WAFER-6820
Low Power Transmeta TM3200 400MHZ
With CRT/LCD, Ethernet
Single Board Computer

Copyright Notice

©Copyright 2000 by ICP Electronics Inc. All Rights Reserved. Manual first edition Nov.01, 2000.

The information in this document is subject to change without prior notice in order to improve reliability, design and function and does not represent a commitment on the part of the manufacturer.

In no event will the manufacturer be liable for direct, indirect, special, incidental, or consequential damages arising out of the use or inability to use the product or documentation, even if advised of the possibility of such damages.

This document contains proprietary information protected by copyright. All rights are reserved. No part of this manual may be reproduced by any mechanical, electronic, or other means in any form without prior written permission of the manufacturer.

Trademarks

WAFER-6820 is a registered trademark of ICP Electronics Inc. IBM PC is a registered trademark of International Business Machines Corporation. Intel is a registered trademark of Intel Corporation. Other product names mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective companies.www.iei.com.tw

Contents

Contents II

1 Introduction 1

1.1 Specifications: 2

1.2 What You Have 4

2 Installation 5

2.1 WAFER-6820 Layout 5

2.2 WAFER-6820 DIMENSION 7

2.3 Unpacking 8

2.4 Clear CMOS Setup (J2) 9

2.5 Fan Connector (J3) 9

2.6 LCD Voltage and Clock Setting (J4) 9

2.7 Buzzer Setting (J5-Pin 1,2) 10

2.8 Compact Flash Setting (J5-Pin 3,4) 10

2.9 COM2 PIN8 Setting (J6) 10

2.10 COM2 RS-232, RS-422 or RS-485 Setting (J7) 11

2.11 Watchdog Timer Setting (J8) 11

2.12 Reset Button (J9) 11

3 Connection 12

3.1 External Power Connector (CN1)..... 12
3.2 PC/104 Connection Bus (CN2, CN3)..... 12
3.3 LAN RJ45 Connector (CN4)..... 14
3.4 LCD Interface Connector (CN5)..... 15
3.5 IDE Disk Drive Connector (CN6)..... 17
3.6 CompactFlash Connector -- TYPE II (CN7)..... 18
3.7 IrDA Infrared Interface Port (CN8)..... 19
3.8 Keyboard Connector (CN9)..... 19
3.9 Floppy Disk Drive Connector (CN10)..... 20
3.10 USB Port Connector (CN12)..... 20
3.11 Parallel Port (CN13)..... 21
3.12 Serial Ports (CN14, CN15)..... 21
3.13 Audio Connector (CN16, CN17)..... 22
3.14 VGA Connector (CN18)..... 23
3.15 TV-OUTPUT Connector (CN19) (Optional)..... 24

4 AWARD BIOS Setup.....25

4.1 Introduction..... 25
4.2 Starting Setup..... 25
4.3 Using Setup..... 26
4.4 Main Menu..... 27
4.5 Standard CMOS Setup..... 30
4.6 Advanced BIOS Features..... 35

4.7 Integrated Peripherals 39
4.8 Power Management Setup 43
4.9 PnP/PCI Configuration Setup 47
4.10 PC Health Status 49
4.11 Defaults Menu 50
4.12 Supervisor/User Password Setting 51
4.13 Exit Selecting 52

Appendix A. Watch-Dog Timer 53

Appendix B. I/O Address Map 55

B.1 System I/O Address Map 55
B.2 DMA channel assignments 56
B.3 Interrupt assignments 57
B.4 1st MB memory map 57

1

Introduction

WAFER-6820 is designed for limited space applications with only the size of a 3½" hard drive. Itsupports the full functions of an AT-compatible industrial computer on a single board. The WAFER-6820 is equipped with a low-power consumption and high performance Transmeta TM3200 processor on board. It also contains an SDRAM SODIMM socket that can support up to 128MB memory.

The WAFER-6820 provides an Ethernet interface, audio interface, Compact Flash Type II, EIDE interface, one parallel port, one serial port RS-232, one serial port RS-232/422/485 with auto-direction, and a mini-DIN PS/2 keyboard/mouse interface. The built-in SVGA/LCD display controller supports both the CRT and LCD display simultaneously. It offers the resolutions of LCD screen up to 1024 x 768 and CRT resolutions up to 1280 x 1024 @ 16 colors. The display type is configured by software utility. The Flash ROM contains both the system BIOS and the VGA BIOS. Reprogramming the Flash ROM could do the modification, in case of necessary.

The RS485 has an outstanding characteristic of intelligent directing control, which eliminates the extra control signal like RTS. With this feature you can develop your program as you are using a normal RS232 without special control routine. This is especially important in WINDOWS programming which do not allow the program to catch the control pin at

your wish.

Finally, one PC/104 connector is included for the future application you will need.

Notes:

The Transmeta Crusoe™ TM3200 will occupy 16MB memory space to save its CMS code temporally. So we must indicate the memory type for Tramsmeta Crusoe™ TM3200. Because this point, we will attaché one 128MB SDRAM module that we approved in the package.

1.1 Specifications:

The WAFER-6820 TM3200 with VGA Computer provides the following specification:

- **CPU**: Low power Transmeta Crusoe ™TM3200 400 MHz
- **Bus**: ISA bus
- **DMA channels**: 7
- **Interrupt levels**: 15
- **Chipset**: TM3200 + VIA VT82C686A
- **PCI VGA**: C&T 69000 with 2MB SDRAM built-in Chipset

  Resolution: 1280x1024, 256 color, 60Hz
  1024x768, 64K color, 85Hz
  800x600,full color, 85Hz

- **Ethernet Interface**:
  Chipset: Realtek 8139C 100Base-TX Fast Ethernet Controller
  Ethernet Interface: Onboard 100Base-TX RJ-45+LED Connector
- **H/W status Monitoring**: VT82C686A H/W status monitoring
  IC supports power supply voltages and temperatures monitoring
- **Real-Time Clock/Calendar**: built-in VT82C686A chipset, backup by industrial Li-battery, 3V/300mAH. .
- **DRAM**: supports to 128MB,SDRAM.

- **Ultra DMA/33 IDE Interface**: supports up to two PCI Enhance IDE hard drives. The Ultra DMA/33 IDE can handle data transfer up to 33MB/s. The best of all is that it is compatible with existing ATA-2 IDE specifications. So there is no need to do any change for customer's current accessory.
- **Floppy disk drive interface**: two 2.88 MB, 1.44MB, 1.2MB, 720KB, or 360KB floppy disk drives.
- **Two high-speed Serial ports**: NS16C550 compatible UARTs, and one RS422/485 port with auto-direction function.
- **Bi-directional Parallel Port: IEEE 1284 compatible**
- **IrDA port: Support serial Infrared (SIR).**
- **USB port: Support two USB ports for future expansion, USB 1.1 compliant.**
- **Watchdog timer**
- **CompactFlash disk**: The CompactFlash Storage Card also runs in True IDE Mode that is compatible with an IDE disk drive. It can be used with a passive adapter in a Type II socket.
- **Keyboard connector**
- **Mouse**: PS/2 Mouse Port on-board.
- **Power Consumption**: +5V @ 1.8A
  (Transmeta TM3200, 128MB SDRAM)
- **Operating Temperature**: 0° ~ 60°C (CPU needs heat sink)

1.2 What You Have

Before you install the product, please check the following materials are included in the package:

- 1 WAFER-6820 All-in-one single board computer
- 1 CD disk for utility and drivers
- 1 3.5" IDE flat cable (44-pin 2.0mm pitch to 40-pin 2.54mm pitch)
- 1 one to two 6pin mini Din connector for keyboard and mouse
- 1 combo serial port cable (RS-232/422/485)
- 1 standard D25 connector for parallel cable
- 1 floppy cable (for 3.5" FDD only)

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

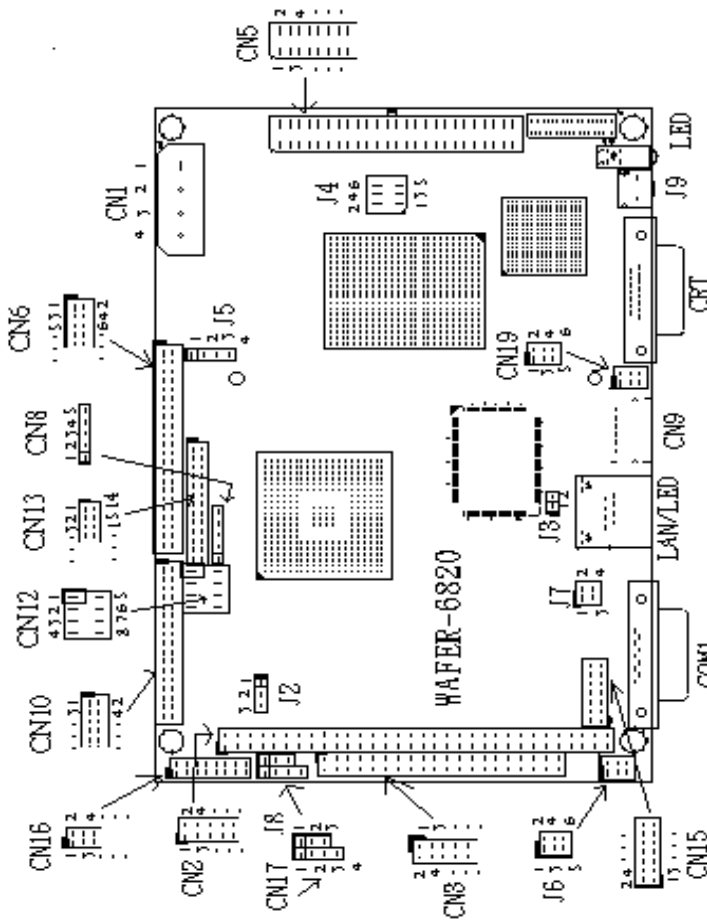
2

Installation

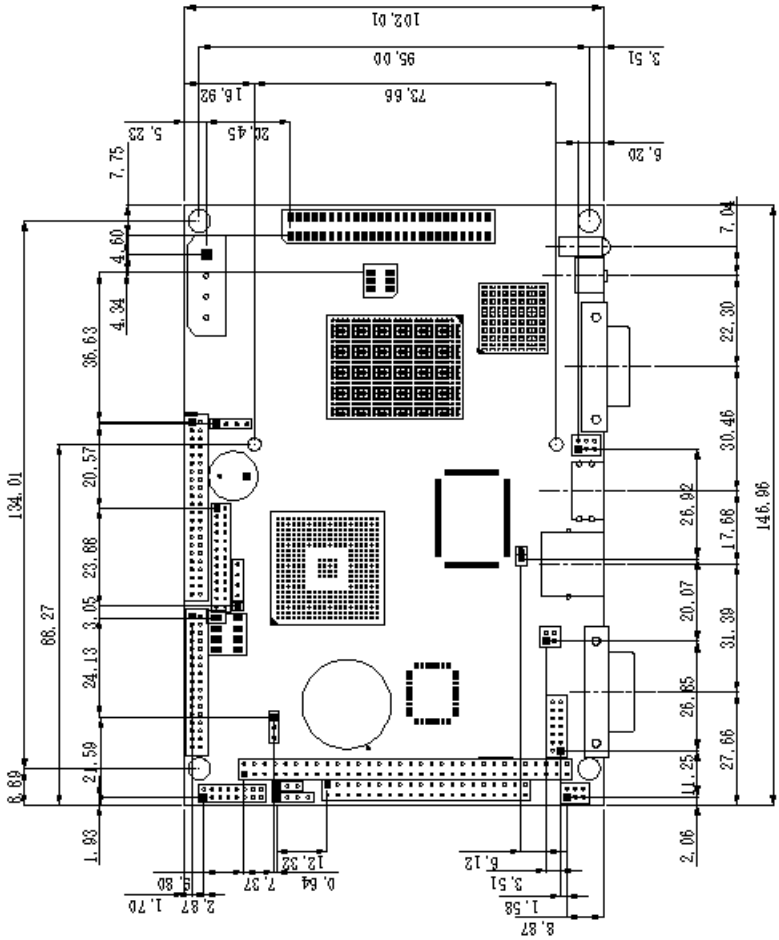
This chapter describes how to install the WAFER-6820. At first, the layout of WAFER-6820 is shown, and the unpacking information that you should be careful is described. The jumpers and switches setting for the WAFER-6820's configuration, such as watchdog timer, are also included.

2.1 WAFER-6820 Layout

(Please refer to next page)


CN5
CN1
J4
J9
LED
CRT
CN6
J5
CN19
CN8
CN9
CN13
J3
LAN/LED
CN12
J7
WAFER-6820
COM1
J2
CN10
CN16
CN2
J8
CN17
CN3
J6
CN15

2.2 WAFER-6820 DIMENSION



2.3 Unpacking

Your WAFER-6820 Single Board Computer contains sensitive electronic components that can be easily damaged by static electricity.

In this section, we describe the precautions you should take while unpacking, as well as during installation. It is very important that the instructions be followed correctly, to avoid static damage, and to successfully install the board.

The system board should be done on a grounded anti-static mat. The operator should be wearing an anti-static wristband, grounded at the same point as the anti-static mat.

Inspect the cardboard carton for obvious damage. Shipping and handling may cause damage to your board. Be sure there are no shipping and handing damages on the board before processing.

After opening the cardboard carton, exact the system board and place it only on a grounded anti-static surface component side up.

Again inspect the board for damage. Press down on all the docketed IC's to make sure that they are properly seated.
Do this only with the board place on a firm flat surface.

Note: DO NOT APPLY POWER TO THE BOARD IF IT HAS BEEN DAMAGED.

You are now ready to install your WAFER-6820 Single Board Computer.

2.4 Clear CMOS Setup (J2)

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 J2 pin 2-3 about 3 seconds, then open again. Set back to normal operation mode, close pin 1-2.

J2	DESCRIPTION
1-2	**Normal Operation**
2-3	Clear CMOS Setup

2.5 Fan Connector (J3)

The WAFER-6820 provides a CPU cooling fan connector. This connector can supply 5V/500mA to the cooling fan.

PIN NO.	DESCRIPTION
1	+5V
2	GND

2.6 LCD Voltage and Clock Setting (J4)

The LCD interface connector CN5 can provide 5V or 3.3V power supply by selecting the J4 (2,4,6) to meet the different LCD requirement. And the JP4 (1,3,5) can provide normal or inverted Shift CLOCK for LCD.

J4 (2,4,6)	DESCRIPTION
2-4	5V
4-6	**3.3V**

JP4 (1,3,5)	DESCRIPTION
1-3	Shift Clock Invert
3-5	**Shift Clock (Normal)**

2.7 Buzzer Setting (J5-Pin 1,2)

Set the operating mode of Buzzer.

Address	J5-1, 2
Buzzer ON	**CLOSE**
Buzzer OFF	OPEN

2.8 Compact Flash Setting (J5-Pin 3,4)

Set the operating mode of CompactFlash disk. This is similar to the operation of hard disk.

Address	J5-3, 4
MASTER	**CLOSE**
SLAVE	OPEN

2.9 COM2 PIN8 Setting (J6)

In the RS232 mode, the COM2 (CN15) can supply +5V or +12V power to the serial devices via RI pin (Pin 8) of the COM port connector. The maximal current is 1A with fuse protection, from these two connector's 5V/12V output. If the output is set to 12V, make sure that you have 12V supply to the board.

CN9 Pin 8	J6 (1,3,5)	J6 (2,4,6)	J7
RI Signal	3-5	Don't care	1-2
+5V	**1-3**	**4-6**	**1-2**
+12V	**1-3**	**2-4**	**1-2**

2.10 COM2 RS-232, RS-422 or RS-485 Setting (J7)

The COM2 (CN15) can be set to RS-232 or RS-422/485 for industrial field site application. Moreover when this port was set to the RS-485 mode, the board equipped with auto-direction IC will automatically sense the data direction to eliminate the data collision. This is especially important in WINDOWS programming which do not allow the program to catch the control pin at your wish.

J7	DESCRIPTION
1-2	**RS232**
3-4	RS422/RS485

2.11 Watchdog Timer Setting (J8)

Rreading port 443H enables the Watch-Dog Timer. It should be re-triggered before the time-out period ends, otherwise it will assume the program operation is abnormal and will issue a reset signal to start again, or activate NMI to CPU. Reading port 043/843H disables the watchdog Timer. Refer to Appendix A for more detailed information on Watchdog Timer

J8	DESCRIPTION
1-2	ACTIVATE NMI TO CPU WHEN WDT TIME-OUT
2-3	RESET WHEN WDT TIME-OUT
OPEN	DISABLE WDT

2.12 Reset Button (J9)

You can press Reset Button (J9) to reset your computer easily.

PIN NO.	DISCRPTION
1	Reset _In
2	GND

3

Connection

This chapter describes how to connect peripherals, switches and indicators to the WAFER-6820 board.

3.1 External Power Connector (CN1)

The WAFER-6820 has an on-board external power connector CN1. You can apply power directly to the CPU board.

- **CN1: External Power Connector**

PIN NO.	DESCRIPTION
1	+12V
2	GROUND
3	GROUND
4	+5V

3.2 PC/104 Connection Bus (CN2, CN3)

The WAFER-6820 PC/104 expansion bus let you attach any kind of PC/104 modules. The PC/104 bus has already become the industrial embedded PC bus standard, so you can easily install over thousands of PC/104 modules from hundreds of vendors in the world. There are two PC/104 connectors on this board: PC/104-64 and PC/104-40.

•CN2: PC/104-64 Connector

PIN NO.	Description	PIN NO.	Description
1	IOCHCK#	2	GND
3	SD7	4	IRSTDRV
5	SD6	6	VCC
7	SD5	8	IRQ9
9	SD4	10	-5V
11	SD3	12	N/C
13	SD2	14	-12V
15	SD1	16	ZWS
17	SD0	18	+12V
19	IOCHRDY	20	GND
21	AEN	22	SMEMW#
23	SA19	24	SMEMR#
25	SA18	26	IOW#
27	SA17	28	IOR#
29	SA16	30	DACK3#
31	SA15	32	DRQ3
33	SA14	34	DACK1#
35	SA13	36	DRQ1
37	SA12	38	REFRESH#
39	SA11	40	SYSCLK
41	SA10	42	IRQ7
43	SA9	44	N/C
45	SA8	46	IRQ5
47	SA7	48	IRQ4
49	SA6	50	IRQ3
51	SA5	52	N/C
53	SA4	54	TC
55	SA3	56	BALE
57	SA2	58	VCC
59	SA1	60	OSC
61	SA0	62	GND
63	GND	64	GND

·CN3: PC/104-40 Connector

PIN NO.	Description	PIN NO	Description
1	GND	2	GND
3	SBHE#	4	MCS16#
5	LA23	6	IOCS16#
7	LA22	8	IRQ10
9	LA21	10	IRQ11
11	LA20	12	IRQ12
13	LA19	14	IRQ15
15	LA18	16	IRQ14
17	LA17	18	DACK0#
19	MEMR#	20	DRQ0
21	MEMW#	22	DACK5#
23	SD8	24	DRQ5
25	SD9	26	DACK6#
27	SD10	28	DRQ6
29	SD11	30	DACK7#
31	SD12	32	DRQ7
33	SD13	34	VCC
35	SD14	36	MASTER#
37	SD15	38	GND
39	GND	40	GND

3.3 LAN RJ45 Connector (CN4)

The WAFER-6820 builds in RJ45 LAN connector. It's for 10/100Mbps Ethernet (RTL8139C).

•CN4: LAN RJ45 Connector

1	TX+	5	NC
2	TX-	6	RX-
3	RX+	7	NC
4	NC	8	NC

3.4 LCD Interface Connector (CN5)

The WAFER-6820 provides a 2x25-pin connector for the LCD flat panel interface.

The WAFER-6820 comes to support TFT/DSTN LCD panels at following display options: (This is a reference table only, may support more type of panels)

Display type	Resolution	Example
TFT VGA	640X480, 64K Color 12 bits	
TFT VGA	640X480, 64K Color, 18bits	P64CV1
TFT SVGA	800X600, 64K Color, 18bits	IMES M121-533DR
TFT XGA	1024X768, 64K Color, 36bits	Sharp LQ150X1DG11

The display options need to be setup from BIOS. The BIOS "**Standard CMOS**" Setup allow you to choose display resolution either 640X480, 800X600 or 1024X768.

- **CN5: LCD Interface Connector** – supports up to 36-bit LCD. For better display quality, the length of LCD cable should be shorter than 45 cm.

PIN NO.	Description	PIN NO.	Description
1	NC	2	P33
3	P34	4	P31
5	P35	6	P32
7	P30	8	P28
9	P29	10	P27
11	P25	12	P26
13	P24	14	P21
15	P23	16	P22
17	P16	18	P20
19	P17	20	P18
21	P19	22	P14
23	P13	24	P12
25	P15	26	P11
27	P7	28	P10
29	FPVCC	30	FPVCC
31	P9	32	P8
33	P4	34	P6
35	P3	36	P5
37	P2	38	P1
39	M	40	P0
41	SHIFT CLOCK	42	ENABKL
43	FPVDD	44	FLM
45	ENAVEE	46	LP
47	GND	48	GND
49	+12V	50	+12V

3.5 IDE Disk Drive Connector (CN6)

You can attach two IDE (Integrated Device Electronics) hard disk drives to the WAFER-6820 IDE controller (Primary). The IDE supports Ultra DMA/33 interface.

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	42	VCC
43	GROUND	44	N/C

3.6 CompactFlash Connector -- TYPE II (CN7)

You can attach one Compact Flash Disk to CN7 that occupy the Secondary IDE channel. The CN7 supports both the TYPE II and TYPE I module.

- **CN7: CompactFlash Connector (Secondary IDE)**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	26	VCC-IN CHECK1
2	DATA 3	27	DATA 11
3	DATA 4	28	DATA 12
4	DATA 5	29	DATA 13
5	DATA 6	30	DATA 14
6	DATA 7	31	DATA 15
7	HDC_CS0#	32	HDC_CS1
8	N/C	33	N/C
9	GROUND	34	IOR#
10	N/C	35	IOW#
11	N/C	36	N/C
12	N/C	37	INTERRUPT
13	VCC_COM	38	VCC_COM
14	N/C	39	CSEL
15	N/C	40	N/C
16	N/C	41	HDD_RESET
17	N/C	42	IORDY
18	SA2	43	N/C
19	SA1	44	VCC_COM
20	SA0	45	HDD_ACTIVE#
21	DATA 0	46	N/C
22	DATA 1	47	DATA 8
23	DATA 2	48	DAYA 9
24	N/C	49	DATA 10
25	VCC-IN CHECK2	50	GROUND

3.7 IrDA Infrared Interface Port (CN8)

The WAFER-6820 builds in an IrDA port, which supports Serial Infrared (SIR). Using the IrDA port has to set the mode of COM2 as SIR (in the BIOS's Peripheral Setup's). Then the RS-232mode of COM2 will be disabled.

· CN8: IrDA connector

PIN NO.	DISCRPTION
1	VCC
2	N/C
3	IRRX
4	Ground
5	IRTX

3.8 Keyboard Connector (CN9)

The WAFER-6820 provides one external keyboard and one PS/2 Keyboard and mouse connectors.

• CN9: 6-pin Mini-DIN Keyboard and Mouse Connector

PIN NO.	DESCRIPTION
1	KB DATA
2	MS DATA
3	GND
4	+5V
5	KB CLOCK
6	MS CLOCK

3.9 Floppy Disk Drive Connector (CN10)

The WAFER-6820 board is equipped with a 34-pin daisy-chain driver connector cable.

•CN10: FDC CONNECTOR (2.0MM)

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	2	REDUCE WRITE
3	GROUND	4	N/C
5	N/C	6	DRVDEN1
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	GROUND	30	READ DATA#
31	GROUND	32	SIDE 1 SELECT#
33	GROUND	34	DISK CHANGE#

3.10 USB Port Connector (CN12)

The WAFER-6820 builds in two USB ports for the future new I/O bus expansion. It is USB 1.1 compliant

•CN12: USB 0 & USB 1

1	VCC	5	GROUND
2	DATA0-	6	DATA1+
3	DATA0+	7	DATA1-
4	GROUND	8	VCC

3.11 Parallel Port (CN13)

This port is usually connected to a printer; The WAFER-6820 includes an on-board parallel port, accessed through a 26-pin flat-cable connector CN13.

•CN13: Parallel Port Connector (2.0MM)

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

3.12 Serial Ports (CN14, CN15)

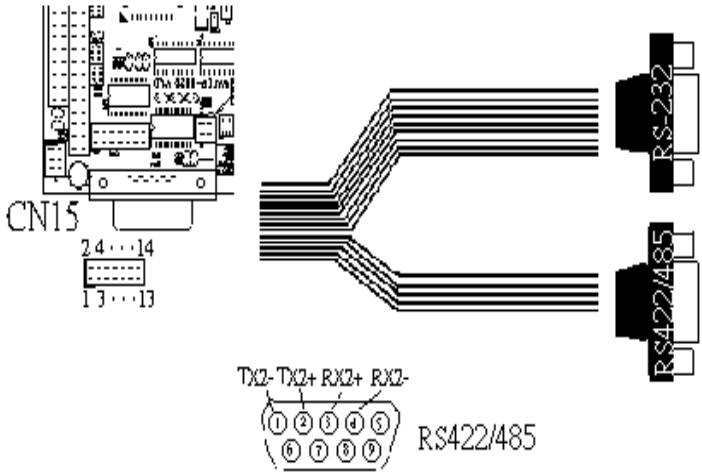
The WAFER-6820 offers two high speeds NS16C550 compatible UARTs with Read/Receive 16 byte FIFO.

•CN14: Serial Port DB-9 Connector (COM1)

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)

- **CN15: Serial Port 14-pin Header (COM2)**

Pin No.	Description	Pin No.	Description
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	NC
11	RS422/RS485 TX2+	12	RS422/RS485 TX2-
13	RS422 RX2+	14	RS422 RX2-



Notes: If you want to use the RS485, just connect to TX2-, TX2+. If you want to use the RS422, please connect to TX2-, TX2+, RX2+, and RX2-.

3.13 Audio Connector (CN16, CN17)

VT82C686A companions and AD1881A CODEC organize the audio function, which is compliant with AC97. You can use CD-IN as the input port (e.g.: connected to the output of CD player), depending on the type of connector that you have.

- **CN16: Audio Connector**

This is the output port of your Sound System.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LINE OUT L	2	GND
3	LINE OUT R	4	GND
5	LINE OUT R	6	LINE OUT L
7	GND	8	GND
9	LINE IN L	10	LINE IN R
11	GND	12	GND
13	MICPWR	14	N/C
15	MIC IN	16	GND

- **CN17: CD_AUDIO INPUT Connector**

PIN NO.	DESCRIPTION
1	CDIN_R
2	CDGND
3	CDGND
4	CDIN_L

3.14 VGA Connector (CN18)

The WAFER-6820 builds in a 15-pin VGA connector that accepts the CRT monitor.

- **CN18: 15-pin Female Connector**

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

3.15 TV-OUTPUT Connector (CN19) (Optional)

The WAFER-6820 provides a TV-Output connector.
The format of NTSC or PAL are supported. You can use composite or S-video connection for TV.

- **CN19: TV-OUTPUT Connector**

1	GROUND	2	LUMI-OUT
3	GROUND	4	CHRO-OUT
5	GROUND	6	COMP-VIDEO

2,4 -- S-video output
6 -- Composite output

4

AWARD BIOS Setup

The WAFER-6820 uses the AWARD PCI/ISA BIOS for system configuration. The AWARD BIOS setup program is designed to provide maximum flexibility in configuring the system by offering various options, which may be selected for end-user requirements. This chapter is written to assist you in the proper usage of these features.

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 Integrated Peripherals Power Management Setup PnP/PCI Configurations PC Health Status	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.

PC Health Status

Use this menu to monitor your hardware.

Frequency/Voltage Control

Use this menu to specify your settings for frequency/voltage control. See section 4.12 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 4.13 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 4.13 for the details.

Supervisor / User Password

Use this menu to set User and Supervisor Passwords. See section 4.14 for the details.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup. See section 4.15 for the details.

Exit Without Save

Abandon all CMOS value changes and exit setup. See section 4.15 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: Wed, Nov 1 2000 Time: 16:19:20	Item Help
➢ IDE Primary Master Press Enter ST310211A ➢ IDE Primary Slave Press Enter None ➢ IDE Secondary Master Press Enter None ➢ IDE Secondary Slave Press Enter None	Menu Level ➢ Change the day, month, year and century
Drive A 1.44M, 3.5 in. Drive B None LCD&CRT Both Panel Type 640X480 18BIT TFT TV Mode Disabled Halt On All, But Keyboard	
Based Memory 640K Extended Memory 113664K Total Memory 114688K	

↑↓←→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	Options are in its sub menu (Described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary	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.

CMOS Setup Utility – Copyright © 1984-2000 Award Software

IDE Primary Master

IDE HDD Auto-Detection	Press Enter	Item Help
		Menu Level ➢➢
IDE Primary Master	Auto	
Access Mode	Auto	
Capacity	10243 MB	To auto-detect the HDD's size, head... on this channel
Cylinder	19846	
Head	16	
Precomp	0	
Landing Zone	19845	
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
The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual'		
Cylinder	Min = 0 Max = 65535	Set the number of cylinders for this hard disk.
Head	Min = 0 Max = 255	Set the number of read/write heads
Precomp	Min = 0 Max = 65535	**** **Warning**: Setting a value of 65535 means no hard disk
Landing zone	Min = 0 Max = 65535	****
Sector	Min = 0 Max = 255	Number of sectors per track

Table 3 Hard disk selections

LCD&CRT: This field may appear as an alternative to the video Field. Select your video display device.

LCD: Liquid Crystal Display
CRT: Auxiliary monitor. When you want to use CRT only, please select this option. The CRT will have good screen.
Both: Display on both device. When you want to use both display, please select this option.

Panel: This field have eight option that have

1024x768 DSTN,
640X480 MONO,
640X480 DSTN ,
800X600 DSTN ,
640X480 TFT(12bits),
640X480 TFT(18bits),
1024X768 TFT,
800X600 TFT.

Please refer to page 14 .

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.

CMOS Setup Utility – Copyright © 1984 – 2000 Award Software

Advanced BIOS Features

Virus Warning	Disabled	Item Help
CPU Internal Cache	Enabled	_____
Quick Power On Self Test	Enabled	
First Boot Device	Floppy	Menu Level ➢
Second Boot device	HDD-0	
Third Boot device	LS120	Allow you to choose the
Boot other device	Enabled	VIRUS warning feature for
Swap Floppy Drive	Disabled	IDE Hard Disk boot sector
Boot Up Floppy Seek	Enabled	protection. If this function is
Boot Up NumLock Status	On	enabled and someone
Typematic Rate Setting	Disabled	attempt to write data into
Typematic Rate (Chars/Sec)	6	this area, BIOS will show a
Typematic Delay (Msec)	250	warning message on screen
Security Option	Setup	and alarm beep
OS Select For DRAM > 64MB	Non-OS2	
Report NO FDD For Win 95	No	
Video BIOS Shadow	Enabled	
C8000-CBFFF Shadow	Disabled	
CC000-CFFFF Shadow	Disabled	

↑↓←→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

Allow 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

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 specified sequence.

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

Typematic Rate Setting

Keystrokes 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 keystroke when you hold the key down.
The choice: 6, 8, 10, 12, 15, 20, 24, and 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 Integrated Peripherals

CMOS Setup Utility – Copyright © 1984 – 2000 Award Software

Integrated Peripherals

On-Chip IDE Channel0	Enabled	Item Help
On-Chip IDE Channel1	Enabled	
IDE Prefetch Mode	Enabled	Menu Level ➢
IDE Primary Master PIO	Auto	If your IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/write per sector the drive can support
IDE Primary Slave PIO	Auto	
IDE Secondary Master PIO	Auto	
IDE Secondary Slave PIO	Auto	
IDE Primary Master UDMA	Auto	
IDE Primary Slave UDMA	Auto	
IDE Secondary Master UDMA	Auto	
IDE Secondary Slave UDMA	Auto	
On Chip USB	Enabled	
AC97 Audio	Auto	
IDE HDD Block Mode	Enabled	
Onboard FDD Controller	Enabled	
Onboard Serial Port 1	3F8/IRQ4	
Onboard Serial Port 2	2F8/IRQ3	
UART 2 Mode	Standard	
X IR Function Duplex	Half	
X TX, RX inverting enable	No, Yes	
Onboard Parallel Port	378/IRQ7	
Onboard Parallel Mode	Normal	
X ECP Mode Use DMA	3	
X Parallel Port EPP Type	EPP1, 9	

↑↓←→ Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help

F5: Previous Values F6: Fail-safe defaults F7:Optimized Defaults

There is 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.

OnChip USB

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.

AC'97 Audio

This item allows you to decide to enable/disable the VT82C686A 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 FDD 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

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

4.8 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.

CMOS Setup Utility – Copyright © 1984 – 2000 Award Software

Power Management Setup

ACPI function	Enabled	Item Help
Power Management	User Define	Menu Level ➢
Video Off Method	Blank Screen	
Standby Mode	Disabled	
Suspend Mode	Disabled	
HDD Power Down	Disabled	
Soft-Off by PWR-BTN	Instant-Off	
Power On by Ring	Disabled	
Resume by Alarm	Disabled	
x Date(of month)Alarm	5	
x Time(hh:mm:ss)Alarm	0 0 0	
** Reload Global Timer Events **		
Primary IDE 0	Disabled	
Primary IDE 1	Disabled	
Secondary IDE 0	Disabled	

↑↓←→Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help

F5: Previous Values F6: Fail-safe defaults F7:Optimized Defaults

ACPI Function

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI).

The choice: Enabled, Disabled.

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	Allow you to set each mode individually. When not disabled, each of the ranges is 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.

MODEM Use IRQ

This determines the IRQ in which the MODEM can use.

The choice: 3, 4, 5, 7, 9, 10, and 11, NA.

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.

Soft-Off by PWR-BTN

Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system has “hung.”

The choice: Delay 4 Sec, Instant-Off.

Power On by Ring

This item is Disabled or Enabled. This function can power on by ring.

The choice: Enabled, Disabled.

Resume by Alarm

This item is Disabled or Enabled. This function can wake-up system by date or time.

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] #

4.9 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.

CMOS Setup Utility – Copyright © 1984-2000 Award Software

PnP/PCI Configurations

PNP OS Installed	No	Item Help
Reset Configuration Data	Disabled	----------
		Menu Level ➢
Resources Controlled By (ESCD)	Auto	Default is Disabled.
X IRQ Resources	Press Enter	Select Enabled to reset Extended System
X DMA Resources	Press Enter	Configuration Data (ESCD) when you exit Setup if you have
PCI/VGA Palette Snoop	Disabled	installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot

↑↓←→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 cannot 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.

4.10 PC Health Status

CMOS Setup Utility – Copyright © 1984-2000 Award Software

PC Health Status

Current System Temp ¢ K	46 ¢ K/114	Item Help ---------- Menu Level ➢
Vcore	1.48 V	
2.5V	2.47 V	
3.3V	3.28 V	
5V	5.01 V	

↑↓←→ Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help

F5: Previous Values F6: Fail-safe defaults F7:Optimized Defaults

4.11 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.

4.12 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.

4.13 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. Watch-Dog Timer

The Watchdog Timer is a device to ensure that standalone systems can always recover from abnormal conditions that cause the system to crash. These conditions may result from an external EMI or a software bug. When the system stops working, hardware on the board will perform hardware reset (cold boot) to bring the system back to a known state.

Three I/O ports control the operation of Watchdog Timer.

443 (hex)	Write	Set Watchdog Time period
443 (hex)	Read	Enable the refresh the Watchdog Timer.
043/843 (hex)	Read	Disable the Watchdog Timer.

Prior to enable the Watchdog Timer, user has to set the time-out period. The resolution of the timer is 1 second and the range of the timer is from 1 sec to 255 sec. You need to send the time-out value to the I/O port – 443H, and then enable it by reading data from the same I/O port – 443H. This will activate the timer that will eventually time out and reset the CPU board. To ensure that this reset condition won't occur, the Watchdog Timer must be periodically refreshed by reading the same I/O port 443H. This must be done within the time-out period that is set by the software, please refer to the example program. Finally, we have to disable the Watchdog timer by reading the I/O port -- 843H or 043H. Otherwise the system could reset unconditionally.

A tolerance of at least 5% must be maintained to avoid unknown routines in the operating system (DOS), such as disk I/O that can be very time-consuming. Therefore if the time-out period has been set to 10 seconds, the I/O port 443H must be read within 7 seconds.

Example assembly program:

TIMER_PORT = 443H

TIMER_START = 443H

TIMER_STOP = 843H

;;INITIAL TIMER COUNTER

MOV DX, TIMER_PORT

MOV AL, 8 **;;8 seconds**

OUT DX, AL

MOV DX, TIMER_START

IN AL, DX. **;;START COUNTER**

W_LOOP:

MOV DX, TIMER_STOP

IN AL, DX

MOV DX, TIMER_START

IN AL, DX **;;RESTART COUNTER**

;;ADD YOUR APPLICATION HERE

CMP EXIT_AP, 0

JNE W_LOOP

MOV DX, TIMER_STOP

IN AL, DX

;;EXIT AP

Appendix B. I/O Address Map

B.1 System I/O Address Map

I/O Address Map	Description
000-01F	DMA Controller #1
020-021	Interrupt Controller # 1, Master
022-023	Chipset address
040-05F	System Timer
060-06F	Standard 101/102 keyboard Controller
070-07F	Real time Clock, NMI Controller
080-0BF	DMA Page Register
0A0-0BF	Interrupt Controller # 2
0C0-0DF	DMA Controller # 2
0F0-0F0	Clear Math Coprocessor Busy
0F1-0F1	Reset Math Coprocessor
0F8-OFF	Math Coprocessor
1F0-1F8	VIR BUS Master PCI IDE Controller
200-207	Game I/O
278-27F	Reserved
2F8-2FF	Serial Port 2
378-37F	Parallel Printer Port 1
3B0-3DF	Cyrix Graphic Adapter
3F0-3F7	Floppy Disk Controller
3F8-3FF	Serial Port 1
443	Watch dog timer enable
043/843	Watch dog timer disable

B.2 DMA channel assignments

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

**parallel port DMA default setting: DMA 3

parallel port DMA select: DMA 1.3

B.3 Interrupt assignments

Interrupt #	Interrupt source
NMI	Parity error detected
IRQ 0	System timer
IRQ 1	Keyboard
IRQ 2	Interrupt from controller 2 (cascade)
IRQ 8	Real-time clock
IRQ 9	Available
IRQ 10	Available
IRQ 11	Available
IRQ 12	PS/2 mouse
IRQ 13	Numeric data processor
IRQ 14	Fixed disk controller
IRQ 15	USB controller
IRQ 3	Available
IRQ 4	Serial communication port 1
IRQ 5	Audio*
IRQ 6	Diskette controller (FDC)
IRQ 7	Parallel port 1 (print port)

* Audio default setting: IRQ5

Ethernet IRQ is automatic set by the system

B.4 1st MB memory map

Address	Description
F000h-FFFFh	System ROM
D800h-EFFFh	Unused
D000h-D7FFh	Unused
C000h-C9FFh	Expansion ROM*
B800h-BFFFh	CGA/EGA/VGA text
B000h-B7FFh	Unused
A000h-AFFFh	EGA/VGA graphics
0000h-9FFFh	Base memory

* Default setting