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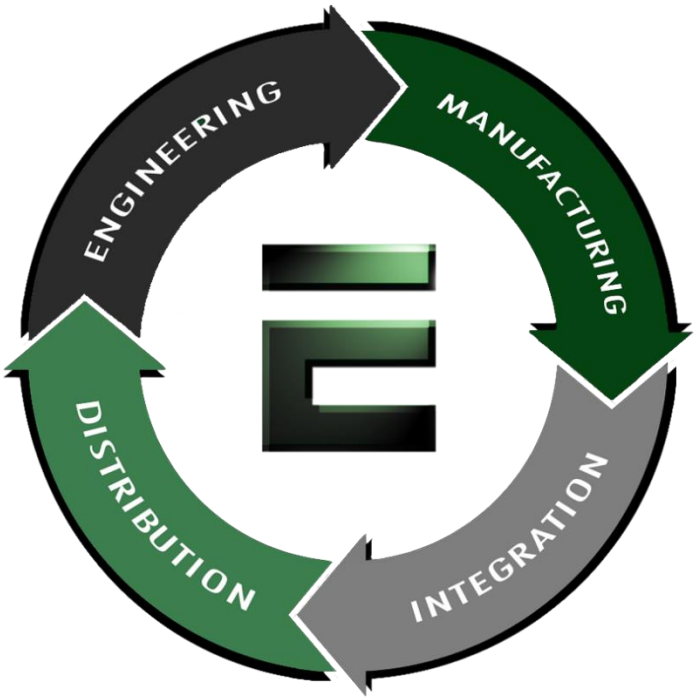

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For technical support please submit a ticket at www.emacinc.com/support

PFM-CVS

Intel® Atom™ N2600 Processor

DDR3 1066 SODIMM

18-bit Single Channel LVDS LCD

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

1 Gigabit Ethernet, PC/104+

Mini Card (Optional)

PFM-CVS Manual Rev. A 2nd Ed.
December 2012

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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 with Heatsink

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

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Chapter

1

General Information

1.1 Introduction

As a leading company in embedded board manufacturing with a full range of PC/104 Modules, launches a brand new PC/104 CPU Module: The PFM-CVS. Its compa ct size and rich functionality ensures the most cost effective and compatible module to coincide with your existing system planning devices.

PFM-CVS adopts an Intel® Atom N2600 Dual Core 1.6 GHz Processor with the latest Intel technology. Although PFM-CVS is a small board, it offers the full functions for custom ers demand. The chip set of PFM-CVS deploys Intel® Atom™N2600 and NM 10 that make this board achieve high performa nce. It features one 10/100/1000Base-TX Ethernet p ort, four USB 2.0 ports, four COM ports. In addition, the PFM-CVS e quips PC/104+ socket a nd Half-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 1066 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
- USB2.0 x 4, COM x 4
- PC/104+ Standard Form Factor Legacy ISA Support. (w/IO Mode), mSATA / Mini Card (Optional) (Half Size support)
- +12V Only Operation

1.3 Specifications

System

- Form Factor PC/104
- Processor Intel® Atom™ N2600 1.6 GHz processor
- System Memory DDR3 1066 MHz SODIMM x 1, Max. 2 GB
- Chipset Intel® Atom™ N2600+ NM10
- I/O Chipset Fintech F81866D
- Ethernet Realtek RTL8111E for 10/100/1000Base-TX, RJ-45 x 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(for Half-size)
- Power Requirement +12V, AT (Default) /ATX
- Battery Lithium battery
- Board Size 3.55” x 3.77” (90mm x 96mm)
- Gross Weight 0.35 lb (0.16 Kg)

- Operating Temperature 32ºF ~ 140ºF (0ºC ~ 60ºC); -4ºF ~ 158ºF (-20ºC ~ 70ºC) for WiTAS1
- Storage Temperature -40ºF ~ 176ºF (-40ºC ~ 80ºC)
- Operating Humidity 0%~90% relative humidity, non-condensing

Display: Supports CRT/LCD simultaneous/ dual view displays

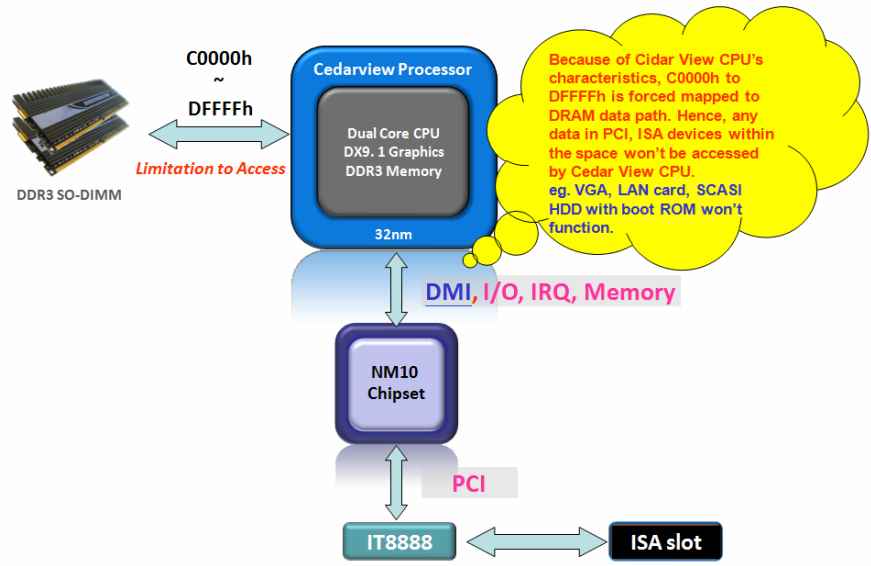
- Chipset Intel® Atom™ N2600 processor integrated
- Resolutions Up to 1920x1200 for CRT; Up to 1366x768 for LVDS
- LCD Interface 18-bit Single Channel LVDS

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)

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)

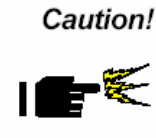
Chapter

2

Quick Installation Guide

2.1 Safety Precautions

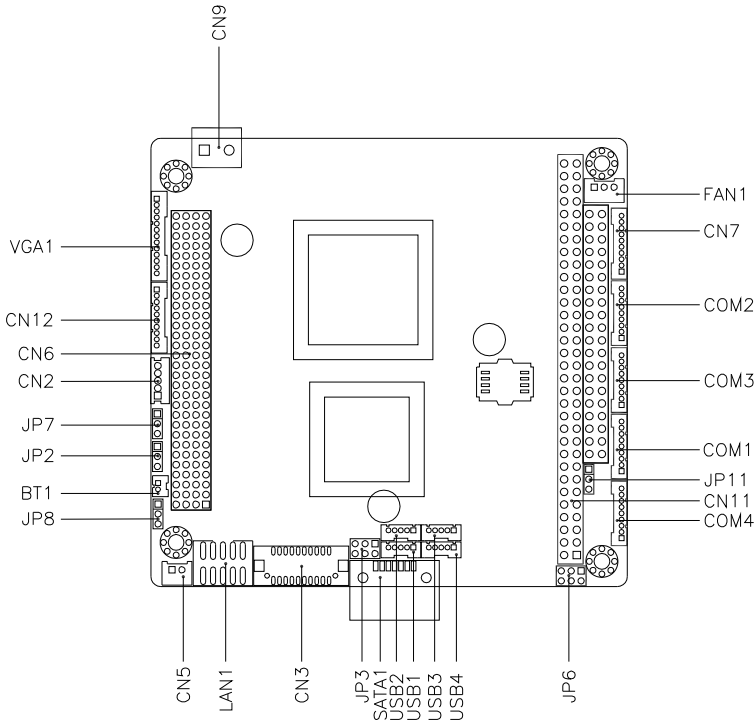
Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.



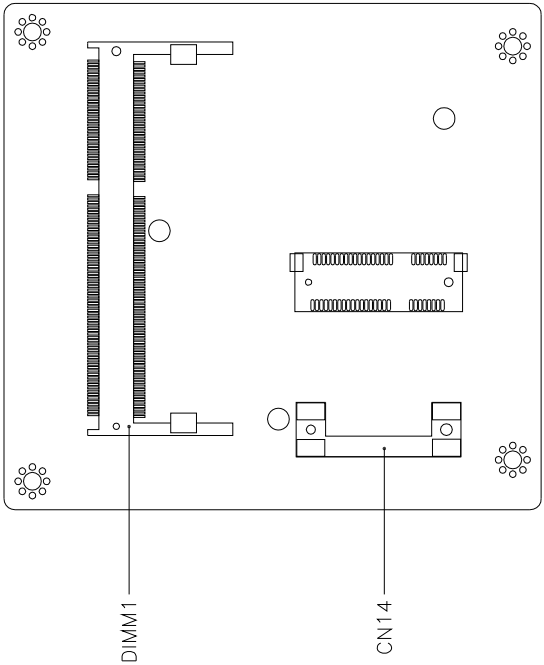
Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not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

2.2 Location of Connectors and Jumpers

Component Side

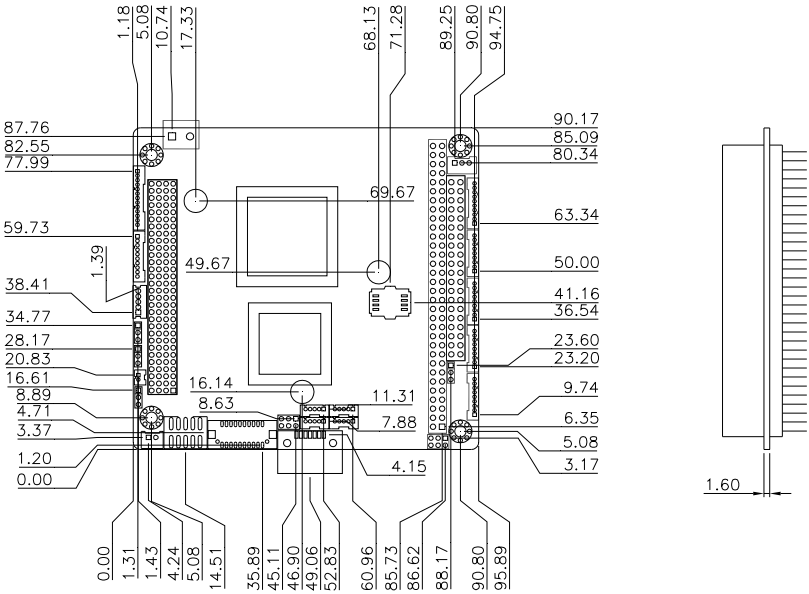


Solder Side

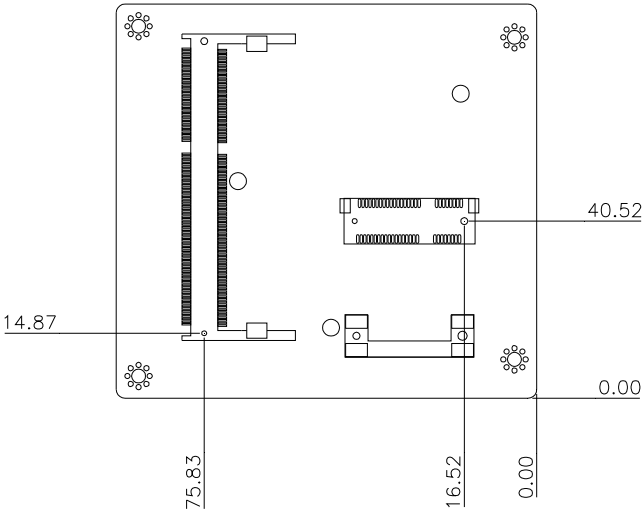


2.3 Mechanical Drawing

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:

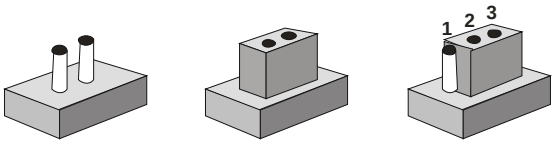
Label	Function
CN2	Backlight Brightness Control Connector
CN3	Internal LVDS Connector
CN5	SATA Power Connector
CN6	PCI-104 Connector
CN7	Front Panel Connector
CN9	+12VSB Power Input Connector
CN11	PC104/ISA Connector
CN12	Digital I/O Connector
CN14	Mini PCI Express/mSATA Connector (Optional)
BT1	Battery 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

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.

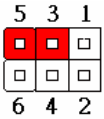
2.7 LVDS Voltage Selection (JP2)

+5V

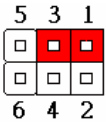
+3.3V

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

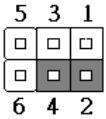
2.8 AT/ATX Selection and LVDS Backlight Control Voltage Selection (JP3)



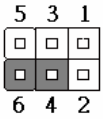
+5V LVDS Backlight



+12V LVDS Backlight



ATX Mode



AT Mode

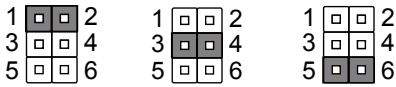
LVDS Backlight

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)



+12V Ring +5V

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

2.10 PCI-104 VIO Voltage Selection (JP7)

+5V +3.3V

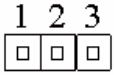
JP7	Function
1-2	+5V
2-3	+3.3V (Default)

2.11 Clear CMOS (JP8)

Normal Clear CMOS

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

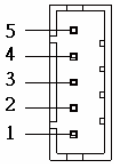
2.12 PC/104 -5V/-12V Voltage Selection (JP11) Reserved



-12V -5V GND

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

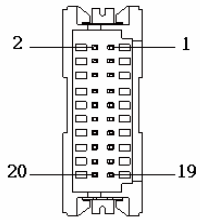
2.13 Backlight Brightness Control Connector (CN2)



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

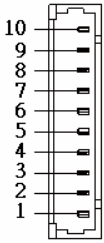
2.15 SATA Power Connector (CN5)

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

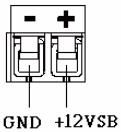
2.17 Front Panel Connector (CN7)



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)

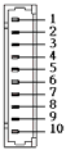


Pin	Pin Name	Signal Type	Signal Level
1	+12VSB	PWR	+12V
2	GND	GND	

2.19 PC/104/ ISA Connector (CN11)

Standard PC/104 / ISA Slot

2.20 Digital I/O Connector (CN12)

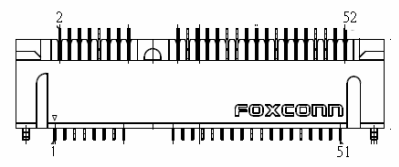


Note: **The DIO function has no ESD protection. It is only for non-isolation function.**

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	

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

Standard Mini PCI Express Connector (52Pins)

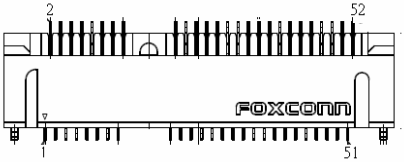


Pin	Pin Name	Signal Type	Signal Level
1	WAKE#	I/O	
2	+3V3_MC	PWR	+3.3V
3	Reserved		
4	GND	GND	
5	Reserved		
6	+1.5V	PWR	+1.5V
7	MC_CLKREQ#	I/O	
8	Reserved		
9	GND	GND	
10	Reserved		
11	PCIE_MC_CKLN	OUT	
12	Reserved		
13	PCIE_MC_CKLP	OUT	
14	Reserved		
15	GND	GND	
16	Reserved		
17	Reserved		
18	GND	GND	
19	Reserved		
20	W_DISABLE#		
21	GND	GND	
22	BUF_PLTRST#	IN	
23	PCIE_RXN1	DIFF	

PC/104 Module		PFM-CVS	
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		

PC/104 Module		PFM-CVS	
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		

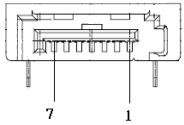
PC/104 Module		PFM-CVS	
13	PCIE_MC_CKLP	OUT	
14	Reserved		
15	GND	GND	
16	Reserved		
17	Reserved		
18	GND	GND	
19	Reserved		
20	W_DISABLE#		
21	GND	GND	
22	BUF_PLTRST#	IN	
23	SATA_RXP1	DIFF	
24	+3V3_MC	PWR	+3.3V
25	SATA_RXN1	DIFF	
26	GND	GND	
27	GND	GND	
28	+1.5V	PWR	+1.5V
29	GND	GND	
30	SMBCLK_SBY	I/O	
31	SATA_TXN1	DIFF	
32	SMBDAT_SBY	I/O	
33	SATA_TXP1	DIFF	
34	GND	GND	
35	GND	GND	
36	USBP4-	DIFF	

PC/104 Module		PFM-CVS	
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)

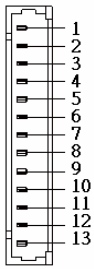
Pin	Pin Name	Signal Type	Signal Level
1	RTCBAT	PWR	+3.3V
2	GND	GND	

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	

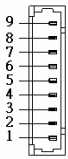
2.24 CRT Connector (VGA1)



Pin	Pin Name	Signal Type	Signal Level
1	VSYNC	OUT	
2	HSYNC	OUT	

PC/104 Module		PFM-CVS	
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

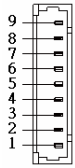
2.25 COM1 RS-232 Connector (COM1)



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

PC/104 Module		PFM-CVS	
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	

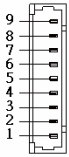
RS-485

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	

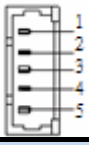
2.28 COM4 RS-232 Connector (COM4)



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

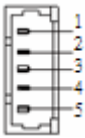
8	RI4	IN
9	GND	GND

2.29 USB2.0 Connector (USB1)



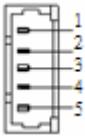
Pin	Pin Name	Signal Type	Signal Level
1	USB_VCC0	PWR	+5V
2	USBP0-	OUT	
3	USBP0+	OUT	
4	GND	GND	
5	GND	GND	

2.30 USB2.0 Connector (USB2)



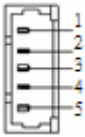
Pin	Pin Name	Signal Type	Signal Level
1	USB_VCC0	PWR	+5V
2	USBP1-	OUT	
3	USBP1+	OUT	
4	GND	GND	
5	GND	GND	

2.31 USB2.0 Connector (USB3)



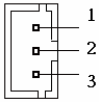
Pin	Pin Name	Signal Type	Signal Level
1	USB_VCC1	PWR	+5V
2	USBP2-	OUT	
3	USBP2+	OUT	
4	GND	GND	
5	GND	GND	

2.32 USB2.0 Connector (USB4)



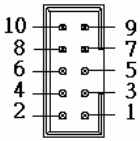
Pin	Pin Name	Signal Type	Signal Level
1	USB_VCC1	PWR	+5V
2	USBP3-	OUT	
3	USBP3+	OUT	
4	GND	GND	
5	GND	GND	

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

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

PFM-CVS 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 Initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors.

System configuration verification

These routines check the current system configuration 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 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

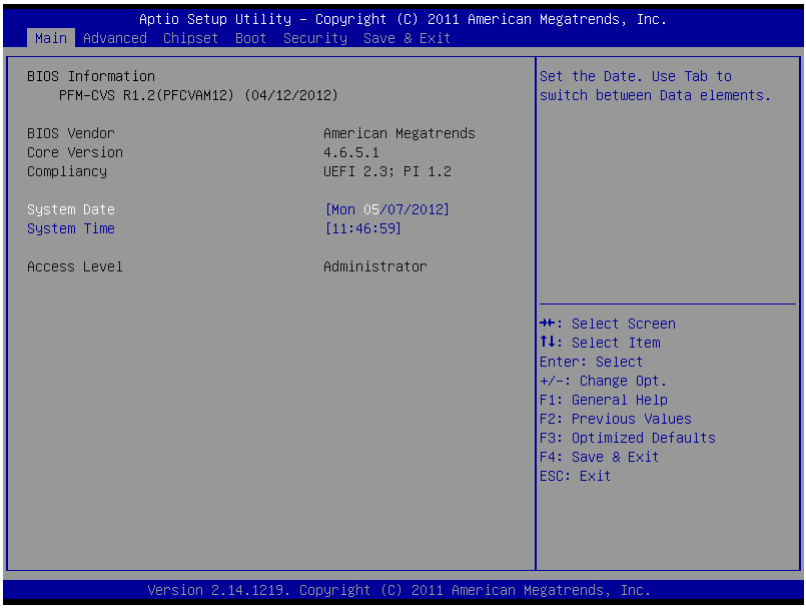
Set setup administrator password.

Save&Exit

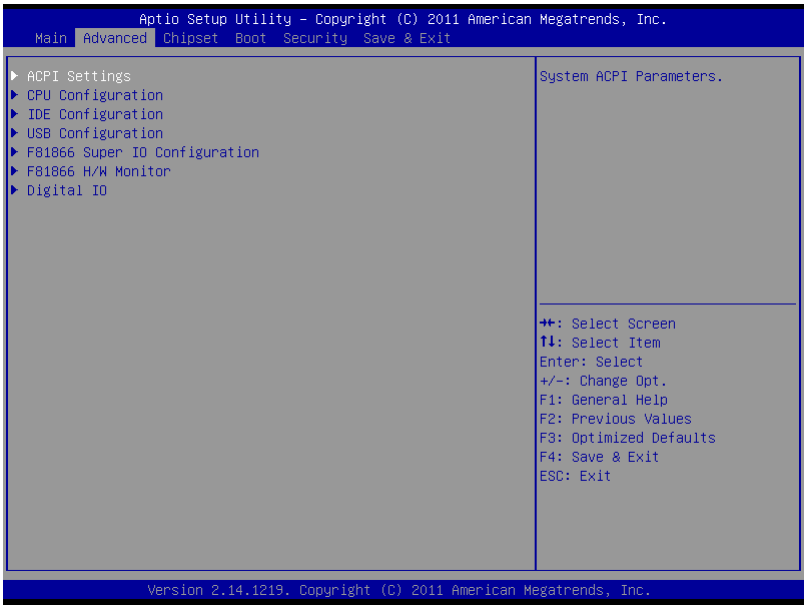
Exit system setup after saving the changes.

Setup Menu

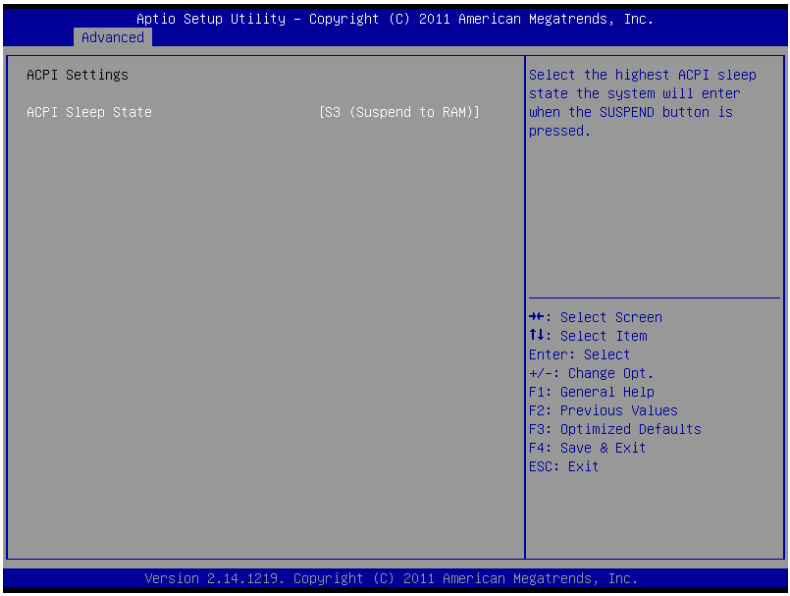
Setup submenu: Main



Setup submenu: Advanced



ACPI Settings



Options summary :

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

CPU Configuration

```
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Advanced

CPU Configuration                                  Enabled for Windows XP and
                                                   Linux (OS optimized for
Processor Type                  Intel(R) Atom(TM) CPU  Hyper-Threading Technology)
EMT64                           Supported          and Disabled for other OS (OS
Processor Speed                 1600 MHz           not optimized for
System Bus Speed                400 MHz            Hyper-Threading Technology).
Ratio Status                    6
Actual Ratio                    16
System Bus Speed                400 MHz
Processor Stepping              30661
Microcode Revision              269
L1 Cache RAM                    2x56 k
L2 Cache RAM                    2x512 k
Processor Core                  Dual               →←: Select Screen
Hyper-Threading                 Supported          ↑↓: Select Item
                                                   Enter: Select
Hyper-Threading                 [Enabled]          +/-: Change Opt.
                                                   F1: General Help
                                                   F2: Previous Values
                                                   F3: Optimized Defaults
                                                   F4: Save & Exit
                                                   ESC: Exit

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```
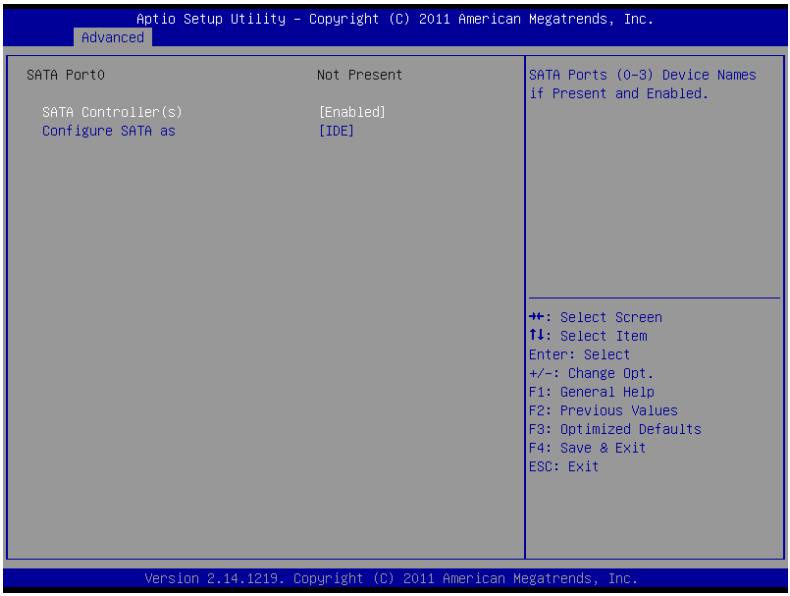
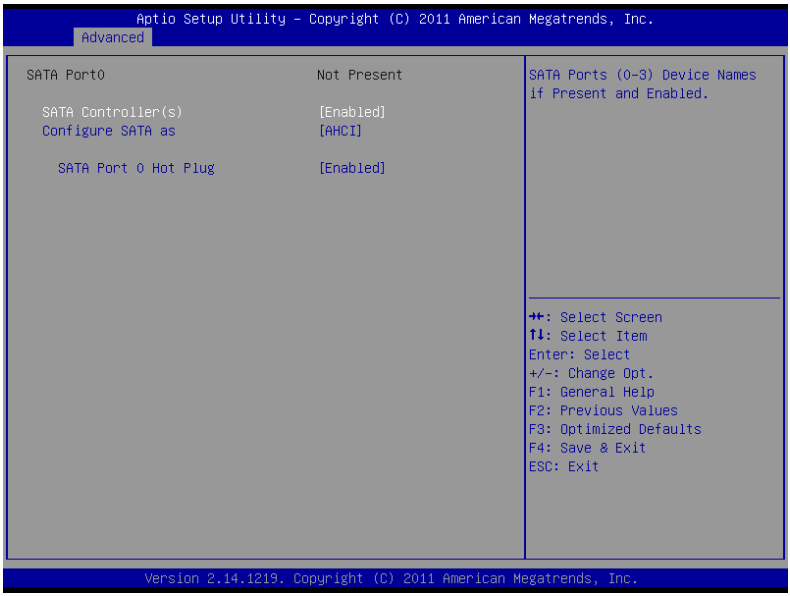

Options summary :

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

IDE Configuration (IDE)



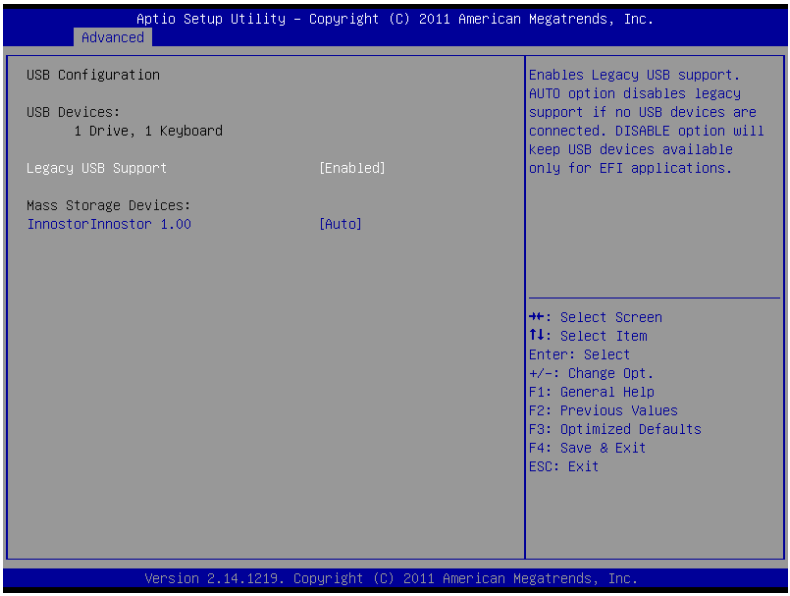
IDE Configuration (AHCI)



Options summary :

SATA Controllers	Disabled Enabled	Default
En/Disable SATA Controller.		
SATA Mode	IDE AHCI	Default
IDE: Configure SATA controllers as legacy IDEAHCI: Configure SATA controllers to operate in AHCI mode		
Hot Plug	Disabled Enabled	Optimal Default, Failsafe Default
En/Disable Hot Plug feature.		

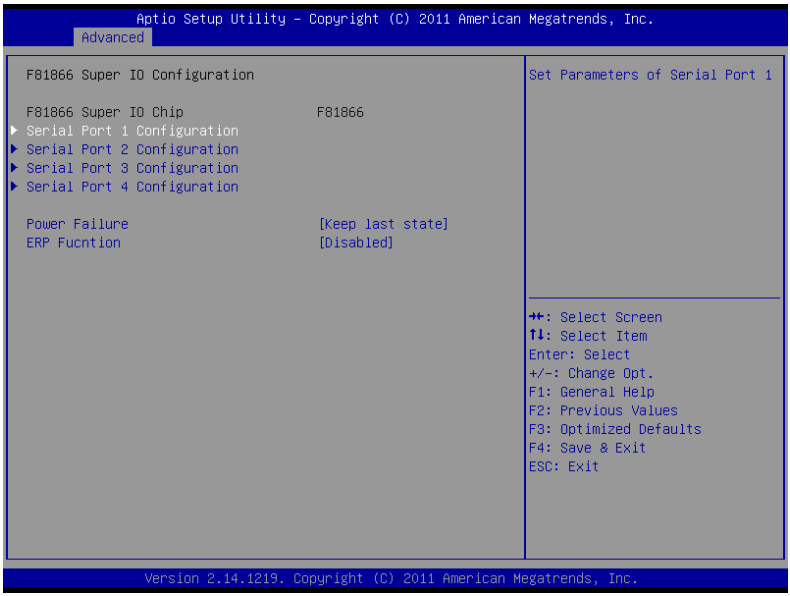
USB Configuration



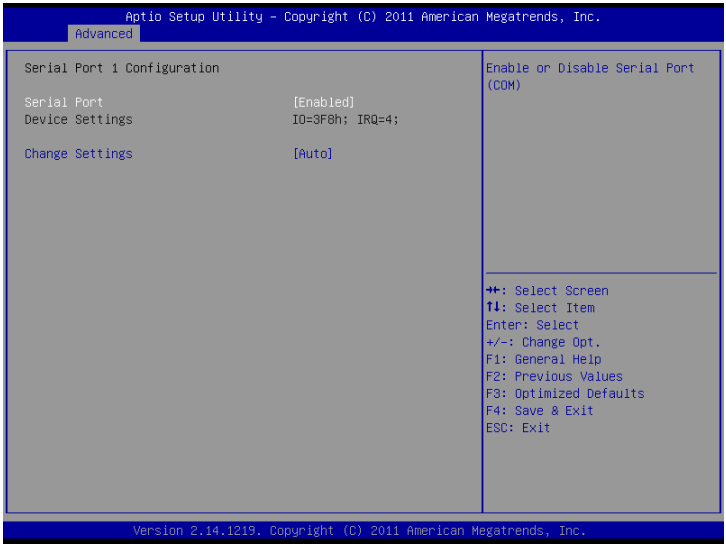
Options summary :

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)		

F81866 Super IO Configuration



Serial Port Configuration



```
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Advanced

Serial Port 2 Configuration                    Enable or Disable Serial Port
                                               (COM)
Serial Port                    [Enabled]
Device Settings                IO=2F8h; IRQ=3;

Change Settings                [Auto]
RS232/422,485                  [RS232]

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

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```

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

Serial Port 3 Configuration                    Enable or Disable Serial Port
                                               (COM)
Serial Port                    [Enabled]
Device Settings                IO=3E8h; IRQ=11;

Change Settings                [Auto]

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

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```

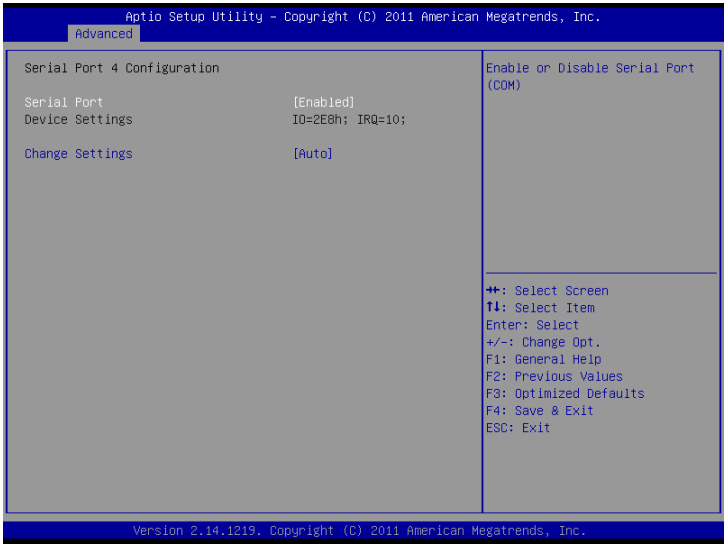
Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Advanced
Serial Port 4 Configuration
Serial Port [Enabled]
Device Settings IO=2E8h; IRQ=10;
Change Settings [Auto]
Enable or Disable Serial Port (COM)
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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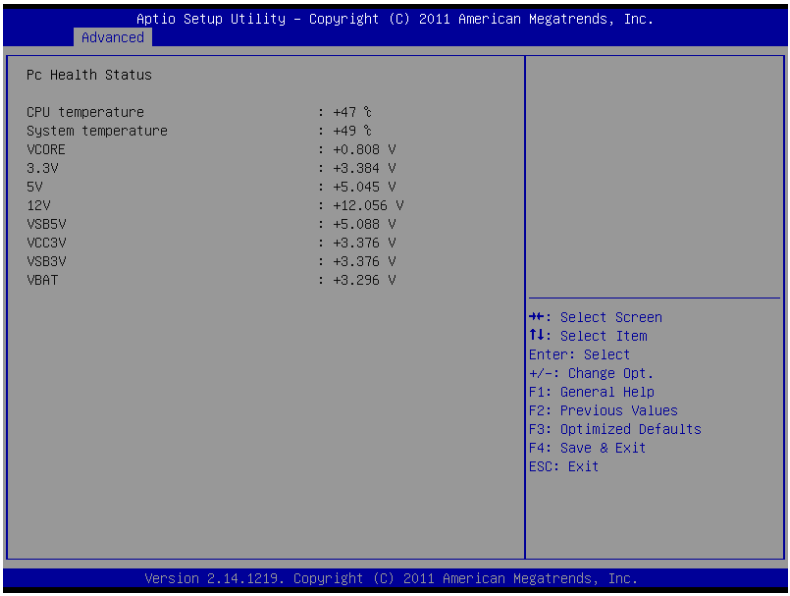
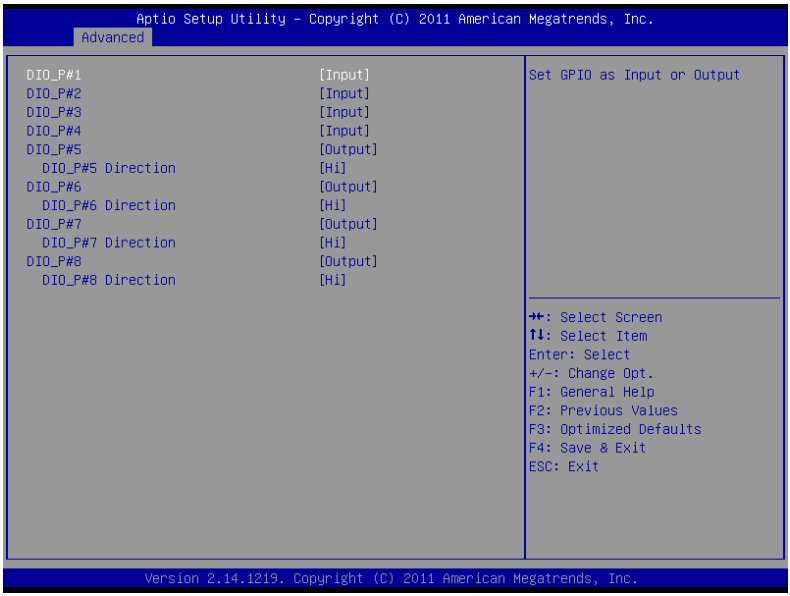
Options summary :

Serial Port	Disabled	
	Enabled	Default
Allows BIOS to En/Disable correspond serial port.		
Change Settings (Serial Port 1)	Auto	Default
	IO=3F8h; IRQ=4;	
	IO=3F8h; IRQ=3,4;	
	IO=2F8h; IRQ=3,4;	
Allows BIOS to Select Serial Port resource.		
Change Settings (Serial Port 2)	Auto	Default
	IO=2F8h; IRQ=3;	
	IO=3F8h; IRQ=3,4;	
	IO=2F8h; IRQ=3,4;	
Allows BIOS to Select Serial Port resource.		
Change Settings (Serial Port 3)	Auto	Default
	IO=3E8h; IRQ=11;	
	IO=3E8h; IRQ=10,11;	
	IO=2E8h; IRQ=10,11;	
Allows BIOS to Select Serial Port resource.		
Change Settings (Serial Port 4)	Auto	Default
	IO=2E8h; IRQ=10;	
	IO=3E8h; IRQ=10,11;	
	IO=2E8h; IRQ=10,11;	
Allows BIOS to Select Serial Port resource.		
Power Failure	Keep last state	Default
	Always on	
	Always off	
Select the action system to take when restoring from power loss.		
ERP Function	Disabled	Default
	Enabled	
En/Disable ERP power saving function.		

F81866 H/W Monitor



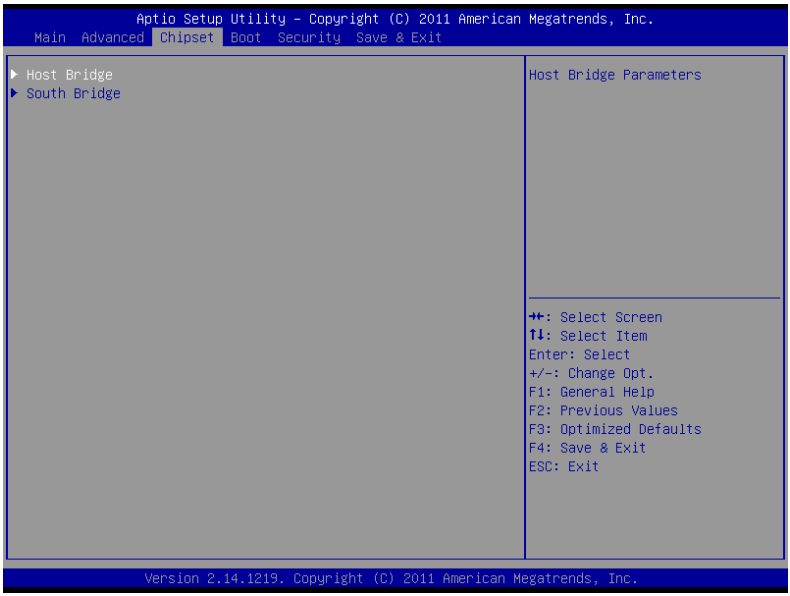
Digital IO



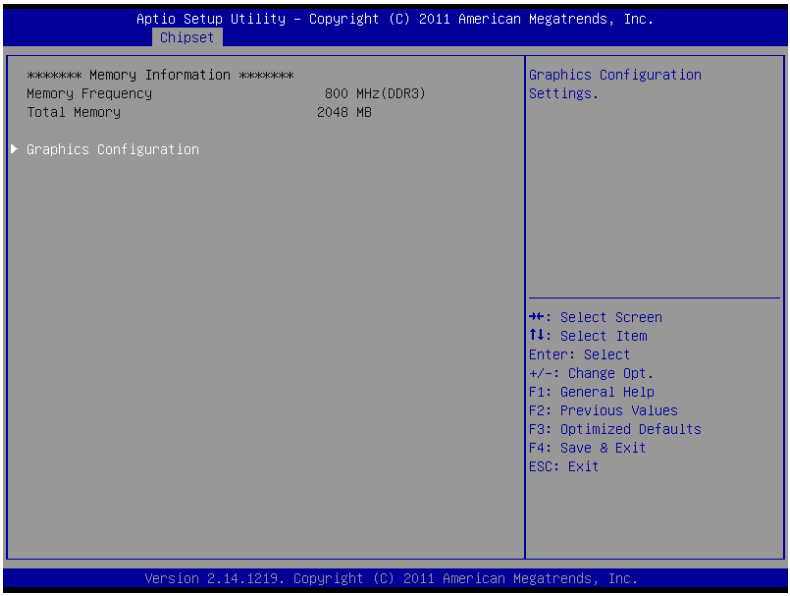
Options summary :

DIO_P#1~4	Input	Default
	Output	
Allows BIOS to select input/output function to corresponding DIO ping.		
DIO_P#5~8	Input	
	Output	Default
Allows BIOS to select input/output function to corresponding DIO ping.		
DIO_P#1~8 Direction	Low	
	Hi	Default
Allows BIOS to select high/low voltage level to output to corresponding DIO ping.		

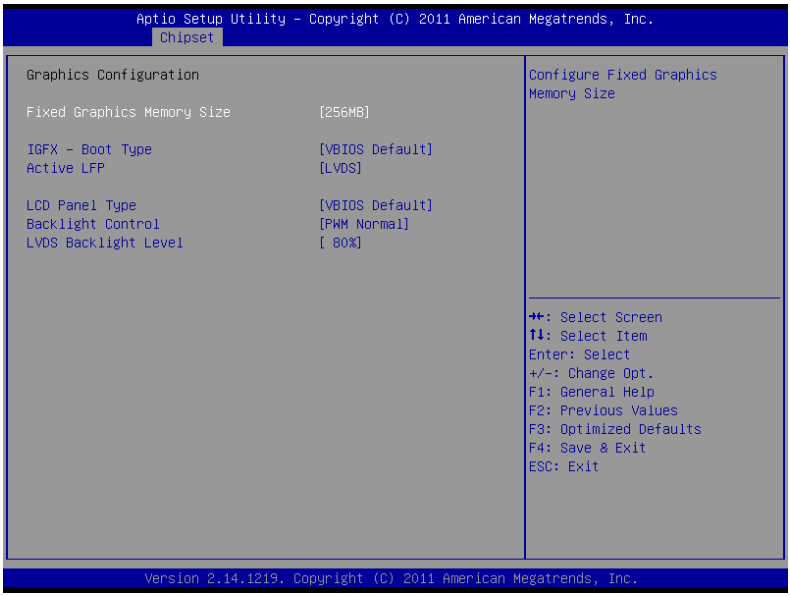
Setup submenu: Chipset



Host Bridge


Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Chipset
******* Memory Information *******
Memory Frequency 800 MHz(DDR3)
Total Memory 2048 MB
Graphics Configuration
Graphics Configuration Settings.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

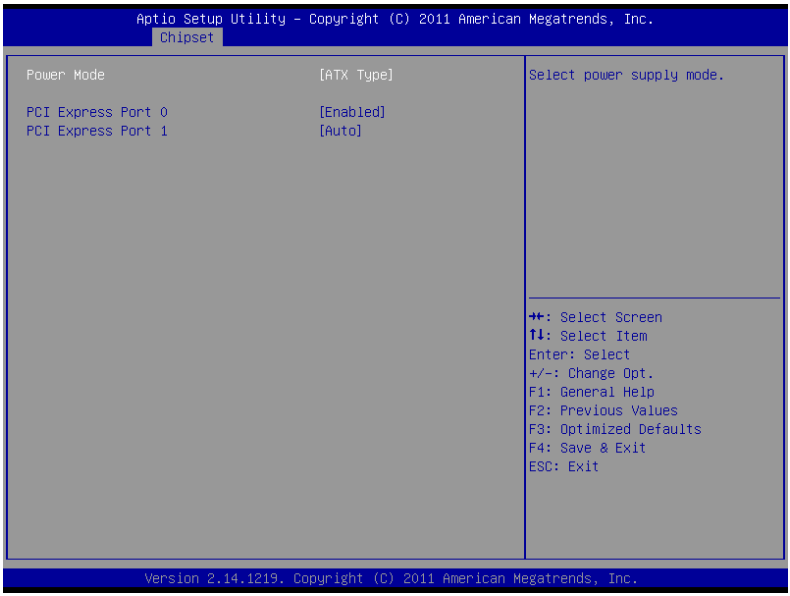
Graphics Configuration



Options summary :

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

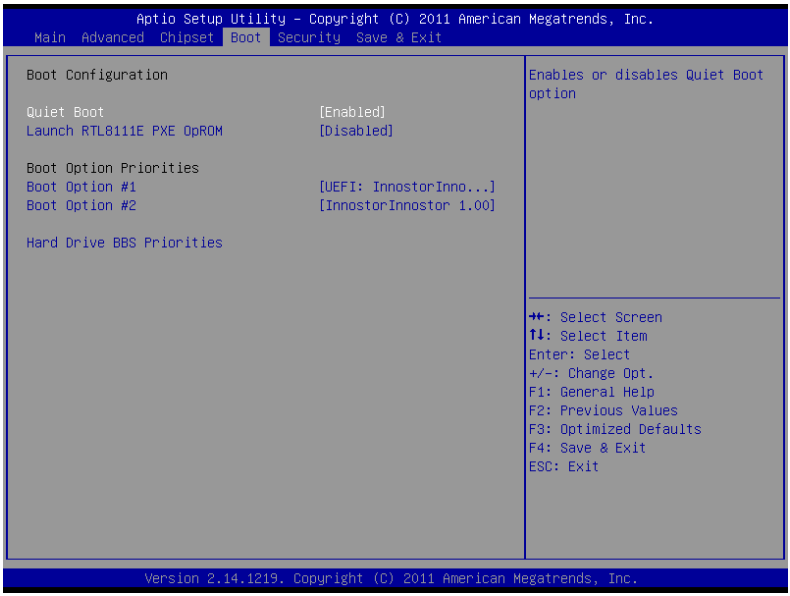
South Bridge



Options summary :

Power Mode	ATX Type	Default
	AT Type	
Select Power Mode: ATX Type: Normal ACPI support AT Type: Suspend/Sleep disabled, and Always On when restoring from power failure.		
PCI Express Root Port 0	Disabled	
	Enabled	Default
Enabling/Disabling PCI Express root ports		
PCI Express Root Port x	Disabled	
	Enabled	
	Auto	Default
Enabling/Disabling PCI Express root ports		

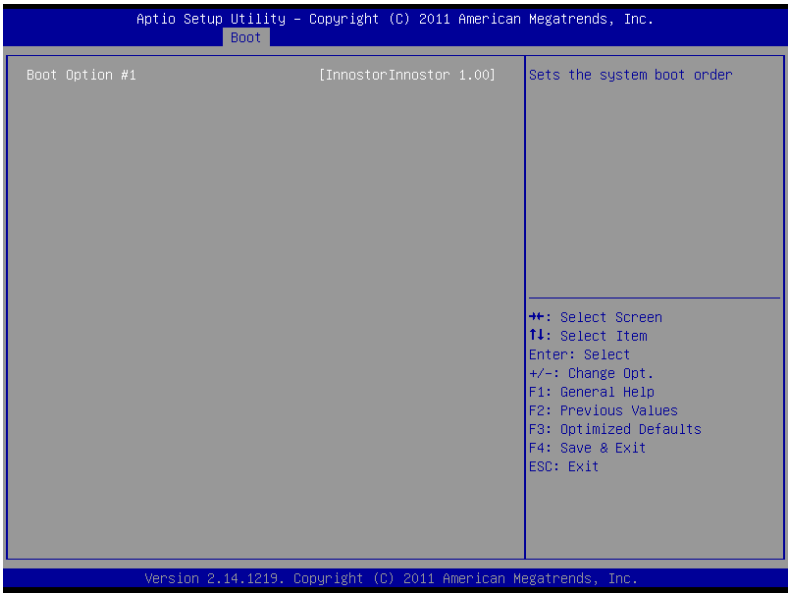
Setup submenu: Boot



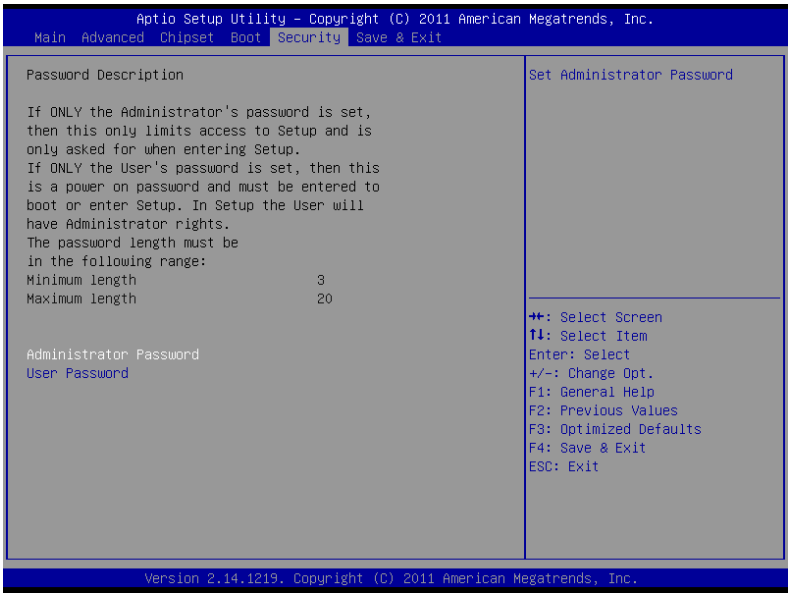
Options summary :

Quiet Boot	Disabled	Default
	Enabled	
En/Disable showing boot logo.		
Launch PXE OpROM	Disabled	Default
	Enabled	
En/Disable PXE boot from LAN		

BBS Priorities



Security



Change User/Supervisor Password

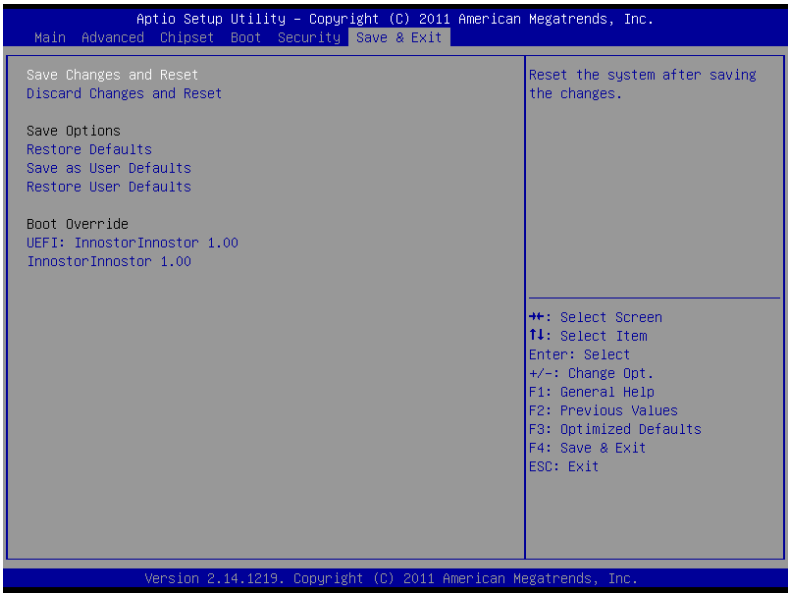
You can install a Supervisor password, and if you install a supervisor password, you can then install a user password. A user password does not provide access to many of the features in the Setup utility.

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 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 Serial Port Driver (Optional)

Step 5 – Install Rapid Storage Technology

Step 6 – Install AHCI for XP Installation

Please read instructions below for further detailed installations.

4.1 Installation:

Insert the PFM-CVS 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

1. Click on the ***Step 2 – VGA*** 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

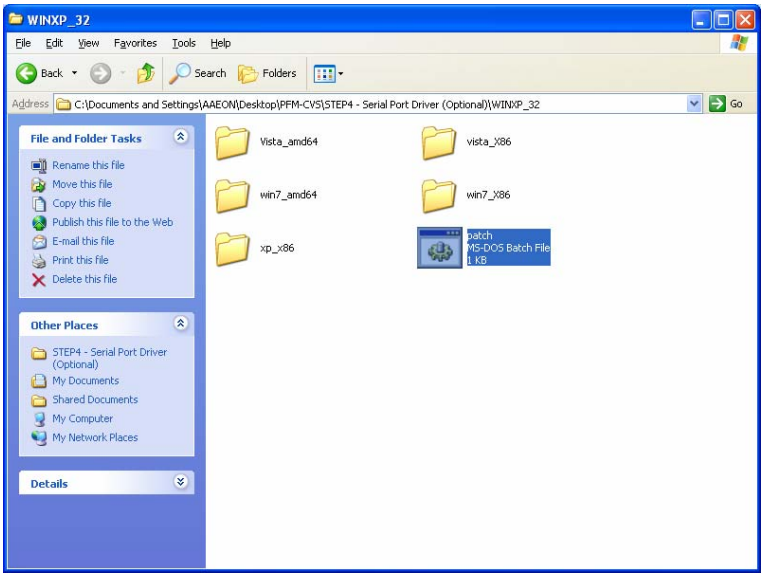
Step 3 – Install LAN Driver

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

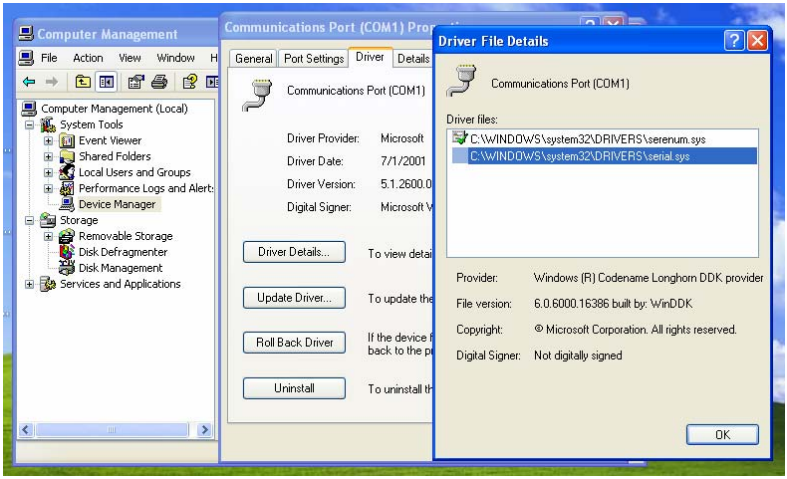
Step 4 – Install Serial Port Driver (Optional)

For Windows® XP 32-bit

1. Click on the ***STEP4 - Serial Port Driver (Optional)*** folder and select the OS folder of ***WINXP_32***
2. Double click on the **patch.bat** file

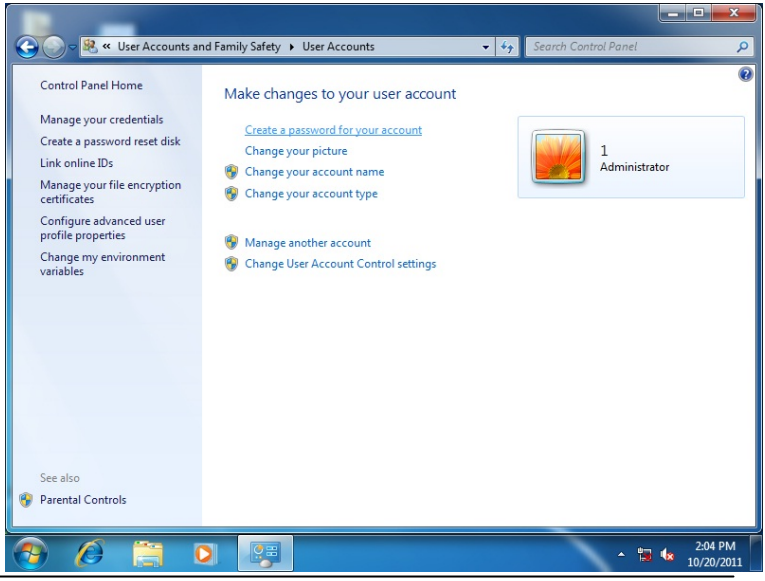


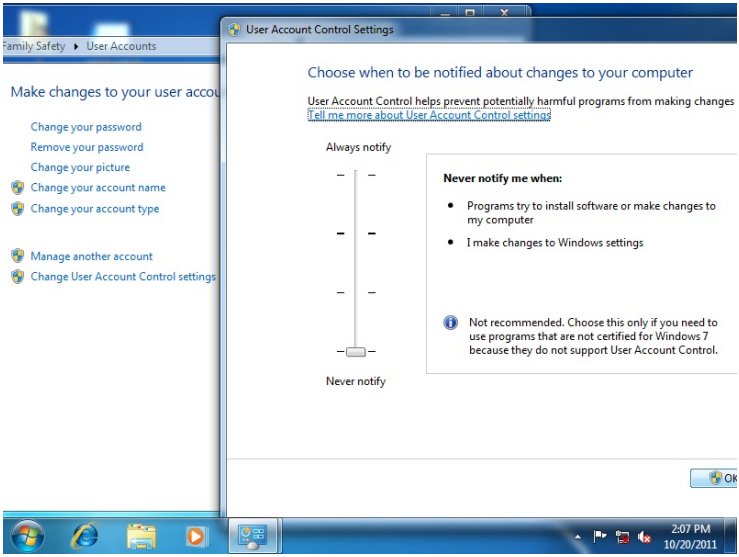
3. The system will help you install the driver automatically
4. Check the driver installation in the device manager



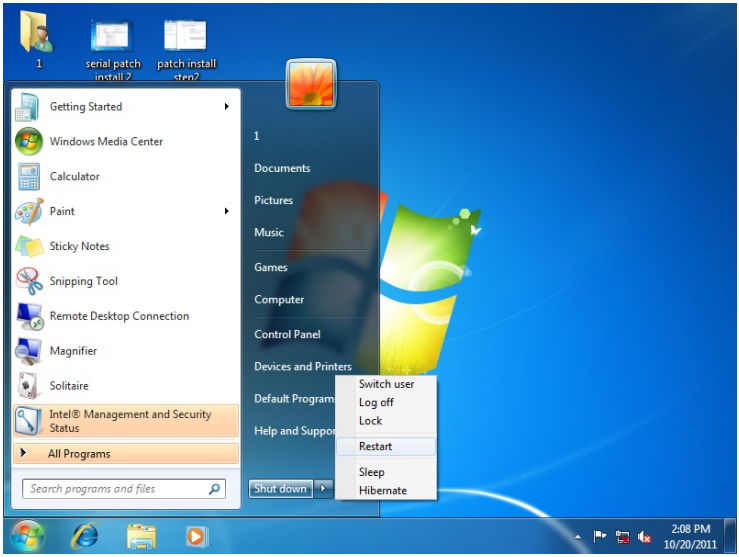
For Windows® 7 32-bit/ 64-bit

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

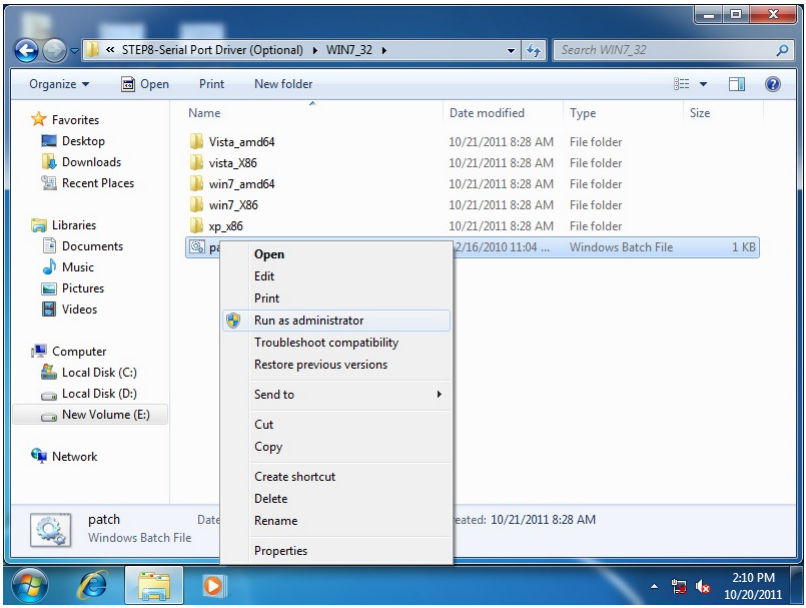




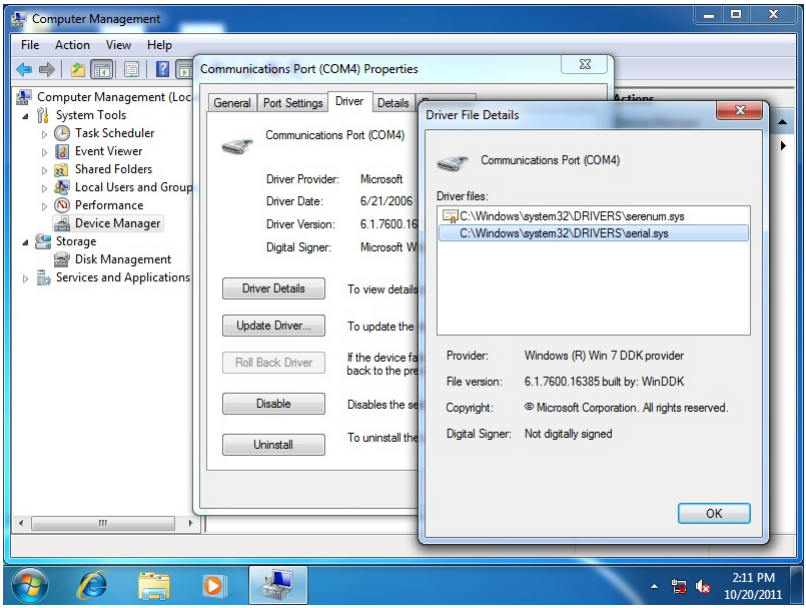
2. Restart the operating system.



3. Click on the ***STEP4 - 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.



Step 5 – Install Rapid Storage Technology

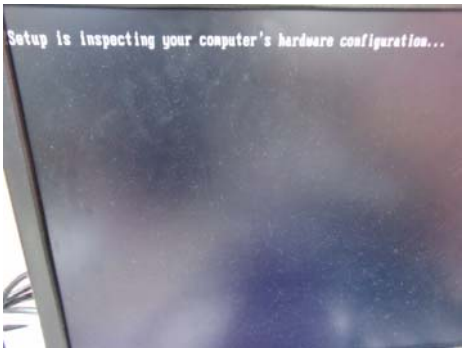
1. Click on the ***Step5 - Rapid Storage Technology*** folder and select the OS your system is
2. Double click on the ***setup.exe*** file located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 6 – Install AHCI for XP Installation

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

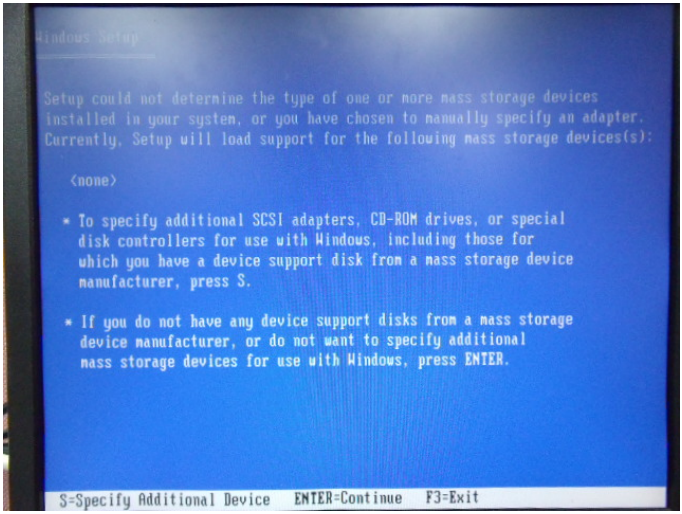
Step 1: Copy the files below from “Driver CD” -> “Step6 - AHCI for XP installation” to Disk.

Step 2: Setup OS

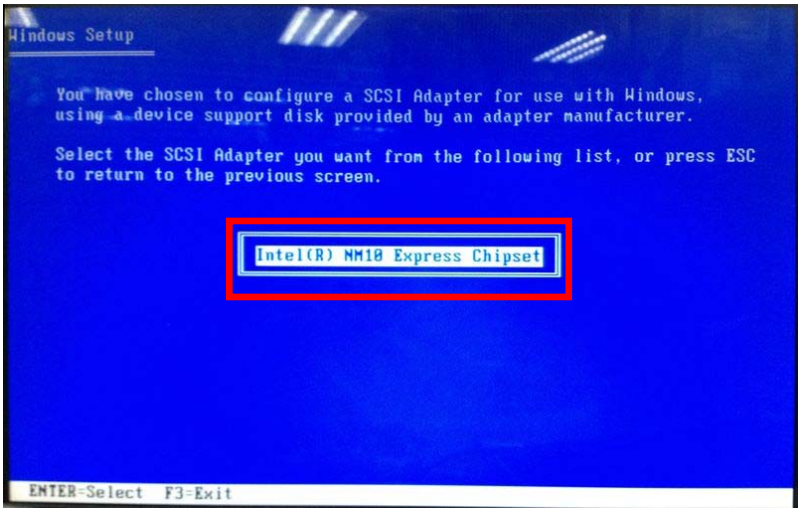


Step 3: Press “**F6**”

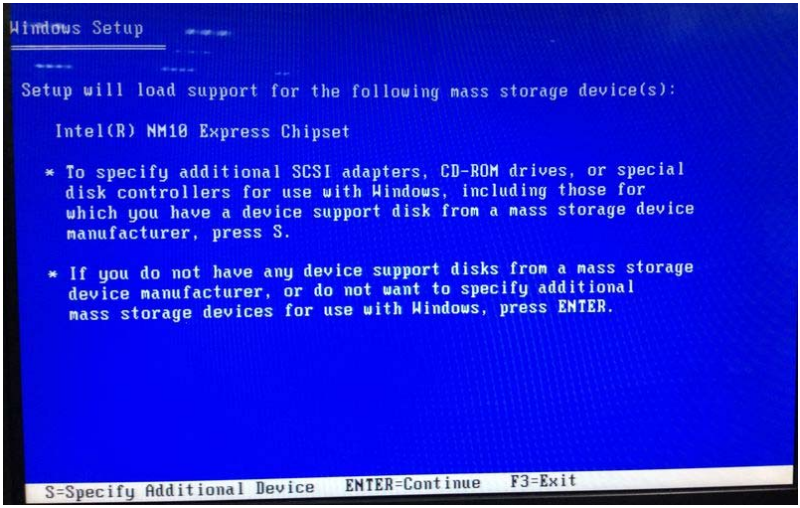
Step 4: Choose "**S**"



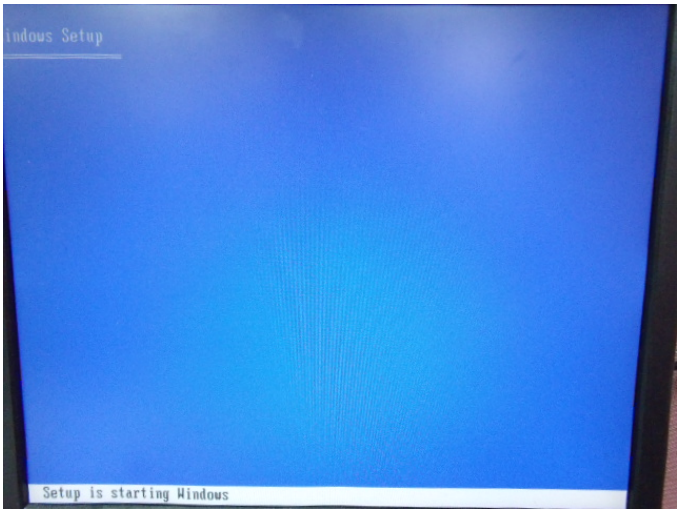
Step 5: Choose "**Intel(R) NM10 Express Chipset**"



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



Step 7: Setup is starting Windows



Appendix

A

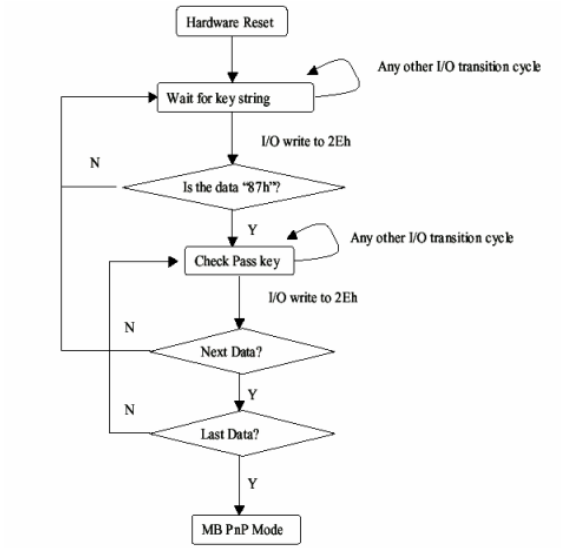
Programming the Watchdog Timer

A.1 Programming

PFM-CVS utilizes FINTEK 81866 chipset as its watchdog timer controller. Below are the procedures to complete its configuration and the initial watchdog timer program is also attached based on which you can develop customized program to fit your application.

Configuring Sequence Description

After the hardware reset or power-on reset, the FINTEK 81866 enters the normal mode with all logical devices disabled except KBC. The initial state (enable bit) of this logical device (KBC) is determined by the state of pin 121 (DTR1#) at the falling edge of the system reset during power-on reset.



There are three steps to complete the configuration setup: (1) Enter the MB PnP Mode; (2) Modify the data of configuration registers; (3) Exit the MB PnP Mode. Undesired result may occur if the MB PnP Mode is not exited normally.

(1) Enter the MB PnP Mode

To enter the MB PnP Mode, four special I/O write operations are to be performed during Wait for Key state. To ensure the initial state of the key-check logic, it is necessary to perform four write opera-tions to the Special Address port (2EH). Two different enter keys are provided to select configuration ports (2Eh/2Fh) of the next step.

```
-o 4e 87
-o 4e 87            ( enable configuration )
```

(2) Modify the Data of the Registers

All configuration registers can be accessed after entering the MB PnP Mode. Before accessing a selected register, the content of Index 07h must be changed to the LDN to which the register belongs, except some Global registers.

(3) Exit the MB PnP Mode

Write exit key 0xAA to the index port.

```
-o 4e aa            ( disable configuration )
```

Watch Dog Timer 1, 2, 3 Control Register (Index=F5h,F6h,FAh Default=00h)

7.8.4 Watchdog Control Configuration Register 1 — Index F5h

Bit	Name	R/W	Reset	Default	Description
7	Reserved	R	-	0	Reserved
6	WDTMOUT_STS	R/W	5VSB	0	If watchdog timeout event occurred, this bit will be set to 1. Write a 1 to this bit will clear it to 0.
5	WD_EN	R/W	5VSB	0	If this bit is set to 1, the counting of watchdog time is enabled.
4	WD_PULSE	R/W	5VSB	0	Select output mode (0: level, 1: pulse) of RSTOUT# by setting this bit.
3	WD_UNIT	R/W	5VSB	0	Select time unit (0: 1sec, 1: 60 sec) of watchdog timer by setting this bit.
2	WD_HACTIVE	R/W	5VSB	0	Select output polarity of RSTOUT# (1: high active, 0: low active) by setting this bit.
1-0	WD_PSWIDTH	R/W	5VSB	0	Select output pulse width of RSTOUT# 0: 1 ms 1: 25 ms 2: 125 ms 3: 5 sec

7.8.5 Watchdog Timer Configuration Register 2 — Index F6h

Bit	Name	R/W	Reset	Default	Description
7-0	WD_TIME	R/W	5VSB	0	Time of watchdog timer (0~255)

7.8.6 Watchdog PME Enable Configuration Register 2 — Index FAh

Bit	Name	R/W	Reset	Default	Description
7	WDT_PME	R	5VSB	0	0: No WDT PME occurred. 1: WDT PME occurred. The WDT PME is occurred one unit before WDT timeout.
6	WDT_PME_EN	R/W	5VSB	0	0: Disable Watchdog PME. 1: enable Watchdog PME.
5	Reserved	R	-	0	Reserved
4	WDT_CLK_SEL	R/W	5VSB	1	WDT Clock Source Select 0: Internal 1KHz clock. 1: 1KHZ clock driven by CLKIN.
3-1	Reserved	R	-	0	Reserved
0	WDOUT_EN	R/W	5VSB	0	0: disable Watchdog time out output via WDTRST#. 1: enable Watchdog time out output via WDTRST#.

A.2 F81866 Watchdog Timer Initial Program

Main(){

```
SupeIIOOpen();
WdőSetCountMode(BOOLbMinute); // Set wdő cotznő mode
WŘő{etTimeoutCount(BYTEtTimeout);// Set wdő timer
WdőSetEnable(BOOLbEnable);// Enablewdő
SupeIIOClose();
}

Void SuperIOOpen(){              // Config F81866 Entry key
        ioWritePoIItByőe(F81866_INDEX, 0x87);
        ioWritePoIItByőe(F81866_INDEX, 0x87);
}

Void I·WdőSetCountMode(BOOLbMinute){
   BYTE WDT_CONTROL = f81866ReadByte(F81866_WDT_CONTROL_REG);
   if(bMinute)
        f81866WriteByte(F81866_WDT_CONTROL_REG, WDT_CONTROL | 0x08);
   else
        f81866WriteByte(F81866_WDT_CONTROL_REG, WDT_CONTROL & 0xF7);
}
```

```
Void WdtSetTimeoutCount(BYTEtTimeout){
   f81866SetLdn(0x07);
   f81866WriteByte(F81866_WDT_TIME_REG, tTimeout);
}

Void WdtSetEnable(BOOLbEnable){
   f81866SetLdn(0x07);
   if(bEnable){
         f81866WriteByte(0x30, 0x01);
         WDT_BASE_ADDR =
         (f81866ReadByte(F81866_WDT_BASEADDR_REG_MSB) << 8)
         | f81866ReadByte(F81866_WDT_BASEADDR_REG_LSB);
         WDT_STATUS = f81866ReadByte(F81866_WDT_CONTROL_REG);
         f81866WriteByte(F81866_WDT_CONTROL_REG, WDT_STATUS | 0x20);
         WDT_STATUS = f81866ReadByte(F81866_WDT_PME_REG);
         f81866WriteByte(F81866_WDT_PME_REG, WDT_STATUS | 0x01);
   }else{
         f81866WriteByte(0x30, 0x00);
         WDT_BASE_ADDR = 0;
         WDT_STATUS = f81866ReadByte(F81866_WDT_CONTROL_REG);
         f81866WriteByte(F81866_WDT_CONTROL_REG, WDT_STATUS & 0xDF);
         WDT_STATUS = f81866ReadByte(F81866_WDT_PME_REG);
         f81866WriteByte(F81866_WDT_PME_REG, WDT_STATUS & 0xFE);
   }
}
```

```
Void SuperIOClose(){
        ioWritePortByte(F81866_INDEX, 0xaa);
}
```

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
  - [00000061 - 00000061] Motherboard resources
  - [00000062 - 00000063] Motherboard resources
  - [00000063 - 00000063] Motherboard resources
  - [00000065 - 00000065] Motherboard resources
  - [00000065 - 0000006F] Motherboard resources
  - [00000067 - 00000067] Motherboard resources
  - [00000070 - 00000070] Motherboard resources
  - [00000070 - 00000077] System CMOS/real time clock
  - [00000072 - 0000007F] Motherboard resources
  - [00000080 - 00000080] Motherboard resources
  - [00000080 - 00000080] Motherboard resources
  - [00000081 - 00000091] Direct memory access controller
  - [00000084 - 00000086] Motherboard resources
  - [00000088 - 00000088] Motherboard resources
  - [0000008C - 0000008E] Motherboard resources
  - [00000090 - 0000009F] Motherboard resources
  - [00000092 - 00000092] Motherboard resources
  - [00000093 - 0000009F] Direct memory access controller
  - [000000A0 - 000000A1] Programmable interrupt controller
  - [000000A2 - 000000BF] Motherboard resources
  - [000000A4 - 000000A5] Programmable interrupt controller
  - [000000A8 - 000000A9] Programmable interrupt controller
  - [000000AC - 000000AD] Programmable interrupt controller
  - [000000B0 - 000000B1] Programmable interrupt controller
  - [000000B2 - 000000B3] Motherboard resources
  - [000000B4 - 000000B5] Programmable interrupt controller
  - [000000B8 - 000000B9] Programmable interrupt controller
  - [000000BC - 000000BD] Programmable interrupt controller

[000000C0 - 000000DF] Direct memory access controller
[000000E0 - 000000EF] Motherboard resources
[000000F0 - 000000F0] Numeric data processor
[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 - 0000E0FF] Realtek PCIe GBE Family Controller #3
[0000E000 - 0000EFFF] Intel(R) N10/ICH7 Family PCI Express Root Port - 27D2
[0000F000 - 0000F01F] Intel(R) N10/ICH7 Family SMBus Controller - 27DA
[0000F020 - 0000F02F] Standard AHCI 1.0 Serial ATA Controller
[0000F040 - 0000F05F] Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CB
[0000F060 - 0000F07F] Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CA
[0000F080 - 0000F09F] Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C9
[0000F0A0 - 0000F0BF] Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C8
[0000F0C0 - 0000F0C3] Standard AHCI 1.0 Serial ATA Controller
[0000F0D0 - 0000F0D7] Standard AHCI 1.0 Serial ATA Controller
[0000F0E0 - 0000F0E3] Standard AHCI 1.0 Serial ATA Controller
[0000F0F0 - 0000F0F7] Standard AHCI 1.0 Serial ATA Controller
[0000F100 - 0000F107] Intel(R) Graphics Media Accelerator 3600 Series
[0000FFFF - 0000FFFF] Motherboard resources
[0000FFFF - 0000FFFF] Motherboard resources

B.2 1st MB Memory Address Map

Memory

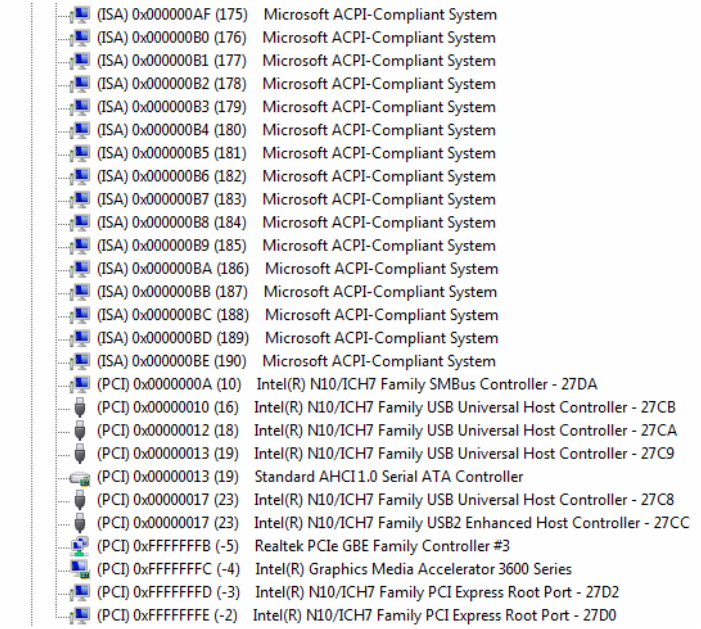
- [00000000 - 00000FFF] Motherboard resources
- [00000000 - 00000FFF] Motherboard resources
- [00000000 - 00003FFF] Motherboard resources
- [000A0000 - 000BFFFF] Intel(R) Graphics Media Accelerator 3600 Series
- [000A0000 - 000BFFFF] PCI bus
- [000C0000 - 000DFFFF] PCI bus
- [000E0000 - 000EFFFF] PCI bus
- [000F0000 - 000FFFFF] PCI bus
- [7F800000 - 7FFFFFFF] PCI bus
- [80000000 - FEBFFFFF] PCI bus
- [DFD00000 - DFDFFFFF] Intel(R) Graphics Media Accelerator 3600 Series
- [DFE00000 - DFE03FFF] Realtek PCIe GBE Family Controller #3
- [DFE00000 - DFEFFFFF] Intel(R) N10/ICH7 Family PCI Express Root Port - 27D2
- [DFE04000 - DFE04FFF] Realtek PCIe GBE Family Controller #3
- [DFF00000 - DFF003FF] Standard AHCI 1.0 Serial ATA Controller
- [DFF01000 - DFF013FF] 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

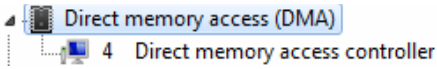
Interrupt request (IRQ)

(ISA) 0x00000000 (00)	System timer
(ISA) 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) 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) 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) 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



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

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 utilizes FINTEK 81866 chipset as its Digital I/O controller.

Below are the procedures to complete its configuration and the 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

GPIO Device Configuration Register (LDN 0x06)

Register 0x[HEX]	Register Name
F0	GPIO0 Output Enable Register
F1	GPIO0 Output Data Register
F2	GPIO0 Pin Status Register
E0	GPIO1 Output Enable Register
E1	GPIO1 Output Data Register
E2	GPIO1 Pin Status Register
D0	GPIO2 Output Enable Register
D1	GPIO2 Output Data Register
D2	GPIO2 Pin Status Register
C0	GPIO3 Output Enable Register
C1	GPIO3 Output Data Register
C2	GPIO3 Pin Status Register
B0	GPIO4 Output Enable Register
B1	GPIO4 Output Data Register
B2	GPIO4 Pin Status Register
A0	GPIO5 Output Enable Register
A1	GPIO5 Output Data Register
A2	GPIO5 Pin Status Register
90	GPIO6 Output Enable Register

91	GPIO6 Output Data Register
92	GPIO6 Pin Status Register
80	GPIO7 Output Enable Register
81	GPIO7 Output Data Register
82	GPIO7 Pin Status Register
88	GPIO8 Output Enable Register
89	GPIO8 Output Data Register
8A	GPIO8 Pin Status Register

D.4 Digital I/O Sample Program

```
Main(){
        SuperIOOpen();
        f81866SetLdn(0x06);             // LDN6 is GPIO Configuration
Register

       If(Set Digital Output High/Low?){
        // Program GPIO pin to Output pin
              // Example :
              // GPIO8x GPIOOutputEnableRegister = 0x88
              // GPIO7x GPIOOutputEnableRegister = 0x80

        // 1: Set to Output Pin
        // 0x0F : GPIOx0~GPIOx3 as Output Pin
        f81866WriteByte(GPIOOutputEnableRegister, 0x0F);

        // Set GPIO Output High/Low
        // Example :
        // GPIO8x GPIOOutputDataRegister = 0x89
        // GPIO7x GPIOOutputDataRegister = 0x81

        // 1: Output Hight, 0: Output Low
        // 0x0F : GPIOx0~GPIOx3 output High
        f81866WriteByte(GPIOOutputDataRegister, 0x0F);
```

```
        }
        Else(Read Digital Input?){
         // Read Digital Input Status, High/Low ?
         // Example :
         // GPIO8x GPIOPinStatusRegister = 0x8A
         // GPIO7x GPIOPinStatusRegister = 0x82
         ByteData = f81866ReadByte(GPIOPinStatusRegister);

         // If ByteDate = 0xF0
                // GPIOx4~GPIOx7 Pin Status is High
        }
          SuperIOClose();
}


Void  SuperIOOpen(){      // Config F81866 Entry key
        ioWritePortByte(F81866_INDEX, 0x87);
        ioWritePortByte(F81866_INDEX, 0x87);
}
Void  SuperIOClose(){
        ioWritePortByte(F81866_INDEX, 0xaa);
}
```