User Manual

PCM-9382

Copyright

This document is copyrighted, © 2008. All rights are reserved. The original manufacturer reserves the right to make improvements to the products described in this manual at any time without notice.

No part of this manual may be reproduced, copied, translated or transmitted in any form or by any means without the prior written permission of the original manufacturer. Information provided in this manual is intended to be accurate and reliable. However, the original manufacturer assumes no responsibility for its use, nor for any infringements upon the rights of third parties that may result from such use.

Trademarks

Award is a trademark of Award Software International, Inc.

VIA is a trademark of VIA Technologies, Inc.

IBM, PC/AT, PS/2 and VGA are trademarks of International Business Machines Corporation.

Intel and Pentium are trademarks of Intel Corporation.

Microsoft Windows® is a registered trademark of Microsoft Corp.

RTL is a trademark of Realtek Semi-Conductor Co., Ltd.

ESS is a trademark of ESS Technology, Inc.

UMC is a trademark of United Microelectronics Corporation.

SMI is a trademark of Silicon Motion, Inc.

Creative is a trademark of Creative Technology LTD.

CHRONTEL is a trademark of Chrontel Inc.

All other product names or trademarks are properties of their respective owners.

Part No. 2006928310   Edition 1

Printed in China   March 2008

Product Warranty

Warranty Period

ADVANTECH aims to meet the customer's expectations for post-sales service and support; therefore, in addition to offering 2 years global warranty for ADVANTECH's standard products, a global extended warranty service is also provided for customers upon request. ADVANTECH customers are entitled to a complete and prompt repair service beyond the standard 2 years of warranty.

Standard products manufactured by ADVANTECH are covered by a 2 year global warranty from the date of shipment. Products covered by extended warranty and cross-region repair services against defects in design, materials, and workmanship, are also covered from the date of shipment. All key parts assembled into ADVAN-TECH system products such as LCD, Touchscreen, power supply, and peripherals, etc, will be also covered by the standard 2 year warranty.

Repairs under Warranty

It is possible to obtain a replacement (Cross-Shipment) during the first 30 days of purchase (45 days for Channel Partners), if the products were purchased directly from ADVANTECH and the product is DOA (Dead-on-Arrival).

DOA Cross-Shipment excludes any customized and/or build-to-order products. The Cross-Shipment agreement signed by customers is required for initiating/releasing cross shipment with ADVANTECH confirmation and verification. The only conditions for Cross-Shipment are: a) the return must not be damaged, altered or marked, b) all parts and accessories must be included as originally shipped; and c) proof of purchase must be included. Any returns that do not meet mentioned requirements above, or any wrong user settings/configurations will be denied, or subject to additional handling/service charges as determined by the ADVANTECH Repair Service Department.

For those products which are not DOA, the return fee to an authorized ADVANTECH repair facility will be at the customers' expense. The shipping fee for reconstructive products from ADVANTECH back to customers' sites will be at ADVANTECH's expense.

Exclusions from Warranty

- The product is excluded from warranty if:
- The product has been found to be defective after expiry of the warranty period.
- Warranty has been voided by removal or alternation of product or part identification labels.
- The product has been misused, abused, or subjected to unauthorized disassembly/modification; placed in an unsuitable physical or operating environment; improperly maintained by the customer; or failure caused which ADVANTECH is not responsible whether by accident or other cause. Such conditions will be determined by ADVANTECH at its sole unfettered discretion.
- The product is damaged beyond repair due to a natural disaster such as a lighting strike, flood, earthquake, etc.
- Products without warranty have been updated/upgraded or tested by customers.

Declaration of Conformity

FCC

This device complies with the requirements in part 15 of the FCC rules: Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this device in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense. The user is advised that any equipment changes or modifications not expressly approved by the party responsible for compliance would void the compliance to FCC regulations and therefore, the user's authority to operate the

equipment.

Caution! *There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.*

Technical Support and Assistance

For more information about this and other Advantech products, please visit our website at:

http://www.advantech.com/

http://www.advantech.com/ePlatform/

For technical support and service, please visit our support website at:

http://support.advantech.com.tw/support/

Additional Information and Assistance

1. Visit the Advantech web site at http://www.advantech.com/ where you can find the latest product information.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:

- Product name and serial number
- Description of your peripheral attachments
- Description of your software (operating system, version, application software, etc.)
- A complete description of the problem
- The exact wording of any error messages

Packing List

Before installation, please ensure the following items have been shipped:

Item Part Number

1 PCM-9382 SBC	
1 Startup manual	
1 Utility CD	
1 ATX power cable	1700000265
1 mini jumper pack	9689000002
2 SATA Data cables	1700006291
1 Audio cable	1703100152
1 Dual Port USB cable	1700006292
1 PS2 KB/MS cable	1700060202
1 RS232/422/485 cable	1701140201
1 Cooler (PCM-9382FG-00A1E/PCM-9382F-00A1E)	1750001940

Ordering Information

Model Number Description

PCM-9382F-00A1E	SKT478 Core 2 Duo SBC, VGA, LCD, Audio, SATA, MIO
PCM-9382F-S0A1E	Celeron M423 (1.06 G) SBC, VGA, LCD, Audio, SATA, MIO
PCM-9382FG-00A1E	SKT478 Core 2 Duo SBC, VGA, LCD, GbE, SATA, MIO

Optional Accessories

Model Number Description

1703150102	Wire BIG4P/Series ATA power 15P 10 cm
MIO-6250-00A1E	MIO Module w/ 3 LAN, RoHS
MIO-6251-00A1E	MIO module w/ 1 Mini-PCI, Audio, RoHS
MIO-6260-00A1E	MIO module w/2 COM, 4 USB, RoHS

Contents

Chapter **1**

Introduction

Sections include:
- ■ **Introduction**
- ■ **Product Specifications**
- ■ **Chipset**

1.1 Introduction

The PCM-9382 is a 3.5" SBC (Single Board Computer) with Intel Core 2 Duo Mobile / Core Duo/Core Solo/Celeron M 65nm processor on board or socket type.

The PCM-9382, in conjunction with Intel 945GM and ICH7M chipsets, supports processors clocked up to 2.16 GHz, five USB 2.0 compatible ports, one Ethernet connection up to 10/100/1000 Mbps, 2-channel 24-bit LVDS which can support dual independent display (48-bit LVDS + VGA), and can accommodate up to 2 GB of DDR2 SODIMM RAM memory (support FSB 533/667 MHz), two SATAII (300 MB/s) and two COM ports.

The PCM-9382 can also be expanded on one MIO interface card.

1.2 Product Specifications

1.2.1 General

- **CPU:** Embedded Intel® Core 2 Duo/ Core Duo/ Core Solo/Celeron® M (65nm Yonal/Merom) Processor
- **2nd Cache Memory:** Depends on CPU; from 1 MB to 2 MB
- **System Chipset:** Intel® 945 GM GMCH/ICH7M Chipset
- **BIOS AWARD:** 4MB Flash BIOS
- **System Memory:** 1 x 200-pin SODIMM socket, supports DDR2 400/533/667 MHz up to 1 GB.
- **Power Management:** APM 1.2, ACPI supports S1,S5
- **Watchdog Timer:** 255-level interval timer, setup by software, Super I/O integrated in SMSC Controller
- **Expansion Interface:** Supports MIO interface
- **Battery:** Lithium 3 V/210 mA

1.2.2 I/O

- **I/O Interface:** 2x SATA-II, 1 x K/B,1 x Mouse, 1 x RS-232, 1 x RS-232/422/485, 1x CF device
- **USB:** 5 x USB 2.0 compliant ports
- **Audio:** HD Audio codec ALC888, 2.1-channel supports Speaker out, Line-out, Microphone
- **IrDA:** N/A
- **GPIO:** 8-bit general purpose 4 input/4 output

1.2.3 Ethernet

- **Chipset:** 1 x Intel 82551QM
- **Speed:** 10/100 Mbps (Optional Intel 82541PI for GbE)
- **Interface:** 1 x RJ45
- **Standard:** IEEE 802.3u 100Base-T & IEEE 802.3ab 1000Base-T

1.2.4 Display

- **Chipset:** Intel 945GM chip integrated. (Inter Gen 3.5 integrated graphic engine)
- **Resolution:** CRT Display mode: pixel resolution up to QXGA (2048 x 1536)
- **LCD Interface:** 2 x 24-bit LVDS support by CH7308
- **LVDS:** Hirose connector supports up to 2 channel (2 x 24-bit) LVDS LCD Panel
- **Dual Ind. Display:** CRT + LVDS under Windows system 48-bit LVDS

1.3 Chipset

1.3.1 Functional Specifications

1.3.1.1 Processor

Processor	■ Yonah processor and Meron processor support
	■ Socket 478 Micro-FCPGA/on board CPU Micro-FCBGA
	■ 533/667 MHz FSB Support
	■ 32-bit host bus addressing
	Micro-FCBGA package (423, L2400, U2500)

1.3.1.2 Chipset (945GM)

Memory	■ 945GM GMCH Supports
	■ 2 GB maximum memory
	■ One 64-bit wide DDR2 SDRAM single channel
	■ Supports DDR2 400, DDR2 533, and DDR2 667
	■ 256 Mb, 512 Mb and 1 Gb DDR2 technology
	■ Only x8,x16 DDR2 devices with 4 or 8 banks
	■ Support for DDR2 On-Die Termination(ODT)
	Socket:
	SODIMM Socket:
	1. 200-pin SODIMM socket type *1

Graphic and Video Controllers	■ 945GM GMCH Supports
	■ 400 MHz Integrated RAMDAC
	■ 250 MHz core render clock and 200 MHz core display clock at 1.05 V core voltage
	■ Two SDVO ports multiplexed with PCI Express graphic interface
	■ Dual Channel LVDS interface supports 48 bits
	■ CRT monitor resolutions supported:
	Supports up to QXGA(2048x1536)
	LVDS panel resolution supported:
	Supports up to UXGA(1600 x 1200)
	Analog CRT Connector:
	D-Sub 15-pin 5 mm (Black)
	LVDS connector:
	Hirose DF13 type 40-pin

1.3.1.3 Chipset (ICH7M)

IDE Interface	■ ICH7M support ■ Single, independent IDE signal channel ■ Supports one CF device
H.D. Codec ALC888 I/F	■ ICH7M support ■ Support for HD codec ■ Supports up to 2.1 channel of PCM audio output ■ Connectors: Line-out, Line-in, Mic-in: Pin header 2*5P (M) 2.0 mm
Concurrent PCI/PCIe Bus Controller	■ MIO 2.0 ICH7M chip support ■ PCI 2.1 compliant ■ 32-bit 3.3 V 33 MHz PCI interface with 5 V tolerant inputs ■ Supports PC/PCI DMA ■ PCI Express 1.0a compliant
SATA Connector	■ ICH7M support ■ Supports independent DMA operation on two ports ■ Supports data transfer rates of up to 3.0 Gb/s (300 MB/s) ■ Operation of AHCI using memory space ■ Supports several optional sections of the Serial ATA II ■ SATA connectors: Connector: Serial ATA II 7 pins 1.27 mm x 2
USB Interface	■ ICH7M support ■ Supports 5 USB 2.0 ports which are high-speed, full-speed, and low-speed capable ■ Port-routing logic determines whether a USB port is controlled by UHCI or EHCI ■ USB Connector: (USB1~4) 2 set 5 x 2-pin Hirose DF13 type
Power Management	■ ICH7M support ■ Fully supports ACPI (Advanced Configuration and Power Interface) 2.0 ■ Supports S1, S5 ■ PCI CLKRUN# and PME# support ■ SMI# (System Management Interrupt) generation
BIOS	ICH7M support Phoenix 4M bit Flash BIOS, supports Plug & Play, APM 1.2/ACPI 1.1. FWH Type Socket: 32-pin PLCC socket

1.3.1.4 Others (Chipset)

Serial ports	SMSC3114 (LPC Super I/O) supports: ■ 2 full function serial ports. High Speed NS16C550A ■ Compatible UARTs with Data rates to 1.5Mbps ■ Support IRQ Sharing among serial ports. ■ RS-485 Auto Direction Control Mode ■ Connectors: COM1(RS-232), DB-9 COM2(RS-232/422/485 with auto-flow control), 14-pin 2.0 mm 2 x 7 Box Header
Thermal sensor	SMSC3114 (LPC Super I/O) support
Parallel port	N/A
Keyboard/Mouse connectors	SMSC3114 support ■ PS/2 Keyboard and Mouse interface ■ Connector: 1 X 6-pin Mini-DIN
LAN	■ PCI Interface ■ Intel 82551QM for 10/100Mbps or Intel 82551PI for 10/100/1000 Mbps ■ Connector: 1 x RJ45
GPIO	■ SMbus expansion ■ 8-bit I/O Pins ■ 5 V tolerance I/Os
Fan	SMSC3114 support ■ Programmable automatic fan control based on temperature ■ CPU Fan Connector x 1 ■ Connector type: 2.0 mm Wafer box 1 x 3-pin Default is +12 V Fan
Battery backup	SMSC3114 support

1.3.2 Mechanical Specifications

1.3.2.1 Dimensions (mm)
146 mm (L) * 105 mm(W)

1.3.2.2 Height on Top (mm)
20.15 mm (with Heatsink)

35.00 mm (with Fan)

1.3.2.3 Height on Bottom (mm)
9 mm (CF socket)

1.3.2.4 Heatsink Dimension (mm)
L50 mm * W50 mm * H24. 7mm (Heatsink)

1.3.2.5 Weight (g) with Heatsink
185 g (Heat sink)

195 g (Fan)

1.3.3 Electrical Specifications

1.3.3.1 Power Supply Voltage
- Voltage requirement with ATX Power:
  +5 DC +/-5%

  +5 VDC Standby +/- 5%

  +12 VDC (For FAN power, and LVDS inverter power)
- Voltage requirement with AT Power:
  +5 VDC +/-5%

  +12 VDC (For FAN power, and LVDS inverter power)

1.3.3.2 Power Supply Current

CPU Type	Status	256 MB/533/ADATA	
		+5 V	+12 V
T7400 2.16 GHz FSB=667 L2=4M	DOS Idle	4.64 A	0.09 A
	Win HCT11.2	5.14 A	0.16 A

CPU Type	Status	256 MB/533/ADATA	
		+5 V	+12 V
L2400 1.66 GHz FSB=667 L2=2M	DOS Idle	2.71A	0.23A
	Win HCT11.2	3.26A	0.23A

1.3.3.3 RTC Battery
Typical Voltage: 3.0 V

Normal discharge capacity: 210 mAh

1.3.4 Environmental Specifications

1.3.4.1 Operating Temperature

The Intel® Core Duo CPU® is specified for proper operation when the junction temperature is within the specified range of 0° C to 100° C.

The Intel® 945GME chipset temperature runs at a maximum of 99° C. The Intel®ICH7M I/O Controller case temperature runs at a maximum of 99° C.

The processor protects itself from catastrophic overheating by use of an internal thermal sensor at a temperature level of approximately 100° C.

Operating temperature: 0 ~ 60° C (32 ~ 140° F)

1.3.4.2 Operating Humidity

Operating Humidity: 0% ~ 90% Relative Humidity, non-condensing

1.3.4.3 Storage Temperature

Standard products (0 ~ 60° C) (32 ~ 140° F)

Storage temperature: -20 ~ 70° C (-4 ~ 158° F)

1.3.4.4 Storage Relative Humidity

Standard products (0 ~ 60° C) (32 ~ 140° F)

Relative humidity: 95% @ 60° C

Chapter 2

H/W installation

This chapter explains the setup procedures of the PCM-9382 hardware, including instructions on setting jumpers and connecting peripherals, switches, indicators and mechanical drawings. Be sure to read all safety precautions before you begin the installation procedure.

2.1 Jumpers

2.1.1 Jumper List

J1	Clear CMOS
J2	LCD Power
J3	COM2 Setting
J4	Audio Power

2.1.2 Jumper Settings

J1	Clear CMOS
Description	**PIN HEADER 3*1P 180D(M) 2.0mm DIP SQUARE W/O Pb**
Setting	**Function**
(1-2)	Normal
(2-3)	Clear COMS

J2	LCD Power
Description	**PIN HEADER 3*1P 180D(M) 2.0mm DIP SQUARE W/O Pb**
Setting	**Function**
(1-2)	+5 V
(2-3)	+3.3 V

J3	COM2 Setting
Description	**PIN HEADER 3*2P 180D 2.0mm SMD SOUARE PIN WO/Pb**
Setting	**Function**
(1-2)	RS232
(3-4)	RS485
(5-6)	RS422

J4	Audio Power
Description	**PIN HEADER 3*1P 180D(M) 2.0mm DIP SQUARE W/O Pb**
Setting	**Function**
(1-2)	+12 V to +5 V LDO
(2-3)	+5 V

2.1.3 Jumper Description

Cards can be configured by setting jumpers. A jumper is a metal bridge used to close an electric circuit. 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.
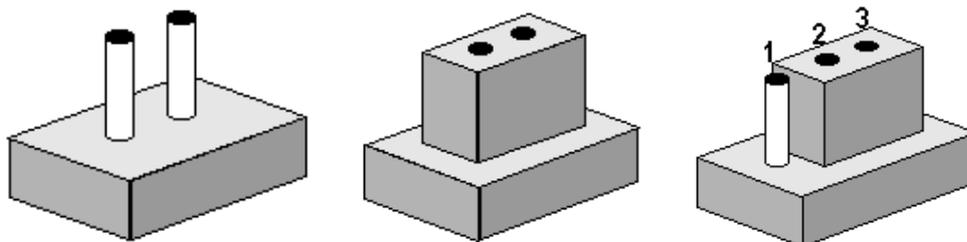
The jumper settings are schematically depicted in this manual as follows.
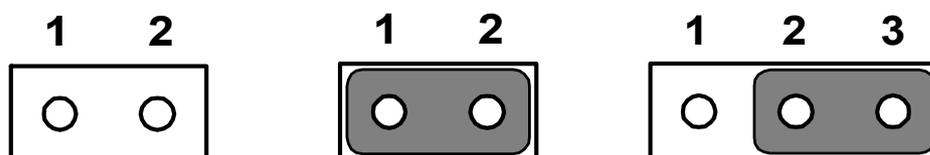
A pair of needle-nose pliers may be helpful when working with jumpers. If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

Setting	Function
1-2	+5 V
2-3	+3.3 V

Warning! *To avoid damaging the computer, always turn off the power supply before setting jumpers. Before turning on the power supply, set the jumper back to 3.0 V Battery On.*

2.2 Connectors

2.2.1 Connector List

CN1	ATX Power Input
CN2	CPU FAN
CN3	DDR2 SO-DIMM H=6.5 mm
CN4	External Battery
CN5	CRT
CN6	LVDS Panel
CN7	Inverter Power
CN8	SATA0
CN9	Compact Flash
CN10	SATA1
CN11	HDD & PWR LED
CN12	Power Switch
CN13	GPIO
CN14	COM1
CN15	COM2
CN17	Internal USB1/2
CN18	PS2(KB & MS)
CN19	External USB
CN20	Audio
CN21	LAN1(RJ45+Transformer)
CN22	MIO 2.0 QSE-160P
CN23	Internal USB3/4
CN24	SMBus

2.2.2 Connector Settings

2.2.2.1 Power Connectors (CN1)
Main power connector, +5 V, +12 V or 5V only

PCM-9382 supports ATX and AT modes

Use ATX power cable (PN: 1700000265 ATX-20P (M)/12P (F) 10 CM) connect CN1, it's changed from 12pin to 20pin, provides 5 V and 12 V and other PS_ON signals.

2.2.2.2 Fan Power Supply Connector (CN2)
Provides +12 V power supply to CPU cooling fan.

2.2.2.3 DDRII DIMM Socket (CN3)
One 200-pin/H6.5 mm DDRII DIMM socket (CN3) supports DDRII 533/66 7 MHz up to 1 GB.

2.2.2.4 External Battery Connector (CN4)
One 2x1 pin wafer box (CN4) for wire battery.

2.2.2.5 CRT Display Connector (CN5)
The CRT display connector is a DB15 connector used for conventional CRT displays.

2.2.2.6 LVDS LCD Panel Connector (CN6)

The board supports 2 channel 24-bit LVDS LCD panel display.

Users can connect to a 48-bit LVDS LCD.

2.2.2.7 LCD Inverter Power Connector (CN7)

The LCD inverter is connected to CN6 via a 5-pin connector to provide +5 V/+12 V power.

2.2.2.8 SATA Connector (CN8, CN10)

PCM-9382 supports Serial ATA via two connectors (CN8, CN10). Data transfer rates up to 300 MB/s, enable very fast data and file transfer, and independent DMA operation on two ports.

2.2.2.9 CompactFlash (CN9)

The CompactFlash card shares a Primary IDE channel which can be

enabled/disabled via the BIOS settings.

2.2.2.10 Power & HDD LED Connector (CN11)

Next, you may want to install external switches to monitor and control the board. These features are optional: install them only if you need them.

The Power & HDD LED connector is 4-pin Wafer box connector. It provides connections for a power and hard disk access indicator.

■ Power & HDD LED Connector(CN11)

The HDD LED indicator for hard disk access is an active low signal (24mA sink rate).

■ Power Reset button (S1)

Momentarily pressing the reset button will activate a reset. The switch should be rated for 10 mA, 5 V.

2.2.2.11 Power Switch Connector (CN12)

One 2 x 1 pin wafer box (CN12) for power switch.

2.2.2.12 GPIO (General Purpose Input Output) (CN13)

The board supports 8-bit GPIO through a GPIO connector.

The digital in and outputs can be programmed as input data or output to devices, with input or output defined. (CN13)

2.2.2.13 COM Port Connector (CN14, CN15, J3)

The PCM-9382 provides 2 serial ports (COM1 and COM2).

One 7*2P PIN HEADER (CN15) for COM2 output; and one DB-9 connector for COM1(CN14)

■ COM RS-232/422/485 settings (J3)

COM2 can be configured to operate in RS-232, RS-422, or RS-485 mode.

This is done via J3.

J3	COM2 Setting
(1-2)	RS-232
(3-4)	RS-485
(5-6)	RS-422

It provides connections for serial devices (ex: a mouse, etc.) or a communication network. You can find the pin assignments for the COM port connector in Appendix A.

2.2.2.14 USB Connectors (CN17, CN19, CN23)

The board provides up to Five USB (Universal Serial Bus) ports. This gives complete Plug and Play, and hot attach/detach for up to 127 external devices. The USB interfaces comply with USB specification Rev. 2.0 which supports 480 Mbps transfer rate, and are fuse protected.

There are 5 x 2 pin 180D (M) connectors for internal use, 4 x USB ports CN17, CN23 and one external USB port CN19. You will need an adapter cable if you use a standard USB connector. On one end the adapter cable has a 5 x 2-pin connector with a foolproof connection to prevent it from being plugged in the wrong way and on the other end a USB connector.

2.2.2.15 Audio Interface (CN20)

■ Audio Port Connectors

One 5 x 2 pin box header for Audio connector. These audio connectors are used for audio devices. The audio jacks are differentiated by color for different audio sound effects.

2.2.2.16 10/100/1000 Mbps Connector (CN21)

10/100/1000 Mbps connections are made via RJ-45 connectors.

■ Ethernet configuration

The board is equipped with 1 high performance PCI Ethernet interface which is fully compliant with IEEE 802.3u 100Base-T & IEEE 802.3ab 1000Base-T. It is supported by all major network operating systems.

2.2.2.17 MIO 2.0 Connector (CN22)

One 160-pin connector (CN22) supports MIO 2.0 spec.

MIO architecture provides multi-functionality in the LPC/USB/PCIe Express/SDVO interface.

PCM-9382 supports MIO 1.0 multi function card as below:

1. MIO-6250-00A1E
2. MIO-6251-00A1E
3. MIO-6260-00A1E

2.2.2.18 SMBus Connector (CN24)

One 4 x 1 pin wafer box (CN24) supports SMBus interface.

2.3 Mechanical

2.3.1 Jumper and Connector Location
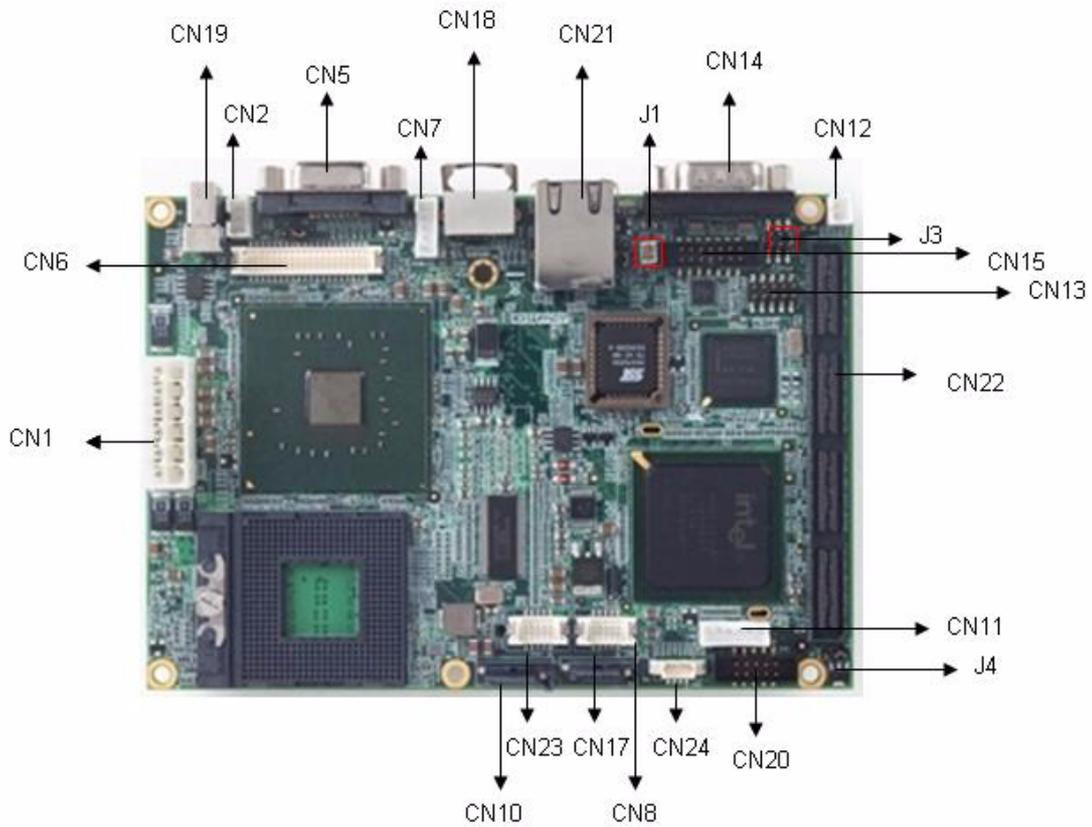
Figure 2.1 PCM-9382 Jumper and Connector Layout (Component Side)
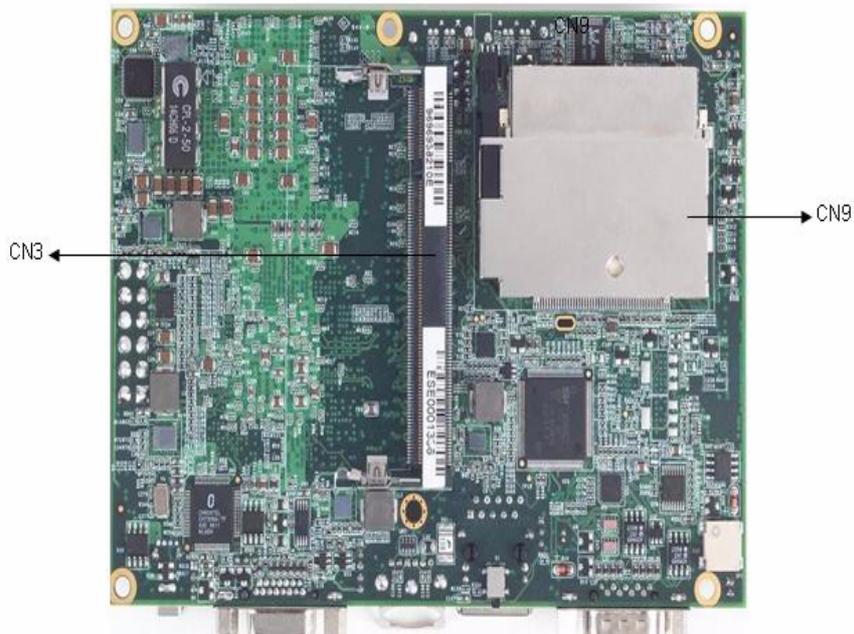
Figure 2.2 PCM-9382 Jumper and Connector Layout (Solder Side)

2.3.2 Board Dimensions
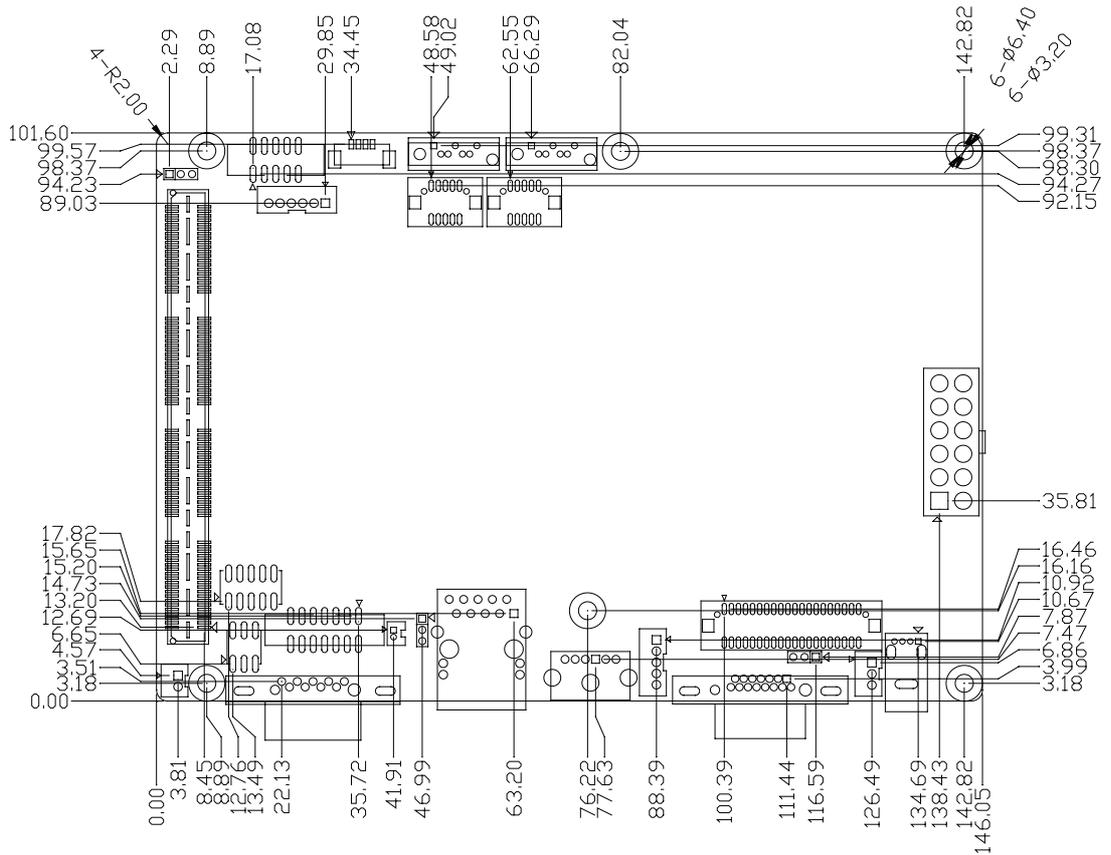
Figure 2.3 Board Dimension Layout (Component Side)
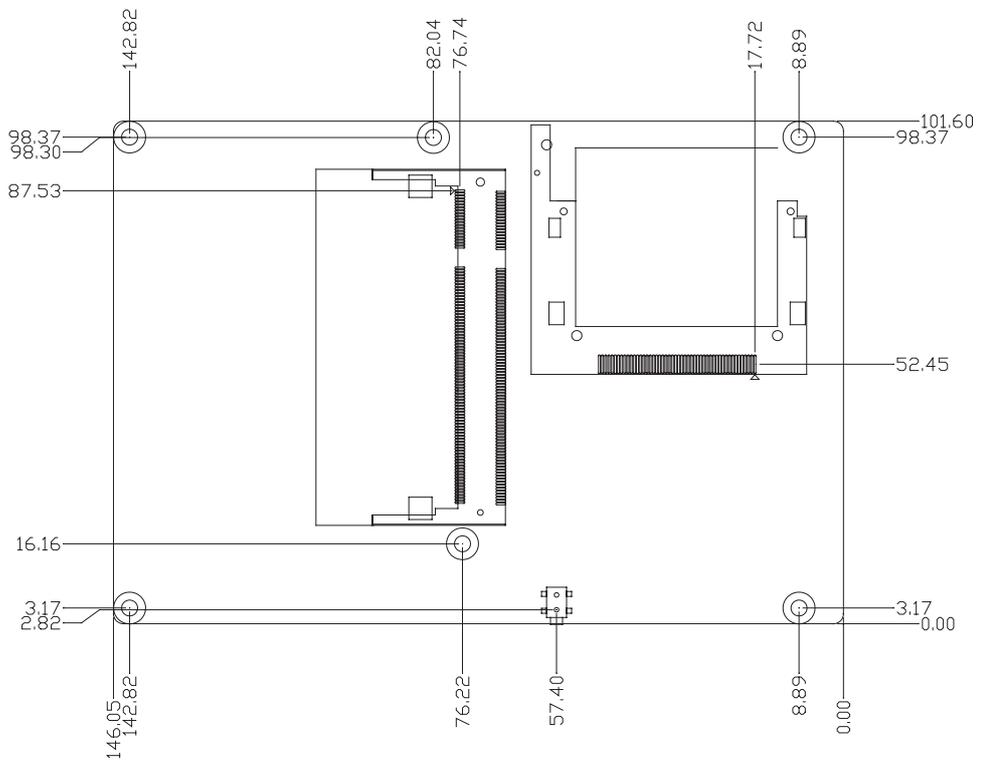
Figure 2.4 Board Dimension Layout (Solder Side)

Chapter 3

BIOS Operation

Sections include:
- BIOS Introduction
- BIOS Setup

3.1 BIOS Introduction

Advantech provides full-featured AwardBIOS 6.0 and delivers the superior performance, compatibility and functionality in the manufacture of Industry PC and Embedded boards. It's many options and extensions let you customize your products to a wide range of designs and target markets.

The modular, adaptable AwardBIOS 6.0 supports the broadest range of third-party peripherals and all popular chipsets, plus Intel, AMD, nVidia, VIA, and compatible CPUs from 386 through Pentium and AMD Geode, K7 and K8 (including multiple processor platforms), and VIA Eden C3 and C7 CPU.

You can use Advantech's utilities to select and install features to suit your designs for customers need.

3.2 BIOS Setup

The system of PCM-9382 has built-in AwardBIOS with a CMOS SETUP utility which allows user to configure required settings or to activate certain system features.

The CMOS SETUP saves the configuration in the CMOS RAM of the motherboard. When the power is turned off, the battery on the board supplies the necessary power to the CMOS RAM.

When the power is turned on, press the <Del> button during the BIOS POST (Power-On Self Test) will take you to the CMOS SETUP screen.

CONTROL KEYS	
< ↑ >< ↓ >< ← >< → >	Move to select item
<Enter>	Select Item
<Esc>	Main Menu - Quit and not save changes into CMOS
	Sub Menu - Exit current page and return to Main Menu
<Page Up/+>	Increase the numeric value or make changes
<Page Down/->	Decrease the numeric value or make changes
<F1>	General help, for Setup Sub Menu
<F2>	Item Help
<F5>	Load Previous Values
<F7>	Load Optimized Default
<F10>	Save all CMOS changes

3.2.1 Main Menu

Press <Del> to enter AwardBIOS CMOS Setup Utility, the Main Menu will appear on the screen. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

```
              Phoenix - AwardBIOS CMOS Setup Utility

   ▶ Standard CMOS Features          ▶ PC Health Status

   ▶ Advanced BIOS Features          ▶ Frequency/Voltage Control

   ▶ Advanced Chipset Features          Load Optimized Defaults

   ▶ Integrated Peripherals             Set Password

   ▶ Power Management Setup             Save & Exit Setup

   ▶ PnP/PCI Configurations            Exit Without Saving


   Esc : Quit        F9 : Menu in BIOS      ↑ ↓ → ←   : Select Item
   F10 : Save & Exit Setup

                    Time, Date, Hard Disk Type...
```

■ Standard CMOS Features
 This setup page includes all the items in standard compatible BIOS.

■ Advanced BIOS Features
 This setup page includes all the items of Award BIOS enhanced features.

■ Advanced Chipset Features
 This setup page includes all the items of Chipset configuration features.

■ Integrated Peripherals
 This setup page includes all onboard peripheral devices.

■ Power Management Setup
 This setup page includes all the items of Power Management features.

■ PnP/PCI Configurations
 This setup page includes PnP OS and PCI device configuration.

■ PC Health Status
 This setup page includes the system auto detect CPU and system temperature, voltage, fan speed.

■ Frequency/Voltage Control
 This setup page includes CPU host clock control, frequency ratio and voltage.

■ Load Optimized Defaults
 This setup page includes Load system optimized value, and the system would be in best performance configuration.

■ Set Password
 Establish, change or disable password.

■ Save & Exit Setup
 Save CMOS value settings to CMOS and exit BIOS setup.

■ Exit Without Saving
 Abandon all CMOS value changes and exit BIOS setup.

3.2.2 Standard CMOS Features

```
              Phoenix - AwardBIOS CMOS Setup Utility
                       Standard CMOS Features
┌──────────────────────────────────────────┬─────────────────────┐
│  Date (mm:dd:yy)         Fri, Jan 4 2008  │     Item Help       │
│  Time (hh:mm:ss)         11 :  8 :  9     ├─────────────────────┤
│                                           │ Menu Level    ►     │
│ ► IDE Channel 0 Master                    │                     │
│ ► IDE Channel 0 Slave                     │ Change the day, month,│
│                                           │ year and century    │
│  Video                   [EGA/VGA]        │                     │
│  Halt On                 [All Errors]     │                     │
│                                           │                     │
│  Base Memory                     1K       │                     │
│  Extended Memory                 1K       │                     │
│  Total Memory                  512K       │                     │
│                                           │                     │
│                                           │                     │
│                                           │                     │
│                                           │                     │
├───────────────────────────────────────────┴─────────────────────┤
│ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│            F5:Previous Values             F7: Optimized Defaults  │
└──────────────────────────────────────────────────────────────────┘
```

■ **Date**

The date format is <week>, <month>, <day>, <year>.

Week	From Sun to Sat, determined and display by BIOS only
Month	From Jan to Dec.
Day	From 1 to 31
Year	From 1999 through 2098

■ **Time**

The time format in <hours> <minutes> <seconds>, based on the 24-hour time

■ **IDE Channel 0 Master/Slave**

IDE HDD Auto-Detection Press "Enter" for automatic device detection.

■ **Halt on**

The item determines whether the computer will stop if an error is detected during power up.

No Errors	The system boot will not stop for any error
All Errors	Whenever the BIOS detects a non-fatal error the system will be stopped.
All, But Keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors. (Default value)
All, But Diskette	The system boot will not stop for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not stop for a keyboard or disk error; it will stop for al other errors.

■ **Base Memory**

The POST of the BIOS will determine the amount of base (or conventional) memory installed in the system.

■ **Extended Memory**

The POST of the BIOS will determine the amount of extended memory (above 1MB in CPU's memory address map) installed in the system.

■ **Total Memory**

This item displays the total system memory size.

3.2.3 Advanced BIOS Features
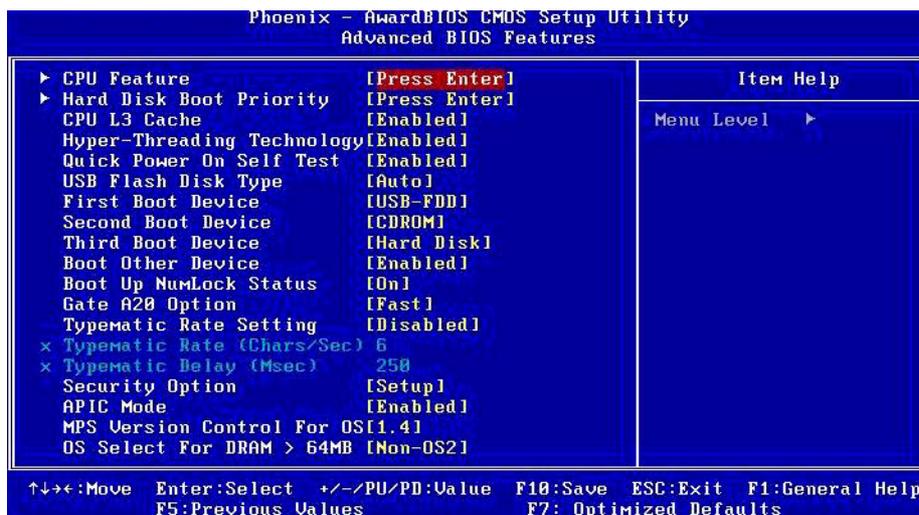
■ CPU Feature

This item allows user to adjust CPU features, CPU ratio, VID and Thermal and special feature like XD flag.

■ Hard Disk Boot Priority

This item allows user to select boot sequence for system device HDD, SCSI, RAID.

■ CPU L3 Cache [Enabled]

This item allows user to enable CPU L3 cache.

■ Hyper-Threading Technology [Enabled]

This item allows user to enable supported on the Intel® Pentium® 4 Processor with HT Technology.

■ Quick Power On Self Test[Enabled]

This field speeds up the Power-On Self Test (POST) routine by skipping retesting a second, third and forth time. Setup setting default is enabled.

■ First / Second / Third / Other Boot Drive

Hard Disk	Select boot device priority by Hard Disk.
CDROM	Select boot device priority by CDROM.
USB-FDD	Select boot device priority by USB-FDD.
USB-ZIP	Select boot device priority by USB-ZIP.
USB-CDROM	Select boot device priority by USB-CDROM.
LAN	Select boot device priority by LAN.
Disabled	Disable this boot function.

■ Boot Up NumLock Status[Enabled]

This item enables users to activate the Number Lock function upon system boot.

■ Gate A20 Option[Fast]

This item enables users to switch A20 control by port 92 or not.

■ Typematic Rate Setting

This item enables users to set the two typematic controls items.

This field controls the speed at

    – Typematic Rate (Chars/Sec)

      This item controls the speed at system registers repeated keystrokes.

      Eight settings are 6, 8, 10, 12, 15, 20, 24 and 30.

    – Typematic Delay (Msec)

      This item sets the time interval for displaying the first and second characters.

      Four delay rate options are 250, 500, 750 and 1000.

■ Security Option[Setup]

| System | System can not boot and can not access Setup page if the correct password is not entered at the prompt. |
| Setup | System will boot, but access to Setup if the correct password is not entered at the prompt. (Default value) |

■ APIC Mode[Enabled]

This item allows user to enable or disable "Advanced Programmable Interrupt Controller". APIC is implemented in the motherboard and must be supported by the operating system, and it extends the number of IRQ's available.

■ MPS Version Control for OS[1.4]

This item sets the operating system multiprocessor support version.

■ OS Select For DRAM > 64M[Non-OS2]

Select OS/2 only if system is running OS/2 operation system with greater than 64MB of RAM on the system

3.2.4 Advanced Chipset Features

```
           Phoenix - AwardBIOS CMOS Setup Utility
                  Advanced Chipset Features

   DRAM Timing Selectable    [By SPD]      ▲       Item Help
   CAS Latency Time          [Auto]
   DRAM RAS# to CAS# Delay   [Auto]           Menu Level    ▶
   DRAM RAS# Precharge       [Auto]
   Precharge dealy (tRAS)    [Auto]
   System Memory Frequency   [Auto]
   System BIOS Cacheable     [Enabled]
   Video  BIOS Cacheable     [Disabled]
   Memory Hole At 15M-16M    [Disabled]
 ▶ PCI Express Root Port Func[Press Enter]

   ** VGA Setting **
   PEG/Onchip VGA Control    [Auto]
   PEG Force X1              [Disabled]
   On-Chip Frame Buffer Size [ 8MB]
   DVMT Mode                 [DVMT]
   DVMT/FIXED Memory Size    [ 128MB]
   Boot Display             [CRT]
   Panel Type               [640X480 , 18bits] ▼

 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
           F5:Previous Values         F7: Optimized Defaults
```
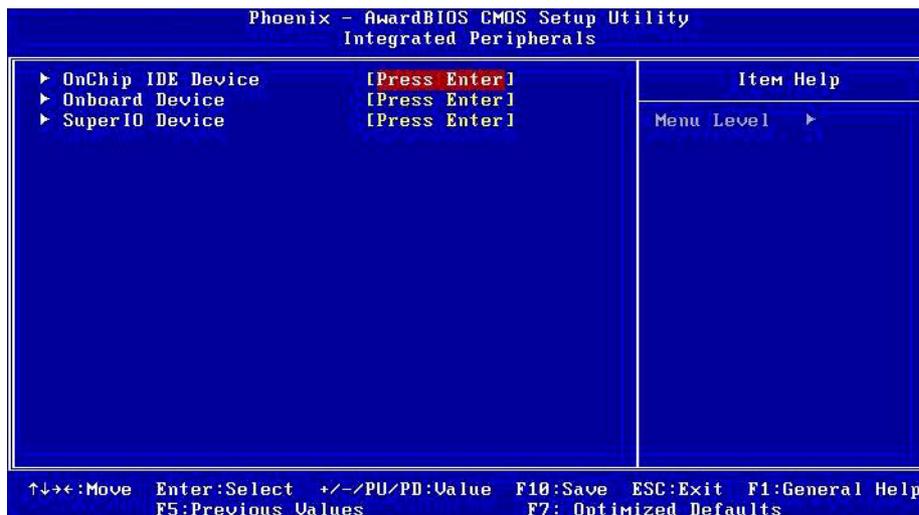
> **Note!** The "Advanced Chipset Features" option controls the configuration of the board's chipset. It is chipset independent, for controlling chipset register settings and fine tuning system performance. It is strongly recommended only technical users make changes to the default settings.

■ DRAM Timing Selectable[By SPD]

This item enables users to set the optimal timings for items 2 through 5, system default setting of "By SPD" to follow the SPD information and ensure the system running in stable and optimal performance.

■ CAS Latency Time[Auto]

This item enables users to set the timing delay in clock cycles before SDRAM start a read command after receiving it.

■ DRAM RAS# to CAS# Delay[Auto]

This item enables users to set the timing of the transition from RAS (row address strobe) to CAS (column address strobe) as both rows and column are separately addressed shortly after DRAM is refreshed.

■ DRAM RAS# Precharge[Auto]

This item enables users to set the DRAM RAS# precharge timing, system default is setting to "Auto" to reference the data from SPD ROM.

■ Prechage delay (tRAS)[Auto]

This item allows user to adjust memory precharge time.

■ System Memory Frequency [Auto]

This item allows user to adjust memory frequency to improvement performance.

■ System BIOS Cacheable[Enabled]

This item allows the system BIOS to be cached to allow faster execution and better performance.

■ Video BIOS Cacheable[Disabled]

This item allows the video BIOS to be cached to allow faster execution and better performance.

■ Memory Hole At 15 M-16 M[Disabled]

This item reserves 15 MB-16 MB memory address space to ISA expansion cards that specifically require the setting. Memory from 15MB-16MB will be

unavailable to the system because only the expansion cards can access memory at this area.

■ PCI Express Root port Func [Press Enter]
This item allows the user to adjust PCIE port on, off or auto.

■ PEG/Onboard VGA Control [Auto]
This item allows the user to select whether there is an onboard graphics processor or a PCI Express card.

■ PEG Force X1 [Disabled]
This item allows the user to convert a PCI Express X16 slot to PCI Express X1 slot.

■ On-Chip Frame Buffer Size [8 MB]
This item allows the user to adjust on-chip graphics of memory buffer.

■ DVMT Mode [DVMT]
This item allows the user to adjust Intel's Dynamic Video Memory Technology (DVMT). Bios provides three option to choose (DVMT,FIXED and Both).

■ DVMT/FIXED Memory Size [128 MB]
This item allows the user to adjust DVMT/FIXED graphics memory size.

■ Boot Display [CRT]
This item allows the user to decide the display mode.

■ Panel Type [640X480]
This item allows the user to adjust panel resolution.

3.2.5 Integrated Peripherals

```
            Phoenix - AwardBIOS CMOS Setup Utility
                    Integrated Peripherals

  ▶ OnChip IDE Device          [Press Enter]        │    Item Help
  ▶ Onboard Device             [Press Enter]        │
  ▶ SuperIO Device             [Press Enter]        │  Menu Level    ▶



  ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
           F5:Previous Values                 F7: Optimized Defaults
```

> **Note!** The "Integrated Peripherals" option controls the configuration of the board's chipset, includes IDE, ATA, SATA, USB, AC97, MC97 and Super IO and Sensor devices. It is chipset independent.

- **OnChip IDE Device**
  This item enables users to set the OnChip IDE device status, including enable IDE devices and setting PIO and DMA access mode; some new chipsets also support SATA devices (Serial-ATA).

- **Onboard Device**
  This item enables users to set the Onboard device status, including enable USB, AC97, MC97 and LAN devices.
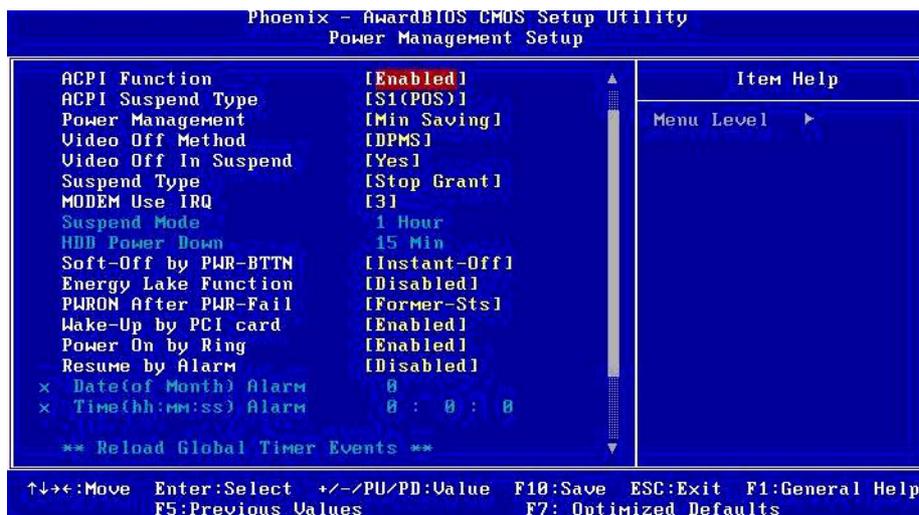
- **Super IO Device**
  This item enables users to set the Super IO device status, including enable Floppy, COM, LPT, IR and control GPIO and Power fail status.

```
            Phoenix - AwardBIOS CMOS Setup Utility
                       SuperIO Device

  Onboard Serial Port 1     [3F8]           ▲  │    Item Help
  Serial Port 1 Use IRQ     [IRQ3]             │
  Onboard Serial Port 2     [2F8]              │  Menu Level    ▶▶
  Serial Port 2 Use IRQ     [IRQ4]             │
  Onboard Parallel Port     [378/IRQ7]         │
  Parallel Port Mode        [Standard]         │
  ECP Mode Use DMA          [3]                │
  WDT Time-out Value Unit   [Minutes]          │
  WDT Time-out Value        [00]               │
  Serial Port 3             [3E8]              │
  Serial 3 IRQ              [IRQ5]             │
  Serial Port 4             [2E8]              │
  Serial 4 IRQ              [IRQ7]             │
  Serial Port 5             [4E8]              │
  Serial 5 IRQ              [IRQ10]            │
  Serial Port 6             [4F8]              │
  Serial 6 IRQ              [IRQ11]            │
  COM3 Mode                 [RS232]           │
  COM4 Mode                 [RS232]        ▼  │

  ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
           F5:Previous Values                 F7: Optimized Defaults
```

- **Onboard Serial port 1 [3F8]**
  This item allows user to adjust serial port 1 address.

- Serial port 1 Use IRQ[IRQ3]

  This item allows user to adjust serial port 1 of IRQ.
- Onboard Serial port 2 [2F8]

  This item allows user to adjust serial port 2 of address.
- Serial port 2 Use IRQ[IRQ4]

  This item allows user to adjust serial port 2 of IRQ.
- Onboard Parallel Port [378/IRQ7]

  This item allows user to adjust parallel port of address and irq.
- Parallel Port Mode [Standard]

  This item allows user to adjust parallel port mode.
- ECP Mode Use DMA[3]

  This item allows user to adjust ECP DMA resource.
- Serial port 3 [3E8]

  This item allows user to adjust serial port 3 of address.
- Serial 3 IRQ[IRQ5]

  This item allows user to adjust serial port 3 of IRQ.
- Serial port 4 [2E8]

  This item allows user to adjust serial port 4 of address.
- Serial 4 IRQ[IRQ7]

  This item allows user to adjust serial port 4 of IRQ.
- Serial port 5 [4E8]

  This item allows user to adjust serial port 5 of address.
- Serial 5 IRQ[IRQ10]

  This item allows user to adjust serial port 5 of IRQ.
- Serial port 6 [4F8]

  This item allows user to adjust serial port 6 of address.
- Serial 6 IRQ[IRQ11]

  This item allows user to adjust serial port 6 of IRQ.
- COM3 Mode [RS-232]

  This item allows user to adjust UART mode. BIOS provides a choice of three items (RS-232, RS-422 and RS-485).
- COM4 Mode [RS-232]

  This item allows user to adjust UART mode. BIOS provides a choice of three items (RS-232, RS-422 and RS-485).

3.2.6 Power Management Setup

```
          Phoenix - AwardBIOS CMOS Setup Utility
                   Power Management Setup

  ACPI Function            [Enabled]        ▲       Item Help
  ACPI Suspend Type        [S1(POS)]
  Power Management         [Min Saving]          Menu Level  ▶
  Video Off Method         [DPMS]
  Video Off In Suspend     [Yes]
  Suspend Type             [Stop Grant]
  MODEM Use IRQ            [3]
  Suspend Mode             1 Hour
  HDD Power Down           15 Min
  Soft-Off by PWR-BTTN     [Instant-Off]
  Energy Lake Function     [Disabled]
  PWRON After PWR-Fail     [Former-Sts]
  Wake-Up by PCI card      [Enabled]
  Power On by Ring         [Enabled]
  Resume by Alarm          [Disabled]
 x Date(of Month) Alarm       0
 x Time(hh:mm:ss) Alarm       0 :  0 :  0

  ** Reload Global Timer Events **              ▼

 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
           F5:Previous Values           F7: Optimized Defaults
```

Note! The "Power Management Setup" option configure systems to most effectively save energy while operating in a manner to support your style of computer usage.

■ ACPI Function [Enabled]

This item defines the ACPI (Advanced Configuration and Power Management) feature that makes hardware status information available to the operating system, and communicates to PC and system devices for improving power management.

■ ACPI Suspend Type [S1 (POS)]

This item allows user to select sleep state when suspended.

S1(POS)   The suspend mode is equivalent to a software power down;
S3(STR)   The system shuts down with the exception of a refresh current to the system memory.

■ Power Management [Min Saving]

This item allows user to select system power saving mode.

Min Saving   Minimum power management. Suspend Mode=1 hr.
Max Saving   Maximum power management. Suspend Mode=1 min.
User Define   Allows user to set each mode individually. Suspend

Mode= Disabled or 1 min. ~1 hr.

■ Video Off Method [DPMS]

This item allows user to determine the manner in which the monitor is blanked.
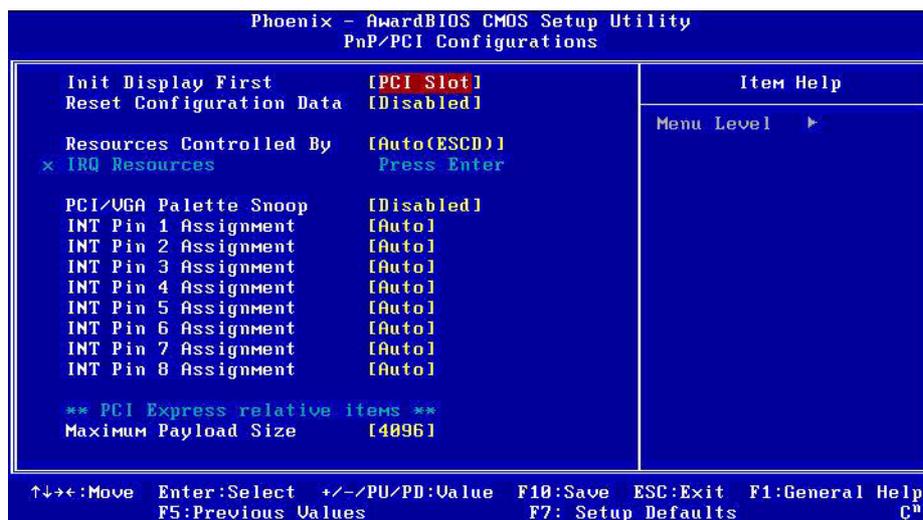
V/H SYNC+Blank This option will cause system to turn off vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen   This option only writes blanks to the video buffer.
DPMS   Initial display power management signaling.

■ Video Off In Suspend [Yes]

This item allows user to turn off Video during system enter suspend mode.

■ Suspend Type [Stop Gran]

This item allows user to determine the suspend type.

- Modem use IRQ [3]

  This item allows user to determine the IRQ which the MODEM can use.
- Suspend Mode [1 Hour]

  This item allows user to determine the time of system inactivity, all devices except the CPU will be shut off.
- HDD Power Down Mode[15 Min]

  This item allows user to determine the time for system inactivity, the hard disk drive will be powered down.
- Soft-Off by PWR-BTTN[Instant-Off]

  This item allows user to define functions to the power button.

  Instant-Off Press power button then Power off instantly.

  Delay 4 Sec Press power button 4 sec. to Power off.
- PWRON After PWR-Fail [Former-Sts]

  This item allows user to select power fail function, The functions depends on chipset design.
- Wake-Up by PCI card [Enabled]

  This item allows user to define PCI cards to wake up the system from suspend mode.
- Power On by Ring [Enabled]

  This item allows user to define the system will resume by activating of modem ring.
- Resume by Alarm [Disabled]

  This item allows user to enable and key in Date/time to power on system

  Disabled Disable this function.

  Enabled Enable alarm function to power on system

  Data (of month) Alarm 1-31

  Time (HH:MM:SS) Alarm (0-23): (0-59): 0-59)
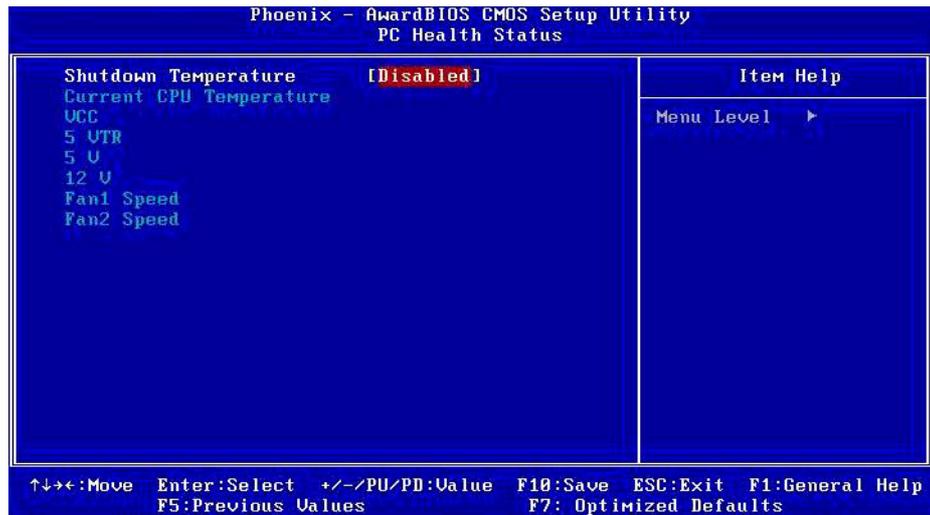
3.2.7 PnP/PCI Configurations

```
         Phoenix - AwardBIOS CMOS Setup Utility
                 PnP/PCI Configurations
┌──────────────────────────────────────┬─────────────────────┐
│  Init Display First      [PCI Slot]   │     Item Help       │
│  Reset Configuration Data [Disabled]  │                     │
│                                       │  Menu Level  ▶      │
│  Resources Controlled By  [Auto(ESCD)]│                     │
│ x IRQ Resources            Press Enter│                     │
│                                       │                     │
│  PCI/VGA Palette Snoop    [Disabled]  │                     │
│  INT Pin 1 Assignment     [Auto]      │                     │
│  INT Pin 2 Assignment     [Auto]      │                     │
│  INT Pin 3 Assignment     [Auto]      │                     │
│  INT Pin 4 Assignment     [Auto]      │                     │
│  INT Pin 5 Assignment     [Auto]      │                     │
│  INT Pin 6 Assignment     [Auto]      │                     │
│  INT Pin 7 Assignment     [Auto]      │                     │
│  INT Pin 8 Assignment     [Auto]      │                     │
│                                       │                     │
│  ** PCI Express relative items **     │                     │
│  Maximum Payload Size     [4096]      │                     │
│                                       │                     │
├──────────────────────────────────────┴─────────────────────┤
│ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│         F5:Previous Values       F7: Setup Defaults            Çⁿ             │
└─────────────────────────────────────────────────────────────┘
```

> **Note!** The "PnP/PCI Configurations" option is for setting up the IRQ and DMA (both PnP and PCI bus assignments).

- **Init Display First [PCI Slot]**
  This item is for setting start up for Video output from PCI or Onboard device.
- **Reset Configuration Data [Disabled]**
  This item allows user to clear any PnP configuration data stored in the BIOS.
- **Resources Controlled By [Auto (ESCD)]**
  – IRQ Resources
    This item allows you to respectively assign an interrupt type for IRQ-3, 4, 5, 7, 9, 10, 11, 12, 14, and 15.
  – DMA Resources
    This item allows you to respectively assign an interrupt type for DMA, 0, 1, 2, 3, 4, 5, 6, and 7.
- **PCI VGA Palette Snoop [Disabled]**
  The item is designed to solve problems caused by some non-standard VGA cards. A built-in VGA system does not need this function.
- **INT Pin 1~8 Assignment [Auto]**
  The interrupt request (IRQ) line assigned to a device connected to the PCI interface on your system.
- **Maximum payload Size [4096]**
  The item allows user to adjust maximum TLP (Transaction Layer Packet) payload size.

3.2.8 PC Health Status

```
        Phoenix - AwardBIOS CMOS Setup Utility
                   PC Health Status
┌──────────────────────────────────────┬──────────────────────┐
│  Shutdown Temperature    [Disabled]   │      Item Help       │
│  Current CPU Temperature              │                      │
│  VCC                                  │  Menu Level    ►     │
│  5 VTR                                │                      │
│  5 V                                  │                      │
│  12 V                                 │                      │
│  Fan1 Speed                           │                      │
│  Fan2 Speed                           │                      │
│                                       │                      │
│                                       │                      │
│                                       │                      │
│                                       │                      │
│                                       │                      │
├──────────────────────────────────────┴──────────────────────┤
│ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│        F5:Previous Values              F7: Optimized Defaults  │
└──────────────────────────────────────────────────────────────┘
```

> *Note!* The "PC Health Status" option controls the Thermal, FAN and Voltage status of the board. It is chipset independent.

- Current CPU Temperature [Show Only]
  This item displays current CPU temperature.
- FAN 1 / FAN2 Speed [Show Only]
  This item displays current system FAN speed.
- VCC/ 5 VTR/ 5 V/ 12 V [Show Only]
  This item displays current CPU and system Voltage.

3.2.9 Frequency/Voltage Control
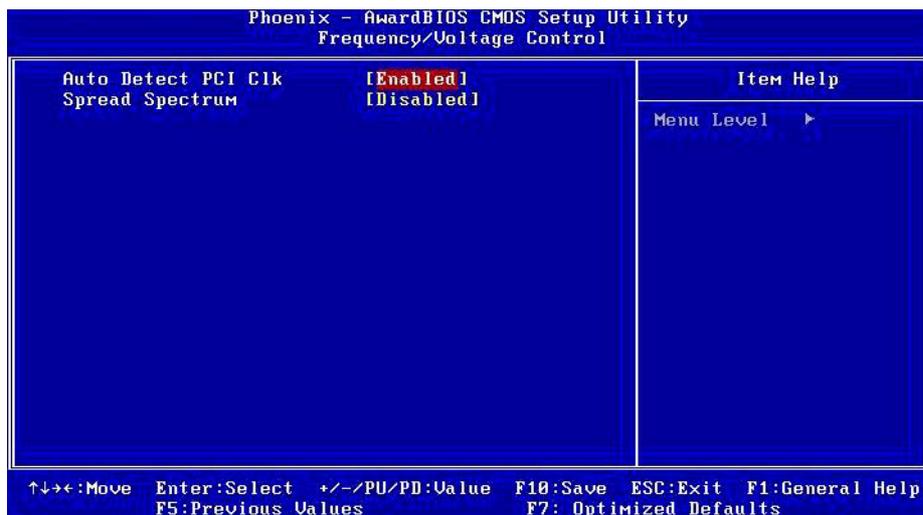
> **Note!** The "Frequency/Voltage Control" option controls the CPU Host and PCI frequency. The settings on this page are CPU and chipset independent. Some items are displayed when you install a processor which supports this function.

- Auto Detect PCI Clk [Enabled]
  This item enables user to set the PCI Clk by system automatic detection or manually.
- Spread Spectrum [Disabled]
  This item enables users to set the spread spectrum modulation.

3.2.10 Load Optimized Defaults
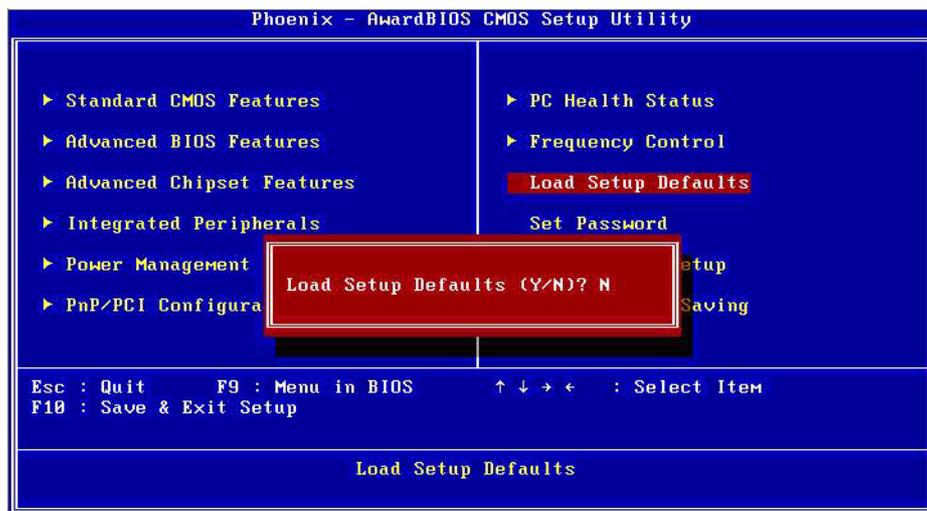
Note!

Load Optimized Defaults reloads the default system values directly from ROM if the stored record created by the setup program should ever become corrupted (and therefore unusable).

These defaults will load automatically when you turn PCM-9382 on.

3.2.11 Set Password
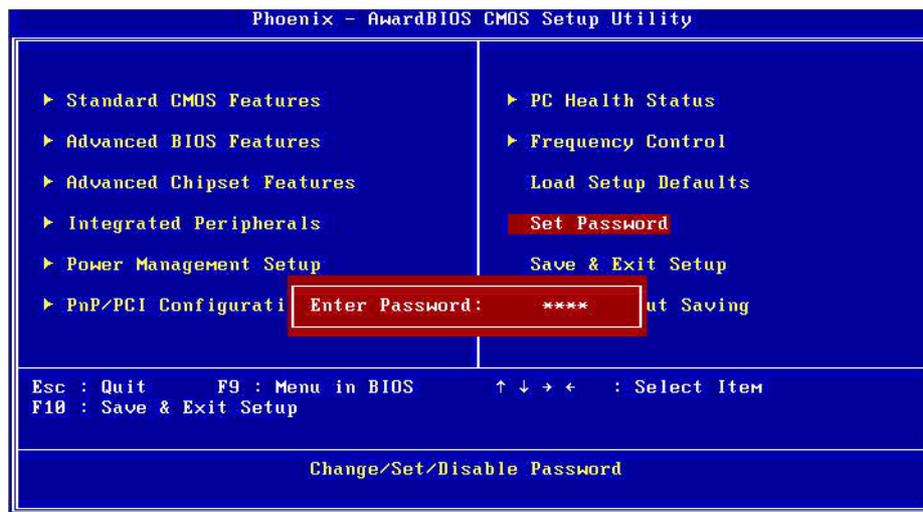
Note! To enable this feature, you should first go to the Advanced BIOS Features menu, choose the Security Option, and select either Setup or System, depending on which option you want password protected. Setup requires a password only to enter Setup. System requires the password either to enter Setup or to boot the system. A password may be at most 8 characters long.

To Establish Password:
1. Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.
2. When you see "Enter Password", enter the desired password and press <Enter>.
3. At the "Confirm Password" prompt, retype the desired password, then press <Enter>.
4. Select Save to CMOS and EXIT, type <Y>, then <Enter>.

To Change Password:
1. Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.
2. When you see "Enter Password", enter the existing password and press <Enter>.
3. You will see "Confirm Password". Type it again, and press <Enter>.
4. Select Set Password again, and at the "Enter Password" prompt, enter the new password and press <Enter>.
5. At the "Confirm Password" prompt, retype the new password, and press <Enter>.
6. Select Save to CMOS and EXIT, type <Y>, then <Enter>.

To Disable Password

1. Choose the Set Password option from the CMOS Setup Utility main menu and press <Enter>.
2. When you see "Enter Password", enter the existing password and press <Enter>.
3. You will see "Confirm Password". Type it again, and press <Enter>.
4. Select Set Password again, and at the "Enter Password" prompt, please don't enter anything; just press <Enter>.
5. At the "Confirm Password" prompt, again, don't type in anything; just press <Enter>.
6. Select Save to CMOS and EXIT, type <Y>, then <Enter>.

3.2.12 Save & Exit Setup

```
          Phoenix - AwardBIOS CMOS Setup Utility

    ▶ Standard CMOS Features        ▶ PC Health Status

    ▶ Advanced BIOS Features        ▶ Frequency Control

    ▶ Advanced Chipset Features        Load Setup Defaults

    ▶ Integrated Peripherals           Set Password

    ▶ Power Management   ┌──────────────────────────┐ Setup
                         │ SAVE to CMOS and EXIT (Y/N)? Y │
    ▶ PnP/PCI Configura  │                          │ Saving
                         └──────────────────────────┘

    Esc : Quit      F9 : Menu in BIOS      ↑ ↓ → ←   : Select Item
    F10 : Save & Exit Setup

                    Save Data to CMOS
```
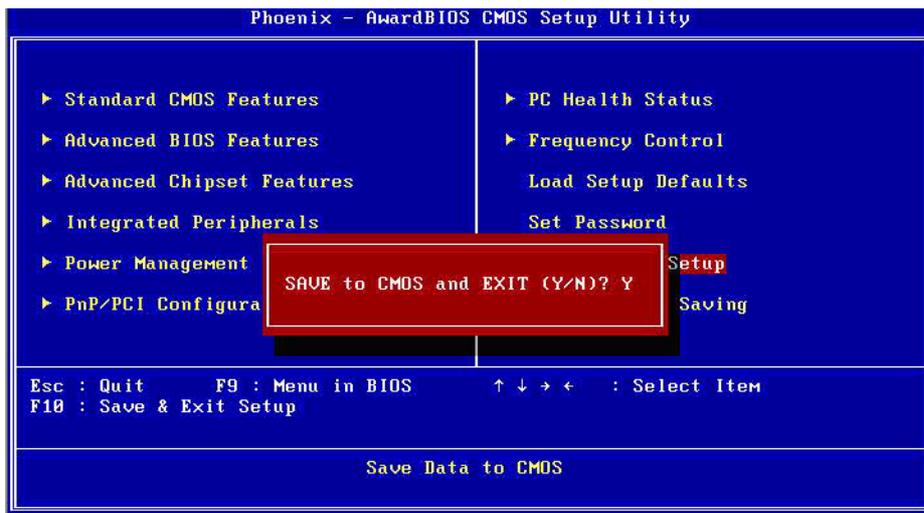
> **Note!**   Type "Y" will quit the BIOS Setup Utility and save user setup value to CMOS.
>
> Type "N" will return to BIOS Setup Utility.

3.2.13 Quit Without Saving

```
          Phoenix - AwardBIOS CMOS Setup Utility

    ▶ Standard CMOS Features        ▶ PC Health Status

    ▶ Advanced BIOS Features        ▶ Frequency Control

    ▶ Advanced Chipset Features        Load Setup Defaults

    ▶ Integrated Peripherals           Set Password

    ▶ Power Management S ┌──────────────────────────┐ Setup
                         │ Quit Without Saving (Y/N)? N │
    ▶ PnP/PCI Configurat │                          │ t Saving
                         └──────────────────────────┘

    Esc : Quit      F9 : Menu in BIOS      ↑ ↓ → ←   : Select Item
    F10 : Save & Exit Setup

                    Abandon all Data
```
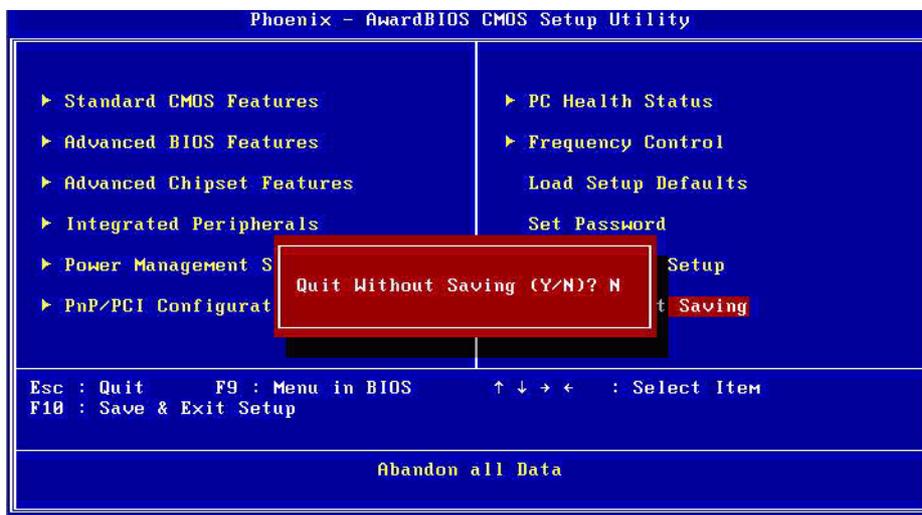
> **Note!**   Type "Y" will quit the BIOS Setup Utility without saving to CMOS.
>
> Type "N" will return to BIOS Setup Utility.

Chapter 4

S/W Introduction & Installation

Sections include:
- S/W Introduction
- Driver Installation
- SUSI Application Library

4.1 S/W Introduction

The mission of Advantech Embedded Software Services is to "Enhance quality of life with Advantech platforms and Microsoft Windows embedded technology". We enable Windows® Embedded software products on Advantech platforms to more effectively support the embedded computing community. Customers are freed from the hassle of dealing with multiple vendors (Hardware suppliers, System integrators, Embedded OS distributor) for projects. Our goal is to make Windows® Embedded Software solutions easily and widely available to the embedded computing community.

4.2 Driver Installation

4.2.1 Windows XP Professional

To install the drivers for Windows XP Professional, insert the CD into the CD-Rom, it will auto-detect the hardware platform and the "Embedded Computing Install Wizard" box will pop up; select the drivers that you want to install and click "Install All Selected Drivers". Follow the Driver Setup Wizard instructions; click "Next" to complete the installation.

4.2.2 Other OSs

To install the drivers for Other Windows OSs or Linux, please browse the CD to run the setup file under each chipset folder on the CD-ROM.

4.3   SUSI Application Library

4.3.1   SUSI Introduction

To make hardware easier and provide more convenient access for programmers, Advantech has released a suite of APIs (Application Programming Interface) in the form of a program library. The program library is called Secured and Unified Smart Interface or SUSI for short.

In modern operating systems, user space applications cannot access hardware directly. Drivers are required to access hardware. User space applications access hardware through drivers. Different operating systems usually define different interfaces for drivers. This means that user space applications call different functions for hardware access in different operating systems. To provide a uniform interface for accessing hardware, an abstraction layer is built on top of the drivers and SUSI is such an abstraction layer. SUSI provides a uniform API for application programmers to access the hardware functions in different Operating Systems and on different Advantech hardware platforms.

Application programmers can invoke the functions exported by SUSI instead of calling the drivers directly. The benefit of using SUSI is portability. The same set of APIs is defined for different Advantech hardware platforms. Also, the same set of APIs is implemented in different Operating Systems including Windows XP and Windows CE. This user's manual describes some sample programs and the API in SUSI. The hardware functions currently supported by SUSI can be grouped into a few categories including Watchdog, I2C, SMBus, GPIO, and VGA control. Each category of API in SUSI is briefly described below.

4.3.2   SUSI Functions

4.3.2.1   The GPIO API

General Purpose Input/Output (GPIO) is a flexible parallel interface that allows a variety of custom connections, and supports digital I/O devices.

4.3.2.2   The I^{2}C API

I^{2}C is a bi-directional two-wire bus that was developed by Philips for use in their televisions in the 1980s and nowadays is used in various types of embedded systems.

The strict timing requirements defined in the I^{2}C protocol has been taken care of by SUSI. Instead of asking application programmers to figure out the strict timing requirements in the I^{2}C protocol, the I^{2}C API in SUSI can be used to control I^{2}C devices by invoking other function calls. SUSI provides a consistent programming interface for different Advantech boards. This means that user programs using SUSI are portable among different Advantech boards as long as the boards and SUSI provide the required functionalities. Overall product development times can be greatly reduced using SUSI.

4.3.2.3   The SMBus API

The System Management Bus (SMBus) is a two-wire interface defined by Intel Corporation in 1995. It is based on the same principles of operation of I^{2}C and is used in personal computers and servers for low-speed system management communications. Nowadays, it can be seen in many types of embedded systems. As with other APIs in SUSI, the SMBus API is available on many platforms including Windows XP and Windows CE.

4.3.2.4 The VGA Control API

There are two kinds of VGA control APIs, backlight on/off control and brightness control. Backlight on/off control allows a developer to turn on or off the backlight, and to control brightness smoothly.

4.3.2.5 The Watchdog API

A watchdog timer (abbreviated as WDT) is a hardware device which triggers an action, e.g. rebooting the system, if the system does not reset the timer within a specific period of time. The WDT API in SUSI provides developers with functions such as starting the timer, resetting the timer, and setting the timeout value if the hardware requires customized timeout values.

4.3.2.6 The Hardware Monitor API

The hardware monitor (abbreviated as HWM) is a system health supervision capability achieved by placing certain I/O chips along with sensors for inspecting the target of interests for certain condition indexes, such as fan speed, temperature and voltage etc.

However, due to the inaccuracy among many commercially available hardware monitoring chips, Advantech has developed a unique scheme for hardware monitoring - achieved by using a dedicated micro-processor with algorithms specifically designed for providing accurate, real-time and reliable data content; helping protect your system in a more reliable manner

4.3.3 SUSI Installation

SUSI supports many different operating systems. Each subsection below describes how to install SUSI and related software on a specific operating system. Please refer to the subsection matching your operating system.

4.3.3.1 Windows XP

In Windows XP, you can install the library, drivers and demo programs onto the platform easily using the installation tool - The SUSI Library Installer. After the installer has executed, the SUSI Library and related files for Windows XP can be found in the target installation directory. The files are listed in the following table.

Directory	Contents
\Library	■ Susi.lib Library for developing the applications on Windows XP. ■ Susi.dll Dynamic library for SUSI on Windows XP.
\Demo	■ SusiDemo.EXE Demo program on Windows XP. ■ Susi.dll Dynamic library for SUSI on Windows XP.
\Demo\SRC	Source code of the demo program on Windows XP.

The following section illustrates the installation process.

> **Note!** *The version of the SUSI Library Installer shown on each screen shot below depends on your own particular version.*

1. Extract Susi.zip.
2. Double-click the "Setup.exe" file.

The installer searches for a previous installation of the SUSI Library. If it locates one, a dialog opens asking whether you want to modify, repair or remove the software. If it is not located, the dialog asks you to proceed by clicking "Next".

4.3.4 SUSI Sample Programs

4.3.4.1 Sample Programs

The sample programs demonstrate how to incorporate SUSI into your program. There are sample programs for two categories of operating system, i.e. Windows XP and Windows CE. The sample programs run in graphics mode in Windows XP and Windows CE. The sample programs are described in the subsections below.

4.3.4.2 Windows Graphics Mode

There are sample programs of Windows in graphics mode for two categories of operating system, i.e. Windows CE and Windows XP. Each demo application contains an executable file SusiDemo.exe, a shared library Susi.dll and source code within the release package. The files of Windows CE and Windows XP are not compatible with each other.

SusiDemo.exe is an executable file and it requires the shared library, Susi.dll, to demonstrate the SUSI functions. The source code of SusiDemo.exe also has two versions, i.e. Windows CE and Windows XP, and must be compiled under Microsoft Visual C++ 6.0 on Windows XP or under Microsoft Embedded Visual C++ 4.0 on Windows CE. Developers must add the header file Susi.h and library Susi.lib to their own projects when they want to develop something with SUSI.

4.3.4.3 SusiDemo.exe

The SusiDemo.exe test application is an application which uses all functions of the SUSI Library. It has five major function blocks: Watchdog, GPIO, SMBus, I2C and VGA control. The following screen shot appears when you execute SusiDemo.exe. You can click function tabs to select test functions respectively. Some function tabs will not show on the test application if your platform does not support such functions. For a complete support list, please refer to Appendix A where steps to test all functions of this application are described.
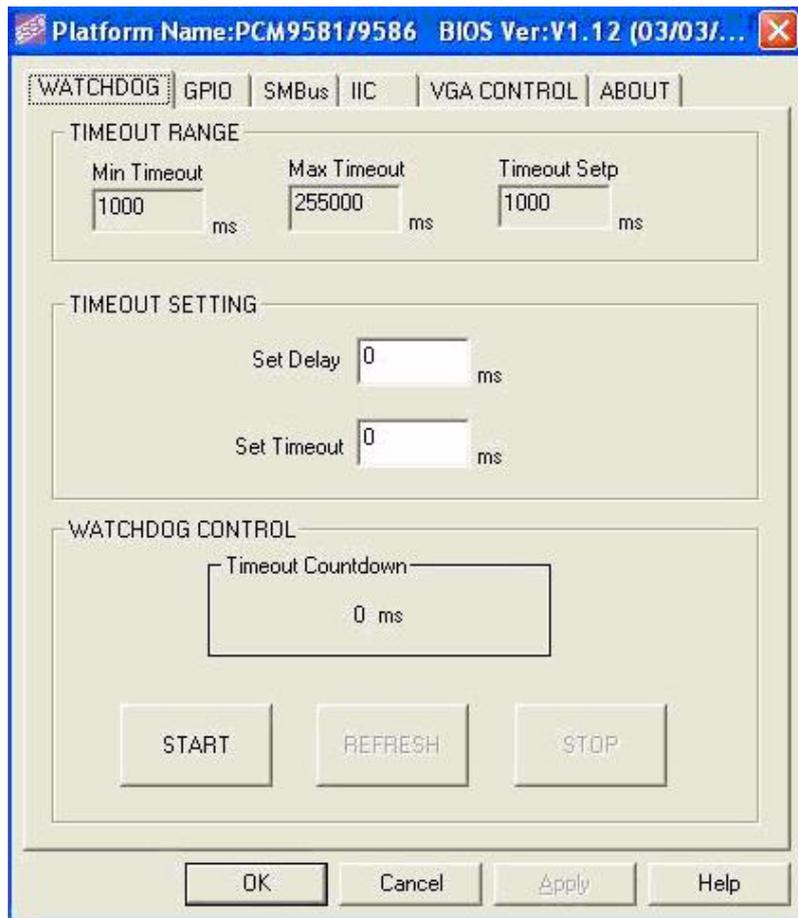
4.3.4.4 GPIO
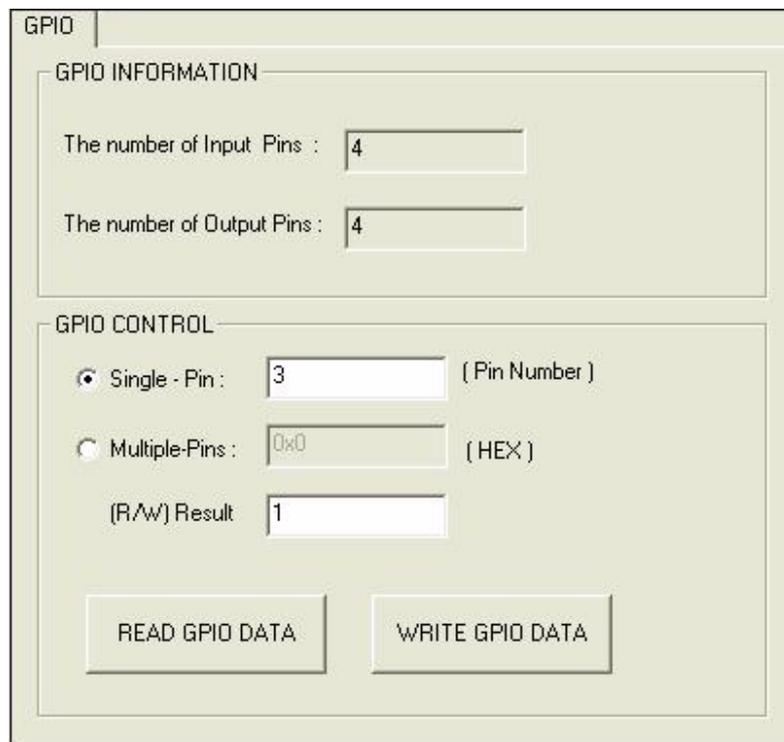
When the application is executed, it will display GPIO information in the GPIO INFORMATION group box. It displays the number of input pins and output pins. You

can click the radio button to choose to test either the single pin function or multiple pin functions. The GPIO pin assignments of the supported platforms are located in Appendix B.

■ Test Read Single Input Pin
  – Click the radio button- Single-Pin.
  – Key in the pin number to read the value of the input pin. The Pin number starts from '0'.
  – Click the READ GPIO DATA button and the status of the GPIO pin will be displayed in (R/W) the Result field.

■ Test Read Multiple Input Pin
  – Click the radio button- Multiple-Pins.
  – Key in the pin number from '0x01' to '0x0F' to read the value of the input pin. The pin numbers are ordered bitwise, i.e. bit 0 stands for GPIO 0, bit 1 stands for GPIO 1, etc. For example, if you want to read pin 0, 1, and 3, the pin numbers should be '0x0B'.
  – Click READ GPIO DATA button and the statuses of the GPIO pins will be displayed in (R/W) Result field.

■ Test Write Single Output Pin
  – Click the radio button- Single-Pin.
  – Key in the pin numbers you want to write. Pin numbers start from '0'.
  – Key in the value either '0' or '1' in (R/W) the Result field to write the output pin you chose above step.
  – Click the WRITE GPIO DATA button to write the GPIO output pin.

■ Test Write Multiple Output Pins
  – Click the radio button- Multiple-Pins.
  – Key in the pin number from '0x01' to '0x0F' to choose the multiple pin numbers to write the value of the output pin. The pin numbers are ordered bitwise, i.e. bit 0 stands for GPIO 0, bit 1 stands for GPIO 1, etc. For example, if you want to write pin 0, 1, and 3, the pin numbers should be '0x0B'.
  – Key in the value in (R/W) the Result field from '0x01' to '0x0F' to write the value of the output pin. The pin numbers are ordered bitwise, i.e. bit 0 stands for GPIO 0, bit 1 stands for GPIO 1, etc. For example, if you want to set pin 0 and 1 high, 3 to low, the pin number should be '0x0B', and then you should key in the value '0x0A' to write.
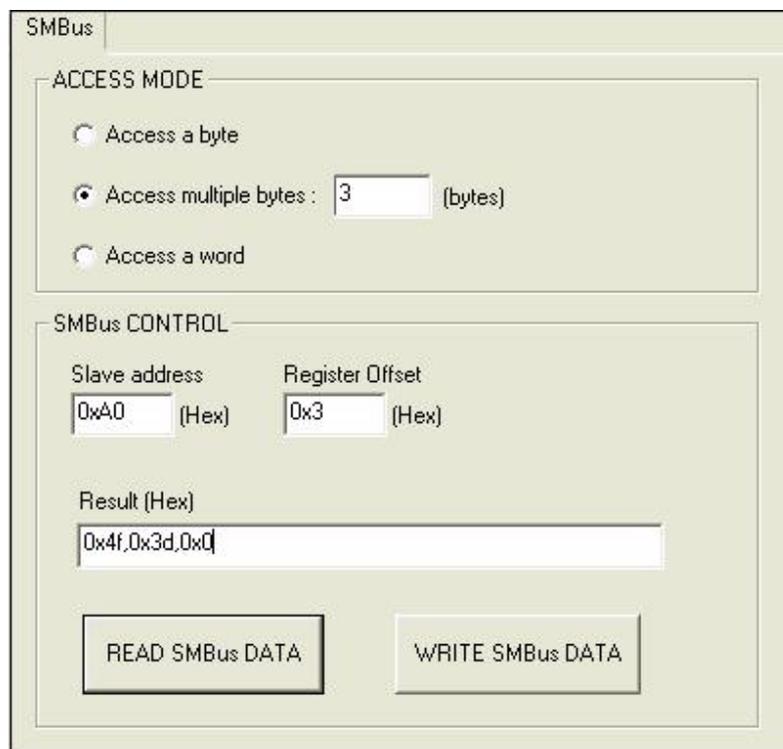 – Click the WRITE GPIO DATA button to write the GPIO output pins.

4.3.4.5 I²C

When the application is executed, you can read or write a byte of data through I^{2}C devices. All data must be read or written in hexadecimal.

- ■ Read a byte
  - Key in the slave device address in the Slave address field.
  - Key in the register offset in the Register Offset field.
  - Click the READ A BYTE button and then a byte of data from the device will be shown on the Result field.
- ■ Write a byte
  - Key in the slave device address in the Slave address field.
  - Key in the register offset in the Register Offset field.
  - Key in the desired data in the Result field to write to the device.
  - Click the WRITE A BYTE button and then the data will be written to the device through I2C.

4.3.4.6 SMBus

When the application has executed, you can click the radio button to choose to test each access mode, i.e. Access a byte, Access multiple bytes and Access a word. All data must be read or written in hexadecimal except the numbers for radio button: Access multiple bytes mode must be written in decimal. You can test the functionalities of the watchdog as follows:

- ■ Read a byte
  - Click the radio button- Access a byte.
  - Key in the slave device address in the Slave address field.
  - Key in the register offset in the Register Offset field.
  - Click the READ SMBus DATA button and a byte of data from the device will be shown on the Result field.
- ■ Write a byte
  - Click the radio button- Access a byte.

– Key in the slave device address in the Slave address field.

– Key in the register offset in the Register Offset field.

– Key the desired data in the Result field to write to the device.

– Click the WRITE SMBus DATA button and the data will be written to the device through SMBus.

■ Read a word

– Click the radio button- Access a word.

– Key in the slave device address in the Slave address field.

– Key in the register offset in the Register Offset field.

– Click the READ SMBus DATA button and then a word of data from the device will be shown on the Result field.

■ Write a word

– Click the radio button- Access a word.

– Key in the slave device address in the Slave address field.

– Key in the register offset in the Register Offset field.

– Key in the desired data, such as 0x1234, in the Result field to write to the device.

– Click the WRITE SMBus DATA button and the data will be written to the device through the SMBus.

■ Read Multiple bytes

– Click the radio button- Access multiple bytes.

– Key in the slave device address in the Slave address field.

– Key in the register offset in the Register Offset field.

– Key in the desired number of bytes, such as 3, in the right side field of radio button- Access multiple bytes. The number must be written in decimal.

– Click the READ SMBus DATA button and then all data from the device will be divided from each other by commas and be shown in the Result field.

■ Write Multiple bytes

– Click the radio button- Access multiple bytes.

– Key in the slave device address in the Slave address field.

– Key in the register offset in the Register Offset field.

– Key in the desired number of bytes, such as 3, in the right side field of the radio button- Access multiple bytes. The number must be written in decimal.

– Key in all the desired data in the Result field in hexadecimal format, divided by commas, for example, 0x50, 0x60, 0x7A.

– Click the WRITE SMBus DATA button and all of the data will be written to the device through the SMBus.

4.3.4.7 VGA Control
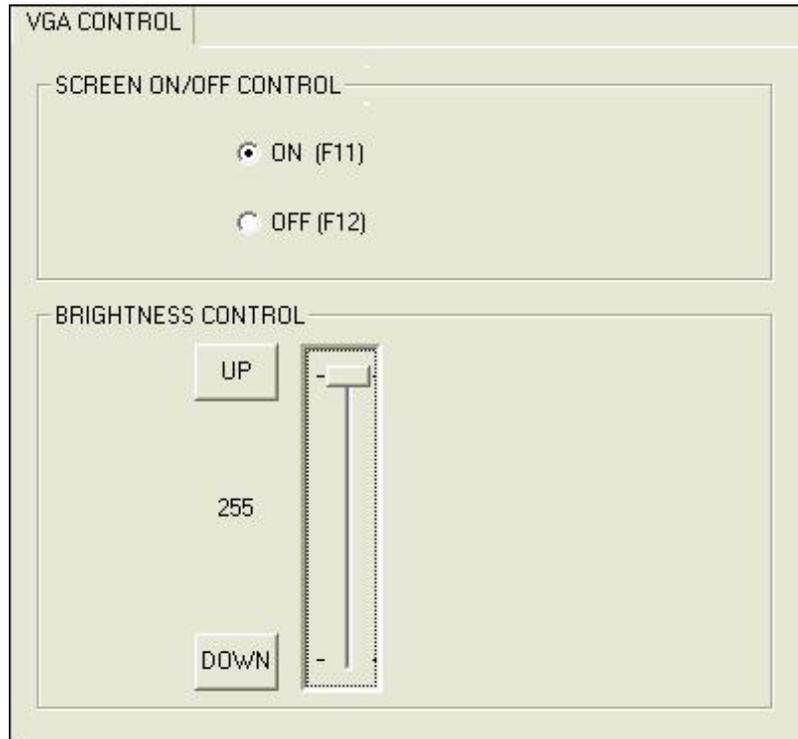
When the application is executed, it will display watchdog information in the WATCH-DOG INFORMATION group box. It displays max timeout, min timeout, and timeout steps in milliseconds. For example, a 1 ~ 255 second watchdog will have a maximum timeout of 255000, a minimum timeout of 1000 and 1000 timeout steps. You can test the functionality of the watchdog as follows:

■ Screen on/off control
   – Click the radio button ON or push the key F11 to turn on the panel screen.
   – Click the radio button OFF or push the key F12 to turn off the panel screen.
   – The display chip of your platform must be in the support list in Appendix A, or this function cannot work.

■ Brightness control
   – Move the slider in increments, using either the mouse or the direction keys, or click the UP button to increase the brightness.
   – Move the slider in decrements, using either the mouse or the direction keys, or click the DOWN button to decrease the brightness.

4.3.4.8 Watchdog

When the application is executed, it will display watchdog information in the WATCH-DOG INFORMATION group box. It displays max timeout, min timeout, and timeout steps in milliseconds. For example, a 1~255 seconds watchdog will has 255000 max timeout, 1000 min timeout, and 1000 timeout steps. You can test the functionality of the watchdog as follows:

■ Set the timeout value 3000 (3 sec.) in the SET TIMEOUT field and set the delay value 2000 (2 sec.) in the SET DELAY field, then click the START button. The Timeout Countdown field will countdown the watchdog timer and display 5000 (5 sec.).

■ Before the timer counts down to zero, you can reset the timer by clicking the REFRESH button. After you click this button, the Timeout Countdown field will display the value of the SET TIMEOUT field.

■ If you want to stop the watchdog timer, just click the STOP button.

4.3.4.9 Hardware Monitor
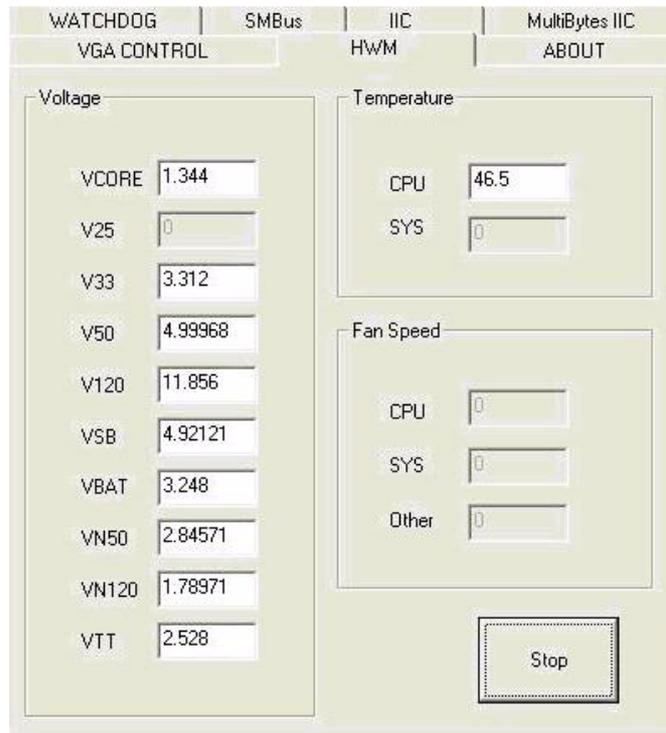
When the Monitor application is executed by clicking the button, hardware monitoring data values will be displayed. If certain data values are not supported by the platform, the corresponding data field will be greyed out with a value of 0.

Appendix A

Pin Assignments

A.1 Pin Assignments

CN1	AT/ATX Power Input
Description	Power CONN.6*2P 180D(M) DIP W/Fixed Lock
Pin	Pin Name
1	GND
2	+5 V
3	+5 V
4	GND
5	+5 V
6	+5 V
7	GND
8	GND
9	+5 VSB
10	PSON#
11	GND
12	+12 V

Figure A.1 CN1

CN2	CPU FAN
Description	WAFER BOX 2.0mm 3P 180D w/LOCK
Pin	Pin Name
1	Speed
2	+5 V
3	GND
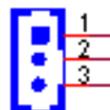
Figure A.2 CN2

CN3	DDR2 SO-DIMM H=6.5 mm
Description	SKT DIMM 200P DDR2 H=6.5 mm RVS SMD 1612773-4
Pin	Pin Name
1	VREF
2	GND
3	GND
4	DQ59
5	DQ63
6	DQ58
7	DQ62
8	GND
9	GND
10	DM7
11	DQS#7
12	GND
13	DQS7
14	DQ57
15	GND
16	DQ56
17	DQ61
18	GND
19	DQ60
20	DQ51
21	GND
22	DQ50
23	DQ55
24	GND
25	DQ54
26	DM6
27	GND
28	GND
29	DQS#6
30	CK1
31	DQS6
32	CK1#
33	GND
34	GND
35	DQ53
36	DQ49
37	DQ52
38	DQ48
39	GND
40	GND
41	GND
42	GND
43	DQ47

44	DQ43
45	DQ46
46	DQ42
47	GND
48	GND
49	DQS#5
50	NC
51	DQS5
52	DM5
53	GND
54	GND
55	DQ45
56	DQ41
57	DQ44
58	DQ40
59	GND
60	GND
61	DQ39
62	DQ35
63	DQ38
64	DQ34
65	GND
66	GND
67	DM4
68	DQS#4
69	NC
70	DQS4
71	GND
72	GND
73	DQ37
74	DQ33
75	DQ36
76	DQ32
77	GND
78	GND
79	CKE0
80	CKE1
81	+1.8 V
82	+1.8 V
83	NC
84	NC
85	BA2
86	NC
87	+1.8 V
88	+1.8 V
89	A12
90	A11
91	A9

92	A7
93	A8
94	A6
95	+1.8 V
96	+1.8 V
97	A5
98	A4
99	A3
100	A2
101	A1
102	A0
103	+1.8 V
104	+1.8 V
105	A10
106	BA1
107	BA0
108	RAS#
109	WE#
110	SCS#0
111	+1.8 V
112	+1.8 V
113	CAS#
114	ODT0
115	SCS#1
116	A13
117	+1.8 V
118	+1.8 V
119	ODT1
120	NC
121	GND
122	GND
123	DQ31
124	DQ27
125	DQ30
126	DQ26
127	GND
128	GND
129	DQS#3
130	DM3
131	DQS3
132	GND
133	GND
134	DQ25
135	DQ29
136	DQ24
137	DQ28
138	GND
139	GND

140	DQ19	
141	DQ23	
142	DQ18	
143	DQ22	
144	GND	
145	GND	
146	DQS#2	
147	DM2	
148	DQS2	
149	GND	
150	GND	
151	DQ21	
152	DQ17	
153	DQ20	
154	DQ16	
155	GND	
156	GND	
157	DQ15	
158	DQ11	
159	DQ14	
160	DQ10	
161	GND	
162	GND	
163	NC	
164	CK0	
165	GND	
166	CK0#	
167	DQS#1	
168	GND	
169	DQS1	
170	DM1	
171	GND	
172	GND	
173	DQ13	
174	DQ9	
175	DQ12	
176	DQ8	
177	GND	
178	GND	
179	DQ7	
180	DQ3	
181	DQ6	
182	DQ2	
183	GND	
184	GND	
185	DM0	
186	DQS#0	
187	GND	

188	DQS0
189	DQ5
190	GND
191	DQ4
192	DQ1
193	GND
194	DQ0
195	SDA
196	GND
197	SCL
198	SA0
199	+3.3 V
200	SA1
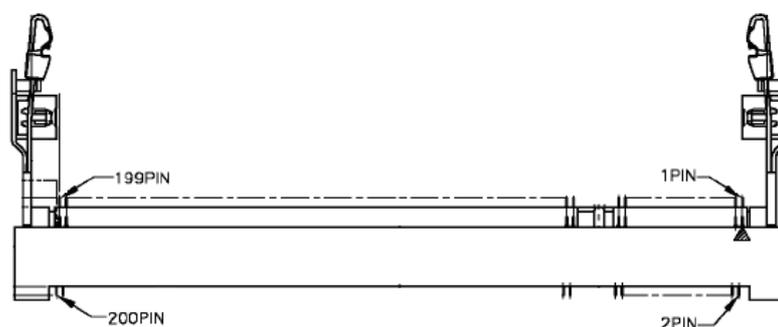
Figure A.3 CN3

CN5	CRT
Description	**D-SUB Conn. 15P 90D(F) DIP 070242FR015S200ZU**
Pin	**Pin Name**
1	R
2	G
3	B
4	NC
5	GND
6	GND
7	GND
8	GND
9	NC
10	GND
11	NC
12	DDAT
13	HSYNC
14	VSYNC
15	DCLK
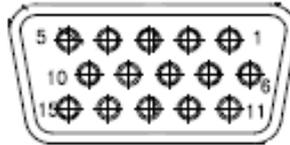
Figure A.4 CN5

CN6	LVDS Panel
Description	*CONN. 40P 90D 1.25mm SMD WO/Pb DF13-40DP-1.25V
Pin	Pin Name
1	+5 V or +3.3 V
2	+5 V or +3.3 V
3	GND
4	GND
5	+5 V or +3.3 V
6	+5 V or +3.3 V
7	LVDS0_D0-
8	LVDS1_D0-
9	LVDS0_D0+
10	LVDS1_D0+
11	GND
12	GND
13	LVDS0_D1-
14	LVDS1_D1-
15	LVDS0_D1+
16	LVDS1_D1+
17	GND
18	GND
19	LVDS0_D2-
20	LVDS1_D2-
21	LVDS0_D2+
22	LVDS1_D2+
23	GND
24	GND
25	LVDS0_CLK-
26	LVDS1_CLK-
27	LVDS0_CLK+
28	LVDS1_CLK+
29	GND
30	GND
31	DDC_CLK
32	DDC_DAT
33	GND
34	GND
35	LVDS0_D3-
36	LVDS1_D3-
37	LVDS0_D3+

38	LVDS1_D3+
39	NC
40	NC

Figure A.5 CN6

CN7	Inverter Power
Description	**WAFER BOX 2.0mm 5P 180D MALE W/LOCK**
Pin	**Pin Name**
1	+12 V
2	GND
3	ENABKL
4	VBR
5	+5 V
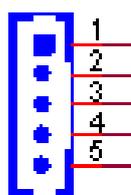
Figure A.6 CN7

CN8/10	SATA0/1
Description	**CONN 7P 180D(M) DIP Serial ATA 1.27mm W/O Pb**
Pin	**Pin Name**
1	GND
2	SATA_TX+
3	SATA_TX-
4	GND
5	SATA_RX-
6	SATA_RX+
7	GND
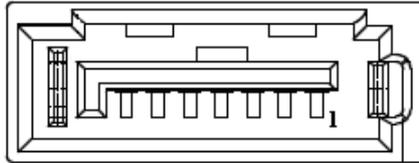
Figure A.7 CN8,10

CN9	CompactFlash
Description	**PIN HEADER 50P 90D(M) 1.27MM SMD N016@0140-004**
Pin	**Pin Name**
1	GND
2	D3
3	D4
4	D5
5	D6
6	D7
7	CS0
8	GND
9	GND
10	GND
11	GND
12	GND
13	+5 V
14	GND
15	GND
16	GND
17	GND
18	A02
19	A01
20	A00
21	D00
22	D01
23	D02
24	NC
25	CD2#
26	CD1#
27	D11
28	D12
29	D13
30	D14
31	D15
32	CS1
33	VS1#
34	IORD#
35	IOWR#
36	WE#
37	IRQ

38	+5V
39	CSEL#
40	VS2
41	RESET
42	IORDY
43	INPACK#
44	REG#
45	DASP#
46	PDIAG#
47	D08
48	D09
49	D10
50	GND
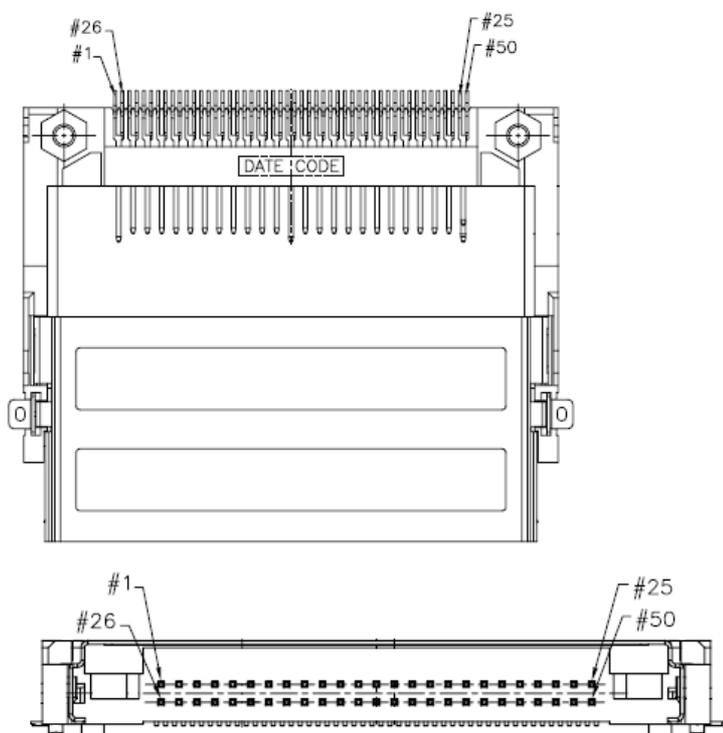
Figure A.8 CN9

CN11	HDD & PWR LED
Description	WAFER BOX 2.0mm 6P 180D MALE W/LOCK
Pin	Pin Name
1	+5 V
2	GND
3	Power LED+
4	Power LED-
5	HDD LED+
6	HDD LED-
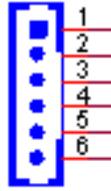
Figure A.9 CN11

CN12	Power Switch
Description	WAFER BOX 2P 180D 2.0 mm MALE W/Lock
Pin	Pin Name
1	PSIN
2	GND
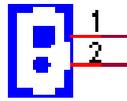
Figure A.10 CN12

CN13	GPIO
Description	PIN HEADER SMD 5*2P 180D(M) 2.0 mm
Pin	Pin Name
1	+5 V
2	GPIO4
3	GPIO0
4	GPIO5
5	GPIO1
6	GPIO6
7	GPIO2
8	GPIO7
9	GPIO3
10	GND
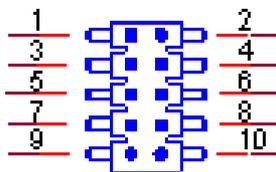
Figure A.11 CN13

CN14	COM1
Description	**D-SUB CON. 9P 90D(M)DIP 070241MR009S200ZU SUYIN**
Pin	**Pin Name**
1	DCD#
2	RXD#
3	TXD#
4	DTR#
5	GND
6	DSR#
7	RTS#
8	CTS#
9	RI#
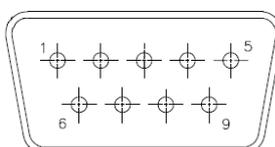
Figure A.12 CN14

CN15	COM2
Description	**BOX HEADER SMD 7*2P 180DMALE 2.0 mm**
Pin	**Pin Name**
1	DCD#
2	DSR#
3	RXD
4	RTS#
5	TXD
6	CTS#
7	DTR#
8	RI#
9	GND
10	NC
11	485/422TX+
12	485/422TX-
13	422RX+
14	422RX-
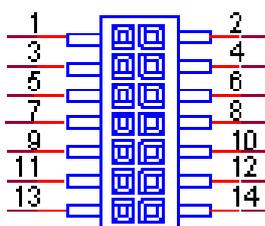
Figure A.13 CN15

CN17/CN23	Internal USB1/2/3/4
Description	CONN. 5*2P 180D(M) SMD WO/Pb DF13-10DS-1.25V
Pin	Pin Name
1	+5 V
2	+5 V
3	A_D-
4	B_D-
5	A_D+
6	B_D-
7	GND
8	GND
9	GND
10	GND
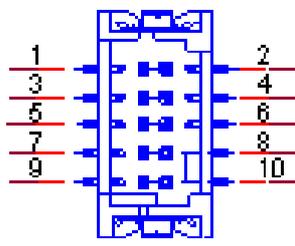
Figure A.14 CN17,23

CN18	PS2 (KB & MS)
Part Number	1654606203
Footprint	MINIDIN 6-H
Description	MINIDIN 6P 90D(F) D Short body W/Shielding WO/Pb
Pin	Pin Name
1	KBDAT
2	MSDAT
3	GND
4	+5 V
5	KBCLK
6	MSCLK
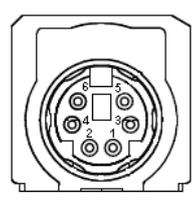
Figure A.15 CN18

CN19	External USB
Description	**USB CON. 4P 90D (F) DIP A TYPE RoHS**
Pin	**Pin Name**
1	+5 V
2	D-
3	D+
4	GND

Figure A.16 CN19

CN20	Audio
Description	**BOX HEADER SMD 5*2 180D (M) 2.0 mm**
Pin	**Pin Name**
1	LOUTR
2	LINR
3	GND
4	GND
5	LOUTL
6	LINL
7	GND
8	GND
9	MIC1R
10	MIC1L
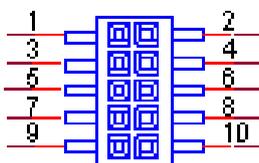
Figure A.17 CN20

CN21	LAN
Description	Phone Jack RJ45 14P 90D (F) W/Xfam P26@P07-1AM9
Pin	Pin Name
1	TX+(10/100),BI_DA+(GHz)
2	TX-(10/100),BI_DA-(GHz)
3	RX+(10/100),BI_DB+(GHz)
4	BI_DC+(GHz)
5	BI_DC-(GHz)
6	RX-(10/100),BI_DB-(GHz)
7	BI_DD+(GHz)
8	BI_DD-(GHz)
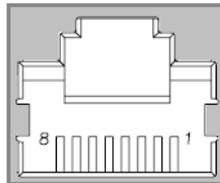
Figure A.18 CN21

CN22	MIO 2.0
Description	B/B CONN. 80*2P 180D SMD 0.8 mm QSE-080-01-F-D-A
Pin	Pin Name
A1	USB_OC#
A2	USB_D-
A3	USB_D+
A4	GND
A5	LPC_CLK48M
A6	GPIO1
A7	GPIO2
A8	LPC_SUSCLK
A9	LPC_DRQ#0
A10	Reserved
A11	AD0
A12	AD1
A13	AD2
A14	AD3
A15	AD4
A16	AD5
A17	AD6
A18	AD7
A19	CBE#0
A20	AD8
A21	AD9
A22	AD10
A23	AD11

A24	AD12
A25	AD13
A26	AD14
A27	AD15
A28	CBE#1
A29	PAR
A30	SERR#
A31	PERR#
A32	STOP#
A33	PME#
A34	INTA#
A35	INTB#
A36	REQ0
A37	REQ1
A38	REQ2
A39	REQA
A40	GNTA
A41	CLK0
A42	GND
A43	PCIE_RX3-
A44	PCIE_RX3+
A45	GND
A46	PCIE_TX3-
A47	PCIE_TX3+
A48	GND
A49	PCIE_CLK3-
A50	PCIE_CLK3+
A51	GND
A52	PCIE_RX1-
A53	PCIE_RX1+
A54	GND
A55	PCIE_TX1-
A56	PCIE_TX1+
A57	GND
A58	PCIE_CLK1-
A59	PCIE_CLK1+
A60	GND
A61	PCIE_RST
A62	Reserved
A63	Reserved
A64	Reserved
A65	GND
A66	SDVO_CLK-
A67	SDVO_CLK+
A68	GND
A69	SDVO_BLUE-
A70	SDVO_BLUE+
A71	GND

A72	SDVO_GREEN-
A73	SDVO_GREEN+
A74	GND
A75	SDVO_RED-
A76	SDVO_RED+
A77	GND
A78	Reserved
A79	+5 V
A80	+5 V
B1	SMB_CLK
B2	SMB_DAT
B3	Global Reset
B4	PWROK_5V
B5	GPIO3
B6	LPC_FRAME#
B7	LPC_AD0
B8	LPC_AD1
B9	LPC_AD2
B10	LPC_AD3
B11	DEVSEL#
B12	TRDY#
B13	IRDY#
B14	LOCK#
B15	FRAME#
B16	CBE#2
B17	AD16
B18	AD17
B19	AD18
B20	AD19
B21	AD20
B22	AD21
B23	AD22
B24	AD23
B25	CBE#3
B26	AD24
B27	AD25
B28	AD26
B29	AD27
B30	AD28
B31	AD29
B32	AD30
B33	AD31
B34	INTC#
B35	INTD#
B36	GNT0
B37	GNT1
B38	GNT2
B39	PCIRST

B40	Ring
B41	SerialIRQ
B42	GND
B43	PCIE_RX4-
B44	PCIE_RX4+
B45	GND
B46	PCIE_TX4-
B47	PCIE_TX4+
B48	GND
B49	PCIE_CLK4-
B50	PCIE_CLK4+
B51	GND
B52	PCIE_RX2-
B53	PCIE_RX2+
B54	GND
B55	PCIE_TX2-
B56	PCIE_TX2+
B57	GND
B58	PCIE_CLK2-
B59	PCIE_CLK2+
B60	GND
B61	PCIE_WAKE#
B62	ACPI_S3
B63	ACPI_S5
B64	Reserved
B65	GND
B66	SDVO_CLDAT
B67	SDVO_CLCLK
B68	GND
B69	SDVO_FLDSTALL+
B70	SDVO_FLDSTALL-
B71	GND
B72	SDVO_TVCLKIN-
B73	SDVO_TVCLKIN+
B74	GND
B75	SDVO_INT-
B76	SDVO_INT+
B77	GND
B78	Reserved
B79	+12 V
B80	+5 VSB
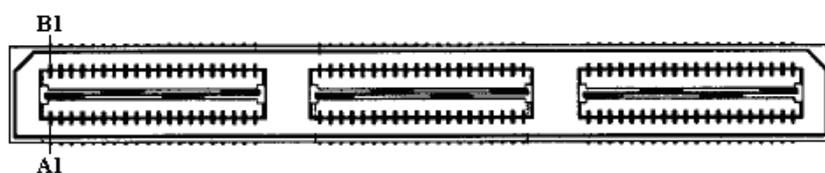
Figure A.19 CN22

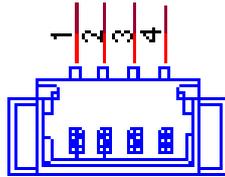| CN24	SMBus
Description	Wafer,85205-0400,SMT-1.25 mm,S/T type,4Pin,180DM
Pin	Pin Name
1	GND
2	SMB_DAT
3	SMB_CLK
4	+5 V

Figure A.20 CN24

Appendix **B**

Watchdog Timer

B.1 Watchdog Timer

```
;The SCH3114 Runtime base I/O address is 800h
;Setting WatchDog time value location at offset 66h
;If set value "0", it is mean disable WatchDog function.
Superio_GPIO_Port = 800h
mov   dx,Superio_GPIO_Port + 66h
mov   al,00h
out   dx,al


.model small
        .486p
        .stack 256
        .data
        SCH3114_IO   EQU   800h
        .code
        org    100h
 .STARTup
;=====================================================
;47H
;enable WDT function bit [3:2]=11
;=====================================================

        mov   dx,SCH3114_IO + 47h
        mov   al,0ch
        out   dx,al


;=====================================================
;65H
;bit [1:0]=Reserved
;bit [6:2]Reserve=00000
;bit [7] WDT time-out Value Units Select
;Minutes=0 (default) Seconds=1
;=====================================================

        mov   dx,SCH3114_IO + 65h ;
        mov   al,080h
        out   dx,al


;=====================================================
;66H
;WDT timer time-out value
;bit[7:0]=0~255
;=====================================================

        mov   dx,SCH3114_IO + 66h
```

```
        mov   al,01h
        out   dx,al


;=====================================================
;bit[0] status bit R/W
;WD timeout occurred =1
;WD timer counting = 0
;=====================================================

        mov   dx,SCH3114_IO + 68h
        mov   al,01h
        out   dx,al
        .exit
         END
```

Trusted ePlatform Services

ADVANTECH