Global AMERICAN

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2807980 User's Manual

Mini-ITX Motherboard with Socket 479

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 2807980 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.*
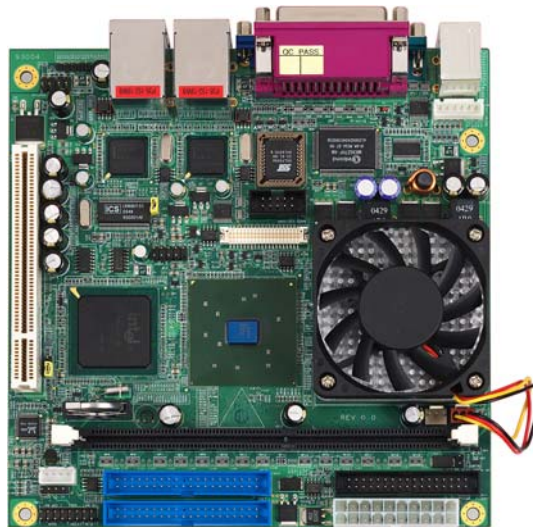
Chapter 1

General Description

The 2807980 is an Intel® 855GME GMCH/ICH4 chipset-based board designed mITX board. Intel® Pentium® M/Celeron® M processor 1.3~2.0GHz compatibility. The combination of these features makes the 2807980 an ideal all-in-one industrial mITX board. Additional features include an enhanced I/O with CRT/LVDS Panel, dual Giga LAN, audio, COM, IrDA and USB2.0 port interface.

Its onboard ATA/33/66/100 connected to IDE drive interface architecture allows the 2807980 to support data transfers of 33, 66 or 100MB/sec. for each IDE drive connection. Designed with the Intel® 855GME GMCH/ICH4 core logic chipset, the board supports all Intel® Pentium® M/Celeron® M processor 1.3~2.0GHz. The display controller is Intel® 855GME for CRT display, supporting up to 1600 x 1200 UXGA. 2807980 also provides 18-bit single channel/36-bit dual channel LVDS Panel display interface.

System memory is also sufficient with the one DIMM socket that can support up to 1GB. It also provides one standard PCI slot.

Additional onboard connectors include two internal and four external USB2.0 ports providing faster data transmission, and two external RJ-45 connectors for use of two 10/100/1000 Base-TX Ethernet interfaces.

1.1   Major Features
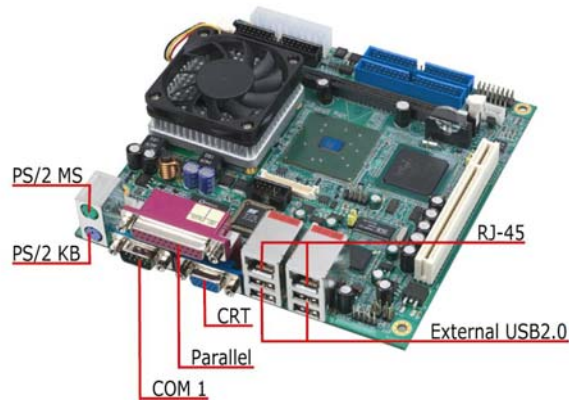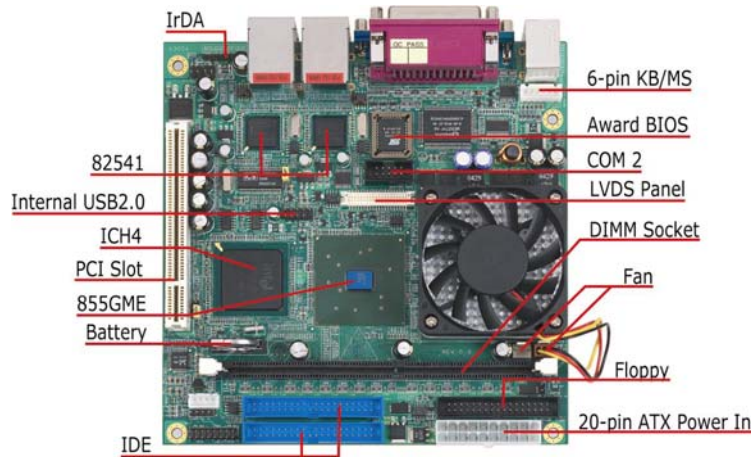
The 2807980 comes with the following features:

- Intel® Pentium® M/Celeron® M processor 1.3~2.0GHz
- Supports 400MHz FSB
- One DIMM socket with a max. capacity of 1GB
- Intel® 855GME GMCH/ICH4 system chipset
- Winbond W83627HF-AW super I/O chipset
- Intel® 855GME graphic controller
- LVDS Panel display interface
- Dual Intel® 82541 Gigabit Ethernet controller
- AC97 3D audio controller
- Fast PCI ATA/33/66/100 IDE controller
- Two COM, IrDA, six USB2.0 ports
- Hardware Monitor function

1.2   Specifications

- **CPU:**
  Intel® Pentium® M processor 1.6GHz
  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
- **Front Side Bus:** Supports 400MHz FSB
- **Memory:** One DIMM socket supporting up to 1GB
- **Chipset:** Intel® 855GME GMCH/ICH4
- **I/O Chipset:** Winbond W83627HF-AW
- **PCI Slot:** One standard PCI slot
- **VGA:** Intel® 855GME for CRT display supporting up to 1600 x 1200 UXGA
- **LVDS Panel:** Supports 18-bit single channel/36-bit dual channel LVDS Panel interface
- **Ethernet:** Dual Intel® 82541 10/100/1000 Based LAN
- **Audio:** AC97 3D audio controller
- **IDE:** Four IDE disk drives supporting ATA/33/66/100 and with transfer rates of 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 x 2 serial ports with 16-byte FIFO
- **IrDA:** One IrDA TX/RX header
- **USB:** Six USB2.0 ports, two internal and four external

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- **Keyboard/Mouse:** PS/2 6-pin Mini DIN or 6-pin header
- **BIOS:** Award PnP Flash BIOS
- **Watchdog Timer:** Software programmable time-out intervals from 1~256 sec.
- **CMOS:** Battery backup
- **Hardware Monitor:** Winbond W83627HF-AW
- **Board Size:** 17.0(L) x 17.0(W) cm

1.3   Board Dimensions
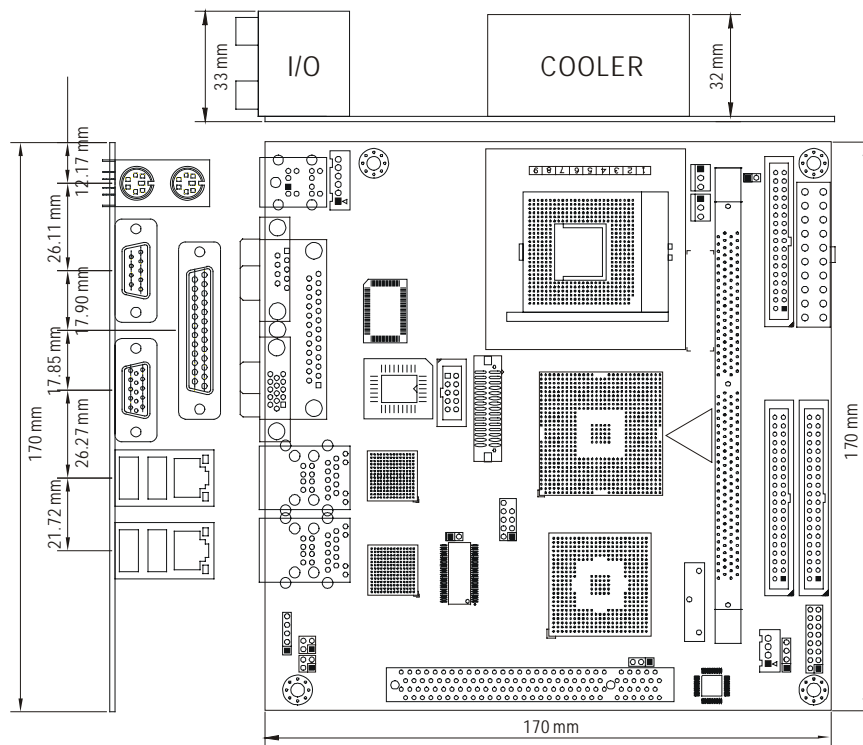
Chapter 2

Unpacking

2.1 Opening the Delivery Package

The 2807980 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 2807980 delivery package contains the following items:

- 2807980 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

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Chapter 3

Hardware Installation

This chapter provides the information on how to install the hardware using the 2807980. 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 JP4 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
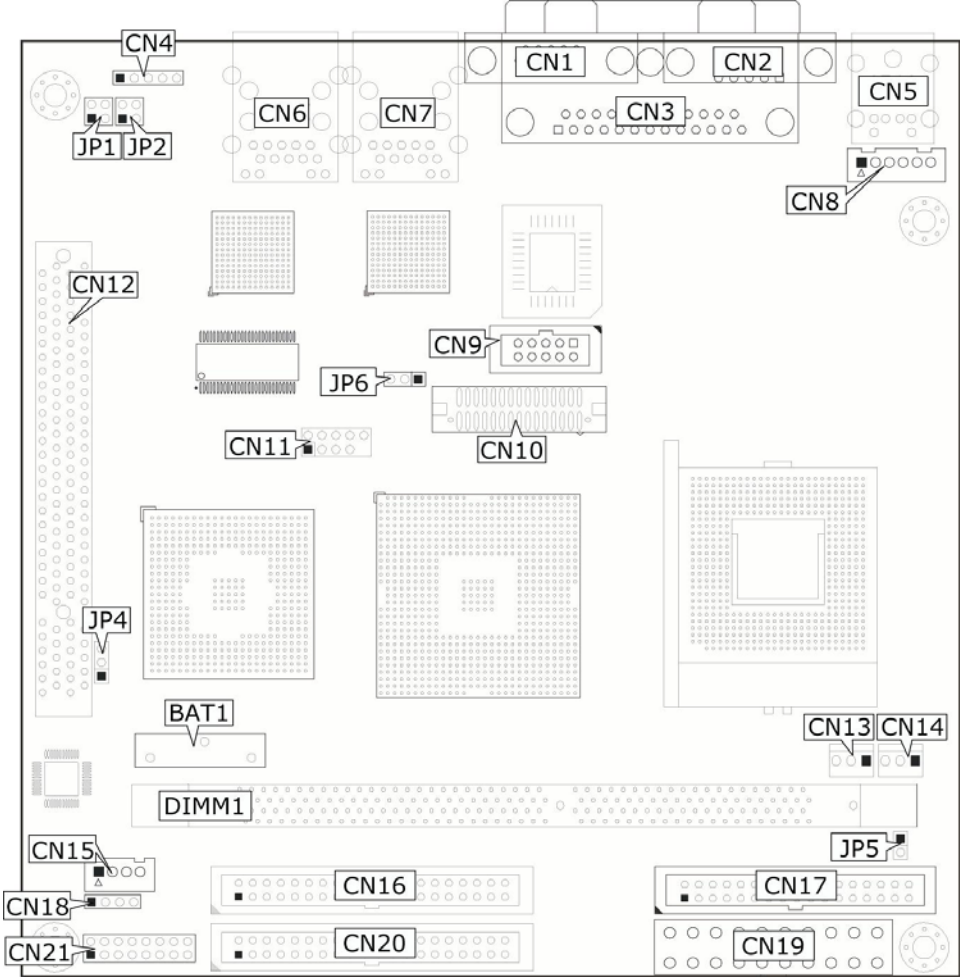
3.3   Jumper List

Jumper	Default Setting	Setting	Page
JP4	Clear CMOS: *Normal Operation*	Short 1-2	17
JP5	AT/Normal Mode Select: *ATX Mode*	Open	17
JP6	Panel Voltage Select: *+3.3V*	Short 1-2	10

3.4   Connector List

Connector	Definition	Page
CN1	15-pin CRT Connector	10
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CN3	Parallel Connector	14
CN4	IrDA Connector	22
CN5	PS/2 6-pin Mini DIN KB and MS Connector	19
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CN18	CD In Connector	22
CN19	20-pin ATX Power In Connector	17
CN21	System Front Panel Connector	20
DIMM1	SO-DIMM Socket	10
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3.5 Configuring the CPU

The 2807980 provides Intel® Pentium® M/Celeron® M processor 1.3~2.0GHz. It offers the convenience in CPU installation with its auto-detect feature. After installing a new microprocessor onboard, the 2807980 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.
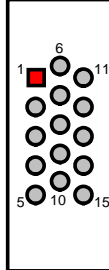
3.6 System Memory

The 2807980 provides one DIMM socket at location *DIMM1*. The maximum capacity of the onboard memory is 1GB.

3.7 VGA Controller

The display controller is Intel® 855GME for CRT display supporting up to 1600 x 1200 UXGA. 2807980 also provides 18-bit single channel or 36-bit dual channel LVDS Panel display interface. The 2807980 provides two methods of connecting VGA device. *CN1* offers a single standard CRT connector (DB15), or *CN10* offers 18-bit/36-bit LVDS panel connectors.
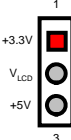
- **CN1: 15-pin CRT Connector (DB15)**

PIN	Description	PIN	Description
1	RED	2	GREEN
3	BLUE	4	N/C
5	GND	6	GND
7	GND	8	GND
9	VCC	10	GND
11	N/C	12	DDData
13	HSYNC	14	VSYNC
15	DDCLK		

- **JP6: Panel Voltage Select**

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

● **CN10: LVDS Panel Connector**

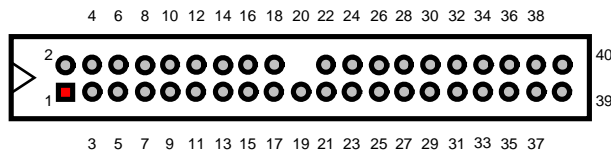| PIN	Description	PIN	Description
1	N/C	2	N/C
3	GND	4	GND
5	YAM0	6	YAM1
7	YAP0	8	YAP1
9	GND	10	GND
11	YAM2	12	CLKAM
13	YAP2	14	CLKAP
15	GND	16	GND
17	YAM3	18	YBM0
19	YAP3	20	YBP0
21	GND	22	GND
23	YBM1	24	YBM2
25	YBP1	26	YBP2
27	GND	28	GND
29	CLKBM	30	YBM3
31	CLKBP	32	YBP3
33	N/C	34	+12V
35	N/C	36	+12V
37	N/C	38	VCC_LCD
39	LCD_BKL	40	VCC_LCD
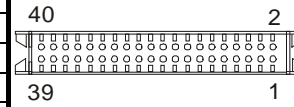
3.8 PCI E-IDE Drive Connector

CN20 and *CN16* are standard 40-pin daisy-chain driver connector that serves the PCI E-IDE drive provisions onboard the 2807980. A maximum of four ATA/33/66/100 IDE drives can be connected to the 2807980 via *CN20* and *CN16*.

● **CN20/CN16: Primary/Secondary IDE Connector**

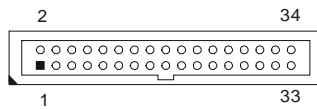| PIN	Description	PIN	Description
1	RESET	2	GND
3	DATA 7	4	DATA 8
5	DATA 6	6	DATA 9
7	DATA 5	8	DATA 10
9	DATA 4	10	DATA 11
11	DATA 3	12	DATA 12
13	DATA 2	14	DATA 13
15	DATA 1	16	DATA 14
17	DATA 0	18	DATA 15
19	GND	20	N/C
21	DRQ0	22	GND
23	IOW	24	GND
25	IOR	26	GND
27	IOCHRDY	28	PD1-
29	DACK0	30	ALE
31	IRQ 14	32	N/C
33	Address 1	34	GND
35	Address 0	36	Address 2
37	Chip Select 0	38	Chip Select 1
39	HDD Active	40	GND

3.9 Floppy Disk Drive Connector

The 2807980 uses a 26-pin connector, *CN17* for two floppy disk drives connection.

● **CN17: FDD Connector**

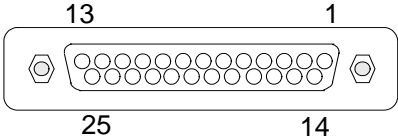| PIN	Description	PIN	Description
1	GND	2	Drive Density Selection
3	GND	4	N/C
5	GND	6	Drive Density Selection
7	GND	8	Index
9	GND	10	Motor Enable 0
11	GND	12	Drive Select 1
13	GND	14	Drive Select 0
15	GND	16	Motor Enable 1
17	GND	18	Direction
19	GND	20	Step
21	GND	22	Write Data
23	GND	24	Write Gate
25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

3.10 Parallel Connector

CN3 is a DB-25 connector designed to accommodate parallel port connection onboard the 2807980.

- **CN3: Parallel Connector**

PIN	Description	PIN	Description
1	Line Printer Strobe	14	Auto Feed
2	PD0	15	Error
3	PD1	16	Initialize
4	PD2	17	Select
5	PD3	18	GND
6	PD4	19	GND
7	PD5	20	GND
8	PD6	21	GND
9	PD7	22	GND
10	ACK	23	GND
11	Busy	24	GND
12	Paper Empty	25	GND
13	Select		

```
      13                    1
   ┌─────────────────────────┐
   │ ⊚ │∘∘∘∘∘∘∘∘∘∘∘∘∘│ ⊚ │
   │    ∘∘∘∘∘∘∘∘∘∘∘∘          │
   └─────────────────────────┘
      25                    14
```
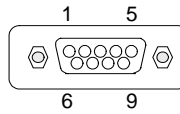
3.11 Serial Port Connectors

The 2807980 offers NS16C550 compatible UARTs with Read/Receive 16-byte FIFO serial ports.
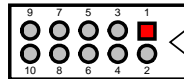
- **CN2: COM 1 Connector (DB9)**

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

- **CN9: COM 2 Connector (5x2 header)**

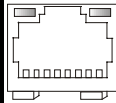| PIN	Description	PIN	Description
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	5V

3.12 Ethernet Connector

The 2807980 provides two 10/100/1000 Base-TX LAN interface connectors. Please refer to the following for its pin information.

● **CN6/CN7: RJ-45 Connector**

PIN	Description
1	Transmit Output (+)
2	Transmit Output (-)
3	Receive Input (+)
4	N/C
5	N/C
6	Receive Input (-)
7	N/C
8	N/C

● **JP2/JP1: LAN 1/LAN 2 LED Connector**

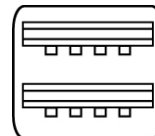| PIN	Description	PIN	Description
1	LINK_LED	2	VCC_3V
3	ACT_LED	4	VCC_3V

3.13 USB Connector

The 2807980 provides one 8-pin internal connector at location *CN11* and four 4-pin external connectors, at locations *CN7/CN6*, for four USB2.0 connections to the 2807980.
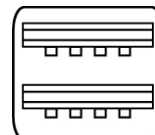
● **CN7: External USB2.0 Connector**

PIN	Description	PIN	Description
1a	VCC	1b	VCC
2a	USB0-	2b	USB1-
3a	USB0+	3b	USB1+
4a	GND	4b	GND

● **CN6: External USB2.0 Connector**

PIN	Description	PIN	Description
1a	VCC	1b	VCC
2a	USB2-	2b	USB3-
3a	USB2+	3b	USB3+
4a	GND	4b	GND

● **CN11: Internal USB2.0 Connector**

PIN	Description	PIN	Description
1	VCC	2	VCC
3	BD4-	4	BD5-
5	BD4+	6	BD5+
7	GND	8	GND
9	----	10	N/C
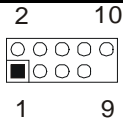
3.14 CMOS Data Clear

The 2807980 has a Clear CMOS jumper on *JP4.*

● **JP4: 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 JP4 to short 1-2 for normal operation.*

3.15 Power and Fan Connectors

2807980 provides AT or normal mode, jumper setting at *JP5.*
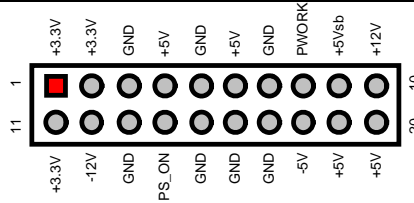
● **JP5: AT/Normal Mode Select**

Options	Settings
AT Mode	Short
Normal Mode (default)	Open

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2807980 provides one 20-pin ATX power in connector at *CN19*.

● **CN19: 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	N/C	18	-5V
9	+5Vsb	19	+5V
10	+12V	20	+5V

CN13/CN14 onboard 2807980 is 3-pin fan power connector.

● **CN13/CN14: Fan Power Connector**

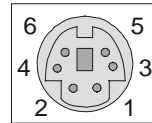| PIN	Description
1	GND
2	VCC
3	FAN In 1/FAN In 2

18
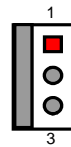
3.16 Keyboard/Mouse Connector

The 2807980 offers two methods for keyboard and mouse connections. The connections are done via *CN5(Purple)* for external PS/2 type keyboard and *CN5(Green)* for external PS/2 type mouse connection. And *CN8* for 6-pin KB/MS header connector
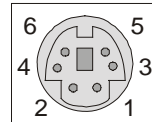
● **CN5(Purple): PS/2 6-pin Mini DIN Keyboard Connector**

PIN	Description	PIN	Description
1	Keyboard Data	2	N/C
3	GND	4	+5V
5	Keyboard Clock	6	N/C

● **CN5(Green): PS/2 6-pin Mini DIN Mouse Connector**

PIN	Description	PIN	Description
1	Mouse Data	2	N/C
3	GND	4	+5V
5	Mouse Clock	6	N/C

● **CN8: 6-pin Keyboard/Mouse Connector**

| PIN	Description	PIN	Description
1	MS Clock	2	MS Data
3	KB Clock	4	KB Data
5	GND	6	VCC
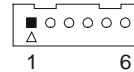
3.17 System Front Panel Connectors

The 2807980 has one system front panel at location *CN21* that indicates the system front panel status.

● **CN21: System Front Panel Connector**

PIN	Description	PIN	Description
1	VCC	2	5V
3	N/C	4	N/C
5	BZ	6	GND
7	Speaker	8	KBLOCK
9	HDLED +	10	GND
11	HDLED -	12	N/C
13	Reset +	14	5VSB
15	Reset -	16	PWRBT -
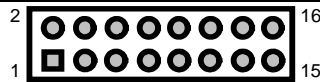
Connector CN21 Orientation
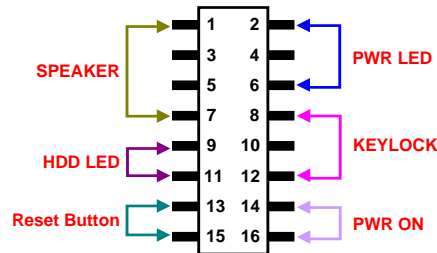
3.18 Watchdog Timer

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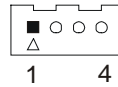
User can also use AL, 00H's defined time for reset purposes, e.g.00H for Disable, 01H = 1sec, 02H = 2sec to FFH = 255sec.

3.19 Audio Connectors

The 2807980 has an onboard AC97 3D audio interface. The following tables list the pin assignments of the MIC In/Line Out connectors.
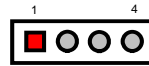
● **CN15: Line Out Connector**

PIN	Description
1	LOUT_L
2	GND
3	GND
4	LOUT_R

● **CN18: CD In Connector**

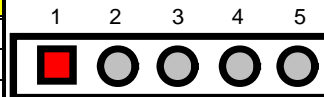| PIN	Description
1	CD_IN_L
2	GND
3	GND
4	CD_IN_R

3.20 IrDA Connector

CN4 is a 5-pin internal IR communication connector for connection of an IrDA device.

● **CN4: IrDA Connector**

PIN	Description
1	+5V
2	FIRTX
3	IRRX
4	GND
5	IRTX

Any advice or comments about our products and service, or anything we can help you with please don't hesitate to contact with us. We will do our best to support your products, projects and business.

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