

# USER MANUAL

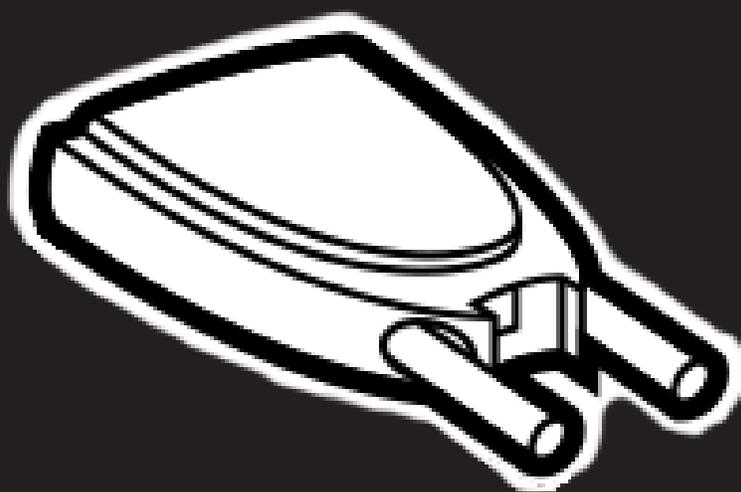
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IC1000A

# SINGLE-PORT USB TO RS-232 CONVERTER

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24/7 TECHNICAL SUPPORT AT 1.877.877.2269 OR VISIT [BLACKBOX.COM](http://BLACKBOX.COM)



**BLACK BOX**®

## CHAPTER 1: SPECIFICATIONS

### SPECIFICATIONS FOR SINGLE-PORT USB TO RS-232 CONVERTER (IC1000A)

<b>INTERFACES</b>	Universal Serial Bus v1.1 (can be attached to USB 2.0 and USB 3.0 devices but will operate at USB 1.1 data rates), EIA/TIA RS-232
<b>SERIAL CHARACTERISTICS</b>	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.
<b>USER CONTROLS</b>	Software drivers are available for download on the Black Box website.
<b>INDICATORS</b>	None
<b>CONNECTORS</b>	(1) USB Type B female, (1) DB9 male for RS-232
<b>TEMPERATURE TOLERANCE</b>	32 to 104°F (0 to 40°C)
<b>POWER</b>	USB-bus-powered, consumes less than 200 mA at full operating speed
<b>DIMENSIONS</b>	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
<b>WEIGHT</b>	1.6 oz. (45 g)



## CHAPTER 2: OVERVIEW

### 2.1 OVERVIEW

The USB to RS-232 Converter connects to a PC or server 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 to RS-232 Converter has a Type B USB connector for a cable running from the USB port of a computer, USB hub, or USB switch. It also has a DB9 male RS-232 port, pinned like the serial ports on a PC, to which you can connect your RS-232 devices. The USB to RS-232 Converter allows you to control one RS-232 device using one USB port on your computer.

### 2.2 WHAT'S INCLUDED

- (1) **USB RS-232 CONVERTER (IC1000A)**
- (1) **1M (3.3 FT) USB CABLE**

If anything is missing or damaged, contact Black box immediately.

### 2.3 FEATURES

- **LETS YOU ADD ONE HIGH-SPEED SERIAL PORT TO YOUR PC OR SERVER IN SECONDS**
- **ELIMINATES THE DIFFICULT INSTALLATION AND CONFIURATION ISSUES ASSOCIATED WITH HIGH-PRICED, OLDER CARD SOLUTIONS (NO PC SLOTS ARE REQUIRED).**
- **THE USB TO RS-232 CONVERTER IS HOT SWAPPABLE, SO YOU DON'T HAVE TO REBOOT THE OPERATING SYSTEM DURING INSTALLATION.**

## CHAPTER 3: INSTALLATION

### 3.1 INSTALLING THE HARDWARE

Plug the Type A end of the included 1m (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 to RS-232 Converter. Figure 3-1 shows the two male connectors and their respective female receptacles.

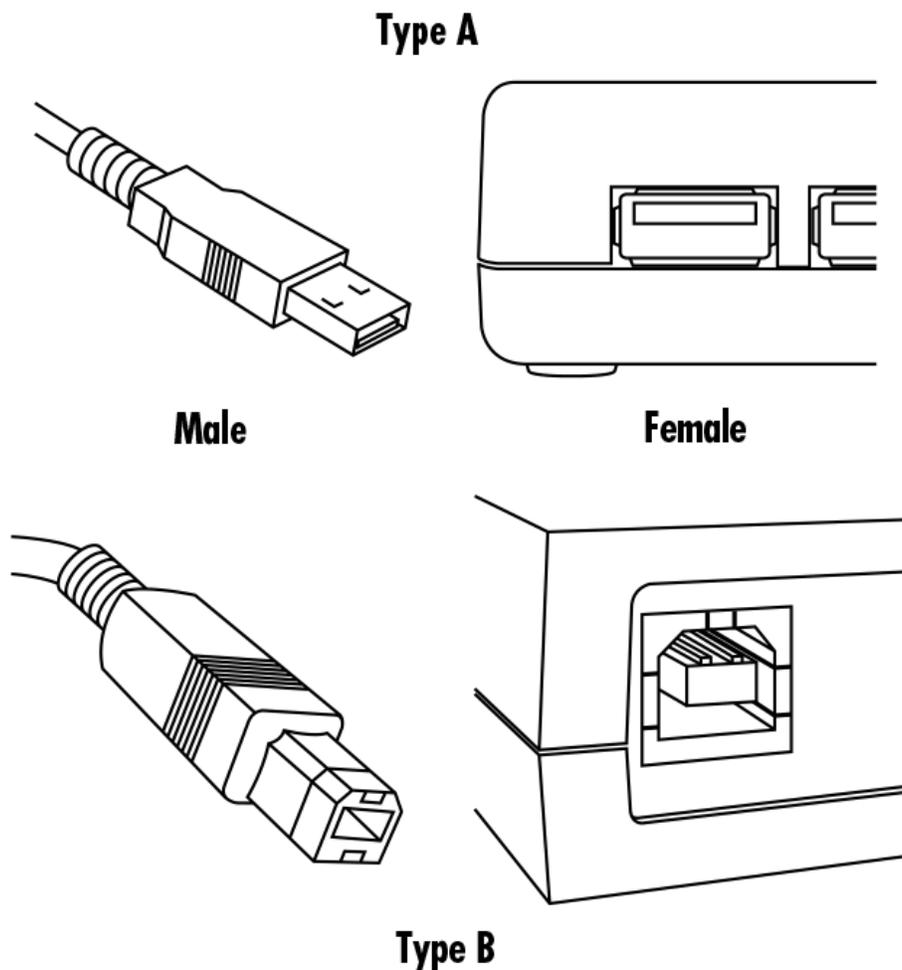


FIGURE 3-1. USB CONNECTORS

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

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

## CHAPTER 3: INSTALLATION

### 3.2 IC1000A USB TO RS-232 CONVERTER DRIVER INSTALLATION

The following instructions apply to Windows® 7, Windows 8.1, Windows Server 2012 (R2), Windows 10, Windows Server 2016, and Windows Server 2019.

1. Download the IC1000A driver from [www.blackbox.com](http://www.blackbox.com).
  - a. Navigate to [www.blackbox.com](http://www.blackbox.com) using a web browser.
  - b. Search for IC1000A.
  - c. Open up the product page and download the driver from the Support tab.
  - d. Save this .exe file somewhere convenient, such as on your desktop.
2. Log into Windows using an account with administrator privileges.
3. Run the downloaded .exe file and wait until the installation is complete. However, If you have installed a previous IC1000A driver, use the IC1000A configuration utility that came with your driver package to uninstall the existing driver first.
  - a. Click on the Uninstall button from the advanced tab.
  - b. Reboot the computer when prompted.
4. Connect the IC1000A to the computer with a USB cable. Or, if the IC1000A is already connected to the computer via USB, unplug it and plug it in again.

The IC1000A driver will automatically install. Your new COM port is ready and will be numbered sequentially following the existing ports in your system. You can now run the IC1000A configuration utility, described in the next section.

## CHAPTER 4: OPERATION

Once you install the USB to RS-232 Converter's hardware and software, it will operate continuously without requiring further intervention on your part.

### 4.1 USING THE UTILITY PROGRAM

NOTE: The following instructions apply to all Windows® operating systems.

The configuration utility program, which is available from the computer's Start menu after you install the driver, allows you to manage the serial port of your IC1000A.

To access the configuration utility:

1. Download the driver, following the instructions in the previous section.
2. After the driver is installed, launch the configuration utility from the USB Director Configuration Utility on the computer's Start menu.

### 4.2 GENERAL TAB

The General tab in this utility allows you to perform various tasks, such as configuring the device's COM ports, setting port flags, and testing the ports. See the subsections that follow for additional details.

### 4.3 INFORMATION TAB

The Information tab allows you to review the manufacturing information pertaining to your device.

### 4.4 CONFIGURATION TAB

The Configuration tab allows you to reassign the physical port on your device to any available Windows COM port number from 1 to 255 and give your device a user-friendly device name. This capability is particularly helpful if you have more than one device.

### 4.5 PORT FLAG CONFIGURATION TAB

The Port Flag Configuration tab allows you to configure performance options and special functionality on a per-port basis.

#### Low Latency

Normally the UART will interrupt when the receiver has been idle for 4 character times (for example, 4ms at 9600). As long as data is being received, the UART will continue to buffer them until its internal FIFO is full (~56 bytes). This flag causes the USB to RS-232 Converter to poll the RX FIFO for received bytes. If any bytes are available, they will be sent to the driver without any delay.

#### Remap Baud

Setting the baud rate to 1200 baud results in 230400 baud.



### Ignore Flush

If an application sends IRP\_MJ\_FLUSH\_BUFFERS, it will be ignored. The following is an excerpt from Microsoft documentation:

Drivers of devices with internal caches for data and drivers that maintain internal buffers for data must handle this request.

### When Sent

Receipt of a flush request indicates that the driver should flush the device's cache or its internal buffer, or, possibly, should discard the data in its internal buffer.

### Operation

The driver transfers any data currently cached in the device or held in the driver's internal buffer(s) before completing the flush request. The driver of an input-only device that buffers data internally might simply discard the currently buffered device data before completing the flush IRP, depending on the nature of its device.

### Fast Writes

When an application sends a write to the driver, by default the USB to RS-232 Converter driver will wait until all data has been transmitted out of the USB to RS-232 Converter device before completing the write. When the Fast Writes flag is set, we complete the write even if data is still buffered in the driver and the USB to RS-232 Converter device.

### Fast Reads

This flag is used when an application requires that a read complete immediately. In the read immediate case, the USB to RS-232 Converter driver will send a request to the USB to RS-232 Converter device asking for any buffered data to be sent up. This buffered data will be included when the read completes. If this flag is set, the driver will not query the USB to RS-232 Converter device for additional data.

### Disable Plug & Play

Uncheck this to allow Windows to detect Plug and Play serial devices, such as most modems.

### Timer Logic: (Windows 9x only)

If the application uses PortSetReadCallback(), the notification routine will only be called when the number of bytes in the receive buffer is greater than the RX trigger. The Microsoft serial VxD also implements a timer that will trigger and call the notification routine if some amount of data is available in the RX buffer but no new data has been received for ~200ms (receiver is no longer active).

We do not enable this behavior by default because of the nature of USB to RS-232 Converter buffering.

But if you set the flag we will complete the read when we detect ~200 ms no activity.

The code specifies that if the receiver is active, the read will not be completed.

## CHAPTER 4: OPERATION

The problem is that the USB to RS-232 Converter buffers the RX bytes and we poll the driver. If we do not receive any bytes in 200ms we may report an erroneous event even if there are available bytes in the USB to RS-232 Converter device or driver.

### 4.6 CONFIDENCE TEST TAB

The Confidence Test tab allows you to perform a confidence test on the internal workings of the serial ports.

### 4.7 POWER MANAGEMENT TAB

The Power Management tab allows you to turn the power on and off for select model Hubports with USB PlusPower ports.

Note This applies to Compact (/c) or PCI card PlusPower Hubport models. This feature does not toggle the 5V standard USB port. It only applies to the 12V and 24V USB ports.

### 4.8 PORT STATUS TAB

The Port Status tab provides the status of a selected (highlighted) serial port.

The Poll Interval is the number of seconds between updates of this window. This is also the number of seconds between each entry in the log file.

To create a log file, click the Start Logging button and enter a filename for the log file. This file will contain all of the information displayed in the Port Status window until you click Stop Logging button.

### 4.9 VERSION TAB

The Version tab allows you to review the file information pertaining to the software.

### 4.10 ADVANCED TAB

The Advanced tab allows you to do several advanced tasks. See the subsections that follow for more detailed information.

#### Uninstall

Uninstall the USB to RS-232 Converter driver.

NOTE: You must reboot the computer after uninstalling the driver.

#### Enable Event Logging

Place event messages in the system event log.



### COM Port Assignment

Configure how COM ports will be assigned. There are two options:

1. Assign COM ports based on converter serial number. This is the default setting. In this mode, the driver uses the serial number of each converter to uniquely identify it, and the COM port assignments for a given converter are based on its serial number. No matter which physical USB port a converter is plugged into, it will maintain its assigned COM port numbers.
1. Assign COM ports based on physical USB port. In this mode, the driver identifies a converter based on the physical USB port it is plugged into. This effectively assigns COM port numbers to physical USB ports. No matter which converter is plugged into a given USB port, it will use the COM port numbers assigned to that USB port. This permits a converter to be replaced with a new unit, 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, converters are identified not by their serial number, but by a 2-7 digit number that identifies which USB port it is plugged into.

When the COM ports are assigned, click OK. You must reboot the computer before the change takes effect.

## CHAPTER 5: TECHNICAL SUPPORT

### 5.1 CONTACTING 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 877-877-2269; 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.



## APPENDIX A: REGULATORY INFORMATION

### A.1 FCC STATEMENT



This equipment has been found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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

Shielded cables must be used with this equipment to maintain compliance with radio frequency energy emission regulations and ensure a suitably high level of immunity to electromagnetic disturbances.

All power supplies are certified to the relevant major international safety standards.



This equipment complies with the CE mark and Declaration of Conformity.



This equipment complies with the Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive and the Waste Electrical and Electronic Equipment Directive (WEEE).

## APPENDIX A: REGULATORY INFORMATION

### A.2 NOM STATEMENT

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.



## **APPENDIX B: DISCLAIMER/TRADEMARKS**

### **B.1 DISCLAIMER**

Black Box Network Services shall not be liable for damages of any kind, including, but not limited to, punitive, consequential or cost of cover damages, resulting from any errors in the product information or specifications set forth in this document and Black Box Network Services may revise this document at any time without notice.

### **B.2 TRADEMARKS USED IN THIS MANUAL**

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