UNIMUX™ Series

UNIMUX-DVI-4
4-Port USB DVI KVM Switch
Installation and Operation Manual

TRADEMARK

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CHANGES

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INTRODUCTION

The UNIMUX-DVI-4 4-Port USB DVI KVM switch (UNIMUX) allows access to any four Windows, MAC, or SUN USB CPUs from one USB keyboard and mouse and a DVI video-enabled monitor.   Internal microprocessor circuitry allows all USB CPUs to be booted simultaneously without keyboard error. Port selection is accomplished by front panel push buttons or commands typed on the keyboard. Port lights and status LEDs continuously update on the front panel.

Available Option
• Switch models are available in 60 or 50 Hz, and 110 or 220V.

Types of User Input Devices Supported:
• USB keyboard with Windows layout
• USB keyboard with SUN layout
• USB keyboard with MAC layout
• USB Mouse - (up to 3 buttons)
• USB IntelliMouse (scrollwheel)
• USB Hub
• Mouse-Trak trackball
• Logitech, Kensington and Microsoft Wheelmouse or Trackball on Mac CPUs with special drivers
• Logitech Cordless Elite Duo keyboard and mouse
• Crystal Vision keyboard with touchpad
• Gyration keyboard/mouse
• NTI USB-PS/2 Adapter
• NTI USB-SUN Adapter
• DVI monitors

Types of CPUs Supported:
Any USB CPU supporting USB version 1.0 or above including:

• USB WINxx
• USB MAC
• USB SUN

MATERIALS

Materials supplied with this kit:
• NTI UNIMUX-DVI-4 USB DVI Video KVM Switch
• 120VAC or 240VAC at 50 or 60Hz-5VDC/2.0A AC Adapter
• Line cord, country specific
• Rack mount kit
• CD with pdf file of this manual

Materials *Not* supplied but *REQUIRED:*

• A USB-AB-xxM cable for each USB CPU being connected to the switch. Used for keyboard and mouse interface.

• A DVI-IS-xx-MM DVI-I digital and analog video interface cable to connect the DVI video from the CPU to the UNIMUX
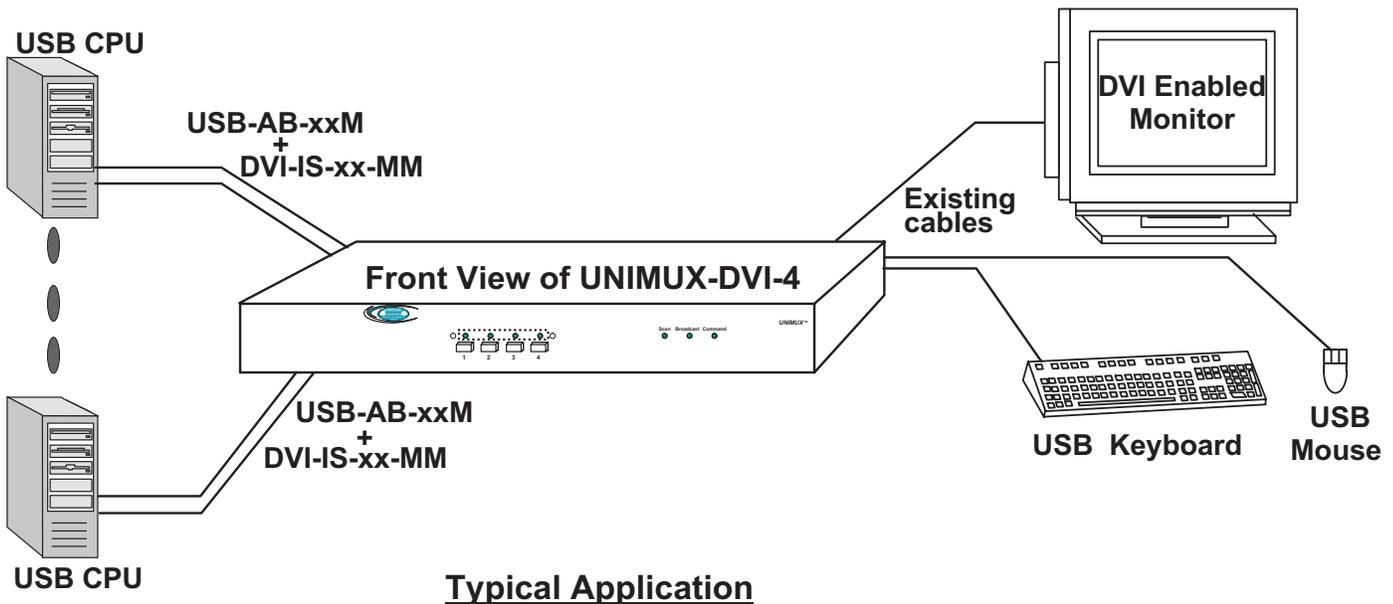
where:
      xx is the length of the cable in feet
      MM indicates male-to-male connector

*Cables can be purchased from Network Technologies Inc by calling **(800) 742-8324** (800-RGB-TECH) in the US and Canada or **(330) 562-7070** (worldwide).*

DEFINITIONS

- USB Composite Device   A USB device that contains multiple endpoints each representing input devices that cannot be separated (i.e. a keyboard with a built-in mouse)
- USB Hub   A USB device that allows one or more USB input devices to plug in to the USB. The hub has exactly one upstream port with one or more downstream ports which input devices connect to
- CPU   Enclosure that contains the operating system and processor (i.e. Sun with SPARCstation5, Windows 95 with Pentium II)
- Input Device   Keyboard or Mouse
- System   One or more CPUs connected to one or more switches controlled by one or more input devices

USB CPU

USB-AB-xxM
+
DVI-IS-xx-MM

DVI Enabled Monitor

Existing cables

Front View of UNIMUX-DVI-4

Scan   Broadcast   Command   UNIMUX™

1   2   3   4

USB-AB-xxM
+
DVI-IS-xx-MM

USB Keyboard

USB Mouse

USB CPU

Typical Application

Front View of UNIMUX-DVI-4

Rear View of UNIMUX-DVI-4
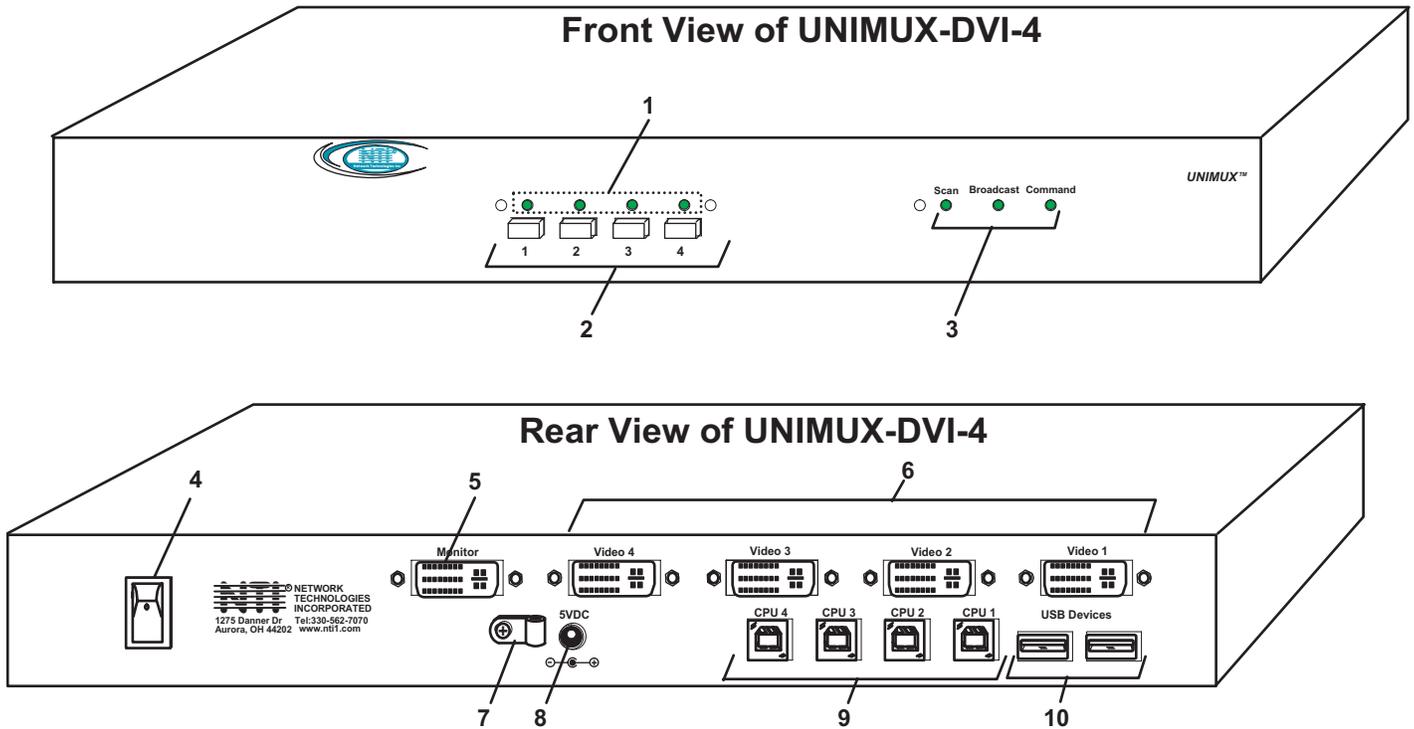
FEATURES AND FUNCTIONS

1. CPU Status LEDs- for visual indication of connection between the user and a specific CPU.

2. CPU Select Switches- push to manually switch to a specific CPU or change the switch operating mode

3. Mode Status LEDs- for visual indication of switch operating mode

4. Power Switch- to power up or power down the UNIMUX

5. MONITOR- DVI-I female connector- for connection of the user video monitor

6. VIDEO-x- DVI-I female connectors- for connecting video cables from CPUs

7. Cable restraint- to secure the AC adapter cable to the UNIMUX

8. 5VDC- power input connector for attachment of the AC adapter

9. CPU x- USB type B female connector-for connection of USB device cable from CPU(s)

10. USB DEVICES- USB type A female connectors- for connection of user USB device(s)

RACKMOUNTING INSTRUCTIONS

This NTI switch was designed to be mounted to a rack or to set on a desktop. It includes rackmount ears to make attachment to a rack easy, and rubber feet to be applied to the bottom of the case if it will instead sit on a flat surface.   If this will sit on a flat surface, simply apply the rubber feet to the bottom of the case in each of the 4 corners.

To Mount to a Rack

1. Attach the ears to the switch using the 6-32x3/16" flat Phillips-head screws (6) provided as shown in the illustration below. The holes in the ears should line up with pre-threaded holes in the sides of the NTI switch.   Tighten the screws securely.
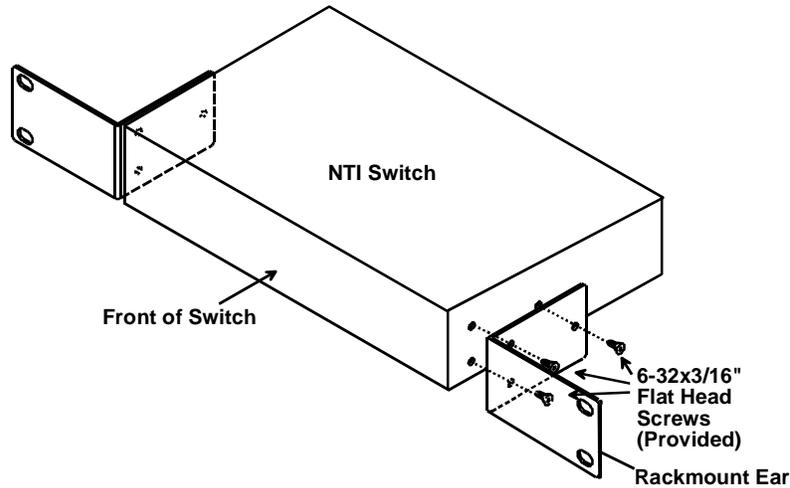
Figure 1- Secure rackmount ears to switch

2. Install 4 captive nuts (not provided) to the rack in locations that line up with the holes in the mounting ear on the NTI switch.

3. Secure the NTI switch to the rack using four 3/16" diameter screws (not provided).   Each screw should be of sufficient length to go completely through the NTI mounting ear, rack frame and fully engage all threads in the captive nut.   Be sure to tighten all mounting screws securely.

4. Attach all cables securely to the switch and where necessary supply adequate means of strain relief for cables.
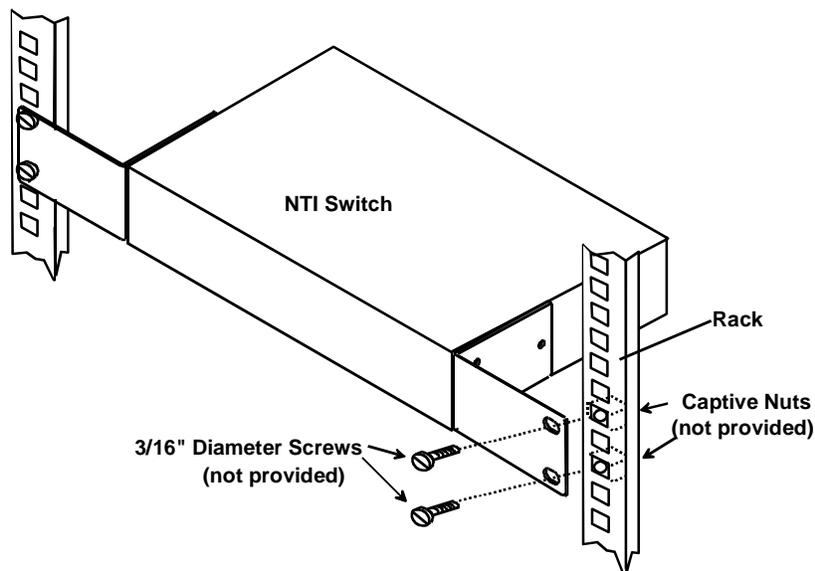
Figure 2- Secure switch to a rack

INSTALLATION

1. It is not necessary to turn the CPUs or monitors OFF during this installation.
2. Connect the cable from a DVI multi-scan monitor to the DVI-I connector labeled "MONITOR" on the UNIMUX (See Fig. 3 below.)

Rear View of UNIMUX-DVI-4
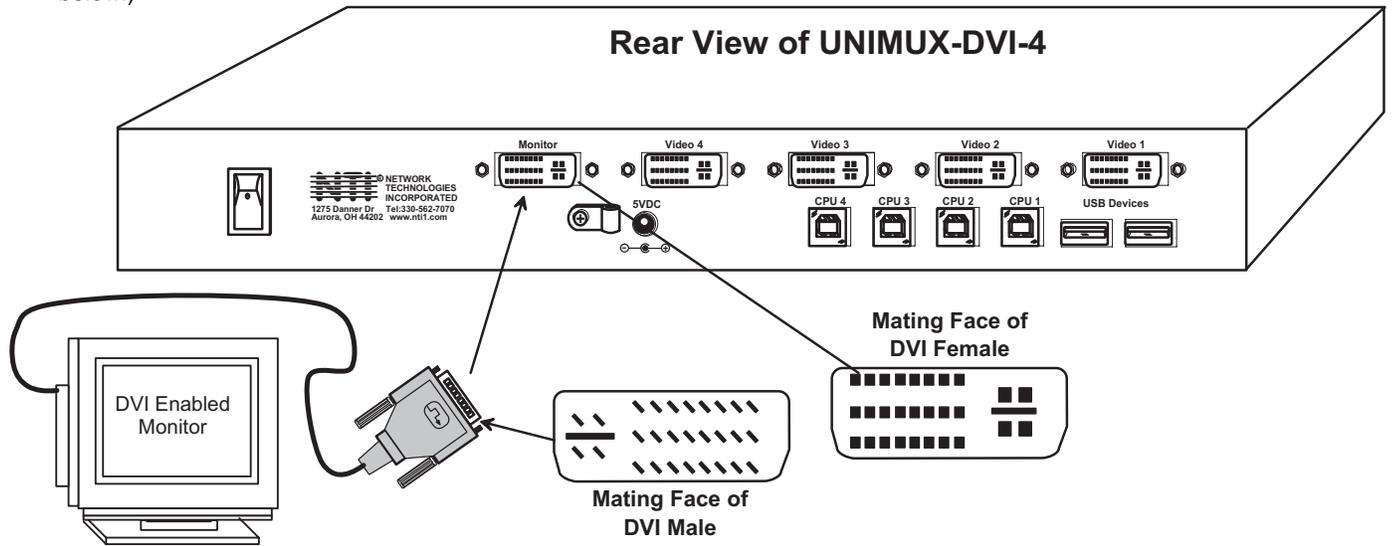
Figure 3- Connect a DVI multi-scan monitor

3. Connect the male USB type A connector on the keyboard cable to either one of the two USB type A female connectors labeled "DEVICES" on the rear panel of the UNIMUX.
4. Connect the male USB type A connector on the mouse cable to the remaining USB type A female connector labeled "DEVICES".

Rear View of UNIMUX-DVI-4
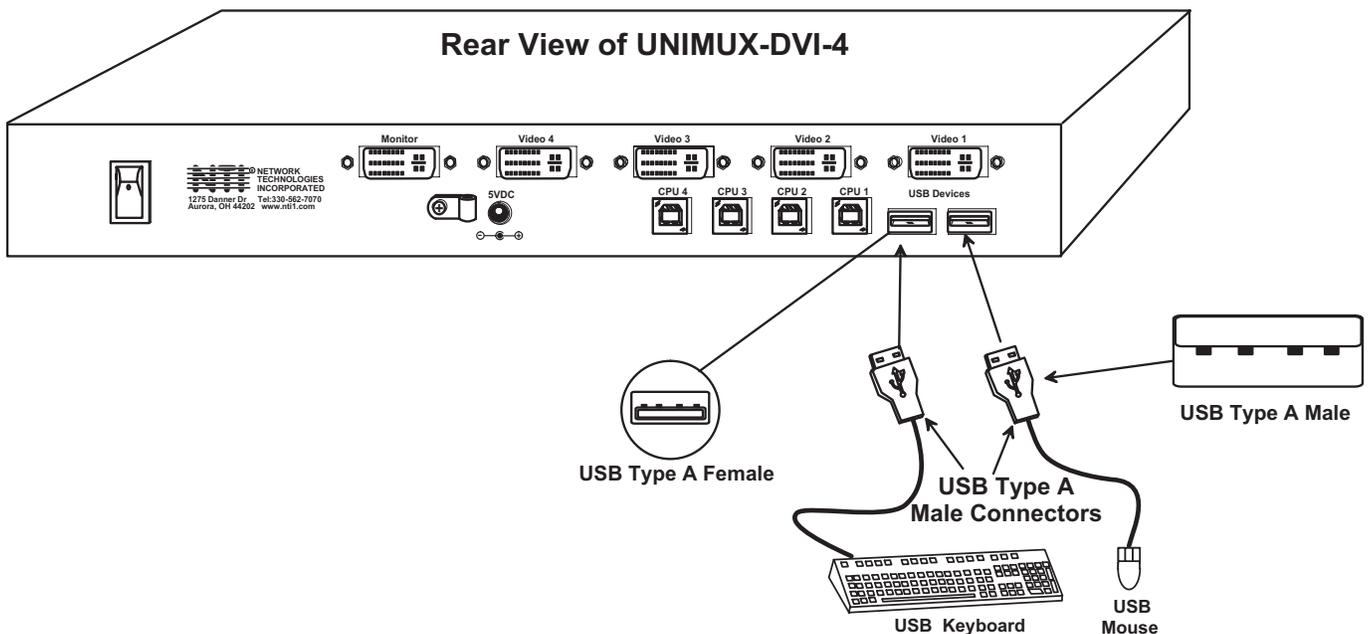
Figure 4- Connect the device(s)

5. Connect the 5VDC AC adapter to the UNIMUX. (See Fig. 5 below.)
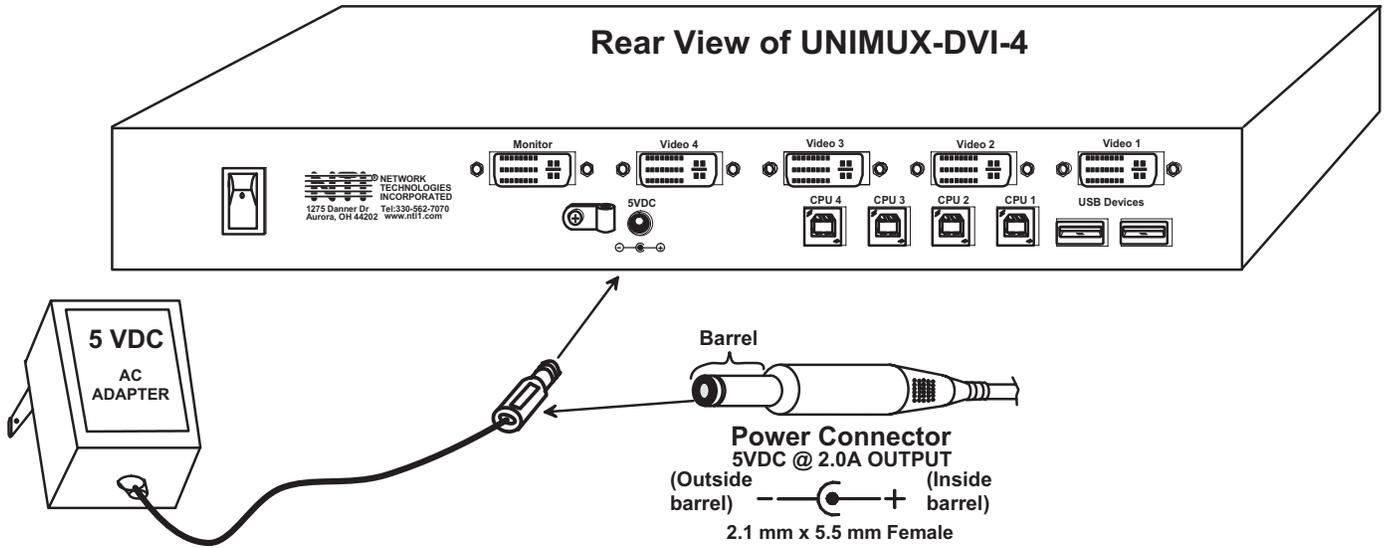
Figure 5- Connect the AC Adapter

6. Connect each CPU to the USB switch using a DVI-IS-xx-MM video cable and USB-AB-xxM input device interface cable – REQUIRED (not supplied).   (See Fig. 6 below.)
7. Group the input device and monitor interface cables from each CPU, making sure that cables from the first CPU are connected to the UNIMUX at connectors CPU 1 and VIDEO 1.   Cables from the second CPU should connect to CPU 2 and VIDEO 2 connectors...etc.
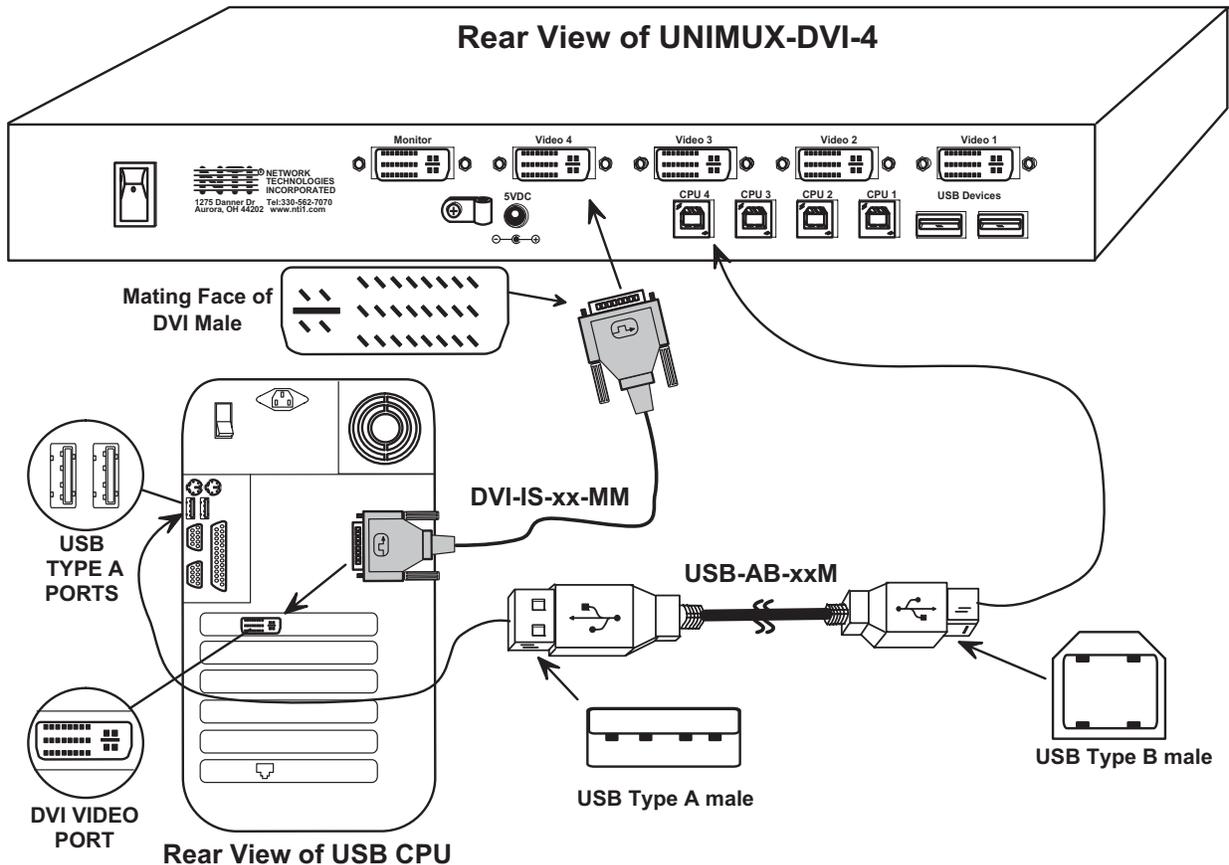
Figure 6- Connect each CPU

Power-Up Sequence

- The UNIMUX can be powered at any time.
- The CPUs can be powered at any time although if a CPU needs a keyboard and/or mouse at power-ON it should be powered after connecting to and powering-ON the UNIMUX.
- USB input devices (keyboard and mouse) can be hot plugged to and from the UNIMUX at any time.

Limitations

- Only USB input device or hub cables can be connected to the UNIMUX at the USB Type A female ports labeled "DEVICES". (See Features and Functions on page 3, item 10.)

- A USB hub (single or multi-port) can be used provided only USB input devices are plugged into it.

- Only a USB Windows or SUN keyboard or USB mouse may be connected to the USB port on a USB MAC keyboard

- A maximum of 8 input devices may be connected to the UNIMUX either directly or through hubs.

See Fig. 7 for some examples of input device combinations that can be used with the UNIMUX.

Typical Installation- 1 Keyboard, 1 Mouse

Optional- Multiple keyboards and mice

Optional- MAC USB keyboard and mouse

2 USB hubs in series (Daisy-Chained)

Figure 7- Compatible device combinations

USING THE UNIMUX USB KVM SWITCH

Once the UNIMUX is properly connected, the UNIMUX will enable a connection to be made between the CPUs attached to its VIDEO and CPU ports and the monitor and input devices attached to the MONITOR and DEVICES ports.   The LEDs on the control panel of the UNI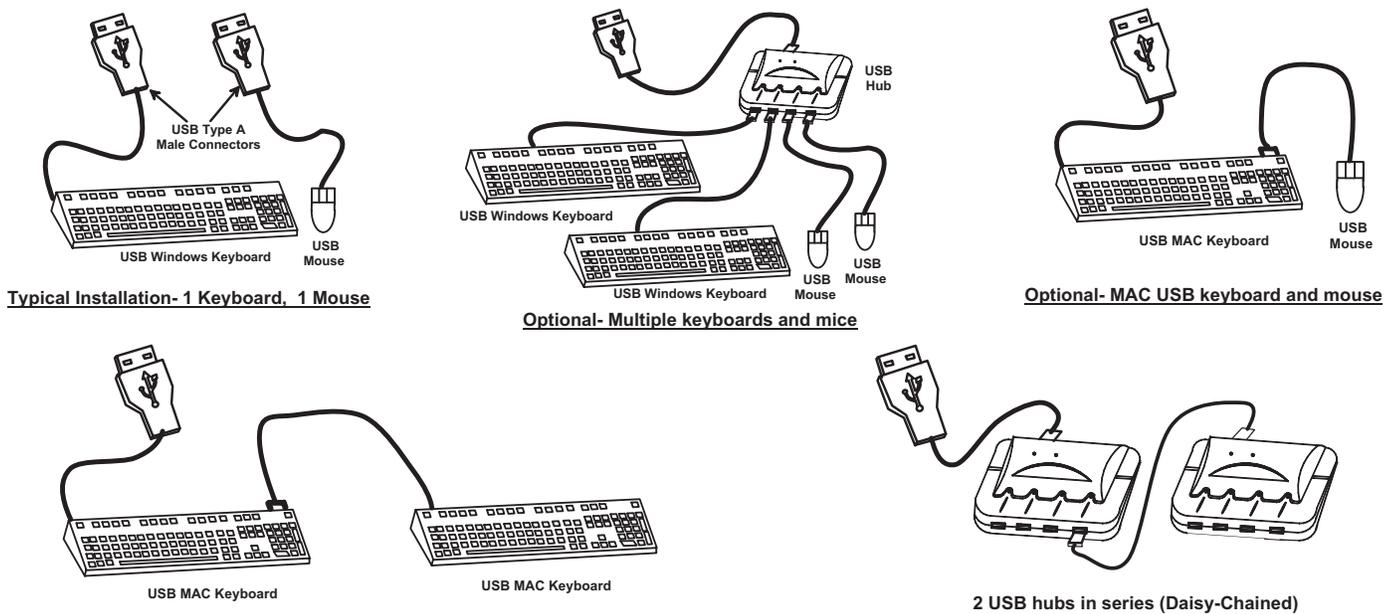MUX will illuminate depending on which port (and corresponding CPU) is being connected to the monitor and input devices.

The UNIMUX can be controlled by two methods:
- front control panel using touch-switches and LEDs
- keyboard control through Command Mode

Front Panel Control

There is a touch-switch and LED on the front panel of the UNIMUX for each CPU the switch will connect the monitor and input devices to. Pressing any touch-switch on the front panel of the UNIMUX will connect the corresponding CPU to the monitor and input devices.

Holding down any front panel touch-switch for more than 2 seconds will cause the UNIMUX to cycle through all modes of operation including COMMAND, BROADCAST, SCAN, and NORMAL (described in "Command Mode" below). The three MODE LEDs on the front panel indicate which mode is selected. Release the touch-switch when the LEDs indicate the desired mode. When no mode LEDs are illuminated the user is in Normal Mode controlling directly the CPU to which the user is connected through the UNIMUX.

Keyboard Control

Keyboard control of the UNIMUX can be achieved using Command Mode (below).   The keyboard can be used to control all functions of the UNIMUX as an alternative to using the front panel on the UNIMUX.

By pressing <Ctrl> + < ` > (accent key), the user can enter Command Mode.   Once in Command Mode, typing a series of commands will cause the UNIMUX to connect the user to any one CPU connected to the switch.   Pressing the <Esc> key will exit Command Mode.

Command Mode

In order to control the UNIMUX with the keyboard connected, Command Mode must be enabled. To enter Command Mode from the keyboard:

Press **[Ctrl]** **+** **[~ `]** **(ACCENT KEY)**

When the COMMAND LED is illuminated, all 3 status lights on the keyboard will illuminate (if they aren't already due to caps lock, scroll lock, and/or num lock) to indicate that Command Mode is enabled and the following functions are available:

Basic Command Functions

KEY SYMBOLS LEGEND:
or PRESS EITHER KEY
+ CHORDED SEQUENCE- PRESS CONSECUTIVELY AND KEEP KEYS PRESSED UNTIL ALL ARE PRESSED.
- PRESS CONSECUTIVELY

Function: Keystroke:

Increment Port **[I] or [→]** **(select the next higher port ex. 03➔04)**

Decrement Port **[D] or [←]** **(select the next lower port ex. 02➔01)**

Toggle Scan Mode ON and OFF **[S]** **(The SCAN Mode LED will also toggle ON and OFF)**

Toggle Broadcast Mode ON and OFF **[B]** **(The Broadcast Mode LED will toggle ON and OFF.)**

Sets scan time-out period for each port. **[T] - [(0-2) x] - [(0-9) x] - [(0-9) x]** **(xxx from 002 to 255.   ie. T002 would set the time-out period for 2 seconds)**

Selects a specific port

P - **(0-9) x** - **(0-9) x**   **(Pxx would be P01, P02, etc.)**

Configure port to connect To a MAC CPU

M + **x** + **x**   **(xx= 01-04   <M> + <0> + <1> will enable function on Port 1**
<M> + <0> + <4> will enable function on Port 4.   Keyboard
LED's will flash once to confirm command.)
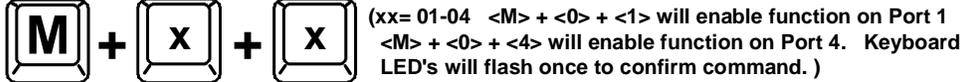
Configure port to connect To a WINDOWS or SUN CPU

W + **x** + **x**   **(xx= 01-04   <W> + <0> + <1> will disable function on Port 1**
<W> + <0> + <4> will disable function on Port 4.   Keyboard
LED's will flash once to confirm command.)

Exit Command Mode

Esc
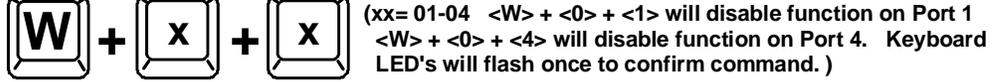
FYI: The user must exit Command Mode to type to a CPU.

To exit Command Mode, either hold down any touch-switch on the front panel for more than 2 seconds, OR press <ESC> on the keyboard.

Scan Mode

When in Scan Mode the switch scans to each port with a CPU powered-ON. (The SCAN LED on the front panel will illuminate and remain ON while in Scan Mode.) The port with the CPU powered-ON remains active while in use until it becomes idle for the configured dwell time (default time-out period is 5 seconds) before switching to the next powered-ON CPU port. See Command Mode section above for configuring the scan dwell time.

Note: The keyboard and mouse must remain idle for the full scan dwell time before the switch selects the next active port.

Broadcast Mode

To activate Broadcast Mode press <Ctrl> + <B> from the Command Mode menu. Broadcast Mode enables the user to type characters to all powered-ON CPUs simultaneously.

Note: The user must type somewhat slowly when in Broadcast Mode (less than 20 wpm) and cannot use the <Backspace> key.

Normal Mode

When all of the UNIMUX mode LEDs are OFF the user is in Normal Mode, controlling the CPU to which the user is connected through the UNIMUX.

No Sun Sleep Mode

Note: It is necessary to configure a Sun CPU (most versions) such that the Sleep Mode is not enabled. If the Sun CPU goes into Sleep Mode either automatically or manually, the user must reboot the Sun CPU in order to resume use of the Sun CPU.

To disable the Sleep Mode, perform the following steps:
1. Select "Power Manager"
2. Look for "Device Idle Time Before Power Saving Starts"
3. Select "Always ON"
4. Look for "Override Device Idle Time For:"
5. Make sure neither "Monitors" nor "Disks" are selected.

Select Country Code

It is possible to configure the UNIMUX to emulate a specific international Sun keyboard regardless of what actual keyboard is connected. This is recommended when the CPU needs the layout code (i.e. a SUN CPU) and the keyboard doesn't have an explicit layout code (i.e. some Windows keyboards).   To do this, manually set the UNIMUX to indicate the international keyboard identification number to the CPU using the following procedure;

1. Connect the keyboard to be used to the UNIMUX
2. Enter Command Mode
3. Type Lxx, where xx is the number from the list below that corresponds to the desired country code
4. Exit Command Mode
5. Reboot the CPU connected to the UNIMUX

Country Codes

00	Auto Detect	13	International (ISO)	26	Swedish
01	Arabic	14	Italian	27	Swiss/French
02	Belgian	15	Japan (Katakana)	28	Swiss/German
03	Canadian-Bilingual	16	Korean	29	Switzerland
04	Canadian-French	17	Latin American	30	Taiwan
05	Czech Republic	18	Netherlands/Dutch	31	Turkish
06	Danish	19	Norwegian	32	UK
07	Finnish	20	Persian (Farsi)	33	US
08	French	21	Poland	34	Yugoslavia
09	German	22	Portuguese		
10	Greek	23	Russia		
11	Hebrew	24	Slovakia		
12	Hungary	25	Spanish		

Figure 8- Country Codes for international SUN keyboards

For more on international SUN keyboards, see page 12.

Mice and Trackballs with MACs

The UNIMUX can be configured to enable full functionality between mice and trackballs having two or more buttons and USB MAC CPUs.   By default, the ports on the UNIMUX are configured for use with WINDOWS and SUN CPUs and have no special translation for using multi-function mice and trackballs when a MAC CPU is connected.   Using the commands <M> + <x> + <x> (xx = port number), or <W> + <x> + <x> in Command Mode (page 9), either enable or disable this feature as needed for each port.

Note: Be sure to re-configure port for connection to a WINDOWS or SUN CPU if a MAC CPU is removed and a WINDOWS or SUN CPU is then connected.

MOUSE CLICK EQUIVALENTS

To emulate a right button click using Apple 1 button mouse, hold down the Command key (⌘) while pressing the mouse button.

Note: Right mouse button emulation must be enabled (see Change Settings on page 19) for this to work.

KEYBOARD FEATURES

The keyboard configuration of each CPU is saved in the UNIMUX. For example, if the CPU attached to Port 2 had CAPS LOCK and NUM LOCK selected the last time that CPU was accessed, then they will automatically be set when that CPU is accessed again.

Keyboard-To-Computer Translation   (See Fig. 9 on page 12 for reference.)

The UNIMUX enables a mixture of otherwise incompatible peripheral computer components to be connected together. This is accomplished by performing keyboard-to-computer translations automatically (i.e. translate a MAC keyboard and mouse to a Windows type CPU). The chart below shows the capabilities of devices controlling certain CPU types.

Translation Capabilities

Device	CPU		
	Sun	*Mac*	*Windows*
Sun Keyboard	Full functionality	Full functionality	Full functionality
AT101 Keyboard	Extra keys emulation	Power key emulation	Full functionality
Mac keyboard	Extra keys emulation	Full functionality	Full functionality-except Application Key
Apple Pro Keyboard	Extra keys emulation	Extra Keys not supported (Eject, Mute, Volume+, Volume-)	Full functionality
Sun Mouse	Full functionality	Full functionality	Full functionality
Wheel Mouse	Full functionality	Full functionality	Full functionality
Apple Mouse	Right button emulation	Full functionality	Right button emulation

Translation Tables

Use the charts below to type SUN's additional keys with Win95 and Apple keyboards:

SUN Extra Keys

WINxx or Mac Keyboards	Sun Extra Keys
Space Bar + F1	Stop
Space Bar + F2	Again
Space Bar + F3	Props
Space Bar + F4	Undo
Space Bar + F5	Front
Space Bar + F6	Copy
Space Bar + F7	Open
Space Bar + F8	Paste
Space Bar + F9	Find
Space Bar + F10	Cut
Space Bar + F11	Help
Space Bar + F12	Compose
Space Bar + Up Arrow	Volume +
Space Bar + Down Arrow	Volume -
Space Bar + Left Arrow	Mute

Power Key Emulation

Win95 Keyboards	Mac CPU	Sun CPU
SB+RT Arrow	Power	Power

Mouse Click Equivalents

To emulate right-button click using an Apple 1-button mouse, hold down the CMND key (key with open apple insignia) while pressing the mouse button.
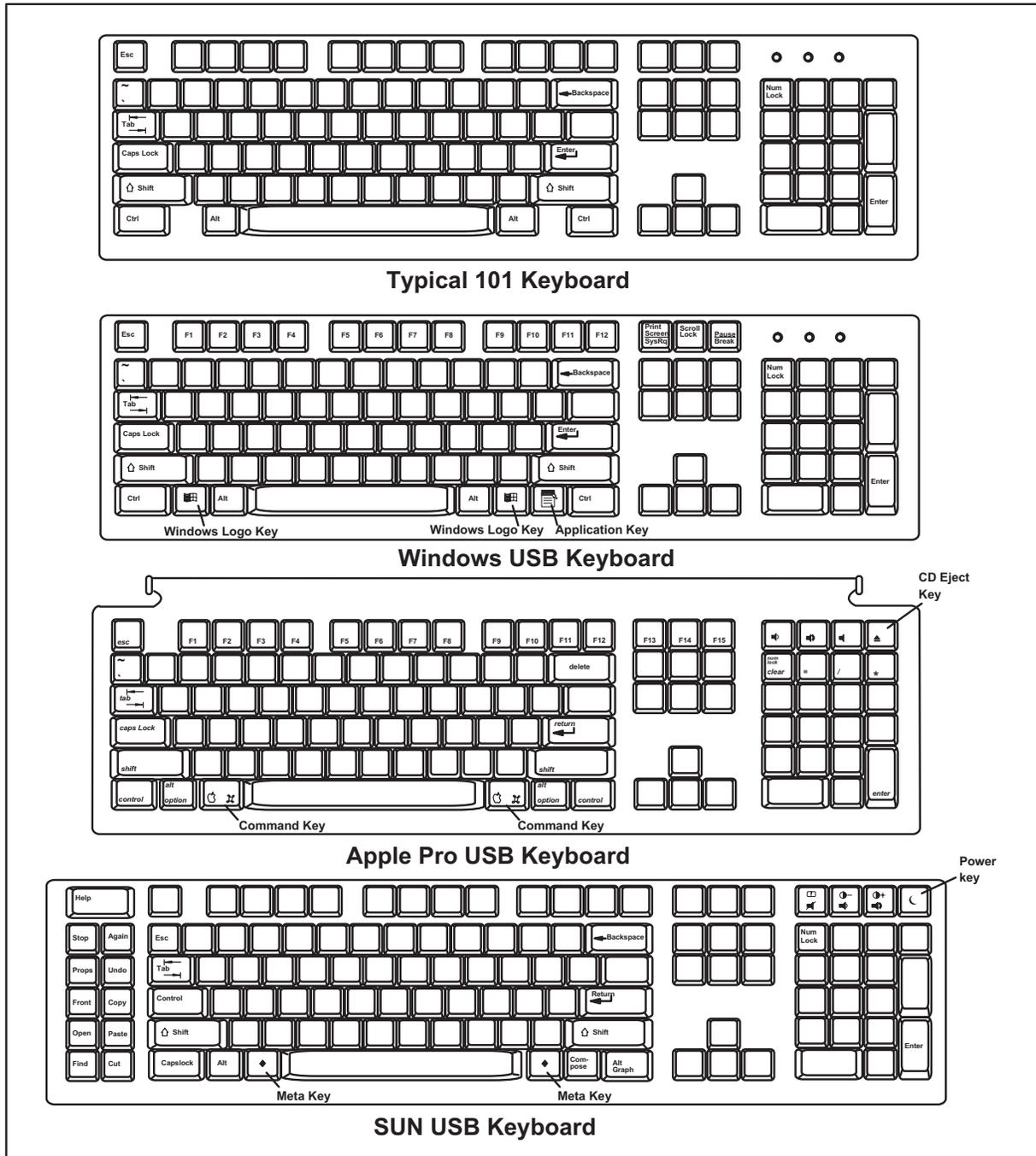
Figure 9- Keyboard Layouts

International Sun Keyboards

The UNIMUX can recognize international layouts for Sun keyboards.   In order to use an international Sun keyboard, follow this procedure:

1. Power-OFF the CPU from the UNIMUX
2. Connect the international keyboard to be used to the UNIMUX
3. Power-ON the CPU to the UNIMUX

It is also possible to configure the UNIMUX to emulate a specific international Sun keyboard regardless of what actual keyboard is connected. This is recommended when the CPU needs the layout code (i.e. a SUN CPU) and the keyboard doesn't have an explicit layout code (i.e. some Windows keyboards).   To do this, manually set the UNIMUX to indicate the international keyboard identification number to the CPU by following the instruction in "Select Country Code" on page 10.

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TROUBLESHOOTING

PROBLEM: Keyboard Errors
SOLUTION: Check cable connections on each CPU and the switch.

PROBLEM: No Video
SOLUTION: Check cable connections on each CPU and the switch.   Make sure thumbscrews are fully tightened.   Verify that keyboard and video connect from each CPU to matching ports. After reconnecting, CPU may need to be re-booted in order to sense the monitor connection.

PROBLEM: No Mouse Movement
SOLUTION: Check cable connections of mouse. Verify that mouse driver was loaded.

WARRANTY INFORMATION

The warranty period on this product (parts and labor) is one (1) year from the date of purchase. Please contact Network Technologies Inc at **(800) 742-8324** (800-RGB-TECH) or **(330) 562-7070** or visit our website at http://www.networktechinc.com for information regarding repairs and/or returns. A return authorization number is required for all repairs/returns.