



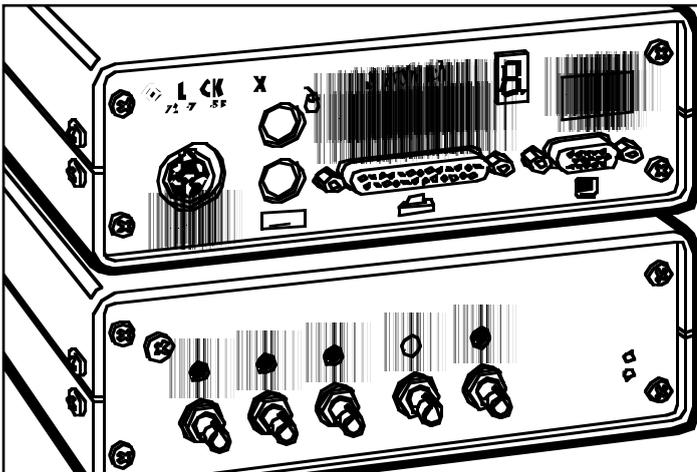
# BLACK BOX<sup>®</sup>

## NETWORK SERVICES

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## SERVSWITCH<sup>™</sup> BRAND FIBER KVM EXTENDERS



*Control a CPU from as much as  
1000 metres (3280 ft.) away, across  
safe, secure fibre optic cable!*

### Key Features

- ▶ **Fibre optic KVM extension for PC or Sun.**
- ▶ **Drive keyboard, video, and mouse signals over multimode fibre cable as far as 3280 ft. (1000 m).**
- ▶ **Also carry parallel (PC version) or serial (Sun) printer signals.**
- ▶ **Support a variety of video types at up to 1280 x 1024 resolution or 100-Hz refresh rates.**
- ▶ **Include both local and remote modules.**
- ▶ **Come with most cables and adapters.**
- ▶ **Rackmountable with optional kit.**

You've seen KVM accessories that you can use to access and control a CPU from the next room or the next building with copper cable. But what if you need to work with a CPU a half-mile away, or if you need better-than-copper security, or if you have to run cable right past a generator?

Situations like these, that call for fibre, are what the ServSwitch<sup>™</sup> Brand Fibre KVM Extenders are made for. They greatly extend the distance between a computer CPU and the keyboard, mouse, monitor, and peripheral that you'll be using—especially in electrically noisy environments.

Normal keyboard-, video-, and mouse-extension cables (and extenders that use normal cabling) can only go so far, and electromagnetic noise can limit their distance and reliability. But with a fibre optic system like the ServSwitch Brand Fibre KVM Extender, these concerns are a thing of the past. You can leave the computer CPU in a secured cabinet or data centre while you

operate it from a convenient remote user station. Using five multimode fibres, the extender system can reach as far as 3280 ft. (1000 m) on either 62.5- $\mu$ m or 50- $\mu$ m fibre.

What's more, the extender units automatically adapt to the correct transfer rates for all of your data; you won't need to manually set these rates.

For monitoring operation, the ServSwitch Brand Fibre KVM Extender remote module has a 7-segment display that continuously indicates system status.

#### **What you need to get started.**

The extender consists of two main components: a local module that you attach to either an IBM<sup>®</sup> PC compatible CPU (with the ACS235A-K) or a Sun<sup>®</sup> CPU (with the ACS236A-K), and a remote module that you attach to your user equipment.

Except for the cabling between the local and remote modules and the ACS236A-K's serial-extension cable, the extender comes with just about

everything you'll need for a basic installation (see "The complete package" on page 2). This includes a specially bonded three-to-three KVM-extension cable for attaching your CPU.

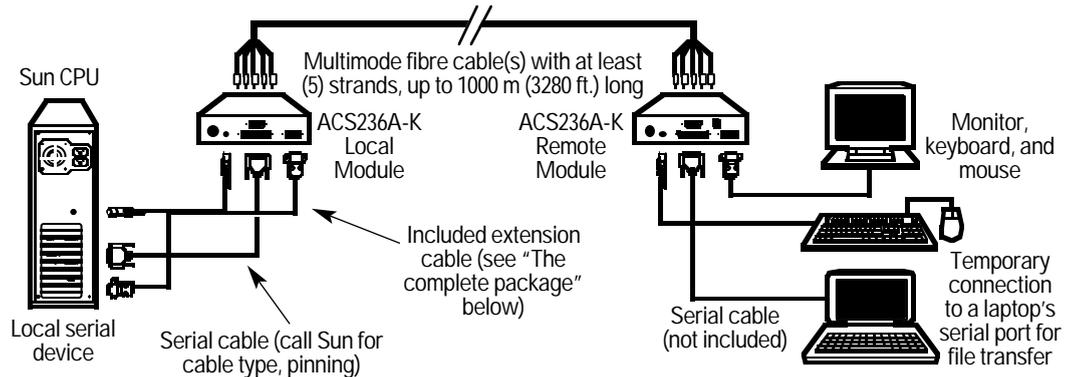
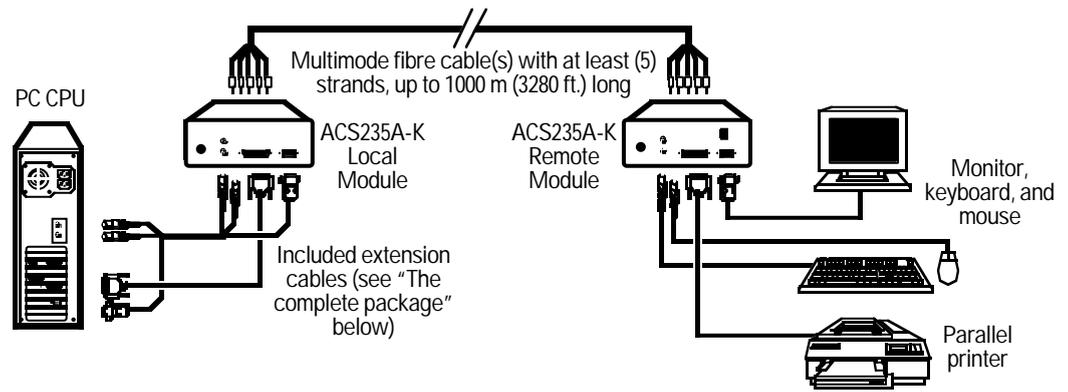
Rackmount kits for mounting one or two extender modules in 19" racks are also available.

#### **Fine-tune the image.**

With both models, your video can be VGA, SVGA, or XGA type. With the ACS235A-K, it could even be RGB type (although RGB I/O will have to be patched to VGA-style HD15 connectors). With the ACS236A-K, the video can be legacy Sun type; it has both HD15 and 13W3 video connectors, but only one can be in use at any given time. Resolution and refresh rate can be as high as 1280 x 1024 at 75 Hz. (NOTE: Plug and Play functions for monitors aren't supported.)

Don't worry about the video getting horribly distorted—the ServSwitch Brand Fibre KVM Extenders feature automatic gain control that cleans up most video problems automatically. And if

Use the extenders for remote control of a CPU — really remote control.



NOTE: Strand separation shown here for the 2-in-1 and 3-in-1 CPU-extension cables is exaggerated for clarity.

they don't arrive at the correct amplification, you can control the gain manually to match the length of fibre optic cabling you're using. By default, the modules' jumpers are set for automatic gain control, but with a flip of a switch, you can use manual gain control. Contrast and brightness dials on the rear panel of the remote module can be tweaked to optimise the video image, too.

In addition to user-selectable jumpers for configuring the type of video signals to transmit and means of gain control, the ServSwitch™ Brand Fibre KVM Extender's local module has jumpers that you use for choosing your type of fibre cable (62.5/125-µm or 50/125-µm fiber).

#### Standard interfaces for keyboards and mice.

The PC extender's keyboard and mouse interfaces are standard PS/2® type interfaces, so you can attach just about any standard PS/2 compatible keyboard and mouse to the unit. To attach a PC/AT® style keyboard with a 5-pin DIN connector to the extender, you'll need a keyboard adapter (order code FA211).

The Sun extender's keyboard and mouse interface is a standard Sun type interface, so you can attach just about any standard Sun compatible keyboard and mouse to the unit. It's transparent to Sun keyboard type and keyboard language.

#### Parallel or serial ports, too.

Along with KVM signals, the PC version (ACS235A-K) can carry unidirectional parallel-printer signals, and the Sun version (ACS236A-K) can carry RS-232 serial signals at speeds up to 38,400 bps. Through the PC version's IBM® PC style (Centronics® compatible) parallel interface, you can attach any basic parallel printer (IBM PC or Centronics type) to the extender (\*). The Sun extender's EIA/TIA RS-232 serial interfaces (DCE on the local module and DTE on the remote module) can be used to attach just about any serial device, including a printer, scanner, or touchscreen.

(\*) NOTE: The PC version's parallel interface cannot be used to attach Zip® drives and other parallel devices, nor can it be used for parallel file transfer using utilities such as Laplink®. It also does not support the newer IEEE 1284 or Bitronics®

signaling, and the latest version of the standard parallel-printer device driver from

HP® will not work with printers attached to a CPU across an extender link.

## The complete package

Included with both extenders:

- (1) local extender module
- (1) remote extender module
- (2) power supplies ([1] for each module)
- *North American customers:* (2) power cords ([1] for each power supply)
- (1) set of (8) adhesive feet
- Users' manual

The ACS235A-K also includes:

- (1) 10-ft. (3-m) keyboard/video/mouse CPU-extension cable with an HD15 female video connector and 6-pin mini-DIN PS/2 keyboard and mouse connectors
- (1) 10-ft. (3-m) DB25 male to DB25 female IBM PC parallel (Centronics compatible) extension cable
- (1) 6-in. (15.2-cm) PC/AT keyboard-port adapter (6-pin mini-DIN female to 5-pin DIN male)
- (1) RS-232 serial mouse-port adapter (6-pin mini-DIN female to DB9 female)

The ACS236A-K also includes:

- (1) 10-ft. (3-m) keyboard/video/mouse CPU-extension cable with an HD15 female video connector and 8-pin mini-DIN Sun keyboard and mouse connectors

# Specifications

**Cable Required:** 62.5/125- $\mu$ m or 50/125- $\mu$ m multimode fibre optic breakout cable with at least (5) strands (not included)

**Compliance:** CE (EN 55022, 50082-1); FCC Class B, IC Class/classe B

**Data Rate:**

ACS235A-K's parallel interface:  
Transparent to data rates up to 20,000 cps;

ACS236A-K's serial interface:  
Transparent to data rates up to 38,400 bps

**Distance (Maximum):** 3280 ft. (1000 m) between local and remote modules

**Resolution:** Up to 1280 x 1024

**Refresh Rate:** Up to 75 Hz

**Optical Loss (Maximum):** 5 dB

**Optical Wavelength:** 850 nm

**Total Output Power:**

Into 62.5- $\mu$ m cable: Typically 88 microwatts;  
Into 50- $\mu$ m cable: Typically 40 microwatts

**User Controls:** Both: Rear-mounted on the remote module:

- (2) dials for contrast and brightness;
- (3) trimpots for adjusting color-signal gain;

**ACS235A-K:**

- (12) internal jumper sets for configuration options:
- (6) inside local module,
- (6) inside remote module;

**ACS236A-K:**

- (7) Internal jumper sets for configuration options:
- (4) inside local module,
- (3) inside remote module

**Interfaces:**

All models: Multimode fiber optic for extension;

Plug and Play not supported for monitors;

Keyboard must not require more than 100 mA to operate;

**ACS235A-K:**

Video: VGA, SVGA, XGA, XGA-2, or RGB (RGB must be patched to an HD15 connector);

Keyboard and mouse: IBM® PS/2® compatible;

Printer: IBM PC parallel (Centronics® compatible);

**ACS236A-K:**

Video: Either legacy Sun® type or VGA, SVGA, XGA, or XGA-2;

Keyboard and mouse: Sun type;

Serial device: EIA/TIA RS-232 (ITU V.24/V.28) pinned according to TIA-574 (PC serial-port compatible)

**Connectors:**

Both: On both local and remote modules:

- (5) rear-mounted ST® F for module-to-module link;
- (1) front-mounted 6-pin DIN for power;

**ACS235A-K: Front-mounted;**

On local module:

- (2) 6-pin mini-DIN F:
  - (1) for CPU's keyboard port,
  - (1) for CPU's mouse port;
- (1) HD15 M for CPU's video port;
- (1) DB25 M for CPU's parallel port;

On remote module:

- (2) 6-pin mini-DIN F:
  - (1) for keyboard,
  - (1) for mouse;
- (1) HD15 F for monitor;
- (1) DB25 F for parallel printer;

**ACS236A-K: Front-mounted;**

On local module:

- (1) 8-pin mini-DIN F for CPU's keyboard and mouse ports;
- (1) HD15 M for CPU's video port (if it's VGA type);
- (1) 13W3 M for CPU's video port (if it's legacy Sun type);
- (1) DB9 F for serial connection;

On remote module:

- (1) 8-pin mini-DIN F for keyboard and mouse;
- (1) 13W3 F for monitor (if it's legacy Sun type);
- (1) HD15 F for monitor (if it's VGA or multisync type);
- (1) DB9 M for serial device

**Indicators:** (1) front-mounted 7-segment LED display on remote module; (1) rear-mounted LED for power on each module

**Temperature Tolerance:**

Operating: 50 to 113°F (10 to 45°C);  
Storage: 23 to 131°F (-5 to +55°C)

**Humidity Tolerance:**

Up to 80% noncondensing

**Power:** From utility-power (mains) outlet, through external transformer:

Input: 100–240 VAC, 47–63 Hz, autosensing, at up to 700 mA;

Output: +12 VDC at 2.1 amps;

Consumption: Approximate:

Local module: 8 watts;

Remote module without

keyboard: 8 watts;

Remote module with

keyboard: 9 watts

**Size:** Each module: 2.2"H x 6.3"W x 7.5"D (5.6 x 16 x 19.1 cm)

**Weight:** Net for each module:

2 lb. (0.9 kg);

Shipping (both modules plus accessories): At least 7.7 lb. (3.5 kg)

## What else you might need

You might need the following for either extender model:

- Fibre optic patch cable to connect the extender's modules to the demarcation points of your sites
- 62.5/125- $\mu$ m or 50/125- $\mu$ m multimode fibre optic cable to connect your local site to your remote site
- A fibre optic termination or installation kit and ST connectors for unterminated cable
- A rackmount kit

- Surge protectors and/or uninterruptible power supplies for your extenders and your attached equipment (for assistance in determining the best type of power protection for your application, call Black Box Tech Support)

You might need the following for the ACS235A-K:

- A keyboard adapter to attach a PC/AT style keyboard with a 5-pin DIN connector

You might need the following for the ACS236A-K:

- *If you're using a legacy Sun CPU that outputs video on a 13W3 connector:*  
A Sun video-extension cable to take the place of the included cable's video strand (do *not* use a standard HD15 to 13W3 "Sun video adapter" or "Sun video adapter cable" to patch the included cable's video strand to the CPU! These are *not* pinned correctly for use with the extender!)

- *If you're transmitting serial data across the fibre link:*  
Serial cables to attach your equipment to the local and remote modules (for help selecting the cables you'll need for your application, call Black Box Tech Support)

# 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.

## Ordering Information

ITEM	CODE
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ServSwitch™ Brand Fibre KVM Extender Kits	
For PC.....	ACS235A-K
For Sun .....	ACS236A-K

### To connect an extender to the demarc, order...

ServSwitch Fibre Patch Cable, (5) Color-Coded 62.5/125-µm Multimode Strands plus Spare, ST Male to Male	
For PC 1-m (3.2-ft.) .....	EFN235-1
5-m (16.4-ft.) .....	EFN235-5
For Sun 1-m (3.2-ft.) .....	EFN236-1
5-m (16.4-ft.) .....	EFN236-5

### For indoor runs between extenders or demarcs, order...

Fibre Optic Cables, Breakout Style, Bulk (Unterminated),	
500-ft. (152.4-m) 6-Fibre .....	EFN1006A-0500
8-Fibre .....	EFN1008A-0500
12-Fibre .....	EFN1012A-0500
Custom Lengths 6-Fibre .....	EFN1006A
8-Fibre .....	EFN1008A
12-Fibre .....	EFN1012A
Terminated (ST),	
Custom Lengths 6-Fibre .....	EFN1006A-ST
8-Fibre .....	EFN1008A-ST
12-Fibre .....	EFN1012A-ST

### For outdoor runs between demarcs, order...

Loose-Tube Outside-Plant Fibre Cables	
Bulk (Unterminated),	
Custom Lengths 6-Fibre .....	EFN3006A
12-Fibre .....	EFN3012A
Terminated (ST),	
Custom Lengths 6-Fibre .....	EFN3006A-ST
12-Fibre.....	EFN3012A-ST

Armored Loose-Tube Outside-Plant Fibre Cables, Bulk (Unterminated) for Extreme Conditions,	
1000-ft. (304.8-m) 6-Fibre .....	EFN4070A-1000
12-Fibre .....	EFN4075A-1000

*NOTE: Versions of these cables with more fibre strands are also available. For more information, refer to our catalogue or [www.blackbox.co.uk](http://www.blackbox.co.uk), or call us.*

### You may also need...

19" Rackmount Kit for (1) Module .....	RMK235
for (2) Modules .....	RMK235-2
Spare Power Supply.....	PS235
Complete Fibre-Installation Kit.....	FT500A
ST Connectors, Pack of (10).....	FO557A
IBM AT Keyboard Adapter, 5-Pin DIN Female to 6-Pin Mini-DIN Male.....	FA211