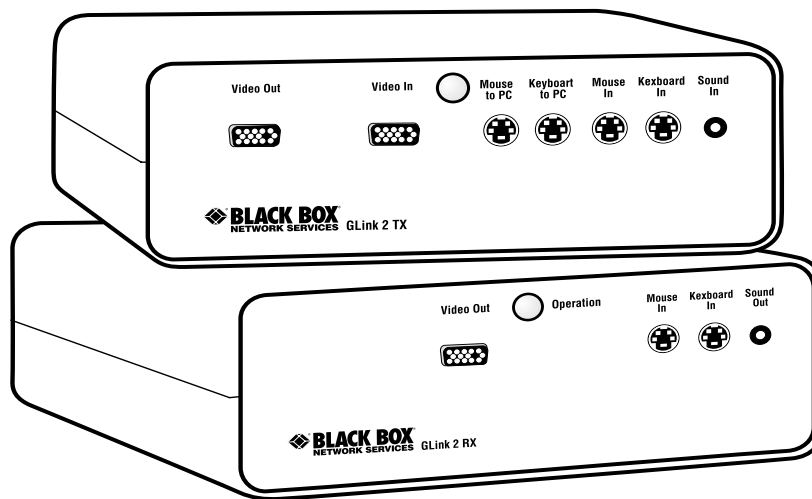# BLACK BOX®
NETWORK SERVICES

GLINK

Key Features

▶ Digital transmission of video, mouse, keyboard and sound information

▶ over distances of up to 10 km on only two fibers

▶ Supports local operation of CPU/workstation

▶ Supports all common graphical resolutions (DOS,VGA,XGA) up to SXGA(1280x1024)

▶ Automatic adjustment of all transmission and image parameters. No user interaction necessary.

▶ Available as kit, including all cables and power supplys, except fibre cable.

▶ Rack mount option available

Kvm solutions are well know on market. Our GLINK-Kit differs completely from those devices. Former analog image transmission systems suffer from image quality degradations, especially when used on long haul distances and high resolutions like SXGA.

GLINK is a digital image transmission system. Video information are automatically digitized by the transmitting device (TX) and transmitted serialy on only one fiber to the receiving unit (RX). There, digital data are converted back to (the former) analog video signal. The system is working with serial data rates up to 1.5GBit per second. Using digital techniques, image quality is independent of length of fibre (taking max. specified length into account).
It is necessary to have a second fibre, when remote mouse and keyboard information should be send back to the workstation (downlink).
Over all, GLINK needs only two fibres for full operation, compared to analog optical systems, which need up to five lines. This will save money, especially for a long distance solution.

There are two models of GLINK Kit:
• GLINKMM for multimode fiber. On 50µ/125µ multimode fiber you can make up to 400m
• GLINKSM for singlemode fiber. System will run on up to 10km

Additionally to keyboard, video and mouse information, TX also digitizes monaural sound information and encodes it to the digital uplink data stream. So you will be able to operate your CPU on long distance even with sound information, which is especially usfull for warning messages. Sound quality is not HiFi, but like telephony.
GLINK TX unit also supports an automatic mouse and keyboard switch and a video loopthrough. By attaching an additional mouse, a keyboard and a display to the TX unit, you can set up a local operation, so CPU can be used loaclly and remote. By pressing a key or moving the mouse, control can be transfered to the active user.

TX Unit
The TX unit is mounted in a metal housing of size 7.3 x 7.1 x 2.6 inches. On its front panel, there are some connectors, that you should set up to

prepare operation. Please power down your workstation equipment before connecting TX unit!
• Video-In: a 15 pin HD-Sub female connector (VGA standard), to be connected to the video output of the graphics card of the workstation. The VGA cable is included within the kit.
• Mouse to PC: 6 pin Mini-DIN connector (PS/2). Please connect mouse output of your workstation to this port with one of the PS/2-style cables included.
• Keyboard to PC: 6 pin Mini-DIN connector (PS/2). Please connect keyboard output of your workstation to this port with the other PS/2-style cable included in the kit.
• Sound In: If sound transmission is desired, please attach sound output of your workstation to this port, using the included 3.5mm-jack stereo cable.

For local console operation, if desired, please set up these connections:
• Video-Out: a 15 pin HD-Sub female connector (VGA standard). Please attach your local display here. There is no cable included in the kit,

normally your monitor should provide one. DDC (Plug&Display) is not supported on this connector, your workstation will not autodetect displaying device. Perhaps you must configure monitor type manually in operating system of your workstation.

- Mouse-In: 6 pin Mini-DIN connector (PS/2). Please attach your local PS/2-compatible pointing device (mouse) here.
- Keyboard-In: 6 pin Mini-DIN connector (PS/2). Please attach your local PS/2-compatible keyboard here. Former AT-style keyboards can be attached, too, by using an adaptor (not included).

After attaching front side cabels, you need to make up some connections on rear:

- Video: fiber optical connector for Duplex-SC. Please attach your duplex fiber (not included) here. The connector is coded, so nothing can go wrong. Other end of fiber can be attached later to the receiving unit (RX). For proper operation, please check type of fiber. ACS250A Kit will only work on multimode (50μ/125μ) fiber. ACS251A Kit will only work on singlemode (9μ) fiber properly.
- Power: 2.1mm concentric connector, power supply input. Please use included 12V DC power supply and connect primary side to mains.

If you succesfully set up TX unit, and no video signal is present, green indication light (LED) on front panel should flash. Congratulations!

To finalize desription of TX unit connectors, there is one additional connector on rear:

- Service: extension port for service and maintenance issues of manufactorer. Never make any connections to this port, this can damage or destroy unit!

RX Unit
The RX unit is mounted in a metal housing of size 7.3 x 7.1 x 2.6 inches. On its front panel, you' ll find a specification „GLINK RX"

To make system work, you sould make some connection to the RX unit.

- Video-Out: a 15 pin HD-Sub female connector (VGA standard). Please attach your displaying device (monitor, flat panel) to this connector. Please use cable provided with your displaying device.
- Mouse-In: 6 pin Mini-DIN connector (PS/2). Please connect your pointing device (mouse, trackball, etc.) to this port.
- Keyboard-In: 6 pin Mini-DIN connector (PS/2). Please attach your PS/2- compatible keyboard here. Former AT-style keyboards can be attached, too, by using an adaptor (not included).
- Sound Out: If sound transmission is desired, please attach a pair of active speakers (not included) to this connector (stereo 3.5mm jack). Adjust volume by using volume control of your operating system and by adjusting volume of your active speakers. Please use only active speakers, drive level of RX unit is not high enough to operate passive speakers.

To make RX unit run, you have to make two connections on rear of RX:

- Video: fiber optical connector for Duplex-SC. Please attach your duplex fiber (not included), coming from TX unit, here. The connector is coded, so nothing can go wrong. For proper operation, please check type of fiber. ACS250A Kit will only work on multimode (50μ/125μ) fiber. ACS251A Kit will only work on singlemode (9μ) fiber properly.
- Power: 2.1mm concentric connector, power supply input. Please use included 12V DC power supply.

There is also one connector on rear, that should never be used:

- Service: extension port for service and maintenance issues of manufactorer. Never make any connections to this port, this can damage or destroy unit!

If TX unit is running (see A) and everything is connected, you can power up RX unit by powering up the 12VDC power supply. If displaying device is

running, you should see a grey box on screen saying „no signal". This is OK and says: fiber optical link is working, no video (RGB-)signal available on TX. If you turn on your workstation, you should see it boot, and after that you will be able to opearate it successfully. If fiber link is missing or broken, or power of TX unit is down, RX unit will message you with a red on-screen box that says „no fiber link". Please check fiber and / or power supply of TX unit.

Video processing
TX unit contains powerful electronics to process your video signal with superior quality. According to the input resolution, graphical data is digitized to 32.768 different colours.

TX unit does support these resolutions:

- DOS-Mode 640x400, 720x400, 640x350, 720x350 up to 85Hz vertical refresh rate
- VGA 640x480 up to 85Hz vertical refresh rate
- SVGA 800x600 up to 85Hz vertical refresh rate
- XGA 1024x768 up to 75Hz vertical refresh rate
- 1152x864 up to 75 Hz vertical refresh rate
- SXGA 1280x1024 up to 72 Hz vertical refresh rate

For proper synchronisation, TX unit supports these modes:

- separate H- and V-Sync, common on PCs
- Composite Sync on HSync-line, like some old machine control systems
- Sync-On-Green, common on many UNIX-workstations

On local „Video-Out"-connector of TX unit, almost all video signals (except DDC) of Video-In are available. They are buffered internally for better signal integrity.

Brightness and contrast of video signal are adjusted automatically before digitizing the signal. This ensures perfect video quality and user need not to adjust parameters.
When a new resoltuion is detected, TX unit will adjust all digitizing parameters automatically. Only a few seconds later, you will have a sharp, crisp and colorful image. Without user interaction!
TX unit checks all video parameters permanently, so video quality is ensured all the time.

After digitizing the video, it is serialized and transmitted digitally over the fiber. Inside the RX unit, signal is converted back to analog domain and is now available on the Video-Out-connector. Spatial resolution of output signal is always same as input on the TX unit, but vertical refresh rate can be modified:

- resolutions smaller than or equivalent to 1152x864 Pixels will have 75Hz as refresh rate.
- SGXA (1280x1024 Pixels) input video will be put out with 60Hz refresh rate.

Sync signals on RX unit will always be separate HSync and VSync on two lines of the Video-Out-connector. To attach a displaying device with five BNC-style connectors, please use HDSUB15-to-BNC-adaptor cable (not included).

Please check, if displaying device supports those resolutions and refresh rates. If it does not, you will not get proper picture quality or it even blanks video content, so you will se nothing at all.

Mouse and Keyboard Switch
TX unit contains an automatic mouse-keyboard-switch. It supports all common PS/2-style pointing devices like two-button, three-button, Intelli-Mouse®, Trackball, Wheelmouse, etc.

Sound processing
Stereo sound is converted to a monaural signal, then digitized with 8 bits and about 16kHz sampling rate. TX unit supports standard input signal levels of 0.7Veff. RX unit converts signal back to analog audio. You can use volume control of your active spreakers to adjust volume.

Specifications

Fiber cable to be used —
50µ/125µ multimode fiber for ACS250A
9µ/125µ singlemode fiber for ACS251A

Approvals (pending by 6/01) —
CE, UL, FCC

Interfaces on TX unit —
Video-In: HDSUB15, female
Video-Out: HDSUB15, female
keyboard and mouse: IBM PS/2 compatibel
(4 connectors)
Sound: 3,5mm stereo jack, 0,7Veff Audio
fiber connector: Duplex-SC-Mount (rear)
Power: power supply 12VDC, about 1,1Amps on a 2,1mm concentric connector

Interfaces on RX unit —
Video-Out: HDSUB15, female
keyboard and mouse: IBM PS/2 kompatibel (2 connectors)
Sound: 3,5mm stereo jack, about 0,7Veff Audio
fiber connector: Duplex-SC-Mount (rear)
Power: power supply 12VDC, about 1,0Amps on a 2,1mm concentric connector

Resolution and refresh rate —
up to SXGA (1280x1024), up to 75Hz (depending on spatial resolution)

Optical data —
wavelength ca. 850nm for ACS250A
wavelength ca. 1300nm for ACS251A
optical transmission power —
typ. –9,0..-4,5dBm for ACS250A
typ. –9,0..-3,0dBm for ACS251A

Optical budget —
ACS250A: max. 7,5dB
ACS251A: max. 10,5dB

Supported distances —
ACS250A: max. 400m on 50µ/125µ-MM-fiber, 220m on 62,5µ/125µ-MM-fiber
ACS251A: max. 10km on 9Ω-SM-fiber

Indication lights —
• TX unit: green LED on front panel. If no video signal is present and power is up, this LED flashes. If supported video is present, persistent green light indicates proper operation.
• RX unit: green LED on front panel. If no fiber connection is present or TX power is down, this LED flashes. If everything is OK and device is opeating, this light is on.

Power supply —
• TX unit: 12VDC/1,1Amps; uses wide input range power supply 100-264VAC, 50-60Hz, autosensing
• RX unit: 12VDC/1,0Amps; uses wide input range power supply 100-264VAC, 50-60Hz, autosensing

Operating conditions —
environement temperature 10-40 °C, up to 70% rel. humidity

Mechanical dimensions —
TX unit
WxHxD 186,0 x 66,0 x 180,0 mm, 1,1 kg
RX unit
WxHxD 186,0 x 66,0 x 180,0 mm, 1,0 kg.

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Ordering information

ITEM	CODE
Multi Mode Extender	ACS250A
Single Mode Extender	ACS251A

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