

ACP-1076

7" Infotainment Multi-Touch Panel PC

User's Manual 2nd Ed

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Packing List

Before setting up your product, please make sure the following items have been shipped:

Item	Quantity
● ACP-1076	1
● Panel mount kit	1
● Product DVD	1

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

About this Document

This User's Manual contains all the essential information, such as detailed descriptions and explanations on the product's hardware and software features (if any), its specifications, dimensions, jumper/connector settings/definitions, and driver installation instructions (if any), to facilitate users in setting up their product.

Users may refer to the AAEON.com for the latest version of this document.

Safety Precautions

Please read the following safety instructions carefully. It is advised that you keep this manual for future references

1. All cautions and warnings on the device should be noted.
2. All cables and adapters supplied by AAEON are certified and in accordance with the material safety laws and regulations of the country of sale. Do not use any cables or adapters not supplied by AAEON to prevent system malfunction or fires.
3. Make sure the power source matches the power rating of the device.
4. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
5. Always completely disconnect the power before working on the system's hardware.
6. No connections should be made when the system is powered as a sudden rush of power may damage sensitive electronic components.
7. If the device is not to be used for a long time, disconnect it from the power supply to avoid damage by transient over-voltage.
8. Always disconnect this device from any AC supply before cleaning.
9. While cleaning, use a damp cloth instead of liquid or spray detergents.
10. Make sure the device is installed near a power outlet and is easily accessible.
11. Keep this device away from humidity.
12. Place the device on a solid surface during installation to prevent falls
13. Do not cover the openings on the device to ensure optimal heat dissipation.
14. Watch out for high temperatures when the system is running.
15. Do not touch the heat sink or heat spreader when the system is running
16. Never pour any liquid into the openings. This could cause fire or electric shock.

17. As most electronic components are sensitive to static electrical charge, be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and contain all electronic components in any static-shielded containers.
18. If any of the following situations arises, please the contact our service personnel:
 - i. Damaged power cord or plug
 - ii. Liquid intrusion to the device
 - iii. Exposure to moisture
 - iv. Device is not working as expected or in a manner as described in this manual
 - v. The device is dropped or damaged
 - vi. Any obvious signs of damage displayed on the device
19. **DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES (SEE CHAPTER 1) TO PREVENT DAMAGE.**

FCC Statement

Warning!



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

Caution:

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

Attention:

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

China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量

AAEON Panel PC/ Workstation

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板 及其电子组件	○	○	○	○	○	○
外部信号 连接器及线材	○	○	○	○	○	○
外壳	○	○	○	○	○	○
中央处理器 与内存	○	○	○	○	○	○
硬盘	○	○	○	○	○	○
液晶模块	○	○	○	○	○	○
光驱	○	○	○	○	○	○
触控模块	○	○	○	○	○	○
电源	○	○	○	○	○	○

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:

- 一、此产品所标示之环保使用期限，系指在一般正常使用状况下。
- 二、上述部件物质中央处理器、内存、硬盘、光驱、触控模块为选购品。

China RoHS Requirement (EN)

Poisonous or Hazardous Substances or Elements in Products

AAEON Panel PC/ Workstation

Component	Poisonous or Hazardous Substances or Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
PCB & Other Components	○	○	○	○	○	○
Wires & Connectors for External Connections	○	○	○	○	○	○
Chassis	○	○	○	○	○	○
CPU & RAM	○	○	○	○	○	○
Hard Disk	○	○	○	○	○	○
LCD	○	○	○	○	○	○
Optical Drive	○	○	○	○	○	○
Touchscreen	○	○	○	○	○	○
PSU	○	○	○	○	○	○
<p>O: The quantity of poisonous or hazardous substances or elements found in each of the component's parts is below the SJ/T 11363-2006-stipulated requirement.</p> <p>X: The quantity of poisonous or hazardous substances or elements found in at least one of the component's parts is beyond the SJ/T 11363-2006-stipulated requirement.</p> <p>Note: The Environment Friendly Use Period as labeled on this product is applicable under normal usage only</p>						

Table of Contents

Chapter 1 - Product Specifications.....	1
1.1 Specifications.....	2
Chapter 2 – Hardware Information.....	5
2.1 Dimensions	6
2.2 Jumpers and Connectors.....	7
2.3 List of Jumpers	9
2.3.1 LVDS Port 1 Backlight Inverter VCC Selection (JP1).....	10
2.3.2 LVDS Port 1 Operating VDD Selection (JP1)	10
2.3.3 LVDS Port 1 Backlight Lightness Control Mode Selection (JP2).....	10
2.3.4 COM2 Pin8 Function Selection (JP3)	10
2.3.5 COM3 Pin8 Function Selection (JP4)	11
2.3.6 Auto Power Button Enable/Disable Selection (JP5)	11
2.3.7 Front Panel Connector (JP6)	11
2.3.8 Touch Screen 4, 5, 8 Wire Selection (JP9)	12
2.3.9 Clear CMOS Jumper (JP10)	12
2.4 List of Connectors	13
2.4.1 Power Button: ON/OFF	14
2.4.2 USB 2.0 port.....	14
2.4.3 USB 2.0 port x 2 (optional)	14
2.4.4 COM2 / COM3 Port (RS232/RS422/RS485).....	15
2.4.5 DC-In connector	16
2.4.6 COM1 port (RS232).....	16
2.4.7 HDMI port	17
2.4.8 USB 3.0 port x 2	18
2.4.9 LAN port x 2	19
Chapter 3 - AMI BIOS Setup.....	20

3.1	System Test and Initialization	21
3.2	AMI BIOS Setup	22
3.3	Setup Submenu: Main	23
3.4	Setup Submenu: Advanced	24
3.4.1	Advanced: Trusted Computing	25
3.4.2	Advanced: CPU Configuration	26
3.4.3	Advanced: SATA Configuration	28
3.4.4	Advanced: PCI Express Configuration	29
3.4.5	Advanced: Hardware Monitor	31
3.4.6	Advanced: SIO Configuration	32
3.4.7	Advanced: Power Management	36
3.5	Setup submenu: Chipset	37
3.5.1	North Bridge	38
3.6	Setup submenu: Security	40
3.7	Setup submenu: Boot	41
3.8	Setup submenu: Save & Exit	42
Chapter 4 – Drivers Installation		43
4.1	Product CD/DVD	44
Appendix A - Watchdog Timer Programming		45
A.1	Watchdog Timer Initial Program	46
Appendix B - I/O Information		51
B.1	I/O Address Map	52
B.2	Memory Address Map	53
B.3	IRQ Mapping Chart	54

Chapter 1

Product Specifications

1.1 Specifications

System

- **Processor** Intel® Pentium® N4200 / Celeron® N3350 Processor
- **System Memory** 204-pin DDR3L 1333 SODIMM x 1, Up to 8 GB (Pre-installed 4 GB)
- **LCD/CRT Controller** LVDS
- **I/O Port**
 - USB 3.0 x 2
 - USB 2.0 x 1
 - LAN x 2
 - DB9 x 2 for RS232 / RS422 / RS485
 - DB9 x 1 for RS232
 - HDMI x 1
 - Antenna Hole x 2
 - Power Button x 1
 - Lockable Power Connector x 1
 - AAEON Expansion slot x 1
- **Storage** Full-size mSATA x 1
- **Expansion Slot**
 - MiniCard (Full-size) x 1 (mSATA only)
 - MiniCard (Half-size) x 1
- **OS Support** Linux by Fedora kernel 2.6.3 up

Mechanical

- **Construction** IP65/ NEMA4-rated Aluminum Front Bezel
- **Mounting** VESA 75 / VESA 100 / Panel Mount

- **Dimension (W x H x D)** 196.4 x 134.2 x 48 mm (7.73 x 5.28 x 1.89")
- **Carton Dimension (W x H x D)** 276 x 239 x 170 mm (10.87 x 9.41 x 6.69")
- **Net Weight** 1.2 kg (2.65 lb)
- **Gross Weight** 2.1 kg (4.63 lb)

Environmental

- **Operating Temperature** -5 ~ 50°C (23 ~ 122°F) - with airflow
- **Storage Temperature** -20 ~ 70°C (-4 ~ 158°F)
- **Operating Humidity** 10 ~ 90% @ 40°C, non-condensing
- **Anti-Vibration** 3 Grms/ 5~500 Hz/ operation (mSATA)
- **Anti-Shock** 20 G peak acceleration (11 msec. duration, mSATA)
- **EMC** CE/FCC Class A

Power Supply

- **DC Input** DC 9~30 V

LCD

- **Display Type** 7", WSVGA, LED
- **Max. Resolution** 1024 x 600
- **Max Colors** 262 K
- **Luminance (cd/m²)** 300 nits

- Contrast Ratio 600:1
- Viewing Angle 120° (H), 120° (V)

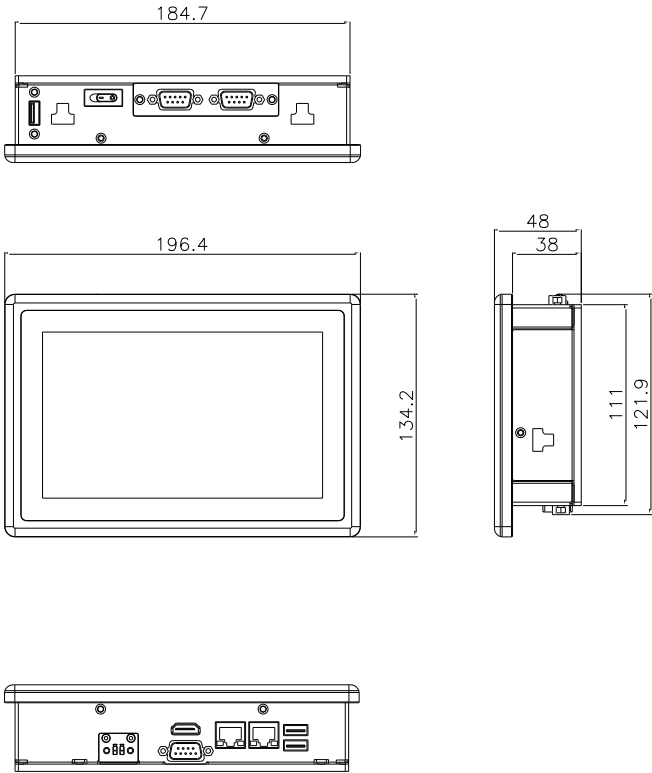
Touchscreen

- Type USB
- Resolution 2048 x 2048
- Light Transmission 90 %

Chapter 2

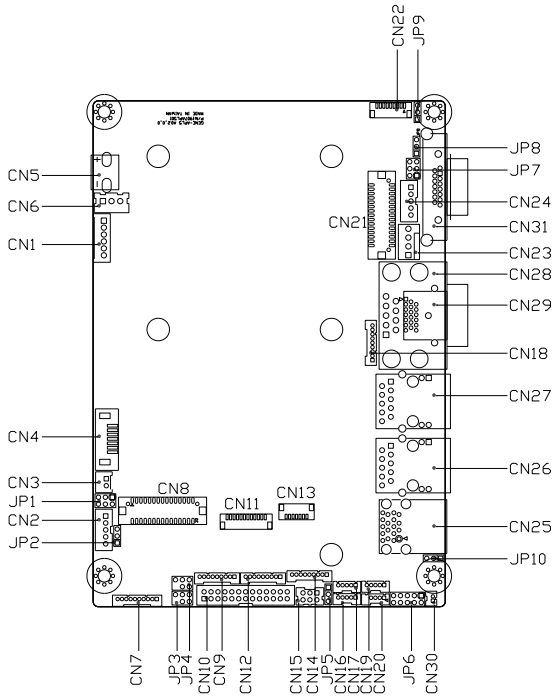
Hardware Information

2.1 Dimensions

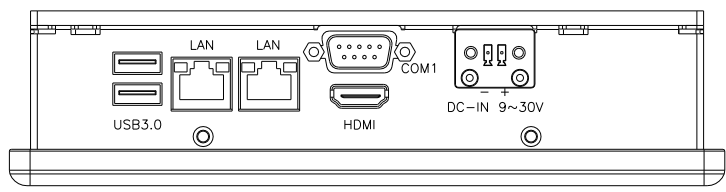


2.2 Jumpers and Connectors

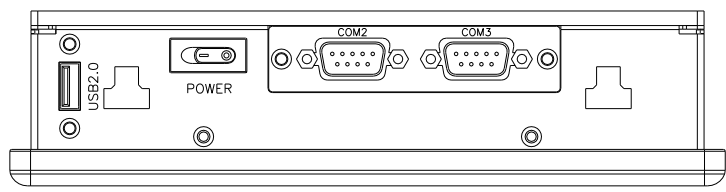
Jumpers (Board)



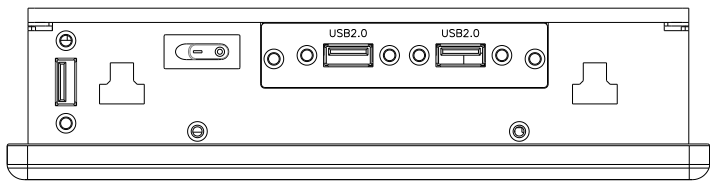
Connectors



COM Option



USB Option

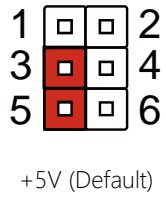
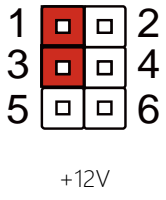


2.3 List of Jumpers

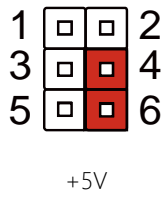
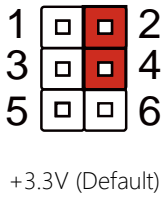
Please refer to the table below for all of the board's jumpers that you can configure for your application

Label	Function
JP1	LVDS Port1 Backlight Inverter VCC Selection and Operating VDD Selection
JP2	LVDS Port1 Backlight Lightness Control Mode Selection
JP3	COM2 Pin8 Function Selection
JP4	COM3 Pin8 Function Selection
JP5	Auto Power Button Enable/Disable Selection
JP6	Front Panel Connector
JP9	Touch Screen 4/5/8-wire Mode Selection
JP10	Clear CMOS Jumper

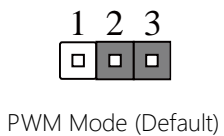
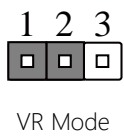
2.3.1 LVDS Port 1 Backlight Inverter VCC Selection (JP1)



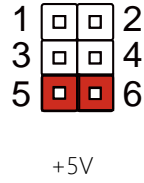
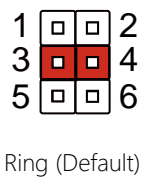
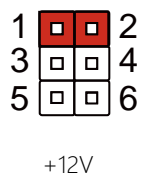
2.3.2 LVDS Port 1 Operating VDD Selection (JP1)



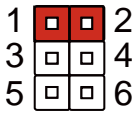
2.3.3 LVDS Port 1 Backlight Lightness Control Mode Selection (JP2)



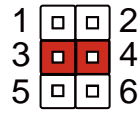
2.3.4 COM2 Pin8 Function Selection (JP3)



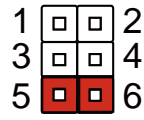
2.3.5 COM3 Pin8 Function Selection (JP4)



+12V

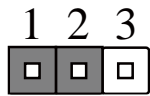


Ring (Default)

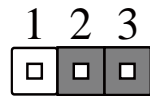


+5V

2.3.6 Auto Power Button Enable/Disable Selection (JP5)

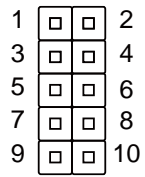


Enable/ATX (Default)



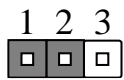
Disable/AT

2.3.7 Front Panel Connector (JP6)

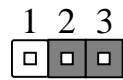


Pin	Pin Name	Pin	Pin Name
1	PWR_BTN-	2	PWR_BTN+
3	HDD_LED-	4	HDD_LED+
5	SPEAKER-	6	SPEAKER+
7	PWR_LED-	8	PWR_LED+
9	H/W RESET-	10	H/W RESET+

2.3.8 Touch Screen 4, 5, 8 Wire Selection (JP9)

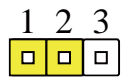


4/8 Wires Mode

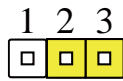


5 Wires Mode (Default)

2.3.9 Clear CMOS Jumper (JP10)



Normal (Default)



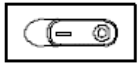
Clear CMOS

2.4 List of Connectors

Please refer to the table below for all of the board's connectors that you can configure for your application

Label	Function
Power	Power on / off
USB 2.0	USB 2.0
COM2 / COM3	RS232 / RS422 / RS485
DC-IN	DC power input 9 – 30 V
COM1	RS232
HDMI	HDMI
USB 3.0	USB 3.0
LAN	10 / 100 / 1000 Ethernet

2.4.1 Power Button: ON/OFF



POWER

2.4.2 USB 2.0 port



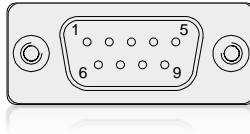
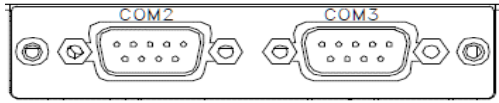
Pin	Pin Name	Pin	Pin Name
1	+5VSB	PWR	+5V
2	USB4_D-	DIFF	
3	USB4_D+	DIFF	
4	GND	GND	

2.4.3 USB 2.0 port x 2 (optional)



Pin	Pin Name	Pin	Pin Name
1	+5VSB	PWR	+5V
2	USB4_D-	DIFF	
3	USB4_D+	DIFF	
4	GND	GND	

2.4.4 COM2 / COM3 Port (RS232/RS422/RS485)



RS-232

Pin	Pin Name	Pin	Pin Name
1	DCD	IN	
2	RX	IN	
3	TX	OUT	±5V
4	DTR	OUT	±5V
5	GND	GND	
6	DSR	IN	
7	RTS	OUT	±5V
8	CTS	IN	
9	RI/ +5V/ +12V	IN/ PWR	+5V/ +12V

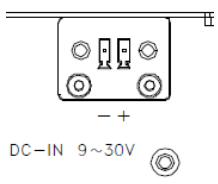
RS-422

Pin	Pin Name	Pin	Pin Name
1	RS422_TX-	OUT	±5V
2	RS422_TX+	OUT	±5V
3	RS422_RX+	IN	-
4	RS422_RX-	IN	-
5	GND	GND	-
6	NC		-
7	NC		-

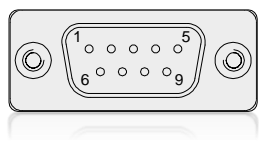
8	NC		-
9	NC/ +5V/ +12V	PWR	+5V/ +12V

RS-485			
Pin	Pin Name	Pin	Pin Name
1	RS485_D-	I/O	±5V
2	RS485_D+	I/O	±5V
3	NC		-
4	NC		-
5	GND	GND	-
6	NC		-
7	NC		-
8	NC		-
9	NC/ +5V/ +12V	PWR	+5V/ +12V

2.4.5 DC-In connector



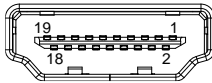
2.4.6 COM1 port (RS232)



Pin	Pin Name	Pin	Pin Name
1	DCD	IN	

2	RX	IN	
3	TX	OUT	±9V
4	DTR	OUT	±9V
5	GND	GND	
6	DSR	IN	
7	RTS	OUT	±9V
8	CTS	IN	
9	RI	IN	

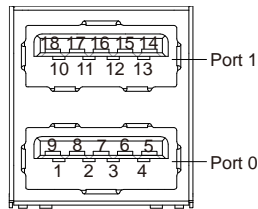
2.4.7 HDMI port



Pin	Pin Name	Signal Type	Signal level
1	TMDS_DAT2+	DIFF	
2	GND	GND	
3	TMDS_DAT2-	DIFF	
4	TMDS_DAT1+	DIFF	
5	GND	GND	
6	TMDS_DAT1-	DIFF	
7	TMDS_DAT0+	DIFF	
8	GND	GND	
9	TMDS_DAT0-	DIFF	
10	TMDS_CLK+	DIFF	
11	GND	GND	
12	TMDS_CLK-	DIFF	
13	NC		
14	NC		

15	DDC_CLK	I/O	+5V
16	DDC_DATA	I/O	+5V
17	GND	GND	
18	+5V	I/O	+5V
19	HPLG_DETECT	IN	

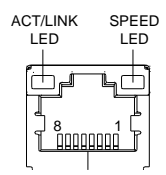
2.4.8 USB 3.0 port x 2



Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V
2	USB_D-	DIFF	
3	USB_D+	DIFF	
4	GND	GND	
5	USB_SSRX-	DIFF	
6	USB_SSRX+	DIFF	
7	GND	GND	
8	USB_SSTX-	DIFF	
9	USB_SSTX+	DIFF	
10	+5VSB	PWR	+5V
11	USB_D-	DIFF	
12	USB_D+	DIFF	
13	GND	GND	
14	USB_SSRX-	DIFF	
15	USB_SSRX+	DIFF	

16	GND	GND
17	USB_SSTX-	DIFF
18	USB_SSTX+	DIFF

2.4.9 LAN port x 2



Pin	Pin Name	Signal Type	Signal level
1	MDI0+	DIFF	
2	MDI0-	DIFF	
3	MDI1+	DIFF	
4	MDI2+	DIFF	
5	MDI2-	DIFF	
6	MDI1-	DIFF	
7	MDI3+	DIFF	
8	MDI3-	DIFF	

Chapter 3

AMI BIOS Setup

3.1 System Test and Initialization

The system uses certain routines to perform testing and initialization. If an error, fatal or non-fatal, is encountered, a few short beeps or an error message will be outputted. The board can usually continue the boot up sequence with non-fatal errors.

The system configuration verification routines check the current system configuration against the values stored in the CMOS memory. If they do not match, an error message will be outputted, in which case you will need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

- You are starting your system for the first time
- You have changed your system's hardware
- The CMOS memory has lost power and the configuration information is erased

The system's CMOS memory uses a backup battery for data retention, which is to be replaced once emptied.

3.2 AMI BIOS Setup

The AMI BIOS ROM has a pre-installed Setup program that allows users to modify basic system configurations, which is stored in the battery-backed CMOS RAM and BIOS NVRAM so that the information is retained when the power is turned off.

To enter BIOS Setup, press immediately while your computer is powering up.

The function for each interface can be found below.

Main – Date and time can be set here. Press <Tab> to switch between date elements

Advanced – Enable/ Disable boot option for legacy network devices

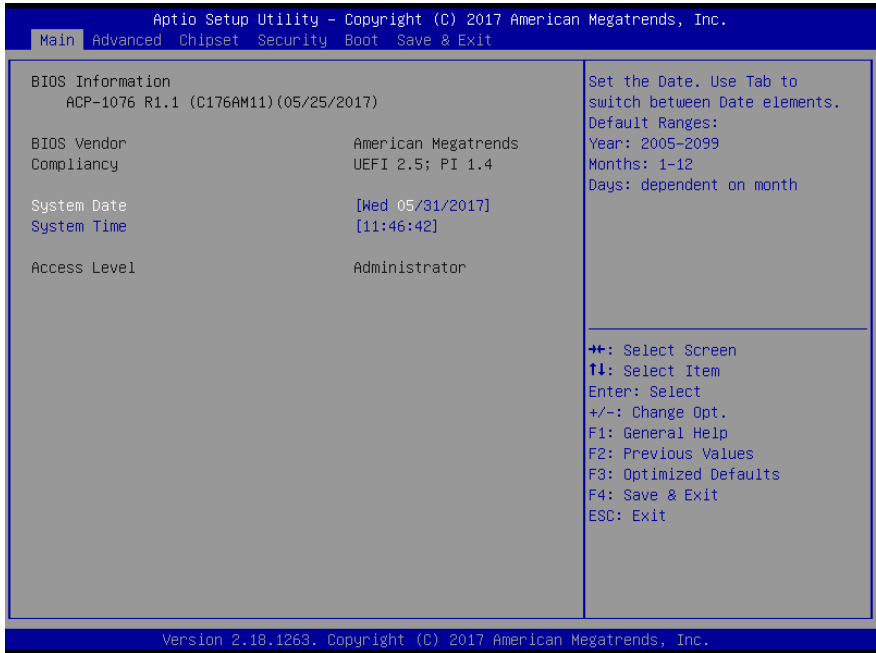
Chipset – For hosting bridge parameters

Boot – Enable/ Disable quiet Boot Option

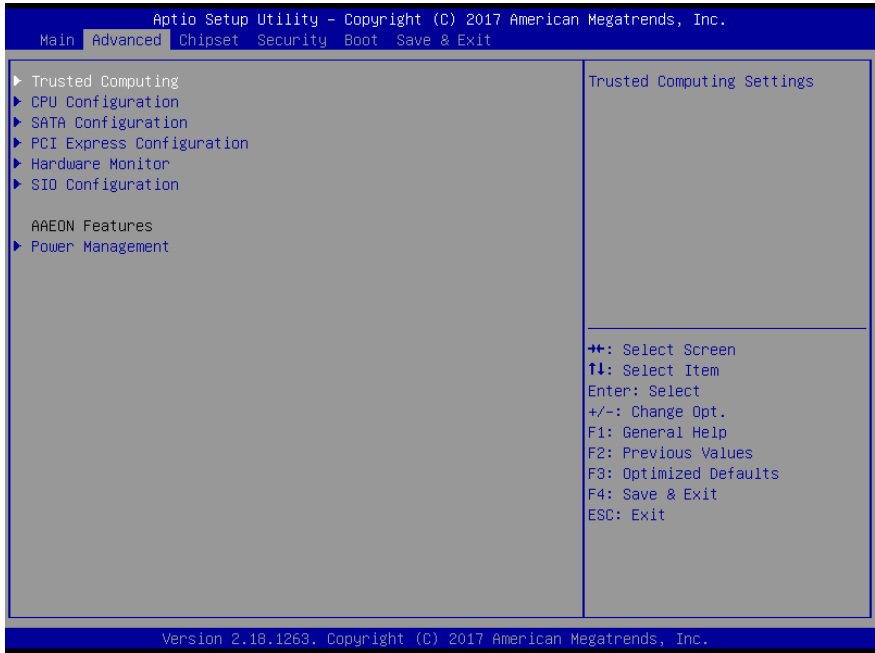
Security – The setup administrator password can be set here

Save & Exit – Save your changes and exit the program

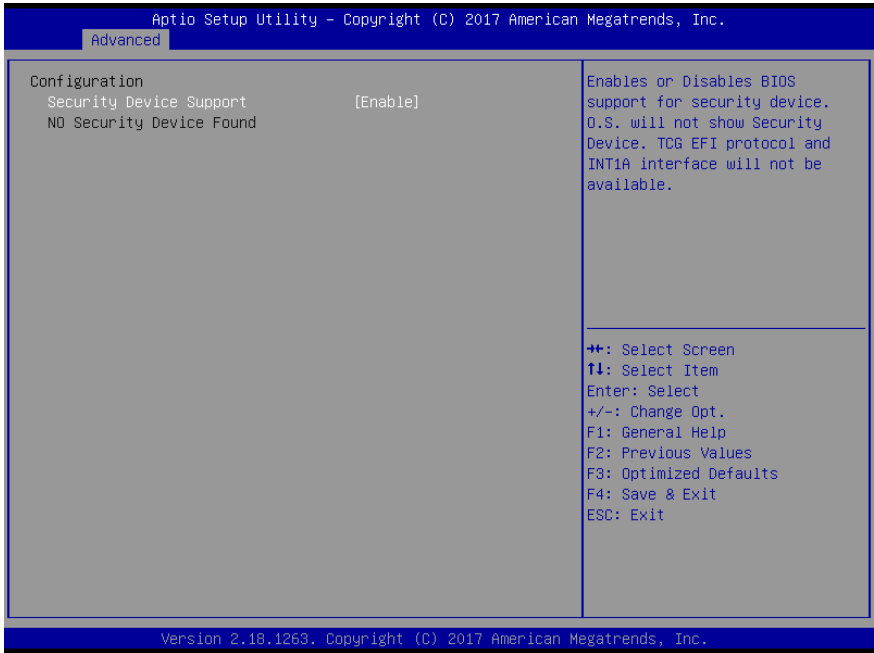
3.3 Setup Submenu: Main



3.4 Setup Submenu: Advanced



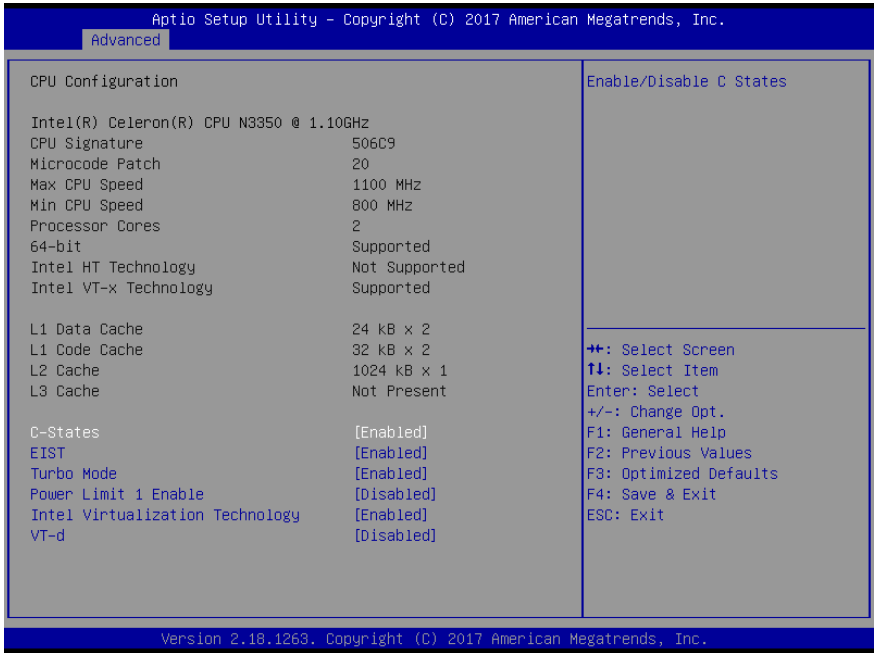
3.4.1 Advanced: Trusted Computing



Options summary:

Security Device Support	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable SATA BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.		

3.4.2 Advanced: CPU Configuration

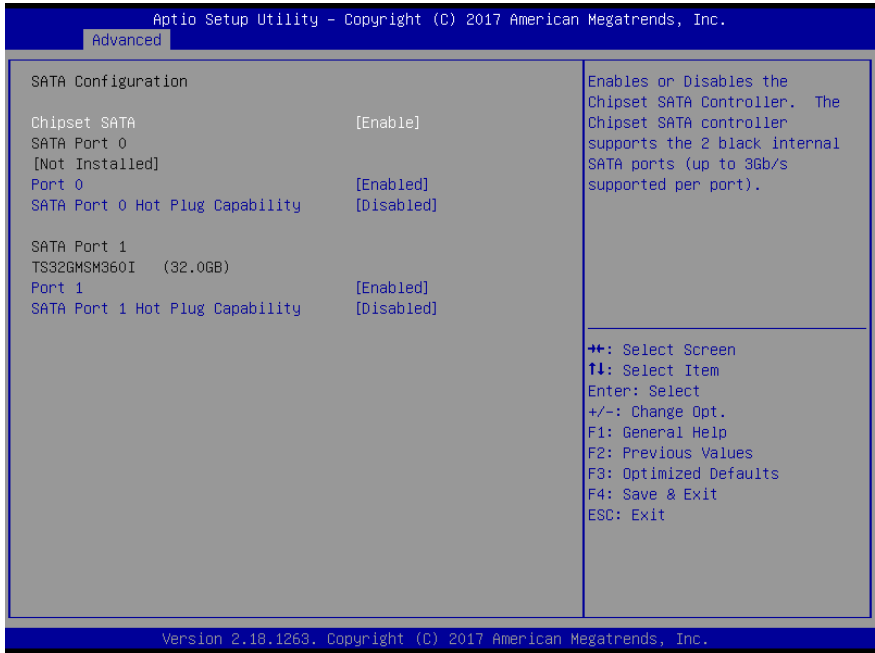


Options summary:

C-States	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enabled/Disable C states		
EIST	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enabled/Disable Intel SpeedStep		
Turbo Mode	Disabled	Optimal Default, Failsafe Default
	Enabled	
Turbo Mode		
Power Limit 1 Enable	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enabled/Disable Power Limit 1		
Intel Virtualization Technology	Disabled	Optimal Default, Failsafe Default
	Enabled	
When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology		

VT-d	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enabled/Disable CPU VT-d		

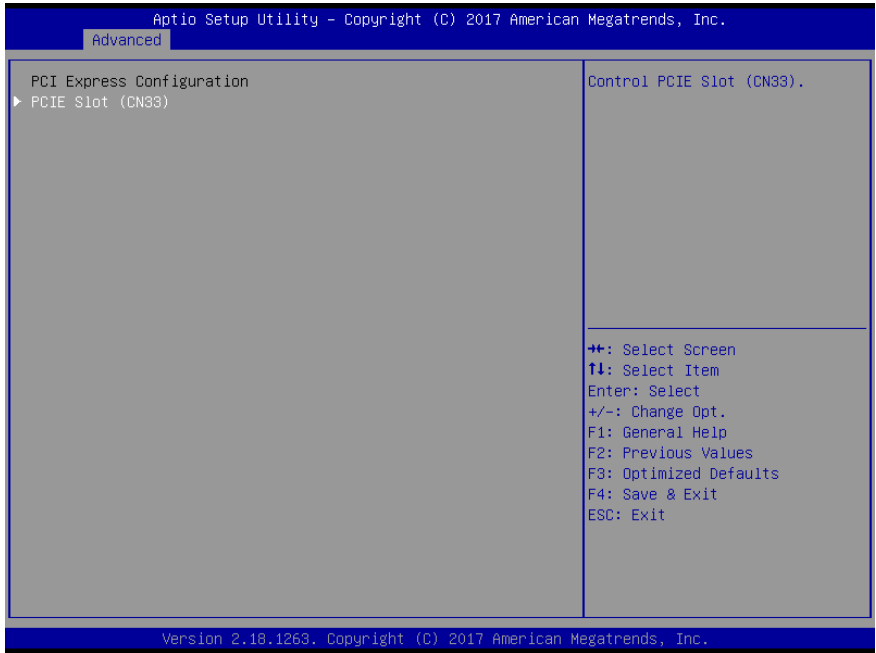
3.4.3 Advanced: SATA Configuration

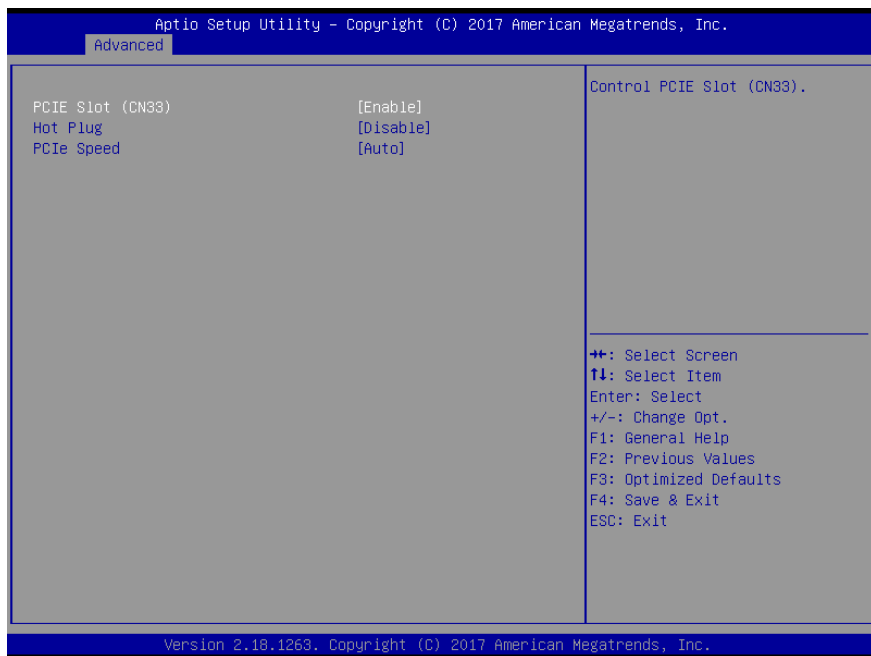


Options summary:

Chipset SATA	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enables or Disables the Chipset SATA Controller. The Chipset SATA controller supports the 2 black internal SATA ports (up to 3Gb/s supported per port)		
Port 0	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable SATA Port.		
SATA Port 0 Hot PlugCapability	Enabled	Optimal Default, Failsafe Default
	Disabled	
If enabled, SATA port will be reported as Hot Plug capable		
Port 1	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable SATA Port.		
SATA Port 1 Hot PlugCapability	Enabled	Optimal Default, Failsafe Default
	Disabled	
If enabled, SATA port will be reported as Hot Plug capable		

3.4.4 Advanced: PCI Express Configuration





Options summary:

PCIe Slot (CN33)	Enable	Optimal Default, Failsafe Default
	Disable	
Control PCIe Slot (CN33)		
Hot Plug	Disable	Optimal Default, Failsafe Default
	Enable	
PCI Express Hot Plug Enable/Disable		
PCIe Speed	Auto	Optimal Default, Failsafe Default
	Gen1	
	Gen2	
Configure PCIe Speed		

3.4.5 Advanced: Hardware Monitor

Aptio Setup Utility - Copyright (C) 2017 American Megatrends, Inc.

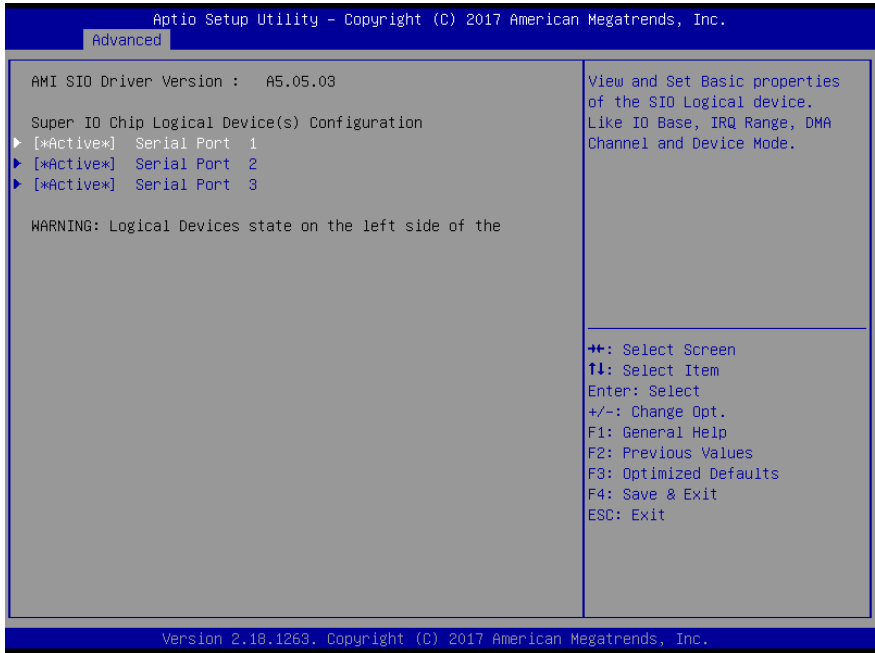
Advanced

CPU Temperature	: +35 ℃
CPU(external) Temperature	: +37 ℃
System Temperature	: +43 ℃
VCORE	: +0.728 V
VMEM	: +1.344 V
+12V	: +11.880 V
+5V	: +5.171 V
+5VSB	: +4.992 V
+3.3V	: +3.408 V
VBAT	: +3.024 V

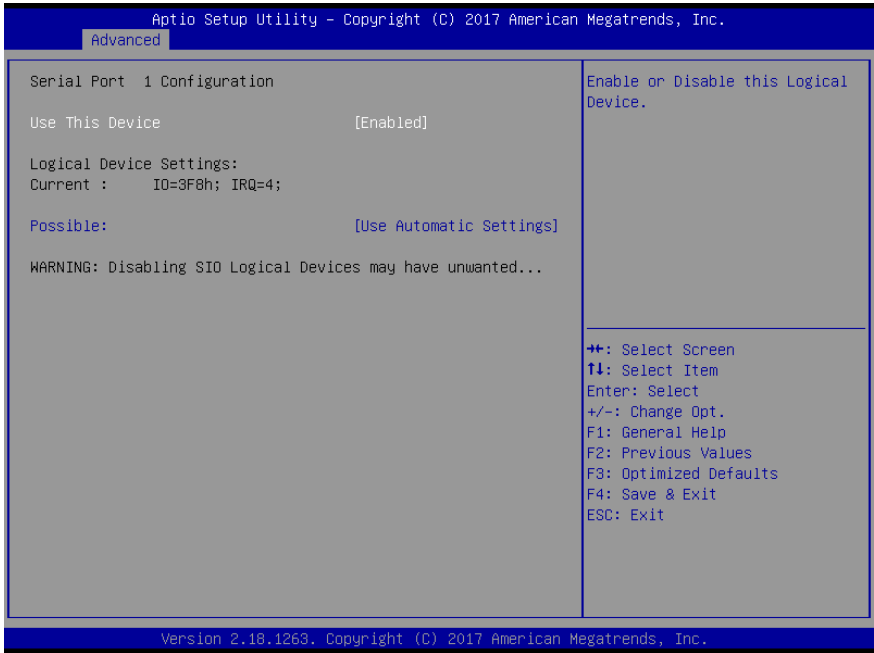
++: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

Version 2.18.1263. Copyright (C) 2017 American Megatrends, Inc.

3.4.6 Advanced: SIO Configuration



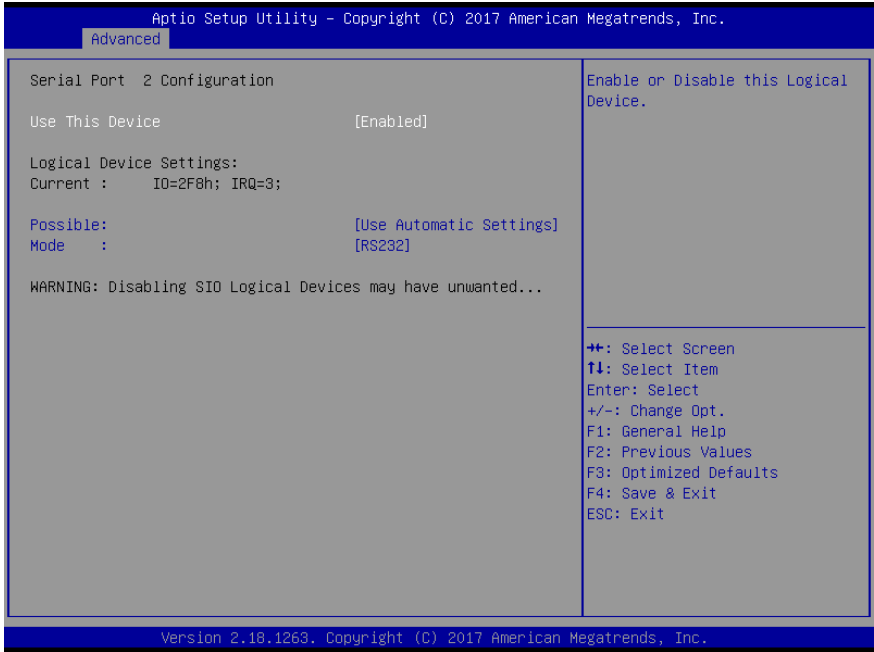
3.4.6.1 SIO Configuration: Serial Port 1 Configuration



Options summary:

Use This Device	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=2F8; IRQ=3;	
	IO=3F8; IRQ=4;	
Allows user to change Device's Resource settings. New settings will be reflected on This Setup Page after System restarts.		

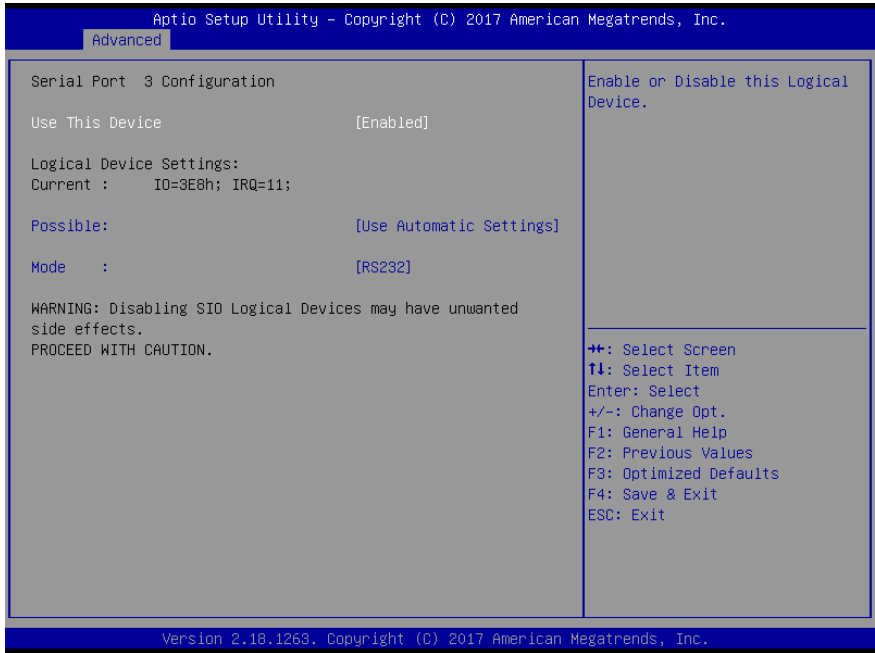
3.4.6.2 SIO Configuration: Serial Port 2 Configuration



Options summary:

Use This Device	Disabled Enabled	Optimal Default, Failsafe Default
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings IO=2F8; IRQ=3; IO=3F8; IRQ=4;	Optimal Default, Failsafe Default
Allows user to change Device's Resource settings. New settings will be reflected on This Setup Page after System restarts.		
Mode:	RS232 RS422 RS485	Optimal Default, Failsafe Default
UART RS232, 422, 485 selection		

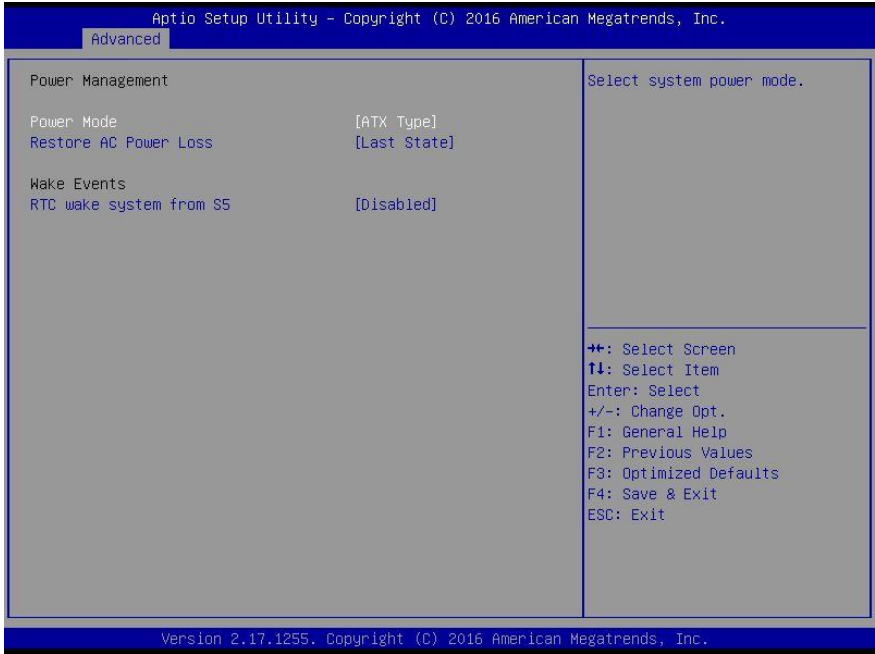
3.4.6.3 SIO Configuration: Serial Port 3 Configuration



Options summary:

Use This Device	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=3E8; IRQ=11;	
	IO=2E8; IRQ=11;	
Allows user to change Device's Resource settings. New settings will be reflected on This Setup Page after System restarts.		
Mode:	RS232	Optimal Default, Failsafe Default
	RS422	
	RS485	
UART RS232, 422, 485 selection		

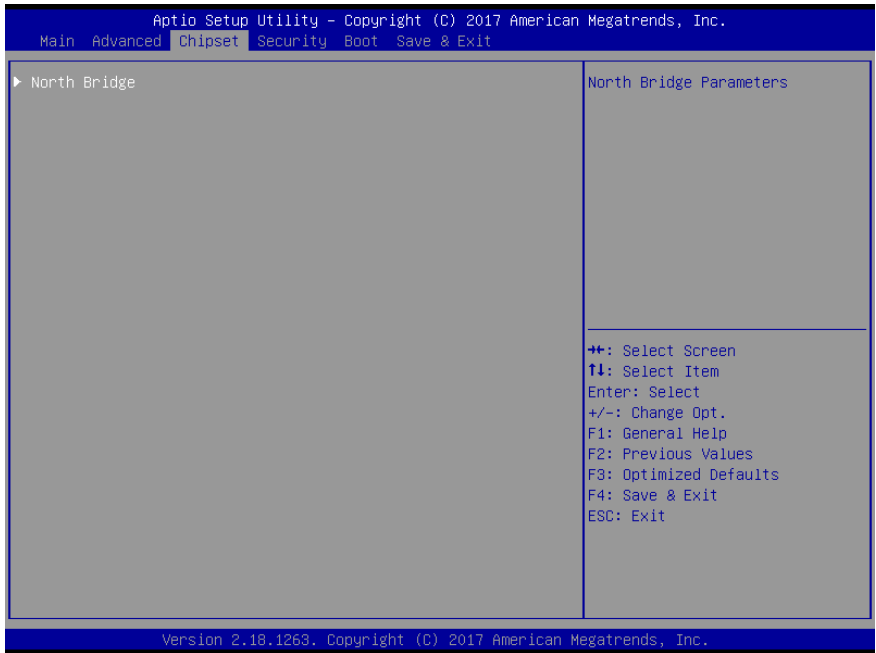
3.4.7 Advanced: Power Management



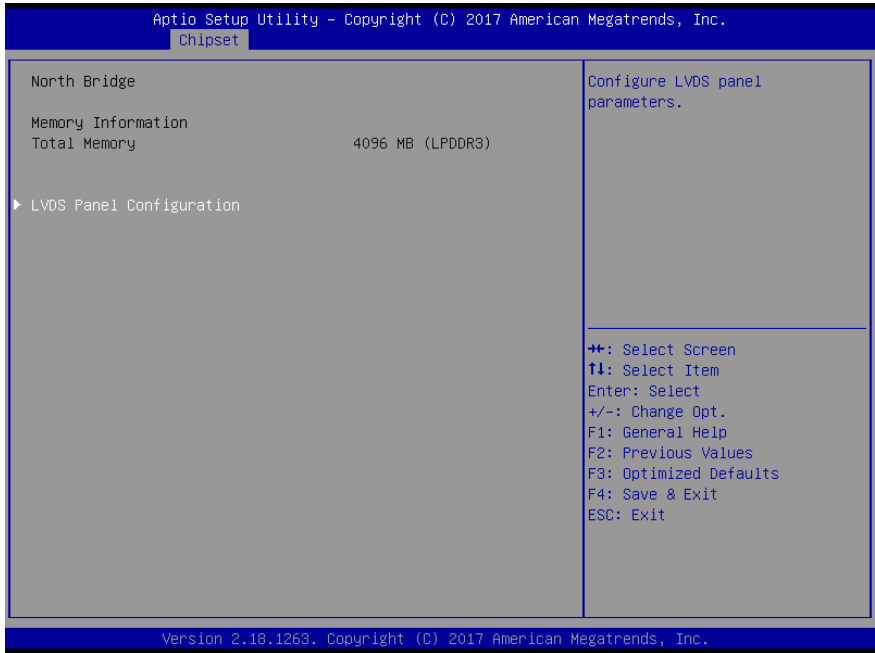
Options summary:

Power Mode	ATX Type	Optimal Default, Failsafe Default
	AT Type	
Select power supply mode.		
Restore AC Power Loss	Last State	Optimal Default, Failsafe Default
	Always On	
Select power state when power is re-applied after a power failure.		
RTC wake system from S5	Disabled	Optimal Default, Failsafe Default
	Fixed Time	
	Dynamic Time	
Fixed Time: System will wake on the hr::min::sec specified./n Dynamic Time: System will wake on the current time + Increase minute(s)		

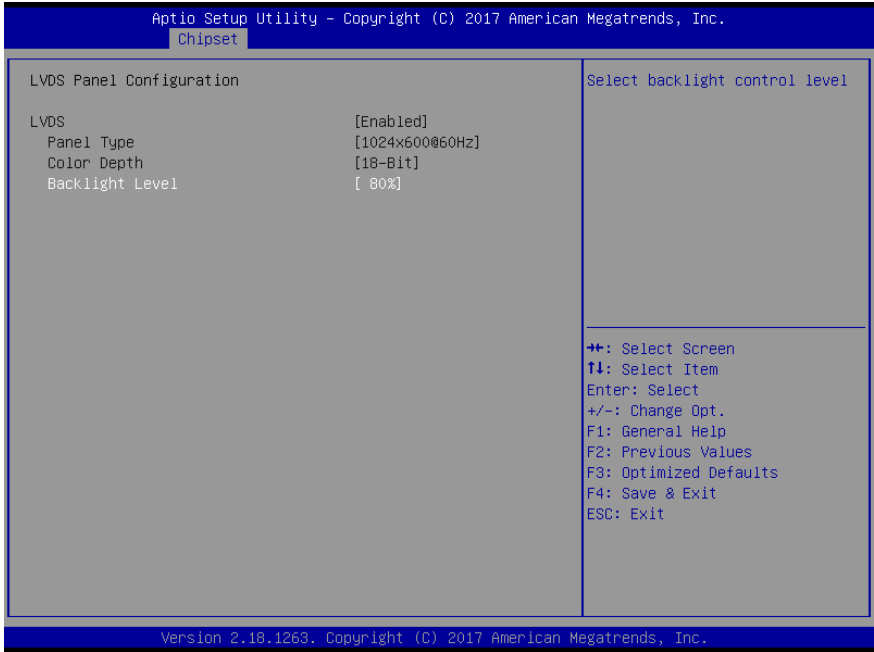
3.5 Setup submenu: Chipset



3.5.1 North Bridge



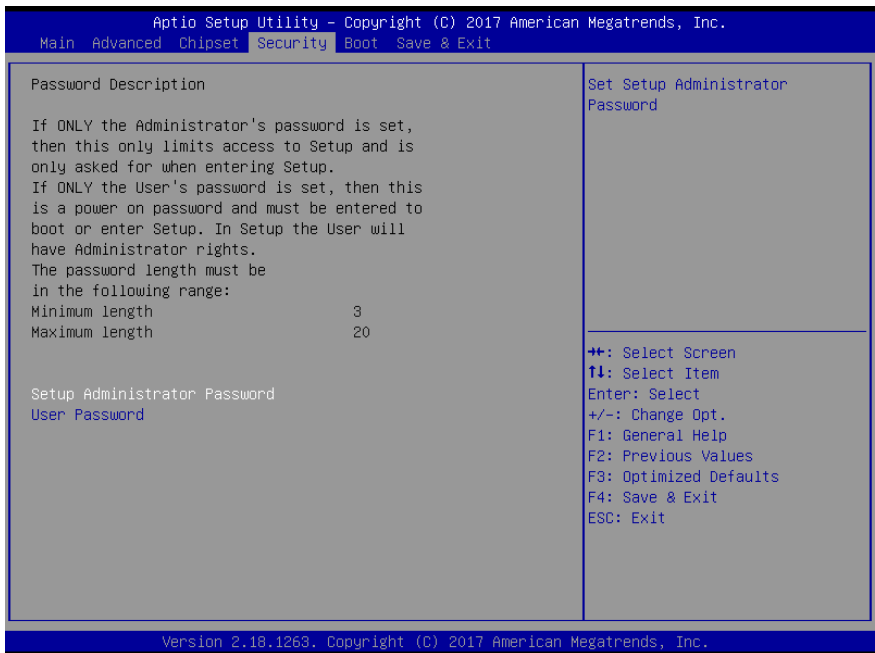
3.5.1.1 LVDS Panel Configuration



Options summary:

Backlight Level	10%	Optimal Default, Failsafe Default
	20%	
	30%	
	40%	
	50%	
	60%	
	70%	
	80%	
	90%	
100%		
Select backlight control level		

3.6 Setup submenu: Security



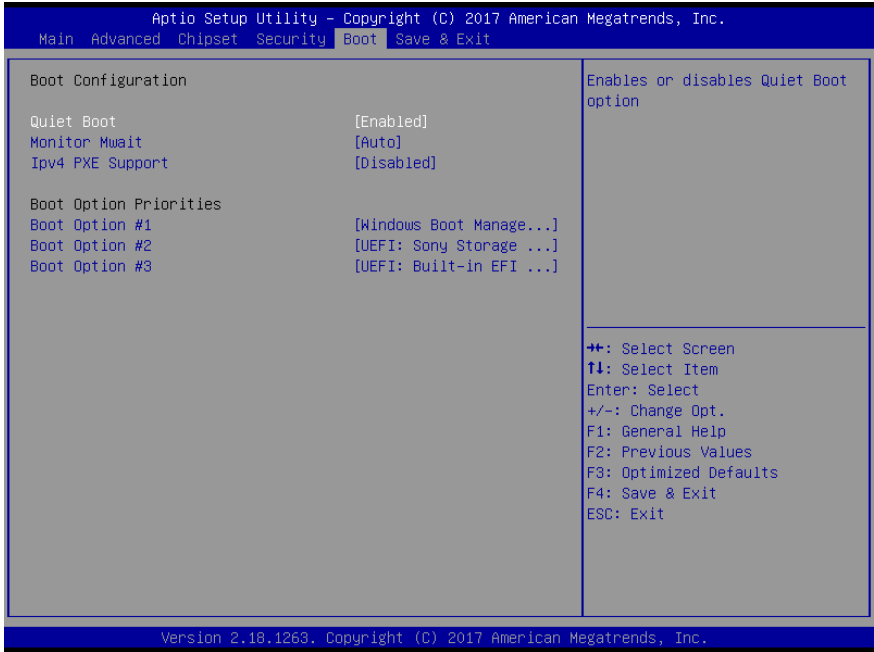
Change User/Administrator Password

You can set a User Password once an Administrator Password is set. The password will be required during boot up, or when the user enters the Setup utility. Please Note that a User Password does not provide access to many of the features in the Setup utility. Select the password you wish to set, press Enter to open a dialog box to enter your password (you can enter no more than six letters or numbers). Press Enter to confirm your entry, after which you will be prompted to retype your password for a final confirmation. Press Enter again after you have retyped it correctly.

Removing the Password

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

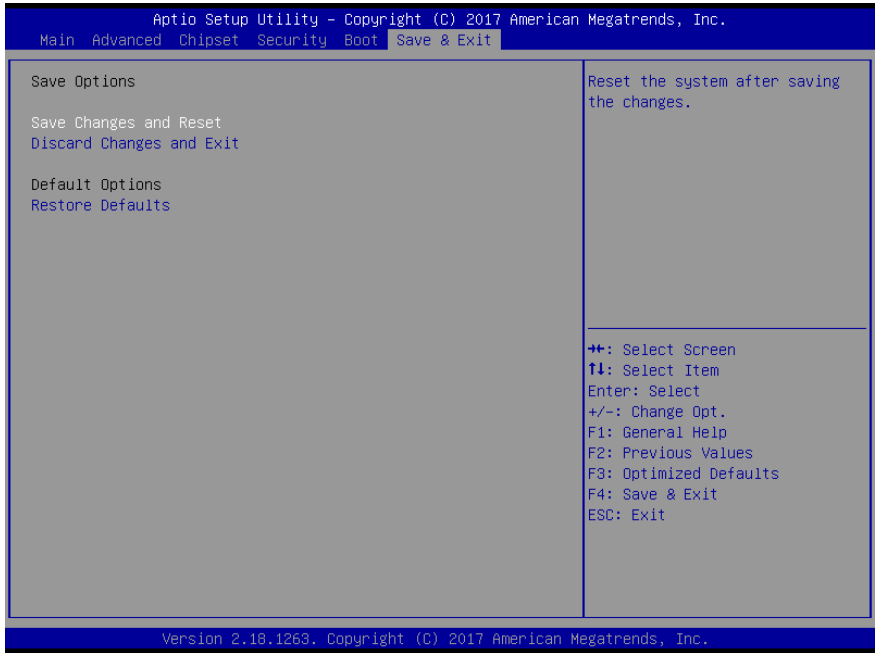
3.7 Setup submenu: Boot



Options summary:

Quiet Boot	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enables or disables Quiet Boot option.		
Monitor Mwait	Disabled	Optimal Default, Failsafe Default
	Enabled	
	Auto	
Enable/Disable Monitor Mwait. To install Linux OS, please set this item to disable.		
Ipv4 PXE Support	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enables Ipv4 PXE Boot Support. If disabled IPV4 PXE boot option will not be created.		

3.8 Setup submenu: Save & Exit



Chapter 4

Drivers Installation

4.1 Product CD/DVD

The ACP-1076 comes with a product DVD that contains all the drivers and utilities you need to setup your product. Insert the DVD and follow the steps in the autorun program to install the drivers.

In case the program does not start, follow the sequence below to install the drivers.

Step 1 – Install Chipset Drivers

1. Open the **STEP 1 - CHIPSET** folder and followed by **SetupChipset.exe** file
2. Follow the instructions
3. Drivers will be installed automatically

Step 2 – Install Graphics Driver

1. Open the **STEP 2 - VGA** folder and followed by the **Setup.exe** file
2. Follow the instructions
3. Drivers will be installed automatically

Step 3 – Install Network Driver

1. Open the **STEP 3 - LAN** folder and followed by the **PROWinx64_21.1.exe** file
2. Follow the instructions
3. Drivers will be installed automatically

Step 4 – Install TXE Driver

1. Open the **STEP 4 - TXE** folder and followed by the **SetupTXE.exe** file
2. Follow the instructions
3. Drivers will be installed automatically

Appendix A

Watchdog Timer Programming

A.1 Watchdog Timer Initial Program

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

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

```

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

```

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

```

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

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

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

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

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

```

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

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

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

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

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

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

Appendix B

I/O Information

B.1 I/O Address Map

Infotainment Multi-Touch Panel PC

ACP-1076





















































▼	Input/output (IO)
📁	[0000000000000000 - 00000000000006F] PCI Express Root Complex
📁	[0000000000000020 - 0000000000000021] Programmable interrupt controller
📁	[0000000000000024 - 0000000000000025] Programmable interrupt controller
📁	[0000000000000028 - 0000000000000029] Programmable interrupt controller
📁	[000000000000002C - 000000000000002D] Programmable interrupt controller
📁	[000000000000002E - 000000000000002F] Motherboard resources
📁	[0000000000000030 - 0000000000000031] Programmable interrupt controller
📁	[0000000000000034 - 0000000000000035] Programmable interrupt controller
📁	[0000000000000038 - 0000000000000039] Programmable interrupt controller
📁	[000000000000003C - 000000000000003D] Programmable interrupt controller
📁	[0000000000000040 - 0000000000000043] System timer
📁	[000000000000004E - 000000000000004F] Motherboard resources
📁	[0000000000000050 - 0000000000000053] System timer
⚠️	[0000000000000060 - 0000000000000060] Standard PS/2 Keyboard
📁	[0000000000000061 - 0000000000000061] Motherboard resources
📁	[0000000000000063 - 0000000000000063] Motherboard resources
⚠️	[0000000000000064 - 0000000000000064] Standard PS/2 Keyboard
📁	[0000000000000065 - 0000000000000065] Motherboard resources
📁	[0000000000000067 - 0000000000000067] Motherboard resources
📁	[0000000000000070 - 0000000000000070] Motherboard resources
📁	[0000000000000070 - 0000000000000077] System CMOS/real time clock
📁	[0000000000000078 - 0000000000000CF7] PCI Express Root Complex
📁	[0000000000000080 - 000000000000008F] Motherboard resources
📁	[0000000000000092 - 0000000000000092] Motherboard resources
📁	[00000000000000A0 - 00000000000000A1] Programmable interrupt controller
📁	[00000000000000A4 - 00000000000000A5] Programmable interrupt controller
📁	[00000000000000A8 - 00000000000000A9] Programmable interrupt controller
📁	[00000000000000AC - 00000000000000AD] Programmable interrupt controller
📁	[00000000000000B0 - 00000000000000B1] Programmable interrupt controller
📁	[00000000000000B2 - 00000000000000B3] Motherboard resources
📁	[00000000000000B4 - 00000000000000B5] Programmable interrupt controller
📁	[00000000000000B8 - 00000000000000B9] Programmable interrupt controller
📁	[00000000000000BC - 00000000000000BD] Programmable interrupt controller
🖨️	[00000000000002F8 - 00000000000002FF] Communications Port (COM2)
🖨️	[00000000000003E8 - 00000000000003EF] Communications Port (COM3)
🖨️	[00000000000003F8 - 00000000000003FF] Communications Port (COM1)
📁	[0000000000000400 - 000000000000047F] Motherboard resources
📁	[00000000000004D0 - 00000000000004D1] Programmable interrupt controller
📁	[0000000000000500 - 00000000000005FE] Motherboard resources
📁	[0000000000000680 - 000000000000069F] Motherboard resources
📁	[0000000000000A00 - 0000000000000A0F] Motherboard resources
📁	[0000000000000A10 - 0000000000000A1F] Motherboard resources
📁	[0000000000000A20 - 0000000000000A2F] Motherboard resources
📁	[0000000000000D00 - 0000000000000FFFF] PCI Express Root Complex
📁	[000000000000D000 - 000000000000DFFF] Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD9
📁	[000000000000E000 - 000000000000EFFF] Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD8
🖥️	[000000000000F000 - 000000000000F03F] Intel(R) HD Graphics
📁	[000000000000F040 - 000000000000F05F] Intel(R) Celeron(R)/Pentium(R) Processor SMBUS - 5AD4
📁	[000000000000F060 - 000000000000F07F] Standard SATA AHCI Controller
📁	[000000000000F080 - 000000000000F083] Standard SATA AHCI Controller
📁	[000000000000F090 - 000000000000F097] Standard SATA AHCI Controller





















































B.2 Memory Address Map





















































Memory	[000000007B800001 - 000000007BFFFFFF]	PCI Express Root Complex
	[000000007C000001 - 000000007FFFFFFF]	PCI Express Root Complex
	[0000000080000000 - 0000000080FFFFFF]	Intel(R) HD Graphics
	[0000000080000000 - 00000000CFFFFFFF]	PCI Express Root Complex
	[0000000081000000 - 00000000810FFFFF]	Intel(R) I211 Gigabit Network Connection #2
	[0000000081000000 - 00000000810FFFFF]	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD9
	[0000000081020000 - 0000000081023FFF]	Intel(R) I211 Gigabit Network Connection #2
	[0000000081100000 - 000000008111FFFF]	Intel(R) I211 Gigabit Network Connection
	[0000000081100000 - 000000008111FFFF]	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD8
	[0000000081120000 - 0000000081123FFF]	Intel(R) I211 Gigabit Network Connection
	[0000000081200000 - 000000008120FFFF]	Intel(R) USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
	[0000000081210000 - 0000000081211FFF]	Standard SATA AHCI Controller
	[0000000081214000 - 00000000812140FF]	Intel(R) Celeron(R)/Pentium(R) Processor SMBUS - 5AD4
	[0000000081215000 - 00000000812157FF]	Standard SATA AHCI Controller
	[0000000081216000 - 00000000812160FF]	Standard SATA AHCI Controller
	[000000008121A000 - 000000008121AFFF]	Intel(R) Trusted Execution Engine Interface
	[0000000090000000 - 000000009FFFFFFF]	Intel(R) HD Graphics
	[00000000D0C00000 - 00000000D0C00653]	Intel(R) Serial IO GPIO Host Controller - INT3452
	[00000000D0C40000 - 00000000D0C40763]	Intel(R) Serial IO GPIO Host Controller - INT3452
	[00000000D0C50000 - 00000000D0C5076B]	Intel(R) Serial IO GPIO Host Controller - INT3452
	[00000000D0C70000 - 00000000D0C70673]	Intel(R) Serial IO GPIO Host Controller - INT3452
	[00000000E0000000 - 00000000EFFFFFFF]	Motherboard resources
	[00000000E0000000 - 00000000EFFFFFFF]	PCI Express Root Complex
	[00000000FEA00000 - 00000000FEAFFFFFFF]	Motherboard resources
	[00000000FED00000 - 00000000FED003FF]	High precision event timer
	[00000000FED01000 - 00000000FED01FFF]	Motherboard resources
	[00000000FED03000 - 00000000FED03FFF]	Motherboard resources
	[00000000FED06000 - 00000000FED06FFF]	Motherboard resources
	[00000000FED08000 - 00000000FED09FFF]	Motherboard resources
	[00000000FED1C000 - 00000000FED1CFFF]	Motherboard resources
	[00000000FED80000 - 00000000FEDBFFFF]	Motherboard resources
	[00000000FEE00000 - 00000000FEEFFFFFFF]	Motherboard resources





















































B.3 IRQ Mapping Chart





















































▼	Interrupt request (IRQ)	
	(ISA) 0x00000000 (00)	System timer
	(ISA) 0x00000001 (01)	Standard PS/2 Keyboard
	(ISA) 0x00000003 (03)	Communications Port (COM2)
	(ISA) 0x00000004 (04)	Communications Port (COM1)
	(ISA) 0x00000008 (08)	High precision event timer
	(ISA) 0x0000000B (11)	Communications Port (COM3)
	(ISA) 0x0000000C (12)	PS/2 Compatible Mouse
	(ISA) 0x0000000E (14)	Intel(R) Serial IO GPIO Host Controller - INT3452
	(ISA) 0x0000000E (14)	Intel(R) Serial IO GPIO Host Controller - INT3452
	(ISA) 0x0000000E (14)	Intel(R) Serial IO GPIO Host Controller - INT3452
	(ISA) 0x0000000E (14)	Intel(R) Serial IO GPIO Host Controller - INT3452
	(ISA) 0x00000036 (54)	Microsoft ACPI-Compliant System
	(ISA) 0x00000037 (55)	Microsoft ACPI-Compliant System
	(ISA) 0x00000038 (56)	Microsoft ACPI-Compliant System
	(ISA) 0x00000039 (57)	Microsoft ACPI-Compliant System
	(ISA) 0x0000003A (58)	Microsoft ACPI-Compliant System
	(ISA) 0x0000003B (59)	Microsoft ACPI-Compliant System
	(ISA) 0x0000003C (60)	Microsoft ACPI-Compliant System
	(ISA) 0x0000003D (61)	Microsoft ACPI-Compliant System
	(ISA) 0x0000003E (62)	Microsoft ACPI-Compliant System
	(ISA) 0x0000003F (63)	Microsoft ACPI-Compliant System
	(ISA) 0x00000040 (64)	Microsoft ACPI-Compliant System
	(ISA) 0x00000041 (65)	Microsoft ACPI-Compliant System
	(ISA) 0x00000042 (66)	Microsoft ACPI-Compliant System
	(ISA) 0x00000043 (67)	Microsoft ACPI-Compliant System
	(ISA) 0x00000044 (68)	Microsoft ACPI-Compliant System
	(ISA) 0x00000045 (69)	Microsoft ACPI-Compliant System
	(ISA) 0x00000046 (70)	Microsoft ACPI-Compliant System
	(ISA) 0x00000047 (71)	Microsoft ACPI-Compliant System
	(ISA) 0x00000048 (72)	Microsoft ACPI-Compliant System
	(ISA) 0x00000049 (73)	Microsoft ACPI-Compliant System
	(ISA) 0x0000004A (74)	Microsoft ACPI-Compliant System
	(ISA) 0x0000004B (75)	Microsoft ACPI-Compliant System
	(ISA) 0x0000004C (76)	Microsoft ACPI-Compliant System
	(ISA) 0x0000004D (77)	Microsoft ACPI-Compliant System
	(ISA) 0x0000004E (78)	Microsoft ACPI-Compliant System
	(ISA) 0x0000004F (79)	Microsoft ACPI-Compliant System
	(ISA) 0x00000050 (80)	Microsoft ACPI-Compliant System
	(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
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 (ISA) 0x00000068 (104)	Microsoft ACPI-Compliant System
 (ISA) 0x00000069 (105)	Microsoft ACPI-Compliant System
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 (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
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 (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
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 (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
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 (ISA) 0x000000A1 (161)	Microsoft ACPI-Compliant System
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 (ISA) 0x0000019D (413)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019E (414)	Microsoft ACPI-Compliant System
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 (ISA) 0x000001A1 (417)	Microsoft ACPI-Compliant System
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 (ISA) 0x000001A8 (424)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A9 (425)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AA (426)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AB (427)	Microsoft ACPI-Compliant System
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 (ISA) 0x000001BA (442)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BB (443)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BC (444)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BD (445)	Microsoft ACPI-Compliant System
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 (ISA) 0x000001C9 (457)	Microsoft ACPI-Compliant System
 (ISA) 0x000001CA (458)	Microsoft ACPI-Compliant System
 (ISA) 0x000001CB (459)	Microsoft ACPI-Compliant System
 (ISA) 0x000001CC (460)	Microsoft ACPI-Compliant System
 (ISA) 0x000001CD (461)	Microsoft ACPI-Compliant System
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 (ISA) 0x000001E1 (481)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E2 (482)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E3 (483)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E4 (484)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E5 (485)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E6 (486)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E7 (487)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E8 (488)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E9 (489)	Microsoft ACPI-Compliant System
 (ISA) 0x000001EA (490)	Microsoft ACPI-Compliant System
 (ISA) 0x000001EB (491)	Microsoft ACPI-Compliant System
 (ISA) 0x000001EC (492)	Microsoft ACPI-Compliant System
 (ISA) 0x000001ED (493)	Microsoft ACPI-Compliant System
 (ISA) 0x000001EE (494)	Microsoft ACPI-Compliant System
 (ISA) 0x000001EF (495)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F0 (496)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F1 (497)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F2 (498)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F3 (499)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F4 (500)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F5 (501)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F6 (502)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F7 (503)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F8 (504)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F9 (505)	Microsoft ACPI-Compliant System
 (ISA) 0x000001FA (506)	Microsoft ACPI-Compliant System
 (ISA) 0x000001FB (507)	Microsoft ACPI-Compliant System
 (ISA) 0x000001FC (508)	Microsoft ACPI-Compliant System

 (ISA) 0x000001FD (509)	Microsoft ACPI-Compliant System
 (ISA) 0x000001FE (510)	Microsoft ACPI-Compliant System
 (ISA) 0x000001FF (511)	Microsoft ACPI-Compliant System
 (PCI) 0xFFFFFFFF0 (-16)	Intel(R) USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
 (PCI) 0xFFFFFFFF1 (-15)	Intel(R) I211 Gigabit Network Connection #2
 (PCI) 0xFFFFFFFF2 (-14)	Intel(R) I211 Gigabit Network Connection #2
 (PCI) 0xFFFFFFFF3 (-13)	Intel(R) I211 Gigabit Network Connection #2
 (PCI) 0xFFFFFFFF4 (-12)	Intel(R) I211 Gigabit Network Connection #2
 (PCI) 0xFFFFFFFF5 (-11)	Intel(R) I211 Gigabit Network Connection
 (PCI) 0xFFFFFFFF6 (-10)	Intel(R) I211 Gigabit Network Connection
 (PCI) 0xFFFFFFFF7 (-9)	Intel(R) I211 Gigabit Network Connection
 (PCI) 0xFFFFFFFF8 (-8)	Intel(R) I211 Gigabit Network Connection
 (PCI) 0xFFFFFFFF9 (-7)	Intel(R) Trusted Execution Engine Interface
 (PCI) 0xFFFFFFFFA (-6)	Intel(R) HD Graphics
 (PCI) 0xFFFFFFFFB (-5)	Standard SATA AHCI Controller
 (PCI) 0xFFFFFFFFC (-4)	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5ADA
 (PCI) 0xFFFFFFFFD (-3)	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD9
 (PCI) 0xFFFFFFFFE (-2)	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD8