Hardware Reference
Guide

Duet HyperX

Xtraordinary Graphics

CHYRON

Hardware Reference
Guide

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Safety Statement: English

Antistatic Wrist Strap

Warning: If using an antistatic wrist strap, the grounding cord must contain a 1 meg ohm to 10 meg ohm series isolation resistor.

Chassis Grounding

Warning: The chassis is grounded through the ground conductor of the A/C line cord. To prevent an electric shock hazard, only plug the line cord into a properly grounded A/C wall receptacle, as verified by a qualified installation technician.

Double Pole/Neutral Fusing

Warning: This unit may contain a neutral line fuse.

Fuse Replacement

Caution: For continued protection against fire, replace fuse with the same type and rating.

Power Cord

Caution: Only use the Line Cord which was supplied with the equipment, or a factory approved alternate. Do not use an extension cord.

Power Source

Caution: Equipment may only be operated at the specified line voltage and frequency.

Servicing

Warning: Servicing must only be performed by a qualified Service Technician. The removal of service access panels may expose an individual to hazardous voltages. Line cord should be disconnected before any servicing is performed.

Rapport De Sûreté: Français

Bracelet antistatique

Avertissement: Si un bracelet antistatique est utilisé, le fil de mise à la terre doit contenir une résistance isolante série de 1 mégohm à 10 mégohms.

Mise à la terre du chassis

Avertissement : Le châssis est mis à la terre au moyen du conducteur de masse du fil électrique secteur. Pour empêcher tout risque de choc électrique, ne brancher le fil électrique secteur que dans une prise de courant murale mise à la terre correctement et inspectée par un technicien d'installation agréé.

Fusible neutre/bipolaire

Avertissement : Cet appareil peut contenir un fusible secteur neutre.

Remplacement du fusible

Mise en garde : Pour assurer une protection continue contre les incendies, remplacer le fusible par un fusible du même type et ayant la même valeur limite.

Cordon électrique

Mise en garde : N'utiliser que le fil électrique qui a été fourni avec le matériel ou un fil de rechange agréé par l'usine. Ne pas utiliser de rallonge.

Alimentation

Mise en garde : Le matériel ne peut fonctionner qu'à la fréquence et à la tension secteur indiquées.

Réparations

Avertissement : Les réparations ne doivent être effectuées que par un Technicien S.A.V. agréé. Le retrait des panneaux d'accés pour les réparations risque d'exposer la personne les retirant à des tensions dangereuses. Le fil électrique doit être débranché avant toute réparation.

Sicherheit Aussage: Allemand

Antistatische Armschlaufe

Warnung: Bei der Verwendung einer antistatischen Armschlaufe muß die Erdungsschnur einen in Reihe geschalteten Isolierwiderstand zwischen 1 Megaohm und 10 Megaohm besitzen.

Chassiserdung

Warnung: Das Chassis ist ¸ber den Erdleiter der Wechselstromnetzschnur geerdet. Zur Vermeidung von Berührungsgefahr darf die Netzschnur nur in eine sachgemäß geerdete Wandsteckdose für Wechselstrom gesteckt werden, die von einem qualifizierten Installateur geprüft worden ist.

Zweipol-/Neutralleiterabsicherung

Warnung: Das Gerät kann eine Neutralleitersicherung besitzen.

Auswechseln der Sicherung

Vorsicht: Zur Aufrechterhaltung des Brandschutzes muß die Sicherung durch eine Sicherung des gleichen Typs und der gleichen Größe ausgewechselt werden.

Anschlußschnur

Vorsicht: Es darf nur die mit dem Gerät gelieferte Netzschnur oder ein vom Werk genehmigter Ersatz verwendet werden. Eine Verlängerungsschnur darf nicht verwendet werden.

Stromquelle

Vorsicht: Das Gerät darf nur mit der vorgeschriebenen Netzspannung und Frequenz betrieben werden.

Wartung

Warnung: Die Wartung darf nur von einem qualifizierten Wartungstechniker durchgeführt werden. Das Abnehmen von Wartungsabdeckplatten ermöglicht den Zugang zu lebensgefährlichen Spannungen. Die Netzschnur sollte vor allen Wartungsarbeiten getrennt werden.

Dichiarazione Di Sicurezza: Italiano

Fascetta antistatica da polso

Avvertenza - Se si usa una fascetta antistatica da polso, il cavo di terra deve essere munito di un resistore d'isolamento in serie con un valore nominale di resistenza compreso tra 1 e 10 mega-ohm.

Collegamento a massa dello chassis

Avvertenza - Lo chassis è collegato a massa attraverso il filo di terra del cavo di alimentazione in c.a. Per evitare scosse elettriche, inserire la spina del cavo di alimentazione in una presa di rete collegata all'impianto di messa a terra. Rivolgersi ad un tecnico qualificato per verificare la correttezza del collegamento.

Polo doppio/fusibile sulla linea neutra

Avvertenza - Questo apparecchio potrebbe contenere un fusibile sulla linea neutra.

Sostituzione del fusibile

Attenzione - Ai fini di una protezione continuata contro gli incendi, sostituire il fusibile con un altro dello stesso tipo e potenza nominale.

Cavo di alimentazione

Attenzione - Usare esclusivamente il cavo fornito in dotazione con l'apparecchio, o un cavo approvato dalla casa fabbricante. Non usare cavi di prolunga.

Alimentazione

Attenzione - Far funzionare l'apparecchio soltanto alla tensione di linea e alla frequenza specificate.

Manutenzione

Avvertenza - Gli interventi di manutenzione vanno eseguiti soltanto da un tecnico qualificato del servizio assistenza. Rimuovendo i pannelli d'accesso per compiere la manutenzione si potrebbe venire a contatto con tensioni pericolose. Prima di eseguire qualsiasi intervento di manutenzione, staccare la spina del cavo di alimentazione dalla presa di rete.

Declaración De Seguridad: Español

Brazalete antiestática

Advertencia: Si utiliza una brazalete antiestática, el cordón de puesta a tierra deberá tener una resistencia aislante de 1 mega ohm a 10 mega ohm conectada en serie.

Puesta a tierra del chasis

Advertencia: El chasis se pone a tierra mediante el conductor de puesta a tierra del cable eléctrico de c.a. Para evitar el peligro de una electrocución, conecte el cable eléctrico únicamente a una toma de pared de c.a. puesta a tierra correctamente y verificada por un técnico de instalación cualificado.

Fusible de lÌnea neutral/Doble polo

Advertencia: Esta unidad puede incluir un fusible de lÌnea neutral.

Reemplazo del fusible

Precaución: Para obtener una protección continua contra el peligro de incendio, reemplace el fusible por uno del mismo tipo y capacidad.

Cable de potencia

Precaución: Utilice únicamente el cable eléctrico que se entrega con el equipo, o bien un cable alternativo aprobado por la fábrica. No utilice cables de extensión.

Fuente de energÌa

Precaución: El equipo únicamente debe usarse con el voltaje y la frecuencia especificados.

Servicio

Advertencia: Todo servicio deberá ser realizado por un Técnico de Servicio cualificado. El desmontaje de los paneles de acceso de servicio puede exponer a una persona a voltajes peligrosos. El cable eléctrico deberá desconectarse antes de realizarse el servicio.

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Section 1: Introduction

This manual is intended for use in the installation, setup, operation and maintenance of Chyron Duet HyperX and HyperX HD/SD systems. The information presented herein is limited to hardware. For information on Chyron's Lyric software, refer to the **Lyric User Guide**, Chyron Publication Number **2A02033**, or to Lyric's Online Help.

1.1 Description

Duet HyperX is a video graphics system based on a custom computer chassis designed and assembled by Chyron Corporation. All components are selected to provide optimal real-time performance in video production and live broadcast environments. The HyperX chassis can be populated with various video graphics boards from Chyron and select third party vendors to meet the demands of SDTV and HDTV environments.

The computer and video components used in HyperX systems can and will be updated as the technology advances. Consult the documentation that accompanies your system for the latest information.
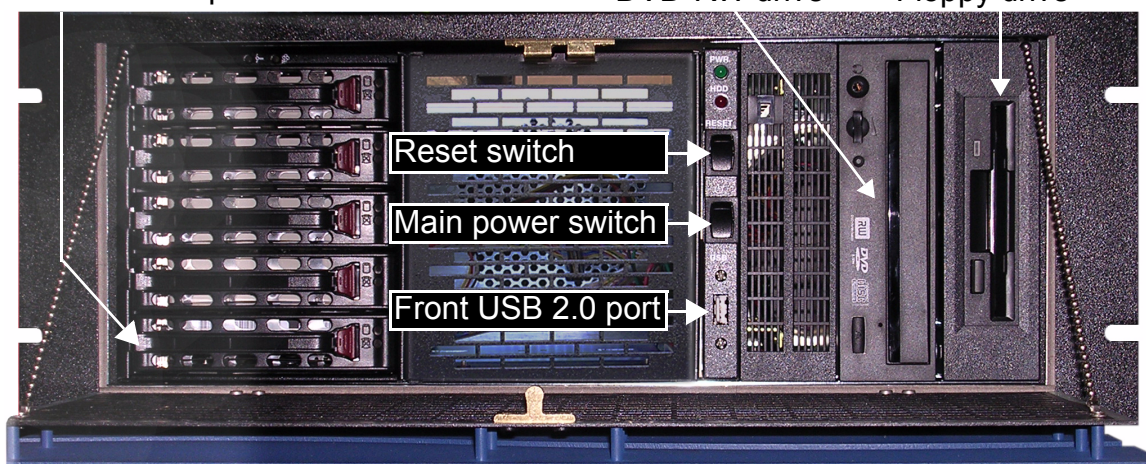
Figure 1-1. HyperX front panel open, showing drives and controls

Duet HyperX offers a variety of configurations for Standard-Definition operations, including a choice of Internal Clip Players and Chyron's popular Squeezeback option.

Duet HyperX HD/SD features the "Altitude" HD/SD Channel Board. This powerful hardware's video output is software-switchable between several Standard- and High-Definition formats. The HD/SD Channel Board also offers integrated clip recording and playout. All HyperX HD/SD configurations include a minimum of one dedicated Standard Definition hardware channel.

Throughout this document, the phrase "Duet HyperX" refers to both systems unless otherwise specified.

1.2 PC and Video Section Features

- 600-Watt triple-redundant power supply; modules hot-swappable (Section 4.1)
- Extended ATX form factor motherboard (Section 4.2)
- 2 Intel Xeon processors, 3.2 GHz; each with 2 MB of L3 cache (Section 6.2)
- 4 GB PC-2100 Registered DIMM memory (Section 6.3)
- 1000BaseT ethernet connection
- Recordable/Rewritable DVD/CD drive (Section 6.4.2)
- 36-GB, 15000 RPM SCSI hard disk drive (Section 5.6)
- 3.5" 1.44 MB floppy disk drive
- AGP-type video card with NVIDIA chipset (Section 6.6)
- Microsoft Windows XP Professional Operating System. (See Section 5.7 for information on restoring your original system configuration with the included Norton Ghost application and image disc.)
- Up to sixteen GPI/O connections available through 25-pin D-connector on systems configured with at least one standard definition Video Processor Board. ALL HyperX systems, including HyperX HD/SD, connect to external GPIs through the Standard Definition VPB's GPI/O facility.

All boards include Analog black burst reference input. Where multiple standard definition VPBs and/or Squeezeback Boards are present, the analog reference signal is taken in through one card's input, and then shared internally. Where multiple switchable-format boards are present and using analog reference, each board requires its own reference input.

1.3 Specifications

Physical Specifications	
Depth Width Height	25 inches / 63.5 cm 19 inches / 48.3 cm 7 inches / 17.8 cm
Weight (varies with system configuration)	60 lbs / 27.3 kg approx., typical
Operating Temperature	32° - 122° F / 0° - 50° C
Operating Humidity	5% to 95% non-condensing
Electrical Specifications	
Power Supply	100 - 240 VAC @ 10 Amperes RMS 50 / 60 Hz. 600W Triple-redundant/Hot-swappable, with Power Factor Correction (PFC)

Section 2: Installation

2.1 Planning; Think Ahead About the Installation Site

- Duet HyperX pulls cool air into the front of the unit and vents through openings in the rear panel. **DO NOT** operate the system without the top cover in place, or air flow necessary to cooling will be compromised.

- Before hookup, place the cables where they'll be convenient.

2.2 Unpack and Check Contents

Check the packing slip against your order. Make sure you've got EVERYTHING listed. If anything is **missing** or **damaged**, contact Chyron Customer Service immediately at 1-888-4-CHYRON (888-424-9766). Problems with components discovered during setup will be handled by Chyron. In the event of substantial physical damage to the contents of your shipment, Chyron will advise you to contact the shipper.

IMPORTANT

Please be sure to secure ALL of the documentation and any software discs that accompany your purchase. Keep them in a readily accessible place. Documentation for third-party components, including the CPU board, may be needed and are NOT replaceable by Chyron.

ESPECIALLY IMPORTANT IS THE IMAGE DISC used for restoring your system's hard drive in the event of a major problem. See Section 5.7 for more information on restoring your system using the "Ghost" CD.

2.3 Rack Mounting

IMPORTANT

GIVE CAREFUL CONSIDERATION TO THE HEIGHT AT WHICH HYPERX IS MOUNTED IN ITS RACK. Take note of HyperX's weight (approximately 60 lbs.) and the length of its chassis, which roughly equals the full depth of a standard equipment rack. ALSO, OBSERVE CAUTION WHEN PULLING THE SYSTEM OUT ON ITS RACK SLIDES, AS THERE MAY BE A TIPPING HAZARD.

1. Locate rack position where system will be installed. Make sure there is adequate space for ventilation.

2. Unpack slides and associated hardware, and check contents.

3. Install slides to rack and to the Duet HyperX chassis in accordance with instructions provided with the slides.

4. Carefully position Duet HyperX in place and engage the intermediate slide section with the rack and chassis slide sections.

5. Attach Duet HyperX front panel flange to rack using hardware supplied.
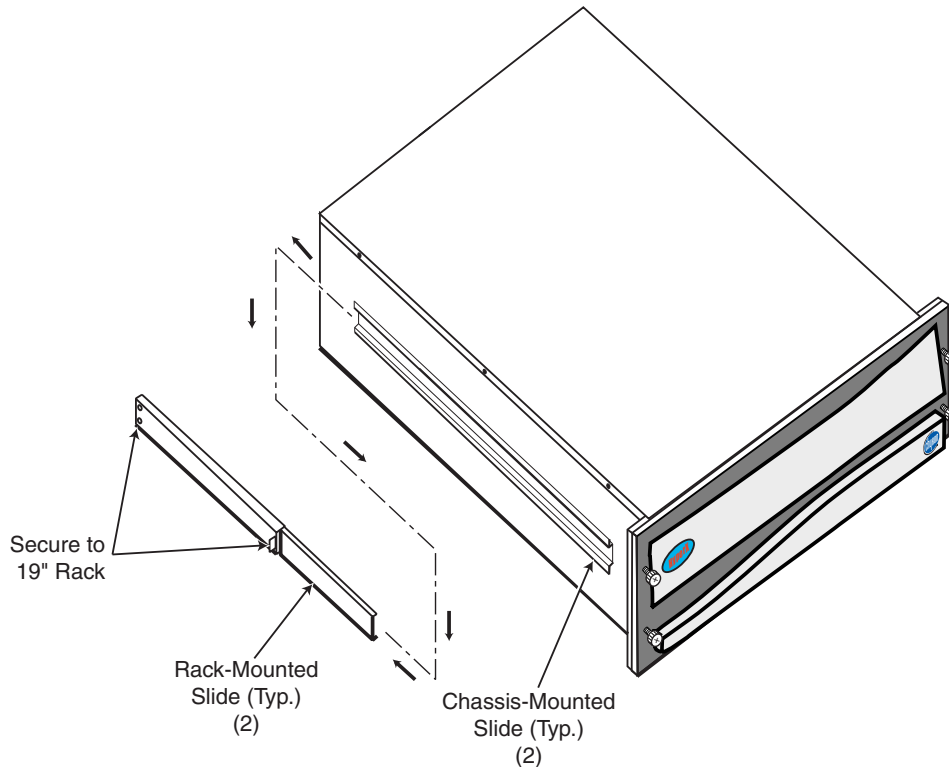
Figure 2-1. Duet HyperX and its rack-mounting hardware

Because of HyperX's weight, Chyron STRONGLY RECOMMENDS that you use the rear brackets pictured in Figure 2-1 to secure the rack slides to the rear horizontal segments of your equipment rack. These brackets are included in the rack slide kit.
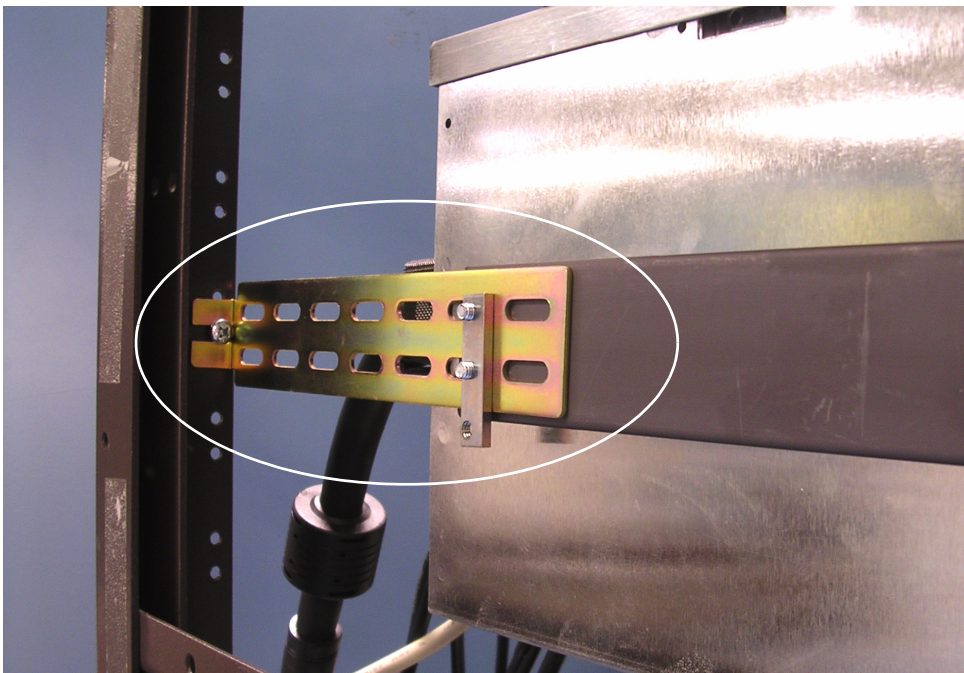
Figure 2-2. Extra brace added to rack slide.

Section 3: System Setup

3.1 Basic Configuration

The numbered components in Figure 3-1 are present in all HyperX systems (the VPBs are included in the illustration for reference purposes; the presence of VPBs and Squeezeback boards varies with system configuration). Remember to connect all video and data cables BEFORE the AC line cords!
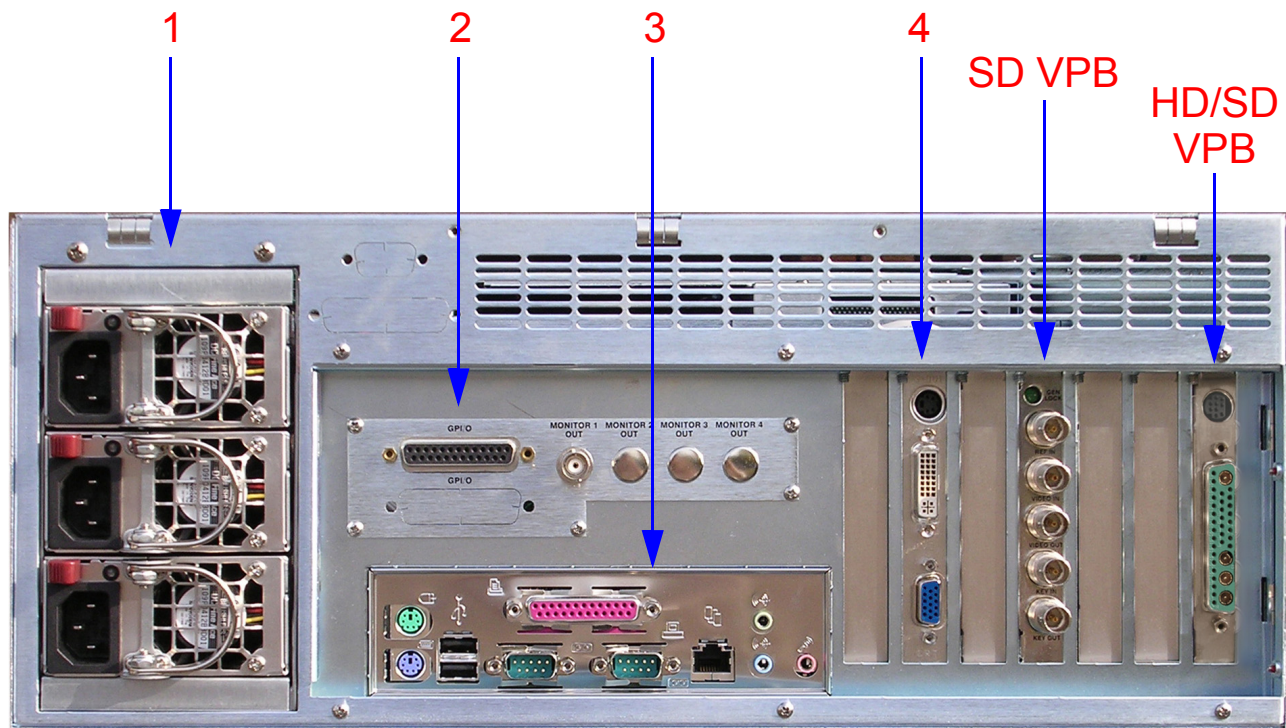
Figure 3-1. HyperX HD/SD shown.
Numbered components are common to all HyperX systems.

3.1.1 Power Supply

It is essential that **all three** power supply modules be connected to AC power at all times. For extra insurance against power loss, you may wish to connect the power supply modules to AC outlets on different circuit breakers.

The power supply is discussed further in Section 5.5.1.

3.1.2 I/O Panel
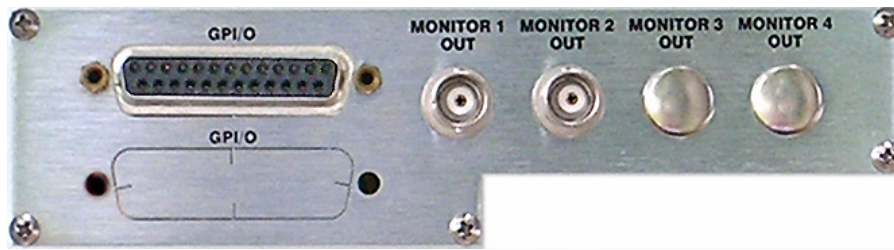
Figure 3-2. Input/Output Panel for a system with two SD VPBs

Only systems with one or more Standard Definition Video Processor Boards will have the connectors shown in Figure 3-2. (Please note the distinction between a VPB and a Squeezeback Board). On High-Definition-only systems, none of these connectors is mounted on this panel.

- DB-25 **GPI/O Connector** (upper left): This 25-pin connector provides up to 16 ports for use with external devices. Each Standard-Definition Video Processor Board (VPB) can support one of these 16-port sets, so a knockout panel for a second DB-25 connector is included. Consult Section 7 for this connector's pinout scheme.

- BNC **Monitor Out Connector(s)**: The panel shown in Figure 3-2 is fitted with an **analog** monitor output from each Standard-Definition Video Processor Board (excluding Squeezeback boards). The panel plugs marked "Monitor 3 Out" and "Monitor 4 Out" indicate the capacity for up to four such outputs. Note that the output standard of these analog outputs corresponds to the selected digital Program output of their boards. Setting the VPB to 525-line SDI will produce an NTSC monitor output; in 625-line mode, the analog monitor output is PAL. These BNC monitor outputs will only be present for **factory-installed** SD VPBs. Any SD channel added after factory configuration includes a Monitor Out mounted on a PCI panel cover that will occupy one PCI slot opening.

3.1.3 CPU Connectors

The connectors shown here may vary with board updates.
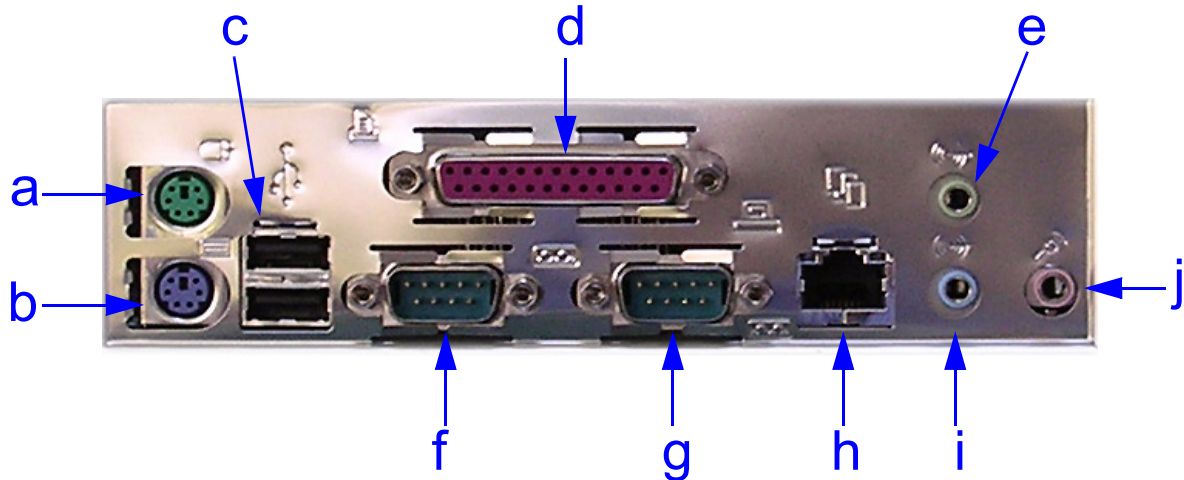
- • a: Mouse (top; green).
- • b: Keyboard (bottom; blue).
- • c: USB ports (2).
- • d: Parallel port (purple).
- • e: Audio Line Output (green).
- • f: Serial port, 9-pin (COM 1).
- • g: Serial port, 9-pin (COM 2).
- • h: RJ-45 LAN connector.
- • i: Audio Line Input (blue).
- • j: Microphone Input (red).

The **CPU**'s audio connections should not be confused with audio connections on the optional Internal Clip Player.

3.1.4 AGP Video Card

IMPORTANT THINGS TO REMEMBER:

- • If the factory-installed graphics card draws power through both the PCI bus and a separate Molex connector, the latter MUST remain connected to the system power supply. If this connection is removed, the card may continue to operate, but at a diminished capacity. The card in your system may have two Molex power connectors; both must be connected.
- • HyperX's PC monitor display may be duplicated on an analog or digital TV monitor; this option may be used as an extra Preview output. If you intend to use this option, you must connect the monitor to the AGP card's S-Video or DVI connector **BEFORE** turning on the system for the first time. The board thus senses that the monitor connection is present, and the appropriate options are available in the monitor configuration software. See Section 4.4.1 for the procedure.

3.2 Video Channel and Clip Player Options (PCI and PCI-X Devices)

Your system will be configured with at least one (and possibly several) of the components described in this section.

About Slot Location and Frame Buffer Designations

The slot location of HyperX's VPBs, Squeezeback Boards or HD/SD Channel Boards determines the Frame Buffer number for that device as it is used by Lyric and other applications.

Figure 3-3. Lyric Frame Buffers

The optimal location for each PCI or PCI-X device has been determined by factory testing. CHYRON STRONGLY RECOMMENDS THAT YOU LEAVE THESE DEVICES IN THE SLOTS WHERE THEY WERE FACTORY-INSTALLED.

Each factory-installed VPB or Squeezeback Board is labelled with the number of its Frame Buffer.
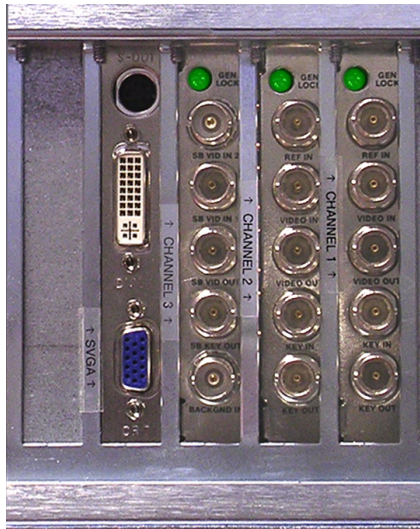
Figure 3-4. Frame Buffer numbers labelled on rear of a HyperX configured with a Squeezeback Board ("Channel 3", left) and two SD VPBs.

NOTE:

Installing additional VPBs or Squeezeback Boards may alter these Frame Buffer assignments! Chyron strongly recommends that systems modified in this way be TESTED before Air/Production to verify each board's Frame Buffer designation. You may wish to change the labels on the rear of the unit accordingly.

3.2.1 Standard Definition Channel Boards

3.2.1.1 Standard Definition VPB

Graphics creation/playout, character generator functions and keying.
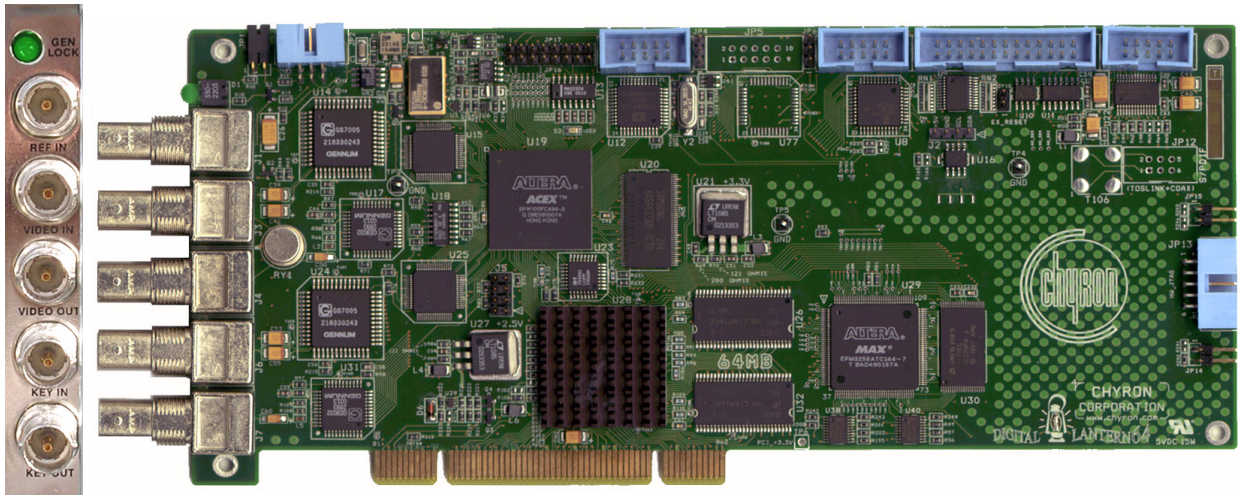
Figure 3-5. SD Video Processor Board. Jumper JP1 and block header JP2 seen at upper right.

SD VPB's I/O Connectors. From the topmost connector, down, in Figure 3-5.

- REF IN: Used to connect an analog GENLOCK source input. The preferred input is Black Burst.

- VIDEO IN: Program video input. HyperX-produced video will be inserted over this video from an external source. Can be used as a digital GENLOCK source. **Signal**: SMPTE 259M/ ITU-R BT.655

- VIDEO OUT: Output of either keyed or non-keyed video. **Signal**: SMPTE 259M/ITU-R BT.655

- KEY IN: Key source input from an external source. **Signal**: SMPTE 259M/ITU-R BT.655

- KEY OUT: Provides a key signal to external device. **Signal**: SMPTE 259M/ITU-R BT.655

- ANALOG MONITOR OUTPUT: Analog video monitoring output of (SDI) VIDEO OUT. See Section 3.1.2 for more detail on the **I/O Panel**. Connect to standard NTSC/PAL monitor. Remember that in factory-configured multiple-channel systems, each factory-installed SD or HD Video Processor Board has one of these Analog Monitor Outputs located on the I/O Panel.

- GPI/O CONNECTOR: See Section 7 for full details on GPI operation and connections.

An alternate connection for Genlock to analog video is provided by the block header designated **JP2**.

3.2.1.2 Squeezeback Board (Standard Definition Only)

Graphics creation/playout, character generator functions and two-input picture resizing/repositioning.
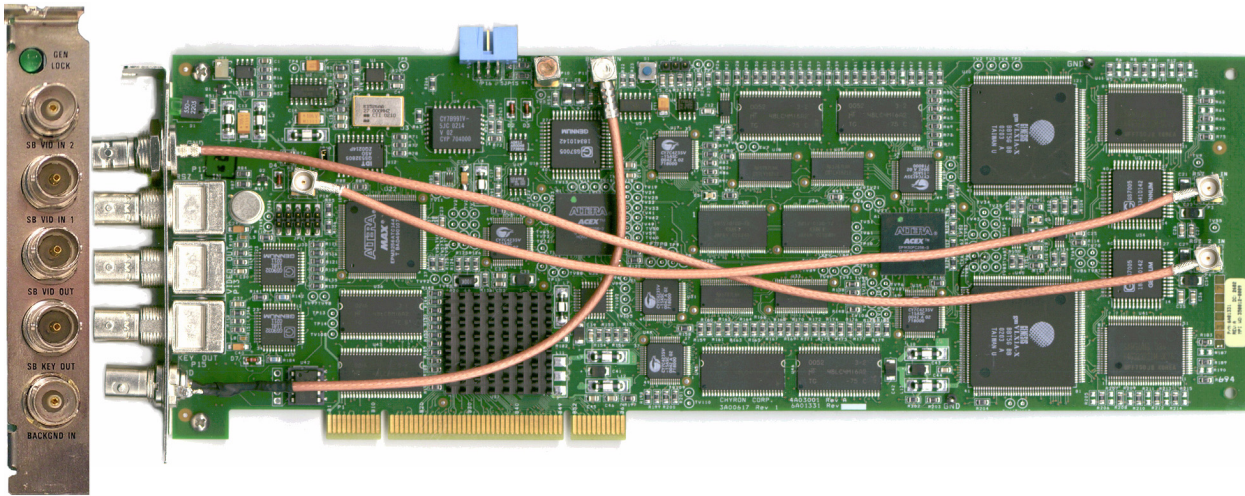
Figure 3-6. Squeezeback Board

Note that the **GenLock** LED near the SB VID IN 2 connector indicates that the system is receiving a suitable sync signal.

All video and key inputs/outputs are 10-bit SDI. From top in Figure 3-6:

- Squeezeback Video In 2: Input to one (Secondary) of two available resizable video regions. **Signal**: SMPTE 259M/ITU-R BT.655 SDI Format.

- Squeezeback Video In 1: Input to one (Primary) of two available resizable video regions. Signal to this input is also routed to a one-frame delay for synchronization with processed signal. Any ancillary data in the signal connected here is preserved and given the same one-frame delay. **Signal**: SMPTE 259M/ITU-R BT.655 SDI Format.

- Squeezeback Video Out: Squeezeback-processed signal. **Signal**: SMPTE 259M/ITU-R BT.655 SDI Format.

- Squeezeback Key Out: Key component of processed signal. **Signal**: SMPTE 259M/ITU-R BT.655 SDI Format.

- Background In: Input for third signal that can serve as non-resizable background image. **NOTE**: Can also be used as a digital GENLOCK source. **Signal**: SMPTE 259M/ITU-R BT.655 SDI Format.

Genlock to analog video is provided by two connectors on top of the Squeezeback board. When used in conjunction with a Standard Definition Video Processor Board, the analog sync signal is delivered via a six-wire ribbon cable to the blue box header at **P16**. In systems with no VPB, analog sync will be

connected to the SMB connector designated **P10**, via a micro-coax cable, from a BNC input mounted on a PCI end panel.
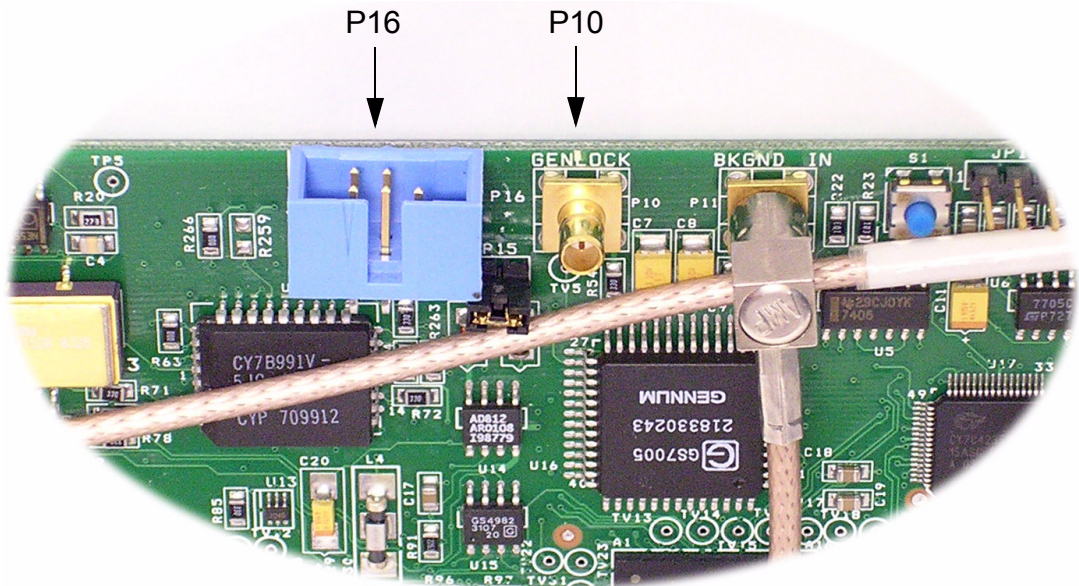
Figure 3-7. Close-up of Squeezeback board's block header P16 (5 pins, as seen, is correct) and SMB connector P10. Jumper JP15 is just below and to the right of P16.

3.2.1.3 Sharing Genlock Signals Among SD Graphics Channels

HyperX's Standard Definition Video Processor Boards (Section 3.2.1.1) and Squeezeback Boards (Section 3.2.1.2) can share **analog genlock** where two or more SD graphics channels are present in one system.

If using multiple SD VPBs and/or Squeezeback Boards in any combination, Genlock the boards as follows:

Feed an analog Genlock signal to **either** the Analog Genlock panel of a PCI-Squeezeback board **or** to the REF IN of a VPB. Connect the 6-pin ribbon cable to each of the internal 6-pin ribbon box headers located at the top of each board until all boards are connected.

Figure 3-8. Ribbon cable for sharing analog Genlock among SD graphics channels

About the 75-Ohm Terminating Resistor

Each PCI-Squeezeback (and Standard Definition VPB) comes from the factory with a 75-ohm terminating resistor installed. A shunt is installed on the 2-pin jumper (at **JP15** on the Squeezeback Board, at **JP1** on a Standard Definition VPB) to connect this resistor to the circuit.

If using analog Genlock, make sure that only one board, preferably the last in the analog Genlock chain, has the

terminating resistor shunt connected to the 2-pin jumper on the board. The terminating resistor shunt should be removed from all other boards in the system. *See* Figure 3-7 *for a close-up of this resistor on the PCI-Squeezeback board. The terminating resistor and the 6-pin ribbon box header used for internal analog Genlock connections on the SD Video Processor Board are called out in* Figure 3-5.

<div align="center">**NOTE**</div>

If removing boards from or exchanging boards in the system, make sure that one board, preferably the last in the analog Genlock chain in the new configuration, has the terminating resistor shunt connected, and that the terminating resistor shunts are removed from all other boards. Additionally, the terminating resistor shunt must be connected to the board if it is a single-board system using an analog Genlock signal.

3.2.2 HD/SD Channel Board (with Optional Clips Capability)

Graphics creation/playout, character generator functions, keying, clip playout and recording.

The HD/SD Channel Board can function in either standard- or high-definition, selectable in the Lyric software. This board is a PCI-X device, installed in Slot 1, 2 or 3, and MUST remain in one of these PCI-X slots.

NOTES

- With the introduction of Chyron's Lyric 5.2 software, the HD/SD Channel Board can serve as both a frame buffer AND an Internal Clip Player (see Section 3.2.2.2).
- The HD/SD Channel Board provides the ONLY clips option available in HyperX HD/SD.
- The clip player option is enabled by the options licensing software described in Section 8. The licensing software works with a security device (referred to henceforth as a 'dongle') which is discussed in Section 5.4.1.

Continued on the next page.

3.2.2.1 HD/SD Channel Board Connections
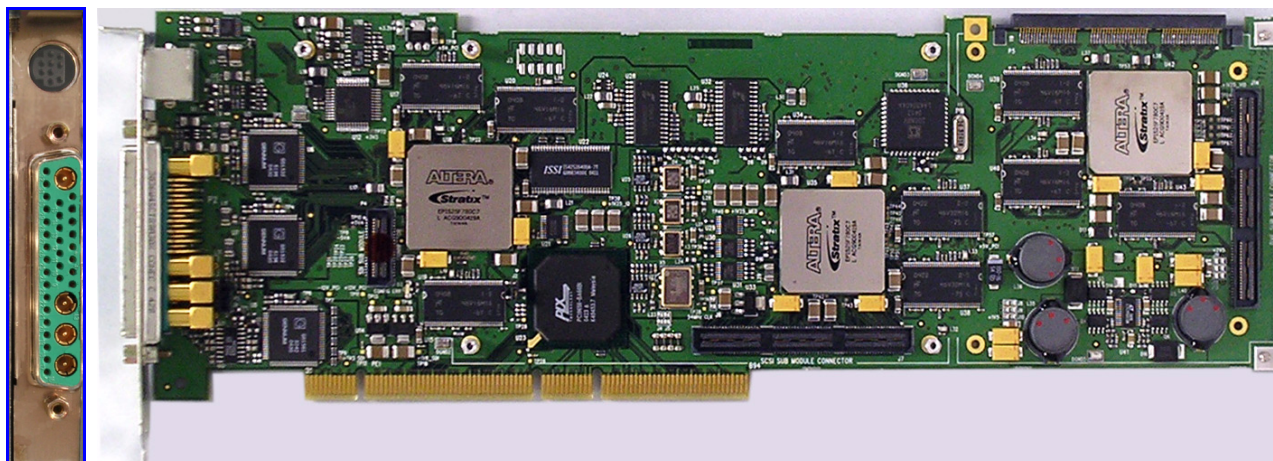
Figure 3-9. "Altitude"- type HD/SD Channel Board; panel connector at left

LTC Output

AES Output #4

LTC Input

AES Output #1

AES Output #2

AES Output #3

HD/SD Output #1

Ref Video

HD/SD Output #2

HD/SD Input #2

HD/SD Input #1

Unbalanced Left Output

Timecode Input

Composite Output

AES Input #2

AES Input #1

Unbalanced Right Output

Figure 3-10. "Altitude" breakout cable; compound connector at left

The HD/SD Channel Board's connectors differ in appearance from the other two VPBs offered, but offer equivalent connection options.

HD/SD Channel Board's I/O Connectors. Refer to Figure 3-10.

- Ref Video: Used to connect an analog GENLOCK source input. The preferred input is Tri-level (600mV nominal) or composite "House" sync signal. *If Reference In is being used, the Genlock signal must be connected here. When multiple boards of this type are installed in a single system, each board must receive its own Reference input to this connector. There is no provision for "sharing" a Reference signal internally, as there is with the SD processors*

- HD/SD Input #1: Program video input. HyperX-produced video will be inserted over this video from an external source. This connection is also used for recording directly to this board's optional Internal Clip Player function.
  - HD Signal: SMPTE 292M/ITU-R BT.709
  - SD Signal: SMPTE 259M/ITU-R BT.655

- HD/SD Output #1: Output of board's internal mixer.
  - HD Signal: SMPTE 292M/ITU-R BT.709
  - SD Signal: SMPTE 259M/ITU-R BT.655

- HD/SD Input #2: *Not used*.

- HD/SD Output #2: Provides a key signal to external device.
  - HD Signal: SMPTE 292M/ITU-R BT.709
  - SD Signal: SMPTE 259M/ITU-R BT.655

- LTC Input and Output: *The Linear Timecode facility on this board is not currently supported for use with Chyron products.*

- AUDIO; *connections will vary with your facility's routing arrangements*:
  - Unbalanced Inputs (2, BNC; red cables) 75 ohm
  - Unbalanced AES Outputs (4, BNC; blue cables) 75 ohm
  - Unbalanced Right & Left Analog Outputs (2, RCA; red cables)

3.2.2.2 A Word About the HD/SD Channel Board's Optional Clips Capability

HyperX's optional Internal Clip Players play the same role as an external VTR or DDR. This is to say that they function as a source of video over which text or graphics produced by HyperX are keyed. These devices record video (and audio) from external sources, saving the data to a partition on the system's main drive or to an additional SCSI hard disk in the drive bay.

Where the HD/SD Channel Board is enabled as a clip player, two additional SCSI drives are installed. These drives are striped together to appear as one drive for storage of video clip files.

Internal Clip Players and Lyric

Video/audio input to the Internal Clip Player can be saved and played back under the control of Lyric's **Clip Control Panel**.

The video output from an Internal Clip Player is not a typical object in a Lyric composition, in that it is not visible on the Lyric Canvas that appears on HyperX's SVGA monitor.

Rather, the video's movement, duration and other behaviors in the composition are controlled by Lyric; in this regard, Internal Clip Player video is manipulated like other Lyric objects.

The HD/SD Channel Board is capable of mixing its own clip output(s) with the graphics or text it generates. Hence, a "finished product" appears at the output(s) of an HD/SD Channel Board that is both generating text/graphics and playing out clips.

The standard-definition Internal Clip Players discussed in Section 3.2.3 are separate pieces of hardware from Chyron's Standard Definition VPB or Squeezeback Board. In some situations the images from these devices are mixed with the images from HyperX's VPBs (or Squeezeback Board), using a separate piece of hardware (see Section 3.3.3, "HyperX Connected to Chyron CMix," on page 25).

3.2.3 Standard Definition Internal Clip Players

3.2.3.1 *DigiSuite LE* Clip Player

This option is used primarily to accommodate older clips in DigiSuite's proprietary file format.

If your system includes, or is retrofitted with, a DigiSuite-LE clip player, a separate SCSI controller is necessary. (The other Internal Clip Player options operate using the motherboard's SCSI controller.) See Section 5.6.1 for more information on using a separate SCSI controller with your HyperX.

The DigiSuite LE-based Internal Clip Player occupies two PCI slots and offers one channel per board. DigiSuite LE offers both digital and analog inputs and outputs. Chyron supports only **digital** I/O for use with its systems. However, the analog video and audio inputs and outputs are usable.

If maintenance or repair requires that you remove and replace the DigiSuite LE hardware, take note of the way that it is configured in the HyperX chassis, before you get started.

Chyron uses the card and connector arrangement pictured in Figure 3-11 to make the best use of the space and slot openings available in the PCI area of the chassis.
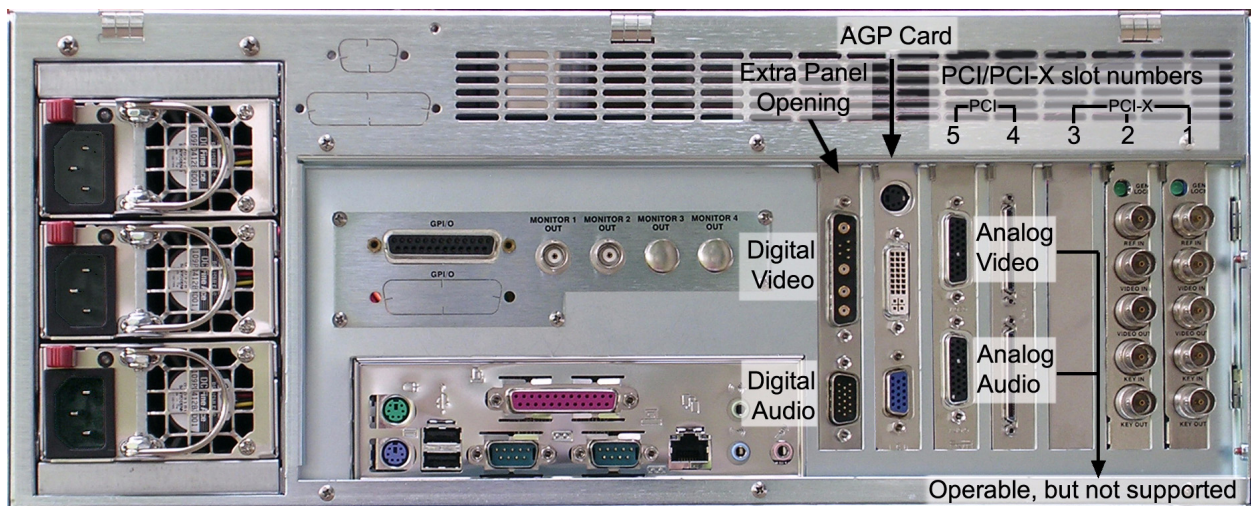

Figure 3-11. DigiSuite LE boards and connectors,
shown in relation to other components

Note that DigiSuite LE's **digital** outputs are simply connectors mounted on a PCI slot panel cover. Hence, they occupy a spot on the system's rear panel, but need not take up a full PCI slot.

Figure 3-12. DigiSuite LE digital video (top) and audio connectors.

For this reason, the digital video and audio connectors are ideally located to the **left** of the AGP card, in the extra space on the chassis.

The DigiSuite LE board itself is located in (and if removed, should be restored to) the PCI slot designated **#5**, as seen in Figure 3-11.

Take note also of the fact that DigiSuite LE's Digital Output Module partially blocks the area at one end of PCI Slot #4. Sufficient room remains for the added SCSI controller to occupy Slot #4.

DigiSuite LE's DIGITAL output module; **partially** blocks the area at one end of PCI Slot #4

PCI Slot #4

Analog video and audio connectors (obscured by tab at top of PCI panel cover)

PCI Slot #5

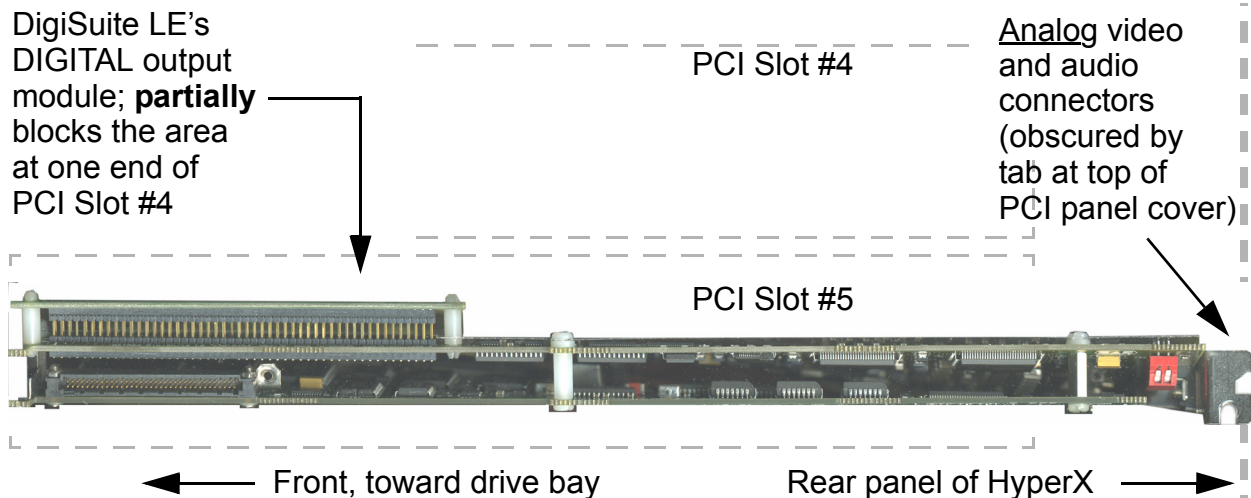← Front, toward drive bay   Rear panel of HyperX →

Figure 3-13. Top view of DigiSuite LE with its attached digital output module

DigiSuite LE's breakout cables are seen in Figure 3-14 and Figure 3-15.
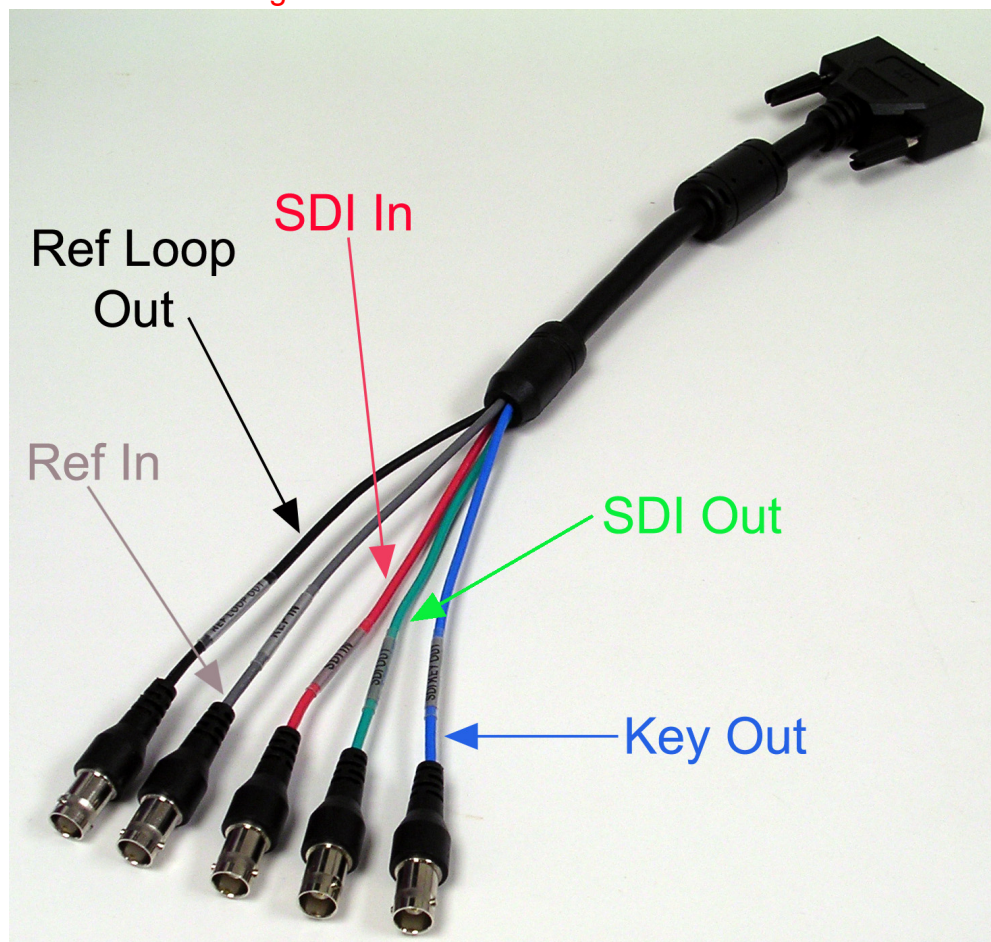

Ref Loop Out

SDI In

Ref In

SDI Out

Key Out

Figure 3-14. DigiSuite LE digital video breakout cable.

VIDEO: The Internal Clip Player and HyperX require separate reference inputs. The Clip Player can be referenced to the signal

connected to its SDI Video Input or to its Analog Reference Input. You may select which of these references is used in the DigiUtils software, which is installed in HyperX as part of the Internal Clip Player option.

- If you wish to use a common analog reference for both HyperX and the DigiSuite LE board, connect your facility's analog reference signal to the gray REF IN of the Internal Clip Player, and connect the Clip Player's black REF LOOP OUT to the REF IN on the Channel 1 Video Processor Board.

- Connect the green SDI OUT cable to the Video In connector on the Video Processor Board.

- Connect the blue SDI KEY OUT cable to the Key In connector on the Video Processor Board.

- Connect DigiSuite LE's red SDI IN cable to an appropriate external signal source. Required only for recording directly to the DigiSuite LE board.
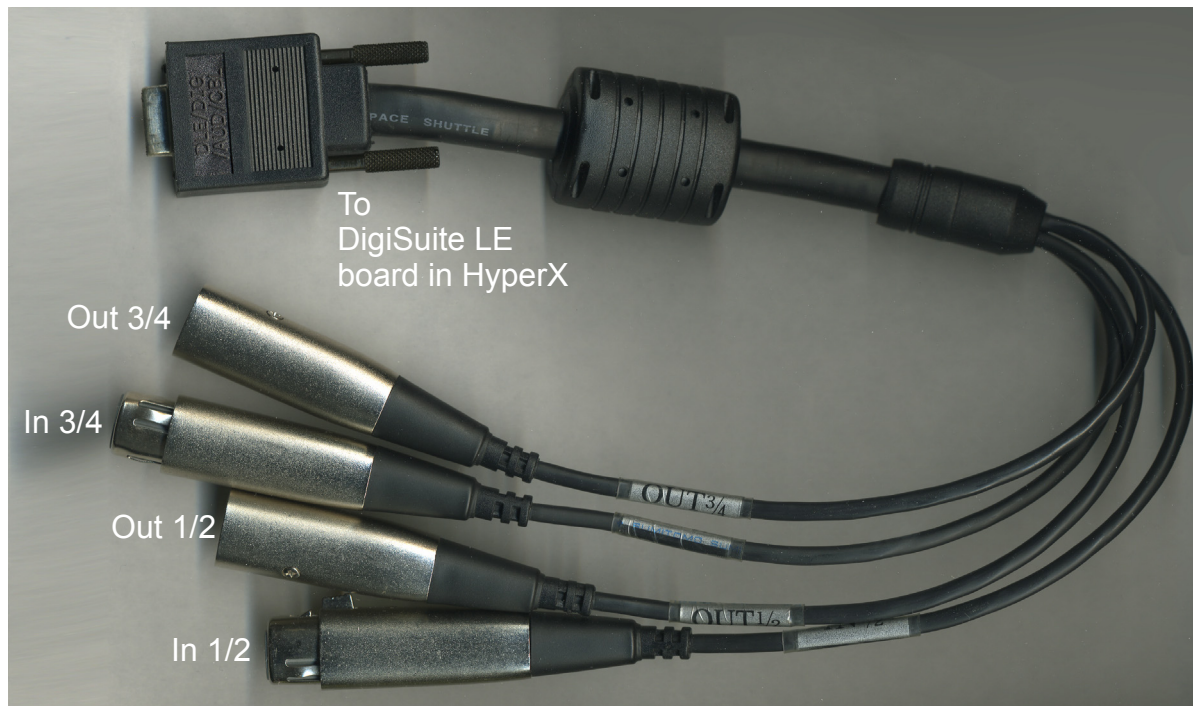

Figure 3-15. DigiSuite LE digital audio breakout cable

AUDIO: The digital audio cable, seen in Figure 3-15, is connected to the connector seen at lower right in Figure 3-14.

- Balanced AES/EBU Inputs (2, XLR female) 110 ohm

- Balanced AES/EBU Outputs (2, XLR male) 110 ohm

Connection of this cable will vary with your facility's requirements.

3.2.3.2 *DigiServer* Clip Player

The DigiServer-based Internal Clip Player uses HyperX's on-board SCSI controller.

DigiServer occupies one PCI slot and offers options for one or two channels per board, as seen in Figure 3-17. Each channel has its own breakout cable like the one pictured in Figure 3-17.
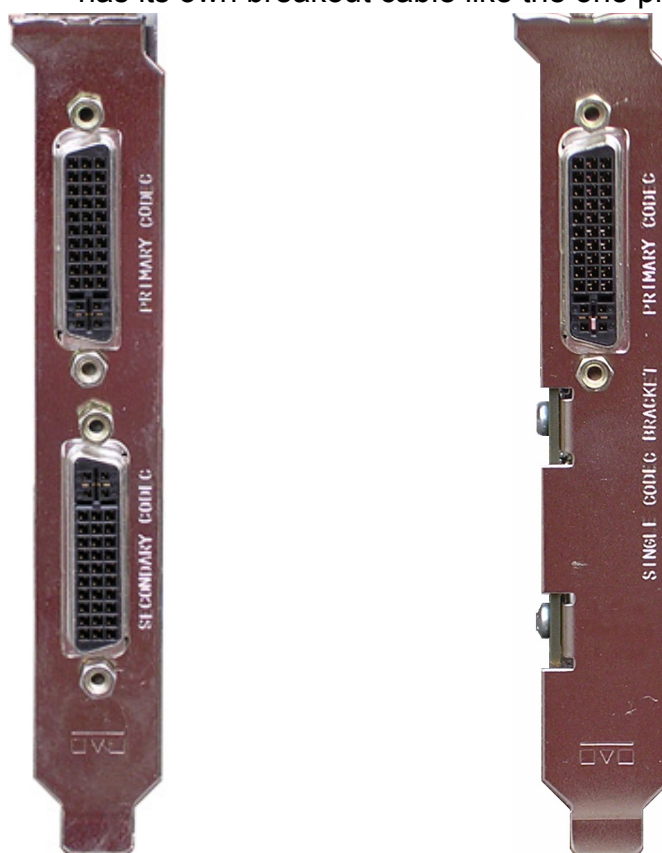

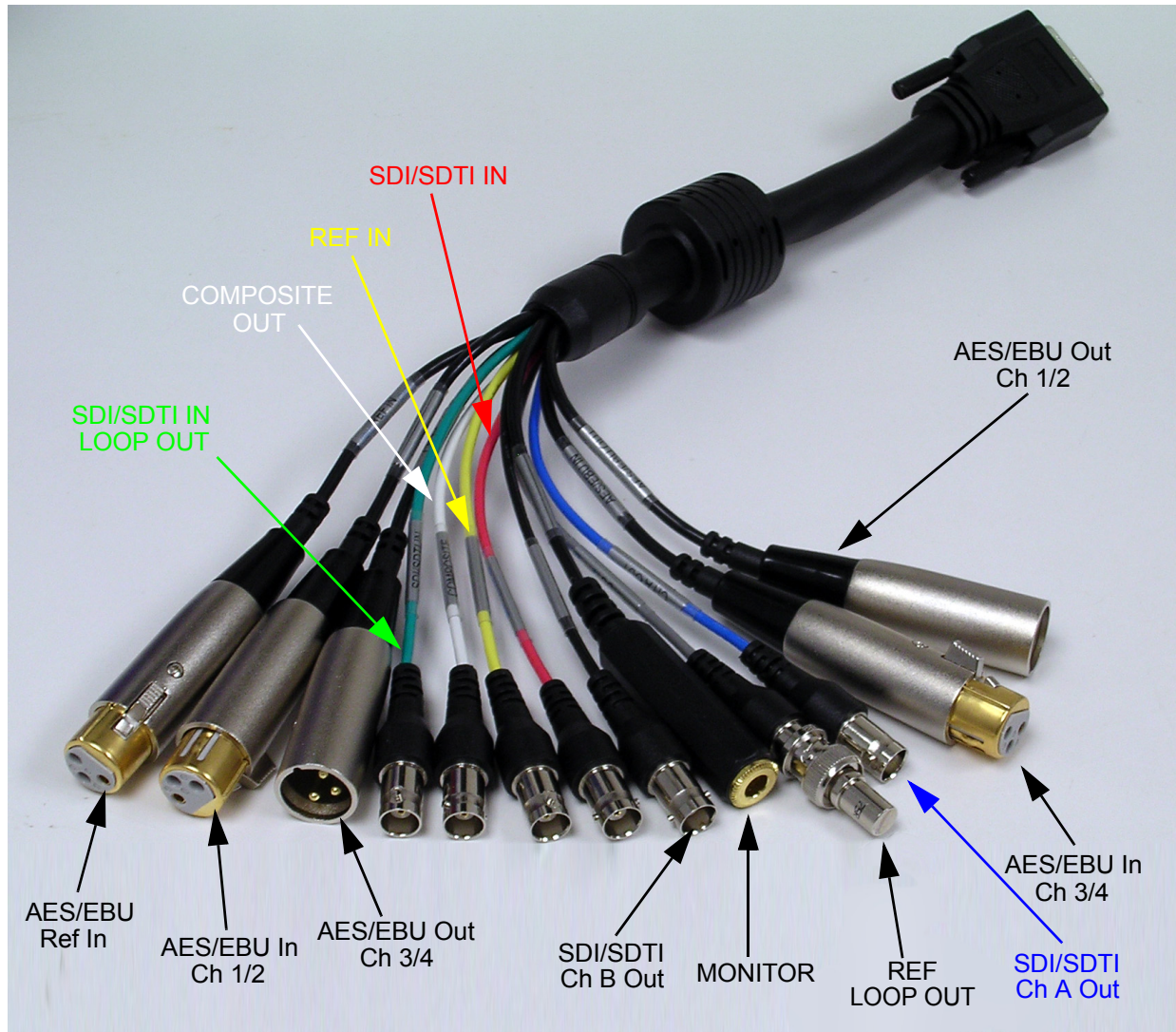Figure 3-16. Left: Two-channel DigiServer panel. Right, single-channel.

Figure 3-17. DigiServer breakout cable includes both audio and video

VIDEO:

- Connect the yellow **REF IN** to an appropriate external signal source (i.e. "House Sync").
- Connect the gray **REF LOOP OUT** cable to the REF IN on the Channel 1 Video Processor Board. See Section 3.2.1 for more information about sharing sync among Video Processor Boards.
- Connect the blue **SDI/SDTI Ch A Out** cable to **Video In** on the Video Processor Board.
- Connect the black **SDI/SDTI Ch B Out** cable to **Key In** on the Video Processor Board.
- Connect the red **SDI/SDTI IN** cable to an appropriate external signal source. Required only for recording video directly to the Internal Clip Player.
- Connect the white Composite Out to a monitor with Composite inputs.

AUDIO; connection of these cables will vary with your facility's setup.

- 2 Balanced AES/EBU Inputs (stereo pair each, XLR female) 110 ohm.
- 2 Balanced AES/EBU Outputs (stereo pair each, XLR male) 110 ohm.
- 1 AES/EBU-standard Reference input.
- 1 Analog stereo headphone monitor output (¼-inch jack).

3.3 Sample Video Routing Configurations

In a discussion of routing and mixing clips with other video, it is worthwhile to repeat a couple of points from Section 3.2.2.2:

The HD/SD Channel Board is capable of mixing its own clip output(s) with the graphics or text it generates. Hence, a "finished product" appears at the output(s) of an HD/SD Channel Board that is both generating text/graphics and playing out clips.

The standard-definition Internal Clip Players discussed in Section 3.2.3 are separate pieces of hardware from Chyron's Standard Definition VPB or Squeezeback Board. In some situations the images from these devices are mixed with the images from HyperX's VPBs (or Squeezeback Board), using a separate piece of hardware (see Section 3.3.3, "HyperX Connected to Chyron CMix," on page 25).

3.3.1 Single Channel With Internal Clip Player
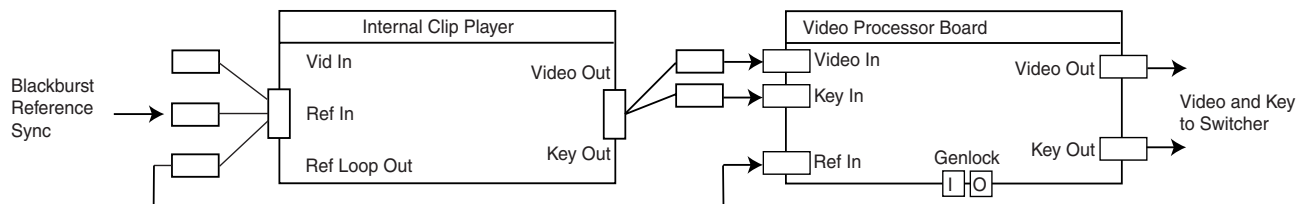
This configuration can reproduce character generator text over a keyed clip background. In this configuration, the Duet HyperX system is placed upstream of the switcher. There is no Program In; Video Out and Key Out are fed to the switcher. An analog genlock signal is fed to the Internal Clip Player's Ref In connector. The genlock signal is then looped from the Internal Clip Player's Ref Loop Out connector to the Ref In connector on the VPB.

3.3.2 Single Channel with Squeezeback and Internal Clip Player
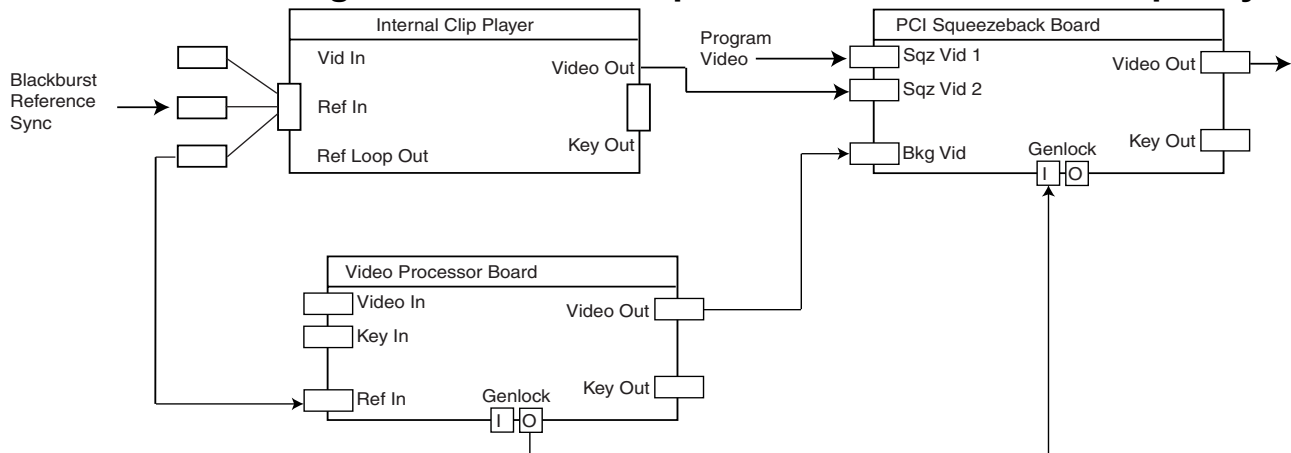
This configuration can place Program video and a video clip in two separate, "squeezable" windows, over full-screen CG text and a Background. In this configuration, the Duet HyperX system is placed downstream of the switcher. An analog genlock signal is fed to the Internal Clip Player's Ref In connector. The genlock signal is then looped from the Internal Clip Player's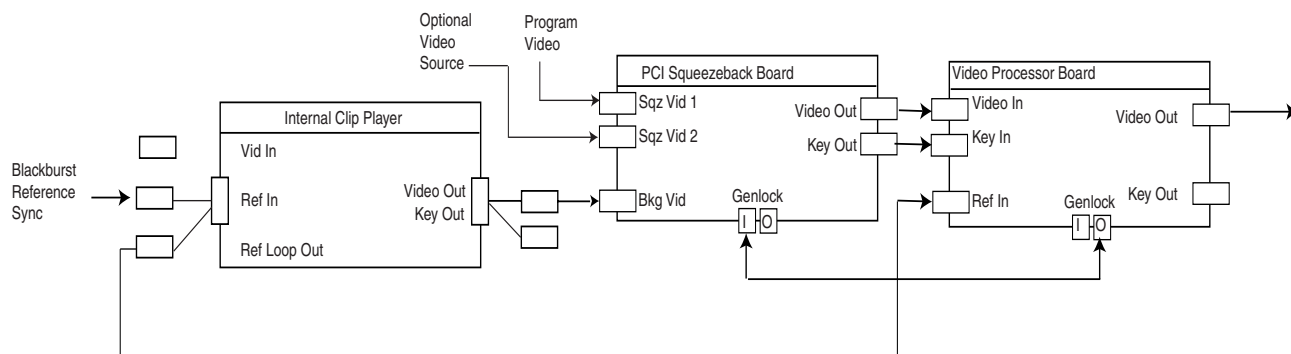 Ref Loop Out connector to the Ref In connector on the VPB. This configuration also requires that the 3x2 box header on top of the VPB be connected by an internal analog sync jumper cable to the 3x2 box header on top of the PCI Squeezeback Board. See Section 3.2 to learn more about sharing analog sync among boards within Duet HyperX.

OR:

Single Channel with Squeezeback and Internal Clip Player - alternate configuration

This configuration can place CG text over Squeezeback-treated Program video, and both over a full-screen clip Background. In this configuration, the Duet HyperX system is placed downstream of the switcher. An analog genlock signal is fed to the Internal Clip Player's Ref In connector. The genlock signal is then looped from the Internal Clip Player's Ref Loop Out connector to the Ref In connector on the VPB. This configuration also requires that the 3x2 box header on top of the VPB be connected by an

internal analog sync jumper cable to the 3x2 box header on top of the PCI Squeezeback Board. Contact Chyron Customer Service to learn more about sharing analog sync among boards within Duet HyperX.

3.3.3 HyperX Connected to Chyron CMix

Chyron's CMix is designed to allow mixing between output channels of a Duet HyperX system. This device combines four video/key input pairs plus one program video input layer into a single video/key pair output. The system contains two independent sets of mixing logic controlling two video/key outputs. The mixers share the same inputs, but the inputs can be assigned to different layers in each mixer.

Figure 3-18 shows CMIX used with a Duet HyperX. This type of configuration allows all Duet HyperX-originated graphics to come from the CMix as a "finished product". Duet HyperX's three sets of outputs and key outputs are mixed and layered as desired, upstream of the production switcher, allowing the greatest possible flexibility in allocating the switcher's resources.
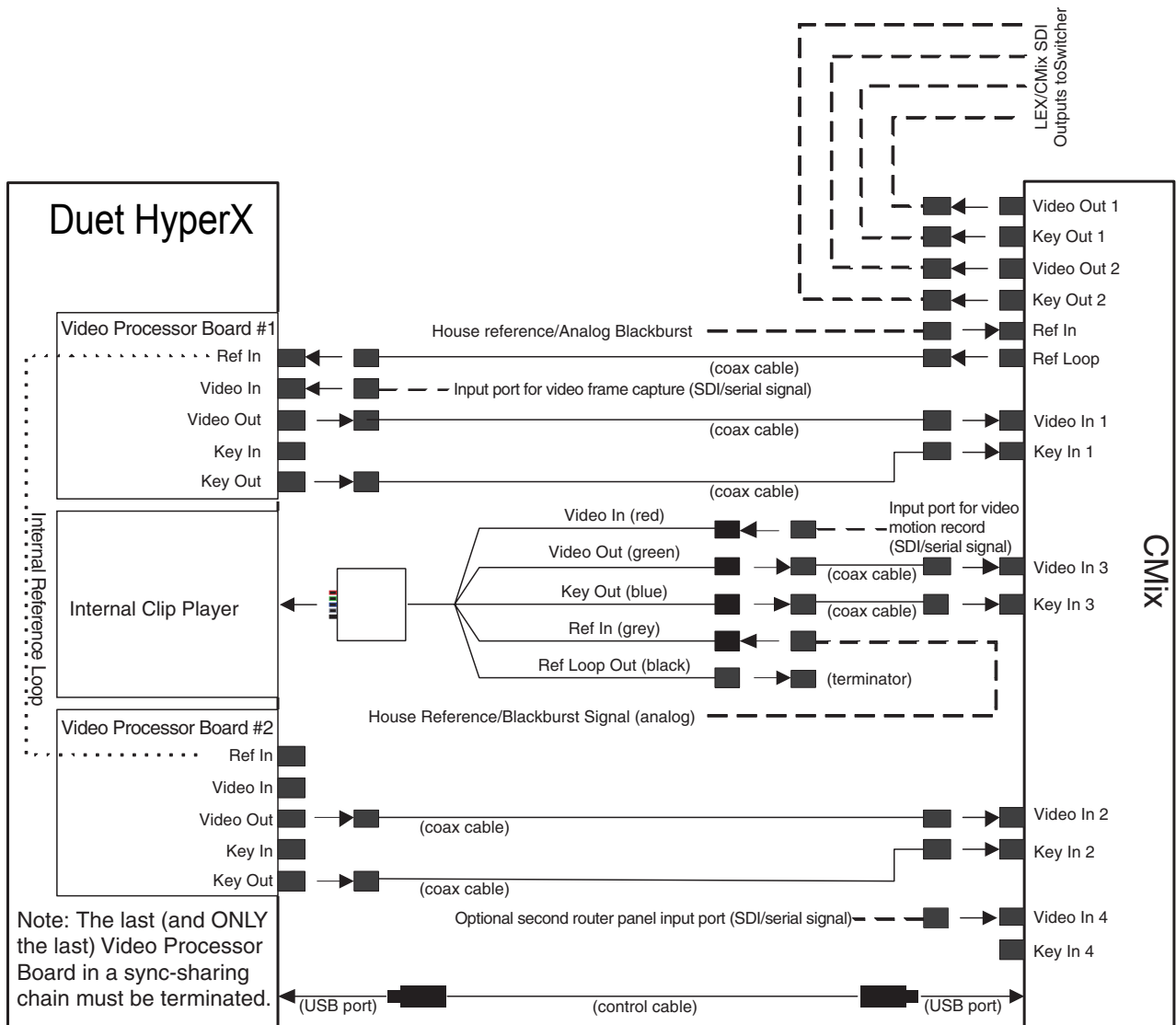
Duet HyperX

Video Processor Board #1
- Ref In
- Video In
- Video Out
- Key In
- Key Out

Internal Clip Player

Internal Reference Loop

Video Processor Board #2
- Ref In
- Video In
- Video Out
- Key In
- Key Out

Note: The last (and ONLY the last) Video Processor Board in a sync-sharing chain must be terminated.

House reference/Analog Blackburst

(coax cable)

Input port for video frame capture (SDI/serial signal)

(coax cable)

(coax cable)

Video In (red)

Video Out (green)

Key Out (blue)

Ref In (grey)

Ref Loop Out (black)

Input port for video motion record (SDI/serial signal)

(coax cable)

(coax cable)

(terminator)

House Reference/Blackburst Signal (analog)

(coax cable)

(coax cable)

Optional second router panel input port (SDI/serial signal)

(USB port)

(control cable)

(USB port)

LEX/CMix SDI Outputs toSwitcher

Video Out 1
Key Out 1
Video Out 2
Key Out 2
Ref In
Ref Loop

Video In 1
Key In 1

Video In 3
Key In 3

CMix

Video In 2
Key In 2

Video In 4
Key In 4

Figure 3-18. Connecting a dual-VPB HyperX with Internal Clip Player to CMix

Section 4: Initial Power-On

4.1 Main Power Switch on Front of Chassis

- Before turning on the power, make sure that all **three** of HyperX's power-supply modules are plugged in. See Section 3.1.1 and Section 5.5.1 for more detailed information.

On each module, a green stand-by LED indicates that the module is receiving power.

- If the system fails to initialize, check the connection between the front-panel power switch and the CPU board (see Section 5 for more about HyperX maintenance).

4.2 System Initialization

- Before turning on the power to HyperX, make sure the system's VGA monitor is connected to the AGP card (Section 3.1.4), and the monitor is receiving power.

- When power is turned on, you should see the familiar **POST** operation (Power On Self-Test) run, as well as an on-screen indication that HyperX's SCSI resources have initialized. As on most systems, the text that indicates these operations goes by quickly, so don't worry about missing something.

- Windows XP starts and the Desktop appears.

NOTE:

HyperX's Windows XP operating system is **activated** at the factory. However, there is a difference between activating and **registering** your copy of Windows XP. The latter action is strictly optional; however it is strongly recommended by Microsoft. You will be prompted periodically to do so, but the reminders can be dismissed.

- If the startup script indicates that no disk has been found, or that there is no operating system, check the SCSI connectors from the drive bay (see Section 5 for more about HyperX maintenance).

4.3 Application Tests

- **Lyric:** If your system includes the optional Lyric software:

  1. After Windows startup is complete, locate the Lyric ▨ icon on the desktop and double-click it to launch the Lyric application.

     Depending on the specifics of your system's Lyric installation, there may be sample Lyric messages available with which you can experiment. If you wish, search your system for files with the **.lyr** extension.

  2. If sample Lyric message files are present, use the File > Open command or click the ▣ button, and navigate to the appropriate file. Consult Lyric Online Help for more information about playout of animated messages.
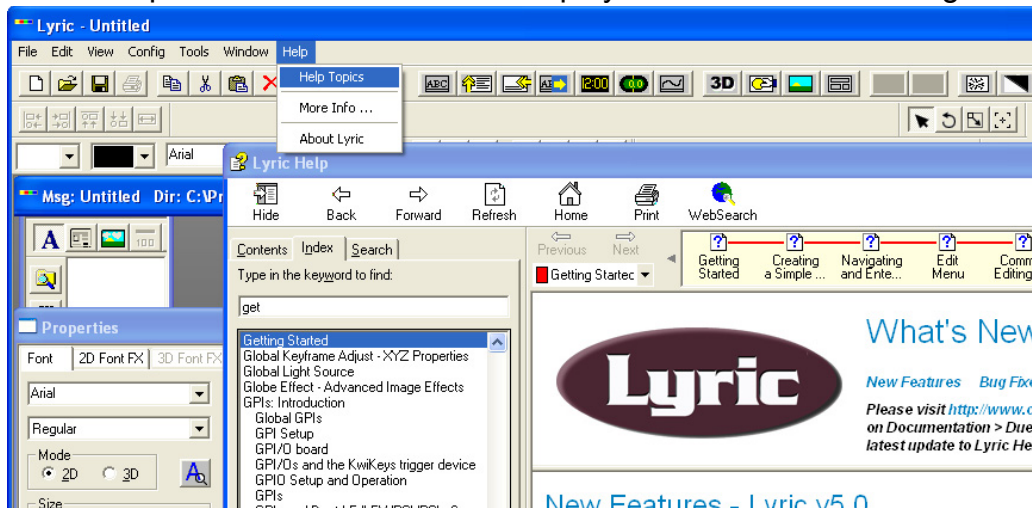
     You might also like to try entering some text on the Lyric Canvas. In any event, the Online Help's **Getting Started** topic will prove invaluable as you're getting accustomed to HyperX and Lyric.

  3. Test the system's Video (and Key) Output 1 by pressing the Xfer key. **Carefully** take note of the correspondence between channels on the Lyric interface and the monitors connected to your system, to confirms correct routing of HyperX's Frame Buffer(s).

  4. On dual- or multiple-channel systems: To test the system's other channel(s) (Video and Key Outputs), press the Swap key, then press again.

- **CAL:**

  Being custom software, CAL applications vary widely. Chyron offers this general advice: Install the CAL application that will be running on your HyperX system. Launch the application, and as above, carefully verify that your animations appear on the expected outputs.

4.4 AGP Card Preview Output

Duet HyperX is factory-configured to produce a Preview monitor output from the AGP graphic card. In the event that the card must be replaced, or if the Preview output must be reconfigured for some other reason, follow the procedure outlined in this section. It may be useful to restate the goal of these actions:

4.4.1 Set-Up Procedure

This procedure may vary with the AGP video card currently being delivered in HyperX systems.

The AGP card can deliver a duplicate of the VGA monitor's "Desktop" display to an analog TV monitor. In the suggested configuration, the Desktop display is **re-sized** and **positioned** (centered) on the TV monitor, so the Canvas area of the Lyric interface occupies the monitor picture completely.

1. Connect an **analog** TV monitor to the ⬤ S-video connector, which is topmost on the AGP graphics card. See the note at the end of this section for other monitor options.

2. Restart Duet HyperX. Restarting after the monitor is connected insures that the AGP card will recognize the connection of the monitor.

3. Before doing anything else, **launch the Lyric application**. Get all of the windows on the Lyric interface arranged to your liking. Do not minimize the Lyric application. Leave it full-screen and proceed so that the windows in the following steps open "over" the Lyric interface. You'll see why this is important later in the procedure.

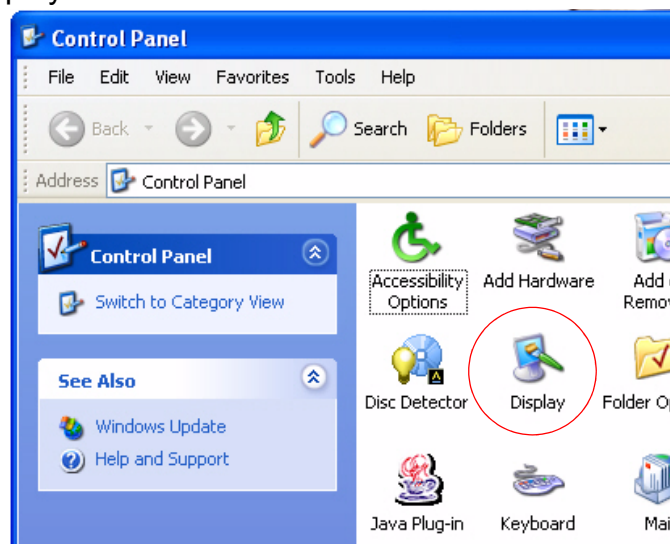4. From the Start Menu in the lower left, select START > Control Panel > Display.

Figure 4-1. Windows XP control panel

5. Double-click the **Display** icon, circled in Figure 4-1. The menu pictured in Figure 4-2 appears. The **2** icon on the right side of the display indicates that the card senses the connection of a second monitor; the "Not Active" tool tip shows that that monitor has not yet been configured.
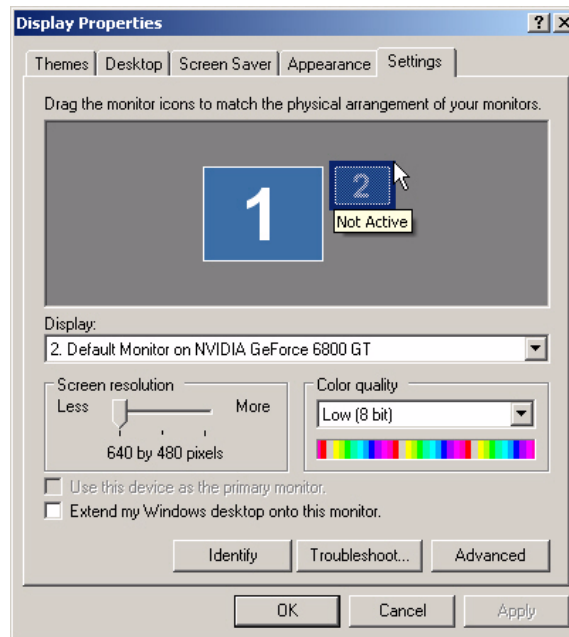

Figure 4-2. Settings menu *before* configuring software for TV display

6. Important: Drag the Display Properties window pictured in Figure 4-2 to the center of the Desktop. This is a necessary part of the actions you will take to properly center the re-sized Desktop image on your monitor.

7. Click the **Advanced** button shown above. The menu below left appears, with the General tab selected by default. Click on the **GeForce 6800 GT** tab. The menu pictured at right in Figure 4-3 appears.
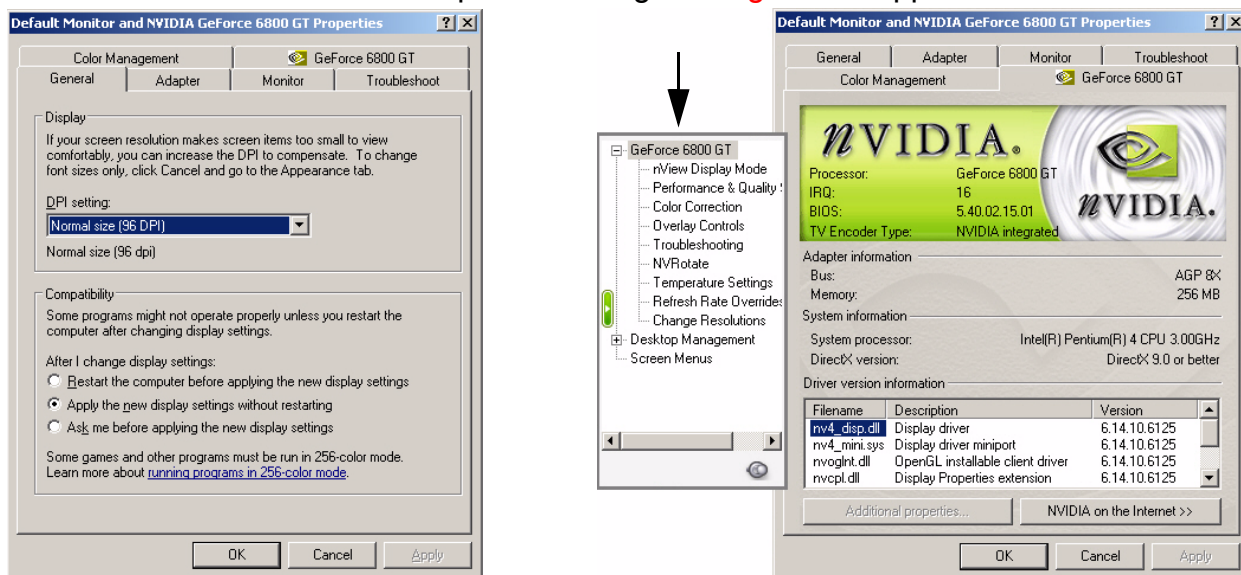

Figure 4-3. GeForce 6800 GT menu with all options displayed

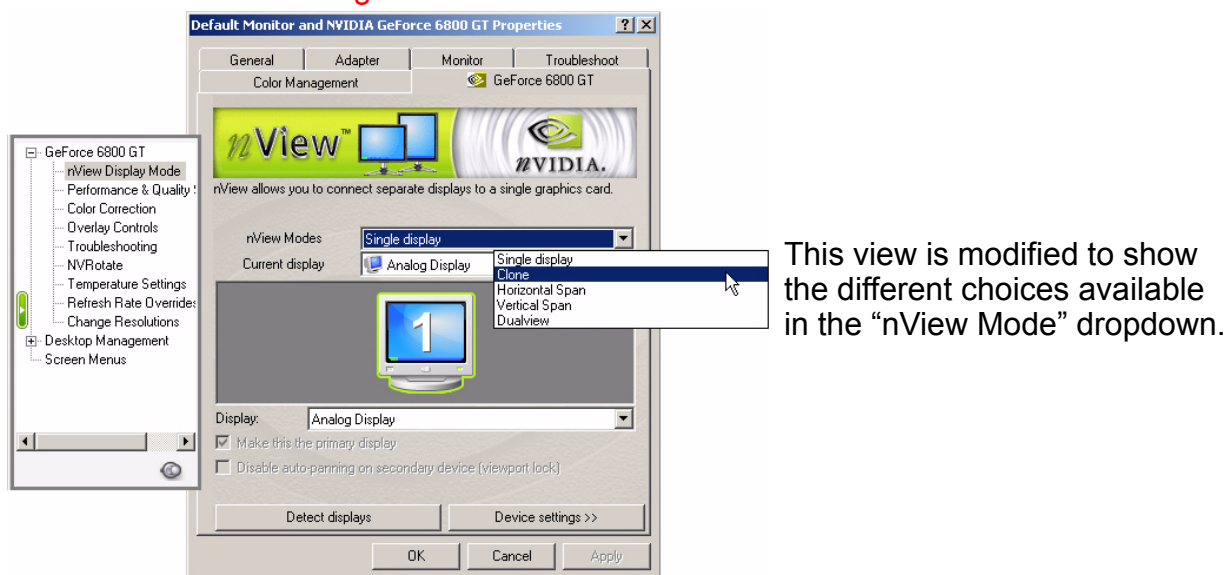8. In the submenu, click on *nView Display Mode*. The menu changes as shown in Figure 4-4.

This view is modified to show the different choices available in the "nView Mode" dropdown.

Figure 4-4. Option for "cloning" VGA display on TV monitor

9. Choose **Clone**. (This will have the effect of duplicating Duet HyperX's "Desktop" display on the TV monitor **after** you complete a couple of more settings). Selecting "Clone" will change the `Current display` `Analog Display` field to read **Display Pair**.

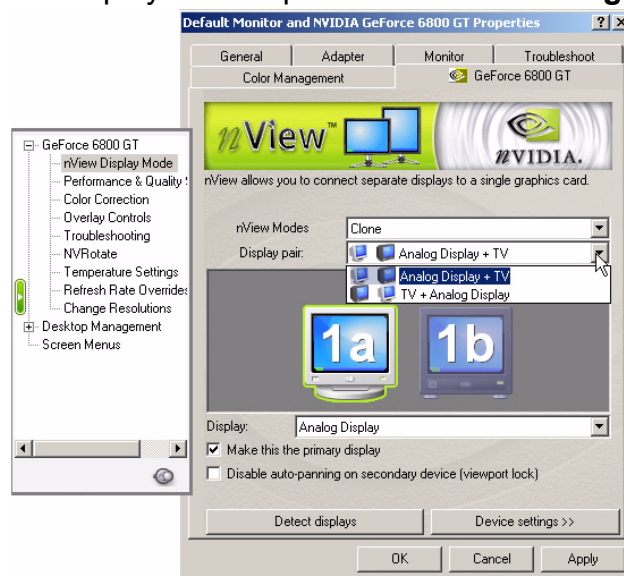10. Use the Display Pair dropdown to select **Analog Display + TV**.

Figure 4-5. "nView Display Mode" controls on the GeForce 6800 GT tab

11. Single-click the **1a** icon at left, so that it is outlined in green. Be sure to select the checkbox **Make this the primary display** and make sure to "un-select" the checkbox **Disable auto-panning on secondary device (viewport lock)**.

12. Now, in the same menu, single-click the **1b** icon at right, so that it is outlined in green. *Make sure to click this icon, and confirm that it is outlined in green; the controls you will be using in the following steps must be dedicated to the appropriate monitor output.*

13. Press the **Apply** button. Don't close any windows yet.

14. Turn your attention to the TV monitor that you've been setting up, with its representation of HyperX's PC desktop.

    As stated earlier, the display should be **re-sized** and **positioned** so that the Lyric Canvas occupies the TV monitor's entire picture. You may have to alternate between adjusting positioning and adjusting the display's **resolution** (see the next step).
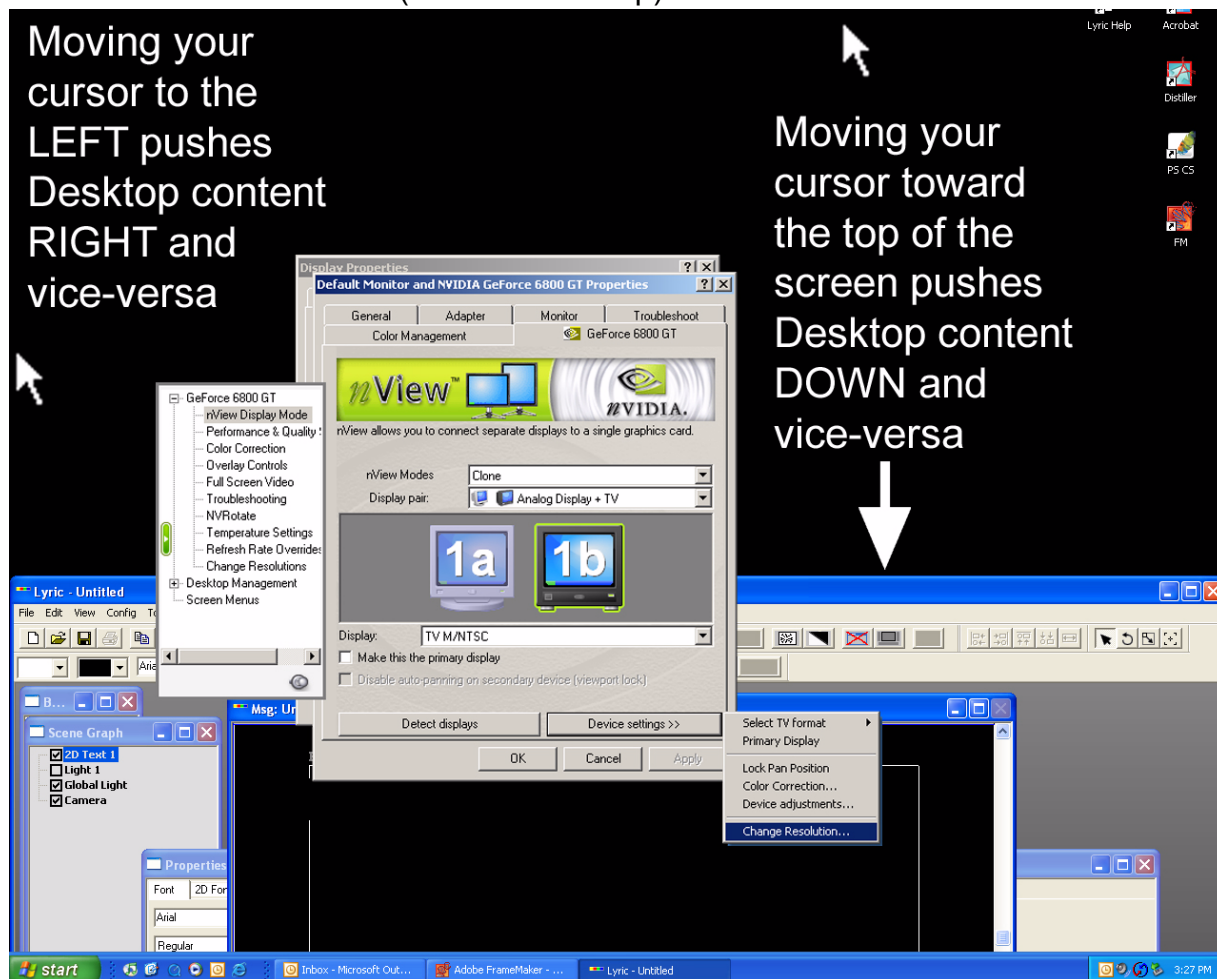

Figure 4-6. HyperX Desktop as seen on TV monitor, with AGP card controls, center

15. To change the display resolution, click the rectangular **Device Settings** button near the bottom of the **Default Monitor and NVIDIA GeForce 6800 GT Properties** window. On the child menu that appears at lower right, select **Change Resolution**. (Do NOT use the "Change Resolution" selection on the sub-menu at left.)
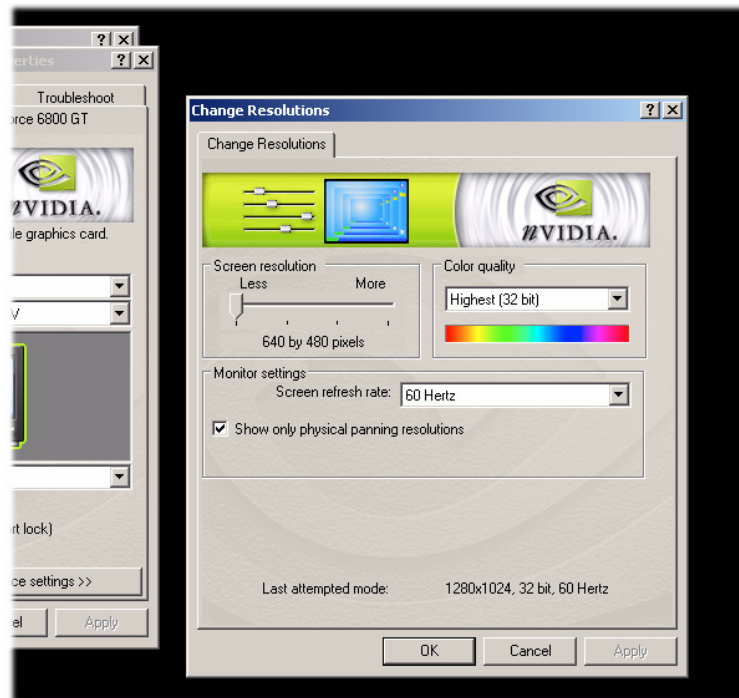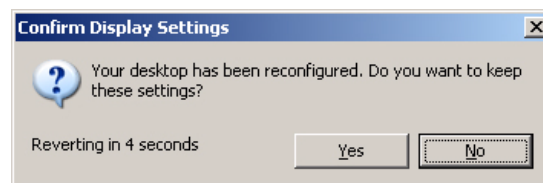
16. The Change Resolution menu appears:

You may have to experiment with the **Screen Resolution** slider at various settings (pressing **Apply** with each variation). Be <u>sure</u> to keep the **Screen refresh rate** at 60 Hertz.

When changing resolutions, the monitor will go black for a moment, and then return. When it does, you will see the **Confirm Display Settings** dialog box:

17. Press **Yes**.

18. Understand that you have (temporarily) configured your Preview monitor to "pan" around the Desktop display. Therefore, you must be careful of where you point your mouse during this part of the procedure! That is why you were advised to set up the Lyric interface ahead of time in Step 3, and to move the AGP card control window to the center of the screen in Step 6.

Once the Lyric Canvas is centered and properly sized on the TV monitor, return to the **GeForce 6800 GT Properties** tab, as pictured in Figure 4-5. On that tab, you must now **select** the **Disable auto-panning on secondary device (viewport lock)** checkbox.

19. Click **Apply** and close all the Display Control Panel windows.

CAUTION

Changing the Screen Resolution slider may cause an unwanted change in the Screen refresh rate setting. Screen refresh rate can easily be reset to the proper value. HOWEVER, if this occurs with the VGA monitor (the **1a** icon in Step 11 or Step 12) selected, that monitor could go <u>completely</u> <u>black</u> in response to an unsuitable refresh rate being set. That is why, in Step 12, you were cautioned to make sure the **1b** icon is selected, so that the TV monitor is the device being adjusted.

HINT

IF YOUR VGA MONITOR GOES BLACK because this has happened, use the TV monitor display of HyperX's PC interface to navigate. Refer to Step 11 to regain control of the VGA monitor's display. Press the Device Settings button, and reset that monitor to the appropriate Refresh rate.

4.4.2 AGP Card Alternate Monitor Connections

4.4.2.1 DVI-to-VGA Adapter

Depending upon your needs, you may use this included adapter to connect a conventional VGA monitor to the AGP card's DVI output (see Section 3.1.4).

Figure 4-8. The included DVI-to-VGA monitor adapter

4.4.2.2 S-Video-to-Composite Video Adapter

Depending on your needs, you may use this included adapter cable to feed a composite video monitor from the AGP card's S-Video output (see Section 3.1.4).
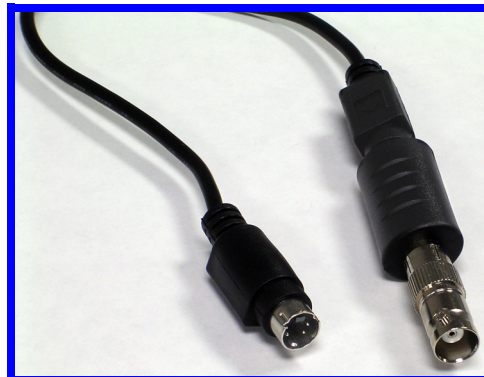

Figure 4-9. S-Video-to-Composite Video adapter cable.
Left, S-Video connector; right, BNC connector

Section 5: Maintenance

5.1 Computer Safety

HyperX, like any Windows-based system, is vulnerable to viruses, worms and other covertly installed destructive software. These measures are recommended to protect the integrity of your HyperX system.

5.1.1 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.

5.1.2 Windows Updates

Not all Windows updates from Microsoft are recommended by Chyron for installation in HyperX. 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 HyperX. 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.

5.1.3 Anti-Virus Software

Your HyperX system may have been shipped with an evaluation version (temporary license) of the Norton Anti-Virus product current at the time of the system's manufacture. The installation, use and maintenance of anti-virus software is **strongly encouraged**. Where HyperX is used in live or other critical real-time production situations, Chyron endorses **cautious** use of the latest Norton Anti-Virus product, observing the following guidelines:

1. **Do not enable 'auto-protect'**; such operation of the anti-virus product may degrade the responsiveness of the system.

2. **Scan and update these systems during maintenance periods**. Since anti-virus products use a stored database of current and new viruses, it is crucial to update these products frequently. These updates should be scheduled during periodic maintenance or other downtimes. Remember that rebooting may be required.

3. **The following extensions should be excluded from scans**:

.301	.iff	.rgb
.avi	.jpg	.sgi
.bmp	.lyr	.swf
.cal	.mod	.tga
.clp	.mov	.tif
.csf	.pcx	.vpb
.dcx	.pct	.wav
.dlf	.png	.xbm
.efx	.psd	.xwd
.ica	.ras	

5.2 Hostile Physical Environments

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

5.2.1 Temperature and Humidity
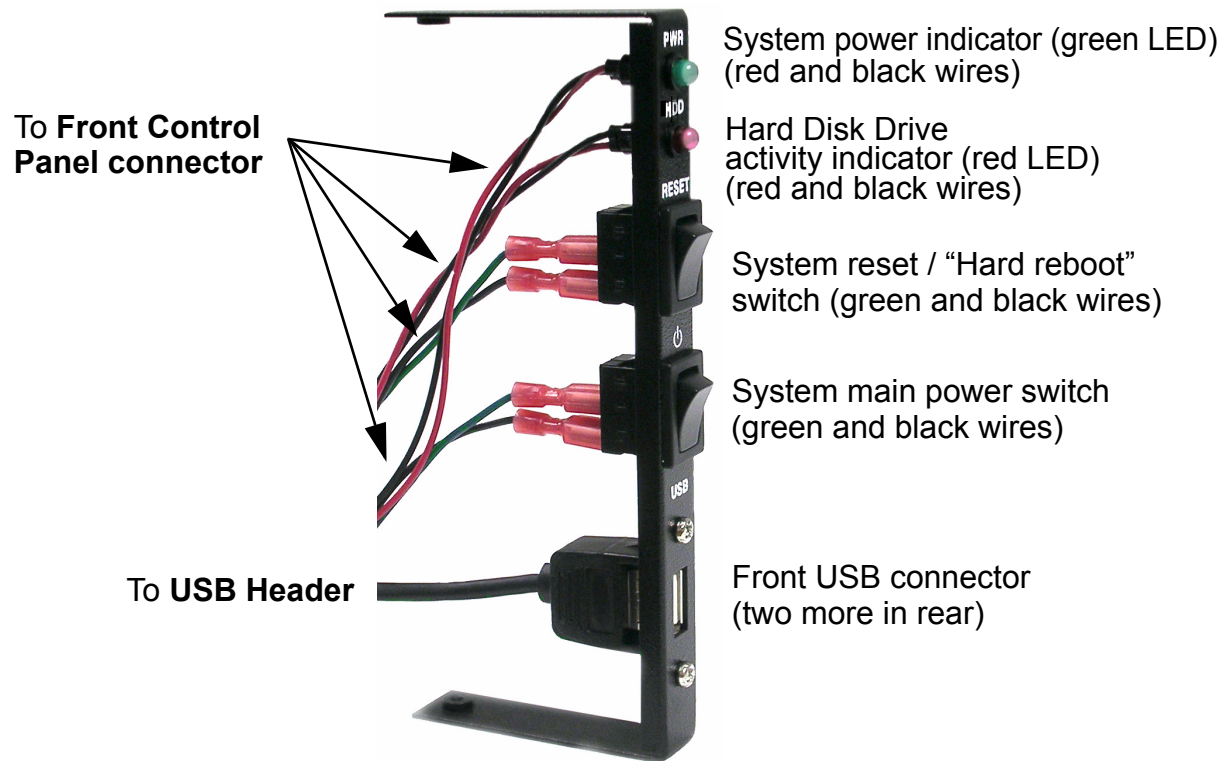
Please be mindful of these recommended limits:
- Operating Temperature: 32° - 122° F / 0° - 50° C
- Operating Humidity: 5% to 95% non-condensing

5.2.2 Recommended Check-Ups

- Every six months, open HyperX's chassis and blow out any accumulated dust, using compressed or canned air.
- Periodically examine the circuit boards to make sure that they are securely in their slots, and make sure any hold-down brackets are in place.
- Periodically check all cables connected to the machine. Make sure that all the signal and power connections are secure, but we recommend that you go one step further: Check to see if any of the connectors are subject to excessive stress. You might want to pay special attention to the thick, heavy cables associated with the Internal Clip Player hardware. Investing the time in a quick inspection and adding a cable tie or two behind your equipment rack could avert major headaches!

5.3 Connections to the Front Panel

Major repairs to HyperX should be performed by Chyron Customer Service personnel. However, you may wish to learn a little about the connections between HyperX's CPU board and the system's front panel. In Figure 5-1, the front panel is seen in isolation.

To **Front Control Panel connector**

System power indicator (green LED) (red and black wires)

Hard Disk Drive activity indicator (red LED) (red and black wires)

System reset / "Hard reboot" switch (green and black wires)

System main power switch (green and black wires)

To **USB Header**

Front USB connector (two more in rear)

Figure 5-1. HyperX front panel, removed from system for visibility.

Should it become necessary to take apart and then restore these connections, be sure to follow the color-coding of the wires, and take care in selecting which sets of pins you connect on the Front Control Panel connector header. See Section 6.4 for details on connecting these components to the motherboard.

5.4 Other Internal Cables

HyperX's PCI card guide cross-bar limits access to many of the cables and connectors discussed in this section, as seen in Figure 5-2 and Figure 5-3.
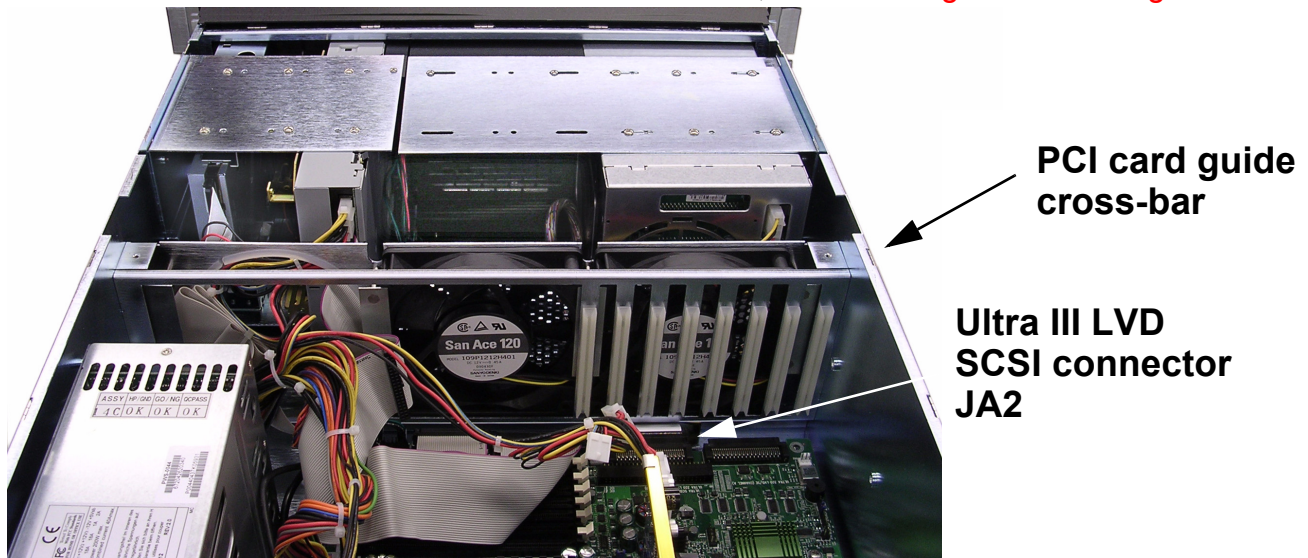

PCI card guide cross-bar

Ultra III LVD SCSI connector JA2

Figure 5-2. HyperX interior, showing rear of disk drives, SCSI connector

Ultra III LVD SCSI connector JA2
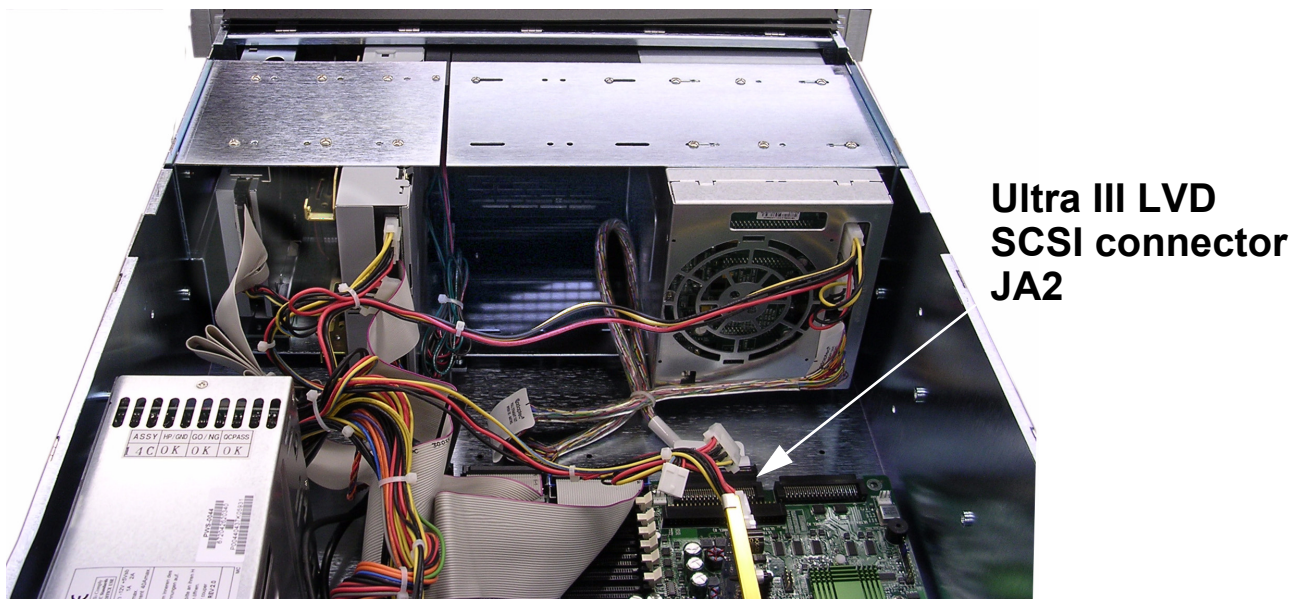
Figure 5-3. HyperX interior, PCI card guide cross-bar removed for visibility

5.4.1 Security Device (Dongle)

The Lyric application includes a number of options that are enabled by the licensing software described in Section 8. The licensing software works with the security device pictured in Figure 5-4.

Figure 5-4. "Dongle" USB security device.

The dongle must remain connected AT ALL TIMES. Under normal circumstances, **there is no need to do anything** with this component.

The dongle is attached to an internal USB cable that shares the **FPUSB 2/3** header with the front panel connectors discussed in Section 5.3. From the perspective seen in Figure 5-5, the dongle's cable connects to the pins on the left side of the pin-block, while the cable going to the front panel switches (and the front panel's USB connector; see Figure 6-4) is connected to the pins on the right side.
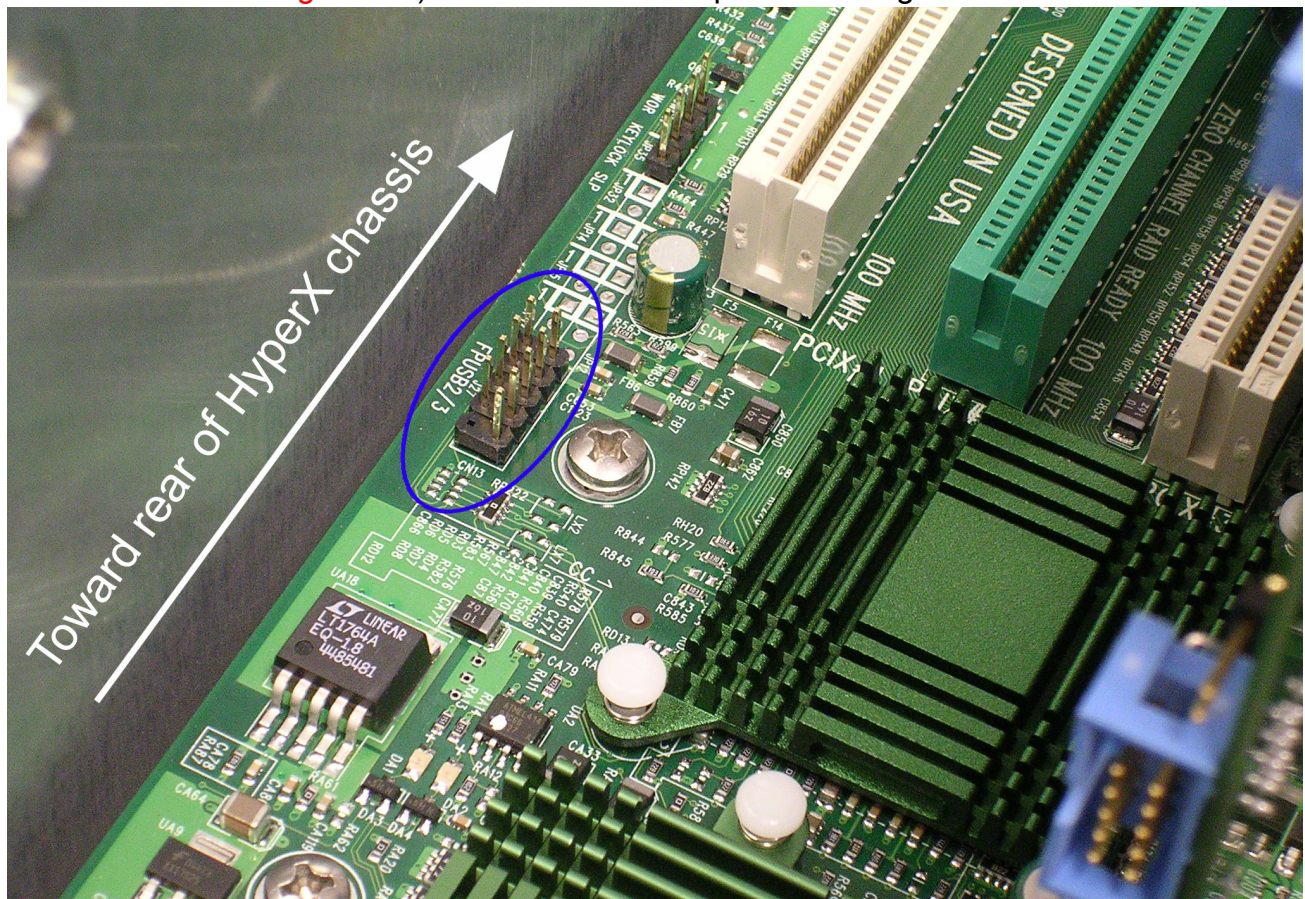

Figure 5-5. The FPUSB2/3 header, located near PCI-X slot #1.

5.4.2 Motherboard Connection to SCSI Drive Bay

The SCSI drive bay uses a ribbon cable to connect to the CPU board's Ultra III LVD SCSI connector **JA2**.
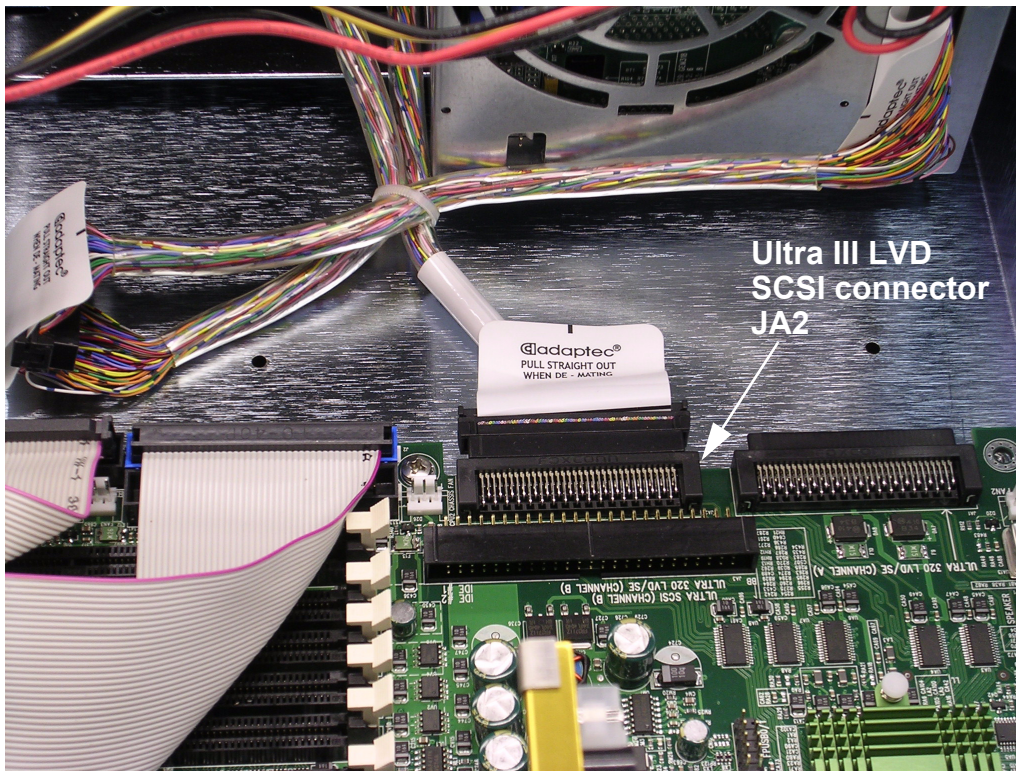

Figure 5-6. Close-up of SCSI connectors JA2 (left) and JA1.
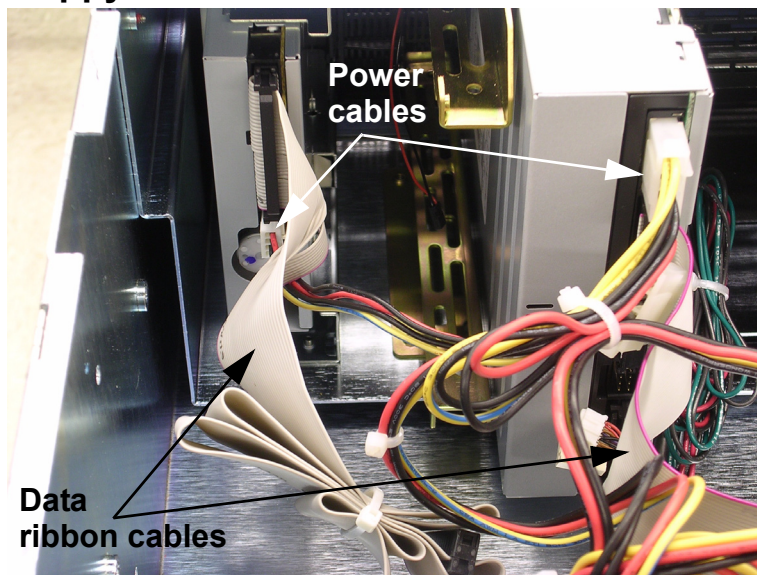
5.4.3 Floppy and DVD-RW Connections

Figure 5-7. Rear view of Floppy disk (left) and DVD-RW drives.

5.5 Power Supply

HyperX is equipped with a 600 watt redundant-module auto-switching power supply. This device is comprised of 3 identical 200-watt modules, each with its own line-cord connector and fan. Under normal circumstances, all 3 of these modules are functioning at all times. If one of the modules fails, it is switched out of the system automatically.

5.5.1 Power Supply Modules at back of system

The power supply modules are **hot-swappable**. They may be removed and replaced, **one at a time**, whether the system is running or not. To replace a power-supply module, pull out the D-ring, move the red latch to the right with your thumb, and pull the module straight out, as seen in Figure 5-8.
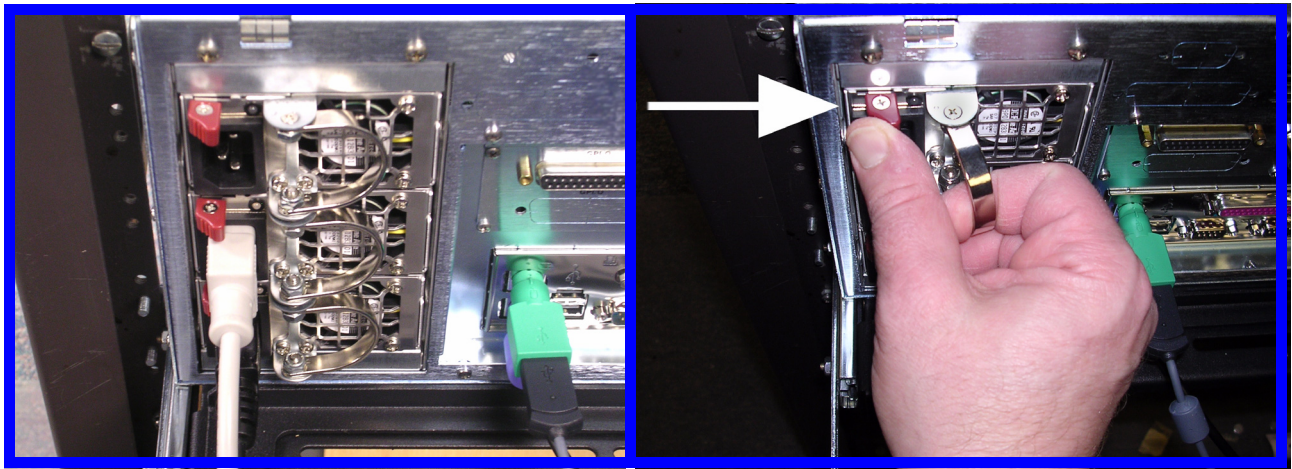

Figure 5-8. Replacing a power supply module

You may wish to have spare modules on-hand for quick replacement. Power supply modules can be purchased by contacting Chyron Customer Service. Specify part number **22M0013**.

Connection of the power supply modules to AC mains is discussed in Section 3.1.1.

5.5.2 Indicator Lights and Alarms

A green indicator light on each power supply module shows that it is receiving current and operating properly.

If any portion of the power supply fails, its light goes out and an audible alarm sounds.
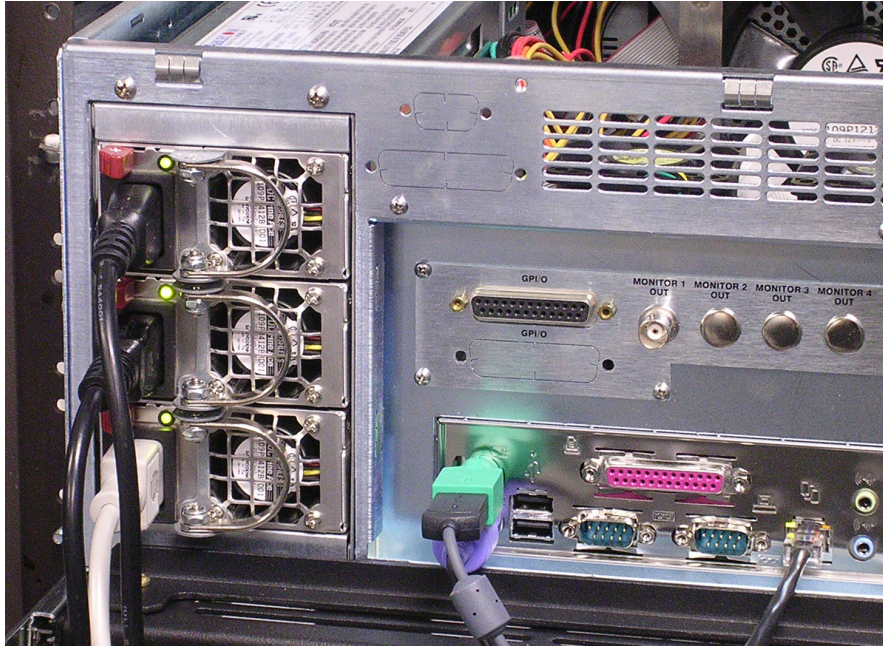
Continued on the next page.

Figure 5-9. Indicator lights on each power supply module

5.5.3 Internal Power Connections

Included here are close-up photos of the ATX and power supply connectors on the motherboard to help you get your bearings in the event that you must undo and restore these connections.
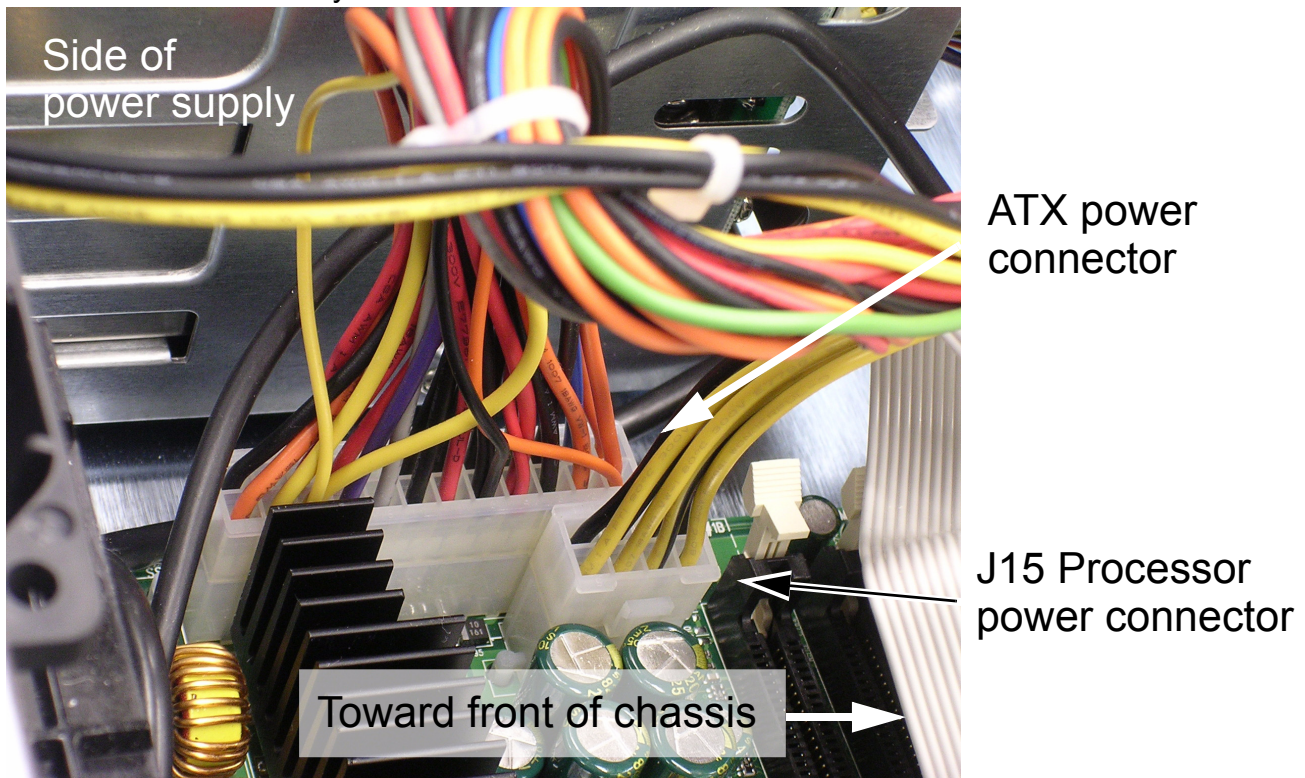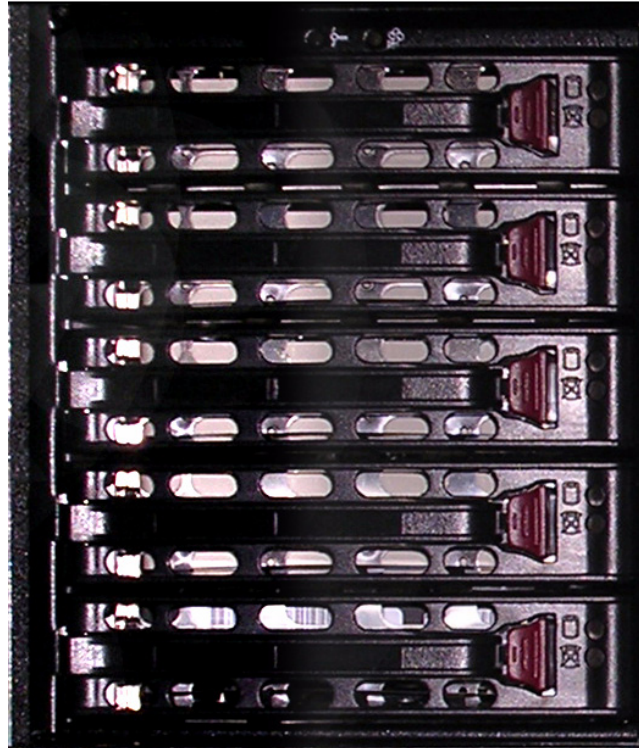

Side of power supply

ATX power connector

J15 Processor power connector

Toward front of chassis

Figure 5-10. ATX power connector, with processor power connector in foreground.

5.6 SCSI Multiple-Drive Bay

Duet HyperX is equipped with a 5-slot hard drive bay as seen in Figure 5-11. This drive bay is specifically designed for "hot-swappable" **80-pin SCA-2 drives**.

Figure 5-11. HyperX's SCSI multiple-drive bay

Factory-installed main hard drives are in the bottom-most trays of the drive bay. New drives should be added to the system, from the lowest available tray, up. Note the empty space between the front panel's power switch and drive bay pictured above; that space may be used for future addition of a second drive bay.

5.6.1 Connection to On-Board SCSI Host Adapter

Normally, the SCSI multiple drive bay is connected to the motherboard's built-in SCSI controller via the Ultra III LVD SCSI connector designated **JA2**. This connection is shown in detail in Figure , Figure 5-3 and Figure 5-6.

However, certain optional equipment may necessitate using a separate SCSI controller. See Section 6.6 for information on the appropriate changes to your system in this situation.

5.6.2 Fan Power from CPU Board

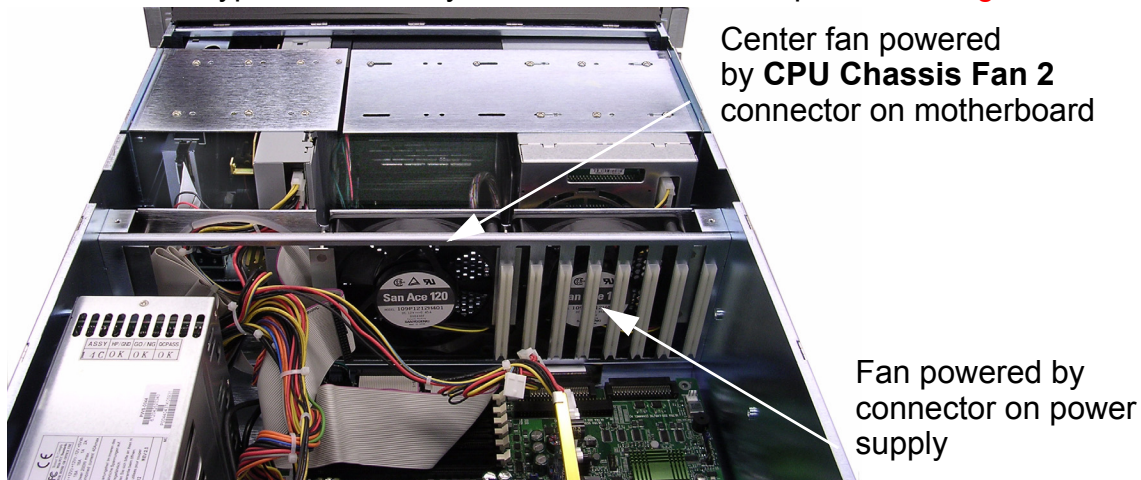HyperX has two system fans, mounted as pictured in Figure 5-12.

Center fan powered by **CPU Chassis Fan 2** connector on motherboard

Fan powered by connector on power supply

Figure 5-12. System fans in place behind disk drives

Power connector to fan located directly behind drive bay

Power connector **CPU2**, to fan located in center
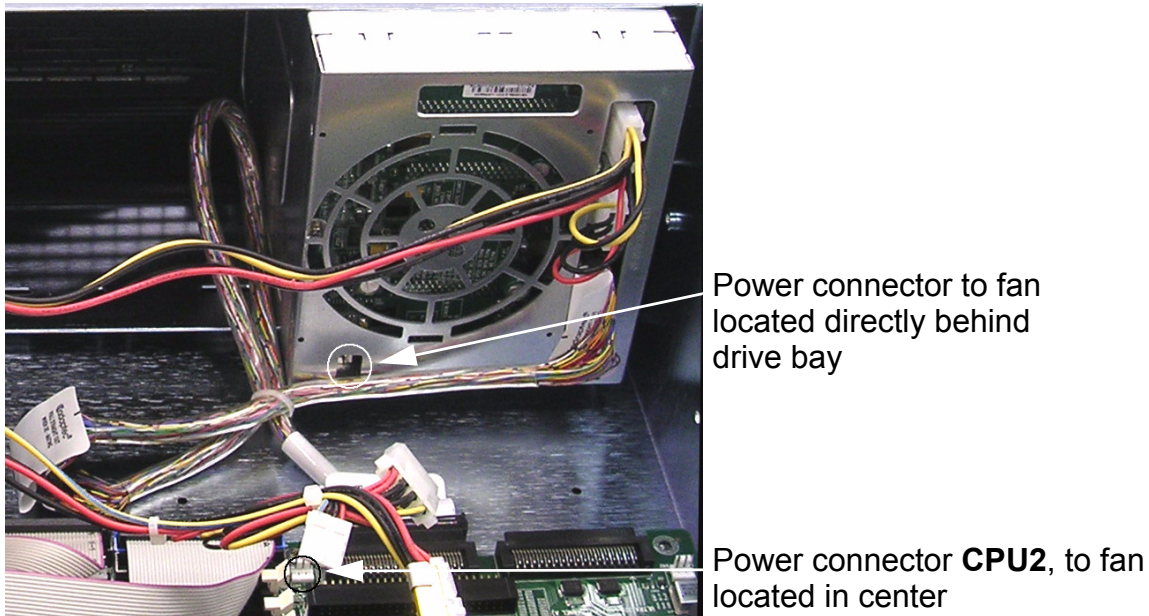
Figure 5-13. Power supply and forward edge of motherboard, fan mount removed.

As pictured in Figure 5-13, the fan in the center of the mounting hardware draws power from the **CPU2 Chassis Fan** connector on the motherboard itself, circled in black. The fan located directly behind the drive bay draws power from the connector located on the rear of the bay, toward the bottom, circled in white.

5.7 System Restore from Image Disc

5.7.1 Image Disc Content and Purpose

Included with HyperX is an **image DVD-ROM** containing essential files that should be reinstalled following a data-loss incident. The DVD can also be used to set up, partition and install system files to a newly-installed replacement main hard disk drive. The DVD contains three files; together; they comprise an image of HyperX's main hard drive contents as they were at the time the system was shipped. When the Restore operation is in progress, each file is opened as it is needed.
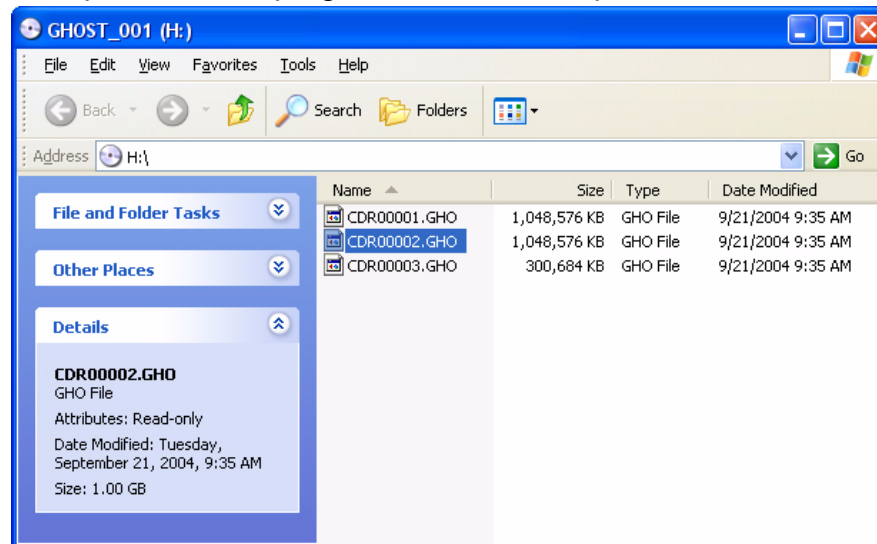
5.7.2 Details of Procedure

HyperX's BIOS (Basic Input/Output System) should already be configured to seek "boot" information on the DVD-ROM drive, should the system fail to find a viable operating system on the hard disk drive. However, the procedure outlined in Section 5.7.2.1 is included as a contingency measure, in case the system fails to boot from a loaded system-restore DVD.

5.7.2.1   Setting HyperX to Boot from DVD Drive

The BIOS is completely separate from the Operating System software on your hard drive, so you may perform this procedure even following a hard drive failure. Remember that all user actions in the BIOS are accomplished via the keyboard. Also note that the term **CD-ROM Drive** in HyperX's BIOS *does* represent the DVD drive.

1. Power down and **re-start** the system.

2. During power-up, press the **Delete** key, slowly and repeatedly; This action gives you access to the system's BIOS.

3. In the BIOS's first screen, "BIOS SETUP UTILITY", take note of the menus: **Main**, **Advanced**, **Security**, **Boot** and **Exit**.
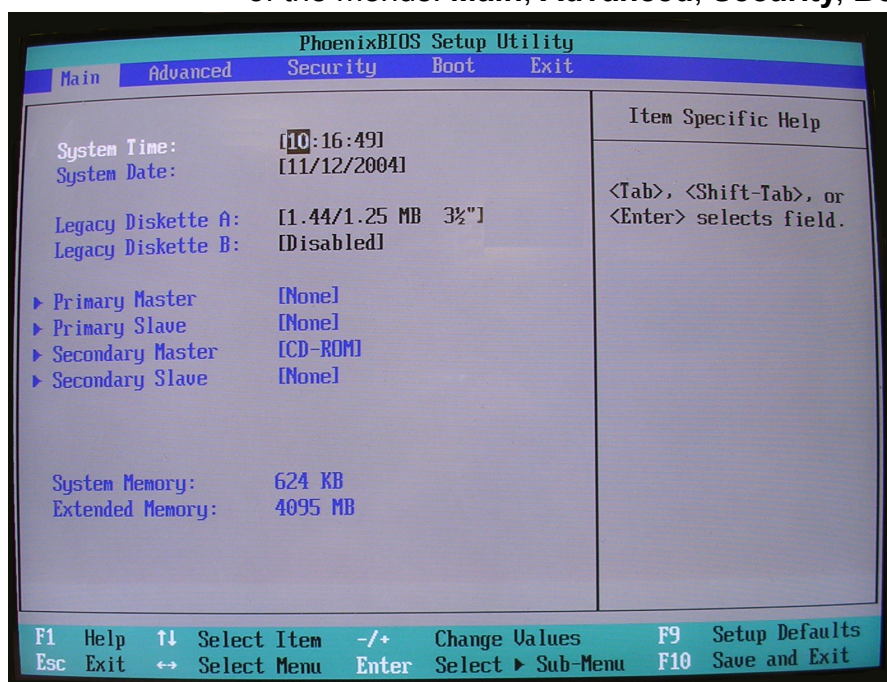

Figure 5-14. BIOS main screen

4. Use the keyboard's arrow keys ↔↕ to cursor left-to-right to the **BOOT** menu, and press **Enter**. The screen seen in Figure 5-15 appears.
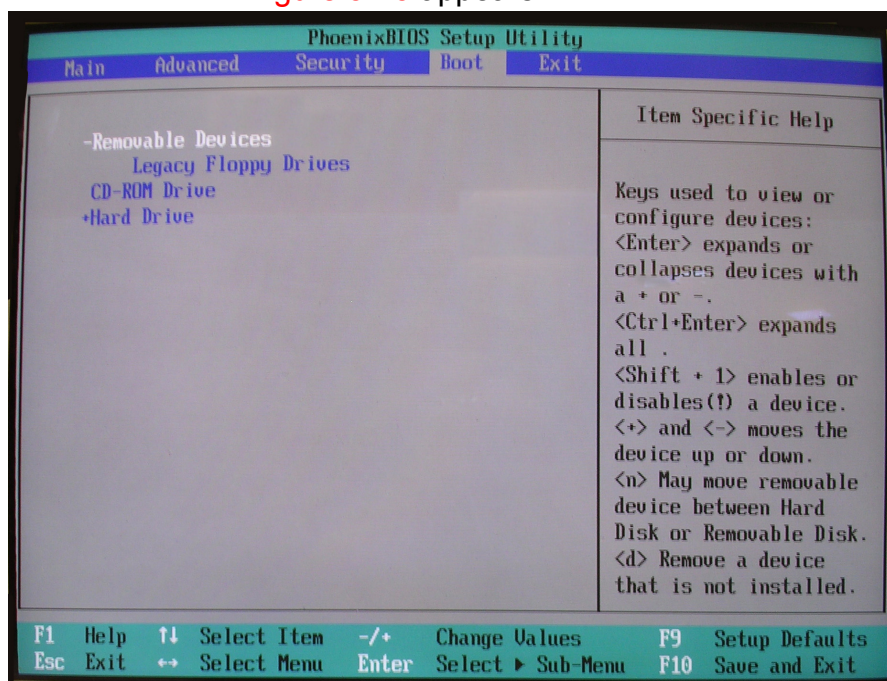

Figure 5-15. BIOS Boot screen

5. In the Boot menu, use the arrow keys to select **CD-ROM Drive**. Follow the instructions on the right side of the screen under **Item Specific Help** to designate **CD-ROM Drive** as the First Boot Device.

6. Press **F10** and confirm that you wish to **Exit and Save Changes**. This action also causes HyperX to begin re-booting from the drive that you designated to boot first.

5.7.2.2 Using the Image Disc

1. Load the **Chyron Image** DVD-ROM.

2. After a couple of moments, Norton Ghost launches. In the first Ghost screen, you may see an "About Norton Ghost" pop-up. If you do, press OK to close it.

3. The screen in Figure 5-16 appears, at first without the sub-menu at the extreme right:
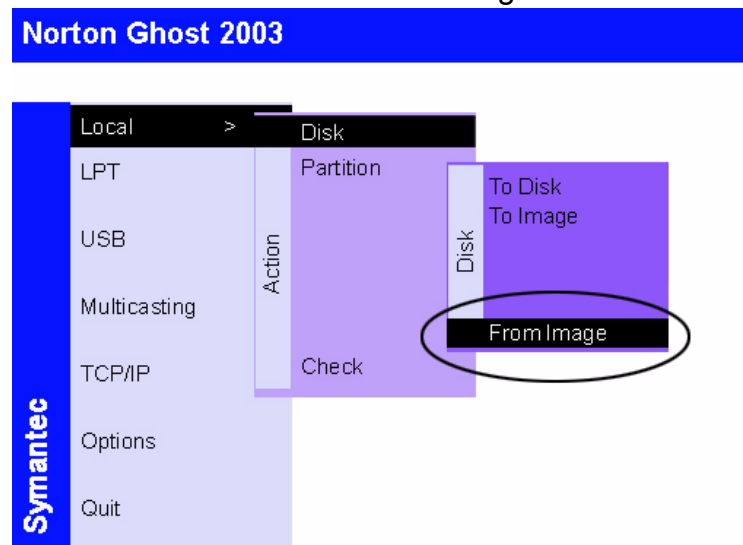

Figure 5-16. Choosing the desired Norton Ghost operation

4. Select **Local > Partition**. Allow the system a few moments to create the partition.

5. Next, select **Local > Disk > From Image**.This tells the system that you will be restoring the contents of a local disk from a Norton Ghost **image** file.

6. In the next window, locate the **Look In** dropdown menu. Choose: **h: [GHOST_00.1] CD-ROM Drive**.

7. Select the file **CDR00001.GHO**.

8. Select the local disk destination to which this file will be copied and installed. Choose the system drive, which is **DRIVE 1**. DO NOT CHOOSE DRIVES 2 OR 3, IF PRESENT IN YOUR SYSTEM, AS THE DESTINATION.

9. The next screen, **Destination Drive Details**, appears. Choose: **Partition 1   Primary   FAT16**.

   **DO NOT CHOOSE PARTITION 2**. Press **OK**.

   In this step, Norton Ghost may identify the partitions by the drive letters you assigned in Steps 5 - 7.

10. A new screen that will show the status of the upcoming operation appears. However, at first, a dialog box, entitled **QUESTION**, is superimposed over the screen. The dialog asks "Proceed With Disk Load?". Press **Yes**.
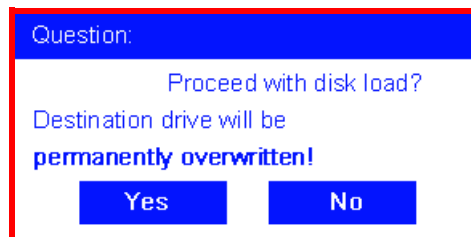
   Norton Ghost proceeds to decompress and copy the appropriate files from the image CD to Duet's hard drive. A Progress bar, Statistics and Details windows will keep you apprised of the status of the operation, as well as showing the source file and destination disk.

11. When the operation is complete, this dialog appears:
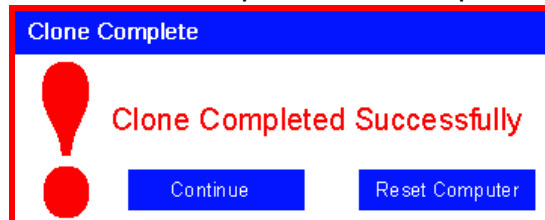
   BEFORE YOU DO ANYTHING ELSE, EJECT THE DVD-ROM FROM ITS DRIVE!! This will prevent the system rebooting from the DVD the next time you restart.

12. Next, press **Reset Computer**. HyperX will reboot from the newly restored files on its hard drive.

NOTE

IF YOU HAVE HAD REASON TO ALTER THE BOOT SEQUENCE (OR ANYTHING ELSE) IN YOUR SYSTEM'S BIOS, BE SURE TO RETURN TO THE BIOS AND RESET THE BOOT MENU SO YOUR SYSTEM PERFORMS START-UP OPERATIONS FROM THE HARD DISK.

Section 6: Super Micro X5DA8 Motherboard

6.1 Supermicro's "SuperO Doctor" Software

This software is installed on your system and ready to use.

This icon appears on HyperX's desktop: , labelled "Supero Doctor III Client". Double-click the icon to launch the application. SuperO Doctor offers convenient monitoring of CPU and system temperature, fan speeds and other variables in its physical condition.

SuperO Doctor's menus allow the user to set up automatic system-conditions alerts to be sent via pager or e-mail. The monitored values that trigger alerts can also be user-defined.

Refer to the enclosed CD from Supermicro for further documentation about this software.

Figure 6-1. SuperO Doctor's "Summary" screen

6.2 Processors

2 Intel Xeon processors, 3.2 GHz; each with 2 MB of L3 cache.

6.3 Memory

Standard on the motherboard is four 1-GB modules of PC-2100 Registered DIMM memory. You may notice that 2 DIMM slots are unpopulated in the factory-configured Duet HyperX system, but Chyron strongly recommends AGAINST adding more memory.
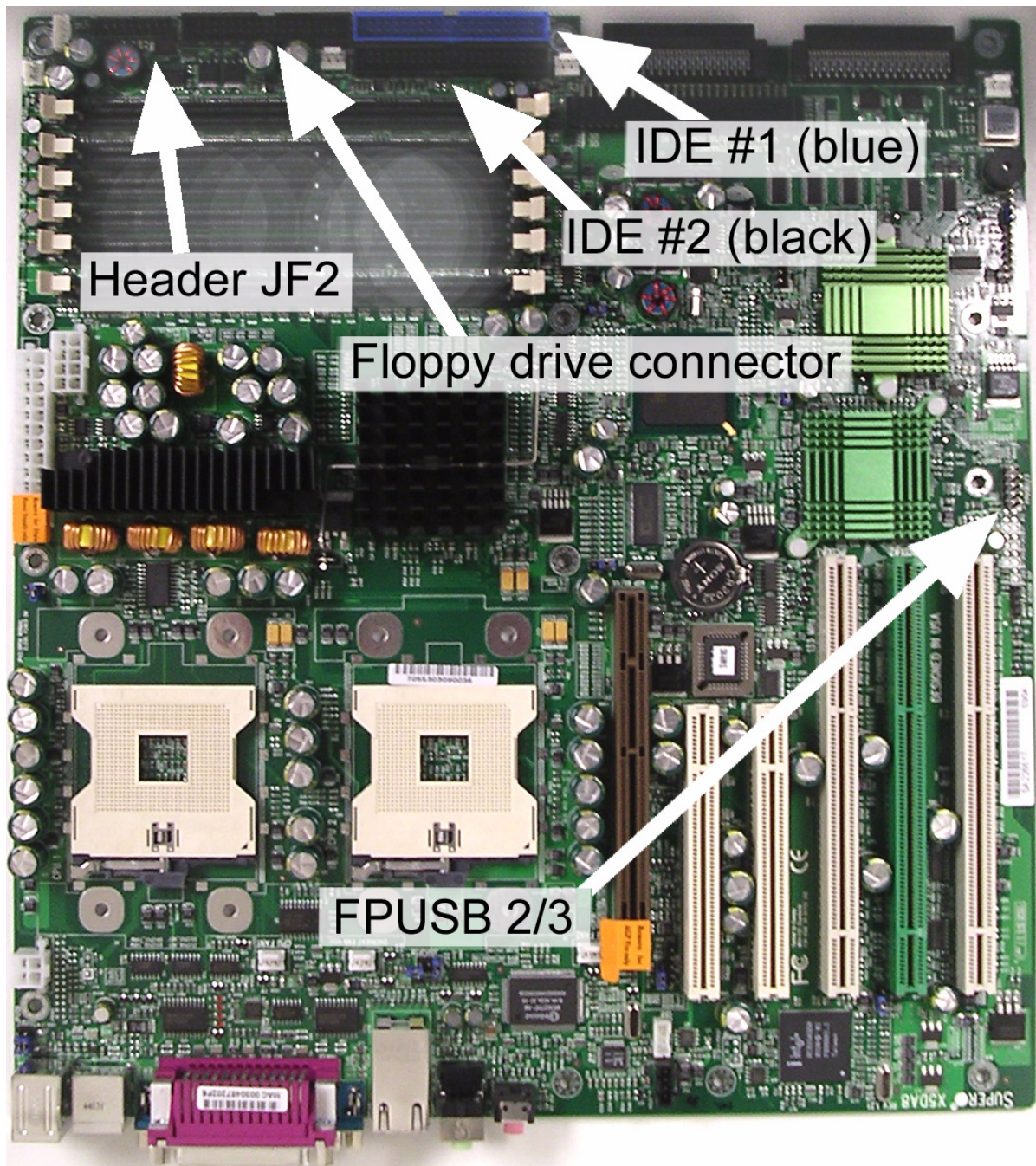
6.4 Front Panel Connectors

IDE #1 (blue)

IDE #2 (black)

Header JF2

Floppy drive connector

FPUSB 2/3

Figure 6-2. X5DA8 motherboard

6.4.1 Power & Reset Switches, LEDs and Front USB Jack

See Section 5.3 for details on connecting the motherboard components seen in this section to the front panel's switches, indicator LEDs and USB jack. The front panel connectors on the motherboard are located at headers JF2 and FPUSB 2/3, the locations of which are shown in Figure 6-2. A close-up view of JF2 is seen in Figure 6-3.
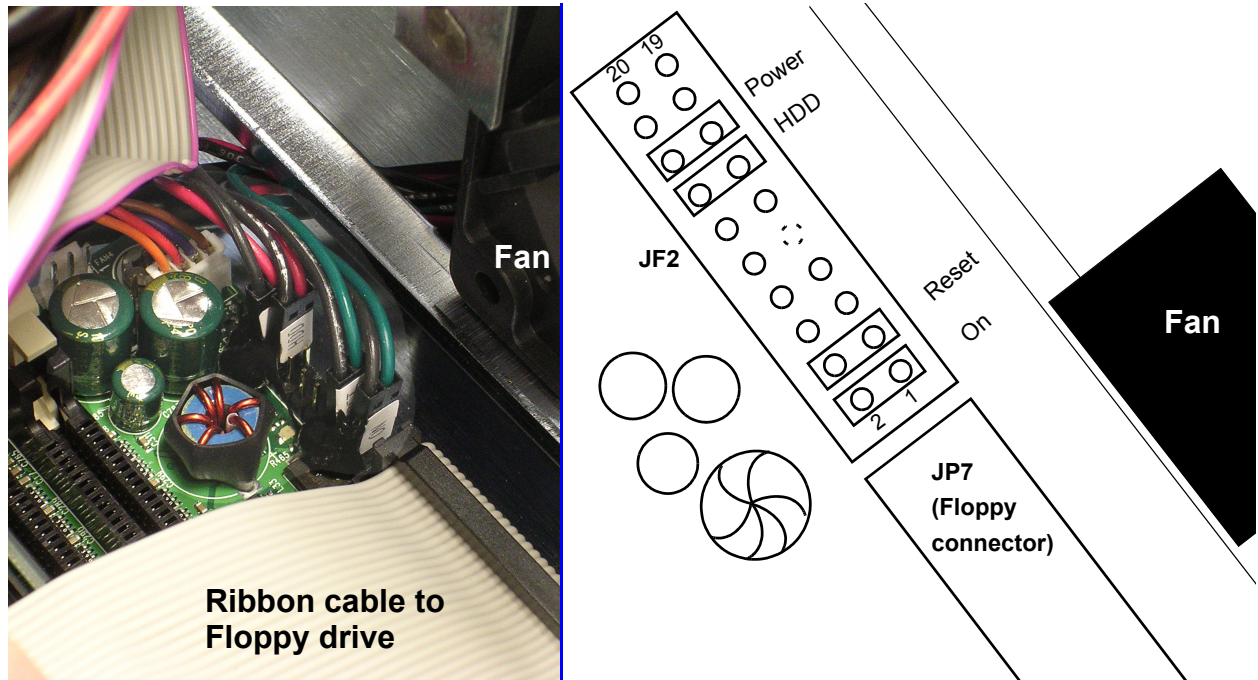
Figure 6-3. Header JF2, close-up, at left. Labelled sketch at right.

The Power LED connects to pins 15 & 16, the HDD Activity LED connects to pins 13 & 14, the Reset switch connects to pins 3 & 4 and the Power switch connects to pins 1 & 2.
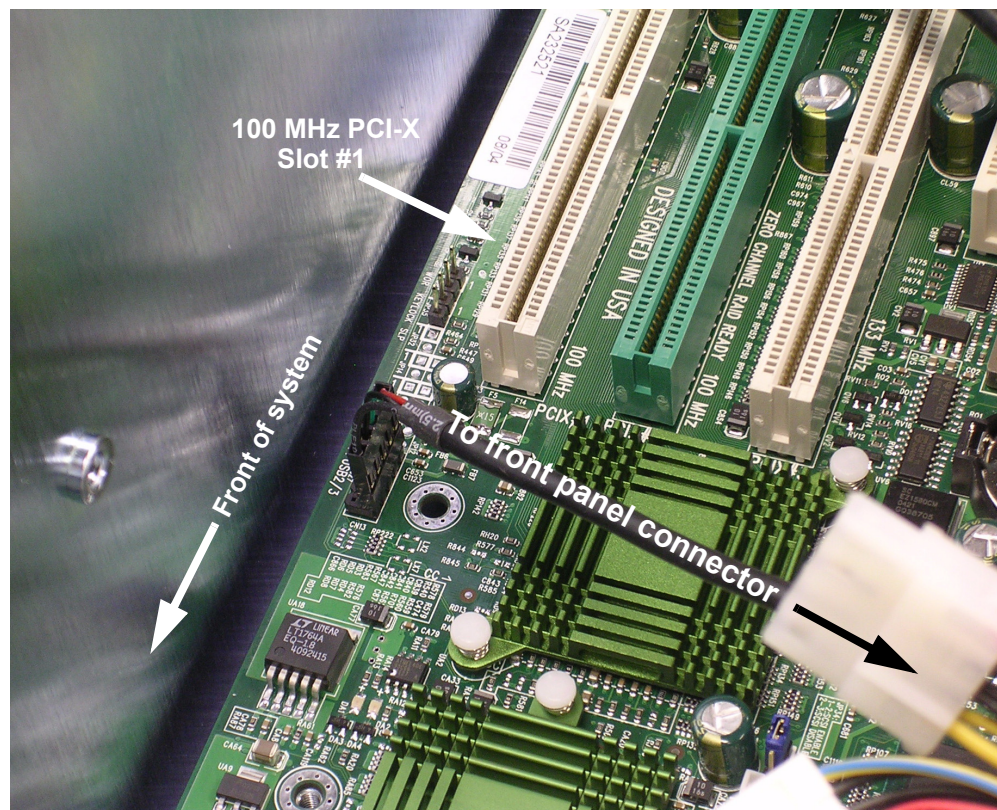

Figure 6-4. Close-up view of motherboard's USB connector

6.4.2 Floppy Disk and DVD-RW Drives

Again, refer to Figure 6-2 for a look at the Floppy drive connector and the IDE #1 (DVD-RW) connector on the motherboard.

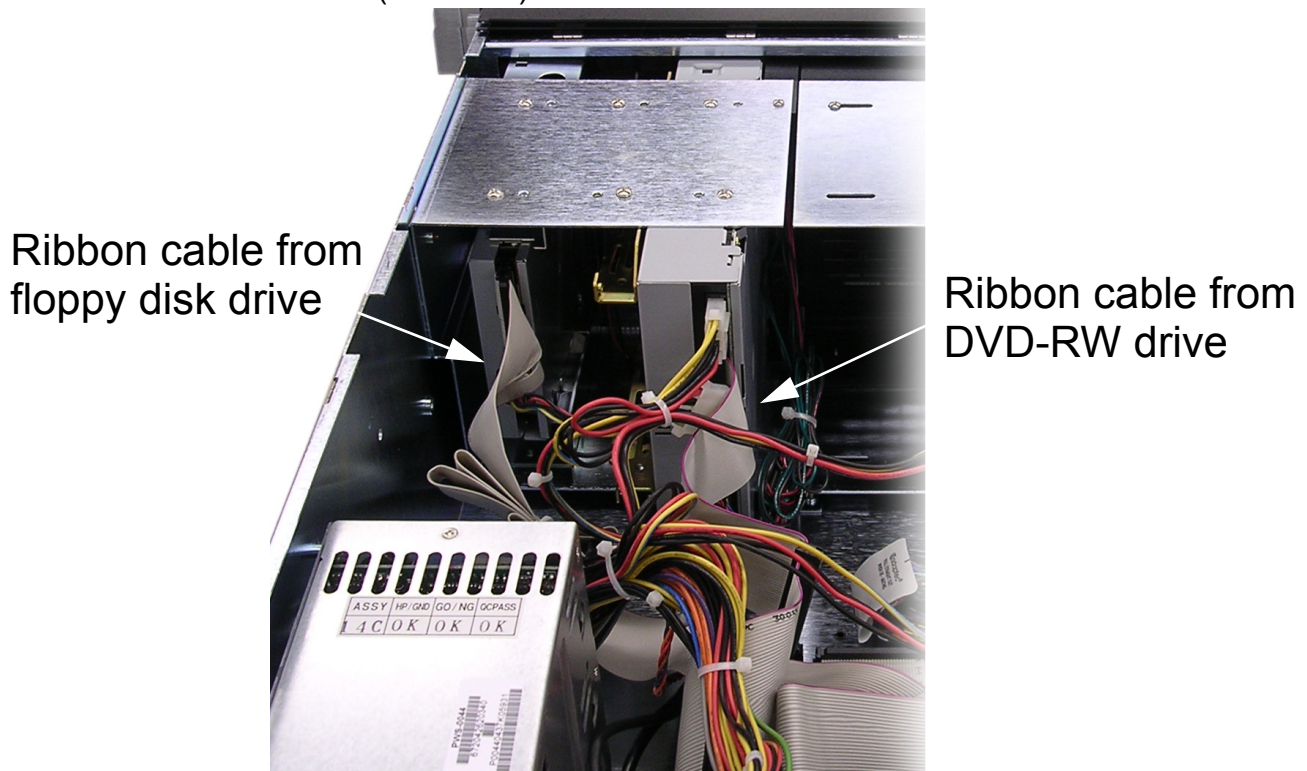Ribbon cable from floppy disk drive

Ribbon cable from DVD-RW drive

Figure 6-5. Rear view, floppy disk and DVD-RW drive cables
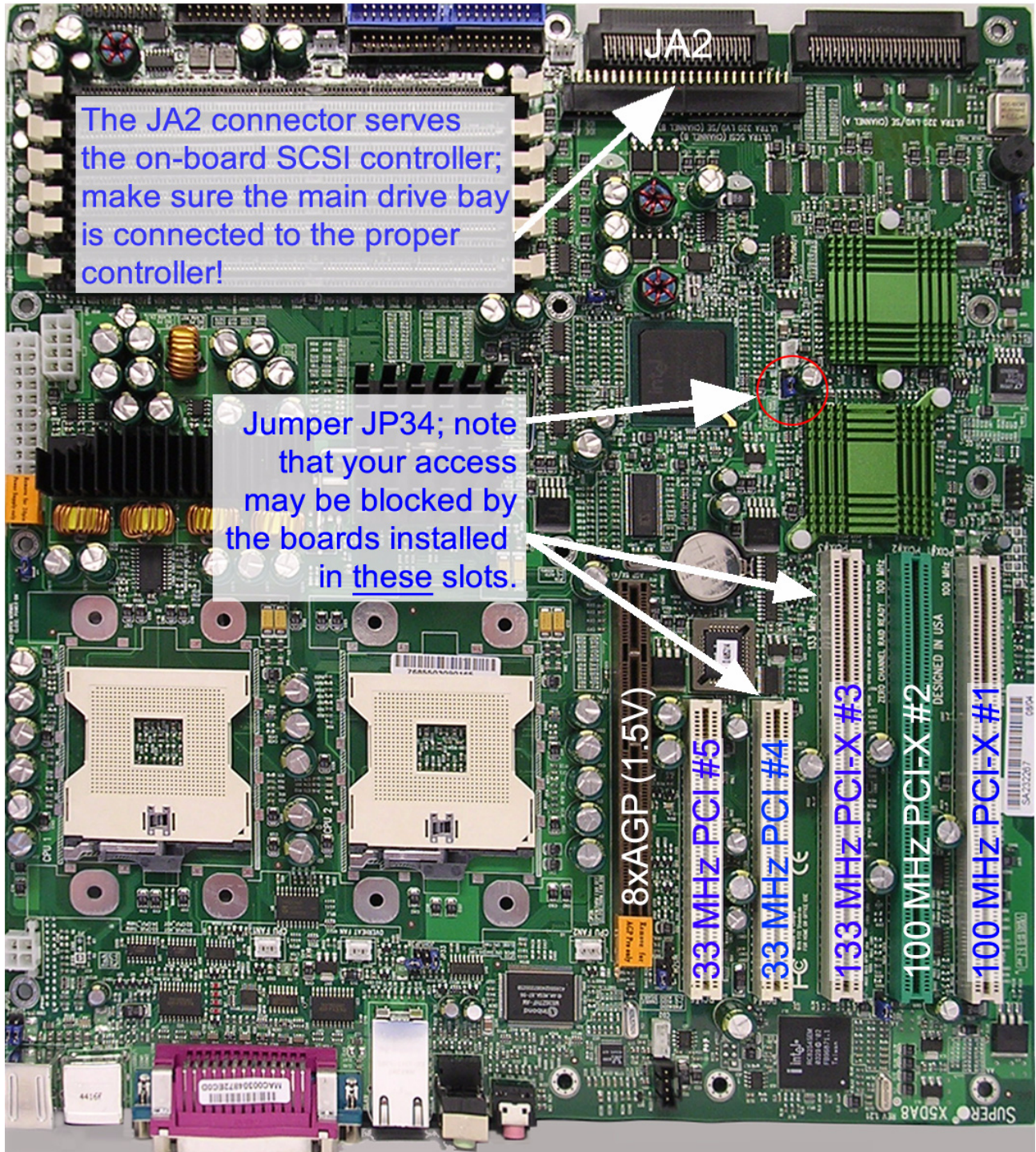
6.5 SCSI Drive Connectors

6.5.1 SCSI Controller

The X5DA8 motherboard includes an on-board SCSI controller. This device manages the drives installed in the system's drive bay (see Section 5.4.2).

HOWEVER, the inclusion of an Internal Clip Player may have a bearing on this situation (see Section 3.2.3 for more on Internal Clip Players). If your system includes, or is retrofitted with, our **Matrox DigiSuite-LE**-based clip player, a **separate** SCSI controller is necessary. (The **Matrox DigiServer** and **Leitch Altitude**-based Internal Clip Player options use the motherboard's SCSI controller.)

The on-board SCSI controller is normally served by header JA2. Refer to the motherboard's User's Manual for additional help in locating components on the board. Jumper JP34 is circled in Figure 6-6. You will need to find it to perform the procedure outlined in Section 6.5.2.

Front

The JA2 connector serves the on-board SCSI controller; make sure the main drive bay is connected to the proper controller!

JA2

Jumper JP34; note that your access may be blocked by the boards installed in these slots.

8xAGP (1.5V)

33 MHz PCI #5

33 MHz PCI #4

133 MHz PCI-X #3

100 MHz PCI-X #2

100 MHz PCI-X #1

Rear

Figure 6-6. HyperX motherboard; Jumper JP34 circled.

6.5.2 Using a Separate SCSI Controller if DigiSuite LE is Installed

Matrox's DigiSuite LE board is a 5-volt device, compatible only with standard PCI slots. Since HyperX's on-board SCSI controller is dedicated to its PCI-X slots, this necessitates the installation of an additional SCSI controller to support the DigiSuite LE board.

To perform this procedure, you will very likely need to remove the boards located in slots #4 and #3. See Figure 6-6 for detail on changing the jumper.

Your system has been factory-configured with the relevant jumper (JP34) set appropriately. Changing it should not be necessary. This information is provided to help in troubleshooting only.

6.5.2.1 Moving the Shunt at Jumper JP34

To disable the on-board SCSI controller for use with the DigiSuite LE-based Internal Clip Player, follow this procedure.

1. Turn off your HyperX unit. Disconnect the power cable.

2. Remove any PCI or PCI-X boards (mostly likely in slots #4 and #3, as seen in Figure 6-7) that may be necessary to gain access to Jumper JP34.

3. Locate the jumper. The **shunt** is attached to pins 1 and 2 on the header to enable the on-board SCSI controller.

Remove the shunt and attach it to pins 2 and 3, as shown at right in Figure 6-7.
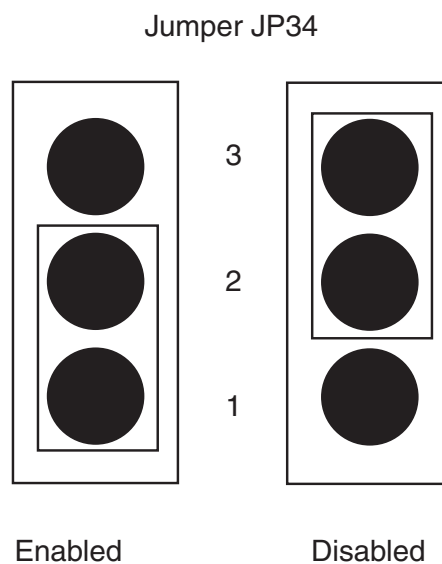
Toward front of motherboard

Jumper JP34

Enabled   Disabled

Figure 6-7. Jumper JP34 configured to enable (left)
or disable the X5DA8 motherboard's on-board SCSI controller.

6.5.2.2 Move the SCSI Data Cable to the Appropriate Controller!

Normally, a ribbon cable connects the Ultra III LVD SCSI connector marked JA2 to the SCSI connector on the back of the multiple drive bay containing the system's hard drive(s). If an additional SCSI controller has been installed in a PCI slot, this cable must be re-routed, so that the drive bay is connected to the new controller.

6.6 AGP Video Card

At the time of this writing, HyperX is equipped with a Verto GeForce 6800 GT graphics card from PNY Technologies.

S-video output

DVI for digital PC monitor

15-pin connector for conventional PC monitor

Figure 6-8. GeForce 6800 GT card. Left: Signal connectors. Right: Internal power connector.

6.6.1 Power Connectors

The graphics card draws power through both the PCI bus and the 4-pin Molex connector shown in Figure 6-8. The latter MUST remain connected to one of the power connectors on the back of either of the system's drive bays. If this connection is removed, the card will continue to operate, but at a diminished capacity. Also, severing this connection will cause an alarm to sound.

6.6.2 Connectors

Use the S-video output or the DVI connector for the card's Preview output. Connect the system's regular PC monitor to the 15-pin SVGA connector at the bottom of the panel. See Section 4.4.1 for a full explanation of configuring the Preview output, and Section 4.4.2 for a discussion of optional monitor types that may be used.

6.6.3 The graphics card's drivers

It is a good idea to keep your card's driver updated. Driver updates may be downloaded from NVidia's website at http://www.nvidia.com. Follow the "Download Drivers" link near the top of the page.

It is **strongly recommended** that you check with Chyron Customer Service at 888-4-CHYRON before installing new graphics card drivers.

Our representatives will be able to tell you about the latest drivers that have been tested with our systems.

6.7 Expansion Slots

HyperX's Supermicro X5DA8 motherboard has five expansion slots.

- PCI: **Two** (2) 32-bit, 33 MHz slot.
- PCI-X: **One** (1) 64-bit, 133 MHz slot.
- PCI-X: **Two** (2) 64-bit, 100 MHz slots.

As mentioned earlier, Chyron STRONGLY RECOMMENDS THAT YOU **DO** **NOT** change the slot locations of factory-installed cards.

As seen in the illustration below, the two types of slot are distinguished by the PCI-X slot's greater length.

AGP Slot
PCI 32/33: Slot 5
PCI 32/33: Slot 4
PCI-X 64/133: Slot 3
PCI-X 64/100: Slot 2
PCI-X 64/100: Slot 1
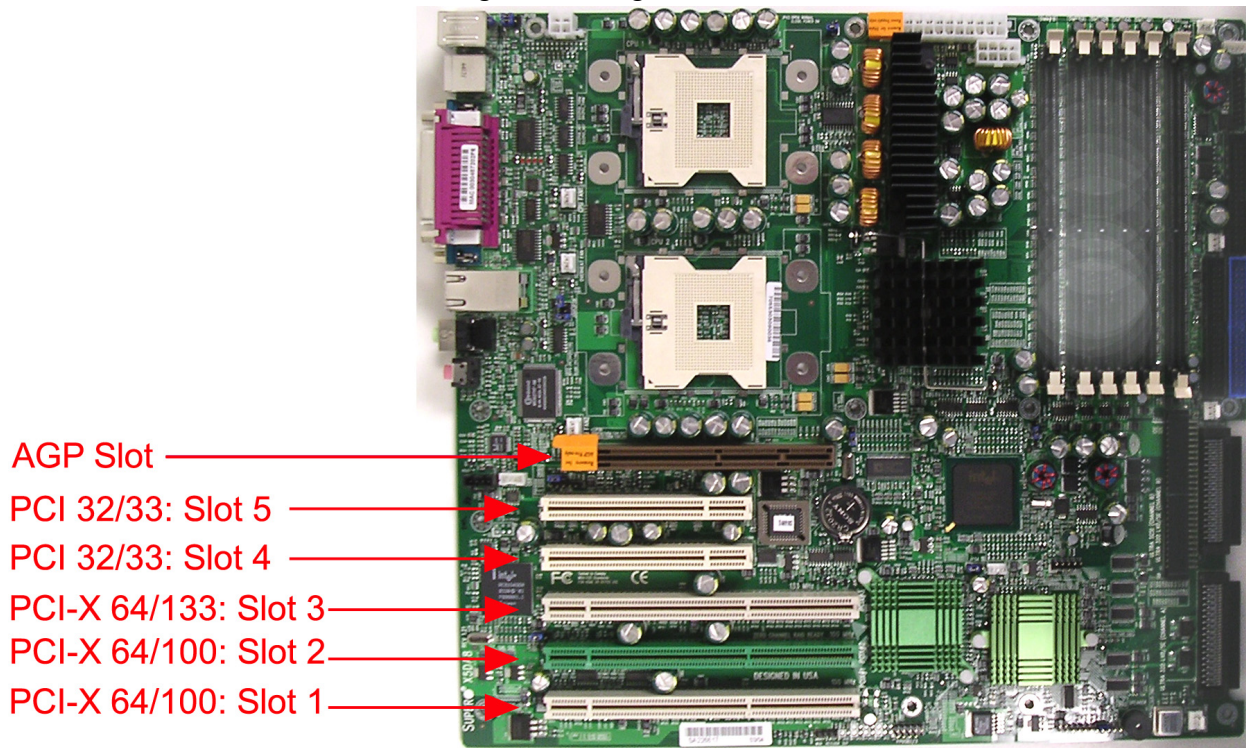
Figure 6-9. PCI and PCI-X slots, numbered at right

6.7.1 PCI Slots

- The primary purpose of HyperX's PCI slots is to accommodate the system's Standard Definition Video Processor Boards (see Section 3.2.1).
- When the DigiSuite LE-based Internal Clip Player (Section 3.2.3.1) and its required SCSI controller are installed, these boards must be installed in HyperX's PCI slots. In this situation, recall that DigiSuite LE's digital I/O panel is installed in the extra panel slot in the chassis to the left of the AGP card. See Section 3.2.3.1 for a complete explanation of slot assignments regarding the DigiSuite LE-based Internal Clip Player.

- Only **standard definition** Video Processor Boards (Section 3.2.1.1) or Squeezeback boards (Section 3.2.1.2) may be placed in HyperX's PCI slots. HyperX's **high definition**-capable Channel Boards (Section 3.2.2) must be placed in PCI-X slots.
- In most situations, VPBs placed in the PCI slots will appear as Frame Buffers 1 & 2.

6.7.2 PCI-X Slots

- Again, HyperX's **high definition**-capable Channel Boards (Section 3.2.2) <u>must</u> be placed in PCI-X slots.
- Note that **standard definition** Video Processor Boards or Squeezeback boards <u>may</u> <u>also</u> use PCI-X slots.
- In the two PCI-X 64/100 slots (#1 and 2), DO NOT use a combination of SD and HD Video Processor Boards. These two slots together must serve either SD or HD boards.
- The **DigiServer**-type Internal Clip Player (Section 3.2.3.2) <u>must</u>, under any circumstances, operate in slot #1.

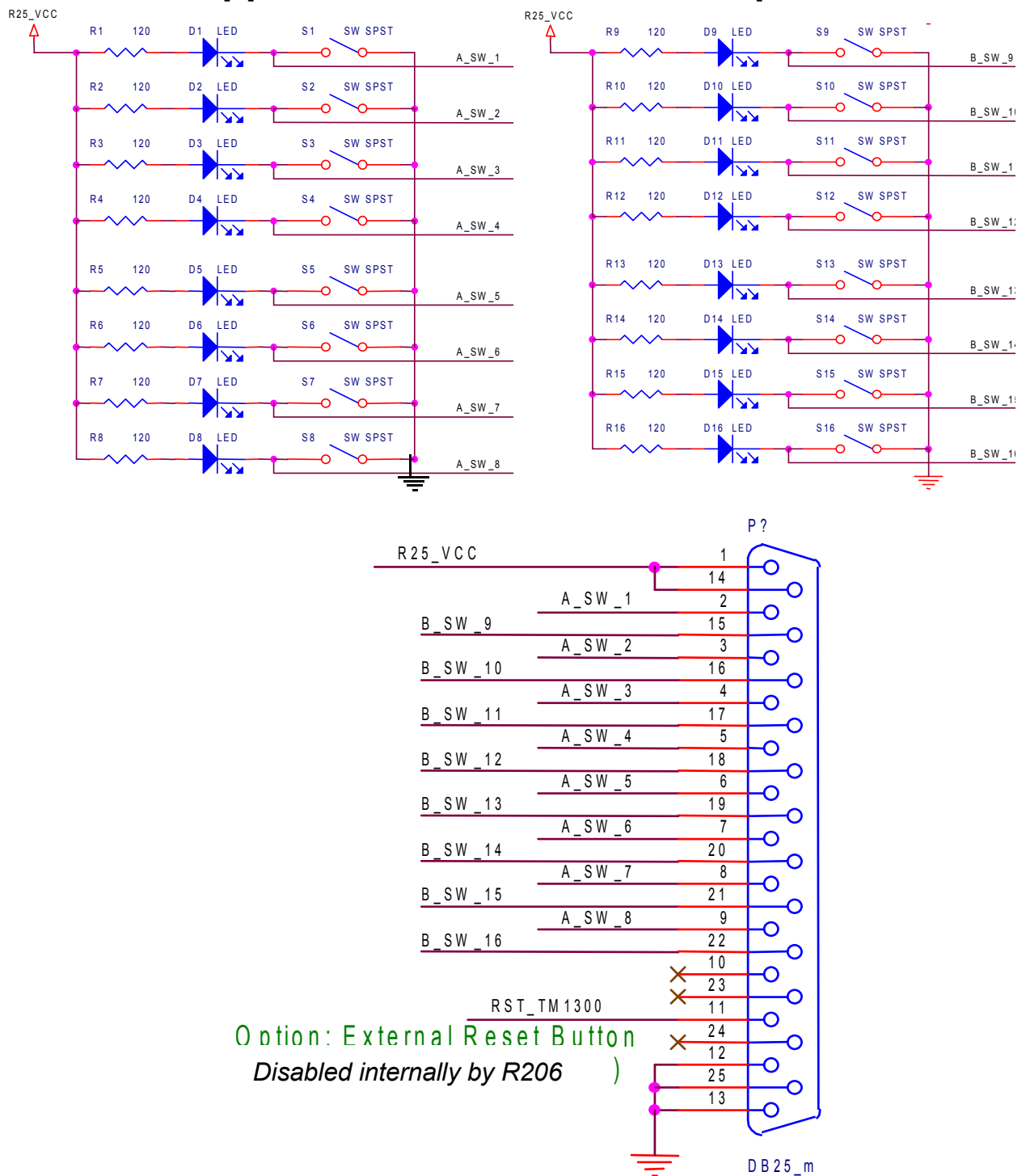# Section 7: Appendix: The GPI/O Port Adapter

Figure 7-1. 16-Port GPIO Adapter Cabling

Section 8: Lyric Options and Licensing Software

Your licensing software may differ in appearance from that which is pictured here. Consult the Lyric documentation for the most accurate information available on this topic.

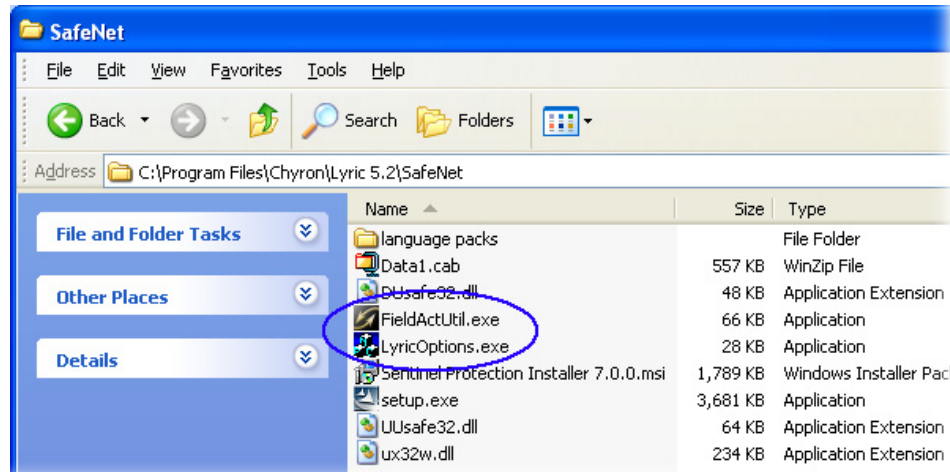## 8.1 Determining Which Options Are Currently Enabled

Figure 8-1. Lyric's "Safenet" folder

Run the program **LyricOptions.exe**. As pictured in Figure 8-1, you will find it in the Lyric installation directory's **SafeNet** folder. The window pictured in Figure 8-2 will appear, indicating the Lyric options currently enabled:
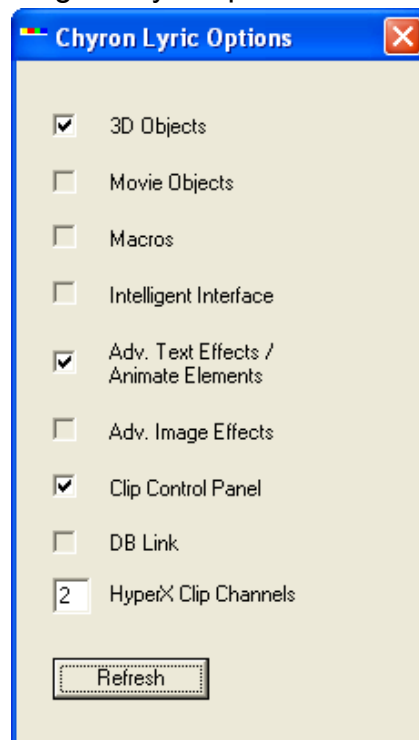
Figure 8-2. Enabled options

If you have made recent alterations to the software's licensing or options status, you may click the **Refresh** button. This action causes Lyric to run a new check of the enabled options.

8.2 Licensing and Enabling Additional Options

To license and enable additional options for your Lyric software, run the program **FieldActUtil.exe**. It is located in the **SafeNet** folder as shown in Figure 8-1. When the window shown in Figure 8-3 appears, press the **Get Locking Code** button. The software displays the locking code in the top text field. Press the ⎀ button to copy the code string to your system clipboard, or press the ⎀ button to save the code as a text file (with the extension **.LOC**).

E-mail the code to Chyron Customer Service. Upon completion of the sales transaction for licensing your new option(s), you will receive a new License Code. Paste it into the lower text field using the ⎀ button. Alternately, the license code may be part of a file (with the extension **.LIC)**, attached to an e-mail. In this case, download the email attachment to your system, and use the ⎀ button to open the file. This action automatically enters the code string into the text field. Click the **Update License** button and installation of your new options commences. These procedures are described in complete detail in the Lyric documentation.
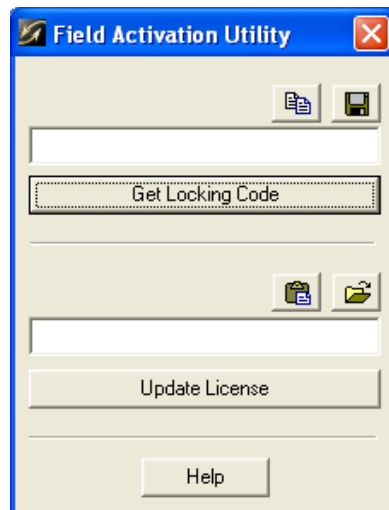

Figure 8-3. Entering Locking and License codes into the FieldActUtil.exe program.

Specifications subject to change

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