TVC-1211

USER MANUAL

020-100769-01

CHRISTIE®

TVC-1211

USER MANUAL

020-100769-01

NOTICES

COPYRIGHT AND TRADEMARKS

All brand names and product names are trademarks, registered trademarks or trade names of their respective holders.

REGULATORY

The product has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the product is operated in a commercial environment. The product generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of the product in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at the user's own expense.

This Class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

이 기기는 업무용 (A 급) 으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이점을 주의하시기 바라며 , 가정 외의 지역에서 사용하는 것을 목적으로 합니다 .

GENERAL

Every effort has been made to ensure accuracy, however in some cases changes in the products or availability could occur which may not be reflected in this document. Christie reserves the right to make changes to specifications at any time without notice. Performance specifications are typical, but may vary depending on conditions beyond Christie's control such as maintenance of the product in proper working conditions. Performance specifications are based on information available at the time of printing. Christie makes no warranty of any kind with regard to this material, including, but not limited to, implied warranties of fitness for a particular purpose. Christie will not be liable for errors contained herein or for incidental or consequential damages in connection with the performance or use of this material.
The product is designed and manufactured with high-quality materials and components that can be recycled and reused. This symbol  means that electrical and electronic equipment, at their end-of-life, should be disposed of separately from regular waste. Please dispose of the product appropriately and according to local regulations. In the European Union, there are separate collection systems for used electrical and electronic products. Please help us to conserve the environment we live in!

Canadian manufacturing facility is ISO 9001 and 14001 certified.

GENERAL WARRANTY STATEMENTS

For complete information about Christie's limited warranty, please contact your Christie dealer. In addition to the other limitations that may be specified in Christie's limited warranty, the warranty does not cover:

a. Damage occurring during shipment, in either direction.
b. Projector lamps (See Christie's separate lamp program policy).
c. Damage caused by use of a projector lamp beyond the recommended lamp life, or use of a lamp supplied by a supplier other than Christie.
d. Problems caused by combination of the product with non-Christie equipment, such as distribution systems, cameras, video tape recorders, etc., or use of the product with any non-Christie interface device.
e. Damage caused by misuse, improper power source, accident, fire, flood, lightning, earthquake or other natural disaster.
f. Damage caused by improper installation/alignment, or by product modification, if by other than a Christie authorized repair service provider.
g. For LCD projectors, the warranty period specified applies only where the LCD projector is in "normal use." "Normal use" means the LCD projector is not used more than 8 hours a day, 5 days a week. For any LCD projector where "normal use" is exceeded, warranty coverage under this warranty terminates after 6000 hours of operation.
h. Failure due to normal wear and tear.

PREVENTATIVE MAINTENANCE

Preventative maintenance is an important part of the continued and proper operation of your product. Please see the Maintenance section for specific maintenance items as they relate to your product. Failure to perform maintenance as required, and in accordance with the maintenance schedule specified by Christie, will void the warranty.

1: Introduction

2: Hardware

3: Connecting the Controller

4: Specifications

1 Introduction

1.1 Labels and Marking

Observe and follow any warnings and instructions marked on the controller.

⚠ DANGER Danger symbols indicate a hazardous situation which, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.

⚠ WARNING Warning symbols indicate a hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION Caution symbols indicate a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE: *Addresses practices not related to personal injury.*

1.2 Related Documents

MASTERSuite User Manual (P/N: 020-100563-xx)

1.3 Safety Information

Review this section before attempting to service the TVC-1211 controller.

1.3.1 Prevent Electrostatic Discharge

Electrostatic discharge (ESD) can damage electronic components. ESD damage can shorten a component's life expectancy or render it useless.

The following precautions can reduce the risk of ESD damage to components:

- Ground yourself properly when working with a static-sensitive component or assembly.
- If possible, work on a grounded surface.
- Keep electrostatic-sensitive components in their static-safe packaging until you are ready to install.
- Always avoid touching pins, leads or circuitry.

1.3.2 Installation Guidelines

Installation in a rack assembly is recommended for this product. Carefully read the following guidelines to ensure the TVC-1211 can maintain optimum operation.

Elevated Ambient Temperature

If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature of 35°C (95°F).

Reduced Air Flow

Maintain unrestricted airflow around the installed equipment at all times. For rack installation, it is recommended to leave a minimum of 1U (1.75”/44.45 mm) above the expansion chassis

Mechanical Loading

Avoid uneven mechanical loading to minimize possible hazardous conditions when mounting the equipment in a rack.

Circuit Overloading

Ensure the equipment is properly connected to the supply circuit and follow equipment ratings to avoid circuit overloading.

Reliable Grounding

Reliable grounding of rack-mounted equipment should be maintained. Particular attention should be given to supply connections rather than direct connections to the branch circuit (e.g., use of power strips).

Grounding the Expansion Chassis

The expansion chassis must be connected to a reliable earth ground and installed in accordance with local electrical safety standards.

Warning/Hazard Labels and Symbols for Controller and Expansion Chassis

Observe and follow all warnings and instructions marked on the chassis, the components in the controller and expansion chassis, and in all related documents. The following symbols indicate potential hazards.

	This symbol indicates the presence of hazardous energy circuits or electrical shock hazards. **WARNING!** To reduce the risk of injury from electrical shock hazards, do not open this enclosure. Refer all maintenance, upgrades and servicing to qualified personnel.
	This symbol indicates that the area contains no user or field serviceable parts and electrical shock hazards may be present. **WARNING!** To reduce the risk of injury from electrical shock hazards, do not open this enclosure.
	This symbol on an RJ-45 receptacle indicates a network interface connection. **WARNING!** To reduce the risk of electric shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.
	This symbol indicates the presence of a hot surface or hot component. Contact with the hot surface may cause personal injury. **WARNING!** To reduce the risk of injury from a hot component, allow the surface to cool before touching.
 **24-41 kg** **55-90 lbs**	This symbol indicates the component exceeds the recommended weight that one person may handle safely. **WARNING!** To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manual material handling.
 	These symbols, on power supplies or systems, indicate the equipment is supplied by multiple power sources. **WARNING!** To reduce the risk of injury from electric shock, remove all power cords to completely disconnect power from the system.
	The power supplies combined exceed the 3.5mA touch current limit. **WARNING!** The expansion chassis must be grounded using the grounding terminal.
	This symbol indicates the presence of hazardous energy circuits or electric shock hazards. **WARNING!** To reduce the risk of injury from electric shock hazards, remove all power cords to completely disconnect power from the system. Refer all maintenance, upgrades and servicing to qualified personnel.
	This symbol indicates that you MUST connect the expansion chassis to a reliable earth ground. The ground wire must be installed in accordance with local electrical safety standards.

* © HP 2005

2 Hardware

2.1 Overview

The TVC-1211 controller is a computer device that allows a user to control a display wall. Specially designed wall management software enables the user to control and display several applications simultaneously on a large, ultra-high resolution desktop. Each controller is pre-configured according to each customer's specifications.

2.1.1 Key Features

- Rugged, industrial 19" rack mount form factor with front panel status LEDs
- 5U main chassis
- Multiple 6U expansion chassis, each with:
  - 16-slot (8 PCI-X and 8 PCI) switch fabric backplane

or:

  - 13-slot PCI backplane
- Cosmetic customizing for consistent look and feel of main and expansion chassis
- Redundant hot plug power supplies
- Redundant chassis cooling fans
- Intel® Xeon™ Quad Core Processor
- 4GB of DDR3 SDRAM
- 500GB of redundant SATA hardware storage
- Integrated RAID support
- 2 Gigabit Ethernet ports
- 4 USB 2.0 ports
- 1 serial port
- 1 keyboard
- 2-button optical mouse with scroll wheel
- DVD +RW 16x drive
- Up to 48 display outputs
- Up to 16 simultaneous video windows per display output
- Up to 32 RGB windows
- System hardware and software monitoring
- Windows Server 2003 SE
- MASTERSuite 5.0
- >50 000 hours MTBF for all major hardware components
- <15 minutes MTTR for all major hardware components

2.2 Unpacking

2.2.1 TVC-1211 Main Chassis

Main Box

- Controller
- Accessories Box 1:
  - Sliding rail rack mounting kit
- Accessories Box 2:
  - Product registration card
  - Start-up instruction sheet (Windows® Server only)
  - Operating System CD (Windows® Server)
  - MASTERSuite Software CD
  - MASTERSuite User Manual (P/N: 020-100563-xx)
  - MASTERSuite Installation Guide (P/N: 020-100566-xx)
  - TVC-1211 User Manual (P/N:020-100769-xx)
  - Keyboard
  - Mouse
  - 1 AC line cord per power supply (2 per controller)
  - HP SmartStart CD (required for Windows reinstall)

TVC Expansion Chassis

- Expansion Chassis
- Accessories Box
  - Sliding rail rack mounting kit
  - 1 AC line cord per power supply (4 per chassis)
  - Dual VGA splitter cables (2 per D4A module)
  - Dual DVI-D splitter cables (2 per D4A module)
  - Miscellaneous hardware (screws, etc.)
  - **Optional:** BNC breakout cables (2 per V16A module)
  - **Optional:** VGA to DVI-1 adapters (2 per D2R2 module)

2.3 Purchase Record and Servicing

If you encounter any problems with the controller and require assistance, contact Christie Technical Support by sending an e-mail to controllers@christiedigital.com. In North America, call toll free 1-800-221-8025. Updated contact information can be found at www.christiedigital.com.

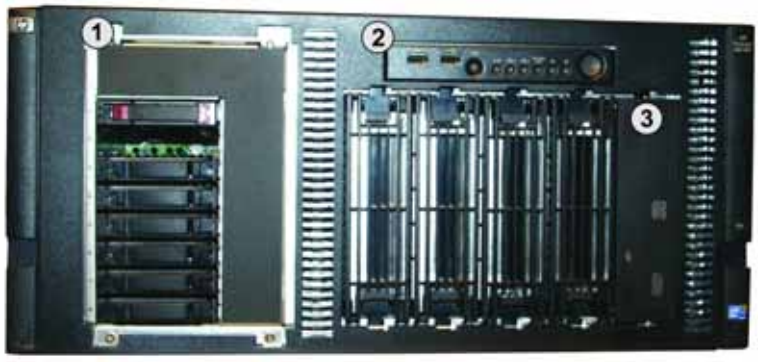
Fill out the information in the table below and keep with your records for future reference. **NOTE:** *The serial number can be found on the license label.*

Purchase Record
TVC Serial Number:
Expansion Chassis Serial Number:
Purchase Date:

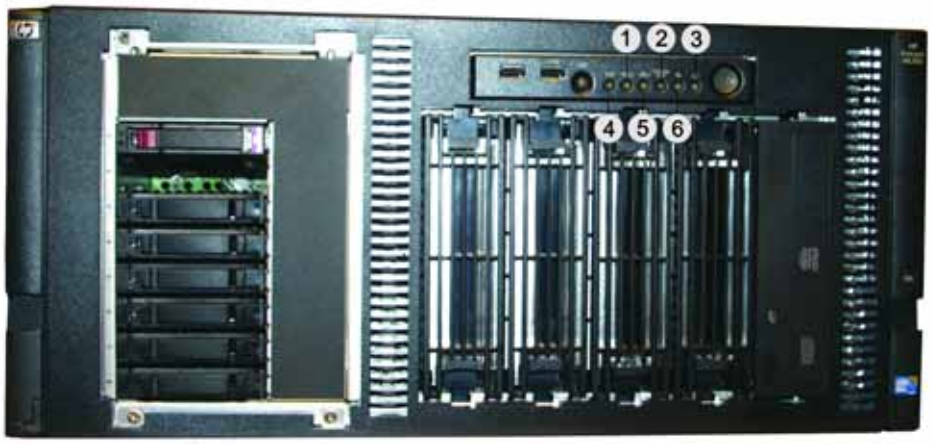
2.4 Component Identification

2.4.1 Main Chassis Front Panel Components

1. Hard drive bays x6
2. USB connectors
3. DVD+RW drive



2.4.2 Main Chassis Front Panel LEDS and Buttons

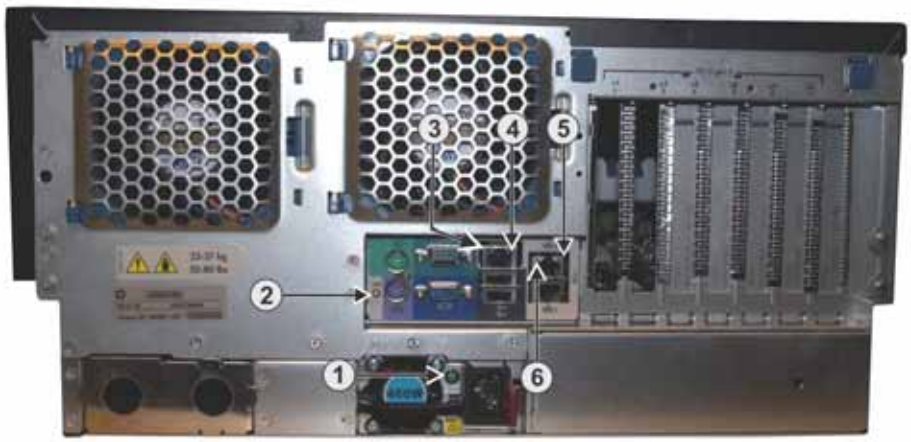


Item	Description	Status
1	NIC 2 Activity LED	Green: Network link. Flashing: Network link and activity. OFF: No link to network. If power is Off, view status on the rear panel RJ-45 LEDs.
2	Power cap LED	Green: Power cap configured. Flashing Amber: Power cap exceeded. OFF: Server in STANDBY or power cap disabled.
3	System Power LED	Green: Power On Flashing Green: Waiting for power due to group power capping. Amber: System in STANDBY, but power still ON. OFF: Power cord not attached or power supply failure.
4	UID LED	Blue: Activated. Flashing: System managed remotely. OFF: Deactivated.
5	NIC 1 Activity LED	Green: Network link. Flashing: Network link and activity. OFF: No link to network. If power is Off, view status on the rear panel RJ-45 LEDs.
6	Health LED	Green: Normal. Amber: System degraded. To identify see the system board LEDs. Red: System critical. To identify see the system board LEDs.

2.4.3 Main Chassis Rear Panel Components

1	Redundant Hot Plug Power Supply Module	**6**	Onboard Graphics Port
2	AC Inlet	**7**	USB Ports
3	PS/2 Mouse Port	**8**	RJ-45 Onboard Ethernet Ports
4	PS/2 Keyboard Port	**9**	PCIe Slots
5	Serial Port		

2.4.4 Rear Panel Chassis LEDS



Item	Description	Status
1	Power Supply LEDs	Green: Power supply is ON and functioning. OFF: No power.
2	Not used	/
3	Not used	/
4	Not used	/
5	10/100/1000 NIC Link LED	Green: Linked to network. OFF: Not linked to network.
6	10/100/1000 NIC Activity LED	Green or Flashing: Network activity. OFF: No network activity.

2.5 Redundant Array of Independent Disks (RAID)

2.5.1 Configurations

RAID combines physical hard disks into a single logical unit. The TVC-1211 utilizes a hardware RAID solution and comes pre-configured in RAID 1+0 configuration.

Recognizing Hard Drive Failures

A steadily glowing Fault LED indicates a drive failure. Ensure you have a current backup and replace the failed drive as soon as possible. For details, refer to *3.9.2 Monitoring Hard Disk Drives, on page 3-12*.

Effects of Hard Drive Failures

If more hard drives fail than the fault tolerance method allows, the logical drive fails. In this case, you are likely to lose data.

2.6 Disk Replacement - Automatic Rebuild

When replacing a failed drive in a RAID configuration, the system automatically starts data recovery. When the failed drive is replaced while the system is powered ON, all disk activity pauses while the drive spins up. Once the drive has reached operating speed data recovery begins.

If you replace a drive when the system is powered OFF, a POST message will appear when the system is powered ON. The message will prompt you to press the F1 key to start data recovery. If you do not press the F1 key the system will remain in a ready-to-recover mode and the POST message will appear each time the system is started.

Failure of another drive in the array during the rebuild will result in a loss of data. Do not remove a second drive from an array until the first failed or missing drive has been replaced and the rebuild process is complete.

3 Connecting the Controller

This section discusses how to prepare your controller for operation. It provides a detailed look at the controller chassis and its various components, instructions on how to connect various sources and how to power the controller.

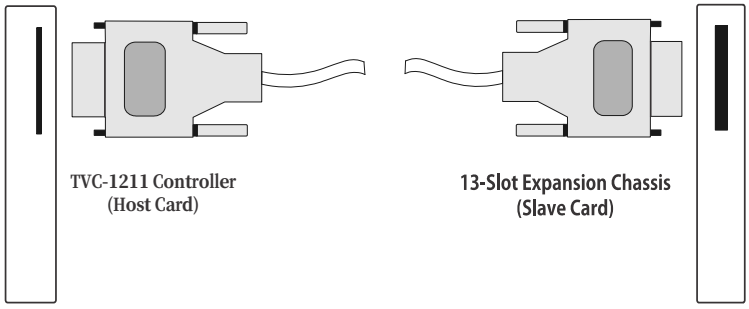
3.1 Grounding the Expansion Chassis

Connect the expansion chassis to a reliable earth ground. Install the ground wire in accordance with local electrical safety standards. Refer to *Grounding the Expansion Chassis, on page 1-2*.

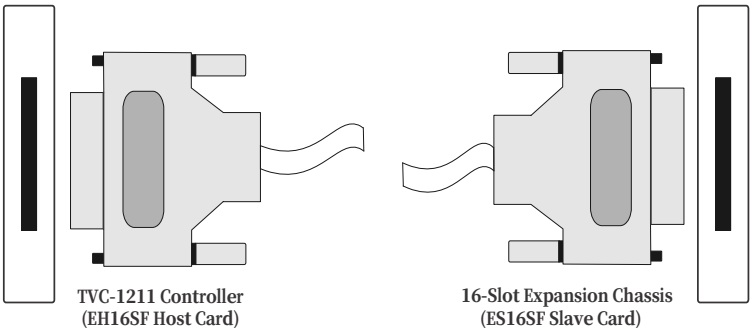
3.2 Connecting the Expansion Chassis to the Controller

Connect the expansion host card (controller) to the expansion slave card (expansion chassis) with the specialized cable provided. The connectors and cable are keyed.

Connecting TVC-1211 to the 13-slot Expansion Chassis

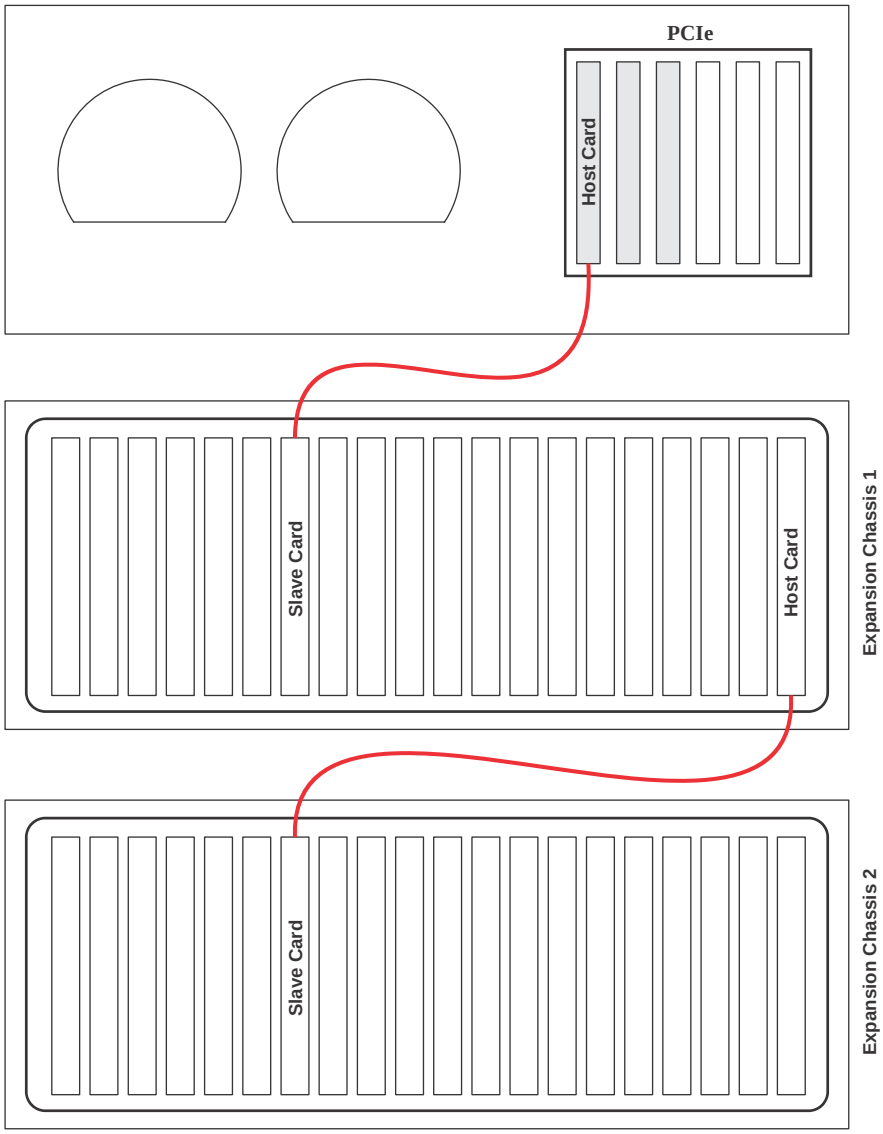


Connecting TVC-1211 to the 16-slot Expansion Chassis

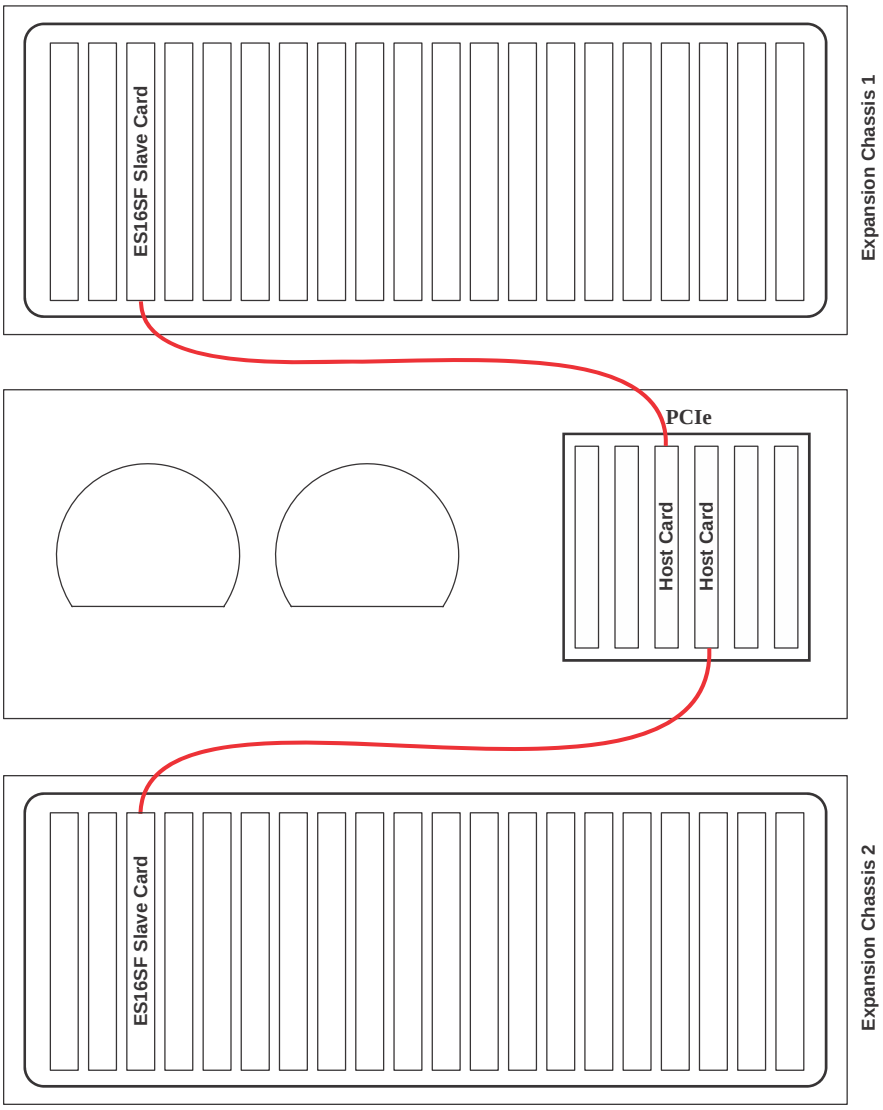


3.2.1 Connecting Multiple 13-slot Chassis

Up to 2 chassis can be connected.



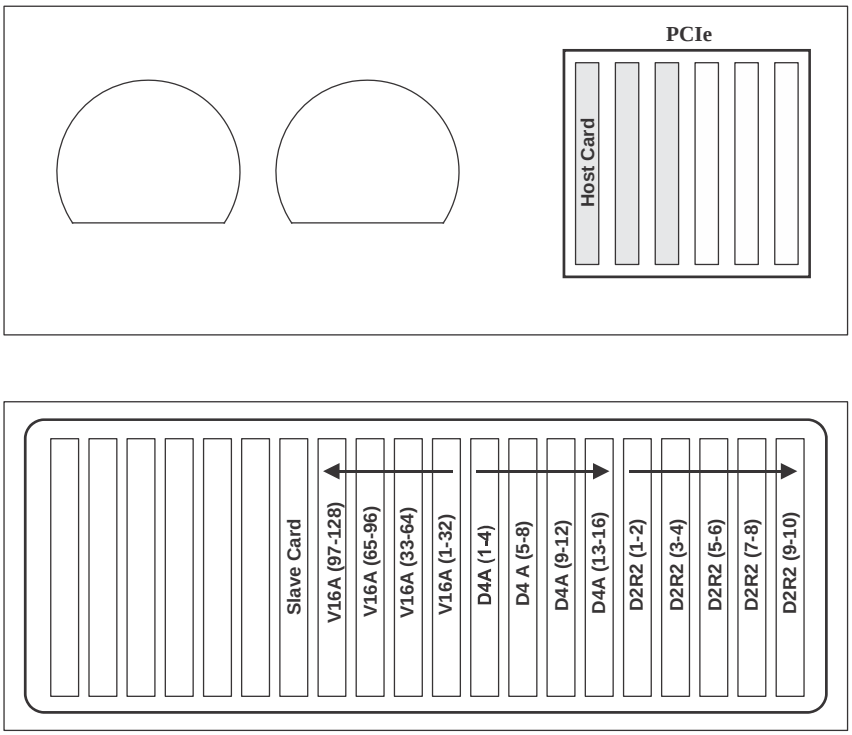
3.2.2 Connecting Multiple 16-slot Expansion Chassis



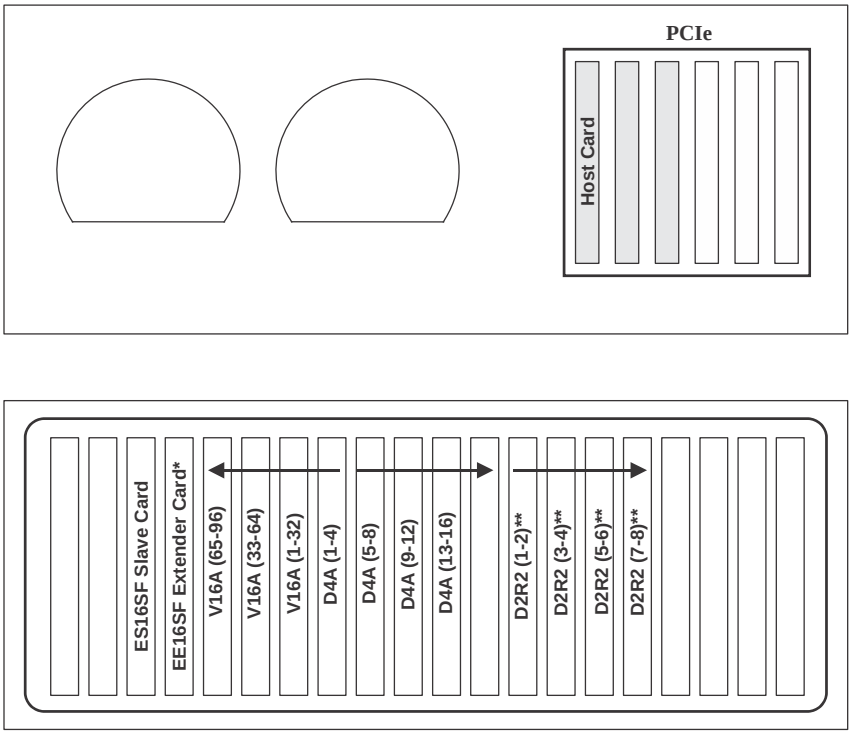
3.3 Input Channel and Display Numbering

Channel numbering refers to the position of the input modules in the expansion chassis. *Section 3.3.1 13-slot Expansion Chassis Channel Numbering* and *Section 3.3.2 16-slot Expansion Chassis Channel Numbering* illustrate how the cards installed in the TVC-1211 and the expansion chassis translate to channels in MASTERSuite.

3.3.1 13-slot Expansion Chassis Channel Numbering



3.3.2 16-slot Expansion Chassis Channel Numbering



*only required if more than 1 expansion chassis are connected.
**D2R2 cards installed in 64 bit slots (9-16) left to right

3.4 Connect Devices

Input and display modules are only installed in the expansion chassis.

3.4.1 About Source Connections

NOTICE: *When installing new or replacement component(s) into your existing controller, read the Service Manual(s) provided with the new module(s) before beginning. The information provided in this chapter is not sufficient for proper installation and module configuration for the TVC-1211 series controller.*

The controller comes pre-configured according to your specifications. You should be able to connect your sources and display content on the display wall when the unit is unpacked. This section provides a high-level overview of the capabilities of the modules available for this controller. It also touches on some system configuration information. All input and display modules are clearly labeled.

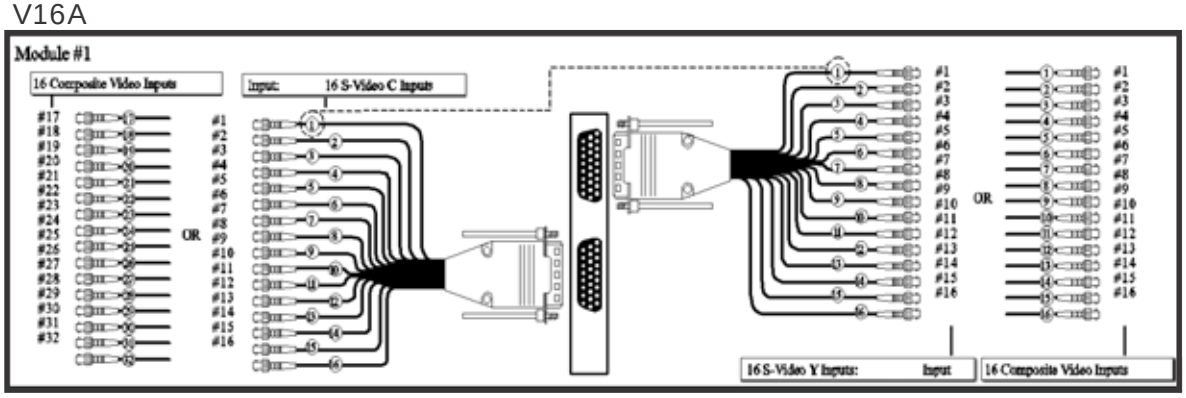
Composites and S-Video Sources

Composite and S-video sources can be connected to V16A modules.

V16A Module

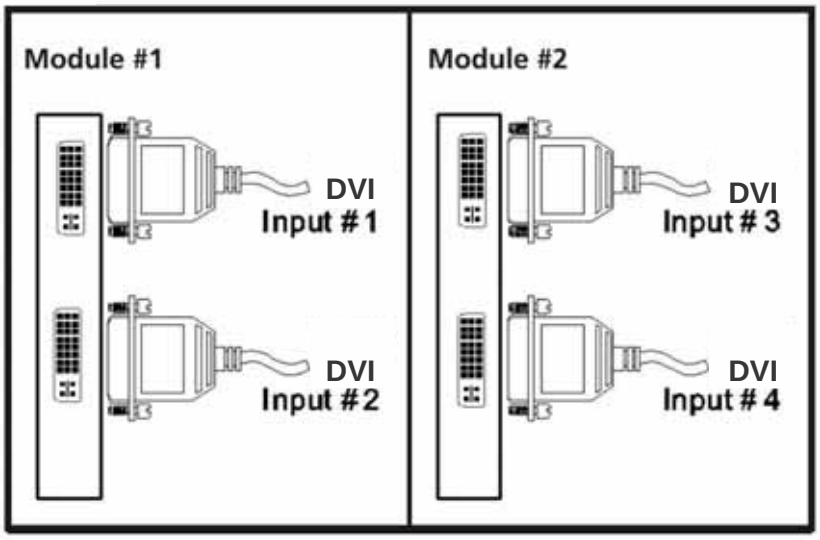
The V16A module (16-input) is installed into the controller to allow connection of S-video, composite sources, or both. A single V16A module has 16 built-in decoders. Each decoder has 2 inputs, which are the corresponding inputs from the top connector (A) and the bottom connector (B). Composite video can be connected to any of the available BNC inputs. To hook up S-video, connect Y (Luma) to the "A" input and C (Chroma) to the corresponding "B" input. Refer to the illustration below. A single V16A module can connect up to 32 composite or 16 S-video signal sources simultaneously. Up to 16 simultaneous video windows per V16A can be opened on the display wall.

V16A



D2R2 Module

Up to a maximum of 16 D2R2 modules can be installed into a TVC-1211. For DVI channel configuration refer to *3.3 Input Channel and Display Numbering, on page 3-4*. Each D2R2 has 2 connectors. A DVI source connected to the top connector is considered Input 1.



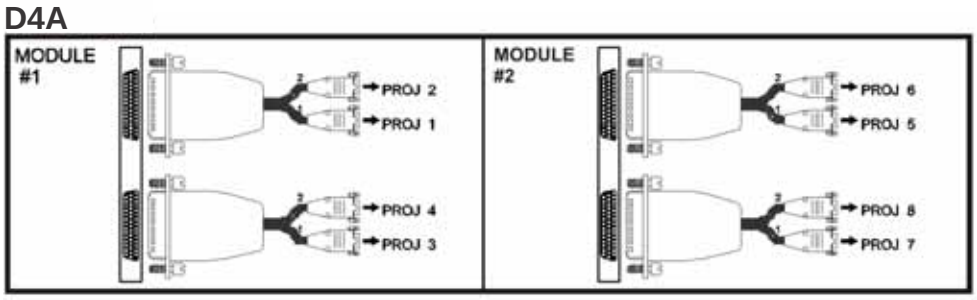
3.5 Connecting Display Devices/Screens

The controller can be customized to include up to 12 D4A (using multiple expansion chassis) modules, enabling you to choose from a variety of configurations.

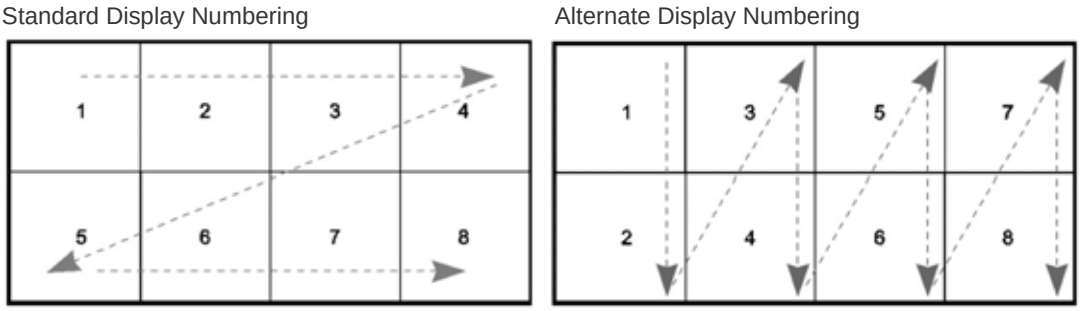
3.5.1 VGA Cables

When connecting display devices to the controller:

1. Connect the single end of each of the 2 dual VGA cables to the display module connectors on the rear panel.



2. Connect the other 2 ends of each cable to your display devices. The way you connect these should reflect how you want to number your display devices. By software default, display numbering begins from the top-left of the display wall and continues across each row and down.



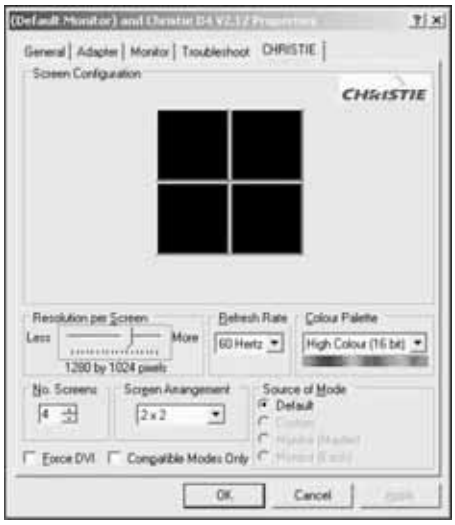
3.5.2 DVI-D Cables

When connecting DVI-D cables, the controller and display devices must be powered down. DVI-D connection requires Extended Display Identification Data (EDID), which is detected at startup.

1. Connect the single end of each of the 2 dual DVI-D cables to the display module connectors on the rear panel.
2. Connect the other 2 ends of each cable to your display devices. For more information about display numbering, refer to *3.5.1 VGA Cables, on page 3-7*.
3. Power up the display devices.
4. Power up the controller. For details, refer to *3.8 Powering ON/OFF, on page 3-9*.

3.5.3 No DVI Signal

If you do not see output on any of the display devices, it is possible there is a problem with the EDID. For example, if the system detects different resolutions, as reported by EDID, it automatically switches to analog output.



1. Power down the controller. For details, refer to *3.8 Powering ON/OFF, on page 3-9*.
2. Connect an analog multi-sync monitor to the Display 1 connector.
3. Power up the controller and confirm the configuration is correct.
   NOTE: *The video overlay created when a MediaManager window is opened is maintained for some time after the MediaManager window is closed. Changing the resolution while this overlay is active can cause unpredictable behavior. Restart the system before changing the resolution.*
4. Check the **Force DVI** checkbox.
5. Power down the controller.
6. Reconnect the DVI cable for Display 1.
7. Power up the display devices and the controller.

NOTE: *If you still do not see output on the DVI displays, contact Christie Technical Support.*

3.6 Connecting Peripheral Devices

1. Connect the keyboard and mouse to the USB ports on the back of the expansion chassis.
2. Connect CAT5 Ethernet cable(s). This step is only required if you are connecting to 1 or more networks.
   NOTE: *ILO port is not supported.*
3. Connect any peripheral devices, such as USB or serial components to the appropriate connectors on the rear and/or front panel.

3.7 Connecting Power

Connect the approved rated line cords, supplied with the controller, to the AC inlets of the power supplies on the rear panel(s) and connect the 3-pronged end of the line cords to a grounded AC outlet. The input voltage must be capable of 100-240 VAC, 15A.

3.7.1 Connect AC Line Cords to TVC-1211 Controller

NOTICE: *The line cords provided with the controller from the Christie factory are approved and rated for North American use only. Do not attempt to operate the controller if the AC supply and power cord are not within the specified voltages and power range.*

The TVC-1211 base chassis comes standard with 2 hot plug redundant power supplies.

3.7.2 Connect AC Line Cords to Expansion Chassis

NOTICE: *The line cords provided with the controller are approved and rated for North American use only. Do not attempt to operate the controller if the AC supply and power cord are not within the specified voltages and power range. This equipment must be grounded to a reliable earth ground. The ground must be installed in accordance with local electrical safety standards.*

The expansion chassis has 4 power supplies. Ensure all power supplies are connected during normal operation.

3.8 Powering ON/OFF

NOTICE: *If this is the very first time the server is powered ON, please refer to the start-up instruction sheet supplied with the controller for information about configuring the system and activating the operating system.*

3.8.1 Power ON Expansion Chassis

If you have an expansion chassis, it must be powered up first so the controller can detect the input and display modules in the expansion chassis.

1. Open the door on the front of the expansion chassis.
2. Switch ON the Power switch.
3. If a power supply is not plugged in or has failed, an alarm will sound. If the alarm sounds, press the **Alarm Reset** button, located to the left of the **Power** switch and determine which power supply modules are missing, disconnected or failed (LED OFF). Power down the expansion chassis and add, connect or replace power supply modules, as necessary. For maximum redundancy, ensure the expansion chassis can be powered up without alarm conditions before powering on the main server.
4. Close and secure the door.

3.8.2 Power ON Controller

To power up the controller and initialize the input and display modules:

1. Press the **Power** button on the front panel.
2. Wait until the Windows Server 2003 operating system cycles through its initialization process. This may take several minutes depending on the number of display cards installed. **NOTE:** *Depending on your display device capabilities you may or may not see the boot up process. The resolution of the boot sequence is 640 x 480.*
3. When the Windows Server login screen appears, login with a valid user name and password.

3.8.3 Power OFF

⚠ WARNING The front panel Power ON/Standby button does not completely shutoff system power. Portions of the power supply and some internal circuitry remain active until AC power is removed. If you are powering down for maintenance, you must also remove the power cord from each power supply. Failure to remove the power cords may increase the risk of personal injury, electric shock, or damage to the equipment.

NOTICE: *If installing a hot-plug device, it is not necessary to power down the server.*

1. Close all applications.
2. Shutdown Windows Server 2003 by clicking **Start>Shutdown**.
3. In the Shutdown dialog, select the appropriate reason for shutting down the system. Windows Server 2003 shuts down and the controller enters STANDBY POWER mode. The system power LED changes to amber.
4. Use the expansion chassis Power switch to turn off the expansion chassis. The power LED will turn OFF.

3.9 System Monitoring

The LEDs on the front and back panels provide information about the controller's status.

3.9.1 Monitoring Controller Components

As the system cycles through the components, the LEDs on the front panel will illuminate to indicate status.

Table 3.1 LED Status

Item	Description	Status
1	UID switch and LED	Not supported by TVC-1211.
2	NIC2 link/activity LED (embedded NIC only)	Green: Linked to network. Flashing Green: Linked with activity on network. OFF: No network connection.
3	NIC1 link/activity LED (embedded NIC only)	Green: Linked to network. Flashing Green: Linked with activity on network. OFF: No network connection.
4	Power cap	Green: Power cap configured. Flashing Amber: Power cap exceeded. OFF: Server in STANDBY or power cap disabled.
5	Internal system health LED	Green: Normal (System ON) Amber: Degraded system health. Please contact Christie Technical Support. Red: System health is critical. Please contact Christie Technical Support. OFF: Normal (System OFF)
6	Power ON/Standby LED	Amber: System has AC power and is in STANDBY mode. Green: System has AC power and is powered up. OFF: System has no AC power.

NOTE: *The server can be remotely monitored through WallManager's Administration>Status window.*

3.9.2 Monitoring Hard Disk Drives

Fault status lights on the hard drive indicate the health of the drive. A flashing light indicates a failing drive.

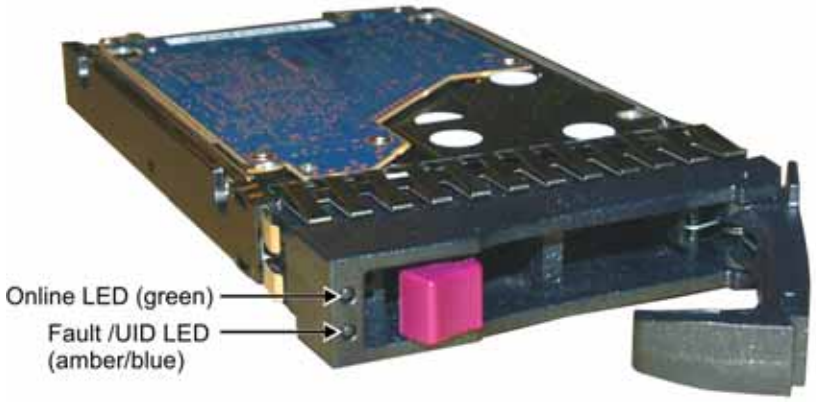


Table 3.2 Hard Drive LEDs

Online/ Activity LED (green)	Fault LED (amber)	Status
ON, OFF or Flashing	Alternating amber and blue	The drive has failed, or a predictive failure alert has been received for this drive and been selected by a management application.
ON, OFF or Flashing	Steadily blue	The drive is operating normally and it has been selected by a management application.
ON	Amber, flashing regularly (1 Hz)	A predictive failure alert has been received for this drive. Replace the drive as soon as possible.
ON	OFF	The drive is online, but is not currently active.
Flashing Regularly (1 Hz)	Amber, Flashing Regularly (1 Hz)	**DO NOT remove the drive. Removing the drive may terminate the current operation and cause data loss.** The drive is part of an array that is undergoing capacity expansion or stripe migration, but a predictive failure alert has been received for this drive. To minimize risk of data loss, do not replace the drive until the expansion or migration is complete.
Flashing Regularly (1 Hz)	OFF	**DO NOT remove the drive. Removing the drive may terminate the current operation and cause data loss.** The drive is rebuilding, or it is part of an array that is undergoing capacity expansion or stripe migration.
Flashing Regularly	Amber, Flashing Regularly (1 Hz)	The drive is active, but a predictive failure alert has been received for this drive. Replace the drive as soon as possible.
Flashing Irregularly	OFF	The drive is active and is operating normally.
OFF	Steadily Amber	A critical fault condition has been identified for this drive and the controller has placed it offline. Replace the drive as soon as possible.
OFF	Amber, Flashing Regularly (1 Hz)	A predictive failure alert has been received for this drive. Replace the drive as soon as possible.
OFF	OFF	The drive is offline, a spare, or not configured as part of an array.

3.9.3 Recognizing Hard Drive Failures

NOTICE: *Occasionally, a drive that has previously failed may seem to be operational after the system is power-cycled or after the drive has been removed and reinserted. However, continued use of such marginal drives could eventually result in data loss. Replace the marginal drive as soon as possible.*

The following section lists other ways in which the hard drive reveals signs of failure.

- The amber LED illuminates if failed drives are inside; however, this LED also illuminates when other problems occur, such as fan failure, redundant power supply failure or the system overheats.
- A POST message lists failed drives whenever the system is restarted, as long as the controller detects at least one functional drive.

3.9.4 Monitoring Expansion Chassis Power Supplies

The expansion chassis has 4 hot plug power supply modules (Figure 3-21). Each of the power supply modules has an LED, which is green when a power cord is connected and the unit is powered ON.

3.9.5 Recognizing Expansion Chassis Power Supply Failures

If 1 or more of the power supply modules fail while the expansion chassis is running an alarm is triggered. When this occurs, check the LED lights on the back of each power supply module to identify which power supply has been disconnected or failed (LED OFF). To disable the alarm, press the **Alarm Reset** button, located to the left of the **Power** switch. Add, connect or replace the failed power supply module(s), as soon as possible. The expansion chassis continues to operate with a minimum of 3 power supplies in non-redundant mode.

3.10 Network Adapter Teaming

The TVC-1211 provides basic teaming with setup options that include network fault tolerance, transmit load balancing with fault tolerance and switch-assisted load balancing with fault tolerance. To setup network adapter teaming, run the HP Network Configuration Utility (NCU) used to create and dissolve teams. This utility is located in the Windows Control Panel.

To deploy a basic team:

1. Run the NCU.
2. Select the network adapter ports for the team on the NCU main page and click on the **Team** button.
3. Set the team type to **Automatic** (default) by selecting **Team Type Selection** under the Teaming Controls tab.
4. Rename the team in the Team Name window.
5. Click **OK** on the Team Properties page when finished.
6. Click **OK** on the NCU main page to apply all changes. Select Yes when prompted if all configuration changes should be applied.
7. Wait until the All Configuration Changes Were Made Successfully dialog box appears.
8. Open the Network Connections window from the Windows Control Panel.
9. Under **Device Name** (Details view) open the Properties page for the device with the same name that was assigned in step 4.
10. Assign the appropriate IP address based on the connected network requirements.

4 Specifications

Due to continuing research, specifications are subject to change without notice.

4.1 Hardware

4.1.1 Main Chassis

- Drive Bays — Internal 2.5” SATA drive bays 8 (6 available)
- Expansion Slots
  - Slot 1 - PCI Express Gen 2 x 4 slot - with x8 connector (full-length, full-height)
  - Slot 2 - PCI Express Gen 2 x 4 slot - with x8 connector (full-length, full-height)
  - Slot 3 - PCI Express Gen 2 x 8 slot - with x8 connector (full-length, full-height)
  - Slot 4 - PCI Express Gen 2 x 8 slot - with x16 connector (full-length, full-height)
  - Slot 5 - PCI Express Gen 2 x 4 slot - with x8 connector (full-length, full-height)
  - Slot 6 - PCI Express Gen 2 x 4 slot - with x8 connector (full-length, full-height)
- Cooling: PCI, Memory, CPU 3x cooling fans
- Monitoring
  - CPU
  - NICs
  - Temperature
  - Fans
  - Power supplies
  - Drive controllers
  - Disk Drives
- Chipset — Intel 5520
- Processor — Standard Intel Xeon Quad Core 2.40GHz-12MB cache

4.1.2 Main Memory

- Type — DDR3, Fully Buffered DIMMs
- Standard Capacity — 4GB (2x 2GB)
- Optional Upgrades — None
- Memory Protection — Advanced ECC

4.1.3 I/O Interfaces

- Serial — 1
- USB 2.0 Ports — 4 (2 front, 2 rear)

4.1.4 Integrated SATA Storage Controller

- Disk Drive & Enclosure Interface — 3G SATA
- SATA Connectors — 8 ports/connectors
- Cache Memory — 256MB
- RAID Support
  - RAID 5+0 (Striping and Distributed Data Guarding)
  - RAID 5 (Distributed Data Guarding)
  - RAID 1+0 (Striping and Mirroring)
  - RAID 1 (Mirroring)
  - RAID 0 (Striping)

4.1.5 Embedded PCI Express Gigabit NIC Server Adapter

- Network Interface — 10/100/1000-T
- Compatibility
  - IEEE 802.3 10Base-T
  - IEE 802.3u 100Base-TX
  - IEE 802.3ab 1000Base-T
- Data Transfer Method — PCI Express, four lanes(x4)
- Network Transfer Rate
  - 10Base-T (Half Duplex) — 10 Mb/s
  - 10Base-T (Full Duplex) — 20 Mb/s
  - 100Base-TX (Half Duplex) — 100 Mb/s
  - 100Base-TX (Full Duplex) — 200 Mb/s
  - 1000Base-TX (Half & Full Duplex) — 2000 Mb/s

4.1.6 Expansion Chassis (16-Slot)

- Expansion Slots
  - 64-bit/66MHz, PCI-X Slots — 8
  - 32-bit/66MHz, PCI Slots — 8
- Cooling
  - 3x chassis cooling fans (150CFM each)
  - 4x chassis extraction fans (21CFM each)
- Monitoring — Audible alarm for power degradation (failed or unplugged)

4.1.7 Expansion Chassis (13-Slot)

- Expansion Slots
  - 32-bit/33MHz, PCI Slots — 13
- Cooling — 3x chassis cooling fans (150CFM each)
- Monitoring — Audible alarm for power degradation (failed or unplugged)

4.2 Power Requirements

4.2.1 Main Chassis

- Standard 460W Custom PSU (Active PFC)
- Rated input voltage 100 to 240 VAC
- Rated input frequency 50/60 Hz
- Rated input current 6.0-3.0A
- Rated input power 460W
- Input voltage range (Vrms) 100 to 240
- Frequency range Hz (Nominal) 50/60

Table 4.1 Nominal Input Voltage Values

Nominal Input Voltage (Vrms)	100	120	200	208	220	230	240
Max. Rated Output Wattage Rating	460	460	460	460	460	460	460
Nom. Input Current (A rms)	5.5	4.5	2.69	2.5	2.4	2.3	2.2
Max. Rated Input Wattage Rating (Watts)	526	520	505	505	503	503	503
Max. Rated VA (Volt-Amp)	548	542	527	527	524	524	524
Efficiency (%)	87.5	88.5	91	91	91.5	91.5	91.5
Power Factor	0.97						
Leakage Current (mA)	0.42	0.50	0.83	0.87	0.92	0.96	1.00
Max. Inrush Current (A peak)	30						
Max. Inrush Current Duration (ms)	20						
Max. British Thermal Unit Rating (BTU-Hr)	1794	1773	1725	1725	1715	1715	1715

4.2.2 Expansion Chassis

- Standard (16 slot/13 slot) 100-120/200-240VAC ±10%
- Range input voltage 100 to 240VAC
- Rated input frequency 47/63Hz
- Rated input current 8.0-4.0A
- Rated input power 500W
- Redundant 3 active & 1 redundant
- Hot swappable Yes

4.3 Storage

- Capacity: 536,870,912,000 bytes (500 GB)
- Length
  - in housing: 13.3 cm (5.2”)
  - without housing: 10.0 cm (4.0”)
- Height
  - in housing: 1.8 cm (0.7”)
  - without housing: 1.3 cm (0.5”)
- Width
  - in housing: 7.5 cm (3.0”)
  - without housing: 7.0 cm (2.8”)
- Interface: Serial ATA
- Transfer Rate (Maximum)
  - External: 3 GB/s
  - Internal: 300MB/s
- Seek Time (typical reads, includes setting)
  - Average: 4.16ms
  - Random read: 8.0ms
  - Random write: 8.5ms
  - Rotational speed: 7200 rpm
- Standard Configuration: 2x500 GB Drives with RAID 1

4.3.1 Peripheral Devices

- Keyboard
  - Type: Standard
  - Interface: USB
- Mouse
  - Type: 2-button optical with scroll wheel
  - Interface: USB

4.4 TVC-1211 Display/Video Architecture

4.4.1 Graphics Output (D4A)

• Card Format	32bit 66 MHz PCI adapter
• Card Size	105mm (4.1”) x 310mm (12.2”)
• Graphics Memory	32Mb per output channel (128Mb per card)
• Number of Output Channels	4
• Max. Analog Output Resolution per Channel	2048x1536 @ 60Hz
• Max. DVI Output Resolution per Channel	1600x1200 @60Hz (2048x1536 @ 35Hz)
• Max. Number of Overlay Windows	16 per output channel (64 windows per card)
• Max. Cards per Expansion Chassis	6 (24 display channels)
• Max. Cards per System	12 (48 display channels)
• Overlay Frame Buffer Resolution	1280x1024x4
• Digital Advanced Video Input Bus Speed	5Gb/s
• Max. Digital Video Channels per Bus	128
• Video Window Update Rate	Real time: 25/30 fps (PAL/NTSC)
• Standard Output Connector Type	HD15 (VGA)
• Optional Output Connector Type	DVI-D
• Output Level - Signal	0.7V
• Output Level - SYNC	TTL
• Offset	0V typical
• Output Impedance	75 ohms
• Max. Power Consumption	36.44 watts
• Max. Power Requirements	+5V @2.8A, +3.3V @6.8A
• Supported Display Modes	All available in 16bpp and 32bpp

4.4.2 D4A Resolution Versus Frequency

Resolutions (Pixels x Lines)	Vertical Frequency (Hz)	DVI Support
640 x 480	60, 75, 85, 100	Yes
720 x 480	75	Yes
720 x 576	75	Yes
800 x 600	56, 60, 72, 75, 85, 100	Yes
848 x 480	60, 75	Yes
856 x 480, 1024 x 512	60	Yes
1024 x 768	60, 70, 75, 85, 100, 130	Yes
1064 x 600	60	Yes
1152 x 864	60, 70, 75, 85, 100	Yes
1248 x 702	60	Yes
1280 x 720	60, 70	Yes
1280 x 768	56, 60, 70	Yes
1280 x 800	60	Yes
1280 x 960	60, 85	Yes
1280 x 1024	57, 60, 75, 85	Yes
1280 x 1024	100	No
1360 x 765	60	Yes
1360 x 768, 1400 x 1050	60, 75	Yes
1400 x 1050	85, 100	No
1600 x 1200	30, 36, 37, 42, 56, 59, 60	Yes
1600 x 1200	75, 85, 100	No
1704 x 960	60	Yes
1792 x 1344	60, 75	No
1856 x 1392, 1888 x 1062 1920 x 1080, 1920 x 1200	60	No
1920 x 1440	60, 75, 85	No
2048 x 1536	30, 35, 37	Yes
2048 x 1536	60, 75	No

4.5 Input (Source Signal) Compatibility

4.5.1 Video Input (V16A)

16-Port Multiple Video Input Module (V16A)

- Card Format — 32bit 66Mhz PCI adapter
- Card Size — 105 mm (4.1”) x 310mm (12.2”)
- Max. Cards per Expansion Chassis — 8
- Number of Capture Channels — 16
- Max. Capture Resolution per Channel — 720 x 288
- Supported Video Formats — PAL, NTSC, SECAM in either Composite or S-Video
- Video Window Update Rate — Real time: 25/30 fps (PAL/NTSC)
- Max. Power Consumption — 23.73 watts
- Max. Power Requirements — +12V @1.4A, +3.3V @ 2.1A

Composite and S-Video Input

- Signal Formats — Composite-video (CVBS), S-video (Y/C)
- Video Standards
  - NTSC M, NTSC J, NTSC N, NTSC 4.43 50/60, PAL I, PAL B, PAL D, PAL G, PAL H, PAL M, PAL N, PAL NC, PAL4.43 60, SECAM B, SECAM D, SECAM G, SECAM K, SECAM L, SECAM L, SECAM LD
- Input Levels Composite Video — 1.0 Vp-p ± 3dB (including sync tip)
- S-Video Luma (Y) — 1.0 Vp-p ± 3dB (including sync tip)
- S-Video Chroma (C) — 630 mVp-p nominal (burst)
- Connector Type — BNC
- DC Offset — ±2V
- Nominal Impedance — 75 ohms
- VS16 Bandwidth — 60 MHz (-3dB)
- Crosstalk — -80dB @ 20kHz (V16A)

4.5.2 Standard Input VGA Connectors (D2R2)

Signal Description	Red	Green	Blue	Hor/ Comp	Vert
RGB with H&V Sync (5 wire) 1, 2, 3	Red	Green	Blue	H-Sync	V-Sync
RGB with composite sync (4 wire) 1, 2, 3, 4, 5	Red	Green	Blue	Comp sync	No signal
RGB with sync-on-green (3 wire) 4, 5	Red	Green w/sync	Blue	No signal	No signal

NOTES: 1) *Sync signals cannot be swapped between the horizontal/composite and vertical connectors.* **2)** *Sync signal(s) can be negative or positive polarity.* **3)** *Sync present on any of the RGB signals will be ignored when separate or composite sync is input.* **4)** *Sync can be bi-level.* **5)** *‘No signal’ means no signal should be applied to the input.*

4.5.3 DVI Input (D2R2)

NOTE: *This specifies frame rate for non-interlaced sources and field rate for interlaced sources. Signals will be displayed at a lower rate (i.e., frame will be dropped).*

• Card Format	64bit 133Mhz PCI-X
• Card Size	105mm (4.1”) x 170mm (6.7”)
• Connectors	2 DVI-I connectors
• Video Capture Memory	64MB triple buffered
• Max. Power Consumption	10.2 Watts
• Max. Current at +3.3V	500mA
• Max. Current at +5V	1.7A
• Input Connector Type	Single link DVI-I, HD15 VGA, HDMI or component (with adapter
• Max. cards per Expansion Chassis	8 (16 capture channels)
• Max. cards per system	16 (32 capture channels)
• Frame rate	**Depends on resolution (see below)
• Resolution-digital	640x480 (VGA), 800x600, 1024x768, 1280x1024, 1600x1200, 1920x1080, 1920x1200 (WUXGA)
• Resolution-analog	640x480 (VGA), 800x600, 1024x768, 1280x1024, 1600x1200, 1920x1080, 2048x1536 (QXGA)
• Bandwidth	480MB/s
• Video bus	PCI-X
• Wall placement	Anywhere on the display wall
• HDCP	Not supported
• Analog input range	Min. 0.5Vpp, MAx 1.0Vpp
• Input offset	±2V
• Hsync	15kHz-110kHz
• Vsync	No hardware limits, typically 25Hz - 200Hz for real signals
• Separate sync polarity	Positive or negative (separate H & V sync, composite sync)
• Sync On green polarity	Negative
• Inputs	75ohms terminated

4.6 Regulatory

4.6.1 Safety

- CAN/CSA C22.2 No. 60950-1
- UL 60950-1
- IEC 60950-1

4.6.2 EMC

- FCC, Part 15, Subpart B, Class A
- EN55022/CISPR22 Class A
- EN55024 / CISPR24

4.6.3 Certification Marks

Check with Christie Digital Systems for latest information.

- cULus (Canada & US)
- CE (EU)
- CCC (China)
- GoST-R (Russia)
- KC/KCC (Korea)
- PSE (Japan)
- C-Tick (Australia & New Zealand)

4.7 Reliability and Serviceability

• Reliability	MTBF of major components 50,000 hours
• Serviceability	MTTR 15 minutes max.

4.8 Quality

- ISO 9001:2000 Manufactured in Christie's Canadian facility, certified for ISO 9001:2000 and ISO 14001:2004
- ISO 14001:2004

4.9 Environment

4.9.1 Operating

• Temperature	+10°C to +35°C (+50°F to +95°F)
• Humidity	15% to 80% non-condensing
• Altitude	0 to 2000m (6,562 ft)

4.9.2 Non-Operating

Storage

• Temperature	-20°C to +40°C (-4°F to +104°F)
• Humidity	5% to 90% non-condensing
• Thermal Shock	-20°C to +40°C (-4°F to +104°F)

Shipping

• Thermal Drop	-20°C (-4°F) for 8 hours then 300mm (12") onto bottom
• Altitude	9144 m (30,000 ft) max.
• Vibration	10Hz, 100Hz, 300Hz for 15 min/frequency

000-103039-01

ASSY TECH DOCS TVC-1211

Corporate offices

USA – Cypress
ph: 714-236-8610

Canada – Kitchener
ph: 519-744-8005

Worldwide offices

United Kingdom
ph: +44 118 977 8000

France
ph: +33 (0) 1 41 21 00 36

Germany
ph: +49 2161 664540

Eastern Europe
ph: +36 (0) 1 47 48 100

Middle East
ph: +971 (0) 4 299 7575

Spain
ph: + 34 91 633 9990

Singapore
ph: +65 6877-8737

Beijing
ph: +86 10 6561 0240

Shanghai
ph: +86 21 6278 7708

Japan
ph: 81-3-3599-7481

South Korea
ph: +82 2 702 1601

For the most current technical documentation, please visit www.christiedigital.com

CHRISTIE®