

PCM-5315

AMD® Geode

LX 800/700 series Processors

RTL8139DL for 10/100Mbps

Type II CompactFlash

2 COM, 4 USB, 1 IrDA

Type III Mini PCI/ PC/104

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Packing List

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

- 1 Cable Kit for PCM-5315
- 1 Jumper Cap
- 1 CD-ROM for manual (in PDF format) and drivers
(The Driver & Manual CD is optional, ask your sales person)
- 1 PCM-5315

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

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Chapter

1

General Information

1.1 Introduction

We, a leading manufacturer of embedded boards, are pleased to announce the debut of our new generation 3.5" Half-EBX SubCompact Boards—PCM-5315. The PCM-5315 not only fills out our embedded product line of half-EBX x86 SBC boards, but also balances performance and cost in the embedded market.

The PCM-5315 adopts optional onboard AMD Geode LX 800 processor. The system memory is deployed with SODIMM DDR 333/400 up to 1GB. In addition, Realtek RTL8139DL supports two 10/100Base-TX that allows network connections. This model applies a Type III Mini PCI socket and PC/104 socket for expansion. Moreover, four USB 2.0, IDE, RS-232, RS-232/422/485 and parallel ports are configured on the PCM-5315. Full functions make PCM-5315 user friendly. With the PCM-5315, there are no more worries about installing many necessary devices to complete the functions of your system.

The display of PCM-5315 supports CRT/LCD simultaneous display and is up to 24-bit LVDS TFT LCD. These great features fit into the needs of digital signage. Furthermore, this brand new SubCompact board is developed to cater to the requirements of Automation, Medical, ticket machine, transportation, gaming, KIOSK, and POS/POI applications.

1.2 Features

- Onboard AMD Geode LX 800 processor
- Supports One SODIMM DDR, Max. 1GB for DDR333 and 512MB for DDR 400
- Supports up to 24-bit LVDS
- Supports dual 10/100Mbps Ethernet
- Supports Type III Mini-PCI and PC/104
- Supports IDE, RS-232 / 422 / 485, Parallel
- Supports AC-97 2 channel
- Supports 4 USB2.0, 8-bit Digital I/O, IrDA

1.3 Specifications

System

- Processor Onboard AMD Geode LX 800 Series Processor
- System Memory 200-pin DDR SDRAM SODIMM x 1, Max. 1GB for DDR333 and 512MB for DDR 400
- Chipset AMD LX series + CS5536
- I/O Chipset IT8712F/KX + IT8888G
- Ethernet Realtek RTL8139DL, 10/100Mbps, RJ-45 x 2
- BIOS Award Plug & Play BIOS - 512KB ROM
- Watchdog Timer ITE 8712
- H/W Monitor Chipset ITE 8712
- RTC CS5536
- Solid Storage Disk Type II CompactFlash™
- Expansion Interface PC/104 x 1, Mini PCI x 1
- Power Requirement +5V/AT/ATX
- Board Size 5.75"(L) x 4"(W) (146mm x 101.6mm)
- Operating Temperature 32°F~ 140°F (0°C ~ 60°C)

Display Supports CRT/LCD simultaneous display

- Chipset AMD LX series + TI SN75LVDS83
- Memory Shared system memory up to 254 MB
- LCD Interface Up to 24-bit TTL/LVDS TFT LCD
- Resolution Up to 1920 x 1440 @ 24bpp for CRT
Up to 1600 x 1200 @ 24bpp for LCD

I/O

- MIO EIDE x 1 (UDMA-33 x 1); Floppy Disk Drive x 1; Keyboard & Mouse x 1; RS-232 x 1; RS-232/422/485 x 1; Parallel x 1
- Audio Realtek ALC203 2CH AC97 Codec, MIC-in/ Line-in/ Line-out/ CD-in
- USB Four USB 2.0 Ports—Two 5x2 pin headers support four USB ports
- Digital I/O Supports 8-bit Digit I/O (Programmable)

Chapter

2

Quick Installation Guide



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!

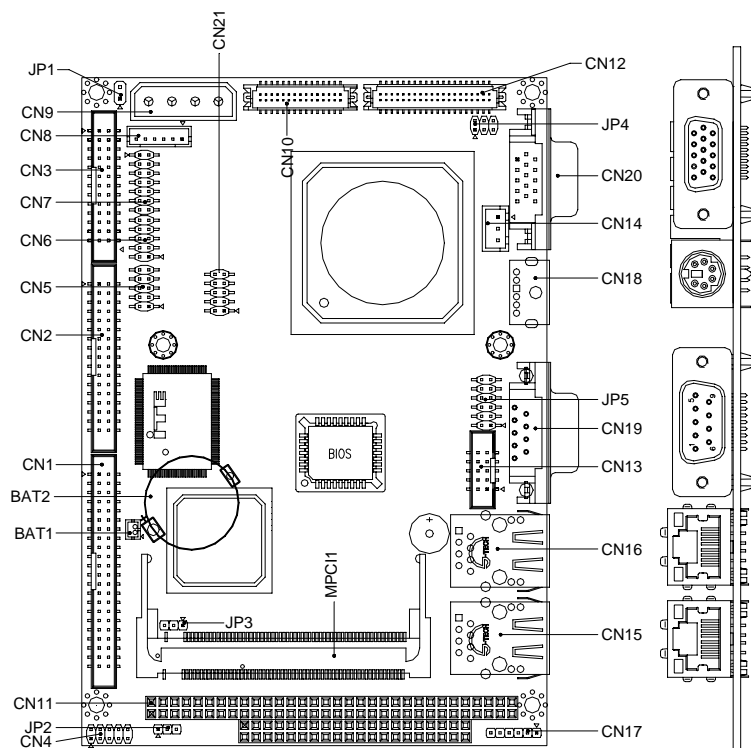
Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.

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

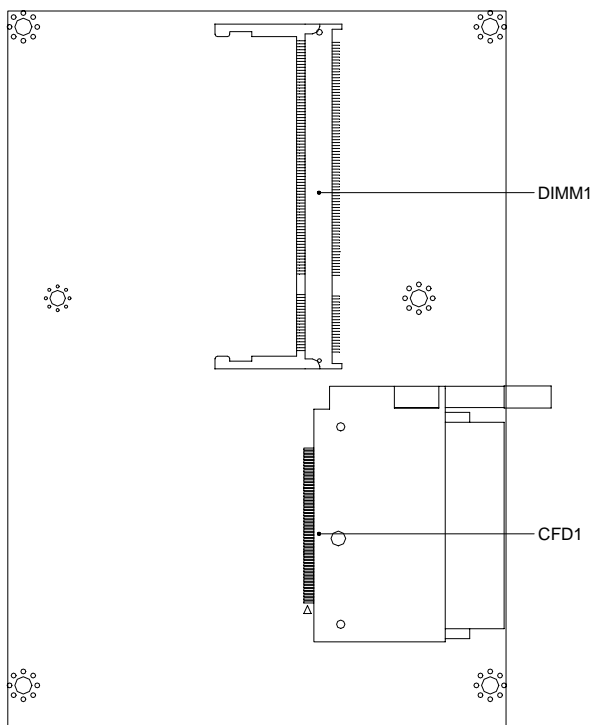
2.2 Location of Connectors and Jumpers

Component Side



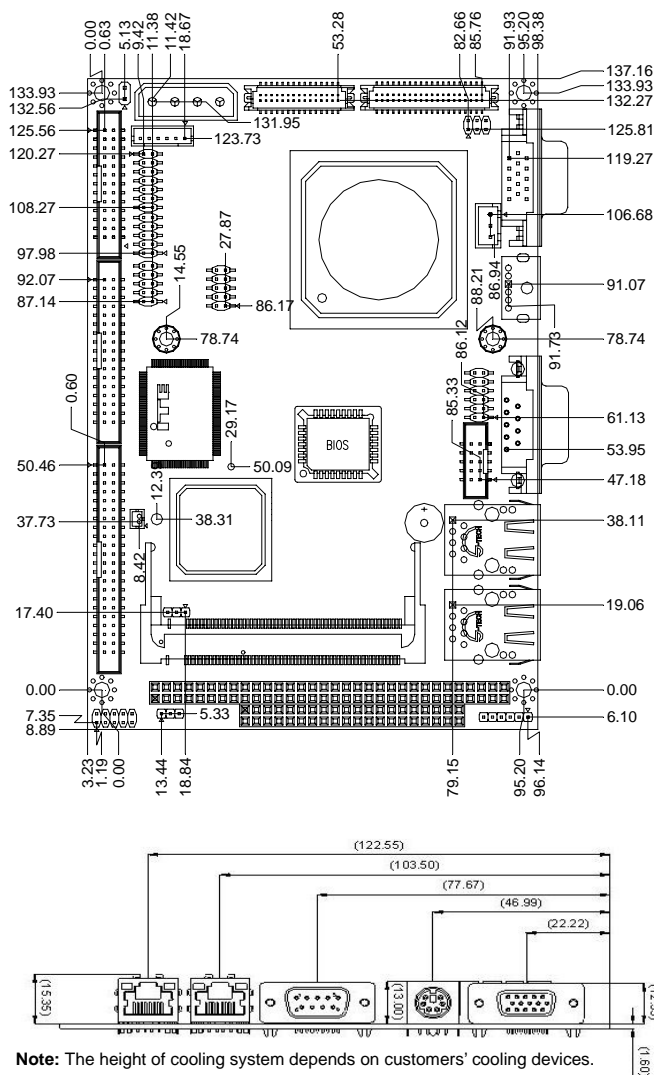
Note: The height of cooling system depends on customers' cooling devices.

Solder Side

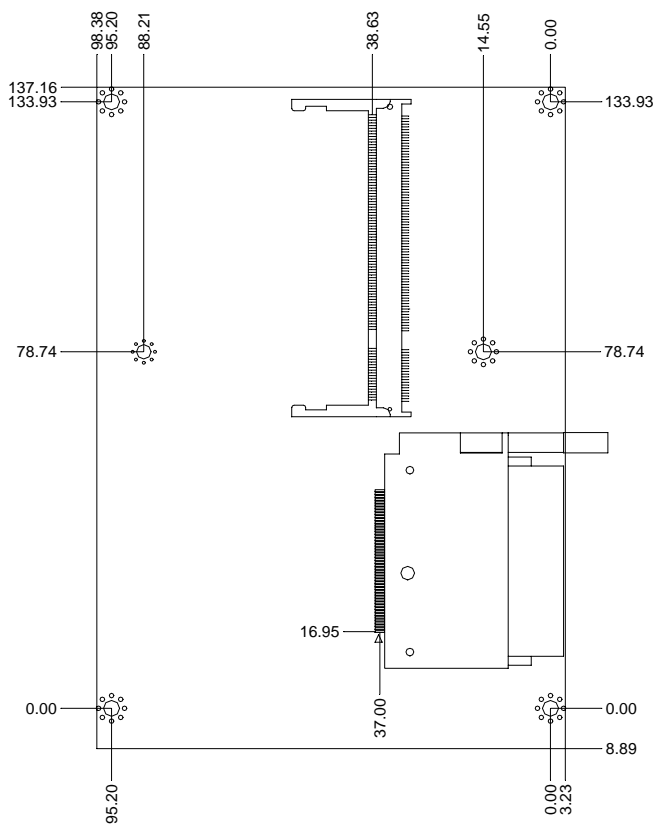


2.3 Mechanical Drawing

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:

Label	Function
JP1	AT/ATX Power Type Selection
JP2	CFD Master/Slave Selection
JP3	Clear CMOS
JP4	LCD Clock and LVDS Supply Voltage Selection
JP5	COM Ports RI/+5V/+12V Selection

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 of the board's connectors:

Note: For further information about mating connectors, please refer to the appendix of the manual.

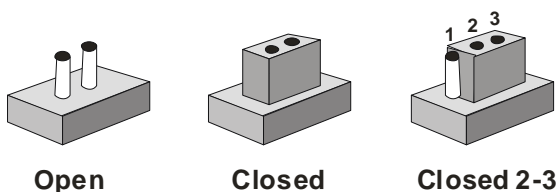
Label	Function
CN1	IDE Hard Drive
CN2	Floppy
CN3	Parallel Port
CN4	Front Panel
CN5	USB Port #1 and Port #2
CN6	Digital I/O
CN7	Audio Input/Output/CDin/MIC
CN8	ATX External 5VSB
CN9	4P Power Socket
CN10	LVDS
CN11	PC-104 / ISA Interface
CN12	TFT LCD
CN13	Serial Port #2
CN14	System FAN
CN15	Ethernet 10/100 Base-TX RJ-45 Phone Jack #1
CN16	Ethernet 10/100 Base-TX RJ-45 Phone Jack #2

CN17	IrDA
CN18	Mini-DIN PS/2 Keyboard/ Mouse Connector
CN19	Serial Port #1
CN20	CRT Display
CN21	USB Port #3 and Port #4
BAT1	External Battery
BAT2	External Battery (Optional)
CFD1	Compact Flash Disk
MPCI1	Mini-PCI
DIMM1	DDR SODIMM Slot

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.



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 AT/ATX Power Type Selection (JP1)

ATX Power Supply (Default)		AT Power Supply	
1	2	1	2
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.8 CFD Master/Slave Selection (JP2)

Slave (Default)			Master		
1	2	3	1	2	3
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

2.9 Clear CMOS (JP3)

Normal (Default)			Clear CMOS		
1	2	3	1	2	3
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

2.10 LCD Clock and LVDS Supply Voltage Selection (JP4)

Clock

Normal (Default)			Shift Clock		
1	3	5	1	3	5
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

LVDS Operating Voltage

+5V			+3.3V (Default)		
2	4	6	2	4	6
■	●	○	□	●	●

2.11 COM Ports RI/+5V/+12V Selection (JP5)

COM 1

+12V			+5V			RI (Default)		
1	3	5	1	3	5	1	3	5
■	○	○	□	●	○	□	○	●
●	○	○	○	●	○	○	○	●
2	4	6	2	4	6	2	4	6

COM 2

+12V			+5V			RI (Default)		
7	9	11	7	9	11	7	9	11
■	○	○	□	●	○	□	○	●
●	○	○	○	●	○	○	○	●
8	10	12	8	10	12	8	10	12

2.12 IDE Hard Drive Connector (CN1)

Pin	Signal	Pin	Signal
1	RESET#	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
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	DA1	34	PDIAG#
35	DA0	36	DA2
37	CS#1	38	CS#3
39	Active LED#	40	Ground
41	+5Volt.	42	+5Volt.
43	Ground	44	N/C

Note: The IDE interface on PCM-5315 only supports two IDE devices including CF card. If you use a CF card, PCM-5315 only allows one IDE device.

2.13 Floppy Connector (CN2)

Pin	Signal	Pin	Signal
1	Ground	2	DENSEL#
3	Ground	4	N/C
5	Ground	6	N/C
7	Ground	8	INDEX#
9	Ground	10	MTRA#
11	Ground	12	DRVB#
13	Ground	14	DRVA#
15	Ground	16	MTRB#
17	Ground	18	DIR#
19	Ground	20	STEP#
21	Ground	22	WDATA#
23	Ground	24	WGATE#
25	Ground	26	TRK0#
27	Ground	28	WPT#
29	N/C	30	RDATA#
31	Ground	32	HDSEL#
33	N/C	34	DSKCHG#

2.14 Parallel Port Connector (CN3)

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

2.15 Front Panel Connector (CN4)

Pin	Signal
1-2	ATX Power-on Button
3-4	HDD Active LED
5-6	External Speaker
7-8	Power LED
9-10	System Reset Button

2.16 USB Port #1 and Port #2 (CN5)

Pin	Signal	Pin	Signal
1	VDD	2	Ground
3	D0-	4	Ground
5	D0+	6	D1+
7	Ground	8	D1-
9	Ground	10	VDD

2.17 Digital I/O Connector (CN6)

Pin	Signal	Pin	Signal
1	IN0	2	IN1
3	IN2	4	IN3
5	OUT0	6	OUT1
7	OUT2	8	OUT3
9	+5Volt.	10	Ground

DIO Address is 801H

BIOS Setting	Connector Definition	Address	IT8712 GPIO Setting
DIO-1	CN6 Pin 1	Bit 7	U1 Pin 20 (GPIO 27)
DIO-2	CN6 Pin 2	Bit 6	U1 Pin 21 (GPIO 26)
DIO-3	CN6 Pin 3	Bit 5	U1 Pin 22 (GPIO 25)
DIO-4	CN6 Pin 4	Bit 4	U1 Pin 23 (GPIO 24)
DIO-5	CN6 Pin 5	Bit 3	U1 Pin 24 (GPIO 23)

DIO-6	CN6 Pin 6	Bit 2	U1 Pin 25 (GPIO 22)
DIO-7	CN6 Pin 7	Bit 1	U1 Pin 26 (GPIO 21)
DIO-8	CN6 Pin 8	Bit 0	U1 Pin 27 (GPIO 20)

2.18 Audio Input/Output/CDin/MIC (CN7)

Pin	Signal	Pin	Signal
1	MIC	2	MIC Vcc
3	Audio Ground	4	CD_GND
5	LINE_IN L	6	CD_L
7	LINE_IN R	8	CD_GND
9	Audio Ground	10	CD_R
11	LINE_OUT L	12	LINE_OUT R
13	Audio Ground	14	Audio Ground

2.19 ATX External 5VSB (CN8)

Pin	Signal	Pin	Signal
1	N/C	2	Ground
3	N/C	4	Ground
5	PS_ON#	6	+5 Volt. Standby

2.20 4P Power Socket (CN9)

Pin	Signal	Pin	Signal
1	+5 Volt.	2	Ground
3	Ground	4	+12 Volt.

2.21 LVDS Connector (CN10)

Pin	Signal	Pin	Signal
1	Back-Light Enable	2	N.C.
3	VDD	4	Ground
5	CLK-	6	CLK+
7	VDD	8	Ground
9	D0-	10	D0+
11	D1-	12	D1+
13	D2-	14	D2+
15	D3-	16	D3+
17	N.C.	18	N.C.
19	N.C.	20	N.C.
21	N.C.	22	N.C.
23	N.C.	24	N.C.
25	N.C.	26	N.C.
27	VDD	28	Ground
29	N.C.	30	N.C.

2.22 PC/104 ISA Interface (CN11)

J1/P1

Pin	A	B
1	IOCHCK*	GND
2	D7	RSTDRV
3	D6	+5V
4	D5	IRQ9
5	D4	-5V
6	D3	DRQ2

7	D2	-12V
8	D1	ENDXFR*
9	D0	+12V
10	IOCHRDY	GND/KEY
11	AEN	SMEMW*
12	A19	SMEMR*
13	A18	IOW*
14	A17	IOR*
15	A16	DACK3*
16	A15	DRQ3
17	A14	DACK1*
18	A13	DRQ1
19	A12	REFRESH*
20	A11	SYSCLK
21	A10	IRQ7
22	A9	IRQ6
23	A8	IRQ5
24	A7	IRQ4
25	A6	IRQ3
26	A5	DACK2*
27	A4	TC
28	A3	BALE
29	A2	+5V
30	A1	OSC
31	A0	GND
32	GND	GND

J2/P2

Pin	D	C
1	GND	GND
2	MEMCS16*	SBHE*

3	IOCS16*	LA23
4	IRQ10	LA22
5	IRQ11	LA21
6	IRQ12	LA20
7	IRQ15	LA19
8	IRQ14	LA18
9	DACK0*	LA17
10	DRQ0	MEMR*
11	DACK5*	MEMW*
12	DRQ5	SD8
13	DACK6*	SD9
14	DRQ6	SD10
15	DACK7*	SD11
16	DRQ7	SD12
17	+5V	SD13
18	MASTER*	SD14
19	GND	SD15
20	GND	GND/KEY

Note 1: PCM-5315 does not support PC/104 way legacy ISA-DMA mode caused by AMD architecture.

Note 2: Allocation Method of PC/104 Card for PCM-5315

PC/104 connector on PCM-5315 cannot automatically get "Resource" when a new PC/104 card is added because of AMD Geode's architecture limitation. The following steps for setup the resources manually for your reference.

1. Retrieve the resource of the PC/104 card. The information is typically contained in the manual of the PC/104 card.
2. Push a function key "Delete" to get into the BIOS.

3. Enable the resource of the device in BIOS setup.
4. Disable the resource of the device for which conflicts the resource of the device mentioned above in BIOS setup.
5. Save above BIOS setup and restart system.
6. Install the driver in operating system.
7. Open your Control Panel (click Start, then pick Settings then Control Panel). Double click the System icon and choose the Device Manager tab. Find the device for which you want to enable the device. Click the plus sign (+) next to the various categories click on the device you want to update, and then click on "Resource" and then choose the resource what should same as the hardware setup.

2.23 TFT LCD Connector (CN12)

For 24-bit TFT LCD

Pin	Signal	Pin	Signal
1	+5Volt.	2	+5Volt.
3	Ground	4	Ground
5	+3.3Volt.	6	+3.3Volt.
7	Back-Light Enable	8	Ground
9	B0	10	B1
11	B2	12	B3
13	B4	14	B5

15	B6	16	B7
17	G0	18	G1
19	G2	20	G3
21	G4	22	G5
23	G6	24	G7
25	R0	26	R1
27	R2	28	R3
29	R4	30	R5
31	R6	32	R7
33	Ground	34	Ground
35	Clock	36	VSYNC
37	DE	38	HSYNC
39	N/C	40	N/C

For 18-bit TFT LCD

Pin	Signal	Pin	Signal
1	+5Volt.	2	+5Volt.
3	Ground	4	Ground
5	+3.3Volt.	6	+3.3Volt.
7	Back-Light Enable	8	Ground
9	N/C	10	N/C
11	B0	12	B1
13	B2	14	B3
15	B4	16	B5
17	N/C	18	N/C
19	G0	20	G1
21	G2	22	G3
23	G4	24	G5
25	N/C	26	N/C

27	R0	28	R1
29	R2	30	R3
31	R4	32	R5
33	Ground	34	Ground
35	Clock	36	VSYN
37	DE	38	HSYN
39	N/C	40	N/C

2.24 Serial Port #2 (CN13)

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/+5V/+12V	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/ +5V/ +12V	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/ +5V/ +12V	10	N/C

2.25 System Fan Connector (CN14)

Pin	Signal	Pin	Signal
1	FAN Sense	2	+5 Volt.
3	Ground		

2.26 Ethernet 10/100 Base-TX RJ-45 Phone Jack #1 (CN15)

Pin	Signal	Pin	Signal
1	RXD-	2	RXD+
3	RCT	4	N/C
5	N/C	6	TCT
7	TXD-	8	TXD+
9	ACT_LED	10	LINK_LED
11	+3.3 Volt.	12	SPD_LED
13	Ground	14	Ground

2.27 Ethernet 10/100 Base-TX RJ-45 Phone Jack #2 (CN16)

Pin	Signal	Pin	Signal
1	RXD-	2	RXD+
3	RCT	4	N/C
5	N/C	6	TCT
7	TXD-	8	TXD+
9	ACT_LED	10	LINK_LED
11	+3.3 Volt.	12	SPD_LED
13	Ground	14	Ground

2.28 IrDA Connector (CN17)

Pin	Signal	Pin	Signal
1	+5 Volt.	2	CIR_TX (Optional)
3	RX	4	Ground
5	TX	6	CIR_RX (Optional)

2.29 Mini-DIN PS/2 Keyboard/ Mouse Connector (CN18)

Pin	Signal	Pin	Signal
1	Keyboard Data	2	Mouse Data
3	Ground	4	Shield
5	+5 Volt.	6	Keyboard Clock
7	Shield	8	Mouse Clock

2.30 Serial Port #1 Connector (CN19)

COM 1

Pin	Signal	Pin	Signal
1	DCDA	2	RXA
3	TXA	4	DTRA
5	Ground	6	DSRA
7	RTSA	8	CTSA
9	RIA/ +5V/ +12V	10	N/C

2.31 CRT Display Connector (CN20)

Pin	Signal	Pin	Signal
1	RED	9	+5 Volt.
2	GREEN	10	Ground
3	BLUE	11	N/C
4	N/C	12	DDCSDA
5	Ground	13	HSYNC
6	Ground	14	VSNC
7	Ground	15	DDCSCL
8	Ground		

2.32 USB Port #3 and Port #4 (CN21)

Pin	Signal	Pin	Signal
1	VDD	2	Ground
3	D2-	4	Ground
5	D2+	6	D3+
7	Ground	8	D3-

9	Ground	10	VDD
---	--------	----	-----

2.33 External Battery (BAT1)

Pin	Signal	Pin	Signal
1	VBAT (+3 Volt.)	2	Ground

2.34 External Battery (BAT2) (Optional)

Pin	Signal	Pin	Signal
1	VBAT (+3 Volt.)	2	Ground

2.35 Compact Flash Disk Slot (CFD1)

Pin	Signal	Pin	Signal
1	Ground	26	Ground
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13
5	D6	30	D14
6	D7	31	D15
7	CS#1	32	CS#3
8	Ground	33	Ground
9	Ground	34	IOR#
10	Ground	35	IOW#
11	Ground	36	+5 Volt.
12	Ground	37	IRQ14
13	+5 Volt.	38	+5 Volt.

14	Ground	39	CSEL#
15	Ground	40	N/C
16	Ground	41	RESET#
17	Ground	42	IORDY
18	DA2	43	DREQ
19	DA1	44	DACK#
20	DA0	45	DASP#
21	D0	46	PDIAG#
22	D1	47	D8
23	D2	48	D9
24	IO16#	49	D10
25	Ground	50	Ground

2.36 Mini-PCI Slot (MPC11)

Standard Specification

2.37 DDR SODIMM Slot (DIMM1)

Standard SODIMM Slot

Note from AMD:

Memory configurations supported. Only one DIMM or SODIMM is supported as long as the configuration requirements are met.

Devices	Max Memory ¹	Max GLIU Frequency	GLCP 4C00000Fh Upper Bits/Lower Bits	GLMC 2000001 Ah Bits 【26:24】
4	512M	400MHz	F2F100FFh/ 56960004h	4

8	1G	400MHz	F2F100FFh/ 56960004h	4
4	512M	333MHz	F2F100FFh/ 56960004h	3
8	1G	333MHz	F2F100FFh/ 56960004h	3
16	2G	333MHz	F2F100FFh/ 56960004h	3

1: Maximum memory is assuming 1Gbit devices.

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.

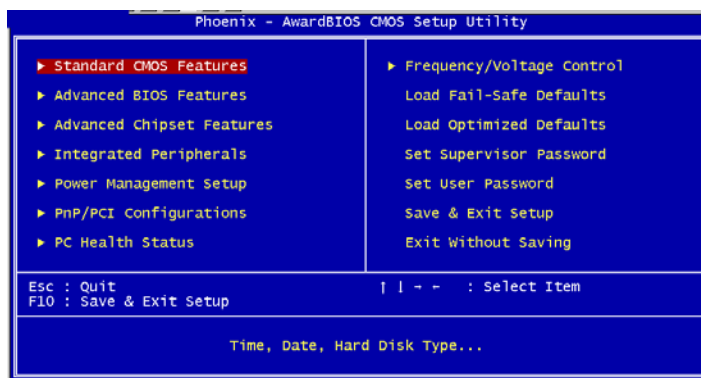
The PCM-5315 CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it finally runs down.

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 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. (Primary slave, secondary slave, 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

This menu allows you to set the shutdown temperature for your system.

Frequency/Voltage Control

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

Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate.

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 Supervisor/User Password

Use this menu to set Supervisor/User Passwords.

Save and Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Saving

Abandon all CMOS value changes and exit setup.

Chapter

4

Driver Installation

4.1 Software Drivers

This chapter describes the operation and installation of the display drivers supplied on the Supporting CD-ROM that are shipped with your product. The onboard VGA adapter is based on the AMD LX VGA Flat Panel/CRT controller. This controller offers a large set of extended functions and higher resolutions. The purpose of the enclosed software drivers is to take advantage of the extended features of the AMD LX VGA Flat Panel/CRT controller.

Hardware Configuration

Some of the high-resolution drivers provided in this package will work only in certain system configurations. If a driver does not display correctly, try the following:

1. Change the display controller to CRT-only mode, rather than flat panel or simultaneous display mode. Some high-resolution drivers will display correctly only in CRT mode.
2. If a high-resolution mode does not support your system, try to use a lower-resolution mode. For example, 1024 x 768 mode will not work on some systems, but 800 x 600 mode supports the most.

4.2 Necessary to Know

The instructions in this manual assume that you understand elementary concepts of MS-DOS and the IBM Personal Computer. Before you attempt to install any driver from the *Supporting CD-ROM*, you should:

- Know how to copy files from a CD-ROM to a directory on the hard disk
- Understand the MS-DOS directory structure

If you are uncertain about any of these concepts, please refer to the DOS or OS/2 user reference guides for more information before you proceed with the installation.

Before you begin

The Supporting CD-ROM contains different drivers for corresponding Windows OS, please choose the specific driver for your Windows OS.

4.3 Installing VGA Driver

Win XP / Win XPe VGA

Place the Driver CD-ROM into your CD-ROM drive and follow the steps below to install.

1. Click on **Start** button.
2. Click on **Settings** button.
3. Click on **Control Panel** button.
4. Click on **System** button.
5. Select **Hardware** and click on **Device Manager....**
6. Double click on **Video Controller (VGA Compatible).**
7. Click on **Update Driver....**
8. Click on **Next.**
9. Select **Search for a suitable driver...**, then click on **Next.**
10. Select **Specify a location**, then click on **Next.**
11. Click on **Browse.**
12. Select "lx_win" file from CD-ROM (**Drivers/Step 1 – LX_Graphics**) then click on **Open.**
13. Click on **OK.**
14. Click on **Next.**
15. Click on **Yes.**
16. Click on **Finish.**

Note: The user must install this system driver before install other device drivers.

4.4 Installing AES Driver

Win XP / Win XPe AES

Place the Driver CD-ROM into your CD-ROM drive and follow the steps below to install.

1. Click on **Start** button.
2. Click on **Settings** button.
3. Click on **Control Panel** button.
4. Click on **System** button.
5. Select **Hardware** and click on **Device Manager...**
6. Double click on **Entertainment Encryption/Decryption Controller**.
7. Click on **Update Driver....**
8. Click on **Next**.
9. Select **Search for a suitable driver...**, then click on **Next**.
10. Select **Specify a location**, then click on **Next**.
11. Click on **Browse**.
12. Select "**LX AES**" file from CD-ROM (**Drivers/Step 2 – AES**) then click on **Open**.
13. Click on **OK**.
14. Click on **Next**.
15. Click on **Finish**.

4.5 Installing PCI to ISA Bridge Driver

Win XP / Win XPe System

Place the Driver CD-ROM into your CD-ROM drive and follow the following steps to install.

1. Click on **Start** button.
2. Click on **Settings** button.
3. Click on **Control Panel** button.
4. Click on **System** button.
5. Select **Hardware** and click on **Device Manager....**
6. Double click on **Other PCI Bridge Device**
7. Click on **Update Driver....**
8. Click on **Next**.
9. Select **Search for a suitable driver...**, then click on **Next**.
10. Select **Specify a location**, then click on **Next**.
11. Click on **Browse**.
12. Select "**lte**" file from CD-ROM (**Drivers/Step 3- PCI to ISA Bridge**) then click on **open**.
13. Click on **OK**.
14. Click on **Next**.
15. Click on **Finish**.

4.6 Installing Ethernet Driver

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

4.7 Ethernet Software Configuration

The onboard Ethernet interface supports all major network operating systems. I/O addresses and interrupts are easily configured via the Insyde BIOS Setup. To configure the medium type, to view the current configuration, or to run diagnostics, please refer to the following instruction:

1. Power the main board on. Ensure that the RSET8139.EXE file is located in the working drive.
2. At the prompt, type RSET8139.EXE and press <ENTER>. The Ethernet configuration program will then be displayed.
3. This simple screen shows all the available options for the Ethernet interface. Just highlight the option you wish to change by using the Up and DOWN keys. To change a selected item, press <ENTER>, and a screen will appear with the available options. Highlight your option and press <ENTER>. Each highlighted option has a helpful message guide displayed at the bottom of the screen for additional

information.

4. After you have made your selections and the configuration is what you want, press <ESC>. A prompt will appear asking if you want to save the configuration. Press "Y" if you want to save.

There are three very useful diagnostic functions offered in the Ethernet Setup Menu as follows:

1. Run EEPROM test
2. Run Diagnostics on Board
3. Run Diagnostics on Network

Each option has its own display screen, which shows the format and result of any diagnostic tests undertaken.

4.8 Installing Audio Driver

Win XP / Win XPe Audio

Place the Driver CD-ROM into your CD-ROM drive and follow the steps below to install.

1. Click on **Start** button.
2. Click on **Settings** button.
3. Click on **Control Panel** button.
4. Click on **System** button.
5. Select **Hardware** and click on **Device Manager....**
6. Double click on **Multimedia Audio Controller**.
7. Click on **Update Driver....**

8. Click on **Next**.
9. Select **Search for a suitable driver...**, then click on **Next**.
10. Select **Specify a location**, then click on **Next**.
11. Click on **Browse**.
12. Select “**LXWDMaU**” file from CD-ROM (**Drivers/Step 5 – Audio**) then click on **Open**.
13. Click on **OK**.
14. Click on **Next**.
15. Click on **Yes**.
16. Click on **Finish**.

Appendix

A

Programming the Watchdog Timer

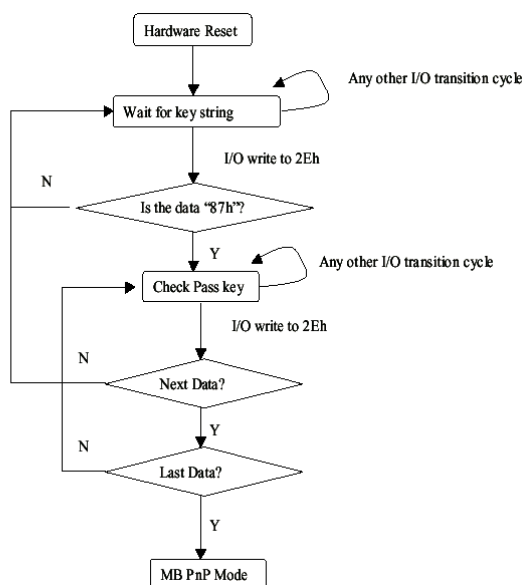
A.1 Programming

PCM-5315 utilizes ITE 8712 chipset as its watchdog timer controller. (K version)

Below are the procedures to complete its configuration and the initial 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 operations 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 Coprocessor	0F0-0FF
1F0-1F7	Primary IDE Channel	1F0-1F7
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-FFFFFF	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	Unused
IRQ3	COM2	IRQ11	Unused
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	Unused	IRQ13	FPU
IRQ6	Floppy	IRQ14	Primary IDE
IRQ7	Printer	IRQ15	Reserved

B.4 DMA Channel Assignments

DMA Channel	Function
0	Available
1	Available
2	Floppy
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	IDE Connector	MOLEX	87568-4463	IDE Cable	1701440500
CN2	Floppy Connector	HR	A2016H-N-2 X17P-A	Floppy Disk Drive Cable	1701340600
CN3	Parallel Port Connector	HR	A2016H-N-2 X13P-A	Parallel Port Cable	1701260201
CN4	Front Panel Connector	繼德工業 Neltron	2026B-10		N/A
CN5	USB Connector	繼德工業 Neltron	2026B-10	USB Cable	1709100201
CN6	Digital I/O Connector	繼德工業 Neltron	2026B-10		N/A
CN7	Audio Connector	凱迅電子 Catch Electronics	052-D200-14P	Audio Cable	1700140510
CN8	ATX External 5VSB Connector	凱迅電子 Catch Electronics	2418HJ-06	ATX External 5VSB Cable	1702200205
CN9	4P Power Connector	繼德工業 Neltron	8980-04		N/A

CN10	LVDS Connector	HIROSE	DF13-30DS- 1.25C		N/A
CN12	TFT LCD Connector	HIROSE	DF13-40DS- 1.25C		N/A
CN13	Serial Port 2 Connector	繼德工業 Neltron	2026B-10	Serial Port Cable	1701100207
CN14	System FAN Connector	何迪 Hobase Technology	2503-H-3		N/A
CN15	Ethernet Connector	繼德工業 Neltron	7001-8P8C		N/A
CN16	Ethernet Connector	繼德工業 Neltron	7001-8P8C		N/A
CN17	IrDA Connector	繼德工業 Neltron	2026A-06		N/A
CN18	Mini-Din PS/2 Connector	凱迅電子 Catch Electronics	MD06F011 121	Keyboard & Mouse Cable	1700060192
CN19	Serial Port 1 Connector	AMP	707-09F		N/A
CN20	CRT Display Connector	何迪 Hobase Technology	708HD-15M		N/A
CN21	USB Connector	繼德工業 Neltron	2026B-10	USB Cable	1709100201