

### FEATURES

- Single slot PC Card and Cardbus PC/104-Plus Adapter
- 32-bit PC Card controller provides 33 MHz PCI performance levels and bus-master capability
- Supports burst mode transfers to maximize throughput
- Hot insertion and removal supported
- PnP and automatic configuration supported
- Full backward compatibility for PC Card-16 cards
- Supports both 5V/3.3V PC cards
- 6 LEDs provide visual status of module
- Low power required
- Single +5V supply
- Operating temperature: -40°C to +85°C

WinSystems' PPM-Cardbus is a PC/104-Plus module that supports both Cardbus and PC cards. Its purpose is allow expansion of additional functions such as 802.11 wireless, IEEE-1394 Firewire, USB 2.0, SCSI, and other high-performance functions that have been developed for mobile computing environments. Cardbus supports 32-bit PC Cards operating at bus speeds up to 33MHz.

### FUNCTIONAL CAPABILITY

**PC Cards** - PC Cards are credit card-size peripherals that add memory, mass storage, and I/O capabilities to computers in a rugged, compact form factor. Small form factor PC Cards have a standard length and width of 85.6mm (3.370") x 54.0mm (2.126"). There are three types of PC Cards that all measure the same length and width and use the same 68-pin connector. The only difference between the card types is thickness which are 3.3, 5.0, and 10.5 millimeters for Type I, Type II, and Type III cards respectively. Because they differ only in thickness, a thinner card can be used in a thicker slot, but a thicker card can not be used in a thinner slot.

The card types each have features that fit the needs of different applications. Type I PC Cards are typically used for memory devices such as RAM, Flash, OTP, and SRAM cards. Type II PC Cards are typically used for I/O devices such as data/fax modems, LANs, wireless, and mass storage devices. Type III PC Cards are used for devices whose components are thicker, such as rotating mass storage devices. These cards can be extended cards to allow the addition of components that must remain outside the system for proper operation, such as antennas for wireless applications.

PC Card can be used as a generic term to refer to both existing 16-bit cards, as well as the new 32-bit Cardbus PC Cards.



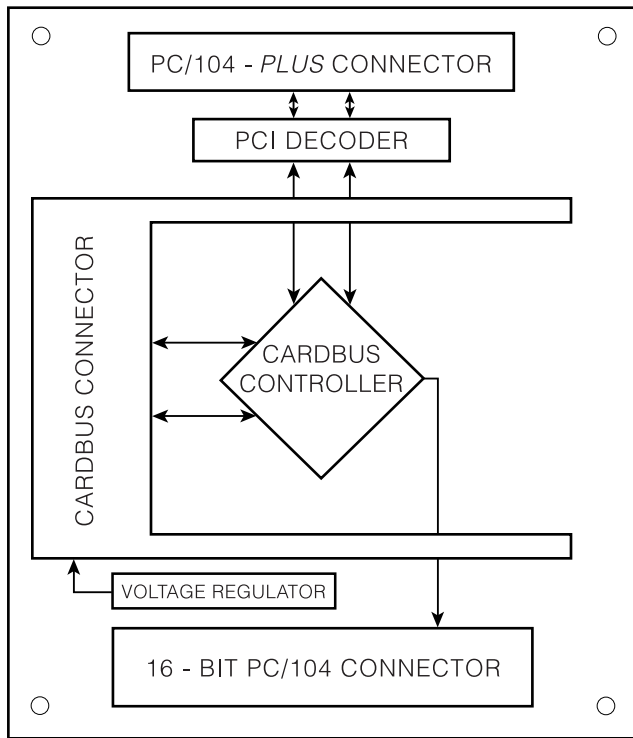
**Card Bus** - Cardbus is a 32-bit high performance bus mastering architecture for PC Cards. It is a method to add high-bandwidth capabilities to the PC Card technology and to match the system performance achieved by today's PC/104 bus-based embedded computers.

The Cardbus resource-configuration architecture allows (re)allocation of system resources whenever cards are added to or removed from a system at boot time and/or dynamically during run-time. This is achieved through an enhanced version of the PC Card standard Card and Socket Services software interface.

Because it shares its protocol and performance level with PCI, exchanging information between PCI and Cardbus is very efficient. The Cardbus hot-insertion and PnP capabilities allow a Cardbus card-resident device to be treated as a normal PCI device for purposes of configuration and usage, with the added benefit that Cardbus devices can be added to or removed from the system at will.

**Cardbus vs. PC Card** - PC Card-16 cards use an 8- or 16-bit interface that operates at ISA bus speeds (8 MHz) using an ISA-like asynchronous protocol. In contrast, Cardbus provides a 32-bit multiplexed address/data path, which operates at PCI local-bus speeds of up to 33 MHz that yields a peak bandwidth of 132MB/sec. Besides supporting a PCI-like data rate, Cardbus devices are capable of acting as system-bus masters. They can assume control of the system bus to effect data transfers. This capability contrasts with PC Card-16 devices that can only act as slaves to system-resident master devices.

**Cardbus Controller** - A Texas Instruments PCI1510 PCI-to-Cardbus controller supports a single PC card



**PPM-CARDBUS BLOCK DIAGRAM**

socket compliant with the PC Card Standard (rev 7.2). It retains compatibility with the 16-bit PC Card specification as well as the 32-bit PC Card (Cardbus). It is capable of full 32-bit transfers at 33 MHz.

The PCI1510 is register-compatible with the Intel 82365SL-DF and 82365SL ExCA controllers. The PCI1510 internal data path logic allows the host to access 8-, 16-, and 32-bit PCI cycles for maximum performance. Independent buffering plus a pipeline architecture provide an unsurpassed performance level with sustained bursting.

**PC/104-Plus Interface** - The PPM-Cardbus provides 32-bits of addressing and data, as well as the complete control interface to operate on the PC/104-Plus bus. The PPM-Cardbus controller has a PCI bus master interface and is compliant with the PCI Bus Local Bus Specification.

Multiple PPM-Cardbus boards can be installed and supported on a single PC/104-Plus stack. There is a jumper block on board to select the module slot position.

There is also a PC/104 connector on the board. No power, control or data signals are wired to it. It simply

feeds the signals through the connector to the next module in a stack.

**Power Switching** - The PPM-Cardbus automatically detects and supports card operation at either 5 volts or 3.3 volts. LEDs indicates the 3.3V and 5V power status and if it is overcurrent.

A switched +12V supply is available at the Cardbus connector for use by PC Cards.

**Software** - Normally Cardbus cards are automatically recognized by operating systems such as Windows® XP. Also, the individual PC Card manufacturer will have drivers either with their card or at their web site. Contact them for specific operating systems that they support.

**Related Information** - To get the latest product data, technical information, and vendors of both Cardbus and PC Cards, visit [www. http://www.pcmcia.org](http://www.pcmcia.org).

## **SPECIFICATIONS**

### **Power Requirements**

Vcc = +5V ±5% @ 25mA typical (without a PC card installed)  
 +12V±5% at tbd mA (Note that this voltage is only required by a few PC Cards. Refer to the manufacturer's data sheet and specifications.)

### **Mechanical**

Dimensions: 3.6" x 3.8" (90mm x 96mm)  
 Weight: 3.5 oz.

### **Connectors**

Cardbus 68-pin PC card  
 PC/104-Plus: 120-pin (4 x 30; 2mm) stackthrough with shrouded header  
 PC/104 16-bit stackthrough

### **Environmental**

Operating Temperature: -40° to +85° Celsius  
 Non-condensing relative humidity: 5% to 95%

## **ORDERING INFORMATION**

PPM-Cardbus PC/104-Plus single socket Cardbus adapter module.

WinSystems reserves the right to make changes to products and/or documentation without further notification.

