

MPC-8890

Intel® Pentium® M and
Celeron® M Processors

Media PC

With LVDS, Gigabit Ethernet,
6 Channel Audio & Mini PCI

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Packing List

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

- 1 MPC-8890 CPU Card
- 1 Quick Installation Guide
- 1 CD-ROM for manual (in PDF format) and drivers
- 1 ATA 100 cable
- 1 FDD cable
- 2 Serial Port cable
- 1 SATA cable
- 1 SATA Power cable
- 1 Cooler for Pentium-M & Celeron-M
- 1 Jumper cap
- 1 5.1 channel audio cable
- 1 TV out cable

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

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Chapter

1

**General
Information**

1.1 Introduction

AAEON debuts our newest compact media single board computer offering VGA, TV-Output and Intel quality chipset. This compact sized single board computer features a new level of multimedia performance.

This single board computer incorporates the VGA interface with Intel Extreme Graphic 2. Our first media PC that supports up to 64 MB of shared display memory with dynamic video memory technology. Throughout our R&D goal was to offer our customers a higher quality visual displays platform.

The Ethernet interface is controlled by the newest 82541GI Gigabit Ethernet controller that can allow users surf on the unprecedented high-speed Internet. Our surrounding sound effect quality audio interface is controlled by the Realtek ALC 65X chipset with 6 channels speakers and S/PDIF.

Central Processing Units can support the latest Intel Pentium M and Celeron M Processors. Meanwhile, the low voltage version is optional for user to purchase. The low voltage version allows you operate the system in the most tough environment with the stiff conditions and no worries at all on the system stability.

The board support CRT and LCD function that either the same displays or different displays can be shown on LCD and CRT monitors. The maximum resolution is up to 1600 x 1200 true color for CRT and is up to 1280 x 1024 true color for LCD. Extreme Graphic second-generation technology from Intel Corporation enhances the visual performance 2D as well as 3D largely and widely. Besides, there is an onboard touchscreen controller attached for supporting most 4/5/8 wires resistance touchscreen panel in the market.

1.2 Features

- 478 Socket supports Intel® Pentium® M and Celeron® M Processors or onboard Low Power Intel® Pentium® M Processor
- AC-97 3D surround 6 channels Audio
- Supports PCI and mini PCI slots
- Supports Type II CompactFlash™ Memory
- Supports 4/5/8 wire resistive touch
- 4 COM / 4 USB 2.0 / Digital I/O / TV-Out

1.3 Specifications

System

- CPU: 478 Socket supports Intel® Pentium®M and Celeron® M Processors support up to 1.6 GHz or onboard Low Voltage Intel® Pentium®M Processor 1.1 GHz
- Memory: 184-pin DDR SDRAM DIMM x 1, Max. 1024 MB (DDR200/266/333)
- Chipset: Intel® 855GME + Intel® 6300ESB (Hance Rapids)
- I/O Chipset: Intel® 6300ESB + ITE 8712
- Ethernet: Intel® 82551 QM/ER 10/100Base-Tx, Intel® 82541GI/ER 10/100/1000Base-Tx, RJ-45 connector x 2
- BIOS: AWARD 512KB FLASH ROM
- Watchdog Timer: Generate a time-out system reset
- H/W Status Monitoring: Supports power supply voltages, fan speed and temperatures monitoring
- SSD: Type II CompactFlash slot x 1
- Expansion Interface: Type III Mini PCI socket x 1, PCI

- slot x 1
- Battery: Lithium battery
- Power Requirement: +5V, +12V, AT/ATX
- Board Size: 7.83”(L) x 6.43”(W) (199mm x 163mm)
- Gross Weight: 1.2lb (0.5kg)
- Operating Temperature: 32 F~140 F (0 C~60 C)

Display

Support CRT and LCD simultaneous/Independent display

- Chipset: Intel® 855GME (Extreme Graphic 2)
- Memory size: Shared system memory up to 64 MB with DVMT
- Resolutions: Up to 1600 X 1200 @ 32bpp for CRT;
Up to 1280 X 1024 @ 18 / 24 bpp colors for LCD
- LCD Interface: Up to 48-bit dual channel LVDS TFT LCD
- TV-Out: Support NTSC and PAL standard

I/O

- MIO: EIDE x 2(UDMA100 x 2), FDD x 1,

- IrDA: KB x 1, Mouse x 1, RS-232 x 3,
RS-232/422/485 x 1, Parallel x 1
One IrDA Tx/Rx header
- Audio: Mic in, Line in, Line out / Speaker
Out 5.1 output
- USB: Two Type-A (dual) connector
support 4 USB 2.0 ports (External)
One 5 x 2 pin header supports 2
USB 2.0 ports (Internal), total 4 USB
2.0 port only
- Digital I/O Supports 8 in, 4 in + 4 out, 8out

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.



2.1 Safety Precautions

Warning!

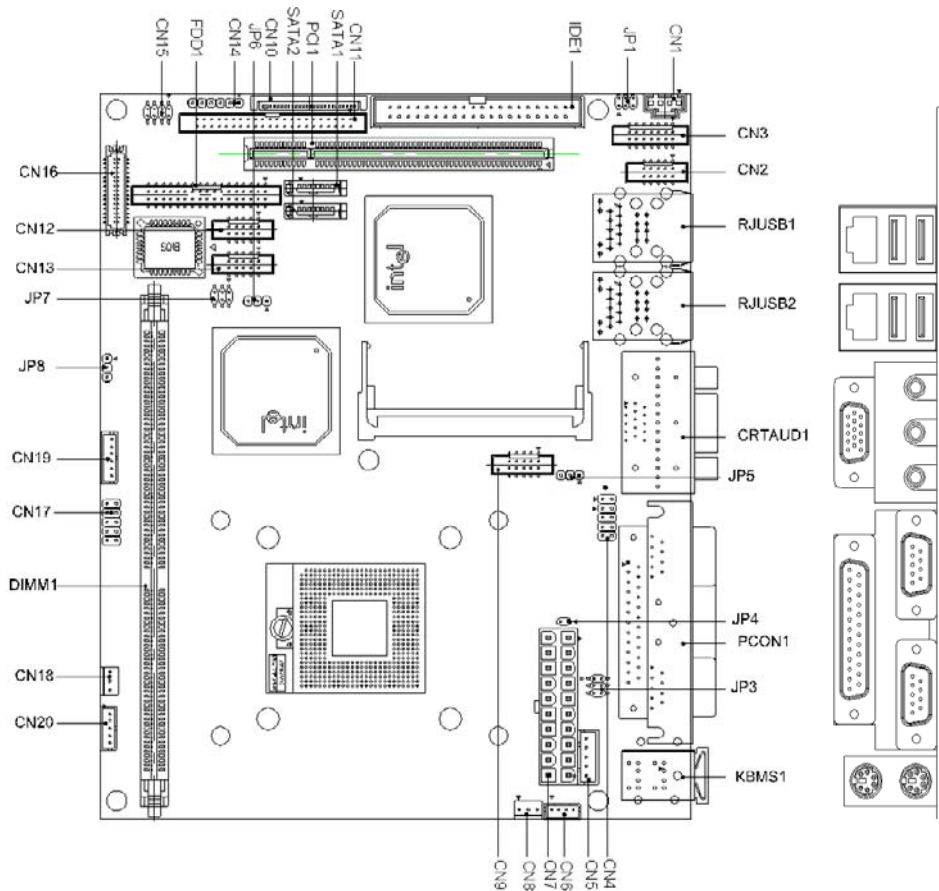
Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.

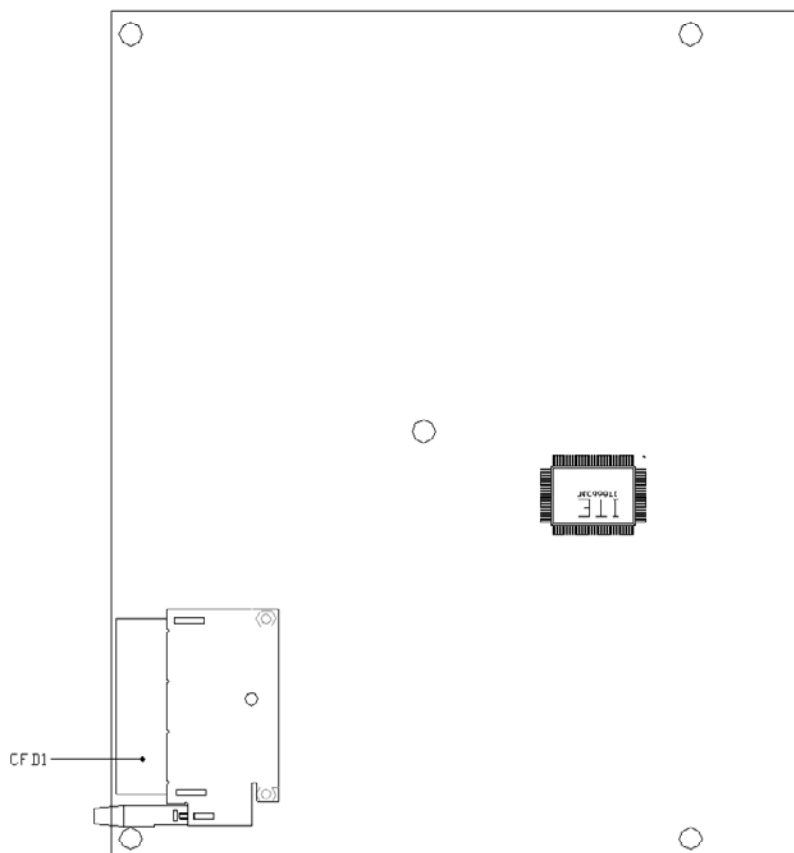
Caution!

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

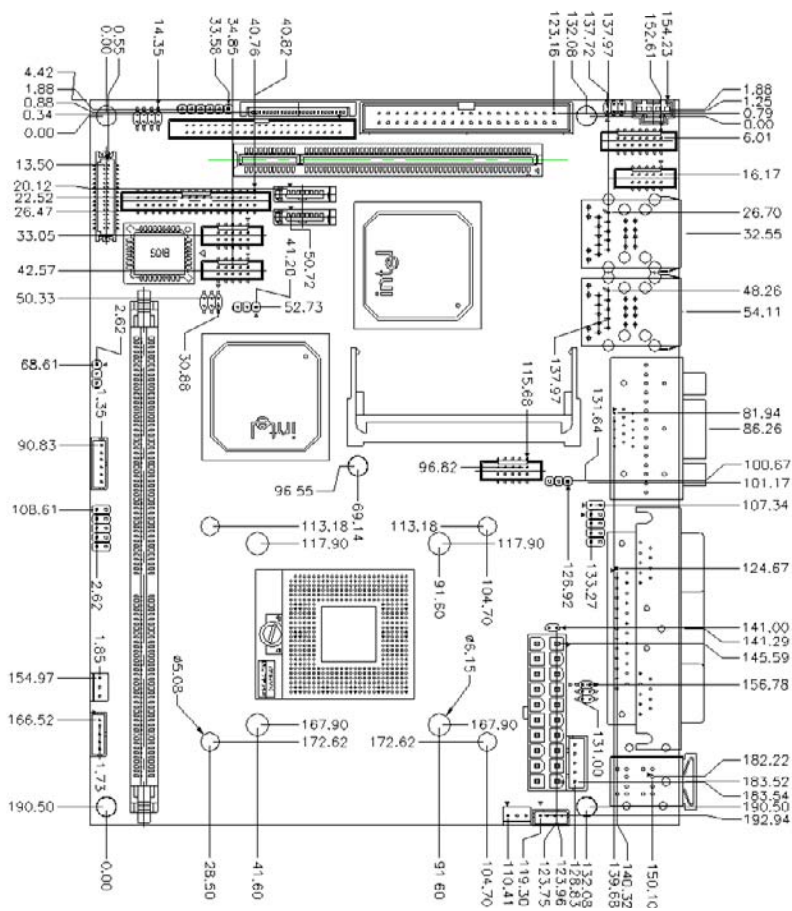
Component Side



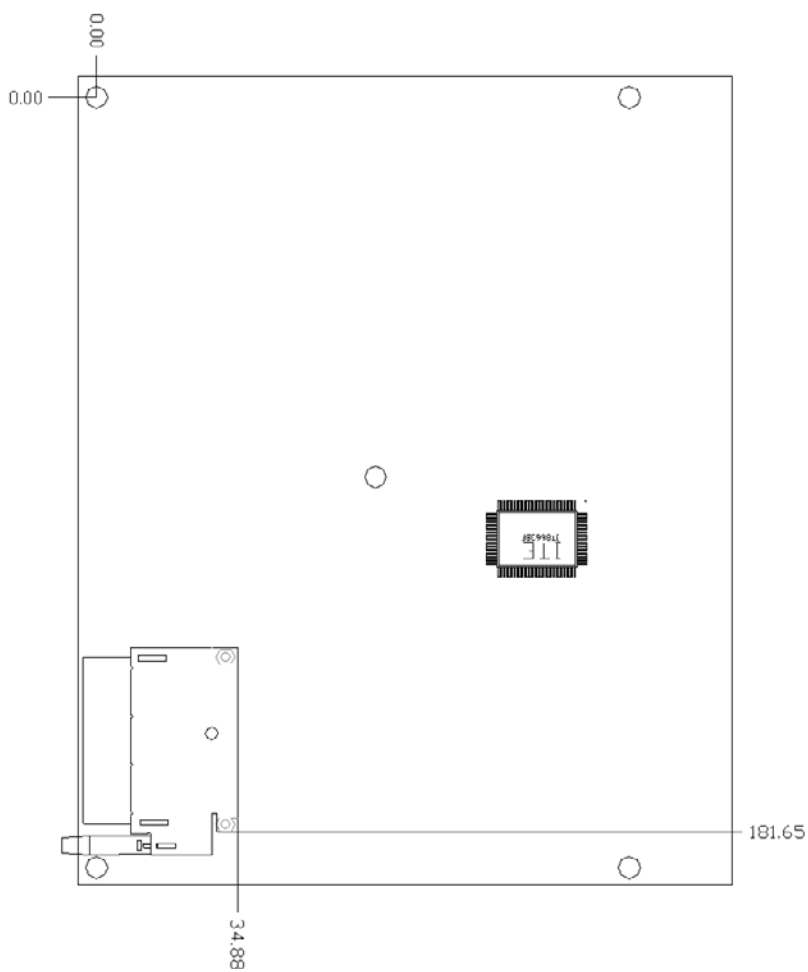
Solder Side

2.3 Mechanical Drawing

Component Side



Solder Side



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	Audio Out Selection
JP3	COM2 Ring/+5V/+12V Selection
JP5	Touch Screen Function Selection
JP6	Clear CMOS
JP7	COM4 Function Selection
JP8	LCD Voltage 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

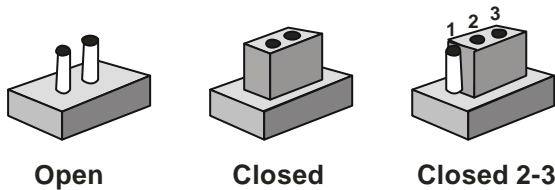
Label	Function
CN1	CD-IN Connector
CN2	USB3 & USB4 Connector
CN3	Audio 5.1 Channel / SPDIF Connector
CN4	Touch Screen panel Connector
CN5	Internal Keyboard Connector
CN6	Internal Mouse Connector
CN7	ATX Power Connector
CN8	Fan1 Connector
CN9	Digital I/O Connector
CN10	Slim Floppy Connector
CN11	Secondary EIDE Connector
CN12	COM4 RS-232 Serial Port Connector
CN13	COM3 RS-232 Serial Port Connector
CN14	IrDA Connector
CN15	TV_Out Connector
CN16	Dual Channel LVDS Connector
CN17	Front Panel Connector

CN18	Fan2 Connector
CN19	LCD Inverter Connector
CN20	Option PME Connector
KBMS1	PS2 Keyboard / Mouse Connector
PCON1	COM1 RS-232 & COM2 RS-232/422/485 Serial Port Connector / LPT Port Connector
CRTAUD1	VGA Display Connector / Audio Connector
RJUSB1	USB3 & USB4 Connector / 10 /100 /1000 Base-Tx Ethernet Connector
RJUSB2	USB1 & USB2 Connector / 10 /100 Base-Tx Ethernet Connector
IDE 1	Primary EIDE Connector
FDD1	Floppy Connector
SATA1	Primary Serial ATA Connector
SATA2	Secondary Serial ATA Connector
MPCI1	Mini PCI Slot
PCI1	PCI Slot
DIMM1	DIMM Slot
CFD1	CompactFlash Slot

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.



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 Audio Out Selection (JP1)

JP1	Function
1-3, 2-4	W/ Amplifier (Default)
3-5, 4-6	W/O Amplifier

2.8 Touchscreen Type Selection (JP5)

JP5	Function
1-3	8 Wire Type (Default)
3-5	5 Wire Type

2.9 COM2 Ring/+5V/+12V Selection (JP3)

JP3	Function
1-2	+12V
3-4	+5V
5-6	Ring (Default)

2.10 Clear CMOS (JP6)

JP6	Function
1-2	Protected (Default)
2-3	Clear

2.11 COM4 Function Selection (JP7)

JP7	Function
1-3, 2-4	Set to Pin Header (Default)
3-5, 4-6	Set to Touch screen Controller

2.12 LCD Voltage Selection (JP8)

JP8	Function
1-2	+5V
2-3	+3.3V (Default)

2.13 CD-IN Connector (CN1)

Pin	Signal
1	CD IN L
2	CD_GND
3	CD_GND
4	CD_IN_R

2.14 USB3 & USB4 Connector (CN2)

RJ USB 1 (USB Type-A x 2) can't be used after CN2 (Pin Header) has been used. The best way is to use one of them.

Pin	Signal	Pin	Signal
1	+5V	2	GND
3	USBD3-	4	GND
5	USBD3+	6	USBD4+
7	GND	8	USBD4-
9	GND	10	+5V

2.15 Audio 5.1 Channel / SPDIF Connector (CN3)

Pin	Signal	Pin	Signal
1	Front-OUT-R	2	GND
3	Front-OUT-L	4	GND
5	Surr-OUT-R	6	GND
7	Surr-OUT-L	8	GND
9	LFE-OUT	10	GND
11	CNE-OUT	12	GND

13	SPDIF-OUT	14	SPDIF-IN
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2.16 Touch Screen Connector 8 Wire (CN4)

Pin	Signal	Pin	Signal
1	X+	2	X+REF
3	Y+	4	Y+REF
5	NC	6	NC
7	Y-	8	Y-REF
9	X-	10	X-REF

Touch Screen Connector 5 Wire (CN4)

Pin	Signal	Pin	Signal
1	UL	2	NC
3	UR	4	NC
5	COM	6	NC
7	LR	8	NC
9	LL	10	NC

2.17 Internal Keyboard Connector (CN5)

Pin	Signal
1	KB_CLK
2	KB_DATA
3	N.C.
4	GND
5	+5V

2.18 Internal Mouse Connector (CN6)

Pin	Signal
1	MS_CLK
2	MS_DATA
3	GND
4	+5V

Note:

Internal Keyboard & Mouse cannot be used after External KB/MS connector has been used. The best way is to use one of them.

2.19 ATX Power Connector (CN7)

Pin	Signal	Pin	Signal
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	GND	13	GND
4	+5V	14	PS_ON
5	GND	15	GND
6	+5V	16	GND
7	GND	17	GND
8	POWER OK	18	-5V
9	+5VSB	19	+5V
10	+12V	20	+5V

2.20 Fan1 Connector (CN8)

Pin	Signal
1	GND
2	+12V
3	Speed Sense

2.21 Digital I/O Connector (CN9)

This connector offers 4-pair of digital I/O functions and address is 801H. The pin definitions are illustrated below:

Pin	Signal
1	Digital-IN/ OUT
2	Digital-IN/OUT
3	Digital-IN/ OUT
4	Digital-IN/ OUT
5	Digital-IN/ OUT
6	Digital-IN/ OUT
7	Digital-IN/ OUT
8	Digital-IN/ OUT
9	+5V
10	GND

The pin definitions and registers mapping are illustrated below:

Address: **801H**

4 in / 4 out

Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8
GPI 27	GPI 26	GPI 25	GPI 24	GPO 23	GPO 22	GPO 21	GPO 20
MSB							LSB

8 in

Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8
GPI 27	GPI 26	GPI 25	GPI 24	GPI 23	GPI 22	GPI 21	GPI 20
MSB							LSB

8 out

Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8
GPO 27	GPO 26	GPO 25	GPO 24	GPO 23	GPO 22	GPO 21	GPO 20
MSB							LSB

2.22 Floppy Connector (CN10)

Pin	Signal	Pin	Signal
1	+5V	2	#INDEX
3	+5V	4	#DRIVE SELCET A
5	+5V	6	#DISK CHANGE
7	N.C.	8	N.C.
9	N.C.	10	#MOTOR A
11	N.C.	12	#DIR
13	#REDWC	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	#SIDE1

Note:

CN10 can't be used after FDD 1 connector has been used. The best way is to use one of them.

2.23 EIDE Secondary Connector (CN11)

CN11 Secondary IDE can't be used after CFD 1 connector has been used. The best way is to use one of them.

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	IRQ14	32	N.C.
33	ADDR1	34	UDMA DETECT
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 COM4 RS-232 Serial Port Connector (CN12)

Pin	Signal	Pin	Signal
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	N.C.

2.25 COM3 RS-232 Serial Port Connector (CN13)

Pin	Signal	Pin	Signal
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	N.C.

2.26 IrDA Connector (CN14)

Pin	Signal
1	+5V
2	CIRTX (or N.C.)
3	IRRX
4	GND
5	IRTX
6	CIRRX (or N.C.)

2.27 TV_Out Connector (CN15)

Pin	Signal	Pin	Signal
1	Y	2	CVBS
3	GND	4	GND
5	C	6	N.C.
7	GND	8	N.C.

2.28 LVDS Connector (CN16)

Pin	Signal	Pin	Signal
1	BKLEN	2	BKLCTL
3	PPVCC	4	GND
5	CH1_CLK-	6	CH1_CLK+
7	PPVCC	8	GND
9	CH1_TX0-	10	CH1_TX0+
11	CH1_TX1-	12	CH1_TX1+
13	CH1_TX2-	14	CH1_TX2+
15	CH1_TX3-	16	CH1_TX3+
17	I2C_DATA	18	I2C_CLK
19	CH2_TX0-	20	CH2_TX0+
21	CH2_TX1-	22	CH2_TX1+
23	CH2_TX2-	24	CH2_TX2+
25	CH2_TX3-	26	CH2_TX3+
27	PPVCC	28	GND
29	CH2_CLK-	30	CH2_CLK+

2.29 Front Panel Connector (CN17)

Pin	Signal	Pin	Signal
1	Power On Button (-)	2	Power On Button (+)
3	IDE LED (-)	4	IDE LED (+)
5	External Buzzer (-)	6	External Buzzer (+)
7	Power LED (-)	8	Power LED (+)
9	Reset Switch (-)	10	Reset Switch (+)

2.30 Fan2 Connector (CN18)

Pin	Signal
1	GND
2	+12V
3	Speed Sense

2.31 LCD Inverter Connector (CN19)

Pin	Signal
1	+12V
2	+12V
3	ENBKL
4	Adjust backlight
5	GND
6	GND

2.32 Option PME Connector (CN20)

Pin	Signal
1	+5VSB
2	GND
3	#PME
4	SMB_DATA
5	SMB_CLK

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 MPC-8890 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 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 etc.)

PnP/PCI Configurations

This entry appears if your system supports PnP/PCI.

PC Health Status

This menu shows you the status of PC.

Frequency/Voltage Control

This menu shows you the display of frequency/Voltage Control.

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.

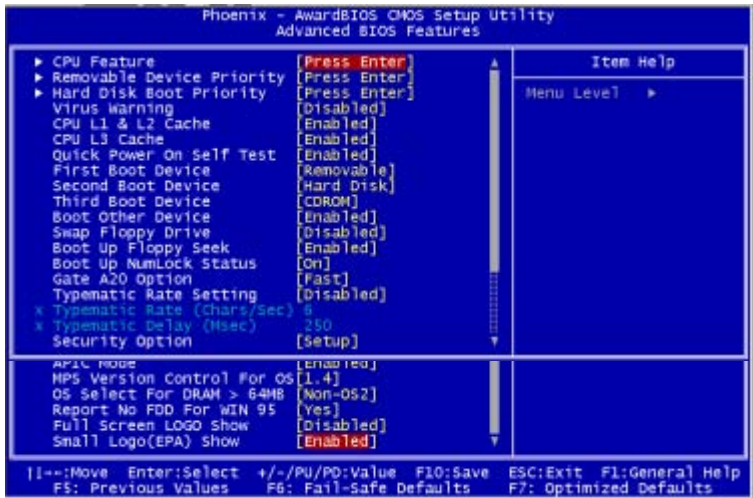
3.3 Standard CMOS Features

When you choose the Standard CMOS Features option from the INITIAL SETUP SCREEN menu, the screen shown below is displayed. This standard Setup Menu allows users to configure system components such as date, time, hard disk drive, floppy drive and display. Once a field is highlighted, on-line help information is displayed in the right box of the Menu screen.



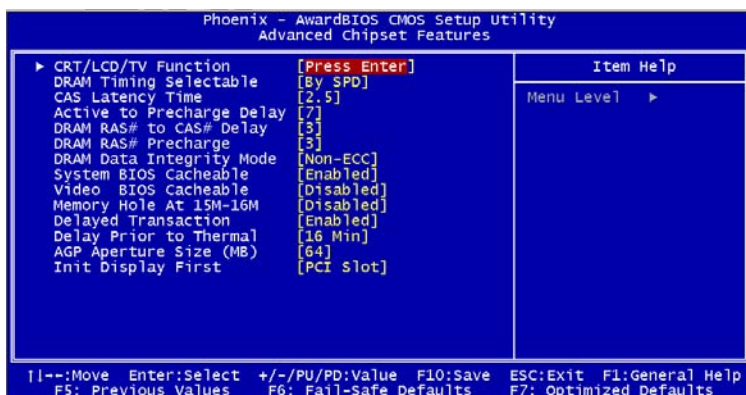
3.4 Advanced BIOS Features

By choosing the Advanced BIOS Features option from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the MPC-8890



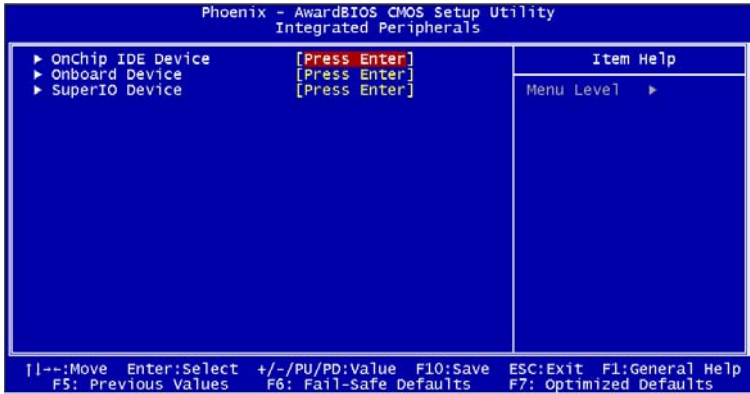
3.5 Advanced Chipset Features

By choosing the Advanced Chipset Features option from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the MPC-8890.



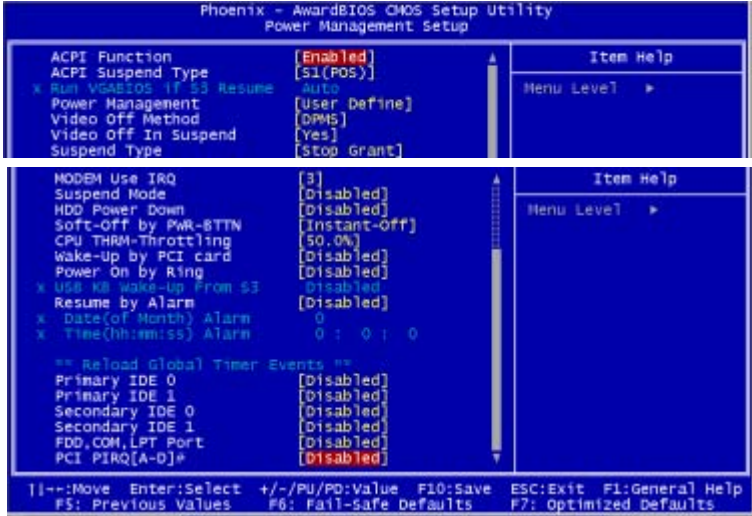
3.6 Integrated Peripherals

By choosing the Integrated Peripherals from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the MPC-8890.



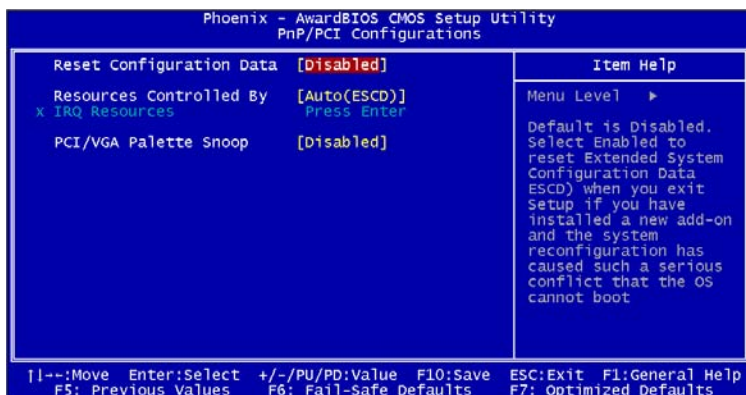
3.7 Power management Setup

By choosing the Power Management Setup from the INITIAL SETUP SCREEN menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the MPC-8890.



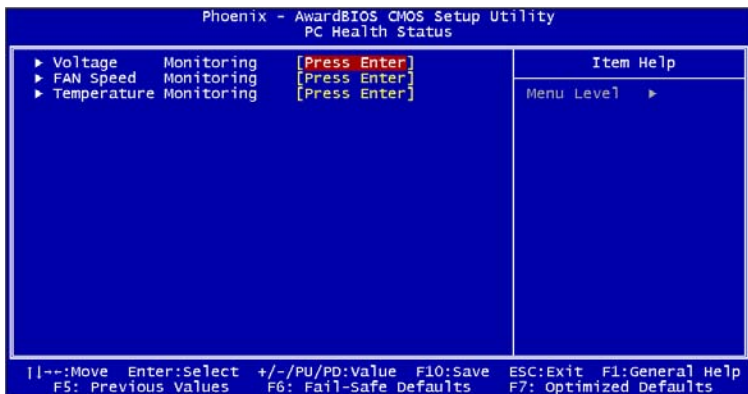
3.8 PnP/PCI configuration

By choosing the PnP/PCI configurations from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the MPC-8890.



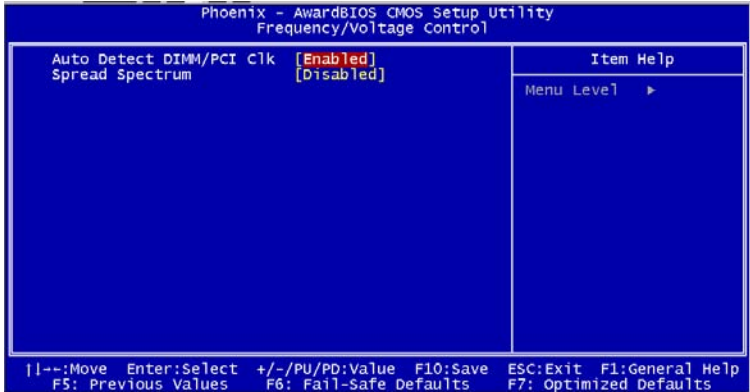
3.9 PC Health Status

By choosing the PC Health Status from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the MPC-8890.



3.10 Frequency/Voltage control

By choosing the Frequency/Voltage Control from the Initial Setup Screen menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the MPC-8890.

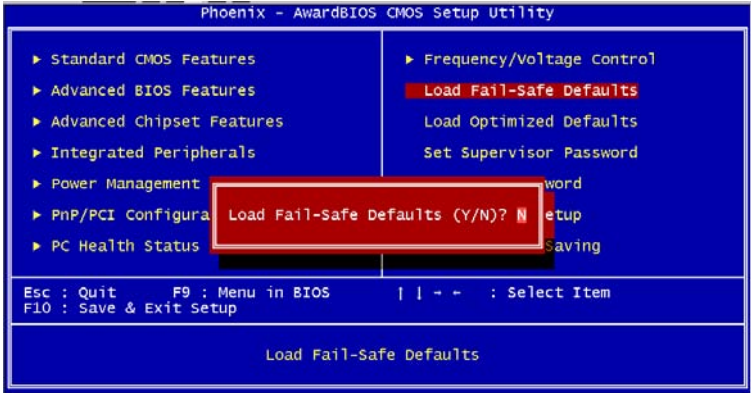


3.11 Load Fail-Safe Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Fail-Safe Default (Y/N)?

Pressing "Y" loads the BIOS default values for the most stable, minimal performance system operations.

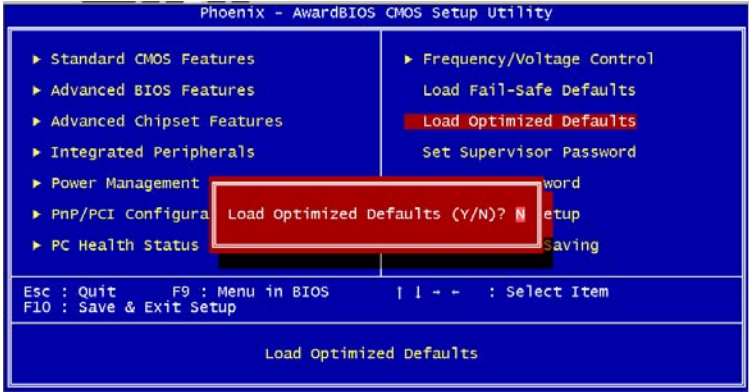


3.12 Load Optimized Defaults

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N)?

Pressing "Y" loads the default values that are manufacturer's settings for optimal performance system operations.



3.13 Set Supervisor/User Password

You can set either SUPERVISOR or USER PASSWORD, or both of them. The difference between the two is that the supervisor password allows unrestricted access to enter and change the options of the setup menus, while the user password only allows entry to the program, but not modify options.

To abort the process at any time, press Esc.

In the Security Option item in the BIOS Features Setup screen, select System or Setup:

System Enter a password each time the system boots and whenever you enter Setup.

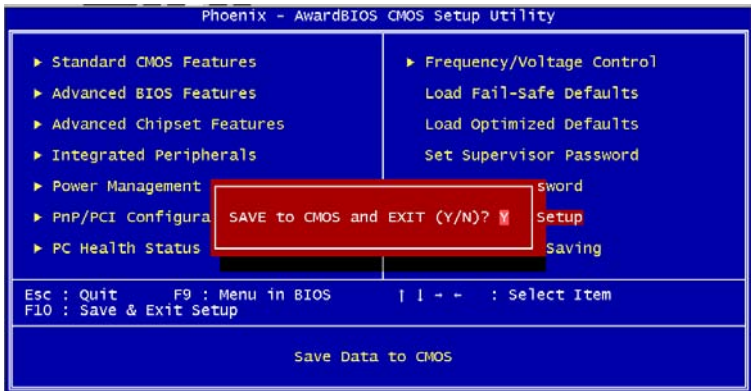
Setup Enter a password whenever you enter Setup.

NOTE: To clear the password, simply press Enter when asked to enter a password. Then the password function is disabled.



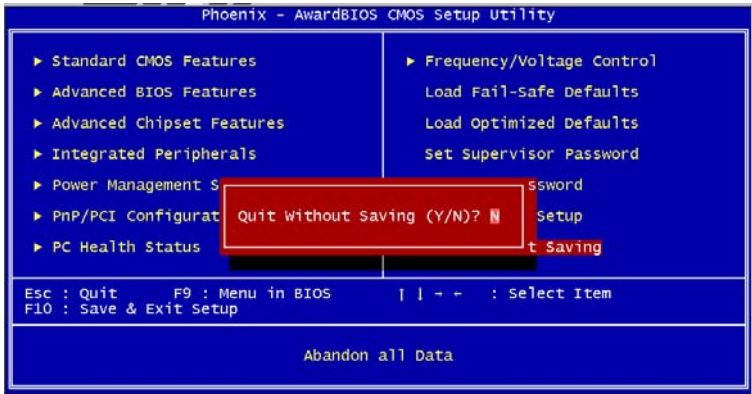
3.14 Save & Exit Setup

If you select this option and press <Enter>, the values entered in the setup utilities will be recorded in the chipset's CMOS memory. The microprocessor will check this every time you turn on your system and compare this to what it finds as it checks the system. This record is required for the system to operate.



3.15 Exit without saving

Selecting this option and pressing <Enter> allows you to exit the Setup program without recording any new value or changing old one.



Chapter

4

**Driver
Installation**

The MPC-8890 comes with a CD-ROM that contains all drivers and utilities that meet your needs.

Follow the sequence below to install the drivers:

Step 1 – Install Intel INF Update for Windows 9x-XP

Step 2 – Install Intel Extreme Graphics 2 Driver

Step 3 – Install Intel LAN 825xx Driver V8.3

Step 4 – Install Realtek AC97 codec Driver

Step 5 – Install Touch screen Driver (Optional)

USB 2.0 Drivers are available for download using Windows Update for both Windows XP and Windows 2000. For additional information regarding USB 2.0 support in Windows XP and Windows 2000, please visit www.microsoft.com/hwdev/usb/.

Please read instructions below for further detailed installations.

4.1 Installation:

Insert the MPC-8890 CD-ROM into the CD-ROM Drive. And install the drivers from Step 1 to Step 5 in order.

Step 1 – Install Intel INF Update for Windows 9x-XP

1. Click on the **Intel INF Update for Windows 9x-XP** folder and then double click on the **setup.exe**.
2. Follow the instructions that the window will show you.
3. The system will help you install the driver automatically.
4. Please re-start your computer.

Step 2 – Install Intel Extreme Graphics 2 Driver

1. Click on the **Intel Extreme Graphics 2 Driver** folder and then double click on the **setup.exe**.
2. Follow the instructions that the window will show you.
3. The system will help you install the driver automatically.
4. Please re-start your computer.

Step 3 – Install Intel LAN 825xx Driver V8.3

1. Click on the **Intel LAN 825xx Driver V8.3** folder and then double click on the **setup.exe**.
2. Follow the instructions that the window will show you.
3. The system will help you install the driver automatically.

Step 4 – Install Realtek AC97 codec Driver

1. Click on the **Realtek AC97 codec Driver** folder and then double click on the **setup.exe**.

2. Follow the instructions that the window will show you.
3. The system will help you install the driver automatically.

Step 5 – Install Touch screen driver (Optional)

Please see the “TouchKit Manual v3.1.3.pdf” in the touch screen driver folder.

Note:

Under the Window OS environment, if the CRT connector is connected to display monitor by the data switch device, the user need to set the color and resolution from Intel Graphic utility (VGA driver) instead of setting from the control panel in case of the wrong display appearance.

Appendix

A

I/O Information

A.1 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
278-27F	Parallel Printer Port 2 (LPT3)	278-27F
2E8-2EF	Serial Port 4	2E8-2EF
2F8-2FF	Serial Port 2	2F8-2FF
378-37F	Parallel Printer Port 1 (LPT2)	378-37F
3B0-3BF	Monochrome Display and Printer Adapter (LPT1)	3B0-3BF
3D0-3DF	EGA / VGA card	3D0-3DF
3E8-3EF	Serial Port 3	3E8-3EF
3F0-3F7	Diskette Controller	3F2-3F7
3F8-3FF	Serial Port 1	3F8-3FF

A.2 1st MB Memory Address Map

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

A.3 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	COM3
IRQ3	COM2	IRQ11	COM4
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	Unused	IRQ13	FPU
IRQ6	Floppy Disk Controller	IRQ14	Primary IDE
IRQ7	Printer	IRQ15	Secondary IDE

A.4 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

Appendix

B

**Programming the
Watchdog Timer**

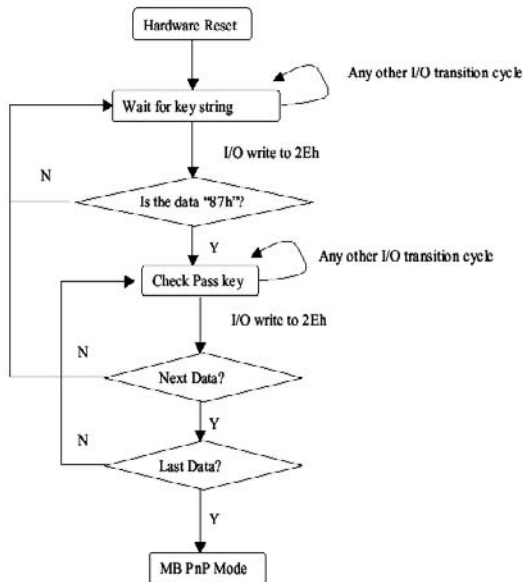
B.1 Programming

MPC-8890 utilizes ITE 8712 chipset as its watchdog timer controller.

Below are the procedures to complete its configuration and the AAEON initial watchdog timer program is also attached based on which you can develop customized program to fit your application.

Configuring Sequence Description

After the hardware reset or power-on reset, the ITE 8712 enters the normal mode with all logical devices disabled except KBC. The initial state (enable bit) of this logical device (KBC) is determined by the state of pin 121 (DTR1#) at the falling edge of the system reset during power-on reset.



There are three steps to complete the configuration setup: (1) Enter the MB PnP Mode; (2) Modify the data of configuration registers; (3) Exit the MB PnP Mode. Undesired result may occur if the MB PnP Mode is not exited normally.

(1) Enter the MB PnP Mode

To enter the MB PnP Mode, four special I/O write operations are to be performed during Wait for Key state. To ensure the initial state of the key-check logic, it is necessary to perform four write operations to the Special Address port (2EH). Two different enter keys are provided to select configuration ports (2Eh/2Fh) of the next step.

	Address Port	Data Port
87h, 01h, 55h, 55h:	2Eh	2Fh

(2) Modify the Data of the Registers

All configuration registers can be accessed after entering the MB PnP Mode. Before accessing a selected register, the content of Index 07h must be changed to the LDN to which the register belongs, except some Global registers.

(3) Exit the MB PnP Mode

Set bit 1 of the configure control register (Index=02h) to 1 to exit the MB PnP Mode.

WatchDog Timer Configuration Registers

LDN	Index	R/W	Reset	Configuration Register or Action
All	02H	W	N/A	Configure Control
07H	71H	R/W	00H	WatchDog Timer Control Register
07H	72H	R/W	00H	WatchDog Timer Configuration Register
07H	73H	R/W	00H	WatchDog Timer Time-out Value Register

Configure Control (Index=02h)

This register is write only. Its values are not sticky; that is to say, a hardware reset will automatically clear the bits, and does not require the software to clear them.

Bit	Description
7-2	Reserved
1	Returns to the Wait for Key state. This bit is used when the configuration sequence is completed
0	Resets all logical devices and restores configuration registers to their power-on states.

WatchDog Timer Control Register (Index=71h, Default=00h)

Bit	Description
7	WDT is reset upon a CIR interrupt
6	WDT is reset upon a KBC (mouse) interrupt
5	WDT is reset upon a KBC (keyboard) interrupt
4	WDT is reset upon a read or a write to the Game Port base address
3-2	Reserved
1	Force Time-out. This bit is self-clearing
0	WDT Status
	1: WDT value reaches 0.
	0: WDT value is not 0

WatchDog Timer Configuration Register (Index=72h, Default=00h)

Bit	Description
7	WDT Time-out value select
	1: Second
	0: Minute
6	WDT output through KRST (pulse) enable
5-4	Reserved
3-0	Select the interrupt level ^{Note} for WDT

WatchDog Timer Time-out Value Register (Index=73h, Default=00h)

Bit	Description
7-0	WDT Time-out value 7-0

B.2 IT8712 Watchdog Timer Initial Program

```
.MODEL SMALL
```

```
.CODE
```

Main:

```
CALL Enter_Configuration_mode
```

```
CALL Check_Chip
```

```
mov cl, 7
```

```
call Set_Logic_Device
```

```
;time setting
```

```
mov cl, 10 ; 10 Sec
```

```
dec al
```

Watch_Dog_Setting:

```
;Timer setting
```

```
mov al, cl
```

```
mov cl, 73h
```

```
call Superio_Set_Reg
```

```
;Clear by keyboard or mouse interrupt
```

```
mov al, 0f0h
```

```
mov cl, 71h
```

```
call Superio_Set_Reg
```

```
;unit is second.
```

```
mov al, 0C0H
```

```
mov cl, 72h
```

```
call Superio_Set_Reg
```

```
; game port enable  
mov cl, 9  
call Set_Logic_Device
```

```
Initial_OK:  
CALL Exit_Configuration_mode  
MOV AH,4Ch  
INT 21h
```

```
Enter_Configuration_Mode PROC NEAR  
MOV SI,WORD PTR CS:[Offset Cfg_Port]
```

```
MOV DX,02Eh  
MOV CX,04h  
Init_1:  
MOV AL,BYTE PTR CS:[SI]  
OUT DX,AL  
INC SI  
LOOP Init_1  
RET  
Enter_Configuration_Mode ENDP
```

```
Exit_Configuration_Mode PROC NEAR  
MOV AX,0202h  
CALL Write_Configuration_Data
```

```
RET
Exit_Configuration_Mode ENDP
```

```
Check_Chip PROC NEAR
```

```
MOV AL,20h
CALL Read_Configuration_Data
CMP AL,87h
JNE Not_Initial
```

```
MOV AL,21h
CALL Read_Configuration_Data
CMP AL,12h
JNE Not_Initial
```

```
Need_Initial:
```

```
STC
RET
```

```
Not_Initial:
```

```
CLC
RET
Check_Chip ENDP
Read_Configuration_Data PROC NEAR
MOV DX,WORD PTR CS:[Cfg_Port+04h]
OUT DX,AL
```

```
MOV DX,WORD PTR CS:[Cfg_Port+06h]
IN AL,DX
RET
Read_Configuration_Data ENDP
```

```
Write_Configuration_Data PROC NEAR
MOV DX,WORD PTR CS:[Cfg_Port+04h]
OUT DX,AL
XCHG AL,AH
MOV DX,WORD PTR CS:[Cfg_Port+06h]
OUT DX,AL
RET
Write_Configuration_Data ENDP
```

```
Superio_Set_Reg proc near
push ax
MOV DX,WORD PTR CS:[Cfg_Port+04h]
mov al,cl
out dx,al
pop ax
inc dx
out dx,al
ret
Superio_Set_Reg endp.Set_Logic_Device proc near
```

```
Set_Logic_Device proc near
push ax
push cx
xchg al,cl
mov cl,07h
call Superio_Set_Reg
pop cx
pop ax
ret
Set_Logic_Device endp
```

```
;Select 02Eh->Index Port, 02Fh->Data Port
Cfg_Port DB 087h,001h,055h,055h
```

```
DW 02Eh,02Fh
```

END Main

Note: Interrupt level mapping

0Fh-Dh: not valid

0Ch: IRQ12

.

.

03h: IRQ3

02h: not valid

01h: IRQ1

00h: no interrupt selected

Appendix

C

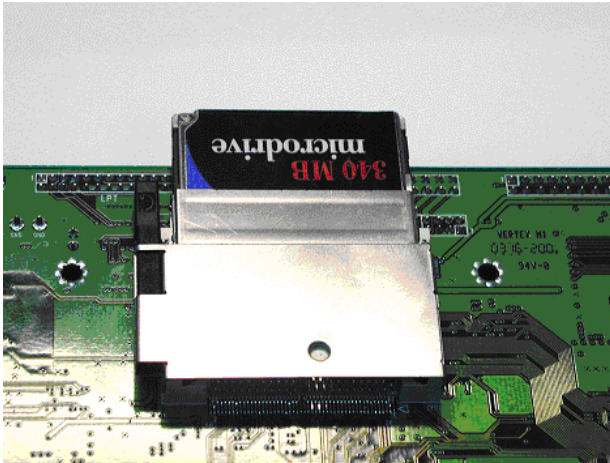
**CompactFlash® Cover
Installation Guide**

C.1 How to install the CompactFlash cover

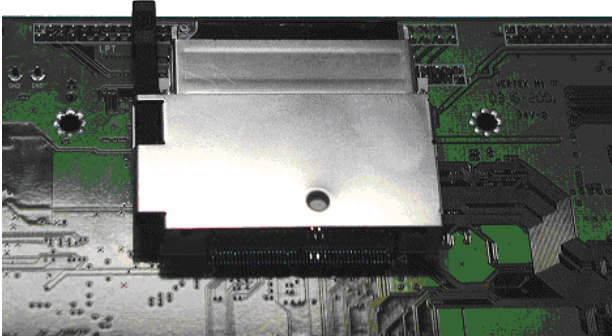
MPC-8890 is given a CompactFlash Card cover with the product. The purpose for the CompactFlash Card cover is to prevent users from dropping the CompactFlash Card under the condition of the delivery and system operation.

Please follow the steps below to install the CompactFlash Card cover. The instructions are simply for your reference which mean you may install the CompactFlash Card cover in the way you prefer.

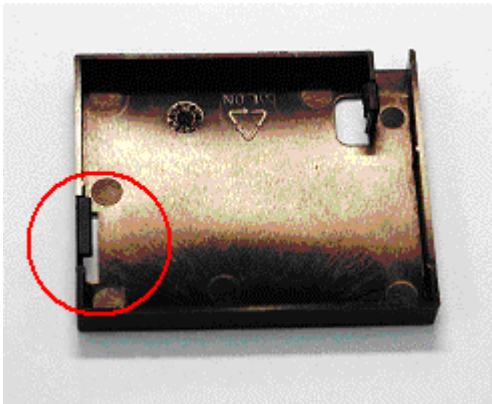
Step 1: Plug in CompactFlash Card

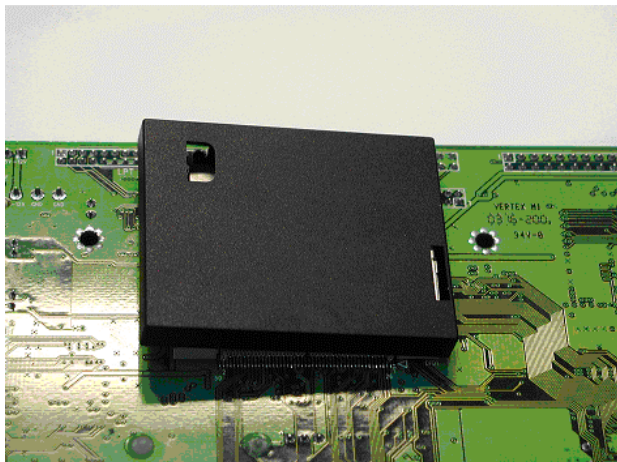


Step 2: Push the CompactFlash Card forward until the end.

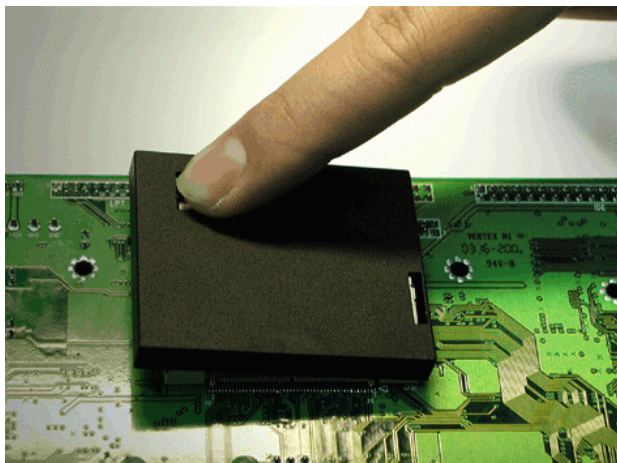


Step 3: Put the cover on from the right to left and hook up the CompactFlash Card white base with the crook on the cover.

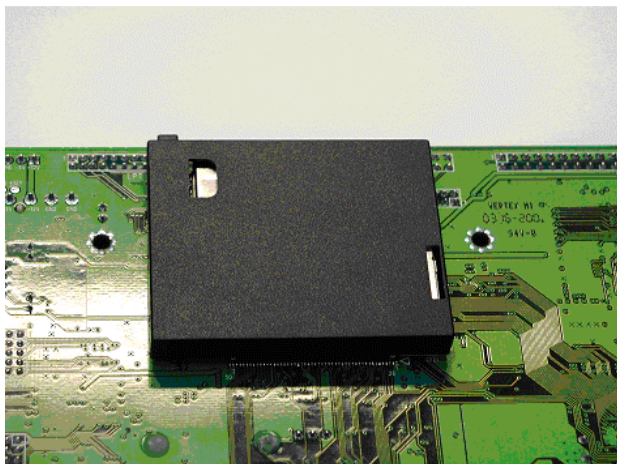




Step 4: Press a little bit with the finger on the hole of the cover.



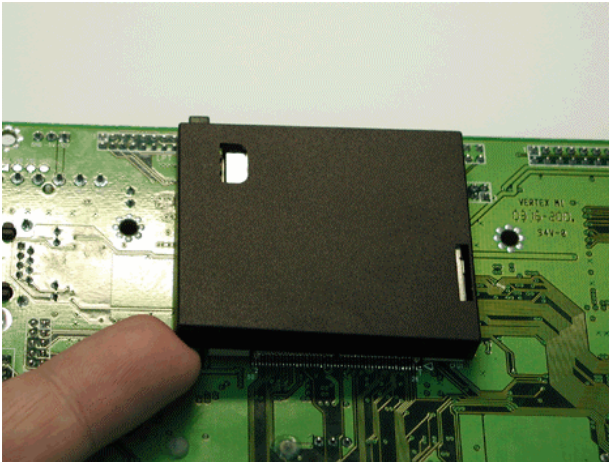
Step 5: Done



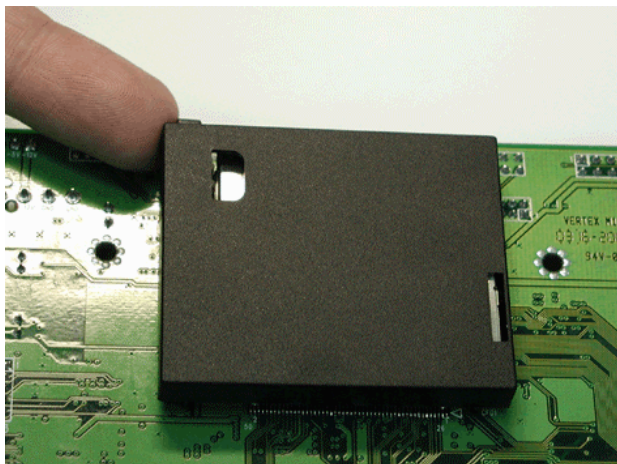
C.2 How to disassemble the CompactFlash cover

If you would like disassemble the CompactFlash Card, please follow the steps below. If you don't follow the regular steps to disassemble, the cover may suffer the permanent damage.

Step 1: Pull the cover a little bit upwards from the corner indicated.



Step 2: Pull the cover hard from the reverse corner indicated.



In this way, the cover can be disassembled as easy as possible.

Appendix

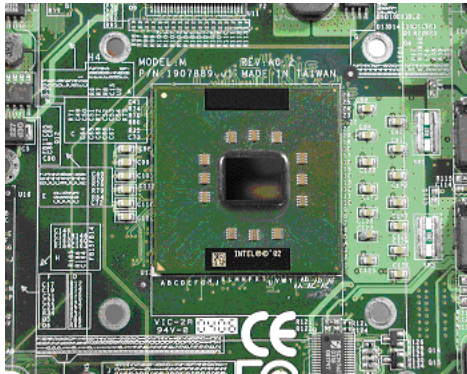
D

**Processor and Cooler
Installation Guide**

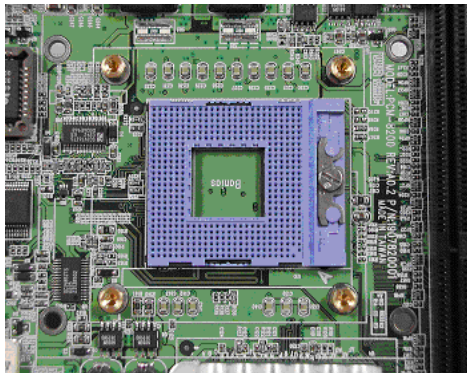
D.1 How to install the Processor and cooler

MPC-8890 is given a CPU cooler with the product. As to the processor, we provide two alternatives for customers.

1. Onboard Low Power CPU (Pentium-M 1.1GHz or Celeron-M 1.3GHz)

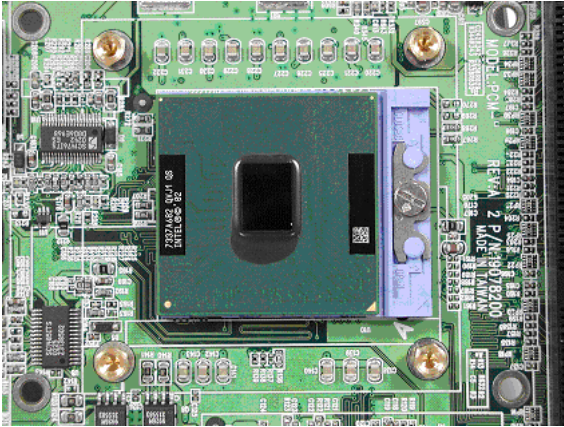


2. Micro PGA Socket 478 (For Pentium-M / Celeron-M only)



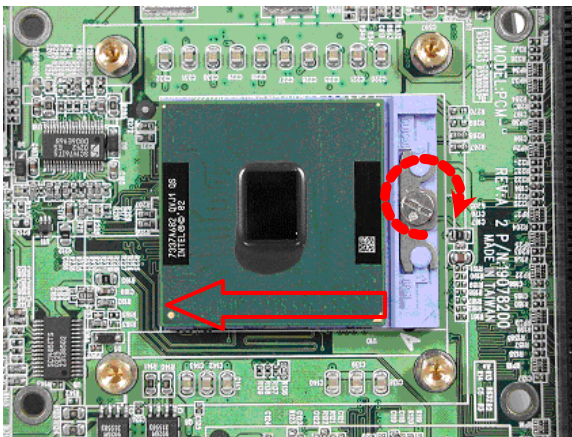
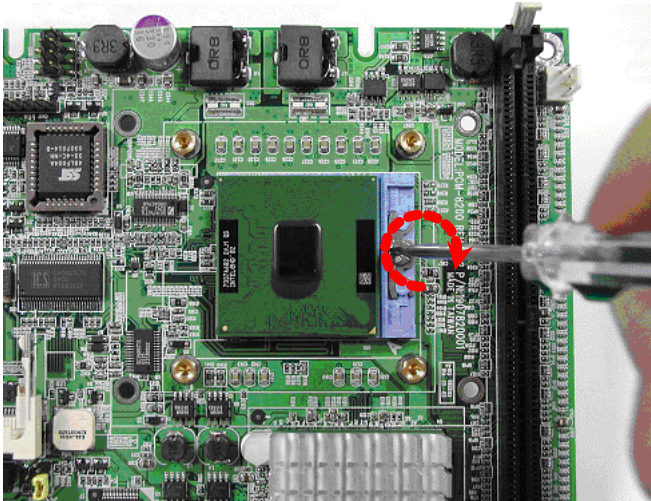
We will instruct you how to install processor and cooler as follows.

Step 1: Put the processor on the socket



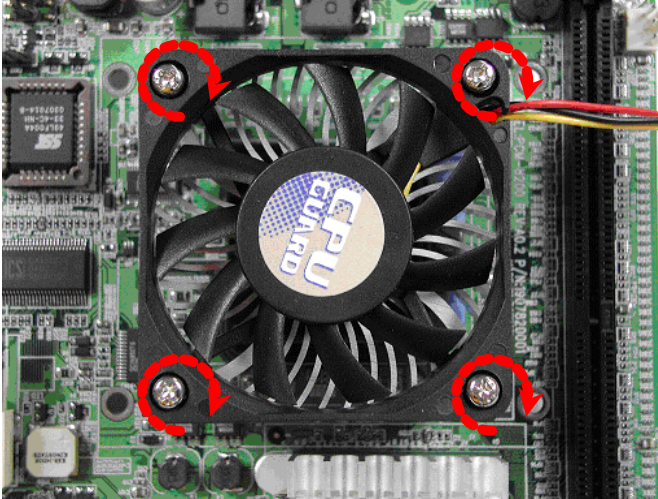
** We have already installed the cooler with the onboard processor. If you need to re-install it, please skip to step 3.

Step 2: Turn it screw right with a screwdriver



When you turn the screw rightward, the socket will move to left then steady lock the processor.

Step 3: Put the cooler on it and lock it with four screws one by one.



Notice that when you are locking it, you need to fasten it with the strength that exerted on four screws balancedly. If you fasten it with the strength on one single screws alone and keep it extremely tight, it may cause the process to the damage.