



Cat 5 High-Density Dual Rail LCD KVM Switch
KL1508 / KL1516
User Manual

FCC Information

This is an FCC Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

RoHS

This product is RoHS compliant.

SJ/T 11364-2006

The following contains information that relates to China.

部件名称	有毒有害物质或元素					
	铅	汞	镉	六价铬	多溴联苯	多溴二苯醚
电器部件	●	○	○	○	○	○
机构部件	○	○	○	○	○	○

- : 表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T 11363-2006规定的限量要求之下。
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User Information

Online Registration

Be sure to register your product at our online support center:

- ◆ International – <http://support.aten.com>
- ◆ North America – http://www.aten-usa.com/product_registration

Telephone Support

- ◆ International – 886-2-8692-6959
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The manufacturer of this system is not responsible for any radio and/or TV interference caused by unauthorized modifications to this device. It is the responsibility of the user to correct such interference.

The manufacturer is not responsible for any damage incurred in the operation of this system if the correct operational voltage setting was not selected prior to operation. PLEASE VERIFY THAT THE VOLTAGE SETTING IS CORRECT BEFORE USE.

Package Contents

The KL1508 / KL1516 package consists of:

- 1 KL1508 or KL1516 Cat 5 High-Density Dual Rail LCD KVM Switch with Standard Rack Mount Kit
- 1 Firmware Upgrade Cable
- 1 Power Cord
- 1 User Manual*
- 1 Quick Start Guide

Optional Equipment

Depending on any optional equipment that you may have purchased, one of the following may be included in your package:

- ◆ Standard Rack Mounting Kit - Long
- ◆ Easy-Installation Rack Mounting Kit - Short
- ◆ Easy-Installation Rack Mounting Kit - Long

Check to make sure that all of the components are present and in good order. If anything is missing, or was damaged in shipping, contact your dealer.

Read this manual thoroughly and follow the installation and operation procedures carefully to prevent any damage to the switch or to any other devices on the KL1508 / KL1516 installation.

* Features may have been added to the KL1508 / KL1516 since this manual was printed. Please visit our website to download the most up-to-date version of the manual.

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Contents

FCC Information	ii
SJ/T 11364-2006.	ii
User Information	iii
Online Registration	iii
Telephone Support	iii
User Notice	iii
Package Contents.	iv
Optional Equipment.	iv
About This Manual	viii
Overview	viii
Conventions	ix
Chapter 1.	
Introduction	
Overview	1
Features	3
Requirements	4
Computers.	4
Cables	5
KVM Adapter Cables	5
Daisy Chain Cables	5
Operating Systems	6
Components	7
KL1508 / KL1516 Front View	7
Keyboard Module	8
LCD Module	9
Rear View	10
KL1508	10
KL1516	10
Chapter 2.	
Hardware Setup	
Before you Begin.	11
Standard Rack Mounting.	12
Single Stage Installation	14
Single Stage Installation Diagram	15
KVM Adapter Cable Installation Diagram	16
Daisy Chaining	17
Daisy Chain Installation Diagram	18

Chapter 3.

Basic Operation

Opening the Console	19
Opening Separately	19
Opening Together	21
Operating Precautions	22
Closing the Console	23
LCD OSD Configuration	25
The LCD Buttons.	25
The Adjustment Settings.	26
Port Selection	27
Manual Port Switching	27
Hot Plugging	27
Switching Station Positions	27
Hot Plugging KVM Ports	27
Powering Off and Restarting.	28
Port ID Numbering	28

Chapter 4.

OSD Operation

OSD Overview	29
OSD Navigation	31
OSD Main Screen Headings.	31
OSD Functions	32
F1 GOTO	32
F2 LIST	33
F3 SET	34
F4 ADM.	36
F5 SKP	40
F6 BRC	41
F7 SCAN.	42
F8 LOUT	43

Chapter 5.

Hotkey Operation

Hotkey Port Control	45
Invoking Hotkey Mode	45
Selecting the Active Port.	46
Auto Scanning	47
Setting the Scan Interval.	47
Invoking Auto Scan	47
Skip Mode.	48
Hotkey Configuration	49
Alternate Hotkey Invocation Keys	49
Alternate OSD Invocation Keys.	49
Platform Setup	50
The Beeper	50
Hotkey Summary Table	51

Chapter 6.**Keyboard Emulation**

Mac Keyboard	53
Sun Keyboard	54

Chapter 7.**Firmware Upgrade**

The Firmware Upgrade Utility	55
Before You Begin	55
Performing the Upgrade	56
Starting the Upgrade:	56
Upgrade Succeeded:	59
Upgrade Failed:	59
Firmware Upgrade Recovery	60
Adapter Cable Upgrade	61
Introduction	61
Before You Begin	61
Performing the Upgrade	62
Starting the Upgrade:	62
Upgrade Succeeded:	63
Firmware Upgrade Recovery	64

Appendix

Safety Instructions	65
General	65
Rack Mounting	67
Technical Support	68
International	68
North America	68
Connection Tables	69
KL1508 – 8-Port Switches	69
KL1508 – 16-Port Switches	69
KL1516 – 8-Port Switches	70
KL1516 – 16-Port Switches	70
Specifications	71
KL1508M / KL1508N	71
KL1516M / KL1516N	72
OSD Factory Default Settings	74
Clear Login Information	75
Optional Rack Mounting	76
Dedicated Invocation Keys	79
Supported KVM Switches	79
Troubleshooting	80
General	80
Sun Systems	81
Screen Resolutions Higher than 1280 x 1024	82
Limited Warranty	84

About This Manual

This User Manual is provided to help you get the most from your KL1508 / KL1516 system. It covers all aspects of installation, configuration and operation. An overview of the information found in the manual is provided below.

Overview

Chapter 1, Introduction, introduces you to the KL1508 / KL1516 system. Its purpose, features and benefits are presented, and its front and back panel components are described.

Chapter 2, Hardware Setup, describes how to set up your installation. The necessary steps – from a basic single stage hookup to a complete 32 switch daisy chained operation are provided.

Chapter 3, Basic Operation, explains the fundamental concepts involved in operating the KL1508 / KL1516.

Chapter 4, OSD Operation, provides a complete description of the KL1508 / KL1516's OSD (On Screen Display), and how to work with it.

Chapter 5, Hotkey Operation, details all of the concepts and procedures involved in the Hotkey operation of your KL1508 / KL1516 installation.


Chapter 6, Keyboard Emulation, provides tables that list the PC to Mac and PC to Sun keyboard emulation mappings.

Chapter 7, Firmware Upgrade, explains how to upgrade the KL1508 / KL1516's firmware with the latest available versions.

An Appendix, provides specifications and other technical information regarding the KL1508 / KL1516.

Conventions

This manual uses the following conventions:

Monospaced	Indicates text that you should key in.
[]	Indicates keys you should press. For example, [Enter] means to press the Enter key. If keys need to be chorded, they appear together in the same bracket with a plus sign between them: [Ctrl+Alt].
1.	Numbered lists represent procedures with sequential steps.
◆	Bullet lists provide information, but do not involve sequential steps.
→	Indicates selecting the option (on a menu or dialog box, for example), that comes next. For example, Start → Run means to open the <i>Start</i> menu, and then select <i>Run</i> .
	Indicates critical information.

Product Information

For information about all of ALTUSEN's products and how they can help you connect without limits, visit ALTUSEN on the web or contact an ALTUSEN Authorized Reseller.

- ◆ In the United States of America, call: 866-ALTUSEN (258-8736)
- ◆ In Canada and South America, call: 949-453-8885
- ◆ In all other locations, call: 886-2-8692-6789
- ◆ Visit ALTUSEN on the web at <http://www.aten.com> for a list of locations and telephone numbers

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Chapter 1

Introduction

Overview

The KL1508 / KL1516 series of Cat 5 Dual Rail LCD KVM Switches are control units that allow access to multiple computers from a single KVM (keyboard, video, and mouse), console. A single KL1508 / KL1516 can control up to 8 or 16 computers, respectively. They consist of an integrated LCD monitor, keyboard, and touchpad in a in a 1U rack-mountable retractable sliding housing.

The similarities and differences among the models in the KL1508 / KL1516 series are shown in the following table:

Model	LCD Panel	Ports
KL1508M	17"	8
KL1508N	19"	8
KL1516M	17"	16
KL1516N	19"	16

The LCD and keyboard/touchpad modules slide independently of each other. To maximize space in your data center, the keyboard/touchpad module slides back to "hide away" when not in use, while the thin profile LCD monitor rotates back – flush against the rack – allowing administrators to monitor computer activity on the installation.

For increased reliability and efficiency, RJ-45 connectors and CAT 5 cable are used to link to the computers. Combined with Auto Signal Compensation (ASC), 1280 x 1024 @ 75Hz signals can travel up to 40 m (130') – eliminating the need for KVM extenders. Utilizing PS/2 and USB KVM Adapter Cables for the final linkup, the KL1508 / KL1516 permits any combination of PCs, Macs, Sun computers, and serial devices to coexist on the installation.

A single KL1508 / KL1516 can control up to 8 / 16 computers. As many as 31 additional KH1508 / KH1516 switches can be daisy chained from the original unit, so that up to 512 computers can all be controlled from the original KVM console. For added convenience, an extra console port is provided on the rear panel to manage the LCD KVM switch from an external console (monitor, keyboard, and mouse) up to 20 meters away, and an external PS/2 mouse can be used instead of the touchpad.

Your KL1508 / KL1516 investment is protected by an included *Firmware Upgrade Utility*. You can stay current with the latest improvements in functionality by downloading firmware update files from our website, and using the utility to quickly and conveniently install them.

Setup is fast and easy; plugging cables into their appropriate ports is all that is entailed. Because the KL1508 / KL1516 intercepts keyboard input directly, there is no software to configure; no need to get involved in complex installation routines; no need to be concerned with incompatibility problems.

Access to any computer connected to the installation is easily accomplished either by pressing front panel port selection switches; entering hotkey combinations from the keyboard; or by means of a powerful menu driven OSD (On Screen Display) system. A convenient *Auto Scan* feature also permits automatic scanning and monitoring of the computers running on the installation.

There is no better way to save time and money than with a KL1508 / KL1516 installation. By using the KL1508 / KL1516 with its sliding LCD console to manage your installation, you: (1) eliminate the expense of having to purchase a separate keyboard, monitor, and mouse for each computer; (2) save all the space those extra components would take up; (3) save the space that a keyboard, monitor, and mouse would take with a standard KVM switch; (4) save on energy costs; and (5) eliminate the inconvenience and wasted effort involved in constantly moving from one computer to another.

Features

- ◆ KVM console with 17" or 19" LCD monitor in a sliding housing with top and bottom clearance for smooth operation in a 1U high rack
- ◆ Dual Rail operation – LCD monitor slides independently of the keyboard/touchpad
- ◆ Console lock enables the sliding console to remain securely locked away when not in use
- ◆ A single console controls up to 8 (KL1508) or 16 (KL1516) computers – daisy chain up to 31 additional units to control up to 512 computers
- ◆ KVM adapter cables with automatic conversion allow flexible interface combinations. PCs, Macs, Sun computers, and serial devices can all coexist on the installation.
- ◆ RJ-45 connectors and Cat 5 cable – extends the distance between computers and switch - up to 40m (130') for resolutions of 1280 x 1024 @75Hz
- ◆ A dedicated console port for management from an external console – plus an extra PS/2 mouse port for external mouse use with the integrated LCD console
- ◆ No software required – convenient computer selection via port selection switches, Hotkeys and intuitive On Screen Display (OSD) menus
- ◆ OSD screen automatically adjusts to resolution changes – OSD tree structure makes finding and managing computers easy
- ◆ Quickly and conveniently switch to any computer with station and port selection switches – LED displays indicate the station and port location
- ◆ Video settings of attached computers are automatically adjusted for optimal output to the LCD monitor
- ◆ Auto Scan feature for monitoring user-selected computers
- ◆ Custom ASIC (patent pending) auto-senses station's position on daisy chained installations – no need for manual DIP switch setting
- ◆ Hot Pluggable – add or remove switches/computers without having to power down the switches
- ◆ Port names automatically reconfigured when station sequence is changed
- ◆ Two level password security – only authorized users view and control the computers – up to four users plus an administrator with separate profiles for each

- ◆ Broadcast support – commands from the keyboard can be broadcast to all available computers on the installation
- ◆ Standard 105-key keyboard; Mac and Sun keyboard emulation
- ◆ Keyboard and mouse emulation - computers boot even when the console focus is elsewhere
- ◆ Dedicated keys to invoke Hotkey Mode and the OSD from the keyboard for quick access to these functions
- ◆ Upgradable firmware – simultaneously upgrade the firmware for all KVM switches on the chain via the daisy chain bus
- ◆ Multiplatform support: PC, Mac, Sun and terminal-based systems
- ◆ Supports Windows, Sun, Linux, Mac, Unix, Netware, AIX (RS6000), and DOS 6.2 and higher
- ◆ Rack mountable in 19" System Rack (1U) – standard rack mount kit included – optional *Easy Rack Mount* (single person installation) kit available (requires separate purchase)

Requirements

Computers

The following equipment must be installed on each computer:

- ◆ A VGA, SVGA or Multisync card.

Note: The integrated LCD monitor's maximum resolution is 1280 x 1024 @ 75Hz. If you want to use a higher setting for the screen resolutions of the attached computers, see *Screen Resolutions Higher than 1280 x 1024*, page 82.

- ◆ Either a *Type A* USB port and USB host controller (for USB KVM Adapter Cable Connection), or 6-pin mini-DIN keyboard and mouse ports (for PS/2 KVM Adapter Cable Connection). See the next section for information regarding KVM Adapter Cables.

Cables

KVM Adapter Cables

- ◆ Cat 5 (or higher) cable is required to connect the KL1508 / KL1516 to one of the KVM Adapter Cables (see *Single Stage Installation*, page 14).
- ◆ The following KVM Adapter Cables are required for use with the KL1508 / KL1516:

Function	Module
Connect to devices with PS/2 ports	KA9520
Connect to devices with USB ports	KA9570
Connect to Sun Legacy systems (with 13W3 port)	KA9130
Connect to Sun USB systems	KA9131
Connect to serial based devices	KA9140

Daisy Chain Cables

Daisy chain cables are not supplied with the KL1508 / KL1516 package. Contact your dealer to purchase them:

Length	Part #
0.6 m	2L-1700
1.8 m	2L-1701

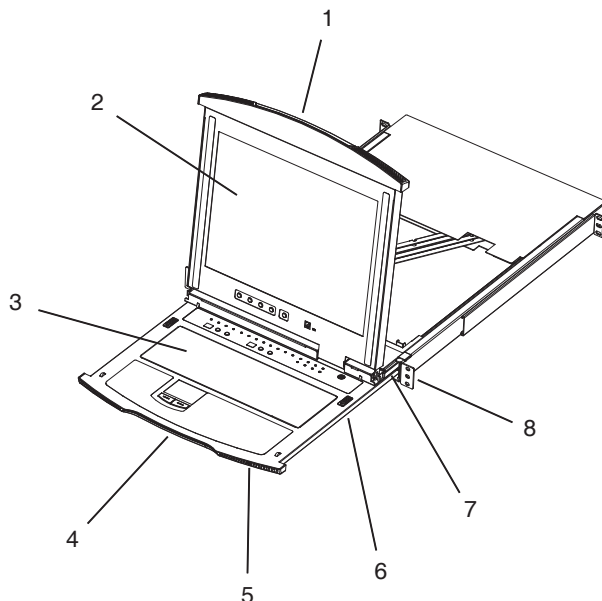
Operating Systems

Supported operating systems are shown in the table, below:

OS	Version	
Windows		2000 and higher
Linux	RedHat	6.0 and higher
	SuSE	8.2 and higher
	Mandriva (Mandrake)	9.0 and higher
UNIX	AIX	4.3 and higher
	FreeBSD	3.51 and higher
	Sun	Solaris 8 and higher
Novell	Netware	5.0 and higher
Mac		OS 9 and higher
DOS		6.2 and higher

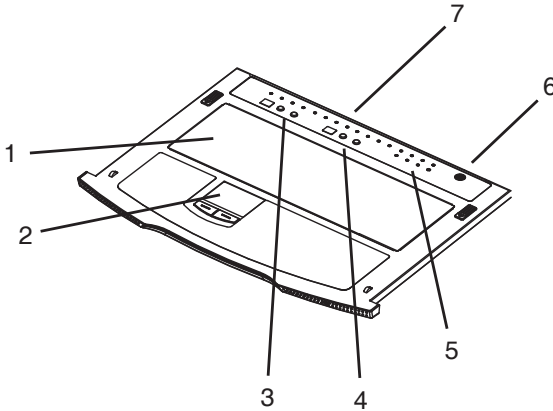
Components

KL1508 / KL1516 Front View



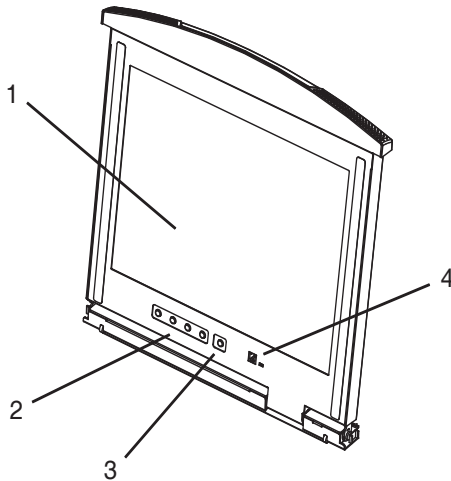
No.	Component	Description
1	Upper Handle	Pull to slide the LCD module out; push to slide the module in. See <i>Opening the Console</i> , page 19, for details on sliding the console in and out.
2	LCD Module	See <i>LCD Module</i> , page 9.
3	Keyboard Module	See <i>Keyboard Module</i> , page 8.
4	Lower Handle	Pull to slide the keyboard module out. See <i>Opening the Console</i> , page 19, for more details on sliding the console in and out.
5	Power LED	Lights (blue) to indicate that the unit is receiving power.
6	Keyboard Release Catch	These catches (one on each side) release the keyboard module so you can slide it away.
7	LCD Release Catch	These catches (one on each side) release the LCD module so you can slide it away.
8	Rack Mounting Tabs	The rack mounting tabs located at each corner of the unit secure the chassis to a system rack. See <i>Standard Rack Mounting</i> , page 12, for details.

Keyboard Module



No.	Component	Description
1	Keyboard	Standard 105-key keyboard
2	Touchpad	Standard mouse touchpad
3	Port Selection Area	<ul style="list-style-type: none"> ◆ The LED displays the port number of the computer that has the KVM focus. ◆ The left button shifts the KVM focus down a port (3 → 2, 2 → 1, etc.) After port 1, it cycles back to the last port. ◆ The right button shifts the KVM focus up a port (2 → 3, 3 → 4, etc.) After the last port, it cycles to port 1.
4	Station Selection Area	<ul style="list-style-type: none"> ◆ The LED displays the station number that the port with the KVM focus is located on. ◆ The left button shifts the KVM focus down the chain (Station 2 → Station 1, etc.). After Station 1, it cycles back to the last Station. ◆ The right button shifts the KVM focus up the chain. After the last Station, it cycles to Station 1.
5	Lock LEDs & Reset Switch	<p>The Num Lock, Caps Lock, Scroll Lock LEDs are located here.</p> <p>A Reset Switch is located just to the right of the Lock LEDs. Press this recessed switch in with a thin object to perform a system reset.</p>
6	External Mouse Port	This PS/2-type mouse port is provided for users who prefer to use an external mouse.
7	Port LEDs	These LEDs light to indicate that the computer attached to its corresponding port is on line (up and running).

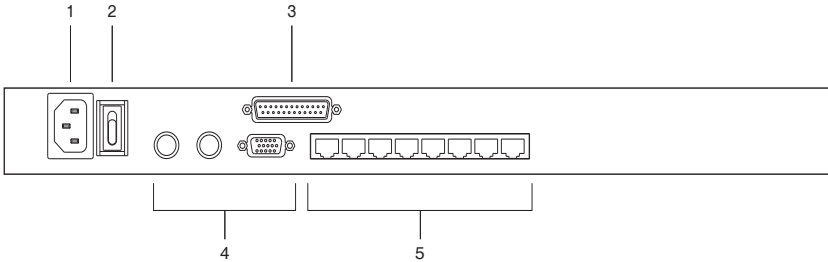
LCD Module



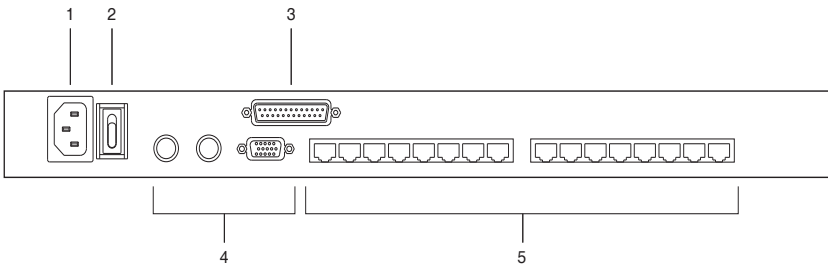
No.	Component	Description
1	LCD Display	To access the LCD monitor, slide the LCD module out and flip up the cover. See <i>Opening the Console</i> , page 19, for details on sliding the LCD module out.
2	LCD Controls	These buttons control the position and picture settings of the LCD display. See <i>LCD OSD Configuration</i> , page 25, for details.
3	LCD On/Off Button	Push this button to turn the LCD monitor on and off. The button lights when the LCD monitor is off to indicate that only the monitor is off – not the KVM switch itself.)
4	Firmware Upgrade Section	<p>Firmware Upgrade Port: The Firmware Upgrade Cable that transfers the firmware upgrade data from the administrator's computer to the KL1508 / KL1516 plugs into this RJ-11 connector.</p> <p>Firmware Upgrade Switch: During normal operation this switch should be in the NORMAL position. (See <i>The Firmware Upgrade Utility</i>, page 55 for firmware upgrading details.)</p>

Rear View

KL1508



KL1516



No.	Component	Description
1	Power Socket	
2	Power Switch	
3	Daisy Chain Port	When Daisy Chaining Units (see <i>Daisy Chaining</i> , page 17), the daisy chain cable plugs in here.
4	Console Port Section	If this is a Single Station installation, or if this is the First Station of a daisy chained installation, the keyboard, monitor, and mouse that make up the Local Console plug in here.
5	KVM Port Section	The Cat 5 cables that link to the KVM Adapter Cables (which link to the computers) plug in here.

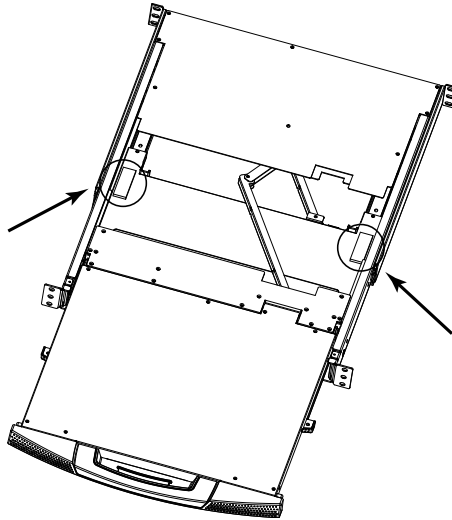
Chapter 2

Hardware Setup

Before you Begin

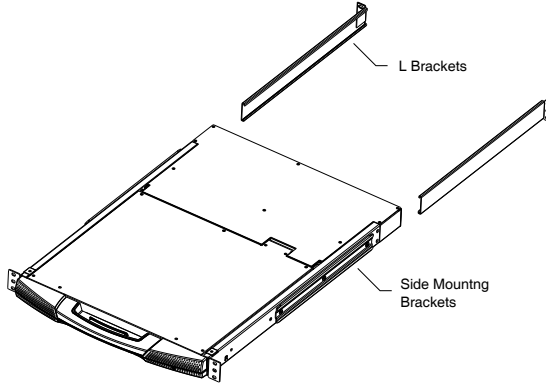


1. Important safety information regarding the placement of this device is provided on page 65. Please review it before proceeding.
2. Make sure that power to all the devices you will be connecting up has been turned off. You must unplug the power cords of any computers that have the Keyboard Power On function.
3. Packing material has been inserted to protect the KL1508 / KL1516 during shipping. Slide the LCD module out (see *Opening the Console*, page 19), until the packing material is visible. Remove the packing material before installing the unit, as shown in the diagram below.



Standard Rack Mounting

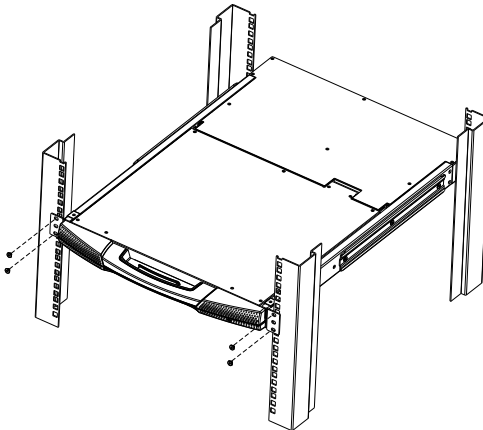
A standard rack mounting kit is provided with your KL1508 / KL1516. The kit enables the switch to be mounted in rack with a depth of 42–77 cm.



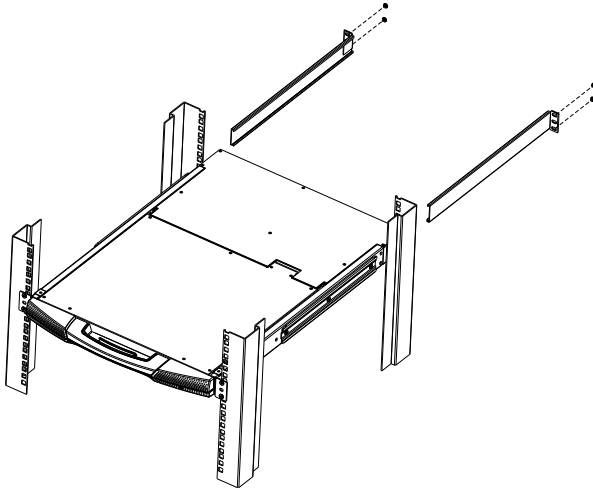
Note: It takes two people to mount the switch: one to hold it in place, the other to screw it in. Optional kits—including single person *Easy Installation* kits—are available with a separate purchase. See *Optional Rack Mounting*, page 76, for details.

To rack mount the switch, do the following:

1. While one person positions the switch in the rack and holds it in place, the second person—using the screws provided with the rack mounting kit—loosely screws the front brackets to the rack.



2. While the first person still holds the switch in place, the second person slides the L brackets into the switch's side mounting brackets, from the rear until the bracket flanges contact the rack, then—using the screws provided with the rack mounting kit—screws the L brackets to the rack.



3. After the L brackets have been secured, tighten the front bracket screws.

Note: 1. Cage nuts are provided for racks that are not prethreaded.

2. Allow at least 5.1 cm on each side for proper ventilation, and at least 12.7 cm at the back for the power cord and cable clearance.
-

Single Stage Installation

In a Single Stage installation, there are no additional switches daisy chained down from the first unit. To set up a single stage installation, refer to the installation diagrams beginning on the following page (the numbers in the diagram correspond to the numbers of the installation steps), and do the following:

1. If you choose to install an external console, plug your keyboard, monitor, and mouse into the *Console Ports* located on the switch's rear panel. The ports are color coded and marked with an icon to identify themselves.

Note: This step is optional.

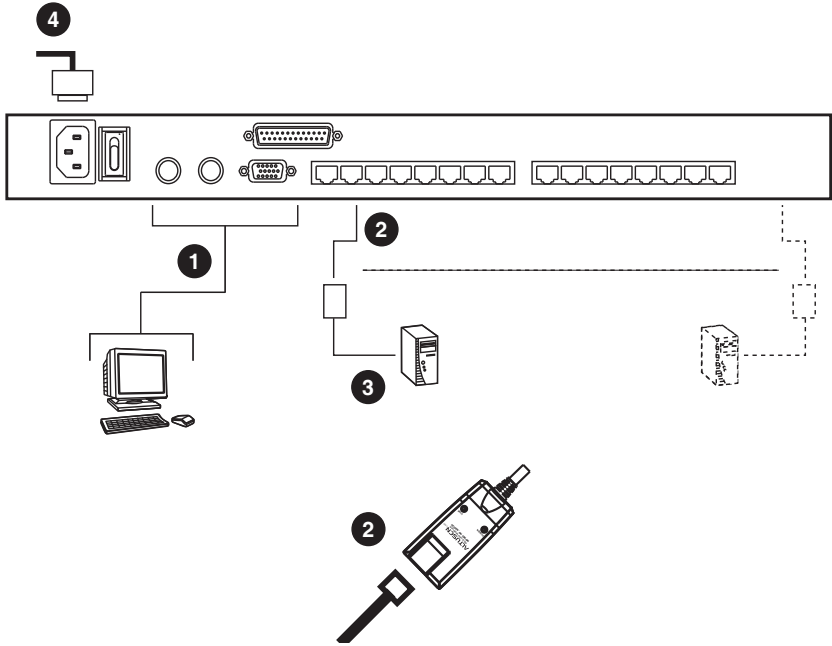
2. For each of the computers you are installing, use Cat 5 cable to connect any available KVM port to a KVM adapter cable that is appropriate for the computer you are installing. (See *KVM Adapter Cables*, page 5, for adapter cable details.)

Note: The maximum supported distance to the adapter cable is 40 m.

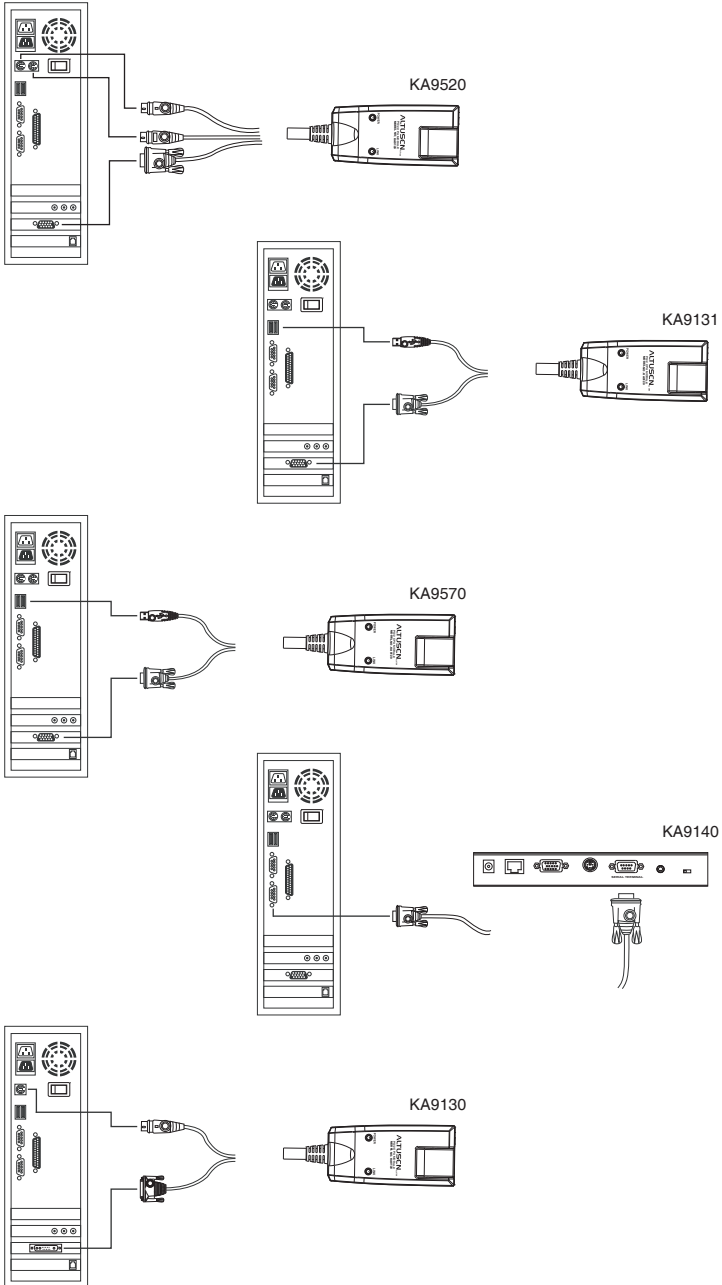
3. Connect the KVM Adapter cable to the computer. Refer to the *KVM Adapter Cable Installation Diagram*, page 16, to plug the adapter cable connectors into their respective ports on the computers you are installing.
4. Connect the power cord to the switch and to an AC power source.

After you are all cabled up, you can power on the switch. After the switch is powered on, power on the computers.

Single Stage Installation Diagram



KVM Adapter Cable Installation Diagram



Daisy Chaining

To control even more computers, up to 31 additional compatible KVM switches can be daisy chained down from the KL1508 / KL1516.

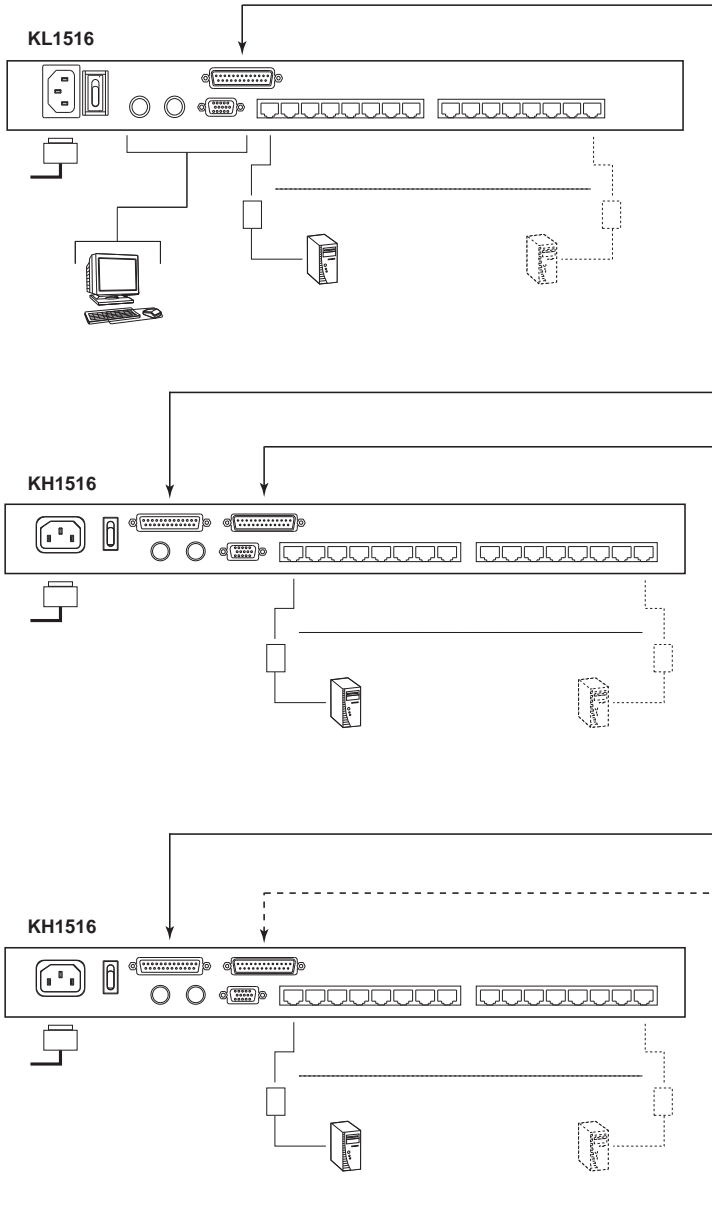
Note: Since it would be unnecessarily wasteful and expensive to use KL1508 / KL1516 switches for daisy chaining (there is no point in having consoles on the chained switches), switches without LCD consoles are used instead. See *Supported KVM Switches*, page 79, for a list of supported switches.

As many as 512 computers can be controlled from the unit's integrated Dual Rail console in a complete installation. See *Connection Tables*, page 69, for tables showing the relation between the number of computers and the KVM switches needed to control them.

To set up a daisy chained installation: make sure that power to all the devices you will be connecting up has been turned off, and refer to the *Daisy Chain Installation Diagram*, page 18 as you do the following:

1. Use a daisy chain cable set (see *Daisy Chain Cables*, page 5), to connect the *Chain Out* port of the parent unit to the *Chain In* port of the child unit (First Station Out to Second Station In, Second Station Out to Third Station In, etc.).
2. Use KVM cable sets (as described in the *Cables* section of the cascaded KVM switch's User Manual), to connect any available KVM port on the Second Stage unit to the Keyboard, Video, and Mouse ports of the computer you are installing.
3. Repeat steps 2 and 3 for any additional switches you add to the chain.
4. Power up the installation according to the following procedure:
 - a) Power on the First Station (KL1508 / KL1516).
Wait a few seconds for the unit to ascertain its Station ID.
 - b) Power up each daisy chained Station on the installation in turn (Second Station, then Third Station, etc.). Each station has a LED display on its front panel to indicate its Station ID (the Station ID for the First Stage unit (KL1508 / KL1516) is **01**, the ID for the Second Stage unit (the first cascaded switch) is **02**, the ID for the Third Stage unit is **03**, etc.).
In each case, wait for the Station ID to be ascertained and displayed on the Station ID LED before connecting the next Station.
 - c) After all the Stations are up, power on the computers.

Daisy Chain Installation Diagram



Chapter 3

Basic Operation

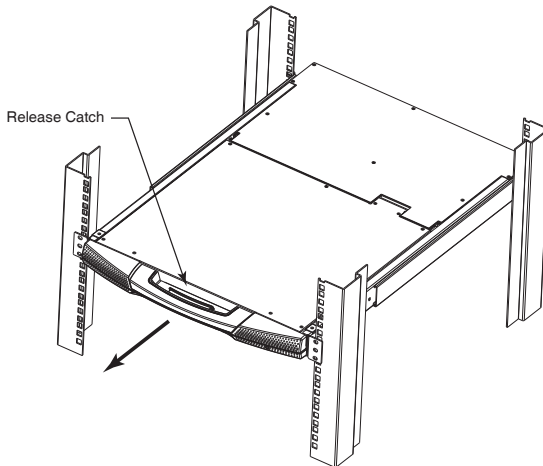
Opening the Console

The KL1508 / KL1516's console consists of two modules: An LCD display module located under the top cover; and a keyboard / touchpad module below the LCD module.

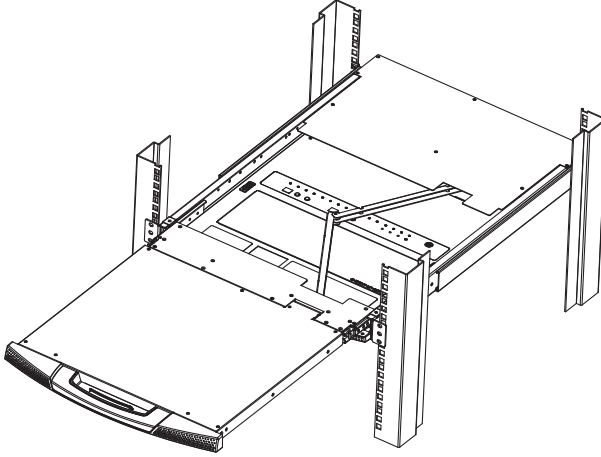
The modules can either slide together, or independently. This allows you to have the LCD display available for viewing while the keyboard / touchpad module is conveniently out of the way when not in use.

Opening Separately

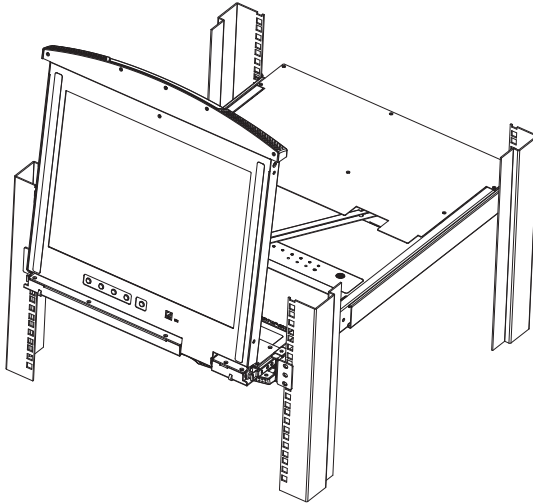
1. Pull the release catch to release the console, and pull the top panel a few centimeters toward you. Once the console has been released, you can let go of the catch.



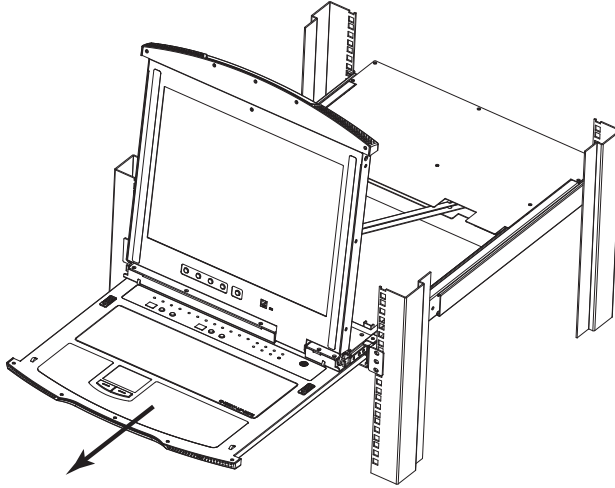
2. Pull the top panel all the way out until it clicks into place.



3. Rotate the top panel all the way back to expose the LCD screen.



4. Reach underneath and pull the keyboard module all the way out until it clicks into place.



Opening Together

Refer to the diagrams in the *Opening Separately* section as you do the following:

1. Pull the release catch and pull the top and bottom panels out until the keyboard module clicks into place.

Note: Once the console has been released, you can let go of the catch.

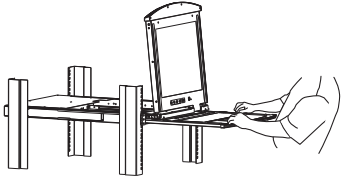
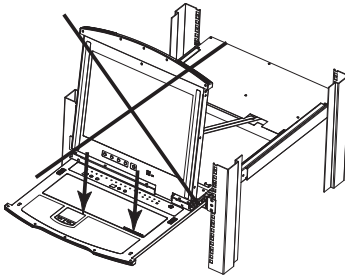
2. Pull the top panel the rest of the way out until it clicks into place.
3. Rotate the top panel all the way back to expose the LCD screen.

Note: Refer to the warning regarding placing excessive weight on the keyboard module on the following page.

Operating Precautions

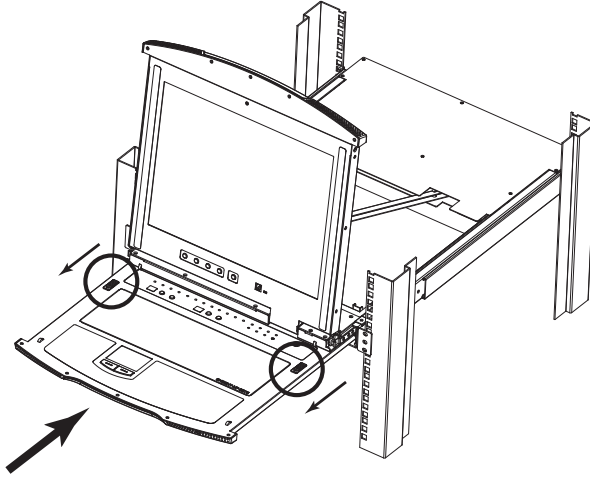


The maximum load bearing capacity of the keyboard module is 30kg. Failure to heed the information below can result in damage to the keyboard module.

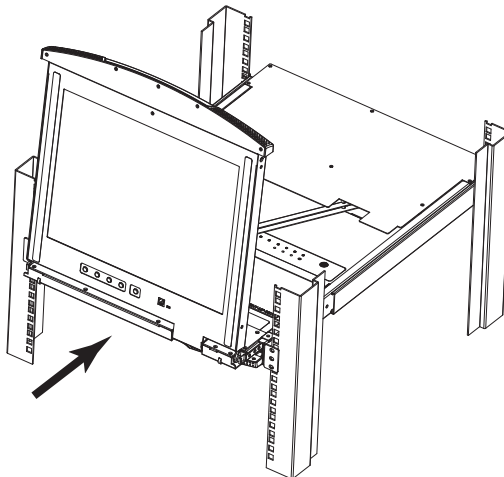
	<p>RIGHT</p> <p>Rest your hands and arms lightly on the keyboard module as you work.</p>
	<p>WRONG!</p> <ul style="list-style-type: none">◆ DO NOT lean your body weight on the keyboard module.◆ DO NOT place heavy objects on the keyboard module.

Closing the Console

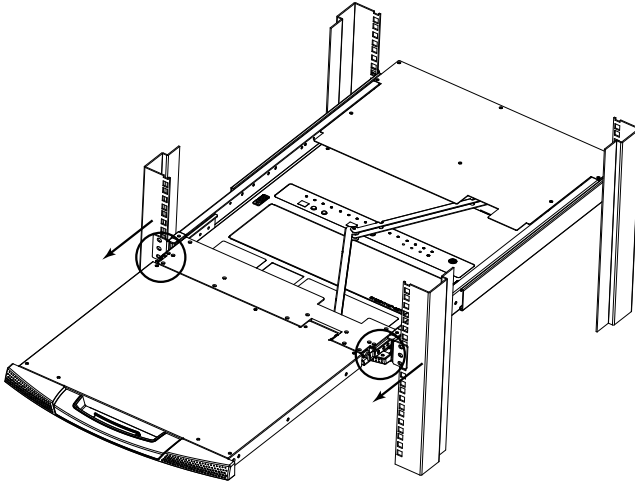
1. Pull the release catches located on either side of the keyboard toward you to release the keyboard module, then slide the module slightly in.



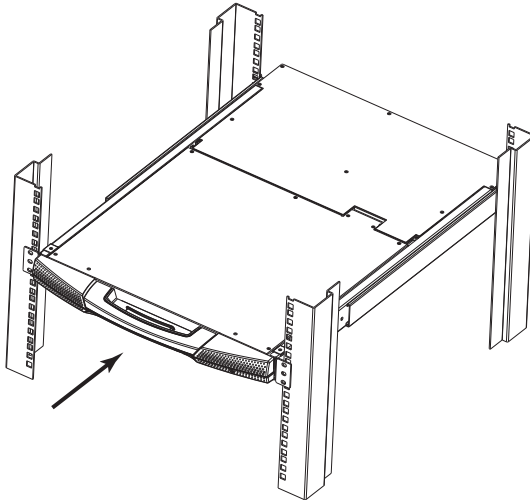
2. Let go of the catches. Using the front handle, push the keyboard module all the way in.



3. Rotate the LCD module all the way down, then pull the rear catches to release the LCD module.





4. Using the front handle, push the module all the way in.



LCD OSD Configuration

The LCD Buttons

The LCD OSD allows you to set up and configure the LCD display. Four buttons (see *LCD Controls*, page 9) are used to perform the configuration, as described in the table below:

Button	Function
MENU	When you have not entered the LCD OSD Menu function, pressing this button invokes the Menu function and brings up the Main Menu.
	When navigating through the menus, this button moves you right or up. When making an adjustment, it increases the value.
	When navigating through the menus, this button moves you left or down. When making an adjustment, it decreases the value.
EXIT	<ul style="list-style-type: none"> ◆ When you have not entered the LCD OSD Menu function, pressing this button performs an auto adjustment. An auto adjustment automatically configures all the settings for the LCD panel to what the OSD considers their optimum values to be. ◆ When you have entered the LCD OSD Menu function, pressing this button exits the current menu and returns you to the previous menu. Use it to leave an adjustment menu when you are satisfied with the adjustment you have made. ◆ When you are at the Main Menu, pressing this button exits the LCD OSD.

The Adjustment Settings

An explanation of the LCD OSD adjustment settings is given in the table below:

Setting	Explanation
Brightness	Adjusts the background black level of the screen image.
Contrast	Adjusts the foreground white level of the screen image.
Phase	If pixel jitter or horizontal line noise is visible on the display, your LCD may have the wrong phase setting. Adjust the phase setting to eliminate these problems.
Clock	If vertical banding is visible on the display, your LCD may have the wrong clock setting. Adjust the clock setting to eliminate vertical banding.
H-Position	Positions the display area on the LCD panel horizontally (moves the display area left or right).
V-Position	Positions the display area on the LCD panel vertically (moves the display area up or down).
Color Temperature	Adjusts the color quality of the display. You can adjust the "warmth" value, color balance, etc. The <i>Adjust Color</i> selection has a further submenu that lets you fine tune the RGB values.
Language	Selects the language that the OSD displays its menus in.
OSD Duration	Lets you set the amount of time that the OSD displays on the screen. If there is no input for the amount of time you choose, the OSD display turns off.
Reset	Resets the menu and submenu adjustments (except for language settings) to the original factory default settings.

Port Selection

The KL1508 / KL1516 provides three port selection methods to access the computers on the installation: Manual, an OSD (On Screen Display) menu system, and Hotkeys. OSD Operation is discussed in the next chapter; Hotkey Port Selection is discussed in Chapter 5.

Manual Port Switching

Use the *Station* and *Port* selection switches on the keyboard module (see page 8), to manually switch to a port.

Hot Plugging

The KL1508 / KL1516 supports *hot plugging*—components can be removed and added back into the installation by unplugging their cables from the ports without the need to shut the unit down. In order for hot plugging to work properly, however, the procedures described below must be followed:

Switching Station Positions

You can switch station positions by simply unplugging from the old parent and plugging into a new one. After you do, in order for the OSD menus to correspond to the change, you must reset the Station IDs in the OSD. See *RESET STATION IDS*, page 38, for details.

Hot Plugging KVM Ports

In order for the OSD menus to correspond to the change, you must manually reconfigure the OSD to reflect the new Port information. See *F3 SET*, page 34, and *F4 ADM*, page 36, for details.

Note: If the computer's Operating System does not support hot plugging, this function may not work properly.

Powering Off and Restarting

If it becomes necessary to Power Off one of the units, unplug its power cable from the rear panel.

Before starting it back up you must do the following:

1. Shut down all the computers that are attached to it.

Note: You must unplug the power cords of any computers that have the *Keyboard Power On* function. Otherwise, the switch will still receive power from the computers.

2. Wait 10 seconds, then plug the Station back in.
3. After the Station is up, Power On the computers.

Note: If you have shut down more than one Station, power up the highest Station first and work your way down to the lowest one.

Port ID Numbering

Each KVM Port on a KL1508 / KL1516 installation is assigned a unique Port ID. The Port ID is made up of two parts: a *Station Number*, and a *Port Number*:

- ♦ The *Station Number*: is a two digit number which reflects the switch's position in the daisy chain sequence.

Note: 1. The first station KL1508 / KL1516 has a Station Number of 01. The first daisy chained switch has a Station Number of 02, the next daisy chained switch has a Station Number of 03, etc.

2. The daisy chained switches have front panel LEDs that display their Station IDs.
-

- ♦ The *Port Number*: is a two digit number which reflects the port on the Station that the computer is connected to.
- ♦ The Station Number precedes the Port Number.
- ♦ Station and Port numbers from 1–9 are padded with a preceding zero, so they become 01–09.

For example, a computer attached to **Port 6** of **Station 12** would have a Port ID of: **12-06**.

Chapter 4

OSD Operation

OSD Overview

The On Screen Display (OSD) is a menu-driven method to handle control and switching operations. All procedures start from the OSD Main Menu.

To invoke the OSD Main Menu, tap the **OSD** key on the keyboard (see *Dedicated Invocation Keys*, page 79), or tap the [Scroll Lock] key twice.

Note: You can optionally change the Hotkey to the Ctrl key, in which case you would tap [Ctrl] twice (see *OSD HOTKEY*, page 34). With this method, the [Ctrl] keys must be on the same side (both left, or both right).

The OSD incorporates a two level (Administrator / User) password system. Before the OSD Main Screen comes up, a login dialog box appears that asks for your username password. If the password function has been set, you must provide a valid username and password in order to access the OSD Main Screen.

If this is the first time that the OSD is being run, or if the password function has not been set, simply press [Enter]. The OSD Main Screen comes up in Administrator Mode. In this mode, you have administrator privileges, with access to all Administrator and User functions, and can set up operations (including password authorization for the future), as you would like.

When you invoke the OSD, a screen similar to the one below appears:




-
- Note:**
1. The diagram depicts the Administrator's Main Screen. The User Main Screen does not show the **F4** and **F6** functions, since these are reserved for the Administrator and can't be accessed by ordinary Users.
 2. The OSD always starts in List view with the highlight bar at the same position it was in the last time it was closed.
 3. Only the ports that have been set accessible by the Administrator for the currently logged in User are visible (see *SET ACCESSIBLE PORTS*, page 38, for details).
-

OSD Navigation

- ◆ To dismiss the menu, and deactivate the OSD, Click the **X** at the upper right corner of the OSD Window or press **Esc**.
- ◆ To Logout click **F8** or the **ZZZ** symbol at the top of the Main Screen, or press [F8].
- ◆ The OSD uses a tree view. To see the ports for a particular station, click the plus sign [+] in front of the Station Number. The Port Number list drops down. To dismiss the list, click the circle symbol [o] in front of the Station Number.
- ◆ To move up or down through the list one line at a time, Click the Up and Down Triangle symbols (▲▼) or use the Up and Down Arrow Keys. If there are more list entries than there is room for on the Main Screen, the screen will scroll.
- ◆ To move up or down through the list one screen at a time, Click the Up and Down Arrow symbols (↑↓), or use the [Pg Up] and [Pg Dn] keys. If there are more list entries than there is room for on the Main Screen, the screen will scroll.
- ◆ To bring the KVM focus to a port, double-click it, or move the Highlight Bar to it and then press [Enter].
- ◆ After executing any action, you automatically go back to the menu one level above.

OSD Main Screen Headings

Heading	Explanation
SN-PN	This column lists the Port ID numbers (Station Number-Port Number) for all the KVM Ports on the installation. The simplest method to access a particular computer is to click it, or move the Highlight Bar to it, and then press [Enter].
QV	If a port has been selected for Quick View scanning (see <i>SET QUICK VIEW PORTS</i> , page 38), an arrowhead displays in this column to indicate so.
	The computers that are powered on and are On Line have a sun symbol in this column to indicate so.
NAME	If a port has been given a name (see <i>EDIT PORT NAMES</i> , page 37), its name appears in this column.

OSD Functions

OSD functions are used to configure and control the OSD. For example, you can rapidly switch to any port, scan selected ports only, limit the list you wish to view, designate a port as a Quick View Port, create or edit a port name, or make OSD setting adjustments.

To access an OSD function:

1. Either Click a Function Key field at the top of the Main Screen, or press a Function Key on the keyboard.
2. In the Submenus that appear make your choice either by Double Clicking it, or moving the Highlight Bar to it, and then pressing [Enter].
3. Press [Esc] to return to the previous menu level.

F1 GOTO

GOTO allows you to switch directly to a port either by keying in the port's *Name* or its *Port ID*.

- ◆ To use the Name method, key in **1**, key in the port's Name, and then press [Enter].
- ◆ To use the Port ID method, key in **2**, key in the *Port ID*, and then press [Enter].

Note: You can key in a partial Name or Port ID. In that case, the screen will show all the computers that the User has *View* rights to (see *SET ACCESSIBLE PORTS*, page 38), that match the Name or Port ID pattern, regardless of the current *List* settings (see *F2 LIST*, page 33, for details).

To return to the OSD Main Menu without making a choice, press [Esc].

F2 LIST

This function lets you broaden or narrow the scope of which ports the OSD displays (lists) on the Main Screen. Many of the OSD functions only operate on the computers currently selected for Listing on the Main Screen with this function. The submenu choices and their meanings are given in the table below:

Choice	Meaning
ALL	Lists all of the ports on the installation.
QUICK VIEW	Lists only the ports that have been selected as Quick View Ports (see <i>SET QUICK VIEW PORTS</i> , page 38).
POWERED ON	Lists only the ports that have their attached computers Powered On.
QUICK VIEW + POWERED ON	Lists only the ports that have been selected as Quick View Ports (see <i>SET QUICK VIEW PORTS</i> , page 38), and that have their attached computers Powered On.

Move the Highlight Bar to the choice you want, then press [Enter]. An icon appears before the choice to indicate that it is the currently selected one.

F3 SET

This function allows the Administrator and each User to set up an individual working environment. A separate profile for each is stored by the OSD and is activated according to the Username provided during Login.

To change a setting:

1. Double-click it; or move the highlight bar to it, then press [Enter].
2. After you select an item, a submenu with further choices appears. To make a selection, either Double Click it; or move the Highlight Bar to it, then press [Enter]. An icon appears before the selected choice to indicate which one it is. The settings are explained in the following table:

Setting	Function
OSD HOTKEY	Selects which Hotkey activates the OSD function: [Scroll Lock] [Scroll Lock] or [Ctrl] [Ctrl]. Since the Ctrl key combination may conflict with programs running on the computers, the default is the Scroll Lock combination.
PORT ID DISPLAY POSITION	Allows you to position where the Port ID appears on the monitor. The default is the upper left corner, but you can choose to have it appear anywhere on the screen. Use the Mouse or the Arrow Keys plus Pg Up, Pg Dn, Home, End, and 5 (on the numeric keypad with Num Lock off), to position the Port ID display, then Click or press [Enter] to lock the position and return to the Set submenu. Note: The setting affects the currently selected computer. If you don't want to use the default position, you must change the setting for each computer individually.
PORT ID DISPLAY DURATION	Determines how long a Port ID displays on the monitor after a port change has taken place. The choices are: User Defined —which lets you select the amount of time (from 1–255 sec.); and Always On —which displays the Port ID at all times. If you select User Defined, key in the number of seconds, then press [Enter]. The default is 3 Seconds. A setting of 0 (zero) disables this function.

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Setting	Function
PORT ID DISPLAY MODE	Selects how the Port ID is displayed: the Port Number alone (PORT NUMBER); the Port Name alone (PORT NAME); or the Port Number plus the Port Name (PORT NUMBER + PORT NAME). The default is PORT NUMBER + PORT NAME .
SCAN DURATION	Determines how long the focus dwells on each port as it cycles through the selected ports in Auto Scan Mode (see <i>F7 SCAN</i> , page 42). Key in a value from 1–255 seconds, then press [Enter]. Default is 5 seconds; a setting of 0 disables the Scan function.
SCAN/SKIP MODE	<p>Selects which computers will be accessed under Skip Mode (see <i>F5 SKP</i>, page 40), and Auto Scan Mode (see <i>F7 SCAN</i>, page 42). Choices are:</p> <p>ALL—All the Ports which have been set Accessible (see <i>SET ACCESSIBLE PORTS</i>, page 38);</p> <p>QUICK VIEW—Only those Ports which have been set Accessible and have been selected as Quick View Ports (see <i>SET QUICK VIEW PORTS</i>, page 38);</p> <p>POWERED ON—Only those Ports which have been set Accessible and are Powered On;</p> <p>QUICK VIEW + POWERED ON—Only those Ports which have been set Accessible and have been selected as Quick View Ports and are Powered On. The default is ALL.</p>
SCREEN BLANKER	If there is no input from the console for the amount of time set with this function, the screen is blanked. Key in a value from 1–30 minutes, then press [Enter]. A setting of 0 disables this function. The default is 0 (disabled).
HOTKEY COMMAND MODE	Enables / Disables the Hotkey function (see <i>Hotkey Operation</i> , page 45), in case a conflict with programs running on the computers occurs.
HOTKEY	This setting selects the Hotkey invocation keys (see <i>Hotkey Operation</i> , page 45). Choices are [NUM LOCK] + [-], or [CTRL] + [F12]. The default is [NUM LOCK] + [-].

F4 ADM

F4 is an Administrator only function. It allows the Administrator to configure and control the overall operation of the OSD. To change a setting Double Click it; or use the Up and Down Arrow Keys to move the highlight bar to it, then press [Enter].

After you select an item, a submenu with further choices appears. Double Click the choice you want, or move the Highlight Bar to it, then press [Enter]. An icon appears before the selected choice so that you know which one it is. The settings are explained in the following table:

Setting	Function
SET USERNAME AND PASSWORD	<p>This function is used to set Usernames and Passwords for the Administrator and Users:</p> <ol style="list-style-type: none"> 1. One Administrator and four User passwords can be set. 2. After you select the Administrator field or one of the User fields, a screen that allows you to key in your Username and Password appears. The Username and Password may be up to 12 characters long, and can consist of any combination of letters and numbers (A–Z, a–z, 0–9). 3. For each individual, key in the Username and Password, then press [Enter]. 4. To modify or delete a previous Username and/or Password, use the backspace key to erase individual letters or numbers.
SET LOGOUT TIMEOUT	<p>If there is no input from the console for the amount of time set with this function, the Operator is automatically logged out. A login is necessary before the console can be used again.</p> <p>This enables other Operators to gain access to the computers when the original Operator is no longer accessing them, but has forgotten to log out. To set the timeout value, key in a number from 1–180 minutes, then press [Enter]. If the number is 0 (zero), this function is disabled. Default is 0 (disabled).</p>

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Setting	Function
EDIT PORT NAMES	<p>To help remember which computer is attached to a particular port, every port can be given a name. This function allows the Administrator to create, modify, or delete port names. To Edit a port name:</p> <ol style="list-style-type: none"> 1. Click the port you want, or use the Navigation Keys to move the highlight bar to it, then press [Enter]. 2. Key in the new Port Name, or modify/delete the old one. The maximum number of characters allowed for the Port Name is 12. Legal characters include: <ul style="list-style-type: none"> ◆ All alpha characters: A–Z* ◆ All numeric characters: 0–9 ◆ + - / : . and Space <p>*Case does not matter; the OSD displays the Port Name in all capitals no matter how they were keyed in.</p> 3. When you have finished editing, press [Enter] to have the change take effect. To abort the change, press Esc.
RESTORE DEFAULT VALUES	<p>This function is used to undo all changes and return the setup to the original factory default settings (see <i>OSD Factory Default Settings</i>, page 74) – except for the <i>Names</i> settings that were assigned to the Ports, which are saved.</p>
CLEAR THE NAME LIST	<p>This function clears the port name list.</p>
ACTIVATE BEEPER	<p>Choices are Y (for Yes), or N (for No). When activated, the beeper sounds whenever a Port is changed, when activating the Auto Scan function (see <i>F7 SCAN</i>, page 42), or an invalid entry is made on an OSD menu. The default is Y (activated).</p>

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(F4 ADM continued)

Setting	Function
SET QUICK VIEW PORTS	<p>This function lets the Administrator select which Ports to include as Quick View ports.</p> <ul style="list-style-type: none"> ◆ To select/deselect a port as a Quick View Port, use the Navigation Keys to move the highlight bar to it, then press the [Spacebar]. ◆ When a port has been selected as a Quick View Port, an arrowhead displays in the QV column of the LIST on the Main Screen to indicate so. When a port is deselected, the arrowhead disappears. ◆ If one of the Quick View options is chosen for the LIST view (see <i>F2 LIST</i>, page 33), only a Port that has been selected here will display on the List. ◆ If one of the Quick View options is chosen for Auto Scanning (see <i>SCAN/SKIP MODE</i>, page 35), only a Port that has been selected here will be Auto Scanned. <p>The default is for no ports to be selected.</p>
SET ACCESSIBLE PORTS	<p>This function allows the Administrator to define User access to the computers on the installation on a Port-by-Port basis.</p> <p>For each User, select the target Port, then press the [Spacebar] to cycle through the choices: F (Full access), V (View Only), or blank. Repeat until all access rights have been set, then press [Esc]. The default is F for all users on all Ports.</p> <p>Note: A blank setting means that no access rights are granted. The Port will not show up on the User's LIST on the Main Screen.</p>
RESET STATION IDS	<p>If you change the position of one of the Stations in the daisy chain, the OSD settings will no longer correspond to the new situation. This function directs the OSD to rescan the Station positions of the entire installation and updates the OSD so that the OSD Station information corresponds to the new physical layout.</p> <p>Note: Only the Station Numbers get updated. Except for the Port Names, all Administrator settings (such as Set Accessible Ports, Set Quick View Ports, etc.), for all of the computers affected by the change, have to be manually redone.</p>

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(F4 ADM continued)

Setting	Function
SET OPERATING SYSTEM	<p>Specifies the operating platform of the computer attached to each port. For each port, press the [Spacebar] to cycle through the choices (PC, Mac, Sun, and Other). Repeat until all the ports have been set, then press [Esc]. The default is PC.</p> <p>Note: If you are installing a Sun or Mac computer, before you run it for the first time you must set the correct operating system for the port it is connected to with this function; otherwise, it will not boot.</p>
SET CAT 5 CABLE LENGTH	<p>Lets you specify how long the Cat 5 cable between the port and the KVM adapter cable is. Press [Spacebar] to cycle through the cable length settings:</p> <p>S: Short – for up to 25 m M: Medium – for between 20 and 40 m L: Long – for above 35 m</p> <p>An S, M, or L appears next to the port to indicate the choice.</p>
SET KEYBOARD LANGUAGE	<p>Sets the keyboard language layout for the computers attached to each port. Press [Spacebar] to cycle through the choices: English (US); English (UK); French; German; Japanese; Korean; Traditional Chinese; and Spanish. The default is English (US).</p>
SET CONSOLE MODE	<p>This setting selects which console(s) (internal/external) are enabled:</p> <p>0 Both consoles enabled 1 LCD Console only 2 External console only</p> <p>Use the spacebar to cycle through the choices. The default is 0. Changes will not be saved until you logout.</p>
FIRMWARE UPGRADE	<p>In order to upgrade the KL1508 / KL1516's firmware (see <i>Firmware Upgrade</i>, page 55) you must first enable <i>Firmware Upgrade Mode</i> with this setting.</p> <p>When you bring up this menu, the current firmware version levels display. Select Y to enable Firmware Upgrade Mode, or N to leave this menu without enabling it.</p>
ADAPTER UPGRADE	<p>In order to upgrade an Adapter Cables' firmware (see <i>Adapter Cable Upgrade</i>, page 61), you must first enable its Upgrade Mode with this setting. Press [Spacebar] to select the KVM Adapter Cable you want to upgrade.</p> <p>When you select a KVM Adapter Cable, its current firmware version levels display. Select Y to enable Firmware Upgrade Mode, or N to leave this menu without enabling it.</p>

F5 SKP

This function enables you to easily skip backward or forward, switching the console focus from the currently active KVM Port to the previous or next available one.

- ◆ The selection of computers to be available for Skip Mode switching is made with the *Scan/Skip Mode* setting under the **F3 SET** function (see page 35).
- ◆ When you are in Skip Mode, press:
 - ← To skip from the current port to the previous port in the List.
 - To skip from the current port to the next port in the List.
 - ↑ To skip from the current port to the last port of the previous station in the List.
 - ↓ To skip from the current port to the first port of the next station in the List.

Note: When you Skip, you only Skip to the previous or next available computer that is in the *Scan/Skip Mode* selection (see page 35).

- ◆ If a Port has been selected for *Scan/Skip Mode*, when the focus switches to that port a Left/Right Triangle symbol appears before its Port ID Display to indicate so.
- ◆ While Skip Mode is in effect, the console will not function normally. You must exit Skip Mode in order to regain control of the console.
- ◆ To exit Skip Mode, press the [Spacebar] or [Esc].

F6 BRC

F6 is an Administrator only function. When this function is in effect, commands sent from the console are broadcast to all available computers on the installation.

This function is particularly useful for operations that need to be performed on multiple computers, such as performing a system wide shutdown, installing or upgrading software, etc.

BRC works in conjunction with the **F2 LIST** function. The LIST function (see page 33), is used to broaden or narrow the focus of which Ports appear on the OSD Main Screen. When you Broadcast a command, it is to the Ports currently displayed on the OSD Main Screen.

- ◆ While BRC Mode is in effect, a Speaker symbol appears before the Port ID Display of the port that currently has the console focus.
- ◆ While BRC Mode is in effect, the mouse will not function normally. You must exit BRC Mode in order to regain control of the mouse.
- ◆ To exit BRC Mode, invoke the OSD (with the OSD Hotkey), then Click the **F6** field, or press [F6], to turn BRC Mode off.

F7 SCAN

This function automatically switches among the available computers at regular intervals so that you can monitor their activity without having to take the trouble of switching manually.

- ◆ The selection of computers to be included for Auto Scanning is made with the *Scan/Skip Mode* setting under the **F3 SET** function (see page 35).
- ◆ The amount of time that each Port displays for is set with the *Scan Duration* setting under the **F3 SET** function (see page 35).
- ◆ As each computer is accessed, an **S** appears in front of the Port ID display to indicate that it is being accessed under *Auto Scan Mode*.
- ◆ While you are in Auto Scan Mode, you can pause the scanning in order to keep the focus on a particular computer either by pressing **P**, or with a Left Click of the mouse. To resume scanning, press any key or left click again. See *Invoking Auto Scan*, page 47, for details.
- ◆ To stop scanning and stay at a particular location, press the [Spacebar] or [Esc] to exit *Auto Scan Mode*. If the scanning stops on an empty port, or one where the computer is attached but is powered Off, the monitor screen will be blank, and the mouse and keyboard will have no effect. Simply wait—after the *Scan Duration* time is up, the Scan function will move on to the next port.
- ◆ While Auto Scan Mode is in effect, the console will not function normally. You must exit Auto Scan Mode in order to regain control of the console.
- ◆ To exit Auto Scan Mode, press the [Spacebar] or [Esc].

F8 LOUT

Clicking the **F8** field, or pressing [F8], logs you out of the OSD and blanks the Console screen. This is different from simply deactivating the OSD when you are at the Main Screen by pressing [Esc].

With this function you must log in all over again to regain access to the OSD, whereas with [Esc], all you have to do to reenter the OSD is tap the OSD Hotkey.

-
- Note:**
1. When you reenter the OSD after logging out, the screen stays blank except for the OSD Main Menu. You must input your password before you can continue.
 2. If you reenter the OSD after logging out, and immediately use [Esc] to deactivate the OSD without having selected a port from the OSD menu, a Null Port message displays on the screen. The OSD Hotkey will bring up the Main OSD Screen.
-

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Chapter 5

Hotkey Operation

Hotkey Port Control

Hotkey Port Control allows you to provide KVM focus to a particular computer directly from the keyboard. The KL1508 / KL1516 provides the following Hotkey Port Control features:

- ◆ Selecting the Active Port
- ◆ Auto Scanning
- ◆ Skip Mode Switching

Note: The hotkey function must be enabled to use hotkey operations. See *HOTKEY COMMAND MODE*, page 35, for details.

Invoking Hotkey Mode

All Hotkey operations begin by invoking *Hotkey Mode*. Invoking Hotkey Mode takes three steps:

1. Hold down the **Num Lock** key;
2. Press and release the **minus** key;
3. Release the **Num Lock** key:

[Num Lock] + [-];

Note: 1. The minus key must be released within one half second, otherwise Hotkey invocation is cancelled and it has no effect.

2. There is an alternate invocation combination (see *Alternate OSD Invocation Keys*, page 49).
-

When Hotkey Mode is active:

- ◆ The Caps Lock, and Scroll Lock LEDs flash in succession to indicate so. They stop flashing and revert to normal status when you exit Hotkey Mode.
- ◆ A Command Line appears on the monitor screen. The command line prompt is the word *Hotkey:* in yellow text on a blue background, and displays the subsequent Hotkey information that you key in.
- ◆ Ordinary keyboard and mouse functions are suspended - only Hotkey compliant keystrokes (described in the sections that follow), can be input.
- ◆ At the conclusion of some hotkey operations, you automatically exit hotkey mode. With others, you must exit manually by pressing [**Esc**] or [**Spacebar**].

Selecting the Active Port

Each Computer Port is assigned a Port ID (see *Port ID Numbering*, page 28). You can directly access any computer on the installation with a Hotkey combination that specifies the Port ID of the port it is connected to. The steps involved are:

1. Invoke Hotkey Mode (see page 45).
2. Key in the Port ID

The Port ID numbers display on the Command Line as you key them in. If you make a mistake, use [**Backspace**] to erase the wrong number.

3. Press [**Enter**]

After you press [**Enter**], the KVM focus switches to the designated computer and you automatically exit Hotkey Mode.

Auto Scanning

Auto Scan automatically switches among all the active KVM ports that are accessible to the currently logged on User at regular intervals, allowing him to monitor their activity automatically. (See *SCAN/SKIP MODE*, page 35.)

Setting the Scan Interval

The amount of time Auto Scan dwells on each port is set with the *SCAN DURATION* setting of the OSD **F3 SET** function (see page 35).

Invoking Auto Scan

To start Auto Scanning, key in the following Hotkey combination:

1. Invoke Hotkey Mode (see page 45).
2. Press **[A]**.

After you press **A**, you automatically exit Hotkey Mode, and enter Auto Scan Mode, and Auto Scanning begins.

While you are in Auto Scan Mode:

- ◆ You can pause the scanning in order to keep the focus on a particular computer by pressing **P**. During the time that Auto Scanning is paused, the Command Line displays: **Auto Scan: Paused**.

Pausing when you want to keep the focus on a particular computer is more convenient than Exiting Auto Scan Mode because when you Resume scanning, you start from where you left off. If, on the other hand, you Exited and restarted, Scanning would start over from the very first computer on the installation.

To resume Auto Scanning, press any key. Scanning continues from where it left off.

- ◆ Ordinary keyboard and mouse functions are suspended - only Auto Scan Mode compliant keystrokes can be input. You must exit Auto Scan Mode in order to regain normal control of the console.

To exit Auto Scan Mode press **[Esc]** or **[Spacebar]**. Auto Scanning stops when you exit Auto Scan Mode.

Skip Mode

This feature allows you to switch between computers in order to monitor them manually. You can dwell on a particular port for as long or as little as you like—as opposed to Auto Scanning, which automatically switches after a fixed interval. To invoke Skip Mode, key in the following Hotkey combination:

1. Invoke Hotkey Mode (see page 45).
2. Key in **[Arrow]**
 - ◆ Where [Arrow] refers to one of the Arrow keys. After you press [Arrow], you automatically exit Hotkey Mode, and enter Skip Mode where you can switch ports as follows:
 - ← Skips from the current port to the first accessible port previous to it. (See *SCAN/SKIP MODE*, page 35, for information regarding accessible ports.)
 - Skips from the current port to the next accessible port.
 - ↑ Skips from the current port to the last accessible port of the previous Station.
 - ↓ Skips from the current port to the first accessible port of the next Station.

Once you are in Skip Mode, you can keep on skipping by pressing the Arrow keys. You don't have to use the [NumLock] + [-] combination again.

While Skip Mode is in effect, ordinary keyboard and mouse functions are suspended - only Skip Mode compliant keystrokes can be input. You must exit Skip Mode in order to regain normal control of the console.

To exit Skip Mode, press **[Esc]** or **[Spacebar]**.

Hotkey Configuration

Alternate Hotkey Invocation Keys

An alternate set of Hotkey Invocation keys is provided in case the default set conflicts with programs running on the computers.

To switch to the alternate Hotkey Invocation set, do the following:

1. Invoke HKM (see page 45)
2. Press and release the [H] key

The Hotkey Invocation keys become the Ctrl key (instead of Num Lock) and the F12 key (instead of Minus).

Note: This procedure is a toggle between the two methods. To revert back to the original [Num Lock] [Minus] method, invoke HKM, then press and release the [H] key again.

Alternate OSD Invocation Keys

The OSD activation method can be changed from tapping the Scroll Lock key twice to tapping the Ctrl key twice ([Ctrl] [Ctrl]). To change the OSD Invocation method, do the following:

1. Invoke HKM (see page 45)
2. Press and release the [T] key

Note: This procedure is a toggle between the two methods. To revert back to the original [Scroll Lock] [Scroll Lock] method, invoke HKM, then press and release the [T] key again.

Platform Setup

The KL1508 / KL1516's default port settings are for a PC Compatible operating platform. You can modify the platform setting for each port by bringing the KVM focus to the port you want to change and using the hotkey combinations shown in the table below.

Key	Operation
[F1]	Sets the PC keyboard operating platform for the port that currently has the KVM focus.
[F2]	Sets the Mac keyboard operating platform for the port that currently has the KVM focus.
[F3]	Sets the Sun keyboard operating platform for the port that currently has the KVM focus.
[R] [Enter]	Reset everything to the default settings.

The Hotkey entry method is as follows:

1. Invoke HKM (see page 45)
2. Press and release the appropriate Function key (see table).

After completing a setting, you automatically exit HKM.

Note: The brackets indicate the keys you should press. Simply press the indicated keys—do not type the brackets.

The Beeper

Hotkeys are also used to toggle the beeper On and Off. To perform any of these operations, do the following:

1. Invoke HKM (see page 45)
2. Press and release the appropriate action key (see table).

Key	Operation
[B]	Toggles the Beeper On or Off. The Command Line displays <i>Beeper On</i> or <i>Beeper Off</i> for one second; then the message disappears and you automatically exit HKM.

After completing a setting, you automatically exit HKM.

Hotkey Summary Table

[Num Lock] + [-] [Port ID] [Enter] or [Ctrl] + [F12] [Port ID] [Enter]	Switches access to the computer that corresponds to that Port ID.
[Num Lock] + [-] [A] or [Ctrl] + [F12] [A]	Invokes Auto Scan Mode.
[P]	When in Auto Scan Mode, it pauses Auto Scanning.
Left-click	
Any key	Resumes Auto Scanning after pausing.
[Esc]	Exits Auto Scan Mode.
[Spacebar]	
Right-click	
[Num Lock] + [*] [Arrow] or [Num Lock] + [-] [Arrow]	Invokes Skip Mode and Switches computer access depending on which Arrow was pressed.
[←]	Skips from the current port to the first accessible port previous to it.
[→]	Skips from the current port to the next accessible port.
[↑]	Skips from the current port to the last accessible port of the previous Station.
[↓]	Skips from the current port to the first accessible port of the next Station.
[Esc]	Exits Skip Mode.
[Spacebar]	
[Num Lock] + [-] [H] or [Ctrl] + [F12] [H]	Changes the Hotkey Invocation keys from [Num Lock] + [-] to [Ctrl] + [F12] and vice versa.
[Num Lock] + [-] [T] or [Ctrl] + [F12] [T]	Changes the OSD Hotkey from [Scroll Lock] [Scroll Lock] to [Ctrl] [Ctrl] and vice versa.
[Num Lock] + [-] [F1] or [Ctrl] + [F12] [F1]	Sets the keyboard language layout of the port that has the KVM focus to Windows.
[Num Lock] + [-] [F2] or [Ctrl] + [F12] [F2]	Sets the keyboard language layout of the port that has the KVM focus to Mac.
[Num Lock] + [-] [F3] or [Ctrl] + [F12] [F3]	Sets the keyboard language layout of the port that has the KVM focus to Sun.
[Num Lock] + [-] [R] [Enter] or [Ctrl] + [F12] [R] [Enter]	Resets the switch to the default settings.
[Num Lock] + [-] [B] or [Ctrl] + [F12] [B]	Toggles the Beeper On or Off.









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Chapter 6

Keyboard Emulation

Mac Keyboard








The PC compatible (101/104 key) keyboard can emulate the functions of the Mac keyboard. The emulation mappings are listed in the table below.

PC Keyboard	Mac Keyboard
[Shift]	Shift
[Ctrl]	Ctrl
	
[Ctrl] [1]	
[Ctrl] [2]	
[Ctrl] [3]	
[Ctrl] [4]	
[Alt]	Alt
[Print Screen]	F13
[Scroll Lock]	F14
	=
[Enter]	Return
[Backspace]	Delete
[Insert]	Help
[Ctrl] 	F15

Note: When using key combinations, press and release the first key (Ctrl), then press and release the activation key.

Sun Keyboard

The PC compatible (101/104 key) keyboard can emulate the functions of the Sun keyboard when the Control key [Ctrl] is used in conjunction with other keys. The corresponding functions are shown in the table below.

PC Keyboard	Sun Keyboard
[Ctrl] [T]	Stop
[Ctrl] [F2]	Again
[Ctrl] [F3]	Props
[Ctrl] [F4]	Undo
[Ctrl] [F5]	Front
[Ctrl] [F6]	Copy
[Ctrl] [F7]	Open
[Ctrl] [F8]	Paste
[Ctrl] [F9]	Find
[Ctrl] [F10]	Cut
[Ctrl] [1]	
[Ctrl] [2]	
[Ctrl] [3]	
[Ctrl] [4]	
[Ctrl] [H]	Help
	Compose
	

Note: When using key combinations, press and release the first key (Ctrl), then press and release the activation key.

Chapter 7

Firmware Upgrade

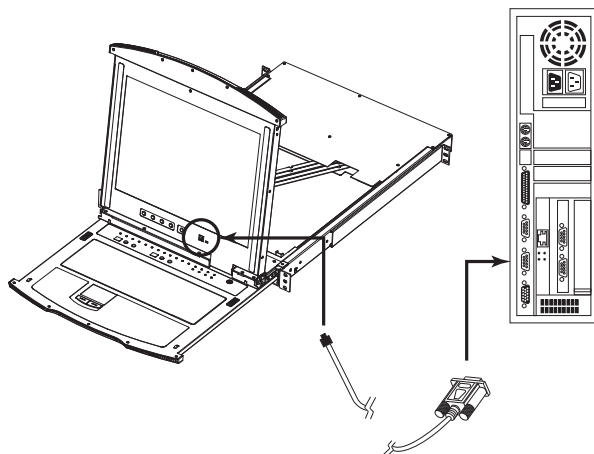
The Firmware Upgrade Utility

As new firmware revisions become available for the KL1508 / KL1516, firmware upgrade packages are posted on our web site. The Windows-based Firmware Upgrade Utility (FWUpgrade.exe) provides a smooth, automated process for upgrading the KVM switch's firmware. Check the web site regularly to find the latest packages and information relating to them.

Before You Begin

To prepare for the firmware upgrade, do the following:

1. From a computer that is not part of your KVM installation go to our Internet support site and choose the model name that relates to your device to get a list of available Firmware Upgrade Packages.
2. Choose the Firmware Upgrade Package you want to install (usually the most recent), and download it to your computer.
3. Use the *Firmware Upgrade Cable* (provided with this unit), to connect a COM port on your computer to the *Firmware Upgrade Port* of your device.



Note: On a daisy chained installation, connect the cable to the First Station (Master) unit. The chained stations (Slaves) will receive the upgrade via the daisy chain cables.

4. Shut down all of the computers - but not the Stations - on your KVM installation.
5. From your KVM switch console, bring up the OSD (see page 29) and select the **F4ADM** function.
6. Scroll down to *FIRMWARE UPGRADE*. Press **[Enter]**, then press **[Y]** to invoke Firmware Upgrade Mode. (see page 39.) For your reference, the current firmware upgrade version displays on the screen.

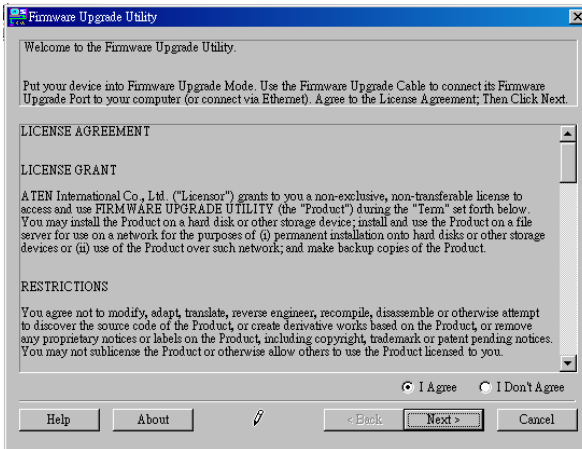
Performing the Upgrade

Starting the Upgrade:

To upgrade your firmware:

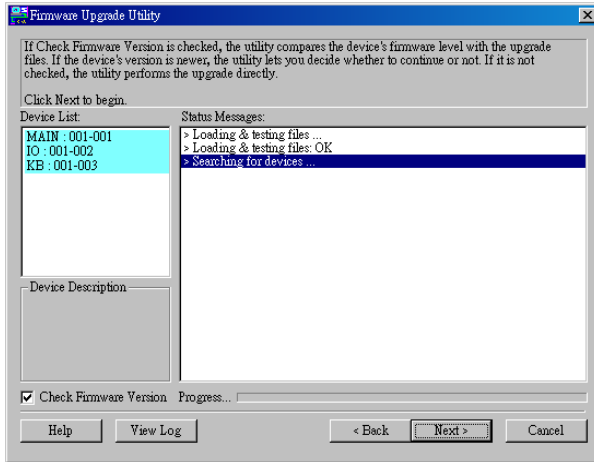
1. Run the downloaded Firmware Upgrade Package file - either by double clicking the file icon, or by opening a command line and keying in the full path to it.

The Firmware Upgrade Utility *Welcome* screen appears:



2. Read and *Agree* to the License Agreement (enable the I Agree radio button).

3. Click **Next**. The Firmware Upgrade Utility main screen appears:

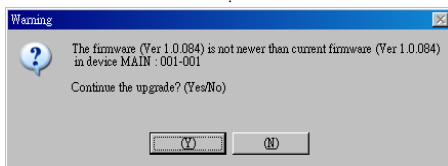


The Utility inspects your installation. All the devices capable of being upgraded by the package are listed in the *Device List* panel.

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4. After you have made your selection(s), Click **Next** to perform the upgrade.
 - ◆ If you enabled *Check Firmware Version*, the Utility compares the device's firmware level with that of the upgrade files. If it finds that the device's version is higher than the upgrade version, it brings up a dialog box informing you of the situation and gives you the option to Continue or Cancel:



If you didn't enable *Check Firmware Version*, the Utility installs the upgrade files without checking whether they are a higher level, or not.

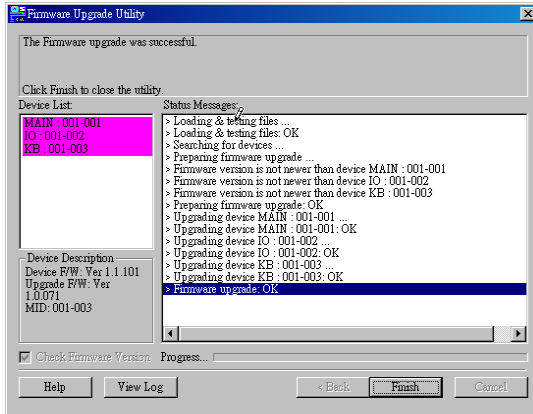
- ◆ As the Upgrade proceeds status messages appear in the Status Messages panel, and the progress toward completion is shown on the *Progress* bar.
- ◆ To abort the upgrade procedure before it completes, click **Cancel**.

If you cancel before completion, a dialog box appears warning you that quitting at this point may cause the device's firmware to be lost, and you are given the option to proceed or abort the cancel operation.

To recover from a "lost firmware" situation, see *Firmware Upgrade Recovery*, page 60.

Upgrade Succeeded:

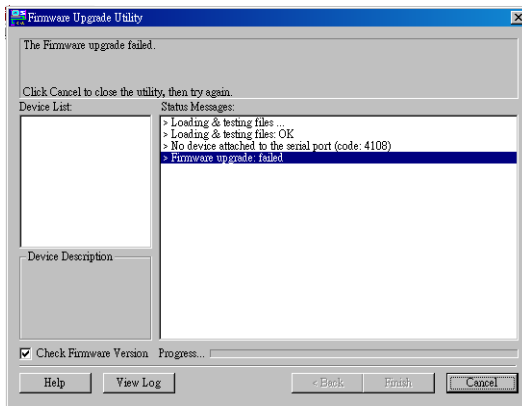
After the upgrade has completed, a screen appears to inform you that the procedure was successful:



Click **Finish** to close the Firmware Upgrade Utility.

Upgrade Failed:

If the upgrade failed to complete successfully a dialog box appears asking if you want to retry. Click **Yes** to retry. If you Click **No**, the *Upgrade Failed* screen appears:



Click **Cancel** to close the Firmware Upgrade Utility. See the next section, *Firmware Upgrade Recovery*, for how to proceed.

Firmware Upgrade Recovery

There are basically four conditions that call for firmware upgrade recovery:

- ◆ When the unit's firmware becomes corrupted for some reason and you are unable to operate it.
- ◆ When you invoke Firmware Upgrade Mode (see *FIRMWARE UPGRADE*, page 39), but decide not to proceed with the upgrade.
- ◆ When a firmware upgrade procedure is interrupted.
- ◆ When a firmware upgrade procedure fails.

To perform a firmware upgrade recovery, do the following:

1. Slide the *Firmware Upgrade Recovery Switch* (see page 9) to the **Recover** position.
2. Power off and restart the switch according to the instructions given in the *Powering Off and Restarting* section (see page 28).
3. Slide the *Firmware Upgrade Recovery Switch* back to the **Normal** position.
4. Repeat Step 2.

Note: If one of the child units fails to upgrade successfully, unchain it from the installation and perform the recovery and upgrade operation on it independently. After it has been successfully upgraded, plug it back into the chain

Adapter Cable Upgrade

Introduction

The firmware for the KA9520, KA9570, and KA9130 KVM Adapter Cables can also be upgraded. As new versions of the firmware become available, they can be downloaded from our Website. Check the Website regularly to find the latest information and firmware upgrade packages.

Before You Begin

To prepare for the firmware upgrade, do the following:

1. From a computer that is not part of your KVM installation go to our Internet support site and choose the model name that relates to your device to get a list of available Firmware Upgrade Packages.
2. Choose the Firmware Upgrade Package you want to install (usually the most recent), and download it to your computer.

Note: The upgrade files for the three adapter cables aren't packaged separately. A single upgrade package provides the upgrade files for all of them.

3. Shut down all of the computers - but not the Stations - on your KVM installation.
4. From your KVM switch console, bring up the OSD (see page 29) and select the **F4ADM** function.
5. Scroll down to *ADAPTER UPGRADE*. Press **[Enter]**.
6. In the screen that comes up, press **[Y]** to invoke Upgrade Mode (see page 29).

Note: 1. A message appears reminding you to connect an adapter cable. The message appears even if you have adapter cables connected. If all the adapter cables you want to upgrade have already been connected, simply ignore the message.

2. The upgrade takes place via the Cat 5 cable that connects the adapter cable to the KVM switch - so there is no firmware upgrade cable to attach.
 3. All the connected adapter cables get upgraded during a single upgrade session.
-

Performing the Upgrade

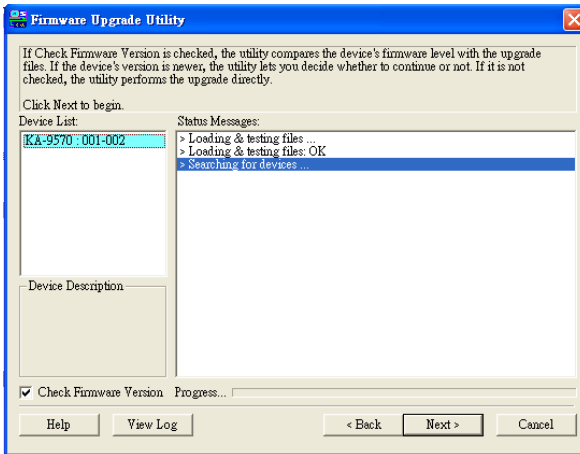
Starting the Upgrade:

To upgrade your firmware:

1. Run the downloaded Firmware Upgrade Package file - either by double clicking the file icon, or by opening a command line and keying in the full path to it.

The Firmware Upgrade Utility *Welcome* screen appears (see page 56).

2. Read and *Agree* to the License Agreement (enable the I Agree radio button), then Click **Next** to continue. The Firmware Upgrade Utility main screen appears:



The Utility inspects your installation. All the devices capable of being upgraded by the package are listed in the *Device List* panel.

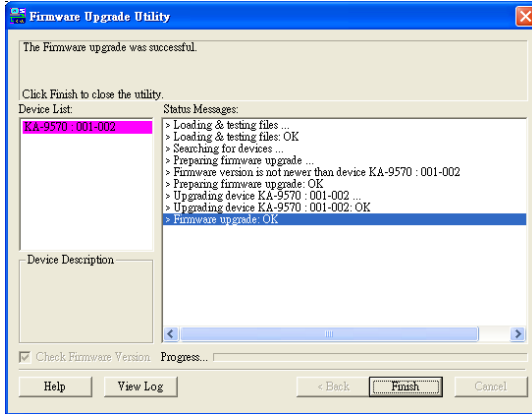
3. After all the devices have been listed, click **Next** to perform the upgrade. If you enabled *Check Firmware Version*, the Utility compares the device's firmware level with that of the upgrade files. If it finds that the device's version is higher than the upgrade version, it brings up a dialog box informing you of the situation and gives you the option to Continue or Cancel.

If you didn't enable *Check Firmware Version*, the Utility installs the upgrade files without checking whether they are a higher level, or not.

As the Upgrade proceeds status messages appear in the Status Messages panel, and the progress toward completion is shown on the *Progress* bar.

Upgrade Succeeded:

After the upgrade has completed, a screen appears to inform you that the procedure was successful:



Click **Finish** to close the Firmware Upgrade Utility.

Note: At the completion of the upgrade the KL1508 / KL1516 restarts.

Firmware Upgrade Recovery

There are basically four conditions that call for firmware upgrade recovery:

- ◆ When the unit's firmware becomes corrupted for some reason and you are unable to operate it.
- ◆ When you invoke Adapter Upgrade Mode (see *ADAPTER UPGRADE*, page 39), but decide not to proceed with the upgrade.
- ◆ When a firmware upgrade procedure is interrupted.
- ◆ When a firmware upgrade procedure fails.

To perform a firmware upgrade recovery, do the following:

1. Unplug the Adapter Cable from the computer it is connected to.
2. Slide its *Firmware Upgrade Recovery Switch* (located next to the Cat 5 connector) to the **Recover** position.
3. Plug the adapter cable back into the computer.
4. From your KVM switch console, bring up the OSD (see page 29) and select the **F4ADM** function.
5. Scroll down to *ADAPTER UPGRADE*. Press [**Enter**].
6. Press [**Y**] to invoke Upgrade Mode (see page 39).
7. Proceed with the firmware upgrade as described in *Performing the Upgrade*, starting on page 62.
8. After the upgrade completes and the switch restarts, unplug the Adapter Cable from the computer and slide the *Firmware Upgrade Recovery Switch* back to the **Normal** position.
9. Plug the adapter cable back into the computer.

This completes the recovery procedure.

Safety Instructions

General

- ◆ Read all of these instructions. Save them for future reference.
- ◆ Follow all warnings and instructions marked on the device.
- ◆ Do not place the device on any unstable surface (cart, stand, table, etc.). If the device falls, serious damage will result.
- ◆ Do not use the device near water.
- ◆ Do not place the device near, or over, radiators or heat registers.
- ◆ The device cabinet is provided with slots and openings to allow for adequate ventilation. To ensure reliable operation, and to protect against overheating, these openings must never be blocked or covered.
- ◆ The device should never be placed on a soft surface (bed, sofa, rug, etc.) as this will block its ventilation openings. Likewise, the device should not be placed in a built in enclosure unless adequate ventilation has been provided.
- ◆ Never spill liquid of any kind on the device.
- ◆ Unplug the device from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.
- ◆ The device should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
- ◆ The device is equipped with a 3-wire grounding type plug. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not attempt to defeat the purpose of the grounding-type plug. Always follow your local/national wiring codes.
- ◆ Do not allow anything to rest on the power cord or cables. Route the power cord and cables so that they cannot be stepped on or tripped over.
- ◆ If an extension cord is used with this device make sure that the total of the ampere ratings of all products used on this cord does not exceed the extension cord ampere rating. Make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes.

- ◆ To help protect your system from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or uninterruptible power supply (UPS).
- ◆ Position system cables and power cables carefully; Be sure that nothing rests on any cables.
- ◆ When connecting or disconnecting power to hot pluggable power supplies, observe the following guidelines:
- ◆ Install the power supply before connecting the power cable to the power supply.
- ◆ Unplug the power cable before removing the power supply.
- ◆ If the system has multiple sources of power, disconnect power from the system by unplugging all power cables from the power supplies.
- ◆ Never push objects of any kind into or through cabinet slots. They may touch dangerous voltage points or short out parts resulting in a risk of fire or electrical shock.
- ◆ Do not attempt to service the device yourself. Refer all servicing to qualified service personnel.
- ◆ If the following conditions occur, unplug the device from the wall outlet and bring it to qualified service personnel for repair.
 - ◆ The power cord or plug has become damaged or frayed.
 - ◆ Liquid has been spilled into the device.
 - ◆ The device has been exposed to rain or water.
 - ◆ The device has been dropped, or the cabinet has been damaged.
 - ◆ The device exhibits a distinct change in performance, indicating a need for service.
 - ◆ The device does not operate normally when the operating instructions are followed.
- ◆ Only adjust those controls that are covered in the operating instructions. Improper adjustment of other controls may result in damage that will require extensive work by a qualified technician to repair.

Rack Mounting

- ◆ Before working on the rack, make sure that the stabilizers are secured to the rack, extended to the floor, and that the full weight of the rack rests on the floor. Install front and side stabilizers on a single rack or front stabilizers for joined multiple racks before working on the rack.
- ◆ Always load the rack from the bottom up, and load the heaviest item in the rack first.
- ◆ Make sure that the rack is level and stable before extending a device from the rack.
- ◆ Use caution when pressing the device rail release latches and sliding a device into or out of a rack; the slide rails can pinch your fingers.
- ◆ After a device is inserted into the rack, carefully extend the rail into a locking position, and then slide the device into the rack.
- ◆ Do not overload the AC supply branch circuit that provides power to the rack. The total rack load should not exceed 80 percent of the branch circuit rating.
- ◆ Ensure that proper airflow is provided to devices in the rack.
- ◆ Do not step on or stand on any device when servicing other devices in a rack.

Technical Support

International

Email Support	Email your questions and concerns to: support@aten.com
Online Support ♦ Technical Support ♦ Troubleshooting ♦ Documentation ♦ Software Updates	1. Online technical support is available to ALTUSEN customers through our e-Support Center: http://support.aten.com 2. Online troubleshooting that describes the most commonly encountered problems and offers possible solutions to them; online documentation (including electronically available manuals); and the latest drivers and firmware for your product are available at our website: http://www.aten.com
Telephone Support	886-2-8692-6959

North America

Email Support	Email your questions and concerns to: support@aten-usa.com
Online Support ♦ Technical Support ♦ Troubleshooting ♦ Documentation ♦ Software Updates	1. Online technical support is available to ALTUSEN customers through our e-Support Center: http://www.aten-usa.com/support 2. Online troubleshooting that describes the most commonly encountered problems and offers possible solutions to them; online documentation (including electronically available manuals); and the latest drivers and firmware for your product are available at our website: http://www.aten-usa.com
Telephone Support	1-888-999-ATEN

When you contact us, please have the following information ready beforehand:

- ♦ Product model number, serial number, and date of purchase.
- ♦ Your computer configuration, including operating system, revision level, expansion cards, and software.
- ♦ Any error messages displayed at the time the error occurred.
- ♦ The sequence of operations that led up to the error.
- ♦ Any other information you feel may be of help.

Connection Tables

The following tables indicate the relationship between the number of cascaded KVM switches and the number of computers that they control on a daisy chained installation. A list of compatible KVM switches is provided on page 79.

KL1508 – 8-Port Switches

MVs	Computers	MVs	Computers	MVs	Computers	MVs	Computers
1	1–8	9	65–72	17	129–136	25	193–200
2	9–16	10	73–80	18	137–144	26	201–208
3	17–24	11	81–88	19	145–152	27	209–216
4	25–32	12	89–96	20	153–160	28	217–224
5	33–40	13	97–104	21	161–168	29	225–232
6	41–48	14	105–112	22	169–176	30	233–240
7	49–56	15	113–120	23	177–184	31	241–248
8	57–64	16	121–128	24	185–192	32	249–256

KL1508 – 16-Port Switches

MVs	Computers	MVs	Computers	MVs	Computers	MVs	Computers
1	1–8	9	121–136	17	249–264	25	377–392
2	9–24	10	137–152	18	265–280	26	393–408
3	25–40	11	152–168	19	281–296	27	409–424
4	41–56	12	169–184	20	297–312	28	425–440
5	57–72	13	185–200	21	313–328	29	441–456
6	73–88	14	201–216	22	329–344	30	457–472
7	89–104	15	217–232	23	345–360	31	473–488
8	105–120	16	233–248	24	361–376	32	489–504

KL1516 – 8-Port Switches

MVs	Computers	MVs	Computers	MVs	Computers	MVs	Computers
1	1–16	9	73–80	17	137–144	25	201–208
2	17–24	10	81–88	18	145–152	26	209–216
3	25–32	11	89–96	19	153–160	27	217–224
4	33–40	12	97–104	20	161–168	28	225–232
5	41–48	13	105–112	21	169–176	29	233–240
6	49–56	14	113–120	22	177–184	30	241–248
7	57–64	15	121–128	23	185–192	31	249–256
8	65–72	16	129–136	24	193–200	32	257–264

KL1516 – 16-Port Switches

MVs	Computers	MVs	Computers	MVs	Computers	MVs	Computers
1	1–16	9	129–144	17	257–272	25	385–400
2	17–32	10	145–160	18	273–288	26	401–416
3	33–48	11	161–176	19	289–304	27	417–432
4	49–64	12	177–192	20	305–320	28	433–448
5	65–80	13	193–208	21	321–336	29	449–464
6	81–96	14	209–224	22	337–352	30	465–480
7	97–112	15	225–240	23	353–368	31	481–496
8	113–128	16	241–256	24	369–384	32	497–512

Specifications

KL1508M / KL1508N

Function			KL1508M	KL1508N
Computer Connections	Direct		8	
	Max		504 (via 16-level Daisy Chain)	
Port Selection			OSD; Hotkey; Pushbutton Switches	
Connectors	External Console Ports	Keyboard	1 x 6 pin Mini-DIN F (Purple)	
		Video	1 x HDB-15 F (Blue)	
		Mouse	1 x 6 pin Mini-DIN F (Green)	
	KVM Ports		8 x RJ-45 F (Black)	
	Daisy Chain		1 x DB-25 M (Black)	
	FW Upgrade		1 x RJ-11 F (Black)	
	Power		1 x 3-prong AC socket	
	External Mouse		1 x 6 pin Mini-DIN F (Green)	
	Switches	Reset		1 x Semi-recessed pushbutton
Power		1 x Rocker		
F/W Upgrade		1 x Slide		
LCD Adjust		4 x Pushbutton		
LCD Power		1 x Pushbutton		
Station Selection		2 x Pushbutton		
Port Selection		2 x Pushbutton		
LEDs	On Line		8 (Green)	
	Selected	Station ID	2 x 7 Segment (Yellow)	
		Port ID	2 x 7 Segment (Yellow)	
	Power		1 (Blue)	
	LCD Power		1 (Orange)	
	Lock	Num	1 x Green	
		Caps	1 x Green	
Scroll		1 x Green		
LCD Panel			17"	19"

(Table continues on next page.)

(Continued from previous page.)

Function		KL1508M	KL1508N
Emulation	Keyboard / Mouse	PS/2; USB (PC, Mac, Sun); Serial	
Video		1280 x 1024 @ 75 Hz; DDC2B	
Scan Interval (OSD Select)		1–255 secs.	
I/P Rating		100–240V AC; 50/60Hz; 1A	
Power Consumption		120 / 230V; 28W	120 / 230 V; 30 W
Environment	Operating Temp.	0–40° C	0–50° C
	Storage Temp.	-20–60° C	
	Humidity	0–80% RH; Non-condensing	
Physical Properties	Housing	Metal	
	Weight	17.3 kg	18.5 kg
	Dimensions (L x W x H)	70.90 x 48.20 x 4.40 cm (19"/1U)	76.00 x 48.20 x 4.40 cm (19"/1U)

KL1516M / KL1516N

Function		KL1516M	KL1516N	
Computer Connections	Direct	16		
	Max	512 (via 16-level Daisy Chain)		
Port Selection		OSD; Hotkey; Pushbutton Switches		
Connectors	External Console Ports	Keyboard	1 x 6 pin Mini-DIN F (Purple)	
		Video	1 x HDB-15 F (Blue)	
		Mouse	1 x 6 pin Mini-DIN F (Green)	
	KVM Ports		16 x RJ-45 F (Black)	
	Daisy Chain		1 x DB-25 M (Black)	
	FW Upgrade		1 x RJ-11 F (Black)	
	Power		1 x 3-prong AC socket	
	External Mouse		1 x 6 pin Mini-DIN F (Green)	
Switches	Reset		1 x Semi-recessed pushbutton	
	Power		1 x Rocker	
	F/W Upgrade.		1 x Slide	
	LCD Adjust		4 x Pushbutton	
	LCD Power		1 x Pushbutton	
	Station Selection		2 x Pushbutton	
	Port Selection		2 x Pushbutton	

(Continued from previous page.)

Function		KL1516M	KL1516N
LEDs	On Line		16 (Green)
	Selected	Station ID	2 x 7 Segment (Yellow)
		Port ID	2 x 7 Segment (Yellow)
	Power		1 (Blue)
	LCD Power		1 (Orange)
	Lock	Num	1 x Green
		Caps	1 x Green
Scroll		1 x Green	
LCD Panel		17"	19"
Emulation	Keyboard / Mouse		PS/2; USB (PC, Mac, Sun); Serial
Video		1280 x 1024 @ 75 Hz; DDC2B	
Scan Interval (OSD Select)		1–255 secs.	
I/P Rating		100–240V AC; 50/60Hz; 1A	
Power Consumption		120 / 230V; 28 W	120 / 230 V; 30 W
Environment	Operating Temp.		0–40° C
	Storage Temp.		-20–60° C
	Humidity		0–80% RH
Physical Properties	Housing		Metal
	Weight		17.3 kg
	Dimensions (L x W x H)		70.90 x 48.20 x 4.40 cm (19"/1U)
		76.00 x 48.20 x 4.40 cm (19"/1U)	

OSD Factory Default Settings

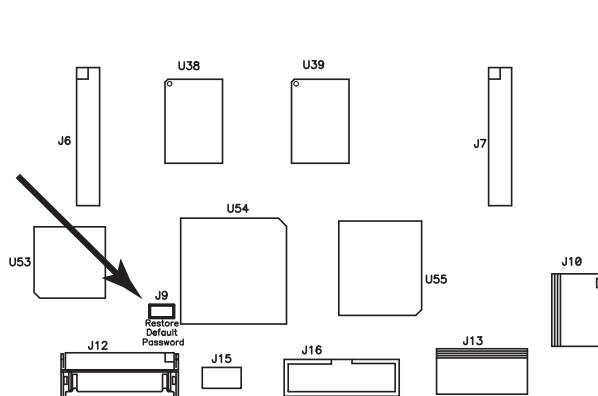
The factory default settings are as follows:

Setting	Default
OSD Hotkey	[Scroll Lock] [Scroll Lock]
Port ID Display Position	Upper Left Corner
Port ID Display Duration	3 Seconds
Port ID Display Mode	The Port Number plus the Port Name
Scan Duration	5 Seconds
Scan/Skip Mode	All
Screen Blanker	0 (Disabled)
Logout Timeout	0 (Disabled)
Beeper	Y (Activated)
Accessible Ports	F (Full Access) For all Users on all Ports
Hotkey Command Mode	Y (Activated)
Set Operating System	Win
Keyboard Language	Auto
Set Console Mode	0: Dual-Console
Hotkey	[Num Lock] + [-]
Restore Default Values	N
Clear the Name List	N
Reset Station IDs	Y
Firmware Upgrade	N

Clear Login Information

If you are unable to perform an Administrator login (because the Username and Password information has become corrupted, or you have forgotten it, for example), you can clear the login information with the following procedure:

1. Power off the switch and remove the top cover from the unit chassis.
2. Short the jumper labeled *Default Password* on the switch's main board.



3. Power on the switch.

When you power the switch on, the following message appears on the LCD display:

```
USERNAME AND PASSWORD INFORMATION HAS BEEN CLEARED.  
PLEASE POWER OFF THE SWITCH, REMOVE THE JUMPER, CLOSE  
THE CASE, THEN RESTART.
```

4. After you start back up, the OSD login function acts exactly the way it did the first time the switch was run (see *OSD Overview*, page 29) and you can reset passwords for the Administrators and Users.

Optional Rack Mounting

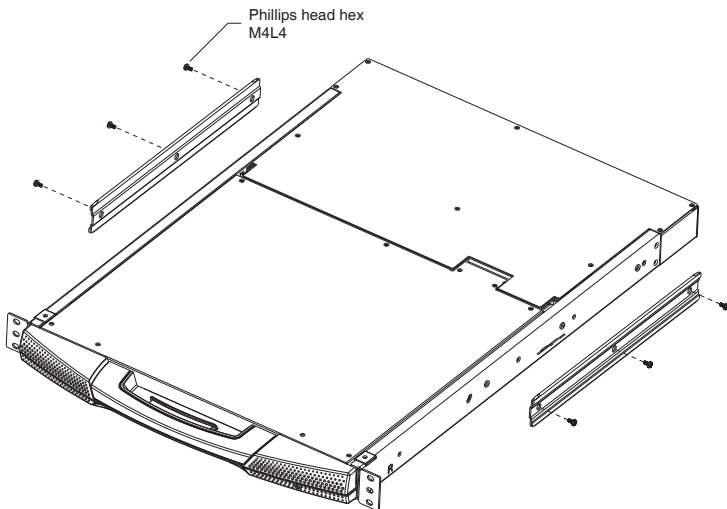
For convenience and flexibility, three optional rack mounting kits are available as shown in the following table:

KVM Model	Bracket Type	Size (cm)
KL1508M / KL1516M	Standard Installation – Long	68.0—105.0
	Easy Installation – Short	57.0—70.0
	Easy Installation – Long	68.0—105.0
KL1508N / KL1516N	Standard Installation – Long	68.0—105.0
	Easy Installation – Short	63.0—70.0
	Easy Installation – Long	74.0—105.0

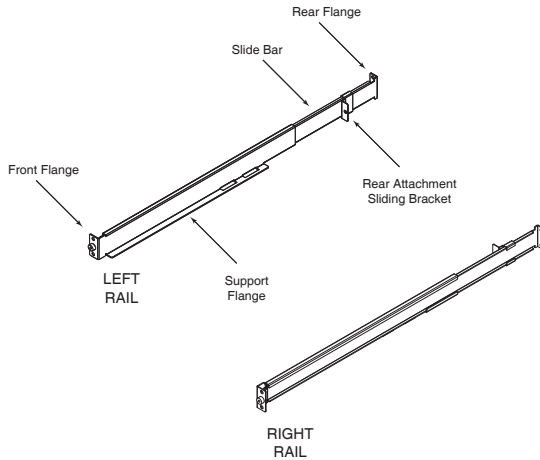
To install the long bracket standard rack mount kit, simply replace the short L brackets on the standard rack mount kit with the long ones, and mount the switch according to the instructions given for *Standard Rack Mounting*, page 12.

While it takes two people to perform a standard installation, with an *Easy-Installation*, kit, one person can mount the switch. To install the *Easy-Installation* kit, do the following:

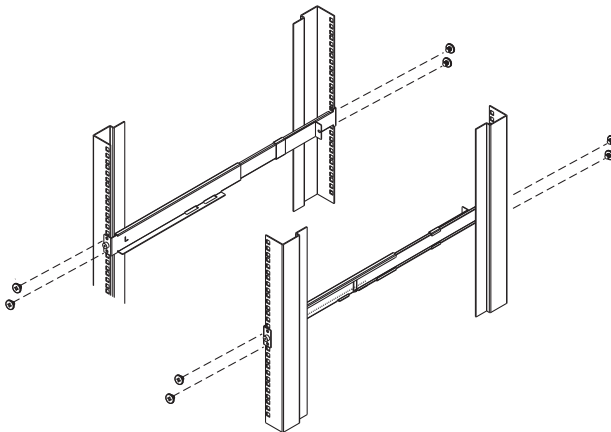
1. Remove the standard L brackets and the side mounting brackets from both sides of the switch.



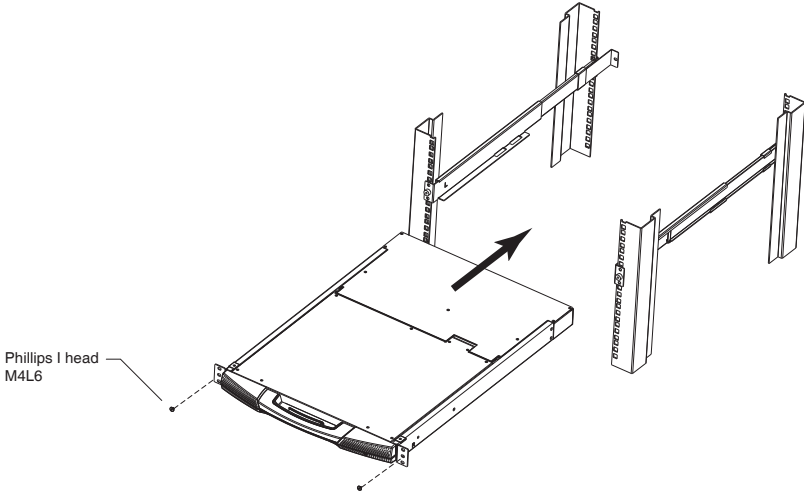
2. Attach the left and right *easy-installation* mounting rails to the inside of the rack. The flange that supports the switch will be to the inside.



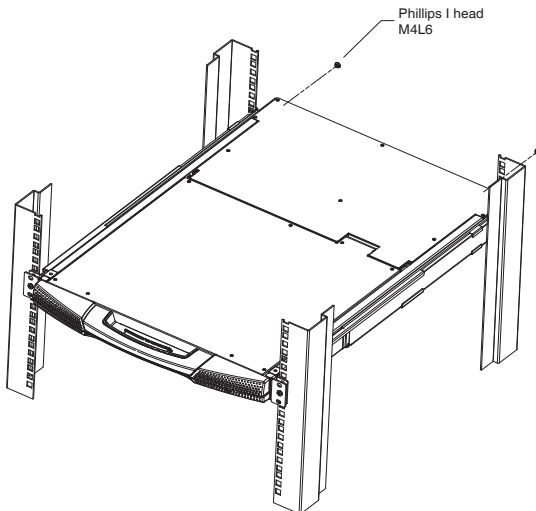
- a) Screw the front flanges to the rack first.
- b) Slide the bars with the rear flanges toward the rack until the flanges make contact with the rack, then screw the rear flanges to the rack.



- Slide the switch onto the support flanges. Use the screws supplied with this package to loosely attach the front of the switch to the front of the rack (only tighten the screws part way).



- Slide the rear attachment sliding brackets along the slide bars until they contact the rear of the switch, then use the screws supplied with this package to attach the bars to the rear of the switch (tighten the screws all the way).



5. Slide the switch open and closed a couple of times to be sure that it is properly aligned and operating smoothly. (See *Opening the Console*, page 19, for opening and closing procedures.)
6. After determining that the switch is properly lined up and operating correctly, finish up by fully tightening down the partially tightened front attachment screws inserted in step 3.

Dedicated Invocation Keys

Two dedicated keys are provided on the keyboard module to make it easy to invoke Hotkey Mode and the OSD (as shown in the diagram below):



Note: These keys are toggles. Press once to invoke the feature; press again to exit.

Supported KVM Switches

The following is a list of supported KVM switches that can be used when configuring a daisy chained installation.

- ♦ ACS1208A
- ♦ ACS1216A
- ♦ KH1508
- ♦ KH1516

Troubleshooting

General

Problem	Solution
Keyboard and/or mouse do not work after computer boots up.	For computers with PS/2 connectors, if you are using 2L-520xP cables, make sure that all the connectors (keyboard, video, and mouse) are plugged into their ports on the computer before starting the computer. Plugging the cables in after the computer has booted will not resolve the problem.
When I emulate the Sun keyboard, I can't go into OK Mode ([Stop] [A]).	To go into OK Mode, use the following key sequence: <ol style="list-style-type: none"> 1. Press and release [Ctrl]. 2. Press and hold [T]. 3. Press and hold [A]. 4. Release [T] and [A] together.
There are ghost images on the external monitor.	The distance between the external console and the KL1508 / KL1516 is too great. The maximum VGA cable distance should not exceed 20m and, in some cases, may need to be shorter. Replace the VGA cable with one of an appropriately short length.
I can't set the computers' screen resolutions higher than 1280 x 1024, even though the KL1508 / KL1516 supports 1600 x 1200 for remote computers.	The maximum screen resolution of the KL1508 / KL1516's integrated LCD monitor is 1280 x 1024. In order to protect it from being damaged by resolutions that are beyond its display capability, we recommend that the screen resolutions of the connected computers be set to 1280 x 1024 or lower. If you wish to set the screen resolutions of the connected computers to something higher than 1280 x 1024, see <i>Screen Resolutions Higher than 1280 x 1024</i> , page 82.
When I switch to one of the computers on my installation, the LCD monitor screen goes blank. All I see is a black screen.	The maximum screen resolution of the KL1508 / KL1516's integrated LCD monitor is 1280 x 1024. The screen resolution of the problem computer is set to something that is too high for the KL1508 / KL1516's LCD monitor to display. To resolve the problem, connect an external KVM console (with a monitor capable of displaying the problem computer's screen resolution) to the KL1508 / KL1516's external console ports. Use the external console to access the problem computer and reduce its resolution to 1280 x 1024. Note: Although the LCD monitor only supports video resolutions of up to 1280 x 1024, the KL1508 / KL1516, itself can support video resolutions up to 1600 x 1200 @ 60 Hz. If you wish to set the screen resolutions of the connected computers to something higher than 1280 x 1024, see <i>Screen Resolutions Higher than 1280 x 1024</i> , page 82 for details.

Sun Systems

Problem	Solution
Video display problems with HDB-15 interface systems (e.g. Sun Blade 1000 servers).	<p>The display resolution should be set to 1024 x 768 @ 60Hz.</p> <p>Under Text Mode:</p> <ol style="list-style-type: none"> 1. Go to OK mode and issue the following commands: <pre>setenv output-device screen:r1024x768x60 reset-all</pre> <p>Under XWindow:</p> <ol style="list-style-type: none"> 1. Open a console and issue the following command: <pre>m64config -res 1024x768x60</pre> 2. Log out. 3. Log in.
Video display problems with 13W3 interface systems (e.g. Sun Ultra servers).*	<p>The display resolution should be set to 1024 x 768 @ 60Hz.</p> <p>Under Text Mode:</p> <ol style="list-style-type: none"> 1. Go to OK mode and issue the following commands: <pre>setenv output-device screen:r1024x768x60 reset-all</pre> <p>Under XWindow:</p> <ol style="list-style-type: none"> 1. Open a console and issue the following command: <pre>ffbconfig -res 1024x768x60</pre> 2. Log out. 3. Log in.

* These solutions work for most common Sun VGA cards. If these procedures fail to resolve the problem, consult the manual for the Sun VGA card.

Screen Resolutions Higher than 1280 x 1024

The maximum screen resolution of the KL1508 / KL1516's integrated LCD monitor is 1280 x 1024. In order to protect it from being damaged by resolutions that are beyond its display capability, we recommend that the screen resolutions of the connected computers be set to 1280 x 1024 or lower.

If you wish to display screen resolutions higher than 1280 x 1024, you can follow the procedure described below to change the computers' screen resolutions and safeguard the KL1508 / KL1516's LCD monitor:

Note: We strongly recommend that you close the KL1508 / KL1516 LCD console before continuing (see *Closing the Console*, page 23.) Using the LCD monitor to view computers that are set to resolutions that exceed its maximum capability can damage it and shorten its life span.

To access computers from the local console when the integrated console is closed, simply connect an external KVM console with a monitor that supports 1600 x 1200 @ 60 Hz to the KL1508 / KL1516's external console ports.

1. From a remote computer, log into the KL1508 / KL1516 and access the computer whose screen resolution you wish to change.
2. Open the computer's *Control Panel* and double-click **Display**. The *Display Properties* dialog box appears.
3. Click the **Settings** tab, and then click **Advanced**.
4. In the dialog box that appears, click the **Monitor** tab.
5. Under *Monitor settings*, click to clear the *Hide modes that this monitor cannot display* check box.
6. Click **Apply**.
7. Click the **Adapter** tab, and then click **List All Modes**. The *List All Modes* dialog box appears.
8. Under *List of valid modes*, select the display mode that you want the computer to use.

Note: The maximum screen resolution and refresh rate that the KL1508 / KL1516 supports for remote computers is 1600 x 1200@60 Hz.

9. Click **OK**, and then click **Apply**. The display mode changes to the one you selected.

10. If the *Monitor Settings* dialog box appears requesting you to confirm the settings change, click **Yes**.

11. After the Monitor Settings dialog box closes, click **OK**.

12. In the Display Properties dialog box, click **OK**.

This completes the procedure. Repeat these steps for any other computer whose screen resolution you wish to change.

Limited Warranty

ALTUSEN warrants this product against defects in material or workmanship for a period of one (1) year from the date of purchase. If this product proves to be defective, contact ALTUSEN's support department for repair or replacement of your unit. ALTUSEN will not issue a refund. Return requests can not be processed without the original proof of purchase.

When returning the product, you must ship the product in its original packaging or packaging that gives an equal degree of protection. Include your proof of purchase in the packaging and the RMA number clearly marked on the outside of the package.

This warranty becomes invalid if the factory-supplied serial number has been removed or altered on the product.

This warranty does not cover cosmetic damage or damage due to acts of God, accident, misuse, abuse, negligence or modification of any part of the product. This warranty does not cover damage due to improper operation or maintenance, connection to improper equipment, or attempted repair by anyone other than ALTUSEN. This warranty does not cover products sold AS IS or WITH FAULTS.

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Index

A

- Alternate Hotkey Keys, 49
- Alternate OSD Keys, 49
- Auto Scanning, 35, 47
 - Invoking Auto Scan, 47
 - Pausing Auto Scan, 47
 - Setting the Scan Interval, 47
 - Stopping, 47

B

- Basic Operation, 19
- Beeper, 50

C

- CL-5208L / CL-5208M
 - Specifications, 71
- CL-5216L / CL-5216M
 - Specifications, 72
- Clear Login Information, 75
- Closing the Console, 23
- Components
 - Front View, 7
 - Rear View, 10
- Connection Tables, 69
- Console
 - Closing, 23
 - Opening Together, 21
 - Separate Opening, 19

D

- Daisy Chain Cables, 5

F

- Factory Default Settings, 74
- Firmware upgrade
 - cable, 55

- recovery, 60, 64
- utility, 55

- Firmware upgrade mode
 - invoking, 56
- Front View, 7

H

- Hot Plugging, 27
 - KVM Ports, 27
- Hotkey
 - Configuration, 49
 - Port Control, 45
 - Selecting the Active Port, 46
 - Summary Table, 51
- Hotkey Mode
 - auto scanning, 47
 - invoking, 45

I

- Installation
 - Daisy Chaining, 17
 - Single Stage, 14
- Invoking Hotkey Mode, 45

K

- Keyboard Emulation
 - Mac, 53
 - Sun, 54
- KL1508
 - Front View, 7
 - Rear View, 10
- KL1516
 - Front View, 7
 - Rear View, 10

L

- LCD OSD

- Adjustment Settings, 26
- Buttons, 25
- Configuration, 25

O

- Online
 - Registration, iii
- Opening the Console, 19
- Operating Precautions, 22
- OSD
 - Factory Default Settings, 74
 - Functions, 32
 - Main Screen Headings, 31
 - Navigation, 31
 - Overview, 29
 - Password, 29

P

- Password, 29
- Platform Setup, 50
- Port ID Numbering, 28
- Port Selection
 - Manual, 27
- Powering Off, 28
- Powering Off and Restarting, 28

R

- Rack mounting
 - Optional, 76
 - Standard, 12
- Rear View
 - KL1508, 10
 - KL1516, 10
- Requirements

- Computers, 4
- KVM Adapter Cables, 5
- Operating Systems, 6
- OS Support, 6

- Restarting, 28
- RoHS, ii

S

- Safety Instructions
 - General, 65
 - Rack Mounting, 67
- Scan Duration, 35
- Selecting the Active Port, 46
- Setting the Auto Scan Interval, 35, 47
- Setting the Scan Interval, 35
- SJ/T 11364-2006, ii
- Skip Mode, 48
- Specifications
 - CL-5208L / CL-5208M, 71
 - CL-5216L / CL-5216M, 72
- Station IDs, 17
- Station Positions
 - Switching, 27
- Supported KVM Switches, 79
- Switching Station Positions, 27

T

- Technical Support, 68
- Telephone support, iii
- Troubleshooting, 80

U

- User Notice, iii