BLACK BOX
ServSwitch™
Multi Video

KV0202A
KV0204A
KV0402A
KV0404A
KV0802A
SW0202A
SW0204A
SW0402A
SW0404A
SW0802A

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NETWORK SERVICES

# FCC/IC STATEMENTS, EU DECLARATION OF CONFORMITY

FEDERAL COMMUNICATIONS COMMISSION AND INDUSTRY CANADA
RADIO-FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A digital device in accordance with the specifications of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This digital apparatus does not exceed the Class A limits for radio noise regulation of industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

EUROPEAN UNION DECLARATION OF CONFORMITY
ACCORDING TO COUNCIL DIRECTIVE 89/336EEC
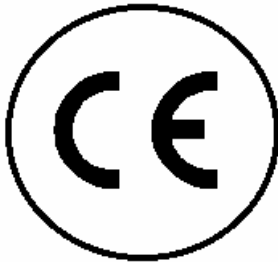
This equipment is in conformity with the requirements of the European EMC directive
89/336/EEC
72/21/EEC
EN55022: (Class A, 1998)
EN55024 (1998)
CISPR22 (1995)

TABLE OF CONTENTS

Contents

Figures

Tables

Appendices

Disclaimer

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Introduction

Thank your for choosing the Black Box® ServSwitch MultiVideo™. The ServSwitch MultiVideo represents the latest technology in single user KVM switching for CPUs with multi-video outputs. The ServSwitch MultiVideo is the result of our commitment to providing state-of-the-art switching solutions for today's demanding workplace. The ServSwitch MultiVideo has proven to be a valuable and dependable investment for users that have the need to switch multiple video images from 2, 4, or 8 computers.

> A **K**eyboard, **V**ideo monitor, and **M**ouse are referred to throughout this manual as a **KVM** station.

There are several models available. The SW0xxxA series supports PC/Unix systems and the KV0xxxA series supports PC, Apple, Sun, and Unix systems.

Switching to a connected computer can be done by simple keyboard commands, selecting the computer from the front panel, or through the RS/232 port.

All ServSwitch MultiVideo models can easily be expanded by chaining the units together and configuring the system. Using the 2 port chassis, you can expand the system to 4 computers. The 4 port chassis can expand to 16 computers, and the 8 port chassis can expand to 64 computers.

Before performing any installation or configuration, please refer to the safety section of this manual.

Features

- Access up to 64 computers from one KVM station
- Available in three different chassis sizes:
  Mini - Chassis - 2 CPUs to 1 Kbd, 1 mouse, and 2 monitors
  Slim - Chassis - 4 CPUs to 1 Kbd, 1 mouse, and 2 monitors
  Full - Chassis - 2 CPUs to 1 Kbd, 1 mouse, and 4 monitors
                               4 CPUs to 1 Kbd, 1 mouse, and 4 monitors
                               8 CPUs to 1 Kbd, 1 mouse, and 2 monitors
- Video resolution up to 1600 x 1280
- On-screen display for configuration and computer selection
- Security system with User IDs and passwords prevents unauthorized configuration and access (OSD option required)
- Switch to a computer from the keyboard, the front panel switches, the RS/232 port or optional on-screen display
- Multi-platform models convert PC, Unix, Apple, or Sun keyboard and mouse data to any platform
- Pre-configuration feature allows for the installation of most computers or servers without removing power
- Full keyboard and mouse emulation for automatic and simultaneous booting
- Flash memory with free base firmware upgrades available from our web site

Compatibility

KVM compatibility	
Keyboards	PC, Unix, and most US and foreign QWERTY keyboards, Japanese and Korean keyboards with or without Windows keys, 101, 102, 104, 105, 106, 109, Sun. Some older XT/AT auto-sensing or single mode keyboards may not be compatible
Monitors	VGA, SVGA, XGA, Composite
Mice	Standard PS/2, PS/2 wheel, Sun
CPU compatibility	
Computers	Industry standard PCs, Unix systems, Sun, IBM RS/6000, DEC, HP, SGI, Apple, and others
Keyboards	Standard PC mode 1, 2, or 3 in PS/2 or AT, USB, Sun, Apple ADB*. Some older XT/AT auto-sensing or single mode keyboards may not be compatible
Monitors	VGA, SVGA, XGA, Composite, Sync-on-green
Mice	Standard PS/2, PS/2 wheel, Serial (2 or 3 button), USB, Sun, Apple ADB*

Requires use of translator: KV99MCON – MAC
                                       KV99SCON – SUN

Package contents

The package contents consist of the following:
- The ServSwitch MultiVideo unit
- Power adapter (provided with the M-chassis)
- Installation and operations manual

CPU, KVM, and expansion cables are usually ordered separately. If the package contents are not correct, contact Black Box so the problem can be quickly resolved.

System overview

The ServSwitch MultiVideo is designed to provide seamless, trouble-free switching from a single KVM station to any connected computer. You can switch to any of the connected computers by simple keyboard commands, the front panel – or + buttons, or from a computer terminal or standalone PC connected to the RS/232 serial port (not connected to a CPU port).

If your system demands are greater than a single unit can provide, the ServSwitch MultiVideo can be easily expanded to connect up to 64 computers by chaining units together with expansion cables.

KVM station

A KVM station consisting of a keyboard, monitors, and mouse connects to the rear panel DB25F connector labeled KVM1.

CPU connection

All CPU connectors on the ServSwitch MultiVideo are DB25F. The CPUs are connected using a CPU cable designed to interface with the CPU keyboard, mouse, and monitor ports. A CPU cable is needed for each connected computer.

VIDEO connection

Video's 2-4 are DB25F connectors. A DB25 to HD15 cable is needed for each video output from a CPU.

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ServSwitch MultiVideo models

Mini – Chassis

Slim – Chassis
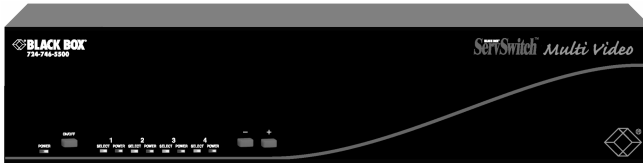
Full - Chassis

Figure 1. ServSwitch MultiVideo models

Label		Description
Power	**POWER**	Power LED - Green when unit is on
LEDs	**1** SELECT POWER	Indicator LEDs; Numbered pairs of LEDs shows status and power of connected computers
- and + Switches*	**–** **+**	- Connects to the previous CPU + Connects to the next CPU

* The - and + switches are used when:
- upgrading the firmware
- resetting the unit to factory defaults
- running diagnostics.

Table 1. Front panel

ServSwitch MultiVideo models (rear)

"Mini" Chassis

"Slim" Chassis
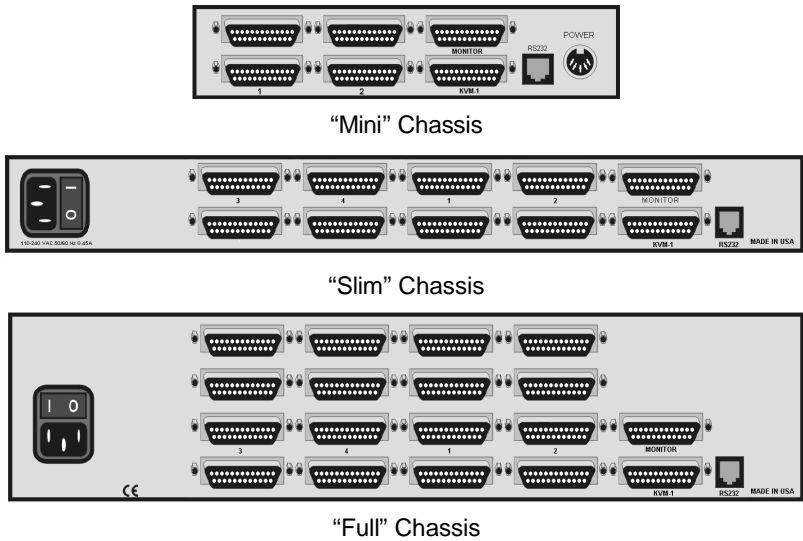
"Full" Chassis

Figure 2. Rear panel
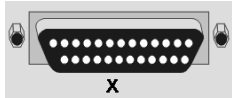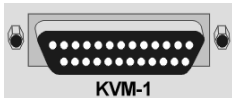
Label	Connector	Description
Power		"Mini" Chassis only DIN 5F Power adapter connector
None		"Slim" and "Full" Chassis only IEC320 Power receptacle w/switch
X = 1-2 (mini) 1-4 (slim) 1-4/8 (full)		DB25F CPU adapter cable connectors
KVM-1		DB25F KVM cable connector.
RS232		RJ12 6-conductor jack

Table 2. Rear panel connectors

CABLES

Cables

(See Appendix B for cable part numbers)

ServSwitch MultiVideo to KVM station cables

The KVM cable connects a keyboard, video monitor, and mouse to the ServSwitch MultiVideo. The KVM cable is configured with a DB25M connector on one end and a connector for the keyboard, video, and mouse cables on the other end. These KVM cable connectors should be compatible with the types of connectors that are on your KVM stations keyboard, monitor, and mouse cables.

ServSwitch MultiVideo to CPU cables

A CPU cable is used to connect each computer to the ServSwitch MultiVideo. The CPU cable connects from the DB25F CPU ports on the ServSwitch MultiVideo to the keyboard, video, and mouse ports on each CPU. This cable is configured with a DB25M connector on one end and a connector for the keyboard, video, and mouse on the other end. These CPU cable connectors should be compatible with each CPUs keyboard, video, and mouse port.

ServSwitch MultiVideo Master to Slave unit cables

In systems needing access to additional CPUs, the ServSwitch MultiVideo can be cascaded to other units. To cascade a ServSwitch MultiVideo to other "Slave" units, you will need one DB25M to DB25M, switch-to-switch cable for each expansion unit.

KEYBOARD COMMANDS

Table 3 shows the keyboard commands that are available for all models. To issue a keyboard command, first press and release the left control [Ctrl] key, then, within 2 seconds, issue the command. <Ctrl> in the key sequence column is a press and release of the left control key.

Command	Key sequence	Description
Select computer	<Ctrl> nnn where nnn = computer number	Connects the KVM station to the selected computer
Next computer	<Ctrl> +	Selects next sequential CPU
Previous computer	<Ctrl> -	Selects previous sequential CPU
Scan ON	<Ctrl> S	Turns scan mode on
Scan OFF	<Ctrl> X	Turns scan mode off
Scan rate	<Ctrl> Tnnn where nnn=1 – 999	Sets pause time, in seconds, before switching to next CPU port in scan mode
Set mode	<Ctrl> Mnn <Enter> where nn = mode value from Table 4	Alternate way to configure keyboard and mouse
Null mouse command	<Ctrl> N	Used to re-sync a PS/2 mouse
Reset mouse	<Ctrl> O (alpha O)	Resets computer's mouse (Win NT / 2000 only)
Reset command	<Ctrl> R	Resets and enables mouse and keyboard on currently selected computer
Max computers	<Ctrl> Pnnn	Total ports used (all units)
Units	<Ctrl> Unn	Number of Slave units
Width	<Ctrl> Wnn	Number of ports on Slave units
Set typematic rate value	<Ctrl> Ann <Enter> where nn=value from Table 5	Sets keyboard typematic rate and delay. Default = 20
Identify Rom Rev	<Ctrl> I	Identify Rom revision-Issue from command prompt or editor
Screen blanking	<Ctrl> Vnnn <Enter> where nnn=0-999	Blanks screen after no keyboard or mouse activity 0-disables blanking
MAC Opt swap	<Ctrl> B <Enter>	Swaps Mac Opt and Alt keys
Keep	<Ctrl> K	Saves to flash memory

Table 3. Keyboard commands

Table 4 shows the available mode values for the keyboards and mice that are supported. To change the default keyboard or mouse types from a PC mode 2 keyboard and PS/2 mouse, first connect to the CPU port that the computer keyboard or mouse needs changing, ([Ctrl],CPU port #,[Enter]) then issue the mode command [Ctrl],Mnn,[Enter], where nn is the mode value from Table 4.

Mode value	Description
1	CPU keyboard = PC mode 1 (Some IBMs & PS/1's)
2	CPU keyboard = PC mode 2 (Most PCs)
3	CPU keyboard = PC mode 3 most (RISC) Unix w/stations
4	CPU keyboard/mouse = Apple ADB
5	CPU keyboard/mouse = Sun
6	CPU mouse = PS/2 mouse – any brand
7	CPU mouse = 2-button serial (Microsoft - 7 bit)
8	CPU mouse (Reserved for future use)
9	CPU mouse/= 3- button serial (Mouse systems)
10	CPU mouse = PS/2 wheel
11	CPU Keyboard/mouse = USB-PC/MAC
12	CPU Keyboard/mouse = USB-Sun
20	Keyboard = PC – 101/102- PC
21	Keyboard = PC – 104/105-PC Win95
30	Mouse = PS/2 or PS/2 wheel
31	Mouse= Serial 2-button (7 bit-Microsoft)
32	Mouse = Serial 3-button (8-bit – not used)
33	Mouse = Serial 3-button (Mouse systems)
40	Keyboard & mouse - Set all ports to Apple ADB
50	Keyboard & mouse - Set all ports to Sun
60	Keyboard & mouse - Set all ports to PC2 kbd/PS/2 mouse

Table 4. Mode commands

Rate Keys/ Sec.	Rate Value	Rate Keys/ Sec.	Rate Value	Rate Keys/ Sec.	Rate Value	Rate Keys/ Sec	Rate Value
30.0	31	15.0	23	7.5	15	3.7	7
26.7	30	13.3	22	6.7	14	3.3	6
24.0	29	12.0	21	6.0	13	3.0	5
21.8	28	10.9	20	5.5	12	2.7	4
20.0	27	10.0	19	5.0	11	2.5	3
18.5	26	9.2	18	4.6	10	2.3	2
17.1	25	8.6	17	4.3	9	2.1	1
16.0	24	8.0	16	4.0	8	2.0	0

Table 5. Typematic value

Keyboard command usage

When using keyboard commands to enter information to the ServSwitch MultiVideo, please observe the following guidelines to avoid entering incorrect values or no values.

1. All commands start with a press and release of the left control key.
2. Commands following the press and release of the left control key must be entered within 2 seconds or the command is aborted and the additional keystrokes will be sent to the selected computer and not the ServSwitch MultiVideo.
3. Use only the numeric keys above the keyboard and not the numeric keypad.
4. Letter commands such as <Ctrl> M are not case sensitive and are only shown in uppercase for clarity. Do not use the shift key to enter letter commands.
5. To connect to the previous or next computer, the keyboard command is <Ctrl> - or <Ctrl> +. The plus and minus keys on the keypad will connect to the next or previous computer. The - and + keys on the keyboard, next to the backspace key vary from country to country as to their usage. These keys can still be used to connect to the next or previous computer.

Configuration Menus

Main configuration menu
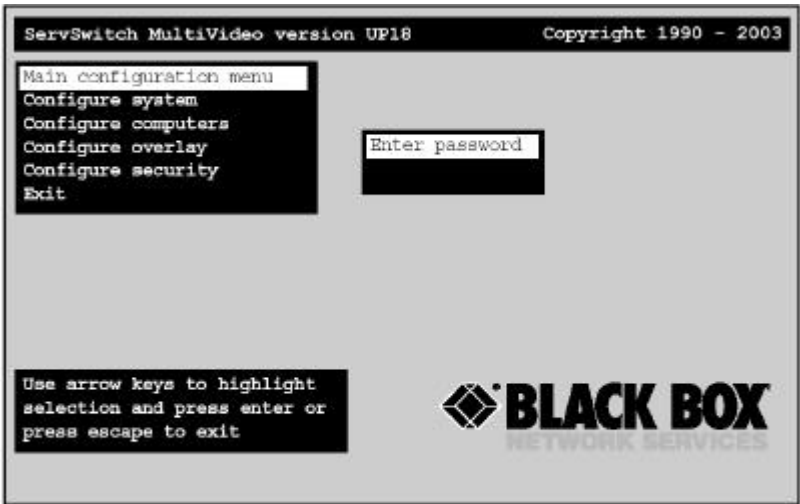
Figure 3. Main Menu

The ServSwitch MultiVideo uses a special command to establish communication to the Unit and not a CPU. This command input is a press and release of the left control <Ctrl> key, then the command. The command must be entered within 2 seconds of pressing and releasing the left control key or the ServSwitch MultiVideo re-establishes communication with the connected CPU.

The main configuration menu is accessed from the keyboard by pressing and releasing the left control <Ctrl> key and within 2 seconds pressing the F12 key. The main configuration menu will display on the KVM monitor. From this menu, you can configure the system, configure the connected computers, the appearance or overlay of the displayed menus, and assign unique passwords for accessing the configuration menus and a password for accessing the connected computers. Use the up/down arrow keys to select which section menu to configure and press enter.

```
Configure system

Keyboard and mouse type
Keyboard        PC 104/105          PC 101/102
Mouse           PS/2                PC 104/105

Expansion
Maximum computers    8
Expansion units      0
Expansion width     16

Scan settings
Scan time (seconds)  5
Scan mode          Off
Power on scan      Off

Keyboard typematic
Rate (keys/sec)     20
Delay             Fast


This model supports the PC keyboard only
```
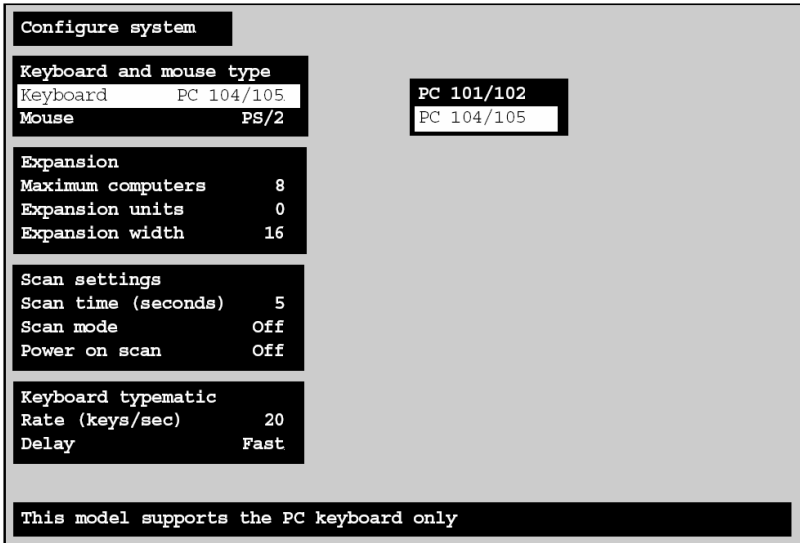
Figure 4. Configure System menu

By selecting "SYSTEM" from the main menu and pressing enter, the "Configure system" menu will display. From this menu, you can configure the KVM stations keyboard and mouse, the expansion information, the scan settings, the keyboard settings or typematic rate, delay and the Sun language settings. (ServSwitch Ultra Multivideo)

Keyboard and mouse type (KVM station)

To configure the keyboard or mouse type, use the up/down arrow keys and select keyboard or mouse and press enter. A display box will appear listing the choices for the keyboard or mouse. Use the up/down arrow keys to select the correct keyboard or mouse and press enter. The select choices are:

Keyboard choices	Mouse choices
101/102	PS/2 or PS/2 wheel
104/105	Serial 2-button
	Serial 3-button

Expansion

If your system consists of cascaded units, the expansion section of the Configure System menu must be properly configured to provide the needed information to manage the slave units.
It is recommended that all slave units have the same number of CPU ports. To change the "Maximum computers", "Expansion width", and "Expansion units", use the up/down arrow keys and select the item and press enter. An input box will display for a new value.

Maximum computers
This setting configures the total number of computers that are connected and provides a wrap around value for scanning and the plus/minus commands. Switching commands are validated against this value for a valid port number. The "Maximum computers" value is the Expansion width value times the number of slave units plus the CPU ports on the master unit that are not used for expansion.   Enter the number of connected computers and press enter. Valid entries are 2 to 256.

Expansion width
The "Expansion width" setting determines how many computers are connected to a slave unit. If the slave units are 4 port units, the width value would be 4. If they are 8 port units, the expansion width value would be 8. If the expansion units are a mixture of 4, 8, and/or 16 port units, the "Expansion width" value is the number of CPU ports on the expansion unit with the greatest number of ports.

Expansion units
The "Expansion units" setting is the number of slave units that are connected to the master unit. This value determines which computer number is associated with which physical connector.
If no expansion units are used, this number should be set to zero.

Scan settings

The scan settings section determines the amount of time in seconds that a computer's video is displayed before automatically switching to the next sequential computer. The scan mode can be turned on or off and set to automatically scan the computers when the ServSwitch MultiVideo is powered up.

Scan time (seconds)
To change the scan time, highlight "Scan time" and press enter. An input box will display for a new value. Enter the new scan time in seconds and press enter. Valid entries are 1 to 999.

Scan mode
This value turns scanning on or off. To change this value, select "Scan mode" and press enter. An input box will appear. Select "On" or "Off" and hit enter.
Power on scan
Setting this value to "On" will enable scanning when the ServSwitch MultiVideo is powered on. To change this value, select "Power on scan" and hit enter. Use the up/down arrow keys to select "OFF" or "ON" and press enter.

Keyboard settings

The keyboard setting section of the configure system menu is used to change the typematic rate and delay for PC keyboards and also to set the language type for Sun keyboards.

Rate (keys/sec)
To change the rate value, highlight "Rate (keys/sec)" and press enter. An input box will appear. Choose the rate value from table 5 that represents the Rate keys/sec needed and press enter.

Delay
This setting is for PC keyboards only. It is used to adjust how long, after a key is depressed and held, that key starts to repeat. To change the delay value, select "Delay" and press enter. A list box will display showing the choices available. Use the up/down arrow keys to select the delay rate wanted and press enter.

The choices are:
- Slow (1 second)
- Medium (750 ms.)
- Fast (500 ms.)
- Fastest (250 ms.)

Sun Language (ServSwitch Ultra MultiVideo)
If the Sun keyboard type you are using is not a US Sun keyboard, the language can be changed to the correct language keyboard. To change the language type, select "Sun Language" and press enter. A list box will display showing the language choices available. Use the up/down arrow keys to select the correct Sun Keyboard language and press enter.

The choices are:
- US
- US Unix
- French
- Danish
- German
- Italian
- Neth/Dutch
- Norwegian
- Portuguese
- Spanish
- Swed/Finn
- SWFrench
- SWGerman
- UK
- Korean
- Taiwan
- Japan
- FrCanadian

```
┌─────────────────────────────┐
│ Configure computers         │
└─────────────────────────────┘

Number Computer name   Keyboard Mouse
     1>Computer   1     PC2      PS/2
     2 Computer   2     PC2      PS/2
     3 Computer   3     PC2      PS/2
     4 Computer   4     PC2      PS/2
     5 Computer   5     PC2      PS/2
     6 Computer   6     PC2      PS/2
     7 Computer   7     PC2      PS/2
     8 Computer   8     PC2      PS/2
     9 Computer   9     PC2      PS/2
    10 Computer  10     PC2      PS/2
    11 Computer  11     PC2      PS/2
    12 Computer  12     PC2      PS/2
    13 Computer  13     PC2      PS/2
    14 Computer  14     PC2      PS/2
    15 Computer  15     PC2      PS/2
    16 Computer  16     PC2      PS/2

Name of computer up to 16 characters
```
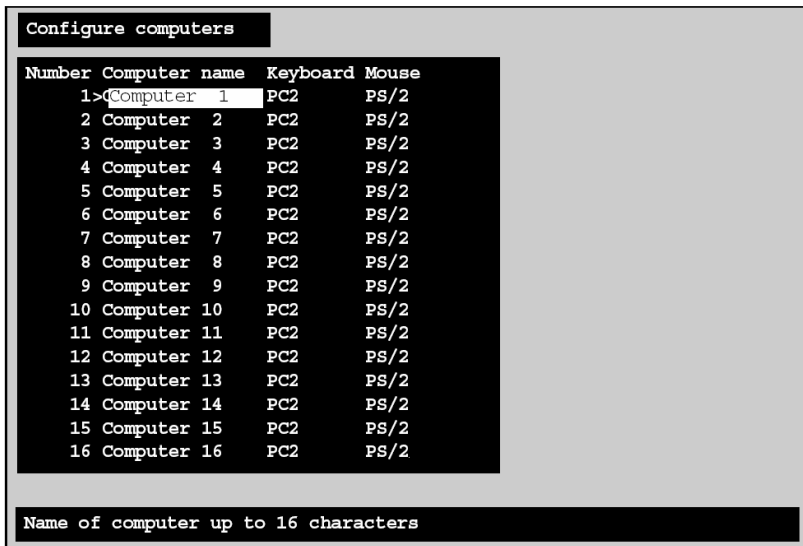
Figure 5. Configure computer menu

The "Configure computer" menu allows you to assign unique names to each computer and change the keyboard and mouse type for each connected computer. Use the page up/down keys if there are more than 16 computers connected in the system.

Computer name
The name of the connected computers can be changed from computer x to any name up to 16 valid ASCII characters. Assigning a unique name to each computer gives you the ability to know what computer you are connecting to without having to remember or use a cross-reference list.

To change the computer name, select the "Computer name" to change and press enter. An input box will display. Enter the new computer name and press enter.

Keyboard
To change a computers keyboard and/or mouse, use the up/down arrow keys to select (highlight) which computer to change the keyboard or mouse. Use the left/right arrow keys to select either the keyboard or mouse to change and press enter.
A window will appear listing the keyboard or mouse types available. Use the up/down arrow keys and select the correct keyboard or mouse type needed for the selected computer and press enter. The keyboard or mouse type will change to the new type.

USB keyboards for PC and Sun computers are fully supported. If the system uses USB keyboards, they must be set-up from the configure computer menu.

Save the changes when finished configuring each computer.

The keyboard and mouse selections are:

Keyboard choices
- PC1
- PC2
- PC3
- USB-PC
- USB-Sun
- Apple*
- Sun*

Mouse choices
- PS/2
- PS/2 wheel
- Serial 2-button
- Serial 3-button

* Available on Ultra MultiVideo models only.

```
┌─────────────────────────────────────────────────┐
│  Configure overlay                              │
│  ┌───────────────────────────────────────────┐  │
│  │ Miscellaneous                             │  │
│  │ Color scheme              Aquarium        │  │
│  │ Resolution          PC1 640x480x60Hz      │  │
│  │ Screen saver              Black screen    │  │
│  │ Screen saver time (seconds)        0      │  │
│  ├───────────────────────────────────────────┤  │
│  │ Computer select window                    │  │
│  │ Background color    Transparent blue      │  │
│  │ Text color                      White     │  │
│  │ Position                X=  3   Y=  3     │  │
│  ├───────────────────────────────────────────┤  │
│  │ Computer label                            │  │
│  │ Background color Transparent magenta      │  │
│  │ Text color                     Yellow     │  │
│  │ Position                X=  3   Y= 90     │  │
│  │ Show computer number              Yes     │  │
│  │ Fade out (seconds)                 20     │  │
│  │ Font                   16x32 classic      │  │
│  ├───────────────────────────────────────────┤  │
│  │ Colors of the configuration menu          │  │
│  └───────────────────────────────────────────┘  │
└─────────────────────────────────────────────────┘
```
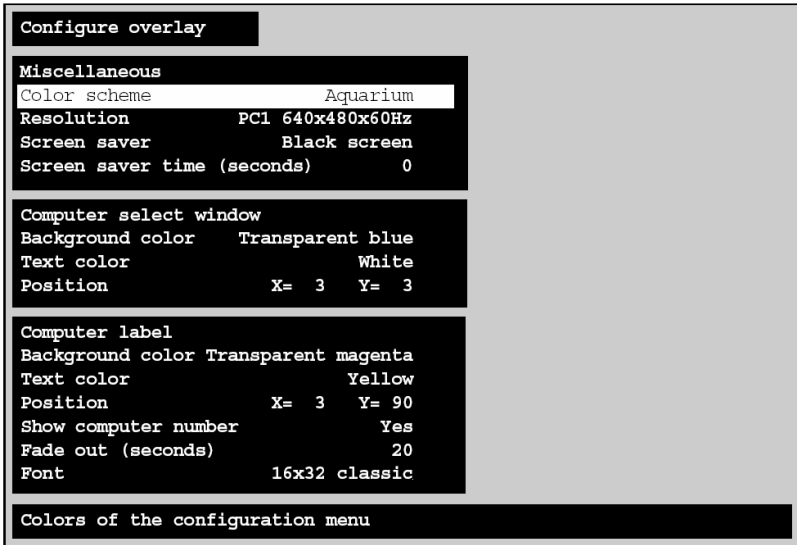
Figure 6. Configure overlay

The "Configure overlay" menu is used to configure the color of the menus, the resolution of the video when no computer video is present, the screen saver type and time, the computer select window appearance, and the displayed computer label. The "Configure overlay" menu is accessed by first calling up the main configuration menu (<Ctrl>, F12), and then selecting "Configure overlay" and pressing enter.

Configure overlay - Miscellaneous

Color scheme
The default setting is Aquarium. To change this, select "Color scheme" and press enter. A selection box will appear listing the 4 choices. Use the arrow keys to select a scheme and press enter. The choices are:

■ Aquarium - cyan, magenta, white, and blue
■ Tuxedo - black, red, and white
■ Night sky - blue, black, and white
■ Forest - green, black, cyan, and blue

Resolution
Use this configuration to set the resolution for the KVM stations video if no computer video is present. To change the setting, select "Resolution" and press enter. A selection box will appear listing the choices.
The default setting is PC2, 640 x 480 @ 60Hz.

DO NOT select a setting that the KVM monitor cannot support

The choices are:

- PC1   1640 x 480 @ 60Hz
- PC2   640 x 480 @ 72Hz
- PC3   640 x 480 @ 75Hz
- MAC1*   640 x 480 @ 67Hz
- MAC2*   832 x 624 @ 75HZ
- SUN1*   1152 x 900 @ 66Hz
- SUN2*   1152 x 900 @ 76Hz
- HV*   640 x 480 @ 66Hz
- CS*   1152 x 900 @ 66Hz

* Available on ServSwitch Ultra MultiVideo models only.

Screen saver
This feature activates a screen saver when there is no keyboard or mouse activity for a specified time period. To change the setting, select "Screen saver" and press enter. A selection box will appear listing the 4 types of screen savers that are available. Use the up/down arrow keys to select a new screen saver and press enter.
The default screen saver is Fireflies.

The choices are:

- Black screen
- Fireflies
- Weaving
- Bounce

Screen saver time (seconds)
This sets the time the screen saver activates when no keyboard or mouse activity is present. To change the time, select the item and press enter. An input box will display to enter a new value. Valid entries are 0 to 999 seconds. A value of 0 disables the screen saver function.

Configure overlay - Computer select window

The "Computer select window" section allows you to change the background and text colors of the computer select window, and the text position on the screen.
Use the up/down arrow keys to select the item to configure and press enter.

DO NOT set the background and text colors the same.

Background color
To change the background color, select "Background color" and press enter. A color selection box will display showing the available background colors. Use the arrow keys to select either a solid or transparent color and press enter.
The default background color is Transparent blue.

The choices are:

Solid colors	Transparent colors
■ Black	■ Clear
■ Red	■ Red
■ Green	■ Green
■ Yellow	■ Yellow
■ Blue	■ Blue
■ Magenta	■ Magenta
■ Cyan	■ Cyan
■ White	■ White

Text color
To change the text color, select it and press enter. A color selection box will display showing the available text colors. Use the arrow keys to select either a solid or transparent color and press enter.
The default text color is white. The color choices are the same as the background selections.

Computer label

The "Computer label" section allows you to customize the display of the computer label. The colors, position, fade out time, font and whether the computer number is displayed.

Background color
To change the background color, select "Background color" and press enter. A color selection box will display showing the available background colors. Use the arrow keys to select either a solid or transparent color and press enter. The default background color is Transparent blue. The choices are the same as the background colors for the computer select window.

Text color
To change the text color, select it and press enter. A color selection box will display showing the available text colors. Use the arrow keys to select either a solid or transparent color and press enter.
The default text color is white. The choices are the same as the background colors for the computer select window

Position

This item sets the position of the computer label window on the display screen. This position is maintained at all screen resolutions.

To change the position, select "Position" and press enter. The overlay page will disappear and a label box will display. Use the arrow keys to move the label box anywhere on the screen. Press enter when the desired position is reached. The screen position values are entered automatically into the x (horizontal) and y (vertical) fields. Setting the position off the edge of the screen may cause an out of sync image.

Valid entries are 0 – 64 (horizontal) and 0 – 99 (vertical).

Show computer number

This sets whether the computer number and computer name are displayed on the KVM stations monitor when a computer is selected. Select this item and press enter. A YES/NO box will display. Use the up/down arrow keys and select either YES or NO and press enter.

Fade out (seconds)

This controls how long the computer label displays before disappearing. A value of zero (0) disables this function and the label will not be displayed. A value of 255 causes the computer label to always be displayed. To change this value, select it and press enter. An input box will display for a new value. Enter the value wanted between 0 and 255 and press enter.

(<Ctrl> D, <Enter> will display the label at any time)

Font

This item sets the font type for the computer label. To change the font, select "Font" and press enter. Use the up/down arrow keys to select a new font type and press enter.

The font choices are:

- 8 x 16 modern
- 8 x 16 classic
- 16 x 24 modern
- 16 x 24 classic
- 16 x 32 modern
- 16 x 32 classic

The actual size of the font will vary depending on the resolution of the video.

As the resolution increases, the fonts become smaller.

The modern font is sans-serif, the classic is similar to Times.

```
┌──────────────────────────────────────────────────────────────────┐
│ ┌──────────────────────┐                                          │
│ │ Configure security   │                                          │
│ └──────────────────────┘                                          │
│ ┌────────────────────────────────────┐   ┌──────────────────────┐ │
│ │ Security                           │   │ New password         │ │
│ │ Configuration password  ********   │   │                      │ │
│ │ Access password         ********   │   └──────────────────────┘ │
│ │ Access time                  999   │                            │
│ └────────────────────────────────────┘                            │
│                                                                    │
│                                                                    │
│ ┌──────────────────────────────────────────────────────────────┐ │
│ │ Protects access to configuration menu, up to 8 characters    │ │
│ └──────────────────────────────────────────────────────────────┘ │
└──────────────────────────────────────────────────────────────────┘
```

Figure 7. Configure security menu

The "Configure security" menu allows for setting a configuration password and an access password. The configuration password restricts access to the configuration menus and the access password limits access to the connected computers.

Configuration password
To assign a "Configuration password", select it from the "Configure security" menu and press enter. An input box will appear. Type in the desired configuration password (case sensitive, 8 chars/max) and press enter. A confirmation box will display, re-type the password and press enter. When the password is saved, the next time the configuration menu is called up (<Ctrl>, F12), this password must be entered.

Access password
This feature is used to restrict unauthorized access to the connected computers. To assign an access password, select it from the menu and press enter. Enter this password the same way as you entered the configuration password. When the ServSwitch MultiVideo is powered on or if you disconnect from a computer, a login box will display requesting the access password.

Access time (minutes)
The access time setting is used to automatically log out of a switch after the set time period. When there is no keyboard or mouse activity for this time setting, the user is automatically logged out. To change this value, select it from the menu and hit enter. An input box will display for a new access time value. Enter the new time in minutes and hit enter. Valid times are 1 to 999 minutes.

Logging off the system

To log off the system and lock the keyboard enter <Ctrl> and the L key to disconnect from the switch. To gain access to the connected computers, an access password must be entered if one has been assigned.

Resetting the passwords

The passwords can be reset if they are ever forgotten. To reset them, first turn off the ServSwitch MultiVideo and disconnect the power cord or power adapter. Carefully remove the top chassis cover exposing the PCB. Put a jumper on the two pins labeled "Password reset jumper" and power on the switch. Call up the configure security menu and enter a new configuration password, access password and access time. Press <Esc> to return to the main menu. Select "Exit" and press enter. You will be prompted to save the changes. Select "YES" and press enter. The new password settings will be saved in flash memory. Next, turn off the ServSwitch MultiVideo and remove the installed jumper. Replace the top chassis cover and power the switch back up. The new passwords will be active after power is applied.

Organizing the system

It is recommended that before any ServSwitch MultiVideo configuration or cable connections be made, plan how the system will be laid out, the placement of the CPUs, the placement of the ServSwitch MultiVideo, and the placement of the monitors. Take into consideration the cable lengths needed to connect to the KVM station, each CPU, and each monitor. Identify which computer will be connected to each CPU connector and if that computer uses a PC mode 2 keyboard and PS/2 mouse. If not, the CPU port should be pre-configured to change the default keyboard and mouse types to the correct settings.

If you are adding Slave units to expand your system, it is important that you understand the width command, especially if your system consists of different models (2-CPU ports, 4-CPU ports, and 8-CPU ports). For example, if your system consists of an 8-port master, two 8-port Slave units and one 4-port Slave unit, and you program the expansion width to 8, there will be 4 blind ports on the 4-port unit. In other words, the 4-port unit will appear to the system as having 8 CPU ports. CPU ports 5-8 are blind ports. If you program the expansion width to 4, then only CPU ports 1-4 on the 8-port Slave units can be accessed. In systems that have a mixture of models, it is recommended that the width value be set to the number of CPU ports on the Slave unit with the most CPU ports.

Installation – Single unit

This section explains how to connect and initially configure the ServSwitch MultiVideo. If you are cascading two or more units together, please refer to the Cascade installation section.

Connecting the KVM station

Connect the KVM station's keyboard, video monitor, and mouse cables to the corresponding connectors on a KVM cable as shown in Figure 8. The KVM cable should have the correct connector types for the equipment used. Connect the DB25M connector into the connector labeled KVM-1 on the rear panel. If a serial mouse is used on a KVM station, all mice in the system (on every computer) must be a serial mouse.

Apply power

For the "M" chassis, connect the power transformer to a 110/220-volt source and to the DIN 5F power adapter connector on the rear panel. Press the ON/OFF button in the front panel once to turn on the unit. For the "B" and "C" chassis, connect a power cord to 110-220-volt source and to the IEC320 connector on the rear panel. Press the rocker switch to the ON position.

The green POWER LED will turn on and the power-on diagnostic will run. Wait until the SELECT 1 LED on the front panel lights before entering any configuration or switching commands. This assures that the internal diagnostics have completed. If, for any reason, you need to cycle power on a unit, turn the power off and wait 10 seconds before re-applying power.

On initial power-up, computer 1 is automatically connected. The SELECT 1 LED on the front panel will light indicating that the KVM station is connected to the CPU-1 port.

Connecting the computers

Each computer that is connected to the ServSwitch MultiVideo is connected using a CPU cable. This cable connects from the DB25M CPU port on the rear panel to the keyboard, monitor, and mouse ports on a CPU (See Figure 8). The keyboard, monitor, and mouse connectors on the CPU cable should be compatible with the corresponding ports on the computer being connected. The additional video ports on the CPU are connected to the DB25F connectors using a DB25F to HD15 cable. For ease of installation and configuration, it is recommended that the computers' power be off at this time. When a computer is booted, the ServSwitch MultiVideo can automatically determine the keyboard and mouse types of the connected CPUs.

If removing power from a computer is not feasible, the ServSwitch MultiVideo should be pre-configured, if needed, before the CPU is connected. The default keyboard and mouse types set for each CPU port are; PC mode 2 keyboard and a PS/2 mouse. If the computer being connected does not use a PC mode 2 keyboard and a PS/2 mouse, pre-configure the CPU port for the correct keyboard and mouse type. Once the CPU port has been configured, the computer can be connected to the ServSwitch MultiVideo. This procedure should only be done if the computer's keyboard and mouse can be disconnected and re-connected with power applied to the computer without affecting the interface.

To pre-configure a CPU port, perform the following:
(Note: the computer should not be connected to the CPU port at this time)
1.   Apply power to the Unit and the KVM station monitor.
2.   Switch to the CPU port to pre-configure by pressing and releasing the left control [Ctrl] key, type in the CPU port number, and press [Enter].
3.   Issue the "Set mode" command. (Ctrl,Mnn,[Enter])
     Example : If the keyboard is a PC mode 3 keyboard, the command would be Ctrl,M3,[Enter] (See Table 3)
4.   Select the correct mouse type from Table 4.
5.   Issue the "Set mode" command (Ctrl,Mnn,[Enter])
     Example: if the mouse type is a serial 2 button mouse, the command would be Ctrl,M7,[Enter]
6.   Issue the "Keep" command to save the new values (Ctrl,K,[Enter])
7.   Perform steps 2 through 7 for each CPU port that needs the default keyboard and mouse changed to a different type.

When all needed CPU ports have been pre-configured, the computers can be connected. Perform the following for each computer to be connected:

(Refer to the Troubleshooting section if needed and Figure 8 for a example of a single unit installation)
Steps
1. Turn on the KVM stations monitor and apply power to the ServSwitch MultiVideo.
2. Wait until the "SELECT 1" LED on the front panel lights.
3. Switch the ServSwitch MultiVideo to CPU port x. (Ctrl,port #,[Enter]) (Starting with x = 1)
4. Connect the computer to the CPU port being configured using the appropriate CPU cable.
5. Connect the additional CPU video outputs to the corresponding connector on the ServSwitch MultiVideo using the appropriate cable.
6. Boot the computer, if needed. You should see the boot-up sequence on the KVM monitor. If the computer was connected to a pre-configured CPU port with power applied, you should see that computers video.
7. Switch to the next CPU port to connect a computer to as defined in step 3 and perform steps 4, 5 and 6 for this computer and for then for the remaining CPU ports.
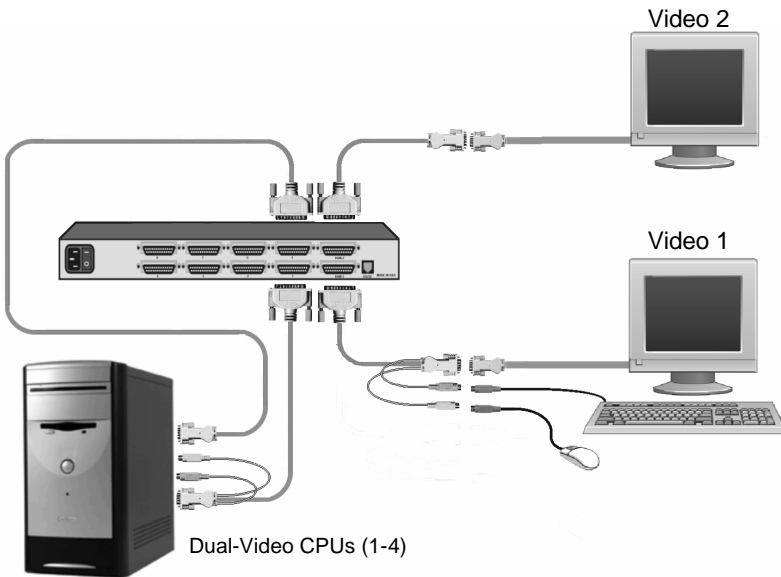

Figure 8. SW0402A Unit installation

Installation – Cascading units

The ServSwitch MultiVideo units can be cascaded together to expand the number of computers that can be accessed from the KVM station. When cascading units, one unit becomes the "Master" unit and all others are "Slave" units. Each computer and video port on the master unit can be connected to a Slave units' KVM and video connectors. Figure 9 illustrates the addition of two 4-port Slave units. Using 8 port units, the master unit can connect to 8 Slave units for a total of 64 CPU ports.

The ServSwitch MultiVideo "Master" must be configured to properly manage the cascaded units. The maximum number of computers, the number of Slave units connected, and the number of ports (width) on the Slave units must be entered and saved. In the example in Figure 9, the maximum computer entry would be 16, the number of Slave units is 2, and the number of ports, or width, on each Slave unit would be 8. It is recommended that all Slave units have the same number of computer ports but it is possible to chain different models.

The "Maximum computers" value is figured as follows:
If all Units in the system have the same number of CPU ports, (no mixed models) then you can count the CPU ports used to connect to the computers. The ports on the master unit used for expansion should not be counted.

If there is a mixture of models in the system, the "Maximum computers" value is the "Width" value times the number of Slave units plus the CPU ports on the master unit that are not used for expansion. Valid entries are 2 to 64.

In the example in Figure 9, the width value is 4, the number of Slave units is 2, and the CPU ports on the master unit that are not used for expansion is 2. The Maximum computers value would be 4 x 2 + 2 or 10.

To configure the "Maximum computer", "Units", and "Width" values, connect a KVM station to the Master unit. Power on the KVM monitor and the Master unit. Wait until the SELECT 1 LED lights.

To enter the "Maximum computer" value, press and release the left control [Ctrl] key,P,nnn,[Enter], nnn=Maximum computers value.

The "Units" value is the total number of Slave units in the system. To enter the "Units" value press and release the left control [Ctrl] key,U,nn,[Enter], nn=number of Slave units. Valid entries are 1-8.

The "Width" value is the number of CPU ports on a single Slave unit. To enter the "Width" value press and release the left control [Ctrl] key,W,nn,[Enter], nn=number of ports on an Slave unit.
Refer to "Organizing the system" for further information.
Save changes by pressing and releasing the left control [Ctrl] key, K, [Enter]

Connecting "Slave" units

To properly install the Slave units, follow the below steps.
Step: (Refer to Figure 9)
1. Connect the KVM stations keyboard, monitor, and mouse to the master units KVM connector using the appropriate KVM cable.
2. Connect CPU port #1 and the video ports on the master unit to the KVM connector and video ports on Slave unit #1 using a DB25 to DB25 expansion cable.
3. Connect the next sequential CPU and video ports on the master unit to the KVM connector on the next sequential Slave unit.
4. Connect the remaining Slave units to the master unit.

Connecting the computers

When all "Slave" units have been connected, the computers can be connected. The following installation steps use the example inFigure 9. The computers are installed on the 2-port and 8-port model in a similar manor. It is recommended that the computers being connected be powered off. If removing power is not feasible, perform the pre-configuration procedure, if needed, before connecting a computer with power applied.

Steps:
1. Apply power to all ServSwitch MultiVideo and the KVM monitors.
2. Switch to the CPU port the computer is being connected to by pressing and releasing the left control [Ctrl] key, type in the CPU port number (starting with port #1), and press [Enter].
3. Connect the computer to the CPU port using the appropriate CPU cable. If the computer being connected does not use a PC mode 2 keyboard and a PS/2 mouse, or is being connected with power applied, pre-configure the CPU port, if needed, before connecting the computer. Change the default keyboard and mouse from a PC mode 2 keyboard and a PS/2 mouse to the correct ones the computer uses. If the computer being connected uses a PC mode 2 keyboard and a PS/2 mouse, skip the pre-configuration procedure and connect the computer to the assigned CPU port.

NOTE: Connecting a computer's keyboard and mouse to the ServSwitch MultiVideo with power applied to the computer should only be done if the keyboard and mouse can be disconnected and re-connected without affecting the interface.

Pre-configuration procedure
Issue the mode command to change the keyboard and issue the command again to change the mouse type or issue a global mode command to change all. Make sure the ServSwitch MultiVideo is connected to the correct CPU port.
   a. Select the correct keyboard type, if needed, from Table 4.
   b. Issue the "Set mode" command. (Ctrl,Mnn,[Enter])
      Example : If the keyboard is a PC mode 3 keyboard, the command would be Ctrl,M3,[Enter]
   c. Select the correct mouse type, if needed, from Table 4.

d. Issue the "Set mode" command (Ctrl,Mnn,[Enter])
Example: if the mouse type is a serial 2 button mouse, the command would be Ctrl,M7,[Enter]

e. Issue the "Keep" command to save the new values (Ctrl,K,[Enter])

f. Perform steps a through e for each CPU port that needs the default keyboard and mouse changed to a different type.

4. Boot the computer if power was not applied. You should see the boot-up sequence on the KVM monitor. If the computer was connected with power applied, you should see that computer's video.

5. Verify that the keyboard, video, and mouse function properly before proceeding.

6. Switch to the next sequential CPU port as explained in step 2 and perform steps 3-5 for this computer and for the remaining computers.
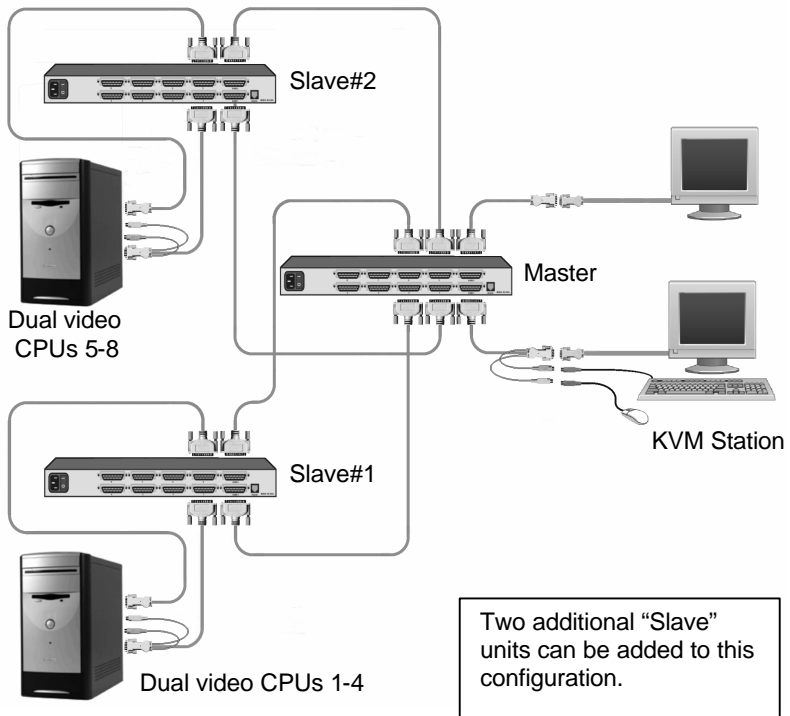

Figure 9. Cascading units

OPERATION

Selecting a computer

To connect to a computer, you can select it from the front panel, select it by keyboard commands, or select it through the RS232 serial port.

Selecting a computer from the front panel

Using the - and + buttons on the front panel will switch to the previous (-) computer port or advance (+) to the next computer.

Selecting a computer using keyboard commands

Press and release the left control <Ctrl> key, then enter the computer port number. Pressing and releasing the left control <Ctrl> key then the + or - key will advance forward or backwards one sequential port.

Selecting a computer through the RS232 port

Selecting a computer can be done through the RS232 port if needed. Contact Black Box for details.

Reset to factory defaults

To reset the ServSwitch MultiVideo to the original factory default settings, first, power down the unit, press and hold the – (minus) switch in and turn the unit's power on. Keep the – (minus) switch held in until the unit switches to the last port on the unit (port 2, 4, or 8). If you release the – (minus) switch before the last port is switched to, the defaults will not be restored.

Rackmounting

The ServSwitch MultiVideo can be rack mounted using a our Rackmount kit. See Appendix D and E for instructions and Appendix B for part numbers.

SERIAL PORT

Serial Port (RS232)

The RS232 serial port on the rear panel is used for sending switching commands from a stand-alone computer or terminal or to load flash firmware upgrades to the unit. A serial cable and an RJ to DB9 adapter are included with the unit. Perform steps 1-3 below to use the serial port.

1. Connect the serial cable to the RS232 serial port on the rear panel and to the RJ12 connector on the adapter.
2. Connect the DB9 connector on the adapter to the stand-alone computer or terminals DB9 COM port.
3. Set the computers communication program for:
   a. 9600 baud
   b. no parity
   c. 8 bits
   d. 1 stop-bit

Firmware update

The ServSwitch MultiVideo's flash memory can be updated with the latest firmware using the RS232 serial port. Updates can be obtained from our web site. Verify the unit's program and kernel versions against the current versions on our web site. To verify the program version, start a text editor application like notepad, press and release the left control (Ctrl) key, then press the "I" key and the program version will display.

To update the firmware, first download the latest revision from our web site and save it to a stand-alone computer that is not connected to the ServSwitch MultiVideo. Connect the serial cable from the serial port of the stand-alone computer as described in steps 1-3. There are two methods of loading the downloaded programs to flash memory.

Method 1 – Using a communication program
1. Press both the - and + switches on the front panel and power on the ServSwitch MultiVideo. LED 1 will light indicating the unit is ready to accept the upgrade file at 9600 baud. To use 57600 baud rate, press the + switch and LED 1 will turn off and LED 4 will light.
2. Run your communication program. Set the baud rate to the correct rate and put the program in direct connect mode. When the - or + switch is pressed, you should see the message:
   "Waiting for file at 9600 or 57600 baud."

3. Send the file to the unit using a simple ASCII text file protocol. While the file is being sent, periods are sent to indicate the file copy progress. Once the file has been sent, you should see the following message:

   "Receive successful"
   "Hit space to program"

4. Hit the space bar to start programming the flash memory. The programming and verifying progress is indicated by sending periods. You should see the following message:
"Programming flash"

…………………
"Verifying flash"

…………………
"Verify successful"
"Hit enter to boot"
5. Hit enter and the Unit will re-start with the new firmware.
6. Hit the enter key to continue. The ServSwitch MultiVideo is now operational with the new firmware update.

If the upgrade is not successful, you will see one of the following error messages:

■ Checksum error or Record error or Data error
■ Receive failed
Try again Y/N?

If any of these errors occur, check the RS232 cable, the connectors, and the adapter. Make sure they are in good working order. Verify the communication program is configured correctly. Enter "Y" to try upgrading the flash again. If programming is unsuccessful, the unit should be serviced.

Method 2 – Using the front panel switches with a file copy.
1. Press both the - and + switches on the front panel and power up the ServSwitch MultiVideo. The ServSwitch MultiVideo is ready to accept the upgrade file. LED 1 will light indicating the unit is set at 9600 baud. To use 57600 baud, press the + switch, LED 4 will light. Copy the file to the unit. While the file is being copied, LED 1 or 4 will flash. Once the file is copied, LED 2 will light.
2. Press and release the + switch, LED 2 flashes off for a brief instant. The flash is now being programmed and verified. LED 3 now lights.
3. Press and release the + switch, LED 3 flashes off for a brief instant. LED 4 now lights.
4. Press and release the + switch. LED 1 now lights. The box is now operational and port 1 is selected. The flash loading procedure is complete.

TROUBLESHOOTING

Computer does not boot, keyboard or mouse error received.
- Cable is loose, reseat cable and on PC hit F1 to continue or reboot computer.
- Wrong cable or keyboard and mouse cables reversed.
- Cable is defective; try using cable from another computer.
- Port on the ServSwitch MultiVideo is defective; try using another port If the problem goes away port is defective.
- Port on computer is defective, try plugging in keyboard or mouse directly if problem remains computer port is defective. If power status LED not lit, fuse on motherboard may be blown.
- Computer keyboard and mouse not configured.

Mouse driver does not load.
- If PS/2 type mouse, computer must be connected to ServSwitch MultiVideo at boot-up time in order for the mouse to be recognized by the computer. Reboot computer with ServSwitch MultiVideo powered on and cable attached.
- Computer keyboard and mouse not configured.

Can't switch computers from keyboard
- Power to the ServSwitch MultiVideo was removed for less than three seconds possibly causing keyboard to lock up. Disconnect and re-connect the keyboard.
- If PS/2 type keyboard and mouse, cables may be reversed.
- Not using left control key. Using numeric keypad instead of keys on top row. Not releasing control key before typing in number. Waiting more than 2 seconds to enter computer number. Using caps lock or shift key.

Wrong or missing characters from those typed
- For PCs, the mode of the keyboard does not match that of the computer. Issue the mode command, usually 1 for IBM PS/2s, 3 for Unix computers, and 2 for all others. The default setting is mode 2. Sometimes an incorrect mode will confuse the computer or keyboard and require re-booting the computer or resetting the keyboard by unplugging and plugging it back in.

Switch to Switch failure
- Verify the firmware in all like switches is the same revision.

Mouse does not move
- Mouse not configured.
- ServSwitch MultiVideo turned off after or not connected when computer booted or application using mouse run. Exit and re-enter application using mouse or issue reset command.
- PS/2 mouse was not connected when ServSwitch MultiVideo powered up or disconnected and reconnected. Issue the reset command or reconfigure the mouse.

PS/2 mouse gets out of sync
- Cabling was disturbed during mouse movement. Issue the null command once or twice to re-sync the mouse. Update mouse driver. Try using ctrl O command to recover if O/S is NT.
- Sun keyboard needs to be reset, with unit power on, disconnect and re-connect the sun keyboard.

Video fuzzy
- Cable too long or wrong type. Verify that resolution and distance match. See Appendix G. Upgrade cable if necessary.

Video not synchronized or wrong color
- Cable is loose, reseat cable.
- Monitor not capable of syncing to video selected, upgrade monitor.
- Cable is defective; try using cable from another computer if problem goes away cable is defective.
- Port on ServSwitch MultiVideo is defective; try using another port. If the problem goes away port is defective.

Lower resolution OK, but can't enter high resolution mode
- Video driver has not been setup for this resolution. Configure the driver.

Slave unit does not switch
- Maximum ports command not issued.
- Width or units command not configured properly. Reconfigure them to match number of computers and how they are connected.

SAFETY

Safety

This ServSwitch MultiVideo KVM switch has been tested for conformance to safety regulations and requirements, and has been certified for international use. Like all electronic equipment, the ServSwitch MultiVideo should be used with care. To protect yourself from possible injury and to minimize the risk of damage to this Unit, read and follow these safety instructions.

- Follow all instructions and warnings marked on this Unit.
- Except where explained in this manual, do not attempt to service this Unit yourself.
- Do not use this Unit near water.
- Assure that the placement of this Unit is on a stable surface or rack mounted.
- Provide proper ventilation and air circulation.
- Keep power cord and connection cables clear of obstructions that might cause damage to them.
- Use only power cords, power transformer and connection cables designed for this Unit.
- Use only a grounded (three-wire) electrical outlet.
- Keep objects that might damage this Unit and liquids that may spill, clear from this Unit. Liquids and foreign objects might come in contact with voltage points that could create a risk of fire or electrical shock.
- Operate this unit only when the cover is in place.
- Do not use liquid or aerosol cleaners to clean this Unit. Always unplug this Unit from its electrical outlet before cleaning.
- Unplug this Unit from the electrical outlet and refer servicing to a qualified service center if any of the following conditions occur:
  - The power cord or connection cables is damaged or frayed.
  - The Unit has been exposed to any liquids.
  - The Unit does not operate normally when all operating instructions have been followed.
  - The Unit has been dropped or the case has been damaged.
  - The Unit exhibits a distinct change in performance, indicating a need for service.

Safety and EMC Regulatory Statements

Safety Information

Documentation reference symbol. If the product is marked with this symbol, refer to the product documentation to get more information about the product.

WARNING   A WARNING in the manual denotes a hazard that can cause injury or death.

CAUTION   A CAUTION in the manual denotes a hazard that can damage equipment.

Do not proceed beyond a WARNING or CAUTION notice until you have understood the hazardous conditions and have taken appropriate steps.

Grounding
These are Safety Class I products and have protective earthing terminals. There must be an un-interruptible safety earth ground from the main power source to the product's input wiring terminals, power cord, or supplied power cord set. Whenever it is likely that the protection has been impaired, disconnect the power cord until the ground has been restored.

Servicing
There are no user-serviceable parts inside these products. Only service-trained personnel must perform any servicing, maintenance, or repair. Only items mentioned in this manual may be adjusted by the user.

Informations concernant la sécurité

 Symbole de référence à la documentation. Si le produit est marqué de ce symbole, reportez-vous à la documentation du produit afin d'obtenir des informations plus détaillées.

WARNING Dans la documentation, un WARNING indique un danger susceptible
d'entraîner des dommages corporels ou la mort.

CAUTION Un texte de mise en garde intitulé indique un danger suscep-tible de causer des dommages à 'équipement.

Ne continuez pas au-delà d'une rubrique WARNING ou CAUTION avant d'avoir bien compris les conditions présentant un danger et pris les mesures appropriées.

Cet appareil est un produit de classe I et possède une borne de mise à la terre. La source d'alimentation principale doit être munie d'une prise de terre de sécurité installée aux bornes du câblage d'entrée, sur le cordon d'alimentation ou le cordon de raccordementfourni avec le produit. Lorsque cette protection semble avoir été endommagée, débrancher le cordon d'alimentation jusqu'à ce que la mise à la terre ait été réparée.
Aucune pièce contenue à l'intérieur de ce produit ne peut être réparée par l'utilisateur.
Tout dépannage, réglage, entretien ou réparation devra être confié exclusivement à unpersonnel qualifié.

APPENDICES

Appendix A. Initial factory settings

Setting	Default value
KVM keyboard/mouse type	Mode 2 – PS/2
CPU keyboard/mouse type	Mode 6 – PS/2
Scan time interval	5 seconds
Power on scan	Off
Maximum ports	Same as physical number of ports
Expansion width	16
Slave units	0
Caps/Numlock/Scroll	Numlock On

Part Numbers:

PC	Multi-Platform	Description
SW0202A	KV0202A	2-CPUs to 1-kbd, 1-mouse, 2-video
SW0204A	KV0204A	2-CPUs to 1-kbd, 1-mouse, 4-video
SW0402A	KV0402A	4-CPUs to 1-kbd, 1-mouse, 2-video
SW0404A	KV0404A	4-CPUs to 1-kbd, 1-mouse, 4-video
SW0802A	KV0802A	8-CPUs to 1-kbd, 1-mouse, 2-video

Appendix B. Parts and cables (Multi-Platform model)

Part number	Description
EHN225-nnnn*	Coax VGA-Sun Kbd-Sun mouse
EHN540-nnnn*	Coax Apple video-Kbd-mouse to DB25M
EHN515-nnnn*	SUN w/ VGA (HD15) Video, SUN Kbd & mouse
EHN560-nnnn*	Coax Apple video-Kbd-mouse to DB25M
EHN215-nnnn*	Apple CPU video-Kbd-mouse to DB25M
EHN206-nnnn*	Coax Sun CPU video-Kbd-mouse to DB25M
ENH245-nnnn*	(Sun 13W3F) DB25M
EHN242-nnnn*	(Sun 13W3M) DB25M
EHN500-nnnn*	SGI-KVM 13W3 / PS2
EHN501-nnnn*	SGI-CPU 13W3 / PS2
EHN520-nnnn*	RS6000 CPU 13W3 / PS2
EHN521-nnnn*	RS6000 KVM 13W3 / PS2

* nnn = Cable lengths in feet

Appendix B1. Parts and cables (PC model)

Part number	Description
EHN283-nnnn*	Coax VGA-PS/2 Kbd-PS/2 mouse to DB25M
EHN151-nnnn*	VGA-PS/2 Kbd-PS/2 mouse to DB25M
EHN270-nnnn*	Coax VGA-AT Kbd-Serial mouse to DB25
EHN052-nnnn*	VGA-AT Kbd-Serial mouse to DB25M
EHN283-nnnn*	Coax VGA-PS/2 Kbd-PS/2 mouse to DB25M
EHN151-nnnn*	VGA-PS/2 Kbd-PS/2 mouse to DB25M
EHN282-nnnn*	Coax VGA-AT Kbd-Serial mouse to DB25M
EHN284-nnnn*	Cascading Cable DB25M to DB25M
EHN041-nnnn*	CPU-VGA HD15M to DB25M)
EHN044-nnnn*	KVM Video only (VGA HD15F to DB25M)
EHN485-nnnn*	CPU-USB
EHN485A-nnnn*	CPU-USB + Audio
EHN382-nnnn*	CPU-VGA/PS2 to DB25M
EHN382A-nnnn*	CPU-VGA/PS2 + Audio to DB25M
EHN383-nnnn*	KVM-VGA/PS2 to DB25M
EHN383A-nnnn*	KVM-VGA/PS2 + Audio to DB25M
EHN154-nnnn*	KVM-VGA/PS2 to DB25M
EHN154A-nnnn*	KVM-VGA/PS2 + Audio to DB25M
PS024	110/220 VAC - Power transformer

 * nnn = Cable lengths in feet

Rackmount Kit

Chassis size	19 inch	23 inch	24 inch
"Mini"	RMK19M	RMK23M	RMK24M
"Slim"	RMK19B	RMK23B	RMK24B
"Full"	RMK19C	RMK23C	RMK24C

Appendix C. General Specifications

Dimensions	Mini chassis 8.8 x 4.85 x 1.75 in 22.3 x 12.3 x 4.4 cm Slim chassis 16.7 x 4.85 x 1.75 in 42.4 x 12.3 x 4.4 cm Full chassis 16.7 x 4.85 x 3.50 in 42.4 x 12.3 x 8.9 cm
Weight	2/4 port, Mini chassis 4lb / 1.8kg 4 port, Slim chassis 6lb / 2.7kg 4/8 port, Full chassis 7lb / 3.2 kg
Environment	0 – 55° C / 32 – 131° F, 5%-80% non-cond. RH
Power	Auto-switching 90 – 240 VAC, 15 watts
Connectors	Power – IEC 320 standard receptacle CPU/KVM connector – DB25F Video ports – DB25 RS232 connector – RJ12, 6 conductor
Video bandwidth	250 Mhz
Video sync	HV, composite, and sync-on-green
Chassis	Electro galvanized steel, black powder coated
Controls	Power switch, - / + switch
Indicators	1 Power LED 2-8 Select LEDs 2-8 Computer power LEDs
Approvals Mini chassis Slim & Full chassis	TUV, CE, VCCI-A, CE UL, cUL, TUV, CE, VCCI-A

Appendix D. Rack mount instructions

The ServSwitch MultiVideo can be mounted in a rack using the Rackmount kits from Black Box.

The optional rack mount kit includes the following items:
- Two black anodized mounting brackets.
- Four 6-32 x 3/8" flat head mounting screws.

To rack mount your ServSwitch MultiVideo, attach the two rack mounting brackets to your unit with the short flange against the unit using the four screws provided. Secure the mounting brackets to the rack using the appropriate size bolts, nuts and lock washers. Using hardware other than that provided could cause damage to the electronics and/or result in loss of mounting integrity. Do not over tighten the screws used to mount the unit to the mounting brackets.

The following general guidelines should be observed when installing your unit into a rack.

1. The ServSwitch MultiVideo is designed to work in an ambient temperature of 0° C to 55° C (32° F – 131° F).
2. Do not block power supply vents or otherwise restrict airflow when rack-mounting this unit.
3. Mechanical loading of the rack should be considered to prevent instability and possible tipping over.
4. Tighten all connectors securely and provide adequate strain relief for all cables.
5. Provide a grounded power source to all units. Pay special attention to overall branch circuit load ratings before connecting equipment to this source. Overloaded circuits are potential fire hazards and can cause equipment failures or poor performance.

Appendix E. Rack mount illustration

KEYBOARD MAPPING FROM PC TO APPLE AND SUN COMPUTERS		
PC 101/102	**APPLE**	**SUN**
Left Control	Left Control	Left Control
Left Alt	Left Cloverleaf	Left Diamond
Right Alt/Alt Graph	Right Option	Alt Graph
Right Control	Power Key	Power Key
Left Control, then Pause, then A	Left Control, then Pause, then A	Stop + A

PC 104/105 (WIN95)	**APPLE**	**SUN**
Left Control	Left Control	Left Control
Left Win95 (Start)	Left Cloverleaf	Left Diamond
Left Alt	Left Option	Left Alt
Right Alt/Alt Graph	Right Option	Alt Graph
Right Win95 (Start)	Right Cloverleaf	Right Diamond
Right Win95 (App)	Power Key	Power Key Right
Right Control	Right Control	Compose
Left Control, then Pause, then A	Left Control, then Pause, then A	Stop + A
Pause or Keypad /		Stop
Keypad *		Again
Keypad 8		Props
Keypad 9		Undo
Keypad 5		Front
Keypad 6		Copy
Keypad 2		Open
Keypad 3		Paste
Keypad 0		Find
Keypad .		Cut
Home		Help
End		Mute
Page Up		Volume Up
Page Down		Volume Down
Delete		Power

Appendix G. Video distance capability

The table below shows the distances, resolution, and quality of video that can be expected with normal or coax cabling. This table applies to the MASTER unit only. There will be some degradation when units are chained together.

Resolution	Video distance capability								
@ 75Hz	5'	10'	20'	35'	50'	75'	100'	150'	200'
640x480	Z4 C4	Z4 C4	Z4 C4	Z3 C4	C4	C4	C4	C3	C3
800X600	Z4 C4	Z4 C4	Z4 C4	Z3 C4	C4	C4	C4	C3	C3
1024x768	Z4 C4	Z4 C4	Z4 C4	Z3 C4	C4	C4	C3	C3	C2
1280x1024	Z4 C4	Z3 C4	Z3 C4	Z3 C3	C3	C3	C2	C2	C2
1600x1200	Z3 C4	Z3 C3	Z2 C3	C3	C3	C2	C2	C2	C1

Legend

Z – Micro Coax
C – Coax cabling

4- Perfect or near-perfect video; Unable to easily detect defects.
3- Very acceptable; Images clear, small reflections around colored letters
2- Acceptable: Slightly fuzzy images, readable text, acceptable usage for short periods of time, can cause eye fatigue.
1- Unusable; images smeared, text not easily readable.

NOTES