



**NTI**® NETWORK  
TECHNOLOGIES  
INCORPORATED

1275 Danner Dr Tel:330-562-7070  
Aurora, OH 44202 Fax:330-562-1999  
www.networktechinc.com

**RACKMUX® Series**

# RACKMUX-V15/17

# RACKMUX-D17

## Rackmount Drawer with Keyboard, LCD Monitor and Mouse Installation and Operation Manual

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RACKMUX-V17-N (Front and Rear View)

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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.

## Typographic Conventions

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

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

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## INTRODUCTION

The RACKMUX-V15/17 Drawer (RACKMUX) consists of a Keyboard, Touchpad, and LCD monitor integrated into a 1RU rack-mountable drawer with wrist pads. When access to a server rack is needed, the drawer can be pulled out and the display lifted up like a notebook computer, revealing the keyboard and mouse. When the drawer is not in use, the display can be folded forward and down so the 1RU drawer can be pushed into the cabinet easily and smoothly, helping to organize and streamline busy server rooms. The NTI RACKMUX product line offers a range of KVM Drawer solutions ideal for rack and server management applications, which will ensure reliability and serviceability.

The RACKMUX will switch between USB and PS/2 standards for versatile connection to a CPU. The forward-folding LCD monitor is offered in either 15" or 17" (designated in the product name as -15 or -17) and the video format can be either VGA or single-link DVI (designated by -V or -D: example RACKMUX-V15). For user input, the drawer offers a notebook-style keyboard, wrist-pad, and a three-button touchpad. The keyboard and mouse can be connected using USB and PS/2 cables. USB and PS/2 interfaces will remain active at all times and the keyboard and mouse can be switched, at any time, to use either one. The RACKMUX-V15/-V17 also provides a front panel USB 1.1 port for the connection of an external USB device (such as a flash drive).

The keyboard and mouse interface is compatible with Windows platform CPUs. This multiple interface capability reduces equipment costs by ensuring that a single console is compatible with various PC/server input devices.

Installing the RACKMUX into any server environment will offer:

- A space saving 1RU design, easily mountable in any 19" cabinet/rack
- A forward-folding 15" or 17" TFT LCD with built-in OSD menu for screen adjustments
- Auto shut-OFF switch: Turns OFF the power to the monitor when the LCD is in a folded-closed position.
- Built-in 83-key (US) keyboard
- Standard 3-button mouse touchpad
  - Touchpad supports single-finger gestures
- Support for PS2 and USB connections for the keyboard and mouse.
- Support for VGA (15" or 17" model) or single-link DVI signals (17" model only)
- Front-access USB port for easy accessory USB 1.1 device connection
- An internal cable arm for proper cable management when sliding the drawer open and closed
- Added security with a drawer lock to prevent unwanted access
- Locking rails to prevent movement of the drawer when fully extended
- Built-in universal (100-240VAC) low power consumption power supply

### Materials Included with this kit:

- ✓ NTI RACKMUX-V15/17 Drawer with VGA Video support
- ~or~
- ✓ NTI RACKMUX-D17 Drawer with DVI Video support
- ✓ 2 Keys for Lock
- ✓ 2 Rear Mounting Brackets w/nuts
- ✓ 8 #10-32x3/4" screws and cage nuts for mounting to a rack
- ✓ IEC Power Cord- country specific
- ✓ USB2-AB-2M-5T 2 meter USB Type A male-to-USB Type B male cable
- ✓ VEXT-THN-6-MM 6 foot VGA video cable (**models with VGA Video support only**)
- ✓ DVI-DS-2M-MM 2 meter DVI video cable (**model with DVI Video support only**)

**Alternative Cables (not supplied):** (available in 3,6,10 and 15 foot lengths)

VKMEXT-xx-MM for VGA Monitor and PS2 Keyboard and Mouse input

USBVEXT-xx-MM for VGA Monitor and USB Keyboard/Mouse input and USB device support

where:

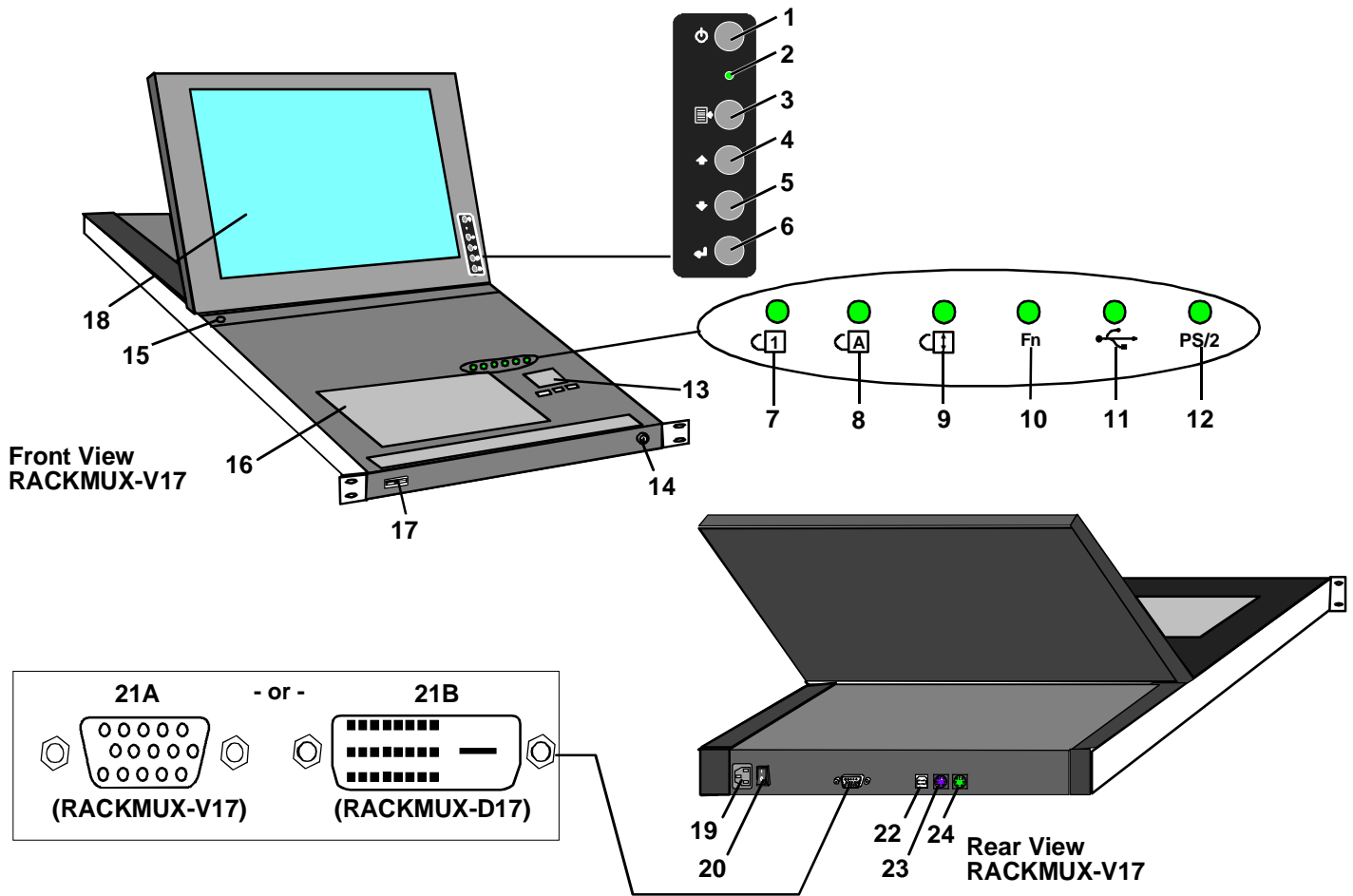
xx is the length of the cable in feet

MM indicates male-to-male connector

Cables can be purchased from Network Technologies Inc by calling **(800) 742-8324 (800-RGB-TECH)** in the US and Canada or **(330) 562-7070** (worldwide).

### Option:

- **Trackball option-** for a RACKMUX with a trackball instead of a touchpad- add "T" to the part number (i.e. RACKMUX-V17-T)
- **Numeric keypad option-** for a separate 17-key numeric keypad, add "-N" to the part number (i.e. RACKMUX-V17-N)
- **Hi-Resolution Monitor-** for a 17" RACKMUX with hi-resolution monitor (1920 x 1200)- add "HR" to the part number (i.e. RACKMUX-V17HR (**available on 17" models only**))



## FEATURES AND FUNCTIONS

1. **Power Button**- press to turn the LCD monitor ON and OFF
2. **Power LED**- Indicates operation status  
Green = Power-ON, Video Input Signal OK  
Red = Suspend / Stand-by, or no Video Input Signal
3. **Menu Button**- press to turn ON the OSD menu
4. **Up Arrow Button**- press to move the cursor in the OSD menu up
5. **Down Arrow Button**- press to move the cursor in the OSD menu down
6. **Select Button**- press to select a menu item (when OSD menu is ON) or press to auto adjust the video quality (when OSD menu is OFF)
7. **NumLock LED**- illuminates when the number lock is ON
8. **CapsLock LED**- illuminates when CapsLock is ON.
9. **Scroll Lock LED**- illuminates when the Scroll Lock keyboard feature is ON.
10. **Fn LED**- illuminates when Function Features (page 16) are enabled.
11. **USB LED**- illuminates when RACKMUX drawer is in USB mode
12. **PS/2 LED**- illuminates when RACKMUX drawer is in PS/2 mode
13. **3-button mouse**- for controlling mouse movements on the monitor and controlling the computer
14. **Keylock**- to prevent unauthorized use of the RACKMUX
15. **Auto Shut-OFF**- switch automatically shuts OFF the LCD display when the monitor is folded down
16. **keyboard**- for manual data entry and computer control
17. **USB Port**- USB Type A female- for connection of any USB 1.1 compatible device (such as a flashdrive, printer, etc)
18. **LCD Display**- for viewing the video signal from the connected CPU
19. **IEC Connector**- for attachment of the IEC power cord to power the RACKMUX drawer
20. **Switch**- for powering ON and OFF the RACKMUX drawer
21. **Video In**- **21A**. 15HD Female- for connection of the VGA video cable from the CPU (only in models that support VGA video)  
**21B**. DVI-D Female- for connection of a DVI-D video cable from the CPU (only in models that support DVI)
22. **USB**- USB Type B female- for connection of the USB cable from a USB CPU
23. **Keyboard Connector**- purple 6 pin miniDIN female- for connection of the PS/2 keyboard cable from a PS/2 CPU
24. **Mouse Connector**- green 6 pin miniDIN female- for connection of the PS/2 mouse cable from a PS/2 CPU

# INSTALLATION

## Rack Mounting Instructions

If you would like to see a video of this installation, see the [“single-person-installation”](#) video .

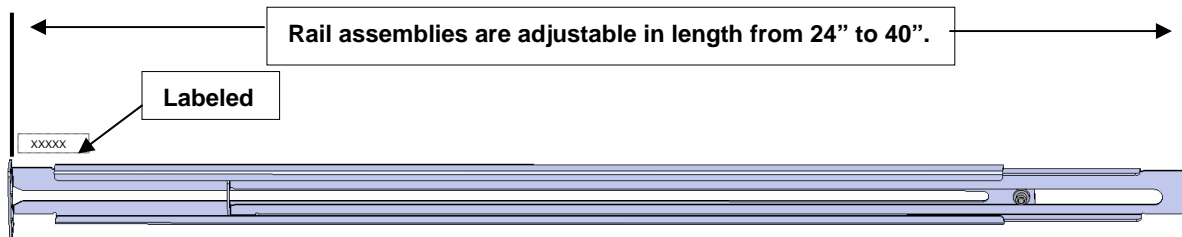
1. Locate and unpack the hardware bag. Your hardware bag will include all items necessary to install the specific RACKMUX model (see the manual that accompanied your RACKMUX drawer), including the following hardware unique to the Single-Person hardware installation:

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



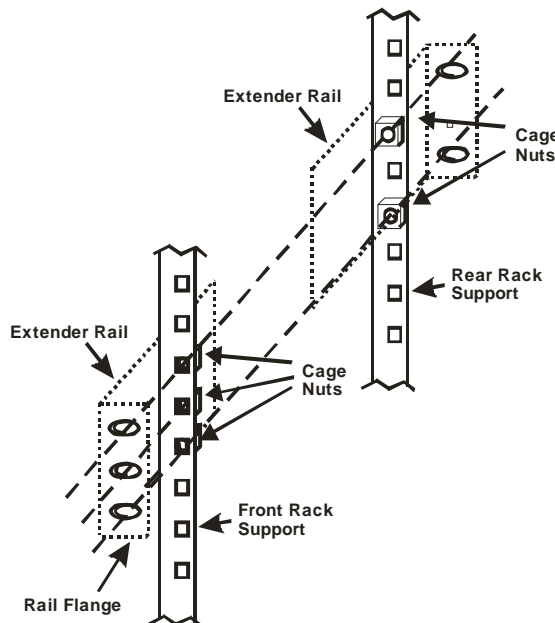
To install the rails you will need only a tape measure and Phillips screwdriver.

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



**Figure 1- Adjustable rail depth**

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



**Figure 2- Install cage nuts**

4. Install the right rail assembly. The end with the label "Right Front" mounts to the front rack support. Install only the center screw through the rail flange to the rack support and cage nut using the #10-32 x 1/2" flat head machine screw provided. (See image below.) Do not tighten at this time. Install the left rail assembly in the same fashion. The end with the label "Left Front" mounts to the front rack support.
5. Install two #10-32 x 3/4" pan-head screws in the rear of each rail assembly as shown below. Do not tighten at the time.

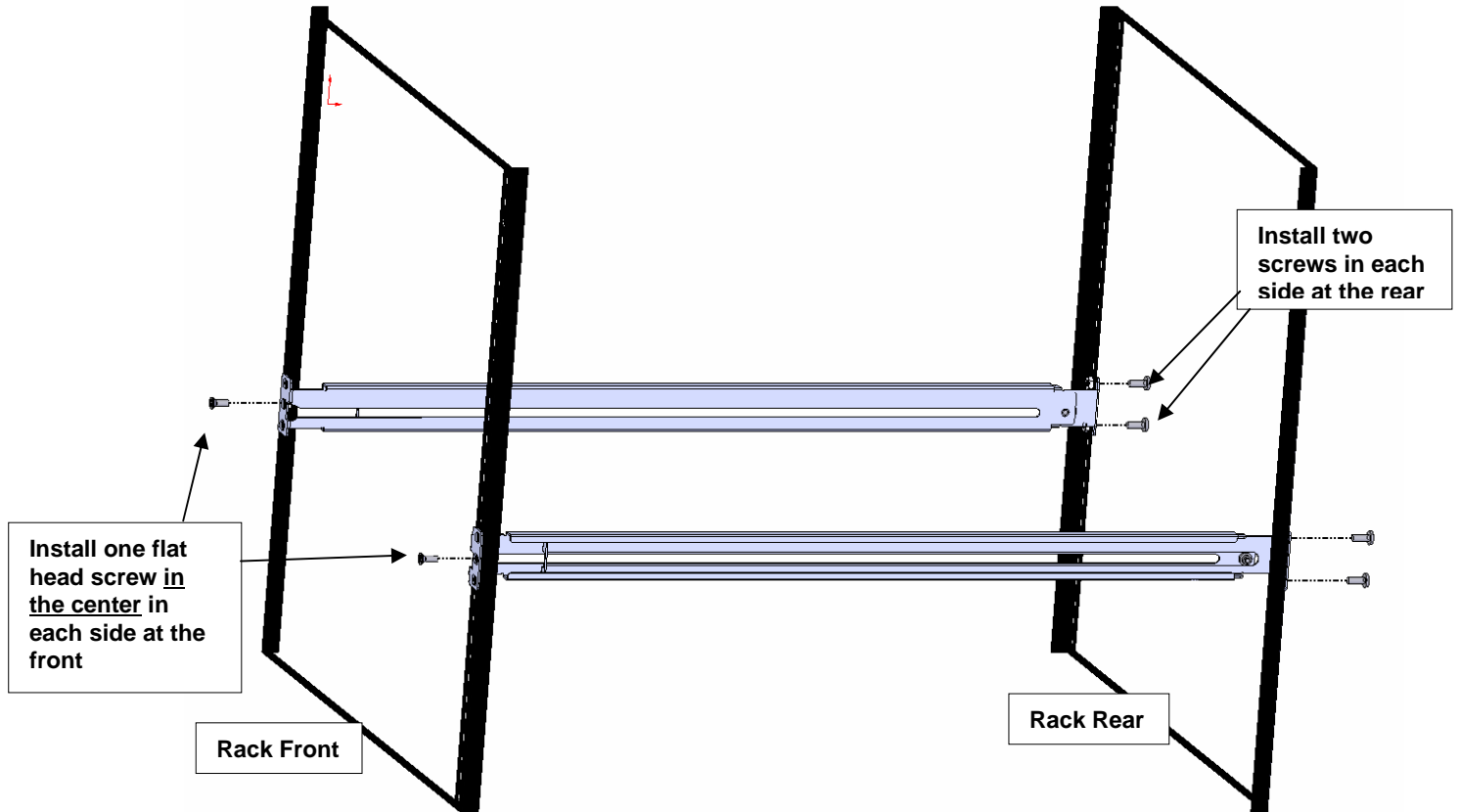


Figure 3- Install rail assemblies

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

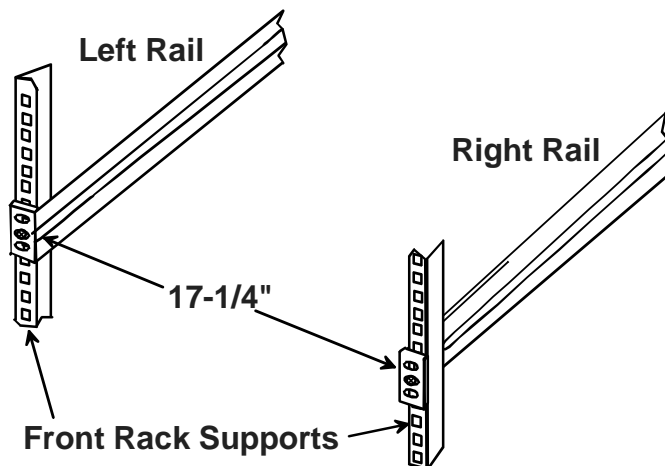


Figure 4- Adjust distance between rails



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

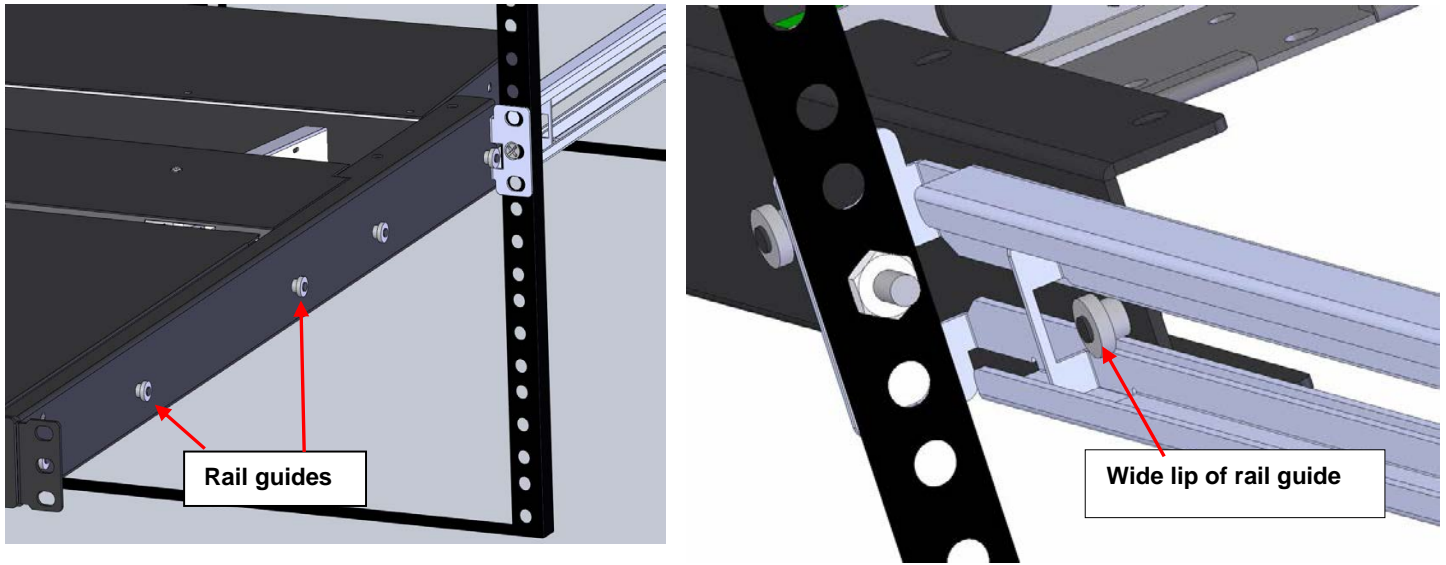


Figure 5- Slide the RACKMUX into the rails

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

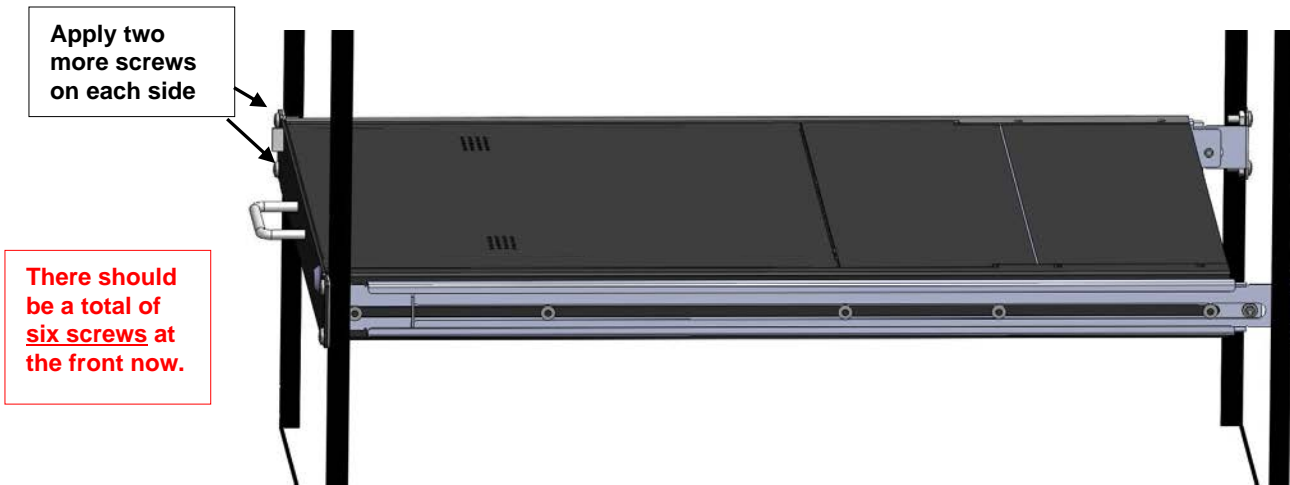


Figure 6- Secure the RACKMUX

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

**Note:** To provide sufficient room for the LCD monitor to be opened to a proper viewing angle (a minimum 90 degree position from the keyboard), ensure that all devices mounted above the RACKMUX extend no more than 1.75" from the rack frame. (See Figure 7)

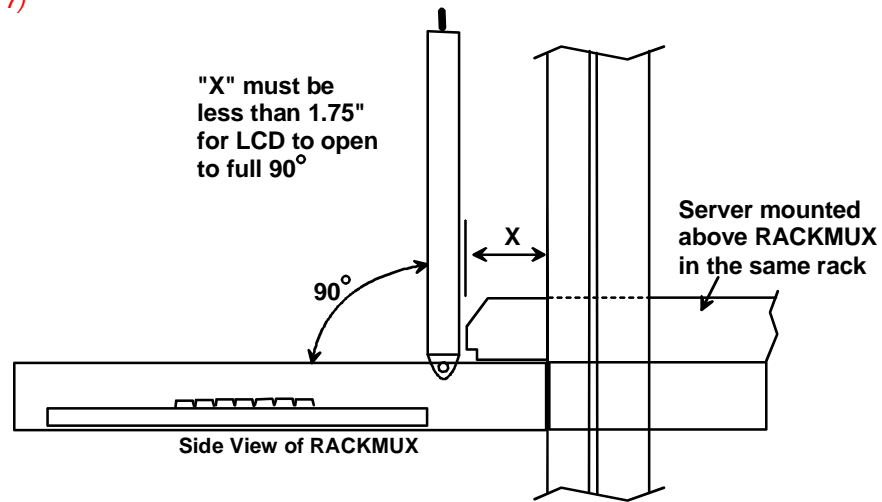
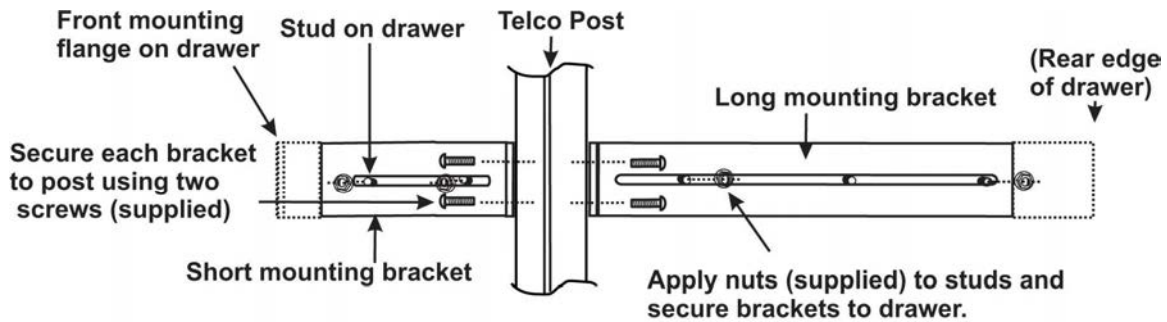


Figure 7- Position RACKMUX with clearance to open

**Optional Telco 2-Post Mounting**

If the Telco 2-post mounting bracket kit (NTI# RL-T15-TEL) is to be used, secure the short and long brackets to each side of the drawer as shown in Figure 8. Apply 2 nuts (supplied) per bracket to secure the brackets to the drawer. Apply two #10-32x3/4" screws (supplied) per bracket to the post at the desired height. Slots are provided in the brackets to make minor depth adjustments easy. Be sure to properly tighten all nuts and screws before using the drawer.

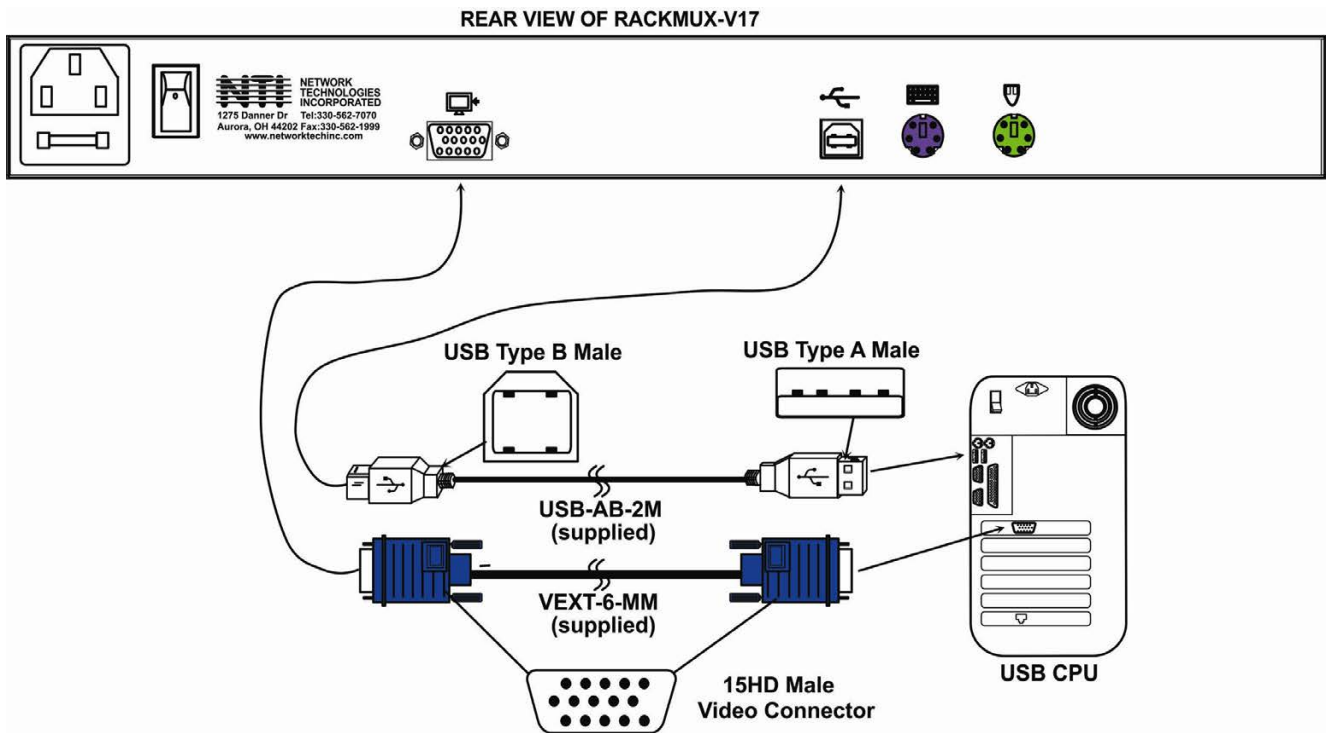
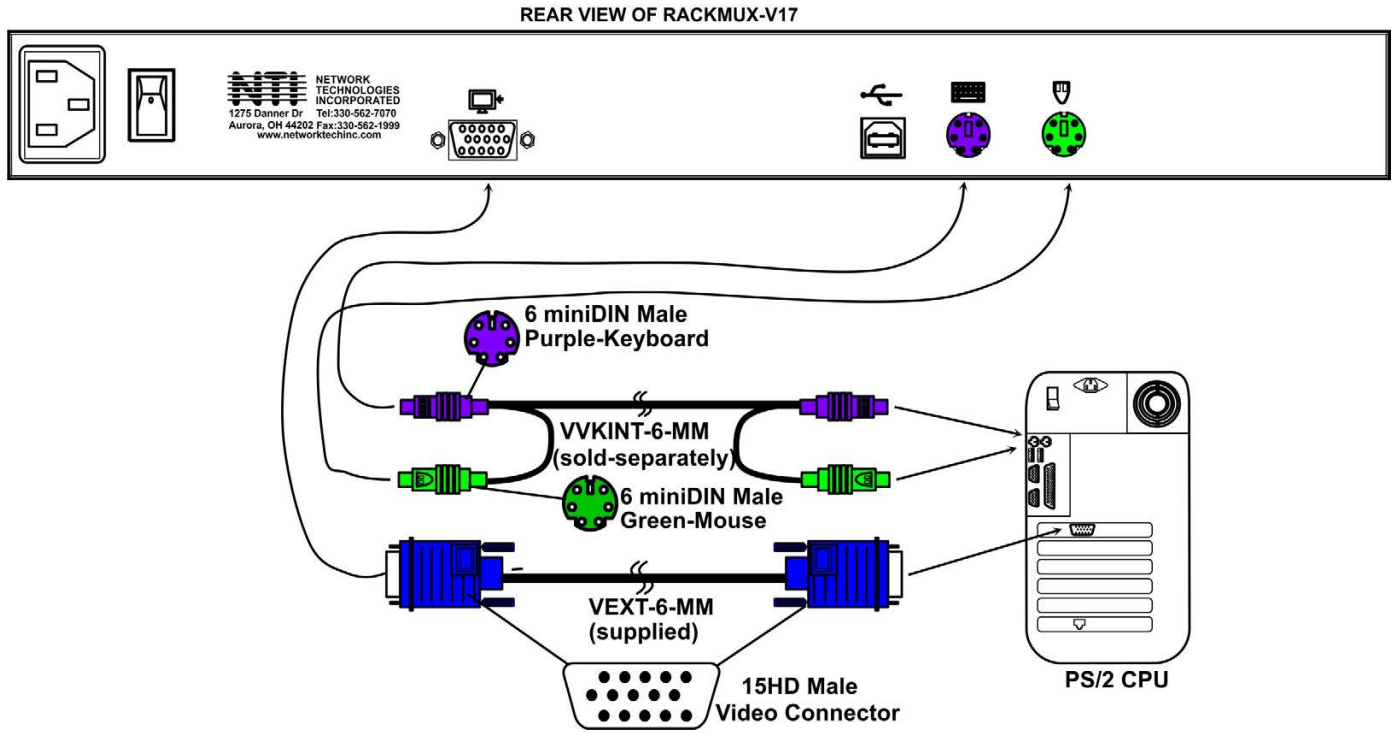


View of right side of drawer with optional Telco mounting brackets

Figure 8- Mount to Telco post with optional mounting brackets

## Connect to a CPU

The RACKMUX may be connected to either a PS/2 or a USB CPU with a VGA video port. To connect to a PS/2 CPU, use a VEXT-6-MM cable and VVKINT-6-MM cable as shown in Figure 9. To connect to a USB CPU, use the VEXT-6-MM and USB-AB-2M cables (supplied) as shown in Figure 10.



When connecting a CPU with DVI support to the single-link DVI port of the RACKMUX, use a DVI-DS-2M-MM (supplied) for the DVI video signal, a USB-AB-2M (supplied) for the USB connection, and if using PS/2 keyboard and mouse connections, connect a VVKINT-6-MM cable (sold separately) between the CPU and RACKMUX.

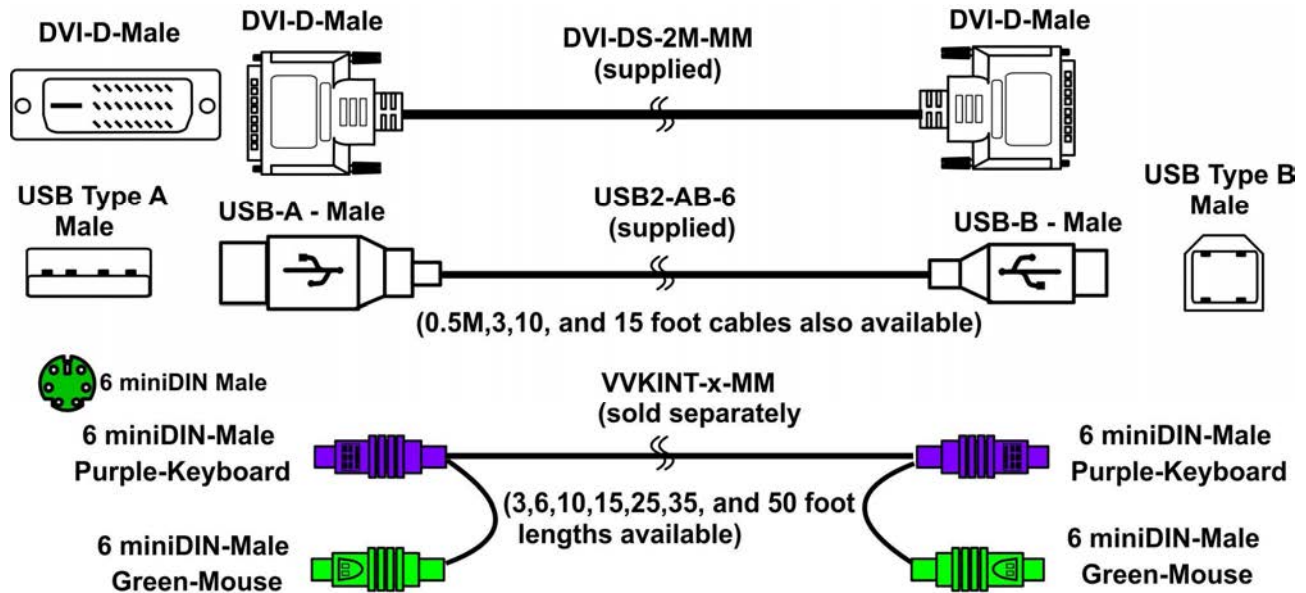


Figure 11- Cables used for RACKMUX with DVI video support

## Connect Extra Device

On the front of the RACKMUX is an additional USB Type A port to be used, if desired, for an extra accessory. Any low or full speed USB device may be connected to this port to be used. This port is fully compliant with USB standard 1.1.

**Note:** In order for the optional USB device port to be usable, the USB port on the rear of the RACKMUX must be connected to a USB enabled CPU (a 2 meter USB cable is supplied).

**Note:** If a USB keyboard or mouse is connected, operation of the RACKMUX keyboard or mouse may cause unpredictable results. Do not try to use both mice or both keyboards at the same time.

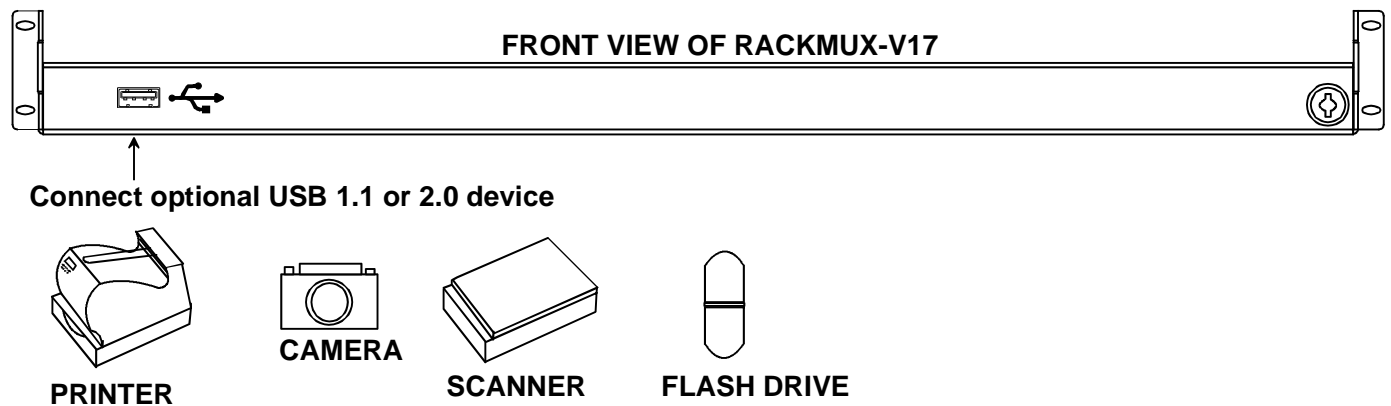


Figure 12- Connect a USB 1.1 device to the front (optional)

**Note:** If a USB 2.0 device is connected to the optional USB device port, it will operate at USB 1.1 speed.

## Connect Power

Connect the IEC power cord to the power port as shown below.

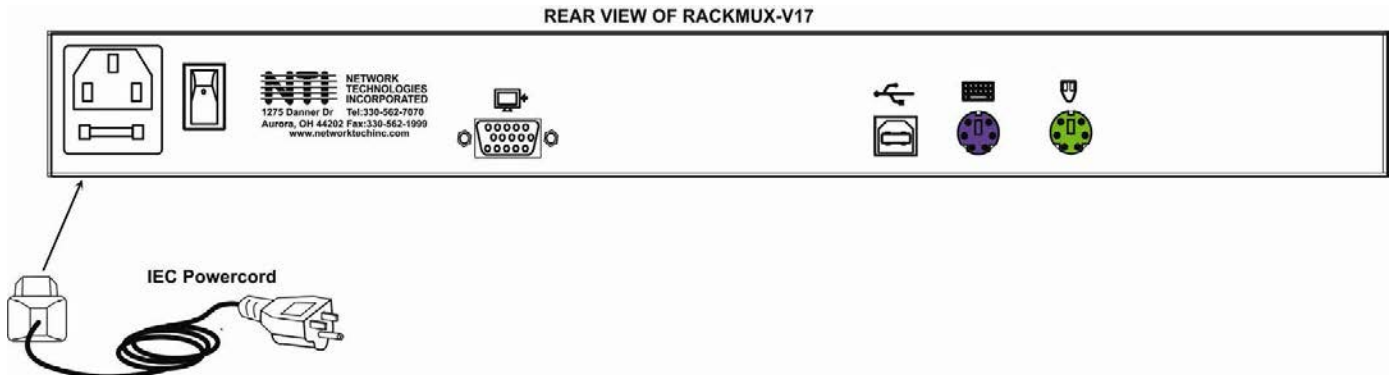


Figure 13- Connect the power cord

## Power Up

Power up the RACKMUX and connected computer in this order.

1. Power On the RACKMUX
2. Power ON the attached CPU.

If a device is plugged into the USB port on the front of the RACKMUX, it can powered-ON at any time.

**Note: During power-up, do not attempt to type or otherwise use the keyboard. Doing so may result in boot errors and loss of keyboard and mouse.**

## DISPLAY FUNCTIONS

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

### Standard Controls

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

- The **Power** button turns the RACKMUX LCD and backlight ON and OFF as desired.
- The **Power LED** located immediately below the Power button is a dual color LED. It will illuminate with a green color when the RACKMUX is powered ON and working properly. It will illuminate with a red color if the RACKMUX is powered ON but there is no input signal detected.
- The **Menu** button is used to bring up the OSD menu where the various settings of the LCD display can be adjusted. See "OSD Control Menu" (below) for more on LCD display settings.
- The **Up and Down Arrow** buttons are used to navigate through the menus. Move the cursor up or down as desired to highlight an item for selection. Once an item is highlighted, pressing the **Select** button will select it.
- The **Select** button is used to make selections within the OSD menus when the OSD menu is ON. When the OSD menu is OFF, the Select button will act as an **Auto Adjust** button to keep the user from having to use the menus to adjust the quality of the image on the monitor.

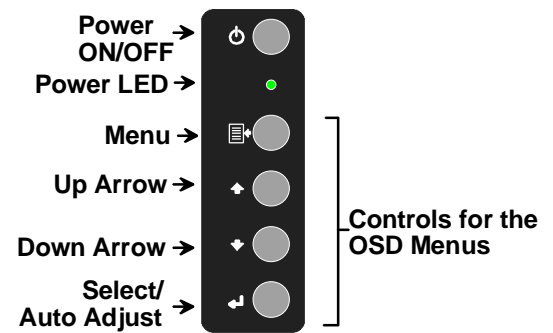
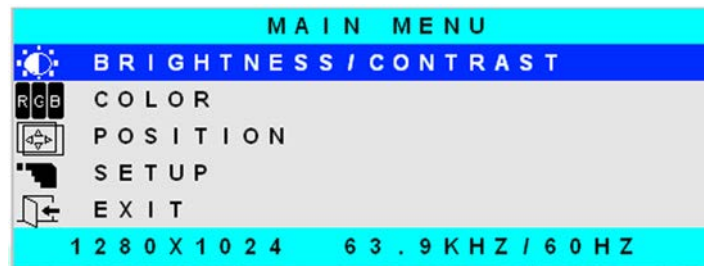


Figure 14- OSD Controls

### OSD Control Menu- 15 and 17 Inch VGA models (-V15/-V17)

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

#### OSD Main Menu



Selection	Purpose	Range
Brightness/Contrast	Increase/decrease panel brightness/contrast level	1-100
Color	R,G,B color temperature control	1-100
Position	<ul style="list-style-type: none"> <li>• Video Image horizontal and vertical position control</li> <li>• Clock setting</li> <li>• Phase control</li> </ul>	1-100
Setup	<ul style="list-style-type: none"> <li>• Control OSD Image position on screen</li> <li>• Set time OSD will stay on screen before auto shutoff</li> <li>• Select the language of the OSD menu</li> </ul>	-- 10 to 60 seconds Several languages (see page 8)
Exit	Exit from the OSD control menu	

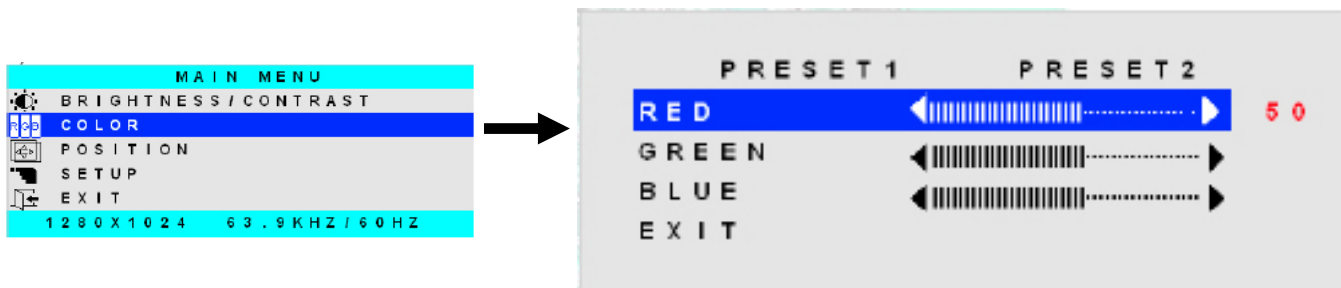
### Brightness/Contrast Menu

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



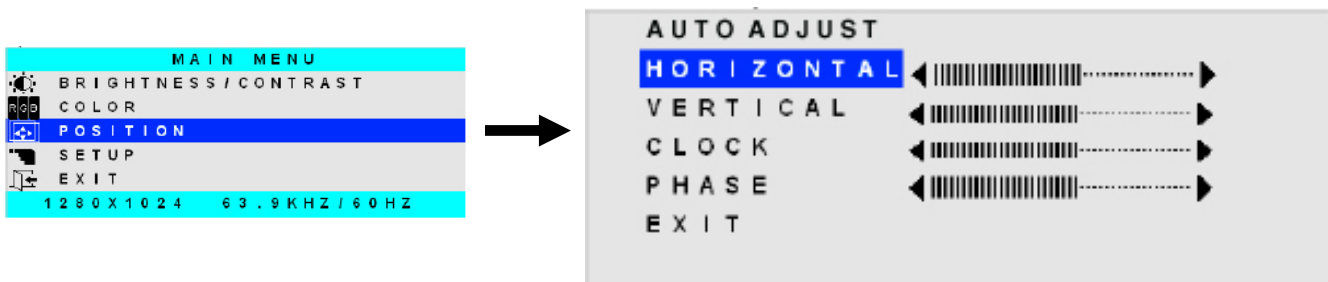
### Color Menu

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



### Position Menu

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

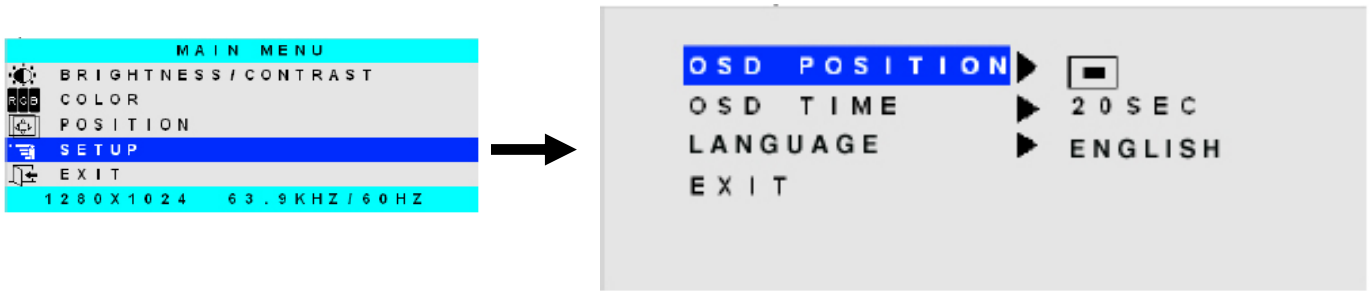


## Setup Menu

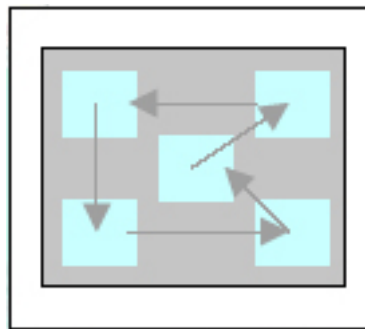
Selecting the Setup menu will bring up a screen in which the user can adjust

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

With the item highlighted, (use the Up or Down arrow to move between them), press the Select button to choose the option to adjust. Then use the Up or Down Arrow to adjust the setting as needed. Select EXIT when finished to return to the Main Menu.



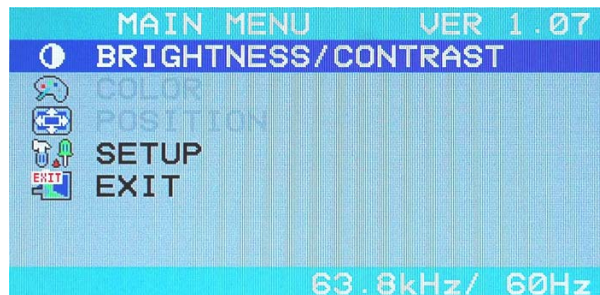
OSD Image can be moved to different points on the display



## OSD Control Menu-DVI Model (-D17)

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

### OSD Main Menu



**Note:** In order to display the OSD Menu, the RACKMUX must first be connected to a video source (see "Connect to a CPU" – page 7).

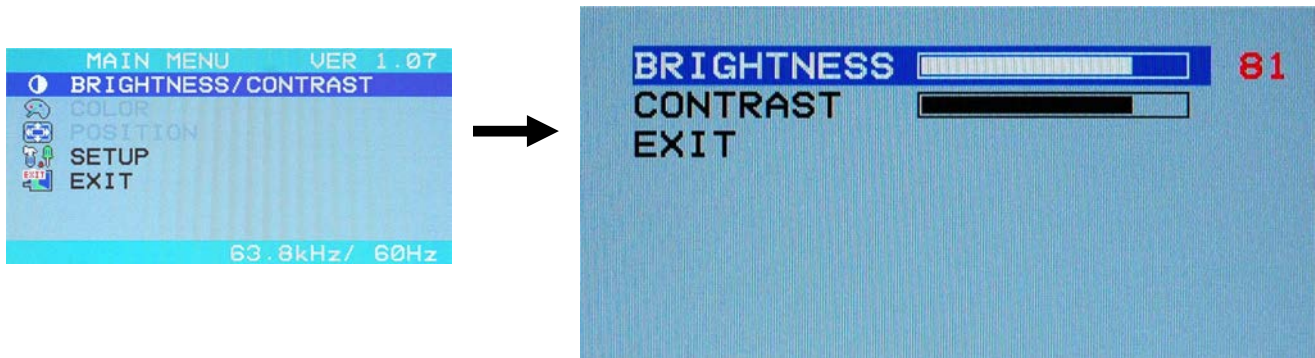
**Note:** If menu does not appear when the Menu button is pressed, the monitor may be set for a "PC" (VGA) input source. Press the Up Arrow button on the monitor to switch it to a "Digital" (DVI) input source.



Selection	Purpose	Range
Brightness/Contrast	Increase/decrease panel brightness/contrast level	1-100
Setup	<ul style="list-style-type: none"> <li>Control OSD Image position on screen</li> <li>Set time OSD will stay on screen before auto shutoff</li> <li>Select the language of the OSD menu</li> <li>Select Input Source to display</li> </ul>	<ul style="list-style-type: none"> <li>0-4</li> <li>10 to 60 seconds</li> <li>English, Spanish, German, Italian, or French</li> <li>Digital or PC (<u>must</u> be set to Digital)</li> </ul>
Exit	Exit from the OSD control menu	

### Brightness/Contrast Menu

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

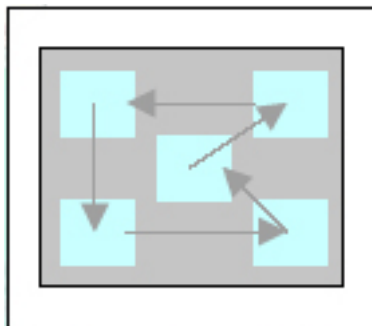
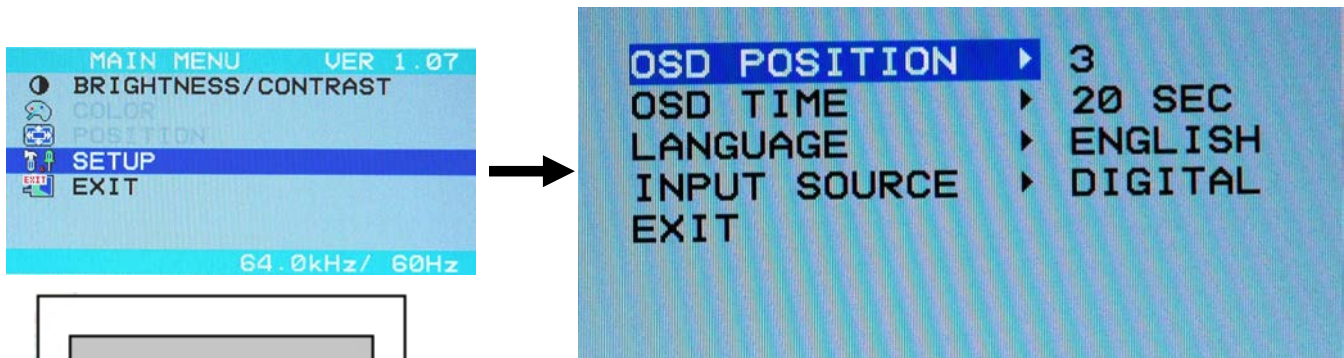


### Setup Menu

- Selecting the Setup menu will bring up a screen in which the user can adjust
- OSD POSITION-the position of the OSD menus on the LCD display (positions 0-4)
  - OSD TIME-the length of time the user can be idle before the OSD menu automatically exits (adjustable from 10 to 60 seconds)
  - LANGUAGE-the language that the OSD menus will be presented in
  - INPUT SOURCE- the type of signal that is coming from the CPU, either Digital (DVI) or PC (VGA)

**NOTE: As used on this RACKMUX, the INPUT SOURCE must be set to "Digital".**

With the item highlighted, (use the **Up** or **Down Arrow** to move between them), press the **Select** button to choose the option to adjust. Then use the **Up** or **Down Arrow** to adjust the setting as needed. Select EXIT when finished to return to the Main Menu.



OSD Image can be moved to different points on the display

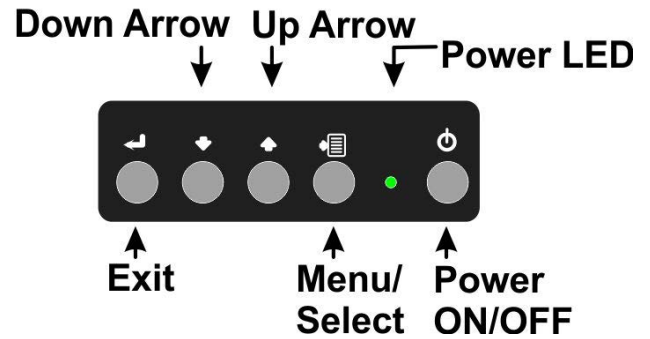
## OSD Control Menu- 17 Inch Hi-Resolution Model (-HR)

The OSD (On Screen Display) Menu enables the user to select the desired characteristics of the LCD display. To activate the OSD Menu, press the **Menu** button (below). To turn the Menu back OFF, either press the Exit button or just wait approximately 10 seconds (timing is adjustable) and it will automatically be cleared from the screen. Any changes made before exiting the menu will be saved.

### Auto Adjust (applies to Hi-Resolution Monitors Only)

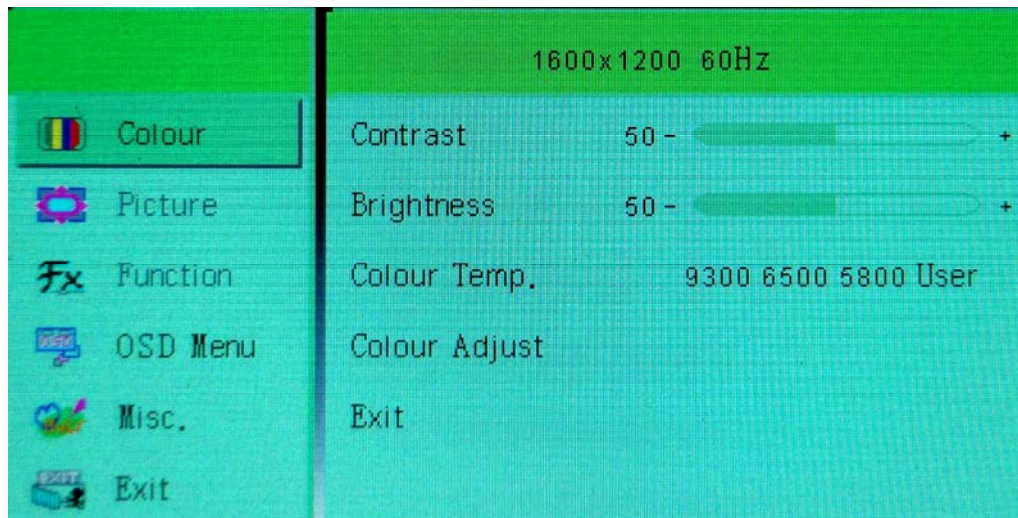
An **Auto Adjust** feature can be engaged by holding down the Function (“Fn”) key on the keyboard and pressing the “A” key to keep the user from having to use the menus to adjust the quality of the image on the monitor. This function can also be used to bring up the signal source menu in the event the user inadvertently selects an unsupported input video type.

### Controls for the OSD Menus



### OSD Main Menu

The Main Menu is broken into five sections, Color, Picture, Function, OSD Menu, and Misc. Press one of the arrow buttons to move between them. The Picture and Function sections only apply when the RACKMUX is connected as VGA instead of DVI. To select a menu and move to characteristics within them (i.e. CSM, Brightness, or Contrast under the Picture menu), press the **Select** button while the desired menu is displayed.

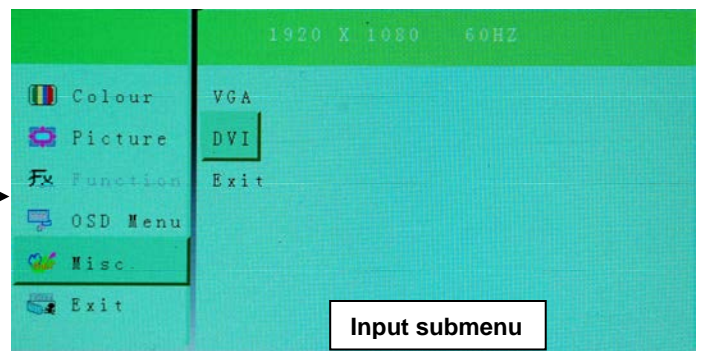
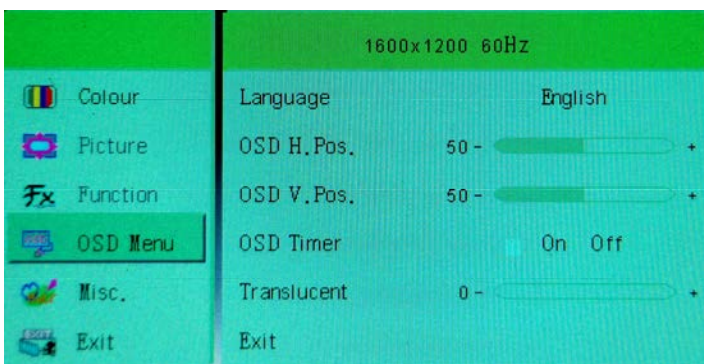
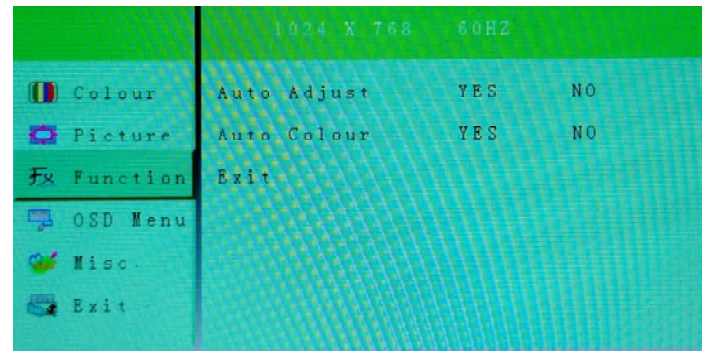
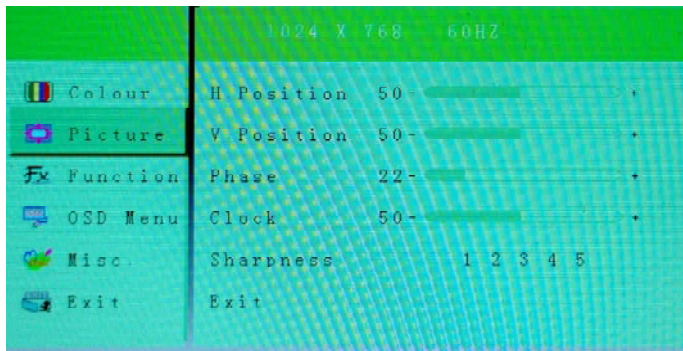
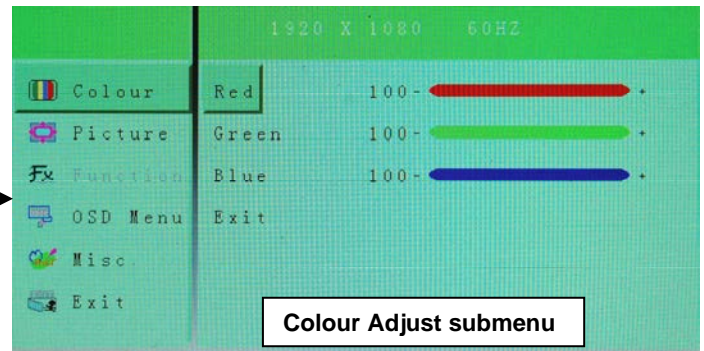
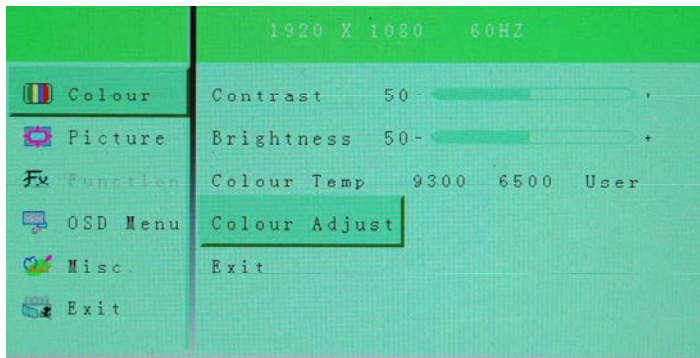


Characteristics that can be adjusted are described in the chart below.

Selection	Purpose	Range
<b>Colour</b> Contrast Brightness Colour Temp. Colour Adjust	<ul style="list-style-type: none"> <li>Increase/decrease panel contrast level</li> <li>Increase/decrease panel brightness level</li> <li>Set panel color temperature</li> <li>Select RGB balance (goes to submenu)</li> </ul>	<ul style="list-style-type: none"> <li>0-100</li> <li>0-100</li> <li>5800K,9300K,6500K,User</li> <li>0-100</li> </ul>
<b>Picture (VGA Only)</b> H Position V Position Phase Clock Sharpness	<ul style="list-style-type: none"> <li>Control Horizontal position of screen</li> <li>Control Vertical position of screen</li> </ul>	<ul style="list-style-type: none"> <li>0-100</li> <li>0-100</li> <li>0-100</li> <li>0-100</li> <li>1-5</li> </ul>
<b>Function (Fx) (VGA Only)</b>	To manually force auto adjust of monitor settings	Select Auto Adjust or Auto Color functions

<p><b>OSD Menu</b>                  Language                  OSD H. Pos.                  OSD V. Pos.                  OSD Timer                  Translucent</p>	<ul style="list-style-type: none"> <li>• Select the language of the OSD menu</li> <li>• Control Horizontal OSD Image position on screen</li> <li>• Control Vertical OSD Image position on screen</li> <li>• Control if OSD will time out</li> <li>• Adjusts how boldly the menu is displayed</li> </ul>	<ul style="list-style-type: none"> <li>• English, Spanish, German, Italian, or French</li> <li>• 0-100</li> <li>• 0-100</li> <li>• On/Off If On, select 3-100 seconds.</li> <li>• -/+</li> </ul>
<p><b>Misc.</b></p>	<ul style="list-style-type: none"> <li>• Select Input</li> <li>• Reset monitor to default settings</li> </ul>	<ul style="list-style-type: none"> <li>• VGA or DVI</li> <li>• Yes/No</li> </ul>

Press the **Exit** button or select "Exit" to exit the OSD menu.



## KEYBOARD FUNCTIONS

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

### Function Key Operation

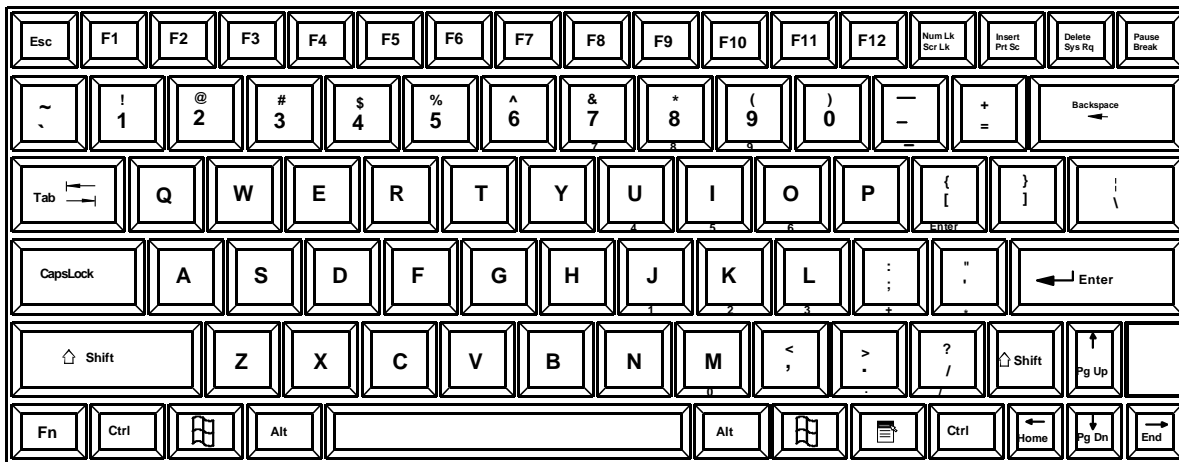
The Function ("Fn") key provides several special functions on the RACKMUX keyboard, including:

- enabling otherwise standard keyboard keys to be used as the keys of a numeric keypad
- enabling multi-function keys to change operation
- enabling the "T" key to act as a mode key to toggle between USB and PS/2 keyboard/mouse mode

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

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

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



↑  
Function Key to enable additional key functions

Figure 15- US(English) Keyboard Layout

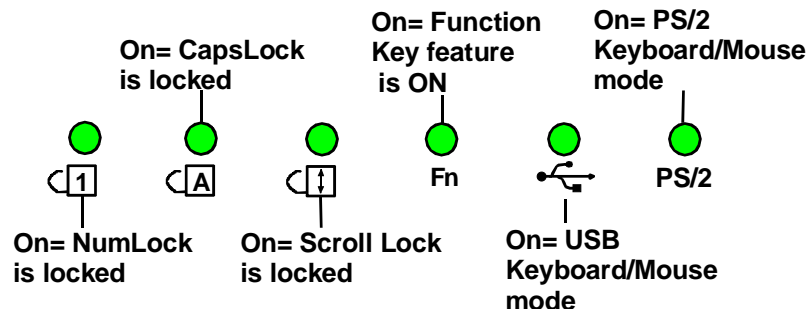



Figure 16- Keyboard LED Indications


**Number Pad**

The functionality of a Number Pad on a standard Windows keyboard has been incorporated into the keyboard of the RACKMUX-V15 (see Figure 17, page 18 ).

To substitute the keys of the Number Pad:

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

To turn OFF Number Pad functions:

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

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

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

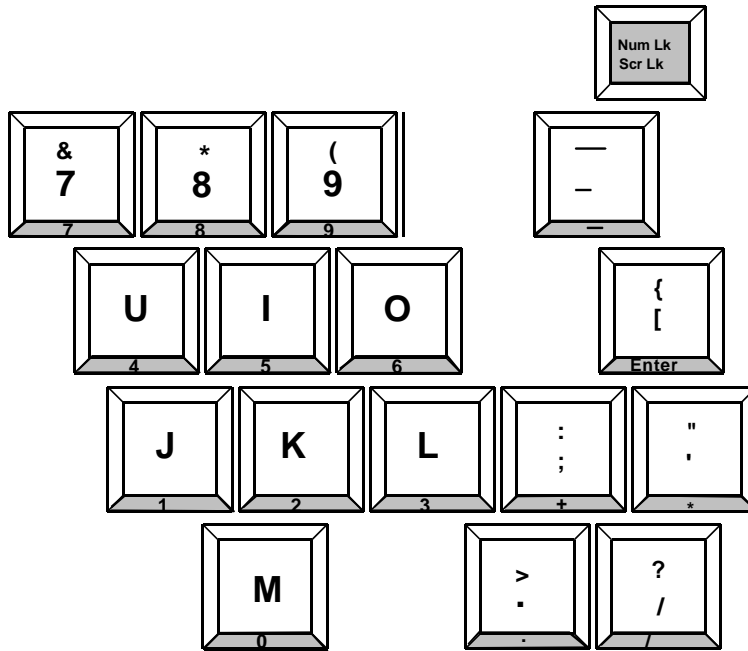


Figure 17- Keys of the Number Pad

**Other Uses of the Function Key**

The Function ("Fn") key (page 16) will enable other standard keyboard features in addition to the Number Pad keys (page 17) .

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

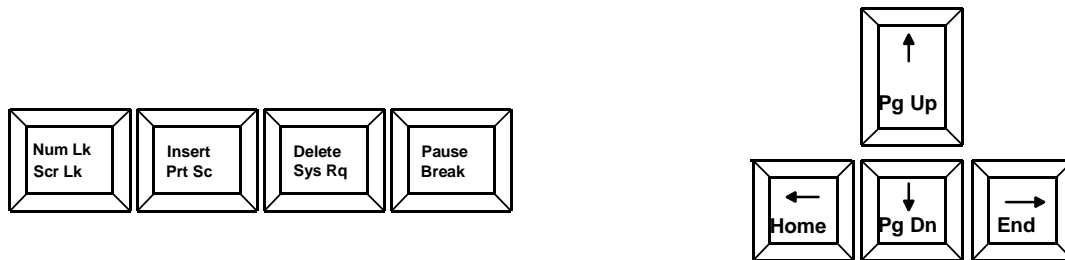


Figure 18- Additional multi-function keys

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

## Numeric Keypad Option

Models with the Numeric Keypad option (-N) (i.e. RACKMUX-V15-N) have a standard Windows keyboard with 17-key numeric keypad.

When the Numeric Keypad option is present, the Function (“Fn”) key, (page 16) is only used to toggle between PS/2 and USB keyboard/mouse mode (page 19).

**Note: When the Numeric Keypad option is present, the “Fn” key does not lock. Instead, the “Fn” key operates similar to the shift key (with only momentary effect).**

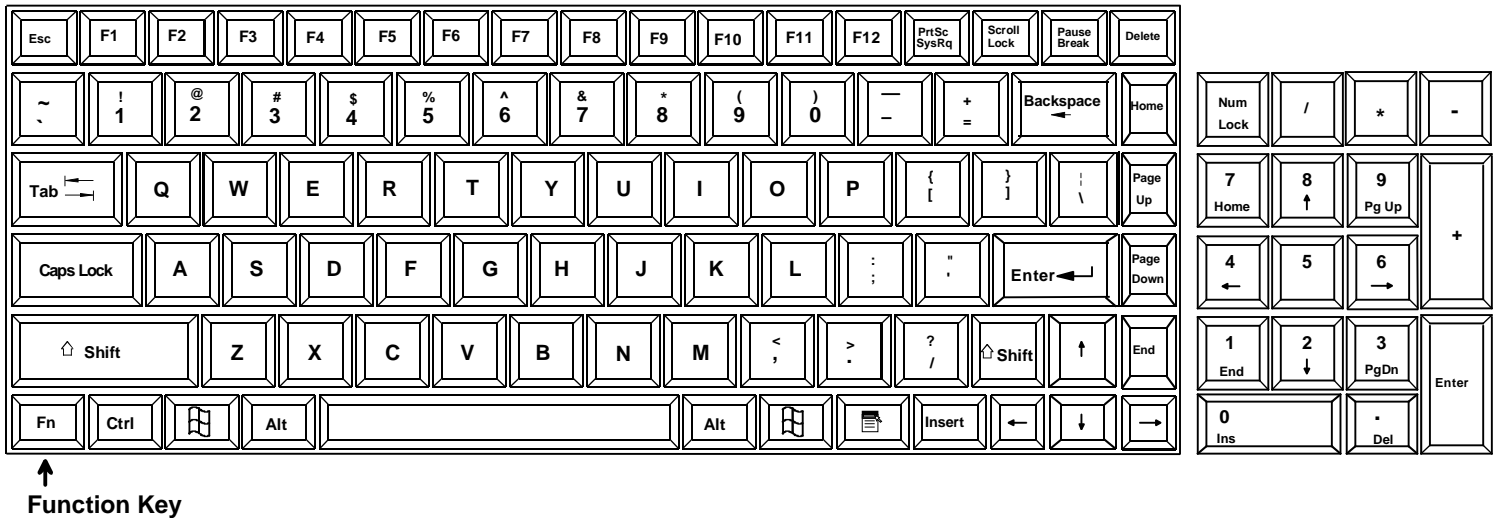


Figure 19- U.S. (English) keyboard with numeric keypad

## PS/2-USB Keyboard/Mouse Mode

The RACKMUX keyboard and mouse can be configured to connect to either a PS/2 or USB enabled CPU. At initial power ON from the factory, the keyboard will be in PS/2 mode.

### To toggle keyboard mouse mode when standard condensed keyboard is present

1. Press the “Fn” key twice quickly (double-click). The “Fn” LED will illuminate.
2. To toggle the keyboard to USB mode, depress and hold the “T” key for at least 7 seconds. The “USB” LED will illuminate. Release the “T” key.
3. To toggle the keyboard back to PS/2 mode, press and hold the “T” key again for at least 7 seconds. The “PS/2” LED will illuminate. (See Figure 16 on page 13.) Release the “T” key.

### To toggle keyboard mouse mode when Numeric Keypad is present

1. To toggle the keyboard to USB mode, depress and hold the “Fn” key (“Fn” LED will illuminate) and the “T” key for at least 7 seconds. The “USB” LED will illuminate. Release both keys.
2. To toggle the keyboard back to PS/2 mode, press and hold the “Fn” and “T” keys again for at least 7 seconds. The “PS/2” LED will illuminate. (See Figure 16 on page 13.) Release both keys.

**Note: In the event of a power failure, the RACKMUX will power up the keyboard in the mode it was last configured for.**

## KOREAN KEYBOARD OPTION

This RACKMUX may include an optional keyboard with special characters on the keys unique to the Korean language. If so, the firmware in the drawer provides special functions to be used for switching between typing in English, "Alternate Language 1" (as configured in your Windows operating system) and "Alternate Language 2".

For this application, we will assume that Alternate Language 1 is configured for Korean characters (Hangeul) and Alternate Language 2 is for Chinese characters (Hanja).

### Alternate Language 1

To switch between typing characters in English and typing in the language configured as "Alternate Language 1" (Korean), press the right hand <Alt> key on the keyboard. To switch back to typing characters in English, press the right hand <Alt> key again.

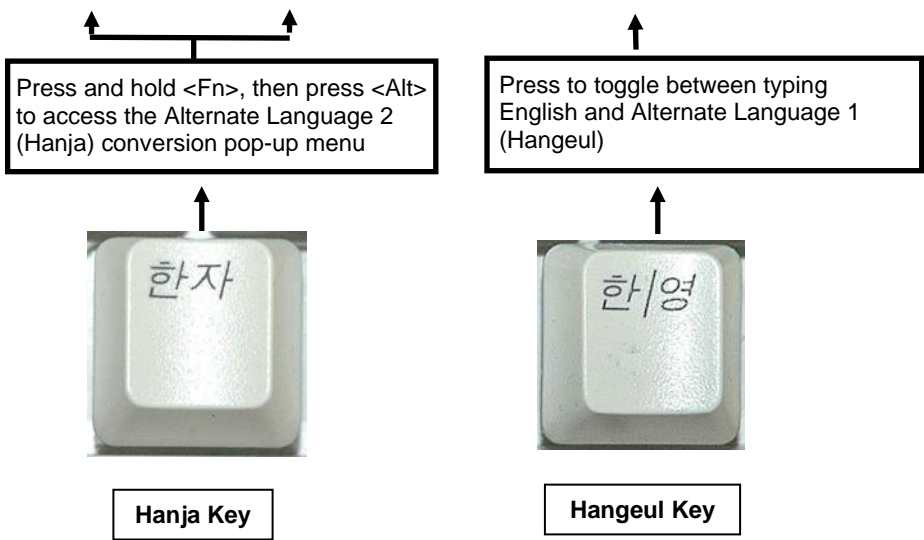
### Alternate Language 2

To use the "Alternate Language 2" character conversion pop-up function as configured in your Windows operating system,

1. press the right hand <Alt> key to switch to "Alternate Language 1" (same as Hangeul key on Korean keyboard), then
2. key in the Korean character to be converted to Chinese
3. press and hold the <Fn> key, then press the left hand <Alt> key and release both. (Pressing these keys substitutes for the Hanja key on a Korean keyboard)

If the character entered has a Chinese equivalent, a popup will be presented for you to select the desired character to be substituted. If there is no Chinese equivalent, no popup will be presented.

To make the pop-up menu re-appear, enter another Korean character sequence and repeat the <Fn> + <Alt> key sequence.





## SAFETY

This NTI product has been designed and fully tested with user safety of the utmost importance. As with all electronic devices, this NTI product should be handled and operated with care. In order to avoid possible injury and to reduce any risk of damage to this product, please read and follow each of these safety instructions.

- Follow all instructions found in this manual.
- Follow all instructions found on the product.
- Do not attempt to perform any service on this product unless specifically instructed to in this manual.
- Objects that can damage or be spilled on this product should be kept away from this product. Liquids, if spilled, could come into contact with voltage points causing a risk of fire or electrical shock.
- Always unplug this product before cleaning it. Do not use any liquid or aerosol cleaners to clean it.
- Do not install or use this product near water
- Be sure to mount this product on a solid, stable surface or in a rack (if applicable)
- Route all cables and the power cord away from sharp edges or objects that could cause damage to them
- Use only the power cord or AC adapter that came with this unit or one that meets the requirements specified in this manual
- Use only a properly grounded 3-wire electrical outlet for power connection
- Unplug this product and contact NTI should any of the following conditions occur:
  - The power cord or connection cables have been damaged
  - The product has come into contact with any liquids
  - The product does not operate properly despite having followed all of the instructions
  - The product has been dropped or the case has been damaged in any way
  - The product performs distinctly different than it did when first put into service

## RACKMUX-KVM DRAWER STANDARD SPECIFICATIONS

### General Specs

Case Material.....	Electro-galvanized steel black powdercoated
Dimensions WxDxH (in.).....	19 x 21.9 x 1.75
Supported Rack Depths.....	Adjustable 22" – 39"
Weight.....	26 lbs.
Input Power.....	AC 100-240V, 50 – 60 Hz
Operating Temperature.....	0-40°C
Storage Temperature.....	-20-60°C
Relative Humidity.....	20-90%, non-condensing
Approvals.....	All parts comply with RoHS

### LCD – 15"

Display area.....	304.1mm (W) x 228.1 (H) (15 inch diagonal)
Panel Type.....	TFT Active
Number of Pixels.....	1024 (H) x 768 (V)
Number of Colors.....	16.2 Million
Pixel Pitch.....	0.297(H) x 0.297(V)
Color Pixel Arrangement.....	RGB Vertical Stripe
Brightness.....	250cd/m <sup>2</sup> (Nits)
Response Time.....	16ms
Viewing Angle.....	Horizontal: 140°; Vertical: 125° (Typ.)
Optimum Viewing Direction.....	6 o'clock
Backlight Unit.....	2x CCFLs (Top & Bottom, edge-light)
Operating Lamp Life.....	30,000 – 40,000 hrs
Contrast Ratio.....	500:1

### LCD – 17"

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

### LCD – 17" Hi-Resolution

Display area.....	379.3mm (W) x 244.6 (H) (17.1 inch diagonal)
Panel Type.....	TFT Active
Number of Pixels.....	1920 (H) x 1200 (V)
Color Depth.....	6 bit, 262,144 colors
Pixel Pitch.....	0.191(H) x 0.191(V)
Brightness.....	275cd/m <sup>2</sup>
Operating Lamp Life.....	10,000 hrs

## Display Controller: VGA (-15 & -17)

Connector.....	15HD, female
Video Format .....	VGA,SVGA, XGA, SXGA (17" only)
Signal Input (from Video Source).....	Analog RGB
Sync Range .....	H: 31 ~ 80KHz, V: 55 ~ 76Hz
OSD Control.....	Menu, Up, Down, Select, Power (5 keys)
Plug and Play.....	VESA DDC 2B Ver1.3

## Display Controller: DVI (-17)

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

## OSD Control Board

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

## Keyboard

No. Of Keys .....	83 Keys (US)
Key Switch Type .....	Membrane switch
Keytop Style.....	Rectangular Cylindrical
Operating Force.....	50gf +/- 25gf
Stroke .....	3.0mm +/- .5mm
Tactile .....	20 gf typ.
Height .....	8.5 mm
Operating Life .....	10M operations, minimum
Interface .....	Row and column matrix
Key Switch Bounce.....	10 ms, maximum
Supported Platforms .....	USB, PS/2
CPU Connectors.....	USB Type B (USB);
.....	6-pin miniDIN, female, Purple & Green (PS/2)

## Touchpad

Motion Detection Method .....	capacitance sensing
X/Y Position Sensing Resolution .....	40 counts/mm
X/Y Position Reporting.....	Relative (Similar to mouse)
Tracking Speed.....	Up to 1016 mm/sec
Touch Force.....	No Contact pressure required
Lifetime (Plastic Overlay) .....	Minimum 10,000,000 strokes
Sample Rate .....	Up to 100 samples/sec
Gesture support.....	Single-finger gestures supported

## TROUBLESHOOTING

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

Problem/Message	Cause	Solution
"OUT OF FREQUENCY"	Input signal is outside the supported range	Lower video frequency to be within specified range
"POWER SAVER MODE"	The input signal is not present. This message will disappear after 5 seconds.	Check all cable connections- verify that they are secure
"NO SIGNAL"	The input signal is not present immediately after power ON.	Check all cable connections- verify that they are secure
"AUTO CONFIGURATION"	The LCD monitor is configuring itself for proper communication with the CPU.	No action necessary
Keyboard/touchpad not functioning	<ul style="list-style-type: none"> <li>Keyboard is in the incorrect mode</li> <li>Cables are not properly connected</li> </ul>	<ul style="list-style-type: none"> <li>Toggle the keyboard mode from PS/2 (default) to USB.                             <ul style="list-style-type: none"> <li>A. If keyboard works in PS/2 mode and not USB, USB cable is incorrectly connected.</li> <li>B. If keyboard works in USB mode and not PS/2, PS/2 cable is incorrectly installed</li> </ul> </li> <li>Check all cable connections between the RACKMUX and the computer.</li> </ul>
Front panel USB port is not working	USB cable is not properly connected	Check USB cable connection between the RACKMUX and the computer. Make sure it is connected to a working USB port at the CPU.
Keys pressed on the keyboard do not yield the expected result	"Fn" function is locked ON.	Check to see if the Fn LED is illuminated. If so, press the "Fn" key twice quickly to unlock the function.
LCD is not displaying image	<ul style="list-style-type: none"> <li>Image out of range</li> <li>LCD Auto-Shut OFF button is depressed</li> <li>LCD is powered OFF</li> </ul>	<ul style="list-style-type: none"> <li>Lower the resolution</li> <li>Make sure nothing is resting on the button</li> <li>Turn power to LCD ON</li> </ul>
"T" key not working ("Fn" LED will be ON solid)	"Fn" key was inadvertently pressed along with another key and is locked ON	Momentarily press the "Fn" key again, by itself, and the "Fn" LED should go OFF. "T" key should work normally again.

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## WARRANTY INFORMATION

The warranty period on this product (parts and labor) is two (2) years from the date of purchase. Please contact Network Technologies Inc at (800) 742-8324 (800-RGB-TECH) or (330) 562-7070 or visit our website at <http://www.networktechinc.com> for information regarding repairs and/or returns. A return authorization number is required for all repairs/returns.