

PCM-LN02

Intel® Atom™ N455/D525 Processors

Onboard DDR3 667/800

18-bit or 24-bit LVDS

6 USB 2.0 / 6 COMs / 2 Mini Card/ Digital IO

PC/104+ (ISA+PCI)/ CompactFlash™/ PCMCIA

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Packing List

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

- 9657666600 Jumper Cap
- PCM-LN02 5.25" CPU Board
- 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.

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Chapter

1

**General
Information**

1.1 Introduction

The PCM-LN02 supports Intel® Atom™ N455/D525 processors offering a wide range of performance, price and power. The standard onboard DDR3 667/800 memory support up to 2 GB. Dual Ethernet connectivity is achieved by employing Intel® i82567V (PHY) + Intel® i82583V 10/100/1000Base-TX Ethernet controllers. To meet demanding expansion requirements the PCM-LN02 offers PCI, PCMCIA, PC/104+ (ISA+PCI), and two Mini Cards (1st: Full size+ SIM; 2nd: Half-size). In addition, the PCM-LN02 features six USB2.0 ports, 8-bit digital I/O (programmable) and six COM ports. With all of the available I/O connections and bus expansion, the PCM-LN02 is an excellent solution for an integrated system.

The display interface of the PCM-LN02 supports CRT/LCD simultaneous and dual view configurations. The LCD interface supports LVDS that features 18-bit or 24-bit LVDS. Moreover, the PCM-LN02 also has optional TPM1.2 function to secure your system. In addition, it deploys two SATA 3.0Gb/s and one CompcatFlash™ to provide ample storages and fulfill diverse demands of various applications.

1.2 Features

- Onboard Intel® Atom™ N455/D525 Processors
- Intel® ICH8M
- Onboard Memory 2GB
- Integrated Graphic Supports 18-bit or 24-bit LVDS Panel, Shared Memory Up To 384MB With DVMT 4.0
- 18-bit LVDS, 24-bit LVDS
- Intel® i82567V (PHY)+Intel® i82583V, 10/100/1000Base-TX
- PC/104+ (ISA+PCI), CompactFlash™, PCMCIA (x1 Slot), EIDE x 1 (Optional), SATA 3.0Gb/s x 2
- Mini-Card x 2 (1st: Full Size + SIM; 2nd: Half Size) On Top Side
- RS-232 x 5, RS-232/422/485 x 1
- Optional TPM1.2
- DC-12V or ATX

1.3 Specifications

System

- CPU Intel® Atom™ N455/D525
- System Memory DDR 3 667/800 2 GB
- Chipset Intel® ICH8M
- I/O Chipset ITE8712F/KX-L + Fintek F81216AD
- Ethernet Intel® i82567V (PHY) + Intel® i82583V, 10/100/1000Base-TX, RJ-45 x 2
- BIOS AMI BIOS – 2 MB ROM
- Watchdog Timer Generates a time-out system reset
- H/W status monitoring Supports power supply voltages, fan speed and temperature monitoring
- Expansion Interface PCI x 1, PCMCIA x 1, PC/104+ (ISA+PCI) x 1, Mini Card x 2 (1st: full size +SIM; 2nd: half-size)
- Battery Lithium battery
- Power Requirement DC 12V or ATX
- Board Size 8”(L) x5.75” (W) (203mm x 146mm)
- 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

Display: Supports CRT/LCD simultaneous/ dual view display

- Chipset Intel® Atom™ processor integrated
- Memory Shared system memory up to 384 MB w/ DVMT4.0
- Resolutions Up to 1366x768 @18bpp for LVDS; Up to 2048x1536 @ 60Hz for CRT
- LCD Interface LVDS (18-bit or 24-bit)

I/O

- Storage CompactFlash™ x 1, SATA 3.0 Gb/s x 2
- Serial Port RS-232 x 5, RS-422/485 x 1
- Parallel Port SPP/EPP/ECP
- USB USB2.0 x 6
- Digital I/O 8-bit (programmable)

Chapter

2

**Quick
Installation
Guide**

2.1 Safety Precautions

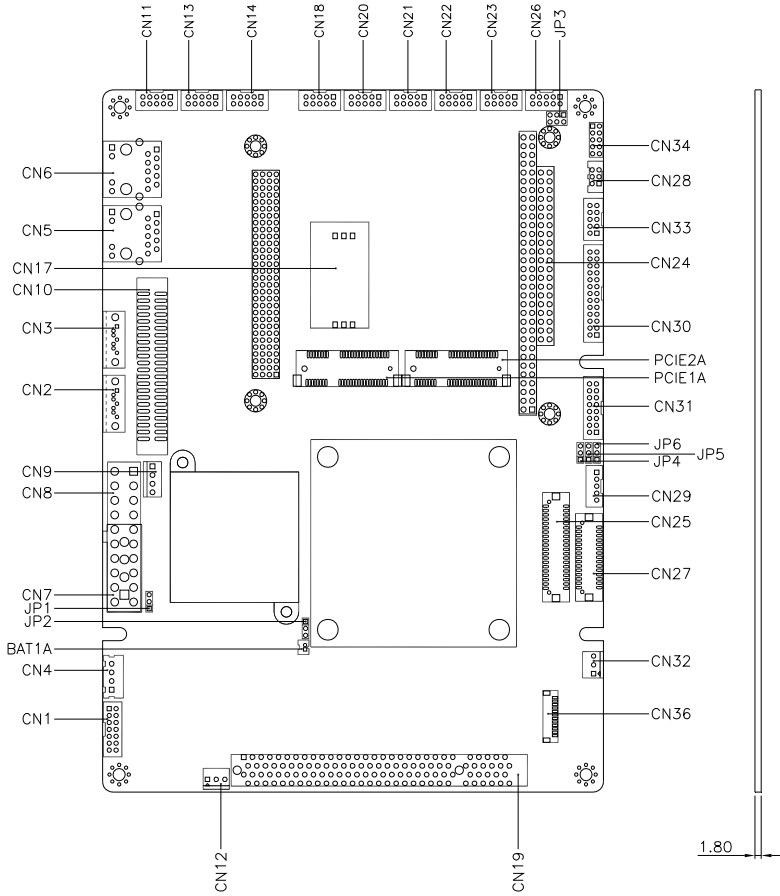
Warning!

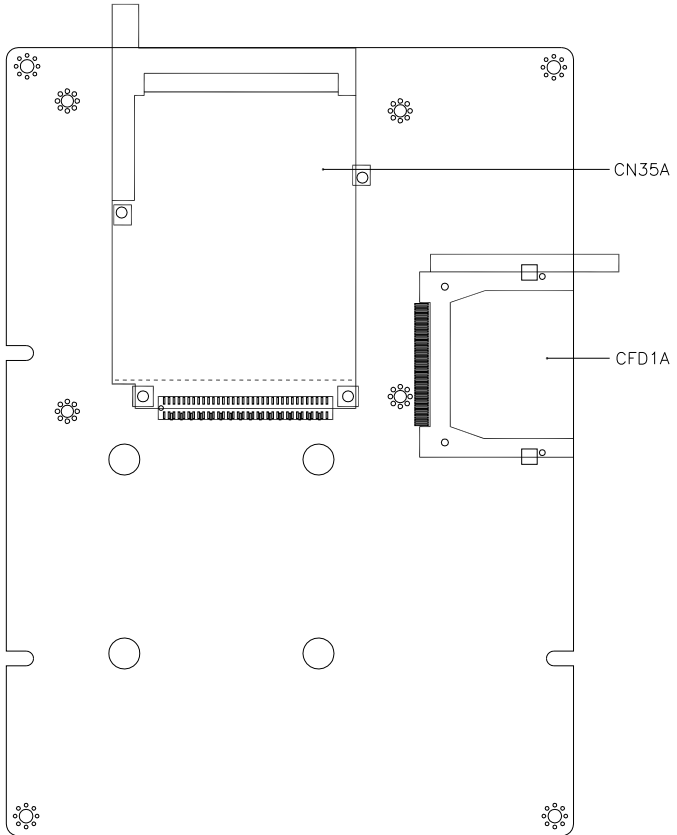
Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.

Caution!

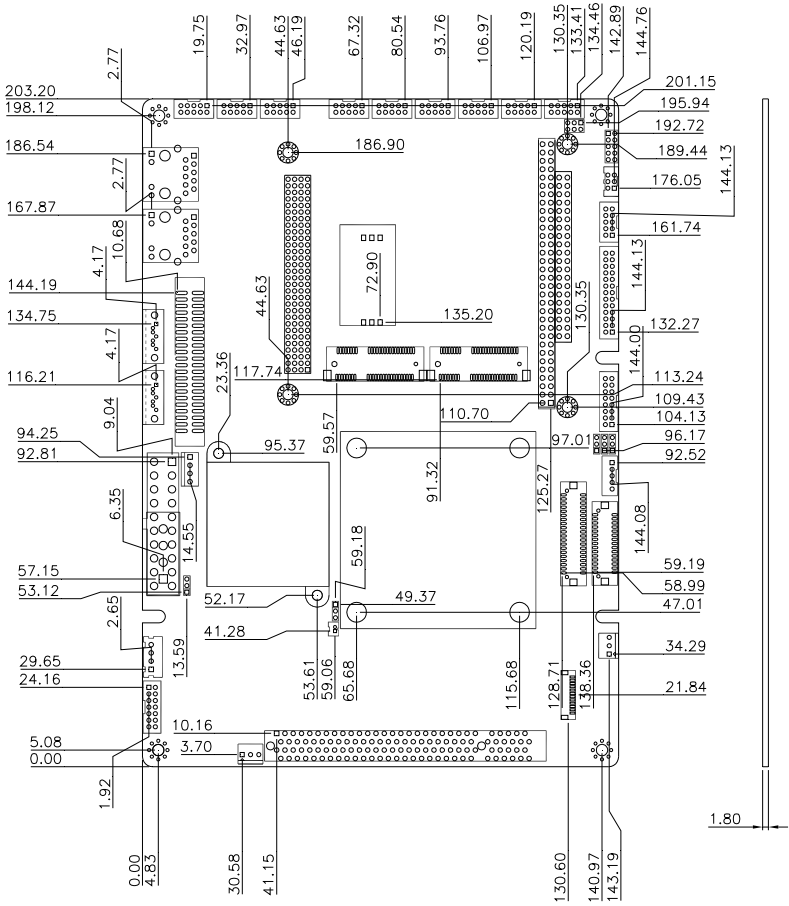
Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not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

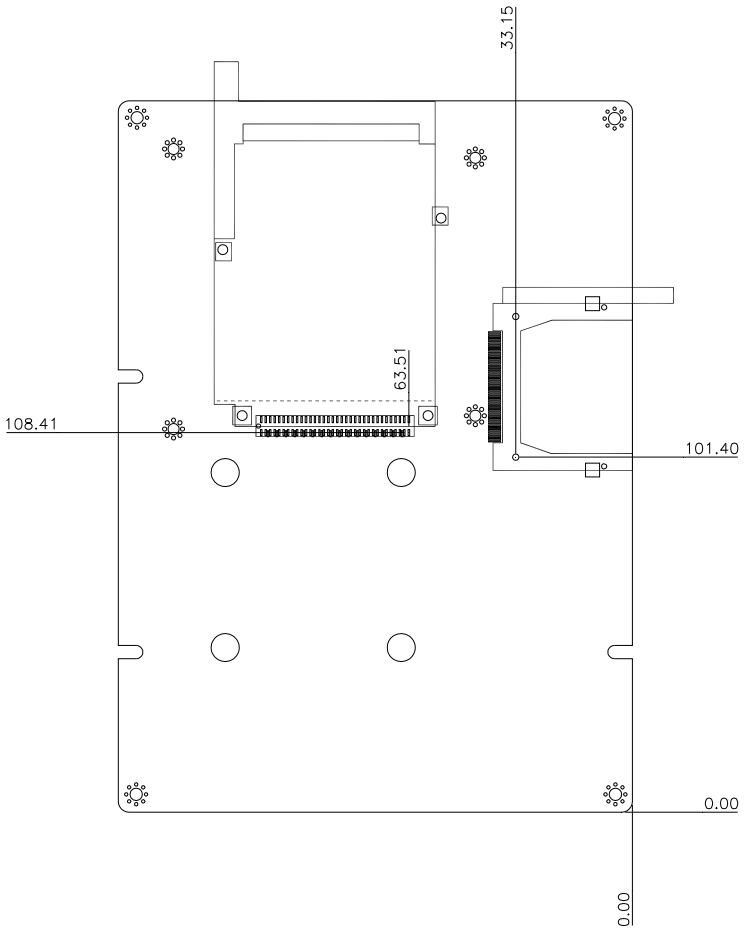
2.2 Location of Connectors and Jumpers





2.3 Mechanical Drawing





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 Selection
JP2	Clear CMOS
JP3	COM1 RI/+5/+12V Selection
JP4	LCD Operating Voltage Selection
JP5	LCD Backlight Bias/PWM Mode Selection
JP6	LCD Inverter Voltage 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 board's connectors:

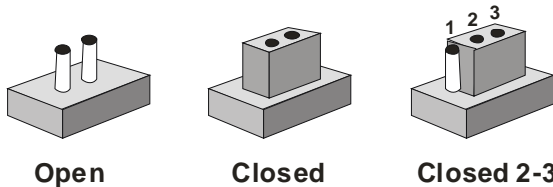
Label	Function
CN1	Audio Line In/Out and MIC Connector
CN2	SATA 1 Connector
CN3	SATA 2 Connector
CN4	Stereo Audio Output Connector
CN5	RJ-45 Ethernet #1 Connector
CN6	RJ-45 Ethernet #2 Connector
CN7	+12V Voltage Input Connector (Optional)
CN8	ATX Power Connector
CN9	+5V/+12V Output Connector for SATA HDD using
CN10	IDE Connector (Optional)
CN11	USB Port 1,2 Connector
CN12	CPU Fan Connector
CN13	USB Port 3,4 Connector
CN14	USB Port 5,6 Connector
CN15	PCI-104 Connector
CN17	SIM Card Socket
CN18	COM Port 6 Connector
CN19	PCI Slot
CN20	COM Port 5 Connector
CN21	COM Port 4 Connector
CN22	COM Port 3 Connector

CN23	COM Port 2 Connector
CN24	PC-104 Slot / ISA Interface
CN25	TTL LCD Connector (Optional)
CN26	COM Port 1 Connector
CN27	LVDS Connector
CN28	PS/2 Keyboard & Mouse Connector
CN29	LCD Inverter Connector
CN30	Parallel Port Connector
CN31	CRT Display Connector
CN32	System Fan Connector
CN33	Digital I/O Connector
CN34	Front Panel
CN35	PCMCIA Slot
CFD1	Compact Flash Disk
PCIE1	Mini-Card Slot #1
PCIE2	Mini-Card Slot #2

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 Selection (JP1)

JP1	Function
1-2	AT
2-3	ATX (default)

2.8 Clear CMOS (JP2)

JP2	Function
1-2	Normal (default)
2-3	Clear CMOS

2.9 COM1 RI/+5V/+12V Selection (JP3)

JP3	Function
1-2	+12V
3-4	+5V
5-6	RI (default)

2.10 LCD Operating Voltage Selection (JP4)

JP4	Function
1-2	+5V
2-3	+3.3V (default)

2.11 LCD Backlight Bias/PWM Mode Selection (JP5)

JP5	Function
1-2	Bias (default)
2-3	PWM Control

2.12 LCD Inverter Voltage Selection (JP6)

JP6	Function
1-2	+12V
2-3	+5V (default)

2.13 Audio Line-In/Out and MIC Selection (CN1)

Pin	Signal	Pin	Signal
1	MIC_R	2	MIC_L
3	Ground	4	N/C
5	LINE IN_L	6	N/C
7	LINE IN_R	8	N/C
9	Ground	10	N/C
11	LINE OUT_L	12	LINE OUT_R
13	Ground	14	Ground

2.14 SATA 1 Connector (CN2)

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

2.15 SATA 2 Connector (CN3)

Pin	Signal
1	Ground
2	TX1+
3	TX1
4	Ground
5	RX1-
6	RX1+
7	Ground

2.16 Stereo Audio Output Connector (CN4)

Pin	Signal	Pin	Signal
1	SPK OUT_R+	2	SPK OUT_R-
3	SPK OUT_L+	4	SPK OUT_L-

2.17 RJ-45 Ethernet #1 (CN5)

Pin	Signal	Pin	Signal
R1	MDIO0+	R2	MDIO0-
R3	MDIO1+	R4	MDIO1-
R5	TCD0	R6	TCD1
R7	MDIO2+	R8	MDIO2-
R9	MDIO3+	R10	MDIO3-
L1	ACT_LED	L2	+3.3 Volt.
L3	SPD100_LED	L4	SPD1K_LED

2.18 RJ-45 Ethernet #2 (CN6)

Pin	Signal	Pin	Signal
R1	GPHY_MDIO0+	R2	GPHY_MDIO0-
R3	GPHY_MDIO1+	R4	GPHY_MDIO1-
R5	TCD0	R6	TCD1
R7	GPHY_MDIO2+	R8	GPHY_MDIO2-
R9	GPHY_MDIO3+	R10	GPHY_MDIO3-
L1	ACT_LED	L2	+3.3 Volt.
L3	SPD100_LED	L4	SPD1K_LED

2.19 Voltage Input Connector (CN7)

Pin	Signal
1	+12 Volt.
2	Ground
3	Ground
4	N/C

2.20 ATX Power Connector (CN8)

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	N/C
19	+5 Volt.	20	+5 Volt.

2.21 +5V/ +12V Output Connector for SATA HDD (CN9)

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

2.22 IDE Connector (CN10)

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 / +5 Volt. 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

2.23 USB Port 1,2 Connector (CN11)

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

2.24 CPU Fan Connector (CN12)

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

2.25 USB Port 3,4 Connector (CN13)

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

2.26 USB Port 5,6 Connector (CN14)

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

2.27 PCI-104 Connector (CN15)

Standard Specifications

2.28 SIM Card Socket (CN17)

Pin	Signal	Pin	Signal
1	UIM_PWR	2	UIM_RST
3	UIM_CLK	4	Ground
5	UIM_VPP	6	UIM_DATA

2.29 COM Port 6 Connector (CN18)

Pin	Signal	Pin	Signal
1	DCDF	2	RXF
3	TXF	4	DTRF
5	Ground	6	DSRF
7	RTSF	8	CTSF
9	RIF	10	N/C

2.30 PCI Slot (CN19)

Standard Specifications

2.31 COM Port 5 Connector (CN20)

Pin	Signal	Pin	Signal
1	DCDE	2	RXE
3	TXE	4	DTRE
5	Ground	6	DSRE
7	RTSE	8	CTSE
9	RIE	10	N/C

2.32 COM Port 4 Connector (CN21)

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
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2.33 COM Port 3 Connector (CN22)

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

2.34 COM Port 2 Connector (CN23)

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

2.35 PC-104 Slot / ISA Interface (CN24)

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	N/C
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	C	D
1	GND	GND
2	MEMCS16*	SBHE*
3	IOCS16*	LA23
4	IRQ10	LA22
5	IRQ11	LS21
6	IRQ12	LS20
7	IRQ13	LS19
8	IRQ14	LA18
9	DACK0*	LA17
10	DRQ0	MEMR*
11	DACK5*	MEMMW*
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

2.36 TTL LCD Connector (CN25)

Pin	Signal	Pin	Signal
1	LCD Volt.	2	LCD Volt.
3	Ground	4	Ground
5	LCD Volt.	6	LCD Volt.
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	LCD_CLK	36	VSYNC
37	TTL_DE	38	HSYNC
39	N/C	40	N/C

2.37 COM Port 1 Connector (CN26)

COM 1/RS-232 Mode

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

COM1/RS-422

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

COM1/RS-485

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

2.38 LVDS Connector (CN27)

Pin	Signal	Pin	Signal
1	Back-Light Enable	2	Back-Light Control
3	LCD Volt.	4	Ground
5	LA_CLK#	6	LA_CLK
7	LCD Volt.	8	Ground
9	LA_DATA#_0	10	LA_DATA_0
11	LA_DATA#_1	12	LA_DATA_1
13	LA_DATA#_2	14	LA_DATA_2
15	LA_DATA#_3	16	LA_DATA_3
17	LVDS_DATA / N/C	18	LVDS_CLK / 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	LCD Volt.	28	Ground
29	N/C	30	N/C

2.39 PS/2 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

2.40 LCD Inverter Connector (CN29)

Pin	Signal
1	+5 Volt./ +12 Volt.
2	Brightness Control
3	Ground
4	Ground
5	Backlight Enable

2.41 Parallel Port Connector (CN30)

Pin	Signal	Pin	Signal
1	STB	2	AFD#
3	D0	4	ERROR#
5	D1	6	PINIT#
7	D2	8	SLIN#
9	D3	10	Ground
11	D4	12	Ground
13	D5	14	Ground
15	D6	16	Ground
17	D7	18	Ground
19	ACK#	20	Ground
21	BUSY	22	Ground
23	PE	24	Ground
25	SLCT	26	N/C

2.42 CRT Display Connector (CN31)

Pin	Signal	Pin	Signal
1	RED	2	+5 Volt.
3	GREEN	4	Ground
5	BLUE	6	N/C
7	N/C	8	DDCDATA
9	Ground	10	HSYNC
11	CRT_PLUG#	12	VSYNC
13	Ground	14	DDCCLK
15	Ground	16	Ground

2.43 System Fan Connector (CN32)

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

2.44 Digital I/O Connector (CN33)

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

Digital I/O Address is A41H.

BIOS Setting	Connector Definition	Address	IT8712 GPIO Setting
Port 1	CN33 Pin 1	Bit 0	U37 Pin 27 (GPIO 20)
Port 2	CN33 Pin 2	Bit 1	U37 Pin 26 (GPIO 21)
Port 3	CN33 Pin 3	Bit 2	U37 Pin 25 (GPIO 22)
Port 4	CN33 Pin 4	Bit 3	U37 Pin 24 (GPIO 23)
Port 5	CN33 Pin 5	Bit 4	U37 Pin 23 (GPIO 24)
Port 6	CN33 Pin 6	Bit 5	U37 Pin 22 (GPIO 25)
Port 7	CN33 Pin 7	Bit 6	U37 Pin 21 (GPIO 26)
Port 8	CN33 Pin 8	Bit 7	U37 Pin 20 (GPIO 27)

2.45 Front Panel (CN34)

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

2.46 PCMCIA Slot (CN35)

Standard Specification

2.47 Compact Flash Disk (CFD1)

Pin	Signal	Pin	Signal
1	Ground	26	Ground
2	PDD3	27	PDD11

3	PDD4	28	PDD12
4	PDD5	29	PDD13
5	PDD6	30	PDD14
6	PDD7	31	PDD15
7	PDCS#1	32	PDCS#3
8	Ground	33	Ground
9	Ground	34	PDIOR#
10	Ground	35	PDIOW#
11	Ground	36	+3.3 Volt.
12	Ground	37	INT_IRQ14
13	+3.3 Volt.	38	+3.3 Volt.
14	Ground	39	CSEL#
15	Ground	40	N/C
16	Ground	41	IDERST#
17	Ground	42	PIORDY
18	PDA2	43	N/C
19	PDA1	44	+3.3 Volt.
20	PDA0	45	DASP#
21	PDD0	46	PDIAG#
22	PDD1	47	PDD8
23	PDD2	48	PDD9
24	N/C	49	PDD10
25	Ground	50	Ground

2.48 Mini-Card Slot #1 (PCIE1)

Pin	Signal	Pin	Signal
1	PCIE_WAKE#	2	+3.3 Volt. Standby
3	N/C	4	Ground
5	N/C	6	+1.5 Volt.
7	CLKREQ#	8	UIM_PWR
9	Ground	10	UIM_DATA
11	MCARD_CLK1#	12	UIM_CLK
13	MCARD_CLK1	14	UIM_RESET
15	Ground	16	UIM_VPP
17	N/C	18	Ground
19	N/C	20	W_DISABLE#1
21	Ground	22	PCIE_RST#
23	PCIE_RXN1	24	+3.3 Volt. Standby
25	PCIE_RXP1	26	Ground
27	Ground	28	+1.5 Volt.
29	Ground	30	SMBCLK
31	PCIE_TXN1	32	SMBDATA
33	PCIE_TXP1	34	Ground
35	Ground	36	USB_DATA8-
37	Ground	38	USB_DATA8+
39	+3.3 Volt. Standby	40	Ground
41	+3.3 Volt. Standby	42	N/C
43	Ground	44	N/C

45	N/C	46	N/C
47	N/C	48	+1.5 Volt.
49	N/C	50	Ground
51	N/C	52	+3.3 Volt. Standby

2.49 Mini-Card Slot #2 (PCIE2)

Pin	Signal	Pin	Signal
1	PCIE_WAKE#	2	+3.3 Volt. Standby
3	N/C	4	Ground
5	N/C	6	+1.5 Volt.
7	CLKREQ#	8	N/C
9	Ground	10	N/C
11	MCARD_CLK2#	12	N/C
13	MCARD_CLK2	14	N/C
15	Ground	16	N/C
17	N/C	18	Ground
19	N/C	20	W_DISABLE#2
21	Ground	22	PCIE_RST#
23	PCIE_RXN2	24	+3.3 Volt. Standby
25	PCIE_RXP2	26	Ground
27	Ground	28	+1.5 Volt.
29	Ground	30	SMBCLK
31	PCIE_TXN2	32	SMBDATA
33	PCIE_TXP2	34	Ground
35	Ground	36	USB_Data9-

37	Ground	38	USB_Data9+
39	+3.3 Volt. Standby	40	Ground
41	+3.3 Volt. Standby	42	N/C
43	Ground	44	N/C
45	N/C	46	N/C
47	N/C	48	+1.5 Volt.
49	N/C	50	Ground
51	N/C	52	+3.3 Volt. Standby

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

**AMI
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.

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-LN02 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 AMI BIOS Setup

AMI 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 or <F2> immediately. This will allow you to enter Setup.

Main

Set the date, use tab to switch between date elements.

Advanced

Enable/disable boot option for legacy network devices.

Chipset

host bridge parameters.

Boot

Enables/disables quiet boot option.

Security

Set setup administrator password.

Save&Exit

Exit system setup after saving the changes.

Chapter

4

**Driver
Installation**

The PCM-LN02 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 Chipset Driver
- Step 2 – Install VGA Driver
- Step 3 – Install LAN Driver
- Step 4 – Install Audio Driver
- Step 5– Install TPM Driver (Optional)

Please read instructions below for further detailed installations.

4.1 Installation

Insert the PCM-LN02 CD-ROM into the CD-ROM drive and install the drivers from Step 1 to Step 5 in order.

Step 1 – Install Chipset Driver

1. Click on the **Step 1 - Intel Chipset Software Installation Utility** folder
2. Double click on **infinst_autol** 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 Production Version** folder and select the folder of **WDM**
2. Choose the OS your system is and double click on **Setup.exe** file located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 3 – Install LAN Driver

1. Click on the **Step 3 – Intel Ethernet 82567V and 82583V** folder and select the folder of **WDM**
2. Double click on **PROWin32.exe** file
3. Follow the instructions that the window shows

4. The system will help you install the driver automatically

Step 4 – Install Audio Driver

1. Click on the **Step 4 – Realtek HD Audio Codec** folder
2. Choose the OS your system is.
3. Double click on **Setup.exe** file located in each OS folder
4. Follow the instructions that the window shows
5. The system will help you install the driver automatically

Step 5 – Install TPM Driver (Optional)

1. Click on the **Step 5 – Infineon TPM (Option)** folder
2. Double click on **Setup.exe** 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

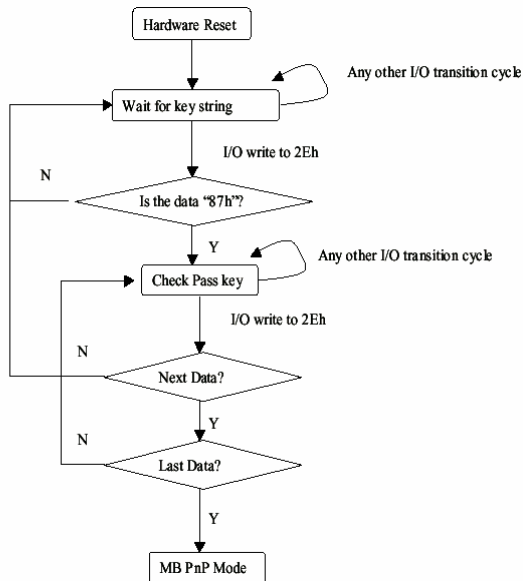
A.1 Programming

PCM-LN02 utilizes ITE 8712 chipset as its watchdog timer controller. (K version)

Below are the procedures to complete its configuration and the AAEON 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
2E8-2EF*	Serial Port 4	2E8-2EF
2F8-2FF	Serial Port 2	2F8-2FF
378-37F	Parallel Printer Port 1	378-37F
3B0-3DF	EGA / VGA card	3B0-3DF
3E8-3EF*	Serial Port 3	3E8-3EF
3F8-3FF	Serial Port 1	3F8-3FF
2E0-2E7*	Serial Port 5	2E0-2E7
2F0-2F7*	Serial Port 6	2F0-2F7

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	ACPI
IRQ2	Cascade to IRQ Controller	IRQ10	COM5
IRQ3	COM2	IRQ11	COM6
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	COM3	IRQ13	FPU
IRQ6	Reserved	IRQ14	Primary IDE
IRQ7	COM4	IRQ15	Secondary IDE

B.4 DMA Channel Assignments

DMA Channel	Function
0	Available
1	Available
2	Available
3	Available

Appendix

C

Mating Connector

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	Audio Connector	CATCH	052-D200-14P	Audio Cable	1700140510
CN2	SATA Port 1	Molex	67582-0000	SATA Cable	1709070500
CN3	SATA Port 2	Molex	67582-0000	SATA Cable	1709070500
CN4	2W Speaker Connector	HO-BASE	2503-H-4	N/A	N/A
CN5	RJ-45 Ethernet #1	Neltron	7001-8P8C	N/A	N/A
CN6	RJ-45 Ethernet #2	Neltron	7001-8P8C	N/A	N/A
CN7	+12V Input Connector	N/A	N/A	N/A	N/A
CN8	ATX Power Connector	N/A	N/A	N/A	N/A
CN9	SATA PWR Connector	HO-BASE	2503-H-4	SATA Cable PWR	1702151200
CN11	USB 1&2 Connector	Neltron	2026B-10	USB Cable	1709100201
CN12	System Fan Connector	CATCH	1190-700-03S	N/A	N/A
CN13	USB 3&4 Connector	Neltron	2026B-10	USB Cable	1709100201
CN14	USB 5&6 Connector	Neltron	2026B-10	USB Cable	1709100201

Compact Board
PCM-LN02

CN18	Serial Port 6 Connector	Neltron	2026B-10	Serial Cable	Port	1701100206
CN20	Serial Port 5 Connector	Neltron	2026B-10	Serial Cable	Port	1701100206
CN21	Serial Port 4 Connector	Neltron	2026B-10	Serial Cable	Port	1701100206
CN22	Serial Port 3 Connector	Neltron	2026B-10	Serial Cable	Port	1701100206
CN23	Serial Port 2 Connector	Neltron	2026B-10	Serial Cable	Port	1701100206
CN25	TTL LCD Connector	HIROSE	DF13-40DS-1.25C	N/A		N/A
CN26	Serial Port 1 Connector	Neltron	2026B-10	Serial Cable	Port	1701100206
CN27	LVDS Connector	HIROSE	DF13-30DS-1.25C	N/A		N/A
CN28	PS/2 Keyboard & Mouse	CATCH	A003-290	KB/MS Cable		1700060152
CN29	Inverter Connector	JST	PHR-5	N/A		N/A
CN30	Parallel Port Connector	HR	A2016H-N-2X13P-A	Parallel Cable	Port	1701260201
CN31	CRT Connector	CATCH	A003-041	CRT Cable		1700160201
CN32	CPU Fan Connector	CATCH	1190-700-03S	N/A		N/A
CN33	Digital I/O Connector	Neltron	2026B-10	N/A		N/A
BAT1	External RTC Connector	Molex	51021-0200	Battery Cable		175011901C