PFM-532I

STPC® Elite &
STPC® Consumer-II
PC/104 CPU Module

PFM-532I Manual Rev. A 1st Ed.
Jan. 2006

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Packing List

Before you begin installing your card, please make sure that the following materials have been shipped:

- 1 PS/2 Keyboard/ Mouse cable
- 1 VGA flat cable
- 1 Serial port cable
- 1 Parallel port cable
- 1 2mm to 2.54mm IDE flat cable, 44-pin to 40-pin
- 1 Ethernet RJ-45 connector conversion Cable (for specific version only)
- 1 Quick Installation Guide
- 1 Utility CD-ROM for manual (in PDF format) and drivers
- 1 PFM-532I PC/104 CPU Module

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

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Chapter 1 General Information

Chapter 2 Quick Installation Guide

Chapter

1

General Information

1.1 Features

- Onboard STPC ELITE/ CONSUMER-II SoC
- Up to 18-bit TTL TFT/ 24-bit DSTN LCD
- 10/100 Base-TX Fast Ethernet
- Supports DiskOnChip® & Type I CompactFlash™
- 2 COM/ Digital I/O Ports
- Watchdog timer 1~255 sec.
- +5V Only Operation
- Lead-free & RoHS Compliance
- FCC Class B Certification

1.2 Specifications

System

- CPU: Onboard STPC-ELITE 133MHz or STPC CONSUMER-II 133MHz Processor
- Memory: Onboard 16/32MB SDRAM
- Chipset: STPC ELITE / CONSUMER-II
- BIOS: AWARD 256KB Flash ROM
- Ethernet: Realtek RTL8100BL, 10/100Base-TX RJ-45 connector x 1
- Watchdog Timer: Generates a time-out system reset, setting via software
- SSD: Type I CompactFlash™ Slot x 1, DiskOnChip x 1
- Expansion Interface: PC/104 socket x 1
- Battery: Lithium battery
- Power Requirement: Small 4-pin power connector, +5V only input
- Board Size: 3.55”(L) x 3.78”(W) (90mm x 96mm)
- Gross Weight: 0.66 lb (0.3 kg)
- Operating Temperature: 32^{o}F~140^{o}F (0^{o}C~60 ^{o}C)

Display

- Chipset: SMI SM712 or STPC CONSUMER-II
- Memory: Built-in 4MB or Shared system memory up to 4MB
- Resolutions: Up to 1024 x 768 @ 24bpp colors for CRT & LCD
- LCD Interface: Up to 18-bit TTL TFT LCD & 24-bit DSTN LCD for PFM-532I-A10/A10-01 (PFM-532I-A10-02/03 does not support LCD)

I/O

- MIO: EIDE x 1, Floppy Drive x 1, Keyboard + Mouse x 1, RS-232 x 1, RS-232/422/485 x 1, Parallel x 1
- IrDA: One IrDA Tx/Rx header
- Digital I/O: Supports programmable 8 in/out

Chapter

2

Quick Installation Guide

Notice:

The Quick Installation Guide is derived from Chapter 2 of user manual. For other chapters and further installation instructions, please refer to the user manual CD-ROM that came with the product.

Part No. 2007532I10 Printed in Taiwan Jan. 2006

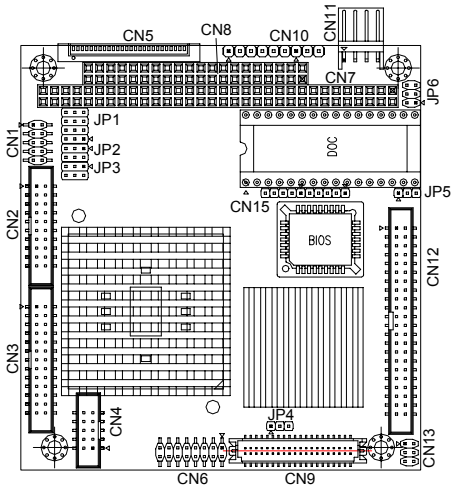
2.1 Safety Precautions

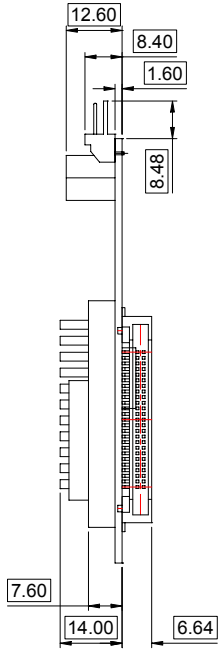
Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.

Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis

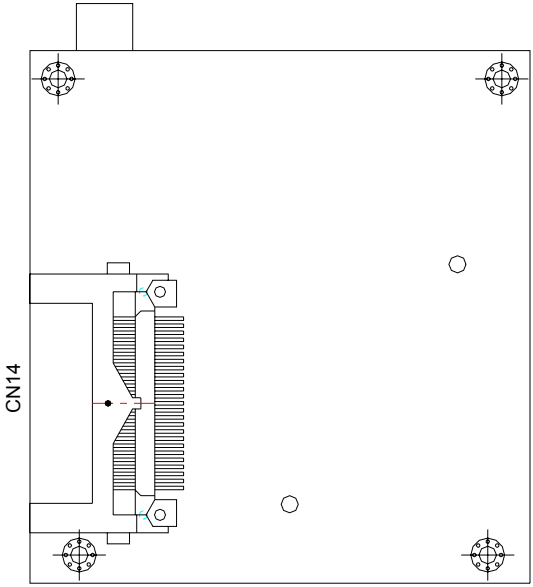
2.2 Location of Connectors and Jumpers

Component Side



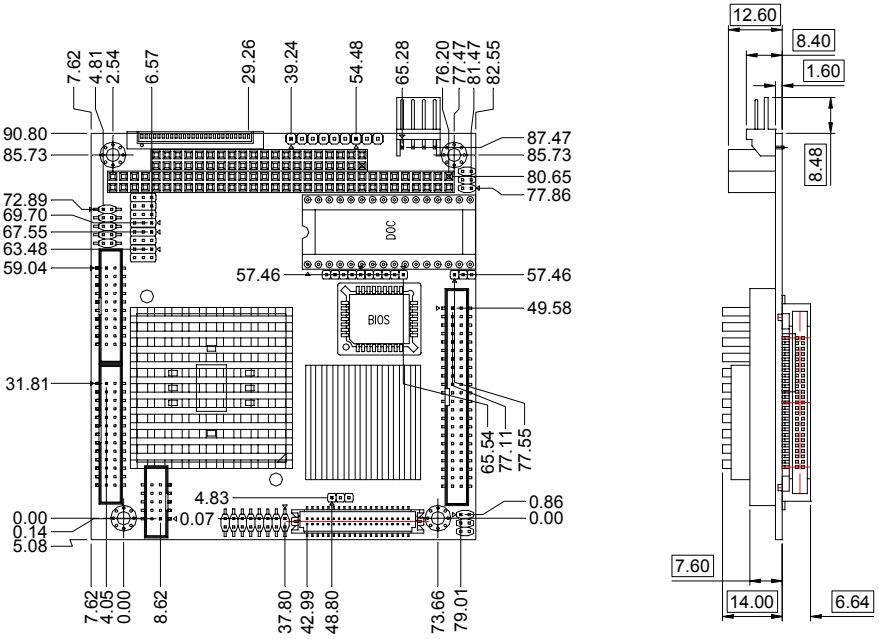


Solder Side

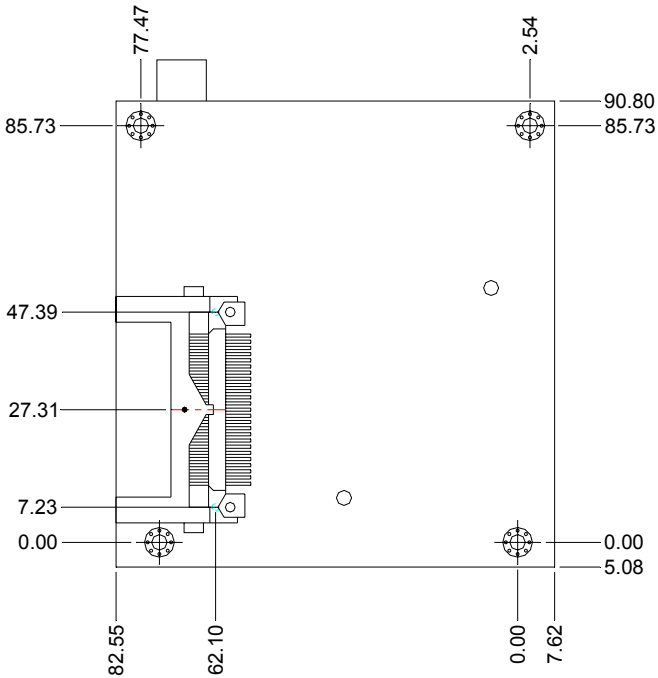


2.3 Mechanical Drawing

Component Side



Solder Side


77.47
2.54
90.80
85.73
85.73
47.39
27.31
7.23
0.00
0.00
5.08
82.55
62.10
0.00
7.62

2.4 List of Jumpers

The board has a number of jumpers that allow you to configure your system to suit your application.

The table below shows the function of each of the board's jumpers:

Jumpers

Label	Function
JP1	COM2 RS232/422/485 Mode Selection – 1
JP2	COM2 Ring/+5V/+12V Selection
JP3	COM2 RS232/422/485 Mode Selection – 2
JP4	TFT Clock Selection
JP5	Clear CMOS
JP6	DOC address Selection

2.5 List of Connectors

The board has a number of connectors that allow you to configure your system to suit your application. The table below shows the function of each board's connectors:

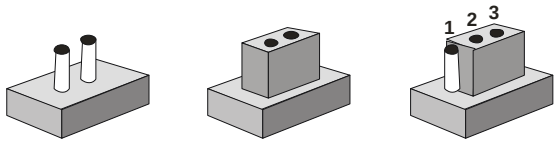
Connectors

Label	Function
CN1	Digital IO Connector
CN2	RS-232 Serial Port Connector
CN3	LPT Port Connector
CN4	LAN Connector
CN5	Floppy Drive Connector
CN6	VGA Display Connector
CN7	PC 104 Connector
CN8	SIR Connector
CN9	TFT 24Bit Panel Connector
CN10	Power Connector
CN11	Power Connector
CN12	Primary IDE Hard Drive Connector
CN13	KB+MS Connector
CN14	Compact Flash Disk Connector
CN15	Front Panel

2.6 Setting Jumpers

You configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper you connect the pins with the clip.

To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2 or 2 and 3.



OFF **ON** **ON 2-3**

A pair of needle-nose pliers may be helpful when working with jumpers.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any change.

Generally, you simply need a standard cable to make most connections.

2.7 COM RS232/422/485 Selection-1 (JP1)

√	RS-232				RS-422				RS-485			
	1	4	7	10	1	4	7	10	1	4	7	10
	■	●	●	●	□	○	○	○	□	○	○	○
	●	●	●	●	●	●	●	●	●	●	●	●
	○	○	○	○	●	●	●	●	●	●	●	●
	3	6	9	12	3	6	9	12	3	6	9	12

2.8 COM RI/+5V/+12V Selection (JP2)

√	Ring			+5Volt.			+12Volt.		
	1	3	5	1	3	5	1	3	5
	□	○	●	□	●	○	■	○	○
	○	○	●	○	●	○	●	○	○
	2	4	6	2	4	6	2	4	6

2.9 COM2 RS232/422/485 Selection-2 (JP3)

√	RS-232			RS-422			RS-485		
	1	3	5	1	3	5	1	3	5
	■	○	○	□	●	○	□	○	●
	●	○	○	○	●	○	○	○	●
	2	4	6	2	4	6	2	4	6

2.10 TFT LCD Clock Selection (JP4)

√	CLK			Reverse CLK		
	1	2	3	1	2	3
	■	●	○	□	●	●

2.11 Clear CMOS (JP5)

√	Normal			Clear CMOS		
	1	2	3	1	2	3
	■	●	○	□	●	●

2.12 DOC Address Selection (JP6)

√	D400h			D800h			DC00h			DISABLE		
	1	3	5	1	3	5	1	3	5	1	3	5
	□	○	○	□	●	○	■	○	○	■	●	○
	○	○	○	○	●	○	●	○	○	●	●	○
	2	4	6	2	4	6	2	4	6	2	4	6

2.13 Digital IO Connector (CN1)

Pin	Signal	Pin	Signal
1	IN0	2	IN1
3	IN2	4	IN3
5	OUT0	6	OUT1
7	OUT2	8	OUT3
9	+5V	10	GND

2.14 COM Port Connector (CN2)

Pin	Signal	Pin	Signal
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	
11	DCD (422TXD-/485DATA-)	12	RXD (422RXD+)
13	TXD (422TXD+/485DATA+)	14	DTR (422RXD-)
15	GND	16	DSR
17	RTS	18	CTS
19	RI	20	

2.15 LPT Port Connector (CN3)

Pin	Signal	Pin	Signal
1	#STROBE	2	#AFD
3	DATA0	4	#ERROR
5	DATA1	6	#INIT
7	DATA2	8	#SLIN
9	DATA3	10	GND
11	DATA4	12	GND
13	DATA5	14	GND
15	DATA6	16	GND
17	DATA7	18	GND

19	#ACK	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SELECT	26	N.C

2.16 LAN Connector (CN4)

Pin	Signal	Pin	Signal
1	RX-	2	RX+
3	N	4	N
5	GND	6	GND
7	C	8	C
9	TX+	10	TX-

2.17 Floppy Connector (CN5)

Pin	Signal	Pin	Signal
1	+5V	2	#INDEX
3	+5V	4	#DRIVE SELECT A
5	+5V	6	#DISK CHANGE
7	NC	8	NC
9	NC	10	#MOTOR A
11	NC	12	#DIR
13	DENSEL#	14	#STEP
15	GND	16	#WRITE DATA
17	GND	18	#WRITE GATE

19	GND	20	#TRACK0
21	GND	22	#WRITE PROTECT
23	GND	24	#READ DATA
25	GND	26	#HDSEL

2.18 VGA Display Connector (CN6)

Pin	Signal	Pin	Signal
1	RED	2	VCC
3	GREEN	4	GND
5	BLUE	6	NC
7	NC	8	DDCDAT
9	GND	10	HSYNC
11	GND	12	VSYNC
13	GND	14	DDCCLK
15	GND	16	NC

2.19 SIR Connector (CN8)

Pin	Signal	Pin	Signal
1	+5V	2	N.C.
3	IRRX	4	GND
5	IRTX	6	N.C.

2.20 TTL_LCD Connector (CN9)

Pin	Signal	Pin	Signal
1	+5V	2	+5V
3	GND	4	GND
5	+3.3V	6	+3.3V
7	ENBKL	8	GND
9	B0	10	B1
11	B2	12	B3
13	B4	14	B5
15	B6	16	B7
17	G0	18	G1
19	G2	20	G3
21	G4	22	G5
23	G6	24	G7
25	R0	26	R1
27	R2	28	R3
29	R4	30	R5
31	R6	32	R7
33	GND	34	GND
35	DOT_CLOCK	36	VSYNC
37	DE	38	HSYNC
39	N.C.	40	ENAVEE

2.21 Power Connector (CN10)

Pin	Signal
1	-12V
2	-5V
3	GND

2.22 Power Connector (CN11)

Pin	Signal
1	+5V
2	GND
3	GND
4	+12V

2.23 Primary IDE Hard Drive Connector (CN12)

Pin	Signal	Pin	Signal
1	IDE RESET	2	GND
3	DATA7	4	DATA8
5	DATA6	6	DATA9
7	DATA5	8	DATA10
9	DATA4	10	DATA11
11	DATA3	12	DATA12
13	DATA2	14	DATA13
15	DATA1	16	DATA14
17	DATA0	18	DATA15

19	GND	20	N.C
21	REQ	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	IO READY	28	GND
29	DACK	30	GND
31	IRQ	32	N.C
33	ADDR1	34	N.C
35	ADDR0	36	ADDR2
37	CS#1	38	CS#3
39	LED	40	GND
41	+5V	42	+5V
43	GND	44	N.C.

2.24 Keyboard & Mouse Connector (CN13)

Pin	Signal	Pin	Signal
1	KDT	2	KCK
3	GND	4	+5V
5	MDT	6	MCK

2.25 Compact Flash Disk Connector (CN14)

Pin	Signal	Pin	Signal
1	GND	26	GND
2	SDD3	27	SDD11

3	SDD4	28	SDD12
4	SDD5	29	SDD13
5	SDD6	30	SDD14
6	SDD7	31	SDD15
7	SDCS#1	32	SDCS#3
8	GND	33	GND
9	GND	34	SDIOR#
10	GND	35	SDIOW#
11	GND	36	+5V
12	GND	37	IRQ15
13	+5V	38	+5V
14	GND	39	CSEL#
15	GND	40	N.C
16	GND	41	SEC_IDERST#
17	GND	42	SIORDY
18	SDA2	43	N.C
19	SDA1	44	+5V
20	SDA0	45	DASP#
21	SDD0	46	PDIAG#
22	SDD1	47	SDD8
23	SDD2	48	SDD9
24	N.C	49	SDD10
25	GND	50	GND

2.26 Front Panel Connector (CN15)

Pin	Signal
1	+5V
2	HDLED
3	LAN_ACT
4	LAN_LINK
5	+5V
6	SPEAK
7	+5V
8	GND
9	+5V
10	HWRST#

Chapter

3

Award BIOS Setup

3.1 System Test and Initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors. Non-fatal error messages usually appear on the screen along with the following instructions:

Press <F1> to RESUME

Write down the message and press the F1 key to continue the boot up sequence.

System configuration verification

These routines check the current system configuration against the values stored in the CMOS memory. If they do not match, the program outputs an error message. You will then need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

1. You are starting your system for the first time
2. You have changed the hardware attached to your system
3. The CMOS memory has lost power and the configuration information has been erased.

The PFM-532I CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it finally runs down.

3.2 Award BIOS Setup

Awards BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM so that it retains the Setup information when the power is turned off.

Entering Setup

Power on the computer and press <Del> immediately. This will allow you to enter Setup.

Standard CMOS Features

Use this menu for basic system configuration. (Date, time, IDE, etc.)

Advanced BIOS Features

Use this menu to set the advanced features available on your system.

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system performance.

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals. (Primary slave, secondary slave, keyboard, mouse etc.)

Power Management Setup

Use this menu to specify your settings for power management. (HDD power down, power on by ring, KB wake up, etc.)

PnP/PCI Configurations

This entry appears if your system supports PnP/PCI.

PC Health Status

This menu allows you to set the shutdown temperature for your system.

Frequency/Voltage Control

Use this menu to specify your settings for auto detect DIMM/PCI clock and spread spectrum.

Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate.

Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While AWARD has designated the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs.

Set Supervisor/User Password

Use this menu to set Supervisor/User Passwords.

Save and Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Saving

Abandon all CMOS value changes and exit setup.

You can refer to the "AAEON BIOS Item Description.pdf" file in the CD for the meaning of each setting in this chapter.

Chapter

4

Driver Installation

The PFM-532I comes with a CD-ROM which contains most of drivers and utilities of your needs.

We recommend that the driver installation procedure must be performed first.

4.1 Installation

Applicable for Windows 98SE

1. Insert the **PFM-532I CD-ROM** into the CD-ROM Drive.
2. Click on **Start** button, select the **Settings**, and then click on the **Control Panel** icon.
3. Double click on the **Add/Remove Hardware** icon and **Add New Hardware Wizard** will appear. Click on the **Next** button.
4. Select **Search for the best driver for your device (Recommended)** and click on the **Next** button.
5. Select **Specify a location,** click on **Have Disk** button then key in the CD-ROM path and specify component drivers and OS folders. Then click on the **Next** button.
6. The Wizard shows that Windows driver file search for the device: (For example, VGA devices of the board**)**. Click on the **Next** button.
7. The system will ask you to insert Windows 98 CD Diskette. Click on the **OK** button to insert Diskette and key in path.
8. Click on the **OK** button.
9. Click on the **Finish** button to finish installation process. And allow the system to reboot.

4.2 Graphic Driver Installation for CONSUMER-II

If the user does not follow the procedure below, the driver will not be installed correctly and Windows will be reinstalled before the driver installation has been repeated.

This driver has to be installed on a new Windows 9x platform. If this is not so, the installation will fail.

1. From the “Control Panel”, select “Display”.
2. In the display window select the “Settings” tab, and then go to “Advaned Properties.”
3. In the “Advanced Display Properties”, select the “Adapter” tab and click on “Change.”
4. In the “Select Device,” click on “Have Disk” and select the appropriate drive.
5. Locate the file entitled “Uma.inf” using the browse function and click “OK” and “OK” again to launch the installation.
6. For the driver to take effect Wndows will reboot. If it does not, reboot after the installation is completed.

Appendix

A

Programming the Watchdog Timer

A.1 Programming

watchdog process:

You can use DEBUG commands to test watchdog function. Some examples are listed below:

-o 370 87 Enter W83977F configuration mode
-o 370 87
-o 370 07 logic device register
-o 371 08 logic device number
-o 370 f2 select register CRF2
-i 371 read CRF2 value
-00 default value=00
-o 371 0a input timeout value，example:10 minutes

Appendix

B

I/O Information

B.1 Digital IO process:

GP2 IO base address=800

bit 0 ---GP20 --->DIO0

bit 1 ---GP21 --->DIO1

bit 2 ---GP22 --->DIO2

bit 3 ---GP23 --->DIO3

GP1 IO base address=802

bit 1 ---GP11 --->DIO4

bit 3 ---GP13 --->DIO5

bit 4 ---GP14 --->DIO6

bit 5 ---GP15 --->DIO7

B.2 I/O Address Map

Address	Description	User Address
000-01F	DMA Controller #1	000-000F
020-03F	Interrupt Controller #1, Master	020-021
040-05F	System Time	040-043
060-06F	8042 (Keyboard Controller)	060-064
070-07F	Real time Clock, NMI (non-maskable Interrupt) Mask	070-073
080-09F	DMA Page Register	080-08F
0A0-0BF	Interrupt Controller #2	0A0-0A1
0C0-0DF	DMA Controller #2	0C0-0DF
0F0-0FF	Math Coprpcessor	0F0-0FF
170-177	Secondary IDE Channel	170-177
1F0-1F7	Primary IDE Channel	1F0-1F7
2F8-2FF	Serial Port 2	2F8-2FF
378-37F	Parallel Printer Port 1	378-37F
3B0-3DF	EGA / VGA card	3B0-3DF
3F0-3F7	Diskette Controller	3F2-3F7
3F8-3FF	Serial Port 1	3F8-3FF

B.3 1st MB Memory Address Map

Memory Address	Description
00000-9FFFF	System memory
A0000-BFFFF	VGA buffer
C0000-CFFFF	VGA BIOS
E0000-FFFFF	System BIOS

B.4 IRQ Mapping Chart

IRQ0	System Timer	IRQ8	System CMOS / Real time clock
IRQ1	Keyboard	IRQ9	Microsoft ACPI – Compliant system
IRQ2	Cascade to IRQ Controller	IRQ10	Unused
IRQ3	COM2	IRQ11	Unused
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	Unused	IRQ13	FPU
IRQ6	Floppy Disk Controller	IRQ14	Primary IDE
IRQ7	Printer	IRQ15	Secondary IDE

B.5 DMA Channel Assignments

DMA Channel	Function
0	Available
1	Available
2	Standard Floppy Disk Controller
3	Available
4	Direct Memory Access Controller
5	Available
6	Available
7	Available