Preface

INTRODUCING PCMCIA CARDS

Introduction

If you are unfamiliar with PCMCIA cards, then we suggest you read this preface to gain an overall understanding of the various types and configurations before you attempt to install your PC/104 PCMCIA Module. If you have used PCMCIA cards before, it is not necessary to read this section and you should proceed directly to the main body of the manual.

What are PCMCIA Cards?

PCMCIA stands for the Personal Computer Memory Card International Association, an organization which sets the technical standards according which all related devices are designed. PCMCIA cards (also known as PC cards, and incorrectly, as IC cards) are rapidly replacing floppy diskettes as the storage medium of choice for computer users. They are small, compact, have a large capacity and offer a flexible range of options for both storage of data and implementation of devices.

PCMCIA cards come in 3 thicknesses (all of them have the same length and width dimensions):

- Type I cards are 3.3 mm thick

- Type II cards are 5 mm thick

- Type III cards are 10.5 mm thick

Though the Type number refers to the thickness of the card rather than to its function, the cards available in each category generally fall into the following three groups:

Type I Cards

Memory cards for storing data. These include two main types - SRAM memory cards and Flash memory cards.

Type II Cards

Type II cards are I/O cards including modem cards, fax/modem cards, Ethernet LAN cards and solid-state ATA hard disk drive cards.

Type III Cards

Type III cards are ATA hard disk drive cards with rotating media.

The PC/104 PCMCIA Module series of products supports some or all of these card types depending on the model.

SRAM and Flash Memory Cards

As we have mentioned, there are two types of memory cards; SRAM and Flash. These types are not interchangeable but both can be used as data storage devices. Note that although SRAM cards are generally Type I devices, Flash memory cards may be either Type I or II, depending on their density. The difference between these two types is as follows:

- SRAM cards can be used to store and load data. Data on these cards can be written and erased many times just like the data on a floppy diskette. SRAM cards can also be made bootable.

- Flash cards can be used to store and load data. Depending on the formatting process used, Flash cards are either WORM (Write Once Read Many times) or full read/write. These cards can also be made bootable.

PCMCIA Memory Card Formatting Options

Memory cards can be formatted with either SystemSoft's Flash Translation Layer (FTL), M-System's True Flash File System (TFFS) or with the DOS File Allocation Table (FAT).

Formatting SRAM Cards

The FAT System is the same as that used by standard floppy diskettes and hard disks and provides a straight forward option for uncomplicated formatting. SRAM cards should always be formatted with the FAT system which will allow them to be used in exactly the same way as floppy diskettes with full read/write capability.

Formatting Flash Cards

For Flash memory cards, the formatting choice depends on the usage intended for the Flash card, and also whether you intend to use the card on some other system, since not all systems support all formats. Flash cards can be formatted using the standard DOS FAT system but this has the disadvantage that they become WORM (Write Once Read Many times) devices.

SystemSoft's Flash Translation Layer (FTL) and M-Systems True Flash File System (TFFS) are special purpose software that organize the data on a Flash card allowing you to use a Flash card in much the same way as a SRAM card. Any application can write data to a Flash card prepared with FTL or TFFS just as easily as writing to a diskette.

You will have to purchase FTL software and/or TFFS software before you will be able to format cards in these formats and read cards already formatted with FTL or TFFS.

What is PC/104?

Introduction

The PC/104 standard is a compact version of the IEEE P996 (PC and PC/AT) bus. The specifications were drafted for the unique requirements of embedded systems and PC/104 is gaining wide acceptance in the field of industrial computing. There are 104 signal contacts on the two PC/104 bus connectors: P1 has 64 pins and P2 has 40 pins

Advantages of PC/104

PC/104 has several advantages over conventional, i.e. ISA/VESA/PCI, bus systems:

- A self-stacking bus eliminates the need for backplanes and card cages

- The 40 and 64-pin connectors are durable and replace typical PC edge connectors

- A small form factor of 3.55" x 3.775" (90.17 mm x 95.89 mm)

- Lower bus drive requirements (6 mA) lowers power consumption to 1~2 watts per card

PC/104 acts as the bridge for using PC technology in industrial applications. It enables system integrators to capitalize on a wide variety of standard PC hardware and software in designing their embedded systems.