

# **IWILL DNS-SATA/DNS/DNS-L Motherboard User's Manual**

Overview

Hardware Installation

BIOS Setup

FB25633100



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**All produce specs are subject to change without prior notice. The actual specs will be according to the actual product.**

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# **Chapter 1 Overview**

## DNS Package Content

1. DNS Motherboard
  - Professional server system board
2. Three jumper caps
  - Extra caps in case original caps get lost
3. One Power Installation CD
  - Includes support software, drivers and bundled software utilities.
4. Rear panel I/O shield
  - Covers the area around the rear panel I/O ports when the board is installed in a system housing.
5. One set of SATA cables (DNS-SATA has two sets)
  - Connector cable for onboard SATA connectors.
6. Two ATA-66/100 IDE cables
  - Connects IDE devices to one of the onboard IDE connectors.
7. One floppy disk drive cable
  - Connects floppy disk drives to the onboard floppy disk connector.
8. Two Hat Springs for CPU cooler
  - Sustain and connect between CPU cooler and chassis
9. PCI-Express Riser Card
  - Change the PCI-Express slot from the vertical to horizontal direction. It is special for 1U chassis.
10. Two CPU backplates
  - It can fix the third party CPU heatsink. Please refer to Chapter 3 for detail information.
11. Two heatsink retention modules
  - It can buckle up the CPU heatsink. Please refer to Chapter 3 for detail information.





- When handling chips or modules, avoid touching their pins.
- Put the motherboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.
- After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

#### OPERATING PRECAUTIONS

- **Check package contents**
- **Missing or damaging accessories**  
Please contact your vendor immediately
- **Motherboard damage**  
Please contact your vendor immediately
- **Prepare minimum system components**
  - ◇ Intel Xeon @800MHz FSB Processor
  - ◇ At least one Registered DDR memory module
  - ◇ At least one SATA or IDE HDD
  - ◇ EPS12V Power Supply with 460W or above

**Important: You must have enough system integration knowledge before the installation**

## Getting Help

If a problem arises with your system during Installation or Operation, you should first ask your dealer for help as they have most likely configured your system. They generally have the best grasp of your issues and the fastest response for your symptoms. If your dealer is near your location, it is recommended that you first bring your system to them to have it serviced instead of attempting to solve the problem yourself.

If those options don't work for you, IWILL also provides some helpful resources to help you.

1. Visit IWILL® website at **Http://www.iwill.net** and navigate to this product's page which contain links to product updates such as Jumper settings or BIOS updates.
2. The FAQ (Frequently Asked Questions) sections in the IWILL website are often helpful since other users often have the same questions.
3. Email us at: **support@iwill.net** and we will try to answer your questions within 5 business days.

### DNS Specifications

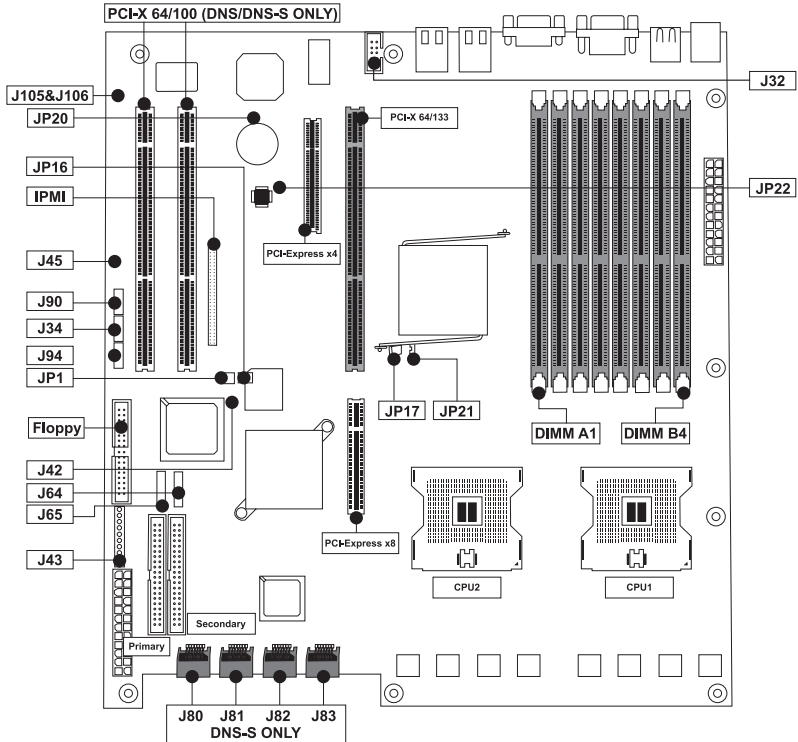
Processor	<ul style="list-style-type: none"> <li>● Dual Intel® Xeon Socket 604 CPUs</li> <li>● Supports 800MHz FSB</li> </ul>
Chipset	<ul style="list-style-type: none"> <li>● Intel E7520 Chipset MCH</li> <li>● Intel ICH5</li> <li>● Intel PXH (DNS/DNS-SATA Only)</li> <li>● Winbond 83627 HF</li> </ul>
Memory	<ul style="list-style-type: none"> <li>● 8 DIMMs for 184-pin DDR 333/266 DIMM sockets</li> <li>● Support up to 6 DIMMs DDR333 memory</li> <li>● Support up to 8 DIMMs DDR266 memory</li> <li>● Uses Registered DDR with ECC or Non-ECC memory</li> <li>● Supports total system memory size of up to 16GB</li> </ul>
On-Board LAN	<ul style="list-style-type: none"> <li>● Dual Broadcom PCI-Express GbE Controller</li> <li>● Two RJ-45 connectors for GbE</li> <li>● Support PME</li> </ul>
Graphic	<ul style="list-style-type: none"> <li>● Integrated ATI RageXL video controller with 8MB memory</li> </ul>
USB	<ul style="list-style-type: none"> <li>● 2 x external USB 2.0 ports at the rear panel</li> <li>● 6 x internal USB 2.0 ports for the front panel</li> </ul>
Serial ATA	<ul style="list-style-type: none"> <li>● 8 Serial ATAII ports supported by Marvell with RAID 0, 1, 10 (DNS-SATA Only)</li> <li>● 2 Serial ATA ports supported by ICH5</li> <li>● Support hot swap</li> </ul>
Expansion Slots	<ul style="list-style-type: none"> <li>● One PCI Express x8 slot (for 1U)</li> <li>● One PCI Express x8 slot (with x4 bandwidth)</li> <li>● One PCI-X 64-bit/133 MHz (DNS/DNS-SATA Only)</li> <li>● Two PCI-X 64-bit/100 MHz (DNS/DNS-SATA Only)</li> </ul>
Internal I/O connector	<ul style="list-style-type: none"> <li>● 1 x 34-pin Floppy Connector</li> </ul>
IDE Bus	<ul style="list-style-type: none"> <li>● 2x 40-pin IDE connectors, supports up to four (4) Enhanced IDE devices</li> <li>● Dual Channel Master Mode</li> <li>● Ultra DMA 100/66/33</li> </ul>

Expansion I/O	<ul style="list-style-type: none"> <li>● PS/2 mouse and keyboard connectors</li> <li>● 1 x UART 16550 serial port (COM1)</li> <li>● 1 x internal UART by 9 pin header</li> <li>● 2 x USB 2.0 ports</li> <li>● 2 x Gigabit Ethernet LAN RJ-45 port</li> <li>● 1 x VGA port</li> </ul>
System BIOS	<ul style="list-style-type: none"> <li>● AMI BIOS</li> <li>● Flash write protection by BIOS and one jumper</li> <li>● Support Adaptec Host RAID</li> <li>● LAN remote boot</li> <li>● BIOS Boot specification v3.1 support</li> <li>● Support ASF2.0</li> </ul>
Server Management	<ul style="list-style-type: none"> <li>● Support IPMI 1.5</li> <li>● Support mBMC</li> <li>● Support remote power on/off and reset support</li> </ul>
System Management	<ul style="list-style-type: none"> <li>● Hardware Monitor control by Analog Device ADM1026</li> <li>● Fan speed control method: DC FAN</li> <li>● Support AC power failure</li> </ul>
Form Factor	<ul style="list-style-type: none"> <li>● EATX form factor</li> <li>● 12"x13"</li> <li>● EEB 3.5</li> <li>● EPS 12V power connectors (24 pin + 8 pin)</li> </ul>

## **Chapter 2**

# **Components and Jumper Setting**

### Mainboard Map



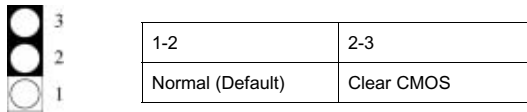
## Components List

CPU1; CPU2	Intel Xeon Socket604 Processor
Primary; Secondary	IDE Driver Connectors
Floppy	Floppy Disk Driver Connector
PCI Slots	PCI-Express x8, x4 Slots; PCI-X 100,133
DIMM B4~A1	Memory Socket for DDR Memory
JP1	Clear CMOS Jumper
JP16	BIOS Protect Jumper
JP20	VGA Jumper
JP22	Chassis Intrusion Pin Header
JP17; 21	Memory Speed Jumper
J32	COM2 Port
J42	Case Open Pin Header
J43	Front Panel Connector
J45	IrDA Connector
J64, J65, J80, J81, J82, J83	Serial ATA Connector
J34, J90, J94	USB 2.0 Pin Header
J92	IPMI connector
J105, J106	LAN LED Pin Header

## Jumper Setting

### JP1: Clear CMOS Jumper

The onboard button cell battery powers the CMOS RAM. It contains all the BIOS setup information. Keep the jumper connected to pins 1-2 (Default) to retain the RTC data as shown below.



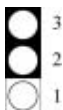
Under certain circumstances, you will need to reset system settings. Follow these instructions to clear the CMOS RTC data:

1. Turn off the computer.
2. Short pins 2 and 3 with a jumper for a few seconds.
3. Replace the jumper to pins 1 and 2.
4. Turn on your computer by pressing the power-on button.
5. Hold down <F2> during boot and select either <Load Optimal Defaults> or <Load Failsafe Defaults> in the “Exit” section. Then go through the BIOS setup to re-enter user preferences.



**JP16: BIOS Protection Jumper**

This jumper protects the system from unnecessary updating or flashing of the BIOS. It secures the BIOS therefore prevents accidental overwriting of the data stored in flash memory.



JP16	
1-2	By Soft (Default)
2-3	Lock
Open	Unlock

**JP20: VGA Jumper**

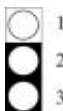
This header lets you set your VGA port function. You can choose enable or disable this function or not.



1-2	2-3
VCC5 Stand By	VCC5 (Default)

**JP17; 21: FSB Jumper**

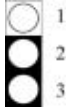
This header lets you set your memory speed. Depend on the memory you choose, please adjust this jumper in order to optimize your memory utilize.



Setting	JP17 PLLSE0	JP21 PLLSE1	Memory
Pin 1-2	Short(Default)	Short(Default)	DDR-333
Pin 2-3	short	short	DDR-266

### JP22 Chassis Intrusion Pin Header

This feature uses a mechanical switch on the chassis that connects to the chassis intrusion connector on the motherboard. When the chassis cover is removed the motherboard circuitry will detect the intrusion.



Setting	J42
Pin 1-2 (default)	Nothing
Pin 2-3	Intrusion

### J42 Case Open Pin Header

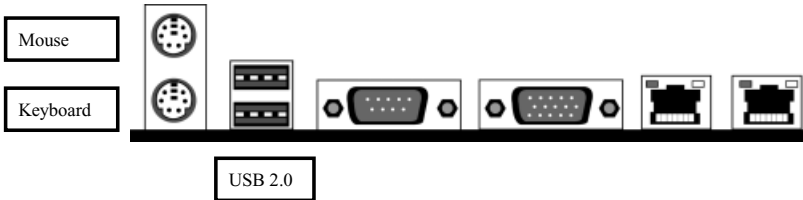
Case Open is a security function. This can detect whether the chassis (case) had been opened or not. If the case had been opened, the open record would show on the screen until you delete this message.



Setting	J42
Open (default)	Disable
Close	Enable

## Rear Panel I/O Ports

This is an illustration of the Mainboard rear I/O port array



### PS/2 Mouse Connector (6-pin Female)

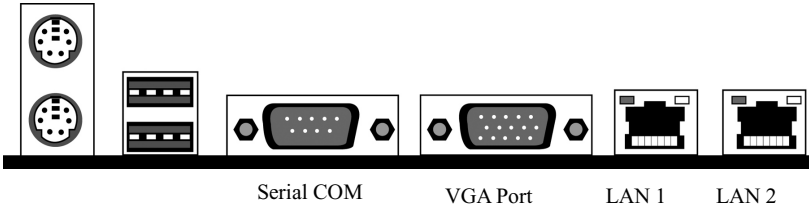
The system will direct IRQ12 to the PS/2 mouse if one is detected. If no mouse is detected, IRQ12 will be free for expansion cards to use.

### PS/2 Keyboard Connector (6-pin Female)

This connection is for standard keyboards using a PS/2 (mini DIN) plug. This connector will not accept standard AT size (large DIN) keyboard plugs. You may need a DIN to mini DIN adapter for standard AT keyboards.

### USB Port Function

DNS provides the two USB 2.0 ports at the rear panel. USB 2.0 supports 480Mb/second bandwidth providing a marked improvement in device transfer speeds between your computer and a wide range of simultaneously accessible external Plug and Play peripherals. You can connect or disconnect USB cables when the system is turned on.



### Serial Port Function

The serial ports are RS-232C asynchronous communication ports with 16C550A-compatible UARTs that can be used with modems, serial printers, remote display terminals, and other serial devices. It can operate at speeds up to 115,200bps. You can configure the port's speed in the computer's Operating System.

### VGA Port Function

The VGA port is for the image output. It can be used with the PC monitor devices.

### LAN Port Function

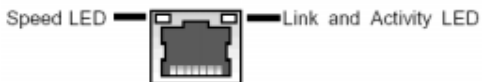
The LAN port uses a CAT 5 LAN cable for connecting the motherboard to a local area network by means of a network hub. The port has 2 indicator LEDs.

#### Speed LED (left)

- 10Mbps - will not blink
- 100Mbps - LED is green
- 1000Mbps - LED is orange

#### Link and Activity LED (right)

- LED is yellow when the LAN connection is linked and accessed.



### Additional I/O Connectors

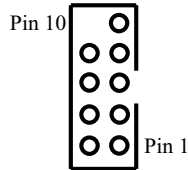
The Mainboard also contains connectors for adding additional ports and devices to the Mainboard.

#### J32: COM2 Header

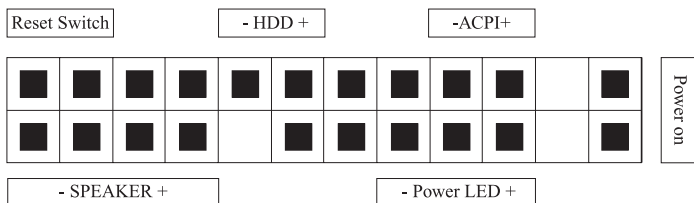
##### Function

The COM2 Port Bracket Connector lets you add an additional serial port, to which you can connect peripherals such as serial modems and pointing devices.

Pin10	NC	Pin9	RI#
Pin8	CTS#	Pin7	RTS#
Pin6	DSR#	Pin5	CON
Pin4	DTR#	Pin3	TXD
Pin2	RXD	Pin1	DCD#



#### J43: Front Panel Connector



##### Reset Switch (2-pin RST)

This 2-pin connector connects to the chassis-mounted reset switch for rebooting your computer without turning your power switch off and on. This is a preferred method of rebooting your system to prolong the life of your system’s power supply.

**Hard Disk Activity LED (2-pin HDD\_LED)**

This connector supplies power to the chassis's HDD/IDE activity LED. Read and Write activity by devices connected to the Primary or Secondary IDE connectors will cause the front panel LED to light up.

**ACPI LED**

ACPI function allows the system to enter or resume from the Suspend mode. If your system chassis does not have this button, the same function may be performed from your OS; if it is supported.

**Power On Switch**

This switch connects to the system's Power button allowing you to power on and off the system. You can configure the system to use the keyboard or mouse to power-on the system. You can also configure the system to respond to power restoration after a power outage occurs. These functions can be configured by making appropriate settings in the Integrated Peripherals submenu ("Super IO Device" field) of the BIOS.

**Speaker Connector**

This connects to the PC speaker installed in the system chassis.

**Power LED Connector**

This connector connects to the system's Power LED. When the system's power is on, this LED will light.

## **J45: IrDA Connector**

### **Function**

The IrDA connector is for wireless connectivity between your computer and peripheral devices. The IRDA (Infrared Data Association) specification supports data transfers of 115K baud at a distance of 1 meter. It supports both IrDA and ASKIR infrared port modules.

### **Connecting the IrDA Cable**

To use the IrDA function, follow the steps below.

1. Connect your IrDA cable to connector J45.
2. Set the “UART Mode Select” field to the type of IrDA standard supported by your IrDA peripheral/device. For better transmission of data, your IrDA peripheral device must be within a 30° angle and within a distance of 1 meter. You may not use IrDA and the COM 2 serial port at the same time. If you are using the COM 2 serial port, make sure to set the “UART Mode Select” field to Normal.
3. Set the “Rx/D, Tx/D Active”, “IR Transmission Delay”, “UR2 Duplex Mode” and “Use IR Pins” fields appropriately.

### **Driver Installation**

You may need to install the proper drivers in your operating system to use the IrDA function. Refer to your operating system’s manual or documentation for more information.

## J92: IPMI connector

### Function

DNS support IPMI v1.5. The IPMI specification defines an internal management bus for extending platform management within a chassis. IPMI functions include remote management access over Serial/Modem and LAN connections, and the capabilities for automatic alerting and recovery.

## J105/ J106: LAN LED Header

### Function

J105 is a header for LAN1 (left), and J106 is a header for LAN2 (right). Two headers are used to connect the RJ-45 LAN ports for the rear panel. It can show the LAN speed status to the users in different light colors.



#### J105 Header

Pin 1 Active LED  
 Pin 2 10Mb Link LED  
 Pin 3 1Gb Link LED  
 Pin 4 1000Mb Link LED  
 Pin 5 NC

#### J106 Header

Pin 1 Active LED  
 Pin 2 10Mb Link LED  
 Pin 3 1Gb Link LED  
 Pin 4 1000Mb Link LED  
 Pin 5 NC



### Serial ATA Connector

#### J64, J65 Serial ATA Connector

DNS supports up to 2 SATA devices each with data transfer rates of 150MB/s. Two Serial ATA ports are supported by ICH5.

This Mainboard features two Serial ATA ports for two Serial ATA devices.



Serial ATA Drive Connectors

SerialATA Pin Assignments	
Pin	Description
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

#### J80, J81, J82, J83 Serial ATAII Connector (DNS-SATA ONLY)

DNS-SATA adopts Marvell chipset, and it can provide eight SATAII ports each with data transfer rates of 300MB/s. The speed of SATA II is double than the SATA devices.

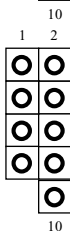
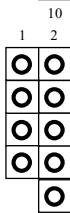
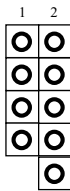
It uses point to point technology, and supports hot swap. This chipset also supports RAID 0, 1, and 10, which are defined as follows:

RAID Type	Description
RAID 0	Striping: high performance, designed to connect multiple drives to act as one
RAID 1	Mirroring: writes data to two drives at once in case one drive fails, the other one will be a complete replica and can continue on.
RAID 10	Combination of RAID 0 and 1: over 4 drives, The drives are split in half and striped together, and the 2 new striped drives are then mirrored.

## USB Header

### J34, J90, J94: USB 2.0 PORTS AND HEADER

DNS supports eight USB 2.0 ports. Two USB 2.0 ports locate at the rear panel. Six USB 2.0 headers are for the front panel. USB 2.0 supports transfer rates of up to 480MB/s.

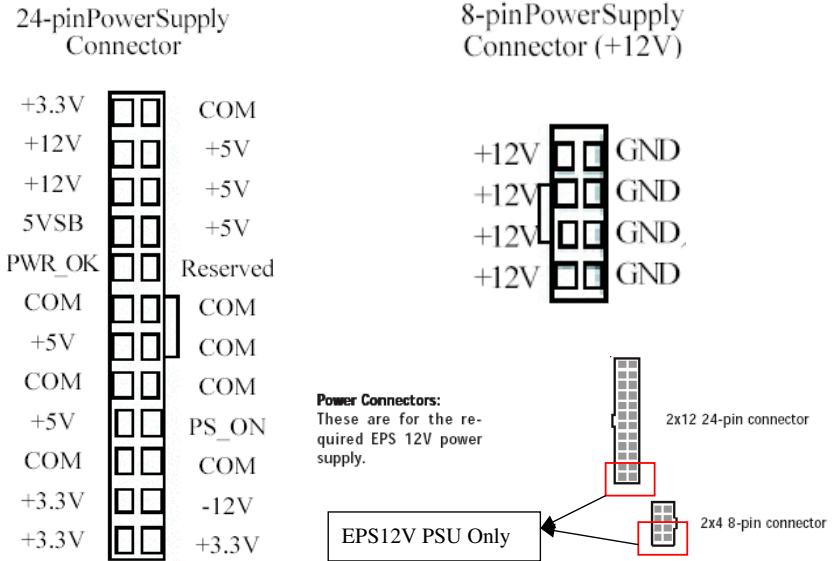


Pin Assignment	
Pin 1 VCC 5V	Pin 2 VCC 5V
Pin 3 Data-	Pin 5 Data-
Pin 5 Data+	Pin 6 Data+
Pin 7 GND	Pin 8 GND
Pin 9 NC	Pin 10 GND

## DNS Power Supply

### EPS12V POWER CONNECTORS

There are two power connectors on the motherboard of the required EPS 12V power supply. DNS needs a minimum 460-watt EPS 12V power supply that complies with the Intel Xeon processor power supply design guidelines. For the 1U and 2U chassis, DNS also supports EPS1U and EPS2U Power. Find the proper orientation of the connectors and push down firmly to make sure that the pins are aligned (the connector will only insert properly when properly aligned). The 8-pin connector is a dedicated power connector to supply power for the CPUs.



**Important: There are two 24 pin connectors. Please choose either one to install. DON'T plug into both connectors at the same time.**

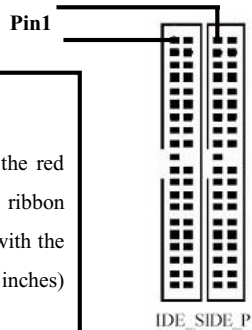
## IDE and Floppy Connectors

### PRIMARY IDE CONNECTORS

The two 40-pin IDE connectors (primary and secondary channels) support 80-conductor IDE ribbon cables. Connect the single connector end to the Mainboard. Then, connect the two connectors at the other end to your IDE device(s). If you connect two hard disks to the same cable, you must set the second drive as a Slave through its jumper settings. Refer to the IDE device's documentation for the specific jumper settings. (Pin 20 is removed to prevent the connector from being inserted in the wrong orientation when using ribbon cables with pin 20 plugged in). The BIOS supports Ultra DMA 33/66/100.

#### IMPORTANT

Ribbon cables should always be connected with the red stripe on the Pin 1 side of the connector. IDE ribbon cables must be less than 46 cm (18 inches) long, with the second drive connector no more than 15 cm (6 inches) away from the first connector.



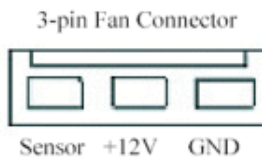
### FLOPPY DISK DRIVE CONNECTOR

This 34-pin connector supports the standard floppy disk drive ribbon cable. Connect the single connector end to the Mainboard. Then, plug the other end of the ribbon into the floppy drive. Make sure you align the Pin 1 on the connector with the Pin 1 alignments on the Mainboard and the floppy drive.



### CPU/ SYSTEM FAN CONNECTORS

There are eight 3-pin fan connectors in the Mainboard. Four fans are used for CPU1 and CPU2; five fans are for system and back. These connectors support cooling fans of 500mA (6W) or less. All fan drive current minimum are must over 1.5V. Depending on the fan manufacturer, the wiring and plug may be different. Connect the fan's plug to the Mainboard with respect to the polarity of the fan connector.



### WARNING

The CPU and/or motherboard will overheat if there is not enough airflow across the CPU and onboard heatsink. Damage may occur to the motherboard and/or the CPU fan if these pins are incorrectly used. These are NOT jumpers; DO NOT place jumper caps over these pins.

## **Chapter 3 Hardware Installation**

## Motherboard Installation

This section explains the basic requirements for installing the motherboard in a system housing or “chassis”. Since housing designs vary widely, you will need to consult the housing documentation for specific information.

To install the motherboard in a system housing, you will need to do the following:

- Install a rear panel I/O shield
- Attach the board to the housing
- Connect leads from the housing’s front panel
- Connect other internal system components.

### Motherboard Installation Procedure

The motherboard requires installing the supplied CPU Hat Spring to mount the heat sink retention mechanisms. Refer to the CPU Installation section in this chapter for details.

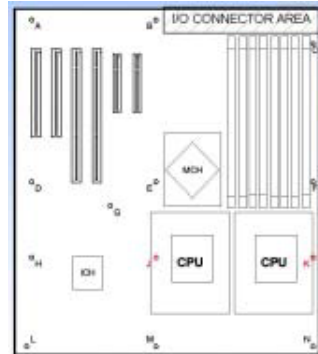
If the housing you are using normally stands vertically, place the open housing on its side before you start.

To install the motherboard, please follow the steps below.

1. Review any instructions that came with the system housing and prepare the necessary mounting hardware that came with it.
2. Identify the mounting holes on the motherboard and confirm that the housing has standoffs that match them.

3. Install the rear panel I/O shield in the housing's I/O panel opening.
4. Place the motherboard in the housing and align the mounting holes to the standoffs of the housing's motherboard mounting plate. Make sure all of the rear I/O ports are properly aligned with the openings of the I/O panel.
5. Secure the motherboard to the housing by inserting mounting screws in all the holes.

Important: DNS follows the EEB 3.5 form factor. Please choose the chassis that can support EEB3.5 form factor.



**EEB 3.5 holes for the motherboard**



## Installing the CPU and Heatsink Procedures

IWILL DNS supports Intel Xeon @FSB800 MHz processor. We only recommend using the Intel Original heatsink kit. CEK (Common Enabling Kit) is specially designed for the Intel latest Xeon. For installing CEK, please follow direction as below.

**Step 1-- Before you install the heatsink, please check whether the attached Hat Springs fasten well to the back of this motherboard or not.**



**Step 2-- Raise the retaining lever of the processor locking mechanism to a perpendicular position.**

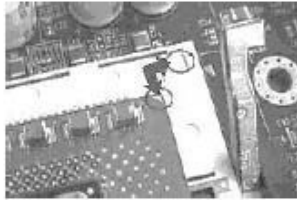
Raise the retaining lever



Raise the socket lever to the vertical position

**Step 3-- Align the processor to the socket by matching the Pin 1 corner of the socket (marked with a triangle) to the Pin 1 corner on the Socket 604 (marked by a triangular hole in the Pin 1 corner).**

Align the Pin 1 corners



**Step 4-- Carefully insert the Xeon processor in the socket receptacles, taking care not to bend any pins.**

Insert the processor



**Step 5-- Lower the locking mechanism's retaining lever and secure it in place to secure the processor in the socket. Grasp the processor by the edges and gently pull upwards to insure it is properly inserted. The processor shouldn't move.**

Secure the CPU retaining lever



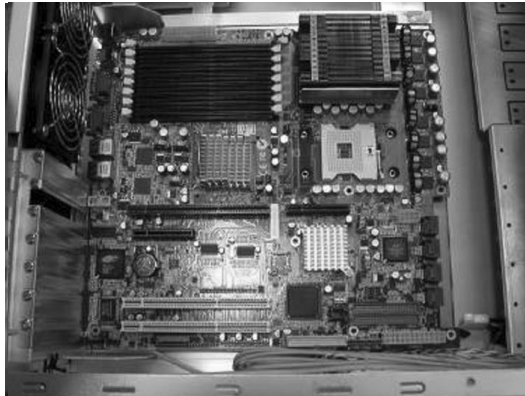
**Step 6--Apply all of the TIM in the applicator to the center of the square heat spreader plate in the middle of the CPU. Do not spread the TIM around. When you place the heatsink on top of the CPU the material will disperse evenly.**

Apply all of the thermal interface material to the center of the processor heater spreader plate



**Important:** When you only place ONE Intel Xeon processor, please put on the position of CPU1

**Step 7 –Fasten the motherboard on the chassis first. Then, place the CPU HeatSink on the top, and match the heatsink, spring and motherboard holes. Finally, please gently drive in these screws in order to fasten the heatsink.**



## Heatsink Installation Notice

### From the third party heatsink

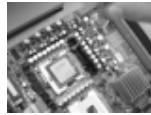
--The rim of heatsink has a fillister, and it needs the retention to fasten it.



1. Put the attached CPU plate to the back of this motherboard



2. Screw Retention Module on top of this motherboard



3. Put CPU HeatSink on the top and finish the installation



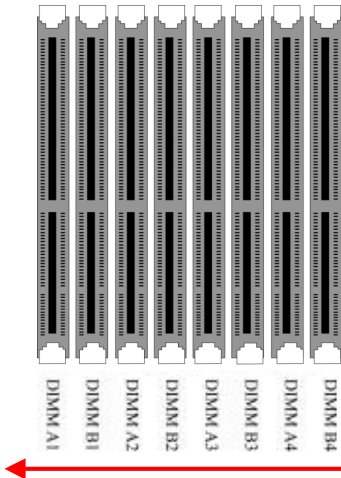
## Memory Installation Procedure

### Installing Memory

This Mainboard uses Dual Inline Memory Modules (DIMM) for registered with ECC or Non-ECC only. Eight DIMM socket memory banks are available. The DIMM sockets accommodate 184-pin DDR266/333 and Double Data Rate (DDR) memory modules in 128MB, 256MB, 512MB, 1GB and 2GB size combinations. Total installed memory size is between a minimum of 128MB to a maximum of 16GB.

#### IMPORTANT

- To take advantage of the 128-bit interface, you must install DIMMs in pairs of two (2). DIMM slots DIMM A1 and DIMM B1 are paired, and slots DIMM A2 and DIMM B2 are paired. If you are only installing two DIMMS into a Memory Bank, it is recommended that you install them in slots DIMM A1 and DIMMB1 to get the full bandwidth.
- The Mainboard has strict memory and timing requirements. Before buying DDR (Double Data Rate) DIMMs for use with the Mainboard, it is recommended that you consult your local reseller for the best and most compatible memory to use.

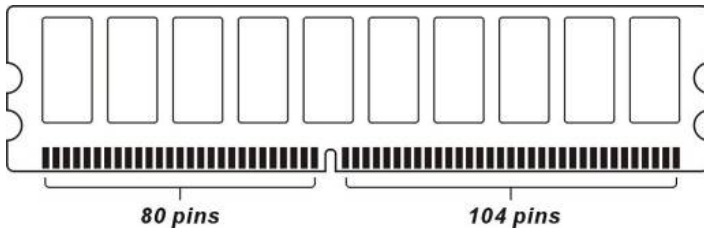


One DDR Module	DIMM B4 (1)
Two DDR Modules	DIMM B4, A4
Four DDR Modules	DIMM B4, A4; B3, A3
Six DDR Modules	B4, A4; B3, A3; B2, A2
Eight DDR Modules	B4, A4; B3, A3; B2, A2; B1, A1

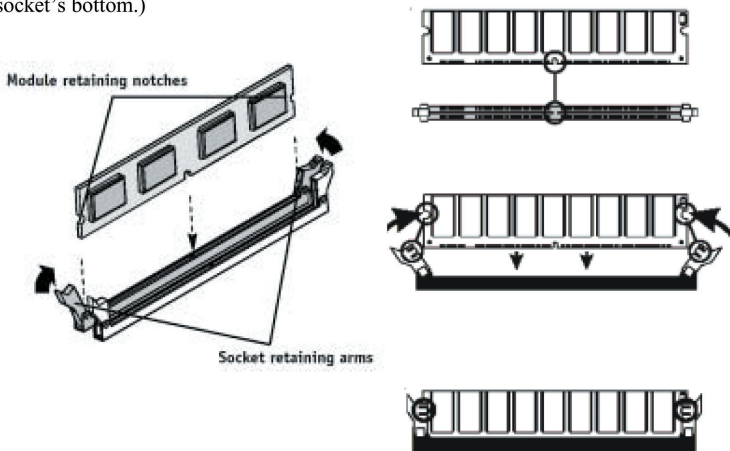
(1) We strongly recommend that you always install a pair of DDR memory in order to take the full advantage of dual channel.

This section outlines how to install Registered PC2100/PC2700 DDR DIMMs into the Mainboard.

1. Locate the Memory Bank on the Mainboard, where you will be installing the DIMMs.
2. Make sure the DIMM's pins are facing down, and check that the pin arrangement on the memory module resembles the one pictured below.



3. Insert the module into the DIMM socket and press down evenly on both ends firmly until the DIMM module is securely in place. (The tabs of the DIMM socket will close-up to hold the DIMM in place when the DIMM is properly installed on the socket's bottom.)



4. Repeat step 1 to step 3 for all additional DIMM modules.



## Installing Expansion Cards

DNS/DNS-S has the PCI-Express and PCI-X slots that can be used for any expansion cards, such as LAN, SCSI, or Riser cards. DNS provides two PCI-Express x8 slots (one with x4 bandwidth) for the high-end expansion card choices. Please be aware of the difference between the PCI-Express and PCI-X slots. Before you install any expansion cards, please read carefully the instruction provided by the card manufacturers.

### The procedures of installation method

1. Insert the PCI card into the correct slot on the Mainboard, pushing down with your thumbs evenly on both sides of the card.
2. Secure the card on the slot with the screw you removed above.
3. Assign IRQs for PCI expansion card: An IRQ number is automatically assigned to PCI expansion card. In the PCI bus design, the BIOS automatically assigns an IRQ to a PCI slot that contains a card requiring an IRQ.

### Important:

You can follow the below chart to plug your PCI-Express Expansion Card.

Card Interoperability

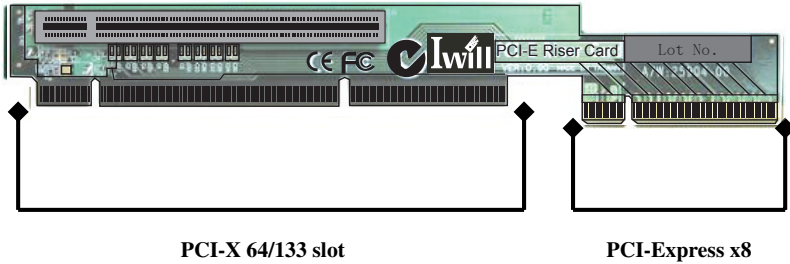
Slot \ Card	x1	x4	x8
x1	Yes	Yes	Yes
x4	No	Yes	Yes
x8	No	No	Yes

### WARNING

Please completely power OFF your power supply when adding or removing any expansion cards or other system components. Failure to do so may cause severe damage to both your Mainboard and expansion cards.

### PCI-Express Riser Card

Inside the motherboard package, there is a PCI-Express Riser Card. This Riser Card can make you to plug your PCI-Express in the horizontal direction. This will make that DNS can easily install in a 1U and 2U chassis without scarified the PCI-Express slot. Please plug this card into PCI-Express x8 and PCI-X 64/133 slot (show in red color on board).



**Important: DNS-L still keeps PCI-X 133 slot without any bandwidth, but only for fixing PCI-Express Riser Card purpose.**

## Powering on your System

Follow these instructions to power on the computer after you have installed the Mainboard and all system devices.

1. Be sure that all switches are off (in some systems, Off is marked by “O”).
2. After double-checking all jumper settings and connections, close the system chassis cover.
3. Connect the power cord to the power cord connector located on the power supply at the back of your system chassis and plug the power cord into a power outlet that is equipped with a surge protector.
4. Turn on your devices in the following order:
  - Monitor
  - System power

For power supplies, you need to switch On the power supply, then press the:

1. Power switch on the front of the chassis the first time you start up the system.
2. The power LED on the front panel of the system case will light up. For power supplies, the system LED will light up when the power switch is pressed. The monitor LED may light up after the system’s LED if it complies with “Green” standards or if it has a power standby feature. The system will first run its “power-on” tests. While the tests are running, additional messages will appear on the screen. If you do not see anything on the screen within 30 seconds from the time you turn on the power, the system may have failed a power-on test. Re-check your jumper settings and connections. Contact your retailer/dealer for assistance if everything else fails.
3. During power-on, hold down <F2> to enter BIOS setup. Follow the instructions in BIOS for further setup information.

## **Chapter 4 BIOS Setup**

## BIOS Setup

This chapter discusses the AMIBIOS Setup program built into the ROM BIOS. The Setup program allows users to modify the basic system configuration.

The BIOS is the Basic Input / Output System used in all IBM PC, XT, AT, and PS/2 compatible computers. The AMIBIOS flash chip stores the system parameters, such as type of disk drives, video displays, etc. in the CMOS. When the computer is turned off, a back-up battery provides power to the BIOS flash chip, enabling it to retain system parameters. Each time the computer is powered-on the computer is configured with the values stored in the BIOS ROM by the system BIOS, which gains control at boot-up.

The AMIBIOS installed in your computer system's ROM (Read Only Memory) is a custom version of an industry standard BIOS. The BIOS provides critical low-level support for standard devices such as disk drives and serial and parallel ports.

### STARTING THE BIOS SETUP

The AMIBIOS is immediately activated every time you power on the system. The BIOS reads the system information contained in the CMOS and begins the process of checking the system and configuring it. After configuring the system, the BIOS will follow the Boot Order to seek out an operating system. The BIOS then turns control of the system over to the operating system.

The CMOS information that determines the system parameters may be changed by entering the BIOS Setup utility.

1. Power on the System.

Note: Normally, the only visible POST (Power On Self Test) routine is the memory test.

2. As the memory is being tested, you can access the BIOS Setup Utility by pressing the <F2> key when “Press < F2> to enter SETUP” appears briefly at the bottom of the screen.

From the main menu of the BIOS Setup Utility, you can access the other setup screens, such as the Security and Power menus.

## Using the BIOS Setup Utility

Navigating through the BIOS Setup Utility is straightforward. Use the arrow keys to highlight items, press <Enter> to select items in menus, and press <Esc> to quit. The following table provides more details about how to navigate in the Setup program using the keyboard.

Up ArrowKey	Move to the previous item
Down Arrow Key	Move to the next item
Left Arrow Key	Move to the previous menu
Right Arrow Key	Move to the next menu
<Esc> key	In the Submenu: Exit the submenu. In the BIOS main menu: Jump to the Exit Menu
<Enter> Key	Select the highlighted item. When available, a pop-up list will display for you to select the item value or select a submenu
<PgUp> Key	Previous page on Scrollable menus or Jump to the first interactive item listed
<PgDn> Key	Next page on Scrollable menus or Jump to the last interactive item listed
<F1> Key	General Help on Setup navigation keys.
<F2>/<F3> Key	Change Colors
<F7> Key	Discard Changes
<F8> Key	Load Failsafe Defaults
<F9> Key	Load Optimal Defaults
<F10> Key	Save and Exit
Home	Go to Top of Screen
END	Go to Bottom of Screen
ESC	Exit

**IMPORTANT**

The BIOS does NOT automatically save values that you have modified. If you do not save your values before you exit the BIOS Setup Utility, all your changes will be lost.

If after making and saving system changes with the BIOS Setup Utility, you discover that your computer is no longer able to boot, the AMIBIOS supports an override, which will reset your system to the Failsafe defaults. If that fails, it is possible to manually clear the present CMOS information through the "Clear CMOS Header" on the motherboard (Refer to Jumper Settings for more information).

The best advice is to ONLY alter settings that you thoroughly understand. The default settings have been carefully chosen by AMIBIOS to provide the maximum system performance and reliability. Even a slight change to the chipset setup may cause potential and unpredictable failure to the system.



## Main Menu

This is the first screen that is displayed when you enter the BIOS Setup Utility. Each tab lined on the top of the screen represents each different menu. The following picture shows the main menu. Main menu shows the information of BIOS version, date and ID, processor type, speed and count, and system size. In addition, system time and date is adjustable using + / - key or number keys.



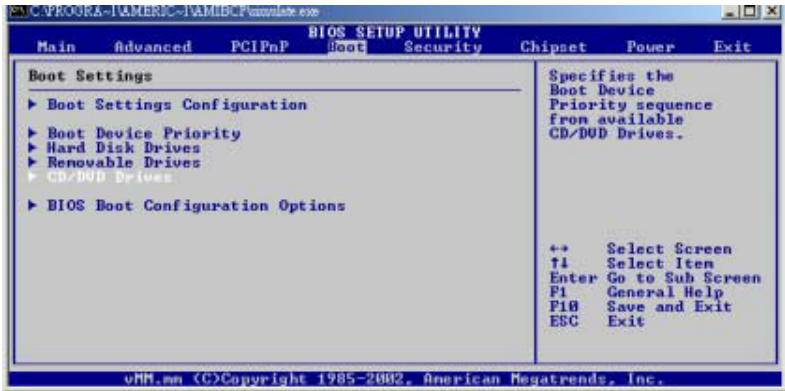
Important: Due to the different BIOS versions, this BIOS screen will possibly be not exactly the same with what you see while you are setting up DNS BIOS. Please read the right description column carefully on your BIOS screen. For any further setup questions, please contact with our Technology Support staff.

## Advanced Menu

You can make these modifications on the Advanced Menu. Select the Submenus to modify those settings.

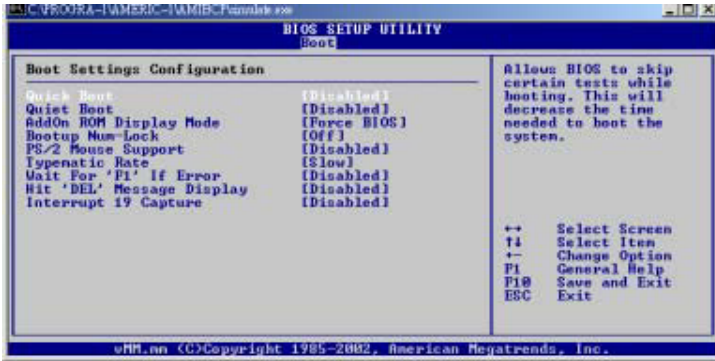
- CPU Configuration
- IDE Configuration
- Floppy Configuration
- SuperIO Configuration
- Hardware Health Configuration
- ACPI Configuration
- Event Log Configuration
- MPS Configuration
- PCI-Express Configuration
- Remote Access Configuration
- USB Configuration

### Boot Menu



Feature	Description
Boot Device Priority	Specify the boot device priority sequence
Hard Disk Drives	Specify the boot device priority sequence from available hard drives
Removable Drives	Specify the boot device priority sequence from available removable drives
CD/DVD Drives	Specify the boot device priority sequence from available CD/DVD drives

### Boot Setting Configuration Submenu



Feature	Option	Description
Quick Boot	Disabled Enabled	Allows BIOS to skip tests while booting
Quiet Boot	Disabled Enabled	Disabled: display normal POST messages Enabled: display OEM logo
AddOn ROM Display Mode	Force BIOS Keep Current	Set display mode for option ROM
Bootup Num-Lock	Off On	Select power on state for NumLock
PS/2 Mouse Support	Disabled Enabled	Select support for PS/2 mouse
Typematic Rate	Slow Fast	Select keyboard typematic rate

Wait for "F1" if error	Disabled Enabled	Wait for F1 key to be pressed if error occurs
Hit 'DEL' Message Display	Disabled Enabled	Display "Press DEL to run Setup" in POST
Interrupt 19 Capture	Disabled Enabled	Enabled: allows option ROMs to trap interrupt 19

## Exit Menu



Feature	Description
Save Changes and Exit	Exit system setup after saving the changes. F10 key can be used for this operation
Discard Changes and Exit	Exit system setup without saving the changes. ESC key can be used for this operation
Discard Changes	Discard changes done so far to any of the setup questions. F7 key can be used for this operation
Load Optimal Defaults	Load optimal default values for all the setup questions. F9 key can be used for this operation
Load Failsafe Defaults	Load Failsafe default values for all the setup questions. F8 key can be used for this operation

# **Chapter 5**

## **OS and Drivers Installation**

## OS Installation

DNS can be run on **Windows 2000, XP, Server 2003 and Linux (SuSe64, RedHat, Turbo)** system.

DNS supports the Intel Extended Memory 64 bit Technology. In order to run the full advantage of 64 bit, you should install OS with 64 bit architecture.

For the 64 bit OS information, you can go to the below website to find out more information.

- Contact Microsoft for additional details.  
[www.microsoft.com/presspass/press/2004/feb04/02-17ExtendedTechnologyPR.asp](http://www.microsoft.com/presspass/press/2004/feb04/02-17ExtendedTechnologyPR.asp)
- Contact Red Hat for additional details.  
<https://rhn.redhat.com>
- Contact SuSE for additional details.  
[http://www.suse.com/us/partner/become\\_partner/technology\\_partner.html](http://www.suse.com/us/partner/become_partner/technology_partner.html)



## Drivers Installation

Inside the motherboard package, you could find a Power installation CD. It contains the required drivers.

1. Marvell driver for the serial-ATAII devices
2. Boardcom GbE LAN Driver
3. INF Driver
4. USB 2.0 Driver (for Windows 2000)

Inside the CD, you can also find the free software “Acrobat Reader” to help you read our pdf.file. Besides, this user’s manual will also be placed inside this the CD-ROM.

If you have any question about how to install operation system, please check on IWILL website [www.iwill.net](http://www.iwill.net) or contact with our Technology Supporters. We also suggest you visit our website for downloading the latest BIOS and drivers regularly.

# MEMO

# MEMO

# MEMO

# MEMO

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# MEMO

# MEMO