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PFM-CVS Rev.B

Intel® Atom™ N2600 Processor

DDR3 1067MHz SODIMM

18-bit Single Channel LVDS LCD

4 USB2.0, 4 COM, 1 SATA, 1 mSATA

1 10/100/1000Base-TX Ethernet, PC/104+

Half/Full size Mini Card (Optional)

PFM-CVS Rev. B Manual 2nd Ed
December 2013

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Packing List

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

- Jumper Cap
- Product CD
- PFM-CVS Rev. B with Heatsink

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

Contents

Chapter 1

General Information

1.1 Introduction

AAEON Technology, a leading company in embedded boards manufacturing with a full range of PC/104 Modules, launches a brand new PC/104 CPU Module-PFM-CVS Rev. B. Its compact size and rich functionality ensures the most cost effective and compatible module to coincide with your existing system planning devices.

PFM-CVS Rev. B adopts an Intel® Atom™ N2600 Dual Core 1.6 GHz Processor with the latest Intel technology. Although PFM-CVS Rev. B is a small board, it offers the full functions for customers demand. The chipset of PFM-CVS Rev. B deploys Intel® Atom™ N2600 and NM10 that make this board achieve high performance. It features one 10/100/1000Base-TX Ethernet port, four USB 2.0 ports, four COM ports. In addition, the PFM-CVS Rev. B equips PC/104+ socket and Half/Full size mSATA/ Mini Card (optional) for flexible expansions.

1.2 Features

- Fanless Intel® Atom™ N2600 Dual Core 1.6 GHz Processor
- Intel® Atom™ N2600 + NM10
- 204-pin DDR3 1067 MHz SODIMM x 1, Max. 2 GB
- 10/100/1000Base-TX Ethernet x 1
- CRT, 18-bit Single Channel LVDS LCD
- SATA 3.0 Gb/s x 1
- 2CH HD Audio
- USB2.0 x 4, COM x 4
- PC/104+ Standard Form Factor Legacy ISA Support. (w/IO Mode), mSATA / Mini Card (Optional) (Half/Full Size support)
- +12V Only Operation

1.3 Specifications

System

● Form Factor	PC/104
● Processor	Intel® Atom™ N2600 1.6 GHz processor
● System Memory	204-pin DDR3 1067 MHz SODIMM x 1, Max. 2 GB
● Chipset	Intel® Atom™ N2600+ NM10
● I/O Chipset	Fintech F81866D
● Ethernet	Intel 82583V for 10/100/1000Base-TX, RJ-45x 1
● BIOS	AMI BIOS – 32MB ROM
● Wake on LAN	Yes
● Watchdog Timer	Generates a time-out system reset
● H/W Status Monitoring	Supports power supply voltage and temperature monitoring
● Expansion Interface	PC/104+, mSATA/ Mini Card(Half/Full size supported)
● Power Requirement	+12V, AT (Default) /ATX
● Battery	Lithium battery
● Board Size	3.78” x 4.05” (96mm x 103mm)
● Gross Weight	0.35 lb (0.16 Kg)

●	Operating Temperature	32°F~ 140°F (0°C ~ 60°C) WiTAS 2 : -40°F~ 185°F (-40°C~85°C) (PFM-CVSW2-B10)
●	Storage Temperature	32ºF ~ 140ºF (0ºC ~ 60ºC)
●	Operating Humidity	0%~90% relative humidity, non-condensing

Display: Supports CRT/LCD simultaneous/ dual view displays

●	Chipset	Intel® Atom™ N2600 processor integrated
●	Resolutions	Up to 1920x1200 for VGA; Up to 1366x768 for LVDS
●	LCD Interface	18-bit Single Channel LVDS

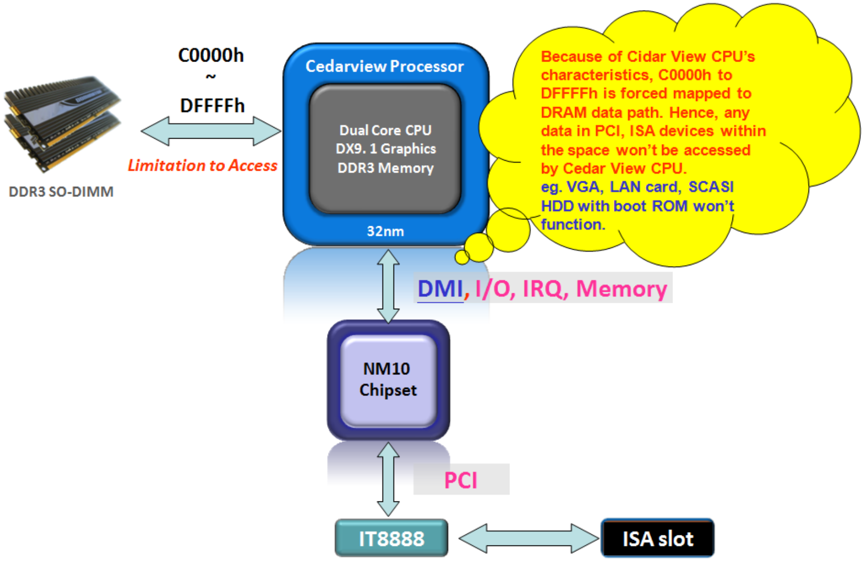
I/O

●	Storage	SATA 3.0 Gb/s x 1, mSATA x 1
●	Serial Port	RS-232 x 3, RS-232/422/485 x 1
●	Universal Serial Bus	USB 2.0 x 4
●	Digital I/O	8-bit Digital I/O (Programmable)
●	Audio	Line-in, Line-out, Mic-in

Note: For PFM-CVSW2-B10, we recommend to add a thermal module on DDR3 memory and the recommended thermal pad of the thermal module is “SARCON® XR-HL” (1.2 W/m-K) or better.

Limitation Notice on ISA Interface Support

According to the information from Intel for Atom™ Processor design, Intel® Atom™ Processor D2000 and N2000 Series do **NOT** support ISA expansion area (C_0000h-D_FFFFh). This area always maps to system DRAM. The illustration is as below for reference.



Document source: Intel® Atom™ Processor D2000 and N2000 Series page 34 mentions that is External Design Specification – Volume 2 of 2. (449931_449931_CDV_EDS_Vol2_Rev1p6)

Chapter 2

Quick Installation Guide

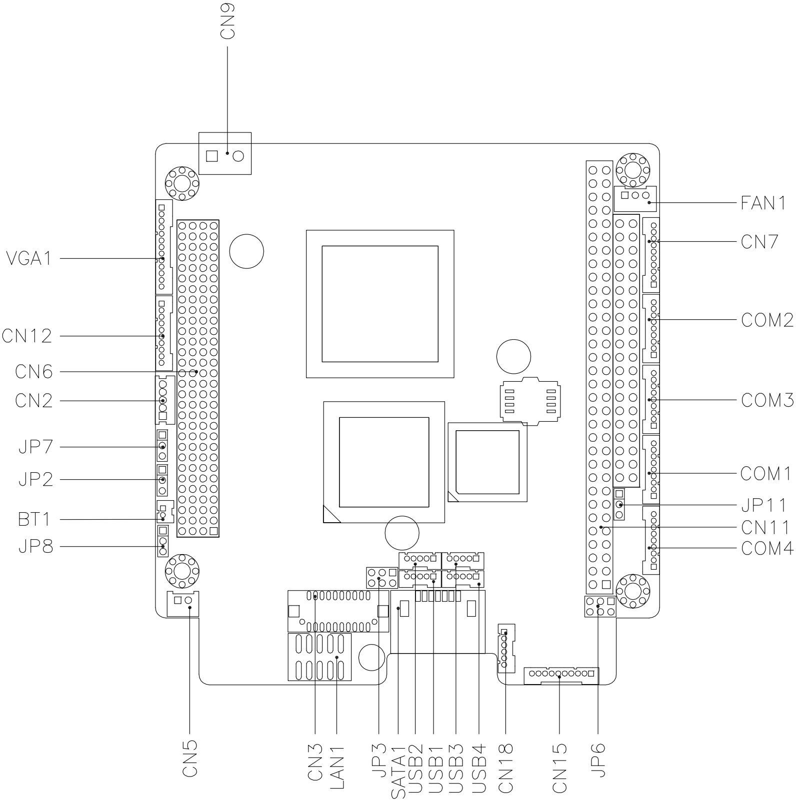
2.1 Safety Precautions

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.

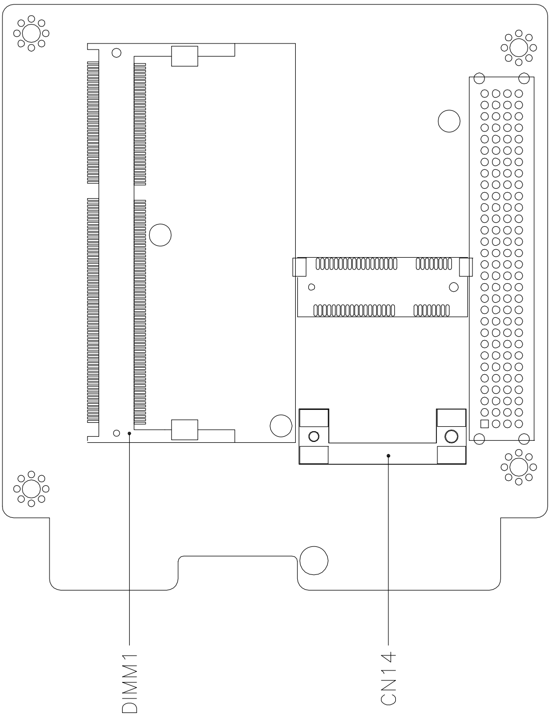
Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not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

2.2 Location of Connectors and Jumpers

Component Side

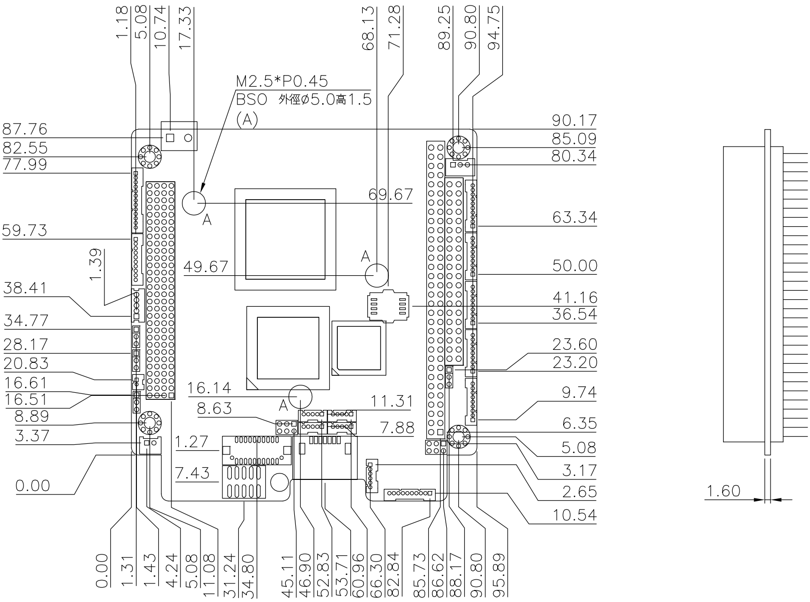


Solder Side

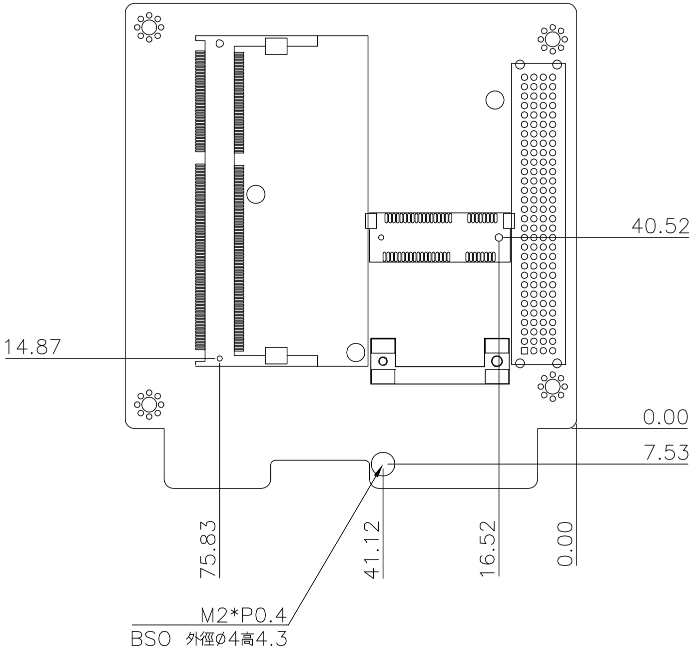


2.3 Mechanical Drawing

Component Side



Solder Side



2.4 List of Jumpers

The board has a number of jumpers that allow you to configure your system to suit your application.

The table below shows the function of each of the board's jumpers:

Label	Function
JP2	LVDS Voltage Selection
JP3	AT/ATX Selection and LVDS Backlight Control Voltage Selection
JP6	COM2 +5V/Ring/+12V Selection
JP7	PCI104 VIO Voltage Selection
JP8	Clear CMOS
JP11	PC104 -5V/-12V Voltage Selection(Reserved)

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:

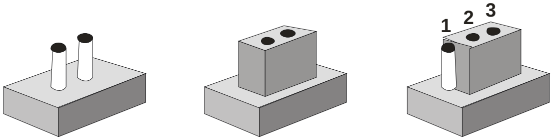
Label	Function
CN2	Backlight Brightness Control Connector
CN3	Internal LVDS Connector
CN5	SATA Power Connector
CN6	PCI-104 Connector
CN7	Front Panel Connector
CN9	+12VSB Power Input Connector
CN11	PC104/ISA Connector
CN12	Digital I/O Connector
CN14	Mini PCI Express/mSATA Connector (Optional)
BT1	Battery Connector
SATA1	SATA Connector
VGA1	CRT Connector
COM1	COM1 RS232 Connector
COM2	COM2 RS232/422/485 Connector
COM3	COM3 RS232 Connector
COM4	COM4 RS232 Connector
USB1	USB2.0 Connector
USB2	USB2.0 Connector
USB3	USB2.0 Connector
USB4	USB2.0 Connector

FAN1	FAN Connector(Reserved)
LAN1	LAN Connector
DIMM1	DDR3 SODIMM Connector
CN15	Audio Connector
CN18	PS2 Keyboard/Mouse Connector

2.6 Setting Jumpers

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

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



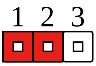
Open Closed Closed 2-3

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

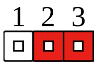
If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any change.

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

2.7 LVDS Voltage Selection (JP2)



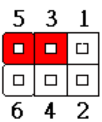
+5V



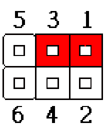
+3.3V

JP2	Function
1-2	+5V
2-3	+3.3V (Default)

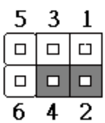
2.8 AT/ATX Selection and LVDS Backlight Control Voltage Selection (JP3)



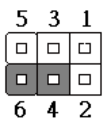
+5V LVDS Backlight



+12V LVDS Backlight



ATX Mode



AT Mode

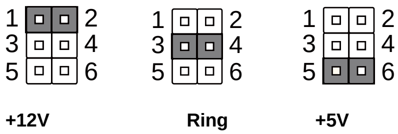
LVDS Backlight

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

ATX/AT Mode

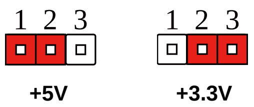
JP3	Function
2-4	ATX
4-6	AT(Default)

2.9 COM2 +5V/Ring/+12V Selection (JP6)



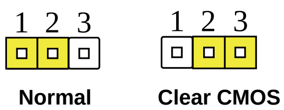
JP6	Function
1-2	+12V
3-4	Ring (Default)
5-6	+5V

2.10 PCI-104 VIO Voltage Selection (JP7)



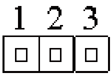
JP7	Function
1-2	+5V
2-3	+3.3V (Default)

2.11 Clear CMOS (JP8)



JP8	Function
1-2	Normal (Default)
2-3	Clear CMOS

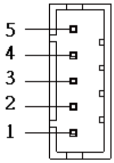
2.12 PC/104 -5V/-12V Voltage Selection (JP11) Reserved



-12V -5V GND

JP11	Function
1	-12V
2	-5V
3	GND

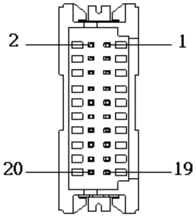
2.13 Backlight Brightness Control Connector (CN2)



Pin	Pin Name	Signal Type	Signal Level
1	LVDS Voltage select	OUT	
2	LVDS Backlight control	OUT	
3	GND	GND	
4	GND	GND	
5	LVDS Backlight Enable	OUT	

Note: LVDS Voltage can be set to +5V or +12V by JP3.

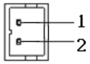
2.14 Internal LVDS Connector (CN3)



Pin	Pin Name	Signal Type	Signal Level
1	LVDS_BKLEN	OUT	
2	LVDS_BKLCTL	OUT	
3	LVDS Voltage	PWR	+3.3V/ +5V
4	LVDS Voltage	PWR	+3.3V/ +5V
5	LVDS_CLKN	OUT	
6	LVDS_TX2	OUT	
7	LVDS_CLKP	OUT	
8	LVDS_TX#2	OUT	
9	LVDS Voltage	PWR	+3.3V/ +5V
10	GND	GND	
11	LVDS_TX0	OUT	
12	LVDS_TX3	OUT	
13	LVDS_TX#0	OUT	
14	LVDS_TX#3	OUT	
15	GND	GND	

16	GND	GND	
17	LVDS_TX1	OUT	
18	LVDS_DDCDAT	I/O	+3.3V
19	LVDS_TX#1	OUT	
20	LVDS_DDCCLK	I/O	+3.3V

2.15 SATA Power Connector (CN5)

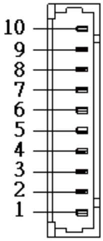


Pin	Pin Name	Signal Type	Signal Level
1	+5V	PWR	+5V
2	GND	GND	GND

2.16 PCI-104 Connector (CN6)

Standard PCI-104 Slot

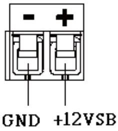
2.17 Front Panel Connector (CN7)



Pin	Pin Name	Signal Type	Signal Level
1	POWER BUTTON	IN	

2	POWRR BUTTON#	IN	
3	External Buzzer(+)	OUT	
4	External Buzzer(-)	OUT	
5	HDD LED	OUT	
6	HDD LED#	OUT	
7	POWER LED	OUT	
8	POWER LED#	OUT	
9	RESET	IN	
10	RESET#	IN	

2.18 +12VSB Power Input Connector (CN9)

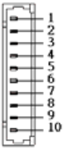


Pin	Pin Name	Signal Type	Signal Level
1	+12VSB	PWR	+12V
2	GND	GND	

2.19 PC/104/ ISA Connector (CN11)

Standard PC/104 / ISA Slot

2.20 Digital I/O Connector (CN12)



Pin	Pin Name	Signal type	Signal Level
1	GPI0	IN	
2	GPI1	IN	
3	GPI2	IN	
4	GPI3	IN	
5	GPO0	OUT	
6	GPO1	OUT	
7	GPO2	OUT	
8	GPO3	OUT	
9	+3.3V	PWR	+3.3V
10	GND	GND	

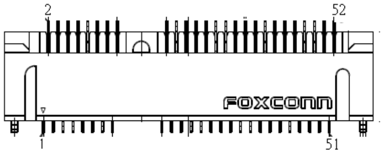
Digital I/O base address: 0xA00

Pin	Pin Name	I/O Port Access Address
1	GPI0	Bit 0 of 0xA00
2	GPI1	Bit 1 of 0xA00
3	GPI2	Bit 2 of 0xA00
4	GPI3	Bit 3 of 0xA00
5	GPO0	Bit 4 of 0xA00

6	GPO1	Bit 5 of 0xA00
7	GPO2	Bit 6 of 0xA00
8	GPO3	Bit 7 of 0xA00

2.21 Mini PCI Express/mSATA Connector (CN14) (Optional)

Standard Mini PCI Express Connector (52Pins)

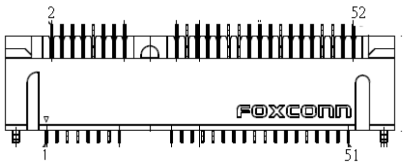


Pin	Pin Name	Signal Type	Signal Level
1	WAKE#	I/O	
2	+3V3_MC	PWR	+3.3V
3	Reserved		
4	GND	GND	
5	Reserved		
6	+1.5V	PWR	+1.5V
7	MC_CLKREQ#	I/O	
8	Reserved		
9	GND	GND	
10	Reserved		
11	PCIE_MC_CKLN	OUT	
12	Reserved		

13	PCIE_MC_CKLP	OUT	
14	Reserved		
15	GND	GND	
16	Reserved		
17	Reserved		
18	GND	GND	
19	Reserved		
20	W_DISABLE#		
21	GND	GND	
22	BUF_PLTRST#	IN	
23	PCIE_RXN1	DIFF	
24	+3V3_MC	PWR	+3.3V
25	PCIE_RXP1	DIFF	
26	GND	GND	
27	GND	GND	
28	+1.5V	PWR	+1.5V
29	GND	GND	
30	SMBCLK_SBY	I/O	
31	PCIE_TXN1	DIFF	
32	SMBDAT_SBY	I/O	
33	PCIE_TXP1	DIFF	
34	GND	GND	
35	GND	GND	
36	USBP4-	DIFF	

37	GND	GND	
38	USBP4+	DIFF	
39	+3V3_MC	PWR	+3.3V
40	GND	GND	
41	+3V3_MC	PWR	+3.3V
42	Reserved		
43	GND	GND	
44	Reserved		
45	Reserved		
46	Reserved		
47	Reserved		
48	+1.5V	PWR	+1.5V
49	Reserved		
50	GND	GND	
51	Reserved		
52	+3V3_MC	PWR	+3.3V

Standard mSATA Connector (52 Pins)



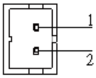
Pin	Pin Name	Signal Type	Signal Level
1	WAKE#	I/O	

2	+3V3_MC	PWR	+3.3V
3	Reserved		
4	GND	GND	
5	Reserved		
6	+1.5V	PWR	+1.5V
7	MC_CLKREQ#	I/O	
8	Reserved		
9	GND	GND	
10	Reserved		
11	PCIE_MC_CKLN	OUT	
12	Reserved		
13	PCIE_MC_CKLP	OUT	
14	Reserved		
15	GND	GND	
16	Reserved		
17	Reserved		
18	GND	GND	
19	Reserved		
20	W_DISABLE#		
21	GND	GND	
22	BUF_PLTRST#	IN	
23	SATA_RXP1	DIFF	
24	+3V3_MC	PWR	+3.3V
25	SATA_RXN1	DIFF	

PC/104 Module		PFM-CVS Rev. B	
26	GND	GND	
27	GND	GND	
28	+1.5V	PWR	+1.5V
29	GND	GND	
30	SMBCLK_SBY	I/O	
31	SATA_TXN1	DIFF	
32	SMBDAT_SBY	I/O	
33	SATA_TXP1	DIFF	
34	GND	GND	
35	GND	GND	
36	USBP4-	DIFF	
37	GND	GND	
38	USBP4+	DIFF	
39	+3V3_MC	PWR	+3.3V
40	GND	GND	
41	+3V3_MC	PWR	+3.3V
42	Reserved		
43	NC		
44	Reserved		
45	Reserved	I/O	
46	Reserved		
47	Reserved	I/O	
48	+1.5V	PWR	+1.5V
49	Reserved	I/O	

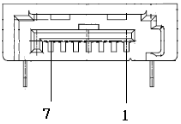
50	GND	GND	
51	Reserved	I/O	
52	+3V3_MC	PWR	+3.3V

2.22 Battery Connector (BT1)



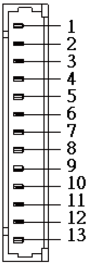
Pin	Pin Name	Signal Type	Signal Level
1	RTCBAT	PWR	+3.3V
2	GND	GND	

2.23 SATA Connector (SATA1)



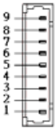
Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	SATA_TXP0	DIFF	
3	SATA_TXN0	DIFF	
4	GND	GND	
5	SATA_RXN0	DIFF	
6	SATA_RXP0	DIFF	
7	GND	GND	

2.24 CRT Connector (VGA1)



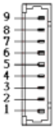
Pin	Pin Name	Signal Type	Signal Level
1	VSYNC	OUT	
2	HSYNC	OUT	
3	GND	GND	
4	SCL	I/O	+5V
5	SDA	I/O	+5V
6	GND	GND	
7	BLUE	OUT	
8	GND	GND	
9	GREEN	OUT	
10	GND	GND	
11	RED	OUT	
12	GND	GND	
13	VCC	PWR	+5V

2.25 COM1 RS-232 Connector (COM1)



Pin	Pin Name	Signal Type	Signal Level
1	DCD1	IN	
2	DSR1	IN	
3	RXD1	IN	
4	RTS1	OUT	±9V
5	TXD1	OUT	±9V
6	CTS1	IN	
7	DTR1	OUT	±9V
8	RI1	IN	
9	GND	GND	

2.26 COM2 RS-232/422/485 Connector (COM2)



RS-232

Pin	Pin Name	Signal Type	Signal Level
1	DCD2	IN	
2	DSR2	IN	

3	RXD2	IN	
4	RTS2	OUT	±9V
5	TXD2	OUT	±9V
6	CTS2	IN	
7	DTR2	OUT	±9V
8	RI2	IN	
9	GND	GND	

RS-422

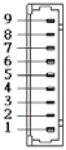
Pin	Pin Name	Signal Type	Signal Level
1	TX-	OUT	±5V
2	N.C		
3	RX+	IN	
4	N.C		
5	TX+	OUT	±5V
6	N.C		
7	RX-	IN	
8	+5V/+12V	PWR	+5V/+12V
9	GND	GND	

RS-485

Pin	Pin Name	Signal Type	Signal Level
1	B (Data-)	I/O	±5V
2	N.C		
3	N.C		

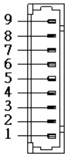
4	N.C		
5	A (Data+)	I/O	±5V
6	N.C		
7	N.C		
8	+5V/+12V	PWR	+5V/+12V
9	GND	GND	

2.27 COM3 RS-232 Connector (COM3)



Pin	Pin Name	Signal Type	Signal Level
1	DCD3	IN	
2	DSR3	IN	
3	RXD3	IN	
4	RTS3	OUT	±9V
5	TXD3	OUT	±9V
6	CTS3	IN	
7	DTR3	OUT	±9V
8	RI3	IN	
9	GND	GND	

2.28 COM4 RS-232 Connector (COM4)



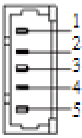
Pin	Pin Name	Signal Type	Signal Level
1	DCD4	IN	
2	DSR4	IN	
3	RXD4	IN	
4	RTS4	OUT	±9V
5	TXD4	OUT	±9V
6	CTS4	IN	
7	DTR4	OUT	±9V
8	RI4	IN	
9	GND	GND	

2.29 USB2.0 Connector (USB1)

Pin	Pin Name	Signal Type	Signal Level
1	USB_VCC0	PWR	+5V
2	USBP0-	OUT	
3	USBP0+	OUT	

4	GND	GND	
5	GND	GND	

2.30 USB2.0 Connector (USB2)



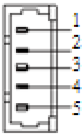
Pin	Pin Name	Signal Type	Signal Level
1	USB_VCC0	PWR	+5V
2	USBP1-	OUT	
3	USBP1+	OUT	
4	GND	GND	
5	GND	GND	

2.31 USB2.0 Connector (USB3)

Pin	Pin Name	Signal Type	Signal Level
1	USB_VCC1	PWR	+5V
2	USBP2-	OUT	
3	USBP2+	OUT	
4	GND	GND	

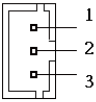
5	GND	GND	

2.32 USB2.0 Connector (USB4)



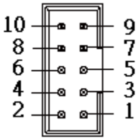
Pin	Pin Name	Signal Type	Signal Level
1	USB_VCC1	PWR	+5V
2	USBP3-	OUT	
3	USBP3+	OUT	
4	GND	GND	
5	GND	GND	

2.33 FAN Connector (FAN1) Reserved



Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	FAN_CTL	OUT	
3	FAN_TAC	IN	

2.34 LAN Connector (LAN1)

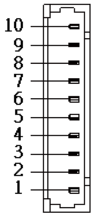


Pin	Pin Name	Signal Type	Signal Level
1	LAN1_TX1+	DIFF.	
2	LAN1_TX1-	DIFF.	
3	LAN1_RX1+	DIFF.	
4	LAN1_RX1-	DIFF.	
5	GND	GND	
6	GND	GND	
7	LAN1_TX2+	DIFF.	
8	LAN1_TX2-	DIFF.	
9	LAN1_RX2+	DIFF	
10	LAN1_RX2-	DIFF	

2.35 DDR3 SODIMM Connector (DIMM1)

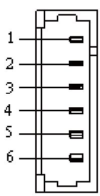
Standard DDR3 SODIMM Specification

2.36 Audio Connector (CN15)



Pin	Pin Name	Signal Type	Signal Level
1	MIC_L	IN	
2	MIC_R	IN	
3	GND	GND	
4	LIN_L	IN	
5	LIN_R	IN	
6	GND	GND	
7	LOUT_L	OUT	
8	GND	GND	
9	LOUT_R	OUT	
10	VCC	PWR	+5V

2.37 PS2 Keyboard and Mouse Connector (CN18)



Pin	Pin Name	Signal Type	Signal Level
1	KBDATA	OUT	
2	KBCLK	OUT	
3	GND	GND	
4	+5VSB	PWR	+5VSB
5	MSDATA	OUT	
6	MSCLK	OUT	

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

AAEON Main Board/ Daughter Board/ Backplane

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

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

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

备注：此产品所标示之环保使用期限，系指在一般正常使用状况下。

Chapter 3

AMI BIOS Setup

3.1 System Test and 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 PFM-CVS Rev.B 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

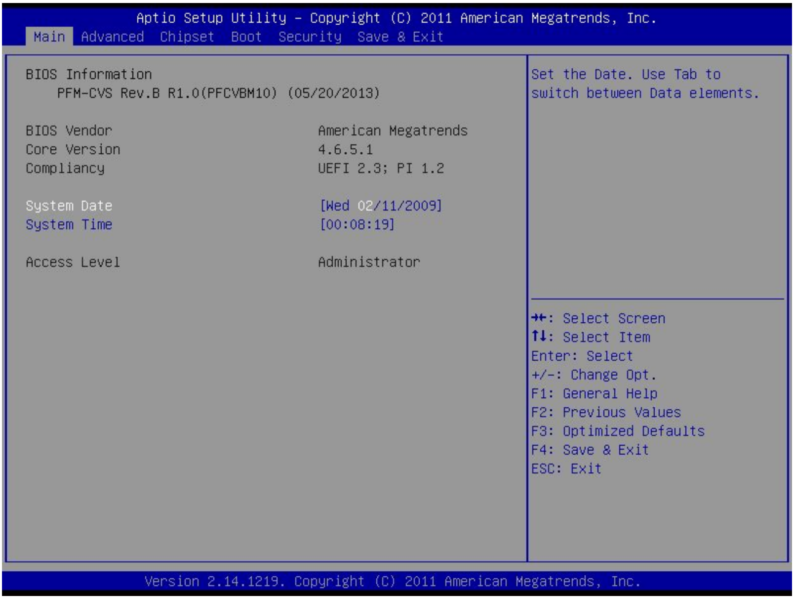
Set setup administrator password.

Save & Exit

Exit system setup after saving the changes.

Setup Menu

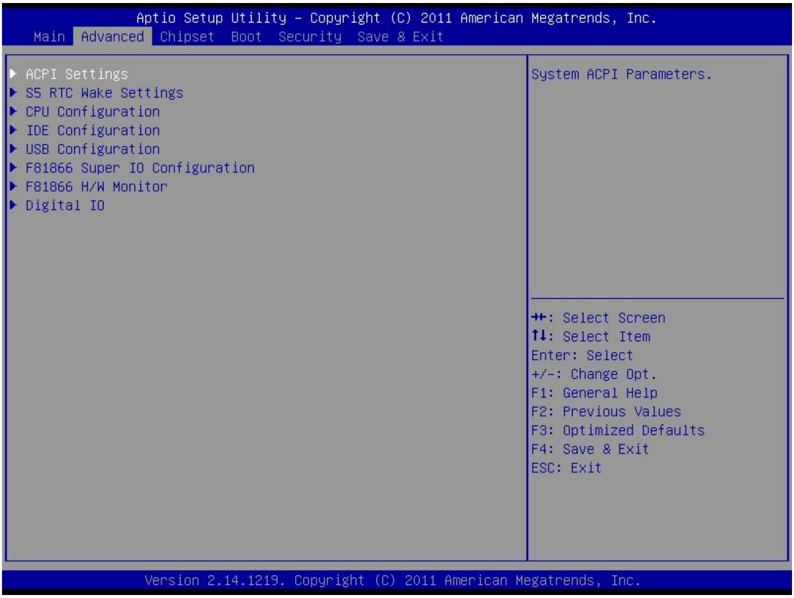
Setup submenu: Main



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.		

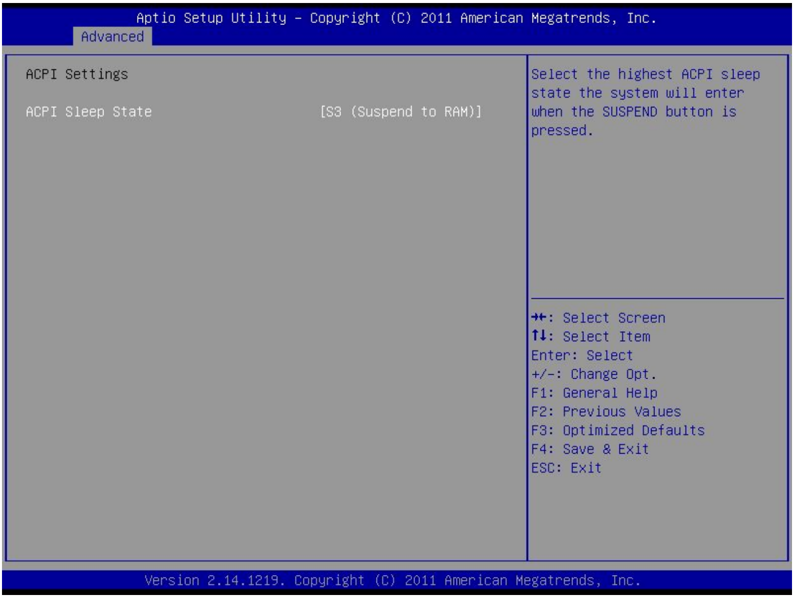
Setup submenu: Advanced



Options summary: (***default setting***)

ACPI Settings		
System ACPI Parameters		
CPU Configuration		
CPU Configuration Parameters		
IDE Configuration		
IDE Device Options Settings		
USB Configuration		
USB Configuration Parameters		
F81866 Super IO Configuration		
System Super IO Parameters		
F81866 H/W Monitor		
Monitor hardware status		
Digital IO Port Configuration		
DIO configuration		
H/W Monitor		
Monitor hardware status		

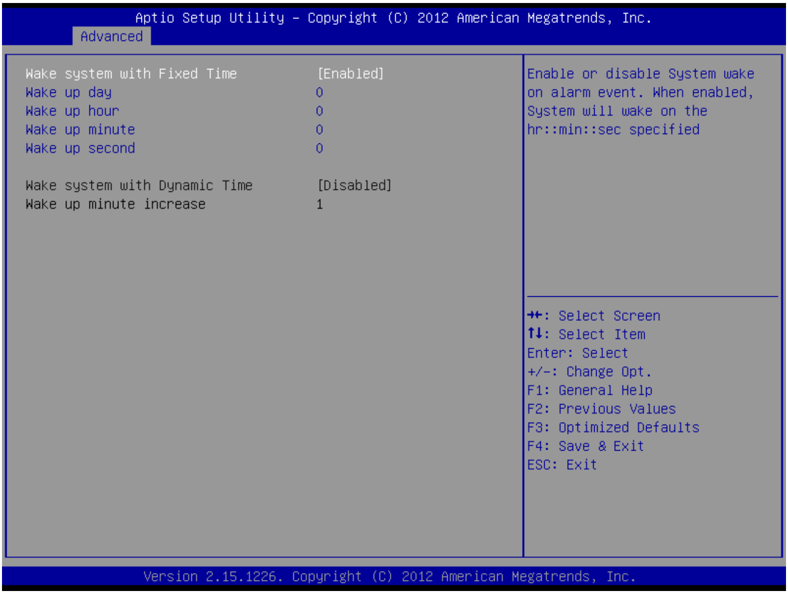
ACPI Settings



Options summary: (***default setting***)

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

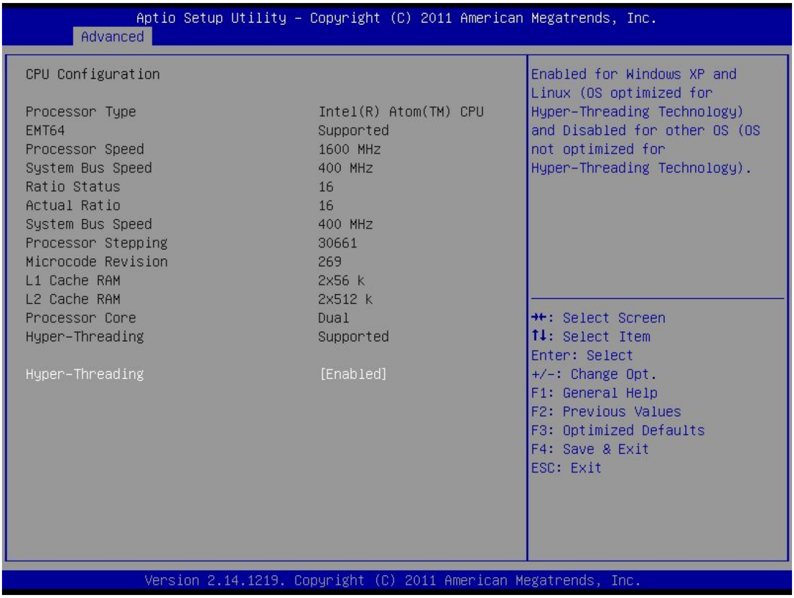
RTC Wake Settings



Options summary: (***default setting***)

Wake system with Fixed Time	***Disabled***	
	Enabled	
Enable or disable System wake on alarm event. Wake up time is setting by following settings.		
Wake up day	0-31	
Select 0 for daily system wake up 1-31 for which day of the month that you would like the system to wake up		
Wake up hour	0-23	
Wake up minute	0-59	
Wake up second	0-59	
Wake system with Dynamic Time	***Disabled***	
	Enabled	
Enable or disable System wake on alarm event. Wake up time is current time + Increase minutes.		
Wake up minute increase	1-5	

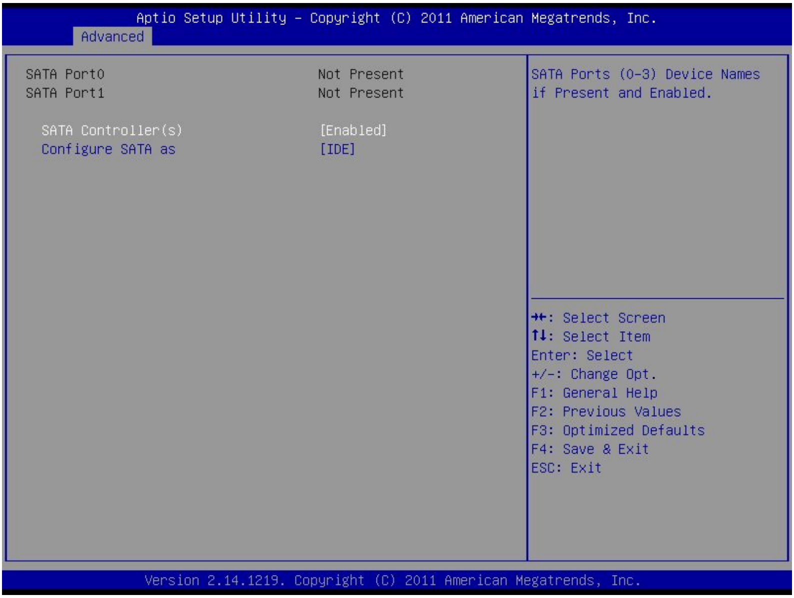
CPU Configuration



Options summary: (***default setting***)

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

IDE Configuration



Options summary: (***default setting***)

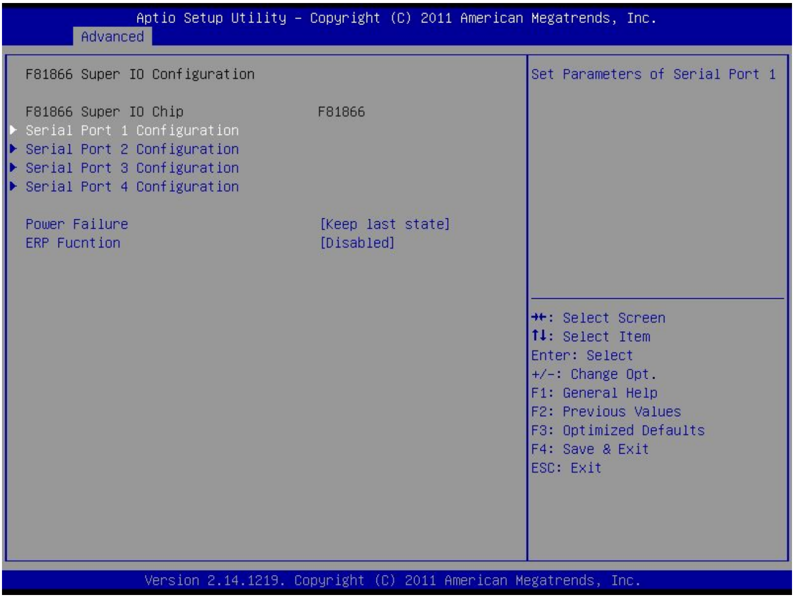
SATA Controller(s)	Disabled	
	Enabled	
En/Disable SATA controller		
Configure SATA as	IDE	
	AHCI	
Configure SATA controller operating as IDE/AHCI mode.		

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	
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)		

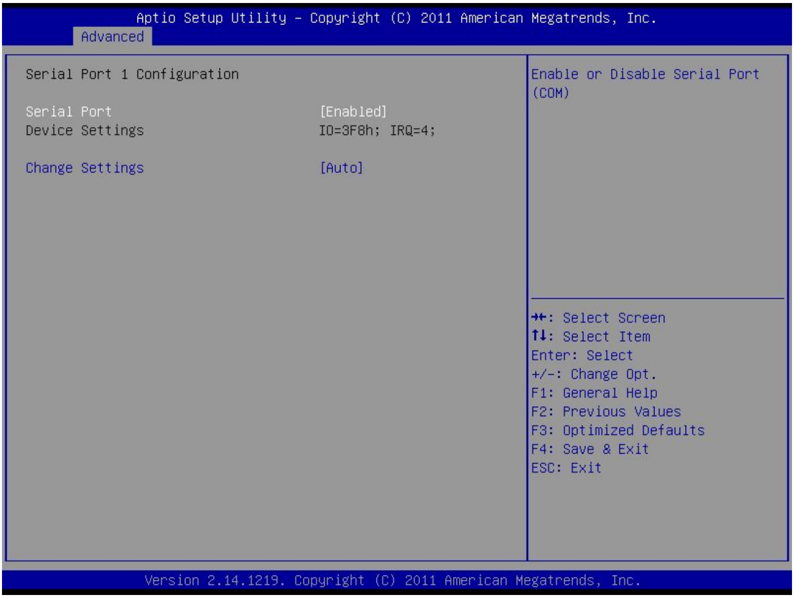
F81866 Super IO Configuration



Options summary: (***default setting***)

Serial Port 1/2/3/4 Configuration		
Set Parameters of Serial Port 1/2/3/4		
Power Failure	***Keep last state***	
	Always on	
	Always off	
F81866 Power Failure		
ERP Function	***Disabled***	
	Enabled	
ERP Function Enable/Disable		

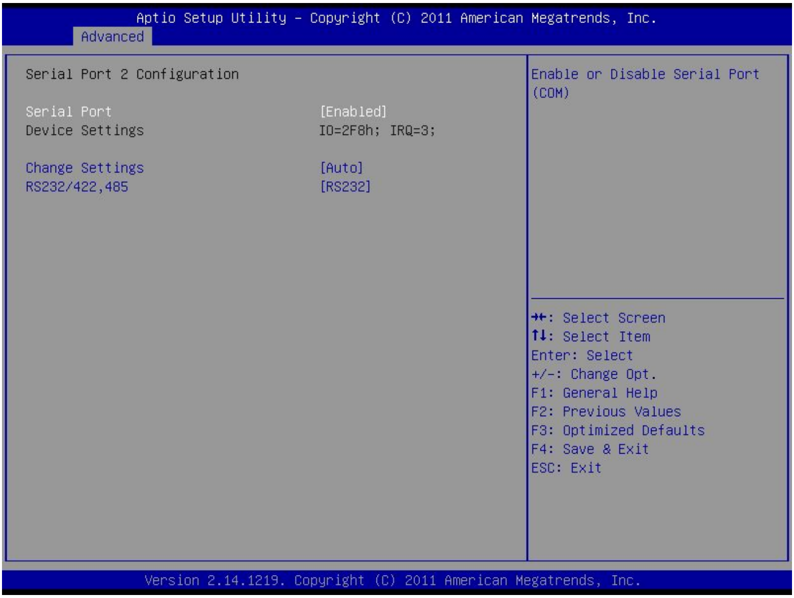
Serial Port 1 Configuration



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;	
	IO=2F8h; IRQ=3,4;	
Select a resource setting for Super IO device.		

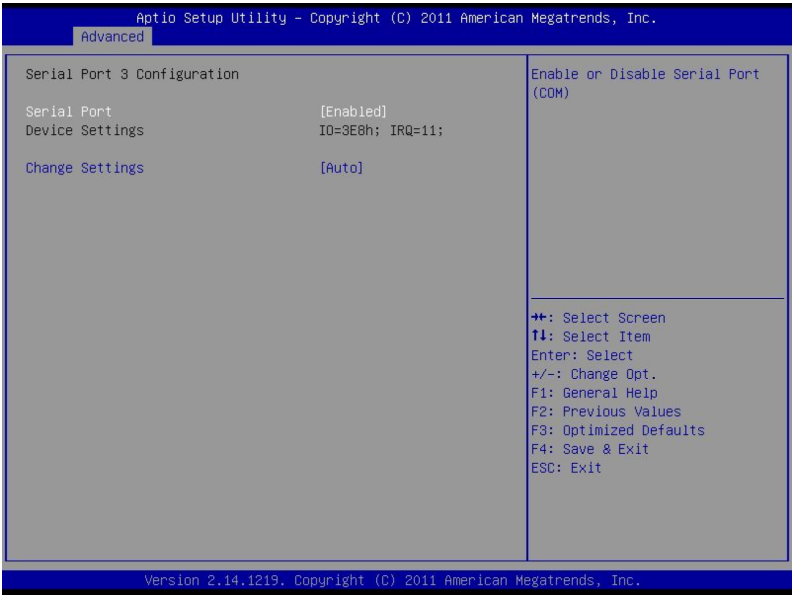
Serial Port 2 Configuration



Options summary: (***default setting***)

Serial Port	Disabled	
	Enabled	
En/Disable specified serial port.		
Change Settings	***Auto***	
	IO=2F8h; IRQ=3;	
	IO=3F8h; IRQ=3,4;	
	IO=2F8h; IRQ=3,4;	
Select a resource setting for Super IO device.		
Device Type	***RS232***	
	RS422	
	RS485	
Configure COM2 operated as RS232, RS422 or RS485.		

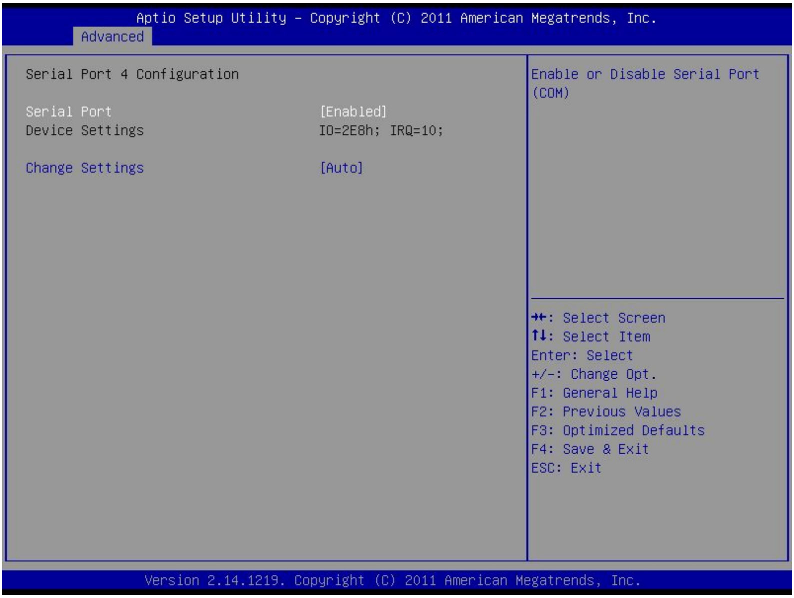
Serial Port 3 Configuration



Options summary: (***default setting***)

Serial Port	Disabled	
	Enabled	
En/Disable specified serial port.		
Change Settings	***Auto***	
	IO=3E8h; IRQ=11;	
	IO=3E8h; IRQ=11;	
	IO=2E8h; IRQ=11;	
Select a resource setting for Super IO device.		

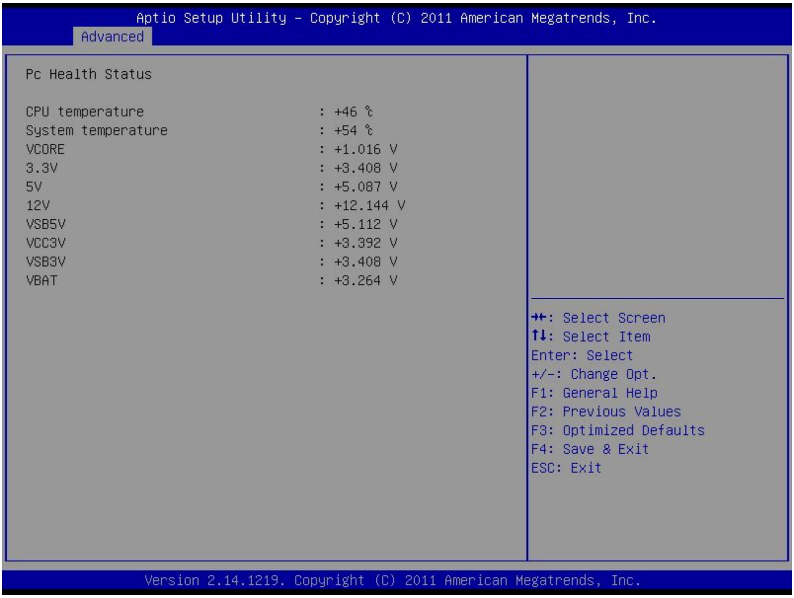
Serial Port 4 Configuration



Options summary: (***default setting***)

Serial Port	Disabled	
	Enabled	
En/Disable specified serial port.		
Change Settings	***Auto***	
	IO=2E8h; IRQ=10;	
	IO=3E8h; IRQ=10;	
	IO=2E8h; IRQ=10;	
Select a resource setting for Super IO device.		

H/W Monitor

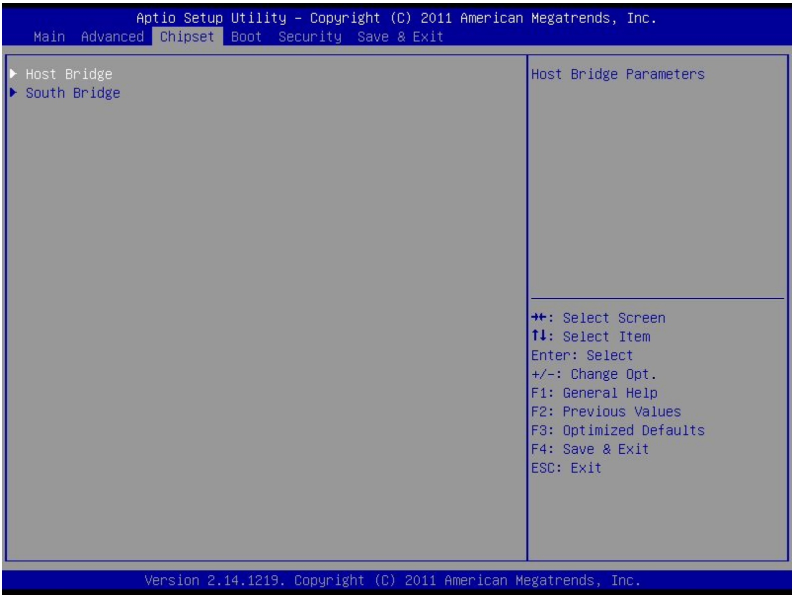

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
Pc Health Status
CPU temperature : +46 ℃
System temperature : +54 ℃
VCORE : +1.016 V
3.3V : +3.408 V
5V : +5.087 V
12V : +12.144 V
VSB5V : +5.112 V
VCC3V : +3.392 V
VSB3V : +3.408 V
VBAT : +3.264 V
→←: Select Screen
↑↓: Select 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.

Digital IO

DIO_P#1~4	***Input***	
	Output	
DIO_P#5~8	Input	
	Output	
Set GPIO as Input or Output		
DIO_P#1~4 Dire1ction	Hi	
	Low	
DIO_P#5~8 Direction	***Hi***	
	Low	

Set GPIO Output as Hi or Low

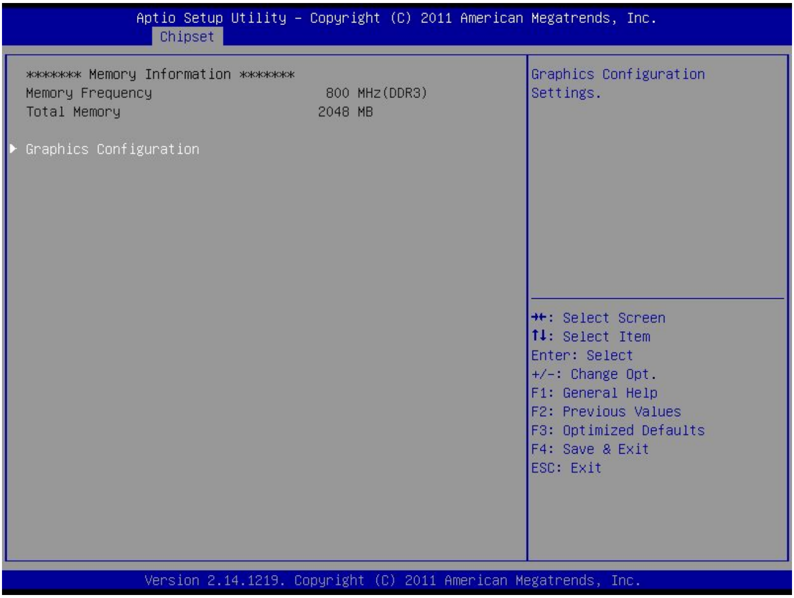
Setup submenu: Chipset



Options summary: (***default setting***)

Host Bridge		
Host Bridge Parameters		
South Bridge		
South Bridge Parameters		

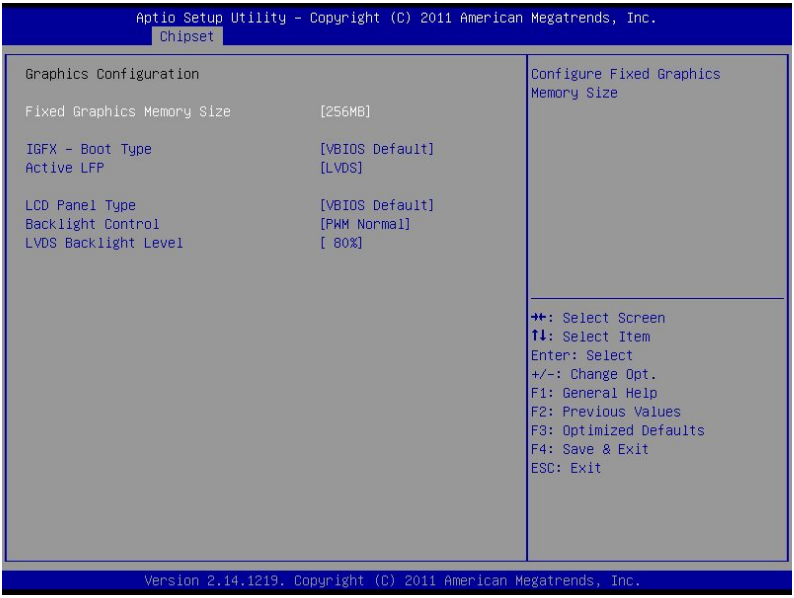
Host Bridge



Options summary: (***default setting***)

Graphics Configuration		
Graphics Configuration Setting.		

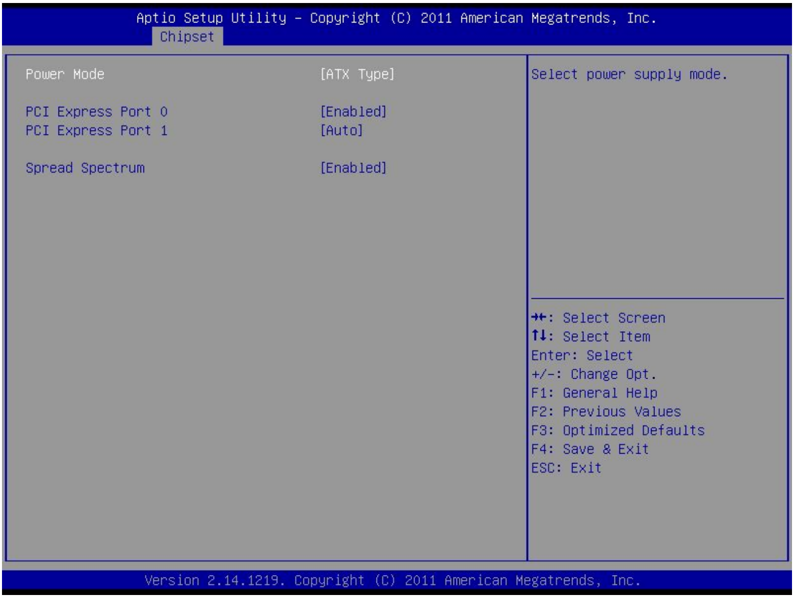
Graphics Configuration



Options summary: (***default setting***)

Fixed Graphics Memory Size	128MB	
	256MB	
Configure Fixed Graphics Memory Size		
IGFX - Boot Type	***VBIOS Default***	
	CRT	
	LFP	
Select boot display device.		
Active LFP	No LVDS	
	LVDS	
En/Disable LVDS interface		
LCD Panel Type	***VBIOS Default***	
	640x480 18bit	
	800x600 18bit	
	1024x768 18bit	
	1366x768 18bit	
	1280x800 18bit	
Select panel native resolution.		
Backlight Control	PWM Inverted	
	PWM Normal	
Select backlight control type		
LCDS Backlight Level	0~100% (***80%***)	
Select backlight control output value		

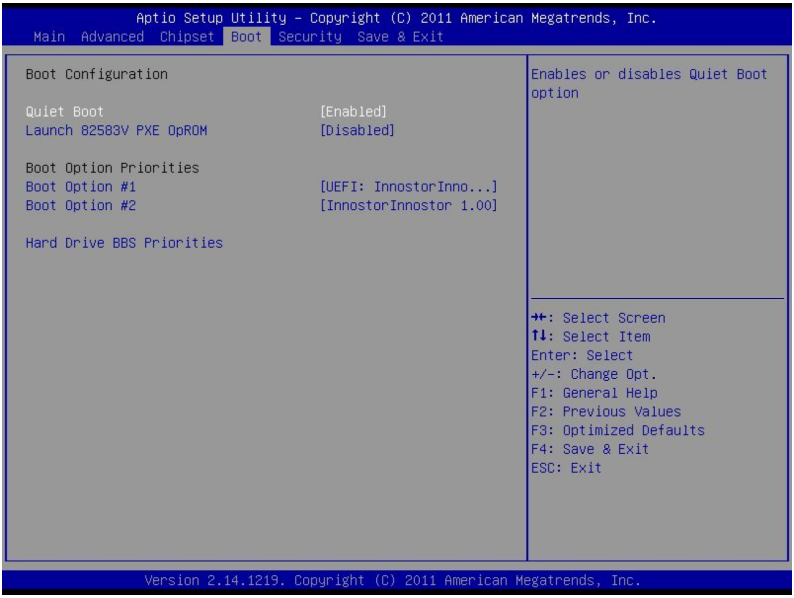
South Bridge



Options summary: (***default setting***)

Power Mode	***ATX Type***	
	AT Type	
Select the power type used on the system		
PCI Express Root Port 0	Disabled	
	Enabled	
Enabling/Disabling PCI Express root ports		
PCI Express Root Port 1	Disabled	
	Enabled	
	Auto	
Enabling/Disabling PCI Express root ports		
Spread Spectrum	Disabled	
	Enabled	
Enable / Disable Spread Spectrum		

Setup submenu: Boot

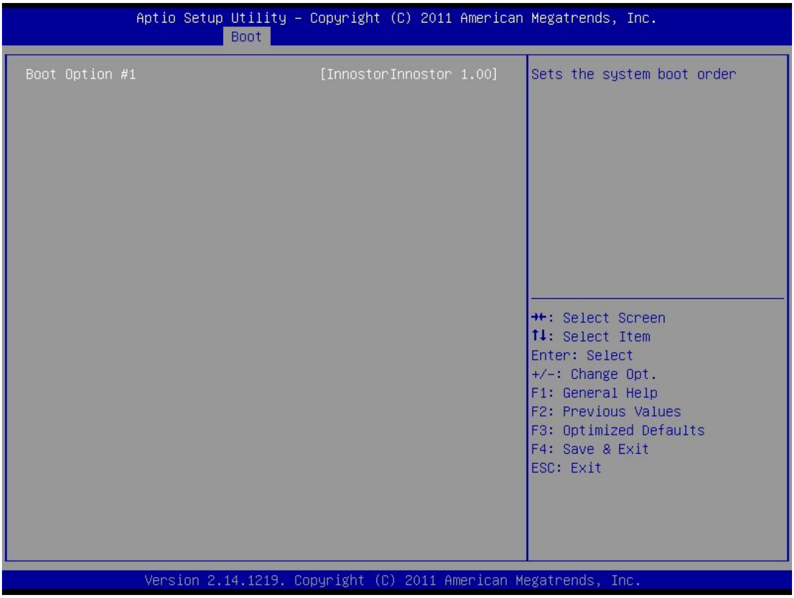


Options summary: (***default setting***)

Quiet Boot	Disabled	
	Enabled	
En/Disable showing boot logo.		
Launch 82583V 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

```
Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
  Main  Advanced  Chipset  Boot  Security  Save & Exit

Password Description                              | Set Administrator Password
                                                  |
If ONLY the Administrator's password is set,      |
then this only limits access to Setup and is      |
only asked for when entering Setup.               |
If ONLY the User's password is set, then this     |
is a power on password and must be entered to     |
boot or enter Setup. In Setup the User will       |
have Administrator rights.                        |
The password length must be                       |
in the following range:                           |
Minimum length                      3             |
Maximum length                      20            |--------------------------------
                                                  | →←: Select Screen
                                                  | ↑↓: Select Item
Administrator Password                            | Enter: Select
User Password                                     | +/-: Change Opt.
                                                  | F1: General Help
                                                  | F2: Previous Values
                                                  | F3: Optimized Defaults
                                                  | F4: Save & Exit
                                                  | ESC: Exit

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```
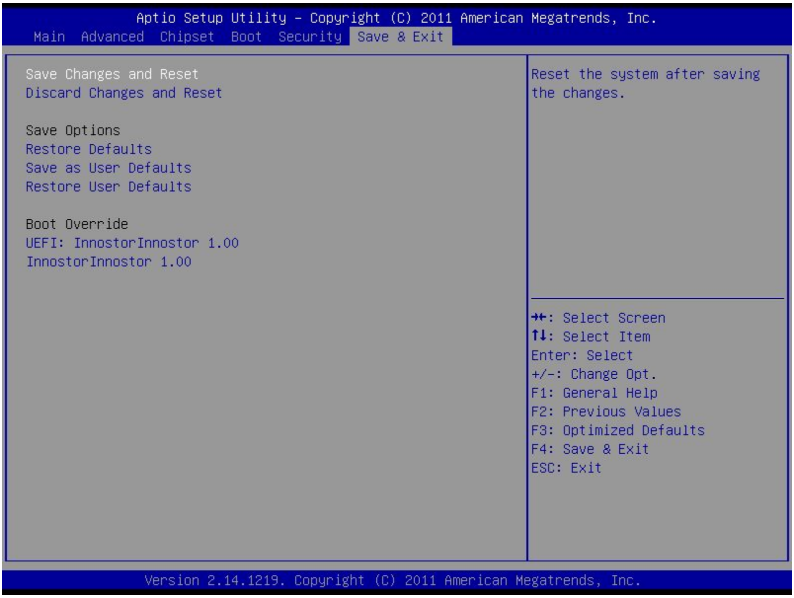

Options summary: (***default setting***)

Administrator Password/ User Password	***Not set***	
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 PFM-CVS comes with a CD-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 4 – Install Serial Port Driver (Optional)

Please read instructions below for further detailed installations.

4.1 Installation:

Insert the PFM-CVS Rev. B CD-ROM into the CD-ROM Drive. And install the drivers from Step 1 to Step 6 in order.

Step 1 – Install Chipset Driver

1. Click on the ***Step 1 – Chipset*** folder and double click on the ***Setup.exe*** file
2. Follow the instructions that the window shows
3. The system will help you install the driver automatically

Step 2 – Install VGA Driver

For Windows® 7

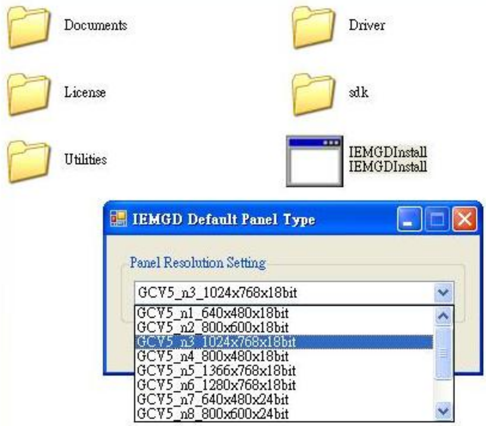
1. Click on the ***STEP2-VGA*** folder and select the folder of ***WIN7_32***
2. Double click on the ***Setup.exe*** file
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

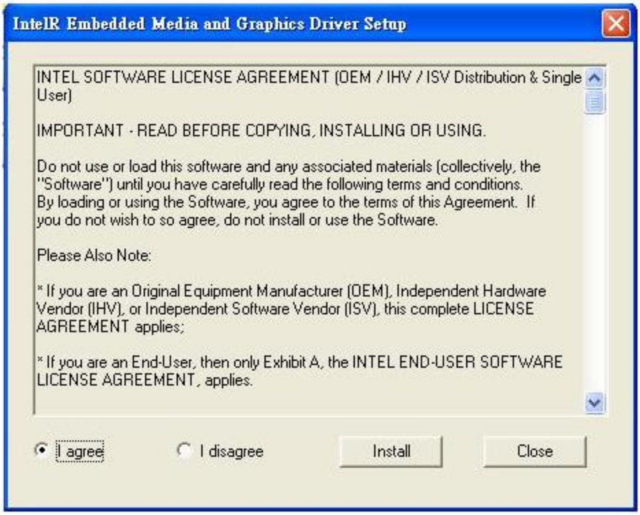
For Windows® XP

1. Install Framework 3.5
   - Double click on the ***dotnetfx35.exe***
   - Follow the instructions that the window shows
   - The system will help you install the driver automatically
2. Install IEMGD
   - Click on the ***PFM-CVS_IEMGD_WinXP32b_R1.0***

folder

- Double click on the ***IEMGDInstall.exe***
- Select the configuration
- Follow the instructions that the window shows
- The system will help you install the driver automatically




IntelR Embedded Media and Graphics Driver Setup
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
* If you are an End-User, then only Exhibit A, the INTEL END-USER SOFTWARE LICENSE AGREEMENT, applies.
I agree
I disagree
Install
Close


Software Installation
The software you are installing has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the software vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

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

Uninstall IEMGD

1. Double click on the ***IEMGDInstall.exe***

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 your system is

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

3. Follow the instructions that the window shows

4. The system will help you install the driver automatically

Step 4 – Install AUDIO Driver

1. Click on the ***Step 4 – AUDIO*** folder and select the OS 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 5 – Install AHCI Driver

For Windows 7:

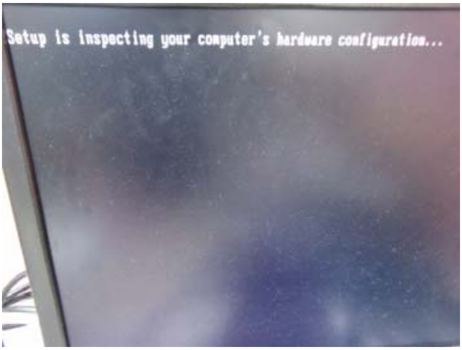
1. Click on the ***STEP5 - AHCI*** folder and select the Win7 folder
2. Double click on the **setup.exe** file

For Windows® XP 32-bit

<u>Note:</u> BIOS Setting Requirement : “BIOS Setting→Advanced →Launch Storage OpROM : **Enable** to enable HDD”

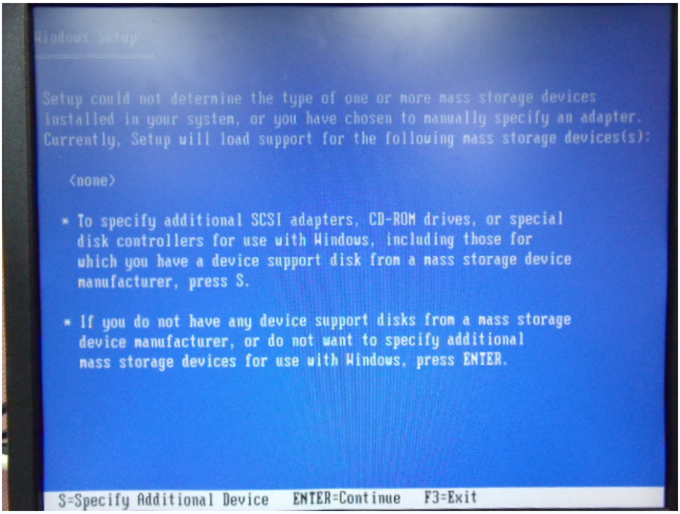
Step 1: Copy the files below from “Driver CD” -> “Step5 - AHCI” -> “F6 Floppy – x86” to Disk.

Step 2: Setup OS

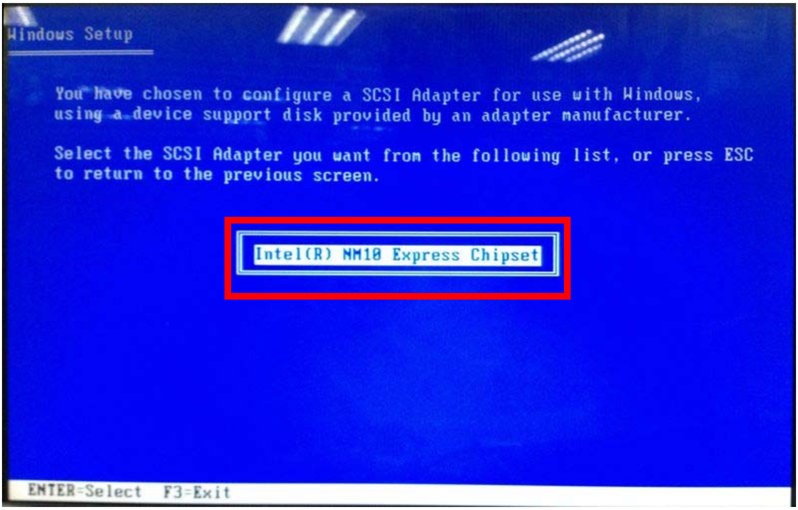


Step 3: Press "**F6**"

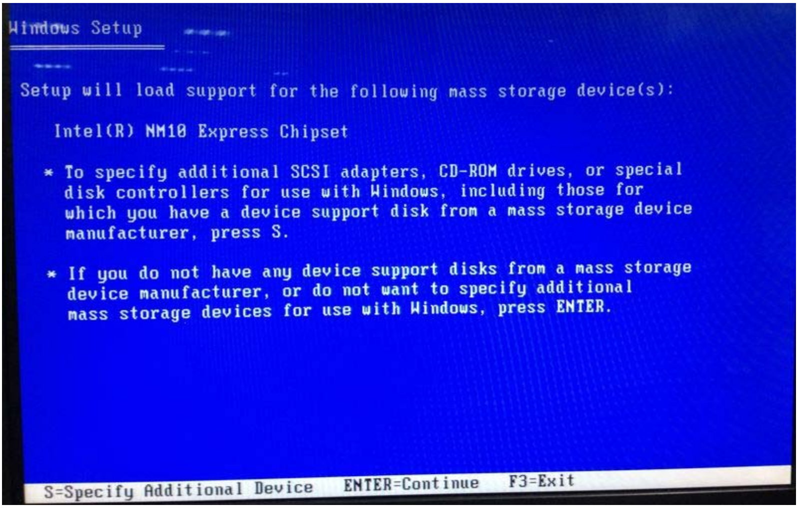
Step 4: Choose "**S**"



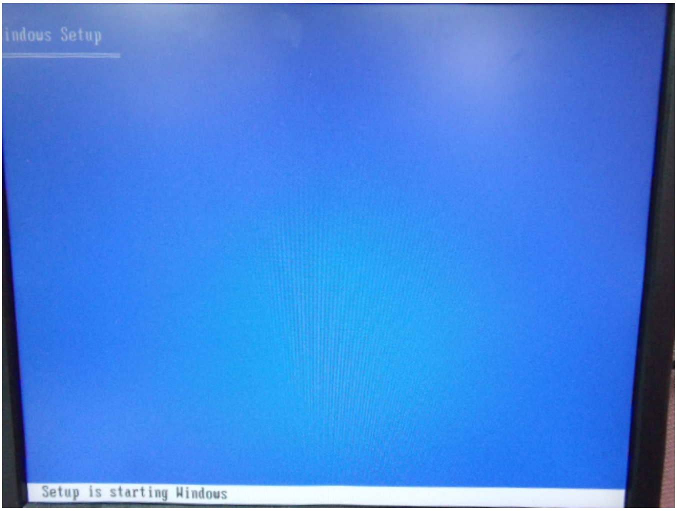
Step 5: Choose "**Intel(R) NM10 Express Chipset**"



Step 6: It will show the model number you select and then press "**ENTER**"



Step 7: Setup is starting Windows



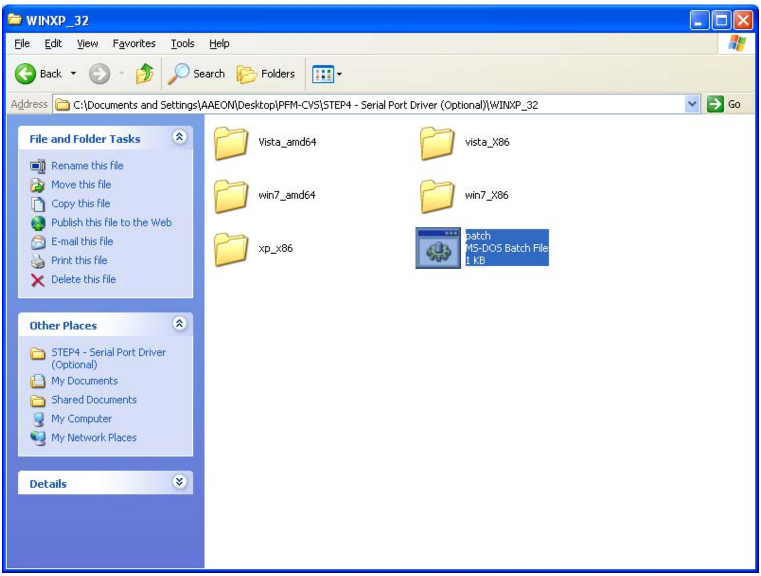
Step 8: Install Rapid Storage Technology

1. Click on the ***Rapid Storage Technology*** 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

Step 6 – Install Serial Port Driver (Optional)

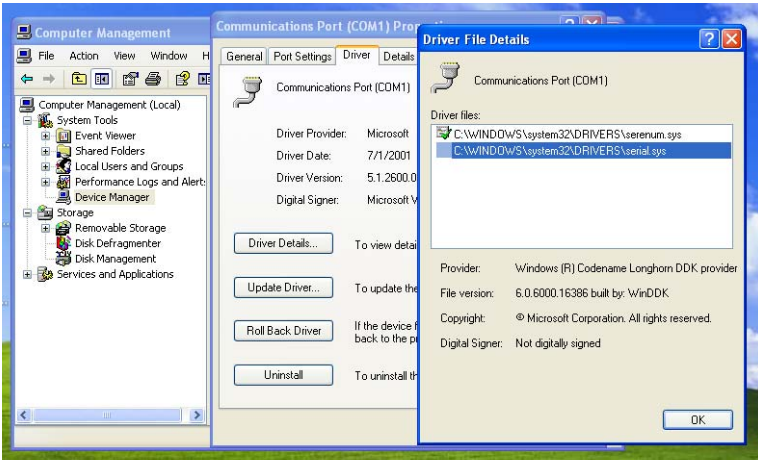
For Windows® XP 32-bit

1. Click on the ***STEP6 - Serial Port Driver (Optional)*** folder and select the OS folder of ***WINXP_32***
2. Double click on the **patch.bat** file



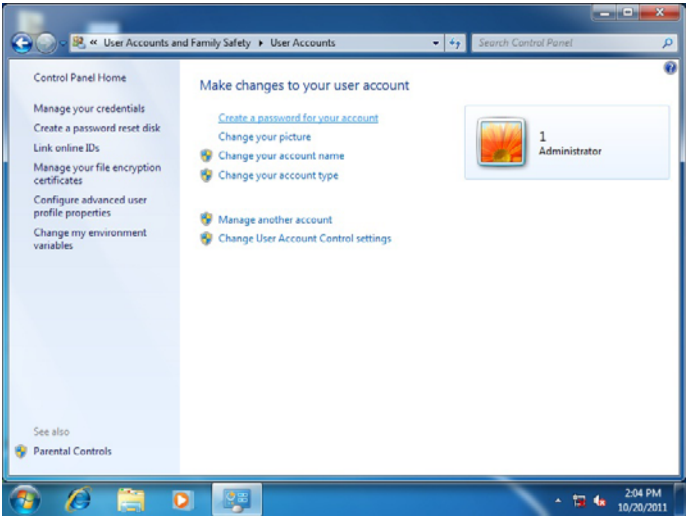
3. The system will help you install the driver automatically

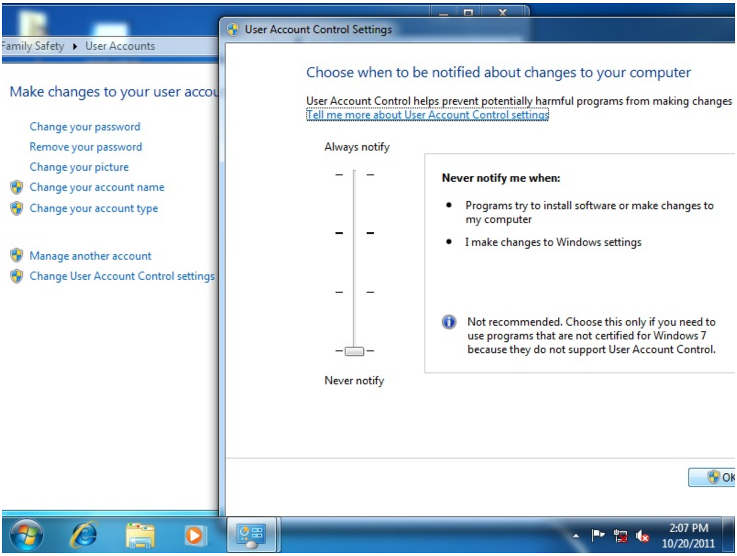
4. Check the driver installation in the device manager



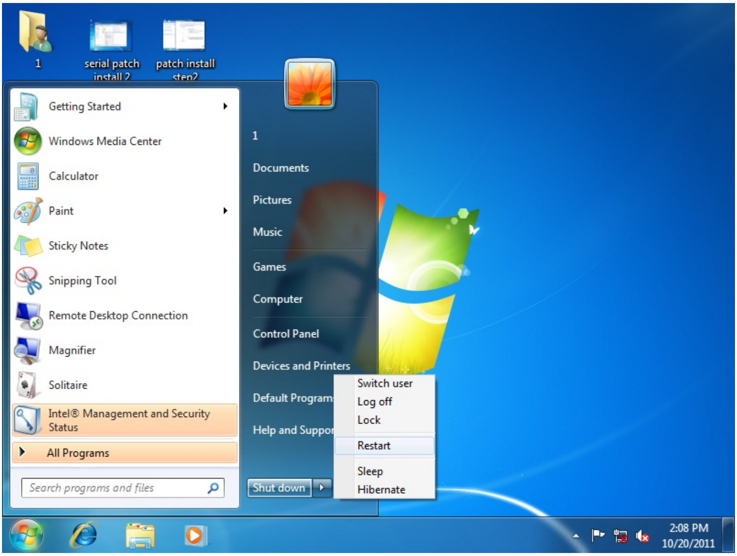
For Windows® 7 32-bit/ 64-bit

1. Modify the UAC (User Account Control) setting to ***Never notify***

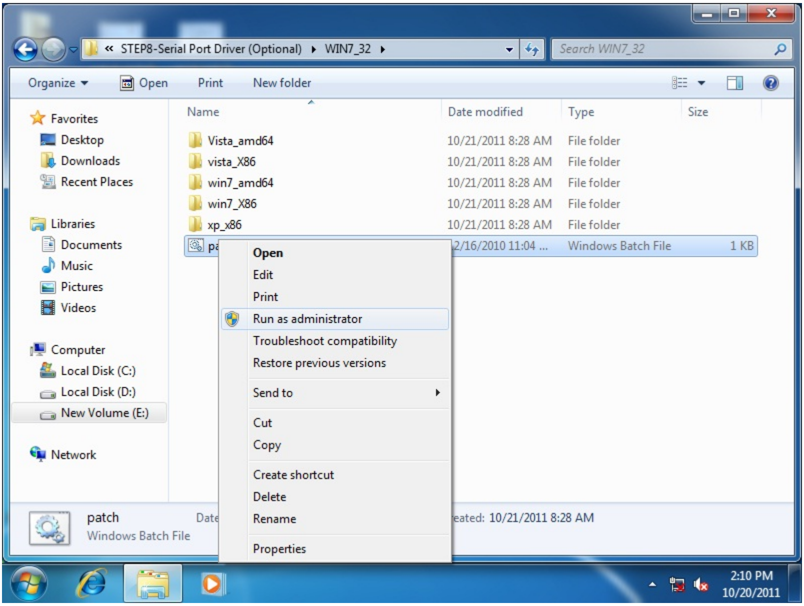




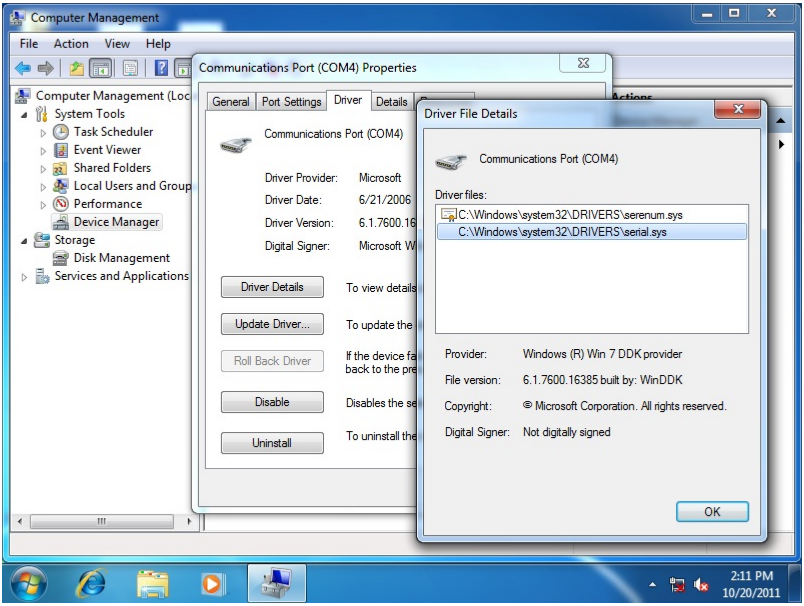
2. Restart the operating system.



3. Click on the ***STEP6 - Serial Port Driver (Optional)*** folder and select the OS folder.
4. Right click on the ***patch.bat*** file and select ***Run as administrator***



5. The system will help you install the driver automatically.
6. Check the driver installation in the device manager.


Computer Management
File Action View Help
Computer Management (Loc
System Tools
Task Scheduler
Event Viewer
Shared Folders
Local Users and Group
Performance
Device Manager
Storage
Disk Management
Services and Applications
Communications Port (COM4) Properties
General Port Settings Driver Details
Communications Port (COM4)
Driver Provider: Microsoft
Driver Date: 6/21/2006
Driver Version: 6.1.7600.16
Digital Signer: Microsoft W
Driver Details
To view details
Update Driver...
To update the
Roll Back Driver
If the device fa back to the pre
Disable
Disables the se
Uninstall
To uninstall the
Actions
Driver File Details
Communications Port (COM4)
Driver files:
C:\Windows\system32\DRIVERS\serenum.sys
C:\Windows\system32\DRIVERS\serial.sys
Provider: Windows (R) Win 7 DDK provider
File version: 6.1.7600.16385 built by: WinDDK
Copyright: © Microsoft Corporation. All rights reserved.
Digital Signer: Not digitally signed
OK
2:11 PM
10/20/2011

Appendix A

Programming the Watchdog Timer

A.1 Watchdog Timer Initial Program

Table 1 : SuperIO relative register table		
	Default Value	**Note**
Index	**0x2E**(Note1)	SIO MB PnP Mode Index Register 0x2E or 0x4E
Data	**0x2F**(Note2)	SIO MB PnP Mode Data Register 0x2F or 0x4F

Table 2 : Watchdog relative register table					
	LDN	**Register**	**BitNum**	**Value**	**Note**
Timer Counter	**0x07**(Note3)	**0xF6**(Note4)		(Note24)	Time of watchdog timer (0~255) This register is byte access
Counting Unit	**0x07**(Note5)	**0xF5**(Note6)	**3**(Note7)	**0**(Note8)	Select time unit. 0: second 1: minute
Watchdog Enable	**0x07**(Note9)	**0xF5**(Note10)	**5**(Note11)	**1**(Note12)	0: Disable 1: Enable
Timeout Status	**0x07**(Note13)	**0xF5**(Note14)	**6**(Note15)	**1**	1: Clear timeout status
Output Mode	**0x07**(Note16)	**0xF5**(Note17)	**4**(Note18)	**1**(Note19)	Select WDTRST# output mode 0: level 1: pulse
WDTRST output	**0x07**(Note20)	**0xFA**(Note21)	**0**(Note22)	**1**(Note23)	Enable/Disable time out output via WDTRST# 0: Disable 1: Enable

```
************************************************************************************
// SuperIO relative definition (Please reference to Table 1)
#define byte    SIOIndex    //This parameter is represented from Note1
#define byte    SIOData    //This parameter is represented from Note2
#define    void    IOWriteByte(byte IOPort, byte Value);
#define    byte    IOReadByte(byte IOPort);
// Watch Dog relative definition (Please reference to Table 2)
#define byte    TimerLDN    //This parameter is represented from Note3
#define byte    TimerReg    //This parameter is represented from Note4
#define byte    TimerVal    // This parameter is represented from Note24
#define byte    UnitLDN    //This parameter is represented from Note5
#define byte    UnitReg    //This parameter is represented from Note6
#define byte    UnitBit    //This parameter is represented from Note7
#define byte    UnitVal    //This parameter is represented from Note8
#define byte    EnableLDN    //This parameter is represented from Note9
#define byte    EnableReg    //This parameter is represented from Note10
#define byte    EnableBit    //This parameter is represented from Note11
#define byte    EnableVal    //This parameter is represented from Note12
#define byte    StatusLDN    // This parameter is represented from Note13
#define byte    StatusReg    // This parameter is represented from Note14
#define byte    StatusBit    // This parameter is represented from Note15
#define byte    ModeLDN    // This parameter is represented from Note16
#define byte    ModeReg    // This parameter is represented from Note17
#define byte    ModeBit    // This parameter is represented from Note18
#define byte    ModeVal    // This parameter is represented from Note19
#define byte    WDTRstLDN    // This parameter is represented from Note20
#define byte    WDTRstReg    // This parameter is represented from Note21
#define byte    WDTRstBit    // This parameter is represented from Note22
#define byte    WDTRstVal    // This parameter is represented from Note23
************************************************************************************
```

```
*************************************************************************************
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(EnableLDN, EnableReg, EnableBit, 1);
}

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

VOID    WDTEnableDisable(byte LDN, byte Register, byte BitNum, byte Value){
        SIOBitSet(LDN, Register, BitNum, Value);
}

VOID    WDTParameterSetting(){
        // Watchdog Timer counter setting
        SIOByteSet(TimerLDN, TimerReg, TimerVal);
        // WDT counting unit setting
        SIOBitSet(UnitLDN, UnitReg, UnitBit, UnitVal);
        // WDT output mode setting, level / pulse
        SIOBitSet(ModeLDN, ModeReg, ModeBit, ModeVal);
        // Watchdog timeout output via WDTRST#
        SIOBitSet(WDTRstLDN, WDTRstReg, WDTRstBit, WDTRstVal);
}

VOID    WDTClearTimeoutStatus(){
        SIOBitSet(StatusLDN, StatusReg, StatusBit, 1);
}
********************************************************************************
```

```
*************************************************************************************
VOID    SIOEnterMBPnPMode(){
        IOWriteByte(SIOIndex, 0x87);
        IOWriteByte(SIOIndex, 0x87);
}

VOID    SIOExitMBPnPMode(){
        IOWriteByte(SIOIndex, 0xAA);
}

VOID    SIOSelectLDN(byte LDN){
        IOWriteByte(SIOIndex, 0x07); // SIO LDN Register Offset = 0x07
        IOWriteByte(SIOData, LDN);
}

VOID    SIOBitSet(byte LDN, byte Register, byte BitNum, byte Value){
        Byte TmpValue;

        SIOEnterMBPnPMode();
        SIOSelectLDN(byte LDN);
        IOWriteByte(SIOIndex, Register);
        TmpValue = IOReadByte(SIOData);
        TmpValue &= ~(1 << BitNum);
        TmpValue |= (Value << BitNum);
        IOWriteByte(SIOData, TmpValue);
        SIOExitMBPnPMode();
}

VOID    SIOByteSet(byte LDN, byte Register, byte Value){
        SIOEnterMBPnPMode();
        SIOSelectLDN(LDN);
        IOWriteByte(SIOIndex, Register);
        IOWriteByte(SIOData, Value);
        SIOExitMBPnPMode();
}
*************************************************************************************
```

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

[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
[000002E8 - 000002EF] Communications Port (COM4)
[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 - 00000A0F] Motherboard resources
[00000A10 - 00000A1F] Motherboard resources
[00000A20 - 00000A2F] Motherboard resources
[00000D00 - 0000FFFF] PCI bus
[00001000 - 0000100F] Motherboard resources
[0000E000 - 0000EFFF] Intel(R) N10/ICH7 Family PCI Express Root Port - 27D2
[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 1st MB Memory Address Map

- Memory
  - [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 - 000FFFFF] PCI bus
  - [7F800000 - 7FFFFFFF] PCI bus
  - [80000000 - FEBFFFFF] PCI bus
  - [DFD00000 - DFDFFFFF] Intel(R) Graphics Media Accelerator 3600 Series
  - [DFE00000 - DFE1FFFF] Intel(R) 82583V Gigabit Network Connection
  - [DFE00000 - DFEFFFFF] Intel(R) N10/ICH7 Family PCI Express Root Port - 27D2
  - [DFE20000 - DFE23FFF] Intel(R) 82583V Gigabit Network Connection
  - [DFF00000 - DFF03FFF] High Definition Audio Controller
  - [DFF04000 - DFF043FF] Intel(R) N10/ICH7 Family Serial ATA Storage Controller - 27C0
  - [DFF05000 - DFF053FF] Intel(R) N10/ICH7 Family USB2 Enhanced Host Controller - 27CC
  - [E0000000 - EFFFFFFF] System board
  - [FEC00000 - FEC00FFF] Motherboard resources
  - [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

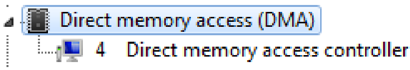
Interrupt request (IRQ)

(ISA) 0x00000000 (00)	System timer
(ISA) 0x00000001 (01)	Standard PS/2 Keyboard
(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 (COM4)
(ISA) 0x0000000B (11)	Communications Port (COM3)
(ISA) 0x0000000C (12)	Microsoft PS/2 Mouse
(ISA) 0x0000000D (13)	Numeric data processor
(ISA) 0x00000051 (81)	Microsoft ACPI-Compliant System
(ISA) 0x00000052 (82)	Microsoft ACPI-Compliant System
(ISA) 0x00000053 (83)	Microsoft ACPI-Compliant System
(ISA) 0x00000054 (84)	Microsoft ACPI-Compliant System
(ISA) 0x00000055 (85)	Microsoft ACPI-Compliant System
(ISA) 0x00000056 (86)	Microsoft ACPI-Compliant System
(ISA) 0x00000057 (87)	Microsoft ACPI-Compliant System
(ISA) 0x00000058 (88)	Microsoft ACPI-Compliant System
(ISA) 0x00000059 (89)	Microsoft ACPI-Compliant System
(ISA) 0x0000005A (90)	Microsoft ACPI-Compliant System
(ISA) 0x0000005B (91)	Microsoft ACPI-Compliant System
(ISA) 0x0000005C (92)	Microsoft ACPI-Compliant System
(ISA) 0x0000005D (93)	Microsoft ACPI-Compliant System
(ISA) 0x0000005E (94)	Microsoft ACPI-Compliant System
(ISA) 0x0000005F (95)	Microsoft ACPI-Compliant System
(ISA) 0x00000060 (96)	Microsoft ACPI-Compliant System
(ISA) 0x00000061 (97)	Microsoft ACPI-Compliant System
(ISA) 0x00000062 (98)	Microsoft ACPI-Compliant System
(ISA) 0x00000063 (99)	Microsoft ACPI-Compliant System
(ISA) 0x00000064 (100)	Microsoft ACPI-Compliant System
(ISA) 0x00000065 (101)	Microsoft ACPI-Compliant System
(ISA) 0x00000066 (102)	Microsoft ACPI-Compliant System
(ISA) 0x00000067 (103)	Microsoft ACPI-Compliant System
(ISA) 0x00000068 (104)	Microsoft ACPI-Compliant System
(ISA) 0x00000069 (105)	Microsoft ACPI-Compliant System
(ISA) 0x0000006A (106)	Microsoft ACPI-Compliant System
(ISA) 0x0000006B (107)	Microsoft ACPI-Compliant System
(ISA) 0x0000006C (108)	Microsoft ACPI-Compliant System
(ISA) 0x0000006D (109)	Microsoft ACPI-Compliant System
(ISA) 0x0000006E (110)	Microsoft ACPI-Compliant System
(ISA) 0x0000006F (111)	Microsoft ACPI-Compliant System
(ISA) 0x00000070 (112)	Microsoft ACPI-Compliant System
(ISA) 0x00000071 (113)	Microsoft ACPI-Compliant System
(ISA) 0x00000072 (114)	Microsoft ACPI-Compliant System
(ISA) 0x00000073 (115)	Microsoft ACPI-Compliant System
(ISA) 0x00000074 (116)	Microsoft ACPI-Compliant System
(ISA) 0x00000075 (117)	Microsoft ACPI-Compliant System
(ISA) 0x00000076 (118)	Microsoft ACPI-Compliant System
(ISA) 0x00000077 (119)	Microsoft ACPI-Compliant System

(ISA) 0x00000077 (119)	Microsoft ACPI-Compliant System
(ISA) 0x00000078 (120)	Microsoft ACPI-Compliant System
(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) 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 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 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) 0xFFFFFFFB (-5)	Intel(R) 82583V Gigabit Network Connection
(PCI) 0xFFFFFFFC (-4)	Intel(R) Graphics Media Accelerator 3600 Series
(PCI) 0xFFFFFFFD (-3)	Intel(R) N10/ICH7 Family PCI Express Root Port - 27D2
(PCI) 0xFFFFFFFE (-2)	Intel(R) N10/ICH7 Family PCI Express Root Port - 27D0

B.4 DMA Channel Assignments



Appendix C

Mating Connector

C.1 List of Mating Connectors and Cables

The table notes mating connectors and available cables.

Connector Label	Function	Mating Connector		Available Cable	Cable P/N
		Vendor	Model number		
CN2	Backlight Brightness Control (Dummy)	CATCH	H738-05	CATCH	1705050153
CN3	Internal LVDS	HIROSE	DF13-20S-1.25C	Great Ideal	1704200200
CN5	SATA Power	CATCH	H732-02	CATCH	1702150155
CN7	Front Panel (Dummy)	CATCH	H752-10	CATCH	1701010150
CN7	Front Panel (External 10Pins Header)	CATCH	H752-10	CATCH	1701100155
CN7	Front Panel (External 2Pins Buzzer)	CATCH	H752-10	CATCH	1703020156
CN9	+12VSB Power Input	N/A	N/A	CATCH	1702002010
CN12	Digital I/O (Dummy)	CATCH	H752-10	CATCH	1701010150
CN12	Digital I/O (External10 Pins Connector)	CATCH	H752-10	CATCH	1700100408
LAN1	LAN Connector	CATCH	H820-2-10	CATCH	1700100201
VGA1	CRT Connector	CATCH	H752-13	CATCH	1709150151
COM1	COM1 RS232 Connector	CATCH	H752-09	CATCH	1701090150

COM2	COM2 RS232/422/485 Connector	CATCH	H752-09	CATCH	1701090150
COM3	COM3 RS232 Connector	CATCH	H752-09	CATCH	1701090150
COM4	COM4 RS232 Connector	CATCH	H752-09	CATCH	1701090150
USB1	USB2.0 Connector	CATCH	H752-05	CATCH	1700050207
USB2	USB2.0 Connector	CATCH	H752-05	CATCH	1700050207
USB3	USB2.0 Connector	CATCH	H752-05	CATCH	1700050207
USB4	USB2.0 Connector	CATCH	H752-05	CATCH	1700050207
CN15	Audio Connector	PINREX	712-71-10TW01	CATCH	1709100254
CN18	PS/2 Keyboard & Mouse	CATCH	1201-700-06S	CATCH	1700060155

Appendix D

Electrical Specifications for I/O Ports

D.1 Electrical Specifications for I/O Ports

I/O	Reference	Signal Name	Rate Output
Backlight Brightness Control Connector	CN2	VDD	+5V/0.5 or +12V/0.5
Iternal LVDS Connector	CN3	VCC	+3.3V/1A or +5V/1A
SATA Power Connector	CN5	+5V	+5V/1A
Digital I/O Connector	CN12	D0~D7	+3.3V/(Open drain)
Mini PCI Express/mSATA Connector	CN14	+3.3VSB +1.5V	+3.3V/1.1A +1.5V/0.375A
CRT Connector	VGA1	+5V	+5V/1A
COM2 RS232/422/485 Connector	COM2	+5V/+12V	+5V/0.5A or +12V/0.5A
USB2.0 Connector	USB1	+5V	+5V/0.5A~1Aer channel)
USB2.0 Connector	USB2	+5V	+5V/0.5A~1Aer channel)
USB2.0 Connector	USB3	+5V	+5V/0.5A~1Aer channel)
USB2.0 Connector	USB4	+5V	+5V/0.5A~1Aer channel)

D.2 DIO Programming

PFM-CVS Rev.B utilizes FINTEK 81866 chipset as its Digital I/O 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.

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.(These three steps are the same as programming WDT)

D.3 Digital I/O Register

Table 1 : SuperIO relative register table		
	Default Value	**Note**
Index	**0x2E**(Note1)	SIO MB PnP Mode Index Register 0x2E or 0x4E
Data	**0x2F**(Note2)	SIO MB PnP Mode Data Register 0x2F or 0x4F

Table 2 : Digital Input relative register table					
	LDN	**Register**	**BitNum**	**Value**	**Note**
DIO-1 Pin Status	**0x06**(Note3)	**0x8A**(Note4)	**0**(Note5)		GPIO80
DIO-2 Pin Status	**0x06**(Note6)	**0x8A**(Note7)	**1**(Note8)		GPIO81
DIO-3 Pin Status	**0x06**(Note9)	**0x8A**(Note10)	**2**(Note11)		GPIO82
DIO-4 Pin Status	**0x06**(Note12)	**0x8A**(Note13)	**3**(Note14)		GPIO83
DIO-5 Pin Status	**0x06**(Note15)	**0x8A**(Note16)	**4**(Note17)		GPIO84
DIO-6 Pin Status	**0x06**(Note18)	**0x8A**(Note19)	**5**(Note20)		GPIO85
DIO-7 Pin Status	**0x06**(Note21)	**0x8A**(Note22)	**6**(Note23)		GPIO86
DIO-8 Pin Status	**0x06**(Note24)	**0x8A**(Note25)	**7**(Note26)		GPIO87

Table 3 : Digital Output relative register table					
	LDN	**Register**	**BitNum**	**Value**	**Note**
DIO-1 Output Data	**0x06**(Note27)	**0x89**(Note28)	**0**(Note29)	(Note30)	GPIO80
DIO-2 Output Data	**0x06**(Note31)	**0x89**(Note32)	**1**(Note33)	(Note34)	GPIO81
DIO-3 Output Data	**0x06**(Note35)	**0x89**(Note36)	**2**(Note37)	(Note38)	GPIO82
DIO-4 Output Data	**0x06**(Note39)	**0x89**(Note40)	**3**(Note41)	(Note42)	GPIO83
DIO-5 Output Data	**0x06**(Note43)	**0x89**(Note44)	**4**(Note45)	(Note46)	GPIO84
DIO-6 Output Data	**0x06**(Note47)	**0x89**(Note48)	**5**(Note49)	(Note50)	GPIO85
DIO-7 Output Data	**0x06**(Note51)	**0x89**(Note52)	**6**(Note53)	(Note54)	GPIO86
DIO-8 Output Data	**0x06**(Note55)	**0x89**(Note56)	**7**(Note57)	(Note58)	GPIO87

D.4 Digital I/O Sample Program

```
****************************************************************************************
// SuperIO relative definition (Please reference to Table 1)
#define byte    SIOIndex    //This parameter is represented from Note1
#define byte    SIOData     //This parameter is represented from Note2
#define    void    IOWriteByte(byte IOPort, byte Value);
#define    byte    IOReadByte(byte IOPort);
// Digital Input Status relative definition (Please reference to Table 2)
#define byte    DInput1LDN    // This parameter is represented from Note3
#define byte    DInput1Reg    // This parameter is represented from Note4
#define byte    DInput1Bit    // This parameter is represented from Note5
#define byte    DInput2LDN    // This parameter is represented from Note6
#define byte    DInput2Reg    // This parameter is represented from Note7
#define byte    DInput2Bit    // This parameter is represented from Note8
#define byte    DInput3LDN    // This parameter is represented from Note9
#define byte    DInput3Reg    // This parameter is represented from Note10
#define byte    DInput3Bit    // This parameter is represented from Note11
#define byte    DInput4LDN    // This parameter is represented from Note12
#define byte    DInput4Reg    // This parameter is represented from Note13
#define byte    DInput4Bit    // This parameter is represented from Note14
#define byte    DInput5LDN    // This parameter is represented from Note15
#define byte    DInput5Reg    // This parameter is represented from Note16
#define byte    DInput5Bit    // This parameter is represented from Note17
#define byte    DInput6LDN    // This parameter is represented from Note18
#define byte    DInput6Reg    // This parameter is represented from Note19
#define byte    DInput6Bit    // This parameter is represented from Note20
#define byte    DInput7LDN    // This parameter is represented from Note21
#define byte    DInput7Reg    // This parameter is represented from Note22
#define byte    DInput7Bit    // This parameter is represented from Note23
#define byte    DInput8LDN    // This parameter is represented from Note24
#define byte    DInput8Reg    // This parameter is represented from Note25
#define byte    DInput8Bit    // This parameter is represented from Note26
****************************************************************************************
```

```
*****************************************************************************************
// Digital Output control relative definition (Please reference to Table 3)
#define byte    DOutput1LDN    // This parameter is represented from Note27
#define byte    DOutput1Reg    // This parameter is represented from Note28
#define byte    DOutput1Bit    // This parameter is represented from Note29
#define byte    DOutput1Val    // This parameter is represented from Note30
#define byte    DOutput2LDN    // This parameter is represented from Note31
#define byte    DOutput2Reg    // This parameter is represented from Note32
#define byte    DOutput2Bit    // This parameter is represented from Note33
#define byte    DOutput2Val    // This parameter is represented from Note34
#define byte    DOutput3LDN    // This parameter is represented from Note35
#define byte    DOutput3Reg    // This parameter is represented from Note36
#define byte    DOutput3Bit    // This parameter is represented from Note37
#define byte    DOutput3Val    // This parameter is represented from Note38
#define byte    DOutput4LDN    // This parameter is represented from Note39
#define byte    DOutput4Reg    // This parameter is represented from Note40
#define byte    DOutput4Bit    // This parameter is represented from Note41
#define byte    DOutput4Val    // This parameter is represented from Note42
#define byte    DOutput5LDN    // This parameter is represented from Note43
#define byte    DOutput5Reg    // This parameter is represented from Note44
#define byte    DOutput5Bit    // This parameter is represented from Note45
#define byte    DOutput5Val    // This parameter is represented from Note46
#define byte    DOutput6LDN    // This parameter is represented from Note47
#define byte    DOutput6Reg    // This parameter is represented from Note48
#define byte    DOutput6Bit    // This parameter is represented from Note49
#define byte    DOutput6Val    // This parameter is represented from Note50
#define byte    DOutput7LDN    // This parameter is represented from Note51
#define byte    DOutput7Reg    // This parameter is represented from Note52
#define byte    DOutput7Bit    // This parameter is represented from Note53
#define byte    DOutput7Val    // This parameter is represented from Note54
#define byte    DOutput8LDN    // This parameter is represented from Note55
#define byte    DOutput8Reg    // This parameter is represented from Note56
#define byte    DOutput8Bit    // This parameter is represented from Note57
#define byte    DOutput8Val    // This parameter is represented from Note58
*****************************************************************************************
```

```
*************************************************************************************
VOID   Main(){
        Boolean PinStatus ;

        // Procedure : AaeonReadPinStatus
        // Input :
        //          Example, Read Digital I/O Pin 3 status
        // Output :
        //          InputStatus :
        //                    0: Digital I/O Pin level is low
        //                    1: Digital I/O Pin level is High
        PinStatus = AaeonReadPinStatus(DInput3LDN, DInput3Reg, DInput3Bit);

        // Procedure : AaeonSetOutputLevel
        // Input :
        //          Example, Set Digital I/O Pin 6 level
        AaeonSetOutputLevel(DOutput6LDN, DOutput6Reg, DOutput6Bit, DOutput6Val);
}
*************************************************************************************
```

```
************************************************************************************
Boolean    AaeonReadPinStatus(byte LDN, byte Register, byte BitNum){
           Boolean PinStatus ;

           PinStatus = SIOBitRead(LDN, Register, BitNum);
           Return PinStatus ;
}
VOID    AaeonSetOutputLevel(byte LDN, byte Register, byte BitNum, byte Value){
           ConfigToOutputMode(LDN, Register, BitNum);
           SIOBitSet(LDN, Register, BitNum, Value);
}
************************************************************************************
```

```
*********************************************************************************
VOID    SIOEnterMBPnPMode(){
         IOWriteByte(SIOIndex, 0x87);
         IOWriteByte(SIOIndex, 0x87);
}

VOID    SIOExitMBPnPMode(){
         IOWriteByte(SIOIndex, 0xAA);
}

VOID    SIOSelectLDN(byte LDN){
         IOWriteByte(SIOIndex, 0x07); // SIO LDN Register Offset = 0x07
         IOWriteByte(SIOData, LDN);
}

VOID    SIOBitSet(byte LDN, byte Register, byte BitNum, byte Value){
         Byte TmpValue;

         SIOEnterMBPnPMode();
         SIOSelectLDN(byte LDN);
         IOWriteByte(SIOIndex, Register);
         TmpValue = IOReadByte(SIOData);
         TmpValue &= ~(1 << BitNum);
         TmpValue |= (Value << BitNum);
         IOWriteByte(SIOData, TmpValue);
         SIOExitMBPnPMode();
}

VOID    SIOByteSet(byte LDN, byte Register, byte Value){
         SIOEnterMBPnPMode();
         SIOSelectLDN(LDN);
         IOWriteByte(SIOIndex, Register);
         IOWriteByte(SIOData, Value);
         SIOExitMBPnPMode();
}
*********************************************************************************
```

```
************************************************************************************
Boolean    SIOBitRead(byte LDN, byte Register, byte BitNum){
        Byte TmpValue;

        SIOEnterMBPnPMode();
        SIOSelectLDN(LDN);
        IOWriteByte(SIOIndex, Register);
        TmpValue = IOReadByte(SIOData);
        TmpValue &= (1 << BitNum);
        SIOExitMBPnPMode();
        If(TmpValue == 0)
                Return 0;
        Return 1;
}
VOID    ConfigToOutputMode(byte LDN, byte Register, byte BitNum){
        Byte TmpValue, OutputEnableReg;

        OutputEnableReg = Register-1;
        SIOEnterMBPnPMode();
        SIOSelectLDN(LDN);
        IOWriteByte(SIOIndex, OutputEnableReg);
        TmpValue = IOReadByte(SIOData);
        TmpValue  |= (1 << BitNum);
        IOWriteByte(SIOData, OutputEnableReg);
        SIOExitMBPnPMode();
}
************************************************************************************
```