

# Introduction

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## 1.1 Using This Manual

This manual provides technical information to assist qualified Electrohome service technicians for servicing and repair of *Marquee 8000* projection systems. Organization of the manual permits easy access to service related information for the system and its serviceable modules. This manual is divided into two parts, Part A and Part B. Part A includes service information pertaining to the complete system. Part B covers information which is specific to the projector's main serviceable modules.

### Conventions ►

Please note the following typographical conventions used in this manual.

- Warnings that relate to user safety are highlighted in **bold** print.
- First and second level subsection titles are located in the left margin of each page. Third level titles are located within the body text and are in ***bold italic*** print.
- The pointing hand symbol  emphasizes important information.
- Special notes and comments appear in *italics*.
- Important terms within a paragraph appear in *italics*.
-  is intended to alert the user to the presence of important operating and maintenance (servicing) instructions. All components on schematics and parts lists identified with this symbol are critical safety.
-  is intended to alert the user to the presence of uninsulated "dangerous voltage" within the projector's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.
- In the module sections, each schematic and parts list is identified with the module number for which the data applies. Part numbers for service replacement modules are provided in section 5.2, *Modules & Parts*.
- An asterisk (\*) next to a digital signal name indicates that the signal is active low, i.e. - DISABLE\* may be understood as DISABLE.

**Updates** ➤ Updates to this manual are created on an as-required basis. Call Electrohome for available updates.

*Note: When referring to the module parts lists or schematics, always make sure that the information applies to the module for which you are servicing. Module part numbers are clearly identified on parts list and schematic pages.*

**Disclaimer** ➤ Due to constant research, the information in this manual is subject to change without notice. The information provided in this manual is believed to be reliable; however, Electrohome assumes no responsibility for inaccuracies or omissions.

### 1.2 Projector Description

The Electrohome *Marquee 8000* is an ultra high resolution graphics projector compatible with virtually all input sources. Its superior performance and high quality projected image place it well above other projection systems in its class. Features of the *Marquee 8000* include:

- automatic lock to inputs between 15 kHz and 130 kHz
- a projected display size from 6 to 25 feet (diagonal)
- a full function built-in keypad and a full function IR remote keypad
- customizable control
- an intuitive menu driven interface with on-line help
- external computer control capability
- advanced features such as *ASR* and *ASI* which reduce the need for manual display adjustments

**Functional Description** ➤ The projector accepts input signals from a variety of sources for projection onto flat, curved, or rear projection screens. System inputs are processed to provide separate red, green, and blue image components for projection through the projector's three front lenses. The three primary color components converge on the projection screen to provide a high quality display output.

Sophisticated processor-based logic and control circuitry provide many of the automatic features which are designed into the *Marquee 8000*. This circuitry interfaces with the built-in and IR hand-held remote keypads, both of which provide full projector control. Control functions include:

- turning the projector on or off
- switching input sources from interface modules and external switchers
- adjusting all display settings such as contrast, brightness, and size
- correcting for undesirable display effects and input noise
- displaying projector operating status screens and help information
- controlling the projector's operating settings
- controlling audio output

For projector servicing, the keypads are used to make service adjustments and alignments.

### Hardware Description ➤

#### Mechanical

The projector body is comprised of a sturdy metal chassis, metal top covers, and durable plastic side covers. The front top cover can be temporarily removed to access the built-in keypad and align the lenses. The rear top cover and rear panels are removable for servicing and projector upgrading. Expansion modules are installed in a card cage at the rear of the projector.

#### Optical

The projector uses F1.1, color corrected, hybrid optics. The optics are formed from glass and acrylic aspheric elements. Two stage focusing allows independent focusing of the image center and corners. It also enables the projector to be used with a variety of screen types, e.g., curved, flat, or rear screens.

### Circuit Modules ➤

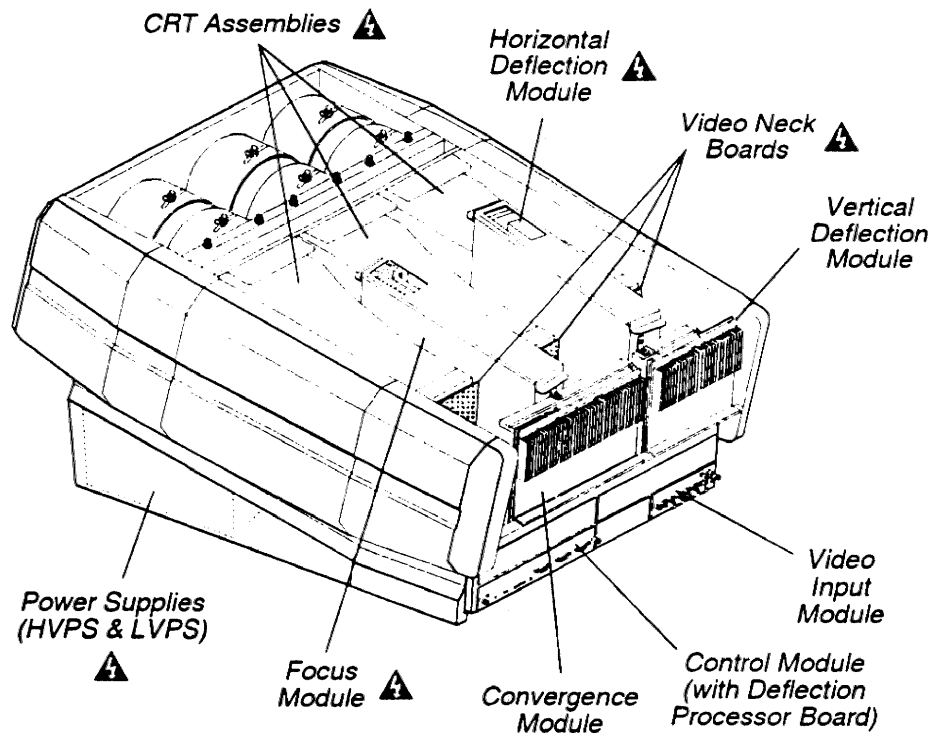


Figure 1-1. Projector Modules

The projector's circuit modules include a Video Input Module (VIM), a Control Module (CLM) with Deflection Processor Board (DPB), a Vertical Deflection Module (VDM), a Horizontal Deflection Module (HDM), a Convergence Amplifier Module (CVA), a Focus Module (FCM), three Video Neck Boards (VNB), a High Voltage Power Supply (HVPS), and a Low Voltage Power Supply (LVPS). The projector has a Mother Board (called the "Top Mother") and a Backplane Board for interconnection between modules. These modules are briefly described in the following. For a detailed description of each, refer to Part B of this manual.

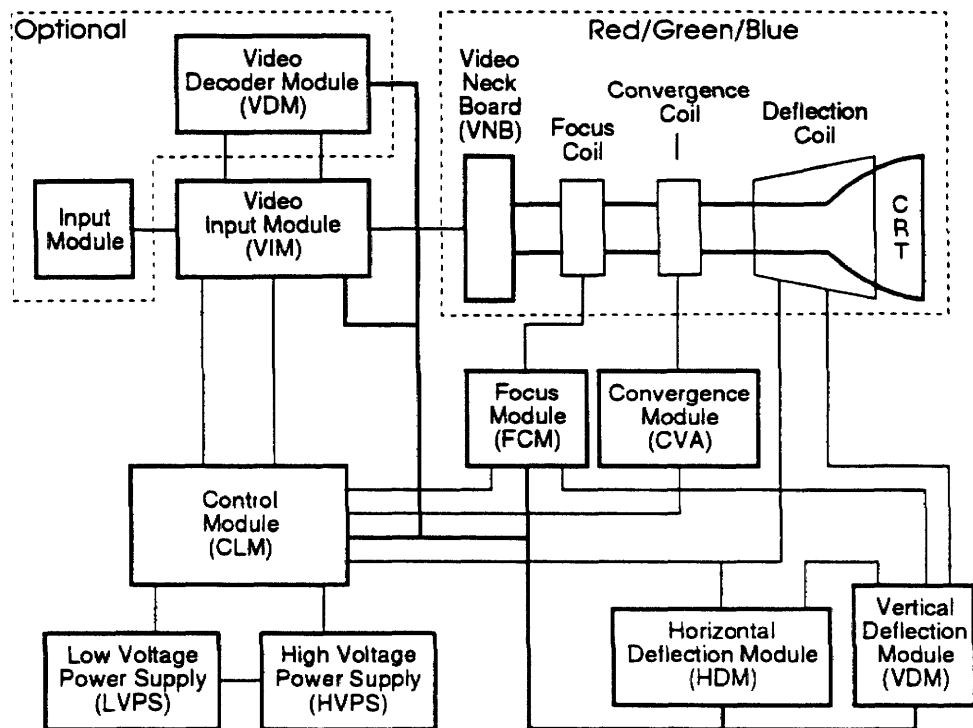


Figure 1-2. Marquee 8000 Function Block Diagram

#### **Video Input Module (VIM)**

The VIM, located at the back of the projector, selects and receives external source signals for processing. The module accepts one input (Input 01) and provides for an additional input (Input 02) through an optional interface. The VIM can process sync-on-green, composite and separate H/V sync formats. Protection circuitry to process the beam current magnitude signals and perform a shutdown of the HVPS, if required, is also located on this module.

#### **Control Module (CLM)**

The CLM, located at the back of the projector, is the main control center for the projector. It consists of a Control Board and Deflection Processor Board (DPB). The module contains several microprocessors, read only memory, random access memory, input/output expanders and a number of digital-to-analog converters. It receives user input from the projector's built-in or external keypads, and monitors status and control inputs from the other projector modules. The CLM outputs convergence waveforms, dynamic focus waveforms, G2 control voltages, drive signals for horizontal and vertical deflection, as well as numerous control signals. It also generates text and test patterns for on-screen display.

#### **Vertical Deflection Module (VDM)**

The VDM, located below the rear top cover of the projector, drives the vertical deflection windings within each of the three main deflection yokes (R,G,B) with a ramp of current. The VDM also creates a number of precise vertical rate waveforms which are required by other modules in the system.

**⚠ *Horizontal Deflection Module (HDM)***

The HDM, located between the green and blue CRTs, controls and monitors horizontal signal timing and CRT beam deflection. This module includes drive and core circuitry and circuits for width control, power and scan fail, modulation, key and pin correction, width sense, delta f feed forward, and scan regulation and centering.

***Convergence Module (CVA)***

The CVA module, located below the rear top cover of the projector, supplies the six convergence coils with a current of the same wave shape as the input voltage signal produced by the CVA. The magnetic field produced by the current in the convergence coils causes movement of the electron beam within the CRT neck to align the three CRT images and correct for N/S geometry and E/W linearity distortions.

**⚠ *Focus Module (FCM)***

The FCM module, located between the red and green CRTs, supplies the magnetic focus coils with a current which creates a magnetic field within each CRT neck thus allowing control of the diameter of the electron beam as it lands on the CRT face plate.

**⚠ *Video Neck Boards (VNB)***

The VNBs, located on the neck of each CRT, amplify the video signal inputs to drive the CRTs.

**⚠ *Power Supplies***

The projector has two main power supplies; a Low Voltage Power Supply (LVPS) and a High Voltage Power Supply (HVPS). Both supplies are non-serviceable.

The LVPS is a 90-264 VAC input, power factor corrected, 8 output (500W max) DC supply. It supplies  $\pm 5\text{Vdc}$ ,  $\pm 15\text{Vdc}$ ,  $\pm 24\text{Vdc}$ ,  $\pm 85\text{Vdc}$  for projector electronics and  $+390\text{Vdc}$  (180W) to drive the HVPS. THE LVPS also includes a 3 output (10W max) standby/housekeeping supply.

The HVPS generates 34KV for CRT anode requirements. Three auxiliary outputs provide 0-1200V for CRT G2 requirements. Input power is provided (390VDC  $\pm 5\%$ ) by the LVPS.

**⚠ *Warning: These power supplies are NON-SERVICEABLE. Do not attempt to open or service them. Faulty supplies must be replaced.***

### **Expandability** ➤

The *Marquee 8000* can be expanded or upgraded to include additional features, accessories, and input options; these include: a variety of quick plug-in interface modules to suit the input devices you are using, a signal switcher, a video decoder, and ceiling and floor mount accessories. For more information contact the dealer or Electrohome.

### **1.3 Electrohome Technical Support**

For additional technical support for the *Marquee 8000* series projector, see below for the nearest Electrohome technical support office.

Electrohome Limited  
809 Wellington Street North  
Kitchener, Ontario  
Canada N2G 4J6  
Telephone (519) 744-7111  
U.S. customers call toll-free  
1-800-265-2171  
Fax: (519) 749-3136

Electrohome USA (1989), Inc.  
10282 Sixth Street  
Rancho Cucamonga  
California 91730-5835  
Telephone: (909) 466-3816  
Fax: (909) 466-3824  
  
700 Ensminger Road, Suite 112  
Tonawanda, N.Y. 14150  
Telephone: (716) 874-3630  
Fax: (716) 874-4309

Electrohome Europe Ltd.  
46 London Road  
Reading  
Berkshire  
RG1 5AP  
England  
Telephone 44 734 756540  
Fax 44 734 756541