



integration with integrity

3307621 User's Manual

3.5" Embedded Controller with

Socket 479 and Intel 82852GM Chipset

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:

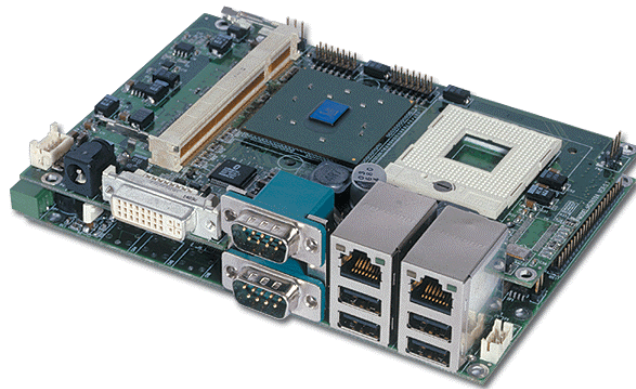
- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This helps to discharge any static electricity on your body.
- 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 handling the 3307621 to protect yourself from the discharge of 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 COMPONENT WITHOUT ALL NECESSARY ANTI-STATIC PROTECTION.*



Chapter 1

General Description



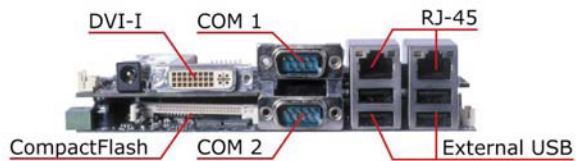
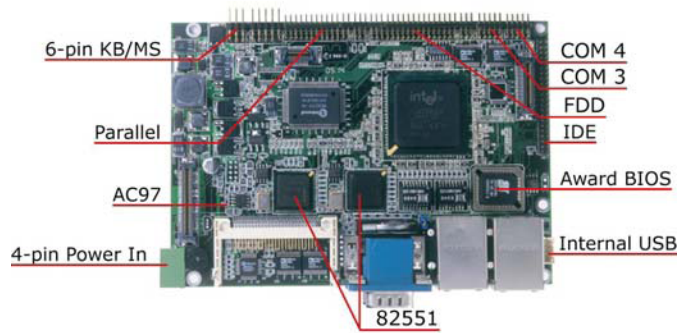
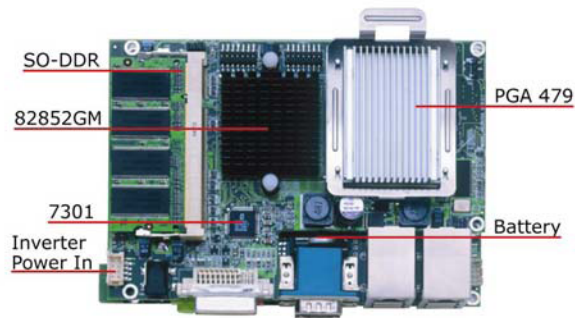
The 3307621 is an Intel® 82852GM/82801DB chipset-based board designed for PCI-ISA Bus PGA 479 Intel® Pentium® M 1.3~1.8GHz CPU/Mobile Celeron® M 600MHz low power embedded CPU compatibility. The combination of these features makes the 3307621 an ideal all-in-one industrial single board computer. Additional features include an enhanced I/O with CompactFlash, DVI-I/CRT/LVDS Panel, dual LAN, audio, 4 COM and USB2.0 port interface.

Its onboard ATA/33/66/100 connected to IDE drive interface architecture allows the 3307621 to support data transfers of 33, 66 or 100MB/sec. for each IDE drive connection. Designed with the Intel® 82852GM/82801DB core logic chipset, the board supports all PGA 479 Pentium® M 1.3~1.8GHz CPU/Mobile Celeron® M 600MHz low power embedded CPU. The display controller is Intel® 82852GM supporting CRT display or CHRONTEL 7301 for DVI-I display up to 1600 x 1200. 3307621 also provides 24-bit single channel or 48-bit dual channel LVDS Panel display interface.

System memory is also sufficient with the one SO-DDR socket that can support up to 512MB.

Additional onboard connectors include two internal and four external USB2.0 ports providing faster data transmission, and two external RJ-45 connector for use of two 10/100 Base-TX Ethernet interfaces.

1.1 Major Features



The 3307621 comes with the following features:

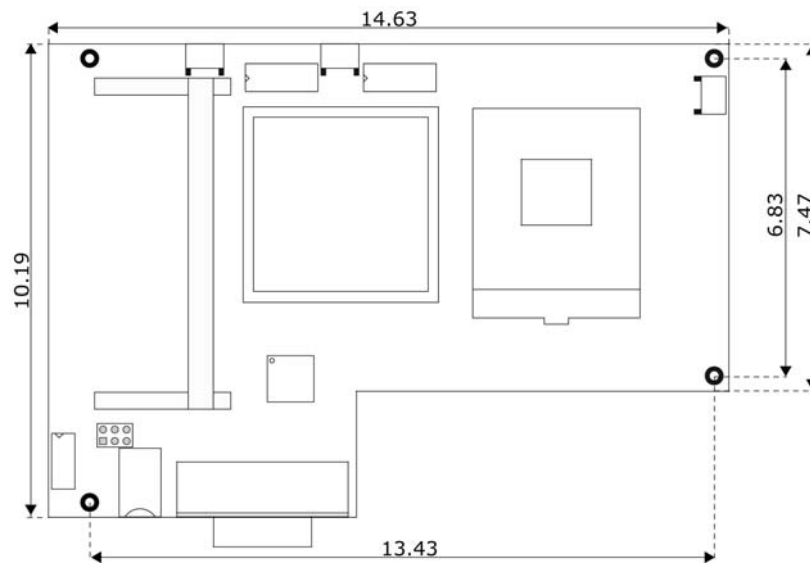
- 3307621 provides PGA 479 for Intel® Pentium® M 1.3~1.8GHz CPU provides Intel® Mobile Celeron® M 600MHz low power embedded CPU
- One SO-DDR socket with a max. capacity of 512MB
- Intel® 82852GM/82801DB system chipset
- Winbond W83627HF super I/O chipset
- Intel® 82852GM display controller
- Dual Intel® 82551 LAN controller
- AC97 3D audio controller
- Fast PCI ATA/33/66/100 IDE controller
- CompactFlash card adapter, four COM, six USB2.0 ports
- Hardware Monitor function
- LVDS Panel display interface (optional)

1.2 Specifications

- **CPU:**
3307621 provides PGA 479 for Intel® Pentium® M 1.3~1.8GHz CPU provides Intel® Mobile Celeron® M 600MHz low power embedded CPU
- **Memory:** One SO-DDR socket supporting up to 512MB
- **Chipset:** Intel® 82852GM/82801DB
- **I/O Chipset:** Winbond W83627HF
- **CompactFlash:** One, Type II IDE interface adapter
- **VGA:** Intel® 82852GM for CRT display or CHRONTEL 7301 for DVI-I display, supporting up to 1600 x 1200 (DVI-I and CRT connector is optional)
- **LVDS Panel:** Supports 24-bit dual channel LVDS Panel interface (optional)
- **LAN:** Dual Intel® 82551 10/100 Based LAN
- **Audio:** AC97 3D audio controller
- **IDE:** Two IDE disk drives supporting ATA/33/66/100 with transfer rates of up to 33/66/100MB/sec.
- **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:** Six USB2.0 ports, two internal and four external
- **Keyboard/Mouse:** 6-pin header
- **BIOS:** Award PnP Flash BIOS

- **Watchdog Timer:** Software programmable time-out intervals from 1~256 sec.
- **CMOS:** Battery backup
- **Power In:** +10~+30V wide range single DC power in
- **Hardware Monitor:** Winbond W83627HF
- **Board Size:** 14.5(L) x 10.2(W) x 4.4(H) cm

1.3 Board Dimensions



Chapter 2

Unpacking

2.1 Opening the Delivery Package

The 3307621 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 that might have occurred during shipment. Ground the board and exercise extreme care to prevent damage to the board from static electricity.

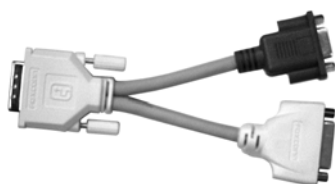
Integrated circuits will sometimes come out of their sockets during shipment. Make sure all integrated circuits, particularly the BIOS, processor, memory modules, ROM-Disk, and keyboard controller chip are firmly seated. The 3307621 delivery package contains the following items:

- 3307621 Board x 1
- Utility CD Disk x 1
- Cables Package x 1
- Cooling Fan & Heat Sink x 1
- Jumper Bag x 1
- User's Manual



Cables Package	
NO.	Description
1	4-pin Power In cable x 1
2	Floppy flat cable x 1
3	ATA/100 IDE flat cable x 1
4	MIC/Audio flat cable x 1P
5	Parallel port flat cable with bracket x 1
6	Keyboard/Mouse transfer cable x 1
7	Two COM flat cable with bracket x 1
8	Two USB flat cable with bracket x 1

If you want to use DVI-I device under WIN98 or WINNT, please purchase this cable separately.



Optional Cable	
Part NO.	Description
1207740	DVI-I to DVI+CRT cable

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

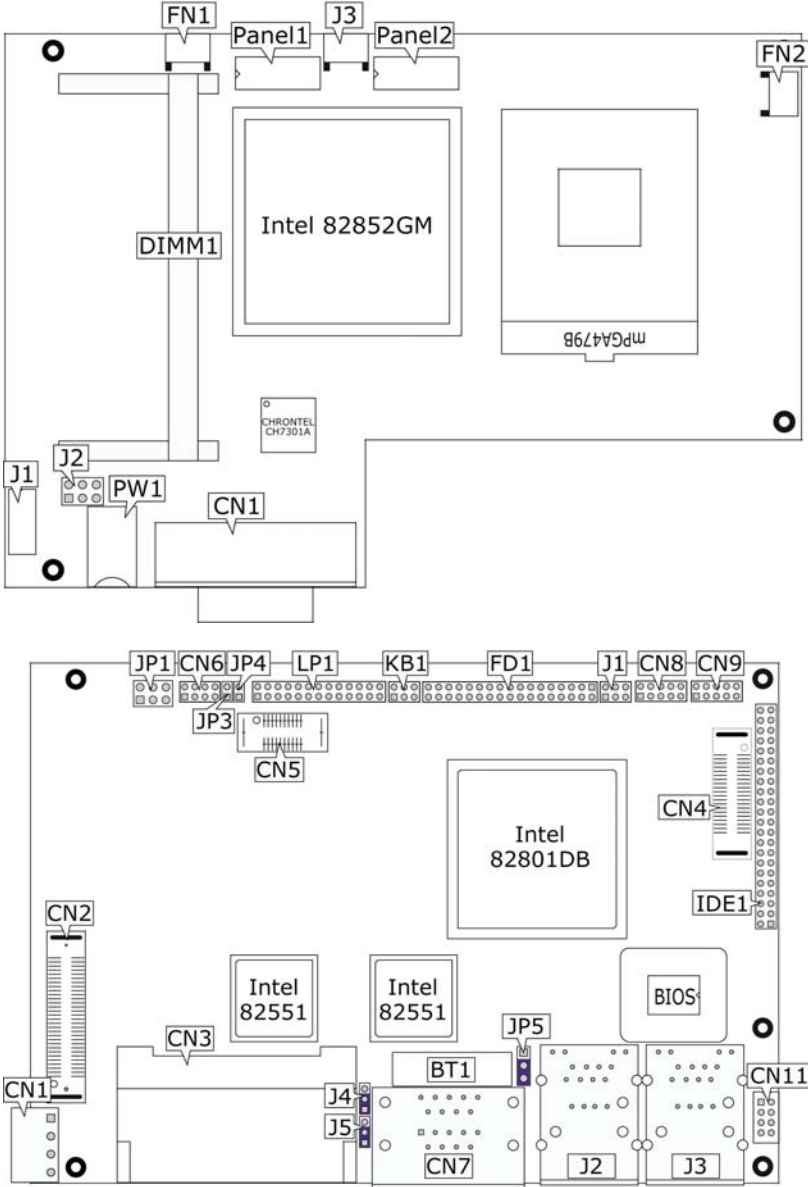
This chapter provides the information on how to install the hardware using the 3307621. This chapter also contains information related to jumper settings of switch, watchdog timer etc.

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 JP5 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



3.3 Jumper List

Jumper	Default Setting	Setting	Page
J2 (CPU Board)	Power In Select: <i>Power Switch</i>	Open	17
J3 (CPU Board)	Panel Voltage Select: +3.3V	Short 1-2	10
J4/J5 (I/O Board)	COM 2 Use RS-232 or RS-422/485 Select: <i>RS-232</i>	Short 1-2	15
JP3 (I/O Board)	LAN 1 Enabled/Disabled Select: <i>Enabled</i>	Off	16
JP4 (I/O Board)	LAN 2 Enabled/Disabled Select: <i>Enabled</i>	Off	16
JP5 (I/O Board)	Clear CMOS: <i>Normal Operation</i>	Short 1-2	17

3.4 Connector List

● 3307621 – CPU Board

Connector	Definition	Page
CN1	DVI-I Connector	10
CN2	15-pin CRT Connector	10
CN3	60-pin B to B Connector	----
CN4	20-pin B to B Connector	----
CN5	40-pin B to B Connector	----
DIMM1	SO-DDR Socket	10
J1	Inverter Power In Connector	10
FN1 / FN2	Fan Power Connectors	17
Panel2/Panel1	24-bit/48-bit LVDS Panel Connector	10

● 3307621 – I/O Board

Connector	Definition	Page
CN1	4-pin Power In Connector	17
CN2	60-pin B to B Connector	----
CN3	CompactFlash Connector	20
CN4	40-pin B to B Connector	----
CN5	20-pin B to B Connector	----
CN6	MIC In/Audio Out Connector	20
CN7	COM 1/COM 2 Connector (DB9)	15
CN8	COM 3 Connector (5x2 header)	15
CN9	COM 4 Connector (5x2 header)	15
CN11	Internal USB2.0 Connector	16
FD1	Floppy Connector	13
IDE1	IDE Connector	12
LP1	Parallel Connector	14
J1	RS-422/485 Connector (2x3 header)	15
J2/J3	RJ-45 + Dual USB2.0 Connector	16
JP1	System Front Panel Connector	18
KB1	Internal 6-pin KB/MS Connector	18

3.5 Configuring the CPU

The 3307621 provides 400MHz FSB Intel® Pentium® M 1.3~1.8GHz CPU/Mobile Celeron® M 600MHz low power CPU compatibility. After installing a new microprocessor onboard, the 3307621 automatically identifies the frequency and clock speed of the installed microprocessor chip, thereby eliminating the need for user to do additional CPU configuration or hardware settings related to it.

3.6 System Memory

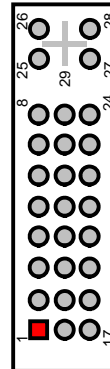
The 3307621 provides one SO-DDR socket at location *DIMM1*. The maximum capacity of the onboard memory is 512MB.

3.7 VGA Controller

The onboard Intel® 82852GM provides CRT/LVDS Panel or CHRONTEL 7301 provides DVI-I display up to 1600 x 1200. The 3307621 provides three methods of connecting VGA device. *CN2* offers a single standard CRT connector (DB15), or *CN1* offers DVI-I connector, or *Panel2/Panel1* offer 24-bit/48-bit LVDS panel connectors.

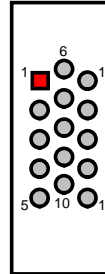
● CN1: DVI-I Connector

PIN	Description	PIN	Description
1	TDC2J	2	TDC2
3	GND	4	N/C
5	N/C	6	DDCCLK
7	DDCDATA	8	OVSYNC
9	TDC1J	10	TDC1
11	GND	12	N/C
13	N/C	14	VCC
15	GND	16	HPDET
17	TEC0-	18	TDC0
19	GND	20	N/C
21	N/C	22	GND
23	TLC	24	TLC1
25	RED	26	GREEN
27	BLUE	28	OHSYNC
29	GND		



● **CN2: 15-pin CRT Connector (DB15)**

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	DCSDA
13	HSYNCB	14	VSYNCB
15	DCSCL		



● **J1: Inverter Power In Connector**

PIN	Description
1	DC In
2	VCC5
3	BackLight Enabled
4	LCD Enabled
5	GND

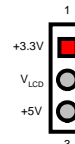


NOTE: Please set the proper voltage of your panel using JP7 before proceeding on installing it.

The 3307621 has an onboard jumper that selects the working voltage of the flat panel connected to the system. Jumper J3 offers two voltage settings for the user.

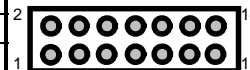
● **J3: Panel Voltage Select**

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



● **Panel2/Panel1: 24-bit LVDS Panel Connector**

PIN	Description	PIN	Description
1	VCC3	2	VCC3
3	GND	4	GND
5	Z0M/Y0M	6	Z0P/Y0P
7	Z1M/Y1M	8	Z1P/Y1P
9	Z2M/Y2M	10	Z2P/Y2P
11	ZCM/YCM	12	ZCP/YCP
13	Z3M/Y3M	14	Z3P/Y3P



NOTE: If using Panel2/Panel1 only, it just supports 24-bit LVDS Panel; If you want to use 48-bit LVDS Panel, please using Panel2 and Panel1 combinedly.

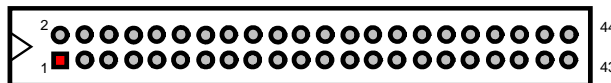
3.8 PCI E-IDE Drive Connector

IDE1 is standard 40-pin daisy-chain driver connector that serves the PCI E-IDE drive provisions onboard the 3307621. A maximum of two ATA/33/66/100 IDE drives can be connected to the 3307621 via IDE1.

NOTE: If user wants to use 2.5" HDD, only can use power-in current under 700mA.

- IDE1: IDE Connector

PIN	Description	PIN	Description
1	RESET	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
41	VCC	42	VCC
43	GND	44	N/C

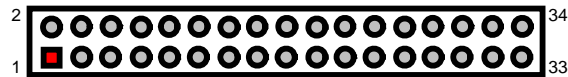


3.9 Floppy Disk Drive Connector

The 3307621 uses a standard 34-pin header connector, *FD1*, for floppy disk drive connection. A total of two FDD drives may be connected to *FD1* at any given time.

- **FD1: FDD Connector**

PIN	Description	PIN	Description
1	GND	2	DRVDEN0
3	GND	4	N/C
5	GND	6	DRVDEN1
7	GND	8	INDEX#
9	GND	10	MTR0#
11	GND	12	DS1#
13	GND	14	DS0#
15	GND	16	MTR1#
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#

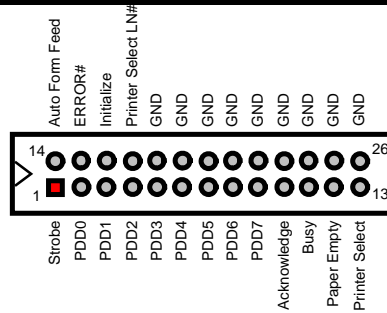


3.10 Parallel Connector

LP1 is a 26-pin 2.0mm flat cable connector designed to accommodate parallel port connection onboard the 3307621.

- **LP1: 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	GND

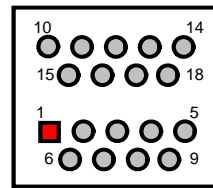


3.11 Serial Port Connectors

The 3307621 offers two NS16C550 compatible UARTs with Read/Receive 16-byte FIFO serial ports and two internal 10-pin headers and two DB9 connectors.

- CN7: COM 1/COM 2 Connector (DB9)**

PIN	Description	PIN	Description
1	DCD1	10	DCD0
2	RXDD1	11	RXDD0
3	TXDD1	12	TXDD0
4	DSR1	13	DTR0
5	GND	14	GND
6	DSR1	15	DSR0
7	RTS1	16	RTS0
8	CTS1	17	CTS0
9	RI1	18	RI0



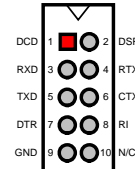
- J4/J5: COM2 Use RS-232 or RS-422/485 Select**

Options	Setting
RS-232 (default)	Short 1-2
RS-422/485	Short 2-3



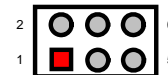
- CN8/CN9: COM 3/COM 4 Connector (5x2 header)**

PIN	Description	PIN	Description
1	DCD	2	DSR
3	RXD	4	RTX
5	TXD	6	CTX
7	DTR	8	RI
9	GND	10	N/C



- J1: RS-422/485 Connector (3x2 header)**

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

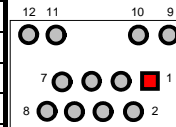


3.12 Ethernet Connector

The 3307621 provides two 10/100 Base-TX LAN interface connector. Please refer to the following for its pin information.

- **J2(1-12)/J3(1-12): RJ-45 Connector**

PIN	Description	PIN	Description
1	TX+	7	75Ω pull GND
2	TX-	8	75Ω pull GND
3	RX+	9	LED1
4	75Ω pull GND	10	VDD3
5	75Ω pull GND	11	1LED0
6	RX-	12	VDD3



- **JP3/JP4: LAN 1/LAN 2 Enabled/Disabled Select**

Options	Setting
Enabled (default)	Open
Disabled	Short

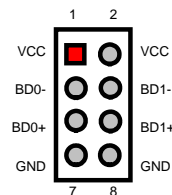


3.13 USB Connector

The 3307621 provides one 8-pin internal connector at location CN11 and four external ports, at locations J2(19-26)/J3(19-26), for six USB2.0 connections to the 3307621.

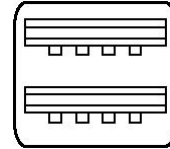
- **CN11: Internal USB2.0 Connector**

PIN	Description	PIN	Description
1	VCC	2	VCC
3	BD0-	4	BD1-
5	BD0+	6	BD1+
7	GND	8	GND



- **J2(19-26)J3(19-26): External USB2.0 Connector**

PIN	Description	PIN	Description
19	VCC	23	VCC
20	DATA0-N	24	DATA1-N
21	DATA0-P	25	DATA1-P
22	GND	26	GND



3.14 CMOS Data Clear

The 3307621 has a Clear CMOS jumper on JP5.

- **JP5: Clear CMOS**

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



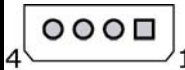
IMPORTANT: Before you turn on the power of your system, please set JP5 to short 1-2 for normal operation.

3.15 Power and Fan Connectors

3307621 provides one 4-pin power in connector at CN1.

- **CN1: 4-pin Power In Connector**

PIN	Description
1	DC In
2	GND
3	GND
4	DC In



FN1 and FN2 onboard 3307621 are 3-pin fan power connectors.

- **FN1/FN2: Fan Power Connector**

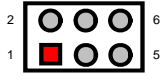
PIN	Description
1	GND
2	VCC
3	Fan In 1/Fan In 2



The 3307621 offers two possibility methods for power in connection. The user can select power in by Adapter or by 2-pin power switch.

- **J2: Power In Select**

Options	Settings
by Adapter	Short 1-2, 3-4, 5-6
by 2-pin Power Switch (default)	Open

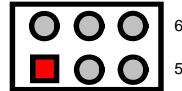


3.16 Keyboard/Mouse Connector

The 3307621 offers one possibility for keyboard/mouse connection. The connections are done via *KB1* for an external PS/2 type keyboard/mouse connection.

- **KB1: Internal 6-pin Keyboard/Mouse Connector**

PIN	Description
1	Keyboard Data
2	Mouse Data
3	GND
4	+5V
5	Keyboard Clock
6	Mouse Clock

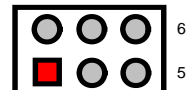


3.17 System Front Panel Connectors

The 3307621 has system front panel at location *JP1*.

- **JP1: Reset Button Connector**

PIN	Description	PIN	Description
1	GND	2	Reset Switch
3	GND	4	Power LED
5	HDD LED	6	330Ω Pull VCC



3.18 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 re-start when such error happens.

The following sample programs show how to Enable, Disable and Refresh the Watchdog Timer:

```

;-----
; Enter the WDT function mode, interruptible double-write
;-----
MOV     DX, 2EH
MOV     AL, 87H
OUT     DX, AL
OUT     DX, AL
MOV     DX, 2EH
MOV     AL, 07H
OUT     DX, AL
MOV     DX, 2FH
MOV     AL, 08H
OUT     DX, AL
MOV     DX, 2EH
MOV     AL, F5H           ; select CRF0
OUT     DX, AL
MOV     DX, 2FH
MOV     AL, 80H
OUT     DX, AL
MOV     DX, 2EH
MOV     AL, F7H
OUT     DX, AL
MOV     DX, 2FH

MOV     AL, 00H
OUT     DX, AL
MOV     DX, 2EH
MOV     AL, F6H
OUT     DX, AL
MOV     DX, 2FH
MOV     AL, 00H         ; * 00H=Disabled
OUT     DX, AL

;-----
; Exit extended function mode
;-----
MOV     DX, 2EH
MOV     AL, AAH
OUT     DX, AL

```

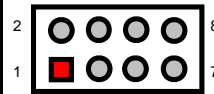
User can also use AL, 00H's defined time for reset purposes, e.g.00H for Disable, 01H = 1sec, 02H = 2sec to FFH = 255sec.

3.19 Audio Connectors

The 3307621 has an onboard AC97 3D audio interface. The following tables list the pin assignments of the MIC In/Line Out connectors.

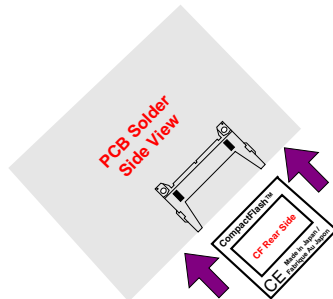
- **CN6: MIC In/Audio Out Connector**

PIN	Description	PIN	Description
1	AOUT_L	2	AOUT_R
3	GND	4	LI_R
5	MIC In	6	LI_L
7	GND	8	GND



3.20 CompactFlash™ Connector

The 3307621 also offers an optional CompactFlash™ connector which is IDE interface located at the solder side of the board. The designated CN3 connector, once soldered with an adapter, can hold CompactFlash™ cards of various sizes. Please turn off the power before inserting the CF card. 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 below for the traditional way of inserting the card.



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