RACKMUX® Series

RACKMUX-VS17-T-4USB

RACKMUX-VS17-T-8USB

KVM Drawer with SUN Keyboard, LCD Monitor and USB KVM Switch

Installation and Operation Manual

Warranty Information

The warranty period on this product (parts and labor) is two (2) years 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.

COPYRIGHT

CHANGES

The material in this guide is for information only and is subject to change without notice. Network Technologies Inc reserves the right to make changes in the product design without reservation and without notification to its users.

TRADEMARK

RACKMUX is a registered trademark of Network Technologies Inc in the U.S. and other countries.

Typographic Conventions

The following table describes the typographic changes used in this instruction.

Typeface	Meaning	Example
AAaaBBaaCCcc123	On-screen computer output	C:>
AAaaBBaaCCcc123	What you type, contrasted with on-screen computer output; keyboard keys to press	C:> **L** Press the **Fn** key

TABLE OF CONTENTS

TABLE OF FIGURES

INTRODUCTION

The RACKMUX-VS17-T-8USB is a KVM Drawer with USB KVM Switch (**_RACKMUX_**) that combines a rackmount 17" TFT/ LCD monitor, SUN keyboard, three-button trackball, and USB KVM switch (**_UNIMUX_**) in a space-saving 1RU industrial strength drawer with wrist pads.   The RACKMUX is equipped with a built-in switch function, which allows control of up to eight USB-enabled computers with a single keyboard, trackball and monitor. When access to a server rack is needed, the drawer can be pulled out and the display lifted up like a notebook computer, revealing the keyboard and trackball. When the drawer is not in use, the display can be folded forward and down so the 1RU drawer can be pushed into the cabinet easily and smoothly, helping to organize and streamline busy server rooms.

The onboard USB KVM switch allows access to any Windows, MAC, or SUN USB CPUs from one monitor, USB keyboard and USB mouse (up to 8 CPUs). Internal microprocessor circuitry allows all USB CPUs to be booted simultaneously without keyboard error. Port selection is accomplished through On Screen Display (OSD) menus provided for switch control and security administration.

Models Available

➢ RACKMUX-VS17-T-4USB -   KVM Drawer with 17" TFT/LCD monitor and 4-port UNIMUX
➢ RACKMUX-VS17-T-8USB -   KVM Drawer with 17" TFT/LCD monitor and 8-port UNIMUX

Types of CPUs Supported

Any USB CPU supporting USB version 1.0 or above including:

- USB WINxx
- USB MAC
- USB SUN

Features

- Entire unit is only 1RU (1.75") high.
- High-quality metal construction (ideal for most industrial and commercial settings)
- 17" Rack Mount LCD Monitor features a wide viewing angle
- Built-in 83-key (US) or 84-key (Europe) keyboard plus 14 SUN extra keys
- 1280x1024 resolution
- A forward-folding 17" TFT LCD with built-in OSD menu for screen adjustments
- Includes rack mount kit suitable for SUN and most EIA 19" racks
- Fits varying rack depths from 22" to 39" deep via adjustable mounting brackets
- VGA/SVGA/XGA/ SXGA Compatible
- Powered by 110-240VAC, 50 or 60Hz via IEC connector and country-specific line cord
- Auto shut-OFF switch: Turns OFF the power to the monitor when the LCD is in a folded-closed position.
- Standard 3-button trackball
- Added security with a drawer lock to prevent unwanted access
- Locking rails to prevent movement of the drawer when fully extended
- An internal cable arm for proper cable management when sliding the drawer open and closed

Options:

- Rackmounting kit for two-post Telco rack - order RL-T15-TEL
- Numeric keypad option- for a separate 17-key numeric keypad, add "-N" to the part number (i.e. RACKMUX-VS17-**N**T-8USB)

MATERIALS

Materials supplied with this kit:
- NTI RACKMUX-VS17-T-4/8 KVM Drawer with USB KVM Switch
- Line cord, country specific
- set of keys for keylock
- 2 Rear Mounting Brackets w/nuts
- 8 #10-32x3/4" screws and cage nuts for mounting to a rack
- CD with pdf of this manual

Materials *Not* supplied but *REQUIRED:*

 A USBVEXT-xx-MM cable for each USB CPU being connected to the switch must be used for monitor, keyboard and mouse interface.

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).*

Front View
RACKMUX-VS17-T-8USB

Rear View
RACKMUX-VS17-T-8USB
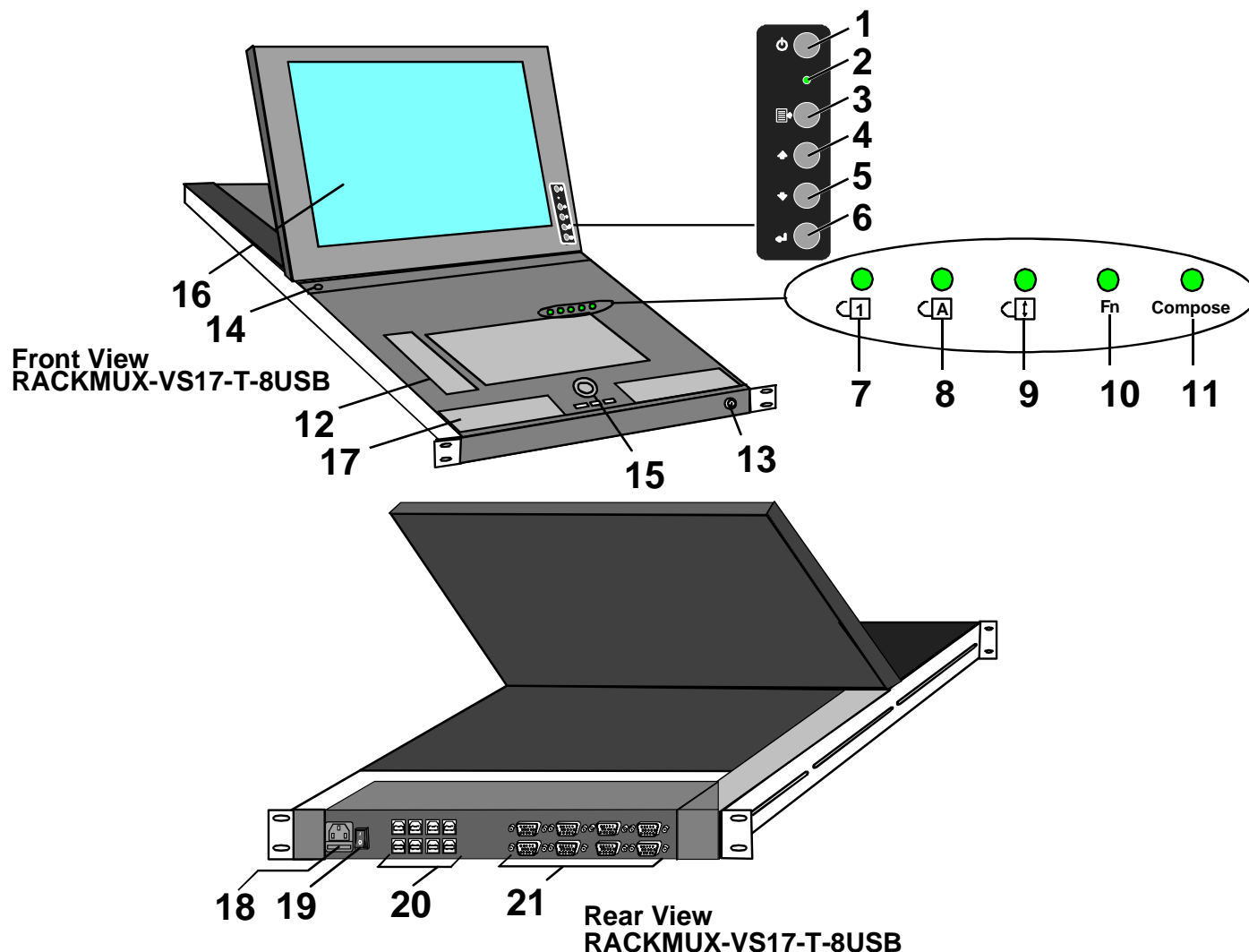
FEATURES AND FUNCTIONS

1. **Power Button-** press to turn the LCD monitor ON and OFF
2. **Power LED**- Indicates operation status
        Green = Power-ON, Video Input Signal OK
        Red = Suspend / Stand-by, or no Video Input Signal
3. **Menu Button**- press to turn ON the OSD menu
4. **Up Arrow Button**- press to move the cursor in the OSD menu up
5. **Down Arrow Button**- press to move the cursor in the OSD menu down
6. **Select Button**- press to select a menu item (when OSD menu is ON) or press to auto adjust the video quality (when OSD menu is OFF)
7. **NumLock LED**- illuminates when the number lock is ON
8. **CapsLock LED**- illuminates when CapsLock is ON.
9. **Scroll Lock LED**- illuminates when the Scroll Lock keyboard feature is ON.
10. **Fn LED**- illuminates when Function Features (page 26) are enabled.
11. **Compose LED**- illuminates when the SUN compose feature is locked ON
12. **Keyboard**- for manual data entry and computer control
13. **Keylock**- to prevent unauthorized use of the RACKMUX
14. **Auto Shut-OFF**- switch automatically shuts OFF the LCD display when the monitor is folded down
15. **3-Button Trackball** - for controlling mouse movements on the monitor and controlling the computer
16. **LCD Display**- for viewing the video signal from the connected CPU
17. **wrist rest-** for user comfort
18. **IEC Connector w/Built-in 2A 240VAC Replaceable Fuse**- for attachment of the IEC power cord to power the RACKMUX drawer
19. **Switch**- for powering ON and OFF the RACKMUX drawer
20. **CPU x**- USB type B female connector-for connection of USB device cable from CPU(s)
21. **VIDEO x**- 15HD female connectors- for connecting video cables from CPUs

INSTALLATION

Rack Mounting Instructions

The RACKMUX was designed to be mounted to a rack and includes mounting flanges to make attachment easy.

1. Determine the mounting height in the rack for the drawer.   It should be a height comfortable to use the keyboard and see the LCD display. Mark holes in each of the 4 corner cabinet rails at points all level with each other.

2. Secure the rear brackets to the rear rack cabinet rails.   Apply the top screws (supplied) for each bracket to the holes marked in step 1.

3. Lift the keyboard into position and line the studs on the left and right sides up with the slotted openings in the rear bracket. Apply the nuts (supplied) to the studs but do not tighten the nuts yet.

FYI: There are 4 mounting studs provided on each side of the RACKMUX. Depending on the depth of the rack and distance apart of the cabinet rails, the position of the rear bracket may make all 4 studs available for use.   In this case, apply the 2 nuts to the studs furthest apart from each other on each side.

4. Slide the drawer in until the top holes in the front bracket flanges line up with the holes marked in step 1.   Secure the front brackets on the drawer to the front cabinet rails with two screws per bracket. Be sure to tighten the screws securely. Then tighten the nuts applied in step 3.

5. Apply one more screw to each of the rear brackets to finish.
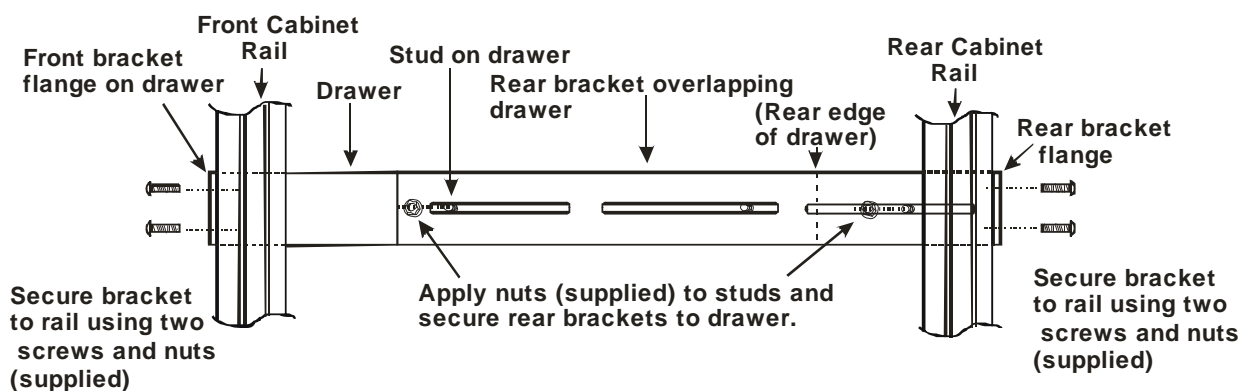
Figure 1- Mount RACKMUX to rack

Optional Telco 2-Post Mounting

If the Telco 2-post mounting bracket kit (NTI# RL-T15-TEL) is to be used, secure the short and long brackets to each side of the drawer as shown in Fig. 2.   Apply 2 nuts (supplied) per bracket to secure the brackets to the drawer.   Apply two #10-32x3/4" screws (supplied) per bracket to the post at the desired height.   Slots are provided in the brackets to make minor depth adjustments easy.   Be sure to properly tighten all nuts and screws before using the drawer.
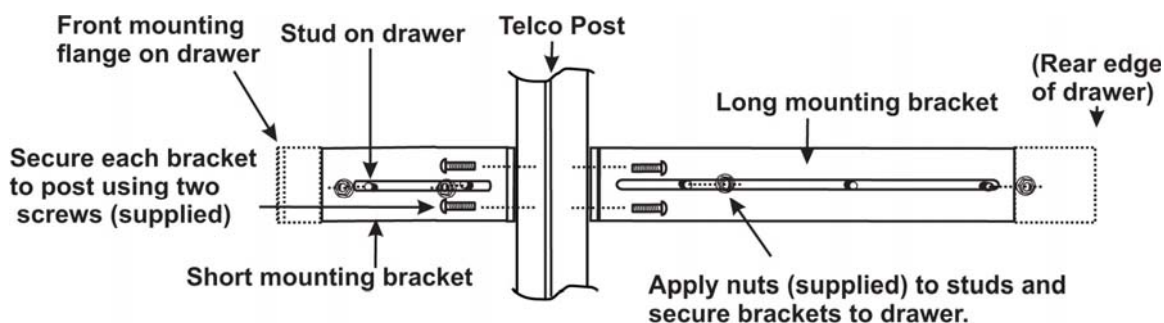
View of right side of drawer with optional Telco mounting brackets

Figure 2- Mount to Telco post with optional mounting brackets

Connect The Cables

FYI It is not necessary to turn the CPUs or monitors OFF during this installation.

1. Connect each CPU to the UNIMUX switch using a USBVEXT-*xx*-MM video and input device interface cable – REQUIRED (not supplied). (See Fig. 3)
2. Group the input device and monitor interface cables from each CPU, making sure that cables from the first CPU are connected to the UNIMUX switch at connectors "CPU 1" and "VIDEO 1". Cables from the second CPU should connect to "CPU 2" and "VIDEO 2" connectors...etc.
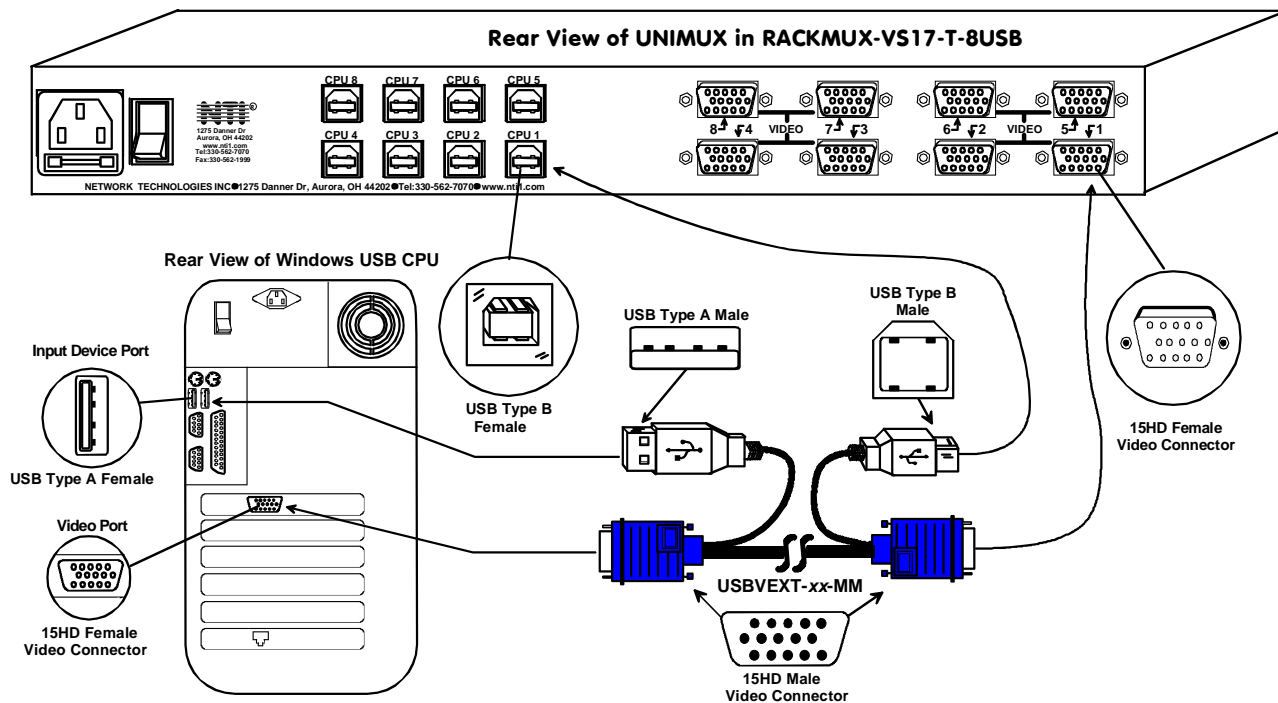
Figure 3- Connect each CPU

3. Connect the power cord to the IEC connector.
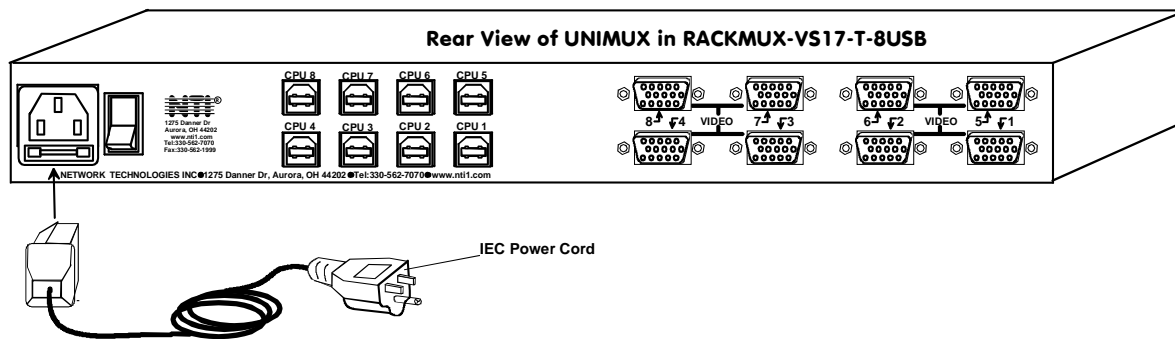
Figure 4- Connect the power cord and AC adapter

Power-Up Sequence

1. Using the key, unlock the drawer and slide the keyboard and LCD Display out far enough to raise the display to a comfortable viewing angle.
2. Power ON the UNIMUX with the power switch at the rear of the unit.
3. Power ON the KVM Drawer with the power switch located on the monitor.
4. Adjust the screen's brightness and contrast with the controls also located on the monitor– as needed.
5. Power ON any attached CPUs.

FYI: 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 switch.

USING THE UNIMUX

Once the RACKMUX is properly connected, the UNIMUX switch will enable a connection to be made between the attached CPUs and the monitor, keyboard, and mouse.

The UNIMUX switch can be controlled by two methods:
- keyboard control through Command Mode
- mouse clicks from within some menus of Command Mode

Keyboard Control

Keyboard control of the UNIMUX switch is achieved using Command Mode - operated using the keyboard and mouse in conjunction with OSD menus superimposed onto the monitor.

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

OSD CONTROL

OSD superimposes a menu system on the user's video screen with a list of all connected CPUs. OSD allows CPUs to be named (with up to 12-character names).   OSD then allows selection of CPUs by that name. Connected CPUs can be listed by name or by port number. OSD Search Mode enables the user to type in the first few characters of the CPU's name and the OSD will locate it. Help screens assist with all OSD functions.

Security Option

The security option of the OSD Control enables an administrator to control access to CPU ports for each user.   Up to 63 users can be created.   These users have controlled access to any CPU.   Only the administrator can activate or deactivate the security features.   Security can be activated from the Maintenance Mode menu (page 17) with a successful administrator login for verification purposes. Furthermore, the administrator can set a maximum idle time value after which the current user will be logged out and the login screen displayed. This time out does not function while the OSD is active. The current security status, idle time out, and scan dwell time are all saved and will be restored whenever power to the switch is cycled OFF, then ON.

If the security option is enabled, when the RACKMUX is powered up the user will be prompted for a username and password to continue.   If the security option is not enabled the monitor will display the desktop image for the connected CPU and the user can continue with normal operation of the connected CPU.

Enabling the Security Feature

To enable the security feature the administrator must first enter Command Mode from the keyboard using the sequence <Ctrl> + <`> (accent key). The OSD menu will automatically appear on the monitor.   This provides a visual way to control the UNIMUX switch using the keyboard and mouse.

The administrator , when setting the UNIMUX switch up for the first time, may want to proceed directly to the ADMINISTRATION Mode by typing <CTRL> +<M> , then <A>, and then <Y>.

The factory settings are:

- **user name = root**
- **password = nti**

In units with earlier manufacturing date:
default user name = ADMINISTRATOR **default password= ADMINISTRATOR**

Note: The user name for the administrator cannot be changed from "root".

Once logged-in, follow the instructions on pages 8 and 9 for setting up users and changing the password. Within the Administration Mode the administrator can setup each of the users and the limitations of their use of the individual CPUs attached to the switch.
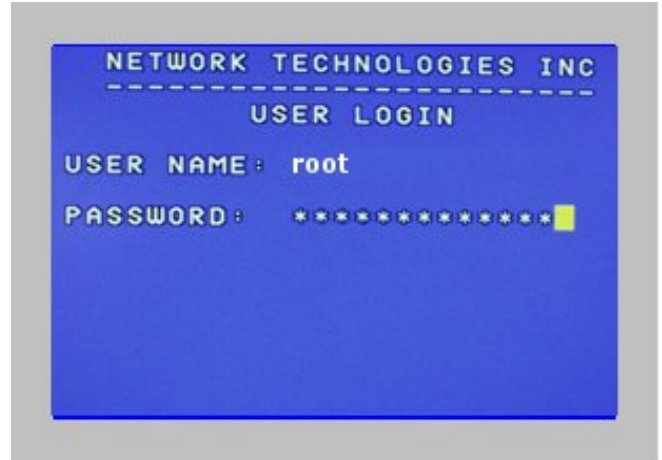

Figure 5- Administrator Login screen

When a standard user powers up the system a security screen will appear if security has been enabled by the administrator. The user will need to login to the switch by following the instructions below for the USER LOGIN. If the user does not know the appropriate user name and password (setup by the administrator), contact the switch administrator for this information. Once logged-in a user can follow the Command Mode functions described on page 10 to control the switch within the limitations as determined by the administrator.

User Login Mode

User login mode requires a user to login with a user name and password from the list created by the administrator. This mode will also disable use of the front panel until the user logs in.

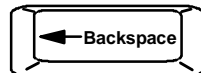| Function:	Keystroke:
Adds a character to the user name/password	A-Z 0-9 **(Type any alphabetical or numeric character)**
Removes previous character from the user name/password	←Backspace
Submit user name/password	Enter
Exit USER LOGIN and return to previous mode. This function is only available if security is not currently active.	Esc

If the password submitted is incorrect, the user will not be able to proceed.

If the password submitted is correct, the user will proceed to Normal Mode.

Figure 6- User Login screen

ADDITIONAL MODES AVAILABLE WITH SECURITY

The three modes that follow are only available if the administrator is logged in.

Administration Mode

To enter the Administration Mode menu press <A> from the Maintenance Mode menu (page 17).

Administration Mode allows the administrator to use the following functions:

Function:	Keystroke:
Change the administrator's password	**C**
Disable security	**S**
Update User Name List	**U**
Change Alternate Command Hot Key	**X**

Figure 7- Administration Mode menu

Selects the idle time in minutes	**T** - **(0-2) x** - **(0-9) x** - **(0-9) x** **(xxx from 000 to 255. i.e. T002 would set the time-out period for 2 minutes. 000 will disable it)**
Exit Administration Mode and return to previous mode	**Esc**
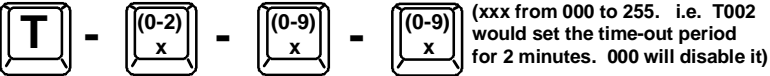
Administrator Password

To change the administrator password press <C> from the Administration Mode menu.

The administrator is able to change the administrator password as needed (see Fig. 8). Two edit fields are available, one for password, the other for verify password. The password can be up to 13 characters in length.

Note: The default password for the administrator is "nti". (On earlier units it is "ADMINISTRATOR")

Figure 8- Administrator password change

Function:	Keystroke:
Add character to password string or verify password string	
Delete previous character in edited string	
Save new password.	
Move to next field to be edited	
Return to Administration Mode	

User Name List

To enter the User Name List press <U> from the Administration Mode menu.

The User Name List displays the list of users and provides control for adding new user

Edit user

To enter the Edit User mode press <E> from the User Name List after selecting a user or an empty record.

The Edit User mode (see Fig. 10) enables the administrator to:
- add a new user
- remove an existing user
- edit the settings for an existing user

The Edit User mode contains three edit boxes and a check box list of up to 32 check boxes representing the User Access List (list of the CPU port(s) the user has access rights to).

The first edit box is used to edit the user name. The next two edit boxes are used to input the password twice (in order to verify it was typed correctly).   The password can be up to 13 characters in length.

The check boxes are used to control the user access to the CPU ports. The user will only have access to check boxes with checks in them.

Figure 10- Edit the user access list

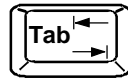The list below describes the functions available in the Edit User mode:
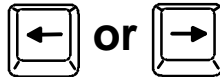
Function:	Keystroke:	
Add a character to user name string, password string, or verify password string, whichever is selected	[A-Z 0-9] **or** [↑ Shift] **+** [A-Z]	**(Type any upper or lower case alphabetical or numeric character)**
Switch sequentially between the User Name edit box, Password edit box, Verify Password edit box, and User Access List	[Tab]	
Navigate through User Access List when it is active	[←] **or** [→]	
Toggle access rights (check/ uncheck) of the highlighted port in the User Access List	(Spacebar)	
Save the edited configuration. Administrator will be prompted for a Yes or No confirmation	[Enter]	**(If Password string and Verify Password string are different, this command will have no effect, enabling the administrator to correct the password)**
Go back to User Name List menu	[Esc]	
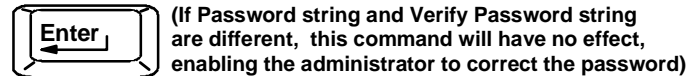
NOTE: To delete a user from the User Name List, use either the <Delete> key or the <Backspace> key to remove characters, not the <Spacebar>.   Using the <Spacebar> will overwrite the characters with spaces and retain the user configuration in the User Name List. .

Alternate Command Hot Key

To enable the administrator to assign a key in addition to the <`> (accent key) to use with <Ctrl> to enter into OSD Command Mode, an Alternate Command Hot Key option is provided.  The default factory setting for this option is <`> (disabling the option).

To select an Alternate Command Hot Key, press <X> from Administration Mode menu (page 8). A window will open and the administrator will be prompted to press a key. After pressing the key, a confirmation message will appear. The administrator should press <Y> (Yes) to validate the key as the Alternate Command Hot Key, or <N> (No) to select another key. Pressing <Esc> will return to the Administration Mode menu.

Only the administrator is allowed to set or change the Alternate Command Hot Key. This function must be set individually for each of the USB User Device ports on the UNIMUX.

FYI: The Alternate Command Hot Key does not replace the <`> (accent) key, it just works as another way to enter into Command Mode. After setting it, the user can enter into Command Mode either with <Ctrl> + <`> or with <Ctrl> + <Alternative Command Hot Key> combination. To disable it, the administrator should set <`> as the Alternate Command Hot Key.
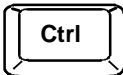
USER ACCESS FUNCTIONS
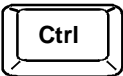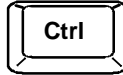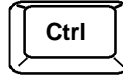
Introduction

The OSD menu enables a user to name the CPUs connected to the UNIMUX switch and connect to them using that name. The OSD is positioned on the monitor, displaying 8 CPU names at a time. The screen can be used for switching as well as editing the CPUs' names. Through the OSD menu, the user can operate the UNIMUX switch to have the switch cycle through 3 extended modes of operation: COMMAND, BROADCAST, and SCAN .

Command Mode

When entering the Command Mode from the keyboard using the <Ctrl> + <`> (accent key), the OSD menu will automatically appear on the monitor.   This provides a visual way to control the UNIMUX switch.

The list below describes the OSD Command functions available from the keyboard after entering Command Mode:

Function: **Keystroke:**

Select the previous port   ↑

Select the next port   ↓

Enable/disable Scan Mode   Ctrl + S

Enable/disable Broadcast Mode   Ctrl + B

Enter Edit Mode   Ctrl + E

Enter Maintenance Mode   Ctrl + M

Enter Change Settings Menu   Ctrl + T
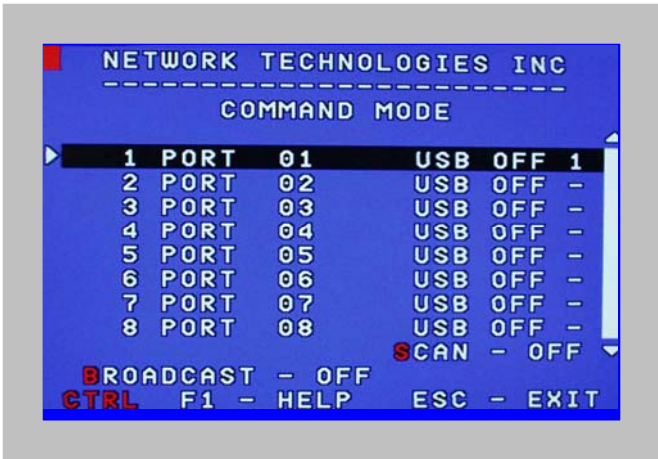
Figure 11- Command Mode screen

Command Mode (Cont'd)
Function: **Keystroke:**

Selects a specific port   **Ctrl** **+** **P** - **(0-9)** **x** - **(0-9)** **x**   **(Pxx would be P01, P02, etc.)**
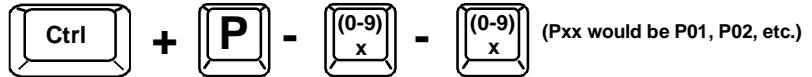
Enters Search Mode and adds a character to search string and selects the CPU's name that matches best.   **A-Z 0-9**   **(Type any alphabetical or numeric character)**
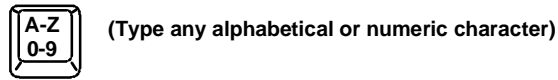
Selects the first port on the switch   **Home**

Selects the last port on the switch   **End**

Display Help Menu   **F1**

Switch to a selected port   **Enter**

Update Configuration   **Ctrl** **+** **Tab**   **(Use this command to update the information describing the structure of the cascaded switches. Used if a slave is powered-ON or OFF at any time after initial startup.)**
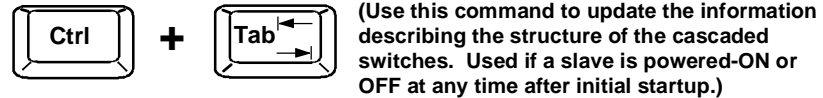
Display port information   **F3**   **(Display information about the selected port. When pressed, a window displays the port name and its position in the configuration structure by level and port number.)**
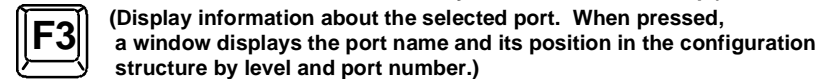
Exit OSD Command Mode   **Esc**

> **Press <CTRL> while in the Command Mode menu to display the Edit, Maintenance, Port, and Settings control features.**
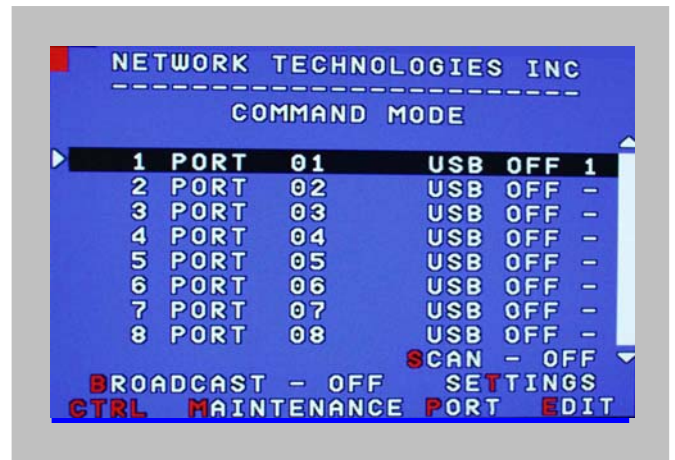
Figure 12- More Command Mode Features

The mouse can also be used to control the UNIMUX switch within the Command Mode menu.
- The mouse cursor can be moved to the Scan, Help, Broadcast, Settings, Maintenance and Exit fields where the user can then click on the left mouse button to perform that function.
- Ports listed on the screen can be selected by moving the cursor onto that port and clicking. Clicking twice on a selected port will switch to that port and exit Command Mode.
- To change the displayed ports on the screen simply click on the up and down arrows located to the right of the port names displayed.

Broadcast Mode

To activate Broadcast Mode press <Ctrl> + <B> from the Command Mode menu.

Broadcast Mode enables the user to type characters to more computers simultaneously. From the Change Settings menu (see page 13) the user can edit the list of ports that receive data in Broadcast Mode. A port doesn't receive broadcast data if one of the following conditions is true:
- the port is not in the Broadcast Mode list
- Security Mode is enabled and the user does not have access rights to the port

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

Scan Mode

To activate Scan Mode press <Ctrl> + <S> from the Command Mode menu.

When in Scan Mode the switch scans to each port with a CPU powered-ON. 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.

Note: The scan dwell time set by the user only effects that user and has no effect on other switch users.

Normal Mode

When the UNIMUX switch is not in Command or Scan mode, the user is in Normal Mode, controlling the CPU to which the user is connected through the UNIMUX switch.

Edit Mode

NOTE: Edit Mode will only be accessible if the administrator is logged in.

To activate Edit Mode press <Ctrl> + <E> from the Command Mode menu.

Edit Mode enables the user to modify the names of the CPUs connected to the switch. Names of CPUs can be up to 12 characters in length. When in Edit Mode, multiple keystroke combinations are not valid (<Shift>+P, <Ctrl>+P, <Alt>+ P, and P will all type a "P" to the display - lower case letters cannot be typed).

Function: **Keystroke:**

Move cursor one position to the right

Move cursor one position to the left

Move cursor to the previous port

Move cursor to the next port

Selects the first port on the switch   `Home`

Selects the last port on the switch   `End`

Figure 13- Edit Mode screen

Toggles between insert and overstrike   `Insert`   **(The character either gets inserted and the remainder of the name gets shifted to the right,   OR   the current character gets overwritten.)**

Edit Mode (Con'td)
Function: **Keystroke:**

Erase current character

> [Delete]

Erase previous character

> [←— Backspace]

When finished making changes in Edit Mode, press <Enter> and a prompt will appear to press either <Y> to save the changes or <N> to continue making changes without saving the changes just made.   If the <Esc> key is pressed instead of <Enter>, all changes made will be ignored and the display will return to the previous menu.

Change Settings

To enter the Change Settings menu (see Fig. 14) press <Ctrl>+<T> from the Command Mode menu.

The list below describes the Change Settings menu functions available from the keyboard:
Function: **Keystroke:**

Go to Broadcast Mode Configuration

> [B]

Go to Scan Mode Configuration

> [S]

Go to Language Selection Menu

(Option only available if the
 administrator is logged in)

> [L]

Change the scan dwell time period

> [T]

Configure ports for MAC or non-
MAC CPUs (Administrator only)

> [M]

Enable/Disable right mouse button
click emulation

> [R]

Exit from Change Settings
Return to Command Mode

> [Esc]

Figure 14- Change Settings menu

When the <T> is pressed, an edit field showing the actual value of the scan dwell time is displayed at the bottom of the Change Settings menu. The user can introduce a new value for scan dwell time and press <Enter> to save it or <Esc> to exit. Any value between 002 and 255 (seconds) is acceptable.

Select Ports For Broadcast

To Select Ports For Broadcasting, press <B> from the Change Settings menu (see Fig. 14).

The Select Ports For Broadcast menu (see Fig. 15) enables the user to select specific ports to be active in Broadcast Mode. Only the selected ports will receive keyboard messages in Broadcast Mode.

A check list with all the port numbers will be displayed in the window.
- unchecked box = the corresponding port is **not** in the broadcast list
- checked box = the corresponding port **is** in the broadcast list

The user can toggle the state of the selected check box by pressing <Spacebar> or clicking the left mouse button.
- press <S> to check all of the ports
- press <C> to uncheck all of the ports

The selected port is highlighted with a green bar. To select another port, the user can use the arrow keys or mouse movement. The name of the selected port is displayed at the bottom left of the menu.

When <Esc> is pressed the display will return to the Change Settings menu. The broadcast selection list is automatically saved.
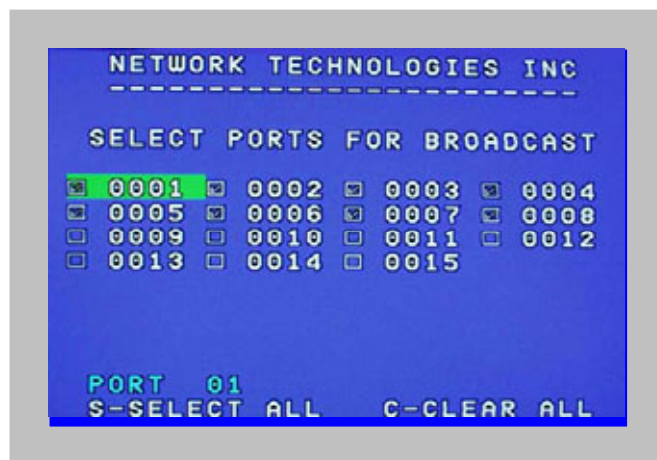
Figure 15- Select ports for broadcasting

Select Ports For Scan

To Select Ports For Scanning, press <S> from the Change Settings menu described on page 14.

The Select Ports For Scan menu enables the user to select specific ports to be active in Scan Mode. Only the selected ports will be scanned in Scan Mode.

A check list with all the port numbers preceded by a check-box will be displayed in the window.
- unchecked box = the corresponding port is **not** in the scan list
- checked box = the corresponding port **is** in the scan list

The user can toggle the state of the selected check box by pressing <Spacebar> or clicking the left mouse button.
- press <S> to check all of the ports
- press <C> to uncheck all of the ports

Figure 16- Select ports for scanning

The selected port is highlighted with a green bar. To select another port, the user can use the arrow keys or mouse movement. The name of the selected port is displayed at the bottom left of the menu.

When <Esc> is pressed the display will return to the Change Settings menu. The scan selection list is automatically saved.
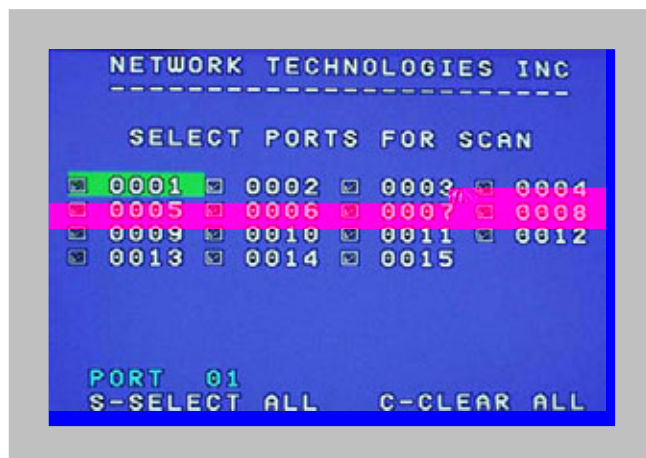
Language Selection

NOTE: The LANGUAGE SELECTION option will only be accessible if the administrator is logged in.

To enter the Select Language menu press <L> from the Change Settings menu described on page 14.

The Language Selection menu enables the user to manually 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. Windows keyboards).

To choose a language, scroll through the menu (using either the mouse or up/down arrows) and when the desired language is highlighted press <Enter> on the main keyboard.   The selected language will be highlighted in red. Press <Esc> to return to the Change Settings menu.

Figure 17- Select the keyboard language

For more on International Sun keyboards, see page 24.

MAC Ports Configuration

NOTE: The CONFIGURE MAC PORTS option will only be accessible if the administrator is logged in.

MAC Ports Configuration menu enables the administrator to select specific ports to be connected to MAC CPUs for passing mouse information to the MAC CPUs. This is useful when the user wants to use mouse drivers provided by the mouse vendor, which allows the use of programmable functions for each button. Ports should be configured at installation time or whenever necessary. After setting, the configuration is stored in non-volatile memory and will be retrieved whenever the switch is power ON. When the port is connected to a Windows or SUN CPU, this configuration SHOULD BE DISABLED. By default, all ports are configured as non-MAC CPUs (Windows and SUN).

NOTE: If a port is configured as connected to a non-MAC CPU, but is in fact connected to a MAC CPU, the mouse will still work as a generic mouse. No special functions provided by software drivers will be available.

To enter the MAC Ports Configuration menu, the administrator must press <M> from the Change Settings menu, described on page 14.

A check list with all the ports numbers preceded by a check-box will be displayed in the window.
- unchecked box = the corresponding port is set as connected to a non-MAC CPU
- checked box = the corresponding port is set as connected to a MAC CPU

In order to change the status of a port, the administrator has to first select the port. The selected port is highlighted with a green bar.

To select another port, the administrator can use the arrow keys or mouse movement. The name of the selected port is displayed at the bottom left of the menu, right above the yellow bar.

The administrator can toggle the state of the selected check box by pressing the <Spacebar> or clicking the left mouse button.
- Press <S> to check all the ports
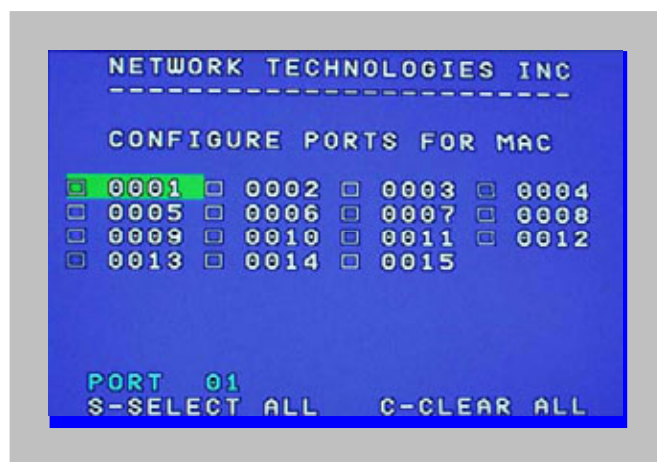- Press <C> to uncheck all the ports

Figure 18- Configure Ports for MAC screen

When <Esc> is pressed, the display will return to the Change Settings menu. The list is automatically saved.

The settings apply to all users of the switch.

Search Mode

To enter Search Mode, type any alphabetical or numeric character when the Command Mode menu is on the monitor.

Search Mode enables the user to enter and maneuver through a list of CPU names. The CPU name best matching the characters typed is selected. The list of CPUs may also be searched for a specific (or similar) name. The following commands are valid when the search option has been invoked from Command Mode.

Function:	Keystroke:
Erase previous character in search name	◄—Backspace
Add a character to the search string and select the best matching CPU name	A-Z 0-9 (Type any alphabetical or numeric character)
Exit Search Mode, return to Command Mode	Esc
Switch to selected port	Enter
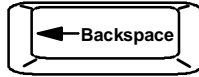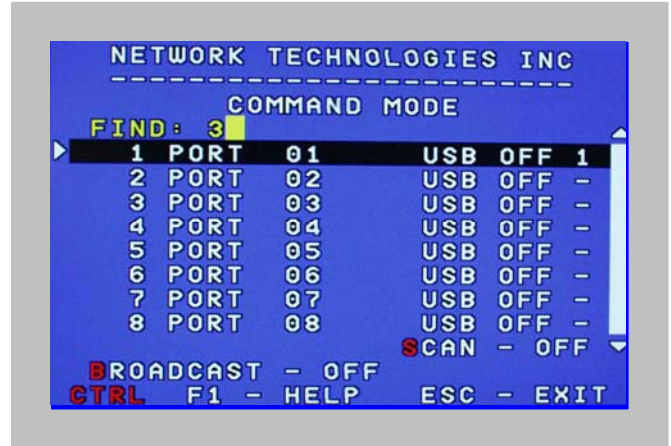
Figure 19- Search Mode screen

Maintenance Mode

To enter Maintenance Mode press <Ctrl>+<M> from the Command Mode menu.

Maintenance Mode enables a user to customize the On Screen Display to their requirements.

Function:	Keystroke:
Reset all of the port names	R
Toggle between numeric and alphabetic listing of ports	L
Move On Screen Display (OSD) menu up on monitor	↑
Move OSD menu down on monitor	↓
Move OSD menu to the right	→

Figure 20- Maintenance Mode screen

Note: After pressing <R> to reset the port names, the switch must be power-cycled or the <Ctrl>+<Tab> keys must be pressed in order for the switch to update.

Maintenance Mode (Cont'd)

Function:	Keystroke:
Move OSD menu to the left	←
Make OSD menu taller	T
Make OSD menu shorter	S
Change user password. (Present only when a standard user is logged in.)	P
Log current user out and return to User Login Mode.	Q

Activate security features.
Present only when security is
available but not active.

A

Note: If activating security features, the user will be prompted for a "Y" (yes) or "N" (no) to confirm the menu choice, at which point the user will be asked for a username and password before continuing. Only the administrator can activate the security features.

Enter Administration Mode.
Option present only when Administrator
is logged in.

Save OSD window parameters for the port	Enter
Return to Command Mode	Esc

Help Mode

To enter Help Mode press the <F1> key from the Command Mode menu (see page 11).

Help Mode displays a list of commands with a short explanation of their function. These lists are organized in pages for each mode (i.e. COMMAND, EDIT, and SEARCH). The following options enable the user to quickly obtain information on any command.

Function:	Keystroke:
View the previous page of help if available	Page Up
View the next page of help if available	Page Down
Exit HELP and return to previous mode	Esc

F3- Display Information

To display information about a selected port, pressing the <F3> key from within the Command Mode main menu will cause a window to open. The window will show the name of the port and its position in the system structure, level by level.   This is most useful when cascading switches (for Cascading see page 20).   An example of this structure might be

<div align="center">
LEVEL 1 : PORT 5
LEVEL 2 : PORT 3
</div>

This means that the CPU connected through this port is actually connect through Port 5 of the master switch (Level 1), and through port 3 of the slave connected to port 4 (Level 2).   See Fig. 21 below.
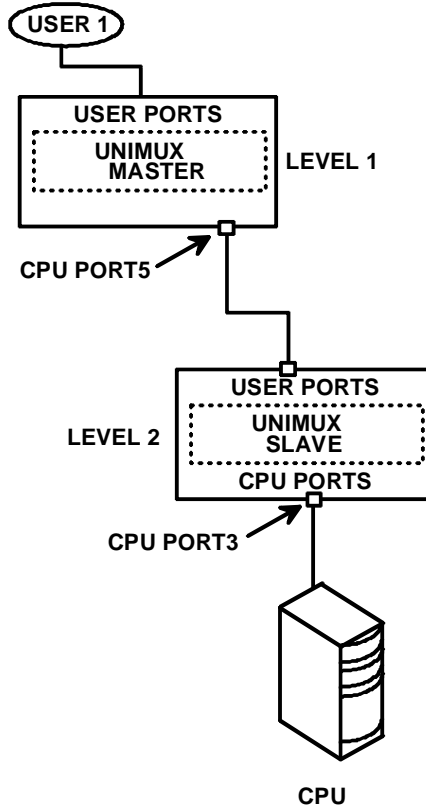
Figure 21- Information provided by the F3 command

No Sun Sleep Mode

PLEASE NOTE: It is necessary to configure a Sun CPU (most versions) such that the Sleep Mode is <u>not enabled</u>. 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.

CASCADING

The UNIMUX can be cascaded as shown in Fig. 22 below.   Single user or multi-user UNIMUX switches may be connected downstream (see Figs. 23 and 24). The first switch in a cascaded system is referred to as the "master", while all downstream switches are referred to as "slaves". The only additional hardware required to cascade switches is a set of device and monitor cables for each "SLAVE UNIT" (USB-VEXT-xx-MM).   All CPUs and switches can then be controlled by users using OSD commands with Command Mode.

Notes:
- ***The UNIMUX used in a RACKMUX cannot be connected in a cascaded system with UNIMUX-USBV-x switches made prior to 10-1-04.***

- ***Slaves in a cascaded system must be either all single-user switches or all multi-user switches, but not a combination of both.***

Cascaded Installation

a.   Using the 15HD video cable ends of a USBVEXT-xx-MM cable, connect the USB KVM slave's MONITOR port to the master's VIDEO 1 port.
b.   Using the USB ends of the same USBVEXT-xx-MM cable, connect one of the USB slave's USB DEVICES ports to the master's CPU 1 port.

Note: Only one of the two ports labeled DEVICES on a slave needs to be used in order for cascading to work.

c.   Repeat step b. & c. for each additional slave, keeping in mind that each slave will connect to the next available master's port (i.e. Slave #2 to master's VIDEO 2 & CPU 2, etc.)   See Fig. 25 on page 22.
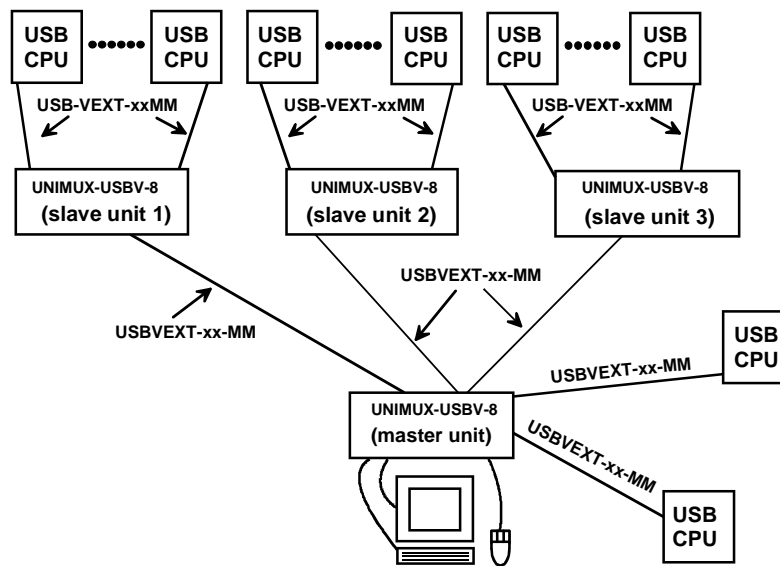
Figure 22- Connections for Cascading

.
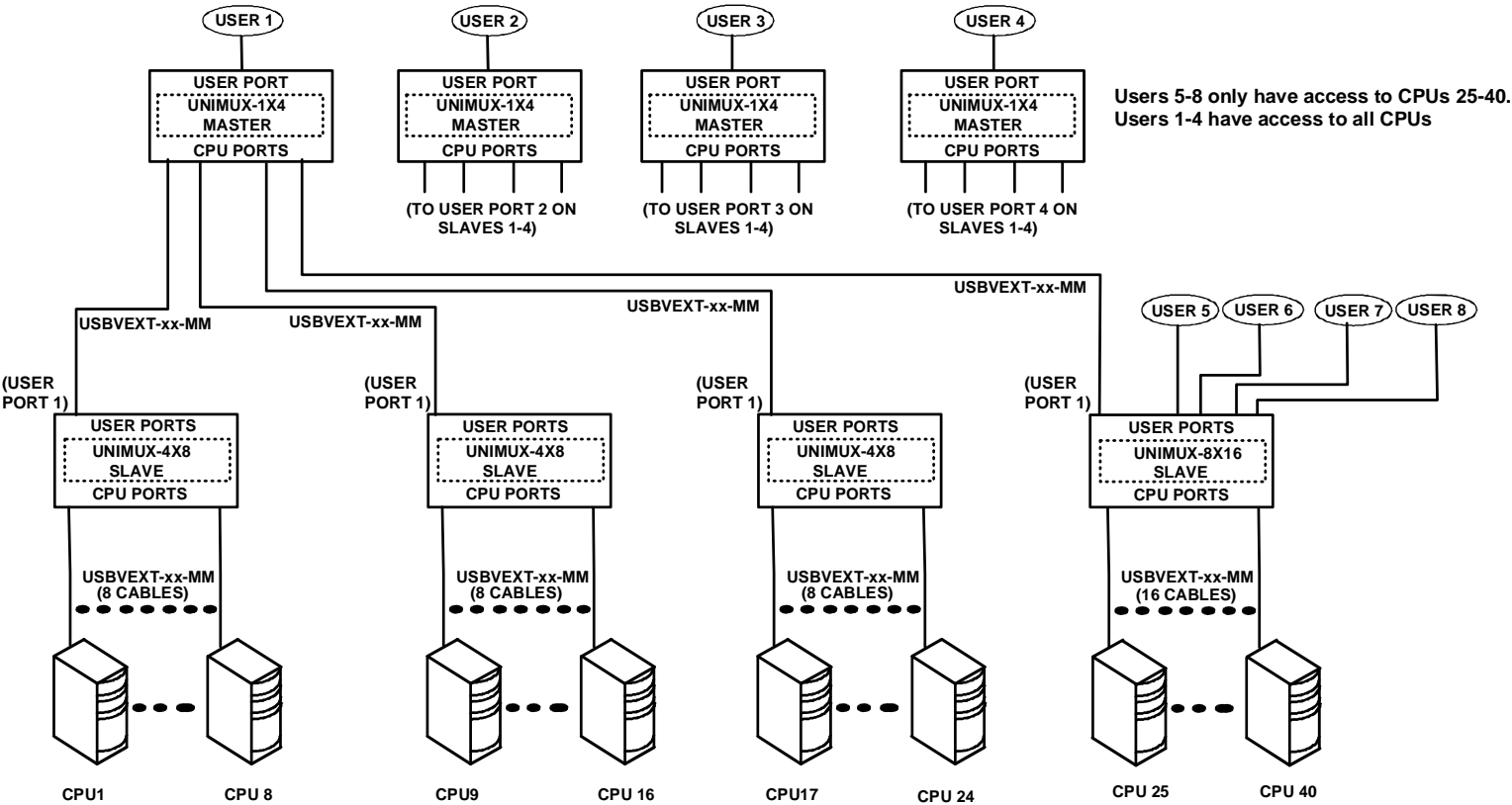
Figure 23- Cascaded configuration with multi-user slaves

FYI: Any USER and MONITOR ports on a multi-user switch connected as a slave that do not get connected to the master can be connected to by users (for example users 5-8 in Fig. 23). Users connected to a slave downstream from the master will control only the CPUs directly connected to that slave switch (i.e. users 5 and 6 in Fig. 23 above can only control CPUs 25-40).

Figure 24- Master-to-slave device cable connections- single-user switches

Rear View of UNIMUX in RACKMUX-VS17-T-8USB

CPU 8   CPU 7   CPU 6   CPU 5

CPU 4   CPU 3   CPU 2   CPU 1

NETWORK TECHNOLOGIES INC●1275 Danner Dr, Aurora, OH 44202●Tel:330-562-7070●www.nti1.com

8↱↴4   VIDEO   7↱↴3   6↱↴2   VIDEO   5↱↴1

USBVEXT-*xx*-MM

USBVEXT-*xx*-MM

CONNECT MASTER CPU PORT 1
TO ONE USER PORT ON SLAVE1

CONNECT MASTER CPU PORT 2
ONE USER PORT ON SLAVE2

USER 4   USER 3   USER 2   USER 1

CPU 16

R
S
2
3
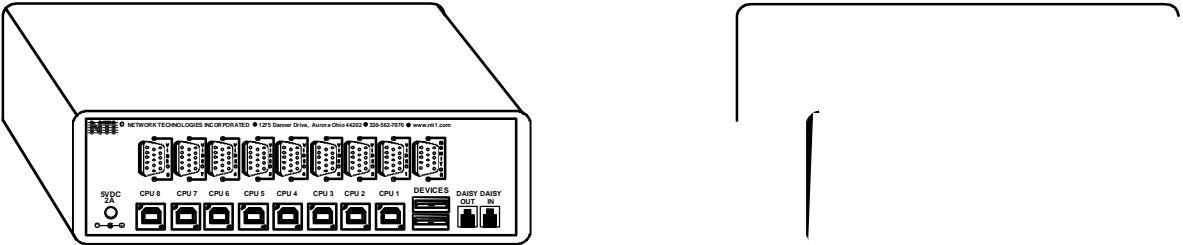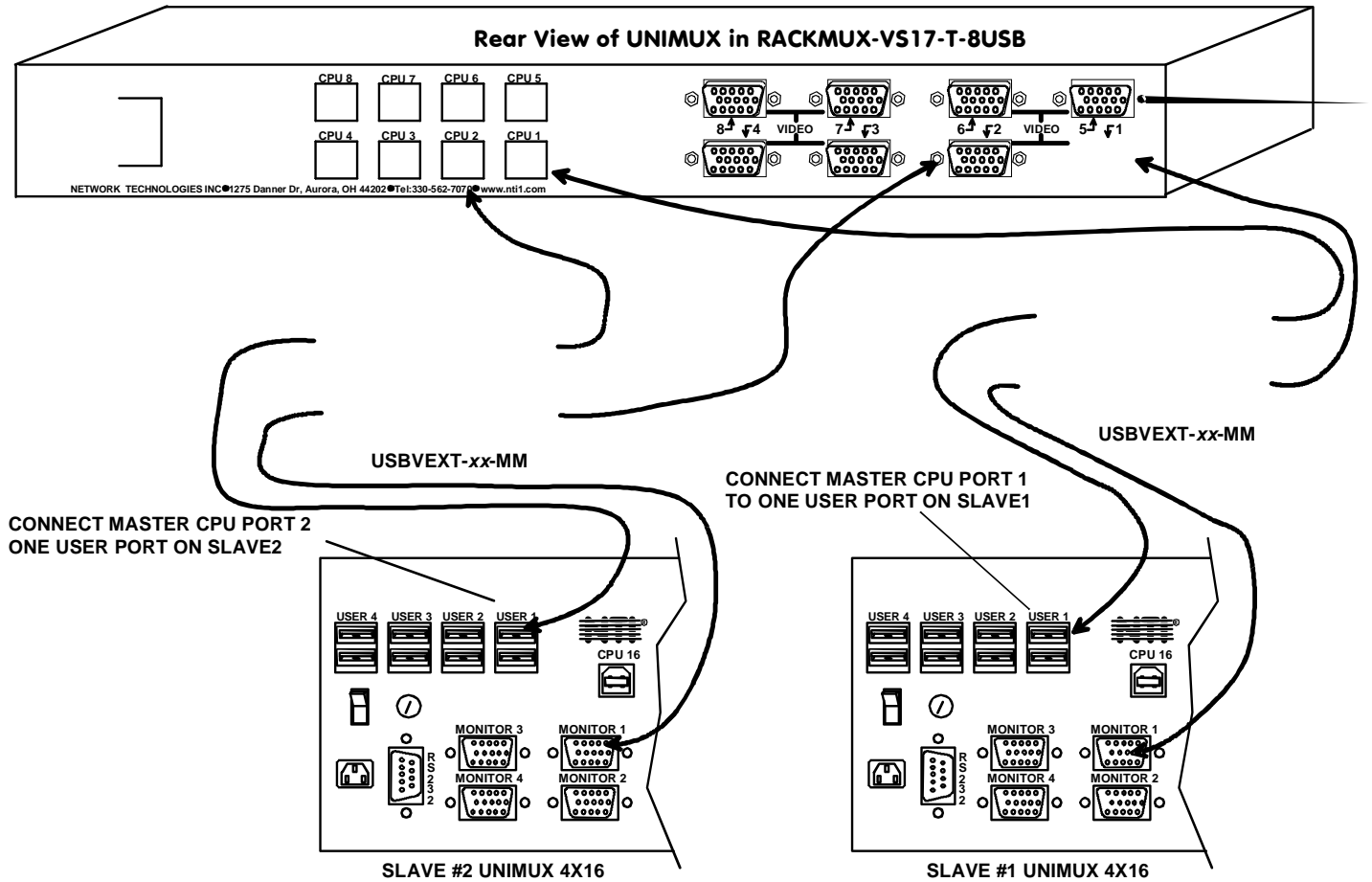2

MONITOR 3   MONITOR 1

MONITOR 4   MONITOR 2

USER 4   USER 3   USER 2   USER 1

CPU 16

R
S
2
3
2

MONITOR 3   MONITOR 1

MONITOR 4   MONITOR 2

SLAVE #2 UNIMUX 4X16

SLAVE #1 UNIMUX 4X16

Figure 25- Master to slave cable connections- multi-user switches

Limitations

➢ All switches used as slaves must have the same number of CPU ports (all 4, 8, or 16 CPU ports).
➢ Up to 8 slaves may be connected to form a maximum system size of 152 ports (1x32 port master + 8x16 port slaves).
➢ Slaves must be added to the master in order (slave #1 to master's port 1, slave #2 to master's port 2, etc).

FYI: Master Port 1 (with an 8-port Slave connected to it) will become ports 1-8 (1-4 for a 4-port slave). Master Unit Port 2 (with a second 8-port Slave Unit connected) will become port numbers 9-16 (5-8 for a 4-port slave).

➢ The front panel buttons (found on most UNIMUX switches) are only used to operate standalone switches. To control a cascaded network of switches, only the OSD commands within Command Mode will be recognized.

DISPLAY FUNCTIONS

An NTI RACKMUX with a 17" monitor supports resolutions up to SXGA (1280 x 1024) with a refresh rate at between 55 and 76Hz. When a 15" monitor is present, support for resolutions up to XGA (1024 x 768) apply with a refresh rate at between 55 and 76Hz. The quality of the image on the LCD monitor is adjustable using an On Screen Display (OSD) menu using the control buttons on the RACKMUX.

Standard Controls

The RACKMUX has 5 standard control buttons and a power LED. The 5 standard control buttons operate as follows:

- The **Power** button turns the RACKMUX LCD and backlight ON and OFF as desired.

- The **Power LED** located immediately below the Power button is a dual color LED.   It will illuminate with a green color when the RACKMUX is powered ON and working properly.   It will illuminate with a red color if the RACKMUX is powered ON but there is no input signal detected.

- The **Menu** button is used to bring up the OSD menu where the various settings of the LCD display can be adjusted. Once the OSD screen is displayed, the Menu button is used to make selections within the menus. See "OSD Control Menu" (below) for more on LCD display settings.

- The **Up and Down Arrow** buttons are used to navigate through the menus. Move the cursor up or down as desired to highlight an item for selection.   Once an item is highlighted, pressing the Menu button will select it.
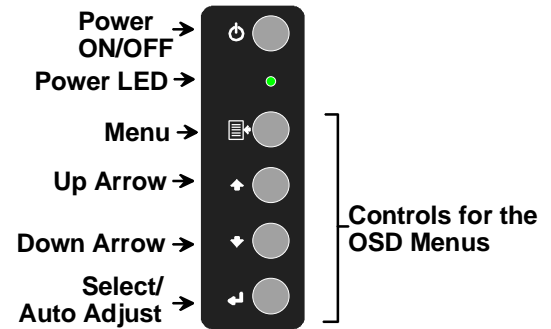

Figure 26- OSD Controls

- The **Select** button is used to make selections within the OSD menus when the OSD menu is ON. When the OSD menu is OFF, the Select button will act as an **Auto Adjust** button to keep the user from having to use the menus to adjust the quality of the image on the monitor.

OSD Control Menu-

The OSD (On Screen Display) Menu enables the user to select the desired characteristics of the LCD display.   To activate the OSD Menu,   press the Menu button (above).   To turn the Menu back OFF, either select "EXIT" from the main menu or just wait 10-60 seconds and it will automatically be cleared from the screen.

OSD Main Menu

| Selection	Purpose	Range
Brightness/Contrast	Increase/decrease panel brightness/contrast level	1-100
Color	R,G,B color temperature control	1-100
Position	- Video Image horizontal and vertical position control - Clock setting - Phase control	1-100
Setup	- Control OSD Image position on screen - Set time OSD will stay on screen before auto shutoff - Select the language of the OSD menu	-- 10 to 60 seconds Several languages (see page 8)
Exit	Exit from the OSD control menu	

Brightness/Contrast Menu

Selecting the Brightness/Contrast menu will bring up a screen in which the user can adjust the brightness and contrast levels of the LCD display.   Using the Up or Down arrows to navigate the menu, highlight either the BRIGHTNESS or CONTRAST sections and press the Select button to choose the option to adjust.   Then use the Up or Down Arrow to adjust the setting. Select EXIT when finished to return to the Main Menu.
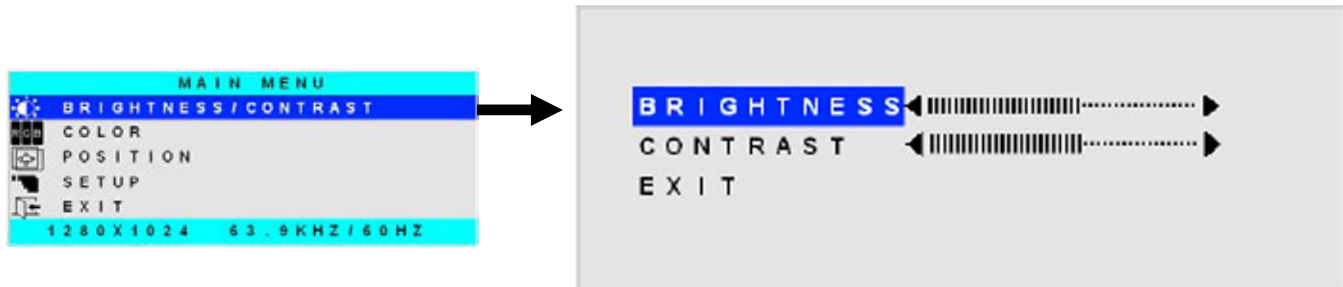
Color Menu

Selecting the Color menu will bring up a screen in which the user can adjust the Red, Green, and Blue color levels (values from 1-100) of the LCD display.   With the RED, GREEN, or BLUE sections highlighted,   (use the Up or Down arrow to move between them),   press the Select button to choose the option to adjust.   Then use the Up or Down Arrow to adjust the setting. Select EXIT when finished to return to the Main Menu.
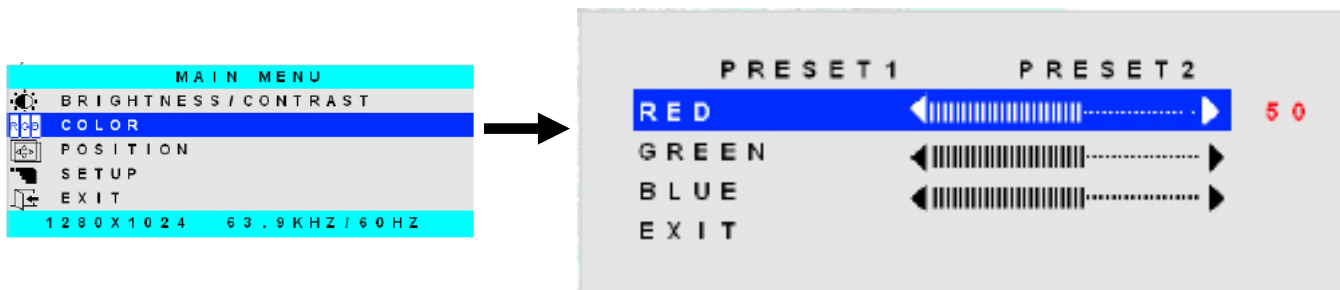
Position Menu

Selecting the Position menu will bring up a screen in which the user can select AUTO ADJUST to automatically adjust the horizontal and vertical position of the displayed image on the monitor, as well as adjust the clock and phase settings if they are not correct.   The user can also individually adjust these settings if so desired. With any of the sections highlighted,   (use the Up or Down arrow to move between them),   press the Select button to choose the option to adjust.   Then use the Up or Down Arrow to adjust the setting as needed.   Select EXIT when finished to return to the Main Menu.
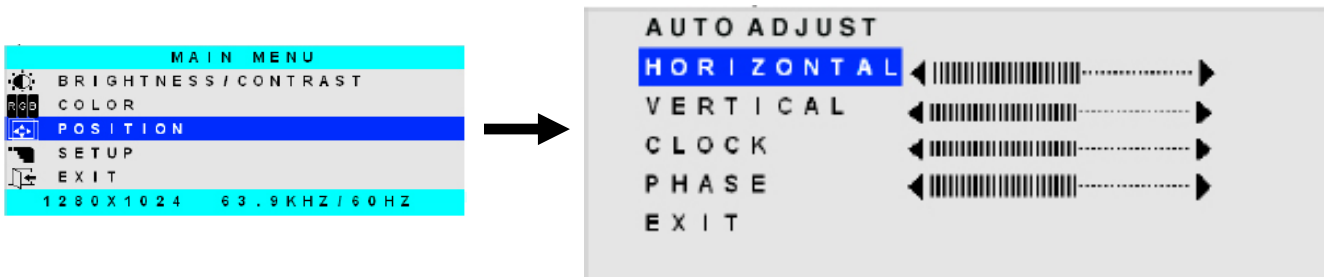
Setup Menu

Selecting the Setup menu will bring up a screen in which the user can adjust
- OSD POSITION-the position of the OSD menus on the LCD display
- OSD TIME-the length of time the user can be idle before the OSD menu automatically exits (adjustable from 10 to 60 seconds)
- LANGUAGE-the language that the OSD menus will be presented in

With the item highlighted, (use the Up or Down arrow to move between them), press the Select button to choose the option to adjust.   Then use the Up or Down Arrow to adjust the setting as needed.   Select EXIT when finished to return to the Main Menu.
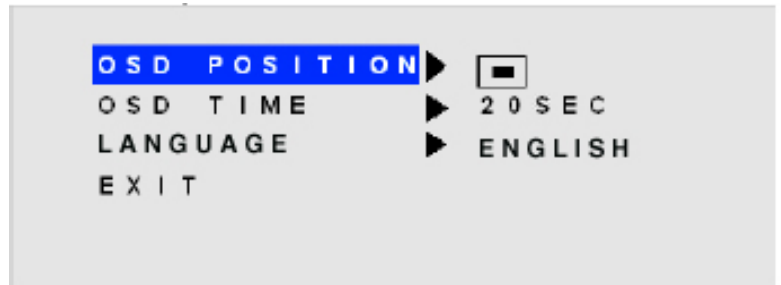
OSD Image can be moved to different points on the display
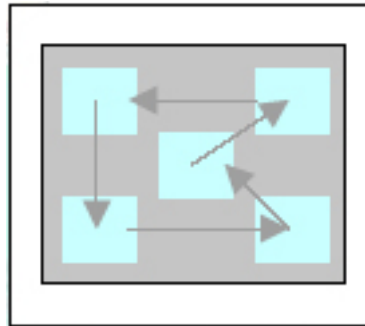
KEYBOARD FUNCTIONS

RACKMUX-VS17-T-8USB

The keyboard on the RACKMUX-VS17-T-8USB is a standard condensed Windows format.   To reduce the keyboard size, some keys have been assigned multiple functions, accessible via the "**Fn**" key.   This section will describe which keys have multiple functions and how to enable them.   Use the LEDs to know what special features are enabled.

Function Key Operation

The Function ("**Fn**") key provides several special functions on the RACKMUX keyboard, including:

- enabling otherwise standard keyboard keys to be used as the keys of a numeric keypad
- enabling multi-function keys to change operation

To turn ON (lock) the Function key, press the "**Fn**" key twice quickly (double-click).   The "Fn" LED will illuminate.

To turn OFF (unlock) the Function key, press the "**Fn**" key twice quickly again. The "Fn" LED will turn OFF.

Note: The "Fn" key will also operate similar to the shift key (with only momentary effect). Press and hold the "Fn" key prior to pressing the special function key.   The "Fn" key will remain active as long as it is depressed.
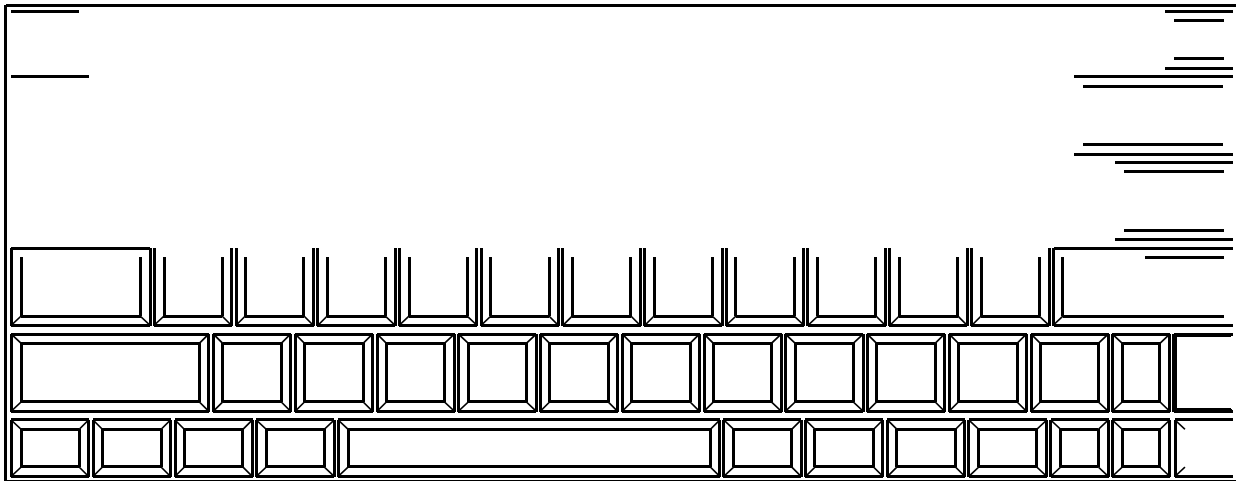
Figure 27- US(English) Keyboard Layout

Figure 28- Keyboard LED Indications

Number Pad

The functionality of a Number Pad on a standard Windows keyboard has been incorporated into the keyboard of the RACKMUX-VS17-T-8USB.

To substitute the keys of the Number Pad:

1. Press the "**NumLock**" key.   The NumLock LED (   ) will illuminate.
2. Press the "**Fn**" key twice quickly (double-click).   The "**Fn**" LED will illuminate.

To turn OFF Number Pad functions:

1. Press the "**Fn**" key twice quickly (double-click).   The "Fn" LED will turn OFF.
2. Press the "**NumLock**" key.   The NumLock LED (1) will turn OFF.

With the Fn and NumLock LEDs illuminated,   pressing some standard keys will result in displaying characters as indicated in the chart below.

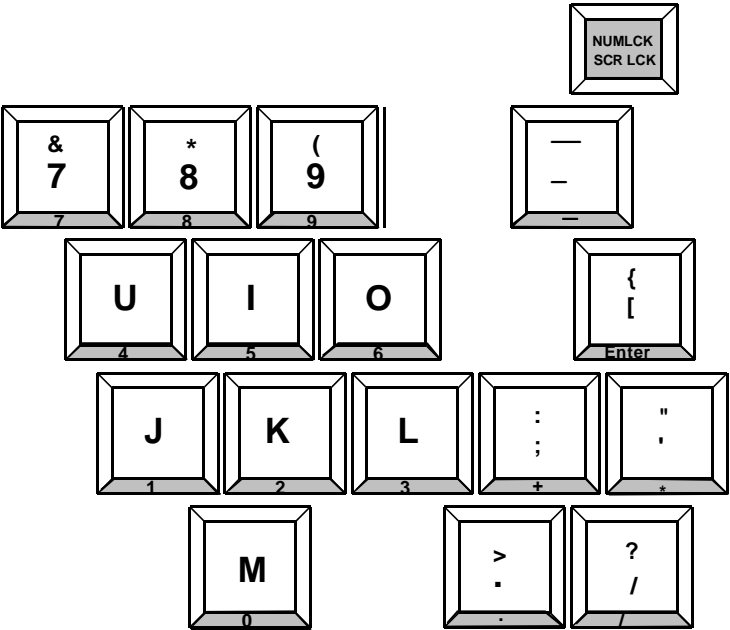| Standard Key	Displayed when NumLock is ON	Function when NumLock is OFF
j	1	End
k	2	Down Arrow
l	3	Page Down
u	4	Left Arrow
j	5	---
o	6	Right Arrow
7	7	Home
8	8	Up Arrow
9	9	Page Up
m	0	Insert
. (period)	. (period)	Delete
/ (forward slash)	/ (forward slash)	
; (semicolon)	+ (plus sign)	
' (apostrophe)	* (asterisk)	
– (hyphen)	– (minus sign)	
[(left bracket)	ENTER	

Figure 29- Keys of the Number Pad

Other Functions of the "Fn" Key

The Function ("**Fn**") key (page 27) will enable other standard keyboard features in addition to the Number Pad keys (page 27) .

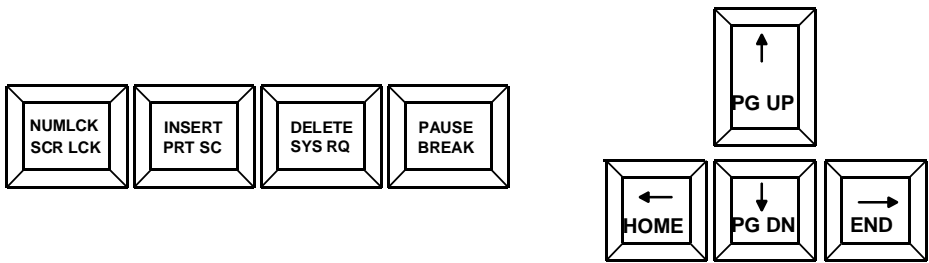| Key Function when Fn key is not locked ("Fn" LED is OFF)	Key Function when Fn key is Locked ("Fn" LED is ON)
Numlck (Number lock)	Scr Lck (Scroll Lock)
Insert	Prt Sc (Print Screen)
Delete	Sys Rq (System Requirements)
Pause	Break
Up Arrow	Page Up
Down Arrow	Page Down
Left Arrow	Home
Right Arrow	End

Figure 30- Additional multi-function keys

Note: The "Fn" key will also operate similar to the shift key (with only momentary effect).

Numeric Keypad Option

Models with the Numeric Keypad option (**-N**) (i.e. RACKMUX-VS17-NT-8USB) have a standard Windows keyboard with 17-key numeric keypad.

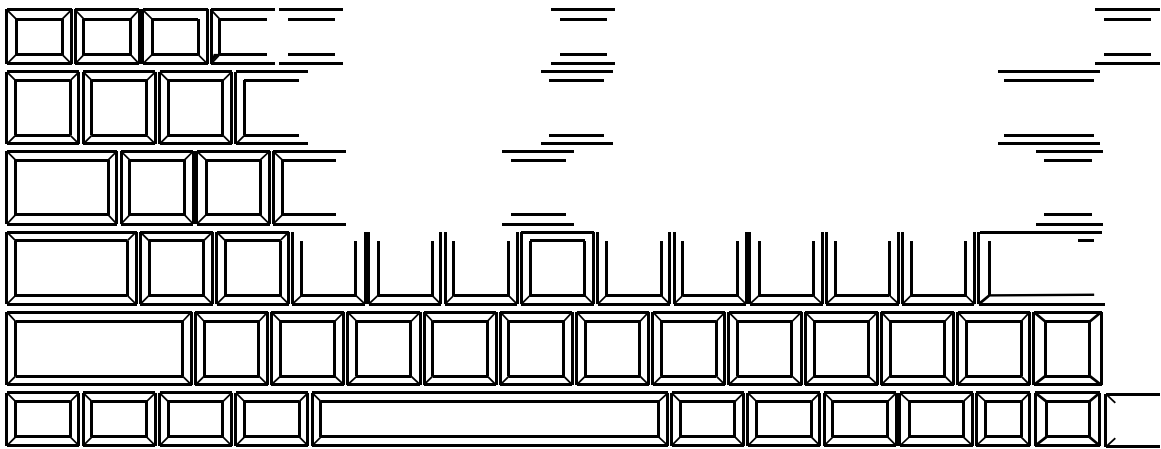*Note: The "Fn" key is not an active key on this keyboard.*

Figure 31- U.S. SUN Keyboard with numeric keypad

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. 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
SOLUTION: Broadcast mode is ON. Turn OFF Broadcast mode.

DEFAULT PASSWORD RESET

In the event the Administrator password is lost or forgotten, the password can be reset to the default password of **"nti"**.
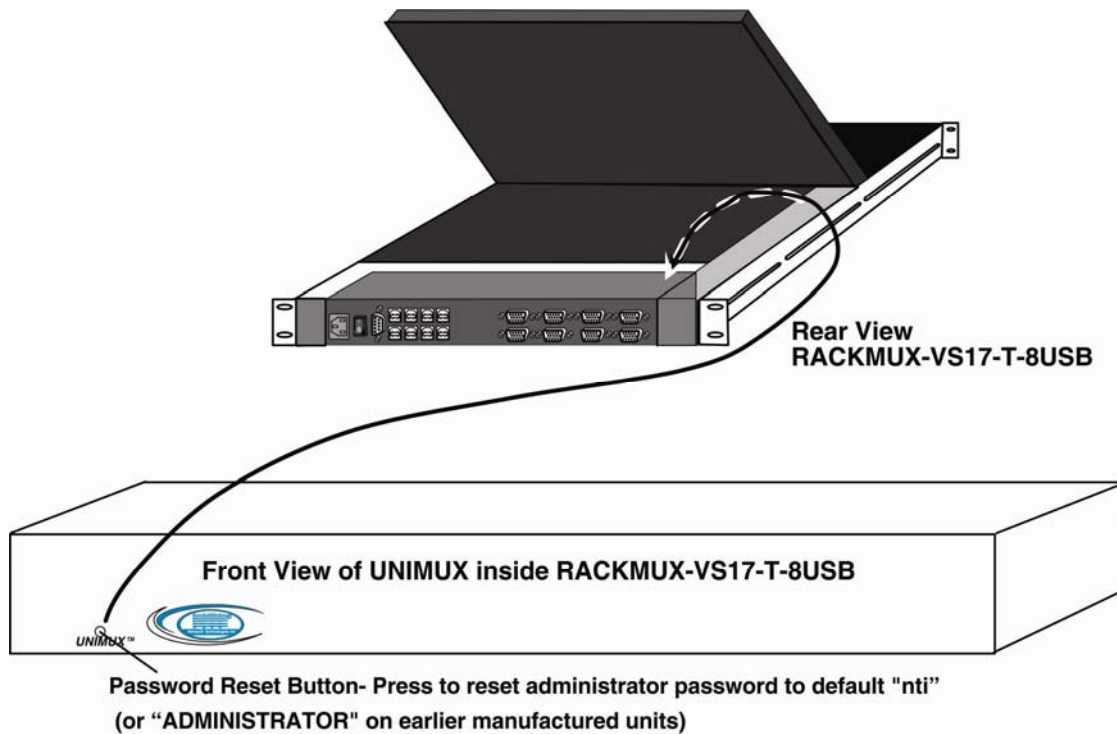Figure 31 shows the location of the password reset button.

**Rear View
RACKMUX-VS17-T-8USB**

Front View of UNIMUX inside RACKMUX-VS17-T-8USB

Password Reset Button- Press to reset administrator password to default "nti"
(or "ADMINISTRATOR" on earlier manufactured units)

Figure 32- Locating the password reset button

RACKMUX-KVM DRAWER STANDARD SPECIFICATIONS

General Specs

Case Material...Electro-ga

Trackball

Casing Material..ABS
Ball Material ....Phenolic (metal core)
Ball color ....Black
Ball diameter..16mm
Tracking force ....10 grams nominal
Resolution..117 pulse per ball revolution
Mounting Angle...Max. 30' to horizontal plane
Lifetime-Ball revolutions................................>= 1 million
Mechanical Buttons ....3 Mechanical switches are supported

INDEX