



**NETWORK  
TECHNOLOGIES  
INCORPORATED**

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## PRIMUX® Series

# PRIMUX

## CAT5 KVM System

### Installation and Operation Manual



(Host Adapter sold separately)

## TRADEMARK

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## CHANGES

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

## FIRMWARE VERSION

PRIMUM Firmware Version 1.9

## Typographic Conventions

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

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

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## INTRODUCTION

The PRIMUX CAT5 KVM System (PRIMUX) allows the relocation of a VGA monitor, PS/2 or USB keyboard, and mouse from up to 64 PS/2, SUN, or USB CPUs by as much as 1000 feet. The PRIMUX is comprised of one PRIMUX-UZR User Station and at least one Host Adapter (HA-PS2, HA-USB, or HA-SUN) connected to a CPU to be controlled by the user. The PRIMUX-UZR User Station supports PS/2 or USB user keyboard and mouse (devices). This manual describes the installation and use of both components.

The PRIMUX Host Adapter and User Station are interconnected with either CAT5, CAT5e, CAT 6 Unshielded Twisted Pair (UTP) or CAT5, CAT5e Shielded Twisted Pair (STP) cable.

The PRIMUX Series CAT5 KVM System is easy to install and has been thoroughly tested to insure reliable performance. Through the use of CAT5, CAT5e, or CAT6 cable it is possible to economically increase the flexibility of a computer system. Here are some of the features and ways this can benefit any workplace:

- Allows the placement of a monitor, keyboard, and mouse in a location where only these parts are needed without having the CPU there too, taking up valuable space
- Rugged metal enclosure allows user to set the monitor directly on top
- Allows any PS/2, USB, or SUN CPU to be accessed by a remote user (up to 1000 feet away)
- Additional RJ45 port on the Host Adapter allows the daisy-chaining of up to 64 Host Adapters providing user access to up to 64 CPUs
- Control up to 64 CPUs from one keyboard, mouse, and monitor without "spaghetti" wiring
- Compatible with XGA, VGA, and SVGA systems
- Compatible with all PS/2 and USB keyboards and mice
- Provides crisp and clear resolution up to 1024x768 /60Hz @ 1000 feet (using CAT5 UTP cable- see pg 37 for details)
- Video quality adjustment is automatic providing optimum image quality
- Allows for future expansion- buy what is needed now, add more later as desired

### Supported Operating Systems

The PRIMUX is compatible with:

- |         |         |                   |                                 |
|---------|---------|-------------------|---------------------------------|
| • Win9x | • WinMe | • Solaris         | • Windows Server 2000,2003,2008 |
| • WinNT | • WinXP | • MAC OS9.x , OSX | • FREE BSD                      |
| • Win2K | • Vista | • Linux           |                                 |

## Materials

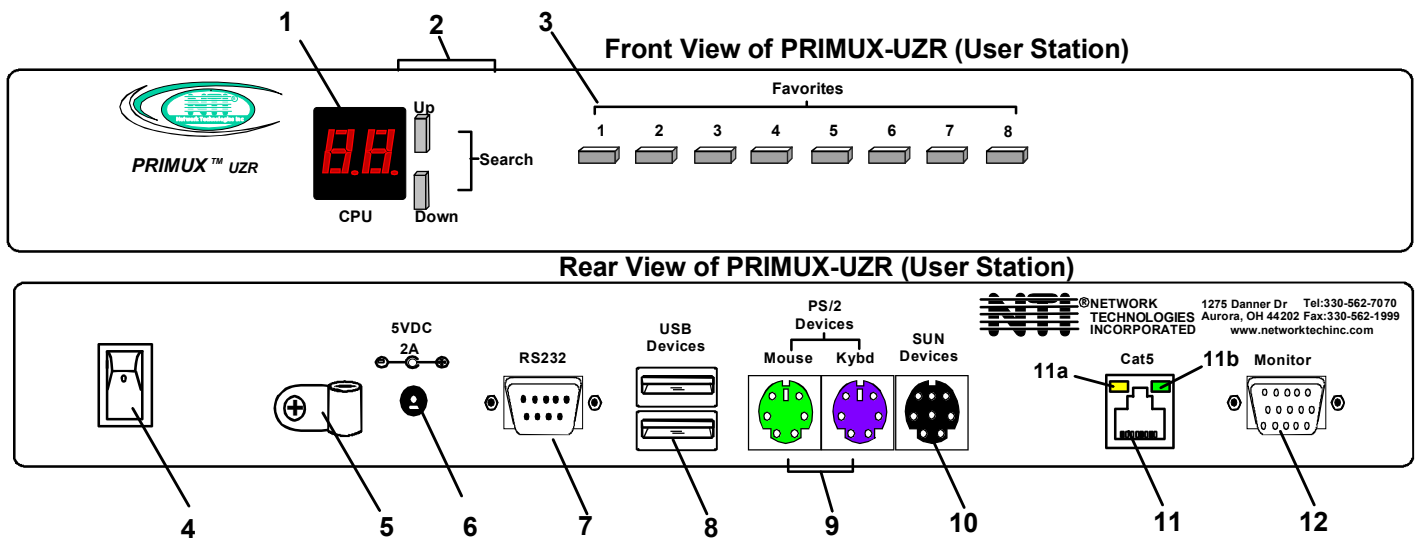
### Materials Supplied with this kit:

- NTI PRIMUX-UZR User Station
- 120VAC or 240VAC @ 50 or 60Hz -5VDC/2A AC Adapter
- Line cord, country specific
- Terminating Plug (for last Host Adapter in chain- see pages 6 and 9 for details)
- PRIMUX CD w/ Owner's Manual and Quick Start Guide (pdf files)
- Quick Start Guide (Printed)

### Materials *Not* Supplied, but **REQUIRED**:

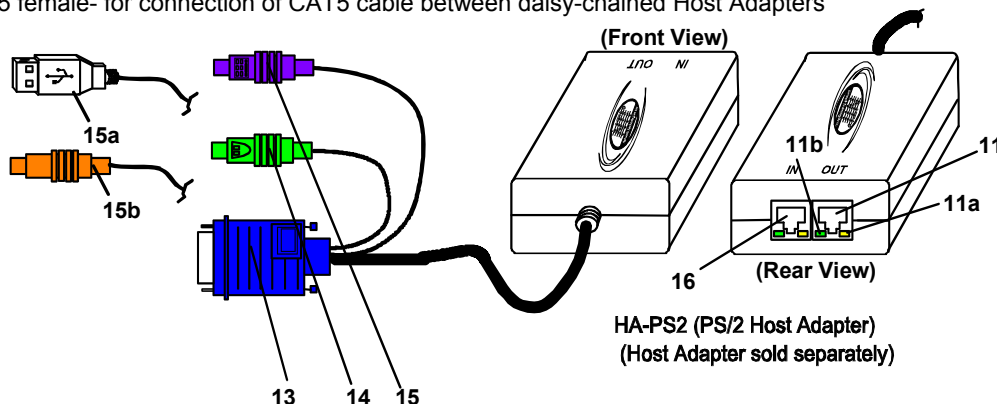
- NTI HA-PS2 PS/2 Host Adapter / HA-USB USB Host Adapter / HA-SUN Host Adapter (see pg. 4)
- CAT5/5e/6 unshielded twisted-pair cable(s) terminated with RJ45 connectors wired straight thru- pin 1 to pin 1, etc. (see pg. 37 for proper EIA/TIA 568B wiring method)
- A null modem cable will be required for future software updates (see specification on page 38).

*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](http://www.networktechinc.com).*



## FEATURES AND FUNCTIONS

1. **LED Display**- for visual indication of which Host Adapter the user is connected to
2. **Search Buttons**- to enable manual search for desired Host Adapter connection
3. **Favorite Buttons**- programmable buttons to quick selection of specific Host Adapters
4. **Power Switch**- to turn the User Station ON and OFF
5. **Cable Clamp**- to secure the cable from the AC adapter
6. **5VDC 2A**- 3.5mm power jack- for connection of AC adapter
7. **RS232**- DB9 male- serial communication port for updating firmware
8. **USB Devices**- USB Type A female- for connection of USB user devices (keyboard and mouse)
9. **PS/2 Devices**- green and purple 6mD females- for connection of PS/2 type mouse (green) and keyboard (purple)
10. **SUN Devices**- black 8mD female- for connection of SUN mouse and keyboard (**not supported at this time**)
11. **Cat5** - RJ45 female- for connection of CAT5 cable between Host Adapter and User Station
  - 11a. Yellow LED- power indicator- illuminates when power has been supplied to the unit
  - 11b. Green LED- traffic indicator- illuminates when there is communication between the User Station and Host Adapters.
12. **Monitor**- for connecting the video monitor
13. **Video Connector**- blue 15HD male- for connecting to the video port on the CPU
14. **Mouse Connector**- green male 6 miniDIN (HA-PS2 only)- for connecting to the mouse port on a PS2 CPU
15. **Keyboard Connector**- purple male 6 miniDIN (HA-PS2 only)- for connecting to the keyboard port on a PS2 CPU
- 15a. **Device Connector**- male USB Type A (HA-USB only)- for connecting to a device port on a USB CPU
- 15b. **Device Connector**- orange male 8 miniDIN (HA-SUN only) - for connecting to the device port on a SUN CPU
16. **Cat5**- RJ45 female- for connection of CAT5 cable between daisy-chained Host Adapters



## PREPARATION FOR INSTALLATION

- Choose a location for the User Station such that cables from the keyboard, mouse, and monitor will reach it.
- The CAT5 cables must be run between the locations where the Host Adapter will be connected and User Station is positioned. Be careful to route the cables away from any sources of magnetic fields or electrical interference that might reduce the quality of the signal (i.e. AC motors, welding equipment, etc.) .

**Note: The installer must ensure that all CAT5 cable between the Host Adapter and User Station and between each Host Adapter (if more than one) is of the straight-through type and not crossed.**

- A 120V or 240V electrical supply must be provided close enough to the position of the User Station to plug the AC adapter into.
- All cables should be installed such that they do not cause stress on their connections to the equipment. Extended lengths of cable hanging from a connection may interfere with the quality of that connection. Secure cables as needed to minimize this.
- Properly shut down and disconnect the power from the CPU and devices to be extended. If other equipment is involved whose connections are being interrupted, be sure to refer to the instruction manuals for that equipment for proper disconnection and re-connection procedures before proceeding.

## Definitions

**Master ID** A number automatically assigned by the User Station to a PRIMUX daisy-chain. It is used to identify Host Adapters that have been configured by the User Station. The Master ID is also used to distinguish between different User Stations and their series of Host Adapters.

**Unique ID** Number identifying a Host Adapter to the User Station.

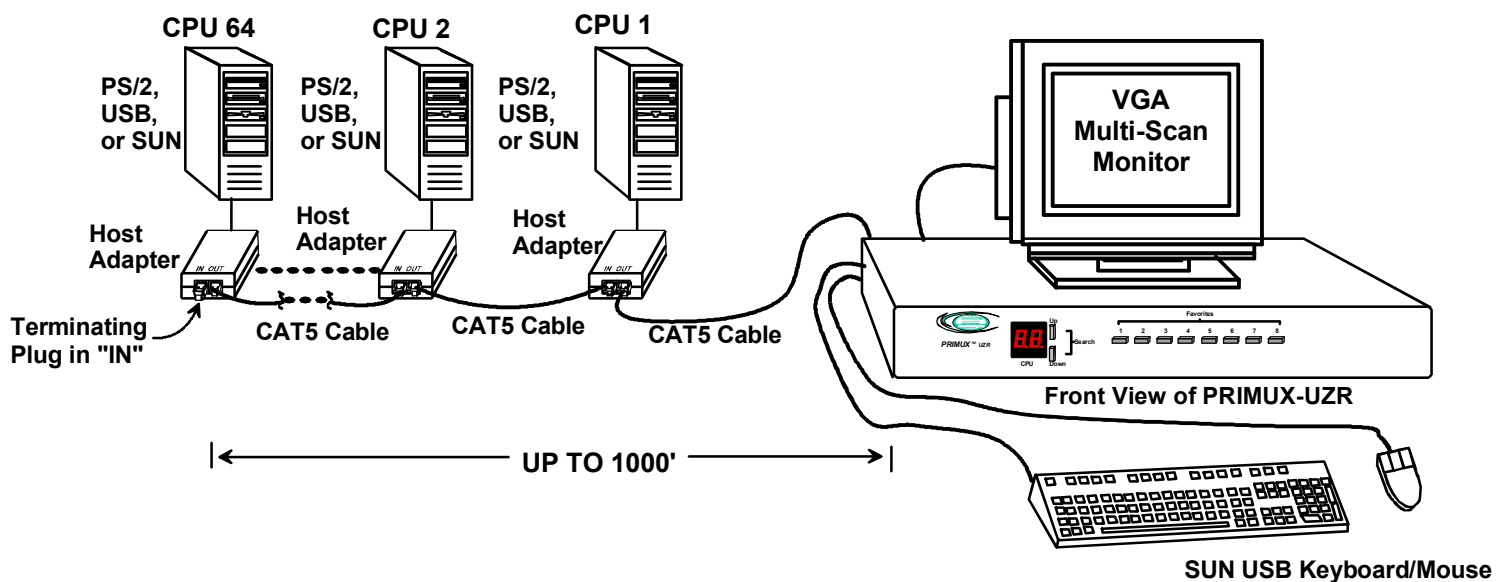


Figure 1- Typical Application



## INSTALLATION

### The Host Adapter

The PRIMUX HA Host Adapter supports PS/2, SUN, and USB CPUs (see chart below). Host Adapters may be connected to or removed from a CPU without powering down the CPU, provided the CPU and operating system supports device hot plugging. (Operating systems known to support hot-plugging include Windows 2000 SP3 and higher, Windows XP, Windows Vista and Linux. )

CPU TYPE	HOST ADAPTER MODEL
PS/2	HA-PS2
SUN	HA-SUN
USB	HA-USB

### Installation of a PS/2 CPU

Plug the cables of the HA-PS2 Host Adapter into the back of the CPU after disconnecting the power cord from the CPU. (See Figure 2.)

- Connect the green 6 pin miniDIN cable end with the mouse symbol on it to the mouse port on the back of the CPU.
- Connect the purple 6 pin miniDIN cable end with the keyboard symbol on it to the keyboard port on the back of the CPU.
- Connect the blue 15HD cable end to the VGA port on the back of the CPU.



PS/2 Mouse



PS/2 Keyboard

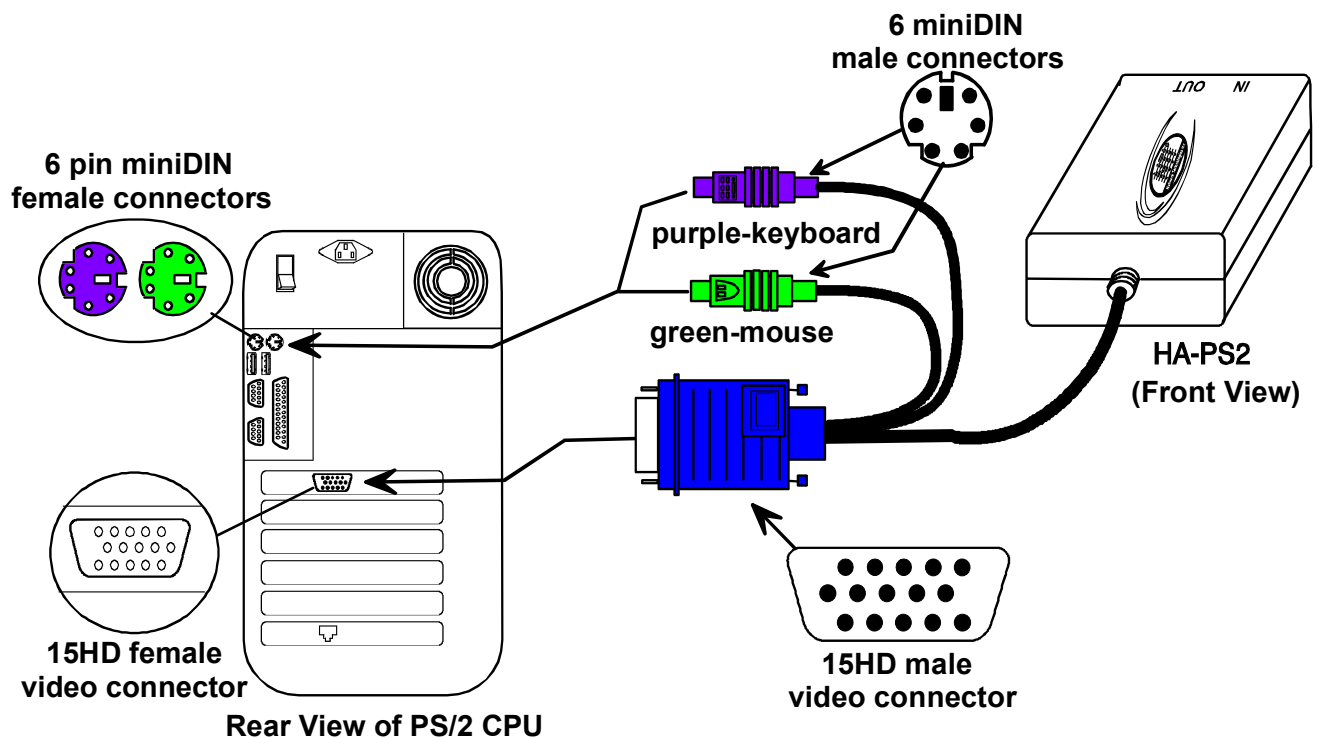


Figure 2- Connect a HA-PS2 Host Adapter to a PS/2 CPU

## Installation of a USB CPU

Plug the cables of the HA-USB Host Adapter into the back of the CPU after disconnecting the power cord from the CPU.  
(See Figure 3.)

- Connect the cable with the USB Type A male cable end on it to a USB Type A female port on the back of the CPU.
- Connect the blue 15HD cable end to the video connector on the back of the CPU.

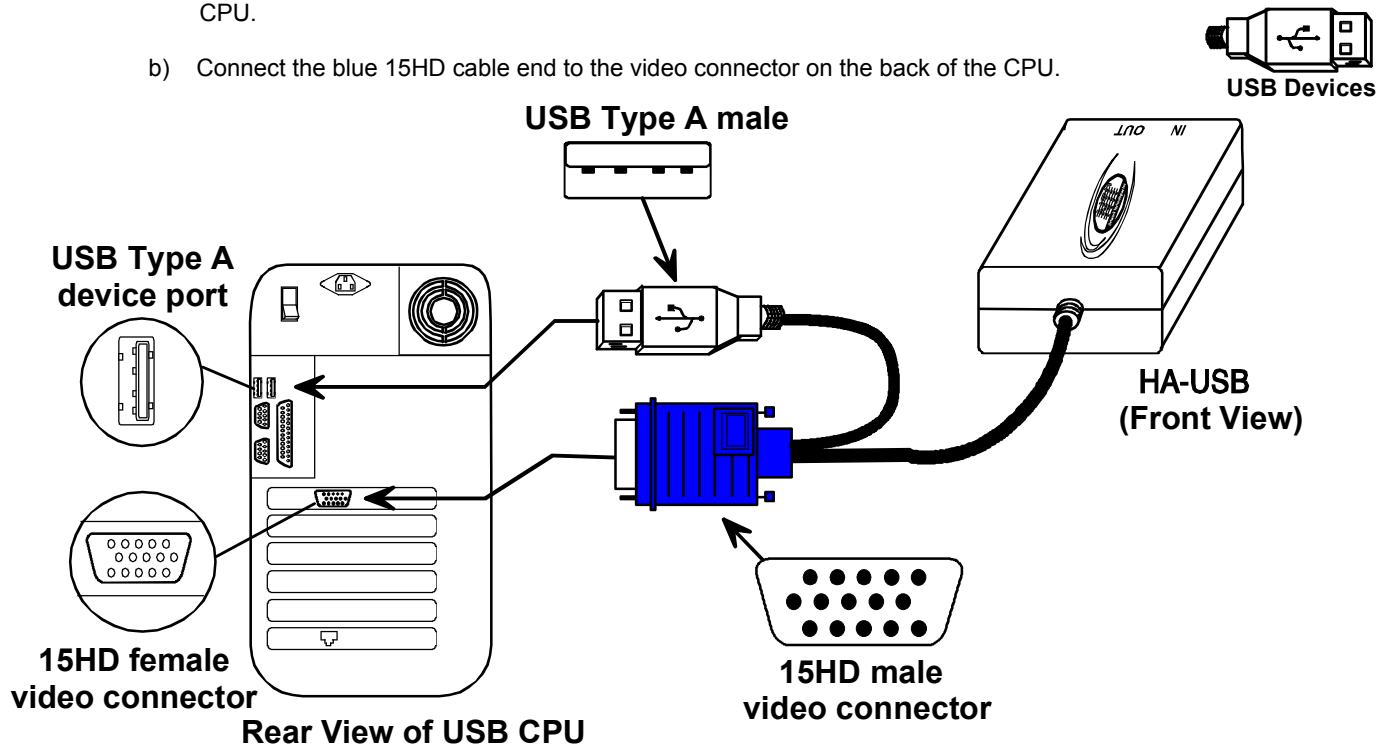


Figure 3- Connect a HA-USB Host Adapter to a USB CPU

## Installation of a SUN CPU

Plug the cables of the HA-SUN Host Adapter into the back of the CPU after disconnecting the power cord from the CPU.  
(See Figure 4.)

- Connect the orange 8 pin miniDIN cable end on it to the devices port on the back of the CPU.
- Connect the blue 15HD cable end to the VGA port on the back of the CPU.

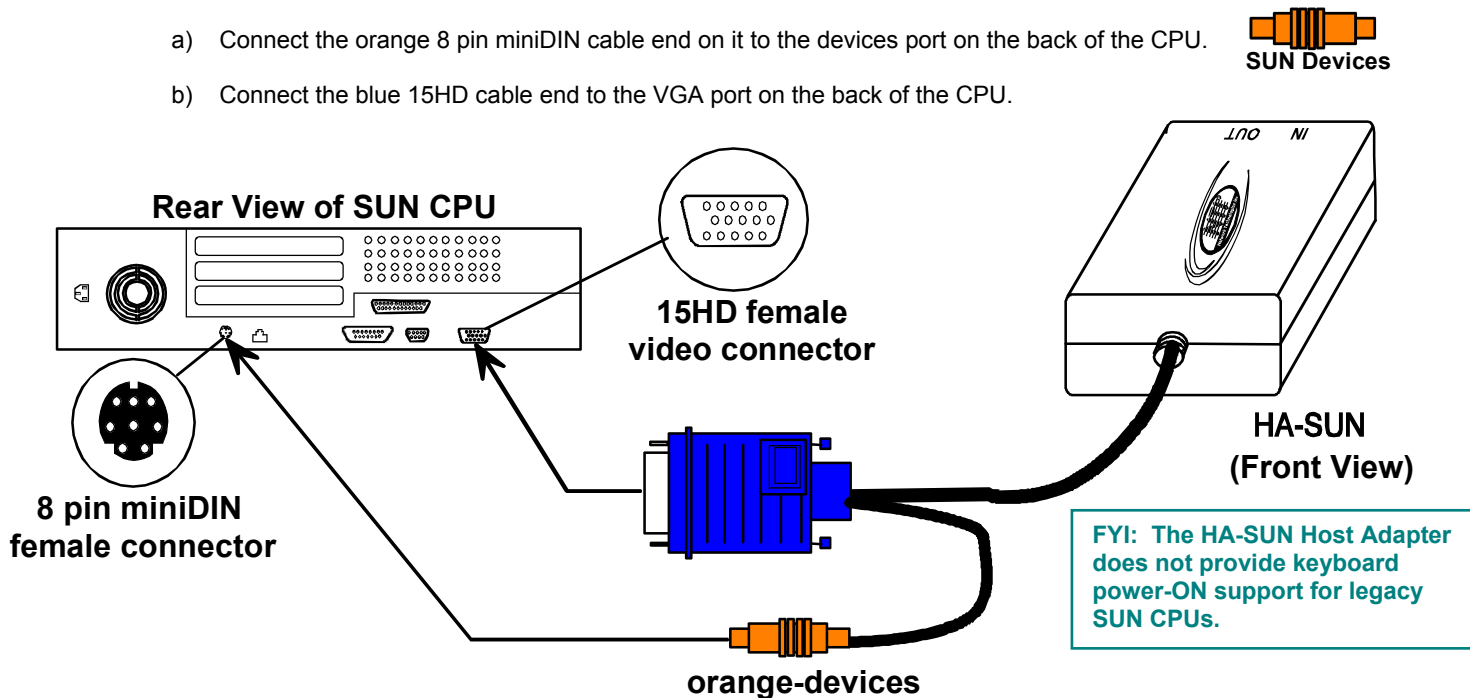


Figure 4- Connect a HA-SUN Host Adapter to a SUN CPU

## Connecting the CAT5 cable to the Host Adapter

Connect CAT5 cable to the “OUT” port on the Host Adapter. (See Figure 5.) When properly inserted the cable end should snap into place. Also be sure to insert the Terminating Plug into the “IN” port on the Host Adapter if this is the only Host Adapter in the daisy-chain. Otherwise, see “Daisy-Chained Host Adapters” on page 9 to add more Host Adapters to the daisy-chain.



**WARNING:** Never connect the PRIMUX Host Adapter to an Ethernet card, Ethernet router, hub or switch or other RJ45 connector of an Ethernet device. Damage to devices connected to the Ethernet may result.

**Note:** The installer must ensure that all CAT5 cables between the Host Adapter and User Station are of the straight-through type and not crossed.

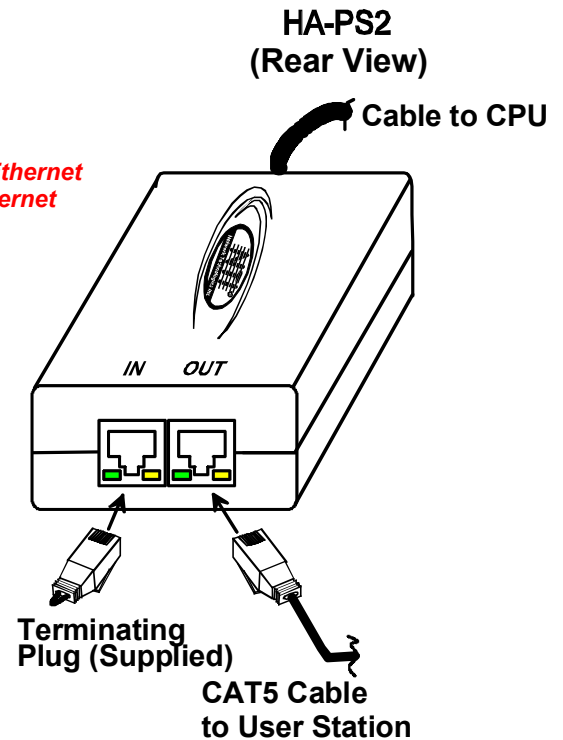


Figure 5- Connect CAT5 cable to Host Adapter

## The User Station

The PRIMUX-UZR User Station can be used with either PS/2 devices or USB devices.

**Note:** Both devices must be either PS/2 or USB. There cannot be one of each type connected to the User Station.

### Installation with PS/2 devices

1. Position the User Station such that the CAT5 cable, the monitor cable, device cables, and the AC adapter power connector can each reach the User Station without cable strain.
2. Connect the monitor cable to the female 15HD video connector labeled “Monitor” on the User Station.
3. Connect the PS/2 device(s) to the User Station (see Figure 6).
  - a. Connect the keyboard to the purple female 6 pin miniDIN connector labeled “Kybd” on the User Station.
  - b. Connect the mouse to the green female 6 pin miniDIN connector labeled “Mouse” on the User Station.

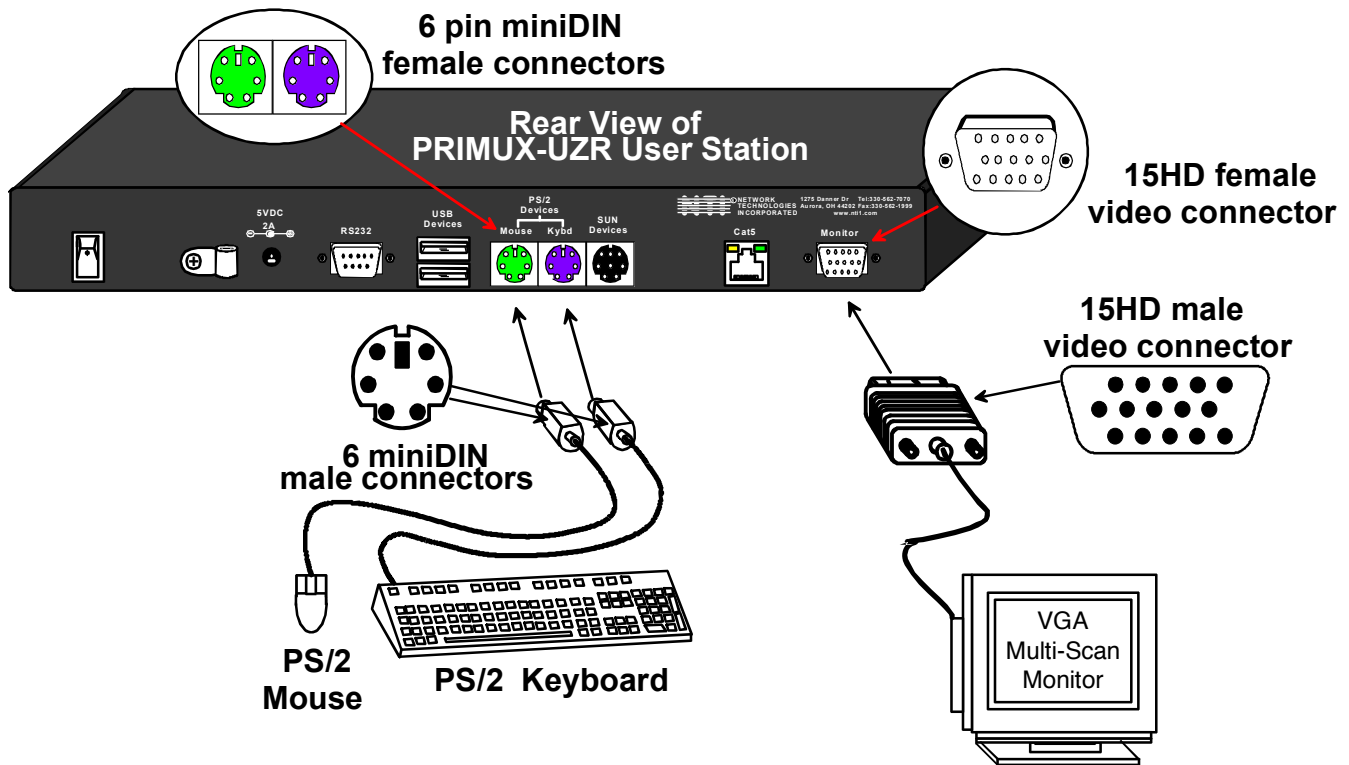


Figure 6- Connect the Extended PS/2 components to the User Station

### Installation with USB devices

1. Position the User Station such that the CAT5 cable, the monitor cable, device cables, and the AC adapter power connector can each reach the User Station without cable strain.
2. Connect the monitor cable to the female 15HD video connector labeled “Monitor” on the User Station.
3. Connect the USB device(s) to the User Station (see Figure 7).

  - a. Connect the keyboard to a USB Type A female connector on the User Station.
  - b. Connect the mouse to the other USB Type A female connector on the User Station.

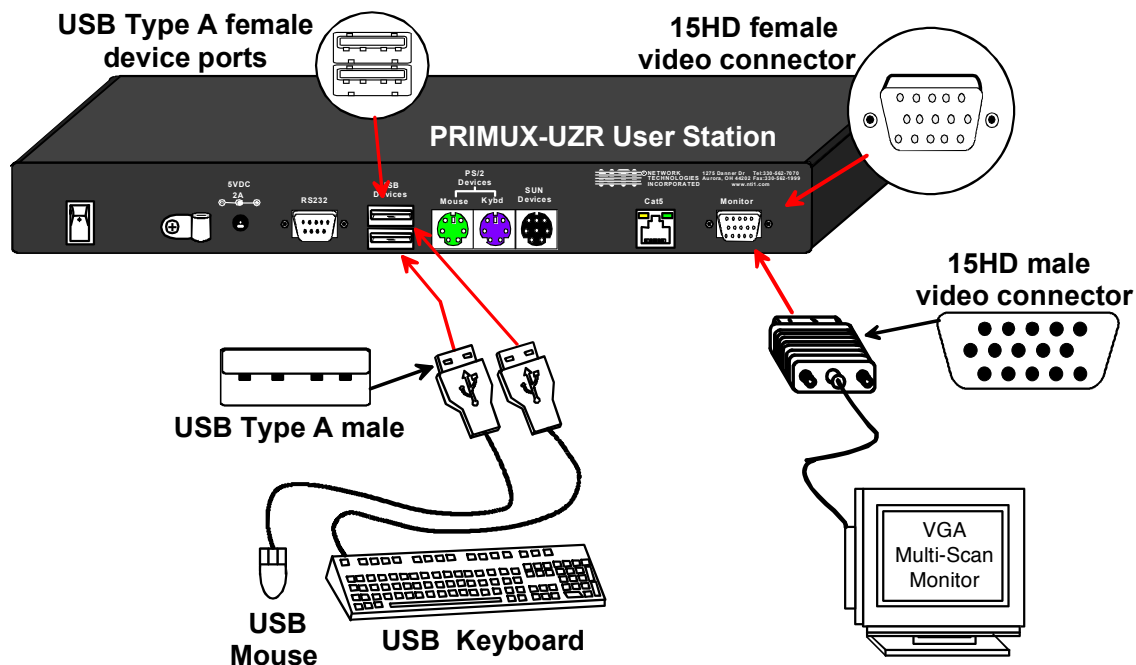


Figure 7- Connect extended USB components to the User Station

## Connecting the CAT5 cable to the User Station

Make sure the CAT5 cable has been installed in accordance with the "Preparation for Installation" instructions on page 3. Connect the CAT5 cable to the RJ45 connector labeled "Cat 5" on the User Station. (See Figure 8.) When properly inserted the CAT5 cable end should snap into place.



**WARNING:** Never connect the PRIMUX-UZR User Station to an Ethernet card, Ethernet router, hub or switch or other RJ45 connector of an Ethernet device. Damage to devices connected to the Ethernet may result.

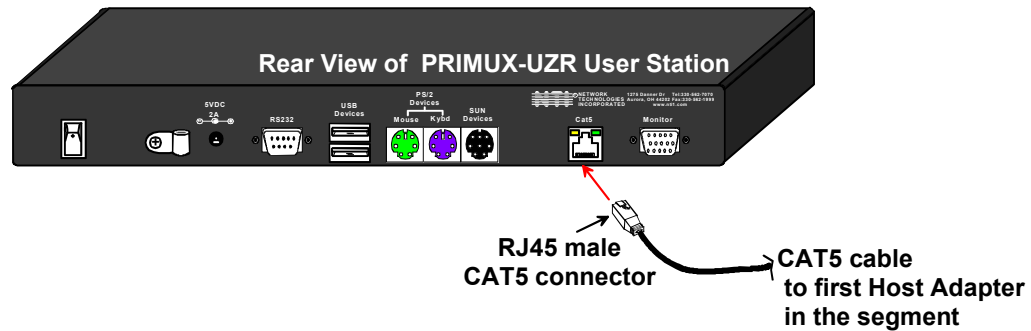


Figure 8- Connect CAT5 cable to User Station

## Power Up for the first time

**Note:** The user devices, monitor, and CAT5 cable should already be connected before powering up the User Station.

1. Connect the AC adapter power connector to the 5VDC port on the User Station (see Figure 9). Plug the AC adapter into a power outlet. The yellow LED on the RJ45 connector of the User Station should illuminate, indicating that a proper power connection has been made to it.
2. Re-connect the power cord to the CPU.

**FYI:** The Host Adapter is powered by the CPU.

3. Power up the monitor.

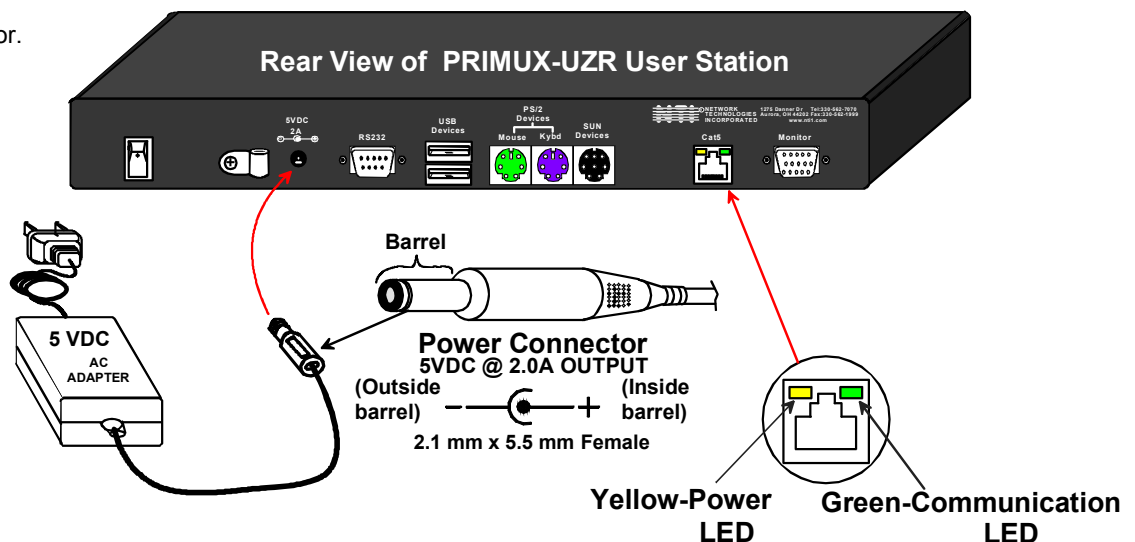


Figure 9- Connect the AC adapter to the User Station

4. With the User Station and Host Adapter connected via CAT5 cable, refer to "Using the PRIMUX" on page 10.

**FYI:** The green LED on each RJ45 connector will illuminate anytime data traffic is passing between the Host Adapter and User Station, indicating proper CAT5 cable connection and communication. (See Fig. 9)

## Daisy-Chained Host Adapters

Up to 64 Host Adapters can be connected in a daisy-chain to create a series of CPUs that are controlled by a single user from a User Station. The first Host Adapter is connected to the User Station via the "OUT" port. The additional Host Adapters in the chain will have CAT5 cable going from their "OUT" port to another Host Adapter's "IN" port to enable communications between the user and each CPU in the system, as shown in Figure 10. A Terminating Plug must be installed in the "IN" port of the last Host Adapter in the daisy-chain.

**Note:** The installer must ensure that all CAT5 cable terminations between each Host Adapter are of the straight-through type (pin 1 to pin 1, pin 2 to pin 2, etc.) and not crossover.

**Note:** The total length of the CAT5 cable from the User Station to the last Host Adapter in the daisy-chain must not exceed 1000'.

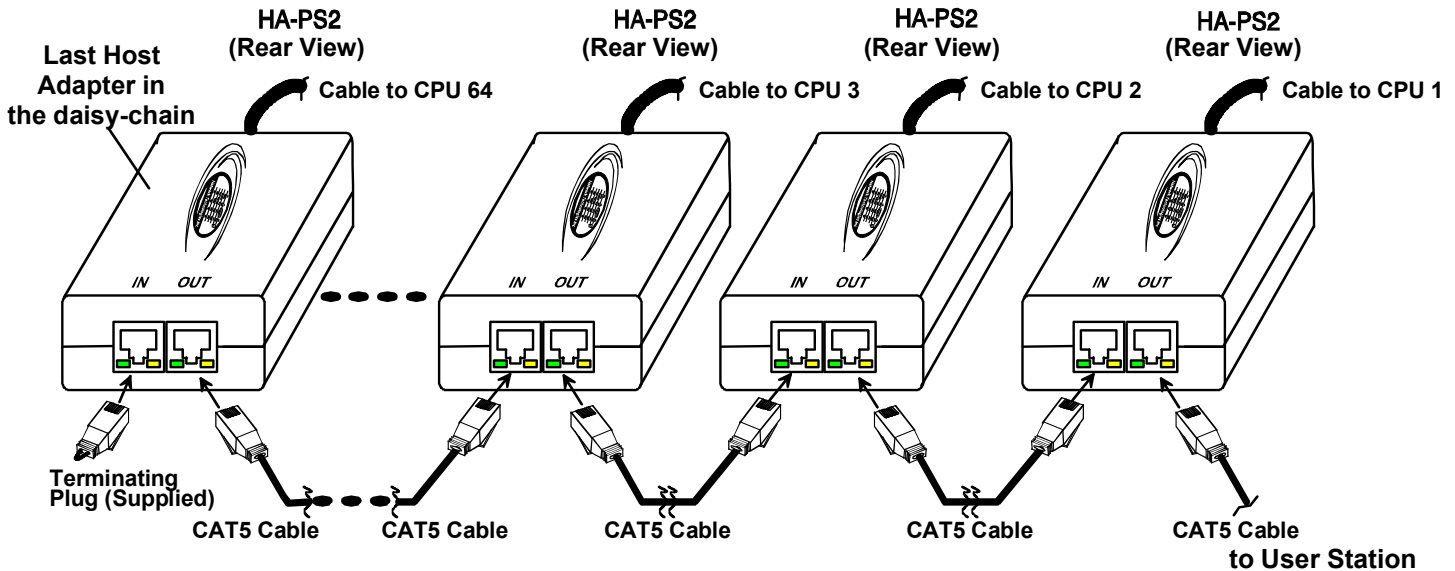


Figure 10- Daisy-chained Host Adapters

### Adding a Host Adapter to the Daisy-Chain

**FYI:** A Host Adapter can be added to the last Host Adapter in the chain, or between two existing Host Adapters.

When adding a Host Adapter to a daisy-chain, whether at the end, or inside the chain, the administrator must follow some simple steps:

1. Make sure the Host Adapter being connected to a CPU is the proper type for the CPU.

CPU TYPE	HOST ADAPTER MODEL
PS/2	HA-PS2
USB	HA-USB
SUN	HA-SUN

2. Determine what name the Host Adapter will be identified as in the Host Adapter list (should be unique to all other known hosts in the daisy-chain).
3. Follow the installation instruction on page 4 for Host Adapters and above for Daisy-Chained Host Adapters.
4. Once the installation procedure is complete the connected CPU must be powered ON.

**Note:** The connected CPU must be powered ON at least once in order for the Host Adapter to be identified and registered by the User Station as indicated in the Command Mode OSD list (page 14).

5. The new Host Adapter will be auto discovered by the User Station. If the Host Adapter is new (unused), it will identify itself as "(NEW PS2 HA)", "(NEW USB HA)", or "(NEW SUN HA)".

**Note:** If the Host Adapter has been previously used, it will still have the name it was issued. To reset the Host Adapter to factory settings, the administrator must use "Reset Host Data" (page 24).

6. The administrator should assign a unique name to the Host Adapter (see page 24)
7. All users will have access to the new Host Adapter unless the Administrator configures the access otherwise (see page 26).
8. Once access controls have been set, the administrator should verify the security access to the new Host Adapter.

## USING THE PRIMUX

The PRIMUX CAT5 KVM System is designed to enable a user to control as many as 64 PS/2, USB, and SUN CPUs (any mixture of each) from a single User Station as much as 1000 feet from the farthest CPU. Control is achieved through the use of either the keypad on the front panel or On Screen Display (OSD) Menus. Access to one or more CPUs is determined by the security configuration of the PRIMUX as set by the administrator. Once user access limitations are defined, the user can select which CPU to connect to using either the OSD menu, the "Search" buttons on the front of the User Station, or quickly make a selection after programming the "Favorite" buttons (page 12).

### Hot Plugging

The PRIMUX-UZR is designed to emulate the presence of a mouse and keyboard whenever the PRIMUX-UZR is powered ON. As a result, the keyboard and mouse may be hot plugged from the User Station at any time without causing a CPU error.

**Note: Device types cannot be changed when hot-plugging. If the device type is changed (i.e. from PS/2 to USB), the PRIMUX-UZR must be power cycled (turned OFF, then ON again) for the device to work properly.**

**Note: Both devices must be either PS/2 or USB. There cannot be one of each type connected to the User Station.**

The PRIMUX Host Adapter may also be hot plugged to a CPU, provided the CPU and the operating system supports device hot-plugging. (Operating systems known to support hot plugging include Windows 2000 SP3 and higher, Windows XP, Windows Vista, Linux, and Windows Server 2000, 2003 and 2008.)

**Note: When hot plugging the mouse and keyboard cables into a PS/2 CPU, be sure to connect the mouse cable first, then the keyboard cable. Failure to connect in this order may cause the mouse to not be recognized by the CPU.**

CAT5 cables can be hot plugged. If the CAT5 cable is disconnected, the User Station will continue to monitor all Host Adapters in the Host Adapter List.

**FYI: Once a Host Adapter is selected by the User Station it will stay connected or attempt to connect forever if the selected Host Adapter is powered OFF or the CAT5 cable is disconnected. To properly remove a Host Adapter, the user must delete it from the Host Adapter List (page 24).**

Hot plugging a Host Adapter to an NTI VOPEX splitter is not recommended. If communication is lost, send a "Reset Host" command (page 24) from the User Station to restore communication.

### Initial Startup

The initial startup of the PRIMUX can be done after installing the User Station and one or more Host Adapters as described on pages 3-6. When first applying power, the user named "NEWUSER1" will be automatically logged-in and the Command Mode menu will appear. By default, access is given to all Host Adapters and their connected CPUs, and Scan Mode will scan all connected CPUs.

### User Rights vs. Administrator Rights

Before continuing, the user should consider what action is going to be taken. The Administrator has full control over the functions of the PRIMUX CAT5 KVM system, while the User has limited control.

#### Administrator Rights Include:

- Change the Administrator Password
- Assign, edit, and remove user names and passwords
- Define user access rights to CPUs in the daisy-chain
- Add and configuring Host Adapters in the daisy-chain
- Configure operating parameters of the User Station
- Update DDC information between the monitor and CPUs
- The ability to connect the User Station's keyboard, mouse, and monitor to any CPU
- The ability to enable/disable Scan Mode
- The ability to change the sorting method of Host Adapters (sort by index number or alphabetically)

**FYI: Users can be given full administrative access rights by the administrator.**

#### User Rights Include:

- The ability to connect the Users Station's keyboard, mouse, and monitor to CPUs (only accessible CPUs as determined by the administrator).
- The ability to enable/disable Scan Mode
- The ability to change the sorting method of Host Adapters (sort by index number or alphabetically)

## **Administrator Login and Password**

To login as the administrator, first press <L> to logout as **NEWUSER1** and the login splash screen will appear. While holding down the <Shift> key, enter an administrator name and default password:

**administrator names = <ROOT> or <ADMINISTRATOR> (either can be used)**  
**administrator password = <NTI>**

**Note: User names and passwords are case sensitive.**

With a successful login, the administrator can setup additional users (see page 25).

**FYI: The User Station can be configured to Autologon a specific user (page 30) with each User Station power up or have a Login splash screen appear for the user to login to the User Station. The administrator can also configure the User Station to autoconnect a user to a specific Host Adapter at logon by configuring the Logon Host and Action on Logon in the "Edit User" menu (page 26). For more on setting up users, see page 26.**

## **Setup Host Adapter(s)**

No initial configuration of the Host Adapter is required for it to be identified by the User Station in the daisy-chain. Once discovered, it appears in the system, and the User Station assigns the Host Adapter its Unique ID value. This value is used to

- set its identity for the security allow/deny access attribute (page 26)
- set its identity in the list of Host Adapters/CPU's that can be scanned in Scan Mode (page 19)
- select the order of Host Adapters in numeric mode

**Note: In order for the User Station to identify a Host Adapter and include a CPU in the OSD list of CPU's connected (page 14), the CPU must be powered-ON at least once. After the first powered-ON connection, the User Station will indicate the status of the connected CPU, whether it is powered-ON or not.**

**Note: Any configuration changes made to the Host Adapter must be made and saved while the connected CPU is powered-ON.**

The Unique ID is stored in the Host Adapter and saved there, even if power is removed.

## **Quick Connect**

From the Command Mode menu, to make connection to any Host Adapter in the daisy-chain,  
press <G> followed by the index number (see page 14) of the desired Host Adapter,  
press <Enter> to select it,  
press <Enter> again to connect to it.

**-OR-**

use the mouse to highlight the desired Host Adapter to connect to and click on it to connect.

Press <X> or <Esc> to exit Command Mode and use the connected CPU connected to the selected Host Adapter.  
Press <Ctrl> + <`> to return to Command Mode (see page 14).

## **Change the Default Administrator Password**

Once the administrator is logged in, it is recommended that the administrator change the default administrator password.

**To change the administrator password:**

- Press **A** (Administration Menu) - **E** (Edit Menu) - **U** (Edit User Menu) - **P** (Change Root Password)
- Enter the current password (default is "NTI")
- Enter the new password (case sensitive, 16 characters maximum, alphanumeric)
- Press <Enter>
- Re-enter to confirm the new password
- Press <Enter> to finish, or <Tab> to enter the password again.

**Note: In the event the password is forgotten, contact NTI for instruction on how to reset the password to the default "NTI".**

**FYI: When the password is changed for user ROOT, it automatically changes for user ADMINISTRATOR as well.**

**Note: User names and passwords are case sensitive.**



## Standards of Operation

Throughout this manual, various standards of operation apply to the menus used to control and operate the PRIMUX.

- OSD menus can be navigated using the mouse, the up and down arrows on the keyboard, and the <Page Up>, <Page Down>, <Home>, <Tab> and <End> keys.
  - The up and down arrows increment/decrement one line item at a time
  - <Page Up> and <Page Down> increment/decrement by one page at a time
  - <Home> will jump to the beginning of the list
  - <Tab> will jump between selectable fields (on supported screens)
  - <End> will jump to the end of the list.
- Alphabetic and numeric characters can be typed in the OSD menu fields, as well as these additional characters: ! (exclamation point) , \* (asterisk) , ( , ) (left and right parenthesis) , - (dash) , \_ (underscore) , + (plus sign) , = (equal sign) , ; (semicolon) , : (colon) , " (quotation mark) , ' (apostrophe) , ? (question mark) , / (forward slash) , comma, and period .
- The scroll bar in a list can be used by clicking on the corresponding up and down arrow above and below the scroll bar.
- The mouse wheel may be used to move the selection bar
- The <Shift> key must be used to enter an uppercase letter within all OSD menus.
- Functions that are "Administrator Only" are also available to users having administrative rights (see page 26).
- Placing the mouse over a listed Host Adapter highlighting the listed item with a blackened background "selects" the Host Adapter. Clicking on it while in Command Mode will connect to that Host Adapter.
- Available functions will have white characters with one red character. The red character indicates what corresponding keyboard character is associated with that function. The background of available functions will become green when the mouse pointer is positioned over the function. Functions that are not available will be transparent.
- When selecting a function spelled with a red letter, press the keyboard key corresponding with that letter on the keyboard or use the mouse to select the function. Red letter keys are NOT case sensitive.
- When "+" is shown between keystrokes, it indicates a chorded sequence (press and hold the keys consecutively until all keys in the sequence are pressed). I.e. <Ctrl>+<'> is a chorded sequence to enter Command Mode.
- When "-" is shown between keystrokes, it indicates to press the keys consecutively (press and release one at a time)
- To exit (and step back 1 menu) from any menu, press <Esc> or <X> on the keyboard or click on "Esc" in the menu.
- Press <F10> from any menu to return directly to the Command Mode menu
- Alphabetic Keys pressed to navigate OSD menus can be upper or lowercase.

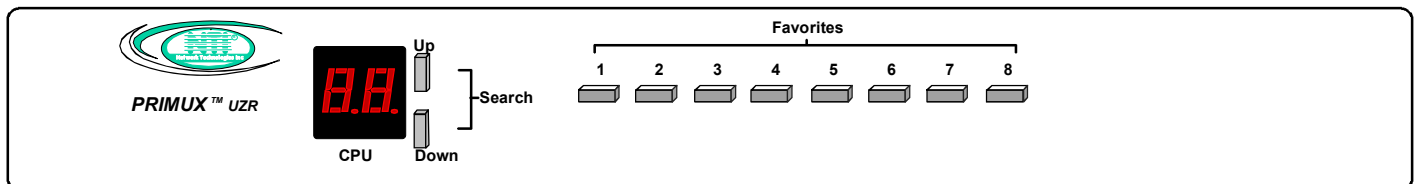


Figure 11- PRIMUX-UZR front panel

## Keypad Control

The keypad on the front panel of the PRIMUX User Station enables a user to quickly set the User Station to connect to the desired CPU. Two seven-segment LEDs illuminate to show the index number of the Host Adapter the user is connected to. The Up and Down buttons enable the user to search for the desired CPU. The Favorite buttons, 1-8, can be programmed for quick selection of the most commonly connected CPUs (See Figure 11). By default, the Favorite buttons 1-8 are pre-programmed to connect to Host Adapters 1-8.

### To program a Favorite button,

- Use the Search buttons to select the desired Host Adapter index number to connect with (or use OSD Command Mode).
- With the index number in the LED display, press and hold the Favorite button to be associated with it for at least 2 seconds. The LED will blink when the selection is remembered and until the Favorite button is released.
- When this button is pressed and released, the User Station will immediately connect to the selected Host Adapter.
- Repeat for each Favorite button to be programmed.

**Note:** Favorite buttons are not available when PRIMUX is mounted in a RACKMUX-15/17-PRIMUX drawer.

## Security

The PRIMUX CAT5 KVM System is designed with security to prevent unauthorized use of the CPUs connected as determined by the administrator. Up to 16 users may be given access to the system, each with individual limitations of use. Only the administrator or user with administrative privileges can activate or deactivate the security features for each user. Finally, the administrator can set a maximum idle time value after which the current user will be logged out and the login splash screen displayed again. The current security status, idle time out, and scan dwell time are all saved and will be restored whenever power to the User Station is cycled OFF, then ON. To reset the administrator's password, call NTI and have the device serial number of the PRIMUX User Station available.

## Autologin

By default, the user account **"NEWUSER1"** has been configured to automatically login at power-up. The administrator may reconfigure the User Station to autologin a different user (page 30) or have a Login splash screen appear at power-up requiring a user to login, with or without a password. The autologin user uses CPUs listed in its Host Allow/Deny Access List as configured by the administrator (page 26). The autologin user can be configured to automatically connect to a CPU, or to open the Command Mode menu.

## Administrator Login

To access the OSD menu Command Mode from the keyboard press the <Ctrl> + <`> (accent/tilde key). (An additional alternate OSD key may be defined, see page 31.) Press <L> to logout as a user. The User Login screen will automatically appear on the monitor. In order to configure the PRIMUX (the PRIMUX must be powered ON), the administrator must login with a proper user name and password. While holding down the <Shift> key, enter the following;

**administrator names = <ROOT> or <ADMINISTRATOR> (either can be used)**  
**administrator password = <NTI>**

***FYI: The names for the administrator ("ROOT" and "ADMINISTRATOR") cannot be changed.***

***Note: User names and passwords are case sensitive.***

Once logged-in, follow the instructions on pages 29 or 27 for 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 (page 27) and the limitations of their use of the individual CPUs from within Administration Mode.

## User Login

The administrator may configure the User Station to require each user to login using a predefined password to gain access rights to CPUs and to the features in the OSD menus. Once logged in, the user may be directed to either a specific CPU (provided the CPU is powered ON), or to the OSD menu where the user can decide what action is to be taken. The initial action ("Action on Logon"- page 26) and whether or not to connect to a specific Host Adapter ("Logon Host"- page 26) will be configured by the administrator.

Once logged-in, a user can use the Command Mode functions described below and on page 14 to control the daisy-chain of CPUs within the limitations as determined by the administrator.

Function	Keystroke
Add a character to the user name/password	<b>A-Z, 0-9</b> Max. 16 characters
Remove previous character from the user name/password	<b>Backspace</b>
Tabs to the next field	<b>Tab</b>
Submit user name/password/data	<b>Enter</b>

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

**If the password submitted is correct, the user will either proceed to a CPU chosen by the administrator and operate in Normal Mode, or proceed to the Command Mode menu.**



Figure 12- Login splash screen

# User Access Functions

## Command Mode

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



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 Fig. 13) lists all Host Adapters by name and index number. Only 8 Host Adapters 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 first displayed, the first Host Adapter listed will be the Host Adapter the current user is connected to, followed by the next seven consecutively numbered Host Adapters. (Alternatively the list may be sorted alphabetically- see Settings Menu on page 16 to toggle sort method.) The names of accessible Host Adapters are displayed with white characters. The access rights for the user logged-in may not include all Host Adapters. Names of inaccessible Host Adapters are displayed in blue.

An arrow to the left of an index number in the list indicates the Host Adapter the user is currently connected to. From left to right, the columns display the following:

- Index Number
- Host Adapter Name
- Type of Host Adapter connected (PS2, SUN, or USB)
- CPU power status (where "p" means ON and "-" means OFF)

**The CPU connected to a Host Adapter must be powered-ON at least once while connected to the daisy-chain and powered-ON User Station in order to be included in the Command Mode list of CPUs.**

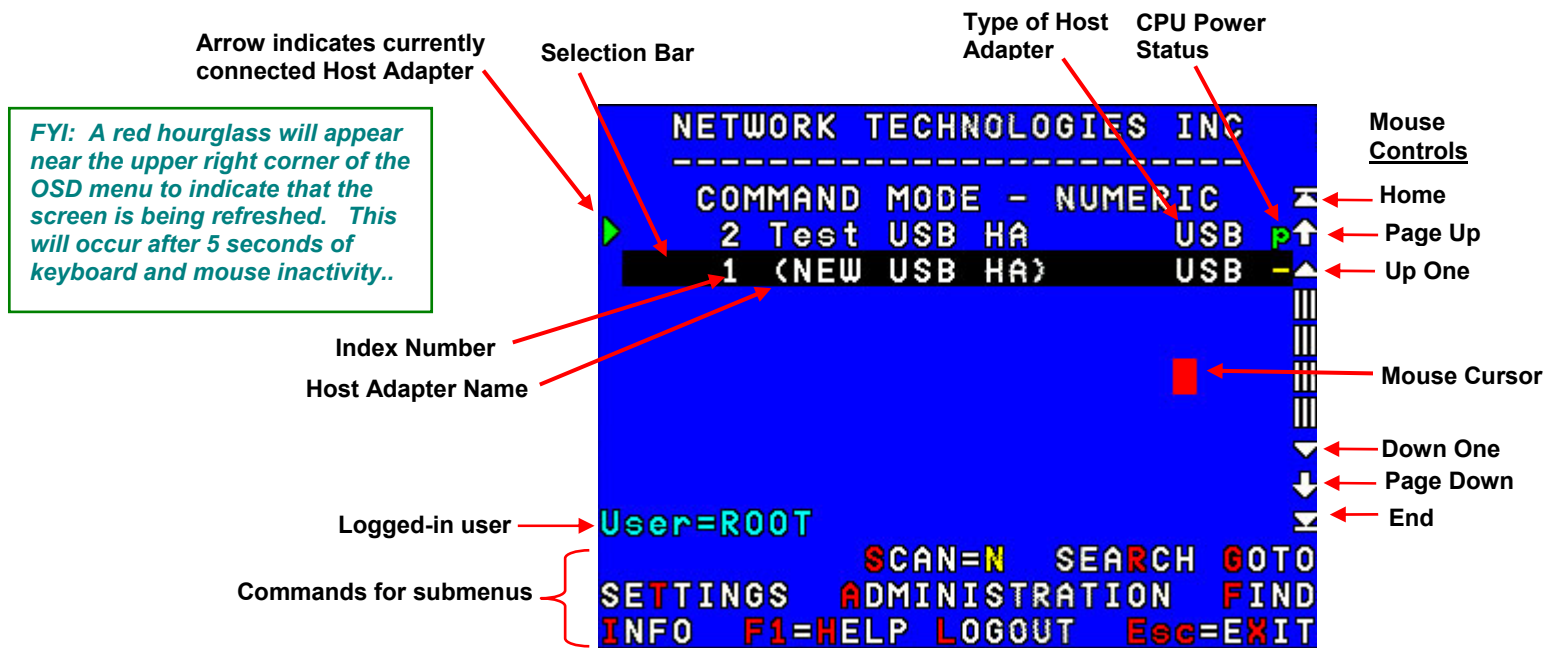


Figure 13- Command Mode main menu

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 Host Adapter	Up Arrow
Select the next Host Adapter	Down Arrow
Decreases the menu by 1 page (displays the previous 7 Host Adapters)	Page Up
Increases the menu by 1 page (displays the next 7 Host Adapters)	Page Down
Display first 8 Host Adapters and move selection bar to the first	Home
Display last 8 Host Adapters and move selection bar to the last	End
Press to toggle enable/disable Scan Mode	S

Function	Keystroke
Enter Settings Menu	<b>T</b>
Search- locate a Host Adapter (using name, comment, unique ID, index number)	<b>R</b>
Enter Administration Mode <b>(Administrator only- see page 22)</b>	<b>A</b>
Display info for the selected Host Adapter/User Station	<b>I</b>
Display Command Mode Help Menu	<b>H</b> or <b>F1</b>
Go to- select Host Adapter by index number	<b>G</b>
Find- select Host Adapter by name	<b>F</b>
Connect to the highlighted Host Adapter	<b>Enter</b> or <b>Spacebar</b>
Log Out the User/Administrator and disconnect from the Host Adapter (The login screen will appear)	<b>L</b>
Exit Command Mode without logging out	<b>X</b> or <b>Esc</b>

The mouse can also be used to control the User Station Command Mode.

- The scroll wheel can be used to scroll through the Host Adapters list.
- The mouse cursor can be moved to the any of the command fields where the user can click the left mouse button to select that function.
- Host Adapters listed on the screen can be selected by moving the cursor onto a Host Adapter.
- To connect to a Host Adapter, click on the selected Host Adapter.
- To move through the Host Adapter 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 enter Normal Mode and control the connected CPU. To exit Command Mode, press <Esc> <X> or click the “ESC” command on the screen with the mouse.**

## **Scan Mode**

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

Scan Mode enables the user to scan through selected Host Adapters (whether they are powered-ON or OFF) and to have full device control of the connected powered-ON Host Adapter. From the Settings menu (page 16) the user can edit the list of Host Adapters that can be scanned. A Host Adapter is skipped from the scan cycle if one of the following conditions is true:

- the Host Adapter is not in the scan list
- the user does not have access rights to the Host Adapter

When switching to a new Host Adapter the Host Adapter name is displayed by OSD 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- see page 20). When the user moves the mouse or types on the keyboard the scanned Host Adapter becomes active and scanning is stopped. The switch will resume scanning after a period of user inactivity determined by the scan dwell time. See Settings Menu (page 16) 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 Host Adapter.**

## **Normal Mode**

When the User Station is not in Command or Scan 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 PRIMUX switch.

## Settings Menu

To enter the Settings Menu, press <T> from the Command Mode Menu.



Figure 14- Settings menu

### Settings Menu

Function	Description	Keystroke
OSD Settings	Enables the user to reposition or resize the OSD menu on the monitor	O
Numeric Host List or Alphabetic Host List	Toggle between listing Host Adapters by reference number vs. alphabetically by name	I
Hosts for Scan	Choose CPUs to be scanned	S
Change Scan Dwell Time	Set length of time a user can dwell (no keyboard or mouse action) before PRIMUX will automatically scan to the next accessible CPU	T
Adjust Video Quality	Adjust the video quality to improve the screen image	V
Esc	Exit the Settings menu	X or Esc

*FYI: CPUs will only be scanned if the user has been allowed access to the CPU (See "Allow/Deny Access To Hosts" on page 26) by the administrator.*

*FYI: The "ROOT" user is not able to select CPUs to be scanned or not scanned. For the "ROOT" user, Scan Mode includes all Hosts.*



## Search Host Adapter

When the user presses <R> from the Command Mode menu, the Search Host Adapter screen will appear. This screen will assist in locating a specific Host Adapter using any of the following:

- N- Name- to search by name
- I - Index- to search by index number
- U- Unique ID- to search by the unique identification number
- C- Comment- to search by words in the comment field of the Host Adapter info screen



Figure 15- Search Host Adapter screen

To continue, press a letter, then type in the value of the chosen parameter. The <Up Arrow> or <Down Arrow> may also be used to move the cursor. Once the selection is highlighted, press <Enter> to select it.

Function	Keystroke	Value or Action
Name	<b>N</b>	type in the name of the Host Adapter, up to 16 characters, case sensitive
Index	<b>I</b>	type in the index number for the Host Adapter
Unique ID	<b>U</b>	type in the Unique ID value of the Host Adapter
Comment	<b>C</b>	type in the case sensitive comment, up to 32 characters.
Exit	<b>Esc</b>	To cancel the search and return to the Command Mode menu

**FYI:** If the wrong characters are entered, use the <Backspace> key to remove and edit characters to submit for search.

The first match to the characters submitted will be displayed as the parameter value is entered.

**Note:** Find and Search Modes are NOT case sensitive.

## Host Adapter Info

To display the selected Host Adapter Info screen, press <I> from the Command Mode menu.

**FYI:** If there are no Host Adapters configured, the information screen for the User Station will be displayed instead.

This screen displays the following information:

Item	Description
Name	The name of the Host Adapter
Comment	could be used to describe the location of the Host Adapter
Unique ID	a value unique to the Host Adapter
Master ID	the configuration's Master ID
Index	number used in the index of the Command Mode menu
Revision	ROM version, used to identify the Host Adapter firmware version installed
Type	PS2, SUN, or USB -Identifies the type of Host Adapter connected
CodeCRC	ROM CRC, use for identification Purposes
HostID	An internal serial number



Figure 16- Host Adapter Info screen

Function	Keystroke
Display User Station info screen	<b>S</b>
Display logged-in user info screen	<b>U</b>
Return to Command Mode	<b>X</b> or <b>Esc</b>

## User Station Info

To display the User Station information screen, press <**S**> from the Host Adapter Info screen (page 17). (From Command Mode press <**I**> - <**S**>.)

This screen displays the following information:

Item	Description
Name	The name of the User Station
Comment	This could be used to describe the location of the User Station
Unique ID	A value unique to the configuration
Master ID	The configuration's Master ID
AutoLogon	If set to a valid user number this user will be automatically logged on at power up
Type/Revision	Product type and ROM version, used for identification purposes
CodeCRC	ROM CRC, use for identification Purposes
UstatID	An internal serial number

NETWORK TECHNOLOGIES INC	
-----	
USER STATION INFO	
Name:	NTI USER STA
Comment:	NTI USER STATION
UniqueID:	1 (0x0001)
MasterID:	510 (0x01FE)
AutoLogon:	1
	NEWUSER1
Type/Rev:	USt/1.9
CodeCRC:	0x7FF5FC13
UstatID:	00000A88
Esc=EXIT	

Figure 17- User Station Info screen

Function	Keystroke
Return to the Host Adapter Info screen	<b>X</b> or <b>Esc</b>

## Help Pages

The Help pages can be viewed by pressing <**F1**> or <**H**> from the Command Mode menu. The Help pages (2) list a brief explanation of each of the commands to be used in the Command Mode menu.

- Press <**P**> or <**Page Down**> to view the second Help page.
- From the second Help page press <**P**> or <**Page Up**> to return to the first Help page.
- Press <**X**> or <**Esc**> or click on <Esc=EXIT> to return to the Command Mode menu.

NETWORK TECHNOLOGIES INC		NETWORK TECHNOLOGIES INC	
-----		-----	
COMMAND MODE HELP PAGE 1/2		COMMAND MODE HELP PAGE 2/2	
Down	= SELECT NEXT HOST	T	= ENTER SETTINGS MENU
Up	= SELECT PREVIOUS HOST	A	= ENTER ADMINISTRATION MENU
PgDn	= DISPLAY NEXT PAGE	S	= TOGGLE HOST SCAN MODE
PgUp	= DISPLAY PREVIOUS PAGE	F	= FIND HOST, BY NAME
Home	= SELECT FIRST HOST	R	= SEARCH HOST, BY CRITERIA
End	= SELECT LAST HOST	G	= FIND HOST, BY INDEX
Enter	= SWITCH TO SELECTION	L	= LOGOUT USER/ADMINISTRATOR
F1/H	= DISPLAY HELP PAGE	I	= DISPLAY HOST ADAPTER INFO
Esc/X	= EXIT CURRENT MODE		
P/PgDn=More help Esc=EXIT		P/PgUp=More help Esc=EXIT	

Figure 18- Help Pages for Command Mode

**OSD Settings Menu**

To enter the OSD Settings Menu, press <0> from the Settings Menu. (From the Command Mode menu press <T> - <0>.) Using the OSD Settings, the user can resize and reposition the OSD window on the monitor as desired.

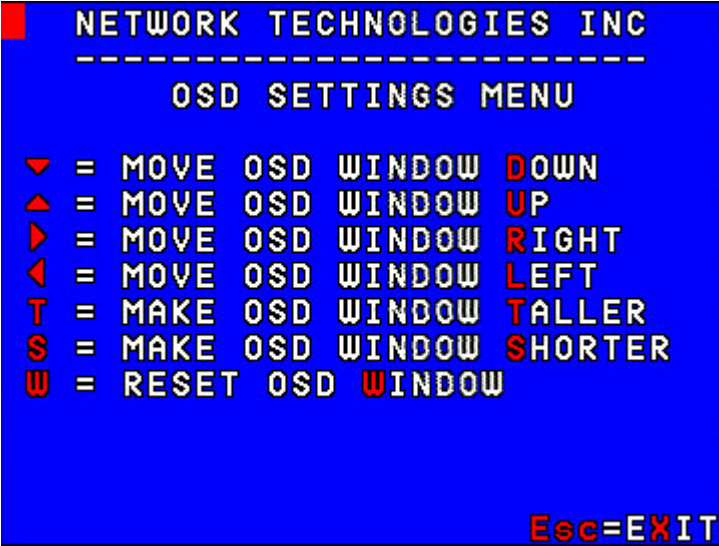


Figure 19- OSD Settings Menu

OSD Settings Menu

Function	Description	Keystroke
Move OSD Window Down	Moves the OSD window down on the monitor	D or ↓
Move OSD Window Up	Moves the OSD window up on the monitor	U or ↑
Move OSD Window Right	Moves the OSD window to the right on the monitor	R or →
Move OSD Window Left	Moves the OSD window to the left on the monitor	L or ←
Make OSD Window Taller	Makes the OSD window taller on the monitor	T
Make OSD Window Shorter	Makes the OSD window shorter on the monitor	S
Reset OSD Window	Resets the OSD to the default size and position	W
Esc	Exit the OSD Settings menu. Any changes are automatically saved.	X or Esc

**Host Adapters for Scan**

From the Settings Menu, press <S> for the list of Host Adapters to select for scanning. (From Command Mode press <T> - <S>)

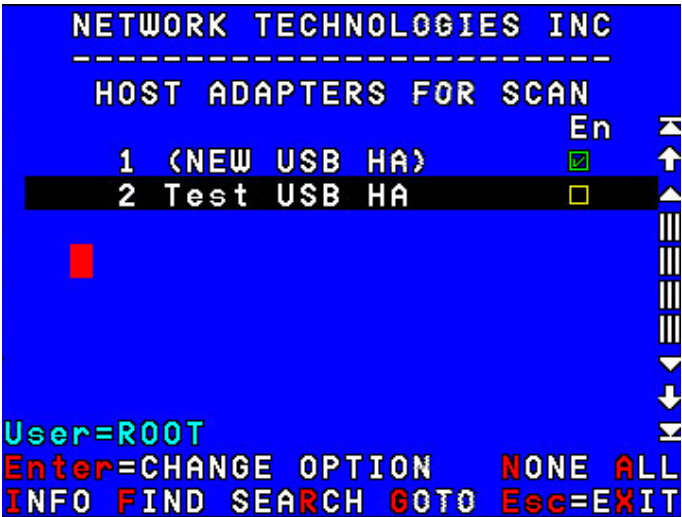


Figure 20- Host Adapters for Scan list



Scan Mode enables the user to scan through selected ports and to have full device control of the connected port. From this menu the user can edit the list of ports that can be scanned.

Only the selected ports will be scanned in Scan Mode when the respective user is logged in. Each user can have their own scan list (except for the "ROOT" user- who scans all hosts without exception).

A check list with all the Host Adapter index numbers and names followed by a check-box will be displayed in the window.

- unchecked box = the corresponding Host Adapter is **not** in the scan list
- checked box = the corresponding Host Adapter **is** in the scan list

The user can toggle the state of the selected check box by pressing <Spacebar>, <Enter> or clicking the Host Adapter with the mouse.

Function	Description	Keystroke
All	Select all Host Adapters	<b>A</b>
None	Clear all selected Host Adapters	<b>N</b>
Search	Locate a Host Adapter using name, comments, unique ID, or index number	<b>R</b>
Find	Locate a Host Adapter by name	<b>F</b>
Goto	Locate a Host Adapter by index number	<b>G</b>
Info	Display the info screen about the selected Host Adapter	<b>I</b>
	Display a Help Page	<b>F1</b>
Exit	Return to the Settings Menu	<b>X</b> or <b>Esc</b>

The scan selection list is automatically saved.

## Change Scan Dwell Time

When the <T> is pressed from the Settings Menu (From the Command Mode menu press <T> - <T>), a screen will appear displaying the parameters for the scan dwell time. The "Cur. Value" shown is the current value. The user can modify the scan dwell time. Any value between 2 and 255 (seconds) is acceptable. The default scan dwell time value is 5 seconds.

Function	Keystroke
Increase value by 1	<b>Up arrow</b>
Decrease value by 1	<b>Down Arrow</b>
Increase value by 10	<b>Page Up</b>
Decrease value by 10	<b>Page Down</b>
Minimum value (2)	<b>Home</b>
Maximum value (255)	<b>End</b>
Save the new value	<b>Enter</b>
Esc	<b>X</b> or <b>Esc</b>

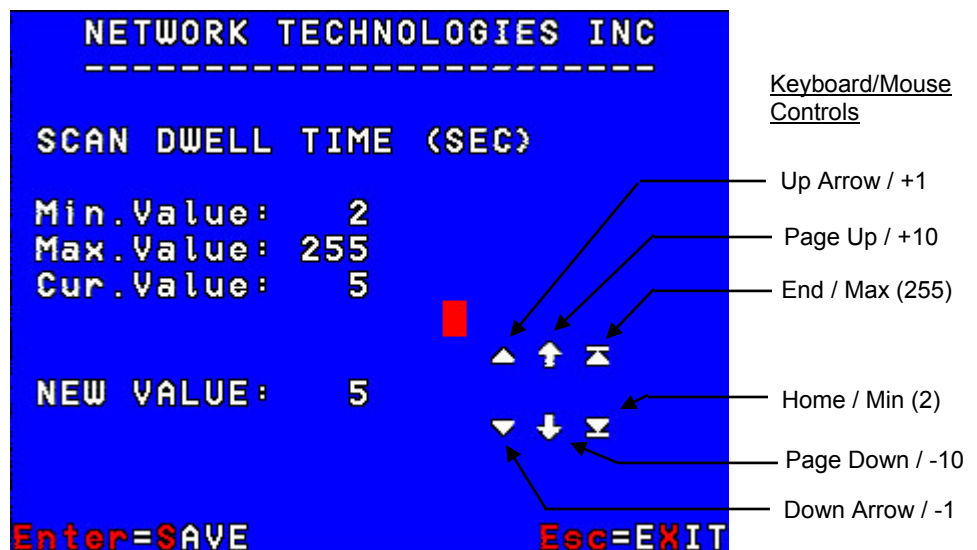


Figure 21- Scan Dwell Time screen

For more on the Scan Dwell Time, see Scan Mode (page 15).

## Video Quality Adjustment

Video quality adjustment is done automatically to assure the image is as clear as possible. However, due to the different twisting rates of each pair of wires in the CAT5 cable, variations in the signal delays between the red, green, and blue channels will occur when the cable is longer than 300 feet. This may also be caused by differences in cable types that can be used (i.e. shielded vs. unshielded cable and CAT5 vs. CAT6 cable).

To display the Video Adjustment screen, press <V> from the Settings Menu. (From the Command Mode menu press <T>-<V>.) An image with 5 horizontal bars (video components) will appear.

**FYI: Video Quality Adjustment may need to be repeated if the CAT5 cable is changed.**

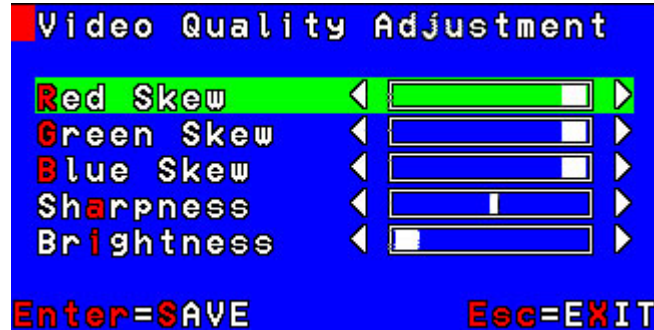


Figure 22- Video Adjustment Screen

Function	Keystroke
To move between the scroll bars	Press <Up Arrow> or <Down Arrow> or <R>, <G>, <B>, <A> or <I> or click on the row
To adjust the scroll bar setting	Press <Left Arrow> or <Right Arrow> or click on the left/right arrow
Save changes and exit menu	Press <Enter> or <S> or click on "Enter=SAVE" A blinking yellow "OK" will confirm
Modify screen position	Move the mouse beyond the image boundaries to drag the image
Exit menu without saving	Press <Esc> or <X> or click on "EXIT"

### Test Patterns for Color Skew Adjustment

To verify the need for and effect of color skew adjustment using a test pattern specifically designed for your display setting, browse the CD this manual was found on and click on the "test-pattern-nXm.pdf" file that matches your current video resolution. Follow the instructions below to make adjustments as needed.

The variations in signal delays could cause the colors to be skewed, or out of alignment as they appear on the monitor (i.e. instead of a white vertical line the user will see three vertical lines: red, green, and blue). These variations may be adjusted by changing the settings of the "Red Skew", "Green Skew", or "Blue Skew" horizontal scroll bars. Changing the settings will vary the timing of the signals and ultimately balance them out.

The "Sharpness" scroll bar is used for adjusting the crispness of the images and characters. This allows the user to "fine tune" the quality of the adjusted video.

The "Brightness" bar is used to adjust the brightness of the video image coming from the connected CPU through the Host Adapter as it appears on the monitor. The PRIMUX will automatically set the brightness to a level that should be acceptable, but the slide can be moved left or right if more adjustment for that Host Adapter is desired.

Video Quality Adjustment values are stored on a per Host Adapter basis. Adjustment may be necessary for each Host Adapter.

**FYI: For additional quality adjustment, it may be necessary to adjust the brightness and contrast settings of the monitor.**

## Administration

### Administration Menu

*Note: The Administration menu will only be accessible if the administrator is logged in or if the user has administration rights.*

Press <A> from the Command Mode menu to display the Administration menu.

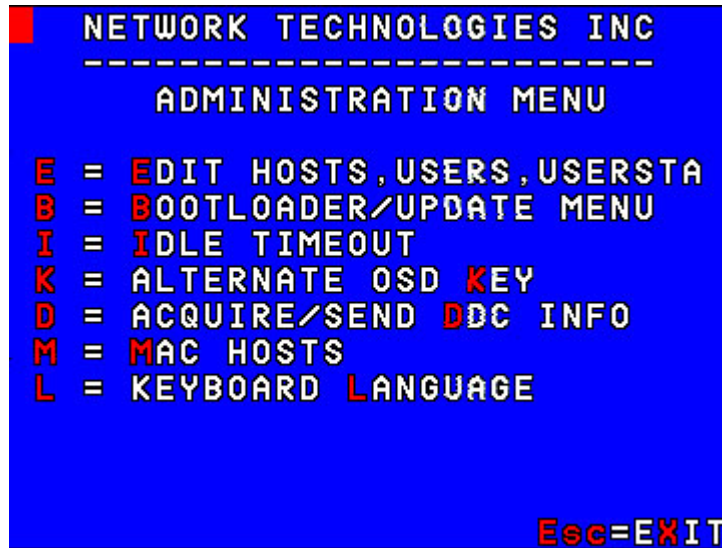


Figure 23- Administration Menu

The table below describes the functions of the Administration menu.

Function	Description	Keystroke
Edit Host Adapter, Users, and User Station	Edit the names and settings of the Host Adapter, Users, and User Station (page 23)	<b>E</b>
Update/Bootloader Menu	Update the firmware of the User Station and Host Adapters (page 32)	<b>B</b>
Change Idle Timeout	Set the time period for the Idle Timeout (page 31)	<b>I</b>
Alternate OSD Key	Define the alternative key sequence (if any) to enter Command Mode (page 31)	<b>K</b>
Acquire/Send DDC Info	Send DDC information about the monitor to all connected and powered ON Host Adapters (page 33)	<b>D</b>
Configure MAC Hosts	Configure Host Adapters for use with MAC CPUs (page 33)	<b>M</b>
Select keyboard language	Select the keyboard language for use with the CPU (page 34)	<b>L</b>
Esc	Return to the Command Mode menu	<b>X</b> or <b>Esc</b>

## Edit Hosts, Users, and User Station Info

From the Administration menu, press <E> to display the Edit Menu .

Function	Keystroke
Display Host Adapter List w/options for editing	H
Display User List w/options for editing	U
Edit User Station Parameters	S
Return to the Administration menu	X or Esc

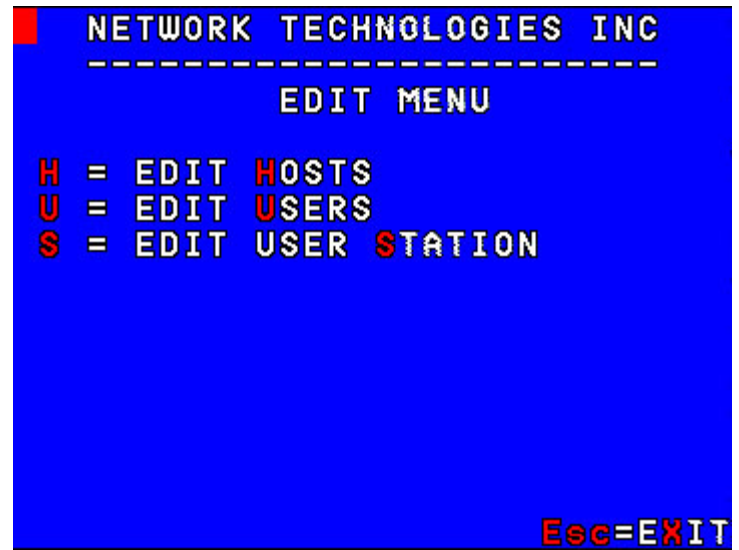


Figure 24- Edit Menu

## Host Adapter List

From the Edit Menu, press <H> to display the Host Adapter List from which the administrator can edit or view selected Host Adapter parameters. (From Command Mode type <A> - <E> - <H>.)

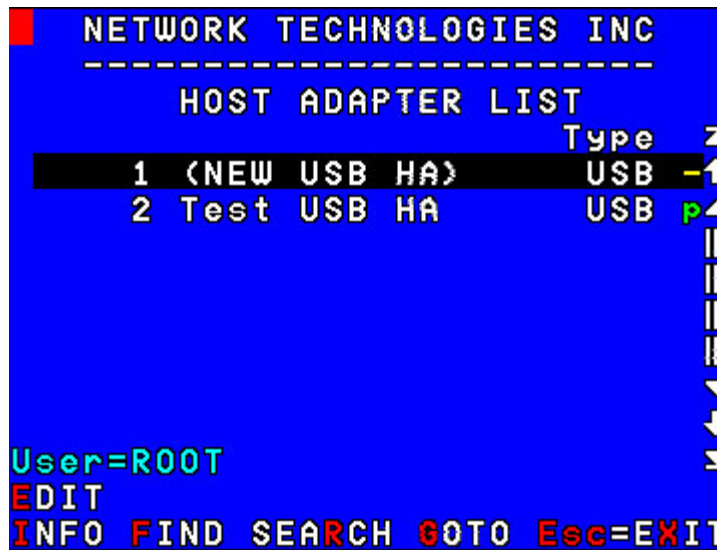


Figure 25- Host Adapter List

Function	Description	Keystroke
Edit	Change the selected Host Adapter parameters	E
Info	Display info about the selected Host Adapter	I
Search	Locate a Host Adapter using name, comments, unique ID, or index number	R
Find	Locate a Host Adapter by name	F
Goto	Locate a Host Adapter by index number	G
	Display Help Page for Host Adapter List	F1
Exit	Return to the Edit menu	X or Esc

## Edit Host Adapter

With a Host Adapter selected from the Host Adapter List, press <E> to bring up the Edit Host Adapter menu. (From Command Mode type <A> - <E> - <H> -<E>.)

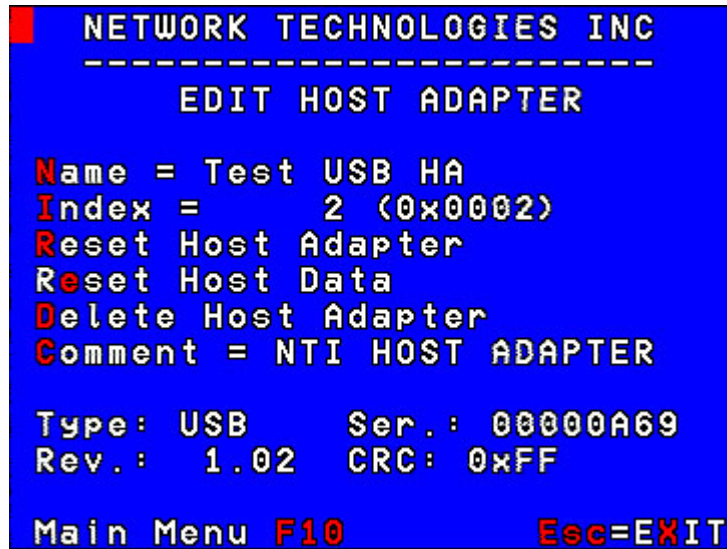


Figure 26- Edit Host Adapters menu

To edit the Host Adapter enter the desired parameter values as defined in the chart below:

*Suggestion: Use the <TAB> key to quickly jump between editable fields for easy configuration management.*

Function	Keystroke	Confirmation Required	Parameter Value
Modify the name (of the selected Host Adapter)	N	No	Alphabetical or numeric characters, 16 characters max., case sensitive
Modify the Index number (see note below)	I	No	Any whole number (1,2,3...)
Reset Host Adapter - perform an internal power reset	R	Yes	N/a
Reset Host Adapter Data to default settings	E	Yes	N/a
Modify the Comment	C	No	Alphabetical or numeric characters, 32 characters max., case sensitive
Delete Host Adapter	D	Yes	See Host Adapter List (page 23)
Return to Host Adapter List	X or Esc	No	N/a

*FYI: When modifying the Index number, the position of that Host Adapter in the Host Adapter list will be adjusted as defined and the positions of the other Host Adapters in the list will be shifted accordingly.*

*FYI: When resetting the Host Adapter data to default settings, all configurable settings including DDC information and the MAC configuration will be removed.*

## User List

From the Edit Menu, press <U> to display the User List from which the administrator can edit or view selected User parameters, (From Command Mode type <A> - <E> - <U>.)



Figure 27- User List

Function	Description	Keystroke
Info	Display info about the selected User	I
New	Add a new user- a confirmation of Yes or No will be required (see page 27)	N
Edit	Change the selected user parameters or remove the user (see page 26)	E
Rootpwd	Change the administrator password (see page 29)	P
	Display User List Help pages	F1
Exit	Return to the Edit Menu	X or Esc

A green checked box next to a user indicates the user is enabled. A yellow unchecked box indicates the user is disabled. Press <Enter> or <Spacebar> or click on the user line to toggle whether a user is enabled or disabled.

A yellow "A" in the "Adm" column indicates the user has administrative privileges, otherwise a "-" is displayed.

To create a new user the administrator will be prompted for a yes "Y" or no "N" blinking confirmation "Are you sure? (Y/N)" before carrying out the command.



## User Info

To display User Info, press <I> from the User Name List. (From Command Mode type <A> - <E> - <U> - <I>.) The User Info screen provides all of the current information about the selected user.

Item	Description
Name	The name of the User
Comment	could be used to describe the location of the User
Unique ID	a value unique to the configuration
Enabled	determines if the user is permitted access to the configuration
LogonUID	Displays which Host Adapter the user will logon to automatically if the LogonAct is set to 1
LogonAct	Displays if the user will logon to a specific Host Adapter (1) or to Command Mode (0) at logon

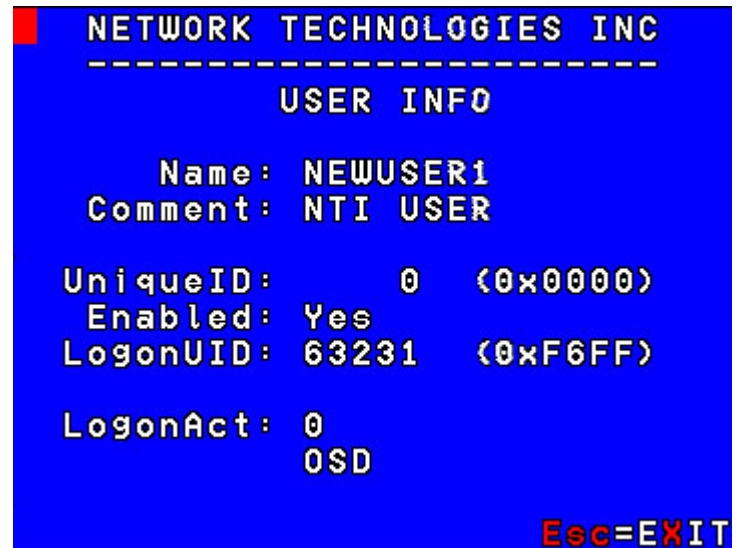


Figure 28- User Info screen

Function	Keystroke
Return to the User Name List menu	X or Esc

## Edit User

From the User List press <E> to bring up the Edit User menu. (From Command Mode type <A> - <E> - <U> - <E>.)

*Suggestion: Use the <TAB> key to quickly jump between editable fields for easy configuration management.*



Figure 29- Edit User menu

To edit User parameters enter the desired parameter values as defined in the chart below:

Function	Keystroke	Parameter Value
Modify the name (of the selected User)	<b>N</b>	Alphabetical or numeric characters, 16 characters max., case sensitive
Delete this user (Confirmation required)	<b>D</b>	Y or N Press <Y> or <N> and <Enter>
Assign Administrative Privileges to user	<b>A</b>	Y or N Press <Y> or <N> and <Enter>
Define Hosts to Allow/Deny access to	<b>H</b>	Choose from the list, toggle selection(s) using mouse or spacebar
Action on Logon - determines what action to take when a user logs on to the User Station	<b>O</b>	0= bring up Command Mode menu 1= connect to CPU specified by Logon Host
Logon Host- determines what Host Adapter to connect to at logon	<b>L</b>	Select host to be connected to automatically when user logs on
Modify the password (of the selected user)	<b>P</b>	Alphabetical or numeric characters, 16 characters max., case sensitive
Return to User List	<b>X</b> or <b>Esc</b>	N/a



Figure 30- Submenu of the Edit User menu

## Add New User

From the User List press <N> to add a new user. (From Command Mode type <A> - <E> - <U> - <N>.) The administrator will be prompted for a "Y" or "N" answer to "Are you sure?" and with a "Y" answer the Edit User menu will come up where all of the parameters for a new user can be defined. When finished, press <X> or <Esc> to exit the menu and the new user will have been added to the User List.

By default, a new user will be given access to the same Host Adapters as those listed in the Host Adapter access list of User #1. To change this, the administrator must edit the user host access list as described on page 28.

**FYI:** The first user in the user list is used as the "template" user. Each time a new user is created, the configuration parameters of the first user are copied to the new user. The administrator can either leave those parameters unchanged and rapidly setup more users with the same access rights as the first user, or change the parameters as desired.



## Edit User Password

The administrator can edit the user password by pressing <P> from the Edit User menu. . (From Command Mode type <A> - <E> - <U> - <E> - <P>.) To setup the password:

- Enter a password- 16 characters maximum, alphabetical or numeric, (**passwords are case sensitive**)
  - Press <Enter> or <Tab>
  - To confirm, re-enter the password
  - Press <Enter> to save and return to the Edit User menu, or press <Tab> to enter the password again
- or
- Press <Esc> to cancel and return to the Edit User menu without making any changes

There is no default user password. If no password is assigned, a user will need only to submit a valid user name and press <Enter> to login and use the CPUs in the daisy-chain to which they have access.



Figure 31- User Password screen

## Host Access List

To define what CPUs a user has access to, press <H> from the Edit User List (page 26). (From Command Mode press <A> - <E> - <U> - <E> - <H>.) The "Allow/Deny Access to Hosts" list will be displayed.

Function	Description	Keystroke
NONE	Deselect all	N
ALL	Select all	A
INFO	Display info for selected Host Adapter	I
SEARCH	Find Host Adapter (using name, index number, comments, or ID)	R
FIND	Locate Host Adapter by name	F
GOTO	Locate Host Adapter by index	G
----	Selects	Enter
----	Deselects	Spacebar
EXIT	Esc	X or Esc

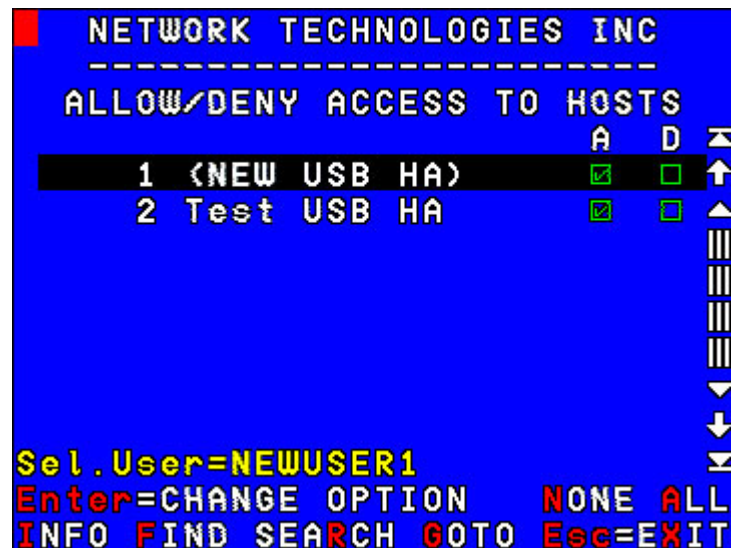


Figure 32- Allow/Deny Access to Hosts screen

All available Host Adapters will be listed 8 at a time. Use the arrow keys, mouse, Page Up/Down, Home, or End keys to move the selection bar and see more Host Adapters if they are available. With the selection bar over the desired Host Adapter;

- press <Enter> or <Spacebar> to grant user access or not to the Host Adapter.
  - a green checked box in the "A" (allow) column indicates access granted
  - a yellow checked box in the "D" (deny) column indicates access denied
  - if neither box "A" nor "D" is checked, access is denied
- press <F1> to display the associated help file.
- press <Esc> or <X> to exit and return to the User Access to Hosts list.

## Change Administrator's Password

To change the Administrator's Password, press <P> from the User List. (From Command Mode type <A> - <E> - <U> - <P>.) A screen will appear prompting the administrator for a new password.

- Enter the current password (case sensitive, maximum 16 characters, alphanumeric)
  - Press <Enter> or <Tab>
  - Enter a new password,
  - Press <Enter> or <Tab>
  - To confirm, re-enter the password,
- Press <Enter> to finish or <Tab> to enter the password again.

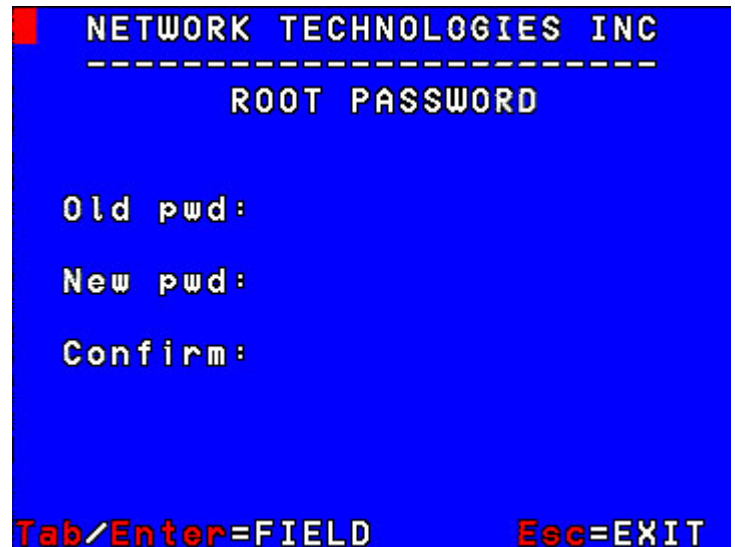


Figure 33- Administrator Password screen

**Note:** In the event the password is forgotten, contact NTI for instruction on how to reset the password to the default "NTI".

**FYI:** When the password is changed for user ROOT , it automatically changes for user ADMINISTRATOR as well.

## Edit User Station

From the Edit menu (page 23) press <S> to bring up the Edit User Station menu. (From Command Mode press <A> - <E> - <S>.)



Figure 34- Edit User Station screen

To edit the User Station Info use the commands and enter the desired parameter values as defined in the chart below:

*Suggestion: Use the <TAB> key to quickly jump between editable fields for easy configuration management.*

Function	Keystroke	Confirmation Required	Parameter Value
Modify the name	<b>N</b>	No	Alphabetical or numeric characters, 16 characters max., case sensitive
Modify the Autologon to select the user to be automatically logged in at power up	<b>A</b>	No	None. Brings up Select User menu.
Reset User Station internal data Default values will be restored. <b>Use with care, all user configuration settings will be lost.</b>	<b>R</b>	Yes	None
Delete all Host Adapters from the daisy-chain	<b>H</b>	Yes	None
Delete all users	<b>U</b>	Yes	None
Return to Edit Menu	<b>X</b> or <b>Esc</b>	No	None
Go to Main Menu	<b>F10</b>	No	None

## Select Autologon User

From the Edit User Station menu, press <A> to bring up the Select User Menu. (From Command Mode type <A> - <E> - <S> - <A>.)

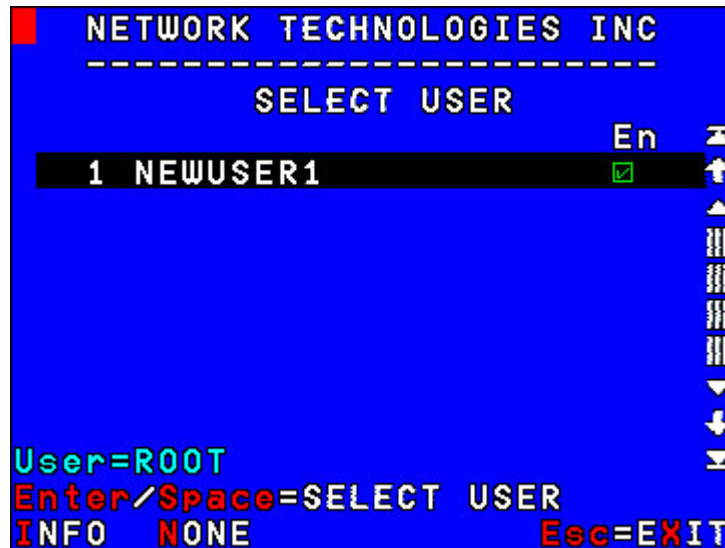


Figure 35- Select user for Autologon

To select which user will be automatically logged in when the User Station is powered up, choose one of the actions listed below:

Function	Description	Keystroke
Enter/Space	Select the user indicated by the selection bar	<b>Enter</b> or <b>Space</b>
Info	Display info on the selected user	<b>I</b>
None	Choose not to have any users logged on at power up. This will bring up the Login screen at power up instead of a user menu.	<b>N</b>
Exit	Return to Edit User Station Menu	<b>X</b> or <b>Esc</b>

## Idle Timeout

Selects the idle time in minutes. xxx= time in minutes from 2 to 255. (From Command Mode press <A>-<I>.) Use 0 to disable this feature. When the user is idle (no keyboard or mouse activity) for the selected number of minutes, the user will be logged out and have to log back in. The user may either enter a value using the numeric keypad, increment/decrement the value using arrows, or click on the arrows on the screen. Functions for the available keystrokes are shown below.

Function	Keystroke
Increase value by 1	Up arrow
Decrease value by 1	Down Arrow
Increase value by 10	Page Up
Decrease value by 10	Page Down
Minimum value	Home
Maximum value	End
Disable feature (assigns value 0)	D
Save new value	S or Enter
Esc	X or Esc

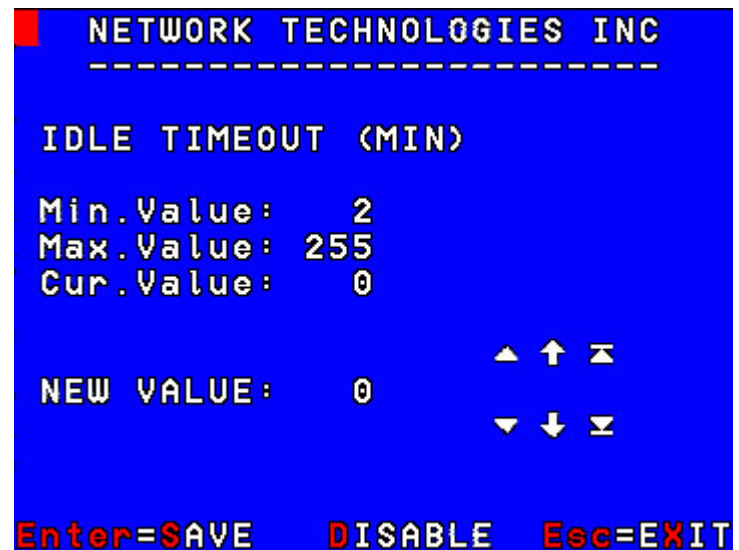


Figure 36- Idle Timeout screen

## Alternate OSD Key

This function enables the administrator to assign a key in addition to the <`> (accent key) to use with <Ctrl> to enter into OSD Command Mode. The default factory setting for this option is "0" (disabling the option).

To assign an Alternate OSD key press <K> from the Administration Menu. (From Command Mode type <A>-<K>.)

A window will open displaying the current "Cur" value, the range of values (from 4 to 164), and a place for the new value to be assigned. As the administrator changes the value, the corresponding keyboard key will appear next to it in parenthesis. Enter the value "0" to disable the feature.

Function	Keystroke
Press key to enter directly	P <x> x= any key on the keyboard
Increase value by 1	Up arrow
Decrease value by 1	Down Arrow
Increase value by 10	Page Up
Decrease value by 10	Page Down
Insert minimum value	Home
Insert maximum value	End
Save new value	S or Enter
Disable feature (input value 0)	D
Esc	X or Esc

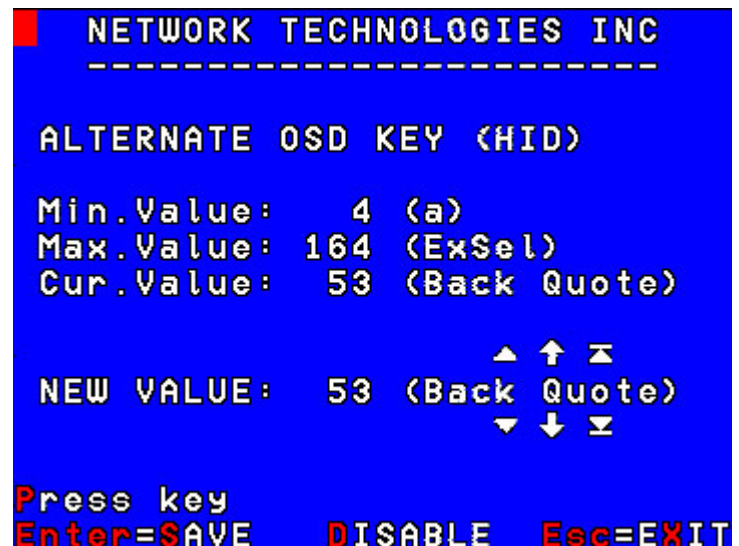


Figure 37- Alternate OSD screen

After pressing <S> to save or <D> to disable, the new value will replace the "Cur. Value" as the current value. This function effects all users of the daisy-chain..

**FYI: The Alternate Command Hot Key does not replace the <`> (accent) key, it just works as an additional 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 the new value at 0 or press <D>.**

## Update Firmware/Bootloader Menu

From the Administration Menu press <B> to get to the Update/Bootloader Menu. (From Command Mode press <A> - <B>.)

The Update/Bootloader Menu is provided to enable the administrator to update the firmware inside the PRIMUX User Station and Host Adapters if needed. The updated code and instructions for using the menu below can be downloaded from the NTI website at [www.networktechinc.com/kvmswitch-cat5.html](http://www.networktechinc.com/kvmswitch-cat5.html) . The functions of this menu are as follows:

Function	Description	Keystroke	Confirmation Required*
USERSTATION CODE INFO	Displays the internal ROM information of this User Station memory	U	No
USERSTAT.CODE IMAGE INFO	Displays the CODE IMAGE info of the last code uploaded to this User Station  This is the code temporarily loaded into the User Station memory	I	No
SEL.HOST	Select a Host Adapter to be upgraded  This opens a Host Adapter list from which you must select the Host Adapter to be upgraded (only necessary if you are upgrading a single Host Adapter.)	H	No
SEND CODE IMAGE TO HOST	To send the current code image from the User Station memory to a specifically selected Host Adapter (see "SEL.HOST" above)  Code transfer is indicated by a solid ON green RJ45 connector LED on the Host Adapter	S	Yes
UPDATE HOST ADAPTER CODE	To send the "request to update the Host Adapter code" with the code image previously sent to the Host Adapter using the "SEND CODE IMAGE TO HOST" command (above).  Indicated by a solid OFF green RJ45 connector LED	C	Yes
SEND+UPDT.CODE, ALL HOSTS	To send the current code image from the User Station memory to all powered-ON Host Adapters of the same type. An UPDATE HOST request is then automatically generated	A	Yes
GO TO BOOTLOADER	To leave the OSD menu and activate the Bootloader Program**.  <b>A serial terminal must be connected to the "RS232" serial port of the User Station to continue operation</b>	B	Yes
SEL.HOST	Select the Host Adapter. By default, the connected Host Adapter (if any) is selected.	H	Yes
ESC	Return to the Administration menu	X or Esc	--

\*Where confirmation is required, the user will be prompted with a "Are you sure? (Y/N)" before acting on the command. Press <Y> to continue, or any other key to cancel. A yellow blinking asterisk is displayed to the left of the command selected and a blinking "Waiting...." is also displayed. To cancel the command, press <Esc>, <X>, or click on "Esc".

\*\*Updated code and instructions for using the Bootloader Program and the features above are included with the downloaded file from the NTI website ([www.networktechinc.com/kvmswitch-cat5.html](http://www.networktechinc.com/kvmswitch-cat5.html)).

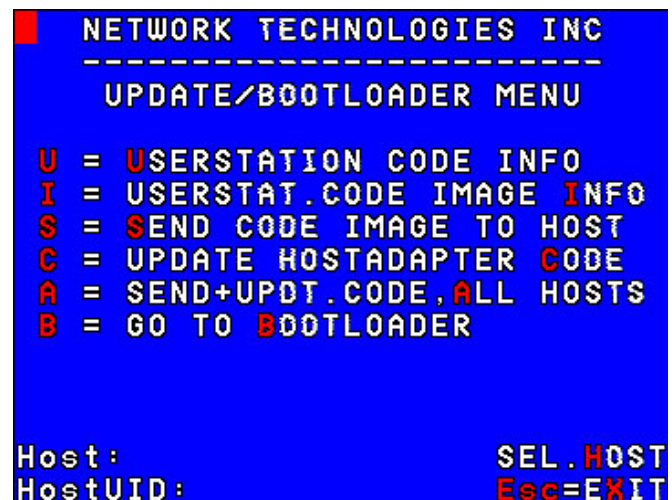


Figure 38- Update/Bootloader Menu



## Acquire/Send DDC Info

DDC information allows the CPU to automatically select the optimal resolution for the monitor by receiving, at power up, information from the monitor concerning its resolution specifications.

The DDC information is acquired from the monitor by the PRIMUX. **A monitor with DDC support must be connected to the connector "MONITOR" on the User Station and be powered ON for this to occur.** The DDC information will be sent to every powered Host Adapter to be retrieved by their connected CPU.

**Note:** The CPU connected to the Host Adapter must be powered up to receive the DDC information.

To acquire DDC information from the monitor and send DDC information to all powered Host Adapters, press <D> from the Administration Menu. (From Command Mode type <A>-<D>.) A "waiting" indicator will be displayed until the DDC information transfer is complete.

**FYI:** If a new Host Adapter is introduced to the daisy-chain, this function will need to be repeated.

## Configure MAC Host Adapters

MAC Ports Configuration menu enables the administrator to select specific ports to be connected to USB MAC CPUs for passing mouse information to the USB 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. Host Adapters 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 PRIMUX-UZR is power ON. When the Host Adapter is connected to a Windows, SUN, or USB SUN CPU, this configuration SHOULD BE DISABLED. By default, all Host Adapters are configured for connection to non-USB MAC CPUs (Windows and USB SUN).

**FYI:** If a Host Adapter 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.

When the <M> is pressed from the Administration Menu (From Command Mode press <A> - <M>), a screen will appear displaying a list of Host Adapters with boxes to their right.

Function	Description	Keystroke
NONE	Deselect all	N
ALL	Select all	A
INFO	Display info for selected Host Adapter	I
SEARCH	Search for Host Adapter (using name, index number, comments, or ID)	R
FIND	Locate Host Adapter by name	F
GOTO	Locate Host Adapter by index	G
	Display Help Page	F1
EXIT	Save changes and return to Administration menu	X or Esc

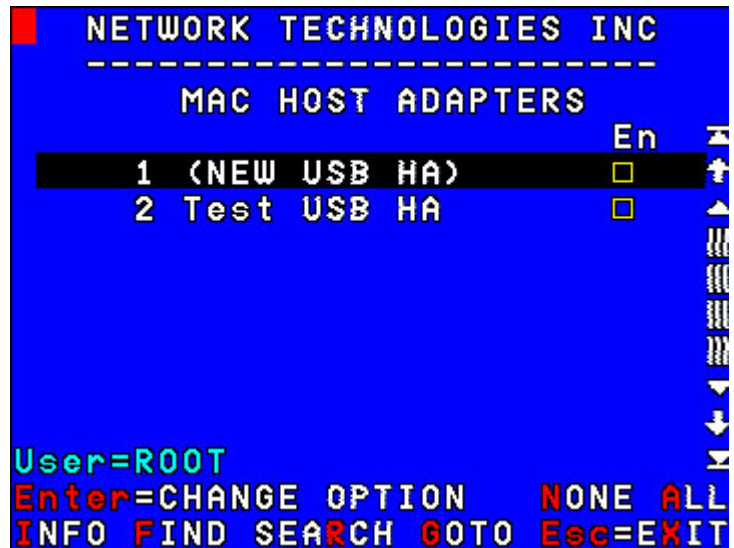


Figure 39- Select MAC Host Adapters screen

- unchecked yellow box = the corresponding Host Adapter is **not** configured for MAC CPU
- checked green box = the corresponding Host Adapter **is** configured for MAC CPU

The user can toggle the state of the selected check box by pressing <Spacebar>, <Enter> or clicking the Host Adapter with the mouse. Selected Host Adapters will have a green checked box. Unchecked yellow boxes indicate those Host Adapters not selected for MAC mode.

Changes to the MAC Host Adapter selection list are automatically saved.

## Select Keyboard Language

To enter the Select Keyboard Language menu press <L> from the Administration menu (from Command Mode press <A> - <L>).



Figure 40- Select Keyboard Language menu

The Select Keyboard 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>, <Page up>, <Page down>, <Home> and <End> keys.

The language in red text is the currently selected language for the keyboard. A green arrow to the left of the text indicates the language reported by the keyboard.

- To manually program a specific keyboard language, select a language and press <Enter> or <Space>.
- To automatically detect the language of the keyboard, select "AutoDetect" and press <Enter> or <Space>. 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 Host Adapter. If a specific country code is manually programmed, it will be the country code for the Host Adapter, regardless of the actual country code of the connected keyboard. The programmed country code is saved in memory and restored each time the User Station is powered-ON. Because the CPUs that use country code (i.e. SUN CPUs) read it at boot time, it is necessary to reboot the CPU(s) after programming the country code.

- Press <X> or <Esc> or click on "Esc=EXIT" to return to the Administration menu.

## KEYBOARD MAPPING

### 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 Fig. 41 on page 36 for reference.)

USB 101	PS/2 (Windows)	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.

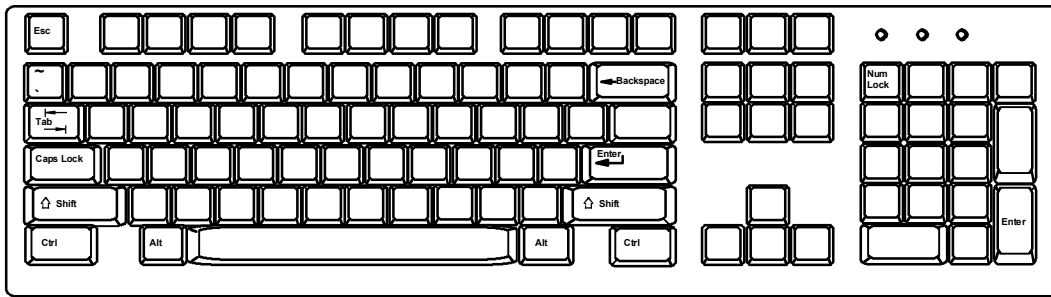
### SUN's 16 Extra Keys

PS/2, USB 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

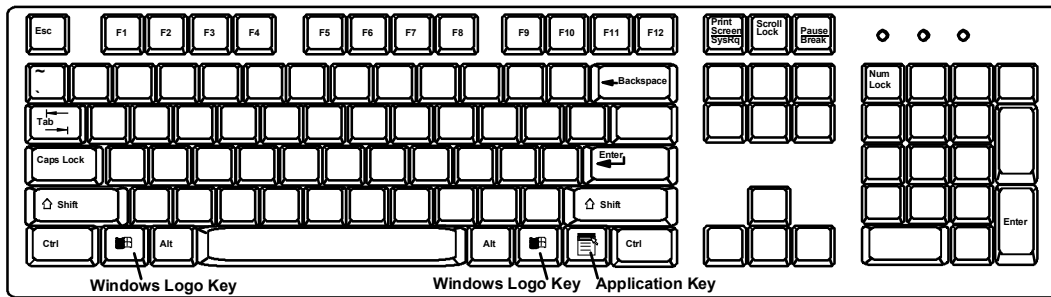
Use the chart to the left to type SUN's additional 16 keys using a PS/2 or USB keyboard

SB= Space Bar

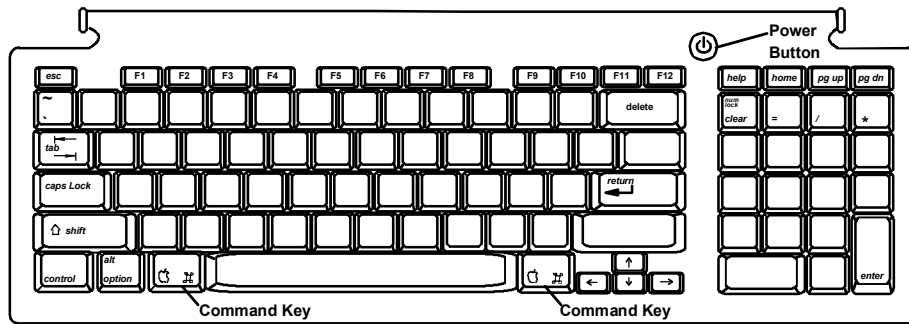




**Typical 101 Keyboard**



**Windows Keyboard**



**Apple USB Keyboard**



**SUN USB Keyboard**

**Figure 41- Keyboard layouts**

## TECHNICAL SPECIFICATIONS

Video Compatibility	SVGA, XGA, VGA
Video Quality Adjustment	Automatic, for up to 1000 feet of CAT5 cable
Video Coupling	DC
Video Connectors	HD15 male to CPU HD15 female to monitor
Maximum Input/Output Levels	1.45Vp-p (no offset)
Input / Output Impedance	75 ohms
Input Horizontal Frequency Range	15kHz to 130 kHz
Input Vertical Frequency Range	30 Hz to 150 Hz
User Keyboard/Mouse Connectors	Female 6 pin miniDIN Female USB Type A
CPU Keyboard/Mouse Connectors	Male 6 pin miniDIN to device ports for PS/2 CPU Male USB-Type A to device port for USB MAC and USB SUN CPUs Male 8 pin miniDIN to device ports for legacy SUN CPU
Mouse and Keyboard Compatibility	Most PS/2 mice and keyboards Most USB mice and keyboards
CPU Compatibility	PS/2, USB and Legacy SUN, USB MAC
Keyboard and Mouse Current Rating	500mA maximum
Sync Types Supported	Separate and composite TTL Level
Interconnect Cable	CAT 5/5e/6 Solid UTP/STP EIA/TIA 568 B wiring w/ male RJ45 connectors
Host Adapter Power	Powered by CPU
User Station Power	5VDC/2.0A via 120V or 240V at 50 or 60Hz AC Adapter
Host Adapter Size (In.) WxDxH	3.1 x 3.7 x 1
User Station Size (In.) WxDxH	11 x 11 x 1.75

### Distances and Resolutions for CAT5/CAT5e and CAT6 Cables

CABLE	DISTANCE (feet)	RESOLUTION
CAT5/CAT5e (UTP)	1000	1024x768 at 60Hz
CAT5/CAT5e (UTP)	700	1280x1024 at 60Hz
CAT5/CAT5e (UTP)	500	1600x1200 at 60Hz
CAT5/CAT5e (UTP)	400	1920x1440 at 60Hz
CAT5/CAT5e (STP)	600	800x600 at 60Hz
CAT5/CAT5e (STP)	500	1024x768 at 60Hz
CAT5/CAT5e (STP)	300	1280x1024 at 60Hz
CAT5/CAT5e (STP)	100	1920x1440 at 60Hz
CAT6 (UTP)	800	1024x768 at 60Hz
CAT6 (UTP)	600	1280x1024 at 60Hz
CAT6 (UTP)	500	1600x1200 at 60Hz
CAT6 (UTP)	350	1920x1440 at 60Hz

**Note:** Actual resolution may vary depending upon the construction of the CAT5 cable used.

## INTERCONNECTION CABLE WIRING METHOD

The CAT5 connection cable between the remote and local is terminated with RJ45 connectors and must be wired according to the EIA/TIA 568 B industry standard. Wiring is as per the table and drawing below.

Pin	Wire Color	Pair	Function
1	White/Orange	2	T
2	Orange	2	R
3	White/Green	3	T
4	Blue	1	R
5	White/Blue	1	T
6	Green	3	R
7	White/Brown	4	T
8	Brown	4	R
SH	Drain wire	-	Shield

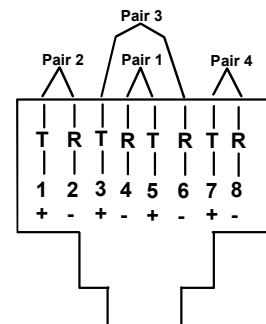


Figure 42- View looking into RJ45 female

## NULL MODEM CABLE PINOUTS

PRIMUM to Terminal (9 PIN) null modem cable  
(NTI cable part # DINT-xx-FF)

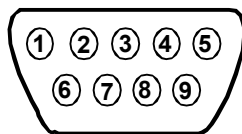
PRIMUM			TERIMINAL	
9 pin		Signal	9 pin	
Function	Pin #	Direction	Pin #	Function
RxD	2	←	3	TxD
TxD	3	→	2	RxD
CTS	8	N/C	7	RTS
RTS	7	N/C	8	CTS
DSR	6	N/C	4	DTR
DTR	4	N/C	6	DSR
DCD	1	N/C	1	DCD
SG	5	—	5	SG

N/C= not connected (no cable wire)

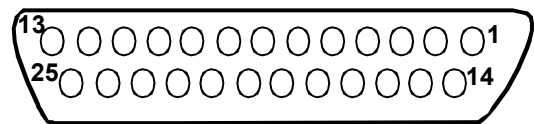
In this cable signals CTS and RTS are connected to each other at the connector ends, and signals DSR, DTR, and DCD are connected to each other at the connector ends.

PRIMUM to Terminal (25 PIN) null modem cable

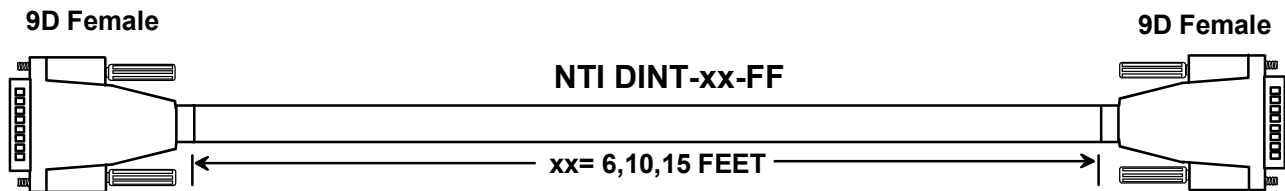
PRIMUM			TERMINAL	
9 pin		Signal	25 pin	
Function	Pin #	Direction	Pin #	Function
RxD	2	←	2	TxD
TxD	3	→	3	RxD
CTS	8	N/C	4	RTS
RTS	7	N/C	5	CTS
DSR	6	N/C	20	DTR
DTR	4	N/C	6	DSR
DCD	1	N/C	8	DCD
SG	5	—	7	SG



Mating Face  
of 9D  
Male Connector



Mating Face  
of 25D  
Female Connector



**Note:** Cable length not to exceed 15ft.

## MENU QUICK-FIND KEYSTROKE TABLE

Function	Source Page	Keystroke Sequence
Command Mode	14	<Ctrl> + <`>
Connect to specific Host Adapter by number	11	<Ctrl> + <`> - <<Gxx> - <Enter> - <Enter> where xx is the index number of the specific Host Adapter
Activate Scan Mode	15	<Ctrl> + <`> - <S>
Settings Menu	16	<Ctrl> + <`> - <T>
Administration Menu	22	<Ctrl> + <`> - <A>
Search Host Adapter	17	<Ctrl> + <`> - <R>
Host Adapter Info	17	<Ctrl> + <`> - <I>
User Station Info	18	<Ctrl> + <`> - <I> - <S>
Return to Command Mode	12	<F10>
OSD Settings Menu	19	<Ctrl> + <`> - <T> - <O>
Host Adapters for scan	19	<Ctrl> + <`> - <T> - <S>
Change scan dwell time	20	<Ctrl> + <`> - <T> - <T>
Video Quality Adjustment	21	<Ctrl> + <`> - <T> - <V>
Edit Menu	23	<Ctrl> + <`> - <A> - <E>
Host Adapter List	23	<Ctrl> + <`> - <A> - <E> - <H>
Edit Host Adapter	24	<Ctrl> + <`> - <A> - <E> - <H> - <E>
User List	25	<Ctrl> + <`> - <A> - <E> - <U>
Edit User	26	<Ctrl> + <`> - <A> - <E> - <U> - <E>
Add New User	27	<Ctrl> + <`> - <A> - <E> - <U> - <N>
Display user info	26	<Ctrl> + <`> - <A> - <E> - <U> - <I>
Edit User Password	28	<Ctrl> + <`> - <A> - <E> - <U> - <E> - <P>
Define user host access	28	<Ctrl> + <`> - <A> - <E> - <U> - <E> - <H>
Change administrator's password	29	<Ctrl> + <`> - <A> - <E> - <U> - <P>
Edit User Station	29	<Ctrl> + <`> - <A> - <E> - <S>
Select Autologon User	30	<Ctrl> + <`> - <A> - <E> - <S> - <A>
Change idle timeout	31	<Ctrl> + <`> - <A> - <I>
Set alternate OSD key	31	<Ctrl> + <`> - <A> - <K>
Update Firmware/Bootloader Menu	32	<Ctrl> + <`> - <A> - <B>
Acquire/Send DDC info	33	<Ctrl> + <`> - <A> - <D>
Configure MAC Host Adapters	33	<Ctrl> + <`> - <A> - <M>
Select keyboard language	34	<Ctrl> + <`> - <A> - <L>

## SAFETY AND EMC REGULATORY STATEMENTS

**WARNING** A WARNING in this manual indicates the potential for serious injury or death.

**CAUTION** A CAUTION in this manual indicates the potential for damage to the equipment

Do not continue past a WARNING or CAUTION statement until you have read and clearly understand the reason for the potential injury, death, or damage to the equipment and have taken the appropriate action(s).

### 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.

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## 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.