UNIMUX™ Series

UNIMUX-nXm-U
Multi-user USB KVM Switch
Installation and Operation Manual
Software Version 1.34

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CHANGES

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TABLE OF CONTENTS

TABLE OF FIGURES

INTRODUCTION

The NTI UNIMUX-nXm-U (formerly referred to as ST-*n*X*m*-USBV-U) is a multi-user / USB KVM Switch, (*n*= number of users, *m*= number of CPUs). It allows multiple users (up to 8), each with USB user devices and monitor, to communicate directly with any WINDOWS, MAC and/or SUN USB CPU (up to 32) connected to the switch.   These CPUs can be file servers, web servers, etc. The auto-boot circuitry in the UNIMUX USB KVM switch allows all CPUs to boot simultaneously without keyboard and/or mouse error.

Definitions

- CPU   Enclosure that contains the operating system and processor
- User Device   Keyboard or Mouse
- System   One or more CPUs connected to one or more switches controlled by one or more user devices
- OSD   On Screen Display

Compatibility

Supported USB CPUs:

- Windows USB CPUs
- SUN (including all SUN Blades and SUN Rays) USB CPUs (see page 34 re: SUN Ray support)
- MAC USB CPUs

Supported User Devices and Monitors:

- VGA, XGA, SVGA, and most DVI monitors (when used with NTI DVIF-15HDM adapter)
- Most USB mice and keyboards
- Polyvision Whiteboard with USB support

ORDERING INFORMATION

The UNIMUX USB KVM switch is built to a specific size ranging from 2 to 8 users and 8 to 32 CPUs. The switch is built at the factory based on the specified size ordered. The switch has USB inputs and outputs that support all platforms and are configured with interface cables, see interface cable section. The "*n*" in the part number UNIMUX-*n*X*m*--U represents the number of users. Select either 2, 4, or 8 user switches. The "*m*" in the part number represents the number of CPUs. The switch is available with either 8, 16, 24, or 32 sets of CPU ports. It is not necessary to connect a user or CPU to each port (I.e. a UNIMUX-2x16-U switch has the capability of supporting 16 CPUs, but can have only 10 CPUs connected and 6 empty ports.

> UNIMUX-*n*X*m*-U
>
> Replace the "*n*" with either 2, 4, or 8
>
> Replace the "*m*" with either 8, 16, 24, or 32

The following list represents the available sizes that can be ordered:

UNIMUX-2X8-U	UNIMUX-4X8-U	UNIMUX-8X8-U
UNIMUX-2X8-UDT	UNIMUX-4X8-UDT	UNIMUX-8X16-U
UNIMUX-2X16-U	UNIMUX-4X16-U	UNIMUX-8X24-U
UNIMUX-2X32-U	UNIMUX-4X32-U	UNIMUX-8X32-U

MATERIALS

Materials Supplied:

- NTI UNIMUX-nXm-U Multi-user USB KVM Switch

- IEC Power cord- country specific

- 4-#10-32 x 3/4" pan head screws and 10-32 cagenuts (server cabinet mounting hardware)

- CD with pdf file of this manual

Materials *Not* Supplied, but *REQUIRED*

- USBVEXT-*xx*-MM cable for each CPU being connected to the switch

Where:

   xx is the length of the cable in feet (3,6,10, or 15 feet available)

   MM indicates male-to-male connector

Cables can be purchased from Network Technologies Inc by calling 800-RGB-TECH (800-742-8324) or 330-562-7070 or by visiting our website at www.networktechinc.com*.*

See page 35 for some of the *.*

Front View of UNIMUX
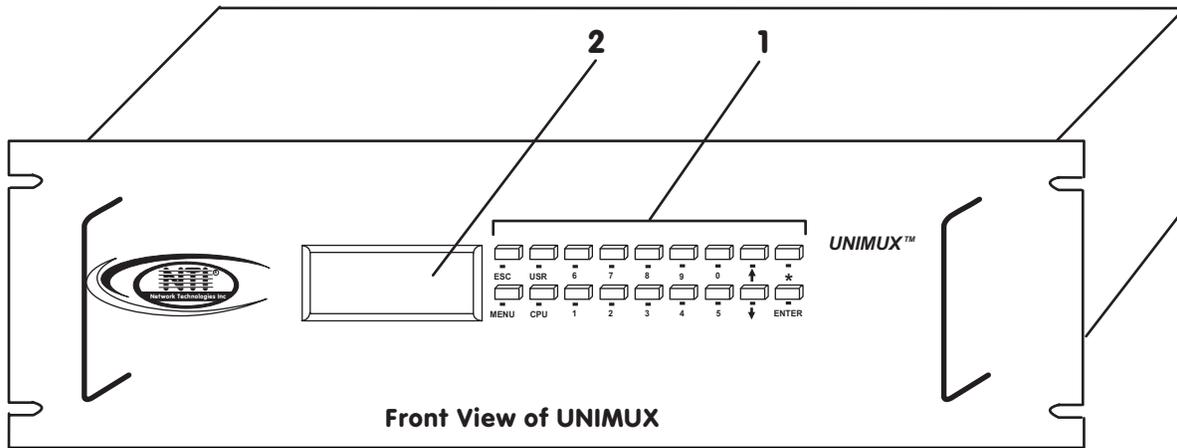
FEATURES AND FUNCTIONS

1. **Keypad**- buttons for user control over switch functions

2. **LCD Display**- for visual indication of connection between the user and a specific CPU.

3. **CPU *x*-** USB Type B female connectors- for connection of CPU device cables

4. **USB User Device *x*-** USB Type A female connectors- for connection of user device cables

5. **Power switch-** for turning the power to the UNIMUX On/Off

6. **IEC Power Connector**- for attachment of power cord (not available on all units)

7. **Fuse Holder**- holder for replaceable 2A 240VAC overcurrent protection fuse (not available on all units)

8. **RS232**- for attaching RS232 interface cable from a CPU to control the functions of one or more switches

9. **MONITOR *x*-** 15HD female connectors- for connection of user monitors

10. **VIDEO *x*-** 15HD female connectors- for attachment of video cables from CPUs

Rear View of UNIMUX
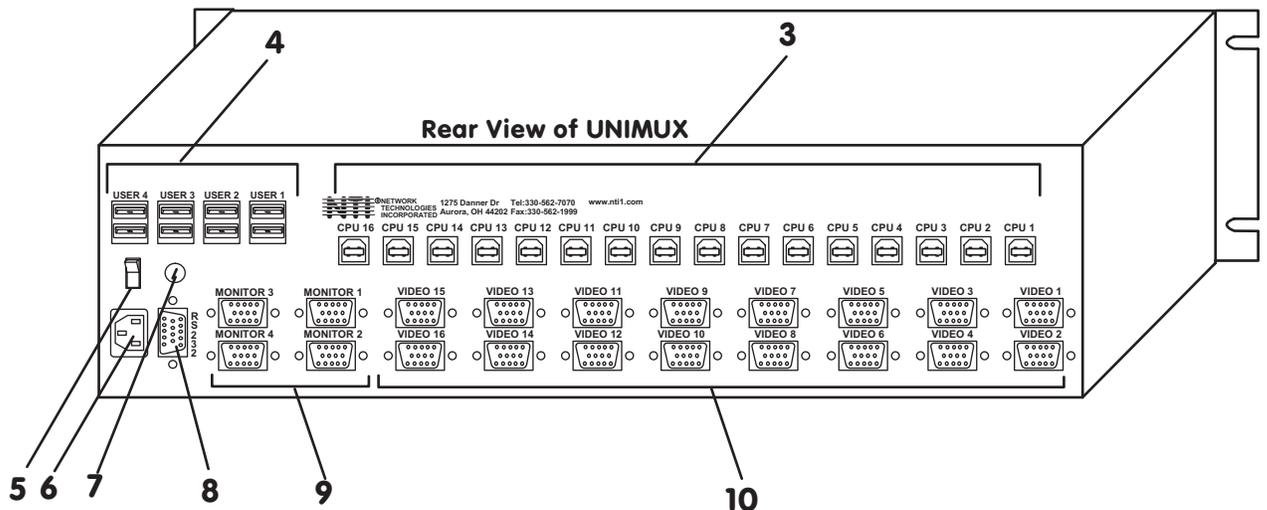
Additional Features

- A single CPU can be used by one or shared by several users.

- Any USB type user device can control any USB CPU (Windows, MAC, and SUN platforms).

- Power cycle circuit control allows the UNIMUX switch to be powered OFF, then ON, at any time without affecting the attached CPUs.   (This assumes that the CPU supports hot plugging.)

- Security features can be enabled on a user port by user port basis.

- A microprocessor is dedicated to each CPU, preventing connected CPUs from locking up.

- Any user device cable can be hot-plugged.

- Typically the LCD display indicates the CPU to which each user is connected.

- 10 configurations can be saved in memory by the user for instant setup recall.

- No dip-switches or jumpers necessary to configure.

- Video formats up to 1920X1200 can be displayed from all platforms.

- Users can control the switch using the On Screen Display (OSD)

- RS-232 control allows control of the switch with one CPU serial port.   (Windows-based software is provided.)

- Matrix Switcher's Control Program provides easy and powerful graphical control of matrix switches through the RS-232 interface. (Windows only.)

RACK MOUNTING INSTRUCTIONS

This NTI switch was designed to be directly mounted to a rack and includes a mounting flange to make attachment easy.

Install 4 cage nuts (supplied) to the rack in locations that line up with the holes (or slots) in the mounting flange on the NTI switch.

Then secure the NTI switch to the rack using four #10-32 x3/4" screws (supplied).   Each screw should be of sufficient length to go completely through the NTI mounting flange, rack frame and fully engage all threads in the captive nut.   Be sure to tighten all mounting screws securely.

Do not block power supply vents in the NTI switch chassis (if provided) .   Be sure to enable adequate airflow in front of and behind the NTI switch.

Attach all cables securely to the switch and where necessary supply adequate means of strain relief for cables.

Rack

Cage Nuts (supplied)

10-32 Rack Screws (supplied)
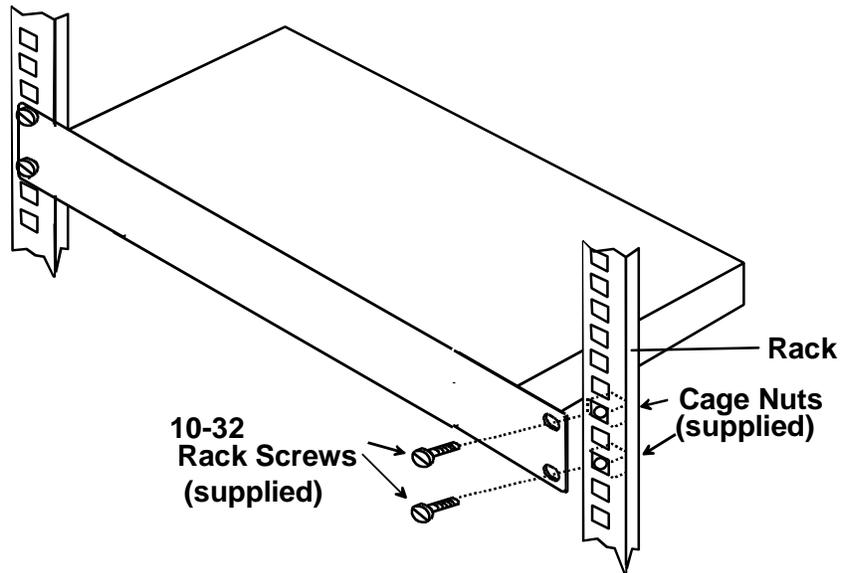
Figure 1- Mount Switch to a Rack

INSTALLATION

It is not necessary to turn OFF power to CPUs or monitors during this installation unless RS-232 is going to be connected.   All cables, except for the RS-232 cables, may be hot plugged.

If using RS-232 Control see RS-232 section on page 26 for more information.   Observe normal precautions when connecting the RS232 cables to the CPU.   Refer to the owners manual for the CPU being connected for precautions, if any.

1. Connect the 15HD male cable end from each user monitor to the female 15HD ports labeled "MONITOR *x* " on the rear of the UNIMUX switch.   See Figure 2.
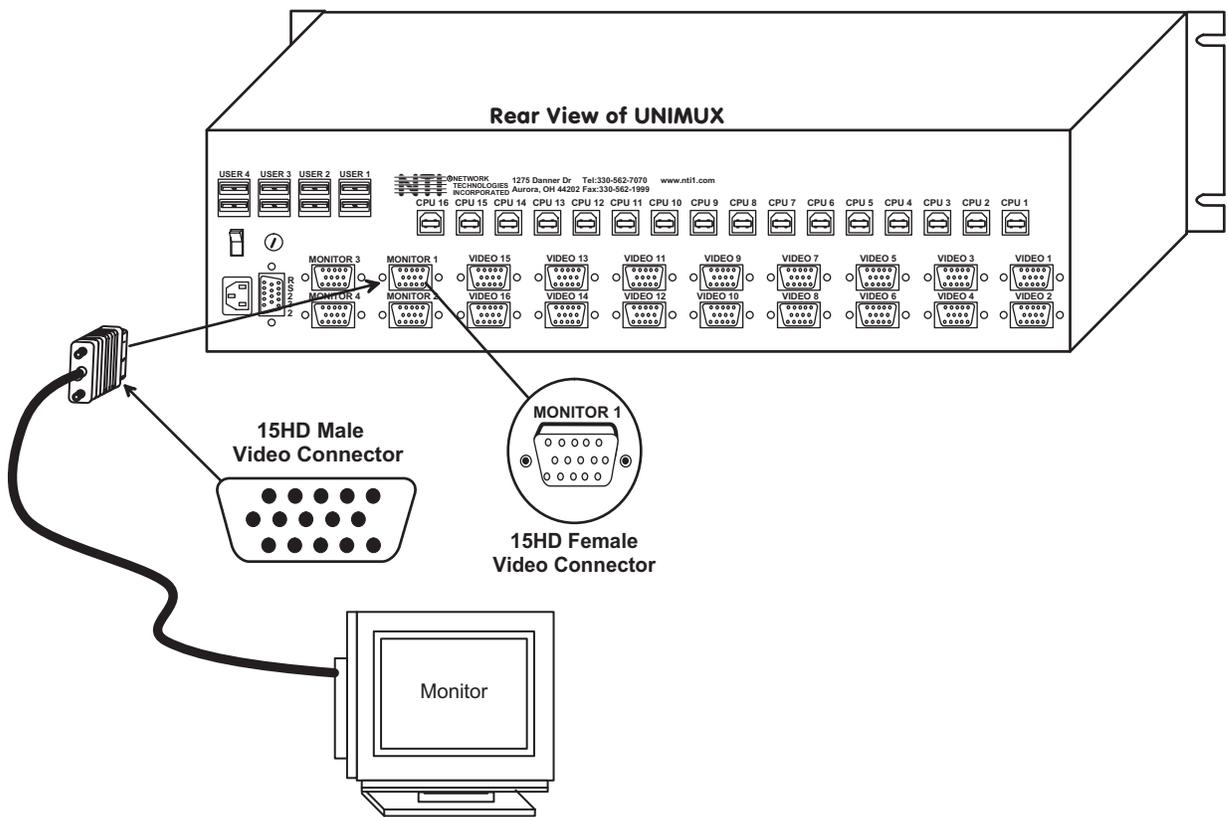
Figure 2- Install user monitor(s)

2. Connect the user devices to the USB type A female ports labeled USB USER DEVICES on the rear of the UNIMUX switch. (See Figure 3.) Ensure that the monitors and related user devices are connected to ports having the same port numbers. (See Figure 5.)

Note: If device cables are not long enough to reach the UNIMUX switch, they can be extended either 5 or 10 meters using either 1 or 2 NTI USB-A+A-5M Improved Active USB 5 Meter Extensions (purchased separately). (See Figure 4.) Contact your NTI salesperson for more details by calling (800) 742-8324 (800-RGB-TECH) or (330) 562-7070 or visit our website at http://www.networktechinc.com.
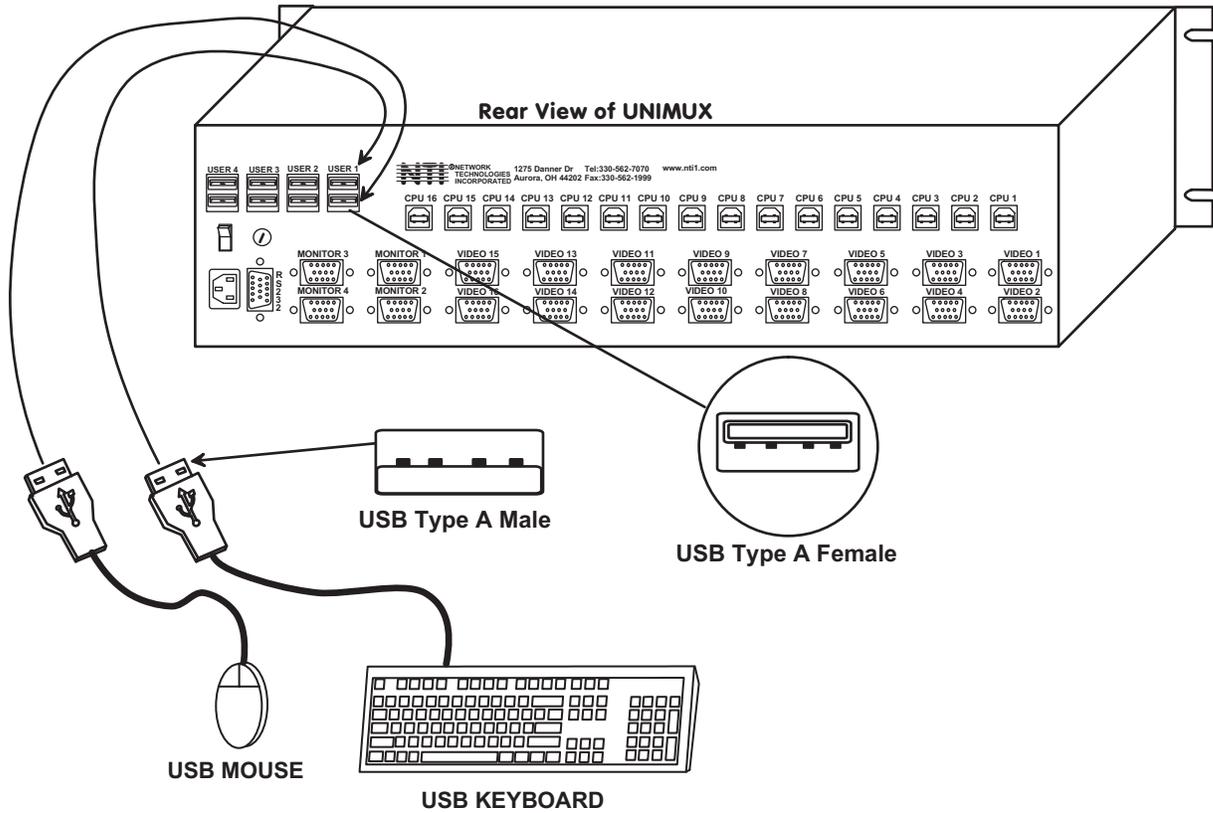
Figure 3- Install user devices (mouse and keyboard)
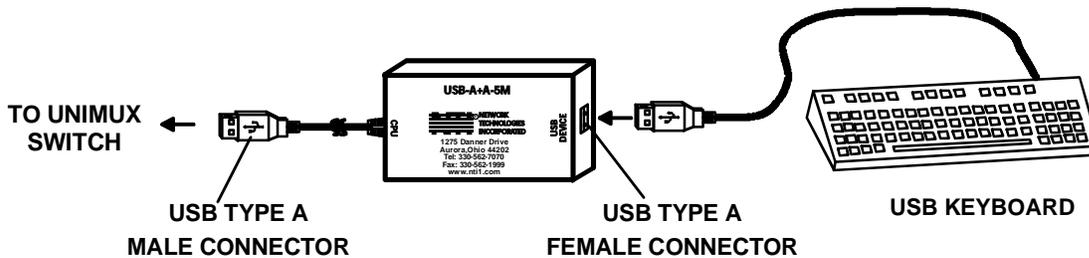
Figure 4- Use USB-A+A-5M to extend a device, or a computer

Ports for User 1 Connections

Ports for User 2 Connections

Ports for CPU 1 Connections

Ports for CPU 2 Connections
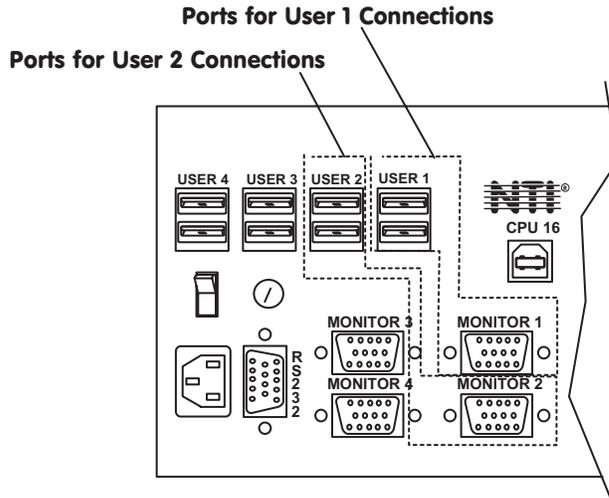
Figure 5- Group user ports by like number
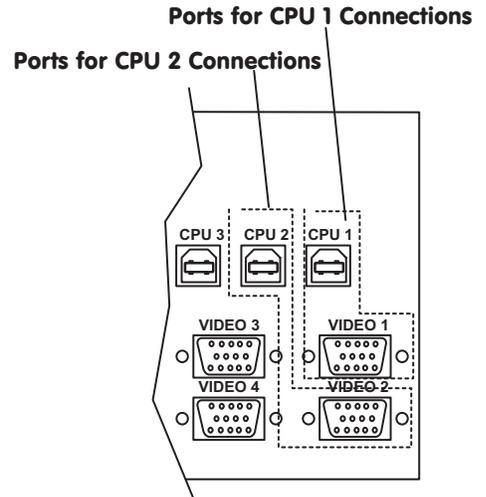
Figure 6- Group CPU ports by like number

3. For each CPU:

- Connect a USB type A cable end of a USBVEXT-*xx*-MM cable to a USB type A female user device port on a CPU. Connect the USB type B cable end of the same cable to a CPU *x* port on the UNIMUX switch. Note the port's number. (See Fig. 6.)
- Connect the 15HD male cable ends of a USBVEXT-xx-MM cable from the video port of the same CPU to a VIDEO *x* port of the UNIMUX switch with the same port number as the user device cable. (See Figure 7.)

Note: Make sure the CPU is connected to a Keyboard port and a Video port with the same number. (See Figure 7.)
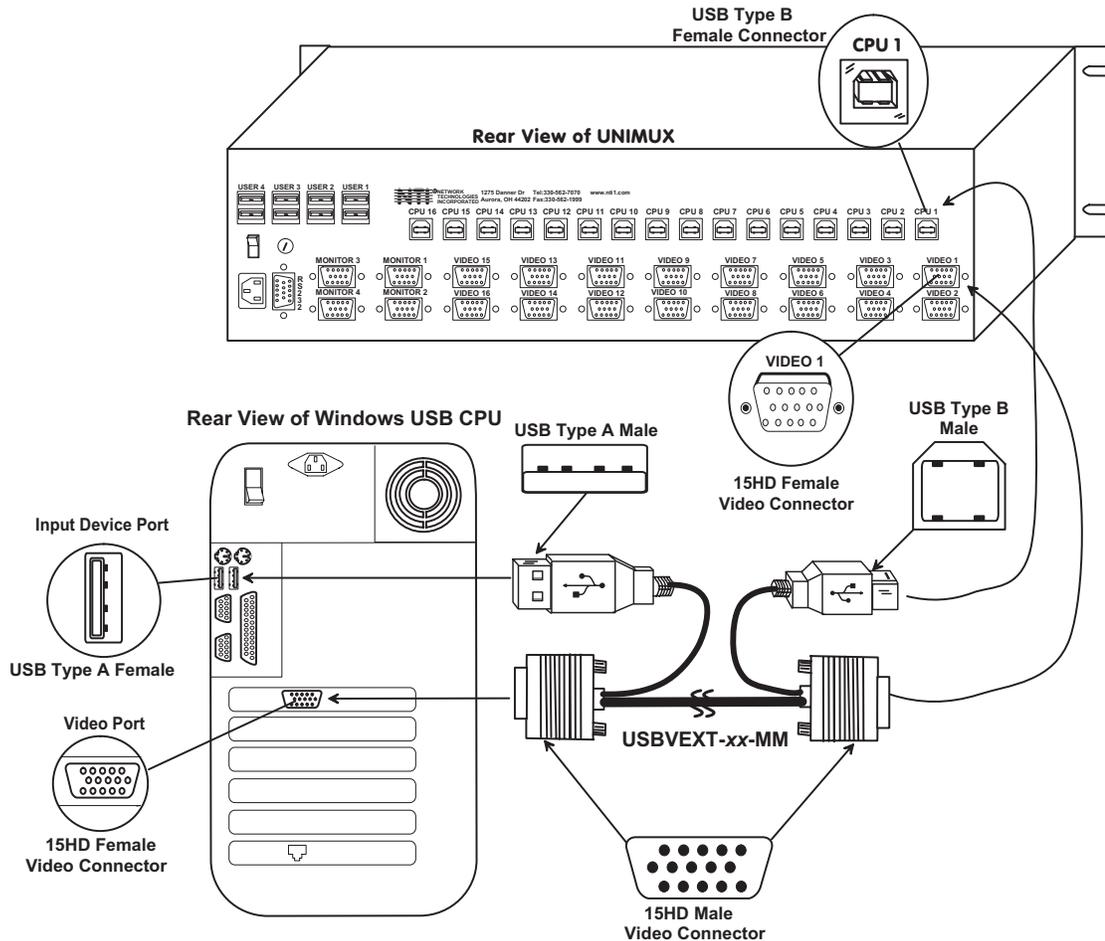
Figure 7- Connect each CPU using a USBVEXT-xx-MM cable

4. Power-up

- Plug the UNIMUX switch into an AC power outlet.

- Turn ON power to the UNIMUX switch, the LCD should illuminate.

- Turn ON power to any or all CPUs connected to the UNIMUX switch (if they aren't ON already).

Note: The order in which the CPUs and switch are powered up does not matter. A power strip can be used.

USING THE NTI UNIMUX USB KVM SWITCH

Basic Operation

The UNIMUX switch enables a user or several users (with sharing enabled) to access any CPU at any time. A CPU can be shared so that more than one user can use a CPU and work on the same project – each from their own console. Resolution is 1920x1200 with no degradation – **guaranteed**. An LCD indicates the port to which each user is attached. The UNIMUX can be controlled by three methods:

- keypad control with LCD via front panel
- OSD control via the user devices
- RS-232 control (see page 26)

Keypad Control

The front panel keypad and LCD (see Figure 8) display allow the user to monitor switch status and route any user to any CPU on the switch. Along with the routing of the CPUs to the user devices the keypad and LCD allow the users to configure the RS-232 control interface. The keypad buttons perform the following functions:

Key	Action
ESC	Escape back to the main display.
0 – 9	Used to enter numbers. (n)
USR	The user device number can be entered (2 digits or 1 digit and ENTER) followed by the desired CPU to be connected to.
CPU	Used following single digit user entries.
ENTER	Used following single digit entries.
▲	Display next 4 users and the CPUs they are connected to. (See note below.)
▼	Display previous 4 users and the CPUs they are connected to. (See note below.)
MENU	The RS-232 menu is displayed. This allows the baud rate to be set at 9600, 2400, 1200 or 300 baud and the unit address to be set to 1 - 15. See RS-232 control on page 26.
*	Activate Memory Function- 10 memory locations (0 – 9), 0 is the power ON default. to Save current connections * - USR - n (0-9) - ENTER to Recall connections * - CPU - n (0-9) - ENTER

Note: By default, the display will show all connections between CPUs and users, displaying 4 at a time, from the first to the last, and repeating the cycle indefinitely.   If the user presses either the up or down arrow to manually view connections, the display will freeze on the chosen view.   To resume the default cycle of displaying all connections, the user must press and hold either the up or down arrow for 3 seconds, and then release it.

The following examples show various methods of routing user 3 to CPU 5. CPUs and users can be entered as a two digit number or a one digit number followed by ENTER.

USR - 3 - CPU - 5 - ENTER

USR - 3 - ENTER - 5 - ENTER

USR - 0 - 3 - 0 - 5

0 - 3 - 0 - 5
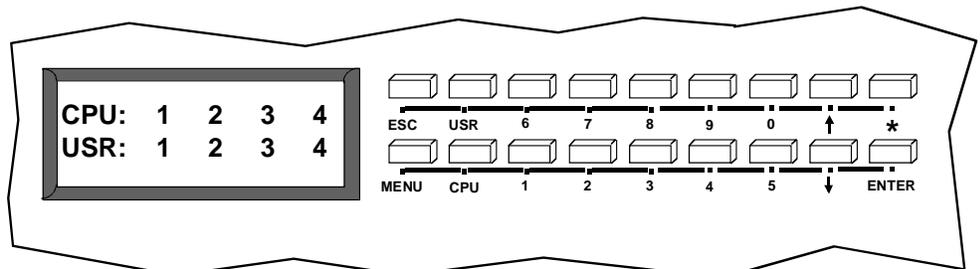
Figure 8- LCD display and keypad

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 in the OSD Control of the UNIMUX USB KVM switch 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 on each user port. Finally, the administrator can set a maximum idle time value after which the current user will be logged out and the login screen displayed again. 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.

Enabling The Security Feature

To enable the security feature the administrator must first enter 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 USB KVM switch using the keyboard and mouse.

The administrator will activate security when logging in by typing <Ctrl> + <M>, then <A>, and then <Y>.   The administrator will then be prompted for a valid administrator username and password (see Figure 9).

Password and User Name

 The factory settings are:

• **default user name = ADMINISTRATOR**
• **default password = ADMINISTRATOR**

Note: The username for the administrator cannot be changed
from "ADMINISTRATOR".

```
NETWORK
-------

USER NAME
PASSWORD:
```
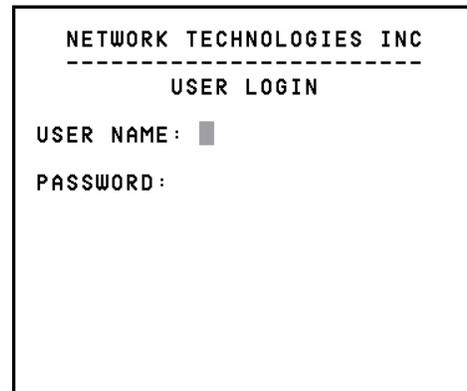
Figure 9- User login screen

Once logged-in, follow the instructions on page 12 for setting up users and changing the password. Once the password is setup, if it is lost or forgotten the administrator will have to contact NTI for assistance on clearing the password and set it up again. The administrator can setup each of the users and the limitations of their use of the individual CPUs .   within the Administration Mode.

When a standard user powers up the system a security screen may appear as setup by the administrator.   The user will need to login to the system 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 system administrator for this information.   Once logged-in a user can follow the Command Mode functions described on page 16 to control the system of CPUs 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. With security enabled, the user will be locked to the current CPU and the login screen will remain on the monitor until the user logs in.

Function:	Keystroke:
Add a character to the user name/password	A-Z 0-9 **or** ↑ Shift + A-Z **(Type any upper or lower case alphabetical or numeric character)**

Remove previous character from the user name/password	← Backspace	If the password submitted is incorrect, the user will not be able to proceed.
Submit user name/password	Enter	If the password submitted is correct, the user will proceed to Normal Mode.
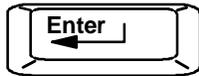
Exit USER LOGIN and return to previous mode. This function is only available if security is not currently enabled.

Esc

Additional OSD Modes Available With Security Enabled

Administration Mode

To enter the Administration Mode: press <A> from the Maintenance Mode menu. (See page 21 for Maintenance menu.)

The Administration Mode (see Figure 10) can be accessed only when security features are activated and the administrator is logged-in. Users other than the administrator are not allowed to enter the Administration Mode.

If a different user is logged-in, log-out by pressing <Q> from the Maintenance Mode menu, then log-in as Administrator. (See page 11, "**E**nabling The Security Feature".)

Administration Mode allows the administrator to use the following functions:

```
■  NETWORK
   -------
       ADMI
C - CHANG
S - DISAB
U - UPDAT
T - CHANG
E - ENABL
D - DISAB
X - CHANG
```

Figure 10- Administration Mode Menu

Function:	Keystroke:
Change the administrator's password	C
Disable security	S
Enter User Name List Mode	U
Selects the idle time in minutes	T - (0-2) x - (0-9) x - (0-9) x **(xxx from 002 to 255. ie. t002 would set the time out period for 2 minutes. 000 will disable it.)**
Enable global security	E **(Enable security on all user ports)**
Disable global security	D **(Disable security on all user ports)**

Change Alternate Command
Hot Key

X   **(See page 13 for details)**

Exit Administration Mode and
return to previous mode

Esc

Administrator Password

To enter the Administrator Password menu press <C> from the
Administration Mode menu.

```
NETWORK
-------
   ADMINI

PASSWORD
VERIFY:




TAB ENTER
```

The Administrator Password menu (see Figure 11) enables the administrator
to change his password. 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 ADMINISTRATOR.

Function: **Keystroke:**

Switch between Password and
Verify Password fields

Tab

Figure 11- Administrator password menu

Add character to password string
or verify password string
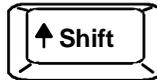
A-Z 0-9 **or** **↑ Shift** **+** **A-Z**   **(Type any upper or lower case
alphabetical or numeric character)**

Delete previous character in
edited string

Backspace

Save new password. (The
administrator will be prompted
for a Yes or No confirmation)
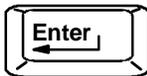
Enter   **(If Password string and Verify Password string
are different, this command will have no effect,
enabling the administrator to correct the password)**

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 (see Figure 12) enables the administrator to see a list of users.   The administrator can select either an existing user to modify user settings, or an empty record to add a new user.

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
Return to Administration Mode	Esc

```
NETWORK
--------
        US

  01  JOHN
  02  BILL
  03  LARR
  04  SALL
  05  CARL
  06  JANE
  07  KELL
  08  PAUL

E  -  EDIT
```
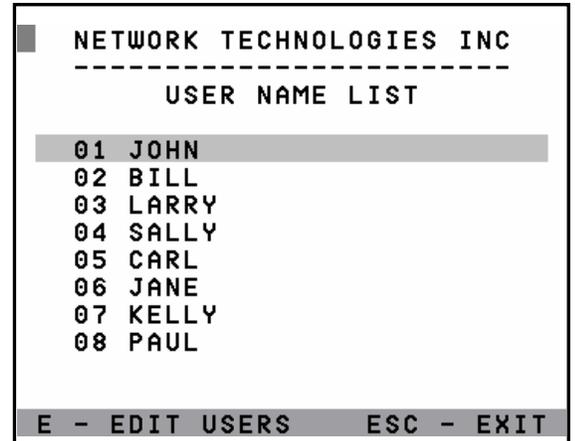
Figure 12- User Name List

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 13) 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.

```
      USE

  USER NAM
  PASSWORD
  VERIFY:
  ☐  P01    ☐
  ☑  P05    ☑


            User


TAB  ENTER
```
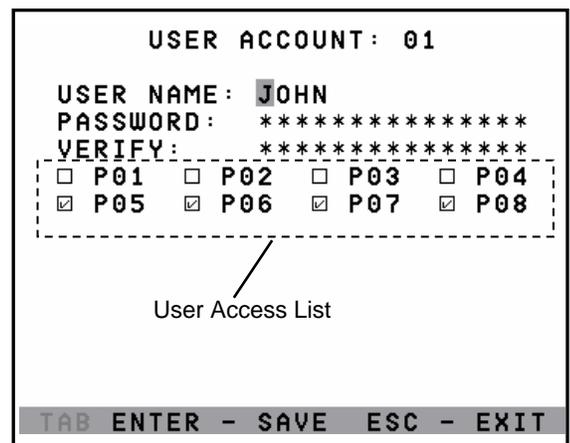
Figure 13- Edit User Menu

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
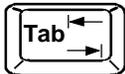
Navigate through User Access
List when it is active

↑ **or** ↓ **or** ← **or** →
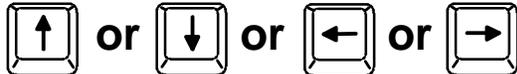
Toggle access rights (check/
uncheck) of the highlighted
port in the User Access List

(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 12). 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 USB KVM switch .

Note: 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

Command Mode

In order to control the switch with the keyboard, Command Mode must be enabled. To enable Command Mode from the keyboard:

Press   **Ctrl**   **+**   ~ \`   **(ACCENT KEY)**
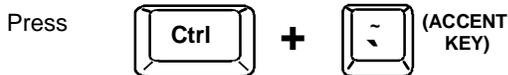
All the status lights on the keyboard will illuminate to indicate that Command Mode is enabled. At this point, the Command Mode menu will be displayed.

The Command Mode menu (see Figure 14) lists all CPUs by name and port number. Only 8 ports are listed on the screen at a time. To view the other portions of the list, scroll using the arrow keys on the keyboard or use the mouse to click on the arrows on the scroll bar in the OSD menu. When the Command Mode main menu is displayed, the first displayed port in the list will be the port the current user is connected to, followed by the next seven consecutively numbered ports. (Alternatively the list may be sorted alphabetically- see Maintenance Mode on page 21 to toggle sort method.) The names of accessible ports are displayed with white characters. If Security is activated, the access rights for the user logged-in may not include all ports. Names of restricted access ports are displayed in blue.

Note: In a cascaded system (see page 31), if a switch is connected to a port, all the names of the ports of the slave switch will be displayed instead of the name of that port of the master switch. This rule applies recursively to all slave switches. If one of the slave switches is powered-OFF during operation, the Status field in the ports name list will display question marks. In this situation, the user should either power-ON the slave switch or send an Update Configuration Command (<Ctrl> + <Tab>). If the slave switch is powered back ON without updating the configuration and security is enabled, the text in the window for CPU type and power status will turn red until the configuration is updated. (The red text indicates that the slave switch was logged out.)

An arrow to the left of a port number in the list indicates the port the user is currently connected to. From left to right, the columns display the following:

- Port Number
- Port Name
- Type of CPU connected (USB)
- Power Status of the CPU (ON/OFF)
- The actual user number (1-8) connected to the CPU.
  - If no user is connected to a CPU, the user number is replaced by a "–" (dash).
  - If more than one user is connected to the same port, this field will indicate the total number of users connected and the text color will be red.
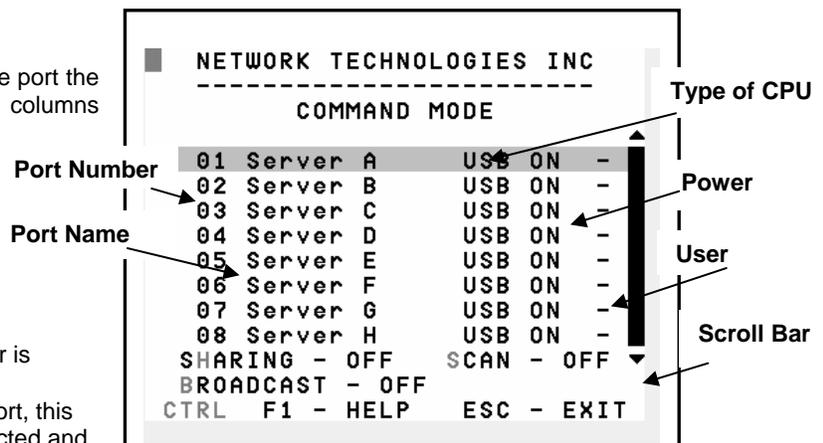
Figure 14- Command Mode main menu

Note: While in Command Mode, the numbers on the NUM PAD on the keyboard are not active. If numbers are required while in Command Mode, use the numbers on the main key bank.

The list below describes the command functions available from the keyboard within the OSD mode of control after entering into Command Mode:

Function: **Keystroke:**

Select the previous port

`↑`

Select the next port

`↓`

Increments the menu
by 1 page

`Page Down`

Decrements the menu
by 1 page

`Page Up`

Enable/disable Scan Mode

`Ctrl` **+** `S`
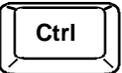
Enable/disable Broadcast Mode

`Ctrl` **+** `B`
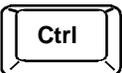
Enable/disable Sharing

`Ctrl` **+** `H`
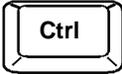
Enter Edit Mode
(Only available if administrator
is logged in)

`Ctrl` **+** `E`

Enter Change Settings Menu

`Ctrl` **+** `T`

```
 ■  NETWORK
    --------
          C
 ▶ 01 Serv
   02 Serv
   03 Serv
   04 Serv
   05 Serv
   06 Serv
   07 Serv
   08 Serv
 SHARING
 BROADCAS
 CTRL  MAI
```

Figure 15- Command Mode additional options

Enter Maintenance Mode

`Ctrl` **+** `M`

Note: When the user presses and holds the <Ctrl> key from the first Command Mode image, the additional options of Maintenance, Port, and Edit will appear. (See Fig. 15)

Display Help Menu

`F1`

Select a specific port

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

Select the first port on the switch

`Home`

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

To exit Command Mode press <ESC> on the keyboard.

Select the last port on the switch

`End`

Enter Search Mode, add a character
to search string and select the CPU's
name that matches best.

`A-Z 0-9` **(Type any alphabetical or numeric character)**
  Note: use is case sensitive

Command Mode (Cont'd)

Function: **Keystroke:**

Switch to a selected port

```
┌─────────────┐
│   Enter  ↵  │
└─────────────┘
```

Update Configuration

```
┌──────┐    ┌──────┐
│ Ctrl │ ➕ │ Tab  │
└──────┘    └──────┘
```
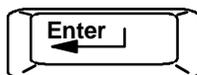
(Use this command to update the information describing the structure of the cascaded switches. Used if a slave is powered-ON or OFF at any time after initial startup.)

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 Command Mode

```
┌──────┐
│ Esc  │
└──────┘
```

The mouse can also be used to control the UNIMUX USB KVM switch Command Mode within the menu.

- The scroll wheel can be used to scroll through the ports list.
- The mouse cursor can be moved to the Sharing, Scan and Broadcast fields where the user can click on the left mouse button to toggle that indicator.
- Ports listed on the screen can be selected by moving the cursor onto a port and clicking.
- To move through the port list, the scroll bar to the right of the list can be used by clicking the up and down arrows.

Note: Exit Command Mode to type to a CPU. To exit Command Mode, press <Esc> or by clicking the "ESC" command on the screen with the mouse.

Scan Mode

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

Scan Mode enables the user to scan through selected ports and to have full device control of the connected port. From the Change Settings menu (see page 19) the user can edit the list of ports that can be scanned. A port is skipped from the scan cycle if one of the following conditions is true:

- the port is not in the scan list
- the port is used by another user and sharing is not enabled
- security mode is enabled and the user does not have access rights to the port
- the CPU connected to the port is OFF

When switching to a new port the port name is displayed by OSD in the left upper corner of the monitor for 5 seconds or until a key is pressed or the mouse is moved, whichever comes first. The scan dwell time is programmable from 2 to 255 seconds (default time-out period is 5 seconds). When the user uses the mouse or keyboard the scanned port becomes active and scanning is stopped. The switch will resume scanning after a period of user inactivity determined by the scan dwell time. See Change Settings Menu on page 19 for configuring the scan dwell time.

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

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

Broadcast Mode

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

Broadcast Mode enables the user to type characters to more computers simultaneously. From the Change Settings menu (see page 19) 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
- the port is used by another user and sharing is not enabled
- 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.

NOTE: The mouse will be disabled while in Broadcast Mode.

Sharing Mode

To activate Sharing Mode press <Ctrl> + <H> from the Command Mode menu.

Sharing Mode enables two or more users to access the same port.   If Sharing Mode is disabled, the user cannot switch to a port that is already connected to by another user.

When a port is connected to by more than one user, the user which is currently typing or moving the mouse has the access to the port and other users cannot use it. The user will lose access after 5 seconds of no activity from the keyboard or mouse. From that moment any other connected user can gain access.

Normal Mode

When the UNIMUX switch is not in Command, Scan, or Broadcast mode and the OSD control is not active on the monitor, the user is in Normal Mode, controlling the CPU to which the user is connected through the UNIMUX switch.

Edit Mode

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

Edit Mode allows only the administrator to modify the names of the CPUs connected to the switch. Names of CPUs can be up to 12 characters in length. Characters typed can be upper or lower case. After changes have been made the administrator will be prompted by the menu to save the changes. Answer "Y" to save changes and answer "N" to continue using previously entered port names.

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	↓

> **NOTE**: If a change has been made, using the up or down arrow will also prompt the user to save any changes.

When finished making changes in Edit Mode, press <Esc> 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.

Change Settings

To enter the Change Settings menu (see Fig. 16) 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**
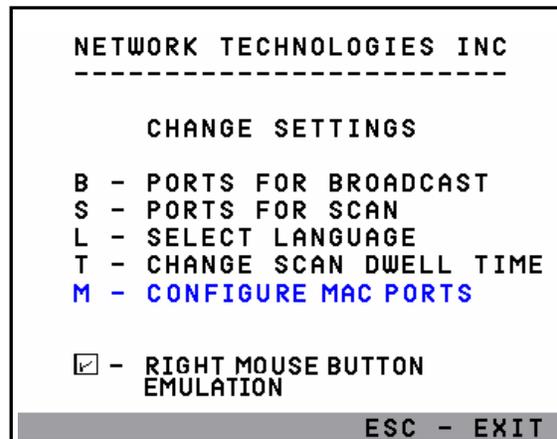
Figure 16- Change Settings menu

Change Settings (Cont'd)

Function: **Keystroke:**

Exit from Change Settings
Return to Command Mode   `Esc`

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.

Broadcast Mode Configuration

To enter the Broadcast Mode Configuration menu press <B> from the Change Settings menu (see Fig. 16).

The Broadcast Mode Configuration menu (see Fig. 17) 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.
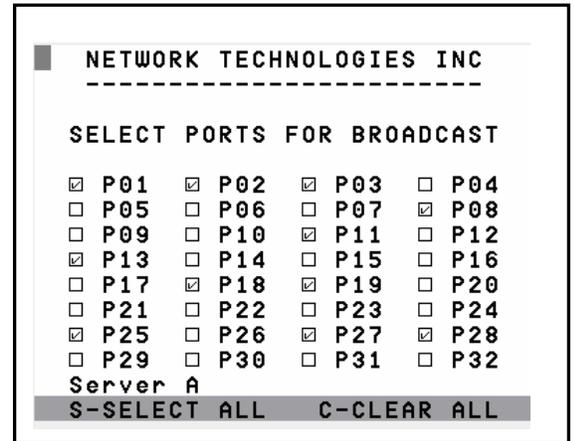
Figure 17- Broadcast Mode port selection

Scan Mode Configuration

To enter the Scan Mode Configuration menu press <S> from the Change Settings menu described on page 19.

The Scan Mode Configuration 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

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.

MAC Ports Configuration

NOTE: The CONFIGURE MAC PORTS option will be in blue text in the Change Settings menu and 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.

NOTE: MAC mode must be enabled on any CPU ports that are connected to a CPU through an NTI ST-C5USBV extender.

To enter the MAC Ports Configuration menu, the administrator must press <M> from the Change Settings menu, described on page 16.

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

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.

Maintenance Mode

To enter Maintenance Mode (see Fig. 18) press <Ctrl>+<M> from the Command Mode menu.

Maintenance Mode enables a user to customize the On Screen Display to their requirements. Also, the Security Mode can be activated/deactivated from this menu.

Function: **Keystroke:**

Reset all of the port names   **R**   **THEN**   **Ctrl** **+** **Tab**   **TO UPDATE**
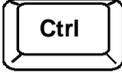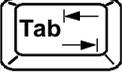
Toggle between numeric and alphabetic listing of ports   **L**

Move On Screen Display (OSD) menu up on monitor   **↑**

Move OSD menu down on monitor   **↓**

Figure 18- Maintenance Mode menu

Move OSD menu to the right   **→**

Move OSD menu to the left   **←**

Make OSD menu taller   **T**

Make OSD menu shorter   **S**

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.

Maintenance Mode (cont'd)

Function: **Keystroke:**

Log current user out and return   **Q**   **(Only displayed when security is active)**
to User Login Mode.

Save OSD window parameters   **Enter**
for the port

Return to Command Mode   **Esc**

NOTE: Based on different scan rates, the OSD window may appear in different areas of the monitor as different CPU
ports are selected. The Maintenance Mode functions allow placement of the window in a particular area of the monitor
and the window will return there when the UNIMUX USB KVM switch is reconnected to that particular CPU (provided the
parameters are saved before exiting Maintenance Mode).

Search Mode

Search Mode is enabled by typing any alphabetical or numeric characters while in the Command Mode menu.

Search Mode allows 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   **◄━Backspace**
in search name
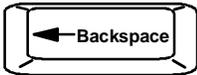
Add a character to the search   **A-Z**
string and select the best   **0-9**   **(Type any alphabetical or numeric character)**
matching CPU name

Exit Search Mode, return to   **Esc**   **or**   **Enter**
Command Mode

Help Mode

To enter Help Mode press the <F1> key from the Command Mode menu (see page 13).

Help Mode displays a list of commands with a short explanation of their function.   The following options allow the user to quickly
obtain information on any command.

Function: **Keystroke:**

View the previous page of help   **Page**
if available   **Up**

View the next page of help   **Page**
if available   **Down**

Exit HELP and return to previous   **Esc**
mode

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 (see Cascading- page 31).

An example of this structure might be:

LEVEL 1 : PORT 5

LEVEL 2 : PORT 3

This means that the CPU connected to this port is actually connected through port 5 of the master switch (Level 1), and through port 3 of the slave connected to the master switch port 5 (Level 2). (See Fig. 19.)
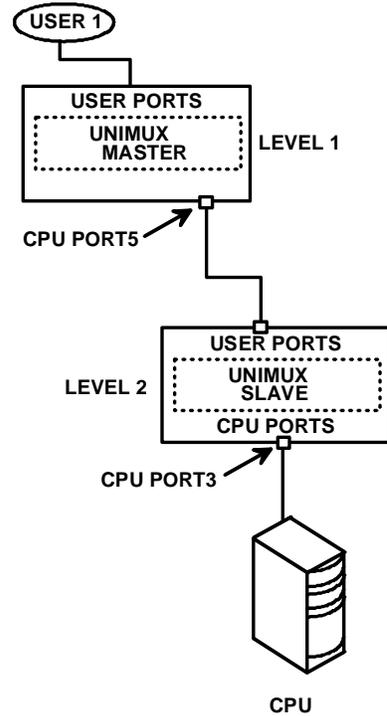
Figure 19- Port information- system structure

Select Language

To enter the Select Language menu (see Figure 20) press <L> from the Change Settings menu described on page 19.

Note: *Only the administrator has the Select Language menu option.*

The Select Language menu enables the user to select a specific language (country code) to be used. Typically only SUN CPUs require a specific country code to be registered at boot up. (For other types of CPUs this feature may have no effect.) A list of available languages is displayed and can be scrolled using the mouse (scroll wheel) and/or <up arrow>, <down arrow>, <Home> and <End> keys.
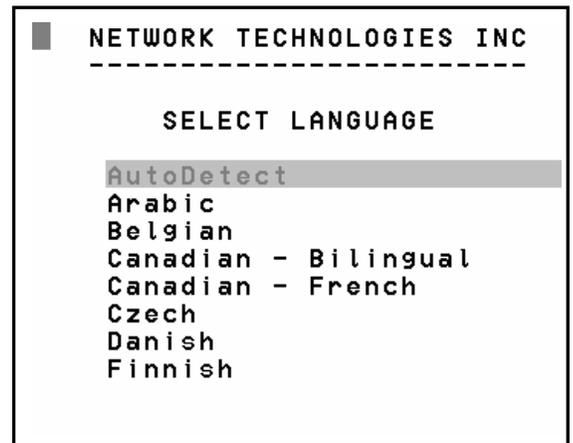
Figure 20- Select Language menu

- To manually program a specific language, select a language and press <Enter> (or click the left mouse button).
- To automatically detect the language of the keyboard, select "AutoDetect" and press <Enter> (or click the left mouse button) . The list will advance to the actual detected keyboard language and that language will be programmed.

Some keyboards don't have a country code. In this case the selection will remain in the "AutoDetect" position and the default country code "00" will be programmed in the UNIMUX USB KVM switch. If a specific country code is manually programmed, it will be the country code for the switch, regardless of the actual country code of the connected keyboard. The programmed country code is saved in memory and restored each time the UNIMUX USB KVM switch is powered-ON. Because the CPUs that use country code (i.e. SUN CPUs) read it at boot time, it is necessary to boot the CPU(s) after programming the country code.

Keyboard Mapping

The keyboard configuration of each CPU is saved in the UNIMUX switch. For example, if the CPU attached to Port 4 had CAPS LOCK and NUM LOCK selected the last time that CPU was accessed, then they will automatically be set when that CPU is accessed again.

Key Equivalents

Using the chart below, find the character needed to be typed on the CPU being accessed, then follow the row across for the equivalent on the keyboard being used.   (See Figure 21 on page 25 for reference.)

USB 101	WINxx	MAC (Apple USB)	SUN
L-Ctrl	L-Ctrl	L-Ctrl	L-Ctrl
L-Alt	L-Alt	L-Option	L-Alt
SB+F12	Application	SB+F12	Compose
R-Alt	R-Alt	R-Option	Alt-Graph
SB+Alt	Windows Logo	Command	Meta
SB+R Arrow	SB+R Arrow	Power	Suspend

SB = Space Bar

L and R = Left and Right keys when two keys are marked the same on a keyboard.

Mouse Click Equivalents

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

Note: Right mouse button emulation must be enabled (see Change Settings on page 16) for this to work.

SUN's 16 Extra Keys

101,WINxx,MAC Keyboards	SUN Extras
SB+F1	Stop (L1)
SB+F2	Again (L2)
SB+F3	Props (L3)
SB+F4	Undo (L4)
SB+F5	Front (L5)
SB+F6	Copy (L6)
SB+F7	Open (L7)
SB+F8	Paste (L8)
SB+F9	Find (L9)
SB+F10	Cut (L10)
SB+F11	Help
SB+F12	Compose
SB + Up Arrow	Vol +
SB + Down Arrow	Vol -
SB + L Arrow	Mute
SB + R Arrow	Suspend

Use the chart to the left to type SUN's

additional 16 keys using a 101,

WINxx, or MAC (Apple)

USB keyboard

SB= Space Bar
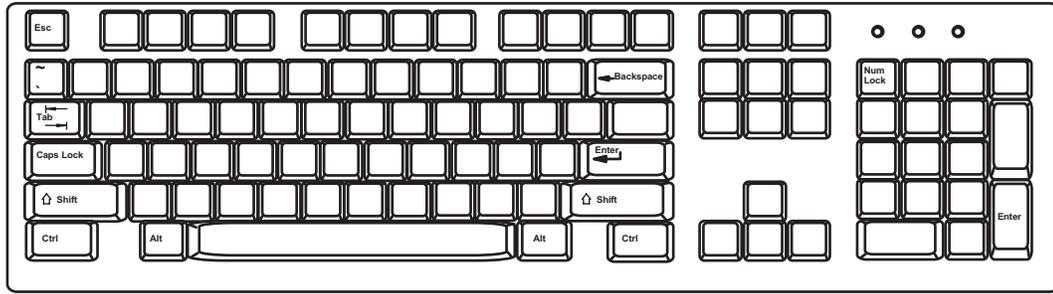
Typical 101 Keyboard

Windows Keyboard

Windows Logo Key

Windows Logo Key   Application Key

Apple USB Keyboard

Power Button

Command Key

Command Key

SUN USB Keyboard

Suspend key

Meta Key

Meta Key
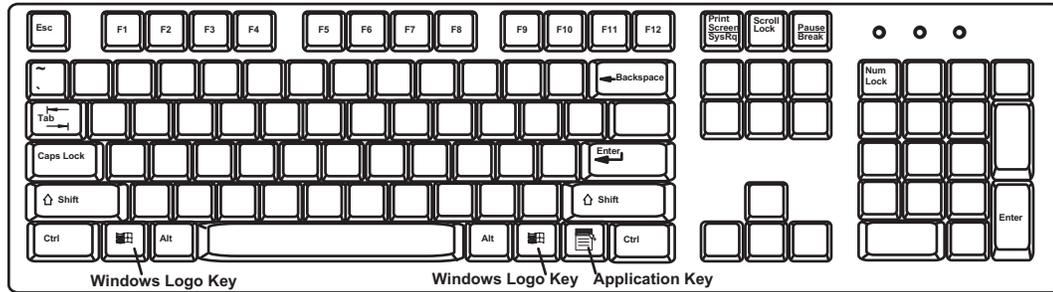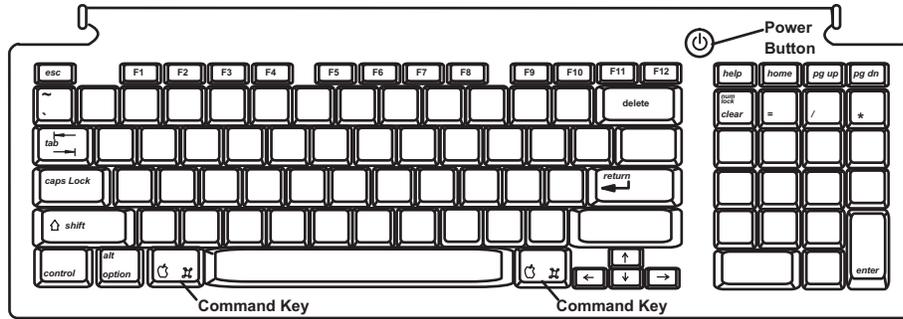
Figure 21- Keyboard layouts

RS232 CONTROL

RS232 enables the UNIMUX to be remotely controlled via RS232.   To control the UNIMUX via RS232 the user has three options:

- write a program that runs on a PC using the Command Protocol (page 28)
- use the Matrix Switcher's Control Program (page 29) provided on the CD
- use the SerTest or RMTEST programs (pages 29 and 30) provided on the CD

Remote Connection

The RS232 Interface is designed to meet the RS232C standard and can be controlled from any host CPU or other controller with an RS232 communications port. The pin-out for the DB-9 connector on the unit is as follows:

RS232 Connector (DB-9 FEMALE)

PIN	SIGNAL	FUNCTION
1	*None*	*no connection*
2	TXD	Transmit Data (RXD at host)
3	RXD	Receive Data (TXD at host)
4	DSR	Data Set Ready
5	GND	Signal Ground
6	DTR	Data Terminal Ready
7	CTS	Clear to Send
8	RTS	Request to Send
9	*none*	*no connection*

NOTE: Security must be disabled or user access to be granted on the port(s) to be selected by RS-232 control.

On the DB-9 female connector, pins 1 (DCD), 4 (DTR), and 6 (DSR) are shorted and pins 7 (RTS) and 8 (CTS) are shorted. Therefore, CPU handshaking is bypassed and TXD and RXD are the only active signals. A straight through DB-9 cable (not null modem) will work for most CPUs. To daisy chain multiple units, the CPU drives the input port on the first unit and the output port is connected to the input port on the next unit etc. The last unit will have a loop back plug installed in its RS232 OUT connector.

Baud Rate

The baud rate can be changed by selecting MENU on the front panel keypad. Then select 1 for SET BAUD RATE and select the desired baud rate of 9600, 4800,2400, or 1200. A data protocol of 8 data bits, no parity, and 1 stop bit is used for communications.

Unit Address and Loop Back

To allow multiple units to be controlled from a single host port, the RS232 control interface is designed to allow "daisy chaining" up to 15 units using an NTI Matrix-Y-1 cable. By setting the appropriate unit address with the keypad, each unit can be given a unique address (1-15). Then the unit will only respond to commands on the bus if its address is embedded in the command.

To set the unit address;
1. select MENU on the front panel keypad,
2. select 2 for SET UNIT ADDRESS,
3. type the address number (1-15),
4. press <ENTER> on the front panel keypad.
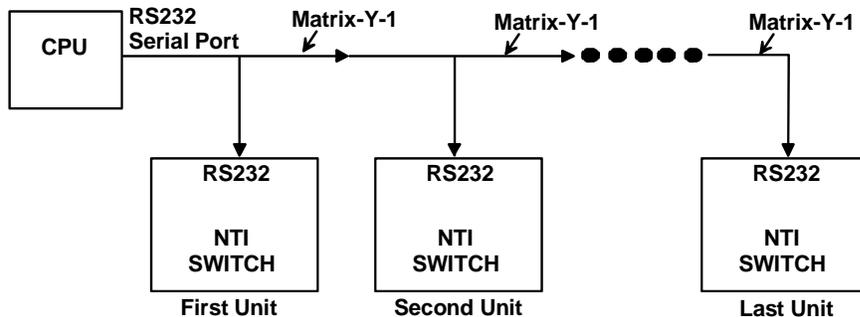
Figure 22- RS232 connection with Matrix-Y-1 cable

Wiring Schematic of Matrix-Y-1 cable

9D Male (Unit #1)	9D Female (Source)	9D Male (Unit #2)

2 ——————— ● ——————— 3

                       Not connected to

3 ——————— 3   **source connector**

5 ——————— 5 ——————— 5

            2 ——————— 2

7 ⎤
8 ⎦ **Jumper**

1 ⎤
4 ⎥ **Jumpers**
6 ⎦
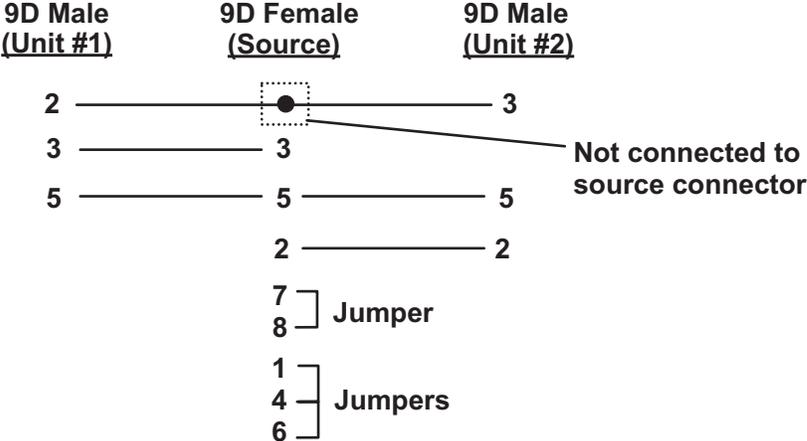
Figure 23- Pinout of Matrix-Y-1 cable

RS-232 Command Protocol

Host controller commands supported by the unit are defined below.

RS-232 Command Protocol Quick Reference

Legend: (All numbers must be two digits)

SW	:	Switch (01-15)	MM :	Save Into Memory Bank (00-09)
BR	:	Baud Rate Code (12,24,48,96)	LL :	Load From Memory Bank (00-09)
OP	:	Output/User Port (01-MAXOUTPUTS)	<CR>:	Carriage Return (Hex 0xD)
IP	:	Input Port/CPU (01-MAXINPUTS)		

Command String	Good Response	Description
CS SW,IP,OP	*<CR>	Connect one User port To CPU port
CA SW,IP	*<CR>	Connect all User ports To CPU port
RO SW,OP	*<CR>IP<CR>	Read Connection For User Port
CC SW,MM	*<CR>MM<CR>	Save Matrix Connections Into Memory Bank
RC SW,LL	*<CR>LL<CR>	Restore Matrix Connections From Memory Bank
CB 00,BR	None	Change Baud Rate For All Switches
RV SW,00	*<CR>string\0<CR>	Read NTI Version String
RU SW	*<CR>IP,OP<CR>	Read Unit Size
SS SW,00	*<CR>	Disable Autostatus feature (see below)
SS SW,01	*<CR>	Enable Autostatus feature (see below)
GO SW OP	*<CR>go SW OP IP<CR>	Report the User port that is connected to the CPU port
GM SW,00	*<CR>go SW OP IP<CR> (all connections)	List all switch User port connections; all User ports to all CPU ports

If the first field is not a known command (as listed above) or SW field is different from the serial address programmed in the switch memory, the command will be ignored. If the SW field corresponds to the serial address, but the syntax is wrong after this field, the switch will answer with ?<CR>.

Autostatus

When Autostatus is enabled, any output-to-input connection change in the UNIMUX will cause an Autostatus message to be sent via RS232 to the administrator. The format of the message would be "pc SW,OP:IP<CR>"

Example of an Autostatus message:

  pc 01,01:04<CR>

which means "At the switch with unit address 01, the output (01) has changed connection to input 04."

Notes: Message to the administrator will be delayed by any RS232 traffic being received by the switch from the administrator.
Autostatus must be disabled before using SerTest or the Matrix Switcher's Control Program (below).

By default, Autostatus is disabled and must be manually enabled.   Autostatus is also disabled any time the power to the UNIMUX is interrupted.

Matrix Switcher's Control Program For Windows 9X, NT, AND 2000

The Matrix Switcher's Control Program is an easy and powerful graphical program that controls NTI matrix switches through an RS232 interface.   The Matrix Switcher's Control Program is included on the CD packaged with the UNIMUX. The Matrix Switcher's Control Program is downloaded by clicking on the link "Download Matrix Switcher's Control Program" found on the webpage the opens when the CD is inserted into the CDROM drive.

> To install the Matrix Switcher's Control Program after downloading

> 1. Locate the **Setup.exe** in the directory the program was downloaded to and double-click on it
> 2. Follow the instructions on the screen

The Matrix Switcher's Control Program performs best on monitors set to a screen resolution of at least 800 X 600. Instruction for using the Matrix Switcher's Control Program is available by opening "MSCP Help" in the "NTI" program group once the program has been installed and is open on the screen.

> To open "MSCP Help" from the Windows desktop

> 11. Click on **START**
> 12. Click on **PROGRAMS**
> 13. Click on **NTI**
> **14.** Click on **MSCP Help**

SerTest- RS232 Interface Test Program

This software allows a user to test the functions of an NTI server switch, matrix switch or Multi-user/Multi-platform switch RS232 interface.   The program SERTEST along with the Matrix Switcher's Control Program (above) is installed from the CD packaged with this switch. SERTEST generates a main menu with the selections described below:

Main Options

- Matrix Operations   - send commands to the matrix unit.
- Ethernet Operations   - set Ethernet connection variables (not applicable to this product)
- Setup Options   - set COM port, baud rate, and unit address
- About SerTest   - display the program version

Matrix Operations

Key	Selection	Description
1)	Connect Output/User to an Input/CPU	- connect an output to an input
2)	Connect All Outputs/Users to an Input/CPU	- connect all outputs to an input
3)	Connect Audio Output/User to an Input/CPU	- connect an output to an input (audio ports only)
4)	Connect All Audio Outputs/Users to an Input	- connect all outputs to an input (audio ports only)
5)	Change Mute Status for Audio Output/User	- mute or un-mute the Audio port output
6)	Change Volume for Audio Output/User	- change Audio port output volume
7)	Read Connection for Video Output/User	-read the connection of a specific video output
8)	Read Connection for Audio Output/User	-read the connection of a specific audio output
9)	Read Mute and Volume for Audio Output/User	- read the volume and the mute status of the specified output (audio ports only)
a)	Save I/O Connections into Unit Memory	-save the connections into switch memory bank
b)	Restore I/O Connections from Unit Memory	-restore the connections from switch memory bank
c)	Change All Units Baud Rate (9600/COM1:)	-change RS-232 Baud rate of all switches -the current baud rate and serial port are displayed in parentheses
d)	Reset Unit	- send a reset command to the switch (This command does not function at this time)
e)	Reset All Units	- send an internal reset command to all switches
f)	Read Unit Size	- read the switch size (number of inputs and outputs)
g)	Read Unit Version/Revision String	-read a string containing the switch version, type, and size
h)	Save All Units I/O Connections into Units Memory	-save the connections into switch memory bank, command for all switches
i)	Restore All Units I/O Connections from Units Memory	-restore the connections from switch memory bank, command for all switches

Selections in the "Key" column that are gray are not applicable to this product.

Setup Options

Key	Selection	Description
1)	select Com port current: (COM1:)	- select PC serial port - the current PC serial port is displayed in parentheses
2)	select Baud rate current: (9600)	- select PC serial port baud rate - the current baud rate is displayed in parentheses
3)	set unit Address current: (1)	- select the unit address - the current address is displayed in parentheses

For any selection that requires user input, the user is prompted. When commands are sent to the matrix unit, the command string and matrix unit responses are echoed to the screen. All commands generated by the program are formatted according to the information provided in sections above. If any transmission problems are detected, an error message is displayed.

Press <Esc> or <Enter> to back out to the main menu and press again to exit.

RMTEST-RS232 Interface Test Program

This software also allows a user to test the functions of an NTI server switch, matrix switch or Multi-user/Multi-platform switch RS232 interface. The RMTEST program is automatically loaded when installing the MATRIX SWITCHER'S CONTROL PROGRAM as described on page 29. The RMTEST program, located in the NTI program group, generates a main menu with the 3 selections described below:

MAIN OPTIONS

  1. Matrix Options   - send commands to the matrix unit.

  2. Setup Options   - set COM port, baud rate, and unit address

  3. Quit   - quit the program

If Matrix Options is selected, the following menu, which has 7 options, is displayed:

MATRIX OPTIONS

  1. Reset single unit   - reset single matrix to power-up defaults (matrix switch only)

  2. Reset all units   - reset all daisy chained matrix units (matrix switch only)

  3. Change single output   - connect an input to one output

  4. Change all outputs   - connect an input to all outputs

  5. Read single output   - read which input is connected to an output

  6. Read unit size   - read how many inputs and outputs the unit has

  7. Return to main menu   - go back to the MAIN OPTIONS menu

The Setup Options main menu selection only needs to be executed if the switches baud rate or unit address have been changed from the factory defaults (9600 baud, and unit address = 1). When this option is selected, the following menu, which has 4 options, is displayed:

SETUP OPTIONS

  1. Set COM port (default = COM1)   - set port to COM1-COM3

  2. Set baud rate (default = 9600)   - set baud rate (see interface manual for supported baud rates)

  3. Set unit address (default = 01)   - set the unit address (if multiple units are daisy-chained)

  4. Return to main menu   - Go back to the MAIN OPTIONS menu

For any selection that requires user input, the user is prompted. When commands are sent to the matrix unit, the command string and matrix unit responses are echoed to the screen. All commands generated by the program are formatted according to the information provided in the sections above. If any transmission problems are detected, an error message is displayed.

CASCADING

The UNIMUX USB Matrix switch can be expanded to access up to 1024 CPUs by cascading multiple units together. As many switches as there are CPU ports may be connected to a UNIMUX USB Matrix switch.   (See Figure 24) All downstream switches are referred to as "slaves" in a cascaded system. The only additional hardware required to cascade switches is a set of device and monitor cables for each "SLAVE UNIT" (see MATERIALS on page 2).   All CPUs and switches can then be controlled by users using OSD commands with Command Mode.

Limitations

The front panel keypad is only used to operate standalone switches.   To control a cascaded network of switches, only the OSD commands within Command Mode will be recognized.

The Matrix Switcher's Control Program (page 29) cannot be used to control cascaded switches.   It can only be used with a standalone switch.

RS232 control (page 26) cannot be used between cascaded switches.   RS232 control can only be used between standalone switches.

Users connected to accessible ports on downstream slaves (i.e. ports not connected to the master) will not be able to control switches or CPUs connected upstream.   Only control over CPUs and slaves downstream from a user's connection point will be enabled. (See Figure 24)

Slaves connected downstream from a master must be switches with at least as many user ports as the master.   I.e. If the master is UNIMUX-4X32, connected slaves can be any switch with 4 or more user ports.

Exception: If the master is a single user UNIMUX switch, slaves connected downstream can be any size multi-user UNIMUX switch (see Figure 25).
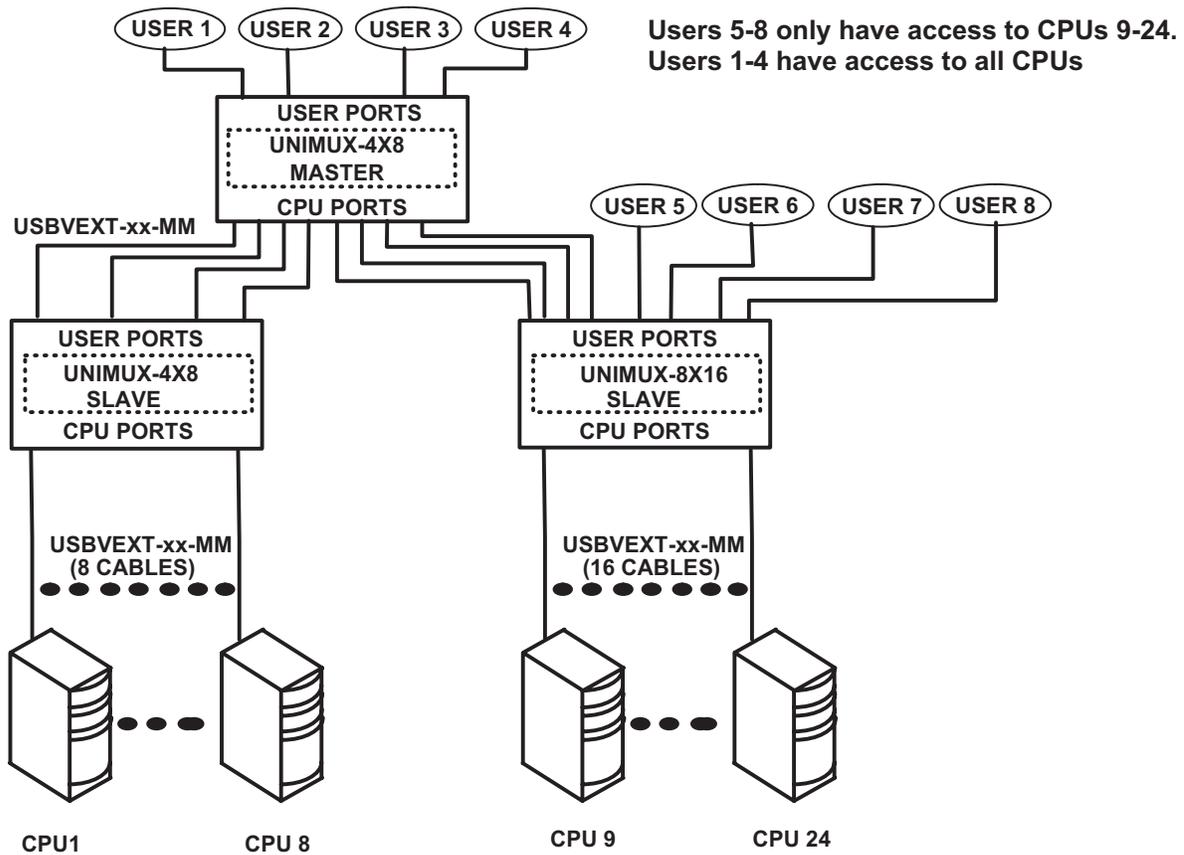
Figure 24- Cascading with only multi-user units
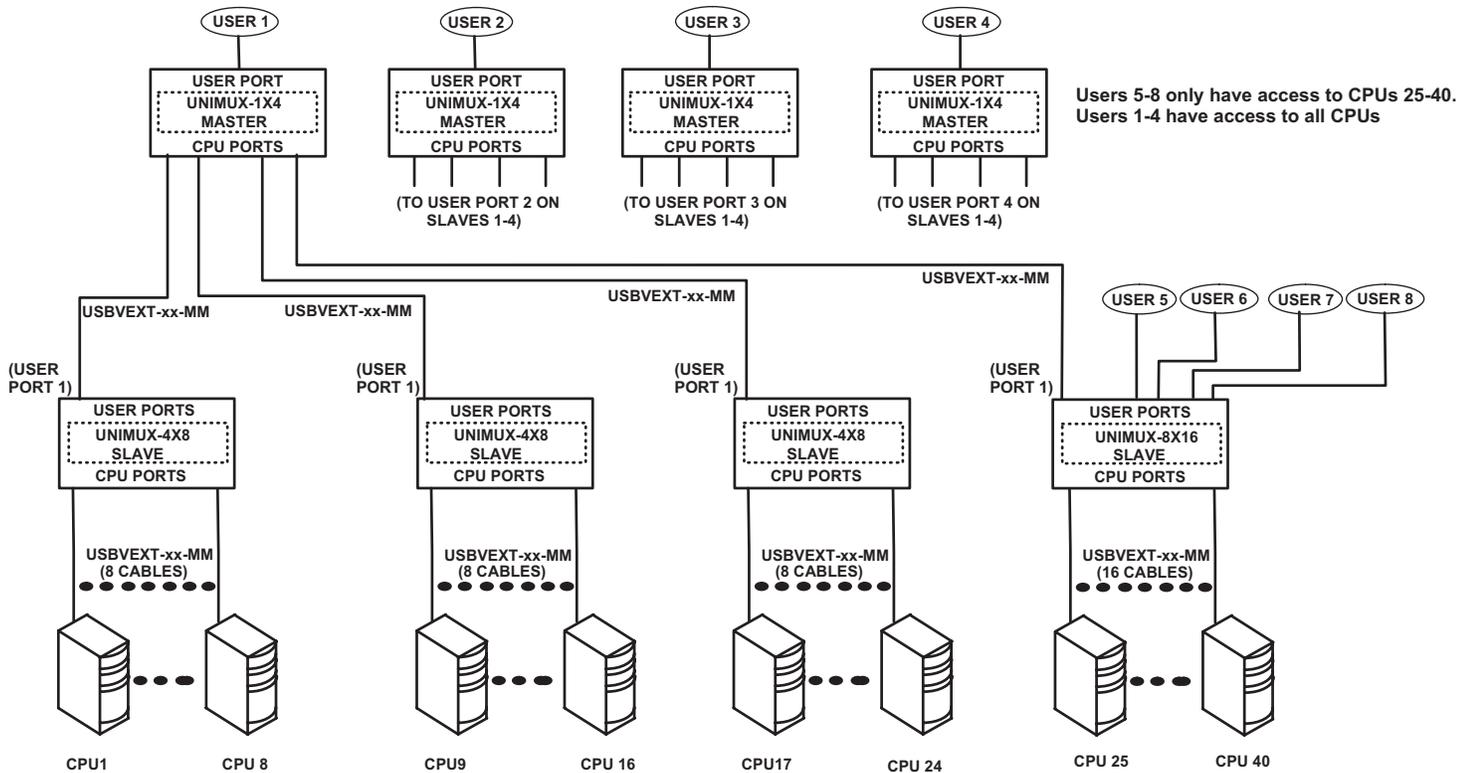
Figure 25- Cascaded configuration with single-user masters

Cable Connections

The same cable used to connect a CPU to the UNIMUX is used to connect two UNIMUX switches together- USBVEXT-xx-MM.
No other cables will be necessary.   To connect a slave to a master

1.   Connect the USB-A-male end of the USBVEXT-xx-MM to the USER 1 port on the slave.

2.   Connect the 15HD male at the same end of the USBVEXT-xx-MM cable to the MONITOR 1 port on the slave.

3.   Connect the USB-B-male end of the USBVEXT-xx-MM to the CPU 1 port on the master.

4.   Connect the 15HD male at the same end of the USBVEXT-xx-MM to the VIDEO 1 port on the master.

Repeat this procedure for each USER and MONITOR port on the slave that is desired to be controlled through the master. Any
USER and MONITOR ports that do not get connected to the master can be connected to by users. 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 25 can
only control CPUs 25-40).
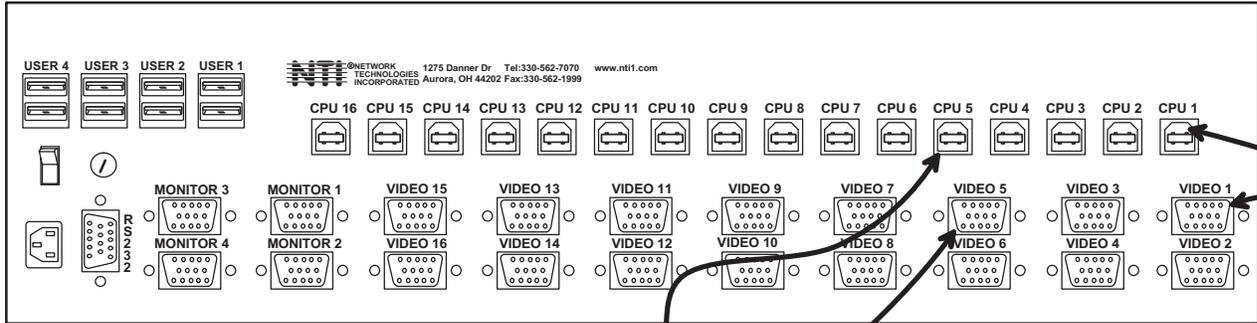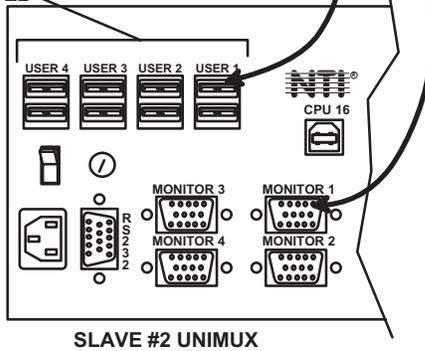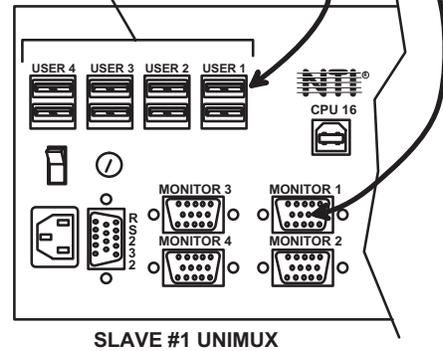
Figure 26- Cascaded switch cable connections

Operating Cascaded Switches

Immediately after powering-ON the Master switch, the following splash screen will display on the monitor:

All the downstream switches should be powered ON before pressing any key. If there are USB extenders connected, they should also be powered ON. An extra time of about 5 seconds after powering-ON the last unit may be needed to complete the USB enumeration process. If the switch is a standalone unit (no downstream switches connected), the key could be pressed immediately.

When a key is pressed, the master switch will start the process of detecting the configuration. This could take several seconds, depending on how many switches are connected together. When configuration update is ready, the splash screen disappears and the system is ready to operate. (If security mode is activated, the login window will be displayed on the screen). The update-configuration function can be recalled at any time by entering into Command Mode and pressing the <Ctrlt> + <Tab> keys.

Note: The front panel keypad is used to operate only standalone switches. To operate a cascaded network of switches use only OSD commands from Command Mode (see page 11).

Note: Matrix Switcher's Control Program (page 29) cannot be used to control cascaded switches, it works only with a standalone switch.

After completing the configuration detection, the splash screen is turned OFF and the switches can be operated. All configuration can be controlled from the keyboard, mouse and monitor through OSD menus (page 11).

SUN RAY SUPPORT

The UNIMUX USB Matrix switch fully supports SUN Ray CPUs, however, if a lack of horizontal mouse movement may be experienced .   If this occurs, enable MAC mode (page 20) for the port that the SUN Ray is connected to.   This should enable proper mouse movement.

SAFETY STATEMENTS

Grounding

These products have protective earth ground terminals and are built with full attention to consumer safety.   There must be an un-interruptible safety earth ground between the main power source and the product's power cord or supplied power cord set.

If ever the possibility exists for the grounding protection to have been reduced in any way, disconnect the power supply until the grounding connection has been fully restored.

Servicing

NTI products are not intended to be serviced in the field and contain no user-serviceable parts.   In the event repair is needed, all servicing must be performed by factory trained and authorized service personnel.   Only those items specifically identified in this manual (if any) may be adjusted by the user of this product and adjusted only as instructed in this manual.

CABLES

NTI #	DESCRIPTION
USBVEXT-3/6/10	VGA and USB extension
USBVEXT-3/6/10/15-MM	VGA and USB interface
USB-AA-5M	Connect up to 5 cables in a series for up to 25 additional meters
USB-A+A-5M	Improved Active USB 5 meter extension
VEXT-3/6/10/15/25/35/50/75/100	VGA extension through 100 feet
VEXT-3/6/10/15/25/35/50/75/100-MM	VGA interface PC to NTI switch
VEXT-xx	VGA extension through 250 feet

Where:

 xx is the length of the cable in feet

 MM indicates male-to-male connector

 M is the length of the cable in meters

Cables can be purchased from Network Technologies Inc by calling 800-RGB-TECH (800-742-8324) or 330-562-7070.

TROUBLESHOOTING

Each and every piece of every product produced by Network Technologies Inc is 100% tested to exacting specifications.   We make every effort to insure trouble-free installation and operation of our products. If problems are experienced while installing this product, please look over the troubleshooting chart below to see if perhaps we can answer any questions that arise.   If the answer is not found in the chart, please check the FAQs (Frequently Asked Questions) at our website at http://www.networktechinc.com or contact us directly for help at 1-800-742-8324 (800-RGB-TECH) in US & Canada or 1-330-562-7070 worldwide.   We will be happy to assist in any way we can.

Problem	Cause	Solution
No mouse or keyboard	• Cable connections loose	• Check all cables for proper connection
No video	• Loose video cable • Power to monitor OFF	• Check video cable connection • Make sure monitor is plugged into live outlet and powered ON
Mouse only moves up and down on computer(s) connected to the switch through a ST-C5USBV Extender	Driver communication not correct between mouse and CPU. Port set for non-MAC mode	Configure any CPU ports that have a ST-C5USBV connected for MAC Mode operation (see page 20)
Mouse not working properly or at all with SUN or PS/2 CPU connected	Driver communication not correct between mouse and CPU. Port set for MAC mode with a SUN or PS/2 CPU connected.	Configure ports correctly. Only MACs or ST-C5USBV Extender should be connected to port configured as MAC ports.

SPECIFICATIONS

Video Connectors	female 15HD
Video Resolution	1920 x 1200 (max.)
Video Support	SVGA, XGA, VGA most DVI monitors (when used with NTI DVIF-15HDM adapter)
Video Bandwidth	150 Mhz
USER Keyboard/Mouse connectors	female USB Type B
Mouse and Keyboard Compatibility	most USB mice and keyboards
CPU connectors	female USB Type A
CPUs supported	Windows USB, SUN USB, MAC USB
RS232 Connector	male DB9
Power required	110 or 220 VAC @ 50-60 Hz at less than 25 watts.
Fuse Protection	2A, 240VAC
Regulatory approval	CE (except on desktop units)

INDEX

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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