BOXER-6404M

Fanless Embedded Box PC

User's Manual 1st Ed

Last Updated: April 26, 2016

Copyright Notice

This document is copyrighted, 2016. All rights are reserved. The original manufacturer reserves the right to make improvements to the products described in this manual at any time without notice.

No part of this manual may be reproduced, copied, translated, or transmitted in any form or by any means without the prior written permission of the original manufacturer. Information provided in this manual is intended to be accurate and reliable. However, the original manufacturer assumes no responsibility for its use, or for any infringements upon the rights of third parties that may result from its use.

The material in this document is for product information only and is subject to change without notice. While reasonable efforts have been made in the preparation of this document to assure its accuracy, AAEON assumes no liabilities resulting from errors or omissions in this document, or from the use of the information contained herein.

AAEON reserves the right to make changes in the product design without notice to its users.

Acknowledgement

All other products' name or trademarks are properties of their respective owners.

- Microsoft Windows is a registered trademark of Microsoft Corp.
- Intel, Pentium, Celeron, and Xeon are registered trademarks of Intel Corporation
- Atom is a trademark of Intel Corporation
- ITE is a trademark of Integrated Technology Express, Inc.
- IBM and VGA are trademarks of International Business Machines Corporation.

All other product names or trademarks are properties of their respective owners.

Packing List

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

Item	Quantity
● BOXER-6404M	1
● Power adapter	1
● Product DVD with User's Manual (in pdf) and drivers	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

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 Embedded Box PC/ Industrial System

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	○	○	○	○	○	○
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、电源为选购品。

China RoHS Requirement (EN)

Poisonous or Hazardous Substances or Elements in Products

AAEON Embedded Box PC/ Industrial System

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	O	O	O	O	O	O
Wires & Connectors for External Connections	O	O	O	O	O	O
Chassis	O	O	O	O	O	O
CPU & RAM	O	O	O	O	O	O
Hard Disk	O	O	O	O	O	O
PSU	O	O	O	O	O	O

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.

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.

Note: The Environment Friendly Use Period as labeled on this product is applicable under normal usage only

Table of Contents

Chapter 1 - Product Specifications 1
1.1 Specifications 2
Chapter 2 – Hardware Information 4
2.1 Dimensions 5
2.2 List of Jumpers 6
2.2.1 Clear CMOS Jumper (JP12, pin 1,3,5) 7
2.2.2 Auto Power Button Enable/ Disable Selection (JP12, pin 2,4,6) 7
2.2.3 Push Power Button with Orange LED (SW1) 7
2.3 List of Connectors 8
2.3.1 COM Port RS-232 (CN1) 9
2.3.2 +12 V Input (CN2) 9
2.3.3 LAN (RJ-45) Port 1,2,3,4 (JP3,4,5,6) 10
2.3.4 +5 V Output for SATA HDD (CN7) 10
2.3.5 SATA Port (CN8) 11
2.3.6 DDR3L SO-DIMM Slot (CN9) 11
2.3.7 C-FAST Card Connector (CN11) 11
2.3.8 MiniCard Slot (CN13) (USB Port2 Only) 12
2.3.9 Battery (CN14) 14
2.3.10 USB 3.0 Port 0 (CN17) 15
2.3.11 USB 2.0 Port 1, 3 (CN18,19) 15
2.3.12 HDMI Port 1, 2 (CN20,21) 16
2.3.13 LPC Port (CN22) 17
2.3.14 SPI Programming Header (CN23) 17
2.4 Installing DRAM 19
2.5 Installing HDD 21

Chapter 3 - AMI BIOS Setup 24
3.1 System Test and Initialization 25
3.2 AMI BIOS Setup 26
3.3 Setup Submenu: Main 27
3.4 Setup Submenu: Advanced 28
3.4.1 Advanced: ACPI Settings 29
3.4.2 Advanced: F81801 Super IO Configuration 31
3.4.2.1 Super IO Configuration: Serial Port 1 Configuration 32
3.4.3 Advanced: H/W Monitor 33
3.4.4 Advanced: CPU Configuration 34
3.4.4.1 CPU Configuration: Socket 0 CPU Information 35
3.4.5 Advanced: SATA Configuration 36
3.4.6 Advanced: USB Configuration 38
3.5 Setup submenu: Chipset 40
3.5.1 Chipset: North Bridge 41
3.5.2 Chipset: South Bridge 42
3.5.2.1 South Bridge: USB Configuration (Default Setting) 43
3.6 Security 44
3.7 Setup submenu: Boot 45
3.8 Setup submenu: Save & Exit 46
Chapter 4 – Drivers Installation 47
4.1 Product CD/DVD 48
Appendix A - Watchdog Timer Programming 50
A.1 Watchdog Timer Initial Program 51
A.2 Watchdog Sample Program 52
Appendix B - I/O Information 55
B.1 I/O Address Map 56
B.2 Memory Address Map 58

B.3 IRQ Mapping Chart 59
Appendix C – Electrical Specifications for I/O Ports 70
C.1 Electrical Specifications for I/O Ports 71

Chapter 1

Product Specifications

1.1 Specifications

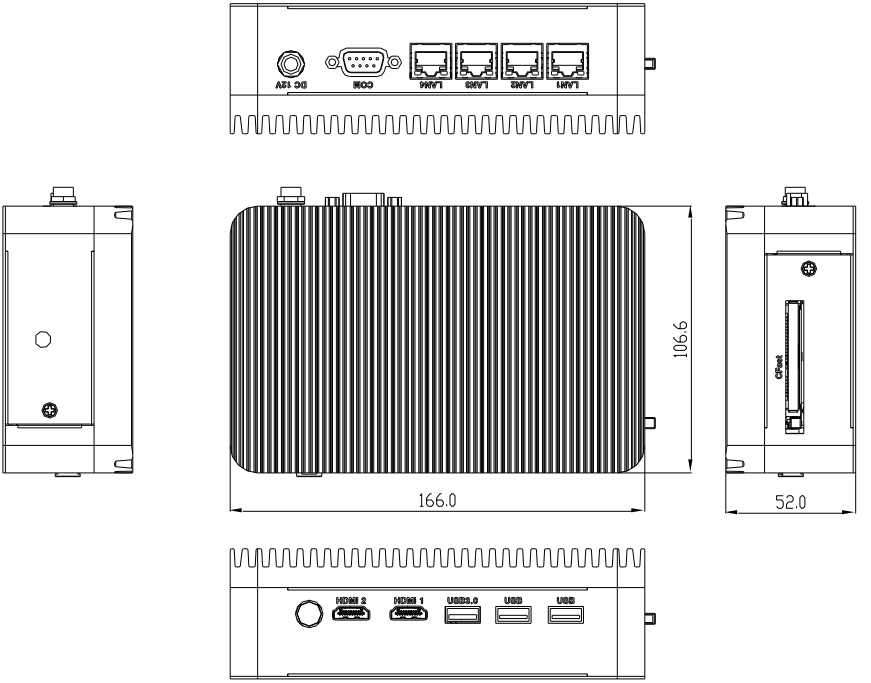
● Processor		Intel® Atom™ N2807/ Celeron® J1900
● System Memory		204-pin DDR3L 1333 SODIMM x 1, Up to 8 GB (2 GB Pre-installed)
● Chipset		-
● Display Interface	HDMI	HDMI x 2
● Storage Device	CF-SATA	CFast™ x 1
	HDD/SSD	2.5" HDD/SSD bay x 1
● Network	LAN	Gigabit Ethernet
	Wireless	Optional
● Front I/O	USB Host	USB 2.0 x 2, USB 3.0 x 1
	LAN	—
	Serial Port	—
	DIO	—
	Audio	—
	KB/MS	—
	Others	Power On/Off button x 1, HDMI x 2
● Rear I/O	USB Host	—
	LAN	RJ-45 x 4
	Serial Port	RS-232 x 1
	DIO	—
	Audio	—
	KB/MS	—
	Others	—
● Expansion	PCIe	—

	PCI	—
	MiniCard	Half MiniCard x 1 (USB Only)
	Mini PCI	—
	Others	—
● Power Requirement		12 V DC-in with lockable connector ATX mode (optional AT by jumper/ BIOS setting)
● System Cooling		Passive cooling
● Mounting		Wall-mount
● Dimension (W x H x D)		166 x 106.6 x 52 mm (6.5 x 4.2 x 2.05")
● OS Support		Windows® Embedded Standard 8 32/64-bit, Windows® Embedded Standard 7 32/64-bit, Windows® 10 32/64-bit Windows® 8.1 32/64-bit Windows® 7 32/64-bit Linux by Fedora kernel 2.6.3 up
● Certification	EMC	CE/FCC Class A
	Safety	—
● Operating Temperature		-30~ 75°C (-22 ~ 167°F) with 0.5 m/s airflow (HDD)
● Storage Temperature		-30 ~ 80°C (-22 ~ 176°F)
● Anti-Vibration		5 Grms/ 5~500 Hz/ operation (CFast) 1 Grms/ 5~500 Hz/ operation (HDD)
● Anti-Shock		50 G peak acceleration (11 msec. duration) – (CFast)
● EMC		CE/FCC Class A

Chapter 2

Hardware Information

2.1 Dimensions

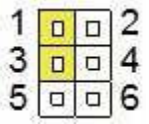


2.2 List of Jumpers

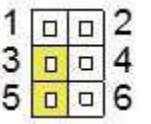
Please refer to the table below for all of the system's jumpers that you can configure for your application

Label	Function
JP12 (1,3,5)	Clear CMOS Jumper
JP12 (2,4,6)	Auto Power Button Enable/ Disable Selection
SW1	Push Power Button with Orange LED

2.2.1 Clear CMOS Jumper (JP12, pin 1,3,5)

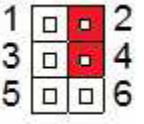


Normal (Default)

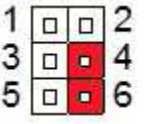


Clear CMOS

2.2.2 Auto Power Button Enable/ Disable Selection (JP12, pin 2,4,6)

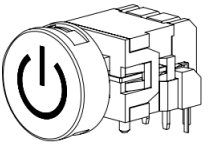


Enable

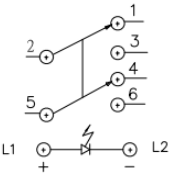


Disable (Default)

2.2.3 Push Power Button with Orange LED (SW1)



CIRCUIT



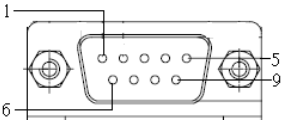
Pin	Pin Name	Signal Type	Signal Level
L1	+V5S	IN	+5V
L2	GND	GND	GND
1	NC		
2	PWRBTN#	OUT	
3	GND	GND	GND
4	NC		
5	NC		
6	NC		

2.3 List of Connectors

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

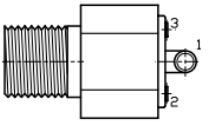
Label	Function
CN1	COM port RS-232
CN2	+12 V Input
CN3	LAN (RJ-45) Port
CN4	LAN (RJ-45) Port
CN5	LAN (RJ-45) Port
CN6	LAN (RJ-45) Port
CN7	+5V Output for SATA HDD
CN8	SATA Port
CN9	DDR3L SO-DIMM Slot
CN11	C-FAST CARD Connector
CN13	MiniCard Slot (USB2.0 port 2 ONLY)
CN14	Battery
CN17	USB3.0 port 0
CN18	USB2.0 port 3
CN19	USB2.0 port 1
CN20	HDMI1 Port
CN21	HDMI 2 Port
CN22	LPC Expansion Connector
CN23	SPI Programming Header

2.3.1 COM Port RS-232 (CN1)



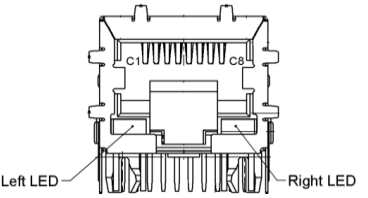
Pin	Pin Name	Signal Type	Signal Level
1	DCD	IN	
2	RX	IN	
3	TX	OUT	±9V
4	DTR	OUT	±9V
5	GND	GND	
6	DSR	IN	
7	RTS	OUT	±9V
8	CTS	IN	
9	RI	IN	

2.3.2 +12 V Input (CN2)



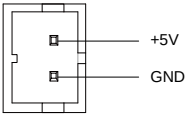
Pin	Pin Name	Signal Type	Signal Level
1	+12 V	PWR	+12 V
2-3	GND	GND	

2.3.3 LAN (RJ-45) Port 1,2,3,4 (JP3,4,5,6)



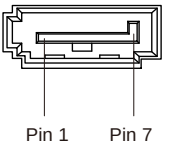
Pin	Pin Name	Signal Type	Signal Level
C1	MDI0+	DIFF	
C2	MDI0-	DIFF	
C3	MDI1+	DIFF	
C4	MDI2+	DIFF	
C5	MDI2-	DIFF	
C6	MDI1-	DIFF	
C7	MDI3+	DIFF	
C8	MDI3-	DIFF	

2.3.4 +5 V Output for SATA HDD (CN7)



Pin	Pin Name	Signal Type	Signal Level
1	+V5S	PWR	+5V
2	GND	GND	

2.3.5 SATA Port (CN8)



Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	SATA_TXP1	DIFF	
3	SATA_TXN1	DIFF	
4	GND	GND	
5	SATA_RXN1	DIFF	
6	SATA_RXP1	DIFF	
7	GND	GND	

2.3.6 DDR3L SO-DIMM Slot (CN9)

Standard Specification

2.3.7 C-FAST Card Connector (CN11)

Pin	Pin Name	Signal Type	Signal Level
S1	GND	GND	
S2	SATA_TXP0	DIFF	
S3	SATA_TXN0	DIFF	
S4	GND	GND	
S5	SATA_RXN0	DIFF	
S6	SATA_RXP0	DIFF	
S7	GND	GND	

P1	NC		
P2	GND	GND	
P3	NC		
P4	NC		
P5	NC		
P6	NC		
P7	GND	GND	
P8	CFD_LED#	OUT	+3.3 V
P9	NC		
P10	NC		
P11	NC		
P12	NC		
P13	+V3.3S	PWR	+3.3 V
P14	+V3.3S	PWR	+3.3 V
P15	GND	GND	
P16	GND	GND	
P17	NC		

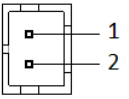
2.3.8 MiniCard Slot (CN13) (USB Port2 Only)

Pin	Pin Name	Signal Type	Signal Level
1	WAKE_PCIE0#_3P3	IN	
2	+V3.3A	PWR	+3.3 V
3	NC		
4	GND	GND	
5	NC		
6	+V1.5S	PWR	+1.5 V

7	NC	IN	
8	NC	PWR	
9	GND	GND	
10	NC	I/O	
11	NC	DIFF	
12	NC	IN	
13	NC	DIFF	
14	NC	IN	
15	GND	GND	
16	NC	PWR	
17	NC		
18	GND	GND	
19	NC		
20	WL_DISABLED0#	OUT	+3.3 V
21	GND	GND	
22	BUF_PLT_RST#	OUT	+3.3 V
23	NC	DIFF	
24	+V3.3A	PWR	+3.3 V
25	NC	DIFF	
26	GND	GND	
27	GND	GND	
28	+V1.5S	PWR	+1.5 V
29	GND	GND	
30	SMB_CLK_3P3_FA	I/O	+3.3 V
31	NC	DIFF	
32	SMB_DATA_3P3_FA	I/O	+3.3 V
33	NC	DIFF	

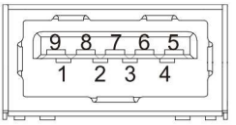
34	GND	GND	
35	GND	GND	
36	USB_DN2	DIFF	
37	GND	GND	
38	USB_DP2	DIFF	
39	+V3.3A	PWR	+3.3 V
40	GND	GND	
41	+V3.3A	PWR	+3.3 V
42	NC		
43	NC		
44	NC		
45	NC		
46	NC		
47	NC		
48	+V1.5S	PWR	+1.5 V
49	NC		
50	GND	GND	
51	NC		
52	+V3.3A	PWR	+3.3 V

2.3.9 Battery (CN14)



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

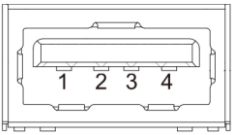
2.3.10 USB 3.0 Port 0 (CN17)



Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5 V
2	USB0_D-	DIFF	
3	USB0_D+	DIFF	
4	GND	GND	
5	USB0_SSRX–	DIFF	
6	USB0_SSRX+	DIFF	
7	GND	GND	
8	USB0_SSTX-	DIFF	
9	USB0_SSTX+	DIFF	

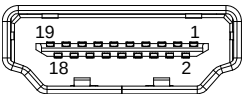
2.3.11 USB 2.0 Port 1, 3 (CN18,19)

Standard USB Connector



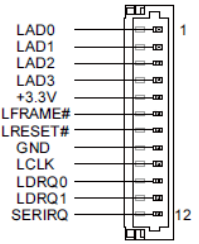
Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5 V
2	USB1_D-	DIFF	
3	USB1_D+	DIFF	
4	GND	GND	

2.3.12 HDMI Port 1, 2 (CN20,21)



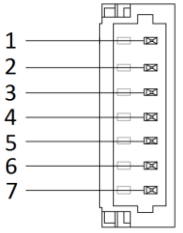
Pin	Pin Name	Signal Type	Signal Level
1	TMDS_DAT2+	DIFF	
2	GND	GND	
3	TMDS_DAT2-	DIFF	
4	TMDS_DAT1+	DIFF	
5	GND	GND	
6	TMDS_DAT1-	DIFF	
7	TMDS_DAT0+	DIFF	
8	GND	GND	
9	TMDS_DAT0-	DIFF	
10	TMDS_CLK+	DIFF	
11	GND	GND	
12	TMDS_CLK-	DIFF	
13	NC		
14	NC		
15	DDC_CLK	I/O	+5 V
16	DDC_DATA	I/O	+5 V
17	GND	GND	
18	+5V	I/O	+5 V
19	HPLG_DETECT	IN	

2.3.13 LPC Port (CN22)



Pin	Pin Name	Signal Type	Signal Level
1	LAD0	I/O	+3.3 V
2	LAD1	I/O	+3.3 V
3	LAD2	I/O	+3.3 V
4	LAD3	I/O	+3.3 V
5	+V3.3S	PWR	+3.3 V
6	LFRAME#	IN	
7	LRESET#	OUT	+3.3 V
8	GND	GND	
9	LCLK	OUT	
10	LDRQ0	IN	
11	LDRQ1	IN	
12	SERIRQ	I/O	+3.3 V

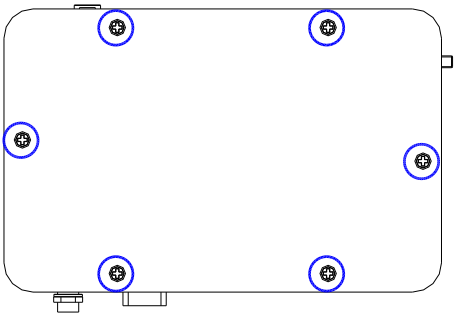
2.3.14 SPI Programming Header (CN23)



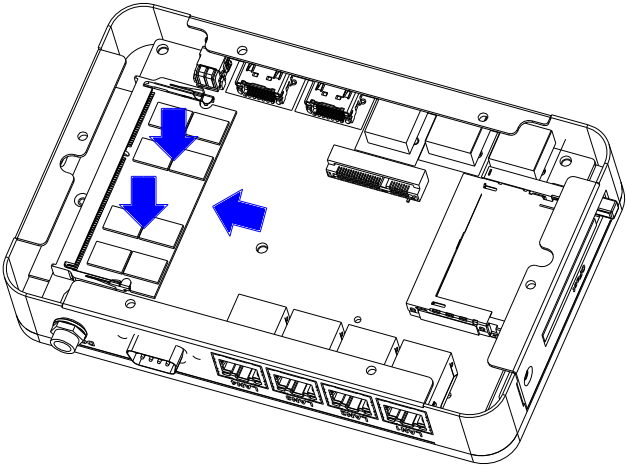
Pin	Pin Name	Signal Type	Signal Level
1	SPI_SO_F	OUT	
2	GND	GND	
3	SPI_CLK_F	IN	
4	+V3.3A_SPI	PWR	+3.3 V
5	SPI_SI_F	IN	
6	SPI_CS0#_F	IN	
7	NC		

2.4 Installing DRAM

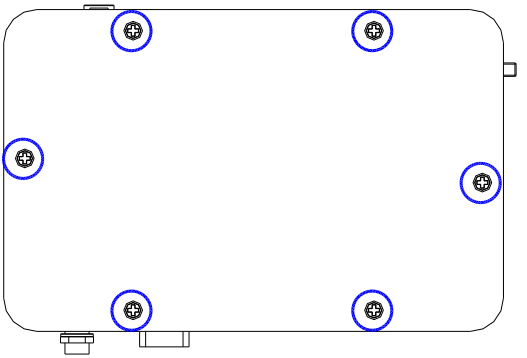
1. Remove the screws as shown below



2. Slot in the RAM diagonally into the slot, push down to secure.

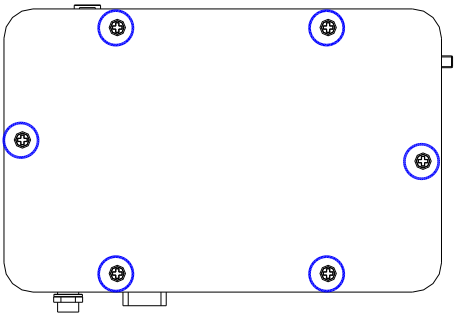


3. Re-tighten the screws

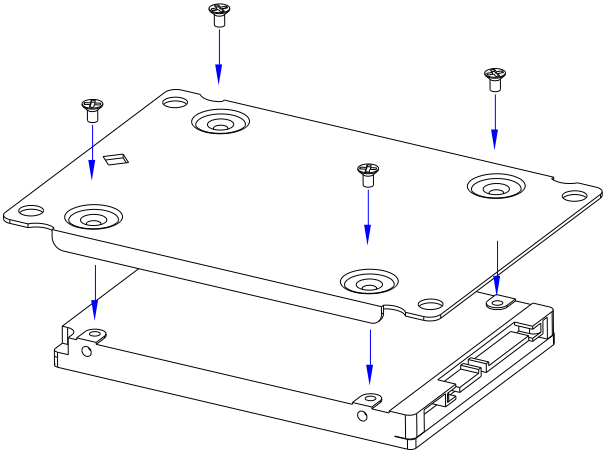


2.5 Installing HDD

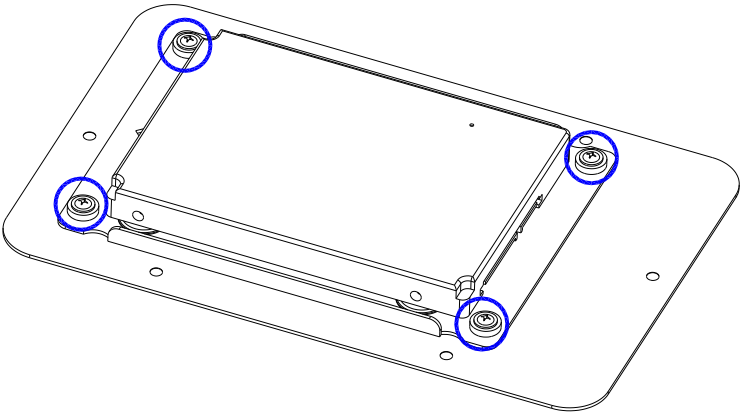
1. Remove the screws as shown below



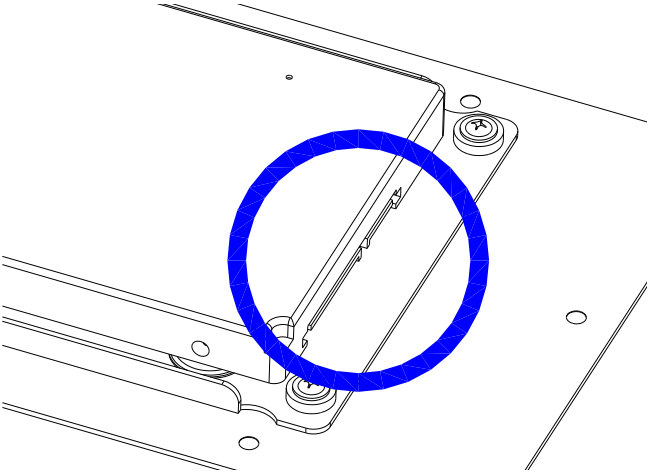
2. Attach the HDD bracket to the HDD with screws



3. Attach the assembled HDD to the underside of the cover with screws



4. Connect up the HDD using the cables below



Serial ATA
SATA Power
Insert I/O Board Side

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 <Del> or <F2> 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

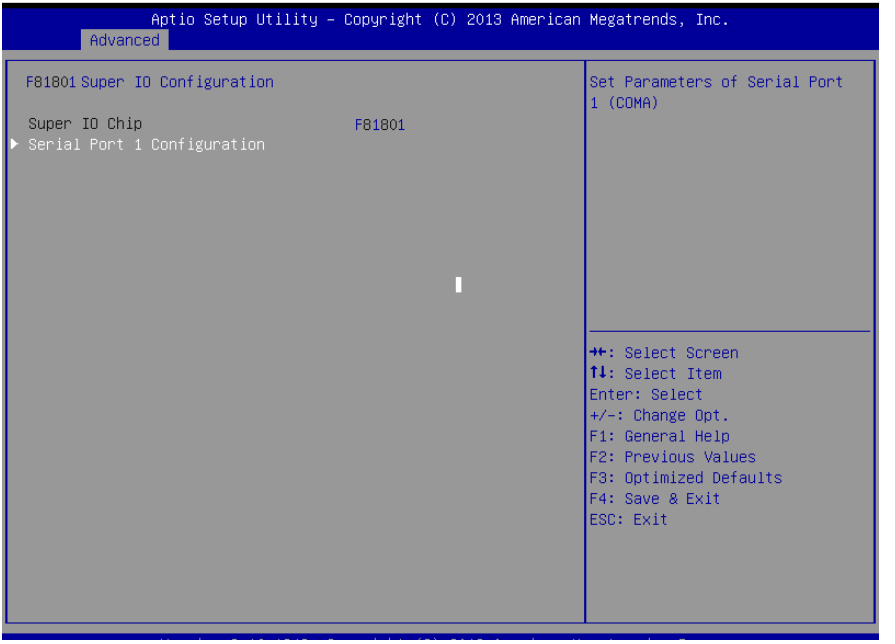
3.4.1 Advanced: ACPI Settings

Options summary:

ACPI Sleep State	Suspend Disabled	
	S3 (Suspend to RAM)	Optimal Default, Failsafe Default
Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.		
Restore AC Power Loss	Power Off	Optimal Default, Failsafe Default
	Power On	
	Last State	
Select AC power state when power is re-applied after a power failure		
Power Mode	ATX Type	Optimal Default, Failsafe Default

	AT Type	
Select power supply mode		
Wake on Ring	Disabled	Optimal Default, Failsafe Default
	Enabled	
En/Disabled wake from ring		
Wake system with Fixed Time	*Disabled*	
	Enabled	
Enable or disable System wake on alarm event. Wake up time is setting by following settings.		
Wake up day	0-31	
Select 0 for daily system wake up		
Wake up hour	0-23	
Wake up minute	0-59	
Wake up second	0-59	
Wake system with Dynamic Time	*Disabled*	
	Enabled	
Enable or disable System wake on alarm event. Wake up time is current time + Increase minutes.		
Wake up minute increase	1-5	

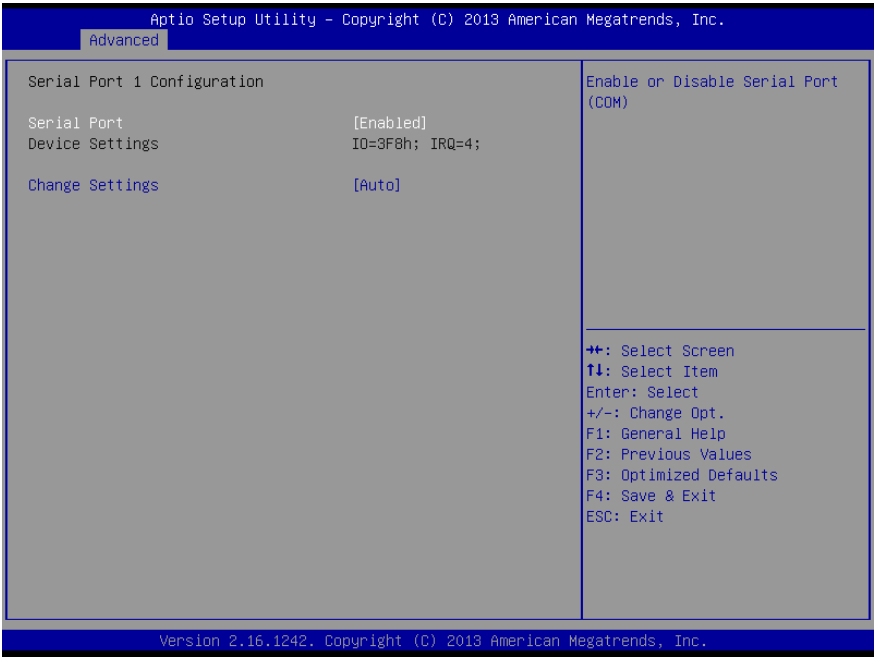
3.4.2 Advanced: F81801 Super IO Configuration



Options summary:

SATA Mode	IDE Mode	Optimal Default, Failsafe Default
	AHCI Mode	

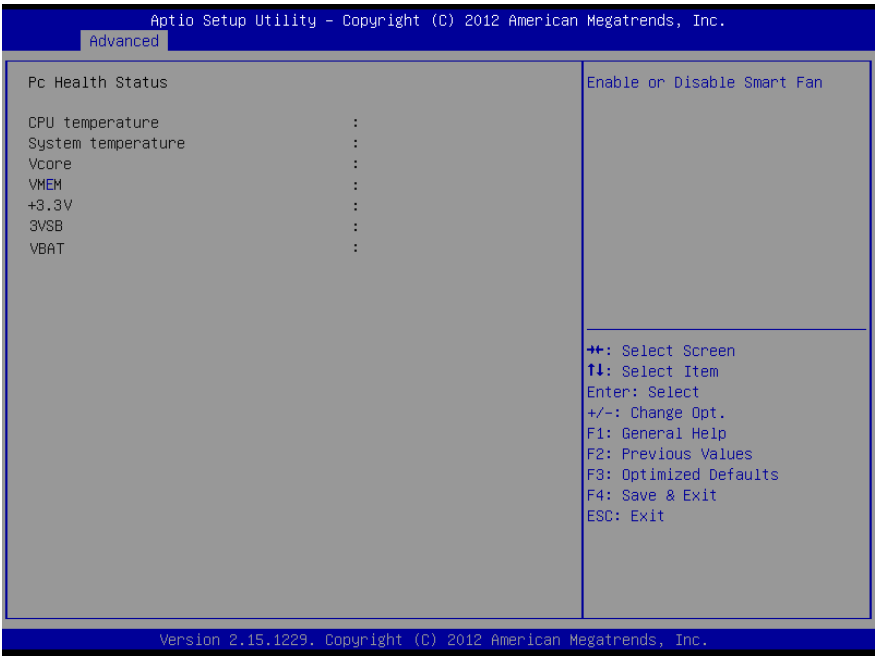
3.4.2.1 Super IO Configuration: Serial Port 1 Configuration



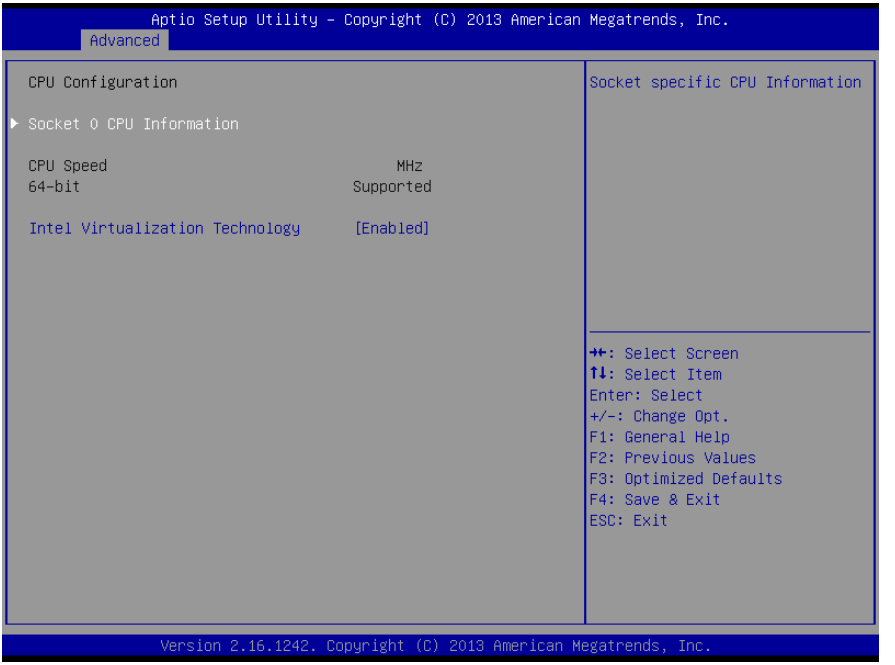
Options summary:

Legacy USB Support	Enabled	Optimal Default, Failsafe Default
	Disabled	
	Auto	
Enables BIOS Support for Legacy USB Support. When enabled, USB can be functional in legacy environment like DOS. AUTO option disables legacy support if no USB devices are connected		

3.4.3 Advanced: H/W Monitor



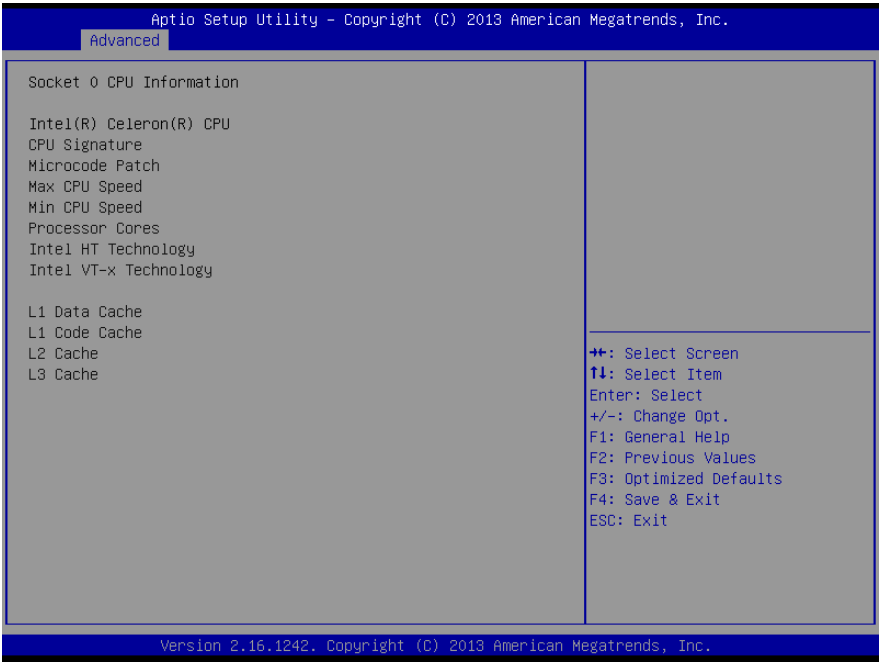
3.4.4 Advanced: CPU Configuration



Options summary:

Intel Virtualization Technology	Disabled	Optimal Default, Failsafe Default
	Enabled	
When enabled, a VMM can utilize the additional hardware capabilities provided by Vander pool Technology		

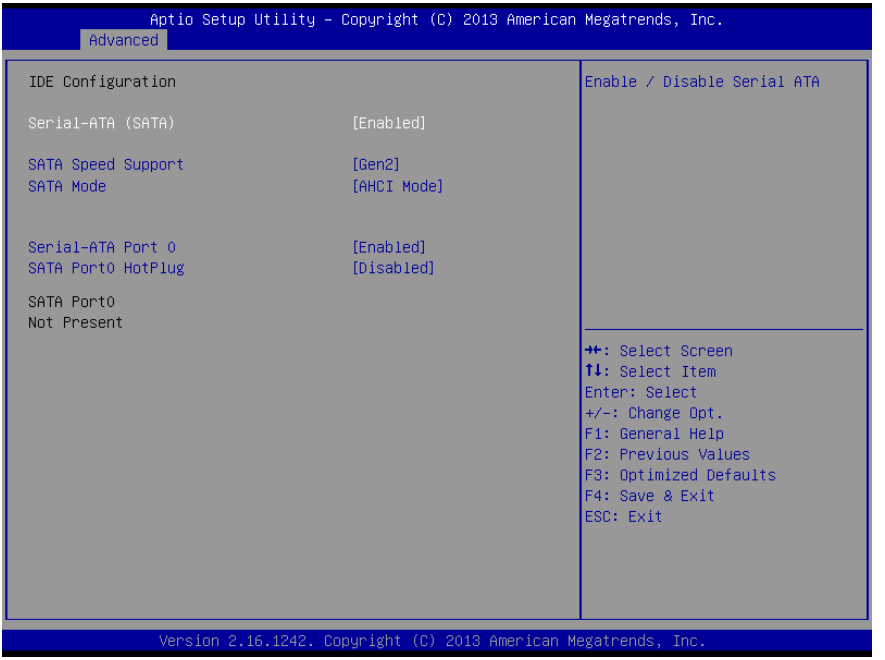
3.4.4.1 CPU Configuration: Socket 0 CPU Information



Options summary:

Power Mode	ATX Type	Optimal Default, Failsafe Default
	AT Type	
Select power supply mode.		
AC Power Loss	Last State	Optimal Default, Failsafe Default
	Power On	
	Power Off	
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	
Enable or disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified		

3.4.5 Advanced: SATA Configuration

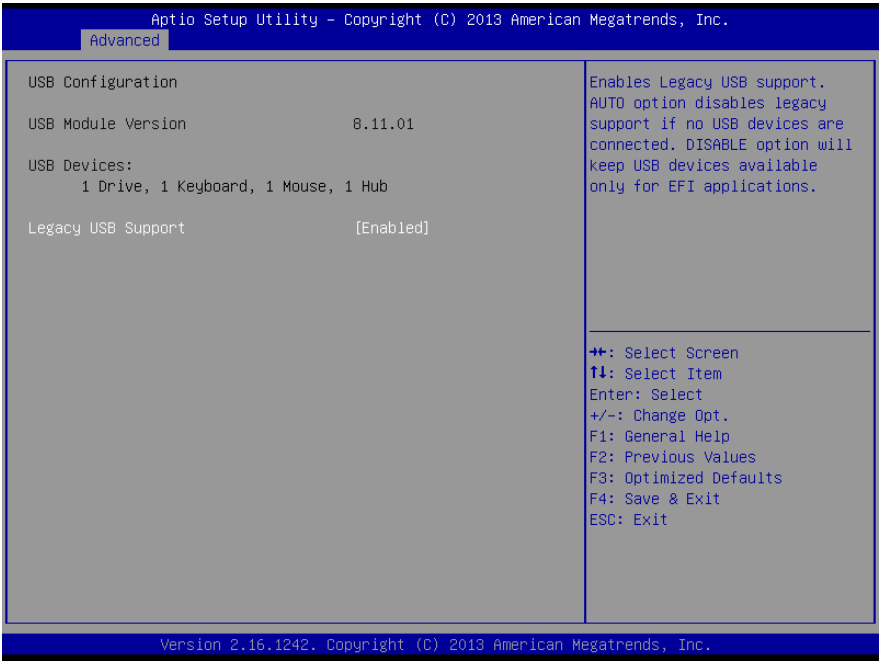


Options summary:

Serial-ATA (SATA)	Enabled	Default
	Disabled	
En/Disable SATA		
SATA Speed Support	Gen1	
	Gen2	Default
SATA Speed Support Gen1 or Gen2		
SATA Mode	IDE	
	AHCI	Default

IDE: Configure SATA controllers as legacy IDE AHCI: Configure SATA controllers to operate in AHCI mode		
Serial-ATA Port 0	Enabled	Default
	Disabled	
En/Disable SATA Port		
SATA Port1 HotPlug	Enabled	
	Disabled	Default
En/Disable SATA Port Hotplug		

3.4.6 Advanced: USB Configuration

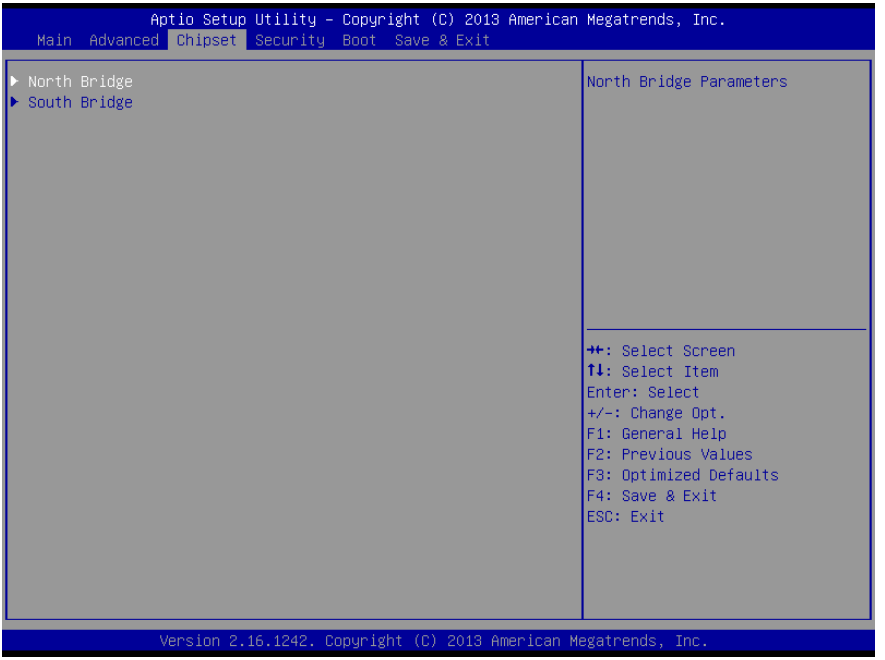


Options summary:

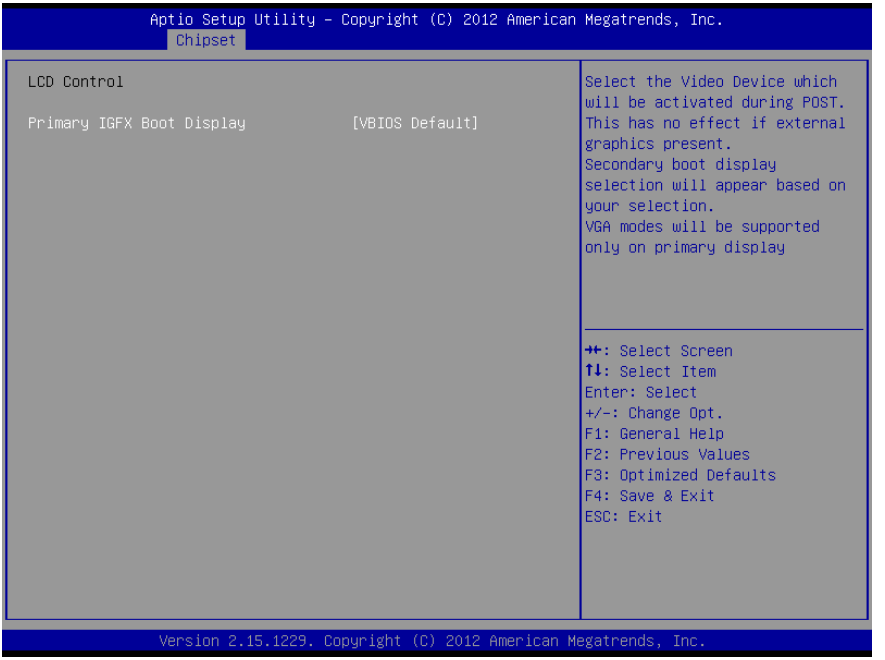
Legacy USB Support	Enabled	Optimal Default, Failsafe Default
	Disabled	
	Auto	
Enables BIOS Support for Legacy USB Support. When enabled, USB can be functional in legacy environment like DOS. AUTO option disables legacy support if no USB devices are connected		
Device Name (Emulation	Auto	Optimal Default, Failsafe Default

Type)	Floppy	
	Forced FDD	
	Hard Disk	
	CDROM	
If Auto. USB devices less than 530MB will be emulated as Floppy and remaining as Floppy and remaining as hard drive. Forced FDD option can be used to force a HDD formatted drive to boot as FDD(Ex. ZIP drive)		

3.5 Setup submenu: Chipset



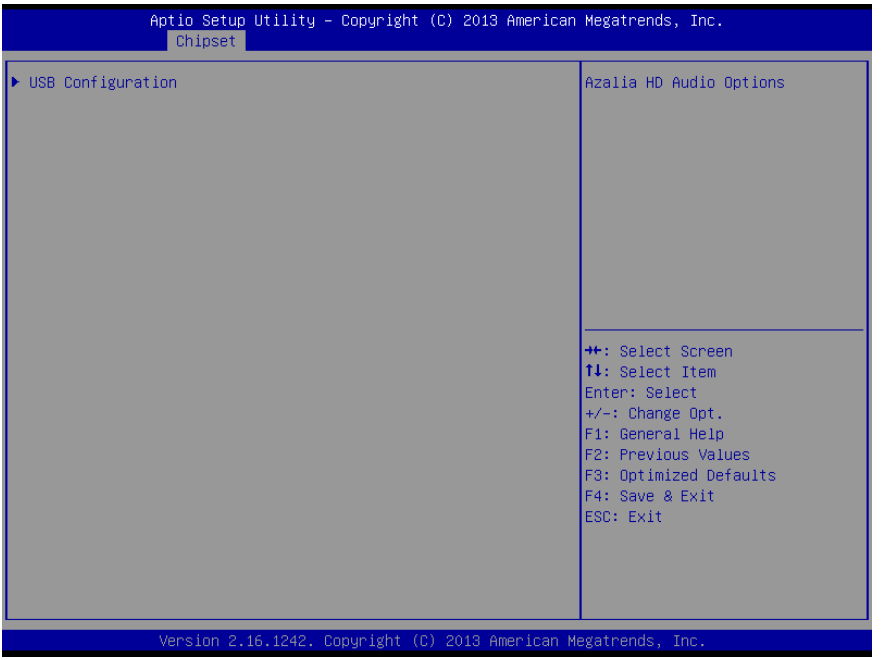
3.5.1 Chipset: North Bridge



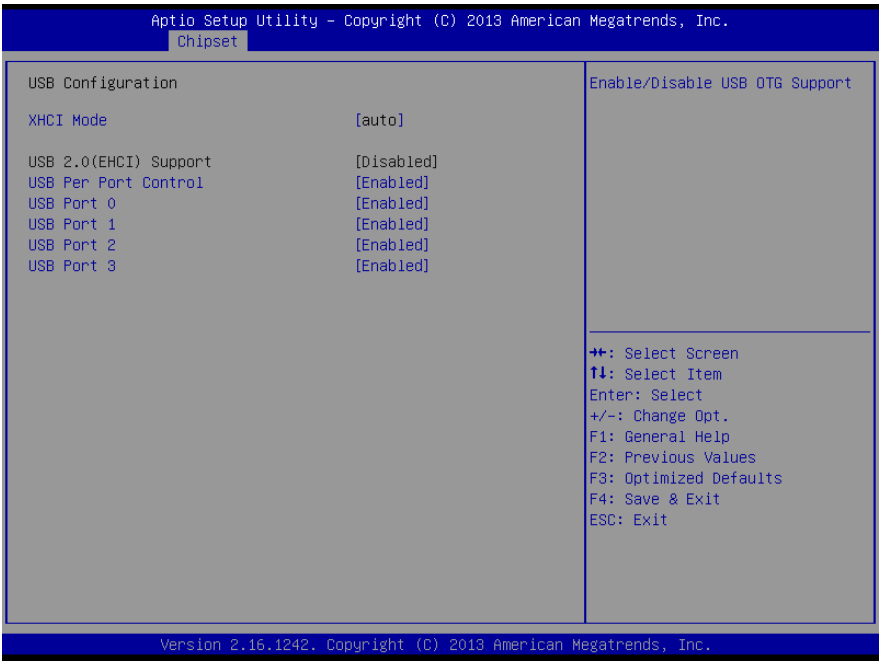
Options summary:

Primary IGFX Boot Display	VBIOS Default	Optimal Default, Failsafe Default
	HDMI1	
	HDMI2	
Select the Video device		

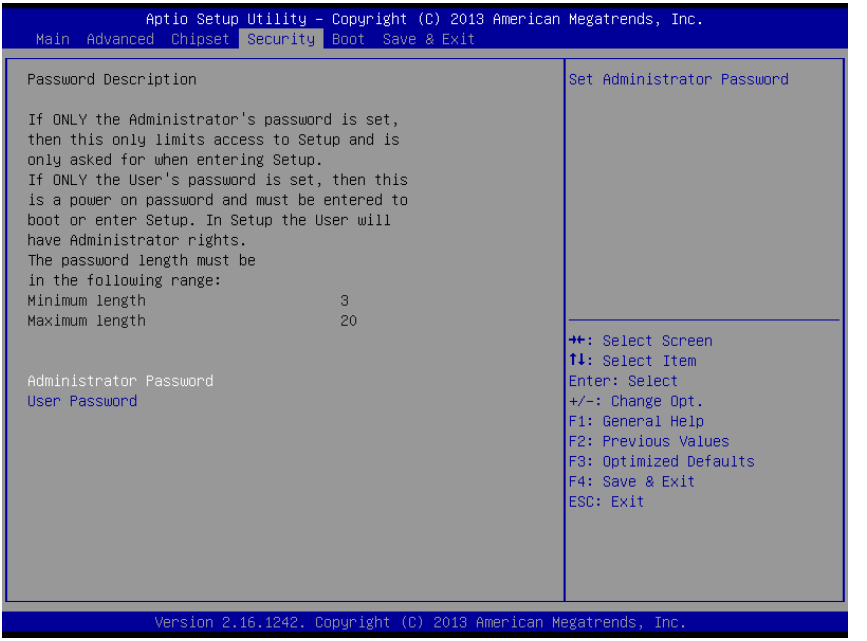
3.5.2 Chipset: South Bridge



3.5.2.1 South Bridge: USB Configuration (Default Setting)



3.6 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.

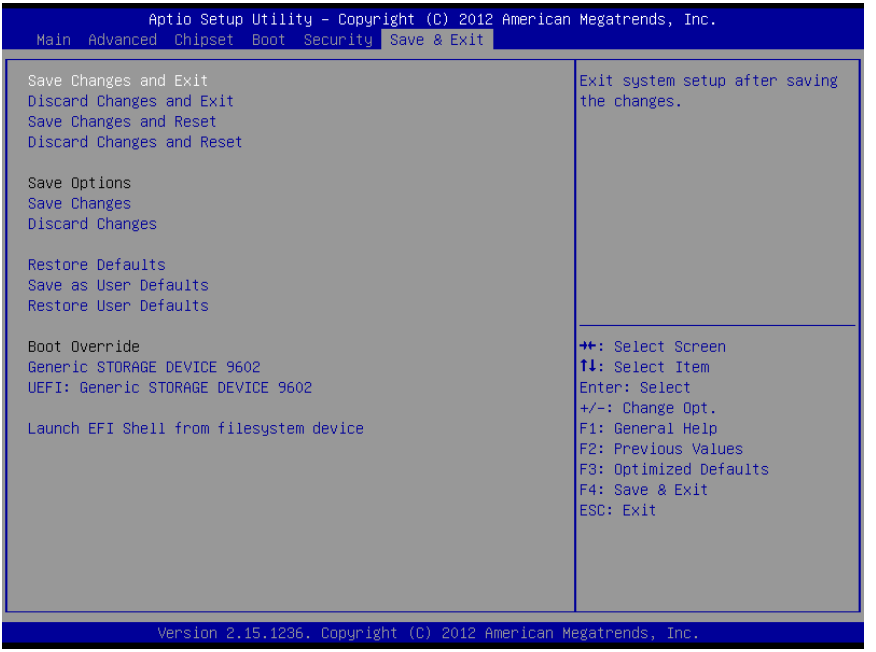
3.7 Setup submenu: Boot

Options summary:

Quiet Boot	Disabled	
	Enabled	Default
En/Disable showing boot logo.		
PXE	Do not launch	Default
	Enabled	
En/Disable PXE boot		

* Only LAN1 and LAN2 supports PXE

3.8 Setup submenu: Save & Exit



Chapter 4

Drivers Installation

4.1 Product CD/DVD

The BOXER-6404M 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 select your OS
2. Open the **SetupChipset.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 2 – Install Graphics Driver

1. Open the **Step 2 - VGA** folder and select your OS
2. Open the **Setup.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 3 – Install Network Driver

1. Open the **Step 3 - LAN** folder and select your OS
2. Open the**.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 4 – Install TXE Driver (Windows 8.1/10 only)

1. Open the **Step 4 - TXE** folder and select your OS
2. Open the **SetupTXE.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 5 – Install USB 3.0 Drivers (Windows 7 only)

1. Open the **Step 5 – USB 3.0** followed by the **Setup.exe** file
2. Follow the instructions
3. Drivers will be installed automatically

Step 6 – Install MBI Drivers

1. Open the **Step 6 - MBI** folder and select your OS
2. Open the **Setup.exe** file
3. Follow the instructions
4. Drivers will be installed automatically

Appendix A

Watchdog Timer Programming

A.1 Watchdog Timer Initial Program

Table 1 : Watch dog relative IO address		
	Default Value	Note
I/O Base Address	0xA00	I/O Base address for Watchdog operation. This address is assigned by SIO LDN7, register 0x60-0x61.

Table 2 : Watchdog relative register table				
Register	Offset	BitNum	Value	Note
Watchdog WDTRST# Enable	0x00	7	1	Enable/Disable time out output via WDTRST# 0: Disable 1: Enable
Pulse Width	0x05	0:1	01	Width of Pulse signal 00: 1ms (do not use) 01: 25ms 10: 125ms 11: 5s *Pulse width is must longer then 16ms.*
Signal Polarity	0x05	2	0	0: low active 1: high active *Must set this bit to 0*
Counting Unit	0x05	3	0	Select time unit. 0: second 1: minute
Output Signal Type	0x05	4	1	0: Level 1: Pulse *Must set this bit to 1*
Watchdog Timer Enable	0x05	5	1	0: Disable 1: Enable
Timeout Status	0x05	6	1	1: timeout occurred. Write a 1 to clear timeout status
Timer Counter	0x06			Time of watchdog timer (0~255)

A.2 Watchdog Sample Program

```
//************************************************************************
// WDT I/O operation relative definition (Please reference to Table 1)
#define   WDTAddr        0xA00   // WDT I/O base address
Void   WDTWriteByte(byte Register, byte Value);
byte   WDTReadByte(byte Register);
Void   WDTSetReg(byte Register, byte Bit, byte Val);
// Watch Dog relative definition (Please reference to Table 2)
#define   DevReg         0x00   // Device configuration register
      #define   WDTRstBit   0x80   // Watchdog WDTRST# (Bit7)
      #define   WDTRstVal   0x80   // Enabled WDTRST#
#define   TimerReg       0x05   // Timer register
      #define   PSWidthBit     0x00     // WDTRST# Pulse width (Bit0:1)
      #define   PSWidthVal     0x01     // 25ms for WDTRST# pulse
      #define   PolarityBit    0x02     // WDTRST# Signal polarity (Bit2)
      #define   PolarityVal    0x00     // Low active for WDTRST#
      #define   UnitBit        0x03     // Unit for timer (Bit3)
      #define   ModeBit        0x04     // WDTRST# mode (Bit4)
      #define   ModeVal        0x01     // 0:level 1: pulse
      #define   EnableBit      0x05     // WDT timer enable (Bit5)
      #define   EnableVal      0x01     // 1: enable
      #define   StatusBit      0x06     // WDT timer status (Bit6)
#define   CounterReg   0x06   // Timer counter register
//************************************************************************

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

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

//************************************************************************
// Procedure : AaeonWDTEnable
```

```
VOID    AaeonWDTEnable (){
        WDTEnableDisable(1);
}

// Procedure : AaeonWDTConfig
VOID    AaeonWDTConfig (byte Counter, BOOLEAN Unit){
        // Disable WDT counting
        WDTEnableDisable(0);
        // Clear Watchdog Timeout Status
        WDTClearTimeoutStatus();
        // WDT relative parameter setting
        WDTParameterSetting(Timer, Unit);
}

VOID    WDTEnableDisable(byte Value){
        If (Value == 1)
            WDTSetBit(TimerReg, EnableBit, 1);
        else
            WDTSetBit(TimerReg, EnableBit, 0);
}

VOID    WDTParameterSetting(byte Counter, BOOLEAN Unit){
        // Watchdog Timer counter setting
        WDTWriteByte(CounterReg, Counter);
       // WDT counting unit setting
       WDTSetBit(TimerReg, UnitBit, Unit);
       // WDT output mode set to pulse
       WDTSetBit(TimerReg, ModeBit, ModeVal);
       // WDT output mode set to active low
       WDTSetBit(TimerReg, PolarityBit, PolarityVal);
       // WDT output pulse width is 25ms
       WDTSetBit(TimerReg, PSWidthBit, PSWidthVal);
         // Watchdog WDTRST# Enable
        WDTSetBit(DevReg, WDTRstBit, WDTRstVal);
}

VOID    WDTClearTimeoutStatus(){
       WDTSetBit(TimerReg, StatusBit, 1);
}
*****************************************************************************

*****************************************************************************
```

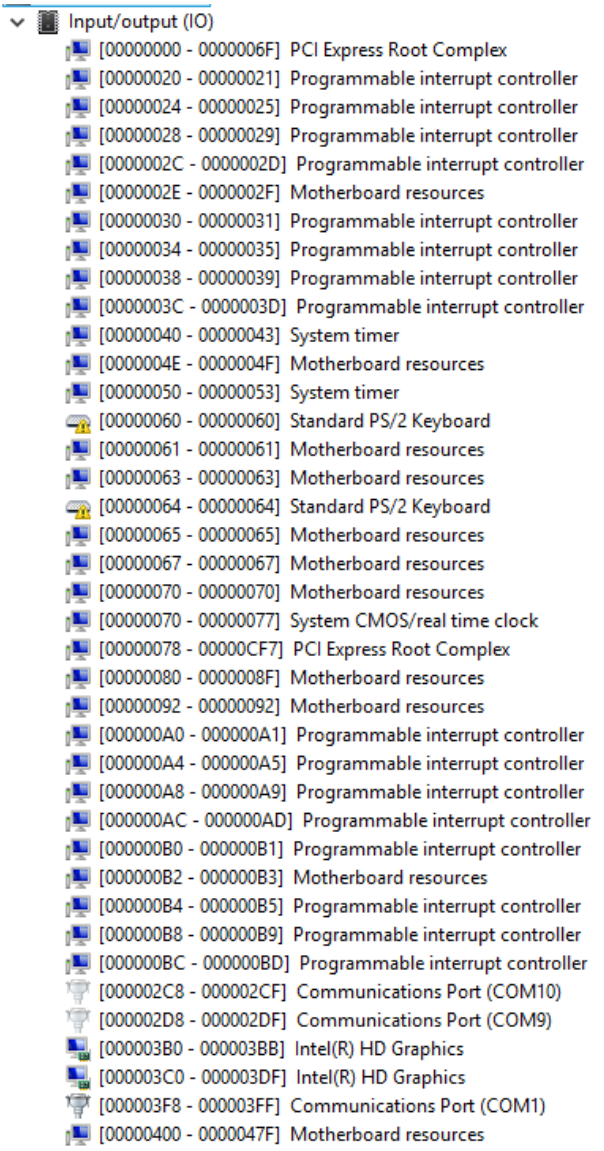
```
VOID   WDTWriteByte(byte Register, byte Value){
       IOWriteByte(WDTAddr+Register, Value);
}

byte   WDTReadByte(byte Register){
       return IOReadByte(WDTAddr+Register);
}

VOID   WDTSetBit(byte Register, byte Bit, byte Val){
       byte TmpValue;

       TmpValue = WDTReadByte(Register);
       TmpValue &= ~(1 << Bit);
       TmpValue |= Val << Bit;
       WDTWriteByte(Register, TmpValue);
}

********************************************************************************
```

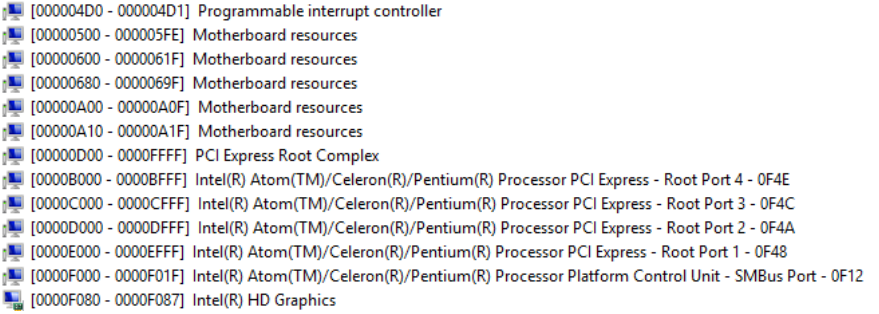
Appendix B

I/O Information

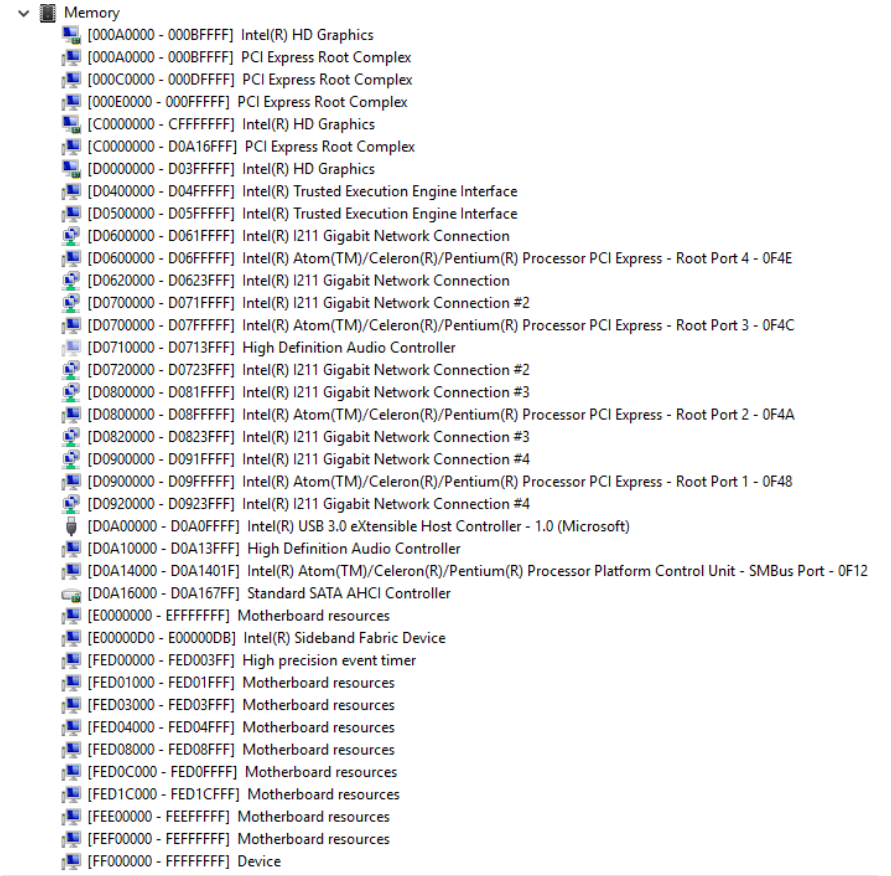
B.1 I/O Address Map

Note: There is no PS/2 interface on the BOXER-6404M, hence the exclamation marks.



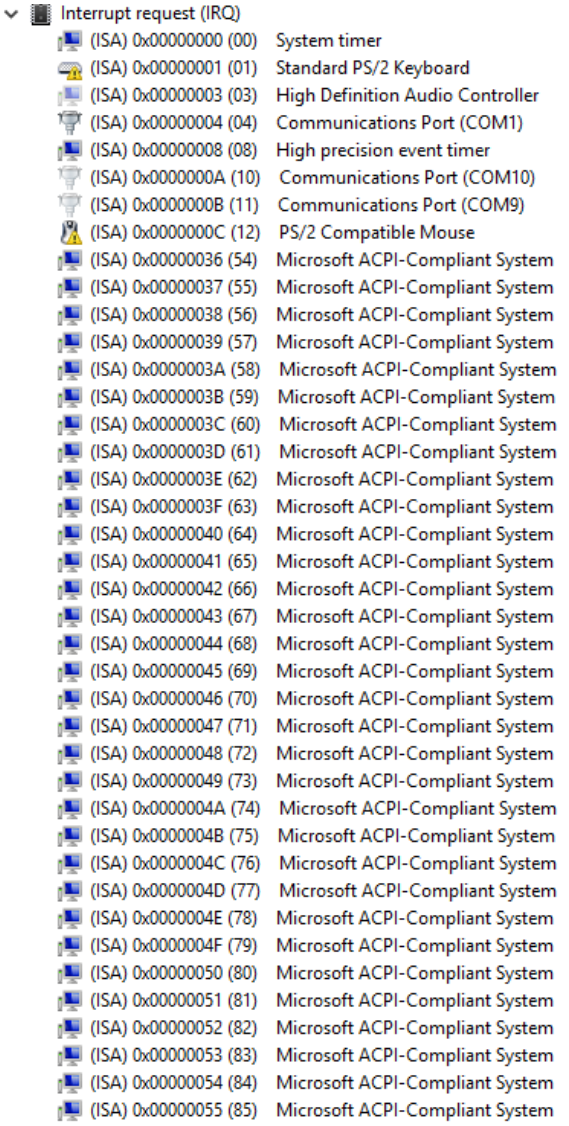

[000004D0 - 000004D1] Programmable interrupt controller
[00000500 - 000005FE] Motherboard resources
[00000600 - 0000061F] Motherboard resources
[00000680 - 0000069F] Motherboard resources
[00000A00 - 00000A0F] Motherboard resources
[00000A10 - 00000A1F] Motherboard resources
[00000D00 - 0000FFFF] PCI Express Root Complex
[0000B000 - 0000BFFF] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 4 - 0F4E
[0000C000 - 0000CFFF] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 3 - 0F4C
[0000D000 - 0000DFFF] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 2 - 0F4A
[0000E000 - 0000EFFF] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 1 - 0F48
[0000F000 - 0000F01F] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Platform Control Unit - SMBus Port - 0F12
[0000F080 - 0000F087] Intel(R) HD Graphics

B.2 Memory Address Map



B.3 IRQ Mapping Chart

Note: There is no PS/2 interface on the BOXER-6404M, hence the exclamation marks.



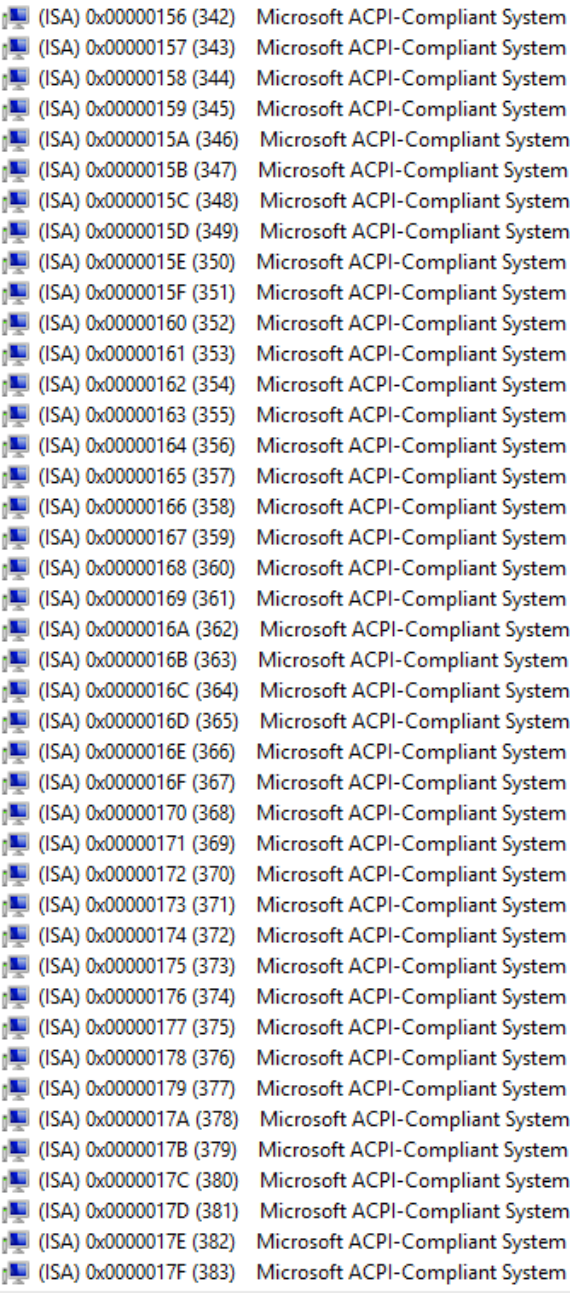
(ISA) 0x00000056 (86) Microsoft ACPI-Compliant System
(ISA) 0x00000057 (87) Microsoft ACPI-Compliant System
(ISA) 0x00000058 (88) Microsoft ACPI-Compliant System
(ISA) 0x00000059 (89) Microsoft ACPI-Compliant System
(ISA) 0x0000005A (90) Microsoft ACPI-Compliant System
(ISA) 0x0000005B (91) Microsoft ACPI-Compliant System
(ISA) 0x0000005C (92) Microsoft ACPI-Compliant System
(ISA) 0x0000005D (93) Microsoft ACPI-Compliant System
(ISA) 0x0000005E (94) Microsoft ACPI-Compliant System
(ISA) 0x0000005F (95) Microsoft ACPI-Compliant System
(ISA) 0x00000060 (96) Microsoft ACPI-Compliant System
(ISA) 0x00000061 (97) Microsoft ACPI-Compliant System
(ISA) 0x00000062 (98) Microsoft ACPI-Compliant System
(ISA) 0x00000063 (99) Microsoft ACPI-Compliant System
(ISA) 0x00000064 (100) Microsoft ACPI-Compliant System
(ISA) 0x00000065 (101) Microsoft ACPI-Compliant System
(ISA) 0x00000066 (102) Microsoft ACPI-Compliant System
(ISA) 0x00000067 (103) Microsoft ACPI-Compliant System
(ISA) 0x00000068 (104) Microsoft ACPI-Compliant System
(ISA) 0x00000069 (105) Microsoft ACPI-Compliant System
(ISA) 0x0000006A (106) Microsoft ACPI-Compliant System
(ISA) 0x0000006B (107) Microsoft ACPI-Compliant System
(ISA) 0x0000006C (108) Microsoft ACPI-Compliant System
(ISA) 0x0000006D (109) Microsoft ACPI-Compliant System
(ISA) 0x0000006E (110) Microsoft ACPI-Compliant System
(ISA) 0x0000006F (111) Microsoft ACPI-Compliant System
(ISA) 0x00000070 (112) Microsoft ACPI-Compliant System
(ISA) 0x00000071 (113) Microsoft ACPI-Compliant System
(ISA) 0x00000072 (114) Microsoft ACPI-Compliant System
(ISA) 0x00000073 (115) Microsoft ACPI-Compliant System
(ISA) 0x00000074 (116) Microsoft ACPI-Compliant System
(ISA) 0x00000075 (117) Microsoft ACPI-Compliant System
(ISA) 0x00000076 (118) Microsoft ACPI-Compliant System
(ISA) 0x00000077 (119) Microsoft ACPI-Compliant System
(ISA) 0x00000078 (120) Microsoft ACPI-Compliant System
(ISA) 0x00000079 (121) Microsoft ACPI-Compliant System
(ISA) 0x0000007A (122) Microsoft ACPI-Compliant System
(ISA) 0x0000007B (123) Microsoft ACPI-Compliant System
(ISA) 0x0000007C (124) Microsoft ACPI-Compliant System

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

(ISA) 0x000000A5 (165) Microsoft ACPI-Compliant System
(ISA) 0x000000A6 (166) Microsoft ACPI-Compliant System
(ISA) 0x000000A7 (167) Microsoft ACPI-Compliant System
(ISA) 0x000000A8 (168) Microsoft ACPI-Compliant System
(ISA) 0x000000A9 (169) Microsoft ACPI-Compliant System
(ISA) 0x000000AA (170) Microsoft ACPI-Compliant System
(ISA) 0x000000AB (171) Microsoft ACPI-Compliant System
(ISA) 0x000000AC (172) Microsoft ACPI-Compliant System
(ISA) 0x000000AD (173) Microsoft ACPI-Compliant System
(ISA) 0x000000AE (174) Microsoft ACPI-Compliant System
(ISA) 0x000000AF (175) Microsoft ACPI-Compliant System
(ISA) 0x000000B0 (176) Microsoft ACPI-Compliant System
(ISA) 0x000000B1 (177) Microsoft ACPI-Compliant System
(ISA) 0x000000B2 (178) Microsoft ACPI-Compliant System
(ISA) 0x000000B3 (179) Microsoft ACPI-Compliant System
(ISA) 0x000000B4 (180) Microsoft ACPI-Compliant System
(ISA) 0x000000B5 (181) Microsoft ACPI-Compliant System
(ISA) 0x000000B6 (182) Microsoft ACPI-Compliant System
(ISA) 0x000000B7 (183) Microsoft ACPI-Compliant System
(ISA) 0x000000B8 (184) Microsoft ACPI-Compliant System
(ISA) 0x000000B9 (185) Microsoft ACPI-Compliant System
(ISA) 0x000000BA (186) Microsoft ACPI-Compliant System
(ISA) 0x000000BB (187) Microsoft ACPI-Compliant System
(ISA) 0x000000BC (188) Microsoft ACPI-Compliant System
(ISA) 0x000000BD (189) Microsoft ACPI-Compliant System
(ISA) 0x000000BE (190) Microsoft ACPI-Compliant System
(ISA) 0x000000BF (191) Microsoft ACPI-Compliant System
(ISA) 0x000000C0 (192) Microsoft ACPI-Compliant System
(ISA) 0x000000C1 (193) Microsoft ACPI-Compliant System
(ISA) 0x000000C2 (194) Microsoft ACPI-Compliant System
(ISA) 0x000000C3 (195) Microsoft ACPI-Compliant System
(ISA) 0x000000C4 (196) Microsoft ACPI-Compliant System
(ISA) 0x000000C5 (197) Microsoft ACPI-Compliant System
(ISA) 0x000000C6 (198) Microsoft ACPI-Compliant System
(ISA) 0x000000C7 (199) Microsoft ACPI-Compliant System
(ISA) 0x000000C8 (200) Microsoft ACPI-Compliant System
(ISA) 0x000000C9 (201) Microsoft ACPI-Compliant System
(ISA) 0x000000CA (202) Microsoft ACPI-Compliant System
(ISA) 0x000000CB (203) Microsoft ACPI-Compliant System
(ISA) 0x000000CC (204) Microsoft ACPI-Compliant System
(ISA) 0x00000100 (256) Microsoft ACPI-Compliant System
(ISA) 0x00000101 (257) Microsoft ACPI-Compliant System

(ISA) 0x00000102 (258)	Microsoft ACPI-Compliant System
(ISA) 0x00000103 (259)	Microsoft ACPI-Compliant System
(ISA) 0x00000104 (260)	Microsoft ACPI-Compliant System
(ISA) 0x00000105 (261)	Microsoft ACPI-Compliant System
(ISA) 0x00000106 (262)	Microsoft ACPI-Compliant System
(ISA) 0x00000107 (263)	Microsoft ACPI-Compliant System
(ISA) 0x00000108 (264)	Microsoft ACPI-Compliant System
(ISA) 0x00000109 (265)	Microsoft ACPI-Compliant System
(ISA) 0x0000010A (266)	Microsoft ACPI-Compliant System
(ISA) 0x0000010B (267)	Microsoft ACPI-Compliant System
(ISA) 0x0000010C (268)	Microsoft ACPI-Compliant System
(ISA) 0x0000010D (269)	Microsoft ACPI-Compliant System
(ISA) 0x0000010E (270)	Microsoft ACPI-Compliant System
(ISA) 0x0000010F (271)	Microsoft ACPI-Compliant System
(ISA) 0x00000110 (272)	Microsoft ACPI-Compliant System
(ISA) 0x00000111 (273)	Microsoft ACPI-Compliant System
(ISA) 0x00000112 (274)	Microsoft ACPI-Compliant System
(ISA) 0x00000113 (275)	Microsoft ACPI-Compliant System
(ISA) 0x00000114 (276)	Microsoft ACPI-Compliant System
(ISA) 0x00000115 (277)	Microsoft ACPI-Compliant System
(ISA) 0x00000116 (278)	Microsoft ACPI-Compliant System
(ISA) 0x00000117 (279)	Microsoft ACPI-Compliant System
(ISA) 0x00000118 (280)	Microsoft ACPI-Compliant System
(ISA) 0x00000119 (281)	Microsoft ACPI-Compliant System
(ISA) 0x0000011A (282)	Microsoft ACPI-Compliant System
(ISA) 0x0000011B (283)	Microsoft ACPI-Compliant System
(ISA) 0x0000011C (284)	Microsoft ACPI-Compliant System
(ISA) 0x0000011D (285)	Microsoft ACPI-Compliant System
(ISA) 0x0000011E (286)	Microsoft ACPI-Compliant System
(ISA) 0x0000011F (287)	Microsoft ACPI-Compliant System
(ISA) 0x00000120 (288)	Microsoft ACPI-Compliant System
(ISA) 0x00000121 (289)	Microsoft ACPI-Compliant System
(ISA) 0x00000122 (290)	Microsoft ACPI-Compliant System
(ISA) 0x00000123 (291)	Microsoft ACPI-Compliant System
(ISA) 0x00000124 (292)	Microsoft ACPI-Compliant System
(ISA) 0x00000125 (293)	Microsoft ACPI-Compliant System
(ISA) 0x00000126 (294)	Microsoft ACPI-Compliant System
(ISA) 0x00000127 (295)	Microsoft ACPI-Compliant System
(ISA) 0x00000128 (296)	Microsoft ACPI-Compliant System
(ISA) 0x00000129 (297)	Microsoft ACPI-Compliant System
(ISA) 0x0000012A (298)	Microsoft ACPI-Compliant System
(ISA) 0x0000012B (299)	Microsoft ACPI-Compliant System

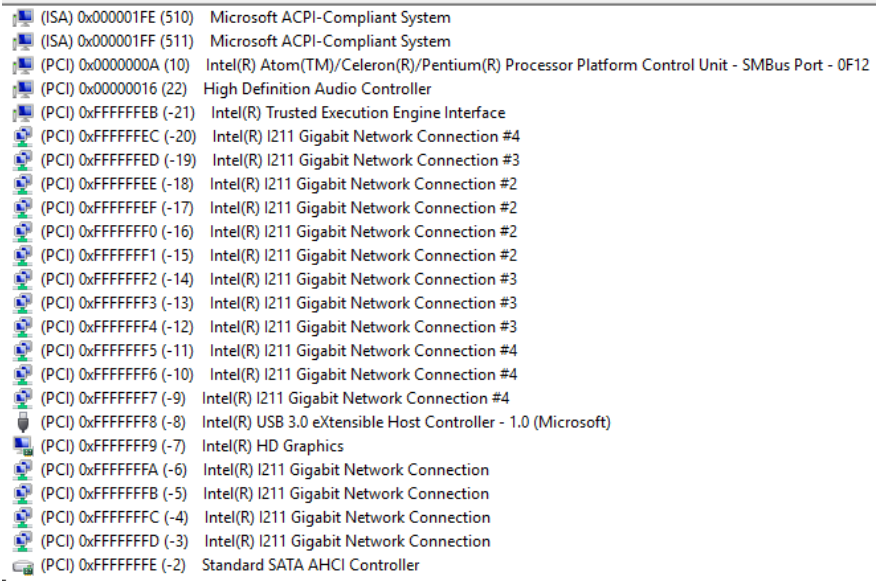
(ISA) 0x0000012C (300) Microsoft ACPI-Compliant System
(ISA) 0x0000012D (301) Microsoft ACPI-Compliant System
(ISA) 0x0000012E (302) Microsoft ACPI-Compliant System
(ISA) 0x0000012F (303) Microsoft ACPI-Compliant System
(ISA) 0x00000130 (304) Microsoft ACPI-Compliant System
(ISA) 0x00000131 (305) Microsoft ACPI-Compliant System
(ISA) 0x00000132 (306) Microsoft ACPI-Compliant System
(ISA) 0x00000133 (307) Microsoft ACPI-Compliant System
(ISA) 0x00000134 (308) Microsoft ACPI-Compliant System
(ISA) 0x00000135 (309) Microsoft ACPI-Compliant System
(ISA) 0x00000136 (310) Microsoft ACPI-Compliant System
(ISA) 0x00000137 (311) Microsoft ACPI-Compliant System
(ISA) 0x00000138 (312) Microsoft ACPI-Compliant System
(ISA) 0x00000139 (313) Microsoft ACPI-Compliant System
(ISA) 0x0000013A (314) Microsoft ACPI-Compliant System
(ISA) 0x0000013B (315) Microsoft ACPI-Compliant System
(ISA) 0x0000013C (316) Microsoft ACPI-Compliant System
(ISA) 0x0000013D (317) Microsoft ACPI-Compliant System
(ISA) 0x0000013E (318) Microsoft ACPI-Compliant System
(ISA) 0x0000013F (319) Microsoft ACPI-Compliant System
(ISA) 0x00000140 (320) Microsoft ACPI-Compliant System
(ISA) 0x00000141 (321) Microsoft ACPI-Compliant System
(ISA) 0x00000142 (322) Microsoft ACPI-Compliant System
(ISA) 0x00000143 (323) Microsoft ACPI-Compliant System
(ISA) 0x00000144 (324) Microsoft ACPI-Compliant System
(ISA) 0x00000145 (325) Microsoft ACPI-Compliant System
(ISA) 0x00000146 (326) Microsoft ACPI-Compliant System
(ISA) 0x00000147 (327) Microsoft ACPI-Compliant System
(ISA) 0x00000148 (328) Microsoft ACPI-Compliant System
(ISA) 0x00000149 (329) Microsoft ACPI-Compliant System
(ISA) 0x0000014A (330) Microsoft ACPI-Compliant System
(ISA) 0x0000014B (331) Microsoft ACPI-Compliant System
(ISA) 0x0000014C (332) Microsoft ACPI-Compliant System
(ISA) 0x0000014D (333) Microsoft ACPI-Compliant System
(ISA) 0x0000014E (334) Microsoft ACPI-Compliant System
(ISA) 0x0000014F (335) Microsoft ACPI-Compliant System
(ISA) 0x00000150 (336) Microsoft ACPI-Compliant System
(ISA) 0x00000151 (337) Microsoft ACPI-Compliant System
(ISA) 0x00000152 (338) Microsoft ACPI-Compliant System
(ISA) 0x00000153 (339) Microsoft ACPI-Compliant System
(ISA) 0x00000154 (340) Microsoft ACPI-Compliant System
(ISA) 0x00000155 (341) Microsoft ACPI-Compliant System


(ISA) 0x00000156 (342) Microsoft ACPI-Compliant System
(ISA) 0x00000157 (343) Microsoft ACPI-Compliant System
(ISA) 0x00000158 (344) Microsoft ACPI-Compliant System
(ISA) 0x00000159 (345) Microsoft ACPI-Compliant System
(ISA) 0x0000015A (346) Microsoft ACPI-Compliant System
(ISA) 0x0000015B (347) Microsoft ACPI-Compliant System
(ISA) 0x0000015C (348) Microsoft ACPI-Compliant System
(ISA) 0x0000015D (349) Microsoft ACPI-Compliant System
(ISA) 0x0000015E (350) Microsoft ACPI-Compliant System
(ISA) 0x0000015F (351) Microsoft ACPI-Compliant System
(ISA) 0x00000160 (352) Microsoft ACPI-Compliant System
(ISA) 0x00000161 (353) Microsoft ACPI-Compliant System
(ISA) 0x00000162 (354) Microsoft ACPI-Compliant System
(ISA) 0x00000163 (355) Microsoft ACPI-Compliant System
(ISA) 0x00000164 (356) Microsoft ACPI-Compliant System
(ISA) 0x00000165 (357) Microsoft ACPI-Compliant System
(ISA) 0x00000166 (358) Microsoft ACPI-Compliant System
(ISA) 0x00000167 (359) Microsoft ACPI-Compliant System
(ISA) 0x00000168 (360) Microsoft ACPI-Compliant System
(ISA) 0x00000169 (361) Microsoft ACPI-Compliant System
(ISA) 0x0000016A (362) Microsoft ACPI-Compliant System
(ISA) 0x0000016B (363) Microsoft ACPI-Compliant System
(ISA) 0x0000016C (364) Microsoft ACPI-Compliant System
(ISA) 0x0000016D (365) Microsoft ACPI-Compliant System
(ISA) 0x0000016E (366) Microsoft ACPI-Compliant System
(ISA) 0x0000016F (367) Microsoft ACPI-Compliant System
(ISA) 0x00000170 (368) Microsoft ACPI-Compliant System
(ISA) 0x00000171 (369) Microsoft ACPI-Compliant System
(ISA) 0x00000172 (370) Microsoft ACPI-Compliant System
(ISA) 0x00000173 (371) Microsoft ACPI-Compliant System
(ISA) 0x00000174 (372) Microsoft ACPI-Compliant System
(ISA) 0x00000175 (373) Microsoft ACPI-Compliant System
(ISA) 0x00000176 (374) Microsoft ACPI-Compliant System
(ISA) 0x00000177 (375) Microsoft ACPI-Compliant System
(ISA) 0x00000178 (376) Microsoft ACPI-Compliant System
(ISA) 0x00000179 (377) Microsoft ACPI-Compliant System
(ISA) 0x0000017A (378) Microsoft ACPI-Compliant System
(ISA) 0x0000017B (379) Microsoft ACPI-Compliant System
(ISA) 0x0000017C (380) Microsoft ACPI-Compliant System
(ISA) 0x0000017D (381) Microsoft ACPI-Compliant System
(ISA) 0x0000017E (382) Microsoft ACPI-Compliant System
(ISA) 0x0000017F (383) Microsoft ACPI-Compliant System

(ISA) 0x00000180 (384)	Microsoft ACPI-Compliant System
(ISA) 0x00000181 (385)	Microsoft ACPI-Compliant System
(ISA) 0x00000182 (386)	Microsoft ACPI-Compliant System
(ISA) 0x00000183 (387)	Microsoft ACPI-Compliant System
(ISA) 0x00000184 (388)	Microsoft ACPI-Compliant System
(ISA) 0x00000185 (389)	Microsoft ACPI-Compliant System
(ISA) 0x00000186 (390)	Microsoft ACPI-Compliant System
(ISA) 0x00000187 (391)	Microsoft ACPI-Compliant System
(ISA) 0x00000188 (392)	Microsoft ACPI-Compliant System
(ISA) 0x00000189 (393)	Microsoft ACPI-Compliant System
(ISA) 0x0000018A (394)	Microsoft ACPI-Compliant System
(ISA) 0x0000018B (395)	Microsoft ACPI-Compliant System
(ISA) 0x0000018C (396)	Microsoft ACPI-Compliant System
(ISA) 0x0000018D (397)	Microsoft ACPI-Compliant System
(ISA) 0x0000018E (398)	Microsoft ACPI-Compliant System
(ISA) 0x0000018F (399)	Microsoft ACPI-Compliant System
(ISA) 0x00000190 (400)	Microsoft ACPI-Compliant System
(ISA) 0x00000191 (401)	Microsoft ACPI-Compliant System
(ISA) 0x00000192 (402)	Microsoft ACPI-Compliant System
(ISA) 0x00000193 (403)	Microsoft ACPI-Compliant System
(ISA) 0x00000194 (404)	Microsoft ACPI-Compliant System
(ISA) 0x00000195 (405)	Microsoft ACPI-Compliant System
(ISA) 0x00000196 (406)	Microsoft ACPI-Compliant System
(ISA) 0x00000197 (407)	Microsoft ACPI-Compliant System
(ISA) 0x00000198 (408)	Microsoft ACPI-Compliant System
(ISA) 0x00000199 (409)	Microsoft ACPI-Compliant System
(ISA) 0x0000019A (410)	Microsoft ACPI-Compliant System
(ISA) 0x0000019B (411)	Microsoft ACPI-Compliant System
(ISA) 0x0000019C (412)	Microsoft ACPI-Compliant System
(ISA) 0x0000019D (413)	Microsoft ACPI-Compliant System
(ISA) 0x0000019E (414)	Microsoft ACPI-Compliant System
(ISA) 0x0000019F (415)	Microsoft ACPI-Compliant System
(ISA) 0x000001A0 (416)	Microsoft ACPI-Compliant System
(ISA) 0x000001A1 (417)	Microsoft ACPI-Compliant System
(ISA) 0x000001A2 (418)	Microsoft ACPI-Compliant System
(ISA) 0x000001A3 (419)	Microsoft ACPI-Compliant System
(ISA) 0x000001A4 (420)	Microsoft ACPI-Compliant System
(ISA) 0x000001A5 (421)	Microsoft ACPI-Compliant System
(ISA) 0x000001A6 (422)	Microsoft ACPI-Compliant System
(ISA) 0x000001A7 (423)	Microsoft ACPI-Compliant System
(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
(ISA) 0x000001AC (428) Microsoft ACPI-Compliant System
(ISA) 0x000001AD (429) Microsoft ACPI-Compliant System
(ISA) 0x000001AE (430) Microsoft ACPI-Compliant System
(ISA) 0x000001AF (431) Microsoft ACPI-Compliant System
(ISA) 0x000001B0 (432) Microsoft ACPI-Compliant System
(ISA) 0x000001B1 (433) Microsoft ACPI-Compliant System
(ISA) 0x000001B2 (434) Microsoft ACPI-Compliant System
(ISA) 0x000001B3 (435) Microsoft ACPI-Compliant System
(ISA) 0x000001B4 (436) Microsoft ACPI-Compliant System
(ISA) 0x000001B5 (437) Microsoft ACPI-Compliant System
(ISA) 0x000001B6 (438) Microsoft ACPI-Compliant System
(ISA) 0x000001B7 (439) Microsoft ACPI-Compliant System
(ISA) 0x000001B8 (440) Microsoft ACPI-Compliant System
(ISA) 0x000001B9 (441) Microsoft ACPI-Compliant System
(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
(ISA) 0x000001BE (446) Microsoft ACPI-Compliant System
(ISA) 0x000001BF (447) Microsoft ACPI-Compliant System
(ISA) 0x000001C0 (448) Microsoft ACPI-Compliant System
(ISA) 0x000001C1 (449) Microsoft ACPI-Compliant System
(ISA) 0x000001C2 (450) Microsoft ACPI-Compliant System
(ISA) 0x000001C3 (451) Microsoft ACPI-Compliant System
(ISA) 0x000001C4 (452) Microsoft ACPI-Compliant System
(ISA) 0x000001C5 (453) Microsoft ACPI-Compliant System
(ISA) 0x000001C6 (454) Microsoft ACPI-Compliant System
(ISA) 0x000001C7 (455) Microsoft ACPI-Compliant System
(ISA) 0x000001C8 (456) Microsoft ACPI-Compliant System
(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
(ISA) 0x000001CE (462) Microsoft ACPI-Compliant System
(ISA) 0x000001CF (463) Microsoft ACPI-Compliant System
(ISA) 0x000001D0 (464) Microsoft ACPI-Compliant System
(ISA) 0x000001D1 (465) Microsoft ACPI-Compliant System
(ISA) 0x000001D2 (466) Microsoft ACPI-Compliant System
(ISA) 0x000001D3 (467) Microsoft ACPI-Compliant System

(ISA) 0x000001D4 (468) Microsoft ACPI-Compliant System
(ISA) 0x000001D5 (469) Microsoft ACPI-Compliant System
(ISA) 0x000001D6 (470) Microsoft ACPI-Compliant System
(ISA) 0x000001D7 (471) Microsoft ACPI-Compliant System
(ISA) 0x000001D8 (472) Microsoft ACPI-Compliant System
(ISA) 0x000001D9 (473) Microsoft ACPI-Compliant System
(ISA) 0x000001DA (474) Microsoft ACPI-Compliant System
(ISA) 0x000001DB (475) Microsoft ACPI-Compliant System
(ISA) 0x000001DC (476) Microsoft ACPI-Compliant System
(ISA) 0x000001DD (477) Microsoft ACPI-Compliant System
(ISA) 0x000001DE (478) Microsoft ACPI-Compliant System
(ISA) 0x000001DF (479) Microsoft ACPI-Compliant System
(ISA) 0x000001E0 (480) Microsoft ACPI-Compliant System
(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) 0x0000000A (10) Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Platform Control Unit - SMBus Port - 0F12
(PCI) 0x00000016 (22) High Definition Audio Controller
(PCI) 0xFFFFFFEB (-21) Intel(R) Trusted Execution Engine Interface
(PCI) 0xFFFFFFEC (-20) Intel(R) I211 Gigabit Network Connection #4
(PCI) 0xFFFFFFED (-19) Intel(R) I211 Gigabit Network Connection #3
(PCI) 0xFFFFFFEE (-18) Intel(R) I211 Gigabit Network Connection #2
(PCI) 0xFFFFFFEF (-17) Intel(R) I211 Gigabit Network Connection #2
(PCI) 0xFFFFFFF0 (-16) Intel(R) I211 Gigabit Network Connection #2
(PCI) 0xFFFFFFF1 (-15) Intel(R) I211 Gigabit Network Connection #2
(PCI) 0xFFFFFFF2 (-14) Intel(R) I211 Gigabit Network Connection #3
(PCI) 0xFFFFFFF3 (-13) Intel(R) I211 Gigabit Network Connection #3
(PCI) 0xFFFFFFF4 (-12) Intel(R) I211 Gigabit Network Connection #3
(PCI) 0xFFFFFFF5 (-11) Intel(R) I211 Gigabit Network Connection #4
(PCI) 0xFFFFFFF6 (-10) Intel(R) I211 Gigabit Network Connection #4
(PCI) 0xFFFFFFF7 (-9) Intel(R) I211 Gigabit Network Connection #4
(PCI) 0xFFFFFFF8 (-8) Intel(R) USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
(PCI) 0xFFFFFFF9 (-7) Intel(R) HD Graphics
(PCI) 0xFFFFFFFA (-6) Intel(R) I211 Gigabit Network Connection
(PCI) 0xFFFFFFFB (-5) Intel(R) I211 Gigabit Network Connection
(PCI) 0xFFFFFFFC (-4) Intel(R) I211 Gigabit Network Connection
(PCI) 0xFFFFFFFD (-3) Intel(R) I211 Gigabit Network Connection
(PCI) 0xFFFFFFFE (-2) Standard SATA AHCI Controller

Appendix C

Electrical Specifications for I/O Ports

C.1 Electrical Specifications for I/O Ports

I/O	Reference	Signal Name	Rate output
COM Port	CN1	+5 V/ +12 V	+5 V/ 1 A or +12 V/ 1 A
+5 V Output for SATA HDD	CN7	+5 V	+5 V/ 1 A
CFast Slot	CN11	+3.3 V	+3.3 V/ 0.5 A
MiniCard Slot (USB 2.0 Port2 Only)	CN13	+3.3 VSB +1.5 V	+3.3 V/ 1.1 A +1.5 V/ 0.375 A
USB 3.0 Port 0	CN17	+5 VSB	+5V/ 1A
USB 2.0 Port 3	CN18	+5 VSB	+5 V/ 0.5A
USB 2.0 Port 1	CN19	+5 VSB	+5 V/ 0.5A
HDMI Port	CN20, CN21	+5 V	+5 V/ 1A