NEXCOM International Co., Ltd.

Industrial Computing Solutions
Fan-less Computer
NISE 101
User Manual

www.nexcom.com

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PREFACE

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Acknowledgements

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Regulatory Compliance Statements

This section provides the FCC compliance statement for Class A devices and describes how to keep the system CE compliant.

Declaration of Conformity

FCC

This equipment has been tested and verified to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area (domestic environment) is likely to cause harmful interference, in which case the user will be required to correct the interference (take adequate measures) at their own expense.

CE

The product(s) described in this manual complies with all applicable European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

RoHS Compliance

NEXCOM RoHS Environmental Policy and Status Update

NEXCOM is a global citizen for building the digital infrastructure. We are committed to providing green products and services, which are compliant with European Union RoHS (Restriction on Use of Hazardous Substance in Electronic Equipment) directive 2002/95/EU, to be your trusted green partner and to protect our environment.

RoHS restricts the use of Lead (Pb) < 0.1% or 1,000ppm, Mercury (Hg) < 0.1% or 1,000ppm, Cadmium (Cd) < 0.01% or 100ppm, Hexavalent Chromium (Cr6+) < 0.1% or 1,000ppm, Polybrominated biphenyls (PBB) < 0.1% or 1,000ppm, and Polybrominated diphenyl Ethers (PBDE) < 0.1% or 1,000ppm.

In order to meet the RoHS compliant directives, NEXCOM has established an engineering and manufacturing task force in to implement the introduction of green products. The task force will ensure that we follow the standard NEXCOM development procedure and that all the new RoHS components and new manufacturing processes maintain the highest industry quality levels for which NEXCOM are renowned.

The model selection criteria will be based on market demand. Vendors and suppliers will ensure that all designed components will be RoHS compliant.

How to recognize NEXCOM RoHS Products?

For existing products where there are non-RoHS and RoHS versions, the suffix "(LF)" will be added to the compliant product name.

All new product models launched after January 2006 will be RoHS compliant. They will use the usual NEXCOM naming convention.

Warranty and RMA

NEXCOM Warranty Period

NEXCOM manufactures products that are new or equivalent to new in accordance with industry standard. NEXCOM warrants that products will be free from defect in material and workmanship for 2 years, beginning on the date of invoice by NEXCOM. HCP series products (Blade Server) which are manufactured by NEXCOM are covered by a three year warranty period.

NEXCOM Return Merchandise Authorization (RMA)

- Customers shall enclose the "NEXCOM RMA Service Form" with the returned packages.

- Customers must collect all the information about the problems encountered and note anything abnormal or, print out any on-screen messages, and describe the problems on the "NEXCOM RMA Service Form" for the RMA number apply process.

- Customers can send back the faulty products with or without accessories (manuals, cable, etc.) and any components from the card, such as CPU and RAM. If the components were suspected as part of the problems, please note clearly which components are included. Otherwise, NEXCOM is not responsible for the devices/parts.

- Customers are responsible for the safe packaging of defective products, making sure it is durable enough to be resistant against further damage and deterioration during transportation. In case of damages occurred during transportation, the repair is treated as "Out of Warranty."

- Any products returned by NEXCOM to other locations besides the customers' site will bear an extra charge and will be billed to the customer.

Repair Service Charges for Out-of-Warranty Products

NEXCOM will charge for out-of-warranty products in two categories, one is basic diagnostic fee and another is component (product) fee.

System Level

- Component fee: NEXCOM will only charge for main components such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistor, capacitor.

- Items will be replaced with NEXCOM products if the original one cannot be repaired. Ex: motherboard, power supply, etc.

- Replace with 3rd party products if needed.

- If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

Board Level

- Component fee: NEXCOM will only charge for main components, such as SMD chip, BGA chip, etc. Passive components will be repaired for free, ex: resistors, capacitors.

- If RMA goods can not be repaired, NEXCOM will return it to the customer without any charge.

Warnings

Read and adhere to all warnings, cautions, and notices in this guide and the documentation supplied with the chassis, power supply, and accessory modules. If the instructions for the chassis and power supply are inconsistent with these instructions or the instructions for accessory modules, contact the supplier to find out how you can ensure that your computer meets safety and regulatory requirements.

Cautions

Electrostatic discharge (ESD) can damage system components. Do the described procedures only at an ESD workstation. If no such station is available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the computer chassis.

Safety Information

Before installing and using the device, note the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Follow all warnings and cautions in this manual.
- When replacing parts, ensure that your service technician uses parts specified by the manufacturer.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- The load of the system unit does not solely rely for support from the rackmounts located on the sides. Firm support from the bottom is highly necessary in order to provide balance stability.
- The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Installation Recommendations

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- A Philips screwdriver
- A flat-tipped screwdriver
- A grounding strap
- An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needlenose pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

Safety Precautions

1. Read these safety instructions carefully.

2. Keep this User Manual for later reference.

3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.

4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.

5. Keep this equipment away from humidity.

6. Put this equipment on a stable surface during installation. Dropping it or letting it fall may cause damage.

7. Do not leave this equipment in either an unconditioned environment or in a above 40°C storage temperature as this may damage the equipment.

8. The openings on the enclosure are for air convection to protect the equipment from overheating. DO NOT COVER THE OPENINGS.

9. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.

10. Place the power cord in a way so that people will not step on it. Do not place anything on top of the power cord. Use a power cord that has been approved for use with the product and that it matches the voltage and current marked on the product's electrical range label. The voltage and current rating of the cord must be greater than the voltage and current rating marked on the product.

11. All cautions and warnings on the equipment should be noted.

12. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.

13. Never pour any liquid into an opening. This may cause fire or electrical shock.

14. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.

15. If one of the following situations arises, get the equipment checked by service personnel:

    a. The power cord or plug is damaged.

    b. Liquid has penetrated into the equipment.

    c. The equipment has been exposed to moisture.

    d. The equipment does not work well, or you cannot get it to work according to the user's manual.

    e. The equipment has been dropped and damaged.

    f. The equipment has obvious signs of breakage.

16. Do not place heavy objects on the equipment.

17. The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.

18. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

19. The computer is provided with CD drives that comply with the appropriate safety standards including IEC 60825.

Technical Support and Assistance

1. For the most updated information of NEXCOM products, visit NEX-COM's website at www.nexcom.com.

2. For technical issues that require contacting our technical support team or sales representative, please have the following information ready before calling:

   – Product name and serial number
   – Detailed information of the peripheral devices
   – Detailed information of the installed software (operating system, version, application software, etc.)
   – A complete description of the problem
   – The exact wordings of the error messages

Warning!

1. Handling the unit: carry the unit with both hands and handle it with care.

2. Maintenance: to keep the unit clean, use only approved cleaning products or clean with a dry cloth.

3. CompactFlash: Turn off the unit's power before inserting or removing a CompactFlash storage card.

Conventions Used in this Manual

Warning: Information about certain situations, which if not observed, can cause personal injury. This will prevent injury to yourself when performing a task.

Caution: Information to avoid damaging components or losing data.

Note: Provides additional information to complete a task easily.

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http://www.nexcom-jp.com

PACKAGE CONTENTS

Before continuing, verify that the NISE 101 package that you received is complete. Your package should have all the items listed in the following table.

Item	P/N	Description	Qty
1	60177A0197X00	NISE101 QUICK REFERENCE GUIDE VER:A	1
2	602DCD0260X00	NISE101 CD DRIVER VER:1.0	1
3	50311F0110X00	FLAT HEAD SCREW LONG F3x5 NI NYLOK	4
4	60233MK202X00	PS/2 Cable	1
5	60233POW33X00	DC CORD Cable	1

ORDERING INFORMATION

The following provides ordering information for NISE 101.

- **Barebone**
  NISE 101 (P/N: 10J00010100x0)
  - Intel® Atom™ N270 Fanless System

- **12V, 60W AC/DC power adapter w/o power cord**
  (P/N: 7400060009X00)

Chapter 1: Product Introduction

Overview

Front

Rear

Key Features

- Onboard Intel® Atom™ N270 processor, 1.6GHz
- Intel® 945GSE chipset
- Dual 10/100/1000 Mbps LAN ports
- 2 x USB 2.0 ports
- 1 x VGA port
- 1 x DVI-D port
- 1 x PS/2 port

- 1 x RS232/422/485 and 1 x RS232 ports
- Onboard DC to DC power designed to support +12V DC power input
- Supports ATX power mode

Hardware Specifications

CPU

- Onboard Intel® Atom™ N270 processor, 1.6GHz
- 533MHz FSB

Chipset

- Intel® 945GSE and ICH7M

Main Memory

- One DDR2 SODIMM socket
- Single channel
- Supports up to 2GB DDR2 400/533 SDRAM, unbuffered, non-ECC

I/O Interface - Front

- ATX Power on/off switch
- 1 x RS232/422/485 port
- 1 x Mic-in
- 1 x Speaker-out
- 1 x PS/2 port for keyboard and mouse
- 1 x DVI-D port

I/O Interface - Rear

- 1 Antenna hole
- 1 x RS232 port
- HDD Access LED
- Power Status LED
- 1 x DB15 VGA port
- 2 x USB 2.0 ports
- 2 x 10/100/1000 Intel LAN ports
- +12V DC power input

Device

- 1 x 2.5" HDD drive bay
- 1 x internal CF card socket
- 1 x Mini-PCIe socket

Power Requirements

- DC to DC power designed for onboard support of +12V DC
- Optional external 60W AC/DC lockable power adapter
  Power input: 100V to 240V AC 2A 50/60Hz
  Power output: 12V DC

Dimensions

- 185mm (W) x 132mm (D) x 54mm (H) (7.28" x 5.2" x 2.13")

Construction

- Aluminum chassis with fan-less design

Environment

- Operating temperature:
  Ambient with airflow: -5°C to 55°C
  (According to IEC60068-2-1, IEC60068-2-2, IEC60068-2-14)
- Storage temperature: -20°C to 80°C
- Relative humidity: 10% to 93% (Non-Condensing)

Certifications

- CE approval
- FCC Class A

Getting to Know NISE 101

Front Panel

PS/2 Port

Used to connect a PS/2 keyboard/mouse device.

DVI-D Port

Used to connect a digital LCD panel.
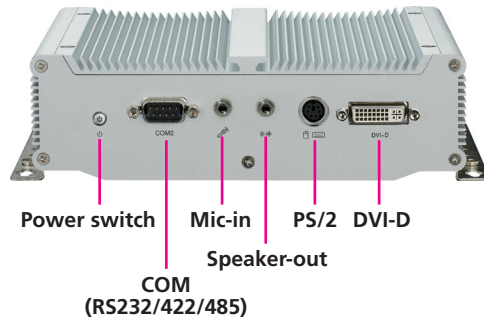
ATX Power On/Off Switch

Press to power-on or power-off the system.

COM Port

The COM port supports RS232/422/485 compatible serial devices.

Mic-in Jack

Used to connect an external microphone.

Speaker-out Jack

Used to connect a headphone or a speaker.

Rear Panel

Antenna hole

HDD LED

COM
(RS232)

VGA USB

+12V DC

Power LED

LAN LAN
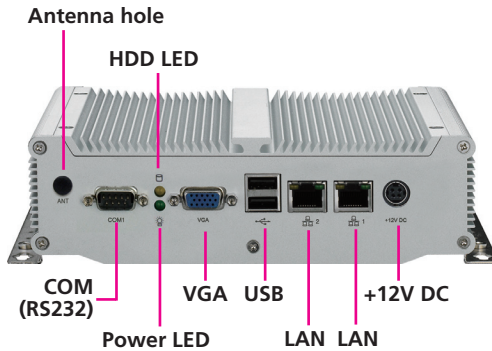
COM Port

The COM port supports RS232 compatible serial devices.

HDD Access LED

Indicates the status of the hard drive.

Power Status LED

Indicates the power status of the system.

VGA Port

Used to connect an analog VGA monitor.

USB Ports

Used to connect USB 2.0/1.1 devices.

LAN Ports

Used to connect the system to a local area network.

+12V DC Input

Used to plug a DC power cord.

Mechanical Dimensions
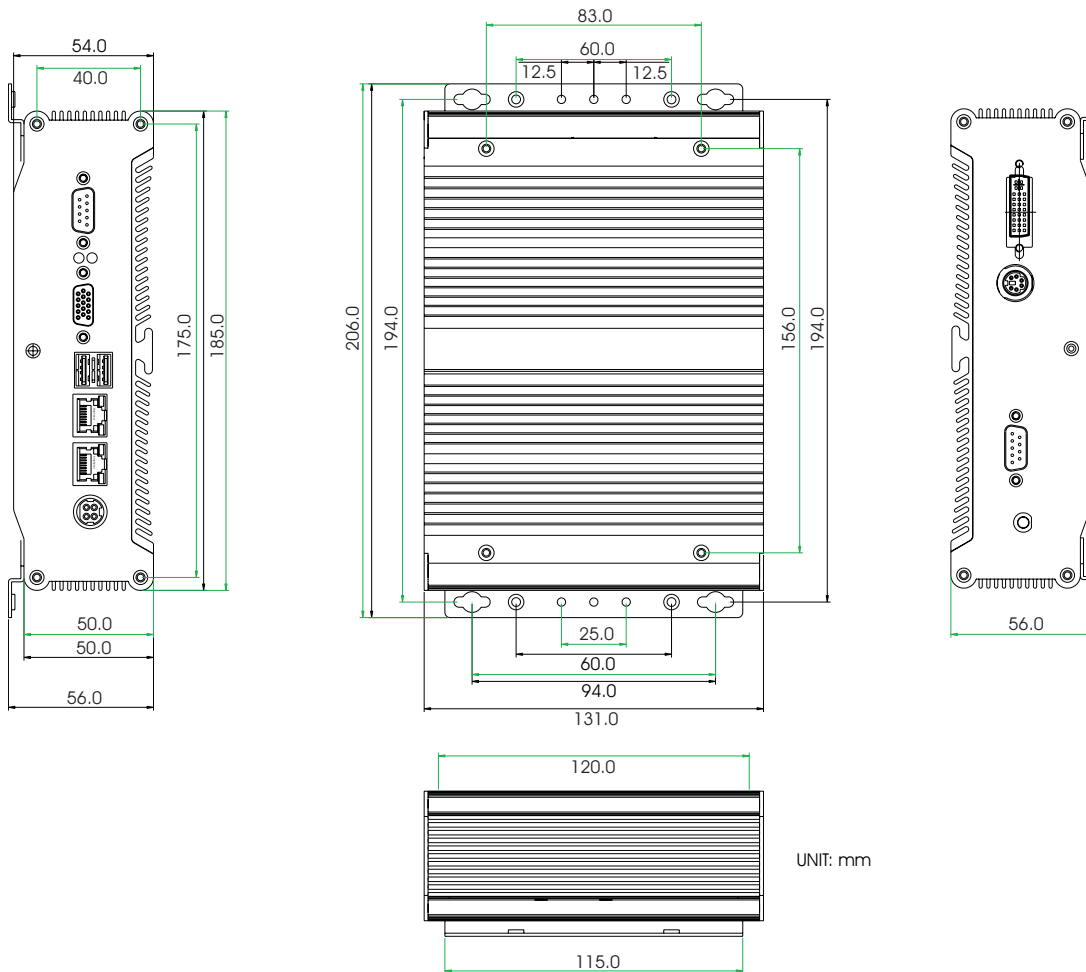
UNIT: mm

CHAPTER 2: JUMPERS AND CONNECTORS

This chapter describes how to set the jumpers and connectors on the motherboard.

Before You Begin

- Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

- Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:
  - A Philips screwdriver
  - A flat-tipped screwdriver
  - A set of jewelers Screwdrivers
  - A grounding strap
  - An anti-static pad

- Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

- Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environment tend to have less static electricity than dry environments. A grounding strap is warranted whenever danger of static electricity exists.

Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on the computers that are still connected to a power supply can be extremely dangerous.

Follow the guidelines below to avoid damage to your computer or yourself:

- Always disconnect the unit from the power outlet whenever you are working inside the case.

- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.

- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Don't flex or stress the circuit board.

- Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.

- Use correct screws and do not over tighten screws.

Jumper Settings

A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is **short**. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is **open**.

Refer to the illustrations below for examples of what the 2-pin and 3-pin jumpers look like when they are short (on) and open (off).

Two-Pin Jumpers: Open (Left) and Short (Right)
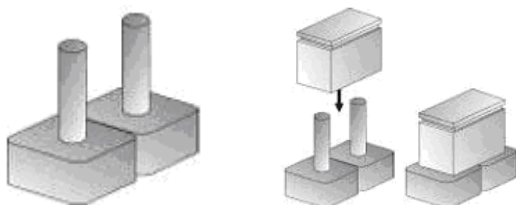
Three-Pin Jumpers: Pins 1 and 2 Are Short
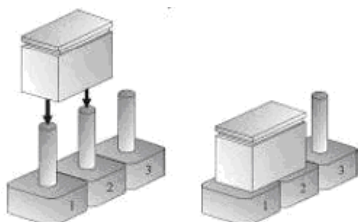
Locations of the Jumpers and Connectors

The figure on the right is the NISB101 main board used in the NISE 101 system. It shows the locations of the jumpers and connectors.

PWR_SB
PWR_5VSEL
PWRCON
CPU_FAN
PWRBTN1
BDCJACK1
COM2
LAN1
LAN2
J1
J2
JCOM2
USB1
JBAT
JLVDS
KB_MS1
VGA
JTV
LED1
JSPI
DVI1
COM1
PWR_MSEL
JVR
JAUDIO
JDIO
JUSB3
PWR1
PWR2
JCF
JPWRBTN
JBKL
JUSB2
SATA1
SATA2
RSTBTN1
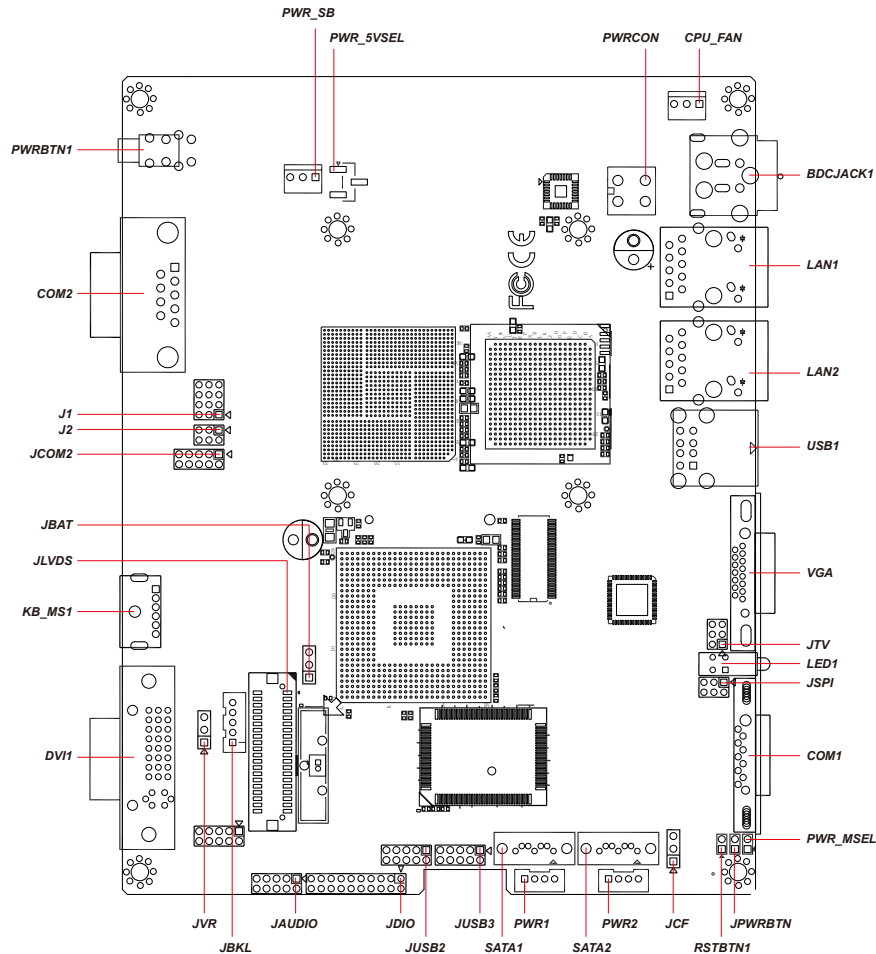
Jumpers

AT/ATX Mode Select

Connector type: 1x2 2-pin header, 2.0mm pitch
Connector location: PWR_MSEL

1
2
AT
(default)

1
2
ATX

Pin	Definition
Open	ATX Mode
Short	AT Mode (default)

Clear CMOS Select

Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: JBAT

1
2
3
Normal
(default)

1
2
3
Clear CMOS

Pin	Definition
1-2	Normal Operation (default)
2-3	Clear CMOS

CF Mode Select

Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: JCF

Slave

Master (default)

Pin	Definition
1-2	Slave
2-3	Master (default)

Input Power Select

Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: PWR_5VSEL

AT (default)

ATX

Pin	Definition
1-2	AT (default)
2-3	ATX

COM 2 – RS232/422/485 Mode Select

Connector type: 3x4 12-pin header
Connector location: J1

12 10

3   1

Pin	Definition
1-2, 4-5, 7-8, 10-11	RS232 (default)
2-3, 5-6, 8-9, 11-12	RS422/485

COM 2 – RS232/422/485 Mode Select

Connector type: 2x3 6-pin header
Connector location: J2

5 3 1

6 4 2

Pin	Definition
1-2	RS232 (default)
3-4	RS422
5-6	RS485

Connector Pin Definitions

External I/O Interface - Front

ATX Power On/Off Switch

Connector location: PWRBTN1

Pin	Definition
1	GND
2	NC
3	PWRST_R#
4	NC
C1	PLED_N
A1	PLED_P
MH1	NC
MH2	NC

RS232/422/485 COM2 Port

Connector type: DB-9
Connector location: COM2
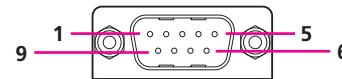
RS232 Pin Definition

Pin	Definition	Pin	Definition
1	DCD2	2	RXD2
3	TXD2	4	DTR2
5	GND	6	DSR2
7	RTS2	8	CTS2
9	RI2		

RS422 Pin Definition

Pin	Definition	Pin	Definition
1	TXD-	2	TXD+
3	RXD+	4	RXD-
5	GND	6	RTS-
7	RTS#	8	CTS+
9	CTS-		

RS485 Pin Definition

Pin	Definition	Pin	Definition
1	TXD-	2	TXD+
	RXD-		RXD+
3	Reserved	4	Reserved
5	Reserved	6	Reserved
7	Reserved	8	Reserved
9	Reserved		

Mic-in Jack

Connector type: 6-pin jack, 25.9x12.6x17.0mm
Connector location: JAUDIO
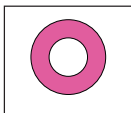
Pin	Definition
1	NC
2	MIC_JD
3	NC
4	MIC_OUT
5	GND
6	GND

Speaker-out Jack

Connector type: 5-pin jack
Connector location: JAUDIO
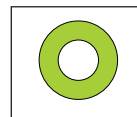
Pin	Definition
1	GND
2	SPK_Out_R
3	NC
4	NC
5	SPK_Out_L

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PS/2 Keyboard/Mouse Port

Connector type: PS/2, Mini-DIN-6
Connector location: KB_MS1
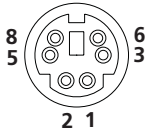
Pin	Definition	Pin	Definition
1	KBDAT	2	MSDAT
3	GND	4	+5V
5	KBCLK	6	MSCLK

DVI-D Port

Connector type: 20-pin D-Sub
Connector location: DVI1
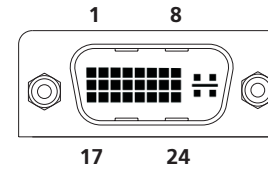
Pin	Function	Pin	Function
1	TDC0#	2	+5V
3	TDC0	4	GND
5	NC	6	NC
7	NC	8	NC
9	TDC1#	10	HPDET
11	TDC1	12	DDC_DAT
13	GND	14	DDC_CLK
15	GND	16	GND
17	TDC2#	18	TLC#
19	TDC2	20	TLC

External I/O Interface - Rear

RS232 COM1 Port

Connector type: DB-9
Connector location: COM1
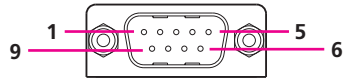
Pin	Definition	Pin	Definition
1	DCD	6	DSR
2	RxD	7	RTS
3	TxD	8	CTS
4	DTR	9	RI
5	GND		

Status Indicators

HDD Access LED
Power Status LED

HDD

PWR

Status	LED Color
HDD	Yellow
PWR	Green

VGA Port

Connector type: DB-15 port, 15-pin D-Sub
Connector location: VGA
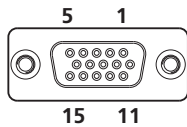
Pin	Definition	Pin	Definition
1	RED	9	VCC
2	GREEN	10	GND
3	BLUE	11	NC
4	NC	12	DAT
5	GND	13	HSYNC
6	GND	14	VSYNC
7	GND	15	CLK
8	GND		

USB Ports

Connector type: Dual USB port, Type A
Connector location: USB1
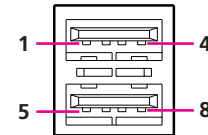
Pin	Definition	Pin	Definition
1	+5V	5	+5V
2	USB1-	6	USB0-
3	USB1+	7	USB0+
4	GND	8	GND

LAN Ports

Connector type: RJ45 port with LEDs
Connector location: LAN1 and LAN2
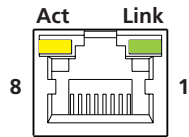
Pin	Definition	Pin	Definition
1	Tx+	5	NC
2	Tx-	6	Rx-
3	Rx+	7	NC
4	NC	8	NC

+12V DC Input

Connector type: 4-pin power jack, 15x16x17.4mm
Connector location: BDCJACK1
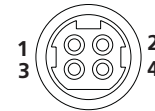
Pin	Definition
1-2	DC-IN
3-4	GND

Internal Connectors

Power Button

Connector type: 1x2 2-pin header, 2.0mm pitch
Connector location: JPWRBTN

2 ▢ ◯ **1**

Pin	Definition
1	PWR_BT
2	GND

Reset Button

Connector type: 1x2 2-pin header, 2.0mm pitch
Connector location: RSTBTN1

2 ▢ ◯ **1**

Pin	Definition
1	RESET#
2	GND

GPIO Connector

Connector type: 2x10 20-pin header, 2.0mm pitch
Connector location: JDIO

```
19 ┌○○○○○○○○○□┐ 1
20 └○○○○○○○○○○┘ 2
```
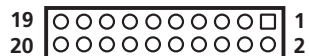
Pin	Definition	Pin	Definition
1	DO_GP20	2	DI_GP30
3	DO_GP21	4	DI_GP31
5	DO_GP22	6	DI_GP32
7	DO_GP23	8	DI_GP33
9	DO_GP24	10	DI_GP34
11	DO_GP25	12	DI_GP35
13	DO_GP26	14	DI_GP36
15	DO_GP27	16	DI_GP37
17	SMB_CLK	18	SMB_DATA
19	GND	20	+5V

Signal	Definition
GP [20:27]	General purpose I/O port 1 bit 0-7
SMB_CLK	Data input for I2C input, 5V tolerant
SMB_DATA	Data input for I2C serial input, 5V tolerant

DC Power Connector

Connector type: 2x2, 2.0mm pitch
Connector location: PWRCON

```
4  1
┌──────┐
│ ○  ○ │
│ ○  ○ │
└──────┘
3  2
```
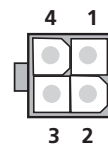
Pin	Definition
1	GND
2	GND
3	VIN
4	VIN

5VSB Connector in ATX

Connector type: 1x3 3-pin wafer, 2.54mm pitch
Connector location: PWR_SB

Pin	Definition
1	PSON#
2	GND
3	5VSB

Audio Connector

Connector type: 2x5 10-pin header, 2.54mm pitch (on the main board)
Connector location: JAUDIO
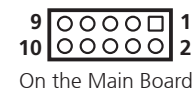
On the Main Board

Mic-in   Speaker-out
On the Front Panel

Pin	Definition	Pin	Definition
1	LIN-OUT-R	2	LIN-OUT-L
3	GND	4	GND
5	LIN-IN-R	6	LIN-IN-L
7	MIC-REF	8	MIC-IN
9	NC	10	NC

LVDS Backlight Connector

Connector type: 1x5 5-pin wafer, 2.0mm pitch
Connector location: JBKL

5 ◻ ○ ○ ○ ◻ **1**

Pin	Definition
1	+12V
2	GND
3	ENBKL
4	VR
5	+5V

Signal	Definition
VR	Vadj = 0.75V - 4.25V (Recommended: 4.7KΩ, >1/16W)
ENBKL	LCD backlight ON/OFF control signal

LVDS Backlight Brightness Adjustment Connector

Connector type: 1x3 3-pin header, 2.54mm pitch
Connector location: JVR

◯ **3**
◯
◻ **1**

Pin	Definition
1	+5V
2	VR
3	GND
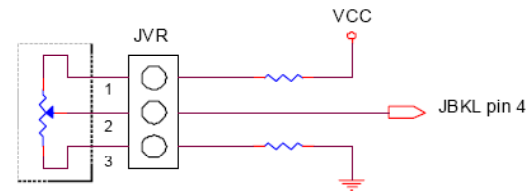
Variation Resistor
Recommended: 4.7KΩ, >1/16W

USB Connectors

Connector type: 2x5 10-pin header, 2.0mm pitch
Connector location: JUSB2 and JUSB3
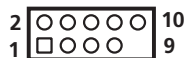
Pin	Definition	Pin	Definition
1	+5V	2	GND
3	D2-/D4+	4	GND
5	D2+/D4+	6	D3+/D5+
7	GND	8	D3-/D5-
9	GND	10	+5V

LVDS Connector (Single 18-bit)

Connector type: 2.0mm pitch
Connector location: JLVDS
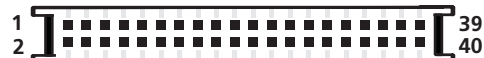
Pin	Definition	Pin	Definition
1	+3.3V	2	+5V
3	+3.3V	4	+5V
5	I²C_CLK1	6	I²C_DAT1
7	GND	8	GND
9	Txout1	10	Txout0
11	Txout1#	12	Txout0#
13	GND	14	GND
15	NC	16	Txout2
17	NC	18	Txout2#
19	GND	20	GND
21	E_Txout1	22	E_Txout0
23	E_Txout1#	24	E_Txout0#
25	GND	26	GND
27	NC	28	E_Txout2
29	NC	30	E_Txout2#
31	GND	32	GND
33	E_Txclk	34	Txclk
35	E_Txclk#	36	Txclk#
37	GND	38	GND
39	+12V	40	+12V

SATA Power Connectors

Connector size: 1x4 4-pin wafer, 2.0mm pitch
Connector location: PWR1 and PWR2

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

CPU Fan Connector

Connector size: 1x3 3-pin wafer, 2.54mm pitch
Connector location: CPU_FAN

Pin	Definition
1	GND
2	+5V
3	FAN_TAC1

SATA Connectors

Connector size: 7-pin standard Serial ATAII (1.27mm)
Connector location: SATA1 and SATA2
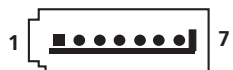
Pin	Definition
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

CHAPTER 3: SYSTEM SETUP

Removing the Chassis Cover

CAUTION! Prior to removing the chassis cover, make sure the unit's power is off and disconnected from the power sources to prevent electric shock or system damage.

This chapter will guide you on installing the SODIMM, SATA drive and CompactFlash card. You need to remove the bottom cover to access the SODIMM socket, SATA cables and CompactFlash socket.

1. With the bottom side of the chassis facing up, remove the mounting screws of the bottom cover and then put them in a safe place for later use.

2. Lift up the cover and remove it from the chassis.

Installing the SODIMM

1. Locate the SODIMM socket on the board.

SODIMM
socket
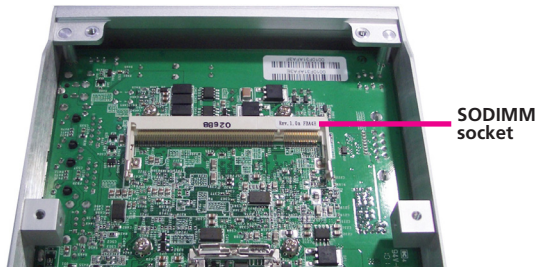
2. Insert the module into the socket at an approximately 30 degrees angle. Apply firm even pressure to each end of the module until it slips into the socket. The gold-plated connector on the edge of the module will almost completely disappear inside the socket.

SODIMM
socket

SODIMM
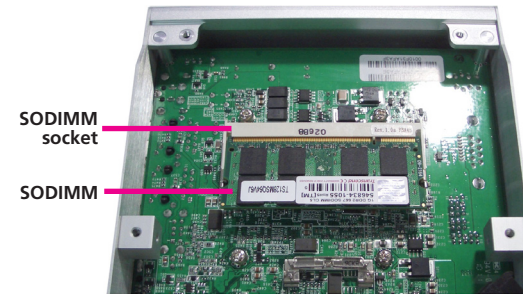
3. Push the module down until the clips on both sides of the socket lock into position. You will hear a distinctive "click", indicating the module is correctly locked into position.
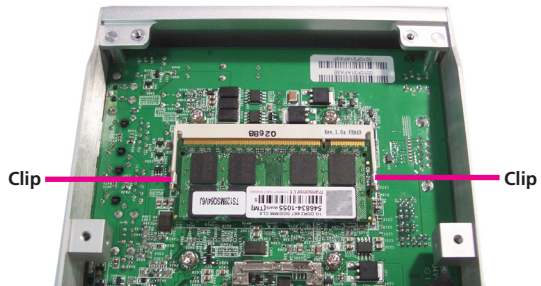
Installing a SATA Hard Drive

1. The inner side of the bottom cover is where you will install the SATA drive.

   The 4 mounting holes for the SATA drive are shown below.
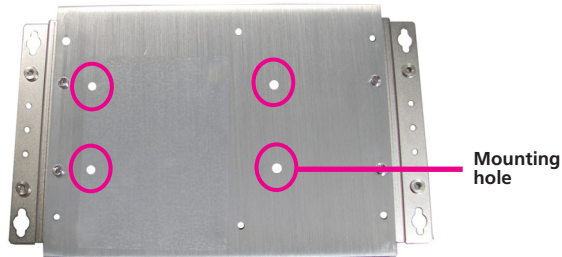
Mounting hole

2. Align the mounting holes of the SATA drive to the mounting holes on the cover.

SATA drive

3. While supporting the SATA drive, turn the cover to the other side. This will be the outer side of the cover. Use the provided screws to secure the drive in place.

4. The SATA data/power cable is readily accessible upon removing the chassis cover.
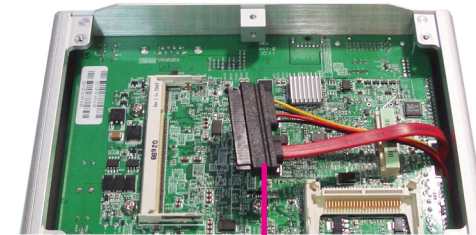
SATA data/power cable

5. Connect the SATA data/power cable to the connectors on the SATA drive.

SATA data/power cable

SATA drive
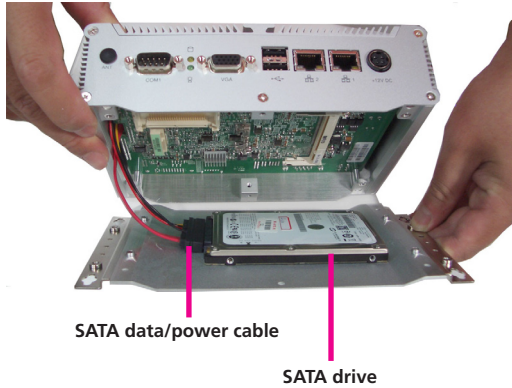
Installing a CompactFlash Card

1. Remove the mounting screws of the rear panel.

Mounting hole
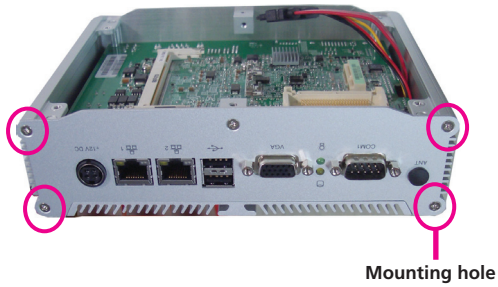
2. Locate for the CompactFlash socket on the board.

CompactFlash socket

31
NISE 101 User Manual
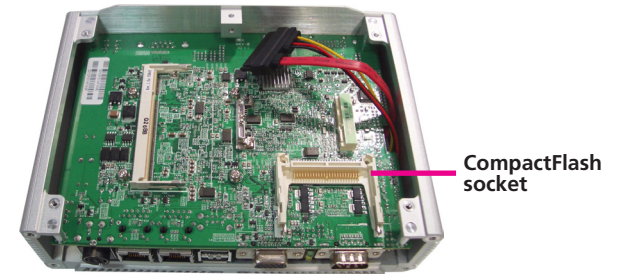
3. Position the CompactFlash card to the socket.

CompactFlash card
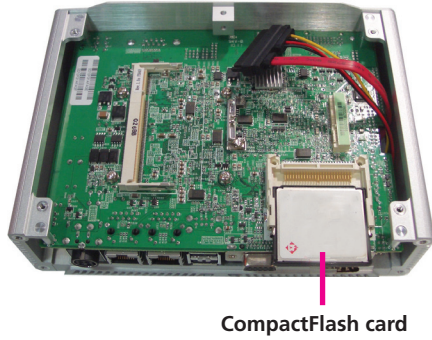
4. Insert the card until it is completely seated in the socket.
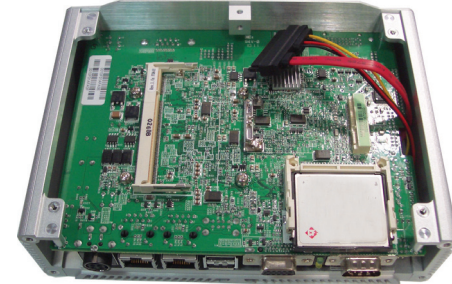
CHAPTER 4: BIOS SETUP

This chapter describes how to use the BIOS setup program for NISE 101. The BIOS screens in this chapter are for reference only and may change if the BIOS is updated in the future.

To check for the latest updates and revisions, visit the NEXCOM Web site at www.nexcom.com.tw.

About BIOS Setup

The BIOS (Basic Input and Output System) Setup program is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. It is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters.

These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values found in CMOS.

With easy-to-use pull down menus, you can configure such items as:

- Hard drives, diskette drives, and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power management features

The settings made in the setup program intimately affect how the computer performs. It is important, therefore, first to try to understand all the Setup options, and second, to make settings appropriate for the way you use the computer.

When to Configure the BIOS

This program should be executed under the following conditions:

- When changing the system configuration
- When a configuration error is detected by the system and you are prompted to make changes to the Setup program
- When resetting the system clock
- When redefining the communication ports to prevent any conflicts
- When making changes to the Power Management configuration
- When changing the password or making other changes to the security setup

Normally, CMOS setup is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM has lost power, or the system features need to be changed.

Entering Setup

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

- If the error occurs before the display device is initialized, a series of beeps will be transmitted.
- If the error occurs after the display device is initialized, the screen will display the error message.

Powering on the computer and immediately pressing <Del> allows you to enter Setup. Another way to enter Setup is to power on the computer and wait for the following message during the POST:

TO ENTER SETUP BEFORE BOOT
PRESS <CTRL-ALT-ESC>
Press the <Del> key to enter Setup:

BIOS Main Menu

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

```
          Phoenix - AwardBIOS CMOS Setup Utility

►  Standard CMOS Features          ►  PC Health Status
►  Advanced BIOS Features             Load Optimized Defaults
►  Advanced Chipset Features          Set Password
►  Integrated Peripherals             Save & Exit Setup
►  Power Management Setup             Exit Without Saving
►  PnP/PCI Configurations


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

                 Time, Date, Hard Disk Type...
```
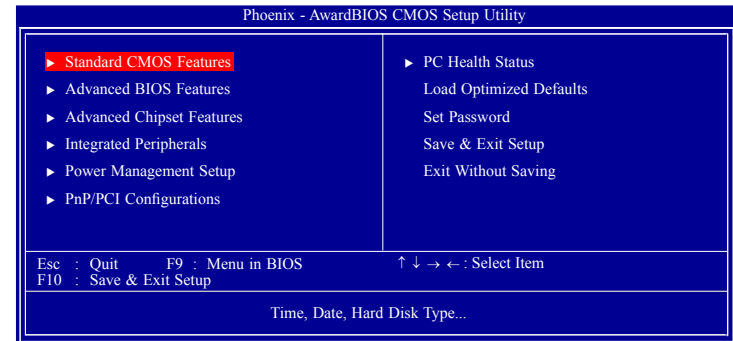
The following table lists the available options on the main menu.

Menu	Description
Standard CMOS Features	Use this menu for basic system configuration.
Advanced BIOS Features	Use this menu to set the advanced features available on the system.
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 Configurations	Appears if your system supports Plug and Play and PCI Configuration.
PC Health Status	Displays CPU, System Temperature, Fan Speed, and System Voltages Value.
Load Optimized Defaults	Use this menu to load the BIOS default values, that is, factory settings for optimum system performance. While Award has designed the custom BIOS to maximize performance, the factory has the option to change these defaults to meet their needs.
Set Password	Enables you to change, set, or disable the supervisor or user password.
Save & Exit Setup	Saves CMOS value changes to CMOS and exits setup
Exit Without Saving	Ignores all CMOS value changes and exits setup.

Getting Help

The BIOS Setup program provides descriptions of the options available on the menu.

- If you are on the main menu, a description of the highlighted option can be found at the bottom of the screen.
- If you are on the Status Page or Option Page setup menu, a description of the highlighted option can be found on the right side of the screen under the heading Item Help.

Using the Control Keys

The table below lists the keys that help you navigate the setup program.

Use This Key	To Do This
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item to the left
Right arrow	Move to the item to the right
Esc key	Main Menu: Quit without saving changes to CMOS Status Option Page Setup Menus: Exit current page and return to Main Menu.
Enter Key	Select or Accept an Item
PgUp/plus key	Increase the numeric value or make changes
PgDn/minus key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu

Use This Key	To Do This
F2/Shift + F2 key	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F5 key	Restore the previous CMOS value from CMOS (only for Option Page Setup Menu)
F6 key	Load the default CMOS value from BIOS default table (only for Option Page Setup Menu)
F7 key	Load the Setup default value (only for Option Page Setup Menu)
F9 Key	Menu in BIOS
F10 key	Save all the CMOS changes (only for Main Menu)

BIOS Setup Utility

Standard CMOS Features

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

   Date (mm:dd:yy)           Thu, Apr 8  2010          Item Help
   Time (hh:mm:ss)           14 : 44 : 30
                                                   Menu Level    ▶
 ▶ IDE Channel 0 Master      [None]
 ▶ IDE Channel 0 Slave       [None]                Change the day, month,
 ▶ IDE Channel 2 Master      [Hitachi HTE722012K9A] year and century
 ▶ IDE Channel 2 Slave       [None]

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

   Base Memory               640K
   Extended Memory           2086912K
   Total Memory              2087936K




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

Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Sunday to Saturday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1999 to 2099.

Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

IDE Channel 0 Master to IDE Channel 2 Slave

To configure the IDE drives, move the cursor to a field then press <Enter>. The following screen will appear.

```
              Phoenix - AwardBIOS CMOS Setup Utility
                    IDE Channel 0 Master

   IDE HDD Auto-Detection        [Press Enter]        Item Help

   IDE Channel 0 Master          Auto             Menu Level    ▶▶
   Access Mode                   Auto
                                                  To auto-detect the
   Capacity                      0 MB             HDD's size, head... on
                                                  this channel
   Cylinder                      0
   Head                          0
   Precomp                       0
   Landing Zone                  0
   Sector                        0




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

IDE HDD Auto-Detection

Detects the parameters of the drive. The parameters will automatically be shown on the screen.

IDE Channel 0 Master/Slave and IDE Channel 2 Master/Slave

If you select "Auto", the BIOS will auto-detect the HDD & CD-ROM drive at the POST stage and show the IDE for the HDD & CD-ROM drive. If a hard disk has not been installed, select "None".

Access Mode

For hard drives larger than 528MB, you would typically select the LBA type. Certain operating systems require that you select CHS or Large. Please check your operating system's manual or Help desk on which one to select.

Capacity

Displays the approximate capacity of the disk drive. Usually the size is slightly greater than the size of a formatted disk given by a disk checking program.

Cylinder

This field displays the number of cylinders.

Head

This field displays the number of read/write heads.

Precomp

This field displays the number of cylinders at which to change the write timing.

Landing Zone

This field displays the number of cylinders specified as the landing zone for the read/write heads.

Sector

This field displays the number sectors per track.

Video

This field selects the type of video adapter used for the primary system monitor. Although secondary monitors are supported, you do not have to select the type. The default setting is EGA/VGA.

EGA/VGA
Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SVGA and PGA monitor adapters.

CGA 40
Color Graphics Adapter. Power up in 40-column mode.

CGA 80
Color Graphics Adapter. Power up in 80-column mode.

Mono
Monochrome adapter. Includes high resolution monochrome adapters.

Halt On

This field determines whether the system will stop if an error is detected during power up. The default setting is All Errors.

No Errors
The system boot will not stop for any errors detected.

All Errors
The system boot will stop whenever the BIOS detects a non-fatal error.

All, But Keyboard
The system boot will not stop for a keyboard error; it will stop for all other errors.

Base Memory

Displays the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed on the motherboard or 640K for systems with 640K or more memory installed on the motherboard.

Extended Memory

Displays the amount of extended memory detected during boot-up.

Total Memory

Displays the total memory available in the system.

Advanced BIOS Features

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

  ▶ Hard Disk Boot Priority      Press Enter         Item Help
    First Boot Device            USB-FDD
    Second Boot Device           USB-CDROM      Menu Level    ▶
    Third Boot Device            Hard Disk
    Boot Up NumLock Status       On             Select Hard Disk Boot
    Security Option              Setup          Device Priority
    APIC Mode                    Enabled

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

Hard Disk Boot Priority

This field is used to select the boot sequence of the hard drives. Move the cursor to this field then press <Enter>. Use the Up or Down arrow keys to select a device then press <+> to move it up or <-> to move it down the list.

```
               Phoenix - AwardBIOS CMOS Setup Utility
                       Hard Disk Boot Priority

    1. Ch2 M. : Hitachi HTE722012K9A30              Item Help
    2. Bootable Add-in Cards
                                              Menu Level    ▶▶

                                              Use <↑> or <↓> to select
                                              a device, then press <+>
                                              to move it up, or <-> to
                                              move it down the list.
                                              Press <ESC> to exit this
                                              menu.

  ↑↓: Move       PU/PD/+/-: Change Priority        F10: Save         ESC: Exit
    F5: Previous Values            F6: Fail-Safe Defaults       F7: Optimized Defaults
```
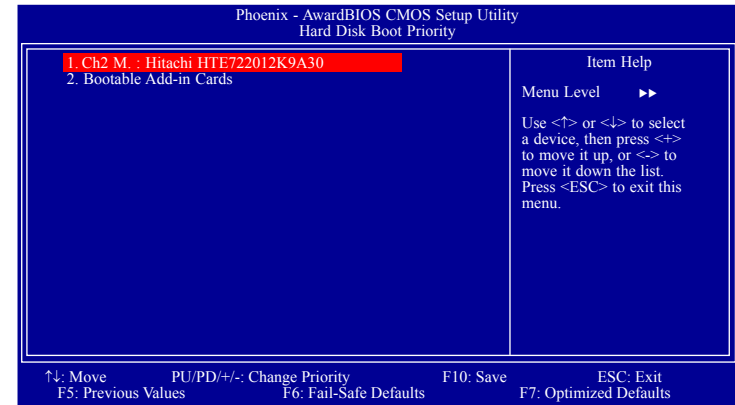
First Boot Device, Second Boot Device and Third Boot Device

Select the drive to boot first, second and third in the "First Boot Device" "Second Boot Device" and "Third Boot Device" fields respectively. The BIOS will boot the operating system according to the sequence of the drive selected.

The options are:

Hard Disk
CDROM
USB-FDD
USB-ZIP
USB-CDROM
LAN
Disabled

Boot Up NumLock Status

Selects the power on state of the numeric keypad. By default, the system boots up with NumLock On wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

Security Option

This field determines when the system will prompt for the password - everytime the system boots or only when you enter the BIOS setup. Set the password in the Set Supervisor/User Password submenu.

System
The system will not boot and access to Setup will be denied unless the correct password is entered at the prompt.

Setup
The system will boot, but access to Setup will be denied unless the correct password is entered at the prompt.

APIC Mode

This field is used to enable or disable the APIC mode.

Advanced Chipset Features

```
                    Phoenix - AwardBIOS CMOS Setup Utility
                         Advanced Chipset Features
┌──────────────────────────────────────────┬─────────────────────────┐
│  System BIOS Cacheable        Enabled     │        Item Help        │
│  Video BIOS Cacheable         Disabled    │                         │
│                                           │  Menu Level     ▶▶      │
│  ** VGA Setting **                        │                         │
│  On-Chip Frame Buffer Size    8MB         │                         │
│  Boot Display                 CRT         │                         │
│  Panel Number                 1024x768 18bit │                      │
│                                           │                         │
│                                           │                         │
│                                           │                         │
│                                           │                         │
│                                           │                         │
│                                           │                         │
│                                           │                         │
├──────────────────────────────────────────┴─────────────────────────┤
│ ↑↓→←: Move    Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help │
│     F5: Previous Values          F6: Fail-Safe Defaults      F7: Optimized Defaults       │
└─────────────────────────────────────────────────────────────────────┘
```
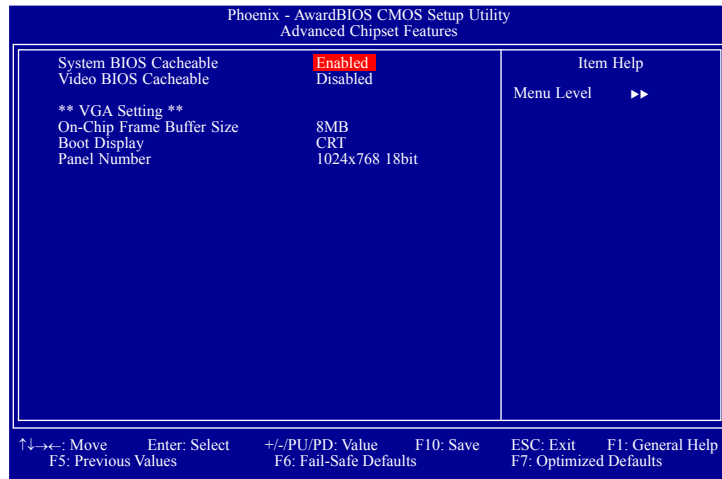
This section gives you functions to configure the system based on the specific features of the chipset. The chipset manages bus speeds and access to system memory resources. These items should not be altered unless necessary. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered some incompatibility or that data was being lost while using your system.

System BIOS Cacheable

When this field is enabled, accesses to the system BIOS ROM addressed at F0000H-FFFFFH are cached, provided that the cache controller is enabled. The larger the range of the Cache RAM, the higher the efficiency of the system.

Video BIOS Cacheable

As with caching the system BIOS, enabling the Video BIOS cache will allow access to video BIOS addresssed at C0000H to C7FFFH to be cached, if the cache controller is also enabled. The larger the range of the Cache RAM, the faster the video performance.

On-Chip Frame Buffer Size

This field is used to select the onboard VGA's frame buffer size that is shared from the system memory.

Boot Display

Selects the type of display to use when the system boots.

Panel Number

Selects the type of panel that you are using.

Integrated Peripherals

```
                    Phoenix - AwardBIOS CMOS Setup Utility
                          Integrated Peripherals
┌─────────────────────────────────────────────┬───────────────────────┐
│  ▶ OnChip IDE Device          Press Enter     │      Item Help         │
│  ▶ Onboard Device             Press Enter     │  Menu Level      ▶     │
│  ▶ Super IO Device            Press Enter     │                        │
│  ▶ USB Device Setting         Press Enter     │                        │
│                                                │                        │
│                                                │                        │
│                                                │                        │
│                                                │                        │
│                                                │                        │
│                                                │                        │
│                                                │                        │
│                                                │                        │
└─────────────────────────────────────────────┴───────────────────────┘
 ↑↓→←: Move      Enter: Select    +/-/PU/PD: Value    F10: Save    ESC: Exit    F1: General Help
      F5: Previous Values         F6: Fail-Safe Defaults         F7: Optimized Defaults
```

OnChip IDE Device

```
                    Phoenix - AwardBIOS CMOS Setup Utility
                          OnChip IDE Device
┌─────────────────────────────────────────────┬───────────────────────┐
│  IDE HDD Block Mode              Enabled       │      Item Help         │
│  IDE DMA Transfer Access         Enabled       │  Menu Level      ▶     │
│  On-Chip Primary PCI IDE         Enabled       │                        │
│  IDE Primary Master PIO          Auto          │  If your IDE hard drive│
│  IDE Primary Slave PIO           Auto          │  supports block mode   │
│  IDE Primary Master UDMA         Auto          │  select Enabled for    │
│  IDE Primary Slave UDMA          Auto          │  automatic detection of│
│  On-Chip Secondary PCI IDE       Enabled       │  the optimal number of │
│  IDE Secondary Master PIO        Auto          │  block read/writes per │
│  IDE Secondary Slave PIO         Auto          │  sector the drive can  │
│  IDE Secondary Master UDMA       Auto          │  support               │
│  IDE Secondary Slave UDMA        Auto          │                        │
│                                                │                        │
│   *** On-Chip Serial ATA Setting ***          │                        │
│  On-Chip Serial ATA              Enhanced Mode │                        │
│ x PATA IDE Mode                  Secondary     │                        │
│  SATA Port                       P0, P2 is Primary │                    │
└─────────────────────────────────────────────┴───────────────────────┘
 ↑↓→←: Move      Enter: Select    +/-/PU/PD: Value    F10: Save    ESC: Exit    F1: General Help
      F5: Previous Values         F6: Fail-Safe Defaults         F7: Optimized Defaults
```

IDE HDD Block Mode

Enabled
The IDE HDD uses the block mode. The system BIOS will check the hard disk drive for the maximum block size the system can transfer. The block size will depend on the type of hard disk drive.

Disabled
The IDE HDD uses the standard mode.

IDE DMA Transfer Access

This field is used to enable or disable the DMA transfer function of an IDE hard drive.

On-Chip Primary/Secondary PCI IDE

These fields are used to enable or disable the primary or secondary IDE controller. The default is Enabled. Select Disabled if you want to add a different hard drive controller.

IDE Primary Master/Slave PIO and IDE Secondary Master/Slave PIO

PIO means Programmed Input/Output. Rather than have the BIOS issue a series of commands to effect a transfer to or from the disk drive, PIO allows the BIOS to tell the controller what it wants and then let the controller and the CPU perform the complete task by themselves. Your system supports five modes, 0 (default) to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode after checking your drive.

Auto
The BIOS will automatically set the system according to your hard disk drive's timing.

Mode 0-4
You can select a mode that matches your hard disk drive's timing. Caution: Do not use the wrong setting or you will have drive errors.

IDE Primary Master/Slave UDMA and IDE Secondary Master/Slave UDMA

These fields allow you to set the Ultra DMA in use. When Auto is selected, the BIOS will select the best available option after checking your hard drive or CD-ROM.

Auto
The BIOS will automatically detect the settings for you.

Disabled
The BIOS will not detect these categories.

On-Chip Serial ATA

Disabled
Disables the SATA controller.

Combined Mode
Combines both PATA and SATA drives; allowing a maximum of 2 IDE drives in each channel.

Enhanced Mode
Enables both PATA and SATA drives; allowing a maximum of 6 IDE drives.

SATA Only
SATA is operating in legacy mode.

PATA IDE Mode and SATA Port

The PATA IDE field is used to select the function mode for the IDE connector and its relation to the SATA ports.

Primary
IDE serves as Primary Master and Primary Slave channel. SATA 1 and SATA 3 serve as Secondary Master and Secondary Slave channel.

Secondary
IDE serves as Secondary Master and Secondary Slave channel. SATA 0 and SATA 2 serve as Primary Master and Primary Slave channel.

Onboard Device

```
              Phoenix - AwardBIOS CMOS Setup Utility
                         Onboard Device

    AC97 Audio                    Enabled              Item Help
    Onboard LAN1 Device           Enabled
    Onboard LAN2 Device           Enabled         Menu Level    ▶▶
    Onboard LAN Boot ROM          Disabled




    ↑↓: Move        PU/PD/+/-: Change Priority       F10: Save          ESC: Exit
    F5: Previous Values          F6: Fail-Safe Defaults        F7: Optimized Defaults
```
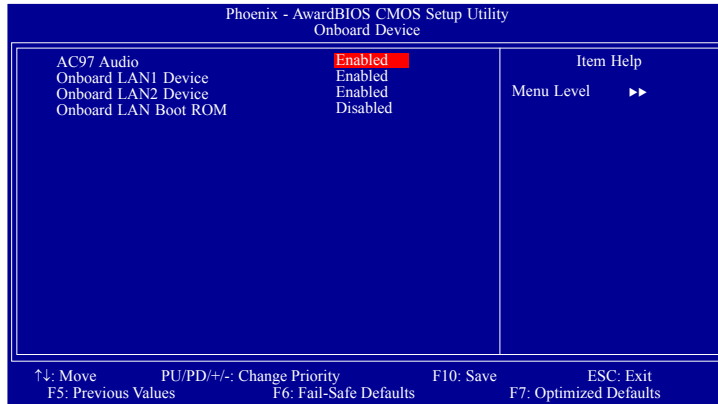
AC97 Audio

This field is used to enable or disable the AC97 audio.

Onboard LAN1 Device and Onboard LAN2 Device

These fields are used to enable or disable the onboard LAN controllers.

Onboard LAN Boot ROM

Enable this field if you wish to use the boot ROM (instead of a disk drive) to boot-up the system and access the local area network directly.

If you wish to change the boot ROM's settings, type the <Shift> and <F10> keys simultaneously when prompted during boot-up. Take note: you will be able to access the boot ROM's program (by typing <Shift> + <F10>) only when this field is enabled.

Super IO Device

```
            Phoenix - AwardBIOS CMOS Setup Utility
                     Super IO Device
┌─────────────────────────────────────────────────────────────────┐
│  Onboard Serial Port 1          3F8/IRQ4          Item Help       │
│  Onboard Serial Port 2          2F8/IRQ3                          │
│                                              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 │
└─────────────────────────────────────────────────────────────────┘
```
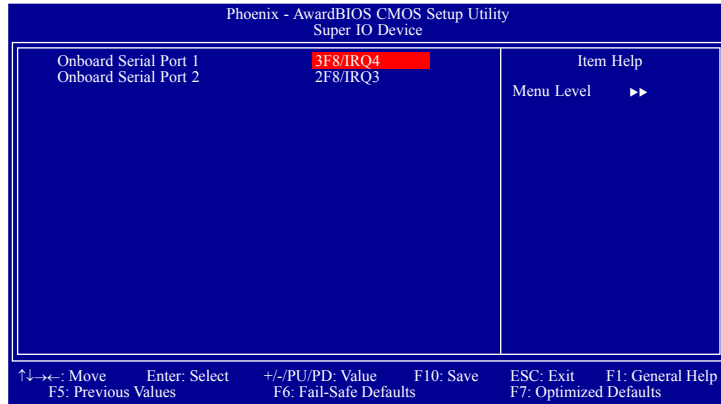
Onboard Serial Port 1 and Onboard Serial Port 2

3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3
Allows you to manually select an I/O address for the serial port.

Disabled
Disables the serial port.

USB Device Setting

```
            Phoenix - AwardBIOS CMOS Setup Utility
                     USB Device Setting
┌─────────────────────────────────────────────────────────────────┐
│  USB 1.0 Controller         Enabled          Item Help           │
│  USB 2.0 Controller         Enabled                              │
│  USB Keyboard Function      Enabled      Menu Level     ▶▶       │
│  USB Storage Function       Enabled                              │
│                                          [Enable] or [Disable]   │
│  *** USB Mass Storage Device Boot Setting ***   Universal Host   │
│                                          Controller Interface    │
│                                          for Universal Serial    │
│                                          Bus.                     │
│                                                                   │
│                                                                   │
│                                                                   │
│                                                                   │
│  ↑↓→←: Move   Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help │
│      F5: Previous Values       F6: Fail-Safe Defaults   F7: Optimized Defaults │
└─────────────────────────────────────────────────────────────────┘
```

USB 1.0 Controller

This field is used to enable or disable the Universal Host Controller Interface (USB 1.0).

USB 2.0 Controller

This field is used to enable or disable the Enhanced Host Controller Interface (USB 2.0).

USB Keyboard Function

Due to the limited space of the BIOS ROM, the support for legacy USB keyboard (in DOS mode) is by default set to Disabled. With more BIOS ROM space available, it will be able to support more advanced features as well as provide compatibility to a wide variety of peripheral devices.

If a PS/2 keyboard is not available and you need to use a USB keyboard to install Windows (installation is performed in DOS mode) or run any program under DOS, set this field to Enabled.

USB Storage Function

Enables or disables the legacy support for USB mass storage.

Power Management Setup

Power Management Setup lets you control the system power. The system has various power-saving modes — including powering down the hard disk, turning off the video, suspending to RAM, and software power down — that allows the system to automatically resume by certain events.

The power-saving modes can be controlled by timeouts. If the system is inactive for a time, the timeouts begin counting. If inactivity continues and reaches the defined timeout period, the system enters a power saving mode. If any item in the list of Reload Global Timer Events is enabled, then any activity on that item will reset the timeout counters to zero.

If the system is suspended or has been powered down by software, it can be resumed by a wake up call that is generated by incoming traffic to a modem, a LAN card, a PCI card, or a fixed alarm on the system real-time clock.

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

 ▶ PCI Express PM Function         Press Enter              Item Help
   ACPI Function                  Enabled
   Video Off Method               DPMS            Menu Level    ▶
   Video Off In Suspend           Yes
   MODEM Use IRQ                  NA
   Soft-Off by PWR-BTTN          Instant-Off
   Power On by Ring              Enabled
   Resume by Alarm               Disabled
 x Date (of Month) Alarm          0
 x Time (hh:mm:ss) Alarm          0 : 0 : 0




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

PCI Express PM Function

```
                   Phoenix - AwardBIOS CMOS Setup Utility
                          PCI Express PM Function

   PCI Express PME                Enabled                  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
```

PCI Express PME

Enables or disables the PCI Express PME.

ACPI Function

By default, the ACPI function is enabled. This function should be enabled only in operating systems that support ACPI.

Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC + Blank
This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.

Blank Screen
This option only writes blanks to the video buffer.

DPMS
Initializes display power management signaling. Use this option if your video board supports it.

Video Off In Suspend

This field is used to activate the video off feature when the system enters the Suspend mode. The options are Yes and No.

MODEM Use IRQ

This field is used to set an IRQ channel for the modem installed in your system.

Soft-Off by PWR-BTTN

This field allows you to select the method of powering off your system.

Delay 4 Sec.
Regardless of whether the Power Management function is enabled or disabled, if the power button is pushed and released in less than 4 sec, the system enters the Suspend mode. The purpose of this function is to prevent the system from powering off in case you accidentally "hit" or pushed the power button. Push and release again in less than 4 sec to restore. Pushing the power button for more than 4 seconds will power off the system.

Instant-Off
Pressing and then releasing the power button at once will immediately power off your system.

Power On By Ring

Set this field to Enabled to use the modem ring-on function. This will allow your system to power-on to respond to calls coming from an external modem.

Resume By Alarm

Enabled
When Enabled, you can set the date and time you would like the Soft Power Down (Soft-Off) PC to power-on in the "Date (of Month) Alarm" and "Time (hh:mm:ss) Alarm" fields. However, if the system is being accessed by incoming calls or the network (Resume On Ring/ LAN) prior to the date and time set in these fields, the system will give priority to the incoming calls or network.

Disabled
Disables the automatic power-on function. (default)

Date (of Month) Alarm

0
The system will power-on everyday according to the time set in the "Time (hh:mm:ss) Alarm" field.

1-31
Select a date you would like the system to power-on. The system will power-on on the set date, and time set in the "Time (hh:mm:ss) Alarm" field.

Time (hh:mm:ss) Alarm

This is used to set the time you would like the system to power-on. If you want the system to power-on everyday as set in the "Date (of Month) Alarm" field, the time set in this field must be later than the time of the RTC set in the Standard CMOS Features submenu.

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PnP/PCI Configurations

```
              Phoenix - AwardBIOS CMOS Setup Utility
                      PnP/PCI Configurations

    Reset Configuration Data        Disabled            Item Help

    Resources Controlled By         Auto(ESCD)       Menu Level    ▶
  x IRQ Resources                   Press Enter




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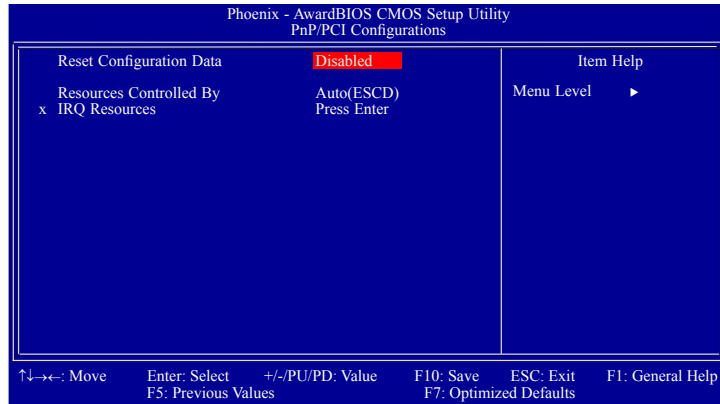
Reset Configuration Data

Enabled
The BIOS will automatically reset the Extended System Configuration Data (ESCD) once. It will then recreate a new set of configuration data.

Disabled
The BIOS will not reset the configuration data.

Resources Controlled By

The Award Plug and Play BIOS has the capability to automatically configure all of the boot and Plug and Play compatible devices.

Auto(ESCD)
The system will automatically detect the settings for you.

Manual
Choose the specific IRQ resources in the "IRQ Resources" field.

IRQ Resources

Set each system interrupt to either PCI Device or Reserved.

```
                      Phoenix - AwardBIOS CMOS Setup Utility
                                  IRQ Resources

     IRQ-3    assigned to        PCI Device              Item Help
     IRQ-4    assigned to        PCI Device
     IRQ-5    assigned to        PCI Device          Menu Level    ▶▶
     IRQ-7    assigned to        PCI Device
     IRQ-9    assigned to        PCI Device          Legacy ISA for devices
     IRQ-10   assigned to        PCI Device          compliant with the
     IRQ-11   assigned to        PCI Device          original PC AT bus
     IRQ-12   assigned to        PCI Device          specification. PCI/ISA
     IRQ-14   assigned to        PCI Device          PnP for devices
     IRQ-15   assigned to        PCI Device          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                   F7: Optimized Defaults
```

PC Health Status

```
              Phoenix - AwardBIOS CMOS Setup Utility
                        PC Health Status
┌─────────────────────────────────────────┬──────────────────────┐
│ +5VSB               4.97V                │      Item Help       │
│ CPU Voltage         0.88V                │                      │
│ DDR2 Voltage        1.84V                │ Menu Level      ▶    │
│ +5V                 4.81V                │                      │
│ +12V                12.16V               │                      │
│ +1.05V              1.04V                │                      │
│ +1.5V               1.47V                │                      │
│ +3.3V               3.16V                │                      │
│ Voltage Battery     3.08V                │                      │
│ CPU Temp            29°C                 │                      │
│ Fan 1 Speed         0 RPM                │                      │
│                                          │                      │
│                                          │                      │
├─────────────────────────────────────────┴──────────────────────┤
│ ↑↓→←: Move    Enter: Select   +/-/PU/PD: Value   F10: Save      │
│   ESC: Exit    F1: General Help                                 │
│ F5: Previous Values      F6: Fail-Safe Defaults                 │
│   F7: Optimized Defaults                                        │
└─────────────────────────────────────────────────────────────────┘
```

+5VSB to Fan 1 Speed

These fields will show the output voltage, temperature and fan speed of the monitored devices or components.

Load Optimized Defaults

```
              Phoenix - AwardBIOS CMOS Setup Utility
┌─────────────────────────────────────────┬──────────────────────┐
│ ▶ Standard CMOS Features                 │ ▶ PC Health Status   │
│ ▶ Advanced BIOS Features                 │   Load Optimized Defaults │
│ ▶ Advanced Chipset Features              │   Set Password       │
│ ▶ Integrated Peripher┌─────────────────────────┐ Setup         │
│ ▶ Power Managemen     │ Load Optimized Defaults (Y/N)? N │ Saving │
│ ▶ PnP/PCI Configurations└───────────────────────┘          │
│                                          │                      │
│                                          │                      │
├─────────────────────────────────────────┴──────────────────────┤
│ Esc  : Quit                  ↑↓→←: Select Item                  │
│ F10  : Save & Exit Setup                                        │
├─────────────────────────────────────────────────────────────────┤
│                  Time, Date, Hard Disk Type...                  │
└─────────────────────────────────────────────────────────────────┘
```
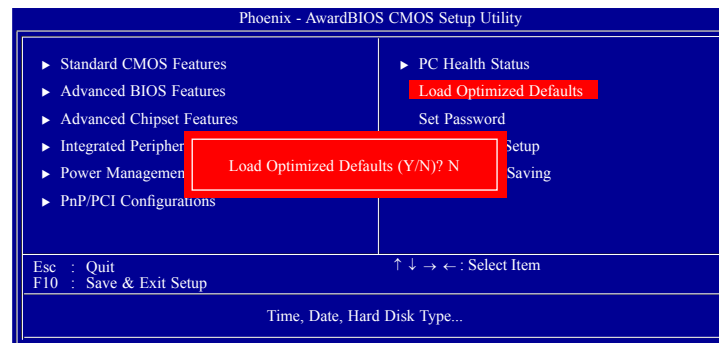
This option opens a dialog box that lets you install optimized defaults for all appropriate items in the whole setup utility. Press the <Y> key and then <Enter> to install the defaults. Press the <N> key and then <Enter> if you do not want to install the defaults. The optimized defaults place demands on the system that may be greater than the performance level of the components, such as the CPU and the memory.

Fatal errors or instability may occur if you install the optimized defaults when your hardware does not support them. If you only want to install setup defaults for a specific option, select and display that option, and then press the <F7> key.

Set Password

```
                Phoenix - AwardBIOS CMOS Setup Utility
┌─────────────────────────────────────────────────────────────────────────┐
│  ▶ Standard CMOS Features          ▶ PC Health Status                     │
│  ▶ Advanced BIOS Features             Load Optimized Defaults             │
│  ▶ Advanced Chipset Features          Set Password                        │
│  ▶ Integrated Periphera┌──────────────────────────┐etup                  │
│  ▶ Power Management     │  Enter Password:         │Saving                │
│  ▶ PnP/PCI Configurations└──────────────────────────┘                    │
│                                                                           │
│                                                                           │
│  Esc  :  Quit                      ↑ ↓ → ← : Select Item                  │
│  F10  :  Save & Exit Setup                                                │
│                      Time, Date, Hard Disk Type...                        │
└─────────────────────────────────────────────────────────────────────────┘
```
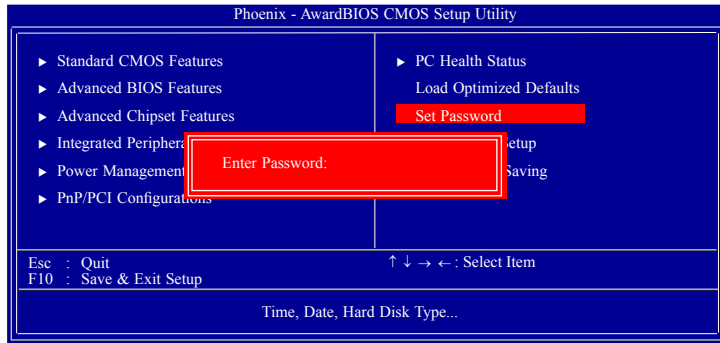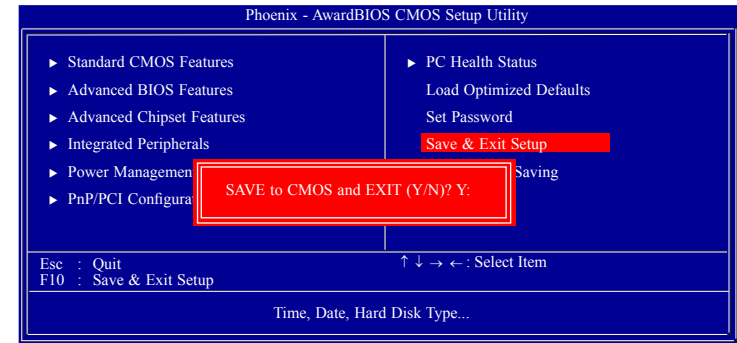
The User Password utility sets the password. The main board is shipped with the password disabled. If you want to change the password, you must first enter the current password, then at the prompt enter your new password. The password is case sensitive. You can use up to eight alpha-numeric characters. Press <Enter> after entering the password. At the next prompt, confirm the new password by retyping it and pressing <Enter> again.

To disable the password function, highlight "Set Password" then press <Enter>, instead of typing in a new password. A message appears con-firming that the password has been disabled. If you have set supervisor and user Password, only the supervisor password allows you to enter the BIOS setup program.
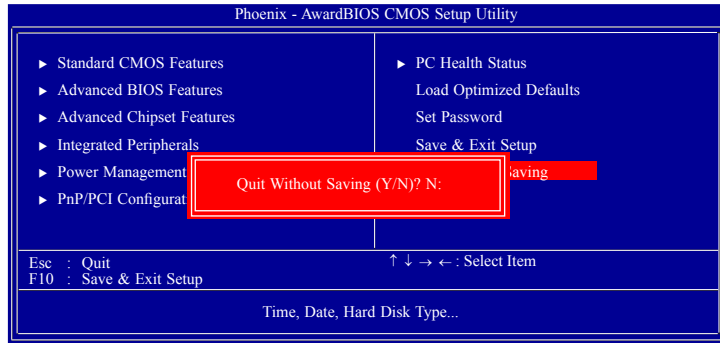
Note: If you forgot your password, the only way to solve this problem is to discharge the CMOS memory by turning power off and placing a shunt (jumper cap) on the RTC Clear jumper to short pin 2 and pin 3 for five seconds, then putting the shunt back to pin 1 and pin 2.

Save & Exit Setup

```
                Phoenix - AwardBIOS CMOS Setup Utility
┌─────────────────────────────────────────────────────────────────────────┐
│  ▶ Standard CMOS Features          ▶ PC Health Status                     │
│  ▶ Advanced BIOS Features             Load Optimized Defaults             │
│  ▶ Advanced Chipset Features          Set Password                        │
│  ▶ Integrated Peripherals             Save & Exit Setup                   │
│  ▶ Power Managemen┌──────────────────────────────┐Saving                 │
│  ▶ PnP/PCI Configura│ SAVE to CMOS and EXIT (Y/N)? Y:│                    │
│                     └──────────────────────────────┘                     │
│                                                                           │
│  Esc  :  Quit                      ↑ ↓ → ← : Select Item                  │
│  F10  :  Save & Exit Setup                                                │
│                      Time, Date, Hard Disk Type...                        │
└─────────────────────────────────────────────────────────────────────────┘
```

Selecting this option and pressing <Enter> will save the new setting infor-mation in the CMOS memory and continue with the bootup process.

Exit Without Saving

```
                 Phoenix - AwardBIOS CMOS Setup Utility
 ┌──────────────────────────────────────────────────────────────────────┐
 │  ▶ Standard CMOS Features          ▶ PC Health Status                  │
 │  ▶ Advanced BIOS Features             Load Optimized Defaults          │
 │  ▶ Advanced Chipset Features          Set Password                     │
 │  ▶ Integrated Peripherals             Save & Exit Setup                │
 │  ▶ Power Management    ┌──────────────────────────────────┐aving       │
 │  ▶ PnP/PCI Configurat  │   Quit Without Saving (Y/N)? N:   │           │
 │                        └──────────────────────────────────┘           │
 │                                                                        │
 │  Esc  :  Quit                    ↑ ↓ → ← : Select Item                 │
 │  F10  :  Save & Exit Setup                                             │
 │                         Time, Date, Hard Disk Type...                  │
 └──────────────────────────────────────────────────────────────────────┘
```

Selecting this option and pressing <Enter> will exit the Setup utility without recording any new values or changing old ones.

Appendix A: Power Consumption

Test Configuration

System Configuration	Sys#1
Chassis	CHASSIS NISE101 VER:B
CPU	Intel® Atom™ N270 1.6G/533M/2.5W
Memory	APACER SODIMM 1G
HDD	HITACHI 2.5 SATA HDD 80G
Power Supply	FSP060-1AD101C 12V/60W
Keyboard	LEMEL B-5201-P
Mouse	GENIUS EASY MOUSE PS/2

Power Consumption Measurement

Test Equipment

PROVA CM-07 AC/DC CLAMP METER

Test Procedure

1. Power up the DUT and then boot Windows XP.
2. Enter the standby mode (HDD power down).
3. Measure the power consumption and record it.
4. Run the Burn-in test program to apply 100% full loading.
5. Measure the power consumption and record it.

Test Data

	Sys #1
	+12V
Full-Loading Mode	1.85A
Total	22.2W
Standby Mode	0.75A
Total	9W

APPENDIX B: GPI/O PROGRAMMING GUIDE

The NISB101 onboard GPIO function is carried out by the ITE IT8712F I/O chip. The board uses the IT8712F's GP20~27 and GP30~37 pins to support 16-channel GPIO interface. The default setup is 8 output channel and 8 input channel.

The I/O decode address are:

Output port: 0x281
Bit[7:0] = GP27~GP20

Input port: 0x281
Bit[7:0] = GP37~GP30

Pin	Description	Pin	Description
1	GPO20	2	GPI30
3	GPO21	4	GPI31
5	GPO22	6	GPI32
7	GPO23	8	GPI33
9	GPO24	10	GPI34
11	GPO25	12	GPI35
13	GPO26	14	GPI36
15	GPO27	16	GPI37
17	Clock	18	Data
19	GND	20	5V

Sample Code

```
#define IO_INDEX_PORT    0x2E

#define IO_DATA_PORT     0x2F

#define UNLOCK_DATA1     0x87

#define UNLOCK_DATA2     0x01

#define UNLOCK_DATA3     0x55

#define UNLOCK_DATA4     0x55

#define LOCK_DATA        0x02

#define CHIP_ID1              0x20

#define CHIP_ID2         0x21

#define DEVICE_REGISTER  0x07

#define GPIO_DEVICE_7    0x07        //GPIO Port

#define IO_BASE_ADDR_H              0x62

#define IO_BASE_ADDR_L        0x63

#define GPIO1_POLARITY     0x0B0

#define GPIO2_POLARITY     0x0B1

#define GPIO3_POLARITY     0x0B2

#define GPIO4_POLARITY     0x0B3

#define GPIO5_POLARITY     0x0B4

#define GPIO6_POLARITY     0x0B5

#define GPIO1_INTERNAL_UP  0x0B8

#define GPIO2_INTERNAL_UP  0x0B9

#define GPIO3_INTERNAL_UP  0x0BA
```

```
#define GPIO4_INTERNAL_UP  0x0BB

#define GPIO5_INTERNAL_UP  0x0BC

#define GPIO6_INTERNAL_UP  0x0BD

#define GPIO1_DIRECTION    0x0C8

#define GPIO2_DIRECTION    0x0C9

#define GPIO3_DIRECTION    0x0CA

#define GPIO4_DIRECTION    0x0CB

#define GPIO5_DIRECTION    0x0CC

#define GPIO6_DIRECTION    0x0CD

#define GPIO_20       0x01       // Digit Output

#define GPIO_21       0x02       // Digit Output

#define GPIO_22       0x04       // Digit Output

#define GPIO_23       0x08       // Digit Output

#define GPIO_24       0x10       // Digit Output

#define GPIO_25       0x20       // Digit Output

#define GPIO_26       0x40       // Digit Output

#define GPIO_27       0x80       // Digit Output

#define GPIO_30       0x01       // Digit Input

#define GPIO_31       0x02       // Digit Input

#define GPIO_32       0x04       // Digit Input

#define GPIO_33       0x08       // Digit Input

#define GPIO_34       0x10       // Digit Input

#define GPIO_35       0x20       // Digit Input

#define GPIO_36       0x40       // Digit Input
```

```
#define GPIO_37        0x80          // Digit Input

#define _ON_          0x01

#define _OFF_         0x00

#define _HIGH_        0x01

#define _LOW_         0x02

unsigned int Port_Addr;

unsigned char ReadAByte(unsigned int port_no)

{    return (inportb(port_no));

}

void WriteAByte(unsigned int port_no, unsigned char data)

{    outportb(port_no, data);

}

void Delay_T(int loop_cnt)

{   int i,j;

    for (i=0 ; i< loop_cnt; i++)

      for (j=0; j< 1000; j++) ;

}
```

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APPENDIX C: WATCHDOG TIMER SETTING

The NISB101's onboard watchdog timer uses an 8-bit counter; therefore it has 256 resolution and the time range is from 1 to 255 seconds with a resolution of per second or 1 to 255 minutes with a resolution of per minute.

When the timer is setting and time-out occurs, it will trigger the hardware reset signal and a system reset will happen.

The NISB101's onboard watchdog timer function is carried out by the ITE IT8712F I/O chip. If you want to use this function in your program, you have to know how to read/write the IT8712F configuration register. The onboard IT8712F I/O chip's decode address is 02Eh, its index port and data port is 02Fh. The read/write register methods are write register number to index port, then read/write data from/to data port.

The following describes how to program the IT8712F register and the procedure of using watchdog function.

To program the IT8712F register:

1. Unlock the IT8712F I/O chip and enter the configuration mode.

2. Select Logical Device.

3. Select the register number.

4. Read/Write data from/to register.

5. Lock the IT8712F I/O chip and exit from the configuration mode.

To Unlock/Lock IT8712F and Enter/Exit the configuration mode is to write a specific value to I/O Port 02Eh.

Unlock IT8712F: contiue write value 87h, 01h, 55h, 55h to I/O port 02Eh. Lock IT8712F: write value 02h to I/O port 02Fh.

Program watchdog procedure:

1. Unlock the IT8712F I/O chip and enter the configuration mode.

   write unlock value (87h,01h,55h,55h) to port 02Eh

   ex: outportb(0x2E, 0x87);
        outportb(0x2E, 0x01);
        outportb(0x2E, 0x55);
        outportb(0x2E, 0x55);

2. Select the logical device to 7

   write value (07h) to register number 07h

   ex: outportb(0x02E, 0x07);
        outportb(0x02F, 0x07);

3. Set watchdog timer time-out output as KRST pin (72h).

   Register number 72h bit 6
   40h : KRST enable   (bit 6 = 1)
   00h : KRST disable (bit 6 = 0)

   ex: outportb(0x02E, 0x072);
       outportb(0x02F, (inportb(0x2F) | 40h));

4. Set watchdog timer count mode (second or minute) to register (72h).

   Register number 72h bit 7
   80h : second mode (bit 7 = 1)
   00h : minute mode (bit 7 = 0)

   ex: outportb(0x02E, 0x072);
       outportb(0x02F, (inportb(0x2F) | 80h));

5. Write time-out value (01h ~ FFh) to timer register (73h).

   Register number 73h
   00h : Time-out Disable
   01h : Time-out occurs after 1 second or minute
   02h : Time-out occurs after 2 seconds or minutes
   03h : Time-out occurs after 3 seconds or minutes
   04h : Time-out occurs after 4 seconds or minutes
   05h : Time-out occurs after 5 seconds or minutes
   FFh : Time-out occurs after 255 seconds or minutes

   write register number 73h to port 02Eh
   write time-out value to port 02Fh

   ex: outportb(0x02E, 0x73);   /* register 73 (Watchdog Timer)   */
       outportb(0x02F, 0x0A);   /* time-out value 0A == 10 seconds */

6. Lock the IT8712F I/O chip, exit the configuration mode

   write lock value (02h) to port 02Eh

   ex: outportb(0x02E, 0x02);

The following shows two examples of programming the watchdog timer with 10 seconds time interval in both Micro-assembly and C language.

Demo Porgram 1 (assember language):

```
;;====================================================
;;  Title : NISB101 WatchDog Timer Demo Program (10 seconds)
;; Date : 02/18/2009
;;====================================================
        .model  small
        .code
CONFIG_PORT    DW    02EH
UNLOCK_KEY     DB    087h,001h,055h,055h
LOCK_KEY       DB    002H
;;-------------------------------------------------
;; Main Program start
;;-------------------------------------------------
WatchDog PROC
     call   Enter_Config_Mode      ;; Enter SuperIO Chip config mode
     mov    cl, 7              ;; Enter Logic Device 7
     call   Set_Logic_Device

;; Set Watchdog Timer Output as KRST Pin (72H,Bit6) 1 = enable, 0 = disable
     mov    cl, 072h            ;; Register 72h
     call   Superio_Get_Reg
```

```
        or     al, 040h              ;; bit6=1 enable, bit6=0 disable
        call   Superio_Set_Reg         ;; KRST as WDT output pin

;; Watchdog Timer time-out value select (72H,Bit7) 1 = second, 0 = minute
        mov    cl, 072h              ;; Register 72h
        call   Superio_Get_Reg
        or     al, 080h              ;; bit7=1 second, bit7=0 minute
        call   Superio_Set_Reg         ;; Set to second mode

;; Set Watchdog Timer Time-out value = 0AH (10 seconds)
        mov    cl, 073h              ;; Register 73H
        mov    al, 0Ah              ;; 01h ~ FFh  == 01 ~ 255 seconds
        call   Superio_Set_Reg

        call   Exit_Config_Mode       ;; Exit SuperIO Chip config mode

        mov    ah,4ch               ;; Retuen to DOS
        int    21h
        ret
WatchDog ENDP
;;-----------------------------------------------


;;-----------------------------------------------
;; Enter ITE8712 I/O Chip Config mode
;;-----------------------------------------------
Enter_Config_Mode  Proc
        mov    si, offset cs:UNLOCK_KEY
        mov    dx, CONFIG_PORT
        mov    cx, 4
@@:
        mov    al, byte ptr cs:[si]
```

```
        out    dx, al
        inc    si
        loop   short @B
        ret
Enter_Config_Mode  Endp

;;-----------------------------------------------
;; exit ITE8712 I/O Chip config mode
;;-----------------------------------------------
Exit_Config_Mode  Proc
        mov    dx, CONFIG_PORT
        mov    al, LOCK_KEY
        out    dx, al
        jmp    $+2
        jmp    $+2
        inc    dx
        mov    al, LOCK_KEY
        out    dx, al
        ret
Exit_Config_Mode  Endp
;;-----------------------------------------------


;;-----------------------------------------------
;; Select ITE8712 I/O Chip Logic Device
;;Input  : CL - logic device to set
;;-----------------------------------------------
Set_Logic_Device        proc
        push   ax
        push   cx
        xchg   al,cl
        mov    cl,07h
```

```
        call    Superio_Set_Reg
        pop     cx
        pop     ax
        ret
Set_Logic_Device        endp
;;------------------------------------------------


;;------------------------------------------------
;; Write data to ITE8712 I/O Chip Register
;; Input : CL - register index
;;         AL - Value to write
;;------------------------------------------------
Superio_Set_Reg proc
        push    ax
        mov     dx, CONFIG_PORT
        mov     al,cl
        out     dx,al
        jmp     $+2
        jmp     $+2
        pop     ax
        inc     dx
        out     dx,al
        jmp     $+2
        jmp     $+2
        ret
Superio_Set_Reg endp
;;------------------------------------------------


;;------------------------------------------------
;; Read data from ITE8712 I/O Chip Register
;; Input  : CL - register index
```

```
;; Output : AL - Value read
;;------------------------------------------------
Superio_Get_Reg proc    Near
        mov     al, cl
        mov     dx, CONFIG_PORT
        out     dx, al
        jmp     $+2
        jmp     $+2
        inc     dx
        in      al, dx
        jmp     $+2
        jmp     $+2

        ret
Superio_Get_Reg endp

        end     watchdog


Demo program 2 (C language):
//==================================================
// Title   : NISB101 WatchDog Timer Test Utility
// Date     : 02/18/2009
// Compiler : Borland C ++
//==================================================


#include <stdio.h>
#include <string.h>
#include <stdlib.h>
#include <conio.h>
```

```
#define IO_INDEX_PORT    0x2E
#define IO_DATA_PORT     0x2F
#define UNLOCK_DATA1     0x87
#define UNLOCK_DATA2     0x01
#define UNLOCK_DATA3     0x55
#define UNLOCK_DATA4     0x55
#define LOCK_DATA        0x02
#define DEVICE_REGISTER  0x07
#define SECOND_MODE      0
#define MINUTE_MODE      1

void EnterConfigMode()
{
    outportb(IO_INDEX_PORT, UNLOCK_DATA1);
    outportb(IO_INDEX_PORT, UNLOCK_DATA2);
    outportb(IO_INDEX_PORT, UNLOCK_DATA3);
    outportb(IO_INDEX_PORT, UNLOCK_DATA4);
}

void ExitConfigMode()
{
    outportb(IO_INDEX_PORT, LOCK_DATA);
}

void SelectDevice(unsigned char device)
{
    outportb(IO_INDEX_PORT, DEVICE_REGISTER);
    outportb(IO_DATA_PORT, device);
}
```

```
unsigned char ReadAData(short int reg)
{
    outportb(IO_INDEX_PORT, reg);
    return (inportb(IO_DATA_PORT));
}

void WriteAData(unsigned char reg, unsigned char data)
{
    outportb(IO_INDEX_PORT, reg);
    outportb(IO_DATA_PORT, data);
}

void SetWatchDogTime(int time_mode, unsigned char time_val)
{
    unsigned char data;

    EnterConfigMode();
    SelectDevice(7);
        //Set Register 72 bit6 = 1, KRST as WDT output pin
    WriteAData(0x72, 0x40);
        //Set Register 72 bit7 = 1, WDT time-out value mode as second
        //Set Watchdog Count Mode (bit7=1:second, bit=0:minute)
    data = ReadAData(0x72);
    if (time_mode == SECOND_MODE)
        data = data | 0x80;
    else
        data = data & 0x7F;
    WriteAData(0x72, data);
        //Set Register 73
        //Set Watch-Dog Timer 1~ 256 steps
    WriteAData(0x73, time_val);
```

```
   ExitConfigMode();
}

void main(int argc, char* argv[])
{
  int time_value=0,time_mode=SECOND_MODE;
  char *ptr;

  printf("ITE-8712 Superio internal WatchDog Timer Test Utility Version 1.0
\n");
  if (argc == 1)
  { printf("\n Syntax: 945GSWDT step [mode] \n");
    printf(" step range : 1 ~ 255 steps (1 ~ 255 seconds or minutes) \n");
    printf("       mode : sec or min  \n");
    return ;
  }
  if (argc > 1)
  {
    ptr = argv[1];
    time_value = atoi(ptr);
  }
  if (argc > 2)
  {
    ptr = argv[2];
    if (strcmp("min",ptr)==0 || strcmp("MIN",ptr)==0)
      time_mode = MINUTE_MODE;
    else
      time_mode = SECOND_MODE;
  }
  if (time_value > 0 && time_value < 256)
  {
```

```
    SetWatchDogTime(time_mode, (unsigned char) time_value);
    printf("Watch Dog reset Timer set up : %03d %s ",time_value,(time_
mode==SECOND_MODE)?"Second":"Minute");
  }
}
```