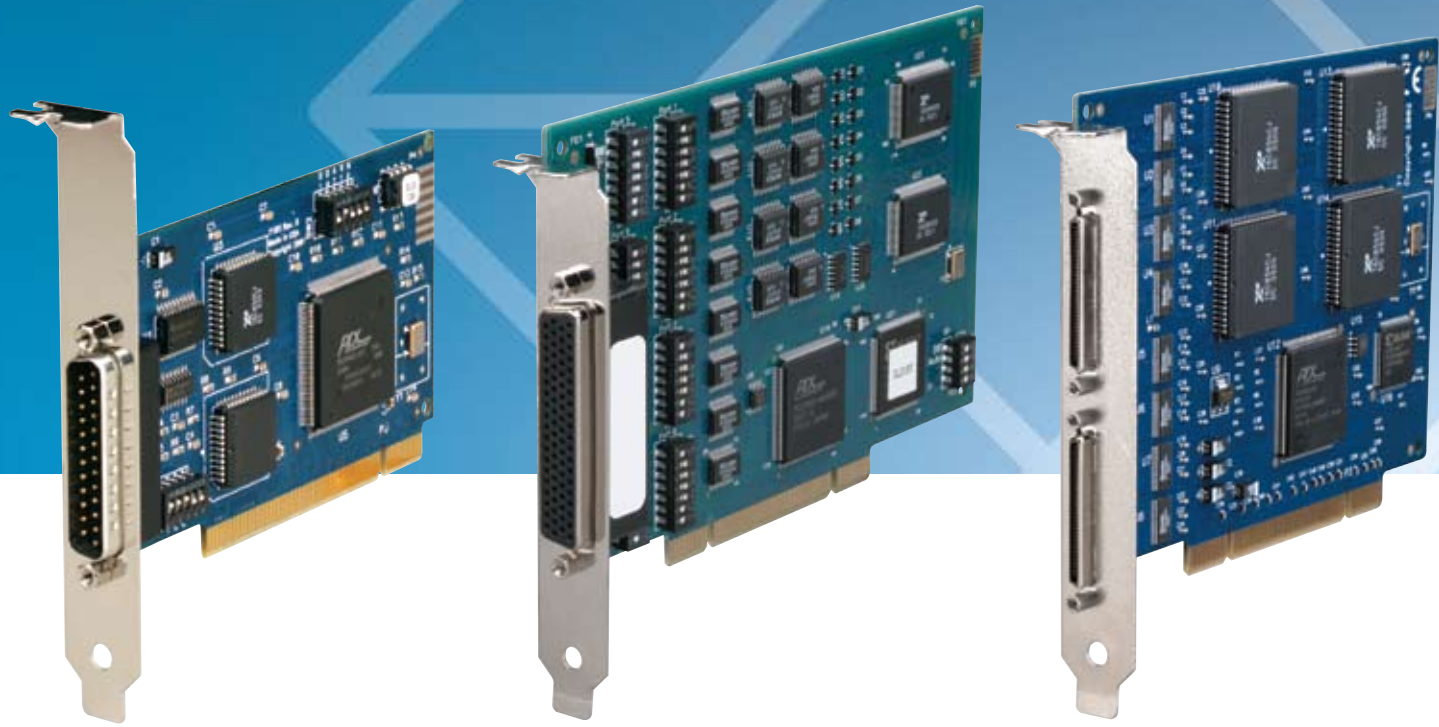


PCI Cards

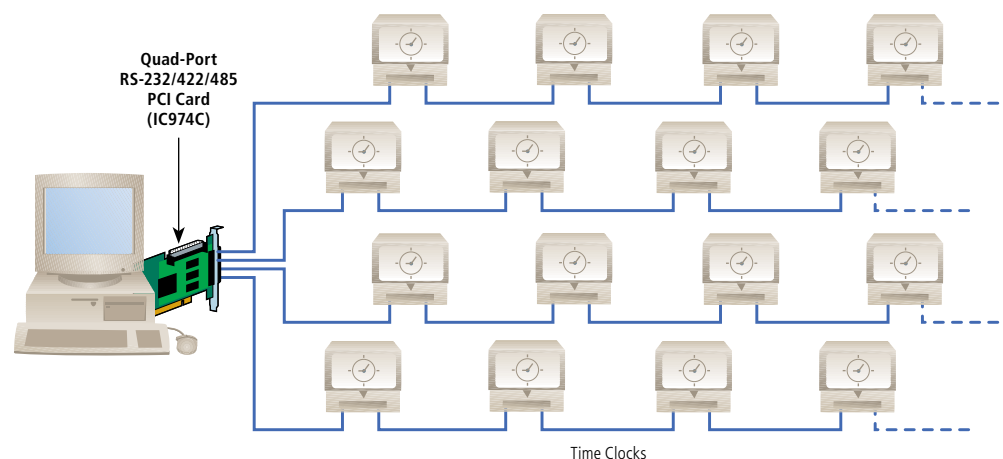
Add ports to your PC with
these PCI cards featuring
high-speed buffered UARTs.



FEATURES

- » Provide an easily configurable interface that's simple to connect.
- » Some models meet a variety of interface standards.
- » Advanced buffered UARTs for faster data transmission.
- » Low-profile models fit in the PCI slots of newer, slimmer PCs.
- » Opto-isolation available on some models.
- » Drivers for all Windows operating systems are included.

Connect up to 31 RS-485 devices to each port on the Quad-Port RS-232/422/485 PCI Card.



OVERVIEW

When you need to add extra PCI ports to your personal computer, select a **PCI card** from Black Box®. All our cards feature speedy buffered Universal Asynchronous Receiver/Transmitters (UARTs); these are integrated circuits that convert bytes from the computer bus into serial bits for transmission.

The cards are designed to maximize DOS, Linux®, OS/2®, QNX, Windows® 95/98/Me/XP, Windows 2000, Windows NT®, and UNIX® communications. Windows drivers, utilities, INF files, and help files are included to simplify installation.

Configure the cards' ports as RS-232 for standard serial COM-port requirements, and you can use a card for modems, printers, plotters, and similar devices.

The RS-232 adapters support distances between devices of up to 50 feet (15.2 m).

Use RS-422 mode for long-distance device connections that require noise immunity and high data integrity (like industrial automation and control applications).

Or, select RS-485 and capture data from multiple peripherals in an RS-485 multidrop network. This communications link between multiple locations uses multiple local exchange carriers. Up to 31 RS-485 devices can be connected to each port to automate your data collection.

The RS-422/485 cards support distances between devices of up to 4000 feet (1219.2 m).

In both RS-232 and RS-422 modes, the **PCI cards** work seamlessly with your standard operating system's serial driver. In RS-485 mode, the cards' special autoenable feature allows the RS-485 ports to be viewed by the operating system as a COM port. This enables you to use a standard COM driver (instead of a custom software driver) for your high-speed

RS-485 connections. It also makes the cards compatible with DOS and Windows 95/98 or Windows NT.

These **PCI cards** are easy to set up and use. Install an adapter in any of the PCI expansion slots on your PC. Configuring a card is just a matter of setting one or a few jumper straps. I/O addresses and IRQs are automatically assigned by your PC motherboard's BIOS. And, because these cards slide into any standard PCI slots, you don't have to install a data-conversion box. They're ideal for field use!

Integration problems are a thing of the past with the adapters. They support all PCI interrupts, providing a wider range of IRQs that will be assigned by the BIOS when installing.

All card versions come with serial utility test software to aid in troubleshooting hardware conflicts. The software's easy-to-use diagnostic program even verifies your installation.

Single-Port PCI Cards

The IC970C-LP provides a single PCI bus RS-232 serial port for applications requiring a high-quality serial port. Regardless of whether you are connecting to a modem, an ISDN terminal adapter, an industrial device, or OEM equipment, this card will provide the speed and power your application requires.

Single-port PCI cards are also available for RS-232/422/485/530 interfaces. They can easily be configured as RS-232, RS-422, RS-485, or RS-530, supporting synchronous data rates up to 460.8 kbps.

The IC971C and IC975C-LP provide a single field-selectable port that you can configure as RS-422/485/530. In RS-485 mode, these cards' autoenable feature allows them to be viewed by the operating system as a standard COM port. These cards function almost identically, but the IC975C-LP is a low-profile version that can also be configured for RS-232. An RoHS-compliant version (IC975C-LP) is also available.

The IC972C-R2 gives your PC a single serial port that's field-selectable for RS-232/422/485. It also provides opto-isolation. This is important in installations where the equipment connected to the PC is either far from the host system or on a different power transformer circuit. The card's true optical isolation eliminates ground loops; these can cause data errors and destroy equipment.

Want to connect a clocked digital line while using your standard communications software? These cards let you do just that—without the need for expensive custom software.

Dual-Port PCI Cards

The IC187C-LP features a pair of field-selectable RS-232/ 422/485 serial ports on one end of an included cable. The other end of the cable has a DB25 female connector that attaches to the card's DB25 male connector.

Configure both ports as RS-232 when highly reliable standard serial ports are required. Choose RS-422/RS-485 mode for long-distance device connections up to 4000 feet (1219.2 m) where noise immunity and high data integrity are essential.

Up to 31 RS-485 devices can be connected to each port to automate your data collection. You can even mix the ports in any of the interface combinations to suit your application.

The IC973C provides two RS-232/422/485 DB9 male serial ports. Plus, it's opto-isolated. Like the IC187C-LP, up to 31 RS-485 devices can be connected to each port to automate your data collection.

RS-232/422/485 cards with opto-isolation and low-profile cards reach speeds of 460.8 kbps and above using a 128-byte FIFO buffer.

Quad-Port PCI Cards

The IC188C-R2 uses its 16854 chip to transfer data at speeds greater than 460.8 kbps.

The IC974C provides four field-selectable RS-232/422/485 serial ports. It's identical in function to the dual-port IC187C-LP except that it connects up to 124 RS-485 devices to your CPU.

Both 4-port cards include "spider" cables with one connector that attaches to the card on one end and four connectors on the other end.

8-Port Combo PCI Card

The IC978C gives you eight field-selectable RS-232/422/485 serial ports. It functions in the same way as the IC974C, but it connects up to 248 RS-485 devices to your PC. It reaches sustained speeds of 460.8 kbps and burst speeds of up to 921.6 kbps.

Serial Host Adapters, PCI

The RS-232 cards (IC140C-R2, IC143C-R2) operate at speeds of up to 460.8 kbps using either a 32-byte FIFO buffer or a 64-byte FIFO buffer.

The IC133C-R2 cards provides two RS-232/422/485 ports. The IC133C-R2 has a 16550 UART for sustained speeds up to 115.2 kbps or bursts of data up to 460.8 kbps. The IC187C has a 16850 UART for speeds beyond 460.8 kbps.

The IC141C-R2 has a 16550 UART for each of its four ports and provides sustained speeds of up to 115.2 kbps or burst speeds of up to 460.8 kbps.

The IC189C and IC133C-R2 each have a 16850 UART for sustained speeds of 460.8 kbps and above.

The 8-port PCI cards (IC142C, IC190C-R2) support RS-232. Each card also includes an octopus cable. A single connector on one end of this cable attaches to the card's single connector. The other end of the cable has eight connectors to attach to the serial devices.

The IC142C has 16554 UARTs for sustained speeds of up to 115.2 kbps or data bursts to 460.8 kbps.

The IC190C-R2 uses 16854 UARTs and a 128-byte FIFO buffer for speeds up to 460.8 kbps and above.

The IC1600C features 16 RS-232 ports and operates at speeds of up to 460.8 kbps and above.

Technically Speaking

With more people using the Internet, new demands have been placed on computer serial ports. Many PC serial ports aren't equipped to handle the level of buffering required for newer data rates. But advanced UARTs—such as the 16550, 16650, 16750, and 16850—go a long way toward satisfying the requirements.

I/O addresses and IRQs

All the UARTs in the PCI cards are buffered, so the CPU is not constantly interrupted to process data.

The adapter is automatically assigned I/O addresses and IRQs by the motherboard BIOS. Only the IRQ address can be modified by the user.

16550 UART

Used in the IC133C-R2 and IC141C-R2, the 16550 features a 16-byte input and output First-In, First-Out (FIFO) buffer that holds characters for the transmitter and receiver. The FIFO enables you to obtain higher data rates while reducing the frequency of processor interrupts. It supports sustained data rates up to 115.2 kbps or bursts of data up to 460.8 kbps.

16554 UART

Used in the IC142C, two 16554 UARTs contain four 16550 UARTs, each with a 16-byte FIFO buffer.

16650 UART

Used in the IC140C-R2, the 16650 UART features a 32-byte FIFO buffer and can handle sustained data rates up to 460.8 kbps. But you must use the appropriate line drivers and receivers and be able to optimize the other factors that affect performance (such as CPU, number of ports, cable length and quality, and electrical interface).

16750 UART

Used in the IC143C-R2, the 16750 has a 64-byte FIFO buffer.

It also features sustained baud rates of 460.8 kbps but delivers better performance because of its larger buffer.

16850 UART

Used in the IC970C-LP, IC971C, IC975C-LP, ICR975C-LP, IC972C-R2, IC187C-LP, IC973C-IC974C, IC187C, and IC189C, the 16850 UART has a 128-byte FIFO buffer for each port.

The 16850 UART features FIFO UARTs that enhance communications. They help you avoid the many I/O problems—like data overruns or underruns—that occur in a multitasking environment when the UART buffering isn't large enough to handle the incoming data. These, of course, can interrupt performance and affect your communications.

The 16850 chip also supports an isochronous scheme, which is asynchronous framing with the addition of clock signal. This scheme allows for much higher data rates and the use of a digital line (ISDN, T1) where a clock is supplied for data multiplexing. And you can get high-speed communications with a simple communications interface that responds to standard communication calls.

16854 UART

Used in the IC188C-R2, IC190C-R2, and IC1600C, the two 16854 UARTs contain four 16850 UARTs, each with a 128-byte FIFO buffer.

16C864 UART

Used in the IC978C, the two 16C864 UARTs contain four 16860 UARTs. Each UART has a 128-byte FIFO buffer.

TECH SPECS

Specs Text Roman — Communications Chip —

IC133C-R2, IC141C-R2: 16550 UART;
IC142C: 16554 UART;
IC140C-R2: 16650 UART;
IC143C-R2: 16750 UART;
IC970C-LP, IC971C, IC975C-LP, ICR975C-LP, IC972C-R2, IC187C-LP,
IC973C-IC974C, IC187C, IC189C: 16850 UART;
IC188C-R2, IC190C-R2, IC1600C: 16854 UART;
IC978C: 16C864 UART

Distance (Maximum) —

RS-232: 50 ft. (15.2 m);
All others: 4000 ft. (1219.2 m)

MTBF — Greater than 150,000 hours (calculated)

Operating Systems Supported — DOS, Linux®, OS/2®, QNX, Windows® 95/98/Me/XP, Windows 2000, Windows NT®, UNIX®

Relative Humidity — 10 to 90%, noncondensing

Speed (Maximum) — IC133C-R2, IC141C-R2, IC142C: Sustained

data rates of up to 115.2 kbps, bursts of 460.8 kbps;
IC140C-R2: Sustained rates of 460.8 kbps;
IC978C: Sustained rates of 460.8 kbps, bursts of up to 921.6 kbps;
All other models: 460.8 kbps and above

Temperature Tolerance —

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

Connectors — IC970C-LP: (1) DB9 M;

IC971C, IC975C-LP, ICR975C-LP, IC972C-R2: (1) DB25 M;
IC187C-LP: (1) DB25 M on card and (1) DB25 F on cable to (2) DB9 M;
IC973C, IC133C-R2, IC187C: (2) DB9 M;
IC188C-R2: (1) DB44 F on card, (1) DB44 M connected to (4) DB25 M
by spider cable;
IC974C, IC140C-R2, IC143C-R2, IC141C-R2, IC189C: (1) DB37 M
on card, (1) DB37 F on included "spider" cable to (4) DB9 M;
IC978C: (1) DB78 M on card, (1) DB78 F on included cable to (8) DB9 M;
IC142C: (1) DB78 M on card, (1) DB78 F and (8) DB25 M on
included octopus cable;
IC190C-R2: (1) DB68 F on card, (1) DB68 M and (8) DB25 M on
included octopus cable;
IC1600C: (2) VHD 68-pin micro F on card, (1) VHD 68-pin micro M
and (8) DB25 M on each of (2) included octopus cables

Power — From the PCI bus

Size —

IC970C-LP, IC975C-LP, ICR975C-LP, IC187C-LP: 2.5"H x 4.7"L (6.4 x 11.9 cm);
IC971C: 2.8"H x 4.9"L (7.1 x 12.4 cm);
IC972C-R2: 3.5"H x 4.9"L (8.9 x 12.4 cm);
IC973C-IC974C, IC978C: 4.2"H x 6.5"L (10.7 x 16.5 cm);
IC188C-R2: 3.3"H x 4.9"L (8.4 x 12.4 cm);
IC140C-R2, IC143C-R2, IC133C-R2, IC187C, IC141C-R2, IC189C, IC142C,
IC190C-R2, IC1600C: Half-card

What's included

All cards:

- ◆ PCI card
- ◆ CD-ROM containing drivers for supported operating systems (DOS, Linux®, OS/2®, QNX, Windows® 95/98/Me/ XP, Windows 2000, Windows NT®, UNIX®) and a user's manual (in PDF format)

IC187C-LP also has:

- ◆ (1) DB25 F to (2) DB9 M cable

IC188C-R2 also has:

- ◆ (1) DB44 M to (4) DB25 M "spider" cable

IC974C, IC140C-R2, IC143C-R2, IC141C-R2, IC189C also have:

- ◆ (1) DB37 F to (4) DB9 M "spider" cable

IC978C also has:

- ◆ (1) DB78 F to (8) DB9 M "octopus" cable

IC142C also has:

- ◆ (1) DB78 F to (8) DB25 M "octopus" cable

IC190C-R2 also has:

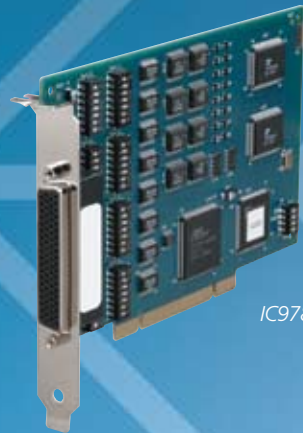
- ◆ (1) DB68 M to (8) DB25 M "octopus" cable

IC1600C also has:

- ◆ (1) VHD 68-pin micro M and (8) DB25 M on each of (2) "octopus" cables



IC971C



IC978C



IC1600C

Item	Code	Item	Code
Single-Port PCI Cards		Serial Host Adapters, PCI	
RS-232 Low-Profile		2-Port RS-232	
16850 UART	IC970C-LP	16650 UART	IC140C-R2
RS-422/485/530		16750 UART	IC143C-R2
16850 UART	IC971C	2-Port RS-232/422/485	
RS-232/422/485/530 Low-Profile		16550 UART	IC133C-R2
16850 UART	IC975C-LP	16850 UART	IC187C
RS-232/422/485/530 Low-Profile, RoHS-Compliant		4-Port RS-422/485	
16850 UART	ICR975C-LP	16550 UART	IC141C-R2
RS-232/422/485 with Opto-Isolation		16850 UART	IC189C
16850 UART	IC972C-R2	8-Port RS-232	
Dual-Port PCI Cards		16554 UART	IC142C
RS-232/422/485 Low-Profile		16854 UART	IC190C-R2
16850 UART	IC187C-LP	16-Port RS-232	
RS-232/422/485 with Opto-Isolation		16854 UART	IC1600C
16850 UART	IC973C		
Quad-Port PCI Cards		You may also need...	
RS-232 Serial Adapter		DB25 to Terminal Block Adapter	IC980
16854 UART	IC188C-R2	DB9 to Terminal Block Adapter	IC981
RS-232/422/485			
16850 UART	IC974C		
8-Port Combo PCI Card			
RS-232/422/485			
16C864 UART	IC978C		

Why Buy From Black Box? Exceptional Value. Exceptional Tech Support. Period.

Recognize any of these situations?

- You wait more than 30 minutes to get through to a vendor's tech support.
- The so-called "tech" can't help you or gives you the wrong answer.
- You don't have a purchase order number and the tech refuses to help you.
- It's 9 p.m. and you need help, but your vendor's tech support line is closed.

According to a survey by *Data Communications* magazine, 90% of network managers surveyed say that getting the technical support they need is extremely important when choosing a vendor. But even though network managers pay anywhere from 10 to 20% of their overall purchase price for a basic service and support contract, the technical support and service they receive falls far short of their expectations—and certainly isn't worth what they paid.

At Black Box, we guarantee the best value and the best support. You can even consult our Technical Support Experts before you buy if you need help selecting just the right component for your application.

Don't waste time and money—call Black Box today.