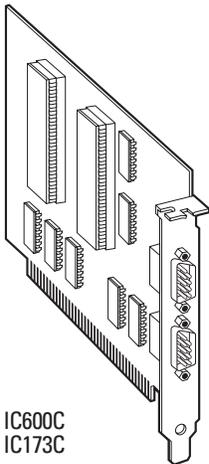


# BLACK BOX<sup>®</sup>

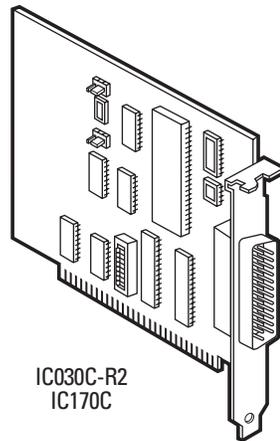
## NETWORK SERVICES

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## DUAL-PORT RS-422/485 SERIAL INTERFACE PC ↔ 422/485 SERIAL INTERFACE CONVERTER



IC600C  
IC173C



IC030C-R2  
IC170C

***These Converters let you double the RS-422 or RS-485 devices connected to your PC—or interface up to 31 or 62 RS-485 devices.***

### Key Features

- ▶ ***Supports RS-422/485 interface connections.***
- ▶ ***Directly address up to 64 RS-485 devices from your PC.***
- ▶ ***No line driver or converter needed.***
- ▶ ***Each port occupies 8 consecutive I/O locations and has base addressing that's user-selectable.***
- ▶ ***Full- or half-duplex operation.***
- ▶ ***Easy to install.***
- ▶ ***Utility software included for diagnostics.***

With the Dual-Port RS-422/485 Serial Interface card, you can add bar-code readers, scales, drill presses, time clocks, and other devices to your PC—and you don't need additional line drivers or converters. It even interfaces to factory- automation equipment.

The IC600C Card uses the 16550 UART chip which features a programmable baud rate, data format, and interrupt control, and a 16-byte FIFO. The IC173C Card uses the 16850 UART, and has a 128-byte FIFO buffer.

And you can set each serial port as COM1 or COM2, so it's compatible with most communications software and languages. Drivers and receivers for RS-422/485 are provided on the serial port.

The RS-422 mode runs point-to-point and supports up to 10 receivers, and the RS-485 mode has the electrical characteristics

to support up to 32 drivers and 32 receivers on one line.

The interface is easy to configure. Simply set the address and IRQ via DIP switches and on-board jumpers.

Troubleshooting's a breeze, too. A utility software package is included with your Card for quick diagnostics.

Or, choose the PC↔422/485 Serial Interface Converter to link up to 31 devices. Two models are available:

- IC030C-R2 features a 16550 UART and a 16-byte FIFO buffer.
- IC170C has a 16850 UART and a 128-byte FIFO buffer.

The interface installs in just minutes. Turn off the PC's power and disconnect the power cord, then remove the PC case and screw holding the blank metal slot cover. Remove the blank metal slot cover. Insert the board, replace the slot cover, screw, and PC case. Replace the PC case and reconnect the power cord. You're ready to go!

Connect your RS-422/485 factory automation equipment to your PC with one of these cards.

# Add bar code readers, scales, drill presses, time clocks, and other devices to your PC—without additional line drivers or converters.

## Technically Speaking

Because RS-422 and RS-485 are differential interfaces, they're less susceptible to line noise, so data integrity is never a problem.

- RS-422 is an Electronic Industries Association (EIA) standard for a balanced system with a high level of noise immunity. It's a differential interface that defines voltage levels and driver/receiver electrical specifications. On this type of interface, the difference in voltage between a pair of outputs or inputs defines logic levels. Contrast this to the RS-232 interface, in which the logic levels are defined as the difference in voltage between a single signal and a common ground signal. Differential interfaces are more immune to noise or voltage spikes than

other types of interfaces. RS-422 signal levels range from 0 to +5 volts. The standard does not define a physical connector.

- RS-485 is an EIA serial interface standard for balanced, multipoint interface that incorporate tri-state drivers providing high tolerance to noise. Like RS-232, RS-485 is a differential interface. It allows cable lengths up to 4000 feet (about 1200 meters) and data rates up to 10 Mbps. The signal levels for RS-485 also range from 0 to +5 volts. This interface is ideal for multi-drop or network environments, since it has a tri-state driver (this allows the electrical presence of the driver to be removed from the line, so that only one driver

can be active at any given time).

### About the UART Chip

A UART (Universal Asynchronous Receiver/Transmitter) is an integrated circuit that converts bytes from the computer bus into serial bits for transmission.

The 16550 UART features a 16-byte FIFO buffer for speeds of up to 115.2 kbps. The 16850 UART has a 128-byte FIFO buffer for speeds of up to 460.8 kbps (sustained).

### Selecting the Address

Each serial port on the Interface occupies 8 consecutive I/O locations. DIP switches are used to set the addresses for Ports 1 and 2.

- S1 sets the base address for Port 1.

- S2 sets the address for Port 2.

- Setting either switch "on" or "closed" corresponds to a "0" in the address, while leaving it "off" or "open" corresponds to a "1."

### Setting the Interrupts

Setting the interrupts on the card is as simple as moving a jumper.

- Move the jumper to the IRQ4 setting for COM1.
- Move the jumper to the IRQ3 setting for COM2.

## Specifications

**Protocol:** Asynchronous

**Speed:** IC600C, IC030C-R2: Up to 115.2 Kbps; IC173C, IC170C: 460.8 kbps (sustained); (maximum rate depends upon software, CPU, and cable length)

**Connectors:** IC600C, IC173C: (2) DB9 male; IC030C-R2, IC170C: (1) DB25 male

**Communications Chip:** IC600C, IC030C-R2: 16550 UART; IC173C, IC170C: 16850 UART

**Maximum Data Distance:** Up to 1219.2 m (4000 feet)

**Modem Control Signals:** RS-422: RTS and CTS

**System Requirements:** ISA bus

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

**Relative Humidity:** 90%

**MTBF:** > 150,000 hours

**MTTR:** < 0.25 hour

**Manufacturing:** IPC 610-A Class-III standards adhered to with a 0.1 visual AQL and 100% functional testing; Boards are built to UL® 94V0 rating and are 100% electrically tested. Boards are solder mask over bare copper or tin nickel.

**Power:** From the PC bus

**Size:** Half-card

**Shipping Weight:** 2 lb. (0.9 kg)

## Ordering Information

ITEM	CODE
Dual-Port RS-422/485 Serial Interface Card	
16550 UART .....	IC600C
16850 UART .....	IC173C
PC↔422/485 Serial Interface Converters	
16550 UART .....	IC030C-R2
16850 UART .....	IC170C
<i>You may also need...</i>	
Modular Thumbscrew Adapter Kits	
<i>For IC600C:</i>	
DB9 Female to RJ-45 Female (8-Wire) .....	FA756
<i>For IC030C-R2:</i>	
DB25 Female to RJ-45 Female (8-Wire) .....	FA771