



# BLACK BOX<sup>®</sup>

## NETWORK SERVICES

### PC Plus Adapters

*Speedy 16650 UARTs and 32K buffers enable these adapters to take full advantage of today's super-fast peripherals.*

#### Key Features

- ▶ *Fast 16650 UART Chips. Integrated 32-byte FIFO buffer for faster throughput.*
- ▶ *Serial models are 100% compatible with all V.90 external modems and all ISDN external terminal adapters.*
- ▶ *The PC Plus Enhanced Parallel Adapter supports both Enhanced Capabilities Port (ECP) and Enhanced Parallel Port (EPP) standards.*
- ▶ *Serial Cards feature a maximum data rate of 460.8 kbps. The Parallel Card has a maximum data rate of 7.2 megabytes per second.*
- ▶ *They're easy to install and troubleshoot. But if you do need assistance, just call our Technical Support experts; they'll be glad to help.*

**T**hese six high-speed adapters feature the 16650 UART chip for fast performance. A roomy 32-KB buffer virtually eliminates lost data and lags from retries and resends. These adapters remove communication roadblocks using technology that's designed to handle today's throughput.

#### PC Plus HS Parallel PCI Adapter or PC Plus Dual PCI Adapter

Free up scarce ISA slots while adding one or two high-speed parallel ports. It can actually achieve data throughput of up to 7.2 megabytes per second—that's two to three times faster than standard parallel throughput, enough to keep up today's high-speed peripherals.

The card adds one or two PCI-bus DB25 female Enhanced Parallel Ports (EPP) to your system, occupying a single LPT port. Moreover, it's plug-and-play compatible: The card selects one available IRQ and one available PCI/O address. You just plug it into your system's motherboard and go.

The Parallel PCI Card is also 100% compatible with any standard parallel-port device, including laser, inkjet, BubbleJet, and dot-matrix printers; parallel removable-storage printers; and parallel scanners. In addition, you can configure the card to the standard ISA parallel-port addresses (0278 and 0378 hex) for compatibility with peripherals such as Iomega<sup>®</sup> Zip<sup>™</sup> drives.

#### PC Plus RS-232 Serial Adapter

This ISA Card with serial port is totally compatible with all V.90 external modems, including 230.4-kbps modems, and all external ISDN terminal adapters. The Adapter is configurable as COM 1 through COM 4 using an IRQ of 2, 3, 4, 5, 10, 11, 12, or 15. Drivers for Windows<sup>®</sup> 95/98 and Windows NT<sup>™</sup> are included.

#### PC Plus HS Serial Adapter or PC Plus Dual Serial PCI Adapter

This PCI card features one or two high-speed serial ports. It uses PCI shared interrupt structure, virtually eliminating IRQ conflicts. It's 100% compatible with 56-kbps external modems and ISDN terminal adapters. Drivers for Windows 95/98 and Windows NT are included.

#### PC Plus Enhanced Parallel Adapter

The Enhanced Parallel Adapter, used primarily for high-speed printer applications, provides an ultra-fast Enhanced Parallel Port with a maximum transfer rate of 2.5 megabytes per second.

The Enhanced Parallel Adapter supports both EPP and ECP standards (see *Technically Speaking* on the following page). You can configure it as LPT1 through LPT6, using IRQ 2, 3, 4, 5, 7, 10, 11, or 12 DMA 1 or 3. The Adapter supports hexadecimal addresses 03BC, 0378, 0278, 0238, 0288, and 0338.

The Adapter is backward-compatible with 4- and 8-bit (bidirectional) parallel ports and requires no special drivers.

#### Typical Application

*When you upgrade to a new 56-kbps modem, upgrade your serial port with a PC Plus RS-232 Serial Adapter to take full advantage of your modem's speed.*

*If your PC has no spare ISA slots, you can still add two high-speed serial ports just by plugging our PC Plus Dual Serial PCI Adapter (IC128C) into a PCI slot.*

*Send files to your high-speed printer as fast as your printer can accept them by installing a PC Plus Enhanced Parallel Port Adapter in your PC.*

If you have an older computer, chances are your parallel and serial ports can't keep up with today's super-fast peripherals. Your computer may actually be slowing down your modem or your printer. These high-speed adapters solve that problem.

## Technically Speaking

### High-Speed Serial Ports

If you're not getting the performance you expect from your new high-speed modem or ISDN terminal adapter, it may be the fault of your PC's serial port. Serial ports on older PCs just can't handle the speeds demanded by today's high-speed equipment.

The speed of a serial port is dependent on the type of UART (Universal Asynchronous Receiver Transmitter) chip it uses. Older Pentium® PCs usually have serial ports based on the 16550 UART chip which are limited to 115.2 kbps—less than the 128 kbps supported by most ISDN terminal adapters. And because of their limited 16K buffer, they're prone to frequent buffer overflows and retransmission of entire blocks of data. Because of these factors, the highest actual speed 16550 chips can achieve is in the neighborhood of 80 kbps. (And most 486 PCs have I/O chips that are even slower than the 16550 chips!)

### 16650 Speed

16550 UARTs just can't keep up with today's high-speed 33.6- and 56-kbps modems and can't begin to touch 128-kbps ISDN speed. For that, you need a faster serial port—a serial port based on the 16650 UART.

Unlike the 16550 UART, the 16650 UART supports data-transfer rates up to 460.8 kbps (including 115.2 and 230.4 kbps).

### Double the Buffer

The robust 32K buffer—twice the size of the 16550 16K buffer—helps to ensure that high data rates can be maintained without speed-dampening buffer overflows.

Instead of the CPU having to verify the buffer status each time it loads a byte into the UART, the 16650 UART enables the CPU to send and receive bursts of data directly from the port without error.

The FIFO buffer in the 16650 UART can even be custom-configured for the most efficient operation. Tx/Rx triggers can be set up to interrupt the CPU only when the buffer has filled to a predetermined level—leaving the CPU free to perform other important tasks.

### Flow Control

Unlike a 16550 UART, which is basically a "dumb" device, the 16650 UART is capable of detecting flow-control signals without intervention from the CPU.

In fact, the only thing the CPU ever sees from the 16650 UART is a request to load the buffer or to retrieve data. No transmission retry is ever required, and overrun errors become virtually impossible.

### Enhanced Parallel Ports

The requirements of high-speed peripheral devices such as printers have led to the development of enhanced parallel standards known as EPP and ECP.

EPP (Enhanced Parallel Port) increases parallel-port throughput to the same speed as the ISA bus. EPP ports are also 8-bit bidirectional, making them ideal for newer high-speed peripherals such as parallel-port modems.

ECC (Enhanced Capabilities Port) is a more recent refinement of EPP.

Although ECP ports operate at the same speeds as EPP, their design gives you even faster data transfer rates. ECP ports have DMA (Direct Memory Access) capability, so data can be channeled directly to memory, bypassing the CPU—an important feature given the overhead demands of modern multitasking operating systems.

The PC Plus Enhanced Parallel Adapter is compatible with EPP and ECP and is also backward-compatible with 4- and 8-bit parallel standards.

## Additional equipment you may need:

### High-Speed Modems:

- Sportster® Fax Modem (81-015630-01)
- MultiModem V.90 (MT5600ZDX-GB)

### ISDN Terminal Adapters:

- DIVA (MZ310235)
- IWAY Hopper (ISU128ST)

### Cables:

- **For serial modem connections:**  
AT Modem Cable (EVMBMC)
- **For parallel-printer connections:**  
Enhanced Parallel Port Cable with DB25M/  
Centronics Connectors (EQN202-0010)

## For these and other components...

Call our expert Technical Support Staff for all your Interface Converter needs. They'll help you find the best equipment for your application.

# Ordering Information

This information will help you place your order quickly.

### PC PLUS ADAPTERS

### ORDER CODE

Parallel PCI.....	IC126C
Dual Parallel PCI.....	IC146C
RS-232 Serial ISA.....	IC127C
Serial PCI.....	IC145C
Dual Serial PCI.....	IC128C-R3
Enhanced Parallel ISA.....	IC129C

## Specifications

### System Requirements —

IBM PC or compatible with Windows 95/98 or Windows NT

### Speed — IC126C, IC146C:

7.2 MB per second;  
IC127C, IC128C, IC145C:  
460.8 kbps;  
IC129C: 2.5 MB per second

### CE Approval —

IC127C–IC129C

### Connectors —

IC126C, IC127C: (1) DB9;  
IC128C: (2) DB9;  
IC129C: (1) DB25;  
IC145C: (1) DB9 male;  
IC146C: (2) DB25 female

### Power — From PC bus

### Card Type —

IC126C, IC128C: PCI;  
IC127C, IC129C: ISA; IC145C,  
IC146C PCI

### Size — ¼ Card