

PCM-8152

Intel® Pentium® M / Celeron® M Processors

One DDR 266/333 SDRAM DIMM

48-bit Dual Channel LVDS TFT LCD

AC97 3D Surround 5.1Channel

4 USB 2.0 / 4 COMs / Digital IO

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Packing List

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

- 1 9657666600 Jumper Cap
- 1 1759200157 CPU Cooler Fan + Heatsink (For Socket type only)
- 1 PCM-8152 CPU Card
- 1 Quick Installation Guide
- 1 CD-ROM for manual (in PDF format) and drivers

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, a leading industrial computer manufacturer, announces a brand new compact board with legacy interface—PCM-8152. This model is different from other compact boards on the market, which is deploying PC/104 interface. This major feature differs from other competitors making PCM-8152 a unique display in this niche embedded world.

PCM-8152 equips Intel® Pentium® M, Celeron® M or Mobile Intel® Celeron® processors with FSB 400MHz. It supports DDR (DDR 266/333) SDRAM DIMM up to 1GB. For Ethernet interface, PCM-8152 adopts Intel 82551 that supports 10/100Mbps, RJ-45 connector and optional Gigabit Ethernet. PCM-8152 features up to 48-bit dual channel LVDS TFT LCD, DVI, TV-out. You also can choose an additional LVDS to meet your versatile application requirements. In addition, PCM-8152's plentiful expansion interfaces, such as PCI slot, Type III Mini PCI socket and PC/104 socket, transcend competitors' comparable products. These features reduce customers' challenges to build systems with multiple expansion requirements.

Moreover, this model supports one IDE, three RS-232, one RS-232/422/485 and one parallel port. In addition, it deploys four USB 2.0, 16-bit digital I/O and IrDA. Flexible expansion connections are equipped to fulfill various application needs.

1.2 Features

- Supports Socket 478 Intel® Pentium® M/ Celeron® M up to 1.8GHz/ Onboard Mobile Intel® Celeron® M Processors at 600MHz and 1GHz
- Supports One DIMM DDR 266/333 up to 1GB
- Supports Dual Channel LVDS, DVI and TV-Out, (2nd LVDS optional)
- Supports One 10/100Mbps Ethernet (Gigabit LAN Optional)
- Supports PCI, Type III Mini-PCI and PC/104
- Supports IDE, RS-232 / 422 / 485, Parallel
- Supports AC97 3D Surround 5.1 Channel
- Supports 4 USB2.0, 16-bit Digital I/O, IrDA

1.3 Specifications

System

- CPU Supports Socket 478 Intel® Pentium® M / Celeron® M up to 1.8GHz (400MHz FSB) or onboard Mobile Intel® Celeron® Processors at 600MHz & 1GHz
- System Memory 1 x DDR SDRAM DIMM supports DDR 266/333 up to 1GB
- Chipset Intel® 852GM + ICH4
- I/O Chipset ITE 8712F-A/IX-L
- Ethernet Intel® 82551, 10/100Mbps, RJ-45 x 1 (Gigabit LAN optional)
- BIOS Award Plug & Play BIOS – 512KB ROM
- Watchdog Timer ITE 8712F-A/IX, generates a time-out system reset
- H/W status monitoring ITE 8712F-A/IX, supports power supply voltages, fan speed and temperature monitoring functions
- Solid Storage Disk One Type II Compact Flash slot
- Expansion Interface Type III Mini-PCI socket x 1, PCI x 1, PC/104 socket x 1
- Battery Lithium battery

- Power Requirement +5V/ AT/ ATX
- Operating Temperature 32°F~140°F (0°C~60°C)
- Board Size 8”(L) x5.72” (W)
(203mm x 146mm)
- Gross Weight 1.2 lb (0.5kg)

Display: Support: CRT/LCD, CRT/TV, LCD/DVI, CRT/DVI,
LCD/TV & LCD/DVI simultaneous/ dual view display

- Chipset Intel® 852GM
- Memory Shared system memory up to
64MB with DVMT
- Resolutions Up to 1600x1200@32bpp for
CRT; Up to 1280x1024@24bpp
for LCD
- LCD Interface Up to 48-bit dual channel LVDS
TFT LCD (24/48-bit optional)
- TV-Out Supports NTSC/PAL, RCA and
S-terminal connector

I/O

- MIO EIDEx1 (UDMA100 x 1), RS-232 x
3, RS-232/422/485 x 1, Keyboard
+ Mouse x1, Parallel x 1
- IrDA One IrDA Tx/Rx header
- Audio MIC-in/ Line-in/ Line-out/
CD-in, S/P DIF in/out, Stereo

- USB
Amplifier included
Two 5x2 pin headers support 4
USB 2.0 Ports
- Digital I/O
Support 16-bit (programmable)

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!

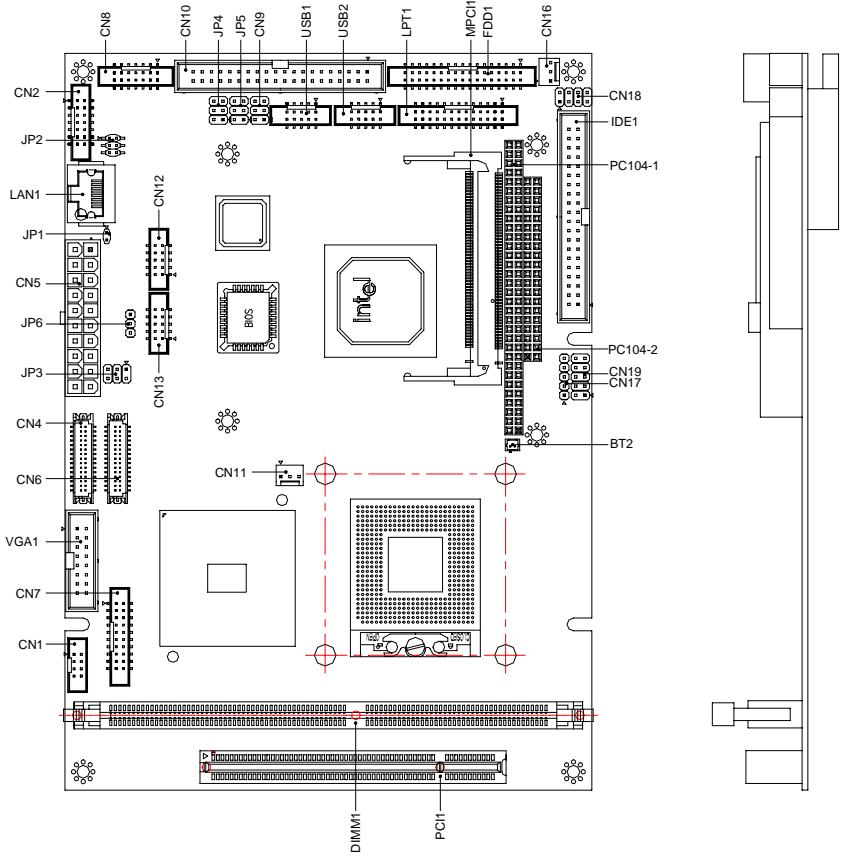
Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.

Caution!

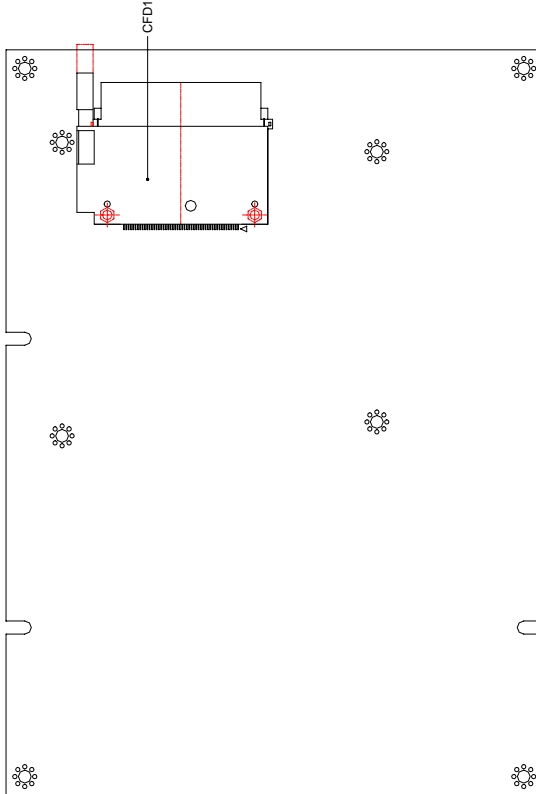
Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not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

2.2 Location of Connectors and Jumpers

Component Side

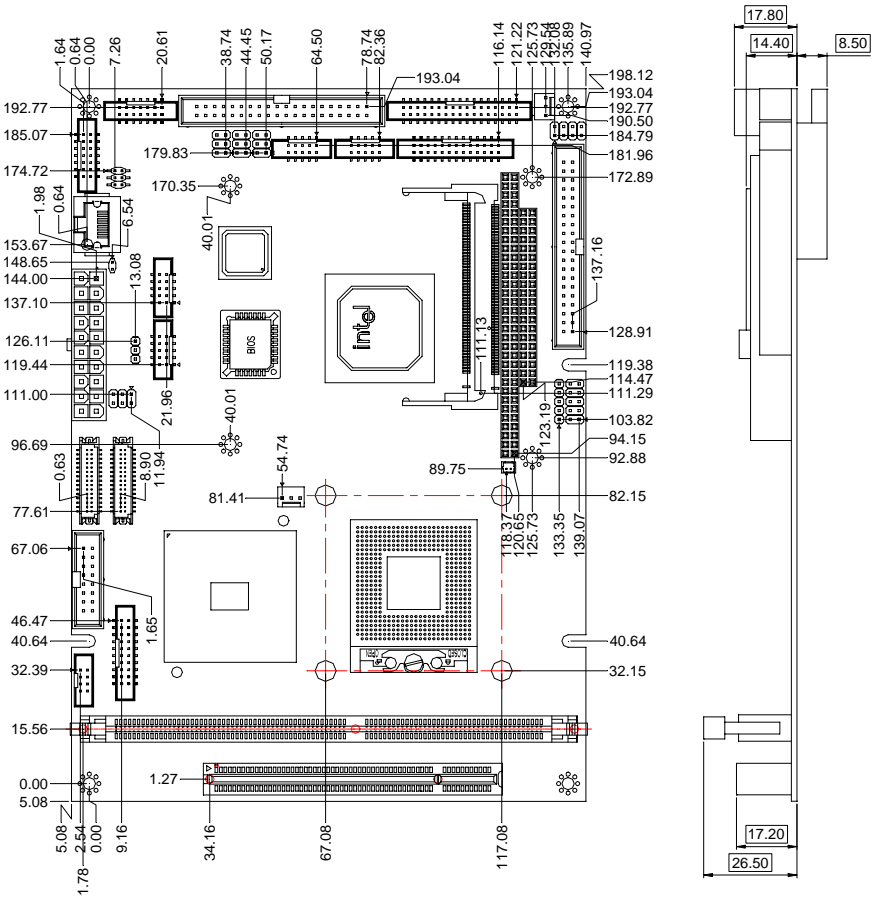


Solder Side

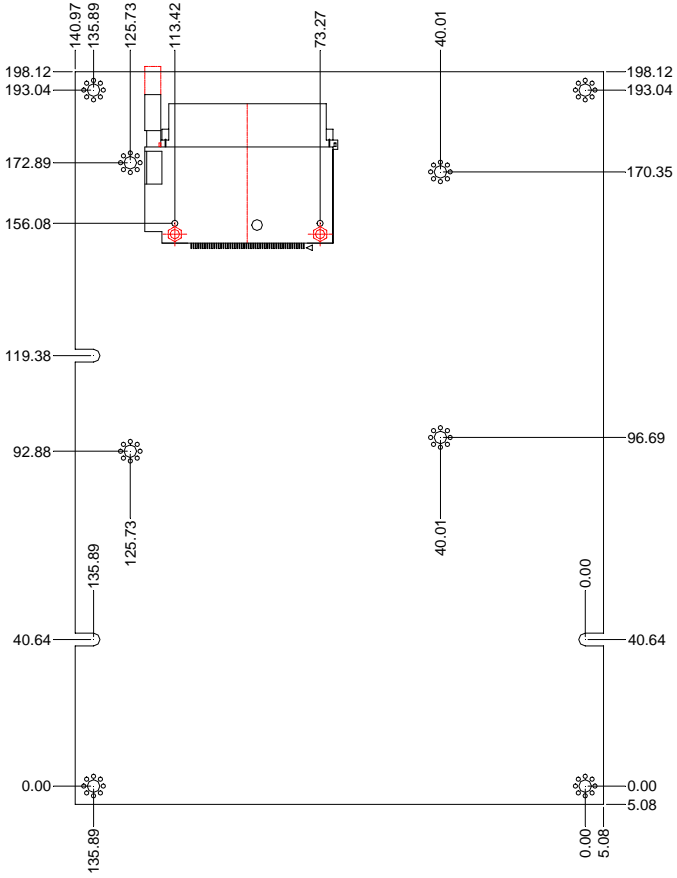


2.3 Mechanical Drawing

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	ATX Power to AT Function
JP2	Audio Out Selection
JP3	LCD Voltage Selection
JP4	COM4 Ring/+5V/+12V Selection
JP5	COM3 Ring/+5V/+12V Selection
JP6	Clear CMOS

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

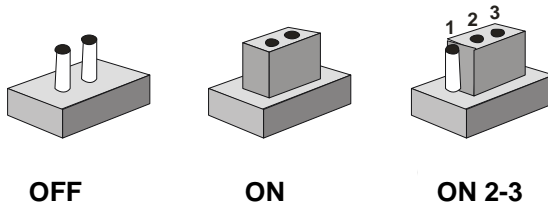
Label	Function
CN1	TV_Out Connector
CN2	Audio SPDIF Connector
CN4	Internal LVDS Connector
CN5	ATX Power Connector
CN6	Extension LVDS Connector (Optional)
CN7	DVI Connector
CN8	Audio Connector
CN9	LAN LED Connector
CN10	COM1-4 Connector
CN11	CPU Fan Connector
CN12	Digital I/O-1 Connector (801H)
CN13	Digital I/O-2 Connector (800H)
CN16	System Fan Connector
CN17	IrDA Connector
CN18	Internal Keyboard and Mouse Connector
CN19	Front Panel Connector
FDD1	Floppy Connector

IDE1	EIDE Connector
VGA1	VGA Display Connector
LPT1	LPT Port Connector
USB1	USB 0/1 Connector
USB2	USB 2/3 Connector
LAN1	10/100 or 100/1000 Base-TX Ethernet Connector
PCI1	PCI Slot
MPCI1	Mini PCI Slot
DIMM1	DDR DIMM Slot
PC104-1	PC/104 Connector
PC104-2	PC/104 Connector

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 ATX Emulation AT Power Function (JP1)

JP1	Function
ATX	OFF (Default)
AT	ON

2.8 Audio Out Selection (JP2)

JP2	Function
1-3, 2-4	W/O Amplifier
3-5, 4-6	W/ Amplifier (Default)

2.9 LCD Voltage Selection (JP3)

JP3	Function
LVDS-LCD For CN4	
1-3	+5V
3-5	+3.3V (Default)
LVDS-LCD For CN6 (Optional)	
2-4	+5V
4-6	+3.3V (Default)

2.10 COM4 Ring/+5V/+12V Selection (JP4)

JP4	Function
1-2	+12V

3-4	+5V
5-6	Ring (Default)

2.11 COM3 Ring/+5V/+12V Selection (JP5)

JP5	Function
1-2	+12V
3-4	+5V
5-6	Ring (Default)

2.12 Clear CMOS (JP6)

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

2.13 TV_Out Connector (CN1)

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

2.14 Audio SPDIF Connector (CN2)

Pin	Signal	Pin	Signal
1	Front-R	2	GND
3	Front-L	4	GND
5	SURROUND-R	6	GND
7	SURROUND-L	8	GND
9	LFEOUT	10	GND
11	CENOUT	12	GND
13	SPDIFO-N	14	SPDIFI-N

2.15 Internal LVDS Connector (CN4)

Pin	Signal	Pin	Signal
1	LVDS_BKLEN	2	LVDS_BKLCTL
3	PPVCC	4	GND
5	LVDS_TXLCLK#	6	LVDS_TXLCLK
7	PPVCC	8	GND
9	LVDS_TXL0#	10	LVDS_TXL0
11	LVDS_TXL1#	12	LVDS_TXL1
13	LVDS_TXL2#	14	LVDS_TXL2
15	LVDS_TXL3#	16	LVDS_TXL3
17	LVDS_DDCPDATA	18	LVDS_DDCPCLK
19	LVDS_TXU0#	20	LVDS_TXU0

21	LVDS_TXU1#	22	LVDS_TXU1
23	LVDS_TXU2#	24	LVDS_TXU2
25	LVDS_TXU3#	26	LVDS_TXU3
27	PPVCC	28	GND
29	LVDS_TXUCLK#	30	LVDS_TXUCLK

2.16 ATX Power Connector (CN5)

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

2.17 Extension LVDS Connector (CN6) (Optional)

Pin	Signal	Pin	Signal
1	LVDS_BKLEN	2	LVDS_BKLCTL
3	PPVCC	4	GND

5	LVDS_TXLCLK#	6	LVDS_TXLCLK
7	PPVCC	8	GND
9	LVDS_TXL0#	10	LVDS_TXL0
11	LVDS_TXL1#	12	LVDS_TXL1
13	LVDS_TXL2#	14	LVDS_TXL2
15	LVDS_TXL3#	16	LVDS_TXL3
17	LVDS_DDCPDATA	18	LVDS_DDCPCLK
19	LVDS_TXU0#	20	LVDS_TXU0
21	LVDS_TXU1#	22	LVDS_TXU1
23	LVDS_TXU2#	24	LVDS_TXU2
25	LVDS_TXU3#	26	LVDS_TXU3
27	PPVCC	28	GND
29	LVDS_TXUCLK#	30	LVDS_TXUCLK

2.18 DVI Connector (CN7)

Pin	Signal	Pin	Signal
1	DVI_TD1	2	DVI_TD1#
3	GND	4	GND
5	DVI_TDC	6	DVI_TDC#
7	GND	8	+5V
9	HPDET	10	+5V
11	DVI_TD2	12	DVI_TD2#
13	GND	14	GND

15	DVI_TD0	16	DVI_TD0#
17	N.C.	18	N.C.
19	MDVI_DATA	20	MDVI_CLK

2.19 Audio Connector (CN8)

Pin	Signal	Pin	Signal
1	MIC_IN	2	MIC_+2.5V
3	LINE_IN_GND	4	CD_GND
5	LINE_IN_L	6	CD_IN_L
7	LINE_IN_R	8	CD_GND
9	LINE_IN_GND	10	CD_IN_R
11	LINE_OUT_L	12	LINE_OUT_R
13	LINE_OUT_GND	14	LINE_OUT_GND

2.20 LAN LED Connector (CN9)

Pin	Signal	Pin	Signal
1	Link / Active LED (+)	2	Link / Active LED (-)
3	Speed 100Base-TX LED (+)	4	Speed 100Base-TX LED (-)
5	Speed 1000Base-TX LED(+)	6	Speed 1000Base-TX LED (-)

2.21 COM1/2/3/4 Connector (CN10)

Pin	Signal	Pin	Signal
1	DCD1	2	DSR1
3	RXD1	4	RTS1
5	TXD1	6	CTS1
7	DTR1	8	RI1
9	GND	10	NC
11	DCD2(422TXD-/485DATA-)	12	DSR2
13	RXD2(422RXD+)	14	RTS2
15	TXD2(422TXD+/485DATA+)	16	CTS2
17	DTR2(422RXD-)	18	RI2
19	GND	20	NC
21	DCD3	22	DSR3
23	RXD3	24	RTS3
25	TXD3	26	CTS3
27	DTR3	28	RI3/ +5V/ +12V
29	GND	30	NC
31	DCD4	32	DSR4
33	RXD4	34	RTS4
35	TXD4	36	CTS4
37	DTR4	38	RI4/ +5V/ +12V
39	GND	40	NC

2.22 CPU FAN Connector (CN11)

Pin	Signal
1	GND
2	+5V
3	Speed Sense

2.23 Digital I/O-1 Connector (CN12) Address=801H

Pin	Signal	Pin	Signal
1	DIO1-1	2	DIO1-2
3	DIO1-3	4	DIO1-4
5	DIO1-5	6	DIO1-6
7	DIO1-7	8	DIO1-8
9	+5V	10	GND

BIOS Setting	Connector Definition	Address	IT8712 GPIO Setting
DIO1-1	CN12 Pin1	Bit 7	U38 Pin20 (GPIO 27)
DIO1-2	CN12 Pin2	Bit 6	U38 Pin21 (GPIO 26)
DIO1-3	CN12 Pin3	Bit 5	U38 Pin22 (GPIO 25)
DIO1-4	CN12 Pin4	Bit 4	U38 Pin23 (GPIO 24)
DIO1-5	CN12 Pin5	Bit 3	U38 Pin22 (GPIO 23)
DIO1-6	CN12 Pin6	Bit 2	U38 Pin23 (GPIO 22)
DIO1-7	CN12 Pin7	Bit 1	U38 Pin24 (GPIO 21)

DIO1-8	CN12 Pin8	Bit 0	U38 Pin25 (GPIO 20)
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2.24 Digital I/O-2 Connector (CN13) Address=800H

Pin	Signal	Pin	Signal
1	DIO2-1	2	DIO2-2
3	DIO2-3	4	DIO2-4
5	DIO2-5	6	DIO2-6
7	DIO2-7	8	DIO2-8
9	+5V	10	GND

BIOS Setting	Connector Definition	Address	IT8712 GPIO Setting
DIO2-1	CN13 Pin1	Bit 7	U38 Pin28 (GPIO 17)
DIO2-2	CN13 Pin2	Bit 6	U38 Pin29 (GPIO 16)
DIO2-3	CN13 Pin3	Bit 5	U38 Pin30 (GPIO 15)
DIO2-4	CN13 Pin4	Bit 4	U38 Pin31 (GPIO 14)
DIO2-5	CN13 Pin5	Bit 3	U38 Pin32 (GPIO 13)
DIO2-6	CN13 Pin6	Bit 2	U38 Pin33 (GPIO 12)
DIO2-7	CN13 Pin7	Bit 1	U38 Pin34 (GPIO 11)
DIO2-8	CN13 Pin8	Bit 0	U38 Pin84 (GPIO 10)

2.25 System FAN Connector (CN16)

Pin	Signal
1	GND
2	+5V
3	Speed Sense

2.26 IrDA Connector (CN17)

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

2.27 Internal Keyboard and Mouse Connector (CN18)

Pin	Signal	Pin	Signal
1	KB_DATA	2	KB_CLK
3	KB_GND	4	KB_VCC
5	MS_DATA	6	MS_CLK
7	N.C.		

2.28 Front Panel Connector (CN19)

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(+)

2.29 Floppy Connector (FDD1)

Pin	Signal	Pin	Signal
1	GND	2	#REDWC
3	GND	4	N.C
5	GND	6	#DS1
7	GND	8	#INDEX
9	GND	10	#MOTOR A
11	GND	12	#DRIVE SELECT B
13	GND	14	#DRIVE SELECT A
15	GND	16	#MOTOR B
17	GND	18	#DIR
19	GND	20	#STEP
21	GND	22	#WRITE DATA
23	GND	24	#WRITE GATE
25	GND	26	#TRACK0
27	GND	28	#WRITE PROTECT
29	GND	30	#READ DATA
31	GND	32	#SIDE1

33	GND	34	#DISK CHANGE
----	-----	----	--------------

2.30 EIDE Connector (IDE1)

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
----	-----	----	-----

2.31 VGA Display Connector (VGA1)

Pin	Signal	Pin	Signal
1	RED	2	VGAVCC
3	GREEN	4	GND
5	BLUE	6	N.C.
7	N.C.	8	SDATA
9	GND	10	H
11	GND	12	V
13	GND	14	SCLK
15	GND	16	N.C.

2.32 LPT Port Connector (LPT1)

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.

2.33 USB Connector (USB1)

Pin	Signal	Pin	Signal
1	+5V	2	GND
3	USBD0#	4	GND
5	USBD0	6	USBD1
7	GND	8	USBD1#
9	GND	10	+5V

2.34 USB Connector (USB2)

Pin	Signal	Pin	Signal
1	+5V	2	GND
3	USBD2#	4	GND
5	USBD2	6	USBD3
7	GND	8	USBD3#
9	GND	10	+5V

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 PCM-8152 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, 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 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 Password

Use this menu to set Supervisor Password.

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 PCM-8152 comes with an AutoRun CD-ROM that contains all drivers and utilities that can help you to install the driver automatically.

Insert the driver CD, the driver CD-title will auto start and show the installation guide. If not, please follow the sequence below to install the drivers.

Follow the sequence below to install the drivers:

- Step 1 – Install INF Driver
- Step 2 – Install VGA Driver
- Step 3 – Install LAN Driver
- Step 4 – Install Audio Driver

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 PCM-8152 CD-ROM into the CD-ROM drive and install the drivers from Step 1 to Step 4 in order.

Step 1 – Install INF Driver

1. Click on the **Step 1 –Inf Driver** folder
2. Double click on **infinst_autol** file
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 2 – Install VGA Driver

1. Click on the **Step 2 –VGA Driver** folder
2. Double click on **win2x_xp141950** file
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 3 – Install LAN Driver

1. Click on **Start** button
2. Click on **Settings** button
3. Click on **Control Panel** button
4. Click on **System** button
5. Select **Hardware** and click on **Device Manager...**
6. Double click on **Ethernet Controller**
7. Click on **Update Driver...**

8. Click on **Next**
9. Select **Search for a suitable driver...**, then click on **Next**
10. Select **Specify a location**, then click on **Next**
11. Click on **Browse**
12. Select “**NetrtOEM**” file from CD-ROM (**Drivers/Step 3 – Intel 82551ER Driver**) then click on **Open**
13. Click on **OK**
14. Click on **Next**
15. Click on **Finish**

Note:

Intel 82554x Driver is optional for Gigabit Ethernet

Step 4 –Install Audio Driver

1. Click on the **Step 4 –Audio driver** folder
2. Choose the OS your system is.
3. Click on **Windows** file and double click on **WDM_A392** file
4. Follow the instructions that the window shows
5. The system will help you install the driver automatically

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

Programming the Watchdog Timer

A.1 Programming

PCM-8152 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

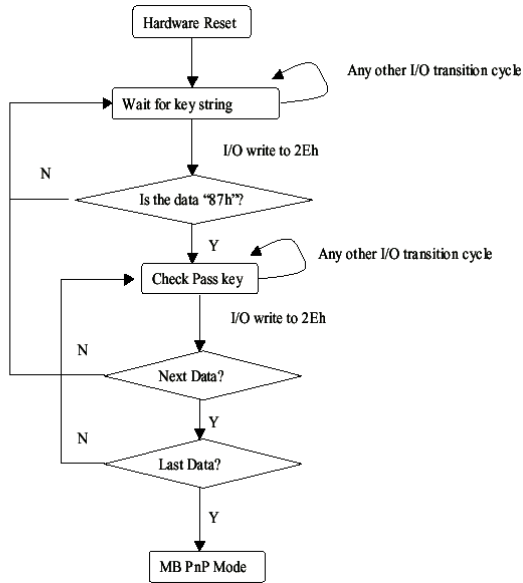
After the hardware reset or power-on reset, the ITE 8712 enters the

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

A.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

B

I/O Information

B.1 I/O Address Map

	[00000000 - 0000000F] Direct memory access controller
	[00000000 - 00000CF7] PCI bus
	[00000010 - 0000001F] Motherboard resources
	[00000020 - 00000021] Programmable interrupt controller
	[00000022 - 0000003F] Motherboard resources
	[00000040 - 00000043] System timer
	[00000044 - 0000005F] Motherboard resources
	[00000060 - 00000060] Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
	[00000061 - 00000061] System speaker
	[00000062 - 00000063] Motherboard resources
	[00000064 - 00000064] Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
	[00000065 - 0000006F] Motherboard resources
	[00000070 - 00000073] System CMOS/real time clock
	[00000074 - 0000007F] Motherboard resources
	[00000080 - 00000090] Direct memory access controller
	[00000091 - 00000093] Motherboard resources
	[00000094 - 0000009F] Direct memory access controller
	[000000A0 - 000000A1] Programmable interrupt controller
	[000000A2 - 000000BF] Motherboard resources
	[000000C0 - 000000DF] Direct memory access controller
	[000000E0 - 000000EF] Motherboard resources
	[000000F0 - 000000FF] Numeric data processor
	[00000170 - 00000177] Secondary IDE Channel
	[000001F0 - 000001F7] Primary IDE Channel
	[00000274 - 00000277] ISAPNP Read Data Port
	[00000279 - 00000279] ISAPNP Read Data Port
	[00000290 - 00000297] Motherboard resources
	[00000290 - 0000029F] Motherboard resources
	[000002E8 - 000002EF] Communications Port (COM4)
	[000002F8 - 000002FF] Communications Port (COM2)
	[00000376 - 00000376] Secondary IDE Channel
	[00000378 - 0000037F] Printer Port (LPT1)
	[00000380 - 0000038B] Intel(R) 82852/82855 GM/GME Graphics Controller
	[000003C0 - 000003DF] Intel(R) 82852/82855 GM/GME Graphics Controller
	[000003E8 - 000003EF] Communications Port (COM3)
	[000003F0 - 000003F5] Standard floppy disk controller
	[000003F6 - 000003F6] Primary IDE Channel
	[000003F7 - 000003F7] Standard floppy disk controller
	[000003F8 - 000003FF] Communications Port (COM1)
	[00000400 - 000004BF] Motherboard resources
	[000004D0 - 000004D1] Motherboard resources
	[00000500 - 0000051F] Intel(R) 82801DB/DBM SMBus Controller - 24C3
	[00000800 - 0000087F] Motherboard resources
	[00000880 - 0000088F] Motherboard resources
	[00000A79 - 00000A79] ISAPNP Read Data Port
	[00000D00 - 0000FFFF] PCI bus
	[00000D00 - 00000D3F] Intel(R) 825xER PCI Adapter
	[0000E000 - 0000E0FF] Realtek AC'97 Audio
	[0000E800 - 0000E807] Intel(R) 82852/82855 GM/GME Graphics Controller
	[0000EA00 - 0000EA1F] Intel(R) 82801DB/DBM USB Universal Host Controller - 24C2
	[0000EB00 - 0000EB3F] Realtek AC'97 Audio
	[0000EC00 - 0000EC1F] Intel(R) 82801DB/DBM USB Universal Host Controller - 24C4
	[0000F000 - 0000F00F] Intel(R) 82801DB Ultra ATA Storage Controller - 24CB

B.2 Memory Address Map

Interrupt request (IRQ)	
(ISA) 0	System timer
(ISA) 1	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
(ISA) 3	Communications Port (COM2)
(ISA) 4	Communications Port (COM1)
(ISA) 6	Standard floppy disk controller
(ISA) 8	System CMOS/real time clock
(ISA) 9	Microsoft ACPI-Compliant System
(ISA) 10	Communications Port (COM3)
(ISA) 11	Communications Port (COM4)
(ISA) 12	PS/2 Compatible Mouse
(ISA) 13	Numeric data processor
(ISA) 14	Primary IDE Channel
(ISA) 15	Secondary IDE Channel
(PCI) 5	Intel(R) 8255xER PCI Adapter
(PCI) 5	Intel(R) 82801DB/DBM SMBus Controller - 24C3
(PCI) 5	Intel(R) 82801DB/DBM USB Universal Host Controller - 24C2
(PCI) 5	Intel(R) 82801DB/DBM USB Universal Host Controller - 24C4
(PCI) 5	Intel(R) 82801DB/DBM USB2 Enhanced Host Controller - 24CD
(PCI) 5	Intel(R) 82852/82855 GM/GME Graphics Controller
(PCI) 5	Realtek AC'97 Audio

B.3 IRQ Mapping Chart

Interrupt request (IRQ)	
(ISA) 0	System timer
(ISA) 1	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
(ISA) 3	Communications Port (COM2)
(ISA) 4	Communications Port (COM1)
(ISA) 6	Standard floppy disk controller
(ISA) 8	System CMOS/real time clock
(ISA) 9	Microsoft ACPI-Compliant System
(ISA) 10	Communications Port (COM3)
(ISA) 11	Communications Port (COM4)
(ISA) 12	PS/2 Compatible Mouse
(ISA) 13	Numeric data processor
(ISA) 14	Primary IDE Channel
(ISA) 15	Secondary IDE Channel
(PCI) 5	Intel(R) 8255xER PCI Adapter
(PCI) 5	Intel(R) 82801DB/DBM SMBus Controller - 24C3
(PCI) 5	Intel(R) 82801DB/DBM USB Universal Host Controller - 24C2
(PCI) 5	Intel(R) 82801DB/DBM USB Universal Host Controller - 24C4
(PCI) 5	Intel(R) 82801DB/DBM USB2 Enhanced Host Controller - 24CD
(PCI) 5	Intel(R) 82852/82855 GM/GME Graphics Controller
(PCI) 5	Realtek AC'97 Audio

B.4 DMA Channel Assignments

