IB882

**Intel ® Atom
Poulsbo Chipset
3.5″ Disk Size SBC**

USER'S MANUAL

Version 1.1

Acknowledgments

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Introduction

Product Description

The IB882 3.5" disk-size board incorporates the Mobile Intel® Poulsbo Chipset for Embedded Computing, consisting of the Intel® single-chip system controller hub (SCH), an optimized integrated graphics solution with a 533MHz and 400MHz front-side bus. Dimensions of the board are 102mm x 147mm.

The integrated powerful 3D graphics engine, based on Intel® Graphics Media Accelerator) architecture 500, operates at core speeds of up to 200 MHz. It features a low-power design, With DDR2 533/400MHz one SO-DIMM socket on board, the board supports up to 1GB of DDR2 system memory.

Intel® Graphics supports a unique intelligent memory management scheme called Dynamic Video Memory Technology (DVMT). DVMT handles diverse applications by providing the availability of system memory for general computer usage, while supplying additional graphics memory when a 3D-intensive application requests it. The Intel graphics architecture also takes advantage of the high-performance Intel processor. Intel graphics supports Dual Independent Display technology.

The main features of the board are:
- Supports Intel® Atom Z530 (1.6GHz), Z510 (1.1GHz)
- Supports up to 533MHz FSB
- One DDR2 SDRAM SO-DIMM, Max. 1GB memory
- Onboard Two Intel Gigabit LAN
- Intel® VGA for CRT (ID398) / LVDS
- 1x SATA, 8x USB 2.0, 4x COM, Watchdog timer
- 1x PCI-104 Socket

Checklist

Your IB882 package should include the items listed below.

- The IB882 3.5" disk-size SBC
- This User's Manual
- 1 CD containing chipset drivers and flash memory utility
- Options:
    - Cable kit
   - Heatsink

Reminder:
When using the SATA hard disk to install the operating system,
you need to install the SATA driver first. The path for the driver
files, assuming D: is the CD/DVD ROM drive, would be
D:\SATA\Jmicron\Windrv\Floppy32.

IB882 Specifications

Form Factor	3.5" Disk Size SBC
CPU Type	Intel Atom (Silverthorne) CPUs 400/533 MHz, - Ultra Low Voltage - 512KB On-die L2 Cache - Hyper- Threading Technology support
System Speed	1.1GHz / 1.6GHz
CPU FSB	400M/533MHz
Cache	512K/1M L2 cache
Green /APM	APM1.2
BIOS	Award BIOS: supports ACPI Function
Chipset	Intel Poulsbo SCH Chipset, 1249-pin BGA, 22X22 mm
Memory	1 x 200-pin DDRII, 400/533-MT/s SO-DIMM, Max. capacity 1GB (Single channel)
VGA	- Through SDVO port (ID398)
LAN	Poulsbo SCH offers two PCI express channel for expansion. Use one channel Thru PCIE switch (PLX pex8505) for two Gigabit LAN (Intel 82574Lx2)
USB	Poulsbo SCH built-in USB2. 0 host controller with 8 ports,
Audio	Poulsbo SCH built-in Audio controller ALC 888 5.1-Channel (Line-in, Line-out & MIC)
PATA-IDE	Poulsbo SCH built-in one channel Ultra DMA 33/66/100, for IDE (44-pin box-header x 1) & CF (TYPEII)
SATA-IDE	Thru PCIE switch (PLX pex8505) for SATAII x1 (JMICRON JMB362)
LPC I/O	Winbond 83627EHF: - COM1 (RS232), COM2 (RS232/422/485), - LPT1 - Hardware monitor (3 thermal inputs, 6 voltage monitor inputs) - KB/Mouse Connector (KB 1ST Priority)
2nd LPC I/O	Fintek F81216DG COM3 & COM4 (RS232)
RTC/CMOS	Poulsbo SCH built-in with on board Lithium Battery
Edge Connector	PS/2 connector x1 for PS/2 KB/Mouse DB15 x1 for VGA (ID398 VGA daughter board) DB9 x1 for COM1 RJ45 x2 for Gigabit LAN Dual USB stack connector x1 for USB1/2
Onboard Header / Connectors	DF13 Socket x 1 for LVDS 8 pins header x 3 for 6 USB ports 44-pin box header x1 for IDE 36-pin female connector x1 for SDVO port 12-pin header x1 for audio 10-pin header x3 for COM2, COM3, COM4 26-pin header for SD/SDIO/MMC
Digital I/O	4 in / 4 out
Expansion Slots	PCI104 , BY PCIE to PCI bridge (PLX pex8112)
Watchdog Timer	Yes (256 segments, 0, 1, 2…255. sec/min)
Power Connector	DC power jack x1 for +12V ~+19V DC-in
Board Size	102 x 147mm

Note: IB882-16 supports 1.6GHz(Z530) FSB 533MHz CPU.
IB882-11 supports 1.1GHz(Z510) FSB 400MHz CPU.

Board Dimensions
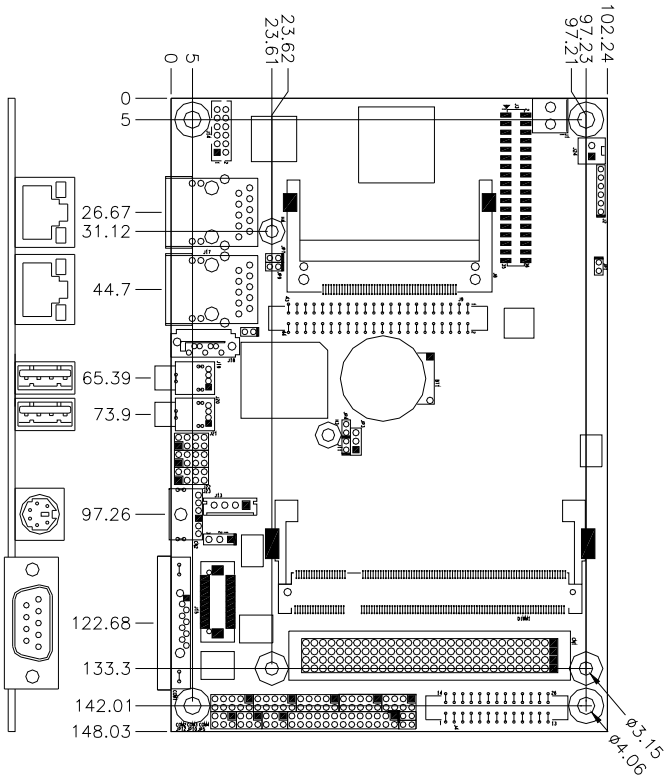
Installations

This section provides information on how to use the jumpers and connectors on the IB882 in order to set up a workable system. The topics covered are:

Installing the Memory

The IB882 board supports a DDR2 memory socket for a maximum total memory of 1GB in DDR2 533/400 memory type.

Installing and Removing Memory Modules

To install DDR2 modules, locate the memory socket on the board and perform the following steps:

1. Hold the DDR2 module so that the keys of the DDR2 module align with those on the memory slot.

2. Gently push the DDR2 module in an angle as shown in the picture below until the clips of the sockets lock to hold the DDR2 module in place when the DDR2 module touches the bottom of the socket.

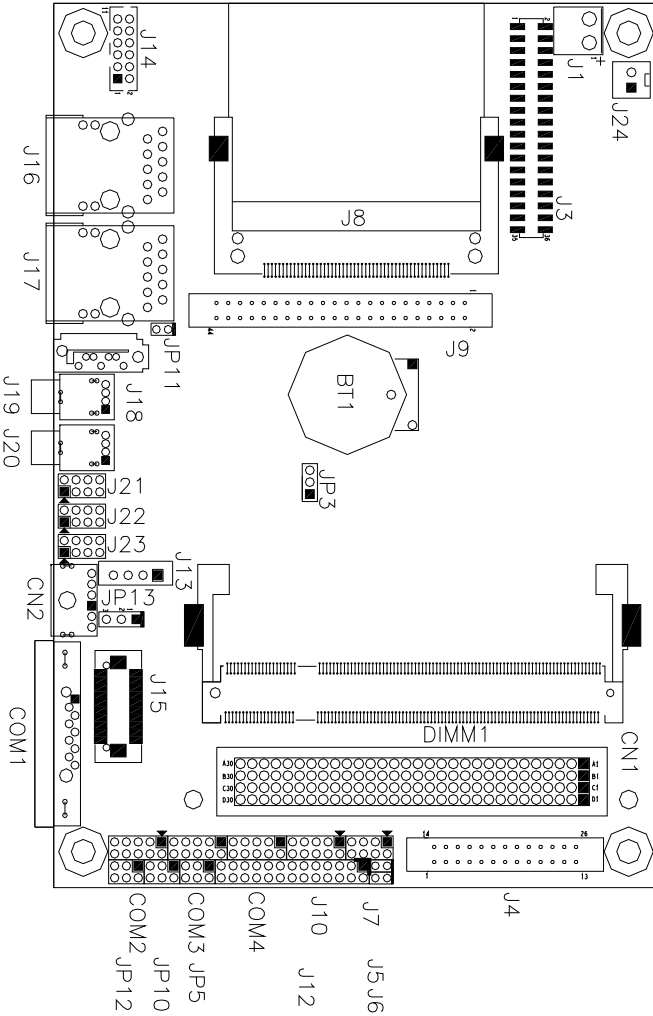3. To remove the DDR2 module, press the clips with both hands.
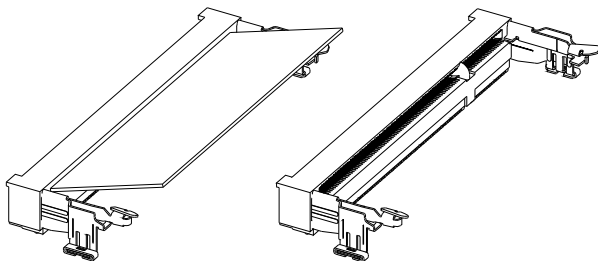
Setting the Jumpers

Jumpers are used on IB882 to select various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your needs. The following lists the connectors on IB882 and their respective functions.

Jumper Locations on IB882

JP3: Clear CMOS Setting

JP3	Setting
□ □ □ 1 2 3	Normal
□ □ □ 1 2 3	Clear CMOS

JP11: CompactFlash Slave/Master Selection

JP11	CF Setting
□ □ Short	Master
□ □ Open	Slave

JP5, JP10, JP12: RS232/422/485 (COM2) Selection
COM1, COM3, COM4 are fixed for RS-232 use only.
COM2 is selectable for RS232, RS-422 and RS-485.
The following table describes the jumper settings for COM2 selection.
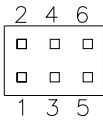
COM2 Function	RS-232	RS-422	RS-485
Jumper Setting (pin closed)	JP5: 1-2 JP10: 3-5 & 4-6 JP12: 3-5 & 4-6	JP5: 3-4 JP10: 1-3 & 2-4 JP12: 1-3 & 2-4	JP5: 5-6 JP10: 1-3 & 2-4 JP12: 1-3 & 2-4

```
2 4 6
□ □ □
□ □ □
1 3 5
```

J5, J6: SD/IO Power Selection

J5	SLOT2 Power
□ □ Short	Enable
□ □ Open	By MANUAL

J6	SLOT1 Power
□ □ Short	Enable
□ □ Open	By MANUAL

JP13: LCD Panel Power Selection

JP13	LCD Panel Power
□ □ □ 1 2 3	3.3V
□ □ □ 1 2 3	5V
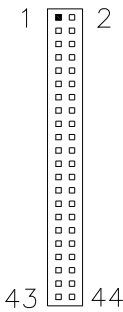
Connectors on IB882

Connector Locations on IB882

IDE1: IDE Connector

Signal Name	Pin #	Pin #	Signal Name
Reset IDE	1	2	Ground
Host data 7	3	4	Host data 8
Host data 6	5	6	Host data 9
Host data 5	7	8	Host data 10
Host data 4	9	10	Host data 11
Host data 3	11	12	Host data 12
Host data 2	13	14	Host data 13
Host data 1	15	16	Host data 14
Host data 0	17	18	Host data 15
Ground	19	20	Protect pin
DRQ0	21	22	Ground
Host IOW	23	24	Ground
Host IOR	25	26	Ground
IOCHRDY	27	28	Host ALE
DACK0	29	30	Ground
IRQ14	31	32	No connect
Address 1	33	34	Cable Detect
Address 0	35	36	Address 2
Chip select 0	37	38	Chip select 1
Activity	39	40	Ground
+5V	41	42	+5V
Ground	43	44	NC

J1: Board Input Power Connector

Pin #	Signal Name
1	+12V~+19V
2	GND

CN1: PCI-104 Connector

CN2: PS/2 Keyboard and PS/2 Mouse Connectors
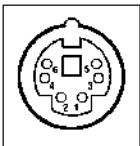
CN3

Pin #	Signal Name
1	Keyboard data
2	Mouse data
3	Ground
4	Vcc
5	Keyboard Clock
6	Mouse Clock

J2: CPLD Connector (factory use only)

J3: SDVO Connector
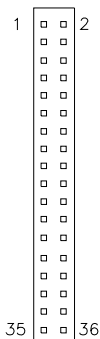
Signal Name	Pin #	Pin #	Signal Name
+12V	1	2	+3.3V
+12V	3	4	+3.3V
CTRL-DATA	5	6	+3.3V
GND	7	8	GND
CTRL-CLK	9	10	+2.5V
GND	11	12	+2.5V
RED+	13	14	GND
RED-	15	16	RESET
GND	17	18	GND
GREEN+	19	20	TV-CLK+
GREEN-	21	22	TV-CLK-
GND	23	24	GND
BLUE+	25	26	INIT+
BLUE-	27	28	INIT-
GND	29	30	GND
CLK+	31	32	STALL+
CLK-	33	34	STALL-
GND	35	36	GND

J4: SD/IO Connector
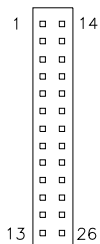
Signal Name	Pin #	Pin #	Signal Name
SLOT2-PWR(3.3V)	1	14	SLOT1-PWR(3.3V)
SLOT2-DATA0	2	15	SLOT1-DATA0
SLOT2-DATA1	3	16	SLOT1-DATA1
SLOT2-DATA2	4	17	SLOT1-DATA2
SLOT2-DATA3	5	18	SLOT1-DATA3
SLOT2-DATA4	6	19	SLOT1-CMD
SLOT2-DATA5	7	20	SLOT1-CLK
SLOT2-DATA6	8	21	SLOT1-CD#
SLOT2-DATA7	9	22	SLOT1-WP
SLOT2-CMD	10	23	N/A
SLOT2-CLK	11	24	N/A
SLOT2-CD#	12	25	Ground
SLOT2-WP	13	26	Ground

J7 (F_PANEL): System Function Connector

J7 provides connectors for system indicators that provide light indication of the computer activities and switches to change the computer status. J7 is an 8-pin header that provides interfaces for the following functions.

Power LED: Pins 1 – 2
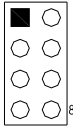
Pin #	Signal Name
1	LED(-)
2	LED(+)

ATX Power ON Switch: Pins 3 and 4

This 2-pin connector is an "ATX Power Supply On/Off Switch" on the system that connects to the power switch on the case. When pressed, the power switch will force the system to power on. When pressed again, it will force the system to power off.

Reset Switch: Pins 5 and 6

The reset switch allows the user to reset the system without turning the main power switch off and then on again. Orientation is not required when making a connection to this header.

Hard Disk Drive LED Connector: Pins 7 and 8

This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.

Pin #	Signal Name
7	LED(+)
8	LED(-)

J8: Compact Flash Connector

J10: Digital I/O
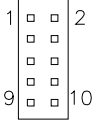
Signal Name	Pin #	Pin #	Signal Name
GND	1	2	VCC
OUT3	3	4	OUT1
OUT2	5	6	OUT0
IN3	7	8	IN1
IN2	9	10	IN0

J12: Parallel Port Connector
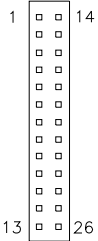
Signal Name	Pin #	Pin #	Signal Name
Line printer strobe	1	14	AutoFeed
PD0, parallel data 0	2	15	Error
PD1, parallel data 1	3	16	Initialize
PD2, parallel data 2	4	17	Select
PD3, parallel data 3	5	18	Ground
PD4, parallel data 4	6	19	Ground
PD5, parallel data 5	7	20	Ground
PD6, parallel data 6	8	21	Ground
PD7, parallel data 7	9	22	Ground
ACK, acknowledge	10	23	Ground
Busy	11	24	Ground
Paper empty	12	25	Ground
Select	13	N/A	N/A

J13: LCD Backlight Connector

Pin #	Signal Name
1	+12V
2	Backlight Enable
3	ADJ
4	Ground

J14: Audio Connector
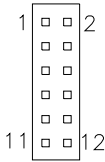
Signal Name	Pin #	Pin #	Signal Name
LINE-OUT L	1	2	LINE-OUT R
JD-OUT	3	4	Ground
LINE-IN L	5	6	LINE-IN R
JD-IN	7	8	Ground
Mic-In L	9	10	Mic-In R
JD-Mic	11	12	Ground

J15: LVDS Connectors

The LVDS connectors supports single-channel 18-bit or 24-bit displays.
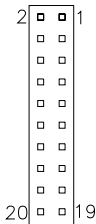
Signal Name	Pin #	Pin #	Signal Name
TX0-	2	1	TX0+
Ground	4	3	Ground
TX1-	6	5	TX1+
5V/3.3V	8	7	Ground
TX3-	10	9	TX3+
TX2-	12	11	TX2+
Ground	14	13	Ground
TXC-	16	15	TXC+
5V/3.3V	18	17	ENABKL
DDC_DATA	20	19	DDC_CLK

J16, J17: Gigabit LAN RJ-45 Connector

J18: SATA Connectors

J19~J23: USB Connectors
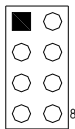
Signal Name	Pin	Pin	Signal Name
Vcc	1	5	Ground
D0-	2	6	D1+
D0+	3	7	D1-
Ground	4	8	Vcc

J24: +5V Output Power Connector

J24 is a 2-pin header for output only. (slim HDD)

Pin #	Signal Name
1	Ground
2	+5V

COM_PORT: COM1~COM4 Serial Ports Connector
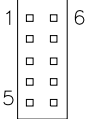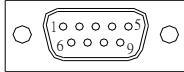
Pin #	Signal Name (RS-232)
1	DCD, Data carrier detect
2	RXD, Receive data
3	TXD, Transmit data
4	DTR, Data terminal ready
5	Ground
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	RI, Ring indicator
10	No Connect.

BIOS Setup

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

BIOS Introduction

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

BIOS Setup

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

```
Press  <DEL>  to  Enter  Setup
```

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

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

Phoenix - AwardBIOS CMOS Setup Utility

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

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

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

Warning: *It is strongly recommended that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could cause the system to become unstable and crash in some cases.*

Standard CMOS Setup

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

Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features

Date (mm:dd:yy)	Wed, Apr 28, 2007	Item Help
Time (hh:mm:ss)	00 : 00 : 00	Menu Level >
IDE Channel 0 Master	None	Change the day, month,
IDE Channel 0 Slave	None	Year and century
Video	EGA/VGA	
Halt On	All, Error	
Base Memory	640K	
Extended Memory	129024K	
Total Memory	130048K	

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

Date
The date format is:
Day :	**Sun to Sat**
Month :	**1 to 12**
Date :	**1 to 31**
Year :	**1999 to 2099**

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

Time
The time format is: **Hour   : 00 to 23**
                              Minute : 00 to 59
                              Second : 00 to 59
To set the time, highlight the "Time" field and use the <PgUp>/ <PgDn> or +/- keys to set the current time.

IDE Channel Master/Slave
The onboard PCI IDE connector provides Primary and Secondary channels for connecting up to two IDE hard disks or other IDE devices.

Press <Enter> to configure the hard disk. The selections include Auto, Manual, and None. Select 'Manual' to define the drive information manually. You will be asked to enter the following items.

   Capacity :   Capacity/size of the hard disk drive
   Cylinder :   Number of cylinders
   Head :   Number of read/write heads
   Precomp :   Write precompensation
   Landing Zone : Landing zone
   Sector :   Number of sectors

   The Access Mode selections are as follows:
   CHS   (HD < 528MB)
   LBA   (HD > 528MB and supports Logical Block Addressing)
   Large   (for MS-DOS only)
   Auto

Remarks: The main board supports two serial ATA ports and are represented in this setting as IDE Channel 0.

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

EGA/VGA	For EGA, VGA, SEGA, SVGA or PGA monitor adapters. (default)
CGA 40	Power up in 40 column mode.
CGA 80	Power up in 80 column mode.
MONO	For Hercules or MDA adapters.

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

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

Advanced BIOS Features

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

Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features

CPU Feature	Press Enter	ITEM HELP
Hard Disk Boot Priority	Press Enter	
Virus Warning	Disabled	Menu Level >
CPU L1 & L2 Cache	Enabled	
CPU L3 Cache	Enabled	
Hyper-Threading Technology	Enabled	
Quick Power On Self Test	Enabled	
First Boot Device	Hard Disk	
Second Boot Device	CDROM	
Third Boot Device	LS120	
Boot Other Device	Enabled	
Boot Up NumLock Status	On	
Typematic Rate Setting	Disabled	
Typematic Rate (Chars/Sec)	6	
Typematic Delay (Msec)	250	
Security Option	Setup	
APIC Mode	Enabled	
MPS Version Control for OS	1.4	
OS Select For DRAM>64MB	Non-OS2	
Report No FDD For WIN 95	No	
Small Logo (EPA) Show	Disabled	

CPU Feature
Press Enter to configure the settings relevant to CPU Feature.

Hard Disk Boot Priority
With the field, there is the option to choose, aside from the hard disks connected, "Bootable add-in Cards" which refers to other external devices.

Virus Warning
If this option is enabled, an alarm message will be displayed when trying to write on the boot sector or on the partition table on the disk.

CPU L1 / L2 / L3 Cache
Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs from 486-type on up contain internal cache memory, and most, but not all, modern PCs have additional (external) cache memory. When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU. These items allow you to enable (speed up memory access) or disable the cache function. By default, these items are enabled.

Hyper-Threading Technology
By default, this function is enabled.

Quick Power On Self Test
When enabled, this field speeds up the Power On Self Test (POST) after the system is turned on. If it is set to *Enabled*, BIOS will skip some items.

First/Second/Third Boot Device
These fields determine the drive that the system searches first for an operating system. The options available include *Floppy*, *LS120*, *Hard Disk*, *CDROM, ZIP100*, *USB-Floppy, USB-ZIP*, *USB-CDROM, Legacy LAN, IBA GE Slot 00C* and *Disable*.

Boot Other Device
These fields allow the system to search for an OS from other devices other than the ones selected in the First/Second/Third Boot Device.

Boot Up NumLock Status
This allows you to activate the NumLock function after you power up the system.

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

Typematic Rate (Chars/Sec)
When the typematic rate is enabled, the system registers repeated keystrokes speeds. Settings are from 6 to 30 characters per second.

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

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

APIC Mode
APIC stands for Advanced Programmable Interrupt Controller. The default setting is *Enabled*.

MPS Version Control for OS
This option is specifies the MPS (Multiprocessor Specification) version for your operating system. MPS version 1.4 added extended configuration tables to improve support for multiple PCI bus configurations and improve future expandability. The default setting is *1.4*.

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

Report No FDD For WIN 95
If you are using Windows 95/98 without a floppy disk drive, select Enabled to release IRQ6. This is required to pass Windows 95/98's SCT test. You should also disable the Onboard FDC Controller in the Integrated Peripherals screen when there's no floppy drive in the system. If you set this feature to Disabled, the BIOS will not report the missing floppy drive to Win95/98.

Small Logo (EPA) Show
The EPA logo appears at the right side of the monitor screen when the system is boot up. The default setting is *Disabled*.

Advanced Chipset Features

This Setup menu controls the configuration of the chipset.

Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features

DRAM Timing Selectable	By SPD	ITEM HELP
SLP_S4# Assertion Width	4 to 5 Sec	Menu Level >
System BIOS Cacheable	Enabled	
Video BIOS Cacheable	Disabled	
** VGA Setting **		
On-Chip Frame Buffer Size	8MB	
Boot Type	CRT	
LCD Panel Type	1024x768 generic	
Panel Scaling	AUTO	
BIA	VBIOS Default	

DRAM Timing Selectable
This option refers to the method by which the DRAM timing is selected. The default is *By SPD*.

SLP_S4# Assertion Width
The default setting is *4 to 5 Sec*.

System BIOS Cacheable
The setting of *Enabled* allows caching of the system BIOS ROM at F000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

Video BIOS Cacheable
The Setting *Enabled* allows caching of the video BIOS ROM at C0000h-F7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result. By default, this field is disabled.

VGA Setting
The fields under the VGA Setting and their default settings are:
   On-Chip Frame Buffer Size: 8MB
   Boot Type: CRT
   LCD Panel Type: 1024x768 generic
   Panel Scaling: Auto
   BIA: VBIOS Default

Integrated Peripherals

This section sets configurations for your hard disk and other integrated peripherals. The first screen shows three main items for user to select. Once an item selected, a submenu appears. Details follow.

Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals

OnChip IDE Device	Press Enter	ITEM HELP
Onboard Device	Press Enter	Menu Level >
Super IO Device	Press Enter	
Second IO Device	Press Enter	
PCI Express Root Function	Press Enter	
USB Device Setting	Press Enter	

Phoenix - AwardBIOS CMOS Setup Utility
OnChip IDE Device

IDE HDD Block Mode	Enabled	ITEM HELP
IDE Primary Master PIO	Auto	Menu Level >
IDE Primary Slave PIO	Auto	
IDE Primary Master UDMA	Auto	
IDE Primary Slave UDMA	Auto	

Phoenix - AwardBIOS CMOS Setup Utility
Onboard Device

Intel HD Audio Controller	Auto	ITEM HELP
SDIO/MMC Controller	Enabled	

Phoenix - AwardBIOS CMOS Setup Utility
SuperIO Device

POWER ON Function	BUTTON ONLY	ITEM HELP
KB Power ON Password	Enter	Menu Level >
Hot Key power ON	Ctrl-F1	
Onboard Serial Port 1	3F8/IRQ4	
Onboard Serial Port 2	2F8/IRQ3	
Onboard Parallel Port	378/IRQ7	
Parallel Port Mode	SPP	
EPP Mode Select	EPP1.7	
ECP Mode Use DMA	3	

Phoenix - AwardBIOS CMOS Setup Utility
Second Super IO Device

Onboard Serial Port 3	3E8h	ITEM HELP
Serial Port 3 Use IRQ	IRQ10	Menu Level >
Onboard Serial Port 4	2E8h	
Serial Port 4 Use IRQ	IRQ5	

Phoenix - AwardBIOS CMOS Setup Utility
PCI Express Root Function

PCI Express Port 1	Auto	ITEM HELP
PCI Express Port 1	Auto	

Phoenix - AwardBIOS CMOS Setup Utility
USB Device Setting

USB 1.0 Controller	Enabled	ITEM HELP
USB 2.0 Controller	Enabled	Menu Level >
USB Keyboard Function	Enabled	
USB Storage Function	Enabled	
*** USB Mass Storage Device Boot Setting ***		

IDE HDD Block Mode

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

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.

IDE Primary/Secondary Master/Slave PIO

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

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

IDE Primary/Secondary Master/Slave UDMA

These fields allow your system to improve disk I/O throughput to 33Mb/sec with the Ultra DMA/33 feature. The options are *Auto* and *Disabled*.

Power ON Function

This field is related to how the system is powered on – such as with the use of conventional power button, keyboard or hot keys. The default is *BUTTON ONLY*.

KB Power ON Password
This field allows users to set the password when keyboard power on is the mode of the Power ON function.

Hot Key Power ON
This field sets certain keys, also known as hot keys, on the keyboard that can be used as a 'switch' to power on the system.

Onboard Serial/Parallel Port
These fields allow you to select the onboard serial and parallel ports and their addresses. The default values for these ports are:

Serial Port 1	3F8/IRQ4
Serial Port 2	2F8/IRQ3
Serial Port 3	3E8/IRQ10
Serial Port 4	2E8/IRQ5
Parallel Port	378H/IRQ7

Parallel Port Mode
This field allows you to determine parallel port mode function.

SPP	Standard Printer Port
EPP	Enhanced Parallel Port
ECP	Extended Capabilities Port
ECP+EPP	Combination of ECP and EPP capabilities
Normal	Normal function

USB 1.0 Controller
The options for this field are *Enabled* and *Disabled*. By default, this field is set to **Enabled**.

USB 2.0 Controller
The options for this field are *Enabled* and *Disabled*. By default, this field is set to **Enabled**. In order to use USB 2.0, necessary OS drivers must be installed first.

USB Keyboard/Mouse/Storage Function
The options for this field are *Enabled* and *Disabled*. By default, this field is set to **Enabled.**

Power Management Setup

ACPI Function	Enabled	ITEM HELP
Power Management	User Define	Menu Level >
Video Off Method	DPMS	
Video Off In Suspend	Yes	
Suspend Type	Stop Grant	
HDD Power Down	Disabled	
Soft-Off by PWR-BTTN	Instant-Off	
HPET Feature	Press Enter	
Intel DTS Feature	Press Enter	

ACPI Function
Enable this function to support ACPI (Advance Configuration and Power Interface).

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

Min. Power Saving	Minimum power management
Max. Power Saving	Maximum power management.
User Define	Each of the ranges is from 1 min. to 1hr. Except for HDD Power Down which ranges from 1 min. to 15 min.

Video Off Method
This field defines the Video Off features. There are three options.

V/H SYNC + Blank	Default setting, blank the screen and turn off vertical and horizontal scanning.
DPMS	Allows BIOS to control the video display.
Blank Screen	Writes blanks to the video buffer.

Video Off In Suspend
When enabled, the video is off in suspend mode. The default setting is *Yes*.

Suspend Type
The default setting for the Suspend Type field is *Stop Grant*.

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.

Soft-Off by PWRBTN
This field defines the power-off mode when using an ATX power supply. The *Instant Off* mode allows powering off immediately upon pressing the power button. In the *Delay 4 Sec* mode, the system powers off when the power button is pressed for more than four seconds or enters the suspend mode when pressed for less than 4 seconds.

HPET Feature
HPET means "High Precision Event Timer". The HPET can produce periodic interrupts at a much higher resolution than the RTC and is often used to synchronize multimedia streams.

Intel DTS Function
When enabled, the fields that can be configured are:
DTS Active temperature
Passive Cooling Trip Point
Passive TC1 Value
Passive TC2 Value
Passive TSP Value

PNP/PCI Configurations

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

Phoenix - AwardBIOS CMOS Setup Utility
PnP/PCI Configurations

		ITEM HELP
Init Display First	PCI Slot	
Reset Configuration Data	Disabled	Menu Level
Resources Controlled By	Auto (ESCD)	
IRQ Resources	Press Enter	Select Yes if you are using a Plug and Play capable operating system Select No if you need the BIOS to configure non-boot devices
PCI/VGA Palette Snoop	Disabled	
PCI Latency Timer(CLK)	32	
PCI Express relative items		
Maximum Payload Size	128	

Init Display First

The default setting is *PCI Card*.

Reset Configuration Data

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

Resources Controlled by

This PnP BIOS can configure all of the boot and compatible devices with the use of a PnP operating system such as Windows 95.

PCI/VGA Palette Snoop

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

Maximum Payload Size

The default setting of the PCI Express Maximum Payload Size is 128.

PC Health Status

This section shows the parameters in determining the PC Health Status. These parameters include temperatures, fan speeds and voltages.

Phoenix - AwardBIOS CMOS Setup Utility
PC Health Status

System Temp.	45°C/113°F	ITEM HELP
CPU Temp.	45°C/113°F	
Vcore	0.92 V	Menu Level >
+12 V	11.82 V	
Vmem	1.88V	
+5V	4.91V	
-12V	-11.85V	
3.3V	3.24V	
VBAT (V)	3.21 V	
3VSB(V)	3.24 V	

Temperatures/Voltages

These fields are the parameters of the hardware monitoring function feature of the board. The values are read-only values as monitored by the system and show the PC health status.

Load Fail-Safe Defaults

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

Load Optimized Defaults

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

Set Supervisor Password

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

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

Save & Exit Setup

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

Exit Without Saving

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

Drivers Installation

This section describes the installation procedures for software and drivers under Windows Vista. The software and drivers are included with the board. If you find the items missing, please contact the vendor where you made the purchase. The contents of this section include the following:

IMPORTANT NOTE:
After installing your Windows operating system, you must install first the Intel Chipset Software Installation Utility before proceeding with the drivers installation.

Intel Chipset Device Software (Windows Vista)

1. Insert the CD that comes with the board. Click *Intel (R)Chipset Software Installation Utility.*

2. When the welcome screen to the setup program for Intel® Chipset Device Software appears, click **Next** to continue.

3. In the next screen, click **Next** to agree with the terms of the license agreement. Then, click **Next** again in the next screen after reading the Readme File Information to continue. After Setup has finished installing the software, click **Finish** to complete the setup process.

VGA Drivers Installation (Windows Vista)

1. Insert the CD that comes with the board. Click *Intel (R)SCH Chipset Family Graphics Driver*.

2. When the welcome screen to the setup program for Intel® Graphics Media Accelerator 500 appears, click **Next** to continue.

3. In the next screen, click **Next** to agree with the terms of the license agreement. Then, click **Next** again in the nex screen after reading the Readme File Information to continue.

4. Click **Install this driver software anyway** to continue.
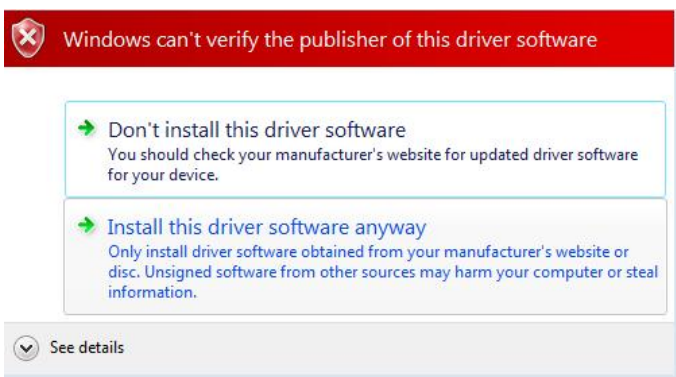
5. Click **Next** to continue with the setup operations.
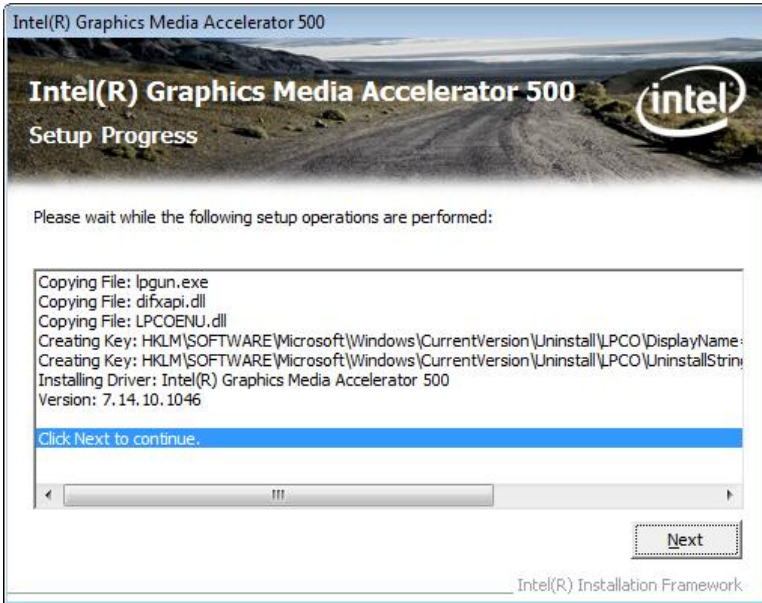
6. When setup is completed, click **Finish** to restart the computer and for changes to take effect.

Audio Drivers Installation (Windows Vista)

1. Insert the CD that comes with the board. Click *Realtek High Definition Codec Audio Driver*.

2. The Welcome screen to the InstallShieled Wizard for Realtek High Definition Audio Driver will appear. At this point, click **Next** to continue the installation process.

3. When installation is completed, restart the computer as prompted. Click **Finish**.

LAN Drivers Installation (Windows Vista)

1. Insert the CD that comes with the board. Click *Intel (R) PRO LAN Network Drivers*.

2. In the next screen, click **Install Drivers and Software** to run InstalShield Wizard.
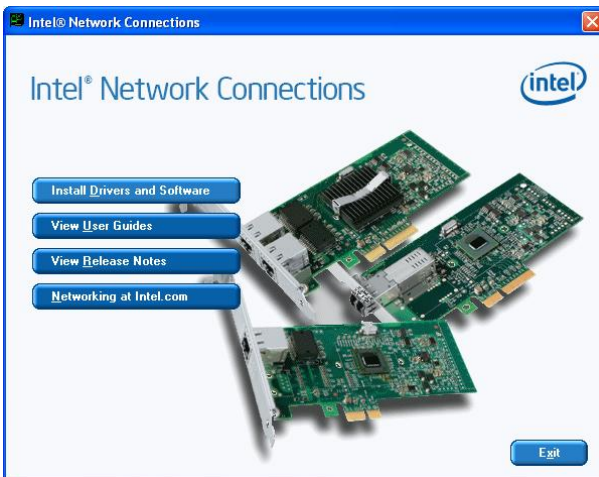
3. When InstallShield Wizard Welcome screen appears, click **Next**.

4. Click **Next** to agree with the terms in the license agreement and continue with the installation process.

5. Click the checkbox for **Drivers** to select it and click **Next** to continue.
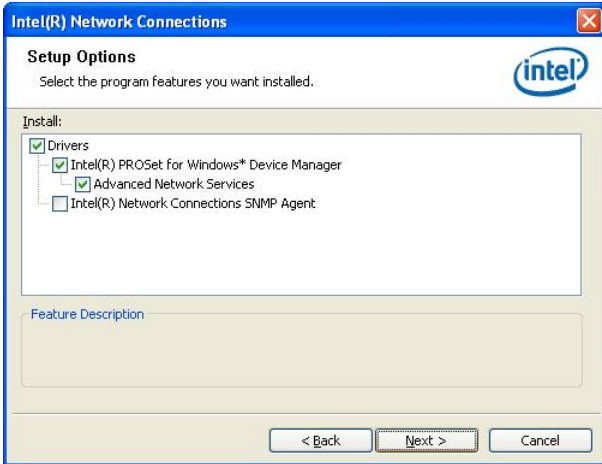
5. Click **Install** to begin installation of the drivers.

6. When InstallShield Wizard is completed, click **Finish** for changes to take effect.

SATA Drivers Installation (Windows Vista)

1. Insert the CD that comes with the board. Click *JMB362 SATA Driver*.
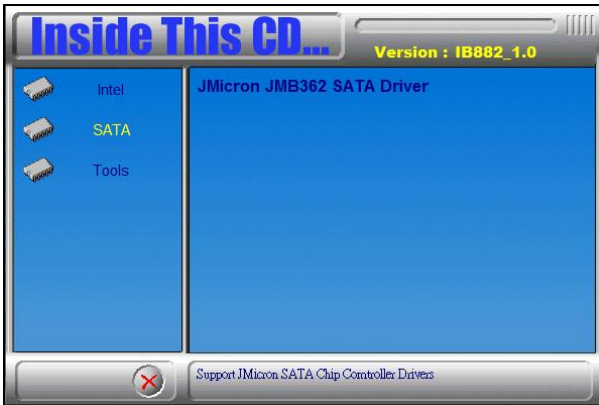
2. When InstallShield Wizard Welcome screen appears, click **Next**..
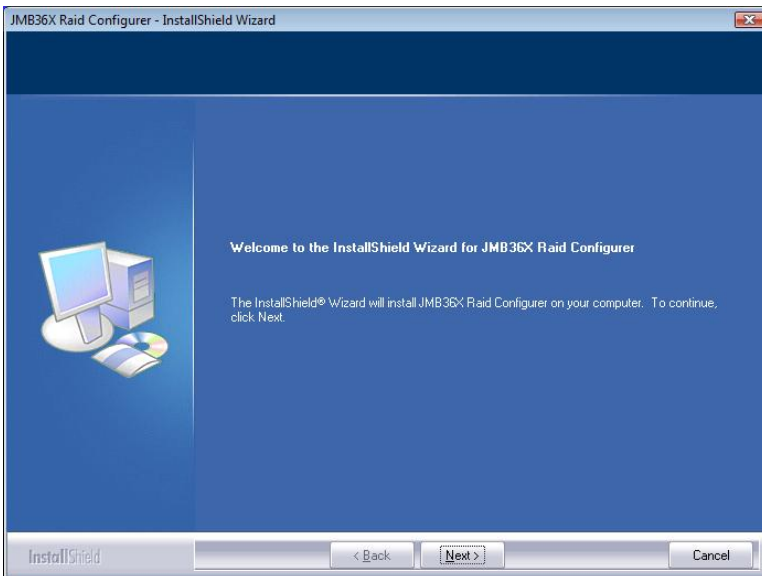
3. Click **Install** to begin the installation process.
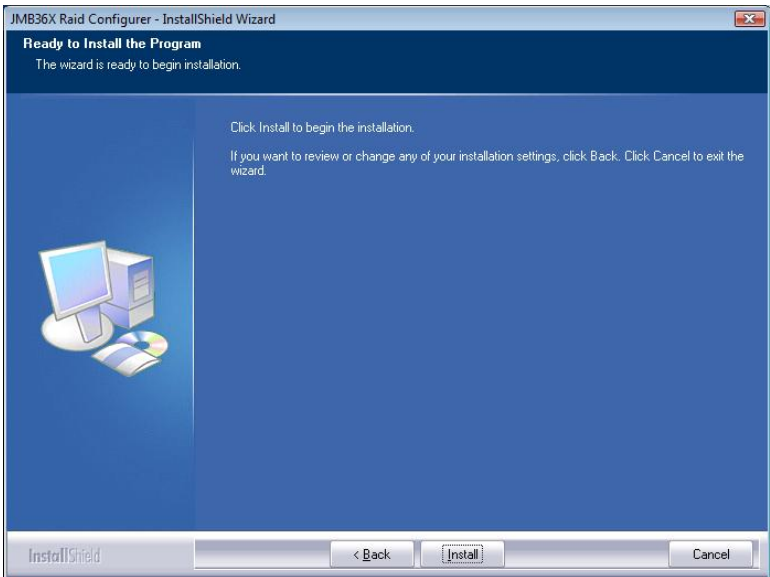
4. When InstallShield Wizard is complete, click **Finish** to restart the computer and for changes to take effect.
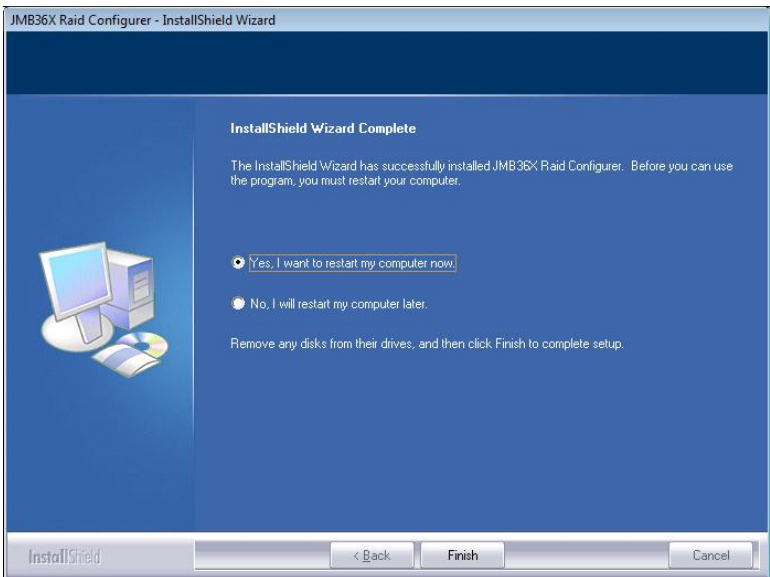
Appendix

A. I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses which also becomes the identity of the device. The following table lists the I/O port addresses used.

Address	Device Description
000h - 01Fh	DMA Controller #1
020h - 03Fh	Interrupt Controller #1
040h - 05Fh	Timer
060h - 06Fh	Keyboard Controller
070h - 07Fh	Real Time Clock, NMI
080h - 09Fh	DMA Page Register
0A0h - 0BFh	Interrupt Controller #2
0C0h - 0DFh	DMA Controller #2
0F0h	Clear Math Coprocessor Busy Signal
0F1h	Reset Math Coprocessor
1F0h - 1F7h	IDE Interface
278 - 27F	Parallel Port #2(LPT2)
2F8h - 2FFh	Serial Port #2(COM2)
2B0 - 2DF	Graphics adapter Controller
378h - 3FFh	Parallel Port #1(LPT1)
360 - 36F	Network Ports
3B0 - 3BF	Monochrome & Printer adapter
3C0 - 3CF	EGA adapter
3D0 - 3DF	CGA adapter
3F0h - 3F7h	Floppy Disk Controller
3F8h - 3FFh	Serial Port #1(COM1)

B. Interrupt Request Lines (IRQ)

Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

Level	Function
IRQ0	System Timer Output
IRQ1	Keyboard
IRQ2	Interrupt Cascade
IRQ3	Serial Port #2
IRQ4	Serial Port #1
IRQ5	Reserved
IRQ6	Floppy Disk Controller
IRQ7	Parallel Port #1
IRQ8	Real Time Clock
IRQ9	Reserved
IRQ10	Reserved
IRQ11	Reserved
IRQ12	PS/2 Mouse
IRQ13	80287
IRQ14	Primary IDE
IRQ15	Secondary IDE

C. Watchdog Timer Configuration

The WDT is used to generate a variety of output signals after a user programmable count. The WDT is suitable for use in the prevention of system lock-up, such as when software becomes trapped in a deadlock. Under these sorts of circumstances, the timer will count to zero and the selected outputs will be driven. Under normal circumstance, the user will restart the WDT at regular intervals before the timer counts to zero.

SAMPLE CODE:

```
//===========================================================================
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//===========================================================================
#include <stdio.h>
#include <stdlib.h>
#include "W627EHF.H"
//===========================================================================
int main (int argc, char *argv[]);
void copyright(void);
void EnableWDT(int);
void DisableWDT(void);
//===========================================================================
int main (int argc, char *argv[])
{
        unsigned char bBuf;
        unsigned char bTime;
        char **endptr;

        copyright();

        if (argc != 2)
        {
                printf(" Parameter incorrect!!\n");
                return 1;
        }

        if (Init_W627EHF() == 0)
        {
                printf(" Winbond 83627HF is not detected, program abort.\n");
                return 1;
        }
        bTime = strtol (argv[1], endptr, 10);
        printf("System will reset after %d seconds\n", bTime);

        EnableWDT(bTime);

        return 0;
}
//===========================================================================
```

```
void copyright(void)
{
        printf("\n======= Winbond 83627EHF Watch Timer Tester (AUTO DETECT) =======\n"\
                "       Usage : W627E_WD reset_time\n"\
                "       Ex : W627E_WD 3  => reset system after 3 second\n"\
                "          W627E_WD 0  => disable watch dog timer\n");
}
//============================================================================
void EnableWDT(int interval)
{
        unsigned char bBuf;

        bBuf = Get_W627EHF_Reg( 0x2D);
        bBuf &= (!0x01);
        Set_W627EHF_Reg( 0x2D, bBuf);                   //Enable WDTO

        Set_W627EHF_LD( 0x08);                          //switch to logic device 8
        Set_W627EHF_Reg( 0x30, 0x01);                   //enable timer

        bBuf = Get_W627EHF_Reg( 0xF5);
        bBuf &= (!0x08);
        Set_W627EHF_Reg( 0xF5, bBuf);                   //count mode is second

        Set_W627EHF_Reg( 0xF6, interval);               //set timer
}
//============================================================================
void DisableWDT(void)
{
        Set_W627EHF_LD(0x08);                           //switch to logic device 8
        Set_W627EHF_Reg(0xF6, 0x00);                    //clear watchdog timer
        Set_W627EHF_Reg(0x30, 0x00);                    //watchdog disabled
}
//============================================================================
```

```
//==========================================================================
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//==========================================================================
#include "W627EHF.H"
#include <dos.h>
//==========================================================================
unsigned int W627EHF_BASE;
void Unlock_W627EHF (void);
void Lock_W627EHF (void);
//==========================================================================
unsigned int Init_W627EHF(void)
{
        unsigned int result;
        unsigned char ucDid;

        W627EHF_BASE = 0x2E;
        result = W627EHF_BASE;

        ucDid = Get_W627EHF_Reg(0x20);
        if (ucDid == 0x88)
        {       goto Init_Finish;       }

        W627EHF_BASE = 0x4E;
        result = W627EHF_BASE;
        ucDid = Get_W627EHF_Reg(0x20);
        if (ucDid == 0x88)
        {       goto Init_Finish;       }

        W627EHF_BASE = 0x00;
        result = W627EHF_BASE;

Init_Finish:
        return (result);
}
//==========================================================================
void Unlock_W627EHF (void)
{
        outportb(W627EHF_INDEX_PORT, W627EHF_UNLOCK);
        outportb(W627EHF_INDEX_PORT, W627EHF_UNLOCK);
}
//==========================================================================
void Lock_W627EHF (void)
{
        outportb(W627EHF_INDEX_PORT, W627EHF_LOCK);
}
//==========================================================================
void Set_W627EHF_LD( unsigned char LD)
{
        Unlock_W627EHF();
        outportb(W627EHF_INDEX_PORT, W627EHF_REG_LD);
        outportb(W627EHF_DATA_PORT, LD);
        Lock_W627EHF();
}
```

```
//==============================================================================
void Set_W627EHF_Reg( unsigned char REG, unsigned char DATA)
{
        Unlock_W627EHF();
        outportb(W627EHF_INDEX_PORT, REG);
        outportb(W627EHF_DATA_PORT, DATA);
        Lock_W627EHF();
}
//==============================================================================
unsigned char Get_W627EHF_Reg(unsigned char REG)
{
        unsigned char Result;
        Unlock_W627EHF();
        outportb(W627EHF_INDEX_PORT, REG);
        Result = inportb(W627EHF_DATA_PORT);
        Lock_W627EHF();
        return Result;
}
//==============================================================================
```

```
//==============================================================================
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//==============================================================================
#ifndef __W627EHF_H
#define __W627EHF_H                         1
//==============================================================================
#define        W627ehf_INDEX_PORT           (W627EHF_BASE)
#define        W627ehf_DATA_PORT            (W627EHF_BASE+1)
//==============================================================================
#define        W627ehf_REG_LD               0x07
//==============================================================================
#define W627ehf_UNLOCK                      0x87
#define        W627ehf_LOCK                 0xAA
//==============================================================================
unsigned int Init_W627EHF(void);
void Set_W627EHF_LD( unsigned char);
void Set_W627EHF_Reg( unsigned char, unsigned char);
unsigned char Get_W627EHF_Reg( unsigned char);
//==============================================================================
#endif //__W627EHF_H
```

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