

ACP-5153

15.6" Intel® Atom™ D2550

Processor

Fanless Multi-Touch Panel PC

Copyright Notice

This document is copyrighted, 2014. All rights are reserved. The original manufacturer reserves the right to make improvements to the products described in this manual at any time without notice.

No part of this manual may be reproduced, copied, translated, or transmitted in any form or by any means without the prior written permission of the original manufacturer. Information provided in this manual is intended to be accurate and reliable. However, the original manufacturer assumes no responsibility for its use, or for any infringements upon the rights of third parties that may result from its use.

The material in this document is for product information only and is subject to change without notice. While reasonable efforts have been made in the preparation of this document to assure its accuracy, AAEON assumes no liabilities resulting from errors or omissions in this document, or from the use of the information contained herein.

AAEON reserves the right to make changes in the product design without notice to its users.

Acknowledgments

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

- AMI is a trademark of American Megatrends Inc.
- Intel[®], and Atom[™] are trademarks of Intel[®] Corporation.
- Microsoft Windows[®] is a registered trademark of Microsoft Corp.
- IBM, PC/AT, PS/2, and VGA are trademarks of International Business Machines Corporation.

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

Packing List

Before you begin operating your PC, please make sure that the following materials are enclosed:

- ACP-5153 Multi Touch Panel PC
- HDD screws
- 100/240V AC Adapter
- Adapter Connector
- DVD-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.

Safety & Warranty

1. Read these safety instructions carefully.
2. Keep this user's manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Do not use liquid or spray detergents for cleaning. Use a damp cloth.
4. For pluggable equipment, the power outlet must be installed near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a firm surface during installation. Dropping it or letting it fall could cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. **DO NOT COVER THE OPENINGS.**
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient over-voltage.
12. Never pour any liquid into an opening. This could cause fire or electrical shock.
13. Never open the equipment. For safety reasons, only qualified service personnel should open the equipment.
14. If any of the following situations arises, get the equipment checked by service personnel:
 - a. The power cord or plug is damaged.
 - b. Liquid has penetrated into the equipment.
 - c. The equipment has been exposed to moisture.

- d. The equipment does not work well, or you cannot get it to work according to the user's manual.
 - e. The equipment has been dropped and damaged.
 - f. The equipment has obvious signs of breakage.
15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE IS BELOW -20°C (-4°F) OR ABOVE 60°C (140°F). IT MAY DAMAGE THE EQUIPMENT.

FCC

Warning!



This device complies with Part 15 FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

Caution:

There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions and your local government's recycling or disposal directives.

Attention:

Il y a un risque d'explosion si la batterie est remplacée de façon incorrecte. Ne la remplacer qu'avec le même modèle ou équivalent recommandé par le constructeur. Recycler les batteries usées en accord avec les instructions du fabricant et les directives gouvernementales de recyclage.

Below Table for China RoHS Requirements

产品中有毒有害物质或元素名称及含量

AAEON Panel PC/ Workstation

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	×	○	○	○	○	○
外壳	×	○	○	○	○	○
中央处理器 与内存	×	○	○	○	○	○
硬盘	×	○	○	○	○	○
液晶模块	×	○	○	○	○	○
光驱	×	○	○	○	○	○
触控模块	×	○	○	○	○	○
电源	×	○	○	○	○	○
<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: 一、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。 二、上述部件物质中央处理器、内存、硬盘、光驱、触控模块为选购品。</p>						

Contents

Chapter 1 General Information

1.1 Introduction.....	1-2
1.2 Features	1-3
1.3 Specification	1-4
1.4 Dimension	1-7

Chapter 2 Hardware Installation

2.1 Safety Precautions	2-2
2.2 A Quick Tour of the ACP-5153.....	2-3
2.3 Location of Connectors and Jumpers of Main Board	2-5
2.4 List of Jumpers	2-7
2.5 List of Connectors	2-8
2.6 Setting Jumpers	2-10
2.7 Auto Power Button Selection (JP1).....	2-11
2.8 Clear CMOS (JP2)	2-11
2.9 COM2 RI/+5V/+12V Selection (JP3).....	2-11
2.10 Touch Screen 4/5/8-wire Mode Selection (JP4)	2-11
2.11 Brightness Control for 2nd LVDS (JP5)	2-11
2.12 2nd LVDS Backlight Bias/PWM Mode Selection (JP6)	2-12
2.13 2nd LVDS Operating Voltage Selection (JP7)	2-12
2.14 2nd LVDS Inverter Voltage Selection (JP8).....	2-12
2.15 1st LVDS Inverter Voltage Selection (JP9)	2-12

2.16 1st LVDS Backlight Bias/PWM Mode Selection (JP10)	2-12
2.17 1st LVDS Operating Voltage Selection (JP11)	2-13
2.18 Front Panel (CN1)	2-13
2.19 External +5VSB Input (CN2)	2-13
2.20 CPU Fan Connector (CN3)	2-13
2.21 +5VSB Output w/SMBUS (CN4)	2-14
2.22 SATA Port (CN5)	2-14
2.23 External 12V Input (CN6)	2-14
2.24 Digital I/O Connector (CN7)	2-15
2.25 Parallel Port Connector (CN8) (Optional)	2-15
2.26 +5V Output for SATA HDD Usage (CN9)	2-16
2.27 USB Port #6 (CN10)	2-16
2.28 COM Port #6 (CN11)	2-16
2.29 USB Port #5 (CN12)	2-17
2.30 COM Port #5 (CN13)	2-17
2.31 USB Port #4 (CN14)	2-17
2.32 USB Port #3 (CN15)	2-18
2.33 COM Port #4 (CN16)	2-18
2.34 LPC Expansion I/F (CN17)	2-18
2.35 COM Port #3 (CN18)	2-19
2.36 COM Port #2 (CN19)	2-19
2.37 Touch Screen (CN20)	2-20
2.38 Stereo-R Channel (CN21)	2-20
2.39 2nd LVDS Output Dual Channel 18/24-bit (CN22)	2-20

2.40 PS/2 Keyboard and Mouse Connector (CN23)	2-21
2.41 2nd LVDS Inverter (CN24)	2-21
2.42 Stereo-L Channel (CN25)	2-22
2.43 1st LVDS Inverter (CN26)	2-22
2.44 1st LVDS Output-Single Channel 18/24-bit (CN27)	2-22
2.45 2nd RJ-45 Ethernet Connector (CN28)	2-23
2.46 1st RJ-45 Ethernet Connector (CN29)	2-23
2.47 USB Port #1 and #2 (CN30)	2-23
2.48 Audio Line In/Out and MIC (CN31)	2-24
2.49 DVI/CRT Display Connector (CN32) Configured by manufacturing	2-24
2.50 COM Port #1 (CN33)	2-25
2.51 SIM Card Socket (CN34)	2-26
2.52 CFast™ Disk (CFD1)	2-26
2.53 Mini Card/ mSATA (PCIE1)	2-27
2.54 DDR3 SODIMM Slot (DIMM 1)	2-28
2.55 Hard Disk Drive Installation	2-29

Chapter 3 AMI BIOS Setup

3.1 System Test and Initialization	3-2
3.2 AMI BIOS Setup	3-3

Chapter 4 Driver Installation

4.1 Introduction	4-3
------------------------	-----

Appendix A Programming the Watchdog Timer

A.1 Programming	A-2
-----------------------	-----

A.2 ITE8783 Watchdog Timer Initial Program.....	A-6
---	-----

Appendix B I/O Information

B.1 I/O Address Map	B-2
B.2 Memory Address Map.....	B-4
B.3 IRQ Mapping Chart	B-5
B.4 DMA Channel Assignments	B-5

Appendix C AHCI Setting

C.1 Setting AHCI	C-2
------------------------	-----

Chapter

1

**General
Information**

1.1 Introduction

The ACP-5153 Multi-Touch Panel PC supports Intel® Atom™ D2550 1.86 GHz processor. It is a PC-based system with 15.6" color TFT LCD display, onboard Ethernet controller, multi-I/O port interfaces and an audio controller. The ACP-5153 is a perfect solution for comprehensive lifestyle computing applications.

For system integrators, this simple, complete, compact and highly integrated system let you easily build an operator panel into your applications. Common industrial applications include factory automation systems, precision machinery, and production process control. It is also suitable for many non-industrial applications, including vending machine, and car park automation. Our operator panel is a reliable, cost-effective solution to your application's processing requirements.

1.2 Features

- 15.6" SXGA TFT LED LCD
- Onboard Intel® Atom™ D2550 1.86GHz
- Wide Screen with Projected Capacitive Multi-Touch
- Anti-Scratch Surface: 7H Surface
- IP65 Compliance Front Bezel & IPx1 Back Chassis
- Fanless System
- VESA 75/100

1.3 Specification

System

- CPU Onboard Intel® Atom™ D2550 1.86 GHz Processor
- System Memory DDR3 SODIMM x 1, Max. 4 GB (Default is 2 GB)
- Ethernet 10/100/1000Base-TX, RJ-45 x 2
- LCD / CRT Controller Intel® NM10
- I/O Port
USB2.0 x 6 (2 on side; 4 on bottom)
RS-232 x 1
LAN x 2
DVI x 1
Line-out x 1
Power switch x 1
- Storage Disk Drive 2.5" SATA Hard Disk Drive x 1/ CFast™ (Internal)
- Expansion Slot Mini-PCIe Card x 1
- OS Support Windows® XP 32-bit, Windows® 7 32-bit, Linux Fedora

Mechanical

- Construction IP65 / NEMA 4 for plastic front bezel, IPx1 for plastic chassis
- Mounting VESA 75/100

- Dimension 15.5"(W) x 10.7"(H) x 2.44"(D) (394mm x 372mm x 62mm)
- Carton Dimension 20.47"(W) x 18.5"(H) x 9.06"(D) (520mm x 470mm x 230mm)
- Gross Weight 13.2 lb (6 kg)

Environmental

- Operating Temperature 32°F~104°F (0°C~40°C) (w/o airflow)
- Storage Temperature -4°F~158°F (-20°C~70°C)
- Operating Humidity 10% to 90% @ 40°C, non-condensing
- Vibration 1 g rms/ 5-500Hz/ Operation (HDD)
- Shock 20 G peak acceleration (11 msec. duration)
- EMC CE/FCC Class A

Power Supply

- AC Input 100/240V AC Power Adapter

LCD

- Display Type 15.6" TFT LCD, LED
- Max. Resolution 1366x768
- Max. Colors 16.7M colors (6/8-bit for R, G, B)
- Luminance (cd/m²) 300 nits
- Viewing Angle 170° (H), 160° (V)
- Backlight LED

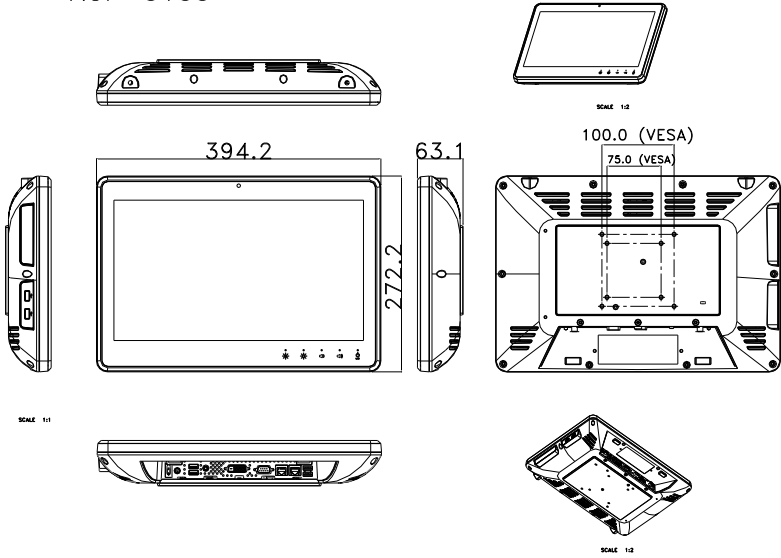
- Backlight MTBF (Hours) 50,000

Touch Screen

- Type Projected Capacitive Touch (two points)
- Resolution 2048x2048
- Light Transmission 90%
- Lifetime 10 million activations

1.4 Dimension

Unit:mm ACP-5153



Chapter

2

**Hardware
Installation**

2.1 Safety Precautions

Warning!

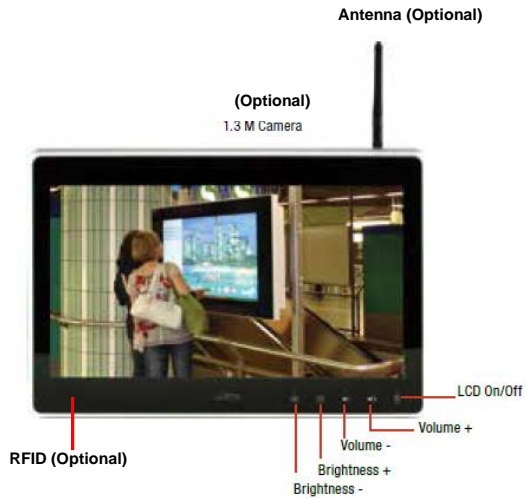
Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.

Caution!

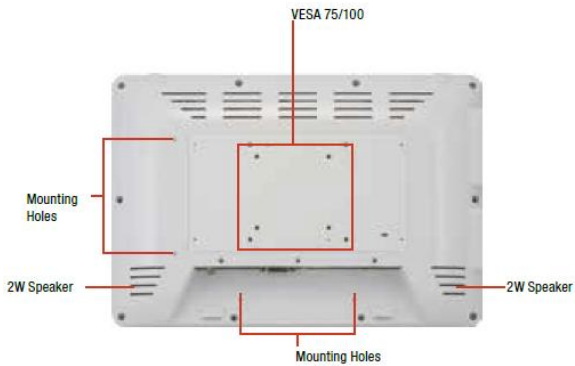
Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not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

2.2 A Quick Tour of the ACP-5153

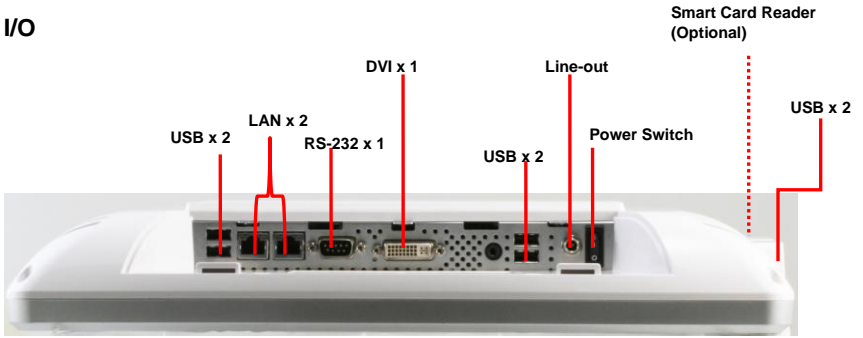
Front



Rear



I/O

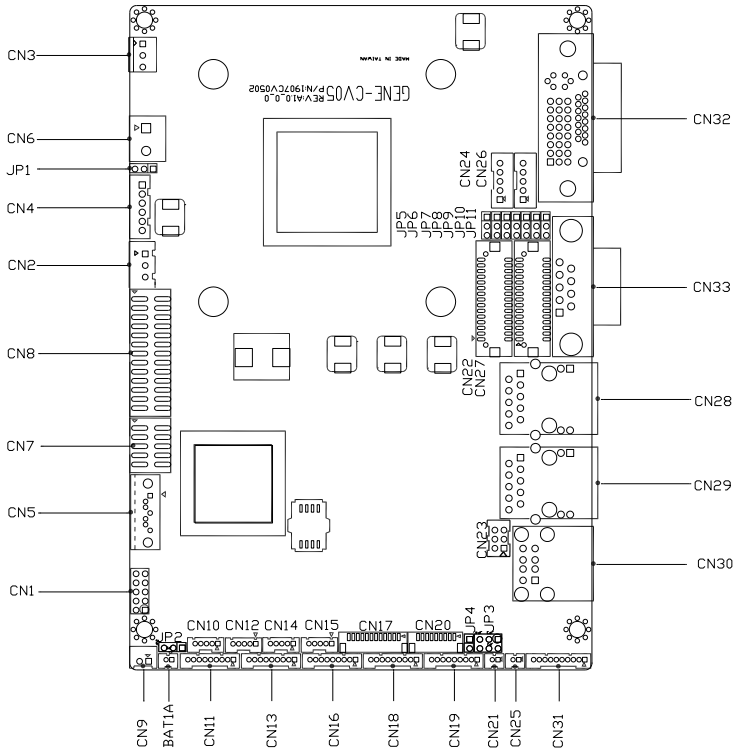


Cable Cover (Optional)

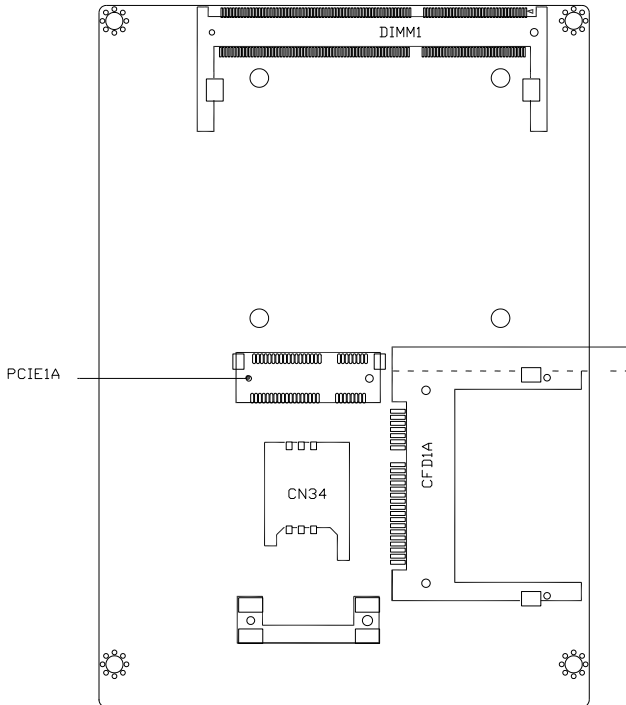


2.3 Location of Connectors and Jumpers of Main Board

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	Auto Power Button Selection
JP2	Clear CMOS
JP3	COM2 RI/+5/+12V Selection
JP4	Touch Screen 4/5/8-wires Mode Selection
JP5	Brightness Control for 2 nd LVDS
JP6	2 nd LVDS Backlight Bias/PWM Mode Selection
JP7	2 nd LVDS Operating Voltage Selection
JP8	2 nd LVDS Inverter Voltage Selection
JP9	1 st LVDS Inverter Voltage Selection
JP10	1 st LVDS Backlight Bias/PWM Mode Selection
JP11	1 st LVDS Operating 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:

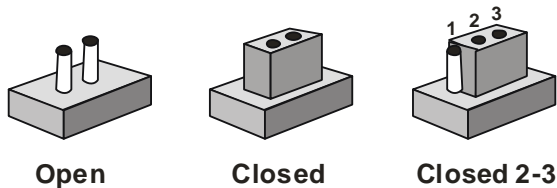
Label	Function
CN1	Front Panel
CN2	External +5VSB Input
CN3	CPU FAN
CN4	+5VSB Output w/ SMBus
CN5	SATA Port
CN6	External 12V Input
CN7	Digital I/O
CN8	Parallel Port
CN9	+5V Output for SATA HDD using
CN10	USB Port #6
CN11	COM Port #6
CN12	USB Port #5
CN13	COM Port #5
CN14	USB Port #4
CN15	USB Port #3
CN16	COM Port #4
CN17	LPC Expansion I/F
CN18	COM Port #3

CN19	COM Port #2
CN20	Touch Screen
CN21	Stereo-R Channel
CN22	2 nd LVDS (Dual channel 18/24bit)
CN23	PS/2 Keyboard & Mouse
CN24	2 nd LVDS Inverter
CN25	Stereo-L Channel
CN26	1 st LVDS Inverter
CN27	1 st LVDS (Single channel 18/24bit)
CN28	2 nd RJ-45 Ethernet
CN29	1 st RJ-45 Ethernet
CN30	USB Port #1 and #2
CN31	Audio Line In/Out and MIC
CN32	CRT/DVI (Configured by manufacturing)
CN33	COM Port #1
CN34	SIM Card Socket
CFD1	CFAST™
PCIE1	Mini Card/mSATA (Configured by manufacturing)
DIMM1	DDR3 SODIMM Slot

2.6 Setting Jumpers

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

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



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

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

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

2.7 Auto Power Button Selection (JP1)

JP1	Function
1-2	Enable(Default)
2-3	Disable

2.8 Clear CMOS (JP2)

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

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

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

Note: Max. Current rating is 0.5A.

2.10 Touch Screen 4/5/8-wire Mode Selection (JP4)

JP4	Function
1-2	4/8-wire (Default)
Open	5-wire

2.11 Brightness Control for 2nd LVDS (JP5)

JP5	Function
1-2	Brightness Up
2-3	Brightness Down

Note: Controlled by triggering UP or DOWN.

2.12 2nd LVDS Backlight Bias/PWM Mode Selection (JP6)

JP6	Function
1-2	Bias (Default)
2-3	PWM Control

2.13 2nd LVDS Operating Voltage Selection (JP7)

JP7	Function
1-2	+5V
2-3	+3.3V (Default)

Note: Max. Current rating is 2A.

2.14 2nd LVDS Inverter Voltage Selection (JP8)

JP8	Function
1-2	+12V
2-3	+5V (Default)

Note: Max. Current rating is 1A.

2.15 1st LVDS Inverter Voltage Selection (JP9)

JP9	Function
1-2	+12V
2-3	+5V (Default)

Note: Max. Current rating is 1A.

2.16 1st LVDS Backlight Bias/PWM Mode Selection (JP10)

JP10	Function
1-2	Bias (Default)
2-3	PWM Control

2.17 1st LVDS Operating Voltage Selection (JP11)

JP11	Function
1-2	+5V
2-3	+3.3V (Default)

Note: Max. Current rating is 2A.

2.18 Front Panel (CN1)

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

2.19 External +5VSB Input (CN2)

Pin	Signal
1	PSON#
2	Ground
3	+5 Volt. Standby

Note: Max. Current rating is 2A.

2.20 CPU Fan Connector (CN3)

Pin	Signal
1	Ground
2	+12 Volt.
3	FAN Sense

2.21 +5VSB Output w/SMBUS (CN4)

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

2.22 SATA Port (CN5)

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

2.23 External 12V Input (CN6)

DC terminal

Pin	Signal
1	+12 Volt.
2	Ground

Note: Max. Current rating is 4A.

2.24 Digital I/O Connector (CN7)

I2C Address: 0x6Eh

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	+3.3 Volt.	10	Ground

BIOS Setting (I2C address)	Connector Definition	Address(Register)		F75111 GPIO Setting
		Output	Input	
Port 1 @6Eh	Pin 1	21h/Bit 0	22h/Bit 0	U44 Pin 6 (GPIO 20)
Port 2 @6Eh	Pin 2	21h/Bit 1	22h/Bit 1	U44 Pin 7 (GPIO 21)
Port 3 @6Eh	Pin 3	21h/Bit 2	22h/Bit 2	U44 Pin 8 (GPIO 22)
Port 4 @6Eh	Pin 4	21h/Bit 3	22h/Bit 3	U44 Pin 24(GPIO 23)
Port 5 @6Eh	Pin 5	21h/Bit 4	22h/Bit 4	U44 Pin 23(GPIO 24)
Port 6 @6Eh	Pin 6	21h/Bit 5	22h/Bit 5	U44 Pin 22(GPIO 25)
Port 7 @6Eh	Pin 7	21h/Bit 6	22h/Bit 6	U44 Pin 21(GPIO 26)
Port 8 @6Eh	Pin 8	21h/Bit 7	22h/Bit 7	U44 Pin 20(GPIO 27)

2.25 Parallel Port Connector (CN8) (Optional)

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

2.26 +5V Output for SATA HDD Usage (CN9)

Pin	Signal
1	+5 Volt.
2	Ground

Note: Max. Current rating is 1A.

2.27 USB Port #6 (CN10)

Pin	Signal
1	+5 Volt. Standby
2	Data5-
3	Data5+
4	Ground
5	Ground

2.28 COM Port #6 (CN11)

Pin	Signal	Pin	Signal
1	DCDF	2	DSRF
3	RXF	4	RTSF

5	TXF	6	CTSF
7	DTRF	8	RIF
9	Ground	10	N/C

2.29 USB Port #5 (CN12)

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

2.30 COM Port #5 (CN13)

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

2.31 USB Port #4 (CN14)

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

2.32 USB Port #3 (CN15)

Pin	Signal
1	+5 Volt. Standby
2	Data2-
3	Data2+
4	Ground
5	Ground

2.33 COM Port #4 (CN16)

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

2.34 LPC Expansion I/F (CN17)

Pin	Signal
1	LAD0
2	LAD1
3	LAD2
4	LAD3
5	+3.3 Volt.
6	LFRAME#
7	LRESET#
8	Ground
9	LPC_CLK

10	LDRQ#0
11	LDRQ#1
12	SERIRQ

2.35 COM Port #3 (CN18)

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

2.36 COM Port #2 (CN19)

RS-232 Mode

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

RS-422 Mode

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

RS-485 Mode

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 / +5 Volt. / (+12 Volt.)
9	Ground	10	N/C

2.37 Touch Screen (CN20)

Pin	8-wire Signal	4-wire Signal	5-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

2.38 Stereo-R Channel (CN21)

Pin	Signal
1	R+
2	R-

2.39 2nd LVDS Output Dual Channel 18/24-bit (CN22)

Pin	Signal	Pin	Signal
1	2 nd Back-Light Enable	2	2 nd Back-Light Control

3	2 nd LCD Volt.	4	Ground
5	LB_CLK#	6	LB_CLK
7	2 nd LCD Volt.	8	Ground
9	LB_DATA#_0	10	LB_DATA_0
11	LB_DATA#_1	12	LB_DATA_1
13	LB_DATA#_2	14	LB_DATA_2
15	LB_DATA#_3	16	LB_DATA_3
17	2 nd LVD_DDCDAT	18	2 nd LVD_DDCCLK
19	LC_DATA#_0	20	LC_DATA_0
21	LC_DATA#_1	22	LC_DATA_1
23	LC_DATA#_2	24	LC_DATA_2
25	LC_DATA#_3	26	LC_DATA_3
27	2 nd LCD Volt.	28	Ground
29	LC_CLK#	30	LC_CLK

2.40 PS/2 Keyboard and Mouse Connector (CN23)

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

2.41 2nd LVDS Inverter (CN24)

Pin	Signal
1	+5 Volt. / +12 Volt.
2	2 nd Brightness Control (Controlled by CH7511B)
3	Ground
4	Ground
5	2 nd Backlight Enable (Controlled by CH7511B)

Note: Max. Current rating is 1A.

2.42 Stereo-L Channel Inverter (CN25)

Pin	Signal
1	L+
2	L-

2.43 1st LVDS Inverter (CN26)

Pin	Signal
1	+5 Volt. / +12 Volt.
2	1 st Brightness Control (Controlled by Cedarview)
3	Ground
4	Ground
5	1 st Backlight Enable (Controlled by Cedarview)

Note: Max. Current rating is 1A.

2.44 1st LVDS Output-Single Channel 18/24-bit (CN27)

Pin	Signal	Pin	Signal
1	1 st Back-Light Enable	2	1 st Back-Light Control
3	1 st LCD Volt.	4	Ground
5	LA_CLK#	6	LA_CLK
7	1 st 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	1 st LVD_DDCDAT	18	1 st LVD_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	1 st LCD Volt.	28	Ground
29	N/C	30	N/C

2.45 2nd RJ-45 Ethernet Connector (CN28)

Pin	Signal	Pin	Signal
R1	LAN2_MDIO0+	R2	LAN2_MDIO0-
R3	LAN2_MDIO1+	R4	LAN2_MDIO1-
R5	LAN2_TCD0	R6	LAN2_TCD1
R7	LAN2_MDIO2+	R8	LAN2_MDIO2-
R9	LAN2_MDIO3+	R10	LAN2_MDIO3-
L1	LAN2_SPD100_LED	L2	LAN2_SPD1K_LED
L3	LAN2_ACT_LED	L4	+3.3 Volt.

2.46 1st RJ-45 Ethernet Connector (CN29)

Pin	Signal	Pin	Signal
R1	LAN1_MDIO0+	R2	LAN1_MDIO0-
R3	LAN1_MDIO1+	R4	LAN1_MDIO1-
R5	LAN1_TCD0	R6	LAN1_TCD1
R7	LAN1_MDIO2+	R8	LAN1_MDIO2-
R9	LAN1_MDIO3+	R10	LAN1_MDIO3-
L1	LAN1_SPD100_LED	L2	LAN1_SPD1K_LED
L3	LAN1_ACT_LED	L4	+3.3 Volt.

2.47 USB Port #1 and #2 (CN30)

Pin	Signal	Pin	Signal
1	+5 Volt. Standby	5	+5 Volt. Standby
2	Data0-	6	Data1-

3	Data0+	7	Data1+
4	Ground	8	Ground

2.48 Audio Line In/Out and MIC (CN31)

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	+5 Volt.

2.49 DVI/CRT Display Connector (CN32) Configured by manufacturing

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	+5 Volt.
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 Display

Pin	Signal	Pin	Signal
29	DDCCLK	30	N/C
31	+5 Volt.	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#		

2.50 COM Port #1 (CN33)

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

2.51 SIM Card Socket (CN34)

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

2.52 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	+3.3 Volt.
P14	+3.3 Volt.
P15	Ground
P16	Ground
P17	N/C

2.53 Mini Card/ mSATA (PCIe1)

Pin	Signal	Pin	Signal
1	PCI_E_WAKE#	2	+3.3 Volt. Standby/+3.3 Volt.
3	N/C	4	Ground
5	N/C	6	+1.5 Volt.
7	CLKREQ#	8	UIM_PWR
9	Ground	10	UIM_DATA
11	MCARD_CLK#	12	UIM_CLK
13	MCARD_CLK	14	UIM_RESET
15	Ground	16	UIM_VPP
17	N/C	18	Ground
19	N/C	20	W_DISABLE#
21	Ground	22	PCI_E_RST#
23	PCI_E_RXN/mSATA_RX+	24	+3.3 Volt. Standby/+3.3 Volt.
25	PCI_E_RXP/mSATA_RX-	26	Ground
27	Ground	28	+1.5 Volt.
29	Ground	30	SMBCLK
31	PCI_E_TXN/mSATA_TX-	32	SMBDATA
33	PCI_E_TXP/mSATA_TX+	34	Ground
35	Ground	36	USB_Data7-
37	Ground	38	USB_Data7+

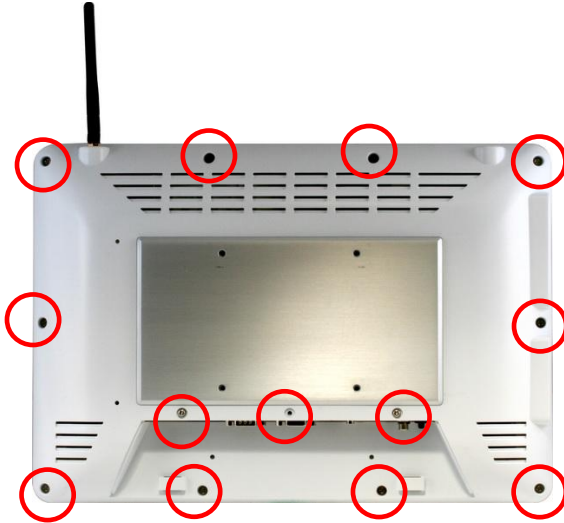
39	+3.3 Volt. Standby/+3.3 Volt.	40	Ground
41	+3.3 Volt. Standby/+3.3 Volt.	42	N/C
43	Ground	44	N/C
45	N/C	46	N/C
47	N/C	48	+1.5 Volt.
49	N/C	50	Ground
51	N/C	52	+3.3 Volt. Standby/+3.3 Volt.

2.54 DDR3 SODIMM Slot (DIMM1)

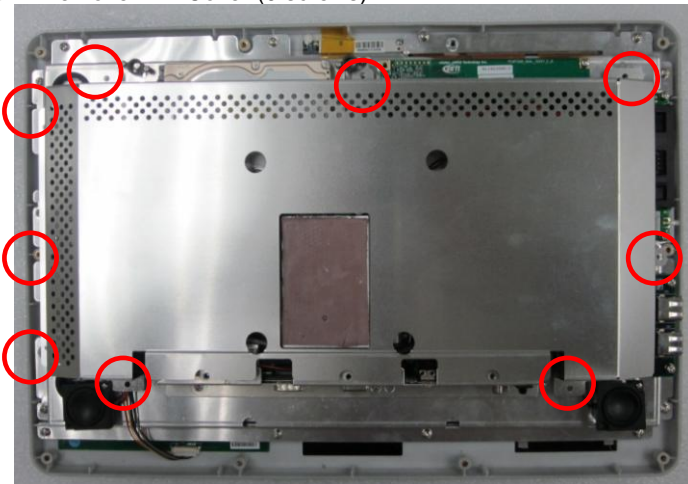
Standard Specification

2.55 2.5" Hard Disk Drive (HDD) Installation

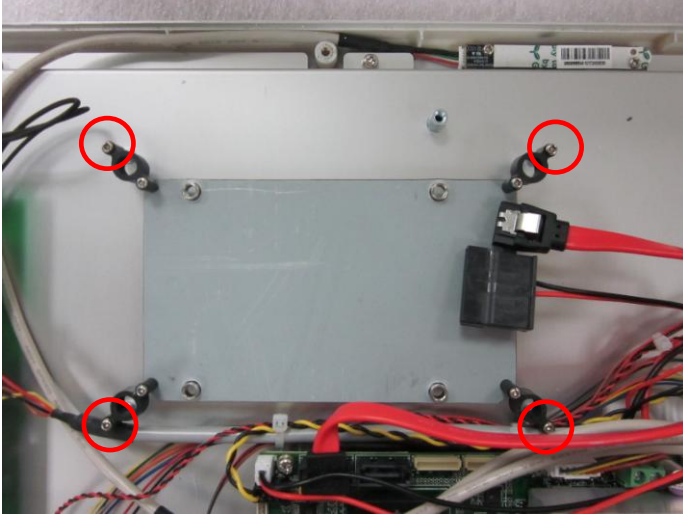
Step 1: Unscrew the rear cover screws (13 screws)



Step 2: Remove EMI Cover (9 screws)



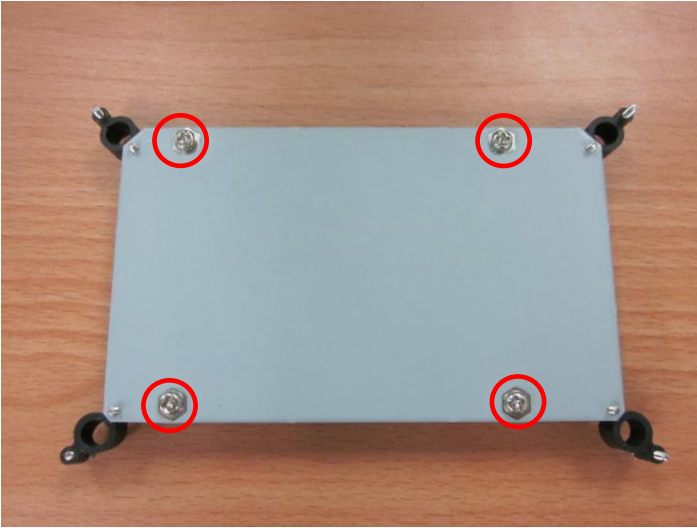
Step 3: Remove HDD Bracket (4 screws)



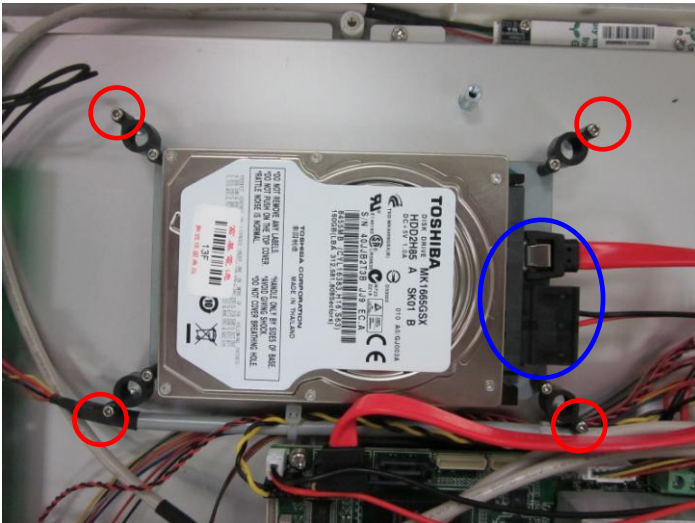
Step 4: Get the HDD and HDD Bracket ready



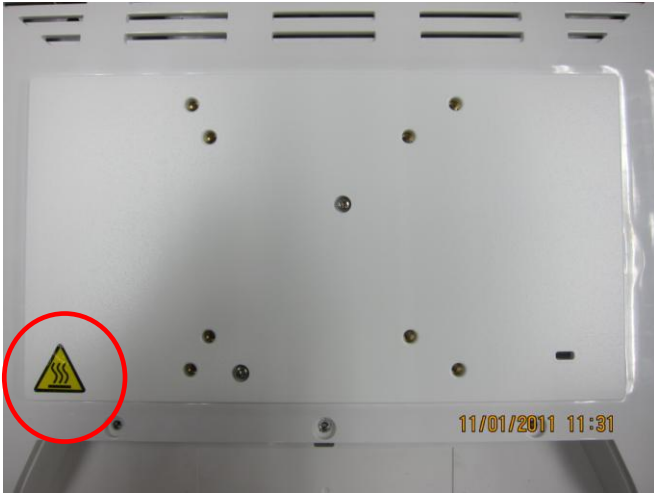
Step 5: Fasten the four screws to fix HDD Bracket and HDD



Step 6: Connect the SATA and power cables to the HDD and fasten the four screws to fix the HDD Bracket



Step 7: Close the rear cover of ACP-5153 and see if the label of “Mind the high temperature” has been firmly stuck on the rear cover of ACP-5153



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 ACP-5153 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.

Setup Menu

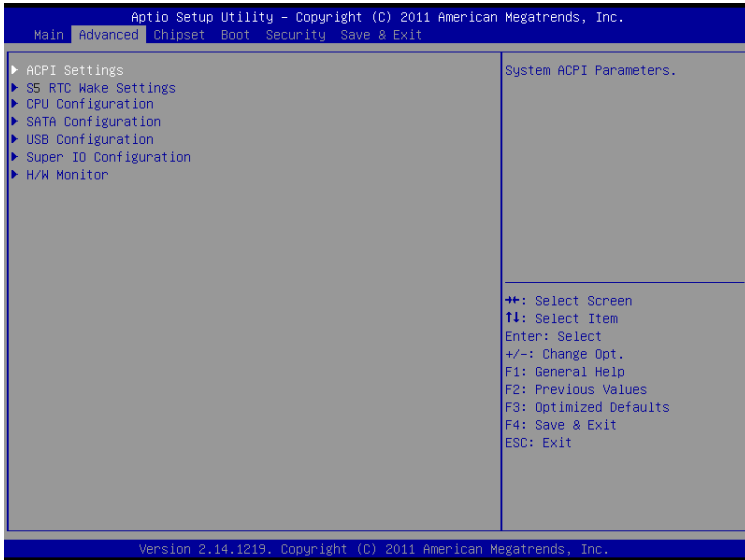
Setup submenu: Main



Options summary: (**default setting**)

System Date	Day MM:DD:YYYY	
Change the month, year and century. The 'Day' is changed automatically.		
System Time	HH : MM : SS	
Change the clock of the system.		

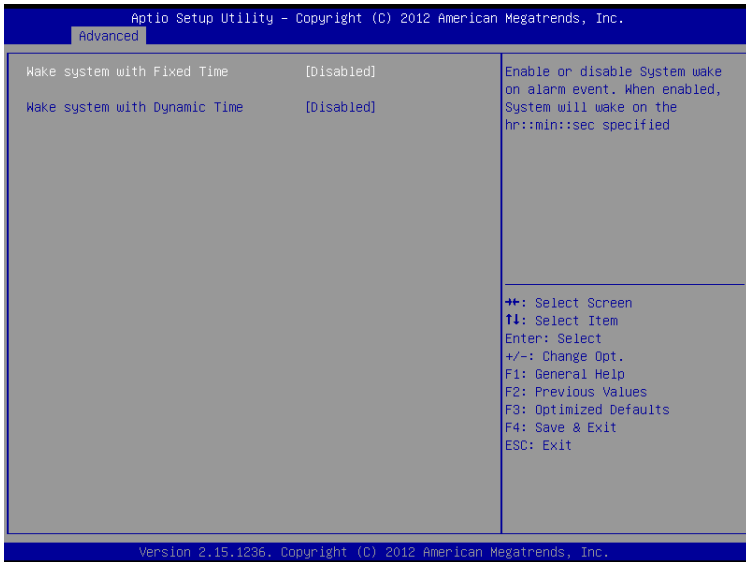
Setup submenu: Advanced

Options summary: (**default setting**)

ACPI Settings		
System ACPI Parameters		
S5 RTC Wake Settings		
Enable system to wake from S5 using RTC alarm.		
CPU Configuration		
CPU Configuration Parameters		
SATA Configuration		
SATA Device Options Settings		
USB Configuration		

USB Configuration Parameters		
Super IO Configuration		
System Super IO Chip Parameters		
H/W Monitor		
Monitor hardware status		

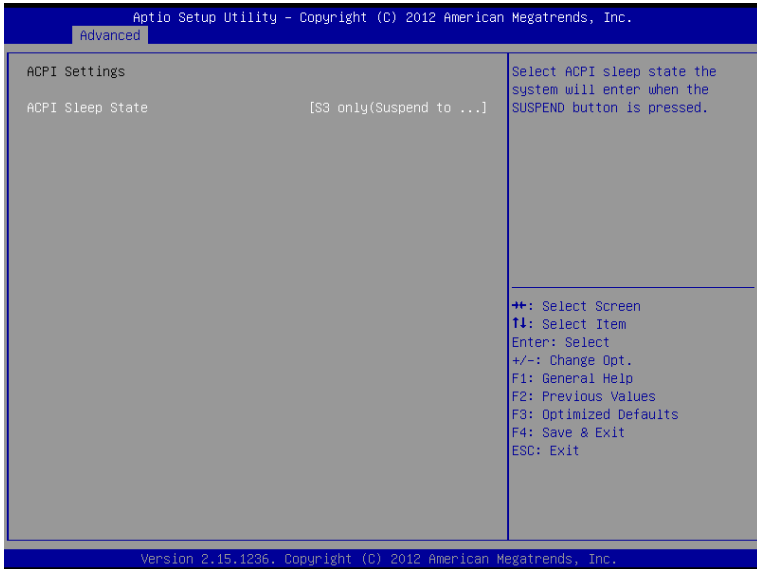
S5 RTC Wake Settings

Options summary: (**default setting**)

Wake system with	Disabled	
Fixed Time	Enabled	
Enable or disable System wake on alarm event. Wake up time is setting by following settings.		
Wake up day	1-31	
Wake up hour	0-23	
Wake up minute	0-59	

Wake up second	0-59	
Wake system with	Disabled	
Dynamic Time	Enabled	
Enable or disable System wake on alarm event. Wake up time is current time + Increase minutes.		
Wake up minute increase	1-5	

ACPI Settings



Options summary: (**default setting**)

ACPI Sleep State	Suspend Disabled	
	S3 only(Suspend to RAM)	
Select the ACPI state used for System Suspend		

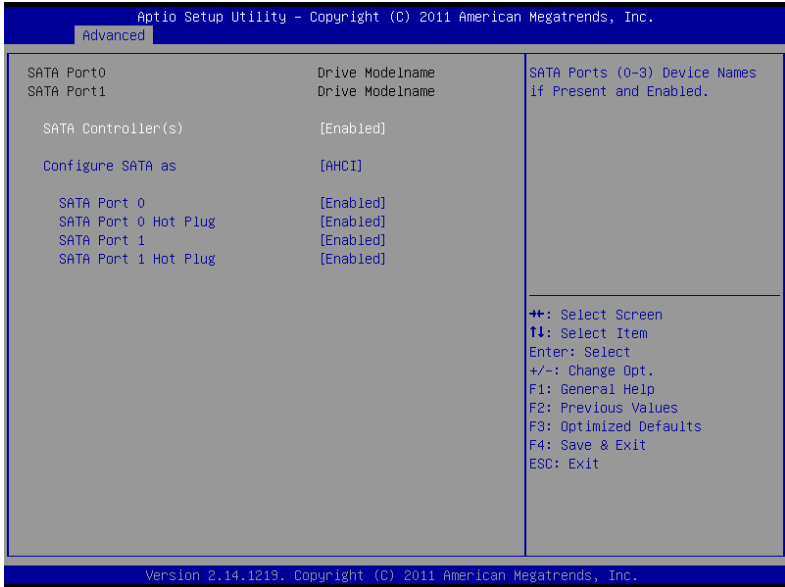
CPU Configuration



Options summary: (**default setting**)

Hyper-Threading	Disabled	
	Enabled	
En/Disable CPU Hyper-Threading function		

SATA Configuration



Options summary: (**default setting**)

SATA Controller(s)	Disabled	
	Enabled	
En/Disable SATA controller		
Configure SATA as	IDE	
	AHCI	
Configure SATA controller operating as IDE/AHCI mode.		
SATA Port 0/Port 1	Disabled	
	Enabled	
En/Disable the selected port.		

SATA Port 0/Port 1 Hot Plug	Disabled	
	Enabled	
En/Disable Hot Plug feature for specified port.		

USB Configuration

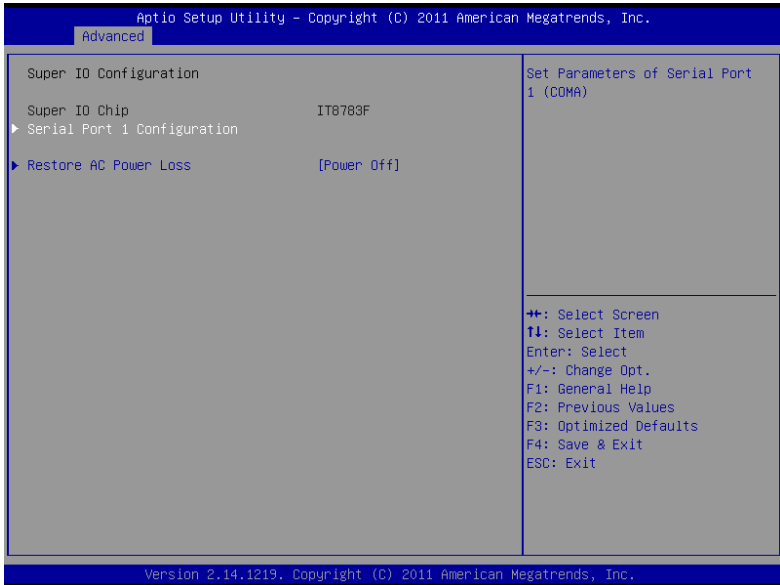


Options summary: (**default setting**)

Legacy USB Support	Enabled	
	Disabled	
	Auto	
Enables BIOS Support for Legacy USB Support. When enabled, USB can be functional in legacy environment like DOS. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI application		
Device Name (Emulation Type)	Auto	
	Floppy	

	Forced FDD	
	Hard Disk	
	CD-ROM	
<p>If Auto. USB devices less than 530MB will be emulated as Floppy and remaining as Floppy and remaining as hard drive. Forced FDD option can be used to force a HDD formatted drive to boot as FDD(Ex. ZIP drive)</p>		

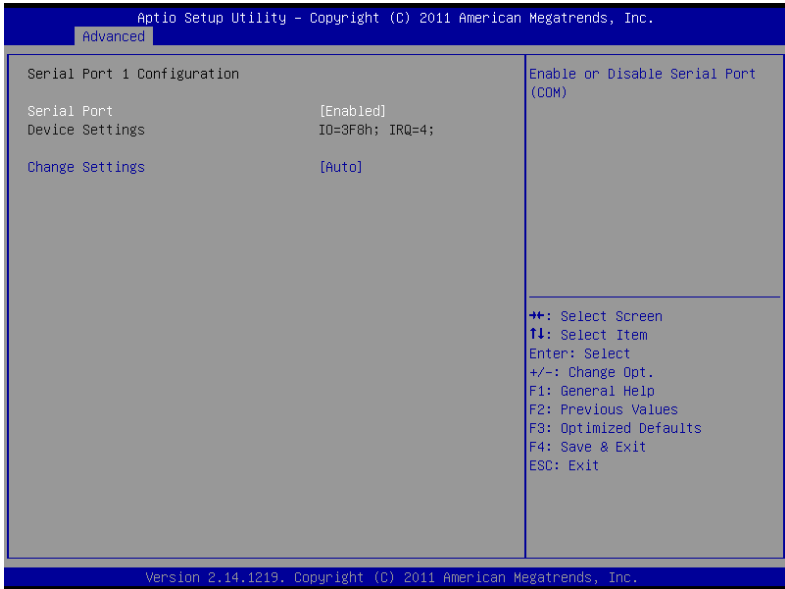
Super IO Configuration



Options summary: (**default setting**)

Serial Port 1 Configuration		
Set Parameters of Serial Port 1		
Restore AC Power Loss	Power Off	
	Power On	
	Last State	
Select AC power state when power is re-applied after a power failure.		

Serial Port 1 Configuration

Options summary: (**default setting**)

Serial Port	Disabled	
	Enabled	
En/Disable specified serial port.		
Change Settings	Auto	
	IO=3F8h; IRQ=4;	
	IO=3F8h; IRQ=3,4,5,7,10,11,12;	
	IO=2F8h; IRQ=3,4,5,7,10,11,12;	

	IO=3E8h; IRQ=3,4,5,7,10,11,12;	
	IO=2E8h; IRQ=3,4,5,7,10,11,12;	
Select a resource setting for Super IO device.		

H/W Monitor

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

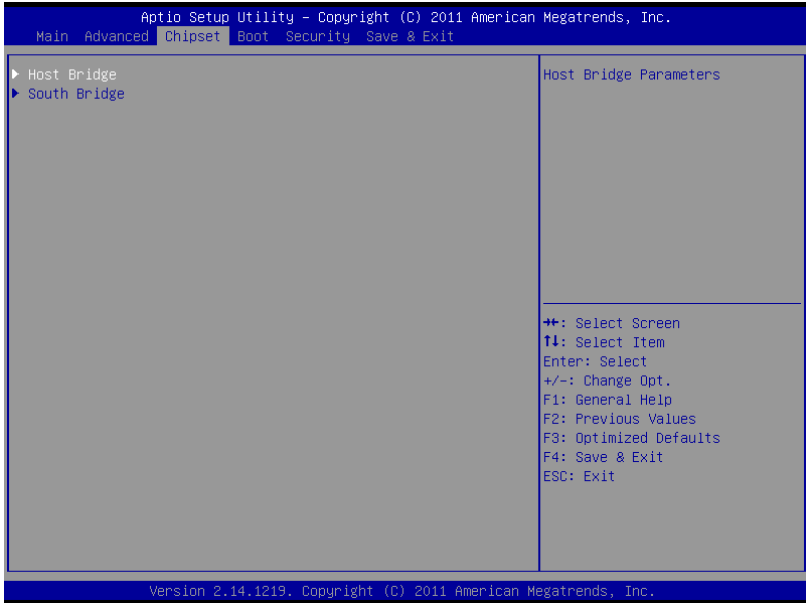
Advanced

Pc Health Status	
CPU temperature	: +41 C
SB temperature	: +39 C
System temperature	: +34 C
Vcore	: +1.213 V
Vcc 1.5V	: +1.541 V
Vcc 3.3V	: +3.412 V
Vcc 5V	: +5.048 V
Vcc 12V	: +11.772 V
5V Dual	: +5.040 V
VBAT	: +3.271 V

++: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

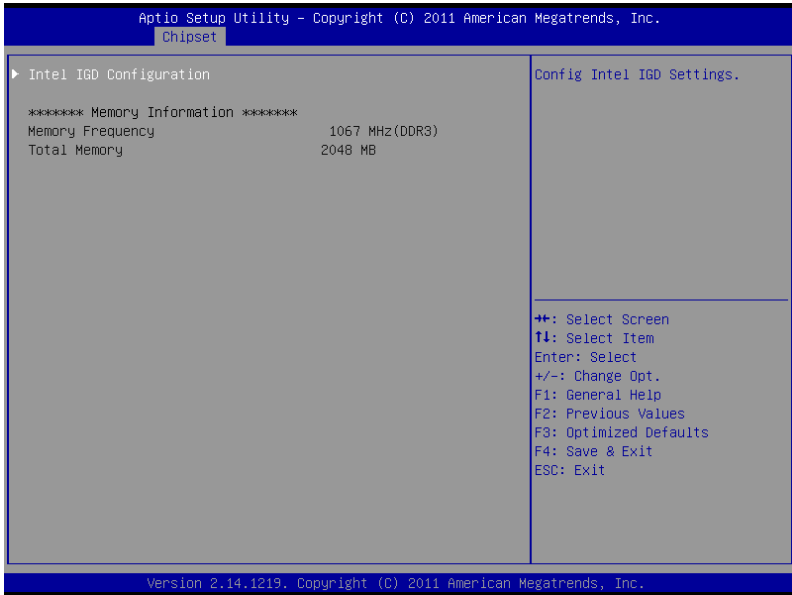
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

Setup submenu: Chipset

Options summary: (**default setting**)

Host Bridge		
Host Bridge Parameters		
South Bridge		
South Bridge Parameters		

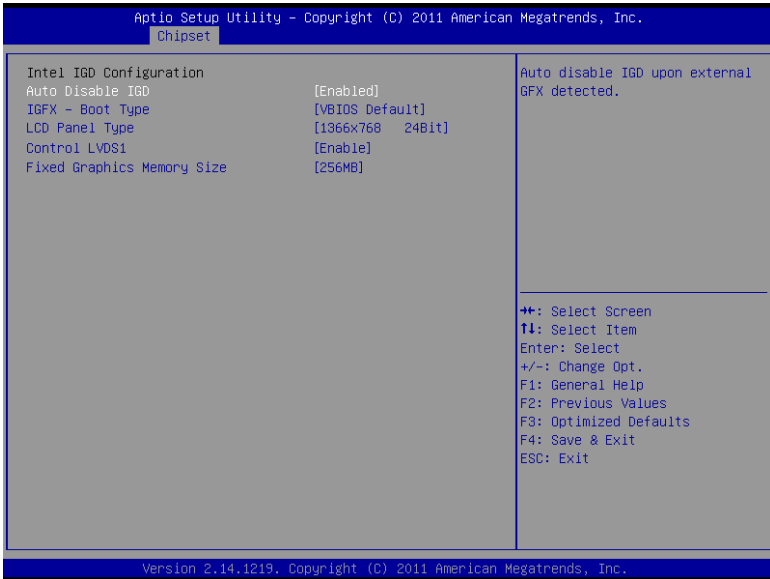
Host Bridge



Options summary: (**default setting**)

Intel IGD Configuration		
Config Intel IGD Settings.		

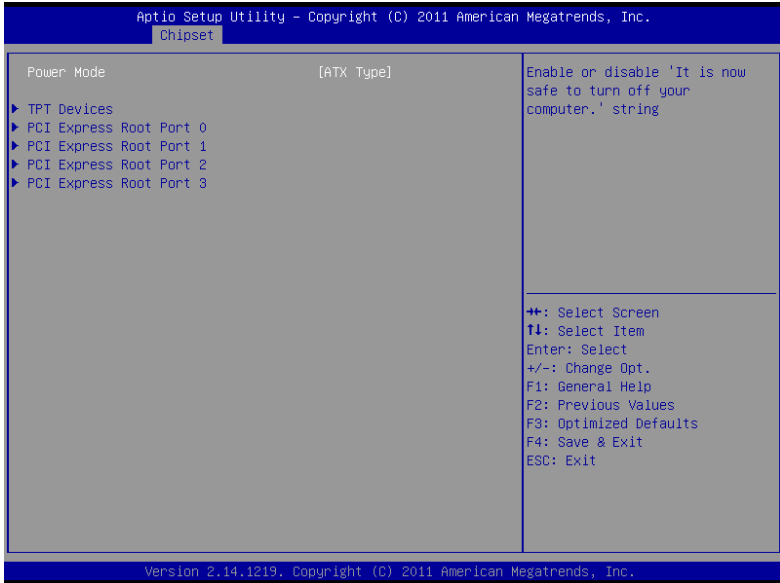
Intel IGD Configuration

Options summary: (**default setting**)

Auto Disable IGD	Enabled	
	Disabled	
Auto disable IGD upon external GFX detected		
IGFX - Boot Type	VBIOS Default	
	CRT	
	1 st LVDS	
	DVI	
	CRT + 1 st LVDS	
Select Primary boot display device		

Control LVDS1	Disable	
	Enable	
Enable/Disable LVDS1		
Fixed Graphics Memory Size	128MB	
	256MB	
Configure Fixed Graphics Memory Size		

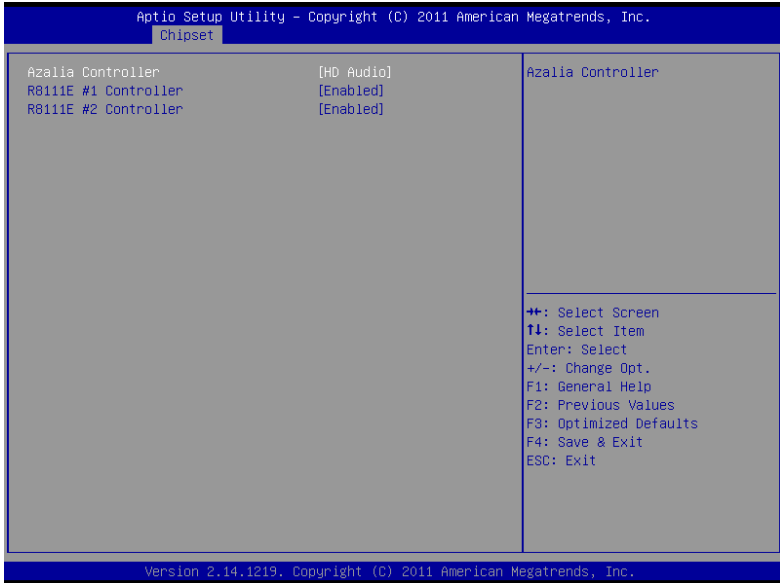
South Bridge



Options summary: (**default setting**)

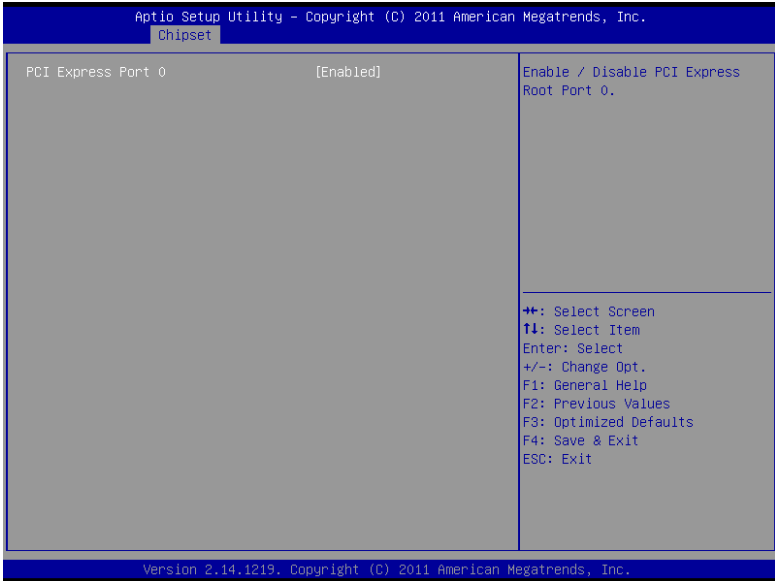
Power Mode	ATX Type	
	AT Type	
Select the power type used on the system		
TPT Devices		
HD audio and onboard LAN Settings.		
PCI Express Root Port		
PCIe root port Settings.		

TPT Devices

Options summary: (**default setting**)

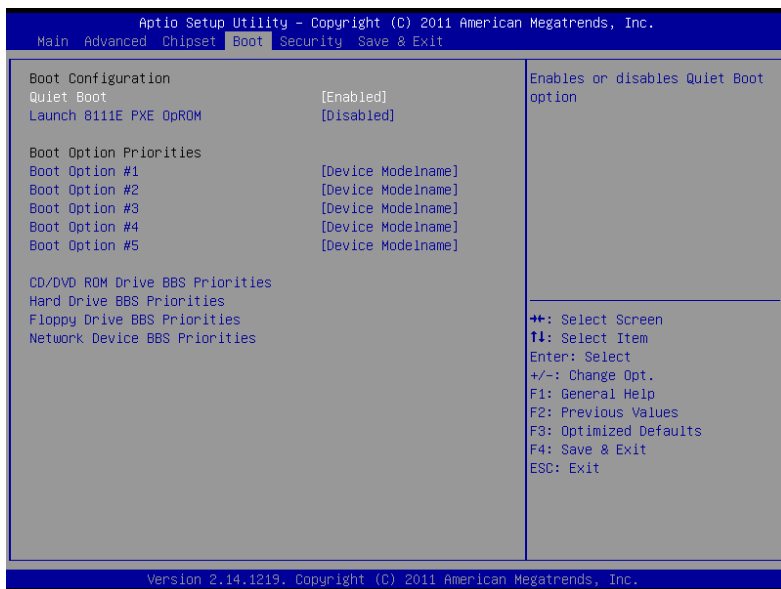
Azalia Controller	Disabled	
	HD Audio	
Enable or disabled Azalia controller		
R8111E #1 Controller	Disabled	
	Enabled	
Enable or disable PCIE Lan.		
R8111E #2 Controller	Disabled	
	Enabled	
Enable or disable PCIE Lan.		

PCI Express Root Port 0/1/2/3

Options summary: (**default setting**)

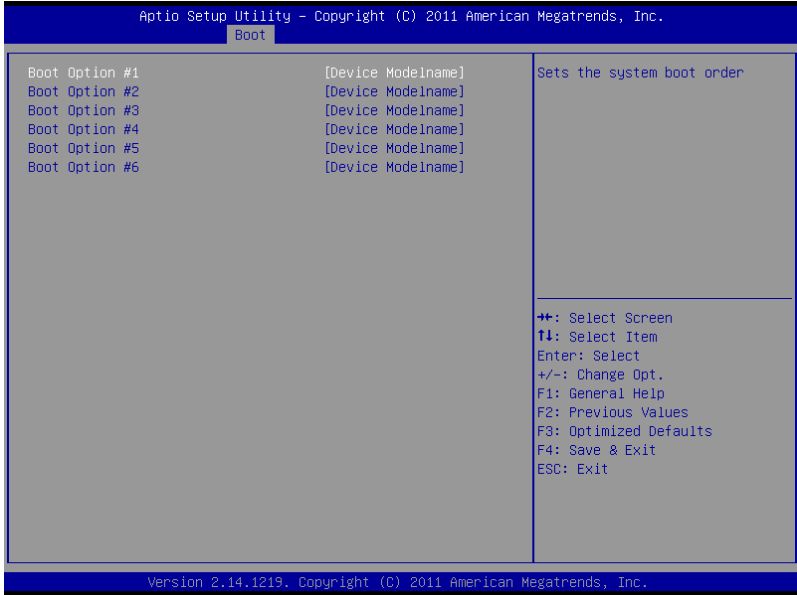
PCI Express Root	Disabled	
Port 0/1/2/3	Enabled	
Control the PCI Express Root Port.		

Setup submenu: Boot

Options summary: (**default setting**)

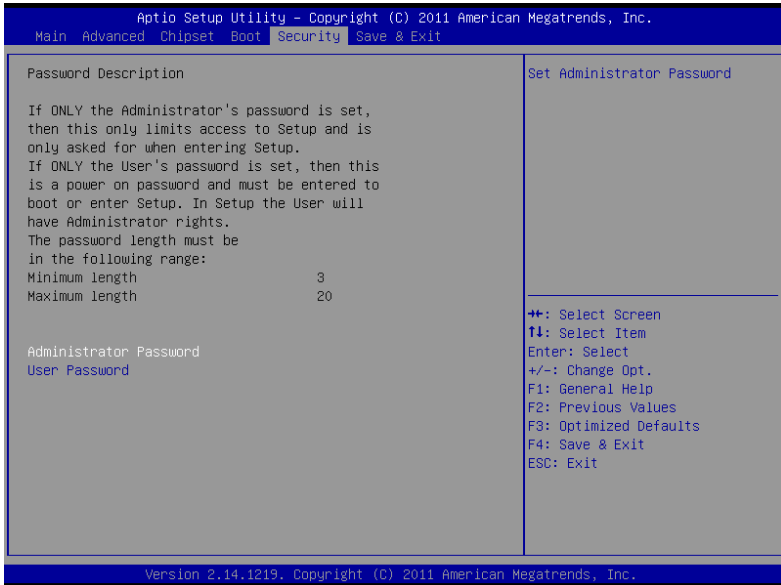
Quiet Boot	Disabled	
	Enabled	
En/Disable showing boot logo.		
Launch RTL8111E PXE OpROM	Disabled	
	Enabled	
En/Disable PXE boot for RTL8111E LAN		
Boot Option #X/ XXXX Drive BBS Priorities		
The order of boot priorities.		

BBS Priorities

Options summary: (**default setting**)

Boot Option #x	Disabled	
	Device name	
Sets the system boot order		

Setup submenu: Security

Options summary: (**default setting**)

Administrator	Not set	
Password/ User Password		

You can install a Supervisor password, and if you install a supervisor password, you can then install a user password. A user password does not provide access to many of the features in the Setup utility.

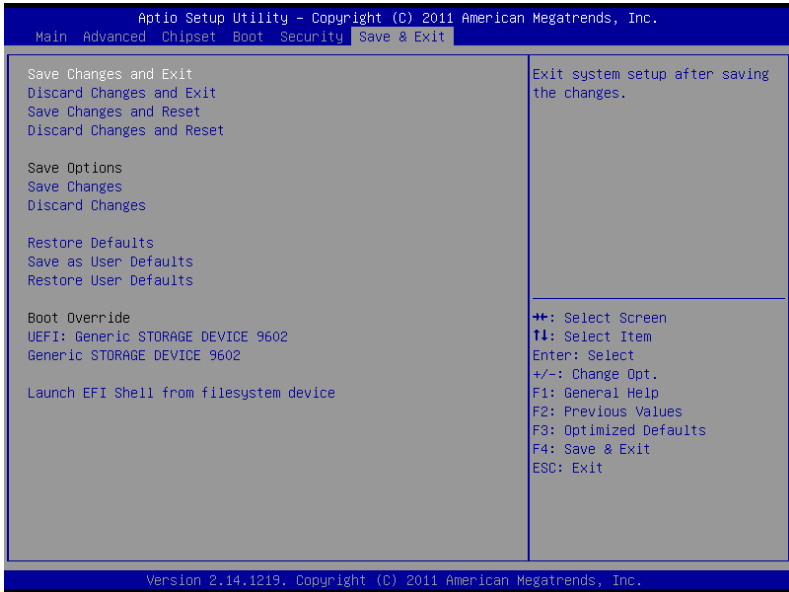
Install the Password:

Press Enter on this item, a dialog box appears which lets you enter a password. You can enter no more than six letters or numbers. Press Enter after you have typed in the password. A second dialog box asks you to retype the password for confirmation. Press Enter after you have retyped it correctly. The password is required at boot time, or when the user enters the Setup utility.

Removing the Password:

Highlight this item and type in the current password. At the next dialog box press Enter to disable password protection.

Setup submenu: Exit

Options summary: (**default setting**)

Save Changes and Reset		
Reset the system after saving the changes		
Discard Changes and Reset		
Reset system setup without saving any changes		
Restore Defaults		
Restore/Load Default values for all the setup options.		
Save as User Defaults		

Save the changes done so far as User Defaults

Restore User Defaults

Restore the User Defaults to all the setup options

Chapter

4

**Driver
Installation**

The ACP-5153 comes with a DVD-ROM that contains all drivers and utilities that meet your needs.

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 AHCI Driver

Step 6– Install Touch Panel Driver

Step 7– Install Serial Port Driver (Optional)

Please read instructions below for further detailed installations.

4.1 Installation:

Insert the ACP-5153 DVD-ROM into the DVD-ROM Drive. And install the drivers from Step 1 to Step 7 in order.

Step 1 – Install Chipset Driver

1. Click on the **STEP1-CHIPSET** and select the OS folder your system is
2. Double click on the **.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 2 – Install VGA Driver

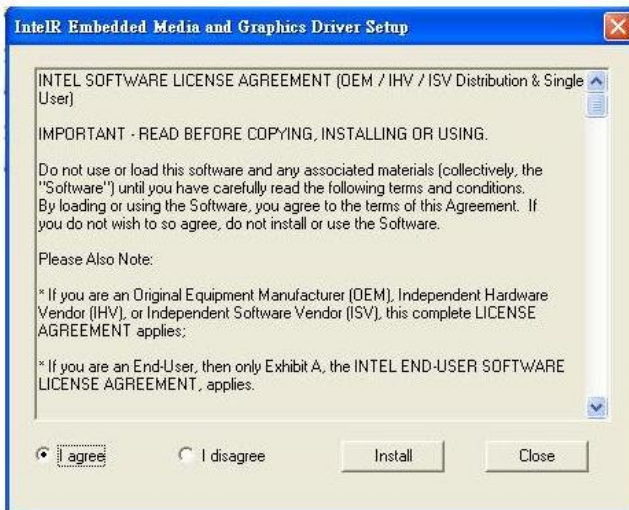
For Windows® 7

1. Click on the **STEP2-VGA** folder and select the folder of **WIN7_32**
2. Double click on the **Setup.exe** file
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

For Windows® XP

1. Click on the **STEP2-VGA** folder and select the folder of **WINXP_32**
2. Install IEMGD
 - Double click on the **WindowsDriverSETUP.bat**
 - Select the configuration
 - Follow the instructions that the window shows

- The system will help you install the driver automatically

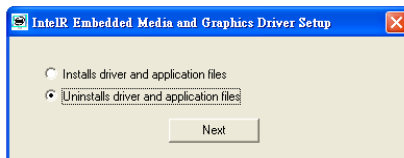




If you want to update driver, please uninstall driver first.

Uninstall IEMGD

1. Double click on the **WindowsDriverSETUP.bat**
2. Follow the instructions that the window shows
3. The system will help you uninstall the driver automatically



Step 3 – Install LAN Driver

1. Click on the **STEP3-LAN** folder and select the OS folder your system is
2. Double click on the **setup.exe** located in each OS folder
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 **STEP4-AUDIO** folder and select the OS folder your system is
2. Double click on the **Setup.exe** located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 5 – Install AHCI Driver (optional, for SATA in AHCI mode only)

For Windows® 7:

1. Click on the **STEP5-AHCI** folder and select the **WIN7_32** folder
2. Double click on the **setup.exe** file
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

For Windows® XP:

Please refer to Appendix C AHCI Setting

Step 6 – Install Touch Panel Driver

1. Click on the **STEP6-TOUCH** folder and select the folder of **WINXP_32**
2. Double click on the **ModifyDBArea.exe**
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 7 – Install Serial Port Driver (Optional)

1. Click on the **STEP7-Serial Port Driver (Optional)** folder and select the OS folder your system is
2. Double click on the **Serial Patch v1.0.1_Eng.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: If the OS is Chinese version, you may click on **Serial Patch v1.0.1.exe** file located in each OS folder.

Appendix

A

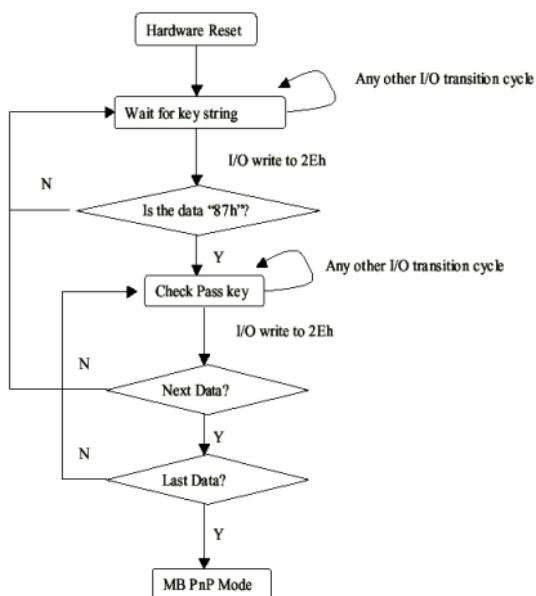
Programming the Watchdog Timer

A.1 Programming

ACP-5153 utilizes ITE 8783 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 8783 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	NA	Configure Control

07h	71h	R/W	00h	Watch Dog Timer Control Register
07h	72h	R/W	001s0000b	Watch Dog Timer Configuration Register
07h	73h	R/W	38h	Watch Dog Timer Time-out Value (LSB) Register
07h	74h	R/W	00h	Watch Dog 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.

Watch Dog Timer 1, 2, 3 Control Register (Index=71h,81h,91h Default=00h)

Bit	Description
7	WDT Timeout Enable(WTE) 1: Disable. 0: Enable.
6	WDT Reset upon Mouse Interrupt(WRKMI) 0: Disable. 1: Enable.
5	WDT Reset upon Keyboard Interrupt(WRKBI) 0: Disable. 1: Enable.
4	Reserved
3-2	Reserved
1	Force Time-out(FTO) This bit is self-clearing.
0	WDT Status(WS) 1: WDT value reaches 0. 0: WDT value is not 0.

Watch Dog Timer 1, 2, 3 Configuration Register (Index=72h, 82h, 92h Default=001s0000b)

Bit	Description
7	WDT Time-out Value Select 1 (WTVS) 1: Second 0: Minute
6	WDT Output through KRST (Pulse) Enable(WOKE) 1: Enable 0: Disable
5	WDT Time-out value Extra select(WTVES) 1: 64ms x WDT Timer-out value (default = 4s) 0: Determined by WDT Time-out value select 1 (bit 7 of this register)
4	WDT Output through PWROK (Pulse) Enable(WOPE) 1: Enable 0: Disable During LRESET#, this bit is selected by JP7 power-on strapping option
3-0	Select interrupt level^{Note1} for WDT(SIL)

Watch Dog Timer 1,2,3 Time-Out Value (LSB) Register (Index=73h,83h,93h, Default=38h)

Bit	Description
7-0	WDT Time-out Value 7-0(WTV)

Watch Dog Timer 1,2,3 Time-Out Value (MSB) Register (Index=74h,84h,94h Default=00h)

Bit	Description
7-0	WDT Time-out Value 15-8(WTV)

A.2 ITE8783 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,81h  
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

Input/output (IO)	
[00000000 - 0000001F]	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
[0000002E - 0000002F]	Motherboard resources
[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
[0000004E - 0000004F]	Motherboard resources
[00000050 - 00000053]	System timer
[00000060 - 00000060]	Standard PS/2 Keyboard
[00000061 - 00000061]	Motherboard resources
[00000062 - 00000063]	Motherboard resources
[00000063 - 00000063]	Motherboard resources
[00000064 - 00000064]	Standard PS/2 Keyboard
[00000065 - 00000065]	Motherboard resources
[00000065 - 0000006F]	Motherboard resources
[00000067 - 00000067]	Motherboard resources
[00000070 - 00000070]	Motherboard resources
[00000070 - 00000077]	System CMOS/real time clock
[00000072 - 0000007F]	Motherboard resources
[00000080 - 00000080]	Motherboard resources
[00000080 - 00000080]	Motherboard resources
[00000081 - 00000091]	Direct memory access controller
[00000084 - 00000086]	Motherboard resources
[00000088 - 00000088]	Motherboard resources
[0000008C - 0000008E]	Motherboard resources
[00000090 - 0000009F]	Motherboard resources
[00000092 - 00000092]	Motherboard resources
[00000093 - 0000009F]	Direct memory access controller
[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
	[000000B2 - 000000B3]	Motherboard resources
	[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 - 000000F0]	Numeric data processor
	[000002F8 - 000002FF]	Communications Port (COM2)
	[000003B0 - 000003BB]	Intel(R) Graphics Media Accelerator 3600 Series
	[000003C0 - 000003DF]	Intel(R) Graphics Media Accelerator 3600 Series
	[000003E8 - 000003EF]	Communications Port (COM3)
	[000003F8 - 000003FF]	Communications Port (COM1)
	[00000400 - 0000047F]	Motherboard resources
	[00000400 - 0000047F]	Motherboard resources
	[000004D0 - 000004D1]	Motherboard resources
	[000004D0 - 000004D1]	Programmable interrupt controller
	[00000500 - 0000053F]	Motherboard resources
	[00000500 - 0000057F]	Motherboard resources
	[00000600 - 0000061F]	Motherboard resources
	[00000680 - 0000069F]	Motherboard resources
	[000006A0 - 000006AF]	Motherboard resources
	[000006B0 - 000006EF]	Motherboard resources
	[00000A00 - 00000A1F]	Motherboard resources
	[00000A20 - 00000A2F]	Motherboard resources
	[00000A30 - 00000A3F]	Motherboard resources
	[00000D00 - 0000FFFF]	PCI bus
	[00001000 - 0000100F]	Motherboard resources
	[0000D000 - 0000D0FF]	Realtek PCIe GBE Family Controller #2
	[0000D000 - 0000DFFF]	Intel(R) N10/ICH7 Family PCI Express Root Port - 27D2
	[0000E000 - 0000E0FF]	Realtek PCIe GBE Family Controller
	[0000E000 - 0000EFFF]	Intel(R) N10/ICH7 Family PCI Express Root Port - 27D0
	[0000F000 - 0000F01F]	Intel(R) N10/ICH7 Family SMBus Controller - 27DA
	[0000F020 - 0000F02F]	Standard AHCI 1.0 Serial ATA Controller
	[0000F040 - 0000F05F]	Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CB
	[0000F060 - 0000F07F]	Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CA
	[0000F080 - 0000F09F]	Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C9
	[0000FA00 - 0000F0BF]	Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C8
	[0000F0C0 - 0000F0C3]	Standard AHCI 1.0 Serial ATA Controller

B.2 Memory Address Map

Address Range	Device
[00000000 - 00000FFF]	Motherboard resources
[00000000 - 00000FFF]	Motherboard resources
[00000000 - 00003FFF]	Motherboard resources
[000A0000 - 000BFFFF]	Intel(R) Graphics Media Accelerator 3600 Series
[000A0000 - 000BFFFF]	PCI bus
[000C0000 - 000DFFFF]	PCI bus
[000E0000 - 000EFFFF]	PCI bus
[000F0000 - 000FFFFFF]	PCI bus
[7F800000 - 7FFFFFFF]	PCI bus
[80000000 - FEBFFFFFF]	PCI bus
[DFC00000 - DFCFFFFFF]	Intel(R) Graphics Media Accelerator 3600 Series
[DFD00000 - DFD03FFF]	Realtek PCIe GBE Family Controller #2
[DFD00000 - DFD0FFFF]	Intel(R) N10/ICH7 Family PCI Express Root Port - 27D2
[DFD04000 - DFD04FFF]	Realtek PCIe GBE Family Controller #2
[DFE00000 - DFE03FFF]	Realtek PCIe GBE Family Controller
[DFE00000 - DFE0FFFF]	Intel(R) N10/ICH7 Family PCI Express Root Port - 27D0
[DFE04000 - DFE04FFF]	Realtek PCIe GBE Family Controller
[DFF00000 - DFF03FFF]	High Definition Audio Controller
[DFF04000 - DFF043FF]	Standard AHCI 1.0 Serial ATA Controller
[DFF05000 - DFF053FF]	Intel(R) N10/ICH7 Family USB2 Enhanced Host Controller - 27CC
[E0000000 - EFFFFFFF]	System board
[FEC00000 - FEC00FFF]	Motherboard resources
[FED00000 - FED003FF]	High precision event timer
[FED14000 - FED19FFF]	System board
[FED1C000 - FED1FFFF]	Motherboard resources
[FED1C000 - FED1FFFF]	Motherboard resources
[FED20000 - FED8FFFF]	Motherboard resources
[FED45000 - FED8FFFF]	Motherboard resources
[FEE00000 - FEE00FFF]	Motherboard resources
[FF000000 - FFFFFFFF]	Intel(R) 82802 Firmware Hub Device
[FF000000 - FFFFFFFF]	Intel(R) 82802 Firmware Hub Device
[FFC00000 - FFFFFFFF]	Motherboard resources

B.3 IRQ Mapping Chart

Interrupt request (IRQ)	Device
(ISA) 0x00000000 (00)	System timer
(ISA) 0x00000003 (03)	Communications Port (COM2)
(ISA) 0x00000004 (04)	Communications Port (COM1)
(ISA) 0x00000008 (08)	System CMOS/real time clock
(ISA) 0x0000000A (10)	Communications Port (COM3)
(ISA) 0x0000000D (13)	Numeric data processor
(PCI) 0x0000000B (11)	Intel(R) N10/ICH7 Family SMBus Controller - 27DA
(PCI) 0x00000010 (16)	Intel(R) N10/ICH7 Family PCI Express Root Port - 27D0
(PCI) 0x00000010 (16)	Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CB
(PCI) 0x00000011 (17)	Intel(R) N10/ICH7 Family PCI Express Root Port - 27D2
(PCI) 0x00000012 (18)	Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CA
(PCI) 0x00000013 (19)	Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C9
(PCI) 0x00000013 (19)	Standard AHCI 1.0 Serial ATA Controller
(PCI) 0x00000016 (22)	High Definition Audio Controller
(PCI) 0x00000017 (23)	Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C8
(PCI) 0x00000017 (23)	Intel(R) N10/ICH7 Family USB2 Enhanced Host Controller - 27CC
(PCI) 0xFFFFFFFF (-4)	Realtek PCIe GBE Family Controller #2
(PCI) 0xFFFFFFFF (-3)	Realtek PCIe GBE Family Controller
(PCI) 0xFFFFFFFF (-2)	Intel(R) Graphics Media Accelerator 3600 Series

B.4 DMA Channel Assignments

Direct memory access (DMA)
4 Direct memory access controller

Appendix

C

AHCI Setting

B.1 Setting AHCI

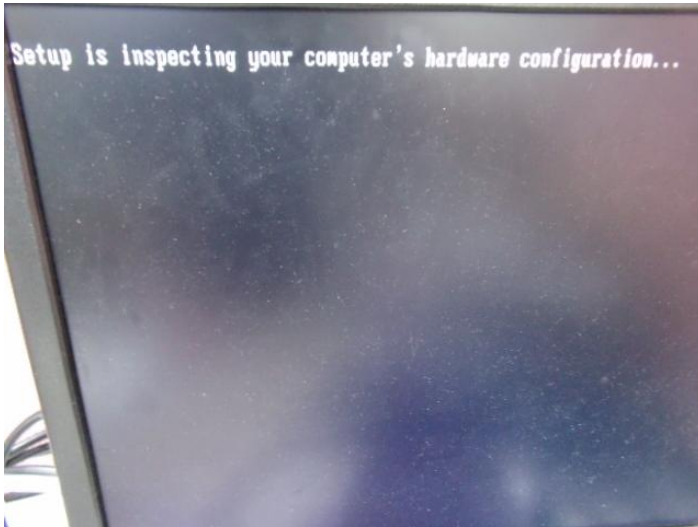
OS installation to setup AHCI Mode.

Step 1: Copy the files below from “Driver CD -> STEP5-AHCI\WINXP_32” to Disk



Step 2: Connect the USB Floppy to the system

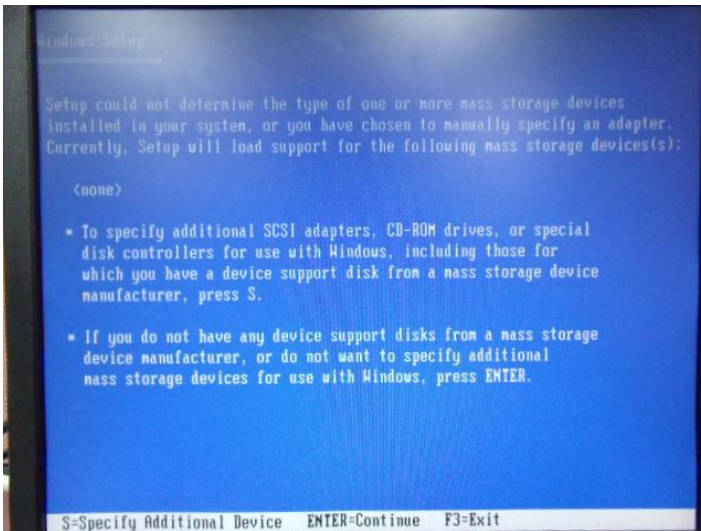
Step 3: Setup OS

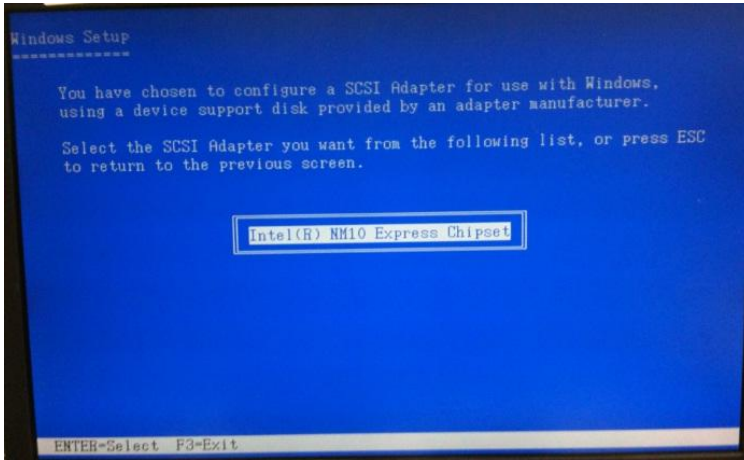


Step 4: Press "F6"



Step 5: Choose "S"



Step 6: Choose "Intel(R) NM10 Express Chipset"

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

Step 8: Setup is loading files, follow the instruction when it's finished

