

Q7M310/311

Intel[®] Celeron[®] N4200/N3350 Intel[®] Atom[™] E3950/E3940/E3930 Qseven Module

User's Manual



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CAUTION

If you replace wrong batteries, it causes the danger of explosion. It is recommended by the manufacturer that you follow the manufacturer's instructions to only replace the same or equivalent type of battery, and dispose of used ones.

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ESD Precautions

Computer boards have integrated circuits sensitive to static electricity. To prevent chipsets from electrostatic discharge damage, please take care of the following jobs with precautions:

- Do not remove modules or integrated circuits from their anti-static packaging until you are ready to install them.
- Before holding the module or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. It discharges static electricity from your body.
- Wear a wrist-grounding strap, available from most electronic component stores, when handling modules and components.

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Chapter 1 Introduction



The Q7M311 is a new Qseven Module supporting $Intel^{^{(0)}}$ Celeron[®] quad/dual core N4200/N3350 processor. Meanwhile, Q7M310 supports $Intel^{^{(0)}}$ AtomTM x5 and x7 E3950/E3940/E3930 processor. Both of them deliver outstanding system performance and support excellent multiple I/Os, one DDI, one LVDS, one Gigabit Ethernet, HD Audio interface, two SATA-600, three USB 3.0 and four USB 2.0 ports. For extension purpose, Q7M310/311 provides maximum up to 4 lanes of PCI-Express.

1.1 **Features**

- •
- Q7M311: Intel[®] Celeron[®] N4200/N3350 processor Q7M310: Intel[®] Atom[™] E3950/E3940/E3930 processor •
- DDR3L onboard memory for up to 8GB memory capacity (the default is 4GB) •
- Support max. up to 4 lanes of PCI-Express •
- 2 SATA-600 •
- 3 USB 3.0 and 4 USB 2.0 ports .
- Optional eMMC storage upto 64GB (BOM Optional) .
- Form factor: Qseven Specification v2.1

Specifications 1.2

- CPU
 - Q7M311
 - Intel[®] Celeron[®] quad core N4200 1.10GHz.
 Intel[®] Celeron[®] dual core N3350 1.10GHz.
 - Q7M310
 - Intel[®] Atom[™] x7-E3950 1.6GHz. Intel[®] Atom[™] x5-E3940 1.6GHz. Intel[®] Atom[™] x5-E3930 1.3GHz.
- BIOS
 - American Megatrends Inc. BIOS.
 - 64Mbit SPI Flash, DMI, Plug and Play.
 - PXE Ethernet Boot ROM, customized default saving features, LPC-free supported, uses SPI type Flash memory.
- System Memory
 - DDR3L 1866MHz onboard memory for up to 8GB capacity (the default is 4GB).
- **Expansion Interface**
 - Four PCI-Express x1 (Three PCIe x1 if onboard LAN is supported).
 - Three USB ports comply with USB Spec. Rev. 3.0.
 - Four USB ports comply with USB Spec. Rev. 2.0.

SATA Interface

- Two SATA-600 supported.
- **On board Storage**
 - 16GB, 32B, 64GB eMMC supported (Not default, only BOM optional)
- Graphics
 - Integrated in processor HD graphics Gen 9.
 - 18/24-bit dual channel LVDS interface.
 - One DDI interface supports DVI/HDMI/DisplayPort.

Ethernet

- One 1000/100/10Mbps Base-T provided by Intel[®] I210IT with integrated boot ROM.
- Audio
 - Intel[®] High Definition Audio interface.
- **Form Factor**
 - Compact module 70mm x 70mm.

Utilities Supported 1.3

- •
- •
- Chipset driver Graphics driver Ethernet utility and driver •
- Trusted execution engine •
- Sideband fabric device •
- USB 3.0 driver •



All specifications and images are subject to change without notice.

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Chapter 2 Module and Pin Assignments

2.1 Module Dimensions and Fixing Holes







2.2 Module Layout

Top View



Bottom View

2.3 Installing Thermal Solution

For thermal dissipation, a thermal solution enables the Q7M310/311's components to dissipate heat efficiently. All heat generating components are thermally conducted to the heatsink in order to avoid hot spots. Figure below illustrates how to install the thermal solution on Q7M310/311.

- 1. There is a protective plastic covering on the thermal pads. This must be removed before the heatsink can be mounted.
- 2. Each heatsink is designed for a specific Q7M module. The thermal pads on the heatsink are designed to make contact with the necessary components on the Q7M module. When mounting the heatsink you must make sure that the thermal pads on the heatsink make complete contact (no space between thermal pad and component) with the corresponding components on the Q7M module. This is especially critical for Q7M modules that have higher CPU speeds (for example 1.46GHz or more) to ensure that the heatsink acts as a proper thermal interface for cooling solutions.
- This CPU module has four assembly holes for installing heatsink plate. Use the four screws to secure the heatsink plate to the Q7M310/311. Be careful not to over-tighten the screws.



2.4 Switch Settings

Properly configure switch settings on the Q7M310/311 to meet your application purpose. Below you can find a summary table of all switches and onboard default settings.

ſ	0	
U		
Ν	ote	

Once the default switch setting needs to be changed, please do it under power-off condition.

Switch	Description	Setting
SSW1	Auto Power On Default: Enable	ON (Up)

2.4.1 Auto Power On (SSW1)

If SSW1 is set to ON (up) position, the system will be automatically power on without pressing soft power button. If set to OFF (down) position, it is necessary to manually press soft power button to power on the system.

Function	Setting
Enable auto power on (Default)	ON (up)
Disable auto power on	OFF (down)



Chapter 3 Hardware Description

3.1 Microprocessor

The Q7M310/311 supports Intel[®] Celeron[®] N4200/N3350 and AtomTM E3950/E3940/E3930 processors which enable your system to operate under Windows[®] 10 and Linux environments. The system performance depends on the microprocessor. You must install the heatsink or cooler carefully and properly to prevent damage.

3.2 BIOS

The Q7M310/311 uses AMI Plug and Play BIOS with a single 64Mbit SPI Flash.

3.3 System Memory

The Q7M310/311 supports DDR3L memory for maximum capacity up to 8GB (the default is 4GB).

3.4 I/O Port Address Map

The I/O port addresses are as follows:

```
    Input/output (IO)

                     Image: State St
                                        line [0000000000000020 - 00000000000000021] Programmable interrupt controller
                                          Image: www.image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/im
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                                                                                 i [000000000000002C - 000000000000002D] Programmable interrupt controller
                                                          [00000000000002E - 0000000000002F] Motherboard resources
                                        늘 [0000000000000030 - 0000000000000031] Programmable interrupt controller
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                                                                                 🛅 [000000000000034 - 000000000000035] Programmable interrupt controller
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                                                                                 [00000000000000040 - 00000000000043] System timer
                                                                                 [00000000000004E - 000000000004F] Motherboard resources
                                        E [000000000000050 - 000000000000053] System timer
                                        to (000000000000061 - 0000000000000061] Motherboard resources
                                                            I00000000000000062 - 000000000000621 Microsoft ACPI-Compliant Embedded Controller
                                                          to 100000000000063 - 00000000000063] Motherboard resources
                                        [0000000000000064 - 0000000000064] Standard PS/2 Keyboard
                                                                                 [000000000000064 - 00000000000064] Standard PS/2 Keyboard
                                                            I000000000000065 - 0000000000000651 Motherboard resources
                                                                        [000000000000066 - 00000000000066] Microsoft ACPI-Compliant Embedded Controller
                                                            [0000000000000067 - 00000000000067] Motherboard resources
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                                                                                 🛅 [00000000000000B0 - 0000000000000B1] Programmable interrupt controller
                                                            [000000000000082 - 0000000000083] Motherboard resources
                                        v 🏣 [0000000000000B4 - 000000000000B5] Programmable interrupt controller
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🛅 [000000000000088 - 000000000000089] Programmable interrupt controller Image: with the second seco E [0000000000000BC - 0000000000000BD] Programmable interrupt controller [0000000000000248 - 0000000000024F] Communications Port (COM1) [000000000000258 - 0000000000025F] Communications Port (COM2) to the sources [000000000000400 - 00000000000047F] Motherboard resources v 🏣 [00000000000004D0 - 000000000004D1] Programmable interrupt controller E [0000000000004D0 - 000000000004D1] Programmable interrupt controller [00000000000000000 - 000000000000061F] Motherboard resources to [000000000000680 - 00000000000069F] Motherboard resources to interboard resources [00000000000164F] Motherboard resources Image: www.image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/image.com/im Image: State St Image: State St Intel(R) I210 Gigabit Network Connection #2 m [00000000000000000 - 0000000000000001F] Standard SATA AHCI Controller Intel(R) HD Graphics [000000000000000000 - 0000000000000003F] Intel(R) HD Graphics Image: Comparison of the second se

3.5 Interrupt Controller (IRQ) Map

The interrupt controller (IRQ) mapping list is shown as follows:

~	Interrupt request (IRQ)	
	(ISA) 0x00000000 (00)	System timer
	(ISA) 0x00000000 (00)	System timer
	(ISA) 0x00000001 (01)	Standard PS/2 Keyboard
	(ISA) 0x00000001 (01)	Standard PS/2 Keyboard
	(ISA) 0x00000003 (03)	Intel SD Host Controller
	(ISA) 0x00000003 (03)	Standard SATA AHCI Controller
	(ISA) 0x00000006 (06)	Communications Port (COM2)
	(ISA) 0x00000007 (07)	Communications Port (COM1)
	(ISA) 0x00000007 (07)	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5ADA
	(ISA) 0x00000007 (07)	Intel(R) Trusted Execution Engine Interface
	(ISA) 0x00000007 (07)	Renesas USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
	(ISA) 0x00000008 (08)	High precision event timer
	(ISA) 0x00000009 (09)	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5ADB
	(ISA) 0x00000009 (09)	Intel(R) I210 Gigabit Network Connection #2
	(ISA) 0x00000009 (09)	Intel(R) I211 Gigabit Network Connection #3
	(ISA) 0x0000000A (10)	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD8
	(ISA) 0x0000000A (10)	Intel(R) I211 Gigabit Network Connection #2
	(ISA) 0x0000000A (10)	Intel(R) I211 Gigabit Network Connection
	(ISA) 0x0000000A (10)	Renesas USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
	(ISA) 0x0000000A (10)	Renesas USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
	iii (ISA) 0x0000000A (10)	Renesas USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
	(ISA) 0x0000000A (10)	Renesas USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
	(ISA) 0x0000000A (10)	Standard SATA AHCI Controller
	(ISA) 0x0000000B (11)	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD9
	(ISA) 0x0000000B (11)	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD7
	E (ISA) 0x000000B (11)	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD9
	(ISA) 0x000000B (11)	Intel(R) HD Graphics
	(ISA) 0x000000B (11)	Intel(R) HD Graphics
	(ISA) 0x000000B (11)	Intel(R) HD Graphics
	(ISA) 0x000000B (11)	Intel(R) HD Graphics
	(ISA) 0x000000B (11)	Renesas USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
	(ISA) 0x000000B (11)	Standard SATA AHCI Controller
	(ISA) 0x000000E (14)	Intel(R) Serial IO GPIO Host Controller - INT3452
	(ISA) 0x000000E (14)	Intel(R) Serial IO GPIO Host Controller - INT3452
	(ISA) 0x000000E (14)	Intel(R) Serial IO GPIO Host Controller - INT3452
	(ISA) 0x000000E (14)	Intel(R) Serial IO GPIO Host Controller - INT3452
	ψ (ISA) 0x00000011 (17)	Intel(R) USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
	(ISA) 0x00000019 (25)	High Definition Audio Controller
	(ISA) 0x00000027 (39)	Intel SD Host Controller
	(ISA) 0x0000002A (42)	Intel SD Host Controller
	(ISA) 0x0000036 (S4)	Microsoft ACPI-Compliant System
	(ISA) 0x0000037 (55)	Microsoft ACPI-Compliant System
	(ISA) 0x0000038 (30)	Microsoft ACPI-Compliant System
	(ISA) 0x0000039 (57)	Microsoft ACPI-Compliant System
	(ISA) 0x000003A (38)	Microsoft ACPI-Compliant System
	(ISA) 0x000003B (39)	Microsoft ACPL-Compliant System
	(ISA) 0x000003C (00)	Microsoft ACPL-Compliant System
	(ISA) 0x000003D (01)	Microsoft ACPL-Compliant System
	[ISA] 0x000003E (02)	Microsoft ACPI-Compliant System
	(ISA) 0x0000001 (63)	Microsoft ACPI-Compliant System
	(134) 00000040 (04)	inclusive dor roompliant system

(ISA) 0x00000041 (65)	Microsoft ACPI-Compliant System
ta (ISA) 0x00000042 (66)	Microsoft ACPI-Compliant System
ta (ISA) 0x00000043 (67)	Microsoft ACPI-Compliant System
to (ISA) 0x00000044 (68)	Microsoft ACPI-Compliant System
ta (ISA) 0x00000045 (69)	Microsoft ACPI-Compliant System
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ta (ISA) 0x00000048 (72)	Microsoft ACPI-Compliant System
(ISA) 0x00000049 (73)	Microsoft ACPI-Compliant System
(ISA) 0x0000004A (74)	Microsoft ACPI-Compliant System
ta (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) 0x00000055 (05)	Microsoft ACPI-Compliant System
I (ISA) 0x00000057 (87)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
(ISA) 0x0000003A (90)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
(ISA) 0x0000005C (92)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
(ISA) 0x0000000 (90)	Microsoft ACPI-Compliant System
(ISA) 0x00000061 (97)	Microsoft ACPI-Compliant System
(ISA) 0x0000062 (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
ta (ISA) 0x00000069 (105)	Microsoft ACPI-Compliant System
(ISA) 0x000006A (106)	Microsoft ACPI-Compliant System
E (ISA) 0x000006B (107)	Microsoft ACPI-Compliant System
(ISA) 0x0000006C (108)	Microsoft ACPI-Compliant System
to (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
Tal: (ISA) 0x00000071 (113)	Microsoft ACPI-Compliant System
to (ISA) 0x00000072 (114)	Microsoft ACPI-Compliant System
ta (ISA) 0x00000073 (115)	Microsoft ACPI-Compliant System

to (ISA) 0x00000074 (116) Microsoft ACPI-Compliant System to (ISA) 0x00000075 (117) Microsoft ACPI-Compliant System to (ISA) 0x00000076 (118) Microsoft ACPI-Compliant System (ISA) 0x00000077 (119) Microsoft ACPI-Compliant System ta (ISA) 0x00000078 (120) Microsoft ACPI-Compliant System ta (ISA) 0x00000079 (121) Microsoft ACPI-Compliant System to (ISA) 0x0000007A (122) Microsoft ACPI-Compliant System to (ISA) 0x0000007B (123) Microsoft ACPI-Compliant System [ISA] 0x0000007C (124) Microsoft ACPI-Compliant System to (ISA) 0x0000007D (125) Microsoft ACPI-Compliant System (ISA) 0x0000007E (126) Microsoft ACPI-Compliant System to (ISA) 0x0000007F (127) Microsoft ACPI-Compliant System ta (ISA) 0x00000080 (128) Microsoft ACPI-Compliant System to (ISA) 0x00000081 (129) Microsoft ACPI-Compliant System to (ISA) 0x00000082 (130) Microsoft ACPI-Compliant System to (ISA) 0x00000083 (131) Microsoft ACPI-Compliant System ta (ISA) 0x00000084 (132) Microsoft ACPI-Compliant System ISA) 0x00000085 (133) Microsoft ACPI-Compliant System to (ISA) 0x00000086 (134) Microsoft ACPI-Compliant System to (ISA) 0x00000087 (135) Microsoft ACPI-Compliant System (ISA) 0x00000088 (136) Microsoft ACPI-Compliant System to (ISA) 0x00000089 (137) Microsoft ACPI-Compliant System to (ISA) 0x0000008A (138) Microsoft ACPI-Compliant System ta (ISA) 0x000008B (139) Microsoft ACPI-Compliant System (ISA) 0x0000008C (140) Microsoft ACPI-Compliant System to (ISA) 0x0000008D (141) Microsoft ACPI-Compliant System to (ISA) 0x0000008E (142) Microsoft ACPI-Compliant System to (ISA) 0x0000008F (143) Microsoft ACPI-Compliant System to (ISA) 0x00000000 (144) Microsoft ACPI-Compliant System Ta (ISA) 0x00000091 (145) Microsoft ACPI-Compliant System to (ISA) 0x00000092 (146) Microsoft ACPI-Compliant System ta (ISA) 0x00000093 (147) Microsoft ACPI-Compliant System to (ISA) 0x00000094 (148) Microsoft ACPI-Compliant System to (ISA) 0x00000095 (149) Microsoft ACPI-Compliant System to (ISA) 0x00000096 (150) Microsoft ACPI-Compliant System to (ISA) 0x00000097 (151) Microsoft ACPI-Compliant System Isa (ISA) 0x00000098 (152) Microsoft ACPI-Compliant System to (ISA) 0x00000099 (153) Microsoft ACPI-Compliant System to (ISA) 0x0000009A (154) Microsoft ACPI-Compliant System (ISA) 0x0000009B (155) Microsoft ACPI-Compliant System to (ISA) 0x0000009C (156) Microsoft ACPI-Compliant System ISA) 0x0000009D (157) Microsoft ACPI-Compliant System (ISA) 0x0000009E (158) Microsoft ACPI-Compliant System ta (ISA) 0x0000009F (159) Microsoft ACPI-Compliant System ta (ISA) 0x000000A0 (160) Microsoft ACPI-Compliant System to (ISA) 0x000000A1 (161) Microsoft ACPI-Compliant System to (ISA) 0x000000A2 (162) Microsoft ACPI-Compliant System to (ISA) 0x000000A3 (163) Microsoft ACPI-Compliant System to (ISA) 0x000000A4 (164) Microsoft ACPI-Compliant System ta (ISA) 0x000000A5 (165) Microsoft ACPI-Compliant System to (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
b	(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
b	(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
b	(ISA) 0x00000106 (262)	Microsoft ACPI-Compliant System
	(ISA) 0x00000107 (263)	Microsoft ACPI-Compliant System
b	(ISA) 0x00000108 (264)	Microsoft ACPI-Compliant System
	(ISA) 0x00000109 (265)	Microsoft ACPI-Compliant System
h	(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 to (ISA) 0x00000111 (273) Microsoft ACPI-Compliant System ta (ISA) 0x00000112 (274) Microsoft ACPI-Compliant System to (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 III (ISA) 0x00000117 (279) Microsoft ACPI-Compliant System ta (ISA) 0x00000118 (280) Microsoft ACPI-Compliant System ISA) 0x00000119 (281) Microsoft ACPI-Compliant System ta (ISA) 0x0000011A (282) Microsoft ACPI-Compliant System isA) 0x0000011B (283) Microsoft ACPI-Compliant System [ISA] 0x0000011C (284) Microsoft ACPI-Compliant System to (ISA) 0x0000011D (285) Microsoft ACPI-Compliant System [ISA] 0x0000011E (286) Microsoft ACPI-Compliant System ta (ISA) 0x0000011F (287) Microsoft ACPI-Compliant System isA) 0x00000120 (288) Microsoft ACPI-Compliant System [ISA] 0x00000121 (289) Microsoft ACPI-Compliant System to (ISA) 0x00000122 (290) Microsoft ACPI-Compliant System to (ISA) 0x00000123 (291) Microsoft ACPI-Compliant System IIII (ISA) 0x00000124 (292) Microsoft ACPI-Compliant System (ISA) 0x00000125 (293) Microsoft ACPI-Compliant System (ISA) 0x00000126 (294) Microsoft ACPI-Compliant System is (ISA) 0x00000127 (295) Microsoft ACPI-Compliant System (ISA) 0x00000128 (296) Microsoft ACPI-Compliant System ISA) 0x00000129 (297) Microsoft ACPI-Compliant System 13A) 0x0000012A (298) Microsoft ACPI-Compliant System ta (ISA) 0x0000012B (299) Microsoft ACPI-Compliant System (ISA) 0x0000012C (300) Microsoft ACPI-Compliant System (ISA) 0x0000012D (301) Microsoft ACPI-Compliant System is (ISA) 0x0000012E (302) Microsoft ACPI-Compliant System 15A) 0x0000012F (303) Microsoft ACPI-Compliant System to (ISA) 0x00000130 (304) Microsoft ACPI-Compliant System ta (ISA) 0x00000131 (305) Microsoft ACPI-Compliant System ISA) 0x00000132 (306) Microsoft ACPI-Compliant System (ISA) 0x00000133 (307) Microsoft ACPI-Compliant System ta (ISA) 0x00000134 (308) Microsoft ACPI-Compliant System (ISA) 0x00000135 (309) Microsoft ACPI-Compliant System ta (ISA) 0x00000136 (310) Microsoft ACPI-Compliant System 늘 (ISA) 0x00000137 (311) Microsoft ACPI-Compliant System is (ISA) 0x00000138 (312) Microsoft ACPI-Compliant System [ISA] 0x00000139 (313) Microsoft ACPI-Compliant System to (ISA) 0x0000013A (314) Microsoft ACPI-Compliant System ISA) 0x0000013B (315) Microsoft ACPI-Compliant System ta (ISA) 0x0000013C (316) Microsoft ACPI-Compliant System to (ISA) 0x0000013D (317) Microsoft ACPI-Compliant System (ISA) 0x0000013E (318) Microsoft ACPI-Compliant System to (ISA) 0x0000013F (319) Microsoft ACPI-Compliant System

ISA) 0x00000140 (320)	Microsoft ACPI-Compliant System
ta (ISA) 0x00000141 (321)	Microsoft ACPI-Compliant System
ta (ISA) 0x00000142 (322)	Microsoft ACPI-Compliant System
ta (ISA) 0x00000143 (323)	Microsoft ACPI-Compliant System
ta (ISA) 0x00000144 (324)	Microsoft ACPI-Compliant System
ta (ISA) 0x00000145 (325)	Microsoft ACPI-Compliant System
(ISA) 0x00000146 (326)	Microsoft ACPI-Compliant System
to (ISA) 0x00000147 (327)	Microsoft ACPI-Compliant System
ta (ISA) 0x00000148 (328)	Microsoft ACPI-Compliant System
ta (ISA) 0x00000149 (329)	Microsoft ACPI-Compliant System
ta (ISA) 0x0000014A (330)	Microsoft ACPI-Compliant System
ta (ISA) 0x0000014B (331)	Microsoft ACPI-Compliant System
ta (ISA) 0x0000014C (332)	Microsoft ACPI-Compliant System
ta (ISA) 0x0000014D (333)	Microsoft ACPI-Compliant System
ta (ISA) 0x0000014E (334)	Microsoft ACPI-Compliant System
(ISA) 0x0000014F (335)	Microsoft ACPI-Compliant System
ta (ISA) 0x00000150 (336)	Microsoft ACPI-Compliant System
(ISA) 0x00000151 (337)	Microsoft ACPI-Compliant System
ta (ISA) 0x00000152 (338)	Microsoft ACPI-Compliant System
ta (ISA) 0x00000153 (339)	Microsoft ACPI-Compliant System
ta (ISA) 0x00000154 (340)	Microsoft ACPI-Compliant System
(ISA) 0x00000155 (341)	Microsoft ACPI-Compliant System
(ISA) 0x00000156 (342)	Microsoft ACPI-Compliant System
ta (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
ta (ISA) 0x0000015B (347)	Microsoft ACPI-Compliant System
(ISA) 0x0000015C (348)	Microsoft ACPI-Compliant System
ta (ISA) 0x0000015D (349)	Microsoft ACPI-Compliant System
to (ISA) 0x0000015E (350)	Microsoft ACPI-Compliant System
(ISA) 0x0000015F (351)	Microsoft ACPI-Compliant System
ta (ISA) 0x00000160 (352)	Microsoft ACPI-Compliant System
tal (ISA) 0x00000161 (353)	Microsoft ACPI-Compliant System
ta (ISA) 0x00000162 (354)	Microsoft ACPI-Compliant System
ta (ISA) 0x00000163 (355)	Microsoft ACPI-Compliant System
tal (ISA) 0x00000164 (356)	Microsoft ACPI-Compliant System
tal (ISA) 0x00000165 (357)	Microsoft ACPI-Compliant System
ta (ISA) 0x00000166 (358)	Microsoft ACPI-Compliant System
ta (ISA) 0x00000167 (359)	Microsoft ACPI-Compliant System
ta (ISA) 0x00000168 (360)	Microsoft ACPI-Compliant System
tal (ISA) 0x00000169 (361)	Microsoft ACPI-Compliant System
ta (ISA) 0x0000016A (362)	Microsoft ACPI-Compliant System
ta (ISA) 0x0000016B (363)	Microsoft ACPI-Compliant System
Table (ISA) 0x0000016C (364)	Microsoft ACPI-Compliant System
ta (ISA) 0x0000016D (365)	Microsoft ACPI-Compliant System
Table (ISA) 0x0000016E (366)	Microsoft ACPI-Compliant System
ISA) 0x0000016F (367)	Microsoft ACPI-Compliant System
Tal: (ISA) 0x00000170 (368)	Microsoft ACPI-Compliant System
ISA) 0x00000171 (369)	Microsoft ACPI-Compliant System
Tal: (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 to (ISA) 0x00000177 (375) Microsoft ACPI-Compliant System is (ISA) 0x00000178 (376) Microsoft ACPI-Compliant System to (ISA) 0x00000179 (377) Microsoft ACPI-Compliant System 늘 (ISA) 0x0000017A (378) Microsoft ACPI-Compliant System [ISA] 0x0000017B (379) Microsoft ACPI-Compliant System [ISA] 0x0000017C (380) Microsoft ACPI-Compliant System La (ISA) 0x0000017D (381) Microsoft ACPI-Compliant System [ISA] 0x0000017E (382) Microsoft ACPI-Compliant System ta (ISA) 0x0000017F (383) Microsoft ACPI-Compliant System ISA) 0x00000180 (384) Microsoft ACPI-Compliant System to (ISA) 0x00000181 (385) Microsoft ACPI-Compliant System ta (ISA) 0x00000182 (386) Microsoft ACPI-Compliant System ta (ISA) 0x00000183 (387) Microsoft ACPI-Compliant System [ISA] 0x00000184 (388) Microsoft ACPI-Compliant System to (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 ta (ISA) 0x00000189 (393) Microsoft ACPI-Compliant System [ISA] 0x0000018A (394) Microsoft ACPI-Compliant System to (ISA) 0x0000018B (395) Microsoft ACPI-Compliant System [ISA] 0x0000018C (396) Microsoft ACPI-Compliant System to (ISA) 0x0000018D (397) Microsoft ACPI-Compliant System (ISA) 0x0000018E (398) Microsoft ACPI-Compliant System to (ISA) 0x0000018F (399) Microsoft ACPI-Compliant System to (ISA) 0x00000190 (400) Microsoft ACPI-Compliant System to (ISA) 0x00000191 (401) Microsoft ACPI-Compliant System (ISA) 0x00000192 (402) Microsoft ACPI-Compliant System ta (ISA) 0x00000193 (403) Microsoft ACPI-Compliant System to (ISA) 0x00000194 (404) Microsoft ACPI-Compliant System to (ISA) 0x00000195 (405) Microsoft ACPI-Compliant System to (ISA) 0x00000196 (406) Microsoft ACPI-Compliant System [ISA] 0x00000197 (407) Microsoft ACPI-Compliant System to (ISA) 0x00000198 (408) Microsoft ACPI-Compliant System ta (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 to (ISA) 0x000001A0 (416) Microsoft ACPI-Compliant System (ISA) 0x000001A1 (417) Microsoft ACPI-Compliant System (ISA) 0x000001A2 (418) Microsoft ACPI-Compliant System Microsoft ACPI-Compliant System (ISA) 0x000001A3 (419) (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
b	(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
6	(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
ta (ISA) 0x000001DA (474)	Microsoft ACPI-Compliant System
(ISA) 0x000001DB (475)	Microsoft ACPI-Compliant System
ta (ISA) 0x000001DC (476)	Microsoft ACPI-Compliant System
ta (ISA) 0x000001DD (477)	Microsoft ACPI-Compliant System
La (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) 0x000001F4 (484)	Microsoft ACPI-Compliant System
(ISA) 0x000001E5 (485)	Microsoft ACPI-Compliant System
(ISA) 0x000001E6 (486)	Microsoft ACPI-Compliant System
(ISA) 0x000001E0 (400)	Microsoft ACPI-Compliant System
(ISA) 0x000001E9 (489)	Microsoft ACPI-Compliant System
(ISA) 0x000001E0 (400)	Microsoft ACPI-Compliant System
	Microsoft ACPI-Compliant System
(ISA) 0x000001EA (490)	Microsoft ACPI-Compliant System
(ISA) 0x000001EB (491)	Microsoft ACPI-Compliant System
(ISA) 0X00000TEC (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
Tal: (ISA) 0x000001F6 (502)	Microsoft ACPI-Compliant System
ta (ISA) 0x000001F7 (503)	Microsoft ACPI-Compliant System
ta (ISA) 0x000001F8 (504)	Microsoft ACPI-Compliant System
ta (ISA) 0x000001F9 (505)	Microsoft ACPI-Compliant System
to (ISA) 0x000001FA (506)	Microsoft ACPI-Compliant System
ta (ISA) 0x000001FB (507)	Microsoft ACPI-Compliant System
to (ISA) 0x000001FC (508)	Microsoft ACPI-Compliant System
ta (ISA) 0x000001FD (509)	Microsoft ACPI-Compliant System
ta (ISA) 0x000001FE (510)	Microsoft ACPI-Compliant System
ta (ISA) 0x000001FF (511)	Microsoft ACPI-Compliant System
(PCI) 0x0000003 (03)	Intel SD Host Controller
E (PCI) 0x00000019 (25)	High Definition Audio Controller
(PCI) 0x00000027 (39)	Intel SD Host Controller
(PCI) 0x0000002A (42)	Intel SD Host Controller
(PCI) 0x00000400 (1024)	Intel SD Host Controller
(PCI) 0xFFFFFFF0 (-16)	Intel(R) USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
Ta (PCI) 0xFFFFFFF7 (-9)	Intel(R) Trusted Execution Engine Interface
(PCI) 0xFFFFFF8 (-8)	Intel(R) HD Graphics
(PCI) 0xFFFFFF9 (-7)	Standard SATA AHCI Controller
(PCI) 0xFFFFFFFA (-6)	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD6
(PCI) 0xFFFFFFB (-5)	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5ADB
(PCI) 0xFFFFFFFC (-4)	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5ADA
(PCI) 0xFFFFFFFD (-3)	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5009
(PCI) 0xFFFFFFFF (-2)	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD8

3.6 Memory Map

The memory mapping list is shown as follows:

```
✓ Memory
          to [0000000000000000 - 0000000000BFFFF] PCI Express Root Complex
          E [000000007B800001 - 000000007BFFFFFF] PCI Express Root Complex
         E [00000007C000001 - 00000007FFFFFF] PCI Express Root Complex
     [0000000000000000 - 00000000CFFFFFF] PCI Express Root Complex
          Image: [000000080000000 - 00000008FFFFFFF] Intel(R) HD Graphics
                [0000000080000000 - 00000008FFFFFFF] Intel(R) HD Graphics
                     [000000080000000 - 00000008FFFFFFF] Intel(R) HD Graphics
                                 [0000000080000000 - 00000008FFFFFF] Intel(R) HD Graphics
          [0000000090000000 - 000000090FFFFFF] Intel(R) HD Graphics
                 [0000000090000000 - 000000090FFFFFF] Intel(R) HD Graphics
                     [0000000090000000 - 000000090FFFFFF] Intel(R) HD Graphics
                               [000000009000000 - 000000090FFFFFF] Intel(R) HD Graphics
          Image: State St
                     [0000000091000000 - 0000000910FFFFF] High Definition Audio Controller
          v 📩 10000000091100000 - 00000000911FFFFF] Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - SAD6
                Im [0000000091100000 - 00000000911FFFFF] Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD6
                       Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - SADB
          Image: State St

    [000000091200000 - 00000009120FFFF] Intel(R) USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)

                          iii [0000000091200000 - 000000009120FFFF] Intel(R) USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
                                ii [0000000091200000 - 0000000091201FFF] Renesas USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
                                🗸 🎚 [000000091200000 - 000000091201FFF] Renesas USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
                                      iii [000000091200000 - 000000091201FFF] Renesas USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
                                                [0000000091200000 - 0000000091201FFF] Renesas USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
               [0000000091210000 - 000000091213FFF] High Definition Audio Controller
                       Im [000000091210000 - 000000091213FFF] High Definition Audio Controller
                                I000000091214000 - 000000091215FFF1 Standard SATA AHCI Controller
                            I000000091214000 - 000000091215FFF1 Standard SATA AHCI Controller
                Image: 10000000091216000 - 00000000912160FF] Intel(R) Celeron(R)/Pentium(R) Processor SMBUS - 5AD4
                          10000000091216000 - 00000000912160FF] Intel(R) Celeron(R)/Pentium(R) Processor SMBUS - SAD4
                    I [0000000091217000 - 0000000091217FFF] Intel SD Host Controller
                            [0000000091217000 - 0000000091217FFF] Intel SD Host Controller
                   [0000000091218000 - 0000000091218FFF] Intel SD Host Controller
                           [0000000091218000 - 0000000091218FFF] Intel SD Host Controller
                   III [0000000091219000 - 0000000091219FFF] Intel SD Host Controller
                             [ [0000000091219000 - 0000000091219FFF] Intel SD Host Controller
                [000000009121A000 - 00000009121AFFF] Intel SD Host Controller
                            [000000009121A000 - 00000009121AFFF] Intel SD Host Controller
                   I000000091218000 - 000000091218FEF1 Intel SD Host Controller
                            1000000091218000 - 000000091218FFF1 Intel SD Host Controller
                Image: 1000000009121C000 - 000000009121CFFF] Intel SD Host Controller
                            [000000009121C000 - 000000009121CFFF] Intel SD Host Controller
                     m [000000009121D000 - 000000009121D7FF] Standard SATA AHCI Controller
                            [000000009121D000 - 000000009121D7FF] Standard SATA AHCI Controller
                    ma [000000009121E000 - 000000009121E0FF] Standard SATA AHCI Controller
                            [000000009121E000 - 000000009121E0FF] Standard SATA AHCI Controller
                    to [000000091221000 - 000000091221FFF] Intel(R) Trusted Execution Engine Interface
                          10000000091221000 - 0000000091221FFF] Intel(R) Trusted Execution Engine Interface
                 (000000091310000 - 0000000913107FF) Standard SATA AHCI Controller
                 [000000000000000 - 00000000CFFFFFFF] Intel(R) HD Graphics
                      [000000000000000 - 00000000CFFFFFFF] Intel(R) HD Graphics
          to (0000000000000000 - 0000000000000053) Intel(R) Serial IO GPIO Host Controller - INT3452
          to [0000000000C40000 - 000000000C40763] Intel(R) Serial IO GPIO Host Controller - INT3452
          V Ta (0000000E000000 - 0000000EFFFFFFF) PCI Express Root Complex
               to (00000000000000 - 00000000EFFFFFFF) Motherboard resources
      [00000000FC000000 - 00000000FCFFFFFF] Intel(R) HD Graphics
                   [00000000FC000000 - 0000000FCFFFFFF] Intel(R) HD Graphics
           [00000000FD000000 - 0000000FD01FFFF] Intel(R) I211 Gigabit Network Connection #3
               [00000000FD020000 - 00000000FD023FFF] Intel(R) I211 Gigabit Network Connection #3
          I0000000FEA00000 - 0000000FEAFFFFF1 Motherboard resources
          i00000000FED00000 - 00000000FED003FF] High precision event times
          5 [00000000FED01000 - 00000000FED01FFF] Motherboard resources
          [00000000FED03000 - 00000000FED03FFF] Motherboard resources
          5 [00000000FED06000 - 00000000FED06FFF] Motherboard resources
          [00000000FED08000 - 00000000FED09FFF] Motherboard resources
          [00000000FED1C000 - 00000000FED1CFFF] Motherboard resources
           100000000FED80000 - 00000000FEDBFFFF1 Motherboard resources
          [00000000FEE00000 - 00000000FEEFFFF] Motherboard resources
```

Chapter 4 AMI BIOS Setup Utility

The AMI UEFI BIOS provides users with a built-in setup program to modify basic system configuration. All configured parameters are stored in a flash chip to save the setup information whenever the power is turned off. This chapter provides users with detailed description about how to set up basic system configuration through the AMI BIOS setup utility.

4.1 Starting

To enter the setup screens, follow the steps below:

- 1. Turn on the computer and press the key immediately.
- 2. After you press the key, the main BIOS setup menu displays. You can access the other setup screens from the main BIOS setup menu, such as the Advanced and Chipset menus.

It is strongly recommended that you should avoid changing the chipset's defaults. Both AMI and your system manufacturer have carefully set up these defaults that provide the best performance and reliability.

4.2 Navigation Keys

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process. These keys include <F1>, <F2>, <Enter>, <ESC>, <Arrow> keys, and so on.



Some of the navigation keys differ from one screen to another.

Hot Keys	Description	
→← Left/Right	The Left and Right < Arrow> keys allow you to select a setup screen.	
∱ ↓ Up/Down	The Up and Down <arrow> keys allow you to select a setup screen or sub-screen.</arrow>	
+– Plus/Minus	The Plus and Minus <arrow> keys allow you to change the field value of a particular setup item.</arrow>	
Tab	The <tab> key allows you to select setup fields.</tab>	
F1	The <f1> key allows you to display the General Help screen.</f1>	
F2	The <f2> key allows you to Load Previous Values.</f2>	
F3	The <f3> key allows you to Load Optimized Defaults.</f3>	
F4	The $<$ F4> key allows you to save any changes you have made and exit Setup. Press the $<$ F4> key to save your changes.	
Esc	The <esc> key allows you to discard any changes you have made and exit the Setup. Press the <esc> key to exit the setup without saving your changes.</esc></esc>	
Enter	The <enter> key allows you to display or change the setup option listed for a particular setup item. The <enter> key can also allow you to display the setup sub- screens.</enter></enter>	

4.3 Main Menu

When you first enter the setup utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. System Time/Date can be set up as described below. The Main BIOS setup screen is shown below.

Project VersionQ7M311 V101switch between Date element.Build Date and Time01/24/2018 15:28:54Default Ranges: Year: 2005-2099 Months: 1-12EC InformationQ7M311 V02Days: dependent on monthSystem Date[Mon 01/09/2012] [00:47:35]Days: dependent on monthSystem Time[00:47:35]++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	BIOS Information		Set the Date. Use Tab to
Build Date and Time 01/24/2018 15:28:54 Default Ranges: Year: 2005-2099 Months: 1-12 Days: dependent on month System Date [Mon 01/09/2012] System Time [00:47:35] Access Level Administrator ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	Project Version	Q7M311 V101	switch between Date elements
EC Information Q7M311 V02 Months: 1-12 Firmware Version Q7M311 V02 Days: dependent on month System Date [Mon 01/09/2012] Days: dependent on month System Time [00:47:35] +	Build Date and Time	01/24/2018 15:28:54	Default Ranges: Year: 2005-2099
Firmware Version Q7M311 V02 Days: dependent on month System Date [Mon 01/09/2012] [00:47:35] Access Level Administrator ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	C Information		Months: 1-12
System Date [Mon 01/09/2012] System Time [00:47:35] Access Level Administrator ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	irmware Version	Q7M311 V02	Days: dependent on month
System Time [00:47:35] Access Level Administrator : Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit		[Mon 01/09/2012]	
Access Level Administrator ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	System Time	[00:47:35]	
++: Select Screen †1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	Access Level	Administrator	
<pre> \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$</pre>			++: Select Screen
Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit			<pre>fl: Select Item</pre>
+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit			Enter: Select
F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit			+/-: Change Opt.
F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit			F1: General Help
F3: Optimized Defaults F4: Save & Exit ESC: Exit			F2: Previous Values
F4: Save & Exit ESC: Exit			F3: Optimized Defaults
ESC: Exit			F4: Save & Exit
			ESC: Exit

BIOS and EC Information

Display BIOS and EC firmware information.

System Date/Time

Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format.

Access Level

Display the access level of current user.

4.4 Advanced Menu

The Advanced menu also allows users to set configuration of the CPU and other system devices. You can select any of the items in the left frame of the screen to go to the sub menus:

- Serial Port Configuration
- Hardware Monitor
- eMMC Information
- ACPI Settings
- CPU Configuration
- SATA Configuration
- USB Configuration
- Serial Port Console Redirection
- Utility Configuration
- Device Configuration

For items marked with "▶", please press <Enter> for more options.



• Serial Port Configuration

You can use this screen to select options for Serial Port Configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen. For items marked with "▶", please press <Enter> for more options.

Serial Port Configuration		Set Parameters of Serial Port
Super IO Chip - Serial Port 1 (UART1)	IT8528SEC	
		++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Serial Port Configuration

Set parameters related to serial ports.

• Serial Port 1 Configuration

	Enable or Disable Serial Port
[Enabled]	CONT
IO=248h; IRQ=7;	
	++: Select Screen 11: Select Item Enter: Select
	+/-: Change Opt. F1: General Help
	F3: Optimized Defaults F4: Save & Exit ESC: Exit
	[Enabled] IO=248h; IRQ=7;

Serial Port 1 (UART1) Enable or disable serial port 1. The optimal setting for base I/O address is 248h and for interrupt request address is IRQ7.

• Hardware Monitor

This screen is for hardware health status monitoring.

Aptio Setup U Advanced	cility - Copyright (C) 2017 Am	erican Megatrends, Inc.
c Health Status		
PU Temperature ystem Temperature BAT 3.3V 3.3VSB 5VSB	: +54 C : +42 C : +2.97 V : +3.29 V : +3.29 V : +4.99 V	
		++: Select Screen 1: Select Item Enter: Select +/-: Change Opt. Fl: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
vocion 2.1) 1262 convertence (c) 2017 Amon	isan Maashaarda Tas

This screen displays the temperature of system and CPU and system voltages (VBAT, +3.3V, +3.3VSB and +5VSB).

• **eMMC Information(option)** This screen is for show the eMMC information.

Apt Advanced	io Setup Utility - Copyright (C) 20	17 American Megatrends, Inc.
eMMC Information eMMC Model Name eMMC Avaliable Size	: Generic R1J : 13GB	
		++: Select Screen †1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
	arcian 2 18 1262 convright (c) 2012	Amorican Magatronds Tas

• ACPI Settings

You can use this screen to select options for the ACPI configuration, and change the value of the selected option. A description of the selected item appears on the right side of the screen.

Aptio Setup U Advanced	tility - Copyright (C) 2017 America	n Megatrends, Inc.
ACPI Settings		Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.
	ACPI Sleep State Suspend Disabled S3 (Suspend to RAM)	
		++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults
varsion 2.1	8 1263 Convright (c) 2017 Amorican	F4: Save & Exit ESC: Exit

ACPI Sleep State

Select the ACPI (Advanced Configuration and Power Interface) sleep state. Configuration options are Suspend Disabled and S3 (Suspend to RAM). The S3 (Suspend to RAM) option selects ACPI sleep state the system will enter when suspend button is pressed.

• CPU Configuration

This screen shows the CPU Configuration, and you can change the value of the selected option.

CPU Configuration		when enabled, a VMM can
Tatal(P) Calaron(P) CBU N2250 @ 1	10047	utilize the additional
CPU Signature	506c0	hardware capabilities provided
Nicrocode Patch	2E	by Vanderpool Technology
Marchocode Fatch	1100 мит	
Min CPU Speed	200 MHZ	
Processor Cores	2 2	
Total HT Technology	4 Not Supported	
Intel VI-x Tachnology	Supported	
64_bit	al Virtualization Technolo	
04-010	and the cult reaction rectinore	² 97
L1 Data Cache	abled	
El Code Cache	bled	
12 Cache		++: Select Screen
13 Cache	Not Present	11: Select Item
	not rresent	Enter: Select
Intel Virtualization Technology		+/-: Change Opt.
Turbo Mode	[Disabled]	F1: General Help
	To the seal	E2: Previous Values
		E2: Ontimized Defaults
		F3. Optimized berautes
		F4: Save & Exit
		ESC: EXIT

Intel Virtualization Technology

Enable or disable Intel Virtualization Technology. When enabled, a VMM can utilize the additional hardware capabilities. It allows a platform to run multiple operating systems and applications independently, hence enabling a computer system to work as several virtual systems.

Advanced	
CPU Configuration	
Intel(R) Celeron(R) CPU N3350 @ 1.	10GHz
CPU Signature	506C9
Microcode Patch	2E
Max CPU Speed	1100 MHz
Min CPU Speed	800 MHz
Processor Cores	2
Intel HT Technology	Not Supported
Intel VT-x Technology	Supported
64-bit	Turbo Mode
	Disabled
L1 Data Cache	Enabled
L1 Code Cache	Endbred
L2 Cache	
L3 Cache	Not Present
Intel Virtualization Technology	[Enabled]
Turbo Mode	

Turbo Mode

Enable or disable turbo mode. The default setting is Disabled.

• SATA Configuration

In the SATA Configuration menu, you can see the currently installed hardware in the SATA ports. During system boot up, the BIOS automatically detects the presence of SATA devices.



Chipset SATA

Enable or disable SATA controller.

Advanced	
SATA Configuration	
Chipset SATA SATA Mode Selection	[Enable] [AHCI]
SATA Port 0	[Not Installed]
SATA Port 1	[Not Installed]
	AHCI

SATA Mode Selection

The SATA operating mode is AHCI.

• USB Configuration

USB Configuration		Mass storage device emulation
USB Module Version	16	devices according to their media format. Optical drives
USB Controllers:		are emulated as 'CDROM',
1 XHCI		drives with no media will be
USB Devices:		emulated according to a drive
1 Drive, 1 Keyboard, 1	Mouse	type.
Mass Storage Devices:		
		++: Select Screen
		<pre>fl: Select Item</pre>
		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

USB Devices

Display all detected USB devices.

Mass Storage Devices

Mass storage device emulation type. Auto option enumerates devices according to their media format. Optical drives are emulated as CDROM, drives with no media will be emulated according to a drive type.

• Serial Port Console Redirection

You can use this screen to select options for Serial Port Console Redirection, and change the value of the selected option. A description of the selected item appears on the right side of the screen. For items marked with "▶", please press <Enter> for more options.

UART1	Console Redirection Enable or Disable.
Console Redirection Console Redirection Settings	
	<pre>→+: Select Screen †↓: Select Item Enter: Select +/-: Change Opt. F1: General Help</pre>
	F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

UART1 Console Redirection

Enable or disable UART1 console redirection settings.

UART1 Console Redirection Settings		Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends
Terminal Type Bits per second Data Bits Parity Stop Bits Flow Control VT-UTF8 Combo Key Support Recorder Mode Pesolution 100%31	[ANST] [115200] [8] [None] [1] [None] [Enabled] [Disabled]	VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
Legacy OS Redirection Resolution Putty KeyPad Redirection After BIOS POST	[80x24] [VT100] [Always Enable]	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

UART1 Console Redirection Settings

When enabled, the settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

• Utility Configuration

Aptio Setup Utility - Copyright (Advanced	C) 2017 American Megatrends, Inc.
Utility Configuration BIOS Flash Utility	BIOS Flash Utility
Acpi(a0341d0, 0)\PCI(15 0)\USB	rom a File system (4,0)\HD(Part1, Sig ?)\
	++: Select Screen †1: 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.

BIOS Flash Utility BIOS flash utility configuration. For more detailed information, please refer to Appendix A.

• Device Configuration

A description of selected item appears on the right side of the screen. For items marked with "▶", please press <Enter> for more options.

Aptio Setup Utility - Copyright (C) 2017 Advanced	'American Megatrends, Inc.
▶ Onboard Device Configuration	Onboard Device Configuration Status
	<pre>→: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.18.1263 Copyright (C) 2017 A	merican Megatrends, Inc.

Onboard Device Configuration

Use this option to configure onboard device (e.g., Digital I/O setting).

• Onboard DIO Configuration

You can use this screen to select options for Digital I/O (DIO) Configuration.





DIO Modification

Enable or disable digital I/O modification. The default is Disabled.

DIO port 1-8

Select this option to open DIO status sub screen.

If DIO Modification is disabled, you are not allowed to change inputs/outputs setting. The DIO status sub screen is as follows:

DIO Status			
1. Input/Output Status	In	& High	
2. Input/Output Status	In	& High	
3. Input/Output Status	In	& High	
4. Input/Output Status	In	& High	
5. Input/Output Status	Out	Low	
5. Input/Output Status	Out	& Low	
7. Input/Output Status	Out	Low	
8. Input/Output Status	Out	& Low	

After enabling, you can load manufacture default and access to the DIO status sub screen to change inputs/outputs setting, see images below.

Advanced	
Onboard DIO Configuration DIO Modification Load Manufacture Default DIO port 1-8	
Advanced	
DIO Status	To & High
Input/Output Setting	[Input]
2. Input/Output Status	In & High
Input/Output Setting	[Input]
3. Input/Output Status	In & High
Input/Output Setting	[Input]
4. Input/Output Status	In & High
Input/Output Setting	[Input]
5. Input/Output Status	Out & Low
Input/Output Setting	[Output]
High/Low Setting	[Low]
6. Input/Output Status	Out & Low
Input/Output Setting	[Output]
High/Low Setting	[LOW]
7. Input/Output Status	Out & Low
Input/Output Setting	[Output]
High/Low Setting	[Low]
8. Input/Output Status	Out & Low
Input/Output Setting	[Output]
High/Low Setting	[Low]

4.5 Chipset Menu

The Chipset menu allows users to change the advanced chipset settings. You can select any of the items in the left frame of the screen to go to the sub menus:

- North Bridge
- South Bridge

For items marked with "▶", please press <Enter> for more options.



North Bridge

This screen shows system memory information and allows users to configure parameters of North Bridge chipset.

CD Control		LCD Control
Memory Information		
Total Memory	4096 MB	
Memory Slot1	4096 мв	
		++-: Select Screen
		<pre> fl: Select Item Enter: Select</pre>
		+/-: Change Opt. F1: General Help
		F2: Previous Values
		F4: Save & Exit
		ESC; EXIT

LCD Control

This item allows you to select LCD panel control options. Please press <Enter> to go to the sub menus.

Memory Information

Display system memory information.



DDI0 Signal Select

Select the DDI0 signal output to DisplayPort or HDMI/DVI.

LCD Control		Select LCD panel used by DI
DDIO Signal Select	[DisplayPort]	appropriate setup item.
	LVDS Panel Type	
	800x600 18Bit	
	1024x768 18Bit	
	1024x768 24Bit	
	1280x768 18Bit	
	1280x800 18Bit	
	1280x960 18Bit	
	1280x1024 48Bit	
	1366x768 18Bit	
	1366x768 24Bit	++: Select Screen
	1440x900 48Bit	tl: Select Item
	1440x1050 48Bit	Enter: Select
	1600x900 48Bit	+/-: Change Opt.
	1680x1050 48Bit	F1: General Help
	1600x1200 48Bit	F2: Previous Values
	1920x1080 48Bit	F3: Optimized Defaults
	1920x1200 48Bit	F4: Save & Exit
		ESC: Exit

LVDS Panel Type

Select LVDS panel resolution for the display device by selecting the appropriate setup item.

• South Bridge This screen allows users to configure parameters of South Bridge chipset.

TXE Information		Enable or Disable the Wake or Lan.
MRC Version	0.56	
PMC FW	03.24	
TXE FW	3.1.50.2222	
		++: Select Screen 11: Select Item
		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

Wake on LAN

Enable or disable integrated LAN to wake the system.

4.6 Security Menu

The Security menu allows users to change the security settings for the system.

Password Description		Set Setup Administrator
If ONLY the Administrator then this only limits acco only asked for when enter If ONLY the User's passwor is a power on password and boot or enter Setup. In So have Administrator rights The password length must b in the following range:	es password is set, ess to Setup and is ing Setup. rd is set, then this d must be entered to etup the User will be	Passworu
Minimum length Maximum length	3 20	++: Select Screen <pre> fl: Select Item </pre>
Setup Administrator Passwo User Password		Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

- Setup Administrator Password Set setup administrator password.
- User Password Set user password.

4.7 Boot Menu

The Boot menu allows users to change boot options of the system.

Boot Configuration Setup Prompt Timeout Bootup Numlock State Quiet Boot Launch UEFI PXE OpROM policy Boot Option Priorities Boot Option #1	1 [On] [Disabled] [Disabled] [Windows Boot Manager]	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Boot Option #2 Boot Mode	[UEFI: SanDisk Cruze] [UEFI Mode]	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

- Setup Prompt Timeout Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
- **Bootup NumLock State** Use this item to select the power-on state for the keyboard NumLock.
- Quiet Boot Select to display either POST output messages or a splash screen during boot up.
- Launch UEFI PXE OpROM policy Control the execution of UEFI PXE OpROM.
- Boot Option Priorities [Boot Option #1, ...] These are settings for boot priority. Specify the boot device priority sequence from the available devices.

Boot Mode •

- Use this item for boot mode settings.
 UEFI Boot: Select support to boot any UEFI-capable OS.
 Legacy Boot: Select support to boot non UEFI-capable OS that expects a legacy BIOS interface.

Boot Configuration		Select the boot mode.
		[UEFI Boot]
Setup Prompt Timeout	1	Support to boot any
Bootup Numlock State	[On]	UEFI-capable OS.
		[Legacy Boot]
Quiet Boot	[Disabled]	Support to boot non
Launch UEFI PXE OpROM policy	[Disabled]	UEFI-capable OS that expects a
		legacy BIOS interface.
Boot Option Priorities		
Boot Option #1	[Windows Boot Manager]	
Boot Option #2	Boot Mode	
	UEFI Mode	
Boot Mode	Legacy Mode	+++: Select Screen
		11: Select Item
		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit

Note that the Primary IGFX Boot Display option appears only if Legacy Mode is selected, see image below.



Primary IGFX Boot Display

Select the video device which will be activated during POST (Power-On Self Test). The secondary boot display item appears based on your Primary IGFX Boot Display selection, see images below.



Secondary IGFX Boot Display

Select secondary boot display device.



Backlight Control

Use this item to select backlight control mode.

4.8 Save & Exit Menu

The Save & Exit menu allows users to load your system configuration with optimal or fail-safe default values.

Aptio Setup Utility - Copyright (C) 2017 American	Megatrends, Inc.
Main Advanced Chipset Security Boot Save & Exit	
Save Options Save Changes and Exit Discard Changes and Exit Save Changes and Reset Discard Changes and Reset Save Changes Discard Changes	Exit system setup after saving the changes.
Default Options Restore Defaults Save as User Defaults Restore User Defaults Boot Override UEFI: NEXS IFLASH P1 PMAP, Partition 1 NEXS IFLASH P1 PMAP	++: Select Screen 1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
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• Save Changes and Exit

When you have completed the system configuration changes, select this option to leave Setup and continue to boot to operating system. Select Save Changes and Exit from the Save & Exit menu and press <Enter>. Select Yes to save changes and exit.

• Discard Changes and Exit

Select this option to quit Setup without making any permanent changes to the system configuration and continue to boot to operating system. Select Discard Changes and Exit from the Save & Exit menu and press <Enter>. Select Yes to discard changes and exit.

• Save Changes and Reset

When you have completed the system configuration changes, select this option to leave Setup and reboot the computer so the new system configuration parameters can take effect. Select Save Changes and Reset from the Save & Exit menu and press <Enter>. Select Yes to save changes and reset.

• Discard Changes and Reset

Select this option to quit Setup without making any permanent changes to the system configuration and reboot the computer. Select Discard Changes and Reset from the Save & Exit menu and press <Enter>. Select Yes to discard changes and reset.

• Save Changes

When you have completed the system configuration changes, select this option to save changes. Select Save Changes from the Save & Exit menu and press <Enter>. Select Yes to save changes.

• Discard Changes

Select this option to quit Setup without making any permanent changes to the system configuration. Select Discard Changes from the Save & Exit menu and press <Enter>. Select Yes to discard changes.

• Restore Defaults

It automatically sets all Setup options to a complete set of default settings when you select this option. Select Restore Defaults from the Save & Exit menu and press <Enter>.

• Save as User Defaults

Select this option to save system configuration changes done so far as User Defaults. Select Save as User Defaults from the Save & Exit menu and press <Enter>.

• Restore User Defaults

It automatically sets all Setup options to a complete set of User Defaults when you select this option. Select Restore User Defaults from the Save & Exit menu and press <Enter>.

Boot Override

Select a drive to immediately boot that device regardless of the current boot order.

Appendix A BIOS Flash Utility

The BIOS Flash utility is a new helpful function in BIOS setup program. With this function you can easily update system BIOS without having to enter operating system. In this appendix you may learn how to do it in just a few steps. Please read and follow the instructions below carefully.

1. In your USB flash drive, create a new folder and name it "Axiomtek", see figure below.



2. Copy BIOS ROM file (e.g. Q7M310X.005) to "Axiomtek" folder.



- 3. Insert the USB flash drive to your system.
- 4. Enter BIOS setup menu and go to Advanced\Utility Configuration. Select BIOS Flash Utility and press <Enter>.

Advanced	
Utility Configuration	BIOS Flash Utility
▶ BIOS Flash Utility	

5. BIOS automatically detect all USB drive(s) attached to the system. In this example only one USB drive is attached to the system. That's why, you can see only one device is displayed in figure below.



6. Select the USB drive containing BIOS ROM file you want to update using the $<\uparrow>$ or $<\downarrow>$ key. Then press <Enter> to get into "Axiomtek" folder.



7. Now you can see the BIOS ROM file on the screen, press <Enter> to select.



8. Select Start to flash system BIOS option to begin updating procedure.



9. Please wait while BIOS completes the entire flash update process: erase data, write new data and verify data.

ion	Flash Update Progress Erase data 13%	BIOS Fla
fon	Flash Update Progress	BIOS Fla
ion	Flash Update Progress Verify data 10%	BIOS Fla

10. When you see the following figure, press <Enter> to finish the update process. After that the system will shut down and restart immediately.



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Appendix B Watchdog Timer and GPIO

B.1 About Watchdog Timer

After the system stops working for a while, it can be auto-reset by the watchdog timer. The integrated watchdog timer can be set up in the system reset mode by program.

Assemb	ly sample code :	
mo∨	dx,fa10	; 5 seconds (Maximum is 65535 seconds; fill in ; 0xFA10 and 0xFA11 register, ex: 0xFA11=0x01, : 0xFA10=0x68 means 360 seconds)
mov out	al,05 dx,al	,
mo∨ mo∨ out	dx,fa12 al,01 dx,al	; Enable WDT

B.2 About GPIO

The onboard GPIO or digital I/O has 8 bits (DIO0~7). Each bit can be set to function as input or output by software programming. In default, all pins are pulled high with +3.3V level (according to main power). The BIOS default settings are 4 inputs and 4 outputs where all of these pins are set to 1.

Assembly mov mov out	sample code : dx,fa18 al,00 dx,al	;	Set DIO	0-7	to Output
mo∨ mo∨ out	dx,fa19 al,f0 dx,al	;	Set DIO	4-7	to High
mo∨ mo∨ out	dx,fa18 al,ff dx,al	;	Set DIO	0-7	to Input
mo∨ in	dx,fa19 al,dx	;	Get DIO	0-7	status
mo∨ mo∨ out	dx,fa18 al,1f dx,al	;	Set DIO al = 1F	0-4 => (to Input, 5-7 to Output 00011111
mo∨ mo∨ out	dx,fa19 al,40 dx,al	;	Set DIO al = 40	6 to => (b High 01000000
in	al,dx	;	Get DIO	0-7	status