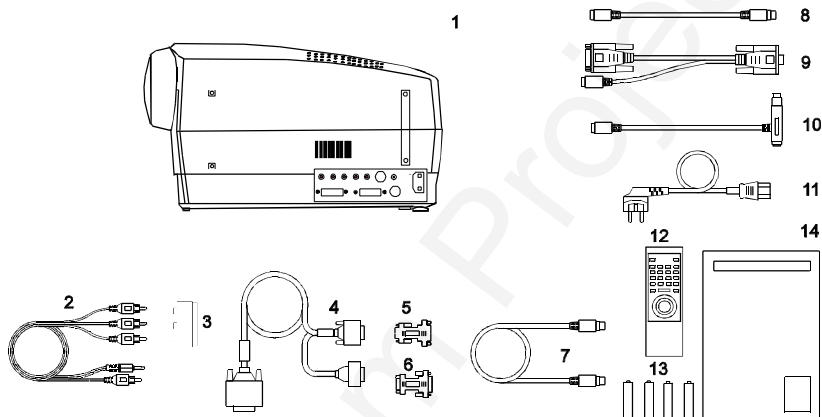
The unit employs the following important features that in total provide you with a highly functional and powerful projector:

- **High brightness image**
- **Compact, light and portable**
- **User replaceable Metal Halide lamp**
- **True SVGA 800 x 600 resolution**
- **640 x 480 to 1152 x 870 image compatibility**
- **16.7 million colors**
- **Stereo sound**
- **Infrared remote control with trackball mouse**
- **Motorized Zoom and Focus lens**
- **Comprehensive menu system**
- **On screen display (OSD)**
- **User and source settings memorized**
- **Low noise cooling system**
- **False light blocking**

5 SUPPLIED MATERIAL

5.1 STANDARD MATERIAL

A complete set includes the following components :



- | | |
|-------------------------|---------------------------------------|
| 1. LCD projector* | 8. Mouse Adapter PS/2 |
| 2. A/V cable** | 9. PC Adapter Y-Split (serial, RS232) |
| 3. SCART Adapter** | 10. MAC Mouse Adapter |
| 4. SVGA Y-Split Cable | 11. Power Cord |
| 5. MAC computer adapter | 12. Remote Control |
| 6. MAC monitor adapter | 13. Batteries |
| 7. Mouse Cable | 14. User Guide |

* Soft Case (not shown in drawing)

** Multimedia version only

5.2 OPTIONAL MATERIAL

Optional cables, adapters and accessories are available. Consult your dealer for further information.

6 MAKING THE CONNECTIONS

The projector may be connected in various ways to different equipment. The following sections describe in detail how to connect to these systems.

See the illustration on the rear of the quick set-up card on how the various system parts connect together.

Be aware of static electricity that may build up in the dry season and when operating on synthetic carpets. Discharge any static electricity by touching a metallic surface before you start.

Place the projector on a table at a suitable distance to the projection screen. Select a screen with good reflectivity and avoid direct sunlight shining in. Place the projector so that the image is visible to the whole audience, and so that the unit does not obstruct the view. The projector is supplied with long cables for high flexibility in placement.

Various cables are supplied or optionally available to connect to different sources. Follow the list below in numerical order for a trouble-free set-up!

1. **SWITCH OFF.** Switch off all equipment before making all the connections.
2. **COMPUTER GRAPHICS ADAPTER.** Computer graphics adapters use different connectors depending on the actual computer system in use. Connection to the projector is made through a basic SVGA cable and appropriate adapters.
 - **PC.** Use the SVGA cable directly to connect the graphics port of the PC to the COMPUTER connector on the projector. If needed, connect your monitor cable to the free branch on the SVGA cable.
 - **MAC.** Use the MAC adapters, as marked, on the computer end of the SVGA cable to adapt to the graphics-port connector and monitor connector on the MAC.
 - **NEC.** Use the optional NEC adapters, as marked, on the computer end of the SVGA cable to adapt to the graphics-port connector and monitor connector on the NEC.

3. **VIDEO.** Video connects through different interfaces, depending on the type of equipment and quality level of the video signal.

- **COMPOSITE VIDEO.** This is the most frequently used video connection. Use the AV cable (supplied) to connect between the yellow phono (also known as 'RCA' or 'cinch') connector on the video source and the yellow VIDEO input connector on the projector.

The AV cable also provides connection to stereo sound. The stereo jack connects to the AUDIO input connector on the projector and the red and white phono connectors on the video source.

- **SUPER VIDEO.** Use the optionally available S-VIDEO cable to connect to the video source. S-VIDEO may give a better quality image than composite video.

Use the AV cable for sound connection as described above.

- **SCART ADAPTER.** Some video sources are provided with the SCART adapter for video and audio output. The SCART adapter (supplied) provides connection to the AV cable.
 - **RGB VIDEO.** Some high end video sources have component red, green and blue video outputs for a best possible image. Some systems use BNC type connectors, other systems use the older CGA or the VGA connector. Contact your dealer for an adapter that is suitable for your source. Use the AV cable for stereo sound connection.
4. **MOUSE.** To enable mouse control from the remote control, a connection is made using a mouse cable and various adapters. Connect the cable directly to the MOUSE connector on the projector. Connect the appropriate adapter to the free end of the mouse cable at the computer end as described below.
- **SERIAL (RS 232).** Use the serial PC adapter with a Y-split branch for the local computer mouse. The serial adapter is fitted with a 9 pin DSUB connector. Use an extra 9 to 25 pin adapter (available from your dealer) if your computer has a 25 pin serial connector. Connect your computer mouse to the free branch of the adapter if desired. With some computers, the

branched adapter may not work. For this purpose, an optional straight serial adapter is available.

- **PS/2.** Use the PS/2 adapter that connects directly to your computer mouse port. Running the computer mouse in parallel is not possible, unless your computer itself has provision for two mice simultaneously. You may consider using the above serial adapter and run your mouse on the serial port instead to be able to run your local mouse in parallel. This will require a different mouse driver setting. Please consult your computer documentation or local dealer for details.
 - **MAC.** Use the MAC mouse adapter to connect to the mouse port on your MAC computer.
5. **MAINS POWER.** Connect the mains cord to the projector and all other equipment in the set-up.
 6. **SWITCH ON.** Switch on the projector first, then the computer and video sources. It is important to switch the projector on first in order for correct detection of the projector as a display and mouse peripheral device to the computer.

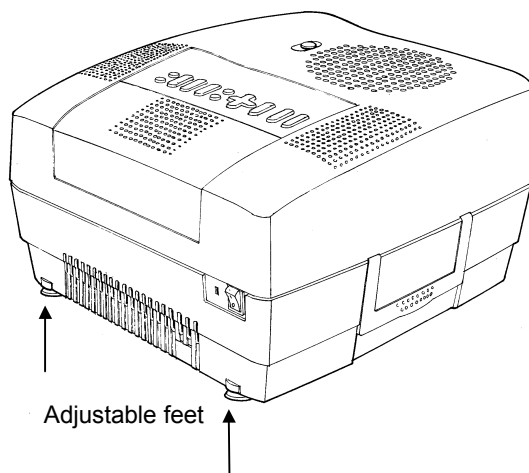
7 IMAGE ADJUSTMENTS

This section will aid in adjusting a stable, flicker-free image for best viewing results.

Use the remote control or the projector keypad to adjust settings, either directly or through the menu system.

The following list aids in a trouble free set-up of the projector. Try using a patterned background (tiles, checkerboard pattern etc) when adjusting the image.

1. **ZOOM, FOCUS AND POSITION IMAGE.** The projection lens has a motorized zoom and focus adjustment. The controls are directly accessible on the projector keyboard or on the remote control by invoking the menu system, SET-UP, ZOOM or FOCUS and press ENTER. Place the projector at a suitable distance to the projection screen, alternatively zoom the image, to obtain the desired screen size. (See the *Technical Data* section for max and min projection distances.) Focus the image and observe that the picture elements (pixels) become sharp on screen. The projector has two adjustable feet so that the image can be shifted to a desired height on the wall. Tilt the projector body in the desired position and press the foot-release buttons. If necessary, fine adjust the height by screwing the feet either direction.



2. **SET FREQUENCY.** The frequency controls the width of the image. A wrong frequency setting can be seen as equally spaced, vertical stripes or irregularities in the pattern displayed. Invoke the menu system, SET-UP, FREQUENCY and press ENTER. Adjust the value up or down using the trackball or keyboard cursor controls, observing that the amount of vertical stripes reduces, until the distortion is gone. You may still have an unstable image, please see the next section.
3. **TUNE.** Tune the image for a stable projection. In the menu, select SET-UP, TUNE and press ENTER. Adjust stability using the trackball.
4. **SCALE & PAN .** Scale the image as desired if you are viewing a lower (VGA) or higher (XGA) resolution image. Scaling will fill the viewable area by enlarging a lower resolution or compressing a higher resolution image. If you do not scale a higher resolution image, you may choose to PAN around instead in order to view parts of the image.
5. **POSITION.** Position the image correctly by accessing SET-UP, POSITION, then press ENTER and adjust position with the trackball or keyboard cursor controls
6. **CONTRAST and BRIGHTNESS.** Contrast and brightness may be adjusted according to your personal taste, the image and the viewing conditions. The controls are directly accessible on the remote control and on the projector keyboard.
7. **COLOR, SHARPNESS and TINT.** These adjustments may be made when viewing video images from the VIDEO or S-VIDEO inputs. These controls do not apply to computer images.

Set-up should be done once with the source(s) you are using most frequently. Allow some minutes for the unit to warm up before adjusting the settings. Most settings will be memorized individually for each source for future use.

8 USING THE PROJECTOR

The projector has a set of features and functions you should familiarize with in order to get the most out of using the unit.

Further information is provided in the *Your Projector in Detail* section.

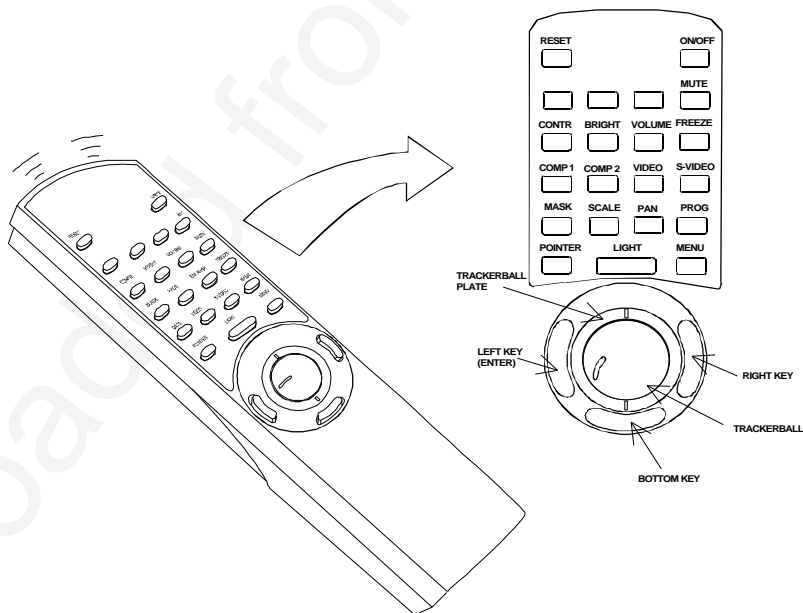
8.1 REMOTE CONTROL

The remote control is used to adjust the projector for the best possible image, either directly or through the menu system. It is also used during presentations for computer mouse control and with special presentation tools.



The remote control may be pointed directly at the projector front or rear, where the receivers are situated, or indirectly by pointing at the projection screen. When pointing at the screen, point at an angle that reflects the beam towards the projector.

The trackball is by default controlling the computer mouse (if the mouse cable is connected properly). With some functions, like POINTER, MASK and in the menu system, the mouse control is disabled.



In the menu system, the trackball is used for navigation between the different alternatives, and when a function is selected, the trackball is used for adjustment of that function.

The following table describes each key in detail. Some functions are memorized, while other functions are only momentary.

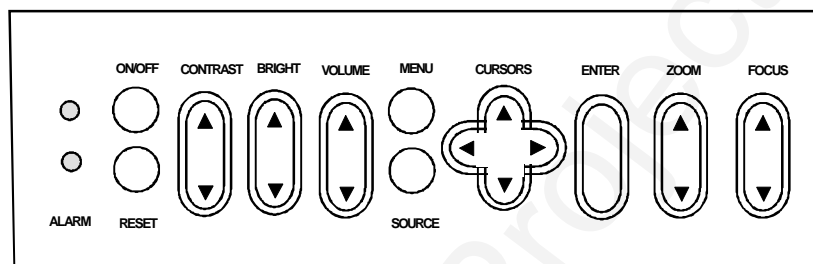
The MEM column indicates whether the function setting is memorized for the source apparatus for future use.

KEY	FUNCTION	MEM
CONTR	Contrast is the ratio between light and dark colors. Low contrast is recommended for long-term viewing, while high contrast is used to enhance details.	Yes
BRIGHT	Brightness (whiteness) of the image can be altered to suit local lighting conditions. Usually a bright, low contrast image is preferred.	Yes
VOLUME	Volume of the audio output can be altered to suit local conditions.	Yes
ON/OFF	Turns the projector into standby mode. Switches the projection lamp off, but leaves power on to the rest of the projector.	-
RESET	Defaults to the standard settings for the active mode.	-
COMP 1	Selects the computer 1 as the active source.	-
COMP 2	Selects the computer 2 as the active source.	-
VIDEO	Selects video as the active source.	-
S-VIDEO	Selects S-video as the active source.	-
MASK	Applies a mask to the image, which can be moved up and down using the trackball.	-
PROG	This key may be programmed to any one of the menu controls.	Yes
MUTE	Switches the sound on/off.	No
FREEZE	Holds the image projected on the screen. This feature can be used to hide actions on the computer that the audience need not see, such as changes between software packages, or for returning the audience's attention back to the presenter!	No

KEY	FUNCTION	MEM
POINTER	Applies a trackball controlled pointer to the screen.	No
SCALE	Selects between direct 1:1 mapping or scaling of images.	No
PAN	Allows panning within oversized images using the trackball.	-
TRACKBALL	The trackball is mainly used to control the mouse pointer (if the mouse cable is attached properly). When SCALE, MASK, PAN or MENU is invoked, mouse control is disabled, as the trackball is used to control these functions instead. Trackball sensitivity, except for the mouse, is set under OPTIONS in the menu system. Mouse sensitivity is set at your computer as with the standard mouse.	-
RIGHT	Emulates the right mouse key.	-
DRAG	This emulates the 'click-and-hold' function of the desktop mouse. Use DRAG instead of RIGHT key when connected to a Macintosh computer.	-
LEFT/ ENTER	Emulates the left mouse key. Once the menu is accessed selection are confirmed using ENTER.	-

8.2 PROJECTOR KEYBOARD

The keypad on the projector gives access to all controls, either directly or through the menu system.



The following table describes each key in detail. For details on CONTR, BRIGHT, VOLUME & MENU see the remote control section above.

KEY	FUNCTION	MEM
ZOOM	Zoom is used to obtain the desired screen size of the image.	-
FOCUS	Focus is adjusted until the image (pixels) becomes sharp on the screen.	-
SOURCE	Toggles between computer 1, computer 2, S-video and video as the active source	-
CURSOR KEYS	The cursor keys are used to navigate in the menu system	-
ENTER	Emulates the left mouse key. Once the menu is accessed selection are confirmed using ENTER.	-

INDICATOR	FUNCTION
ON/OFF	<ul style="list-style-type: none">• NO LIGHT indicates that the unit is completely switched off by the mains switch• GREEN indicates that the unit is operational• YELLOW indicates that the unit is in standby mode (switched off using the remote control or the keypad)
ALARM	<ul style="list-style-type: none">• RED indicates lamp lifetime overdue.

8.3 THE MENU SYSTEM

The menu system is designed to gain access to functions not often used, as opposed to frequently used features that are directly available through the remote control and the projector keypad.

Press the MENU key to invoke or exit from the menu system. When the menu is active, the trackball is used to navigate between options (and therefore is not available for mouse control etc. at the same time). The ENTER (left) key is used to activate or deactivate a function.

The PROG key may be assigned to any of the menu functions.

Toggle functions (like OSD, REAR etc) are tagged when active and untagged when not active.

Increase/decrease functions (like TUNE and FREQUENCY etc) are adjusted using the trackball or keyboard cursor controls. The OSD field (in the lower left corner of the screen) indicates the actual settings.

The menu system is toggled on and off with the MENU key. The MENU is also switched off automatically after one minute of inactivity.

Most settings are memorized unless otherwise noted.

The main menu selections SETUP, PICTURE, SOUND, OPTIONS and HELP are explained in detail below.

Features available with some sources only are shown in *Italic* characters, while generally available functions are in normal case.

8.3.1 THE SET-UP MENU SELECTIONS

ZOOM is used to obtain the desired screen size of the image at a given projection distance.

FOCUS is adjusted until the image (pixels) becomes sharp on the screen.

TUNE is used to stabilize the image. An untuned image can be seen as sideways instability or "swimming". The TUNE function has no effect in VIDEO mode.

FREQUENCY is provided in order to image width. Generally, an incorrect frequency setting can be observed as an image too wide or too narrow, combined with vertical, unstable bands.

POSITION. Due to minor variations in graphic cards, the horizontal and vertical position may need adjustment. Select POSITION, then press LEFT and use the cursor keys.

REAR inverts the image for use in rear projection arrangements i.e. projection from the back of a screen.

CEILING switches between an upright and an upside-down projection by flipping the image vertically.

FACTORY RESET. This function resumes factory settings of all parameters.

8.3.2 THE PICTURE SELECTIONS (VIDEO ONLY)

TINT controls the hue of an image, and is only active in NTSC-video.

SHARPNESS controls the sharpness of the lines in an image, and is only active for video sources.

COLOR adjusts color saturation. Only applicable when video is connected.

GAMMA toggles the gamma correction on and off for video sources. Only active for video sources.

8.3.3 THE SOUND SELECTIONS

TREBLE controls the higher sound range.

BASS controls the lower sound range .

BALANCE controls the sound balance between the two stereo speakers.

MONO must be selected if the audio source is not stereo, in order to get sound in both speakers.

8.3.4 THE OPTIONS SELECTIONS

HIDE OSD switches the on-screen echoing of controls on and off. This setting only affects the direct control operations, not the menu system. This setting is not memorized.

SOURCE SEARCH is a toggle function that controls whether the projector shall automatically search for an active source or not. Manual source selection is maintained between active sources. Source priority is COMPUTER 1, COMPUTER 2, S-VIDEO and then VIDEO. If SOURCE SEARCH is off (not tagged), the manually selected source is maintained, regardless of signal presence. If SOURCE SEARCH is active, the projector will switch to the next priority active source, regardless of manual selection.

TRACKBALL SENSITIVITY. Controls the response of the remote control trackball in the menu system. (It does not affect the response of the computer mouse. Please adjust mouse sensitivity on the computer). FAST, MEDIUM and SLOW are available options.

LANGUAGE. A selection of languages is available for the menu options, including English, German, French, Italian, Spanish, Norwegian and Japanese. Other languages may apply.

POINTER selects the pointer appearance. Options include BALL, ARROW and CROSS. Other shapes may apply.

MASK selects whether the mask is applied downwards or upwards.

SERVICE is used for resetting the lamp timer. This is done when the lamp is changed.

8.3.5 THE HELP SELECTIONS

SOURCE INFO provides a status list of parameters relating to the source selected.

ABOUT provides system information about the projector. It shows TOTAL TIME that the projector has been used since it was manufactured, LAMP LIFE TIME USED and SOFTWARE REVISION.

9 CEILING MOUNTING

The projector is prepared for ceiling mounting. As opposed to desktop use (most tables are approx. 80 cm tall, are flat and have a hard surface finish), ceilings vary in height and material. Also considerations must be made with respect to signal and power wiring.

9.1 SELECTING A MOUNT

Various mounting systems are available from different sources. Contact your dealer for further details or consult vendor catalogs.



Be sure that the vendor has tested the mount with this specific projector for operational safety.

Check that the mounting brackets fit the integral M4 screw mounts (threaded inserts) of the projector, and that the ventilation slots are not blocked.



Avoid using screws that penetrates more than 5 mm into the screw mounts, and do not overtighten the screws as this may cause damage to internal parts of the projector.

9.2 MOUNTING IN THE CEILING



An improperly mounted projector is a potential danger to people and equipment. A projector and mount falling down may cause personal injury and material damage. Such damage caused by bad workmanship in mounting and operation may lead to legal action and should be avoided.



Avoid ceiling mounting of the projector in areas of frequent or probable earth quakes.

When fixing the mount in the ceiling, be sure to check the ceiling material and if it will hold the total weight of the mount and the projector. Look for wood, steel beams or concrete that will secure a good and lasting fixture. Avoid plaster or other fragile materials that do not have sufficient structural properties. Follow the detailed instructions supplied with the ceiling mount for proper mounting and operation.

After having mounted the projector in the ceiling, test if the holding force is sufficient by adding a load to the mount double the weight of the combined projector and mount. The mount should hold this extra weight with no sign of fatigue and with no sign of mounting screws loosening.

9.3 WIRING

Ceiling mounted projectors require long signal and power wires.

The signals should be wired using high quality coaxial cable. The cables usually need to be customized. Some vendors have specialized in this field. Contact your dealer for further detail.

If the signal cables run over a longer distance from the source to the projector, a line buffer (distribution amplifier) may be needed (available from third party vendors).



For potential fire reasons, the power wiring should be separately switched so that the projector can be switched off completely when not in use. The ON/OFF on the remote control only suspends operation of the projector without switching off completely.

10 YOUR PROJECTOR IN DETAIL

The projector is designed from the ground up to be a compact, durable, bright and versatile device that is suitable for use in various indoors projection applications.

International mandatory regulations are employed, including the rigorous European CE and American UL and FCC standards that cover safety and radio interference issues.

Product packaging is by environmentally friendly materials that are recyclable and that do not emit any toxic fumes if combusted. The 'RESY' and 'Grüne Punkt' marks are referenced (with ID numbers), indicating that the proper fees are already paid for controlled return of packaging material.

To allow for flexible operation and installation, the unit may be operated from the tabletop, ceiling mounted or in a rear-projection arrangement. Safe thermal operation is secured through a temperature controlled, well dimensioned cooling system that is minimizing fan noise and stray light.

Compatibility is wide, including most popular computer sources from VGA (640x480 expanded) to XGA (1024x768 compressed) resolution as well as all international video standards (NTSC, PAL and SECAM) and video formats (composite video, super video and RGB video).

A wide mains voltage operating range is employed, and connection is through the internationally recognized IEC connector. The user guide and menu system are multi-lingual.

The following chapters detail various features of your projector that may be of interest.

10.1 SLB - SMALL, LIGHT AND BRIGHT

The projector was designed to be the ultimate portable projector.

The advanced, miniaturized optical design and the use of a relatively low power, high efficiency illumination system combined with optimized electronics has yielded a very compact, lightweight projector.

10.2 DMD TECHNOLOGY

The light valve technology employed in the projector is based on a small Digital Micromirror Device (DMD). The DMD is basically an integrated circuit chip covered with a large number of minute mirrors, one for each picture element (pixel). These tiny mirrors may be actuated digitally by electrostatic force individually at high speed. This enables the formation of a full color gamut of 16.7 million colors perceived by the eye. It is actually the eye that 'integrates' the digitally generated full color image into what is perceived as a continuous (analog) set of colors.

10.3 DLP OPTICAL SYSTEM

The DMD chip is part of the Digital Light Processing (DLP), which is the complete optical system from illumination lamp all the way to projection lens that enables the projection of high quality, digital images.

In the DLP, the light from the illumination lamp is directed onto the DMD. Light is then reflected off each mirror through a rotating color wheel that sequences between red, green and blue in order to form a full color image. The image is then projected by the projection lens onto the screen.

The projection lens has motorized zoom and focus control available to the user in order to be able to select a suitable magnification (image size) at a given projection distance, and to adjust for a sharp image.

10.4 TRACKBALL REMOTE CONTROL

This device enables both set-up of the projector before use and control both of the projector and the computer mouse pointer during operation.

The mouse functionality duplicates the local computer mouse without the need for any special software drivers.

10.5 MENU SYSTEM

The menu system is designed so that it may be invoked and overlayed at any time with any image projected. When invoked, the menu system will not interrupt the display of the underlying image. The hierarchical design, with a main menu and sub-menus, provides a logical approach to access the various functions. The localization in the upper left corner and the moderate size of the menus does not block much of the view of the image displayed. Several languages are selectable to suit international users.

10.6 OSD SYSTEM

The OSD (On Screen Display) is used to echo user controls for positive feedback. The OSD is active both within the menu and with direct controls. The OSD should not be confused with the menu system, the latter being used to gain access to controls, while the OSD merely indicates the actual operation. The OSD may be selected or deselected in the menu.

10.7 SET-UP MEMORY

The various user selections and settings that are made with the remote control, the projector keypad and the menu system, are automatically memorized for future reference. Most settings are related to the actual source in use, so when switching between sources, or between modes within sources, the individual settings are recalled accordingly.

The memory can store up to 40 different sources and mode characteristics. Some sources are predefined, while the remaining are available for customer set-up. See the compatibility list in the Technical Data section.

New sources are added to the memory only if the sync pattern differs significantly from a previous selection. If a new source is detected as an old one (close or identical sync patterns), and the settings are changed, the new settings will override the old ones.

See the Remote Control and Menu sections for details of which functions that are memorized.

10.8 COOLING SYSTEM

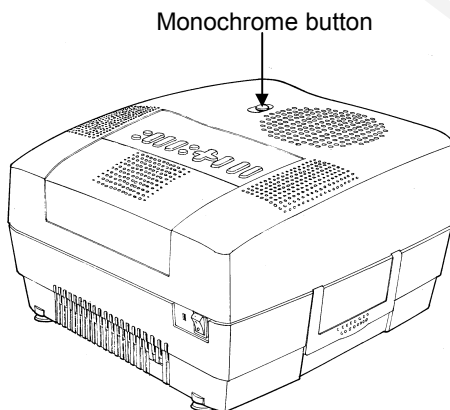
The heat generated in the projection lamp and the electronics circuitry needs to be effectively vented out of the projector. Cooling fans are employed to force the convection of air through the system. Air is let out close to the projection lamp (as this is the hottest area).

The projector is designed to operate at a wide temperature range and works well when ceiling mounted, even at high ambient temperatures. See the *Technical Data* section for temperature specification.

The cooling system is temperature controlled, so that when operated on the desktop at normal temperature, the noise level is minimized due to a relaxed fan speed. When operating in the ceiling under high ambient temperatures, the fan runs at a higher speed to maintain cooling while the noise level increases. The light leakage out of the vents is minimized by a special light blocking design of the vent flanges.

10.9 MONOCHROME MODE

In some presentations where colors are not required, i.e. word processing documents or spreadsheets, the monochrome mode can be used to increase the brightness.



When the monochrome button (black & white) is pulled up the brightness is increased three times compared to color mode. To return to color mode, press button down.

11 APPLICATIONS

The projector is perfectly suited for a variety of different applications including portable use, work groups, teaching, training, home theatres, control rooms, product promotion, shows, simulators and more.

11.1 PORTABLE USE

The projector is designed with portability in mind for the nomadic user. The footprint is small and the weight is low. The unit is supplied with a soft carrying case holding the projector and all cables. The unit can be carried on-board an aeroplane and fits easily in the overhead locker. Remember that the projector is a delicate instrument containing precision optics. Avoid bumping and dropping the unit during transportation. When checking the unit in at the airport, ensure proper packaging to avoid breakage and malfunction. It is wise to bring an extra projection lamp, just in case.

11.2 WORK GROUPS

A work group typically involves a group of people actively involved in discussions round the table. The projector usually is connected to a networked computer. As the meeting evolves, various documents are continuously updated and corrected. Information is downloaded from the Internet or the company Intranet for up-to-date processing in the group. Video may be played back any time with high quality stereo sound. By the end of the session, the documents are wrapped up and minutes are distributed to the various recipients over the e-mail system. The projector may be placed on a table or permanently installed, either ceiling mounted or arranged for rear projection.

11.3 TEACHING

Educational institutions would use the projector both for traditional computer and video based teaching for the class, as well as interactive use over the Internet. By using the projector, the attention of the students is focused on a single large projection screen, supplementing the ordinary, individual computer monitors when needed. The projector may be placed on a table or permanently installed, either ceiling mounted or arranged for rear projection.

11.4 TRAINING

The projector is ideally suited for company training in various areas such as products, software, organisational and staff continued education. It is practical for this purpose to have a dedicated training room with good facilities for each individual in order to secure the attention of each person during the training session. It may sometimes help to break up the session with a video to regain any lost attention! The projector may be placed on a table or permanently installed, either ceiling mounted or arranged for rear projection.

11.5 HOME THEATRES

The projector is equipped with multistandard composite and super-video, as well as stereo sound, enabling large screen projection of high quality video. The user has full control over all parameters including color, sharpness contrast and brightness through the remote control and the menu system for the best possible projected image.

11.6 CONTROL ROOMS

Large screen projection of critical information enables a quicker and more consistent reaction to any change that needs immediate attention. This includes both manufacturing process control, as well as operational control in private, public and military situations. Several projectors may be cascaded or grouped to simultaneously project over a larger area or to project different screens simultaneously, using a dedicated screen splitter (available from third party suppliers). These applications are typically fixed and the projectors are usually either ceiling mounted for front projection or arranged in a rear-projection set-up.

11.7 PRODUCT PROMOTION

The projector is ideally suited to attract attention in order to promote sales of all kinds of products in shops and malls. The promotion material may be either computer generated or video based. Several projectors may be employed simultaneously to increase attention further. The projector is usually semi-permanently installed, either ceiling mounted or arranged for rear projection.

11.8 TRADE SHOWS

Many companies attend various trade shows throughout the year. In these situations, the key issue is to attract the attention of a large, continuously moving public. One or more units projecting your company message will help steering the crowd to your business. The projector might be either placed on the table top, ceiling mounted or used for rear projection. Since control over lighting conditions is difficult at trade shows, arranging two projectors on top of each other projecting, the same image on the same screen will help by increasing the brightness.

11.9 SIMULATORS

Simulators are used in various applications for training and entertainment. Professional use includes car driving, air plane and ship vessel control training, as well as other expensive and often dangerous situations that require well trained personnel. Entertainment use is basically in various theme parks etc.

12 TROUBLE-SHOOTING

This is a checklist to help you pinpoint any problem that may arise. Check the symptoms carefully if you experience any problem. The cure may be at your fingertips!



Always check that the ON/OFF indicator on the projector flashes when the a key on the remote control is pressed. This indicates that the projector is receiving signals from the remote control.

SYMPTOM	SOLUTION
The projector does not work	<ul style="list-style-type: none"> • Check if the mains cable is attached properly. • Check that the Power switch is ON. • Toggle the ON/OFF button on the remote control.
The projected image is completely black	<ul style="list-style-type: none"> • Check that the Power switch at the mains inlet is ON. • The unit may have overheated due to the ventilation slots being covered while the projector was in use. Also ensure that the ambient temperature is within spec. Check the air inlet, as it may need vacuuming. Wait until the unit has completely cooled down before using again.
The projected image is completely black, but the fans are running	<ul style="list-style-type: none"> • The lamp may have burned out and needs to be changed. If the red alarm LED is lit, see the <i>Lamp Replacement</i> section for details.
The projected image is too dark or too light.	<ul style="list-style-type: none"> • Adjust the CONTRAST and BRIGHTNESS settings. • Press RESET, which will remove the pre-determined settings for the current source, and make the set-up adjustments again.
Some colors are unstable or flickering	<ul style="list-style-type: none"> • Check first that there are no loose cable connections. • You can try to adjust the image quality with the CONTRAST and BRIGHTNESS keys. Try to improve the tuning by accessing TUNE in the menu system. See the <i>Image Adjustment</i> section for details.

SYMPTOM	SOLUTION
The whole image appears to be unstable or misplaced	<ul style="list-style-type: none"> • If the image is scaled, press SCALE to return to the default mode. • Adjust the frequency and tuning settings (instability), or the image position settings (misalignment). • Check that you are using a source with compatible resolution. • The projector may be connected to a source with a non-standard computer (or video card). Adjust the frequency and position of the image. See the <i>Image Adjustment</i> section for details
Cooling fan is not working	<ul style="list-style-type: none"> • Check that the Power ON/OFF switch is ON. • If the fan does not work the projector must not be used and should be returned to your dealer for repair.
The remote control is not working	<ul style="list-style-type: none"> • Check the batteries by pressing LIGHT on the remote control. The keypad shall then be backlit by a red light. • Check that the green LED on the projector is blinking when you press any one of the keys on the remote control. • Make sure you point the remote control at the projection screen or directly at the IR receiver • The maximum range of the IR transmitters is 15m (50 feet) - Are you standing close enough? • If the effective range of the transmitters is significantly reduced, the remote control needs new batteries.
The desktop mouse is not working	<ul style="list-style-type: none"> • Remember that the mouse must be connected, and the projector switched on, before the computer source is switched on. • Are the mouse cable and mouse adapter connections secure? • Check the mouse driver settings on the computer • You must boot the computer after the cable has been connected for it to recognise the mouse. If you are unsure whether this was the case, reboot your computer.

13 MAINTENANCE

The projector needs very little maintenance in order to function properly.

13.1 GENERAL

Use a damp cloth to wipe off dust on the exterior. Clean the lens with a damp, non-abrasive cloth, using just water or a standard lens cleaning solution available from photographic dealers.

Vacuum the air inlets periodically, especially when build-up of dust is observed. This will ensure cool operation of the unit.

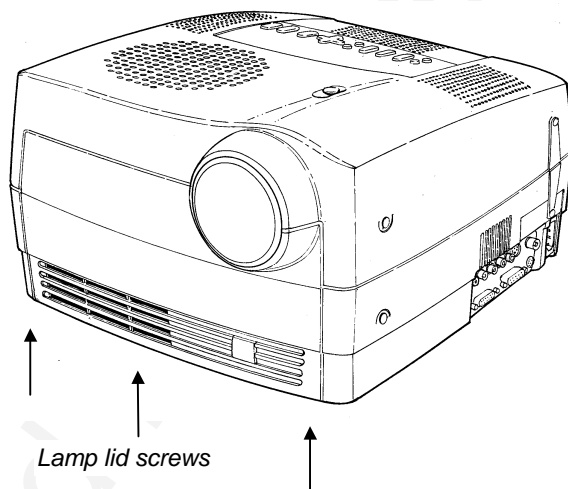
Do not scratch the lens surface. Use the lens cap when the projector is not in use for added protection. Remember to remove the lens cap before operating the unit!

13.2 LAMP REPLACEMENT

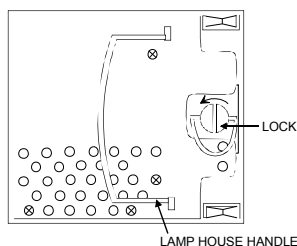
The projector is using a custom metal halide lamp for illumination. The lamp is high pressure when hot (operating or immediately after switch-off). Lamp pressure is normal when cold.

A lamp timer is available in the menu system under HELP, ABOUT, that may be used to track lamp operating time. The timer may be reset by the user.

To change lamp, remove the lamp lid by unscrewing the three screws indicated below. A safety switch will cut off the power supply to the lamp completely.



Twist the handle on the small screw to unlock the lamp holder. Fold out the large handle and pull out the lamp holder.



Insert a new lamp. Push the lamp holder all the way until it positively stops. Twist the handle on the small screw to lock the lamp holder. Fold the large handle and remount the lamp lid. Mount all the screws holding the lamp lid tightly.



Use only original lamp and holder as specified. The lamp is individually adjusted with the holder to maintain optimum illumination. Replacement using a different lamp may result in poor illumination, malfunction (potentially explosion) and will void any warranties.

To reset the lamp timer, invoke the menu system under OPTIONS, SERVICE, LAMP TIMER RESET. You need to confirm that you actually intend to reset the lamp timer, or cancel if you accidentally invoked the function.

13.3 THE REMOTE CONTROL

The infrared remote control requires little maintenance.

The trackball element may be cleaned occasionally with a damp (not wet) cloth. To take out the ball, twist the ring holding the ball anti-clockwise. Having taken out the ball, you may also clean the trackball interior using a damp (not wet) cotton swab.

To change the batteries, open the battery holder on the rear of the handset. Remove the old batteries and dispose of carefully. Insert new batteries of the type described in the *Technical Data* section, observing the polarity instructions inside the battery holder, and close the clip-shut door. Test that the remote control functions correctly by pressing the LIGHT key to see if the backlighting operates properly.

14 TECHNICAL DATA



The technical data given in this section was correct at the time of going to print, but may change without prior notice in order to improve product performance.

This projector is designed for indoor use and should not be operated or stored in conditions outside the general environmental limits given in section below, as this may lead to permanent damage and will violate any warranties.

14.1 GENERAL ENVIRONMENTAL LIMITS

Storage temperature	-20 - 60°C (-4 - 140 F), sea level
Storage humidity	10 - 90 % relative humidity, non-condensing
Operating temperature	10 - 30°C (50 - 86 F) ambient, sea level
Operating humidity	20 - 80 % relative humidity



Allow for slow acclimatization after storing at extreme temperatures and humidities, to avoid condensation. Should condensation appear, leave the projector unit in a controlled environment within the operating limits until the condensation has evaporated before using the projector

14.2 PROJECTOR UNIT

PROJECTOR DIMENSIONS	330x310x220 mm/ 12.9 x 12.2 x 8.6 inches
PROJECTOR WEIGHT	8.4 kg /18.5 lb.
PROJECTION LENS	Motorized zoom projection lens (20-30 mm) Zoom ratio : 1:1.5 to 1: 2.2 (screen width/projection distance)
ANTI-KEystone CORRECTION	17°
PROJECTION LAMP	270 W metal Halide (OSRAM VIP270)
IMAGE SIZE (DIAGONAL)	1.0 - 6.4 m/ 40 - 250 inches (wide) 0.5 - 4.2 m/ 20 - 165 inches (tele)
PROJECTION DISTANCE	1 - 7.5 m / 3.3 - 25 ft
DISPLAY	Digital Micro-mirror Device. 800 x 600 pixel resolution
COLOR RESOLUTION	16.7 million
CONTRAST RATIO	200 : 1
PIXEL RESOLUTION	800x600 (SVGA)
DEFECTIVE PIXELS	Max. 3 at delivery (+ 1 per 1000 hours of operation)
VIDEO FREQUENCY	14 - 150 MHz
HORIZONTAL SYNC	14 - 100 kHz
VERTICAL SYNC	50 - 120 Hz
NTSC SYSTEM	M, 4.43 NTSC
PAL SYSTEM	B, G, H, D, I
SECAM SYSTEM	B, G, H, D, I, K1, L
COMPUTER INPUT	0 - 1 Vpp
VIDEO INPUT	0 - 1 Vpp
S-VIDEO INPUT	0 - 1 Vpp
AUDIO INPUTS	1V RMS
SPEAKERS	2 x 5 Watt
APPROVALS	<ul style="list-style-type: none"> • CE • UL • cUL • FCC Class A, Subpart J, Part 15

14.3 POWER SUPPLY

DUAL VOLTAGE	100 - 120 VAC (8A), 60 Hz 220 - 240 VAC (4A), 50 Hz
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14.4 REMOTE CONTROL

UNIT SIZE	190 x 49 x 21 mm / 7.5 x 1.9 x 0.8 inches
UNIT WEIGHT	154 g / 5.4 ounces (with batteries)
BATTERIES	4 pcs LR03/AM4 1.5V
FUNCTIONAL RANGE	15 m/45 ft
COMPATIBILITY	Microsoft 2-key serial mouse; IBM PS/2; MAC
APPROVALS	CE, FCC Class A

14.5 COMPATIBILITY

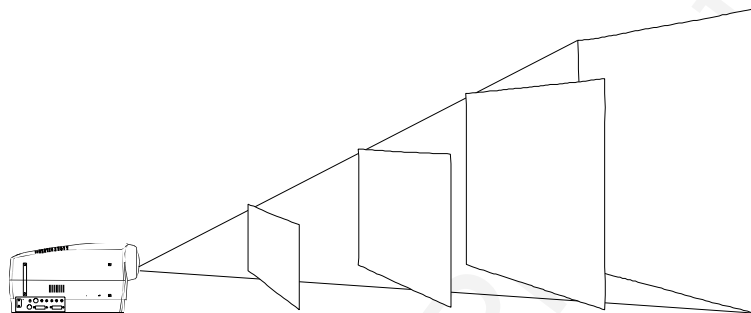
The projector is compatible with the interfaces and resolutions shown below, some of which are predefined. However since different varieties of these exist, a frequency adjustment may be needed.

MODE	RESOLUTION	MAXIMUM VERTICAL FREQUENCY (Hz)
Generic	640 x 350	85
	640 x 400	85
	640 x 480	120
	720 x 480	85
	800 x 600	120
	1024 x 768 (compressed)	100
	1152 x 870 (compressed)	90
SVGA	800 x 600	120
XGA	1024 x 768 (compressed)	100
MAC	640 x 480	120
	832 x 624*	120
	1024 x 768 (compressed)	100
	1152 x 870 (compressed)	90

* MAC 832x624 mode is projected at 800 x 600 resolution and therefore a few lines vertically and horizontally at the edge of the MAC images at 832 x 624 will not be visible. The image is not compressed and cannot be panned around using the remote control.

14.6 PROJECTION DISTANCES

The following table shows the combinations of projection distances and screen sizes that are possible.



	MINIMUM			MAXIMUM
WIDE				
DISTANCE	1.17m/ 46"	3.00m/ 118"	5.00m/ 197"	7.50m/ 295"
DIAGONAL	1.04m/ 41"	2.59m/ 102"	4.28m/ 169"	6.35m/ 250"
WIDTH	0.83m/ 33"	2.07m/ 81"	3.43m/ 135"	5.08m/ 200"
HEIGHT	0.63m/ 25"	1.57m/ 62"	2.57m/ 101"	3.81m/ 150"
TELE				
DISTANCE	1.02m/ 40"	3.00m/ 118"	5.00m/ 197"	7.50m/ 295"
DIAGONAL	0.60m/ 24"	1.72m/ 68"	2.84m/ 112"	4.21m/ 166"
WIDTH	0.48m/ 19"	1.37m/ 55"	2.27m/ 89"	3.37m/ 133"
HEIGHT	0.37m/ 15"	1.03m/ 41"	1.71m/ 67"	2.53m/ 100"

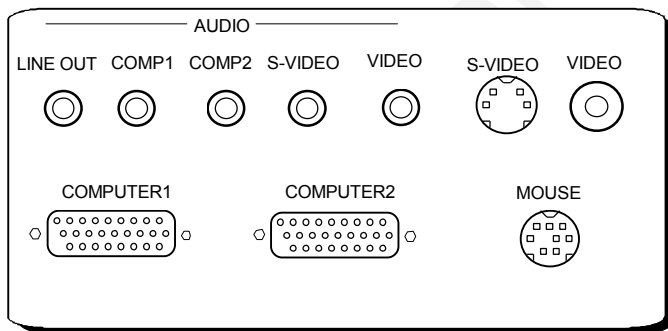
Please consider the values given as nominal, with a variation of +/- 10 %.

15 CONNECTORS

The connector ports for the source equipment on the projector are located on the right hand-side (when facing) of the unit. The pinouts of all the connector ports is described in this section.

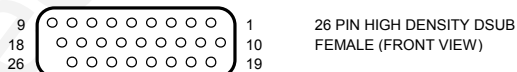


Do not connect any devices or cables other than those supplied with the projector into the connector ports on the projector unit, even if the connector ports appear identical, as this voids any warranty and may cause permanent damage to the projector



15.1 COMP 1 AND COMP 2

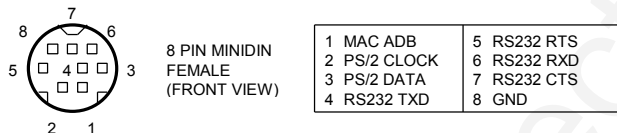
These computer connectors relays all signals from the computer to the projector, and also back to a local CRT monitor if required.



1 ANALOG R IN	10 ANALOG R GND IN	19 HSYNC IN
2 ANALOG G IN	11 ANALOG G GND IN	20 C/VSYS IN
3 ANALOG B IN	12 ANALOG B GND IN	21 DIGITAL GND
4 NOT USED	13 NOT USED	22 PCID0
5 NOT USED	14 NOT USED	23 PCID1
6 NOT USED	15 NOT USED	24 DIGITAL GND
7 ANALOG R OUT	16 ANALOG R GND OUT	25 HSYNC OUT
8 ANALOG G OUT	17 ANALOG G GND OUT	26 VSYNC OUT
9 ANALOG B OUT	18 ANALOG B GND OUT	

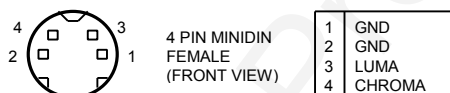
15.2 MOUSE

This port is used to relay mouse signals from the projector to the computer.



15.3 S-VIDEO

This connector is used as S-VHS video input.



15.4 VIDEO

This connector is used as composite video input.



15.5 AUDIO

This connector is used for stereo sound line input and output.



16 ENVIRONMENTAL HANDLING

Care has been taken in the manufacture of this projector so that environmental stress and pollution has been minimized. No CFCs are used during the manufacture of the unit. Where possible, recyclable materials have been used to minimize the environmental impact.

The delivery packaging can be recycled without further ado.

With respect to the projector unit itself, thought should be given to the eventual disposal of the unit in the most environmentally friendly manner considering the mechanical, electronic and chemical components inside. If possible, return the unit to a specialized company handling electronic waste.

17 FCC STATEMENT

This equipment complies with the limits for a Class A computing device, pursuant to Subpart J of Part 15 of FCC rules. Only peripherals (computer input/output devices, terminals, printers, etc.) certified to comply with the Class A limits may be attached to a computer that complies with Class A limits. When connecting to a peripheral device, a shielded input/output cable is required to ensure compliance with FCC rules. The shielded cable that must be used is supplied with the equipment. Operation with non-certified peripherals or non-shielded cables is likely to result in interference to radio and TV reception.

This equipment generates and uses radio-frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio and television reception. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart J of Part 15 of the FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures :

- Reorient the receiving antenna.
- Relocate the projector with respect to the receiver.
- Plug the equipment to a different mains outlet so that equipment and receiver are on different branch circuits.
- Fasten cables using mounting screws to ensure adequate EMI control.

You may require the following booklet from the Federal Communications Commission (FCC) : "How to identify and resolve radio and TV interference problems", available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

PLEASE READ

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