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PRIMUX® Series

PRIMUX

CAT5 KVM System

Installation and Operation Manual



PRIMUX-UZR User Station



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 2.8

Please Note: This manual applies to PRIMUX with firmware version 2.0 and later. This version number can be found in the splash screen viewed when the PRIMUX is first powered ON (example shown below). If no version is shown, it is an earlier model. PRIMUX with earlier firmware versions are covered in manuals for the PRIMUX dated prior to January 1, 2009. An earlier manual can be found at www.networktechinc.com.



Please Note: A PRIMUX-UZR User Station with firmware version 2.0 and later will not recognize or work with a Host Adapter programmed with firmware version 1.6 and earlier. If you have Host Adapters with firmware version 1.6 and earlier, they must first be updated to firmware version 2.0 using a PRIMUX-UZR User Station programmed with firmware version 1.9. After updating all Host Adapters, the PRIMUX-UZR User Station can then be updated to firmware version 2.0 to work with the newly updated Host Adapters. Firmware version 1.9 (with version 1.6 Host Adapter firmware) and firmware version 2.0 can be found at <http://www.networktechinc.com/download/d-kvmswitch-cat5.html>. Instruction for changing the firmware in the User Station and Host Adapters is included in the .zip file with the firmware.

Typographic Conventions

The table below offers examples of text format and its meaning when used in place of the standard font (Helvetica) used throughout this manual.

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

See also "Standards of Operation" on page 16 for instruction on the use of the keyboard and mouse within OSD menus.

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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, legacy SUN, or USB CPUs by as much as 1000 feet. The PRIMUX is comprised of one PRIMUX-UZR User Station for remote user control and at least one Host Adapter (HA-PS2, HA-USB, HA-SUN or HA-RS) connected to a local CPU. 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, CAT6 Unshielded Twisted Pair (UTP) or CAT5, CAT5e Shielded Twisted Pair (STP) cable.

The PRIMUX User Station may be used to control a PRIMUX Matrix Switch. When connected to one of up to 8 user ports, the PRIMUX User Station can be used to share access to up to 64 Host Adapters with the other User Stations connected to the PRIMUX Matrix Switch. Features unique to Matrix Switch operation are highlighted throughout this manual where applicable.

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 legacy 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
- Provides crisp and clear resolution up to 1024x768 /60Hz @ 1000 feet (using CAT5 UTP cable- see pg 46 for details)
- Video quality adjustment is automatic providing optimum image quality
- On Screen Display (OSD) menus enable easy configuration of the system (page 16)
- Allows for future expansion- buy what is needed now, add more later as desired

Supported Operating Systems

The PRIMUX is compatible with:

- Win9x
- WinMe
- Windows 7
- Windows Server 2000,2003,2008
- WinNT
- WinXP
- MAC OS9.x , OSX
- FREE BSD
- Win2K
- WinVista
- Linux
- Solaris

Materials

Materials Supplied with this kit:



NTI PRIMUX-UZR User Station



120VAC or 240VAC @ 50 or 60Hz -5VDC/2A AC Adapter



AC Adapter Line cord, country specific



DINT-6-FF Null Modem Cable



Terminating Plug



PRIMUM CD w/ Owner's Manual and Quick Start Guide (pdf files)



PRIMUM Quick Start Guide (printed)

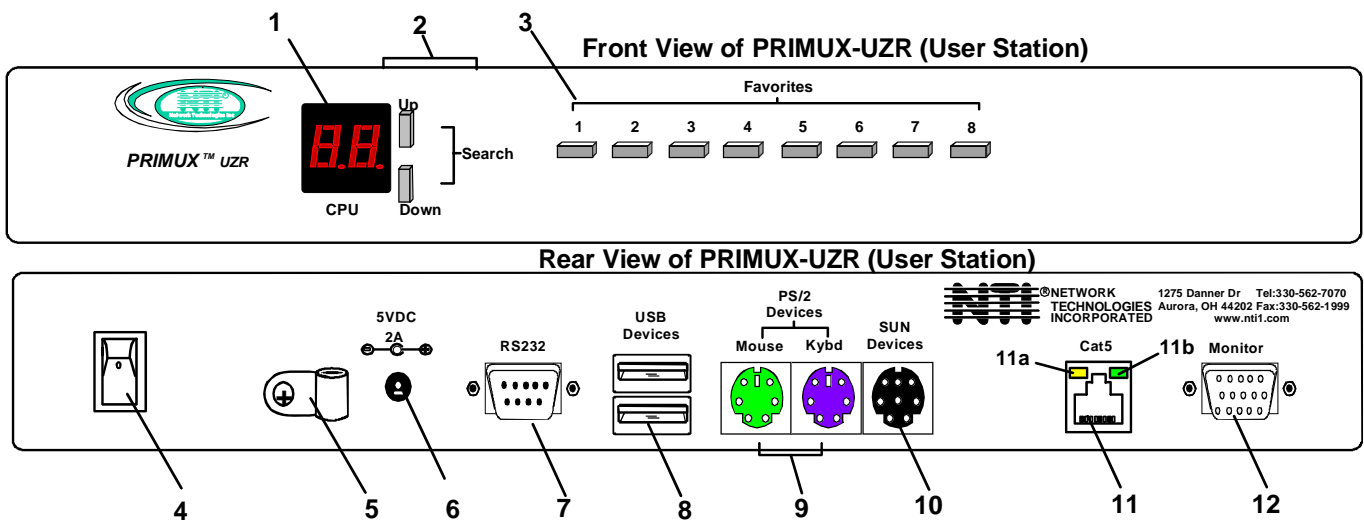
Materials *Not* Supplied, but **REQUIRED**:

- NTI HA-PS2 PS/2 Host Adapter / HA-USB USB Host Adapter / HA-SUN Legacy SUN Host Adapter / HA-RS Serial Host Adapter (see pg. 5)
- CAT5/5e/6 unshielded twisted-pair cable(s) terminated with RJ45 connectors wired straight thru- pin 1 to pin 1, etc. (see pg. 47 for proper EIA/TIA 568B wiring method)
- NTI-RJ45MF-RS232-CO crossover adapter will be needed if an HA-RS Host Adapter is being used and connected to a DCE type device (see page 7)

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.

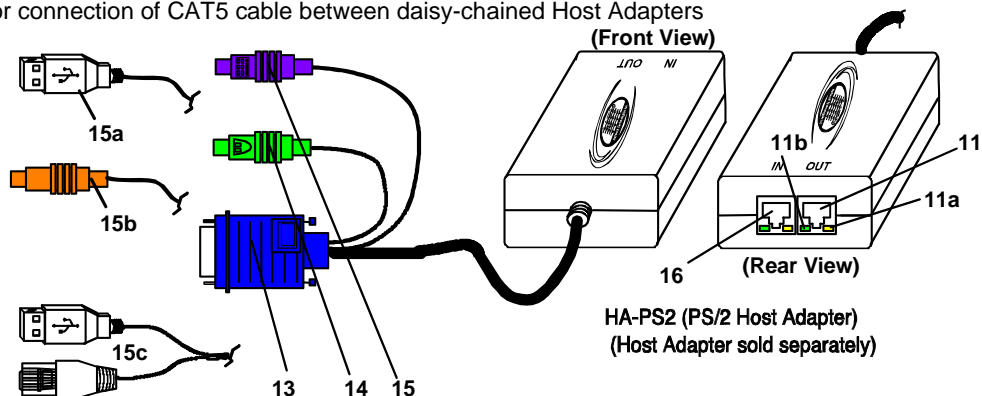
Please Note: A PRIMUX-UZR User Station with firmware version 2.0 and later will not recognize or work with a Host Adapter programmed with firmware version 1.6 and earlier. If you have Host Adapters with firmware version 1.6 and earlier, they must first be updated to firmware version 2.0 using a PRIMUX-UZR User Station programmed with firmware version 1.9. After updating all Host Adapters, the PRIMUX-UZR User Station can then be updated to firmware version 2.0 to work with the newly updated Host Adapters. Firmware version 1.9 (with version 1.6 Host Adapter firmware) and firmware version 2.0 can be found at <http://www.networktechinc.com/download/d-kvmswitch-cat5.html>. Instruction for changing the firmware in the User Station and Host Adapters is included in the .zip file with the firmware.

Note: The HA-RS Host Adapter will only work with User Stations programmed with firmware version 2.0 and later.



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
- 15c. **Power and Serial Connectors**-USB Type A and RJ45 male(HA-RS only)- for connecting to the serial port on a terminal and powering the Host Adapter
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 CATx 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.) . **If cables must be routed near sources of magnetic fields or electrical interference, use shielded CATx cable (see table on page 46) for best performance.**

NOTE: The installer must ensure that all CATx 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 (depending on the AC adapter being used) 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.

Please Note: A PRIMUX-UZR User Station with firmware version 2.0 and later will not recognize or work with a Host Adapter programmed with firmware version 1.6 and earlier. If you have Host Adapters with firmware version 1.6 and earlier, they must first be updated to firmware version 2.0 using a PRIMUX-UZR User Station programmed with firmware version 1.9. After updating all Host Adapters, the PRIMUX-UZR User Station can then be updated to firmware version 2.0 to work with the newly updated Host Adapters. Firmware version 1.9 (with version 1.6 Host Adapter firmware) and firmware version 2.0 can be found at <http://www.networktechinc.com/download/d-kvmswitch-cat5.html>. Instruction for changing the firmware in the User Station and Host Adapters is included in the .zip file with the firmware.

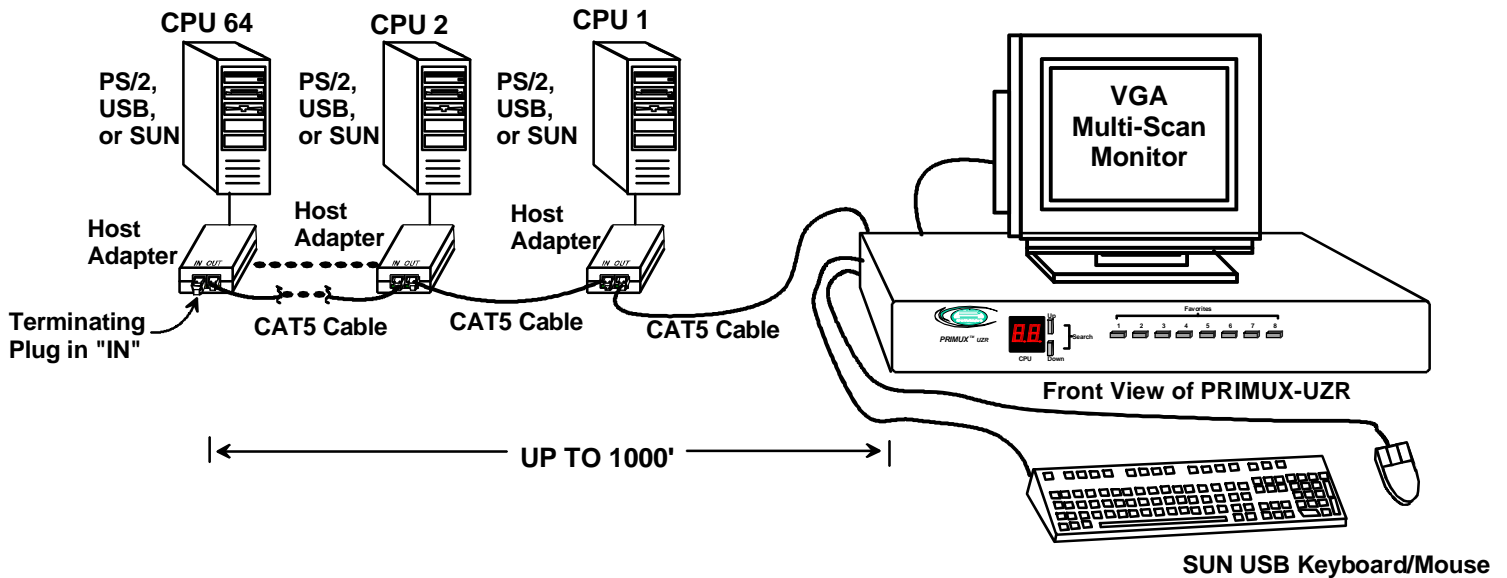


Figure 1- Typical Application

INSTALLATION

The Host Adapter

The PRIMUX HA Host Adapter is designed to support PS/2, SUN and USB CPUs, as well as serial-controlled servers and devices (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
SERIAL	HA-RS

Note: The HA-RS Host Adapter will only work with User Stations programmed with firmware version 2.0 and later.

Note: All Host Adapters must be programmed with firmware version 2.0 in order to work with a User Station programmed with firmware version 2.0 and later. See "Please Note..." on page i.

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.)

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



PS/2 Mouse



PS/2 Keyboard

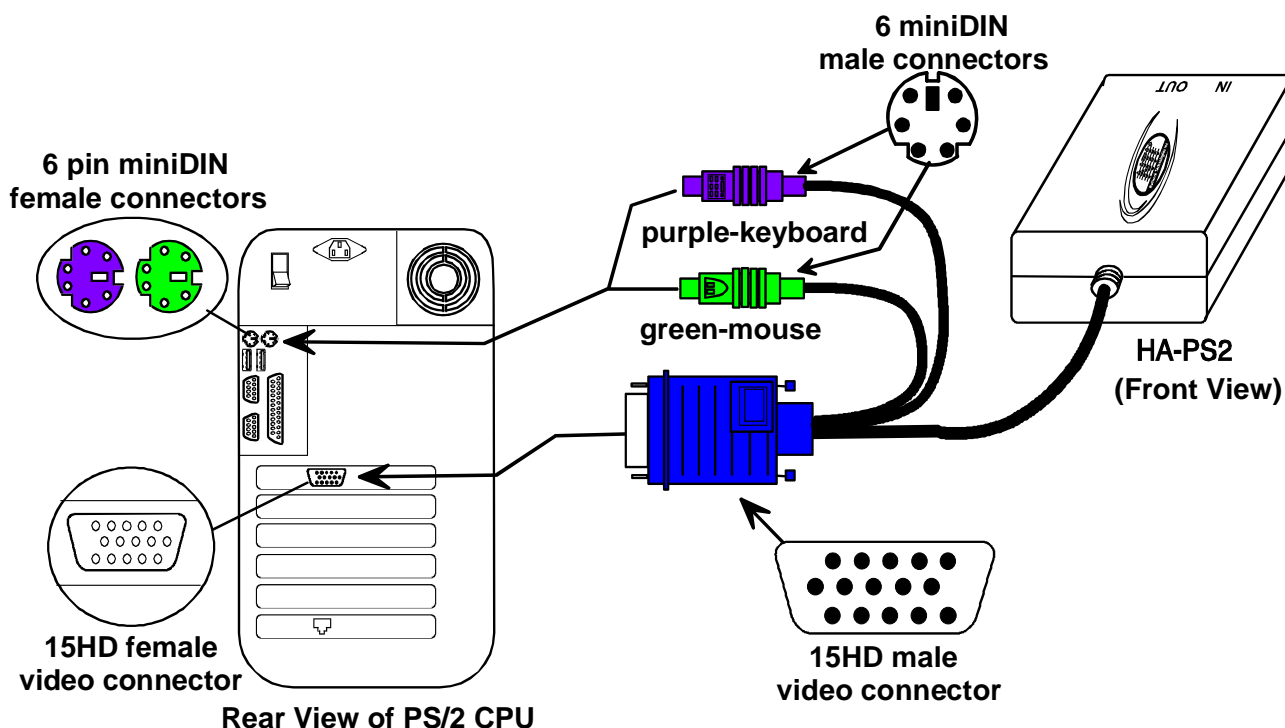


Figure 2- Connect an HA-PS2 Host Adapter to a PS/2 CPU

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.

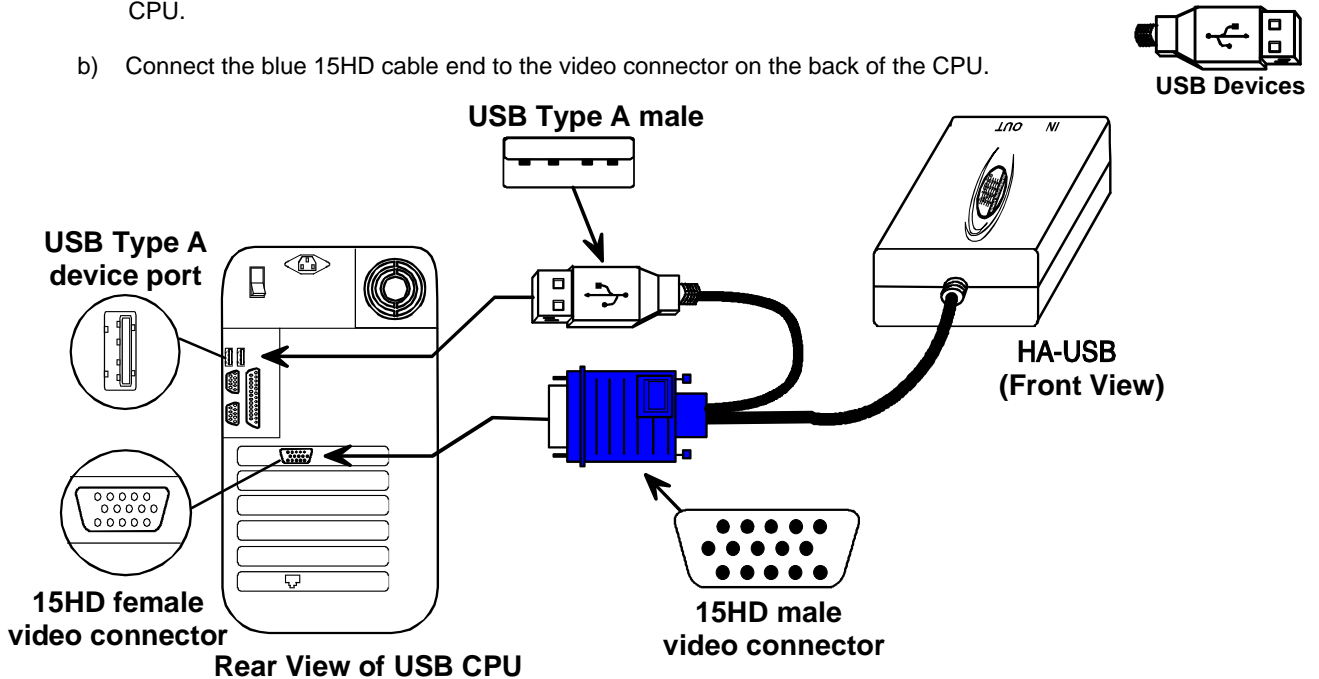


Figure 3- Connect an HA-USB Host Adapter to a USB CPU

Installation of a Legacy 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.

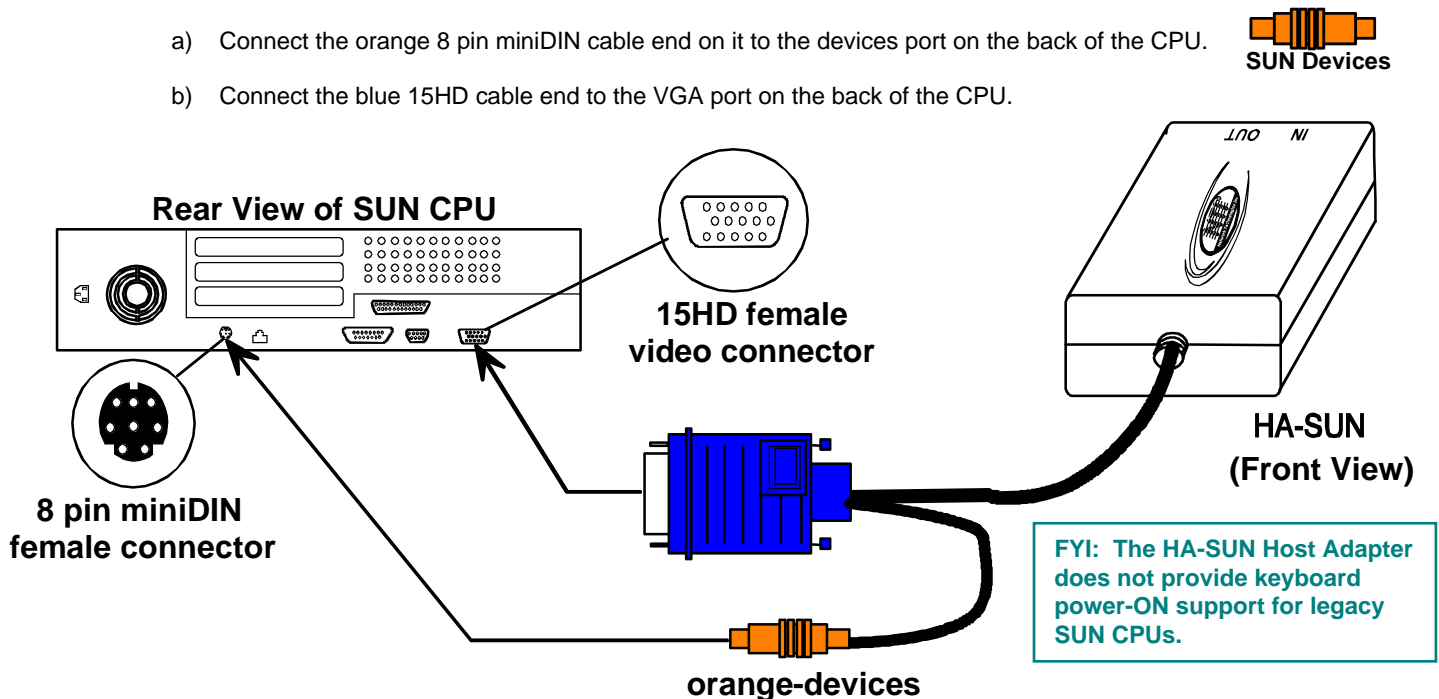


Figure 4- Connect an HA-SUN Host Adapter to a Legacy SUN CPU

Installation of a Serial-Controlled Server or Device

Plug the cables of the HA-RS Host Adapter into the serial port on a server or other serially-controlled data terminal equipment (DTE) device. If the device is a data communication equipment (DCE) type device, an NTI RJ45MF-RS232-CO crossover cable or adapter (see bottom of this page) will be required (sold separately).

- Connect the RJ45 cable end to the serial control port on the serial device. A DB9 to RJ45 console adapter (supplied with HA-RS) may be required to make this connection.
- Connect the USB Type A cable to any available USB Type A female port. If the device being controlled does not have a USB port, connect it to any USB Type A port on a device nearby. Any USB Type A port will do, as the HA-RS is only using the power supplied by two of the four terminals in the connector.

Note: The HA-RS Host Adapter will only work with User Stations programmed with firmware version 2.0 and later.

Note: All Host Adapters must be programmed with firmware version 2.0 in order to work with a User Station programmed with firmware version 2.0 and later. See "Please Note..." on page i.

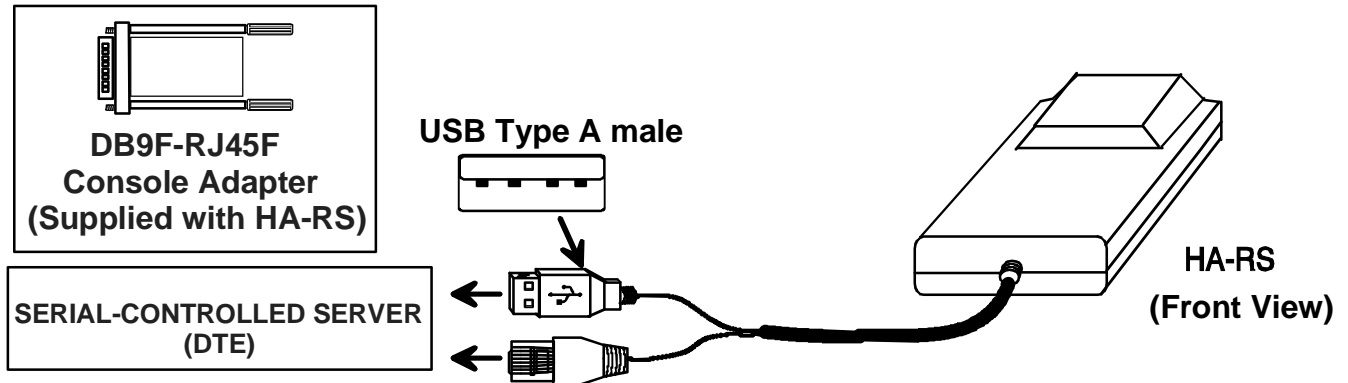


Figure 5- Connect an HA-RS Host Adapter to a server

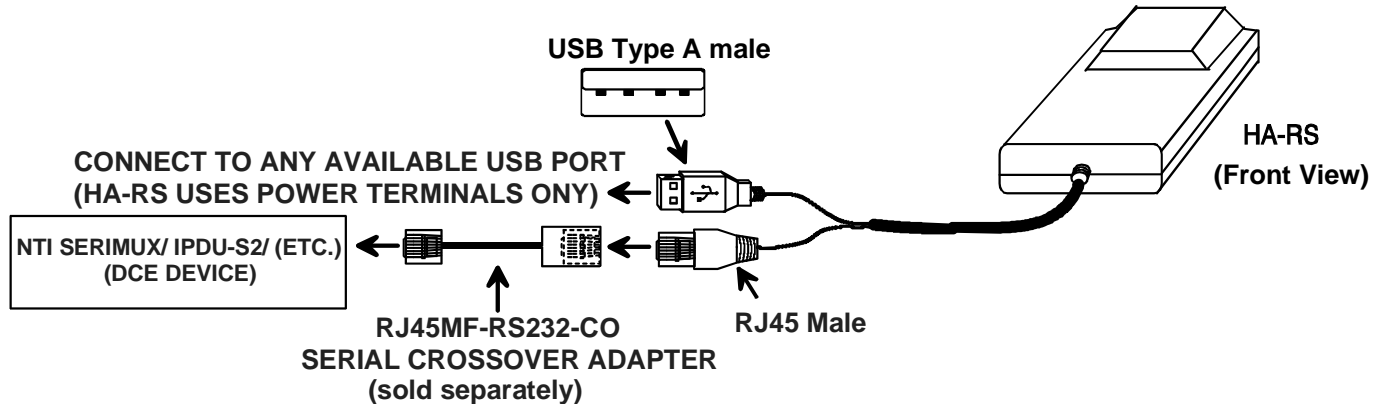
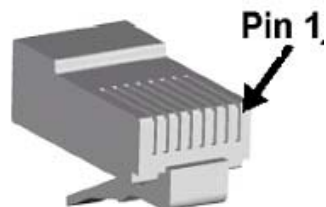


Figure 6- Connect an HA-RS Host Adapter to a DCE type device

Pinout for RJ45 Female to RJ45 Male crossover Adapter

RJ45-F			RJ45-M	
Pin	Signal		Pin	Signal
1	CTS	Connected to	8	RTS
2	DSR	Connected to	7	DTR
3	RxD	Connected to	6	TxD
4	GND	Connected to	4	GND
5	DCD	Connected to	1	CTS
6	TxD	Connected to	3	RxD
7	DTR	Connected to	N/c	
8	RTS	Connected to	2	DSR



Note: The serial port on the device must be configured for a maximum baud rate of 115200 bps.

The HA-RS Host Adapter includes with a base for mounting to any desired surface. To Host Adapter snaps-in securely, and is quickly released from the base by applying pressure to the two release tabs, as shown in the image below.

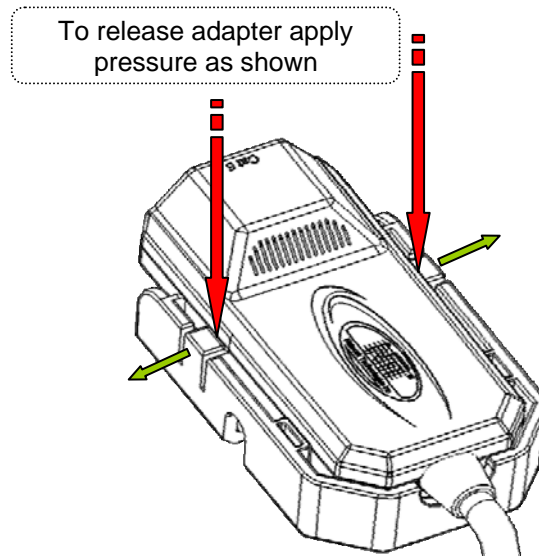


Figure 7- HA-RS mounting base

For instruction on configuration of the HA-RS to make connection to the serial device, see page 41.

Connecting the CAT5 cable to the Host Adapter

Connect CAT5 cable to the "OUT" port on the Host Adapter. (See Figure 8.) When properly inserted the cable end should snap into place. Also be sure to insert the Terminating Plug (HA-PLGTRM) into the "IN" port on the Host Adapter if this is the only Host Adapter in the system. Otherwise, see "Daisy-Chained Host Adapters" on page 9 to add more Host Adapters to the system.



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

NOTE: The installer must ensure that all CAT5 cable between the Host Adapter and User Station is of the straight-through type and not crossed.

If cables must be routed near sources of magnetic fields or electrical interference, use shielded CATx cable (see table on page 46) for best performance.

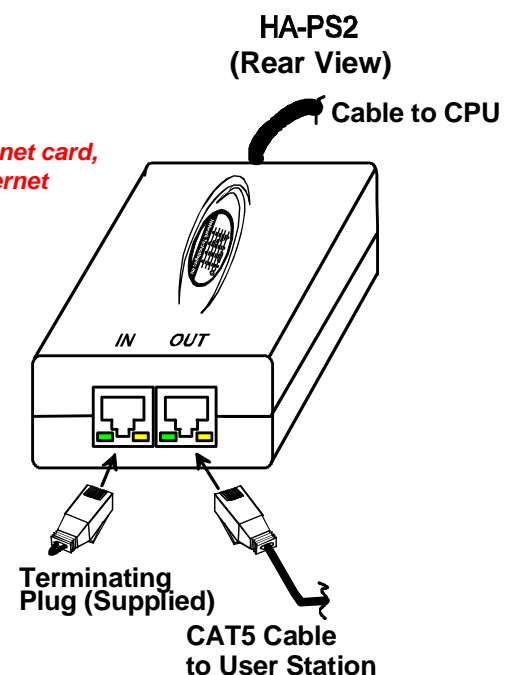


Figure 8- Connect CAT5 cable to Host Adapter

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 9. 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'.

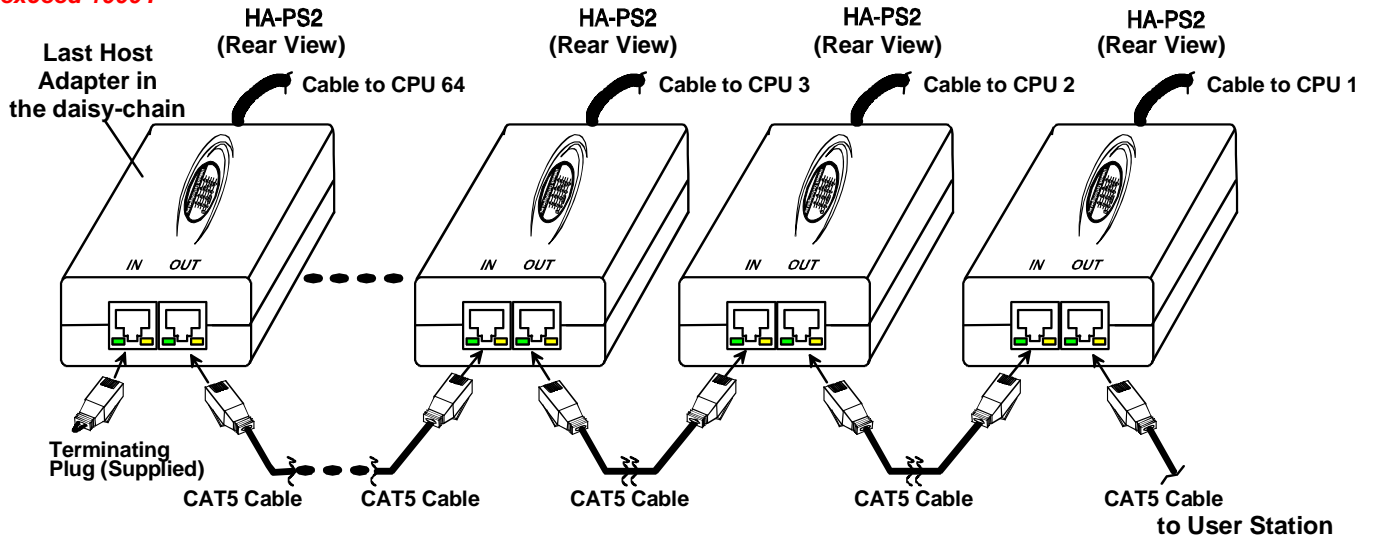


Figure 9- Daisy-chained Host Adapters

Adding a Host Adapter to the Daisy-Chain

When adding a Host Adapter to a daisy-chain, whether at the end, or inside the chain (between two other Host Adapters connected together), 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. Host Adapters are either HA-PS2 (for PS/2 CPUs), HA-USB (for USB CPUs), HA-SUN (for legacy SUN CPUs) or HA-RS (for serial-controlled devices).
2. Determine what name the Host Adapter will be identified as in the Host Adapter list. The PRIMUX will automatically name it for the PN# (part number) found on the case of the Host Adapter. (This name can be changed later- page 29.)
3. Follow the installation instruction on page 5 for Host Adapters and above for Daisy-Chained Host Adapters.

FYI: A Host Adapter can be added to the last Host Adapter in the chain, or between two existing 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 (for more on "Command Mode" see page 19).

5. This Host Adapter will be auto-discovered by the PRIMUX. If the Host Adapter is new (unused), it will identify itself as "PN:xxxxxxx" (where xxxxxxx is the part number of the Host Adapter).

Note: If the Host Adapter has been previously connected and the name is still present in the Host Adapter list, it will still have the name and settings it was originally configured with. To delete those settings in the PRIMUX, delete the Host Adapter from the Edit Host Adapter menu (page 29).

Note: A PRIMUX in Matrix Mode (page 34) will not auto-discover a Host Adapter. To force a Host Adapter to be discovered after connecting it to a PRIMUX Matrix Switch, press <F5> while in Command Mode.

6. The administrator should assign a unique name to the Host Adapter (see page 29)
7. Only users with administrator rights will have access to the new Host Adapter unless the administrator assigns additional users access (see page 32).

Once access controls have been set, the administrator should verify the security access to the new Host Adapter.

The User Station

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

NOTE: If the user keyboard connected is PS/2 (6mD connector), then the mouse must also be PS/2. If the user keyboard is USB (USB Type A connector), then the mouse must also be USB.

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 on the User Station.
3. Connect the PS/2 device(s) to the User Station (see Figure 10).
 - 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.

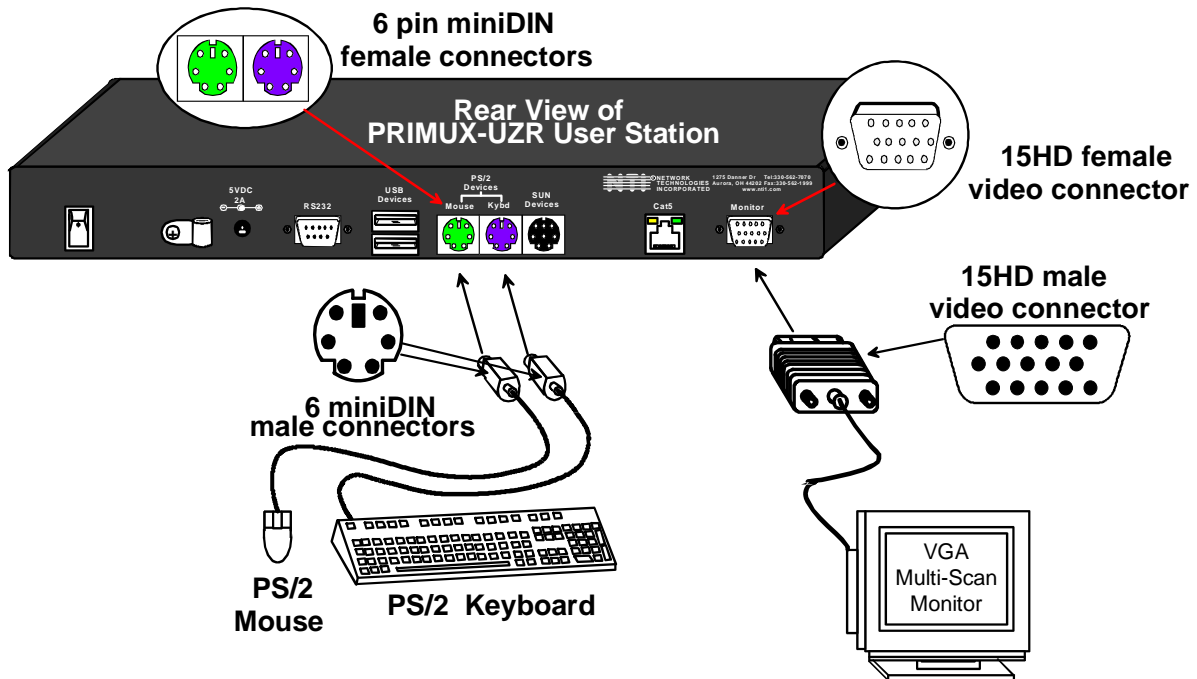


Figure 10- Connect the Extended PS/2 components to the User Station

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 11).
 - 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.

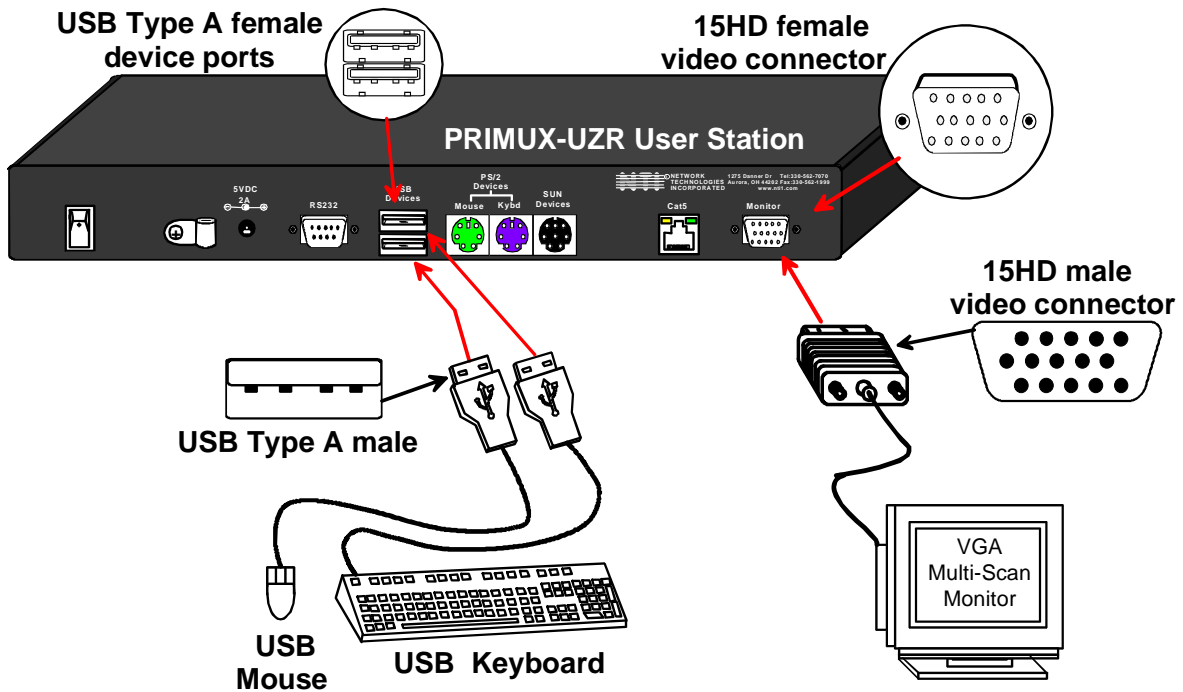


Figure 11- Connect extended USB components to the User Station

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 4. Connect the CAT5 cable to the RJ45 connector labeled “Cat 5” on the User Station. (See Figure 12.) 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.

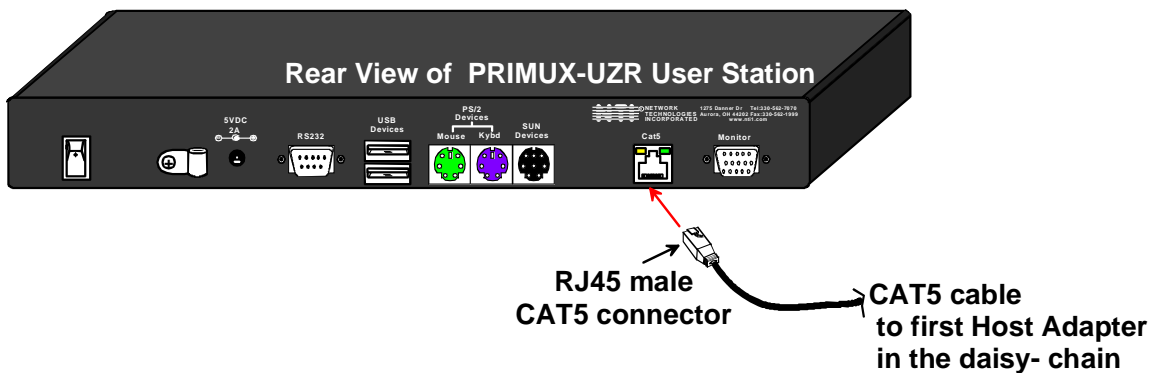


Figure 12- Connect CAT5 cable to User Station

NOTE: If an RJ45 wall outlet is being used, connect the other end of the extension cable to the RJ45 wall outlet.

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 13). Plug the AC adapter into a power outlet and press the power switch to turn the User Station ON. 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.

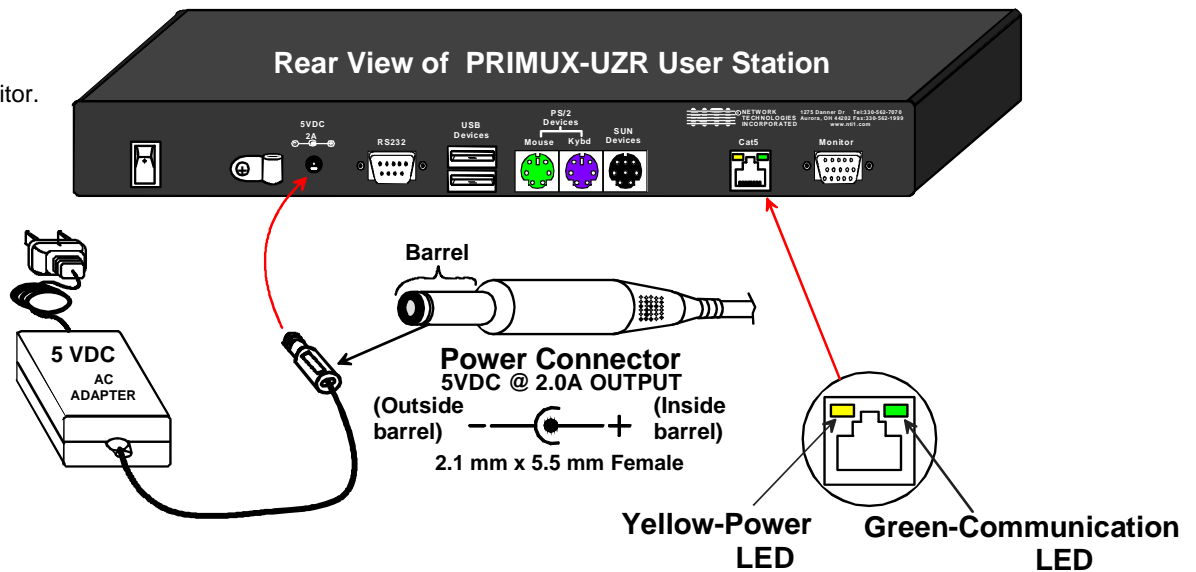


Figure 13- Connect the AC adapter to the User Station

4. With the User Station and Host Adapter connected via CAT5 cable, refer to "Using the PRIMUX " on page 13.

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 Figure 13)

USING THE PRIMUX

The PRIMUX CAT5 KVM System is designed to enable a user to control as many as 64 PS/2, USB and legacy 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.

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 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, Windows Server 2000,2003 and 2008.)

Note: When hotplugging the mouse and keyboard cables into a PS/2 CPU that is known to support hotplugging, 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 29).

Hot plugging a Host Adapter to an NTI VOPEX splitter is not recommended.

Initial Startup

After installing the User Station and one or more Host Adapters as described on pages 4-8, when first applying power the user named **"root"** will be automatically logged-in and the Command Mode OSD menu will appear. By default, the root user has full administrator rights and access to all Host Adapters and their connected CPUs.

User Rights vs. Administrator Rights

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
- Adding and configuring Host Adapters
- 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 and configure Scan Mode
- The ability to assign a list of favorite CPUs
- The ability to fine tune the video quality

FYI: Users can be given full administrative access rights by the administrator (see page 32).

User Rights Include:

- The ability to connect the Users Station's keyboard, mouse, and monitor to CPUs (only those CPUs that have been granted access by the administrator).
- The ability to enable/disable and configure Scan Mode
- The ability to assign a list of favorite CPUs
- The ability to fine tune the video quality

Setup Host Adapter(s)

No initial configuration of the Host Adapter is required for it to be identified by the User Station. Once discovered, it appears in the list of CPUs in the Command Mode main menu. The name will appear as "PN:xxxxxxx" where xxxxxxx is the number found on the Host Adapter case. The name can be edited later (see page 29).

Note: In order for the User Station to identify a Host Adapter and be included in the OSD list of connected CPUs (page 19), 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: All Host Adapters must be programmed with firmware version 2.0 in order to work with a User Station programmed with firmware version 2.0 and later. See "Please Note..." on page i.

Quick Connect to a CPU

For OSD menu Navigation guidelines, see page 16.

From the Command Mode menu (page 19), to make connection to any Host Adapter in the daisy-chain, press <Up arrow> or <Down arrow> to highlight and select the desired Host Adapter, press <Enter> to connect to it.

-OR-

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

Press <Esc> to exit Command Mode and use the connected CPU.

Press <Ctrl> + <`> to return to Command Mode if desired.

Change or Disable "root" Auto-login

For security purposes, it is recommended that the Auto-login feature either be disabled or the Auto-login user be changed to a user with fewer rights than the administrator.

To **disable** the Auto-login, from the main menu, press <A> -<R>-<A>-<N>.

To **change** the Auto-login, from the main menu,

- press <A> -<U>-<A>-<Y>-<F10> to first establish "user1" with no Host Adapter access but no administrative privileges
- press <A> -<R>-<A> and select "user1" for Autologon. (Selection can be made using left mouse click or spacebar)
- press <F10> to return to the main menu.

Press <L> - <Y> to logout and return to a login prompt.

To return to the Command Mode menu via Auto-login, press <F1>. You will be logged in as "user1" .

To login as the administrator, see below.

Note: If the PRIMUX is power cycled, the PRIMUX will now auto-login and open into the Command Mode menu with user1 logged in.

Administrator Login and Password

To login as the administrator, from the login prompt, enter the administrator name and default password:

administrator name = <root>

administrator password = <nti>

Note: User names and passwords are case sensitive.

With a successful login, the administrator can setup additional users (see page 32).

FYI: The User Station can be configured to Autologon a specific user (page 35) with each User Station power-up or have a Login splash screen appear for the user to login to the User Station.

NOTE: In PRIMUX units with firmware version 1.9 and earlier, the administrator name was "ADMINISTRATOR" and the password was "NTI" (all upper case letters).

Change the Default Administrator Password

Once the administrator is logged in, it is recommended (for greater security) that the the administrator change the default administrator password.

To change the administrator password:

- Press <A> (Administration Menu) - <U> (User Configuration)
- Select the user "root" to open the "Edit User" menu
- Press <P> to open the "password" field.
- Type in a new password (case sensitive, 16 characters maximum, alphanumeric)
- Press <Tab> to open the "confirm" field
- Re-type the new password to confirm
- Press <Enter> to finish and save.

Note: If you press <Enter> again, you will have to retype the confirmation.

Press <Esc> to exit the menu, or <P> to change it again.

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

Note: User names and passwords are case sensitive.

Guidelines for Navigating OSD Menu

Throughout this manual, various rules apply for navigating 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 <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 32).
- 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> on the keyboard.
- Press <F10> to return directly to the Command Mode menu.
- Alphabetic Keys pressed to navigate OSD menus can be upper or lowercase.

Reference the image below:

1. 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.
2. 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.
3. The scroll bar in a list can be used by clicking on the corresponding up and down arrow above and below the scroll bar.
4. The mouse wheel may be used to move the selection bar
5. Placing the mouse over a listed Host Adapter highlighting the listed item with a light blue background "selects" the Host Adapter. Clicking on it while in Command Mode will connect to that Host Adapter.

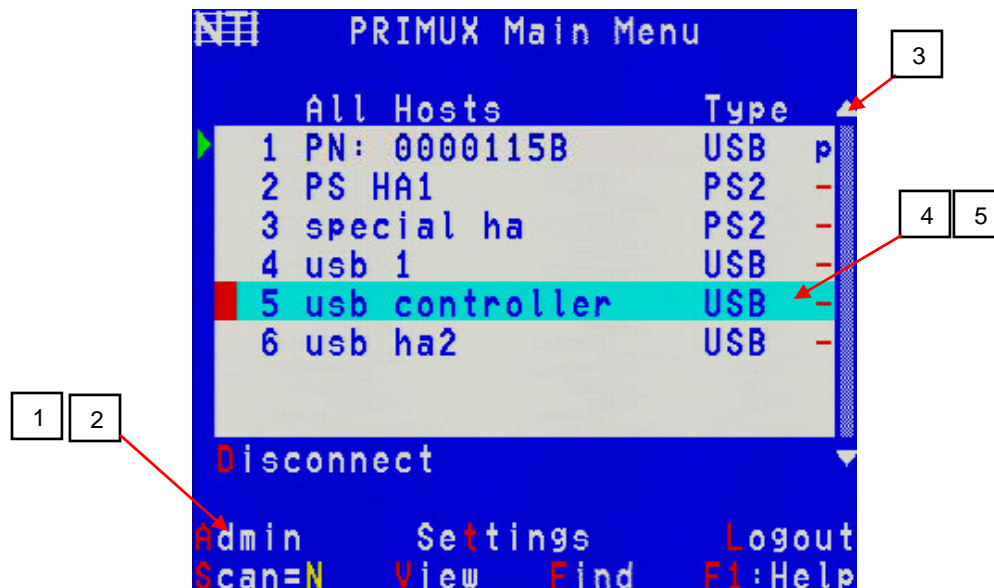


Figure 14- OSD Menu Navigation

FYI: A "Quick-Find Keystroke Table" can be found at the end of this manual (page 48).

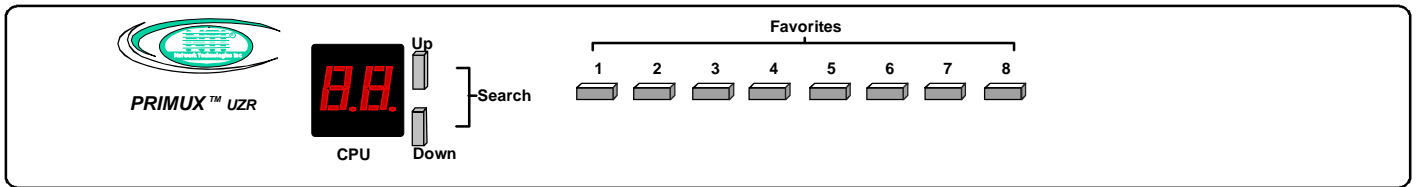


Figure 15- PRIMUX-UZR front panel

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 (page 19) 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 15)

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. See “Favorite Hosts” on page 24 to use Favorites through the OSD menu.

Note: Only one Favorite button can be programmed per Host Adapter (i.e. Favorite buttons 1 and 5 cannot both be programmed to connect to Host Adapter 10).

Using the Search buttons

The moment a Search button is pressed, the user connection to the previously selected Host Adapter will be terminated.

A quick press and release of the Up or Down Search button will increment or decrement (respectively) the selected Host Adapter by one.

Pressing and holding the Up or Down Search button will rapidly increment or decrement the selected Host Adapter, skipping every other available host adapter for rapid searching.

Note: The Host Adapters accessible through the front panel will be limited to only those Host Adapters the logged-in user has access to (page 33)..

If, after releasing a Search button, the display reads “0”, the selected Host Adapter is unavailable because Sharing mode (page 31) has not been enabled for this Host Adapter and another user is presently connected to it.

Once a Host Adapter is selected, either by the Search buttons or the Favorite buttons, the connection between the Host Adapter and the user will be delayed by 1 second.

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 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 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.

Auto-login

By default, the user account "root" has been configured to automatically login at power-up. The administrator may reconfigure the User Station to auto-login a different user (page 35) or have a Login splash screen appear at power-up requiring a user to login, with or without a password. The auto-login user uses CPUs listed in its Host Access List as configured by the administrator (page 33). The auto-login user will open the Command Mode menu with a listing of any Host Adapters that user has access to.

Administrator Login

To access the OSD Command Mode menu from the keyboard press the <Ctrl> + <~> (accent/tilde key). (An additional alternate OSD key may be defined, see page 28.) 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. Enter the following;

administrator name = <root>
administrator password = <nti>

FYI: The name for the administrator ("root") cannot be changed.

Note: User names and passwords are case sensitive.

Once logged-in, see "Edit Users" on page 32 to change the password. Once the password is setup, if it is lost or forgotten the administrator will have to contact NTI for assistance on resetting the password. The administrator can setup each of the users (page 33) and the limitations of their use of the individual CPUs from the Administration Menu.

User Login

The administrator may configure the User Station to require each user to login using a predefined password to gain access to CPUs and to the features in the OSD menus. Once logged-in, the user will be directed to the OSD menu where the user can decide what action is to be taken.

Once logged-in, a user can use the Command Mode functions described below and on page 19 to control the CPUs within the limitations as determined by the administrator.

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

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

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



Figure 16- Login splash screen

User OSD Menus

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 Figure 17) 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 at login, the first 8 Host Adapters will be displayed, sorted alphabetically. When the Command Mode main menu is re-displayed to a logged-in user that has been working in a connected CPU, the Host Adapters listed will be those in the same group of 8 as the CPU they are connected to (I.e., if they are connected to the Host Adapter in index position 14, then Host Adapters 9-16 will be displayed when they reopen Command Mode). Alternatively, the user can display only the Host Adapters they use most often, sorted as "Favorites" (see next page and page 24).

Only the names of Host Adapters accessible to the user that is logged-in will be displayed. The access rights for the user logged-in may not include all Host Adapters.

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, USB or SER)
- 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.

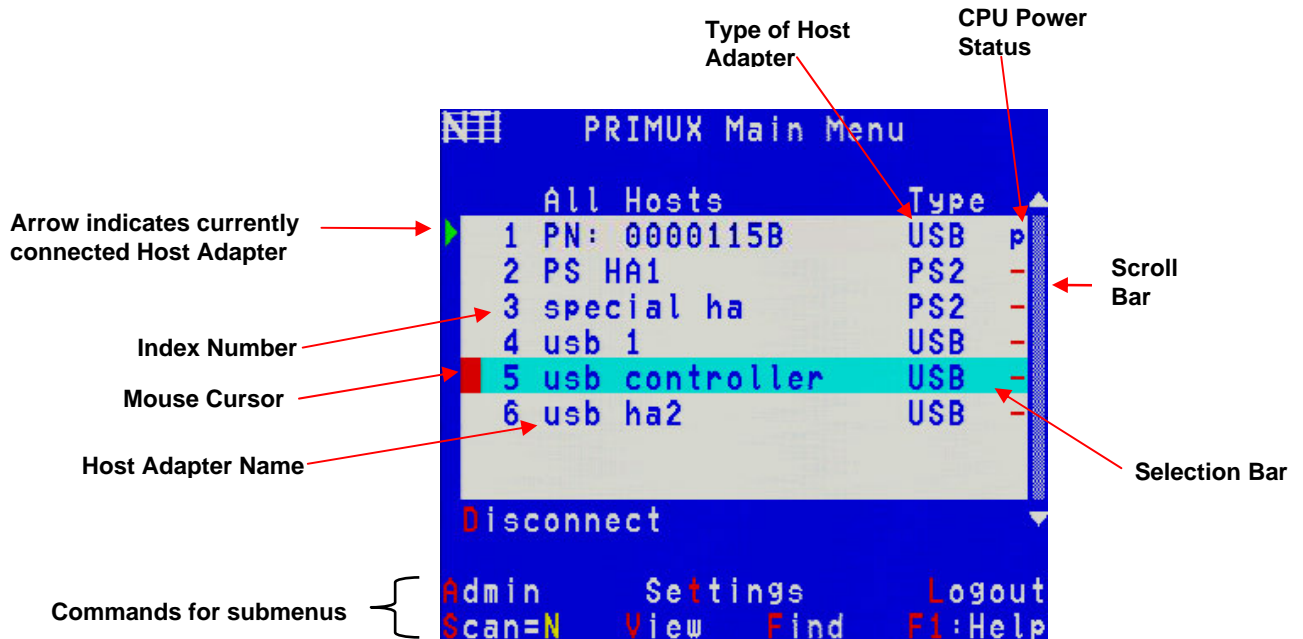


Figure 17- Command Mode main menu

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

Function	Keystroke
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
Enter Settings Menu	T
Enter Administration Mode (Administrator only- see page 26)	A
Find- select Host Adapter by name	F
Display Command Mode Help Menu	F1
Connect to the highlighted Host Adapter	Enter
Toggle between listing all accessible Host Adapters and listing only accessible "Favorite" Host Adapters	V
Disconnect from the currently connected Host Adapter- no CPU connection will be displayed behind the OSD menu	D
Log Out the User/Administrator and disconnect from the Host Adapter The login screen will appear (page 18)	L
Exit Command Mode without logging out	Esc

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 on 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>.

Note: All Host Adapters must be programmed with firmware version 2.0 in order to work with a User Station programmed with firmware version 2.0 and later. See "Please Note..." on page i.

Scan Mode

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

Scan Mode enables the user to scan through selected Host Adapters (unless they are powered-OFF) and to have full device control of the connected powered-ON Host Adapter. From the Settings menu (page 21) the user can edit the list of Host Adapters that can be scanned. A Host Adapter is skipped from the scan cycle if the Host Adapter is not selected in the scan list (page 23).

When switching to a new Host Adapter the Host Adapter name is displayed by OSD for 4 seconds. 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**. The scan dwell time is programmable from 2 to 255 seconds (default time-out period is 5 seconds). See Settings Menu (page 21) 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 menu 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

The Settings Menu provides controls for how the current logged-in user will view and make the best use of the PRIMUX.

Note: Changes to Video Quality settings will effect all users of this User Station.

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



Figure 18- Settings menu

Function	Description	Keystroke
OSD Settings	Enables the user to reposition or resize the OSD menu on the monitor	O
Host View	Open field to toggle between a listing Host Adapters alphabetically by name or just Favorites by default when opening Command Mode <ul style="list-style-type: none">• Press <spacebar> to toggle setting• Press <Enter> or <Tab> to save• Press <Esc> to cancel	H
Scan Dwell Time	Enter field to set change Scan dwell time value	T
Hosts to Scan	Choose CPUs to be scanned	S
Favorite Hosts	Open listing of Host Adapters to be designated as Favorites	F
Video Quality	Adjust the video quality to improve the screen image (must be connected to a Host Adapter to use this)	V
Help	Open Help window	F1
Esc	Exit the Settings menu	Esc

OSD Settings Menu

To enter the OSD Settings Menu, press <O> from the Settings Menu. (From the Command Mode menu press <T> - <O>.) Using the OSD Settings, the user can resize and reposition the OSD window on the monitor as desired. Changes to the OSD settings will only affect the logged-in user.



The default resolution of the OSD menu is much lower than the average CPU display setting. We recommend adjusting the size of the OSD menu before connecting to a CPU (i.e. make adjustment immediately after powering on the User Station, before connecting to a CPU). Once a CPU connection is made, the OSD menu will appear smaller due to the higher resolution setting.

Figure 19- 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
Esc	Exit the OSD Settings menu. Any changes are automatically saved.	Esc

Change Scan Dwell Time

The scan dwell time determines how long the PRIMUX will stay connected to a Host Adapter (in Scan Mode- page 20) while the user is idle before switching to the next Host Adapter. When the <T> is pressed from the Settings Menu (From the Command Mode menu press <T> - <T>), a field will appear around the current value for the scan dwell time. The user can enter any value between 2 and 255 (seconds). The default scan dwell time value is 5 seconds.

Function	Keystroke
Enter value	002-255
Save the new value	Enter or Tab
Exit	Esc



Figure 20- Scan Dwell Time field

Select Hosts to Scan

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

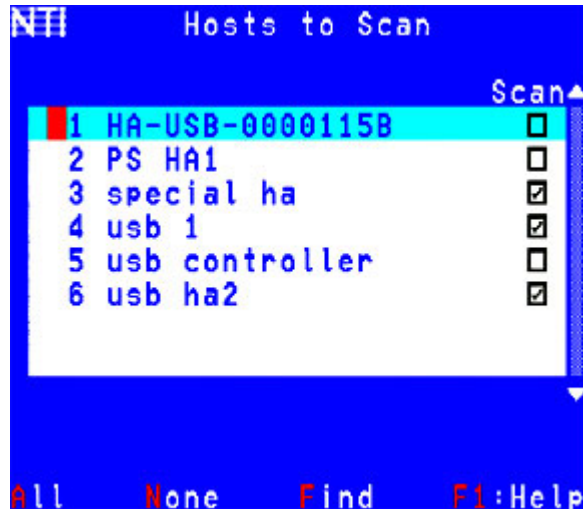


Figure 21- Host Adapters to Scan list

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 select the ports that will be scanned.

Only the selected ports will be scanned in Scan Mode (page 20) when the respective user is logged in. Each user can have a separate scan list.

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> or clicking the Host Adapter with the mouse.

Function	Description	Keystroke
All	Select all Host Adapters	A
None	Clear all selected Host Adapters	N
Find	Locate a Host Adapter by name	F
	Display a Help Page for Hosts to Scan	F1
Exit	Return to the Settings Menu	Esc

The scan selection list is automatically saved.

Favorite Hosts

From the Settings Menu, press <F> for the list of Host Adapters to select as favorites. (From Command Mode press <T> - <F>) The favorite hosts are typically those that a user connects to the most frequently. All accessible Host Adapters are listed and up to 8 can be numbered 1-8. The numbers assigned will determine their order of listing on your Favorites list in the Command Mode main menu, and which Front Panel buttons (where applicable- see page 17) will be associated with which Host Adapters. Favorite Host assignments are unique to each user profile.



Figure 22- Favorite Hosts list

Function	Description	Keystroke
----	Move selection bar up	Up arrow
----	Move selection bar down	Down arrow
----	Assign a position in the Favorite's List or a Favorite button	1 thru 8
----	Remove a position in the Favorites List or a Favorite button	Backspace
None	Clear all selected Host Adapters	N
Find	Locate a Host Adapter by name	F
Help	Display a Help Page for Favorite Hosts	F1
----	Return to the Settings Menu	Esc

Note: *If a number is assigned twice, the first listing with that number will lose its place in the list.*

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).

Video Quality Adjustment values are stored on a per Host Adapter-to-User Station basis. The settings made will apply to all users for that Host Adapter-to-User Station connection. Adjustment may be necessary for each Host Adapter.

To display the Video Adjustment screen, press <v> from the Settings Menu. (From the Command Mode menu press <T>-<V>.) An image with 6 horizontal bars (video components) will appear.

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



Figure 23- Video Adjustment Screen

Function	Keystroke
To move between the scroll bars	Up Arrow Or Down Arrow Or R, G, B, A or I or click on the row
To adjust the scroll bar setting	Left Arrow Or Right Arrow or click on the left/right arrow
Modify screen position	Move the mouse beyond the image boundaries to drag the image
Exit menu and save	Esc

Note: Changes made to the settings affect the screen image as they are made.

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. **FYI: Due to the extensive range of this feature, pressing and holding the left or right arrow key down with this bar will move the adjustment slide more rapidly.**

The “Brightness” scroll 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.

The “Comp.” scroll bar is use to adjust the video quality based on the varying twist rates and lengths of the CATx cable used.

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

Administrator Controls

Administration Menu

Note: The Administration menu will only be accessible if the administrator is logged in (page 18) or if the user has administration rights.

Press <A> from the Command Mode menu (page 19) to display the Administration menu.

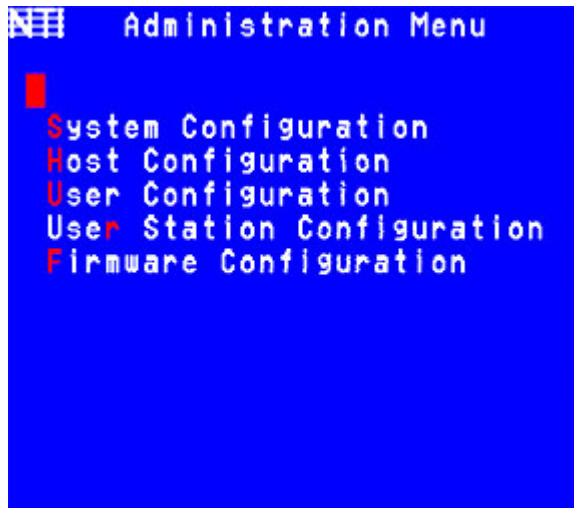


Figure 24- Administration Menu

The table below describes the functions of the Administration menu.

Function	Description	Keystroke
System Configuration	Edit settings like logoff timeout, alternate OSD key, OSD blank timeout, etc. (page 27)	S
Host Configuration	Edit Host Adapter names and properties (page 29)	H
User Configuration	Lists the Users to be edited, shows the status of all users, and provides option to Add/Delete users (page 32)	U
User Station Configuration	Set auto-login user, User Station name, keyboard language, etc. (page 34)	R
Firmware Configuration	View code version, downloaded code, upgrade Host Adapters (page 36)	F
Network Configuration	*shown only in Matrix Mode* (page 34)- Edit the network settings (page 40) of the PRIMUX Matrix	N
Esc	Return to the Command Mode menu	Esc

System Configuration Menu

Press <A> -<S> from the Command Mode menu to display the System Configuration menu.



Figure 25- System Configuration menu

Function	Description	Keystroke
Logoff Timeout	Open an edit field to set the time in minutes after which a user will be logged out of Command Mode due to inactivity. Range= 0-255 minutes (value of 0 disables the feature)	L - (000-255)
Alternate OSD Key	Define an alternative key to use with <ctrl> to enter Command Mode	A
OSD Blank Timeout	Set the time in minutes for the OSD screen to blank out due to inactivity- moving the mouse or pressing a key on the keyboard will redisplay the OSD Range= 0-255 minutes (value of 0 disables the feature)	I
Configure DDC	Opens a Host Adapters list in which DDC can be sent from the monitor to specific host adapters	D
Delete All Hosts	Deletes all Host Adapters listed- requires confirmation	H
Delete All Users	Deletes all configured Users- requires confirmation	U
Sharing Timeout	*shown only in Matrix Mode* (page 34)- when a host is in full share mode (page 29) , this is the time after which a user will relinquish control so that another user may take control. Range= 2-255 seconds	
Help	Display topic specific help page	F1

Alternate OSD Key

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

To assign an Alternate OSD key press <A> from the System Configuration Menu. (From Command Mode type <A>-<S>-<A>.) An edit field will open displaying the current value. Type a key to be used with the <Ctrl> key to open command mode. Re-enter <`> (accent/tilde key) to disable the feature.

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> + <Alternate OSD Key> combination.

Configure DDC-Auto Detect Resolutions

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 the selected powered Host Adapter to be retrieved by its connected CPU.

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

DDC information is automatically acquired from the monitor by the User Station. To send DDC information to a powered Host Adapter, press <D> from the System Configuration Menu. (From Command Mode type <A>-<S>-<D>.)

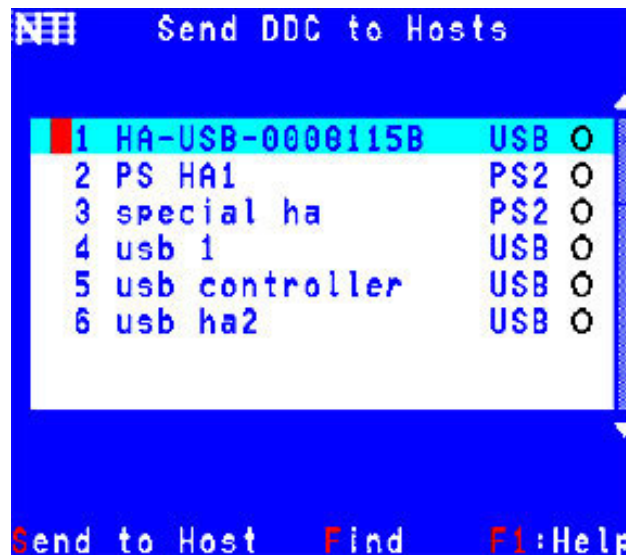


Figure 26- Configure DDC

Description	Keystroke
Move the selection bar to the desired Host Adapter	Up arrow or Down arrow
Use the "Find" feature to locate the Host Adapter	F
Make a selection	Spacebar
Send DDC information to the selected Host Adapter	S
View help screen	F1
Return to the System Configuration menu	Esc

Configure Host Adapters

From the Administration Menu, press <H> to display the Configure Host Adapters menu from which the administrator can select Host Adapters to edit (From Command Mode type <A> - <H>.)

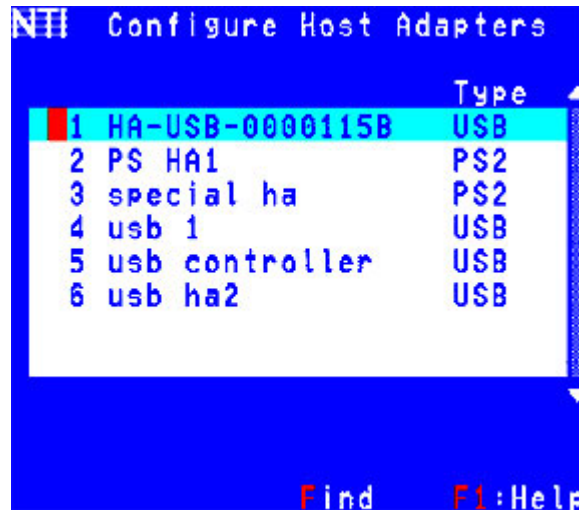


Figure 27- Host Adapter List

Function	Description	Keystroke
Find	Locate a Host Adapter by name	F
Help	Display topic specific help page	F1
Exit	Return to the Edit menu	Esc

Note: The HA-RS Host Adapter will only work with User Stations programmed with firmware version 2.0 and later.

Note: All Host Adapters must be programmed with firmware version 2.0 in order to work with a User Station programmed with firmware version 2.0 and later. See "Please Note..." on page i.

Edit Host Adapter

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

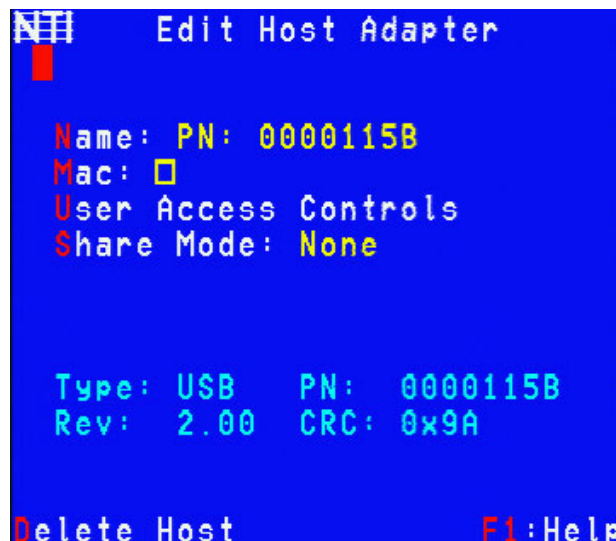


Figure 28- Edit Host Adapters menu

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	Description	Keystroke
Name	Modify the name (of the selected Host Adapter)- opens an edit field to enter a character string- 16 characters max., case sensitive. Press <Enter> or <Tab> to save Press <Esc> to cancel	N
Mac	Designate a Host Adapter to be connected to a Mac- A checkmark in the box indicates Mac CPU	M - Spacebar
User Access Controls	Open list of Users to select which users will have access to this Host Adapter	U
Share Mode	*only shown in Matrix Mode* (page 34)- Configure sharing for the Host Adapter. Options are None, Limited, and Full.	S - Spacebar
Delete	Delete Host Adapter from Host Adapters list	D
Help	Display topic specific help page	F1
----	Return to Host Adapter List	Esc

FYI: When modifying the name, the position of that Host Adapter in the Host Adapter list will be adjusted according to its alphabetical order. Index numbers will adjust accordingly.

FYI: When deleting a Host Adapter, all configurable settings including DDC information and the MAC configuration will be removed. If a Host Adapter is deleted while connected, it must be disconnected from the CPU and reconnected in order to be re-discovered by the User Station.

Configure MAC Host Adapters

Designating a Host Adapter for use with a MAC CPU enables the mouse to pass information to a connected USB MAC CPU. 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.

User Access Controls

The User Access Controls list enables the administrator to assign which users will have access to a specific Host Adapter.

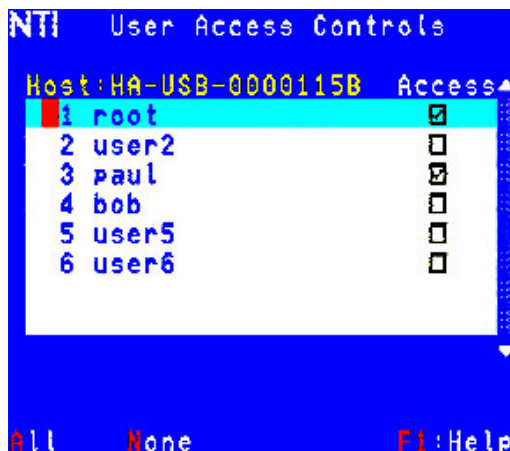


Figure 29- User Access Controls list

Function	Description	Keystroke
---	Move selection Bar bar	Up arrow or Down arrow
---	Select specific user to access the Host Adapter	Spacebar
All	Allow All Users to access the Host Adapter	A
None	Allow No Users to access the Host Adapter	N
Help	Display topic specific help page	F1
Exit	Return to the Edit menu	Esc

Note: Changes to these selections will effect the selections made in the Access Controls list for User (page 30).

Note: Users with administrative rights automatically have access to all Host Adapters, so access to the user "root" and any users with administrative privileges cannot be de-selected.

Share Mode

Share mode is only available in Matrix Mode (page 34)

From the Edit Host Adapter menu, press <s> to toggle Share Mode between three possible settings:

None- only one user can access a host adapter at a time. Other users that try will receive a "Host in use" error message.

Limited- the first user to connect to the Host Adapter will gain control of the keyboard/mouse for the connected CPU until they logout, disconnect from that Host Adapter, or change to a different Host Adapter. Other users can connect to the Host Adapter to view the video, but no keyboard/mouse control will be allowed unless the first user gives up control.

Full- all users with access permission to that Host Adapter may compete for keyboard/mouse control. A user with control will retain control until their keyboard/mouse is idle for the specified **sharing timeout** period (page 27). Control is then relinquished and the first user to use their keyboard/mouse will gain control.

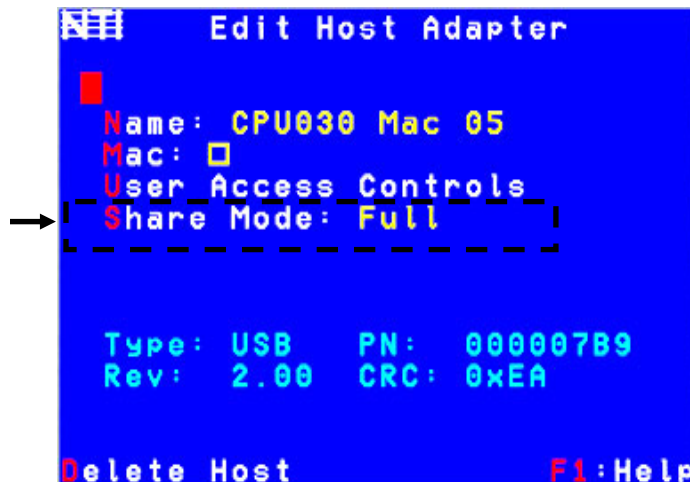


Figure 30- Share Mode Option (Matrix Mode only)

Keyboard/Mouse Access Indicators

A mouse and keyboard icon will appear in the upper left corner of the screen for a couple of seconds to indicate the status of the keyboard/mouse control.

The icons will appear green when the user has control over the keyboard/mouse, yellow when the keyboard/mouse control is available to the user (like in Limited and Full Share Modes), red when the keyboard/mouse control is not available to the user.

Configure Users

From the Administration Menu, press <U> to display the Configure Users menu from which the administrator can select Users to add or edit (From Command Mode type <A> - <U>.) The Configure User menu displays from left to right 1) the name of each user, 2) whether or not the user has been assigned administrative rights and 3) whether they are enabled to login or not. From this menu the administrator can also add new users.

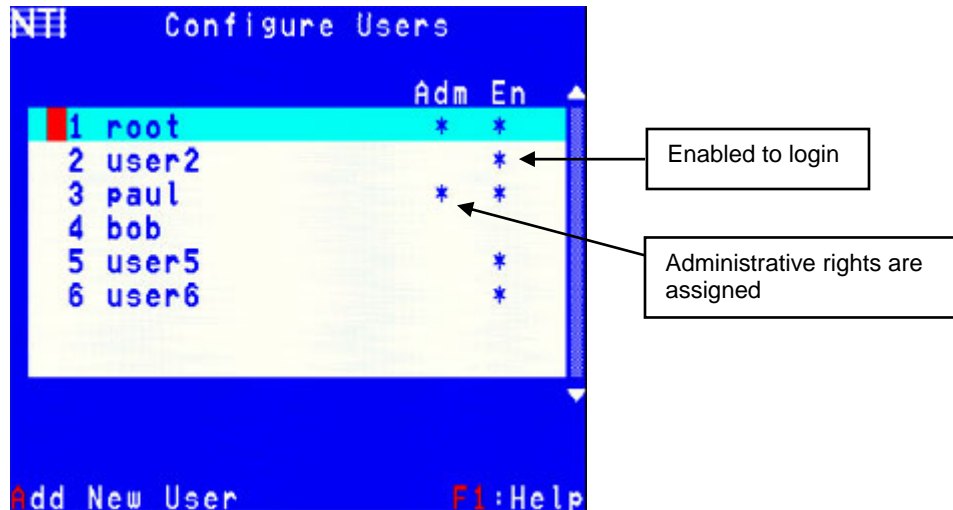


Figure 31- Configure Users menu

Function	Description	Keystroke
----	Select User to be edited	Up arrow or Down arrow
----	Open User Edit menu	Enter
Add New User	Add new user and open User Edit menu to configure User options- Y / N Confirmation required	A - Y/N
Help	Display topic specific help page	F1
----	Return to Administration menu	Esc

Edit Users

From the Configure Users menu, press <Enter> to select a user to edit and bring up the Edit User menu. (From Command Mode type <A>-<U>- select a user and press <Enter>)

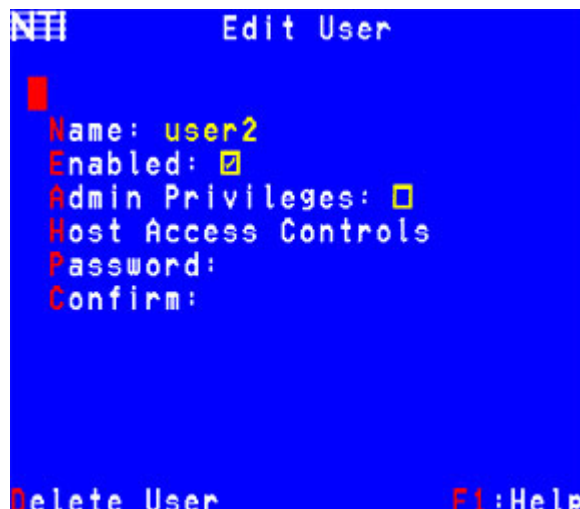


Figure 32- Edit Users menu

Function	Description	Keystroke
Name	Modify the name (of the selected User)- opens an edit field to enter a character string- 16 characters max., case sensitive. Press <Enter> or <Tab> to save Press <Esc> to cancel	N
Enabled	Allows the administrator to enable a user to login or not to login to the User Station. A checkmark in the box indicates the user is enabled.	E - Spacebar
Admin Privileges	Allows the administrator to assign a user to have administrator rights or not. A checkmark in the box indicates the user has administrative privileges.	A - Spacebar
Host Access Controls	Brings up a list of Host Adapters to assign user access to	H
Password	Opens an edit field to enter a password for that user. 16 characters max. - case sensitive- - Press <Enter> to save - Press <Tab> to save and move to next field	P
Confirm	Opens an edit field to re-enter a password for that user. Must be entered exactly as it was entered in Password field - Press <Enter> to save - Press <Tab> to save and move to next field	C
Delete User	Delete User from Users list- Y / N Confirmation required	D
Help	Display topic specific help page	F1
Exit	Return to the Configure Users menu	Esc

- If no password is entered in the "Password" field, a message "Press Enter for blank password" will appear when you open the "Confirm" field. Press <Enter> for that user to login without submitting a password at the login prompt.
- If the <Esc> key is pressed to exit while entering the Password or Confirming, no change to the password will be made.
- If no password is assigned to a user when a user is added, that user will login without the need for a password.

Note: The user "root" is special. Its name, enabled status, privileges, and host access cannot be changed. Only root's password can be changed from the default "nti".

Add New User

From the Configure Users menu press <A> to add a new user. (From Command Mode type <A> - <U> - <A>.) 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 <Esc> to exit the menu and the new user "NEW USERx" will have been added to the User List.

By default, a new user will be given no access to Host Adapters. To change this, the administrator must edit the user host access list as described on page 33.

Host Access Controls

To define what CPUs a specific user has access to, press <H> from the Edit User List (page 32). (From Command Mode press <A> - <U> - select a user (other than "root") and press <Enter> - <H>.) The "Host Access Controls" list will be displayed.

FYI- Access Controls list can also be applied from the User Access Controls menu. (From Command Mode press <A> - <H>-Select Host Adapter-<Enter>-<U>). The User Access Controls list includes a list of Users to select to have access to a specific Host Adapter. Changes made in either access controls menu will effect selections in both menus.

Note: Users with administrative rights automatically have access to all Host Adapters, so the Host Access Control list is not present to edit for those users.

Function	Description	Keystroke
----	Toggle Specific selection	Spacebar
Find	Locate Host Adapter by name	F
All	Allow user access to all Host Adapters	A
None	Allow user access to no Host Adapters	N
Help	Display topic specific help page	F1
----	Esc	Esc

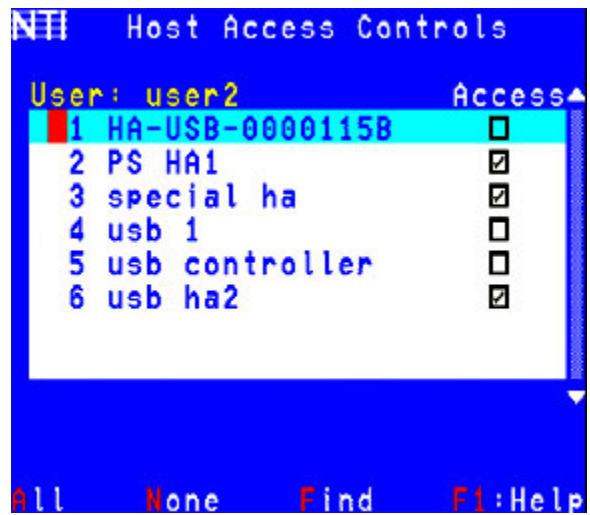


Figure 33- Host Access Controls list

User Station Configuration

From the Administration menu (page 26) press <R> to bring up the User Station Configuration menu. (From Command Mode press <A> - <R>.)

Note: The "Mode" setting should be left as "Stand-alone" whenever the User Station is being used by itself. Only set it to "Matrix" if the User Station will be used in conjunction with a PRIMUX Matrix Multi-User KVM Switch. If this setting is changed to "Matrix" by mistake, contact NTI for instruction to return the setting to "Stand-alone".



Figure 34- User Station Configuration 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	Description	Keystroke	Parameter Value
Name	Modify the name (this only has a practical purpose when the User Station is in Matrix Mode.)	N	String, 16 characters max., case sensitive
Set Keyboard Language	Set the keyboard language for use with the CPU	K	None. Brings up Keyboard Languages menu. Choose from list.
Auto-login	Select the Auto-login user to be automatically logged in at power up	A	None. Brings up Select User menu.
Mode	Choose User Station mode See "Note" above	M + Spacebar	Toggle between "Stand-alone" and "Matrix" Y / N Confirmation required
Help	Display topic specific help page	F1	None
----	Return to Administration Menu	Esc	None

Select Auto-login User

From the User Station Configuration menu, press <A> to bring up the Auto-login User list. (From Command Mode type <A> - <R> - <A>.)

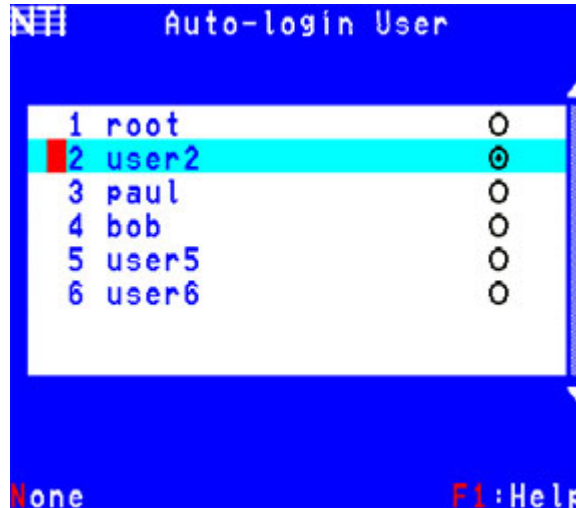


Figure 35- Select user for Auto-login

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

Function	Description	Keystroke
----	Select the user indicated by the selection bar (user2 is selected as the auto-login user in the image above)	Enter or Space
None	Disable auto-login. A login prompt will be shown at power up instead of Command Mode.	N
Help	Display topic specific help page	F1
----	Return to User Station Configuration Menu	Esc

Caution: Selecting a user with administrative privileges will leave system configuration completely open.

Firmware Configuration Menu

The Firmware Configuration Menu is provided to enable the administrator to update the firmware inside the PRIMUX User Station and Host Adapters as new or improved features are available. The updated code can be downloaded from the NTI website at www.networktechinc.com/kvmswitch-cat5.html. This section describes how to update the firmware in the User Station and Host Adapters.

From the Administration Menu press <F> to get to the Firmware Configuration Menu. (From Command Mode press <A> - <F>.)

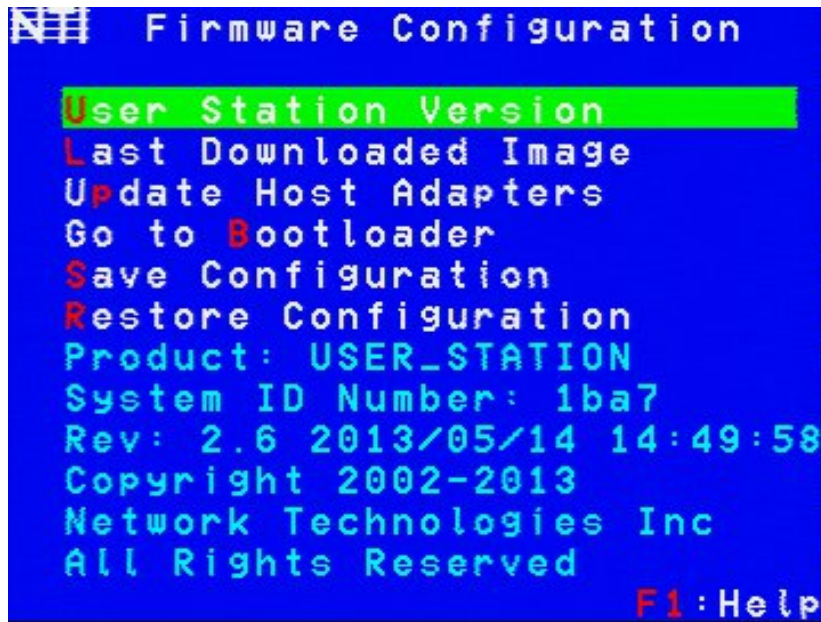


Figure 36- Firmware Configuration Menu

The functions of this menu are as follows:

Function	Description	Keystroke
User Station Version	Displays the latest firmware version of this User Station	U
Last Downloaded Image	Displays the CODE IMAGE info of the last code that was downloaded to the User Station using the Bootloader program	L
Update Host Adapters	To send the downloaded firmware image to a Host Adapter selected from a list of Host Adapters (page 38)	P
Go to Bootloader	To leave the OSD menu and activate the Bootloader Program***. The Bootloader program is used to download firmware images and update the firmware in the User Station. A serial terminal*** must be connected to the "RS232" serial port of the User Station to continue operation Confirmation required- the user will be prompted with a "Are you sure? (Y/N)" before acting on the command. Press <Y> to continue, or <N> to cancel.	B
Save Configuration	Save the system configuration file to a location on a connected PC using HyperTerminal	S
Restore Configuration	Restore a saved system configuration file from a location on a connected PC using HyperTerminal	R
Help	Display topic specific help page	F1
----	Return to the Administration menu	Esc

***See the instructions included with the updated code downloaded from the NTI website (www.networktechinc.com/kvmswitch-cat5.html) for additional information on the Bootloader Program.

Updated code and instructions for using the features above are included with the downloaded file from the NTI website.

Save and Restore Configuration

This feature works in Stand-Alone mode only (page 34)

To use the Save Configuration or Restore Configuration features you must first have a computer with a terminal emulation program (i.e. HyperTerminal) attached to the User Station using the Null Modem cable included with your PRIMUX. Also, the PRIMUX-UZR must be in Stand-Alone mode (page 34).

1. Attach the DINT-6-FF 9-pin serial null modem cable (supplied) between the serial port on the computer and the SERIAL port on the PRIMUX.

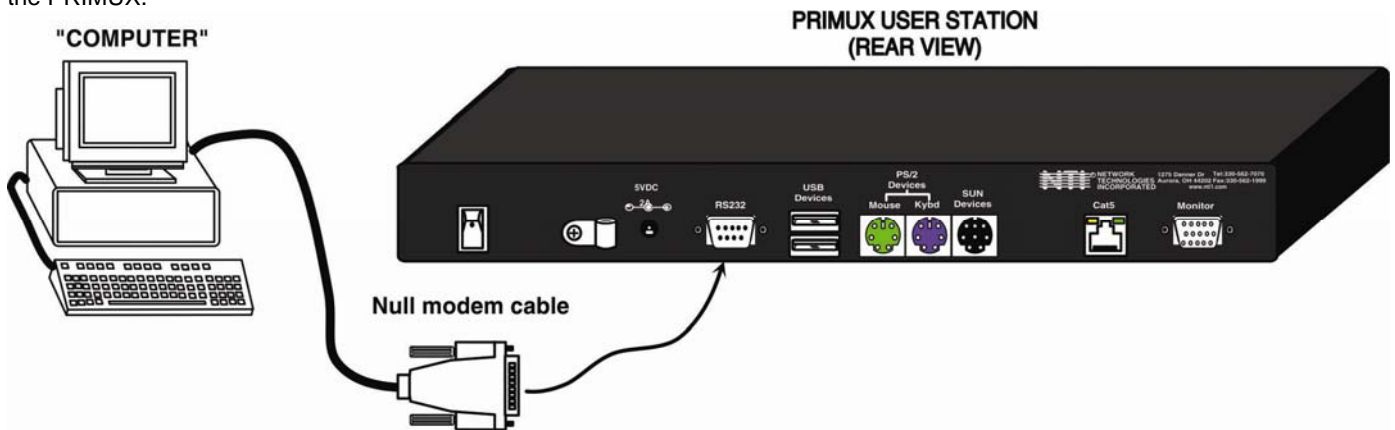


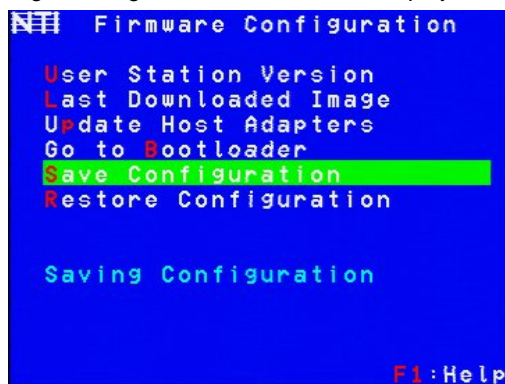
Figure 37- Connect null modem cable

2. Open the terminal emulation program (HyperTerminal) on the computer.
3. Connect to the User Station through the proper COM port using the following settings: 9600,8,n,1, no flow control.

To Save the Configuration:

With a connection made to the PRIMUX, press <S> from the computer with the OSD menu to select "Save Configuration".

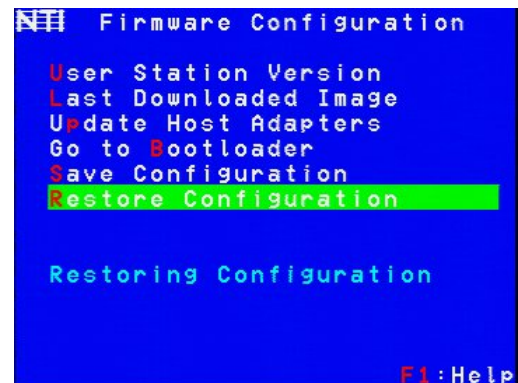
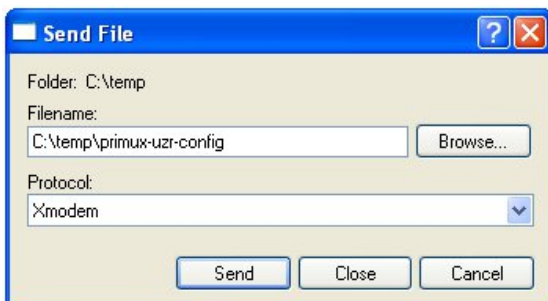
From the terminal window, go to the Transfer Menu, select Receive, and decide where to save the configuration file on the PC (using Xmodem protocol) and then determine what to name the configuration file. While the file is being saved, the terminal will display a status page and the message (in the OSD screen) "Saving Configuration" will be displayed. When finished, the message "Configuration Saved" will be displayed.



To Restore the Configuration:

With a connection made to the PRIMUX, press <R> from the computer with the OSD menu to select "Restore Configuration".

From the terminal window, go to the Transfer Menu, select Send (using Xmodem protocol), and browse to the saved configuration file on the PC. While the file is being restored, the message "Restoring Configuration" will be displayed. When finished, the message "Configuration Restored" will be displayed.



The following error messages may be displayed for the reasons shown:

Error Message	Reason
"Error Saving Configuration"	Took too long to connect to the terminal
"Serial Communication Error"	serial cable disconnected
"Configuration File Size Error"	wrong file selected to restore
"Configuration File Type Error"	wrong file selected to restore

Update Host Adapter Firmware

To use the "Update Host Adapters" command, the image downloaded using the bootloader (previous page) must be for either a HA_USB, HA_PS2, or HA_SUN. The type of image downloaded into the bootloader will be shown. If the image is not for a Host Adapter, the word "INVALID" will be shown.

Note: The HA-RS Host Adapter will only work with User Stations programmed with firmware version 2.0 and later.

Note: All Host Adapters must be programmed with firmware version 2.0 in order to work with a User Station programmed with firmware version 2.0 and later. See "Please Note..." on page i.

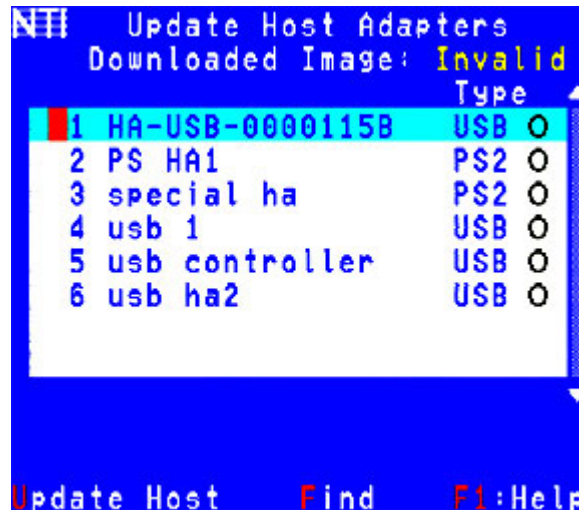


Figure 38- Update Host Adapters

When updating a Host Adapter, the downloaded image must match the type of Host Adapter selected:

Host Adapter Type	Downloaded Image needed (firmware file)
USB	PRIMUMX_HA_USB_x_x.b01 (where x_x is the version)
PS/2	PRIMUMX_HA_PS2_x_x.b01
SUN	PRIMUMX_HA_SUN_x_x.b01
SER (RS)	PRIMUMX_HA_RS_x_x.b01

- Press <P> from the Firmware Configuration menu. The Host Adapter List will appear.
- Press the <Up arrow> or <Down arrow> to select the Host Adapter to be upgraded (or press <F> to use the "Find" Feature to assist locating the desired Host Adapter).
- Press <Spacebar> to toggle the radio button to lock in the selection. Make sure the Host Adapter selected matches the type of image downloaded.
- Press <U> for "Update Host" to send the firmware to the selected Host Adapter. An indication of percentage of transfer will appear. At 100% the update will be complete. If the Host Adapter selected is not powered, inaccessible, or just not functioning properly, an error will be displayed.

Select Keyboard Language

To enter the Select Keyboard Language menu press <K> from the User Station Configuration menu (from Command Mode press <A> - <R> - <K>).



Figure 39- 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 listing having a radio button with a dot in the center is the currently selected language for the keyboard.

- To manually program a specific keyboard language, select a language and press <Spacebar>.
- To have the User Station automatically detect the language of the keyboard, select "AutoDetect" and press <Spacebar>. 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 <Esc> to return to the User Station Configuration menu.

Network Configuration

This screen is only available in Matrix Mode (applicable when used with a PRIMUX Matrix Multi-User KVM Switch)- see page 34 to change to Matrix Mode.

From the Administration Menu press <N> to get to the Network Configuration Menu. (From Command Mode press <A> - <N>.) To enable the PRIMUX Matrix to be accessible via Telnet, the IP Address, Gateway, and DNS settings must first be configured.

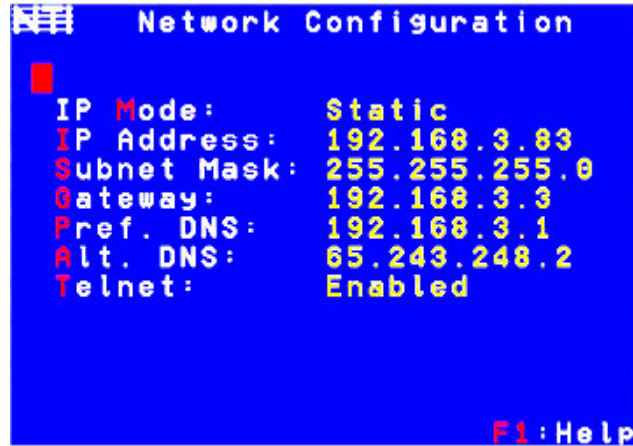


Figure 40- Network Configuration page

Function	Description	Keystroke
IP Mode	Toggle, using the <Spacebar> between "Static" or "DHCP". <ul style="list-style-type: none"> - In "Static" mode, the user must fill in all appropriate IP settings. - In "DHCP" mode, the DHCP server will fill all IP settings in automatically. 	M-Spacebar
IP Address	Open a field to enter an appropriate IP address (default is 192.168.1.22)	I
Subnet Mask	Open a field to enter an appropriate subnet mask	S
Gateway	Open a field to enter an appropriate gateway	G
Preferred DNS	Open a field to enter a preferred DNS address	P
Alternate DNS	Open a field to enter an alternate DNS address	A
Telnet	Toggle telnet access between enabled and disabled	T- Spacebar
Help	Open topic specific help page	F1
----	Exit and return to the Administration Menu	Esc

HA-RS Configuration

The HA-RS Serial Host Adapter enables a user to remotely connect to a serial device and control the device using the PRIMUX User Station as a terminal. The HA-RS is compatible with most serial devices with an RS232 port. The HA-RS emulates a VT100 terminal – converting serial data from an ASCII device into VGA video (800x600 @ 60Hz signal).

Note: The HA-RS Host Adapter will only work with User Stations programmed with firmware version 2.0 and later.

Note: All Host Adapters must be programmed with firmware version 2.0 in order to work with a User Station programmed with firmware version 2.0 and later. See “Please Note...” on page i.

When connecting to an HA-RS through Command Mode (page 19) a terminal screen will be presented with a connection to the serial device. The terminal screen will include available functions for the user interface listed at the bottom.

```
Network Technologies Inc.          HA-RS          Copyright 2009,2010
ASCII Terminal Converter          Version 2.00.1
Status: Online          Baud: 115200   Flow: None   Line 05   Col 14   Page 01

Fedora Core release 6 (Zod)
Kernel 2.6.22.14-72.fc6 on an i686

cpu53 login: _

<CTRL-F1> = Help Menu Screen          <CTRL-F3> = Setup Programmable Keys
<CTRL-F2> = Setup Screen              <CTRL-F4> = View Buffer
<CTRL-S> = Stop output from host      <CTRL-Q> = Resume output from host
```

Figure 41- HA-RS User Interface

The user can either communicate to the serial device or use the <Ctrl> key in conjunction with <F> keys to control the colors of the interface, the connection parameters of the HA-RS, or view up to 10 pages of data that has been viewed through the HA-RS from the serial device. Control options are as follows:

Key Strokes	Function
<Ctrl>-<F1>	Help Menu
<Ctrl>-<F2>	Setup Screen to setup connection parameters
<Ctrl>-<F3>	Setup Programmable keys
<Ctrl>-<F4>	View the stored data in the buffer
<Ctrl>-<S>	Stop displaying output from host (serial device)
<Ctrl>-<Q>	Resume displaying output from host (serial device)

Help Menu

Press <Ctrl>-<F1> to view a list of information that will help you to navigate the features of the HA-RS host adapter.

```
Network Technologies Inc.          HA-RS          Copyright 2009,2010
ASCII Terminal Converter          Version 2.00.1
Status: Help          Baud: 115200  Flow: None          Line 01  Col 01  Page 13

                          Help Screen

On Line Commands
  <CTRL-S>          - Stop Output from serial device
  <CTRL-Q>          - Resume Output from serial device

Function Keys
  <CTRL-F1>         - Displays the Help Screen
  <CTRL-F2>         - Displays the Communication Setup Screen
  <CTRL-F3>         - Displays the Programmable Keys Screen
  <CTRL-F4>         - Displays the History Screen

View Buffer
  <Home>/<End>      - Go to first/last page
  <Pg Up>/<Pg Down> - Go to previous/next page
  <↑>/<↓>/<→>/<←>  - Move cursor
  F5                - Begin mark text
  F6                - End mark text and send it to the serial device
  F12               - Clear the buffer

  <ESC>             - Return to online mode

<CTRL-F1> = Help Menu Screen          <CTRL-F3> = Setup Programmable Keys
<CTRL-F2> = Setup Screen              <CTRL-F4> = View Buffer
<CTRL-S>  = Stop output from host     <CTRL-Q> = Resume output from host
```

Figure 42- HA-RS Help Screen

Setup Screen

Press <Ctrl>-<F2> to access a list of connection parameters and window color controls. The connection information shown must match the required connection criteria of the serial device in order to connect to it.

```
Network Technologies Inc.          HA-RS          Copyright 2009,2010
ASCII Terminal Converter          Version 2.00.1
Status: Setup          Baud: 115200  Flow: None          Line 03  Col 26  Page 11

                          Setup Screen

Baud Rate:          115200
Data Bits:          8
Parity:             None
Stop Bits:          1
Flow Control:       None

Send CR as CRLF:    No
Receive CR as CRLF: No

Active window background color:      3f
Active window text color:             00
Active window mark color:             fb
Status/Help window background color:  28
Status/Help window text color:       3f

Use <↑> or <↓> to navigate
Use <→> or <←> to change value
Use <ENTER> to save new values
Use <ESC> to return to online mode

<CTRL-F1> = Help Menu Screen          <CTRL-F3> = Setup Programmable Keys
<CTRL-F2> = Setup Screen              <CTRL-F4> = View Buffer
<CTRL-S>  = Stop output from host     <CTRL-Q> = Resume output from host
```

Figure 43- HA-RS Setup Screen

Window color controls are available to change the look of the user interface as desired.

Programmable Keys

A list of <F> keys that when used in conjunction with the <Alt> key can be programmed to be used as macro keys to send commands to the connected serial device. When applicable commands are associated with an <F> key, pressing <Alt>-<F> will send that command automatically to the serial device. In the example below, pressing <Alt>-<F1> will automatically send the "logout" command.

```
Network Technologies Inc.      HA-RS      Copyright 2009,2010
ASCII Terminal Converter      Version 2.00.1
Status: Program Keys      Baud: 115200      Flow: None      Line 03      Col 18      Page 12

                          Programmable Keys Screen

F1 = logout
F2 =
F3 =
F4 =
F5 =
F6 =
F7 =
F8 =
F9 =
F10 =
F11 =
F12 =

Use <↑> or <↓> to navigate
Use <DEL> or <Backspace> to delete next or previous character
Use <ALT> in conjunction with a special character, e.g. <ALT>+<ENTER>
Use <ENTER> to save new values
Use <ESC> to return to online mode

<CTRL-F1> = Help Menu Screen      <CTRL-F3> = Setup Programmable Keys
<CTRL-F2> = Setup Screen          <CTRL-F4> = View Buffer
<CTRL-S> = Stop output from host  <CTRL-Q> = Resume output from host
```

Figure 44- HA-RS Programmable Keys Screen

View the Buffer

Press <Ctrl>-<F4> to view the last 10 pages of data that was received from the serial adapter. Once the buffer is full, the oldest data in history will automatically be deleted to make room for new. The lines of text can be cleared from the history in their entirety by pressing <Ctrl>-<F12> .

Stop and Resume Output

Press <Ctrl>-<S> to stop viewing the data received by the serial device. This will not stop the device from sending data, it will simply stop you from seeing it.

Press <Ctrl>-<Q> to resume viewing the data received by the serial device.

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 Figure 45 on page 45 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

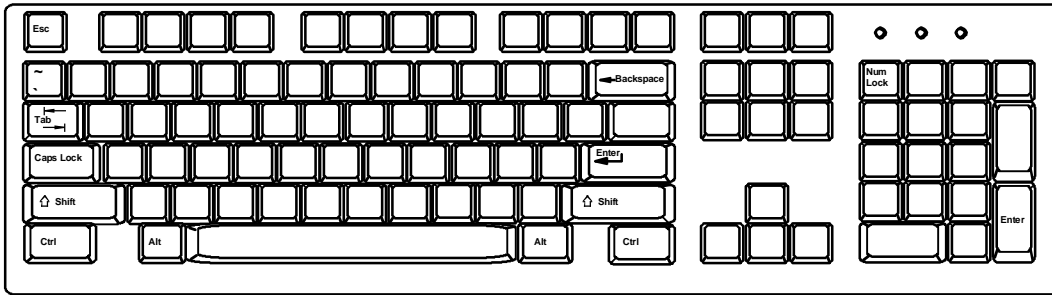
L and R = Left and Right keys when two keys are marked the same on a keyboard.

SUN's 16 Extra Keys

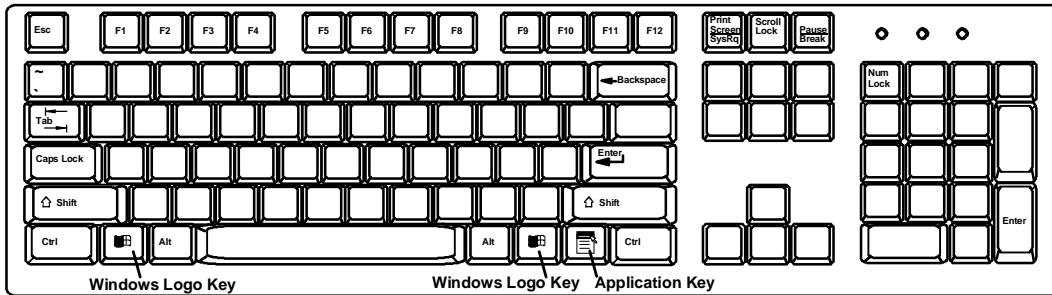
PS/2, USB Keyboards	SUN Extras
SB+F1	Stop (L1)
SB+F2	Again (L2)
SB+F3	Props (L3)
SB+F4	Undo (L4)
SB+F5	Front (L5)
SB+F6	Copy (L6)
SB+F7	Open (L7)
SB+F8	Paste (L8)
SB+F9	Find (L9)
SB+F10	Cut (L10)
SB+F11	Help
SB+F12	Compose
SB + Up Arrow	Vol +
SB + Down Arrow	Vol -
SB + L Arrow	Mute
SB + R Arrow	Suspend

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

SB= Space Bar



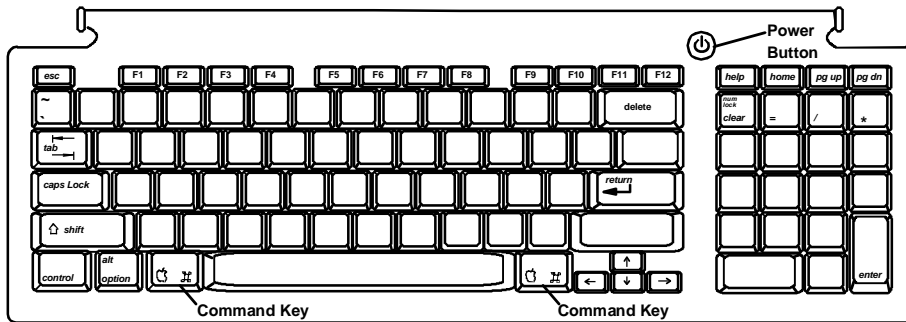
Typical 101 Keyboard



Windows Logo Key

Windows Logo Key Application Key

Windows Keyboard



Power Button

Command Key

Command Key

Apple USB Keyboard



Suspend key

Meta Key

Meta Key

SUN USB Keyboard

Figure 45- 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
Maximum Baud rate (HA-RS only)	115200 bps
Support RS232 Signals (HA-RS only)	TXD,RXD,DSR,DTR,CTS,RTS
Terminal emulation (HA-RS only)	ASCII to VGA (800x600@60Hz, 80 characters wide x 30 lines high)- supports VT100 emulation
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 CPUs Male 8 pin miniDIN to devices port for Legacy SUN CPU Male RJ45 and USB Type A Male to console ports on serial devices
Mouse and Keyboard Compatibility	Most PS/2 mice and keyboards Most USB mice and keyboards
CPU Compatibility	PS/2, Legacy SUN, USB SUN, USB MAC, Serially-Controlled servers/devices
Keyboard and Mouse Current Rating	500mA maximum
Sync Types Supported	Separate and composite TTL Level
Mean Time Between Failures (MTBF)	User Station: 72,786 hrs Host Adapters: 316,996 hrs
Regulatory Approvals	CE, RoHS
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.

Note: The CATx 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.) . If cables must be routed near sources of magnetic fields or electrical interference, use shielded CATx cable (see table above) for best performance.

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

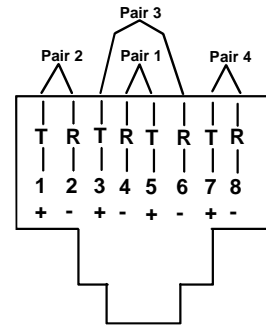


Figure 46- View looking into RJ45 female

NULL MODEM CABLE PINOUTS

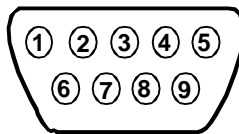
An NTI DINT-6-FF 6 foot null modem cable has been supplied to make connection between your PC terminal and the PRIMUX in order to perform firmware upgrades or save and restore configuration files. The pinouts for this cable are detailed below should you wish to make a longer cable (not to exceed 15 feet).

PRIMUX to Terminal (9 PIN) null modem cable

PRIMUX		Signal Direction	TERIMINAL	
Function	Pin #		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.

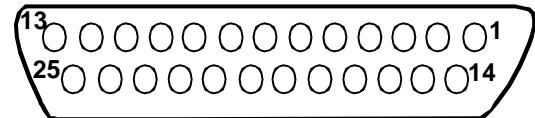


**Mating Face
of 9D
Male Connector**

NTI Parts to make:
DB9F-SLDR (X2) + DB9-HOOD-SHLD (X2) +
Any 20-24AWG 3-wire cable

PRIMUX to Terminal (25 PIN) null modem cable

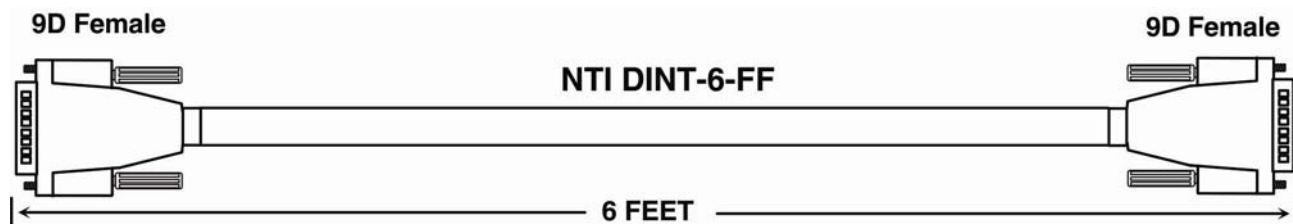
PRIMUX		Signal Direction	TERMINAL	
Function	Pin #		Pin #	Function
RxD	2	←	2	TxD
TxD	3	→	3	RxD
CTS	8	N/C	4	RTS
RTS	7	N/C	5	CTS
DSR	6	N/C	20	DTR
DTR	4	N/C	6	DSR
DCD	1	N/C	8	DCD
SG	5	—	7	SG



**Mating Face
of 25D
Female Connector**

NTI Parts to make:
DB25F-SLDR + DB9F-SLDR + DB25-HOOD-SHLD +
Any 20-24AWG 3-wire cable

Note: Cable length not to exceed 15ft.



MENU QUICK-FIND KEYSTROKE TABLE

Function	Source Page	Keystroke Sequence
Command Mode	19	<Ctrl> + <`>
Return to Command Mode	16	<F10>
Administration Menu	26	<Ctrl> + <`> - <A>
Activate Scan Mode	20	<Ctrl> + <`> - <S>
Settings Menu	21	<Ctrl> + <`> - <T>
OSD Settings Menu	22	<Ctrl> + <`> - <T> - <O>
Host Adapters for scan	23	<Ctrl> + <`> - <T> - <S>
Change scan dwell time	21	<Ctrl> + <`> - <T> - <T>
Favorite Host Adapters selection	24	<Ctrl> + <`> - <T> - <F>
Video Quality Adjustment	25	<Ctrl> + <`> - <T> - <V>
System Configuration Menu	27	<Ctrl> + <`> - <A> - <S>
Change Logoff timeout	27	<Ctrl> + <`> - <A> - <L>
Set alternate OSD key	28	<Ctrl> + <`> - <A> - <S> - <A>
Configure DDC info	28	<Ctrl> + <`> - <A> - <S> - <D>
Configure Host Adapters	29	<Ctrl> + <`> - <A> - <H>
Edit Host Adapter	29	<Ctrl> + <`> - <A> - <E> - <H> - <Enter>
Configure MAC Host Adapter	30	<Ctrl> + <`> - <A> - <E> - <H> - <Enter> - <M>
User Access Controls	30	<Ctrl> + <`> - <A> - <E> - <H> - <Enter> - <U>
Enable Share Mode (Matrix Only)	31	<Ctrl> + <`> - <A> - <E> - <H> - <Enter> - <S>
Delete Host Adapter	31	<Ctrl> + <`> - <A> - <E> - <H> - <Enter> - <D>
Configure Users	32	<Ctrl> + <`> - <A> - <U>
Edit User	32	<Ctrl> + <`> - <A> - <U> - <Enter>
Edit User/Administrator Password	32	<Ctrl> + <`> - <A> - <U> - <Enter> - <P>
Add New User	33	<Ctrl> + <`> - <A> - <U> - <A>
Host Access Control	33	<Ctrl> + <`> - <A> - <U> - <Enter> - <H>
User Station Configuration	34	<Ctrl> + <`> - <A> - <R>
Select Auto-login User	35	<Ctrl> + <`> - <A> - <R> - <A>
Firmware Configuration Menu	36	<Ctrl> + <`> - <A> - <F>
Update Host Adapter Firmware	37	<Ctrl> + <`> - <A> - <F> - <U>
Select keyboard language	38	<Ctrl> + <`> - <A> - <R> - <K>
Network Configuration (Matrix Only)	39	<Ctrl> + <`> - <A> - <N>

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Please Note: A PRIMUX-UZR User Station with firmware version 2.0 and later will not recognize or work with a Host Adapter programmed with firmware version 1.6 and earlier. If you have Host Adapters with firmware version 1.6 and earlier, they must first be updated to firmware version 2.0 using a PRIMUX-UZR User Station programmed with firmware version 1.9. After updating all Host Adapters, the PRIMUX-UZR User Station can then be updated to firmware version 2.0 to work with the newly updated Host Adapters. Firmware version 1.9 (with version 1.6 Host Adapter firmware) and firmware version 2.0 can be found at <http://www.networktechinc.com/download/d-kvmswitch-cat5.html>. Instruction for changing the firmware in the User Station and Host Adapters is included in the .zip file with the firmware.

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.