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RACKMUX® Series

# RACKMUX-4K17-N

## Rackmount Drawer with 4K Video LCD Monitor, USB Keyboard, and Mouse

## Installation and Operation Manual

**RACKMUX-4K17-N (Front 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:>` |
| **`AAaaBBaaCCcc123`** | `What you type, contrasted with on-screen computer output; keyboard keys to press` | `C:>` **`L`**<br>Press the **Fn** key |

# TABLE OF CONTENTS


Introduction ..... 1
Features and Functions ..... 2
Installation ..... 3
  Rack Mounting Instructions ..... 3
    Optional Telco 2-Post Mounting ..... 6
  Connect to a CPU ..... 7
  Connect Extra Device ..... 7
  Connect Power ..... 8
  Power Up ..... 8
Display Functions ..... 9
  Standard Controls ..... 9
  OSD Control Menu- 17.3 Inch Hi-Definition 4K Monitor ..... 9
    OSD Main Menu ..... 10
Keyboard Functions ..... 15
  Numeric Keypad ..... 15
SAFETY ..... 16
Rackmux-KVM Drawer Standard Specifications ..... 17
  General Specs ..... 17
  LCD – 17.3” UHD/4K ..... 17
  Display Controller: HDMI ..... 17
  OSD Control Board ..... 17
  Keyboard ..... 17
  Touchpad ..... 18
Troubleshooting ..... 19
Index ..... 19
Warranty Information ..... 19

# TABLE OF FIGURES

Figure 1- Adjustable rail depth ..... 3
Figure 2- Install cage nuts ..... 3
Figure 3- Install rail assemblies ..... 4
Figure 4- Adjust distance between rails ..... 4
Figure 5- Slide the RACKMUX into the rails ..... 5
Figure 6- Secure the RACKMUX ..... 5
Figure 7- Position RACKMUX with clearance to open ..... 6
Figure 8- Mount to Telco post with optional mounting brackets ..... 6
Figure 9- Connect a CPU ..... 7
Figure 10- Connect a USB 2.0 device to the front (optional) ..... 7
Figure 11- Connect the power cord ..... 8
Figure 12- OSD Controls ..... 9
Figure 13- U.S. (English) keyboard with numeric keypad ..... 15
Figure 14- Keyboard LED Indications ..... 15

# INTRODUCTION

The RACKMUX-4K17-N Drawer (RACKMUX®) consists of a Keyboard, Touchpad, and 4K 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 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.

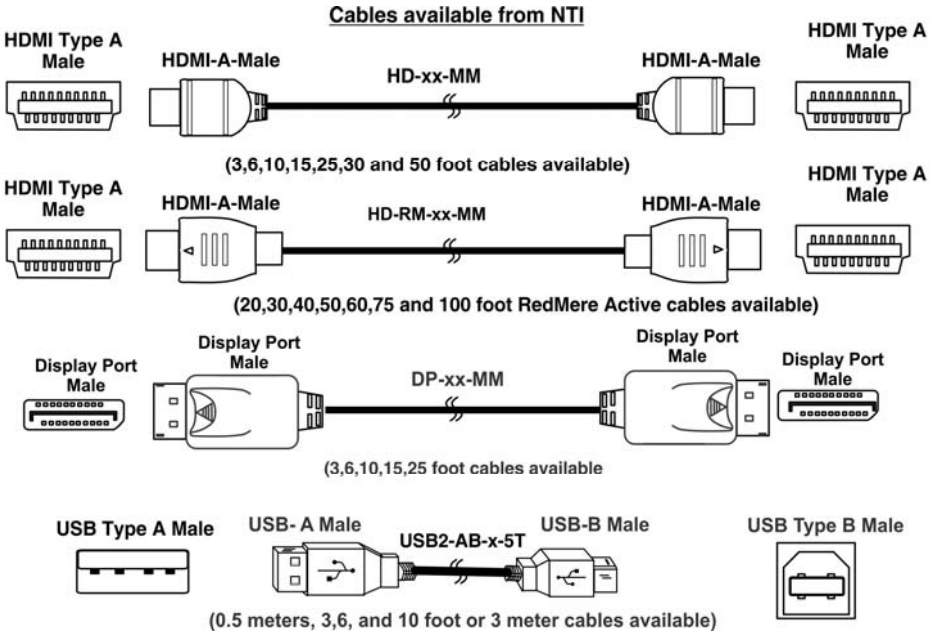
**Features Include:**

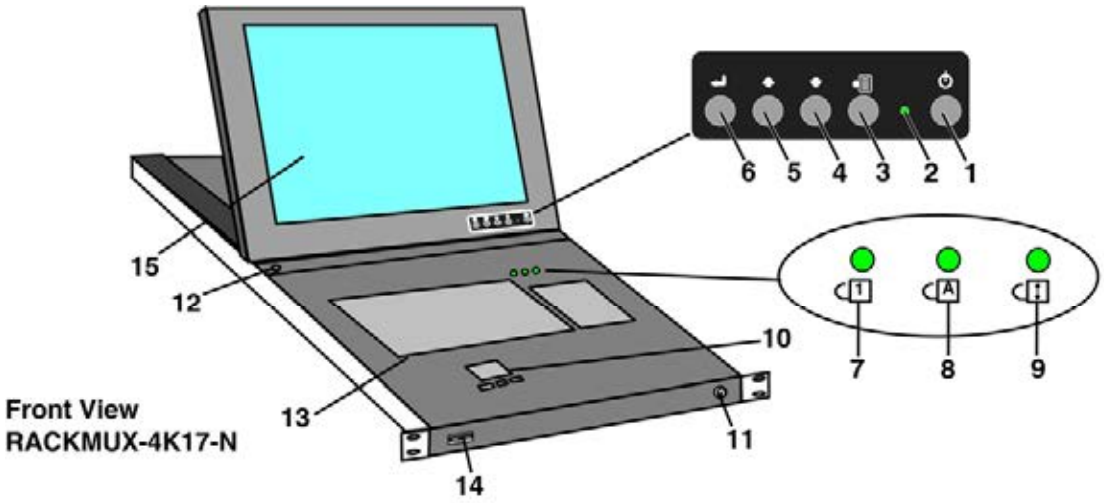
- Forward-folding 17.3" Active Matrix LCD HDMI flat panel monitor.
  - HDMI Port supports video resolution up to 3840x2160@60Hz
  - DisplayPort supports video resolution up to 3840x2160@60Hz
  - On screen display for modifying settings, uses attached mouse and keyboard.
  - Passes embedded audio
  - HDCP 2.2 and 1.4 Compliant
  - DisplayPort 1.2a Compliant
  - Supports HDMI 2.0
- Any HDMI source or display can be connected by using HD-xx-MM cable.
- Torque-friction hinges - monitor does not wobble, spring, or slam shut.
- Compact, heavy-duty tactile keyboard.
- Rugged steel construction with durable powder coat finish.
- Built-in 83-key (US) keyboard with 17-key numeric keypad.
- Standard 3-button mouse touchpad.
  - Touchpad supports single-finger gestures
- Auto shut-OFF switch: Turns OFF the power to the monitor when the LCD is in a folded-closed position.
- Front-access USB port for easy accessory USB 2.0 device connection.
- Built-in universal (100-240VAC) low power consumption power supply.
- Multi-language support including: US(English), UK(English), German, French, Italian, Spanish
- Drawer locks into place when open to prevent it from sliding in and out of the rack.

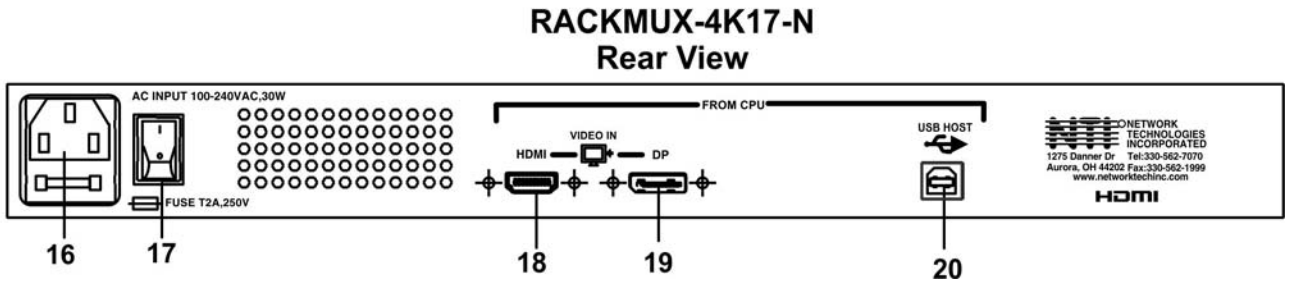
**Materials Included with this kit:**

- ✓ RACKMUX-4K17-N KVM Drawer
- ✓ IEC power cord, country-specific
- ✓ 2 Keys for Lock
- ✓ Single-Person Installation mounting kit
- ✓ USB2-AB-2M-5T 2 meter USB Type A male-to-USB Type B male cable
- ✓ HD-6-MM 6 foot HDMI video cable
- ✓ DP-6-MM 6 foot DisplayPort video cable
- ✓ URL slip with link to PDF file of this manual

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.






## FEATURES AND FUNCTIONS

| # | LABEL | PHYSICAL | DESCRIPTION |
|---|---|---|---|
| 1 | **Power** | Button | press to turn only the LCD monitor ON and OFF |
| 2 | --- | Green/Red LED | Indicates operation status<br>Green = Power-ON, Video Input Signal OK<br>Red = Suspend / Stand-by, or no Video Input Signal |
| 3 | **Menu /Select** | Button | press to turn ON the OSD menu or press to select a menu item |
| 4 | **Down Arrow** | Button | press to move the cursor in the OSD menu down |
| 5 | **Up Arrow** | Button | press to move the cursor in the OSD menu up |
| 6 | **Exit** | Button | press to exit a menu or close the OSD menu |
| 7 | **NumLock** | Green LED | illuminates when the number lock is ON |
| 8 | **CapsLock** | Green LED | illuminates when CapsLock is ON |
| 9 | **Scroll Lock** | Green LED | illuminates when the Scroll Lock keyboard feature is ON. |
| 10 | --- | 3-button mouse | for controlling mouse movements on the monitor and controlling the computer |
| 11 | --- | Keylock | to prevent unauthorized use of the RACKMUX |
| 12 | --- | Auto Shut-OFF | switch automatically shuts OFF the LCD display when the monitor is folded down |
| 13 | --- | Keyboard | for manual data entry and computer control |
| 14 | --- | USB Type A | for connection of USB 2.0 device (flash drive, printer, CAC reader, etc) |
| 15 | --- | LCD Display | for viewing the video signal from the connected CPU |
| 16 | **AC INPUT** | IEC Connector | for attachment of the IEC power cord to power the RACKMUX drawer |
| 17 | --- | Main Switch | for powering ON and OFF the RACKMUX drawer |
| 18 | **HDMI** | HDMI female | for connection of HDMI video cable from video source |
| 19 | **DP** | Display Port female | for connection of optional Display Port video cable from video source |
| 20 | **USB HOST** | USB Type B | For connection of USB cable from host CPU- to support mouse, keyboard and other USB Device functions |

# 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.

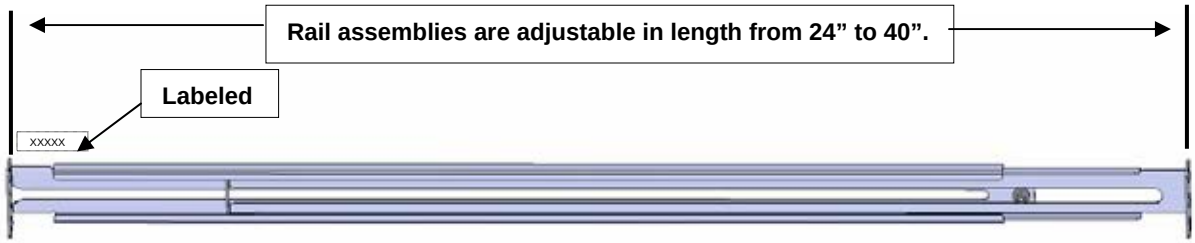



**Figure 1- Adjustable rail depth**

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.

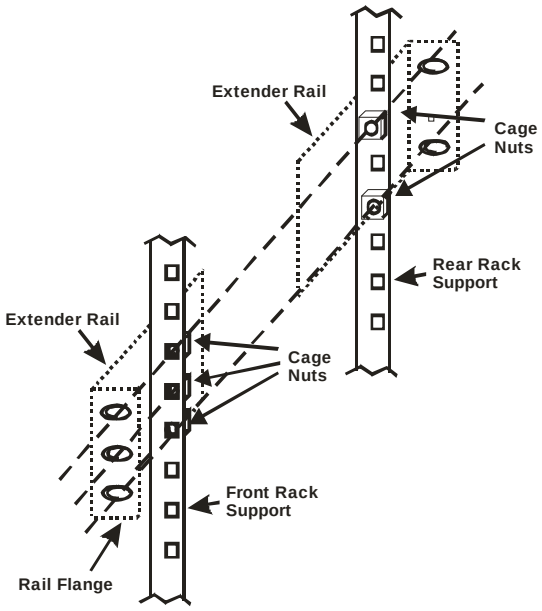



**Figure 2- Install cage nuts**

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.

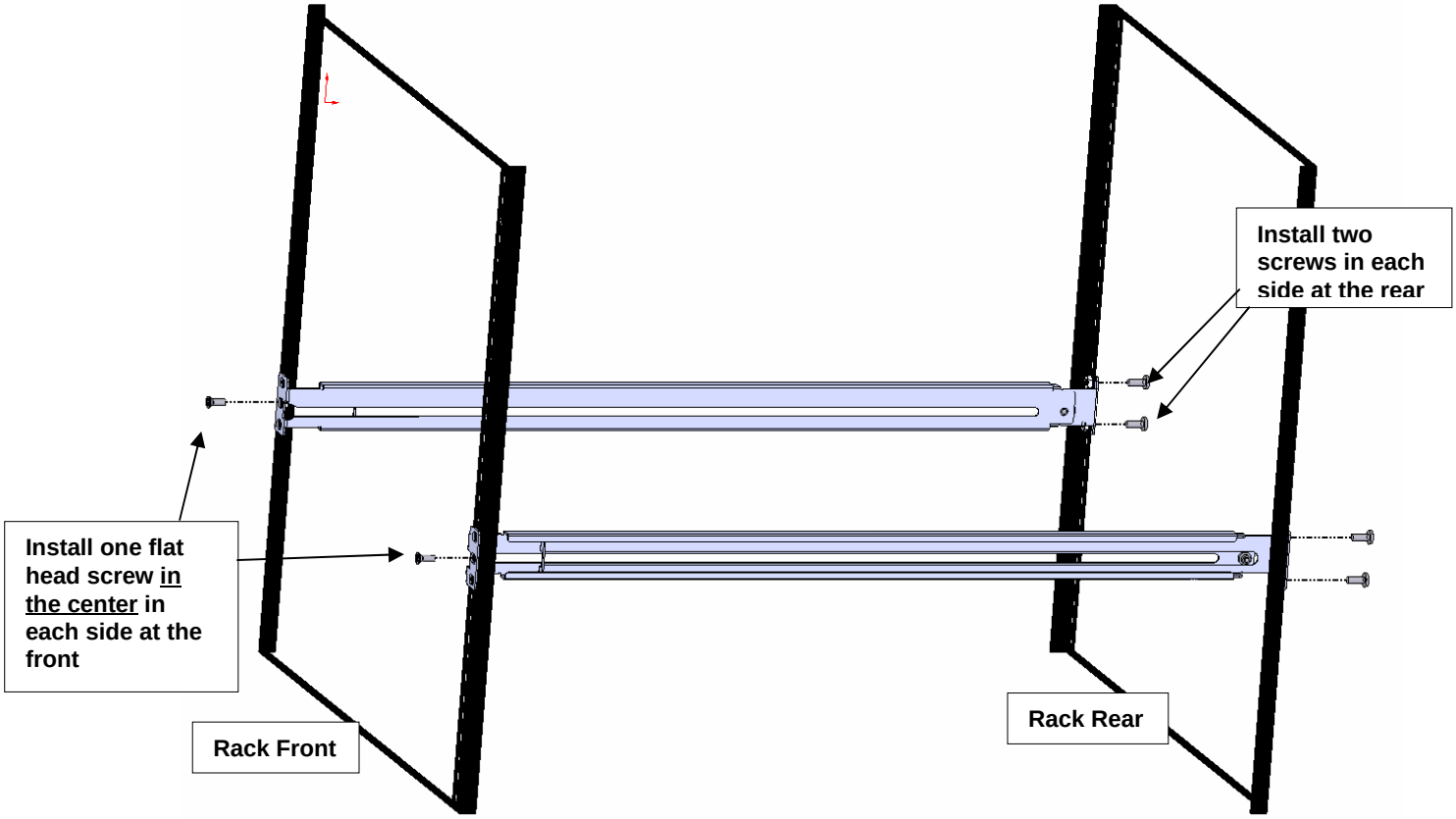



**Figure 3- Install rail assemblies**

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.

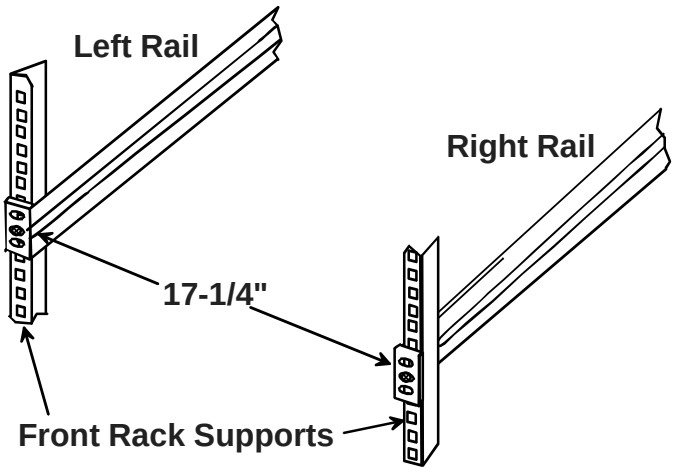



**Figure 4- Adjust distance between rails**

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.

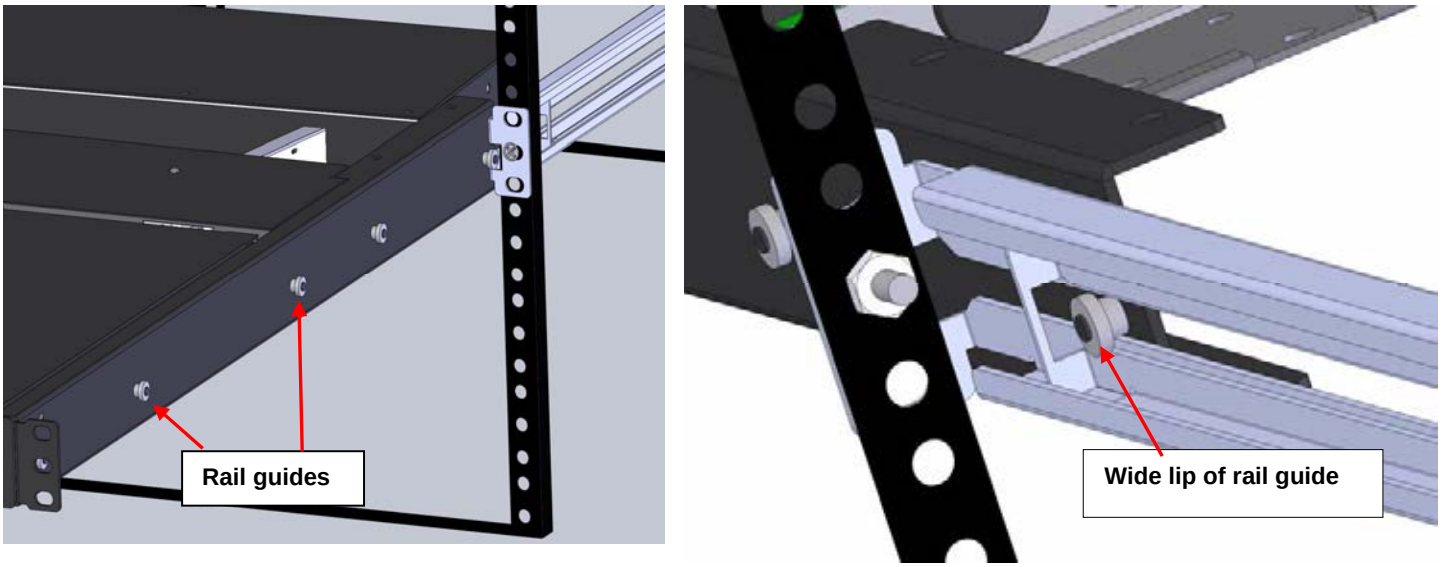



**Figure 5- Slide the RACKMUX into the rails**

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)***

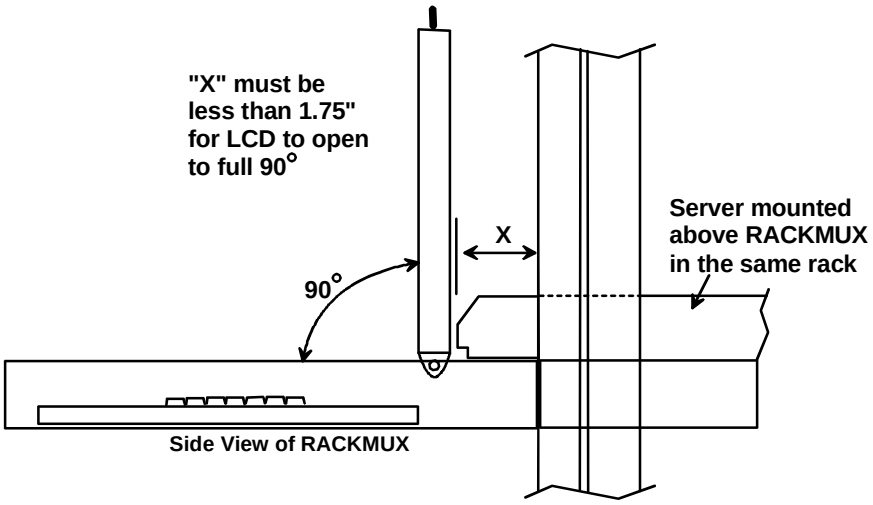



**Figure 7- Position RACKMUX with clearance to open**

## 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.

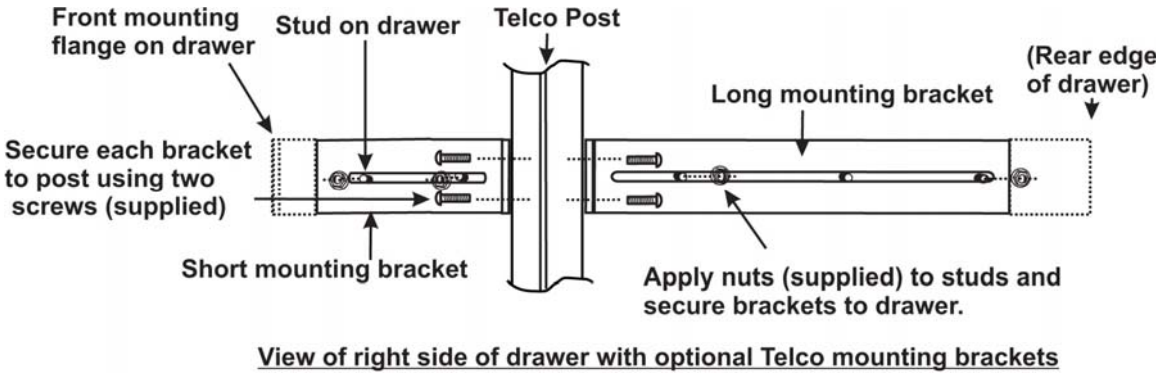



**Figure 8- Mount to Telco post with optional mounting brackets**

## Connect to a CPU

Connect the RACKMUX to a USB CPU with either an HDMI or Display Port type video port. For connection to a USB CPU with HDMI video port, use the HD-6-MM and USB2-AB-2M-5T cables supplied as shown in Figure 9. Longer cables are available (see page 1).

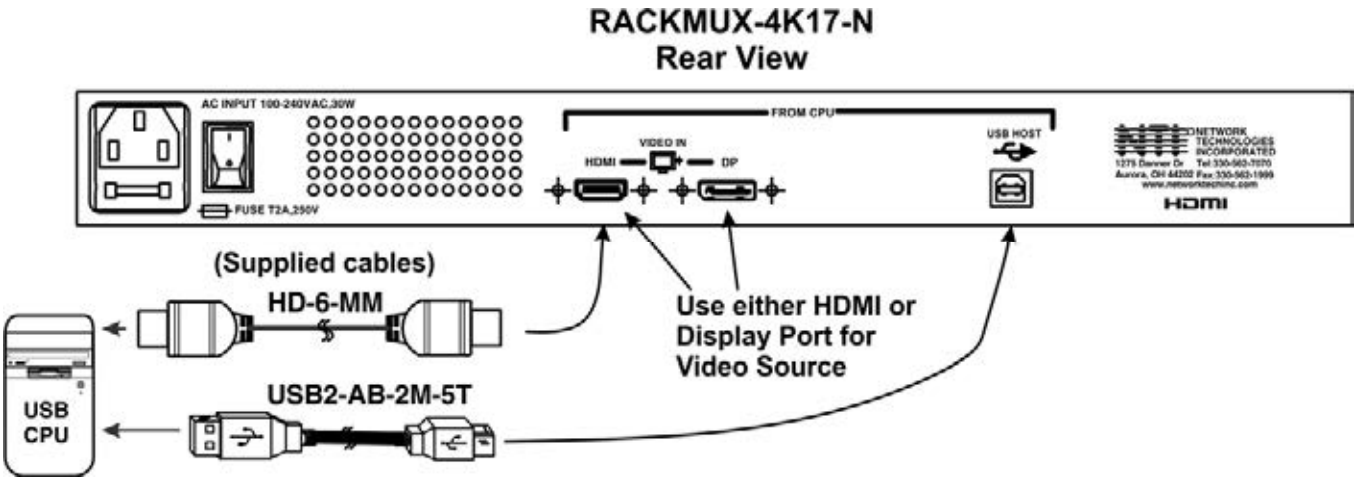



**Figure 9- Connect a CPU**

## 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 2.0 and earlier.

***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.***

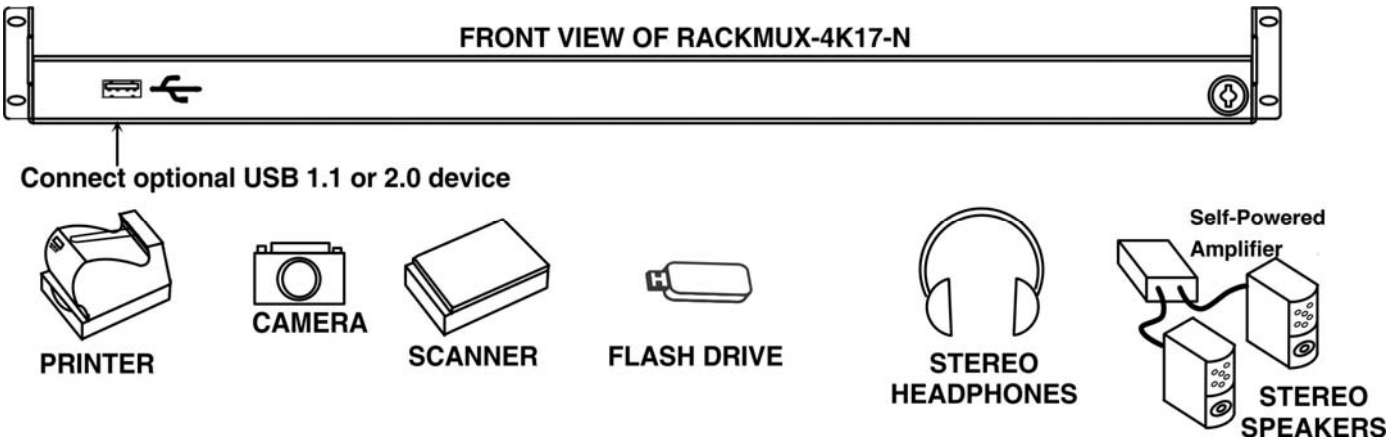



**Figure 10- Connect a USB 2.0 device to the front (optional)**

***Note: In order to use the stereo headphones or self-powered speakers, the CPU must have proper drivers loaded that support the connected headphones or speakers.***

## Connect Power

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

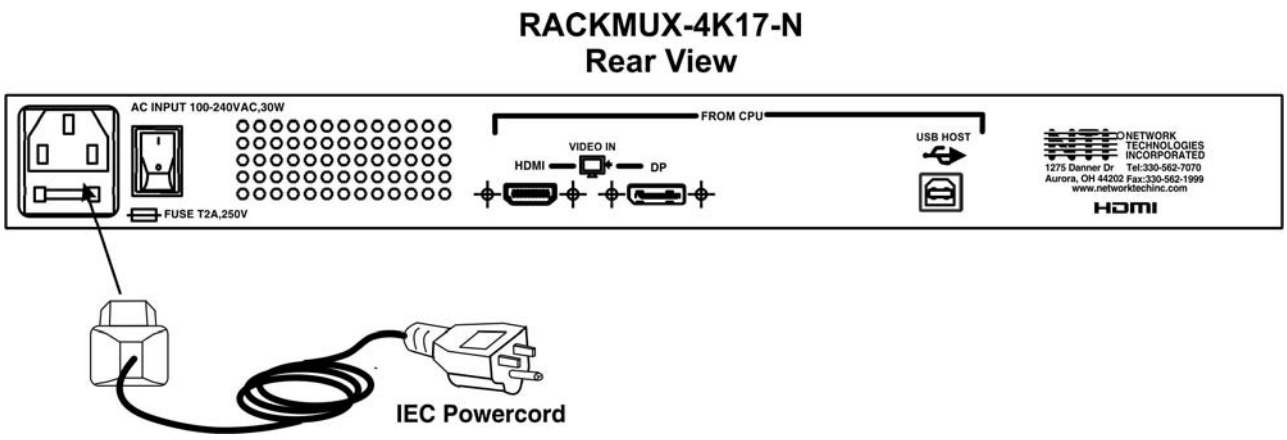



**Figure 11- Connect the power cord**

## 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 3840 x 2160 @ 60Hz. 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 Monitor and backlight ON and OFF as desired.
- The **Power LED** located immediately to the left of the Power button is a dual color LED. It will illuminate with a green color when the RACKMUX is powered ON and has video sync. It will illuminate with a red color if the RACKMUX is powered ON but there is no input signal detected.
- The **Menu/Select** button is used to bring up the OSD menu where the various settings of the LCD display can be adjusted. Once the OSD screen is displayed, the Menu/Select button is used to make selections within the menus. See "OSD Control Menu" (below) for more on LCD display settings.
- The **Up and Down Arrow** buttons are used to navigate through the menus. Move the cursor up or down as desired to highlight an item for selection. Once an item is highlighted, pressing the Menu button will select it.
- The **Exit** button will exit the OSD menu when visible.

## OSD Control Menu- 17.3 Inch Hi-Definition 4K Monitor

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.

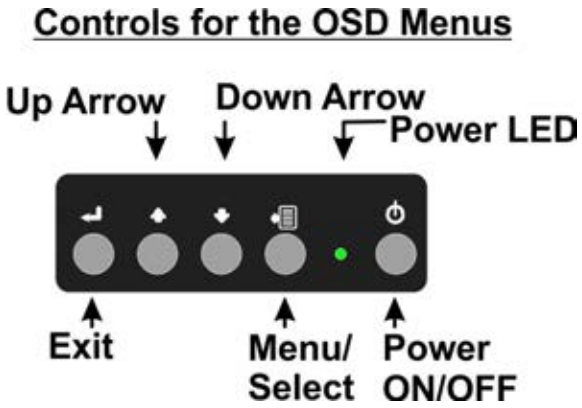



**Figure 12- OSD Controls**

## OSD Main Menu

The Main Menu is broken into eight sections, Input Source, Brightness/Contrast, Color, Picture Quality, Display, Audio, Multi-Window and Other (Misc). Press one of the arrow buttons to move between them. To select a menu and move to characteristics within them (i.e. VGA, DP or HDMI2.0 under the Input Source menu), press the **Select** button while the desired menu is displayed.

**Note: If only one input connector is used, the input source will automatically switch to the active connector. No user selection will be necessary.**

**If both input connectors are used, as of this publication, to use a DisplayPort source select "HDMI2.0", and to use an HDMI source select "DP".**

Images of the other menus are provided on the following pages for your reference.

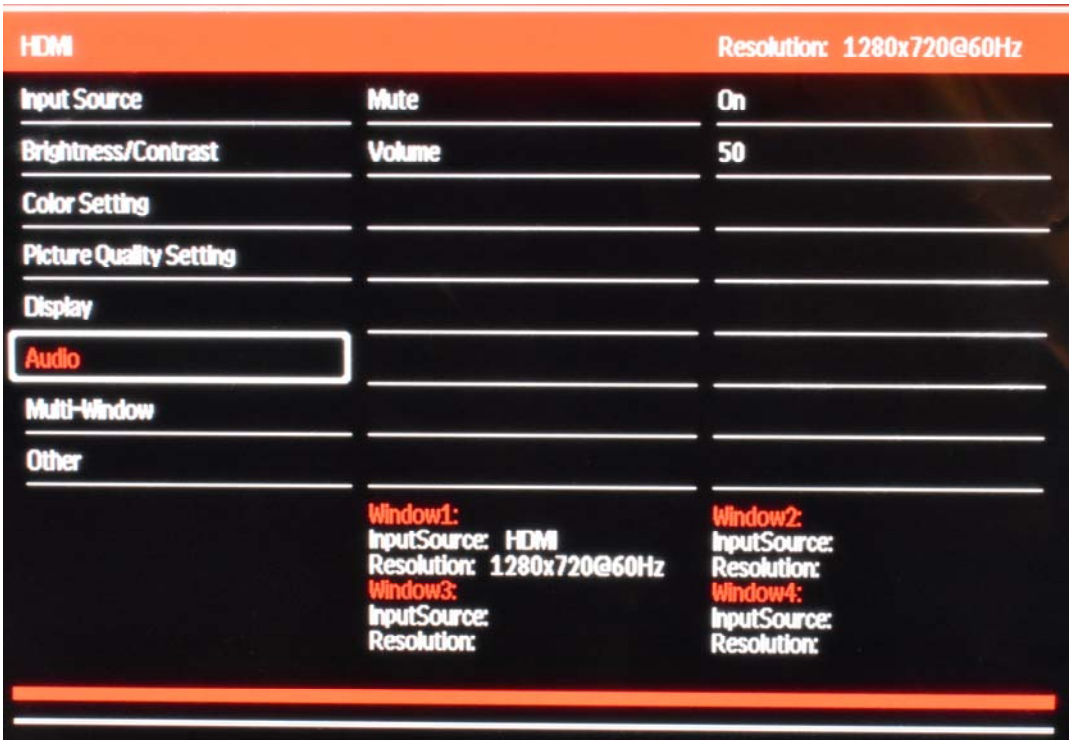
Press the **Exit** button or select “Exit” to exit the OSD menu.

HDMI
Resolution: 1280x720@60Hz
Input Source
Brightness/Contrast
Color Setting
Picture Quality Setting
Display
Audio
Multi-Window
Other
Brightness
100
Contrast
50
DCR
Off
Window1:
InputSource: HDMI
Resolution: 1280x720@60Hz
Window2:
InputSource:
Resolution:
Window3:
InputSource:
Resolution:
Window4:
InputSource:
Resolution:

HDMI
Resolution: 1280x720@60Hz
Input Source
Brightness/Contrast
Color Setting
Picture Quality Setting
Display
Audio
Multi-Window
Other
Gamma
2.2
Picture Mode
Standard
Color Temperature
USER
USER
Hue/Saturation
Window1:
InputSource: HDMI
Resolution: 1280x720@60Hz
Window2:
InputSource:
Resolution:
Window3:
InputSource:
Resolution:
Window4:
InputSource:
Resolution:

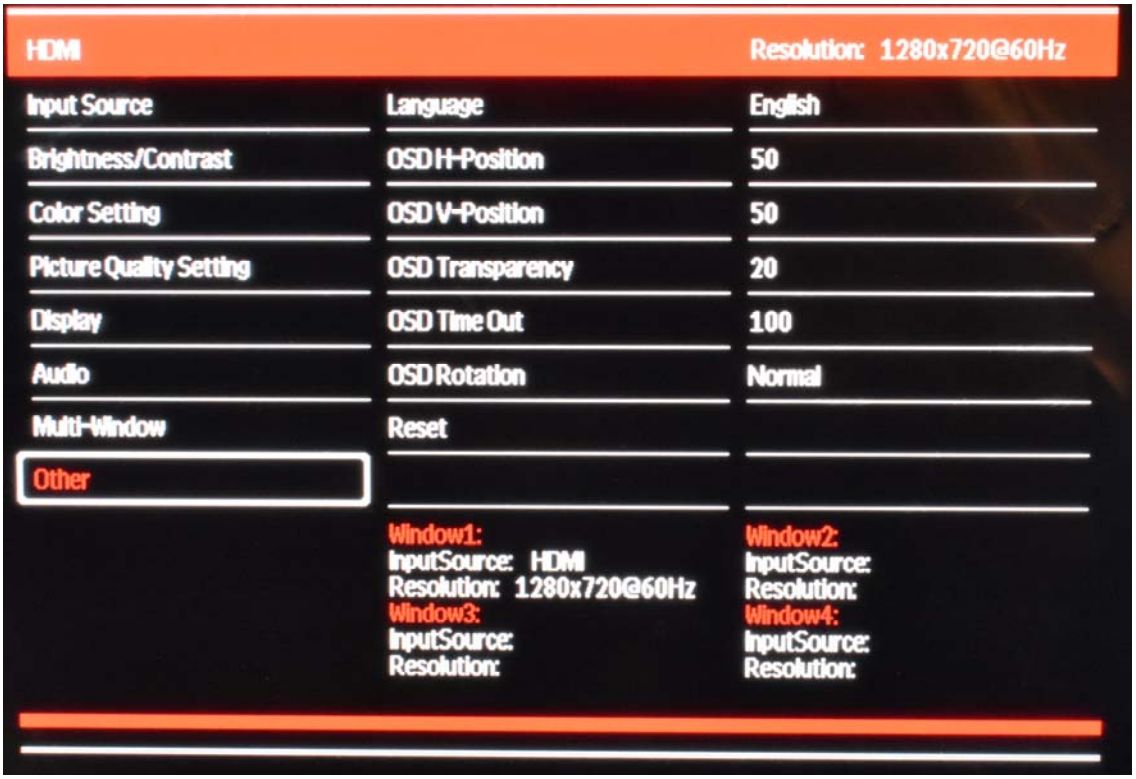
HDMI
Resolution: 1280x720@60Hz
Input Source
Brightness/Contrast
Color Setting
Picture Quality Setting
Display
Audio
Multi-Window
Other
Bypass
Sharpness
Response Time
Noise Reduction
Super Resolution
Dynamic Luminous Control
Off
50
Off
Off
Off
Off
Window1:
InputSource: HDMI
Resolution: 1280x720@60Hz
Window2:
InputSource:
Resolution:
Window3:
InputSource:
Resolution:
Window4:
InputSource:
Resolution:

HDMI
Resolution: 1280x720@60Hz
Input Source
Brightness/Contrast
Color Setting
Picture Quality Setting
Display
Audio
Multi-Window
Other
Aspect Ratio
H-Position
V-Position
Clock
Phase
Auto Adjust
DP Version
Wide Screen
50
50
50
50
Window1:
InputSource: HDMI
Resolution: 1280x720@60Hz
Window2:
InputSource:
Resolution:
Window3:
InputSource:
Resolution:
Window4:
InputSource:
Resolution:




**Note: the Audio option is not be applicable to this product.**

**Note: the Multi-window option is not be applicable to this product.**



# KEYBOARD FUNCTIONS

## Numeric Keypad

This RACKMUX has a standard Windows keyboard with 17-key numeric keypad.

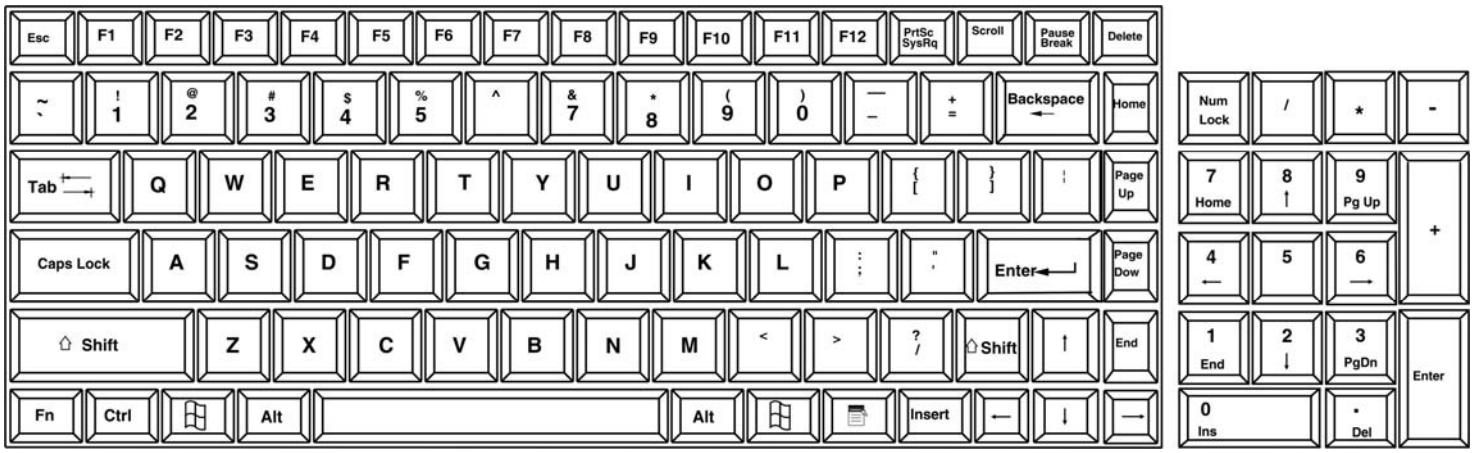



**Figure 13- U.S. (English) keyboard with numeric keypad**

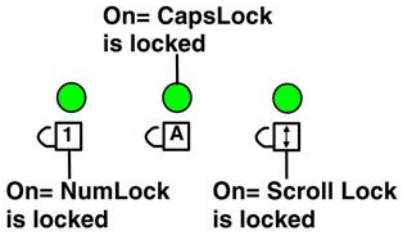



**Figure 14- Keyboard LED Indications**

# 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
- Do not remove covers or disassemble
- 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 this product
- 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 powder coated
Dimensions WxDxH (in.).....19 x 23.9 x 1.75
Supported Rack Depths.....Adjustable 24" – 40"
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 – 17.3" UHD/4K

Display area.....382.1mm (W) x 214.9 (H) (17.3 inch diagonal)
Panel Type.....TFT Active
Number of Pixels .....3840 (H) x 2160 (V)
Color Depth.....8 bit,16.7M colors
Pixel Pitch .....0.0995(H) x 0.0995(V)
Brightness.....340cd/m2 minimum, 400cd/m2 typ
Backlight .....LED

## Display Controller: HDMI or DP

Connector.....HDMI female, HDMI 2.0 compliant
Connector.....DisplayPort female, DisplayPort 1.2a compliant
Video Format .....Up to UHD
Signal Input (from Video Source).....Digital TMDS
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 .....100 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
CPU Connectors.....USB Type B

## 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 and front panel USB port not functioning** | USB Cable are 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. |
| **LCD is not displaying image** | • Image out of range<br>• LCD Auto-Shut OFF button is depressed<br>• LCD is powered OFF | • Lower the resolution<br>• Make sure nothing is resting on the button<br>• Turn power to LCD ON |

# INDEX

accessory USB port, 7
**D**isplay functions, 9
**M**aterials included, 1
numeric keypad, 15
OSD Controls, 9
Power up sequence, 8
**T**elco mount, 6
**U**SB port, 7

# 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.

MAN338 Rev. 5/7/24