

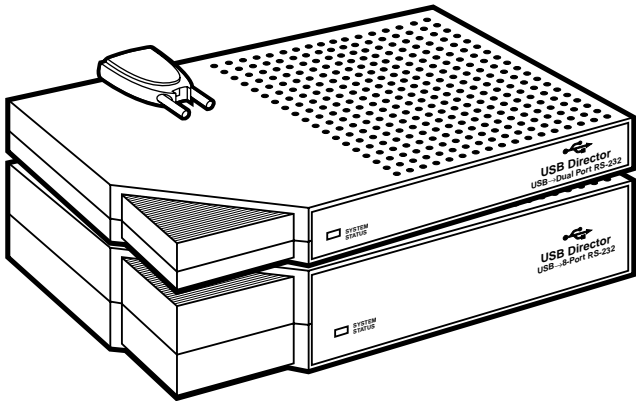


JULY 2002

IC135A IC1001A

IC1000A IC1002A

USB Directors RS-232



CUSTOMER SUPPORT INFORMATION

Order **toll-free** in the U.S.: Call **877-877-BBOX** (outside U.S. call **724-746-5500**)

FREE technical support 24 hours a day, 7 days a week: Call **724-746-5500** or fax **724-746-0746**

Mailing address: **Black Box Corporation**, 1000 Park Drive, Lawrence, PA 15055-1018

Web site: www.blackbox.com • E-mail: info@blackbox.com

FEDERAL COMMUNICATIONS COMMISSION AND INDUSTRY CANADA RADIO-FREQUENCY INTERFERENCE STATEMENTS

This device complies with the requirements of the Code of Federal Regulations listed below:

FCC Title 47 CFR, Part 15 Class B for a digital device.

Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that might cause undesired operation.

Class B Digital Device. This equipment has been tested and found to comply with the limits for a Class B computing device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. This equipment generates, uses, and can radiate radio frequency energy, and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. If this equipment does cause harmful interference to radio or telephone reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

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- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an experienced radio/TV technician for help.

Caution:

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Warning: Connecting a non-shielded interface cable to this device will invalidate this device's FCC Certification.

This digital apparatus does not exceed the Class B limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe B prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

EUROPEAN UNION DECLARATION OF CONFORMITY



This product conforms to the EMC Directive 89/336/EEC, Low Voltage Directive 73/23/EEC, and the Amending Directive 93/68 EEC, using the relevant section of the following EU standards and other normative documents:

- **Safety:** All models: IEC 950: 1991 + A1, A2, A3, A4;
EN 60950: 1992 + A1, A2, A3, A4
- **EMC:**
 - All models: EN 55022 Class B (1994 w/A1 1995), EN 55024;
 - IC1001A, IC1002A, IC135A: EN 50082-1: 1992 "Immunity to Electromagnetic Disturbance," and IEC 801-2, 801-3, and 801-4

UL/CSA STATEMENT

This product complies with the requirements of UL® 1950, 3rd edition, and CSA No. 950.

NORMAS OFICIALES MEXICANAS (NOM)


ELECTRICAL SAFETY STATEMENT

INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.

11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
 - A: El cable de poder o el contacto ha sido dañado; u
 - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
 - C: El aparato ha sido expuesto a la lluvia; o
 - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
 - E: El aparato ha sido tirado o su cubierta ha sido dañada.

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1. Specifications

System Requirements: Pentium® class CPU with at least 16 MB RAM and at least one available USB type A (downstream) port, running Windows 95 (at least OSR2), 98, 98 SE, 2000, Windows CE, Windows Me, or Windows NT

Compliance:

EMI/RFI: CE (EN 55022, EN 55024) Class B,
FCC Part 15 Subpart B Class B, IC Class/classe B;
Safety: UL® 1950 (3rd. ed.), CSA No. 950, IEC 950,
EN 60950

Interfaces: Universal Serial Bus v1.1 (can be attached to USB 2.0 devices but will operate at USB 1.1 data rates), EIA/TIA RS-232

Serial Characteristics:

Data rate: Up to 230 kbps;
Serial port(s) can be set to any data format, flow control, or duplex setting the PC application supports

User Controls: Software drivers on included CD

Indicators:

IC1000A: None;

IC1001A, IC1002A, IC135A: (1) Front-mounted tricolor LED

Connectors:

All models: (1) USB Type B female (front-mounted on IC1001A, rear-mounted on other models);

Rear-mounted DB9 male for RS-232:

IC1000A: (1);

IC1001A: (2);

IC135A: (4);

IC1002A: (8)

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

Humidity Tolerance: Up to 95% noncondensing

Power: USB-bus-powered, consumes less than 200 mA at full operating speed

Size:

IC1000A: 0.8"H x 1.75"W x 3"D (2 x 4.4 x 7.6 cm); DB9 thumbscrews protrude an additional 0.15" (0.4 cm) from the rear;

IC1001A, IC135A: 1"H x 7"W x 4"D (2.5 x 17.8 x 10.2 cm);

IC1002A: 1.75"H x 7"W x 4.25"D (4.4 x 17.8 x 10.8 cm)

Weight:

IC1000A: 1.6 oz. (45 g);

IC1001A: 12 oz. (340 g);

IC1002A, IC135A: 1 lb. (0.5 kg)

2. Introduction

2.1 Overview

The USB Directors RS-232 are intelligent expansion modules that connect to a PC or server running Microsoft® Windows® 95, 98, 98 SE, or 2000, Windows CE®, Windows Me®, or Windows NT® 4.0 through the Universal Serial Bus (USB), providing easy, high-speed serial connectivity to equipment that uses the standard RS-232 serial interface, including modems, printers, point-of-sale (POS) terminals, and industrial-control devices.

The USB Directors RS-232 have a Type B USB connector for a cable running from the USB port of a computer, USB hub, or USB switch. They'll also have one (product code IC1000A), two (IC1001A), four (IC135A), or eight (IC1002A) DB9 male RS-232 ports, pinned like the serial ports on a PC, to which you can connect your RS-232 devices. The USB Directors allow you to control one or more RS-232 devices without using the RS-232 ports on your computer. All models except the IC1000A are stackable.

2.2 The Complete Package

In addition to the USB Director RS-232, you should have received:

- (1) 1-m (3.3-ft.) USB cable.
- (1) CD with driver and utility software.
- This manual.

If anything is missing or damaged, please contact Black Box immediately at 724-746-5500.

2.3 Features

Some of the useful features of the USB Director RS-232:

- Lets you add one or more extra high-speed serial ports to your PC or server in seconds.
- Eliminates the difficult installation and configuration issues associated with high-priced, older card solutions (no PC slots are required).
- The Director's hot-swappable, so you don't have to reboot the operating system during installation.

3. Installation

3.1 Installing the Hardware

Plug the Type A end of the included 1-m (3.3-ft.) USB cable into the USB port located in the back of your PC or into an available USB port on a standard USB hub or USB switch. Plug the Type B end of the USB cable into the back of the USB Director RS-232. Figure 3-1 shows the two male connectors and their respective female receptacles.

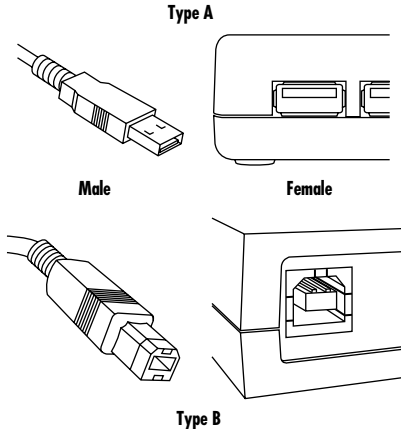


Figure 3-1. USB connectors.

Plug your RS-232 device(s), or the cables running to them (not included), into the USB Director RS-232's DB9 male serial connector(s). Any device or cable that can be attached directly to a DB9 serial port on a PC can be attached to the DB9 connector(s) on a USB Director RS-232.

If the USB Director RS-232's software drivers are not already installed, proceed to the next section.

3.2 Installing the Software Drivers

These installation instructions are for installing the USB Director RS-232 software from CD. NT users will not be prompted and will need to locate the driver by double-clicking on their CD-ROM drive. In either case, you will not need to specify a directory.

3.2.1 WINDOWS 95

If you haven't already done so, follow the hardware-installation instructions described in **Section 3.1**. If you're not sure whether your system supports USB, or if after connecting the USB cable the Update Device Driver Wizard dialog box does not appear, please take the steps described in **Section 5.1**. Otherwise, click "Next" to continue with driver installation.

To install the USB Director RS-232 drivers in Windows 95:

1. Insert the Black Box driver CD in your CD-ROM drive.
2. After Windows fails to locate the drivers on your CD-ROM drive, click "Other Locations...".

3. When the Select Other Location dialog box appears, type "X:\Win95" (where "X" is the drive letter of your CD-ROM drive) and click "OK."
4. Confirm that Windows has found the correct driver location and click "Finish."
5. When Windows prompts you for the driver disk, click "OK."
6. At the next Windows prompt, type "X:\Win95" (where "X" is the drive letter of your CD-ROM drive) and click "OK".

After installing the drivers, Windows will detect your USB Director RS-232's new COM ports and will begin to initialize them. Installation is complete when no more dialog boxes appear. Your new communication ports, numbered sequentially following the existing ports in your system, are now ready.

3.2.2 WINDOWS 98 OR 98 SE, WINDOWS CE, WINDOWS ME

To install the USB Director RS-232 drivers in one of these Windows versions:

1. Insert the Black Box driver CD in your CD-ROM drive.

2. If you haven't already done so, follow the hardware-installation instructions in **Section 3.1**. After connecting the USB cable, the Add New Hardware Wizard should appear. Click "Next."
3. Select "Search for the best driver for your device" and click "Next."
4. Select "Specify a location" and type in "X:\Win98" (where "X" is the drive letter of your CD-ROM drive). Then click "Next."
5. Confirm that Windows is pointing to X:\Win98 (where "X" is the drive letter of your CD-ROM drive). Click "Next." Windows will then copy over the driver files.
6. Click "Finish" to complete the driver installation.

After installing the drivers, Windows will detect your USB Director RS-232's new COM ports and will begin to initialize them. Installation is complete when no more dialog boxes appear. Your new communication ports, numbered sequentially following the existing ports in your system, are now ready.

3.2.3 WINDOWS NT

Because Microsoft does not support USB in NT4.0, we supply a USB stack that will be installed along with the necessary drivers.

NOTE

You must install the drivers using an account that has administrative privileges!

To install the USB stack and USB Director RS-232 drivers, either:

- 1a. Insert the Black Box driver CD in your CD-ROM drive.
- 2a. When the “welcome” dialog box appears, click the “Install Driver” button.

or

- 1b. From the Start menu, select “Run.”
- 2b. Type “X:\NT40\gp4n4YY.exe” (where “X” is the drive letter of your CD-ROM drive and “YY” is the driver version number) and click “OK.” (For an example of a driver filename, driver version 1.31 would be “gp4n4131.exe”.)

Once the driver installation program has begun, follow the on-screen instructions.

- 3a. *If you are installing drivers for the first time:* An Information dialog box informs you that the installation was successful. After clicking “OK,” the installation is complete.
- 3b. *If you are replacing version 1.14 or later:* Follow the on-screen instructions. Note that before beginning the installation of the drivers, all applications with open ports must be closed and all USB devices unplugged. If you close all the applications and unplug all the USB devices, then you will not need to reboot for the new drivers to take effect immediately. If any applications are left open or USB devices plugged in, you may choose to abort the installation or to continue and be required to reboot before the upgrade can take effect.
- 3c. *If you are replacing version 1.13 or earlier:* The USB Director RS-232 Drivers Installation Complete dialog box tells you that the USB Director RS-232 drivers have been updated. Before the updates can take effect, however, you will need to reboot your computer. To reboot immediately, eject the Black Box driver disk, select the option to restart the computer now, and click “Finish.”

If you haven't already done so, follow the hardware-installation instructions in **Section 3.1**. When that's finished, your new communication ports, numbered sequentially following the existing ports in your system, are ready. (Note that because Windows NT 4.0 is not Plug-and-Play, you will not see a pop-up dialog box indicating that new hardware has been found. You may verify correct installation with the Edgeport Utility or USB Status Utility. See **Sections 4.2.2** and **4.3** for more information.)

3.2.4 WINDOWS 2000

To install the USB Director RS-232 drivers in Windows 2000:

1. Insert the Black Box driver CD in your CD-ROM drive.
2. If you haven't already done so, follow the hardware-installation instructions in **Section 3.1**.
3. After you connect the USB cable, the Found New Hardware Wizard should appear. Click "Next."
4. Select "Search for a suitable driver for my device" and click "Next."

5. Select “Specify a location” and click “Next.”
6. Type in “X:\Win2k” (where “X” is the drive letter of your CD-ROM drive) and click “OK.”
7. Confirm that Windows is pointing to X:\Win2k (where “X” is the drive letter of your CD-ROM drive). Then click “Next.”

NOTE

Drivers installed from the CD have received “Designed for Windows 2000” certification. Drivers downloaded from our Web site or FTP might be pending certification. If so, Windows 2000 will display a warning: “Digital Signature Not Found.” Click “Yes” to continue with driver installation. If you click “No,” you will need to contact Black Box before continuing to install your USB Director RS-232.

Windows will then finish installing the driver files.

8. Click “Finish” to complete the driver installation.

After installing the drivers, Windows detects your USB Director RS-232’s new COM ports and will begin to initialize them. Installation is complete when no more dialog boxes appear. Your new communication ports, numbered sequentially following the existing ports in your system, are now ready.

4. Operation

Once you finish installing the hardware and software of the USB Director RS-232, it will operate continuously without requiring further intervention on your part.

4.1 Interpreting the LED (IC135A, IC1001A, and IC1002A Only)

The IC135A, IC1001A, and IC1002A models have a tricolor STATUS LED that tells you various things about how the unit is operating:

- It lights *red* to indicate a loss of USB communication with the host. If the loss is due to unplugging the USB Director RS-232, the LED will blink red for a few moments before turning green when you reconnect the unit. If the loss wasn't caused by unplugging the unit, the LED indicates a problem with the drivers, which may need to be reinstalled. The LED will also blink red during installation until the installation is complete.
- It lights *amber* to indicate serial-port activity on the USB Director RS-232. The LED might also flash amber briefly during installation.

- It lights *green* to indicate that the USB Director RS-232's serial ports are successfully set up and the unit is operating normally, but there's not currently any data activity.

4.2 Using the Edgeport Utility Program

4.2.1 FOR ALL WINDOWS VERSIONS EXCEPT WINDOWS NT

The CD also contains a USB Director RS-232 configuration utility program called “Edgeport” that allows you to manage various resources of your USB Director RS-232. You can check the mapping of each physical communications port to your Windows COM port numbers. You can reassign the physical ports on your USB Director RS-232 to any available Windows COM port number from 1 to 255, or give your USB Director RS-232 a user-friendly Device Name. This capability is particularly helpful if you have more than one USB Director RS-232. You can also check the version numbers and get other information about the USB Director RS-232 drivers.

Advanced USB Director RS-232 options are:

1. Clicking the Uninstall button will remove the USB Director RS-232 device drivers and utilities.

2. Allows you to configure how COM ports will be assigned.

The driver supports COM-port number assignment in two ways:

1. Assigning COM ports based on units' serial numbers. This is the default setting. In this mode, the driver uses the serial number of each unit to uniquely identify it, and the COM-port assignments for a given unit are based on its serial number. No matter which physical USB port a unit is plugged into, it will maintain its assigned COM-port numbers.
2. Assigning COM ports based on physical USB port. In this mode, the driver identifies a unit based on the physical USB port it is plugged into. This effectively assigns COM-port numbers to physical USB ports. No matter which unit is plugged into a given USB port, it will use the COM-port numbers assigned to that USB port. This permits one unit to be replaced with another, and, although the new unit has a different serial number, it will receive the same COM port assignments as the old unit because they were both plugged into the same USB port.

When using this mode, units are identified not by their serial number, but by a 2- to 7- digit number that identifies which USB port they are plugged into.

After changing this setting, you will need to reboot before the change takes effect.

4.2.2 FOR WINDOWS NT

From the Start menu, select Programs, then Edgeport Utilities, then Edgeport Configuration Utility. The USB Director RS-232 Properties dialog box contains the same functions described in **Section 4.2.1**. Note, however, that you must have administrative privileges in order to change the COM-port settings.

4.3 Using the USB Status Utility (Viewer) for Windows NT

If you're running Windows NT, the USB Status Utility can be accessed by clicking the USB icon in your system tray or by clicking on Start, then Programs, then Black Box Utilities, then USB Status Utility. This utility lists all the USB devices installed on your PC and provides other relevant information for each device. You may also use this utility to create a log file.

5. Troubleshooting

5.1 Using USB with Windows 95

If you're having difficulty installing or operating your USB Director RS-232 in a Windows 95 system, check the revision level of your copy of Windows 95. If you are using Windows 95 OSR2.1 or above, take the steps described in **Sections 5.1.1** through **5.1.4**. If not, you will need to upgrade to a more recent version of Windows.

5.1.1 CHECKING FOR USB HARDWARE

To verify that the necessary USB host controller is installed in your system, make sure that your PC has USB connectors. If it doesn't, your PC will not support USB regardless of which Windows version it's running. You will need to purchase a PCI USB controller card.

If your PC has USB connectors, verify that the USB hardware is enabled in your system BIOS configuration. In some cases your manufacturer may have elected to ship your PC without the USB-support drivers installed. If the two USB-hardware listings that should be there ("root hub" and "host controller"—see **Section 5.1.3**) are absent in your Device Manager, you will need to upgrade to a more recent version of Windows.

After installing USB Support from your Microsoft Windows 95 OEM system disk, check your Device Manager again. If the two devices are not present or Windows Plug & Play does not autodetect the USB Director RS-232, try the following:

1. If only the host controller is listed in the Device Manager, delete it from the Device Manager and reboot.
2. If other USB devices are listed in the Device Manager, open the System Properties window from the Control Panel and select “Check for a device labeled ?UNKNOWN.” If the root hub and host controller are listed, then delete them from the Device Manager and reboot.

If, after rebooting, the Add Hardware Wizard finds the USB devices and requires new drivers, such as UHCD.SYS, the drivers should be available in the C:\WINDOWS\SYSTEM directory. If, after following these procedures, you are still having installation problems, please call Black Box Technical Support as described in **Section 5.2**.

5.1.2 DETERMINING THE LEVEL OF USB SUPPORT

If you have an earlier version of Windows 95 than OSR2.1, you will need to upgrade to a more recent version of Windows. Otherwise, to determine if your system supports USB, take the following steps:

1. Insert the Black Box driver CD into your CD-ROM drive.
2. In the START menu, select RUN.
3. Type "X:\Win95\usbready" (where "X" is the drive letter of your CD-ROM drive).

One of two USB System Checker dialog boxes will appear. If your system does not support USB, the text in the dialog box will read, "This system DOES NOT currently support USB!" If you see this, take the steps described in **Section 5.1.4**. If your system does support USB, the text in the dialog box will read, "This system DOES have support for USB," and you may continue with the Windows 95 installation instructions for your USB Director RS-232.

5.1.3 CHECKING FOR FULL USB SUPPORT IN THE DEVICE MANAGER

To determine whether the Windows 95 Device Manager fully supports USB, take the following steps:

1. From the main desktop area of Windows, right-click on the My Computer icon and choose Properties to open the System Properties window.
2. Click once on the Device Manager tab to view a listing of installed hardware devices.
3. In the Device Manager tab, your hardware devices are in alphabetical order and should include a Universal Serial Bus controller toward the bottom of the list. Double click on this device to open it.

In order for the USB Director RS-232 and other USB devices to work properly, at least two devices must be listed under Universal Serial Bus controller in the Device Manager tab. Although the exact name of each manufacturer's device listing can vary, the names of these two required USB devices should include the following descriptive words:

- USB Root Hub
- USB Host Controller

If you do not see one or both of these devices, go on to **Section 5.1.4**.

5.1.4 DETERMINING WHY SUPPORT IS NOT PRESENT

The DETAILS button in the USBREADY program (see **Section 5.1.2**) can help you determine what is preventing USB support. Click on the DETAILS button and wait for the results. If the USB Class Host Controller window reads, “No USB Host Controller Found,” then the necessary hardware, a USB Host Controller, has not been detected. If your PC doesn’t have USB connectors, then it won’t support USB regardless of which Windows version it’s running. You will need to purchase a PCI USB controller card. If your PC does have USB connectors, verify that the USB hardware is enabled in your system BIOS configuration. If the USB Class Host Controller window displays any other message, such as “Standard,” “Intel,” “Universal,” or “Open” Host Controller, then hardware support is present, but an incompatible version of Windows is currently installed.

If the Test Results Details dialog box shows Windows 95 version 4.0.1111, which is Windows 95 OSR.2, you will need to upgrade to a more recent version of Windows.

If the Test Results Details dialog box shows Windows 95 version 4.0.950 or 4.0.950a, these Windows 95 versions do not support the upgrade path to USB. Unfortunately, Microsoft has not provided an upgrade path to OSR2 from earlier of these versions of Windows. OSR2 must be preinstalled by your PC vendor. Contact your PC vendor for more information.

5.2 Calling Black Box

If your USB Director RS-232 seems to be malfunctioning, *do not attempt to alter or repair it*. It contains no user-serviceable parts. Call Black Box Technical Support at 724-746-5500; the problem might be solvable over the phone.

Before you call, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description, including:

- the nature and duration of the problem;
- when the problem occurs;
- the components involved in the problem;
- any particular application that, when used, appears to create the problem or make it worse; and
- the results of any testing you might have already done.

5.3 Shipping and Packaging

If you need to transport or ship your USB Director RS-232:

- Package it carefully. We recommend that you use the original container.
- If the shipping is return- or repair-related, include everything you received with the unit when you pack it. Contact Black Box to get a Return Authorization (RA) number.

SOFTWARE RESTRICTIONS

If the USB Director RS-232's software is being used by the U.S. government:

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NOTES

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