

EMB-9458T

Intel® Core™ 2 Duo/Core™ Duo/
Celeron® M Processor,
Mini-ITX
Intel® 82573L Ethernet
TPM 1.2
AC 97 Audio & Mini PCI

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Packing List

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

- 1 1701400453 IDE Cable
- 1 9657666600 Jumper Cap
- 1 1709070500 Serial ATA Cable
- 1 1702150150 Serial ATA Power Cable
- 1 Quick Installation Guide
- 1 Utility CD
- 1 EMB-9458T

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 EMB-9458T adopts the latest Intel® Core™ 2 Duo / Core™ Duo/ Celeron® M processor and Intel® 945GME+ICH7M chipset for better power-management capabilities and enhanced performance.

The system memory of EMB-9458T features two 240-pin DIMM and DDRII 400/533/667 up to 4GB. The LCD interface is 18/24-bit dual-channel LVDS TFT LCD and 2nd 18/24-bit dual-channel LVDS through optional SDVO Card (TF-PER-V04B-A10)

The EMB-9458T features one PCI slot, two optional PCI-E [x1] slot, one Mini PCI slot, four RS-232 ports, one RS-232 TTL only/GPS port, one RS-232/422/485 port, eight USB 2.0 ports, multiple Digital I/O ports, and Type II CFD storage, providing versatile expansion options for many embedded applications.

EMB-9458T with mobile-optimized Intel dual-core processors is the latest embedded motherboard designed to cope with increasingly heavily work-loaded embedded systems found in POS (Point-of-Sale) machines, automated kiosks, medical instruments, advanced automation for buildings and homes, and gaming machines.

1.2 Features

- Intel® Core™ 2 Duo / Core™ Duo/ Celeron M Processor
- DDRII 400/533/667 DIMM Memory Up to 4GB
- 18/24-bit Dual-channel LVDS TFT LCD, DVI, LVDS, TV-out, SDVO x 1 for 2nd 18/24-bit Dual-channel DVI/ LVDS
- Intel® 82573L Gigabit Ethernet
- CompactFlash™ Type II Slot, Two SATA (Optional RAID 0 & RAID 1)
- Two PCI-E [x1] Slots (Optional), One PCI, and One Mini PCI Socket
- Six COM Ports (RS-232 x 4, RS-232 TTL only/ GPS x 1, RS-232/422/485 x 1), Eight USB 2.0 Ports, and Digital I/O 8-bit
- Optional TPM 1.2

1.3 Specifications

System

- Processor Supports Intel® Core™ 2 Duo/ Core™ Duo/ Celeron® M processor
- System Memory 240-pin DIMM x 2, DDRII 400/533/667 up to 4GB
- Chipset Intel® 945GME + ICH7M (-DH optional for RAID)
- I/O Chipset ICH7-M (-DH optional for RAID) + IT8712F-KX
- Ethernet Intel® 82573L 10/100/1000Base-TX, RJ-45 x 2
- BIOS Award Plug & Play BIOS – 1MB 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, PCI-E [x1] x 2 (Optional), Mini PCI x 1
- Power Requirement ATX (+3.3V, +5V, +5VSB,

- Power Consumption (Typical)

T7400	2.16GHz, DDRII 667
2 GB :	2.24A@+12V, 3.6A@+5V
- Board Size

6.7"(L) x 6.7"(W)	(170 mm x 170 mm)
-------------------	-------------------
- Operating Temperature

32°F~ 140°F	(0°C ~ 60°C)
-------------	--------------
- Storage Temperature

-40°F~ 176°F	(-40°C ~ 80°C)
--------------	----------------
- Operating Humidity

0%~90%	relative humidity, non-condensing
--------	-----------------------------------
- MTBF (Hours)

60,000	
--------	--

Display: Supports CRT/LCD, CRT/TV, LCD/TV, LCD/DVI and CRT/DVI simultaneous/ dual view display

- Chipset

Intel [®] 945GME	
---------------------------	--
- Memory

Shared system memory up to 224MB w/ DVMT3.0	
---	--
- LCD Interface

18/24-bit dual-channel LVDS TFT LCD, 2 nd 18/24-bit dual-channel LVDS through an optional SDVO card (TF-PER-V04B-A10)	
--	--
- TV-out

Supports NTSC and PAL standard, S-Terminal and Composite Video	
--	--

- DVI Yes, 2nd DVI through an optional SDVO card (TF-PER-V03B-A10)
- TPM Optional

I/O

- Storage EIDE x 1 (UDMA100), SATA II x 2, Type II CompactFlash x 1
- Serial Port RS-232 x 4, RS-232 TTL only/
GPS x1, RS-232/422/485 x 1
- IrDA One IrDA Tx/Rx header
- Audio MIC-In, Line-In, Line-out, CD-in,
Stereo amplifier included
- USB USB 2.0 x 8
- Parallel Port Supports SPP/ EPP/ ECP mode
- K/B and Mouse PS/2 Keyboard x 1, and PS/2
Mouse x1
- Digital I/O Supports 8-bit (Programmable)

Chapter

2

**Quick
Installation
Guide**

2.1 Safety Precautions

Warning!

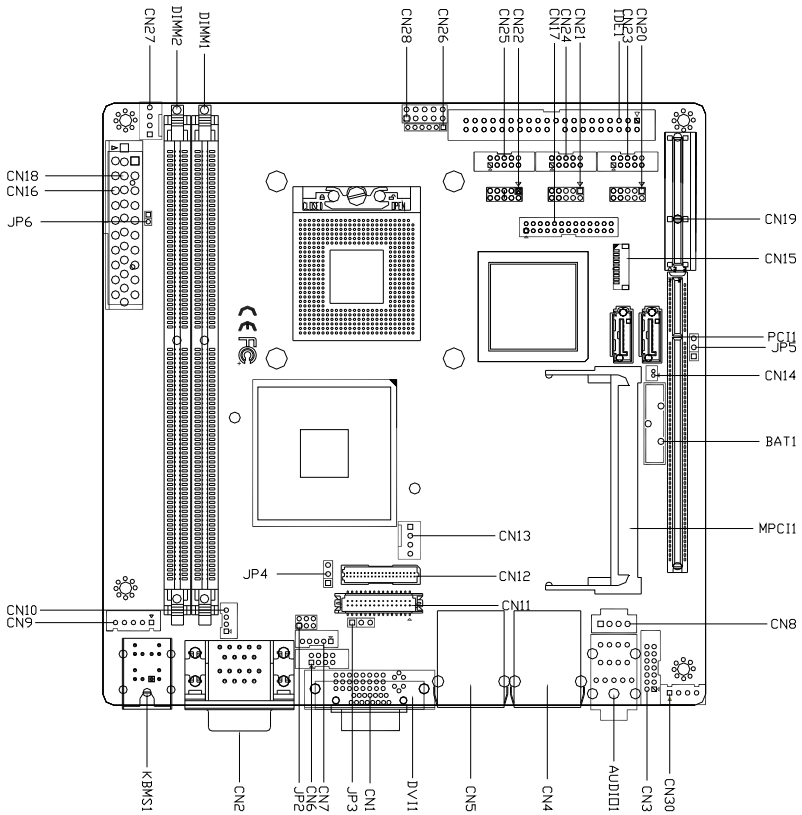
Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.

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

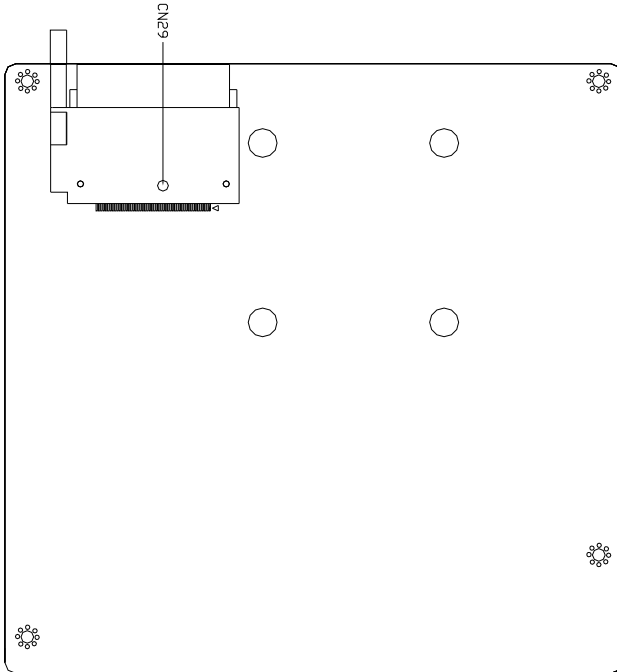
Component Side



NOTE:

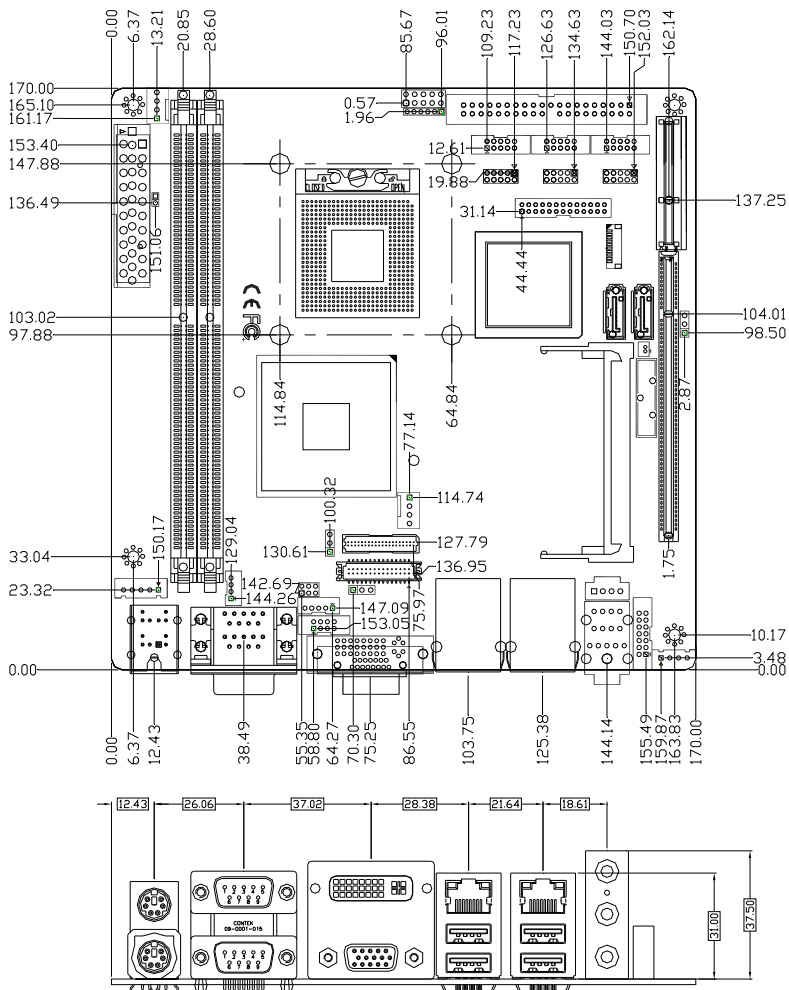
The Height of Cooling System Depends on Customer Cooling Device.

Solder Side

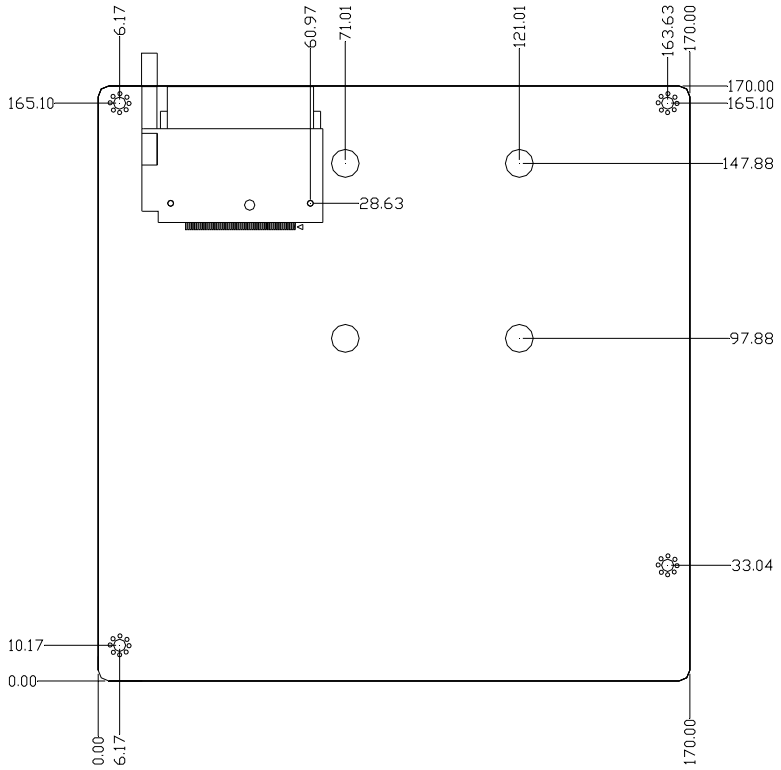


2.3 Mechanical Drawing

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
JP2	COM2 Ring/+5V/+12V Selection
JP3	LCD INVERTER Voltage Selection
JP4	LVDS Voltage Selection
JP5	Clear CMOS
JP6	ATX Power simulate AT Power

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:

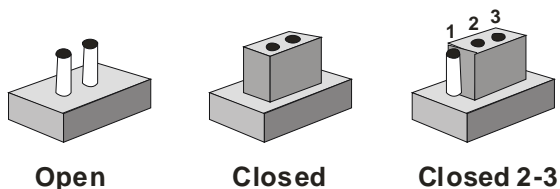
Label	Function
CN1	VGA Display Connector
CN2	COM1 RS-232 & COM2 RS-232/422/485
CN3	Audio 5.1 Channel / SPDIF Connector
CN4	USB Connector / 10/100/1000 Base-TX Ethernet Connector
CN5	USB Connector / 10/100/1000 Base-TX Ethernet Connector
CN7	LCD Inverter Connector
CN8	CD-IN Connector
CN9	Internal Keyboard Connector
CN10	Internal Mouse Connector
CN11	LVDS LCD Connector
CN12	SDVO Connector
CN13	System Fan Connector
CN14	RTC Battery Connector
CN15	RS-232 TTL only/ GPS Connector
CN16	ATX Power Connector
CN17	LPT Port Connector
CN18	AT Power Connector
CN19	PCI Express Slot
CN20	USB Connector

CN21	USB Connector
CN22	Digital I/O Connector
CN23	COM4 RS-232 Serial Port Connector
CN24	COM3 RS-232 Serial Port Connector
CN25	COM6 RS-232 Serial Port Connector
CN26	IrDA Connector
CN27	CPU FAN Connector
CN28	Front Panel Connector
CN29	CompactFlash Slot
CN30	Audio Speaker Output
KBMS1	PS2 Keyboard / Mouse Connector
DVI1	DVI Connector
AUDIO1	Audio Connector
MPCI1	Mini PCI Slot
PCI1	PCI Slot
SATA1	Primary Serial ATA Connector
SATA2	Secondary Serial ATA Connector
DIMM1	DDRII DIMM Slot
DIMM2	DDRII DIMM Slot
IDE1	EIDE Connector

2.6 Setting Jumpers

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

To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2 or 2 and 3.



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

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

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

2.7 COM2 Ring/+5V/+12V Selection (JP2)

JP2	Function
1-2	+12V
3-4	+5V
5-6	Ring (Default)

2.8 LCD INVERTER Voltage Selection (JP3)

JP3	Function
1-2	+5V(Default)
2-3	+12V

2.9 LCD Voltage Selection (JP4)

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

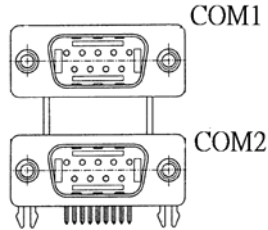
2.10 Clear CMOS (JP5)

JP5	Function
1-2	Protected (Default)
2-3	Clear

2.11 ATX Power Simulate AT Power (JP6)

JP6	Function
NC	ATX or AT standard (Default)
1-2	ATX Power Simulate AT Power

2.12 COM1 RS-232 & COM2 RS-232/422/485 Connector (CN2)



COM1

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

COM2

Pin	Signal	Pin	Signal
1	DCD (422TXD-/485DATA-)	2	RXD (422RXD+)
3	TXD (422TXD+/485DATA+)	4	DTR (422RXD-)
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	N.C.

2.13 Audio 5.1 Channel/SPDIF Connector (CN3)

Pin	Signal	Pin	Signal
1	Front-OUT-R	2	GND
3	Front-OUT-L	4	GND

5	Surr-OUT-R	6	GND
7	Surr-OUT-L	8	GND
9	LFE-OUT	10	GND
11	CNE-OUT	12	GND
13	SPDIF-OUT	14	SPDIF-IN

2.14 LCD Inverter Connector (CN7)

Pin	Signal
1	VCC of LCD inverter (+5V/+12V)
2	Adjust backlight
3	GND
4	GND
5	ENBKL

2.15 CD-IN Connector (CN8)

Pin	Signal
1	CD_IN_L
2	CD_GND
3	CD_GND
4	CD_IN_R

2.16 Internal Keyboard Connector (CN9)

Pin	Signal
1	KB_CLK
2	KB_DATA
3	N.C.
4	GND
5	+5V

2.17 Internal Mouse Connector (CN10)

Pin	Signal
1	MS_CLK
2	MS_DATA
3	GND
4	+5V

2.18 LVDS-LCD Connector (CN11)

Pin	Signal	Pin	Signal
1	ENBKL	2	N.C.
3	PPVCC	4	GND
5	LVDS1_TXCLK-	6	LVDS1_TXCLK+
7	PPVCC	8	GND
9	LVDS1_TX0-	10	LVDS1_TX0+
11	LVDS1_TX1-	12	LVDS1_TX1+
13	LVDS1_TX2-	14	LVDS1_TX2+
15	N.C.	16	N.C.
17	I2C_DATA	18	I2C_CLK
19	LVDS2_TX0-	20	LVDS2_TX0+
21	LVDS2_TX1-	22	LVDS2_TX1+
23	LVDS2_TX2-	24	LVDS2_TX2+
25	N.C.	26	N.C.
27	PPVCC	28	GND
29	LVDS2_TXCLK-	30	LVDS2_TXCLK+

2.19 SDVO Connector (CN12)

Pin	Signal	Pin	Signal
1	SDVO_SPC	2	SDVO_RST#
3	SDVO_SPD	4	SMBCLK
5	N.C.	6	SMBDATA
7	GND	8	GND
9	SDVO_RED#	10	SDVO_FLDSTALL#
11	SDOV_RED	12	SDVO_FLDSTALL
13	GND	14	GND
15	SDVO_BLUE#	16	SDVO_INT#
17	SDVO_BLUE	18	SDVO_INT
19	GND	20	GND
21	SDVO_GREEN#	22	SDVO_CLK#
23	SDVO_GREEN	24	SDVO_CLK
25	GND	26	GND
27	+2.5V	28	+5V
29	+2.5V	30	+5V
31	+2.5V	32	GND
33	GND	34	+12V
35	+3.3V	36	+12V
37	+3.3V	38	GND
39	GND	40	GND

2.20 System Fan Connector (CN13)

Pin	Signal
1	GND
2	VCC of FAN
3	Speed Sense
4	Speed Control

2.21 RTC Battery Connector (CN14)

Pin	Signal
1	Battery Power input
2	GND

2.22 RS-232 TTL/ GPS Connector (CN15)

Pin	Signal
1	N.C.
2	N.C.
3	GND
4	GPS_LED
5	GPS_TXD
6	GPS_RXD
7	VCC3.3_BAT
8	+3.3V
9	GPS_RST#
10	GND

2.23 ATX Power Connector (CN16)

Pin	Signal	Pin	Signal
1	N.C.	11	N.C.

2	N.C.	12	-12V
3	GND	13	GND
4	+5V	14	PS_ON
5	GND	15	GND
6	+5V	16	GND
7	GND	17	GND
8	POWER OK	18	-5V
9	+5VSB	19	+5V
10	+12V	20	+5V

2.24 LPT Port Connector (CN17)

Pin	Signal	Pin	Signal
1	STROBE	2	AFD
3	PTD0	4	ERROR
5	PTD1	6	INIT
7	PTD2	8	SLIN
9	PTD3	10	GND
11	PTD4	12	GND
13	PTD5	14	GND
15	PTD6	16	GND
17	PTD7	18	GND
19	ACK	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SELECT	26	N.C.

2.25 AT Power Connector (CN18)

Pin	Signal
1	N.C.
2	+5V
3	+12V
4	-12V
5	GND
6	GND
7	GND
8	GND
9	-5V
10	+5V
11	+5V
12	+5V

2.26 PCI-Express Slot (CN19)

Pin	Signal	Pin	Signal
A1	NC	B1	+12V
A2	+12V	B2	+12V
A3	+12V	B3	+12V
A4	GND	B4	GND
A5	NC	B5	SMBCLK
A6	NC	B6	SMBDAT
A7	NC	B7	GND
A8	NC	B8	+3.3V
A9	+3.3V	B9	NC
A10	+3.3V	B10	+3.3VSB

A11	PCIE_RESET#	B11	PCIE_WAKE#
A12	GND	B12	NC
A13	PCIE1_CLKP	B13	GND
A14	PCIE1_CLKN	B14	PCIE1_TXP
A15	GND	B15	PCIE1_TXN
A16	PCIE1_RXP	B16	GND
A17	PCIE1_RXN	B17	NC
A18	GND	B18	GND
A19	NC	B19	PCIE2_TXP
A20	GND	B20	PCIE2_TXN
A21	PCIE2_RXP	B21	GND
A22	PCIE2_RXN	B22	GND
A23	GND	B23	PCIE3_TXP
A24	GND	B24	PCIE3_TXN
A25	PCIE3_RXP	B25	GND
A26	PCIE3_RXN	B26	GND
A27	GND	B27	PCIE4_TXP
A28	GND	B28	PCIE4_TXN
A29	PCIE4_RXP	B29	GND
A30	PCIE4_RXN	B30	PCIE2_CLKN
A31	GND	B31	NC
A32	PCIE2_CLKP	B32	GND

2.27 USB Connector (CN20 & CN21)

Pin	Signal	Pin	Signal
1	+5V	2	GND

3	USBD1-	4	GND
5	USBD1+	6	USBD2+
7	GND	8	USBD2-
9	GND	10	+5V

2.28 Digital I/O Connector (CN22)

This connector offers 4-pair of digital I/O functions and address is 2A1H. The pin definitions are illustrated below:

Pin	Signal	Pin	Signal
1	Digital-IN/ OUT	2	Digital-IN/OUT
3	Digital-IN/ OUT	4	Digital-IN/ OUT
5	Digital-IN/ OUT	6	Digital-IN/ OUT
7	Digital-IN/ OUT	8	Digital-IN/ OUT
9	+5V	10	GND

The pin definitions and registers mapping are illustrated below:

Address: 2A1H

4 in / 4 out

Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8
GPI 27	GPI 26	GPI 25	GPI 24	GPO 23	GPO 22	GPO 21	GPO 20
MSB							LSB

8 in

Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8
GPI 27	GPI 26	GPI 25	GPI 24	GPI 23	GPI 22	GPI 21	GPI 20
MSB							LSB

8 out

Pin1	Pin2	Pin3	Pin4	Pin5	Pin6	Pin7	Pin8
GPO 27	GPO 26	GPO 25	GPO 24	GPO 23	GPO 22	GPO 21	GPO 20
MSB							LSB

2.29 COM4 RS-232 Serial Port Connector (CN23)

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

2.30 COM3 RS-232 Serial Port Connector (CN24)

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

2.31 COM6 RS-232 Serial Port Connector (CN25)

Pin	Signal	Pin	Signal
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR

7	RTS	8	CTS
9	RI	10	N.C.

2.32 IrDA Connector (CN26)

Pin	Signal
1	+5V
2	N.C.
3	IRRX
4	GND
5	IRTX
6	N.C.

2.33 CPU FAN Connector (CN27)

Pin	Signal
1	GND
2	VCC of FAN
3	Speed Sense
4	Speed Control

2.34 Front Panel Connector (CN28)

Pin	Signal	Pin	Signal
1	Power On Button (-)	2	Power On Button (+)
3	IDE LED (-)	4	IDE LED (+)
5	External Buzzer (-)	6	External Buzzer (+)
7	Power LED (-)	8	Power LED (+)
9	Reset Switch (-)	10	Reset Switch (+)

2.35 Audio Speaker Output (CN30)

Pin	Signal
1	SPK-R+
2	SPK-R-
3	SPK-L+
4	SPK-L-

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	×	○	○	○	○	○
<p>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。</p> <p>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。</p> <p>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。</p>						

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 EMB-9458T 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.

Note:

1. **System boot time will be longer when "TPM function" is enabled in BIOS setup.**
2. **Due to the system resource conflict, BIOS automatically disables COM5/COM6 when "ACPI function" is disabled in BIOS setup.**
3. **In some 640x480 display resolution scenarios, user need to choose correct display resolutions under "Display Properties --> setting --> advanced --> adapter --> List All Mode".**
4. **System with EMB-9458T + PER-V04B to support CRT+**

LVDS (24-bit) has the following limitation. In Microsoft windows dual independent display mode (extended desktop), LVDS channel used as secondary(extended) screen cannot full screen at resolution of 1366x768 and 1600x1200. Other resolutions are ok.

5. 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 EMB-9458T 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
- Step 6 – Install TPM Driver

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 EMB-9458T CD-ROM into the CD-ROM drive. And install the drivers from Step 1 to Step 4 in order.

Step 1 – Install INF Driver

1. Click on the **Step 1-inf** folder and then double click on the **setup.exe**
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Step 2 – Install VGA Driver

1. Click on the **Step 2-vga** folder and choose the folder your system is
2. Double click on **.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-LAN driver** folder
2. Select the **Windows** folder and then double click on **Autorun.exe**
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- AC97** folder and choose the folder your system is
2. Double click on **.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

Note:

Under the Window OS environment, if the CRT connector is connected to display monitor by the data switch device, the user need to set the color and resolution from Intel Graphic utility (VGA driver) instead of setting from the control panel in case of the wrong display appearance.

Step 5 – Install SATA RAID Driver

1. Click on the **Step 5- ICH7M-GHM SATA RAID Driver** Folder
2. Select the **Win OS** folder and then double click on **iatabl_cd.exe**
3. Follow the instructions that the windows shows
4. The system will help you install the driver automatically

Step 6 – Install TPM Driver

1. Click on the **Step 6-TPM DRIVER** folder and then double click on the **setup.exe**
2. Follow the instructions that the windows shows
3. The system will help you install the driver automatically

Appendix

A

Programming the Watchdog Timer

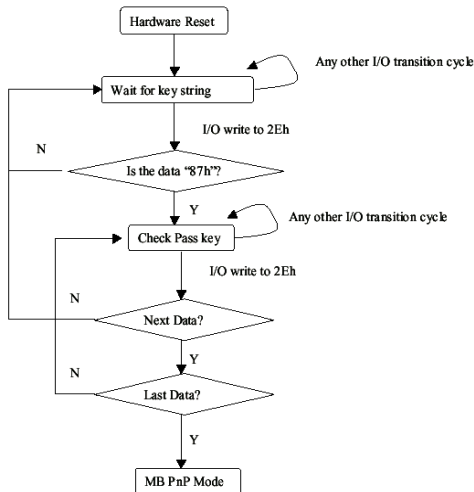
A.1 Programming

EMB-9458T utilizes ITE 8712 chipset as its watchdog timer controller.

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. The initial state (enable bit) of this logical device (KBC) is determined by the state of pin 121 (DTR1#) at the falling edge of the system reset during power-on reset.



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	Configure 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 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
5-4	Reserved
3-0	Select the interrupt level ^{Note} for WDT

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

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

A.2 IT8712 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

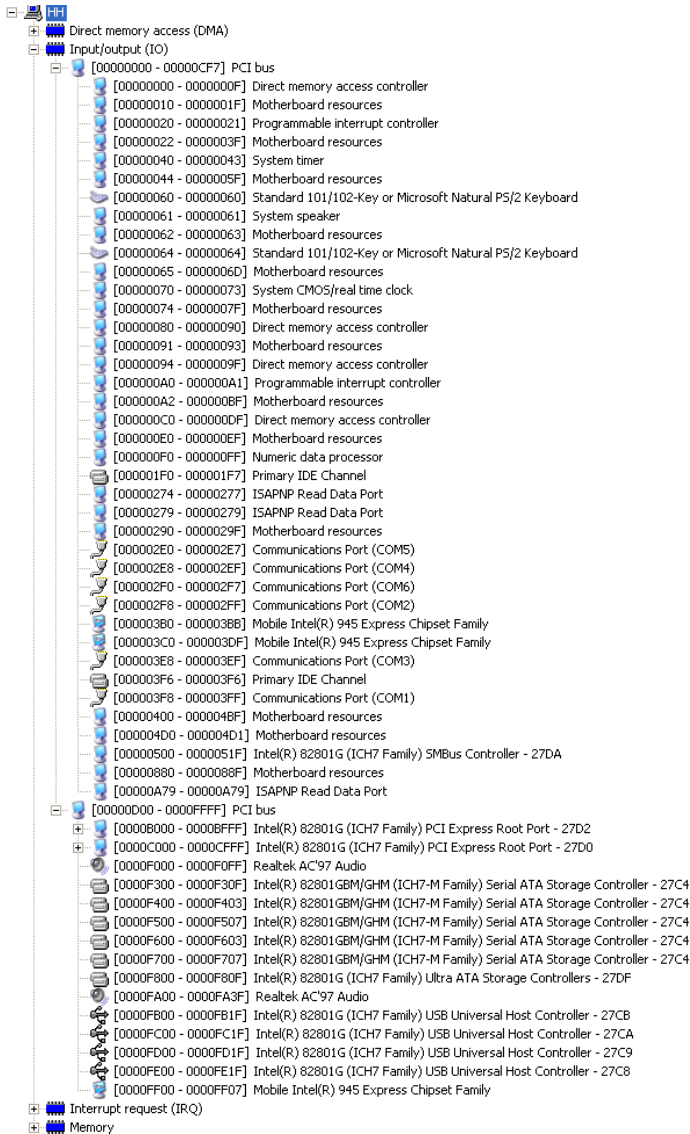
00h: no interrupt selected

Appendix

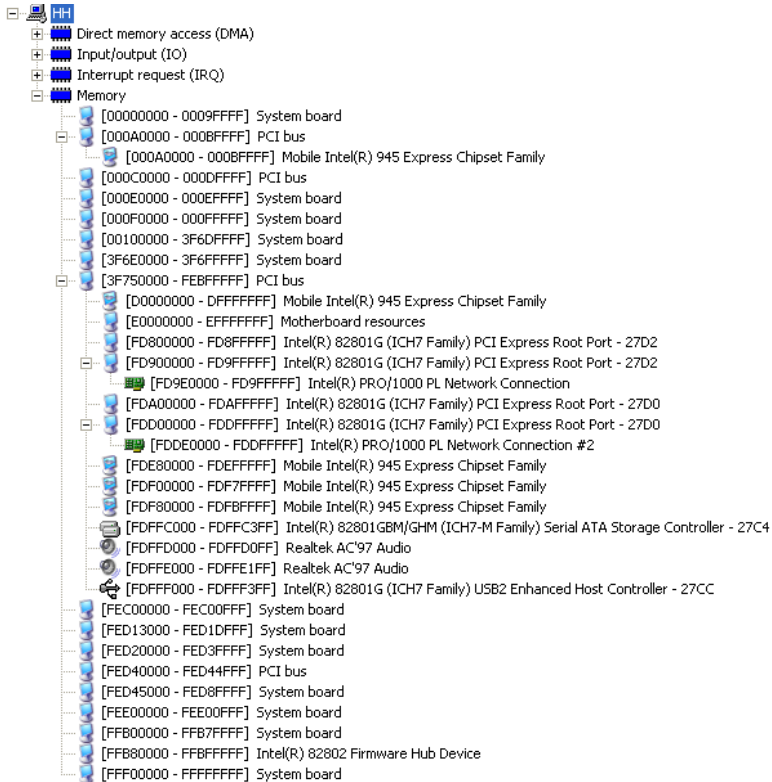
B

I/O Information

B.1 I/O Address Map



B.2 Memory Address Map



B.3 IRQ Mapping Chart

	Direct memory access (DMA)
	Input/output (IO)
	Interrupt request (IRQ)
	(ISA) 0 System timer
	(ISA) 1 Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
	(ISA) 3 Communications Port (COM2)
	(ISA) 4 Communications Port (COM1)
	(ISA) 5 Communications Port (COM5)
	(ISA) 6 Standard floppy disk controller
	(ISA) 7 Communications Port (COM6)
	(ISA) 8 System CMOS/real time clock
	(ISA) 9 Microsoft ACPI-Compliant System
	(ISA) 10 Communications Port (COM3)
	(ISA) 11 Communications Port (COM4)
	(ISA) 12 PS/2 Compatible Mouse
	(ISA) 13 Numeric data processor
	(ISA) 14 Primary IDE Channel
	(PCI) 15 Intel(R) 82801G (ICH7 Family) SMBus Controller - 27DA
	(PCI) 16 Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D0
	(PCI) 16 Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CB
	(PCI) 16 Intel(R) PRO/1000 PL Network Connection #2
	(PCI) 16 Mobile Intel(R) 945 Express Chipset Family
	(PCI) 17 Intel(R) 82801G (ICH7 Family) PCI Express Root Port - 27D2
	(PCI) 17 Intel(R) PRO/1000 PL Network Connection
	(PCI) 17 Realtek AC'97 Audio
	(PCI) 18 Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27CA
	(PCI) 19 Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C9
	(PCI) 19 Intel(R) 82801GBM/GHM (ICH7-M Family) Serial ATA Storage Controller - 27C4
	(PCI) 23 Intel(R) 82801G (ICH7 Family) USB Universal Host Controller - 27C8
	(PCI) 23 Intel(R) 82801G (ICH7 Family) USB2 Enhanced Host Controller - 27CC
	Memory

B.4 DMA Channel Assignments

	Direct memory access (DMA)
	4 Direct memory access controller
	Input/output (IO)
	Interrupt request (IRQ)
	Memory

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		
CN3	Audio 5.1 Channel/ SPDIF	Catch	2.00mm Pitch 14 pins (Catch H709-2 or compatible)	Audio Cable	1700140164
CN6	TV-Out	Catch	2.00mm Pitch 8 pins (Catch H754-2x4 or compatible)	TV-Out Cable	1700080180
CN7	LCD Inverter	HO-BASE	2.0mm Pitch 5 pins (HO-BASE 2002-H-5 or compatible)	NA	NA
CN8	CD-IN	HO-BASE	2.54mm Pitch 4 pins (HO-BASE 2541-1H-4 or compatible)	CDROM Cable	1703040400
CN9	Internal Keyboard	HO-BASE	2.54mm Pitch 5 pins (HO-BASE 2503-H-5 or compatible)	NA	NA
CN10	Internal Mouse	HO-BASE	2.0mm Pitch 4 pins (HO-BASE 2002-H-4 or compatible)	NA	NA
CN11	LVDS LCD	ComWeal	1.25mm Pitch 30 Pins(ComWeal 103-303M or compatible)	NA	NA

CN12	SDVO	WELL-LIN	1.0mm Pitch 40 pins(WELL-LIN WL1010H-2*20 P or compatible)		
CN13	Fan	Catch	2.54mm Pitch 3 pins (Catch 1190-700-03S or compatible)	NA	NA
CN14	RTC Battery	Molex	1.25mm Pitch 2 pins (Molex 51021-0200 or compatible)	NA	NA
CN15	GPS	Catch	1.0mm Pitch 10 pins (Catch HS-10P-1.0 or compatible)	NA	NA
CN16	ATX Power Socket	Catch	3.50 mm Pitch 20 pins (Catch 1121-700-20S or compatible)	NA	NA
CN17	Parallel Port	HR	2.0mm Pitch 26 pins (HR A2016H-N-2X1 3P-A)	Parallel Port Cable	1701260200
CN20	USB Port	Catch	2.00mm Pitch 10 pins (Catch H754-2x5 or compatible)	USB Cable	1709100201
CN21	USB Port	Catch	2.00mm Pitch 10 pins (Catch H754-2x5 or compatible)	USB Cable	1709100201
CN22	Digital I/O	Catch	2.00mm Pitch 10 pins (Catch H754-2x5 or compatible)	NA	NA
CN23	RS-232 Serial Port	Catch	2.00mm Pitch 10 pins (Catch H754-2x5 or compatible)	Serial Port Cable	1701100206
CN24	RS-232 Serial Port	Catch	2.00mm Pitch 10 pins (Catch	Serial Port Cable	1701100206

			H754-2x5 or compatible)		
CN25	RS-232 Serial Port	Catch	2.00mm Pitch 10 pins (Catch H754-2x5 or compatible)	Serial Port Cable	1701100206
CN26	IrDA	HO- BASE	2.0mm Pitch 6 pins (HO-BASE 2000-1H-6 or compatible)	NA	NA
CN27	Fan	Catch	2.54mm Pitch 3 pins (Catch 1190-700-03S or compatible)	NA	NA
CN28	Front Panel	HO- BASE	2.54mm Pitch 10 pins (HO-BASE 2541-2H-2X5 or compatible)	NA	NA
CN30	Speaker Output	HO- BASE	2.54mm Pitch 4 pins (HO-BASE 2503-H-4 or compatible)	NA	NA
IDE1	EIDE Connector	Catch	【2.54mm】 1137-020-40SA (or compatible)	EIDE Cable	1701400453