



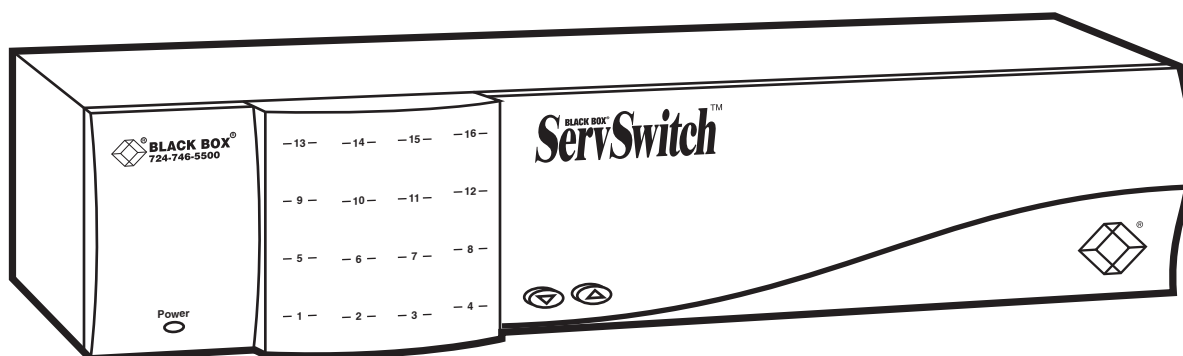
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Black Box Corporation.

BLACK BOX[®]

NETWORK SERVICES

Black Box Corporation • 1000 Park Drive • Lawrence, PA 15055-1018 • Tech Support: 724-746-5500 • www.blackbox.com • e-mail: info@blackbox.com

SERVSWITCH



Manage up to 256 CPUs using a single keyboard, mouse, and monitor!

Key Features

- ▶ **Access up to 256 CPUs with one keyboard, monitor, and mouse.**
- ▶ **Select CPUs from the shared keyboard, the switch's front panel, a remote PC, or an easy on-screen menu.**
- ▶ **Flash ROM for easy firmware upgrades.**
- ▶ **Compatible with most IBM keyboard, mouse, and video standards.**
- ▶ **Excellent video resolution—up to 1600 x 1280 @ 100 Hz.**
- ▶ **Supports USB keyboards and mice.**

The ServSwitch™ is a keyboard/video/mouse switch compatible with AT® and PS/2® computer platforms. You can attach as many as 256 CPUs to a set of ServSwitch units and use a single shared keyboard, monitor, and mouse to administer them all.

On-screen menus

With the exception of the KV3104MN-R5, SW721A-R2, and SW722A-R2 models, you can harness all that power with easy on-screen menus—without having to remember commands!

On-screen menus make switching far more convenient. You can even give your servers names that make sense to you.

Most ServSwitch models feature on-screen menus. However, you may want to consider our KV3104MN-R5, which is built without menus for use in situations where not having

visible menus is desirable for security reasons.

For more information, see On-Screen Menus on page 5.

More ways to switch

You can configure the ServSwitch, scan CPU ports, set and trigger a screen-saver function, set the key-repeat rate for the keyboard, and perform other functions via on-screen menus or by entering simple commands of two to six keystrokes from the shared keyboard. You can also control the switch (but not actually view

the CPUs) through the RS-232 port.

Cable it up

ServSwitch makes cable management easy. The control station and all CPUs attach to the ServSwitch with special three-way cables that have a single standard DB25 male connector on one end and split out into three connectors at the other end. This means that you only have one cable to run instead of separate cables for your keyboard, monitor, and mouse. If you need to reorganize CPUs or peripherals,

Typical Applications

- Put your servers on a rack and use one shared keyboard, monitor, and mouse to manage them.
- Cascade ServSwitch units to administer all of the PCs in a data center.

just plug and unplug single cables rather than three. And these cables can span as much as 100 feet (30.5 m) on either side of the switch, so you have plenty of flexibility in your installation.

Each ServSwitch supports VGA and SVGA video; with special cabling, it can also handle XGA and XGA-2. See Technically Speaking below and Specifications on page 4 for information about video compatibility, screen resolutions, and cabling distances.

For information about low-smoke cables, contact Technical Support.

A switch for every application

ServSwitch comes with 2, 4, 8, 12, or 16 CPU ports. Depending on the model, ServSwitch is available in a Mini, Slim, or Full Chassis. You can use ServSwitch to ServSwitch Expansion Cable to cascade subsidiary ("sub-master") switches to a master ServSwitch in order to control as many as 256 CPUs.

Support for audio, serial, and USB

With the use of specialized cables, the ServSwitch can be adapted to support USB keyboards and mice, serial touch screens, or audio speakers.

Order the USB to PS/2 User Cable (EHNUSB or EHN485) to support USB keyboard and mouse connections.

Order Server and User ServSwitch Cables with Serial Support (EHN382S, EHN383S) to connect serial devices such as touch screen monitors.

Order Server and User ServSwitch Cables with Audio Support (EHN151A, EHN154A) to use one set of speakers for multiple CPUs.

Flash upgradable

Most ServSwitch models feature flash ROM. As firmware upgrades become available, you can easily download them to the switch through the RS-232 port.

If you need a ServSwitch without flash memory for secure applications, choose the -R2 ServSwitch versions which feature non-upgradable ROM.

Technically Speaking

ServSwitch commands consist of a press and release of the left Control (CTRL) key followed by just a few other keystrokes.

The ServSwitch is not designed to handle bus-mouse I/O, so it cannot be attached to bus-mouse CPUs, and it cannot be an adequate master unit for submaster ServSwitch bus-mouse units.

The ServSwitch is not designed to be cascaded with the ServSwitch Multi, the ServSelect, or the ServSwitch Duo. However, ServSwitch can be cascaded with itself, the

ServSwitch Ultra™, the Matrix ServSwitch, and the ServSwitch Affinity™.

The maximum distance that original ServSwitch cable can be run is 20 ft. (6.1 m) end to end from the shared peripherals to any CPU. Because some CPUs can drive keyboard and mouse signals farther than that, we offer coaxial cables in lengths up to 100 ft. (30.5 m). (Consult with your CPU manufacturers about this, and note that screen-image quality will decrease with distance.)

4-Port Expansion Boards are available if you would like to add CPU ports to a Full-Chassis 8- or 12-Port ServSwitch. Since it's a tricky procedure, we'll install the upgrade for you at no extra charge.

Specially quoted cables are available if you would like to use an IBM 9515, 9517, or 9518 monitor. Call Tech Support at 724-746-5500 to find out about the custom cables for these products.

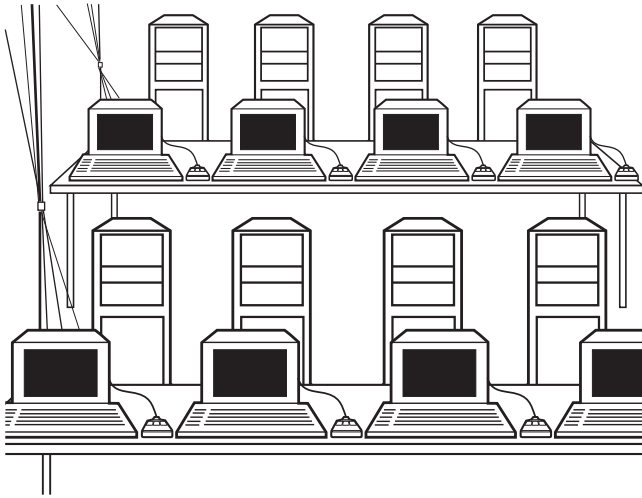
If you would like to mount a 2-Port Mini-Chassis ServSwitch in a 19", 23", or 24" rack, our product

codes for the required Rackmount Kit are RMK19M, RMK23M, or RMK24M. The corresponding product codes for the 4- or 8-Port Slim-Chassis switches are RMK19B, RMK23B, or RMK24B. The corresponding codes for the 8-, 12-, and 16-Port Full Chassis units are RMK19C, RMK23C, or RMK24C.

The ServSwitch is not designed to work with dongles or docking stations. Call Technical Support for information on other products that support these devices.

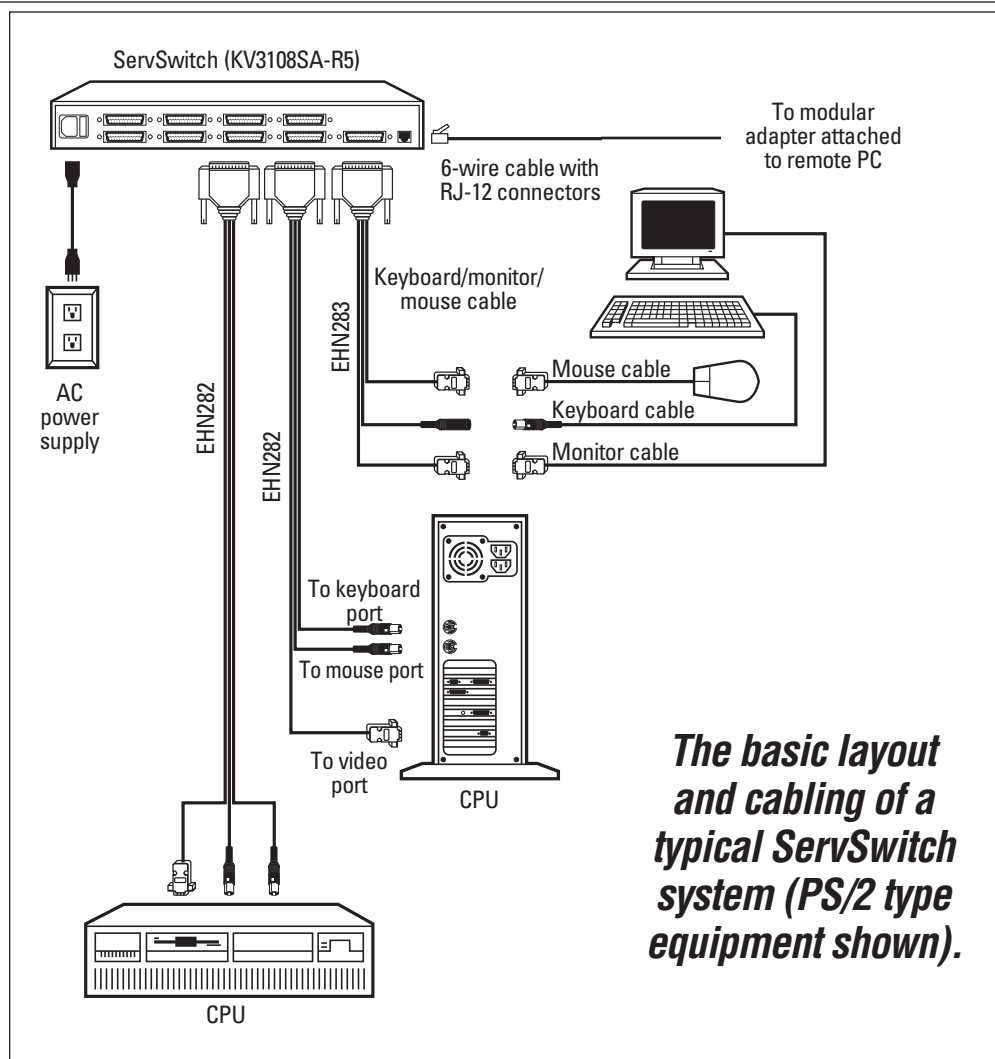
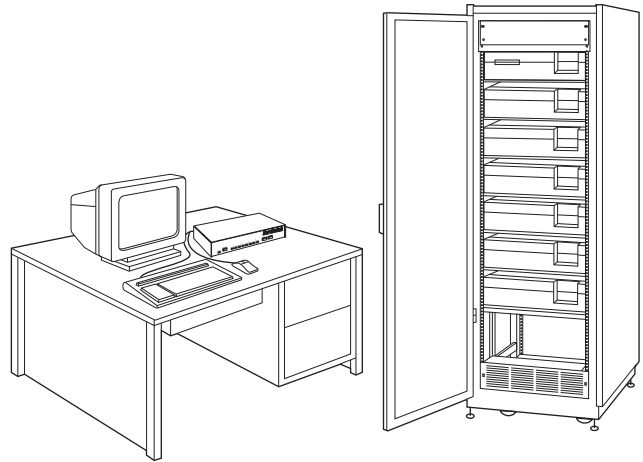
Before ServSwitch:

You needed a separate monitor, keyboard, and mouse for each server.

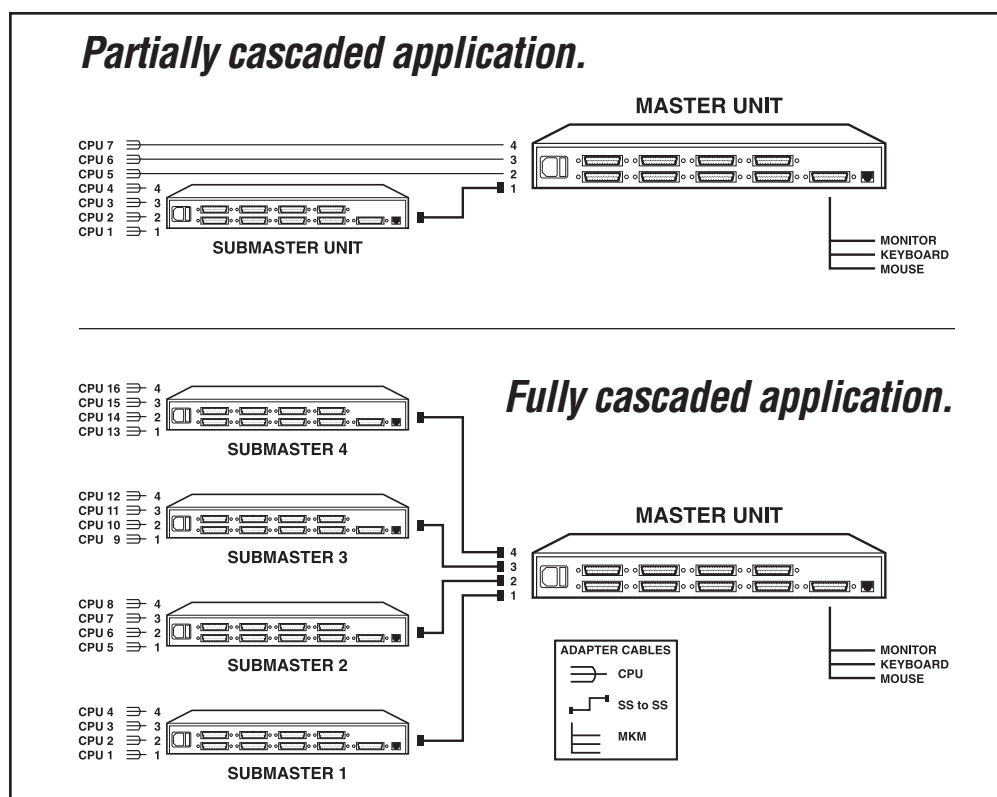


After ServSwitch:

Now only one station is needed to manage all those servers. There's actually enough free space to expand your network!



In properly installed and configured cascaded systems, the master ServSwitch automatically keeps track of where each CPU is.



Specifications

Compliance: FCC Part 15 Class A, DOC Class/MDC classe A, CE

Data Format: RS-232: 8 data bits, 1 stop bit, no parity (fixed)

Data Rate: RS-232: 9600 bps or (for firmware update only) 57.6 kbps

Distance (Maximum):

Depending on the CPU, monitor, and video resolution, either:

25 ft. (7.6 m) of total original ServSwitch cable from the keyboard, monitor, and mouse to any CPU, including up to 5 ft. (1.5 m) from any ServSwitch to any other ServSwitch unit (submaster) attached to it; or

20 ft. (6.1 m) of coaxial cable—possibly as much as 100 ft. (30.5 m), depending on CPUs—from any ServSwitch to any device attached to it;

Also, 50 ft. (15.2 m) of serial cable from any ServSwitch RS-232 port to a remote computer (for switching via serial port or upgrading firmware)

Protocol: RS-232: Asynchronous

Resolution (Maximum): Secure models: With original ServSwitch cabling: 1024 x 768; With coaxial cabling: 1280 x 1024;

All other models: With original ServSwitch cabling: 1024 x 768 noninterlaced; With coaxial cabling: 1600 x 1280 noninterlaced

Supported CPUs: AT; PS/2; IBM® PCs (286, 386, 486), Pentium® or compatible; and most PC UNIX® boxes (SGI™, RS/6000®, etc.)

Video Standards: All PC video up to 1600 x 1280 noninterlaced video; monitor used must support desired video resolution

User Controls:

On-screen menus (except for KV3104MN-R5, SW721A-R2, and SW722A-R2); Keyboard commands; (3) push buttons: Power, “▼” (switch to next port), and “▲” (switch to previous port)

Interface:

CPU and keyboard/monitor/mouse ports: Proprietary composite of IBM AT or IBM PS/2 keyboard, video (standards listed above), and either an RS-232 or PS/2 mouse;

RS-232 port: Proprietary variant of EIA RS-232D, DTE

Connectors: All rear-mounted; 2-Port model:

Power: (1) 5-pin DIN F; RS-232 remote control: (1) RJ-12 (6-wire RJ-11) F; Keyboard/monitor/mouse: (1) DB25 F;

4-, 8-, 12-, and 16-Port models:

Power: (1) IEC 320 M; RS-232 remote control: (1) RJ-12 (6-wire RJ-11) F; Keyboard/monitor/mouse: (1) DB25 F;

2-Port model also has:

CPU: (2) DB25 F;

4-Port models also have:

CPU: (4) DB25 F;

8-Port models also have:

CPU: (8) DB25 F;

12-Port model also has:

CPU: (12) DB25 F;

16-Port model also has:

CPU: (16) DB25 F

Indicators: All front-mounted LEDs:

All models: (1) [Unit] Power; 2-Port model also has: (2) Select, (2) [CPU] Power; 4-Port models also have: (4) Select, (4) [CPU] Power; 8-Port models also have: (8) Select, (8) [CPU] Power; 12-Port model also has: (12) Select, (12) [CPU] Power; 16-Port model also has: (16) Select, (16) [CPU] Power

Temperature Tolerance: Operating: 32 to 131°F (0 to 55°C)

Humidity Tolerance: 5 to 80%, noncondensing

Power: 100 to 240 VAC, 50 to 60 Hz, autosensing; IEC 320 connector with power cord

Size: Mini chassis:

1.75"H (1U) x 8.9"W x 5.1"D (4.4 x 22.6 x 13 cm);

Slim chassis:

1.75"H (1U) x 16.75"W x 5.5"D (4.4 x 42.5 x 14 cm);

Full chassis:

3.5"H (2U) x 16.75"W x 5.5"D (8.9 x 42.5 x 14 cm)

Weight: Mini chassis: 4 lb. (1.8 kg); Slim chassis: 5.4 lb. (2.4 kg); Full chassis: 8.2 lb. (3.7 kg)

On-Screen Menus

With on-screen menus (standard on every ServSwitch unit except for the KV3104MN-R5, SW721A-R2, and SW722A-R2), you can give each CPU a name that makes sense to you. That makes it easy to identify the server you want and switch to it. Plus, you can easily configure CPU, keyboard, and mouse types via the on-screen menus.

You can position your on-screen menus anywhere on your computer screen and keep the name of your current server on the screen at all times or for just a few seconds after switching. Built-in security features keep unwanted users from using the menus to infiltrate your system.

The Complete Package

- The ServSwitch.
- Power adapter (PS024) with cord (or power cord alone).
- KV99 Flash Kit, which includes a serial to RJ-11 adapter and 7-ft. (2.1-m) RJ-11 cable.
- A users' manual.

Chassis Sizes

Mini —

1.75"H (1U) x 8.9"W x 5.1"D (4.4 x 22.6 x 13 cm)

Slim —

1.75"H (1U) x 16.75"W x 5.5"D (4.4 x 42.5 x 14 cm)

Full —

3.5"H (2U) x 16.75"W x 5.5"D (8.9 x 42.5 x 14 cm)

Additional Equipment You Will Need

- A keyboard and mouse. They must both be of the same platform—AT or PS/2.
- A monitor compatible with all of the CPUs' video cards, capable of syncing to each CPU's video-output frequencies. We recommend that the monitor be able to display a maximum resolution of at least 1024 x 768 (1600 x 1280 is better) at a maximum refresh rate of not less than 75 Hz.
- A keyboard/monitor/mouse adapter cable to connect the shared keyboard/monitor/mouse to the ServSwitch.
- CPU adapter cables to connect your CPUs to the ServSwitch.

Additional Equipment You Might Need

- ServSwitch-to-ServSwitch Cables (EHN284) for cascading.
- A rackmount kit.
- An RS-232 cable and adapter for remote switching.
- Station extenders and cables for extra distance.

Why Buy From Black Box? Exceptional Value. Exceptional Tech Support. Period.

Recognize these situations?

- You wait more than 30 minutes to get through to a vendor's tech support.
- The so-called "tech" can't help you or gives you the wrong answer.
- You don't have a purchase order number and the tech refuses to help you.
- It's 9 p.m. and you need help, but your vendor's tech support line is closed.

According to a survey by Data Communications magazine, 90% of network managers surveyed say that getting the technical support they need is extremely

important when choosing a vendor. But even though network managers pay anywhere from 10 to 20% of their overall purchase price for a basic service and support contract, what they receive falls far short of their expectations—and isn't worth the \$10,000 to \$100,000 they paid.

At Black Box, we guarantee the best value and support. You can even consult with our Tech Support experts before you buy if you need help selecting the right component for your application.

Don't waste time and money. Call us today at **724-746-5500**.

Ordering Information

ITEM	CODE
ServSwitch	
Mini Chassis Style	
2-Port.....	SW721A-R5
4-Port.....	KV3104MA-R5
4-Port (No On-Screen Menus).....	KV3104MN-R5
Slim Chassis Style	
4-Port.....	SW722A-R5
8-Port.....	KV3108SA-R5
Full Chassis Style	
8-Port.....	SW723A-R5
12-Port.....	SW724A-R5
16-Port.....	SW725A-R5
<i>For secure applications, order...</i>	
ServSwitch (Secure), Mini Chassis Style	
2-Port.....	SW721A-R2
4-Port.....	SW722A-R2
<i>Connect your ServSwitch with the following cables. For distances up to 20 feet (6.1 m), order standard cables.</i>	
<i>For higher resolutions and greater distances, order coax cables...</i>	
CPU/Server to ServSwitch Cables	
Standard—PS/2	
5-ft. (1.5-m).....	EHN151-0005
10-ft. (3-m).....	EHN151-0010
20-ft. (6.1-m).....	EHN151-0020
Standard—AT	
5-ft. (1.5-m).....	EHN048-0005
10-ft. (3-m).....	EHN048-0010
20-ft. (6.1-m).....	EHN048-0020
Coax—PS/2	
5-ft. (1.5-m).....	EHN382-0005
10-ft. (3-m).....	EHN382-0010
20-ft. (6.1-m).....	EHN382-0020
35-ft. (10.7-m).....	EHN382-0035
50-ft. (15.2-m).....	EHN382-0050
75-ft. (22.9-m).....	EHN282-0075
100-ft. (30.5-m).....	EHN282-0100
ServSwitch to Keyboard/Monitor/Mouse Cables	
Standard—PS/2	
1-ft. (0.3-m).....	EHN154-0001
5-ft. (1.5-m).....	EHN154-0005
10-ft. (3-m).....	EHN154-0010
20-ft. (6.1-m).....	EHN154-0020
Standard—AT	
1-ft. (0.3-m).....	EHN052-0001
5-ft. (1.5-m).....	EHN052-0005
10-ft. (3-m).....	EHN052-0010
20-ft. (6.1-m).....	EHN052-0020

Ordering Information

ITEM

CODE

ServSwitch to Keyboard/Monitor/Mouse Cables (Continued)

Coax—PS/2

5-ft. (1.5-m)	EHN383-0005
10-ft. (3-m)	EHN383-0010
20-ft. (6.1-m)	EHN283-0020
35-ft. (10.7-m)	EHN383-0035
50-ft. (15.2-m)	EHN383-0050
100-ft. (30.5-m)	EHN383-0100

Coax—AT

5-ft. (1.5-m)	EHN270-0005
10-ft. (3-m)	EHN270-0010
20-ft. (6.1-m)	EHN270-0020
35-ft. (10.7-m)	EHN270-0035
50-ft. (15.2-m)	EHN270-0050
100-ft. (30.5-m)	EHN270-0100

To use a USB keyboard and mouse, order...

USB to PS/2 User Cables, Flashable

1-ft. (0.3-m)	EHNUSB-0001
5-ft. (1.5-m)	EHNUSB-0005
10-ft. (3-m)	EHNUSB-0010
20-ft. (6.1-m)	EHNUSB-0020

USB to PS/2 User Cables, Nonflashable

1-ft. (0.3-m)	EHNUSBNF1-0001
5-ft. (1.5-m)	EHNUSBNF1-0005
10-ft. (3-m)	EHNUSBNF1-0010
20-ft. (6.1-m)	EHNUSBNF1-0020

ServSwitch USB Coax CPU Cables

5-ft. (1.5-m)	EHN485-0005
10-ft. (3-m)	EHN485-0010
20-ft. (6.1-m)	EHN485-0020
35-ft. (10.7-m)	EHN485-0035
50-ft. (15.2-m)	EHN485-0050
75-ft. (22.9-m)	EHN485-0075
100-ft. (30.5-m)	EHN485-0100

To connect a touch screen monitor or other serial device, order...

CPU/Server to ServSwitch Ultra Cables (CPU Cables) for Serial Support

1-ft. (0.3-m)	EHN382S-0001
5-ft. (1.5-m)	EHN382S-0005
10-ft. (3-m)	EHN382S-0010
20-ft. (6.1-m)	EHN382S-0020
35-ft. (10.7-m)	EHN382S-0035
50-ft. (15.2-m)	EHN382S-0050
75-ft. (22.9-m)	EHN382S-0075
100-ft. (30.5-m)	EHN382S-0100

Ordering Information

ITEM

CODE

ServSwitch to Keyboard/Monitor/Mouse Cables (User Cables) for Serial Support

1-ft. (0.3-m).....	EHN383S-0001
5-ft. (1.5-m).....	EHN383S-0005
10-ft. (3-m).....	EHN383S-0010
20-ft. (6.1-m).....	EHN383S-0020
35-ft. (10.7-m).....	EHN383S-0035
50-ft. (15.2-m).....	EHN383S-0050
75-ft. (22.9-m).....	EHN383S-0075
100-ft. (30.5-m).....	EHN383S-0100

To use use a single set of audio speakers with multiple CPUs, order...

CPU/Server to ServSwitch Ultra Cables (CPU Cables) for Audio Support

5-ft. (1.5-m).....	EHN382A-0005
10-ft. (3-m).....	EHN382A-0010
20-ft. (6.1-m).....	EHN382A-0020
35-ft. (10.7-m).....	EHN382A-0035
50-ft. (15.2-m).....	EHN382A-0050
75-ft. (22.9-m).....	EHN382A-0075
100-ft. (30.5-m).....	EHN382A-0100

ServSwitch to Keyboard/Monitor/Mouse Cables (User Cables) for Audio Support

1-ft. (0.3-m).....	EHN383A-0001
5-ft. (1.5-m).....	EHN383A-0005
10-ft. (3-m).....	EHN383A-0010
20-ft. (6.1-m).....	EHN383A-0020
35-ft. (10.7-m).....	EHN383A-0035
50-ft. (15.2-m).....	EHN383A-0050
75-ft. (22.9-m).....	EHN383A-0075
100-ft. (30.5-m).....	EHN383A-0100

To cascade ServSwitch, order...

ServSwitch to ServSwitch Cables

5-ft. (1.5-m).....	EHN284-0005
10-ft. (3-m).....	EHN284-0010
20-ft. (6.1-m).....	EHN284-0020
50-ft. (15.2-m).....	EHN284-0050
75-ft. (22.9-m).....	EHN284-0075
100-ft. (30.5-m).....	EHN284-0100

Ordering Information

ITEM

CODE

To extend the distance to your monitor, keyboard, and mouse or to your CPUs beyond 100 ft. (30.5 m), order...

Station Extender Kits

CPU to ServSwitch—AT	AC254A
CPU to ServSwitch—PS/2.....	AC258A
ServSwitch to Keyboard/Monitor/Mouse—AT.....	AC255A
ServSwitch to Keyboard/Monitor/Mouse—PS/2.....	AC259A
CPU to Keyboard/Monitor/Mouse—AT.....	AC257A
ServSwitch to ServSwitch—PC.....	AC256A

Station Extender Cables

PVC (available in lengths of 50-, 100-, and 150-ft. [15.2-, 30.5-, and 45.7-m])	EHN250
Plenum (available in lengths of 100- and 200-ft. [30.5- and 61-m]).....	EHP250

To install your ServSwitch in a rack, order...

Rackmount Kits

19" Rackmount Kit for Mini Chassis	RMK19M
23" Rackmount Kit for Mini Chassis	RMK23M
24" Rackmount Kit for Mini Chassis	RMK24M
19" Rackmount Kit for Slim Chassis.....	RMK19B
23" Rackmount Kit for Slim Chassis.....	RMK23B
24" Rackmount Kit for Slim Chassis.....	RMK24B
19" Rackmount Kit for Full Chassis	RMK19C
23" Rackmount Kit for Full Chassis	RMK23C
24" Rackmount Kit for Full Chassis	RMK24C