WAFER-7850

Pentium® III, Celeron with

Single Port Ethernet, VGA, 3.5” SBC

Ver 1.0

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Introduction

Welcome to the WAFER-7850 Pentium® III, Celeron Single Board Computer. The WAFER-7850 board is a big 4 pin 3.5 inches form factor board, which comes equipped with high performance Pentium® III, or economical Celeron Processor with
the Intel advanced chipset 815E. This product is designed for the system manufacturers, integrators, or VARs that want to provide all the performance, reliability, and quality at a reasonable price.

In addition, the WAFER-7850 provides on chip VGA. The VGA which provides up to 1600x1200 resolution. The VGA memory is share main memory.

An advanced high performance super AT I/O chip – ITE IT8702 is used in the WAFER-7850 board. Both on-chip UARTs are compatible with the NS16C550. The parallel port and IDE interface are compatible with IBM PC/AT architecture's.

WAFER-7850 uses Intel 82801BA embedded LAN controller, which is a fully integrated 10BASE-T/100BASE-TX LAN solution with high performance networking functions and Alert-on-Lan features.

WAFER-7850 uses the advanced INTEL Chipset, 815E which is provided up to 133MHz for FSB and 133MHz for SDRAM memory.

1.1 Specifications:

- **CPU** : Celeron® Processor, 300MHz and above
  Pentium® III(FC-PGA) Processor, 450MHz and above
- **DMA channels** : 7
- **Interrupt levels** : 15
- **Chipset** : Intel 815E
- **RAM memory** : Single 144 pin SODIMM socket . The memory capability is up to 256MB/133MHz.
- **Ultra ATA/33/66/100 IDE Interface** : Single PCI Enhance IDE channel. The south bridge ICH2 supports Ultra ATA/33/66/100 IDE interface. To support Ultra ATA66/100 Hard disk, a specified cable must be available.
- **Floppy disk drive interface** : Single 2.88 MB, 1.44MB, 1.2MB, 720KB, or 360KB floppy disk drive.
- **CompactFlash Card Storage Card interface** : Supports Type II CompactFlash and IBM Micro Drive.
- **Two high speed Series ports** : 16C550 compatible UARTs
- **Bi-directional Parallel Port** IEEE1284 compatible
- **IrDA port :** Supports Serial Infrared(SIR) and Amplitude Shift Keyed IR(ASKIR) interface.
- **USB port :** Support single USB port for future expansion. USB 1.0 compatible.
- **AC97Codec :** Supports two channel Left/Right Line IN/OUT, and Left/Right speaker out, MIC IN, CD IN.
- **Watchdog timer** : Time resolution 1 second or 1 minute, maximum 255 unit. Reset was generated when CPU did not periodically trigger the timer.
- **VGA Controller :** Embedded VGA controller, Screen Resolution : up to 1600x1200 in 256 Colors at 85Hz Refresh.
- **Intel 82801BA embedded Lan Controller :** IEEE 802.3u Auto-Negotiation support for 10BASE-T/100BASE-TX standard. Fast back-to-back transmission support with minimum interframe spacing. Connected to your LAN through RJ45 connector.

- **Keyboard Controller:** 8042 compatible for keyboard and PS/2 mouse
- **Daughter Board (Option)** : A special 20X2 connector left for daughter board is option. The daughter board's full features are TV out with resolution 1024X768, 8 bit programmable digital I/O with 4 input and 4 output, auto-direction RS422/485
- **Power Consumption** : 25W; with 5V/4.8A and 12V/0.074A, as running by PIII 550MHz and 256MB SODIMM
- **Operating Temperature** : 0° ~ 55°C (CPU needs Cooler)

1.2 What You Have

In addition to this *User's Manual*, the WAFER-7850 package includes the following items:

- WAFER-7850 Celeron®, Pentium® III Single Board Computer with a heat sink on the GMCH chip
- RS-232 cable
- Printer cable
- FDD cable
- IDE cable
- USB cable
- Audio cable with 6X2 2.0mm pitch female connector.
- Cooler and Heat sink module
- Y cable for PS/2 keyboard and mouse

2

Installation

This chapter describes how to install the WAFER-7850. At first, the layout of WAFER-7850 is shown, and the unpacking information that you should be careful is described. The jumpers and switches setting for the WAFER-7850's configuration, such as CPU type selection, system clock setting, and watch dog timer, are also included.

2.1 WAFER-7850's Layout

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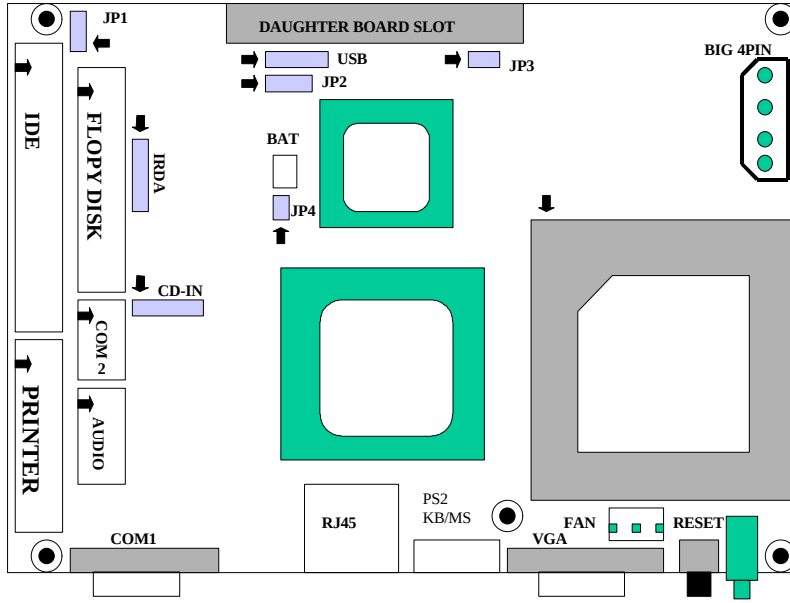
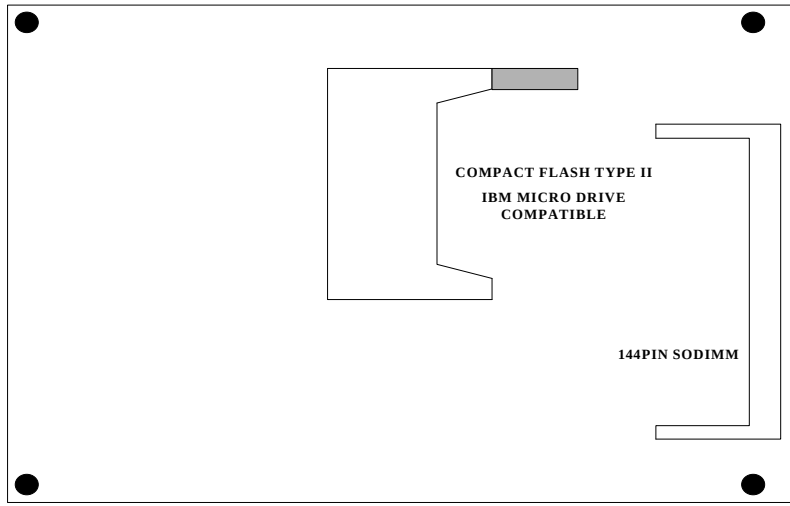
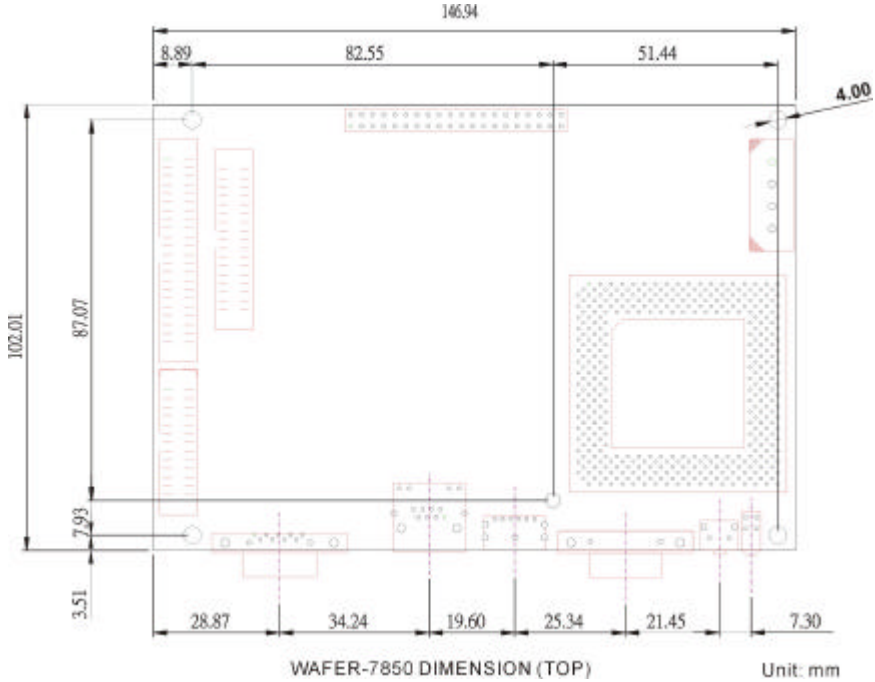
COMPONENT SIDE VIEW

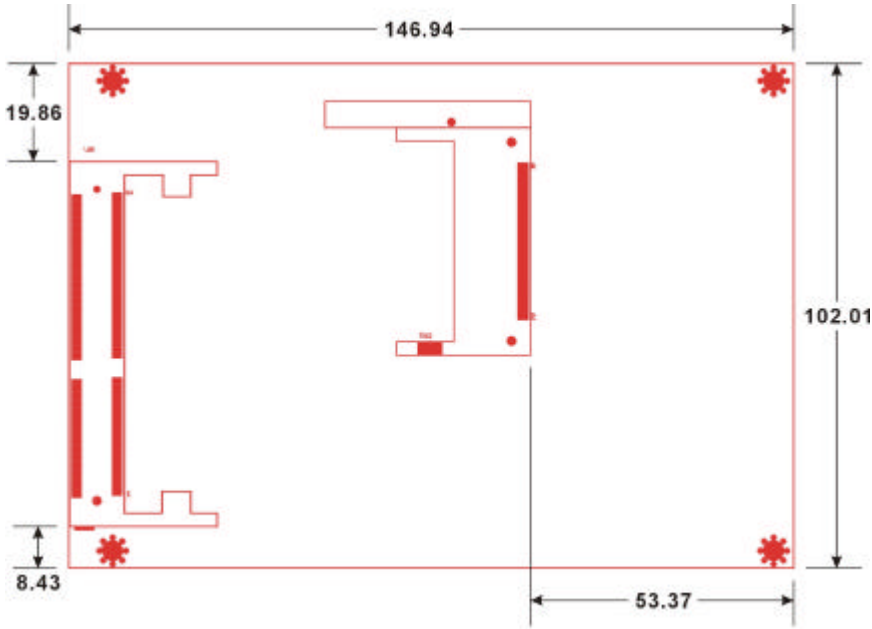


SOLDER SIDE VIEW



2.2 WAFER-7850's Dimension





WAFER-7850 DIMENSION (BOTTOM) Unit: mm

2.3 Clear CMOS Setup

If want to clear the CMOS Setup(for example forgot the password you should clear the setup and then set the password again.),you should close the JP2 about 3 seconds, then open again. Set back to normal operation mode, open JP2.

- **JP2: Clear CMOS Setup**

JP2	DESCRIPTION
1-2	**Keep CMOS Setup (Normal Operation)**
2-3	Clear CMOS Setup

2.4 BIOS Protection Setting

To protect the bios from writing, place the cap on the location 2-3.

- **JP1 : Flash Protection Setting**

JP1	DESCRIPTION
2-3	**Locked**
1-2	Unlocked

2.5 COM2 RS232 or RS422/485 Selection

- **JP4 : COM2 RS232 or RS422/485 Selection**

JP4	DESCRIPTION
RS232	**Short**
RS422/485	Opened

Caution: While RS232 is selected, to be sure no daughter board with RS422/485 function equipped.

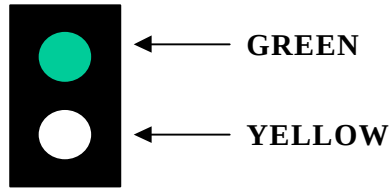
2.6 CompactFlash Card Master/Slave Mode Setting

- **JP3 : Master/Slave Mode Setting**

JP3	DESCRIPTION
OPEN	**SLAVE**
SHORT	MASTER

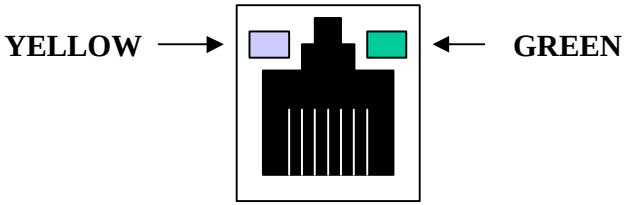
2.7 LED Indications

The WAFER-7850 is equipped 4 LEDs to indicate the system status. There are two LEDs on the D6. The upper green one indicates the IDE status.
While the IDE is transferring data, this LED is in flicker. The lower yellow LED indicates the power on/off. After the power on, the yellow LED will light on.



D6

On the RJ45 connector, while the network is in linking, the yellow LED turns on. During data transmitting or receiving, the green LED will flicker. The flicker rate depends on the activity load.



RJ45

3

Connection

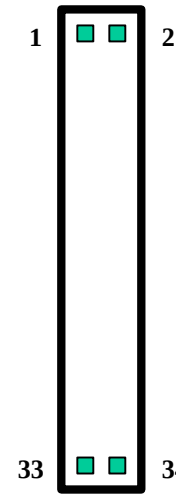
This chapter describes how to connect peripherals, switches and indicators to the WAFER-7850 board.

3.1 Floppy Disk Drive Connector

WAFER-7850 board equipped with a 34-pin daisy-chain driver connector cable.

- **CN5 : FDC CONNECTOR**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	2	REDUCE WRITE
3	GROUND	4	N/C
5	GROUND	6	N/C
7	GROUND	8	INDEX#
9	GROUND	10	MOTOR ENABLE A#
11	GROUND	12	DRIVE SELECT B#
13	GROUND	14	DRIVE SELECT A#
15	GROUND	16	MOTOR ENABLE B#
17	GROUND	18	DIRECTION#
19	GROUND	20	STEP#
21	GROUND	22	WRITE DATA#
23	GROUND	24	WRITE GATE#
25	GROUND	26	TRACK 0#
27	GROUND	28	WRITE PROTECT#
29	N/C	30	READ DATA#
31	GROUND	32	SIDE 1 SELECT#
33	N/C	34	DISK CHANGE#

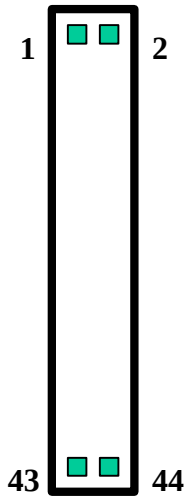


3.2 Ultra ATA33/66/100 IDE Disk Drive Connector

You can attach two IDE(Integrated Device Electronics) hard disk drives to the WAFER-7850 IDE controller.

CN4 (IDE 1) : Primary IDE Connector

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RESET#	2	GROUND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GROUND	20	N/C
21	N/C	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	N/C	28	BALE - DEFAULT
29	N/C	30	GROUND - DEFAULT
31	INTERRUPT	32	IOCS16#-DEFAULT
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND
41	VCC 5V	42	VCC 5V
43	GROUND	44	N/C

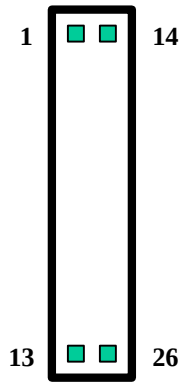


3.3 Parallel Port

This port is usually connected to a printer, The WAFER-7850 includes an on-board parallel port, accessed through a 26-pin flat-cable connector CN10.Three modes – SPP, EPP and ECP – are supported.

- **CN10 : Parallel Port Connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	STROBE#	2	DATA 0
3	DATA 1	4	DATA 2
5	DATA 3	6	DATA 4
7	DATA 5	8	DATA 6
9	DATA 7	10	ACKNOWLEDGE
11	BUSY	12	PAPER EMPTY
13	PRINTER SELECT	14	AUTO FORM FEED #
15	ERROR#	16	INITIALIZE
17	PRINTER SELECT LN#	18	GROUND
19	GROUND	20	GROUND
21	GROUND	22	GROUND
23	GROUND	24	GROUND
25	GROUND	26	NC



3.4 Serial Ports

The WAFER-7850 offers two high speed NS16C550 compatible UARTs with Read/Receive 16 byte FIFO serial ports.

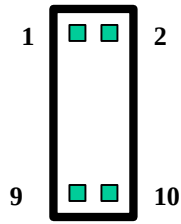
CN14 : COM1
CN8 : COM2

- **CN14 : COM1 9-pin Connector**

PIN NO.	DESCRIPTION
1	DATA CARRIER DETECT (DCD)
2	RECEIVE DATA (RXD)
3	TRANSMIT DATA (TXD)
4	DATA TERMINAL READY (DTR)
5	GROUND (GND)
6	DATA SET READY (DSR)
7	REQUEST TO SEND (RTS)
8	CLEAR TO SEND (CTS)
9	RING INDICATOR (RI)

- **CN8 : COM2 10-pin Connector**

PIN NO.	DESCRIPTION
1	DATA CARRIER DETECT (DCD)
2	DATA SET READY (DSR)
3	RECEIVE DATA (RXD)
4	REQUEST TO SEND (RTS)
5	TRANSMIT DATA (TXD)
6	CLEAR TO SEND (CTS)
7	DATA TERMINAL READY (DTR)
8	RING INDICATOR (RI)
9	GROUND
10	NC



3.5 Keyboard Connector

The WAFER-7850 provides 6-PIN MINI-DIN keyboard/mouse connector.

- **CN5 : 6-pin Mini-DIN Keyboard/Mouse Connector**

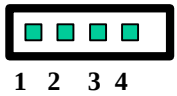
PIN NO.	DESCRIPTION
1	KEYBOARD DATA
2	MOUSE DATA
3	GROUND
4	+5V
5	KEYBOARD CLOCK
6	MOUSE CLOCK

3.6 USB Port Connector

The WAFER-7850 built-in an USB port for the future new I/O bus expansion.

CN2 :

1.	VCC
2.	DATA-
3.	DATA+
4.	GROUND

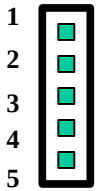


3.7 IrDA Infrared Interface Port

The WAFER-7850 built-in a IrDA port which support Serial Infrared(SIR) or Amplitude Shift Keyed IR(ASKIR) interface. When use the IrDA port have to set SIR or ASKIR model in the BIOS's Peripheral Setup's COM 2. Then the normal RS -232 COM 2 will be disabled.

- **CN6 : IrDA connector**

PIN NO.	DESCRIPTION
1	VCC5V
2	N/C
3	IR-RX
4	Ground
5	IR-TX

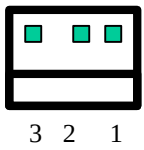


3.8 Fan Connector

The WAFER-7850 provides CPU cooling fan connector and chassis fan connector. These connectors can supply 12V/500mA to the cooling fan. The Fan's rotation is in ful l speed.

- **FAN1/FAN2 : CPU Fan Connector**

PIN NO.	DESCRIPTION
3	NC
2	12V
1	Ground



3.9 LAN RJ45 Connector

WAFER-7850 is equipped with a built-in 10/100Mbps Ethernet Controller. You can connect it to your LAN through RJ45 LAN connector. The pin assignments are as following:

- **CN14 : LAN RJ45 Connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TX+	5.	N/C
2	TX-	6.	RX-
3.	RX+	7.	N/C
4.	N/C	8.	N/C

3.10 VGA Connector

WAFER-7850 built-in 15-pin VGA connector directly to your CRT monitor.

- **CN17 : 15-pin Female Connector**

1	RED	2	GREEN
3	BLUE	4	NC
5	GROUND	6	GROUND
7	GROUND	8	GROUND
9	NC	10	GROUND
11	NC	12	DDC DAT
13	HSYNC	14	VSYNC
15	DDCCLK		

3.11 Audio Connectors

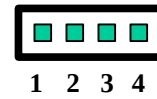
The AC97 Codec support several audio functions. The connector are described as below.

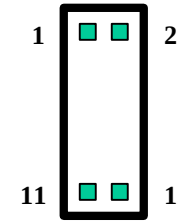
CN11 : AUDIO CONNECTOR

1.	LEFT SPEAKER OUT SIGNAL (*WITH OP AMPLIFIER*)
2.	RIGHT SPEAKER OUT SIGNAL (*WITH OP AMPLIFIER*)
3.	GROUND(*FOR SPK CONNECTOR*)
4.	GROUND(*FOR LINE OUT CONNECTOR*)
5.	LEFT LINE OUT SIGNAL
6.	RIGHT LINE OUT SIGNAL
7.	LEFT LINE IN SIGNAL
8.	RIGHT LINE IN SIGNAL
9.	GROUND(*FOR LINE IN CONNECTOR*)
10.	GROUND*(NO USE)*
11.	MIC IN
12.	GROUND(*FOR MIC IN CONNECTOR*)

CN9 : CD IN

1.	CD LEFT SIGNAL
2.	GROUND
3.	GROUND
4.	CD RIGHT SIGNAL





3.12 CompactFlash Storage Card Socket

The WAFER-7850 configures CompactFlash Storage Card in IDE Mode. This type II Socket is compatible with IBM Micro Drive.

• CN17 : CompactFlash Storage Card Socket pin assignment

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	26	CARD DETECT1
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13
5	D6	30	D14
6	D7	31	D15
7	CS1#	32	CS3#
8	N/C	33	N/C
9	GROUND	34	IOR#
10	N/C	35	IOW#
11	N/C	36	OBLIGATORY TO PULL HIGH
12	N/C	37	IRQ15
13	VCC	38	VCC
14	N/C	39	MASTER/SLAVE
15	N/C	40	N/C
16	N/C	41	RESET#
17	N/C	42	IORDY
18	A2	43	N/C
19	A1	44	OBLIGATORY TO PULL HIGH
20	A0	45	ACTIVE#
21	D0	46	PDIAG#
22	D1	47	D8
23	D2	48	D9
24	N/C	49	D10
25	CARD DETECT2	50	GROUND

4

Award BIOS Setup

4.1 Introduction

This chapter discusses the Setup program built into the BIOS. The Setup program allows users to configure the system. This configuration is then stored in battery-backed CMOS RAM so that it retains the Setup information while the power is off.

4.2 Starting Setup

The BIOS is immediately active when you turn on the computer. While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Del> immediately after switching the system on, or

2. by pressing the <Del> key when the following message appears briefly at the bottom of the screen during the POST (Power On Self-Test).

   Press DEL to enter SETUP.

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

PRESS F1 TO CONTINUE, DEL TO ENTER SETUP

4.3 Using Setup

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

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

4.4 Main Menu

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

CMOS Setup Utility - Copyright (C) 1984-2000 Award Software

Standard CMOS Features Advanced BIOS Features Advanced Chipset Features Integrated Peripherals Power Management Setup PnP/PCI Configurations Frequency/Voltage Control	Load Fail-Safe Defaults Load Optimized Defaults Set Supervisor Password Set User Password Save & Exit Setup Exit Without Saving
Esc : Quit ↑↓←→ : Select Item F10 : Save & Exit Setup	
Time, Date, Hard Disk Type… .	

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

4.4.1 Setup Items

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

Standard CMOS Features

Use this menu for basic system configuration. See Section 4.5 for the details.

Advanced BIOS Features

Use this menu to set the Advanced Features available on your system. See Section 4.6 for the details.

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system's performance. See section 4.7 for the details.

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals. See section 4.8 for the details.

Power Management Setup

Use this menu to specify your settings for power management. See section 4.9 for the details.

PnP / PCI Configuration

This entry appears if your system supports PnP / PCI. See section 4.10 for the details.

Frequency/Voltage Control

Use this menu to specify your settings for frequency/voltage control. See section 4.11 for the details.

Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate. See section 4.12 for the details.

Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While Award has designed the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs. See section 4.12 for the details.

Supervisor / User Password

Use this menu to set User and Supervisor Passwords. See section 4.13 for the details.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup. See section 4.14 for the details.

Exit Without Save

Abandon all CMOS value changes and exit setup. See section 4.14 for the details.

4.5 Standard CMOS Setup

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

CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
Standard CMOS Features

Date: Mon, Feb 8 2000 Time: 16:19:20	Item Help
➢ IDE Primary Master HD Model Name ➢ IDE Primary Slave <Press Enter> None ➢ IDE Secondary Master <Press Enter> None ➢ IDE Secondary Slave <Press Enter> None	Menu Level ➢
Drive A 1.44M, 3.5 in. Drive B None	Change the day, month, year and century
Video EGA/VGA Halt On All,But Keyboard	
Based Memory 640K Extended Memory 129024K Total Memory 130048K	

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

Figure 1: The Main Menu

Main Menu Selections

Item	Options	Description
Date	MM DD YYYY	Set the system date.
Time	HH : MM : SS	Set the system time
IDE Primary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Primary Slave	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Slave	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
Drive A Drive B	None 360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in 2.88M, 3.5 in	Select the type of floppy disk drive installed in your system
Video	EGA/VGA CGA 40 CGA 80 MONO	Select the default video device
Halt On	All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/Key	Select the situation in which you want the BIOS to stop the POST process and notify you
Base Memory	N/A	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up
Total Memory	N/A	Displays the total memory available in the system

Table 2 Main Menu Selections

IDE Adapters

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

Figure 2 shows the IDE primary master sub menu.

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IDE Primary Master

IDE HDD Auto-Detection	Press Enter	Item Help
IDE Primary Master	Auto	Menu Level ➢➢
Access Mode	Auto	
Capacity	15362 MB	To auto-detect the HDD's size, head... on this channel
Cylinder	29765	
Head	16	
Precomp	0	
Landing Zone	29764	
Sector	63	

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

Figure 2 IDE Primary Master sub menu

Use the legend keys to navigate through this menu and exit to the main menu. Use Table 3 to configure the hard disk.

Item	Options	Description
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.
IDE Primary Master	None Auto Manual	Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !
Capacity	Auto Display your disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
Access Mode	CHS LBA Large Auto	Choose the access mode for this hard disk

Table 3 Hard disk selections

4.6 Advanced BIOS Features

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

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Advanced BIOS Features

Virus Warning	Disabled	Item Help
CPU Internal Cache	Enabled	
External Cache	Enabled	
CPU L2 Cache ECC Checking	Enabled	Menu Level ➢
Process Number feature	Enabled	
Quick Power On Self Test	Disabled	Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep
First Boot device	Floppy	
Second Boot device	HDD-0	
Third Boot device	LS120	
Boot other device	Enabled	
Swap Floppy Drive	Disabled	
Boot Up Floppy Seek	Enabled	
Boot Up NumLock Status	On	
Gate A20 Option	Fast	
Typematic Rate Setting	Disabled	
Typematic Rate (Chars/Sec)	6	
Typematic Delay (Msec)	250	
Security Option	Setup	
OS Select For DRAM > 64MB	Non-OS2	
Report NO FDD For Win 95	No	

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

Virus Warning

Allows you to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.

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

CPU Internal Cache/External Cache

These two categories speed up memory access. However, it depends on CPU/chipset design.

Enabled	Enable cache
Disabled	Disable cache

CPU L2 Cache ECC Checking

This item allows you to enable/disable CPU L2 Cache ECC checking.

The choice: Enabled, Disabled.

Processor Number Feature

This item allows you to enable/disable support KLAMATH.

The choice: Enabled, Disabled.

Quick Power On Self Test

This category speeds up Power On Self Test (POST) after you power up the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.

Enabled	Enable quick POST
Disabled	Normal POST

First/Second/Third/Other Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.

The Choice: Floppy, LS120, HDD0-3, SCSI, CDROM, ZIP 100 , LAN, Disabled.

Swap Floppy Drive

If the system has two floppy drives, you can swap the logical drive name assignments.

The choice: Enabled/Disabled.

Boot Up Floppy Seek

Seeks disk drives during boot up. Disabling speeds boot up.

The choice: Enabled/Disabled.

Boot Up NumLock Status

Select power on state for NumLock.

The choice: On/Off.

Gate A20 Option

Select if chipset or keyboard controller should control GateA20.

Normal	A pin in the keyboard controller controls GateA20
Fast	Lets chipset control GateA20

Typematic Rate Setting

Key strokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected.

The choice: Enabled/Disabled.

Typematic Rate (Chars/Sec)

Sets the number of times a second to repeat a key stroke when you hold the key down.

The choice: 6, 8, 10, 12, 15, 20, 24, 30.

Typematic Delay (Msec)

Sets the delay time after the key is held down before it begins to repeat the keystroke.

The choice: 250, 500, 750, 1000.

Security Option

Select whether the password is required every time the system boots or only when you enter setup.

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

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

OS Select For DRAM > 64MB

Select the operating system that is running with greater than 64MB of RAM on the system.

The choice: Non-OS2, OS2.

Report No FDD For Win 95

Whether report no FDD for Win 95 or not.

The choice: Yes, No.

4.7 Advanced Chipset Features

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Advanced Chipset Features

SDRAM CAS Latency Time 3	Item Help
SDRAM Cycle Time Tras/Trc 7/9	
SDRAM RAS-to-CAS Delay 3	Menu Level ➢
SDRAM RAS Precharge Time 3	
System BIOS Cacheable	
Disabled	
Video BIOS Cacheable	
Disabled	
Memory Hole At 15M-16M	
Disabled	
CPU Latency Timer	
Disabled	
Delay Transaction Enabled	
AGP Graphics Aperture Size 64MB	
Use VGA BIOS In VBU Block	
Enabled	
On-Chip Video Window Size 64MB	
TV Format NTSC	
Output Device Priority	
CRT/FP/TV	

↑↓←→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 allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system.

DRAM Settings

The first chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if your system had mixed speed DRAM chips installed so that greater delays may be required to preserve the integrity of the data held in the slower memory chips.

SDRAM CAS Latency Time

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing.

The Choice: 2, 3

SDRAM Cycle Time Tras/Trc

Select the number of SCLKs for an access cycle.

The Choice: 5/7, 6/8.

SDRAM RAS-to-CAS Delay

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

The Choice: 2, 3.

SDRAM RAS Precharge Time

If an insufficient number of cycles is allowed for the RAS to accumulate its charge before DRAM refresh, the refresh may be incomplete and the DRAM may fail to retain data. Fast gives faster performance; and Slow gives more stable performance. This field applies only when synchronous DRAM is installed in the system.

The Choice: 2, 3.

System BIOS Cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

The choice: Enabled, Disabled.

Video BIOS Cacheable

Select Enabled allows caching of the video BIOS , resulting in better system performance. However, if any program writes to this memory area, a system error may result.

The Choice: Enabled, Disabled.

Memory Hole At 15M-16M

You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements.

The Choice: Enabled, Disabled.

CPU Latency Timer

Enabled :CPU cycle will only be Deferred after in has been in a "Snoop Stall" for 31 clocks and another ADS# has arrived .

Disabled: CPU cycle will only be Deferred immediately after the GMCH receives another ADS#.

The Choice: Enabled, Disabled.

Delay Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.1.

The Choice: Enabled, Disabled.

On-Chip Video Window Size

Select the on-chip video window size for VGA drive use.

The Choice: 32MB, 64MB, Disabled.

4.8 Integrated Peripherals

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Integrated Peripherals

On-Chip Primary PCI IDE	Enabled	Item Help
On-Chip Secondary PCI IDE	Enabled	
IDE Primary Master PIO	Auto	Menu Level ➢
IDE Primary Slave PIO	Auto	If your IDE hard
IDE Secondary Master PIO	Auto	drive supports block
IDE Secondary Slave PIO	Auto	mode select Enabled
IDE Primary Master UDMA	Auto	for automatic
IDE Primary Slave UDMA	Auto	detection of the
IDE Secondary Master UDMA	Auto	optimal number of
IDE Secondary Slave UDMA	Auto	block read/write per
USB Controller	Disabled	sector the drive can
USB Keyboard Support	Disabled	support
AC97 Audio	Auto	
IDE HDD Block Mode	Enabled	
Onboard FDC Controller	Enabled	
Onboard Serial Port 1	3F8/IRQ4	
Onboard Serial Port 2	2F8/IRQ3	
UART Mode Select	Normal	
Onboard Parallel Port	378/IRQ7	
Parallel Port Mode	SPP	
Watch Timer Unit Select	Second	

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

There are some item in bottom of scroll.

On-Chip Primary/Secondary PCI IDE

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select *Enabled* to activate each channel separately.

The choice: Enabled, Disabled.

IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA-33/66 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA-33/66, select Auto to enable BIOS support.

The Choice: Auto, Disabled.

USB Controller

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals.
The Choice: Enabled, Disabled.

USB Keyboard Support

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.
The Choice: Enabled, Disabled.

AC97 Audio

This item allows you to decide to enable/disable the 810E chipset family to support AC97 Audio.
The choice: Auto, Disabled.

IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.
The choice: Enabled, Disabled

Onboard FDC Controller

Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install and-in FDC or the system has no floppy drive, select Disabled in this field.

The choice: Enabled, Disabled

Onboard Serial Port 1/Port 2

Select an address and corresponding interrupt for the first and second serial ports.

The choice: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto

UART Mode Select

Select a serial port 2 operation mode.

The choice: Normal, IrDA, ASKIR, SCR

Onboard Parallel Port

Select an address and corresponding interrupt for the parallel ports.

The choice: 378/IRQ7, 278/IRQ5, 3BC/IRQ7, Disabled,

Parallel Port Mode

Select a parallel operation mode.

The choice: SPP, EPP, ECP,ECP+EPP

Watchdog Timer Unit Select

Select the WatchDog Timer unit.

The choice: Second, Minute

4.9 Power Management Setup

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

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Power Management Setup

Power Management	User Define	Item Help
Video Off Method	DPMS	
Video Off In Suspend	Yes	Menu Level ➢
Suspend Type	Stop Grant	
Suspend Mode	Disabled	
HDD Power Down	Disabled	
** Reload Global Timer Events **		
Primary IDE 0	Disabled	
Primary IDE 1	Disabled	
Secondary IDE 0	Disabled	
Secondary IDE 1	Disabled	
FDD,COM,LPT Port	Disabled	
PCI, PIRQ[A-D]#	Disabled	

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

Power Management

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

1. HDD Power Down

2. Doze Mode

3. Suspend Mode

There are four selections for Power Management, three of which have fixed mode settings.

Disable (default)	No power management. Disables all four modes
Min. Power Saving	Minimum power management. Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max. Power Saving	Maximum power management -- **ONLY AVAILABLE FOR SL CPU's**. Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.
User Defined	Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disable.

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	Initial display power management signaling.

Video Off In Suspend

This determines the manner in which the monitor is blanked.

The choice: Yes, No.

SuspendType

Select the Suspend Type.

The choice: PWRON Suspend, Stop Grant.

Suspend Mode

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

The choice: 1Min, 2Min, 4Min, 8Min, 12Min, 20Min, 30Min, 40Min, 1Hour, Disabled.

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.

The choice: 1Min, 2Min, 3Min, 4Min, 5Min, 6Min, 7Min, 8Min, 9Min, 10Min, 11Min, 12Min, 13Min, 14Min, 15Min, Disabled.

PM EVENTS

PM events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything which occurs to a device which is configured as *Enabled* , even when the system is in a power down mode.

Primary IDE 0
Primary IDE 1
Secondary IDE 0
Secondary IDE 1
FDD, COM, LPT Port
PCI PIRQ[A-D] #

4.10 PnP/PCI Configuration Setup

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

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PnP/PCI Configurations

Reset Configuration Data Disabled	Item Help

Resources Controlled By Auto(ESCD)	Menu Level ➢
x IRQ Resources Press Enter	Default is Disabled. Select Enabled to reset Extended System Configuration Data(ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot
PCI/VGA Palette Snoop Disabled	

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

Reset Configuration Data

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system can not boot.

The choice: Enabled, Disabled .

Resource controlled by

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows®95. If you set this field to "manual" choose specific resources by going into each of the sub menu that follows this field (a sub menu is preceded by a "➢").

The choice: Auto(ESCD), Manual.

IRQ Resources

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

IRQ3/4/5/7/9/10/11/12/14/15 assigned to

This item allows you to determine the IRQ assigned to the ISA bus and is not available to any PCI slot. Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.

The Choice: PCI Device, Reserved.

PCI/VGA Palette Snoop

Leave this field at *Disabled*.

Choices are Enabled, Disabled.

4.11 Frequency/Voltage Control

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Frequency/Voltage Control

Auto Detect DIMM/PCI Clk	Disabled	Item Help
Spread Spectrum	Disabled	----------
CPU Skew Adjust	Disabled	Menu Level ➢
SDRAM Skew Adjust	Disabled	
AGP Skew Adjust	Disabled	
CPU Host/PCI Clock		
100/133MHz		
CPU Clock Ratio	X 3	

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

Auto Detect DIMM/PCI Clk

This item allows you to enable/disable auto detect DIMM/PCI Clock.
The choice: Enabled, Disabled.

Spread Spectrum

This item allows you to enable/disable the spread spectrum modulate.
The choice: Enabled, Disabled.

CPU Clock Ratio

This item allows you to select CPU clock ratio.
The choice: 3, 3.5, 4, 4.5, 5, 5.5, 6, 6.5, 7, 7.5, 8.

4.12 Defaults Menu

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

Load Fail-Safe Defaults
When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

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

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

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

Load Optimized Defaults (Y/N) ? N

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

4.13 Supervisor/User Password Setting

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

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

ENTER PASSWORD:

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

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

PASSWORD DISABLED.

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

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

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

4.14 Exit Selecting

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

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

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

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? Y

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

Appendix A. Watchdog Timer

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMI or a software bug. When the CPU stops working correctly, hardware on the board will either perform a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer:

INT 15H:

AH – 6FH
Sub-function: **AL – 2** : Set the Watchdog Timer's period **BL** : Time-out value(Its unit--second or minute, is dependent on the item "Watchdog Timer unit select" in CMOS setup).

You have to call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer will start counting down. While the timer value reaches zero, the system will reset. To ensure that this reset condition does not occur, the Watchdog Timer must be periodically refreshed by calling sub-function 2. However the Watchdog timer will be disabled if you set the time-out value to be zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

Note: when exiting a program it is necessary to disable the Watchdog Timer, otherwise the system will reset.

Example program:

```
; INITIAL TIMER PERIOD COUNTER
;
W_LOOP:

      MOV    AX, 6F02H          ;setting the time-out value
      MOV    BL, 30             ;time-out value is 48 seconds
      INT    15H
 ;
; ADD YOUR APPLICATION PROGRAM HERE
;
      CMP    EXIT_AP, 1         ;is your application over?
      JNE    W_LOOP             ;No, restart your application

      MOV    AX, 6F02H          ;disable Watchdog Timer
      MOV    BL, 0              ;
      INT    15H
;
; EXIT
;
```

Appendix B. Address Mapping

IO Address Map

I/O address Range	Description
000-01F	DMA Controller #1
020-021	Interrupt Controller #1, Master
040-05F	8254 timer
060-06F	8042 (Keyboard Controller)
070-07F	Real time Clock, NMI Mask
080-09F	DMA Page Register
0A0-0BF	Interrupt Controller #2
0C0-0DF	DMA Controller #2
0F0	Clear Math Coprocessor Busy
0F1	Reset Math Coprocessor
0F2	Core logic programming configuration
0F8-0FF	Math Coprocessor
1F0-1F8	Fixed Disk
200-207	Game I/O
278-27F	Parallel Printer Port 2 (LPT3)
2E8-2EF	Serial Port 4
2F8-2FF	Serial Port 2
300-31F	Prototype Card
360-36F	Reserved
378-37F	Parallel Printer Port 1 (LPT2)
3B0-3BF	Monochrome Display and Printer Adapter (LPT1)
3C0-3CF	Reserved
3D0-3DF	Color/Graphics Monitor Adapter
3E8-3EF	Serial Port 3
3F0-3F7	Diskette Controller
3F8-3FF	Serial Port 1

1st MB Memory Address Map

Memory address	Description
00000-9FFFF	System memory
A0000-BFFFF	VGA buffer
C0000-C7FFF	VGA BIOS
F0000-FFFFF	System BIOS
1000000-	Extend BIOS

*Default setting

IRQ Mapping Table

IRQ0	System Timer	IRQ8	RTC clock
IRQ1	Keyboard	IRQ9	Available
IRQ2	Cascade to IRQ Controller	IRQ10	Available
IRQ3	COM2	IRQ11	Available
IRQ4	COM1	IRQ12	PS2 mouse
IRQ5	Available	IRQ13	FPU
IRQ6	FDC	IRQ14	Primary IDE
IRQ7	Printer	IRQ15	Secondary IDE

DMA Channel Assignments

Channel	Function
0	Available
1	Available
2	Floppy disk (8-bit transfer)
3	Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

8 Bit Programmable Digital I/O

The WAFER7850 provides 8 bit programmable digital I/O ports which located on the super I/O chip IT8702F. The system address is **801H**. The detail mapping table is as the following

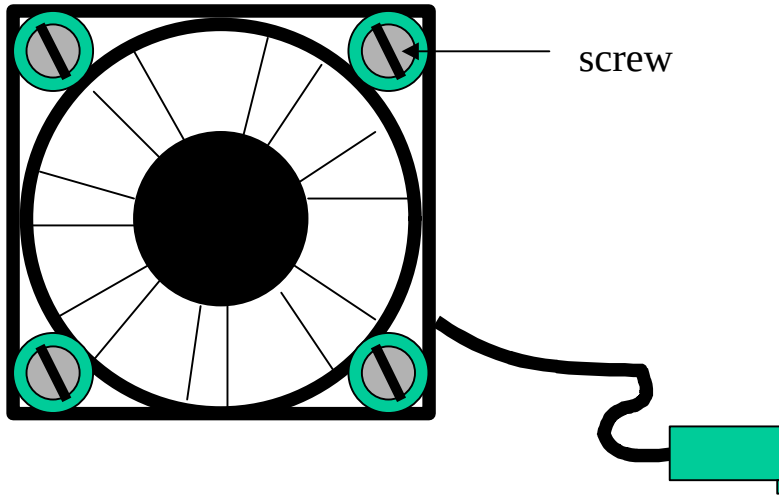
GPIO[0..7]	PIN#	ADDRESS
0	27	Bit 0
1	26	Bit 1
2	25	Bit 2
3	24	Bit 3
4	23	Bit 4
5	22	Bit 5
6	21	Bit 6
7	20	Bit 7

Appendix C. Install CPU with Cooler

We provide a special designed cooler for the Wafer7850 CPU board. There are two kind of installation directions which base on the CPU package. If the CPU you would like to install is FCPGA package then read the case one. If CPU is PPGA Celeron then start from case two.

Case one:

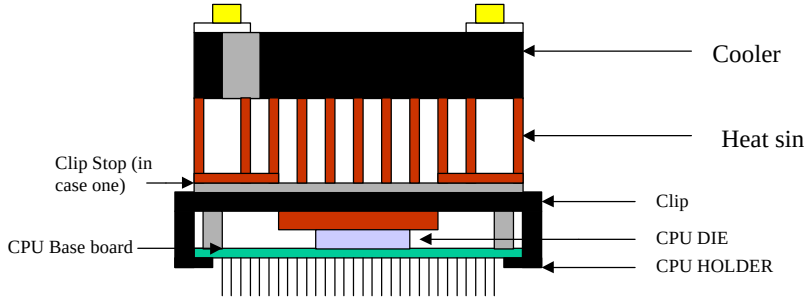
Step 1. Loose the four screws on the top of cooler about three rounds



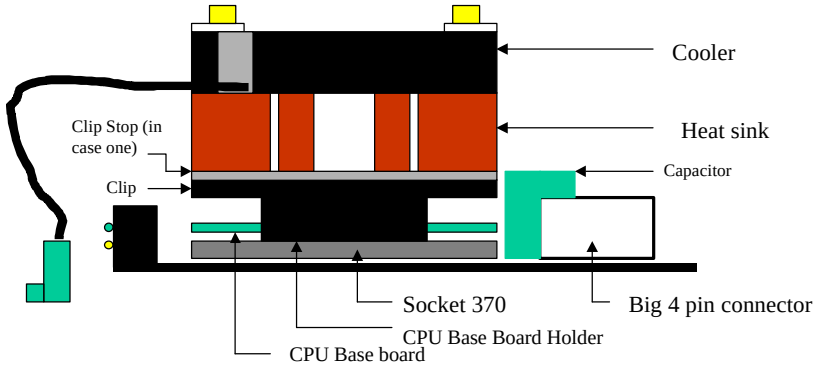
Step 2. To prevent form the CPU holders of the clip part interfere with the other components those on the board. Make sure the two CPU holder edges toward the left and right hand side.

Step 3. Make sure the pin-one marking on CPU toward the left hand side. Push CPU lightly into the clip to make the CPU holder holding the CPU base board then slowly tighten the screws.

Be careful, too tight would cause the CPU base board broken. Using fingers to rotate the screws instead of screwdriver is recommended.

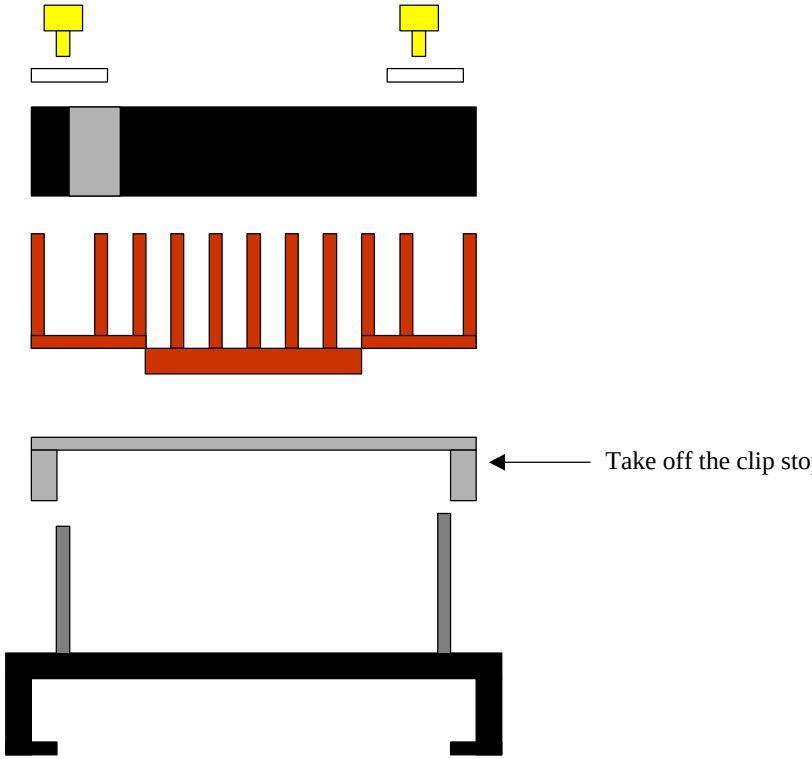


Step 4. Place the CPU with cooler on the socket 370 lightly. Be sure of each pin to hole is correct. Using palm to press the right edge of cooler to insert CPU to the socket then the left. After that the CPU is fixing on the socket and looked like the following figure.



VIEW FROM RIGHT HAND SIDE OF WAFER7850

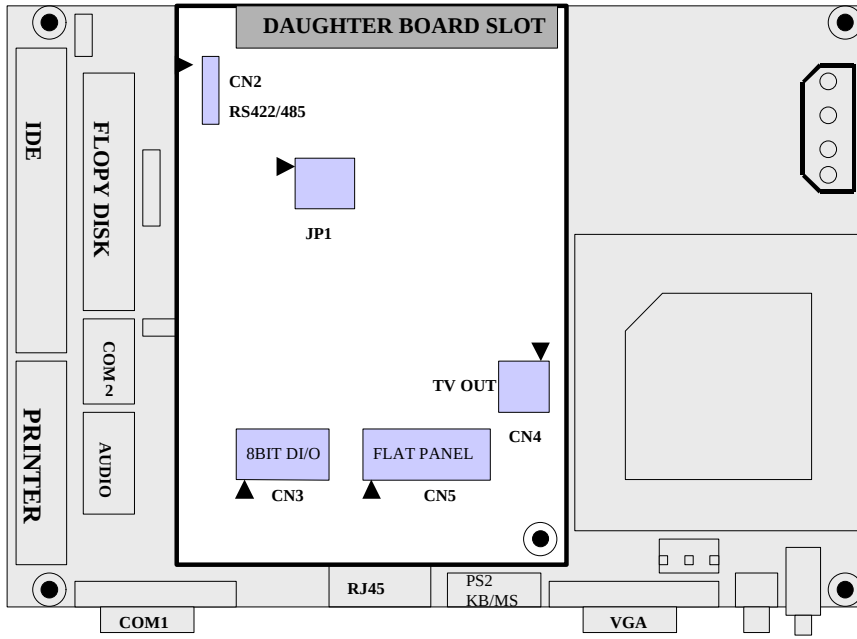
Case two:
Unscrew the four screws of cooler to de-assemble cooler module then take off the clip stop. After that re-assemble them. Follow the case one procedures.



Appendix D. Daughter Board

The Wafer 7850 daughter board is implemented some functions to compensate the spec. of Wafer 7850 main board, which due to the tiny space. There are four functions including RS422/485, 4in and 4out 8 bit digital I/O, TV OUT with 1024x768 resolution, and Flat Panel.

COMPONENT SIDE VIEW OF WAFER7850 AND 7850 KIT



At the first, open the main boardś JP4 then attach the daughter board on the main board.

D.1 RS422/485 Port

- **CN2 : RS422/485 CONNECTOR**

RS485 on Wafer-7850 features the "auto-direction" function that make it more easier to be used on Windows environment.

PIN NO.	DESCRIPTION
1	TX2+
2	TX2-
3	RX2+
4	RX2-

D.2 4-IN AND 4-OUT DIGITAL I/O

The mapping system address is 801H. Wafer 7850 provides one byte for customized in/out control.

- **CN3**

PIN NO.	DESCRIPTION	
1	DIN0	BIT0
3	DIN1	BIT1
5	DIN2	BIT2
7	DIN3	BIT3
2	DOUT0	BIT4
4	DOUT1	BIT5
6	DOUT2	BIT6
8	DOUT3	BIT7

D.3 TV OUT AND PANEL LINK

- **JP1: Pin#1 and #2 is fixing on the opening state**

JP1	OPEN	SHORT
1-2	0X75	0X76
3-4	NTSC	PAL
5-6	DVI	TV

- **CN4 : TV OUTPUT**

Wafer-7850 provides both composite and S-Video signal

PIN NO.	DESCRIPTION
1	COMPOSITE VIDEO
2	GND
3	CHROMA
4	GND
5	LUMA
6	GND

- **CN5 : PANEL LINK**

PIN NO.	DESCRIPTION
1	TX1+
2	TX1-
3	GND
4	GND
5	TXC+
6	TXC-
7	GND
8	5V
9	NO CONNECT
10	NO CONNECT
11	TX2+
12	TX2-
13	GND
14	GND
15	TX0+
16	TX0-
17	NO CONNECT
18	HOT PLUG DETECTION
19	5V FTSDA
20	5V FTSCL