Table of Contents

NOTE: Due to constant research, the information in this manual is subject to change without notice

Section 1

Introduction

1.1 The Projector

The *HAL Series DLV 1280* is a professional quality projector that uses Digital Light Valve (DLV) reflective technology from IBM® to project images with exceptional clarity and brilliance. The high resolution, contrast and consistency of DLV 1280 images is ideal for situations in which superior readability and detail are crucial, such as control rooms, boardrooms, and training venues. A complete data/graphics/video projector, *DLV 1280* can interface with IBM®-compatible PCs, Macintosh and computer workstations, and is compatible with standard international video formats. Main features are listed below:

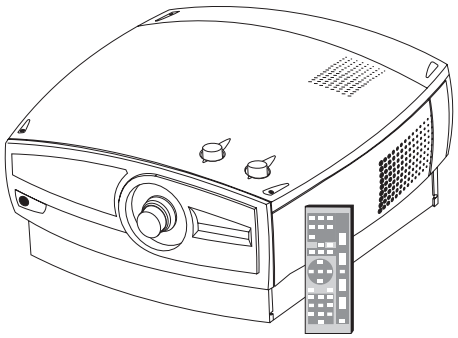


Figure 1-1. DLV 1280

Features ➤

- ◊ 1280 x 1024 pixels resolution
- ◊ 1000 lumens brightness
- ◊ Displays input from PCs, Macs, workstations, VCRs, laser-disc players, video cameras, etc.
- ◊ NTSC, PAL and SECAM compatible *(some models require an optional decoder)*
- ◊ Diagonal screen size up to 30 feet
- ◊ Set up and adjust images directly or through menus
- ◊ Memory for up to 99 different “channels” or source setups
- ◊ Active data loop-through capability for additional destinations
- ◊ RS-232 input with loop-through for networking multiple projectors
- ◊ Switcher and controller compatibility
- ◊ Input switching at projector or with remote keypad
- ◊ Long lamp life expectancy
- ◊ Power saving lamp modes for extended lamp life
- ◊ Interchangeable lenses
- ◊ Volume control for stereo PA system or (some models) internal speakers
- ◊ Modular design for ease of servicing

How it Works ➤ *DLV 1280* accepts data/graphics and video input signals for projection onto flat or curved front or rear projection screens. High brightness light is generated by an internal 500 watt CERMAX® Xenon lamp. This light is collected and transmitted by a system of optical components and sent to three DLV panels responsible for either red, green or blue digitized video information. Light from

the “on” pixels of each panel is reflected, converged and then projected to the screen through a single front lens, where the pixels are all superimposed to create a sharp full-color image.

Construction ➤ The projector body is comprised of plastic panels and lid (DVL 1280 only), with a durable powder-coated metal base. The top cover can be removed for quick replacement of the lamp, filters or lens. A modular internal design ensures ease-of-service and minimal down-time.

1.2 Components

Make sure you have the items shown below. Fill out the warranty registration card and mail it directly to Electrohome.

	DLV 1280, N. America	DLV 1280, overseas export	DLV 1280 CR
Projector case covers	✔	✔	*not included*
10’ line cord	✔	✔	✔
DLV 1280 User’s Manual	✔	✔	*1 per installation*
Video functions	✔	*not included*	*not included*
Audio functions	✔	*not included*	*not included*
Internal speakers	✔	✔	*not included*
IR remote keypad	✔	✔	*1 per installation*
Warranty card	✔	✔	✔

NOTE: The overseas export DLV 1280 and the DLV 1280 CR do not include video or audio functions. This manual assumes the video/audio options have been installed.

1.3 Purchase Record and Servicing

Complete the information below for your records.

Purchase Record

Dealer:	
Dealer Phone Number:	
Projector Serial Number:	
Purchase Date:	
Installation Date:	

NOTE: The projector serial number is on the projector's identification label located on the rear panel of the projector.

If you require technical assistance or if you experience a problem with your projector, contact the authorized Electrohome dealer from which the projector was purchased. Whether the projector is under warranty or the warranty has expired, Electrohome’s extensive factory and dealer service network is always available. Electrohome service technicians are fully trained to quickly diagnose and correct projector malfunction, often performing the service on site.

Section 2

Installation & Setup

This section explains how to install and set up the projector. If you are familiar with the projector and want to quickly set it up for temporary use, follow the Quick Setup instructions. For a complete setup, follow the instructions and guides covered in the remaining subsections.

NOTE: The overseas export DLV 1280 and the DLV 1280 CR do not include video or audio functions. This manual assumes the video/audio options have been installed.

2.1 Quick Setup

Follow these steps for quick setup of the projector:

Step 1 ➤ Position the Projector

- **THROW DISTANCE:** Set the projector at the proper throw distance (projector-to-screen distance) for your screen size and lens type. Make sure that the projector front panel is parallel to the screen. See *2.3, Projector Position and Mounting*.

- **CHECK LEVEL:** Rotate the feet until the projector is level. See *2.7, Leveling.*

Step 2 ➤ Connect a Source

Locate the input panel at the rear of the projector. Connect RGB inputs such as PCs to either Dat 1 or Dat 2. Connect video inputs such as VCRs to Vid 1 (composite) or Vid 2 (S-Video). See *2.4, Connecting a Source*.

Step 3 ➤ Connect the Power Cord

Plug the AC power cord into the AC power socket at the rear of the projector. Required input power from 90 VAC to 264 VAC, 50 to 60 Hz is 9 amps.

STEP 4 ➤ Turn the Projector ON

Using either the built-in or IR remote keypad, press POWER and hold for a second or two to turn the projector on. Let the projector warm up for five minutes.

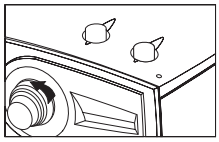
STEP 5 ➤ Select a Source

Using either the built-in or IR remote keypad, press DAT 1, DAT 2, VID 1, or VID 2 to select and display the image for the source you have connected.

STEP 6 ➤ Adjust Display

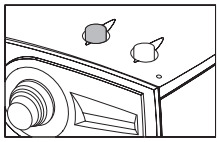
Once you have positioned the projector and are displaying a source image, adjust as follows.

- **ZOOM**: If you have a zoom lens, rotate the lens barrel end (closest to the projector) as desired to increase or decrease the image size.

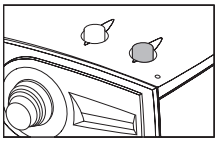


  If you don't have a zoom lens or if you can't adjust the image enough, the projector is likely not positioned at the proper throw distance for your screen size. Power down, unplug the projector and move it towards or away from the screen. See *2.3, Projector Position and Mounting* for details.

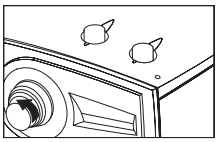
- **CHECK VERTICAL OFFSET**: To ensure that the image is located as desired and that the image is a proper rectangle rather than "keystoned" (having non-parallel sides), turn the vertical offset knob located on the top of the unit near the front edge—this is the knob closest to the lens. Try to achieve the desired overall image position while obtaining a rectangular image with the best overall brightness. If the image remains keystoned, the projector may be too high or low for the screen. Also, ensure that the projector is perpendicular to the screen. See *2.8, Zoom, Focus and Offset* and Figure 2-10.



- **CHECK HORIZONTAL OFFSET**: To mechanically place your image slightly left or right of center, turn the horizontal offset knob located on the top of the unit near the front edge—this is the knob nearest the corner of the projector. See Figure 2-9.



- **FOCUS**: When the image is the right size and shape, rotate the lens barrel (at the end furthest from the projector) until the image is as sharp as possible.



- Press MENU to refine other display settings, press SRC if you want to select a different source or channel. See *3.5, Working With Sources and Channels.*

2.2 Installation Considerations

Although *DLV 1280* delivers both high resolution and high brightness output, your final display quality could be compromised if the projector is not properly installed. This subsection discusses issues you should consider before proceeding with a final installation. Even if you do not intend to use the projector in a fixed and permanent installation, this subsection will help you to better understand what may be done to ensure maximum performance.

Installation Type ➤

Choose the installation type which suits your needs: front or rear screen, floor mount or inverted mount.

Front Screen, Floor Mount Installation

ADVANTAGES	CONSIDERATIONS
• Easy to set up • Can be moved or changed quickly • Easy to access	• Shares floor space with audience

Front Screen, Inverted Mount (ceiling) Installation

ADVANTAGES	CONSIDERATIONS
• Does not take up audience space • Projector is unobtrusive • Projector cannot be accidentally moved	• Installation is more permanent • It is more difficult to access the projector

Rear Screen, Floor Mount Installation

ADVANTAGES	CONSIDERATIONS
• Projector is completely hidden • Projector is easily accessed • Usually good ambient light rejection	• Requires separate room

Rear Screen, Inverted Mount (ceiling) Installation

ADVANTAGES	CONSIDERATIONS
• Projector is completely hidden • Usually good ambient light rejection	• Requires separate room • Installation cost is usually higher

Rear Screen, Floor Mount with Mirror

ADVANTAGES	CONSIDERATIONS
• Projector is completely hidden • Usually good ambient light rejection • Requires less space behind screen than other rear screen installations	• Requires separate room. • Installation cost is usually higher

Flat and Curved Screens ➤

Screen type is important when designing a projection system. Inexperienced users or installers should always consult their dealer when deciding on screen type. The following guidelines explain the differences between screen types.

Front Screen Installations

There are two basic screen types: flat and curved. The choice between a flat screen or a curved screen is dependent on audience viewing angle and screen gain. There is always a trade-off between viewing angle and gain. Viewing angles for both screen types are illustrated in Figures 2-1 and 2-2 (plan views).

Flat screens offer a gain of about 1 with a viewing angle just less than 180°. Incident light reflects equally in all directions so the audience can see the display from various angles. Because of the lower gain, flat screens are more effective when ambient lighting is reduced.

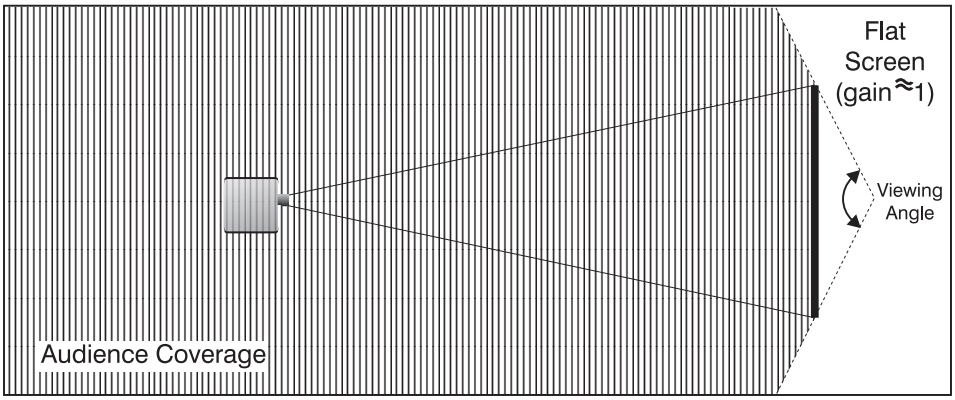


Figure 2-1. Audience Coverage with Flat Screen

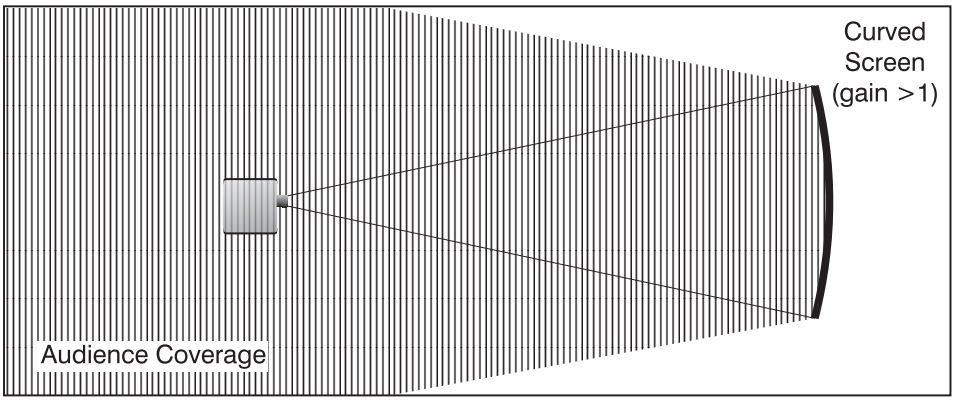


Figure 2-2. Audience Coverage with Curved Screen

Curved screens have gains larger than 1 (due in part to the screen material) and viewing angles much less than 180°. Most curved screens have different horizontal and vertical viewing angles. Incident light does not reflect equally in all directions. The reflected light concentrates in a conical volume or "viewing cone". Audiences within the viewing cone see a brighter image than that from an equal area on a flat screen. Audiences outside the viewing cone see a dimmer image.

NOTE: While DLV 1280 lenses are designed primarily for use with flat screens, the depth-of-field range for these lenses allows focusing on curved screens as well. Focus remains sharp, however there may be significant pincushion distortion, primarily at the top of the screen..

Rear Screen Installations

There are two basic types of rear screens: diffused and optical. A diffused screen has a surface which spreads the light striking it. Purely diffused screens have a gain of less than 1. The main advantage of the diffused screen is its wide viewing angle, similar to that of a flat screen for front screen projection. Optical screens take light from the projector and redirect it to increase the light intensity at the front of the screen. This reduces it in other areas. A viewing cone, similar to that of a curved front screen installation, is created.

To summarize, optical screens are better suited for brightly lit rooms where the audience is situated within the viewing cone. Diffused screens are best suited when a wide viewing angle is required but there is low ambient room lighting.

Screen Size ➤ Choose a screen size which is most appropriate for your lens and application.

Table 2-1. Screen Size Ranges

Lens Type	Diagonal Screen Size* (if 5:4)
2:1 - 3:1 zoom	2.3' - 30' (0.7 - 9 meters)
1.2:1 fixed	4' - 10' (1.2 - 3.1 meters)
1.5:1 - 3:1 zoom	4' - 30' (1.2 - 9 meters)
3:1 - 7:1 zoom	6' - 30' (1.8 - 9 meters)

*Note: Stated screen sizes refer to the diagonal size of a **5:4** screen.*

Screen Aspect Ratio ➤ Choose a screen *aspect ratio* which is most appropriate for your application. Aspect ratio describes the proportion of the screen and is expressed as a ratio of width to height, such as "4:3" or "5:4". Ideally, to exactly fill a screen with an image, the aspect ratio of the screen should correspond to the aspect ratio of the image, which depends on the source in use. For example, standard video from a VCR has a 4:3 aspect ratio, whereas a high resolution SXGA signal (1280 x 1024) has a 5:4 aspect ratio. See Figure 2-3.

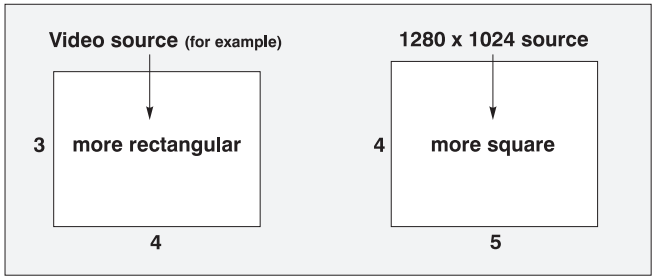


Figure 2-3. Aspect Ratios

*NOTE: With a few exceptions, sources with **less** than 1280 x 1024 resolution have a 4:3 aspect ratio. The correct aspect ratio for 1280 x 1024 sources is 5:4.*

Using a 5:4 Screen

If you use a mix of sources—i.e., those with the rectangular 4:3 aspect ratio as well as those with the slightly more square 5:4 aspect ratio—a 5:4 screen will likely provide the most flexibility. With a 5:4 screen, a 5:4 source image naturally fills the screen at an established throw distance. Filling the same screen with a 4:3 source image requires only a simple software adjustment to slightly expand the image to the top and bottom edges of the screen (Figure 2-4). See *3.6, Adjusting the Image*.

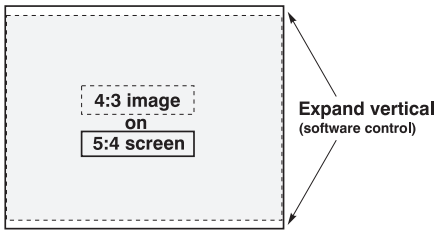


Figure 2-4. Adjusting a 4:3 Image

Using a 4:3 Screen

With a 4:3 screen, 4:3 sources will naturally fill the screen at an established throw distance. Filling the same screen with a 5:4 source image (one from a 1280 x 1024 source) requires a reduction in this throw distance so that the "too tall" 5:4 image no longer spills over the top or bottom of the screen. Once set up in this manner, all images will then have side borders (Figure 2-5), with most 4:3 images changing aspect ratio as well.

NOTE: For existing installations having multiple 4:3 screens, you can use Electrohome's EX-1200 or EX-2000 Display Wall controller to fill each screen.

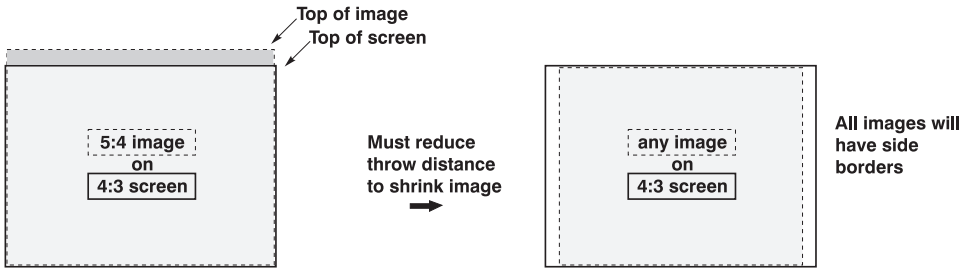


Figure 2-5. Using a 4:3 Screen for a Mix of 5:4 and 4:3 Sources

Room Lighting ➤

While it is always preferable to operate the projector in an ideal projection room environment, the high brightness output of *DLV 1280* is well suited for locations where ambient lighting may be less than optimum for projection. For temporary installations where the room may not be designed for projection, there are many simple things which can be done to avoid problems caused by unwanted light.

Visiting a movie theater can give you an idea of what makes a good projection environment. Walls, floors and furnishings are dark and matte finished. A projection room should not have reflective white ceilings or non-directional lighting such as fluorescent lights. The white ceiling spreads light, making the room appear brighter. Keep lighting and reflections to a minimum.

If it is not possible to eliminate fluorescent lights, consider using parabolic reflectors ("egg crates") to direct light down to the floor. Incandescent spot lighting is a better way to obtain illumination. Light dimmers or rheostats allow you to further control the lighting.

Outside windows are undesirable in any projection room. A small crack between curtains on a sunny day can wash out a projected image. If you do have windows, make sure that window coverings are opaque and overlapping — some window coverings are designed to provide up to 100 percent blockage of outside light. Ideally, the material should have a matte finish.

To minimize the effects caused by unwanted light from door and aisle ways, carefully choose the position of your projector and screen. Figure 2-6 shows an installation where poor screen placement allows too much unwanted light to enter the screen. In Figure 2-7, the screen and the projector are positioned to minimize the effect of unwanted light.

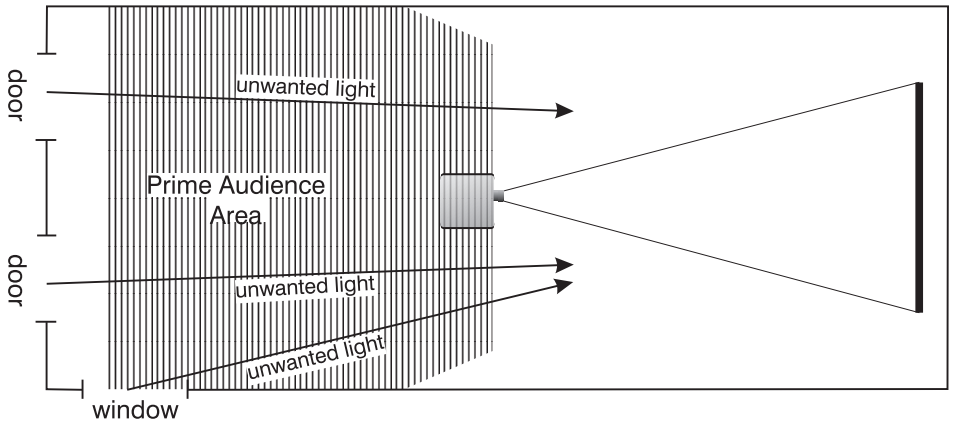


Figure 2-6. Poor Screen Placement

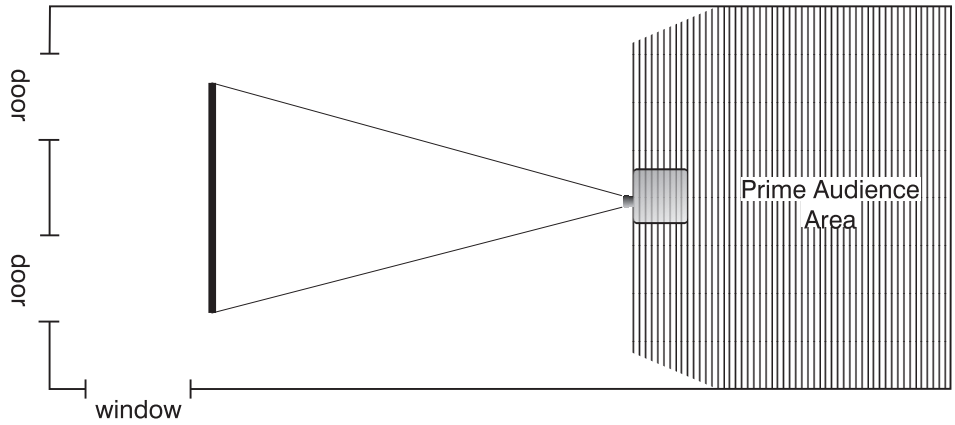


Figure 2-7. Better Screen Placement

Even with all lighting removed it is still possible that room reflections within the room can degrade the image. Light from the projection screen should be absorbed by the ceilings, walls and floors so that it will not be reflected back to the screen. Again, reflective surfaces should be kept to a minimum.

Other Considerations ➤ Here are some other considerations and tips which can help you improve your installation:

- Ventilation is an important factor when preparing a projection room. The ambient temperature should be kept constant and below 35°C (95°F). Keep the projector away from heating and/or air conditioning vents. Changes in temperature can cause drifts in the projector circuitry which may affect performance.
- Keep the projector away from devices which radiate electromagnetic energy such as motors and transformers. Common sources of these are slide projectors, speakers, power amplifiers, elevators, etc.
- For rear screen applications, less space is required if a mirror is used to fold the optical path.
- Choose the right screen size for the application:
  - ◊ As screen size increases, magnification increases which reduces brightness. Select a screen size which is appropriate for the venue, but not larger than that required.
  - ◊ Installing a large screen in a small room is similar to watching television close up; too large a screen can overpower a room. A good rule of thumb is to be no closer than 1.5 times the width of the screen.
  - ◊ Larger screens require greater attention to lighting conditions.
- When laying out the projection room, consider positioning the projector and screen in a manner which will achieve maximum audience coverage and space efficiency. For example, placing the screen along the larger wall in a rectangular room will reduce audience coverage. Figure 2-8 shows two examples of how audience coverage is maximized.
- Keep in mind that for good display of text information, the image size must allow the audience to distinguish all text clearly. In general, the eye can

recognize a letter if eye-to-text distance is less than 150 times the height of the letter. Text will normally become illegible at a greater distance despite the sharpest and clearest of images.

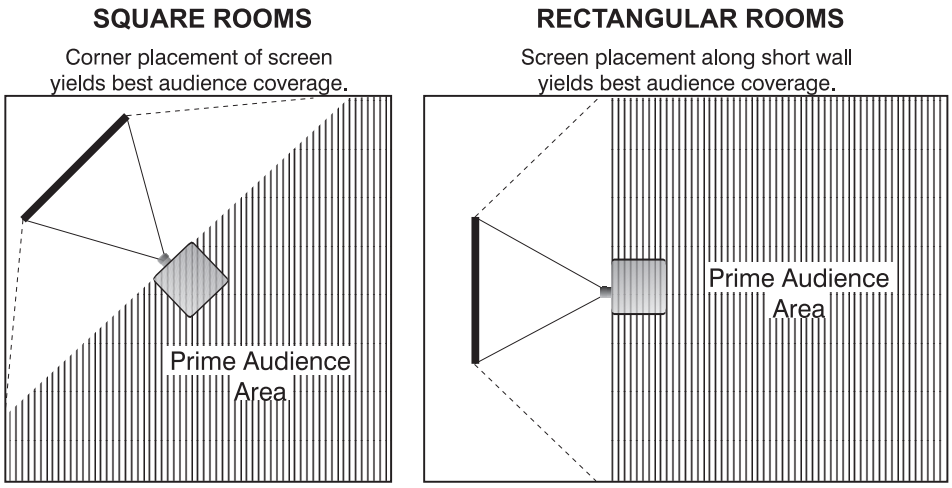


Figure 2-8. Screen Locations for Maximum Audience Coverage

2.3 Projector Position and Mounting

As mentioned, installation type, screen type, and lighting all affect where the projector is positioned. In addition, both throw distance (the distance between the projector and screen) and horizontal/vertical position must be determined for every new installation. Both depend on screen size and projector lens type. Make sure that the room can accommodate the required position of the projector for the chosen screen size.

Throw Distance ➤

Throw distance is the distance between the projector's front feet and the screen (measured perpendicular to the screen and projector, not necessarily parallel to floor). As the distance between the projector and the screen increases, image size also increases.

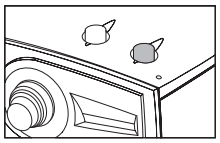
Throw distance is roughly equal to the horizontal width of the screen multiplied by the type of lens you are using. For example, if using a 1.2:1 lens, throw distance should be roughly equal to 1.2 x the horizontal screen width. Once you know your horizontal screen size, you can determine how far away the projector should be:

Table 2-2. Throw Distance Guide

Lens Type	Approx. Throw Distance
2:1 - 3:1	2x to 3x horizontal screen width
1.2:1 (no zoom)	1.2x horizontal screen width
1.5:1 - 3:1	1.5x to 3x horizontal screen width
3:1 - 7:1	3x to 7x horizontal screen width

*NOTES: **1)** Throw distance is measured perpendicular to the screen and projector, not necessarily parallel to the floor. **2)** It is good practice to simulate the setup with the projector fully warmed-up to determine the actual throw distance required.*

Horizontal Position ➤



Correct horizontal position of the projector can ensure that the image is positioned properly on the screen. With any lens installed, the image can be manually offset left or right by a distance of up to 25 pixels (Figure 2-9). Turn the horizontal offset adjustment knob on the top edge of the projector as desired.

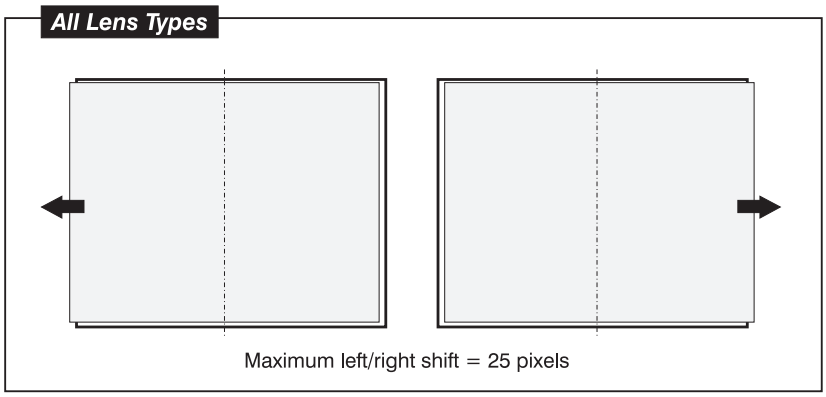
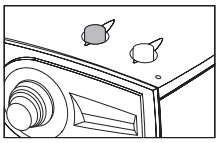


Figure 2-9. Horizontal Offsets, All DLV 1280 Lenses

Vertical Position ➤



The vertical position of the projector in relation to the screen also depends on the size of the screen and the lens type. Correct vertical position ensures that the image will be rectangular in shape rather than keystoned (having non-parallel sides). Depending on the type of lens you are using, the image can also be offset up or down by turning the vertical offset adjustment knob on the top edge of the projector.

The number of pixels by which you can raise or lower an image are listed in Table 2-3. In addition, refer to Figure 2-10 to see how these pixel offsets affect the placement of your image. If your projector is inverted, such as with a ceiling -mounted projector, turn the illustration upside-down.

Table 2-3. Vertical Offset Ranges, in Pixels

Lens Type	Vertical Offset (in Pixels)
2:1 - 3:1 zoom (standard)	-25 to +366
1.2:1 fixed (opt.)	fixed @ 0, ±25 pixels
1.5:1 - 3:1 zoom (opt.)	-25 to +512 pixels
3:1 - 7:1 zoom (opt.)	-25 to +512 pixels

NOTE: If you cannot raise or lower the image enough, or if the image becomes keystoned or exhibits uneven brightness, the projector is probably too high or low in relation to the screen.

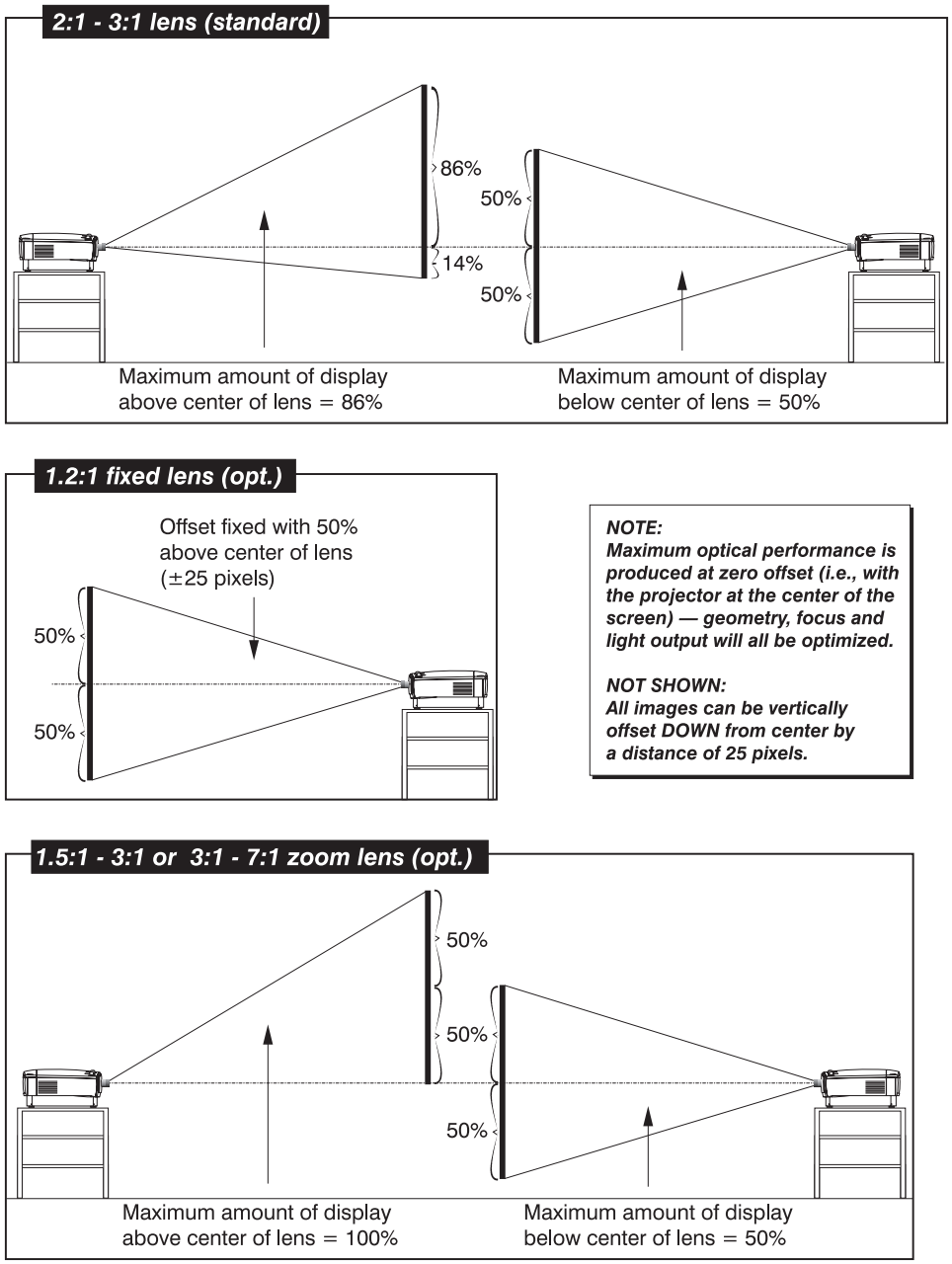


Figure 2-10. Vertical Offset Ranges, All DLV 1280 Lenses

Mounting ➤ For typical front or rear floor mounts, secure the projector to a stable table or cart. Take particular care with a mobile cart—avoid sudden stops, excessive force and uneven surfaces that may cause the projector and cart combination to overturn.

The table or cart should be reasonably level, but fine adjustments to the projector level can be made by adjusting the height of the projector legs; refer to *2.7, Leveling* for details.

To invert the projector you must use a proper ceiling mount fixture. For more information, contact Electrohome.

Folded Optics ➤ In rear screen applications where space behind the projector is limited, a mirror may be used to fold the optical path. See Figure 2-11. The position of the projector and mirror must be accurately set. If considering this type of installation, call your dealer for assistance.

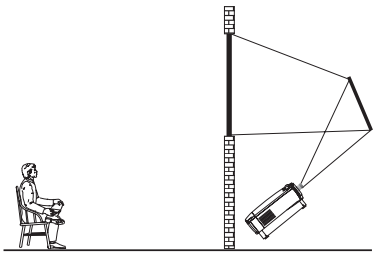


Figure 2-11. Folded Optics

2.4 Connecting Sources

At the rear of the projector is a standard input panel to which you may connect a variety of source types (Figure 2-12). *NOTE: Audio/video not standard for all models. The illustration below shows all options installed.*

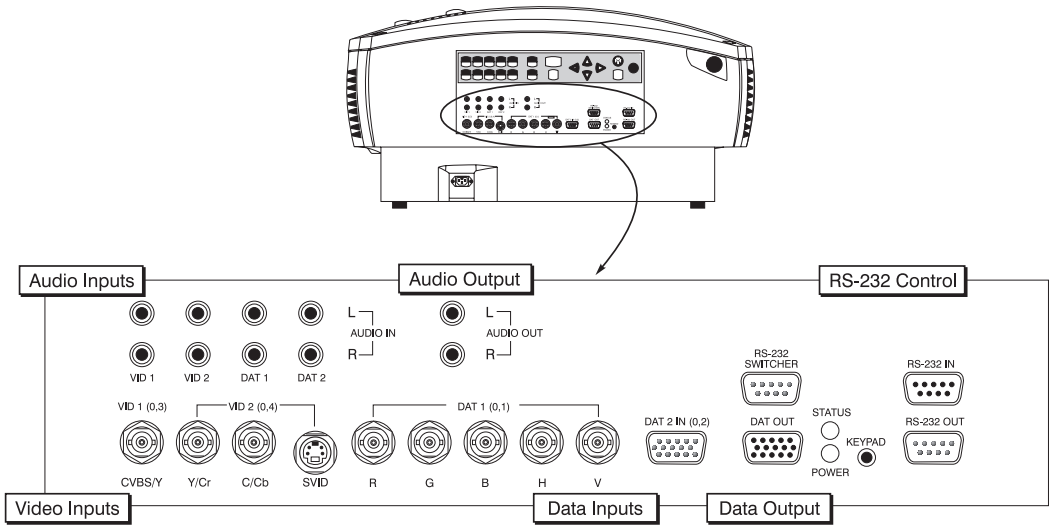


Figure 2-12. Rear Connector Panel

- **DAT 1**: A standard RGB input with five BNC connectors. Connect RGB inputs from computer sources such as VGA, SVGA, Mac, PowerMac, DEC, Sun, SGI and others. DLV 1280 supports multiple sync types: sync-on-green for data, composite, and separate H & V. If desired, loop the signal out through the **DAT OUT** port to a second destination, such as a monitor or another projector.

- **DAT 2**: A standard RGB input with a VGA input (15-pin) connector. Connect compatible computer analog signals to the "Dat 2" port and, if desired, loop the signal out through the **DAT OUT** port to a second display, such as monitor or another projector.

- **VID 1**: A standard BNC connector for composite video sources.

- **VID 2**: A pair of standard BNC connectors (Y and C, for luminance and chrominance) ***or*** a single 4-pin mini DIN connector for S-Video sources.

To control audio levels, connect pre-amplified (line level) audio inputs to the left and right audio inputs corresponding to the input labeling (Dat 1, Dat 2, Vid 1, or Vid 2). Then, if desired, connect **AUDIO OUT** to external audio amplification equipment. Use RCA-type cables and connectors for all audio.

RGB/Data Inputs ➤

The RGB input (DAT 1) consists of five BNC type connectors for connection to a variety of RGB sources. Such sources include VGA, SVGA, SXGA, XGA, Mac, PowerMac, DEC, Sun, SGI and others. DLV 1280 supports multiple sync types: sync-on-green for data, composite, and separate H & V (3-,4-, or 5-wire RGB).

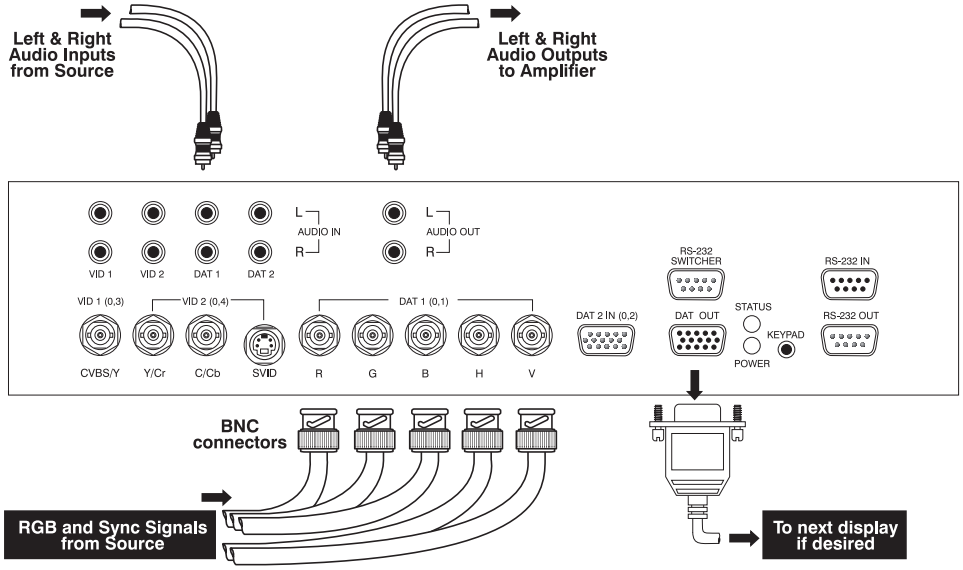


Figure 2-13. Connecting to RGB Inputs

Connect the sync BNC inputs. Then connect the red, green and blue source outputs to the RED, GREEN, and BLUE inputs on the panel. If the source uses sync-on-green, you only need to connect the red, green, and blue. If your source provides a composite sync output, connect it to the H input. If your source provides separate horizontal and vertical sync outputs, connect horizontal sync to the H input and connect vertical sync to the V input. See Figure 2-13.

Connect PC analog sources to Dat 2 as shown in Figure 2-14. You may need an adapter if you are connecting a Mac to Dat 2.

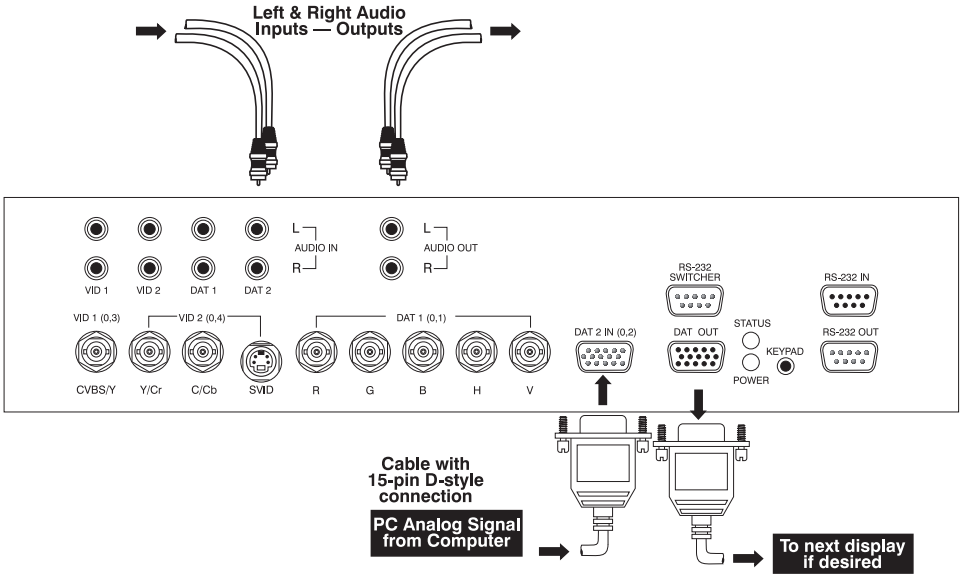


Figure 2-14. Connecting PC Analog Input

The Composite Video and S-Video inputs provide simultaneous connection of a composite video source (**VID 1**) and an S-Video source (**VID 2**) to the projector. For each video input, use the corresponding audio input/output as shown.

Composite Video Input

➤ If you have a composite video source, connect it to the projector's rear input panel using the extreme left composite BNC connector labeled **VID 1**. See Figure 2-15.

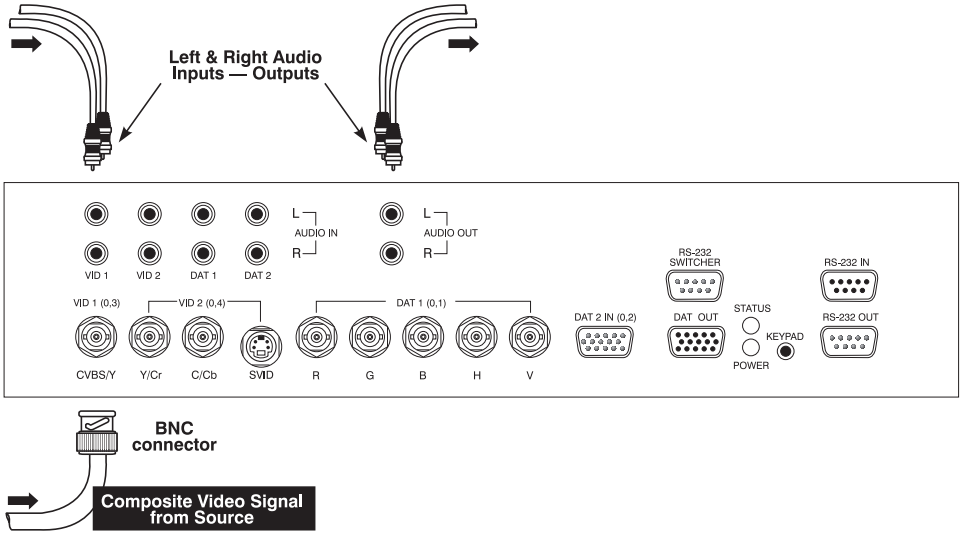


Figure 2-15. Connecting a Composite Video Source

VID 1 AUDIO: To control audio levels in an audio/visual system, connect pre-amplified (line level) audio inputs to the left and right audio inputs labeled **VID 1**. Then connect the audio outputs (**AUDIO OUT**) to external audio amplification equipment. All audio connection cables require standard RCA-type plugs.

Extra Composite Video Input

➤ If you want to connect an extra composite video source, connect to **DAT 1** using the green BNC connector (labeled "**G**") and use **DAT 1 AUDIO**. See Figure 2-16.

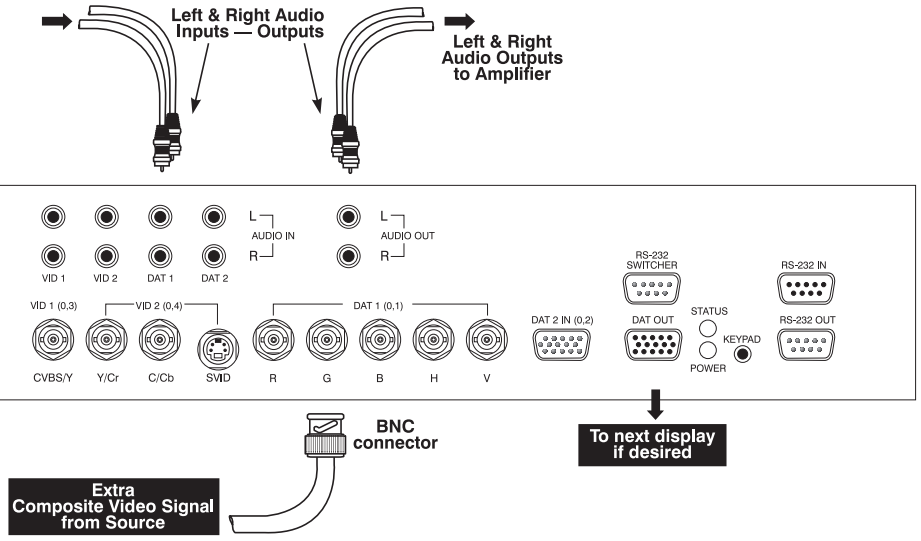


Figure 2-16. Connecting an Extra Composite Video Source

S-Video Input ➤ If you have an S-Video (SVHS) source, connect it to the projector's rear input panel at **VID 2**. Depending on the source, use either the two BNC connectors labeled "**Y**/**Cr** and **C**/**Cb**" (luminance and chrominance) ***or*** use the 4-pin mini DIN connector labeled "**SVID**"— do not use both types of connectors simultaneously. See Figure 2-17.

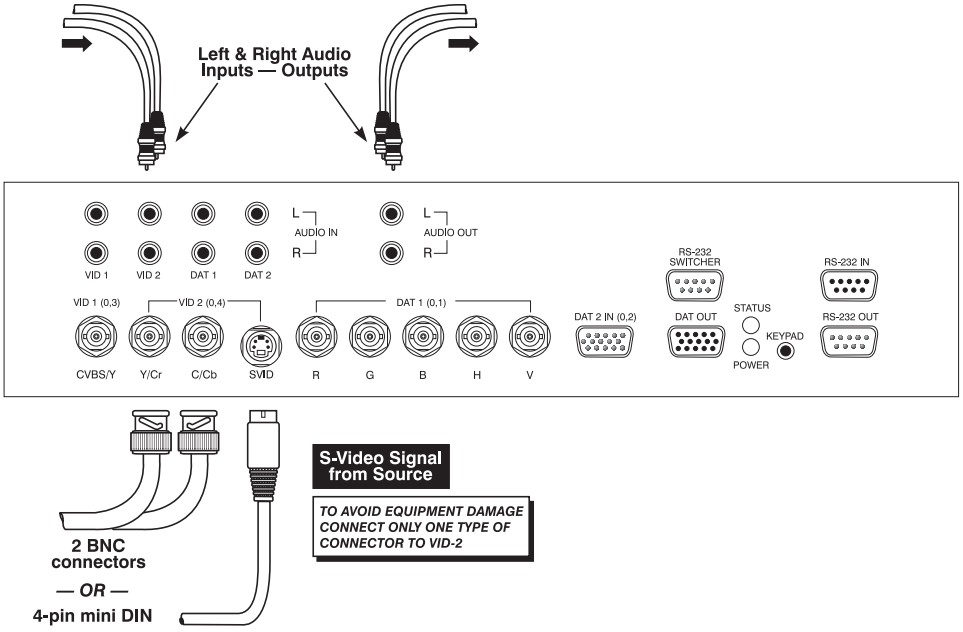


Figure 2-17. Connecting an S-Video Source

VID 2 AUDIO: To control audio levels in an audio/visual system, connect pre-amplified (line level) audio inputs to the left and right audio inputs labeled **VID 2**.

Extra S-Video Input ➤ If you want to connect an extra S-Video source, connect to **DAT 1** using the red and blue BNC connectors (labeled "**R**" and "**B**") and use **DAT 1 AUDIO**. Make sure to connect the "Y" signal (luminance) to red, the "C" signal (chrominance) to blue. See Figure 2-18.

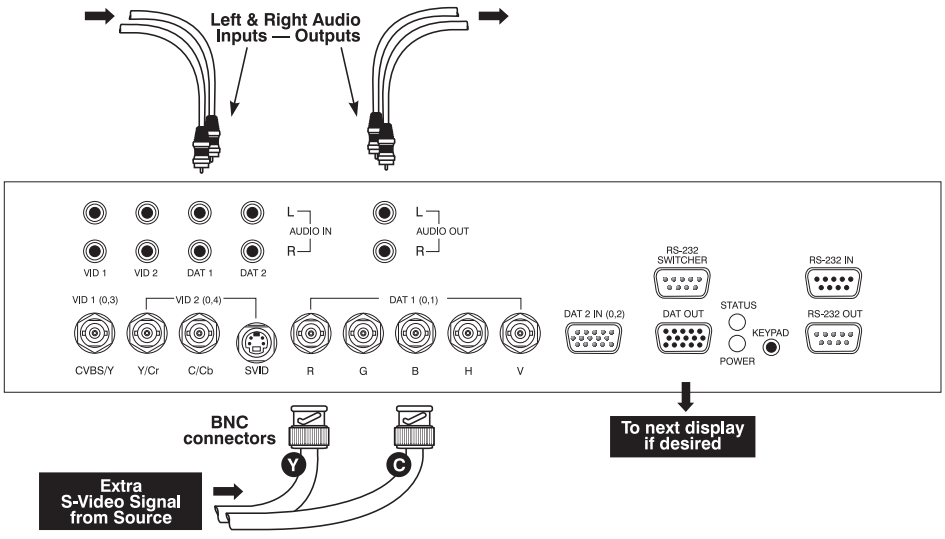


Figure 2-18. Connecting an Extra S-Video Source

YCrCb or "Component" Video

➤ Connect YCrCb video (component video) sources as shown in Figure 2-19. Note that if you use the video inputs you will connect to both **Vid 1** and **Vid 2** simultaneously for the single source. The projector detects such a connection as a **Vid 1** source, and **Vid 2** cannot be used.

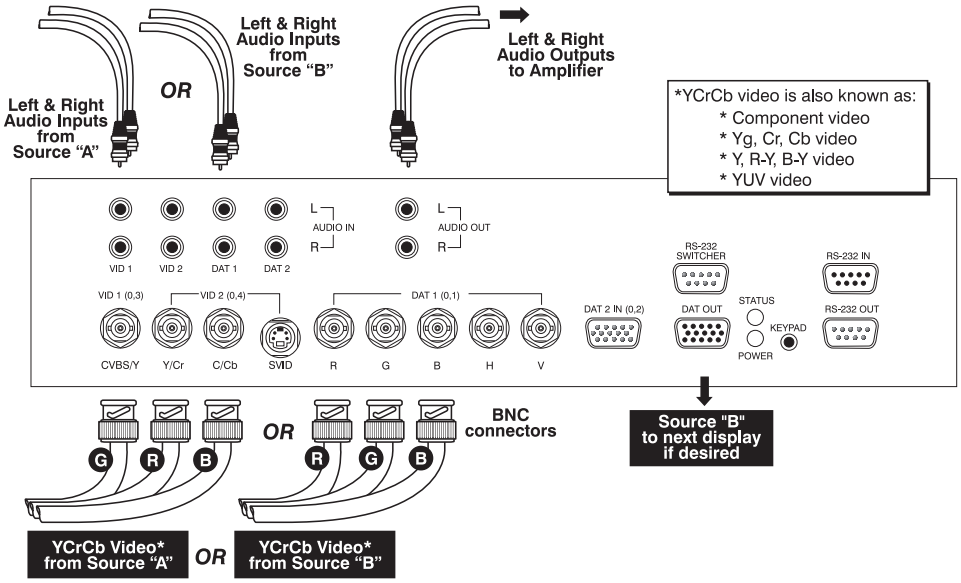


Figure 2-19. Connecting "YCrCb" Video

*NOTES:1) If you connect YCrCb video using Vid 1 and Vid2, you cannot also connect an S-video source using the 4-pin DIN. 2)**DLV 1280** does not automatically distinguish between a YCrCb signal and other RGB sources. When using YCrCb video, turn the YCrCb option on in the **Image Settings** menu. See **3.6, Adjusting the Image**.*

YCrCb AUDIO: Connect pre-amplified (line level) audio inputs to the left and right audio inputs labeled **VID 1**or **DAT 1**, depending on where your video input is connected (see Figure 2-19).

2.5 Connecting to Power

Plug the AC power cord into the input socket located at the left rear of the projector (Figure 2-20). Plug the three-prong end of the power cord in a grounded AC outlet. Input voltage to the projector must be between 90 and 264 VAC, 50 or 60 Hz. The power source must be capable of supplying 900 watts of power to the projector.

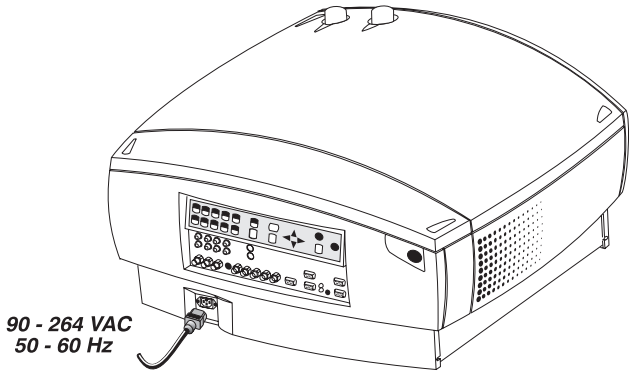


Figure 2-20. Connecting Power

NOTE: Once the projector is turned off, the lamp cooling fans will continue to run for approximately five minutes to cool the lamp. The fans will then automatically shut off. Do not unplug the power cord before the fans stop.

2.6 Operating Orientation

DLV 1280 is set up at the factory for use in a front screen, floor mount orientation. If the installation is ceiling mount or rear screen, your initial images will likely be displayed upside down and/or reversed. To correct, you must change the image orientation from within the *Preferences* menu. You may prefer to do this before physically installing the projector, however it can be done at any time. See *Section 3, Operation* for further information.

In the *Preferences* menu, highlight and select the "Orientation" option to display a pull-down list. From a front screen floor mount installation, select from Front, Rear, Inverted Front, or Inverted Rear according to your intended installation. See Figure 2-21.

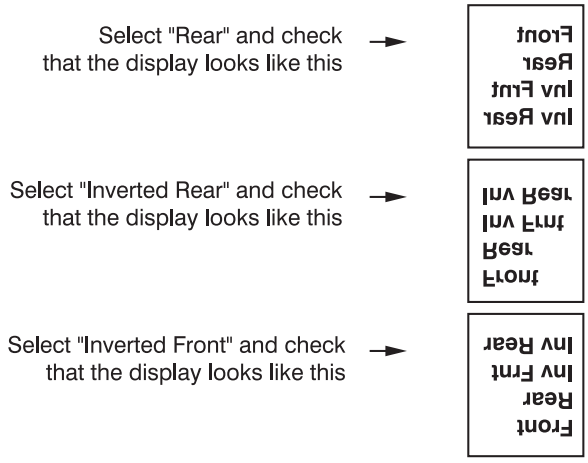
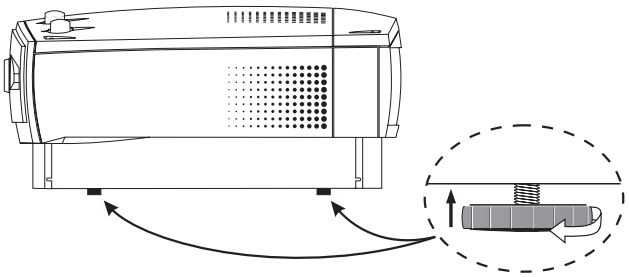


Figure 2-21. Orienting the Image

2.7 Leveling

For most installations you will want to make sure that the projector is level from side-to-side and that the lens surface is parallel to the screen. This will ensure a rectangular image that is level. To make small corrections to the projector's level, rotate each leg as necessary to raise or lower.



Special Mounting Angles

If desired, the projector can be rotated and mounted at any angle front-to-back. The side-to-side tilt, however, must not exceed ±45°. This limit ensures that the arc lamp in the projector operates properly and safely, and applies to all projectors using similar lamps. See Figure 2-22.

WARNING

Do not operate the projector outside these ranges.

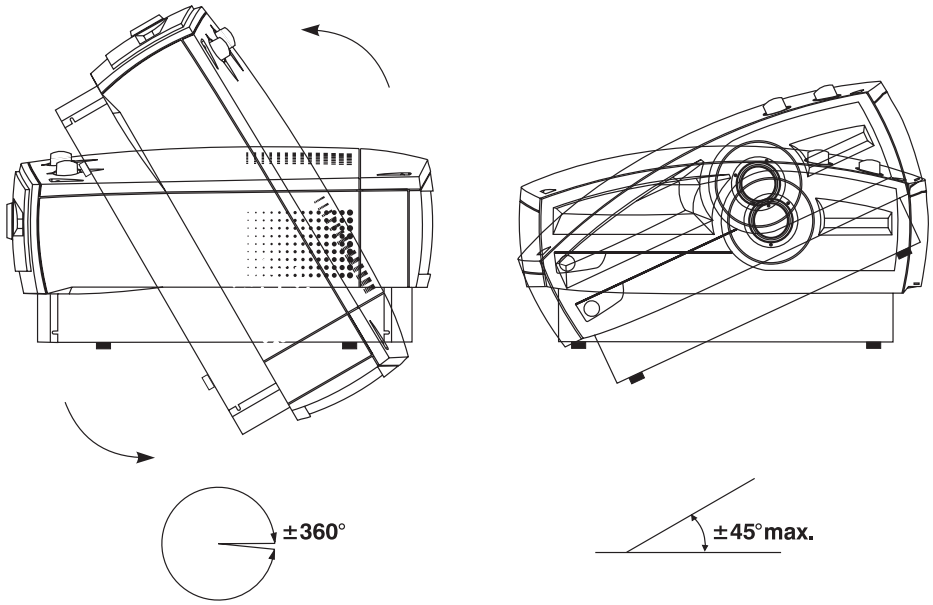


Figure 2-22. Ranges for Special Mounting

2.8 Zoom, Focus & Offset

Once the projector is properly set up and projecting an image on screen, you are ready to make quick manual display adjustments.

Zoom ➤ If you are using a zoom lens, grasp the lens barrel close to where it enters the projector. Turn it as necessary to decrease or increase the size of the image at your current throw distance. Take care not to touch the lens surface.

Focus ➤ Turn the outside end of the lens barrel until you obtain the best overall image clarity.

Horizontal Offset ➤ Turn the Horizontal Offset adjustment knob to move your image slightly to the left or right of center.

Vertical Offset ➤ Depending on the lens present, turning the Vertical Offset adjustment knob can raise or lower the image without causing keystone distortion. Turn the knob until you achieve the desired placement of the image while maintaining its rectangular shape. See *2.3, Projector Position and Mounting*.

For further display adjustments through keypad commands and on-screen menus, refer to *Section 3, Operation*.

2.9 Connecting to the Serial Ports

Use RS-232 (serial) connections when controlling the projector with a personal computer having an RS-232 serial interface or when using the projector with a *Marquee* (or other) switcher. The RS-232 ports are located on the rear control panel of the projector as shown in Figure 2-23.

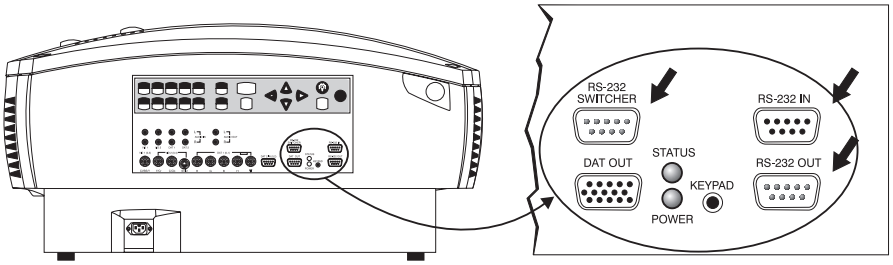


Figure 2-23. RS-232 Serial Ports

NOTES: ***1) DLV 1280*** *serial connections require a 9-pin D connector. Refer to Appendix D for complete cable wiring requirements* ***2)*** *The "***RS-232 OUT***" port is provided for networking applications only — see "If using multiple projectors", below.*

If Using a Computer ➤ You may wish to use a computer rather than a keypad for controlling the projector and for performing other special functions. Connect an RS-232 serial communication cable between the computer and the projector serial port labeled "**RS-232 IN**" (Figure 2-24). Then set the baud rate to match that of the computer. Changing the baud rate is described in *3.7, Adjusting and Checking System Parameters.*

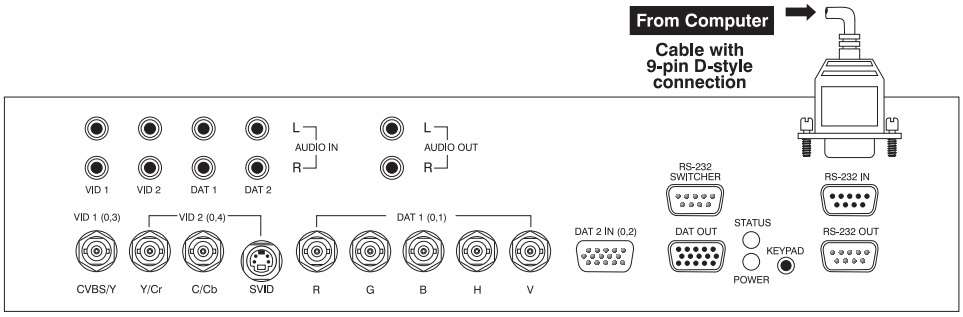


Figure 2-24. RS-232 Serial Port Connection to a Computer

Note: PC software is required for computer control. Contact your dealer or Electrohome for details.

If using a switcher ➤ You may wish to use one or more external switchers, such as the *Marquee Switcher*, in order to significantly increase the number of sources you can use. Connect an RS-232 serial communication cable between the switcher and the projector serial port labeled "**RS-232 SWITCHER**" (Figure 2-25). This port is permanently set at 9600 baud.

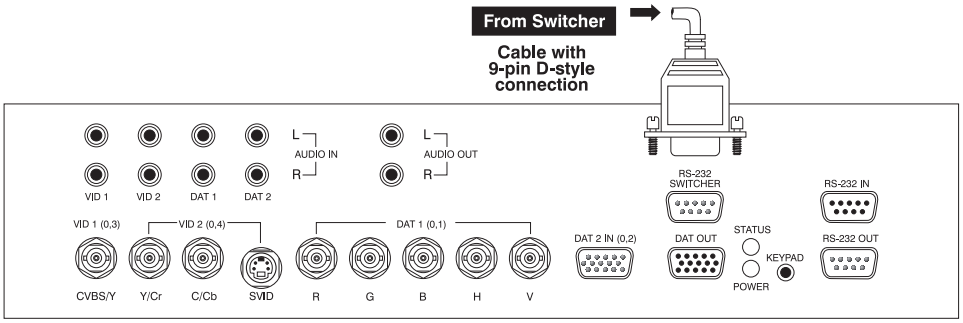


Figure 2-25. RS-232 Serial Port Connection to a Switcher

If using multiple projectors ➤ To control multiple projectors with a computer/controller, chain the projectors together by connecting the "**RS-232 OUT**" connector of the first projector (already connected to the computer/controller) to the "**RS-232 IN**" connector of the next projector in the chain. See Figure 2-26.

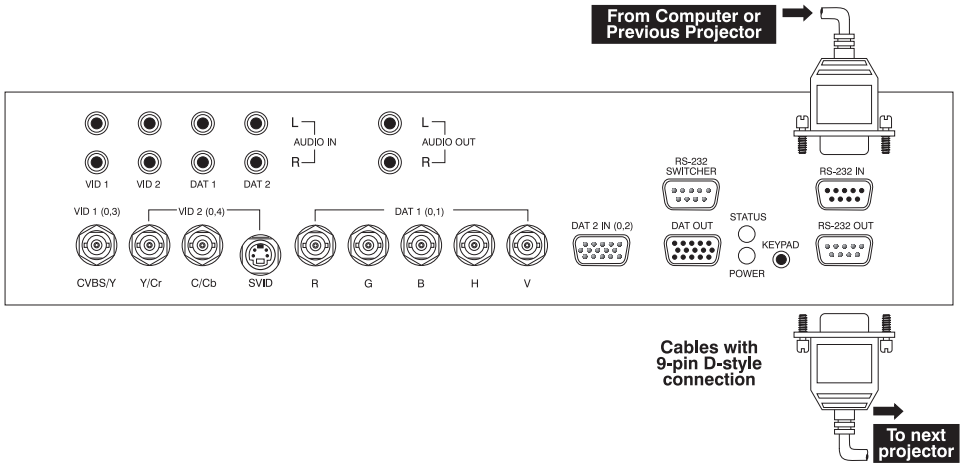


Figure 2-26. Adding Another Projector

Continue connecting projectors in this way to the last projector in the chain, so that only the last projector has an empty "**RS-232 OUT**" connector. See Figure 2-27.

Communication parameters such as baud rate must be set to match your controlling device—refer to the documentation for the controlling device. See *3.7, Adjusting and Checking System Parameters* if you need help changing the projector baud rate from its default of 38400.

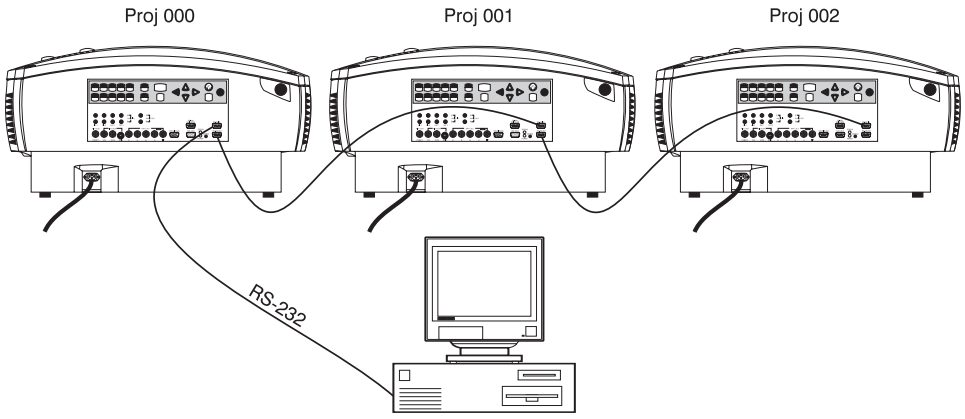


Figure 2-27. Three Networked or "Chained" Projectors

Notes: ***1)*** *To avoid damage, connect only properly wired RS-232 serial communication cables to the DLV 1280 RS-232 connectors.* ***2)*** *It is recommended that each communication cable be no more than 25 feet in length.*

Projector Number ➤ Each projector can be assigned a unique 3-digit projector number (for example, 001). These numbers are particularly useful when you are working with multiple linked projectors, enabling you to direct commands to a certain projector rather than broadcast to all projectors. For complete information on how to assign projector numbers, see *3.7, Adjusting and Checking System Parameters.*

2.10 Keypad Protocols

At manufacture, every remote keypad is assigned a default protocol, which is simply a collection of settings that determine how the keypad operates. Once assigned, this protocol remains in effect until it is changed — that is, the keypad will operate as it currently does until you change its protocol.

Protocols are most useful for multiple-projector applications. For example, you might want to change one keypad protocol if you are working with two remote keypads and two projectors in the same room and need to control each projector independently (Figure 2-28). When Keypad A has a different protocol than Keypad B, each keypad communicates *only* with the projector having a matching protocol. Or, if you have a network of two or more projectors connected together via RS-232 serial ports, you may want only certain projectors to respond to a wired keypad.

NOTE: Match the protocol on the projector to that of a keypad by setting the desired option in the ***Preferences*** *menu (use Front IR, Rear IR or Wired Keypad, depending on which you want to change). See* ***3.7, Adjusting and Checking System Parameters*** *for further information.*

A protocol for either type of remote keypad — IR or wired — can be changed through software commands entered on the keypad. A new protocol set through software commands remains in effect until a battery is removed (if an IR remote), or until the keypad is unplugged from the projector (if a wired remote). The projector will automatically detect software changes. A remote can also be changed manually — you can "hard-wire" new jumper settings inside the keypad so that they remain in effect permanently until you change the hard-wiring back again. Again, to temporarily override the hard-wired protocol at any time, simply use the shortcut software command.

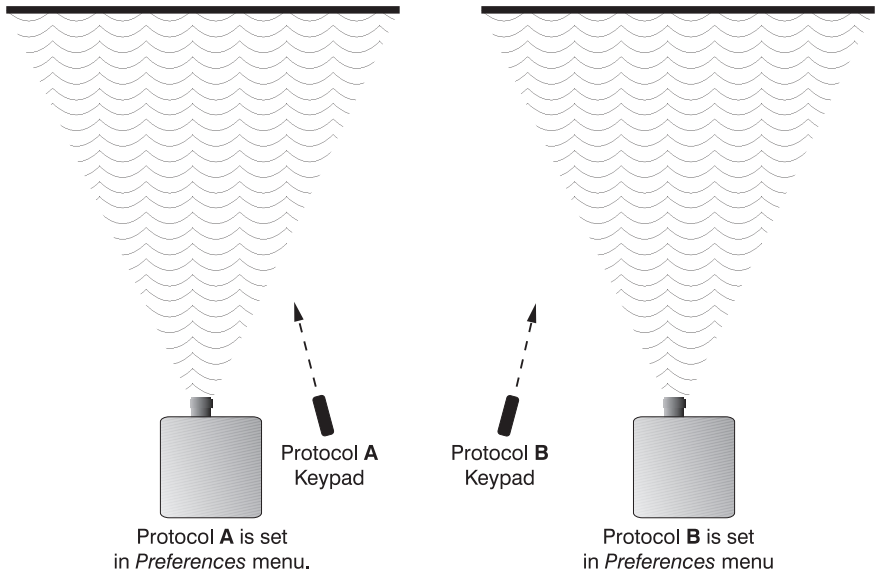


Figure 2-28. Independent Keypads and Projectors

Changing Keypad Protocol

➤ The IR remote keypad or the optional wired remote can be set to one of two different protocols — "A" or "B". To hard-wire a protocol to "A" or "B" in either type remote, follow Steps 1 through 6.

Step 1

In the *Preferences* menu, make sure that the desired keypad option (Front IR, Rear IR, or Wired Keypad) is set to Option 1 “A or B”. This will ensure that the projector will continue to respond to the keypad after you change protocol.

Step 2

Unplug the keypad from the projector (applies to wired remote only).

Step 3

Unlatch and open the battery compartment on the back of the keypad as shown in Figure 2-29. Make sure the batteries are in place (IR keypad only).

NOTE: The optional wired keypad appears as shown, but there is a cable passing through the battery compartment cover.

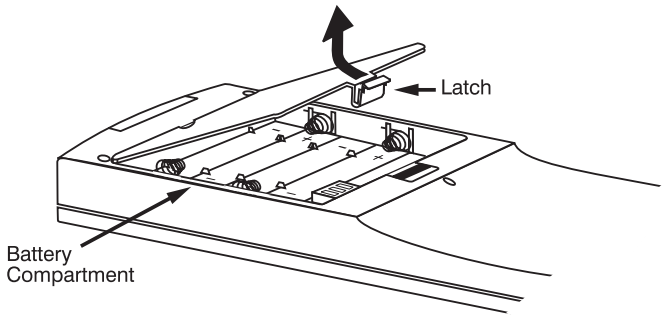
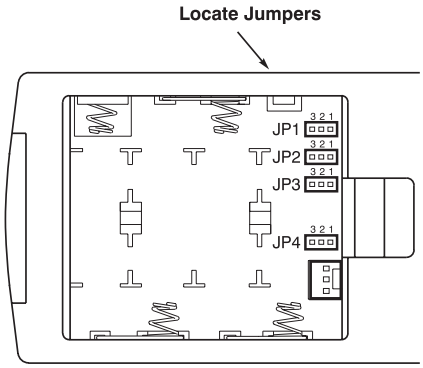


Figure 2-29. Opening the Keypad (shown without batteries)

Step 4

Find the 4 jumpers located along the latching side of the battery compartment (Figure 2-30). These jumpers set the keypad protocol and other parameters so that the keypad functions in a certain manner.



IR Remote Keypad:

JP1	3 2 1 = PROTOCOL **A** *-or-* 3 2 1 = PROTOCOL **B**
JP2	3 2 1 (ALWAYS)
JP3	3 2 1 DISABLE IR
JP4	3 2 1 WIRED KEYPAD

Wired Keypad:

JP1	3 2 1 = PROTOCOL **A** *-or-* 3 2 1 = PROTOCOL **B**
JP2	3 2 1 (ALWAYS)
JP3	3 2 1 DISABLE IR
JP4	3 2 1 WIRED KEYPAD

Figure 2-30. Locating and Setting the Jumpers

Step 5: Set the Jumpers

Set the jumpers as shown in Figure 2-30. Take care to refer to the correct part of the drawing — IR or wired (optional). Use tweezers or needle-nose pliers to remove and replace each jumper as necessary.

- **J1** jumper: For either remote, set between pins 1 and 2 to set as Protocol "A". Set between pins 2 and 3 to set as Protocol "B".
- **J2** jumper: For either remote, set between pins 2 and 3 as shown; otherwise, the projector will not respond correctly to keypad commands.
- **J3** jumper: For the IR remote, make sure that the jumper is set between pins 2 and 3 as shown. For the wired remote, make sure that the jumper is set between pins 1 and 2 as shown.
- **J4** jumper: For the IR remote, make sure that the jumper is set between pins 1 and 2 as shown. For the wired remote, make sure that the jumper is set between pins 2 and 3 as shown.

Step 6

Replace battery compartment cover. Plug into projector (wired keypad only) and test.

NOTE: Although they are similar, a wired keypad cannot be converted into an IR remote keypad, nor vice versa.

SHORTCUT METHOD FOR CHANGING PROTOCOL:

You can also issue software protocol settings through the keypad. These settings override the hard-wired jumper settings and remain in effect until the keypad is either unplugged or until a battery is removed. At that point, keypad protocol will then revert back to the hard-wired jumper settings (see above). Note that the projector will automatically detect this return to hard-wired settings and will still respond. To set the keypad protocol through software:

Press DAT 1 MUTE VID 1 VID 2 1 = Protocol "A"

Press DAT 1 MUTE VID 1 VID 2 2 = Protocol "B"

*NOTE: If you set a remote keypad to a new protocol and the projector stops responding entirely, the projector may be set to a conflicting protocol. Use the projector's built-in keypad to access the **Preferences** menu. Under the relevant keypad option, select the protocol that matches the new protocol of the remote keypad. The projector should now respond properly.*

Section 3

Operation

3.1 Overview

This section explains how to use the *DLV 1280* projector once it has been installed. Please read through this section before using the projector for the first time, and keep it on hand for future reference. With a full understanding of *DLV 1280* features and how to access them, you will be able to take complete advantage of the capabilities of the projector.

NOTES: 1) Installation involves locating the projector and adjusting it for use at that location. If you have not yet installed the projector, refer to ***Section 2, Installation and Setup****. 2) This manual assumes all audio/video options are installed.*

Organization of this section is as follows:

3.2 Projector Basics

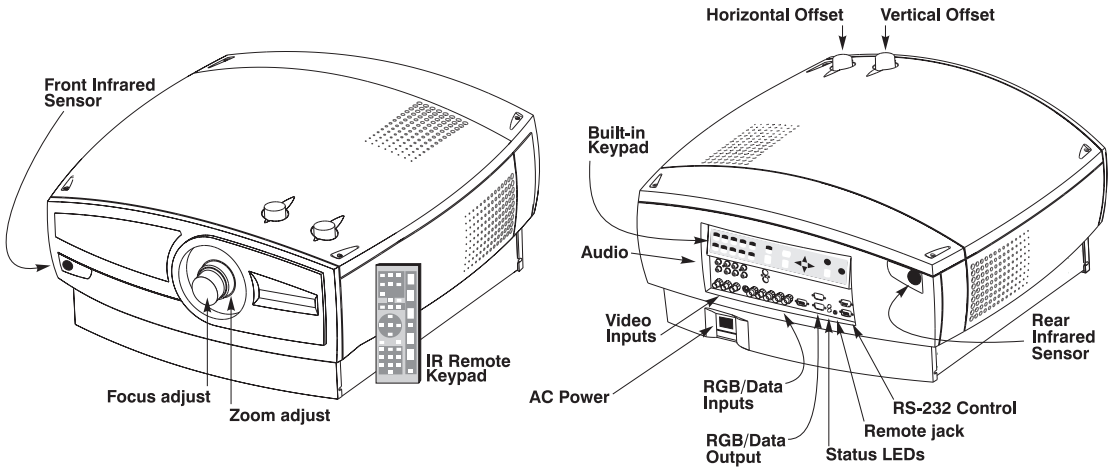


Figure 3-1. Main Components *(DLV 1280 model shown)*

Main components for operating the projector are shown in Figure 3-1. Notice that only zoom, focus and lens offsets are mechanically adjusted at the projector. Most other *DLV 1280* functions and adjustments are entered through simple keypad commands that either control the projector directly or which display a system of easy-to-use menus. In addition, you can define up to ninety-nine different source setups called *channels* for storage in the projector's internal memory, with each channel retaining its own specific adjustment levels and settings. Projector components are described below:

Infrared Sensors ➤ The infrared (IR) sensors on the front and rear of *DLV 1280* receive infrared signals from the IR keypad for remote control of the projector. Make sure that these sensors are not blocked. *Note: DLV 1280 CR has front sensor only.*

Zoom ➤ A zoom lens barrel rotates to change the size of the image at the current throw distance (projector-to-screen distance). Minimum and maximum image sizes depend on the specific zoom lens installed *(see Section 5, Specifications).*

Focus ➤ The lens barrel rotates to adjust the sharpness of the image at the current throw distance.

Lens Offset ➤ The two lens offset adjustment knobs adjust the vertical and horizontal position of the image in relation to the projector lens. See *Section 2, Installation and Setup* for details.

Composite or S-Video Input ➤ Accepts Composite video or S-Video signals from devices such as VCRs.

RGB Input (with loop-through) ➤ Accepts RGB and sync signals from devices such as computers, looping through to another display if desired.

PC Analog Input (with loop-through) ➤ Accepts PC analog signals from PCs and (with adapter) Macs, looping through to another display if desired.

Data Output (loop-through) ➤ "Dat Out" loops a currently selected source input through to another destination if desired.

RS-232 Interface (with loop-through) ➤ Allows one or more projectors to be remotely controlled by a computer or controller, and provides a communications connection for *Marquee* and third-party signal switchers.

AC Line Input ➤ Accepts only a AC line cord (power cord) as supplied with projector. The projector requires AC power of 90 to 264 VAC, 50 to 60 Hz @ 9 amps.

WARNING:
Do not attempt operation if the AC supply is not within the specified voltage and power range.

Status LEDs ➤ Two LEDs (light emitting diodes) located to the right of the "**DAT OUT**" connector indicate "Status" (top) and "Power" (bottom). During normal operation, the "Power" light is steady green and the "Status" light flashes green each time a key is pressed or when the projector receives a serial command. Use the following guide for interpreting the status LEDs.

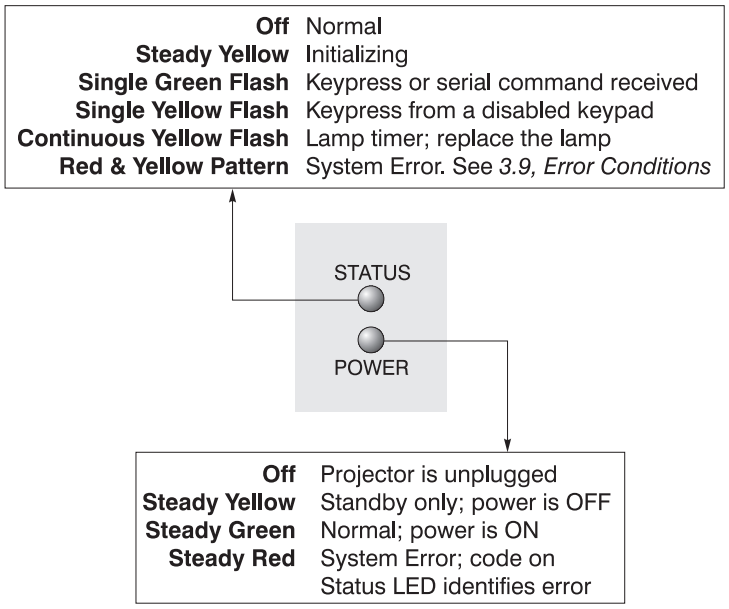


Figure 3-2. Reading the Status LEDs

NOTE: A steady red power light accompanied by a coded pattern of red and yellow flashes from the status light indicates an internal system error. Should the problem persist, contact a qualified service technician through your dealer or at Electrohome. See 3.9, Error Conditions for more information.

Infrared Remote Keypad ➤ Standard keypad for controlling the projector from a distance.

Built-in Keypad ➤ Alternative location on the projector for entering commands.

Remote Jack ➤ Accepts a wired remote keypad for alternative method of remote control.

3.3 Using the Keypads

Use any of three different keypads to control *DLV 1280*: The Built-in Keypad, the IR (infrared) Remote, or the Wired Remote Keypad (optional). Each keypad provides complete control of the projector, however you may find one keypad more appropriate or convenient than another, depending on your specific installation and application.

On each keypad, some keys always cause a single *direct* action, such as POWER to turn the projector on or off. Direct keys allow you to perform some tasks or adjustments quickly without going through a menu system. Other keys activate on-screen menus.

Built-in Keypad ➤ The built-in keypad is located on the back panel of the projector.

Note that on this keypad, each number key also has a second label indicating a specific function ("SRC" or VID 2", e.g.). These second labels apply only in *presentation* level, i.e., when there is no part of the menu system present.

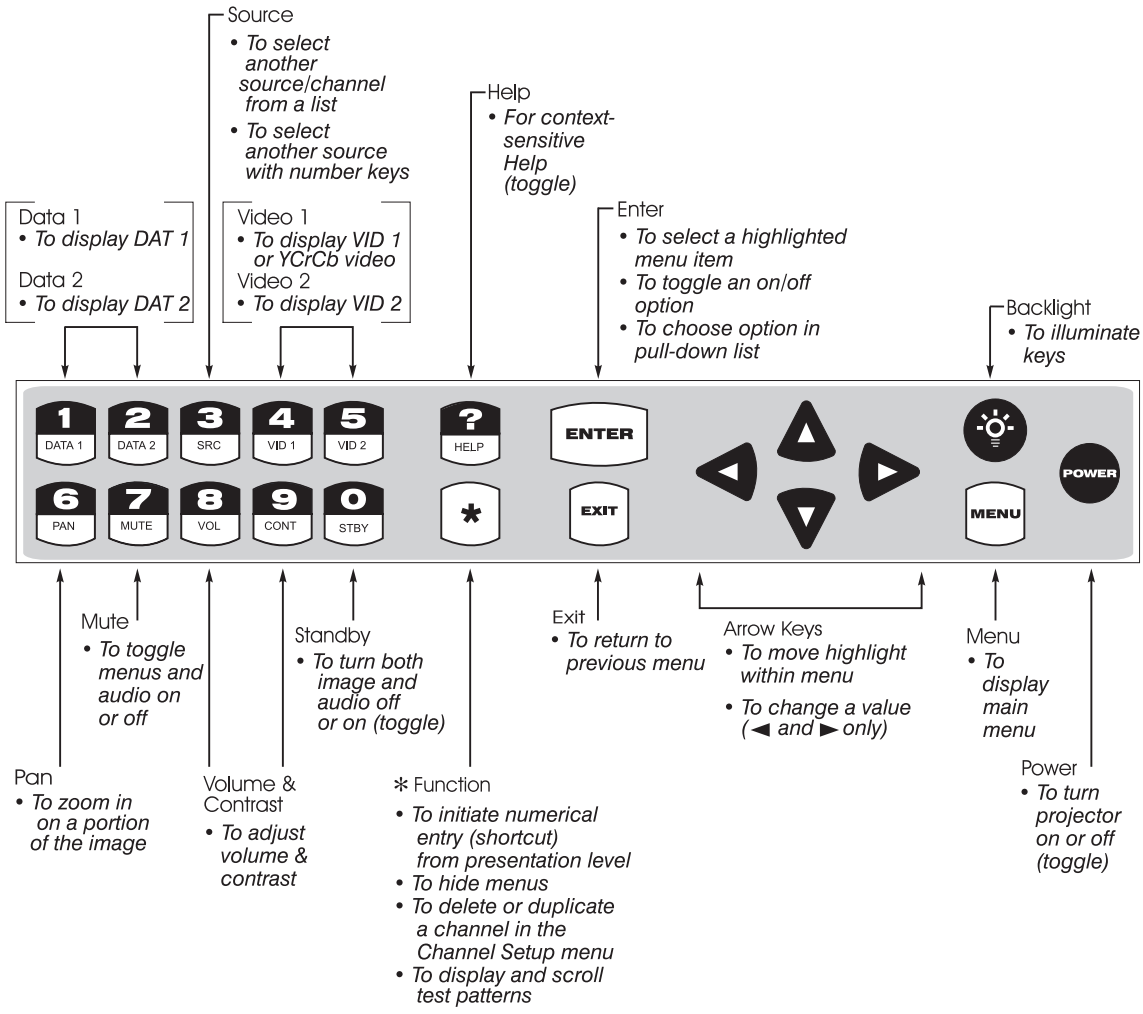


Figure 3-3. Built-in Keypad

IR Remote Keypad ➤

The IR Remote Keypad is the most commonly used keypad. It controls the projector by way of wireless communications from a battery-powered infrared (IR) transmitter. Use the keypad the same way you would use a remote keypad supplied with a television or VCR. When making key presses, point the keypad either toward the screen or toward the front or rear of the projector.

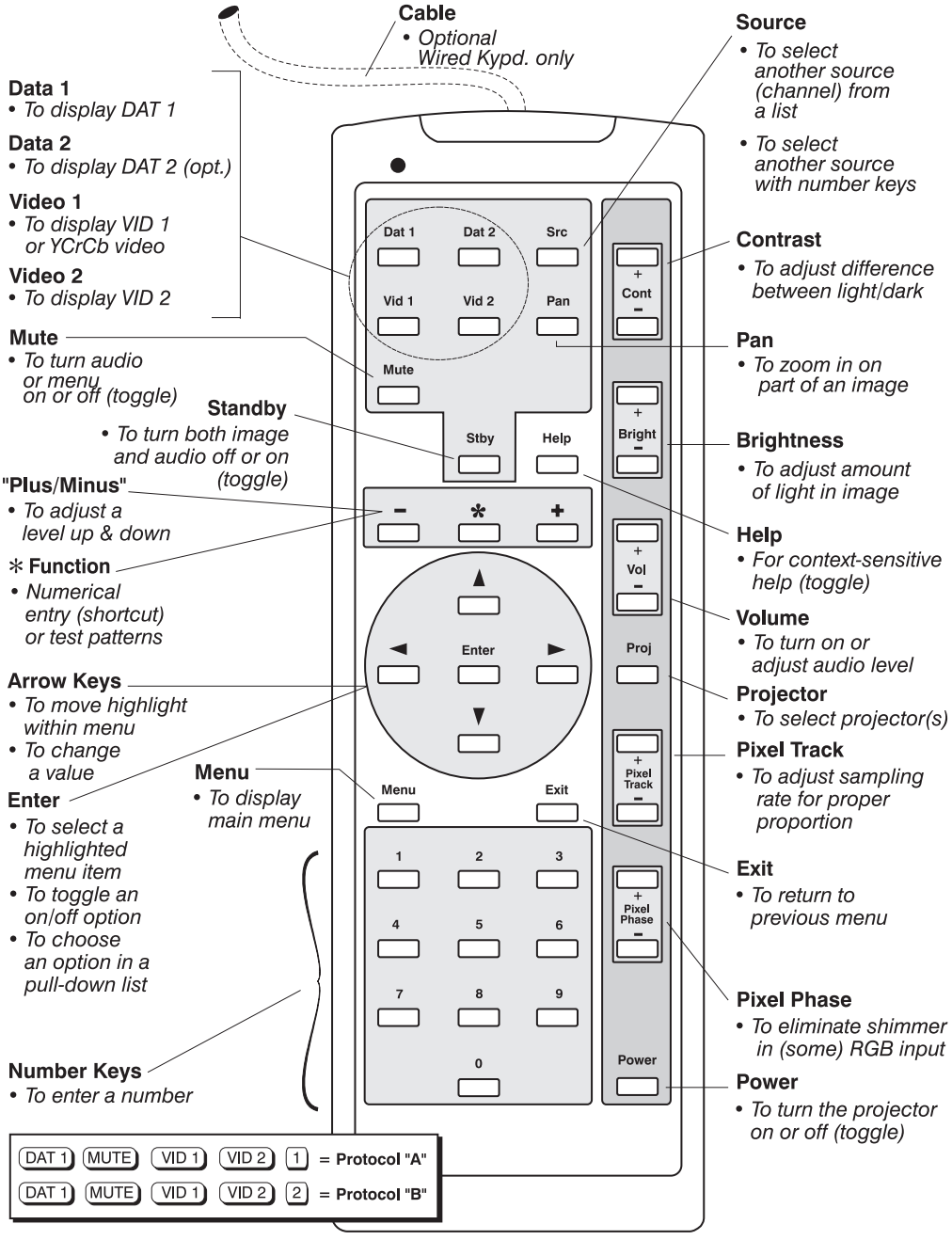


Figure 3-4. IR Remote Keypad or Wired Keypad

Wired Remote Keypad (OPTIONAL) ➤

The wired remote keypad connects to the *DLV 1280* remote jack via a 25 ft extension cable. This keypad is particularly useful when:

- the location of the keypad in relation to the projector or screen is inadequate for IR Remote Keypad operation.
- the lighting conditions are unsuitable for proper IR transmission
- you are controlling multiple projectors in the same room and need to control each by its own remote keypad.

NOTE: The wired keypad layout and functions are identical to the IR remote.

Guide to Keypads ➤

The following guidelines apply for all *DLV 1280* keypads.

1) Press and release keys one at a time.
2) You must hold down [POWER] for about a second in order to turn the projector on or off. For other keys, a momentary press similar to a mouse click is sufficient.
3) Any key press temporarily illuminates the backlight for reading the keys (applies to remote keypads only).
4) [◀], [▶], [▲], [▼], [+] and [−] usually repeat their actions when held down. For other keys, release and press again to repeat an action.
5) Any number key will function as a number within all parts of the menu system.
6) If you press a key while the projector is busy with another action, such as during power-up, the key press may not take effect.

When you turn on the projector it begins operating at *presentation level*, which displays the image from the existing source signal. The projector temporarily leaves presentation level when you use the keypad to change control settings, display menus, or access on-line help. For example, pressing [MENU] after startup displays the main menu list for access to specific functions — presentation level remains visible but is no longer considered “active”. Pressing [MENU] again (or [EXIT]) returns to presentation level.

Keypad operating settings (protocols)

The remote keypad and the optional wired keypad both can store keypad operating settings (also called protocols) in memory. In some advanced applications, such as when you want to use two separate keypads to control two projectors independently, you may want to override the original protocol (called Protocol "A") set during manufacture. See *2.10, Keypad Protocols* for complete instructions on changing protocol.

Basic keypad commands are explained below.

[POWER] Power ON / OFF

Press [POWER] and hold for approximately one second to turn the projector on or off.

*NOTES: **1)** Once the projector is turned off, fans remain on for about five minutes to cool the lamp as quickly as possible. **2)** Always avoid turning the*

projector on and off unnecessarily — each striking of the lamp significantly reduces lamp life.

DAT 1 *Dat 1*

Press DAT 1 to select and display the input connected to **DAT 1** on the projector (data input). Note that if a switcher is connected to Dat 1, the source on the last selected switcher/slot will be displayed.

DAT 2 *Dat 2*

Press DAT 2 to select the input connected to **DAT 2** on the projector (data input).

VID 1 *Vid 1*

Press VID 1 to select the input connected to **VID 1** on the projector (normally composite video). Note that YCrCb video (component video) connected to the video inputs also responds to **VID 1.**

VID 2 *Vid 2*

Press VID 2 to select the input connected to **VID 2** on the projector (normally S-Video, also known as SVHS). **VID 2** *cannot* select any YCrCb video (component video) that may be connected to the video inputs—use **VID 1**.

SRC *Source*

Press SRC to select a source or channel Note that the precise method you use depends on which option (from within the *Preferences* menu) you have chosen for the SRC key. You can choose to enter the switcher and slot number for a source location when you press SRC (this is the default), or you may prefer to see a scrollable list of channels when you press SRC, or you may want to enter the 2-digit channel number representing a source setup. See *Preferences* for details.

STBY *Standby*

Press STBY to blank the display and mute the audio output while keeping the projector in a warmed-up and ready state (standby). Note that everything remains ON even though the screen turns to black. If menus are up when you press STBY, the projector first leaves the menu system, then goes into the standby state. To leave standby, press STBY again, or EXIT.

MENU *Menu*

Press MENU at any time to display the main menu list of eight function menus. Press MENU again (or EXIT) to return to presentation level.

ENTER *Enter*

Press ENTER to select and accept a highlighted item, display a pull-down list, toggle an on/off option, or to save an adjustment and return to the menu.

EXIT *Exit*

Press EXIT to return to the previous menu level.

NOTES: ***1)*** EXIT *does* ***not*** *save changes within text editing boxes or pull-down lists, where it functions as an "escape" (cancel). For example, if you are moving*

within a list of channels, pressing EXIT *will NOT change the channel.* ***2)*** EXIT *has no effect in presentation level except to remove any test patterns present.*

Arrow Keys

Use the 4 arrow keys to:

- navigate within a menu
- navigate within a pull-down list
- increase or decrease a value

Within all menus or lists, ▲ and ▼ keys moves up or down one option at a time. For faster scrolling in longer menus (i.e., those showing a scroll bar), use ▶ to move to the next page of the menu, use ◀ to move to the previous page.

While in PAN mode, use arrow keys to reposition a zoomed (panned) image.

+ *or* ▶ *"Plus" or Right Arrow*

There are various uses for these keys, depending on the situation:

- + or ▶ to increase a slidebar value
- + or ▶ to change an on/off option to "on" (in short menus)
- + or ▶ to scroll up through options in a pull-down list
- + to go to the next source (channel) in the "InMenu" list (remotes only)
- + to duplicate a given source (channel)
- ▶ to go to the next page in a long menu (one having a scroll bar)

− *or* ◀ *"Minus" or Left Arrow*

There are various uses for these keys, depending on the situation:

- − or ◀ to decrease a slidebar value
- − or ◀ to change an on/off option to "off" (in short menus)
- − or ◀ to scroll down through options in a pull-down list
- − to go to the previous source (channel) in the "InMenu" list (remotes only)
- − to delete a given source (channel)
- ◀ to go to the previous page in a long menu (one having a scroll bar)

✻ *Function Key*

Use the ✻ key to access menus without displaying them. This direct and "blind" access enables you to continually display an image while making a quick adjustment. For this blind access, press ✻ *n* *n* (or more) from presentation level to use a specific menu option. Make sure to use the corresponding numbers from the menu system. You will find that codes to the most commonly used menu options are easily memorized and can save time.

For example, enter ✻ 2 3 to immediately display and adjust the *color* slidebar without displaying the *Main* menu or *Image Settings* menu. If slidebars have been turned off (in *Preferences* menu), even the slidebar will be hidden. Press ✻ again if you ever want to recover a menu or slidebar and verify your status.

NOTE: Certain engineering codes accessed through the ✻ key may freeze an image or display an unfamiliar menu. Should you accidentally select one of these special codes, press any non-number key to cancel and return to presentation level.

The ✻ key can also access certain other functions outside the menu system, such as test patterns and certain commands from the built-in keypad. For details, see *Service* menu later in this section.

Contrast

Press CONT to increase or decrease the difference between light and dark areas of your image. Use + and – until you reach the desired level of contrast, making sure that whites do not distort or become tinted. Note that after 5 seconds of inactivity the Contrast slidebar disappears and the previous menu or presentation level reappears.

*NOTE: On the IR or wired remote, you can select either the + or – "Cont" keys to begin increasing or decreasing the degree of contrast in the image. See **3.6, Adjusting the Image** (**Image Settings** subsection) below.*

Bright key

Select either the + or – "Bright" key to begin increasing or decreasing the amount of perceived light in the image so that black just changes to very dark gray. See *3.6, Adjusting the Image (Image Settings* subsection).

NOTE: Remote keypads only.

Volume

On the built-in keypad, press VOL to turn on or control the audio level for the current source or channel. Use + and – until you reach the desired volume. Note that after 5 seconds of inactivity the volume slidebar disappears and the previous menu or presentation level reappears.

NOTE: On a remote keypad, select either the + or – "Vol" key to raise or lower the volume.

PROJ

Projector Key

Press PROJ to display an editable box indicating which projector is active and currently listening to the remote keypad. To control a single projector within a group, enter the 3-digit number assigned to the projector you want to use, or use + or – to scroll. Press ENTER to select.

To broadcast to multiple projectors, do one of the following on a remote keypad (a built-in keypad controls only its local projector):

- press PROJ + PROJ
- press PROJ + ENTER

*NOTES: 1)If the editable box is displayed and you want to select a different option in the Preferences menu, use the arrow keys rather than a number key. 2) See **2.10. Keypad Protocols**, **3.7, Controlling System Parameters** and **3.8, Using Multiple Projectors**.*

Pixel Track

Select either the + or – "Pixel Track" key to begin increasing or decreasing the frequency of the pixel sampling clock to match the input signal. Pixel tracking may need adjustment when your image is stretched or compressed (assuming it is sized correctly) and exhibits soft vertical bars of noise. See *3.6, Adjusting the Image (Image Size & Position* subsection).

NOTE: Remote keypads only.

Pixel Phase

Select either the + or – "Pixel Phase" key to begin increasing or decreasing the phase of the pixel sampling clock so that any shimmer disappears and the image is stable. See *3.6, Adjusting the Image (Image Size & Position* subsection).

For continuous automatic adjustment, press ENTER. The phase value will change and an "**A**" will appear in the menu to signify that the projector has selected the correct phase setting for the current display. To toggle auto phase off, press ENTER again.

*NOTES: **1)** This key is on remote keypads only. **2)** Pixel Tracking must be correct in order for Pixel Phase to work.*

MUTE

Mute

At presentation level, press MUTE to toggle audio from the current source on or off. A small "MUTE" message will appear until you cancel (press MUTE or VOL).

If a menu is visible, press MUTE (or * on the built-in keypad) to hide it. You can continue adjustments as usual with the arrow keys while displaying only the image. To cancel mute and return to the normal menu display, press any key other than the right or left arrow keys, or + or – .

If you are hiding the menus (i.e., you entered the menu system "blindly" with * n n), press MUTE or * to re-display the menus.

PAN

Pan

Press PAN if you want to enlarge (zoom in on) only a portion of the image, such as extremely small text or some sort of detail. Each press of PAN will scroll through the zoom factors of **Off** (normal state of image), **x2** (doubled) and **x3** (tripled). Use the arrow keys to move the portion you want to see into view.

HELP

Help

Press for detailed information about any current menu and highlight. Press HELP again to exit. From presentation level, press HELP to access the *General Help* menu consisting *Using Help, Setup, Keys, Source Selection* and *Status and Power LEDs*. Press EXIT to exit and return to presentation level.

3.4 Navigating the Menus

Most of the controls for the projector are accessed from within the *DLV 1280* menu system, consisting of a main menu from which eight function menus and other options stem. See *Appendix C* for the complete *DLV 1280* menu tree.

Main Menu ➤

Press MENU at any time to access the *Main* menu. This menu lists all function menus.

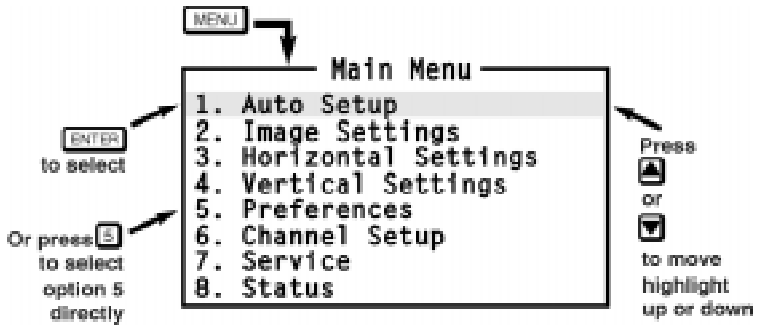


Figure 3-5. Using the Main Menu

In the *Main* menu, use the arrow keys to highlight the function menu you wish to access, then press ENTER to display it. Or, for quicker access with less manual scrolling, simply enter the number of the desired menu. For example, enter 2 (in the *Main* menu) for *Image Settings* or 5 for *Preferences*. The desired function menu will appear.

Function Menus ➤

Function menus are accessed through the *Main* menu. They are *Auto Setup, Image Settings, Horizontal Settings, Vertical Settings, Preferences, Channel Setup, Service,* and *Status.*

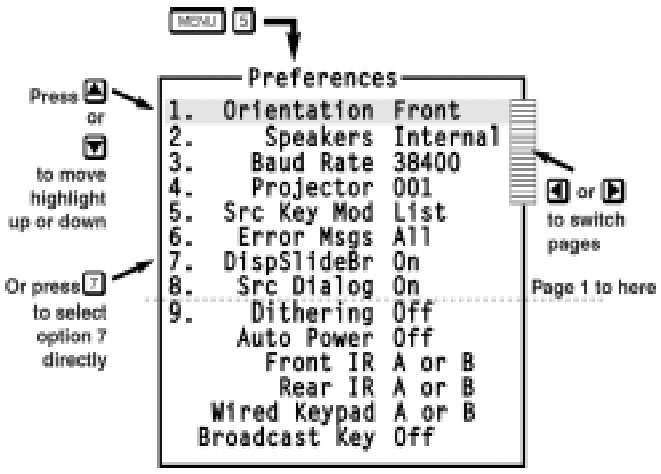


Figure 3-6. Sample "Function" menu

Once in a function menu (such as *Preferences*, left), use the arrow keys to move the highlight to a desired option. Then press ENTER to select it. Or simply press the appropriate number key for quicker access to any numbered menu item. If a menu is longer than a single page (indicated by the presence of a scroll bar on the right side), use ▶ to go the next page and ◀ to return to the previous.

If items are locked out or do not pertain to the current action, the highlight will skip over them and you cannot select them, although they remain in the list. If there is no signal present all source-dependent adjustments are disabled. Also note that after 15 minutes of inactivity, a function menu disappears and the projector returns to presentation level.

When you are finished with a function menu, do one of the following:

- Press EXIT to return to the previous menu level (usually the main menu).
- Press MENU to accept any changes made and return to the main menu.

Hiding the Menu System ➤

NOTE: See Appendix C for the complete DLV 1280 menu tree.

If you like, you can change a setting directly from presentation level without seeing on-screen feedback. This "blind" access enables you to continually display your image while making a quick adjustment. From presentation level, simply press ✻ ∩ ∩ (or more), using the corresponding numbers from the menu system to immediately access a desired option. Note that options in pull-down lists may be numbered as well, so include this extra number in your entry.

For example, enter ✻ 2 3 to change the *color* level for the current image while suppressing both menus and slidebar. Press ✻ again if you want to recover a menu or slidebar and verify your status. If you are accessing an on/off option, direct access immediately toggles the current setting.

Use the arrow keys as usual to go to another menu item or option.

On-line Help ➤

If at any time you are uncertain about a menu or highlighted option, press HELP to display detailed information about it. Once in Help, use the arrow keys to scroll as necessary. Press HELP again (or EXIT) to leave help, or press MENU to exit and return to the main menu.

Or, if you are at presentation level with no menu displayed, press HELP to access General Help topics. Press EXIT to return to presentation level.

Using slidebars and other controls ➤

Within most function menus you can change various settings through slidebars, on/off toggles, and pull-down lists. Highlight the menu item (parameter) that you want to adjust. If it is a slidebar, adjust it as desired (see below). For other menu items, press ENTER to reverse an on/off status, or display a pull-down list.

Slidebars

A slidebar is a simple graphic representing the current value for the given parameter, such as a brightness or contrast setting. The numerical value appears in the right corner above the slidebar. This number usually represents either an actual amount (such as number of pixels) or a percentage (such as 77% brightness).

To adjust a slidebar up or down:

- Press + or − (remote keypad only)
- Or press ▶ or ◀
- Or press ENTER and enter a specific value
  (note: does not apply to Pixel Phase option)

As soon as you increase or decrease the level, both the number and the length of the bar change accordingly. Press EXIT to return to the function menu.

NOTE: If you use a slidebar directly from presentation level, you must enter a change within 5 seconds or the slidebar will disappear from the screen.

To turn all stand-alone (non-menu) slidebar graphics off so that you can adjust settings without displaying any slidebars, set the "Display Slidebars" option to "**Off**" in the Preferences menu.

On/Off

Some options are either on or off, such as “Broadcast Key”.

To toggle an option on or off:

- Press + (on)
- Press − (off)
- Press ENTER to toggle between on and off

Note that in *Preferences* and *Channel Edit* menus, the ◄ and ► arrow keys change the menu page rather than toggling an on/off option. Use one of the other keys in these menus.

Pull-down Lists

Some options can be set to one of several specific values or settings, such as “Baud Rate” or “Orientation”. Press ENTER to see the pull-down list of possible settings for an option.

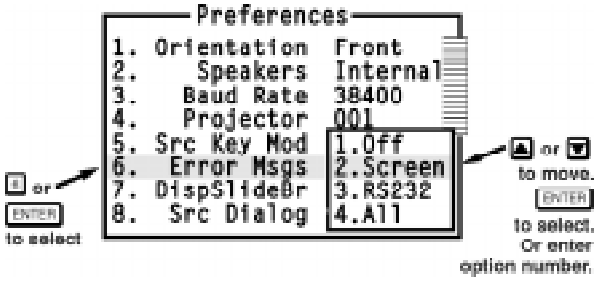


Figure 3-7.Using a Pull-down List

To select an item in a pull-down list:

- Press ▼ to move down in the list, then press ENTER to save.
- Press ▲ to move up in the list, then press ENTER to save.
- Press a n key corresponding to a numbered option
- Press EXIT to cancel (escape). Original setting remains.

NOTE: Press + or − to cycle through a pull-down list without displaying it.

Editing Text ➤

To edit a text parameter (such as a channel name), highlight the desired parameter and press ENTER to enable the text editor. The highlight will shrink to the edit area, where you can begin entering characters or digits.

- Press ▲ to move to the next letter in the alphabet or to a higher number
- Press ▼ to move to the previous letter in the alphabet or to a lower number
- Press ► to move right
- Press ◄ to move left
- Press + to insert a space
- Press − to delete a character or number
- Press ENTER to save the complete entry
- Press EXIT to cancel (escape). Original text remains.

NOTES: 1) Numbers are at either end of the alphabet. If desired, scroll with ▲ or ▼. Or enter numbers using the number keys on the keypad.

Entering Numbers ➤ When a number is required, such as when you are specifying a projector number, a special highlighted numeric field appears on screen. Press a numbered key on the keypad to begin entering the desired number. Note that once you enter the first digit, it replaces all of the old.

- To delete the last digit entered press −
- To cancel (revert back to the old number), press EXIT at any time
- To accept the new number, press ENTER

Time-outs ➤ Whenever the projector is *not* at presentation level, such as when there is a slidebar, menu, message or test pattern present, you have limited time in which to make a keypad entry before the projector returns to presentation level. These time-outs vary depending on the specific function at hand, as shown in the following chart:

TIME-OUTS	
Display	**Time-out**
All menus and options	15 minutes
Slidebar (direct access)	5 seconds
Source entry	5 seconds
Direct control entry	5 seconds
Other	15 minutes

3.5 Working With Sources and Channels

*NOTE: See **Section 2, Installation and Setup**, for a complete explanation of how to connect the various types of sources to the projector.*

Selecting a Source ➤ Once you connect a source to the projector, such as a VCR or computer, you can display the image from it by pressing the appropriate "direct" key: DAT 1, DAT 2, VID 1 or VID 2 at any time.

Or, perhaps if your system includes many sources, press SRC to use another method of selection. Depending on how you have defined it from within the *Preferences* menu, the SRC key will trigger one of the following:

- **A pull-down list** of channels retained in projector. Highlight and press ENTER to select the desired channel. Or press EXIT to cancel and return to the present channel. Note too that you can cycle up or down through this list of channels simply by pressing + or − from presentation level. *NOTE: Only those sources marked as "In Menu" (default) in the Channel Edit menu appear. See **Editing Channels**, below.*

- **2-digit channel entry** of channel numbers representing source setups retained in projector memory.

- **Switcher & Slot entry** of a source location (default). First enter the number of the switcher used, then enter the number of the slot for the source.

NOTES: 1) A source number in the pull-down list identifies a particular channel retained in projector memory. A "switcher/slot" number identifies the physical location of a source. 2) If you pause for 5 seconds or more during a source switch, the switch is canceled and you're returned to the present source.

See *Preferences* section to set your desired method of source selection.

Creating a Channel ➤

Once you have requested an image from a source, the image will be displayed according to the input and signal parameters—the *channel*—last defined for that source. If you have not yet defined any parameters that match the source, a new channel is temporarily defined according to a default mode table defined in the projector, and the image will initially be displayed based on these defaults. Note, however, that this source will not be permanently saved as a new channel unless you change a parameter (size, phase, etc.) either manually or through an "**Auto Setup**" (see below).

You may want to adjust and define a wide variety of display parameters for a channel, such as brightness, contrast, tint, etc., in order to optimize the display for that source. For example, the display settings you choose for a VCR source may be quite different from those you choose for a high resolution computer source. Once defined, settings for a particular source are collectively stored in the projector's memory as a unique source setup called a *channel*. *DLV 1280* can store and automatically recall up to 99 channels so that you do not have to repeatedly re-configure the projector whenever returning to a previously used channel. Note that you can have more than one channel for the same physical source.

*NOTE: A new channel is assigned the first available number from 1-99. You can change this number in the **Channel Edit** submenu.*

Auto Setup ➤

To quickly adjust a new image for which initial default settings may not be ideal, select "**Auto Setup**" in the *Main* menu. A dialog box will appear, at which point you can either continue with the Auto Setup or cancel (see Figure 3-8). If you continue, the following settings will be calculated automatically, filling the horizontal width as closely as possible based on the source present:

- Size and Position
- Brightness & Contrast (set to defaults)
- Pixel Tracking
- Frame rates (input/panel) are matched if possible
- Top/Left Blanking (set to 0)
- Pixel Phase
- RGB Drivelevels (set to defaults)
- RGB Blacklevels (set to defaults)

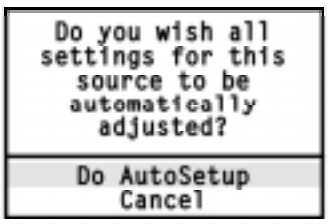


Figure 3-8. Auto Setup Dialog Box

An Auto Setup for non-video images takes up to 30 seconds. Auto Setup can be canceled at any time by pressing EXIT at any time.

While auto setup can save time and effort in setting up a new source, you may still want to improve some adjustments manually, especially if the setup was based on a dark, moving or poor quality image. For best results, use a fully bright and stable image that entirely fills the screen.

NOTE: 1) Auto Setup can fail if the image content or quality is not suitable. 2) An Auto Setup of a video image takes only an instant rather than 30 seconds.

About Channels ➤ *The Channel Setup Menu*

A channel is automatically created and stored in memory when an input signal is sent to the projector and you change a parameter (either manually or with an Auto Setup). To learn more about channels, press 6 to display the *Channel Setup* menu.

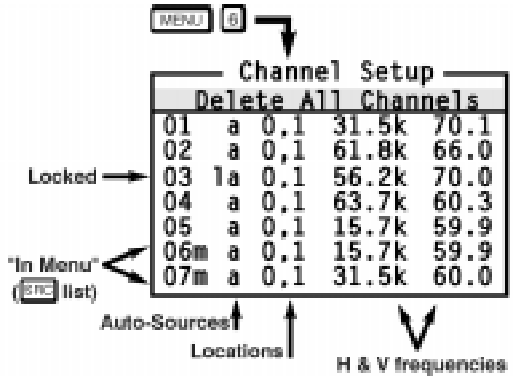


Figure 3-9. Channel Setup Menu

This menu lists all channels defined so far. If there are more channels than can be displayed at once, press ▶ to scroll to the next page.

NOTE: To see more information about a certain channel, enter the number, or highlight the desired channel and press ENTER. *This will activate the* ***Channel Edit*** *menu (see* ***Editing Channel Setups****, below).*

CHANNEL NUMBER AND "m": Every defined channel is identified by a number from 01-99 and listed in the first column of the *Channel Setup* menu. These numbers appear in the channel list that may be displayed when you use the SRC key.

An "**m**" after a number signifies that this channel will be included in the channel selection menu (also known as the *channel list*) available from the SRC key.

*NOTE: By default, a channel will have an "***m***" here, thus the channel will appear in the channel list that may appear when you press* SRC. *To delete a channel from the menu, you must specify "***Off***" in the "***In Menu***" option in the* ***Channel Edit.*** *See* ***Editing Channels,*** *below.*

AUTO SOURCE: The second column identifies two states, "locked" and "auto source". Locked sources are marked with an "**l**" in this column. Sources that the projector can automatically switch to or away from whenever the input signal changes are marked with an "**a**" (default). The projector uses the channel best suited to the input signal. To turn the auto source off or on for a channel, use the *Channel Edit* menu (see *Editing Channel Setups*, below).

SOURCE (CHANNEL) LOCATION: The third column consists of two digits (for example 0,1) that identify the location of each channel according to its switcher number (first digit) and slot number (second digit). Note that the projector is considered to be switcher "0", with other switchers identified as 1-9. Slot numbers for the projector are:

- DAT 1 = switcher 0, slot 1
- DAT 2 = switcher 0, slot 2
- VID 1 = switcher 0, slot 3

- VID 2 = switcher 0, slot 4

Slot numbers for other switchers can range from 1-9.

FREQUENCIES (READ-ONLY): The last two columns list the horizontal and vertical frequencies for each channel. Or, if you have entered a name for the channel, it will appear here instead.

To Delete Channels ➤ *Deleting One Channel*

In the *Channel Setup* menu, highlight the channel you wish to delete and press −. A confirmation box will appear to make sure you really want to delete the selected channel (see left). Highlight the desired response and press EXIT.

*NOTE: The built-in keypad has no + or − key. Instead, press * if you want to delete a highlighted channel. This will display the confirmation box.*

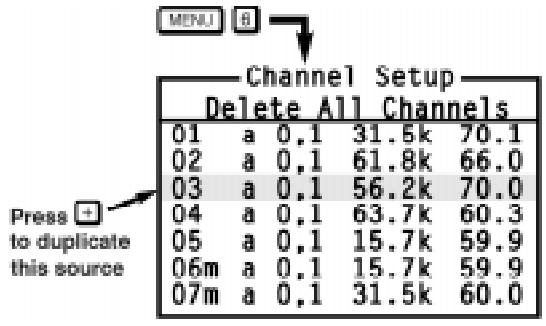
If you delete the current channel, another new default channel will be created (saved in memory only if a parameter is changed). This channel will appear in the *Channel Setup* menu the next time you are in it, and will be assigned the lower available channel number.

Deleting Multiple Channels

In the *Channel Setup* menu, highlight the "Delete All Channels" and press ENTER. A confirmation box will appear to ask which channels to delete: all, only the unlocked channels or cancel (see left). Highlight the desired response and press ENTER.

To Duplicate a Channel ➤

In the *Channel Setup* menu, highlight the channel you wish to duplicate and press +. The selected channel will be duplicated and assigned the next available number. This new channel becomes highlighted in the menu.



*NOTE: The built-in keypad has no + or − key. Instead, press * if you want to duplicate a channel. A dialogue box will appear, asking if you want to either duplicate or delete the selected channel. Select Duplicate or Cancel.*

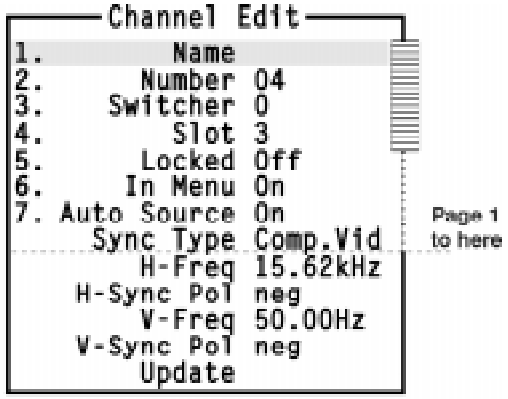
Editing Channels ➤

You can edit a channel at anytime from with the *Channel Edit* menu, accessed through the *Channel Setup* menu. For example you may wish to add a

recognizable name for a certain channel (such as “vhs2” or “pc”), lock a channel from further changes, or include another channel in the channel list menu.

The Channel Edit Menu

From the *Channel Setup* menu, highlight the channel you wish to edit or see further information about. Press ENTER to display the *Channel Edit* menu for this channel.



Highlight and select an editable parameter here.

Figure 3-10. Channel Edit Menu

NAME: To enter or edit the channel name (maximum of 8 characters), press ENTER and then:

- Press ▲ to move to the next letter in the alphabet or a higher number
- Press ▼ to move to the previous letter in the alphabet or a lower number
- Press ▶ to move right
- Press ◀ to move left
- Press + to insert a space
- Press − to delete a character or number
- Press ENTER to accept all when done
- Press EXIT to cancel (escape). Original text remains.

Remember to press ▶ after each character or digit you want. You can enter numbers directly from the keypad.

CHANNEL (SOURCE) NUMBER: To change a channel number, press the desired number (1-99) on the keypad. If the number you enter has already been assigned, you will be asked if you want to delete the other channel. Select “**Off**” to cancel the change and retain the other channel number.

SWITCHER NUMBER: This number identifies the switcher to which the source is connected. The projector is considered to be a switcher and is always identified as switcher “**0**”, with other switchers identified as 1-9. Edit as necessary.

SLOT NUMBER: This number identifies the slot to which the source is connected. On the projector, these slots are:

- slot 1 = DAT 1
- slot 2 = DAT 2
- slot 3 = VID 1
- slot 4 = VID 2

Slot numbers for other switchers can range from 1-9. Edit as necessary.

LOCKED: Select "**On**" to prohibit any changes to the channel, "**Off**" to unlock.

IN MENU: Select "**On**" if you want this channel to appear in the channel selection menu that may appear when you press [SRC] . Select "**Off**" (default) to prevent it from appearing in the channel selection list.

AUTO SOURCE: Select "**On**" (default) if you want the projector to automatically switch to or away from this channel when the input signal changes (recommended).

SYNC TYPE: Read-only, showing the type of signal for which this channel is defined, such as "Composite."

H-SYNC and V-SYNC: These read-only parameters show the frequencies and polarity ("pos" or "neg") for a channel. These numbers enable selection of the correct channel setup for the current source. If these are blank, there is no sync present or detectable.

UPDATE: Select this option to reset all image parameters for the current channel to their defaults. This is useful if you specifically wish to re-define a channel according to default values or if you want to change the source for a channel. A message of "reading New Values" appears on screen during an update.

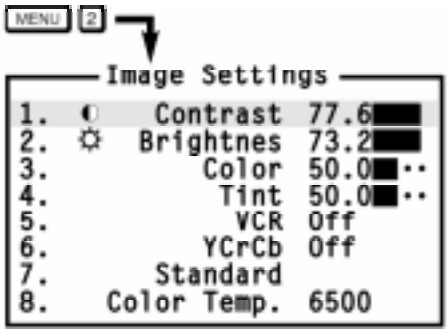
3.6 Adjusting the Image

Various image controls lie in three function menus: *Image Settings, Horizontal Settings or Vertical Settings*, each of which is called up by its own name in the *Main* menu. Or, if desired, call up an individual image control directly from presentation level by pressing the [*] key followed by the appropriate numbers representing the numbered menus and options you want.

While in any of the function menus (each described below), you can adjust settings for the current image by working with the available slidebars, on/off options and pull-down lists. When you are done with a function menu, press [EXIT] to accept changes and return to the previous menu.

Image Settings ➤

Use this menu to adjust all settings for the current image except its size and position. In *Image Settings*, adjust brightness, contrast, color, tint, or color temperature as well as its video standard and others. Refer to *Using Slidebars and Other Controls* if you need help in selecting options and accepting changes.



To return to the main menu, press EXIT.

Figure 3-11. Image Settings Menu

Contrast

CONTRAST increases or decreases the perceived difference between light and dark areas of your image (0-100). Adjust so that whites remain bright but not distorted or tinted. If contrast is set too high, the light parts of the image lose detail and clarity. If set too low, the light areas will not be as bright as they could be and it may be difficult to distinguish between foreground and background information.

*NOTES: **1)** For best results, adjust contrast AFTER brightness. **2)** If room lighting changes, it may be necessary to re-adjust both.*

Brightness

BRIGHTNESS increases or decreases the amount of perceived light in the image (0-100). If video or data is displayed with a black background, adjust until the background just changes from black to very dark gray.

Color

COLOR increases or decreases the amount of color in a video image—i.e., its color saturation level. For example, setting Color to "0" produces a black and white image. If Color is set too high, the color levels in the picture will be over-powering and unrealistic. Use + or − until the desired color saturation level is displayed.

Tint

TINT adjusts color hue to obtain true color reproduction of NTSC video signals. Use + or − until the you reach optimum balance of red-to-green in your image. For best results, adjust tint while displaying a proper test pattern—otherwise, tint should remain at its default setting.

VCR

VCR should be "**On**" if you are using a VCR or if you need to reduce flag-waving (bending) in your image. The projector will have more tolerance for poor signals, thus it will more easily recognize and lock onto your VCR signal without jumping to another channel. Set to "**Off**" for non-VCR sources, or if the option creates an objectionable amount of noise in the image.

YCrCb

Turn **YCrCb** "**On**" only if the input video signal is 3-wire component video (also known as "YUV" or "Y, R-Y, B-Y" video). Laser disks are common sources of YCrCb video. Keep this option off for other signals.

Standard

STANDARD indicates what video standard is currently being used for decoding the source video signal. Generally the projector automatically recognizes a signal and applies the proper standard. If necessary (such as for PAL-N, a black-and-white signal, PAL-M, or a poor quality signal), use the pull-down list to select a specific standard for the projector to use. For best results, leave **Standard** set to **Auto**.

The projector decodes using the following standards:

- NTSC (also known as NTSC-M or NTSC 3.58)
- NTSC 4.43
- PAL-M (must be set in the pull-down list)
- PAL-N (must be set in the pull-down list)
- SECAM

Color Temp.

COLOR TEMPERATURE (expressed in degrees Kelvin) adjusts "coloration" (reddish or bluish) of the whites displayed—the lower the temperature, the more reddish the whites. Use + or − as desired for the current channel.

Horizontal Settings ➤

Use this menu to adjust the width of an image or move it left or right. Refer to *Using Slidebars and Other Controls* if you need help in selecting options and accepting changes.

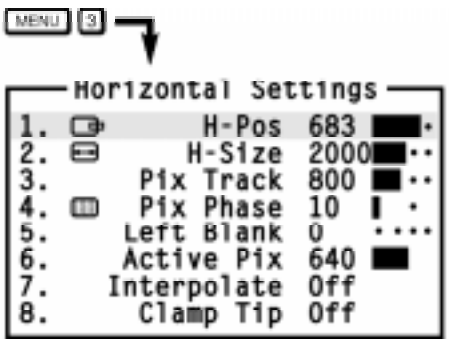


Figure 3-12. Horizontal Settings Menu

To return to the main menu, press EXIT.

H-Pos

HORIZONTAL POSITION moves the image left or right.

H-Size

HORIZONTAL SIZE adjusts the width of the image. Values for H-size have the following meanings:

- 1000 = 1:1 size
- 2000 = 2:1 size
- 3000 = 3:1 size

Pix Track

PIXEL TRACKING adjusts the frequency of the pixel sampling clock, indicated by the number of pixels per line, so that all pixels generated by a particular source

are sampled. Proper pixel tracking may need adjustment when your image is stretched or compressed and exhibits soft vertical bars of noise. For best results, adjust pixel tracking from within a smooth gray test pattern made up of a clear pattern of tiny black and white dots, or a similar graphic image. Adjust until the noise either disappears or fills the image completely. When noise fills the image, adjust pixel phase to eliminate it.

Or, if you know the resolution of your source, you may prefer to use a different approach to adjusting pixel tracking:

1. Set the active pixels to match the resolution of the current source.
2. Set the correct size (set a 1280 x 1024 display to "1000", for example).
3. Adjust pixel tracking in combination with horizontal position to exactly fill the screen.

NOTE: By default, the projector samples at the correct frequency for a given source. For best results, it is recommended that this default not be overridden.

Pix Phase

PIXEL PHASE adjusts the phase of the pixel sampling clock relative to the incoming signal (usually from an RGB input). Pixel phase may need adjustment when your image shows shimmer. If shimmer is in vertical bands, adjust tracking first. For best results, adjust pixel phase from within a smooth gray test pattern made up of a clear pattern of tiny black and white dots, or a similar graphic image. Adjust until the image is stable and each dot is clearly defined.

*NOTES: 1) Always adjust pixel **tracking** before pixel **phase**.*

Left Blank

LEFT BLANKING blanks out the left edge of an image (turns it to black). You can use this option in combination with horizontal position to center an image or portion of an image horizontally.

Active Pix

ACTIVE PIXELS defines how many pixels are used across the image. In most cases, this number represents the horizontal resolution of the current source. For example, if the incoming image is 1280 x 1024, there are 1280 active pixels across the image. When reduced, the right portion of the image will be blanked.

Interpolate

When an image is resized extra pixels are added to the picture (vertically and horizontally). If Interpolate is "**Off**" (default), the extra pixels are duplicates of neighboring pixels, which maintains sharpness while possibly making some lines wider than others. If Interpolate is "**On**", the extra pixels are an average of the adjacent pixels, which makes the image more even but softer. Choose the setting you feel is most appropriate for the type of image present.

Clamp Tip

CLAMP TIP moves the usual clamping pulse to prevent severe brightness or contrast problems from certain sources. In most cases, clamping will automatically be correct and this control has no effect on the image.

NOTE: This option does not apply to video sources or any RGB source with sync information on the video (e.g., sync-on-green).

Vertical Settings ➤

Use this menu to adjust the vertical size and vertical placement of an image. Refer to *Using Slidebars and Other Controls* if you need help in selecting options and accepting changes.

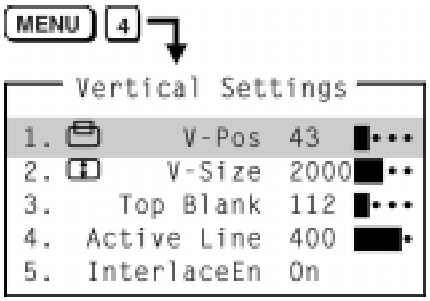


Figure 3-13. Vertical Settings Menu

To save changes in the *Vertical Settings* menu, press EXIT.

V-Pos

VERTICAL POSITION moves the image up or down.

V-Size

VERTICAL SIZE adjusts the height of the image. Values for V-size have the following meanings:

- 1000 = 1:1 size
- 2000 = 2:1 size
- 3000 = 3:1 size

Top Blank

TOP BLANK blanks out the top edge of an image (turns it to black). You can use this option in combination with vertical position to center an image or portion of an image vertically.

Active Line

ACTIVE LINES defines how many lines from top to bottom are used to display the image. In most cases, this number represents the vertical resolution of the current source. For example, if the incoming image is 1280 x 1024 there are 1024 active lines from the top of the image to bottom. When reduced, the bottom portion of the image will be blanked.

Interlace Enable

INTERLACE ENABLE should be “on” for all sources *except* HDTV sources. This option will ensure correct image size and proportion. Set to “off” for HDTV sources only—turning this option “off for other sources will reduce image size by one half.

3.7 Adjusting and Checking System Parameters

Use the remaining three function menus *Preferences*, *Status* and *Service* to change or review numerous system parameters that affect the overall operation of the projector rather than a given source/channel only.

Preferences ➤

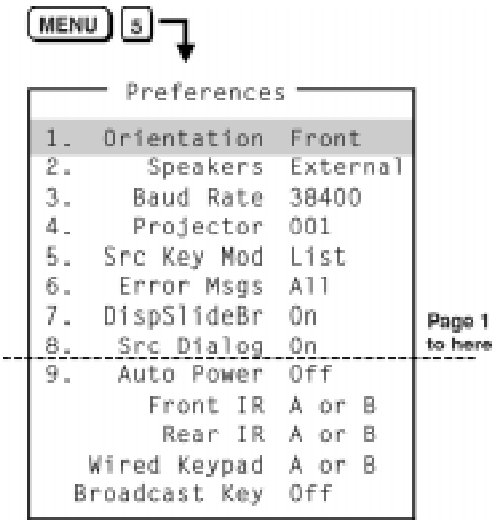


Figure 3-14. Preferences Menu

Use this 2-page menu for establishing overall projector operation independent of sources. Changes made in *Preferences* are in effect when you press EXIT. Refer to the *Using Slidebars and Other Controls* subsection (above) if you need help.

Orientation

Choose from Front, Rear, Inverted Front, Inverted Rear according to your installation. If the setting is incorrect, the image will be reversed and/or upside down. See ***2.6, Operating Orientation*** for an illustrated explanation.

Speakers

Select either the internal or external speakers as desired. You will hear audio for the currently selected channel. *NOTE: Not standard on all models.*

Baud Rate

The baud rate setting determines the speed of RS-232 communications, important if you are controlling the projector with an external device such as a computer or another projector via an RS-232 port. By default, the projector baud rate is set to 38400—change this as necessary to match the baud rate of your controlling device. If you are unsure about what baud rate to assign, refer to the documentation for the controlling device.

NOTES: ***1)*** *Changing the baud rate setting does not affect the switcher port, which remains at 9600.* ***2)*** *DLV 1280 RS-232 communication is always 8 data bits, no parity.* ***3)*** *See* ***2.9, Serial Port Connections*** *and* ***Appendix D*** *for more information about cable connections between devices.*

Projector

Enter a three-digit number (such as “001”) to assign a number to the projector you are currently using. Numerical identity for a projector is required whenever you want to communicate with a single projector within a multi-projector application (see PROJ key. above).

Src Key Mod

Choose how you want to select sources or channels when using the SRC key:

- **Switcher & Slot Location (default)**: Select this option if you have numerous locations.

  NOTE: The projector is always considered to be Switcher 0.

- **Pull-down list:** Select this option if you have numerous channels (source setups) available and want to choose from a list accessed with the SRC key. The channel number, location (switcher and slot number) and sync frequencies of each available channel will appear in the list (or, if a name exists, the name will appear instead).

  *NOTE: The "In Menu" option in the **Channel Setup** menu must be turned to "**On**" for any channel that you wish to see in the SRC key list.*

- **2-digit channel:** Select this option if you have numerous channels (source setups) available and want to change displays by pressing SRC and entering a 2-digit channel number.

Keep in mind that a source number in the pull-down list identifies a particular channel that has been set up and retained in projector memory. A source entered as "switcher/slot" number identifies the physical location of the source.

Error Msgs

Choose in what way you want to be notified of errors detected in either the incoming signal or projector. Select **Screen** or **All** if you want a brief message displayed. If you prefer to be notified via an RS-232 message only, select **RS-232** instead. To disable error messages entirely (except invalid user entries), select **Off**.

*NOTE: Display of invalid user entries cannot be disabled, even if you choose the "**Off**" option.*

DispSlideBr

If Display Slidebars is "**On**", direct access slidebars can be superimposed over the current image when an adjustable parameter is selected. These slidebars include volume, contrast, brightness, position, pixel tracking and phase, and others. If "**Off**", slidebars will be invisible during adjustment.

Src Dialog

If you want to see on-screen feedback whenever you use the SRC key to switch channels, set the Source Dialog box to "**On**". A channel dialog box will then prompt you to enter the switcher and slot location you want to use (if you have set up this method of source selection in the *Preferences* menu).

If you would like to use the SRC key for "invisible" source/channel switching (i.e., without a Source Dialog box reminder), set the Source Dialog box to "**Off**". You will still have to enter either the switcher and slot location after you press SRC , however no on-screen feedback will appear.

NOTE: If you are using the "List" option when using the SRC *key, the list will always appear regardless of how Src Dialog is set.*

Auto Power-Up

If "**On**", the projector will automatically power up after a power failure. During an auto-power up, a delay of "last digit of proj# x 500ms" is added to the power up time, ensuring that a wall of projectors will power up in sequence rather than all at once. *NOTE: Unsaved display adjustments may be lost.*

Front IR and Rear IR

DLV 1280 IR remote keypads are capable of sending data to the projector in either one of two protocols called "A" or "B". Likewise, the front and rear IR sensors on the projector can be set to accept IR data accordingly, responding to A, B, both, or neither protocol. The "A or B" option is adequate for most single-projector installations. Selecting a specific protocol prevents interference when you are controlling two projectors in the same room, allowing you to work with a single projector without affecting the other.

Note that the front and rear IR sensors cannot respond to *different* protocols—if you set **Front IR** to "**B**", the **Rear IR** will automatically be set to "**B**" as well. However, an IR sensor can be turned *off* independently. If you want to prevent one of the IR sensors from responding, set it to "**Off**" — the other IR sensor setting will remain as it is.

If you want to disable *both* IR sensors, you cannot use the IR remote keypad to select the second "**Off**" setting. This safeguard prevents accidentally disabling the IR keypad while you are using it. Instead, use either the built-in keypad or the wired remote keypad to set the remaining active sensor to "**Off**". The projector will no longer respond to an IR remote keypad.

See *2.10, Keypad Protocols* for further information about changing your keypad. *NOTE: DLV 1280 CR includes a front IR sensor only.*

Wired Keypad

Like the IR remote keypad, a *DLV 1280* wired keypad (optional) is either a "Protocol A" keypad (the original setting at manufacture) or a "Protocol B" keypad. You can set the projector to respond to only one of these protocols, or you can ensure that the projector responds to either protocol. You can also prevent the projector from responding to the wired keypad at all.

ADDING A PROTOCOL: To add a protocol, select the "**A or B**" option in the **Wired Keypad** list—the projector will now respond to either protocol.

CHANGING A PROTOCOL: As a safeguard, you cannot accidentally select any option in the **Wired Keypad** list that would disable the wired keypad during use. In other words, you cannot switch to the opposite protocol or select "**Off**" using the wired keypad. Instead, if you want to quickly change to the other protocol, you may find it more convenient to use one of the other keypads (the built-in or the IR remote) to execute the protocol change. The projector will now recognize only the opposing wired keypad protocol. Or, if you prefer, use the wired keypad to safely change its own protocol:

1. Select the "**A or B**" option. This will ensure that once your keypad protocol is manually changed (see Step 2), it will still be recognized by the projector.

2. Unplug the keypad and change the protocol in the keypad as desired. Do this either by entering the short-cut software command or by hard-wiring the keypad as described in *2.10, Keypad Protocols.*

3. Plug the keypad back into the projector. Return to the *Preferences* menu and select the specific Wired Keypad protocol that you have just set up.

TURNING OFF THE WIRED KEYPAD: If you want to disable the wired keypad entirely, you cannot use it to select the "**Off**" setting. This safeguard prevents you from accidentally disabling the wired keypad during use. Instead, use either the built-in keypad or the IR remote keypad to select "**Off**". The projector will no longer respond to the wired keypad.

NOTES: 1) Electrohome's DLV 1280 keypads and VistaPro keypads are interchangeable and are set to "Protocol A" at manufacture. Please see ***2.10, Keypad Protocols****. 2) The Electrohome keypads used with the Marquee projector are not compatible with the series of Vista or DLV projectors.*

Broadcast Key

Set to "**On**" if you want keypad commands sent to this projector to be relayed to all projectors in a network. The PROJ key will still allow you to control a specific projector.

Status ➤

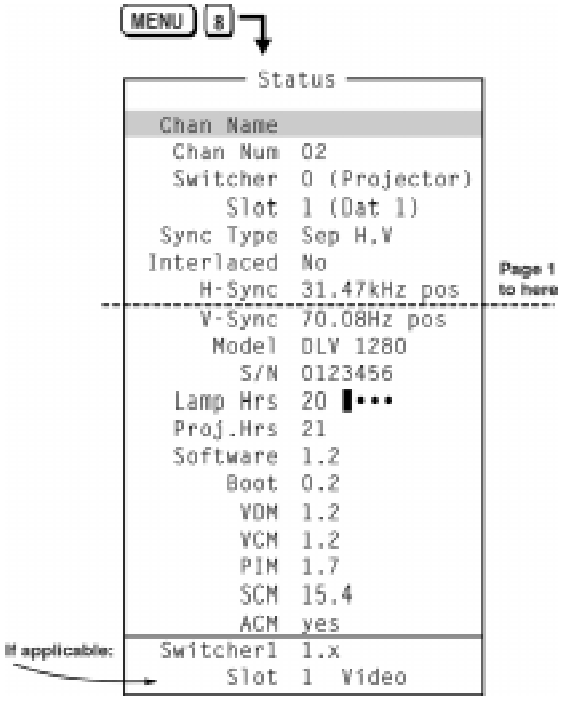


Figure 3-15. Status Menu

The 2-page *Status* menu (read-only) displays information about the currently active channel as well as a variety of details about the standard and optional components present on the projector. Refer to this menu for serial numbers, current hardware and software versions, the number of lamp hours logged and other current facts about the source. In addition, the *Status* Menu identifies the current source signal, and lists its location, sync type and frequencies.

Service ➤ Use the *Service* menu when setting or selecting service related parameters for the projector, such as flicker adjustments or lamp options. Note that the *Advanced*

portion of the *Service* menu is password-protected and can be used by qualified service personnel only. See below:

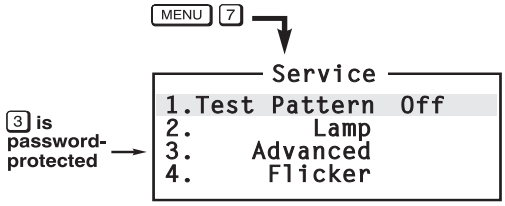


Figure 3-16. Service Menu

Test Patterns

In the *Service* menu, select **Test Patterns** for a pull-down list. Or, for quick access from presentation level, press ✻ ✻. Continue to press ✻ to quickly go from one pattern to the next (press ✻ ✻ if you have paused). To leave test patterns, press EXIT, or cycle out with ⏹.

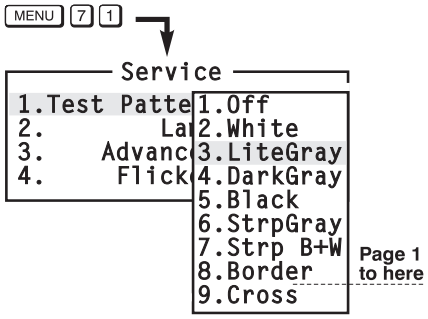


Figure 3-17. Test Pattern Options

Lamp

Whenever you install a new lamp in the projector you need to record the lamp serial number in the projector's memory. Once installed, you can set different options for the lamp such as its intensity and expected life span. These setups can be changed at any time during the life of the lamp.

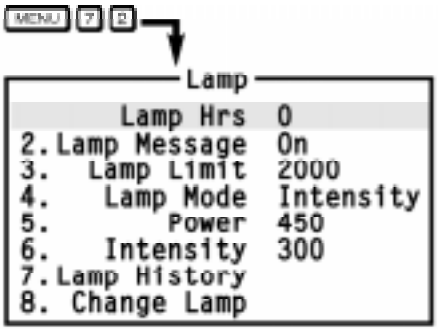


Figure 3-18. Lamp Menu

*NOTE: See **4.4, Replacing the Lamp and Filter** for complete instructions on installing a new lamp in the projector.*

In the *Service* menu, select "**Lamp**" to access the *Lamp* submenu (see left).

LAMP HOURS shows the number of hours logged on the current lamp. Whenever a new lamp serial number is recorded, this value automatically resets to "0", where it begins to log time for the new lamp.

Set **LAMP MESSAGE** to "**On**" if you want to enable a warning message upon power-up that the lamp has reached the specified lamp limit and should be replaced. Set to "**Off**" if you do not want to see this warning—instead, when your

lamp expires, only the status LED on the back of the projector will flash the coded warning to replace the lamp.

*NOTES: 1) It is recommended that the Lamp Message always remain set to "***On***". 2) When a lamp warning message appears, press* EXIT *to temporarily cancel the message. The message will continued to appear upon power-up until you install a new lamp.*

Set **LAMP LIMIT** to the number of hours you expect to log on the current lamp before replacing it. The recommended value you set here depends on the lamp mode you have selected. Consider the following as a general guide:

Table 3-1. Lamp Limit and Lamp Mode

LAMP MODE	EST. AMP LIMIT
Continuous **Max Brt**	=2000 hours
Continuous **Max Life**	>2000 hours
Continuous reduced **Intensity**	>2000 hours
Continuous reduced **Power**	>2000 hours

NOTE: 1) If you change modes over the life of a lamp the original lamp limit setting will no longer be valid. 2) Turning the lamp on and off reduces lamp life significantly, as do other factors. Consider Table 3-1 as a rough guide only.

Set which **LAMP MODE** you want to use in order to control the light output and/or life span of the lamp. The higher the light output or power setting, the shorter the life span of the lamp.

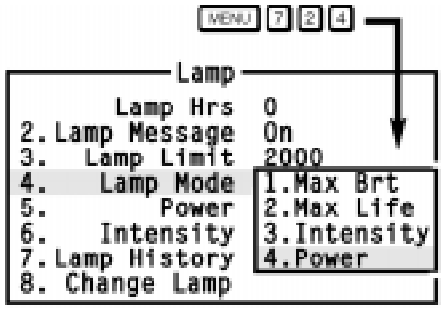


Figure 3-19. Choosing a Lamp Mode

Use the lamp mode that best suits your needs. For example, in a tiled application you may want to precisely match brightness levels between adjacent DLV 1280 images—choose **Intensity** for each projector, then set each individual intensity setting as necessary (see "Intensity", below). Or you may not need full light intensity and prefer to extend lamp life as long as possible—choose **Max Life**.

Lamp modes are described below:

- **Max Brt:** The lamp will burn as brightly as possible for its lifetime. Keep in mind that the lamp's "maximum brightness" gradually diminishes with age—your image will become dimmer over time, shown in "Intensity".

- **Max Life:** The lamp will last as long as possible. Unlike "Max Brt", a reduced power level is applied to the lamp, so image brightness is likewise reduced and lamp life extended.

- **Intensity:** Brightness will remain at a specified level for as long as possible. Once you select this option, enter a number representing the intensity level (brightness) you wish to maintain. See "**Intensity**" below.

- **Power:** The power supplied to the lamp will remain at a desired watt level throughout the life of the lamp. Once you select this option, enter the number of watts representing the power level you wish to maintain. See "**Power**" below.

POWER - The number shown here indicates how many watts are applied to the lamp. Set from 350-500 watts as desired, keeping in mind that lower power levels produce a dimmer image while extending lamp life.

NOTES: 1) Power level can be set only if the lamp is in "power" mode. 2) If you are in "Intensity" mode, the power level value will automatically increase over time as necessary to maintain the desired brightness, until it reaches 500W.

INTENSITY - The number shown here usually varies with the brightness of your lamp. However, if you are currently operating in "**Intensity**" mode this value indicates the original "**Intensity**" setting chosen.

To use "**Intensity**" mode, judge by eye and set the level as desired for your application, remembering that higher settings can significantly shorten lamp life. Over time, the projector will automatically increase the power supplied to the lamp as needed to maintain the chosen intensity to within 10% of the setting. This is called brightness "tracking".

Keep in mind that once the lamp power has reached its *maximum* of 500 watts (see "**Power**", above), this tracking is no longer possible. At this point, the lamp will gradually begin to dim as usual, even though your original "**Intensity**" value will still appear in the menu. To resume accurate tracking, reduce the intensity setting so that the resulting "**Power**" value is under 500 watts — the lower the intensity, the longer it can be maintained.

Do not lower the "**Intensity**" so much that the corresponding "**Power**" value reaches its *minimum* of 350 watts — the intensity setting will be inaccurate and cannot be maintained. For matching intensity over in tiled images, choose an intensity setting that enables all lamps to operate at less than 500 watts.

NOTES: 1) Lamps become more stable over time, thus a specific intensity is more easily maintained as the lamp ages 2) Intensity can be set only if the lamp is in "intensity" mode 3) Intensity will not exceed the output of Max Brt mode.

LAMP HISTORY - This option lists the 14 to 15 most recent lamps installed and recorded in the projector, with the current lamp listed last.

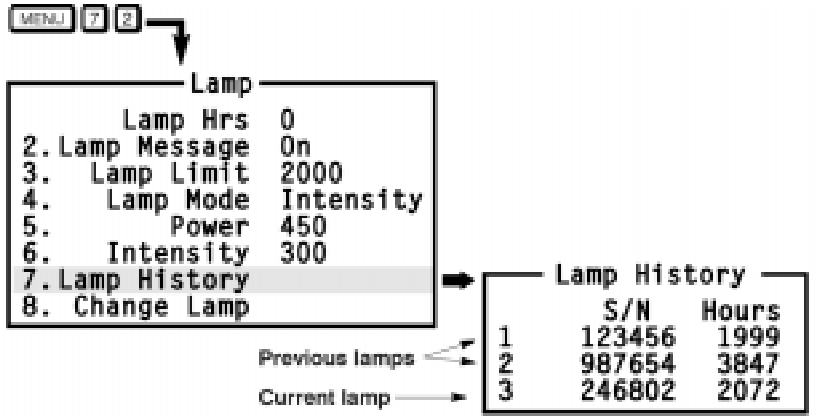


Figure 3-20. Lamp History (read-only)

The middle column shows the serial number for each lamp. The far right column shows the number of hours logged on each lamp. *Lamp History* is automatically updated whenever you record a new lamp serial number—the new lamp is added to the bottom of the list.

Use **CHANGE LAMP** to record the serial number for a newly installed lamp.

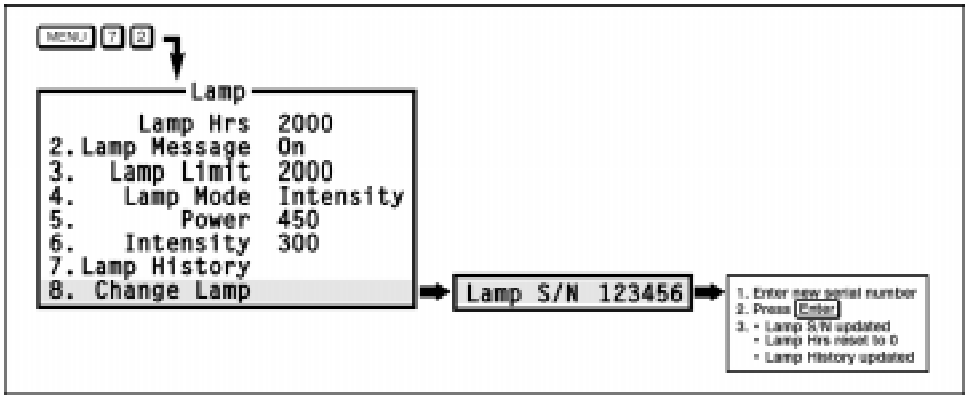


Figure 3-21. Recording the Serial Number of a New Lamp

In the *Change Lamp* dialog box, use the number text entry keys to record the new lamp serial number, and press ENTER again to accept the change. See *Using Slidebars and Other Controls* if you need help entering the number. Once entered, the new lamp serial number will be added to the *Lamp History* menu and the *Lamp Hours* timer will reset to "0". *Lamp Mode* and *Lamp Limit* remain as they were for the previous lamp.

*NOTES: 1) Enter a serial number only if you have just installed a new lamp. This will help ensure that lamp timer is not reset on an old lamp and that the number of hours logged on the lamp will be accurate. 2) Always **do** record the serial number of a new lamp.*

Red, Green or Blue Flicker

Proper flicker settings prevent permanent damage to the projector and result in stable images, reduced image retention, reduced color drift and no strobe effect.

WHEN TO ADJUST FLICKER: It is important to check red, green and blue flicker adjustments on a regular basis — check daily for very new projectors, then check

at least every two weeks for the life of the projector. In addition, always adjust flicker if you notice one or more of the following symptoms after a 15-30 minute warm-up:

- image "sticks", or retains a shadow of a previous image
- image flickers or strobes
- narrow vertical stripes appear to crawl across the screen

Note that flicker is a critical adjustment that should be checked regularly, even if your typical images do not obviously exhibit these symptoms.

IMPORTANT

If flicker settings remain significantly wrong for an extended period, damage to the projector may result and cause image sticking.

HOW TO ADJUST FLICKER:

1. Turn the projector on and allow to warm up for at least 15-30 minutes.
2. In the Service menu, select the flicker option (7 4). A warning message will appear, enabling you to abort or to continue.
3. At the warning screen, select "Do Flicker Adjustments" to access flicker controls. A full red screen will appear, likely exhibiting current strobing or flicker.
4. With the red screen displayed, use ◀ and ▶ to minimize overall flicker and to stabilize the image. Note that flicker may not disappear entirely.
5. Repeat Steps 2 and 3 with green and blue flicker.
6. Press EXIT when each of the three colors are as stable as possible.

You will find that all three flicker values should range from approximately 230-330 or from approximately 1700-2100, depending on the version of panel hardware present in your projector.

NOTES: 1) Always make sure to wait 15-30 minutes before adjusting any flicker. If adjusted prematurely, image quality will worsen during warm up. 2) It may not be possible to completely eliminate flicker from all areas of the red, green and blue screens — chose the setting that produces the most stable image overall. 3) On-line help is not visible when adjusting red or blue flicker.

3.8 Using Multiple Projectors

When working with multiple projectors, you may want to use the **RS-232 IN/OUT** ports to chain the projectors together in a network that you can control from either a keypad or a computer/controller (*see 2.9, Serial Port Connections*). Or you may prefer that each projector stands alone, in which case you will probably use a single IR remote keypad. In either case, you can switch back and forth between broadcasting to all projectors or controlling each projector individually.

➤ *Assigning a "Projector#"*

First, assign a unique projector number to each projector present — this number is required in order to gain the exclusive attention of an individual projector using a remote keypad. To assign a projector number:

In the *Preferences* menu, select "**Projector**". Enter a three-digit number (000 to 999) to identify the current projector. Press EXIT to accept the entry and return to the main menu.

Repeat for each projector, always entering a unique three-digit number. Once every projector has its own number, you can begin to control the network.

Setting Up the Network ➤ *See 2.9, Connecting to the Serial Ports for instructions on connecting projectors together as a network.*

In a serial network, make certain that only one projector — any one — has its **Broadcast Keys** option "**On**" (see *Preferences* menu), and that all other projectors have their **Broadcast Keys** option "**Off**". In addition, make sure that the keypad you are using is enabled for this controlling projector — in the *Preferences* menu, set its **Front IR**, **Rear IR** and/or **Wired Keypad** option to "**On**". Disable the keypad for all of the other projectors (in the *Preferences* menu, set **Front IR**, **Rear IR** and/or **Wired Keypad** options to "**Off**"). The controlling projector will then receive all remote keypad commands and relay them to the others through the serial cables connecting the projectors.

*NOTE: If you are using a wired keypad (optional) with the network, make sure that the projector to which the keypad is connected has its **Broadcast Keys** option set to "**On**" and the **Wired Keypad** enabled. The remaining projectors must have their **Broadcast Keys** option off and keypads disabled.*

Broadcasting to All Projectors ➤ When your network is set up, do one of the following on a remote keypad in order to broadcast to the group:

- Press PROJ PROJ

or

- Press PROJ ENTER

Keypad commands will now affect all projectors. See *2.10. Keypad Protocols* and *3.7, Controlling System Parameters.*

NOTES: 1) Each built-in keypad always controls its own local projector only. 2) If you are using a computer or controller to issue commands, use the correct RS-232 software command to broadcast.

Using a Single Networked Projector ➤ If you want to communicate with a single projector in a network, press PROJ to bring up the projector number edit box. Enter the three-digit number assigned to the projector you want to control — keypad commands will now affect only the desired projector until you press PROJ again and enter a different number, or until you switch to broadcast mode (below).

NOTE: If you are using a computer or controller to issue commands, use the correct RS-232 software command to gain control of a single projector.

3.9 Error Conditions

Occasionally the projector may encounter an error condition that interrupts normal operation. Such an error can be caused by an invalid user entry, an input signal error or a system error.

If you would like to be notified on-screen of such errors, select the **Screen** option from the **Error Msgs** pull-down list (in *Preferences* menu). If you would like to be notified via an RS-232 message only, select the **RS232** option instead. For both types of notification, select **All**. To disable error messages (except for invalid user entries), select **Off**.

User Errors ➤ Invalid User Entry

Any keypad entry not recognized by *DLV 1280* will trigger an on-screen error message describing the problem. For example, if you specify a source or channel that has not been defined, the message "*Invalid Channel* will appear. Or if you try to enter the wrong password, you'll see "*Invalid Password*". Press any key to confirm the message and eliminate the message box.

NOTE: Displaying of "Invalid User Entry" messages cannot be disabled, even if **Error Msgs** *in the* ***Preferences menu*** *is set to* **Off**.

Input Signal Errors ➤

Input signal errors messages appear when you are in presentation level (i.e., when there are no menus present) and have selected an input on which the projector detects a problem. While menus remain operational and pressing any key will temporarily remove the message from the screen, you must resolve the signal problem in order to permanently eliminate the message.

NOTE: Input signal messages appear only if the **Error Msgs** *in the* ***Preferences menu*** *is set to* **Screen** *or* **All**.

No Signal

The message *"No signal"* appears when there is no signal on the selected input. Both HSYNC and VSYNC are inactive and the screen background is black. Correct the signal or select another input.

Bad Sync

The message *"Bad Sync"* is displayed when HSYNC or VSYNC are active but the signal cannot be displayed. Such a condition occurs when only one of the two signals is present, or when either signal is unstable or of the wrong frequency. Correct the signal or select another input.

Other Signal Error Messages

In addition to the common *"Bad Sync"* and "*No Signal*", you may encounter a signal error message indicating that Hsync and/or Vsync are either too fast or too slow. When such a message appears, check the frequencies shown in the *Status* menu. If they are correct, then the channel is not recognized by the projector. On some PCs you may be able to change the settings to generate a compatible signal. If the frequencies shown in the *Status* menu are incorrect, check the cabling to see where the problem is.

System Warnings / Errors ➤

When the projector encounters a system malfunction, either a System Warning message or a System Error message may appear. Both types of messages are accompanied by a steady red "Power" LED and a flashing red-and-yellow error code on the "Status" LED. This condition indicates the need for service by a qualified service technician.

NOTE: System messages appear only if the **Error Msgs** *in the* ***Preferences*** *menu is set to* **Screen** *or* **All.**

System Warnings

A system *warning* message indicates that a system malfunction has been detected (see *Status LED Codes*, below). A system warning message replaces any input signal message and disappears when the input signal status changes. While the projector will remain operational, the message indicates the presence of a serious problem that should be reported to the factory. You can press EXIT to remove the message, but for best results you should reset the projector—power the projector down and up again with the POWER key.

System Errors

A system *error* message indicates that a serious malfunction has been detected and must be reported to the factory (see *Status LED Codes*, below). The projector will no longer operate and must be reset—power the projector down and up again with the POWER key.

The Status LED Codes

If the "Status" LED on the back of the projector repeatedly flashes a pattern of yellow and red light while the "Power" LED glows a continuous red, you have encountered a possible system error requiring the attention of a qualified service technician (see *System Warnings* and *System Errors*, above). Please contact your dealer or Electrohome if the problem persists.

The specific pattern of flashing indicates the 2-digit type code identifying the type of problem detected — the number of yellow flashes represents the first digit and the number of red flashes indicates the second. For example, a pattern of "yellow-yellow-red" is "Code 21", meaning that the lamp has overheated. Possible codes and what they mean are shown in Table 3-2:

Table 3-2. System Error Codes

Code	Description	Code	Description
12	Software bug	41	ACM doesn't return I^2C acknowledgments
13	CRC error in flash ROM	51	Unable to access EEPROM on the ICM
14	Programming complete	52	EEPROM has reinitialized (ICM or VCM)
21	Lamp has overheated	61	Unable to access the PIM
22	Unable to turn lamp on	71	Boot code CRC failed
31	SCM not clearing the busy line	72	Unable to program Xilinx (on VCM)
32	Unable to set host ID (SCM)	73	Unrecognized ROM type
33	SCM failed to reply to a request		

Please contact your dealer or Electrohome if an error code persists.

Section 4

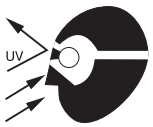
Maintenance

4.1 Warnings and Guidelines

DLV 1280 is designed for safe and reliable operation and is certified compliant to appropriate safety standards. However, safe operation cannot be assured by design alone; installers, maintainers, and users must maintain a safe operating environment for the system. Please read through and understand the following warnings and guidelines promoting safe usage of the projector.

WARNING
Never look directly into the projector lens. The high brightness of this projector (1000 lumens) could cause permanent eye damage.

WARNING
For protection from ultraviolet radiation, keep all projector shielding intact during operation.



Labels and Markings ➤ Observe and follow all warnings and instructions marked on the projector.

The exclamation point within the equilateral triangle alerts the user to important operating and maintenance (servicing) instructions in the literature accompanying the projector.

The lightning flash and arrowhead symbol within the equilateral triangle alerts the user to non-insulated "dangerous voltage" within the projector's enclosure that may be of sufficient magnitude to constitute a risk of electric shock.

Projector Location ➤ Only operate the projector in an environment which meets the operating range specifications in *Section 5, Specifications*. Do not operate the projector close to water, such as near a swimming pool.

Do not place the projector on an unstable cart, stand or table. If the projector is to be ceiling mounted, only use an Electrohome-approved ceiling mount fixture.

A projector and cart combination should be used with care. Sudden stops, excessive force, and uneven surfaces may cause the projector and cart combination to overturn.

Using the Lamp ➤ Do not operate the Xenon lamp for more than 2000 hours in "**Max Brt**" mode. Operation beyond 2000 hours in this mode significantly reduces the amount of light produced and increases the possibility of explosion. Use other lamp modes

if you want to extend the life of the lamp. See *Lamp Setups* in *Section 3* for a full description of how to use lamp modes.

WARNING

Never attempt to remove the lamp directly after use. The lamp is under great pressure when hot and may explode, causing personal injury and/or property damage. Allow to cool completely and handle by the metal bracket handle only.

The arc lamp operates at a very high temperature and pressure. Failure to allow the lamp to cool sufficiently prior to handling could result in an explosion causing personal injury and/or property damage. After turning the projector off it is important that you wait at least five minutes before unplugging it. This provides enough time for the internal lamp cooling fans to cool the lamp and to automatically shut off. Cool completely before handling.

See ***4.4, Replacing the Lamp*** for the complete lamp replacement procedure.

Using the Filters ➤ Replace the two internal air filters every 2000 hours or sooner. If these filters are not replaced regularly, accumulated dust on the filter may restrict air intake and cause the projector to overheat.

See ***4.5, Replacing the Filters*** for the complete filter replacement procedure.

WARNING

Only use filters supplied by Electrohome.

Power Cord and Attachments ➤ Operate the projector at the specified voltage only. Do not overload power outlets and extension cords as this can result in fire or shock hazards.

WARNING

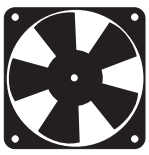
Do not attempt to operate the projector if the AC supply is not within the specified voltage and power range.

The projector is equipped with a three wire plug having a third (grounding) pin. This is a safety feature. If you are unable to insert the plug into the outlet, contact an electrician to have the outlet replaced. Do not defeat the safety purpose of the grounding-type plug.

Do not allow anything to rest on the power cord. Locate the projector where the cord cannot be abused by persons walking on it or objects rolling over it.

Use only attachments or accessories recommended by Electrohome. Use of other components may result in the risk of fire, shock or personal injury.

Ventilation ➤ Before unplugging the projector, always make sure the internal lamp cooling fans have shut off. The fans automatically shut off when the projector has adequately cooled down.



Slots and openings in the projector provide ventilation. To ensure reliable operation of the projector and to prevent overheating, these openings must never

be blocked or covered. The projector should never be placed near or over a radiator or heat register. The projector should not be placed in an enclosure unless proper ventilation is provided.

Do not push objects of any kind into the projector through the ventilation openings. They may touch dangerous voltages or short-out components resulting in a fire or shock hazard. Do not spill liquids of any kind into the projector. Should an accidental spill occur, immediately unplug the projector and have it serviced by a qualified service technician.

Servicing ➤ If any of the following conditions exist, unplug the projector and refer service to qualified service personnel.

- The power cord has been damaged.
- The internal cooling fans do not come on when the projector is first turned on.
- Liquid has been spilled into the projector.
- The projector has been exposed to excessive moisture.
- The projector does not operate normally.
- The projector has been dropped or the case has been damaged.
- Projector performance has deteriorated.

Do not attempt to service the projector yourself. All servicing must be performed by a qualified Electrohome service technician. If replacement parts are required, it is important that only Electrohome-approved parts are used. Other parts may result in fire, electric shock or risk of personal injury.

4.2 Cleaning

Clean the projector when required. Always unplug the projector before cleaning.

Lens ➤ To avoid the risk of scratching the lens, clean the lens only if absolutely required—keep in mind that a small amount of dust on the lens will have very little effect on picture quality. If you must clean the lens, use a DRY soft cotton cloth. Dust gently in a circular motion.

Lamp ➤ It is important to never touch the sapphire (glass) surface of the lamp, as the oil imprint will seriously degrade lamp performance. Should you accidentally touch the surface of the lamp, clean gently with a lint-free cloth moistened with isopropyl alcohol.

Case ➤ Clean the case with a soft dampened cloth. Use a mild commercial cleaner. Do not use liquid or aerosol cleaners.

4.3 Replacing Keypad Batteries

The standard IR Remote Keypad uses four AA size, 1.5V alkaline batteries. To install new batteries, open the battery compartment at the back side of the keypad by pulling on the raised portion of the cover as shown (Figure 4-1).

Remove old batteries and properly discard. Place the new batteries in the compartment, orienting the +/- of each battery according to the labels in the compartment. When batteries are in place, replace the cover by inserting its bottom edge first and snapping the top into place. Do not force.

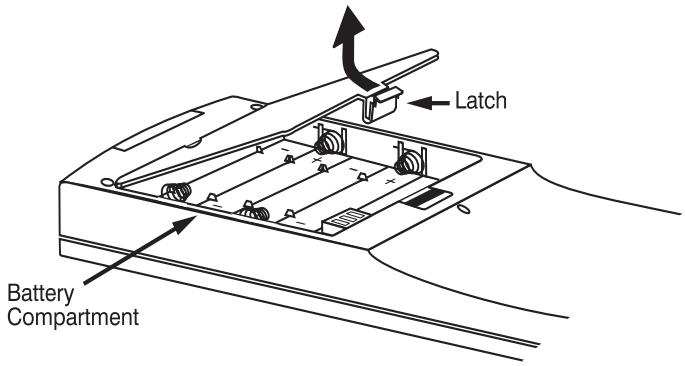


Figure 4-1. Replacing Keypad Batteries

4.4 Replacing the Lamp

The high brightness of the *DLV 1280* projector is provided by a 500 watt Xenon lamp permanently assembled in a polymer housing and mounted to a pre-aligned bracket. When the lamp approaches its lamp limit—as defined in the *Service-Lamp* menu—the entire lamp assembly (module plus bracket) should be replaced. Contact your dealer or Electrohome for the Lamp/Filter kit needed.

If you want to know how many hours have been logged on your lamp so far, go to either the *Status* menu or the *Service-Lamp* menu. "**Lamp Hrs**" indicates the total number of hours the lamp has been used.

*NOTE: As the lamp nears its Lamp Limit (as set in **Service-Lamp**), a lamp timer message may appear on screen to warn that the lamp needs to be replaced. To make sure that this warning appears, enter "**Yes**" for the Lamp Message option in the **Preferences** menu.*

⚠ **WARNING**

Never attempt to remove the lamp when it is hot. The lamp is under great pressure when hot and may explode, causing personal injury and/or property damage. Allow to cool completely and handle by the housing only.

Follow the instructions below to replace the lamp.

WARNING

For best results, the lamp should be replaced by a qualified service technician only.

STEP 1 ➤ Turn off the projector

Once you have turned off the projector, allow the cooling fans to automatically turn off before continuing with Step 2. This will take about five minutes.

STEP 2 ➤ Unplug the projector

When the cooling fans have turned off, unplug the projector. Allow additional time for the lamp to cool completely.

STEP 3 ➤ *Remove the projector lid*

Loosen the four screws located in the corners of the projector lid. Lift off the lid and set aside (Figure 4-2).

(lid: where applicable)

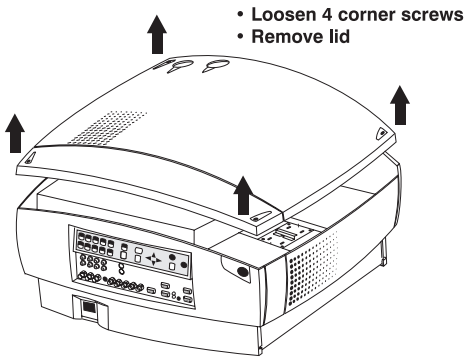


Figure 4-2. Open the Projector

STEP 4 ➤ *Remove the old lamp assembly*

Locate the lamp assembly—consisting of a metal lamp bracket attached to the lamp module—installed near the center-left of the projector's interior. Locate the 4 corner screws securing the complete assembly to the projector: the 2 rear screws are on the bracket flange, the 2 front screws are located under the flexible U.V. Light Shield and are accessible through holes in the bracket (beneath the shield). Puncture/cut the U.V. shield as necessary, unscrew all 4 screws and carefully lift the lamp assembly straight out (Figure 4-3). Dispose of as per instructions in Step 12.

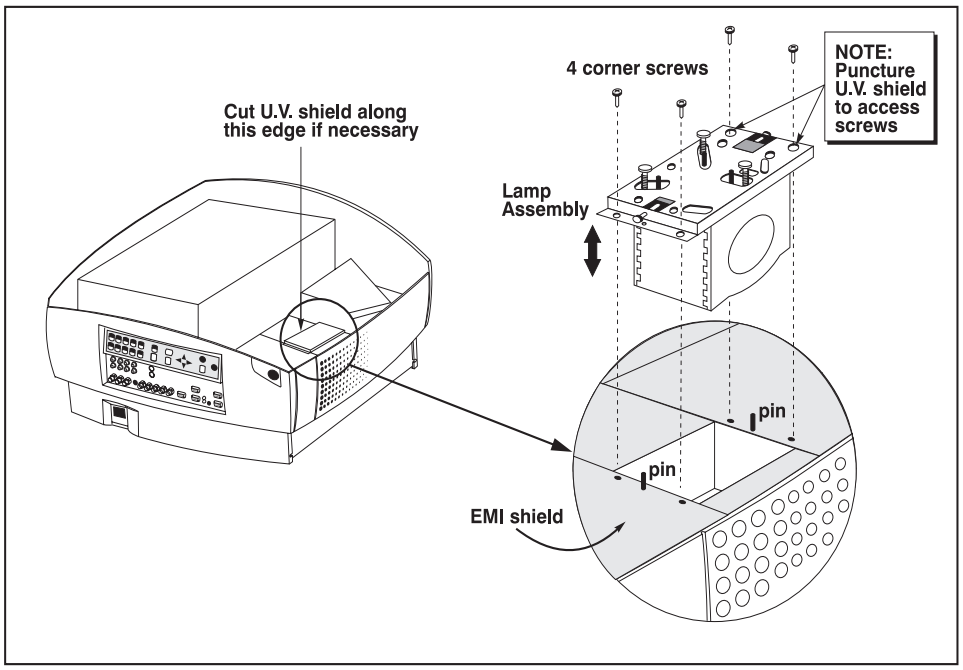


Figure 4-3. Lamp Assembly Removal/Replacement

STEP 5 ➤ *Install the new lamp assembly and align*

Your new lamp module has been precisely mounted on its own bracket. ***Do not alter this assembly.***

Carefully lower the new lamp assembly over the 2 alignment pins in the projector (Figure 4-3). Make sure that the lamp is facing in the right direction—the lens faces towards the center of the projector—and take care not to touch or

bump the lamp module itself. Secure with all four corner screws removed in Step 4.

Once installed, you must align the new lamp to ensure maximum image brightness/uniformity and projector reliability. Perform this adjustment by adjusting specific screws on the lamp bracket as described in the instructions that came with your new lamp (qualified technician recommended).

STEP 6 ➤ *Apply U.V. light shield material*

Peel off the backing on the flexible metallic U.V. light shield that came with your lamp kit. Carefully align the shield with the lamp bracket and smooth it over the top. Make sure to bend excess material over all the edges to provide a good seal.

STEP 7 ➤ *Replace projector lid*

Replace the projector lid and secure with the four corner screws.

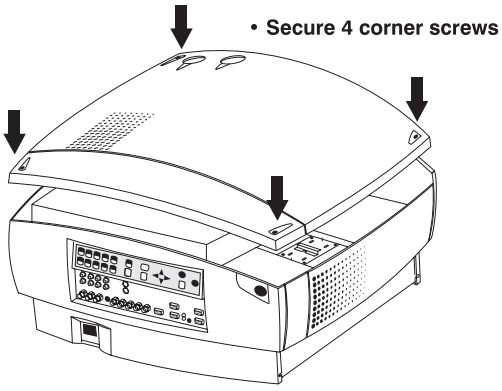


Figure 4-4. Close the Projector

STEP 8 ➤ *Power up the projector*

Plug the projector in and press POWER to turn it on. Allow the projector to warm up for about five minutes.

STEP 9 ➤ *Enter the new serial number*

As soon as the new lamp is installed its serial number should be recorded in the projector memory. This automatically resets the lamp timer to "0" and updates the *Lamp History* menu, enabling you to monitor lamp usage.

In the *Service* menu, select "**Lamp**". Continue with the instructions illustrated below.

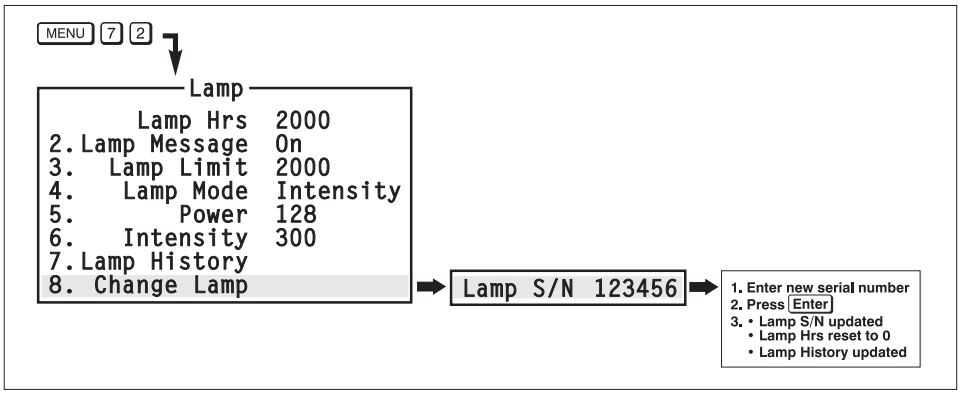


Figure 4-5. Enter the New Lamp Serial Number

STEP 10 ➤ *Set Lamp Mode and Lamp Limit*

If desired, select different **LAMP MODE** and **LAMP LIMIT** options for controlling the amount of light output and/or life span of the lamp. See *3.7, Adjusting and Checking System Parameters (Lamp Setups)* in *Section 3*.

STEP 11 ➤ Turn Lamp Message ON

In the Lamp Menu (✻ 7 3), set **LAMP MESSAGE** to "**On**". This permits a warning message to appear upon power-up once your lamp limit setting expires.

*NOTES: 1) It is recommended that the Lamp Message always remain set to "**On**". 2) When a lamp warning message appears, press EXIT to temporarily cancel the message. The message will continued to appear with each power-up until you replace the lamp.*

STEP 12 ➤ Dispose of old lamp

Locate the relief stem on the end opposite the glass window of the lamp. With a pair of side cutters, make a tiny cut on the stem surface. **DO NOT COMPLETELY CUT THIS STEM OFF. DIRECT THE STEM AWAY FROM ANYONE OR ANY NEARBY SURFACE.**

Using a pair of pliers, grasp the relief stem firmly and bend the stem sufficiently to break the seal and allow the xenon gas to escape. Xenon gas is harmless and can be allowed to escape into the atmosphere.

You can now dispose of the lamp module with regular waste. Note that the integral lamp timer contains a small amount of mercury. This mercury must be treated as hazardous waste if discarded in volume.

NOTE: If you do not feel comfortable with the above disposal procedure, ship the old lamp module back to your closest Electrohome Service depot. Use the same container that the new lamp module came in.

4.5 Replacing the Filters

There are two identical air filters installed within the projector. Air drawn from the environment passes through these filters before circulating throughout the rest of the projector for cooling purposes. It is a good idea to replace both of these filters whenever the lamp is replaced, or more frequently if your operating environment is exceptionally dusty.

Follow the instructions below to replace the filters.

⚠ **WARNING**
Only use filters supplied by Electrohome.

STEP I ➤ Follow Steps 1-3 in the lamp procedure (see *4.4, Replacing the Lamp)* to power down the projector, unplug it and (where applicable) remove the lid.

STEP 2 ➤ Replace Side Filter

The side filter is sandwiched between the right outer panel of the projector and the interior EMI shield that covers most components. It is installed vertically near the perforated area of the right outer panel. Grasp the end of the filter and pull it straight up to remove.

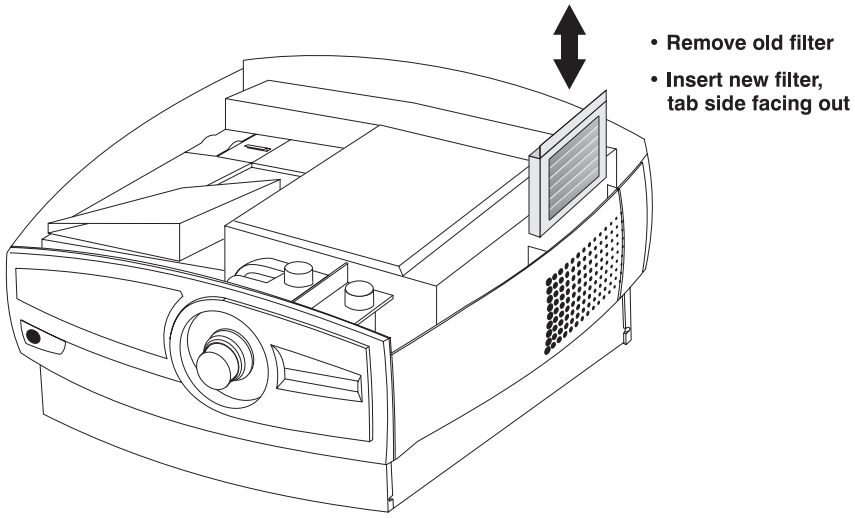


Figure 4-6. Replacing the Side Filter

Insert the new side filter between the brackets, making sure that the tabbed side faces out. Slide all the way down.

STEP 3 ➤ Replace Top Filter

The top filter is installed horizontally near the center-right of the interior. Standing at the left side of the projector, locate the edge of the filter just visible under the small end of the funnel-like duct. Slide the filter towards the rear of the projector as far as possible, exposing the entire filter. Lift out (Figure 4-7).

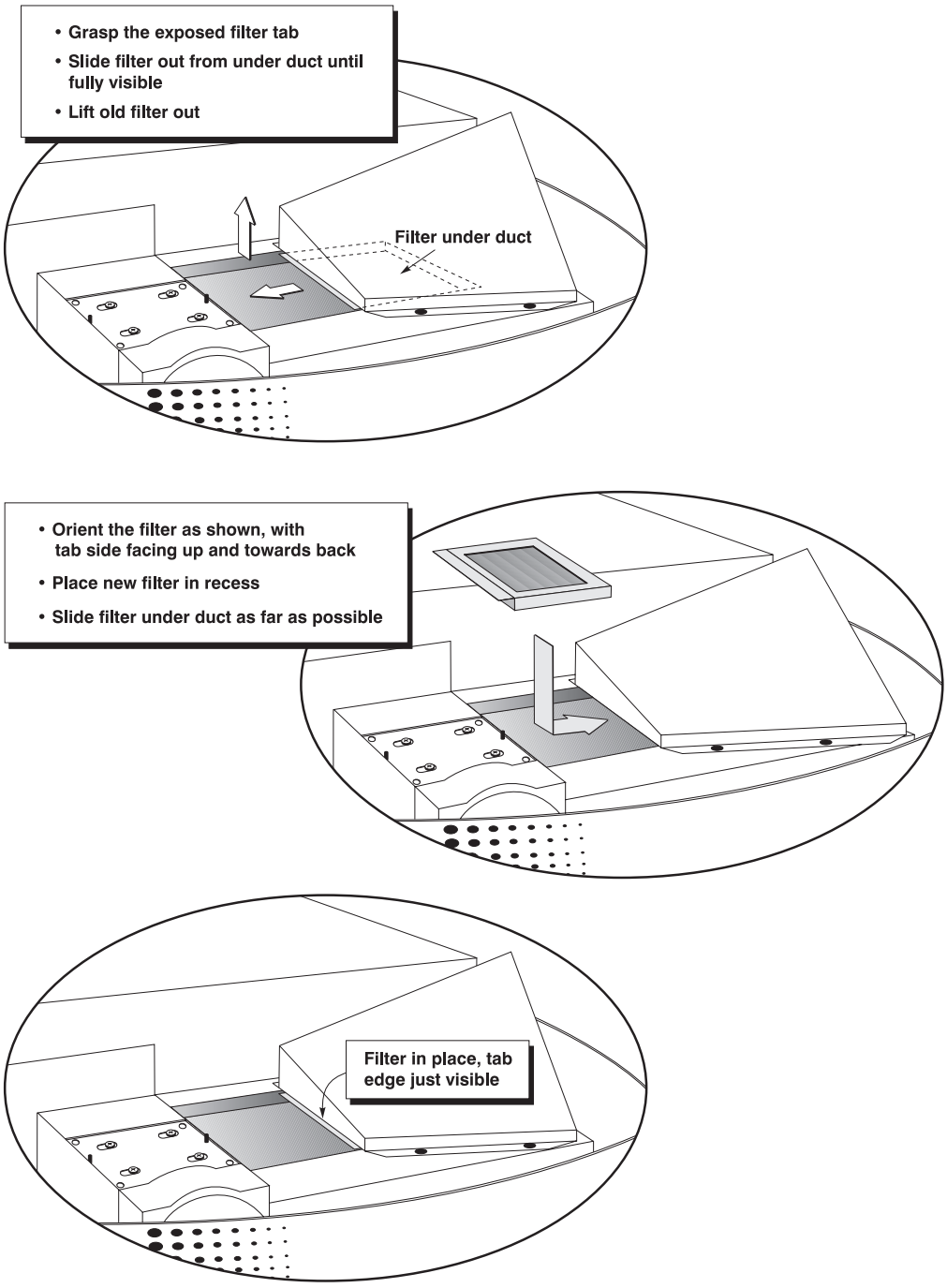


Figure 4-7. Replacing the Top Filter

Insert the new top filter into the recessed area, making sure that the tabbed edge side is up and towards the rear of the projector. Slide all the way under the funnel-like duct—when properly installed, about an eighth-inch of the filter tab edge will be visible along the small end of the duct.

STEP 4 ➤ Replace the projector lid and power the projector back up (see Steps 6-7 in *4.4, Replacing the Lamp).*

4.6 Changing the Lens

A variety of *DLV 1280* lenses are available to accommodate different throw distances and specific types of installations. Contact your dealer or Electrohome for more information. To replace a lens, follow the instructions below.

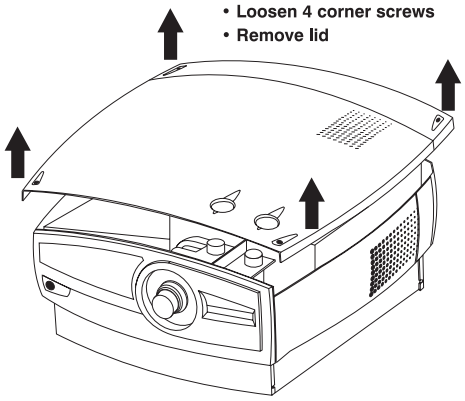
STEP 1 ➤ Turn off the projector and allow it to cool. Install the lens cap. Unplug the projector.

WARNING
Always unplug the projector and allow to cool before removing or installing a lens.

WARNING
Make sure the lens cap is on before removing or installing a lens assembly.

STEP 2 ➤ ***Remove the projector lid***

Loosen the four screws located in the corners of the projector lid. Lift the lid off the projector and set aside.



STEP 3 ➤ ***Loosen the lens mount and remove the lens***

Locate the lens mount behind the front panel of the projector. While supporting the lens, loosen the 2 hex screws located about halfway down the curved portion of the lens mount (Allen key provided). When the curved clamp opens, carefully slide out the lens and remove any shim present. See Figure 4-8.

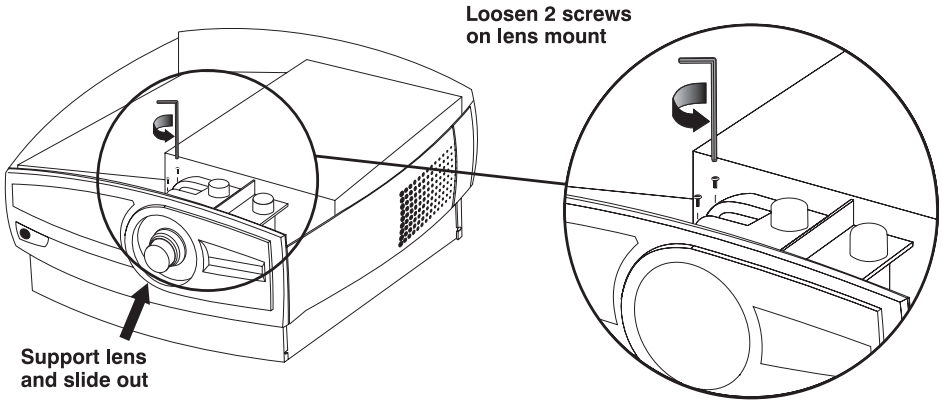


Figure 4-8. Loosen Lens Mount Screws

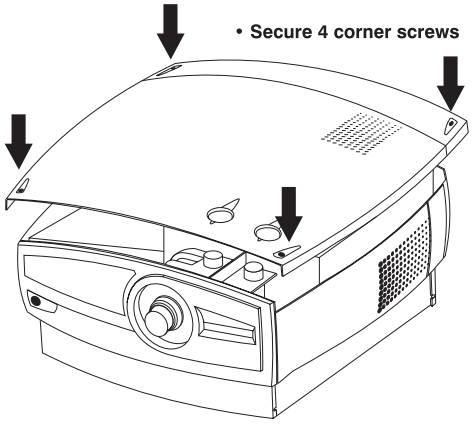
STEP 4 ➤ ***Install the new lens***

Make sure the new lens is protected by the lens cap. Carefully insert the new lens assembly through the lens opening and into place in the lens mount. Make

sure that the lens is as ***far back*** into the projector as possible—flush with the front face of the lens mount clamp. Support the lens and secure the 2 hex screws on the curved portion of the lens mount.

STEP 5 ➤ Replace the projector lid

Replace the projector lid and secure with the four corner screws.



STEP 6 ➤ Adjust the projector position

Remove lens cap and reposition the projector closer to or further from the screen as necessary for the screen and new lens type. For example, if using a 1.2:1 lens, throw distance should be roughly equal to 1.2 x the screen width. Adjust offsets as necessary so that the display is rectangular. See *Section 2* for details. *Note: For extremely long throws using a 1.2:1 lens, you may need to move the lens further out from the projector.*

4.7 Trouble-shooting

If the projector is not operating properly, note the symptoms of the problem and use the following guide to assist you. If you cannot resolve the problem yourself, contact your dealer for assistance.

Symptom ➤ The projector will not turn on when [POWER] is pressed...

CAUSE / REMEDY:

1. Make sure that [POWER] is held down for at least a second or two.
2. Are both LEDs OFF on at the back of the projector? Check that the power cord is properly connected at the both the wall outlet and the projector.
3. Does the green "Status" LED flash with each key press? If not, *DLV 1280* is not receiving the keypad's IR signals. Ensure the keypad is directed at either the front or rear of the projector, or at the screen. Also make sure that the path between the IR keypad and the projector (or screen) is not blocked.
4. The batteries in the IR remote keypad may be weak. Refer to *4.3, Replacing Keypad Batteries* for instructions.
5. The IR keypad may have been disabled by a change in protocol. See *2.10, Keypad Protocols* and *3.7, Adjusting and Checking System Parameters*.
6. Use the [POWER] key on the built-in keypad to turn the projector on.

Symptom ➤ The projector is on but there is no display of source input...

CAUSE / REMEDY:

1. Is an active source connected properly? Check the cable connections. Is that source/channel selected? Press [DAT 1], [DAT 2], [VID 1], or [VID 2] to select. Or use [SRC] to switch to other sources or channels. See *2.4, Connecting Sources* and *3.5, Working With Sources and Channels*.

2. The room lighting may be too bright. Lower the intensity of the room lighting. Reduce light reflections as much as possible.
3. Increase contrast and/or brightness of image.
4. The projector may be too far from the screen. Move the projector closer to the screen.
5. Try an Auto-Setup (see *Main* menu)
6. Is the "Status" LED flashing a pattern of yellow and red lights while the "Power" LED is steady red? This pattern indicates an internal system error. If the problem persists contact a qualified Electrohome service technician.
7. Was the lens cover accidentally left on? Remove lens cover.

Symptom ➤ The projector does not respond to the infrared remote keypad...

CAUSE / REMEDY:

1. Does the green "Status" LED flash each time a key is pressed? If not, *DLV 1280* is not receiving the keypad's IR signals. Ensure the keypad is pointed either at the front or rear of the projector, or at the screen.
2. The viewing path between the IR keypad and the projector (or screen) may be blocked. Ensure there is a clear line-of-sight between the keypad and the projector (or screen).
3. The batteries in the IR remote keypad may be weak. Refer to *4.3, Replacing Keypad Batteries* for instructions on how to replace the batteries.
4. There may be unusual lighting conditions in the room affecting IR keypad operation. Determine if such conditions exist and correct.
5. The IR keypad may have been disabled for use with this projector(s). See *2.10, Keypad Protocols* and *3.7, Adjusting and Checking System Parameters*.

Symptom ➤ The power is on but the lamp is not...

CAUSE / REMEDY:

1. The projector probably became overheated. Allow to cool and make sure that nothing blocks projector vents. Do not operate in environments warmer than 35°C (95°F).
2. The lamp may have reached the end of its life. Replace the lamp assembly as described in *4.4, Replacing the Lamp*.

Symptom ➤ The display is jittery or unstable...

CAUSE / REMEDY:

1. If the display is jittery or if it disappears and reappears erratically, check that the source is properly connected and that its signal is of adequate quality for detection. For example, the projector scans the default input DAT 1 for a signal to display. If a poor quality or improperly connected source is connected, the projector will briefly and repeatedly attempt to display an image. If no source is connected, the "No Signal" error message appears over a blank display. Correct the source connection.
2. The horizontal or vertical scan frequency of the input signal may be out of range of the projector. Refer to *Section 5, Specifications* for scan frequency ranges.
3. Sync signal may be inadequate. Correct the source problem.
4. The input signal type may conflict with the input. Use the input that matches the source.
5. Pixel tracking and phase may need adjustment.

Symptom ➤ The display is faint...

CAUSE / REMEDY:

1. Brightness and/or contrast may be set too low. Increase the brightness and/or contrast settings.
2. The projection room may be too bright. Lower the intensity of projection room lighting and reduce light reflections as much as possible.
3. The projector may be too far from the screen. Move the projector closer to the screen.
4. The location of the audience with respect to the screen may not be adequate. Make sure the audience is within the viewing angle set by the projector and screen position, and the screen type.
5. The source may be double terminated. Ensure the source is terminated only once.
6. The source (if non-video) may need sync tip clamping. Turn the "**Clamp Tip**" option to "**On**" in the *Horizontal Settings* menu.

Symptom ➤ The display is reversed or upside down...

CAUSE / REMEDY:

1. The projector's image orientation is not set correctly for the current installation. Refer to *2.6, Operating Orientation*, to set the projector's image orientation to match your installation.

Symptom ➤ The upper portion of the display is waving, tearing or jittering...

CAUSE / REMEDY:

1. This can sometimes occur when the source is a VCR or video signal. If you are using a VCR, turn the "**VCR**" option to "**On**" within the *Image Settings* menu.

Symptom ➤ Portions of the display are cut off or wrap to the opposite edge...

CAUSE / REMEDY:

1. Horizontal/vertical size or position may need adjustment. Adjust until the entire image is visible and centered.

Symptom ➤ The display appears compressed or stretched

CAUSE / REMEDY:

1. The *Horizontal Size (or Vertical Size)* setting may be incorrect for the current source. Adjust *H-Size* in the *Horizontal Settings* menu (or adjust *V-Size* in the *Vertical Settings* menu).
2. The frequency of the pixel sampling clock is incorrect for the current source. Adjust pixel tracking up or down.

Symptom ➤ Display quality appears to drift from good to bad, bad to good...

CAUSE / REMEDY:

1. The operating temperature of the projector may not be constant. Watch that the projector is not located too close to heating/air conditioning vents.
2. The source input signal may be of low quality.
3. The horizontal or vertical frequency of the input may have changed at the source end.

Symptom ➤ An unknown menu has appeared…

CAUSE / REMEDY:

1. You may have accidentally entered a special engineering code. Press EXIT to cancel the function and return to presentation level.

2. If the screen blacks out, it is possible that excessive voltage noise on the AC or ground input has interfered with the projector's ability to lock on to a signal. Turn the projector off, wait for the lamp fans to stop and unplug. Plug in again and power up as usual.

Symptom ➤ The display is not sharp or "clean"...

CAUSE / REMEDY:

1. Display adjustment may be required. Rotate the lens barrel to adjust for the best focus, then adjust brightness, contrast and detail.
2. Is a BNC T-connector being used? Use a distribution amplifier to boost signal levels.
3. The screen size may be too large. As screen size increases, magnification increases, reducing brightness.
4. The source input signal may be of low quality.

Symptom ➤ Colors in the display are inaccurate...

CAUSE / REMEDY:

1. The color, tint and/or color temperature settings may require adjustment from within the *Image Settings* menu.

Symptom ➤ The display is not rectangular...

CAUSE / REMEDY:

1. Are the vertical and horizontal offsets adjusted correctly for the current throw distance? Use the offset knobs on the top of the projector and see *2.8, Zoom, Focus and Offset* for more information.
2. Is the projector lens surface parallel to the screen? See *2.7, Leveling.*

Symptom ➤ The display is "noisy"...

CAUSE / REMEDY:

1. Display adjustment may be required. Adjust pixel tracking and phase.
2. The signal cables carrying the input signal may be of poor quality. Use only good quality signal cables. Electrohome cables are recommended.
3. The distance between the input source device and the projector may be too great. If the distance between the input source device and the projector is greater than 25 feet, signal amplification/conditioning may be required.
4. The input signal may be of poor quality.

Symptom ➤ The video inputs "Vid 1" and "Vid 2" do not respond

CAUSE / REMEDY:

1. Your projector may not have a video decoder module installed (optional on overseas exports models). Install a *DLV 1280* video decoder module.

Section 5

Specifications

5.1 Specifications

DLV 1280 or
DLV 1280 CR

NOTE: Due to constant research, specifications are subject to change without notice.

Display ➤

Resolution

Pixel format (H x V)	1280 X 1024
Maximum digitizing sample rate	135 MHz

Brightness (full usable brightness per industry standard measurement methods)

1000 lumens

Contrast Ratio

100:1

DLV Panels, Colors and Grayscale

Number of DLV reflective panels	3
Panel resolution	1280 x 1024
Number of possible colors	16.7 million
Number of possible grays	256

Color Temperature

Range of Adjustment	3200 K to 9999 K

Projection Lenses

	Lenses			
Throw ratio	2:1 - 3:1 (zoom)	1.2:1	1.5:1 - 3:1 (zoom)	3:1 - 7:1 (zoom)
Screen Size (diagonal)	2.3' - 30'	4' - 10'	4' - 30'	6' to 30'
Vertical Offset of Pixels	-25 to +366 pixels	fixed @ 0, ±25 pixels	-25 to +512 pixels	-25 to +512 pixels
Horizontal Offset of Pixels	fixed @ 0, ±25 pixels	fixed @ 0, ±25 pixels	fixed @ 0, ±25 pixels	fixed @ 0, ±25 pixels
Geometry Distortion	1.0%	0.075%	0.7% - 2.0%	2%

Inputs ➤

Number of inputs	2 RGBHV (Dat 1 and Dat 2) 2 Video *(standard on N. American DLV 1280 only)* 4 Audio *(standard on N. American DLV 1280 only)*
Source switch time	<3 seconds

RGB

Horizontal frequency input range	30 - 90 kHz
Vertical frequency input range	45 - 72 Hz (see table below)
Maximum pixel clock rate	135 MHz
Signal format	Analog RGB
Input level	$0.5V_{p-p}$ - $1.4V_{p-p}$
DC offset	± 4V
Impedance	75 ohms

Use the following vertical frequencies for other resolutions:

VGA (NI)	*640 x 480*	*59 - 120 Hz*
SVGA (NI)	*800 x 600*	*59 - 120 Hz*
MAC (NI)	*832 x 624*	*73 - 75 Hz*
XGA (NI)	*1024 x 768*	*59 - 100 Hz*
SUN (NI)	*1152 x 900*	*60 - 90 Hz*
SXGA (NI)	*1280 x 1024*	*60 - 75z*

Video (standard on North American DLV 1280 only)

Signal formats	Composite (CVBS), S-Video (Y/C)
Video standards	NTSC, PAL, & SECAM
Input level, Composite	1.0 V_{p-p} ± 3db (including sync tip)
Input level, S-Video, Luminance (Y)	1.0 V_{p-p} ± 3db (including sync tip)
Input level, S-Video, Chrominance (C)	630 mV_{p-p} nominal (burst)
DC offset	± 3.5V
Impedance	75 ohms

Sync

Input levels	
(with VCM version 27071-01)	$0.5V_{p-p}$ - $5.0V_{p-p}$ (±5 V)
(with VCM version 27071-02 or later)	±4V, V_{p-p} >=0.5V for Dat 1 $0V_{p-p}$ - $5.0V_{p-p}$ >=0.5 V for Dat 2
Impedance	
(with VCM version 27071-01)	750 ohms
(with VCM version 27071-02 or later)	75 ohms for Dat 1 134 ohms (226 to +5V and 332 to 0V) for Dat 2
Type	Sync-on-green, Composite, Separate H and V
Polarity	Positive or negative
Sync-on-green Input Signal	$0.65V_{p-p}$ to $1.5V_{p-p}$
Sync amplitude with sync-on-green	$0.15V_{p-p}$ to $0.5V_{p-p}$
Duty Cycles	.1% - 10% vertical 4% - 20% horizontal

Wired Control Input (optional)

Control type	1/8" mini stereo jack
Input level	High 2.0V min., Low 0.7V max.

RS-232

Number of connectors	3 (1 in, 1 out, 1 switcher)
Connector type	9 pin D
Maximum recommended cable length	200’

Power ➤	Voltage range (auto switching)	90 VAC to 264 VAC
	Line frequency	50 - 60 Hz nominal
	Inrush current	35 amps max. at 110 VAC
	Operating current	9 amps @ 90VAC 4 amps @ 240VAC
	Power consumption	900W max.
Lamp ➤	Type	Xenon short arc
	Power	350 - 500 watts, adjustable
	Warm-up period for full output	<5 minutes
	Operating angle	any vertical angle, ±45° horizontal
	Brightness tracking in intensity mode	±10%
IR Remote Control ➤	Range (line-of-sight)	200' typical, 250’ maximum
	IR carrier frequency (subcarrier modulated)	336 kHz
	Backlight	LED array
	Battery type	Alkaline cells AA (4)
	Battery life	1 year shelf, 1 month continuous use
DLV 1280 Size & Weight ➤	Size (W x L x H)	26" x 27" x 13" (66cm x 68.6cm x 33cm)
	Product weight, no lens	70 lb. (32 kg)
	Shipping weight	100 lb. (45 kg)

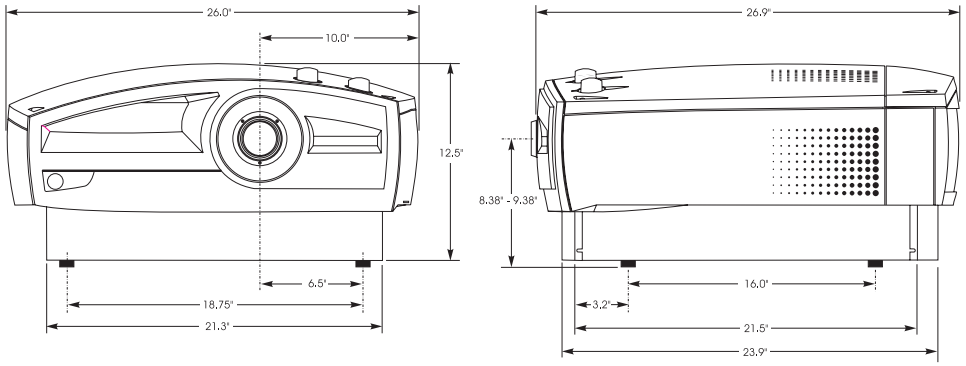


Figure 5-1. DLV 1280 Dimensions (N. American DLV 1280)

Safety ➤	C.S.A. C22.2.950 (M94) approved to U.L. 1950 by NRTL (Semko) EN60950
EMI ➤	47CFR 2&15 (FCC) Class A - U.S. - Conducted and Radiated Emissions Stds. CRC 1374 (DOC) Class A - Canadian - Conducted and Radiated Emissions Stds. Emissions per EN50081-1. Immunity per EN50082-1.

Operating Environment ➤	Temperature (sea level)	0°C to 35°C (32°F to 95°F)
	Humidity (non-condensing)	15% to 80%
	Altitude	0 - 3000 meters

Standard Components ➤ Components for the three models in the *HAL Series* are shown below:

	DLV 1280, N. America	DLV 1280, overseas export	DLV 1280 CR
Projector case covers	✔	✔	*not included*
10’ line cord	✔	✔	✔
DLV 1280 User’s Manual	✔	✔	*1 per installation*
Video functions	✔	*not included*	*not included*
Audio functions	✔	*not included*	*not included*
Internal speakers	✔	✔	*not included*
IR remote keypad	✔	✔	*1 per installation*
Warranty card	✔	✔	✔

Optional Accessories ➤

Alternate Throw Lenses (see page 5-1)
Marquee Signal Switcher
Marquee Case / Power Supply
Wired Remote Keypad
*RGB 500 Input Module
*RGB 400BA Input Module
*RGB 400ALT Input Module
*Composite / S-Video Input Module
*HDTV Input Module
*PC Analog Input Module
Audio/Video Kit

**requires Marquee Case / Power Supply*

Appendix A

Glossary

This appendix defines the specific terms used in this manual as they apply to *DLV 1280*. Also included are other general terms commonly used in the projection industry.

Active Line Time ➤ The time, inside one horizontal scan line, during which video is generated.

Ambient Light Rejection ➤ The ability of a screen to reflect ambient light in a direction away from the "line of best viewing". Curved screens usually have good ambient light rejection. Flat screens usually have less ambient light rejection.

Analog Video ➤ The video output of most computers and video tape machines. Analog video can generate a large number of colors.

Aspect Ratio ➤ The ratio of the width of an image to its height, such as the 4:3 aspect ratio common in video output. Also known as proportion.

Auto Sourcing ➤ The ability of the projector to automatically synchronize to the horizontal and vertical scan frequencies of an input signal.

Bandwidth ➤ The frequency range of the projector's video amplifier.

Baud Rate ➤ The speed at which serial communications travel from their origin. The *DLV 1280* default baud rate of 38400 can be changed to match a controlling device.

Blanking Time ➤ The time inside one scan line during which video is not generated. The blanking time of the input signal must be equal to or greater than the retrace time of the projector.

Brightness ➤ In projection, brightness usually describes the amount of light emitting from a surface such as a screen. This intensity is measured in foot-lamberts or candelas per square meter.

Candela or Candle ➤ Unit of measure for measuring light intensity.

Channel ➤ A unique set of adjustment levels and options stored in projector memory and used to display an image from the current source. A channel includes frequencies, polarity, syncs, channel number and location, user-adjustable display settings, and other variables. Channels enable the projector to automatically recognize and properly display input from a variety of sources. Sometimes known as source setups.

Channel Number ➤ A number used to uniquely identify a specific channel (source setup) stored in projector memory (maximum of 99).

Color Shift ➤ A change in the tint of a white field across an image.

Color Temperature ➤ The coloration (reddish, white, bluish, greenish, etc.) of white in an image, measured using the Kelvin (K) temperature scale. Higher temperatures output more light.

Component Video ➤ See *YCrCb Video*.

Composite Video ➤ The output of video tape players and some computers, characterized by synchronization, luminance and color signals combined on one output cable.

Contrast (ratio) ➤ The degree of difference between the lightest and darkest areas of the image.

Convergence ➤ The alignment of the red, green, and blue elements of a projected image.

Current Channel ➤ A collection of settings (stored in projector memory) currently being used to display an image from the source. Sometimes known as current source setup.

Curved Screen ➤ A projection screen which is slightly concave for improved screen gain. Curved screens usually have screen gains which are greater than 1 but viewing angles much less than 180°.

DLV ➤ Digital Light Valve technology used in the DLV 1280 projector for high resolution projection of red, green, and blue color data.

DMD™ ➤ Digital Micromirror Devices™ used in some projectors (Electrohome *Vista* series, e.g.) for processing red, green, and blue color data.

Decoder ➤ A device in the North American *DLV 1280* that converts NTSC 3.58, NTSC 4.4, PAL, PAL-N, PAL-M, or SECAM to RGB video.

Detail ➤ The sharpness of a display from a video source, adjustable on some types of projectors.

Diffused Screen ➤ A type of rear-projection screen which spreads the light striking it. Screen gain is less than 1 but audience viewing angles are increased.

Display Setting ➤ An adjustment that affects the display of an image. Such display settings include contrast, brightness, tint, blanking, focus, etc.

Flicker ➤ A very rapid variation in image brightness caused by a frame rate that is too slow (see *Interlace*).

Frame Rate ➤ The frequency at which complete images are generated. For non-interlaced signals, the frame rate is identical to the vertical frequency. For interlaced signals, the frame rate is one half of vertical frequency.

Foot-candle ➤ The intensity of visible light per square foot.

Foot-lambert ➤ The luminance (brightness) which results from one foot-candle of illumination falling on a perfectly diffuse surface.

Gain or Screen Gain ➤ The ability of a screen to direct incident light to an audience. A flat matte white wall has a gain of approximately 1. Screens with gain less than 1 attenuate

incident light; screens with gain more than 1 direct more incident light to the audience but have a narrow viewing angle. For example: An image reflecting off a 10 gain screen appears 10 times brighter than it would if reflected off a matte white wall. Curved screens usually have larger gain than flat screens.

Help Screen ➤ A display of help information on the projection screen.

Horizontal Frequency ➤ The frequency at which scan lines are generated, which varies amongst sources. Also called horizontal scan rate or line rate.

Horizontal Offset ➤ The difference between the position of the projector lens and the horizontal placement of the display. In the *DLV 1280* projector, this offset is commonly measured in pixels.

Hot Spot ➤ A circular area of a screen where the image appears brighter than elsewhere on the screen. The hot spot always appears along the line of sight and "moves" with the line of sight. High gain screens and rear screens designed for slide or movie projection usually have a hot spot.

Input ➤ A physical connection route for a source (input) signal.

Input Signal ➤ Signal sent from a source to the projector.

Interface ➤ A device that accepts an input signal for display by the projector.

Interlace ➤ A method used by video tape players and some computers to double the vertical resolution without increasing the horizontal line rate. If the resulting frame rate is too low, the image may flicker depending on the image content.

Keypad ➤ A small push-button device which allows the user to control projector settings and operation. There are three different *DLV 1280* keypads: built-in, IR remote, and wired remote (optional). For more information, refer to *3.3, Using the Keypads.*

Keystone ➤ A distortion of the image which occurs when the top and bottom borders of the image are of different lengths. Side borders slant in or out, producing a keystone shaped image.

Linearity ➤ The reproduction of the horizontal and vertical size of characters and/or shapes over the entire screen.

Line of Best Viewing ➤ When light from a projector is incident on a screen, the light reflects from the screen such that the angle of reflection equals the angle of incidence. The Line of Best Viewing is along the line of reflection.

Loopthrough (Loopthru) ➤ The method of feeding a series of high impedance inputs from a single video source with a coaxial transmission line in such a manner that the line is terminated with its characteristic impedance at the last input on the line.

Lumen ➤ Unit of measure for the amount of visible light emitting from a light source.

Lux ➤ The amount of visible light per square meter incident on a surface.
1 lux = 1 lumen/square meter = 0.093 foot-candles

Menu ➤ A list of selectable options displayed on the screen.

NTSC Video ➤ A video output format of some video tape and disk players. There are two types of NTSC (National Television Standards Committee) video: NTSC 3.58 and NTSC 4.43. NTSC 3.58 is used primarily in North America and Japan. NTSC 4.43 is less commonly used.

Optical Screen ➤ A type of rear-projection screen which re-directs light through the screen to increase image brightness in front of the screen. Screen gain is usually greater than 1 but audience viewing angles are reduced.

PAL Video ➤ PAL (Phase Alternating Line) video is a 50 Hz standard with 768 x 576 resolution. It is found on some video tape and disk players (used primarily in Europe, China and some South American and African countries).

Pincushion ➤ A distortion of the image possible on some types of projectors, characterized by concave or convex borders.

Pixel (picture element) ➤ The smallest discernible element of data from a computer-generated image.

Pixel Phase ➤ The phase of the pixel sampling clock relative to incoming data.

Pixel Tracking ➤ The frequency of the pixel sampling clock, indicated by the number of pixels per line.

Presentation Level ➤ The projector is at presentation level when an image from a source is displayed without the presence of a slidebar, menu, pull-down list, or error message. For example, if a help page is displayed, the projector is not at presentation level.

Projector-to-Screen Distance ➤ The distance between the projector's front feet and the screen. Also called "Throw Distance".

Protocol ➤ The type of code format utilized by remote keypad(s). For any keypad, the default protocol from manufacture is Protocol A. By using two different protocols, two projectors may be used side by side while being controlled independently by their remote IR keypads.

Pull-down List ➤ A selectable menu item that unfolds into a list of options pertaining to a given parameter.

Rear Screen ➤ A translucent panel for screen projection. Incident light travels through the incident surface of a rear screen and forms an image on the other surface.

Resolution (lens) ➤ The maximum number of alternate white and black horizontal lines that can be distinguished on a screen when a photographic target placed between the lens and a light source is illuminated by that light source.

Resolution (projector) ➤ The maximum number of pixels that the projector can display horizontally and vertically across an image. In *DLV 1280*, resolution is 1280 x 1024.

Retrace Time (Horizontal) ➤ The minimum time required for a CRT projector to move the position of the scanning spot from the right edge to the left edge.

Rise Time ➤ The time required by the video amplifier of the projector to increase its output from 10% to 90% of the maximum value.

RGB Video ➤ The video output (analog or digital) of most computers. Analog RGB video can have 3, 4, or 5 wires — one each for red, green, and blue, and either none, one or two for sync. For three-wire RGB, the green wire usually provides sync. (See TTL Video).

RS-232 ➤ An asynchronous data transmission standard recommended by the Electronics Industries Association (EIA). Also called serial communication.

S-Video ➤ The output from certain video tape players and video equipment. S-Video separates sync and luminance from color information, typically producing a higher quality display than composite video.

Scan Frequency ➤ The horizontal or vertical frequency at which images are generated.

Scan Line ➤ One horizontal line on the display.

SECAM ➤ A video output format of some video tape and disk players (used primarily in France). SECAM (Sequential Couleur á Mémoire) signals are similar in resolution and frequency to PAL signals. The primary difference between the two standards is in the way color information is encoded.

Slidebar ➤ A slidebar is a graphical display of an adjustable setting. The numerical setting usually represents a percentage.

Source ➤ The device, such as a computer or VCR, connected to the projector for display. A source is identified by the projector as DAT 1, DAT 2, VID 1 or VID 2, or as other user-defined numbers. Sources have corresponding channels recognized by the projector.

Source Setup ➤ See *channel*.

Spot Size ➤ The diameter of the smallest dot that can be generated by a CRT projector.

Switcher ➤ A signal selector that can be connected to a projector for the purpose of adding more sources.

Sync ➤ This term refers to the part of the video signal that is used to stabilize the picture. Sync can occur in three forms:

1) "Composite sync": the horizontal and vertical components are together on one cable.
2) "Sync-on-green": the sync is part of the green video.
3) "Separate sync" or "H.SYNC and V.SYNC": the horizontal and vertical components of the sync are on two separate cables.

Sync Width ➤ The duration of each sync pulse generated by a computer. The sync width is part of the blanking time.

TTL Video ➤ A type of RGB video with digital characteristics.

Terminated ➤ A wire connecting a single video source to a display device, such as a projector, must be terminated by a resistance (usually 75Ω for video).

Throw Distance ➤ The distance between the front feet of the projector and the screen. Also called "Projector-to-Screen Distance".

Tint ➤ Balance of red-to-green necessary for realistic representation of NTSC signals.

Variable Scan ➤ The ability of a projector to synchronize to inputs with frequencies within a specified range.

Vertical Frequency ➤ The frequency at which images are generated. Vertical frequencies vary amongst sources. Also called vertical scan rate.

Vertical Offset ➤ The difference between the vertical height of the projector lens and the vertical height of the display. In the *DLV 1280* projector, this offset is commonly measured in pixels.

Video ➤ The signal that is used by display devices (such as projectors) to generate an image. This term also refers to the output of video tape/disk players and computers.

Video Decoder ➤ A device that converts NTSC 3.58, NTSC 4.4, PAL, PAL-N, PAL-M or SECAM to RGB video.

Video Standard ➤ A specific type of video signal, such as NTSC, PAL, SECAM. *DLV 1280* can automatically recognize the standard required for a source and display accordingly.

Viewing Angle ➤ Screens do not reflect equally in all directions. Most light is reflected in a conical volume centered around the "line of best viewing". Maximum brightness is perceived if you are within the viewing cone defined by the horizontal and vertical viewing angles.

White Balance ➤ The color temperature of white used by the projector.

White Field ➤ The area of an image that is white only. For example, a full white field is an image that is white everywhere. A 10% white field is a white area (usually rectangular) that occupies 10% of the image; the remaining 90% is black.

YCrCb Video ➤ A high-end signal suitable for broadcast. YCrCb video (also called component video, YUV video or Y, R-Y, B-Y video) by-passes the video decoder that may be installed in the projector.

Zoom ➤ The adjustment of image size through the use of a zoom lens. In DLV 1280, you can also “zoom in” on a portion of the image by using the pan function.

Appendix B

Keypad Reference

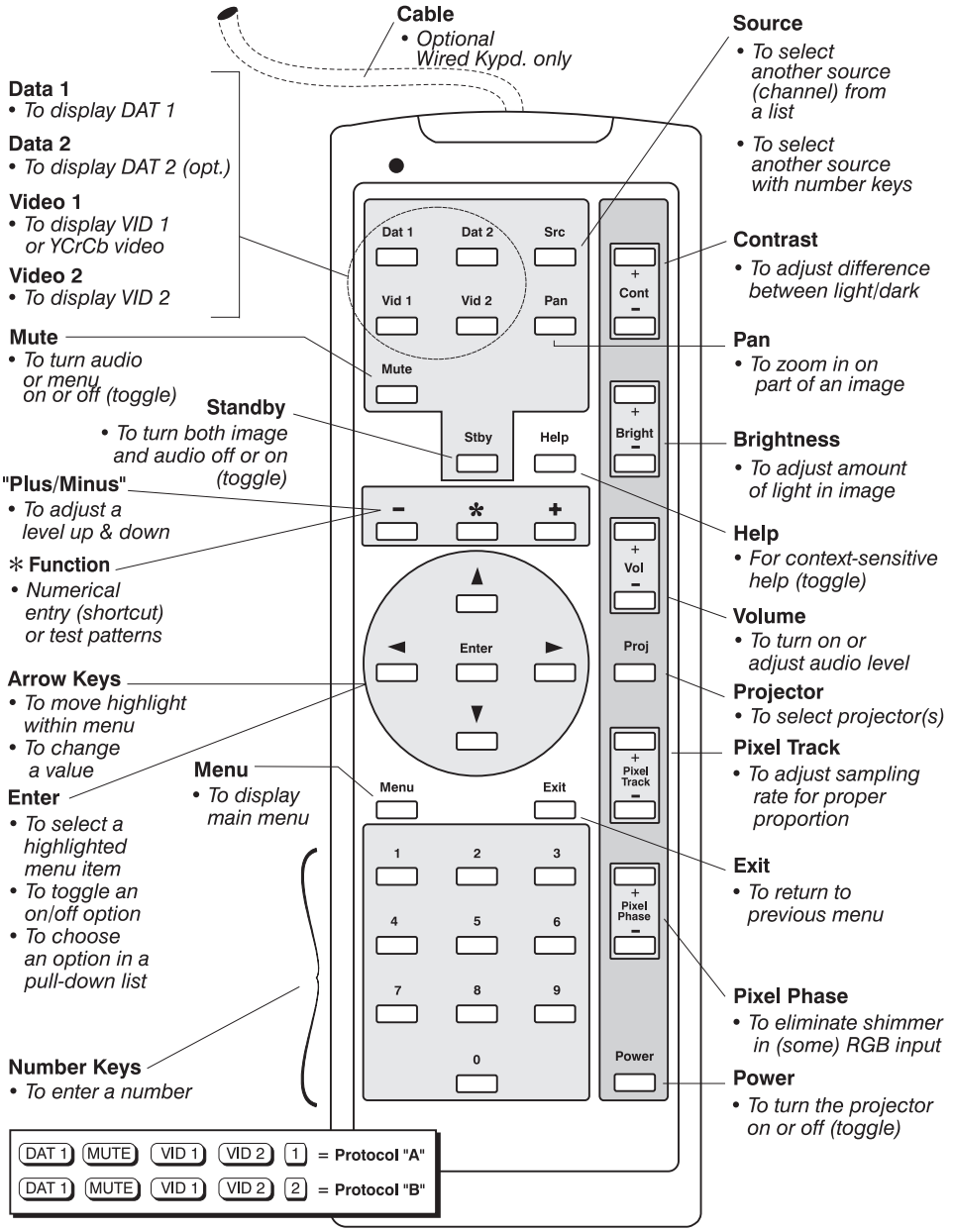


Figure B-1. IR Remote Keypad or Wired Keypad
(Remotes are optional on DLV 1280 CR)

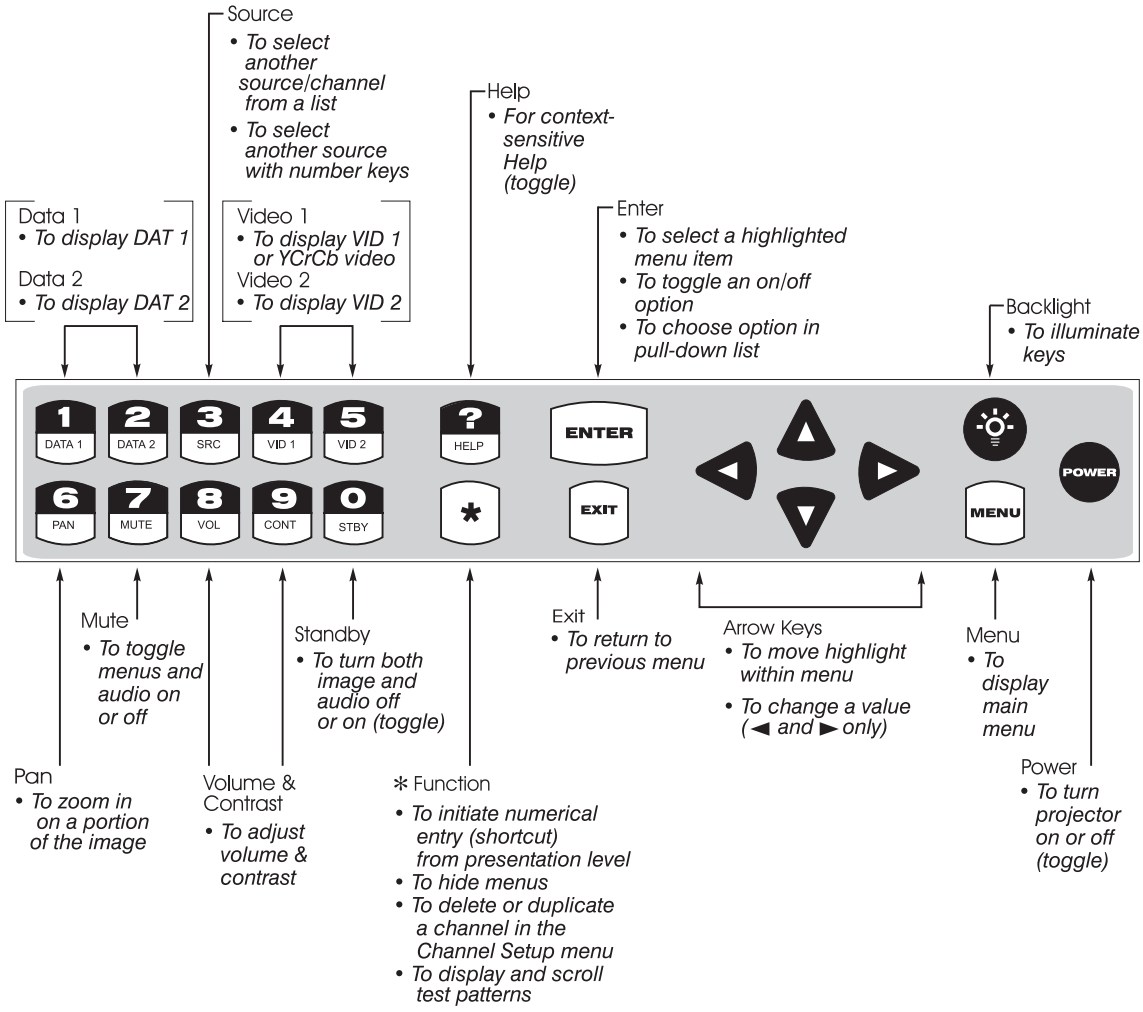
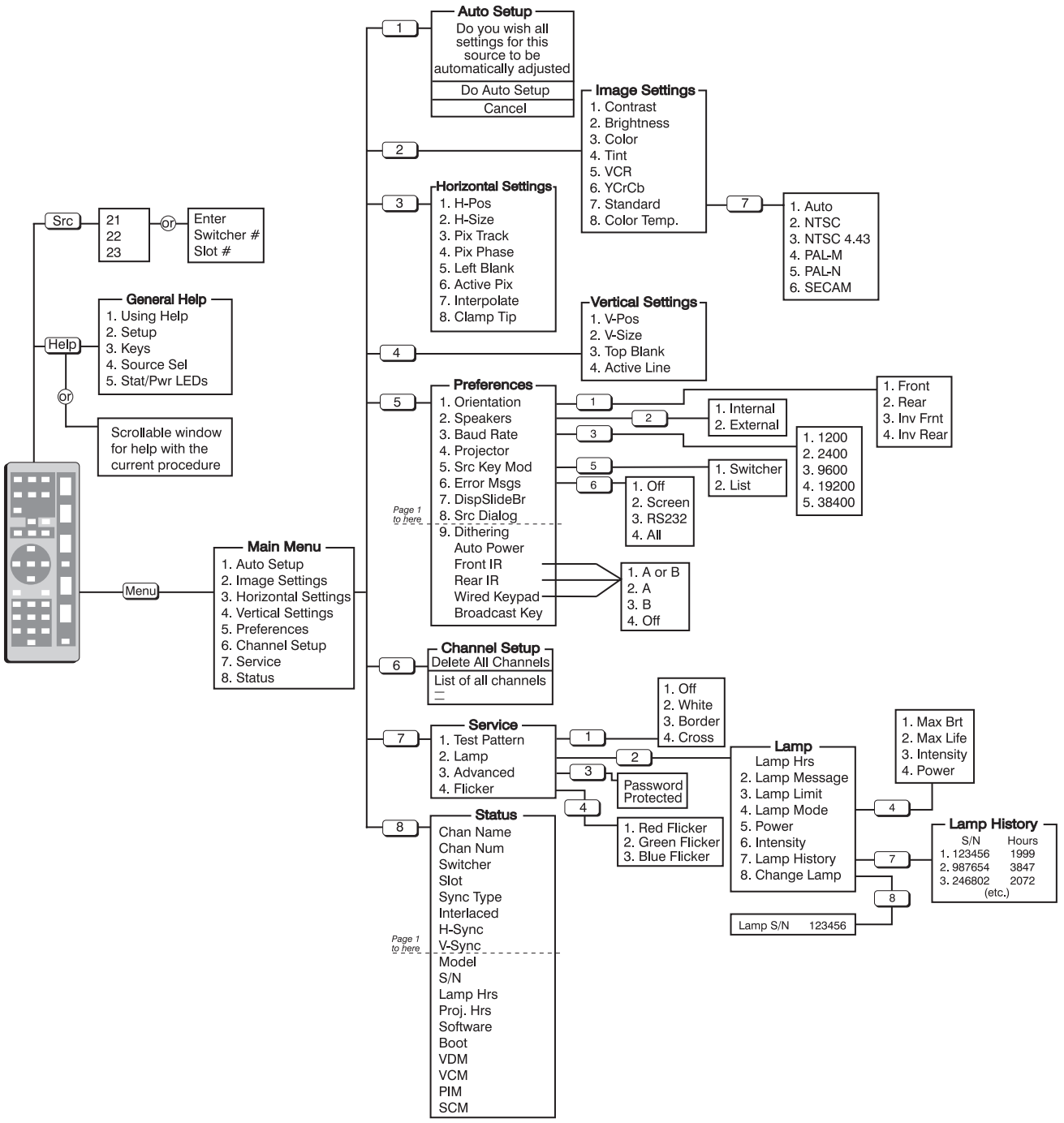


Figure B-2. Built-in Keypad

Appendix C

Menu Tree



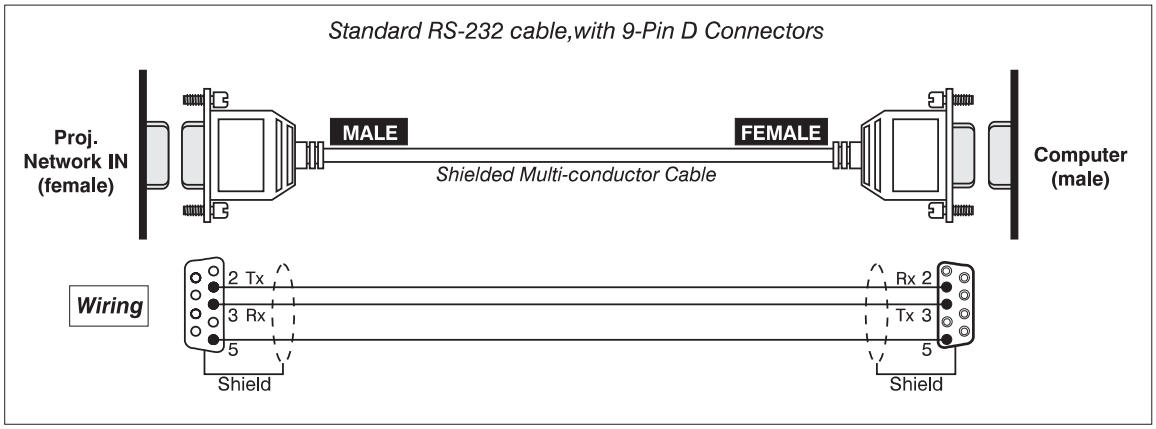
Appendix D

Serial Communication Cables

Refer to the following RS-232 (serial) communication cable details when connecting *DLV 1280* to a computer, another *DLV 1280* projector, or to a *Marquee Signal Switcher*.

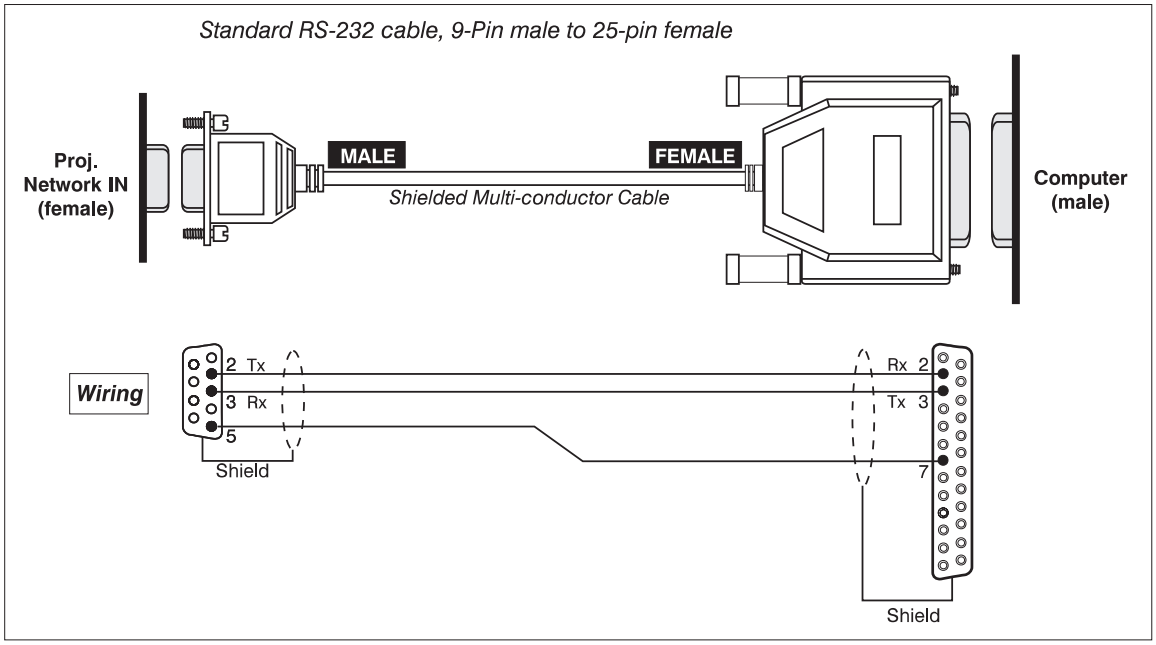
❑ *From projector to computer*

For computers having a 9-pin "AT" type serial port

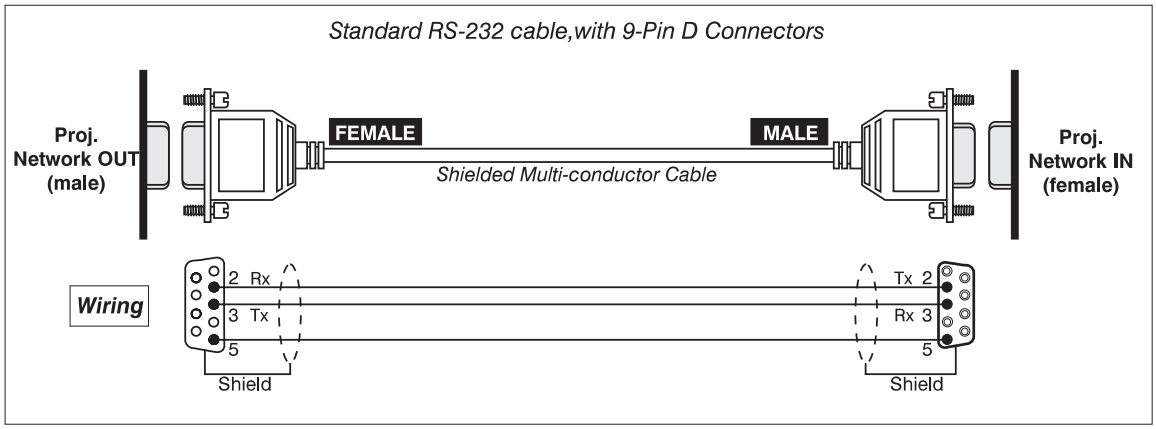


❑ *From projector to computer*

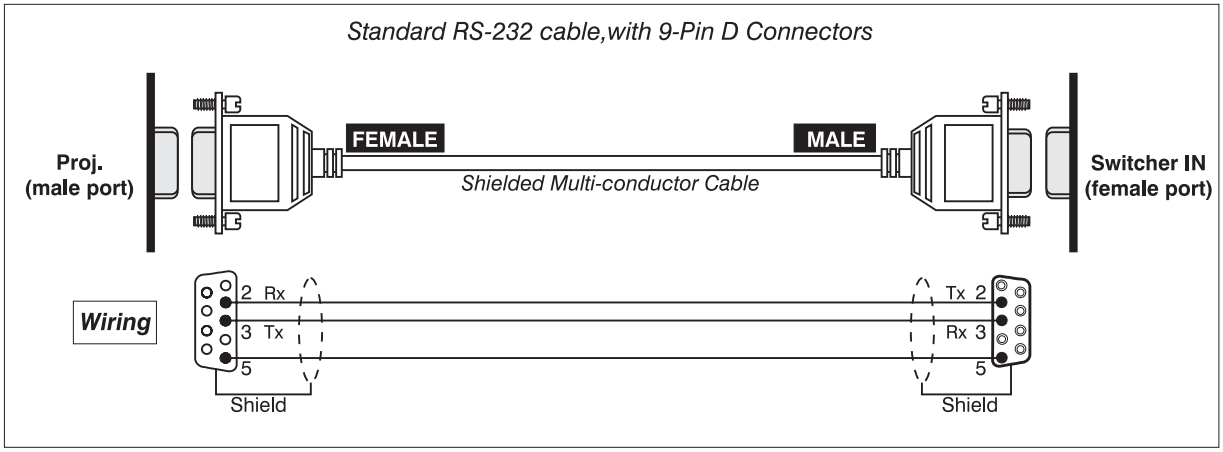
For computers having a 25-pin serial port



❑ *From projector to projector*

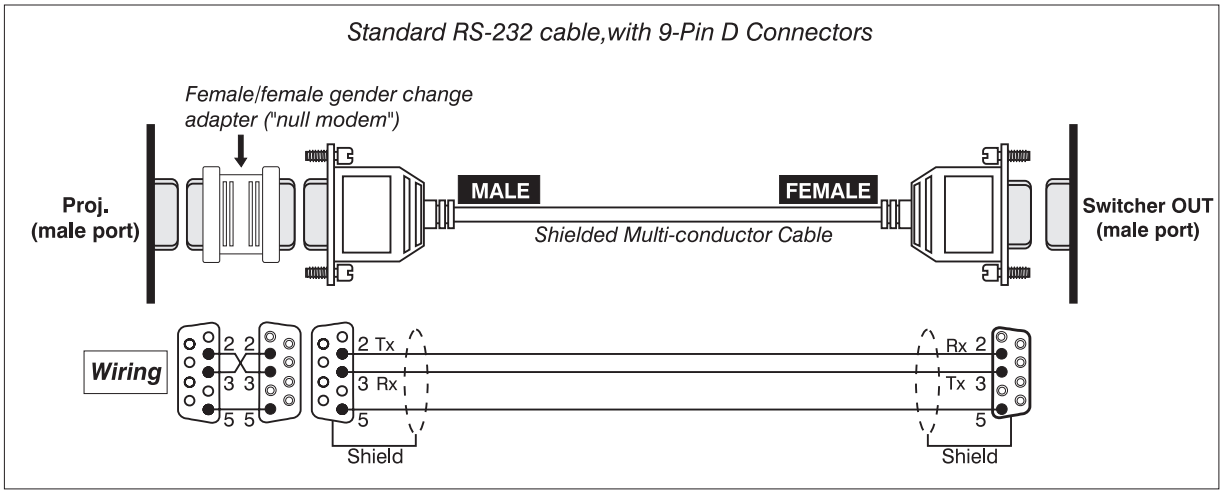


❑ *From projector to switcher, new installation*



❑ *From projector to switcher, in existing Marquee installation*

For adding a DLV 1280 projector to an existing installation in which the switcher OUT port is used (such as with Marquee projectors), add a gender changing adapter at the projector port as shown:

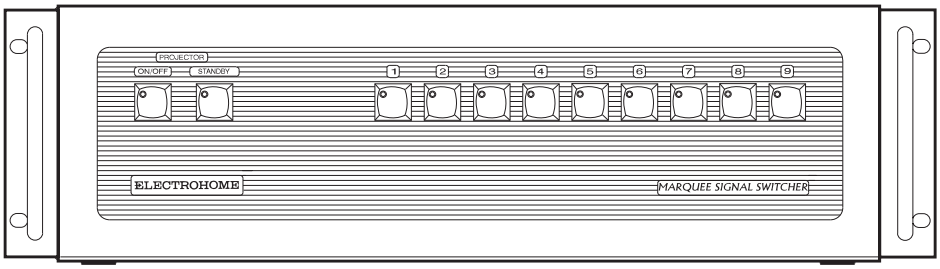


Appendix E

Optional Input Modules

There are many external optional input modules and accessories available for *DLV 1280*. Contact you dealer or Electrohome for a complete and up-to-date listing.

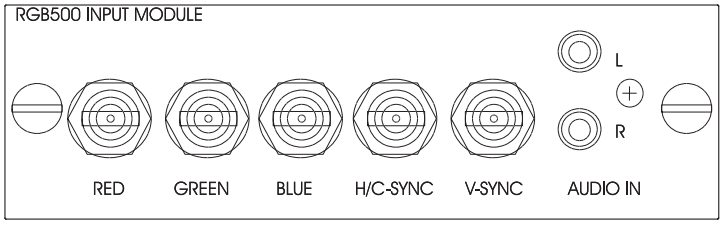
Marquee Signal Switcher 38-801000-xx ➤ The *Marquee* Signal Switcher is a rack-mountable signal selector which can extend the number of selectable inputs by the *DLV 1280*. Connected to the projector RGB interface (DAT 1), each switcher adds up to 9 more sources to the system. Other switchers can be connected to the first, with each input selected with a keypad. Switcher inputs can also be selected by pressing the appropriate front panel push-button.



Features

- ◊ can be used with *DLV 1280* and other projectors
- ◊ simple push-button control
- ◊ easy to see, illuminated indicators
- ◊ 9 expansion slots for interface modules
- ◊ RS-232 serial interface
- ◊ input for a wired remote keypad
- ◊ universal power input
- ◊ use up to 9 switchers ganged together for use with *DLV 1280*

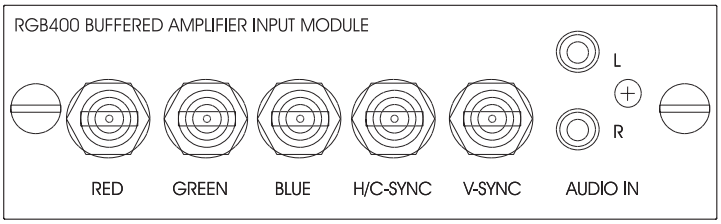
RGB500 Input Module 38-801001-xx ➤ The RGB500 Input Module may be installed in a *Marquee* signal switcher or a *Marquee* Case/Power Supply and used with DLV 1280. Connect analog RGB input signals of up to 500 MHz, such as those from high-resolution computers. Inputs are 75Ω terminated.



Features

- ◊ accepts 3, 4, or 5 wire RGB video (sync-on-green, composite sync, or separate horizontal and vertical sync)
- ◊ BNC connectors for RGB signal inputs
- ◊ RCA connectors for left and right channel audio inputs

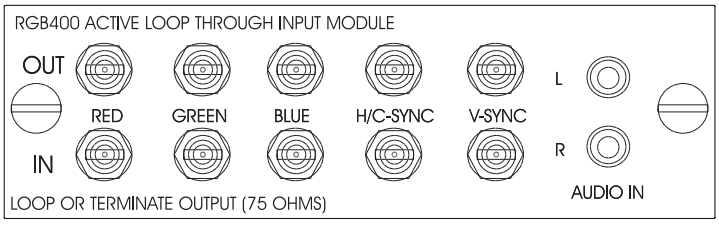
RGB400BA Input Module 38-801033-xx ➤ The RGB400 Buffered Amplifier Input Module may be installed in a *Marquee* signal switcher or *Marquee* Case/Power Supply and used with DLV 1280. Connect three-, four-, or five-wire RGB video signals of up to 400 MHz bandwidth, signals typically produced by high-resolution computers or workstations. The buffering capability of the module enables the incoming signal to be sent to a remote destination. Inputs are 75Ω terminated.



Features

- ◊ accepts 3, 4, or 5 wire RGB video (sync-on-green, composite sync, or separate horizontal and vertical sync)
- ◊ BNC connectors for RGB signal inputs
- ◊ Buffered signals to a remote destination
- ◊ RCA connectors for left and right channel audio inputs

RGB400 ALT Input Module 38-801002-xx ➤ The RGB400 Active Loop Through Input Module may be installed in a *Marquee* signal switcher or *Marquee* Case/Power Supply and used with DLV 1280. The buffering capability of the RGB400 ALT, in combination with its pair of input/output connectors, permit the original source signal to be sent intact to multiple remote destinations. For example, you may want to display your data on both a projector and a monitor, or perhaps two projectors. Inputs are 75Ω terminated.

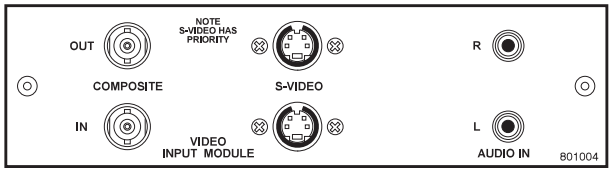


Features

- ◊ accepts 3, 4, or 5 wire RGB video (sync-on-green, composite sync, or separate horizontal and vertical sync)
- ◊ BNC connectors for RGB signal inputs and outputs
- ◊ RCA connectors for left and right channel audio inputs
- ◊ buffered, active loop-through video outputs

Composite / S-Video Input Module 38-801004-xx

➤ The Composite/S-Video Input Module may be installed in a *Marquee* signal switcher or a *Marquee* Case/Power Supply and used with DLV 1280. The module receives composite video or S-video input signals from tape or disk players. Video inputs are 75Ω terminated. Video outputs are provided for buffered loop-through to another display device.



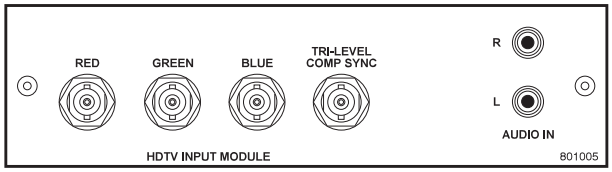
Features

- ◊ BNC connectors for composite RGB signals
- ◊ 4-pin mini-DIN connectors for S-Video signals
- ◊ RCA connectors for left and right channel audio inputs
- ◊ buffered loop-through video outputs

NOTE: This interface is not a decoder. Proper display of NTSC, PAL, OR SECAM signals requires that the DLV 1280 includes a multistandard decoder (optional on overseas export model).

HDTV Input Module 38-801005-xx

➤ The HDTV Input Module may be installed in a *Marquee* signal switcher or *Marquee* Case/Power Supply and used with DLV 1280. The module receives HDTV analog RGB input signals with tri-level sync.

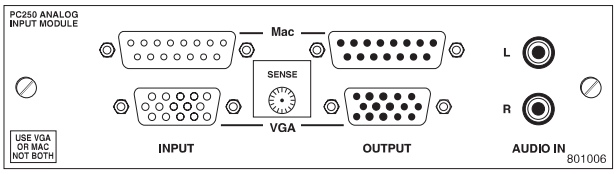


Features

- ◊ accepts RGB video with tri-level composite sync
- ◊ BNC connectors for RGB signal inputs
- ◊ RCA connectors for left and right channel audio inputs

PC Analog Input Module 38-801006-xx

➤ The PC Analog Input Module may be installed in a *Marquee* signal switcher or *Marquee* Case/Power Supply and used with DLV 1280. The module receives analog RGB input signals from IBM PC compatibles or Macintosh computers. Video inputs are 75Ω terminated. Video outputs are provided for buffered active loop-through to another display device such as a monitor.



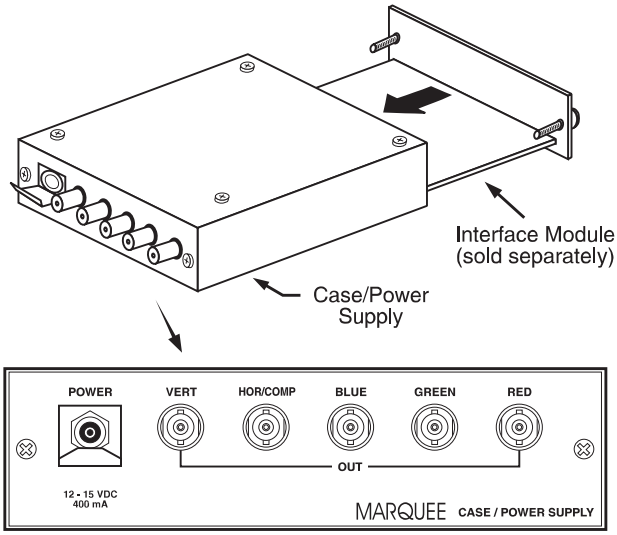
Features

- ◊ accepts VGA or MAC RGB video
- ◊ 15 pin D connectors for video
- ◊ RCA connectors for left and right channel audio inputs
- ◊ active loop-through video outputs

*NOTE: **1)** This interface does not accept VGA and MAC signals simultaneously.*
***2)** All trademarks are the rights of their respective owners.*

Marquee Case/Power Supply 38-801023-xx 38-801026-xx ➤

The *Marquee* Case/Power Supply enables you to use an input module as a stand-alone interface that can be connected to a projector. Two modules are available: one for use with 120 volt line voltage (38-801023-XX), and the other for use with 220 volt line voltage (38-801026-XX). Both models include a 15 Vdc, 500 mA AC adapter.



Features

- ◊ easy installation — no tools required
- ◊ can be used with the input modules described above
- ◊ retaining clip to secure AC adapter
- ◊ non-slip feet
- ◊ supplied with 110 or 220 volt AC adapter

Index

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I

K

L

M

N

O

P