EC Declaration of Conformity

We

    Iwill Corp.

    No. 10, Wu Chuan 3rd Rd.,

    Hsin Chuang City, Taipei,

    Taiwan, R.O.C.

Declare under sole responsibility that the

    DBD100 motherboard

Meets the intent of Directive 89/336/ECC for Electromagnetic Compatibility. Compliance was demonstrated to the following specifications as listed in the official Journal of the European Communities:

    EN 50081-1 Emissions:

EN 55022	**Radiated, Class B**	
EN 55022	**Conducted, Class B**	
EN 60555-2	**Power Harmonics**	

    EN 50082-1 Immunity:

IEC	**801-2**	**Electrostatic Discharge**
IEC	**801-3**	**RF Radiate**
IEC	**801-4**	**Fast Transient**

About This Manual

This manual will introduce to the user how this product is consisted. All useful information will be described in later chapters. Keep this manual for your future upgrade or system re-configuration.

Chapter 0 Overview

The features and specifications of this motherboard

Chapter 1 Quick Installation

The quick reference for experienced users

Chapter 2 Hardware Installation

The detailed information on jumper setting, connection, and hardware installation

Chapter 3 System BIOS Setup

The detail information of the system BIOS setup options

Chapter 4 Software and Tools

The detail information of the Software and Tools

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Warning

Most of the features of this product have passed strict verification and are subject to change at any time without notice. If any malfunction occurs due to the future technical changes made by the respective component manufacturers, Iwill assumes no responsibility or liability for it.

Content

Chapter 0

Overview

Thank you for purchasing Iwill DBD100 motherboard This operation manual will instruct you how to configure and install the system properly. It contains an overview about the engineering design and features of this product. Also, this manual provides useful information for later on upgrade or configuration change. Keep this for your future need.

YEAR 2000 issue

The IBM compatible PC utilizes a Motorola MC146818 compatible Real Time Clock (RTC) chip to maintain the date and time. Unfortunately, the "century" is not manipulated by the RTC. It uses 8-bit of information to report the year and can only hold the last two digits of a year in packed BCD format. So 1997 is reported solely as 97. Since the RTC also contains non-volatile memory, IBM specified a location in the memory to hold "century" information. By combining the century data with the year data, software can obtain a full 4-digit year. When the Year 2000 occurs, the RTC reports the year as '00' and the "century" in RTC memory will contain '19.' Combining the full 4-digit year yields 1900, not 2000. Any applications which compares dates, or uses relative dates to perform functions will see an incorrect dates.

Motherboards contain BIOS, which is one of the key ingredients to check for systems designed to handle the year 2000. **All motherboards currently shipped from Iwill contain BIOS capable of handling the year 2000 date correctly**. The BIOS contains a feature that checks the least two significant digits of the year stored in the RTC during each BIOS request (INT 1Ah) to read the date and, if less than `80', updates the century byte to `20'. This feature enables operating systems and applications using the BIOS date/time services to reliably manipulate the year as a four-digit value.

Be aware that the BIOS capability alone does not ensure that the system will handle the transition correctly. Other system components such as the operating system and application software also need to be able to handle the year 2000 date and recognize the date format from other pieces.

0.1 Features

0.1.1 Processor

Single or dual Pentium® III/II processor support

Supports 100 MHz and 66 MHz bus speed

Supports all published Pentium® III/II processor voltages

S.E.C. (Single Edge Contact) cartridge and S.E.C.C.2 cartridge Slot 1 connector

Jumper inside selects the processor speed from 233 MHz to 500 MHz or higher

0.1.2 Core Logic

Intel 82443BX PCI/A.G.P. controller

Integrated DRAM controller

Integrated PCI bus mastering controller

Integrated Accelerated Graphics Port (A.G.P.) bus controller

Intel 82371EB PCI/ISA/IDE Xcelerator (PIIX4E)

Multifunction PCI-to-ISA bridge (PCI Rev 2.1 compliant)

Integrated IDE controller with Ultra DMA/33 support

USB host interface with support for two USB ports

Enhanced DMA controller and standard Interrupt controller and Timer function

System Management Bus (SMB) with support for DIMM Serial PD

0.1.3 Main Memory

Four 168-pin DIMM (Dual In Line Memory Module) sockets

Supports up to 1 GB of 3.3 V Unbuffered SDRAM or Registered DIMM

Supports up to 1 GB of 3.3 V Extended Data Out (EDO) memory

64-bit data interface with ECC support (SDRAM only)

0.1.4 Multi I/O

Winbond W83977TF super I/O controller

Supports two floppy disk drives (include 3 Mode drive) and / or QIC-80 tape drive

Supports one multi-mode parallel port

Supports two high speed 16550 FIFO serial ports

Integrated keyboard controller

Integrated PS/2 mouse controller

Support Keyboard-Power-On function

0.1.5 Expansion slots

Two ISA slots

Four PCI slots

One A.G.P. slot

0.1.6 Form Factor

Compliance with ATX Version 2.01 specification

Supports ATX power supply connector

Supports the remote on/off switch

Physical dimensions: length: 265 mm / width: 305 mm

0.1.7 Manageability

NS LM78 System Hardware Monitor

Wake on LAN header for use with add-in network interface cards (NICs)

0.1.8 Other features

Award BIOS

Using Flash ROM to provide on-board-upgrade ability without changing components

Plug and Play compatible

Supports Advanced Power Management (APM)

Supports Creative SB-LINK to deliver Sound Blaster 16 compatibility

0.2 Environment Requirements

Temperature 0-55 degrees C (operating or storage)

5% to 95% non-condensing relative humidity

At least a 250 W power supply

The power supply must comply with the following recommendations found in the spec.:

The potential relation between 3.3 VDC and +5 VDC power rails

The current capability of the +5VSB line

0.3 Motherboard Components Placement

The following figure shows the location of the motherboard components.

IR
- 1
- VCC
- FIRRX
- IRRX
- GND
- IRTX
- NC
- CIRRX
- 7

JP1
- 1
- 1--2:Normal
- 2--3:Clear CMOS
- 3

WOL

GNT# 1 2 **GND**
REQ#
GND **SIRQ**
5 6

SB-LINK

LPT
S2

5VSB
- 1
- 5VSB
- GND
- LID-ON
- 3

KB ON
- 1
- 1--2: Disable KB-ON
- 2--3: Enable KB-ON
- 3

S1
USB
KB
MS
PWR

J21,J22 1

PCIx
JP5

P. SLOT1
AGP
FAN1
S. SLOT1
FAN2
DIMM0~3
FDC

1 1
1

PWR ON   FAN3   IDE1   IDE0

SENSE / +12V / GND
- 3
- SENSE
- +12V
- GND
- 1

Cathode-
Anode+
Cathode-
Anode+

GND
Reset

RST SLED ALED

J43
10 | 1
20 | 11

Buzz SPKR   KL PLED Anode+
NC   NC
GND   Cathode-
VCC   Keylock
                              GND

8

Location	ScreenPrinting	Description
J3	P.Slot1	Primary processor Slot 1
J4	S.Slot1	Secondary processor Slot 1
J5--J8	DIMM0--3	168-pin DIMM Sockets
J11	AGP	A.G.P. connector
J12--J15	PCI1--4	PCI expansion slots
J21--J22	J21,J22	ISA expansion slots
J28	IDE 0	Primary IDE connector
J29	IDE 1	Secondary IDE connector
J30	FDC	Floppy drive connector
J31	S1	Serial 1 connector
J32	S2	Serial 2 connector
J33	LPT	Parallel connector
J34	USB	Two USB connectors
J35	MS	PS/2 mouse connector
J35	KB	PS/2 keyboard connector
J37	PWR	Standard ATX power connector
J39	FAN1	Processor fan header
J40	FAN2	System fan header
J41	FAN3	System fan header
J42	PWR ON	Remote power on/off header
J43	J43	Front panel I/O header
	ALED (pins 5--6): IDE LED header	
	RST (pins 9--10): Reset Switch header	
	PLED (pins 11--13): Power LED header	
	KL (pins 14--15): Keylock switch header	
	SPKR (pins 17--20): Speaker header	
J44	SB-LINK	Creative SB-LINK header
J45	IR	IR (infrared) connector
J46	WOL	Wake On LAN header
J52	KB ON	Jumper for Keyboard-Power-On enable/disable
JP1	CLRTC	Jumper for clearing CMOS
JP5	JP5	Jumper for PCI devices compatibility

0.4 Back Panel Connectors

The following figure shows the location of the back panel I/O connectors, which include:

      PS/2-style keyboard and mouse connectors

      Two USB connectors

      Two serial port connectors

      One parallel port connector

Mouse

USB1

Parallel

Keyboard

USB0   Serial 1   Serial 2
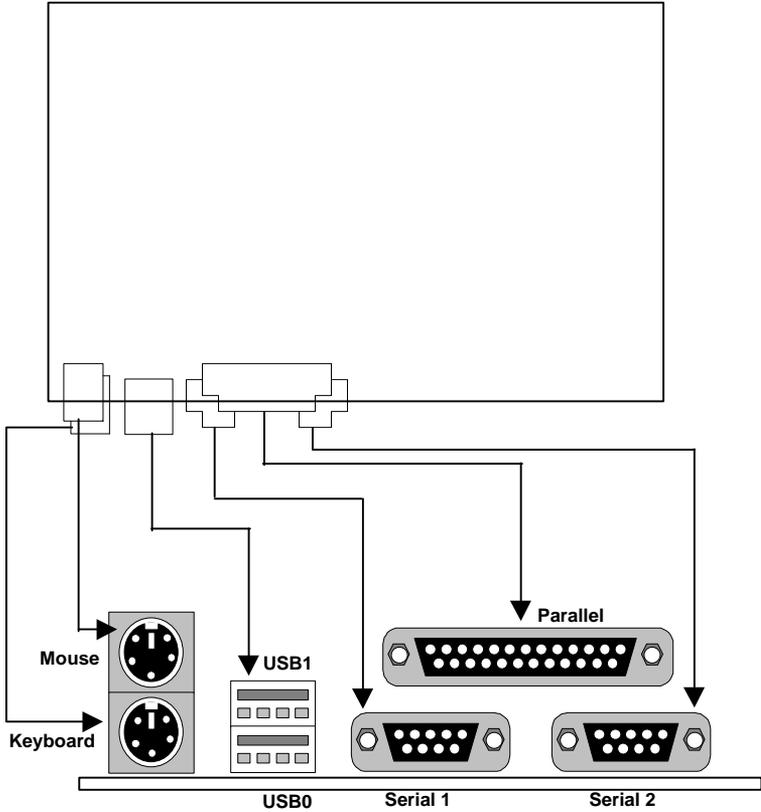
0.5 Form Factor

The motherboard is designed to fit into an ATX form-factor chassis. The I/O connector locations and the mounting hole locations are in compliance with the ATX specification.   Please see detail in the following figure.
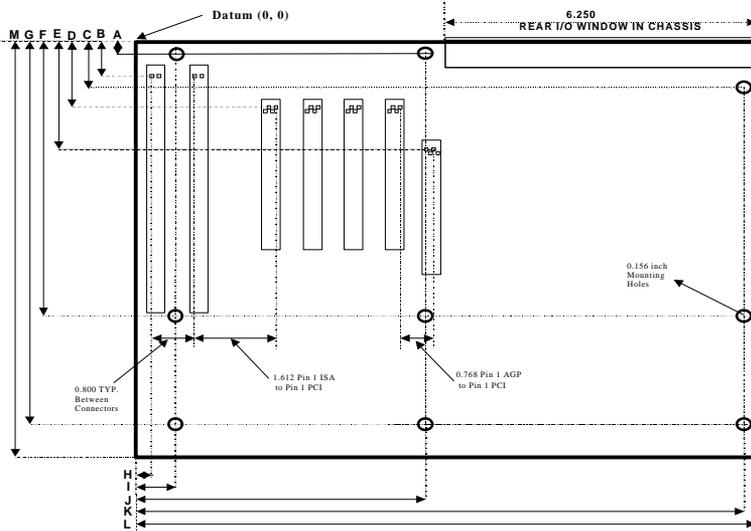
A: 0.400 inch	H: 0.150 inch
B: 1.000 inch	I: 0.650 inch
C: 1.300 inch	J: 5.550 inch
D: 1.625 inch	K: 11.750 inch
E: 2.630 inch	L: 12.000 inch
F: 6.500 inch	
G: 9.350 inch	
M: 10.390 inch	

Chapter 1

Quick Installation

Several easy installation steps will be described in this chapter to help the experienced users with quick installation. If you are a beginner, or need to know more about this product, please refer to **Chapter 2**.

Note: Please reviews **0.3 Motherboard Components Placement** graphic for reference.

Warning: Users must follow these guidelines to ensure the DBD100 is protected during installation.

    a.   Make sure your computer is unplugged whenever working with inside components.

    b.   Beware of Static electricity! Either wear anti-static wrist straps, or ensure that you touch a safely grounded object (such as a metal desk/table). Don't handle components near high static objects (i.e. carpets, wool/ acrylic sweaters, etc.).

    c.   Pick up components by their bodies. Try not to touch IC chips, connectors or leads. Don't handle components any more than necessary.

    d.   Keep all magnets away from both your hard and floppy disk drives, especially magnetic screwdrivers. Keep both floppy and hard disks apart if disassembled.

    e.   Keep water and liquids away from your computer and its components.

Step 1. Install processor

This process is for motherboards already equipped with the universal retention mechanism.

For Pentium II processors:

    a.   Lift each of the two retention mechanism brackets so that they stand fully upright. You should hear a soft "click" sound once each bracket is in the correct upright position.

    b.   With the CPU fan facing the DIMM sockets, insert the CPU horizontally into the retention mechanism, sliding both edges in simultaneously and as "evenly" as possible. Then, press down gently yet firmly so that the CPU is fully inserted correctly into the socket.

    c.   Locate the two CPU lock switches, which are on the top, one on each side of the CPU just above its respective bracket. With the CPU fan facing you, use **both** hands and grasp the CPU, placing each thumb on top of each lock switch. Then, at the same time "flip" each lock switch outward in opposite directions (both away from the CPU fan). You should hear two "click" sounds, one from each switch. This indicates the CPU is secured into place.

    d.   To release CPU, grasp the CPU (in the same manner in "c" above) and push both lock switches inward (toward the CPU fan). You should hear two "click" sounds, one from each switch. Lift CPU upward and out of the socket.

For Pentium III/Celeron processors:

    a. Follow steps "a" ~ "b" above.

    b. Locate the two sliding locks on each bracket.   Read the writing on each lock: "OPEN" and "LOCK".   To lock, use your index finger and thumb, grasp each lock, and gently slide upward.   This may be done simultaneously with two hands, or one at a time.   Once each lock has been fixed upward, the CPU is secured into place.

    c. To release CPU, use your index finger and thumb, grasp each lock, and gently push downward.   Lift the CPU upward and out of the socket.

Step 2. Install processor fan

This process is executed more quickly if your Pentium II/III/Celeron processor already has a fan attached to it.   If so, attach the processor fan power cable to the "FAN1" header.

Step 3. Setting CPU speed

The CPU speed is setup using **Iwill Smart Setting**.   This is found in the BIOS setup by pressing <Del> during the boot up process.   Please refer to Chapter3 for instructions on setting CPU speed.

Note: The CPU speed must be setup according to the CPU's specifications.

Step 4. Install the memory module

At least one piece of 168-pin 3.3V unbuffered SDRAM, Registered DIMM or EDO DIMM is needed to be located into the DIMM sockets.

Step 5. Connect the internal peripherals

The internal peripherals means devices that are in the computer chassis like the floppy disk drive, hard disk drive, CD-ROM drive ..etc. There are one 34-pin flat cable for floppy disk drive and one 40-pin flat cable for IDE devices included in your retail package. The protected key on cables' connector will guide you the correct direction when you insert the cables.

Step 6. Connect the Reset button

The 2-pin reset header is located on pins 9--10 (marked as RST) of the front panel connector. Connect the momentary type switch on the chassis to this header for reset function.

    Signal of RST header

    Pin 9   Ground

    Pin 10   RESET

Step 7. Connect the Speaker

The 4-pin speaker header is located on pins 17--20 (marked as SPKR) of the front panel connector. Connect the speaker to this header.

	Signal of SPKR header
Pin 17	VCC
Pin 18	Ground
Pin 19	NC
Pin 20	BUZZ

Step 8. Connect the power LED and keylock switch

The power LED and keylock header is located on pins 11--15 (marked as PLED and KL) of the front panel connector. It contains two functions: the power on LED header and the keylock header. Connect chassis's power LED and keylock switch (if supported) to these headers.

Signal of PLED header		Signal of KL header	
Pin 11	Anode (+)	Pin 14	KEYLOCK
Pin 12	NC	Pin 15	Ground
Pin 13	Cathode (-)		

Step 9. Connect the IDE LED

The 2-pin IDE LED header is located on pins 5--6 (marked as ALED) of the front panel connector. Connect the chassis's LED to this header.

	Signal of ALED header
Pin 5	Anode (+)
Pin 6	Cathode (-)

Step 10. Connect the Power ON button

All the ATX computer chassis provide a power on button. Connect the button to the header marked as "PWR ON".

Step 11. Install the Power Supply cord

This motherboard provides the 20-pin ATX power connector. This works conjunction with the *Power On button* to provide remote On/Off function.

Step 12. Install the Keyboard

Connect the keyboard to the PS/2 keyboard connector at the back panel.

Step 13. Install the Display Card

Insert the display card into the ISA, PCI or AGP expansion slot.

Step 14. Connect the External Peripherals

The external device means devices outside the computer chassis like the serial mouse, printer, PS/2 mouse, external modem ..etc.

Step 15. Power on the system

Once the system is powered on, make sure you enter the BIOS setup program and load the manufacturer's default settings. After the system reboot, you are ready to install your operating system and we wish you to enjoy it.

Chapter 2

Hardware Installation

2.1 Preparation and Inspection

This motherboard, like all other electronic equipment, is static sensitive. Please take the proper precautions when handling it. If possible, ground yourself by touching a metal table or your computer frame. Keep the board in its conductive wrapping until it is configured and ready to be installed in your system.

2.2 Unpack the DBD100

You should find the following components when opening the box:

- One motherboard
- Two sets of Pentium® II Retention kit
- One User's manual
- One 34-pin floppy cable
- One 40-pin IDE cable
- One Iwill Power Installer CD diskette
- One LANDesk Client Management CD

For installation, you may need some or all of the following tools:

Medium size flat blade screwdriver

Medium sized Phillips head screwdriver

A 3/16 inch nut driver or wrench

Warning: Users must follow these guidelines to ensure the DBD100 is protected during installation.

    a.   Make sure your computer is unplugged whenever working with inside components.

    b.   Beware of Static electricity! Either wear anti-static wrist straps, or ensure that you touch a safely grounded object (such as a metal desk/table). Don't handle components near high static objects (i.e. carpets, wool/ acrylic sweaters, etc.).

    c.   Pick up components by their bodies. Try not to touch IC chips, connectors or leads. Don't handle components any more than necessary.

    d.   Keep all magnets away from both your hard and floppy disk drives, especially magnetic screwdrivers. Keep both floppy and hard disks apart if disassembled.

    e.   Keep water and liquids away from your computer and its components.

2.3 Installation procedures

2.3.1 Processors (P.Slot 1, S.Slot 1, FAN1 and FAN2)

The DBD100 motherboard supports single or dual Pentium® III/II/Celeron processors. The processor's VID pins automatically program the voltage regulator on the motherboard to the required voltage. The motherboard currently supports processors that run internally from 233 MHz to 500 MHz or higher.

If you are installing two processors, the following values must be identical for both processors:

> L2 cache size and type (ECC or non-ECC)
>
> Operating voltages
>
> Bus and core frequencies

This process is for motherboards already equipped with the universal retention mechanism.

For Pentium II processors:

  a. Lift each of the two retention mechanism brackets so that they stand fully upright. You should hear a soft "click" sound once each bracket is in the correct upright position.

  b. With the CPU fan facing the DIMM sockets, insert the CPU horizontally into the retention mechanism, sliding both edges in simultaneously and as "evenly" as possible. Then, press down gently yet firmly so that the CPU is fully inserted correctly into the socket.

  c. Locate the two CPU lock switches, which are on the top, one on each side of the CPU just above its respective bracket. With the CPU fan facing you, use **both** hands and grasp the CPU, placing each thumb on top of each lock switch. Then, at the same time "flip" each lock switch outward in opposite directions (both away from the CPU fan). You should hear two "click" sounds, one from each switch. This indicates the CPU is secured into place.

  d. To release CPU, grasp the CPU (in the same manner in "c" above) and push both lock switches inward (toward the CPU fan). You should hear two "click" sounds, one from each switch. Lift CPU upward and out of the socket.

For Pentium III/Celeron processors:

  a. Follow steps "a" ~ "b" above.

  b. Locate the two sliding locks on each bracket. Read the writing on each lock: "OPEN" and "LOCK". To lock, use your index finger and thumb, grasp each lock, and gently slide upward. This may be done simultaneously with two hands, or one at a time. Once each lock has been fixed upward, the CPU is secured into place.

  c. To release CPU, use your index finger and thumb, grasp each lock, and gently push downward. Lift the CPU upward and out of the socket.

Locate the FAN1 header (processor fan header) on the motherboard:

Pin 1   Ground
Pin 2   +12 V
Pin 3   SENSE

Note 1.   The processor fan must always be attached to the processor to prevent overheating.
Note 2.   The second-level cache is located on the base of the SEC cartridge.   The cache size and cacheable memory size vary, depending on the processor used.

2.3.2 Setting CPU speed

The CPU speed is setup using **Iwill Smart Setting**.   This is found in the BIOS setup by pressing <Del> during the boot up process.   Please refer to **Chapter 4** for instructions on setting CPU speed. When adjusting frequency, select the frequency that matches your motherboard's bus speed in order to maximize your motherboard's performance. Enclosed is a list of possible CPU settings.

Note: The CPU speed must be setup according to the CPU's specifications.

CPU Model	BIOS Setting
Intel Pentium II 233MHz	Manual, x3.5, 66MHz
Intel Pentium II 266MHz	Manual, x4, 66MHz
Intel Pentium II 300MHz	300Mhz(66x4.5)
Intel Pentium II 333MHz	333Mhz(66x5)
Intel Pentium II 350MHz	350Mhz(100x3.5)
Intel Pentium II 400MHz	400Mhz(100x4)
Intel Pentium II 450MHz	450Mhz(100x4.5)
Intel Pentium III 450MHz	450Mhz(100x4.5)
Intel Pentium III 500MHz	500Mhz(100x5)
Intel Pentium III 550MHz	550Mhz(100x5.5)
Intel Celeron 266MHz	Manual, x4, 66MHz
Intel Celeron 300	300Mhz(66x4.5)
Intel Celeron 333MHz	333Mhz(66x5)
Intel Celeron 366MHz	366Mhz(66x5.5)
Intel Celeron 400MHz	400Mhz(66x6)
Intel Celeron 433MHz	433Mhz(66x6.5)
Intel Celeron 466MHz	466Mhz(66x7)

2.3.3 Main memory (DIMM0--3)

The motherboard has four dual inline memory module (DIMM) sockets, which supports memory size from 8 MB to 1 GB with SDRAM and EDO DRAM. The Synchronous DRAM (SDRAM) improves memory performance through memory access that is synchronous with the memory clock. The Error Checking and Correcting (ECC) memory improves system security by detecting and correcting error bit when accessing memory.

The motherboard supports the following memory features:

JEDEC MO-161 compliant 168-pin DIMMs with gold-plated contacts

3.3 V memory module only

ECC logic detects multiple-bit errors and corrects single-bit errors (SDRAM)

Unbuffered SDRAM, Registered DIMM or 60-ns 3.3 V EDO DIMMs

16 / 64 Mbit DRAM technology

Symmetrical and asymmetrical DRAM addressing

Single-sided or double-sided DIMMs

3.3 V EDO and SDRAM DIMMs can NOT be installed on the same motherboard

Registered and Unbuffered DIMMs can NOT be installed on the same motherboard

Memory can be installed in DIMM sockets without any order restriction. The memory size, speed can vary between sockets. The BIOS automatically detects memory type, size and speed.

Note 1. In order to reduce the loading, the total memory chip count installed on the system should not exceed 72 unless the Registered DIMMs are used.

Note 2. The Serial Presence Detect (SPD) information is highly recommended on all 100 MHz DIMMs for this motherboard. This function is implemented using an EEPROM component on the memory module. The nonvolatile storage device contains data programmed by the DIMM manufacturer that identifies the module type and various SDRAM organization and timing parameters. A warning message will be prompted if any DIMMs installed on this motherboard has no SPD EEPROM. In this case, the system might fail to be stable without correct timing parameters.

2.3.4 Accelerated Graphics Port (AGP)

The Accelerated Graphics Port (A.G.P.) is a high-performance interconnect, especially for graphic-intensive 3D applications. A.G.P. is independent of the PCI bus and is intended for exclusive use with graphical display devices. The A.G.P. supports AC timing for 133 MHz data transfer rates, allowing data throughput of 533 MB/sec.

The most important feature of A.G.P. is DIME (Direct Memory Execute). DIME needs to allocate some system memory via the O.S. to access large textures outside the local graphic memory of the card. In order to take advantage of DIME feature, some software components should be installed or upgraded in the system.

For Windows NT 4.0   :Upgrade to "Windows NT 4.0 Service Pack 3".

For Windows 95   :Upgrade to Windows 95 OSR 2.1.

Install DirectX 5 from Microsoft.

2.3.5 Primary/Secondary IDE connectors (IDE0 and IDE1)

The motherboard has two bus-mastering IDE interfaces, which support PIO Mode 3 / 4 and Ultra DMA 33 mode transfer. These interfaces support IDE disks, ATAPI devices (ex: CD-ROM), ZIP and LS-120 devices. If two devices are connected to one channel, one should be set to "Master" and the other one to "Slave" (Refer to device operation guide).

Simply connect the 40-pin IDE cable between the IDE/ATAPI devices and these connectors on the motherboard.   For a performance reason, we suggest that connect the disk drive to the primary channel and other devices like CD-ROM to the secondary channel.

2.3.6 Floppy drive connector (FDC)

The motherboard has one floppy interface, which supports 360K, 720K, 1.2M, 1.44M, 2.88M, 3 Mode floppy drives and QIC-80 Floppy tape drive. It supports up to two devices in any capacity with the same connector. Simply connect 34-pin floppy cable between this connector and floppy drives.

2.3.7 Serial port connector (S1 and S2)

The two 9-pin D-Sub serial port connectors on the back panel are compatible with 16550 UART. These ports are used for serial mouse, serial printer, fax modem ..etc. Simply connect the serial devices to these connectors.

2.3.8 Parallel port connector (LPT)

The connector for the multi-mode parallel port is a 25-pin D-Sub connector located on the back panel. It is used for the printer or other parallel devices. Simply connect the parallel cable between devices and the parallel port connector.

2.3.9 Universal Serial Bus (USB)

The USB is suitable for mid-to-low speed devices like mouse, keyboard, joystick...etc. In the past, all these devices were using different connectors, and it is difficult for end users to install the system.   With USB technology, users only need to plug all their USB peripherals on the connector in chain and ready to go.

The motherboard supports following USB features:

Self-identifying, hot pluggable peripherals

Support of isochronous and asynchronous transfer type

Supports for a maximum of 127 physical devices

Supports data transfer rate up to 12 Mbit/sec

The motherboard has two USB ports; any USB peripheral can be connected to either port. For more than two USB devices, an external hub can be connected to either port.

2.3.10 PS/2 keyboard and mouse connectors (KB and MS)

The keyboard connector is a 6-pin mini-DIN connector located on the back panel (the bottom one). Simply connect the standard PS/2 keyboard into this connector. The PS/2 mouse connector is a 6-pin mini-DIN connector on the back panel. Simply connect the PS/2 mouse into this connector.

Note that power to the computer should be turned off before a keyboard and/or mouse is connected or disconnected.

2.3.11 ATX power connector (PWR)

This motherboard supports an ATX power connector. Simply connect the power cord of power supply to this connector.

Signal of ATX power supply connector

Pin 1 ---------- +3.3 V	Pin 11 ---------- +3.3 V
Pin 2 ---------- +3.3 V	Pin 12 ---------- +12 V
Pin 3 ---------- Ground	Pin 13 ---------- Ground
Pin 4 ---------- +5 V	Pin 14 ---------- PWR_ON#
Pin 5 ---------- Ground	Pin 15 ---------- Ground
Pin 6 ---------- +5 V	Pin 16 ---------- Ground
Pin 7 ---------- Ground	Pin 17 ---------- Ground
Pin 8 ---------- PWRGOOD	Pin 18 ---------- -5 V
Pin 9 ---------- +5VSB	Pin 19 ---------- +5 V
Pin 10 -------- +12 V	Pin 20 ---------- +5 V

2.3.12 System fan header (FAN3)

The system airflow is critical for system's reliability. Airflow is determined by the size and number of fans and vents along with the placement in relation to the components and the airflow channels within the system.

The motherboard supports one extra system fan header: FAN3. Connect the system cooler's power cable to this header to move the air through the chassis.

Signal of FAN3 header

Pin 1 ---------- Ground

Pin 2 ---------- +12 V

Pin 3 ---------- SENSE

2.3.13 Power On header (PWR ON)

This header can be connected to chassis's power switch. Because of debounce circuitry on the motherboard, the switch must be pressed for at least 50 ms to signal the power supply to switch on or off. At least two seconds must pass before the power supply will recognize another on/off signal.

Note: Hold the power on switch in for four seconds will force the system switch off.

2.3.14 Front panel connector (J43)

This connector contains several headers, which are connected to button or switch located on front panel of the chassis.

2.3.14.1 IDE LED header (ALED)

The 2-pin IDE LED header is located on pins 5--6 (marked as ALED) of the front panel connector. It can be connected to an LED on the chassis, which will light up when IDE devices is working.

Signal of ALED header

Pin 5 ---------- Anode (+)

Pin 6 ---------- Cathode (-)

2.3.14.2 RESET header (RST)

The 2-pin reset header is located on pins 9--10 (marked as RST) of the front panel connector. It can be connected to a momentary type switch that is normally open. When the switch is close, the system will reset.

Signal of RST header

Pin 9   -------- Ground

Pin 10 -------- RESET

2.3.14.3 Power LED and KEYLOCK header (PLED and KL)

The power LED and keylock header is located on pins 11--15 (marked as PLED and KL) of the front panel. It contains two functions: the power on LED header and the keylock header. The power on LED can be connected to a LED. When the computer is powered on, the LED will be lighted up. The keylock header can be connected to a switch on the chassis. When the switch is close, keyboard function will be disabled temporarily until the switch is open.

Signal of PLED header   Signal of KL header

Pin 11 ---------- Anode (+)   Pin 14 ---------- KEYLOCK

Pin 12 ---------- NC   Pin 15 ---------- Ground

Pin 13 ---------- Cathode (-)

2.3.14.4 SPEAKER header (SPKR)

The 4-pin speaker header is located on pins 17--20 (marked as SPKR) of the front panel connector. The speaker provides error beep code information during the POST in the event that the computer can not use the video interface.

Signal of SPKR header

Pin 17   VCC

Pin 18   Ground

Pin 19   NC

Pin 20   BUZZ

2.3.15 SB-LINK header (SB-LINK)

Sound Blaster 16 was almost the standard of the ISA Bus sound cards, a lot of games were programmed for Sound Blaster especially under DOS environment.   If the users are still interested in playing these game titles, they might have compatibility problems with the new up graded PCI Bus sound card.

This header adopts Intel's PC/PCI technology to deliver Sound Blaster 16 compatibility to PCI Bus sound card, enabling users to play real-mode DOS games. Connect the cable provided by PCI sound card to this connector.

Signal of SB-LINK header			
Pin 1	GNT#	Pin 2	Ground
Pin 3	Key	Pin 4	REQ#
Pin 5	Ground	Pin 6	SIRQ

2.3.16 Infrared connector (IR)

Serial Port 2 can be configured to support an IrDA module connected to this connector. After the IrDA interface is configured, data can be transferred between devices by using application software.

Signal of IR connector			
Pin 1	VCC	Pin 5	IRTX
Pin 2	FIRRX	Pin 6	NC
Pin 3	IRRX	Pin 7	CIRRX
Pin 4	Ground		

2.3.17 WOL header (WOL)

This header is used to implement the Wake on LAN feature. Connect this header to a network interface card (NIC) that supports the Wake on LAN technology. The NIC monitors network traffic. When it detects a Magic Packet, it asserts a signal through the WOL header to wake up the computer. This signal can wake up the computer only when the power cord is still plugged into the socket and the computer is turned off.

Signal of WOL header	
Pin 1	5VSB
Pin 2	Ground
Pin 3	LID_ON

2.3.18 Clear CMOS jumper block (CLRTC)

To reset the RTC (Real Time Clock) CMOS data, you need to change the jumper cap of JP1 from *1-2 close* to *2-3 close*, then set to *1-2 close* again. After that, you should get into BIOS setup program and choose LOAD SETUP DEFAULTS, then you will now get original manufacturer default setting in your CMOS.

2.3.19 Keyboard-Power-On Enable/Disable jumper block (KB ON)

The motherboard supports a Keyboard-Power-On feature. The system can be powered on by pressing a set of user-defined-key simultaneously. The default setting, 2-3, makes this feature enabled. If you want to disable the Keyboard-Power-On feature, put the jumper cap to pins 1-2.

2.3.20 System Hardware Monitor

The system hardware monitor supports following features:

      Integrated temperature sensor to monitor system temperature

      Voltage sense monitoring to detect voltage level (+12 V, -12 V, +5 V, -5 V, +3.3 V)

      Fan speed sensors for up to three fans

With a proprietary application, the system hardware monitor logic will check the voltage, temperature and fan speed all the time. If any failure occurs, the application will prompt warning message in a real time.

Chapter 3

System BIOS Setup

3.1 Introduction

The DBD100 motherboard uses AWARD BIOS, which is stored in flash memory and can be upgraded using the appropriate software program.   The setup program is for viewing and changing the BIOS setting for a computer.   These settings are stored in battery-backed RAM so that it retains all the settings after the power has been turned off.

3.1.1 Upgrade BIOS

The BIOS can be upgraded from a diskette with the Award Flash utility -- AWDFLASH.EXE. The BIOS image file, and update utility are available from Iwill's WEB site: www.iwill.com.tw.

3.1.2 Recovering BIOS Data

Some types of conditions can destroy the BIOS. Nevertheless, the BIOS can be recovered from a diskette.   To recover BIOS, you must create a bootable diskette, then copy the recovery files onto it.   The recovery files are available from Iwill.

Note: No video is displayed during the recovery process.

3.1.3 Enter BIOS setup program

Power-on the system by either pressing the Power-On button, or by using any of the power-on features provided by the DBD100 motherboard.   Then, press the <Del> key after the Power-On Self Test (POST), and before the scanning of IDE devices.   Simply look for the message "Press DEL to enter SETUP" displayed at the bottom of the screen during the boot up process.   If the message disappears before you've had a chance to respond, you can restart the system by

Turning off the system power then turn it on again, or

Pressing the "RESET" button on the system case, or

Pressing   <Ctrl>, <Alt> and <Del> keys simultaneously.

3.1.4 Using BIOS setup program

The following table shows the function keys available for each menu screen.

↑Up	Move to the previous field
↓Down	Move to the next field
←Left	Move to the field on the left hand side
→Right	Move to the field on the right hand side
<Esc>	Quit from setup program without saving changes, or
	Exit from current menu page and return to main menu page
<PgUp> or <+>	Select the previous value for a field
<PgDn> or <->	Select the next value for a field
<F1>	Bring up a help screen for the current field
(Shift)<F2>	Change screen color. F2 to select color forward, (Shift) F2 to select color backward
<F10>	Save the current value and exit setup program

NOTE

Generally, the BIOS default settings have been carefully chosen by the system manufacturer to provide the absolute maximum performance and reliability.   It is very dangerous to change any setting without full understanding.   We strongly recommend that you

> **DO NOT update your BIOS if the system works perfectly.**
>
> **DO NOT change any setting unless you fully understand what it means.**

If the system does not work smoothly after changing the BIOS settings, follow the procedures described previously, enter the BIOS setup program, then load the original manufacturer default settings.

If the system is no longer able to boot after changing the settings, the only way to recover it is to clear the data stored in RTC CMOS.   To reset the RTC CMOS data, take the JP1 jumper cap off pins 1-2, place onto pins 2-3, and then place back onto pins 1-2 again.   This will return the RTC to the default setting.   Then, get into the BIOS setup program (see 4.1.3 above), choose LOAD SETUP DEFAULTS, and select the original manufacturer default settings in your CMOS.

3.2 Main Menu

The main menu allows you to select from several setup pages.   Use the arrow keys to select among these pages and press <Enter> key to enter the sub-menu.

Note: A brief description of each highlighted selection appears at the bottom of the screen.

The main menu includes the following setup pages.

> **STANDARD CMOS SETUP**
>
> > Allocates resources for hardware components
>
> **BIOS FEATURES SETUP**
>
> > Specifies advanced features available through the BIOS

CHIPSET FEATURES SETUP

Specifies advanced features available through the chipset

POWER MANAGEMENT SETUP

Specifies power management features

PNP /PCI CONFIGURATION

Specifies Plug and Play and PCI features

INTEGRATED PERIPHERALS

Specifies on-board controller features

LOAD SETUP DEFAULTS

Loads the manufacturer default setting into CMOS

IWILL SMART SETTING

Specifies special features

SUPERVISOR / USER PASSWORD

Specifies passwords

IDE HDD AUTO DETECTION

Auto-detects the parameters of IDE disks

SAVE & EXIT SETUP

Saves current value to CMOS and exit setup

EXIT WITHOUT SAVING

Abandons all changes and exit setup

3.3 STANDARD CMOS SETUP

This setup page is used for allocating resources for hardware components.

3.3.1 Date

This field specifies the current date. The date format is <day>, <month>, <date>, and <year>.

3.3.2 Time

This field specifies the current time. The time format is <hour>, <minute>, and <second>.   The time is calculated based on the 24-hour military-time clock.

3.3.3 Primary Master / Primary Slave / Secondary Master / Secondary

Slave

This field specifies the geometric parameters and translation mode of IDE disk drives.

3.3.3.1 TYPE

This field specifies the drive type that corresponds to the drive installed in the system. If set to *User*, the number of *Cylinders*, *Heads*, and *Sectors* can be modified.

Options	Description
1 – 45	Specifies pre-defined disk drive type
User	Specifies disk drive type by user
Auto	BIOS automatically fills in the values for the cylinders, heads and sectors fields
None	No disk drive attached

3.3.3.2 Cylinders

If device *TYPE* is set to *Auto*, this field reports the number of cylinders for your hard disk and can not be modified. If the *TYPE* is set to *User*, you must type the correct number of cylinders for your hard disk.

3.3.3.3 Heads

If device *TYPE* is set to *Auto*, this field reports the number of heads for your hard disk and can not be modified. If the *TYPE* is set to *User*, you must type the correct number of heads for your hard disk.

3.3.3.4 Sectors

If device *TYPE* is set to *Auto*, this field reports the number of sectors for your hard disk and can not be modified. If the *TYPE* is set to *User*, you must type the correct number of sectors for your hard disk.

3.3.3.5 MODE

This field specifies the IDE translation mode.

Options	Description
NORMAL	Specifies traditional CHS addressing mode
LARGE	Specifies extended CHS translation mode
LBA	Specifies LBA translation mode
AUTO	BIOS specifies translation method automatically

3.3.4 Drive A / Drive B

This field specifies the traditional type of the floppy drives.

Options	Description
None	No floppy drive is connected
360K, 5.25 in.	A 360K floppy drive is connected
1.2M, 5.25 in.	A 1.2M floppy drive is connected
720K, 3.5 in.	A 720K floppy drive is connected
1.44M, 3.5 in.	A 1.44M floppy drive is connected
2.88M, 3.5 in.	A 2.88M floppy drive is connected

3.3.5 Floppy 3 Mode Support

3 Mode floppy drive is a kind of 3.5 inches drive, which is used at NEC PC98 computer. It supports 1.2M and 1.44M format with the same drive. This field specifies which drive 3 Mode is supported. When a floppy drive is specified to support 3 Mode, the respective drive setting in "Drive A / Drive B" field will be invalid.

Options	Description
Disabled	No 3 Mode drive is connected
Drive A	A 3 Mode drive is connected as drive A
Drive B	A 3 Mode drive is connected as drive B
Both	Both drive A and drive B are 3 Mode drives

3.3.6 Video

This field specifies the type of the graphics adapters used for the primary system monitor.

Options	Description
EGA/VGA	Specifies EGA or VGA adapter
CGA 40	Specifies CGA adapter with 40 column mode
CGA 80	Specifies CGA adapter with 80 column
MONO	Specifies Monochrome adapter

3.3.7 Halt On

This field specifies the failure event, which should halt the system if occurred.

Options	Description
All Errors	When the BIOS detects a non-fatal error, the system will stop and you will be prompted
No Errors	The system will not stop for any error that may be detected
All, But Keyboard	The system will stop for any errors except keyboard error
All, But Diskette	The system will stop for any errors except diskette error
All, But Disk/Key	The system will stop for any errors except diskette and keyboard errors

3.3.8 Base Memory

The POST will determine the amount of base (conventional) memory installed in the system. The value of the base memory is typically 640K. This field has no options.

3.3.9 Extended Memory

The BIOS determines how much extended memory is present during the POST. This is the amount of memory located above 1MB in the processor's memory address map. This field has no options.

3.3.10 Other Memory

This refers to the memory located in the 640K to 1024K address space. This is memory that can be used for different applications. DOS uses this area to load device drivers in an effort to keep as much base memory free for application programs. The BIOS is the most frequent user of this RAM area since this is where it shadows RAM. This field has no options.

3.4 BIOS FEATURES SETUP

This setup page specifies advanced features available through the BIOS.

3.4.1 Virus Warning

When this function is enabled, the BIOS will monitor the boot sector and partition table of the hard disk drive for any attempt at modification. If an attempt is made, the BIOS will halt the system and then prompts an error message. Afterwards, if necessary, you can run an anti-virus program to locate and remove the problem before any damage is done.

Note that many disk diagnostic programs will attempt to access the boot sector table, which can cause the above warning message. If you will be running such a program, we recommend that you first disable Virus Warning beforehand.

      Options   **Enabled / Disabled (*)**

3.4.2 CPU Internal Cache

This field configures the CPU internal cache (L1 cache).

      Options   **Enabled (*) / Disabled**

3.4.3 External Cache

This field configures the system external cache (L2 cache).

      Options   **Enabled (*) / Disabled**

3.4.4 CPU L2 Cache ECC Checking

This field specifies whether the CPU L2 cache supports ECC or not.

      Options   **Enabled (*) / Disabled**

3.4.5 Quick Power On Self Test

When enabled, BIOS will shorten or skip some items during POST.

Options   **Enabled (*) / Disabled**

3.4.6 Boot From LAN First

This field configures the boot from the network adapter. If this feature is enabled, no matter what Boot Sequence you choose (see below section 4.4.7), the system will try to boot from the network adapter first. The adapter must have a BootROM on it.

Options   **Enabled**

                     Disabled (*)

3.4.7 Boot Sequence

This field configures the boot sequence of boot devices.

Options	Description
A,C,SCSI (*)	System will first try to boot from floppy drive then master IDE disk drive on primary channel and then SCSI disk drive
C,A,SCSI	Master IDE disk drive on primary channel, floppy drive, SCSI disk driver
C,CDROM,A	Master IDE disk drive on primary channel, ATAPI CDROM drive, floppy drive
CDROM,C,A	ATAPI CDROM drive, master IDE disk drive on primary channel, floppy drive
D,A,SCSI	Slave IDE disk drive on primary channel, floppy drive, SCSI disk drive
E,A,SCSI	Master IDE disk drive on secondary channel, floppy drive, SCSI disk drive
F,A,SCSI	Slave IDE disk drive on secondary channel, floppy drive, SCSI disk drive
SCSI,A,C	SCSI disk drive, floppy drive, ATAPI CD-ROM drive
SCSI,C,A	SCSI disk drive, master IDE disk drive on primary channel, floppy drive
C only	Master IDE disk drive on primary channel only
LS/ZIP,C	LS-120 or ZIP drive, master IDE disk drive on primary channel

3.4.8 Swap Floppy Drive

When enabled, the logical drive letter of floppy drive A and B will be exchanged without changing the physical cable.

Options   **Enabled / Disabled (*)**

3.4.9 Boot Up Floppy Seek

When enabled, BIOS will check floppy drive status during POST. If an error occurred, system will be paused and an error message will be prompted.

      Options   **Enabled (*) / Disabled**

3.4.10 Floppy Disk Access Control

This field configures floppy disks access mode.

Options	Description
R/W (*)	Floppy disks can be accessed read and write both
Read Only	Floppy disks can be accessed read only

3.4.11 Boot Up NumLock Status

This field configures the numeric keypad after system booting up.

Options	Description
On (*)	Keypad works as number keys
Off	Keypad works as arrow keys

3.4.12 Gate A20 Option

This field configures how the gate A20 is handled.   The gate A20 is a device used to address memory above 1 Mbytes.   Initially, the gate A20 was handled via a pin on the keyboard.   Today, while keyboards still provide this support, it is more common, and much faster, for the system chipset to provide support for gate A20.

Options	Description
Fast (*)	GateA20 signal supported by core logic
Normal	GateA20 signal supported by keyboard controller

3.4.13 Typematic Rate Setting

This field configures how the keyboard is handled. When enabled, the *Typematic Rate (Chars/Sec)* and *Typematic Delay (Msec)* fields will be available.

      Options   **Enabled / Disabled (*)**

3.4.14 Typematic Rate (Chars/Sec)

This field specifies how many characters will be prompted in one second when a key is pressed continuously.

      Options   **6 (*) / 8 / 10 / 12 / 15 / 20 / 24 / 30**

3.4.15 Typematic Delay (Msec)

This field specifies the delay between when a key was first pressed and when the acceleration begins.

Options   **250 msec (*) / 500 msec / 750 msec / 1000 msec**

3.4.16 Security Option

This field configures how the system security is handled. It works conjunction with *SETTING SUPERVISOR / USER PASSWORD* page to control the security level of the system.

Options	Description
Setup (*)	System need password to enter BIOS setup program
System	System need password to boot

3.4.17 PS/2 mouse function control

This field configures PS/2 mouse function .

Options   **Enabled (*)**
        Disabled

3.4.18 PCI / VGA Palette Snoop

This field controls the ability of a primary PCI graphics controller to share a common palette with an ISA/VESA video or MPEG card

Options	Description
Enabled	PCI VGA co-works with ISA MPEG card
Disabled (*)	All cases except above

3.4.19 MPS Version Control For OS

This field specifies which version of MPS this motherboard will use.

Options   **1.1 (*) / 1.4**

3.4.20 Video BIOS Shadow

When enabled, the video BIOS will be copied to system memory and increase the video speed.

Options   **Enabled (*) / Disabled**

3.4.21 C8000-CBFFF / CC000-CFFFF / D0000-D3FFF Shadow
D4000-D7FFF / D8000-DBFFF / DC000-DFFFF Shadow

When enabled, the extended ROM data located at the respective address range will be copied to system memory.

Options   **Enabled / Disabled (*)**

3.4.22 Assign IRQ for VGA

When enabled, BIOS will assign your Video Graphics Array (VGA) an IRQ (Interrupt Request) level.

> Options   **Disabled**
>
>   **Enabled (*)**

3.4.23 OS Select for DRAM >64MB

When enabled, this field allows you to access the memory that is over 64MB under OS/2.

> Options   **OS/2**
>
>   **Non-OS/2 (*)**

3.4.24 Report No FDD For WIN 95

For a floppy diskless system that runs Windows 95, this field should be set to **Yes**.

> Options   **Yes**
>
>   **No (*)**

3.5 CHIPSET FEATURES SETUP

This setup page is used to specify advanced features available through the chipset. The default settings have been chosen carefully for most operating conditions. **DO NOT change the value of any field in this setup page without full understanding.**

3.5.1 Auto Configuration

When enabled, BIOS will divide all the EDO memory into two categories: 50ns DRAM and 60ns DRAM. A set of pre-defined values about DRAM timing will be used for each category. Then the user can assign the correct timing easily. When disabled, user can specify the EDO DRAM timing value.

Note: Some engineering knowledge is needed prior to handling Auto Configuration.

> Options   **Enabled (*)**
>
>   **Disabled**

3.5.2 EDO DRAM Speed Selection

This field selects pre-defined EDO DRAM timing for different speed categories. It is available only when the Auto Configuration field is enabled.

Options	Description
50ns	Pre-defined timing for 50ns EDO DRAM
60ns (*)	Pre-defined timing for 60ns EDO DRAM

3.5.3 EDO CASx# MA Wait State

This field specifies the Wait State of EDO DRAM address line.   This field is available only when the Auto Configuration field is disabled.   **Note:** This field is for experienced users only.

Options	Description
2 (*)	2 system clocks wait state for EDO address line
1	1 system clock wait state for EDO address line

3.5.4 EDO RASx# Wait State

This field specifies the Wait State of EDO DRAM row address line.   This field is available only when the Auto Configuration field is disabled.   **Note:** This field is for experienced users only.

Options	Description
2 (*)	2 system clocks wait state for EDO row address line
1	1 system clock wait state for EDO row address line

3.5.5 SDRAM CAS Latency Time

This field specifies the SDRAM CAS latency timing parameter (the time from CAS# assertion to data valid). **Note:**   This field is for experienced users only.

Options	Description
2	2 system clocks
3 (*)	3 system clocks

3.5.6 DRAM Data Integrity Mode

When enabled, the BIOS will use ECC (Error Checking and Correcting) protocol to increase integrity of system data.   When ECC is selected, all memory modules used by the system must support ECC.

Options	**ECC**
	Non-ECC (*)

3.5.7 System BIOS Cacheable

When enabled, accesses to the system BIOS will be cached.

Options	**Enabled (*)**
	Disabled

3.5.8 Video BIOS Cacheable

When enabled, access to the video BIOS will be cached.

Options	**Enabled**
	Disabled (*)

3.5.9 Video RAM Cacheable

When enabled, access to the video memory located at A0000H to BFFFFH will be cached.

    Options   **Enabled**

                   Disabled (*)

3.5.10 8 Bit I/O Recovery Time

This field specifies the number of clocks, which the system will delay after the completion of an 8 bit input/output request.

    Options   **1 (*) / 2 / 3 / 4 / 5 / 6 / 7 / NA / 8**

3.5.11 16 Bit I/O Recovery Time

This field specifies the number of clocks, which the system will delay after the completion of an 16 bit input/output request.

    Options   **1 (*) / 2 / 3 / NA / 4**

3.5.12 Memory Hole At 15M-16M

Some add-in cards need to re-map its resource to a block of main memory address range.   Any host cycles that match this memory hole are passed on to the add-in cards.

    Options   **Enabled**

                   Disabled (*)

3.5.13 Passive Release

When enabled, the south bridge PIIX4 will support the Passive Release mechanism when it is a PCI master.   The PCI revision 2.1 compliant requires this field to be enabled.   This field is for experienced users only.

    Options   **Enabled (*)**

                   Disabled

3.5.14 Delayed Transaction

When enabled, the south bridge PIIX4 will supports the Delayed Transaction mechanism when it is the target of a PCI transaction.   The PCI revision 2.1 compliant requires this field to be enabled. This field is for experienced users only.

    Options   **Enabled**

                   Disabled (*)

3.5.15 AGP Aperture Size (MB)

This field specifies the size of system memory that can be used for AGP graphics aperture.

    Options   **4 / 8 / 16 / 32 / 64 (*) / 128 / 256**

3.5.16 Set SDRAM Timing By SPD

When Enabled, the system BIOS will reference data of DIMM module EEPROM.

      Options   **Enabled (*)**

                    Disabled

3.6 POWER MANEGEMENT SETUP

This setup page specifies power management features.

There are several modes used to save computer's energy:

Doze Mode	The CPU clock will run at slower speed, and all other devices still operate at full speed
Standby Mode	The CPU clock will run at slower speed, and the fixed disk drive will be power off, and the video will be power off, and all other devices still operate at full speed
Suspend Mode	All devices except the CPU will be shut off

Each power saving mode has a respective timer. The value of the timer can be assigned or reloaded and it will count down to zero. When the timer equals to zero, the system will be forced into the related power saving mode. If any predefined signal or event is detected during the timer counting period, the timer will be reloaded automatically.

3.6.1 Power Management

Options	Description
Min Saving	When idled for one hour, the system will enter suspend mode
Max Saving	When idled for fifteen minutes, the system will enter suspend mode
User Define (*)	User can specify the timer value of each power saving mode

3.6.2 PM Control by APM

When enabled, an Advanced Power Management (APM) protocol will be activated to handle the power saving mode.

      Options   **Yes (*) / No**

3.6.3 Video off Method

This field specifies the method that video subsystem used for power saving.

Options	Description
V/H SYNC+Blank (*)	Turn off the vertical and horizontal synchronization ports and write blanks to the video buffer
Blank Screen	Writes blanks to the video buffer only
DPMS	Initial display power management signaling with DPMS

3.6.4 Video Off After

This field specifies the power saving mode, which will shut off the video.

Options   **Doze / Standby (*) / Suspend / NA**

3.6.5 Doze Mode

This field specifies the time the system enters Doze Mode.   It is available only when the Power Management field set to User Define.

Options   **1 Min / 2 Min / 4 Min / 8 Min / 12 Min / 20 Min**

                         30 Min / 40 Min / 1 Hour / Disable

3.6.6 Standby Mode

This field specifies the time the system enters Standby Mode.   It is available only when the Power Management field is set to User Define.

Options   **1 Min / 2 Min / 4 Min / 8 Min / 12 Min / 20 Min**

                         30 Min / 40 Min / 1 Hour / Disable (*)

3.6.7 Suspend Mode

This field specifies the time the system enters power saving mode.   It is available only when the Power Management field is set to User Define.

Options   **1 Min / 2 Min / 4 Min / 8 Min / 12 Min / 20 Min**

                         30 Min / 40 Min / 1 Hour / Disable (*)

3.6.8 HDD Power Down

This field specifies the time the system enters HDD power down.   It is available only when the Power Management field is set to User Define.

Options   **1 Min / 2 Min / 3 Min / 4 Min / 5 Min / 6 Min**

                         7 Min / 8 Min / 9 Min / 10 Min / 11 Min / 12 Min

                         13 Min / 14 Min / 15 Min / Disable (*)

3.6.9 HDD Power Down When suspend

This field specifies the time the system enters HDD power down during the suspend mode only.

Options   **Enabled (*)**

                         Disabled

3.6.10 Throttle Duty Cycle

This field specifies system performance when system is in suspend mode. More performance, less energy saved.

    Options   **Disabled**

                        12.5-25%

                        37.5-50%

                        50-62.5%(*)

3.6.11 PCI/VGA ACT-Monitor

When enabled, the system goes into power saving mode if there's no activity on the monitor screen. When disabled, the system goes into power saving mode, whether or not there is activity on the monitor screen.

    Options   **Enabled (*)**

                        Disabled

3.6.12 Soft-Off by PWR-BTTN

This field specified the function of power button.

Options	Description
Instant-Off	When power button pressed, turn off the system immediately.
Delay 4 Sec.	Turn off the system after the power button has been pressed for four seconds.

3.6.13 Wake Up On LAN

When enabled, the PC can power-on or "wake up" through LAN (Local Area Network).   Used only when your PC is connected to a network system.

    Options   **Enabled**

                        Disabled (*)

3.6.14 Power-On By Ring

When enabled, the PC can power-on through an external modem connected to your PC.   For example, you may send an e-mail message to your PC from another location, and this will power-on your PC.   When using this feature, you must have a modem, and your PC must be turned off.

Note: This feature alone doesn't allow you to power off your PC (see 4.6.10 Suspend Mode).

    Options   **Enabled**

                        Disabled (*)

3.6.15 Resume by Alarm

When enabled, you can set the date and time to automatically power-on your PC (similar to an alarm clock). The alarm from RTC (real-time clock) automatically turns on the system.

Options	Description
Disabled (*)	Disables RTC alarm function
Enabled	Sets the date and time to power-on the PC.
	When date is set to 0, the alarm becomes set for every day.

3.6.16 IRQ 8 Break Suspend

When disabled, this feature allows the system to go into suspend mode. When enabled, IRQ 8 (RTC) is broken, and the system cannot go into suspend mode.

Options	**Enabled**
	Disable (*)

3.6.17 Reload Global Timer Events

This field configures the events to reload the power saving mode timer.

IRQ [3-7,9-15], NMI

If enabled, timer will be reloaded when any of these interrupts occurs.

Primary IDE 0

If enabled, timer will be reloaded when master disk of primary IDE channel is active.

Primary IDE 1

If enabled, timer will be reloaded when slave disk of primary IDE channel is active.

Secondary IDE 0

If enabled, timer will be reloaded when master disk of secondary IDE channel is active.

Secondary IDE 1

If enabled, timer will be reloaded when slave disk of secondary IDE channel is active.

Floppy Disk

If enabled, timer will be reloaded when floppy disk is active.

Serial Port

If enabled, timer will be reloaded when serial port is active.

Parallel Port

If enabled, timer will be reloaded when parallel port is active.

3.7 PNP/ PCI CONFIGURATION

This setup page specifies Plug and Play and PCI features

3.7.1 PNP OS Installed

The field specifies whether a Plug and Play operating system is installed.

Options   **Yes / No (*)**

3.7.2 Resources Controlled By

The BIOS has the capability to assign the system resource to all of the boot and Plug and Play devices.   However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows® 95.

Options	Description
Auto	Resource controlled by BIOS automatically
Manual (*)	Resource controlled by the user

3.7.3 Reset Configuration Data

When enabled, the extended configuration data (ESCD) will be cleared during each boot time.

Options   **Enabled / Disabled (*)**

3.7.4 IRQ 3 / 4 / 5 / 7 / 9 / 10 / 11 / 12 / 14 / 15 assigned to

DMA 0 / 1 / 3 / 5 / 6 / 7 assigned to

If the *Resources Controlled By* field is set as *Manual*, these resource fields can be assigned by the user.

Options	Description
Legacy ISA	Resource will not be assigned to any PnP device
PCI/ISA PnP	Resource is available to PnP devices

3.7.5 Used MEM base addr

Some add-in cards ask for a special range of the system address space. This field specifies the base address of the memory address space.

Options   **N/A (*) / C800 / CC00 / D000 / D400 / D800 / DC00**

3.7.5.1 Used MEM Length

This field is available only when the *Used MEM base addr* field has been assigned to a base address. It specifies the memory size for the add-in card used.

Options   **8K (*) / 16K / 32K / 64K**

3.7.6 Assign IRQ For USB

When disabled, the BIOS will not assign IRQ channel to USB controller.

Options   **Enabled (*) / Disabled**

3.8 INTEGRATED PERIPHERALS

3.8.1 IDE HDD Block Mode

When enabled, the IDE controller will use the faster block mode to access devices.

Options   **Enabled (*) / Disabled**

3.8.2 IDE Primary Master / Slave PIO
IDE Secondary Master / Slave PIO

These fields configure the PIO (Programmable Input Output) transfer mode for IDE controller. The maximum transfer rate of each PIO mode are listing as follow:

	Maximum transfer rate
PIO Mode 0	3.3 MB/sec
PIO Mode 1	5.2 MB/sec
PIO Mode 2	8.3 MB/sec
PIO Mode 3	11 MB/sec
PIO Mode 4	16.6 MB/sec

Options	Description
Auto (*)	The BIOS negotiates with device automatically
Mode 0	Use Mode 0 timing to access device
Mode 1	Use Mode 1 timing to access device
Mode 2	Use Mode 2 timing to access device
Mode 3	Use Mode 3 timing to access device
Mode 4	Use Mode 4 timing to access device

3.8.3 IDE Primary Master / Slave UDMA
IDE Secondary Master / Slave UDMA

When selected *Auto*, the IDE controller will use Ultra DMA 33 Mode to access device if the device supports it. The maximum transfer rate of Ultra DMA 33 Mode is 33.3 MB/sec.

Options   **Auto (*) / Disabled**

3.8.4 On-Chip Primary / Secondary PCI IDE

These fields enable or disable the onboard IDE controller.

Options   **Enabled (*) / Disabled**

3.8.5 USB Keyboard Support

This field enables or disables the USB keyboard supported.

     Options   **Enabled / Disabled (*)**

3.8.6 KBC input clock

Set the frequency for the keyboard controller input clock.

Options   **8 MHz (*)/ 12 MHz / 16MHz**.

3.8.7 Onboard FDC Controller

This field enables or disables the onboard floppy controller.

     Options   **Enabled (*) / Disabled**

3.8.8 Onboard Serial Port 1 / 2

These fields configure the onboard serial ports. There are several port address and IRQ channels that can be selected.

Options	Description
3F8 / IRQ 4	Port address 3F8h, IRQ 4
2F8 / IRQ 3	Port address 2F8h, IRQ 3
3E8 / IRQ 4	Port address 3E8h, IRQ 4
2E8 / IRQ 3	Port address 2E8h, IRQ 3
Auto	BIOS assigns port address and IRQ channel automatically
Disabled	Disables serial port

3.8.9 Onboard Parallel Port

This field configures the onboard parallel port. There are several port addresses and IRQ channel that can be selected.

Options	Description
378 / IRQ 7	Port address 378h, IRQ 7
278 / IRQ 5	Port address 278h, IRQ 5
3BC / IRQ 7	Port address 3BCh, IRQ 7
Disabled	Disable parallel port

3.8.10 Parallel Port Mode

This field configures the operating mode of onboard parallel port.

     Options   **SPP (*)** / **EPP** / **ECP** / **ECP+EPP**

3.8.10.1 ECP Mode Use DMA

When the *Parallel Port Mode* field is configured as *ECP*, *ECP+EPP* mode, it need a DMA channel for data transfer. This field specifies the DMA channel for ECP parallel port use.

Options	Description
1	Use DMA channel 1
3 (*)	Use DMA channel 3

3.8.10.2 EPP Mode Select

When the *Parallel Port Mode* field is configured as *EPP*, *ECP+EPP* mode, the EPP version can be specified by this field.

Options	Description
EPP1.7	Use EPP 1.7 protocol
EPP1.9 (*)	Use EPP 1.9 protocol

3.8.11 Init Display First

This item allows you to decide which slot to activate first, either PCI slot or AGP slot. This function takes place during the system boot.

Options **PCI Slot**

AGP (*)

3.8.12 Power-On Function

This field configures the Power-On mode of the system. If a power outage occurs, you need to re-configure this field. To ensure proper set up, allow the system to complete its reboot process (including the Power-On Self Test) before powering off computer.

Note: This feature only supports PS/2 keyboard and PS/2 mouse. It does not work with USB keyboard or serial mouse.

Options	Description
Hot KEY	You can assign a hot key through the Hot Key Power-On field. Pressing this hot key will power-on your system.
Password	You can assign a password string through KB Power-On Password field. Typing this password string will power-on your system. **Note**: The Power-On button will not function in this mode.
Mouse left	"Double-Clicking" the left button on your mouse will automatically power-on your system.
Mouse right	"Double-Clicking" the right button on your mouse will power-on your system.
Button only	Simply power-on your system by pressing the Power-On button on the front panel of your PC case.
Keyboard 98	Enables Keyboard 98 function. This function is good only for users of Keyboard 98.

3.8.12.1 Hot Key Power-On

This field specifies key selection for the Keyboard-Power-On hot key.

Options   **Ctrl-F1 / Ctrl-F2 / Ctrl-F3 / Ctrl-F4 / Ctrl-F5 / Ctrl-F6**

                  Ctrl-F7 / Ctrl-F8 / Ctrl-F9 / Ctrl-F10 / Ctrl-F11 / Ctrl-F12

3.8.12.2 KB Power-On Password

Enter your Keyboard-Power-On password in this field if you wish to use this function.

3.8.13 PWRON After PWR-Fail

The field configures the system status after experiencing a power failure.

Options	Description
Former-Sts	System returns to former status prior to power failure (on or off)
On	System turns back on after power lost
Off (*)	System remains off after power lost

3.9 LOAD SETUP DEFAULTS

This setup page is used for loading the manufacturer default values.

3.10 IWILL SMART SETTING

Warning: Over-clocking is not guaranteed.   Users must have substantial knowledge of proper Vcore settings prior to adjusting CPU speeds.   Over-clocking should be done only by experienced engineers who conduct tests.

In general, when adjusting the CPU frequency, you should select the frequency that matches your motherboard bus speed.   The reason is that your CPU can only communicate with its external components at the same speed at which the components operate.   In other words, if your motherboard bus speed is 100 MHz, you should start by selecting 100 MHz (as a "base") to set the CPU frequency.   This frequency is also referred to as the "system bus frequency" or **external frequency**.

However, the CPU manufacturers make CPUs much faster than the speed of the motherboard system bus frequency.   This is true because most of the operations are done in a small die inside the CPU chip.   This is the CPU **internal frequency**.   For example, a 400 MHz CPU actually means the **internal frequency** runs at 400 MHz.

To understand the term **multiplier**, and how it applies to setting your CPU frequency, here's an example: If you purchase a 400 MHz CPU, and your motherboard runs at 100 MHz system bus speed, adjust your CPU frequency by selecting 100 MHz (system bus frequency) x 4 (**multiplier**), which equals 400 MHz (your CPU frequency). Or, to install the same 400 MHz CPU into motherboard with 66 MHz system bus speed, you may be select 66 MHz (system bus frequency) x 6 (**multiplier**), which equals 400 MHz (your CPU frequency).   However, the fact is, a higher system bus frequency runs faster and has a much better performance than a   slower system bus frequency.

3.10.1 CPU Speed

This field allows user to adjust CPU speed.

Options **233 (66x3.5) / 266 (66x4)** / **300 (66x4.5) / 333 (66x5) / 366 (66x5.5) / 400 (66x6) / 433 (66x6.5) / 466 (66x7) / 500 (66x7.5) / 533 (66x8)**

300 (100x3) (*) / 350 (100x3.5) / 400 (100x4) / 450 (100x4.5) / 500 (100x5) / 550 (100x 5.5) / 600 (100x6) / 650 (100x6.5) / 700 (100x7) / 750 (100x7.5) / 800 (100x8) / Manual

3.10.1.1 Manual

This option sets the CPU speed.

In this field, the CPU speed is indicated as such:

CPU speed = CPU Frequency x CPU Ratio, select the CPU speed according the type and the speed of your CPU.

CPU Frequency

Option   **66/68/75/83/100/103/112/133 MHz**

CPU Ratio:

Option   **3/3.5/4/4.5/5/5.5/6/6.5/7/7.5/8**

3.10.2 Auto Detect DIMM/PCI Clk

When enabled, the DBD100 motherboard will automatically disable the clock source for a DIMM socket, which does not have a module on it.   This is true for all PCI slots.

Options   **Enabled (*)**

Disabled

3.10.3 Spread Spectrum

This item configures radiation emitted from the system.   When enabled, system will release less radiation.

Options   **Enabled**

Disabled (*)

3.11 SUPERVISOR / USER PASSWORD SETTING

These setup pages are used for password setting. Note that the User Password can enter BIOS setup program, but has no rights to change the value of any fields.

When a password has been enabled and the *Security Option* field is set as *Setup*, you will be prompted to enter the password every time you try to enter BIOS Setup program. This prevents an unauthorized person from changing any part of your system configuration. Additionally, if the *Security Option* field is set as *Boot*, the BIOS will request a password every time your system boot. This would prevent unauthorized use of your computer.

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

3.12 IDE HDD AUTODETECTION

This setup page detects and configures hard disk parameters automatically.

3.13 SAVE & EXIT SETUP

Save current CMOS value and exit BIOS setup program.

3.14 EXIT WITHOUT SAVING

Abandon all CMOS value changes and exit BIOS setup program.

Chapter 4

Software and Tools

4.1 Software Installation

The attached Power Installer CD contains all the necessary drivers, utilities and tools for Iwill's full range of motherboards.   It provides an easy way for users to install the needed drivers without going through a complicated process.   The Power Installer CD is able to auto-detect and display the drivers, utilities and tools needed for your motherboard.

Note: Not all drivers or utilities can be used on this motherboard.

4.1.1 What's inside Power Installer CD (needed for the DBD100 motherboard)

    1. Drivers

        a.   Intel PIIX4 Patch Program

        b.   Intel IDE Bus Master Driver

    2. Utilities

        a.   McAfee Anti-Virus

    3. Tool

        a.   Adobe Acrobat Reader

    4. Make Driver Diskettes

    5. Manuals

4.1.2 How to use the Power Installer CD

The Power Installer CD supports the Auto Run program used by Windows 98/95 and Windows NT operating systems.   You may simply select the software shown on screen that needs to be installed. Then simply follow the messages displayed on the screen to complete setup.

Note: Iwill PowerInstaller does not support a keyboard at this moment. You must use a mouse to install it.

4.2 How to make driver diskette without O.S. installed

This bootable Power Installer CD also allows you to boot up your system, even when the OS has not been installed.   During the boot-up process, you can perform "Iwill Diskette Creator," which will automatically make the driver diskettes you need.

Note: At least one CD-ROM drive and one 1.44M floppy drive are necessary to make "Iwill Diskette Creator" work properly.

Follow the instructions below to make your own device driver floppy diskettes if you have a CD-ROM with IDE interface. If you have already installed SCSI CD-ROM, please make sure your SCSI host adapter supports bootable CD-ROM, and then proceed directly to step h, and then finish the procedure.

     a.   First, power-on or "boot" your system.

     b.   Press <**Del>** key during boot sequence to enter " **CMOS Setup Utility**"

     c.   Use arrow keys to select "**BIOS FEATURES SETUP**" on the menu, then press "**Enter**."

     d.   Select "**Boot Sequence**" and change the default setting from <u>A, C, SCSI</u> to "**CD-ROM, C, A**" using Page Up /Page Down key.

     e.   Press <**Esc>** key to go back to CMOS SETUP Utility menu.

     f.   Press <**F10>** to select "Save and Exit Setup"

     g.   Press "**Y**" then "Enter" to complete. Now you are able to boot up the system from the CD-ROM.

     h.   Insert the Power Installer CD into the CD-ROM drive and re-start the computer.

     i.   Iwill Diskette Creator will now execute automatically for making your own driver diskettes.

     j.   Make the desired driver diskettes according to the instructions displayed on screen.

4.3 View Detailed Manual

This Power Installer CD includes detailed information of all Iwill manuals for every motherboard manufactured by Iwill. Please insert the Iwill Power Installer CD into the CD-ROM drive; the Auto Run program will display the main manual automatically. Click the "View Manual" item, and select the product you want to view, and the manual will be displayed.

4.4 CPU frequency selection by BIOS

CPU frequency selection by BIOS

Iwill DBD100 motherboard offers the Iwill Smart Setting for CPU selection.

Warning: Over-clocking is not guaranteed. Users must have substantial knowledge of proper Vcore settings prior to adjusting CPU speeds. Over-clocking should be done only by experienced engineers who conduct tests.

Through Software -- BIOS setting

In case there is a special need for over-clocking, please …

    a. First, power-on or "boot" your system.

    b. Press <**Del>** key during boot sequence to enter " **CMOS Setup Utility**"

    c. Select **IWILL SMART SETTING**

    d. Select **CPU Speed**

    e. Use page down/page up key to select

233 (66x3.5) / 266 (66x4) / **300 (66x4.5) / 333 (66x5) / 366 (66x5.5) / 400 (66x6) / 433 (66x6.5) / 466 (66x7) / 500 (66x7.5) / 533 (66x8) / Manual**

300 (100x3) (*) / 350 (100x3.5) / 400 (100x4) / 450 (100x4.5) / 500 (100x5) / 550 (100x 5.5) / 600 (100x6) / 650 (100x6.5) / 700 (100x7) / 750 (100x7.5) / 800 (100x8) / Manual

f. After selecting CPU speed, press **Save & Exit CMOS Setup** to complete.   The system will automatically re-boot.

Should your CPU fail to over-clock, the screen will become blank and the system will hang (temporarily suspend or "freeze") while the system attempts to re-boot.   If this happens, follow the procedure below:

a. Press the power button on the front panel to power off the system.

b. Hold the **INSERT** key down, then press the power button on the case.   The system will re-start using 66 MHz as the CPU external frequency.

c. Press <**Del**> key during boot sequence to enter " **CMOS Setup Utility**" and repeat steps "c" through "f" (See above).

4.5 Installing Operating Systems

This section briefly demonstrates how to install a few popular software operating systems.   Use this section only as a guide.   It is highly recommended that users first refer to the installation manual of their operating system for a more thorough, detailed description on how to install software.

4.5.1 Windows 98

Whenever installing Windows 98, please remember that Setup creates a new folder for Windows 98, and won't transfer any existing system settings. Windows 98 will become your default operating system, and will use standard system settings.   This procedure represents an entirely new installation of Windows, therefore you'll need to reinstall any existing programs you may want to use.

There are two ways to install Windows 98. Each method depends on your current computer setup.

Note: During Setup, your computer will automatically restart several times using the Windows 98 Setup wizard.

4.5.1.1 Installing the CD-ROM version of Windows 98

1. Place a Windows 98 Startup Disk into the floppy disk drive.

2. Restart your computer.

    The Microsoft Windows 98 Startup menu will appear.

3. Place the Windows 98 CD into your CD-ROM drive.

4. Type the number **1** and press <ENTER >.

    A series of scans is performed, and then the MS-DOS prompt is displayed.

5. Type the word **setup** at the MS-DOS display, and press <ENTER>.

    Setup performs a check (A message will be displayed).

    This message won't appear if your computer can't locate your CD-ROM drive.   If you

haven't installed the correct CD-ROM driver, please consult your drive's documentation or contact your hardware manufacturer.

6. Press <ENTER>.

   Microsoft ScanDisk will check your disk drives for errors.

7. When ScanDisk finishes, press the **X** key.

   Setup will initialize.   Then, Windows 98 Setup begins.

8. Please follow the instructions that are displayed.

   Note: Setup may ask you to insert your original Windows 95 or Windows 3.1 disks if you're using the upgrade version of Windows 98.

4.5.1.2 Installing the floppy disk version of Windows 98

1. Place Setup disk 1 into your floppy disk drive.

2. Restart your computer.

3. At the MS-DOS prompt, type the word **setup** and press <ENTER>.
   The Windows 98 Setup wizard will begin.

4. Please follow the instructions that appear.

4.5.2 Windows NT

4.5.2.1 Installing the CD-ROM version of Windows NT using SCSI controller

1. Prepare a 1.44MB blank diskette

2. Enable CD-ROM Bootable and Set boot sequence first priority is CD-ROM.

3. Place the Iwill Power Installer CD into the CD-ROM drive

4. Boot from Iwill Power Installer to create Windows 9x/NT driver diskette from CD-ROM by selecting FMS Disk1 for **Win95/NT**

5. Place the Windows NT 4.0 CD-ROM in the drive.

6. Press <F6> when the screen show following messages: Setup is inspecting your computer's hardware configuration …

7. Press <S> to specify additional SCSI adapters.

8. Select <Other> to load manufacture supplied software driver.

9. Place **the SCSI driver diskette for Windows NT 4.0** into the floppy drive.

10. Press <ENTER> when SCSI driver is ready.

11. From list select the proper SCSI controller driver:

12. **Example: Adaptec AHA-294xU2/295xU2/395xU2/AIC-789xPCI SCSI Controller (NT 4.0)**

13. Press <ENTER> to continue if you have no other SCSI controller to install.   Or, repeat steps 3-7 to install all drivers as needed.

14. Follow all instruction to finish Windows NT installation.

4.5.2.2 Installing the CD-ROM version of Windows NT on an IDE system

1. First, power-on or "boot" your system.

2. Press <Del> key during boot sequence to enter " CMOS Setup Utility"

3. Use arrow keys to select "BIOS FEATURES SETUP" on the menu, then press "Enter."

4. Select "Boot Sequence" and change the default setting from **A, C, SCSI** to "**CD-ROM, C, A**" using Page Up /Page Down key.

5. Place the Windows NT 4.0 CD-ROM in the drive.

6. Follow all instructions to finish Windows NT installation.

4.6 How to use the Thermal sensor
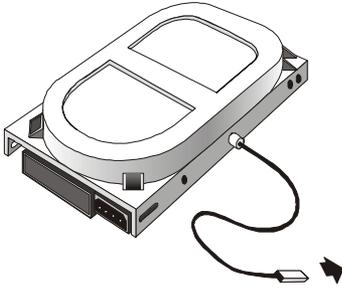
Detects all heat-releasing devices.   Firmly screw the connector to any device.
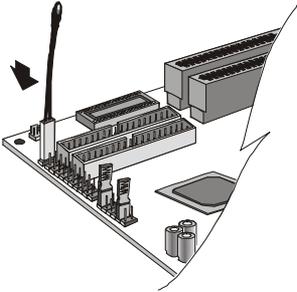
Detects system temperature. NO NEED to contact this thermostat to any device. Leave it on the motherboard.

4.7 Iwill SCSI series

If you want to improve I/O performance of your DBD100 , choose the latest Iwill SCSI controllers. The following are some Iwill SCSI controllers you may purchase, and use with your DBD100 motherboard:

SIDE 2930C: an economical SCSI card, and connects up to 7 device

- Support SCSI-1, SCSI-2 protocol
- 10 MB/sec. Data transfer rate
- The best choice for CD-ROM, CD-R, CD-R/W, MO, Scanner ..etc.
- Connects maximum 7 narrow SCSI devices
- Automatic active termination control for easy plug & play installation.

SIDE 2930U+: a 20MB/sec. transfer rate, this card also connects up to 7 devices
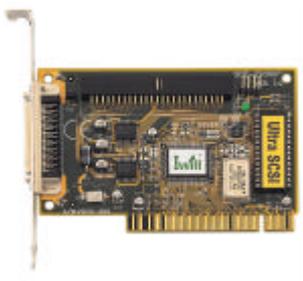
- Supports SCSI-1, SCSI-2 and Ultra SCSI protocol
- Up to 20 MB/sec synchronous data transfer rate
- Connects maximum narrow SCSI devices
- Automatic active termination control for easy plug & play installation
- Supports Multi-tasking, Multi-threaded, scatter/gather, tagged queuing

SIDE 2935UW: this doubles the 2930U+; a 40 MB/sec transfer rate, connects up to 15 devices

- Support both Ultra Narrow (50-pin) and Ultra Wide (68-pin) SCSI
- Data transfer rate up to 20 MB/sec and 40 MB/sec respectively
- Able to connect up to 15 Ultra Wide SCSI devices
- Active terminator
- Able to boot from CD-ROM

SIDE 2935LVD: an 80MB/sec. transfer rate, and a 12-meter cable length connecting 15 devices

- Double the data transfer rate of Ultra Wide SCSI to 80 MB/sec
- Up to 12 meters cable length for Ultra 2 devices
- Able to connect up to 15 devices
- Able to boot from any SCSI ID
- Able to boot from CD-ROM