## ServSwitch WIzard Extender Kits with Skew Compensation
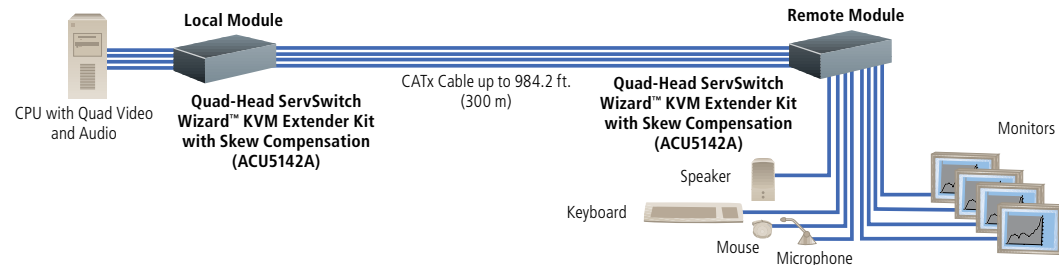
# Get clear, sharp video resolution atdistances up to 984.2 feet (300 m).

**Local Module**

CPU with Quad Video and Audio

Quad-Head ServSwitch Wizard™ KVM Extender Kit with Skew Compensation (ACU5142A)

CATx Cable up to 984.2 ft. (300 m)

**Remote Module**

Quad-Head ServSwitch Wizard™ KVM Extender Kit with Skew Compensation (ACU5142A)

Monitors

Speaker

Keyboard

Mouse

Microphone

## FEATURES

» Get maximum bandwidth and distances over CAT5, CAT5e, or CAT6 cable with this KVM ServSwitch™.

» Skew compensation reduces color drift and keeps images sharp.

» Kits include a local and a remote module.

» 56-kbps RS-232 serial transmission is transparent.

» Provides 1600 x 1200 resolution at 656.1 feet (200 m) or 1280 x 1024 resolution at 984.2 feet (300 m).

## OVERVIEW

Extend the distance between KVM devices using the ServSwitch Wizard™ Extender Kit with Skew Compensation.

Over long runs of CAT5, CAT5e, or CAT6 cable, color drift can be a problem. Since the four wires in a typical cable can be of different lengths, the color signals transmitted on each wire won't arrive at their destination at the same time. This results in colored shadows in the image on a video screen also known as delay skew.

At distances above 492.1 feet (150 m), skew compensation is definitely needed with at least 300 MHz of de-skew circuitry. The skew compensator uses impedance-controlled circuit board tracks to achieve very high bandwidths and does not suffer from any bandwidth limiting problems.

The ServSwitch Wizard Extender Kits with Skew Compensation eliminate delay skew for clean, crisp video images. Maximum resolutions of 1600 x 1200 at 60 Hz support distances of 656.1 feet (200 m). Reach longer distances (984.2 feet [300 m]) at 1280 x 1024 resolution and 60 Hz.

The ServSwitch kit supports high-fidelity audio, serial mouse support, and dual and quad multi-head support.

And it works with graphic adapter cards that use Display Data Channel (DDC) information for proper operation. The ServSwitch Wizard kit transmits an attached monitor's DDC information to a remote module.

Five models are available. The ACU5110A extends PS/2 keyboard and mouse signals, transparent serial signals, and the analog VGA signal over a single CAT5, CAT5e, or CAT6 cable up to 984.2 feet (300 m).

The ACU5114A functions in the same way as the ACU5110A, but either the local or the remote user can operate the PC.

The ACU5112A transmits serial signals, KVM signals, and bidirectional stereo audio signals. With this model, you can use speakers, headsets, and microphones at your workstation.

For applications that include multihead graphics cards, choose the ACU5122A or ACU5142A.

Rackmount the cards for neat installation and easy access.

The ServSwitch kit also provides increased tolerance of common-mode ground noise. It's unlikely to be affected by industrial motor startups or fluorescent lights being switched on and off.

## Technically Speaking

**Cable construction and delay skew.**

There are two prominent CAT5e and CAT6 cable constructions on the market. The first is referred to as "2 + 2," where two of the four pairs are of similar electrical length, and the other two pairs are of different lengths. The second cable construction is known as "3 + 1," where three pairs are of similar electrical length.

If you encounter delay skew when using the 2 + 2 type of cable construction, a delay line will be required because it is impossible to find three cable pairs that closely match for RGB. If delay skew is encountered with a 3 + 1 cable construction, it can often be eliminated (if not greatly reduced) by using the three similar cable pairs to send RGB signals.

The preferred way to determine which cable construction you have is to measure a 300-foot (91.4-m) run with a cable scanner. Otherwise, you can strip back 3 inches (7.6 cm) of the cable sheath and look at how pairs are twisted. If you have a 2 + 2 cable, the two pairs of similar length will be more tightly twisted than the other two pairs. If you have a 3 + 1 cable, the three pairs of similar length will be more tightly twisted than the fourth. The three similar pairs can then be "pair swapped" onto the RJ-45 pins that carry RGB signals and the fourth can be used for data.

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## Technically Speaking

**Skew compensation.**

UTP cable is often used with video or KVM extenders to extend the reach of a video signal. It's popular for this application because it's lightweight, easy to handle, and inexpensive. But when you transmit video over long stretches of twisted-pair cable, you sometimes run into a phenomenon called color drift or color split.

Color drift shows up as that annoying colored shadow you occasionally see around objects on a video screen. It sometimes happens with UTP cable because the pairs of wire in the cable are twisted at slightly different rates to reduce crosstalk between pairs. Because of these differences between wire pairs, video signals for different colors often travel different distances before they reach the remote receiver. When one color signal arrives behind the others because its wire is longer, you get that red, green, or blue shadow around the objects on your video screen.

UTP cable varies widely by manufacturer, so before installing video extenders, it's difficult to determine whether or not you're going to have a color drift problem. You're more likely to experience color drift with higher grades (CAT5e or CAT6) of cable, on longer cable runs, and on high-resolution screens.

If you experience color drift, there are several possible solutions. You can use a shorter length of cable, switch from CAT5e or CAT6 cable to CAT5 cable, use a lower screen resolution, or use a video skew compensator.

A video skew compensator removes color drift by delaying some color signals to compensate for differences in wire pairs.

*ACU5110A*

## TECH SPECS

**Maximum Resolution and Distance** — 1600 x 1200 at 60 Hz and 656.1 ft. (200 m); 1280 x 1024 at 60 Hz and 984.2 ft. (300 m)

**Connectors** —
ACU5110A: Local module: Interconnect: (1) RJ-45;
    CPU: (1) DB25 F; Serial: (1) DB9 F; Power: (1) 8-pin mini-DIN F;
    Remote module: Interconnect: (1) RJ-45;
        Keyboard and mouse: (2) 6-pin mini-DIN F;
        Video: (1) HD15 F; Serial: (1) DB9 F; Power: (1) barrel jack;
ACU5114A: Local module: Interconnect: (1) RJ-45;
    CPU: (1) DB25 F; Keyboard and mouse: (2) 6-pin mini-DIN F;
    Video: (1) HD15 F; Serial: (1) DB9 F; Power: (1) 8-pin mini-DIN F;
    Remote module: Interconnect: (1) RJ-45;
        Keyboard and mouse: (2) 6-pin mini-DIN F;
        Video: (1) HD15 F; Serial: (1) DB9 F; Power: (1) barrel jack;
ACU5112A: Local module: Interconnect: (1) RJ-45;
    CPU: (1) DB25 F; Serial: (1) DB9 F; Power: (1) 8-pin mini-DIN F;
    Remote module: Interconnect: (1) RJ-45;
        Keyboard and mouse: (2) 6-pin mini-DIN F;
        Video: (1) HD15 F; Serial: (1) DB9 F; Audio: (2) 3.5-mm jacks;
        Power: (1) barrel jack;
ACU5122A: Local module: Interconnect: (1) RJ-45;
    CPU: (1) DB25 F; Keyboard and mouse: (2) 6-pin mini-DIN F;
    Video: (3) HD15 F; Serial: (2) DB9 F; Audio: (1) 3.5-mm jack;
    Power: (1) 8-pin mini-DIN F;
    Remote module: Interconnect: (1) RJ-45;
        Keyboard and mouse: (2) 6-pin mini-DIN F; Video: (2) HD15 F;
        Serial: (2) DB9 F; Audio: (2) 3.5-mm jacks; Power: (1) barrel jack;
ACU5142A: Local module: Interconnect: (1) RJ-45; CPU: (1) DB25 F;
    Keyboard and mouse: (2) 6-pin mini-DIN F; Video: (7) HD15 F;
    Serial: (4) DB9 F; Audio: (1) 3.5-mm jack;
    Power: (1) 8-pin mini-DIN F;
    Remote module: Interconnect: (1) RJ-45;
        Keyboard and mouse: (2) 6-pin mini-DIN F; Video: (4) HD15 F;
    Serial: (4) DB9 F; Audio: (2) 3.5-mm jacks; Power: (1) barrel jack

### What's included

- ✦ Local module
- ✦ Remote module
- ✦ Power supply (for remote module)
- ✦ Front plate for mounting in an optional Rackmount Chassis (ACU5000A)
- ✦ Set of rubber feet
- ✦ Complete set of cables to connect the local module to a CPU (only [1] serial cable)
- ✦ ACU5142A also has (1) power supply (for local module)
- ✦ CD-ROM containing a user's manual

| Item | Code |
|---|---|
| ServSwitch Wizard Extender Kits with Skew Compensation | |
| Serial | |
| Single-Access | **ACU5110A** |
| Dual-Access | **ACU5114A** |
| Serial and Bidirectional Stereo Audio | |
| Single-Access | **ACU5112A** |
| Single-Access, Dual-Head | **ACU5122A** |
| Single-Access, Quad-Head | **ACU5142A** |
| **To rackmount local or remote modules, order…** | |
| Rackmount Chassis for ServSwitch Wizard Extender | **ACU5000A** |
| **To supply power to up to four rackmounted remote modules, order…** | |
| Rackmountable Power Distribution Module | **PS5000** |
| **For video-only applications, you will need…** | |
| Spare Power Supply for Remote Module | **PS649-R2** |