integration with integrity

3308520 User's Manual

5.25" Embedded Controller with Socket 479 for Intel Pentium M/ Celeron M

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 from 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 a conductive from 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. If such a situation is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching if to a metal part of the computer chassis. 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 3308520 is an Intel® 852GME GMCH and is an Intel® 852GM GMCH chipset-based board designed. The 3308520/ is ideal all-in-one embedded engine board. Additional features include an enhanced I/O with CF, mini PCI slot, PCI slot, GPIO, CRT/LVDS, LAN, audio, 4 COM, PC/104, and USB2.0 interfaces.

Its onboard ATA/33/66/100 to IDE drive interface architecture allows the 3308520/ to support data transfers of 33, 66 or 100MB/sec. to one IDE drive connection. The 3308520 supports Intel® Pentium® M/Celeron® M processor 1.3~2.0GHz, and supports ULV Intel® Celeron® M processor 600MHz/512K.

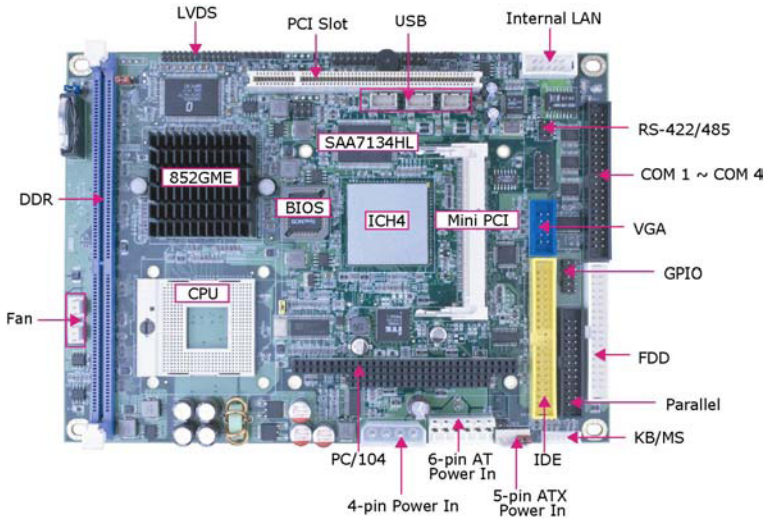
The Intel® 852GM(E) with 8MB shared main memory supports CRT display up to 1600 x 1200. It also supports LVDS interface, 3308520 provides 24-bit single channel/48-bit dual channel, provides 18-bit single channel/36-bit dual channel.

System memory is also sufficient with the one DDR socket that can support up to 1GB.

Additional onboard connectors include 6 x USB2.0 ports providing faster data transmission. And one 10-pin connector for 10/100 Based Ethernet uses.

To ensure the reliability in an unmanned or standalone system, the watchdog timer (WDT) onboard 3308520/ 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 3308520/ provides with the following features:

- Intel® Pentium® M/Celeron® M processor 1.3~2.0GHz (3308520)
  ULV Intel® Celeron® M processor 600MHz/512K ()
- Supports 533MHz FSB (only 3308520)
- One 200-pin SO-DIMM socket up to 1GB DDR SDRAM
- Intel® 852GME GMCH/ICH4 system chipset (3308520)
  Intel® 852GM GMCH/ICH4 system chipset ()
- Winbond W83627HG-AW super I/O chipset
- Intel® 82852GME graphics controller (3308520)
  Intel® 82852GM graphics controller ()
- 24-bit/48-bit LVDS Panel display interface (3308520)
  18-bit/36-bit LVDS Panel display interface ()
- Intel® 82562ET fast Ethernet controller
- ALC203 3D audio controller
- Fast PCI ATA/33/66/100 IDE controller
- CF, GPIO, 4 COM, 6 USB2.0, PC/104
- TV-Out (3308520 only), Capture (3308520 only), H/W Monitor function

1.2 Specifications

- **System**
  - **CPU**
    3308520 provides Intel® Pentium® M processor 760 2.0GHz, Intel® Pentium® M processor 745 1.8GHz, Intel® Celeron® M processor 370 1.5GHz, Intel® Celeron® M processor 320 1.3GHz
    provides ULV Intel® Celeron® M processor 600MHz/512K
  - **Front Side Bus**
    3308520 supports 400/533MHz FSB
    supports 400MHz FSB
  - **BIOS**
    Award PnP Flash BIOS
  - **Chipset System**
    Intel® 852GME GMCH/ICH4
  - **I/O Chipset**
    Winbond W83627HG-AW
  - **System Memory**
    One 200-pin SO-DIMM socket up to 1GB DDR SDRAM
  - **Storage**
    One Type I/II CF socket
  - **Watchdog Timer**
    Software programmable time-out intervals from 1~255 sec.
  - **Hardware Monitor**
    Monitoring temperatures, voltages, and cooling fan status
  - **Expansion**
    One Type III mini PCI slot, one standard PCI slot, PC/104 Bus
- **I/O Interface**
  - **MIO**
    1 x IDE
    1 x FDD
    1 x Parallel
    1 x RS-232/422/485
    3 x RS-232
    6 x USB2.0
    1 x 6-pin header for KB/MS
  - **DIO**
    8-bit digital input/output port

Display

- **Chipset**
  Intel® 82852GME
- **LVDS**
  24-bit single channel/48-bit dual channel
- **TV-Out**
  Provides PAL or NTSC TV systems
- **Capture**
  SAA7134HL video broadcast decoder

Audio

- **Chipset**
  ALC203
- **Audio Interface (w/header)**
  MIC In, Line In, Line Out

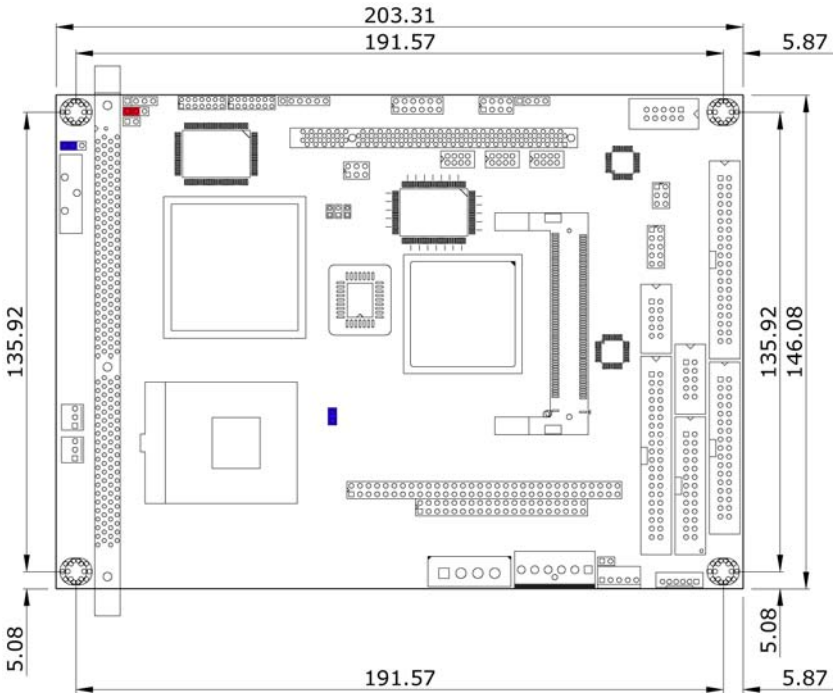
Ethernet

- **Chipset**
  Intel® 82562ET 10/100 Mbps LAN
- **Ethernet Interface**
  Internal 5x2 header

Mechanical & Environmental

- **Operating Temperature**
  0~60 degrees
- **Operating Humidity**
  0~95%, non-condensing
- **Board Size (LxW)**
  170 x 170 mm

1.3 Board Dimensions



Chapter 2

Unpacking

2.1 Opening the Delivery Package

The 3308520 is packed with an anti-static bag. The board contains sensitive electrical components that are easily damaged by static (electricity). Do not remove the anti-static wrapping until proper grounding have been taken. Safety instruction has been described the anti-static precautions and procedures in the previous.

2.2 Inspection

After unpacking the Panel PC, places it on a raised surface and carefully inspect the board for any damage that might have occurred during shipment. Grounding the board and exercise extremely careful to prevent any damages to the board from static.

Integrated circuits will sometimes come out from socket 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 3308520 delivery package contains the following items:

- **3308520 or Board x 1**
- **System board driver CD x 1**
- **Cables Package x 1**
- **Jumper Bag x 1**
- **User's Manual**

Cables Package		
NO.	**Description**	**Qty.**
1	LAN 10-pin to RJ-45 cable	1
2	ATX power cable 20-pin to 4-pin(12V+5V) and 5-pin(5V only)	1
3	COM 40-pin to DB9*4	1
4	1-to-2 USB Y-cable w/bracket	1
5	Floppy controller cable 34-pin	1
6	UDMA5 40-pin IDE cable	1
7	Printer cable DB26-25pin	1
8	VGA cable DB10-15pin	1
9	Speaker/MIC port w/8-pin header	1
10	PS/2 Keyboard/Mouse 1-to-2 6-pin Mini DIN cable	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

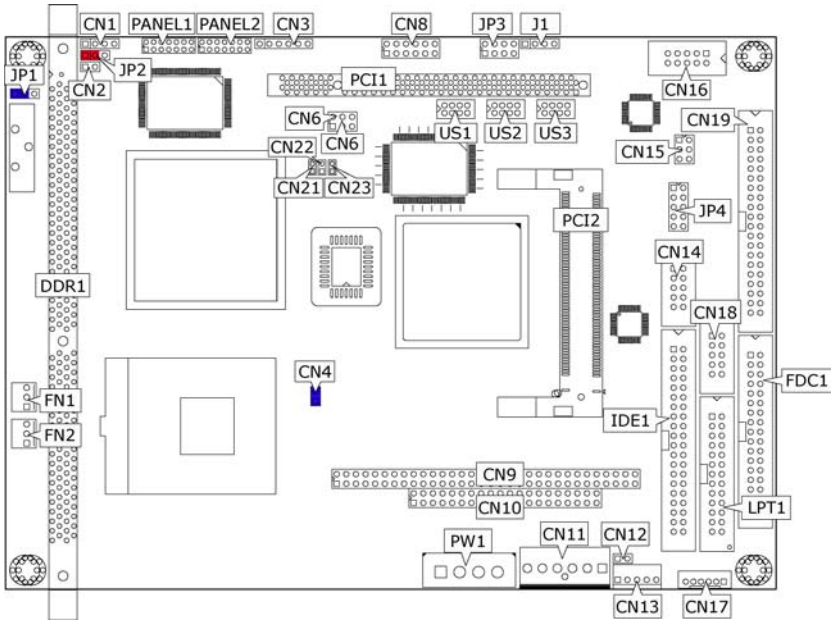
This chapter illustrates how to install the hardware using the 3308520/. This chapter also contains information related to jumper settings of switch, and watchdog timer selection.

3.1 Before Installation

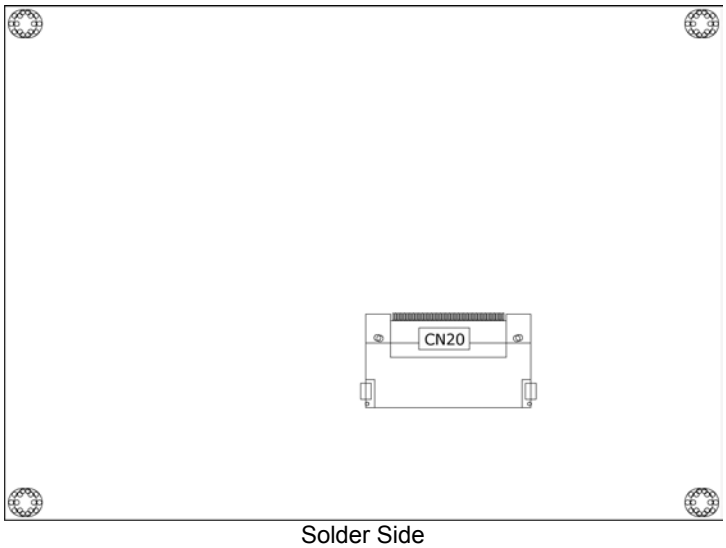
After checking your package contents, you are now ready to install your hardware. The following are important reminders and steps to take before you begin with your installation process.

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. (sets JP1 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 use.

3.2 Board Layout



Top Side



Solder Side

3.3 Jumper List

Jumper	Default Setting	Setting	Page
JP1	Clear CMOS: *Normal Operation*	Short 1-2	20
JP2	Panel Voltage Select: *+3.3V*	Short 1-2	13
JP4	COM4 Use RS-232 or RS-422/485 Select: *RS-232*	Open	18
CN4	System & Memory Frequency Select: 4*00MHz FSB*	Short	12
CN21		Short	
CN22		Open	
CN23		Short	

NOTE: *CN4/CN21/CN22/CN23 are for 3308520 only.*

3.4 Connector List

Connector	Definition	Page
CN1	S-Video Out Connector	30
CN2	TV-Out Connector	30
CN3	Inverter Power In Connector	13
CN6	Capture In Connector	29
CN8(1-2)	HDD LED	22
CN8(2-4-6-8)	Speaker Connector	22
CN8(5-7)	ATX Power Button	22
CN8(9-11)	Reset Button	22
CN8(10-12)	Power LED	22
CN9/CN10	PC/104 64-pin/40-pin Connector	30
CN11	6-pin AT Power In Connector (P8)	20
CN12	2-pin ATX Power Switch	20
CN13	5-pin ATX Power In Connector	20
CN14	Internal CRT Connector (2x5 header)	13
CN15	RS-422/485 Connector (2x3 header)	18
CN16	Internal LAN Connector (2x5 header)	19
CN17	Internal KB/MS Connector	22
CN18	GPIO Connector	26
CN19	COM 1~COM 4 Connector (2x20 header)	18
CN20	CompactFlash Connector	24
DDR1	DDR Socket	12
FDC1	FDD Connector	16
FN1/FN2	Fan Power Connector	30

Connector	Definition	Page
IDE1	IDE Connector	15
J1	Line In Connector	24
JP3	MIC In/Line Out Connector	24
LPT1	Parallel Port	17
PANEL1/PANEL2	LVDS Panel Connector	13
PCI1	Standard PCI Slot	25
PCI2	Type III Mini PCI Connector	25
US1/US2/US3	Internal USB2.0 Port	20
PW1	4-pin Power In Connector	20

3.5 Configuring the CPU

The 3308520 provides Intel® Pentium® M processor 760 2.0GHz, Pentium® M processor 745 1.8GHz, Celeron® M processor 370 1.5GHz, and Celeron® M processor 1.3GHz socket. The embedded with ULV Intel® Celeron® M processor 600MHz/512K. If you want to use 533MHz FSB processor, please set *CN4*, *CN21*, *CN22, CN23* as below table.

- **CN4/CN21/CN22/CN23: System & Memory Frequency Select**

Options		Settings			
System	Memory	CN4	CN21	CN22	CN23
400MHz FSB (default)		Short	Short	Open	Short
533MHz FSB		Open	Open	Open	Short

3.6 System Memory

The 3308520/ provides one DDR socket at locations *DDR1*.
It supports:

- 266/333MHz un-buffered, non-registered DDR1 DIMMs.
- Serial Presence Detect (SPD) memory only.
- Non-ECC memory
- Up to 1GB of memory.

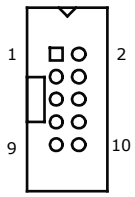
3.7 VGA Controller

The 3308520/ provides two connection methods of a VGA device. *CN14* offers an internal 10-pin CRT connector and *PANEL1/PANEL2* are the LVDS interface connectors onboard reserved for flat panel installation. Please see the following chart for more detail:

	3308520	
VGA Chipset	852GME	
TV-Out Function	Yes	
Capture Function	Yes	
LVDS Interface	24-bit/48-bit	

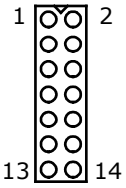
- **CN14: Internal CRT Connector**

PIN	Description	PIN	Description
1	Red	6	GND
2	GND	7	HSYNC
3	Green	8	SDA
4	GND	9	VSYNC
5	Blue	10	SDC



- **PANEL1/PANEL2: LVDS Interface Connector**

PIN	Description	PIN	Description
1	V_{LCD}	2	V_{LCD}
3	GND	4	GND
5	A0-/A4-	6	A0+/A4+
7	A1-/A5-	8	A1+/A5+
9	A2-/A6-	10	A2+/A6+
11	CLK1-/CLK2-	12	CLK1+/CLK2+
13	A3-/A7-	14	A3+/A7+



CAUTION: *Please check LVDS panel pin assign specification from your LVDS panel manufacturer. Failure to do so could damage the board and any attached devices.*

NOTE: *LVDS cable should be produced very carefully. A0- & A0+ have to be fabricated in twister pair (A1- & A1+, A2- & A2+ and so on) otherwise the signal won't be stable.*

NOTE: *If use PANEL1 only, it just supports 24-bit single channel LVDS panel; If you want to use 48-bit dual channel LVDS panel, please use PANEL1 and PANEL2 combined.*

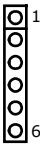
The 3308520/ has an onboard jumper voltage select for flat panel. Jumper *JP2* offers two voltage settings for the user.

- **JP2: Panel Voltage Select**

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

- **CN3: Inverter Power In Connector**

PIN	Description
1	+12V
2	+12V
3	VCC5
4	BK_EN
5	LCD_EN
6	GND

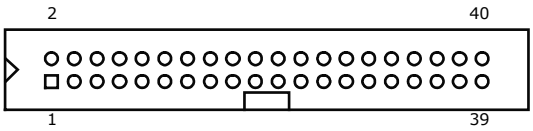


3.8 PCI E-IDE Drive Connector

IDE1 is a standard 40-pin 2.54-pitch connector daisy-chain driver connector serves the PCI E-IDE drive provisions onboard the 3308520/ . A maximum of two ATA/33/66/100 IDE drives can be connected to the 3308520/ via *IDE1*.

- **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

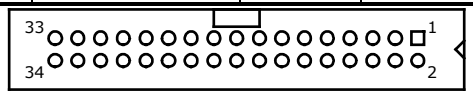


3.9 Floppy disk Drive Connector

The 3308520/ uses a standard 34-pin header connector, *FDC1*, for floppy disk drive connection.

- **FDC1: Floppy 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#

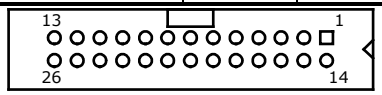


3.10 Parallel Connector

LPT1 is a standard 26-pin connector designed to accommodate parallel port connection onboard for 3308520/.

- **LPT1: 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

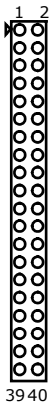


3.11 Serial Port Connectors

The 3308520/ offers NS16C550 compatible UARTs with Read/Receive 16-byte FIFO serial ports and internal 2x20 header and RS-422/485 connector.

- **CN19: COM 1~COM 4 Connector (2x20 Header)**

PIN	Description	PIN	Description
1	DCD1	2	DSR1
3	RXD1	4	RTS1
5	TXD1	6	CTS1
7	DTR1	8	RI1
9	GND	10	N/C
11	DCD2	12	DSR2
13	RXD2	14	RTS2
15	TXD2	16	CTS2
17	DTR2	18	RI2
19	GND	20	N/C
21	DCD3	22	DSR3
23	RXD3	24	RTS3
25	TXD3	26	CTS3
27	DTR3	28	RI3
29	GND	30	N/C
31	DCD4	32	DSR4
33	RXD4	34	RTS4
35	TXD4	36	CTS4
37	DTR4	38	RI4
39	GND	40	N/C



- **CN15: RS-422/485 Connector (3x2 Header, COM4)**

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

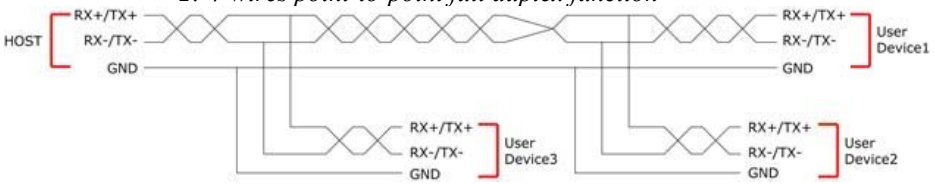
NOTE: *The terminal resistance of RX & TX is set at 180 Ω.*

- **JP4: COM 4 use RS-232 or RS-422/485 Select**

Options	Settings
RS-232 (default)	All 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 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*



Typical RS-485 2-wires Mutildrop Network

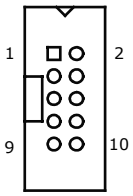
4-wires point-to-point full duplex RS-422

3.12 Ethernet Connector

The 3308520/ provides one internal 10-pin connector for 10/100 Based LAN. Please refer to the following for its pin information.

- **CN16: Internal LAN Connector**

PIN	Description
1	VCC3 Dual
2	LILED
3	RX+
4	RX-
5	ACTLED
6	75Ω Pull GND
7	N/C
8	75Ω Pull GND
9	TX+
10	TX-

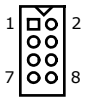


3.13 USB Port

The 3308520/ provides 6 USB2.0 ports at *US1/US2/US3*.

- **US1/US2/US3: Internal USB2.0 Port**

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



3.14 CMOS Data Clear

The 3308520/ has a Clear CMOS jumper on *JP1*.

- **JP1: Clear CMOS**

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

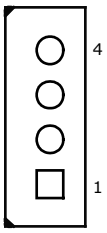
IMPORTANT: *Before you turn on the power of your system, please set JP1 to Short 1-2 for normal operation.*

3.15 Power and Fan Connectors

3308520/ provides one 4-pin power in at *PW1*.

- **PW1: 4-pin Power In Connector**

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



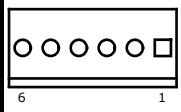
- **FN1/FN2: Fan Power In Connector**

PIN	Description
1	GND
2	+5V
3	Fan Speed

Connector *FN1/FN2* onboard 3308520/ is a 3-pin fan power output connector. And 3308520/ supports +5V Fan only.

- **CN11: AT Power In Connector**

PIN	Description
1	GND
2	GND
3	N/C
4	+12v
5	+5V
6	+5V

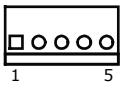


- **CN12: 2-pin ATX Power On/Off Switch**

PIN	Description
1	Pull 220Ω to VCCSTBY
2	PANSWIN

- **CN13: 5-pin ATX Power In Connector**

PIN	Description
1	GND
2	PS_ON
3	N/C
4	5VSB
5	VCC



3.16 Keyboard/Mouse Connectors

The 3308520/ offers *CN17* for an internal 6-pin cable converter to keyboard/mouse.

- **CN17: 6-pin Keyboard/Mouse Connector**

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

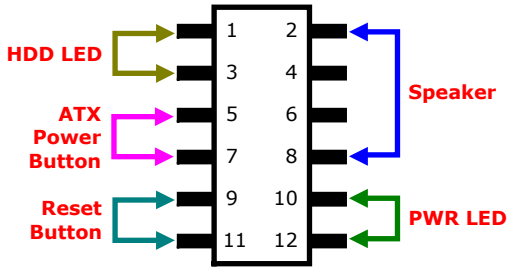
3.17 System Front Panel Control

The 3308520/ has system front panel control at location *CN8*.

- **CN8: System Front Panel Control**

PIN	Description	PIN	Description
1	220Ω pull VCC	2	Speaker
3	HDD LED	4	N/C
5	220Ω pull VCC	6	GND
7	ATX Power Button	8	220Ω pull VCC
9	Reset Switch	10	220Ω pull VCC
11	GND	12	GND

Connector CN8 Orientation



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 restart when such error happens.

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

```
;-----------------------------------------------------------------
;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
        OUT     DX, AL              ;select CRF0
        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….FFH=255sec.

3.19 Audio Connectors

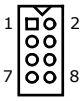
The 3308520/ has an onboard ALC203 3D audio controller. The following tables list the pin assignments for the MIC In/Line Out connector.

- **J1: CD Line-In Connector**

PIN	Description
1	LINE_R
2	GND
3	GND
4	LINE_L

- **JP3: 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



3.20 CompactFlash™ Connector

The 3308520/ also offers Type I/II CompactFlash™ socket which located at the solder side of the board (beneath the Mini PCI socket). The designated *CN20* connector, once soldered with an adapter, can hold CompactFlash™ cards of various sizes. Please turn off the power before operating.

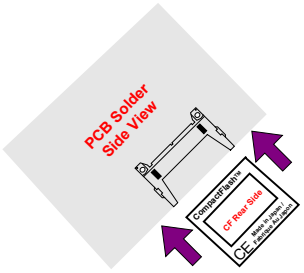
- **CN20: CompactFlash™ Connector**

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

...MORE ON NEXT PAGE...

PIN	Description	PIN	Description
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

The CompactFlash™ socket has a dummy protected design which prevents user insert CompactFlash card into wrong direction.



3.21 PCI Expansion Slot

3308520/ provides a Mini PCI slot. The peripheral component with standard Type III Mini PCI card can be used. And also provides one standard PCI slot for use.

3.22 GPIO Function

The 3308520/ offers one 8-bit GPIO port.

- **CN18: 8-bit Input/Output**

PIN	Description	PIN	Description
1	VCC	2	GND
3	GD0	4	GD4
5	GD1	6	GD5
7	GD2	8	GD6
9	GD3	10	GD7


```
MOV   DX, 2EH
MOV   AL, 87H
OUT   DX, AL
OUT   DX, AL

MOV   AL, 07H
OUT   DX, AL
INC   DX
OUT   DX, AL

DEC   DX
MOV   AL, 2AH
OUT   DX, AL
INC   DX
MOV   AL, 0FCH
OUT   DX, AL

DEC   DX
MOV   AL, 30H
OUT   DX, AL
INC   DX
MOV   AL, 01H
OUT   DX, AL

DEC   DX
MOV   AL, 0F0H
OUT   DX, AL
INC   DX
MOV   AL, 0FFH
OUT   DX, AL

DEC   DX
MOV   AL, 0AAH
OUT   DX, AL
```

3.23 Capture Function

	3308520	
Capture Function	Yes	

◆ Supports multi standard NTSC/PAL/SECAM video decoding

- CN6: Capture In Connector

PIN	Description	PIN	Description
1	GND	2	Capture In_1
3	GND	4	Capture In_2
5	GND	6	Capture In_3

3.24 TV-Out and S-Video Function

	3308520	
TV-Out Function	Yes	

- CN1: S-Video Out Connector

PIN	Description
1	Video-SVHSY
2	GND
3	Video-SVHSC
4	GND

- CN2: TV-Out Connector

PIN	Description
1	TVCVB
2	GND

3.25 PC/104 Connectors

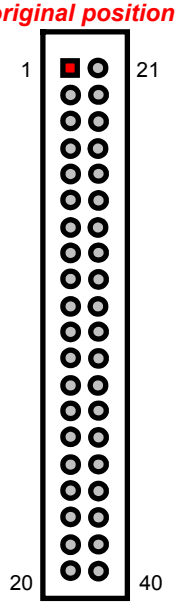
The PC/104 expansion bus offers provisions to connect all types of PC/104 modules. With the PC/104 bus being known as the new generation of industrial embedded 16-bit PC standard bus, thousands of PC/104 modules from multiple venders can be easily installed onboard. The detailed pin assignment of the PC/104 expansion bus connectors *CN10* and *CN9* are listed on the following tables:

NOTE： *The PC/104 connector allows direct plugging or stack-through piling of PC/104 modules without requiring the PC/104 mounting kit.*

- **CN10: PC/104 40-pin Connector**

PIN	Description	PIN	Description
1	GND	21	GND
2	-MEMCS16	22	-SBHE
3	-IOSC16	23	SA23
4	IRQ10	24	SA22
5	IRQ11	25	SA21
6	IRQ12	26	SA20
7	IRQ15	27	SA19
8	IRQ14	28	SA18
9	-DACK0	29	SA17
10	DRQ0	30	-MEMR
11	-DACK5	31	-MEMW
12	DRQ5	32	SD8
13	-DACK6	33	SD9
14	DRQ6	34	SD10
15	-DACK7	35	SD11
16	DRQ7	36	SD12
17	+5V	37	SD13
18	-MASTER	38	SD14
19	GND	39	SD15
20	GND	40	N/C

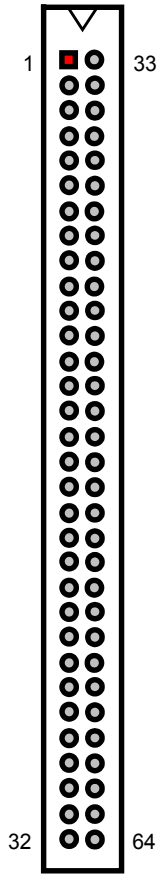
Connector diagram rotated 90 degrees clockwise from original position



- **CN9: PC/104 64-pin Connector**

PIN	Description	PIN	Description
1	-IOCHECK	33	GND
2	SD7	34	RESETDRV
3	SD6	35	+5V
4	SD5	36	IRQ9
5	SD4	37	N/C
6	SD3	38	N/C
7	SD2	39	N/C
8	SD1	40	N/C
9	SD0	41	N/C
10	IOCHRDY	42	GND
11	AEN	43	-SMEMW
12	SA19	44	-SMEMR
13	SA18	45	-IOW
14	SA17	46	-IOR
15	SA16	47	-DACK3
16	SA15	48	DRQ3
17	SA14	49	-DACK1
18	SA13	50	DRQ1
19	SA12	51	-REFRESH
20	SA11	52	SYSCLK
21	SA10	53	IRQ7
22	SA9	54	IRQ6
23	SA8	55	IRQ5
24	SA7	56	IRQ4
25	SA6	57	IRQ3
26	SA5	58	-DACK2
27	SA4	59	TC
28	SA3	60	BALE
29	SA2	61	+5V
30	SA1	62	OSC
31	SA0	63	N/C
32	GND	64	GND

Connector diagram rotated 90 degrees clockwise from original position



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