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INSTALLATION
AND
OPERATIONS MANUAL
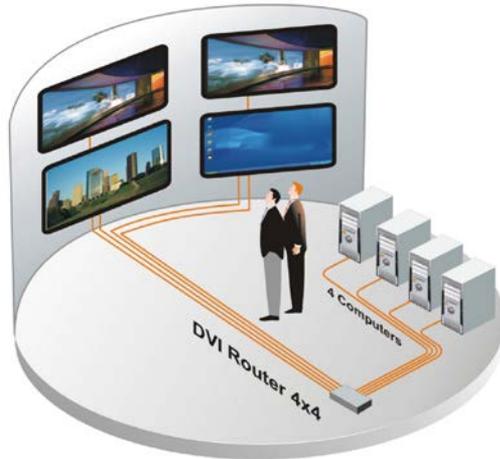
ROSE ELECTRONICS

LIMITED WARRANTY

Rose Electronics® warrants the UltraMatrix™ AV to be in good working order for one year from the date of purchase from Rose Electronics or an authorized dealer. Should this product fail to be in good working order at any time during this one-year warranty period, Rose Electronics will, at its option, repair or replace the Unit as set forth below. Repair parts and replacement units will be either reconditioned or new. All replaced parts become the property of Rose Electronics. This limited warranty does not include service to repair damage to the Unit resulting from accident, disaster, abuse, or unauthorized modification of the Unit, including static discharge and power surges.

Limited Warranty service may be obtained by delivering this unit during the one-year warranty period to Rose Electronics or an authorized repair center providing a proof of purchase date. If this Unit is delivered by mail, you agree to insure the Unit or assume the risk of loss or damage in transit, to prepay shipping charges to the warranty service location, and to use the original shipping container or its equivalent. You must call for a return authorization number first. Under no circumstances will a unit be accepted without a return authorization number. Contact an authorized repair center or Rose Electronics for further information.

ALL EXPRESS AND IMPLIED WARRANTIES FOR THIS PRODUCT INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO A PERIOD OF ONE YEAR FROM THE DATE OF PURCHASE, AND NO WARRANTIES, WHETHER EXPRESS OR IMPLIED, WILL APPLY AFTER THIS PERIOD. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

IF THIS PRODUCT IS NOT IN GOOD WORKING ORDER AS WARRANTIED ABOVE, YOUR SOLE REMEDY SHALL BE REPLACEMENT OR REPAIR AS PROVIDED ABOVE. IN NO EVENT WILL ROSE ELECTRONICS BE LIABLE TO YOU FOR ANY DAMAGES INCLUDING ANY LOST PROFITS, LOST SAVINGS OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF OR THE INABILITY TO USE SUCH PRODUCT, EVEN IF ROSE ELECTRONICS OR AN AUTHORIZED DEALER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, OR FOR ANY CLAIM BY ANY OTHER PARTY.

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR CONSUMER PRODUCTS, SO THE ABOVE MAY NOT APPLY TO YOU. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE.

NOTE: This equipment 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 equipment is operated in a commercial environment. This equipment 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 this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

IBM, AT, and PS/2 are trademarks of International Business Machines Corp. Microsoft and Microsoft Windows are registered trademarks of Microsoft Corp. Any other trademarks mentioned in this manual are acknowledged to be the property of the trademark owner.

Disclaimer

While every precaution has been taken in the preparation of this manual, the manufacturer assumes no responsibility for errors or omissions. Neither does the manufacturer assume any liability for damages resulting from the use of the information contained herein. The manufacturer reserves the right to change the specifications, functions, or circuitry of the product without notice.

The manufacturer cannot accept liability for damages due to misuse of the product or other circumstances outside the manufacturer's control. The manufacturer will not be responsible for any loss, damage, or injury arising directly or indirectly from the use of this product.

System introduction

Thank you for choosing the Rose Electronics® UltraMatrix AV 4x4 DVI Router. The UltraMatrix AV is the result of Rose Electronics commitment to providing state-of-the-art solutions for today's demanding workplace. The UltraMatrix AV has proven to be a valuable investment for any business, big or small that has a need to easily route DVI video from several sources to multiple displays. Select a video source, and then select the monitor to display the source on. The matrix switching of the unit allows any source to be routed to any or all destination ports. Select one source and display the video on any or all monitors.

The UltraMatrix AV can learn the specifications of the connected monitors. This feature enables the connected computers to be booted anytime. The learn mode will learn the specifications of any monitor connected to an output port, any PC connected to a input port, or the specifications of an Apple monitor.

Features

- 4 x 4 non-blocking, single link DVI-D matrix switch
  (4-DVI video inputs / 4-DVI video outputs)
- Independently display the contents of four computers on four displays
- Max TMDS rate of 2 x 1.65 Gb/sec
- Resolutions up to 1080p, 2K, and 1920 x 1200
- Switch using the front panel selection, send serial commands to the
  RS232 port, or using RoseControl switching software
- Unique "Learn Mode" determines the specs for any output monitor or
  any PC or Apple monitor. Once learned, the monitors do not have to
  be connected for the computers to boot
- Simultaneous 4x4 analog matrix switching at 165 MHz
- DVI video transmission distance up to 20 feet
- Multimedia presentations where information is displayed from several
  computers
- Record up to 50 switching macros

Package contents

The package contents consist of the following:
- The UltraMatrix AV unit as ordered
- Power adapter
- Serial communication cable
- Installation and operations manual.

DVI cables are usually ordered separately. If the package contents are not
correct, contact Rose Electronics or your reseller, so the problem can be
quickly resolved.

Rose Electronics web site

Visit out web site at www.rose.com for additional information on the
UltraMatrix AV 4x4 and other products that are designed for data center
applications, classroom environments and other applications.

About this manual

This manual covers the installation and operation of the
UltraMatrix AV, 4 x 4 DVI video router.

Model

Front View

Figure 1. Front View

→ Video Source Port selected
→ Video Monitor Port selected

Video Source / Monitor Select Buttons

Rear View

Inputs 1 & 3   Inputs 2 & 4   Outputs 2 & 4   Outputs 1 & 3   Serial   Power

Figure 2. Rear View

Left 4 connectors – 4 DVI-I video in connectors

Right 4 connectors – 4 DVI-I video out connectors

DB9F Serial input for serial switching commands

Power input jack (+5V power adapter)

Cables

DVI-I MM – Video In   DB9MM – Serial RS232 In

Figure 3. Cables

Installation and Set-Up

Please refer to the safety section first before proceeding with any installation or configuration or the UltraMatrix AV. It is recommended that the following installation procedure be followed. All equipment (UltraMatrix AV, Monitors, and PC's) should be powered off until all cabling is connected. Once UltraMatrix AV learns the specifications of the connected monitors, they can be disconnected if needed and the computers will still boot without a monitor connected. The figure below shows a typical installation.
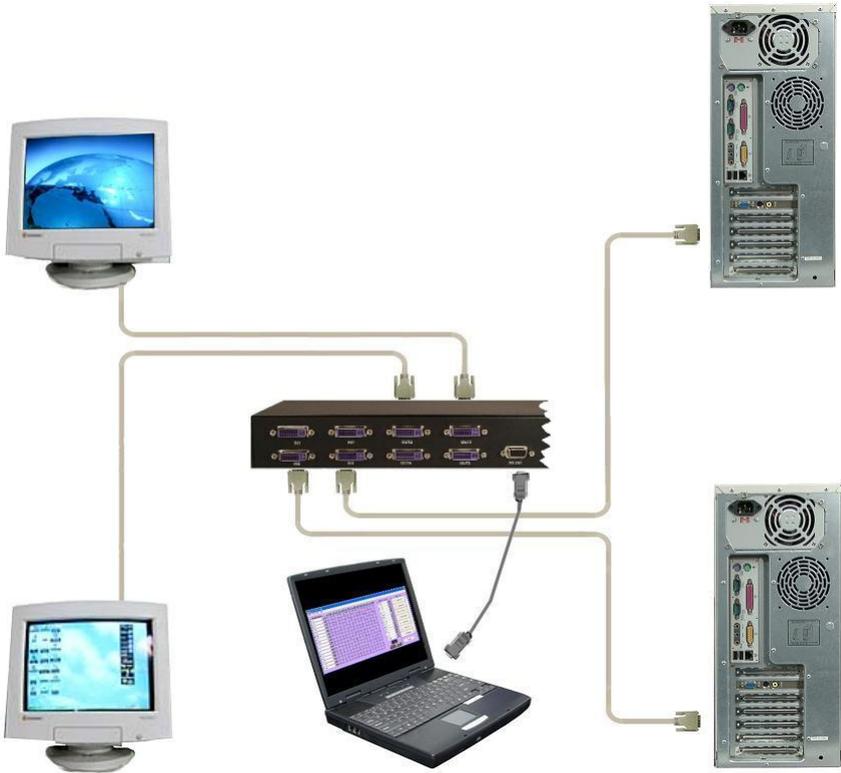
Figure 4. Typical Installation

Installation consists of four steps:
1. Connect up to 4 video sources to the units DVI inputs
2. Connect up to 4 monitors to the units DVI outputs
3. Connect a remote computer to the units DB9 serial input
4. Install RoseControl software on the remote computer

Connecting the video sources

Connect up to four single link DVI video sources to the Video In ports on the rear panel using a DVI male to male extension cable. The DVI cable length is a maximum of 20 ft. (6.1 m).

Connecting the video monitors

Connect up to four DVI video monitors to the Video Out ports on the rear panel. Monitor cable length is a maximum of 20 ft (6.1 meters).

Note: The UltraMatrix AV 4X4's learning mode makes it possible to "learn" the specifications of any monitor connected to output #1, from the attached computer, or from an Apple monitor. This enables the unit to emulate a monitor even if none are attached. This learning feature makes it possible for your computer/server to boot up even if no monitors are attached.

Connecting the control computer

The controlling computer is used to switch any video source to any video monitor. These switching commands can be from a serial string sent to the unit or using RoseControl software to easily route the video.

To connect the control computer to the unit, connect a standard DB9MM serial cable from a COM port (DB9F) on the control computer to the RS232 port on the UltraMatrix AV 4x4's rear panel.

Learn Mode

The learn mode feature of the UltraMatrix AV 4x4 enables the unit to learn the specifications of the monitor connected to output port #1, from the PC, or from an Apple monitor. To enter the learn mode, press and hold both the input select and output select buttons for 2 seconds. "Lern" will appear in the display. Press the input select button to cycle through the options.
- LE-S = Learn specs from the monitor connected to port #1
- LE-P = Learn specs from a PC
- LE-A = Learn specs of an Apple monitor

When the desired option is displayed, press the output select button to execute the learn feature and return to normal operation.

Switching using the front panel

To switch a video source to an output monitor using the front panel, first press the output select button to choose which output port to display the video on. Next press the input select button to select the input source to route to the selected output. Sequence through the 4 outputs and assign the needed input. An input can be switched to any or all outputs, but an output can only be connected to one input source.
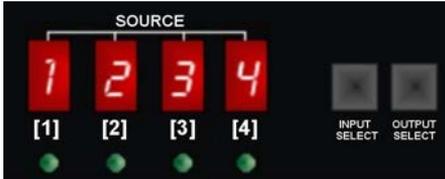
Switching using serial commands

Set-up a serial communication program with the following parameters:

Baud Rate – 9600
Data Bits – 8
Parity – None
Stop Bits - 1
Connect to the UltraMatrix AV 4x4 unit and issue the following command :
<CR>//MxxIyy<CR>

where xx = output port / yy = input port / <CR> = carriage return

To switch monitor #2 to computer #4, issue the command
<CR>//M02I04<CR>
To display a computer on all monitors use 00 as the output port.

Installing RoseControl software

Install the RoseControl switching software on the computer or laptop that will be used to control and switch the video inputs. Installation of RoseControl follows the standard Windows® type installation procedure.

NOTE: All equipment should be properly connected, powered on and the control computer connected via a serial cable to the unit prior to installing the RoseControl software.

Insert the provided CD and when Autorun executes, click on the Install RoseControl button. Follow the onscreen instructions to properly install the software.

When the installation of RoseControl is complete, a RoseControl ICON will be placed in the start-up menu.

Click on the RoseControl Icon to invoke the switching software. If you have saved a previous configuration, you can load that configuration by clicking on the "Yes" button, select the configuration file, and load it to the OSD matrix.

If you click on the "No" button, the "Configure Router" window will display as shown below.
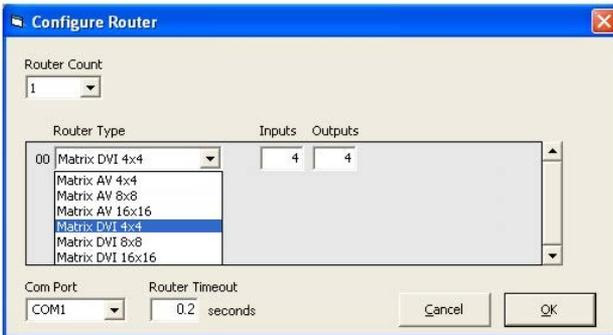
Figure 5. Configure Router screen

Select a Router Count of "1" and Router Type of Matrix DVI 4x4 for this model. Select the Com Port that the serial cable is connected to on the controlling computer and click on "OK".

The Rose Control switching matrix will adjust to the 4x4 showing 4 inputs and 4 outputs as shown in figure 6.
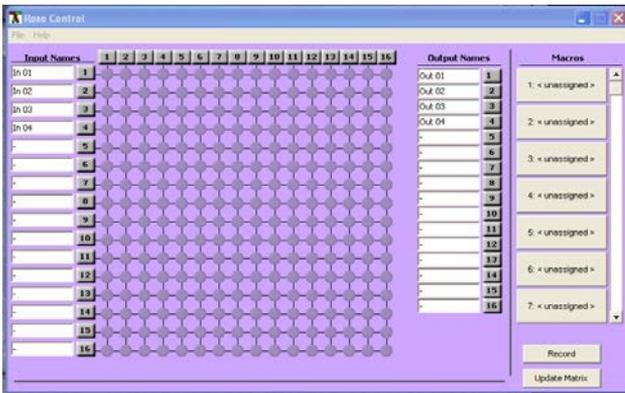
Figure 6. Rose Control Switching Matrix

The left column lists the inputs 1-4 and the right column lists the outputs 1-4.
The input and output names can be changed by highlighting the name to
change and re-naming it.

Switching using Rose Control Switching Matrix

Using the switching matrix is the easiest way to route a video input to any or
all outputs. Click on the cross-point where the input to route (vertical
numbers 1-4) and the output destination (horizontal numbers 1-4) cross and
the switch is executed immediately. The example shown in figure 7 shows
input #1 routed to output #1 and #3, input #2 routed to output #2, and input
#3 routed to output #4. An input can be routed to multiple outputs, but an
output can only be connected to one input.
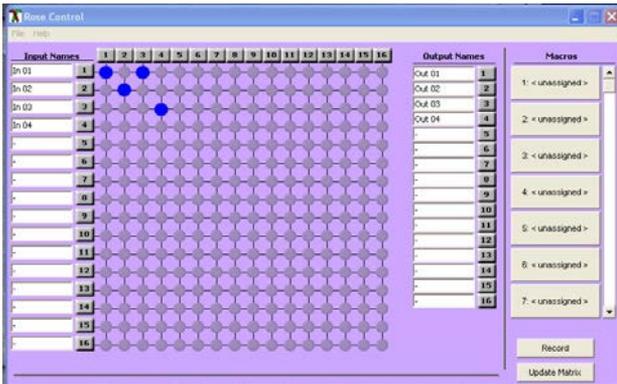
Figure 7. Example of Switching Matrix

To select multiple outputs to connect to a single input, hold the control (Ctrl)
key down and click on the individual output numbers needed. Next, click on
the input number to route to the selected outputs.

Example:
To route outputs 1, 2, and 4 to input #2, hold down the control key, click on the output numbers 1, 2, and 4.
When all outputs are selected, click on input #2.

To select multiple adjacent outputs to connect to a single input, click on the first output number, hold down the shift key, and then click on the last output number.

Example:
To route outputs 1-3 to input #3 click on output number 1, hold down the shift key and click on output number 3, then click on the input #3.

To route a single input to all outputs, hold down the control key and click on an input number.

Example:
To route input #4 to outputs 1-4, hold down the control key and click on the input #4. Outputs 1-4 will be routed to input #4.

Recording Macros

On the right side of the RoseControl switching matrix there are up to 50 macro tabs that are used to save and play back macros. These macros store a set sequence of routes.

To record a macro:
1. Click on the Record button. A blinking "recording" message below this button will be displayed to indicate that all routes are being recorded.
2. Select the desired cross points. There is no limit on the number of routes you may record.
3. If you click a macro button while in the record mode, the macro will be executed, and these routes will be added to the recording. This makes it possible to combine the routes of two or more macros into one bigger macro.
4. When finished, click the "Save Macro" button. You will be instructed to then click on one of the macro buttons. Doing this will save the recorded routes to that button.

   To cancel saving the macro, click the "Cancel Save" button.

5. To play back a macro, simply click on one of the 50 macro buttons. Use the scrollbar to bring any of these into view.
6. The macros are automatically saved in the current configuration file. They are also saved when you select the File/Save Configuration... menu.

NOTE: A macro is temporarily saved in the macro tabs (1-50) for the current session. If power is cycled or removed, all macro settings are lost unless they have been previously saved. To save the macro and session settings, click on "File" and choose "Save Configuration" or "Save Configuration As" and save the session and all macro information to a file on the controlling computer.

Safety

The UltraMatrix AV 4x4 has been tested for conformance to safety regulations and requirements, and has been certified for international use. Like all electronic equipment, the unit should be used with care. To protect yourself from possible injury and to minimize the risk of damage to the Unit, read and follow these safety instructions.

Follow all instructions and warnings marked on this Unit.
Except where explained in this manual, do not attempt to service this Unit yourself.

Do not use this Unit near water.

Assure that the placement of this Unit is on a stable surface.

Provide proper ventilation and air circulation.

Keep connection cables clear of obstructions that might cause damage to them.

Use only power cords, power adapter and connection cables designed for this Unit.

Keep objects that might damage this Unit and liquids that may spill, clear from this Unit. Liquids and foreign objects might come in contact with voltage points that could create a risk of fire or electrical shock.

Do not use liquid or aerosol cleaners to clean this Unit. Always unplug this Unit from its electrical outlet before cleaning.

Unplug this Unit and refer servicing to a qualified service center if any of the following conditions occur:
- The connection cables are damaged or frayed.
- The Unit has been exposed to any liquids.
- The Unit does not operate normally when all operating instructions have been followed.
- The Unit has been dropped or the case has been damaged.
- The Unit exhibits a distinct change in performance, indicating a need for service.

Safety and EMC Regulatory Statements

Safety information

⚠ Documentation reference symbol. If the product is marked with this symbol, refer to the product documentation to get more information about the product.

WARNING   A WARNING in the manual denotes a hazard that can cause injury or death.

CAUTION   A CAUTION in the manual denotes a hazard that can damage equipment.

Do not proceed beyond a WARNING or CAUTION notice until you have understood the hazardous conditions and have taken appropriate steps.

Grounding
These are Safety Class I products and have protective earthing terminals. There must be an un-interruptible safety earth ground from the main power source to the product's input wiring terminals, power cord, or supplied power cord set. Whenever it is likely that the protection has been impaired, disconnect the power cord until the ground has been restored.

Servicing
There are no user-serviceable parts inside these products. Only service-trained personnel must perform any servicing, maintenance, or repair.

The user may adjust only items mentioned in this manual.

Service Information

Maintenance and Repair

This Unit does not contain any internal user-serviceable parts. In the event a Unit needs repair or maintenance, you must first obtain a Return Authorization (RA) number from Rose Electronics or an authorized repair center. This Return Authorization number must appear on the outside of the shipping container.

See Limited Warranty for more information.

When returning a Unit, it should be double-packed in the original container or equivalent, insured and shipped to:

> Rose Electronics
> Attn: RA_____
> 10707 Stancliff Road
> Houston, Texas 77099 USA

Technical Support

If you are experiencing problems, or need assistance in setting up, configuring or operating your UltraMatrix AV 4x4, consult the appropriate sections of this manual. If, however, you require additional information or assistance, please contact the Rose Electronics Technical Support Department at:

> Phone: (281) 933-7673
> E-Mail: TechSupport@rose.com
> Web: www.rose.com

Technical Support hours are from: 8:00 am to 6:00 pm CST (USA), Monday through Friday.

Please report any malfunctions in the operation of this Unit or any discrepancies in this manual to the Rose Electronics Technical Support Department.

APPENDICES

Appendix A - Specifications

Video	
Video Bandwidth	165MHz
Video Input Signal Level	1.2 Volt p-p
Resolution	1080p / 1920 x 1200
Video Connector	DVI-I
Power	
Voltage	5VDC / 3A Power Adapter
Physical	
Dimensions	12" W x 7.0" D x 1.75" H (305mm W x 178mm D x 44.5mm H
Weight	4.05 lbs (1.84kg)

Appendix B – Part Numbers and Cables

Part Number	Description
UMA-04DX04D	UltraMatrix AV 4x4
CAB-DVIIMM	DVI video cable (male to male)
CAB-D9MF	DB9 Male to Female (5' to 20')

ROSE ELECTRONICS

Server Management

Solutions

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