



Universal Serial Bus

Information Brief

Worth remembering

- New technology supports up to 127 external PC peripherals
- Industry standard will take the guesswork out of expanding PC functionality
- Incredible 12 Mbps data transfer rate supports multimedia and telephony devices
- Cost-effective universal connection helps reduce the costs of owning and using PCs

Who says adding peripherals has to be so confusing?

Adding a peripheral to a PC—assuming there's an available port—can turn into a test of skill and endurance. You can spend hours setting dip switches and resolving conflicts with IRQ settings, DMA channels, and I/O addresses. Don't forget to check the software driver level—and try not to trip over the messy cabling. Finally, everything's ready to go. You boot up—and cross your fingers. Will it all work together or will adding this one humble peripheral bring the entire system to a halt? And, just think—the next time you want to add a peripheral, you get to do this all over again. There's got to be a better way.

USB: Practical technology that works

Enter Universal Serial Bus (USB), a standard for connecting external PC peripherals. USB makes it easy to add peripherals externally and paves the way for everything from digital peripherals and telephony devices to multi-user games.

In a nutshell, the USB standard means system units will no longer offer a confusing array of dedicated ports. Instead, USB takes the “one size fits all” approach. Four-pin USB connectors will accept virtually any USB peripheral—from mice to keyboards to printers to modems. What's more, with USB, add-on peripherals don't have to connect directly to the system unit. A USB hub can be connected to a USB port on the system unit. Each hub provides outlets for 7 USB devices. You can even plug another hub into the hub that is connected to the system unit, giving you 13 outlets (the 6 remaining outlets on the first hub, plus 7 more on the second hub). By plugging in more hubs, you can attach up to 127 different devices. That means greatly improved flexibility and efficiency for you.

USB is supported by specific chip sets on Pentium processor- and Pentium Pro processor-equipped host PCs, and software device drivers to be included in the Microsoft Windows 95 and Windows NT operating systems. This support allows USB to sense when peripherals are attached or detached. There's no hunting for the “right” connection, and, even better, there's no rebooting or reconfiguring every time a peripheral is added or removed. In fact, USB's hot insertion and removal feature lets you install and detach peripherals while the PC stays up and running. Who says PCs are difficult to set up? With USB, it's never been simpler. You don't even have to open the system unit. Fewer installation problems, reduced setup time...and you don't need to call a high-tech guru for assistance every time you want to plug in a new peripheral.

The full-speed USB bandwidth (12 Mbps) will support a wide range of multimedia and telephony devices, and provides both ISDN and PBX interfaces that accommodate future system growth. The low-speed bandwidth (1.5 Mbps) will support low-end devices, such as keyboards and mice, for additional cost savings. What's more, USB ports will support both full-speed and low-speed devices simultaneously.

A quick word about a different standard

IEEE 1394 is a connection standard that promises high-speed data transfer rates of at least 100 Mbps. The consumer electronics industry is focusing on IEEE 1394 because it supports high-speed computer peripherals, such as external disk drives and video teleconferencing equipment. External disk drives will probably be the first to market. Commercial desktop computers will support this technology in the future. And, since USB supports full-speed and low-speed devices and IEEE 1394 supports high-speed devices, there's plenty of room for both standards.

We like it just the way it is

IBM is so convinced of USB's valuable time- and cost-saving features that we're applying this technology in complete compliance with the USB specifications. In fact, IBM and Intel worked closely to get USB technology to market quickly. Currently, selected models in the IBM PC 300 commercial desktop computer family are USB-ready, as are some home PCs in the Aptiva family.

All things considered, USB is a classic example of how properly designed and applied technology can help reduce the costs of owning and using PCs by allowing systems to grow in direct response to their owners' needs. USB positions your PCs for streamlined incorporation of future technologies.

For More Information

For information via the World Wide Web

<http://www.pc.ibm.com>

<http://www.teleport.com/~usb>
