

## Rackmount ServSwitch CAT5 KVM Extender Hubs

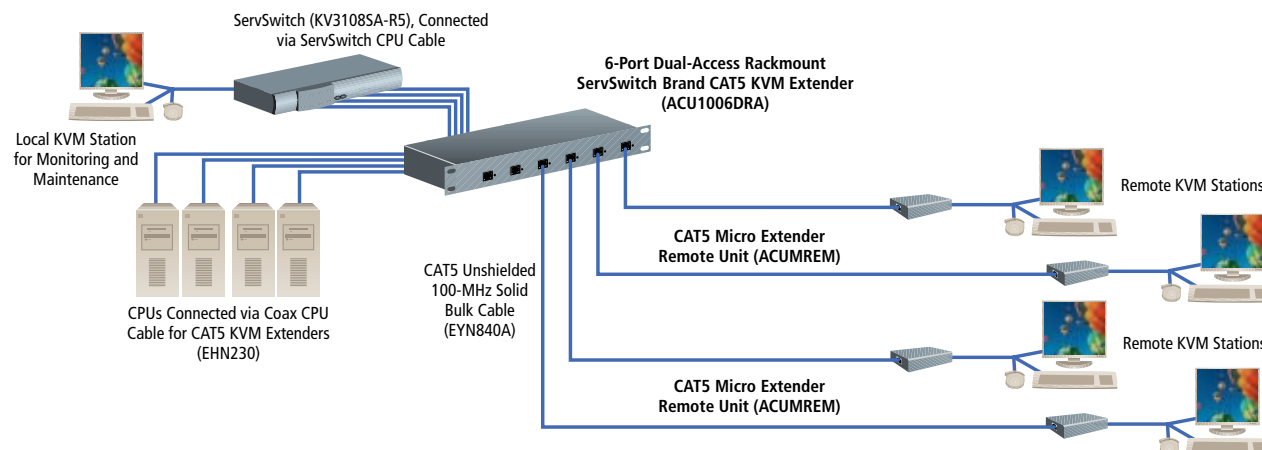
# Heavy-duty KVM extension for multiple CPUs.



## FEATURES

- » Hubs combine 6 or 12 extender units in just one box.
- » Put your keyboard, monitor, and mouse up to 1000 feet (304.8 m) away from a CPU or ServSwitch. If you only need extensions up to 150 feet (45.7 m), use ACUMREM.
- » Audio, dual-access, switching, serial, and bidirectional stereo options available.
- » The hubs feature built-in surge protection, with a clamping voltage rated up to 15 volts.
- » Fully adjustable video equalization.

Put your CPUs or ServSwitch KVM switches where you want them!



## OVERVIEW

When you want to link multiple computers to multiple dedicated stations, consider a [Rackmount ServSwitch™ Brand CAT5 KVM Extender Hub](#). Just install an extender hub where your CPUs are, then attach the CPUs to the hub with short extension cables. Next, run inexpensive CAT5 twisted-pair cabling from the hub to smaller, distributed remote units that you'll plug your user-station equipment into.

We offer seven varieties of extender hubs.

The 6- and 12-port standard models (ACU1006RA and ACU1012RA) carry KVM signals only and support only one user station per CPU.

A 6-port dual-access model (ACU1006DRA) supports local user stations that contend with the remote stations for access to the corresponding CPUs.

To transmit RS-232 serial data between the CPUs and the remote stations, choose the 6-port serial model (ACU1006SRA).

Or select the 6-port dual-access serial model (ACU1006DSRA). It supports a local user station and transmits RS-232 to the remote station.

To provide bidirectional stereo audio across the link on all ports, select the 6-port serial model (ACU1006VRA).

And finally, a 6-port serial model (ACU1006DVRA) provides both dual access and bidirectional stereo audio. It enables you to attach two workstations to each CPU—one local and one remote.

To go with the hubs, we offer eight types of remote units. Unless otherwise stated, remote units are capable of resolutions of 1600 x 1280 at 200 feet (61 m), 1280 x 1024 at 300 feet (91.4 m), or 1024 x 768 at 1000 feet (304.8 m).

A standard standalone model (ACUREM) works with each active port on ACU1006RA, ACU1012RA, and ACU1006DRA hubs.

A serial standalone model (ACUSREM) is available for each active port on the ACU1006SRA and ACU1006DSRA hubs.

For shorter distances (up to 150 ft. [45.7 m]), select the smaller standalone micro model (ACUMREM). Use it with our ACU1006RA, ACU1012RA, and ACU1006DRA hubs only.

Choose the standalone serial model (ACUVREM) for bidirectional stereo audio. It can be used with each active port on our ACU1006VRA and ACU1006DVRA hubs.

A second standalone micro model (ACUWREM) is available with serial and bidirectional stereo audio. It extends distance only up to 150 feet (45.7 m). Order one for each active port on the ACU1006DVRA hub.

Add switching capabilities to the ACU1006RA and ACU1012RA hubs with the standalone model with an integrated KVM switch (ACUREMSW).

Two rackmount micro remote models are available, each with six modules in a chassis. The ACU1006MRA contains six ACUMREMs, and the ACU1006MRVA contains six ACUWREMs. The micro remote hub extends distances up to 150 feet (45.7 m).

You can adjust the extenders' video equalization to compensate for losses in image quality that such long cable runs can cause. All signals are fully buffered to guarantee remote users smooth, transparent control. And the hubs emulate keyboards and mice so that your CPUs can autoboot.

[Rackmount ServSwitch Brand CAT5 KVM Extender Hubs](#) are ready for rackmounting right out of the box. (Those not 19" wide can still be rackmounted using the RMK19U-R2 Rackmount Kits.)

## TECH SPECS

### Cable Required —

Between hubs and remote units:

Category 5 solid unshielded or shielded twisted pair (UTP or STP), wired to the TIA/EIA-568A or (preferred) -568B standard, terminated with RJ-45 M connectors

### Clamping Voltage — Up to 15 volts

### Compatibility —

Video: VGA, SVGA, XGA, XGA-2, or RGB (sync on green), although if your system has monitor ID-bit requirements, you might need to call Black Box for technical support;

Keyboard: IBM PC/AT or PS/2 compatible (PC/AT types require connector adapter);

Mouse: IBM PS/2 compatible two-button, Microsoft® IntelliMouse®, or Logitech® PS/2 compatible three-button

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

### Distance (Maximum) —

ACU1006RA, ACU1012RA, ACU1006DRA, ACU1006SRA, ACU1006DSRA, ACU1006VRA, ACU1006DVRA:

16.4 ft. (5 m) from a local hub to the attached local equipment;

16.4 ft. (5 m) from each remote unit to the attached remote equipment;

164 ft. (50 m) between a local hub and any Micro remote unit;

1000 ft. (304.8 m) between a local hub and any other type of remote unit;

ACUREM, ACUSREM, ACUVREM, ACUWREM, ACUREMSW, ACU1006MRA:

16.4 ft. (5 m) from the remote to the attached remote equipment;

1000 ft. (304.8 m) between a local hub and any other type of remote unit;

ACUMREM, ACUWREM:

16.4 ft. (5 m) between the remote and the attached remote equipment;

150 ft. (45.7 m) between a local hub and the micro remote unit

*NOTE: With high-quality cables, it might be possible to run farther than 16.4 ft. (5 m) from the hub or a remote unit to attached equipment.*

### Resolution (Maximum) —

ACUREM, ACUSREM, ACUVREM, ACUREMSW:

1600 x 1280: 200 ft. (61 m);

1280 x 1024: 300 ft. (91.4 m);

1024 x 768: 1000 ft. (304.8 m);

ACUMREM, ACUWREM:

1280 x 1024: 150 ft. (45.7 m)

### Serial Characteristics —

ACU1006SRA, ACU1006DSRA, ACUSREM:

Data rate: 9600 bps or 9.2 kbps, user selectable;

Data format: 8 data bits, no parity, 1 stop bit (fixed);

ACU1006VRA, ACU1006DVRA, ACUWREM:

Data rate: Up to 19.2 kbps;

Data format: 8 data bits, no parity, 1 stop bit (fixed);

ACUVREM, ACU1006MRVA:

Data rate: Up to 19.2 kbps;

Data format: 8 data bits, no parity, 1 stop bit;

ACU1006RA, ACU1012RA, ACU1006DRA, ACU1006SRA, ACU1006DSRA,

ACUREM, ACUSREM, ACUMREM, ACUREMSW, ACU1006MRA:

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;

ACU1006VRA, ACU1006DVRA, ACUVREM, ACUWREM, ACU1006MRVA:

Flow control: Transparent to hardware and software flow control (RTS, CTS, DTR, and DSR are all passed through across the link)

**Synchronization** — H/V or composite, TTL signal levels; sync polarity is preserved

### Video Bandwidth (to -3 dB) —

ACU1006RA, ACU1012RA, ACU1006DRA, ACU1006SRA, ACU1006DSRA, ACU1006VRA, ACU1006DVRA: 150 MHz per port;

ACUREM, ACUSREM, ACUVREM, ACUREMSW, ACU1006MRVA:

Intrinsic: 300 MHz;

Across 328 ft. (100 m) UTP: 95 MHz (with equalization)

### Video Compensation —

With ACUMREM, ACUWREM, ACU1006MRA: For short- or long-distance (user-selectable);

With all other remote units: 3-stage continuously variable

### Video Coupling — DC

### Video I/O Signal Levels — 0.7 volts peak to peak

### User Controls —

ACU1006SRA, ACU1006DSRA:

(6) internal data-rate jumpers (1 for each port);

(6) internal flow-control jumper blocks (1 for each port);

ACUREM, ACUSREM, ACUVREM, ACUREMSW:

(2) front-mounted dials: Brightness and Focus;

(3) internal video-distance (cable-length) jumpers;

(1) internal 4-position DIP switch for various options;

ACUSREM:

(1) internal data-rate jumper;

(1) internal flow-control jumper block;

ACUMREM, ACUWREM:

(1) bottom-mounted 2-position DIP switch for video distance (cable length) and keyboard-command recognition;

ACU1006MRA, ACU1006MRVA:

(6) internal 2-position DIP switches for video distance and keyboard-command recognition, (1) for each local-to-remote link;

ACUVREM, ACUWREM only:

(1) internal microphone-amplification jumper;

ACU1006MRVA only:

(6) internal microphone-amplification jumpers, (1) for each local-to-remote link

### Mean Time Between Failure (MTBF) — 40,000 hours

### Interface —

Between local hubs and remote units: Proprietary composite of all supported types of computer I/O;

On local hubs to CPUs:

Proprietary composite of VGA-compatible video and IBM PS/2 compatible keyboard and mouse;

ACU1006SRA, ACU1006DSRA, ACU1006VRA only: TIA/EIA RS-232 (DCE);

ACU1006VRA, ACU1006DVRA only: Bidirectional 3.5-mm mini stereo audio;

ACU1006DRA, ACU1006DSRA, ACU1006DVRA:

To local monitor: VGA;

To local keyboard and mouse: IBM PS/2 compatible;

Remote units: Depending on the type of unit, either separate or proprietary composite VGA video and IBM PS/2 compatible keyboard and mouse;

ACUREM, ACUSREM, ACUVREM, ACUREMSW, ACU1006MRVA only: TIA/EIA RS-232 (DTE);

ACUVREM, ACUWREM, ACU1006MRVA: 3.5-mm mini stereo audio

#### Connectors —

All: Power: (1) IEC 320 M to 2.5-mm center-positive barrel connector;  
ACU1006RA, ACU1012RA:  
Interconnect: (6) or (12) RJ-45;  
CPU: (6) or (12) DB25 F;  
ACU1006DRA:  
Interconnect: (6) RJ-45;  
CPU: (6) DB25 F;  
Keyboard and mouse: (12) 6-pin mini-DIN F;  
Monitor: (6) HD15 F;  
ACU1006SRA:  
Interconnect: (6) RJ-45;  
CPU: (6) DB25 F, (6) DB9 F;  
ACU1006DSRA:  
Interconnect: (6) RJ-45;  
CPU: (6) DB25 F, (6) DB9 F;  
Keyboard and mouse: (12) 6-pin mini-DIN F;  
Monitor: (6) HD15 F;  
ACU1006VRA:  
Interconnect: (6) RJ-45;  
CPU: (6) DB25 F, (6) DB9 F;  
Audio I/O: (12) 3.5-mm stereo sockets;  
ACU1006DVRA:  
Interconnect: (6) RJ-45;  
CPU: (6) DB25 F, (6) DB9 F;  
Keyboard and mouse: (12) 6-pin mini-DIN F;  
Monitor: (6) HD15 F;  
Audio I/O: (12) 3.5-mm stereo sockets;  
ACUREM, ACUMREM:  
Interconnect: (1) RJ-45;  
Keyboard and mouse: (2) 6-pin mini-DIN F;  
Monitor: (1) HD15 F;  
ACUSREM:  
Interconnect: (1) RJ-45;  
Keyboard and mouse: (2) 6-pin mini-DIN F;  
Monitor: (1) HD15 F;  
Serial: (1) DB9 F;  
ACUVREM, ACUWREM:  
Interconnect: (1) RJ-45;  
Keyboard and mouse: (2) 6-pin mini-DIN F;  
Monitor: (1) HD15 F;  
Audio I/O: (2) 3.5-mm stereo sockets;  
Serial: (1) DB9 M;  
ACUREMSW:  
Interconnect: (1) RJ-45;  
Keyboard and mouse: (2) 6-pin mini-DIN F;  
Monitor: (1) HD15 F;  
Switch: (1) DB25 F;  
ACU1006MRA:  
Interconnect: (6) RJ-45;  
Keyboard and mouse: (12) 6-pin mini-DIN F;  
Monitor: (6) HD15 F;  
ACU1006MRVA:  
Interconnect: (6) RJ-45;  
Keyboard and mouse: (12) 6-pin mini-DIN F;  
Monitor: (6) HD15 F;  
Audio I/O: (12) 3.5-mm stereo sockets;  
Serial: (6) DB9 F

**Indicators** — ACU1006RA, ACU1012RA, ACU1006DRA, ACU1006SRA, ACU1006DSRA, ACU1006VRA, ACU1006DVRA: Front-mounted LEDs (1 for each port) for power and link integrity;  
ACUREM, ACUSREM, ACUMREM, ACUVREM, ACUWREM, ACUREMSW, ACU1006MRA, ACU1006MRVA: None

#### Temperature Tolerance —

Operating: 32 to 104°F (0 to 40°C);  
Storage: -40 to +176°F (-40 to +80°C)

#### Humidity Tolerance —

5 to 90% noncondensing

#### Enclosure — Steel

#### Power —

To local hub:

5 VDC at up to 120 mA from each attached CPU's keyboard and mouse ports;

Optionally, from desktop power supply, PSU1006E-R2 (certified to the relevant international safety standards):

Input: 100 to 240 VAC at 47 to 63 Hz from utility-power (mains) outlet, through detachable power cord and IEC 320 M inlet, to external transformer;  
Output: 5 VDC regulated, at 1.5 amps minimum, from transformer to local hub;

To remote unit:

From desktop power supply, PSU1002E-R3 (certified to the relevant international safety standards):

Input: 100 to 240 VAC at 47 to 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 amp, from transformer to remote unit

**Size** — ACU1006RA, ACU1012RA, ACU1006DRA, ACU1006SRA, ACU1006DSRA, ACU1006VRA, ACU1006MRA, ACU1006MRVA:

1.75"H x 19"W x 4.5"D (4.4 x 48.3 x 11.4 cm);

ACU1006DVRA: 3.5"H x 17.3"W x 4.5"D (8.9 x 43.9 x 11.4 cm);

ACUREM, ACUSREM, ACUREMSW: 1.4"H x 7"W x 3.9"D

(3.6 x 17.8 x 9.9 cm);

ACUMREM: 1.5"H x 3.1"W x 4.3"D (3.8 x 7.9 x 10.9 cm);

ACUVREM: 1.4"H x 7.8"W x 3.9"D (3.6 x 19.8 x 9.9 cm);

ACUWREM: 2"H x 3.1"W x 4.3"D (5.1 x 7.9 x 10.9 cm)

#### Weight —

ACU1006RA, ACU1006DRA, ACU1006SRA, ACU1006VRA,

ACU1006DVRA: 3 lb. (1.4 kg);

ACU1012RA: 4.3 lb. (2 kg);

ACU1006DSRA: 6.6 lb. (3 kg);

ACUREM, ACUSREM, ACUVREM, ACUWREM: 1.1 lb. (0.5 kg);

ACUMREM: 0.5 lb. (0.2 kg);

ACUWREMSW: 1.4 lb. (0.6 kg);

ACU1006MRA, ACU1006MRVA: 4 lb. (1.8 kg)





ACU1006RA:  
top: front view;  
bottom: rear view

## What's included

When you order a Rackmount ServSwitch Brand CAT5 KVM Extender Hub, you'll also receive:

- ◆ (1) 5-VDC (1.5 amps or higher) power-supply transformer and output cord for optional video power
- ◆ (1) input cord for the optional power supply, suitable for your country or region
- ◆ (1) users' manual

When you order a Standalone Remote Unit, you'll also receive:

- ◆ (1) 9-VDC, 1-amp power-supply transformer and output cord
- ◆ (1) power-supply input cord suitable for your country or region
- ◆ (1) users' manual

When you order a Rackmount Remote Unit, you'll also receive:

- ◆ (1) 9-VDC, 1-amp power-supply transformer and output cord
- ◆ (1) power-supply input cord suitable for your country or region
- ◆ (1) pair of rackmount ears for 19" rack
- ◆ (1) users' manual

## What else you might need:

- Solid-core 4-pair Category 5 UTP or STP, pinned and paired according to TIA/EIA-568A or (preferably) TIA/EIA-568B, to run from your hub to your remote unit. (Bulk CAT5 cable should be terminated with high-quality RJ-45 plugs.) To use Category 5e or Category 6 cable, call Black Box for technical support.
- CPU extension cables.
- Serial extension cables.
- A 19" rack or cabinet.
- A monitor for each user station (each monitor must work when attached directly to any of the CPUs connected to the extender).
- A standard IBM PC/AT or PS/2 keyboard for each user station where users will need keyboard control.
- A standard PS/2 compatible mouse for each user station where users will need mouse control.

## Item

## Code

### First, choose the hub for your application...

Rackmount ServSwitch Brand CAT5 KVM Extender Hubs

6-Port Standard	ACU1006RA
12-Port Standard	ACU1012RA
6-Port Dual-Access	ACU1006DRA
6-Port with Serial	ACU1006SRA
6-Port Dual-Access with Serial	ACU1006DSRA
6-Port with Serial and Bidirectional Stereo Audio	ACU1006VRA
6-Port Dual-Access with Serial and Bidirectional Stereo Audio	ACU1006DVRA

### ...then order a remote unit for each active hub port...

Standalone Remote Units

Standard	ACUREM
Serial	ACUSREM
Micro	ACUMREM
Serial and Bidirectional Stereo Audio	ACUVREM
Micro with Serial and Bidirectional Stereo Audio	ACUWREM
with Integrated KVM Switch	ACUREMSW

### You can also choose rackmount remote units with six units in a chassis...

Rackmount Remote Units

Micro (ACUMREM)	ACU1006MRA
Micro with Serial and Bidirectional Stereo Audio (ACUWREM)	ACU1006MRVA

### For optimum performance and a 20% savings, order...

Category 5 Solid-Conductor Cable, 4-Pair, Straight-Pinned	
Preterminated Patch Cable (Specify Length)	EYN737MS
100-MHz Bulk Cable, 1000-ft. (304.8-m)	
PVC	
Spool	EYN840A-1000
Box	EYN840A-B
Plenum-Rated	
Spool	EYN860A-1000
Box	EYN860A-B
Coaxial CPU Cable for CAT5 KVM Extenders	
3-ft. (0.9-m)	EHN230-0003
10-ft. (3-m)	EHN230-0010
15-ft. (4.6-m)	EHN230-0015
DB9 Extension Cable, Male/Female	EDN12H-MF

### You may also need...

AT <sup>®</sup> →PS/2 <sup>®</sup> Mouse GHOST Emulator	AC244A
5-Pin DIN Male to 6-Pin Mini-DIN Female Keyboard Adapter	
	FA222-R2
19" Rackmount Kit	RMK19U-R2
9-Volt Power Supply	PSU1002E-R3
5-Volt Power Supply	PSU1006E-R2

### If you want to use CAT5e or CAT6 cable, order...

ServSwitch Brand CAT5 Extender Delay Line Module	ACUDLY
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### For better twisted-pair performance, choose...

ServSwitch Wizard <sup>™</sup> Skew Compensator	ACU5100A
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