



TVC4403
4U Rackmount
Video Display Wall Controller

No. TVC4403-xxx Revision A

REFERENCE MANUAL

Publication No. 8404403-05103



WARRANTY

The following is an abbreviated version of Trenton Systems' warranty policy for rackmount computer products. For a complete warranty statement, contact Trenton or visit our website at www.trentonsystems.com/about-us/company-policies.

All boards used in systems delivered by Trenton are covered under a pass-through warranty. For example, if Trenton PICMG 1.3 boards are used in the system then these boards will carry a five-year warranty. All other system sub-components including but not limited to video controller board, power supplies, DVDs, CD-ROMS, etc. are covered under their original manufacturer's warranty. All systems built by Trenton are warranted against defects in material, workmanship and design for a period of one year from date of delivery. Repair or replacement products will be warranted for a period of three months from the date of shipment or for the remainder of the original warranty period for that particular product, whichever is longer. Any software or firmware that is delivered by Trenton will be warranted for a period of one year to perform in accordance with published specifications prepared, approved and issued by Trenton and/or the appropriate 3rd party vendor. Contact Trenton for the complete system warranty policy.

Buyer agrees that if a Trenton product proves defective, Trenton is only obligated to repair, replace or refund the purchase price of this product at Trenton's discretion. The warranty is void if the product has been subjected to alteration, neglect, misuse, or abuse; if any repairs have been attempted by anyone other than Trenton; or if failure is caused by accident, acts of God, or other causes beyond the control of Trenton. Trenton reserves the right to make changes or improvements in any product without incurring any obligation to similarly alter products previously purchased.

In no event shall Trenton Systems, Inc. be liable for any defect in hardware or software or loss or inadequacy of data of any kind, or for any direct, indirect, incidental or consequential damages arising out of or in connection with the performance or use of the product or information provided. Trenton Systems, Inc.'s liability shall in no event exceed the purchase price of the product purchased hereunder. The foregoing limitation of liability shall be equally applicable to any service provided by Trenton Systems, Inc.

RETURN POLICY

Products returned for repair must be accompanied by a Return Material Authorization (RMA) number, obtained from Trenton Systems prior to return. Freight on all returned items must be prepaid by the customer, and the customer is responsible for any loss or damage caused by common carrier in transit. Items will be returned from Trenton Systems via Ground, unless prior arrangements are made by the customer for an alternative shipping method

To obtain an RMA number, call us at (800) 875-6031 or (770) 287-3100. We will need the following information:

- Return company address and contact
- Model name
- Serial number from chassis label
- Description of the failure

An RMA number will be issued. Mark the RMA number clearly on the outside of each box, include a failure report for each item and return the product(s) to our Gainesville, GA facility:

TRENTON Systems, Inc.
2350 Centennial Drive
Gainesville, GA 30504
Attn: Repair Department

Contact Trenton for our complete service and repair policy.

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Handling Precautions

WARNING: This system has internal components which may be damaged by electrostatic discharge.

To protect internal components from electrostatic damage, be sure to observe the following precautions when handling or storing the system:

- The TVC4403 has a net chassis weight of approximately 30lbs. (13.62kg). This base chassis weight includes the chassis, a system host board, a 14-slot backplane and a rear-mounted redundant power supply. Use proper lifting techniques when moving and installing the system.
- When removing or installing boards and sub-components, keep these components in their static-shielded bag and/or packaging until you are ready to for component installation.
- Handle the sub-components by their edges.
- Do not touch any sub-component I/O connector pins. Do not apply pressure or attach labels to the board-level sub-components.
- Use a grounded wrist strap at your system or ground yourself frequently by touching the metal chassis of the system before handling any sub-components.
- Ensure the systems external power source has a solid connection to an earth ground.
- Use antistatic padding on all work surfaces when installing or removing sub-components.
- Avoid static-inducing carpeted areas.

Before You Begin

INTRODUCTION

It is important to be aware of the information listed below before installing your rackmount video wall controller. System performance may be affected by incorrect usage of these features.

EXTERNAL POWER SOURCE – REDUNDANT

Incoming AC power must be supplied to both of the receptacles located on the rear of the chassis. This dual AC power connection ensures that the main system power supply as well as the fail-over supply are each connected to a power source with a solid earth ground and is capable of delivering 110-240VAC at 50 to 60Hz. The typical maximum current draw of the rackmount computer is 4.07A per incoming power receptacle.

INTERNAL 5V CURRENT LIMIT

The maximum current limits for the +5V, +3.3V and +12V outputs from the system power supply are 32A, 32A and 65A respectively. The system's power monitoring circuits will shut the system down if these maximum current limits are drawn from the power supply.

CHASSIS AIRFLOW

When installing the chassis, ensure that a minimum free air space is available around the system. The installation should have a minimum of 4-6 inches (101-152mm) behind the chassis and 1-3 inches (25-75mm) in front of the chassis. Any front cabinet doors or access aisles must accommodate an TVC4403 front chassis clearance of at least 4.0" (102mm) in order to provide proper cable clearances for any front panel I/O port connections and to gain access to the system air filter for maintenance. Ideally, a chassis clearance of 0.5-1.5 inches (13-38mm) above the system is desirable, but not required.

CHASSIS RACK MOUNTING

The TVC4403 system can be installed in a rackmount cabinet that conforms to EIA standards for computer equipment with 19-inch wide panels. The cabinet must be tall enough to accommodate the computer's height and deep enough to accommodate the system's depth, while providing the proper clearances for air flow and cabling. A cabinet with a standard depth of 31.5 inches (800mm) should be sufficient; however, a rack with a non-standard depth dimension of at least 22 inches (559mm) will provide the suggested minimum front and rear chassis clearances needed for an installation.

Chapter 1 - *Product Overview*

DESCRIPTION

The Trenton TVC4403-051 is a CE-compliant and UL recognized*, 4U rackmount computer chassis / video display wall controller that offers choices in HDD and media drive bay configurations with system support for the BPG7087, 14-slot form factor backplane, JXTS6966 PICMG 1.3 system host board or SHB and redundant power supply. This rackmount system is configured with a single-processor SHB to deliver multi-core performance in advanced video wall controller applications using the BPG7087 backplane.

The TVC4403 rackmount chassis supports four 3.5" HDD bays, a Slim-Line optical media bay, an 800W redundant power supply and a front access air filter. These components maximize power delivery and cooling to ensure long-life system reliability with minimal Mean-Time-To-Repair (MTTR) times.

**Refer to the agency approval section in chapter five and the TVC4403 Certificate Of Compliance document in chapter six for a complete listing of the Council Directive: 2004/108/EC-EMC Directive standards to which conformity is declared.*

BACKPLANE, SHB & SYSTEM POWER SUPPLY MODELS

NOTE: The chart below illustrates backplane, SHB and system power supply supported in the Trenton TVC4403-xxx system. The three characters to the right on the hyphen indicate the specific backplane, SBC and power supply combination.

System Model Number	Backplane Model	SHB Model Number	Description of Backplane, SHB and System Power Supply Combination
TVC4403-051	BPG7087	JXTS6966	<p>Backplane: 1 SHB Slot, 4 x16 PCIe, 5 x4 PCIe, 1 x4/x1 PCIe and 1 IOB33/PCIe Expansion card slots Note: all PCIe card slots use x16 PCIe mechanical connectors</p> <p>SHB: Single processor JXTS6966 board (part no. 392696612500000) with one Intel® Xeon® EC5549 processor and two 2GB DDR3-1600 MiniDIMMs installed</p> <p>System Power Supply: 800W, redundant</p> <p>See the JXTS6966 web page for more SHB details See the BPG7087 web page for more backplane details</p>

ADDITIONAL SYSTEM ELEMENTS

The TVC4403-xxx configuration contains the following active components:

- 1 – SATA II, 2.5" HDD, 500GB, fixed mount
- 1 – Slim-Line R/W DVD
- 1 – 800 W redundant, rear-mounted PS2 power supply
- 1 – Fan control kit
- 3 – 102CFM system fans

Consult with Trenton for available storage drives and optical media drives compatible with the TVC4403.

SHB BATTERY

CAUTION: Risk of explosion if the system host board battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

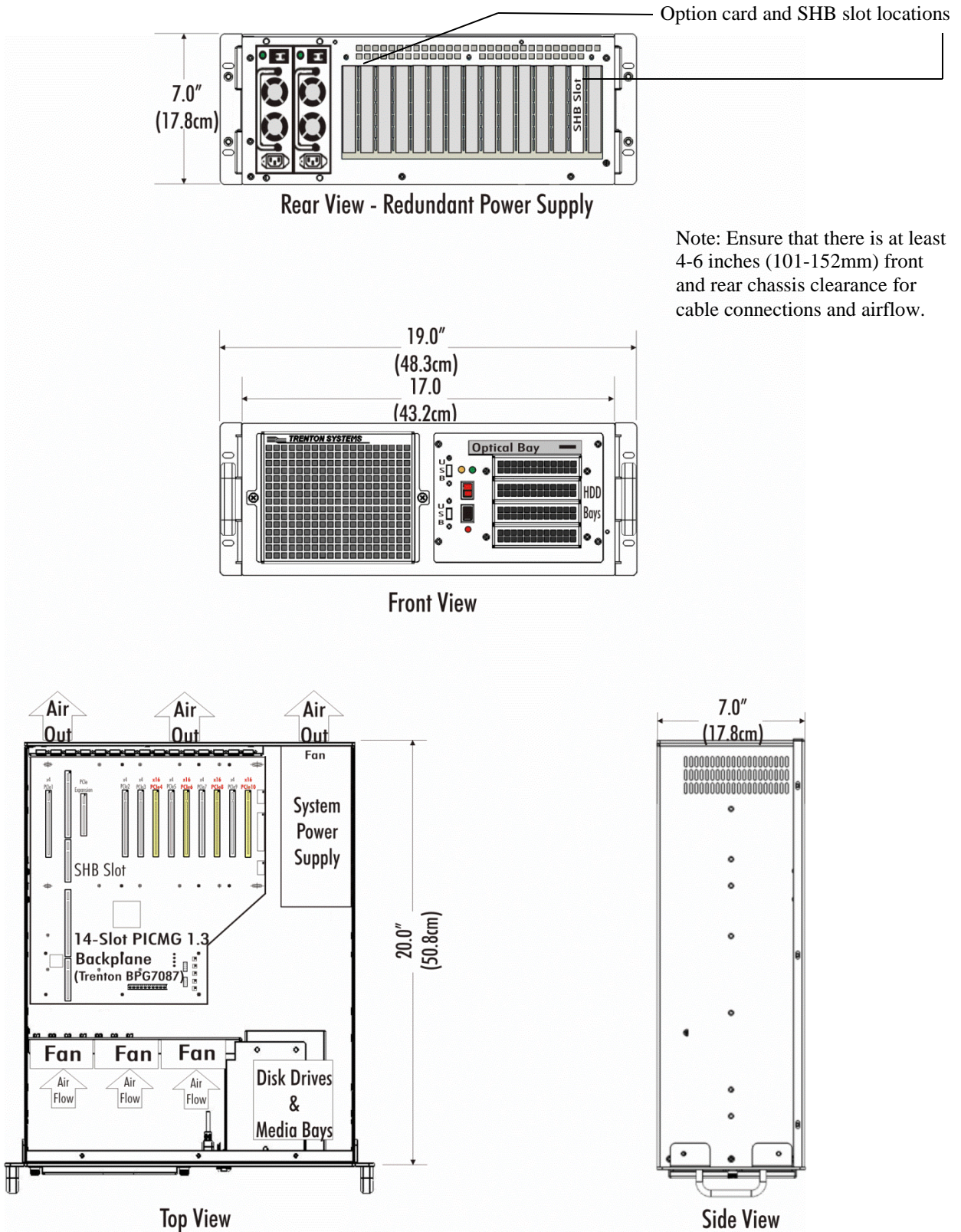
PACKING LIST

Trenton TVC4403 is shipped with the following

- TVC4403 4U video display wall controller
- Two, 10ft. (3.1m) AC power cord(s)
- One rackmount slide rail kit

Chapter 2 - *Physical Dimensions & Layout Drawings*

LAYOUT DIMENSION DRAWING



Note: Ensure that there is at least 4-6 inches (101-152mm) front and rear chassis clearance for cable connections and airflow.

TVC4403 SYSTEM LAYOUT

Figures 1 and 2 provide a TVC4403 video controller layout guide to aid in installing your system.

1. Power LED
2. Hard Drive LED
3. System Power Button
4. Reset Button
5. Front USB Ports
6. DVD Slot
7. Hard Drive Slot (internal)
8. Fan Filter
9. Over-temp LED

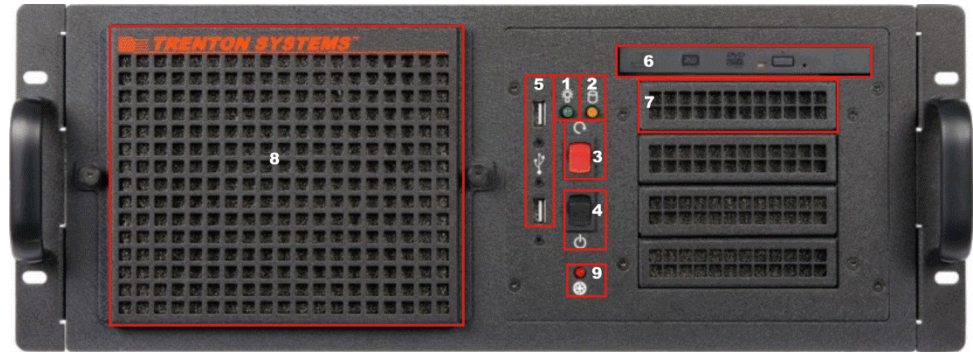


Figure 1 - TVC4403 Front View

1. AC Power Inputs
2. PS Power Buttons
3. Power On LEDs
4. JXTS System Host Board
5. Ethernet
6. On-board VGA
7. USB
8. Available Mura MPX Card Slots
9. Chassis Earth Ground Connection

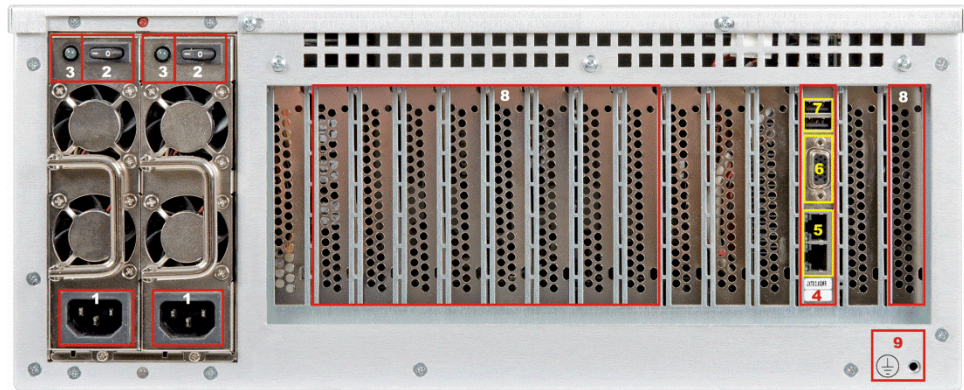


Figure 2a - TVC4403 Rear View

10. Mura MPX-4/4 Boards - 9-card installation
11. Video output connections to display wall screens via KX20 to quad-DVI cable
12. Video input source connections to Mura MPX-4/4 Boards via KX20 to quad-DVI cable

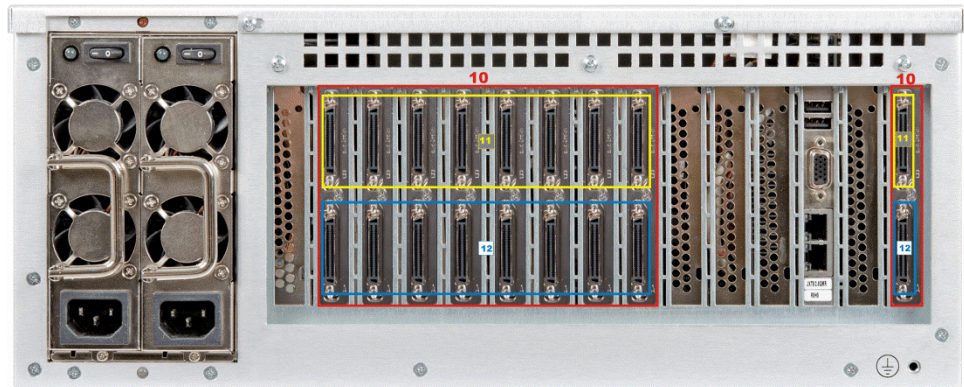


Figure 2b - TVC4403 Rear View – 9-card Installation Example

Figure 3 shows the interior of the TVC4403 and will be a useful reference when installing video controller boards such as the Matrox Mura MPX-4/4. Figure 4 illustrates the slide rail mounting holes.

1. Available Mura MPX Card Slots
2. Temperature Sensor
3. Temp. Sensor Input to Fan Speed Control Module
4. System Fans (3)
5. SATA and Power Connections to DVD
6. SATA and Power Connections to HDD
7. Power Connections to Backplane
8. JXTS System Host Board
9. BPG7087 Backplane
10. Redundant Power Supply Assembly

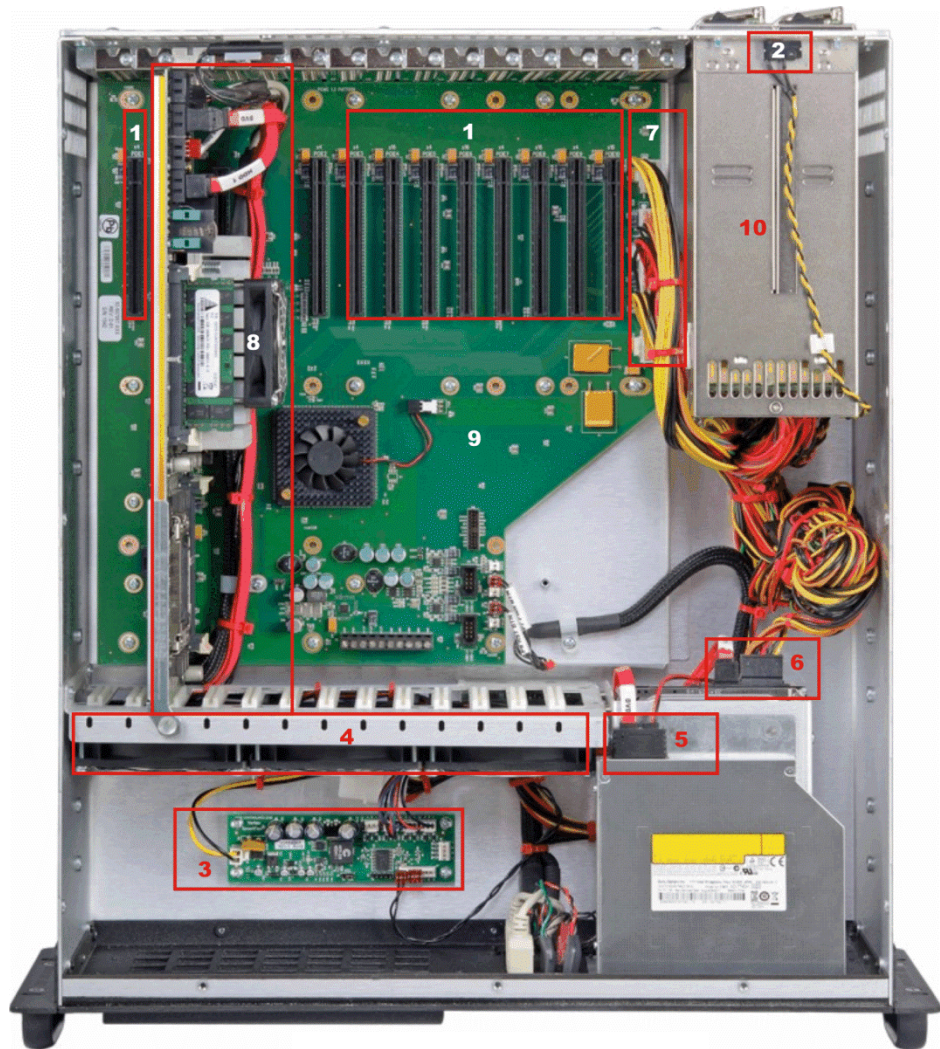


Figure 3 - TVC4403 Inside View

1. Threaded Holes for Slide Rail Attachment
2. Chassis Air Flow Vents – CAUTION – Do Not Block These Vents

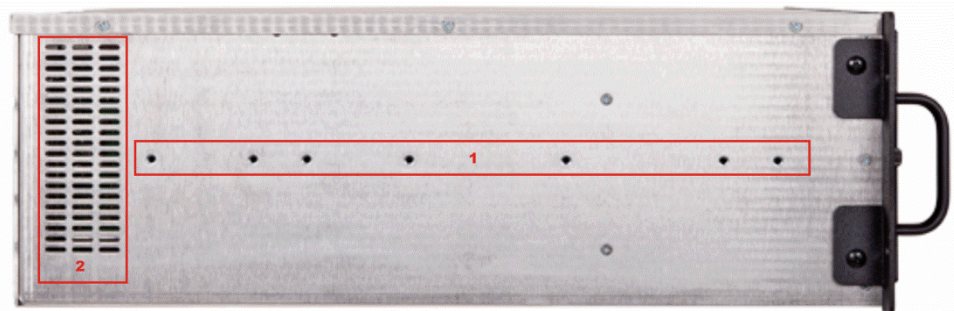


Figure 4 - TVC4403 Side View

Chapter 3 - *Installation Instructions*

ENVIRONMENTAL CONSIDERATIONS

When installing the chassis, ensure that a minimum free air space is available around the system. The installation should have a minimum of 4-6 inches (101-152mm) in front of and behind the chassis and 1-3 inches (25-75mm) in front of the chassis. Ideally, a chassis clearance of 0.5-1.5 inches (13-38mm) above the system is desirable, but not required. The computer is equipped with fans to help ensure proper cooling.

MATROX MURA MPX CARD INSTALLATION

Adding cards of any type to a computer requires the user to follow several general precautions such as:

- Insure the that you are properly grounded by using anti-static straps that are worn correctly
- Ensure that all LEDs on the BPG7087 backplane are OFF. If any backplane LED is on, disconnect the incoming power cords from the system power supplies.
- Handle the Matrox Mura MPX card by the card edges only, avoid touching the card edge fingers and the active components on the board itself.

Remove the TVC4403 top cover and the card hold-down bar that extends across the controller. Refer to Figure 2a and determine which available TVC4403 slot locations are to be used for the Matrox Mura MPX cards. Remove the TVC4403's blank I/O plates from the chassis which are associated with these slot locations before attempting card installation. Ensure that the screws used for the blank I/O plates are retained because they will be needed to secure the cards at the end of the installation procedure.

Choose any available BPG7087 backplane slot as illustrated in Figure 2a and Figure 3 and install the Matrox Mura MPX card by sliding the card straight down into the backplane's option card slot. You'll feel a slight bump as you apply slight downward pressure to fully seat the card into the card slot. Repeat this process for all of the cards you need for your particular video display wall. Secure the cards to the chassis using the screws that were used previously to hold down the blank I/O plates. Re-install the card hold-down bar and the controller's top cover.

Refer to the Matrox Mura MPX Series Users Guide for more detailed card installation information:

http://www.matrox.com/graphics/media/pdf/products/display_wall/mura/en_mura_user_guide.pdf

The general Matrox Mura MPX product page may also prove useful:

http://www.matrox.com/graphics/en/products/display_wall/mura_mpx_series/

RACK MOUNTING

The TVC4403 system can be installed in a rackmount cabinet that conforms to EIA standards for computer equipment with 19-inch wide panels. The cabinet must be tall enough to accommodate the computer's height and deep enough to accommodate the system's depth, while providing the proper clearances for air flow and cabling. A cabinet with a standard depth of 31.5 inches (800mm) should be sufficient; however, a rack with a non-standard depth dimension of at least 26 inches (660mm) will provide the suggested minimum front and rear chassis clearances needed for an installation.

The TVC4403 is designed to be supported in the cabinet with rack slides or placed on a cabinet shelf. The front flanges of the computer are designed to secure the TVC4403 to the rack cabinet's front mounting rails

RACKMOUNT INSTRUCTIONS

A) Elevated Operating Ambient – If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T_{ma}) specified by the manufacturer.

B) Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

C) Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

D) Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

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

F) Chassis Access – Use in a RESTRICTED ACCESS LOCATION only.

NOTE: Only trained personnel shall install or operate this equipment

SLIDE RAIL INSTALLATION

Trenton offers a slide rail kit to help with the installation of a 4U Trenton Systems' computer chassis. Here are the installation instructions Trenton 18" Slide Rail kit.

1. Remove slide rails from the box along with the rail frames, optional rack frame mounting brackets and the mounting hardware. The Trenton 18" Slide Rail kit includes the following items.
 - 2, 18" slide rails
 - 4, rail frames
 - 4, rack frame mounting brackets (optional)
 - 1, mounting hardware bag number S-047-0 includes:
 - 10 mounting rail to computer chassis screws
 - 1, mounting hardware bag number S-017-1 includes:
 - 36 rail frame to 19" rack mounting screws
 - 10 nuts
 - 10 flat washer
2. Take one of the slide rails and slide the inside portion of the rail completely out until you hear an audible click.
3. On the inside of the rail, you will see a rail stop hook, push the hook up to release and detach the inside portion of the slide completely from the outside portion of the rack slide.
4. Set aside this inside portion of the rack slide. You will be mounting this part of the rack slide to a side of the computer chassis later in this procedure.
5. Repeat steps 3 and 4 for the other rack slide. (Refer to figure 1 as necessary)

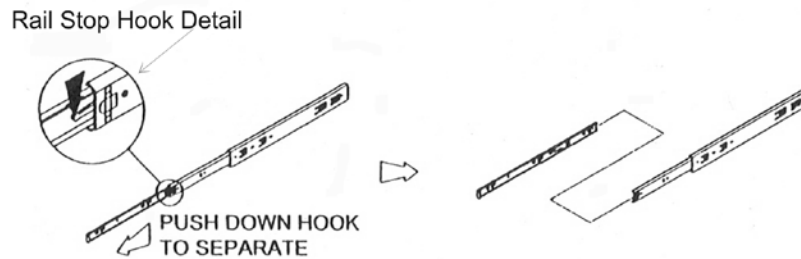


Figure 1 – Rail Stop Hook Detail

6. Using four mounting screws from hardware bag S-047-0, attach an inside rail to the left side of the computer chassis as shown in figure 2. Note – the rubber bumper on the inside rail slide needs to be facing toward the front of the computer and the cut-out portion of the rail release latch should be pointing downward indicating that the slide rail has been properly mounted to the correct side of the computer chassis.

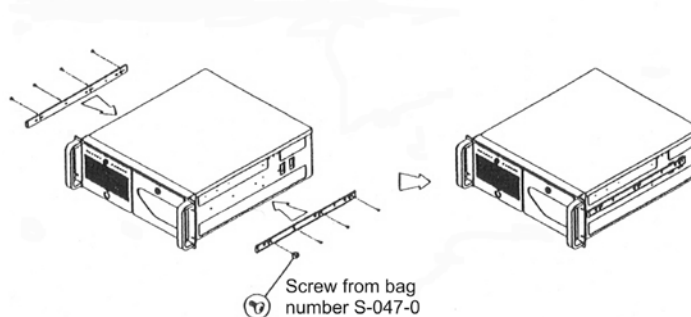


Figure 2 – Inside Rail Mounting Detail

7. Repeat step 6 for the right side on the computer and refer to figure 2 as necessary.
8. Standard 19" instrument racks have a wide variety of mounting hole types. Some mounting holes are threaded, but most of not, some mounting holes are located on side flanges rather than the front and back of the rack supports and finally some holes are round while others are rectangular. The

following steps assume that your 19" instrument rack has round, non-threaded mounting holes for the slide rail frames. The optional rack frame mounting brackets accommodate the side flange rackmount hole placements. If your rack has other mounting hole types or placements, then you may need to consult with your rack supplier to obtain the correct slide rail mounting hardware.

9. The rubber bumper on the outside portion of slide rails are to be located toward the rear of the 19" rack.
10. Refer to figure 3 and attach two rail frames each to the outside portion of both rack slides using the hardware in bag number S-107-1.

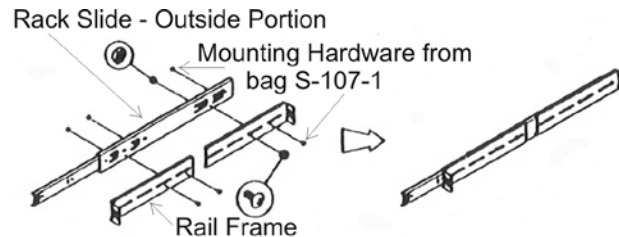


Figure 3 – Outside Rail and Frame Assembly

11. If the mounting holes are on the inside portions of your rackmount supports, then mount each assembly directly to the rack supports as shown in figure 4-A.

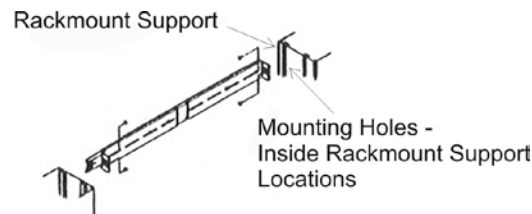


Figure 4A – Rail/Frame Mounting – Inside Rackmount Hole Locations

12. If the mounting holes are located on side flanges then you will need to use the optional rack frame mounting brackets.
13. Attach the optional brackets to the rack slides as shown in figure 4-B and attach the completed assembly to the rack supports.

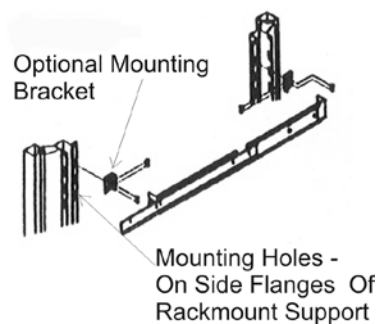


Figure 4B – Rail/Frame Mounting – Side Flange Rackmount Hole Locations

14. You will need to supply the hardware necessary to mount your completed rail and frame assemblies to the rackmount enclosure supports.
15. CAUTION – Ensure that when mounting the completed rail and frame assemblies to the 19" rack that the left and right assemblies are the same distance from the top or bottom of the rack. Failure to align the slide rails properly will result in the computer not being level inside the rack. If the slides are grossly misaligned then you may not be able to slide the chassis into the slide rails.
16. Refer to figure 5 and slide the chassis into the rails attached to the frame of the rackmount enclosure. (You should have another person help you lift and slide the chassis into the enclosure.)

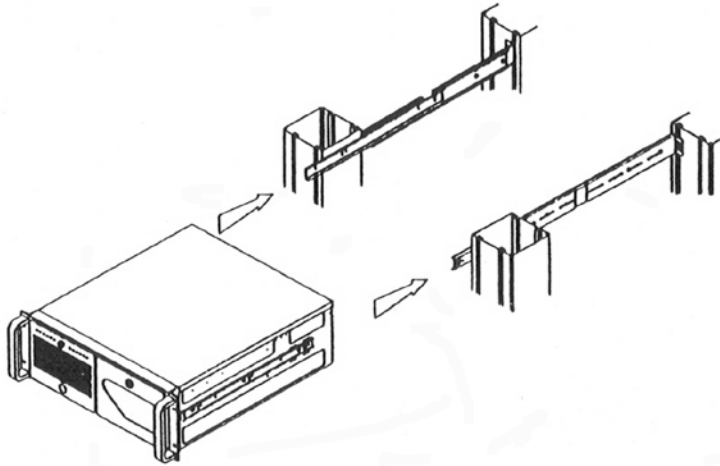


Figure 5 – Chassis Installation

17. You should hear and audible “click” when the rail stop hooks on the slide engage with the chassis stops inside the rails mounted to the enclosure.
18. Push up on the rail stop hooks and push the chassis completely into the enclosure.
19. Each Trenton System chassis has two through holes on each chassis-mounting flange. Use these holes to secure your chassis to the enclosure. (Note: The hardware used in this step is highly dependent on your enclosure type; therefore, Trenton does not provide the hardware for this step.)
20. Contact Trenton Systems if you require additional assistance.

CONNECTING AC POWER

The TVC4403 requires a single-phase power source providing 110-240VAC at 50 to 60Hz to the AC input power outlets located at the rear of the chassis. Power must be available at the three-pin AC input receptacle located on the supply at the rear of the system. An over-current protection device shall protect the power cord.

To connect AC power to the computer:

1. Establish a chassis to earth ground connection to the TVC4403 chassis.

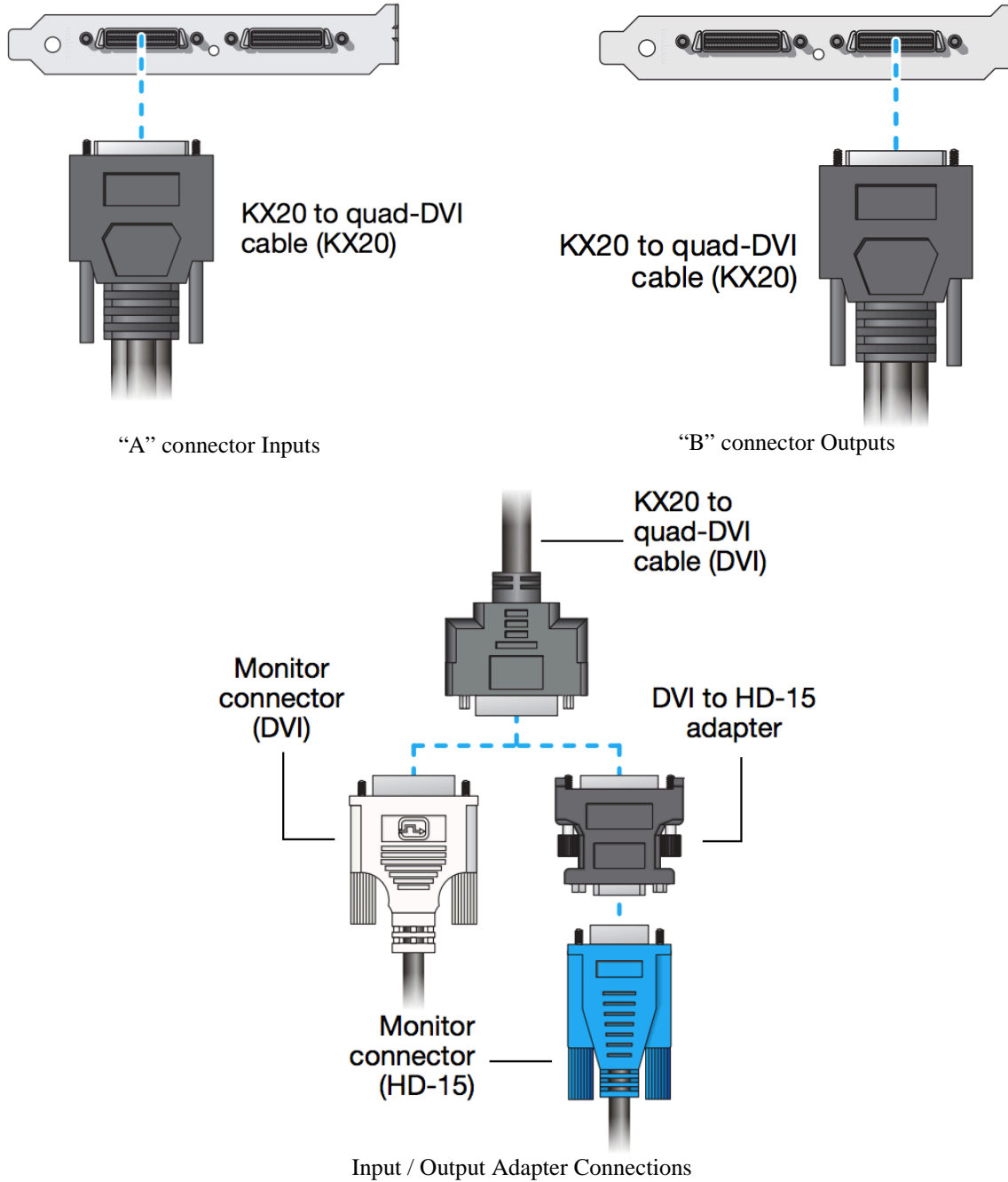


2. Connect the AC power cords to the AC receptacles.
3. Connect the plug end of the power cords into the main outlet.

NOTE: The maximum current limits for the +5V, +3.3V and +12V outputs from the system power supply are 32A, 32A and 65A respectively. The system’s power monitoring circuits will shut the system down if these maximum current limits are drawn from the power supply.

CONNECTING DVI OR HD-15 I/O TO THE TVC4403 SYSTEM

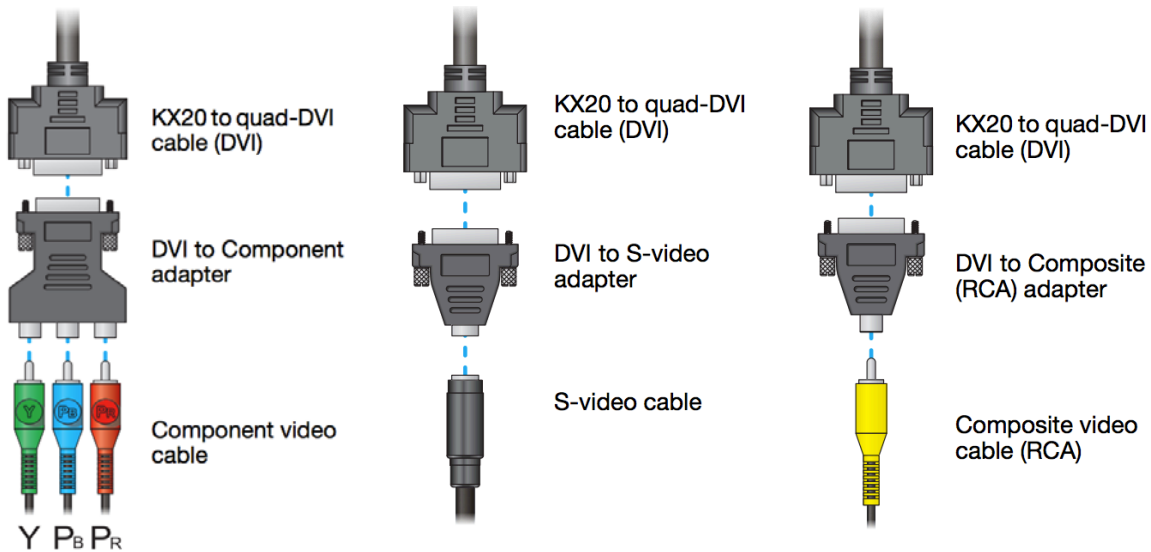
On the display card(s) integrated into your system, the lower connector (labeled “A”) are inputs and the upper connector (labeled “B”) are outputs. Monitors and inputs are numbered consecutively based on which connector each is attached to. For example, the monitor attached to the connector labeled 1 on the cable is identified as 1; the monitor attached to the connector labeled 2 on the cable is identified as 2, and so on.



CONNECTING OTHER VIDEO INPUT DEVICES TO THE TVC4403 SYSTEM

Depending on your video input connection setup, you may also need any of the following adapter hardware (available separately):

- DVI cable (male to male)
- DVI to Component adapter
- DVI to S-video adapter
- DVI to Composite (RCA) adapter



CAUTION: To avoid possible connection problems that could damage your monitors or prevent you from using your TCV4403, read the following guidelines **before** connecting your hardware.

- Whenever you change your connection setup, make sure you are using the correct connectors and that all connectors are properly fastened.
- Do not change connections while your system is turned on. Before changing connections, make sure your system is shut down and turned off.
- Whenever you restart your system, make sure your monitors are connected and powered on. Otherwise, the software may not be able to properly detect your monitors.

Refer to the Matrox Mura MPX Series Users Guide for more detailed card connection information:
http://www.matrox.com/graphics/media/pdf/products/display_wall/mura/en_mura_user_guide.pdf

Chapter 4 - TVC4403 Power-Up & BIOS Set-Up Considerations

When powering-up the TVC4403 for the first time Trenton suggests that you enter the BIOS set-up menu of the JXTS6966 single board computer to ensure that the SBC's BIOS settings are appropriate for your specific video wall controller application.

TVC4403 INITIAL POWER-UP SEQUENCE

- Ensure both AC power cords are connected to the controller's redundant power supplies and plugged into the 115/230VAC wall outlets
- Turn on both switches of the redundant power supplies: see callouts 2 & 3 in Figure 2a
- Connect a VGA monitor to the SBC's video port: see callout 6 in Figure 2a
- Turn on the VGA monitor
- Connect a USB keyboard and mouse to the TVC4403 using any of the controller's available USB ports. Refer to callout 5 in Figure 1 or callout 7 in Figure 2a.
- Turn on the TVC4403 using the power on switch in the front of the unit: see callout 4 in Figure 1.

ENTERING THE JXTS6966 BIOS SETUP MENU

The JXTS6966 BIOS has been optimized for use with the Mura MPX video controller cards. The current JXTS6966 Mura MPX BIOS is version 0ACAR004 and it ships with the SBC used in the TVC4403 under Trenton Systems deviation B011E. The BIOS revision or deviation level may change slightly, but the BIOS set-up parameters should remain consistent. Refer to the BIOS set-up parameters listed below to make any necessary changes to optimize the TVC4403 for your specific video display wall applications.

To enter the BIOS set-up screens, follow the steps below:

Step	Description
1	Power on the TVC4403
2	Press the <Delete> or <F2> key on your keyboard when you see the following text prompt: Press DEL or F2 to enter Setup
3	After you press the <Delete>/<F2> key, the Aptio TSE main BIOS setup menu displays. You can access the other setup screens from the main BIOS setup menu, such as the Chipset and Power menus.

NOTE: In most cases, the <Delete> or <F2> keys are used to invoke the Aptio TSE screen. There are a few cases that other keys are used (<F1>, <F10>, ...).

NOTE: The user can press the <TAB> key during boot to switch from the boot splash screen (logo) to see the keystroke messages.

Aptio® TSE Setup Menu

The Aptio TSE BIOS setup menu is the first screen that you can navigate. Each BIOS setup menu option is described in this user's guide.

Aptio Setup Utility – Copyright © 2009 American Megatrends Inc.						
Main	Advanced	Chipset	Boot	Security	Save & Exit	Event Logs
BIOS Information					Choose the system default language	
BIOS Vendor		American Megatrends				
Core Version		4.6.3.7				
Project Version		0ACAR004				
Build Date		03/22/2013				
Customer Reference Number		006250				
Memory Information						
Total Memory		4096 MB (DDR3)				
System Language		[English]				
					↑↓ : Select Item	
System Date		[Thu 11/02/2012]			Enter: Select	
System Time		[14:20:00]			+/- : Change Opt.	
					F1 : General Help	
Access Level		Administrator			F2 : Previous Values	
					F3 : Optimized Defaults	
					F4 : Save & Exit	
					ESC : Exit	
Version 2.00.1201, Copyright © 2009 American Megatrends, Inc.						

There may be slight differences in the screen shots illustrated in this manual due to Trenton JXTS6966 BIOS modifications. [Contact Trenton Technical support](#) for any questions regarding the SHBs' implementation of Aptio TSE.

Navigation

The Aptio® TSE keyboard-based navigation can be accomplished using a combination of the keys.(<FUNCTION> keys, <ENTER>, <ESC>, <ARROW> keys, etc.).

Key	Description
ENTER	The <i>Enter</i> key allows the user to select an option to edit its value or access a sub menu.
→← Left/Right	The <i>Left and Right</i> <Arrow> keys allow you to select an Aptio TSE screen. For example: Main screen, Advanced screen, Chipset screen, and so on.
↑↓ Up/Down	The <i>Up and Down</i> <Arrow> keys allow you to select an Aptio TSE item or sub-screen.
+/- Plus/Minus	The <i>Plus and Minus</i> <Arrow> keys allow you to change the field value of a particular setup item. For example: Date and Time.
Tab	The <Tab> key allows you to select Aptio TSE fields.
ESC	The <Esc> key allows you to discard any changes you have made and exit the Aptio TSE. Press the <Esc> key to exit the Aptio TSE without saving your changes. The following screen will appear: Press the <Enter> key to discard changes and exit. You can also use the <Arrow> key to select <i>Cancel</i> and then press the <Enter> key to abort this function and return to the previous screen.
Function keys	When other function keys become available, they are displayed in the help screen along with their intended function.

Listed below are JXTS6966 BIOS set-up default parameters that are unique for 0ACAR004 custom BIOS used for the TVC4403 video wall controller. Refer to the Trenton Systems JXT6966/JXTS6966 BIOS Setup Manual for a complete listing of all JXTS6966 BIOS parameters:
http://www.trentonsystems.com/wp-content/uploads/trenton_jxt6966_jxts6966_bios_setup_manual_6966.pdf

Advanced BIOS Set-Up Menu – PCI Subsystem Settings, ACPI Settings & CPU Configuration

Aptio Setup Utility – Copyright © 2009 American Megatrends Inc.						
Main	Advanced	Chipset	Boot	Security	Save & Exit	Event Logs
Legacy OpRom Support					Enable of Disable Boot Option for Legacy Devices	
Launch PXE OpRom		Disabled/Enabled				
Launch Storage OpRom		Enabled/Disabled				
▶ PCI Subsystem Settings					→← : Select Screen	
▶ ACPI Settings					↑↓ : Select Item	
▶ CPU Configuration					Enter: Select	
▶ Runtime Error Logging					+/- : Change Opt.	
▶ SATA Configuration					F1 : General Help	
▶ USB Configuration					F2 : Previous Values	
▶ Info Report Configuration					F3 : Optimized Defaults	
▶ SuperIO Configuration					F4 : Save & Exit	
▶ Serial Port Console Redirection					ESC : Exit	
					F1 : General Help	
Version 2.00.1201, Copyright © 2009 American Megatrends, Inc.						

PCI Sub-System Settings

A number of PCI Express, PCI-X and PCI device settings are available for configuration with this BIOS parameter. Specific device availability depends on what the BIOS can see during the system boot process. The PCI Subsystem Setting is used to optimize the operations of off-board cards or devices that interact with the SHB and the SHB’s BIOS. Listed below are all the available BIOS settings for board’s PCI bus driver and the PCI Express link interfaces with the Above 4G Decoding custom BIOS setting for the JXTS6966 implementation in the TVC4403 video controller noted in red.

Option	Description
PCI ROM Priority	EFI Compatible ROM /Legacy ROM (bold = default setting)
Above 4G Decoding	Disabled/ Enabled – The system design needs to support 64-bit PCI decoding for this setting to be meaningful. Enabling the setting allows the SHB to decode the 64-bit capable devices such as the Matrox Mura MPX series cards connected to the SHB’s the 4G-address space.
PCI Latency Timer	Timer value selections available: 32 PCI Bus Clocks , 64 PCI Bus Clocks, 96 PCI Bus Clocks, 128 PCI Bus Clocks, 160 PCI Bus Clocks, 192 PCI Bus Clocks, 224 PCI Bus Clocks, 248 PCI Bus Clocks
VGA Pallet Snoop	Disabled /Enabled
PERR# Generation	Disabled /Enabled
SERR# Generation	Disabled /Enabled
PCI Express Device Settings	There are several sections associated with this BIOS parameter setting as shown below. Short operational descriptions for each setting can be found in the upper left corner of the BIOS set-up screen. PCI Express Device Register Settings Relaxed Ordering: Disabled /Enabled (bold = default setting) Extended Tag: Disabled /Enabled No Snoop: Disabled/ Enabled Maximum Payload: Auto , 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048Bytes, 4096 Bytes Maximum Read Request: Auto , 128 Bytes, 256 Bytes, 512 Bytes, 1024 Bytes, 2048Bytes, 4096 Bytes
PCI Express Link Settings	ASPM Support: Disabled /Auto/Force L0 WARNING: Enabling ASPM may cause some PCI devices to fail Extended Sync: Disabled /Enabled Spread Spectrum Mode: Disabled / Enabled

ACPI Settings

This is where you set up your system for use with the ACPI soft control states available on the JXTS6966. Enable hibernation is disabled as the custom BIOS default setting and ACPI sleep state BIOS default has the suspend state disabled. The SHB hardware and BIOS core supports both the S1 and S3 sleep states; however, enabling one of these sleep states may cause operational errors with the Mura MPX video controller cards.

Option	Description
Enable ACPI Auto Configuration	Disabled /Enabled (bold = default setting)
Enable Hibernation	Disabled /Enabled
ACPI Sleep State	S3 (Suspend to RAM)/ Suspend Disabled /S1 (CPU Stop Clock)
S3 Video Repost	Enabled /Disabled
Power Supply Shutoff	AUTO /Manual

Note: The enable hibernation and ACPI sleep state selections may not be visible in the custom BIOS.

CPU Configuration

The first six settings on the sub-menu display the specifics of the processors installed in the SHB sockets. The remaining selections provide the mechanism to enable or disable select processor features. The CPU C7 Report option is defaulted to Disabled for the JXTS6966 used in the TVC4403 video wall controller. All other parameters are standard default options for the SHB.

Option	Description
Processor Type	Intel® Xeon® CPU
EMT64	Supported
Processor Speed	2128 MHz
Processor Stepping	106e4
Processor Cores	4
Intel HT Technology	Supported
Hyper-Threading	Enabled /Disabled (bold = default setting)
Active Processor Cores	All /1/2
Limit CPUID Maximum	Disabled /Enabled
Execute Disable Bit	Enabled /Disabled
Hardware Prefetcher	Enabled /Disabled
Adjacent Cache Line Prefetch	Enabled /Disabled
Intel Virtualization Technology	Disabled /Enabled
Power Technology	Energy Efficient/Disable/Custom
EIST	Enabled /Disabled
Turbo Mode	Enabled /Disabled
Performance/Watt	Traditional /Power Optimized
P-State Coordination	HW_ALL /SW_ALL/SW_ANY
CPU C3 Report	Disabled /ACPI C-2/ACPI C-3
CPU C6 Report	Enabled /Disabled
CPU C7 Report	Enabled/ Disabled (Failsafe and Optimal)
Interrupt Filtering	Enabled /Disabled
Package C State Limit	No Limit /C0/C1/C3/C6/C7
Local x2APIC	Disabled /Enabled
TDC Limit	0
TDP Limit	0
1-Core Ratio Limit	0
2-Core Ratio Limit	0
3-Core Ratio Limit	0
4-Core Ratio Limit	0

Chipset Configuration Setup

The term “chipset” is a bit of a misnomer for the Trenton JXTS6966. The “chipset” on the SHB is really a single component called a “Platform Controller Hub” or PCH. Specifically, the Trenton JXTS6966 features the Intel® 3420 PCH. The PCH device combines many of the capabilities that were previously contained in individual North Bridge and South Bridge chipset components. Select BIOS set-up parameters noted in **red** are changed from the standard JXTS6966 BIOS used for the Intel® 3420 PCH. These custom JXTS6966 BIOS set-up parameters are needed for the SHB implementation used by the TVC4403 video controller.

North Bridge Configuration

The *North Bridge Configuration* menu item allows the user to do the following:

Option	Description
► Jasper Forest I/O Configuration	<p>This option allows the user to view, enable or disable the Intel® Virtualization Technology for Directed I/O feature of the processors. The default setting is Disabled and when Enabled the following sub-menu of specific I/O parameters become available for selection;</p> <ul style="list-style-type: none"> ► Intel® VT for Directed I/O Configuration <ul style="list-style-type: none"> ► Intel VT-d Disabled/Enabled (if Enabled the following five selections appear) <ul style="list-style-type: none"> Interrupt Remapping: Enabled/Disabled Coherency Support: Disabled/Enabled ATS Support: Enabled/Disabled Pass Through DMA: Enabled/Disabled <p>[All remaining North Bridge settings are standard BIOS defaults]</p>

South Bridge Menu Configuration

Select BIOS set-up parameters noted in **red** are changed from the standard JXTS6966 BIOS used for the portion of the Intel® 3420 PCH that handles the former South Bridge functions. The *South Bridge Configuration* menu item allows the user to do the following:

Option	Description
SMBus Controller	Enabled/Disabled - This option allows the user to enable or disable the SMBus Controller in the Intel® 3420 (bold = default)
GbE Controller	Enabled/Disabled - This option allows the user to enable or disable the Ethernet Controller in the Intel® 3420. Disabling this internal controller shuts down the LAN interface to the PICMG 1.3 backplane. This setting does not affect the operation of the independent Intel 82575 Ethernet Controller that drives the two LAN ports on the SHBs I/O plate.
Wake on LAN from S5	Enabled/Disabled - This option allows the user to enable or disable wake on LAN feature derived from an ACPI S5 shutdown event
Restore AC Power Loss Settings	Power On/Power Off/Last State - This option allows the user to determine how the system will come back up when power is restored after an unplanned power interruption. The options are Power Off, Power On or Last State.
SLP_S4 Assertion Stretch Enable	Enabled/Disabled
SLP_S4 Assertion Width	4-5seconds/1-2 Seconds/2-3 Seconds/3-4 Seconds
Azalia HD Audio	Enabled/ Disabled
Azalia internal HDMI codec	Enabled/ Disabled
High Precision Timer	Enabled/Disabled

Note: The enable Azalia HD Audio and Azalia internal HDMI codec selections may not be visible in the custom BIOS.

South Bridge Configuration – USB Setup

The USB BIOS set-up parameters noted in **red** are changed from the standard JXTS6966 BIOS used for the portion of the Intel® 3420 PCH. All other USB parameters are standard JXTS6966 BIOS defaults.

USB Configuration	<p>This option allows the user to Enable or Disable the various USB ports inside the Intel® 3420 PCH. The default setting is set to Enable. These internal USB ports drive the USB interface connections to the SHBs I/O plate and down to edge connector C for us on a PICMG 1.3 backplane.</p> <p>All USB Devices: Enabled/Disabled EHCI Controller 1: Enabled/Disabled EHCI Controller 2: Enabled/Disabled RMH Support: Enabled/Disabled/Auto (if disabled the following UHCI parameters become available) UHCI Controller 1: Enabled/Disabled UHCI Controller 2: Enabled/Disabled UHCI Controller 3: Enabled/Disabled UHCI Controller 4: Enabled/Disabled UHCI Controller 5: Enabled/Disabled UHCI Controller 6: Enabled/Disabled UHCI Controller 7: Enabled/Disabled USB Port 0: Enabled/Disabled USB Port 1: Enabled/Disabled USB Port 2: Enabled/Disabled USB Port 3: Enabled/Disabled USB Port 4: Enabled/Disabled USB Port 5: Enabled/Disabled USB Port 6: Enabled/Disabled USB Port 7: Enabled/Disabled USB Port 8: Enabled/Disabled USB Port 9: Enabled/Disabled USB Port 10: Enabled/Disabled USB Port 11: Enabled/Disabled USB Port 12: Enabled/Disabled USB Port 13: Enabled/Disabled</p>
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SMBIOS Event Log – Changing Event Log Settings

Use the JXTS6966 BIOS menu screen options to set up the system event log reporting format and configuration options for the BIOS. The set-up parameters noted in red are custom for the JXTS6966 implementation in the TVC4403 video wall controller

Option	Description
► Change SMBIOS Event Log Settings	
SMBIOS Event Log	Enabled /Disabled - This option allows the user to enable or disable the recording of SMBIOS boot errors (bold = default)
Erasing Settings	
Erase Event Log	<i>No/Yes, Next Reset/Yes, Every reset</i> – Use this setting to control if and when to erase error messages for the event log.
When Log is Full	Do Nothing /Erase Immediately
SMBIOS Event Log Standard Settings	
MECI	<i>1/1-255</i> - Multiple Event Count Increment – The number of duplicate occurrences of an event before the counter is updated
METW	<i>60/0-99</i> - Multiple Event Time Window – The number of minutes that must pass between duplicate events before the counter is updated
Custom Options	
Log OEM Codes	Enabled /Disabled
Convert OEM Codes	Disabled /Enabled

Refer to the Trenton Systems JXT6966/JXTS6966 BIOS Setup Manual for a complete listing of all BIOS parameters:

http://www.trentonsystems.com/wp-content/uploads/trenton_jxt6966_jxts6966_bios_setup_manual_6966.pdf

Chapter 5 - *Mura & HDCP*

High-bandwidth Digital Content Protection (HDCP) is a means to prevent the display of digital content on devices that do not support HDCP. Encrypted HDCP signals can only be utilized by digital equipment that support HDCP and every part of the system must comply with the protocol. If any device in the chain is not compliant, the transmission of content will be halted.

HDCP DEVICES

A HDCP system can be broken down into three components: Sources, Repeaters, and Sinks.

- **Sources** include HDCP compliant digital devices such as Blu-ray or DVD players, gaming consoles, cable/satellite, HD cameras, and computer video cards.
 - Note: It does not matter what the content is (i.e. copy-protected Blu-ray disc or home movie saved to a thumb drive). Because, in most situations, the encryption is handled by the device itself.
- **Repeaters** are devices that process and distribute content. Mura cards can be thought of as the repeaters of the HDCP chain.
- **Sinks** are display devices such as monitors, TVs, or digital projectors.

THE HDCP CHAIN

Connections between devices in the chain must be made using DVI, or DP. Analog connections are not supported and will break the chain. The HDCP specification limits the amount of devices that can be connected within a chain. This requirement limits a HDCP compliant video controller to 24 inputs and 24 outputs (i.e. up to six Mura cards).

- All enabled Mura outputs must be connected to a monitor or utilized with software. Otherwise HDCP cannot be authenticated.

TROUBLESHOOTING: HDCP CHAIN

- Black or Blue “flickering” output.
 - This is what will be displayed if the HDCP chain is broken.
- Sudden loss of HDCP output.
 - The HDCP protocol is constantly authenticating the device chain. The loss of a monitor (entering a sleep state or power loss) will break the chain. Once the chain is restored, HDCP will authenticate and the content will display. Check for “flaky” cabling, sleeping monitors, or unutilized outputs.
 - Unutilized outputs are outputs enabled in the Matrox PowerDesk configuration software used with the Mura cards but not connected to the TVC4403.

Chapter 6 - *Matrox PowerDesk Configuration Software*

The Matrox PowerDesk software is oftentimes used with the TVC4403 and this software allows the user to graphically configure a stretched desktop across an array of monitors connected to the Matrox Mura MPX video controller card(s). It also has the ability to create cloned and rotated desktops, as well as adjust for bezels and overlapping. These desktop settings can be saved and modified.

AUTO-CONFIGURATION

Default PowerDesk settings scan connected output devices at Windows start up and chooses the optimal resolution and frequency settings based on connected devices. The detection is based off the Extended Display Identification Data (EDID) received from the digital device. If analog devices are used, the highest compatible analog setting is chosen. PowerDesk allows the flexibility to use both digital and analog devices within the same configuration.

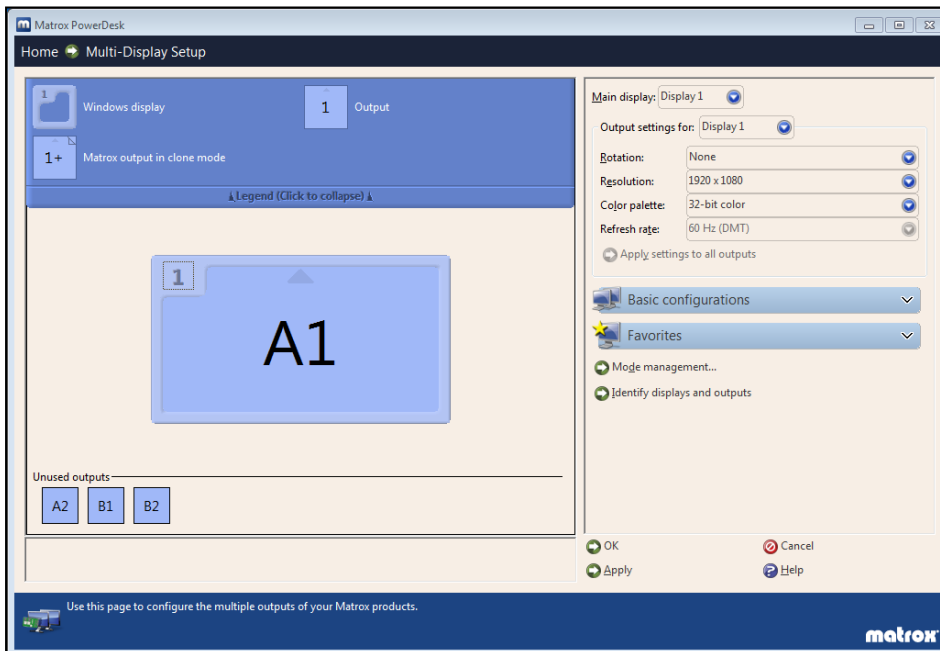
Automatic configuration creates an adaptable video wall that adjusts for output device failures. If this automatic operation is not desired, it can be disabled and a predefined configuration can be forced.

ACCESSING POWERDESK

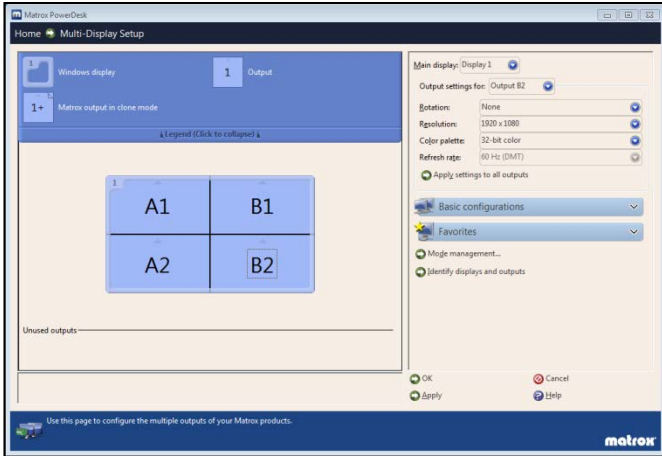
Open Powerdesk by right clicking on the desktop and selecting **Launch Matrox PowerDesk** from the drop down menu or from the start menu: **Start ► All programs ► Matrox Graphics ► Matrox PowerDesk**.

CONFIGURING MULTIPLE DISPLAYS AS A STRETCHED DESKTOP (ONE MURA MPX-4/4 CARD EXAMPLE)

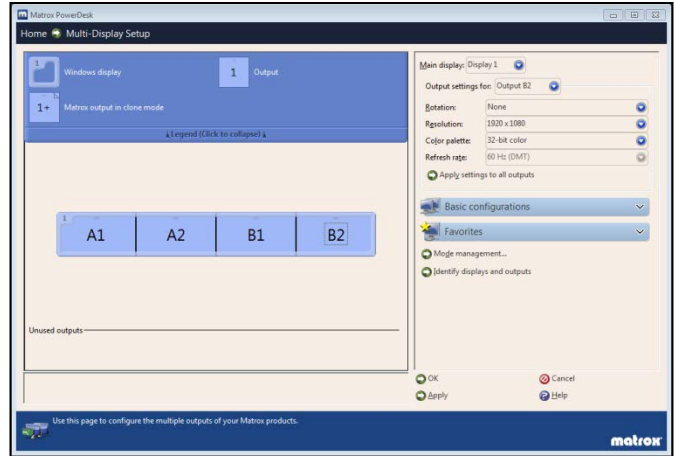
- Select the **Multi-Display Setup** option from the PowerDesk main menu.
- The default interface should be similar to the screen shot shown below.



- The center pane is a representation of the layout of your desktop. Drag and connect the edges of the outputs in the Unused Outputs section to the desired location in the center pane. This creates a rectangular stretched desktop using a configuration that complements your setup.

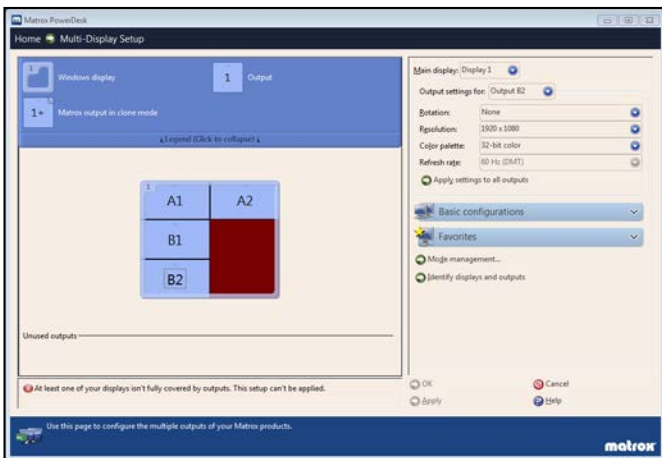


2x2 layout using 4 outputs

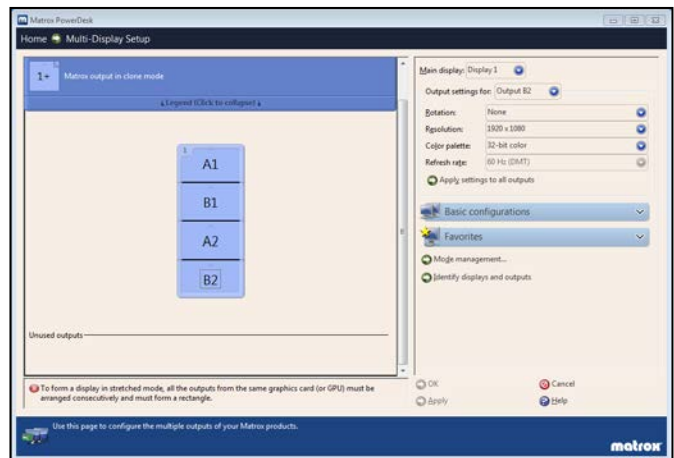


4x1 layout using 4 outputs

- Stretched desktops do not support non-rectangular layouts. A red empty placeholder on your layout will indicate an unsupported layout. You will not be able to apply an unsupported layout until the placeholder is filled.
- All outputs from the same video card (or GPU) must be arranged consecutively and must form a rectangle. A red **X** in the notes section of PowerDesk will indicate an unsupported layout.



Unsupported layout using 4 outputs



Unsupported 1x4 layout using 4 outputs

CONFIGURING MULTIPLE DISPLAYS AS A CLONED DESKTOP

PowerDesk also gives you the ability to create “mirrored” or “cloned” layouts.

- Drag an unused output on top of a previously placed output on your layout in the center pane.
- Once in place, the layered “cloned” output will be indicated by a plus sign.
- This will display that portion of the desktop on each of the layered outputs.

You can save and recall layouts using the options under the favorites section in the right pane.

ACCESSING POWERDESK HELP

The PowerDesk Software also includes controls for adjusting your output settings (such as rotation, resolution, color palette, refresh rate, bezel management, program window control, and, keyboard shortcuts). For information on these features and options, see the help file included with your PowerDesk software.

Chapter 7 - *Replacing System Components*

OPENING THE TVC4403

A trained electronics technician may need to remove the top cover of the TVC4403 to install or remove the option cards.

NOTE: When installing option cards into the TVC4403 rackmount computer you must ensure that the card installation does not result in non-conformance to the safety or EMC requirements for this product.

To open the computer:

1. Disconnect the AC power cords
 2. Remove the nine (9) screws attaching the cover to the chassis. There are three screws on the right and left-side of the chassis, two screws on the back of the chassis and one screw on the top securing the cover to the chassis
 3. Slide the cover back slightly and lift it off the chassis
 4. Ensure you are properly grounded before installing or removing option cards
 5. Remove the option card hold down bar to install or remove cards
-

NOTE: NEVER install or remove any option card from a backplane if any +5V AUX / Standby LED is ON.

REPLACING COMPONENTS

The JXTS6966, Mura MPX cards, system fans and storage drives for the TVC4403 are designed for easy access. Make sure you have a top chassis clearance of at least 6" (152mm) to remove or install system cards.

JXTS6966 & MURA MPX CARDS

Remove all system power from the TVC4403. Remove the controller's top cover, card hold-down bar and the I/O plate retention screw from the card to be removed from the system. Pull straight up on the card to be removed being careful to handle the card by its edges and not by any active board components. Insert the removed card into an anti-static bag for return to the repair facility. Refer to page 2 of this document for the proper RMA return procedure. Re-install the replacement board by reversing this procedure.

COOLING FANS

The three cooling fans of the TVC4403 are mounted along the top of the chassis. Each fan is secured to a fan carrier and can be removed by loosening the two thumbscrews and lifting out the assembly. A connector on the fan carrier connects each fan to the chassis' +12V supply line.

STORAGE DRIVES

The fixed-mount storage drives of the TVC4403 are mounted to the drive bay to allow easy insertion and removal from the chassis. You will need to remove the chassis' top cover in order to replace a fixed-mounted HDD or optical drive. The number of HDDs used is dependent on your specific system requirements. The HDD and optical media drive bays are located to the right of the system's power and reset switches.

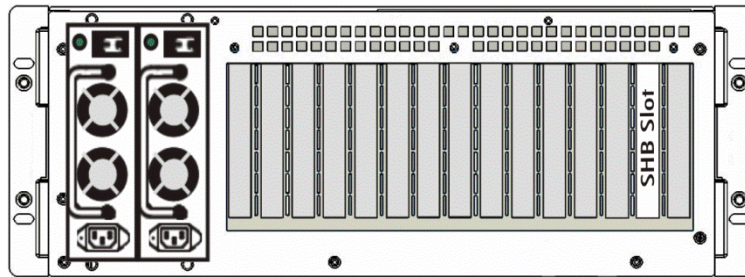
Some HDDs may utilize a drive carrier. Drive carrier mounted HDDs are secured to the chassis with either a black slide catch or a thumbscrew. Either slide the black HDD catch to the left or loosen the HDD carrier's thumbscrew to grasp the drive carrier handle and then pull out the carrier to remove. Once the carrier is removed, you may mount or remove the drive or drives as necessary.

AIR FILTER

As the system ages and depending on the installation you may need to periodically clean or replace the system's air filter. The filter cleaning/replacement frequency is highly dependent on the installation environment, but should be done at least once a year. Loosen the thumbscrews on either side of the filter guard and remove the filter located inside for cleaning or replacement.

POWER SUPPLY - REDUNDANT

The 800W rear-mounted, redundant power supply option used in the TVC4403 rackmount computer is shown in the figure below.



The system's redundant, rear-mounted, power supplies should only be removed and replaced by a trained electronics technician.

NOTE: The maximum current limits for the +5V, +3.3V and +12V outputs from the system power supply are 32A, 32A and 65A respectively. The system's power monitoring circuits will shut the system down if these maximum current limits are drawn from the power supply.

CAUTION: Risk of explosion if the system host board battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

PREPARATION FOR SHIPMENT

The TVC4403 should always be removed from the rack cabinet if the unit must be shipped to another site. If possible, use the original shipping carton to ship the TVC4403.

NOTE: Never ship the TVC4403 when it is mounted inside a rack; damage to the computer and rack cabinet will likely result.

Reverse the installation steps in chapter three to remove the TVC4403 from the rack cabinet. Do not forget to remove the chassis' earth ground wire before attempting computer removal.

Chapter 8 - *TVC4403 Troubleshooting Guide*

If you any problems with your Matrox Mura MPX card first check the following:

- Make sure your JXTS6966 single board computer, the Matrox card(s) and all backplane connectors are properly seated and correctly installed.
- Ensure that you are using the correct connectors on the Mura MPX cards, and that all connectors plus any connector adapters are properly fastened.
- Make sure you have administrator rights on the system you want to use. For more information, see Windows documentation.
- Refer to the Matrox Mura MPX Series Users Guide for more detailed card information:
http://www.matrox.com/graphics/media/pdf/products/display_wall/mura/en_mura_user_guide.pdf
- Manual for a complete listing of all JXTS6966 BIOS parameters:
http://www.trentonsystems.com/wp-content/uploads/trenton_jxt6966_jxts6966_bios_setup_manual_6966.pdf
- Refer to the Trenton Systems JXT6966/JXTS6966 Hardware Manual for more detailed information:
http://www.trentonsystems.com/wp-content/uploads/trenton_jxt6966_jxts6966_hardware_manual_6966.pdf
- The webpage for the JXTS6966 single board computer may prove useful in the TVC4403 application:
<http://www.trentonsystems.com/single-board-computers/picmg-1-3/jxts6966-single-board-computer>

This section addresses common problems that could prevent you from using your system from displaying the correct information on your video display wall.

- 1. System doesn't display information or boot after Matrox card is installed**
 - a. Card may not be properly seated into backplane slot
 - i. Ensure card is seated properly
 - b. Backplane slot may have a fault
 - i. Move card to a another slot
 1. If this corrects the problem the backplane slot may be defective or the available device resources from the SHB may be set improperly. Either way, contact Trenton tech support for assistance.
- 2. Cannot use Windows, Windows reports a configuration error, and/or can't install or uninstall Matrox driver**
 - a. May need to uninstall and then reinstall Matrox software. See page 38 of the Matrox Mura MPX Series Users Guide.
 - b. May need to re-load correct device driver. Contact Trenton tech support for assistance.
- 3. System performance is slow or degraded**
 - a. The BPG7087 backplane used in the TVC4403 controller has four x16 PCIe slots. Ensure that the Matrox Mura MPX cards are installed in these slots and are used for all critical or high-speed video outputs and inputs
 - b. Your Matrox Mura MPX cards may be overheating.
 - i. Make sure the operating temperature of your graphics chip is within a normal range by accessing the Matrox PowerDesk software. Refer to page 33 of the Matrox Mura MPX Series Users Guide:
 1. From the main interface, click Help and Troubleshooting
 2. Check the peak temperature being reported.
 3. If the reading is too high then:
 - a. Make sure the TVC4403 is free of dust and is located in a well- ventilated area.

4. **Wrong color balance, screen image off-center, or no picture at all**
 - a. Monitor video controls may be improperly set.
 - i. Adjust your monitor controls (brightness, contrast, and so on). For more information, see your monitor manual.
 - b. Monitor may not be properly connected (the connectors aren't properly fastened or the monitor power cable isn't firmly in place) or may have been disconnected.
 - i. Make sure you're using the correct connectors, that all connectors are properly fastened, and that all power cables are firmly in place. Refer to the Connecting DVI or HD-15 I/O to the TVC4403 System section of Chapter 3
 - c. If your monitor supports multiple input sources (analog/digital), it may be configured to use the wrong source.
 - i. Make sure your monitor is using the correct input source. For more information on selecting the input source for your monitor, see your monitor documentation.
 - ii. Change your connection setup to use a different input source.
 - d. If the EDID of your monitor can't be detected, the driver default analog signal is used.
 - i. Force the driver to use a digital signal instead by using the Matrox PowerDesk software.
 1. From the main interface of PowerDesk, click Help and Troubleshooting
 2. Under Connection Management, enable the Use digital signal when no EDID is detected check box.
 3. You'll be prompted to restart your system for changes to take effect.
 4. For information on Matrox PowerDesk software features and options, see the help file included with the PowerDesk software.
5. **After the startup screen, or after display settings are changed, the screen image is garbled or unusable (blank screen, rolling or overlapping screen images)**
 - a. Analog monitors only – The Matrox driver may be trying to use settings your monitor doesn't support. This can happen if the display resolution was changed to one your monitor doesn't support or if the monitor connected to your system was changed without changing the display or monitor settings in the software.
 - i. Make sure your monitor supports the display mode currently in use. After installing your Matrox product, your system uses either the preferred display mode for your monitor or a display mode of 800 × 600 at 60 Hz.
 - b. If none of your monitors are available, reinstall your Matrox drivers. For more information on reinstalling your driver, see the following solution.
 - i. Files on your system may have been deleted or corrupted.
 1. Solution Uninstall, then reinstall Matrox software.
 2. Refer to page 38 of the Matrox Mura MPX Series Users Guide
6. **Problem Monitor settings aren't automatically detected**
 - a. Monitor may not be detected by the software.
 - i. Restart the system. If the monitor is a Plug-and-Play (DDC) monitor, it should be automatically detected by the software.
 - ii. Try using a different monitor.
7. **Black borders appear around video capture content**
 - a. Video source (input device) is using a different aspect ratio than your output device.
 - i. Change your aspect ratio so that all devices use the same aspect ratio.

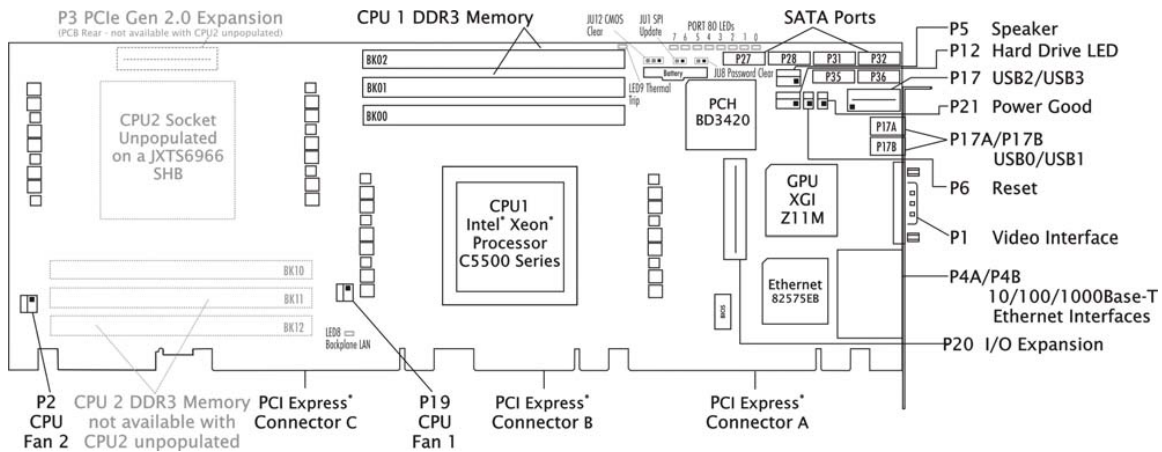
- 8. Problem Built-in network hardware doesn't work after Matrox cards are installed**
- a. The installation of a card may have caused your system to reallocate system resources.
 - i. Try reinstalling your network drivers.
 - 1. See the DOWNLOADS tab of the [JXTS6966 product detail webpage](#) for available network driver links
 - ii. Try moving your Matrox card to another PCIe slot in the TVC4403. Refer to card installation instructions in Chapter 3 to safely install your Matrox MPX card.
- 9. Screen image defects appear or Windows doesn't work properly e.g. the mouse pointer is not drawn properly**
- a. Some programs may not work properly with some Matrox acceleration.
 - i. Windows 7 – Disable Windows effects:
 - 1. Click Start → Settings* → Control Panel → System and Security* → System → Advanced system settings.
 - 2. Depending on your version and configuration of Windows, this part of the step may not be necessary.
 - a. Under Performance, click Settings.
 - b. Disable one or more features.
 - c. Click OK → OK.
 - b. Update your Matrox driver. Matrox makes new drivers available on the Matrox website (www.matrox.com/graphics).
- 10. Program window or dialog box doesn't appear on screen**
- a. Another window or dialog box may be covering the window or dialog box you want to see.
 - i. Move, close, or minimize any window or dialog box that may be covering the window or dialog box you want to see.
 - b. The program window or dialog box may be on a monitor that's unusable. For example, your monitor may not be properly connected or configured.
 - i. Make sure all the monitors you want to use are usable.
 - c. The program window or dialog box may be somewhere off-screen.
 - i. If the program window you want to see is named on the Windows taskbar, right-click on it and select Maximize. If you click Restore the program window goes back to its previous position. To fix this problem, see the other solutions.
 - 1. Manually move the program window or dialog box:
 - a. Press [Alt]+[Space].
 - b. If you see a pop-up menu, click Move. If you don't see a pop-up menu, press [M] for Move.
 - c. Press on one of the arrow keys once and move your mouse pointer to where you want the window or dialog box to appear then click. The program window or dialog box should appear where you clicked.
- 11. Problem Display on digital monitor appears blurry or uses only a portion of the screen**
- a. You may be using a lower display resolution than what your digital monitor supports. If your monitor supports display scaling, the image on your screen may appear blurry. If display scaling isn't supported, the display may use only a portion of your screen.
 - i. Select the highest display resolution available. This generally results in better image quality.

12. Problem Mouse pointer flickers or disappears when it's over a video window

- a. You may be using a customized mouse pointer. Windows draws customized mouse pointers in a way that may cause them to flicker or disappear while they're over a video window.
 - i. Use default Windows 7 mouse pointers:
 1. Click Start → Settings* → Control Panel → Hardware and Sound* → Mouse (doubleclick*).
 - (* Depending on your version and configuration of Windows, this part of the step may not be necessary.)
 2. Click the Pointers tab.
 3. In the Scheme box, select (or reselect) "(None)", then click OK.

JXTS6866 Clear CMOS Procedure

A Trenton Systems support engineer may ask you to clear CMOS on the single board computer as a method of trouble shooting the TVC4403. Refer to the JXTS6966 layout diagram figure and the procedure below to operate the JU12 Clear CMOS jumper.



JU12 - CMOS Clear (three position jumper)

Install on the LEFT to clear.

Install on the RIGHT to operate. (DEFAULT)

To clear the CMOS

1. Power down the TVC4403
2. Install the JU12 jumper on the LEFT.
3. Wait for at least two seconds
4. Move the jumper back to the RIGHT and turn the power on.

Clearing CMOS on the JXTS6966 will not result in a checksum error on the following boot. If you want to change a BIOS setting, you must press DEL or the F2 key during POST to enter BIOS setup after clearing CMOS.

Chapter 9 - *TVC4403 Frequently Asked Questions (FAQs)*

Here's a list of TVC4403 frequently asked questions that may prove useful in explaining certain controller features and in troubleshooting the system.

- Q. Is the Trenton Systems TVC4403 validated by Matrox Graphics to support up to nine Matrox Mura MPX series video controller cards?
- A. Yes
- Q. What is the maximum number of video screens that can be supported by the TVC4403?
- A. 36 – when using nine Mura MPX-4/4, Mura MPX-4/2 or Mura MPX-4/0 video controller cards
- Q. What is the maximum number of video inputs that can be supported by the TVC4403?
- A. 36 – when using nine Mura MPX-4/4 video controller cards
- Q. Is the Trenton JXTS6966 the only single board computer that can be used in the TVC4403?
- A. The JXTS6966 is the validated single board computer that is used in the TVC4403. It is technically possible to use other SBCs; however, use of a different SBC will require re-validation of the video wall controller platform.
- Q. Does the Trenton JXTS6966 single board computer require a custom BIOS for use with the TVC4403?
- A. Yes, BIOS version 0ACAR004, deviation B011E ships with the SBC used in the TVC4403. See Chapter 4 for more information.
- Q. Is the Trenton BPG7087 the only backplane that can be used in the TVC4403?
- A. The BPG7087 is the validated backplane that is used in the TVC4403. It is technically possible to use other backplanes; however, use of a different backplane will require re-validation of the video wall controller platform.
- Q. Who provides technical support for the TVC4403?
- A. Trenton Systems
- Q. Should I contact Matrox directly for Matrox Mura MPX product support?
- A. No, contact Trenton Systems first to discuss the problem. The problem may not be related to the Mura card. If the Mura card is at fault, the Trenton technical support team will make this work with you to make this determination and contact Matrox for resolution.

Chapter 10 - *TVC4403 Controller Specifications*

ENVIRONMENTAL

Temperature	
Operating	5°C to 35°C typical
Storage	-20°C to 70°C
Cold Excursion Temp	-40°C for up to sixteen hours
Relative Humidity	5% to 90%, non-condensing

Specific operating temperature ranges for the TVC4403 are dependent on the number of option cards and other system components installed. Extended operating temperature CPUs resulting in a system's achievable operating temperature range higher than what is stated here may be available for use on the system host inside the TVC4403. The reverse can also be true in that a system subcomponent could have a lower operating temperature range that could lower the system's overall operating temperature range. Contact Trenton for more details.

ELECTRICAL

Line Voltage	110-240VAC
Line Frequency	50-60Hz
Power Consumption	450W typical, 800W or 860W max.

PHYSICAL

Approximate Dimensions (W x H x D)	19" x 7.0" x 20.0" 48.3cm x 17.8cm x 50.8cm
Net Weight	24 lbs. (10.9 kg) (doesn't include option cards)

SHOCK & VIBRATION

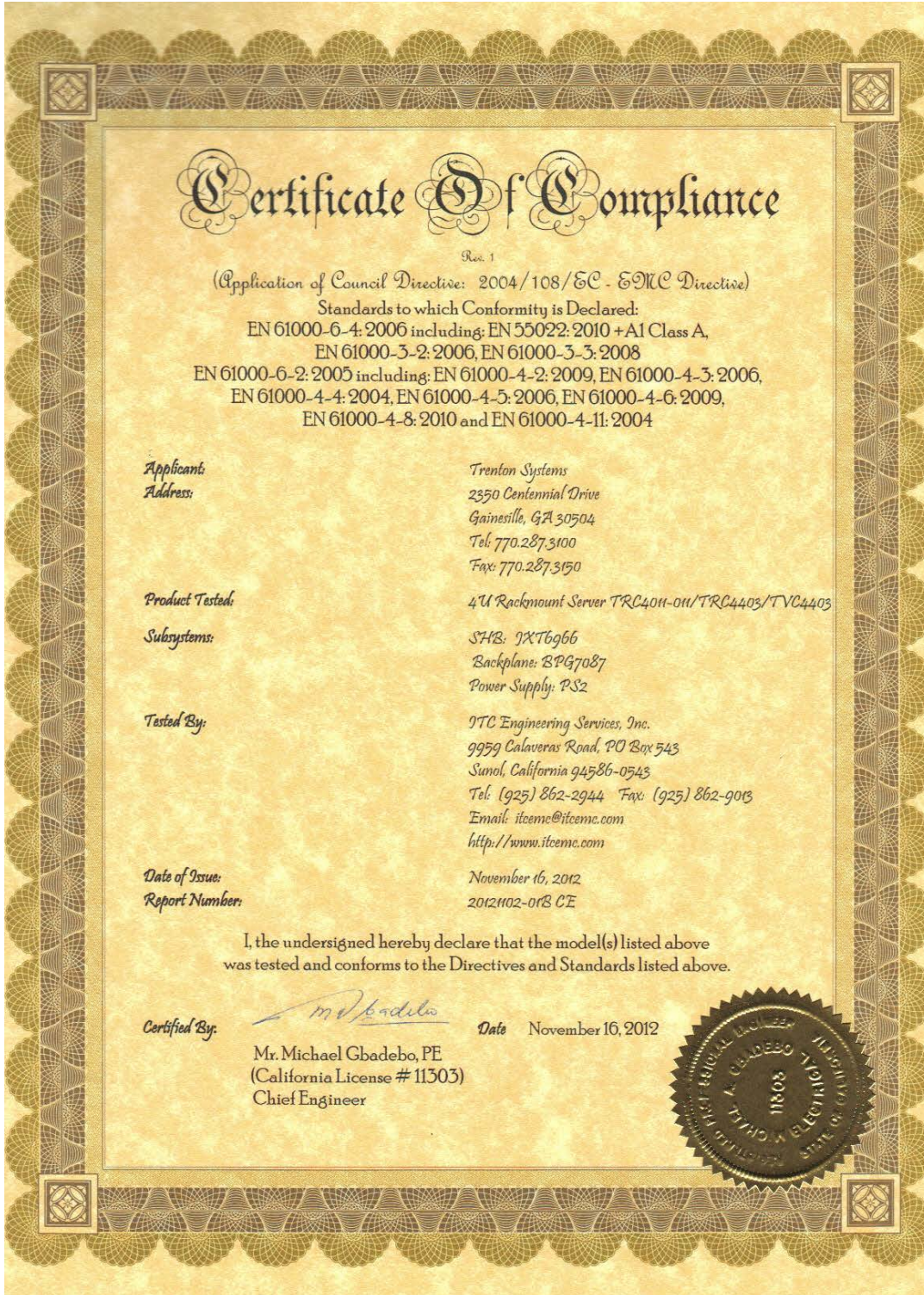
Shock - Class 3M4 operational and non-operational under EN60721-3-3	10G operating; 100m/s ² ; Type I
Vibration - Class 3M4 operational and non-operational under EN60721-3-3	Sinusoidal Vibration: 1G; 3mm; 10 m/s ² ; 2-9 9-200Hz

AGENCY APPROVAL

UL	UL recognized product listed in file #E208896-A3-UL dated 2013-02-28
Environmental	IEC 60721-3-3:2002 including Class 3K3, 3Z3, 3Z4, 3M4 and 3S2 IEC 60721-3-2:1997 including Class IE23 and 2M3
CE – ECM Directive 2004/108/EC including EMI/EMC	IEC61000-6-4:2006 & IEC61000-6-2:2005 including: CISPR22:1997 + A1:2000 + A2:2002ClassA, IEC61000-3-2:2005, IEC61000-3-3:2008, IEC61000-4-2:2008, IEC61000-4-3:2008 + A1:2010, IEC61000-4-4:2004 + A1:2010, IEC61000-4-5:2005, IEC61000-4-6:2008, IEC61000-4-8:2009 & IEC61000-4-11:2004

Chapter 11 - CE & FCC Part 15 Subpart B Certificates of Compliance

TRC4011-011 CE Certificate of Compliance – JXTS6966, BPG7087 and Redundant PS Configuration



TRC4011-011 FCC Part 15 Subpart B Certificate of Compliance – JXTS6966, BPG7087 and Redundant PS Configuration

<h1>Certificate of Compliance</h1>	
(FCC Part 15 Subpart B / IEC CISPR 22: 2006 Class A)	
I hereby certify that the equipment, which test and report is referenced below has been found to meet the requisites of FCC ET Docket No. 95-15 and that the energy emitted by this equipment was found to comply with the FCC Class A limits. I further certify that on the basis of the measurements taken at the ITC Engineering Services, Inc. facility; the equipment tested is capable of operation in compliance with the conditions set forth in the FCC Rules and Regulations Part 15 Subpart B (IEC CISPR 22: 2006 Class A).	
The measurement results are deemed satisfactory evidence of compliance with the technical EMC requirements of the Radio Interference Regulations of the Industry Canada.	
ITC Engineering Services, Inc. hereby certifies compliance to the applicable test requirements per FCC/ANSI C63.4-2009 guidelines for Radiated & Conducted Emissions.	
<i>Applicant:</i>	Trenton Systems
<i>Address:</i>	2350 Centennial Drive Gainesville, GA 30504 Tel: # 770.287.3100 Fax: # 770.287.3150
<i>Product:</i>	4U Rackmount Server TRC4011-011/TRC4403/TVC4403
<i>Subsystems:</i>	SAB: JXT6966 Backplane: BPG7087 Power Supply: PS2
<i>Tested By:</i>	ITC Engineering Services, Inc. 9959 Calaveras Road, PO Box 543 Stanol, California 94586-0543 Tel: (925) 862-2944 Fax: (925) 862-9013 Email: itcenc@itcenc.com http://www.itcenc.com
<i>Test Report Number:</i>	20121102-01B FCC
<i>Issue Date:</i>	November 16, 2012
<i>Certified By:</i>	<i>Mr. Michael Gbadebo</i> Mr. Michael Gbadebo, PE (California License #11303) Chief Engineer
<i>Date:</i>	November 16, 2012

