SI-304

User Manual

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Table of Contents

Setting up your system v
Care during use vi
Acknowledgments vii

CHAPTER 1 INTRODUCTION 1
1.1 General Description 1
1.2 System Specifications 2
1.2.1 Hardware Specifications 2
1.2.2 Dimensions 3
1.2.3 I/O View 4
1.3 Exploded View of the SI-304 Assembly 5
1.3.1 Parts Description 5
1.4 Packing List 6
1.4.1 Optional Items module 6
1.5 Hardware Installation 7
1.5.1 Mounting Installation 7

CHAPTER 2 MOTHERBOARD INTRODUCTION 8
2.1 Introduction 8
2.2 Installations 10
2.2.1 Installing the Memory 10
2.3 Setting the Jumpers 11

CHAPTER 3 BIOS SETUP 14
3.1 BIOS Introduction 14
3.2 BIOS Setup 14

CHAPTER 4 DRIVERS INSTALLATION 33
4.1 VGA Drivers Installation 33
4.2 Audio Drivers Installation 37
4.3 LAN Drivers Installation 38

Appendix 39
A. ATI Eyefinitity setting 39
B. I/O Port Address Map 476
C. Interrupt Request Lines (IRQ) 47
D. Watchdog Timer Configuration 48

Safety Information

Your SI-304 is designed and tested to meet the latest standards of safety for information technology equipment. However, to ensure your safety, it is important that you read the following safety instructions

Setting up your system

- Read and follow all instructions in the documentation before you operate your system.
- Do not use this product near water.
- Set up the system on a stable surface. Do not secure the system on any unstable plane.
- Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.
- Slots and openings on the chassis are for ventilation. Do not block or cover these openings. Make sure you leave plenty of space around the system for ventilation. ***Never insert objects of any kind into the ventilation openings***.
- This system should be operated from the type of power indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
- Use this product in environments with ambient temperatures between 0˚C and 45˚C.
- If you use an extension cord, make sure that the total ampere rating of the devices plugged into the extension cord does not exceed its ampere rating.
- DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 80° C (167° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.

Care during use

- Do not walk on the power cord or allow anything to rest on it.
- Do not spill water or any other liquids on your system.
- When the system is turned off, a small amount of electrical current still flows. Always unplug all power, and network cables from the power outlets before cleaning the system.
- If you encounter the following technical problems with the product, unplug the power cord and contact a qualified service technician or your retailer.
  - The power cord or plug is damaged.
  - Liquid has been spilled into the system.
  - The system does not function properly even if you follow the operating instructions.
  - The system was dropped or the cabinet is damaged.

Lithium-Ion Battery Warning

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

NO DISASSEMBLY

The warranty does not apply to the products that have been disassembled by users

WARNING
HAZARDOUS MOVING PARTS
KEEP FINGERS AND OTHER BODY PARTS AWAY

Acknowledgments

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CHAPTER 1 INTRODUCTION

1.1 General Description

The “Signature Book™” SI-304 is a professional digital signage system powered by 2nd Gen AMD Embedded R-series APU-based Signage Player with Radeon™ HD 9000 series graphics. The SI-304 integrates 4 HDMI ports with EDID emulation function. Additionally, SI-304 has two dual-channel DDR3-2133 sockets to provide up to 32GB of memory. It also has dual Gigabit Ethernet, one mSATA and NGFF drive and IBASE’s iSMART green technology for power on/off scheduling and power resume functions. The ruggedized design player’s chassis provides passive cooling for better system reliability and quiet operation.

SI-304 overview

*** The integrated four HDMI interface has built-in EDID emulation function. To use the EDID function, turn off the power first. Then, connect the new display port. After you turn on the power, SI-304 will detect new EDID data.*

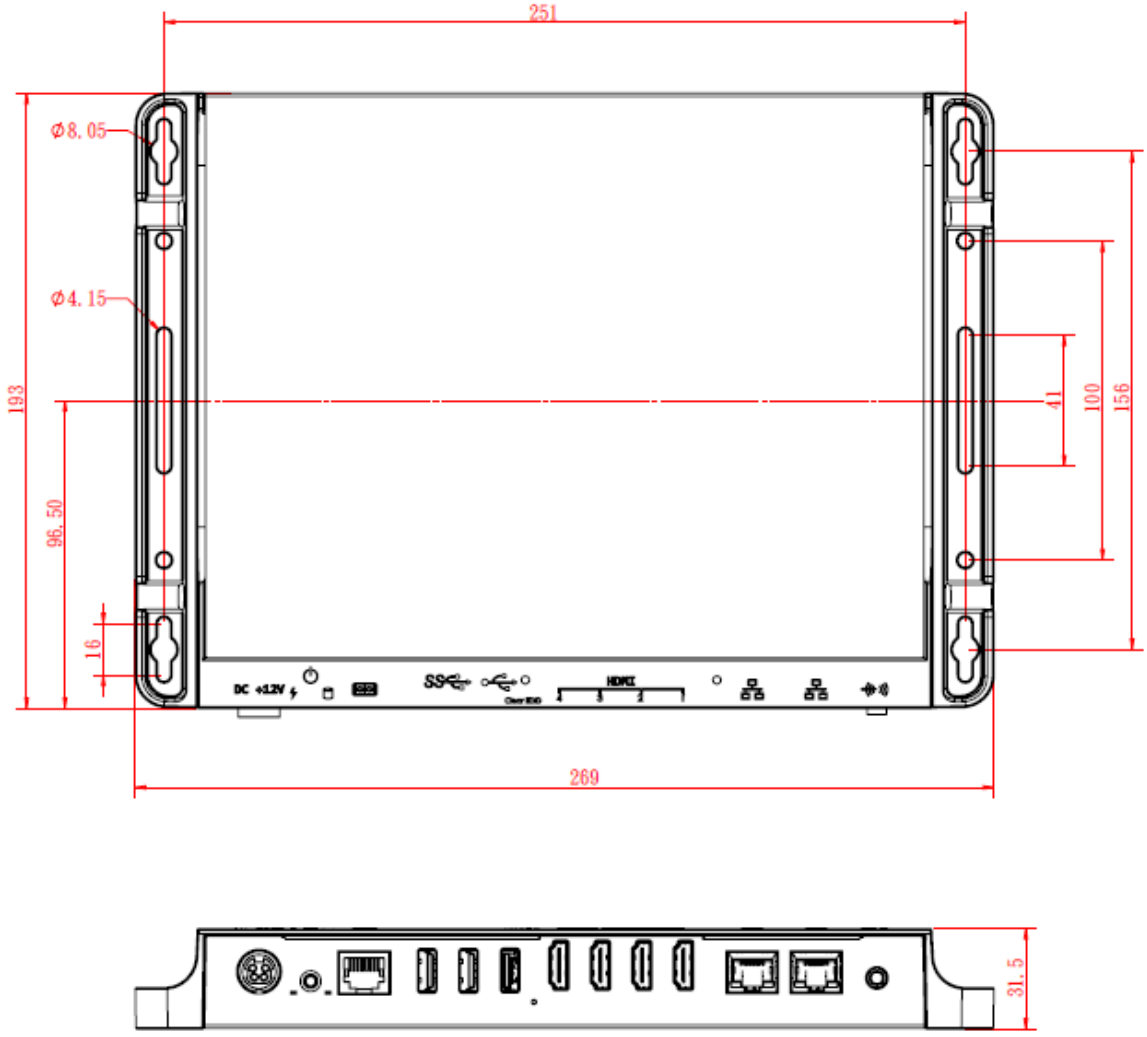
1.2 System Specifications

1.2.1 Hardware Specifications

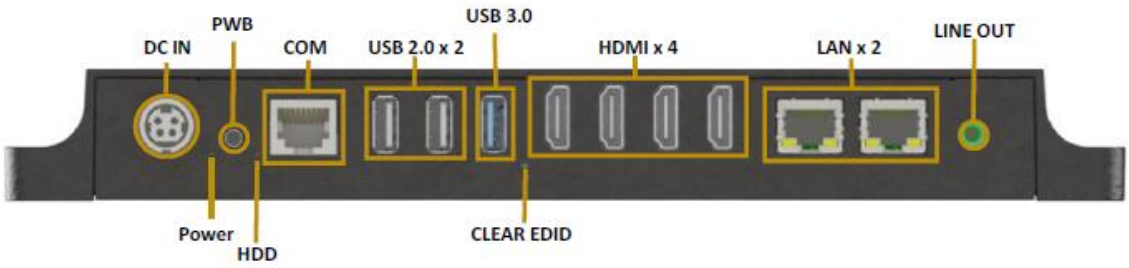
Model Name	SI-304
System Mainboard	MBD304
CPU	2nd Gen. R-series QC RX-427BB 2.7/3.4G DC RX-225BB 2.2/3.0G APU
Memory	2x DDR3 2133 SO-DIMM, dual channel, Max. 32GB
I/O Interface	4x HDMI 2x USB 3.0 ports 1x USB 2.0 port 2x RJ45 for LAN 1x RJ45 for RS232 1x Microjack audio connector for Line-in Power LED / HDD LED, power on/off button 1x DC power jack
Storage	1x mSATA 1x NGFF M key 22 x 80mm(2280)
Expansion Slots	2x mPCIe(x1) for WiFi + Bluetooth, 3G, GPS and TV tuner options 1x UIM/SIM card slot (for 3G/LTE adaptor in mPCIe slot)
Construction	Aluminum + SGCC
Mounting	Slim design with wall mounting holes
Dimensions	269mm(W) x 193mm(D) x 29.5mm(H) 10.59”(W) x 7.6”(D) x 1.16”(H)
Operating Temperature	0°C~ 45°C (32°F~113°F)
Storage Temperature	-20°C ~ 80°C (-4°F~176°F)
Relative Humidity	5~90% @ 45°C, (non-condensing)
Vibration	SSD: 5 grms / 5~500Hz / random operation HDD: 0.25 grms / 5~500Hz / random operation
RoHS	Available
Certification	CE, FCC, CCC, UL

·This specification is subject to change without prior notice.

1.2.2 Dimensions

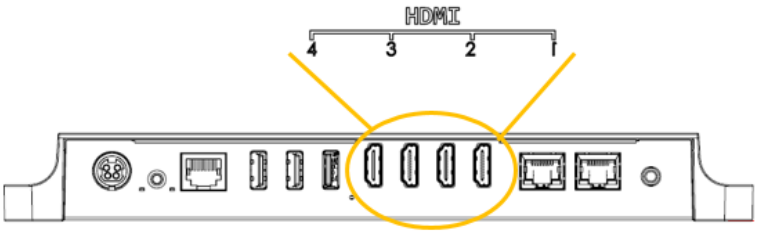


1.2.3 I/O View



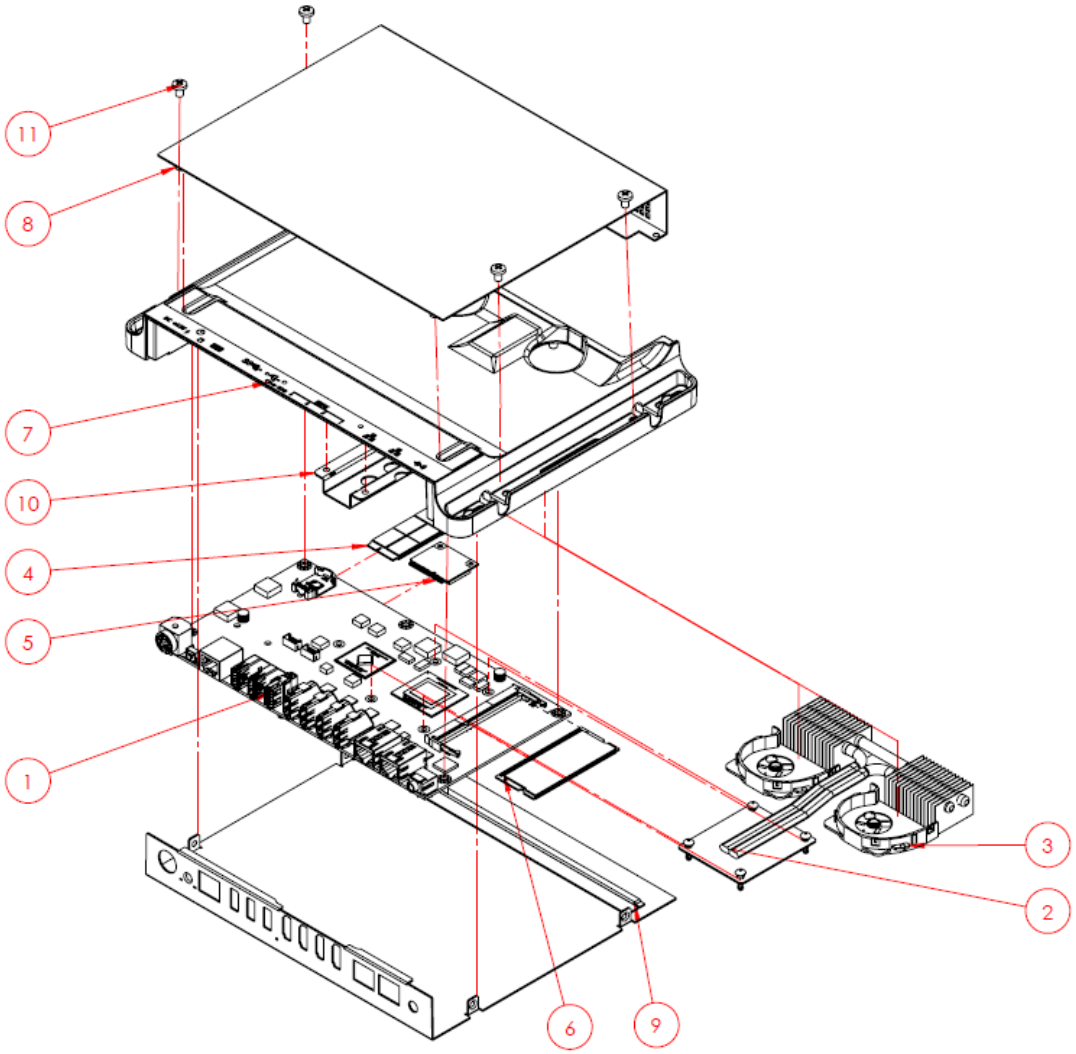
SI-304 front side

***** Based on the design of SI-304, the use of HDMI port has certain limitations. In order to have an image on the screen, the "odd number" port should be plugged in first. If the "even number" port is plugged in first, then there will be no image on the screen. This procedure also applies when using the two ports at the same time in order to have image on the screens. The only requirement is to always plugged in first the "odd number" port.***



***** In order to erase the EDID data, the system needs to be powered off and the HDMI connector has to be removed. Afterwards, press and hold the EDID button while power is introduced for five (5) seconds; then, release the EDID button.***

1.3 Exploded View of the SI-304 Assembly



1.3.1 Parts Description

Part No.	Description	Part No.	Description
1	SI-304 Main Board	2	Thermal Module
3	System Fan	4	M.2 Module
5	Mini PCI-E	6	RAM
7	Die Casting-Case	8	Cover
9	I/O Plate	10	M.2 Bracket
11	Mounting Screw		

1.4 Packing List

Item No.	Description	Qty
1	Driver CD	1
2	Power adaptor	1
3	Power cord	1

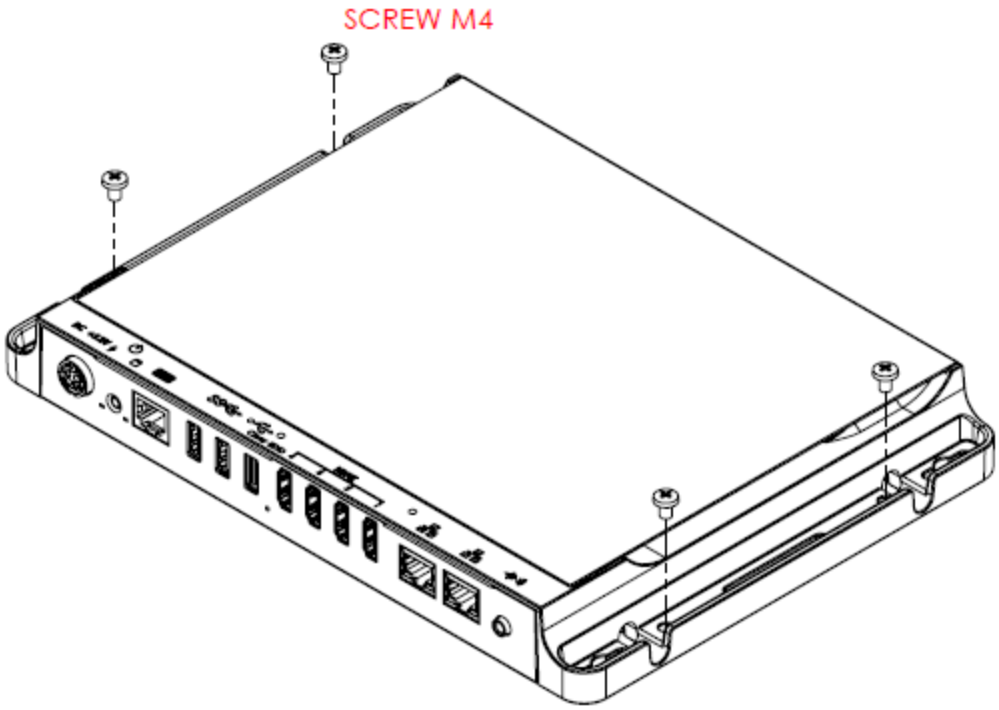
1.4.1 Optional Items module

WiFi Solution	Description	
WiFi module	Wireless; PCI-E Mini Card 802.11B/G/N [AW-NE238H] (A008WLAWNE238H000P)	
External Antenna, 2pcs	WiFi Antenna (A055RFA02C2M20800P)	
Internal cable, 2pcs	Internal Antenna 200mm [BTC130-1-70B-200-1] RoHS (A055RFA0000020000P)	
Screw, 2pcs	SCREW;A31 M2.5*4mm RoHS (H0220613011200000P)	
Bracket, 1 set	Component BOM; MPCIE-EXT V-B2 Bracket (SC2MPCIEEXT0B2100P)	
3G Solution	**Description**	
3G	Wireless; 3.75G UMTS/HSPA [ZU202] RoHS (A008WIRELESS00520P)	
3G+GPS	Wireless; 3.75G UMTS/HSPA & GPS Module [ZU200] RoHS (A008WIRELESS00510P)	
WW-350U	Wireless; 3.75G UMTS/HSPA [NAVISYS WW-350U] RoHS (A008WIRELESS00530P)	
Cable	Cable; SMA IPX Cable For 3G 30CM [RF11030A] RoHS (A012INTENAL010000P)	
Antenna	3G [ANT0921Q2P] RoHS (A055ANT0921Q2P000P)	
COM Port Cable	**Description**	
EXT-311	Cable; EXT-311 2-HD 10C 150CM; DSUB-9F => RJ45-10M RoHS (C501EXT3110A12000P)	
EXT-312	Cable; EXT-312 2-HD 10C 150CM; DSUB-9M => RJ45-10M RoHS (C501EXT3120A12000P)	

1.5 Hardware Installation

1.5.1 Mounting Installation

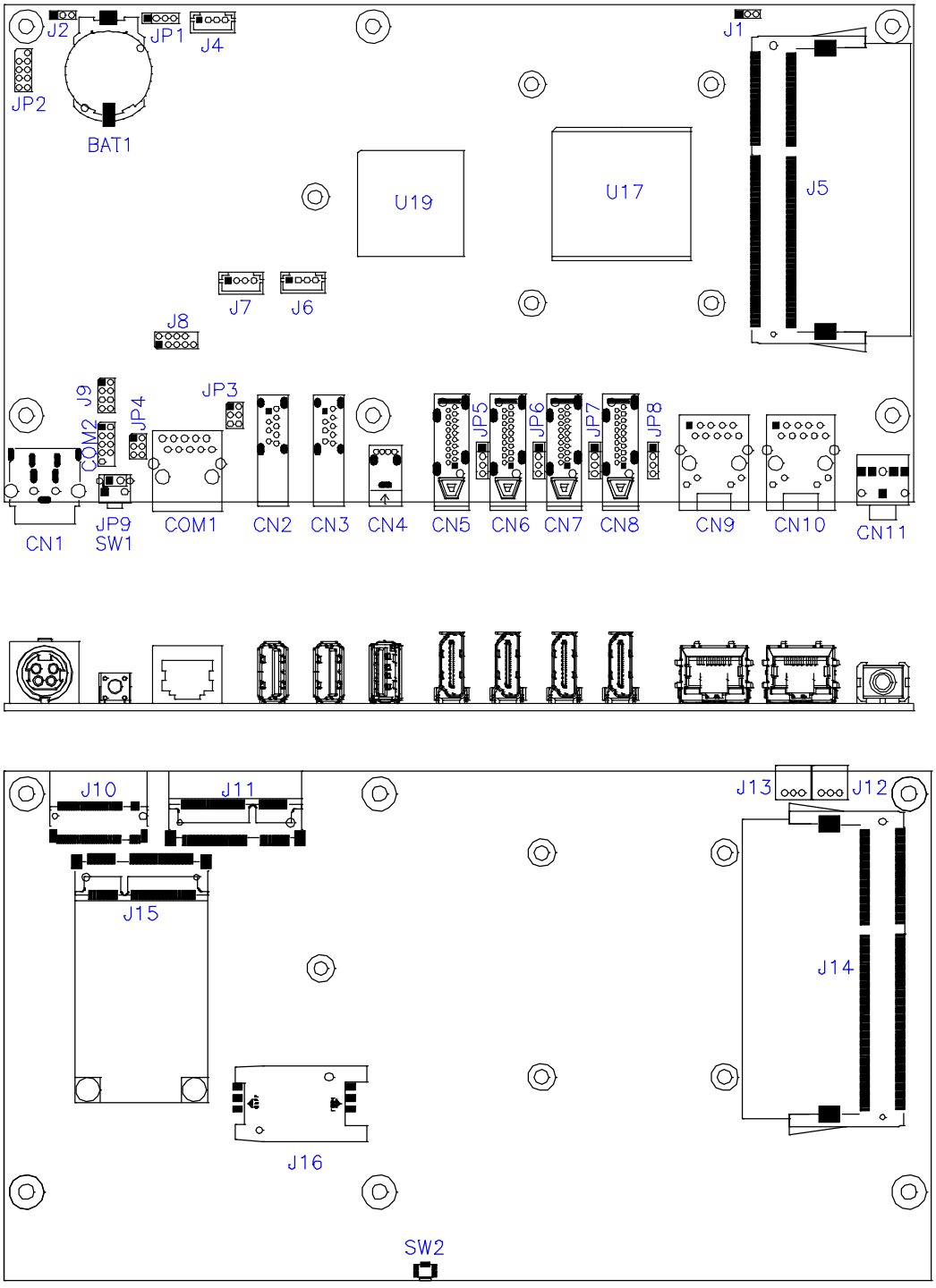
1. Please install SI-304 to the intended location using 4x M4*0.7*6L screws, as shown in the picture.



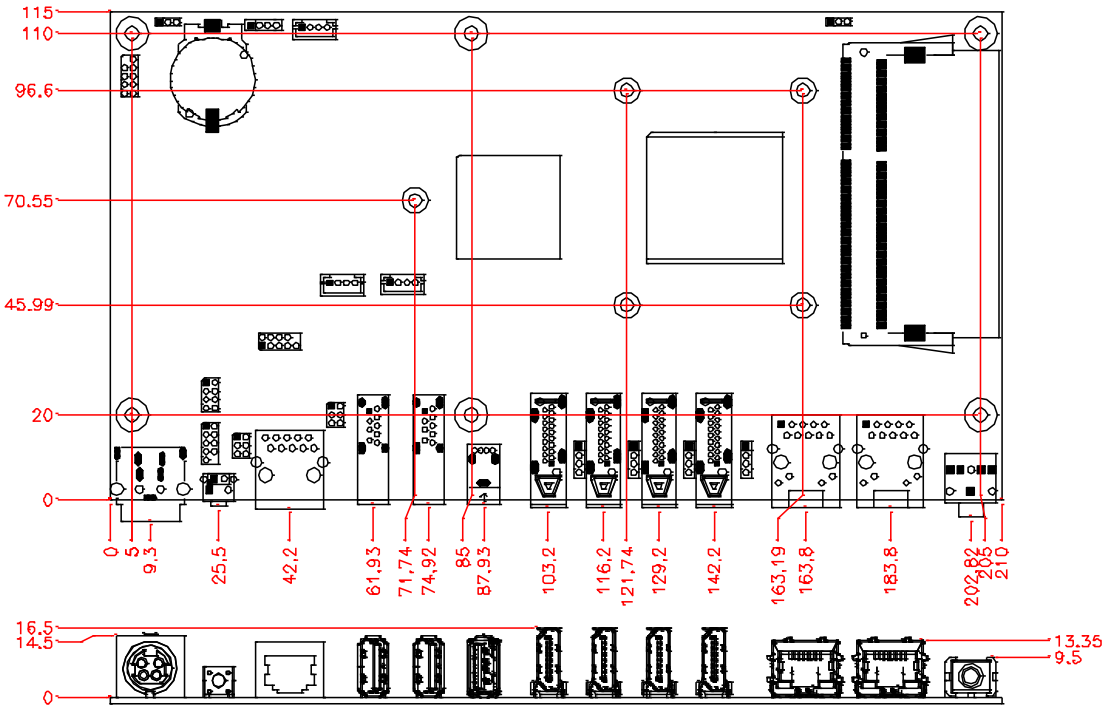
CHAPTER 2 MOTHERBOARD INTRODUCTION

2.1 Introduction

MBD304 Jumpers and Connectors



MBD304 Board Dimensions



2.2 Installations

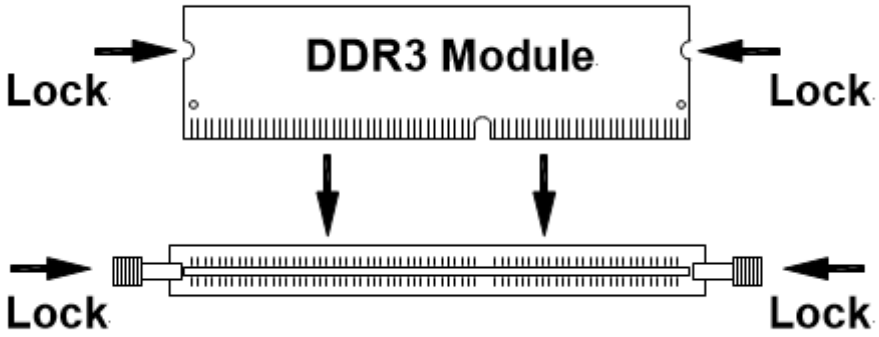
2.2.1 Installing the Memory

The MBD304 board supports four DDR3 memory modules for a maximum total of 32GB in DDR3 SODIMM memory type.

Installing and Removing Memory Modules

To install the DDR3 modules, locate the memory slot on the board and perform the following steps:

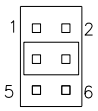
1. Hold the DDR3 module so that the key of the DDR3 module aligned with that on the memory slot.
2. Gently push the DDR3 module in an upright position until the clips of the slot close to hold the DDR3 module in place when the DDR3 module touches the bottom of the slot.
3. To remove the DDR3 module, press the clips with both hands.



2.3 Setting the Jumpers

Jumpers are used on MBD304 to select various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your needs. The following lists the jumpers and connectors on MBD304 and their respective functions.

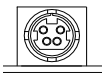
JP3, JP4: COM1/COM2 RS232 RI/+5V/+12V Power Setting

JP4/JP5	Setting	Function
	Pin 1-3 Short/Closed	+12V
	Pin 3-4 Short/Closed	RI
	Pin 3-5 Short/Closed	+5V

J2: Clear CMOS Setting

J2	Function
	Normal
	Clear CMOS

CN1: DC_IN Connector (+12V Adaptor 4 Pin)

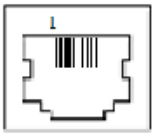


Pin #	Signal Name
1	+12V
2	+12V
3	GND
4	GND
5	GND

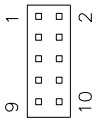
J1: Memory Voltage Setting

J1	Function
	1.5V
	1.35V

COM1: COM1 Connector

COM1	Pin #	Signal Name
	1	DSR, Data set ready
	2	GND, ground
	3	GND, ground
	4	TXD, Transmit data
	5	RXD, Receive data
	6	DCD, Data carrier detect
	7	DTR, Data terminal ready
	8	CTS, Clear to send
	9	RTS, Request to send
	10	RI, Ring indicator

COM2: COM2 Connector



Signal Name	Pin #	Pin #	Signal Name
Data carrier detect	1	2	Data set ready
Receive data	3	4	Request to send
Transmit data	5	6	Clear to send
Data terminal ready	7	8	Ring indicator
Ground	9	10	No connect.

CN11: Audio Line out

JP2: SPI Flash Connector

J8: Half Mini PCIE Slot

J8: LPC Debug Port Connector

J22: Front Panel

Signal Name	Pin #	Pin #	Signal Name
Power BTN	1	2	Power BTN
HDD LED+	3	4	HDD LED-
Reset BTN	5	6	Reset BTN
VCC5V 7-8 FOR ID723 POWER USE	7	8	5VDUAL 7-8 FOR ID723 POWER USE

JP1: DASH Programming header

J4: ISMART MCU Programming header

J6 J7: EDID Emulator MCU Programming header

CN9: LAN RTL8111EP-CG DASH

CN10: LAN RT8111G

CN5: HDMI (DP3)

CN6: HDMI (DP2)

CN7: HDMI (DP1)

CN8: HDMI (DP0)

J10: M.2 Socket SATA Only

J11/J6: Mini PCI-E With SIM Card Slot

J15: mSATA/Mini PCI-E

SW2: EDID Clear Button

CHAPTER 3 BIOS SETUP

This chapter describes the different settings available in the AMI BIOS that comes with the board. The topics covered in this chapter are as follows:

3.1 BIOS Introduction

The BIOS (Basic Input/Output System) installed in your computer system's ROM supports Intel processors. The BIOS provides critical low-level support for a standard device such as disk drives, serial ports and parallel ports. It also password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

3.2 BIOS Setup

The BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the BIOS is immediately activated. Pressing the <Del> key immediately allows you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again. The following message will appear on the screen:

```
Press  <DEL> or <ESC> to  Enter  Setup
```

In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

Main Settings

Aptio Setup Utility – Copyright © 2012 American Megatrends, Inc.

Main	Advanced	Chipset	Boot	Security	Save & Exit	
						Choose the system default language
System Date			[Tue 01/20/2015]			
System Time			[15:27:20]			→ ← Select Screen ↑ ↓ Select Item Enter: Select +- Change Field F1: General Help F2: Previous Values F3: Optimized Default F4: Save ESC: Exit
Access Level			Administrator			

System Date

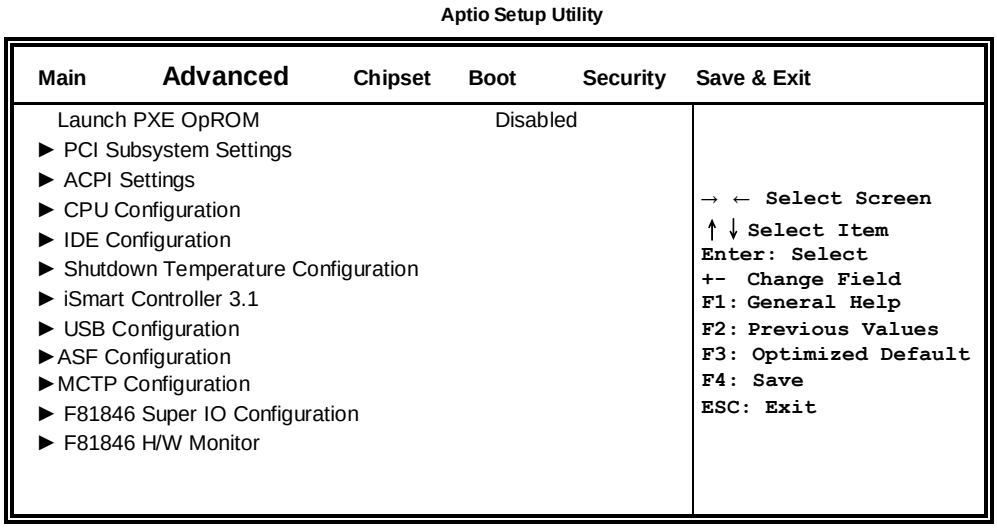
Set the Date. Use Tab to switch between Data elements.

System Time

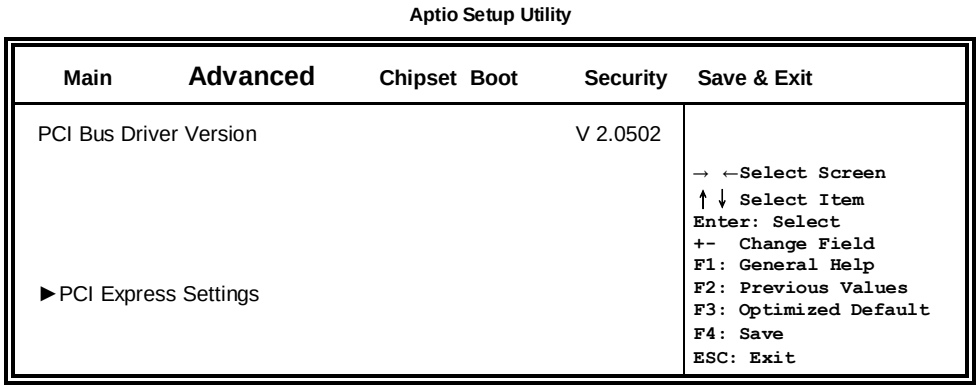
Set the Time. Use Tab to switch between Data elements.

Advanced Settings

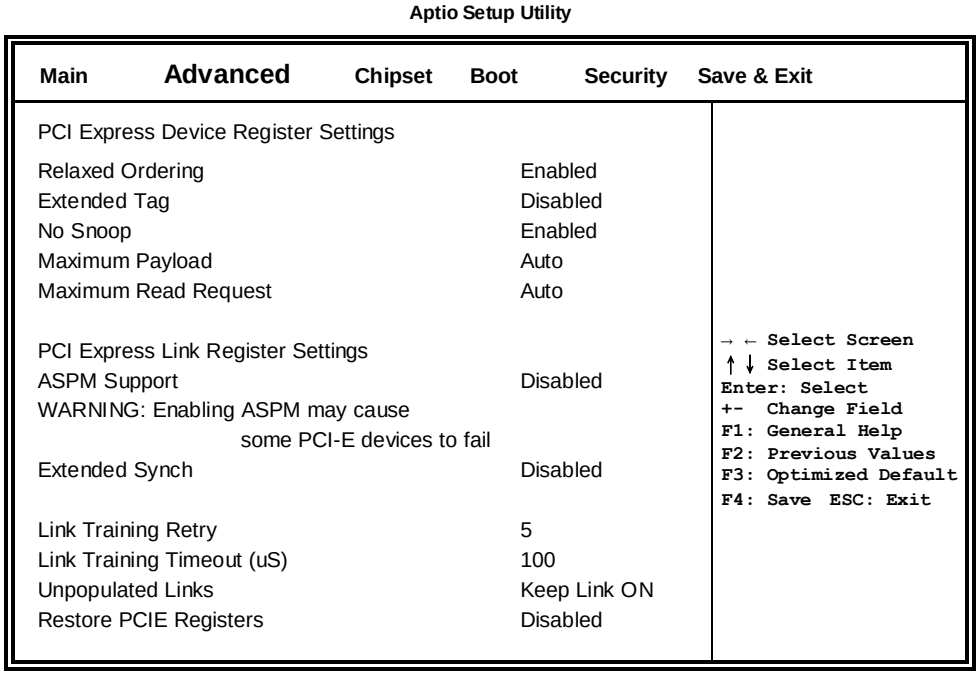
This section allows you to configure and improve your system and allows you to set up some system features according to your preference.



PCI Subsystem Settings



PCI Express Settings



Relaxed Ordering

Enables or disables PCI Express Device Relaxed Ordering.

Extended Tag

If ENABLED allows device to use 8-bit Tag field as a requester.

No Snoop

Enables or disables PCI Express Device No Snoop option.

Maximum Payload

Set Maximum Payload of PCI Express Device or allow System BIOS to select the value.

Maximum Read Request

Set Maximum Read Request Size of PCI Express Device or allow System BIOS to select the value.

ASPM Support

Set the ASPM Level: Force L0s – Force all links to L0s State:

AUTO – BIOS auto configure : DISABLE – Disables ASPM.

Extended Synch

If ENABLED allows generation of Extended Synchronization patterns.

Link Training Retry

Defines number of Retry Attempts software will take to retrain the link if previous training attempt was unsuccessful.

Link Training Timeout (uS)

Defines number of Microseconds software will wait before polling 'Link Training' bit in Link Status register. Value range from 10 to 1000 uS.

Unpopulated Links

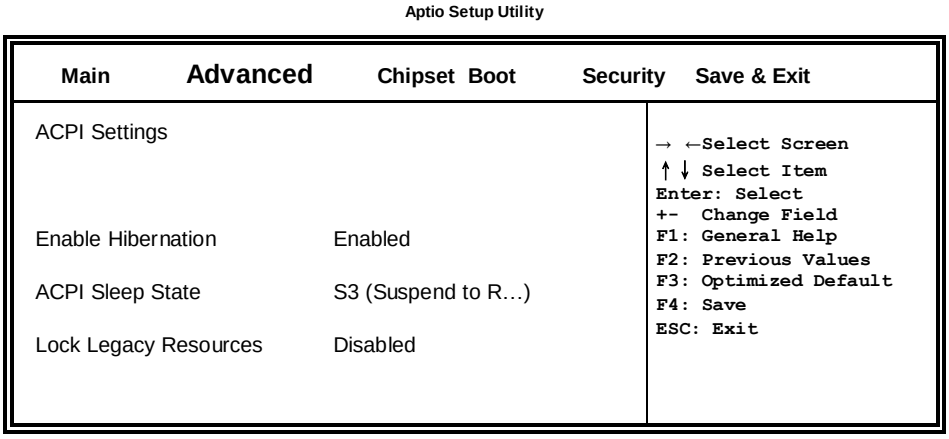
In order to save power, software will disable unpopulated PCI Express links, if this option set to 'Disable Link'.

Restore PCIE Registers

On non-PCI Express aware OS's (Pre Windows Vista)some devices may not be correctly reinitialized after S3.Enabling this restors PCI Express device configuration on S3 resume

Warning : Enabling this may cause issues with other hardware after S3 resume.

ACPI Settings



Enable Hibernation

Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.

ACPI Sleep State

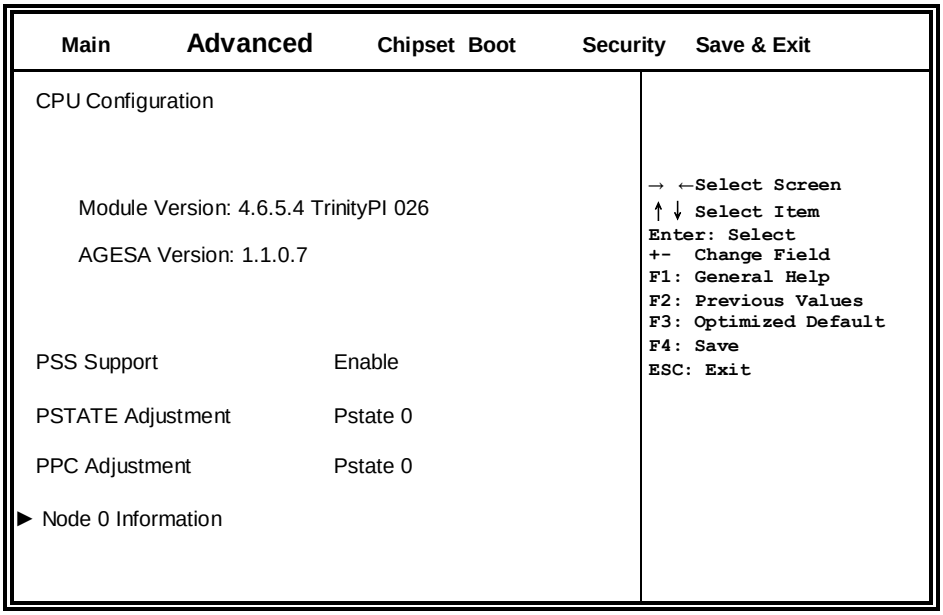
Select ACPI sleep state the system will enter, when the SUSPEND button is pressed.

Lock Legacy Resources

Enabled or Disabled Lock of Legacy Resources.

CPU Configuration

This section shows the CPU configuration parameters.



PSS Support

Enable/disable the generation of ACPI _PPC, _PPC, _PSS, and _PCT objects.

PSTATE Adjustment

Provide to adjust startup P-state level.

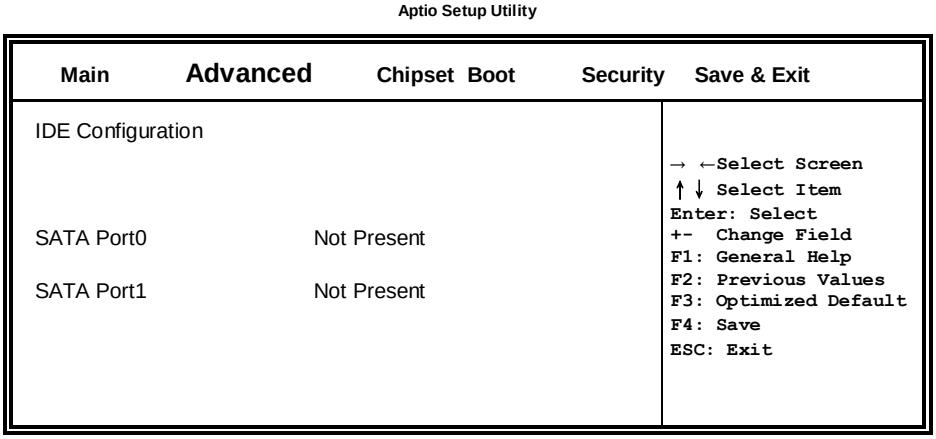
PPC Adjustment

Provide to adjust _PPC object.

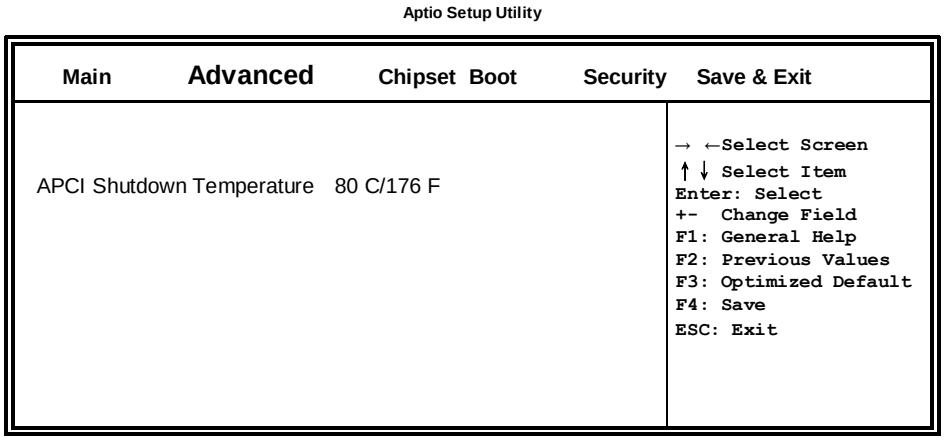
Node 0 Information

View memory information related to Node 0.

IDE Configuration



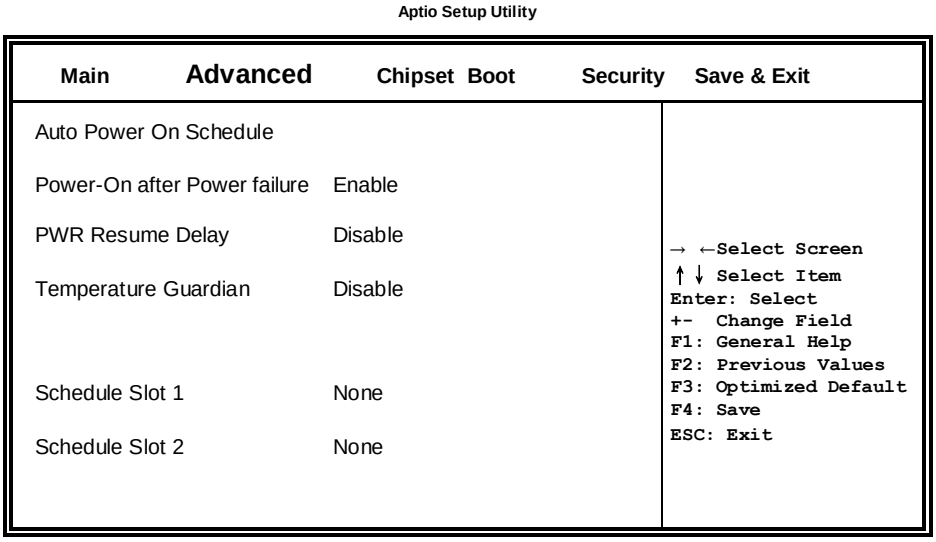
Shutdown Temperature Configuration



ACPI Shutdown Temperature

The default setting is 80 C/176 F.

iSmart Controller 3.1



Power-On after Power failure

This field sets the system power status whether *Disable or Enable* when power returns to the system from a power failure situation.

PWR Resume Delay

Enable or disable power on resume delay.

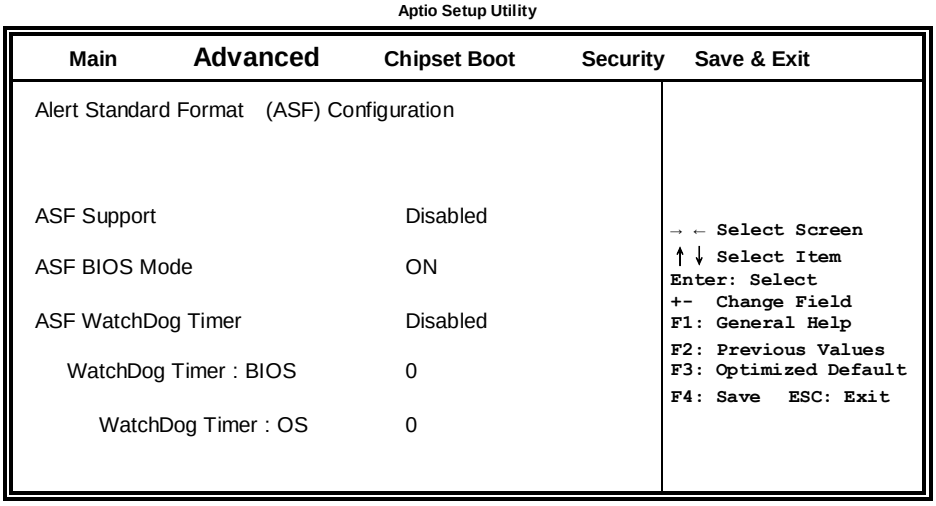
Temperature Guardian

Generate the reset signal when system hangs up on POST.

Schedule Slot 1 / 2

Setup the hour/minute for system power on.

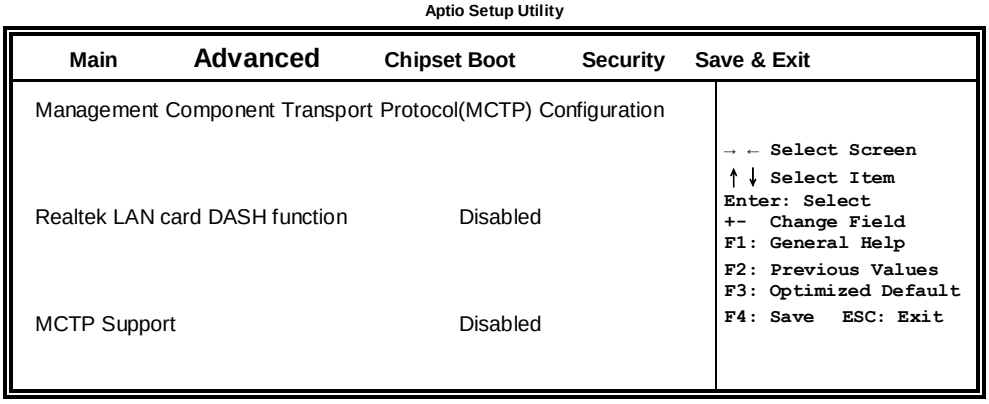
ASF Configuration



ASF Support

ASF Support Enable/Disable

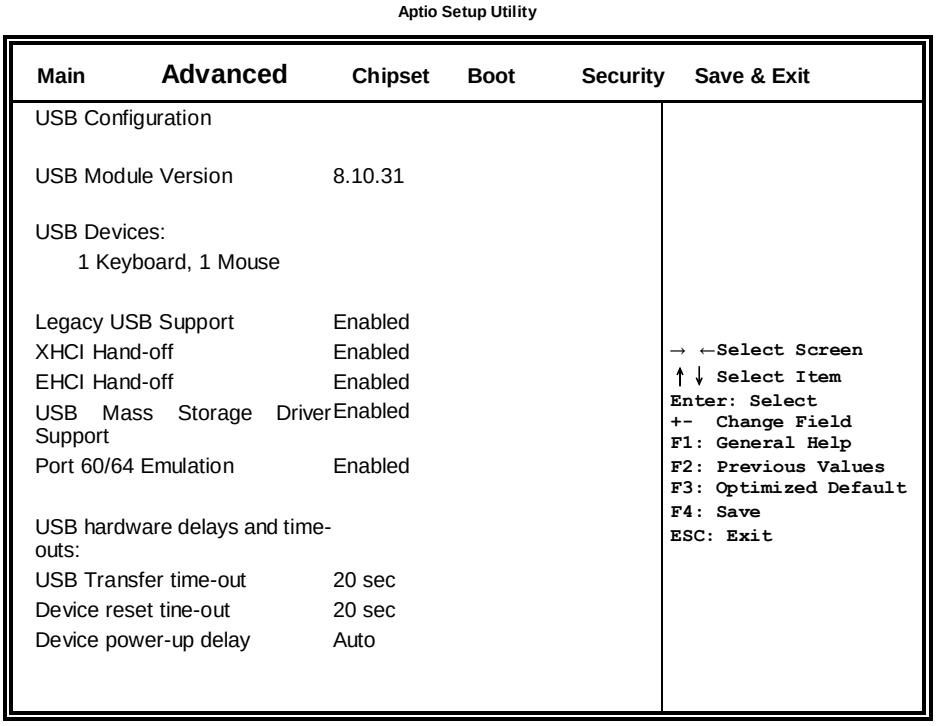
MCTP Configuration



Realtek LAN card DASH function

Realtek LAN card DASH function Enable/Disable

USB Configuration



Legacy USB Support

Enables Legacy USB support.

AUTO option disables legacy support if no USB devices are connected.

DISABLE option keeps USB devices available only for EFI applications.

USB3.0 Support

Enable/Disable USB3.0 (XHCI) Controller support.

XHCI Hand-off

This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

EHCI Hand-off

Enabled/Disabled. This is a workaround for OSes without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.

USB Transfer time-out

The time-out value for Control, Bulk, and Interrupt transfers.

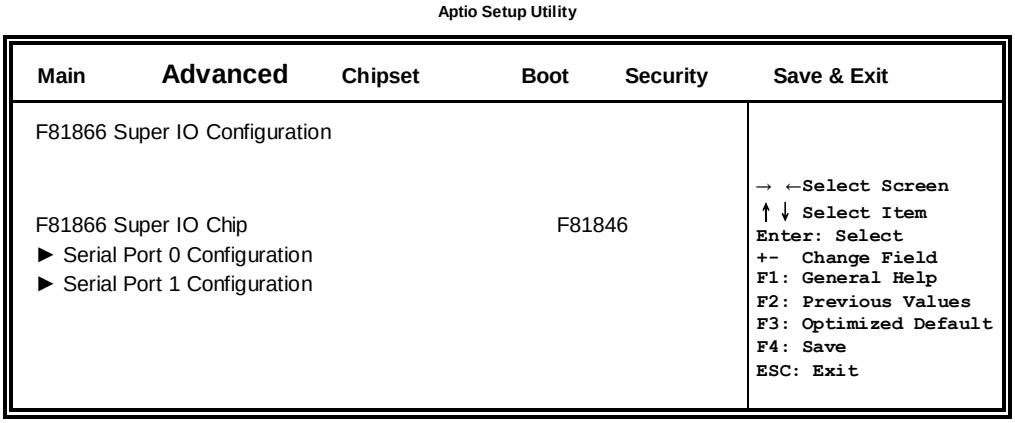
Device reset time-out

USB mass Storage device start Unit command time-out.

Device power-up delay

Maximum time the device will take before it properly reports itself to the Host Controller. ‘Auto’ uses default value: for a Root port it is 100ms, for a Hub port the delay is taken from Hub descriptor.

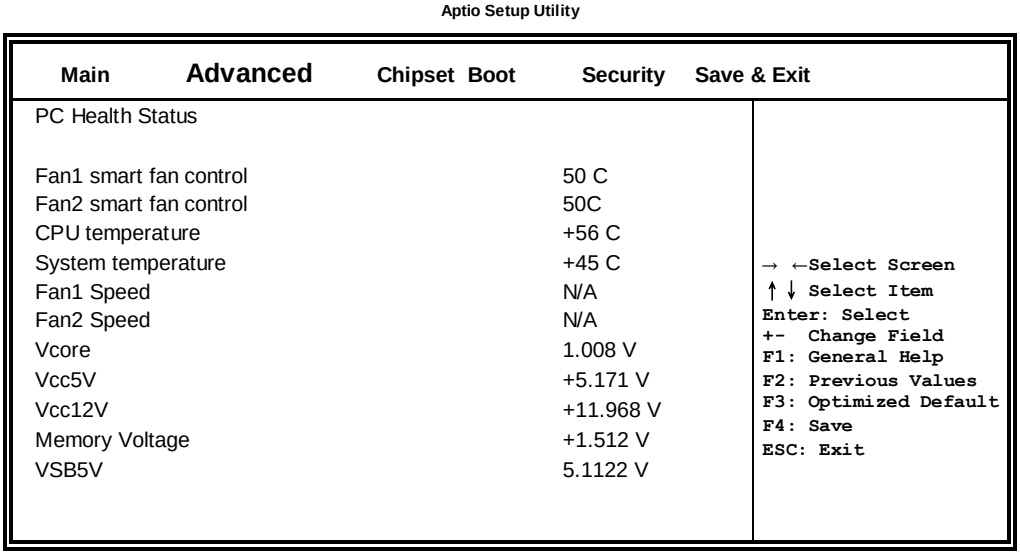
F81846 Super IO Configuration



Serial Port Configuration

Set Parameters of Serial Ports. User can Enable/Disable the serial port and Select an optimal settings for the Super IO Device.

F81846 H/W Monitor

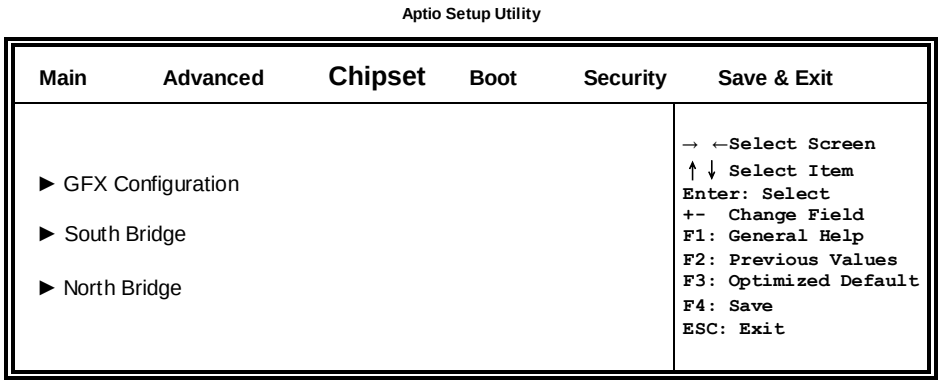


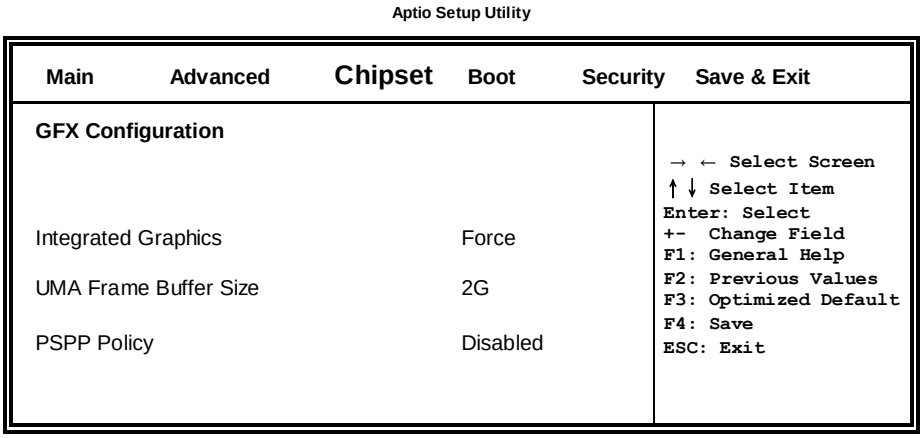
Temperatures/Voltages

These fields are the parameters of the hardware monitoring function feature of the motherboard. The values are read-only values as monitored by the system and show the PC health status.

Chipset Settings

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.





Integrated Graphics

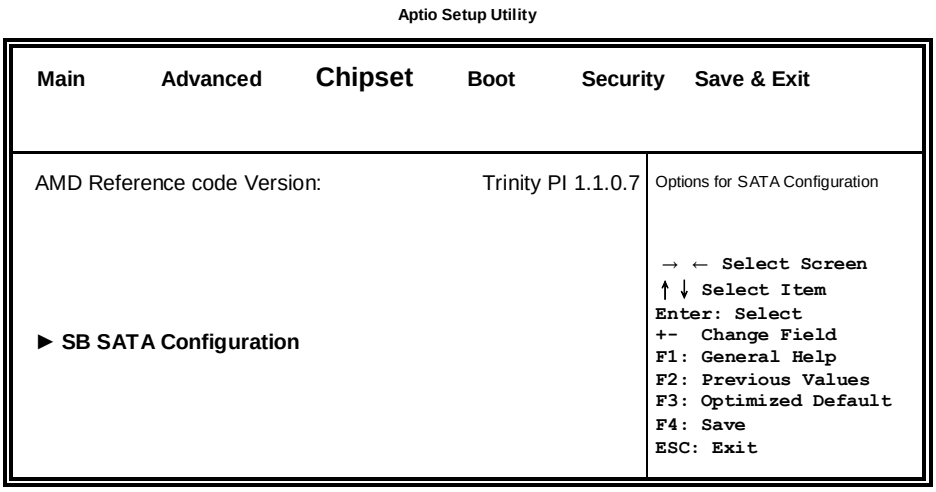
Options are Auto Disabled and Force

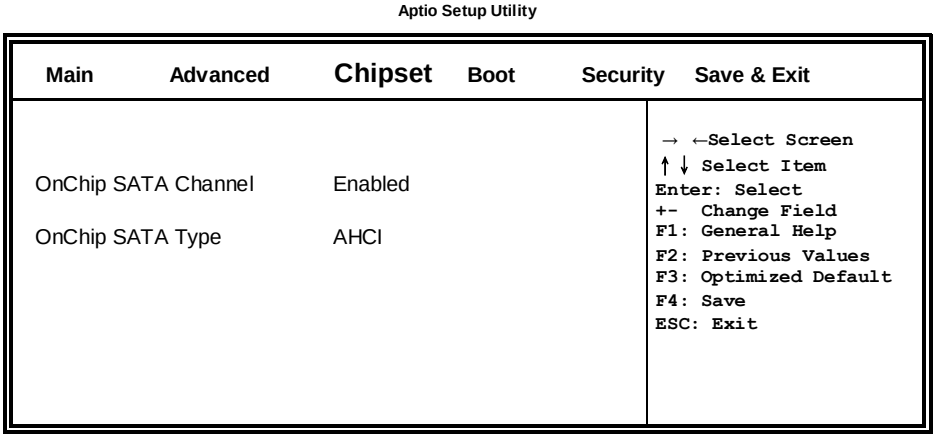
UMA Frame Buffer Size

Set UMA FB Size

PSPP Policy

PCIe Speed Power Policy



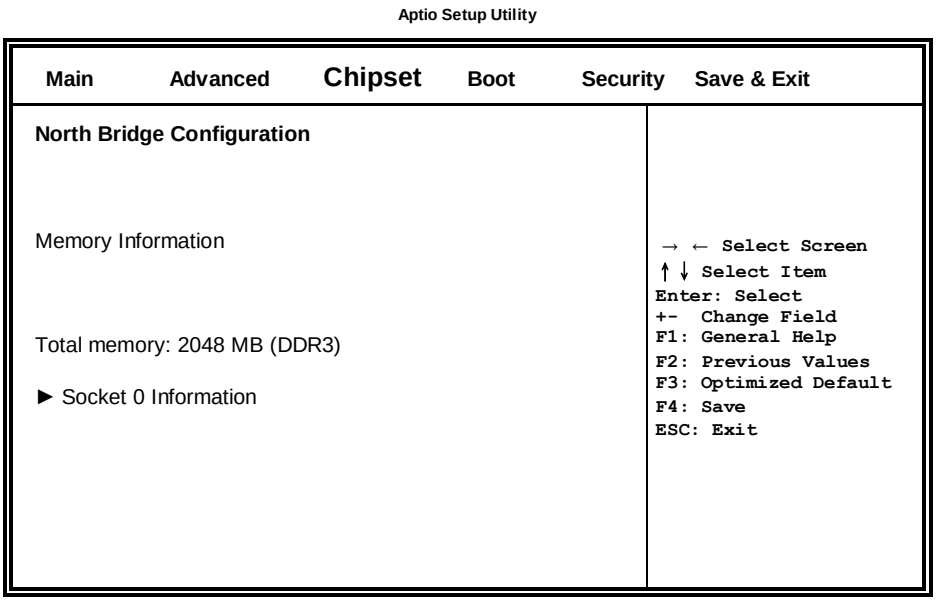


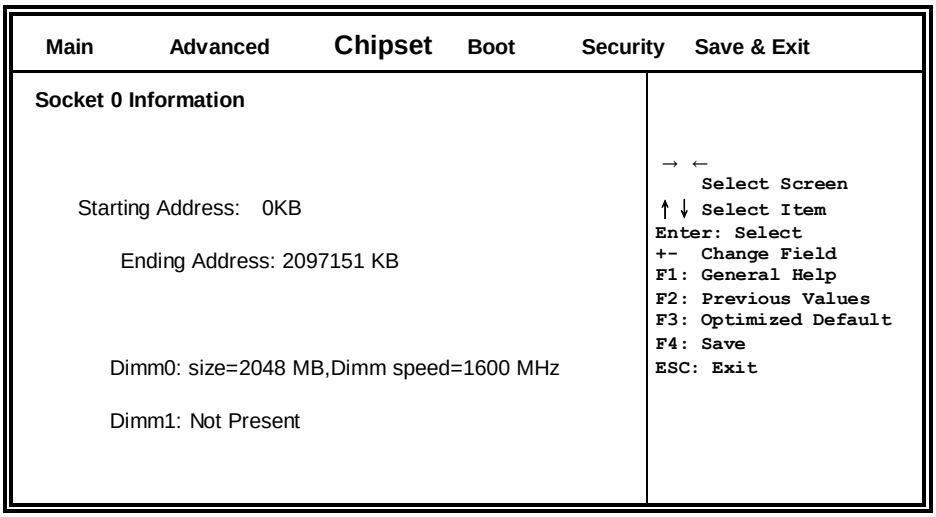
OnChip SATA Channel

Enabled or Disabled.

OnChip SATA Type

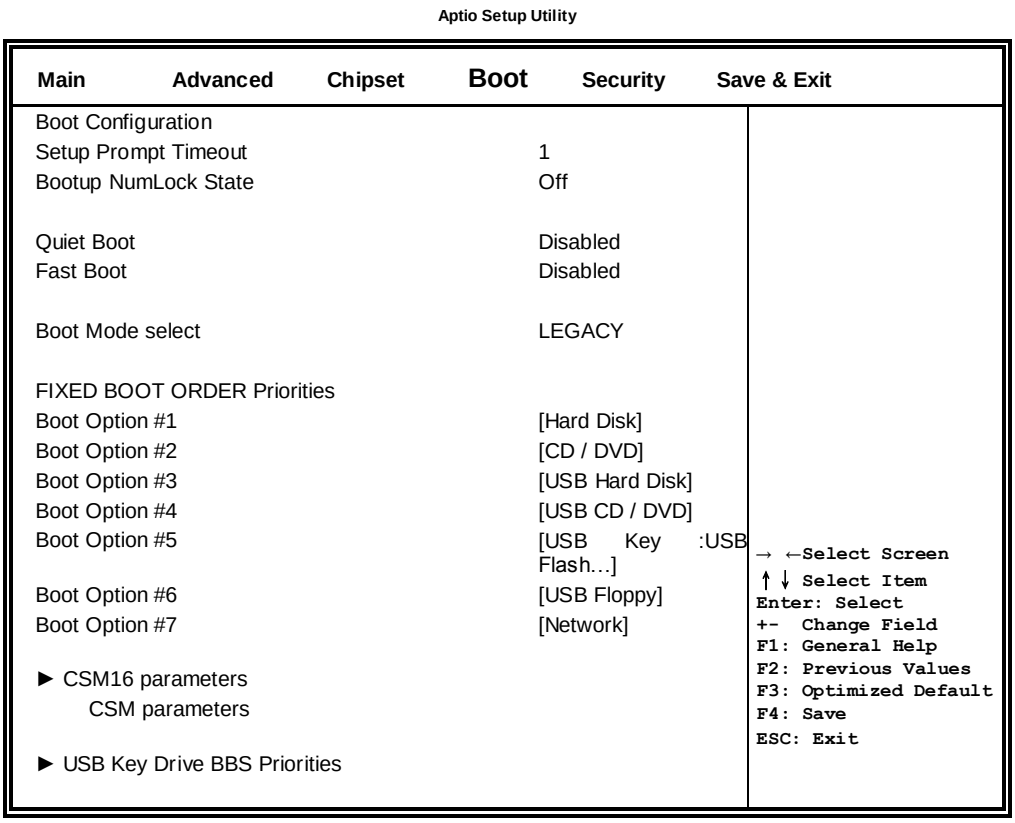
Native IDE /n RAID /n AHCI /n AHCI /n Legacy IDE /n IDE->AHCI /n HyperFlash


Aptio Setup Utility
Main Advanced Chipset Boot Security Save & Exit
North Bridge Configuration
Memory Information
Total memory: 2048 MB (DDR3)
► Socket 0 Information
→ ← Select Screen
↑ ↓ Select Item
Enter: Select
+- Change Field
F1: General Help
F2: Previous Values
F3: Optimized Default
F4: Save
ESC: Exit


Aptio Setup Utility
Main Advanced Chipset Boot Security Save & Exit
Socket 0 Information
Starting Address: 0KB
Ending Address: 2097151 KB
Dimm0: size=2048 MB,Dimm speed=1600 MHz
Dimm1: Not Present
→ ←
Select Screen
↑ ↓ Select Item
Enter: Select
+- Change Field
F1: General Help
F2: Previous Values
F3: Optimized Default
F4: Save
ESC: Exit

Boot Settings

This section allows you to configure the boot settings.



Setup Prompt Timeout

Number of seconds to wait for setup activation key.

65535(0xFFFF) means indefinite waiting.

Bootup NumLock State

Select the keyboard NumLock state.

Quiet Boot

Enables/Disables Quiet Boot option.

Fast Boot

Enables/Disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.

FIXED BOOT ORDER Priorities

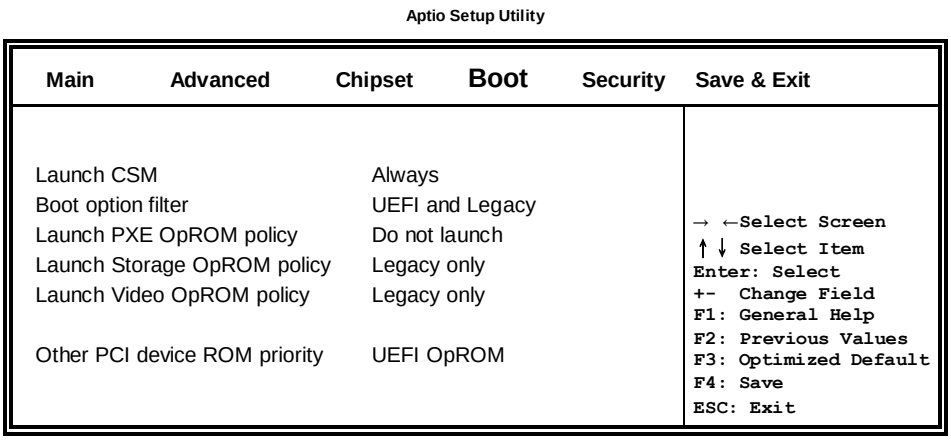
Sets the system boot order.

CSM parameters

OpROM execution, boot options, filter, etc.

CSM parameters

This section allows you to configure the boot settings.



Launch CSM

This option controls if CSM will be launched.

Boot option filter

This option controls what devices system can boot to.

Launch PXE OpROM policy

Controls the execution of UEFI and Legacy PXE OpROM.

Launch Storatge OpROM policy

Controls the execution of UEFI and Legacy Storage OpROM.

Launch Video OpROM policy

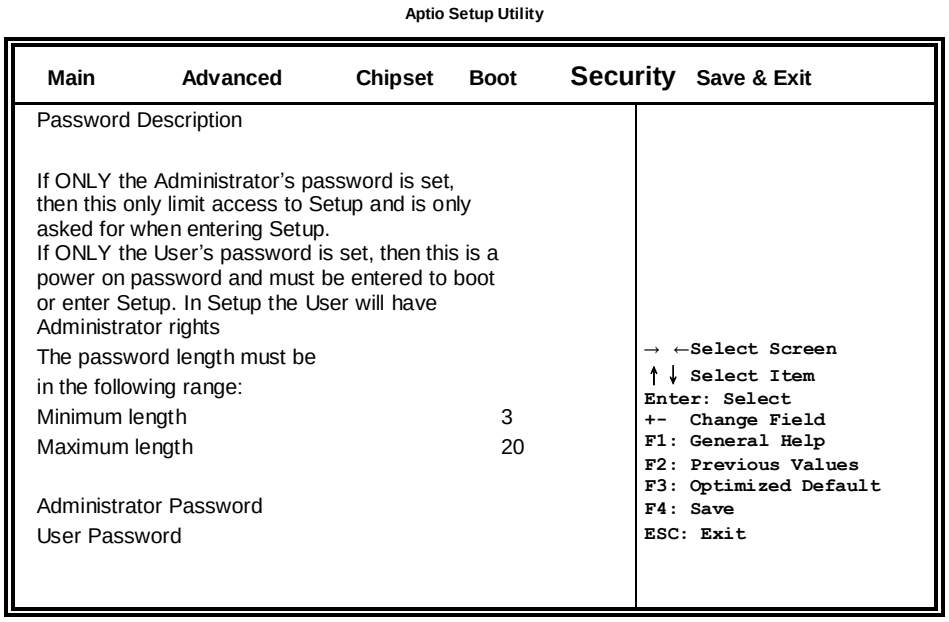
Controls the execution of UEFI and Legacy Video OpROM.

Other PCI device ROM priority

For PCI devices other than Network, Mass storage or Video defines which OpROM to launch.

Security Settings

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.



Administrator Password

Set Setup Administrator Password.

User Password

Set User Password.

Secure Boot control

Secure Boot flow control.

Secure Boot is possible only if System runs in User Mode.

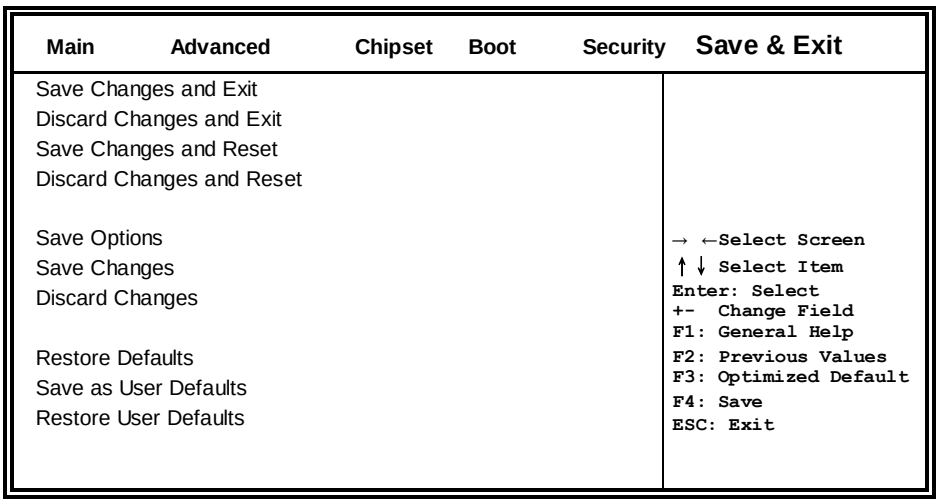
Secure Boot Policy

Select Secure Boot mode extended options: Internal FV, Option ROM, Removable Media, Fixed Media.

Administrator Password

Set Setup Administrator Password

Save & Exit Settings



Save Changes and Exit

Exit system setup after saving the changes.

Discard Changes and Exit

Exit system setup without saving any changes.

Save Changes and Reset

Reset the system after saving the changes.

Discard Changes and Reset

Reset system setup without saving any changes.

Save Changes

Save Changes done so far to any of the setup options.

Discard Changes

Discard Changes done so far to any of the setup options.

Restore Defaults

Restore/Load Defaults 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 DRIVERS INSTALLATION

IMPORTANT NOTE:

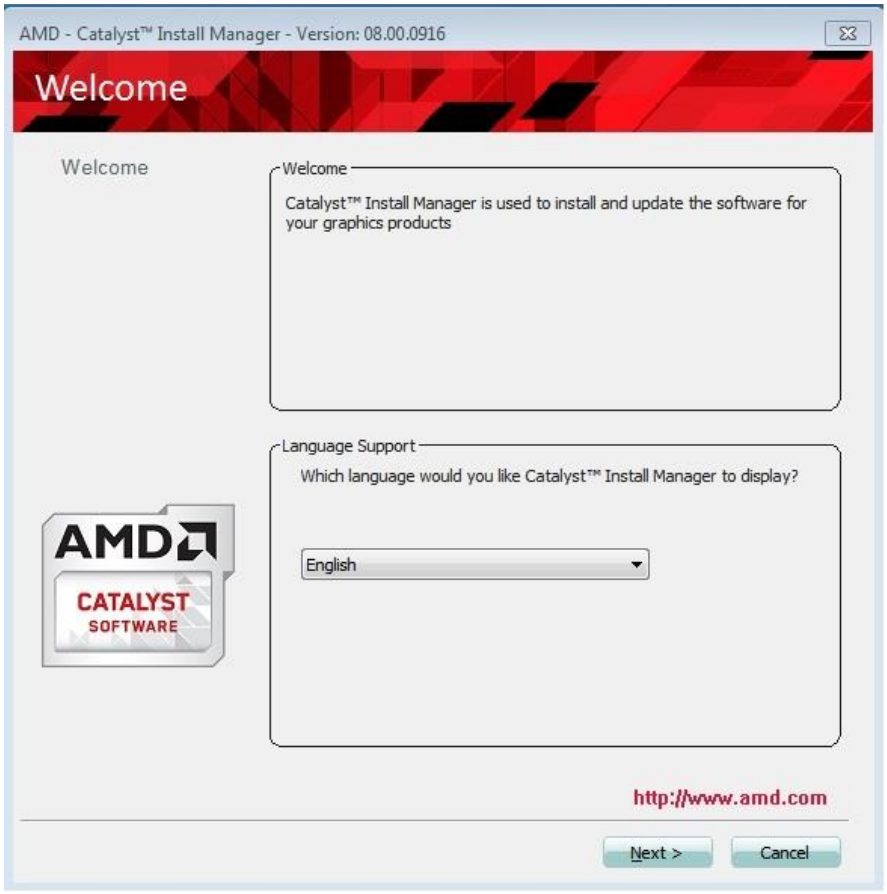
After installing your Windows operating system, you must install first the Intel Chipset Software Installation Utility before proceeding with the drivers installation.

4.1 VGA Drivers Installation

1. Insert the drivers DVD that comes with the system. Click ***System***, then ***SI-304 Series Products***.

2. Click ***AMD Bald Eagle Graphics Drivers.***

3. When the welcome screen appears, click ***Next***.

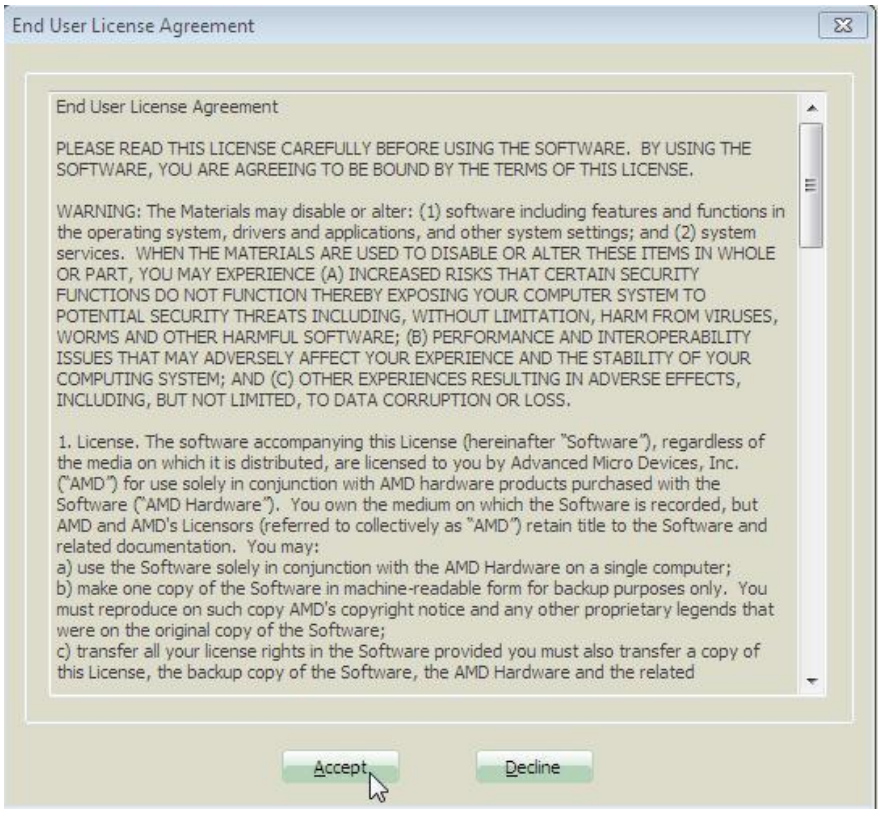


4. Select the language you would like to be displayed and click ***Next***.

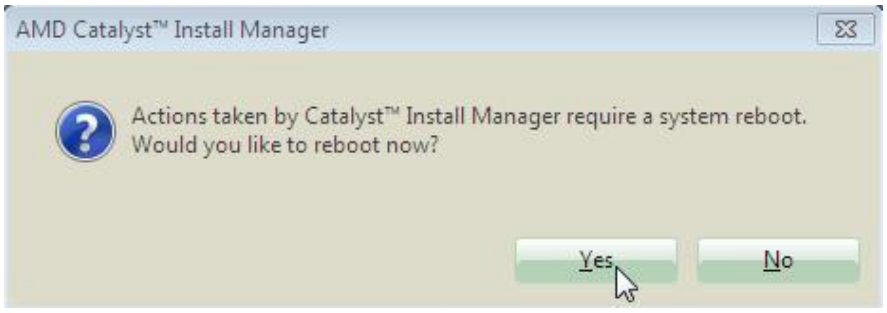
5. Click ***Next*** to continue the installation process.

6. Select **Express** and the **installation location** and click ***Next***.

7. Click ***Accept*** to accept the End User License Agreement.



8. To reboot the system, click ***Yes***.



4.2 Audio Drivers Installation

1. Insert the drivers DVD that comes with the syste0. Click ***Realtek High Definition Audio Driver***.

2. When the Welcome screen to the InstallShield Wizard appears, click ***Next***.

3. InstallShield Wizard is now complete, click **Finish** to restart the system and for changes to take effect.

4.3 LAN Drivers Installation

1. Insert the drivers DVD that comes with the syste0. Click ***LAN Card***.

2. Click ***Realtek GbE _FE Ethernet PCI-E NIC Drivers***.

3. When the Welcome screen appears, click ***Next***.

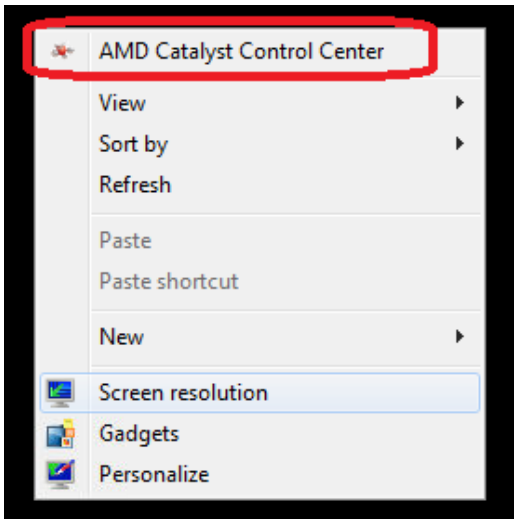
4. click ***Install*** to begin the installation.

5. InstallShield Wizard is complete. Click ***Finish***.

Appendix

A. ATI Eyefinitity setting

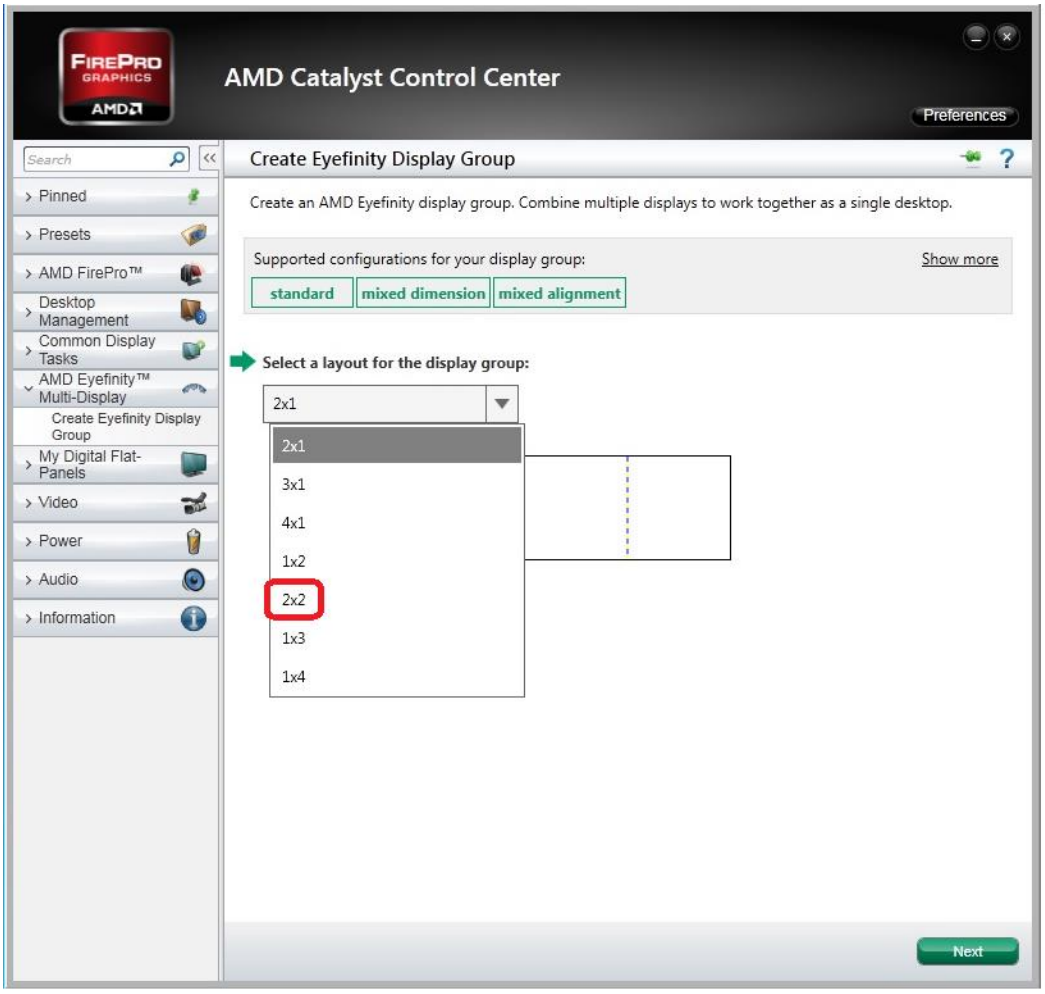
After finishing AMD VGA driver installation, you can start to use "AMD Catalyst Control Center".



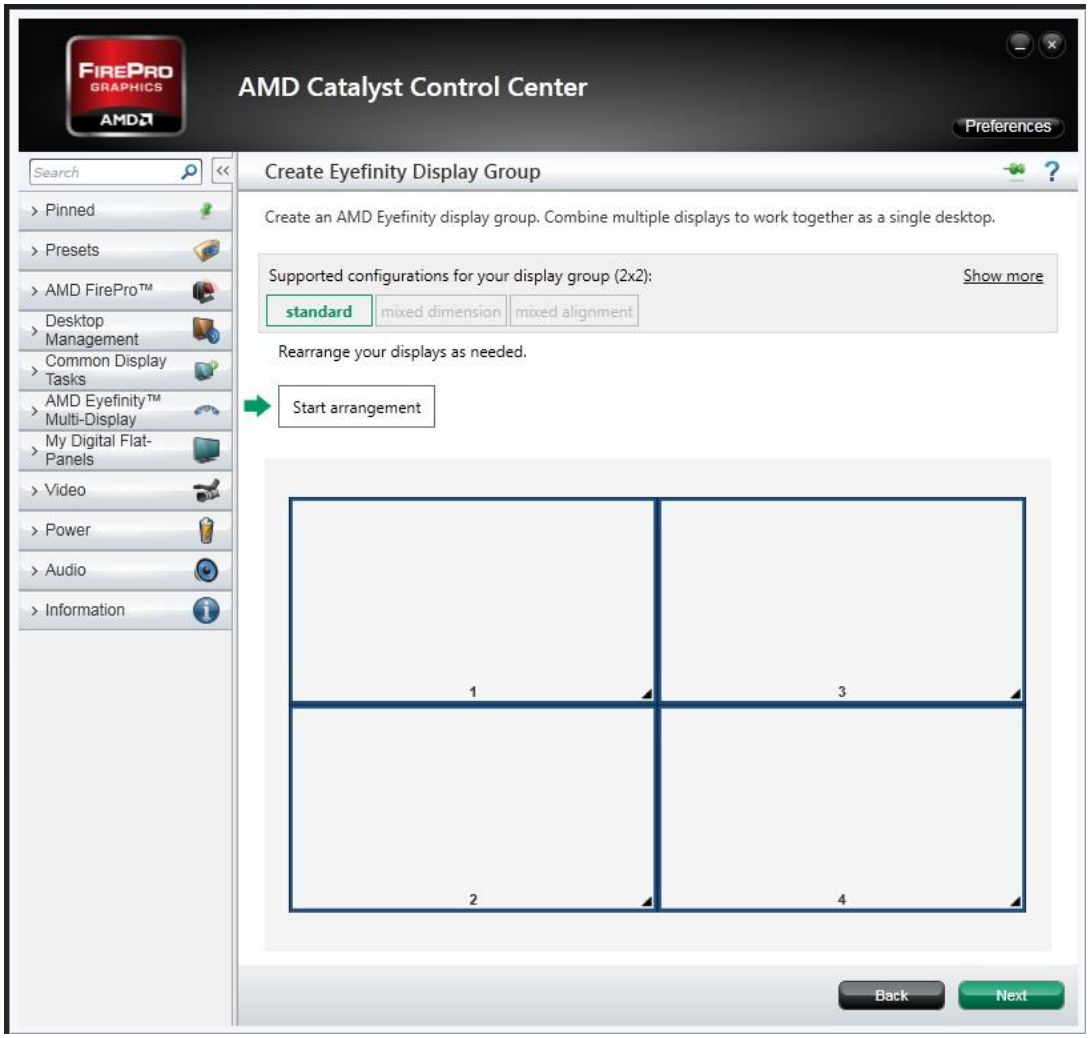
Choose **"AMD Eyefinity Multi-Display"** for Video wall display configuration setting.

Select **"Create Eyefinity Display Group"**

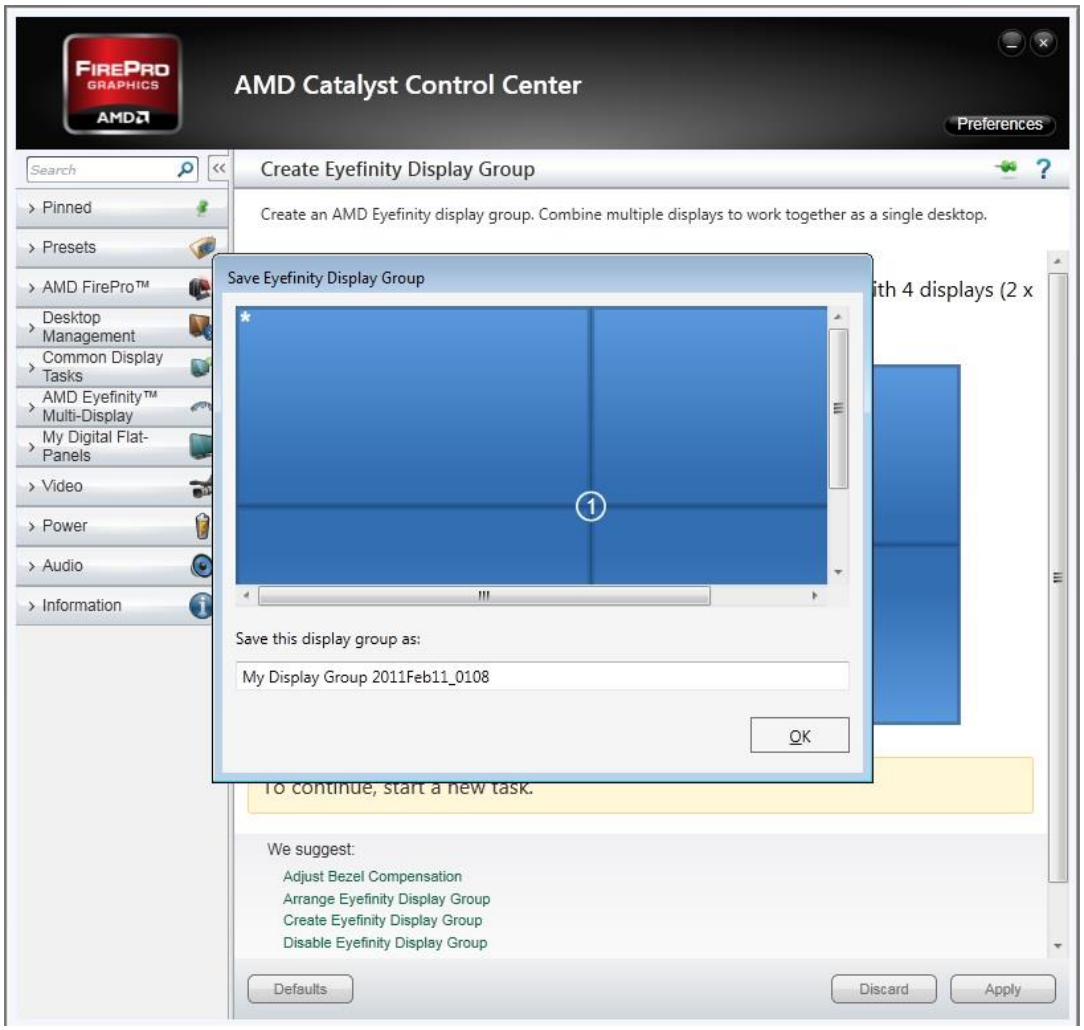
Select **"2 x 2"** for the Display configuration



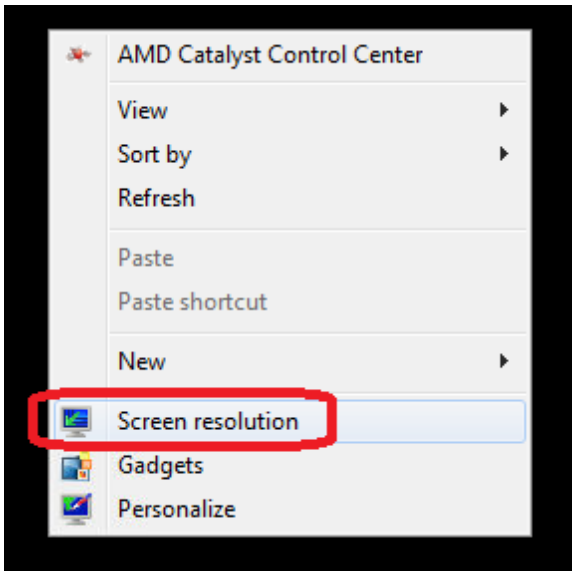
Make the displays arrangement



Complete the settings



Now, you can use Screen resolution to check your setting.



A screen with 7680 X 4320 is the correct setting for 2 x 2 Display configuration. (Monitor: ASUS PB287Q with 3840 * 2160 resolution support.)

Remarks:

3 and 4 Displays configurations

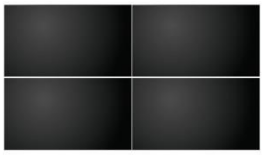
3x1 Landscape Display Group

3x1 Protrait Display Group

1x3 Protrait Display Group

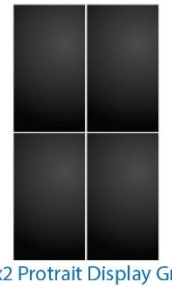
1x3 Landscape Display Group

4x1 Landscape Display Group



2x2 Landscape Display Group

4x1 Protrait Display Group



2x2 Protrait Display Group

1x4 Protrait Display Group

1x4 Landscape Display Group

B. I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses, which also becomes the identity of the device. The following table lists the I/O port addresses used.

Address	Device Description
0000h-03AFh	PCI bus
0000h-03AFh	Direct memory access controller
0010h-001Fh	Motherboard resources
0020h-0021h	Programmable interrupt controller
0022h-003Fh	Motherboard resources
0040h-0043h	System timer
0044h-005Fh	Motherboard resources
0060h-0060h	Standard PS/2 Keyboard
0061h-0061h	System speaker
0063h-0063h	Motherboard resources
0064h-0064h	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
0065h-0065h	Motherboard resources
0070h-0071h	System CMOS/real time clock
0072h-007Fh	Motherboard resources
0081h-0083h	Direct memory access controller
0084h-0086h	Motherboard resources
0084h-0087h	Direct memory access controller
00A0h-00A1h	Programmable interrupt controller
00A2h-00BFh	Motherboard resources
00A2h-00BFh	Direct memory access controller
00B1h-00B1h	Motherboard resources
00F0h-00FFh	Numeric data processor
0170h-0177h	ATA Channel 1
01F0h-01F7h	ATA Channel 0
0238H-023Fh	Communications Port (COM5)
02E8H-02EFh	Communications Port (COM4)
02F8H-02FFh	Communications Port (COM2)
0338H-033Fh	Communications Port (COM6)
03E8H-03EFh	Communications Port (COM3)
03F8H-03FFh	Communications Port (COM1)

C. Interrupt Request Lines (IRQ)

Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

Level	Function
IRQ 0	System timer
IRQ 1	Standard 101/102-Key
IRQ 3	Communications Port (COM2)
IRQ 4	Communications Port (COM1)
IRQ 6	Communications Port (COM3)
IRQ 6	Communications Port (COM4)
IRQ 8	System CMOS/real time clock
IRQ 10	Communications Port (COM5)
IRQ 10	Communications Port (COM6)
IRQ 12	PS/2 Compatible Mouse
IRQ 13	Numeric data processor
IRQ 16	High Definition Audio Controller
IRQ 16	PCI standard PCI-to-PCI bridge
IRQ 17	Standard Enhanced PCI to USB Host Controller
IRQ 17	Standard Enhanced PCI to USB Host Controller
IRQ 18	High Definition Audio Controller
IRQ 18	Standard Open HCD USB Host Controller
IRQ 18	Standard Open HCD USB Host Controller
IRQ 18	Standard Open HCD USB Host Controller
IRQ 18	Standard Open HCD USB Host Controller
IRQ 19	PCI standard PCI-to-PCI bridge
IRQ 19	AMD SATA Controller (IDE Mode)

D. Watchdog Timer Configuration

The WDT is used to generate a variety of output signals after a user programmable count. The WDT is suitable for use in the prevention of system lock-up, such as when software becomes trapped in a deadlock. Under these sorts of circumstances, the timer will count to zero and the selected outputs will be driven. Under normal circumstance, the user will restart the WDT at regular intervals before the timer counts to zero.

SAMPLE CODE:

```
//---------------------------------------------------------------------------
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//---------------------------------------------------------------------------
#include <dos.h>
#include <conio.h>
#include <stdio.h>
#include <stdlib.h>
#include "F81866.H"
//---------------------------------------------------------------------------
int main (int argc, char *argv[]);
void EnableWDT(int);
void DisableWDT(void);
//---------------------------------------------------------------------------
int main (int argc, char *argv[])
{
unsigned char bBuf;
unsigned char bTime;
char **endptr;

char SIO;

printf("Fintek 81866 watch dog program\n");

SIO = Init_F81866();
```

```
if (SIO == 0)
printf("Can not detect Fintek 81866, program abort.\n");
return(1);
}//if (SIO == 0)

if (argc != 2)
{
printf(" Parameter incorrect!!\n");
return (1);
}

bTime = strtol (argv[1], endptr, 10);
printf("System will reset after %d seconds\n", bTime);

if (bTime)
{EnableWDT(bTime); }
else
{DisableWDT();}

return 0;
}
//-------------------------------------------------------------------------
void EnableWDT(int interval)
{
unsigned char bBuf;

bBuf = Get_F81866_Reg(0x2B);
bBuf &= (~0x20);
Set_F81866_Reg(0x2B, bBuf);
 /Enable WDTO

Set_F81866_LD(0x07);
 //switch to logic device 7
Set_F81866_Reg(0x30, 0x01);
 //enable timer

bBuf = Get_F81866_Reg(0xF5);
bBuf &= (~0x0F);
bBuf |= 0x52;
```

```
Set_F81866_Reg(0xF5, bBuf);
 //count mode is second

Set_F81866_Reg(0xF6, interval);
 //set timer

bBuf = Get_F81866_Reg(0xFA);
bBuf |= 0x01;
Set_F81866_Reg(0xFA, bBuf);
 //enable WDTO output

bBuf = Get_F81866_Reg(0xF5);
bBuf |= 0x20;
Set_F81866_Reg(0xF5, bBuf);
 //start counting
}
//-----------------------------------------------------------------------
void DisableWDT(void)
{
unsigned char bBuf;
Set_F81866_LD(0x07);
 //switch to logic device 7

bBuf = Get_F81866_Reg(0xFA);
bBuf &= ~0x01;
Set_F81866_Reg(0xFA, bBuf);
 //disable WDTO output

bBuf = Get_F81866_Reg(0xF5);
bBuf &= ~0x20;
bBuf |= 0x40;
Set_F81866_Reg(0xF5, bBuf);
 //disable WDT
}
//-----------------------------------------------------------------------
```

```
//---------------------------------------------------------------------------
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//---------------------------------------------------------------------------
#include "F81866.H"
#include <dos.h>
//---------------------------------------------------------------------------
unsigned int F81866_BASE;
void Unlock_F81866 (void);
void Lock_F81866 (void);
//---------------------------------------------------------------------------
unsigned int Init_F81866(void)
{
unsigned int result;
unsigned char ucDid;

F81866_BASE = 0x4E;
result = F81866_BASE;

ucDid = Get_F81866_Reg(0x20);
if (ucDid == 0x07)
 //Fintek 81866
{goto Init_Finish; }

F81866_BASE = 0x2E;
result = F81866_BASE;

ucDid = Get_F81866_Reg(0x20);
if (ucDid == 0x07)
 //Fintek 81866
{goto Init_Finish; }

F81866_BASE = 0x00;
result = F81866_BASE;
```

```
Init_Finish:
return (result);
}
//---------------------------------------------------------------------------
void Unlock_F81866 (void)
{
outportb(F81866_INDEX_PORT, F81866_UNLOCK);
outportb(F81866_INDEX_PORT, F81866_UNLOCK);
}
//---------------------------------------------------------------------------
void Lock_F81866 (void)
{
outportb(F81866_INDEX_PORT, F81866_LOCK);
}
//---------------------------------------------------------------------------
void Set_F81866_LD( unsigned char LD)
{
Unlock_F81866();
outportb(F81866_INDEX_PORT, F81866_REG_LD);
outportb(F81866_DATA_PORT, LD);
Lock_F81866();
}
//---------------------------------------------------------------------------
void Set_F81866_Reg( unsigned char REG, unsigned char DATA)
{
Unlock_F81866();
outportb(F81866_INDEX_PORT, REG);
outportb(F81866_DATA_PORT, DATA);
Lock_F81866();
}
//---------------------------------------------------------------------------
```

```
unsigned char Get_F81866_Reg(unsigned char REG)
{
unsigned char Result;
Unlock_F81866();
outportb(F81866_INDEX_PORT, REG);
Result = inportb(F81866_DATA_PORT);
Lock_F81866();
return Result;
}
//-----------------------------------------------------------------------------
```

```
//-----------------------------------------------------------------------------
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR
// PURPOSE.
//
//-----------------------------------------------------------------------------
#ifndef __F81866_H
#define __F81866_H
```

1

```
//-----------------------------------------------------------------------------
#define
F81866_INDEX_PORT
 (F81866_BASE)
#define
F81866_DATA_PORT
 (F81866_BASE+1)
//-----------------------------------------------------------------------------
```

```
#define
F81866_REG_LD
0x07
//----------------------------------------------------------------------------
#define F81866_UNLOCK
0x87
#define
F81866_LOCK
0xAA
//----------------------------------------------------------------------------
unsigned int Init_F81866(void);
void Set_F81866_LD( unsigned char);
void Set_F81866_Reg( unsigned char, unsigned char);
unsigned char Get_F81866_Reg( unsigned char);
//----------------------------------------------------------------------------
#endif
//__F81866_H
```