HyperX^3 HD/SD Graphics System

HARDWARE REFERENCE GUIDE

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Related Publications

Title	Publication No.	Rev
HyperX^3 HD/SD Graphics System Quick Start Guide	2A02325	0
Lyric Handbook	2A02111	--
Lyric Handbook Supplement for Version 3.12	2A02163	--


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WARNING— These instructions are for the standard configuration as provided by Chyron Corporation. If the customer alters this configuration, without approval from Chyron Corporation, the customer assumes responsibility for safety issues, installation, operation and all other items pertinent to conformance to standards.


IMPORTANT

The OEM (Original Equipment Manufacturer) instruction manuals and other pertinent documents and software that are included with the Unit are supplied by the manufacturers of particular components used in the System. Chyron Corporation is not responsible for replacing these items.

WEEE STATEMENT

The WEEE directive places an obligation on EU-based manufacturers, distributors, and retailers to take back electronics products at the end of their useful life. A sister Directive, ROHS (Restriction of Hazardous Substances) complements the WEEE Directive by banning the presence of specific hazardous substances in the products at the design phase. The WEEE Directive covers all Chyron products imported into the EU as of August 13, 2005. EU-based manufacturers, distributors, retailers and importers are obliged to finance the costs of recovery from municipal collection points, reuse, and recycling of specified percentages per the WEEE requirements.

Instructions for Disposal of WEEE by Users in the European Union

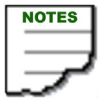
The symbol shown below is on the product or on its packaging, which indicates that this product must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of their waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the seller from whom you purchased the product.

Table Of Contents

CHAPTER 1 INTRODUCTION

PURPOSE of THIS GUIDE

This manual provides hardware reference information for the HyperX^3 HD/SD System. For installation and setup procedures see the *HyperX^3 HD/SD Graphics System Quick Start Guide*.



- The equipment you received may or may not look exactly like the equipment shown in this manual.
- In this manual, the HyperX^3 System may be referred to as the System or Unit.

See the HyperX^3 HD/SD Graphics System Quick Start Guide for instructions on how to turn on the Unit.

SAFETY

Important safety instructions are provided in this manual. See “CHAPTER 2 SAFETY” on page 6.

WARNING

Read the Safety Chapter before installing or operating this equipment, or before performing any troubleshooting procedures.

CUSTOMER SUPPORT

For customer support, call *1-888-4-CHYRON (1-888-424-9766)*.

Visit the Chyron Website at **www.chyron.com**, for immediate access to our forums and knowledge base, and an array of documentation downloads and other information to assist you.

NOTES:

CHAPTER 2 SAFETY

IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.

2. Keep these instructions.

3. Heed all warnings.

4. Follow all instructions.

5. Do not use this apparatus near water.

6. Clean only with dry cloth.

7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.

8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

11. Only use attachments/accessories specified by the manufacturer.

12. Unplug this apparatus during storms or when unused for long periods of time.

13. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

SAFETY INFORMATION and the MANUAL

Throughout this manual, you will see the words WARNING and CAUTION indicating potentially dangerous or hazardous situations which, if not avoided, could result in death, serious or minor injury, or damage to the equipment. Specifically:

WARNING—indicates a potentially dangerous situation that can result in serious injury or death

CAUTION—indicates a potentially hazardous situation that can result in minor or moderate injury or damage to the equipment

The specific nature of the warning or caution is provided, and a symbol is used, where applicable, to alert the user to the warning or caution being given.

GENERAL SAFETY CONSIDERATIONS

If any of the following conditions exist, or are even suspected, do not use the Unit until safe operation can be verified by trained service personnel:

- Visible damage
- Severe transport stress
- Prolonged storage under adverse conditions

ADDITIONAL SAFETY MEASURES

Ensure that the following safety measures and instructions are followed:

- WARNING—Follow all safety instructions given in this manual. Follow all relevant safety instructions given in OEM documentation provided with this equipment.
- WARNING—The chassis is grounded through the ground conductor of the AC line cord. To prevent an electric shock hazard, plug the line cord(s) into properly grounded AC wall receptacle(s) as verified by a qualified technician.
- WARNING—If you are handling the computer monitor and it has a cathode ray tube (CRT), be careful as the risk of implosion exists. Always wear safety gear, particularly eye wear, since the phosphor coating is toxic. If phosphor makes contact with the eyes, rinse the eyes out with water and contact a physician immediately.
- CAUTION—Only use the AC line cords that were supplied with the Unit or a factory approved substitute. Do **NOT** use extension cords.
- CAUTION—Equipment may only be operated at the specified line voltage and frequency. See “SPECIFICATIONS” on page 8.
- WARNING—To prevent a risk of fire or explosion when replacing the CMOS lithium battery, use only P/N CR2032.
- The CMOS lithium battery used in this device may present a fire and chemical burn hazard if mistreated. Do not recharge, dissemble, heat above 100^{O} C (212^{O} F) or incinerate.
- Dispose of the CMOS battery promptly. Keep away from children.

CHAPTER 3 SYSTEM DESCRIPTION

INTRODUCTION

The HyperX^3 HD/SD (Figure 1) supports one or two independent HD/SD-switchable channels, each with optional integrated eFX Clips, DVE, and a second video input. HyperX^3 also supports simultaneous HD animations on two channels.

Figure 1 HyperX^3 HD/SD

SYSTEM SPECIFICATIONS and CONFIGURATION

SPECIFICATIONS

Dimensions	**Chassis**: 4RU **Height:** 17.8 cm (7") **Width:** 48.3 cm (19") **Depth:** 63.5 cm (25") **Weight:** 27.3 kg (60 lbs)
Power Supply (input characteristics)	**Input Range:** 100~240 VAC, Full Range Input **Frequency:** 50-60 Hz **Input Current:** 12A (RMS) @110VAC, 6A (RMS) @220VAC **Inrush Current:** 60A Max for 110VAC, 80A Max for 220VAC
Environmental	**Operating Temperature:** 0° C to 40° C

DIGITAL VIDEO INPUTS/OUTPUTS (per channel)

INPUT		1 SDI Video In (can also serve as digital Gen/Lock input); optional Second Video Input provides 1 additional SDI Video In
OUTPUTS		1 SDI Video, 1 SDI Key
TYPE		All BNC for input and output
IMPEDANCE		75 ohms
DATA FORMATS	SD	10-bit, 270 Mb/s ITU-R Bt.656 SMPTE 259M-C
	HD	10-bit, 1.485 Gb/s ITU-R Bt.709 SMPTE 292M

ANALOG INPUT - GEN/LOCK (per channel)

GEN/LOCK	1 analog black burst; can also accept tri-level analog sync
TYPE	BNC
IMPEDANCE	75 ohms
FORMAT	1 volt p-p composite video, 525/625

ANALOG OUTPUT - MONITORING (per channel)

MONITORING	1 SD analog composite out down converted from Program Out
TYPE	BNC
IMPEDANCE	75 ohms
FORMAT	NTSC/PAL

AUDIO

INPUT	2 AES3id for 4 mono tracks
OUTPUT	4 AES3id for 8 mono tracks
TYPE	BNC

GPI/O CONNECTIONS (Requires GPI/O option)

CONNECTIONS	16 inputs, 16 outputs
TYPE	DB37
IMPEDANCE	50 ohms
FORMAT	TTL level only

BASE SYSTEM CONFIGURATION

The base System configuration is given below.

Important

The System configuration is subject to change without notice. Your System may be different from the configuration described below.

- Core i7 CPU board
- 2.93 GHz Intel Core i7 940 Processor
- 6 GB, DDR3-RAM
- Three 500GB SATA drives
- Microsoft Windows XP Professional operating system
- eFX video processing board
- eFX breakout panel
- PCI-e 2.0 video card
- 2+1 redundant power supply
- 20X DVD±R/RW dual layer DVD/CD burner
- PS2 keyboard and mouse
- 5-position, hot-swappable media drive bay

BASE CHANNEL CONFIGURATION

The base configuration of the HyperX^3 is one SDI HD/SD-switchable channel. The System can contain up to two HD/SD channels, each of which can be upgraded with integrated eFX Clips, DVE, second video input.

OPTIONS and UPGRADES

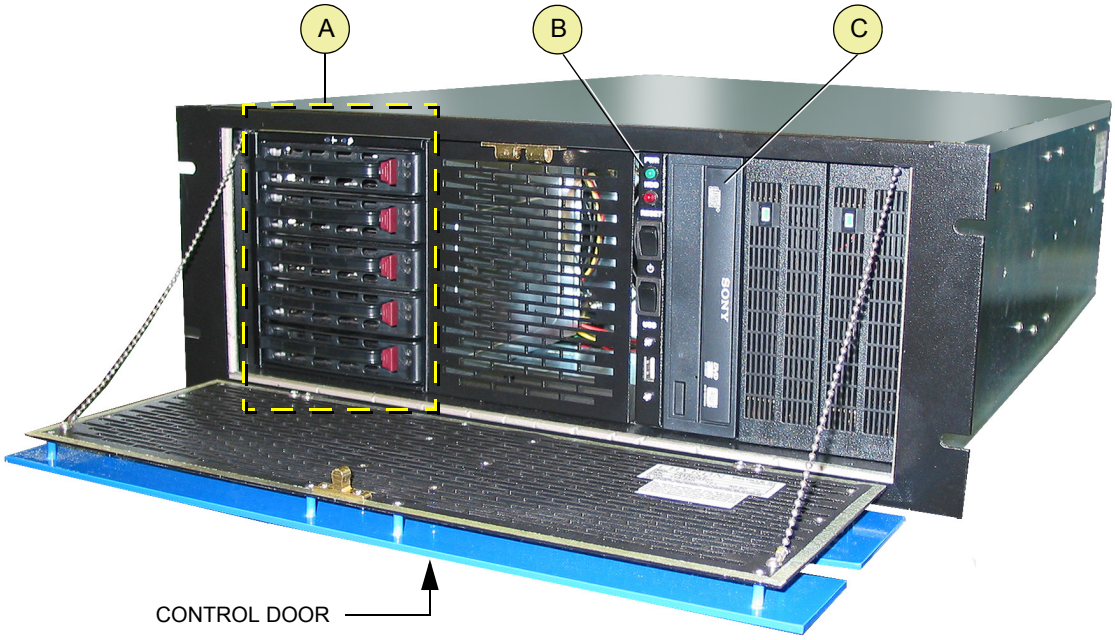
- HyperX^3 can be configured with up to two channels
- Optional Clip Player per channel
- Lyric PRO
- Additional eFX channel
- HD/SD-switchable 3D DVE
- HD/SD second video input
- Chyron-style keyboards (English and International)
- KVM extender kit
- RGB tools graphics editing plug-in
- Harvester Pro WEB harvesting plug-in
- Quarterback asset browsing plug-in
- FORMIT—provides the tools necessary to create custom control panels and GUIs within Lyric. Common widgits, such as buttons, check boxes, edit fields, combo boxes, etc., can be arranged on a form that will present itself when a message ID is loaded. These controls can be linked via VBScript to Lyric via the LEIF interface.

Contact Chyron Customer Service for details.

LOCATION and DESCRIPTION of COMPONENTS

FRONT PANEL

The front panel's controls, indicators, and removable-media drives are identified in Figure 2.



A 5-position media drive bay — contains System drive

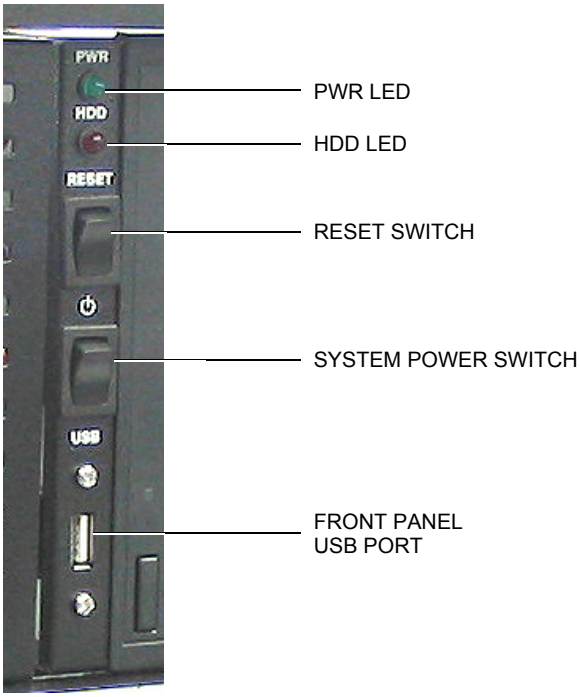
B Controls and indicators. See "Controls and Indicators" on page 12.

C DVD±RW drive

Figure 2 Front Panel Features

Controls and Indicators

The front panel controls and indicators are identified in Figure 3.

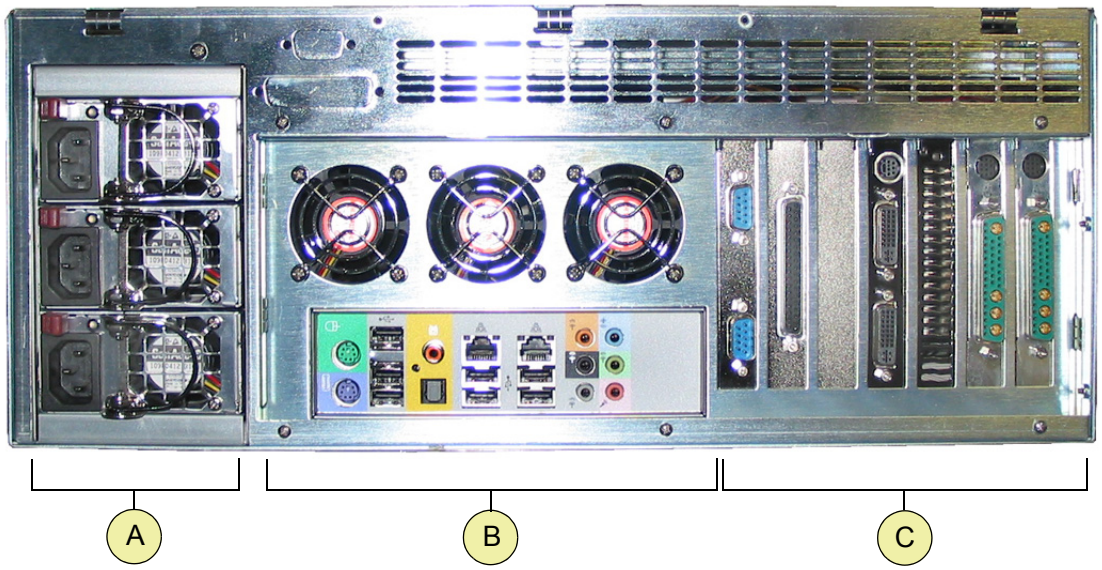


ITEM	DESCRIPTION
PWR LED	Indicates that power is on. Routine power-down should be performed through Windows.
HDD LED	Lights to indicate that the System hard drive is active.
Front Panel USB Port	Front panel Universal Serial Bus 2.0 port (4-pin female)
Reset Switch	Press this spring-loaded rocker switch to give the System a hard re-boot. This switch should only be used in case of System lock-up.
System Power Switch	Spring-loaded momentary switch. Applies power to the Unit when pressed. This switch will turn the Unit OFF if it is held for 4-5 seconds.

Figure 3 Controls and Indicators

REAR PANEL and CHASSIS MOUNTED COMPONENTS

Components are identified in Figure 4 and are described in the following paragraphs.



A Power Supply Modules

B PC I/O Connectors and Rear Panel Exhaust Fans

C Expansion Slots

Figure 4 Rear Panel

POWER SUPPLY

The Unit is equipped with a 2+1 redundant module power supply (Figure 5). The power supply consists of three identical 380 Watt modules, each with its own fan and AC line cord connector (power cords are supplied). The System will operate as long as two of the three modules are functional.

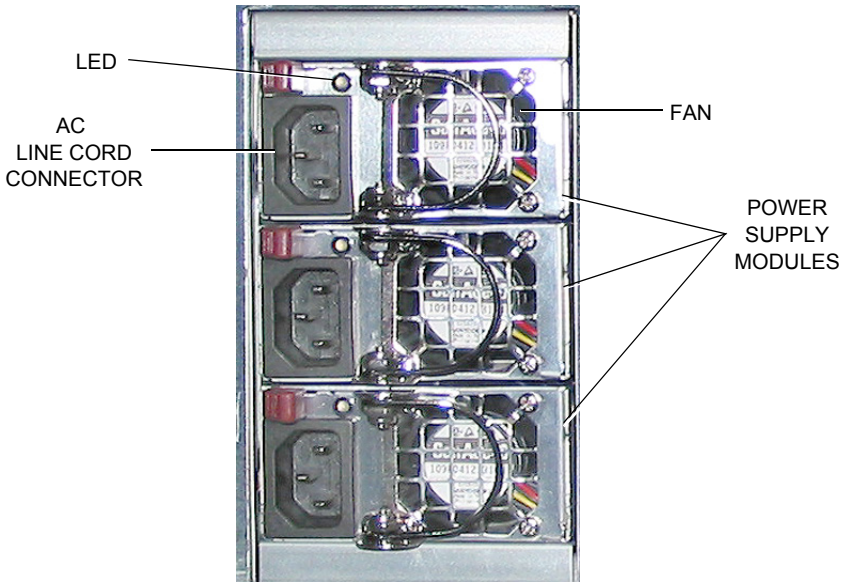


Figure 5 Power Supply

Operation

In normal operation, all three modules supply power to the System. Each module's LED will be lit green. If a module fails,

- Its LED is not lit
- The warning buzzer sounds a continuous tone
- The module is switched out of the System automatically, and the remaining modules continue to supply power to the System

To maintain System integrity, replace a defective module as soon as practical. See "REPLACING a DEFECTIVE POWER SUPPLY MODULE (HOT-SWAP PROCEDURE)" on page 24.

It is advisable to have spare power supply modules on hand for quick replacement. Power supply modules can be purchased by contacting Chyron Customer Service. Have the serial number (located on the module) available, when calling.

EXPANSION SLOTS

The expansion slots provided at the rear of the Unit are identified in Figure 6. Slot numbers are shown circled. A detailed description of each follows.

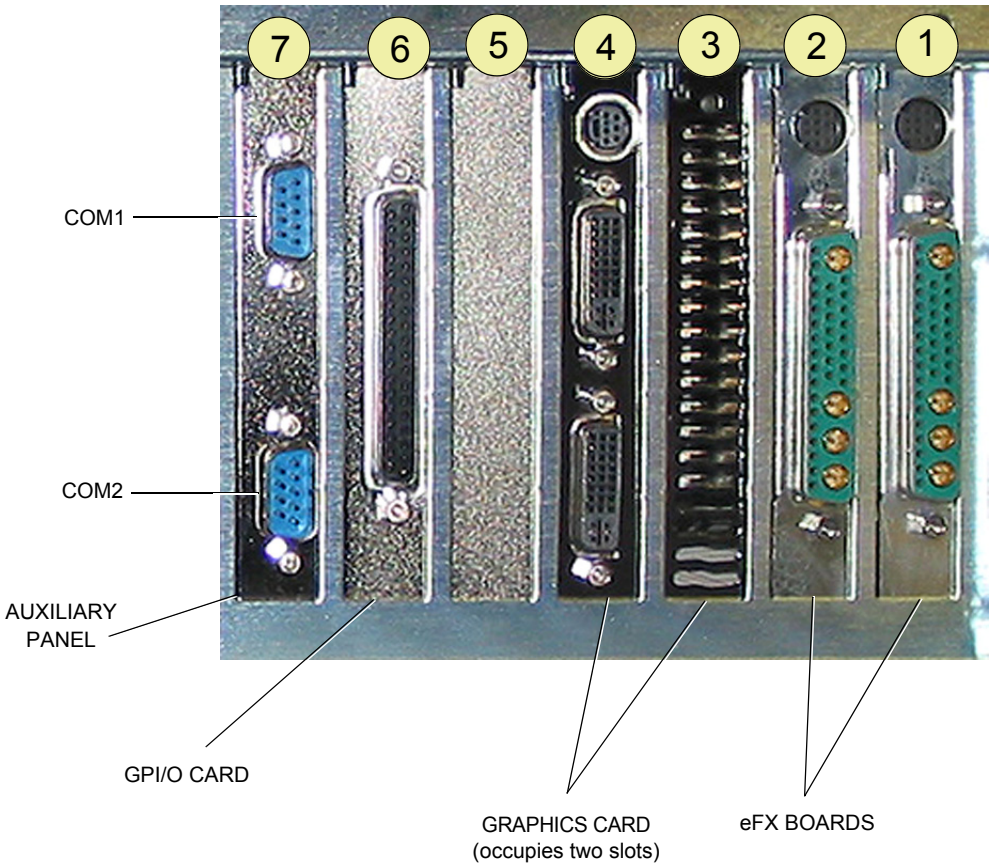


Figure 6 Expansion Slots

Serial Ports (Slot 7)

Two serial ports, COM1 and COM2, are provided on the auxiliary panel in slot 7. They are connected to COM port headers COM1 and COM2 on the motherboard. Refer to the motherboard documentation supplied with the Unit for additional information.

GPI/O Card (Slot 6)

Slot 6 is reserved for an optional GPI/O card.

Slot 5 is not used

Graphics Card (Slots 3 and 4)

The Unit comes equipped with a PCI-e 2.0 Video Card.

EFX Board (Slots 1 and 2)

The Unit comes equipped with either one or two identical eFX boards in slots 1 and 2. Figure 7 identifies the board's connectors.

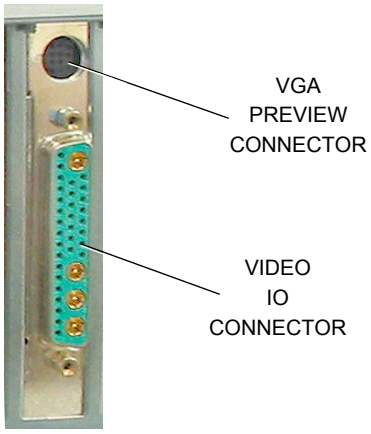


Figure 7 eFX Board Connectors

PC I/O CONNECTORS and COMPONENTS

Refer to your motherboard user manual for detailed information.

USB HARDWARE KEY

A USB hardware key (also referred to as a security device or dongle) with the proper enable codes is installed inside the Unit chassis on the motherboard at USB connector USB9. See Figure 8.

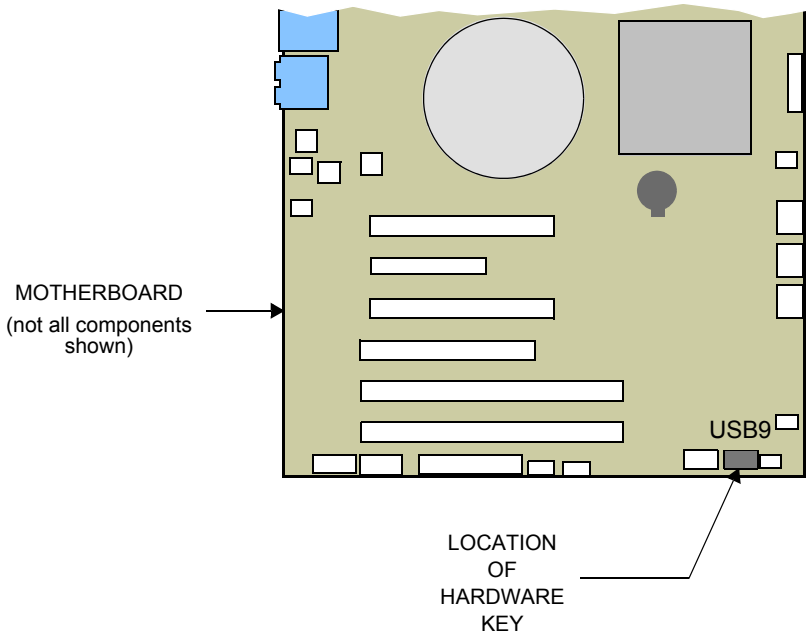


Figure 8 USB Hardware Key

REPROGRAMMING the HARDWARE KEY

To access additional services or features you have purchased, the hardware key must be reprogrammed.

To learn how to reprogram the hardware key, do the following:

1. Locate and open the **Lyric** folder on your system drive.
2. Locate and open the **SafeNet** folder.
3. Double-click on **FieldActUtil**. The **Field Activation Utility** dialog is displayed.
4. Click on Help for detailed instructions on reprogramming the hardware key

COMPUTER SECURITY

INTRODUCTION

Your System incorporate Windows PC technology, but is not intended to function as a personal computer.

Important

To maximize the stability of the System for use in mission-critical situations, no unnecessary software should be installed. Refer to http://www.chyron.com/support/docs/wpapers/security_policy.htm, for further information on System security.

The Unit, like any Windows-based system, is vulnerable to viruses, worms and other destructive software. The following measures are recommended to protect the integrity of your System.

FIREWALLS

Chyron strongly encourages the use of an external firewall in production/broadcast environments, where Windows-based systems are connected to a computer network. Due to the adverse performance impact of “personal firewalls”, these products are not recommended for use in live or real-time television production.

WINDOWS UPDATES

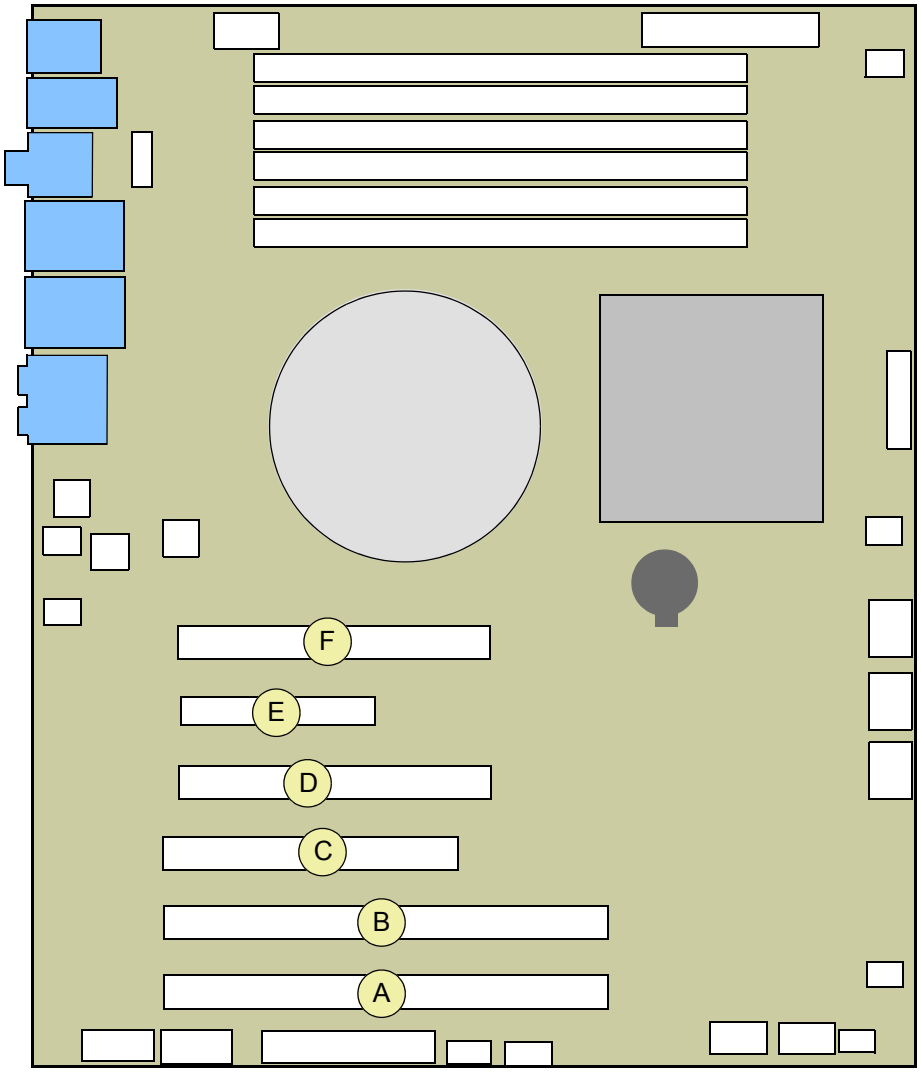
Not all Microsoft Windows updates are recommended by Chyron for installation in your System. Before installing Windows service packs or patches, check the Chyron website at **http://www.chyron.com/support/** for the latest update of our *Statement Regarding Chyron Systems and Computer Security*. Many of the updates offered by Microsoft *are* recommended for use with your System. However, your machine should NOT be configured for automatic download and installation. All such modifications to your operating system should be performed during scheduled down times and manually overseen. If you are in doubt about installing any software update, contact Chyron Customer Service.

HOSTILE PHYSICAL ENVIRONMENTS

Production trucks and other mobile installations may present extraordinary hazards to the Unit’s mechanical integrity. Dust, vibration, temperature and humidity can affect the System’s operation or reliability.

PCI SLOT ASSIGNMENTS

The order in which boards are installed determines the identity of the board as seen by the Lyric (or CAL) software. Figure 9 depicts the location of the PCI slots on the motherboard and describes the function of each PCI slot.



	SLOT DESIGNATION	FUNCTION
A	Slot 1: PCI-X (133/100 MHz)	eFX board
B	Slot 2: PCI-X (133/100 MHz)	eFX board
C	Slot 3: PCI 33 MHz	---
D	Slot 4: PCI-e x 16 Gen2	Video Card
E	Slot 5: PCI-e x 4 in x8 Gen1	---
F	Slot 6: PCI-e x 16 Gen2	GPI/O card

Figure 9 PCI Slot Designations

CHAPTER 4 TROUBLESHOOTING

INTRODUCTION

This chapter provides maintenance and troubleshooting instructions to enable maintenance personnel to troubleshoot, service, repair, and upgrade the System. If the problem cannot be corrected in the field by maintenance personnel, contact Chyron customer service.

SYSTEM TROUBLESHOOTING

Table 1 provides a troubleshooting chart for the Unit that is based on a Symptom, Probable Cause, and Corrective Action concept. The **Symptom** column lists expected failure modes that could occur during operation. The **Probable Cause** column lists one or more possible causes for the symptom. The instructions in the **Corrective Action** column are limited to removal/ replacement of faulty peripherals (e.g., disk drive), removal/replacement of boards, software problems, and adjustments, if any.

If the problem cannot be corrected in the field by maintenance personnel, contact Chyron customer service.

Important

If corrective action requires the removal/replacement or inspection of components within the chassis, refer to "CHAPTER 2 SAFETY" on page 6 and follow all applicable safety instructions provided there when performing any troubleshooting procedures within the chassis.

WARNING

TO PREVENT AN ELECTRIC SHOCK HAZARD AND/OR DAMAGE TO THE SYSTEM, SHUT THE UNIT OFF AND REMOVE THE POWER CORD(S), BEFORE REMOVING THE TOP COVER.

CAUTION

Some components within the chassis may be susceptible to electrostatic charge. Wear a wrist strap connected to ground, if you will be touching components.

Table 1: Troubleshooting

Symptom	Probable Cause	Corrective Action
System does not power-up	1. No AC power present	1. Ensure that all three supplied line cords are properly connected to the power supply modules and that the other ends are plugged into active wall plugs or outlet boxes. When properly connected, a green LED will be lit on the CPU board.
	2. Front panel power switch is inoperative	2. Inspect front panel power button header JF1. See “CHECKING FRONT PANEL POWER SWITCH CONNECTIONS” on page 26.
	3. Power supply is disconnected from CPU board	3. Ensure that 24-pin ATX power connector, 12V 8-pin CPU power connector, and 12V 4-pin secondary power connector are connected to their respective CPU board mating connectors. See “CHECKING ATX POWER CONNECTIONS” on page 27.
	4. Defective power supply or CPU board	4. See “REPLACING a DEFECTIVE POWER SUPPLY MODULE (HOT-SWAP PROCEDURE)” on page 24. If Unit does not power-up after checking/ replacing module(s), contact Chyron Customer Service for service instructions.
System powers-up, but System monitor displays no video.	1. Monitor is not properly connected	1. Ensure that monitor is plugged in and turned on. Video cable must be connected to connector on the graphics card, not the CPU board. Refer to the Quick Start Guide.
	2. Graphics card is not properly installed	2. Ensure that the graphics card is fully seated in the slot and any auxiliary power cables are connected.

Table 1: Troubleshooting

Symptom	Probable Cause	Corrective Action
System powers-up, but operating system fails to start. **NOTE**: It could take up to 45 seconds before the operating system responds. During this time no video signal is present and your monitor screen will remain blank.	1. System drive is inoperative	1. The SATA drive data cable must connect to SATA header '0' on motherboard. **NOTE:** the System drive is located in the top drive bay. If a SCSI drive was installed, ensure that power and data cables are properly attached.
	2. System drive is being preempted	2. Check to make sure there is no floppy disc in the floppy disc drive (if so equipped). If necessary, check the BIOS to ensure that the System drive is in the boot sequence and is detected.
	3. Operating system has been corrupted	3. Install Windows system CD into CD drive and reboot. When prompted, have it "repair" the operating system.
	4. Hard disc corrupted	4. Run system recovery process. See instructions packaged with the DVD recovery disc.
	5. Hard drive or motherboard failure	5. For motherboard failure, contact Chyron Customer Service. For hard drive failure, contact Chyron Customer Service to obtain a new drive. Install new drive. See"REPLACING a DEFECTIVE HARD DRIVE" on page 28.
DVD-RW drive is inoperative	1. Cables are disconnected	1. Check that 4-pin power cable is connected. Check that data cable is connected to both the drive and the CPU board connector.
	2. Defective drive or CPU board	2. Contact Chyron Customer Service.
Lyric not operating as expected	1. Customer installed boards or software may be interfering with operation	1. Remove customer installed hardware and/or software.
	2. Multiple Lyric installations may have corrupted registry	2. Run Lyric unregister.exe program.
	3. Lyric may be corrupted	3. Uninstall, then reinstall Lyric.
Video processor board (frame buffer) not available in Lyric	1. Customer installed hardware may have altered System	1. Uninstall any user installed hardware or software.
	2. Board may have worked loose from slot connector	2. Check that board is still installed and secured to rear panel I/O fence.
	3. Defective slot on CPU board	3. If possible, move board to a different PCI slot, restart System and reinstall drivers.
	4. Defective video processor board	4. Contact Chyron Customer Service if corrective actions 1-3 above do not resolve the problem.

Table 1: Troubleshooting

Symptom	Probable Cause	Corrective Action
No video output from frame buffer	1. Cable miswired	1. Verify that all external cable connections are correct.
	2. Defective cable	2. Replace the cable used for video out, or swap video and key output cables.
	3. Looking at wrong frame buffer output	3. In multiple frame buffer systems, transfer output to all frame buffers and verify that they are correctly numbered and connected.
	4. Defective frame buffer	4. Contact Chyron Customer Service.

CHAPTER 5 MAINTENANCE

INTRODUCTION

This section provides both corrective and preventive maintenance procedures. Corrective maintenance procedures are provided first.

CORRECTIVE MAINTENANCE

Corrective maintenance is performed when a problem occurs in the System. There are six corrective maintenance procedures:

- Replacing a defective power supply module. See “REPLACING a DEFECTIVE POWER SUPPLY MODULE (HOT-SWAP PROCEDURE)” below.
- Checking front panel power switch connections. See “CHECKING FRONT PANEL POWER SWITCH CONNECTIONS” on page 26.
- Checking ATX Power Connection. See “CHECKING ATX POWER CONNECTIONS” on page 27.
- Replacing a defective hard drive. See “REPLACING a DEFECTIVE HARD DRIVE” on page 28.
- Checking installation of security device. See“CHECKING INSTALLATION of SECURITY DEVICE” on page 29.
- Replacing the CMOS battery. See “REPLACING the CMOS BATTERY” on page 30.

REPLACING a DEFECTIVE POWER SUPPLY MODULE (HOT-SWAP PROCEDURE)

The power supply modules are hot-swappable. They may be removed and replaced, one at a time, while the System is running.

To remove a defective module (Figure 10):

1. Unplug the power cord (not shown) from the AC line cord connector (3) of the power module (4) being replaced.

CAUTION

The module gets hot during normal operation. Wait until the module cools or use protective gloves when removing it.

2. Grab hold of the D-ring (2) and, at the same time, push the lever (1) to the right and pull the module (4) straight out of the power supply chassis.

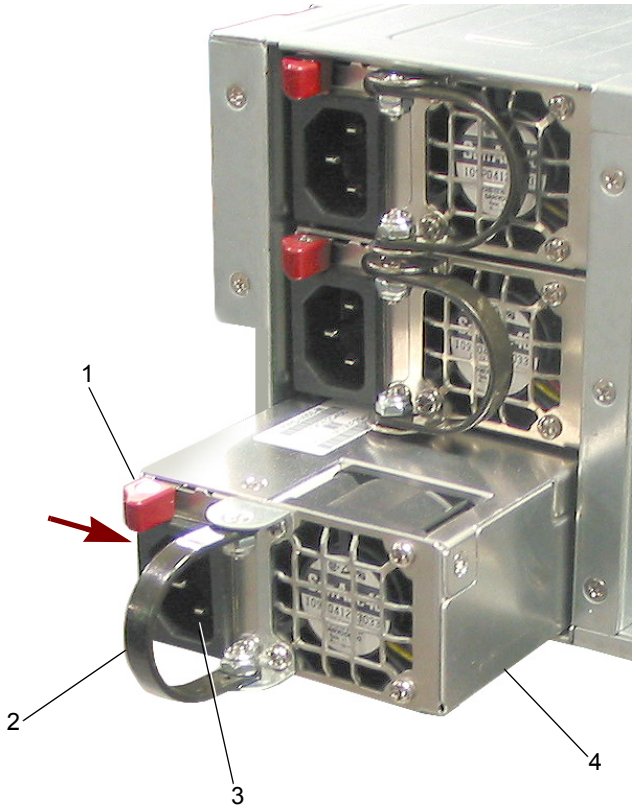


Figure 10 Power Supply—Hot Swap Procedure

CAUTION

Place the module aside, so that others do not come in contact with its hot surface.

To install a new module (Figure 10):

1. Install the module (4) by sliding it into the System chassis until it locks in place.
2. Connect the power cord (not shown) to the AC line cord connector (3).

CHECKING FRONT PANEL POWER SWITCH CONNECTIONS

To check front panel power switch connections:

CAUTION

Some components within the chassis may be susceptible to electrostatic charge. Wear a wrist strap connected to ground, if you will be touching components.

1. Remove the top cover from the Unit. Save screws.

2. Inspect the front panel power button header JF1 (Figure 11). Make sure mating connector is firmly seated to JF1 pins 1 and 2.

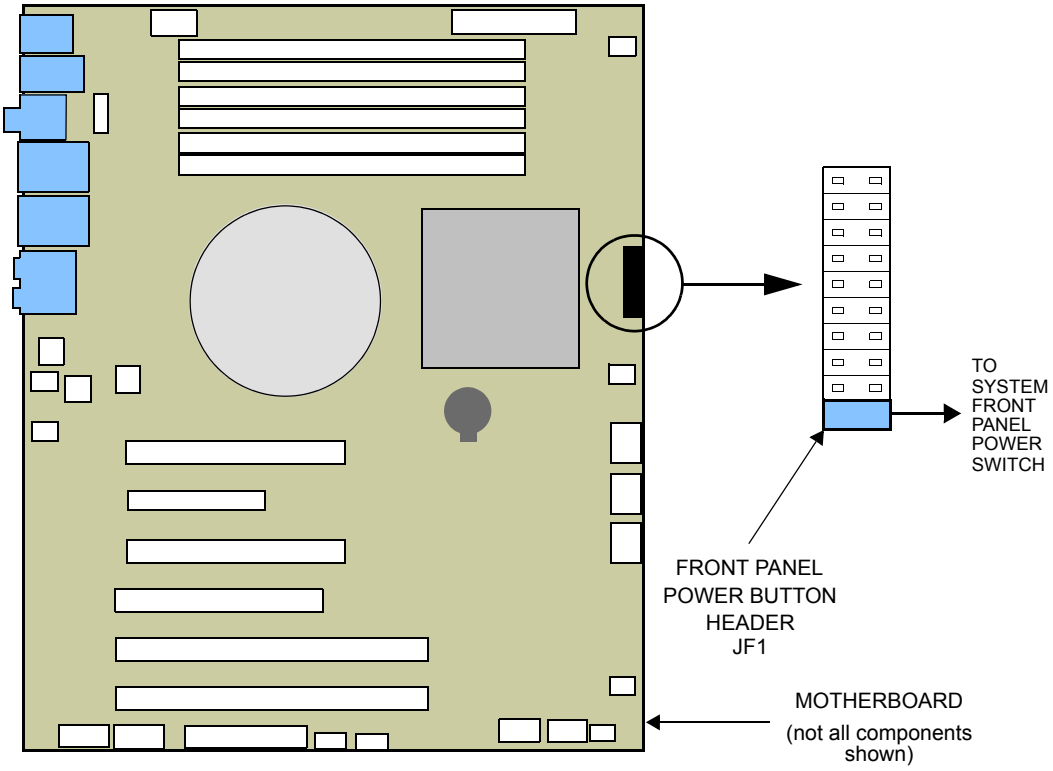


Figure 11 Front Panel Power Switch Connections

CAUTION

The Unit must be operated with the chassis top cover installed, to ensure proper cooling.

3. Position the top cover on the chassis and slide it into position.

4. Press the System Power Switch. The Power On Self-Test (POST) should begin. If the System fails to start, contact Chyron Customer Service.

CHECKING ATX POWER CONNECTIONS

To check ATX power connections (Figure 12):

WARNING

TO PREVENT AN ELECTRIC SHOCK HAZARD AND/OR DAMAGE TO THE SYSTEM, SHUT THE UNIT OFF AND REMOVE THE POWER CORD BEFORE REMOVING THE TOP COVER.

CAUTION

Some components within the chassis may be susceptible to electrostatic charge. Wear a wrist strap connected to ground, if you will be touching components.

1. Remove the top cover from the Unit. Save screws.
2. Locate 24-pin ATX power plug.
3. Ensure that the ATX power plug is firmly seated to its mating power connector (J40) on the motherboard.
4. Locate 8-pin ATX power plug.
5. Ensure that the ATX power plug is firmly seated to its mating connector (JPW2) on the motherboard.
6. Locate 4-pin ATX power plug.
7. Ensure that the ATX power plug is firmly seated to its mating power connector (JPW3) on the motherboard
8. Secure top cover to Unit using screws previously removed.

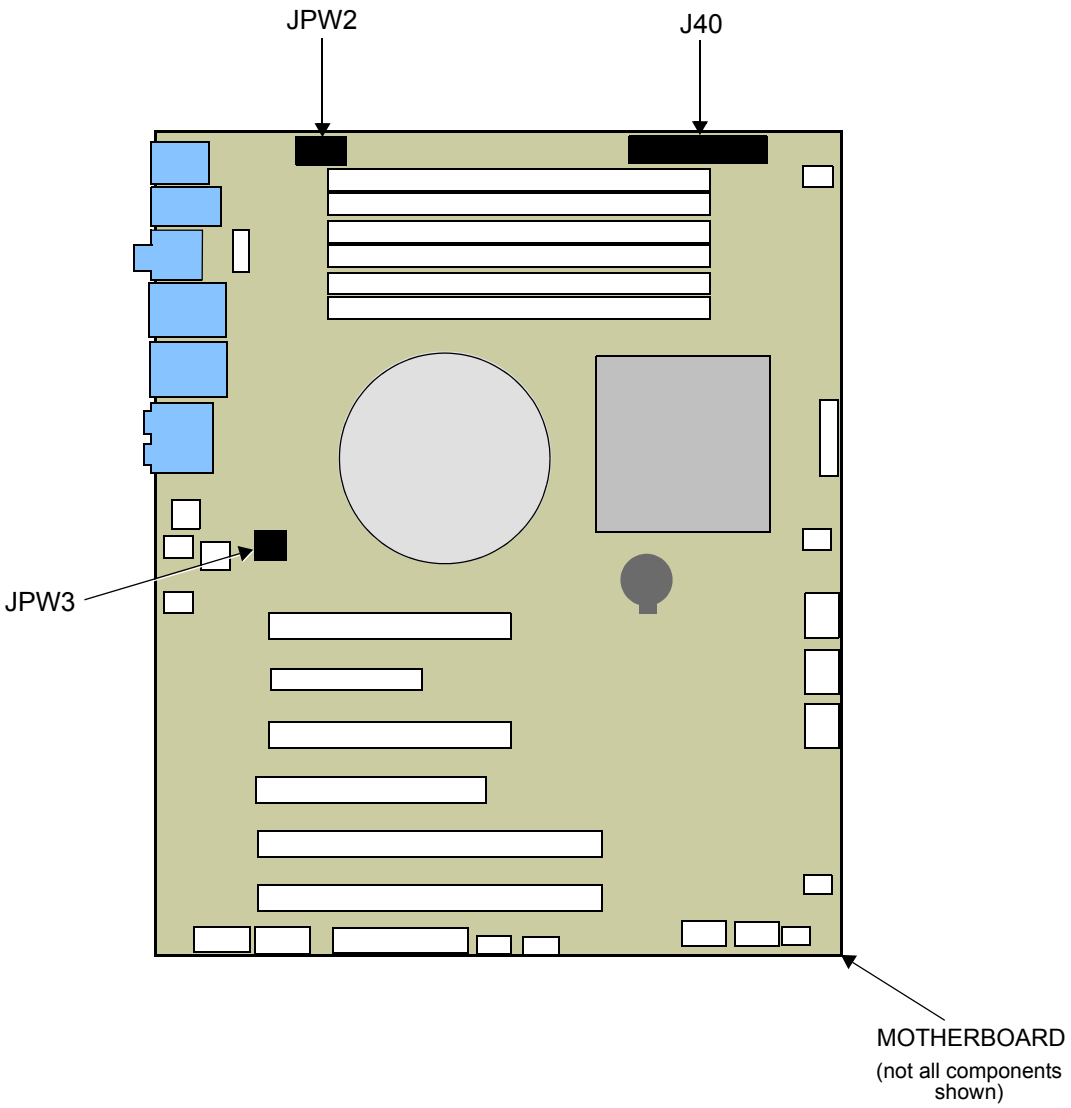


Figure 12 ATX Power Connections

REPLACING a DEFECTIVE HARD DRIVE

To replace a defective hard drive, perform the following steps:

1. Push drive tray latch toward right to open lever.
2. Slide tray out of the chassis.
3. Remove screws that secure drive to tray; remove defective drive.
4. Mount the new hard drive onto the tray. Secure with four screws.
5. Slide the tray into the case. Push lever into the tray until latch clicks shut.
6. Run system recovery process. See instructions packaged with the DVD recovery disc.

CHECKING INSTALLATION of SECURITY DEVICE

To check installation of security device:

CAUTION

Some components within the chassis may be susceptible to electrostatic charge. Wear a wrist strap connected to ground, if you will be touching components.

1. Remove the top cover from the Unit. Save screws.

2. Locate the security device (also referred to as the hardware key or dongle) installed on the motherboard at USB connector USB9. See Figure 13.

3. Ensure that the security device is securely connected to USB9.

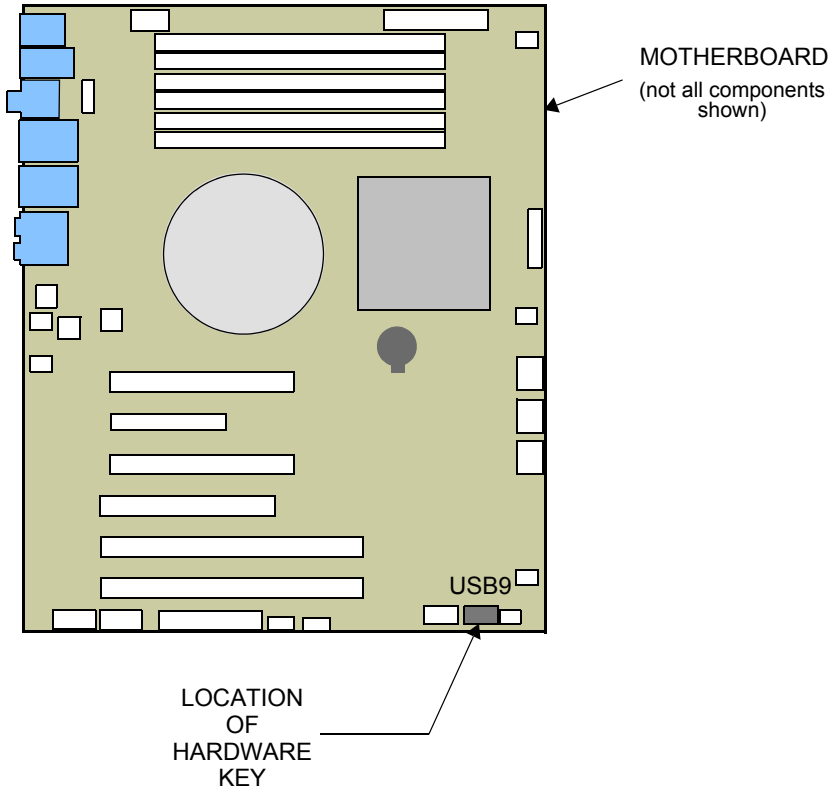


Figure 13 Checking Installation of Security Device

4. Secure top cover to Unit using screws previously removed.

REPLACING the CMOS BATTERY

To replace the CMOS battery:

WARNING

TO PREVENT AN ELECTRIC SHOCK HAZARD AND/OR DAMAGE TO THE SYSTEM, SHUT THE UNIT OFF AND REMOVE THE POWER CORD BEFORE REMOVING THE TOP COVER.

CAUTION

Some components within the chassis may be susceptible to electrostatic charge. Wear a wrist strap connected to ground, if you will be touching components.

1. Remove the top cover from the Unit. Retain screws.
2. Locate the CMOS battery on the motherboard (Figure 14). Remove the battery from its holder.
3. Dispose of the battery.

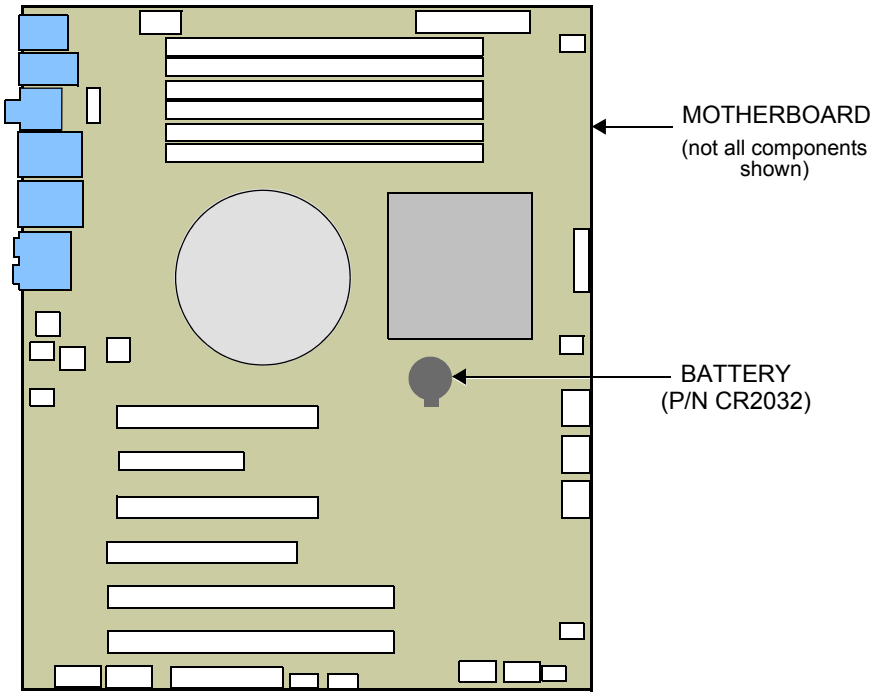


Figure 14 Location of CMOS Battery

WARNING

Dispose of the CMOS battery promptly. Do not incinerate. Keep away from children.

4. Install the replacement battery, P/N CR2032.

WARNING

WARNING—To prevent a risk of fire or explosion when replacing the CMOS lithium battery, ensure that the part number of the new battery is CR2032.

WARNING

The CMOS lithium battery used in this device may present a fire and chemical burn hazard if mistreated. Do not recharge, dissemble, heat above 100^{O} C (212^{O} F) or incinerate.

5. Secure top cover to Unit using screws previously removed.

PREVENTIVE MAINTENANCE

INTRODUCTION

Preventive maintenance is done at scheduled intervals to maximize the System's up time. Chyron recommends performing the following procedures and checks.

- Every six months, perform the following procedures:

WARNING

TO PREVENT AN ELECTRIC SHOCK HAZARD AND/OR DAMAGE TO THE SYSTEM, SHUT THE UNIT OFF AND REMOVE THE POWER CORDS, BEFORE REMOVING THE TOP COVER.

CAUTION

Some components within the chassis may be susceptible to electrostatic charge. Wear a wrist strap connected to ground if you will be touching components. When handling a circuit card, hold it by its edges, and avoid touching its circuitry.

1. Remove the top cover from the Unit. Save screws.
2. Blow out any accumulated dust, using compressed or canned air.

CAUTION

Wear protective eye gear when using compressed or canned air.

3. Examine the circuit boards to make sure that they are seated securely in their slots.

CAUTION

The Unit must be operated with the chassis top cover installed, to ensure proper cooling.

4. Position the top cover on the chassis and slide it into position.

NOTES:

CHAPTER 6 REMOVAL/REPLACEMENT PROCEDURES

INTRODUCTION

This chapter provides step-by-step procedures to remove/install the Unit chassis in the rack, and to remove/replace the eFX board(s) and video graphics board.

WARNING

READ THE SAFETY CHAPTER BEFORE PERFORMING THE FOLLOWING PROCEDURES.

REMOVAL/REPLACEMENT of RACK-MOUNTED CHASSIS

To remove the chassis from the rack, proceed as follows:

WARNING

THE CHASSIS WEIGHS 35-40 POUNDS, DEPENDING ON OPTIONS PURCHASED. TO AVOID PERSONAL INJURY, CARE SHOULD BE EXERCISED WHEN LIFTING.

1. Remove hardware securing Unit front panel flange to rack.
2. Fully extend the chassis in the rack.
3. Make sure that power switch is set to the OFF position.
4. Remove AC power cords from power supply.
5. Remove any cables connected to the Unit.
6. Press the “Quick” disconnect button at each side of the chassis and pull the chassis forward.
7. Carefully remove the Unit from the rack and place on suitable work bench.

To replace the chassis in the rack, do the following:

1. Carefully align the chassis slides with the intermediate slides. Make sure that both sides are aligned to allow proper engagement.
2. Press both “Quick” disconnect buttons and push the chassis in towards the rack until the front panel flange is properly seated on the rack.
3. Connect AC power cord to power supply.
4. Connect any cables to the Unit previously removed.
5. Secure the chassis front panel flange to rack using the hardware previously removed.

REMOVING/REPLACING eFX BOARDS

WARNING

SERVICING MUST ONLY BE PERFORMED BY A QUALIFIED SERVICE TECHNICIAN. REMOVAL OF THE TOP COVER MAY EXPOSE AN INDIVIDUAL TO HAZARDOUS VOLTAGES. THE LINE CORD MUST BE DISCONNECTED FROM THE POWER SUPPLY, BEFORE ANY SERVICING IS PERFORMED.

CAUTION

Printed circuit boards installed in the Unit are ESD sensitive. Proper ESD handling procedures must be observed at all times.

To remove the eFX board(s), refer to Figure 15 and proceed as follows:

1. Remove breakout panel connector(s) attached to the board(s), if applicable.
2. Remove the Unit from the rack. Refer to “REMOVAL/REPLACEMENT of RACK-MOUNTED CHASSIS” on page 34.
3. Remove the top cover from the Unit. Save screws.
4. Remove the screws that secure the front rail (7) to the chassis. Remove the rail.
5. Remove the screws that secure the rear rail (9) to the chassis. Remove the rail.
6. Remove screws securing PC board hold-down bracket (8) to the chassis. Remove the bracket.
7. Remove the circuit card bracket screw (5) that secures the board (6) to the chassis.
8. Carefully remove the board (6) from its connector.
9. Repeat steps 7 and 8 to remove the other eFX board, if applicable.

To replace the eFX board(s), refer to Figure 15 and proceed as follows:

1. Insert the board(s) (6) into its/their connector(s).
2. Secure the front rail (7) to the chassis using the screws previously removed.
3. Secure the PC board hold-down bracket (8) to the chassis, using the screws removed previously.
4. Secure the rear rail (9) to the chassis using the screws previously removed.
5. Secure the board(s) (6) to the chassis using the circuit card bracket screw(s) (5) removed previously.
6. Install the top cover on the Unit. Secure top cover using screws previously removed.
7. Install the chassis in the rack. See “REMOVAL/REPLACEMENT of RACK-MOUNTED CHASSIS” on page 34.
8. Reconnect the breakout panel connector(s), if applicable.

REMOVAL/REPLACEMENT of the PCI-e VIDEO GRAPHICS BOARD

WARNING

SERVICING MUST ONLY BE PERFORMED BY A QUALIFIED SERVICE TECHNICIAN. REMOVAL OF THE TOP COVER MAY EXPOSE AN INDIVIDUAL TO HAZARDOUS VOLTAGES. THE LINE CORD MUST BE DISCONNECTED FROM THE POWER SUPPLY, BEFORE ANY SERVICING IS PERFORMED.

CAUTION

Printed circuit boards installed in the Unit are ESD sensitive. Proper ESD handling procedures must be observed at all times.

NOTE

The graphics board occupies two expansion slots.

To remove the PCI-e graphics board, refer to Figure 15 and proceed as follows:

1. Remove all external connections to the Unit.
2. Remove the Unit from the rack. Refer to “REMOVAL/REPLACEMENT of RACK-MOUNTED CHASSIS” on page 34.
3. Remove the top cover from the Unit. Save screws.
4. Remove and save the screws that secure the front rail (7) to the chassis. Remove the rail.
5. Remove and save the circuit card bracket screws (4) that secures the board (3) to the chassis.
6. Carefully remove the board (3) from its connector.

To replace the PCI-e graphics board, refer to Figure 15 and proceed as follows:

1. Insert the board (3) into its connector.
2. Secure the board (3) to the chassis using the circuit card bracket screws (4) removed previously.
3. Reconnect any connectors to the board (3). Remove tags.
4. Secure the front rail (7) to the chassis using the screws previously removed.

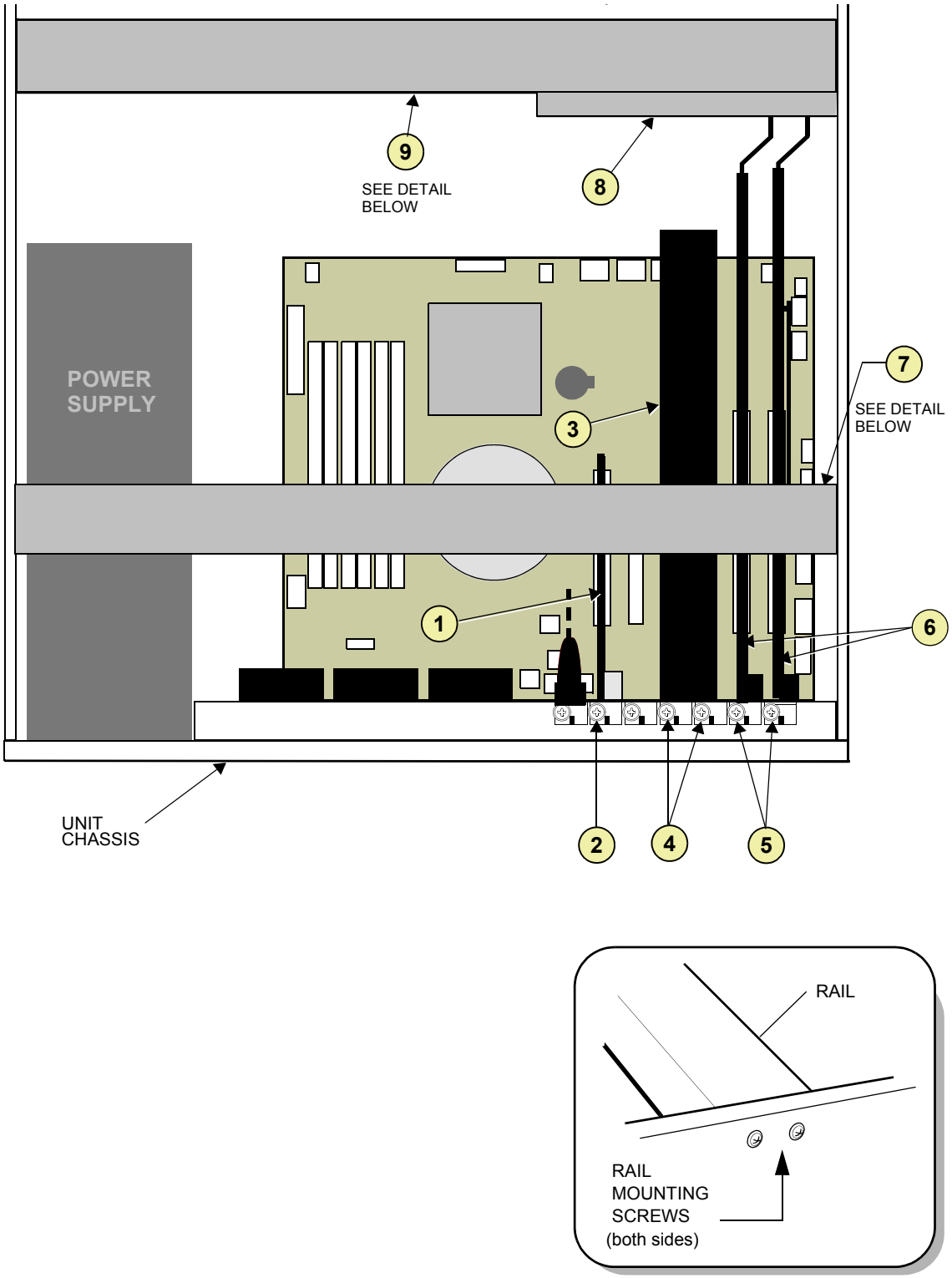


Figure 15 Removal/Replacement of Circuit Boards

5. Install the top cover on the Unit. Secure top cover using screws previously removed.
6. Install the chassis in the rack. See “REMOVAL/REPLACEMENT of RACK-MOUNTED CHASSIS” on page 34.
7. Reconnect all external connections to the Unit, if applicable.

REMOVAL/REPLACEMENT of the GPI/O BOARD

WARNING

SERVICING MUST ONLY BE PERFORMED BY A QUALIFIED SERVICE TECHNICIAN. REMOVAL OF THE TOP COVER MAY EXPOSE AN INDIVIDUAL TO HAZARDOUS VOLTAGES. THE LINE CORD MUST BE DISCONNECTED FROM THE POWER SUPPLY, BEFORE ANY SERVICING IS PERFORMED.

CAUTION

Printed circuit boards installed in the Unit are ESD sensitive. Proper ESD handling procedures must be observed at all times.

To remove the GPI/O board, refer to Figure 15 and proceed as follows:

1. Remove all external connections to the Unit.
2. Remove the Unit from the rack. Refer to “REMOVAL/REPLACEMENT of RACK-MOUNTED CHASSIS” on page 34.
3. Remove the top cover from the Unit. Save screws.
4. Remove and save the screws that secure the front rail (7) to the chassis. Remove the rail.
5. Remove and save the circuit card bracket screw (2) that secures the board (1) to the chassis.
6. Carefully remove the board (1) from its connector.

To replace the GPI/O board, refer to Figure 15 and proceed as follows:

1. Insert the board (1) into its connector.
2. Secure the board (1) to the chassis using the circuit card bracket screw (2) removed previously.
3. Reconnect any connectors to the board (1). Remove tags.
4. Secure the front rail (7) to the chassis using the screws previously removed.

REMOVAL/REPLACEMENT of the MOTHERBOARD

Removal and replacement of the motherboard is not a field operation. If it is suspected that there is a problem with the motherboard, Chyron customer service should be contacted.

RAM REPLACEMENT

Follow the instructions provided in the motherboard documentation that ships with your System.

NOTES: