Panther series CompactFlash Card

Product Specification

Version 2.0

July 2024

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Document Version

Version	Description	Date	Editor	Approved by
1.0	Preliminary	16, March, 2009	Amos Chung	Alvin Yu
1.1	Update	14, May, 2009	Amos Chung	Alvin Yu
1.2	Modify	13, April, 2010	Amos Chung	Kent Liu
1.3	Modify	25, June, 2010	Amos Chung	Kent Liu
1.4	Modify	5, Oct., 2010	Amos Chung	Kent Liu
1.5	Modify	24, Nov., 2010	Amos Chung	Kent Liu
2.0	Modify	1,July. 2024	Ryan Lee	Humphrey Liu

Contents

1. Introduction

1.1 General Description

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

Compliant with ISA (Industrial Standard Architecture) bus interface standard, the CompactFlash Card performs sequential read/write for each sector (512 bytes) count. It also conforms to CompactFlash specification and is designed with precision mechanics to enable host devices to read/write from the CompactFlash 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 or other CF compatible electric equipments and digital still camera, and, in particular, Pretec Panther series CompactFlash Card has been approved through various compatibility tests to be used in numerous portable desktop, notebook computers and personal handheld devices such as handheld video/audio recorders, PDAs, Palm sized PCs, Handheld PCs and Auto PCs under industrial environment.

1.2 Features

- PC Card compliant
  Conforms to CompactFlash™ standard 4.1
  Compatible with PCMCIA™ ATA specification
  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
CFA128-HP	128MB	Panther CF 128MB, Industrial (Plastic frame)
CFA256-HP	256MB	Panther CF 256MB, Industrial (Plastic frame)
CFA512-HP	512MB	Panther CF 512MB, Industrial (Plastic frame)
CFA01G-HP	1GB	Panther CF 1GB, Industrial (Plastic frame)
CFA02G-HP	2GB	Panther CF 2GB, Industrial (Plastic frame)
CFA04G-HP	4GB	Panther CF 4GB, Industrial (Plastic 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.	0ºC to +70ºC
		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 I	Weight: 15 g	L x W x H 36.4 x 42.8 x 3.3 (mm)
		Pin-Pitch: 1.27 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 CF Card Part Number Definition

$X_1X_2\,X_3\,X_4X_5\,X_6$ -X_7 X_8 X_9 X_{10}

Code	Definition	symbol	Description
X_1X_2	Card Type	CF	CF card type I
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	P	Plastic 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 CompactFlash 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

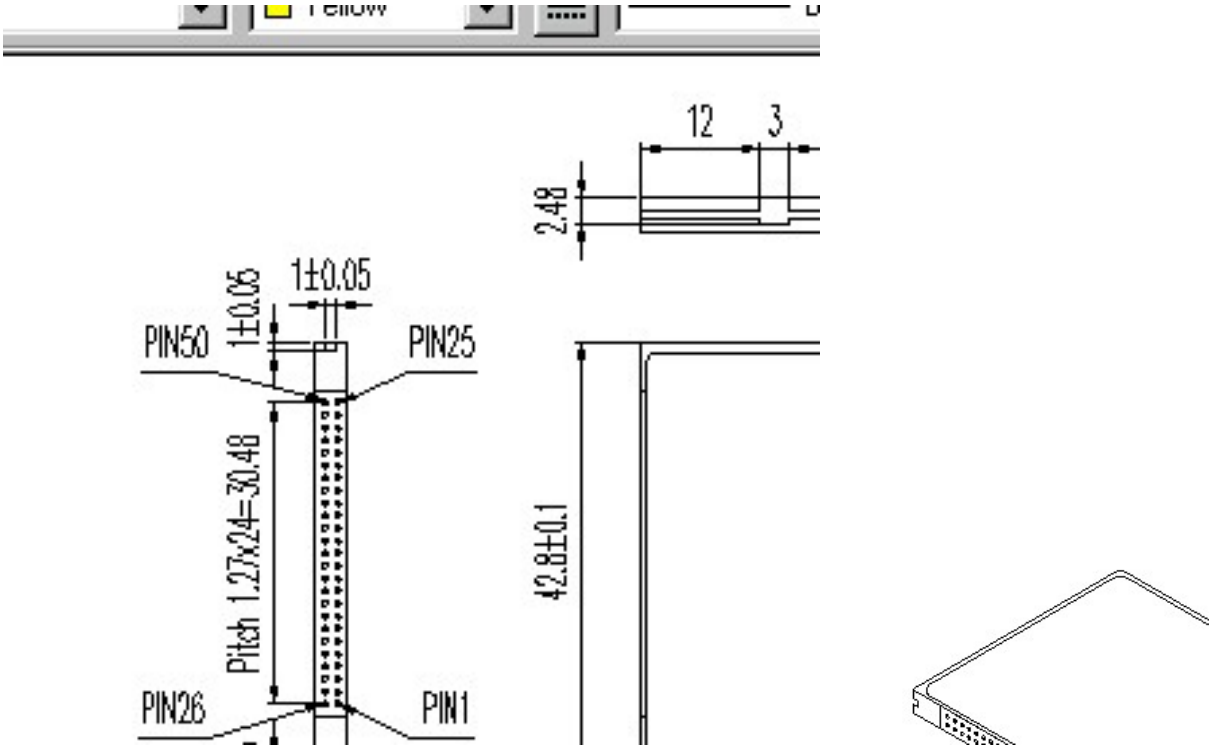

Figure 1: Mechanical Dimensions of Panther series CF Card

5. Block Diagram

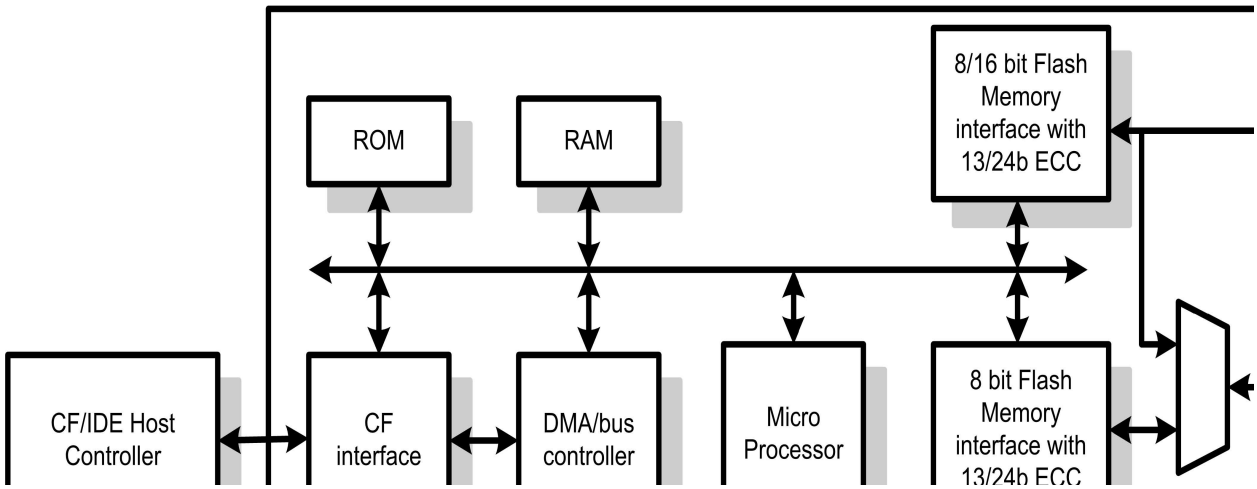

Figure 2: Function Block Diagram of Panther series CF Card

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