IP-4BEI26
Series

(Industrial Board)

INSTALLATION GUIDE

Installation Guide Revision 02
Oct 2003

i

CONTENTS

CONTENTS

INTRODUCTION

1.1   Unpacking IP-4BEI26 Series

1. Take out the IP-4BEI26 series unit from the carton box, check if the unit is properly secure in the plastic bag.

2. Check the contents of the carton box:

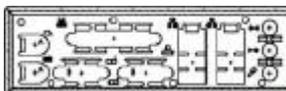☞ Industrial Board   ☞ Installation Guide

☞ Floppy ribbon cable   ☞ ATA-66/100 HDD ribbon cable

☞ Driver Utility   ☞ I/O Shield

1.2 Description

The IP-4BEI26 Series combines the high performance and exceptional value of Intel® 845E chipset with a full-featured, new generation, industrial board. The Intel® advanced 845E chipset support socket 478-pins Intel® Pentium® 4 / Celeron™ processors of 1.3GHz and up to 3.06GHz, Pentium® 4 Mobile processors of 1.2GHz and up to 2.4GHz that memory base on the FSB 400/533MHz operation supports DDR SDRAM interface. In the meantime, the IP-4BEI26 system memory size can be up to 2GB DDR 200/266 memory, besides, the IP-4BEI26 onboard two Intel® 82540 or 82541 Gigabit Ethernet controllers support 10/100/1000 Base-TX Ethernet, two COM ports, AC97 Audio and ISA slots.

The 82801DB I/O Controller Hub (ICH4) employs the Intel® Accelerated Hub Architecture to make a direct connection from the graphics and memory to the integrated Ethernet controller, the IDE controllers (ATA/33 or ATA/66 or ATA/100), six USB ports that are supported USB 1.1/2.0 standard meets the performance, stability and reliability requirements.

The industrial board - IP-4BEI26 is suitable and valuable for all the industry applications, which also well support with the Windows® 95/98/2000/SE/ME and Windows® NT operation system.

1.3 Features

1.3.1 Ethernet & Audio
The IP-4BEI26 is base on the Intel® 845E chipset, offers users the 4XAGP slot, onboard Ethernet and Audio function. The features of chipset are as below:

☞ Enhanced 4XAGP slot & system performance:
    - 400/533 FSB support
☞ Memory:
    - DDR SDRAM, DDR200/266
    - 2.0GB Max. Memory
    - 2 DIMM, with ECC
☞ Southbridge - ICH4:
    - AC97 Audio
    - 6 Hi-Speed USB2.0 ports

1.3.2   Ultra ATA/66/100

The ICH4 provides two channel Ultra ATA/66/100 Bus Master IDE controller, that support Ultra ATA/66/100 protocols, perfect for such demanding applications as real-time video, multimedia, and high performance operating system. A new IDE cable is required for Ultra ATA/66/100. This cable is an 80-conductor cable; however the connectors are, of course, backwards compatible with ATA/33.

1.3.3   Hardware Monitoring

Hardware monitoring allows you to monitor various aspects of your systems operations and status. The features include CPU temperature, voltage and RPM of fan.

1.3.4   I/O Shield Connector

The board is equipped with an I/O back panel. Please use the appropriate I/O shield (Figure 1).

3
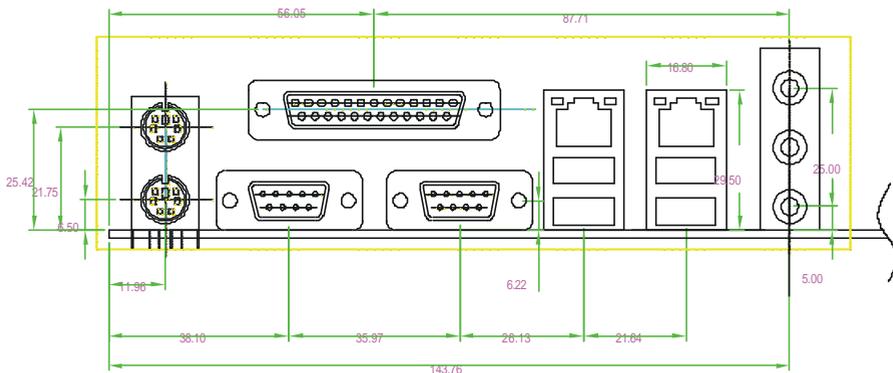
1.3.5   Power-On/Off (Remote)

The board has a single 20-pin connector for ATX power supplies. For ATX power supplies that support the Remote On/Off feature, this should be connected to the systems front panel for system Power On/Off button. The systems power On/Off button should be a momentary button that is normally open.

The board has been designed with "Soft Off" functions. You can turn Off the system from one of two sources: The first is the front panel Power On/Off the button, and the other is the "Soft Off" function (coming from the M/B   s onboard circuit controller) that can be controlled by the operating system such as Windows® 95/98/SE/ME or Windows® 2000.

1.3.6   IP-4BEI26 Series Overview

Function / Model	IP-4BEI26
☞ Chipset	Intel® 845E
☞ VGA Function	/
☞ Ethernet Function	Dual
☞ Audio Function	☞
☞ EIDE Interface	2
☞ Floppy Interface	1
☞ One Parallel	1
☞ 4XAGP Slot	1
☞ PCI Slots	4 (One shared ISA slot)
☞ ISA Slots	3
☞ Serial Ports	2
☞ USB 2.0 Ports (two for Optional USB Cable)	6
☞ Fan Connectors	3

1.3.7 System Block Diagram

```
┌──────────┐      ┌─────────────────┐      ┌──────────┐
│          │      │ Socket 478-pins │      │          │
│   VRM    │◄────►│ for             │◄────►│  Clock   │
│          │      │ Intel Regular P4P│      │          │
└──────────┘      │ or              │      └──────────┘
                  │ Intel P4 Mobile │
                  └─────────────────┘
                    ADDR  CTRL  DATA
                        400/533MHz FSB

┌──────────┐  AGP 4X  ┌─────────────┐         ┌──────────────┐
│   CRT    │◄────────►│ MCH (845E)  │◄───────►│ DDR200/266 X2│
│  Device  │          │ 593 FC-BGA  │         └──────────────┘
└──────────┘          └─────────────┘

┌──────────────┐ ATA100  ┌─────────────┐      ┌──────────┐   ┌──────────────┐
│ IDE Primary  │◄───────►│             │◄────►│  Ac97    │   │ Dual         │
├──────────────┤         │   ICH4      │      │  Audio   │   │ 82540EM      │
│ IDE Secondary│         │   421 BGA   │      │  Codec   │   │ 10/100/1000  │
└──────────────┘         │             │      └──────────┘   │ Base-TX      │
                         │             │                     └──────────────┘
┌──────────────┐ USB2.0  │             │                           ▲        ┌──────────┐
│ USB Port 1/2 │◄───────►│             │                           │        │ PCI SLOTS│
├──────────────┤         │             │◄──────── PCI BUS ─────────┼───────►│          │
│ USB Port 3/4 │         └─────────────┘                           │        └──────────┘
├──────────────┤
│ USB Port 5/6 │
└──────────────┘
                    ┌─────────────┐      ┌──────────────┐ ISA BUS  ┌──────────┐
┌──────────┐        │ Super I/O   │      │ iTE Bridge   │◄────────►│ISA SLOTS │
│   FWH    │◄───────│ W83627HF    │      │ IT8888F      │          │          │
└──────────┘        └─────────────┘      └──────────────┘          └──────────┘

                    ┌─────────────┐
                    │ Keyboard    │
                    ├─────────────┤
                    │ Mouse       │
                    ├─────────────┤
                    │ COM Port    │
                    ├─────────────┤
                    │ LPT Port    │
                    ├─────────────┤
                    │ Floppy      │
                    └─────────────┘
```
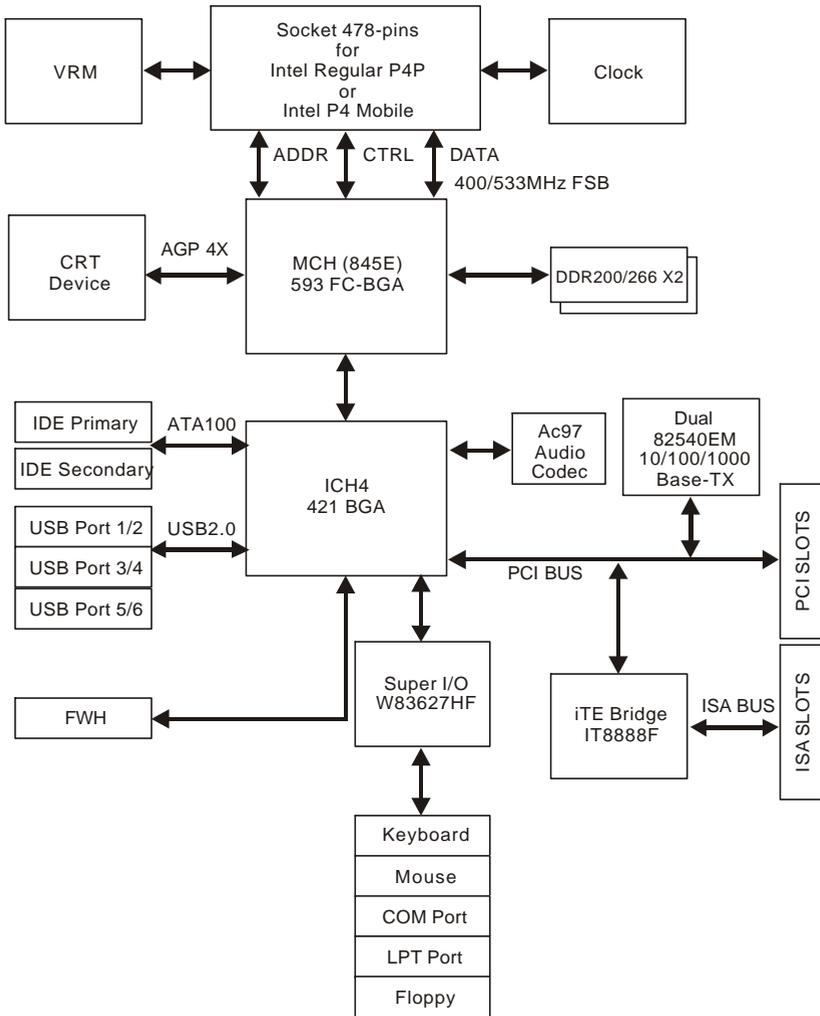
Figure 2: System Block Diagram

1.4   Specifications

☞ **Processor:**
- Intel® Pentium® 4 / Celeron™ processor with socket 478-pin package
- Intel® Pentium® 4 Mobile™ processor with socket 478-pin package
- System bus frequency at 400/533 MHz FSB

☞ **Chipset:**
- Intel® 82845E AGPset

☞ **DRAM Module:**
- Two 184-pins Sockets
- For DDR200/266 SDRAM Memory, with ECC
- Support DDR SDRAM up to 2GB (Max.)

☞ **Ethernet Function:**
- Two Intel® 82540 or 82541 Gigabit Ethernet controller
- For 10/100/1000 Base-TX Ethernet
- Onboard two RJ-45 Ethernet connectors

☞ **Audio Function:**
- AC97 Audio Codec

☞ **Expansion Slot:**
- 1 x 4XAGP slot
- 4 x PCI slots (One shared ISA slot)
- 3 x ISA slots

☞ **Onboard I/O:**
- On-Chip I/O integrated with K/B, Mouse, FDD, Parallel and Serial,
  Fast IR and Power-ON controllers

☞ **Onboard PCI / IDE:**
- Intel® (ICH4) Controller
- PCI rev2.2 Compliant
- ACPI Compliant Power Management
- PCI Bus IDE Port with PIO /Ultra DMA-100 x 2 (Up to 4 Devices)

☞ **Rear I/O Connectors:**
- PS/2 Mouse and PS/2 style Keyboard
- D-Sub 25-pins Printer port connector
  Dual D-Sub 9-pins Serial port connectors for RS-232
- Gigabit RJ-45 Ethernet LAN1 connector
  2 x USB2.0 connectors
- Gigabit RJ-45 Ethernet LAN2 connector
  2 x USB2.0 connectors
- Audio for Line-In, Line-Out, MIC phone jack

☞ **Internal I/O Connectors (pin-header):**
- 2 x USB2.0 connectors (for USB ports cable with bracket)

☞ **BIOS:**
- Award Plug & Play BIOS

☞ **Form Factor:**
- 12" x 8.7" (305 x 220mm) ATX Size

☞ **Weight:**
- 1.44lb (650g) --- IP-4BEI26

INSTALLATIONS

2.1   System Installation

2.1.1   CPU Installation

Carefully follow the steps below in order to install the CPU:

1. Check and confirm that the jumpers are correctly set for the CPU you are going to install (figure 3).

2. Lift the releasing lever of the Socket 478.

3. Align the pins of the CPU against the pinholes of the Socket 478. Be sure to pay attention to the orientation of the CPU.
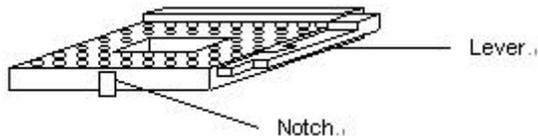

Figure 3: CPU Socket

4. Push down the CPU into the Socket 478.

5. Push down the release lever and lock it against the key hook.

6. Hook the hole in ZIF clip for the CPU cooling fan onto the notch on the socket 478.

7. Place the CPU cooling fan atop the CPU surface.

8. Push down the opposite side of the ZIF clip and hook it.

9. Slide the head of the clip to left and lock it.

10. Connect the cooling fan cable to the socket as shown below. Be careful not to place the cable on the CPU cooling fan.

Removing a CPU:
1. Before removing the CPU, turn off the IP-4BEI26 Series power; then wait for about 20 minutes until the heat radiation plate of the cooling fan and the CPU cools down.

2. To remove the CPU, lift the releasing lever of the Socket 478.

Note: The CPU and the heat radiation plate are hot. They may cause burns.

To remove the CPU, reverse the installation steps.

2.1.2   Heat Sink & Retention Module Installation

Make sure that good contact is made between the processors and the heat sinks & fan. Insufficient contact, incorrect types of heat sinks, fans, or thermal compound used or improper amount of thermal compound applied on the CPU die can cause the processors to overheat, which may crash the system.

Heat Sink & Fan   Retention Module   Installation
(For P4 processor only)   (For P4 Heat Sink & Fan)
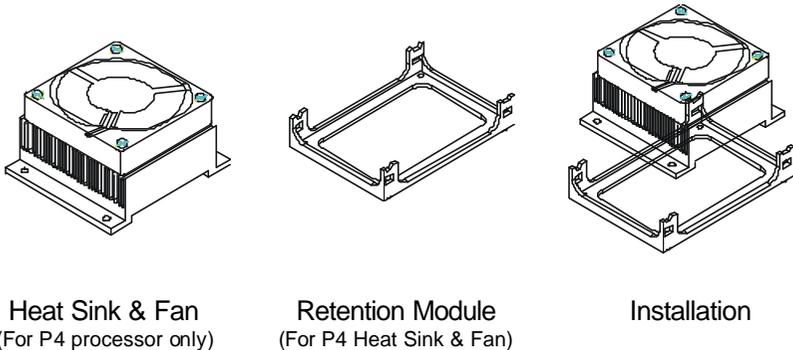
Figure 4: Heat Sink & Retention Module Installation

2.1.3   Memory Module Installation

Figure 5 display the notch marks and what they should look like on your DIMM memory module.

DIMMs have184-pins and two notches, that will match with the onboard DIMM socket. DIMM modules are installed by placing the chip firmly into the socket at a 90-degree angle and pressing straight down (figure 6) until it fits tightly into the DIMM socket.
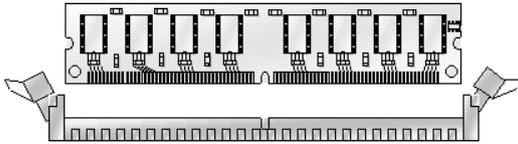

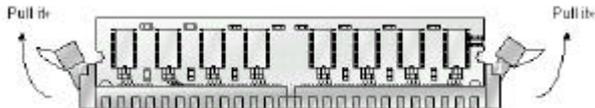Figure 5: DIMM Memory and 184-pins Socket

Figure 6: Memory Installation

Carefully follow the steps below in order to install the DIMMs:

1. To avoid generating static electricity and damaging the DIMM, ground yourself by touching a grounded metal surface or using a ground scrap before you touch the DIMM.

2. Do not touch the connector of the DIMM. Dirt residue may cause a malfunction.

3. Hold the DIMM with its notch to the front side of the M845D Series and insert it completely into the socket. A DIMM should be inserted into the inner socket first. Guiding the hole at each end of the DIMM over the retaining post at each end of the DIMM socket.

4. If you install two DIMMs, install the second DIMM using the same procedure as above.

5. If DIMM does not go in smoothly, do not force it. Pull it all the way out and try again.

6. Make sure the DIMM is properly installed and locked by the tabs on both sides of the socket.

Removing a DIMM:
To remove the DIMM, use your fingers or a small screwdriver to carefully push away the plastic tabs that secure the DIMM at each end. Lift it out of the socket.

Make sure you store the DIMM in an anti-static bag and must be populated the same size and manufactory of memory modules.

2.1.4   Setting Jumpers and DIP Switches

There are jumpers and DIP-switches on the system board of the IP-4BEI26 Series. You can set the jumpers to make the necessary operations.
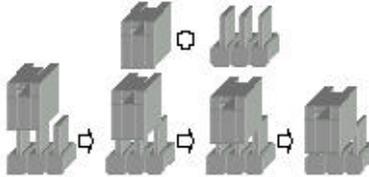

Figure 7: Jumper Connector

For any three-pin jumpers (Figure 7), the jumper setting is 1-2 when the jumper connects pins 1 and 2. The setting is 2-3 when pins 2 and 3 are connected and so on. You see a number " 1 " and a " 3 " printed on the circuit board to identify these pins. And also, there is a second way of indication – one of the lines surrounding jumpers is thick, which indicates pin NO.1.

To move a jumper from one position to another, use needle-nose pliers or tweezers to pull the pin cap off the pins and move it to the desired position.

2.2 Board Layout
Jumper & Connector Location
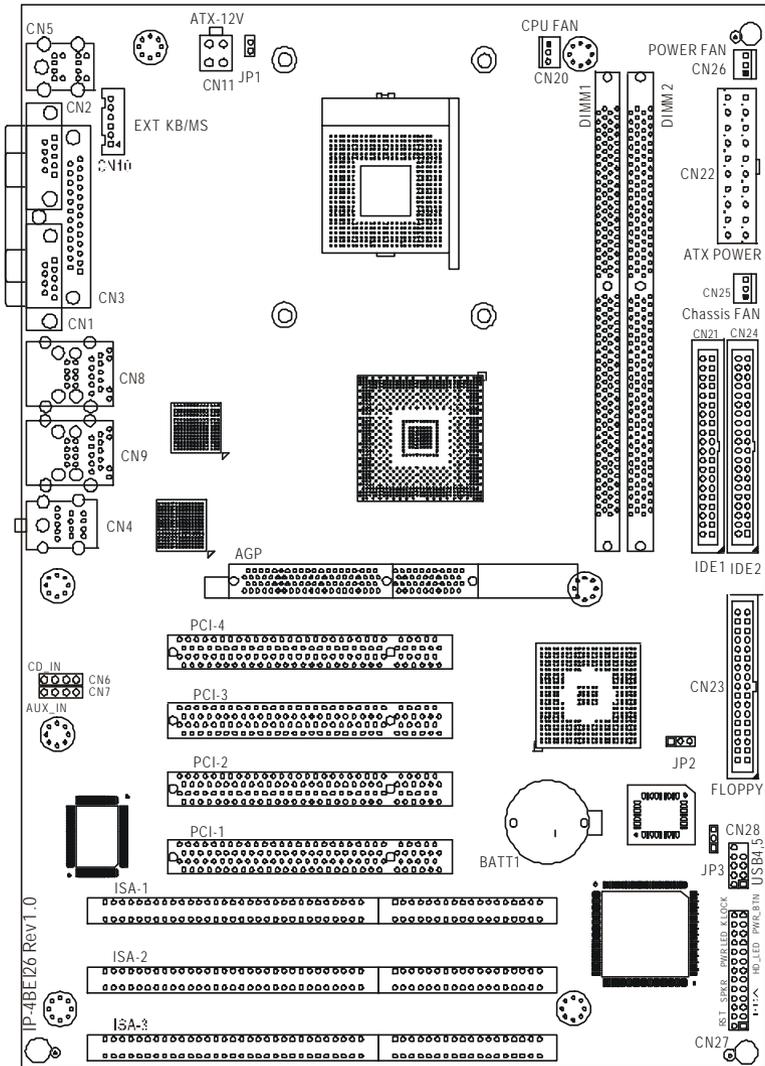
2.3 Jumper Setting

Table for Jumper Location Description:
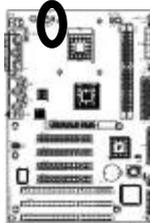Use the information in the following table to change the jumpers and the DIP switches.

Jumpers	Functions
JP1	P4-P / P4-M CPU Setting Select
JP2	Clear CMOS Setting Select
JP3	Watchdog Timer Setting Select

In order to set up the correct configuration, here is the description about how to set the jumpers to enable/disable or change functions. All jumpers' location please refer to jumper location diagram.

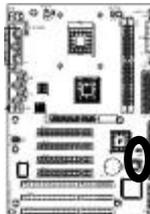☞ **P4-P/P4-M CPU Setting Select: JP1**

Function	JP1
P4P (Default)	ON
P4M	OFF

☞**Location:**

☞ **Clear CMOS Setting Select: JP2**

Function	JP2
Normal (Default)	1-2
Clear CMOS	2-3

☞**Location:**

16

) **Watchdog Timer Setting Select: JP3**

Function	JP3
NMI	1-2
Reset System (Default)	2-3

)**Location:**
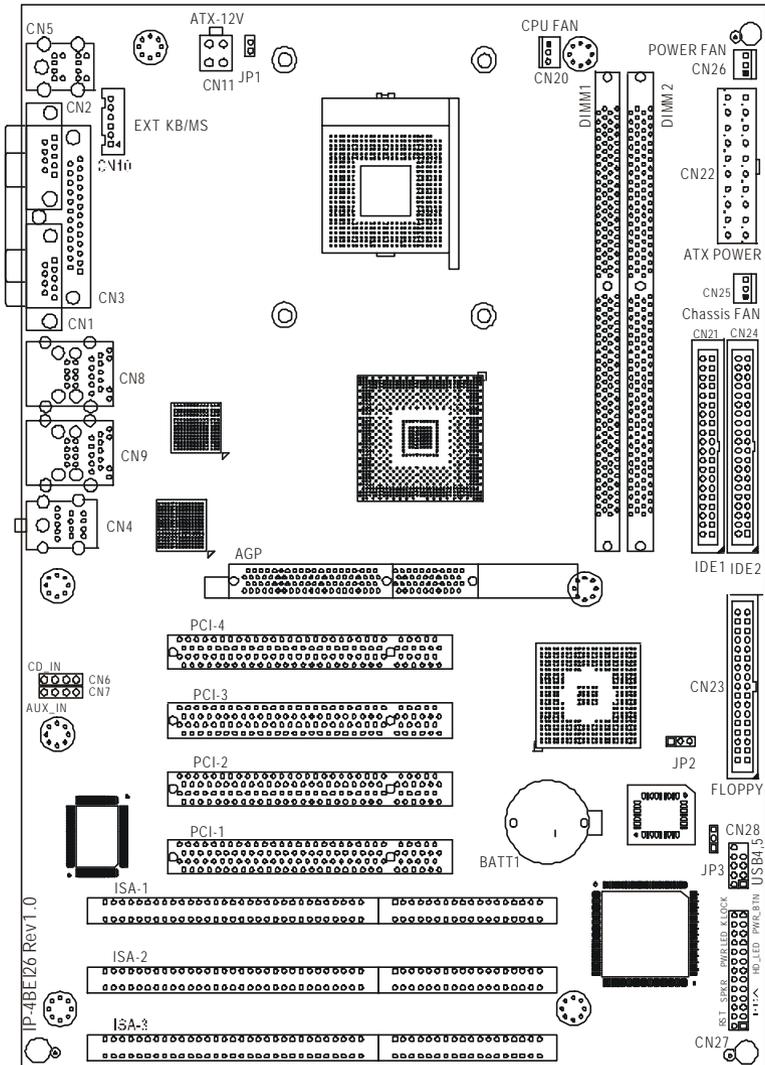
2.4 Connector's Description
Connector Location

Table for Connector's Location Description:
Use the information in the following table to change the connector.

Connectors	Functions
CN1	COM2 RS-232 Serial Port Connector
CN2	COM1 RS-232 Serial Port Connector
CN3	Parallel Port Connector
CN4	Audio port Connector
CN5	PS/2 Keyboard Mouse Connector
CN6	AUX_IN Connector
CN7	CD _IN Connector
CN8	Ethernet RJ-45 LAN1 & USB 0/1 Connector
CN9	Ethernet RJ-45 LAN2 & USB 2/3 Connector
CN10	Ethernet K/B & M/S Connector
CN11	ATX 12V Power Connector
CN20	CPU Fan Power Connector
CN21	Secondary IDE Connector
CN22	ATX Power Connector
CN23	Floppy Disk Connector
CN24	Primary IDE Connector
CN25	Chassis Fan Power Connector
CN26	Power Fan Power Connector
CN27	System Panel Indicate Connector
CN28	USB 4/5 (Pin-Header) Connector

☞ **COM2 RS-232 Serial Port Connector (D-Sub 9-pin Male): CN1**

Pin #	Assignment	Pin #	Assignment
1	DCD (Data Carrier Detect)	6	DSR (Data Set Ready)
2	RXD (Receive Data)	7	RTS (Request to Send)
3	TXD (Transmit Data)	8	CTS (Clear to Send)
4	DTR (Data Terminal Ready)	9	RI (Ring Indicator)
5	Ground		

☞**Figure:**
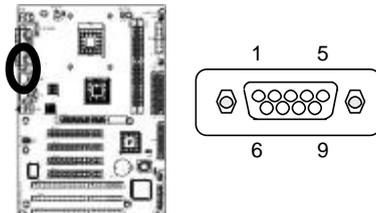
☞ **COM1 RS-232 Serial Port Connector (D-Sub 9-pin Male): CN2**

Pin #	Assignment	Pin #	Assignment
1	DCD (Data Carrier Detect)	6	DSR (Data Set Ready)
2	RXD (Receive Data)	7	RTS (Request to Send)
3	TXD (Transmit Data)	8	CTS (Clear to Send)
4	DTR (Data Terminal Ready)	9	RI (Ring Indicator)
5	Ground		

☞**Figure:**
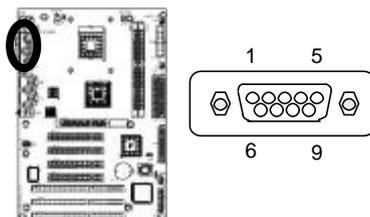
) **Parallel Port Connector (D-Sub 25-pin Male): CN3**

Pin #	Assignment	Pin #	Assignment
1	Line Printer Strobe	14	Auto Feed
2	PD 0, Parallel Data 0	15	Error
3	PD 1, Parallel Data 1	16	Initialize
4	PD 2, Parallel Data 2	17	Select
5	PD 3, Parallel Data 3	18	Ground
6	PD 4, Parallel Data 4	19	Ground
7	PD 5, Parallel Data 5	20	Ground
8	PD 6, Parallel Data 6	21	Ground
9	PD 7, Parallel Data 7	22	Ground
10	ACK, Acknowledge	23	Ground
11	Busy	24	Ground
12	Paper Empty	25	Ground
13	Select	26	N/A

)**Figure:**
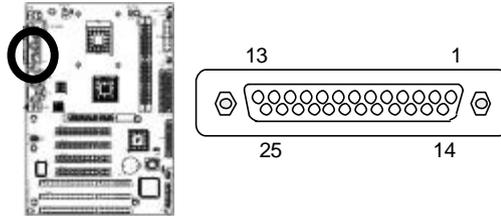
) **Audio Port Connector: CN4**

Pin #	Assignment
Blue	Line -In
Green	Line-Out
Pink	Mic-In

)**Figure:**
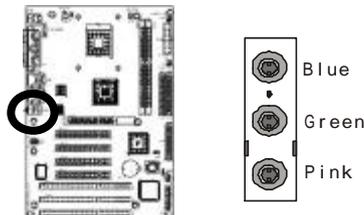
☞ **PS/2 Keyboard Connector (6-pin Green Mini Din): CN5**

Pin #	Assignment	Pin #	Assignment
1	Keyboard data	2	NC
3	Ground	4	+5V
5	Keyboard clock	6	NC

☞**Figure:**
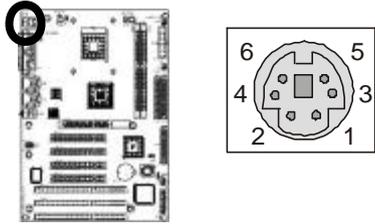
☞ **PS/2 Mouse Connector (6-pin Purple Mini Din): CN5**

Pin #	Assignment	Pin #	Assignment
1	Mouse data	2	NC
3	Ground	4	+5V
5	Mouse clock	6	NC

☞**Figure:**
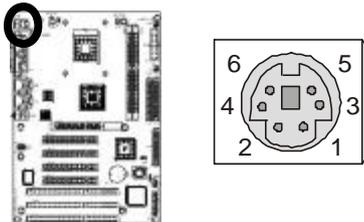
☞ **AUX_IN Connector (4-pin Male): CN6**

Pin #	Assignment
1	Left Line_IN
2	Ground
3	Ground
4	Right Line_IN_

☞**Figure:**

■○ ○○
1   4
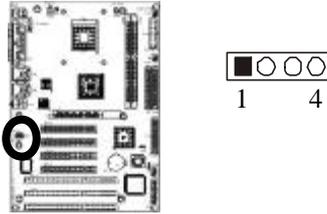
☞ **CD_IN Connector (4-pin Male): CN7**

Pin #	Assignment
1	CD_IN_Left
2	CD_Reference
3	CD_Reference
4	CD_IN_Right

☞**Figure:**

■○ ○○
1   4
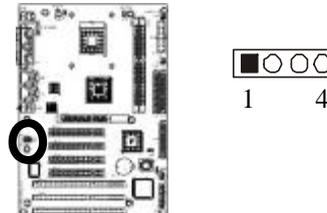
☞ Ethernet (82540/82541) RJ-45 Connector (RJ-45 Phone–jacket): CN8

Pin #	Assignment	Pin #	Assignment
1	Transmit output (+)	5	NC
2	Transmit output (-)	6	Receive input (-)
3	Receive input (+)	7	NC
4	NC	8	NC
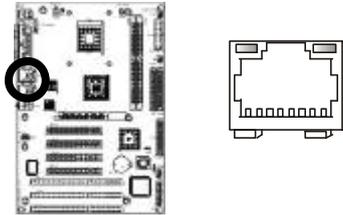
☞**Figure:**

☞ USB 0/1 Connector (4-pin Female): CN8

Pin #	Assignment	Pin #	Assignment
1a	Vcc via Ploy-fuse	1b	Vcc via Poly-fuse
2a	USB0 -	2b	USB1 -
3a	USB0 +	3b	USB1 +
4a	Signal ground	4b	Signal ground
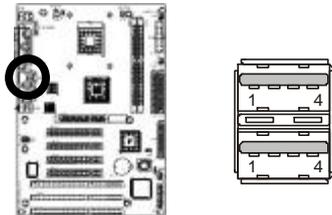
☞**Figure:**

) **Ethernet (82540/82541) RJ-45 Connector (RJ-45 Phone–jacket): CN9**

Pin #	Assignment	Pin #	Assignment
1	Transmit output (+)	5	NC
2	Transmit output (-)	6	Receive input (-)
3	Receive input (+)	7	NC
4	NC	8	NC
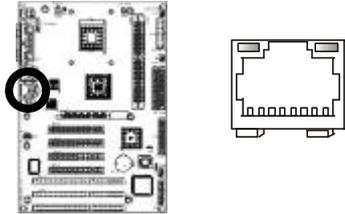
)**Figure:**

) **USB 2/3 Connector (4-pin Female): CN9**

Pin #	Assignment	Pin #	Assignment
1a	Vcc via Ploy-fuse	1b	Vcc via Poly-fuse
2a	USB2 -	2b	USB3 -
3a	USB2 +	3b	USB3 +
4a	Signal ground	4b	Signal ground
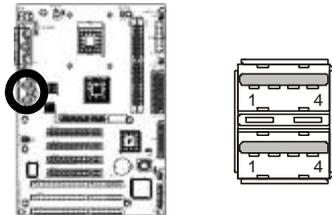
)**Figure:**

☞ **External K/B & M/S Connector (6-pin Male): CN10**

Pin #	Assignment
1	MS Clock
2	MS Data
3	KB Clock
4	KB Data
5	Ground
6	VCC

☞**Figure:**
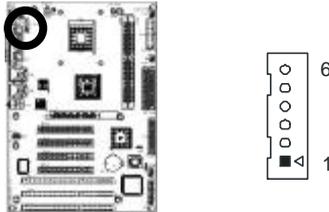
☞ **ATX 12V Power Connector: CN11**

Pin #	Assignment	Pin #	Assignment
1	Ground	3	+12V
2	Ground	4	+12V

☞**Figure:**
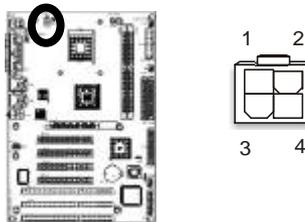
) **CPU Fan Power Connector: CN20**

Pin #	Assignment
1	Ground
2	+12V
3	Sense

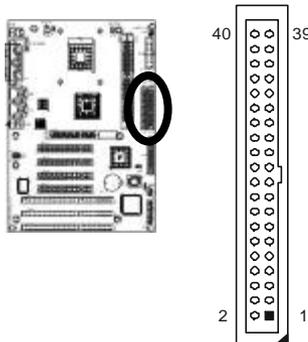)**Figure:**
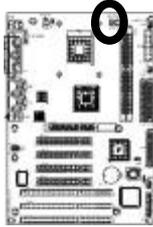
 Secondary IDE Connector (40-pin 2.54mm Pitch Pin-Header with Housing): CN21

Pin #	Assignment	Pin #	Assignment
1	Reset IDE	2	Ground
3	Host Data 7	4	Host Data 8
5	Host Data 6	6	Host Data 9
7	Host Data 5	8	Host Data 10
9	Host Data 4	10	Host Data 11
11	Host Data 3	12	Host Data 12
13	Host Data 2	14	Host Data 13
15	Host Data 1	16	Host Data 14
17	Host Data 0	18	Host Data 15
19	Ground	20	NC
21	DRQ 1	22	Ground
23	Host IOW	24	Ground
25	Host IOR	26	Ground
27	IOCHRDY	28	Host ALE
29	DACK 1	30	Ground
31	IRQ 15	32	NC
33	Address 1	34	NC
35	Address 0	36	Address 2
37	Chip Select 0	38	Chip Select 1
39	Activity	40	Ground

Figure:

☞ ATX Power Connector: CN22

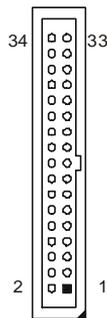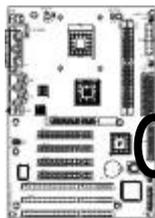| Pin #	Assignment	Pin #	Assignment
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	Ground	13	Ground
4	+5V	14	PS-ON
5	Ground	15	Ground
6	+5V	16	Ground
7	Ground	17	Ground
8	PW-OK	18	-5V
9	5VSB	19	+5V
10	+12v	20	+5V

☞**Figure:**
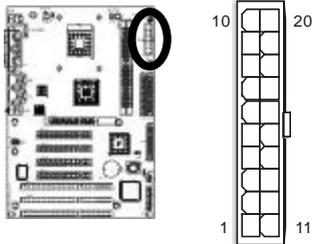
☞ Floppy Disk Connector (34-pin 2.54mm Pitch Pin-Header with Housing): CN23

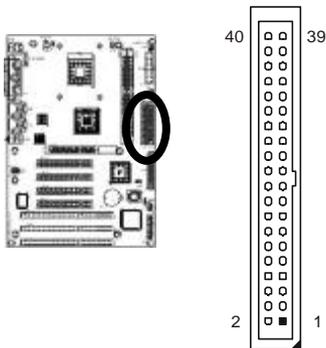| Pin #	Assignment	Pin #	Assignment
1	Ground	2	Drive Density Selection
3	Ground	4	NC
5	Ground	6	Drive Density Selection
7	Ground	8	Index
9	Ground	10	Motor Enable 0
11	Ground	12	Drive Select 1
13	Ground	14	Drive Select 0
15	Ground	16	Motor Enable 1
17	Ground	18	Direction
19	Ground	20	Step
21	Ground	22	Write Data
23	Ground	24	Write Gate
25	Ground	26	Track 00
27	Ground	28	Write Protect
29	Ground	30	Read Data
31	Ground	32	Head Select
33	Ground	34	Diskette Change

☞**Figure:**

☞ **Primary IDE Connector (40-pin 2.54mm Pitch Pin-Header with Housing): CN24**

Pin #	Assignment	Pin #	Assignment
1	Reset IDE	2	Ground
3	Host Data 7	4	Host Data 8
5	Host Data 6	6	Host Data 9
7	Host Data 5	8	Host Data 10
9	Host Data 4	10	Host Data 11
11	Host Data 3	12	Host Data 12
13	Host Data 2	14	Host Data 13
15	Host Data 1	16	Host Data 14
17	Host Data 0	18	Host Data 15
19	Ground	20	NC
21	DRQ 0	22	Ground
23	Host IOW	24	Ground
25	Host IOR	26	Ground
27	IOCHRDY	28	Host ALE
29	DACK 0	30	Ground
31	IRQ 14	32	NC
33	Address 1	34	NC
35	Address 0	36	Address 2
37	Chip Select 0	38	Chip Select 1
39	Activity	40	Ground

☞**Figure:**

) **Chassis Fan Power Connector: CN25**

Pin #	Assignment
1	Ground
2	+12V
3	Sense
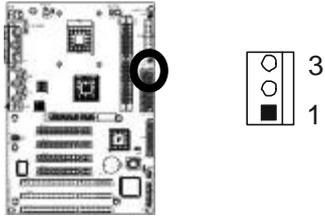
)**Figure:**

) **Power Fan Power Connector: CN26**

Pin #	Assignment
1	Ground
2	+12V
3	Sense

)**Figure:**
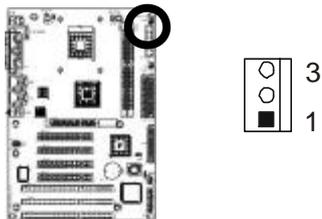
☞ **System Panel Indicate Connector: CN27**

Pin #	Assignment	Pin #	Assignment
IR		**RESET**	
1	+5V	1	RESET+
2	FIRTX	2	RESET-
3	IRRX	**SPEAKER**	
4	Ground	4	SPEAKER
5	IRTX	5	NC
HDD LED		6	Ground
7	HDLED+	7	+5V
8	HDLED-	**PWR LED**	
TB LED		9	PWLED+
9	TBLED+	10	NC
10	TBLED-	11	PWLED-
PWR ON		**KEYLOCK**	
12	PWRBT+	12	KBLOCK
13	PWRBT-	13	Ground

☞**Figure:**
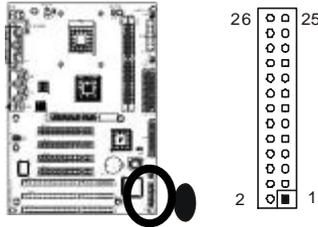
☞ **USB 4/5 Connector (10-pin Pin-Header): CN28**

Pin #	Assignment	Pin #	Assignment
1	VCC	2	VCC
3	USB4 -	4	USB5 -
5	USB4 +	6	USB5 +
7	Ground	8	Ground
9	--	10	NC

☞**Figure:**