NanoCOM-CV Rev.A

Intel® Atom™ N2600 1.6GHz Processor

Intel® NM10

Gigabit Ethernet

2 SATA 3.0 Gb/s

8 USB2.0, 3 PCI-E[x1]

COM Express Compact Module

NanoCOM-CV Manual Rev.A 2nd Ed.
Feb. 27, 2014

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Packing List

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

- 4 M2.5 Screw
- 1 CD-ROM for manual (in PDF format) and drivers
- 1 NanoCOM-CV Rev.A

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

Contents

Appendix B I/O Information

Chapter

1

General Information

1.1 Introduction

AAEON, a leading embedded board manufacturer, is pleased to announce the debut of their new generation COM Express Module- NanoCOM-CV Rev.A. The NanoCOM-CV Rev.A is a cutting-edge product that provides high performance and low power consumption in the embedded market.

NanoCOM-CV Rev.A adopts the latest Intel® Atom™ N2600 processor. The system memory deploys with onboard 204-pin DDR3 800 memory up to 2 GB. In addition, Intel® 82583V supports 10/100/1000Base-TX that allows faster network connections. This model applies three PCI-Express[x1], one LPC bus, and one SMBus. Moreover, two SATA 3.0Gb/s (one shared with SSD) are configured on the NanoCOM-CV Rev.A. NanoCOM-CV Rev.A also equips eight USB2.0 for flexible I/O expansions.

The display of NanoCOM-CV Rev.A supports CRT/LVDS simultaneous and dual view displays. This brand new COM Express Module is developed to cater to the requirements of Automation, Medical, ticket machine, transportation, gaming, KIOSK, and POS/POI applications.

1.2 Features

- Onboard Intel® Atom™N2600 Processor
- Intel® NM10
- SODIMM DDR3 800 Memory, Max. 2 GB
- Intel® 82583V Gigabit Ethernet
- CRT, Up to 18-bit Single Channel LVDS LCD, DisplayPort™
- High Definition Audio Interface
- SATA 3.0Gb/s x 2 (One Shared with SSD)
- USB2.0 x 8
- PCI-Express[x1] x 3
- Nano Module Size, Pin-out Type 1, 84mm x 55mm

1.3 Specifications

System

Form Factor	Nano Module, Pin-out Type 1
Processor	Intel® Atom™ N2600 processor, 1.6 GHz
System Memory	204-pin DDR3 800 SODIMM x 1, Max. 2 GB
Chipset	Intel® NM10
I/O Chipset	Intel® NM10
Ethernet	Intel® 82583V,10/100/1000Base-TX
BIOS	AMI BIOS SPI type, 4MB ROM
EEPROM	Atmel® AT24C02
Wake On LAN	Yes
BIOS Boot Spec. (BBS)	Yes
Watchdog Timer	Fintek F75111
H/W Status Monitoring	Supports CPU temperature monitoring
Expansion Interface	PCI-Express [x1] x 3 LPC bus x 1 SMBus x 1
Power Requirement	Nominal: +12V Wide DC input range: +4.75V to +14.7V (optional)
Board Size	3.31”(L) x 2.17”(W) (84mm x 55mm)
Gross Weight	0.44 lb (0.2 Kg)
Operating Temperature	32˚F ~ 140˚F (0˚C ~ 60˚C)

- Storage Temperature: -40˚F ~ 176˚F (-40˚C ~ 80˚C)
- Operating Humidity: 0% ~ 90% relative humidity, non-condensing

Display: Supports CRT/LVDS Simultaneous/ dual view displays

- Chipset: Intel® Atom™ N2600 processor integrated
- Memory: Shared system memory up to 512MB/ DVMT 5.0
- Resolution: Up to 1920x1200 @ 60Hz for CRT
Up to 1366x768 @ 18-bit for LCD
- LCD Interface: Up to 18-bit single channel LVDS

I/O

- Storage: SATA 3.0Gb/s x 2 (on shared with SSD)
SATA SSD x 1 up to 16GB (optional)
- USB: USB 2.0 x 8
- Audio: High definition audio
- GPIO: Up to 4 in and 4 out
- K/B & Mouse: From LPC interface on carrier board

Chapter

2

Quick Installation Guide

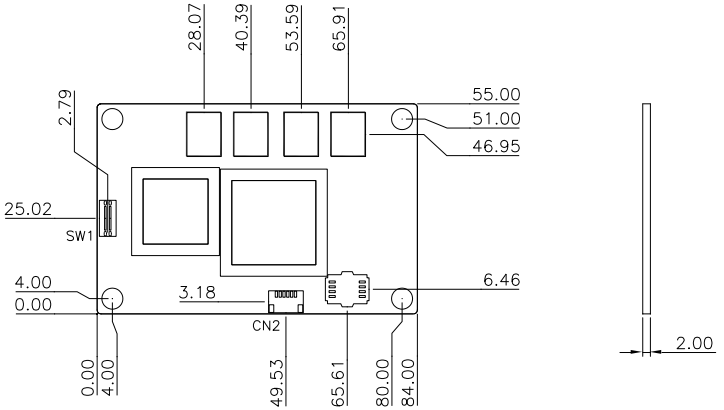
2.1 Safety Precautions

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.

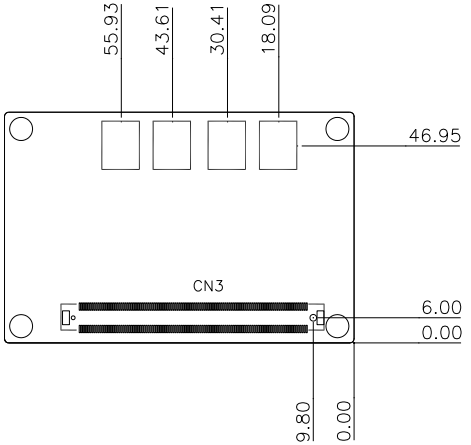
Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not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

2.2 Location and Mechanical Drawings of Connectors and Switches

Component Side



Solder Side



2.3 List of Switch and Connector

There is a switch on the board that allows you to configure your system to suit your application. The table below shows the function of the switch and connectors.

Label	Function
SW1	1. AT & ATX mode 2. SSD Write Protect Function
CN2	CPLD Flash Connector
CN3	Board to Board Connector

2.4 AT/ATX Selection and SSD Write Protect Function (SW1)

	ON	OFF
1	ATX Mode	AT Mode
2	Write protect	Writable

2.5 CPLD Flash Connector (CN2)

Pin	Signal
1	TMS
2	TDI
3	TDO
4	TCK
5	GND
6	3.3V

2.6 Board to Board Connector (CN3)

Row A		Row B	
A1	GND (FIXED)	B1	GND (FIXED)
A2	GBE0_MDI3-	B2	GBE0_ACT#
A3	GBE0_MDI3+	B3	LPC_FRAME#
A4	GBE0_LINK100#	B4	LPC_AD0
A5	GBE0_LINK1000#	B5	LPC_AD1
A6	GBE0_MDI2-	B6	LPC_AD2
A7	GBE0_MDI2+	B7	LPC_AD3
A8	GBE0_LINK	B8	LPC_DRQ0#
A9	GBE0_MDI1-	B9	LPC_DRQ1#
A10	GBE0_MDI1+	B10	LPC_CLK
A11	GND (FIXED)	B11	GND (FIXED)
A12	GBE0_MDI0-	B12	PWRBTN#
A13	GBE0_MDI0+	B13	SMB_CK
A14	GBE0_CTREF	B14	SMB_DAT
A15	SUS_S3#	B15	SMB_ALERT#
A16	SATA0_TX+	B16	SATA1_TX+
A17	SATA0_TX-	B17	SATA1_TX-
A18	SUS_S4#	B18	SUS_STAT#
A19	SATA0_RX+	B19	SATA1_RX+
A20	SATA0_RX-	B20	SATA1_RX-
A21	GND (FIXED)	B21	GND (FIXED)

A22	N.C.	B22	N.C.
A23	N.C.	B23	N.C.
A24	SUS_S5#	B24	PWR_OK
A25	N.C.	B25	N.C.
A26	N.C.	B26	N.C.
A27	BATLOW#	B27	WDT
A28	ATA_ACT#	B28	AC_SDIN2
A29	AC_SYNC	B29	N.C.
A30	AC_RST#	B30	AC_SDIN0
A31	GND (FIXED)	B31	GND (FIXED)
A32	AC_BITCLK	B32	SPKR
A33	AC_SDOUT	B33	I2C_CK
A34	BIOS_DIS0#	B34	I2C_DAT
A35	THRMTRIP#	B35	THRM#
A36	USB6-	B36	USB7-
A37	USB6+	B37	USB7+
A38	USB_6_7_OC#	B38	USB_4_5_OC#
A39	USB4-	B39	USB5-
A40	USB4+	B40	USB5+
A41	GND (FIXED)	B41	GND (FIXED)
A42	USB2-	B42	USB3-
A43	USB2+	B43	USB3+
A44	USB_2_3_OC#	B44	USB_0_1_OC#
A45	USB0-	B45	USB1-

A46	USB0+	B46	USB1+
A47	VCC_RTC	B47	EXCD1_PERST#
A48	EXCD0_PERST#	B48	EXCD1_CPPE#
A49	EXCD0_CPPE#	B49	SYS_RESET#
A50	LPC_SERIRQ	B50	CB_RESET#
A51	GND (FIXED)	B51	GND (FIXED)
A52	N.C.	B52	N.C.
A53	N.C.	B53	N.C.
A54	GPI0	B54	GPO1
A55	N.C.	B55	N.C.
A56	N.C.	B56	N.C.
A57	GND	B57	GPO2
A58	N.C.	B58	N.C.
A59	N.C.	B59	N.C.
A60	GND (FIXED)	B60	GND (FIXED)
A61	PCIE_TX2+	B61	PCIE_RX2+
A62	PCIE_TX2-	B62	PCIE_RX2-
A63	GPI1	B63	GPO3
A64	PCIE_TX1+	B64	PCIE_RX1+
A65	PCIE_TX1-	B65	PCIE_RX1-
A66	GND	B66	WAKE0#
A67	GPI2	B67	WAKE1#
A68	PCIE_TX0+	B68	PCIE_RX0+
A69	PCIE_TX0-	B69	PCIE_RX0-

A70	GND (FIXED)	B70	GND (FIXED)
A71	LVDS_A0+	B71	N.C.
A72	LVDS_A0-	B72	N.C.
A73	LVDS_A1+	B73	N.C.
A74	LVDS_A1-	B74	N.C.
A75	LVDS_A2+	B75	N.C.
A76	LVDS_A2-	B76	N.C.
A77	LVDS_VDD_EN	B77	N.C.
A78	N.C.	B78	N.C.
A79	N.C.	B79	LVDS_BKLT_EN
A80	GND (FIXED)	B80	GND (FIXED)
A81	LVDS_A_CK+	B81	N.C.
A82	LVDS_A_CK-	B82	N.C.
A83	LVDS_I2C_CK	B83	LVDS_BKLT_CTRL
A84	LVDS_I2C_DAT	B84	VCC_5V_SBY
A85	GPI3	B85	VCC_5V_SBY
A86	KBD_RST#	B86	VCC_5V_SBY
A87	KBD_A20GATE	B87	VCC_5V_SBY
A88	PCIE0_CK_REF+	B88	BISO_DIS1#
A89	PCIE0_CK_REF-	B89	VGA_RED
A90	GND (FIXED)	B90	GND (FIXED)
A91	SPI _POWER	B91	VGA_GRN
A92	SPI_MISO	B92	VGA_BLU
A93	GPO0	B93	VGA_HSYNC

A94	SPI_CLK	B94	VGA_VSYNC
A95	SPI_MOSI	B95	VGA_I2C_CK
A96	GND	B96	VGA_I2C_DAT
A97	N.C.	B97	SPI_CS#
A98	N.C.	B98	H_SMI#
A99	N.C.	B99	SCI#
A100	GND (FIXED)	B100	GND (FIXED)
A101	N.C.	B101	N.C.
A102	N.C.	B102	N.C.
A103	N.C.	B103	N.C.
A104	VCC_12V	B104	VCC_12V
A105	VCC_12V	B105	VCC_12V
A106	VCC_12V	B106	VCC_12V
A107	VCC_12V	B107	VCC_12V
A108	VCC_12V	B108	VCC_12V
A109	VCC_12V	B109	VCC_12V
A110	GND (FIXED)	B110	GND (FIXED)

Below Table for China RoHS Requirements
产品中有毒有害物质或元素名称及含量

AAEON Main Board/ Daughter Board/ Backplane

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板及其电子组件	×	○	○	○	○	○
外部信号连接器及线材	×	○	○	○	○	○

O：表示该有毒有害物质在该部件所有均质材料中的含量均在 **SJT 11363-2006** 标准规定的限量要求以下。

X：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 **SJT 11363-2006** 标准规定的限量要求。

备注：此产品所标示之环保使用期限，系指在一般正常使用状况下。

Chapter

3

AMI BIOS Setup

3.1 System Test and Iinitialization

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 stored in the CMOS memory and BIOS NVRAM. If system configuration is not found or system configuration data error is detected, system will load optimized default and re-boot with this default system configuration automatically.

There are four situations in which you will need to setup system configuration:

1. You are starting your system for the first time
2. You have changed the hardware attached to your system
3. The system configuration is reset by Clear-CMOS jumper
4. The CMOS memory has lost power and the configuration information has been erased.

The NanoCOM-CV Rev.A 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 and BIOS NVRAM 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

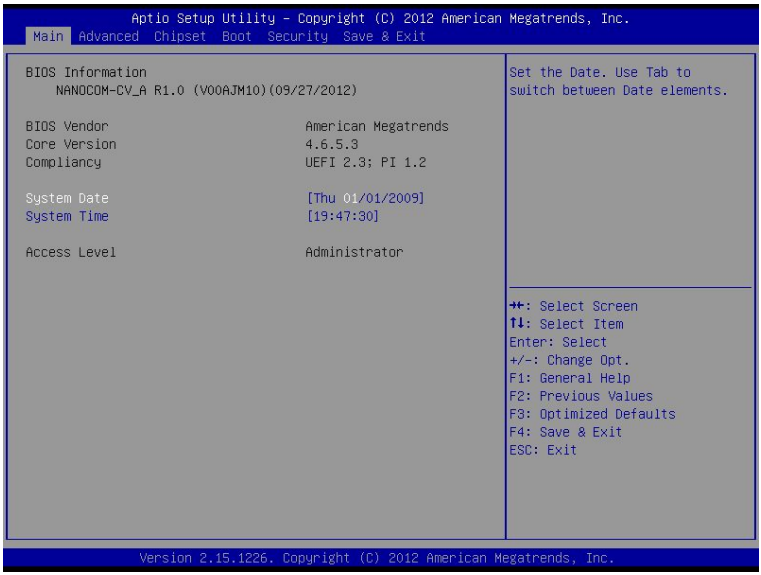
Set setup administrator password.

Save & Exit

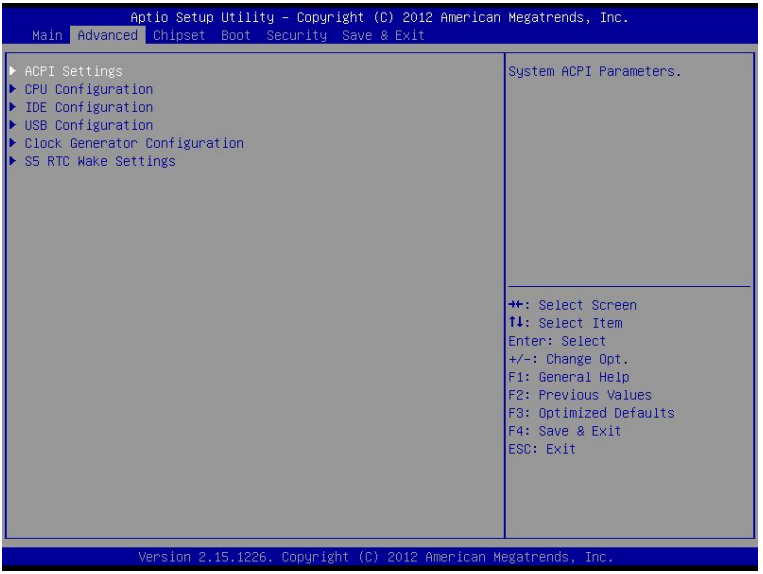
Exit system setup after saving the changes.

Setup Menu

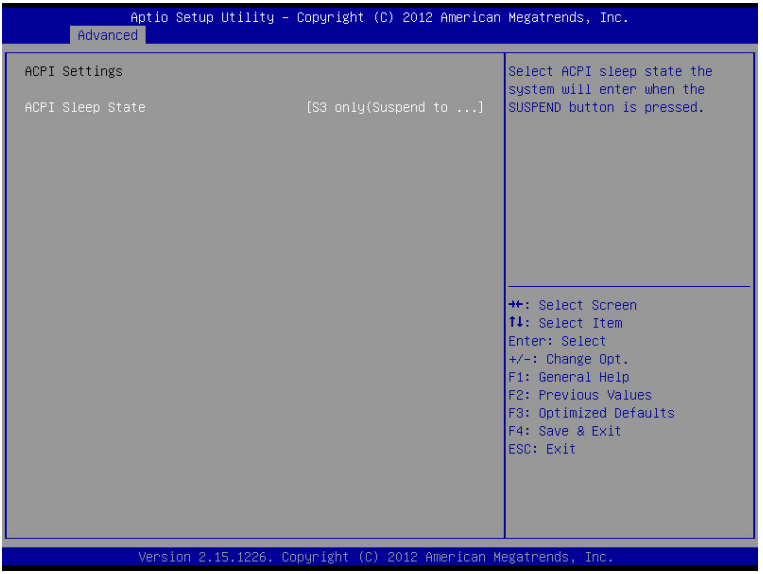
Setup submenu: Main



Setup submenu: Advanced



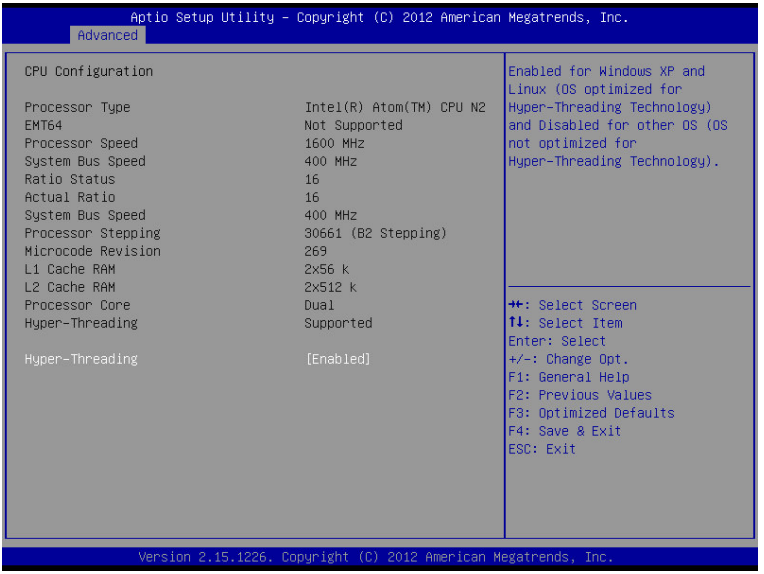
ACPI Settings



Options summary:

ACPI Sleep State	S3 only (Suspend to RAM)	Optimal Default, Failsafe Default
Select the ACPI state used for System Suspend		

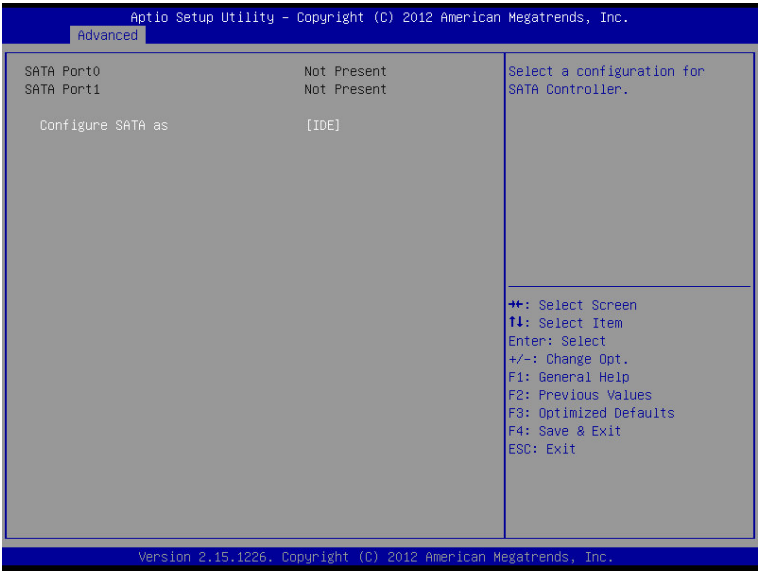
CPU Configuration



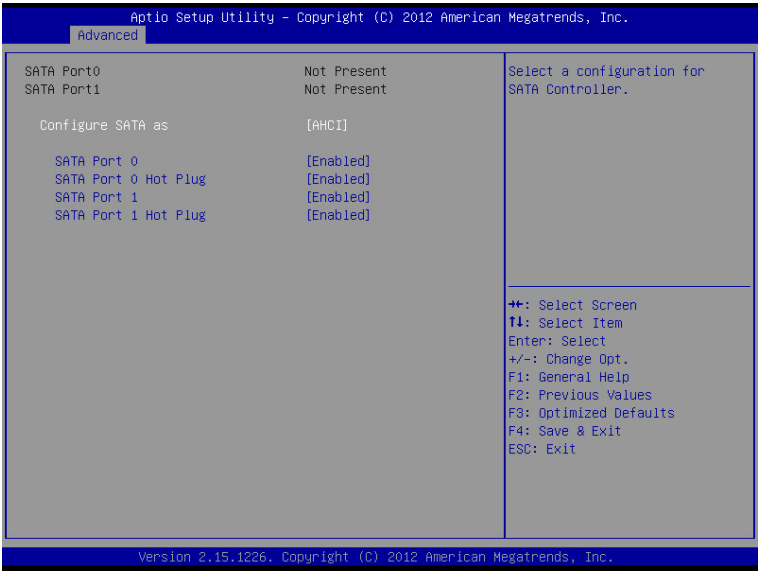
Options summary:

Hyper-Threading	Disabled	Optimal Default, Failsafe Default
	Enabled	
En/Disable CPU Hyper-Threading function		

IDE Configuration (IDE)



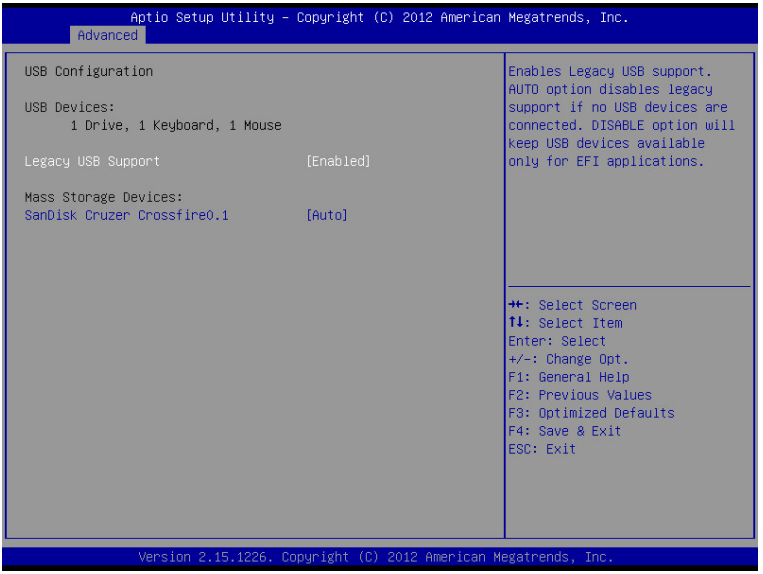
IDE Configuration (AHCI)



Options summary:

SATA Port 0/1	Disabled	Optimal Default, Failsafe Default
	Enabled	
En/Disable SATA Port		
SATA Port 0/1 Hot Plug	Disabled	Optimal Default, Failsafe Default
	Enabled	
Designates this port as Hot Pluggable		

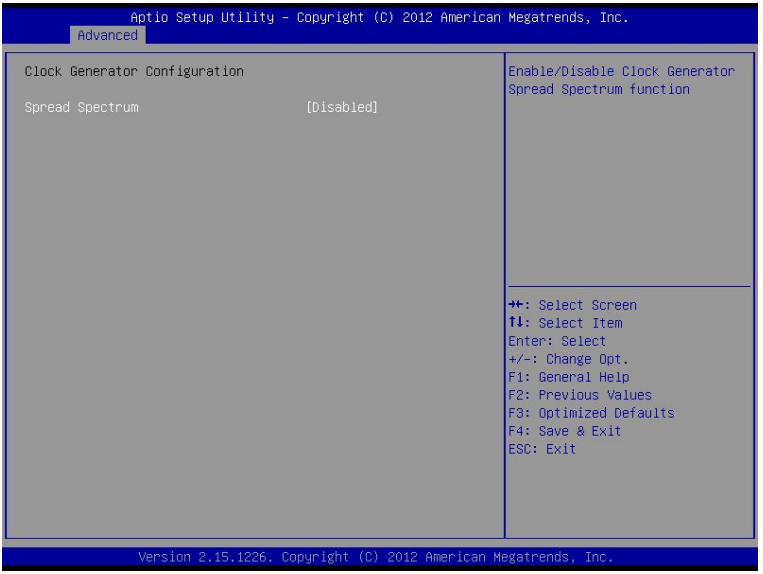
USB Configuration



Options summary:

Legacy USB Support	Enabled	Optimal Default, Failsafe Default
	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		
Device Name (Emulation Type)	Auto	Optimal Default, Failsafe Default
	Floppy	
	Forced FDD	
	Hard Disk	
	CDROM	
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)		

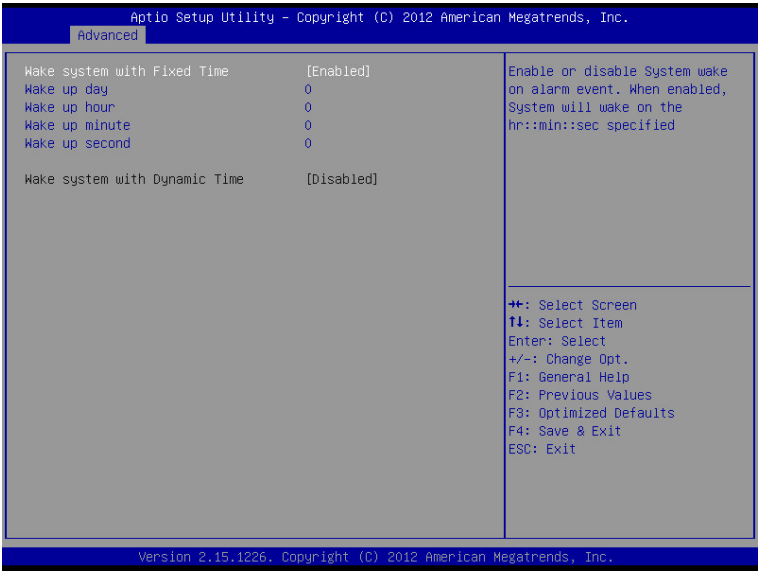
Clock Generator Configuration



Options summary:

Spread Spectrum	Disabled	Optimal Default, Failsafe Default
	Enabled	
En/Disable Clock Generator Spread Spectrum function		

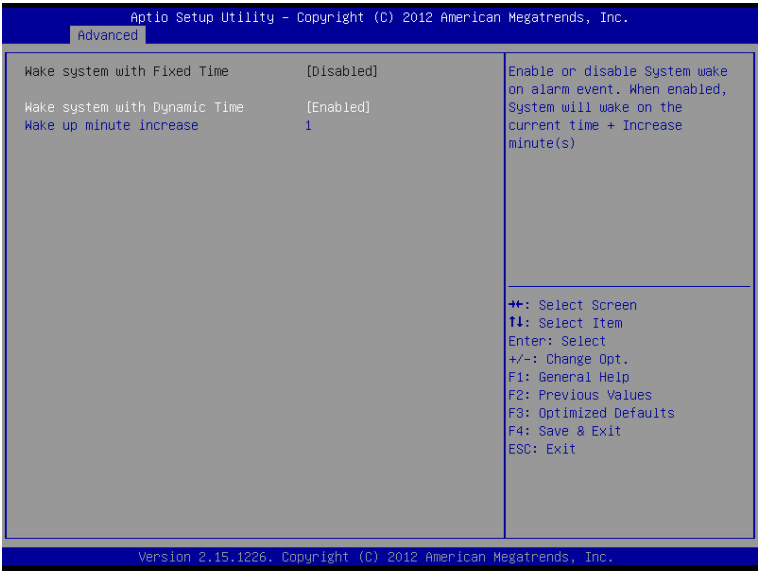
S5 RTC Wake Settings (Fixed Time)



Options summary:

Wake system with Fixed Time	Disabled	Optimal Default, Failsafe Default
	Enabled	
En/Disable System wake on alarm event. When enabled, System will wake on the hr:min:sec specified		
Wake up day	0-31	Default 0
Select 0 for daily system wake up, 1-31 for witch day of the moth that you would like the system to wake up.		
Wake up day	0-23	Default 0
Select 0-23 For example enter 3 for 3am and 15 for 3pm		
Wake up day	0-59	Default 0
Select 0-59		
Wake up day	0-59	Default 0
Select 0-59		

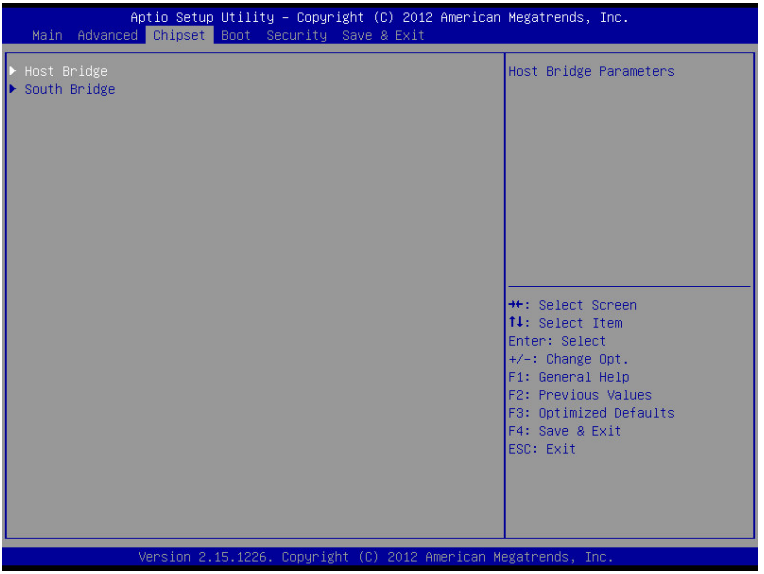
S5 RTC Wake Settings (Dynamic Time)



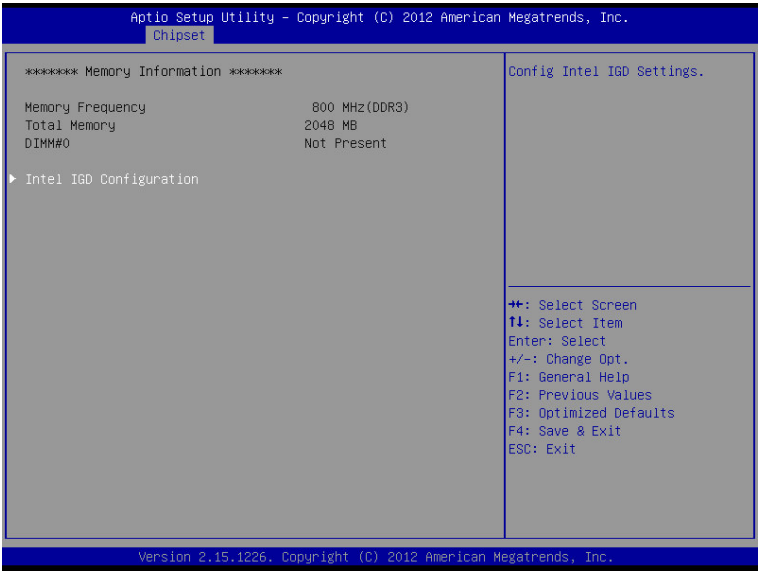
Options summary:

Wake system with Dynamic Time	Disabled	Optimal Default, Failsafe Default
	Enabled	
En/Disable System wake on alarm event. When enabled, System will wake on current time + Increases minutese(s)		
Wake up day	1-5	Default 1
Select 1-5		

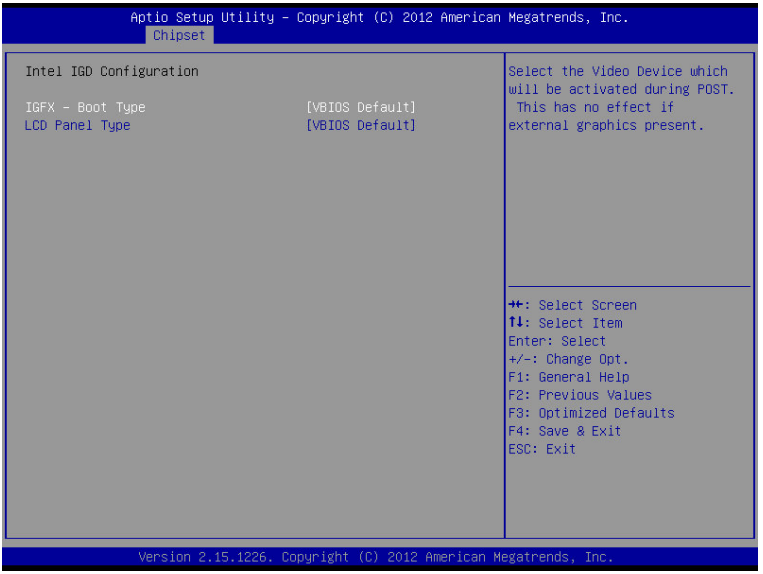
Setup submenu: Chipset



HOST Bridge


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Chipset
******* Memory Information *******
Memory Frequency 800 MHz(DDR3)
Total Memory 2048 MB
DIMM#0 Not Present
Intel IGD Configuration
Config Intel IGD Settings.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.

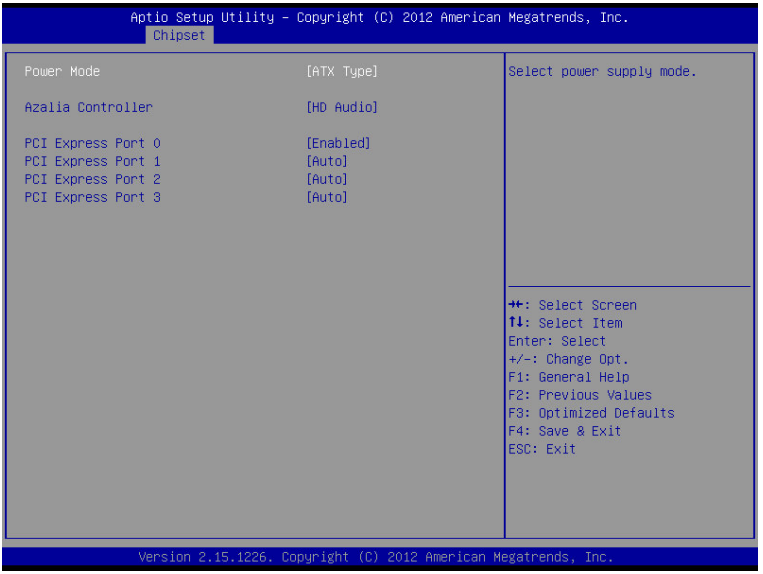
Intel IGD Configuration



Options summary:

IGFX – Boot Type	VBIOS Default	Optimal Default, Failsafe Default
	CRT	
	LFP	
	CRT + LFP	
Select the Video Device which will be activated during POST. This has no effect if external graphics present.		
LCD Panel Type	VBIOS Default	Optimal Default, Failsafe Default
	640x480 LVDS	
	800x600 LVDS	
	1024x768 LVDS	
	1280x1024 LVDS	
	1366x768 LVDS	
	1024x600 LVDS	
	1280x800 LVDS	
Select LCD panel used by Internal Graphics Device by selecting the appropriate setup item.		

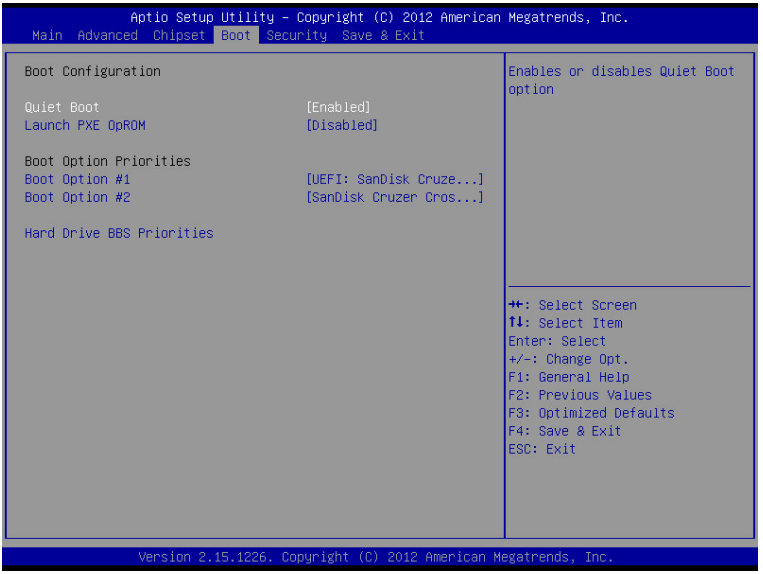
South Bridge



Options summary:

Power Mode	ATX Type	Optimal Default, Failsafe Default
	AT Type	
Select power supply mode.		
Azalia Controller	Disabled	
	HD Audio	Optimal Default, Failsafe Default
En/Disable Azalia Controller		
PCI Express Port 0	Disabled	
	Enabled	Optimal Default, Failsafe Default
En/Disable PCI Express Root Port 0		
PCI Express Port 1/2/3	Disabled	
	Enabled	
	Auto	Optimal Default, Failsafe Default
En/Disable PCI Express Root Port 1/2/3		

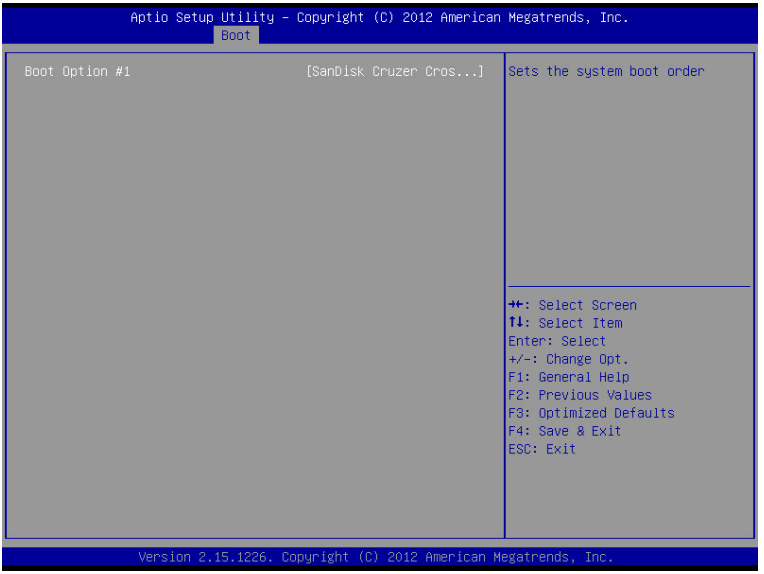
Setup submenu: Boot



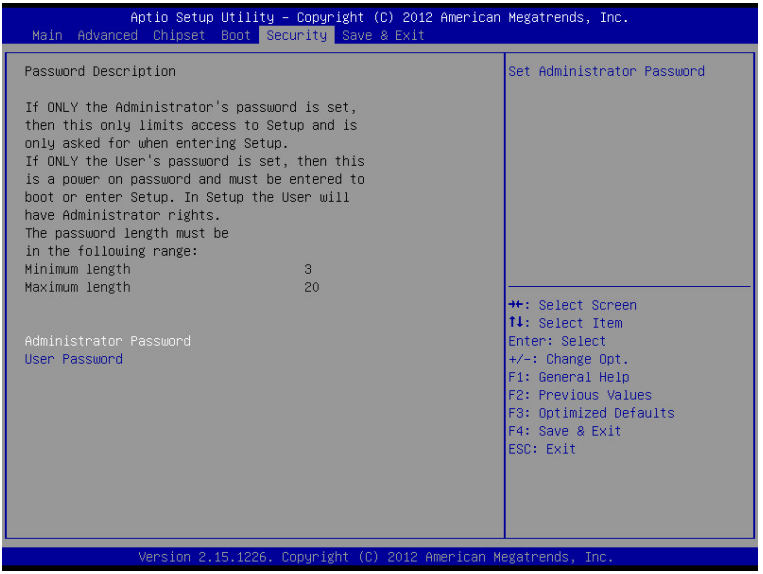
Options summary:

Quiet Boot	Disabled	
	Enabled	Optimal Default, Failsafe Default
En/Disable showing boot logo.		
Launch PXE OpROM	Disabled	Optimal Default, Failsafe Default
	Enabled	
En/Disable Legacy PXE OpROM		

BBS Priorities



Security



Change User/Supervisor Password

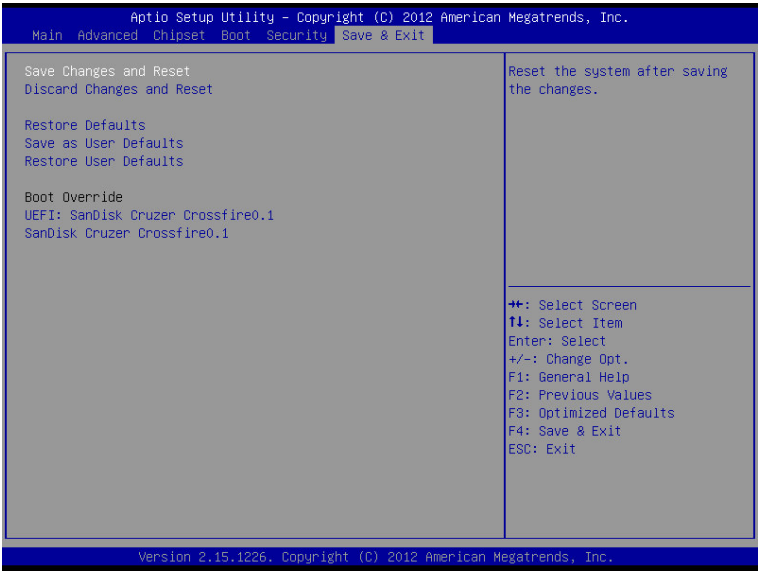
You can install a Supervisor password, and if you install a supervisor password, you can then install a user password. A user password does not provide access to many of the features in the Setup utility.

If you highlight these items and press Enter, 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



Chapter

4

Driver Installation

The NanoCOM-CV Rev.A 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 LAN Driver

Step 4 – Install Audio Driver

Step 5 – Install Rapid Storage Technology Driver

Please read following instructions for detailed installations.

4.1 Installation:

Insert the NanoCOM-CV Rev.A CD-ROM into the CD-ROM Drive. And install the drivers from Step 1 to Step 5 in order.

Step 1 – Install Chipset Driver

1. Click on the ***Step1 - CHIPSET*** folder and double click on ***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

1. Click on the ***Step2 - VGA*** folder and select the OS folder your system is
2. Double click on ***.exe*** file located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you to install 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 ***PROWin32.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 Audio Driver

1. Click on the ***Step4 - AUDIO*** folder and select the OS folder your system is
2. Double click on ***Setup.exe*** file located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you to install the driver automatically

Step 5 – Install Rapid Storage Technology Driver

1. Click on the ***Step5 - Rapid Storage Technology*** folder and double click on ***iata_cd.exe*** file
2. Follow the instructions that the window shows
3. The system will help you to install the driver automatically

Appendix

A

Programming the Watchdog Timer

A.1 Watchdog Timer Initial Program

Table 1 : Smbus IO relative register table		
	Default Value	**Note**
Smbus Base Address	**0xF000**(Note1)	Chipset smbus base address
Smbus Status	**0x00**(Note2)	Smbus status register
Smbus Control	**0x02**(Note3)	Smbus control register
Smbus Offset	**0x03**(Note4)	Smbus offset register
Smbus Slave Address	**0x04**(Note5)	Smbus device slave address register
Smbus Data1	**0x05**(Note6)	Smbus data 1 register
Smbus Data2	**0x06**(Note7)	Smbus data 2 register
Device Slave Address	**0x37**(Note8)	Device smbus slave address(Non shift format)

Table 2 : Watchdog relative register table				
	Register	**BitNum**	**Value**	**Note**
Timer Counter	**0x37**(Note9)		(Note10)	Time of watchdog timer (0~255) This register is byte access
Counting Unit	**0x36**(Note11)	**3**(Note12)	**0**(Note13)	Select time unit. 0: second 1: minute
Watchdog Enable	**0x36**(Note14)	**5**(Note15)	(Note16)	0: Disable 1: Enable
Timeout Status	**0x36**(Note17)	**6**(Note18)	**1**	1: Clear timeout status

```
*****************************************************************************
#define   void   SmbusWriteByte(byte SlaveAddress, byte Offset, byte Value);
#define   byte   SmbusReadByte(byte SlaveAddress, byte Offset);
#define   void   IOWriteByte(byte IOPort, byte Value);
#define   byte   IOReadByte(byte IOPort);

// Smbus IO relative definition (Please reference to Table 1)
#define word   SMBBase    //This parameter is represented from Note1
#define byte   SMBStatus   //This parameter is represented from Note2
#define byte   SMBControl   //This parameter is represented from Note3
#define byte   SMBOffset   //This parameter is represented from Note4
#define byte   SMBSlave   //This parameter is represented from Note5
#define byte   SMBData1   //This parameter is represented from Note6
#define byte   SMBData2   //This parameter is represented from Note7
#define byte   DeviceSlave   //This parameter is represented from Note8

// Watch Dog relative definition (Please reference to Table 2)
#define byte   TimerReg   //This parameter is represented from Note9
#define byte   TimerVal   // This parameter is represented from Note10
#define byte   UnitReg   //This parameter is represented from Note11
#define byte   UnitBit   //This parameter is represented from Note12
#define byte   UnitVal   //This parameter is represented from Note13
#define byte   EnableReg   //This parameter is represented from Note14
#define byte   EnableBit   //This parameter is represented from Note15
#define byte   EnableVal   //This parameter is represented from Note16
#define byte   StatusReg   // This parameter is represented from Note17
#define byte   StatusBit   // This parameter is represented from Note18
*****************************************************************************
```

```
**********************************************************************************
VOID   Main(){
        // Procedure : AaeonWDTConfig
        // (byte)Timer : Time of WDT timer.(0x00~0xFF)
        // (boolean)Unit : Select time unit(0: second, 1: minute).
        AaeonWDTConfig();

        // Procedure : AaeonWDTEnable
        // This procudure will enable the WDT counting.
        AaeonWDTEnable();
}
**********************************************************************************
```

```
*****************************************************************************
// Procedure : AaeonWDTEnable
VOID   AaeonWDTEnable (){
        WDTEnableDisable(DeviceSlave, EnableReg, EnableBit, 1);
}

// Procedure : AaeonWDTConfig
VOID   AaeonWDTConfig (){
        // Disable WDT counting
        WDTEnableDisable(DeviceSlave, EnableReg, EnableBit, 0);
        // Clear Watchdog Timeout Status
        WDTClearSmbusStatus();
        // WDT relative parameter setting
        WDTParameterSetting();
}

VOID   WDTEnableDisable(byte SlaveAdd, byte Register, byte BitNum, byte Value){
        Byte TmpValue;

        TmpValue = SmbusReadByte(SlaveAdd, SMBControl);
        TmpValue &= ~(1 << BitNum);
        TmpValue |= (Value << BitNum)
        SmbusWriteByte(SlaveAdd, SMBControl, TmpValue);
}
*****************************************************************************
```

```
*****************************************************************************************
VOID    WDTParameterSetting(){
        Byte TmpValue;

        // Watchdog Timer counter setting
        SmbusWriteByte(DeviceSlave, TimerReg, TimerVal);
        // WDT counting unit setting
        TmpValue = SmbusReadByte(DeviceSlave, UnitReg);
        TmpValue &= ~(1 << UnitBit);
        TmpValue |= (UnitVal << UnitBit);
        SmbusWriteByte(DeviceSlave, UnitReg, TimerVal);
        // WDT pulse width default as 20ms for FINTEK F75111
        TmpValue = SmbusReadByte(DeviceSlave, 0x36);
        TmpValue &= 0xFC;
        TmpValue |= 0x01;
        SmbusWriteByte(DeviceSlave, 0x36, TimerVal);
}

VOID    WDTClearSmbusStatus(){
        SmbusWriteByte(DeviceSlave, SMBStatus, 0xFE);
}
*****************************************************************************************
```

```
*****************************************************************************
VOID    BeforeSmBusAccess(word SMBBase){
        Byte TmpValue;

        TmpValue = IOReadByte(SMBBase + SMBStatus);
        While( TmpValue & 0x40 ){ //Check inuse status
                IODelay();
        }
        While( TmpValue & 0x01 ){ //Check host busy status
                IODelay();
        }
        IOWriteByte(SMBBase + SMBStatus, 0xFE); //Clear all status
}
VOID    WaitSmBusAccess(word SMBBase){
        Byte TmpValue = 0;

        While( !(TmpValue & 0x02) ){
                TmpValue = IOReadByte(SMBBase + SMBStatus);
                IODelay();
        }
}
*****************************************************************************
```

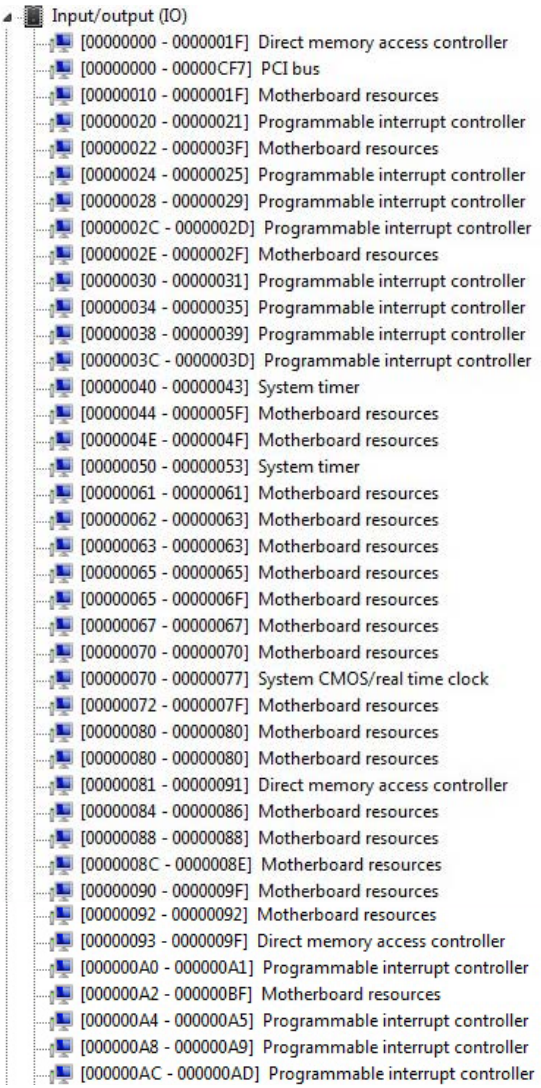
```
**********************************************************************************
VOID    SmbusWriteByte(byte SlaveAddress, byte Offset, byte Value){
        BeforeSmBusAccess(SMBBase);

        //Write smbus slave address
        IOWriteByte( SMBBase + SMBSlave, (SlaveAddress<<1 & 0xFE) );
        IOWriteByte(SMBBase + SMBOffset, Offset); //Write offset
        IOWriteByte(SMBBase + SMBData1, Value); //Write value
        IOWriteByte(SMBBase + SMBControl, 0x48); //byte command
        WaitSmBusAccess(SMBBase);
}
byte    SmbusReadByte(byte SlaveAddress, byte Offset){
        Byte TmpValue;

        BeforeSmBusAccess(SMBBase);

        //Write smbus slave address
        IOWriteByte( SMBBase + SMBSlave, (SlaveAddress<<1 | 0x01) );
        IOWriteByte(SMBBase + SMBOffset, Offset); //Write offset
        IOWriteByte(SMBBase + SMBControl, 0x48); // byte command
        WaitSmBusAccess(SMBBase);

        TmpValue = IOReadByte(SMBBase + SMBData1);
        Return TmpValue;
}
**********************************************************************************
```

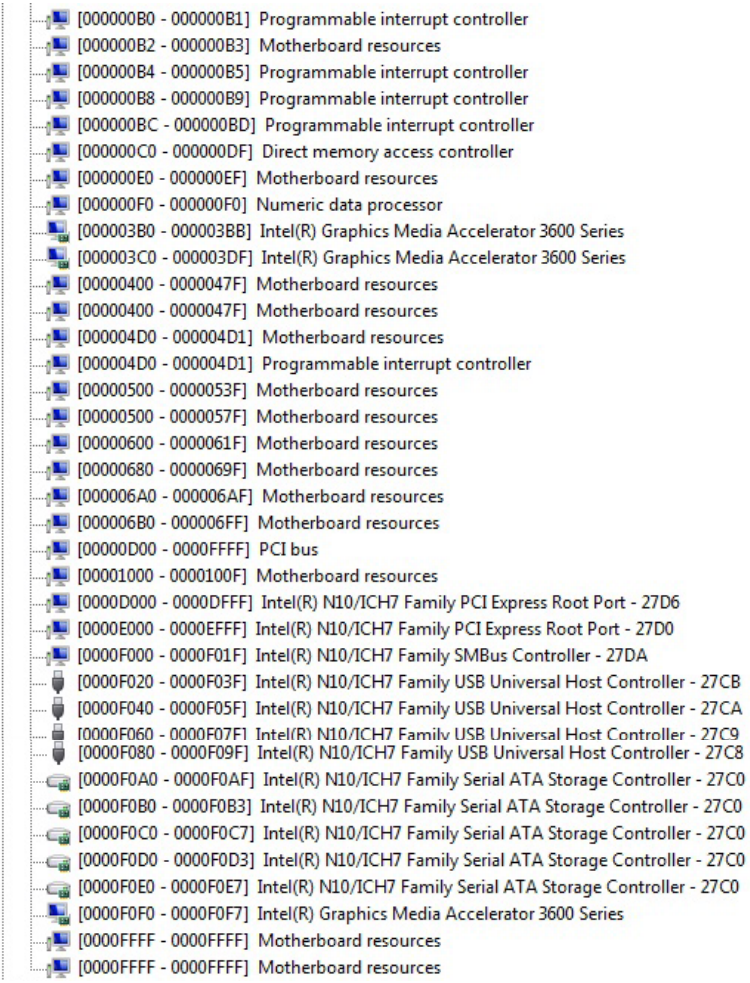
Appendix

B

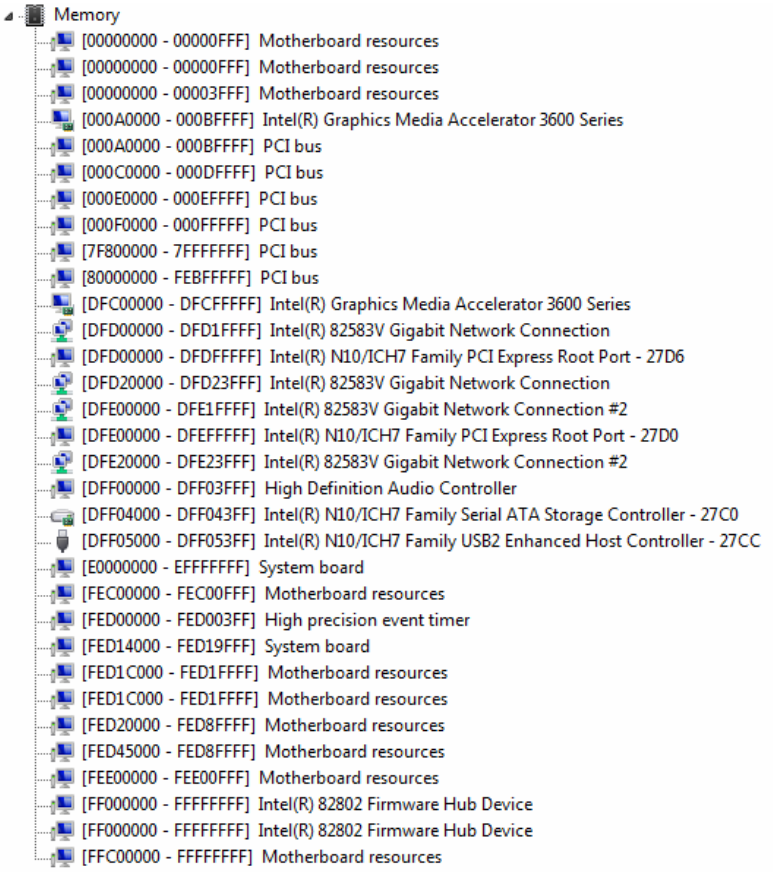
I/O Information

B.1 I/O Address Map

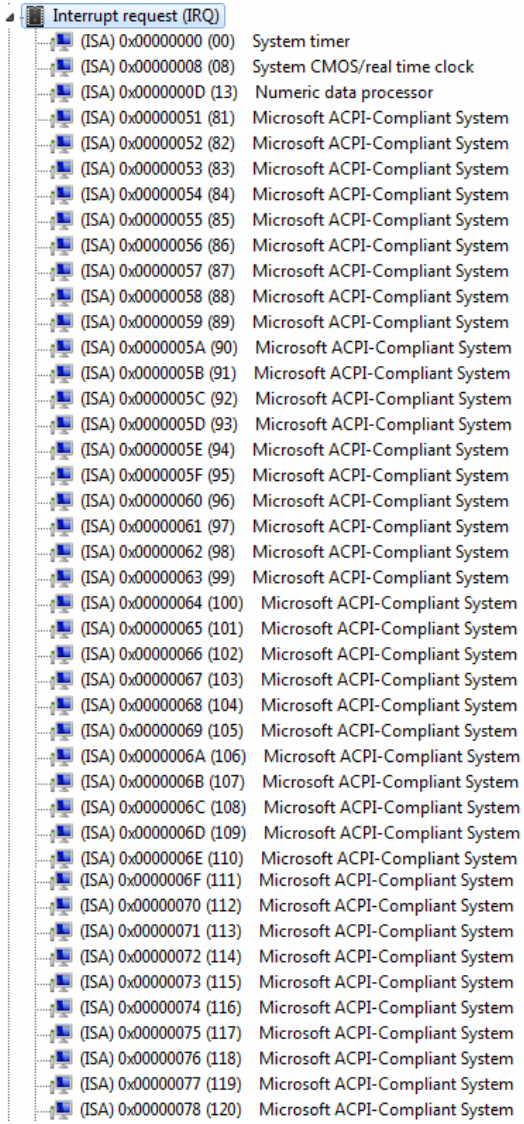



[000000B0 - 000000B1] Programmable interrupt controller
[000000B2 - 000000B3] Motherboard resources
[000000B4 - 000000B5] Programmable interrupt controller
[000000B8 - 000000B9] Programmable interrupt controller
[000000BC - 000000BD] Programmable interrupt controller
[000000C0 - 000000DF] Direct memory access controller
[000000E0 - 000000EF] Motherboard resources
[000000F0 - 000000F0] Numeric data processor
[000003B0 - 000003BB] Intel(R) Graphics Media Accelerator 3600 Series
[000003C0 - 000003DF] Intel(R) Graphics Media Accelerator 3600 Series
[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 - 000006FF] Motherboard resources
[00000D00 - 0000FFFF] PCI bus
[00001000 - 0000100F] Motherboard resources
[0000D000 - 0000DFFF] Intel(R) N10/ICH7 Family PCI Express Root Port - 27D6
[0000E000 - 0000EFFF] Intel(R) N10/ICH7 Family PCI Express Root Port - 27D0
[0000F000 - 0000F01F] Intel(R) N10/ICH7 Family SMBus Controller - 27DA
[0000F020 - 0000F03F] Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CB
[0000F040 - 0000F05F] Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CA
[0000F060 - 0000F07F] Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C9
[0000F080 - 0000F09F] Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C8
[0000F0A0 - 0000F0AF] Intel(R) N10/ICH7 Family Serial ATA Storage Controller - 27C0
[0000F0B0 - 0000F0B3] Intel(R) N10/ICH7 Family Serial ATA Storage Controller - 27C0
[0000F0C0 - 0000F0C7] Intel(R) N10/ICH7 Family Serial ATA Storage Controller - 27C0
[0000F0D0 - 0000F0D3] Intel(R) N10/ICH7 Family Serial ATA Storage Controller - 27C0
[0000F0E0 - 0000F0E7] Intel(R) N10/ICH7 Family Serial ATA Storage Controller - 27C0
[0000F0F0 - 0000F0F7] Intel(R) Graphics Media Accelerator 3600 Series
[0000FFFF - 0000FFFF] Motherboard resources
[0000FFFF - 0000FFFF] Motherboard resources

B.2 Memory Address Map



B.3 IRQ Mapping Chart



(ISA) 0x00000079 (121) Microsoft ACPI-Compliant System
(ISA) 0x0000007A (122) Microsoft ACPI-Compliant System
(ISA) 0x0000007B (123) Microsoft ACPI-Compliant System
(ISA) 0x0000007C (124) Microsoft ACPI-Compliant System
(ISA) 0x0000007D (125) Microsoft ACPI-Compliant System
(ISA) 0x0000007E (126) Microsoft ACPI-Compliant System
(ISA) 0x0000007F (127) Microsoft ACPI-Compliant System
(ISA) 0x00000080 (128) Microsoft ACPI-Compliant System
(ISA) 0x00000081 (129) Microsoft ACPI-Compliant System
(ISA) 0x00000082 (130) Microsoft ACPI-Compliant System
(ISA) 0x00000083 (131) Microsoft ACPI-Compliant System
(ISA) 0x00000084 (132) Microsoft ACPI-Compliant System
(ISA) 0x00000085 (133) Microsoft ACPI-Compliant System
(ISA) 0x00000086 (134) Microsoft ACPI-Compliant System
(ISA) 0x00000087 (135) Microsoft ACPI-Compliant System
(ISA) 0x00000088 (136) Microsoft ACPI-Compliant System
(ISA) 0x00000089 (137) Microsoft ACPI-Compliant System
(ISA) 0x0000008A (138) Microsoft ACPI-Compliant System
(ISA) 0x0000008B (139) Microsoft ACPI-Compliant System
(ISA) 0x0000008C (140) Microsoft ACPI-Compliant System
(ISA) 0x0000008D (141) Microsoft ACPI-Compliant System
(ISA) 0x0000008E (142) Microsoft ACPI-Compliant System
(ISA) 0x0000008F (143) Microsoft ACPI-Compliant System
(ISA) 0x00000090 (144) Microsoft ACPI-Compliant System
(ISA) 0x00000091 (145) Microsoft ACPI-Compliant System
(ISA) 0x00000092 (146) Microsoft ACPI-Compliant System
(ISA) 0x00000093 (147) Microsoft ACPI-Compliant System
(ISA) 0x00000094 (148) Microsoft ACPI-Compliant System
(ISA) 0x00000095 (149) Microsoft ACPI-Compliant System
(ISA) 0x00000096 (150) Microsoft ACPI-Compliant System
(ISA) 0x00000097 (151) Microsoft ACPI-Compliant System
(ISA) 0x00000098 (152) Microsoft ACPI-Compliant System
(ISA) 0x00000099 (153) Microsoft ACPI-Compliant System
(ISA) 0x0000009A (154) Microsoft ACPI-Compliant System
(ISA) 0x0000009B (155) Microsoft ACPI-Compliant System
(ISA) 0x0000009C (156) Microsoft ACPI-Compliant System
(ISA) 0x0000009D (157) Microsoft ACPI-Compliant System
(ISA) 0x0000009E (158) Microsoft ACPI-Compliant System
(ISA) 0x0000009F (159) Microsoft ACPI-Compliant System
(ISA) 0x000000A0 (160) Microsoft ACPI-Compliant System
(ISA) 0x000000A1 (161) Microsoft ACPI-Compliant System
(ISA) 0x000000A2 (162) Microsoft ACPI-Compliant System
(ISA) 0x000000A3 (163) Microsoft ACPI-Compliant System
(ISA) 0x000000A4 (164) Microsoft ACPI-Compliant System
(ISA) 0x000000A5 (165) Microsoft ACPI-Compliant System
(ISA) 0x000000A6 (166) Microsoft ACPI-Compliant System
(ISA) 0x000000A7 (167) Microsoft ACPI-Compliant System
(ISA) 0x000000A8 (168) Microsoft ACPI-Compliant System
(ISA) 0x000000A9 (169) Microsoft ACPI-Compliant System
(ISA) 0x000000AA (170) Microsoft ACPI-Compliant System

- (ISA) 0x000000AB (171) Microsoft ACPI-Compliant System
- (ISA) 0x000000AC (172) Microsoft ACPI-Compliant System
- (ISA) 0x000000AD (173) Microsoft ACPI-Compliant System
- (ISA) 0x000000AE (174) Microsoft ACPI-Compliant System
- (ISA) 0x000000AF (175) Microsoft ACPI-Compliant System
- (ISA) 0x000000B0 (176) Microsoft ACPI-Compliant System
- (ISA) 0x000000B1 (177) Microsoft ACPI-Compliant System
- (ISA) 0x000000B2 (178) Microsoft ACPI-Compliant System
- (ISA) 0x000000B3 (179) Microsoft ACPI-Compliant System
- (ISA) 0x000000B4 (180) Microsoft ACPI-Compliant System
- (ISA) 0x000000B5 (181) Microsoft ACPI-Compliant System
- (ISA) 0x000000B6 (182) Microsoft ACPI-Compliant System
- (ISA) 0x000000B7 (183) Microsoft ACPI-Compliant System
- (ISA) 0x000000B8 (184) Microsoft ACPI-Compliant System
- (ISA) 0x000000B9 (185) Microsoft ACPI-Compliant System
- (ISA) 0x000000BA (186) Microsoft ACPI-Compliant System
- (ISA) 0x000000BB (187) Microsoft ACPI-Compliant System
- (ISA) 0x000000BC (188) Microsoft ACPI-Compliant System
- (ISA) 0x000000BD (189) Microsoft ACPI-Compliant System
- (ISA) 0x000000BE (190) Microsoft ACPI-Compliant System
- (PCI) 0x00000005 (05) 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) 0x00000012 (18) Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CA
- (PCI) 0x00000013 (19) Intel(R) N10/ICH7 Family PCI Express Root Port - 27D6
- (PCI) 0x00000013 (19) Intel(R) N10/ICH7 Family Serial ATA Storage Controller - 27C0
- (PCI) 0x00000013 (19) Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C9
- (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) 0xFFFFFFFC (-4) Intel(R) 82583V Gigabit Network Connection
- (PCI) 0xFFFFFFFD (-3) Intel(R) 82583V Gigabit Network Connection #2
- (PCI) 0xFFFFFFFE (-2) Intel(R) Graphics Media Accelerator 3600 Series

B.4 DMA Channel Assignments

- Direct memory access (DMA)
  - 4 Direct memory access controller