5.25-inch size
Single Board Computer
Equipped with Celeron M 800MHz,
LAN, Audio

SLC-8521-LA
User's Manual

CONTEC CO.,LTD.

Check Your Package

Thank you for purchasing the CONTEC product.

The product consists of the items listed below.

Check, with the following list, that your package is complete.　If you discover damaged or missing items, contact your retailer.

Product Configuration List

- Board [SLC-8521-LA] …1
- Product Guide …1
- IPC Precaution List ...1
- CD-ROM (Driver disk utilities) *1 ...1
- IDE 80pin Ribbon Cable...1
- IDE 40pin Ribbon Cable...1
- Combine screw for D-SUB connector...10
- 6 pin mini-DIN cable (2 in 1 for PS2 Mouse & Keyboard functions) ...1
- Jumper short pin (2mm)...1

*1 The CD-ROM contains the driver software and User's Manual (this Manual)
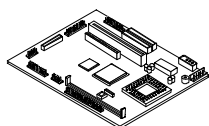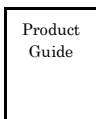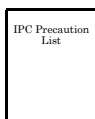

Board

IDE 80 pin Ribbon Cable

IDE 40 pin Ribbon Cable

Driver disk utility [CD-ROM]

Product Guide

IPC Precaution List

6 pin mini-DIN cable (2 in 1 for PS2 Mouse & Keyboard functions)

Combine screws for D-SUB connector　x 10

Jumper short pin (2mm)　x 1

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MS, Microsoft and Windows are trademarks of Microsoft Corporation. Other brand and product names are trademarks of their respective holder.

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

Caution about Battery

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer.

Dispose of used batteries according to the local ordinances or regulations.

Table of Contents

1. Introduction

This product is a 5-inches bay sized single board computer based on 852GM chipset.

Equipped with the Celeron(R) M 800MHz(FSB400MHz) of the fan less type

The all-in-one design features a wide variety of interfaces including Serial x 6. It also comes with CRT connectors and LVDS interfaces and supports Dual View. This product is also equipped with a CF card slot (TypeI), enabling boot-up from a CF card.

When to connecting external devices or building the system, please read this manual carefully.

Features

- Equipped with the fan less type Intel(R) Celeron(R) M processor 800MHz (FSB400MHz) CPU
- Intel(R) 852GM + ICH4 chipset
- Max. 1GB DDR SDRAM(ECC function non-support.)
- 5-inches bay sized CPU board and equipped with a range of standard interfaces including Analog RGB, LVDS, EIDE, Serial (RS-232C) x 6, USB2.0 x 6, PS/2.
- Equipped with CRT and LDVS, supports Dual View.
- Allows direct connection of an LCD display to an LVDS interface.
- Equipped with a CF card slot (Type I), enabling boot-up from a CF card.

Option List

Memory

- PC-MDD256-184A   184-Pin DDR-Memory (PC2700, 256MB)
- PC-MDD512-184A   184-Pin DDR-Memory (PC2700, 512MB)
- PC-MDD1G-184A   184-Pin DDR-Memory (PC2700, 1GB)

CF Card

- CF-1GB-R   1GB CompactFlash for Fix Disk
- CF-2GB-R   2GB CompactFlash for Fix Disk
- CF-4GB-R   4GB CompactFlash for Fix Disk
- CF-8GB-R   8GB CompactFlash for Fix Disk

Riser Card

- RPC-0211   Riser Card with PCI 2-Slots
- RPC-0411   Riser Card with PCI 4-Slots

Customer Support

CONTEC provides the following support services for you to use CONTEC products more efficiently and comfortably.

Web Site

Japanese	http://www.contec.co.jp/
English	http://www.contec.com/
Chinese	http://www.contec.com.cn/

Latest product information

CONTEC provides up-to-date information on products.

CONTEC also provides product manuals and various technical documents in the PDF.

Free download

You can download updated driver software and differential files as well as sample programs available in several languages.

Note!   For product information

Contact your retailer if you have any technical question about a CONTEC product or need its price, delivery time, or estimate information.

Limited One Year Warranty

CONTEC products is warranted by CONTEC CO., Ltd. to be free from defects in material and workmanship for up to one year from the date of purchase by the original purchaser.

Repair will be free of charge only when this device is returned freight prepaid with a copy of the original invoice and a Return Merchandise Authorization to the distributor or the CONTEC group office from which it was purchased.

This warranty is not applicable for scratches or normal wear, but only for the electronic circuitry and original boards. The warranty is not applicable if the device has been tampered with or damaged through abuse, mistreatment, neglect, or unreasonable use, or if the original invoice is not included, in which case repairs will be considered beyond the warranty policy.

How to Obtain Service

For replacement or repair, return the device freight prepaid, with a copy of the original invoice. Please obtain a Return Merchandise Authorization Number (RMA) from our Sales Administration Department before returning any product.

*   No product will be accepted by CONTEC group without an RMA number.

Liability

The obligation of the warrantor is solely to repair or replace the product. In no event will the warrantor be liable for any incidental or consequential damages due to such defect or consequences that arise from inexperienced usage, misuse, or malfunction of this device.

Safety Precautions

Understand the following definitions and precautions to use the product safely.

1. Introduction

Safety Information

This document provides safety information using the following symbols to prevent accidents resulting in injury or death and the destruction of equipment and resources. Understand the meanings of these labels to operate the equipment safely.

⚠ DANGER	DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
⚠ WARNING	WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠ CAUTION	CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or in property damage.

Handling Precautions

⚠ CAUTION

- Do not modify the product.   CONTEC will bear no responsibility for any problems, etc., resulting from modifying this product.
- Do not strike or bend the board.
- Otherwise, the board may malfunction, overheat, causes a failure or breakage.
- Do not touch the board's metal plated terminals (edge connector) with your hands.
- Otherwise, the board may malfunction, overheat, or cause a failure.   If the terminals are touched by someone's hands, clean the terminals with industrial alcohol.
- There are switches and jumpers on the board that need to be set in advance.   Be sure to check these before installing to the expansion slot.
- Only set the switches and jumpers on the board to the specified settings.
- Otherwise, the board may malfunction, overheat, or cause a failure.

⚠ DANGER

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacture's instructions.

Environment

Use this product in the following environment. If used in an unauthorized environment, the board may overheat, malfunction, or cause a failure.

Operating temperature

0 - 50°C

Operating humidity

10 - 90%RH (No condensation)

Corrosive gases

None

Floating dust particles

Not to be excessive

Inspection

Inspect the product periodically as follows to use it safely.

- Check that the board has no dust or foreign matter adhering.

- Check that the bus connector of the board and its cable have been plugged correctly.
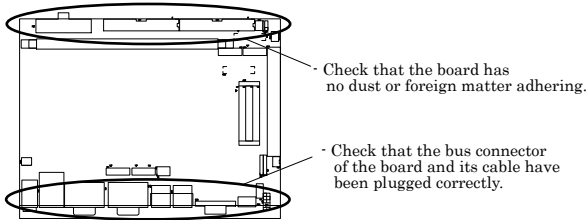
Storage

When storing this product, keep it in its original packing form.

(1) Put the board in the storage bag.

(2) Wrap it in the packing material, then put it in the box.

(3) Store the package at room temperature at a place free from direct sunlight, moisture, shock, vibration, magnetism, and static electricity.

Disposal

When disposing of the product, follow the disposal procedures stipulated under the relevant laws and municipal ordinances.

2. System Reference

Specification

Table 2.1.   Functional Specifications <1/2>

Type	SLC-8521-LA
CPU(Option)	Intel(R) Celeron(R) M Processor 800MHz (FSB400MHz)
Cache	None
Processor socket	None
Memory(Option)	Max.1GB, 184 pin DIMM socket x 1, PC2700 DDR SDRAM, Not supported ECC
Chipset	Intel(R) 852GM + ICH4
BIOS	AWARD BIOS, PnP support
VGA	Built in Intel 852GM, One Analog RGB I/F(One HD-SUB type 15 pin connector), One LVDS I/F (Two box-header 30pin, 20pin connectors)
Keyboard / Mouse connector	One PS/2 keyboard/Mouse connector (Bundled the 2 in 1 cable), external keyboard , mouse signals that build-in with CN11.
Serial I/F	16550 UART Four front D-SUB 9-pin connectors (RS-232C x 4), One inner box-header 20-pin connectors (RS-232C x 2), Baud rate: 50 - 115,200bps (programmable)
Parallel I/F	None
On board expansion bus	PCI slot x 1 *1
LAN Port	100BASE-TX/10BASE-T, Intel ICH4 integrated controller One RJ-45 connector, Wake On LAN support
IDE I/F	Two EIDE ports, up to four IDE devices, Two box-header 40-pin connectors, support Ultra DMA 33/66/100 *2, The CF card slot and it shares with a secondary EIDE port. *3
SATA I/F	None
FDD I/F	None
CompactFlash Slot *4	Compact Flash Type I x 1, IDE secondary port connection, Support booting
SSD Socket	None
USB Port	6ch USB2.0 compliant ports, Six USB Type A connectors
RAID	None
Audio	AC97 CODEC., One 3.5φ jack connector for line-out, line-in, microphone-in.
Watchdog Timer	Software programmable 255 levels (1 - 255sec). Reset occurrence at the time of time up.
General-purpose I/F	None
Hardware Monitor	Monitoring of the temperature of CPU and board, power supply voltage, and fan speed (This is a function of superI/O [W83627HG Winbond])
RTC/CMOS	The RTC (real-time clock) and CMOS data backup by the lithium battery. The Litium battery specification is shown in table. Specification: BR-2/3AC2P Voltage: 3V Capacity: 1200mAh Weigh: 15.5g * Backup time: Over 10 years at none AC power 25ºC. * Real Time Clock accurate: ±3 minutes/month at 25ºC.

Table 2.1.   Functional Specifications <2/2>

Type	SLC-8521-LA
Power Management	Power management setup via BIOS Modem Ring On/Wake On LAN Supports PC98/PC99 ACPI Power management
Bus specification/Size(mm)	5.25 inch Little board / 203(L) x 145(H)
Power Supply	+5VDC±5% +12VDC±5% (For fan, PCI Slot) +5VSB(Stand by)±5%
Power supply specifications (Max.)	+5VDC: 5.0A +12VDC: None +5VSB(Stand by): 0.5A
Operating temperature /	0 - 50°C
Operating Humidity	10 - 90%RH(No condensation)
Storage temperature	-20 - 80°C
Floating dust particles	Not to be excessive
Corrosive gases	None
Weight	880g
Operating System Support	Windows XP Professional Windows XP Home Edition Windows 2000 Professional

*1 When using the PCI slot of this product, use an optional riser card.   Mount the optional riser card on the main unit
    before mounting the PCI board.   Do not connect the PCI board directly to the PCI slot of the product, as this may cause
    malfunction.
    (For the installation dimensions of the PCI board when mounted on the riser board, refer to the riser board manual.)

*2 IDE secondary port cannot support by UltlaDMA66/100 mode at the time of CF card use

*3 IDE secondary port can support one drive at the time of CF card use.

*4 This CF Card slot do not have the hot-swap function. The card cannot remove from slot and attach to slot at the time
    of a power supply ON.
    The card may be damaged if a power supply is turned off at the time of card access.

Power Management Features

- Support both ACPI (Advanced Configuration and Power Interface) and legacy (APM) power management.

- ACPI v2.0 compliant

- APM v1.2 compliant

- PCI bus clock run, Power Management Enable (PME) control, all with hardware automatic wake-up

- Multiple suspends power plane controls and suspends status indicators

- Normal, doze, sleep, suspend and conserve modes

- Global and local device power control

Power Requirements

Your system requires a clean, steady power source for reliable performance of the high frequency CPU on the product, the quality of the power supply is even more important. For the best performance makes sure your power supply provides a range of 4.75 volts minimum to 5.25 volts maximum DC power source.

Power Consumption

For typical configurations, the product is designed to operate with at least a 200 W power supply. A higher-wattage power supply should be used for heavily-loaded configurations. The power supply must meet the following requirements:

- Rise time for power supply: 2 - 20 ms

- Minimum delay for reset to Power Good: 100 ms

- Minimum Power down warning: 1 ms

The following table lists the power supply's tolerances for DC voltages:

Table 2.2.   DC Voltage Tolerances

DC Voltage	Acceptable Tolerance
+ 5V	±5%
+ 5VSB (Stand by)	±5%
+ 12V	±5%

*   +12V: Only for FAN, PCI slot use

⚠ CAUTION

On power-up, this product temporarily stops before restarting. This is a normal operation within the specifications of the product.

Connector & Jumper Location
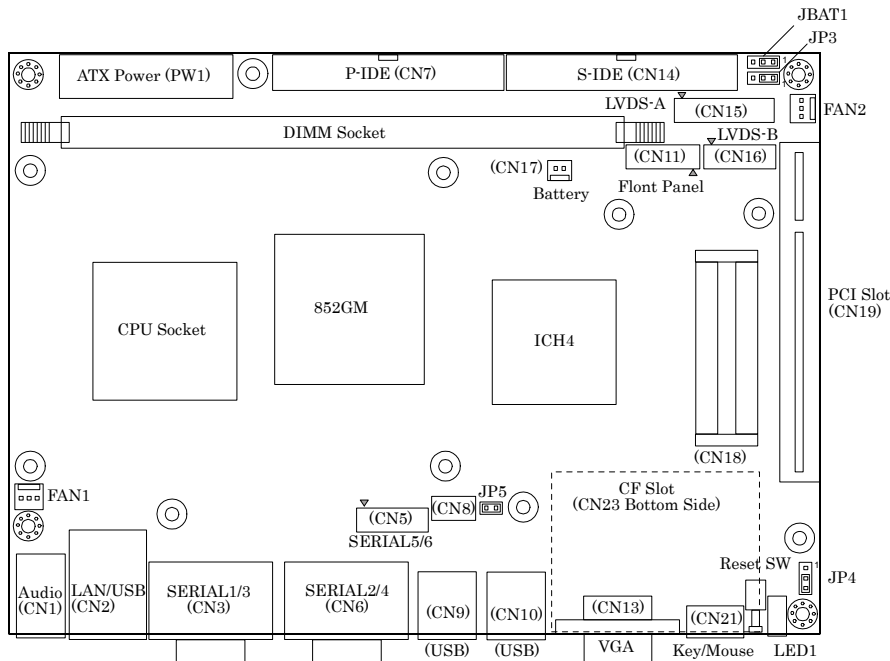
Figure 2.1.   Connector & Jumper Location

Table 2.3.   Parts Name

Item	Content
CN1	Audio Connector
CN2	10/100 LAN Connector
CN2,CN9, CN10	USB ports
CN3	SERIAL1(lower), SERIAL3(upper) Connector
CN5	SERIAL5, 6 Connector
CN6	SERIAL2(lower), SERIAL4(upper) Connector
CN7	Primary IDE Connector
CN8	Reserved Connector *1
CN11	Front Panel Connector , External Keyboard/Mouse Connector
CN13	VGA connector
CN14	Secondary IDE Connector
CN15, CN16	LVDS Connector
CN17	Battery Connector
CN18	Reserved Connector *1
CN19	PCI slot
CN21	PS2 Keyboard/Mouse Connector
CN23	Compact Flash Slot
Reset SW	Reset or Power switch
PW1	ATX Power Connector
LED1	Power(Green) / IDE Access(Yellow) / Status(Red) LED
JBAT1	Clear CMOS Content
JP3	Clear ROM Content
JP4	Reset/Power switch selector
JP5	CF card Master/Slave selector
FAN1	CPU fan connector
FAN2	System fan connector

*1   It cannot be used because of the connector for reserved.

Block Diagram
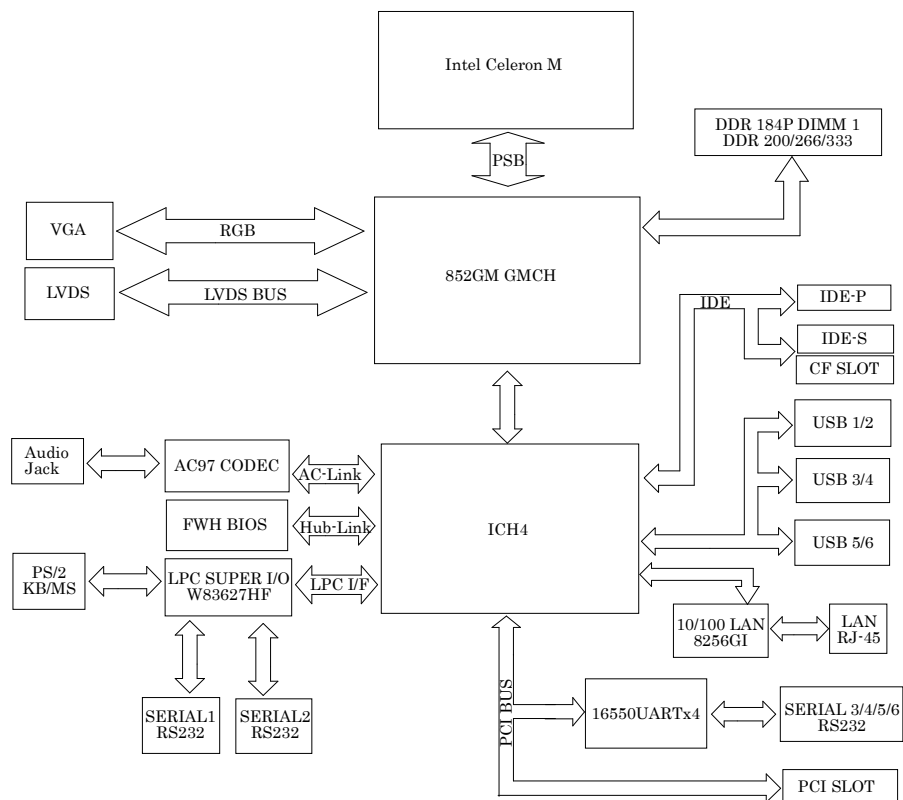
Figure 2.2. Block Diagram

SLC-8521-LA
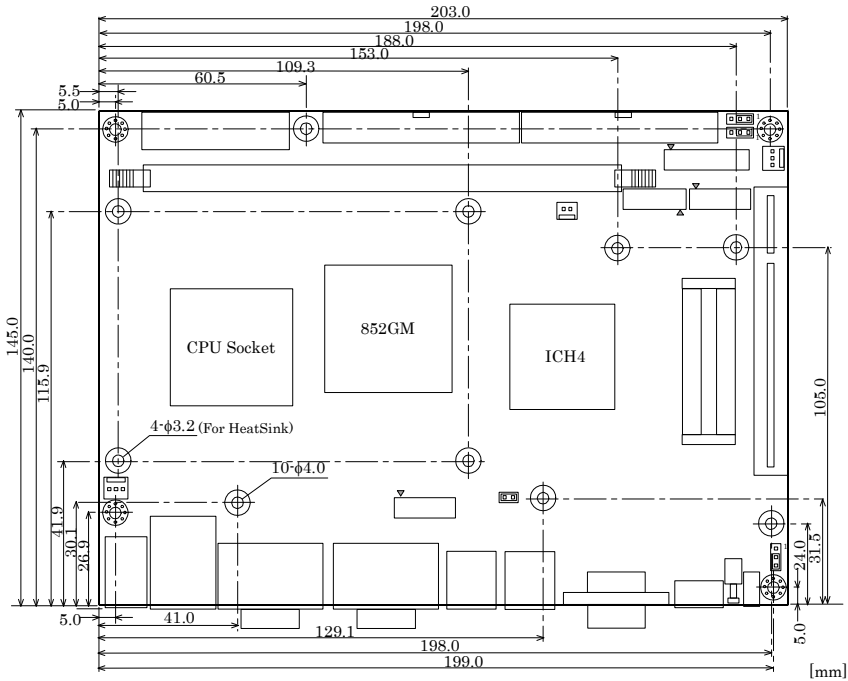
Board Dimensions

Figure 2.3.   Board Dimensions

SLC-8521-LA

3. Hardware Installations

This chapter provides information on how to use the jumpers and connectors on the product in order to set up a workable system.

Installation procedure

(1) Confirm the power supply is off.

(2) Insert the DDR DRAM module with correct orientation.

(3) Insert all external cables. (Keyboard, Mouse, LAN, etc.)

(4) Prepare a CRT monitor for CMOS setup.

(5) Turn on the power by power bottom.

(6) Enter the BIOS setup mode by pressing 'Del' key during boot up.

(7) Use the "Load Optimal Defaults" feature.

(8)Configure the **Peripheral Setup** and the **Standard Setup** correctly.

⚠ CAUTION
　　The CMOS memory may be in an undefined state at power-on after a period of no battery backup.

Main Memory Installation: DIMM1

The product supports one single-side or double-sided DDR200/266/333 unregistered 184-pin DIMM sockets for a maximum memory of 1GB.

The CPU board supports the following memory features:

-    184-pin DIMM with gold-plated contacts

-    200MHz, 266MHz and 333 MHz DDR SDRAM. (unregistered)

-    ECC function support.

-    2.5V memory only.

-    Single or double-sided DIMM in the following sizes:

DDR SDRAM

DDR SDRAM improves memory performance through memory access that is synchronous with the memory clock.

The CPU card supports single or double-sided DIMM in the following sizes:

Table 3.1.   DDR SDRAM

DIMM size	Non-ECC configuration
128MB	16Mbit x 64
256MB	32Mbit x 64
512MB	64Mbit x 64
1GB	128Mbit x 64

⚠ CAUTION
All memory components and DIMMs used with the product must comply with the PC SDRAM Specification. These include: the PC SDRAM Specification *memory component specific), the PC Unbuffered DIMM Specification, and the PC Serial Presence Detect Specification.

Audio Signal Connector: CN1
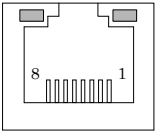
Table 3.2.   Audio Signal Connector (CN1)

CN1	Pin No.	Function
◎	1	Blue: Audio line IN
◎	2	Green: Audio line Out
◎	3	Pink: Microphone

10/100 BASE-TX LAN Connector: CN2

This connector is for the 10/100BASE-TX LAN I/F that has LED indicated the 10/100Mbps transfer rate / Link / Act status of Ethernet capability of the product. The follow table shows the pin assignments of this connector.

Table 3.3.   10/100 BASE-TX LAN Connector (CN2)

Pin No.	Function
1	Tx+
2	Tx-
3	Rx+
4	N.C.
5	N.C.
6	Rx-
7	N.C.
8	N.C.

Right LED: Link LED
    Link: Green, Active: Blink
Left LED: Speed LED
    10M: Off, 100M: Yellow
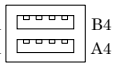
USB Connector: CN2 / CN9 / CN10

This board has six USB (v2.0 compliant) ports. There are three USB A type connectors (CN2, CN9, CN10 for USB0/1/2/3/4/5).

Table 3.4.   USB Connector (CN2, CN9, CN10)

Pin No.	Signal name	Pin No.	Signal name
A1	USB1/3/5 Vcc	B1	USB0/2/4/ Vcc
A2	USB1/3/5 -	B2	USB0/2/4 -
A3	USB1/3/5 +	B3	USB0/2/4 +
A4	USB1/3/5 GND	B4	USB0/2/4 GND

⚠ CAUTION
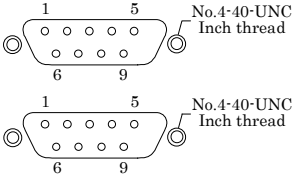
Computer systems that have an unshielded cable attached to a USB port may not meet FCC requirements, even if no device or a low-speed USB device is attached to the cable. Use shielded cable that meets the requirements for full-speed devices.

Serial Port Connector: CN3 / CN5 / CN6

SERIAL1 - SERIAL6 are onboard RS-232C compliant serial ports of the product. CN3 and CN6 consist of 2 stacks D-SUB 9pin male on board connectors. CN5 consist of 20-pin connectors that using the Hirose's DF13A-20DP-1.25V. The following table shows the pin assignments of these connectors.

Table 3.5. Serial Port Connector (CN3, CN6)

Upper side   CN3:SERIAL3, CN6:SERIAL4
Lower side   CN3:SERIAL1, CN6:SERIAL2
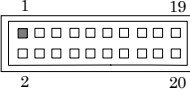
No.4-40-UNC Inch thread

Pin No.	RS-232C	Pin No.	RS-232C
1	DCD	6	DSR
2	RxD	7	RTS
3	TxD	8	CTS
4	DTR	9	RI
5	GND		

Table 3.6.   Serial Port Connector (CN5)

CN5
SERIAL5/6

Housing: DF13-20DS-1.25C
(HIROSE)
Contact: DF13-2630SCF
(HIROSE)

Pin No.	RS-232C	Pin No.	RS-232C
1	DCD_5	2	RxD_5
3	TXD_5	4	DTR_5
5	GND	6	DSR_5
7	RTS_5	8	CTS_5
9	RI_5	10	GND
11	DCD_6	12	RxD_6
13	TxD_6	14	DTR_6
15	GND	16	DSR_6
17	RTS_6	18	CTS_6
19	RI_6	20	GND

SLC-8521-LA

IDE port Connector: CN7, CN14

The product provides a bus-mastering PCI IDE interface. This interface support PIO Mode 3, PIO Mode 4, ATAPI devices (e.g., CD-ROM), and Ultra DMA/33/66/100 synchronous-DMA mode transfers. The BIOS supports logical block addressing (LBA) and extended cylinder head sector (ECHS) translation modes. The BIOS automatically detects the IDE device transfer rate and translation mode.

This connector supports the provided IDE hard disk ribbon cable. After connecting the single end to the board, connect the two plugs at the other end to your hard disk(s). If you install two hard disks, you must configure the second drive to Slave mode by setting its jumper accordingly. Please refer to your hard disk documentation for the jumper setting.

⚠ CAUTION
- IDE secondary port cannot support by UltlaDMA66/100 mode at the time of CF card use.

- IDE secondary port can support one drive at the time of CF card use.

Table 3.7. Primary and Secondary IDE Connector (CN7, CN14)

Pin No.	Function	Pin No.	Function
1	RESET	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	N.C.
21	DREQ	22	GND
23	IOW	24	GND
25	IOR	26	GND
27	IORDY	28	ALE
29	DACK	30	GND
31	IRQ	32	N.C.
33	A1	34	PDIAG
35	A0	36	A2
37	CS1	38	CS3
39	HD ACT	40	GND

Front Panel & External Keyboard / Mouse Connector: CN11

CN11 consist of 20-pin connector that using the Hirose's DF13A-20DP-1.25V and can be connected to a front panel power switch.

The front panel connector for these I/O connections:

Power Switch (Power BT)

This header can be connected to a power push switch for ATX power supply.

Reset Switch (RESET)

This header can be connected to a reset push switch.

Power LED

This header can be connected to an LED that will light when the computer is powered on.

IDE drive activity LED (IDE ACT)

This header can be connected to an LED to provide a visual indicator that data is being read from or written to an IDE drive. For the LED to function properly, the IDE drive must be connected to the onboard IDE controller.
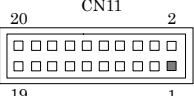
Speaker (BUZZER)

A speaker can be installed on the product as a manufacturing option.   The speaker is connected by a jumper on pins 9, 11 of this connector.

External keyboard and mouse

This header can be connected to an external PS/2 keyboard and mouse. When the keyboard (mouse) is connected to Keyboard/Mouse connector (CN21), this connector cannot be used together.

Table 3.8.   Front Panel Connector (CN11)

Pin No.	Function	Pin No.	Function
1	Power BT	2	IDE ACT
3	GND	4	+5V
5	GND	6	Power LED
7	RESET	8	+5V
9	Speaker+	10	Reserved
11	Speaker-	12	Reserved
13	KB Clock	14	Mouse Clock
15	KB Data	16	Mouse Data
17	GND	18	GND
19	+5VSB	20	+5V

Speaker	9,11	Power LED	1, 3
Reset Button	5, 7	HDD LED	2, 4
Power LED	8, 10, 12	External Keyboard	13, 15
		External Mouse	14, 16
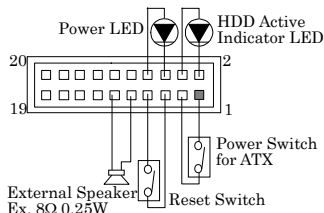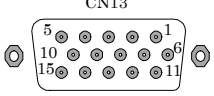
Housing: DF13-20DS-1.25S (HIROSE)
Contact: DF13-2630SCF (HIROSE)
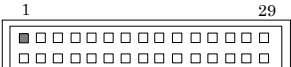
VGA Connector: CN13

It is a VGA (Analog RGB) connector. The pin assignments are as follows:

Table 3.9.   VGA Connector (CN13)

PIN No.	Function	PIN No.	Function
1	Red	2	Green
3	Blue	4	N.C.
5	GND	6	GND
7	GND	8	GND
9	VCC	10	GND
11	N.C.	12	DDC data
13	H-Sync	14	V-Sync
15	DDC clock	16	N.C.

LVDS LCD panel Connector: CN15 / CN16

CN15 consist of 30-pin connector that using the Hirose's DF13A-30DP-1.25V. CN16 consist of 20-pin connectors that using the Hirose's DF13A-20DP-1.25V. The product supports 2 channels of LVDS LCD panel display.

Table 3.10.   LVDS LCD panel Connector (CN15, CN16)

CN15
ChannelA

1 ... 29
2 ... 30

Housing: DF13-30DS-1.25C
(HIROSE)
Contact: DF13-2630SCF
(HIROSE)

Pin No.	Function	Pin No.	Function
1	A_TX0+	2	A_TX1+
3	A_TX0-	4	A_TX1-
5	GND	6	GND
7	A_TX2+	8	A_TX3+
9	A_TX2-	10	A_TX3-
11	GND	12	GND
13	A_CLK1+	14	LCD_VDD
15	A_CLK1-	16	LCD_VDD
17	GND	18	GND
19	DDC_CLK	20	DDC_DATA
21	Reserved	22	Reserved
23	Reserved	24	+5V
25	BLK_EN	26	+5V
27	GND	28	+12V
29	GND	30	+12V

CN16
ChannelB

1 ... 19
2 ... 20

Housing: DF13-20DS-1.25C
(HIROSE)
Contact: DF13-2630SCF
(HIROSE)

Pin No.	Function	Pin No.	Function
1	B_TX0+	2	B_TX1+
3	B_TX0-	4	B_TX1-
5	GND	6	GND
7	B_TX2+	8	B_TX3+
9	B_TX2-	10	B_TX3-
11	GND	12	GND
13	B_CLK1+	14	LCD_VDD
15	B_CLK1-	16	LCD_VDD
17	GND	18	GND
19	+5V	20	LCDVDD_EN

LCD_VDD : +3.3V LCD power out (1A Max.)

Reserved : keep none connect

Battery Connector: CN17

It is a 2 Pin connector used for on board battery for the real-time clock and CMOS memory.

Table 3.11.   External Battery Connector (CN17)

CN17	Pin No.	Function
	1	GND
2 1	2	External battery (3V)
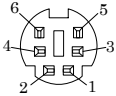
Housing: IL-2S-S3L-(N) (JAE)
Contact: IL-C2-1-10000 (JAE)

This board has the large capacity battery connected to this connector as standard.

Keyboard / Mouse Connector: CN21

The product provides a standard PS/2 keyboard/mouse mini-DIN 6pin connector for attaching a PS/2 keyboard/mouse. When connecting only a PS/2 keyboard, connect directly to this connector. Please use an attached "2 in 1 cable", when you connect both mouse and keyboard.

Table 3.12.   Keyboard / Mouse Connector (CN21)

CN21	Pin No.	Function
	1	KB Data
	2	MS DATA
	3	GND
	4	+5V
	5	KB Clock
	6	MS Clock

CompactFlash Slot: CN23

The product provides a Compact Flash interfaces. This interface is a very small removable mass storage device (CF Type I). It provides compatibility plus True IDE functionality compatible with ATA/ATA-4.

Table 3.13.   CompactFlash Slot (CN23)

Pin No.	Function	Pin No.	Function
1	GND	2	D3
3	D4	4	D5
5	D6	6	D7
7	CS1#	8	GND
9	GND	10	GND
11	GND	12	GND
13	VCC	14	GND
15	GND	16	GND
17	GND	18	A2
19	A1	20	A0
21	D0	22	D1
23	D2	24	N.C.
25	GND	26	GND
27	D11	28	D12
29	D13	30	D14
31	D15	32	CS3#
33	GND	34	IOR#
35	IOW#	36	VCC
37	IRQ15	38	VCC
39	CSEL#	40	N.C.
41	SDRST#	42	IORDY
43	SDREQ	44	SDDACK#
45	CF_ACT#	46	SDIAG
47	D8	48	D9
49	D10	50	GND

CN23

1 ... 2
49 ... 50

◎ CONTEC
SLC-8521-LA

CPU FAN Connector: FAN1

FAN1 is a 3-pins box-header for the CPU cooling fan power connector. The fan must be a 12V fan. Pin 3 is for Fan speed sensor input.

Table 3.14.   CPU FAN Connector

Pin No.	Function
1	GND
2	POWER
3	FAN

FAN1
1 2 3

Housing: 5102-03 (molex)
Contact: 5103 (molex)

System FAN Connector: FAN2

FAN2 is a 3-pins box-header for the system cooling fan power connector. The fan must be a 12V fan. Pin 3 is for Fan speed sensor input. Pin 2 is for +12V power supply.
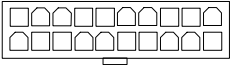
Table 3.15.   System FAN Connector

Pin No.	Function
1	GND
2	POWER
3	FAN

FAN2
1 2 3

Housing: 5102-03 (molex)
Contact: 5103 (molex)

ATX power supply Connector: PW1

Table 3.16.   ATX power supply Connector

```
        1      PW1      10
     ┌──────────────────────┐
     │ □□□□□□□□□□ │
     │ □□□□□□□□□□ │
     └──────────────────────┘
       11                20
```

Pin No.	Function	Pin No.	Function
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	GND	13	GND
4	+5V	14	PON
5	GND	15	GND
6	+5V	16	GND
7	GND	17	GND
8	Power Good	18	-5V
9	+5VSBY	19	+5V
10	+12V	20	+5V

Suitable Housing: 39-01-2200 (correpond)
Suitable Contac: 5556 (correspond)
Maker: Molex

4. Jumper Setting

Clear CMOS Content: JBAT1

The time, date, and CMOS values can be specified in the Setup program. The CMOS values can be returned to their defaults by using the Setup program. The RAM data contains the password information is powered by the onboard button cell battery. User can erase the CMOS memory content by short pin2 and pin3 of JBAT1 together.

Table 4.1.   Clear CMOS Content

JBAT1	Function
○ ○ ○ 3 2 1	Normal Operation(Default)
○ ○ ○ 3 2 1	Clear CMOS Content

Clear ROM Content: JP3

It is possible to start by invalidating the BIOS setting because pin 2 of JP3 and pin 3 are connected and the system is started. If the system doesn't start, please try this setting.   Please set the setup screen again when the system starts.

Please connect pin 1 and pin 2 in the state of driving usually.

Table 4.2.   Clear ROM Content

JP3	Function
○ ○ ○ 3 2 1	Normal Operation(Default)
○ ○ ○ 3 2 1	Clear ROM Content

Power / Reset switch Selector: JP4

This jumper is to select the Power/Reset function of the S2 push switch on CPU board.

Table 4.3. **Power/Reset switch Selector (JP4)**

JP4	Function
1 2 3	ATX Power switch
1 2 3	Reset switch (Default)

CF Master/Slave Selector: JP5

On board CF slot is connected to Secondary IDE. This jumper is select Master/Slave of CF memory card. Usually, please use it with a master setup.

Table 4.4. **CF Master/Slave Selector (JP5)**

JP5	Function
1 2	Master (Default)
1 2	Slave

5. CPU Card Resources

System Address Map

The GMCH memory map includes a number of programmable ranges. All of these ranges must be unique and non-overlapping. There are no hardware interlocks to prevent problems in the case of overlapping ranges. Accesses to overlapped ranges may produce indeterminate results.

Compatibility Area

Address	Description
0 - 640KB	DOS area
640 - 768KB	Video Buffer area
768 - 896KB	Expansion Area
896 - 960KB	Extended System BIOS Area
960 - 1MB	System BIOS Area

Memory Segment

Memory Segments	Comments
00000h - 9FFFFh	0 - 640K DOS Region
A0000h - BFFFFh	Video Buffer
B0000h - B7FFFh	Monochrome Adapter range
C0000h - CFFFFh	Video BIOS
D0000h - DFFFFh	Expansion Area
E0000h - EFFFFh	Extended System BIOS Area
F0000h - FFFFFh	System BIOS Area
100000h - FFFFFFFFh	Extended Memory Area
100000h - Top of Main Memory	Main DRAM Address Range
Top of Main Memory	Extended SMRAM Address Range
Top of Main Memory To 4GB	PCI Memory Address Range
FEC00000h - FECFFFFFh, FEE00000h - FEEFFFFFh	APIC configuration space
FFFE0000h - FFFFFFFFh	High BIOS Area

6. Watch-Dog-Timer (WDT) Setting

The watchdog timer serves as a safeguard against possible system lock-up in your industrial computer system. In most industrial environments, there are heavy equipment, generators, high-voltage power lines, or power drops that have adverse effects on your computer system. For instance, when a power drop occurs, it could cause the CPU to come to a halt state or enter into an infinite loop, resulting in a system lock-up.

The application software created by user with the watchdog timer enabled, a RESET automatically generated unless the software periodically triggers the timer within the setting time-out interval. That is, while the system gets hung up, the running program can't trigger the timer periodically. The timer will generate a reset signal to reboot the system. This feature allows a running program to restart in an orderly way when a power glitch or any abnormal condition occurs.

The watchdog timer comes with 255-level time-out interval, 1 - 255 seconds per interval, which can be adjusted by software setting. There is a tolerance of 2 second for this time-out interval. For example, if the time-out interval has been set to 32 seconds, your program should trigger the watchdog timer before 28 seconds are escaped. Otherwise, after 28 - 32 seconds are escaped, the system will automatically reboot. To keep the system running normally, your program should trigger the watchdog timer every 28 seconds.

The I/O port is defined at address 2e/2fH. You can trigger/enable disable the timer by writing address 2e/2fH.

Here is an example for flow chart and programming how to use the watch-dog-timer.

(1) Example flow chart

```
        START
          │
      WDT Initial
          │
   ┌──────┤
   │  WDT Start  ┐
   │            }──→  If [WDT Stop] is not performed within the limit time set up
   │  WDT Stop  ┘      by [WDT Start], system reset occurs.
   │      │
Yes│    WDT          When performing the re-start of WDT, it repeats [WDT Start] and [WDT Stop].
└──┤  Restart?
        │ No
        END
```
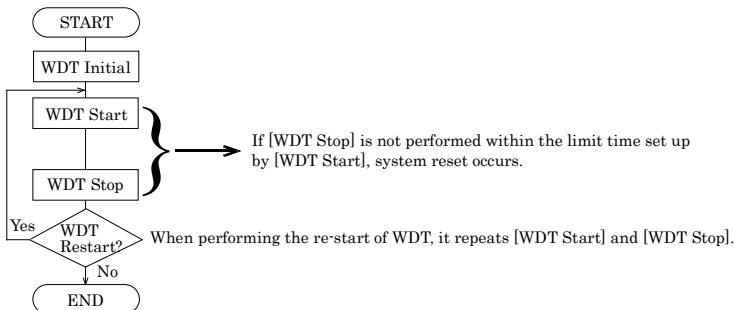
*   It is also possible not to perform [WDT Stop] instead of performing [WDT Stop] to [WDT Start], but to perform [WDT Start] continuously at the time of a re-start.

(2) Example programming

The following example is written in Intel8086 assembly language.

```
;===============
;<WDT Initial>
;===============
;----------------------------------
;Enter the extended function mode
;----------------------------------
MOV DX,2EH
MOV AL,87H
OUT DX,AL
OUT DX,AL
;----------------------------------
;Set WDT function at pin89
;----------------------------------
MOV DX,2EH
MOV AL,2BH
OUT DX,AL
MOV DX,2FH
MOV AL,0DH
OUT DX,AL
;----------------------------------------------
;Select logical device WDT(number 8)
;----------------------------------------------
MOV DX,2EH
MOV AL,07H
OUT DX,AL
MOV DX,2FH
MOV AL,08H
OUT DX,AL
;---------------------------------------------------
;Activate logical device WDT(number 8)
;---------------------------------------------------
MOV DX,2EH
MOV AL,30H
OUT DX,AL
MOV DX,2FH
MOV AL,01H
OUT DX,AL
;----------------------------------
;Set timer unit : second
;----------------------------------
MOV DX,2EH
MOV AL,F5H
OUT DX,AL
MOV DX,2FH
MOV AL,00H
OUT DX,AL
```

```
;----------------------------------------
;Exit the extended function mode
;----------------------------------------
MOV DX,2EH
MOV AL,AAH
OUT DX,AL


;==============================
;<WDT START : counter set and a start >
;==============================
;--------------------------------------------
;Enter the extended function mode
;--------------------------------------------
MOV DX,2EH
MOV AL,87H
OUT DX,AL
OUT DX,AL
;------------------------------------------------
;Select logical device WDT(number 8)
;------------------------------------------------
MOV DX,2EH
MOV AL,07H
OUT DX,AL
MOV DX,2FH
MOV AL,08H
OUT DX,AL
;----------------------------------------------------
;Set time of WDT and start to count down
;----------------------------------------------------
MOV DX,2EH
MOV AL,F6H
OUT DX,AL
MOV DX,2FH
;-------------------------------------------------------------------------------
;The data of an example is 15 seconds.(01H=1sec.- FFH=255sec.)
MOV AL,0FH      ; 0FH = 15Sec.
;-------------------------------------------------------------------------------
OUT DX,AL
;----------------------------------
;Exit the extended function mode
;----------------------------------
MOV DX,2EH
MOV AL,AAH
OUT DX,AL
```

```
;==============
;<WDT STOP>
;==============
;----------------------------------
;Enter the extended function mode
;----------------------------------
MOV DX,2EH
MOV AL,87H
OUT DX,AL
OUT DX,AL
;----------------------------------
;Select logical device WDT(number 8)
;----------------------------------
MOV DX,2EH
MOV AL,07H
OUT DX,AL
MOV DX,2FH
MOV AL,08H
OUT DX,AL
;----------------------------------
;Stop count down of WDT
;----------------------------------
MOV DX,2EH
MOV AL,F6H
OUT DX,AL
MOV DX,2FH
;----------------------------------
;The data of 00H is stop WDT
MOV AL,00H
;----------------------------------
OUT DX,AL
;----------------------------------
;Exit the extended function mode
;----------------------------------
MOV DX,2EH
MOV AL,AAH
OUT DX,AL
```

⚠ CAUTION
The timer's intervals have a tolerance of ±2 seconds.

7. Hard Ware Monitor

Hardware Monitor function is included in LPC I/O Controller (Winbond W83627HF) on SBC.

You can read Temperature ,Voltage and Fan Sensor output of SBC. Each data include +/-10% tolerant.

Temperature

There are the sensor on board (Sensor1) and the sensor with built-in a CPU (Sensor2).These sensors position are the followings. You can read Temperature of these sensors.

Sensor1(Q5)
Sensor2
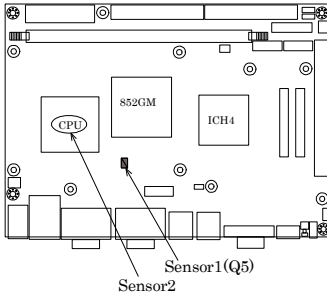
Voltage

You can read +3.3V, +5V, +12V, Vcore, VCCP, VBAT, 5VSB of SBC.

Vcore   : CPU Core Voltage

VCCP   : CPU I/O Voltage

5VSB   : 5V Stand by voltage of ATX Power supply

FAN Speed Sensor

FAN Speed Sensor can read speed of FAN when connect FAN with speed sensor to FAN1 and FAN2 connectors.

<Caution>

You must use FAN with speed sensor if you would like to read FAN speed.

W83627HF Registers

There are two ports to read W83627HF HardWare Monitor Registers.　These two ports are described as following.

   Index Register : 295h

   Data Register : 296h

The registers Index is showed as next page.

<Sample Program : Read Chip ID Register to bx>

```
mov ax,4eh;
mov dx,295h;
out dx,ax ;(index register set for BANK select register)
inc dx;
out dx,80h;(BANK=0 is set)
mov ax,58h;
mov dx,295h;
out dx,ax;       (index register set for Chip ID register)
inc dx;
in  bx,dx;  (Read Chip ID Register to bx)
```

Hard Ware Monitor Register Index:

Address	Auto-Increment Address	Description
20h	60h	Vcore reading
21h	61h	VCCP reading
22h	62h	+3.3V reading
23h	63h	+5V reading
24h	64h	+12V reading
25h	65h	Reserved
26h	66h	Reserved
27h	67h	Temperature Sensor1 reading
28h	68h	FAN1 sensor reading
29h	69h	FAN2 sensor reading
2Ah	6Ah	Reserved
2Bh - 3Dh	6Bh - 7Dh	Reserved
3Eh - 3Fh	7Eh - 7Fh	Reserved
40h - 46h	-	Reserved
47h	-	VID/Fan Register
48h - 4Dh, 4Fh	-	Reserved
4Eh	-	50h - 5Fh Bank Select register
BANK0		
50h - 55h	-	Reserved
56h, 57h		Reserved
58h	-	Chip ID Register <21h>
59h - 5Eh	-	Reserved
5Dh	-	FAN Divisor register
5Eh, 5Fh	-	Reserved
BANK1		
50h, 51h	-	Temperature Sensor2 reading
52h - 5Fh	-	Reserved
BANK2		
50h - 5Fh	-	Reserved
BANK3		
50h - 5Fh	-	Reserved
BANK4		
50h - 5Fh	-	Reserved
BANK5		
50h	50h	5VSB reading
51h	51h	Reserved
52h, 53h	52h, 53h	Reserved
54h - 67h		Reserved
BANK6		
50h - 5Fh	-	Reserved

Vcore reading Register (20h)

Vcore(V) = 16mV x ReadData

VCCP reading reading Register (21h)

VTT(V) = 16mV x ReadData

+3.3V reading Register (22h)

V3.3(V) = 16mV x ReadData

+5V reading Register (23h)

V5(V) = 16mV x ReadData x 1.68

+12V reading Register (24h)

V+12(V) = 16mV x ReadData x 3.8

5VSB reading Register (BANK5: 50h)

V5VSB(V) = 16mV x ReadData x 1.52

Temperature Sensor1 reading Register (27h)

Temperature Sensor1 Data Format Table:

Temperature	Temperature Sensor Register
+125°C	7Dh
:	:
+25°C	19h
:	:
+5°C	05h
:	:
+1°C	01h
+0°C	00h
-1°C	FFh
:	:
-5°C	FBh
:	:
-25°C	E7h
:	:
-55°C	C9h

◎ CONTEC
SLC-8521-LA

FAN sensor Reading Register (FAN1: 28h , FAN2: 29h)

$$RPM = 1.35 \times 10^6 / (\text{ReadData} \times \text{FAN\_sensor1\_Divisor})$$

VID/FAN Register (47h)

```
   7    6    5    4    3    2    1    0
 ┌────┬────┬────┬────┬────┬────┬────┬────┐
 │    │    │    │    │    │    │    │    │
 └────┴────┴────┴────┴────┴────┴────┴────┘
```

— VID0
— VID1
— VID2
— VID3
— FAN_Sensor1_Divisor_B0
— FAN_Sensor1_Divisor_B1
— FAN_Sensor2_Divisor_B0
— FAN_Sensor2_Divisor_B1
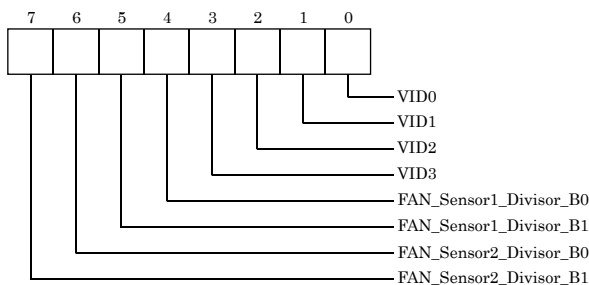
Bit 7 - 6:FAN_Sensor2 Divisor Bit 1 - 0(not in use)
Bit 5 - 4:FAN_Sensor1 Divisor Bit 1 - 0
Bit 3 - 0:VID<3:0> Input

FAN Divisor Register (BANK0: 5Dh)

```
   7    6    5    4    3    2    1    0
 ┌────┬────┬────┬────┬────┬────┬────┬────┐
 │    │    │    │    │    │    │    │    │
 └────┴────┴────┴────┴────┴────┴────┴────┘
```

— EN_VBAT_MNT
— DIODES1
— DIODES2
— DIODES3
— Reserved
— FAN_Sensor1_divisor_B2
— FAN_Sensor2_divisor_B2(not in use)
— FAN_Sensor3_divisor_B2(not in use)
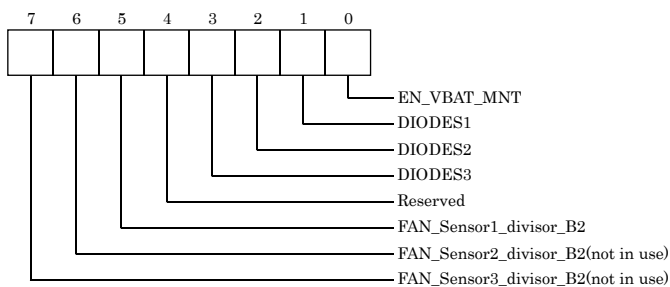
Bit 7:FAN_Sensor3 Divisor Bit3(not in use)
Bit 6:FAN_Sensor2 Divisor Bit3(not in use)
Bit 5:FAN_Sensor1 Divisor Bit3
Bit 4:Reserved
Bit 3:Sensor 3 type selection(not in use)
Bit 2:Sensor 2 type selection(Set to "1")
Bit 1:Sensor 1 type selection (Set to "1")
Bit 0:Battery Monitor Enable/Disable (1:Enable,0:Disable)

FAN Divisor Table:

Bit2	Bit1	Bit0	Divisor		Bit2	Bit1	Bit0	Divisor
0	0	0	1		1	0	0	16
0	0	1	2		1	0	1	32
0	1	0	4		1	1	0	64
0	1	1	8		1	1	1	128

50 - 5Fh Bank Select Register (4Eh)

```
  7     6     5     4     3     2     1     0
┌─────┬─────┬─────┬─────┬─────┬─────┬─────┬─────┐
│     │     │     │     │     │     │     │     │
└─────┴─────┴─────┴─────┴─────┴─────┴─────┴─────┘
```

BANK_SEL0
BANK_SEL1
BANK_SEL2
Reserved
Reserved
Reserved
Reserved
HBACS
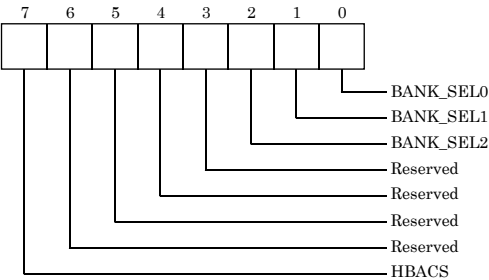
Bit 7:Byte access select for 4Fh (not in use)
Bit 6 - 3:Reserved
Bit 2 - 0:Index ports 50h - 5Fh Bank Select

Chip ID Register (BANK0: 58h)

```
  7     6     5     4     3     2     1     0
┌─────┬─────┬─────┬─────┬─────┬─────┬─────┬─────┐
│     │     │     │     │     │     │     │     │
└─────┴─────┴─────┴─────┴─────┴─────┴─────┴─────┘
```
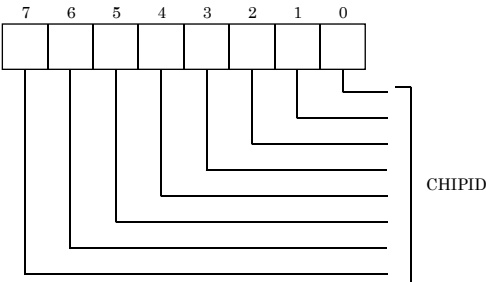
CHIPID

Bit 7 - 0:Winbond Chip ID number. Read this register return "21h".

Temperature Sensor2 reading Register1 (BANK1: 50h)
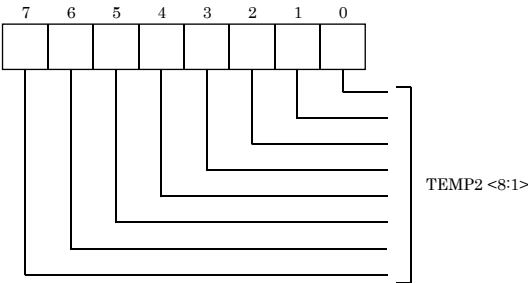
```
  7     6     5     4     3     2     1     0
┌─────┬─────┬─────┬─────┬─────┬─────┬─────┬─────┐
│     │     │     │     │     │     │     │     │
└─────┴─────┴─────┴─────┴─────┴─────┴─────┴─────┘
```

TEMP2 <8:1>

Please refer to temperature Sensor2 Data Format Table

Temperature Sensor2 reading Register2 (BANK1: 51h)
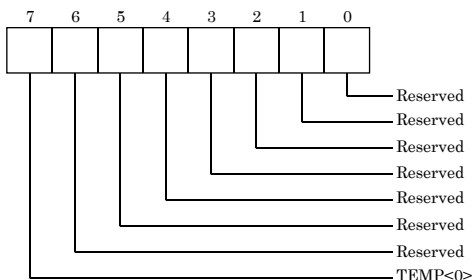
7	6	5	4	3	2	1	0

```
                                    Reserved
                                    Reserved
                                    Reserved
                                    Reserved
                                    Reserved
                                    Reserved
                                    Reserved
                                    TEMP<0>
```

Please refer to temperature Sensor2 Data Format Table

Temperature Sensor2 Data Format Table:

Temperature	TEMP<8:1>	TEMP<0>
+125°C	7Dh	0
:	:	:
+25°C	19h	0
:	:	:
+1°C	01h	0
+0.5°C	00h	1
+0°C	00h	0
-0.5°C	FFh	1
-1°C	FFh	0
:	:	:
-25°C	E7h	0
:	:	:
-55°C	C9h	1

LED

There are three LED in the front of this board.

Power LED (Green): This LED is "On" when power supply is on.

IDE Access LED (Yellow): This LED is "On" when IDE drive or CF card access.

Status LED (Red): User can control this LED.

Refer to the following example of programming for ON/OFF of Status LED.

The I/O Port of status LED control uses address 2e/2fH.

The following example is created by Intel8086 assembly language.

(1) Initialize (Operate only at once first)

```
;----------------------------------------
;Enter the extended function mode
;----------------------------------------
MOV DX,2E
MOV AL,87
OUT DX,AL
OUT DX,AL
;----------------------------------------------------
;Select logical device GPIO Port3(number 9)
;----------------------------------------------------
MOV DX,2E
MOV AL,07
OUT DX,AL
MOV DX,2F
MOV AL,09
OUT DX,AL
;------------------------------------------------------
;Activate logical device GPIO Port3(number 9)
;-------------------------------------------------------
MOV DX,2E
MOV AL,30
OUT DX,AL
MOV DX,2F
MOV AL,01
OUT DX,AL
;-------------------------------------------
;Set GPIO35(Red LED) output port
;-------------------------------------------
MOV DX,2E
MOV AL,F0
OUT DX,AL
MOV DX,2F
MOV AL,1E
```

```
    OUT DX,AL
    ;----------------------------------
    ;Set PIN64S GP35
    ;----------------------------------
    MOV DX,2E
    MOV AL,29
    OUT DX,AL
    MOV DX,2F
    MOV AL,80
    OUT DX,AL
    ;----------------------------------
    ;Exit the extended function mode
    ;----------------------------------
    MOV DX,2E
    MOV AL,AA
    OUT DX,AL
```

(2) LED On

```
    ;----------------------------------------
    ;Enter the extended function mode
    ;----------------------------------------
    MOV DX,2E
    MOV AL,87
    OUT DX,AL
    OUT DX,AL
    ;----------------------------------------------------
    ;Select logical device GPIO Port3(number 9)
    ;----------------------------------------------------
    MOV DX,2E
    MOV AL,07
    OUT DX,AL
    MOV DX,2F
    MOV AL,09
    OUT DX,AL
    ;------------------------------------------------------
    ;Set GPIO35(Red LED) ON (output 1(bit5 ON)
    ;------------------------------------------------------
    MOV DX,2E
    MOV AL,F1
    OUT DX,AL
    MOV DX,2F
    MOV AL,20
    OUT DX,AL
    ;---------------------------------------
    ;Exit the extended function mode
    ;---------------------------------------
    MOV DX,2E
    MOV AL,AA
    OUT DX,AL
```

(3) LED Off

```
;----------------------------------------
;Enter the extended function mode
;----------------------------------------
MOV DX,2E
MOV AL,87
OUT DX,AL
OUT DX,AL
;-----------------------------------------------------
;Select logical device GPIO Port3(number 9)
;-----------------------------------------------------
MOV DX,2E
MOV AL,07
OUT DX,AL
MOV DX,2F
MOV AL,09
OUT DX,AL
;---------------------------------------------
;Set GPIO35(Red LED) output 0(OFF)
;---------------------------------------------
MOV DX,2E
MOV AL,F1
OUT DX,AL
MOV DX,2F
MOV AL,00
OUT DX,AL
;--------------------------------------
;Exit the extended function mode
;--------------------------------------
MOV DX,2E
MOV AL,AA
OUT DX,AL
```

◎ CONTEC
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8. BIOS Setup

Introduction

This chapter discusses Award's Setup program built into the FLASH ROM BIOS. The Setup program allows users to modify the basic system configuration. This special information is then stored in battery-backed RAM so that it retains the Setup information when the power is turned off.

The rest of this chapter is intended to guide you through the process of configuring your system using Setup.

Starting Setup

The Award BIOS is immediately activated when you first power on the computer. The BIOS reads the system information contained in the CMOS and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Del> immediately after switching the system on, or
2. by pressing the <Del> key when the following message appears briefly at the bottom of the screen during the POST (Power On Self-Test).

   Press DEL to enter SETUP.

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to...

   Press F1 to continue, DEL to enter SETUP

Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

Table 8.1. Using Setup

Key	Function
Up Arrow	Move to the previous item
Down Arrow	Move to the next item
Left Arrow	Move to the item on the left (menu bar)
Right Arrow	Move to the item on the right (menu bar)
Esc	Main Menu: Quit without saving changes Submenus: Exit Current page to the next higher level menu
Move Enter	Move to the item you desired
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
Esc key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
F1 key	General help on Setup navigation keys
F5 key	Load previous values from CMOS
F6 key	Load the fail-safe defaults from BIOS default table
F7 key	Load the optimized defaults
F10 key	Save all the CMOS changes and exit

Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc> or the F1 key again.

In Case of Problems

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the AwardBIOS™ supports an override to the CMOS settings which resets your system to its defaults.

The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your systems manufacturer to provide the absolute maximum performance and reliability. Even a seemingly small change to the chipset setup has the potential for causing you to use the override.

A Final Note About Setup

The information in this chapter is subject to change without notice.

Main Menu

Once you enter the Award BIOS CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and two exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

Note that a brief description of each highlighted selection appears at the bottom of the screen.

```
              Phoenix - AwardBIOS CMOS Setup Utility

   ▸ Standard CMOS Features          ▸ Frequency/Voltage Control

   ▸ Advanced BIOS Features            Load Fail-Safe Defaults

   ▸ Advanced Chipset Features         Load Optimized Defaults

   ▸ Integrated Peripherals            Set Supervisor Password

   ▸ Power Management Setup            Set User Password

   ▸ PnP/PCI Configurations            Save & Exit Setup

   ▸ PC Health Status                 Exit Without Saving


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

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

Figure 8.1. Main Manu

Setup Items

The main menu includes the following main setup categories. Recall that some systems may not include all entries.

Standard CMOS Features

Use this menu for basic system configuration.

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's performance.

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals.

Power Management Setup

Use this menu to specify your settings for power management.

PnP / PCI Configuration

This entry appears if your system supports PnP / PCI.

Load Fail-Safe Defaults

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

Load Optimized Defaults

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

Supervisor / User Password

Use this menu to set User and Supervisor Passwords.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Save

Abandon all CMOS value changes and exit setup.

Standard CMOS Setup

```
              Phoenix - AwardBIOS CMOS Setup Utility
                      Standard CMOS Features

    Date (mm:dd:yy)          Thu,  Jan  1  2006        Item Help
    Time (hh:mm:ss)           10 : 22 : 30
                                                   Menu Level    ▶
  ▶ IDE Primary Master      [ None]
  ▶ IDE Primary Slave       [ None]                Change the day, month,
  ▶ IDE Secondary Master    [ None]                year and century
  ▶ IDE Secondary Slave     [ None]

    Drive A                 [ None]
    Drive B                 [ None]

    Video                   [EGA/VGA]
    Halt On                 [All , But Keyboard]

    Base Memory                  640K
    Extended Memory             64512K
    Total Memory                65536K


 ↑↓←→:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
      F5: Previous Values    F6: Fail-Safe Defaults    F7: O timized Defaults
```

Figure 8.2. Standard CMOS Setup

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

Main Menu Selections

This table shows the selections that you can make on the Main Menu

Table 8.2. Main Menu Selections

Item	Options	Description
Date	Month DD YYYY	Set the system date. Note that the 'Day' automatically changes when you set the date
Time	HH : MM : SS	Set the system time
IDE Primary Master	Options are in its sub menu	Press <Enter> to enter the sub menu of detailed options
IDE Primary Slave	Options are in its sub menu	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Master	Options are in its sub menu	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Master	Options are in its sub menu	Press <Enter> to enter the sub menu of detailed options
Drive A Drive B	None 360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in 2.88M, 3.5 in	Select the "None"
Video	EGA/VGA CGA 40 CGA 80 MONO	Select the default video device
Halt On	All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/Key	Select the situation in which you want the BIOS to stop the POST process and notify you
Base Memory	N/A	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up
Total Memory	N/A	Displays the total memory available in the system

IDE Adapters

The IDE adapters control the hard disk drive. Use a separate sub menu to configure each hard disk drive.

Table 8.3. IDE Adapters configurations

Item	Options	Description
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.
IDE Primary Master	None Auto Manual	Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !
Capacity	Auto Display your disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
Access Mode	CHS LBA Large Auto	Choose the access mode for this hard disk
The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual'		
Cylinder	Min = 0 Max = 65535	Set the number of cylinders for this hard disk.
Head	Min = 0 Max = 255	Set the number of read/write heads
Precomp	Min = 0 Max = 65535	Set the "Precomp" value of this hard disk.
Landing zone	Min = 0 Max = 65535	Set the cylinder of "Landing zone" for this hard disk.
Sector	Min = 0 Max = 255	Number of sectors per track

Advanced BIOS Features Setup

This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

```
              Phoenix - AwardBIOS CMOS Setup Utility
                     Advanced BIOS Features
 ┌─────────────────────────────────────────┬─────────────────────┐
 │ Virus Warning            [Disabled]      │      Item Help       │
 │ CPU L1 & L2 Cache        [Enabled]       ├─────────────────────┤
 │ Quick Power On Self Test [Enabled]       │ Menu Level    ▶     │
 │ First Boot Device        [USB-FDD]       │                     │
 │ Second Boot Device       [HDD-0]         │                     │
 │ Third Boot Device        [CDROM]         │                     │
 │ Boot Other Device        [Enabled]       │                     │
 │ Boot Up NumLock Status   [On]            │                     │
 │ Gate A20 Option          [Fast]          │                     │
 │ Typematic Rate Setting   [Disabled]      │                     │
 │ Typematic Rate (Chars/Sec) 6             │                     │
 │ Typematic Delay (Msec)     250           │                     │
 │ Security Option          [Setup]         │                     │
 │                                          │                     │
 └─────────────────────────────────────────┴─────────────────────┘
 ↑↓←→:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults
```

Figure 8.3.   Advanced BIOS Features Setup

Virus Warning

When enabled, you receive a warning message if a program (specifically, a virus) attempts to write to the boot sector or the partition table of the hard disk drive. You should then run an anti-virus program. Keep in mind that this feature protects only the boot sector, not the entire hard drive.

⚠ CAUTION

Many disk diagnostic programs that access the boot sector table can trigger the virus warning message. If you plan to run such a program, we recommend that you first disable the virus warning.

Enabled	Activates automatically when the system boots up causing a warning message to appear when any-thing attempts to access the boot sector or hard disk partition table.
Disabled	No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

Description	Choice
CPU L1 & L2 Cache CPU L1/L2 Cache Enabled/Disabled select Usually, select Enabled.	``` CPU L1 & L2 Cache Enabled ..... [■] Disabled ..... [ ] ↑↓:Move ENTER:Accept ESC:Abort ```
Quick Power On Self Test Select Enabled to reduce the amount of time required to run the power-on self-test (POST). A quick POST skips certain steps.	``` Quick Power On Self Test Disabled ..... [ ] Enabled ..... [■] ↑↓:Move ENTER:Accept ESC:Abort ```
First / Second / Third / Other Boot Device The BIOS attempts to load the operating system from the devices in the sequence selected in these items.	``` First Boot Device Floppy ..... [■] LS120 ..... [ ] HDD-0 ..... [ ] SCSI ..... [ ] CDROM ..... [ ] HDD-1 ..... [ ] HDD-2 ..... [ ] HDD-3 ..... [ ] ZIP100 ..... [ ] USB-FDD ..... [ ] USB-ZIP ..... [ ] USB-CDROM ..... [ ] USB-HDD ..... [ ] LAN ..... [ ] Disabled ..... [ ] ↑↓:Move ENTER:Accept ESC:Abort ```
Boot Up NumLock Status Toggle between On or Off to control the state of the NumLock key when the system boots. When toggled On, the numeric keypad generates numbers instead of controlling cursor operations.	``` Boot Up NumLock Status Off ..... [ ] On ..... [■] ↑↓:Move ENTER:Accept ESC:Abort ```

Description	Choice
Gate A20 option Gate A20 refers to the way the system addresses memory above 1 MB (extended memory). When set to Fast, the system chipset controls Gate A20. When set to Normal, a pin in the keyboard controller controls Gate A20. Setting Gate A20 to Fast improves system speed, particularly with OS/2 and Windows	``` Gate A20 Option Normal ..... [ ] Fast ..... [■] ↑↓:Move ENTER:Accept ESC:Abort ```
Typematic Rate Setting When Disabled, the following two items (Typematic Rate and Typematic Delay) are irrelevant. Keystrokes repeat at a rate determined by the keyboard controller in your system. When Enabled, you can select a typematic rate and typematic delay.	``` Typematic Rate Setting Disabled ..... [ ] Enabled ..... [■] ↑↓:Move ENTER:Accept ESC:Abort ```
Typematic Rate (Chars/Sec) When the typematic rate setting is enabled, you can select a typematic rate (the rate at which character repeats when you hold down a key) of 6, 8, 10, 12, 15, 20, 24 or 30 characters per second.	``` Typematic Rate (Chars/Sec) 6 ..... [■] 8 ..... [ ] 10 ..... [ ] 12 ..... [ ] 15 ..... [ ] 20 ..... [ ] 24 ..... [ ] 30 ..... [ ] ↑↓:Move ENTER:Accept ESC:Abort ```
Typematic Delay (Msec) When the typematic rate setting is enabled, you can select a typematic delay (the delay before key strokes begin to repeat) of 250, 500, 750 or 1000 milliseconds.	``` Typematic Delay (Msec) 250 ..... [■] 500 ..... [ ] 750 ..... [ ] 1000 ..... [ ] ↑↓:Move ENTER:Accept ESC:Abort ```

Description	Choice

Security Option
 	
Select whether the password is required every time the system boots or only when you enter setup. If you have set a password, select whether the password is required every time the System boots, or only when you enter Setup.
 	
System: The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
 	
Setup: The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.
	<pre>┌─────────────────────────────┐
	│ Security Option │
	│ ─────────────────────────── │
	│ Setup ..... [■] │
	│ System ..... [ ] │
	│ │
	│ │
	│ ─────────────────────────── │
	│ ↑↓:Move ENTER:Accept ESC:Abort │
	└─────────────────────────────┘</pre>

Note: To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.	

Advanced Chipset Features Setup

Figure 8.4.   Advanced Chipset Features Setup

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

Description	Choice
DRAM Timing Selectable The value in this field depends on performance parameters of the installed memory chips (DRAM). Do not change the value from the factory setting unless you install new memory that has a different performance rating than the original DRAMs	
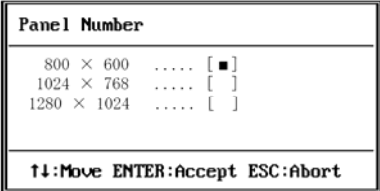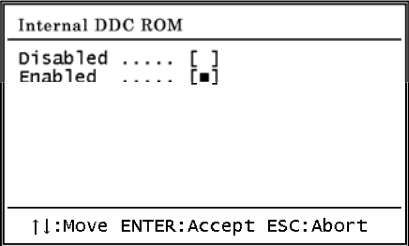
Description	Choice
CAS Latency Time When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer. You can select CAS latency time in HCLK of 2/2 or 3/3. The system board designer should set the values in this field, depends on the DRAM installed specifications of the installed DRAM or the installed CPU.	```CAS Latency Time

2.5 ..... [■]
2   ..... [ ]

 ↑↓:Move ENTER:Accept ESC:Abort``` |
| **Active to Precharge delay**
Select the precharge delay timer. | ```Active to Precharge Delay
7   ..... [■]
6   ..... [ ]
5   ..... [ ]

 ↑↓:Move ENTER:Accept ESC:Abort``` |
| **DRAM RAS# to CAS# delay**

This field lets you insert a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed. Fast gives faster performance; and Slow gives more stable performance. This field applies only when synchronous DRAM is installed in the system. | ```DRAM RAS# to CAS# Delay

3   ..... [■]
2   ..... [ ]

 ↑↓:Move ENTER:Accept ESC:Abort``` |
| **DRAM RAS# Precharge**

The precharge time is the number of cycles it takes for the RAS to accumulate its charge before DRAM refresh. If insufficient time is allowed, refresh may be incomplete and the DRAM may fail to retain data. | ```DRAM RAS# Precharge

3   ..... [■]
2   ..... [ ]

 ↑↓:Move ENTER:Accept ESC:Abort``` |

Description	Choice
DRAM Data Integrity Mode	``` DRAM Data Integrity Mode Non-ECC ..... [■] ECC ..... [ ] ↑↓:Move ENTER:Accept ESC:Abort ```
MGM Core Frequency This Select equates are used for determining the FSB MEM / GFX LOW / GFX HIGH core frequency DRAM Data Integrity Mode.	``` MGM Core Frequency Auto Max 266MHz ..... [■] 400/266/133/200 MHz ..... [ ] 400/200/100/200 MHz ..... [ ] 400/200/100/133 MHz ..... [ ] 400/266/133/267 MHz ..... [ ] 400/333/166/250 MHz ..... [ ] Auto Max 400/333MHz ..... [ ] ↑↓:Move ENTER:Accept ESC:Abort ```
System BIOS Cacheable Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.	``` System BIOS Cacheable Disabled ..... [ ] Enabled ..... [■] ↑↓:Move ENTER:Accept ESC:Abort ```
Video BIOS Cacheable Selecting Enabled allows caching of the video BIOS ROM at C0000h - CFFFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result.	``` Video BIOS Cacheable Disabled ..... [■] Enabled ..... [ ] ↑↓:Move ENTER:Accept ESC:Abort ```

Description	Choice
AGP Aperture Size (MB) Select the size of the Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded. Host cycles that hit the aperture range are forwarded to the AGP without any translation.	``` AGP Aperture Size (MB) 4 ..... [ ] 8 ..... [ ] 16 ..... [ ] 32 ..... [ ] 64 ..... [■] 128 ..... [ ] 256 ..... [ ] ↑↓:Move ENTER:Accept ESC:Abort ```

On-Chip VGA setting

Description	Choice
On-Chip VGA When Enabled to choice the on-board VGA function, otherwise disabled the on-board VGA function.	``` On-Chip VGA Enabled ..... [■] Disabled ..... [ ] ↑↓:Move ENTER:Accept ESC:Abort ```
On chip Frame buffer size Select the size of video memory assigned from the main memory.	``` On-Chip Frame Buffer Size 1MB ..... [ ] 4MB ..... [ ] 8MB ..... [ ] 16MB ..... [ ] 32MB ..... [■] ↑↓:Move ENTER:Accept ESC:Abort ```
Boot Display Select the boot display device. CRT: Analog RGB Display LFP: LVDS Display	``` Boot Display Auto ..... [ ] CRT ..... [■] CRT+LFP ..... [ ] LFP ..... [ ] ↑↓:Move ENTER:Accept ESC:Abort ```

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Description	Choice
Panel Number Select the LVDS panel device resolution.	Panel Number 800 × 600 ..... [■] 1024 × 768 ..... [ ] 1280 × 1024 ..... [ ] ↑↓:Move ENTER:Accept ESC:Abort
Internal DDC ROM VGA(Analog RGB) use DDC data select. When Enabled display data read from internal DDC ROM. Normally select [Enabled].	Internal DDC ROM Disabled ..... [ ] Enabled ..... [■] ↑↓:Move ENTER:Accept ESC:Abort

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    F6: Fail-Safe Defaults   F7: Optimized Defaults
```

Figure 8.5. Integrated Peripherals

On-Chip IDE Device

```
            Phoenix - AwardBIOS CMOS Setup Utility
                    OnChip IDE Device
┌─────────────────────────────────────────┬───────────────────────┐
│ On-Chip Primary   PCI IDE [Enabled]      │      Item Help        │
│ IDE Primary Master PIO    [Auto]         │                       │
│ IDE Primary Slave  PIO    [Auto]         │  Menu Level   ▶▶      │
│ IDE Primary Master UDMA    [Auto]        │                       │
│ IDE Primary Slave  UDMA   [Auto]         │                       │
│ On-Chip Secondary PCI IDE [Enabled]      │                       │
│ IDE Secondary Master PIO  [Auto]         │                       │
│ IDE Secondary Slave  PIO  [Auto]         │                       │
│ IDE Secondary Master UDMA [Auto]         │                       │
│ IDE Secondary Slave  UDMA [Auto]         │                       │
│                                          │                       │
│ IDE HDD Block Mode         [Enabled]     │                       │
│                                          │                       │
│                                          │                       │
│                                          │                       │
└─────────────────────────────────────────┴───────────────────────┘
 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults
```

Figure 8.6. OnChip IDE Device

Description	Choice
On-Chip Primary PCI IDE The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately.	``` On-Chip Primary PCI IDE Disabled ..... [ ] Enabled ..... [■] ↑↓:Move ENTER:Accept ESC:Abort ```
IDE Primary Master/Slave PIO The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.	``` IDE Primary Master PIO Auto ..... [■] Mode 0 ..... [ ] Mode 1 ..... [ ] Mode 2 ..... [ ] Mode 3 ..... [ ] Mode 4 ..... [ ] ↑↓:Move ENTER:Accept ESC:Abort ```
IDE Primary Master/Slave UDMA UDMA (Ultra DMA) is a DMA data transfer protocol that utilizes ATA commands and the ATA bus to allow DMA commands to transfer data at a maximum burst rate of 33 MB/s. When you select Auto in the four IDE UDMA fields (for each of up to four IDE devices that the internal PCI IDE interface supports), the system automatically determines the optimal data transfer rate for each IDE device.	``` IDE Primary Master UDMA Disabled ..... [ ] Auto ..... [■] ↑↓:Move ENTER:Accept ESC:Abort ```
On-Chip Secondary PCI IDE The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select Enabled to activate each channel separately.	``` On-Chip Secondary PCI IDE Disabled ..... [ ] Enabled ..... [■] ↑↓:Move ENTER:Accept ESC:Abort ```

Description	Choice
| **IDE Secondary Master/Slave PIO**<br><br>The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0 - 4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device. | ```
IDE Secondary Master PIO

Auto    ..... [■]
Mode 0 ..... [ ]
Mode 1 ..... [ ]
Mode 2 ..... [ ]
Mode 3 ..... [ ]
Mode 4 ..... [ ]


  ↑↓:Move ENTER:Accept ESC:Abort
``` |
| **IDE Secondary Master/Slave UDMA**<br><br>UDMA (Ultra DMA) is a DMA data transfer protocol that utilizes ATA commands and the ATA bus to allow DMA commands to transfer data at a maximum burst rate of 33 MB/s. When you select Auto in the four IDE UDMA fields (for each of up to four IDE devices that the internal PCI IDE interface supports), the system automatically determines the optimal data transfer rate for each IDE device. | ```
IDE Secondary Slave  PIO

Auto    ..... [■]
Mode 0 ..... [ ]
Mode 1 ..... [ ]
Mode 2 ..... [ ]
Mode 3 ..... [ ]
Mode 4 ..... [ ]


  ↑↓:Move ENTER:Accept ESC:Abort
``` |
| **IDE HDD Block mode**<br><br>Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support. | ```
IDE HDD Block Mode

Disabled ..... [ ]
Enabled  ..... [■]




  ↑↓:Move ENTER:Accept ESC:Abort
``` |

Onboard Device

```
            Phoenix - AwardBIOS CMOS Setup Utility
                      Onboard Device
┌─────────────────────────────────────┬─────────────────────────┐
│  USB Controller          [Enabled]   │        Item Help        │
│  USB 2.0 Controller      [Enabled]   ├─────────────────────────┤
│  USB Keyboard Support    [Disabled]  │  Menu Level    ▶▶       │
│  USB Mouse Support       [Disabled]  │                         │
│  AC97 Audio              [Auto]      │                         │
│  Init Display First      [PCI Slot]  │                         │
│  internal LAN            [Enabled]   │                         │
│                                      │                         │
│                                      │                         │
│                                      │                         │
│                                      │                         │
│                                      │                         │
│                                      │                         │
│                                      │                         │
│                                      │                         │
└─────────────────────────────────────┴─────────────────────────┘
  ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
     F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults
```

Figure 8.7 Onboard Device

Description	Choice
USB Controller Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals.	```USB Controller────────────────┐│ Enabled ..... [■] ││ Disabled ..... [ ] ││ ││ ↑↓:Move ENTER:Accept ESC:Abort│```
USB 2.0 controller Select Enabled if your system contains a Universal Serial Bus (USB 2.0) controller and you have USB peripherals.	```USB 2.0 Controller────────────┐│ Enabled ..... [■] ││ Disabled ..... [ ] ││ ││ ↑↓:Move ENTER:Accept ESC:Abort│```

Description	Choice

USB Keyboard Support
 	
Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.
	```USB Keyboard Support```
	
	```Enabled ..... [■]```
	```Disabled ..... [ ]```
	
	```↑↓:Move ENTER:Accept ESC:Abort```

USB Mouse support
 	
Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB mouse.
	```USB Mouse Support```
	
	```Enabled ..... [■]```
	```Disabled ..... [ ]```
	
	```↑↓:Move ENTER:Accept ESC:Abort```

AC'97 Audio
 	
Select Enabled to use the audio capabilities of your system.
	```AC97 Audio```
	
	```Auto ..... [■]```
	```Disabled ..... [ ]```
	
	```↑↓:Move ENTER:Accept ESC:Abort```

Init Display First
 	
Initialize the AGP video display before initializing any other display device on the system. Thus the AGP display becomes the primary display.
	```Init Display First```
	
	```PCI Slot ..... [■]```
	```Onboard/AGP ..... [ ]```
	
	```↑↓:Move ENTER:Accept ESC:Abort```

Description	Choice
| **Internal LAN**<br><br>Select Enabled to active the onboard 10/100 LAN controller, select Disabled to turn-off the onboard 10/100 LAN controller when you do not want to use this function. | ```
internal LAN

Disabled ..... [ ]
Enabled  ..... [■]




 ↑↓:Move ENTER:Accept ESC:Abort
``` |

Super IO Device

```
              Phoenix - AwardBIOS CMOS Setup Utility
                          SuperIO Device
   ┌─────────────────────────────────────────┬───────────────────────┐
   │ Onboard FDC Controller    [Disabled]     │       Item Help       │
   │ Onboard Serial Port 1     [3F8/IRQ4]     │                       │
   │ Onboard Serial Port 2     [2F8/IRQ3]     │ Menu Level    ▶▶      │
   │ Onboard Parallel Port     [378/IRQ7]     │                       │
   │ Parallel Port Mode        [SPP]          │                       │
   │ EPP Mode Select           [EPP1.7]       │                       │
   │ ECP Mode Use DMA          [3]            │                       │
   │                                          │                       │
   │                                          │                       │
   │                                          │                       │
   │                                          │                       │
   │                                          │                       │
   │                                          │                       │
   │                                          │                       │
   │                                          │                       │
   │                                          │                       │
   └─────────────────────────────────────────┴───────────────────────┘
  ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
       F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults
```

Figure 8.8   Super I/O Device

Description	Choice
Onboard FDC Controller Always select "Disabled".	Onboard FDC Controller Disabled ..... [■] Enabled ..... [ ] ↑│:Move ENTER:Accept ESC:Abort
Onboard Serial Port 1 Select an address and corresponding interrupt for the first serial port (SERIAL1).	Onboard Serial Port 1 Disabled ..... [ ] 3F8/IRQ4 ..... [■] 2F8/IRQ3 ..... [ ] 3E8/IRQ4 ..... [ ] 2E8/IRQ3 ..... [ ] Auto ..... [ ] ↑│:Move ENTER:Accept ESC:Abort

Description	Choice

Onboard Serial Port 2
 	
Select an address and corresponding interrupt for the second serial port (SERIAL2).
	```Onboard Serial Port 2```
	
	```Disabled ..... [ ]```
	```3F8/IRQ4 ..... [ ]```
	```2F8/IRQ3 ..... [■]```
	```3E8/IRQ4 ..... [ ]```
	```2E8/IRQ3 ..... [ ]```
	```Auto ..... [ ]```
	
	```↑↓:Move ENTER:Accept ESC:Abort```

Power Management Setup

The Power Management Setup allows you to configure you system to most effectively save energy while operating in a manner consistent with your own style of computer use.

```
           Phoenix - AwardBIOS CMOS Setup Utility
                   Power Management Setup
┌─────────────────────────────────────────────┬───────────────────┐
│  Power-Supply Type         [ATX]             │     Item Help     │
│  Power after PWR fail       [Off]            │                   │
│  ACPI Function             [Enabled]         │  Menu Level   ▶   │
│  Power Management          [user define]     │                   │
│  Video Off In Suspend      [Yes]             │                   │
│  Suspend Mode              [Disabled]        │                   │
│  HDD Power Down            [Disabled]        │                   │
│  Soft-Off by PWR-BTTN      [Instant-Off]     │                   │
│  Wake Up On LAN/PCI card   [Enabled]         │                   │
│  Wake Up On Ring           [Disabled]        │                   │
│  Resume by Alarm           [Disabled]        │                   │
│   Date(of Month) Alarm        0              │                   │
│   Time(hh:mm:ss) Alarm      0 : 0 : 0        │                   │
│                                              │                   │
│  ** Reload Global Timer Events **            │                   │
│  Primary IDE 0             [Disabled]        │                   │
│  Primary IDE 1             [Disabled]        │                   │
│  Secondary IDE 0           [Disabled]        │                   │
│  Secondary IDE 1           [Disabled]        │                   │
│  FDD,COM,LPT Port          [Disabled]        │                   │
│  PCI PIRQ[A-D]#            [Disabled]        │                   │
└─────────────────────────────────────────────┴───────────────────┘
  ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values     F6: Fail-Safe Defaults     F7: Optimized Defaults
```

Figure 8.9. Power Management Setup

Description	Choice
Power-Supply Type Select the power supply type.	Power-Supply Type AT ..... [ ] ATX ..... [■] ↑↓:Move ENTER:Accept ESC:Abort
Power after PWR Fail Select a Power On status by the BIOS setup when power fail	PWRON After PWR-Fail Previous Status..... [ ] On ..... [ ] Off ..... [■] ↑↓:Move ENTER:Accept ESC:Abort

Description	Choice
ACPI function Select to Enabled the ACPI function and select Disabled to disable the APCI.	``` ACPI Function Enabled ..... [■] Disabled ..... [ ] ↑↓:Move ENTER:Accept ESC:Abort ```
Power management	``` Power Management User Define ..... [■] Min Saving ..... [ ] Max Saving ..... [ ] ↑↓:Move ENTER:Accept ESC:Abort ```
Video Off In Suspend This determines the manner in which the monitor is blanked.	``` Video Off In Suspend No ..... [ ] Yes ..... [■] ↑↓:Move ENTER:Accept ESC:Abort ```
Suspend Mode	``` Suspend Mode Disabled ..... [■] 1 Min ..... [ ] 2 Min ..... [ ] 4 Min ..... [ ] 8 Min ..... [ ] 12 Min ..... [ ] 20 Min ..... [ ] 30 Min ..... [ ] 40 Min ..... [ ] 1 Hour ..... [ ] ↑↓:Move ENTER:Accept ESC:Abort ```

Description	Choice
HDD Power Down When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.	``` HDD Power Down Disabled ..... [■] 1 Min ..... [ ] 2 Min ..... [ ] 3 Min ..... [ ] 4 Min ..... [ ] 5 Min ..... [ ] 6 Min ..... [ ] 7 Min ..... [ ] 8 Min ..... [ ] 9 Min ..... [ ] 10 Min ..... [ ] 11 Min ..... [ ] 12 Min ..... [ ] 13 Min ..... [ ] 14 Min ..... [ ] 15 Min ..... [ ] ↑↓:Move ENTER:Accept ESC:Abort ```

Soft-Off by PWR-BTTN
 	
Set up the operation of the power button at the time of power supply OFF.
 	
Instant-off :
 	
   If a button is pushed, it turns off immediately.
 	
Delay 4 Sec. :
 	
   If a button is pushing continues for 4 seconds, it turns off.
	``
	Soft-Off by PWR-BTTN
	
	Instant-Off ..... [■]
	Delay 4 Sec. ..... [ ]
	
	 ↑↓:Move ENTER:Accept ESC:Abort
	``

Wake up on LAN/PCI card When Enabled, your can awakens the system from Suspend mode from LAN/ PCI card event.	``` Wake Up On LAN/PCI card Disabled ..... [ ] Enabled ..... [■] ↑↓:Move ENTER:Accept ESC:Abort ```
Wake up on Ring An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state.	``` Wake Up On Ring Disabled ..... [■] Enabled ..... [ ] ↑↓:Move ENTER:Accept ESC:Abort ```

Description	Choice
| **Resume by Alarm**<br><br>When Enabled, your can set the date and time at which the RTC (real-time clock) alarm awakens the system from Suspend mode. | ```
Resume by Alarm

Disabled ..... [ ]
Enabled  ..... [■]




↑↓:Move ENTER:Accept ESC:Abort
``` |

| ```
 Date(of Month) Alarm


Min=    0
Max=   31

Key in a DEC number :



 ↑↓:Move ENTER:Accept ESC:Abort
``` | ```
 Time(hh:mm:ss) Alarm


Min=    0
Max=   23

Key in a DEC number :



 ↑↓:Move ENTER:Accept ESC:Abort
``` |

Reload Global Timer Events: When Enabled, an event occurring on each listed device restarts the global timer for Standby mode.

| ```
Primary IDE 0 /1

Disabled ..... [■]
Enabled  ..... [ ]




 ↑↓:Move ENTER:Accept ESC:Abort
``` | ```
Secondary IDE 0 /1

Disabled ..... [■]
Enabled  ..... [ ]




 ↑↓:Move ENTER:Accept ESC:Abort
``` |

| ```
FDD,COM,LPT Port

Disabled ..... [■]
Enabled  ..... [ ]




 ↑↓:Move ENTER:Accept ESC:Abort
``` | ```
 PCI PIRQ[A-D]#

Disabled ..... [■]
Enabled  ..... [ ]




 ↑↓:Move ENTER:Accept ESC:Abort
``` |

PnP/PCI Configuration Setup

This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

```
              Phoenix - AwardBIOS CMOS Setup Utility
                      PnP/PCI Configurations
┌──────────────────────────────────────────┬──────────────────────┐
│  PNP OS Installed        [No]             │      Item Help       │
│  Reset Configuration Data [Disabled]      ├──────────────────────┤
│                                           │ Menu Level    ▶      │
│  Resources Controlled By  [Manual]        │                      │
│ ▶ IRQ Resources           [Press Enter]   │ Select Yes if you are│
│ ▶ DMA Resources           [Press Enter]   │ using a Plug and Play│
│                                           │ capable operating    │
│  PCI/VGA Palette Snoop    [Disabled]      │ system Select No if   │
│                                           │ you need the BIOS to │
│                                           │ configure non-boot   │
│                                           │ devices              │
│                                           │                      │
│                                           │                      │
│                                           │                      │
│                                           │                      │
│                                           │                      │
└──────────────────────────────────────────┴──────────────────────┘
 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
     F5: Previous Values     F6: Fail-Safe Defaults    F7: Optimized Defaults
```

Figure 8.10. PnP/PCI Configuration Setup

Description	Choices

PNP OS Installed
 	
In the case of OS corresponding to Plug-and-Play, selection of Yes assigns a resource automatically.
	```PNP OS Installed```
	
	```No ..... [∎]```
	```Yes ..... [ ]```
	
	```↑↓:Move ENTER:Accept ESC:Abort```

Reset Configuration Data
 	
Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system can not boot
	```Reset Configuration Data```
	
	```Disabled ..... [∎]```
	```Enabled ..... [ ]```
	
	```↑↓:Move ENTER:Accept ESC:Abort```

Description	Choices
| **Resource Controlled by**<br><br>The Award Plug and Play BIOS can automatically configure all the boot and Plug and Play – compatible devices. If you select Auto, all the interrupt request (IRQ) and DMA assignment fields disappear, as the BIOS automatically assigns them | ```
Resources Controlled By

Auto<ESCD> ..... [ ]
Manual    ..... [■]




 ↑↓:Move ENTER:Accept ESC:Abort
``` |

IRQ n Resources

```
              Phoenix - AwardBIOS CMOS Setup Utility
                         IRQ Resources
┌─────────────────────────────────────────────────┬───────────────────────┐
│  IRQ-3   assigned to        [PCI/ISA PnP]        │      Item Help        │
│  IRQ-4   assigned to        [PCI/ISA PnP]        ├───────────────────────┤
│  IRQ-5   assigned to        [PCI/ISA PnP]        │ Menu Level    ▶▶      │
│  IRQ-7   assigned to        [PCI/ISA PnP]        │                       │
│  IRQ-9   assigned to        [PCI/ISA PnP]        │ Legacy ISA for devices│
│  IRQ-10 assigned to         [PCI/ISA PnP]        │ compliant with the    │
│  IRQ-11 assigned to         [PCI/ISA PnP]        │ original PC AT bus     │
│  IRQ-12 assigned to         [PCI/ISA PnP]        │ specification, PCI/ISA │
│  IRQ-14 assigned to         [PCI/ISA PnP]        │ PnP for devices       │
│  IRQ-15 assigned to         [PCI/ISA PnP]        │ compliant with the    │
│                                                  │ Plug and Play standard│
│                                                  │ whether designed for  │
│                                                  │ PCI or ISA bus        │
│                                                  │ architecture          │
│                                                  │                       │
│                                                  │                       │
└─────────────────────────────────────────────────┴───────────────────────┘
 ↑↓→←:Move   Enter:Select   +/-/PU/PD:Value  F10:Save   ESC:Exit  F1:General Help
    F5: Previous Values      F6: Fail-Safe Defaults     F7: Optimized Defaults
```

Figure 8.11.   IRQ n Resources

When resources are controlled manually, assign each system interrupt as on of the following type, depending on the type of device using the interrupt.

Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (Such as IRQ4 for serial port 1)

PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

The Choice: Legacy ISA and PCI/ISA PnP.

DMA n Resources

```
              Phoenix - AwardBIOS CMOS Setup Utility
                         DMA Resources
┌─────────────────────────────────────────────────┬───────────────────────┐
│  DMA-0 assigned to          [PCI/ISA PnP]        │      Item Help        │
│  DMA-1 assigned to          [PCI/ISA PnP]        ├───────────────────────┤
│  DMA-3 assigned to          [PCI/ISA PnP]        │ Menu Level    ▶▶      │
│  DMA-5 assigned to          [PCI/ISA PnP]        │                       │
│  DMA-6 assigned to          [PCI/ISA PnP]        │ Legacy ISA for devices│
│  DMA-7 assigned to          [PCI/ISA PnP]        │ compliant with the    │
│                                                  │ original PC AT bus     │
│                                                  │ specification, PCI/ISA │
│                                                  │ PnP for devices       │
│                                                  │ compliant with the    │
│                                                  │ Plug and Play standard│
│                                                  │ whether designed for  │
│                                                  │ PCI or ISA bus        │
│                                                  │ architecture          │
│                                                  │                       │
│                                                  │                       │
│                                                  │                       │
└─────────────────────────────────────────────────┴───────────────────────┘
 ↑↓→←:Move   Enter:Select   +/-/PU/PD:Value  F10:Save   ESC:Exit  F1:General Help
    F5: Previous Values      F6: Fail-Safe Defaults     F7: Optimized Defaults
```

When resources are controlled manually, assign each system DMA channel as one of the following types, depending on the type of device using the interrupt: Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.

The Choice: Legacy ISA and PCI/ISA PnP.

Description	Choices
PCI/VGA Palette Snoop Leave this field at Disabled.	PCI/VGA Palette Snoop Disabled ..... [■] Enabled ..... [ ] ↑↓:Move ENTER:Accept ESC:Abort

PC Health Status

```
            Phoenix - AwardBIOS CMOS Setup Utility
                      PC Health Status

                                              ┌─────────────────┐
                                              │    Item Help    │
   Delay Prior to Thermal        [16min]      ├─────────────────┤
   CPU Temperature Function      [Disabled]   │ Menu Level   ▶  │
   Warning BEEP                  Disabled     │                 │
   THRM-Throuttling              Disabled     │                 │
   CPU THRM-Throuttling          50%          │                 │
   Current System Temp.                       │                 │
   Current CPU1 Temperature                   │                 │
   Current CPUFAN1 Speed                      │                 │
   Current CPUFAN2 Speed                      │                 │
   Vcore                                      │                 │
   VCCP                                       │                 │
   +3.3V                                      │                 │
   + 5 V                                      │                 │
   +12V                                       │                 │
   -12V                                       │                 │
   VBAT(V)                                    │                 │
   5VSB(V)                                    │                 │
                                              │                 │
                                              │                 │
                                              └─────────────────┘

 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults
```

Figure 8.12.   PC Health Status

The BIOS shows the PC health status in this window.

Item	Description
| Delay Prior to Thermal<br><br>Select the interval to setup the delay timer for CPU Thermal-Throttling. | ```
Delay Prior to Thermal

  4 Min   ..... [ ]
  8 Min   ..... [ ]
 16 Min   ..... [■]
 32 Min   ..... [ ]




 ↑↓:Move ENTER:Accept ESC:Abort
``` |
| CPU THRM-Throttling<br><br>To select throttling ration for CPU speed down active when CPU temperature up to over specification. | ```
CPU THRM-Throttling

87.5% ..... [■]
75.0% ..... [ ]
62.5% ..... [ ]
50.0% ..... [ ]
37.5% ..... [ ]
25.0% ..... [ ]
12.5% ..... [ ]


 ↑↓:Move ENTER:Accept ESC:Abort
``` |
Current System Temp.	This field displays the current system temperature, if your computer contains a monitoring system.
Current CPU1 Temp.	This field displays the current CPU temperature, if your computer contains a monitoring system.
Current CPUFAN1 / CPUFAN2 Speed	These fields display the current speed of up to three CPU fans, if your computer contains a monitoring system.
Vcore / VCCP / +12V / +5V / +3.3V / VBAT / 5VSB	These fields display the current voltage of input lines, if your computer contains a monitoring system.

◎CONTEC
SLC-8521-LA

Frequency / Voltage Control

```
            Phoenix - AwardBIOS CMOS Setup Utility
                   Frequency/Voltage Control
┌─────────────────────────────────────────┬──────────────────────────┐
│  Spread Spectrum           [Disabled]    │        Item Help         │
│                                          │                          │
│                                          │   Menu Level    ▶        │
│                                          │                          │
│                                          │                          │
│                                          │                          │
│                                          │                          │
│                                          │                          │
│                                          │                          │
│                                          │                          │
│                                          │                          │
│                                          │                          │
│                                          │                          │
│                                          │                          │
│                                          │                          │
└─────────────────────────────────────────┴──────────────────────────┘
 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
    F5: Previous Values    F6: Fail-Safe Defaults    F7: Optimized Defaults
```
Figure 8.13. Frequency/Voltage Control

Spread Spectrum

When the system clock generator pulses, the extreme values of the pulse generate excess EMI. Enabling pulse spectrum spread modulation changes the extreme values from spikes to flat curves, thus reducing EMI. However, since a system may become unstable if it is set as "Enabled", so it is usually set as "Disabled".

```
┌──────────────────────────────────┐
│  Spread Spectrum                 │
│  ──────────────────────────────  │
│  Enabled  ..... [ ]              │
│  Disabled ..... [■]              │
│                                  │
│                                  │
│                                  │
│  ──────────────────────────────  │
│   ↑↓:Move ENTER:Accept ESC:Abort │
└──────────────────────────────────┘
```

Defaults Menu

Selecting "Defaults" from the main menu shows you two options which are described below

Load Fail-Safe Defaults

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

Load Fail-Safe Defaults (Y/N) ? N

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

Load Optimized Defaults

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

Load Optimized Defaults (Y/N) ? N

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

Supervisor /User Password Setting

You can set either supervisor or user password, or both of then. The differences between are:

SUPERVISOR PASSWORD: can enter and change the options of the setup menus.

USER PASSWORD: just can only enter but do not have the right to change the options of the setup menus. When you select this unction, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED.

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option (see Section 3). If the Security option is set to "System", the password will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs when trying to enter Setup.

Exit Selecting

Load Fail-Safe Defaults

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? Y

Pressing "Y" stores the selections made in the menus in CMOS – a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? Y

This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

POST Messages

During the Power On Self-Test (POST), if the BIOS detects an error requiring you to do something to fix, it will either sound a beep code or display a message.

If a message is displayed, it will be accompanied by:

PRESS F1 TO CONTINUE, CTRL-ALT-ESC OR DEL TO ENTER SETUP

POST Beep

Currently there are two kinds of beep codes in BIOS. This code indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by two short beeps. The other code indicates that your DRAM error has occurred. This beep code consists of a single long beep repeatedly.

Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list includes messages for both the ISA and the EISA BIOS.

CMOS battery has failed

CMOS battery is no longer functional. It should be replaced.

CMOS checksum error

Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

DISK BOOT failure

INSERT SYSTEM DISK AND PRESS ENTER

No boot device was found. This could mean that either a boot drive was not detected or the drive does not contain proper system boot files. Insert a system disk into Drive A: and press <Enter>. If you assumed the system would boot from the hard drive, make sure the controller is inserted correctly and all cables are properly attached. Also be sure the disk is formatted as a boot device. Then reboot the system.

Diskette drives or types mismatch error

RUN SETUP

Type of diskette drive installed in the system is different from the CMOS definition. Run Setup to reconfigure the drive type correctly.

Display switch is set incorrectly

Display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, and then either turn off the system and change the jumper, or enter Setup and change the VIDEO selection.

Display type has changed since last BOOT

Since last powering off the system, the display adapter has been changed. You must configure the system for the new display type.

EISA configuration checksum error

PLEASE RUN EISA CONFIGURATION UTILITY

The EISA non-volatile RAM checksum is incorrect or cannot correctly read the EISA slot. This can indicate either the EISA non-volatile memory has become corrupt or the slot has been configured incorrectly. Also be sure the card is in-stalled firmly in the slot.

EISA configuration is not complete

PLEASE RUN EISA CONFIGURATION UTILITY

The slot configuration information stored in the EISA non-volatile memory is incomplete.

> Note: When either of these errors appear, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

Error encountered initializing hard drive

Hard drive cannot be initialized. Be sure the adapter **is** installed correctly and all cables are correctly and firmly attached. Also be sure the correct hard drive type is selected in Setup.

Error initializing hard disk controller

Cannot initialize controller. Make sure the cord is correctly and firmly installed in the bus. Be sure the correct hard drive type is selected in Setup. Also check to see if any jumper needs to be set correctly on the hard drive.

Floppy disk controller error or no controller present

Cannot find or initialize the floppy drive controller. Make sure the controller is installed correctly and firmly. If there are no floppy drives installed, be sure the Diskette Drive selection in Setup is set to NONE.

Invalid EISA configuration

> *PLEASE RUN EISA CONFIGURATION UTILITY*

The non-volatile memory containing EISA configuration information was programmed incorrectly or has become corrupt. Re-run EISA configuration utility to correctly program the memory.

> Note: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

Keyboard error or no keyboard present

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

If you are purposely configuring the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD. This will cause the BIOS to ignore the missing keyboard and continue the boot.

Memory address error at …

Indicates a memory address error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

Memory parity error at …

Indicates a memory parity error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

Memory size has changed since last BOOT

Memory has been added or removed since the last boot. In EISA mode use Configuration Utility to reconfigure the memory configuration. In ISA mode enter Setup and enter the new memory size in the memory fields.

Memory verify error at …

Indicates an error verifying a value already written to memory. Use the location along with your system's memory map to locate the bad chip.

Offending address not found

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem cannot be isolated.

Offending segment

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem has been isolated.

Press a key to REBOOT

This will be displayed at the bottom screen when an error occurs that requires you to reboot. Press any key and the system will reboot.

Press F1 to disable NMI, F1 to REBOOT

When BIOS detects a Non-maskable Interrupt condition during boot, this will allow you to disable the NMI and continue to boot, or you can reboot the system with the NMI enabled.

RAM parity error

>*CHECKING FOR SEGMENT ...*

Indicates a parity error in Random Access Memory.

Should be empty but EISA board found

>*PLEASE RUN EISA CONFIGURATION UTILITY*

A valid board ID was found in a slot that was configured as having no board ID.

> Note, When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

Should have EISA board but not found

>*PLEASE RUN EISA CONFIGURATION UTILITY*

The board installed is not responding to the ID request, or no board ID has been found in the indicated slot.

> Note, When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

Slot not empty

Indicates that a slot designated as empty by the EISA Configuration Utility actually con-tains a board.

> Note, When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

System halted, (CTRL-ALT-DEL) to REBOOT …

Indicates the present boot attempt has been aborted and the system must be rebooted. Press and hold down the CTRL and ALT keys and press DEL.

Wrong board in slot

>*PLEASE RUN EISA CONFIGURATION UTILITY*

The board ID does not match the ID stored in the EISA non-volatile memory.

> Note, When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

Floppy disk(s) fail (80)

Unable to reset floppy subsystem.

Floppy disk(s) fail (40)

Floppy Type mismatch.

Hard disk(s) fail (80)

HDD reset failed.

Hard disk(s) fail (40)

HDD controller diagnostics failed.

Hard disk(s) fail (20)

HDD initialization error.

Hard disk(s) fail (10)

Unable to recalibrate fixed disk.

Hark disk(s) fail (08)

Sector Verify failed.

Keyboard is locked out - Unlock the key

Unlock the key. BIOS detect the keyboard is locked. P17 of keyboard controller is pulled low.

Keyboard error or no keyboard present

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

Manufacturing POST loop

System will repeat POST procedure infinitely while the P15 of keyboard controller is pull low. This is also used for M/B burn in test.

BIOS ROM checksum error -System halted

The checksum of ROM address F0000H - FFFFFH is bad.

Memory test fail

BIOS reports the memory tests fail if the onboard memory is tested error.

POST Codes

POST (hex)	Description
CFh	Test CMOS R/W functionality.
C0h	Early chipset initialization: -Disable shadow RAM -Disable L2 cache (socket 7 or below) -Program basic chipset registers

C1h	Detect memory
	    -Auto-detection of DRAM size, type and ECC.
	    -Auto-detection of L2 cache (socket 7 or below)

C3h	Expand compressed BIOS code to DRAM
C5h	Call chipset hook to copy BIOS back to E000 & F000 shadow RAM.
01h	Expand the Xgroup codes locating in physical address 1000:0
02h	Reserved
03h	Initial Superio_Early_Init switch.
04h	Reserved
05h	1. Blank out screen 2. Clear CMOS error flag
06h	Reserved
07h	Clear 8042 interface Initialize 8042 self-test
08h	Test special keyboard controller for Winbond 977 series Super I/O chips. Enable keyboard interface.
09h	Reserved
0Ah	Disable PS/2 mouse interface (optional). Auto detect ports for keyboard & mouse followed by a port & interface swap (optional). Reset keyboard for Winbond 977 series Super I/O chips.
0Bh	Reserved
0Ch	Reserved
0Dh	Reserved
0Eh	Test F000h segment shadow to see whether it is R/W-able or not. If test fails, keep beeping the speaker.
0Fh	Reserved
10h	Auto detect flash type to load appropriate flash R/W codes into the run time area in F000 for ESCD & DMI support.
11h	Reserved
12h	Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real-time clock power status, and then check for override.
13h	Reserved
14h	Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers.
15h	Reserved
16h	Initial Early_Init_Onboard_Generator switch.
17h	Reserved
18h	Detect CPU information including brand, SMI type (Cyrix or Intel®) and CPU level (586 or 686).
19h	Reserved
1Ah	Reserved
1Bh	Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR.
1Ch	Reserved
1Dh	Initial EARLY_PM_INIT switch.

POST (hex)	Description
1Eh	Reserved
1Fh	Load keyboard matrix (notebook platform)
20h	Reserved
21h	HPM initialization (notebook platform)
22h	Reserved
23h	Check validity of RTC value: e.g. a value of 5Ah is an invalid value for RTC minute. Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead. Prepare BIOS resource map for PCI & PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information. Onboard clock generator initialization. Disable respective clock resource to empty PCI & DIMM slots. Early PCI initialization: -Enumerate PCI bus number -Assign memory & I/O resource -Search for a valid VGA device & VGA BIOS, and put it into C000:0.
24h	Reserved
25h	Reserved
26h	Reserved
27h	Initialize INT 09 buffer
28h	Reserved
29h	Program CPU internal MTRR (P6 & PII) for 0 - 640K memory address. Initialize the APIC for Pentium class CPU. Program early chipset according to CMOS setup. Example: onboard IDE controller. Measure CPU speed. Invoke video BIOS.
2Ah	Reserved
2Bh	Reserved
2Ch	Reserved
2Dh	Initialize multi-language Put information on screen display, including Award title, CPU type, CPU speed ….
2Eh	Reserved
2Fh	Reserved
30h	Reserved
31h	Reserved
32h	Reserved
33h	Reset keyboard except Winbond 977 series Super I/O chips.
34h	Reserved
35h	Reserved
36h	Reserved
37h	Reserved
38h	Reserved
39h	Reserved
3Ah	Reserved
3Bh	Reserved
3Ch	Test 8254
3Dh	Reserved
3Eh	Test 8259 interrupt mask bits for channel 1.
3Fh	Reserved
40h	Test 8259 interrupt mask bits for channel 2.
41h	Reserved
42h	Reserved
43h	Test 8259 functionality.

POST (hex)	Description
44h	Reserved
45h	Reserved
46h	Reserved
47h	Initialize EISA slot
48h	Reserved
49h	Calculate total memory by testing the last double word of each 64K page. Program writes allocation for AMD K5 CPU.
4Ah	Reserved
4Bh	Reserved
4Ch	Reserved
4Dh	Reserved
4Eh	Program MTRR of M1 CPU Initialize L2 cache for P6 class CPU & program CPU with proper cacheable range. Initialize the APIC for P6 class CPU. On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical.
4Fh	Reserved
50h	Initialize USB
51h	Reserved
52h	Test all memory (clear all extended memory to 0)
53h	Reserved
54h	Reserved
55h	Display number of processors (multi-processor platform)
56h	Reserved
57h	1. Display PnP logo 2. Early ISA PnP initialization -Assign CSN to every ISA PnP device.
58h	Reserved
59h	Initialize the combined Trend Anti-Virus code.
5Ah	Reserved
5Bh	(Optional Feature) Show message for entering AWDFLASH.EXE from FDD (optional)
5Ch	Reserved
5Dh	Initialize Init_Onboard_Super_IO switch. Initialize Init_Onbaord_AUDIO switch.
5Eh	Reserved
5Fh	Reserved
60h	Okay to enter Setup utility; i.e. not until this POST stage can users enter the CMOS setup utility.
61h	Reserved
62h	Reserved
63h	Reserved
64h	Reserved
65h	Initialize PS/2 Mouse
66h	Reserved
67h	Prepare memory size information for function call: INT 15h ax=E820h
68h	Reserved
69h	Turn on L2 cache
6Ah	Reserved
6Bh	Program chipset registers according to items described in Setup & Auto-configuration table.
6Ch	Reserved
6Dh	Assign resources to all ISA PnP devices. Auto assign ports to onboard COM ports if the corresponding item in Setup is set to "AUTO".

POST (hex)	Description
6Eh	Reserved
6Fh	Initialize floppy controller Set up floppy related fields in 40:hardware.
70h	Reserved
71h	Reserved
72h	Reserved
73h	(Optional Feature) Enter AWDFLASH.EXE if : 　　-AWDFLASH is found in floppy drive. 　　-ALT+F2 is pressed
74h	Reserved
75h	Detect & install all IDE devices: HDD, LS120, ZIP, CDROM…..
76h	Reserved
77h	Detect serial ports & parallel ports.
78h	Reserved
79h	Reserved
7Ah	Detect & install co-processor
7Bh	Reserved
7Ch	Reserved
7Dh	Reserved
7Eh	Reserved
7Fh	Switch back to text mode if full screen logo is supported. -If errors occur, report errors & wait for keys -If no errors occur or F1 key is pressed to continue: ◆Clear EPA or customization logo.
80h	Reserved
81h	Reserved
82h	Call chipset power management hook. Recover the text fond used by EPA logo (not for full screen logo) If password is set, ask for password.
83h	Save all data in stack back to CMOS
84h	Initialize ISA PnP boot devices
85h	USB final Initialization NET PC: Build SYSID structure Switch screen back to text mode Set up ACPI table at top of memory. Invoke ISA adapter ROMs Assign IRQs to PCI devices Initialize APM Clear noise of IRQs.
86h	Reserved
87h	Reserved
88h	Reserved
89h	Reserved
90h	Reserved
91h	Reserved
92h	Reserved
93h	Read HDD boot sector information for Trend Anti-Virus code

POST (hex)	Description
94h	Enable L2 cache Program boot up speed Chipset final initialization. Power management final initialization Clear screen & display summary table Program K6 write allocation Program P6 class write combining
95h	Program daylight saving Update keyboard LED & typematic rate
96h	Build MP table Build & update ESCD Set CMOS century to 20h or 19h Load CMOS time into DOS timer tick Build MSIRQ routing table.
FFh	Boot attempt (INT 19h)

SLC-8521-LA

User's Manual