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330827 User's Manual

Full Size PICMG 1.0 SBC

Version 1.0

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Safety Instructions

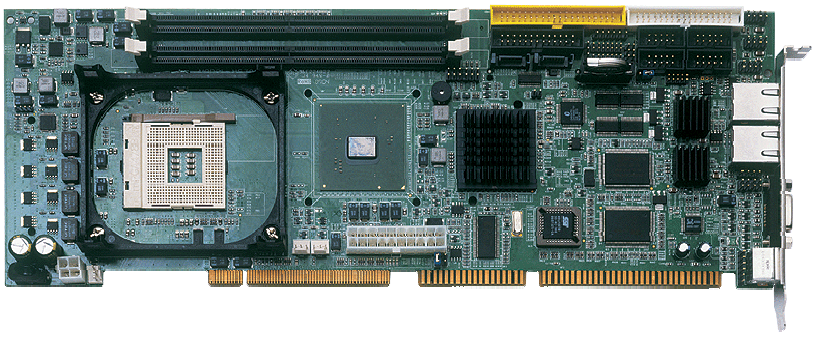
Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This helps to discharge any static electricity on your body.
- Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components. Fasten the ALLIGATOR clip of the strap to the end of the shielded wire lead from a grounded object. Please wear and connect the strap before handle the product to ensure harmlessly discharge any static electricity through the strap.
- Please use an anti-static pad when putting down any components or parts or tools outside the computer. You may also use an anti-static bag instead of the pad. Please inquire from your local supplier for additional assistance in finding the necessary anti-static gadgets.

NOTE: *DO NOT TOUCH THE BOARD OR ANY OTHER SENSITIVE COMPONENTS WITHOUT ALL NECESSARY ANTI-STATIC PROTECTIONS.*

Chapter 1

General Description



The 3308270 is an Intel® 915GV GMCH chipset-based board designed. The 3308270 is an ideal all-in-one PICMG Bus SBC. Additional features include an enhanced I/O with CF, CRT/LVDS, dual GB LAN, audio, SATA, COM, and USB2.0 interfaces.

Designed with the Intel® 915GV GMCH, the board supports Intel® Pentium® 4 processor 2.8~3.4GHz.

Its onboard ATA/33/66/100 to IDE drive interface architecture allows the 3308270 to support data transfers of 33, 66 or 100MB/sec. to one IDE drive connection. The Intel® ICH6 serial ATA controller with two ports supporting transfer rates up to 150MB/sec.

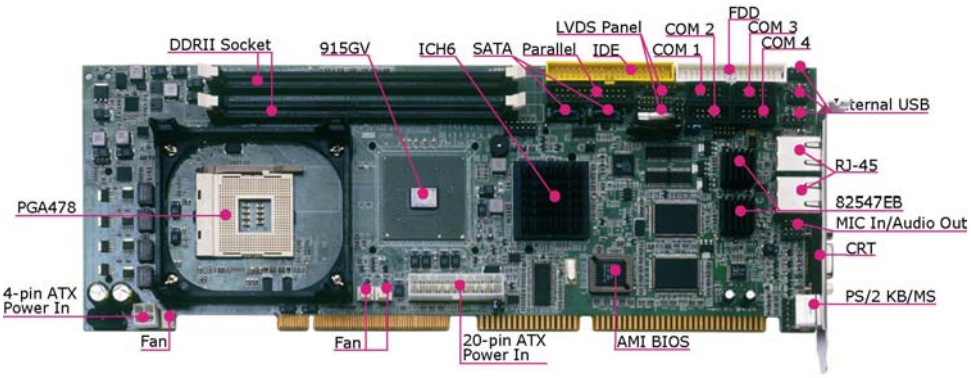
Onboard Intel® 915GV GMCH chipset for CRT display supporting up to 1600 x 1200 x 32-bit at 60MHz. It also supports 24-bit single channel/48-bit dual channel LVDS interface.

System memory is also sufficient with the two DDRII sockets that can support up to 2GB.

Additional onboard connectors include an advanced USB2.0 port providing faster data transmission. And two external RJ-45 connectors for 10/100/1000 Based Ethernet uses.

To ensure the reliability in an unmanned or standalone system, the watchdog timer (WDT) onboard 3308270 is designed with software that does not need the arithmetical functions of a real-time clock chip. If any program causes unexpected halts to the system, the onboard WDT will automatically reset the CPU or generate an interrupt to resolve such condition.

1.1 Major Features



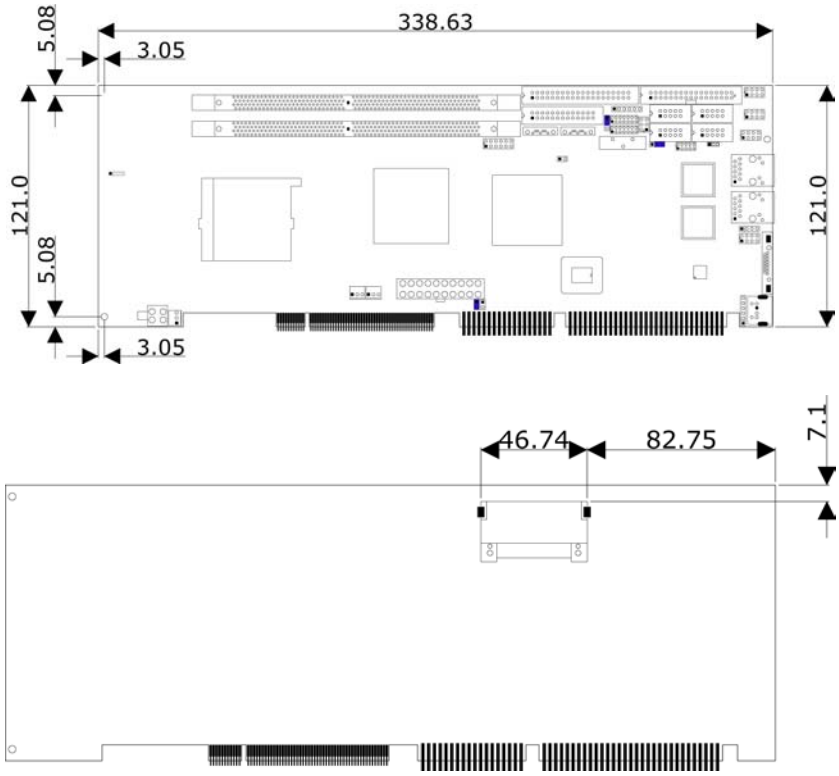
The 3308270 comes with the following features:

- Intel® Pentium® 4 processor 2.8~3.4GHz
- Supports 800MHz FSB, 8-bit ISA Bus
- Two DDRII sockets with a max. capacity of 2GB
- Intel® 915GV GMCH/ICH6 chipset
- Winbond W83627HG super I/O chipset
- Intel® 915GV graphics controller
- 24-bit/48-bit LVDS panel display interface (optional)
- Dual Intel® 82573L Gigabit Ethernet controller
- AC97 3D audio controller
- Intel® ICH6 Serial ATA controller
- Fast PCI ATA/33/66/100 IDE controller
- CF, 4 COM, 6 USB2.0 ports
- Hardware Monitor function

1.2 Specifications

- **CPU:** Intel® Pentium® 4 processor 2.8~3.4GHz
- **Bus Interface:** PICMG1.0 Bus, 8-bit ISA Bus
- **Front Side Bus:** Supports 533/800MHz FSB
- **Memory:** Two DDRII sockets supporting up to 2GB
- **Chipset:** Intel® 915GV GMCH/ICH6
- **I/O Chipset:** Winbond W83627HG
- **CompactFlash:** One, Type I/II IDE interface adapter
- **VGA:** Intel® 915GV supporting CRT display up to 1600 x 1200 x 32-bit
- **LVDS Panel:** Supports 24-bit single channel/48-bit dual channel LVDS interface (optional)
- **Ethernet:** Dual Intel® 82573L 10/100/1000 Based LAN
- **Audio:** AC97 3D audio controller
- **Serial ATA:** Intel® ICH6 controller and with two ports supporting a transfer rate up to 150MB/sec.
- **IDE:** One 2.54-pitch 40-pin IDE connector
- **FDD:** Supports up to two floppy disk drives
- **Parallel:** One enhanced bi-directional parallel port supporting SPP/ECP/EPP
- **Serial Port:** 16C550 UART-compatible RS-232/422/485 x 1 and RS-232 x 3 serial ports with 16-byte FIFO
- **USB:** 6 internal USB2.0 ports
- **Keyboard/Mouse:** PS/2 6-pin Mini DIN or 6-pin header
- **BIOS:** AMI PnP Flash BIOS
- **Watchdog Timer:** Software programmable time-out intervals from 1~256 sec.
- **CMOS:** Battery backup
- **Hardware Monitor:** Winbond W83627HG
- **Board Size:** 33.8(L) x 12.1(W) cm

1.3 Board Dimensions



Chapter 2

Unpacking

2.1 Opening the Delivery Package

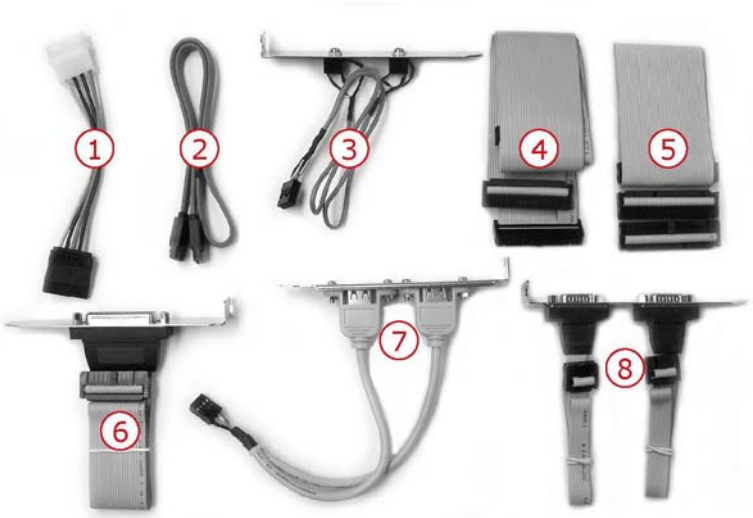
The 3308270 is packed in an anti-static bag. The board has components that are easily damaged by static electricity. Do not remove the anti-static wrapping until proper precautions have been taken. Safety Instructions in front of this manual describe anti-static precautions and procedures.

2.2 Inspection

After unpacking the board, place it on a raised surface and carefully inspect the board for any damage t hat might have occurred during shipment. Ground the board and exercise extreme care to prevent damage to the board from static electricity.

Integrated circuits will sometimes come out of their sockets during shipment. Examine all integrated circuits, particularly the BIOS, processor, memory modules, ROM- Disk, and keyboard controller chip to ensure that they are firmly seated. The 3308270 delivery package contains the following items:

- **3308270 Board x 1**
- **Utility CD Disk x 1**
- **Cables Package x 1**
- **Jumper Bag x 1**
- **User's Manual**



Cables Package	
NO.	**Description**
1	SATA cable x 1
2	SATA power cable x 1
3	Audio cable with bracket x 1
4	Floppy flat cable x 1
5	IDE flat cable x 1
6	Parallel port cable with bracket x 1
7	Two USB flat cable with bracket x 1
8	COM flat cable with bracket x 1

It is recommended that you keep all the parts of the delivery package intact and store them in a safe/dry place for any unforeseen event requiring the return shipment of the product. In case you discover any missing and/or damaged items from the list of items, please contact your dealer immediately.

Chapter 3

Hardware Installation

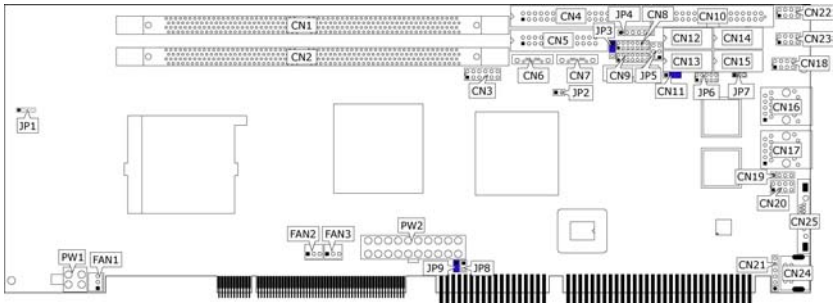
This chapter provides the information on how to install the hardware using the 3308270. This chapter also contains information related to jumper settings of switch, and watchdog timer selection etc.

3.1 Before Installation

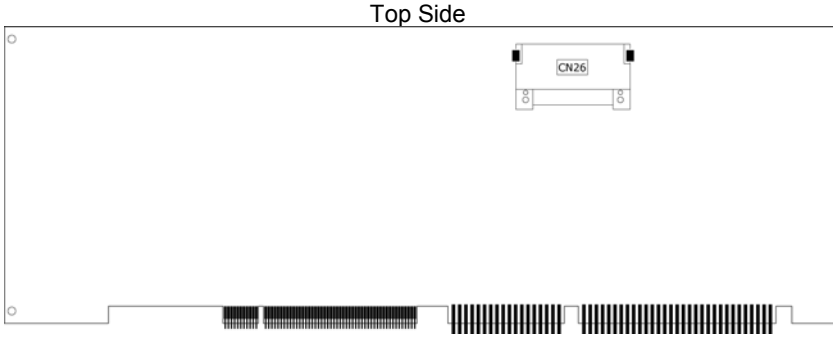
After confirming your package contents, you are now ready to install your hardware. The following are important reminders and steps to take before you begin with your installation process.

1. Make sure that all jumper settings match their default settings and CMOS setup correctly. Refer to the sections on this chapter for the default settings of each jumper. (Set JP11 short 1-2)
2. Go through the connections of all external devices and make sure that they are installed properly and configured correctly within the CMOS setup. Refer to the sections on this chapter for the detailed information on the connectors.
3. Keep the manual and diskette in good condition for future reference and use.

3.2 Board Layout



Top Side



Solder Side

3.3 Jumper List

Jumper	Default Setting	Setting	Page
JP2	CF Use Master/Slave Select: *Slave*	Open	23
JP3	Panel Voltage Select: *+3.3V*	Short 1-2	10
JP6	COM 4 Use RS-232 or RS-422/485 Select: *RS-232*	Open	15
JP8	FSB Frequency Select: *533MHz*	Open	10
JP9		Short	10
CN11	Clear CMOS: *Normal Operation*	Short 2-3	18

3.4 Connector List

Connector	Definition	Page
CN1/CN2	DDRII Socket	10
CN3	System Front Panel Control	20
CN4	IDE Connector	12
CN5	Parallel Port	15
CN6/CN7	Serial ATA Connector	13
CN8/CN9	LVDS Panel Connector	10
CN10	Floppy Connector	14
CN12	COM 4 Connector (5x2 header)	15
CN13	COM 3 Connector (5x2 header)	15
CN14	COM 2 Connector (5x2 header)	15
CN15	COM 1 Connector (5x2 header)	15
CN16/CN17	RJ-45 Connector	17
CN18/CN22/CN23	Internal USB2.0 Port	17
CN19	4-pin Line In Connector	22
CN20	MIC In/Line Out Connector	22
CN21	6-pin KB/MS Connector	19
CN24	PS/2 6-pin Mini DIN KB/MS Connector	19
CN25	15-pin CRT Connector	10
CN26	CompactFlash Connector	23
FAN1~FAN3	Fan Power In Connector	18
PW1	4-pin +12V Power In Connector	18
PW2	20-pin ATX Power In Connector	18
JP4	Inverter Power In Connector	10
JP5	RS-422/485 Connector	15
JP7	Wake On LAN Connector	17

3.5 Configuring the CPU

The 3308270 provides with Intel® Pentium® 4 processor 2.8~3.4GHz. User can select Front Side Bus by *JP8/JP9*.

- **JP8/JP9: FSB Frequency Select**

Option	Settings	
	JP8	JP9
533MHz (default)	Open	Short
800MHz	Short	Open

3.6 System Memory

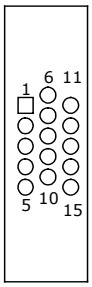
The 3308270 provides two DDRII sockets at locations *CN1/CN2*. The maximum capacity of the onboard memory is 2GB.

3.7 VGA Controller

The 3308270 provides two connection methods of a VGA device. *CN25* offers a single standard CRT connector and *CN8/CN9* are the LVDS interface connectors onboard reserved for flat panel installation. LVDS function is optional.

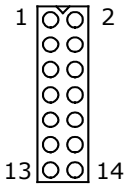
- **CN25: 15-pin CRT Connector**

PIN	Description	PIN	Description
1	Red	2	Green
3	Blue	4	N/C
5	GND	6	GND
7	GND	8	GND
9	N/C	10	GND
11	N/C	12	SDA
13	HSYNC	14	VSYNC
15	SDC		



- **CN8/CN9: LVDS Interface Connector**

PIN	Description	PIN	Description
1	V_{LCD}	2	V_{LCD}
3	GND	4	GND
5	Y0-/Z0-	6	Y0+/Z0+
7	Y1-/Z1-	8	Y1+/Z1+
9	Y2-/Z2-	10	Y2+/Z2+
11	CLK-	12	CLK+
13	Y3-/Z3-	14	Y3+/Z3+



NOTE: *LVDS cable should be produced very carefully. Y0- & Y0+ have to be fabricated in twister pair (Y1- & Y1+, Y2- & Y2+ and so on) otherwise the signal won't be stable. Please set the proper voltage of your panel using JP3 before proceeding on installing it.*

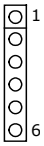
NOTE: *If use CN8 only, it just supports 24-bit single channel LVDS panel; If you want to use 48-bit dual channel LVDS panel, please use CN8 and CN9 combined.*

- **JP3: Panel Voltage Select**

Options	Settings
+3.3V (default)	Short 1-2
+5V	Short 2-3

- **JP4: Inverter Power In Connector**

PIN	Description
1	+12V
2	+12V
3	+5V
4	BK EN
5	LCD EN
6	GND

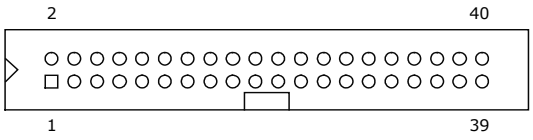


3.8 PCI E-IDE Drive Connector

CN4 is a standard 40-pin 2.54-pitch connector daisy-chain driver connector serves the PCI E-IDE drive provisions onboard the 3308270.
A maximum of two ATA/33/66/100 IDE drives can be connected to the 3308270 via *CN4*.

- **CN4: IDE Connector**

PIN	Description	PIN	Description
1	IDERST	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GND	20	N/C
21	PDREQ	22	GND
23	IOW#	24	GND
25	IOR#	26	GND
27	PIORDY	28	PR1PD1-
29	RPDACK-	30	GND
31	Interrupt	32	N/C
33	RPDA1-	34	PATA66
35	RPDA0-	36	RPDA2-
37	RPCS1-	38	RPCS3-
39	HDD Active	40	GND

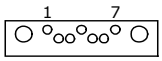


3.9 Serial ATA Connector

You can connect the Serial ATA device that provides you high speeds transfer rates (150MB/sec.). If you wish to use RAID function, please note that these two serial ATA connectors just support RAID0 and only compatible with WINXP.

- **CN6/CN7: Serial ATA Connector**

PIN	Description
1	GND
2	SATATXP
3	SATATXN
4	GND
5	SATARXN
6	SATARXP
7	GND

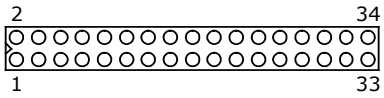


3.10 Floppy Disk Drive Connector

The 3308270 uses a standard 34-pin header connector, *CN10*, for floppy disk drive connection. A total of two FDD drives may be connected to *CN10* at any given time.

- **CN10: Floppy Connector**

PIN	Description	PIN	Description
1	GND	2	-RWC
3	GND	4	N/C
5	GND	6	N/C
7	GND	8	INDEX#
9	GND	10	MOA-
11	GND	12	DSB-
13	GND	14	DSA-
15	GND	16	MOB-
17	GND	18	DIR-
19	GND	20	STEP-
21	GND	22	WDATA#
23	GND	24	WGATE#
25	GND	26	TRAK00#
27	GND	28	WRTPRT#
29	N/C	30	RDATA#
31	GND	32	HDSEL#
33	N/C	34	DSKCHG#

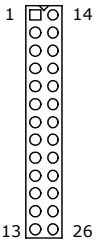


3.11 Parallel Connector

CN5 is a standard 26-pin flat cable connector deigned to accommodate parallel port connection on the 3308270.

- **CN5: Parallel Connector**

PIN	Description	PIN	Description
1	Strobe	14	Auto Form Feed
2	DATA 0	15	ERROR#
3	DATA 1	16	Initialize
4	DATA 2	17	Printer Select LN#
5	DATA 3	18	GND
6	DATA 4	19	GND
7	DATA 5	20	GND
8	DATA 6	21	GND
9	DATA 7	22	GND
10	Acknowledge	23	GND
11	Busy	24	GND
12	Paper Empty	25	GND
13	Printer Select	26	N/C



3.12 Serial Port Connectors

The 3308270 offers NS16C550 compatible UARTs with Read/ Receive 16-byte FIFO serial ports and four internal 10-pin headers and one RS-422/485 connector.

- **CN15/CN14/CN13/CN12: COM 1~COM 4 Connector (5x2 Header)**

PIN	Description	PIN	Description
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	+12V

- **JP5: RS-422/485 Connector (3x2 Header)**

PIN	Description	PIN	Description
1	TX-	2	TX+
3	RX+	4	RX-
5	GND	6	+5V

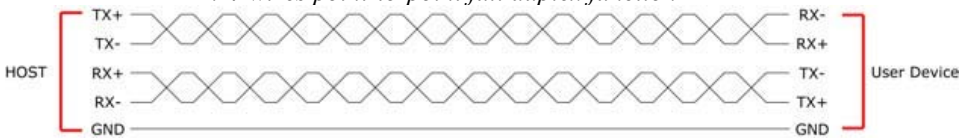
NOTE: *The terminal resistance of RX & TX is set at 180 Ω.*

- **JP6: COM 4 use RS-232 or RS-422/485 Select**

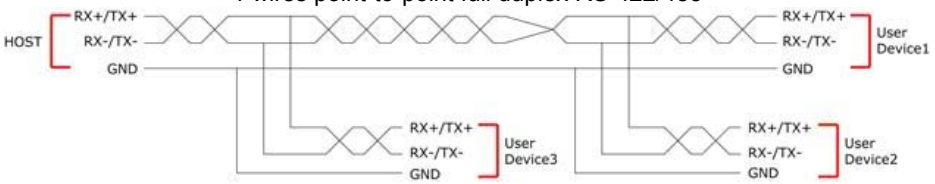
Options	Settings
RS-232 (default)	Open
RS-485 by Auto (*1)	Short 1-2, 3-4, 5-7, 8-10
RS-485 by –RTS (*-1)	Short 1-2, 3-4, 7-9, 8-10
RS-422/485 Full Duplex (*2)	Short 1-2, 3-4, 6-8

NOTE: **1: 2-wires RS-485 function*

**2: 4-wires point-to-point full duplex function*



4-wires point-to-point full duplex RS-422/485



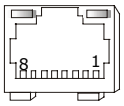
Typical RS-485 2-wires Mutildrop Network

3.13 Ethernet Connector

The 3308270 provides two external RJ-45 interface connectors. Please refer to the following for its pin information.

- **CN16/CN17: RJ-45 Connector**

PIN	Description
1	TX+
2	TX-
3	RX+
4	R/C GND
5	R/C GND
6	RX-
7	R/C GND
8	R/C GND



- **JP7: Wake On LAN**

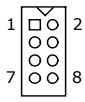
PIN	Description
1	+5V
2	GND
3	Wake On LAN

3.14 USB Connector

The 3308270 provides three 8-pin connectors, at location *CN18/CN22/CN23*, for six USB2.0 ports.

- **CN18/CN22/CN23: Internal USB2.0 Connector**

PIN	Description	PIN	Description
1	VCC	2	VCC
3	USBD0-/USBD2-/USBD4-	4	USBD1-/USBD3-/USBD5-
5	USBD0+/USBD2+/USBD4+	6	USBD1+/USBD3+/USBD5+
7	GND	8	GND



3.15 CMOS Data Clear

The 3308270 has a Clear CMOS jumper on *CN11.*

- **CN11: Clear CMOS**

Options	Settings
Normal Operation (default)	Short 2-3
Clear CMOS	Short 1-2

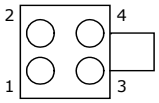
IMPORTANT: *Before you turn on the power of your system, please set CN11 to Open for normal operation.*

3.16 Power and Fan Connectors

3308270 provides one 20-pin ATX power in at *PW2*, and one 4-pin +12V power in at *PW1*.

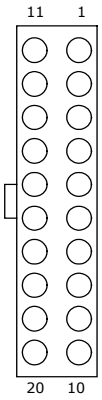
- **PW1: 4-pin +12V ATX Power In Connector**

PIN	Description
1	GND
2	GND
3	+12V
4	+12V



- **PW2: 20-pin ATX Power In Connector**

PIN	Description	PIN	Description
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	GND	13	GND
4	+5V	14	PS_ON
5	GND	15	GND
6	+5V	16	GND
7	GND	17	GND
8	Power OK	18	-5V
9	5VSB	19	+5V
10	+12V	20	+5V

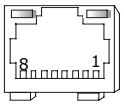


3.13 Ethernet Connector

The 3308270 provides two external RJ-45 interface connectors. Please refer to the following for its pin information.

- **CN16/CN17: RJ-45 Connector**

PIN	Description
1	TX+
2	TX-
3	RX+
4	R/C GND
5	R/C GND
6	RX-
7	R/C GND
8	R/C GND



- **JP7: Wake On LAN**

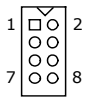
PIN	Description
1	+5V
2	GND
3	Wake On LAN

3.14 USB Connector

The 330827 provides three 8-pin connectors, at location *CN18/CN22/ CN23*, for six USB2.0 ports.

- **CN18/CN22/CN23: Internal USB2.0 Connector**

PIN	Description	PIN	Description
1	VCC	2	VCC
3	USBD0-/USBD2-/USBD4-	4	USBD1-/USBD3-/USBD5-
5	USBD0+/USBD2+/USBD4+	6	USBD1+/USBD3+/USBD5+
7	GND	8	GND



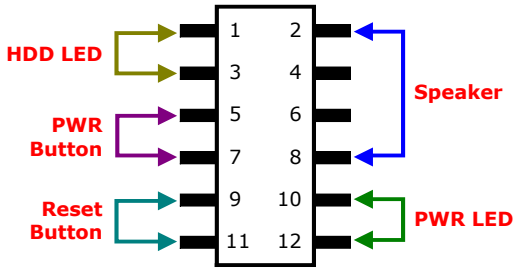
3.18 System Front Panel Control

The 3308270 has front panel control at location *CN3* that indicates the power-on status.

- **CN3: System Front Panel Control**

PIN	Description	PIN	Description
1	VCC	2	Speaker
3	HDD LED	4	N/C
5	VCC	6	GND
7	PWR Button	8	GND
9	Reset Switch	10	VCC
11	GND	12	PWR LED

Connector CN3 Orientation



3.19 Watchdog Timer

Once the Enable cycle is active a Refresh cycle is requested before the time-out period. This restarts counting of the WDT period. When the time counting goes over the period preset of WDT, it will assume that the program operation is abnormal. A system reset signal will restart when such error happens.

The following sample programs show how to enable, disable and refresh the watchdog timer:

```
.286

      .MODEL SMALL
      .DATA                          ;this is data area

x1          db    '-----------------------------------------------------------',0ah,0dh,'$'
copyright   db    '                                                           ',0ah,0dh,'$'
x2          db    '-----------------------------------------------------------',0ah,0dh,'$'

port      equ       02Eh       ;W83627H Chipset port
datao     equ       02Fh       ;data port

      .CODE

print     macro     buff
          mov       dx,offset buff;
          mov       ah,09h
          int       21h
          endm

begin   proc    near
          mov       ax,@data
          mov       ds,ax
          STI
                                ; W83627H
          mov       dx,port     ; Unlock registor
          mov       al,087H     ;
          out       dx,al
          jmp       $+2
          out       dx,al
          mov       dx,port     ;
          mov       al,07H      ;
          out       dx,al
          jmp       $+2
          mov       dx,datao    ; set device 8
          mov       al,08H      ;
          out       dx,al
          jmp       $+2

          mov       dx,port     ; Watchdog IO function
          mov       al,030H     ; registor
          out       dx,al
          jmp       $+2

          mov       dx,datao    ; set 01h toactivate
          mov       al,01H      ;
          out       dx,al
```

```
                jmp     $+2

                mov     dx,port     ; set CRF5
                mov     al,0f5H     ;
                out     dx,al
                jmp     $+2

                mov     dx,datao    ; set CRF5 to secend
                mov     al,00H      ;
                out     dx,al
                jmp     $+2

                mov     dx,port     ; set CRF6 time
                mov     al,0f6H     ;
                out     dx,al
                jmp     $+2

                mov     dx,datao    ; set CRF6 time to 5 s'
                mov     al,05H      ;
                out     dx,al

                print   x1
                print   copyright
                print   x2
                mov     ah,4ch      ;go back to dos
                int     21h
                .stack
begin   endp
                end begin
```

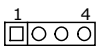
User can also use AL, 00H's defined time for reset purposes, e.g. 00H = Disable, 01H = 1sec, 02H=2sec….FFH = 255sec.

3.20 Audio Connectors

The 3308270 has an onboard AC97 3D audio controller. The following tables list the pin assignments of the Line In/Audio Out connector.

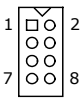
- **CN19: 4-pin Lin In Connector**

PIN	Description
1	Right
2	GND
3	GND
4	Left



- **CN20: MIC In/Line Out Connector**

PIN	Description	PIN	Description
1	AOUTL	2	AOUTR
3	GND	4	GND
5	MIC IN	6	N/C
7	GND	8	GND



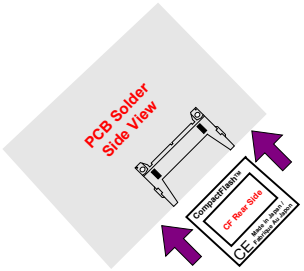
3.21 CompactFlash™ Connector

The 3308270 also offers a Type I/II CompactFlash™ connector which is IDE interface located at the solder side of the board. The designated *CN26* connector, once soldered with an adapter, can hold CompactFlash™ cards of various sizes. Please turn off the power before inserting the CF card.

- **CN26: CompactFlash™ Connector**

PIN	Description	PIN	Description
1	GND	2	IDE_PDD3
3	IDE_PDD4	4	IDE_PDD5
5	IDE_PDD6	6	IDE_PDD7
7	IDE_PDCS1#	8	GND
9	GND	10	GND
11	GND	12	GND
13	+3.3V	14	GND
15	GND	16	GND
17	GND	18	IDE_PDA2
19	IDE_PDA1	20	IDE_PDA0
21	IDE_PDD0	22	IDE_PDD1
23	IDE_PDD2	24	GND
25	GND	26	GND
27	IDE_PDD11	28	IDE_PDD12
29	IDE_PDD13	30	IDE_PDD14
31	IDE_PDD15	32	IDE_PDCS3#
33	GND	34	IDE_PDIOR#
35	IDE_PDIOW#	36	+3.3V
37	INT_IRQ15	38	+3.3V
39	+3.3V	40	N/C
41	RESET#	42	IDE_PDIORDY
43	CF_PDERQ	44	CF_REGB
45	IDE_ACTP#	46	DETECT
47	IDE_PDD8	48	IDE_PDD9
49	IDE_PDD10	50	GND

Inserting a CompactFlash™ card into the adapter is not a difficult task. The socket and card are both keyed and there is only one direction for the card to be completely inserted. Refer to the diagram on the following page for the traditional way of inserting the card.



- **JP2: CF Use Master/Slave Select**

Options	Setting
Master	Short
Slave(default)	Open

NOTE: *When use CF card, IDE device function will be disabled.*

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