BLACK BOX®
NETWORK SERVICES

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SERVSWITCH BRAND CAT5 KVM EXTENDERS (SERIAL)
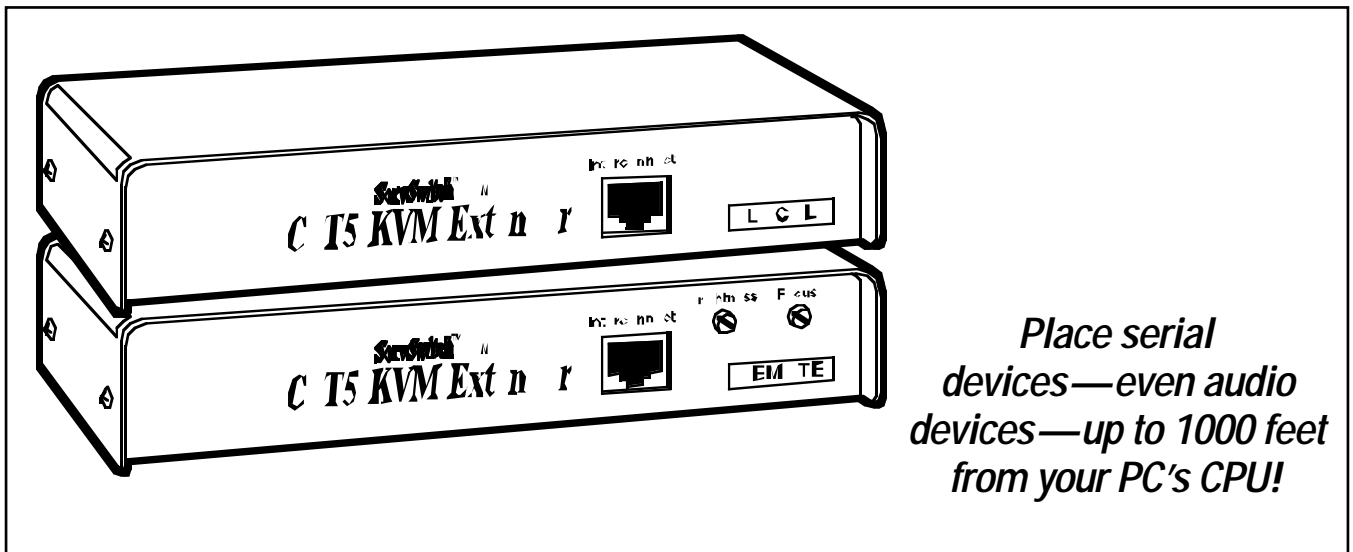
Place serial devices—even audio devices—up to 1000 feet from your PC's CPU!

Key Features

▶ *All signals are fully buffered to ensure consistent remote operation of your PC.*

▶ *Boot your PC without an attached mouse or keyboard—complete PS/2 mouse and keyboard emulation.*

▶ *Fully adjustable video equalisation.*

▶ *Dual-access models enable a PC to be operated from either the local or remote user station.*

▶ *Include local and remote units.*

With the ServSwitch® Brand CAT5 KVM Extenders with Serial Extension, you can place a VGA monitor, keyboard, mouse, and a serial device (such as a modem, printer, or touchscreen) as far as 1000 feet (304.8 m) from your PC's CPU. Now you can operate your PC from almost anywhere in the same building.

Their serial support means you can connect just about any standard asynchronous RS-232 peripheral—including trackballs and serial mice—that operate at up to 19.2 kbps and don't require any control signals other than RTS, CTS, DSR, and DTR.

The extenders come in kits that include local and remote units. These units are connected with a single Category 5 UTP or STP 4-pair cable. All keyboard, mouse, video, and serial signals are fully buffered to ensure consistent remote operation

of your PC. What's more, surge protection defends the CAT5 side against spikes and surges on the line.

Versions for single or dual access

Single-Access ServSwitch CAT5 KVM Extender with Serial Extension models (ACU1002A, ACU1022A) are designed to perform KVM and serial extension.

With the dual-access models (ACU1008A, ACU1028A), you can attach an additional monitor, keyboard, and mouse to the local unit. The PC can then be operated from either the local or remote user station. These stations share access on a "first-come, first-served" basis. When there's no keyboard or mouse activity on one station for a certain amount of time, the dual-user extender switches automatically to the first station from which it detects a keyboard keypress (or mouse movement, if you prefer). The

"inactivity timeout" prevents a user at the other station from interrupting work in progress at the active station. (NOTE: KVM contention has no effect on the serial communication between the CPU and the remote serial device.)
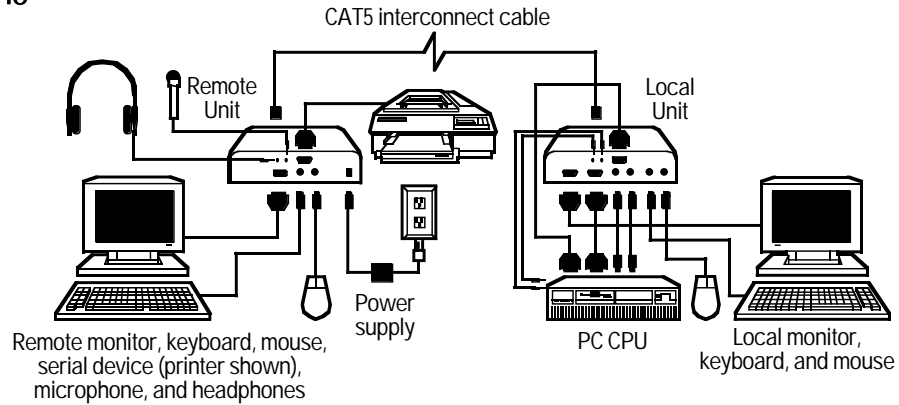
For applications in which your remote station isn't in a secure location, the local user should set the extender for "private mode" operation, which disables the remote monitor, keyboard, and mouse.
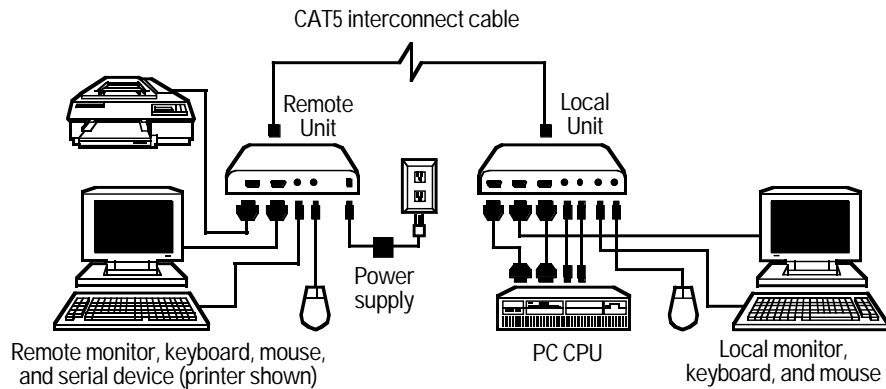
Transmit audio, too

The ACU1022A and ACU1028A models also provide audio-extension capabilities. With them, you can place audio devices, such as speakers, microphones, and headphones, up to 1000 feet (304.8 m) from the PC's CPU! Through this bidirectional stereo audio interface, sound can be transmitted in both directions

Dual-access connections

ACU1028A

CAT5 interconnect cable

Remote Unit

Local Unit

Power supply

Remote monitor, keyboard, mouse,
serial device (printer shown),
microphone, and headphones

PC CPU

Local monitor,
keyboard, and mouse

ACU1008A

CAT5 interconnect cable

Remote Unit

Local Unit

Power supply

Remote monitor, keyboard, mouse,
and serial device (printer shown)

PC CPU

Local monitor,
keyboard, and mouse

across the link at the same time. This way, you can listen to near-digital quality audio from the CPU via speakers attached to the remote unit (on the single-access version) or both the local and remote unit (on the dual-access version).

Just about any standard PC sound card or consumer audio device that doesn't transmit or receive signals at voltages above line level (5 volts peak-to-peak) works with the audio extenders. And, as with the KVM and serial signals, the audio signals transmit fully buffered.

No-hassle setup and operation

Setup is easy. Start with a simple configuration of your extenders. This is done using several internal controls. You may, for instance, have to adjust jumpers to work with the distance of the CAT5 cabling run between the extender's local and remote units. And, for the extenders with audio capabilities, you may need to amplify microphone input from the remote site.

As for the rest of the setup, connect the local and remote units to each other and to your equipment, adjust your video compensation as necessary, and you're ready! The extenders are simple to use and require no software. And, other than a few keyboard-command functions, they operate automatically and transparently in most cases. The remote unit draws its power from an external supply, and the local unit is powered by the connection from the CPU's keyboard port.

Because the extenders perform complete PS/2® keyboard and mouse emulation, you can boot the PC without having a keyboard or mouse attached to it. Your PC will boot even if an extender's remote unit is not powered or if no keyboard or mouse is connected to the local or remote unit. You can also "hot-swap" the remote or local keyboard and mouse at any time; that is, you can unplug and replug

the keyboard and mouse without disrupting the operation of the PC.

The extenders are designed for use up to a maximum cable length of 1000 ft., and at this length, the video quality should be acceptable even at a screen resolution of 1024 x 768 and a refresh rate of 75 Hz. To fine-tune the image more, the extenders feature fully adjustable video equalization to compensate for the loss of image quality caused by the signal passing through long cable runs. Jumpers on the remote unit's board enable you to configure an equalization-adjustment range appropriate to the length of the cable connecting

local and remote units, and rotary controls on the remote unit enable you to adjust the compensation level while the system operates.

The extenders are compatible with Microsoft® IntelliMouse® and other wheel mice. With the dual-access models, you can even use a standard PS/2 mouse at one user station and an IntelliMouse at the other.

To save even more space in your application, you can rackmount the extenders using a 19" Rackmount Kit (RMK19U-R2 or RMK19X), which enables you to place an extender unit in 1U of vertical space within a 19" rack.

What's Included

- All ServSwitch Brand CAT5 KVM Extender Kits include (1) local unit, (1) remote unit, and cables from the CPU to the local unit.
- The ACU1002A and ACU1008A also include (1) serial cable.
- The ACU1022A and ACU1028A also include (1) power supply.

Specifications

Audio Characteristics:
ACU1022A, ACU1028A only:
Input impedance: 47 kΩ;
Signal direction: Simultaneous bidirectional;
Signal format: Digitized at near-CD quality (16-bit sampling at 38.4 kHz);
Signal levels: Line level (5 volts peak-to-peak maximum);
Extra microphone support at remote unit: Pull-up resistor provides bias for condenser microphone; optional amplification to +17 dB for external microphone

Cable Required: Between local and remote units: Category 5 solid twisted pair (STP or UTP), wired to the TIA/EIA-568A or (preferred) -568B standard, terminated with RJ-45 M connectors

Compatibility: Keyboard: IBM® PC/AT or PS/2 compatible (PC/AT types require connector adapter);
Mouse: IBM PS/2 compatible two button, Microsoft IntelliMouse, Logitech® PS/2 compatible three button;
Video: VGA, SVGA, XGA, XGA-2, or RGB (sync on green); call Tech Support if your system has monitor ID-bit requirements

Compliance: FCC Part 15 Subpart B Class A; IC Class/classe A; CE

Distance (Maximum):
All units:
16.4 ft. (5 m) from the local unit to the attached CPU or KVM switch;
16.4 ft. (5 m) from the remote unit to the attached monitor, keyboard, mouse, and serial device or KVM switch;
984.3 ft. (300 m) between the local and remote units;
ACU1008A, ACU1028A only:
16.4 ft. (5 m) from the local unit to the attached keyboard, mouse, and serial device;
98.4 ft. (30 m) to the attached monitor

Resolution (Maximum):
All units:
1280 x 1024: 393.7 ft. (120 m);
1024 x 768: 984.3 ft. (300 m);
ACU1022A, ACU1028A only:
1600 x 1280: 196.9 ft. (60 m)

Serial Characteristics:
ACU1002A, ACU1008A:
Data rate: 9600 bps or 19.2 kbps (user-selectable);
Data format: 8 data bits, no parity, 1 stop bit (fixed);
Flow control:
Hardware: RTS/CTS passed through or looped back, DTR/DSR passed through or looped back, or none (user-selectable);
Software: Transparent to software flow control;
ACU1022A, ACU1028A:
Data rate: Transparent up to 19.2 kbps;
Data format: Transparent;
Flow control: Transparent to hardware and software flow control (RTS, CTS, DTR, and DSR are all passed through across the link)

User Controls:
ACU1002A, ACU1008A:
Both local and remote units: (1) internal data-rate jumper, (1) internal flow-control jumper block;
Remote unit only: (2) front-mounted dials for brightness and focus, (3) internal video-distance (cable-length) jumpers, (1) internal 4-position DIP switch for various options;
ACU1022A, ACU1028A:
All on/in remote unit: (2) front-mounted dials for brightness and focus, (3) internal video-distance (cable-length) jumpers, (1) internal microphone-amplification jumper, (1) internal 4-position DIP switch for hotkey selection

Video Bandwidth (to -3 dB):
Local unit: 150 MHz;
Remote unit: 300 MHz;
Across 328 ft. (100 m) of UTP: 95 MHz (with equalization)

Video Compensation: 3-stage continuously variable

Video Coupling: DC

Video I/O Signal Levels: 0.7 volts peak-to-peak

Video Synchronisation: H/V or composite, TTL signal levels; sync polarity is preserved

Interface:
All units:
Keyboard and mouse: IBM PS/2 compatible;
Video: VGA;
ACU1002A, ACU1008A only:
Serial: TIA/EIA RS-232;
ACU1022A, ACU1028A only:
Serial: TIA/EIA RS-232; DCE to CPU, DTE to stations;
Audio: Bidirectional 3.5-mm mini stereo audio

Connectors:
ACU1002A local unit:
Front-mounted: (1) RJ-45 for local/remote interconnection;
Rear-mounted: (1) HD15 M for video input from computer; (2) 6-pin mini-DIN F for keyboard and mouse output to computer; (1) DB9 F for serial I/O to/from computer;
ACU1008A local unit:
Front-mounted: (1) RJ-45 for local/remote interconnection;
Rear-mounted: (1) HD15 F for video output to monitor; (2) 6-pin mini-DIN F for input from keyboard and mouse; (1) DB9 M for serial I/O to/from RS-232 device;
ACU1002A, ACU1008A remote unit:
Front-mounted: (1) RJ-45 for local/remote interconnection;
Rear-mounted: (1) HD15 F for video output to monitor; (2) 6-pin mini-DIN F for input from keyboard and mouse; (1) DB9 M for serial I/O to/from RS-232 device; (1) 2.5-mm center-positive barrel jack for power;
ACU1022A local unit:
Front-mounted: (1) RJ-45 for local/remote interconnection;
Rear-mounted: (1) HD15 M for video input from computer; (2) 6-pin mini-DIN F for keyboard and mouse output to computer; (1) DB9 F for serial I/O to/from computer; (2) 3.5-mm mini stereo jacks for audio I/O to/from computer;

ACU1028A local unit:
Front-mounted: (1) RJ-45 for local/remote interconnection;
Rear-mounted: (1) HD15 F for video output to monitor; (2) 6-pin mini-DIN F for input from keyboard and mouse; (1) DB9 M for serial I/O to/from RS-232 device;
ACU1022A, ACU1028A remote unit:
Front-mounted: (1) RJ-45 for local/remote interconnection;
Rear-mounted: (1) HD15 F for video output to monitor; (2) 6-pin mini-DIN F for input from keyboard and mouse; (1) DB9 M for serial I/O to/from RS-232 device; (1) 2.5-mm center-positive barrel jack for power; (2) 3.5-mm mini stereo jacks for audio I/O to/from audio devices

Enclosure: Steel

Temperature Tolerance:
Operating: 32 to 104°F (0 to 40°C)

Humidity Tolerance: 5 to 90%, noncondensing

Power:
Local unit:
ACU1002A, ACU1008A:
5 VDC at up to 120 mA from CPU's keyboard port;
ACU1022A, ACU1028A:
5 VDC at up to 170 mA from CPU's keyboard port;
Remote unit:
From desktop power supply, PSU1002E:
Input: 100–240 VAC to 47–63 Hz from utility power outlet, through detachable power cord and IEC 320 M inlet, to external transformer;
Output (isolated from mains ground): 9 VDC regulated, at up to 1 A, from transformer to extender

Size: ACU1002A, ACU1008A:
Local unit: 1.4"H x 8.8"W x 4"D (3.6 x 22.4 x 10.2 cm);
Remote unit: 1.4"H x 7.8"W x 4"D (3.6 x 19.8 x 10.2 cm);
ACU1022A, ACU1028A:
1.75"H (1U) x 7.8"W x 4"D (4.4 x 19.8 x 10.2 cm)

Weight: 1.1 lb. (0.5 kg)

For installations with higher-capacity cable

In many data communications applications, using products that exceed required capacities is usually not a problem. But sometimes more isn't better. For instance, KVM extenders are designed to expect CAT5 and only CAT5 cable. You'd probably guess that Category 3 cable wouldn't be effective with these products, and you'd be right. But you may also assume that if Category 5 cable works just fine, Category 5e, Category 6, and other higher-capacity cables would work even better. This isn't the case.

KVM extenders from many manufacturers, including our ServSwitch CAT5 KVM Extenders, are designed specifically for the Category 5 specs defined by the TIA/EIA standard. Higher-level cables, such as CAT5e, have different characteristics and specs. Although differences like twist ratios might seem small, they can have a negative impact on these extenders, which are expecting a true Category 5 transmission.

However, if you already have CAT5e or CAT6 cable installed, you can work around this problem by installing a ServSwitch Brand CAT5 Extender Delay Line Module (ACUDLY) or ServSwitch Wizard Skew Compensator (ACU5100A).

For more information on these products, please request **FaxBack 10281** (ACUDLY) and **26293** (ACU5100A).

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

Recognise any of 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.

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, the technical support and service they receive falls far short of their expectations—and certainly isn't worth what they paid.

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

Don't waste time and money—call Black Box today.

Black Box offers the best warranty program in the industry—Fido Protection®. For more information, request **FaxBack 22512**.