

Panther series ATA Card Product Specification

Version 1.0

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1. Introduction

1.1 General Description

Pretec Panther series ATA Card uses NAND-Type flash memory devices, which leads to its remarkable high performance and comes with capacities from 128MB to 4GB unformatted.

The Panther ATA Flash Card performs sequential read/write for each sector (512 bytes) count. It also conforms to PCMCIA specification and is designed with precision mechanics to enable host devices to read/write from the PCMCIA interface into flash media. It can operate with a 3.3V or 5V single power from the host side.

The card provides extraordinary memory medium for PC, IPC or other ATA card compatible devices. Pretec Panther ATA card has been approved through various compatibility tests to be used in various portable applications based on notebook computers, (rugged) handheld devices (such as data-logger, measurement instruments etc.) and others. Therefore these are implemented in numerous medical, industrial and military applications and fulfill the strict requirements for these markets

1.2 Features

- PC Card compliant
 - Compatible with PCMCIA 2.1/JEDIA 4.2
 - Conforms to CompactFlash™ standard 4.1
 - PC Card ATA Specification Compliant 6.0 and downward compatibility to 1.02
 - Support CIS implemented with attribute memory
 - Compatible with all PC Card Services and Socket Services
- PCMCIA ATA / IDE interface
 - ATA command set compatible
 - Support for 8-bit or 16-bit host data transfer
- Extremely rugged and reliable
 - Advanced defect block management
- 3.3/5 Volt power supply, very low power consumption
 - Internal self-diagnostic program operates at VCC power on
 - Auto sleep mode
- Hardware BCH ECC to correct up to 24 bit errors within 1KB data
- Automatic on-the-fly, in-buffer Error Correcting
- Zero-power data retention, no batteries required
- 3 variations of mode access
 - Memory card mode
 - I/O card mode
 - True IDE mode
 - PIO mode 6
 - UDMA mode 5
 - Supported Multi word DMA mode 4

1.3 Ordering Information

-40°C ~ +85°C:

Part Number	Capacity	Description
PAA128-HR	128MB	Panther ATA card 128MB, Industrial (Metal frame)
PAA256-HR	256MB	Panther ATA card 256MB, Industrial (Metal frame)
PAA512-HR	512MB	Panther ATA card 512MB, Industrial (Metal frame)
PAA01G-HR	1GB	Panther ATA card 1GB, Industrial (Metal frame)
PAA02G-HR	2GB	Panther ATA card 2GB, Industrial (Metal frame)
PAA04G-HR	4GB	Panther ATA card 4GB, Industrial (Metal frame)

2. Product Specification

2.1 Operation and environment description

Operating Voltage	DC Input Power	5V ± 10%		
		3.3V ± 5%		
Typical power consumptions	5V	Read Mode: 40mA (Max.)		
		Write Mode: 60mA (Max.)		
		Normal Mode: 6.5mA(Approach values)		
		Read/ Write Peak: 100mA		
	3.3V	Read Mode: 20mA (Max.)		
		Write Mode: 35mA (Max.)		
		Standby Mode: 1mA (Approach values)		
		Read/ Write Peak: 100mA		
Environment conditions	Operating Temperature	Normal Temp.	0°C to +70°C	
		Industrial Temp.	-40°C to +85°C	
	Storage Temperature	Normal Temp.	0°C to +70°C	
		Industrial Temp.	-50°C to +90°C	
	Humidity Operation		5% to 95% (Non-condensing)	
	Humidity Non-operation		5% to 95% (Non-condensing)	
	Shock Operation		3000-G (Max.)	
	Shock Non-operation		3000-G (Max.)	
	Vibration Operation		30-G (Peak to peak to maximum)	
	Vibration Non-operation		30-G (Peak to peak to maximum)	
File system supported compatibility	FAT, FAT16, FAT32, NTFS, EXT2, EXT3			

2.2 Physical description

Weight and Measures (Plastic housing)	Type II	L x W x H 85.6 x 54 x 5.0 (mm)
Storage Capacities	Capacity	128MB – 4GB
Performance	Data Transfer Rates	Read speed up to 30 Mbytes/sec (Max.)
		Write speed up to 15 Mbytes/sec (Max.)
Reliability	MTBF	3,000,000 hours
	Error Correction	BCH ECC to correct up to 24 bit
	R/W Test	Test disk: 3,000,000 Read/Write cycles

3. Product Model

3.1 Industrial ATA Card Part Number Definition

$X_1X_2X_3X_4X_5X_6-X_7X_8X_9X_{10}$

Code	Definition	symbol	Description
X_1X_2	Card Type	PA	PCMCIA ATA Card
X_3	Solution	A	Panther Series
$X_4X_5X_6$	Capacity	128	128MB
		256	256MB
		512	512MB
		01G	1GB
		02G	2GB
		04G	4GB
X_7	Temperature Range	H	-40°C ~ +85°C
X_8	Housing	R	Metal housing
X_9X_{10}	Extension	PR	PIO 6, UDMA off, Removable
		PF	PIO 6, UDMA off, Fixed
		UR	PIO 6, UDMA 5, Removable
		UF	PIO 6, UDMA 5, Fixed

4. Support Flash Media

4.1 ATA Card Logical Format Parameters (CHS)

Card Density ¹	128MB	256MB	512MB
Cylinder	944	1006	991
Heads	8	15	16
Sectors/Track ²	32	32	63
Total Sectors/Card ³	241,664	482,880	998,929
Capacity ⁴	123,731,968	247,234,560	511,451,136

Unit : Bytes

Card Density ¹	1GB	2GB	4GB
Cylinder	1976	3969	7785
Heads	16	16	16
Sectors/Track ²	63	63	63
Total Sectors/Card ³	1,991,808	4,000,752	7,847,280
Capacity ⁴	1,019,805,696	2,048,385,024	4,017,807,360

Unit : Bytes

Notes:

1. Those are general unformatted capacity of all cards.
2. Total tracks = number of head x number of cylinder.
3. Total sector/Card = sector/track x number of head x number of cylinder
4. It's the logical address capacity including the area which is used for file system.
5. Different file system format (FAT16/32) might result in minor different capacity
6. Future spec change can be downloading from Pretec website without further notice to each customer.

4.2 Physical Specification

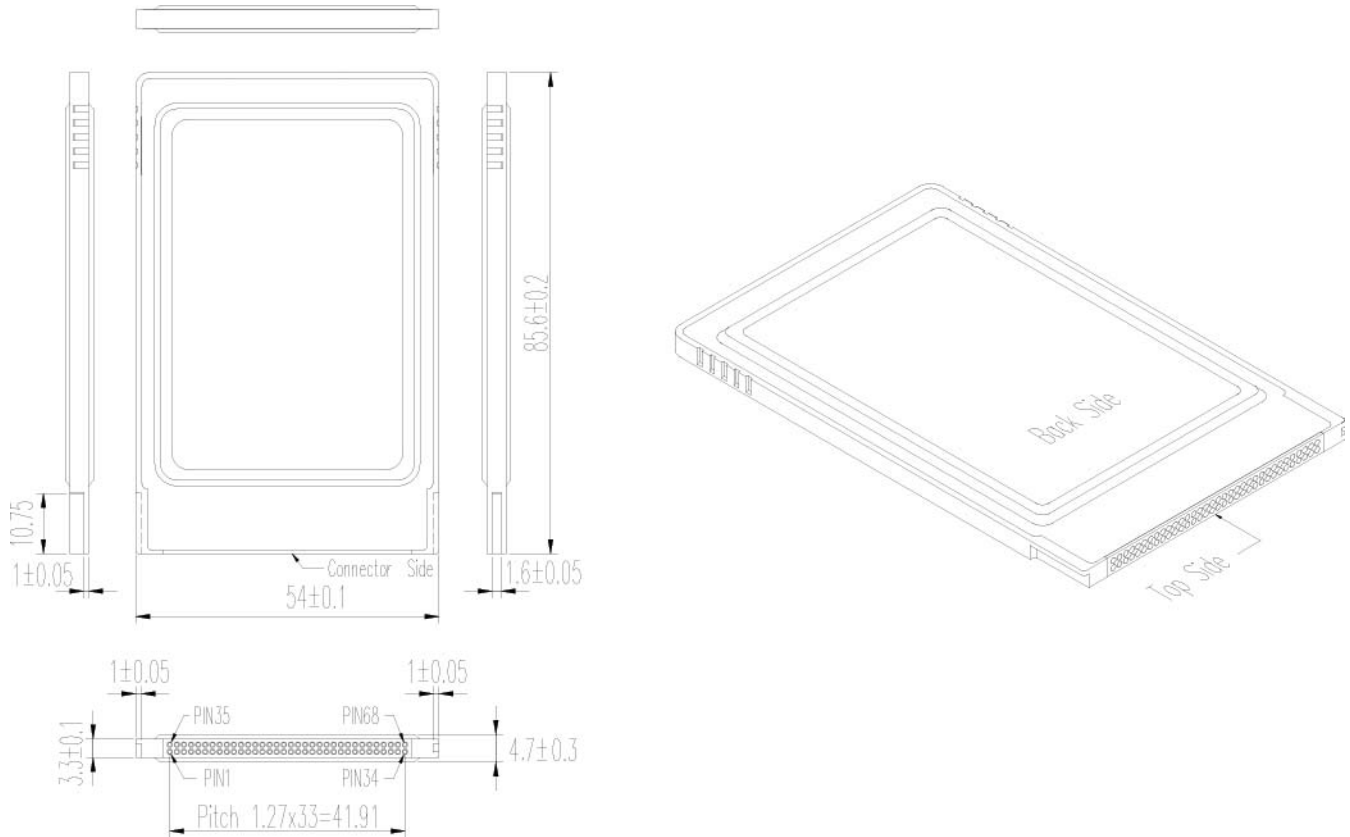


Figure 1: Mechanical Dimensions of Panther series ATA Card

5. Block Diagram

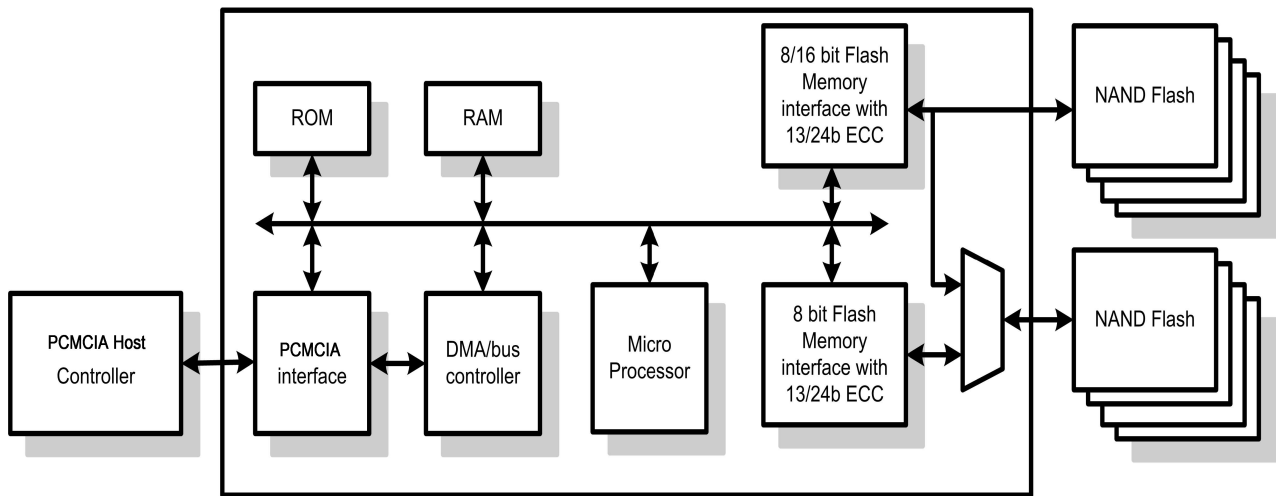


Figure 2: Function Block Diagram of Panther series ATA Card

6. Specification and Features

6.1 Electrical Specification

6.1.1 Recommended Operating Conditions

Operating Conditions	Min.	Typ.	Max.
I/O DC Supply Voltage (5V)	4.5 V	5 V	5.5 V
I/O DC Supply Voltage (3.3V)	2.97 V	3.3 V	3.63 V
Temperature	-40°C	25°C	85°C

6.1.2 DC Electrical Characteristics for 5 Volts Operation

Symbol	Parameter	Min.	Typ.	Max.	Units
V_{OH}	High level output voltage	$V_{CC} - 0.8$	-	-	V
V_{OL}	Low level output voltage	-	-	0.8	V
V_{CC}	Power supply	4.5	5.0	5.5	V
V_{IL}	Input low voltage	-	-	0.8	V
V_{IH}	Input high voltage	4.0	-	-	V

6.1.3 DC Electrical Characteristics for 3.3 Volts Operation

Symbol	Parameter	Min.	Typ.	Max.	Units
V_{OH}	High level output voltage	$V_{CC} - 0.8$	-	-	V
V_{OL}	Low level output voltage	-	-	0.8	V
V_{CC}	Power supply	2.97	3.3	3.63	V
V_{IL}	Input low voltage	-	-	0.6	V
V_{IH}	Input high voltage	2.4	-	-	V

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