PCM-9452

Intel® Core™ 2 Duo/ Core™ Duo/

Celeron® M (Yonah) Processors

Two DDR 400/533/667 DDR II SODIMM

18-bit Dual-Channel LVDS TFT LCD

6 USB 2.0 / 4 COMs / Digital IO

PCM-9452 Manual Rev.A 2nd Ed.
Mar. 2008

Copyright Notice

Acknowledgments

All other products' name or trademarks are properties of their respective owners.

- Award is a trademark of Award Software International, Inc.
- CompactFlash™ is a trademark of the Compact Flash Association.
- Intel®, Core™ 2 Duo, Core™ Duo, and Celeron® M are trademarks of Intel® Corporation.
- Microsoft Windows® is a registered trademark of Microsoft Corp.
- ITE is a trademark of Integrated Technology Express, Inc.
- IBM, PC/AT, PS/2, and VGA are trademarks of International Business Machines Corporation.

All other product names or trademarks are properties of their respective owners.

Packing List

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

- 1 9657666600 Jumper Cap
- 1 1759294520 CPU Cooler (Fan + Heatsink)
- 1 PCM-9452
- 1 Quick Installation Guide
- 1 CD-ROM for manual (in PDF format) and drivers

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

Contents

Chapter 1 General Information

1.1 Introduction 1-2
1.2 Features 1-3
1.3 Specifications 1-4

Chapter 2 Quick Installation Guide

2.1 Safety Precautions 2-2
2.2 Location of Connectors and Jumpers 2-3
2.3 Mechanical Drawing 2-5
2.4 List of Jumpers 2-7
2.5 List of Connectors 2-8
2.6 Setting Jumpers 2-10
2.7 LVDS Operating Voltage Selection (JP1) 2-11
2.8 ATX Power Supply Auto Turn-on Selection (JP3) 2-11
2.9 LVDS Inverter Voltage Selection (JP4) 2-11
2.10 COM2 RI/+5V/+12V Selection (JP5) 2-11
2.11 Clear CMOS (JP6) 2-11
2.12 Front Panel (JP7) 2-12
2.13 CFD Master/Slave Mode Selection (JP8) 2-12
2.14 CFD Operating Voltage Selection (JP9) 2-12
2.15 PCI-Express〔x16〕Function Selection (JP10) (Optional) 2-12
2.16 TV-out Connector (CN1) 2-13

2.17 SATA 2 Connector (CN2)..... 2-13
2.18 System Fan Connector (CN3)..... 2-13
2.19 LVDS Connector (CN4)..... 2-13
2.20 ATX Power Connector (CN5)..... 2-14
2.21 RJ-45 Ethernet #1 Connector (CN6)..... 2-15
2.22 RJ-45 Ethernet #2 Connector (CN7)..... 2-15
2.23 Pin Header Ethernet #1 Connector (CN8) (Optional)
..... 2-15
2.24 Pin Header Ethernet #2 Connector (CN9)(Optional)2-16
2.25 SATA 0 Connector (CN10)..... 2-16
2.26 Audio In/Out/ CD-in and MIC Connector (CN11).... 2-16
2.27 COM Port 4 Connector (CN12)..... 2-17
2.28 CRT Display Connector (CN13)..... 2-17
2.29 LVDS Inverter Connector (CN14) 2-17
2.30 Stereo Audio Output Connector (CN15) 2-18
2.31 Ethernet #1 LED Indicator (CN16) 2-18
2.32 Ethernet #2 LED Indicator (CN17) 2-18
2.33 COM Port 1 Connector (CN18)..... 2-18
2.34 COM Port 2 Connector (CN19)..... 2-19
2.35 COM Port 3 Connector (CN20) 2-20
2.36 Digital I/O Connector (CN22) 2-20
2.37 USB Port 5,6 Connector (CN23) 2-21
2.38 USB Port 3,4 Connector (CN24) 2-21
2.39 Parallel Port Connector (CN25) 2-21
2.40 USB Port 1,2 Connector (CN26) 2-22

2.41 IDE Connector (CN27) 2-22
2.42 Keyboard/Mouse Connector (CN28) 2-23
2.43 CPU Fan Connector (CN29) 2-24
2.44 IrDA Connector (CN30) 2-24
2.45 PCMCIA Slot (CN31) 2-24
2.46 Mini-PCI Slot (MPC1) 2-24
2.47 PCI-Express〔x16〕Slot (PCIE1) 2-24
2.48 CompactFlash Disk (CFD1) 2-24

Chapter 3 Award BIOS Setup

3.1 System Test and Initialization. 3-2
3.2 Award BIOS Setup 3-3

Chapter 4 Driver Installation

4.1 Installation 4-3

Appendix A Programming The Watchdog Timer

A.1 Programming A-2
A.2 ITE8712 Watchdog Timer Initial Program.....A-5

Appendix B I/O Information

B.1 I/O Address Map B-2
B.2 Memory Address Map.....B-2
B.3 IRQ Mapping Chart.....B-3
B.4 DMA Channel Assignments.....B-3

Appendix C Mating Connector

C.1 List of Mating Connectors and Cables..... C-2

Chapter

1

General Information

1.1 Introduction

The PCM-9452 supports Intel® Core™ 2 Duo (Merom)/ Core™ Duo/ Celeron® M processors offering a wide range of performance, price and power. Memory support for up to 4GB of DDRII 400/533/667 is available through two 200-pin SODIMM sockets. Dual Ethernet connectivity is achieved by employing Intel® 82573L 10/100/1000Base-TX Ethernet controllers. To meet demanding expansion requirements the PCM-9452 offers Mini PCI, PCI and PCI-Express[x16]. In addition, the PCM-9452 features six USB2.0 ports, 8-bit digital I/O (programmable) and four COM ports. With all of the available I/O connections and bus expansion, the PCM-9452 is an excellent solution for an integrated system.

The display interface of the PCM-9452 supports CRT/LCD, CRT/TV, LCD/TV in simultaneous and dual view configurations. The LCD interface is 18-bit dual channel LVDS. Paired with a dual core CPU, the integrated graphics engine provides exceptional 3D graphic performance. For higher end graphic applications the PCM-9452 offers expandability through the PCI-Express[x16] slot. Whether your application utilizes the integrated graphics or uses an add-on card for more demanding multimedia applications the PCM-9452 is a solid performer.

1.2 Features

- Intel® Core™ 2 Duo/ Core™ Duo/ Celeron® M (Yonah) Processors
- 18-bit Dual-Channel LVDS TFT LCD, TV-out
- Two DDR II 400/533/667 SODIMM Memory Up to 4GB
- Dual Gigabit Ethernet (Optional 10/100 LAN)
- PCI-Express〔x16〕, PCI x 1, Mini PCI x 1
- MIC-in/ Line-in/ Line-out, Stereo Amplifier
- PCMCIA and CompactFlash Type II Slot, SATA x 2 (optional RAID 0 & RAID 1)
- Optional TPM 1.2
- Digital I/O 8-bit, USB2.0 x 6, COM x 4

1.3 Specifications

System

CPU	Supports Intel® Core™ 2 Duo/ Core™ Duo/ Celeron® M (Yonah) processors
System Memory	200-pin SODIMM x 2, max. 4GB (DDR II 400/533/667)
Chipset	Intel 945GM + ICH7-M (-DH optional for RAID)
I/O Chipset	ICH7-M + ITE8712F-KX
Ethernet	Intel 82573L, 10/100/1000Base-TX, RJ-45 x 2, optional 10/100 LAN
BIOS	Award Plug & Play BIOS – 1 MB ROM
Watchdog Timer	Generates a time-out system reset
H/W status monitoring	ITE8712F-KX, supports power supply voltages, fan speed and temperature monitoring functions
Expansion Interface	Mini PCI x 1, PCI x 1, PCI-E〔x16〕(Share〔x1〕) x 1
Battery	Lithium battery
Power Requirement	Standard ATX Power
Power Consumption	T7400 2.16GHz, DDRII 667 2GB

(Typical)	+12V @ 2.96A, +5V @ 3.72 A
● Operating Temperature	32°F~140°F (0°C~60°C)
● Storage Temperature	-40°F~176°F (-40°C~80°C)
● Board Size	8”(L) x5.75” (W) (203mm x 146mm)
● Gross Weight	1.2 lb (0.5kg)
● MTBF (Hours)	60,000

Display: Support CRT/LCD, CRT/TV, LCD/TV, simultaneous/ dual view display

● Chipset	Intel 945GM
● Memory	Shared system memory up to 224MB w/ DVMT3.0
● Resolutions	Up to 2048 x 1536 @32bpp for CRT; Up to 1280x1024@ 36bpp for LCD
● LCD Interface	Up to 18-bit dual-channel LVDS TFT LCD
● TV-Out	Supports NTSC/PAL, S-terminal and Composite Video

I/O

● Storage	EIDE x 1 (UDMA100), SATA II x 2, PCMCIA x 1, Type II CompactFlash x 1

- IrDA — One IrDA Tx/Rx header
- Serial Port — RS-232 x 3, RS-232/422/485 x 1
- PS/2 Port — Keyboard +Mouse x 1
- Audio — MIC-in/ Line-in/ Line-out,/ CD-in
  Stereo Amplifier included
- USB — USB 2.0 Port x 6
- Digital I/O — 8-bit (programmable)

Chapter 2

Quick Installation Guide

Notice:

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

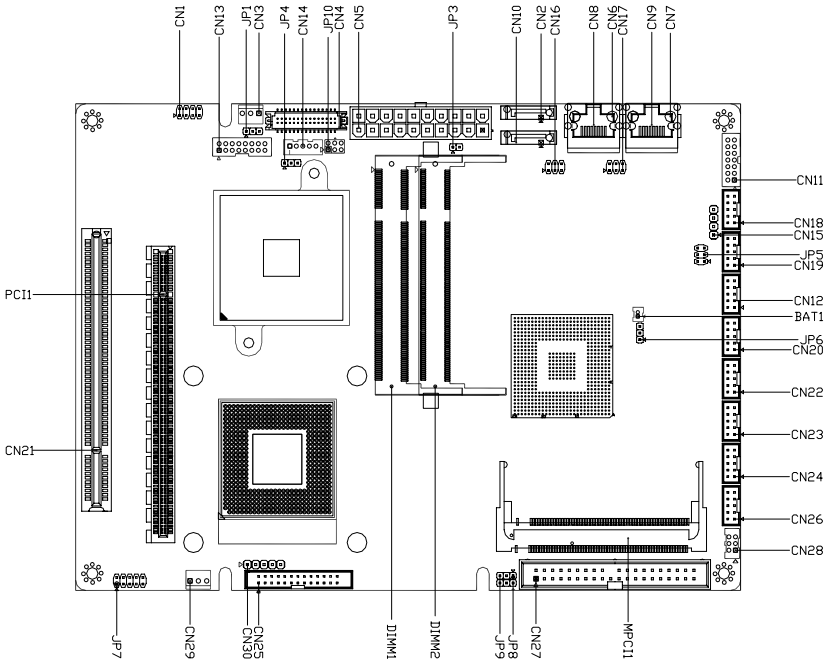
Part No. 2007945211 Printed in Taiwan Mar. 2008

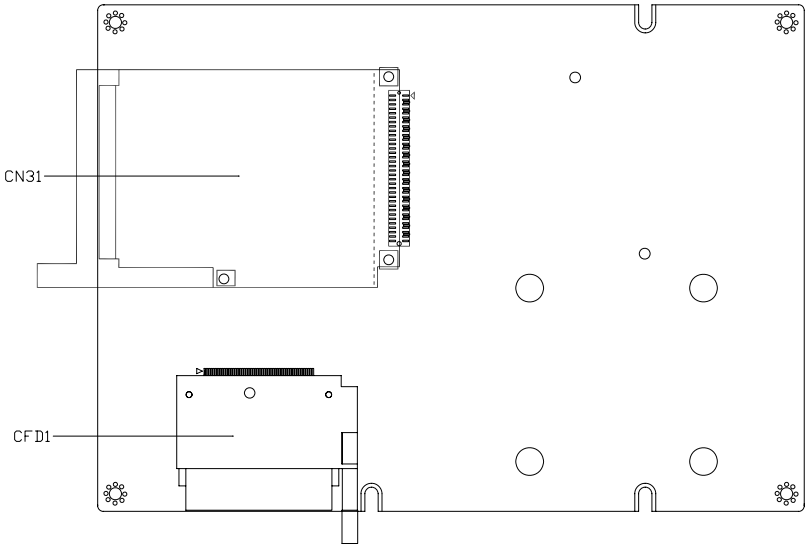
2.1 Safety Precautions

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.

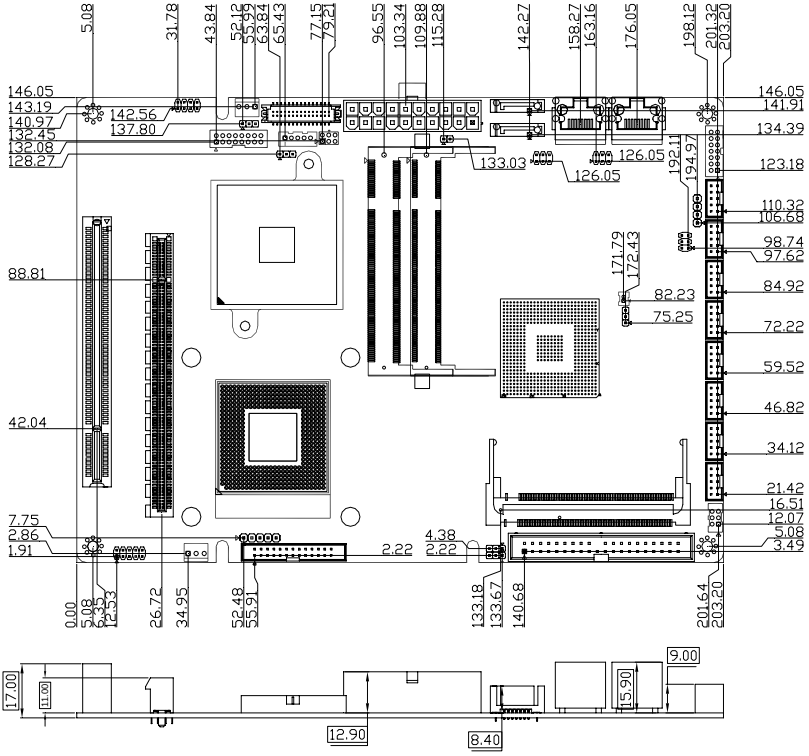
Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not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

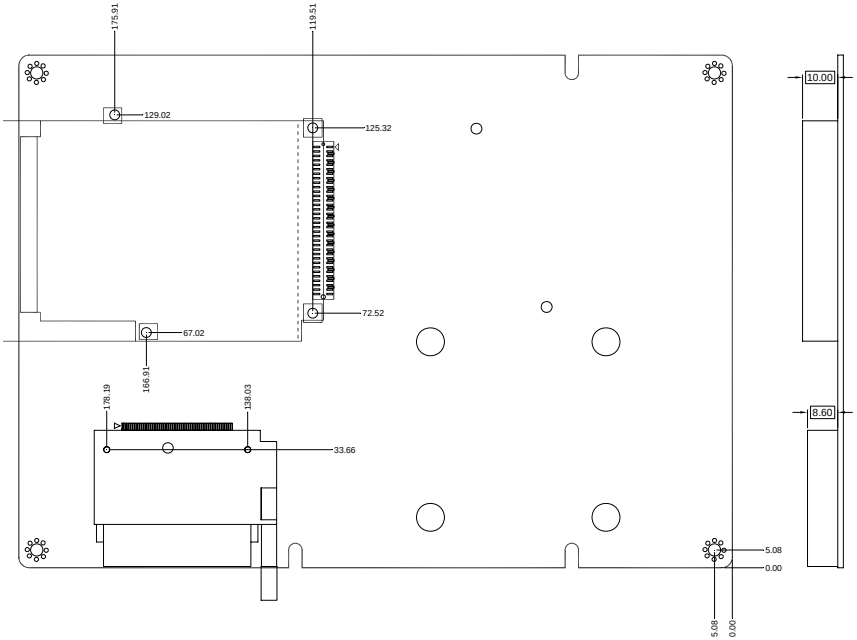
2.2 Location of Connectors and Jumpers




CN31
CFD1

2.3 Mechanical Drawing




175.91
119.51
129.02
125.32
72.52
67.02
166.91
178.19
138.03
33.66
10.00
8.60
5.08
0.00
5.08
0.00

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:

Label	Function
JP1	LVDS Operating Voltage Selection
JP3	ATX Power Supply Auto Turn-on Selection
JP4	LVDS Inverter Voltage Selection
JP5	COM2 RI/+5/+12V Selection
JP6	Clear CMOS
JP7	Front Panel
JP8	CFD Master/Slave Mode Selection
JP9	CFD Operating Voltage Selection
JP10	PCI-Express Function Selection (OPTION)

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:

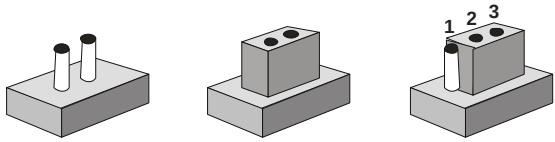
Label	Function
CN1	TV-out Connector
CN2	SATA 2 Connector
CN3	System Fan Connector
CN4	LVDS Connector
CN5	ATX Power Connector
CN6	RJ-45 Ethernet#1 Connector
CN7	RJ-45 Ethernet#2 Connector
CN8	Ethernet#1 Connector (Optional)
CN9	Ethernet#2 Connector (Optional)
CN10	SATA 0 Connector
CN11	Audio In/Out/CD-in and MIC Connector
CN12	COM Port 4 Connector
CN13	CRT Display Connector
CN14	LVDS Inverter Connector
CN15	Stereo Audio Output Connector
CN16	Ethernet#1 LED Indicator
CN17	Ethernet#2 LED Indicator
CN18	COM Port 1 Connector

CN19	COM Port 2 Connector
CN20	COM Port 3 Connector
CN21	PCI Slot
CN22	Digital I/O Connector
CN23	USB Port 5,6 Connector
CN24	USB Port 3,4 Connector
CN25	Parallel Port Connector
CN26	USB Port 1,2 Connector
CN27	IDE Connector
CN28	Keyboard / Mouse Connector
CN29	CPU Fan Connector
CN30	IrDA Connector
CN31	PCMCIA Slot
MPCI1	Mini-PCI Slot
PCIE1	PCI-Express〔x16〕 Slot
CFD1	Compact Flash Disk

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 LVDS Operating Voltage Selection (JP1)

JP1	Function
1-2	+5V
2-3	+3.3V (default)

2.8 ATX Power Supply Auto Turn-on Selection (JP3)

JP3	Function
Open	Standard ATX Operating (default)
1-2	Auto Turn-on (AT Power Supply Behavior)

2.9 LVDS Inverter Voltage Selection (JP4)

JP4	Function
1-2	+12V
2-3	+5V (default)

2.10 COM2 RI/+5V/+12V Selection (JP5)

JP5	Function
1-2	+12V
3-4	+5V
5-6	RI (default)

2.11 Clear CMOS (JP6)

JP6	Function
1-2	Normal (default)
2-3	Clear CMOS

2.12 Front Panel (JP7)

JP7	Function
(-) 1-2 (+)	ATX Power-on Button
(-) 3-4 (+)	HDD Active LED
(-) 5-6 (+)	External Speaker
(-) 7-8 (+)	Power LED / or CASEOPEN# (Optional)
(-) 9-10 (+)	System Reset Button

2.13 CFD Master/ Slave Mode Selection (JP8)

JP8	Function
1-2	Slave (default)
2-3	Master

2.14 CFD Operating Voltage Selection (JP9)

JP9	Function
1-2	+5V
2-3	+3.3V (default)

2.15 PCI-Express〔x16〕Function Selection (JP10) (Optional)

JP10	Function
3-5 4-6	PCI-Express〔x16〕Mode (default)
1-3 4-6	SDVO
1-3 2-4	PCI-Express〔x1〕Mode

2.16 TV-out Connector (CN1)

Pin	Signal	Pin	Signal
1	Y	2	CVBS
3	Ground	4	Ground
5	C	6	N/C
7	Ground	8	N/C

2.17 SATA 2 Connector (CN2)

Pin	Signal
1	Ground
2	TX2+
3	TX2-
4	Ground
5	RX2-
6	RX2+
7	Ground

2.18 System Fan Connector (CN3)

Pin	Signal
1	Ground
2	+5 Volt. / +12 Volt. (Optional)
3	FAN Sense

2.19 LVDS Connector (CN4)

Pin	Signal	Pin	Signal
1	Back-Light Enable	2	Back-Light Control
3	LCD Volt.	4	Ground

5	TXLCLK#	6	TXLCLK
7	LCD Volt.	8	Ground
9	TXL0#	10	TXL0
11	TXL1#	12	TXL1
13	TXL2#	14	TXL2
15	N/C	16	N/C
17	LVDS_DATA	18	LVDS_CLK
19	TXU0#	20	TXU0
21	TXU1#	22	TXU1
23	TXU2#	24	TXU2
25	N/C	26	N/C
27	LCD Volt.	28	Ground
29	TXUCLK#	30	TXUCLK

2.20 ATX Power Connector (CN5)

Pin	Signal	Pin	Signal
1	N/C	2	N/C
3	Ground	4	+5 Volt.
5	Ground	6	+5 Volt.
7	Ground	8	N/C
9	+5 Volt. Standby	10	+12 Volt.
11	N/C	12	-12 Volt.
13	Ground	14	PSON#
15	Ground	16	Ground

17	Ground	18	-5 Volt.
19	+5 Volt.	20	+5 Volt.

2.21 RJ-45 Ethernet#1 Connector (CN6)

Pin	Signal	Pin	Signal
1	MDI1_0+ / TXD+	2	MDI1_0- / TXD-
3	MDI1_1+ / RXD+	4	MDI1_2+
5	MDI1_2-	6	MDI1_1- / RXD-
7	MDI1_3+	8	MDI1_3-

2.22 RJ-45 Ethernet#2 Connector (CN7)

Pin	Signal	Pin	Signal
1	MDI2_0+	2	MDI2_0-
3	MDI2_1+	4	MDI2_2+
5	MDI2_2-	6	MDI2_1-
7	MDI2_3+	8	MDI2_3-

2.23 Pin Header Ethernet#1 Connector (CN8) (Optional)

Pin	Signal	Pin	Signal
1	MDI1_0+ / TXD+	2	MDI1_0- / TXD-
3	MDI1_1+ / RXD+	4	MDI1_1- / RXD-
5	Ground	6	Ground
7	MDI1_2+	8	MDI1_2-
9	MDI1_3+	10	MDI1_3-

2.24 Pin Header Ethernet#2 Connector (CN9) (Optional)

Pin	Signal	Pin	Signal
1	MDI2_0+	2	MDI2_0-
3	MDI2_1+	4	MDI2_1-
5	Ground	6	Ground
7	MDI2_2+	8	MDI2_2-
9	MDI2_3+	10	MDI2_3-

2.25 SATA 0 Connector (CN10)

Pin	Signal
1	Ground
2	TX0+
3	TX0-
4	Ground
5	RX0-
6	RX0+
7	Ground

2.26 Audio In/Out/CD-in and MIC Connector (CN11)

Pin	Signal	Pin	Signal
1	MIC	2	MIC_Vcc
3	Ground	4	CD_GND
5	LINE_IN L	6	CD_L
7	LINE_IN R	8	CD_GND
9	Ground	10	CD_R
11	LINE_OUT L	12	LINE_OUT R

13	Ground	14	Ground

2.27 COM Port 4 Connector (CN12)

Pin	Signal	Pin	Signal
1	DCDD	2	RXD
3	TXD	4	DTRD
5	Ground	6	DSRD
7	RTSD	8	CTSD
9	RID	10	N/C

2.28 CRT Display Connector (CN13)

Pin	Signal	Pin	Signal
1	R	2	+5 Volt.
3	G	4	Ground
5	B	6	N/C
7	N/C	8	DDCDATA
9	Ground	10	HSYNC
11	Ground	12	VSYNC
13	Ground	14	DDCCLK
15	Ground	16	Ground

2.29 LVDS Inverter Connector (CN14)

Pin	Signal
1	+5 Volt. / +12 Volt.
2	VCON
3	Ground

4	Ground
5	Backlight Enable

2.30 Stereo Audio Output Connector (CN15)

Pin	Signal	Pin	Signal
1	OUTA+	2	OUTA-
3	OUTB+	4	OUTB-

2.31 Ethernet#1 LED Indicator (CN16)

Pin	Signal	Pin	Signal
1	+3.3 Volt. Standby	2	Active LED_1
3	+3.3 Volt. Standby	4	Speed LED_1 (100BaseT)
5	+3.3 Volt. Standby	6	Speed LED_1 (Gigabit)

2.32 Ethernet#2 LED Indicator (CN17)

Pin	Signal	Pin	Signal
1	+3.3 Volt. Standby	2	Active LED_2
3	+3.3 Volt. Standby	4	Speed LED_2 (100BaseT)
5	+3.3 Volt. Standby	6	Speed LED_2 (Gigabit)

2.33 COM Port 1 Connector (CN18)

Pin	Signal	Pin	Signal
1	DCDA	2	RXA
3	TXA	4	DTRA
5	Ground	6	DSRA
7	RTSA	8	CTSA

9	RIA	10	N/C

2.34 COM Port 2 Connector (CN19)

COM2 RS-232 Mode

Pin	Signal	Pin	Signal
1	DCDB	2	RXB
3	TXB	4	DTRB
5	Ground	6	DSRB
7	RTSB	8	CTSB
9	RIB / +5 Volt. / +12 Volt.	10	N/C

COM2 RS-422 Mode

Pin	Signal	Pin	Signal
1	TXD-	2	RXD+
3	TXD+	4	RXD-
5	Ground	6	N/C
7	N/C	8	N/C
9	N/C / +5 Volt. / +12 Volt.	10	N/C

COM2 RS-485 Mode

Pin	Signal	Pin	Signal
1	TXD-	2	N/C
3	TXD+	4	N/C
5	Ground	6	N/C
7	N/C	8	N/C
9	N/C / +5 Volt. / +12 Volt.	10	N/C

2.35 COM Port 3 Connector (CN20)

Pin	Signal	Pin	Signal
1	DCDC	2	RXC
3	TXC	4	DTRC
5	Ground	6	DSRC
7	RTSC	8	CTSC
9	RIC	10	N/C

2.36 Digital I/O Connector (CN22)

Pin	Signal	Pin	Signal
1	Port 1	2	Port 2
3	Port 3	4	Port 4
5	Port 5	6	Port 6
7	Port 7	8	Port 8
9	+5 Volt.	10	Ground

Mapping Table (Digital I/O Address is 801H)

BIOS Setting	Connector Definition	Address	IT8712 GPIO Setting
Port 8	CN22 Pin 8	Bit 7	U22 Pin 20 (GPIO 27)
Port 7	CN22 Pin 7	Bit 6	U22 Pin 21 (GPIO 26)
Port 6	CN22 Pin 6	Bit 5	U22 Pin 22 (GPIO 25)
Port 5	CN22 Pin 5	Bit 4	U22 Pin 23 (GPIO 24)
Port 4	CN22 Pin 4	Bit 3	U22 Pin 24 (GPIO 23)
Port 3	CN22 Pin 3	Bit 2	U22 Pin 25 (GPIO 22)

Port 2	CN22 Pin 2	Bit 1	U22 Pin 26 (GPIO 21)
Port 1	CN22 Pin 1	Bit 0	U22 Pin 27 (GPIO 20)

2.37 USB Port 5,6 Connector (CN23)

Pin	Signal	Pin	Signal
1	+5 Volt.	2	Ground
3	Data4 -	4	Ground
5	Data4 +	6	Data5 +
7	Ground	8	Data5 -
9	Ground	10	+5 Volt.

2.38 USB Port 3,4 Connector (CN24)

Pin	Signal	Pin	Signal
1	+5 Volt.	2	Ground
3	Data2 -	4	Ground
5	Data2 +	6	Data3 +
7	Ground	8	Data3 -
9	Ground	10	+5 Volt.

2.39 Parallel Port Connector (CN25)

Pin	Signal	Pin	Signal
1	STB#	2	AFD#
3	PTD0	4	ERR#
5	PTD1	6	PINIT#
7	PTD2	8	SLIN#

9	PTD3	10	Ground
11	PTD4	12	Ground
13	PTD5	14	Ground
15	PTD6	16	Ground
17	PTD7	18	Ground
19	ACK#	20	Ground
21	BUSY	22	Ground
23	PE	24	Ground
25	SLCT	26	N/C

2.40 USB Port 1,2 Connector (CN26)

Pin	Signal	Pin	Signal
1	+5 Volt.	2	Ground
3	Data0 -	4	Ground
5	Data0 +	6	Data1 +
7	Ground	8	Data1 -
9	Ground	10	+5 Volt.

2.41 IDE Connector (CN27)

Pin	Signal	Pin	Signal
1	IDERST#	2	Ground
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11

11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	Ground	20	N/C / +5V for DOM optional
21	DREQ	22	Ground
23	IOW#	24	Ground
25	IOR#	26	Ground
27	IORDY	28	Ground
29	DACK#	30	Ground
31	IRQ14	32	N/C
33	A1	34	Cable Detect
35	A0	36	A2
37	CS#1	38	CS#3
39	ACT#	40	Ground

2.42 Keyboard/ Mouse Connector (CN28)

Pin	Signal	Pin	Signal
1	Keyboard Data	2	Keyboard Clock
3	Ground	4	+5 Volt.
5	Mouse Data	6	Mouse Clock

2.43 CPU FAN Connector (CN29)

Pin	Signal
1	Ground
2	+5 Volt. / +12 Volt. (Optional)
3	FAN Sense

2.44 IrDA Connector (CN30)

Pin	Signal
1	+5 Volt.
2	N/C
3	Rx
4	Ground
5	Tx

2.45 PCMCIA Slot (CN31)

Standard Specification

2.46 Mini-PCI Slot (MPC1)

Standard Specification

2.47 PCI-Express〔x16〕Slot (PCIE1)

Standard Specification

2.48 CompactFlash Disk (CFD1)

Pin	Signal	Pin	Signal
1	Ground	26	Ground
2	SDD3	27	SDD11

3	SDD4	28	SDD12
4	SDD5	29	SDD13
5	SDD6	30	SDD14
6	SDD7	31	SDD15
7	SDCS#1	32	SDCS#3
8	Ground	33	Ground
9	Ground	34	SDIOR#
10	Ground	35	SDIOW#
11	Ground	36	+5 Volt.
12	Ground	37	IRQ15
13	+5 Volt.	38	+5 Volt.
14	Ground	39	CSEL#
15	Ground	40	N/C
16	Ground	41	IDERST#
17	Ground	42	SIORDY
18	SDA2	43	N/C
19	SDA1	44	+5 Volt.
20	SDA0	45	DASP#
21	SDD0	46	PDIAG#
22	SDD1	47	SDD8
23	SDD2	48	SDD9
24	N/C	49	SDD10
25	Ground	50	Ground

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。

备注：此产品所标示之环保使用期限，系指在一般正常使用状况下。

Chapter

3

Award BIOS Setup

3.1 System Test and Initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors. Non-fatal error messages usually appear on the screen along with the following instructions:

Press <F1> to RESUME

Write down the message and press the F1 key to continue the boot up sequence.

System configuration verification

These routines check the current system configuration against the values stored in the CMOS memory. If they do not match, the program outputs an error message. You will then need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

1. You are starting your system for the first time
2. You have changed the hardware attached to your system
3. The CMOS memory has lost power and the configuration information has been erased.

The PCM-9452 CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it finally runs down.

3.2 Award BIOS Setup

Awards BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM so that it retains the Setup information when the power is turned off.

Entering Setup

Power on the computer and press <Del> immediately. This will allow you to enter Setup.

Standard CMOS Features

Use this menu for basic system configuration. (Date, time, IDE, etc.)

Advanced BIOS Features

Use this menu to set the advanced features available on your system.

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system performance.

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals. (keyboard, mouse etc.)

Power Management Setup

Use this menu to specify your settings for power management. (HDD power down, power on by ring, KB wake up, etc.)

PnP/PCI Configurations

This entry appears if your system supports PnP/PCI.

PC Health Status

Use this menu to set PC Health Status.

Frequency/Voltage Control

Use this menu to specify your settings for auto detect DIMM/PCI clock and spread spectrum.

Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While AWARD has designated the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs.

Set Password

Use this menu to set Supervisor Password.

Save and Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Saving

Abandon all CMOS value changes and exit setup.

Note:

In some 640x480 display resolution scenarios, users need to choose correct display resolutions under the two steps below:

1.Display Properties--->Setting---> Advanced --->Monitor ==>Monitor settings - > uncheck <Hide modes that this monitor cannot display>

2. "Display Properties --> setting --> advanced --> adapter --> List All Mode".

You can refer to the "AAEON BIOS Item Description.pdf" file in the CD for the meaning of each setting in this chapter.

Chapter

4

Driver Installation

The PCM-9452 comes with an AutoRun CD-ROM that contains all drivers and utilities that can help you to install the driver automatically.

Insert the driver CD, the driver CD-title will auto start and show the installation guide. If not, please follow the sequence below to install the drivers.

Follow the sequence below to install the drivers:

Step 1 – Install INF Driver

Step 2 – Install VGA Driver

Step 3 – Install LAN Driver

Step 4 – Install Audio Driver

Step 5 – Install SATA RAID Driver (Optional)

Step 6 – Install TPM Driver(Optional)

USB 2.0 Drivers are available for download using Windows® Update for both Windows® XP and Windows® 2000. For additional information regarding USB 2.0 support in Windows® XP and Windows® 2000, please visit www.microsoft.com/hwdev/usb/.

Please read instructions below for further detailed installations.

4.1 Installation:

Insert the PCM-9452 CD-ROM into the CD-ROM drive and install the drivers from Step 1 to Step 6 in order.

Step 1 – Install INF Driver

1. Click on the ***Step 1 –INF Update Utility v8.2.0.1014*** folder
2. Double click on ***Setup*** file
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 2 – Install VGA Driver

1. Click on the ***Step 2 –Intel Graphics Media Accelerator Driver*** folder
2. Choose the OS your system is
3. Double click on ***.exe*** file
4. Follow the instructions that the window shows
5. The system will help you install the driver automatically

Step 3 – Install LAN Driver

1. Click on the ***Step 3 –Intel Ethernet Driver*** folder
2. Choose the OS your system is
3. Double click on ***.exe*** file
4. Follow the instructions that the window shows

5. The system will help you install the driver automatically

Step 4 –Install Audio Driver

1. Click on the ***Step 4 –Realtek ALC 655 Audio Driver v3.71*** folder
2. Choose the OS your system is.
3. Double click on ***.exe*** file
4. Follow the instructions that the window shows
5. The system will help you install the driver automatically

Step 5 –Install SATA RAID Driver (Optional)

1. Click on the ***Step 5 –ICH7M-GHM SATA RAID Driver*** folder
2. Click on the folder of ***Win OS***
3. Double click on ***iata61_cd*** file
4. Follow the instructions that the window shows
5. The system will help you install the driver automatically

Step 6 – Install TPM Driver (Optional)

1. Click on the ***Step 6 –TPM DRIVER*** folder
2. Double click on ***Setup*** file
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Appendix A

Programming the Watchdog Timer

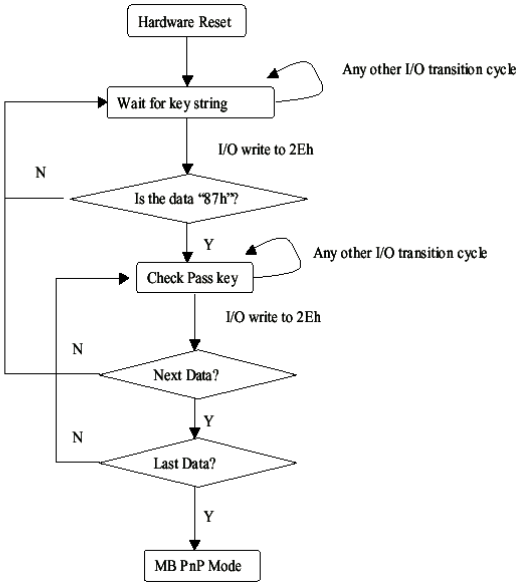
A.1 Programming

PCM-9452 utilizes ITE 8712 chipset as its watchdog timer controller. (K version)

Below are the procedures to complete its configuration and the AAEON intial watchdog timer program is also attached based on which you can develop customized program to fit your application.

Configuring Sequence Description

After the hardware reset or power-on reset, the ITE 8712 enters the normal mode with all logical devices disabled except KBC.



There are three steps to complete the configuration setup: (1) Enter the MB PnP Mode; (2) Modify the data of configuration registers; (3) Exit the MB PnP Mode. Undesired result may occur if the MB PnP Mode is not exited normally.

(1) Enter the MB PnP Mode

To enter the MB PnP Mode, four special I/O write operations are to be performed during Wait for Key state. To ensure the initial state of the key-check logic, it is necessary to perform four write opera-tions to the Special Address port (2EH). Two different enter keys are provided to select configuration ports (2Eh/2Fh) of the next step.

	Address Port	Data Port
87h, 01h, 55h, 55h:	2Eh	2Fh

(2) Modify the Data of the Registers

All configuration registers can be accessed after entering the MB PnP Mode. Before accessing a selected register, the content of Index 07h must be changed to the LDN to which the register belongs, except some Global registers.

(3) Exit the MB PnP Mode

Set bit 1 of the configure control register (Index=02h) to 1 to exit the MB PnP Mode.

WatchDog Timer Configuration Registers

LDN	Index	R/W	Reset	Configuration Register or Action
All	02H	W	N/A	Configuration Control
07H	71H	R/W	00H	WatchDog Timer Control Register
07H	72H	R/W	00H	WatchDog Timer Configuration Register
07H	73H	R/W	00H	WatchDog Timer Time-out Value (LSB) Register
07H	74H	R/W	00H	WatchDog Timer Time-out Value (MSB) Register

Configure Control (Index=02h)

This register is write only. Its values are not sticky; that is to say, a hardware reset will automatically clear the bits, and does not require the software to clear them.

Bit	Description
7-2	Reserved
1	Returns to the Wait for Key state. This bit is used when the configuration sequence is completed.
0	Resets all logical devices and restores configuration registers to their power-on states.

WatchDog Timer Control Register (Index=71h, Default=00h)

Bit	Description
7	WDT is reset upon a CIR interrupt
6	WDT is reset upon a KBC (Mouse) interrupt
5	WDT is reset upon a KBC (Keyboard) interrupt
4	WDT is reset upon a read or a write to the Game port base address
3-2	Reserved
1	Force Time-out. This bit is self-clearing
0	WDT status
	1: WDT value reaches 0
	0: WDT value is not 0

WatchDog Timer Configuration Register (Index=72h, Default=00h)

Bit	Description
7	WDT Time-out value select
	1: Second
	0: Minute
6	WDT output through KRST (pulse) enable
5	WDT Time-out value Extra select 1: 4s. 0: Determine by WDT Time-out value select (bit7 of this register)

4	WDT output through PWROK1/PWROK2 (pulse) enable
3	Select the interrupt level[note] for WDT

WatchDog Timer Time-out Value (LSB) Register (Index=73h, Default=00h)

Bit	Description
7-0	WDT Time-out value 7-0

WatchDog Timer Time-out Value (MSB) Register (Index=74h, Default=00h)

Bit	Description
7-0	WDT Time-out value 15-8

A.2 ITE8712 Watchdog Timer Initial Program

```
        .MODEL SMALL
        .CODE
Main:
        CALL Enter_Configuration_mode
        CALL Check_Chip
        mov cl, 7
        call Set_Logic_Device
        ;time setting
        mov cl, 10 ; 10 Sec
        dec al
```

```
Watch_Dog_Setting:
        ;Timer setting
        mov al, cl
        mov cl, 73h
        call Superio_Set_Reg
        ;Clear by keyboard or mouse interrupt
        mov al, 0f0h
        mov cl, 71h
        call Superio_Set_Reg
        ;unit is second.
        mov al, 0C0H
        mov cl, 72h
        call Superio_Set_Reg
        ; game port enable
        mov cl, 9
        call Set_Logic_Device

        Initial_OK:
        CALL Exit_Configuration_mode
        MOV AH,4Ch
        INT 21h

        Enter_Configuration_Mode PROC NEAR
        MOV SI,WORD PTR CS:[Offset Cfg_Port]
```

```
MOV DX,02Eh
MOV CX,04h
Init_1:
MOV AL,BYTE PTR CS:[SI]
OUT DX,AL
INC SI
LOOP Init_1
RET
Enter_Configuration_Mode ENDP

Exit_Configuration_Mode PROC NEAR
MOV AX,0202h
CALL Write_Configuration_Data
RET
Exit_Configuration_Mode ENDP

Check_Chip PROC NEAR

MOV AL,20h
CALL Read_Configuration_Data
CMP AL,87h
JNE Not_Initial

MOV AL,21h
CALL Read_Configuration_Data
```

```
        CMP AL,12h
        JNE Not_Initial

Need_Initial:
        STC
        RET
Not_Initial:
        CLC
        RET
        Check_Chip ENDP
        Read_Configuration_Data PROC NEAR
        MOV DX,WORD PTR CS:[Cfg_Port+04h]
        OUT DX,AL
        MOV DX,WORD PTR CS:[Cfg_Port+06h]
        IN AL,DX
        RET
        Read_Configuration_Data ENDP

        Write_Configuration_Data PROC NEAR
        MOV DX,WORD PTR CS:[Cfg_Port+04h]
        OUT DX,AL
        XCHG AL,AH
        MOV DX,WORD PTR CS:[Cfg_Port+06h]
        OUT DX,AL
        RET
```

```
Write_Configuration_Data ENDP

Superio_Set_Reg proc near
push ax
MOV DX,WORD PTR CS:[Cfg_Port+04h]
mov al,cl
out dx,al
pop ax
inc dx
out dx,al
ret
Superio_Set_Reg endp.Set_Logic_Device proc near

Set_Logic_Device    proc    near
push ax
push cx
xchg al,cl
mov cl,07h
call Superio_Set_Reg
pop cx
pop ax
ret
Set_Logic_Device endp

;Select 02Eh->Index Port, 02Fh->Data Port
```

Cfg_Port DB 087h,001h,055h,055h

DW 02Eh,02Fh

END Main

Note: Interrupt level mapping

0Fh-Dh: not valid

0Ch: IRQ12

.

.

03h: IRQ3

02h: not valid

01h: IRQ1

00h: no interrupt selected

Appendix B

I/O Information

B.1 I/O Address Map

Address	Description	User Address
000-01F	DMA Controller #1	000-000F
020-03F	Interrupt Controller #1, Master	020-021
040-05F	System Time	040-043
060-06F	8042 (Keyboard Controller)	060-064
070-07F	Real time Clock, NMI (non-maskable Interrupt) Mask	070-073
080-09F	DMA Page Register	080-08F
0A0-0BF	Interrupt Controller #2	0A0-0A1
0C0-0DF	DMA Controller #2	0C0-0DF
0F0-0FF	Math Coprpcessor	0F0-0FF
1F0-1F7	Primary IDE Channel	1F0-1F7
280-287	Serial Port 3	280-287
288-28F	Serial Port 4	288-28F
2F8-2FF	Serial Port 2	2F8-2FF
378-37F	Parallel Printer Port 1	378-37F
3B0-3DF	EGA / VGA card	3B0-3DF
3F8-3FF	Serial Port 1	3F8-3FF

B.2 1st MB Memory Address Map

Memory Address	Description
00000-9FFFF	System memory
A0000-BFFFF	VGA buffer
C0000-CBFFF	VGA BIOS
E0000-FFFFF	System BIOS

B.3 IRQ Mapping Chart

IRQ0	System Timer	IRQ8	System CMOS / Real time clock
IRQ1	Keyboard	IRQ9	Microsoft ACPI – Compliant system
IRQ2	Cascade to IRQ Controller	IRQ10	COM3
IRQ3	COM2	IRQ11	COM4
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	Unused	IRQ13	FPU
IRQ6	Reserved	IRQ14	Primary IDE
IRQ7	Printer	IRQ15	Reserved

B.4 DMA Channel Assignments

DMA Channel	Function
0	Available
1	Available
2	Available
3	Available

Appendix C

Mating Connecotor

C.1 List of Mating Connectors and Cables

The table notes mating connectors and available cables.

Connector Label	Function	Mating Connector		Available Cable	Cable P/N
		Vendor	Model no		
CN1	TV Connector	Astron	27-24041-204-1G-TB1-R	TV Cable	1700080180
CN2	SATA 2 Connector			N/A	N/A
CN3	System Fan Connector			N/A	N/A
CN4	LVDS Connector	HIROSE	DF13-30DS-1.25C		N/A
CN5	ATX Power Connector			N/A	N/A
CN6	Ethernet #1 Connector	Neltron	7001-8P8C		N/A
CN7	Ethernet #2 Connector	Neltron	7001-8P8C		N/A
CN10	SATA 1 Connector			N/A	N/A
CN11	Audio Connector	CATCH	052-D200-14P	Audio Cable	1700140510
CN12	Serial Port 4 Connector	Neltron	2026B-10	Serial Port Cable	1701100207
CN13	CRT Connector	CATCH	A003-041	CRT Cable	1701160201
CN14	LVDS Connector	HIROSE	DF13-30DS-1.25C		N/A
CN15	Stereo Audio Outout Connector			N/A	N/A

CN16	Ethernet #1 LAN LED			N/A	N/A
CN17	Ethernet #2 LAN LED			N/A	N/A
CN18	Serial Port 1 Connector	Neltron	2026B-10	Serial Port Cable	1701100207
CN19	Serial Port 2 Connector	Neltron	2026B-10	Serial Port Cable	1701100207
CN20	Serial Port 3 Connector	Neltron	2026B-10	Serial Port Cable	1701100207
CN22	Digital I/O Connector	Neltron	2026B-10		N/A
CN23	USB 5&6 Connector	Neltron	2026B-10	USB Cable	1709100201
CN24	USB 3&4 Connector	Neltron	2026B-10	USB Cable	1709100201
CN25	Parallel Port Connector	HR	A2016H-N-2X13P-A	Parallel Port Cable	1701260201
CN26	USB 1&2 Connector	Neltron	2026B-10	USB Cable	1709100201
CN27	IDE Connector	CATCH	B016-009-2	IDE Cable	1701400453
CN28	PS/2 Connector	CATCH	A003-290	KB/MS Cable	1700060152
CN29	CPU Fan Connector			N/A	N/A
CN30	IrDA Connector	Neltron	2026A-05		N/A