FEBRUARY 2001
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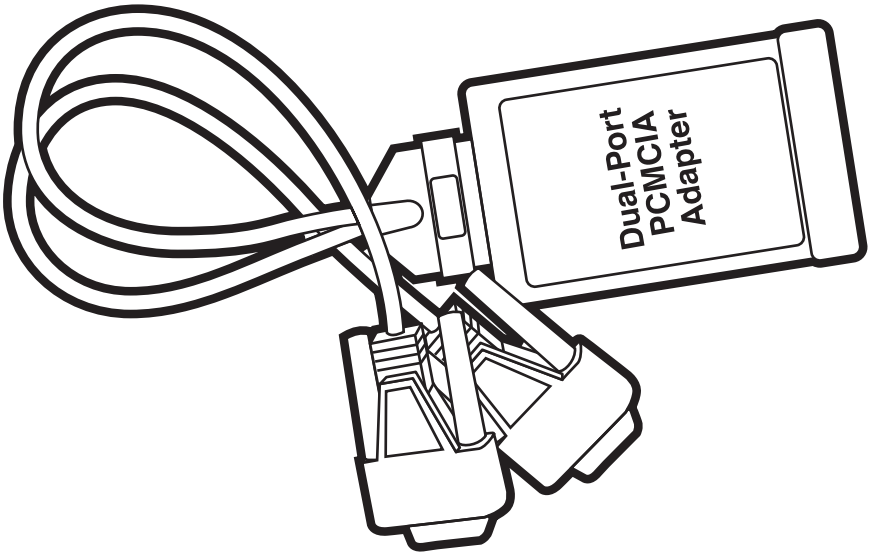
Dual-Port PCMCIA RS-232 Adapter



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

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:

- Reorient or relocate the receiving antenna.
- 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.

To meet FCC requirements, shielded cables and power cords are required to connect this device to a personal computer or other Class B certified device.

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.

EMC DIRECTIVE STATEMENT

Products bearing the CE label fulfill the requirements of the EMC directive (89/336/EEC) and of the low-voltage directive (73/23/EEC) issued by European Commission.

To obey these directives, the following European standards must be met:

- **EN55022 Class B:** Limits and methods of measurement of radio interference characteristics of information technology equipment.
- **EN50082-1:** Electromagnetic compatibility—Generic immunity standard Part 1: Residential, commercial, and light industry.
- **EN60950 (IEC950):** Safety of information technology equipment, including electrical business equipment.

Always use cabling provided with this product if possible. If no cable is provided or if an alternate cable is required, use high-quality shielded cabling to maintain compliance with EMC directives.

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 connectado 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 fisica 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 lineas de energia.

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 objectos liquidos 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: Objectos 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.

TRADEMARKS USED IN THIS MANUAL

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Quick Start

NOTE

You must install the software before installing the card in the PCMCIA slot of your computer.

Card Setup

The Dual-Port PCMCIA RS-232 Adapter will use I/O addresses 240H and 248H and allow your operating system to assign the IRQ. If these I/O addresses are already in use, contact Black Box Technical Support at 724-746-5500 to identify possible solutions.

Operating System Installation

Install the proper software for your adapter BEFORE installing the hardware. Refer to the supplied software for the correct operating system installation procedure.

WINDOWS® 95, 98, ME, AND 2000

1. Make sure that the PCMCIA services are enabled. (You can do this in the Control Panel.)
2. Install the supplied software. This installation will provide the necessary drivers and INF files required to properly initialize and enable your adapter.
3. Using the Device manager, verify that the ports have been installed and what names (COM5:, COM6:, etc.) have been assigned to your adapter.

WINDOWS NT®

1. Make sure that the PCMCIA services are enabled. (You can do this in the Control Panel.)
2. Install the supplied software. This installation will provide the necessary drivers and INF files required to properly initialize and enable your adapter.
3. Power down the machine, install the card, and power up. This will allow Windows NT to find the first port at 240H and assign an IRQ.
4. Open “Advanced Ports” in the Control Panel. Verify that the first port on your card has been initialized at 240H and identify the IRQ. The IRQ will be the same for the second port.

5. Select "Add Ports." Type in "248" for the Starting I/O Address. Select the same interrupt that has been assigned to the first port. *Do not select the "Share Interrupt" box.*

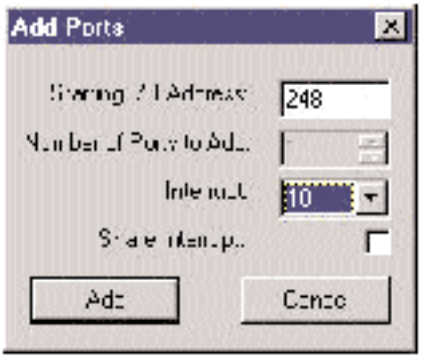

Figure Q-1. Add Ports screen.

6. Click the "Add" button, and then the "Apply" button.

7. Allow your system to reboot with the card installed.

NOTE

Windows NT is not plug-and-play, nor does it support hot swapping. Power down the computer before installing or removing the PCMCIA card.

LINUX

Refer to the Linux subdirectory on your supplied software disk for up-to-date instructions for various Linux installations.

1. Specifications

Indicators—None

Connectors—(2) DB9 male

Temperature Tolerance—*Operating:* 32 to 122°F (0 to 50°C); *Storage:* -4 to +158°F (-20 to +70°C)

Relative Humidity—10 to 90% noncondensing

Mean Time Between Failures (MTBF)—Greater than 150,000 hours

Power—Supply line: +5 VDC; Rating: 25 mA

Size—0.1"H x 2.1"W x 3.3"D (0.3 x 5.3 x 8.4 cm)

Weight—0.1 lb. (0.05 kg)

2. Introduction

2.1 Overview

The Dual-Port PCMCIA RS-232 Adapter provides two RS-232 serial ports for connecting to modems, terminals, printers, or other data collection equipment. The adapter plugs into a PCMCIA Type II drive slot. It uses XR16C850 UARTs (Universal Asynchronous Receiver Transmitter). The XR16C850 is compatible with the 16550 UART. The XR16C850 is an enhanced UART with 128-byte FIFOs, automatic hardware/software flow control, and the ability to handle much higher data rates than standard UARTs.

2.2 What the Package Includes

The Adapter comes with the following items.

- Dual-Port PCMCIA RS-232 Adapter
- Dual DB9 cable assembly
- Impact-resistant carrying case (jewel case)
- (1) Serial loopback plug
- (3) diskettes: (2) with drivers for Windows; (1) operating systems diskette for DOS, Q&X, and Linear Op. systems
- This users' manual

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

3. Card Setup

NOTE

You must install the software before installing the card in the PCI slot of your computer.

Card and Socket Services—supplied by the PCMCIA slot provider—must be loaded on the system *before* installing the PCMCIA card. These may be in the form of a third-party add-on Card and Socket Services (for example, CardSoft's CardWizard) or with your current operating system (for example, Windows 95, 98, Me, 2000, or Windows NT).

Socket Services are the lowest level of the PCMCIA software hierarchy. They provide a standard interface to the higher-level drivers and isolate the socket controller's specific hardware details. Socket Services provide the BIOS interface to the socket controller hardware, typically hidden under Card Services, and are rarely directly accessible by application software.

Card Services provide the interface to application software and drivers. Card Services are responsible for allocating card resources and ensuring that card resources do not interfere with other existing system resources. For the Dual-Port PCMCIA RS-232 Adapter, the generic Card Services driver supplied with the computer system should provide adequate support for most applications. Connecting the Adapter to the computer requires no special technical skills. You can do it in two simple steps:

1. Follow the directions given for your operating system found on the supplied software and in the Quick Start section of this manual.

2. Simply slide the card into a PCMCIA Type II compliant slot on the PC. The PCMCIA slot is keyed so that the Adapter cannot be installed backwards or upside down. The card should install with a minimal amount of pressure. Do not force the card into the slot. Forcing the card can damage it or the PCMCIA slot. After you install the card in the slot, connect the I/O cable to the card. The cable is also keyed for proper installation.

Appendix A. RS-232 Connector Pin Assignments

Signal	Name	DB9*	Mode
GND	Ground	5	
TD	Transmit Data	3	Output
RTS	Request to Send	7	Output
DTR	Data Terminal Ready	4	Output
RD	Receive Data	2	Input
CTS	Clear to Send	8	Input
DSR	Data Set Ready	6	Input
CD	Carrier Detect	1	Input
RI	Ring Indicator	9	Input

*These assignments meet EIA/TIA/ANSI-574 DTE for DB9 connectors.

Appendix B. Electrical Interface

RS-232

The most widely used communication standard is RS-232. This implementation has been defined and revised several times and is often referred to as RS-232 or EIA/TIA-232.

The IBM PC computer defined the RS-232 port on a DB9 connector. Subsequently, the EIA/TIA approved this implementation as the EIA/TIA-574 standard. This standard is defined as the *9-Position Non-Synchronous Interface Between Data Terminal Equipment and Data Circuit-Terminating Equipment Employing Serial Binary Data Interchange.*

Both implementations are widely used and will be referred to as RS-232 in this manual. RS-232 is capable of operating at data rates of up to 20 kbps at distances less than 50 ft (15.2 m). The absolute maximum data rate may vary due to line conditions and cable lengths. RS-232 often operates at 38.4 kbps over very short distances.

The voltage levels defined by RS-232 range from -12 to +12 volts. RS-232 is a single-ended or unbalanced interface, meaning that a single electrical signal is compared to a common signal (ground) to determine binary logic states. A voltage of +12 volts (usually +3 to +10 volts) represents a binary 0 (space) and -12 volts (-3 to -10 volts) denote a binary 1 (mark).

The RS-232 and the EIA/TIA-574 specification define two types of interface circuits, Data Terminal Equipment (DTE) and Data-Circuit Terminating Equipment (DCE). The Dual-Port PCMCIA RS-232 Adapter is a DTE interface.

Appendix C. Troubleshooting

C.1 Using Serial Utility Test Software

Serial Utility test software is supplied with the adapter and will be used in the troubleshooting procedures. By using this software and following these simple steps, you can eliminate most problems without calling for technical support.

1. Identify all I/O adapters currently installed in your system. This includes your on-board serial ports, controller cards, sound cards, etc. Identify the I/O addresses used by these adapters, as well as the IRQ (if any).

2. Configure your I/O adapters so that there are no conflicts with currently installed adapters. No two adapters can occupy the same I/O address.

3. Make sure the Dual-Port PCMCIA RS-232 Adapter is securely installed in a PC Card slot.

4. For Windows 95, 98, Me, 2000, and Windows NT, the diagnostic tool "WinSSD" is installed in the Black Box folder on the Start Menu during the setup process. First, find the ports using the Device Manager, then use "WinSSD" to verify that the ports are functional.

5. Always use the diagnostic software when troubleshooting a problem. This will help eliminate any software issues and identify any hardware conflicts.

C.2 Calling Black Box

If you determine that your Dual-Port PCMCIA RS-232 Adapter is malfunctioning, do not attempt to alter or repair the unit. It contains no user-serviceable parts. Contact Black Box at 724-746-5500.

Before you do, 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.

C.3 Shipping and Packaging

If you need to transport or ship your Dual-Port PCMCIA RS-232 Adapter:

- Package it carefully. We recommend that you use the original container.
- If you are shipping the Adapter for repair, make sure you include everything that came in the original package. Before you ship, contact Black Box to get a Return Authorization (RA) number.

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