



PC *ServerSwitch* **plus**

Product Handbook



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PC ServerSwitch Plus User's Manual

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1.0 PC ServerSwitch Plus - Introduction

The PC ServerSwitch Plus is an eight port device that supports all IBM compatible PS/2 keyboards and mice. The PC ServerSwitch Plus has full-time keyboard and mouse emulation to each PC or server. This assures that there will be no interruptions or interference to boot processes or other CPU activity. The PC ServerSwitch Plus is, therefore, transparent to the CPUs. The video switching circuitry is designed with state of the art video multiplexers that support high resolution graphics adapters with video resolutions in excess of 1600 x 1200 pixels.

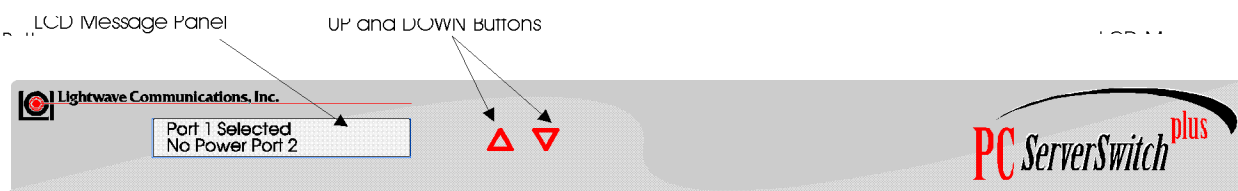


Figure 1: PC ServerSwitch - Front Panel

The PC ServerSwitch Plus has a built in 24 character, 2 line LCD display. The display has one line dedicated to real time monitoring while the first line displays the selected port. The PC ServerSwitch Plus can be controlled either through on-screen menus (see section 3.0) or directly through the up and down buttons on the unit.

PC ServerSwitch Plus features:

- Rack mountable chassis
- Eight ports/chassis, cascadable to 120 ports
- Industry standard cabling
 - 6 pin miniDIN keyboard and mouse cables
 - HD15 video cables
- On-screen menus
- LCD display
- Non volatile memory for server names & options
- Video cascade port for cascading PC ServerSwitch Plus
- Distance between cascaded switches may be up to 50 feet

2.0 PC ServerSwitch Plus - System Information

2.1 Video

The PC ServerSwitch Plus is an active, high bandwidth switch for graphics adapter cards supporting resolutions up to 1600 × 1200 pixels. A constant impedance of 75 ohms is maintained on all video lines in the PC ServerSwitch Plus, so that the signal is not compromised by mismatched impedance. Monitor sense lines are also transported by the PC ServerSwitch Plus. The ID lines are buffered and passed from the monitor to the attached graphics adapters in the servers.

2.2 Keyboard/Mouse

The PC ServerSwitch Plus is an intelligent switch for the keyboard and mouse. Each port emulates the keyboard and mouse fully, allowing an attached server or PC to boot without having been previously selected. Power for each connected device is monitored from the keyboard port. If there is no connection on a port, a message (No Power Port X) will be displayed on the LCD.

Should the keyboard or mouse fail or become disconnected at the PC ServerSwitch, a message will be displayed on the LCD. The attached servers will not be affected because of the keyboard and mouse emulation.

Each port maintains a local copy of the keyboard and mouse configuration. When the user switches from one port to another, the keyboard is set up just as it was prior to switching to another port. The mouse behaves in a similar manner.

3.0 On-Screen Menus

The PC ServerSwitch Plus is controlled either by using the up and down arrows on the front panel of the unit or via on-screen menus.

To activate the on-screen menus, press and release both "Ctrl" keys simultaneously on the keyboard.

Navigating the on-screen menus

- Up Arrow/Down Arrows
- Enter (select or scroll through options)
- Esc (back up one menu)
- Each option has one character that is a different color, press that character to select that option.

NOTE! While in the on-screen menu mode, the "Caps Lock", "Num Lock", and "Scroll Lock" LED's will flash.

NOTE! Reduce downtime by setting up your PC ServerSwitch Plus options, port names, etc. before you connect your PCs or servers.

3.1 Main Menu

Main Menu	
Curr: File Server 1	
System setup...	
start Auto scan	
Jump to port...	
File Server 1	1
File Server 2	2
Print Server	3
Email Server	4
Engineering	5
Enterprise	6
Firewall	7
Fax Server	8
esc Exits	

Pressing and releasing both control buttons (Ctrl-Ctrl) on the keyboard will bring up the main menu of the PC ServerSwitch Plus. This window will show the current port (curr: File Server 1) and the names assigned to each port. Navigate through this window by using the up and down arrows on your keyboard and "Enter" to select the following:

- **System Setup** - Select this option for customizing your PC ServerSwitch Plus.
- **Start Auto Scan** - This option begins a scan of each attached port for a duration determined by the user.
- **Jump to port...** - You can jump to specific ports several different ways. By selecting "Jump to port...", navigate by typing either the name or number of the desired port. The up and down arrows can also be used to select a desired port by pressing "Enter."

See the next page for
"System Setup."

3.2 System Setup

System Setup		
Master	V3.xx	xxxxxx
Port	V3.xx	xxxxxx
Auto Scan Duration:		10 sec
Error Message Duration:		5 sec
ignore Case in Names		
Server Name is Never On		
Port setup...		
menu Window setup...		
Server window setup...		

The options at the main System Setup window can be selected by highlighting the desired option using the up/down arrows on your keyboard to select the option and scrolling through the values of each using either the +/- keys OR the "Enter" key to select your desired value.

- **Auto Scan Duration** - Select the length of time, in seconds, that each port will be scanned during auto scan.
- **Error Message Duration** - Select the amount of time each error message will appear on the LCD as the system scans through the ports.
- **Ignore Case in Names/Case Sensitive Names** - This option lets you dictate whether the names entered in the "Jump to port..." mode need to be case sensitive.
- **Server Name is Never On/Always On/Temporary** - As you scroll through each port and/or as each port goes through auto scan, you have the option of having a window with the port name/number appear permanently, temporarily, or not at all.

Selecting "Port Setup," "Menu Window Setup," or "Server Window setup" will open one of three menus to be discussed in the following pages.

NOTE! System Setup options and values are automatically saved to the memory of the PC ServerSwitch Plus.

3.3 System Setup: Port Setup

System Setup

Master	V3.xx	xxxxxx
Port	V3.xx	xxxxxx

Auto Scan duration: 10 sec
 Error Message duration: 5 sec
 ignore Case in names
 Server Name is Never On

Port setup...
 menu Window setup...
 Server window setup...

Edit Port Names - Select the desired port using the up and down arrows and the "Enter" key. Enter any name, up to 15 characters long.

Turn Auto Scan On/Off
Edit Port Names

☀	Port 1	File Server 1
	Port 2	File Server 2
☀	Port 3	Print Server
	Port 4	Email Server
☀	Port 5	Engineering
	Port 6	Enterprise
	Port 7	Firewall
☀	Port 8	Fax Server

Keypad + or - toggles auto scan
 Enter to edit port name
 ☀ : port auto scan Enabled

Auto Scan Enabled - Select which ports should be scanned during auto scan mode (default is all). Select auto scan on/off by using the + and - keys.

3.4 System Setup: Menu Window Setup

System Setup		
Master	V3.xx	xxxxxx
Port	V3.xx	xxxxxx
Auto Scan duration:		10 sec
Error Message duration:		5 sec
ignore Case in names		
Server Name is Never On		
Port Setup...		
menu Window Setup...		
Server window setup...		

Menu Window Setup
move Up
move Down
move Left
move Right
Background color
Foreground color
Highlight color
Select menu color

Menu Window Setup - Customize the location and color of the Main Menu window by selecting any of the above options and pressing "Enter".

3.5 System Setup: Server Window Setup

System Setup		
Master	V3.xx	xxxxxx
Port	V3.xx	xxxxxx
Auto Scan duration:		10 sec
Error Message duration:		5 sec
ignore Case in names		
Server Name is Never On		
Port Setup		
menu Window setup		
Server window setup		

- move Up
- move Down
- move Left
- move Right
- Background color
- Foreground color

Server Window Setup - Select the color and location of the Server Window by scrolling through the above options using the up/down arrow keys and pressing "Enter" to move window/change colors. Note that only one of the above windows appears at a time. To jump to a specific window, enter the letter that is capitalized in the desired window.

The Server Window contains the port name and number.

File Server 1 1

3.6 Main Menu: Auto Scan

Main Menu	
Curr: File Server 1	
System setup...	
start Auto scan	
Jump to port...	
File Server 1	1
File Server 2	2
Print Server	3
Email Server	4
Engineering	5
Enterprise	6
Firewall	7
Fax Server	8
esc Exits	

no Auto scan

Toggle between the "start auto scan" and "no auto scan" modes by using the +/- keys. Exiting the menus using the escape key will either send you into auto scan mode or to a single PC, depending on which option is selected.

File Server 1 1

Start Auto Scan - During auto scan the PC ServerSwitch Plus will scan through each PC, stopping at each port for the duration assigned in the System Setup menu. The port name and number will appear as the attached PCs are scrolled through.

To exit auto scan mode, press any key on your keyboard. Return to the main menu by pressing Ctrl-Ctrl.

NOTE! Only PCs powered on will be scanned.

NOTE! During auto scan, the port name and number will appear for the duration defined in the System Setup menu. The user selects the server name to be "always on," "temporary," or "never on."

3.7 Main Menu: Jump to Port...

Main Menu	
Curr: File Server 1	
System setup...	
start Auto scan	
Jump to port...	
File Server 1	1
File Server 2	2
Print Server	3
Email Server	4
Engineering	5
Enterprise	6
Firewall	7
Fax Server	8
esc Exits	

Main Menu	
Curr: File Server 1	
System setup...	
start Auto scan	
Enter port:	
File Server 1	1
File Server 2	2
Print Server	3
Email Server	4
Engineering	5
Enterprise	6
Firewall	7
Fax Server	8
esc Exits	

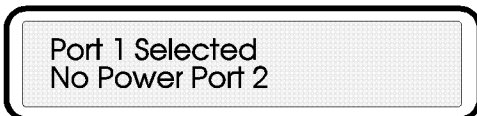
Jump to Port - Jump directly to any port from the Main Menu by entering either the port name or port number.

NOTE! When entering the port name, make sure you enter the name as case sensitive if "Case sensitive names" is selected in the System Setup menu. If you would like to enter names ignoring case, select "Ignore Case in Names" in the System Setup menu.

3.8 The LCD Panel

Each PC ServerSwitch Plus is equipped with an LCD panel that scans through each port. When the PC ServerSwitch Plus is turned on the LCD will show the version of the switch, perform quick diagnostics, and inform you that the "Unit is Ready."

The top line of the LCD shows which port is selected, either by port number or name. You can change the active port on the PC ServerSwitch Plus either via the on-screen menu or by using the up and down buttons on the unit.



The second line of the LCD panel contains error messages for attached PCs.

4.0 Operational Safety

The PC ServerSwitch Plus should be installed in a suitable environment.

- A) The PC ServerSwitch Plus is designed to work below an ambient temperature of 50° C (122° F). Make sure that closed or multi-unit racks maintain an ambient temperature not to exceed 50° C (122° F).
- B) The PC ServerSwitch Plus is designed to operate with convection cooling provided by the air holes located in both sides of the unit. Make sure that these ventilation holes are not obstructed by equipment placed directly in contact with either side of a PC ServerSwitch Plus.
- C) Make sure that each PC ServerSwitch Plus unit is properly supported in the front of the unit, by bolting the PC ServerSwitch Plus into a standard 19 inch rack.
- D) The PC ServerSwitch Plus requires 100-240 Volts, 1 Amp, 50/60 Hz. It is important for each unit to be supplied with the proper operating voltage and current.
- E) All rack mounted equipment should be reliably connected to earth ground. Pay close attention to grounding at all times, particularly when equipment is not directly connected to power mains (such as when a power strip is used).

WARNING! The top cover should not be removed due to the potentially hazardous voltages in the unit. No user serviceable parts are inside the PC ServerSwitch Plus. All repairs should be performed by Lightwave to avoid cancellation of the warranty.

5.0 Installation

The PC ServerSwitch Plus unit is designed to occupy 1.75 inch rack space. Sufficient space is required behind the rear panel of the unit to allow for attached cables bend radius (6 inches should be sufficient). It is helpful to decide if additional units will be added to the configuration at some later date. If cascading (adding PC ServerSwitch Pluses) is to be used, make certain to leave enough space in the rack for additional units. The PC ServerSwitch Plus installation can be expanded at any time, without interfering with devices connected to existing switches.

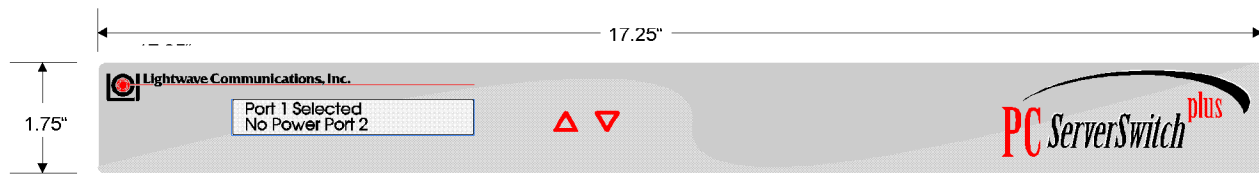


Figure 2: PC ServerSwitch Plus - Dimensions

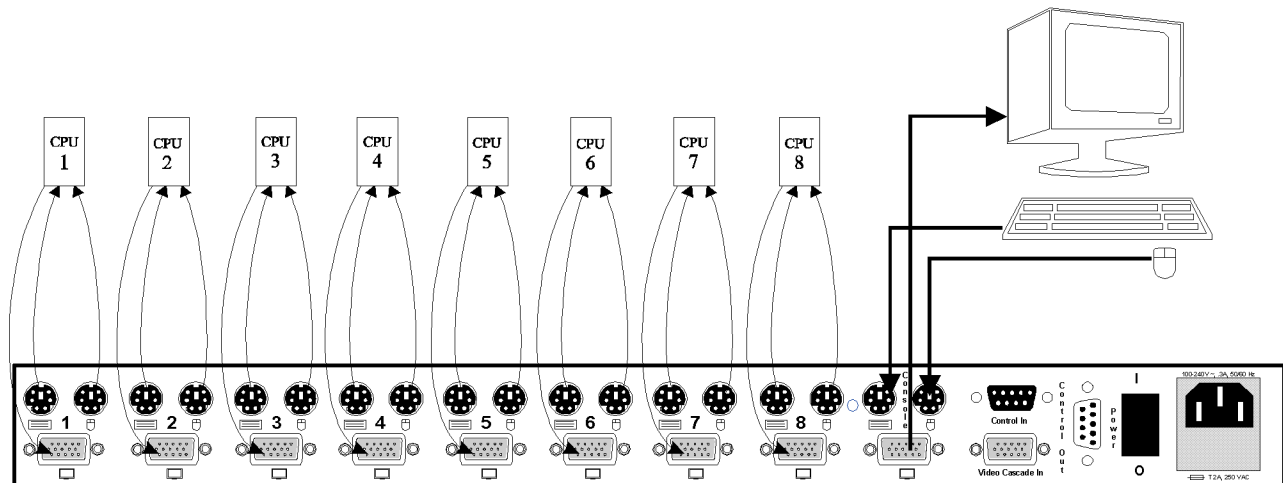


Figure 3: Connecting 8 CPUs to the PC ServerSwitch Plus

STEP 1 -- The Shipping Container

Verify that the following items are located in the container.

- 1 PC ServerSwitch Plus
- 1 AC Power Cord
- 1 Cable - DB9 Serial Data Cable
- 1 PC ServerSwitch Plus Product Handbook

NOTE! Optional cable kits (part # 200.0105) are available and may be in the shipping container as well. These cable kits contain:

6' male-male 6-pin miniDIN to connect server keyboard and mouse to PC ServerSwitch Plus (2 cables)

6' HD15 male-male video cable to connect server video adapter to PC ServerSwitch Plus (1 cable)

NOTE! Other items such as cables may be ordered separately and shipped in a separate container.

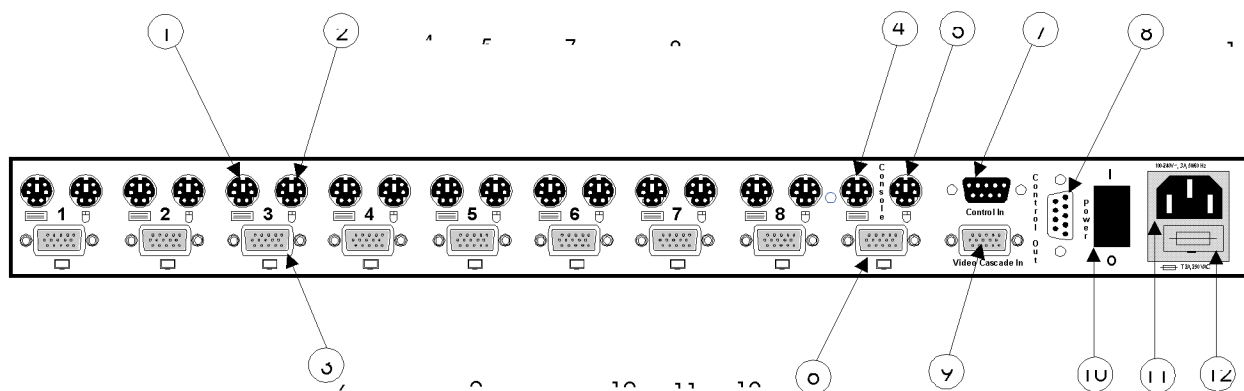


Figure 4: PC ServerSwitch Plus - Rear Panel View, Connections

Figure 4

- 1) Keyboard interface to the server
- 2) Mouse interface to the server
- 3) Video interface to the server
- 4) Keyboard
- 5) Mouse
- 6) Monitor
- 7) Control In: DB9 cable carries signal for box to box communications
- 8) Control Out: DB9 cable carries signal for box to box communications
- 9) Video Cascade In: Accepts video signals from cascaded units
- 10) AC power on/off switch
- 11) AC receptacle for AC power cord
- 12) AC receptacle fuse

STEP 2 -- Initial Start-Up

- a) Connect the AC Power Cord to the PC ServerSwitch Plus and plug the power cord into a grounded outlet.

The power supply unit in the PC ServerSwitch Plus is a universal supply, capable of operating from 90 to 264 volts.

- b) Connect a keyboard and mouse to the PC ServerSwitch Plus.

STEP 3 -- Connecting CPUs

Referring to Figure 4, connect a single PC to the PC ServerSwitch Plus and verify it's operation. Use the cables that were purchased with the PC ServerSwitch Plus to attach the PC. Connect the cables in the following order:

- 1) A cable from the PC server keyboard connection to the PC ServerSwitch Plus.
- 2) A cable from the PC server mouse connection to the PC ServerSwitch Plus.
- 3) An HD15 video cable from the PC server graphics adapter to the PC ServerSwitch Plus.

Make certain that all PCs are powered off when connecting them to the PC ServerSwitch Plus. It is important to note that some servers do not allow for keyboards to be connected and disconnected during operation. This will cause them to halt.

Once step three is complete, continue to connect the remaining PCs. Repeat step three until all of the devices are connected. Refer to Figure 4 when connecting cables.

<p>NOTE! CPUs can be connected to any port. It is not necessary to use port 1 as the first connection, port 2 as the second, etc.</p>
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6.0 Cascading the PC ServerSwitch Plus

This section only applies to systems with more than one PC ServerSwitch Plus.

If more than eight servers are to be connected, then cascading of the PC ServerSwitch Plus is necessary. In a cascade environment, the first unit that is installed is considered to be the "Master Unit." All information is stored in the Master Unit.

Cascading the units is very simple.

If the Master Unit has been installed and running, do not turn off the power to the Master Unit. The installation of additional PC ServerSwitch Plus units can be accomplished without any interruption to the existing servers.

Using Figure 5 as a guide for cable installation, complete the following steps:

STEP 1

Connect the DB9 Serial data cable (supplied with each PC ServerSwitch Plus) from the Master Unit "Control Out" port to the Aux Unit "Control In" port. Make certain that these cables are securely fastened to the units. These data cables carry all mouse, keyboard, and control data necessary for cascading units. Follow this procedure for as many Aux units (Fourteen max) as required for the servers.

STEP 2

Connect the "Video Cascade In" port on the Master Unit to the "Console" video port. This will allow the video signals from the Aux units to reach the Monitor that is connected to the Master unit. Follow this procedure for as many Aux units (Fourteen max) as required for the servers.

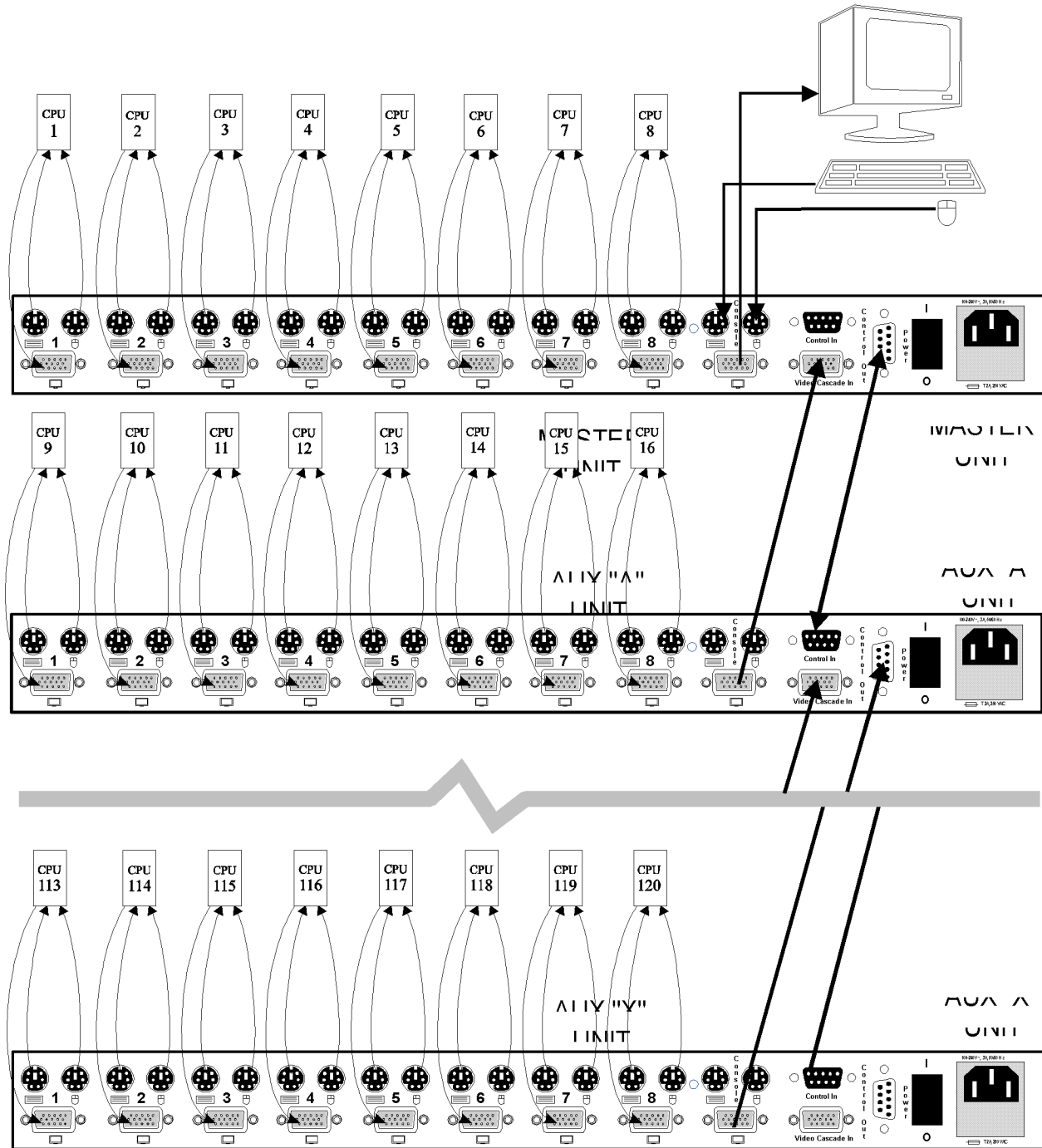
STEP 3

Turn on all of the Aux units that were installed. Connect the servers to these units as done in the earlier installation for a single unit.

NOTE! The original PC ServerSwitch can be cascaded with the PC ServerSwitch Plus, but must be used as an Aux unit only. **The PC ServerSwitch Plus must be the Master Unit when combining it with the original PC ServerSwitch.**

To install a PC ServerSwitch Plus as the new master, turn the old master off, connect it, and then turn it back on. Turning off the old master may affect PCs connected to it, so it is recommended that you shut down any PCs connected to the old master during this installation.

Figure 5: PC ServerSwitch Plus - Cascading



7.0 Using Serial Mice with the PC ServerSwitch Plus

If your server does not have a PS/2 mouse connector, Lightwave offers an adapter cable (LCI part number 200.0134) that allows you to connect the PC ServerSwitch to the serial port on the CPU. **Do not use any other serial mouse adapter, using another adapter can cause significant damage to the PC ServerSwitch Plus.** Some systems use a Bus-Mouse interface; it may look like a PS/2 port, but it is not compatible with the PC ServerSwitch and a serial port connection must be used in its place.

Only a PS/2 mouse will work as the console mouse.

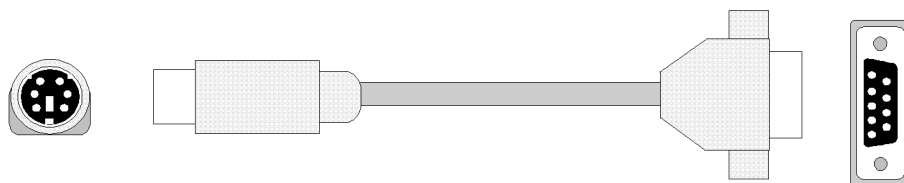


Figure 6: Part Number 200.0134 for Serial Mice