RACKMUX® Series

RACKMUX-VS17-NT-4USB

RACKMUX-VS17-NT-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.

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CHANGES

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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

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INTRODUCTION

The RACKMUX-VS17-NT-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. 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-NT-4USB -   KVM Drawer with 17" TFT/LCD monitor and 4-port UNIMUX
➢ RACKMUX-VS17-NT-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

MATERIALS

Materials supplied with this kit:
- NTI RACKMUX-VS17-NT-4/8USB 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
- URL slip with link to 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-NT-8USB**

**Rear View
RACKMUX-VS17-NT-8USB**
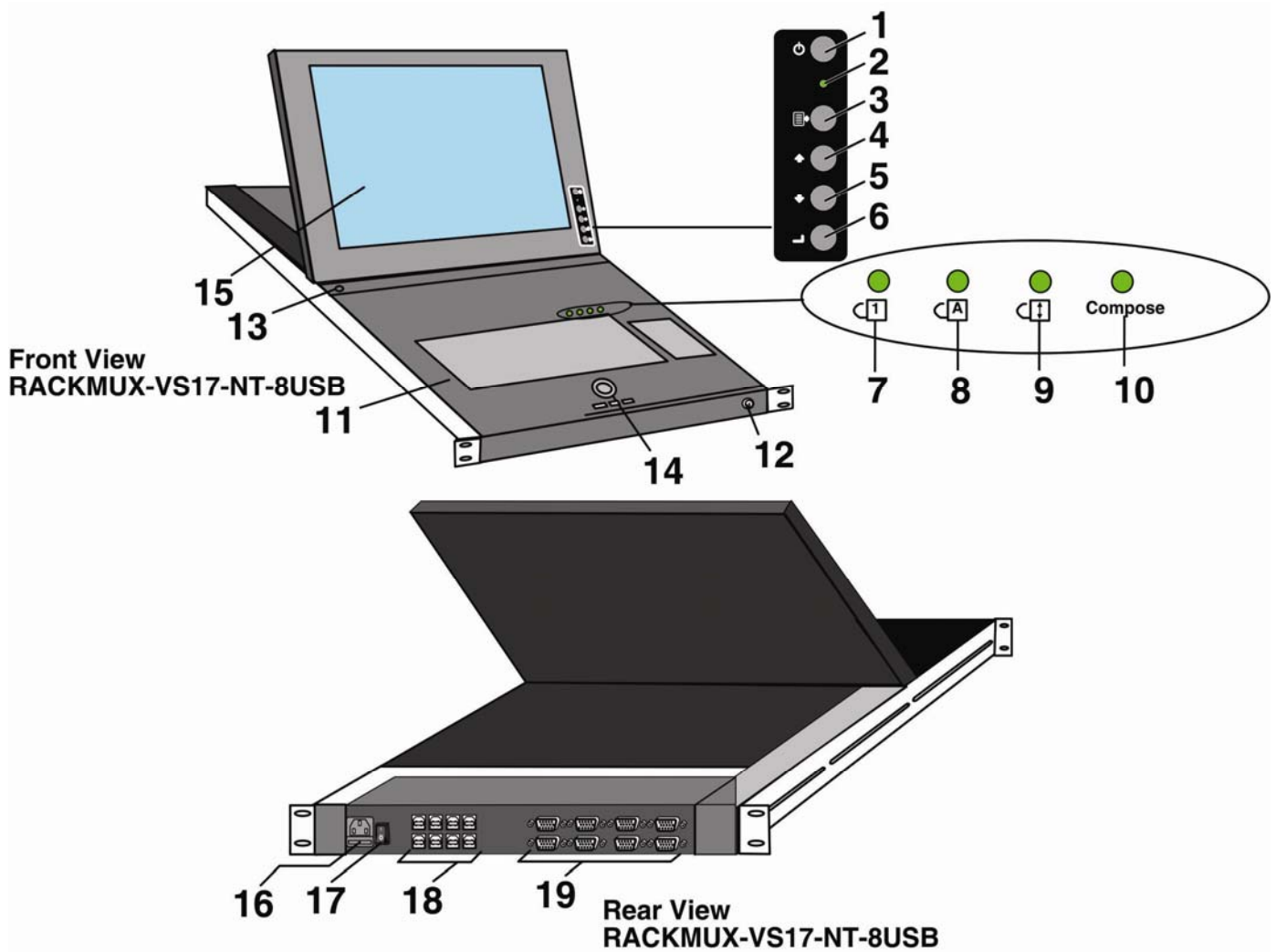
FEATURES AND FUNCTIONS

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. **Compose LED**- illuminates when the SUN compose feature is locked ON
11. **Keyboard**- for manual data entry and computer control
12. **Keylock**- to prevent unauthorized use of the RACKMUX
13. **Auto Shut-OFF**- switch automatically shuts OFF the LCD display when the monitor is folded down
14. **3-Button Trackball** - for controlling mouse movements on the monitor and controlling the computer
15. **LCD Display**- for viewing the video signal from the connected CPU
16. **IEC Connector w/Built-in 2A 240VAC Replaceable Fuse**- for attachment of the IEC power cord to power the RACKMUX drawer
17. **Switch**- for powering ON and OFF the RACKMUX drawer
18. **CPU x**- USB type B female connector-for connection of USB device cable from CPU(s)
19. **VIDEO x**- 15HD female connectors- for connecting video cables from CPUs

RACKMUX SINGLE-PERSON INSTALLATION

Your NTI RACKMUX Drawer was designed for easy installation by one person with a minimum of tools and effort.   Follow the simple steps below to quickly install your RACKMUX Drawer.

If you would like to see a video of this installation, see the "single-person-installation" video .

1. Locate and unpack the hardware bag.   Your hardware bag will include all items necessary to install the specific RACKMUX model (see the manual that accompanied your RACKMUX drawer), including the following hardware unique to the Single-Person hardware installation:

- 10- #10-32 cage nut
- 2- #10-32 x 1/2" flat-head machine screw
- 8- #10-32 x 3/4" pan-head machine screw

To install the rails you will need only a tape measure and Phillips screwdriver.

2. Unpack the left and right rail assemblies. Each are labeled "Right Front" and "Left Front" to indicate their intended position and orientation.   Extend each rail assembly to the dimension required for your rack.   Rail assemblies are adjustable to fit within a rack between 24" and 40" in depth.

Rail assemblies are adjustable in length from 24" to 40".

Labeled

xxxxx
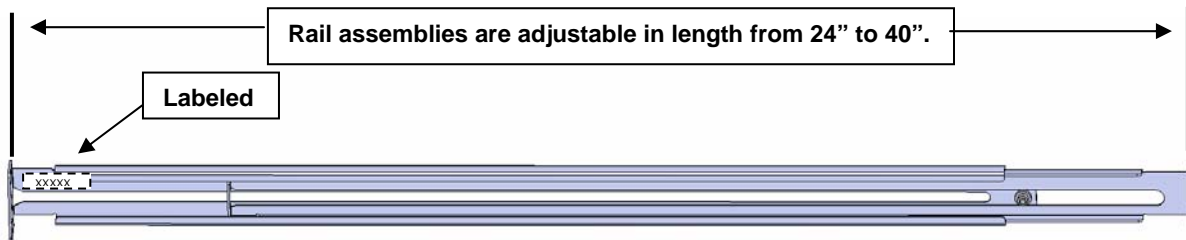
Figure 1- Adjustable rail assemblies

3. Install six #10-32 cage nuts at the front of the rack in positions where the RACKMUX will be mounted (three in each side). Install four more cage nuts at the rear of the rack in positions straight across from the upper and lower cage nuts installed in front.
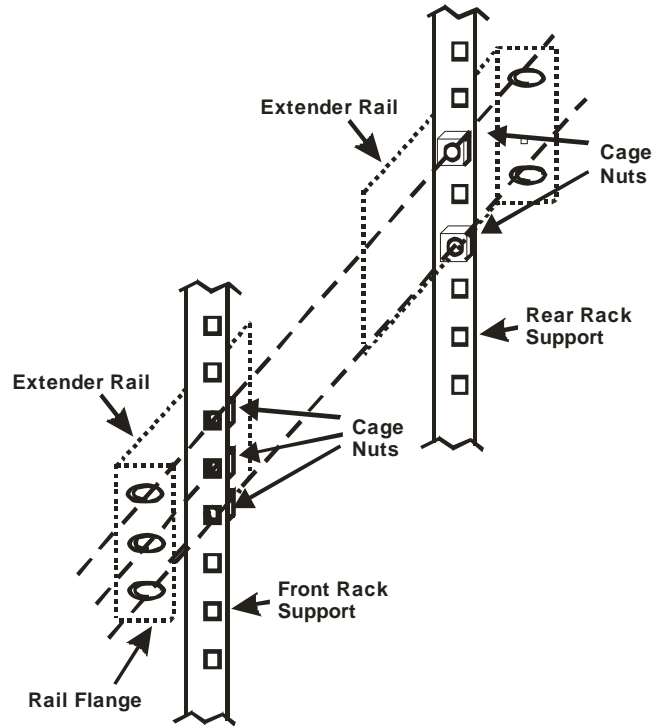
Figure 2- Install the cage nuts

4. Install the right rail assembly.   The end with the label "Right Front" mounts to the front rack support. Install only the center screw through the rail flange to the rack support and cage nut using the #10-32 x 1/2" flat head machine screw provided. (See image below.)   Do not tighten at this time.   Install the left rail assembly in the same fashion.   The end with the label "Left Front" mounts to the front rack support.

5. Install two #10-32 x 3/4" pan-head screws in the rear of each rail assembly as shown below.   Do not tighten at the time.
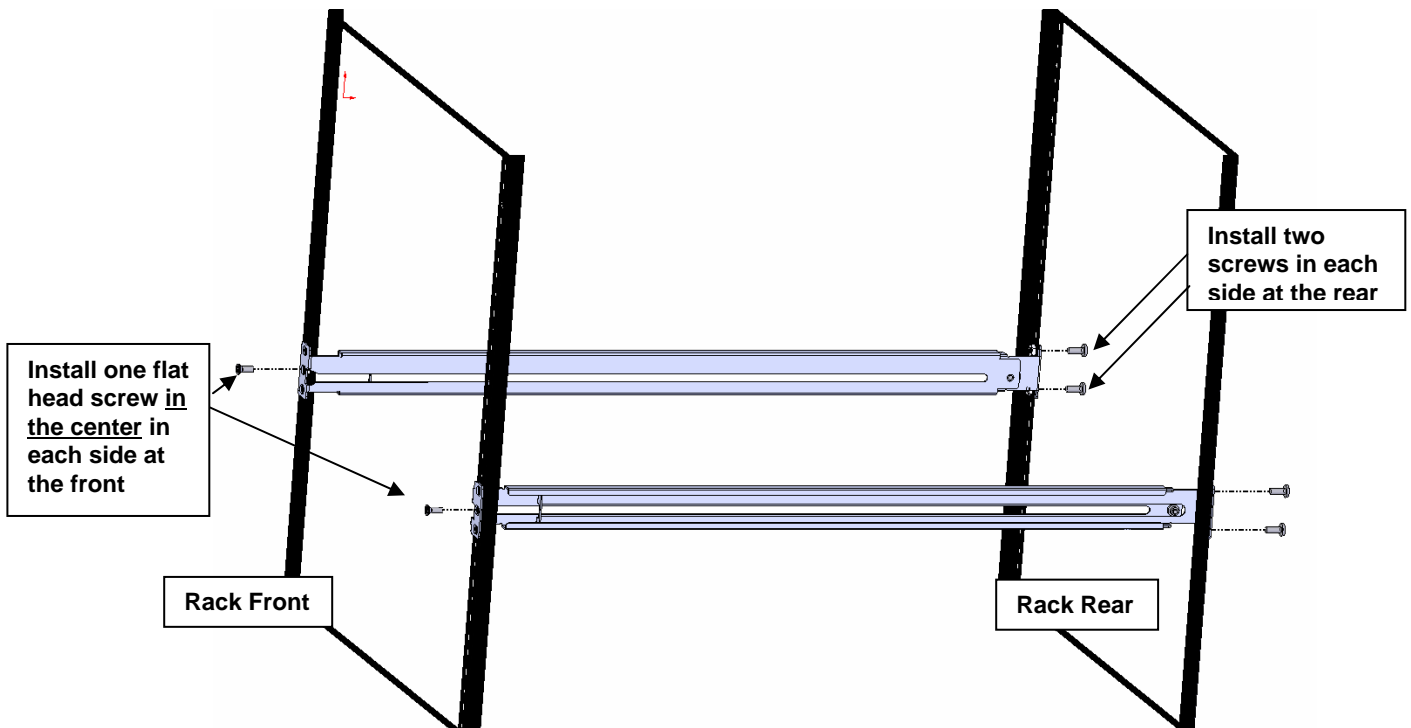
Figure 3- Install the rail assemblies

6. Measure the distance between the inside of the rails at the front of the rack.   Adjust the distance to 17-1/4" and tighten the flat-head screws to the rail flanges securely.
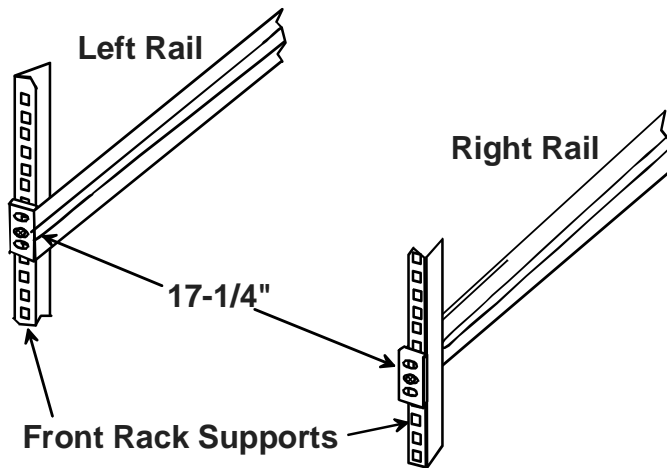
Figure 4- Check spacing of the rails

7. Lineup the rail guides on the RACKMUX drawer with the slots in the front of the left and right rails and slide the drawer into the rack.   The rail guides should be positioned such that the wide lip of the guide is on the backside of the rail. Slide the drawer in completely.
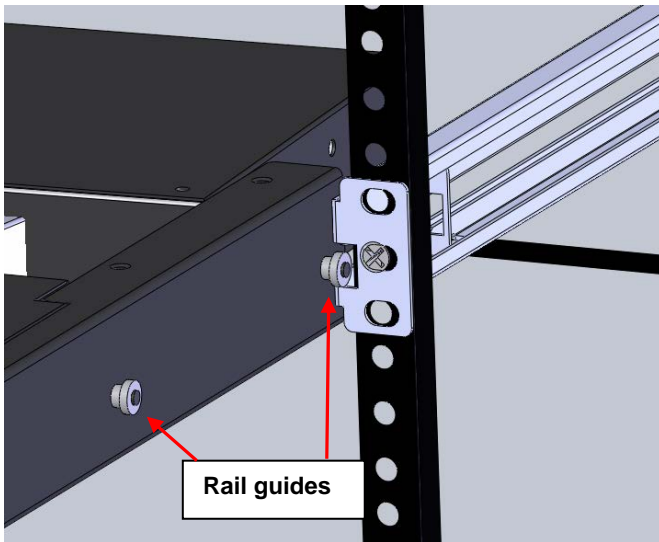
View of rail guide from the front of the rack support
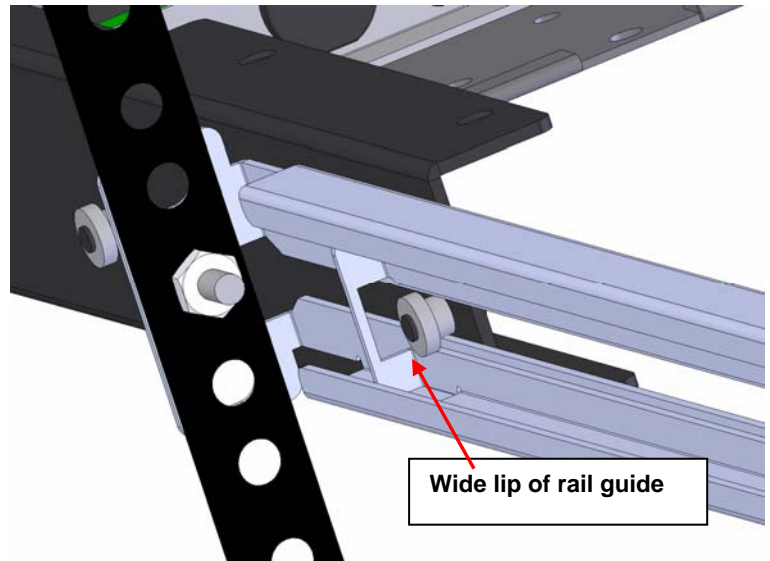
View of rail guide from the backside of the rail

Figure 5- Rail guides

8. Apply four more #10-32 x 3/4" pan-head machine screws (two for each) through the holes in the drawer flanges, through the holes in the left and right rails, into the cage nuts in the rack supports.   Tighten each securely.

Apply two more screws on each side

There should be a total of <u>six screws</u> at the front now.

Figure 6- Apply remaining screws to complete installation

9. Tighten securely the four screws applied to the rear rail flanges in step 4.

10. Make your cable connections according to your RACKMUX Drawer instructions.

Your NTI RACKMUX Drawer is now installed and ready for use.

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 Figure 7.   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.

Front mounting flange on drawer   Stud on drawer   Telco Post

(Rear edge of drawer)

Long mounting bracket

Secure each bracket to post using two screws (supplied)

Short mounting bracket

Apply nuts (supplied) to studs and secure brackets to drawer.
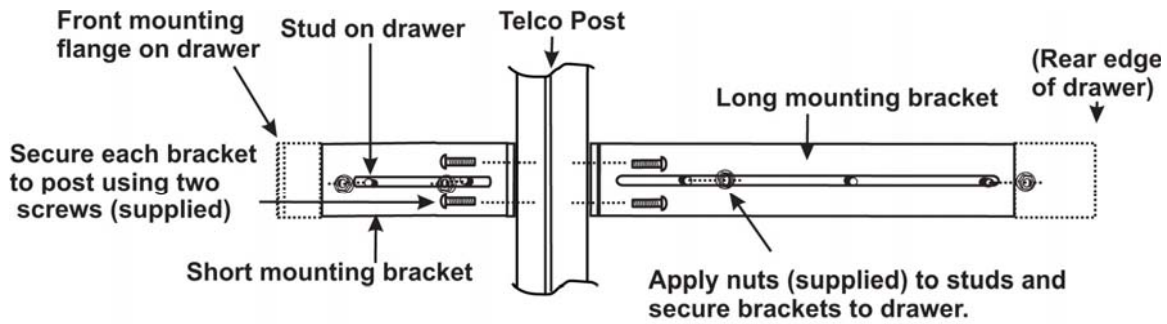
View of right side of drawer with optional Telco mounting brackets

Figure 7- 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 Figure 8)
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.
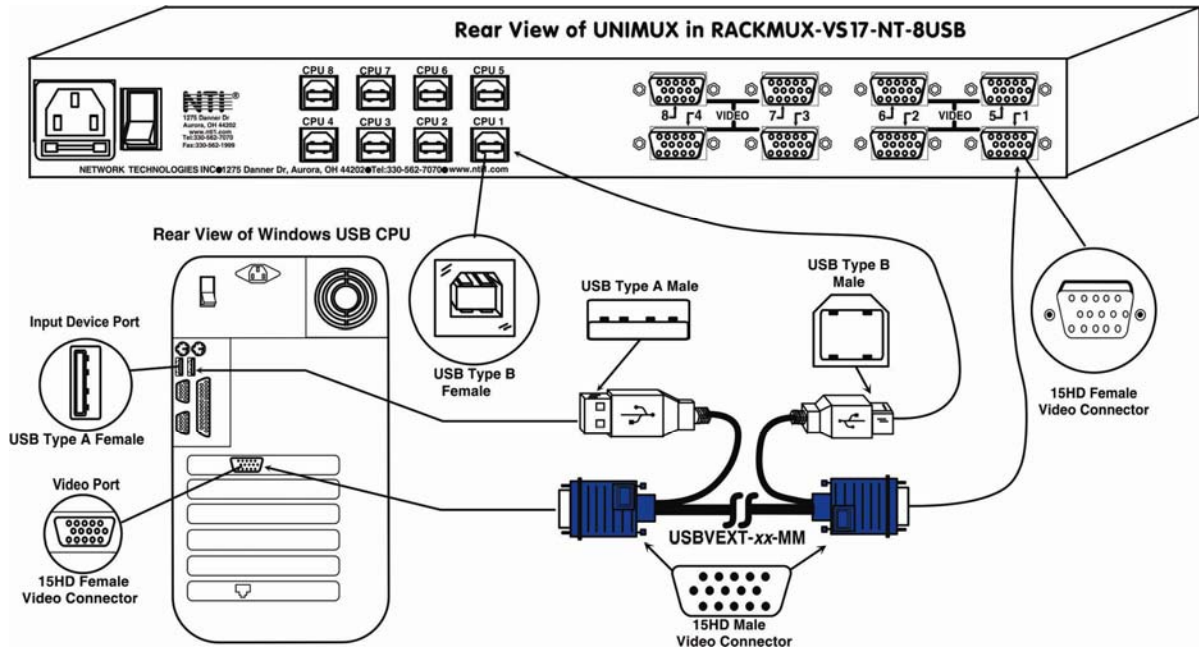
Figure 8- Connect each CPU

3.   Connect the power cord to the IEC connector.
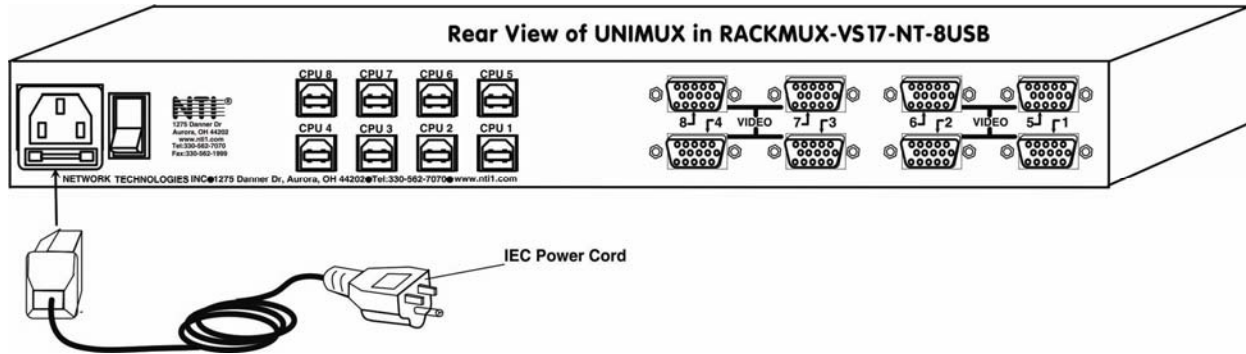
Figure 9- Connect the power cord and AC adapter

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 21) 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 12 and 13 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.
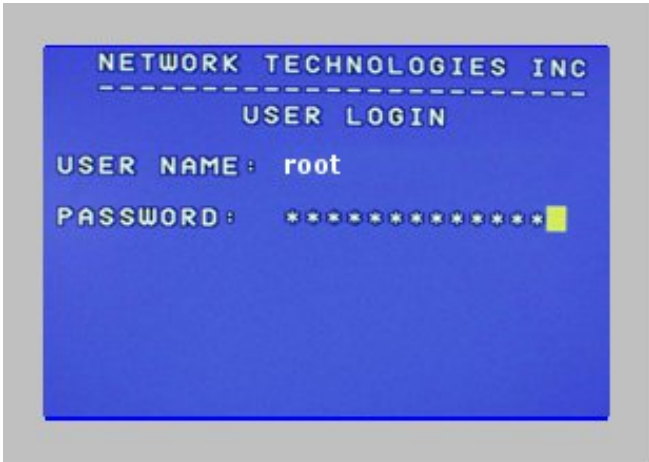
Figure 10- Administrator Login screen

<u>**When a standard user powers up the system a security screen will appear if security has been enabled by the administrator.**</u>   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 14 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
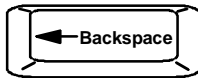
Submit user name/password

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 11- 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 20).

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 12- 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 Figure 13).   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 13- Administrator password change

Function:	Keystroke:
Add character to password string or verify password string	**A-Z 0-9** or **↑ Shift** + **A-Z** (Type any upper or lower case alphabetical or numeric character)
Delete previous character in edited string	**Backspace**
Save new password.	**Enter** (If Password string and Verify Password string are different, this command will have no effect, enabling the administrator to correct the password)
Move to next field to be edited	**Tab**
Return to Administration Mode	**Esc**
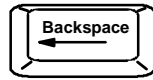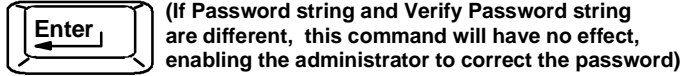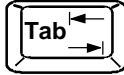
User Name List

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 users (up to 63), changing or assigning user passwords, and changing access rights for any given user. User names may be up to 12 characters long, may not contain spaces, and are not case sensitive. Passwords may be up to 15 characters long, may not contain spaces, and are case sensitive.

Function:	Keystroke:
Select previous user in the list	**↑**
Select next user in the list	**↓**
Scroll the list with one page up	**Page Up**
Scroll the list with one page down	**Page Down**
Edit selected user settings- Enter Edit User Mode	**E**
Exit the USER NAME LIST and return to previous mode	**Esc**


```
NETWORK TECHNOLOGIES INC
------------------------
       USER NAME LIST

 01
 02  tim
 03  bob
 04
 05
 06
 07
 08

 E - EDIT USERS    ESC - EXIT
```

Figure 14- User Name List screen

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 Figure 15) 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 15- Edit the user access list

The list below describes the functions available in the Edit User mode:

Function: **Keystroke:**

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**
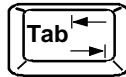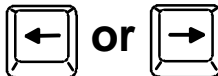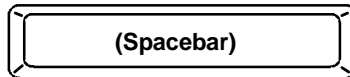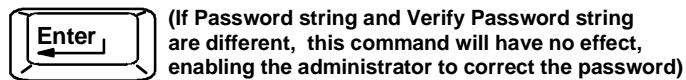
NOTE: To delete a user from the User Name List, use either the <Delete> key or the <Backspace> key to remove characters, not the <Spacebar>.   Using the <Spacebar> will overwrite the characters with spaces and retain the user configuration in the User Name List. .

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 11). 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
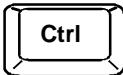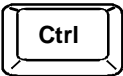
Introduction

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
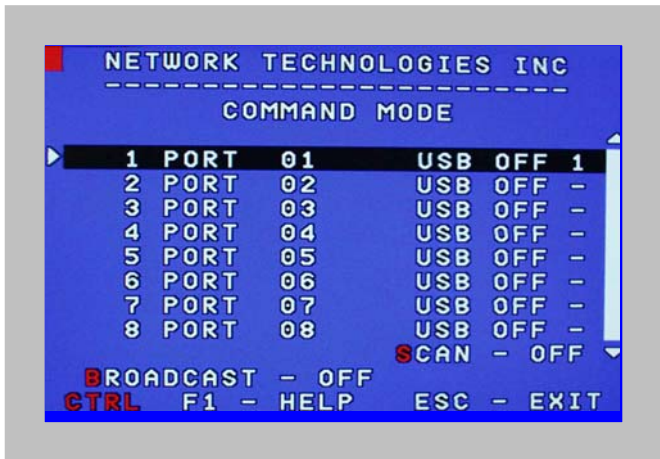
Figure 16- Command Mode screen

Command Mode (Cont'd)

Function:	Keystroke:

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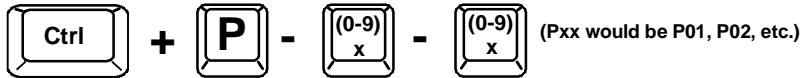
Enters Search Mode and adds a character to search string and selects the CPU's name that matches best.   **A-Z 0-9**   **(Type any alphabetical or numeric character)**
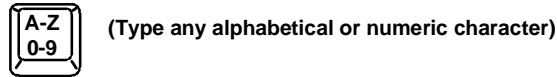
Selects the first port on the switch   **Home**

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.)**
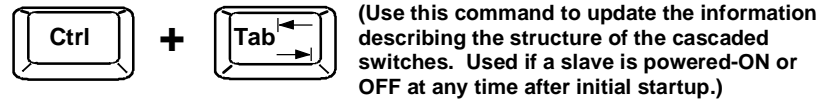
Display port information   **F3**   **(Display information about the selected port. When pressed, a window displays the port name and its position in the configuration structure by level and port number.)**
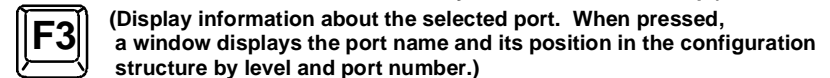
Exit OSD Command Mode   **Esc**

> **Press <CTRL> while in the Command Mode menu to display the Edit, Maintenance, Port, and Settings control features.**
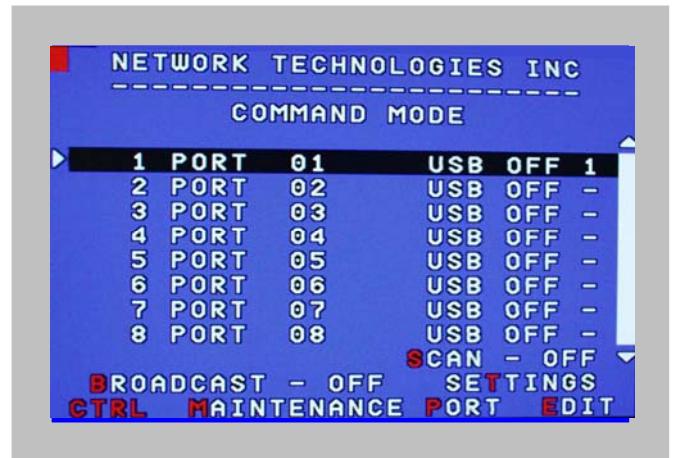
Figure 17- More Command Mode Features

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 17) 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 18- 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 |
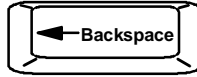
When finished making changes in Edit Mode, press <Enter> and a prompt will appear to press either <Y> to save the changes or <N> to continue making changes without saving the changes just made.   If the <Esc> key is pressed instead of <Enter>, all changes made will be ignored and the display will return to the previous menu.

Change Settings

To enter the Change Settings menu (see **Figure 19**) 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 19- 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 **Figure 19**).

The Select Ports For Broadcast menu 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.
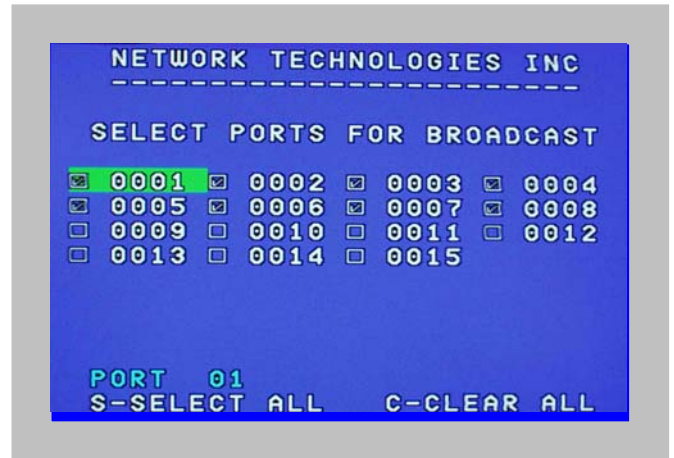
Figure 20- Select ports for broadcasting

Select Ports For Scan

To Select Ports For Scanning, press <S> from the Change Settings menu described on page 17.

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 21- 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.
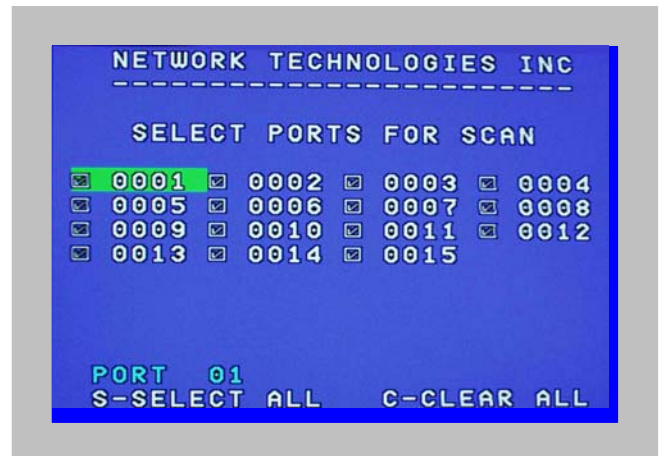
Language Selection

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 17.

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 22- Select the keyboard language

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 17.
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
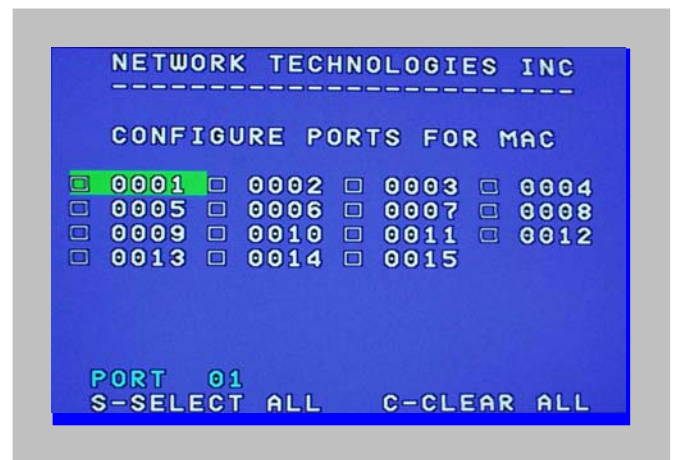
Figure 23- Configure Ports for MAC screen

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
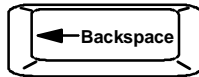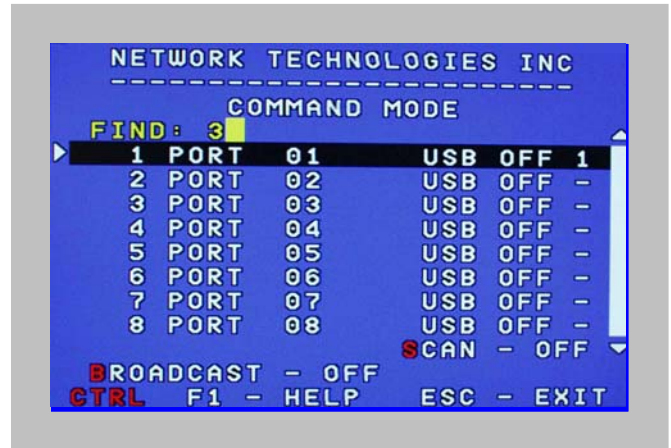
Figure 24- Search Mode screen

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 25- 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

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

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.

Save OSD window parameters
for the port

Enter ⏎

Return to Command Mode

Esc
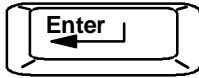
Help Mode

To enter Help Mode press the <F1> key from the Command Mode menu (see page 14).

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 23).   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 Figure 26 below.

<div align="center">

USER 1

USER PORTS

UNIMUX MASTER

LEVEL 1

CPU PORT5

USER PORTS

LEVEL 2

UNIMUX SLAVE

CPU PORTS

CPU PORT3

CPU

</div>

<div align="center">
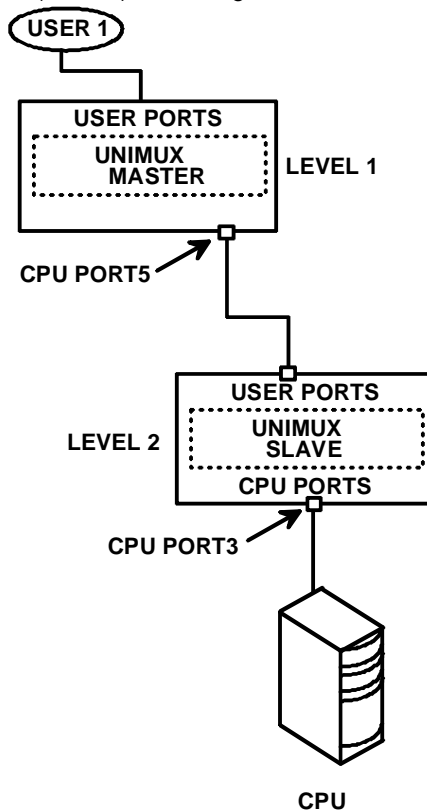
Figure 26- Information provided by the F3 command

</div>

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 Figure 28 and Figure 29). 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.)
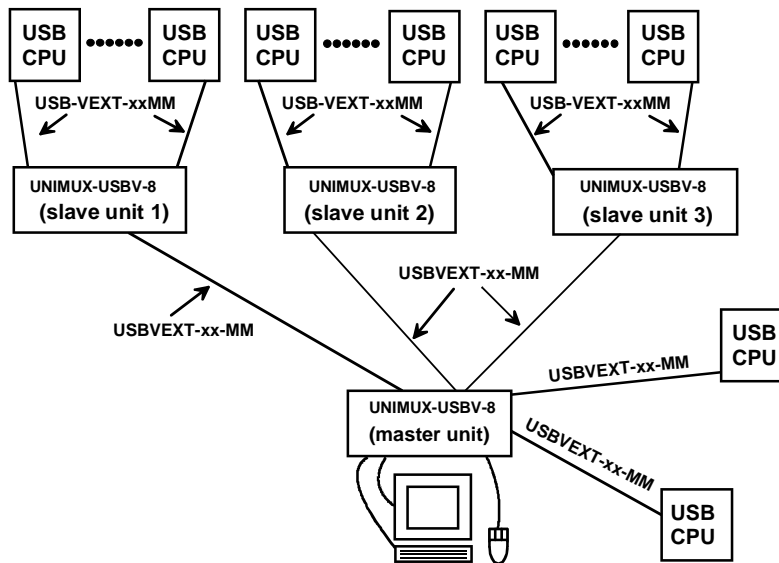
Figure 27- Connections for Cascading

.

Users 5-8 only have access to CPUs 25-40.
Users 1-4 have access to all CPUs
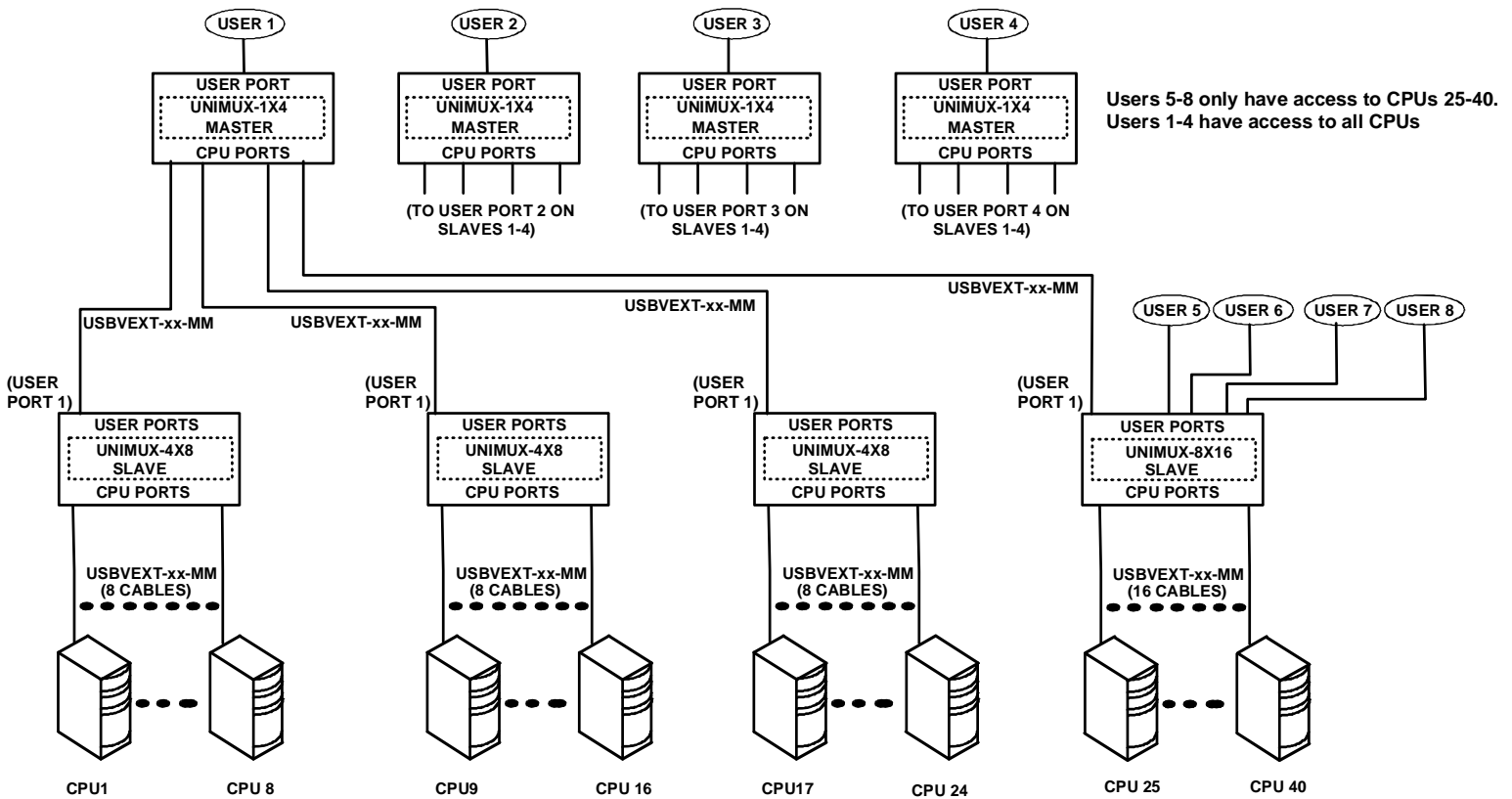
Figure 28- Cascaded configuration with multi-user slaves

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 Figure 28). 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 Figure 28 above can only control CPUs 25-40).
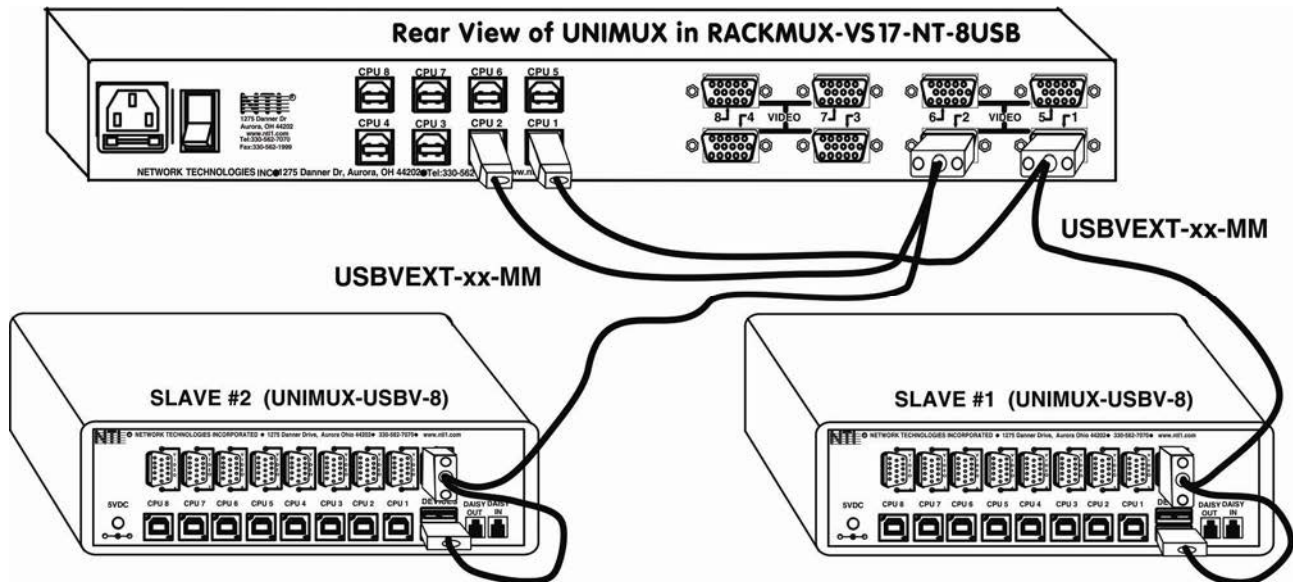
Figure 29- Master-to-slave device cable connections- single-user switches
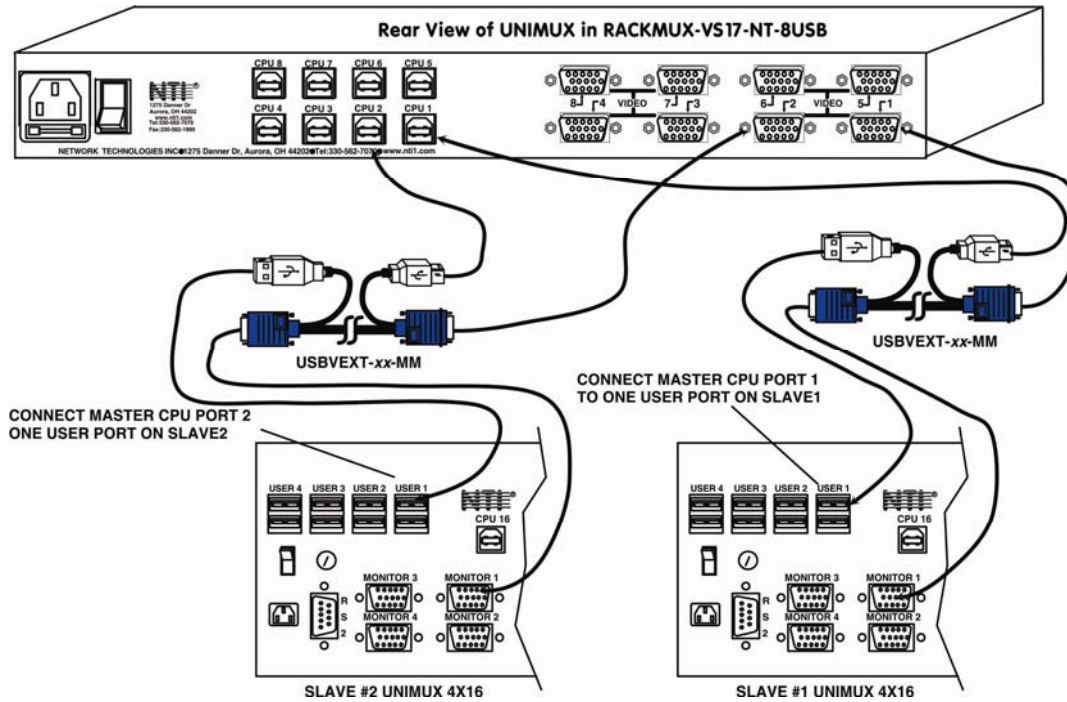
Figure 30- Master to slave cable connections- multi-user switches

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.
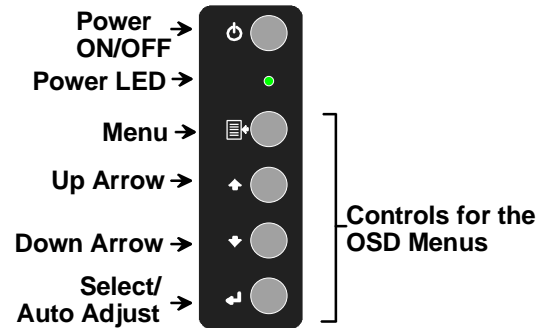
Figure 31- OSD Controls

- 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
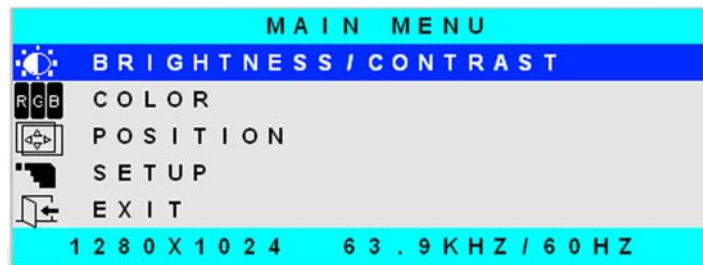
Selection	Purpose	Range
Brightness/Contrast	Increase/decrease panel brightness/contrast level	1-100
Color	R,G,B color temperature control	1-100
Position	• Video Image horizontal and vertical position control • Clock setting • Phase control	1-100
Setup	• Control OSD Image position on screen • Set time 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.
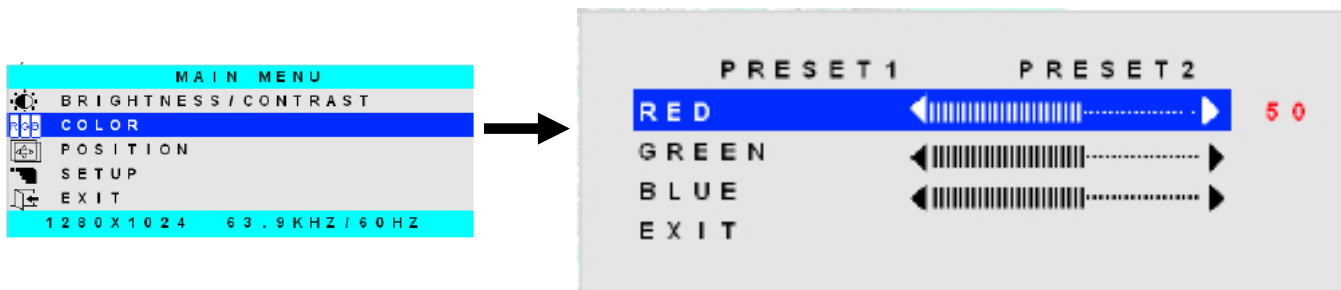Select EXIT when finished to return to the Main Menu.

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.
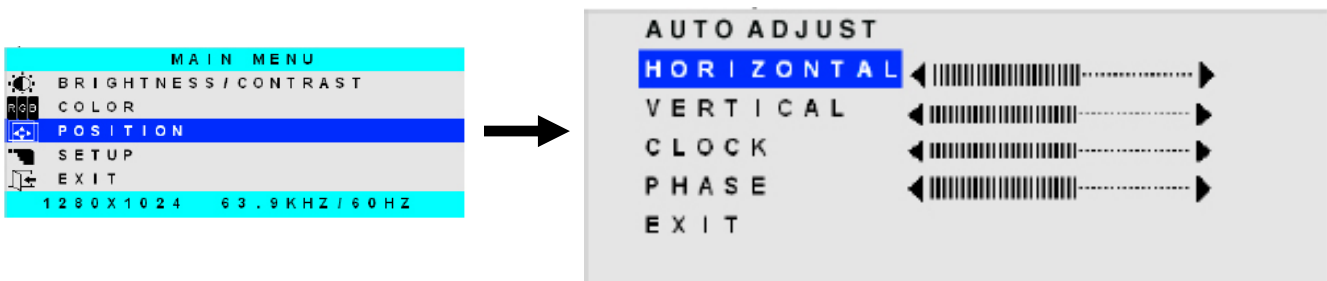
Setup Menu

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.
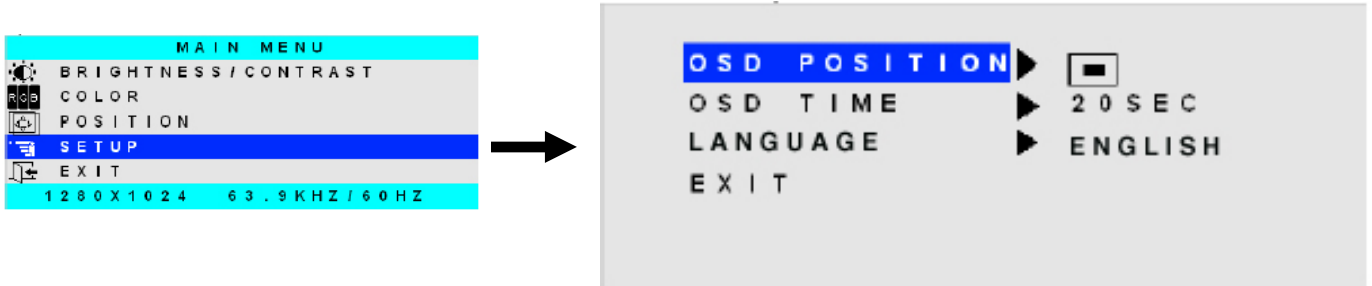

OSD Image can be moved to different points on the display
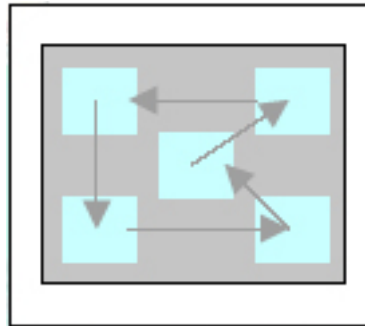
KEYBOARD FUNCTIONS

The keyboard on the RACKMUX-VS17-NT-8USB is a standard Windows keyboard with 17-key numeric keypad.

Note: The "Fn" key is not an active key on this keyboard.
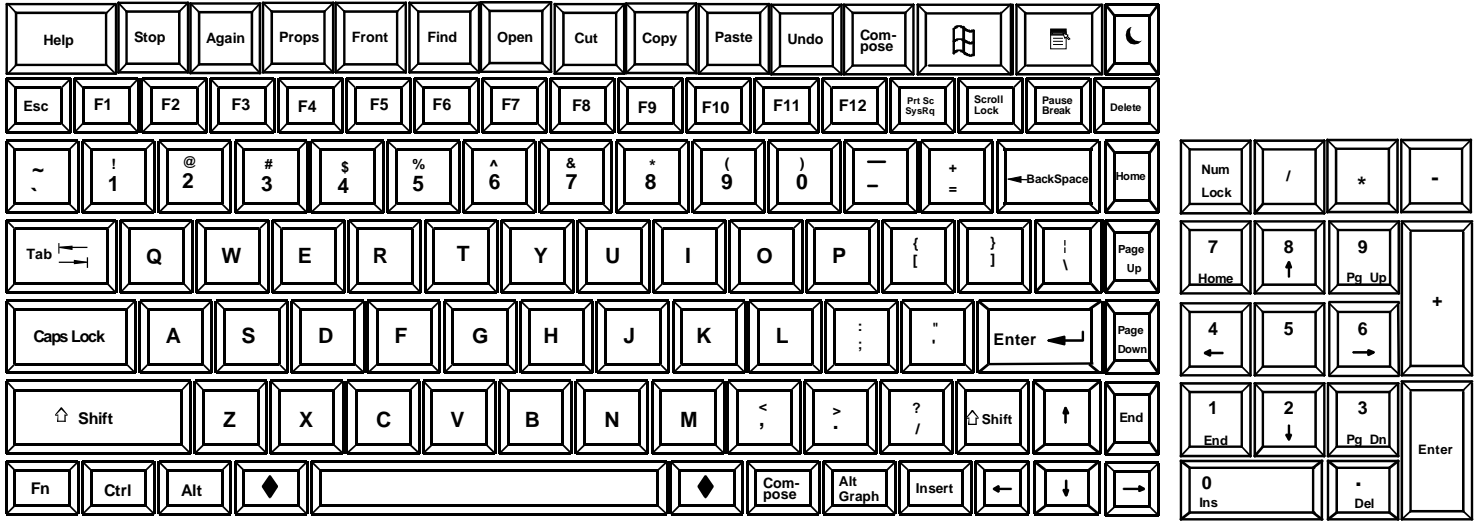
Figure 32- U.S. SUN Keyboard with numeric keypad
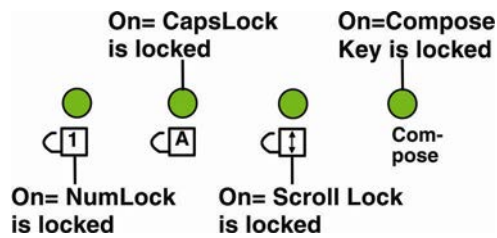
Figure 33- Keyboard LED Indications

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 34 shows the location of the password reset button.
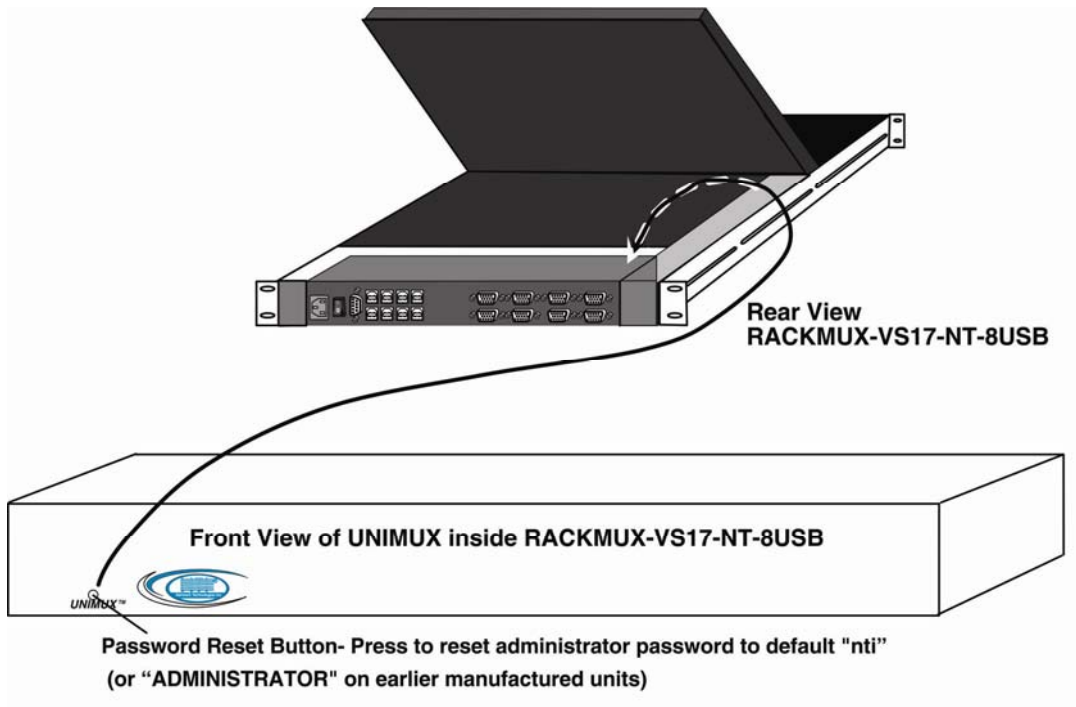
Figure 34- Locating the password reset button

RACKMUX-KVM DRAWER STANDARD SPECIFICATIONS

General Specs

Case Material..Electro-galvanized steel black powdercoated
Dimensions WxDxH (in.)...............................19 x 21.9 x 1.75
Supported Rack Depths………………………..Adjustable 22" – 39"
Input Power...AC 100-240V, 50 – 60 Hz
Operating Temperature.................................0-40˚C
Storage Temperature…………………………..-20-60˚C
Relative Humidity……………………………….. 20-90%, non-condensing
Approvals...All parts comply with RoHS

LCD

Display area…………………………………….337.92mm (W) x 270.336 (H) (17 inch diagonal)
Panel Type…………………………………………TFT Active
Number of Pixels ....1280 (H) x 1024 (V)
Number of Colors..16.2 Million (6 bits + FRC)
Pixel Pitch ....0.264(H) x 0.264(V)
Color Pixel Arrangement................................RGB Vertical Stripe
Brightness..300cd/m^2 (Nits)
Response Time..5.5ms
Viewing Angle ....Horizontal: 140º; Vertical: 130º (Typ.)
Optimum Viewing Direction............................6 o'clock
Backlight Unit…………………………………….CCFL, 4 Tables, Edge-Light (2 Top/2 Bottom)
Operating Lamp Life ....40,000 – 50,000 hrs
Contrast Ratio………………………………….500:1

Display Controller: VGA

Connector……………………………………….15HD, female
Video Format ....VGA,SVGA, XGA, SXGA
Signal Input (from Video Source)……….......Analog RGB
Sync Range ....H: 31 ~ 80KHz, V: 55 ~ 76Hz
OSD Control………………………………….Menu, Up, Down, Select, Power (5 keys)
Plug and Play..VESA DDC 2B Ver1.3

OSD Control Board

OSD Control ....5 Keys
Power Key ....Power ON/OFF
Menu Key..Activates Menu
Up, Down Keys ....Navigation Control
Select Key...Select (when in Menu); Auto Adjust (not in menu)
LED...Indicates Operation Status
        ....Green = Power-ON, Video Input OK
        ....Red = Suspend / Stand-by, or Input Out of Range

Keyboard

No. Of Keys ....83 Keys (US)+ 14 Sun keys
Key Switch Type ....Membrane switch
Keytop Style..Rectangular Cylindrical
Operating Force..50gf +/- 25gf
Stroke ....3.0mm +/- .5mm
Tactile ....20 gf typ.
Height ....8.5 mm
Operating Life ....10M operations, minimum
Interface ....Row and column matrix
Key Switch Bounce.......................................10 ms, maximum
Supported Platforms ....USB
CPU Connectors...USB Type B (USB);

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

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