
AMB-2020HT(T)-E Series

Open Frame Modular Industrial Panel PCs

Version 1.1

Industrial Panel PCs

Industrial Panel PCs for Industrial Automation

User's Manual

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Packing List

Before installing your Panel PC, please check if the package contains the following items.

- AMB-2020HT(T)-E series Panel PC
- CD-ROM
 - For User's Manual, Drivers and Utilities
- Accessory
 - Metal cover for LCD connector
 - CD-ROM and Floppy drive's cover
 - Power cables for HDD & FDD
 - Screws bag
 - 50-pin Cable (1M)
 - Power cord (1.8 M)
 - Wire cable for external power
 - Mounting kits
 - Waterproof sponge

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

Safety & Warranty

1. Read these safety instructions carefully.
2. Keep this user's manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Do not use liquid or spray detergents for cleaning. Use a damp cloth.
4. For pluggable equipment, the power outlet must be installed near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall could cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. **DO NOT COVER THE OPENINGS.**
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient over-voltage.
12. Never pour any liquid into an opening. This could cause fire or electrical shock.
13. Never open the equipment. For safety reasons, only qualified service personnel should open the equipment.
14. If any 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 users manual.
 - e. The equipment has been dropped and damaged.
 - f. The equipment has obvious signs of breakage.
15. **DO NOT LEAVE THIS EQUIPMENT IN AN UNCONTROLLED ENVIRONMENT WHERE THE STORAGE TEMPERATURE IS BELOW -20° C (-4°F) OR ABOVE 60° C (140° F). IT MAY DAMAGE THE EQUIPMENT.**

These products will CE certification No. C071101 and FCC certification No. F071101.

FCC Safety

Warning!



This device complies with Part 15 FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

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Chapter1 General Information

1.1 Introduction

The AMB-2020HT(T)-E series modular system panel PCs, is the PC-base industrial computer that specially designed to keep normal operation under harsh environment, which meet the entire requirement as an industrial man machine interface (MMI).

It is a full-function PC-base system with a 12.1" SVGA (800 x 600) color TFT hi-brightness, long-life time LCD display, and compact with different control modules. The compact dimensions are ideal for automation applications when the installation space is critical.

These PCs are characterized by their space saving, there is one free slot for PCI/ ISA AMB-2020HT(T)-E is heavy-duty steel chassis and optional aluminum front panel, which meets the toughest industrial and environmental standards. All the controls and connectors are placed on the rear panel; you can connect the panel PCs to other devices via them.

1.2 Specifications

Features

AMB-2020HT(T)-E Features (12.1" open frame front panel + ACS-2300 Control Box)

- 12.1" SVGA color TFT LCD display
- Open frame architecture with heavy-duty steel chassis
- All-in-one SBC, onboard NS Geode GXm 233MHz
- Four 16C550 RS-232C port, one RS-232C port can be set as RS-422/485 also
- Adjustment-panel on the rear panel
- Disk Driver Space for CD-ROM, FDD and HDD
- DiskOnChip flash disk socket
- Resistive touchscreen (optional)
- Rotatable Mounting mechanism (optional)
- Aluminum front bezel (optional)

Features of EI5CM Single Board Computer

- Processor: Cyrix MediaGXLV MMX™ ENHANCED
- Chipset: Cyrix Cx5530
- Memory: Up to 128MB in SDRAM
- VGA: Support XpressGRAPHICS™ and integrated on the process
- Audio: Support XpressAUDIO and integrated on the processor.
- High speed bi-directional SPP/ECP/EPP parallel port
- Four serial ports (three RS-232, one RS-232/422/485)

General

- **Construction:** Heavy-duty steel chassis
- **Disk drive housing:**
 - a 3.5" HDD or
 - a 2.5" HDD and Slim CD-ROM or
 - a 2.5" HDD and Slim FDD.
- **Dimensions:** 350(W) x 275(H) x 116mm(D)
- **Gross Weight:** 10.3 Kg

Environmental

- **Operating temperature:** 0° to 45
- **Vibration:** Random Non-operation 2G 5 ~ 500Hz
- **Shock:** 15G-peak acceleration (11-msec. duration)
- **EMI:** FCC/CE Class A

Specifications

AMB-2020HT(T)-E (12.1" open frame front panel + ACS-2300 Control Box)

- **Construction:** Heavy-duty steel chassis & open frame front panel.
- **CPU:** Onboard NS Geode GXm 233MHz
- **Memory:** Supports up to 128MB
- **Display:** 12.1" SVGA (800 x 600) TFT color LCD
- **LCD/CRT controller:**
 - NS Cx5530 Chipset
 - UMA supports up to 2.5MB display memory
- **Network (LAN):** Realtek RTL8139B 10/100 Base-T Ethernet controller
- **I/O ports:**
 - 4 serial ports: 3 x RS-232, 1 x RS-232/422/485 (one is reserved for touchscreen)
 - 1 parallel port (supports ECP/EPP)
 - 1 PS/2 keyboard interface
 - 1 PS/2 mouse interface
- **Disk Drive Housing:** 3.5" HDD or 2.5" HDD and 3.5" FDD or 2.5" HDD and Slim CD-ROM
- **USB connector:** Dual USB ports
- **Mounting:** Panel, Rear, Handle mount or Wall mount
- **Power supply:** Universal 70W switching power supply
- **OS Support:** MS DOS, Windows 98/SE, Windows NT4.0

Power Supply Selection Table

Mode	Input voltage
Universal/70W	85-270VAC
24VDC/70W	10-30VDC

1.3 Touchscreen (Optional)

- **Type:** 8-wire, analog resistive
- **Resolution:** 1024 x 1024
- **Light transmission:** 75%
- **Lifetime:** 1 million activations
- **Controller:** RS-232 interface

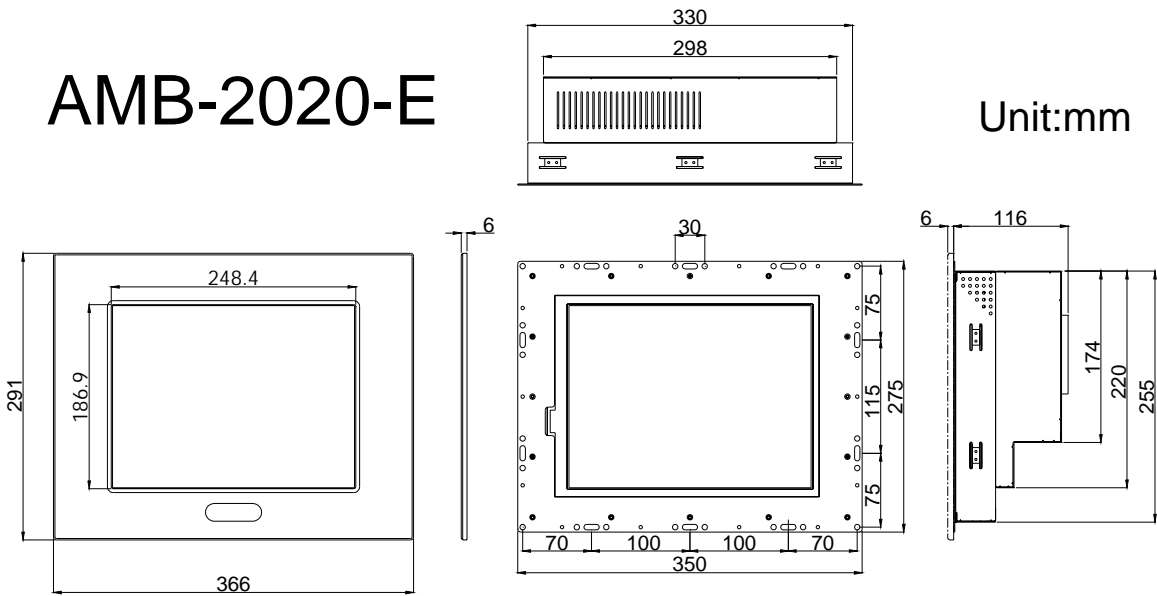
1.4 LCD Specifications

Mode	AMB-2020HT-E
Display type	TFT color LCD
Size (diagonal)	12.1"
Number of Pixels	800(W) x 600(H)
Dot size (mm x mm)	0.3075 x 0.3075
Contrast ratio	250 (TYP)
View angle (Horizontal)	120°
View angle (Vertical)	90°
Luminance (cd/m ²)	250
Operating temperature	0 ~ 45 °C
Backlight Life-time (Hrs)	50,000

1.5 Dimensions

AMB-2020-E

Unit:mm



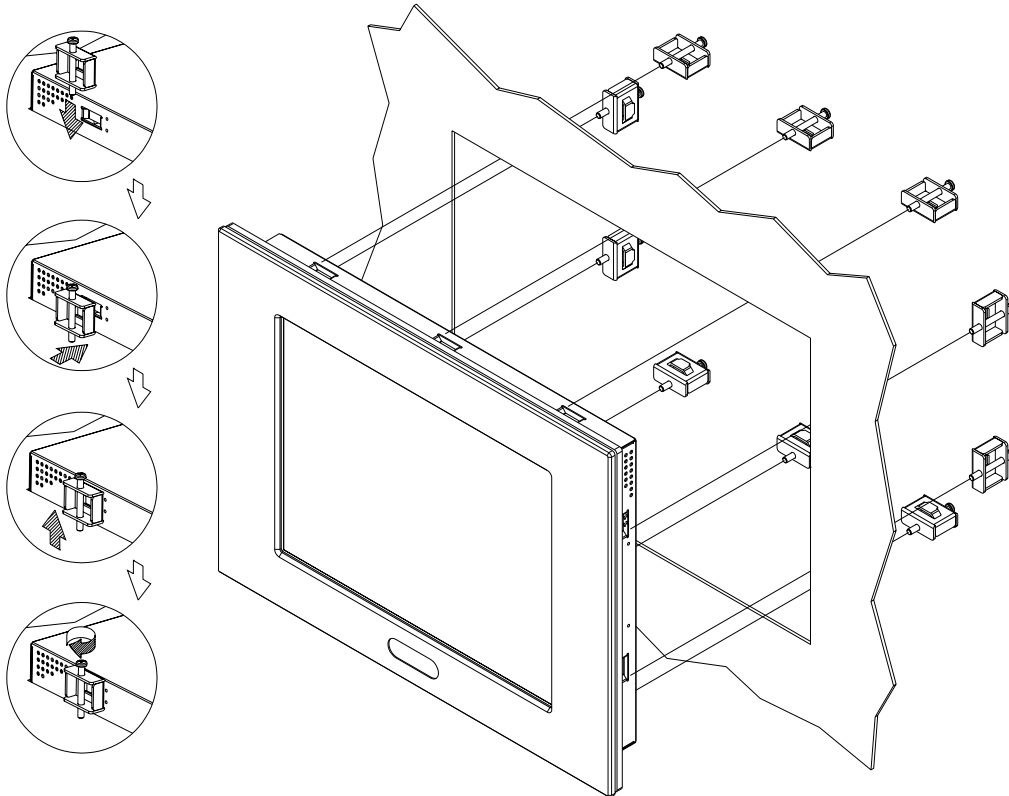
Front Bezel Size

Chassis Cutout Size:333*258 mm
LCD Cutout Size:248.4*186.9 mm

1.6 Panel Mounting

These display panels can be placed on a shelf or table, or mounted onto the wall. To mount them onto the wall, you need the mounting brackets, which you will find in the accessory box. Follows the steps described below:

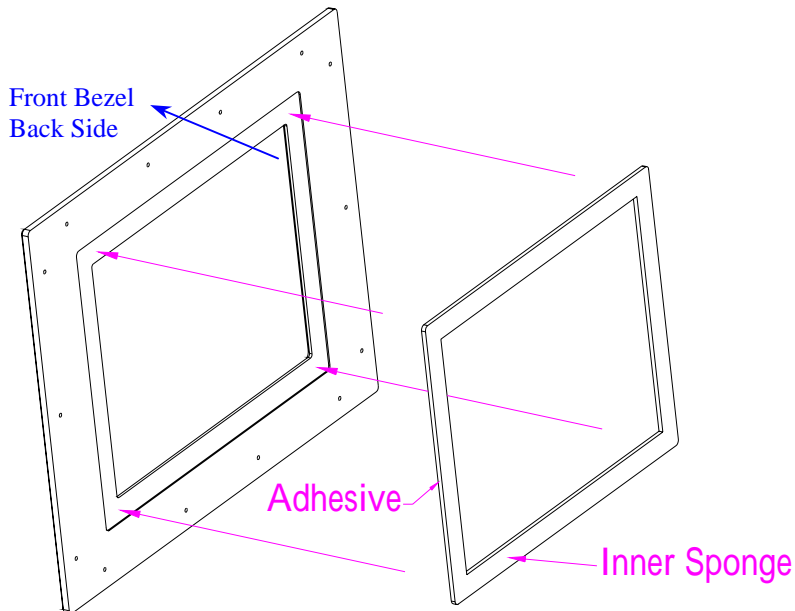
1. Slide the display panel onto the wall
2. Tighten the brackets until the display panel is firmly secured to the wall.



1.7 Waterproof Sponge Position

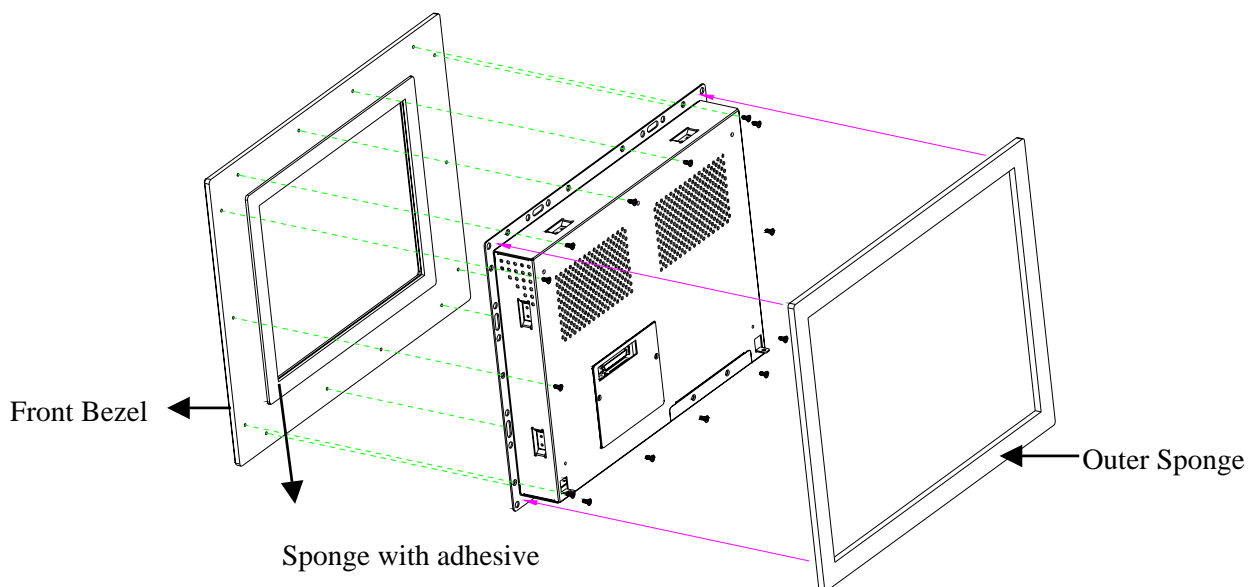
Inside sponge (the smaller one):

- Tear off the protection paper on the self-adhesive side of the inside sponge.
- Stick the sponge on the recessed area of the Aluminum bezel or customer's own bezel.



Outside sponge :

Press close the outside sponge to the edge of the Panel PC



2

Chapter 2 Jumper Settings

This chapter provides information on how to use the jumpers and connectors on the EI5CM in order to set up a workable system. The topics covered are:

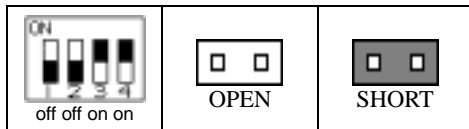
<u><i>Jumpers on the EI5CM</i></u>	22
<u><i>Connectors on the EI5CM</i></u>	26

2.1 Jumpers on the EI5CM

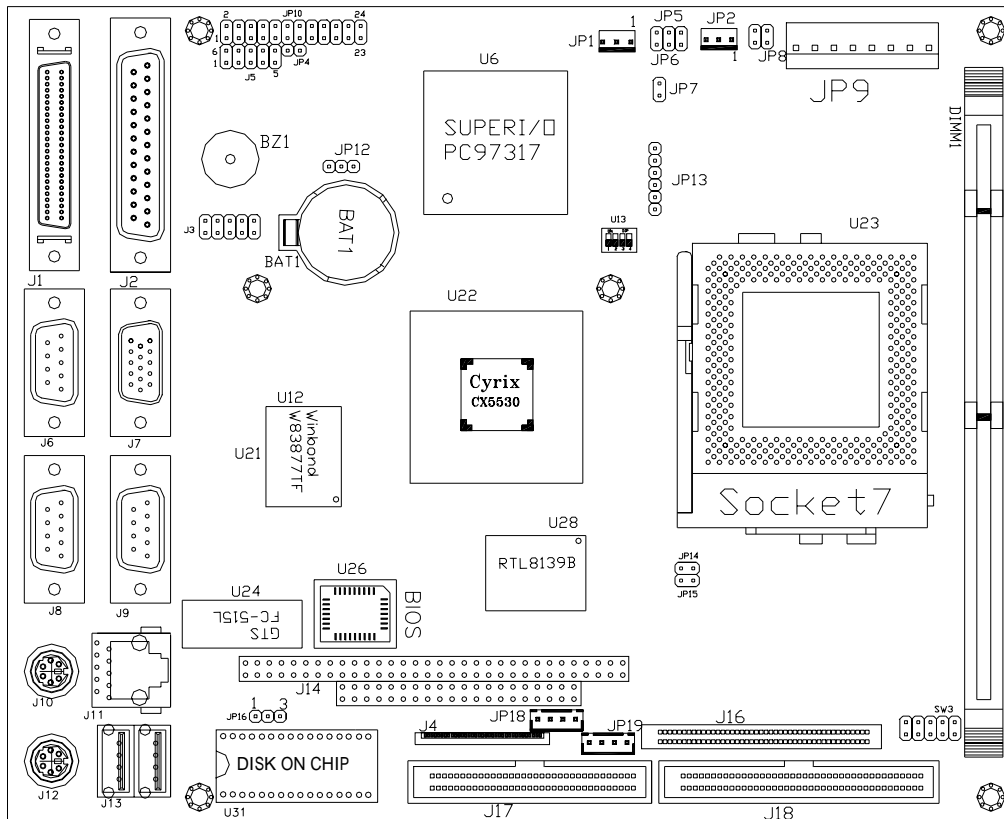
The jumpers on EI5CM allow you to configure your system to your applications. The following table lists the jumper functions on the board.

- Jumper Locations on the EI5CM* 15
- SW3: CPU Voltage Selector* 16
- JP10: RS232/422/485 (COM2) Selection* 16
- JP12: Clear CMOS* 17
- JP16: DiskOnChip BIOS Expansion Address Select* 17
- JP14: Reset Button Connector* 17

Remarks: The following conventions are used in this section:



Jumper Locations on the EI5CM



SW3: CPU Voltage Selector

CPU Voltage	SW3 Short Jumpers	CPU Voltage	SW3 Short Jumpers	CPU Voltage	SW3 Short Jumpers
1.3V	9-10	2.1V	1-2	2.9V	1-2, 7-8
1.4V	3-4, 9-10	2.2V	3-4	3.0V	3-4, 7-8
1.5V	5-6, 9-10	2.3V	1-2, 3-4	3.1V	1-2, 3-4, 7-8
1.6V	3-4, 5-6, 9-10	2.4V	5-6	3.2V	5-6, 7-8
1.7V	7-8, 9-10	2.5V	1-2, 5-6	3.3V	1-2, 5-6, 7-8
1.8V	3-4, 7-8, 9-10	2.6V	2-4, 5-6	3.4V	3-4, 5-6, 7-8
1.9V	5-6, 7-8, 9-10	2.7V	3-4, 5-6	3.5V	1-2, 3-4, 5-6, 7-8
2.0V	All Open	2.8V	1-2, 3-4, 5-6		

JP10: RS232/422/485 (COM2-J6) Selection

COM1 is fixed for RS-232 use only.

COM2 is selectable for RS232, RS-422 and RS-485.

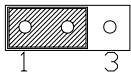
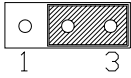
The following table describes the connectors' jumper settings.

COM2 Function	RS-232	RS-422	RS-485
Jumper Setting (pin closed)	all jumpers open	1-2 3-4 5-6 7-8 11-12 15-16 17-18 19-20 23-24	1-2 3-4 5-6 7-8 9-10 11-12 13-14 15-16 17-18 19-20 21-22
Jumper Illustration			

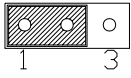
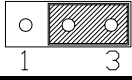
JP12: Clear CMOS

Follow steps to clear CMOS data.

1. Disconnect the AC power cord.
2. Short JP12 (1-2) and wait for 3 seconds.
3. Short JP12 (2-3) and replace the AC power cord.
4. Turn on the system.

JP12	Setting	Function
	Pin 1-2 Short/Closed	Clear CMOS
	Pin 2-3 Short/Closed	Normal

JP16: DiskOnChip BIOS Expansion Address Select

JP16	Address
	D0000-D7FFF
	D8000-DFFFF (default)

JP14: Reset Button Connector

JP14 is a 2-pin headers for the reset button used to restart the system without turning off the power and then on again.

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Chapter 3 BIOS Configuration

This chapter describes the different settings available in the Award BIOS that comes with the EI5CM embedded board. The topics covered in this chapter are as follows:

BIOS Introduction

The Award BIOS (Basic Input/Output System) installed in your system's ROM supports Intel/Cyrix/AMD/IDT processors in a standard IBM-AT compatible I/O system. The BIOS provides critical low-level support for standard devices such as disk drives, parallel port and serial ports. It also adds virus and password protection, as well as special support for detailed fine-tuning of the chipset controlling the entire system.

BIOS Setup

The Award BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the Award BIOS is immediately activated. Pressing the key immediately allows you to enter the Setup utility. If you are a little bit late pressing the key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again. The following message will appear on the screen:

Press to Enter Setup

In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

ROM PCI/ISA BIOS
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT SETUP	IDE HDD AUTO DETECTION
PNP/PCI CONFIGURATION	HDD LOW LEVEL FORMAT
LOAD BIOS DEFAULTS	SAVE & EXIT SETUP
LOAD SETUP DEFAULTS	EXIT WITHOUT SAVING
ESC : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Time, Date, Hard Disk Type	

The section below the setup items of the Main Menu displays the control keys for this menu. At the bottom of the Main Menu just below the control keys section, there is another section that displays information about the currently highlighted item in the list.

NOTE: *If your computer cannot boot after making and saving system changes with Setup, the Award BIOS supports an override to the CMOS settings that resets your system to its default.*

We strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your system manufacturer to provide the absolute maximum performance and reliability.

Standard CMOS Setup

“Standard CMOS Setup” choice allows you to record some basic hardware configurations in your computer system and set the system clock and error handling. If the Embedded Little Board is already installed in a working system, you will not need to select this option. You will need to run the Standard CMOS option, however, if you change your system hardware configurations, the onboard battery fails, or the configuration stored in the CMOS memory was lost or damaged.

ROM PCI/ISA BIOS
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Mon , Aug 19 1996								
Time (hh:mm:ss) : 00 : 00 : 00								
HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master	Auto	0	0	0	0	0	0	Auto
Primary Slave	None	0	0	0	0	0	0	----
Secondary Master	None	0	0	0	0	0	0	----
Secondary Slave	None	0	0	0	0	0	0	----
Drive A	: 1.44M, 3.5in			Base Memory : 640K				
Drive B	: None			Extended : 15360K				
				Memory				
Floppy 3 Mode Support	: Disabled			Other Memory : 384K				
Video	: EGA / VGA			Total Memory : 16384K				
Halt On	: All Errors							
ESC : Quit			↑ ↓ → ← : Select		Item		PU / PD / + / - : Modify	
F1 : Help			(Shift) F2 : Change Color					

At the bottom of the menu are the control keys for use on this menu. If you need any help in each item field, you can press the <F1> key. It will display the relevant information to help you. The memory display at the lower right-hand side of the menu is read-only. It will adjust automatically according to the memory changed. The following describes each item of this menu.

Date

The date format is:

Day : Sun to Sat
Month : 1 to 12
Date : 1 to 31
Year : 1994 to 2009

To set the date, highlight the “Date” field and use the PageUp/ PageDown or +/- keys to set the current time.

Time

The time format is: **Hour : 00 to 23**
Minute : 00 to 59
Second : 00 to 59

To set the time, highlight the “Time” field and use the <PgUp>/ <PgDn> or +/- keys to set the current time.

Primary HDDs / Secondary HDDs

The onboard PCI IDE connectors provide Primary and Secondary channels for connecting up to four IDE hard disks or other IDE devices. Each channel can support up to two hard disks; the first is the “Master” and the second is the “Slave”.

To enter the specifications for a hard disk drive, you must select first a “Type”. There are 45 predefined types and 4 user definable types are for Enhanced IDE BIOS. Type 1 to 45 are predefined. Type “User” is user-definable. For the Primary Master/Slave as well as Secondary Master/Slave, you can select “Auto” under the TYPE and MODE fields. This will enable auto detection of your IDE drives and CD-ROM drive during POST.

Press <PgUp>/<PgDn> to select a numbered hard disk type or type the number and press the <Enter> key. The hard disk will not work properly if you enter incorrect information for this field. If your hard disk drive type is not matched or listed, you can use Type User to define your own drive type manually. If you select Type User, related information is asked to be entered to the following items.

CYLS : Number of cylinders
HEAD : Number of read/write heads
PRECOMP : Write precompensation
LANDZ : Landing zone
SECTOR : Number of sectors
SIZE : Automatically adjust according to the configuration
MODE (for IDE HDD only) : Auto
Normal (HD < 528MB)
Large (for MS-DOS only)
LBA (HD > 528MB and supports Logical Block Addressing)

NOTE: The specifications of your drive must match with the drive table. If your hard disk drive type is not matched or listed, you can use Type User to define your own drive type manually.

Drive A / Drive B

These fields identify the types of floppy disk drive A or drive B that has been installed in the computer. The available specifications are:

360KB	1.2MB	720KB	1.44MB	2.88MB
5.25 in.	5.25 in.	3.5 in.	3.5 in.	3.5 in.

Floppy 3 Mode Support

This is the Japanese standard floppy drive. The standard stores 1.2MB in a 3.5-inch diskette. You have four options to choose:

Disabled No 3 mode floppy drive installed. (default)
Drive A Installed 3 mode drive at drive A.
Drive B Installed 3 mode drive at drive B.
Both Installed 3 mode drive at drive A and B.

Video

This field selects the type of video display card installed in your system. You can choose the following video display cards:

EGA/VGA For EGA, VGA, SEGA, SVGA
or ZIF monitor adapters.(default)

CGA 40	Power up in 40 column mode.
CGA 80	Power up in 80 column mode.
MONO	For Hercules or MDA, includes high resolution monochrome adapters.

Halt On

This field determines whether or not the system will halt if an error is detected during power up.

No errors	The system boot will not be halted for any error that may be detected.
All errors	Whenever the BIOS detects a non-fatal error, the system will be halted and you will be prompted.
All, But Keyboard	The system boot will not be halted for a keyboard error; it will stop for all other errors.
All, But Diskette	The system boot will not be halted for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not be halted for a keyboard or disk error; it will stop for all other errors.

BIOS Features Setup

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

ROM / PCI ISA BIOS
 BIOS FEATURES SETUP
 AWARD SOFTWARE, INC.

Virus Warning	: Disabled	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000-CBFFF Shadow	: Disabled
Quick Power On Self Test	: Enabled	CC000-CFFFF Shadow	: Disabled
Boot Sequence	: A, C, SCSI	D0000-D3FFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	D4000-D7FFF Shadow	: Disabled
Boot Up Floppy Seek	: Enabled	D8000-DBFFF Shadow	: Disabled
Boot Up Numlock Status	: On	DC000-DFFF Shadow	: Disabled
Boot Up System Speed	: High		
Gate A20 Option	: Fast		
Memory Parity Check	: Enabled		
Typematic Rate Setting	: Disabled		
Typematic Rate (chars/Sec)	: 6		
Typematic Delay (Msec)	: 250	ESC : Quit	↑ ↓ → ← : Select Item
Security Option	: Setup	F1 : Help	PU/PD/+/- : Modify
PCI /VGA Palette Snoop	: Disabled	F5 : Old	(Shift) F2 : Color
OS Select For DRAM>64MB	: Non-OS2	Values	
Report No FDD For WIN 95	: Yes	F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

Virus Warning

This item protects the boot sector and partition table of your hard disk against accidental modifications. If an attempt is made, the BIOS will halt the system and display a warning message. If this occurs, you can either allow the operation to continue or run an anti-virus program to locate and remove the problem.

NOTE: Many disk diagnostic programs, which attempt to access the boot sector table, can cause the virus warning. If you will run such a program, disable the Virus Warning feature.

CPU Internal Cache / External Cache

These items allow you to enable (speed up memory access) or disable the cache function. By default, these items are **Enabled**.

Quick Power On Self Test

This choice speeds up the Power On Self Test (POST) after you power up the system. If it is set to **Enabled**, BIOS will skip some items. By default, this choice is **Enabled**.

Boot Sequence

This field determines the drive that the system searches first for an operating system. The options are:

A, C, SCSI	D, A, SCSI	SCSI, C, A
C, A, SCSI	E, A, SCSI	C only
C, CDROM, A	F, A, SCSI	LS120, C
CDROM, C, A	SCSI, A, C	

The default value is **A, C, SCSI**.

Swap Floppy Drive

This item allows you to determine whether or not to enable the swap Floppy Drive. When enabled, the BIOS swaps floppy drive assignments so that Drive A becomes Drive B, and Drive B becomes Drive A. By default, this field is set to *Disabled*.

Boot Up Floppy Seek

When enabled, the BIOS will seek whether or not the floppy drive installed has 40 or 80 tracks. 360K type has 40 tracks while 760K, 1.2M and 1.44M all have 80 tracks. By default, this field is set to *Enabled*.

Boot Up NumLock Status

This allows you to activate the NumLock function after you power up the system. By default, the system boots up with *NumLock* On.

Boot Up System Speed

This has no function and selects the default system speed (*High*).

Gate A20 Option

This field allows you to select how Gate A20 is worked. The Gate A20 is a device used to address memory above 1 MB. By default, this field is set to *Fast*.

Memory Parity/ECC Check

This field allows you to enable the parity/ECC checking function of the memory module if it is supported. By default, this field is set to *Disabled*.

Typematic Rate Setting

When disabled, continually holding down a key on your keyboard will generate only one instance. When enabled, you can set the two typematic controls listed next. By default, this field is set to *Disabled*.

Typematic Rate (Chars/Sec)

When the typematic rate is enabled, the system registers repeated keystrokes speeds. You can select speed range from 6 to 30 characters per second. By default, this item is set to *6*.

Typematic Delay (Msec)

When the typematic rate is enabled, this item allows you to set the time interval for displaying the first and second characters. By default, this item is set to *250msec*.

Security Option

This field allows you to limit access to the System and Setup. The default value is *Setup*. When you select *System*, the system prompts for the User Password every time you boot up. When you select *Setup*, the system always boots up and prompts for the Supervisor Password only when the Setup utility is called up.

PCI/VGA Palette Snoop

Some display cards that are non-standard VGA may not show colors properly. This field allows you to set whether or not MPEG ISA/VESA VGA Cards can work with PCI/VGA. When this field is enabled, a PCI/VGA can work with an MPEG ISA/VESA VGA card. When this field is disabled, a PCI/VGA cannot work with an MPEG ISA/VESA card.

OS Select for DRAM > 64MB

This option allows the system to access greater than 64MB of DRAM memory when used with OS/2 that depends on certain BIOS calls to access memory. The default setting is **NON-OS/2**.

Report No FDD For WIN 95

This option allows Windows 95 to share with other peripherals IRQ6, which is assigned to a floppy disk drive if the drive is not existing.

Video BIOS Shadow

This item allows you to change the Video BIOS location from ROM to RAM. Video Shadow will increase the video speed.

C8000 - CBFFF Shadow/DC000 - DFFFF Shadow

Shadowing a ROM reduces the memory available between 640KB to 1024KB. These fields determine whether or not optional ROM will be copied to RAM.

Chipset Features Setup

This menu controls the configuration of the embedded board chipset.

ROM PCI/ISA BIOS
 CHIPSET FEATURES SETUP
 AWARD SOFTWARE INC.

SDRAM Timing Setup	: Auto	16-bit I/O Recovery (CLK)	: 5
		8-bit I/O Recovery (CLK)	: 5
		USB Controller	: Disabled
Multiple Monitor Support	: No Onboard		
Video Memory Size	: 2.5M		
Flat Panel Status	: Enabled		
Flat Panel Resolution	: 800x600		
		ESC : Quit	↑ ↓ → ← : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift) F2 : Color
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

SDRAM Timing

The SDRAM timing is controlled by the DRAM Timing Registers. The timing type is dependent on the system design. Slower rates may be required in some system designs to support loose layouts or slower memory. When set to *User* the following options are opened for configuration:

- SDRAM Clock Ratio
- MA/BA High Drive Control
- Two Clock Address Setup
- SDCLK Falling Delay
- Shift SD CLK
- MD High Drive Control
- Control High Drive/Slew
- SDCLK Edge Delay
- SDCLK High Drive/Slew
- CAS Latency (LTMODE)

Multiple Monitor Support

The default setting for Multiple Monitor Support is *No Onboard*.

Video Memory Size

The default setting of Video Memory Size is *2.5 M*.

Flat Panel Status

The default setting of Flat Panel Status is *Enabled*.

Flat Panel Resolution

The default setting of the flat panel resolution is *800x600*.

16 Bit I/O Recovery (CLK)

This field allows you to select the recovery time allowed for 16 bit I/O.

8 Bit I/O Recovery (CLK)

This field allows you to select the recovery time allowed for 8 bit I/O.

USB Controller

This field allows you to enable or disable the USB controller on board.

Power Management Setup

The Power Management Setup allows you to save energy of your system effectively. It will shut down the hard disk and turn off video display after a period of inactivity.

ROM PCI/ISA BIOS (2A59IM29)
 POWER MANAGEMENT SETUP
 AWARD SOFTWARE, INC.

Power Management	: Disabled	** Reload Global Timer Events **	
** Timers **		IRQ1 (Keyboard)	: ON
Doze Mode	: Disabled	IRQ3 (COM2)	: OFF
Standby Mode	: Disabled	IRQ4 (COM1)	: OFF
HDD Power Down	: Disabled	IRQ5 (LPT 2)	: OFF
MODEM Use IRQ	: NA	IRQ6 (Floppy Disk)	: OFF
		IRQ7 (LPT 1)	: OFF
Throttle Duty Cycle	: 33.3%	IRQ8 (RTC Alarm)	: OFF
		IRQ9 (IRQ2 Redir)	: OFF
RTC Alarm Function	: Disabled	IRQ10 (Reserved)	: OFF
		IRQ11 (Reserved)	: OFF
		IRQ12 (PS/2 Mouse)	: OFF
		IRQ13 (Coprocessor)	: OFF
		IRQ14 (Hard Disk)	: OFF
		IRQ15 (Reserved)	: OFF
		ESC : Quit	↑ ↓ → ← : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old	(Shift) F2 : Color
		Values	
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

Power Management

This field allows you to select the type of power saving management modes. There are four selections for Power Management.

- Disable No power management. (Default)
- Min. Power Saving Minimum power management.
- Max. Power Saving Maximum power management. Only available for SL CPU.
- User Define Each of the ranges are from 1 min. to 1hr. Except for HDD Power Down which ranges from 1 min. to 15 min.

Doze Mode

When enabled, and after the set time of system inactivity, the CPU clock will run at a slower speed while all other devices operate at full speed.

Suspend Mode

When enabled, and after the set time of system inactivity, all devices except the CPU will be shut off.

HDD Power Down

When enabled, and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

RTC Alarm Function

This field enables or disables the RTC Alarm.

PM Events

The I/O events prevent the system from entering a power saving mode or can awaken the system from such a mode. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service. The default value is *Off*. When set On, activity will neither prevent the system from going into a power management mode nor awaken it. The IRQ section sets the wake-up call of the system. If activity is detected from any enabled IRQ channels in the left-hand group, the system wakes up from suspended mode.

PNP/PCI Configuration

This option configures the PCI bus system. All PCI bus systems on the system use INT#, thus all installed PCI cards must be set to this value.

ROM PCI/ISA BIOS PNP/PCI CONFIGURATION AWARD SOFTWARE INC.			
PNP OS Installed	:	Yes	PCI IRQ Activated By : Level
Resources Controlled by	:	Manual	Used MEM base addr : N/A
Reset Configuration Data	:	Disabled	
IRQ-3	assigned to	: Legacy ISA	
IRQ-4	assigned to	: Legacy ISA	
IRQ-5	assigned to	: Legacy ISA	
IRQ-7	assigned to	: Legacy ISA	
IRQ-9	assigned to	: Legacy ISA	
IRQ-10	assigned to	: Legacy ISA	
IRQ-11	assigned to	: PCI/ISA PnP	
IRQ-12	assigned to	: PCI/ISA PnP	
IRQ-14	assigned to	: PCI/ISA PnP	
IRQ-15	assigned to	: PCI/ISA PnP	
DMA-0	assigned to	: PCI/ISA PnP	
DMA-1	assigned to	: PCI/ISA PnP	
DMA-3	assigned to	: PCI/ISA PnP	
DMA-5	assigned to	: PCI/ISA PnP	
DMA-6	assigned to	: PCI/ISA PnP	
DMA-7	assigned to	: PCI/ISA PnP	
			ESC : Quit ↑ ↓ ← : Select Item
			F1 : Help PU/PD/+/- : Modify
			F5 : Old (Shift) F2 : Color
			Values
			F6 : Load BIOS Defaults
			F7 : Load Setup Defaults

PNP OS Installed

This field allows you to specify if the operating system installed in your system is plug and play aware.

NOTE: Operating systems such as DOS, OS/2, and Windows 3.x do not use PnP.

Resources Controlled by

This PnP BIOS can configure all of the boot and compatible devices automatically. However, this capability needs you to use a PnP operating system such as Windows 95 and Windows 98. The default value is *Manual*.

Reset Configuration Data

This field allows you to determine whether or not to reset the configuration data. The default value is *Disabled*.

IRQ3/4/5/7/9/10/11/12/14/15, DMA0/1/3/5/6/7 assigned to

These fields allow you to determine the IRQ/DMA assigned to the ISA bus and is not available to any PCI slot.

Used MEM base addr

This field allows the user to set the base address and block size of a legacy (non-PnP) ISA card that uses any memory segment within the C800H and DFFFH address range. If you have such a card and are not using an ICU (ISA Configuration Utility) to specify its address range, select a base address from the six available options. During selection, the “Used MEM Length” field will appear with the block size options. If you have more than one legacy ISA card in your system that require the use of this address range, you can increase the block size to either 8K, 16K, 32K or 64K. If you are using ICU to accomplish this task, leave “Used MEM base addr” to its default setting of N/A.

Load BIOS Defaults

This option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high-performance features.

ROM PCI/ISA BIOS
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
LOAD SETUP DEFAULTS	IDE HDD AUTO DETECTION
ESC : Quit	SAVE & EXIT SETUP
F10 : Save & Exit Setup	EXIT WITHOUT SAVING
Load BIOS Defaults except Standard CMOS Setup	

↑ ↓ → ← : Select Item
(Shift) F2 : Change Color

Load BIOS Defaults (Y/N)? N

To load BIOS defaults value to CMOS SRAM, enter “Y”. If not, enter “N”.

Load Setup Defaults

This option allows you to load the default values to your system configuration. These default settings are optimal and enable all high performance features.

ROM PCI/ISA BIOS
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP BIOS FEATURES SETUP CHIPSET FEATURES SETUP POWER MANAGEMENT SETUP	INTEGRATED PERIPHERALS SUPERVISOR PASSWORD USER PASSWORD IDE HDD AUTO DETECTION SAVE & EXIT SETUP EXIT WITHOUT SAVING
Load Setup Defaults (Y/N)? N	
ESC : Quit F10 : Save & Exit Setup	↑ ↓ → ← : Select Item (Shift) F2 : Change Color
Load BIOS Defaults except Standard CMOS Setup	

To load SETUP defaults value to CMOS SRAM, enter “Y”. If not, enter “N”.

Integrated Peripherals

This option allows you to determine the configuration of the integrated peripherals including hard disk drives USB, serial and parallel ports.

ROM PCI/ISA BIOS
INTEGRATED PERIPHERALS
AWARD SOFTWARE INC.

IDE HDD Block Mode : Enabled	Onboard Serial Port 3 : 3F8H
Primary IDE Channel : Enabled	Serial Port 3 Use IRQ : IRQ10
Master Drive PIO Mode : Auto	Onboard Serial Port 4 : 2E8H
Slave Drive PIO Mode : Auto	Serial Port 4 Use IRQ : IRQ9
Secondary IDE Channel : Enabled	Digital I/O Index : Disabled
Master Drive PIO Mode : Auto	Build in CPU Audio : Enabled
Slave Drive PIO Mode : Auto	Audio I/O Base Address : 220H
IDE Primary Master UDMA : Auto	MPU-401 I/O Base Address : 330H
IDE Primary Slave UDMA : Auto	Audio IRQ Select : IRQ5
IDE Secondary Master UDMA : Auto	Audio Low DMA Select : DMA 1
IDE Secondary Slave UDMA : Auto	Audio High DMA Select : DMA 5
KBC input clock : 8 MHz	ESC : Quit ↑ ↓ ← : Select Item
Onboard FDC Controller : Enabled	F1 : Help PU/PD/+/- : Modify
Onboard Serial Port 1 : 3F8/IRQ4	F5 : Old (Shift) F2 : Color
Onboard Serial Port 2 : 2F8/IRQ3	Values
UR2 Mode : Standard	F6 : Load BIOS Defaults
Onboard Parallel Port : 378 /	F7 : Load Setup Defaults
IRQ7	
Parallel Port Mode : ECP +	
EPP	

IDE HDD Block Mode

This field allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive.

Primary / Secondary IDE Channel

These fields allow your system's hard disk controller to work faster. Rather than have the BIOS issue a series of commands that transfer to or from the disk drive, PIO (Programmed Input/Output) allows the BIOS to communicate with controller and CPU directly.

The system supports five modes, numbered from 0 (default) to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode.

IDE Primary Master/Slave UDMA And Secondary Master/Slave

UDMA

This field allows your system to improve disk I/O throughput with the Ultra DMA feature in the hard disk drive. The options are *Auto* and *Disabled*.

KBC Input Clock

The default setting for the keyboard controller input clock is *8 MHz*.

Onboard FDC Controller

This option allows you to select the onboard FDD port.

Onboard Serial/Parallel Port

These fields allow you to select the onboard serial/parallel port and its address. The default values for these ports are:

Serial Port 1	3F8/IRQ4
Serial Port 2	2F8/IRQ3
Serial Port 3	3E8/IRQ10
Serial Port 4	2E8/IRQ9
Parallel Port	378H/IRQ7

UR2 Mode

This field determines the UART 2 mode in your computer. The options are *Standard*, *HPSIR*, and *ASKIR*.

Onboard Parallel Mode

This field allows you to determine parallel port mode function.

Normal	Normal Printer Port
EPP	Enhanced Parallel Port
ECP	Extended Capabilities Port
ECP+EPP	Extended Capabilities Port or Enhanced Parallel Port

Build in CPU Audio

When enabled, other relevant Audio parameters are open for configuration. These include Audio I/O Base Address, MPU-401 I/O Base Address, Audio IRQ Select, Audio Low DMA Select, and Audio High DMA Select.

Digital I/O Index

This field enables or disables the Digital I/O Index.

The EI5CM has two high drive digital outputs and two digital inputs (TTL level). You can configure the digital I/O to control the opening of the cash drawer and to sense the closing of the cash drawer. The following explains how the digital I/O is controlled via software programming.

Digital output programming

This is meant to drive relays or solenoid. Refer to the table below for digital output programming

Output	Address	Bit
Out 1	220	0
Out 2	220	1

Example: “0” is off “1” is on

```
Mov     AX, Data
Mov     DX, 0220H
Out     DX, AX
```

Data = 01

Out 0 = “1”

Out 1 = “0”

Digital Input Programming Table

Input	Address	Bit
IN-0	220	0
IN-1	220	1

```
Mov     DX, 0220H
IN      DX
```

If IN-0 = “1”

IN-1 = “0”

Then AX = “1”

Note: The INPUT signal must be TTL compatible

Supervisor / User Password

These two options set the system password. *Supervisor Password* sets a password that will be used to protect the system and Setup utility. *User Password* sets a password that will be used exclusively on the system. To specify a password, highlight the type you want and press <Enter>. The **Enter Password:** message prompts on the screen. Type the password, up to eight characters in length, and press <Enter>. The system confirms your password by asking you to type it again. After setting a password, the screen automatically returns to the main screen.

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

ROM PCI/ISA BIOS
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP BIOS FEATURES SETUP CHIPSET FEATURES SETUP POWER MANAGEMENT SETUP LOAD SETUP DEFAULTS	INTEGRATED PERIPHERALS SUPERVISOR PASSWORD USER PASSWORD IDE HDD AUTO DETECTION SAVE & EXIT SETUP EXIT WITHOUT SAVING
ESC : Quit F10 : Save & Exit Setup	↑ ↓ → ← : Select Item (Shift) F2 : Change Color
Change / Set / Disable Password	

Enter Password:

IDE HDD Auto Detection

This option detects the parameters of an IDE hard disk drive, and automatically enters them into Standard CMOS Setup screen.

ROM PCI/ISA BIOS
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master:								
Select Primary Master Option (N=SKIP) : N								
OPTIONS	TYP	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
1 (Y)	E	0	0	0	0	0	0	NORMAL

NOTE: Some OSes (like SCO-UNIX) must use "NORMAL" for installation

ESC: SKIP

Up to four IDE drives can be detected, with parameters for each appearing in sequence inside a box. To accept the displayed entries, press the “Y” key to skip to the next drive, press the “N” key. If you accept the values, the parameters will appear listed beside the drive letter on the screen.

HDD Low Level Format

This option should only be used by a professional. Low-level formatting can cause irreparable damage to your hard disk. The procedures include selecting the drive you want to low-level format, determining the bad tracks, and proceeding with pre-formatting.

Save & Exit Setup

This option allows you to determine whether or not to accept the modifications. If you type “Y”, you will quit the setup utility and save all changes into the CMOS memory. If you type “N”, you will return to Setup utility.

ROM PCI/ISA BIOS
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP BIOS FEATURES SETUP CHIPSET FEATURES SETUP LOAD SETUP DEFAULTS ESC : Quit F10 : Save & Exit Setup	INTEGRATED PERIPHERALS SUPERVISOR PASSWORD USER PASSWORD IDE HDD AUTO DETECTION SAVE & EXIT SETUP EXIT WITHOUT SAVING ↑ ↓ → ← : Select Item (Shift) F2 : Change Color
Save Data to CMOS & Exit Setup	

Exit Without Saving

Select this option to exit the Setup utility without saving the changes you have made in this session. Typing “Y” will quit the Setup utility without saving the modifications. Typing “N” will return you to Setup utility.

ROM PCI/ISA BIOS
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP BIOS FEATURES SETUP CHIPSET FEATURES SETUP LOAD BIOS DEFAULTS LOAD SETUP DEFAULTS ESC : Quit F10 : Save & Exit Setup	INTEGRATED PERIPHERALS SUPERVISOR PASSWORD USER PASSWORD IDE HDD AUTO DETECTION SAVE & EXIT SETUP EXIT WITHOUT SAVING ↑ ↓ → ← : Select Item (Shift) F2 : Change Color
Abandon all Data & Exit Setup	