GENE-1270

Marvell® XScale PXA 270 CPU

RISC CPU Module

USB Host x 4 / USB Client x1

RS-232 x 1/ RS-232/485 x 1

CF Type I/II x 1, SDIO x 1

GENE-1270 Rev.B Manual 3rd Ed.

July 2008

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Packing List

Before you begin installing your card, please make sure that the following materials have been shipped:

- 1   1701100207 COM Port Cable
- 1   1709100201 USB Port Cable
- 1   1700140510 Audio Cable
- 1   1701440180 IDE Cable
- 1   GENE-1270 CPU Module
- 1   Quick Installation Guide
- 1   CD-ROM for manual (in PDF format)

If any of these items should be missing or damaged, please contact your distributor or sales representative immediately.

Contents

Chapter 1 General Information

Chapter 2 Quick Installation Guide

Chapter 3   Software Installation Guide

Chapter

1

General Information

1.1 Introduction

GENE-1270 Rev.B (GENE-1270B) adopts Marvell® XScale PXA270. This RISC CPU module features low power consumption and cost-efficiency, to fulfill the requirements of hardy and more cost-focusing applications.

The module has 2COM ports (1 RS-232, 1 RS-232/485), 4 USB1.1 host, 1 USB1.1 Client, Digital I/O, etc., to connect and control the peripheral devices. CF and SDIO slots make the implementation of external expansion. The CPU frequency is up to 520MHz and shows a better performance. In addition, the GENE-1270B companies with PXA270 Display Companion Chipset, it not only provides the functions of MPEG2/4 video decode, but also 2D/3D acceleration. Bundling with Marvell® XScale PXA270, GENE-1270B features highly integration in rugged mobile applications.

Although the Marvell® PXA270 has the same kernel as PXA250, the PXA270 has been improved to save more power and enlarged the supporting function for multimedia. The power-saving contribution helps GENE-1270B to run rich multimedia applications and perform excellently. For targeting at the vehicle PC and mobile device markets, the GENE-1270B is no doubt the best solution.

1.2   Features

- Marvell® XScale PXA270 Processor
- LCD/CRT Video Output Support
- 10/100Base-TX Ethernet
- AC97 Audio
- RS-232 x 1, RS-232/485 x 1
- IrDA Port
- USB Host x 4, USB Client x 1
- CompactFlash Type I/II x 1, SDIO x 1
- 4-wire touchScreen Support
- Digital I/O
- LCD Backlight On/Off Control
- Hardware Reset
- JTAG Port

1.3   Specifications

System

- CPU   Marvell® XScale PXA270
                                   520MHz Processor

- System Memory   Onboard 128MB SDRAM
- Storage Memory   128MB SanDisk MDOC
- Ethernet   10/100Base-TX, Davicom
                                   DM9000AEP
- Boot Loader   Microsoft Windows CE or Linux
- Expansion Interface   SDIO, Type II CompactFlash
- Watchdog Timer   Generates a Time-out System
                                   Reset, setting via software
- Power Requirement   +9V to +24V DC
- Power Consumption   520MHz, 128MB SDRAM
                                   0.29A @ +12V
- Board Size   5.75"(L) x 4"(W) (146mm x
                                   101.6mm)
- Gross Weight   0.88lb (0.4kg)
- Operating Temperature 32°F~140°F (0°C~60°C)
- Storage Temperature   -40°F~176°F (-40°C~80°C)
- Operating Humidity   0%~90% relative humidity,
                                   non-condensing
- MTBF (Hours)   100,000

I/O

- MIO
  RS-232 x 1, RS-232/485 x 1 (COM1: full modem control signals, COM2: Tx, Rx, CTS, RTS only)

- USB
  Two Type-A Connectors and One 5 x 2 Pin header supports 4 USB2.0 Host ports, One USB Type B connector supports USB1.1 Client port

- Digital I/O
  Supports 10-bit (Programmable)

- Audio
  Line-out, Stereo Amplifier included

Chapter

2

Quick Installation Guide

OZONE SAFE

RECYCLABLE

Notice:
The Quick Installation Guide is derived from Chapter 2 of user manual. For other chapters and further installation instructions, please refer to the user manual CD-ROM that came with the product.

2.1   Safety Precautions

Warning!   *Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.*

Caution!   *Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis*

2.2   Location of Connectors and Jumpers

Component Side
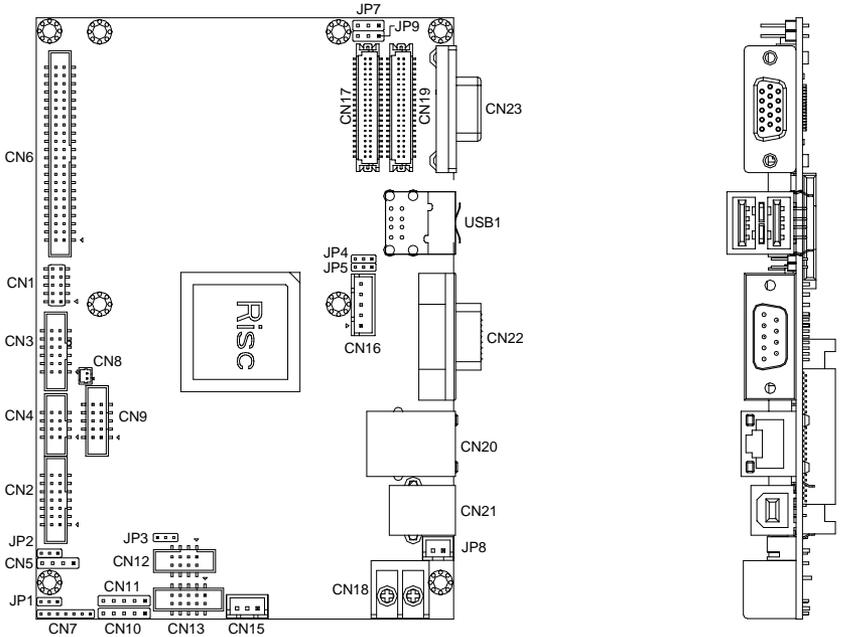
Solder Side
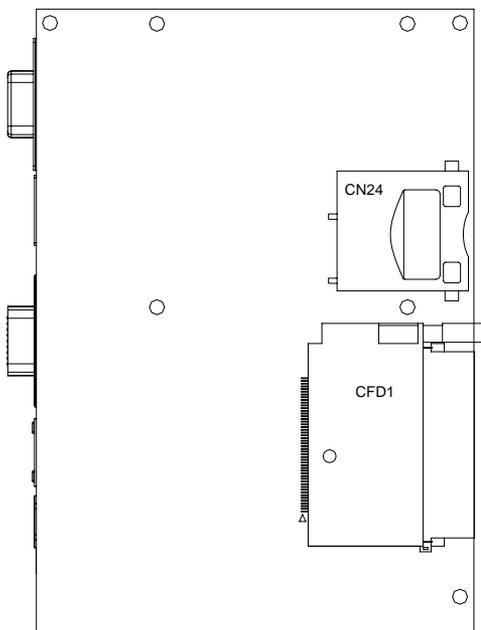
2.3 Mechanical Drawing

Component Side
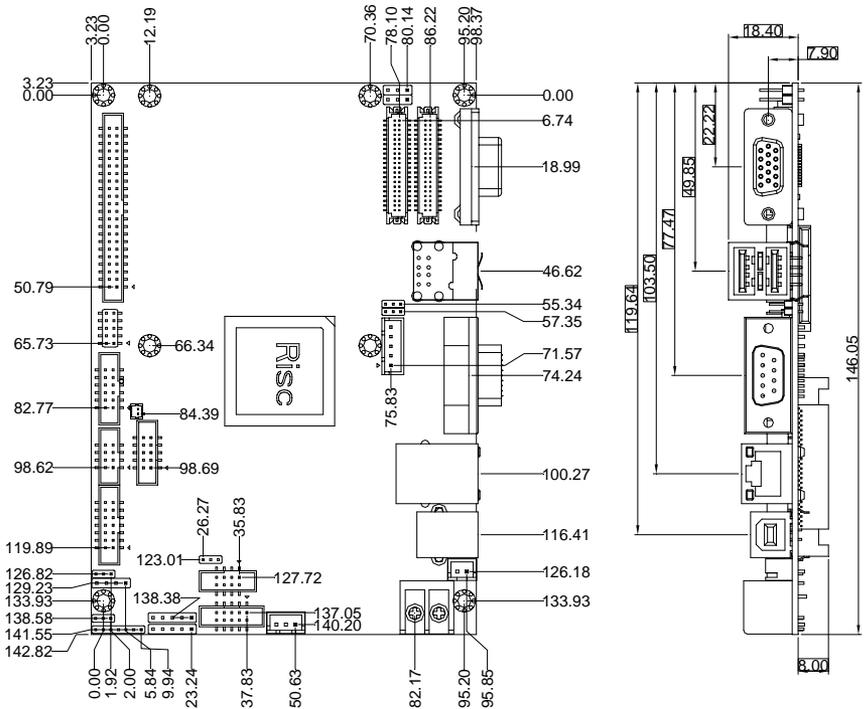
Solder Side
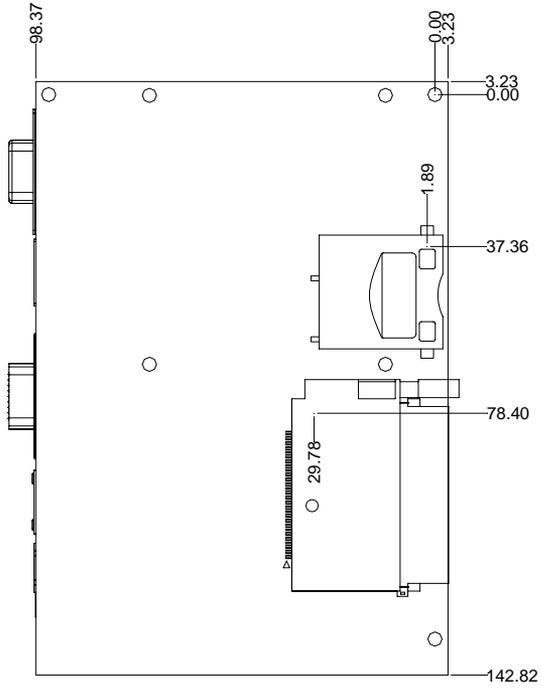
2.4 List of Jumpers

The board has a number of jumpers that allow you to configure your system to suit your application.

The table below shows the function of each of the board's jumpers:

Jumpers

Label	Function
JP1	COM2 Function Selection
JP2	Audio Output Selection
JP3	COM2 Function Selection
JP4	LCD2 TTL-LCD Clock Selection
JP5	LCD1 TTL-LCD Clock Selection
JP6	LCD2 Voltage Selection
JP7	LCD1 Voltage Selection
JP8	TDP

2.5   List of Connectors

The board has a number of connectors that allow you to configure your system to suit your application. The table below shows the function of each board's connectors:

Connectors

Label	Function
CN1	Front Panel Connector
CN2	Audio Connector
CN3	Digital I/O Connector
CN4	TDP
CN5	Internal Speaker Connector
CN6	EIDE Connector
CN7	Bluetooth Connector
CN8	RTC Battery Connector
CN9	USB3 & USB4 Connector
CN10	IrDA Connector
CN11	Touch Panel Connector
CN12	JTAG Connector
CN13	COM2 RS-232 Connector
CN15	COM2 RS-485 Connector
CN16	LCD Inverter Connector
CN17	LCD2 TTL_LCD Connector
CN18	Power In Connector

CN19	LCD1 TTL_LCD Connector
CN20	LAN 10/100 Base-TX Ethernet Connector
CN21	Client USB Connector
CN22	COM1 RS-232 Connector
CN23	VGA Display Connector
CN24	SD Card Connector
CFD1	CompactFlash Slot
USB1	USB1 & USB2 Connector

2.6 Setting Jumpers

You configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To "close" a jumper you connect the pins with the clip.

To "open" a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2 or 2 and 3.
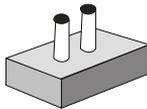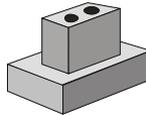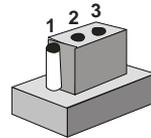
Open   **Closed**   **Closed 2-3**

A pair of needle-nose pliers may be helpful when working with jumpers.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any change.

Generally, you simply need a standard cable to make most connections.

2.7 COM2 Function Selection (JP1 & JP3)

JP1	Function
1-2	RS-232 (CN13) (default)
2-3	RS-485 (CN15)
2-3	BLUETOOTH (CN7)
JP3	**Function**
N.C.	RS-232 (CN13) (default)
1-2	RS-485 (CN15)
2-3	BLUETOOTH (CN7)

2.8 Audio Out Selection (JP2)

JP2	Function
1-2	EARPHONE (From CN2) (default)
2-3	INTERNAL SPEAKER (From CN5)

2.9 LCD2 TTL-LCD Clock Selection (JP4)

JP4	Function
1-2	CLK (default)
2-3	Reverse CLK

2.10 LCD1 TTL-LCD Clock Selection (JP5)

JP5	Function
1-2	CLK (default)
2-3	Reverse CLK

2.11 LCD2 Voltage Selection (JP6)

JP6	Function
1-2	+5V

2-3	+3.3V (default)

2.12 LCD1 Voltage Selection (JP7)

JP7	Function
1-2	+5V
2-3	+3.3V (default)

2.13 Front Panel Connector (CN1)

Pin	Signal	Pin	Signal
1	TDP	2	GND
3	N.C.	4	N.C.
5	Load default of Boot Flash	6	GND
7	TDP	8	GND
9	Hardware Reset	10	GND

2.14 Audio Connector (CN2)

Pin	Signal	Pin	Signal
1	MIC_IN	2	MIC_VCC
3	LINE_IN_GND	4	N.C.
5	LINE_IN_L	6	N.C.
7	LINE_IN_R	8	N.C.
9	LINE_IN_GND	10	N.C.
11	LINE_OUT_L	12	LINE_OUT_R
13	LINE_OUT_GND	14	LINE_OUT_GND

2.15 Digital I/O Connector (CN3)

Pin	Signal	Pin	Signal
1	Input/Output 1	2	Input/Output 2
3	Input/Output 3	4	Input/Output 4
5	Input/Output 5	6	Input/Output 6
7	Input/Output 7	8	Input/Output 8
9	Input/Output 9	10	Input/Output 10
11	+3.3V	12	GND

2.16 Internal Speaker Connector (CN5)

Pin	Signal
1	Right Speaker out-
2	Right Speaker out+
3	Left Speaker out+
4	Left Speaker out-

2.17 EIDE Connector (CN6)

Pin	Signal	Pin	Signal
1	IDE RESET	2	GND
3	DATA7	4	DATA8
5	DATA6	6	DATA9
7	DATA5	8	DATA10
9	DATA4	10	DATA11
11	DATA3	12	DATA12

13	DATA2	14	DATA13
15	DATA1	16	DATA14
17	DATA0	18	DATA15
19	GND	20	N.C.
21	REQ	22	GND
23	IO WRITE	24	GND
25	IO READ	26	GND
27	IO READY	28	GND
29	DACK	30	GND
31	HDD_IRQ	32	N.C.
33	ADDR1	34	UDMA DETECT
35	ADDR0	36	ADDR2
37	CS#1	38	CS#3
39	LED	40	GND
41	+5V	42	+5V
43	GND	44	N.C.

2.18 Bluetooth Connector (CN7)

Pin	Signal
1	+3.3V
2	BT_RXD
3	BT_TXD
4	BT_CTS
5	BT_RTS

6	Reset (-)
7	GND

2.19 RTC Battery Connector (CN8)

Pin	Signal
1	Battery VCC
2	Battery GND

2.20 USB3 & USB4 Connector (CN9)

Pin	Signal	Pin	Signal
1	+5V	2	GND
3	USBD3-	4	GND
5	USBD3+	6	USBD4+
7	GND	8	USBD4-
9	GND	10	+5V

2.21 IrDA Connector (CN10)

Pin	Signal
1	+5V
2	N.C.
3	RXD
4	GND
5	TXD

2.22 Touch Panel Connector (CN11)

Pin	Signal
1	TOUCHSYP
2	TOUCHSXM
3	TOUCHSYM
4	TOUCHSXP
5	GND

2.23 JTAG Connector (CN12)

Pin	Signal	Pin	Signal
1	+3.3V	2	JTG_TMS
3	JTG_TCK	4	JTG_TRST#
5	JTG_TDI	6	JTG_RESET
7	JTG_TDO	8	GND

2.24 COM2 RS-232 Connector (CN13)

Pin	Signal	Pin	Signal
1	N.C.	2	RXD
3	TXD	4	N.C.
5	GND	6	N.C.
7	RTS	8	CTS
9	N.C.	10	N.C.

2.25 RS-485 Connector (CN15)

Pin	Signal
1	Data-
2	Data+
3	GND

2.26 LCD Inverter Connector (CN16)

Pin	Signal
1	+5V
2	+5V
3	TDP
4	GND
5	GND

2.27 LCD2 TTL_LCD Connector (CN17)

Pin	Signal	Pin	Signal
1	LCD_VCC	2	LCD_VCC
3	GND	4	GND
5	LCD_VCC	6	LCD_VCC
7	ENVEE	8	GND
9	BLUE0	10	BLUE1
11	BLUE2	12	BLUE3
13	BLUE4	14	BLUE5
15	BLUE6	16	BLUE7

17	GREEN0	18	GREEN1
19	GREEN2	20	GREEN3
21	GREEN4	22	GREEN5
23	GREEN6	24	GREEN7
25	RED0	26	RED1
27	RED2	28	RED3
29	RED4	30	RED5
31	RED6	32	RED7
33	GND	34	GND
35	DOT_CLOCK	36	VSYNC
37	DE	38	HSYNC
39	N.C.	40	ENBKL

2.28 Power In Connector (CN18)

Pin	Signal
1	+9V~+24V Input
2	GND

2.29 LCD1 TTL_LCD Connector (CN19)

Pin	Signal	Pin	Signal
1	LCD_VCC	2	LCD_VCC
3	GND	4	GND
5	LCD_VCC	6	LCD_VCC
7	ENVEE	8	GND

9	BLUE0	10	BLUE1
11	BLUE2	12	BLUE3
13	BLUE4	14	BLUE5
15	BLUE6	16	BLUE7
17	GREEN0	18	GREEN1
19	GREEN2	20	GREEN3
21	GREEN4	22	GREEN5
23	GREEN6	24	GREEN7
25	RED0	26	RED1
27	RED2	28	RED3
29	RED4	30	RED5
31	RED6	32	RED7
33	GND	34	GND
35	DOT_CLOCK	36	VSYNC
37	DE	38	HSYNC
39	N.C.	40	ENBKL

Below Table for China RoHS Requirements

产品中有毒有害物质或元素名称及含量

AAEON Main Board/ Daughter Board/ Backplane

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板 及其电子组件	×	○	○	○	○	○
外部信号 连接器及线材	×	○	○	○	○	○

O：表示该有毒有害物质在该部件所有均质材料中的含量均在
SJ/T 11363-2006 标准规定的限量要求以下。

X：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出
SJ/T 11363-2006 标准规定的限量要求。

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