GENE-TC05

Intel® Atom™ E680/ E620/ E620T

(E620T for WiTAS2) Processor

Intel® EG20T PCH

10/100/1000Base-TX

1 SATA 3.0Gb/s, CFast™

6 COM, 4 USB2.0, CAN BUS

Digital I/O, 2 Mini Card

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Packing List

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

- CD-ROM for manual (in PDF format) and drivers
- GENE-TC05 with Passive Heatsink

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

AAEON, a leading embedded boards manufacturer, is pleased to announce the debut of their new generation 3.5" SubCompact Board―GENE-TC05. The GENE-TC05 is a cutting-edge product that provides high performance and low power consumption in the embedded market.

GENE-TC05 adopts the latest Intel® Atom™ E680/E620/E620T (E620T is for WiTAS2 operating temperature) processor and the system memory deploys with onboard DDR2 667/800 memory.   In addition, Realtek RTL8211CL and Intel® 82574L support two 10/100/1000Base-TX that allows faster network connections.   This model applies two Mini Cards and onboard 4/5/8-wire resistive touch screen controller.   Moreover, one SATA 3.0Gb/s and one CFast™ are configured on the GENE-TC05. GENE-TC05 also equips four USB2.0, six COM, one keyboard and one mouse ports for flexible I/O expansions.

The display of GENE-TC05 supports VGA or DVI (Optional) , and up to 24-bit single channel LVDS.   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

- Intel® Atom™ E680/E620/E620T Processor (E620T is for WiTAS2)
- Intel® EG20T PCH
- Onboard DDR2 667/800 Memory
- Gigabit Ethernet x 2
- VGA or DVI(Optional) , 24-bit Single Channel LVDS LCD
- 2CH HD Audio
- SATA 3.0Gb/s x 1, CFast™ x 1
- CAN Bus x 1, USB2.0 x 4, COM x 6, 8-bit Digital I/O
- Onboard 4/5/8-wire Resistive Touch Screen Controller
- Mini Card x 2
- +12V Only Operation

1.3 Specifications

System

- Form Factor — 3.5"
- Processor — Intel® Atom™ E680 1.6GHz/ E620 600MHz/ E620T 600MHz (E620T is for WiTAS2)
- System Memory — Onboard DDR2 667/800 Memory
- Chipset — Intel® EG20T PCH
- I/O Chipset — Nuvoton W82627DHG-P, Fintek F81216DG
- Ethernet — Realtek RTL8211CL & Intel® 82574L, 10/100/1000Base-TX, RJ-45 x 2
- BIOS — AMI BIOS - 4MB SPI Flash
- Wake On LAN — Yes
- Watchdog Timer — Generate a time-out system reset
- H/W Monitor Chipset — Supports power supply voltages and temperature monitoring
- Expansion Interface — Mini Card x 2 (one include SIM slot and USB interface), LPC
- Battery — Lithium battery
- Power Requirement — +12V
- Board Size — 5.75" x 4" (146mm x 101.6mm)
- Gross Weight — 0.4kg
- Operating Temperature — 32°F ~ 140°F (0°C ~ 60°C)

  WiTAS2: -40°F ~ 185°F (-40°C ~ 85°C) (TF-GENE-TC05W2-A10-01)

SubCompact Board	GENE-TC05

- Storage Temperature   -40°F ~ 176°F (-40°C ~ 80°C)

- Operating Humidity   0% ~ 90% relative humidity, non-condensing

Display: Supports VGA or DVI (Optional) / LVDS LCD

- Chipset   Intel$^®$ E680/E620/E620T integrated (E620T is for WiTAS2)

- Memory   Shared system memory up to 512MB

- Resolution   Up to 1280x1024 for VGA, DVI

  Up to 1280x768 for LCD

- LCD Interface   Up to 24-bit single channel LVDS

I/O

- Storage   SATA 3.0Gb/s x 1, CFast™ x 1

- Serial Port   RS-232 x 5, RS-232/422/485(auto flow) x 1 (the baud rate of the serial port should be 9600 during high temperature operation)

- CAN Bus   Supports CAN Protocol Version 2.0B, bit rate up to 1M-bit/sec.

- USB Port   USB2.0 x 4

- PS/2 Port   Keyboard x 1, Mouse x 1

- Touch Screen   Support 4/5/8-wire Resistive Touch Screen

- Digital I/O   Supports 8-bit (Programmable)

- Audio   Line-in, Line-out, Mic-in

Note: To turn on the power in ATX mode, please touch the power button within 1 second.

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
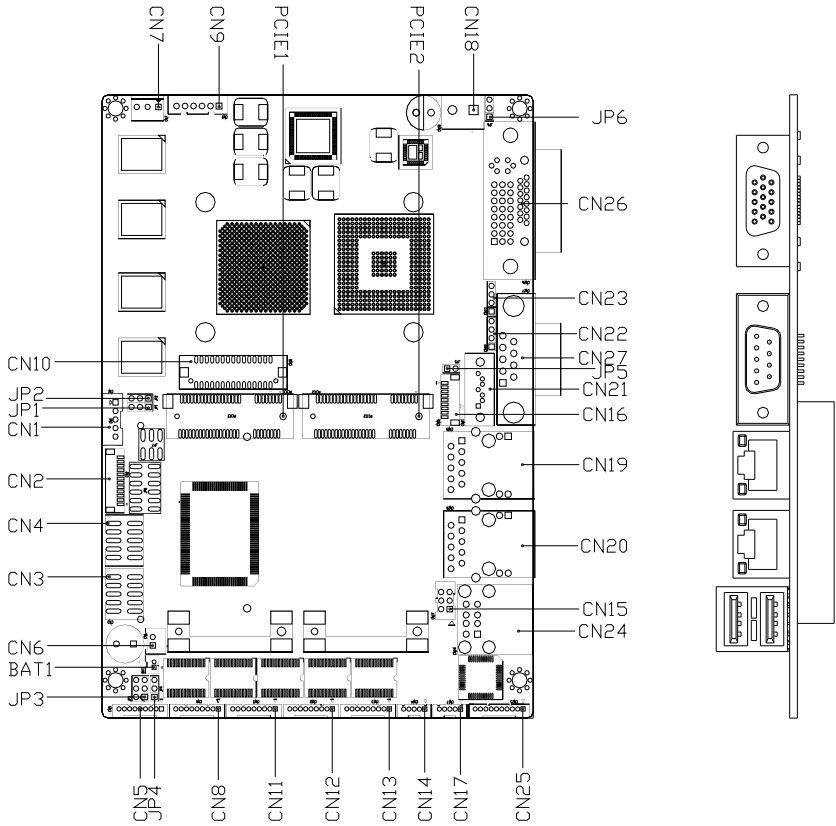
Solder Side
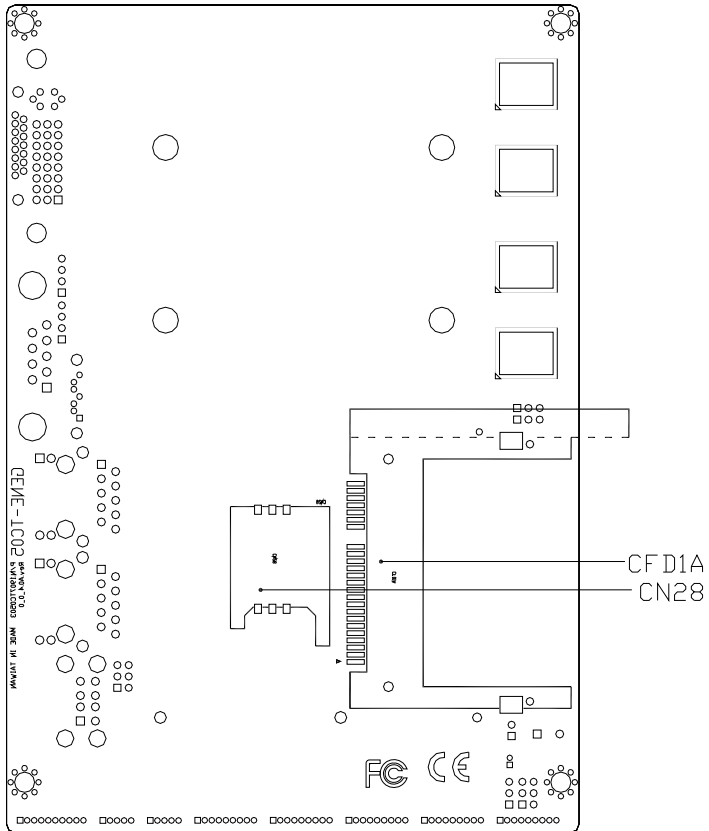
2.3 Mechanical Drawing

Component Side
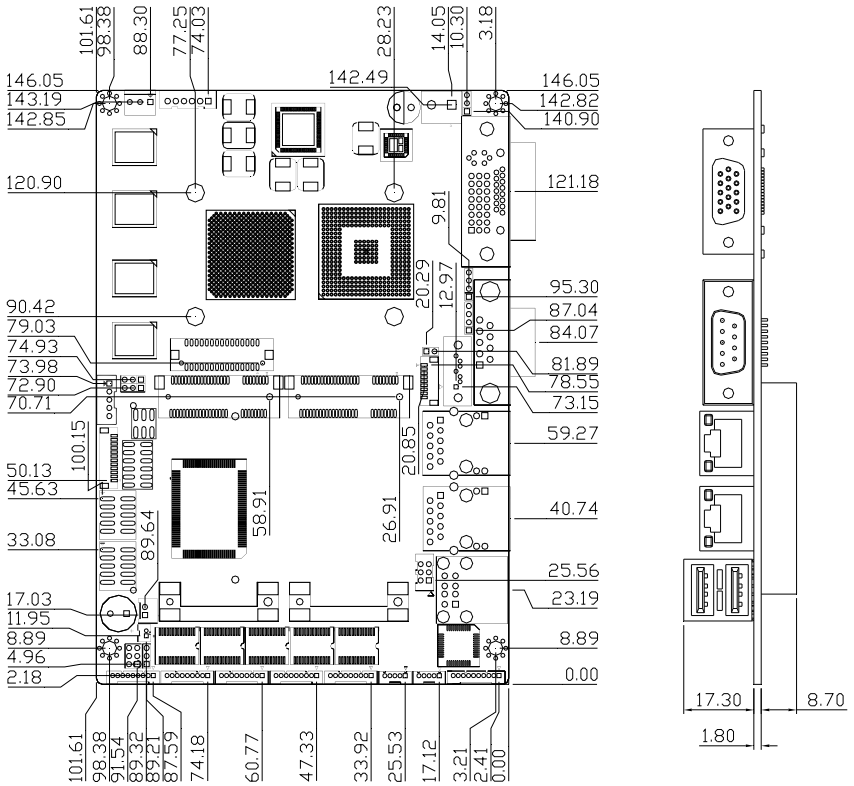
Solder Side
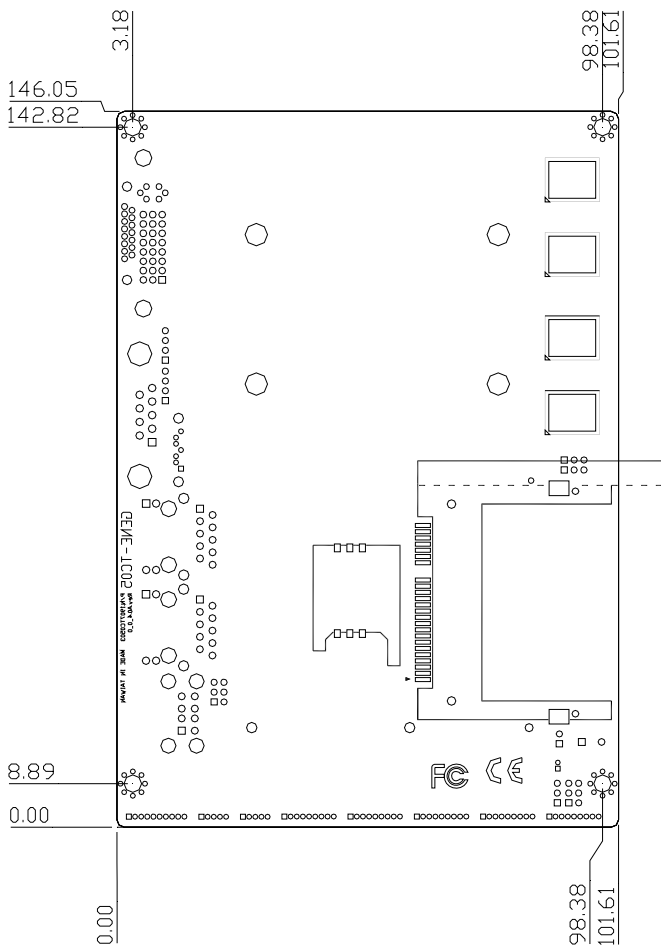
2.4 List of Jumpers

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	LVDS Operating Voltage Selection
JP2	LVDS Inverter Voltage Selection
JP3	COM2 RI/+5/+12V
JP4	Clear CMOS
JP5	Touch Screen 4/5/8-wire Mode Selection
JP6	Auto Power Button Selection
JP7	RS-232/422/485 Selection-1
JP8	RS-232/422/485 Selection-2

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	LVDS Inverter Connector
CN2	LPC Expansion I/F
CN3	Front Panel
CN4	Digital I/O
CN5	COM Port #2
CN6	+5V Output for SATA HDD using
CN7	SYSTEM FAN
CN8	COM Port #3
CN9	+5VSB Output w/ SMBus

CN10	LVDS
CN11	COM Port #4
CN12	COM Port #5
CN13	COM Port #6
CN14	USB Port #4
CN15	PS/2 Keyboard & Mouse
CN16	Touch Screen I/F
CN17	USB Port #3
CN18	Power Input (Vin)
CN19	RJ-45 Ethernet #1
CN20	RJ-45 Ethernet #2
CN21	SATA
CN22	I2C
CN23	CAN Bus
CN24	USB Port #1 and #2
CN25	Audio Line In/Out and MIC Connector
CN26	CRT/DVI Display
CN27	COM Port #1
CN28	SIM Card Socket
CFD1	CFast™ Disk
PCIE1	Mini Card Slot #1
PCIE2	Mini Card Slot #2

Note: Because of the limitation of the Intel® processor, the GENE-TC05 needs battery—CR-2450 with higher capacity to deal with higher power consumption.

2.6 Setting Jumpers

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

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

Open   **Closed**   **Closed 2-3**
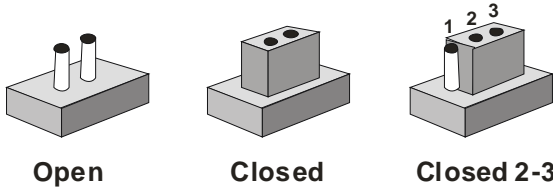
A pair of needle-nose pliers may be helpful when working with jumpers.

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

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

2.7 LVDS Operating Voltage Selection (JP1)

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

2.8 LVDS Inverter Voltage Selection (JP2)

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

2.9 COM2 RI/5V/+12V Selection (JP3)

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

2.10 Clear CMOS (JP4)

JP4	Function
1-2	Normal (Default)
2-3	Clear CMOS

2.11 Touch Screen 4/5/8-wire Mode Selection (JP5)

JP5	Function
1-2	4/8-wire (Default)
Open	5-wire

2.12 Auto Power Button Selection (JP6)

JP6	Function
1-2	Enable (Default)
2-3	Disable

2.13 RS-232/422/485 Selection (JP7)

JP7	Function
1-2	RS-232 (Default)
3-4	RS-422
5-6	RS-485

2.14 RS-232/422/485 Selection (JP8)

JP8	Function
1-3, 2-4, 7-9, 8-10	RS-232 (Default)
3-5, 4-6, 9-11, 10-12	RS-422
3-5, 9-11	RS-485

2.15 LVDS Inverter Connector (CN1)

Note: The max. rating of pin 1 is 1A

Pin	Signal
1	+5 Volt. / +12 Volt.
2	N/C
3	Ground
4	Ground
5	Backlight Enable (Controlled by CH7308C)

2.16 LPC Expansion I/F (CN2)

Pin	Signal
1	LAD0
2	LAD1
3	LAD2
4	LAD3
5	+3.3V
6	LFRAME#
7	LRESET#
8	Ground
9	LPC_CLK
10	LDRQ#0
11	LDRQ#1
12	SERIRQ

2.17 Front Panel (CN3)

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

2.18 Digital I/O Connector (CN4)

This connector offers 4-pair of digital I/O functions and address is 6Eh. The pin definitions are illustrated below:

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	+3.3V	10	Ground

Note: The max. rating of pin 9 is 1A

BIOS Setting	Connector Definition	Address (Register)		F75111 GPIO Setting
		Output	Input	
Port 8 @6Eh	Pin 8	21h/Bit7	22h/Bit7	U8 Pin 20 (GPIO 27)
Port 7 @6Eh	Pin 7	21h/Bit6	22h/Bit6	U8 Pin 21 (GPIO 26)
Port 6 @6Eh	Pin 6	21h/Bit5	22h/Bit5	U8 Pin 22 (GPIO 25)
Port 5 @6Eh	Pin 5	21h/Bit4	22h/Bit4	U8 Pin 23 (GPIO 24)
Port 4 @6Eh	Pin 4	21h/Bit3	22h/Bit3	U8 Pin 24 (GPIO 23)
Port 3 @6Eh	Pin 3	21h/Bit2	22h/Bit2	U8 Pin 8 (GPIO 22)
Port 2 @6Eh	Pin 2	21h/Bit1	22h/Bit1	U8 Pin 7 (GPIO 21)
Port 1 @6Eh	Pin 1	21h/Bit0	22h/Bit0	U8 Pin 6 (GPIO 20)

2.19 COM Port #2 (CN5)

Note: The max. rating of pin 8 is 0.5A

RS-232

Pin	Signal	Pin	Signal
1	DCDB	2	DSRB
3	RXB	4	RTSB
5	TXB	6	CTSB
7	DTRB	8	RIB / +5V / +12V
9	Ground		

RS-422

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

RS-485

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

2.20 +5V Output For SATA HDD (CN6)

Note: The max. output of CN6 is 1A @ 5V

Pin	Signal
1	+5V
2	Ground

2.21 System Fan (CN7)

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

2.22 COM Port #3 (CN8)

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

2.23 +5VSB Output w/SMBus (CN9)

Pin	Signal
1	SMBDATA
2	Ground
3	SMBCLK
4	Ground
5	PSON#
6	+5V Standby

2.24 LVDS Output (CN10)

<u>Note</u>: The total max. rating of pin 3, 7, 27 is 3A

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	DDCDATA	18	DDCCLK
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

2.25 COM Port #4 (CN11)

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

2.26 COM Port #5 (CN12)

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

2.27 COM Port #6 (CN13)

Pin	Signal	Pin	Signal
1	DCDF	2	DSRF

3	RXF	4	RTSF
5	TXF	6	CTSF
7	DTRF	8	RIF
9	Ground		

2.28 USB Port #4 (CN14)

Pin	Signal
1	+5V Standby
2	Data4-
3	Data4+
4	Ground
5	Ground

2.29 PS/2 Keyboard and Mouse (CN15)

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

2.30 Touch Screen I/F (CN16)

Pin	8-wire Signal	5-wire Signal	4-wire Signal
1	Ground	Ground	Ground
2	Top Excite	Top	UL(Y)
3	Bottom Excite	Bottom	UR(H)
4	Left Excite	Left	LL(L)
5	Right Excite	Right	LR(X)
6	Top Sense	N/C	SENSE
7	Bottom Sense	N/C	N/C

8	Left Sense	N/C	N/C
9	Right Sense	N/C	N/C

2.31 USB Port #3 (CN17)

Pin	Signal
1	+5V Standby
2	Data3-
3	Data3+
4	Ground
5	Ground

2.32 Power Input (Vin) (CN18)

Pin	Signal
1	+12V
2	Ground

2.33 RJ-45 Ethernet #1 (CN19)

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	SPD100_LED	L2	SPD1K_LED
L3	ACT_LED	L4	+3.3V

2.34 RJ-45 Ethernet #2 (CN20)

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	SPD100_LED	L2	SPD1K_LED
L3	ACT_LED	L4	+3.3V

2.35 SATA Connector (CN21)

Pin	Signal
1	Ground
2	TX+
3	TX-
4	Ground
5	RX-
6	RX+
7	Ground

2.36 I2C (CN22)

Pin	Signal
1	+3.3V
2	SCL
3	SDA
4	Ground

2.37 CAN Bus (CN23)

Pin	Signal
1	CANH
2	Ground
3	CANL
4	N/C

2.38 USB Port #1 & #2 (CN24)

Pin	Signal	Pin	Signal
1	+5V Standby	5	+5V Standby
2	Data1-	6	Data2-
3	Data1+	7	Data2+
4	Ground	8	Ground

2.39 Audio Line In/Out and MIC Connector (CN25)

Pin	Signal
1	MIC_L
2	MIC_R
3	Ground
4	Line IN_L
5	Line IN_R
6	Ground
7	Line OUT_L
8	Ground
9	Line OUT_R
10	+5V

2.40 DVI/CRT Display (CN26)

DVI

Pin	Signal	Pin	Signal
C1	RED	C2	GREEN
C3	BLUE	C4	HSYNC
C5	Ground	C6	N/C
1	DVI_TDC2#	2	DVI_TDC2
3	Ground	4	DDCCLK
5	DDCDATA	6	DVI_CLK
7	DVI_DATA	8	VSYNC
9	DVI_TDC1#	10	DVI_TDC1
11	Ground	12	N/C
13	N/C	14	+5V
15	Ground	16	DVI_DET
17	DVI_TDC0#	18	DVI_TDC0
19	Ground	20	N/C
21	N/C	22	Ground
23	DVI_TLC	24	DVI_TLC#
25	Ground	26	Ground
27	N/C	28	N/C

CRT

Pin	Signal	Pin	Signal
29	DDCCLK	30	N/C
31	+5V	32	HSYNC
33	GREEN	34	Ground
35	N/C	36	Ground
37	Ground	38	VSYNC

39	BLUE	40	Ground
41	DDCDATA	42	RED
43	CRT_PLUG#		

2.41 COM Port #1 (CN27)

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

2.42 SIM Card Socket (CN28)

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

2.43 CFast™ Disk (CFD1)

Pin	Signal
S1	Ground
S2	SATA_TX+
S3	SATA_TX-
S4	Ground
S5	SATA_RX-
S6	SATA_RX+
S7	Ground
P1	N/C

P2	Ground
P3	N/C
P4	N/C
P5	N/C
P6	N/C
P7	Ground
P8	CFD_LED#
P9	N/C
P10	N/C
P11	N/C
P12	N/C
P13	+3.3V
P14	+3.3V
P15	Ground
P16	Ground
P17	N/C

2.44 Mini Card Slot #1 (PCIE1)

Pin	Signal	Pin	Signal
1	PCIE_WAKE#	2	+3.3V Standby
3	N/C	4	Ground
5	N/C	6	+1.5V
7	N/C	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	+3.3V Standby
25	PCIE_RXP1	26	Ground
27	Ground	28	+1.5V
29	Ground	30	SMBCLK
31	PCIE_TXN1	32	SMBDATA
33	PCIE_TXP1	34	Ground
35	Ground	36	USB_Data5-
37	Ground	38	USB_Data5+
39	+3.3V Standby	40	Ground
41	+3.3V Standby	42	N/C
43	Ground	44	N/C
45	N/C	46	N/C
47	N/C	48	+1.5V
49	N/C	50	Ground
51	N/C	52	+3.3V Standby

2.45 Mini Card Slot #2 (PCIE2)

Pin	Signal	Pin	Signal
1	PCIE_WAKE#	2	+3.3V Standby
3	N/C	4	Ground
5	N/C	6	+1.5V
7	N/C	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	+3.3V Standby
25	PCIE_RXP2	26	Ground
27	Ground	28	+1.5V
29	Ground	30	SMBCLK
31	PCIE_TXN2	32	SMBDATA
33	PCIE_TXP2	34	Ground
35	Ground	36	N/C
37	Ground	38	N/C
39	+3.3V Standby	40	Ground
41	+3.3V Standby	42	N/C
43	Ground	44	N/C
45	N/C	46	N/C
47	N/C	48	+1.5V
49	N/C	50	Ground
51	N/C	52	+3.3V Standby

Below Table for China RoHS Requirements
產品中有毒有害物質或元素名稱及含量

AAEON Main Board/ Daughter Board/ Backplane

部件名稱	有毒有害物質或元素					
	鉛 (Pb)	汞 (Hg)	鎘 (Cd)	六價鉻 (Cr(VI))	多溴聯苯 (PBB)	多溴二苯醚 (PBDE)
印刷電路板 及其電子元件	×	○	○	○	○	○
外部信號 連接器及線材	×	○	○	○	○	○

O：表示該有毒有害物質在該部件所有均質材料中的含量均在
　SJ/T 11363-2006 標準規定的限量要求以下。

X：表示該有毒有害物質至少在該部件的某一均質材料中的含量超出
　SJ/T 11363-2006 標準規定的限量要求。

備註：此產品所標示之環保使用期限，系指在一般正常使用狀況下。

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 GENE-TC05 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 <Del> 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/disable quiet boot option.

Security

Set setup administrator password.

Save&Exit

Exit system setup after saving the changes.

Chapter

4

Driver Installation

.

The GENE-TC05 comes with a CD-ROM that contains all drivers your need.

Follow the sequence below to install the drivers:

      Step 1 – Install Chipset Driver

      Step 2 – Install VGA Driver

      Step 3 – Install PCH EG20T Driver

      Step 4 – Install LAN Driver

      Step 5 – Install Audio Driver

      Step 6 – Install Touch Driver

Please read following instructions for detailed installations.

4.1 Installation:

Insert the GENE-TC05 DVD-ROM into the CD-ROM Drive. And install the drivers from Step 1 to Step 6 in order.

Step 1 – Install Chipset Driver

1. Click on the **Step 1 - Chipset INF** folder and double click on the **Setup.exe** file

2. Follow the instructions that the window shows

3. The system will help you to install the driver automatically

Step 2 – Install VGA Driver

For the VGA drivers, there are three types. 2a is for CRT only, 2b is for DVI only, and 2c is for LVDS and CRT only.

1. Click on the **Step 2a - Graphic CRT only** folder and double click on **WindowsDriverSETUP** file

   Click on the **Step 2b - Graphic DVI only** folder and double click on **WindowsDriverSETUP** file

   Click on the **Step 2c- Graphic LVDS and CRT** folder and double click on **WindowsDriverSETUP** file

2. Follow the instructions that the window shows

3. The system will help you to install the driver automatically

Step 3 – Install PCH EG20T Driver

1. Click on the **Step 3 - PCH EG20T** folder and select the OS 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 to install the driver automatically

Step 4 – Install LAN Driver

1. Click on the *Step 4 - Intel 82574L Ethernet* folder and select the OS 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 to install the driver automatically

Step 5 – Install Audio Driver

1. Click on the *Step 5 - Realtek ALC888 Audio Codec* folder and select the OS 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 to install the driver automatically

Step 6 – Install Touch Driver

1. Click on the *Step 6 - PenMount Touch 6000 series (Option)* folder and select the OS your system is

2. Double click on the *Setup.exe* file located in each OS folder

3. Follow the instructions that the window shows you

4. The system will help you install the driver automatically

Appendix

A

Programming the
Watchdog Timer

A.1 Programming

GENE-TC05 utilizes W83627DHG-P chipset as its watchdog timer controller.

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

Configuring Sequence Description

```
┌─────────────────────────┐
│   Unlock W83627DHG      │
└─────────────────────────┘
           │
           ▼
┌─────────────────────────┐
│   Select register of    │
│   watchdog timer        │
└─────────────────────────┘
           │
           ▼
┌─────────────────────────┐
│   Enable the function of│
│   the watchdog timer    │
└─────────────────────────┘
           │
           ▼
┌─────────────────────────┐
│   Use the function of the│
│   watchdog timer        │
└─────────────────────────┘
           │
           ▼
┌─────────────────────────┐
│   Lock W83627DHG        │
└─────────────────────────┘
```
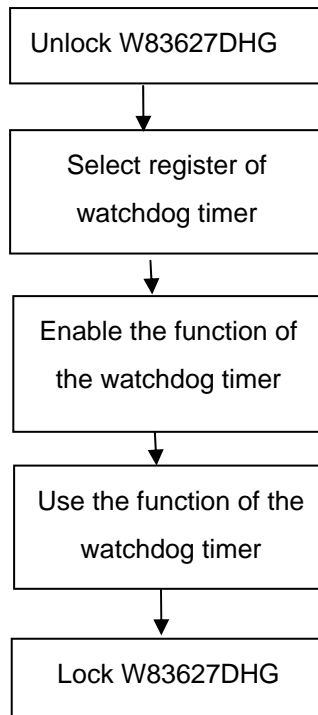
There are three steps to complete the configuration setup:

> (1) Enter the W83627DHG config Mode

> (2) Modify the data of configuration registers

(3) Exit the W83627DHG config Mode. Undesired result may occur if the config Mode is not exited normally.

(1) Enter the W83627DHG config Mode

To enter the W83627DHG config Mode, two 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 two write operations to the Special Address port (2EH). The different enter keys are provided to select configuration ports (2Eh/2Fh) of the next step.

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

(2) Modify the Data of the Registers

All configuration registers can be accessed after entering the config 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 W83627DHG config Mode

The exit key is provided to select configuration ports (2Eh/2Fh) of the next step.

	Address Port	Data Port
0aah:	2Eh	2Fh

WatchDog Timer Register I (Index=F5h, Default=00h)

CRF5 (PLED and KBC P20 Control Mode Register)

Bit 7-5   : select PLED mode

= 000   Power LED pin is driven high.

= 001   Power LED pin outputs 0.5Hz pulse with 50% duty cycle.

= 010   Power LED pin is driven low.

= 011   Power LED pin outputs 2Hz pulse with 50% duty cycle.

= 100   Power LED pin outputs 1Hz pulse with 50% duty cycle.

= 101   Power LED pin outputs 4Hz pulse with 50% duty cycle.

= 110   Power LED pin outputs 0.25Hz pulse with 50% duty cycle.

=111   Power LED pin outputs 0.25Hz pulse with 50% duty cycle..

Bit 4   : WDTO# count mode is 1000 times faster.

= 0   Disable.

= 1   Enable.

Bit 3   : select WDTO# count mode.

= 0   second

= 1   minute

Bit 2   : Enable the rising edge of keyboard Reset (P20) to force Time-out event.

= 0 Disable

= 1 Enable

Bit 1   : Disable / Enable the WDTO# output low pulse to the KBRST# pin (PIN60)

= 0 Disable

= 1 Enable

Bit 0   : Reserved.

WatchDog Timer Register II (Index=F6h, Default=00h)

Bit 7-0 = 0 x 00 Time-out Disable

= 0 x 01 Time-out occurs after 1

second/minute

= 0 x 02 Time-out occurs after 2

second/minutes

= 0 x 03 Time-out occurs after 3

second/minutes

………………………………..

= 0 x FF Time-out occurs after 255

second/minutes

WatchDog Timer Register III (Index=F7h, Default=00h)

Bit 7 : Mouse interrupt reset Enable or Disable

= 1 Watchdog Timer is reset upon a Mouse interrupt

= 0 Watchdog Timer is not affected by Mouse interrupt

Bit 6 : Keyboard interrupt reset Enable or Disable

= 1 Watchdog Timer is reset upon a

Keyboard interrupt

= 0 Watchdog Timer is not affected by

Keyboard interrupt

Bit 5 : Force Watchdog Timer Time-out. Write

Only

      = 1 Force Watchdog Timer time-out

          event: this bit is self-clearing

Bit 4 : Watchdog Timer Status. R/W

     = 1 Watchdog Timer time-out occurred

     = 0 Watchdog Timer counting

Bit 3-0 : These bits select IRQ resource for

     Watchdog. Setting of 2 selects SMI.

A.2 W83627DHG Watchdog Timer Initial Program

Example: Setting 10 sec. as Watchdog timeout interval

;///

```
Mov dx,2eh          ;Enter W83627DHG config mode
Mov al,87h          (out 87h to 2eh twice)
Out dx,al
Out dx,al
```

;///

```
Mov al,07h
Out dx,al
Inc dx
Mov al,08h          ;Select Logical Device 8 (GPIO Port
2)
Out dx,al
```

;///

```
Dec dx
Mov al,30h          ;CR30 (GP20~GP27)
Out dx,al
Inc dx
Mov al,01h          ;Activate GPIO2
Out dx,al
```

```
;/////////////////////////////////////////////////////////////////////////////////////

Dec dx

Mov al,0f5h                ;CRF5 (PLED mode register)

Out dx,al

Inc dx

In al,dx

And al,not 08h             ;Set second as counting unit

Out dx,al

;/////////////////////////////////////////////////////////////////////////////////////

Dec dx

Mov al,0f6h                ; CRF6

Out dx,al

Inc dx

Mov al,10                  ;Set timeout interval as 10 sec.

Out dx,al

;/////////////////////////////////////////////////////////////////////////////////////

Dec dx                     ;Exit W83627DHG config mode

Mov al,0aah                    (out 0aah to 2eh once)

Out dx,al

;/////////////////////////////////////////////////////////////////////////////////////
```

Appendix

B

I/O Information

B.1 I/O Address Map

```
Input/output (IO)
    [00000000 - 0000000F] Direct memory access controller
    [00000000 - 00000CF7] PCI bus
    [00000010 - 0000001F] Motherboard resources
    [00000020 - 00000021] Programmable interrupt controller
    [00000022 - 0000003F] Motherboard resources
    [00000024 - 00000025] Programmable interrupt controller
    [00000028 - 00000029] Programmable interrupt controller
    [0000002C - 0000002D] Programmable interrupt controller
    [00000030 - 00000031] Programmable interrupt controller
    [00000034 - 00000035] Programmable interrupt controller
    [00000038 - 00000039] Programmable interrupt controller
    [0000003C - 0000003D] Programmable interrupt controller
    [00000040 - 00000043] System timer
    [00000044 - 0000005F] Motherboard resources
    [00000050 - 00000053] System timer
    [00000060 - 00000060] Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
    [00000061 - 00000061] System speaker
    [00000063 - 00000063] Motherboard resources
    [00000064 - 00000064] Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
    [00000065 - 00000065] Motherboard resources
    [00000067 - 0000006F] Motherboard resources
    [00000070 - 00000077] System CMOS/real time clock
    [00000072 - 0000007F] Motherboard resources
    [00000080 - 00000080] Motherboard resources
    [00000081 - 00000083] Direct memory access controller
    [00000084 - 00000086] Motherboard resources
    [00000087 - 00000087] Direct memory access controller
    [00000088 - 00000088] Motherboard resources
    [00000089 - 0000008B] Direct memory access controller
    [0000008C - 0000008E] Motherboard resources
    [0000008F - 0000008F] Direct memory access controller
    [00000090 - 0000009F] Motherboard resources
    [000000A0 - 000000A1] Programmable interrupt controller
    [000000A2 - 000000BF] Motherboard resources
    [000000A4 - 000000A5] Programmable interrupt controller
    [000000A8 - 000000A9] Programmable interrupt controller
    [000000AC - 000000AD] Programmable interrupt controller
    [000000B0 - 000000B1] Programmable interrupt controller
    [000000B4 - 000000B5] Programmable interrupt controller
    [000000B8 - 000000B9] Programmable interrupt controller
    [000000BC - 000000BD] Programmable interrupt controller
    [000000C0 - 000000DF] Direct memory access controller
    [000000E0 - 000000EF] Motherboard resources
    [000000F0 - 000000FF] Numeric data processor
    [00000274 - 00000277] ISAPNP Read Data Port
    [00000279 - 00000279] ISAPNP Read Data Port
    [00000295 - 000002A4] Motherboard resources
```

[000002E0 - 000002E7] Communications Port (COM6)
[000002E8 - 000002EF] Communications Port (COM4)
[000002F0 - 000002F7] Communications Port (COM5)
[000002F8 - 000002FF] Communications Port (COM2)
[000003B0 - 000003BB] Intel Corporation Atom? E6xx Intel? Embedded Media and Graphics Driver Function 0
[000003C0 - 000003DF] Intel Corporation Atom? E6xx Intel? Embedded Media and Graphics Driver Function 0
[000003E8 - 000003EF] Communications Port (COM3)
[000003F8 - 000003FF] Communications Port (COM1)
[00000400 - 0000043F] System board
[00000480 - 000004BF] System board
[000004D0 - 000004D1] Motherboard resources
[000004D0 - 000004D1] Programmable interrupt controller
[00000900 - 0000097F] System board
[000009C0 - 000009FF] System board
[00000A79 - 00000A79] ISAPNP Read Data Port
[00000D00 - 0000FFFF] PCI bus
[0000D000 - 0000D01F] Intel(R) 82574L Gigabit Network Connection
[0000D000 - 0000DFFF] Intel(R) Atom(TM) Processor E6xx PCI Express Port 2 - 8185
[0000E000 - 0000E01F] Intel(R) Platform Controller Hub EG20T SATA AHCI Controller - 880B
[0000E000 - 0000EFFF] Intel(R) Atom(TM) Processor E6xx PCI Express Port 1 - 8184
[0000E000 - 0000EFFF] Intel(R) Platform Controller Hub EG20T PCI Express Port - 8800
[0000E020 - 0000E03F] Intel(R) Platform Controller Hub EG20T Gigabit Ethernet Controller - 8802
[0000E040 - 0000E047] Intel(R) Platform Controller Hub EG20T UART Controller - 8814 (COM10)
[0000E050 - 0000E057] Intel(R) Platform Controller Hub EG20T UART Controller - 8813 (COM9)
[0000E060 - 0000E067] Intel(R) Platform Controller Hub EG20T UART Controller - 8812 (COM8)
[0000E070 - 0000E077] Intel(R) Platform Controller Hub EG20T UART Controller - 8811 (COM7)
[0000F000 - 0000F007] Intel Corporation Atom? E6xx Intel? Embedded Media and Graphics Driver Extension
[0000F010 - 0000F017] Intel Corporation Atom? E6xx Intel? Embedded Media and Graphics Driver Function 0

B.2 Memory Address Map

```
Memory
    [000A0000 - 000BFFFF] Intel Corporation Atom? E6xx Intel? Embedded Media and Graphics Driver Function 0
    [000A0000 - 000BFFFF] PCI bus
    [000C0000 - 000DFFFF] System board
    [000E0000 - 000EFFFF] System board
    [000F0000 - 000FFFFF] System board
    [3F6F0000 - 3F6FFFFF] System board
    [3F700000 - 3F7FFFFF] System board
    [3F800000 - 3FFFFFFF] System board
    [40000000 - FFFFFFFF] PCI bus
    [B0000000 - BFFFFFFF] Intel Corporation Atom? E6xx Intel? Embedded Media and Graphics Driver Extension
    [C0000000 - CFFFFFFF] Intel Corporation Atom? E6xx Intel? Embedded Media and Graphics Driver Function 0
    [D0000000 - D00FFFFF] Intel Corporation Atom? E6xx Intel? Embedded Media and Graphics Driver Function 0
    [D0100000 - D01FFFFF] Intel(R) Platform Controller Hub EG20T PCI Express Port - 8800
    [D0100000 - D02FFFFF] Intel(R) Atom(TM) Processor E6xx PCI Express Port 1 - 8184
    [D0140000 - D0141FFF] Intel(R) Platform Controller Hub EG20T USB Client Controller - 8808
    [D0142000 - D01420FF] Intel(R) Platform Controller Hub EG20T IEEE 1588 Hardware Assist - 8819
    [D0143000 - D01431FF] Intel(R) Platform Controller Hub EG20T Controller Area Network (CAN) Controller - 8818
    [D0144000 - D01440FF] Intel(R) Platform Controller Hub EG20T I2C Controller - 8817
    [D0145000 - D014501F] Intel(R) Platform Controller Hub EG20T Serial Peripheral Interface Bus - 8816
    [D0146000 - D01460FF] Intel(R) Platform Controller Hub EG20T DMA Controller #2 - 8815
    [D0147000 - D014700F] Intel(R) Platform Controller Hub EG20T UART Controller - 8814 (COM10)
    [D0148000 - D014800F] Intel(R) Platform Controller Hub EG20T UART Controller - 8813 (COM9)
    [D0149000 - D014900F] Intel(R) Platform Controller Hub EG20T UART Controller - 8812 (COM8)
    [D014A000 - D014A00F] Intel(R) Platform Controller Hub EG20T UART Controller - 8811 (COM7)
    [D014B000 - D014B0FF] Intel(R) Platform Controller Hub EG20T DMA Controller #1 - 8810
    [D014C000 - D014C0FF] Intel(R) Platform Controller Hub EG20T USB2 EHCI Controller #1 - 880f
    [D014D000 - D014D0FF] Intel(R) Platform Controller Hub EG20T USB OHCI Controller #3 - 880e
    [D014E000 - D014E0FF] Intel(R) Platform Controller Hub EG20T USB OHCI Controller #2 - 880d
    [D014F000 - D014F0FF] Intel(R) Platform Controller Hub EG20T USB OHCI Controller #1 - 880c
    [D0150000 - D01503FF] Intel(R) Platform Controller Hub EG20T SATA AHCI Controller - 880B
    [D0151000 - D01511FF] Intel(R) Platform Controller Hub EG20T SDIO Controller #2 - 880a
    [D0152000 - D01521FF] Intel(R) Platform Controller Hub EG20T SDIO Controller #1 - 8809
    [D0153000 - D01530FF] Intel(R) Platform Controller Hub EG20T USB2 EHCI Controller #2 - 8807
    [D0154000 - D01540FF] Intel(R) Platform Controller Hub EG20T USB OHCI Controller #6 - 8806
    [D0155000 - D01550FF] Intel(R) Platform Controller Hub EG20T USB OHCI Controller #5 - 8805
    [D0156000 - D01560FF] Intel(R) Platform Controller Hub EG20T USB OHCI Controller #4 - 8804
    [D0157000 - D015703F] Intel(R) Platform Controller Hub EG20T General Purpose IO Controller - 8803
    [D0158000 - D01581FF] Intel(R) Platform Controller Hub EG20T Gigabit Ethernet Controller - 8802
    [D0159000 - D01597FF] Intel(R) Platform Controller Hub EG20T Packet Hub - 8801
    [D0300000 - D031FFFF] Intel(R) 82574L Gigabit Network Connection
    [D0300000 - D03FFFFF] Intel(R) Atom(TM) Processor E6xx PCI Express Port 2 - 8185
    [D0320000 - D0323FFF] Intel(R) 82574L Gigabit Network Connection
    [D0400000 - D047FFFF] Intel Corporation Atom? E6xx Intel? Embedded Media and Graphics Driver Extension
    [D0480000 - D04BFFFF] Intel Corporation Atom? E6xx Intel? Embedded Media and Graphics Driver Extension
    [D04C0000 - D04FFFFF] Intel Corporation Atom? E6xx Intel? Embedded Media and Graphics Driver Function 0
    [D0500000 - D0503FFF] Microsoft UAA Bus Driver for High Definition Audio
    [E0000000 - EFFFFFFF] System board
    [FEC00000 - FEC85FFF] System board
    [FED00000 - FED003FF] High precision event timer
    [FED1C000 - FED1FFFF] System board
    [FEE00000 - FEEFFFFF] System board
    [FF800000 - FFFFFFFF] System board
```

B.3 IRQ Mapping Chart

```
□ ☐ 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 (COM6)
      🖋 (ISA) 7    Communications Port (COM5)
      😕 (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   Microsoft PS/2 Mouse
      😕 (ISA) 13   Numeric data processor
      😕 (PCI) 7    Intel(R) Platform Controller Hub EG20T DMA Controller #2 - 8815
      🖭 (PCI) 11   Intel Corporation Atom? E6xx Intel? Embedded Media and Graphics Driver Extension
      🖭 (PCI) 16   Intel Corporation Atom? E6xx Intel? Embedded Media and Graphics Driver Function 0
      😕 (PCI) 16   Intel(R) Atom(TM) Processor E6xx PCI Express Port 1 - 8184
      😕 (PCI) 16   Intel(R) Atom(TM) Processor E6xx PCI Express Port 2 - 8185
      😕 (PCI) 16   Intel(R) Atom(TM) Processor E6xx PCI Express Port 3 - 8180
      😕 (PCI) 16   Intel(R) Atom(TM) Processor E6xx PCI Express Port 4 - 8181
      😕 (PCI) 16   Intel(R) Platform Controller Hub EG20T General Purpose IO Controller - 8803
      🖳 (PCI) 16   Intel(R) Platform Controller Hub EG20T Gigabit Ethernet Controller - 8802
      😕 (PCI) 16   Intel(R) Platform Controller Hub EG20T PCI Express Port - 8800
      🖧 (PCI) 16   Intel(R) Platform Controller Hub EG20T USB OHCI Controller #1 - 880c
      🖧 (PCI) 16   Intel(R) Platform Controller Hub EG20T USB OHCI Controller #2 - 880d
      🖧 (PCI) 16   Intel(R) Platform Controller Hub EG20T USB OHCI Controller #3 - 880e
      🖧 (PCI) 16   Intel(R) Platform Controller Hub EG20T USB2 EHCI Controller #1 - 880f
      😕 (PCI) 16   Microsoft UAA Bus Driver for High Definition Audio
      🖳 (PCI) 17   Intel(R) 82574L Gigabit Network Connection
      🖧 (PCI) 17   Intel(R) Platform Controller Hub EG20T SATA AHCI Controller - 880B
      😕 (PCI) 18   Intel(R) Platform Controller Hub EG20T Controller Area Network (CAN) Controller - 8818
      😕 (PCI) 18   Intel(R) Platform Controller Hub EG20T I2C Controller - 8817
      😕 (PCI) 18   Intel(R) Platform Controller Hub EG20T IEEE 1588 Hardware Assist - 8819
      🖭 (PCI) 18   Intel(R) Platform Controller Hub EG20T SDIO Controller #1 - 8809
      🖭 (PCI) 18   Intel(R) Platform Controller Hub EG20T SDIO Controller #2 - 880a
      😕 (PCI) 18   Intel(R) Platform Controller Hub EG20T Serial Peripheral Interface Bus - 8816
      😕 (PCI) 19   Intel(R) Platform Controller Hub EG20T DMA Controller #1 - 8810
      🖋 (PCI) 19   Intel(R) Platform Controller Hub EG20T UART Controller - 8811 (COM7)
      🖋 (PCI) 19   Intel(R) Platform Controller Hub EG20T UART Controller - 8812 (COM8)
      🖋 (PCI) 19   Intel(R) Platform Controller Hub EG20T UART Controller - 8813 (COM9)
      🖋 (PCI) 19   Intel(R) Platform Controller Hub EG20T UART Controller - 8814 (COM10)
      😕 (PCI) 19   Intel(R) Platform Controller Hub EG20T USB Client Controller - 8808
      🖧 (PCI) 19   Intel(R) Platform Controller Hub EG20T USB OHCI Controller #4 - 8804
      🖧 (PCI) 19   Intel(R) Platform Controller Hub EG20T USB OHCI Controller #5 - 8805
      🖧 (PCI) 19   Intel(R) Platform Controller Hub EG20T USB OHCI Controller #6 - 8806
      🖧 (PCI) 19   Intel(R) Platform Controller Hub EG20T USB2 EHCI Controller #2 - 8807
```

B.4 DMA Channel Assignments

Direct memory access (DMA)
    4 Direct memory access controller

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	LVDS Inverter Connector	JST	PHR-5	Invertor Cable	1705050153
CN4	Digital I/O Connector	Neltron	2026B-10	N/A	N/A
CN5	COM Port 2 Connector	Molex	51021-0900	UART Wafer Cable	1701090150
CN6	+5Vout Connector	N/A	N/A	2 Pins For SATA Power	1702150155
CN7	System Fan Connector	Catch	1190-700-03S	N/A	N/A
CN8	COM Port 3 Connector	Molex	51021-0900	UART Wafer Cable	1701090150
CN9	External AUX Power and PS_ON#	Catch	2418HJ-06	ATX External 5VSB Cable	External AUX Power and PS_ON#
CN10	LVDS Connector	HIROSE	DF13-30DS-1.25C	N/A	N/A
CN11	COM Port 4 Connector	Molex	51021-0900	UART Wafer Cable	1701090150
CN12	COM Port 5 Connector	Molex	51021-0900	UART Wafer Cable	1701090150
CN13	COM Port 6 Connector	Molex	51021-0900	UART Wafer Cable	1701090150
CN14	USB Port Connector	Molex	51021-0500	USB Wafer Cable	1700050207

CN15	Keyboard / Mouse Connector	Catch	A003-290	KB/MS Cable	1700060152
CN17	USB Port Connector	Molex	51021-0500	USB Wafer Cable	1700050207
CN18	+12V Vin Connector	N/A	N/A	Power Cable	1702002010
CN19	RJ-45 Ethernet#1 Connector	Neltron	7001-8P8C	N/A	N/A
CN20	RJ-45 Ethernet#1 Connector	Neltron	7001-8P8C	N/A	N/A
CN21	SATA Connector	Molex	67582-0000	SATA Cable	1709070500
CN25	Audio In/Out/CD-in and MIC Connector	N/A	N/A	Audio Cable	1709100254
CN26	DVI Connector	LIAN TAY	H820-2X10	DVI Cable	1700250450
BAT1	External RTC Connector	Molex	51021-0200	Battery Cable	175011901C

Appendix

D

AHCI Setting

D.1 WIN XP OS installation

Note: BIOS Setting Requirement : "BIOS Setting→Advanced →Launch Storage OpROM : **Enable** to enable HDD"

Step 1: Copy the files below from "Driver CD" ->"STEP 3 PCH EG20T
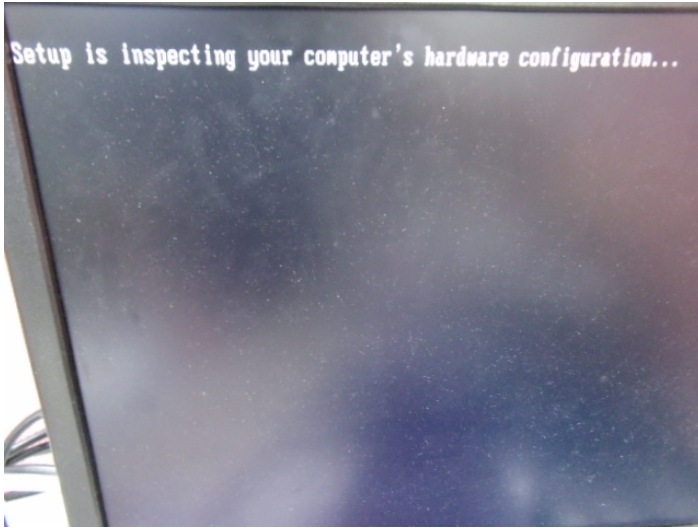
\EG20T_WinXP_WePOS_Package_220\FD_Inst_WinXP

To Disk.

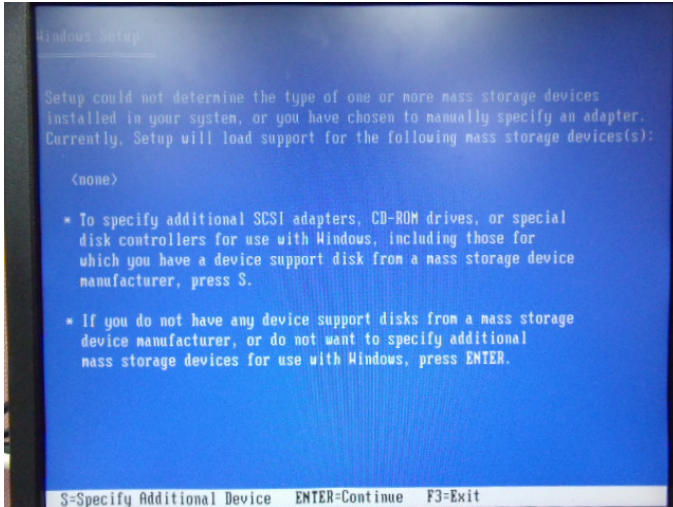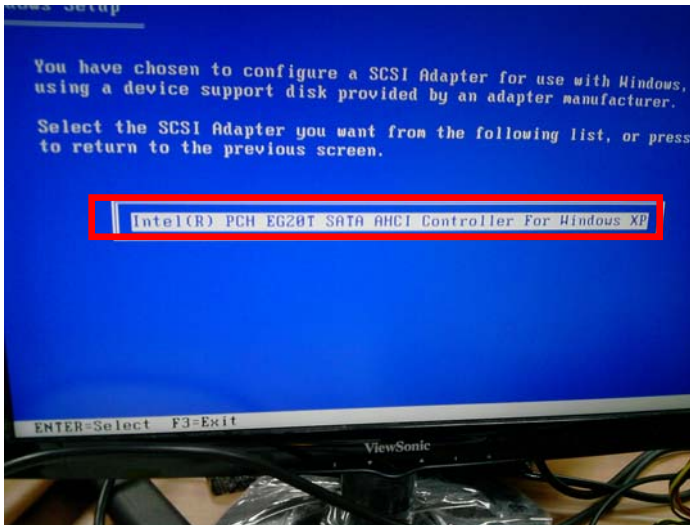Step 2: Connect the USB floppy (disk with AHCI files) to the board.

Step 3: Setup OS

Step 4: Press "**F6**"

Press F6 if you need to install a third party SCSI or RAID driver...

Step 5: Choose "**S**"

Step 6: Choose "**Intel(R) PCH EG20T SATA AHCI Controller For Windows XP**"

Step 7: It will show the model number you select and then press "**ENTER**"

Step 8: Setup is starting Windows