

TECH



TIPS

THE IDEAL HIGH-PERFORMANCE INTERFACE BUS HAS A COMBINATION OF ISA & PCI SLOTS

ISA bus (Industry Standard Architecture) was an early designation for 8-bit expansion slots in the IBM PC and XT (ISA-8), later expanded to cover the 16-bit AT-style (ISA) slots used to add cards to your PC. The ISA bus supports a wide variety of PC expansion cards. But all ISA-bus computers share a common bottleneck: no matter how fast the microprocessor in your PC, the ISA bus is limited to a maximum data transfer rate of approximately 500Kbytes of data per second for all the cards on the bus. This limitation can be a severe problem in high-speed data acquisition and graphics applications, where multi-megabyte files are common. Speeding up the processor does little good if the application is bottlenecked by the limited throughput of the PC's ISA bus.

PCI: AN OPEN SYSTEM ENVIRONMENT WITH FAST DATA TRANSFERS

The newer PCI bus (Peripheral Component Interconnect) standard offers a solution to this problem. A PCI controller can be used in conjunction with an ISA controller to provide increased synchronisation over all the system's bus-installed resources (CPU, cards, etc). The PCI controller can exchange data with your PC's CPU 32 or 64 bits at a time, and it can allow intelligent, PCI-compliant adapters to perform tasks concurrently with the CPU using a technique called bus mastering. PCI-bus graphics adapters and drive controllers offer especially impressive performance, often many times faster than their ISA-bus counterparts. The PCI specification allows for multiplexing, which permits more than one data transfer to happen on the bus at one time. Aside from benefits such as data transfer rates up to 132 Mbytes per second, PCI is a true open-system environment which allows for CPU, platform, and operating system independence.

By choosing a PCI-based computer system (which offers a combination of both PCI-bus and ISA-bus card expansion slots), you can take advantage of the best features of both interface bus standards while protecting your investment in existing ISA-bus expansion cards. (For a short time at least! Many standard PC motherboards ship with only one ISA slot and soon they might become obsolete. Of course, the ISA bus will still be around in specialised systems using passive backplanes and so forth for a few years to come.)