IEI Integration Corp.

MODEL:

NANO-QM871-i1

EPIC SBC with 4th Generation Intel® Mobile Core™ i7/i5/i3 or Celeron® Processor, Dual HDMI, LVDS, VGA, Dual PCIe GbE, SATA 6Gb/s, USB 3.0, PCIe Mini, Intel® AMT 9.0, iRIS-1010, Audio and RoHS

User Manual

Rev. 1.00 – July 10, 2014

RoHS Lead Free

Revision

Date	Version	Changes
July 10, 2014	1.00	Initial release

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Introduction

1.1 Introduction

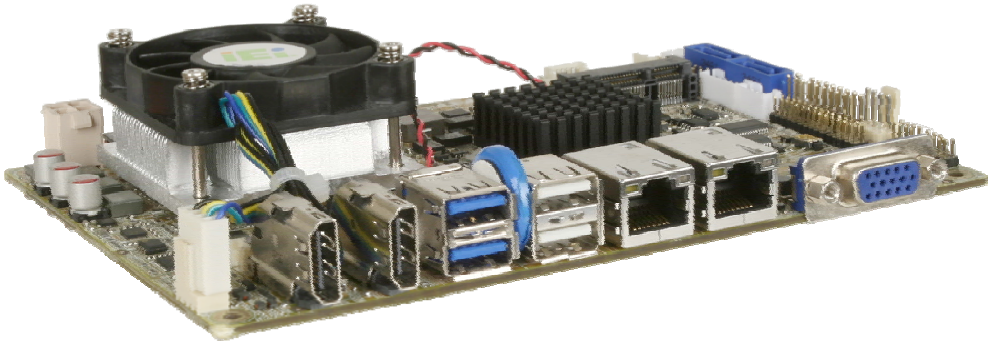


Figure 1-1: NANO-QM871-i1

The NANO-QM871-i1 is an EPIC SBC with a 4th generation Intel® mobile Core™ i7/i5/i3 or Celeron® processor and Intel® QM87 Express Chipset. Storage on the board is handled by two SATA 6Gb/s ports and one PCIe Mini socket for connecting a hard drive, optical drive or SSD.

The NANO-QM871-i1 features Intelligent Platform Management Interface (IPMI) that helps lower the overall costs of server management by enabling users to maximize IT resource, save time and manage multiple systems. The NANO-QM871-i1 supports IPMI 2.0 through the optional iRIS-1010 module.

The NANO-QM871-i1 has three types of graphics outputs that support triple independent display. A VGA output connects to a VGA monitor. One LVDS connector supports 18/24-bit dual-channel display. Two HDMI connectors support up to 1920x1200 resolution. Other connectors include RS-232 ports, RS-422/485 port, Gigabit Ethernet, USB 3.0 ports, USB 2.0 ports, TPM, SMBus and digital I/O.

1.2 Model Variations

There are four models of the NANO-QM871-i1 series. The model variations are listed in **Table 1-1**.

Model	On-board Processor			
	Name	Speed	Cache	TDP
NANO-QM871-i1-i7	Intel® mobile Core™ i7-4700EQ	2.4 GHz	6 MB	47 W
NANO-QM871-i1-i5	Intel® mobile Core™ i5-4400E	2.7 GHz	3 MB	37 W
NANO-QM871-i1-i3	Intel® mobile Core™ i3-4100E	2.4 GHz	3 MB	37 W
NANO-QM871-i1-C	Intel® mobile Celeron® 2000E	1.5 GHz	2 MB	37 W

Table 1-1: Model Variations

1.3 Features

Some of the NANO-QM871-i1 motherboard features are listed below:

- EPIC form factor
- 4th generation Intel® mobile Core™ i7/i5/i3 or Celeron® processor
- One 204-pin 1600/1333 MHz DDR3/DDR3L SO-DIMM supported (system max. 8.0 GB)
- Dual PCIe GbE
- Intel® AMT 9.0 support
- Supports triple independent display with dual HDMI+VGA/dual HDMI+LVDS/HDMI+VGA+LVDS
- Supports IPMI 2.0 via the optional iRIS-1010 module
- One PCIe Mini card slot with mSATA support
- Complete I/O with six USB (two USB 3.0, four USB 2.0), two SATA 6Gb/s, three COM (two RS-232, one RS-422/485) and audio
- RoHS compliant

1.4 Connectors

The connectors on the NANO-QM871-i1 are shown in the figure below.

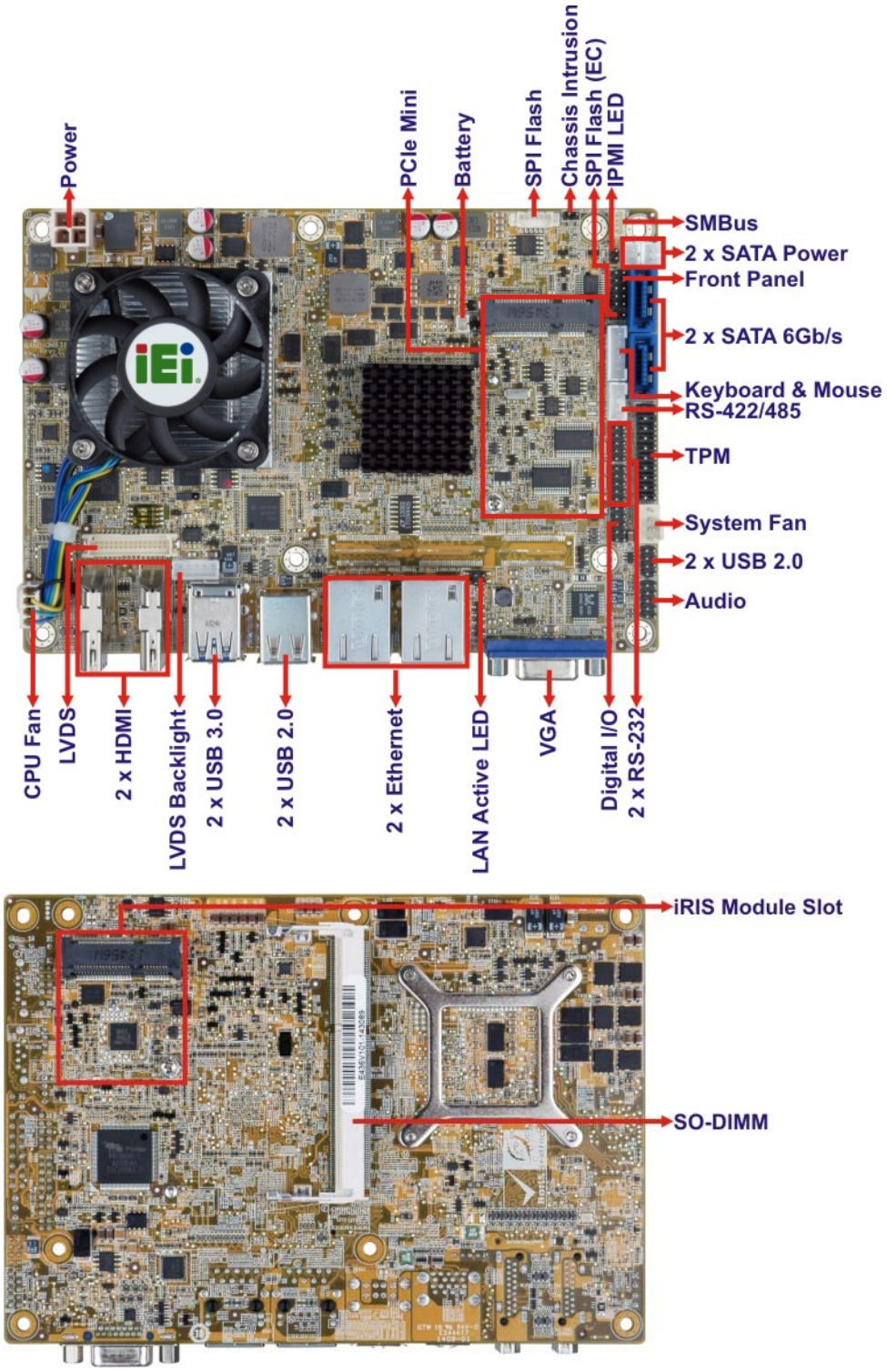


Figure 1-2: Connectors

1.5 Dimensions

The main dimensions of the NANO-QM871-i1 are shown in the diagram below.

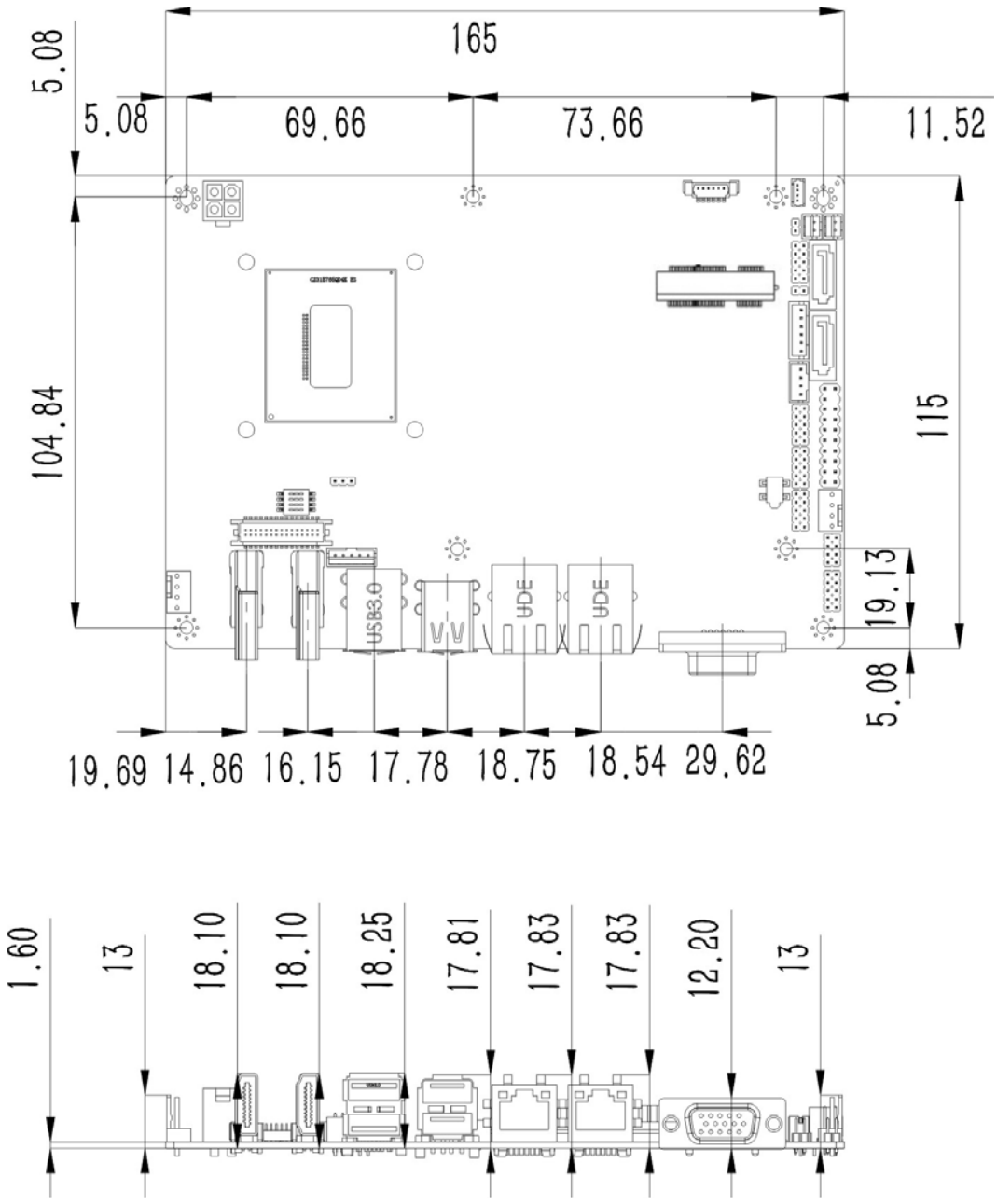


Figure 1-3: NANO-QM871-i1 Dimensions (mm)

1.6 Data Flow

Figure 1-4 shows the data flow between the system chipset, the CPU and other components installed on the motherboard.

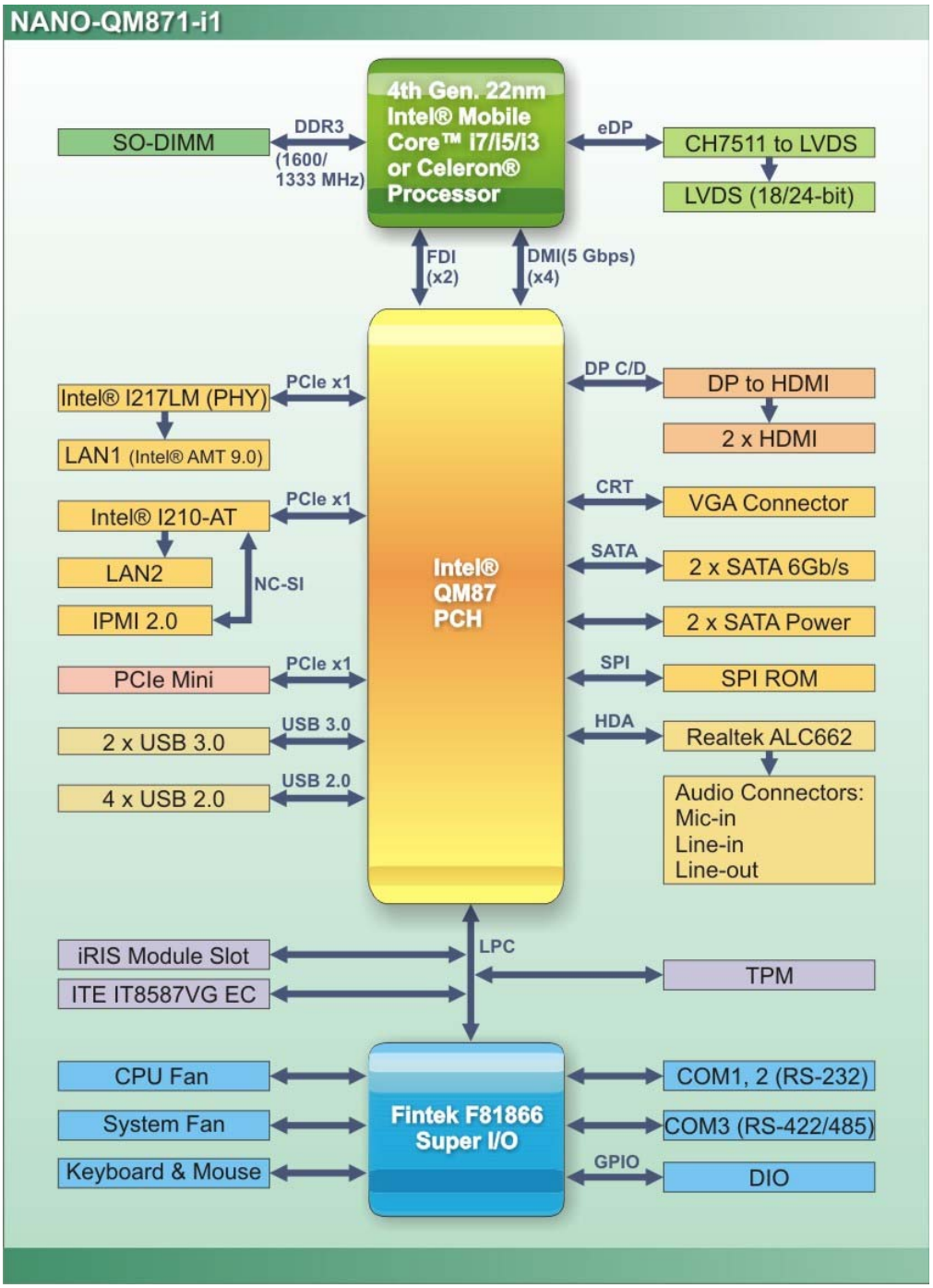


Figure 1-4: Data Flow Diagram

1.7 Technical Specifications

The NANO-QM871-i1 technical specifications are listed in **Table 1-2**.

Specification	NANO-QM871-i1
Form Factor	EPIC
CPU	▪ **Standard** o Intel® mobile Core™ i7-4700EQ processor with Intel® AMT 9.0 support (2.4 GHz, quad-core, 6 MB cache, TDP=47 W) o Intel® mobile Core™ i5-4400E processor with Intel® AMT 9.0 support (2.7 GHz, dual-core, 3 MB cache, TDP=37 W) o Intel® mobile Core™ i3-4100E processor (2.4 GHz, dual-core, 3 MB cache, TDP=37 W) o Intel® mobile Celeron® 2000E processor (2.2 GHz, dual-core, 2 MB cache, 37 W TDP) ▪ **By request** o Intel® mobile Core™ i5-4402E processor with Intel® AMT 9.0 support (1.6 GHz, dual-core, 3 MB cache, TDP=25 W) o Intel® mobile Core™ i3-4102E processor (1.6 GHz, dual-core, 3 MB cache, TDP=25 W) o Intel® mobile Celeron® 2002E processor (1.5 GHz, dual-core, 2 MB cache, TDP=25 W)
PCH	Intel® QM87
Memory	One 204-pin 1600/1333 MHz DDR3/DDR3L SO-DIMM supported (system max. 8 GB)
Graphics Engine	Intel® HD Graphics Gen 7.5 supports DirectX 11.1, OpenGL 3.2 and OpenCL 1.2 Full MPEG2, VC1, AVC decode
Ethernet Controllers	**LAN1:** Intel® I217LM PHY with Intel® AMT 9.0 support **LAN2:** Intel® I210-AT PCIe Ethernet controller with NC-SI support
Audio	Realtek ALC662 HD Audio codec One internal audio connector (10-pin header)

Display Output	1 x VGA (up to 1920x1200@60Hz) 1 x 18/24-bit dual-channel LVDS by CH7511B DP to LVDS converter (up to 1920x1200@60Hz) 2 x HDMI (up to 2500x1600@60Hz) Supports triple independent display with dual HDMI+VGA/ dual HDMI+LVDS/HDMI+VGA+LVDS
Super I/O Controller	Fintek F81866
Embedded Controller	ITE IT8587VG
BIOS	UEFI BIOS
Watchdog Timer	Software programmable supports 1~255 sec. system reset
Expansion	1 x Full-size PCIe Mini card slot with mSATA support
IPMI 2.0	Supported by the optional iRIS-1010 module
IPMI LED	1 x 2-pin header for IPMI LED
Chassis Intrusion	1 x 2-pin header
Digital I/O	8-bit, 4-bit input/4-bit output
Fan Connectors	1 x 4-pin wafer for CPU fan 1 x 4-pin wafer for system fan
Front Panel	1 x 10-pin header (power LED, HDD LED, power button, reset button)
LAN Active LED	1 x 4-pin (2x2) header
Keyboard and Mouse	1 x 6-pin wafer connector for PS/2 keyboard and mouse
Serial Ports	2 x RS-232 COM connectors (10-pin header) 1 x RS-422/485 COM connector (4-pin wafer)
USB Ports	4 x USB 2.0 ports (two by 8-pin header, two on rear I/O) 2 x USB 3.0 ports (on rear I/O)
SATA	2 x SATA 6Gb/s ports with 5V power connectors (RAID 0/1 supported)
SMBus	1 x 4-pin wafer connector
TPM	1 x 20-pin header
Power Supply	12V only, AT/ATX support 1 x Internal 4-pin (2x2) power connector

Power Consumption	12V@4.78A (2.4 GHz Intel® Core™ i7-4700EQ CPU with 4 GB 1333 MHz DDR3 memory)
Operating Temperature	-10ºC ~ 60ºC
Storage Temperature	-20ºC ~ 60ºC
Operating Humidity	5% ~ 95% (non-condensing)
Dimensions	115 mm x 165 mm
Weight GW/NW	850 g/350 g

Table 1-2: Technical Specifications

Chapter

2

Packing List

2.1 Anti-static Precautions

WARNING!

Static electricity can destroy certain electronics. Make sure to follow the ESD precautions to prevent damage to the product, and injury to the user.

Make sure to adhere to the following guidelines:

- ***Wear an anti-static wristband***: - Wearing an anti-static wristband can prevent electrostatic discharge.
- ***Self-grounding***:- Touch a grounded conductor every few minutes to discharge any excess static buildup.
- ***Use an anti-static pad***: When configuring any circuit board, place it on an anti-static mat.
- ***Only handle the edges of the PCB***:- Don't touch the surface of the motherboard. Hold the motherboard by the edges when handling.

2.2 Unpacking Precautions

When the NANO-QM871-i1 is unpacked, please do the following:

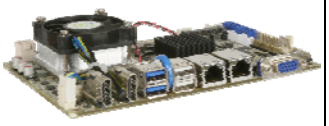
- Follow the antistatic guidelines above.
- Make sure the packing box is facing upwards when opening.
- Make sure all the packing list items are present.

2.3 Packing List

NOTE:

If any of the components listed in the checklist below are missing, do not proceed with the installation. Contact the IEI reseller or vendor the NANO-QM871-i1 was purchased from or contact an IEI sales representative directly by sending an email to sales@ieiworld.com.

The NANO-QM871-i1 is shipped with the following components:

Quantity	Item and Part Number	Image
1	NANO-QM871-i1 SBC with CPU cooler	
2	SATA and power cable (**P/N:** 32801-000201-100-RS)	
1	Audio cable (**P/N**: 32007-002600-100-RS)	
1	Power cable (**P/N**: 32100-087100-RS)	
2	RS-232 cable (**P/N:** 32200-000049-RS)	
1	Utility CD	

Quantity	Item and Part Number	Image
1	One Key Recovery CD	
1	Quick installation guide	

Table 2-1: Packing List

2.4 Optional Items

These optional items are available.

Item and Part Number	Image
iRIS-1010 module, IPMI 2.0 adapter card with AST1010 BMC chip (without KVM over IP function) for PCIe Mini socket interface (**P/N**: iRIS-1010-R10)	
Dual USB 2.0 cable (wo bracket) (**P/N:** 32000-070301-RS)	
RS-422/485 cable (200 mm) (**P/N**: 32205-003800-100-RS)	
KB/MS PS/2 Y-cable (**P/N**: 32006-001100-100-RS)	

Item and Part Number	Image
Infineon TPM module (**P/N**: TPM-IN01-R11)	

Table 2-2: Optional Items

Chapter

3

Connector Pinouts

3.1 Peripheral Interface Connectors

Section 3.1.1 shows peripheral interface connector locations. **Section 3.1.2** lists all the peripheral interface connectors seen in **Section 3.1.1**.

3.1.1 Layout

The figure below shows the on-board peripheral connectors, rear panel peripheral connectors and on-board jumpers.

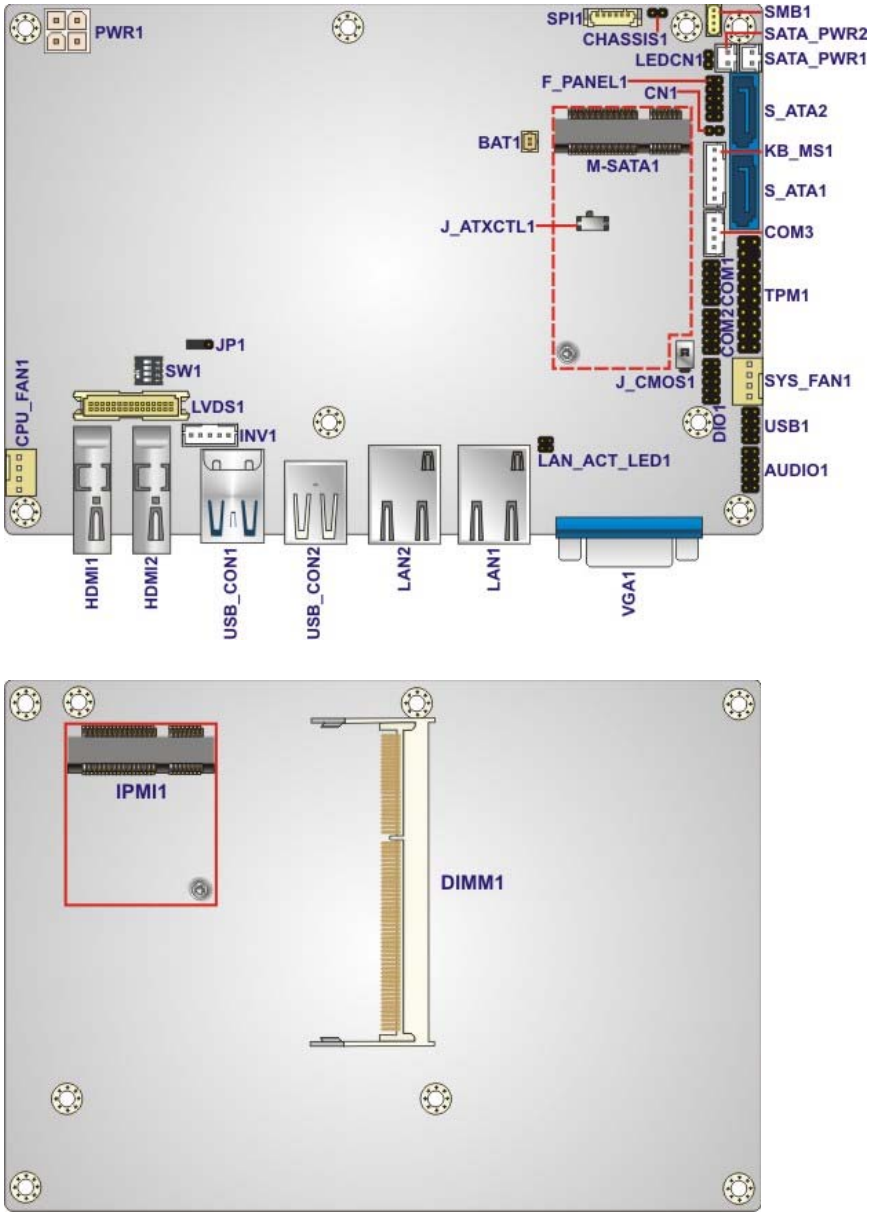


Figure 3-1: Connector and Jumper Locations

3.1.2 Peripheral Interface Connectors

The table below shows a list of the peripheral interface connectors on the NANO-QM871-i1. Detailed descriptions of these connectors can be found below.

Connector	Type	Label
Audio connector	10-pin header	AUDIO1
Battery connector	2-pin wafer	BAT1
Chassis intrusion	2-pin header	CHASSIS1
Digital I/O connector	10-pin header	DIO1
Fan connector (CPU)	4-pin wafer	CPU_FAN1
Fan connector (system)	4-pin wafer	SYS_FAN1
Front panel connector	10-pin header	F_PANEL1
IPMI active LED connector	2-pin header	LEDCN1
iRIS module slot	iRIS module slot	IPMI1
Keyboard and mouse connector	6-pin wafer	KB_MS1
LAN active LED connector	4-pin header	LAN_ACT_LED1
LVDS connector	30-pin crimp	LVDS1
LVDS backlight connector	5-pin wafer	INV1
PCIe Mini card slot	PCIe Mini card slot	M-SATA1
Power connector (12V)	4-pin connector	PWR1
RS-232 serial ports	10-pin header	COM1, COM2
RS-422/485 serial port	4-pin wafer	COM3
SATA 6Gb/s connectors	SATA connector	S_ATA1, S_ATA2
SATA power connectors	2-pin wafer	SATA_PWR1, SATA_PWR2
SMBus connector	4-pin wafer	SMB1
SO-DIMM connector	SO-DIMM connector	DIMM1
SPI Flash connector	6-pin wafer	SPI1

Connector	Type	Label
SPI Flash connector (EC)	2-pin header	CN1
TPM connector	20-pin header	TPM1
USB 2.0 connector	8-pin header	USB1

Table 3-1: Peripheral Interface Connectors

3.1.3 External Interface Panel Connectors

The table below lists the rear panel connectors on the NANO-QM871-i1. Detailed descriptions of these connectors can be found in a later section.

Connector	Type	Label
Ethernet connectors	RJ-45	LAN1, LAN2
HDMI connectors	HDMI	HDMI1, HDMI2
USB 2.0 connector	USB 2.0	USB_CON2
USB 3.0 connector	USB 3.0	USB_CON1
VGA connector	DB-15	VGA1

Table 3-2: Rear Panel Connectors

3.2 Internal Peripheral Connectors

Internal peripheral connectors are found on the motherboard and are only accessible when the motherboard is outside of the chassis. This section has complete descriptions of all the internal, peripheral connectors on the NANO-QM871-i1.

3.2.1 Audio Connector

CN Label: **AUDIO1**

CN Type: 10-pin header

CN Location: See **Figure 3-2**

CN Pinouts: See **Table 3-3**

The 10-pin audio connector is connected to external audio devices including speakers and microphones for the input and output of audio signals to and from the system.

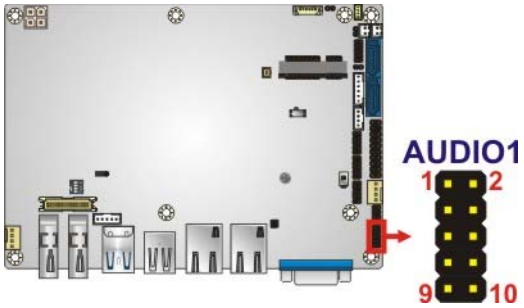


Figure 3-2: Audio Connector Location

Pin	Description	Pin	Description
1	SPK_OUT-R	2	LINE_IN-R
3	GND	4	GND
5	SPK_OUT-L	6	LINE_IN-L
7	GND	8	GND
9	MIC-R	10	MIC-L

Table 3-3: Audio Connector Pinouts

3.2.2 Battery Connector

CAUTION:

Risk of explosion if battery is replaced by an incorrect type. Only certified engineers should replace the on-board battery.

Dispose of used batteries according to instructions and local regulations.

CN Label: **BAT1**

CN Type: 2-pin wafer

CN Location: See **Figure 3-3**

CN Pinouts: See **Table 3-4**

This is connected to the system battery. The battery provides power to the system clock to retain the time when power is turned off.

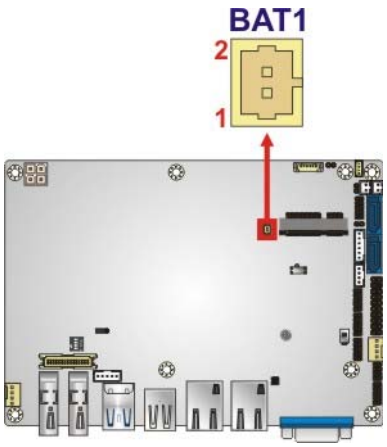


Figure 3-3: Battery Connector Location

Pin	Description
1	Battery+
2	Ground

Table 3-4: Battery Connector Pinouts

3.2.3 Chassis Intrusion Connector

CN Label: **CHASSIS1**

CN Type: 2-pin header

CN Location: See **Figure 3-4**

CN Pinouts: See **Table 3-5**

The chassis intrusion connector is for a chassis intrusion detection sensor or switch that detects if a chassis component is removed or replaced.

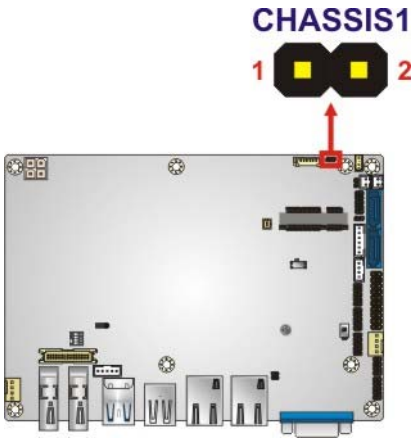


Figure 3-4: Chassis Intrusion Connector Location

Pin	Description
1	Pull High +3.3V
2	CHASSIS OPEN

Table 3-5: Chassis Intrusion Connector Pinouts

3.2.4 Digital I/O Connector

CN Label: **DIO1**

CN Type: 10-pin header

CN Location: See **Figure 3-5**

CN Pinouts: See **Table 3-6**

The digital I/O connector provides programmable input and output for external devices. The digital I/O provides 4-bit output and 4-bit input.

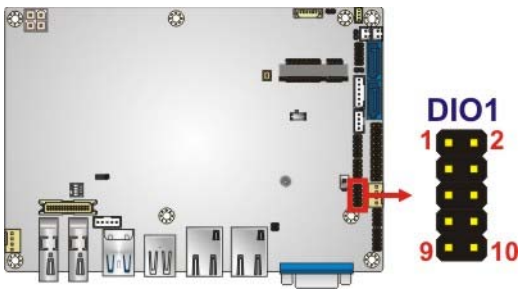


Figure 3-5: Digital I/O Connector Location

Pin	Description	Pin	Description
1	GND	2	+5V
3	DOUT3	4	DOUT2
5	DOUT1	6	DOUT0
7	DIN3	8	DIN2
9	DIN1	10	DIN0

Table 3-6: Digital I/O Connector Pinouts

3.2.5 Fan Connector (CPU)

CN Label: **CPU_FAN1**

CN Type: 4-pin wafer

CN Location: See **Figure 3-6**

CN Pinouts: See **Table 3-7**

The fan connector attaches to a CPU cooling fan.

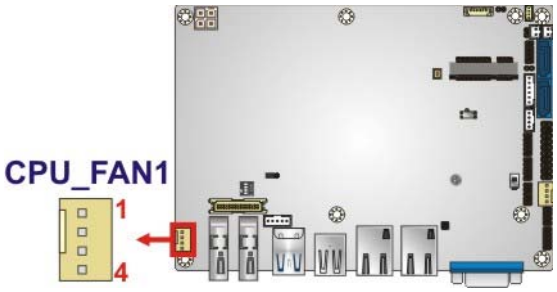


Figure 3-6: CPU Fan Connector Location

Pin	Description
1	GND
2	+V12S
3	Rotation Signal
4	PWM Control Signal

Table 3-7: CPU Fan Connector Pinouts

3.2.6 Fan Connector (System)

CN Label: **SYS_FAN1**

CN Type: 4-pin wafer

CN Location: See **Figure 3-7**

CN Pinouts: See **Table 3-8**

The fan connector attaches to a system cooling fan.

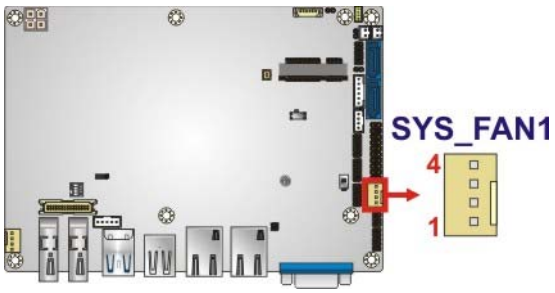


Figure 3-7: System Fan Connector Location

Pin	Description
1	GND
2	+V12S
3	Rotation Signal
4	PWM Control Signal

Table 3-8: System Fan Connector Pinouts

3.2.7 Front Panel Connector

CN Label: **F_PANEL1**

CN Type: 10-pin header

CN Location: See **Figure 3-8**

CN Pinouts: See **Table 3-9**

The front panel connector connects to the indicator LEDs and buttons on the computer's front panel.

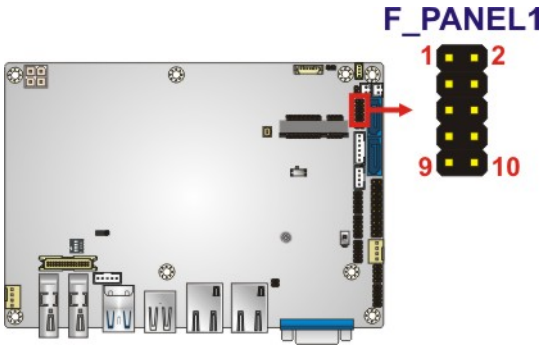


Figure 3-8: Front Panel Connector Location

Pin	Description	Pin	Description
1	PWR_LED+	2	PWRBTN_SW#
3	PWR_LED-	4	GND
5	NC	6	NC
7	HDD_LED+	8	EXTRST-
9	HDD_LED-	10	GND

Table 3-9: Front Panel Connector Pinouts

3.2.8 IPMI Active LED Connector

CN Label: **LEDCN1**

CN Type: 2-pin header

CN Location: See **Figure 3-9**

CN Pinouts: See **Table 3-10**

The connector is for IPMI active LED connection.

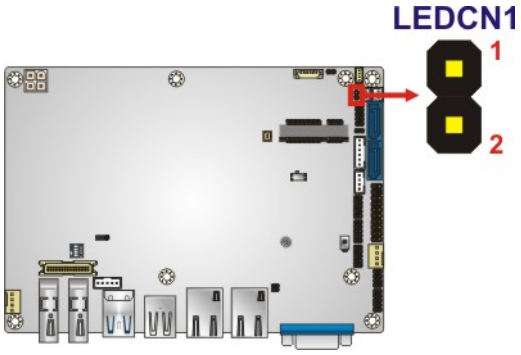


Figure 3-9: IPMI Active LED Connector

Pin	Description
1	IPMI_LED+
2	IPMI_LED-

Table 3-10: IPMI Active LED Connector Pinouts

3.2.9 iRIS Module Slot

CN Label: **IPMI1**

CN Type: iRIS module slot

CN Location: See **Figure 3-10**

The iRIS module slot allows installation of the iRIS-1010 module.

WARNING:

The iRIS module slot is designed to install the iRIS-1010 module only. DO NOT install other modules into the iRIS module slot. Doing so may cause damage to the NANO-QM871-i1.

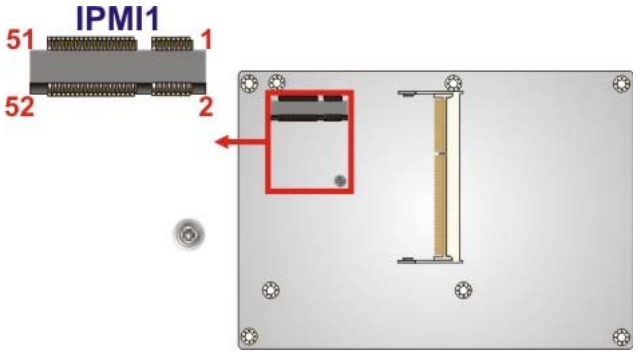


Figure 3-10: iRIS Module Slot Location

3.2.10 Keyboard and Mouse Connector

CN Label:	**KB_MS1**
CN Type:	6-pin wafer
CN Location:	See **Figure 3-11**
CN Pinouts:	See **Table 3-11**

The keyboard and mouse connector connects to a PS/2 Y-cable that can be connected to a PS/2 keyboard and mouse.

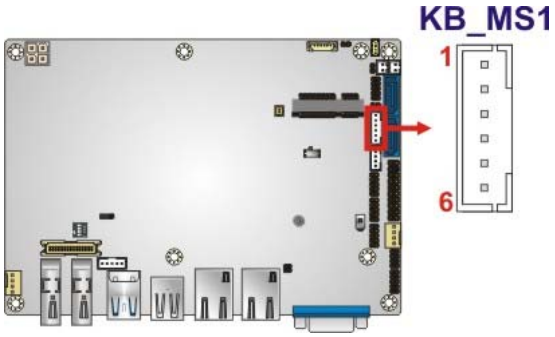


Figure 3-11: Keyboard and Mouse Connector Location

Pin	Description
1	VCC5_KBMS
2	Mouse Data
3	Mouse Clock
4	Keyboard Data

Pin	Description
5	Keyboard Clock
6	GND

Table 3-11: Keyboard and Mouse Connector Pinouts

3.2.11 LAN Active LED Connector

CN Label: **LAN_ACT_LED1**

CN Type: 4-pin header

CN Location: See **Figure 3-12**

CN Pinouts: See **Table 3-12**

The connector is for active LED connection of the external LAN ports.

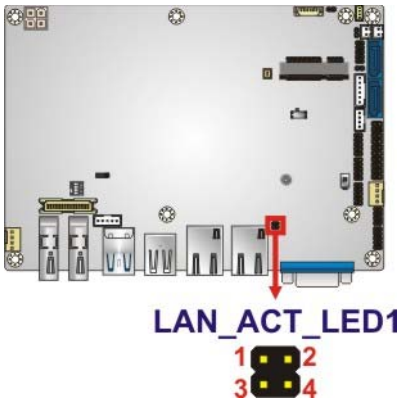


Figure 3-12: LAN Active LED Connector Location

Pin	Description	Pin	Description
1	LAN1_LINK_ACT-	2	V_3P3_LAN
3	LAN2_LINK_ACT-	4	+3.3A

Table 3-12: LAN Active LED Connector Pinouts

3.2.12 LVDS Connector

CN Label: **LVDS1**

CN Type: 30-pin crimp

CN Location: See **Figure 3-13**

CN Pinouts: See **Table 3-13**

The LVDS connector is for an LCD panel connected to the board.

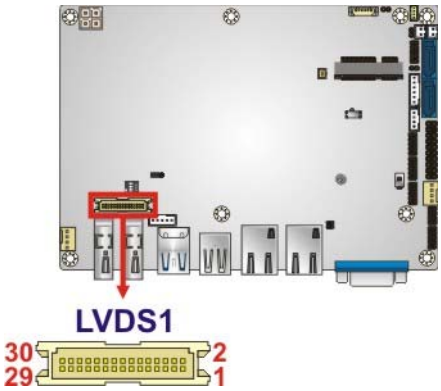


Figure 3-13: LVDS Connector Location

Pin	Description	Pin	Description
1	GND	2	GND
3	LVDS_A_TX0-P	4	LVDS_A _TX0-N
5	LVDS_A_TX1-P	6	LVDS_A _TX1-N
7	LVDS_A_TX2-P	8	LVDS_A _TX2-N
9	LVDS_A_TXCLK-P	10	LVDS_A _TXCLK-N
11	LVDS_A_TX3-P	12	LVDS_A _TX3-N
13	GND	14	GND
15	LVDS_B _TX0-P	16	LVDS_B _TX0-N
17	LVDS_B _TX1-P	18	LVDS_B _TX1-N
19	LVDS_B _TX2-P	20	LVDS_B _TX2-N
21	LVDS_B _TXCLK-P	22	LVDS_B _TXCLK-N
23	LVDS_B _TX3-P	24	LVDS_B _TX3-N
25	GND	26	GND
27	+LCD Vcc	28	+LCD Vcc
29	+LCD Vcc	30	+LCD Vcc

Table 3-13: LVDS Connector Pinouts

3.2.13 LVDS Backlight Connector

CN Label: **INV1**

CN Type: 5-pin wafer

CN Location: See **Figure 3-14**

CN Pinouts: See **Table 3-14**

The backlight inverter connector provides power to the LCD panel connected to the board.

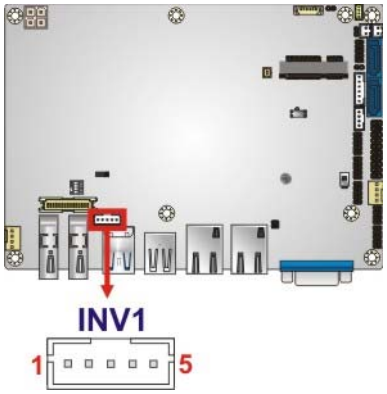


Figure 3-14: LVDS Backlight Inverter Connector

Pin	Description
1	BRIGHTNESS
2	GROUND
3	+12VS_LCD_BKL
4	GROUND
5	BACKLIGHT ENABLE

Table 3-14: Backlight Inverter Connector Pinouts

3.2.14 PCIe Mini Card Slot

CN Label: **M-SATA1**

CN Type: PCIe Mini card slot

CN Location: See **Figure 3-15**

CN Pinouts: See **Table 3-15**

The PCIe Mini card slot enables a PCIe Mini card expansion module to be connected to the board. Cards supported include among others PCIe Mini cards and mSATA cards.

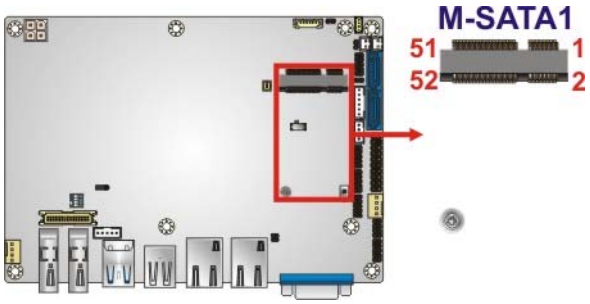


Figure 3-15: PCIe Mini Card Slot Location

Pin	Description	Pin	Description
1	PCIE_WAKE#	2	VCC3
3	N/C	4	GND
5	N/C	6	1.5V
7	N/C	8	N/C
9	GND	10	N/C
11	CLK-	12	N/C
13	CLK+	14	N/C
15	GND	16	N/C
17	PCIRST#	18	GND
19	N/C	20	VCC3
21	GND	22	PCIRST#
23	PERN2 (SATA_RX4+)	24	3VDual
25	PERP2 (SATA_RX4-)	26	GND
27	GND	28	1.5V
29	GND	30	SMBCLK
31	PETN2 (SATA_TX4-)	32	SMBDATA
33	PETP2 (SATA_TX4+)	34	GND
35	GND	36	USBD-
37	N/C	38	USBD+
39	N/C	40	GND
41	N/C	42	N/C

Pin	Description	Pin	Description
43	SATA_DET4_R_N	44	N/C
45	N/C	46	N/C
47	N/C	48	1.5V
49	N/C	50	GND
51	MSATA_SEL#	52	VCC3

Table 3-15: PCIe Mini Card Slot Pinouts

3.2.15 Power Connector (12V)

CN Label: **PWR1**

CN Type: 4-pin connector

CN Location: See **Figure 3-16**

CN Pinouts: See **Table 3-16**

The power connector is connected to an external power supply and supports 12V power input. Power is provided to the system, from the power supply through this connector.

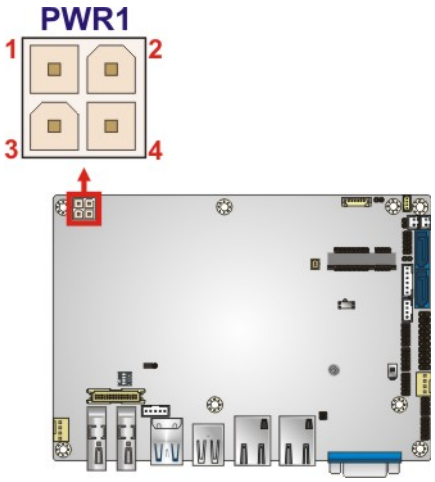


Figure 3-16: Power Connector Location

Pin	Description	Pin	Description
1	Ground	2	Ground
3	+12V	4	+12V

Table 3-16: Power Connector Pinouts

3.2.16 RS-232 Serial Port Connectors

CN Label: **COM1, COM2**

CN Type: 10-pin header

CN Location: See **Figure 3-17**

CN Pinouts: See **Table 3-17**

The 10-pin serial port connector provides one RS-232 serial communication channel. The COM serial port connector can be connected to an external RS-232 serial port device.

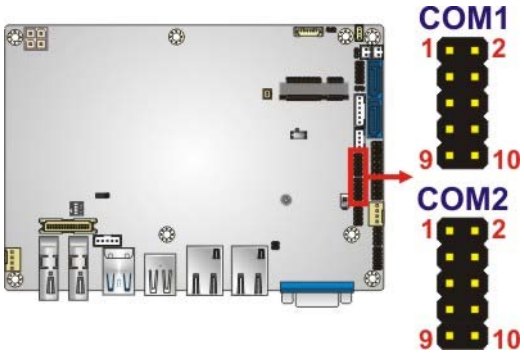


Figure 3-17: RS-232 Serial Port Connector Location

Pin	Description	Pin	Description
1	-NDCD	2	-NDSR
3	NSIN	4	-NRTS
5	NSOUT	6	-NCTS
7	-NDTR	8	-XRI
9	GND	10	GND

Table 3-17: RS-232 Serial Port Connector Pinouts

3.2.17 RS-422/485 Serial Port Connector (COM3)

CN Label: **COM3**

CN Type: 4-pin wafer

CN Location: See **Figure 3-18**

CN Pinouts: See **Table 3-18**

This connector provides RS-422 or RS-485 communications.

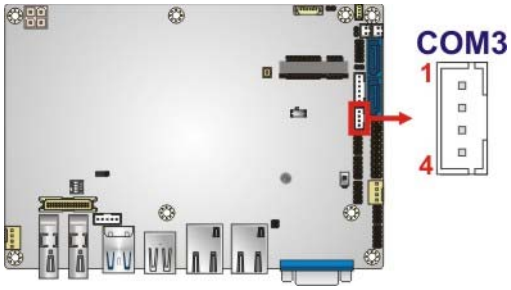


Figure 3-18: RS-422/485 Serial Port Connector Location

Pin	Description
1	RXD422-
2	RXD422+
3	TXD422+/TXD485+
4	TXD422-/TXD485-

Table 3-18: RS-422/485 Serial Port Connector Pinouts

Use the optional RS-422/485 cable to connect to a serial device. The pinouts of the DB-9 connector are listed below.

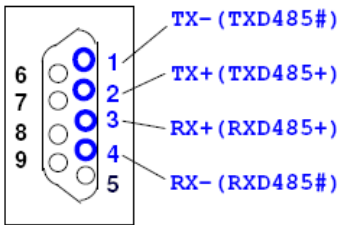
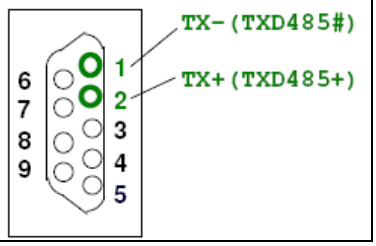
RS-422 Pinouts	RS-485 Pinouts
	

Table 3-19: DB-9 RS-422/485 Pinouts

3.2.18 SATA 6Gb/s Drive Connectors

CN Label: **S_ATA1, S_ATA2**

CN Type: 7-pin SATA drive connectors

CN Location: See **Figure 3-19**

CN Pinouts: See **Table 3-20**

The SATA connectors connect to SATA hard drives or optical drives with data transfer speeds as high as 6Gb/s.

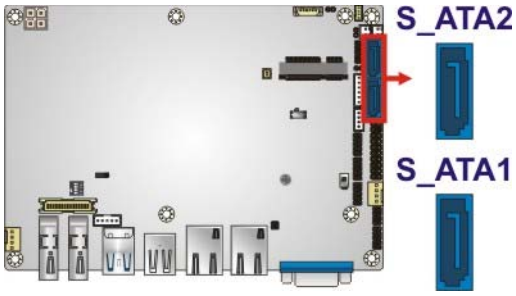


Figure 3-19: SATA 6Gb/s Drive Connector Locations

Pin	Description
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

Table 3-20: SATA 6Gb/s Drive Connector Pinouts

3.2.19 SATA Power Connectors

CN Label: **SATA_PWR1, SATA_PWR2**

CN Type: 2-pin wafer

CN Location: See **Figure 3-20**

CN Pinouts: See **Table 3-21**

Use the SATA Power Connector to connect to SATA device power connections.

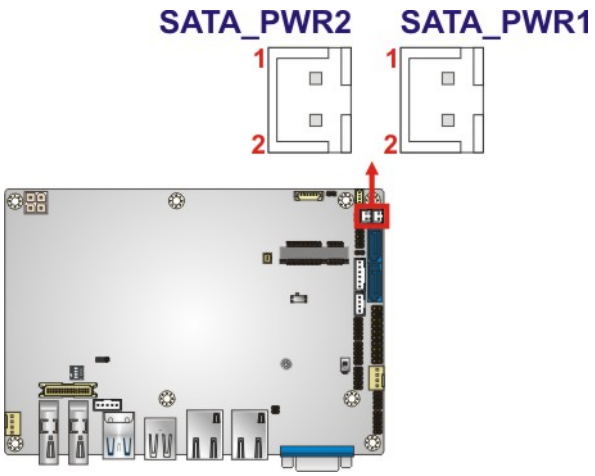


Figure 3-20: SATA Power Connector Locations

Pin	Description
1	+V5S
2	GND

Table 3-21: SATA Power Connector Pinouts

3.2.20 SMBus Connector

CN Label: **SMB1**

CN Type: 4-pin wafer

CN Location: See **Figure 3-21**

CN Pinouts: See **Table 3-22**

The SMBus (System Management Bus) connector provides low-speed system management communications.

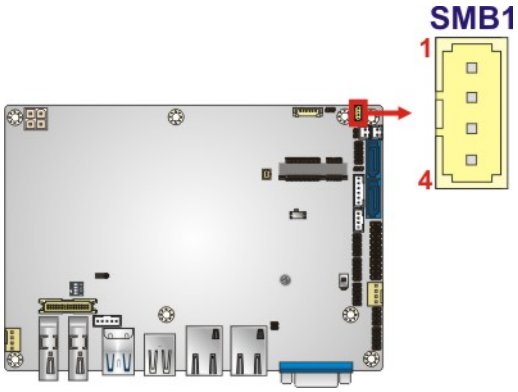


Figure 3-21: SMBus Connector Location

Pin	Description
1	GND
2	SMB_DATA
3	SMB_CLK
4	+V5S

Table 3-22: SMBus Connector Pinouts

3.2.21 SO-DIMM Connector

CN Label: **DIMM1**

CN Type: 204-pin DDR3 SO-DIMM connector

CN Location: See **Figure 3-22**

The SO-DIMM connector is for installing memory on the system.

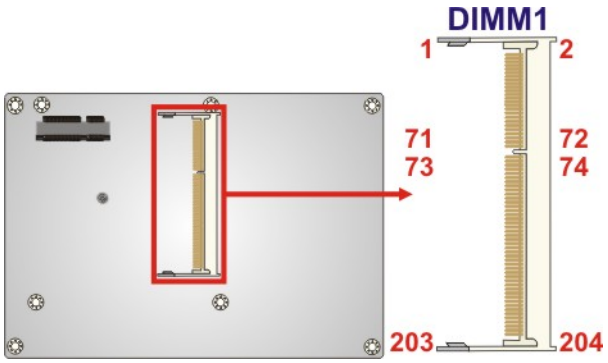


Figure 3-22: SO-DIMM Connector Locations

3.2.22 SPI Flash Connector

CN Label:	**SPI1**
CN Type:	6-pin wafer
CN Location:	See **Figure 3-23**
CN Pinouts:	See **Table 3-23**

The 6-pin SPI Flash connector is used to flash the BIOS.

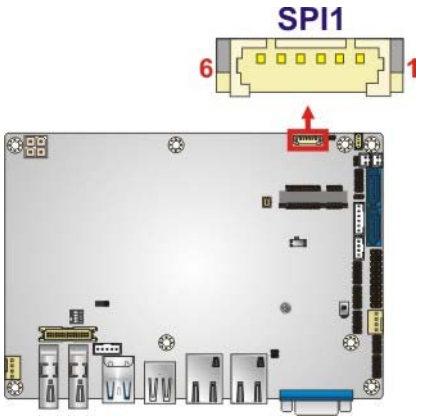


Figure 3-23: SPI Flash Connector Location

Pin	Description
1	+V3.3M_SPI_CON
2	SPI_CS#0_CN
3	SPI_SO_SW

Pin	Description
4	SPI_CLK_SW
5	SPI_SI_SW
6	GND

Table 3-23: SPI Flash Connector Pinouts

3.2.23 SPI Flash Connector (EC)

CN Label: **CN1**

CN Type: 2-pin header

CN Location: See **Figure 3-24**

CN Pinouts: See **Table 3-24**

The 2-pin EC SPI flash connector is used to flash the EC BIOS.

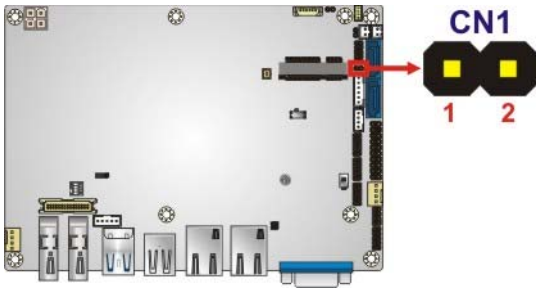


Figure 3-24: EC SPI Flash Connector Location

Pin	Description
1	SMCLK1_EC
2	SMDAT1_EC

Table 3-24: EC SPI Flash Connector Pinouts

3.2.24 TPM Connector

CN Label: **TPM1**

CN Type: 20-pin header

CN Location: See **Figure 3-25**

CN Pinouts: See **Table 3-25**

The Trusted Platform Module (TPM) connector secures the system on bootup.

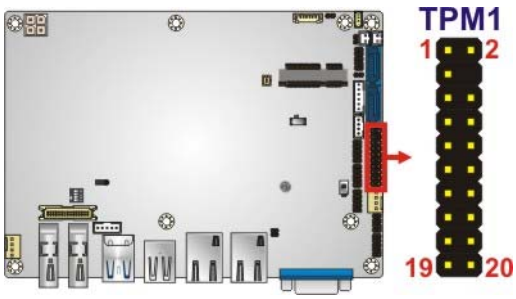


Figure 3-25: TPM Connector Location

Pin	Description	Pin	Description
1	LCLK	2	GND
3	LFRAME#	4	KEY
5	LRERST#	6	+5V
7	LAD3	8	LAD2
9	+3V	10	LAD1
11	LAD0	12	GND
13	SCL	14	SDA
15	SB3V	16	SERIRQ
17	GND	18	GLKRUN#
19	LPCPD#	20	LDRQ#

Table 3-25: TPM Connector Pinouts

3.2.25 USB 2.0 Connector

CN Label: **USB1**

CN Type: 8-pin header

CN Location: See **Figure 3-26**

CN Pinouts: See **Table 3-26**

The USB header can connect to two USB devices.

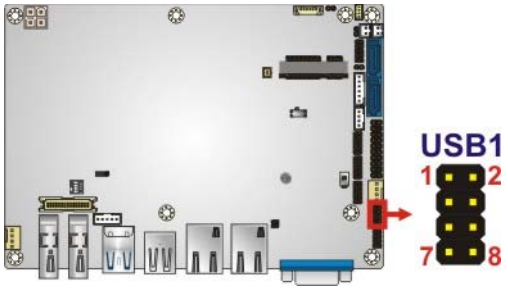


Figure 3-26: USB Connector Locations

Pin	Description	Pin	Description
1	VCC	2	GND
3	DATA-	4	DATA+
5	DATA+	6	DATA-
7	GND	8	VCC

Table 3-26: USB Port Connector Pinouts

3.3 External Interface Connectors

The NANO-QM871-i1 on-board external interface connectors are shown in **Figure 3-27.**

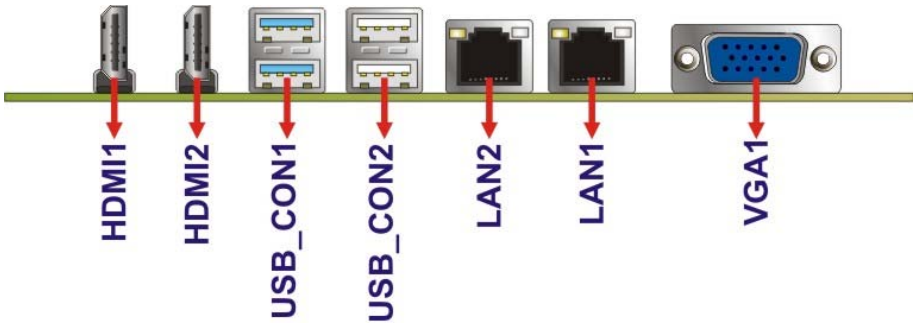


Figure 3-27: External Interface Connectors

3.3.1 Ethernet Connectors

CN Label: **LAN1, LAN2**

CN Type: RJ-45 connector

CN Location: See **Figure 3-27**

CN Pinouts: See **Table 3-27**

The NANO-QM871-i1 is equipped with two built-in RJ-45 Ethernet controllers. Each controller can connect to the LAN through one RJ-45 LAN connector.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	MDIA0+	5	MDIA2-
2	MDIA0-	6	MDIA1-
3	MDIA1+	7	MDIA3+
4	MDIA2+	8	MDIA3-

Table 3-27: LAN Pinouts

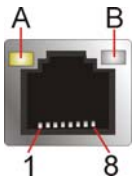


Figure 3-28: Ethernet Connector

LED	Description	LED	Description
A	on: linked blinking: data is being sent/received	B	off: 10 Mb/s green: 100 Mb/s orange: 1000 Mb/s

Table 3-28: Connector LEDs

3.3.2 HDMI Connectors

CN Label: **HDMI1, HDMI2**

CN Type: HDMI connector

CN Location: See **Figure 3-27**

CN Pinouts: See **Table 3-29** and **Figure 3-29**

The HDMI connector connects to a display device with HDMI interface.

Pin	Description	Pin	Description
1	HDMI_DATA2+	11	GND
2	GND	12	HDMI_CLK#

Pin	Description	Pin	Description
3	HDMI_DATA2#-	13	N/C
4	HDMI_DATA1+	14	N/C
5	GND	15	HDMI_SCL
6	HDMI_DATA1#-	16	HDMI_SDA
7	HDMI_DATA0+	17	GND
8	GND	18	+5VCC
9	HDMI_DATA0#-	19	HDMI_HPD
10	HDMI_CLK+		

Table 3-29: HDMI Connector Pinouts

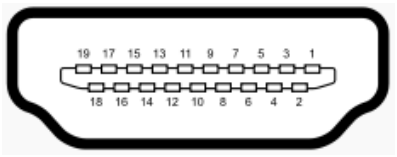


Figure 3-29: HDMI Connector

3.3.3 USB 2.0 Connector

CN Label: **USB_CON2**

CN Type: Dual USB 2.0 port

CN Location: See **Figure 3-27**

CN Pinouts: See **Table 3-30**

The ports connect to both USB 2.0 and USB 1.1 devices.

Pin	Description
1	VBUS
2	D1-
3	D1+
4	GND

Table 3-30: External USB 2.0 Port Pinouts

3.3.4 USB 3.0 Connector

CN Label: **USB_CON1**

CN Type: Dual USB 3.0 port

CN Location: See **Figure 3-27**

CN Pinouts: See **Table 3-31**

The NANO-QM871-i1 has two external USB 3.0 ports. Each USB 3.0 port can be connected to a USB device.

Pin	Description
1	VBUS
2	D1-
3	D1+
4	GND1
5	STDA_SSRX1_N
6	STDA_SSRX1_P
7	GND_DRAIN
8	STDA_SSTX1_N
9	STDA_SSTX1_P

Table 3-31: External USB 3.0 Port Pinouts

3.3.5 VGA Connector

CN Label: **VGA1**

CN Type: 15-pin Female

CN Location: See **Figure 3-27**

CN Pinouts: See **Figure 3-30** and **Table 3-32**

Connects to a monitor that accepts a standard VGA input.

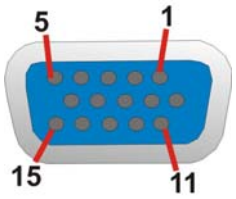


Figure 3-30: VGA Connector

Pin	Description	Pin	Description
1	RED	9	5V
2	GREEN	10	GROUND
3	BLUE	11	NC
4	NC	12	DDCDAT
5	GND	13	HSYNC
6	GND	14	VSYNC
7	GND	15	DDCCLK
8	GND		

Table 3-32: VGA Connector Pinouts

Chapter

4

Installation

4.1 Anti-static Precautions

WARNING:

Failure to take ESD precautions during installation may result in permanent damage to the product and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the NANO-QM871-i1. Dry climates are especially susceptible to ESD. It is therefore critical to strictly adhere to the following anti-static precautions whenever the NANO-QM871-i1, or any other electrical component, is handled.

- ***Wear an anti-static wristband***: - Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- ***Self-grounding***:- Before handling the board touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad***: When configuring the NANO-QM871-i1, place it on an antic-static pad. This reduces the possibility of ESD damaging the NANO-QM871-i1.
- ***Only handle the edges of the PCB***:-: When handling the PCB, hold it by the edges.

4.2 Installation Considerations

NOTE:

The following installation notices and installation considerations should be read and understood before the NANO-QM871-i1 is installed. All installation notices pertaining to the installation of NANO-QM871-i1 should be strictly adhered to. Failing to adhere to these precautions may lead to severe damage of the NANO-QM871-i1 and injury to the person installing the motherboard.

WARNING:

The installation instructions described in this manual should be carefully followed in order to prevent damage to the NANO-QM871-i1, NANO-QM871-i1 components and injury to the user.

Before and during the installation please **DO** the following:

- **Read the user manual**:
  - The user manual provides a complete description of the installation instructions and configuration options.
- **Wear an electrostatic discharge cuff (ESD)**:
  - Electronic components are easily damaged by ESD. Wearing an ESD cuff removes ESD from the body and helps prevent ESD damage.
- **Place on an antistatic pad**:
  - When installing or configuring the motherboard, place it on an antistatic pad. This helps to prevent potential ESD damage.
- **Turn all power off**:
  - Make sure the product is disconnected from all power supplies and that no electricity is being fed into the system.

Before and during the installation of the NANO-QM871-i1 **DO NOT:**

- Remove any of the stickers on the PCB board. These stickers are required for warranty validation.
- Use the product before verifying all the cables and power connectors are properly connected.
- Allow screws to come in contact with the PCB circuit, connector pins, or its components.

4.3 Cooling Kit Installation

An IEI CPU cooling kit can be purchased separately (See **Chapter 2**). The cooling kit is comprised of a CPU heat sink and a cooling fan.

WARNING:

Do not wipe off (accidentally or otherwise) the pre-sprayed layer of thermal paste on the bottom of the heat sink. The thermal paste between the CPU and the heat sink is important for optimum heat dissipation.

To install the cooling kit, please follow the steps below.

Step 1: **Install the support bracket.** Remove the tape from the support bracket. From the solder side of the board, align the support bracket to the holes on board and stick in place.

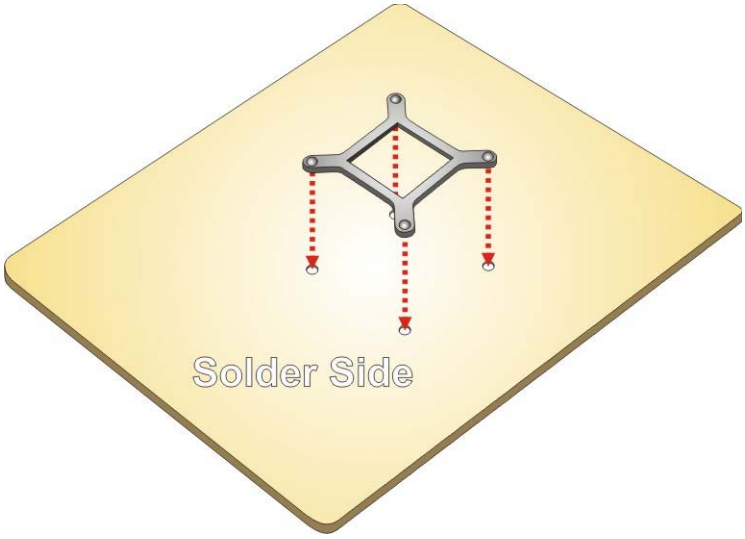


Figure 4-1: Install Support Bracket

Step 2: **Properly orient the cooling kit**. The CPU fan cable must not interfere with the fan or other moving parts. Make sure the cable can be routed away from the moving parts.

Step 3: **Properly align the cooling kit**. Line up the four screws with the screw holes on the support bracket below the board (**Figure 4-2**).

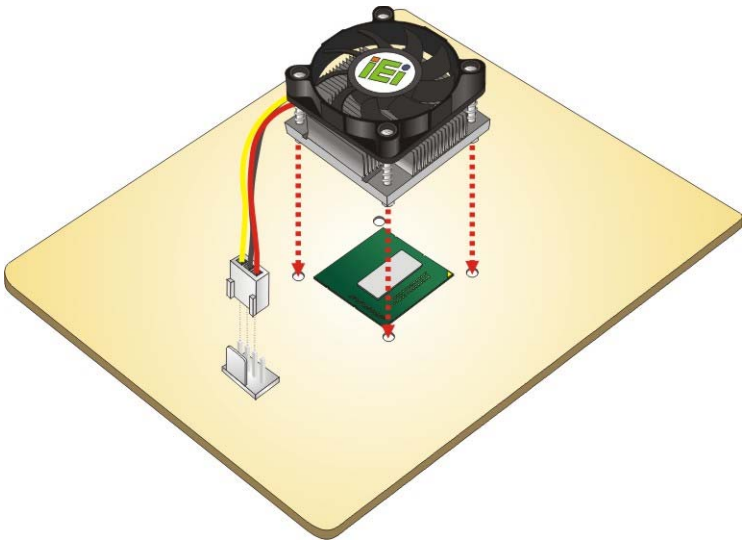


Figure 4-2: Align the Cooling Kit

Step 4: **Place the cooling kit onto the CPU**. Push down the fan with some pressure to secure the cooling kit with the support bracket. See **Figure 4-3**.

Step 5: **Tighten the screws**. Use a screwdriver to tighten the four screws. In a diagonal pattern, tighten each screw a few turns then move to the next one, until they are all secured. Do not overtighten the screws. See **Figure 4-3**.

Step 6: **Connect the fan cable**. Connect the cooling kit fan cable to the fan connector on the board. Carefully route the cable away from heat generating chips and fan blades.

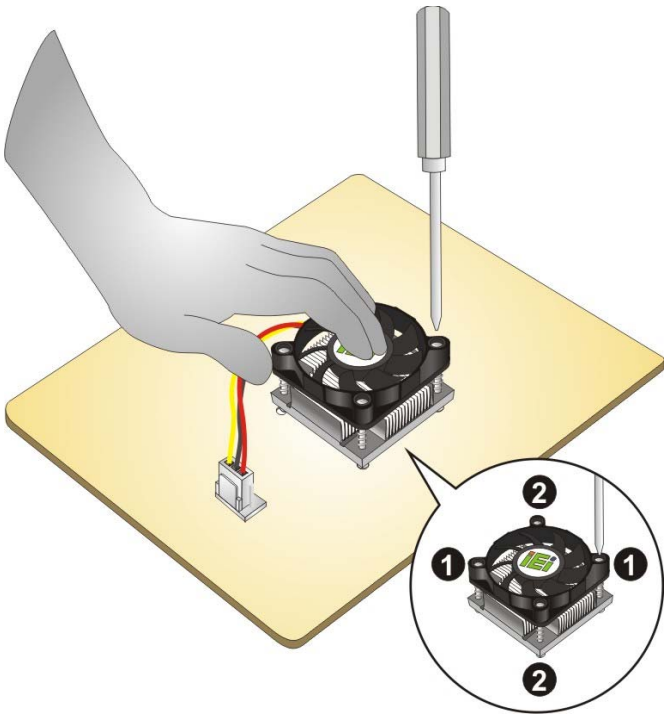


Figure 4-3: Secure the Cooling Kit

4.4 SO-DIMM Installation

WARNING:

Using incorrectly specified SO-DIMM may cause permanent damage to the NANO-QM871-i1. Please make sure the purchased SO-DIMM complies with the memory specifications of the NANO-QM871-i1. SO-DIMM specifications compliant with the NANO-QM871-i1 are listed in Chapter 1.

To install a SO-DIMM into a SO-DIMM socket, please follow the steps below and refer to **Figure 4-4**.

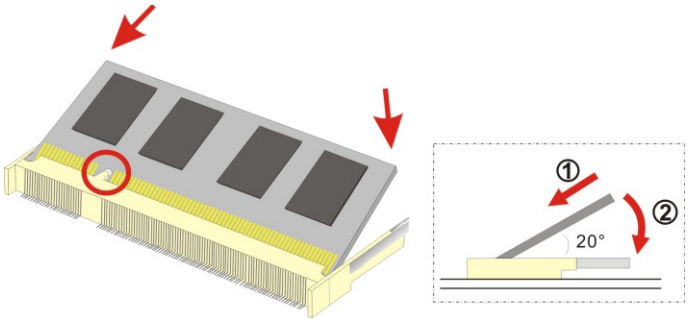


Figure 4-4: SO-DIMM Installation

Step 1: **Locate the SO-DIMM socket**. Place the NANO-QM871-i1 on an anti-static pad with the solder side facing up.

Step 2: **Align the SO-DIMM with the socket**. Align the notch on the memory with the notch on the memory socket.

Step 3: **Insert the SO-DIMM**. Push the memory in at a 20º angle. (See **Figure 4-4**)

Step 4: **Seat the SO-DIMM**. Gently push downwards and the arms clip into place. (See **Figure 4-4**)

4.5 iRIS-1010 Module Installation

WARNING:

The iRIS module slot is designed to install the iRIS-1010 module only. DO NOT install other modules into the iRIS module slot. Doing so may cause damage to the NANO-QM871-i1.

To install the iRIS-1010 module, please follow the steps below.

Step 1: **Locate the iRIS module slot**. The iRIS module slot is located on the solder side of the motherboard. See **Figure 3-10**.

Step 2: **Remove the retention screw**. Remove the retention screw as shown in **Figure 4-5**.

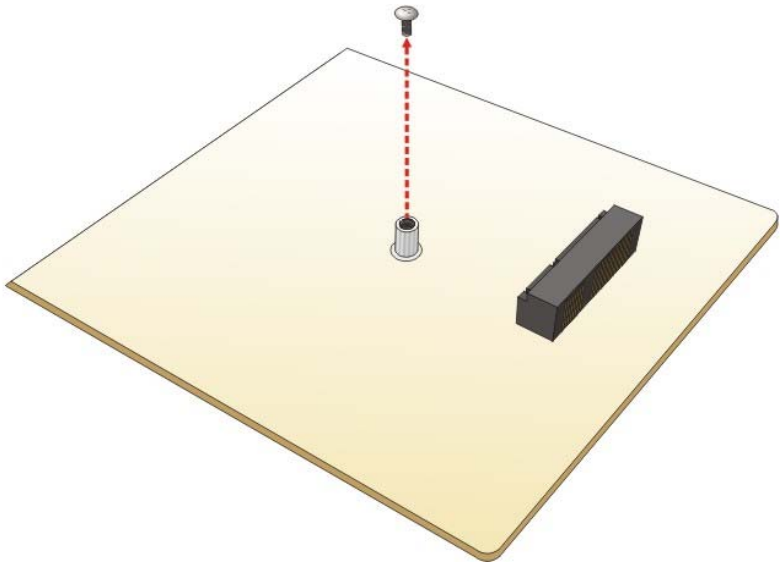


Figure 4-5: Removing the Retention Screw for the iRIS-1010 Module

Step 3: **Insert into the slot at an angle**. Line up the notch on the module with the notch on the slot. Slide the iRIS-1010 module into the slot at an angle of about 20º (**Figure 4-6**).

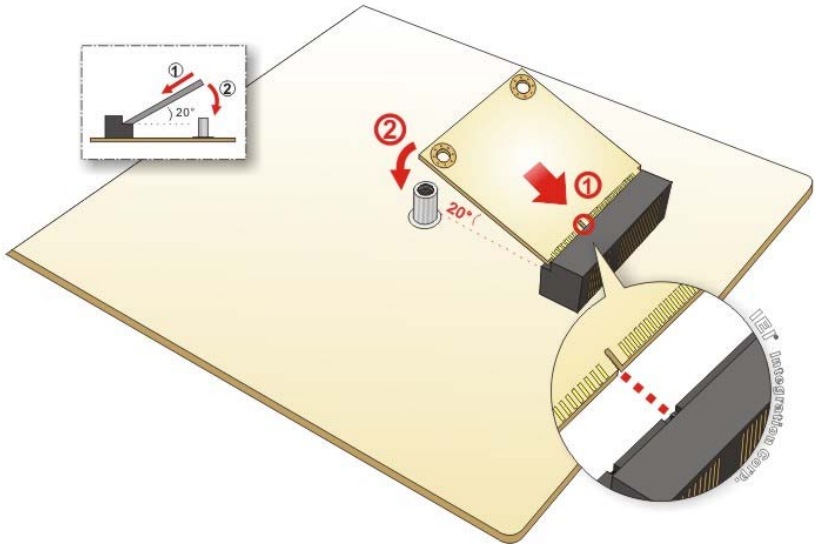


Figure 4-6: Inserting the iRIS-1010 Module into the Slot at an Angle

Step 4: **Secure the iRIS-1010 module**. Secure the iRIS-1010 module with the retention screw previously removed (**Figure 4-7**).

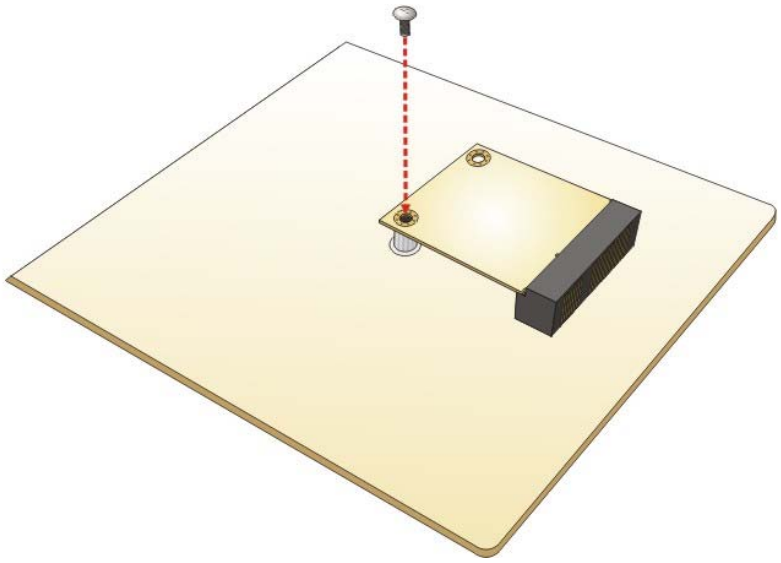


Figure 4-7: Securing the iRIS-1010 Module

NOTE:

After installing the iRIS-1010 module, use **LAN2** port to establish a network connection.

4.6 PCIe Mini Card Installation

One PCIe Mini card slot is located on the NANO-QM871-i1. To install the PCIe Mini card, please refer to the diagram and instructions below.

Step 1: **Locate the PCIe Mini card slot**. See **Figure 3-15**.

Step 2: **Remove the retention screw**. Remove the retention screw as shown in **Figure 4-8**.

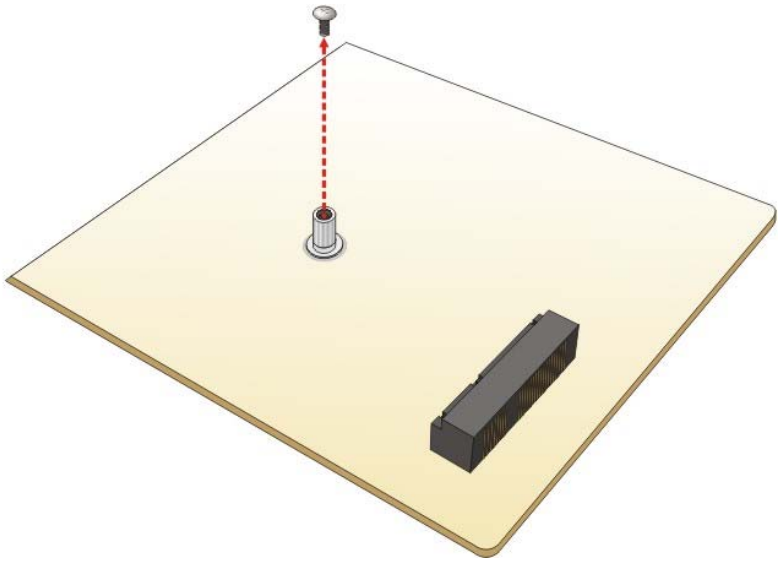


Figure 4-8: Removing the Retention Screw

Step 3: **Insert into the socket at an angle**. Line up the notch on the card with the notch on the slot. Slide the PCIe Mini card into the socket at an angle of about 20º (**Figure 4-9**).

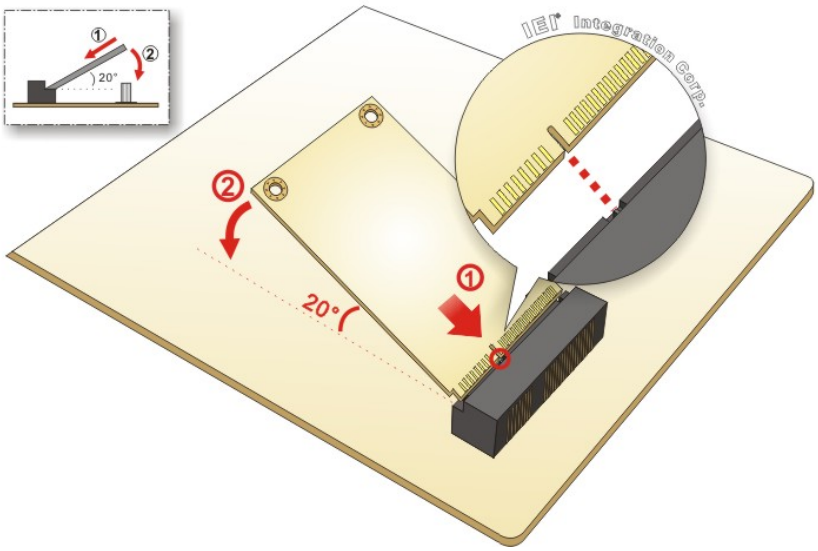


Figure 4-9: Inserting the Full-size PCIe Mini Card into the Slot at an Angle

Step 4: **Secure the full-size PCIe Mini card**. Secure the full-size PCIe Mini card with the retention screw previously removed (**Figure 4-10**).

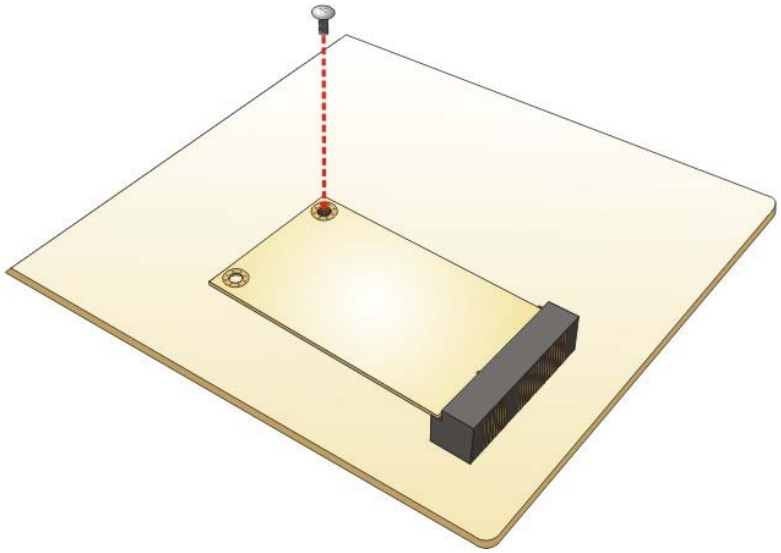


Figure 4-10: Securing the Full-size PCIe Mini Card

4.7 System Configuration

The system configuration is controlled by buttons, jumpers and switches. The system configuration should be performed before installation.

4.7.1 AT/ATX Mode Selection

Jumper Label:	**J_ATXCTL1**
Jumper Type:	Switch
Jumper Settings:	See **Figure 4-11**
Jumper Location:	See **Figure 4-11**

Set the switch to select AT or ATX power mode for the NANO-QM871-i1. AT power mode limits the system to on/off. ATX allows the system to use various power saving states and enter a standby state, so the system can be turned on remotely over a network. To configure, see the diagram below.

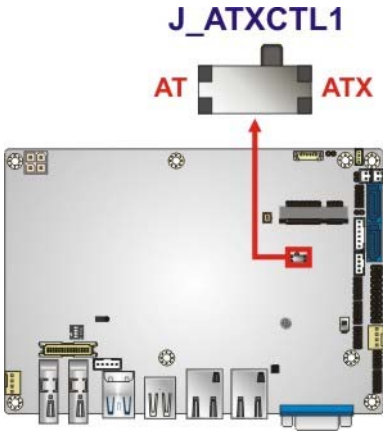


Figure 4-11: AT/ATX Mode Selection Jumper Location

4.7.2 Clear CMOS

Jumper Label:	**J_CMOS1**
Jumper Type:	Push button
Jumper Location:	See **Figure 4-12**

If the NANO-QM871-i1 fails to boot due to improper BIOS settings, the clear CMOS button clears the CMOS data and resets the system BIOS information. To do this, push the clear CMOS button for three seconds, then restart the system.

If the “CMOS Settings Wrong” message is displayed during the boot up process, the fault may be corrected by pressing the F1 to enter the CMOS Setup menu. Do one of the following:

- Enter the correct CMOS setting
- Load Optimal Defaults
- Load Failsafe Defaults.

After having done one of the above, save the changes and exit the CMOS Setup menu.

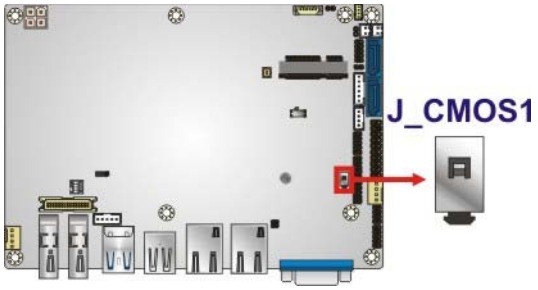


Figure 4-12: Clear CMOS Jumper Location

4.7.3 LVDS Voltage Selection

Jumper Label: **JP1**

Jumper Type: 3-pin header

Jumper Settings: See **Table 4-1**

Jumper Location: See **Figure 4-13**

Selects the voltage of the LVDS connector.

Pin	Description
Short 1-2	+3.3 V (Default)
Short 2-3	+5 V

Table 4-1: LVDS Voltage Selection Jumper Settings

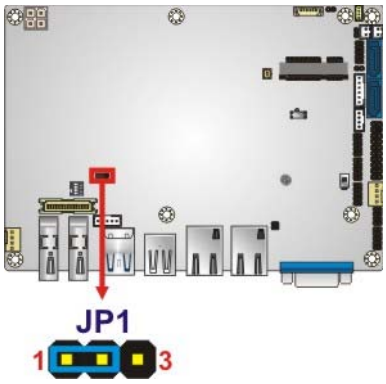


Figure 4-13: LVDS Voltage Selection Jumper Location

4.7.4 LVDS Resolution Selection

Jumper Label:	**SW1**
Jumper Type:	DIP switch
Jumper Settings:	See **Table 4-2**
Jumper Location:	See **Figure 4-14**

Selects the resolution of the LCD panel connected to the LVDS connector.

* ON=0, OFF=1; S= Single, D=Dual

SW1 (4-3-2-1)	Description
0000	800x600 18bit S (default)
0001	1024x768 18bit S
0010	1024x768 24bit S
0011	1280x768 18bit S
0100	1280x800 18bit S
0101	1280x960 18bit S
0110	1280x1024 24bit D
0111	1366x768 18bit S
1000	1366x768 24bit S
1001	1440x960 24bit D
1010	1400x1050 24bit D
1011	1600x900 24bit D
1100	1680x1050 24bit D
1101	1600x1200 24bit D
1110	1920x1080 24bit D
1111	1920x1200 24bit D

Table 4-2: LVDS Resolution Selection Jumper Settings

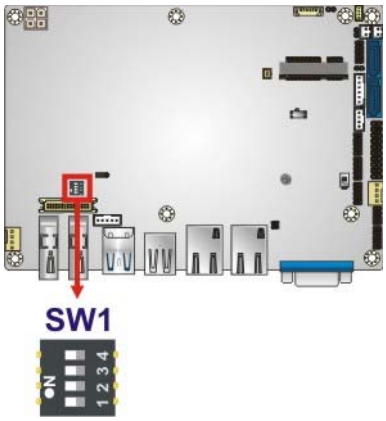


Figure 4-14: LVDS Resolution Selection Jumper Location

4.8 Chassis Installation

4.8.1 Airflow

WARNING:

Airflow is critical for keeping components within recommended operating temperatures. The chassis should have fans and vents as necessary to keep things cool.

The NANO-QM871-i1 must be installed in a chassis with ventilation holes on the sides allowing airflow to travel through the heat sink surface. In a system with an individual power supply unit, the cooling fan of a power supply can also help generate airflow through the board surface.

4.8.2 Motherboard Installation

To install the NANO-QM871-i1 motherboard into the chassis please refer to the reference material that came with the chassis.

4.9 Internal Peripheral Device Connections

This section outlines the installation of peripheral devices to the onboard connectors.

4.9.1 AT/ATX Power Connection

Follow the instructions below to connect the NANO-QM871-i1 to an AT or ATX power supply.

WARNING:

Disconnect the power supply power cord from its AC power source to prevent a sudden power surge to the NANO-QM871-i1.

Step 1: **Locate the power cable**. The power cable is shown in the packing list in **Chapter 2**.

Step 2: **Connect the Power Cable to the Motherboard**. Connect the 4-pin (2x2) Molex type power cable connector to the power connector on the motherboard. See **Figure 4-15**.

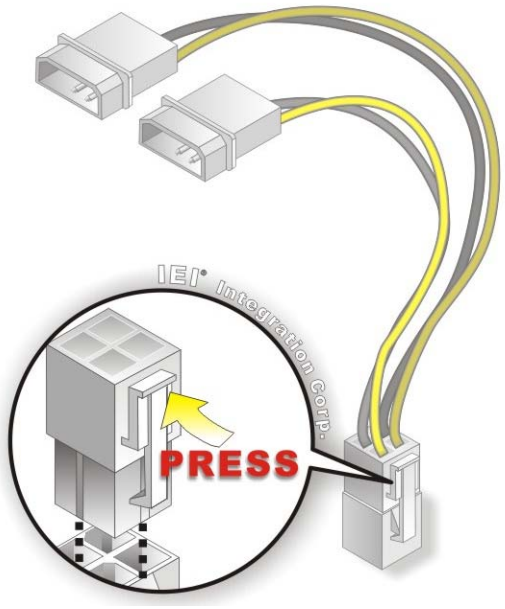


Figure 4-15: Power Cable to Motherboard Connection

Step 3: **Connect Power Cable to Power Supply**. Connect one of the 4-pin (1x4) Molex type power cable connectors to an AT/ATX power supply. See **Figure 4-16**.

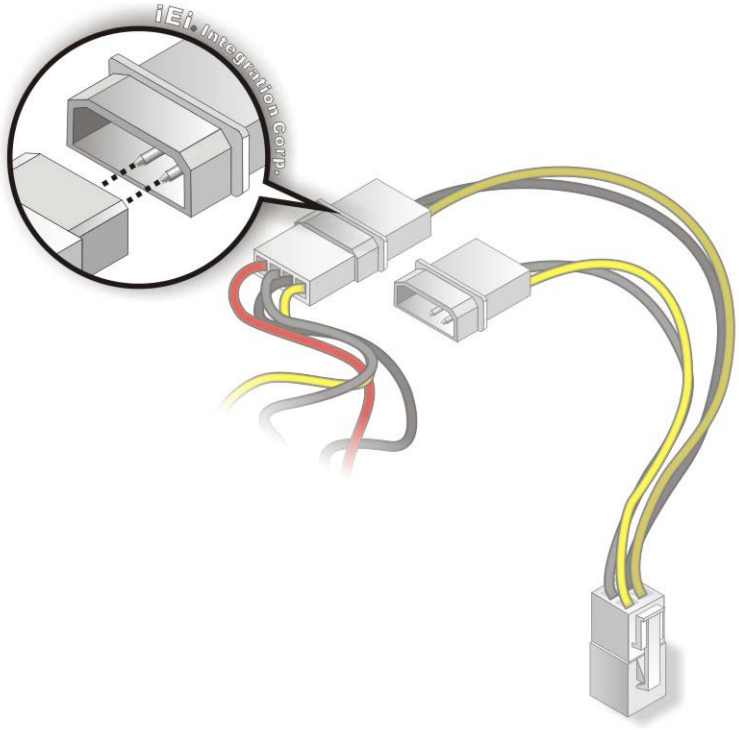


Figure 4-16: Connect Power Cable to Power Supply

4.9.2 Audio Kit Installation

The Audio Kit that came with the NANO-QM871-i1 connects to the 10-pin audio connector on the NANO-QM871-i1. The audio kit consists of three audio jacks. One audio jack, Mic In, connects to a microphone. The remaining two audio jacks, Line-In and Line-Out, connect to two speakers. To install the audio kit, please refer to the steps below:

Step 1: **Locate the audio connector**. The location of the 10-pin audio connector is shown in **Chapter 3**.

Step 2: **Align pin 1**. Align pin 1 on the on-board connector with pin 1 on the audio kit connector. Pin 1 on the audio kit connector is indicated with a white dot. See **Figure 4-17**.

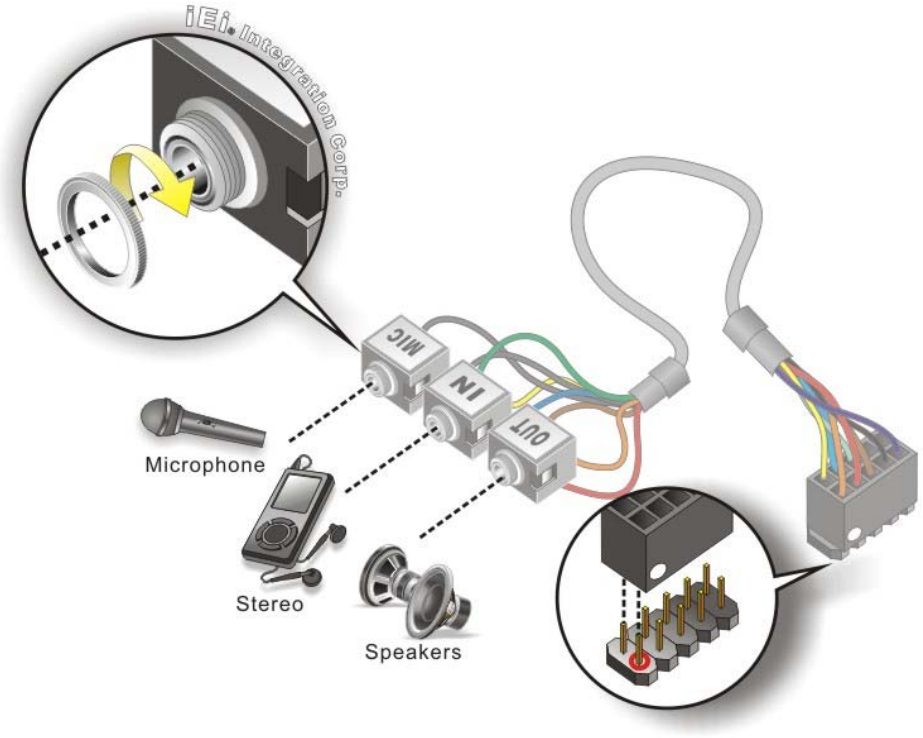


Figure 4-17: Audio Kit Cable Connection

Step 3: **Connect the audio devices**. Connect one speaker to the line-in audio jack, one speaker to the line-out audio jack and a microphone to the mic-in audio jack.

4.9.3 LVDS LCD Installation

The NANO-QM871-i1 can be connected to a TFT LCD screen through the LVDS crimp connectors on the board. To connect a TFT LCD to the NANO-QM871-i1, please follow the steps below.

Step 1: **Locate the connector**. The location of the LVDS connector is shown in **Chapter 3**.

Step 2: **Insert the cable connector**. Insert the connector from the LVDS PCB driving board to the LVDS connector as shown in **Figure 4-18**. When connecting the connectors, make sure the pins are properly aligned.

WARNING:

The diagram below is merely for illustration. The configuration and connection of the cables from the TFT LCD screen being installed may be different. Please refer to the installation manual that came with the TFT LCD screen.

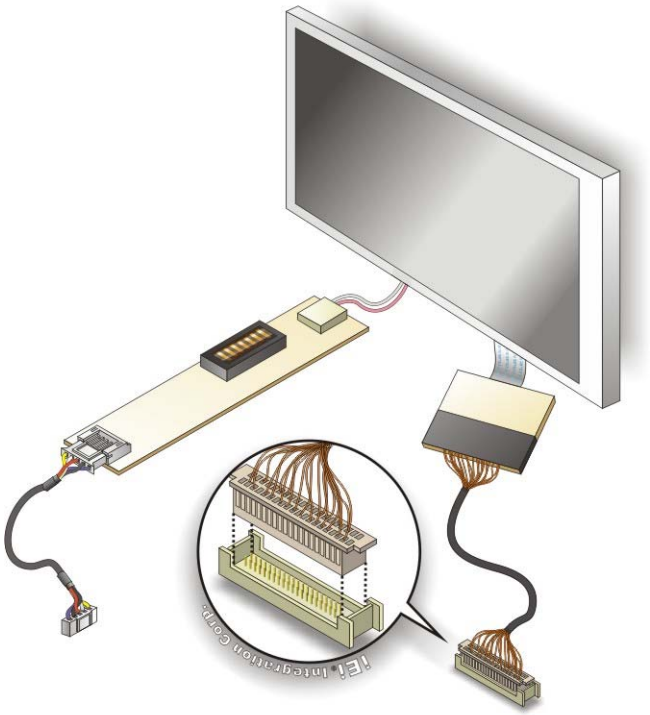


Figure 4-18: LVDS Connector

Step 3: **Locate the backlight inverter connector**. The location of the backlight inverter connector is shown in **Chapter 3**.

Step 4: **Connect backlight connector**. Connect the backlight connector to the driver TFT LCD PCB as shown in **Figure 4-19**. When inserting the cable connector, make sure the pins are properly aligned.

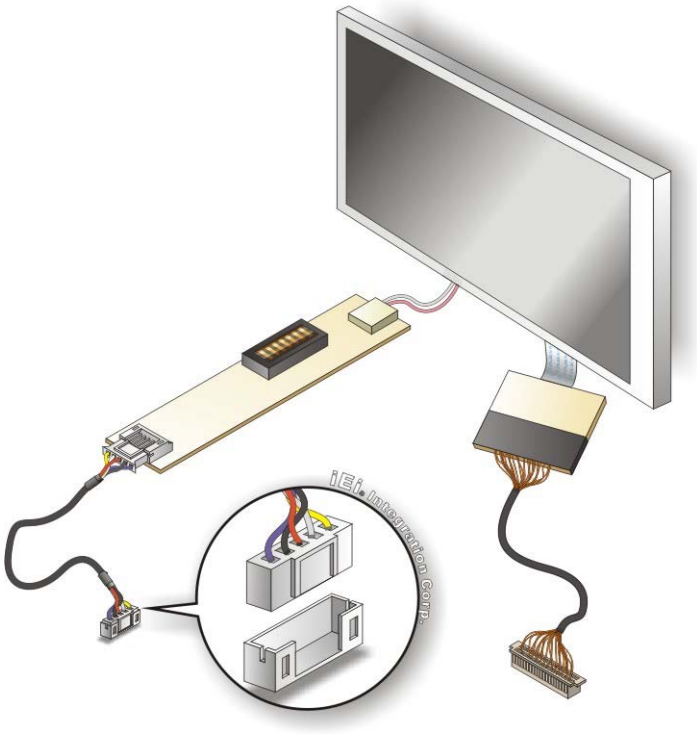


Figure 4-19: Backlight Inverter Connection

4.9.4 SATA Drive Connection

The NANO-QM871-i1 is shipped with two SATA drive cables. To connect the SATA drive to the connector, please follow the steps below.

Step 1: **Locate the SATA connector and the SATA power connector**. The locations of the connectors are shown in **Chapter 3**.

Step 2: **Insert the cable connector**. Insert the cable connector into the on-board SATA drive connector and the SATA power connector. See **Figure 4-20**.

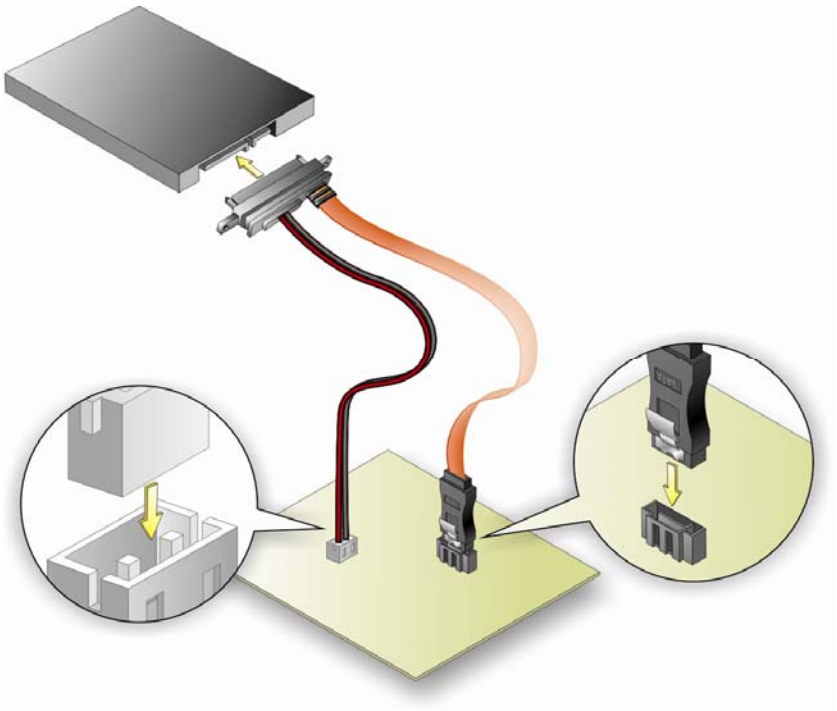


Figure 4-20: SATA Drive Cable Connection

Step 3: **Connect the cable to the SATA disk**. Connect the connector on the other end of the cable to the connector at the back of the SATA drive. See **Figure 4-20**.

Step 4: To remove the SATA cable from the SATA connector, press the clip on the connector at the end of the cable.

4.9.5 Single RS-232 Cable

The single RS-232 cable consists of one serial port connector attached to a serial communications cable that is then attached to a D-sub 9 male connector. To install the single RS-232 cable, please follow the steps below.

Step 1: **Locate the connector**. The locations of the RS-232 connectors are shown in **Chapter 3**.

Step 2: **Insert the cable connector**. Insert the connector into the serial port header. See **Figure 4-21**. A key on the front of the cable connector ensures the connector can only be installed in one direction.

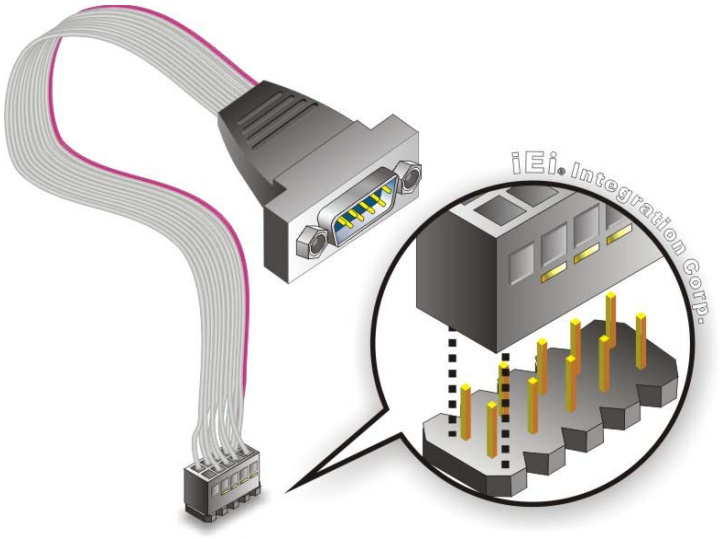


Figure 4-21: Single RS-232 Cable Installation

Step 3: **Secure the bracket**. The single RS-232 connector has two retention screws that must be secured to a chassis or bracket.

Step 4: **Connect the serial device**. Once the single RS-232 connector is connected to a chassis or bracket, a serial communications device can be connected to the system.

4.10 External Peripheral Interface Connection

Devices can be connected to the external connectors. To install external devices, follow the directions in the subsections below.

4.10.1 HDMI Display Device Connection

The HDMI connector transmits a digital signal to compatible HDMI display devices such as a TV or computer screen. To connect the HDMI cable to the NANO-QM871-i1, follow the steps below.

Step 1: **Locate the HDMI connectors**. The locations are shown in **Chapter 3**.

Step 2: **Align the connector.** Align the HDMI connector with the HDMI port. Make sure the orientation of the connector is correct.

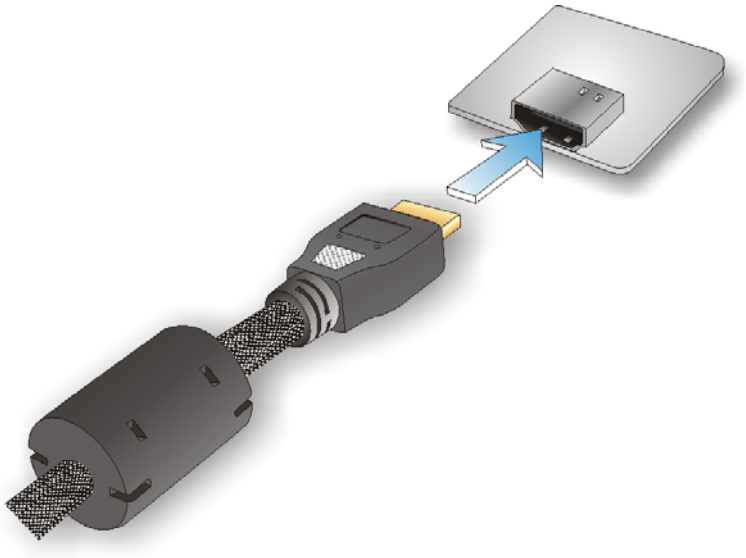


Figure 4-22: HDMI Connection

Step 3: **Insert the HDMI connector.** Gently insert the HDMI connector. The connector should engage with a gentle push. If the connector does not insert easily, check again that the connector is aligned correctly, and that the connector is being inserted with the right way up.

4.10.2 LAN Connection

The RJ-45 connectors enable connection to an external network. To connect a LAN cable with an RJ-45 connector, please follow the instructions below.

Step 1: **Locate the RJ-45 connectors**. The locations of the RJ-45 connectors are shown in **Chapter 3**.

Step 2: **Align the connectors.** Align the RJ-45 connector on the LAN cable with one of the RJ-45 connectors on the NANO-QM871-i1. See **Figure 4-23**.

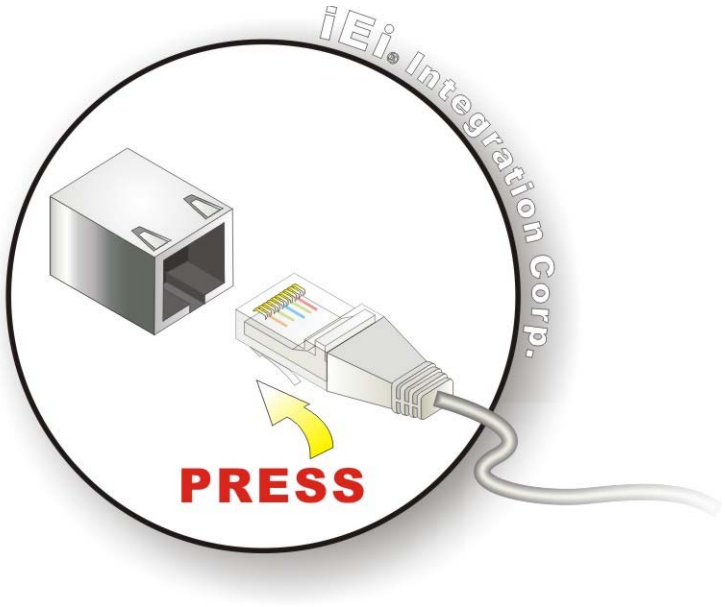


Figure 4-23: LAN Connection

Step 3: **Insert the LAN cable RJ-45 connector.** Once aligned, gently insert the LAN cable RJ-45 connector into the on-board RJ-45 connector.

4.10.3 USB Connection (Dual Connector)

The external USB 2.0/3.0 connectors provide easier and quicker access to external USB devices. Follow the steps below to connect USB devices to the NANO-QM871-i1.

Step 1: **Locate the USB 2.0/3.0 connectors**. The locations of the USB 2.0/3.0 connectors are shown in **Chapter 3**.

Step 2: **Insert a USB 2.0/3.0 plug**. Insert the USB 2.0/3.0 plug of a device into the USB 2.0/3.0 on the external peripheral interface. See **Figure 4-24**.

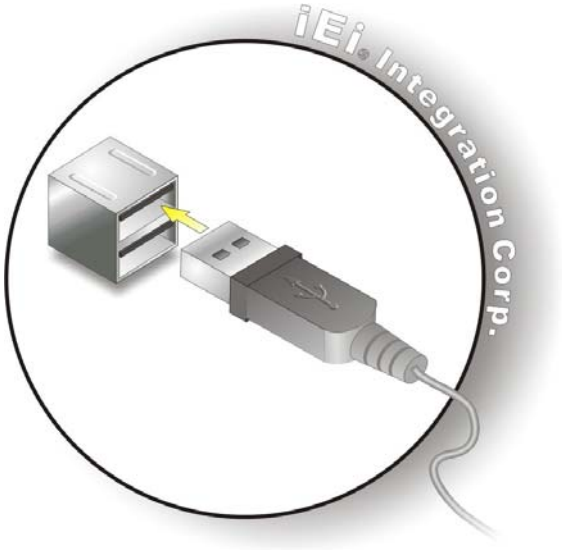


Figure 4-24: USB Connector

4.10.4 VGA Monitor Connection

The NANO-QM871-i1 has a single female DB-15 connector on the external peripheral interface panel. The DB-15 connector is connected to a CRT or VGA monitor. To connect a monitor to the NANO-QM871-i1, please follow the instructions below.

Step 1: **Locate the female DB-15 connector**. The location of the female DB-15 connector is shown in **Chapter 3**.

Step 2: **Align the VGA connector**. Align the male DB-15 connector on the VGA screen cable with the female DB-15 connector on the external peripheral interface.

Step 3: **Insert the VGA connector** Once the connectors are properly aligned with the insert the male connector from the VGA screen into the female connector on the NANO-QM871-i1. See **Figure 4-25**.

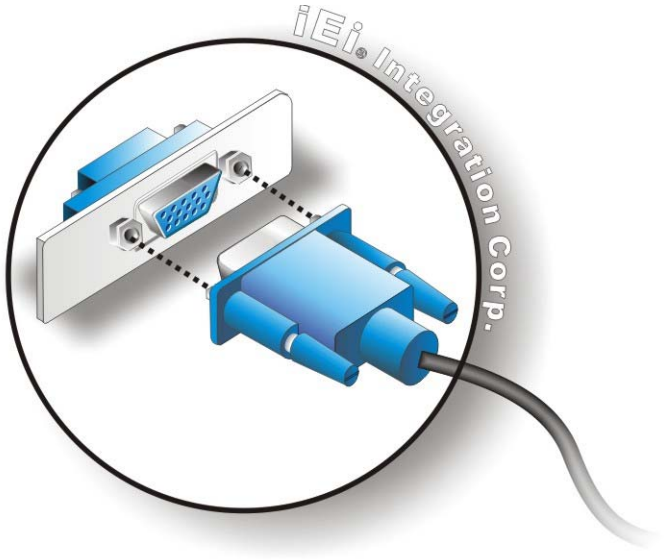


Figure 4-25: VGA Connector

Step 4: **Secure the connector**. Secure the DB-15 VGA connector from the VGA monitor to the external interface by tightening the two retention screws on either side of the connector.

4.11 Intel® AMT Setup Procedure

The NANO-QM871-i1 is featured with the Intel® Active Management Technology (AMT). To enable the Intel® AMT function, follow the steps below.

Step 1: Make sure the **DIMM1** socket is installed with one DDR3 SO-DIMM.

Step 2: Connect an Ethernet cable to the RJ-45 connector labeled **LAN1**.

Step 3: The AMI BIOS options regarding the Intel® ME or Intel® AMT must be enabled.

Step 4: Properly install the Intel® Management Engine Components drivers from the iAMT Driver & Utility directory in the driver CD. See **Section 6.8**.

Step 5: Configure the Intel® Management Engine BIOS extension (MEBx). To get into the Intel® MEBx settings, press <Ctrl+P> after a single beep during boot-up

process. Enter the Intel® current ME password as it requires (the Intel® default password is **admin**).

NOTE:

To change the password, enter a new password following the strong password rule (containing at least one upper case letter, one lower case letter, one digit and one special character, and be at least eight characters).

Chapter

5

BIOS

5.1 Introduction

The BIOS is programmed onto the BIOS chip. The BIOS setup program allows changes to certain system settings. This chapter outlines the options that can be changed.

NOTE:

Some of the BIOS options may vary throughout the life cycle of the product and are subject to change without prior notice.

5.1.1 Starting Setup

The UEFI BIOS is activated when the computer is turned on. The setup program can be activated in one of two ways.

1. Press the **DEL** or **F2** key as soon as the system is turned on or
2. Press the **DEL** or **F2** key when the "**Press DEL or F2 to enter SETUP**" message appears on the screen.

If the message disappears before the **DEL or F2** key is pressed, restart the computer and try again.

5.1.2 Using Setup

Use the arrow keys to highlight items, press **ENTER** to select, use the PageUp and PageDown keys to change entries, press **F1** for help and press **ESC** to quit. Navigation keys are shown in the following table.

Key	Function
Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item on the left hand side
Right arrow	Move to the item on the right hand side
+	Increase the numeric value or make changes

Key	Function
-	Decrease the numeric value or make changes
Page Up key	Move to the next page
Page Dn key	Move to the previous page
Esc key	Main Menu – Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
F1	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2	Load previous values
F3	Load optimized defaults
F4	Save changes and Exit BIOS

Table 5-1: BIOS Navigation Keys

5.1.3 Getting Help

When **F1** is pressed a small help window describing the appropriate keys to use and the possible selections for the highlighted item appears. To exit the Help Window press **Esc** or the **F1** key again.

5.1.4 Unable to Reboot after Configuration Changes

If the computer cannot boot after changes to the system configuration are made, CMOS defaults. Use the jumper described in **Chapter 4**.

5.1.5 BIOS Menu Bar

The **menu bar** on top of the BIOS screen has the following main items:

- Main – Changes the basic system configuration.
- Advanced – Changes the advanced system settings.
- Chipset – Changes the chipset settings.
- Boot – Changes the system boot configuration.

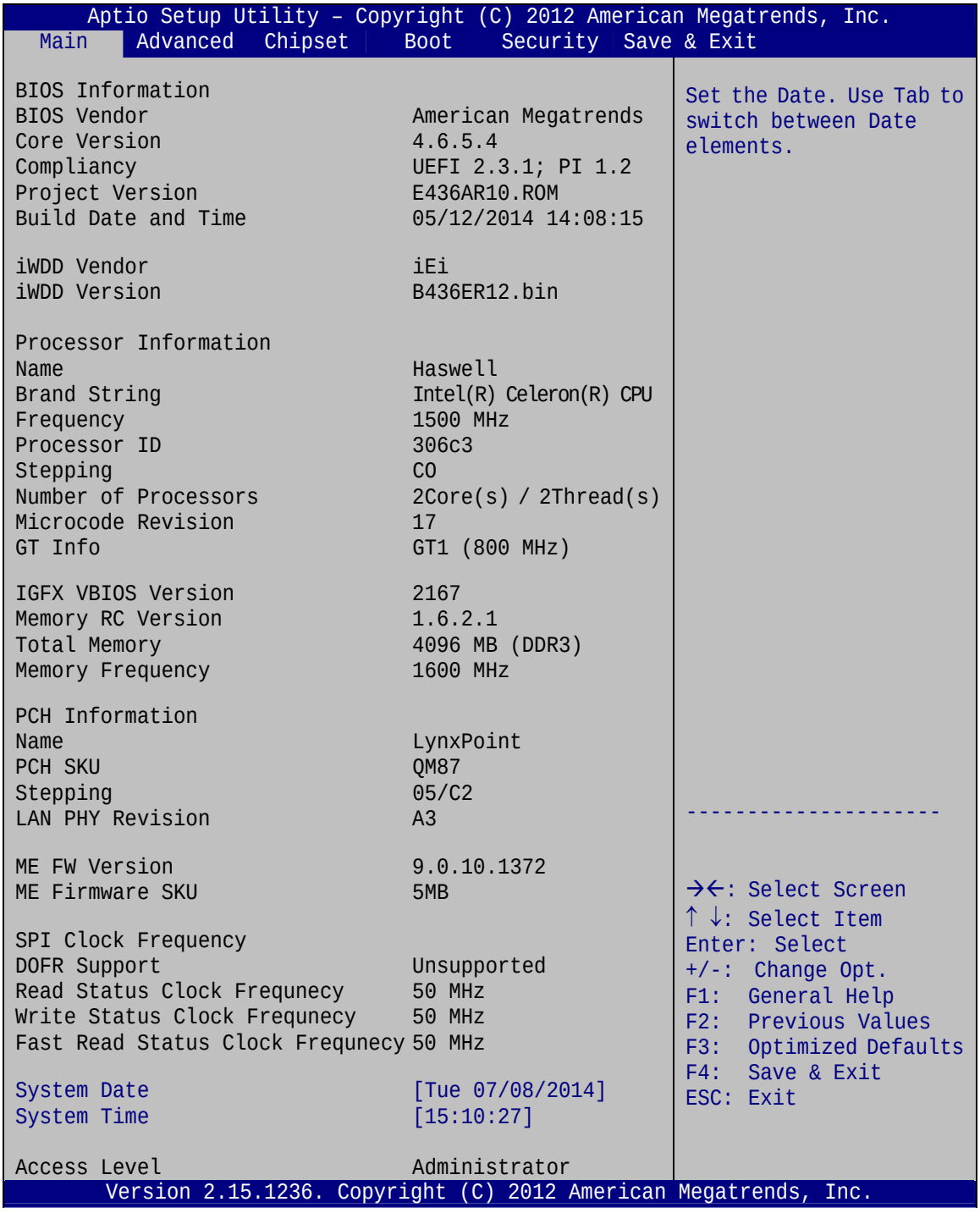
- Security – Sets User and Supervisor Passwords.
- Save & Exit – Selects exit options and loads default settings.

The following sections completely describe the configuration options found in the menu items at the top of the BIOS screen and listed above.

5.2 Main

The **Main** BIOS menu (**BIOS Menu 1**) appears when the **BIOS Setup** program is entered.

The **Main** menu gives an overview of the basic system information.



BIOS Menu 1: Main

➔ **System Overview**

The **BIOS Information** lists a brief summary of the BIOS. The fields in **BIOS Information** cannot be changed. The items shown in the system overview include:

- BIOS Information
- Processor Information
- Memory Information
- PCH Information
- SPI Clock Frequency

The System Overview field also has two user configurable fields:

➔ **System Date [xx/xx/xx]**

Use the **System Date** option to set the system date. Manually enter the day, month and year.

➔ **System Time [xx:xx:xx]**

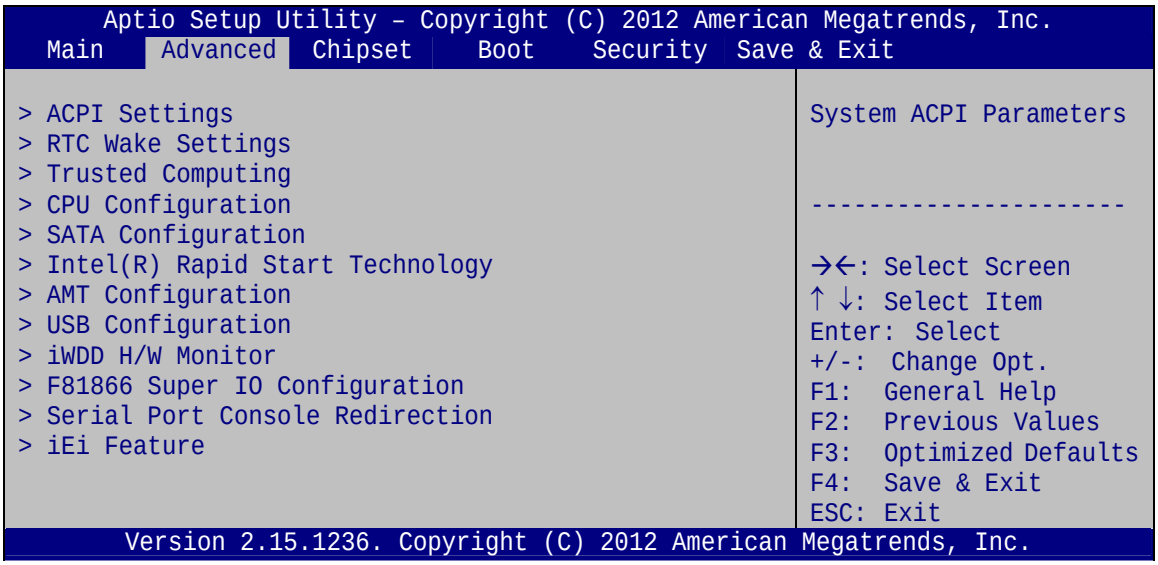
Use the **System Time** option to set the system time. Manually enter the hours, minutes and seconds.

5.3 Advanced

Use the **Advanced** menu (**BIOS Menu 2**) to configure the CPU and peripheral devices through the following sub-menus:

WARNING:

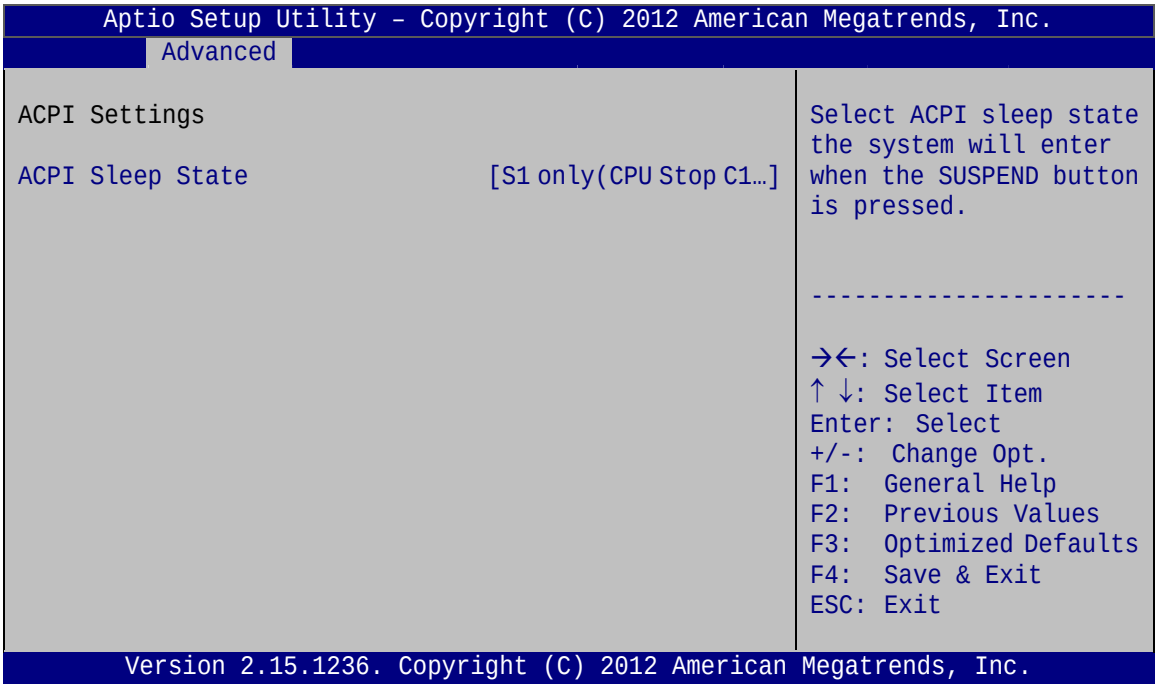
Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.



BIOS Menu 2: Advanced

5.3.1 ACPI Settings

The **ACPI Settings** menu (**BIOS Menu 3**) configures the Advanced Configuration and Power Interface (ACPI) options.



BIOS Menu 3: ACPI Settings

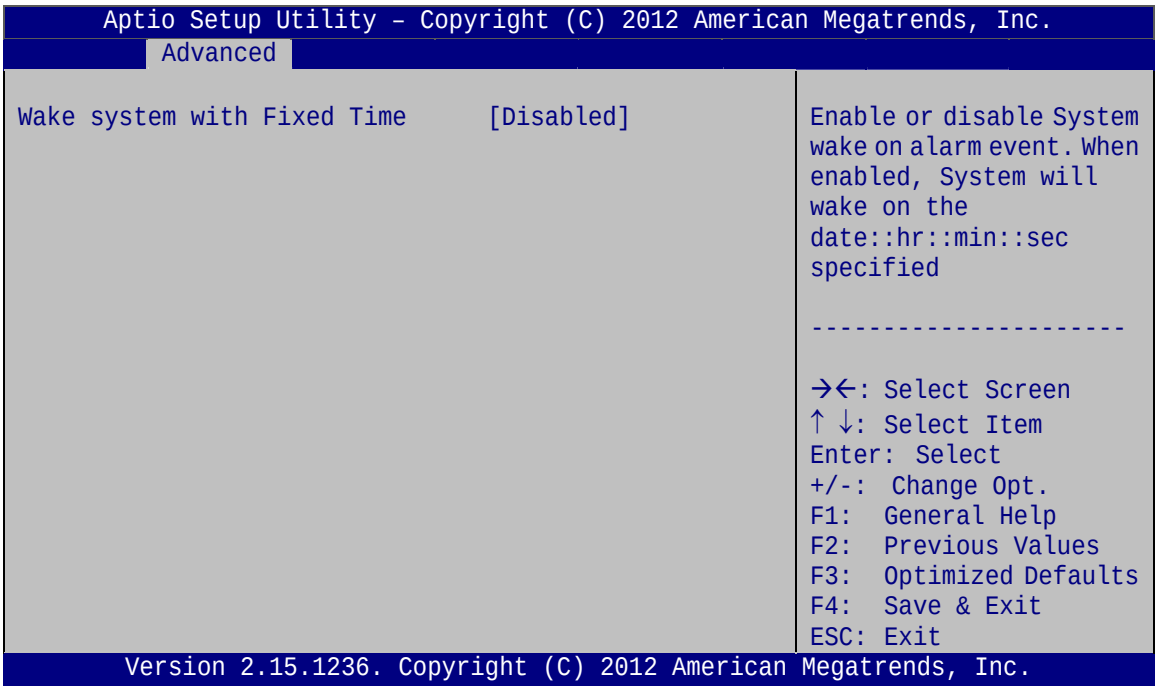
➔ **ACPI Sleep State [S1 only (CPU Stop Clock)]**

Use the **ACPI Sleep State** option to specify the sleep state the system enters when it is not being used.

➔ **S1 only (CPU Stop Clock)**	**DEFAULT**	The system enters S1 (POS) sleep state. The system appears off. The CPU is stopped; RAM is refreshed; the system is running in a low power mode.
➔ **S3 only (Suspend to RAM)**		The caches are flushed and the CPU is powered off. Power to the RAM is maintained. The computer returns slower to a working state, but more power is saved.

5.3.2 RTC Wake Settings

The **RTC Wake Settings** menu (**BIOS Menu 4**) enables the system to wake at the specified time.



BIOS Menu 4: RTC Wake Settings

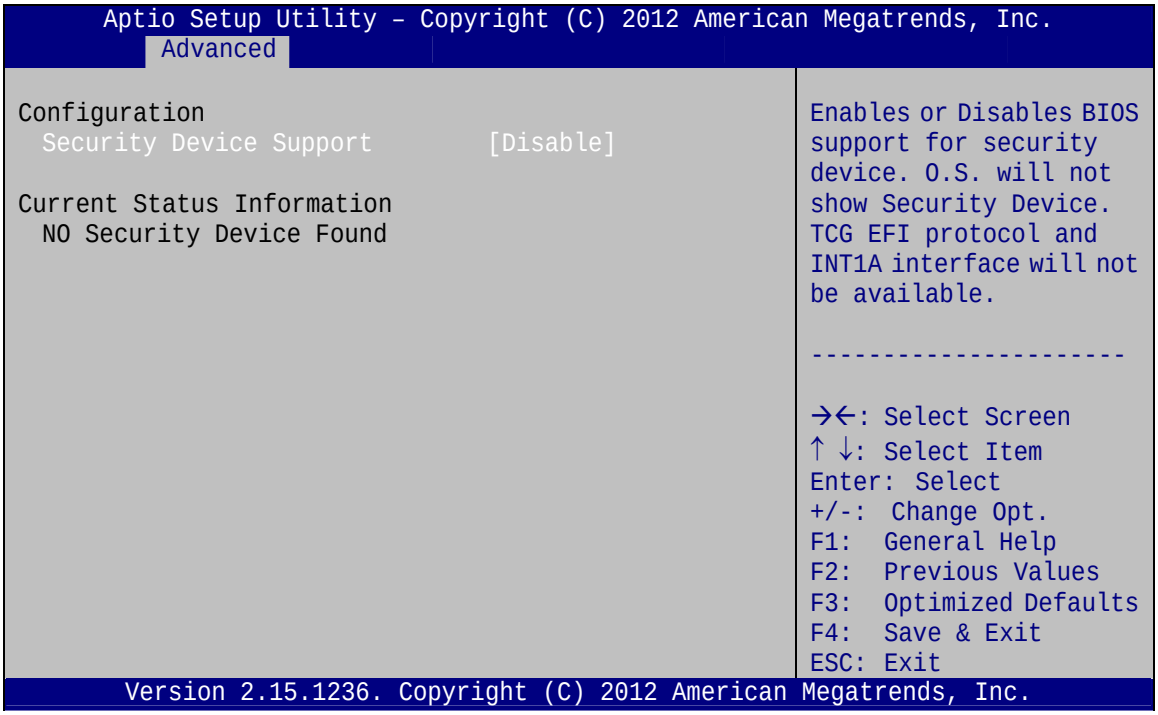
➔ **Wake system with Fixed Time [Disabled]**

Use the **Wake system with Fixed Time** option to enable or disable the system wake on alarm event.

➔ **Disabled**	**DEFAULT**	The real time clock (RTC) cannot generate a wake event
➔ **Enabled**		If selected, the **Wake up every day** option appears allowing you to enable to disable the system to wake every day at the specified time. Besides, the following options appear with values that can be selected: Wake up every day Wake up date Wake up hour Wake up minute Wake up second After setting the alarm, the computer turns itself on from a suspend state when the alarm goes off.

5.3.3 Trusted Computing

Use the **Trusted Computing** menu (**BIOS Menu 5**) to configure settings related to the Trusted Computing Group (TCG) Trusted Platform Module (TPM).



BIOS Menu 5: Trusted Computing

➔ **Security Device Support [Disable]**

Use the **Security Device Support** option to configure support for the TPM.

➔ **Disable** **DEFAULT** TPM support is disabled.

➔ **Enable** TPM support is enabled.

5.3.4 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 6**) to view detailed CPU specifications and configure the CPU.

```
Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
        Advanced

CPU Configuration                                  Enabled for Windows XP
                                                   and Linux (OS optimized
Intel(R) Celeron(R) CPU 2002E @ 1.50GHz            for Hyper-Threading
CPU Signature                    306c3             Technology) and Disabled
Microcode Patch                  17                for other OS (OS not
Max CPU Speed                    1500 MHz          optimized for
Min CPU Speed                    800 MHz           Hyper-Threading
CPU Speed                        1500 MHz          Technology). When
Processor Cores                  2                 Disabled only one thread
Intel HT Technology              Not Supported     per enabled core is
Intel VT-x Technology            Supported         enabled.
Intel SMX Technology             Not Supported
64-bit                           Supported         ----------------------
EIST Technology                  Supported
                                                   →←: Select Screen
L1 Data Cache                    32 kB x 2         ↑ ↓: Select Item
L1 Code Cache                    32 kB x 2         Enter: Select
L2 Cache                         256 kB x 2        +/-:  Change Opt.
L3 Cache                         2048 kB           F1:  General Help
                                                   F2:  Previous Values
Active Processor Cores           [All]             F3:  Optimized Defaults
Intel Virtualization Technology  [Disabled]        F4:  Save & Exit
EIST                             [Enabled]         ESC: Exit

Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.
```

BIOS Menu 6: CPU Configuration

The CPU Configuration menu (**BIOS Menu 6**) lists the following CPU details:

- Processor Type: Lists the brand name of the CPU being used
- CPU Signature: Lists the CPU signature value.
- Microcode Patch: Lists the microcode patch being used.
- Max CPU Speed: Lists the maximum CPU processing speed.
- Min CPU Speed: Lists the minimum CPU processing speed.
- CPU Speed: Lists the CPU processing speed
- Processor Cores: Lists the number of the processor core
- Intel HT Technology: Indicates if Intel HT Technology is supported by the CPU.

- Intel VT-x Technology: Indicates if Intel VT-x Technology is supported by the CPU.
- Intel SMX Technology: Indicates if Intel SMX Technology is supported by the CPU.
- EIST Technology: Indicates if the Enhanced Intel SpeedStep® Technology (EIST) is supported by the CPU.
- 64-bit: Indicates if 64-bit is supported by the CPU.
- L1 Data Cache: Lists the amount of data storage space on the L1 cache.
- L1 Code Cache: Lists the amount of code storage space on the L1 cache.
- L2 Cache: Lists the amount of storage space on the L2 cache.
- L3 Cache: Lists the amount of storage space on the L3 cache.

➔ **Active Processor Cores [All]**

Use the **Active Processor Cores** option to configure the number of cores to enable in each processor package.

➔	**All**	**DEFAULT**	All cores are enabled in the processor package.
➔	**1**		One of the cores is enabled in the processor package.

➔ **Intel Virtualization Technology [Disabled]**

Use the **Intel Virtualization Technology** option to enable or disable virtualization on the system. When combined with third party software, Intel® Virtualization technology allows several OSs to run on the same system at the same time.

➔	**Disabled**	**DEFAULT**	Disables Intel Virtualization Technology.
➔	**Enabled**		Enables Intel Virtualization Technology.

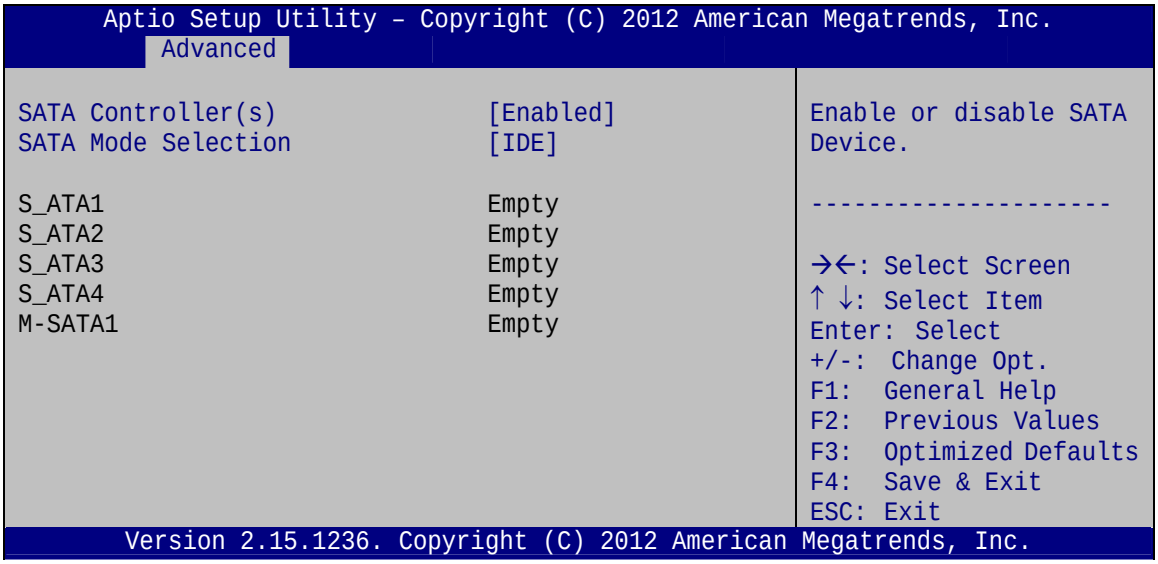
➔ **EIST [Enabled]**

Use the **EIST** BIOS option to enable or disable the Intel SpeedStep® Technology.

➔	**Disabled**		Disables the Intel SpeedStep® Technology.
➔	**Enabled**	**DEFAULT**	Enables the Intel SpeedStep® Technology.

5.3.5 SATA Configuration

Use the **SATA Configuration** menu (**BIOS Menu 7**) to change and/or set the configuration of the SATA devices installed in the system.



BIOS Menu 7: SATA Configuration

➔ **SATA Controller(s) [Enabled]**

Use the **SATA Controller(s)** option to configure the SATA controller.

➔	**Enabled**	**DEFAULT**	Enable SATA controller.
➔	**Disabled**		Disable SATA controller.

➔ **SATA Mode Selection [IDE]**

Use the **SATA Mode Selection** option to configure SATA devices.

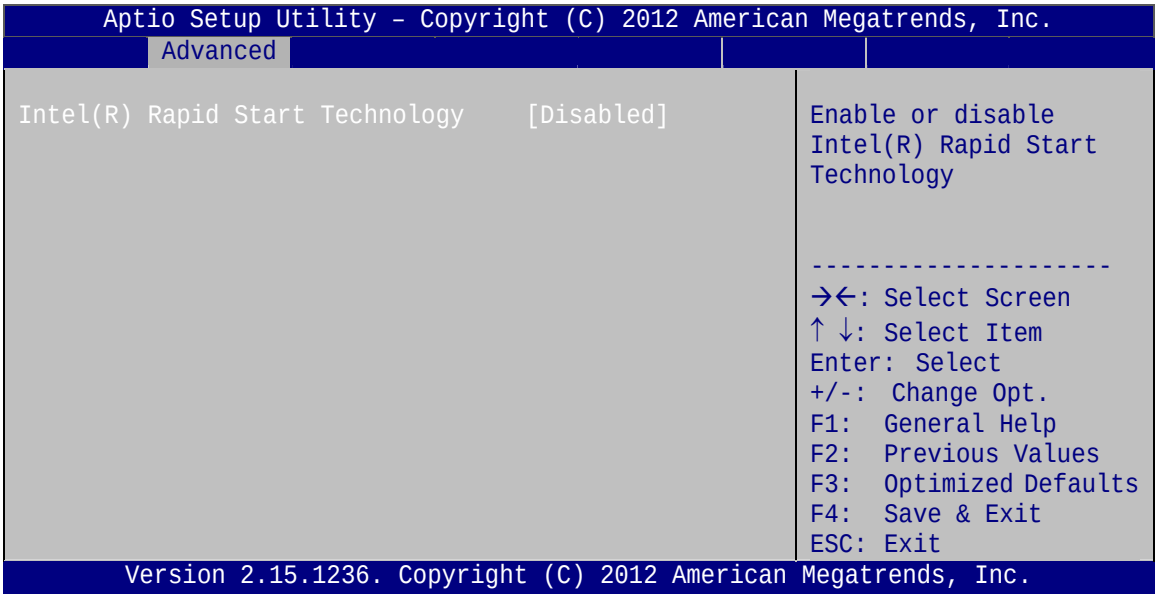
➔	**IDE**	**DEFAULT**	Configures SATA devices as normal IDE device.
➔	**AHCI**		Configures SATA devices as AHCI device.
➔	**RAID**		Configures SATA devices as RAID device.

NOTE:

Before accessing the RAID configuration utility, ensure to set the **Option ROM Messages** BIOS option in the **Boot** menu to **Force BIOS**. This is to allow the "Press <CTRL+I> to enter Configuration Utility……" message to appear during POST. Press Ctrl+I when prompted to enter the RAID configuration utility.

5.3.6 Intel(R) Rapid Start Technology

Use the **Intel(R) Rapid Start Technology** (**BIOS Menu 8**) menu to configure Intel® Rapid Start Technology support.



BIOS Menu 8: Intel(R) Rapid Start Technology

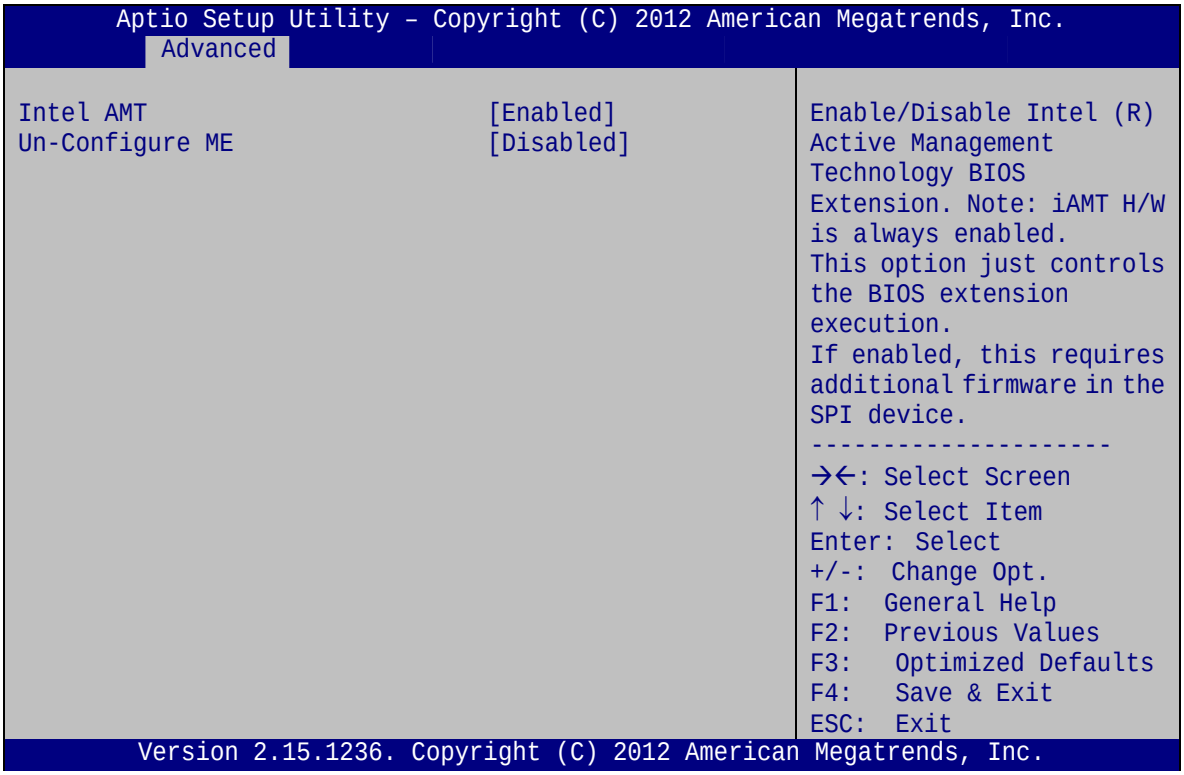
➔ **Intel(R) Rapid Start Technology [Disabled]**

Use **Intel(R) Rapid Start Technology** option to enable or disable the Intel® Rapid Start Technology function.

➔	**Disabled**	**DEFAULT**	Intel® Rapid Start Technology is disabled
➔	**Enabled**		Intel® Rapid Start Technology is enabled

5.3.7 AMT Configuration

The **AMT Configuration** menu (**BIOS Menu 9**) allows the Intel® AMT options to be configured.



BIOS Menu 9: AMT Configuration

➔ **Intel AMT [Enabled]**

Use **Intel AMT** option to enable or disable the Intel® AMT function.

➔	**Disabled**		Intel® AMT is disabled
➔	**Enabled**	**DEFAULT**	Intel® AMT is enabled

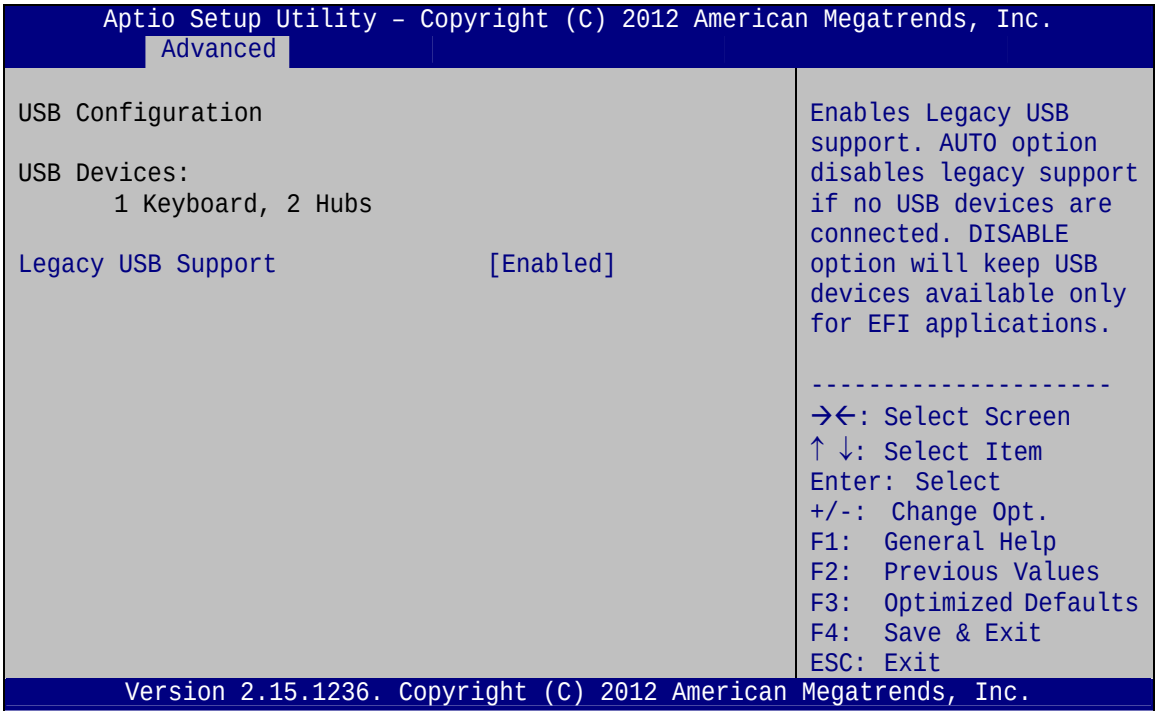
➔ **Un-Configure ME [Disabled]**

Use the **Un-Configure ME** option to perform ME unconfigure without password operation.

➔	**Disabled**	**DEFAULT**	Not perform ME unconfigure
➔	**Enabled**		To perform ME unconfigure

5.3.8 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 10**) to read USB configuration information and configure the USB settings.



BIOS Menu 10: USB Configuration

➔ **USB Devices**

The **USB Devices** field lists the USB devices that are enabled on the system

➔ **Legacy USB Support [Enabled]**

Use the **Legacy USB Support** BIOS option to enable USB mouse and USB keyboard support.

Normally if this option is not enabled, any attached USB mouse or USB keyboard does not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB driver loaded onto the system.

➔	**Enabled**	**DEFAULT**	Legacy USB support enabled
➔	**Disabled**		Legacy USB support disabled
➔	**Auto**		Legacy USB support disabled if no USB devices are connected

5.3.9 iWDD H/W Monitor

The **iWDD H/W Monitor** menu (**BIOS Menu 11**) displays the CPU temperature and CPU fan speed, and contains the fan configuration submenu.

```
Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
        Advanced
PC Health Status                                Smart Fan Mode Select

CPU temperature                 : +48 C
CPU_FAN1 Speed                  : 2130 RPM
SYS_FAN1 Speed                  : N/A

CPU_CORE                        : +1.864 V      ---------------------
+12V                            : +12.232 V     →←: Select Screen
+DDR                            : +1.584 V      ↑ ↓: Select Item
+5VSB                           : +5.028 V      Enter:  Select
+3.3V                           : +3.328 V      +/-:  Change Opt.
+3.3VSB                         : +3.328 V      F1:   General Help
> Smart Fan Mode Configuration                  F2:   Previous Values
                                                F3:   Optimized Defaults
                                                F4:   Save & Exit
                                                ESC:  Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.
```

BIOS Menu 11: iWDD H/W Monitor

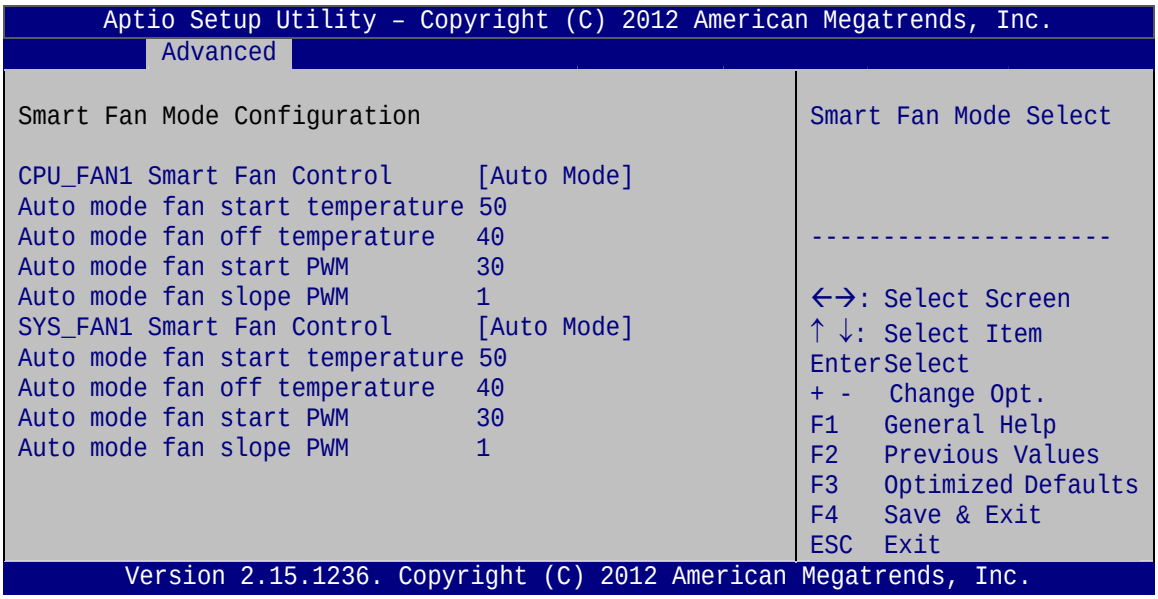
➔ **PC Health Status**

The following system parameters and values are shown. The system parameters that are monitored are:

- CPU Temperature
- CPU Fan Speed
- System Fan Speed

5.3.9.1 Smart Fan Mode Configuration

Use the **Smart Fan Mode Configuration** submenu (**BIOS Menu 12**) to configure the smart fan temperature and speed settings.



BIOS Menu 12: Smar Fan Mode Configuration

➔ **CPU_FAN1/SYS_FAN1 Smart Fan Control [Auto Mode]**

Use the **CPU_FAN1/SYS_FAN1 Smart Fan Control** option to configure the CPU/System Smart Fan.

➔ **Manual Mode**		The fan spins at the speed set in Manual Mode settings
➔ **Auto Mode**	**DEFAULT**	The fan adjusts its speed using Auto by Duty-Cycle settings

➔ **Auto mode fan start/off temperature**

Use the + or – key to change the **Auto mode fan start/off temperature** value. Enter a decimal number between 1 and 100.

➔ **Auto mode fan start PWM**

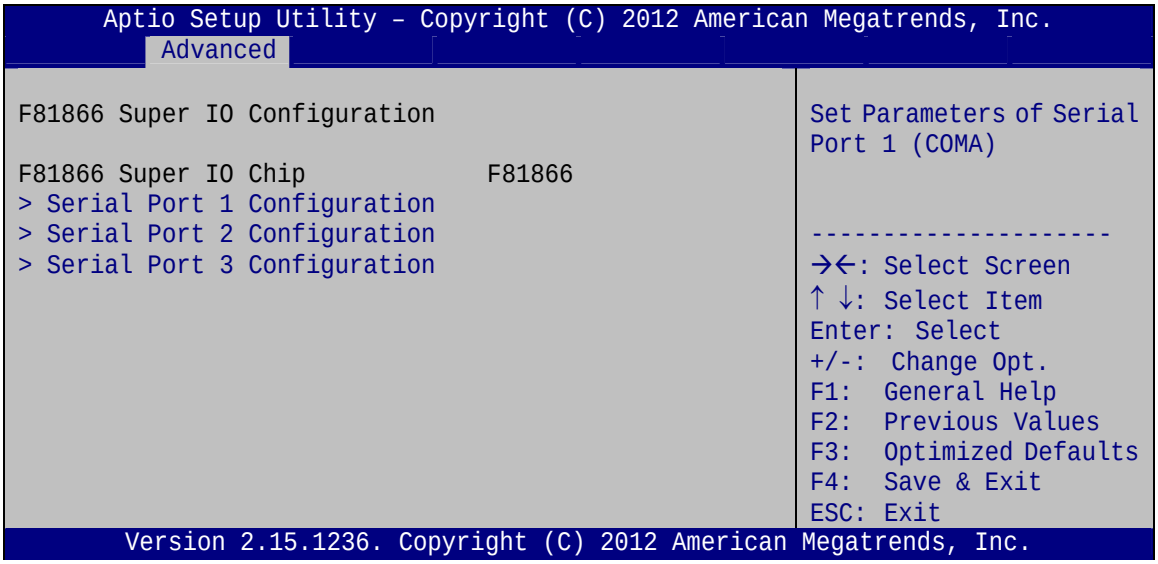
Use the + or – key to change the **Auto mode fan start PWM** value. Enter a decimal number between 1 and 100.

➔ **Auto mode fan slope PWM**

Use the + or – key to change the **Auto mode fan slope PWM** value. Enter a decimal number between 1 and 64.

5.3.10 F81866 Super IO Configuration

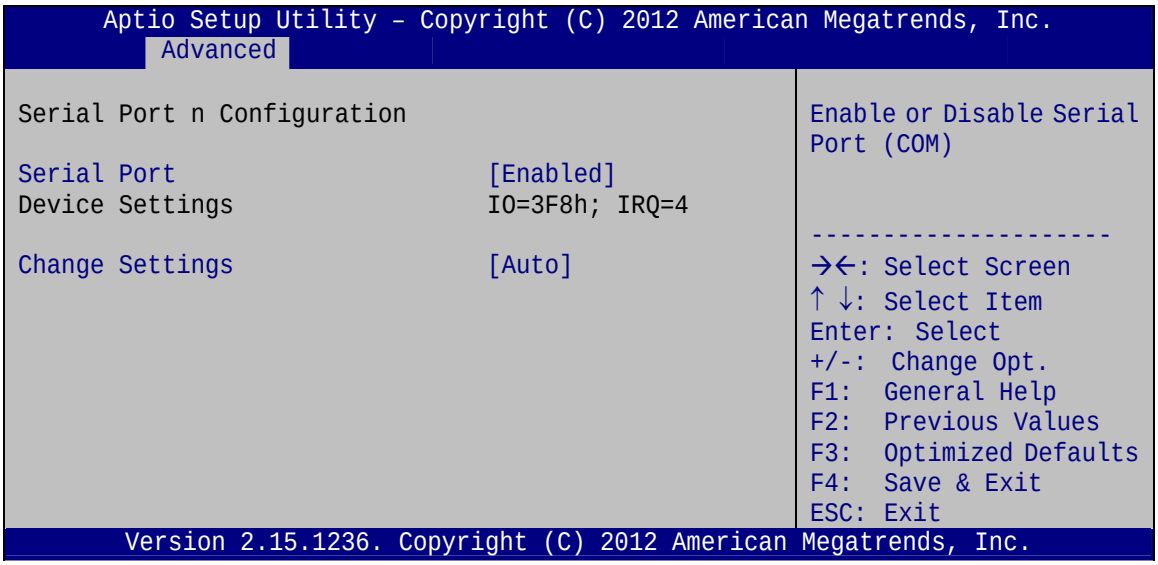
Use the **F81866 Super IO Configuration** menu (**BIOS Menu 13**) to set or change the configurations for the serial ports.



BIOS Menu 13: F81866 Super IO Configuration

5.3.10.1 Serial Port n Configuration

Use the **Serial Port n Configuration** menu (**BIOS Menu 14**) to configure the serial port n.



BIOS Menu 14: Serial Port n Configuration Menu

5.3.10.1.1 Serial Port 1 Configuration

➔ **Serial Port [Enabled]**

Use the **Serial Port** option to enable or disable the serial port.

➔	**Disabled**		Disable the serial port
➔	**Enabled**	**DEFAULT**	Enable the serial port

➔ **Change Settings [Auto]**

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

➔	**Auto**	**DEFAULT**	The serial port IO port address and interrupt address are automatically detected.
➔	**IO=3F8h; IRQ=4**		Serial Port I/O port address is 3F8h and the interrupt address is IRQ4

➔ **IO=3F8h; IRQ=3, 4**		Serial Port I/O port address is 3F8h and the interrupt address is IRQ3, 4
➔ **IO=2F8h; IRQ=3, 4**		Serial Port I/O port address is 2F8h and the interrupt address is IRQ3, 4
➔ **IO=2C0h; IRQ=3, 4**		Serial Port I/O port address is 2C0h and the interrupt address is IRQ3, 4
➔ **IO=2C8h; IRQ=3, 4**		Serial Port I/O port address is 2C8h and the interrupt address is IRQ3, 4

5.3.10.1.2 Serial Port 2 Configuration

➔ **Serial Port [Enabled]**

Use the **Serial Port** option to enable or disable the serial port.

➔ **Disabled**		Disable the serial port
➔ **Enabled**	**DEFAULT**	Enable the serial port

➔ **Change Settings [Auto]**

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

➔ **Auto**	**DEFAULT**	The serial port IO port address and interrupt address are automatically detected.
➔ **IO=2F8h; IRQ=3**		Serial Port I/O port address is 2F8h and the interrupt address is IRQ3
➔ **IO=3F8h; IRQ=3, 4**		Serial Port I/O port address is 3F8h and the interrupt address is IRQ3, 4
➔ **IO=2F8h; IRQ=3, 4**		Serial Port I/O port address is 2F8h and the interrupt address is IRQ3, 4
➔ **IO=2C0h; IRQ=3, 4**		Serial Port I/O port address is 2C0h and the interrupt address is IRQ3, 4

➔ **IO=2C8h; IRQ=3, 4**		Serial Port I/O port address is 2C8h and the interrupt address is IRQ3, 4

5.3.10.1.3 Serial Port 3 Configuration

➔ **Serial Port [Enabled]**

Use the **Serial Port** option to enable or disable the serial port.

➔ **Disabled**		Disable the serial port
➔ **Enabled**	**DEFAULT**	Enable the serial port

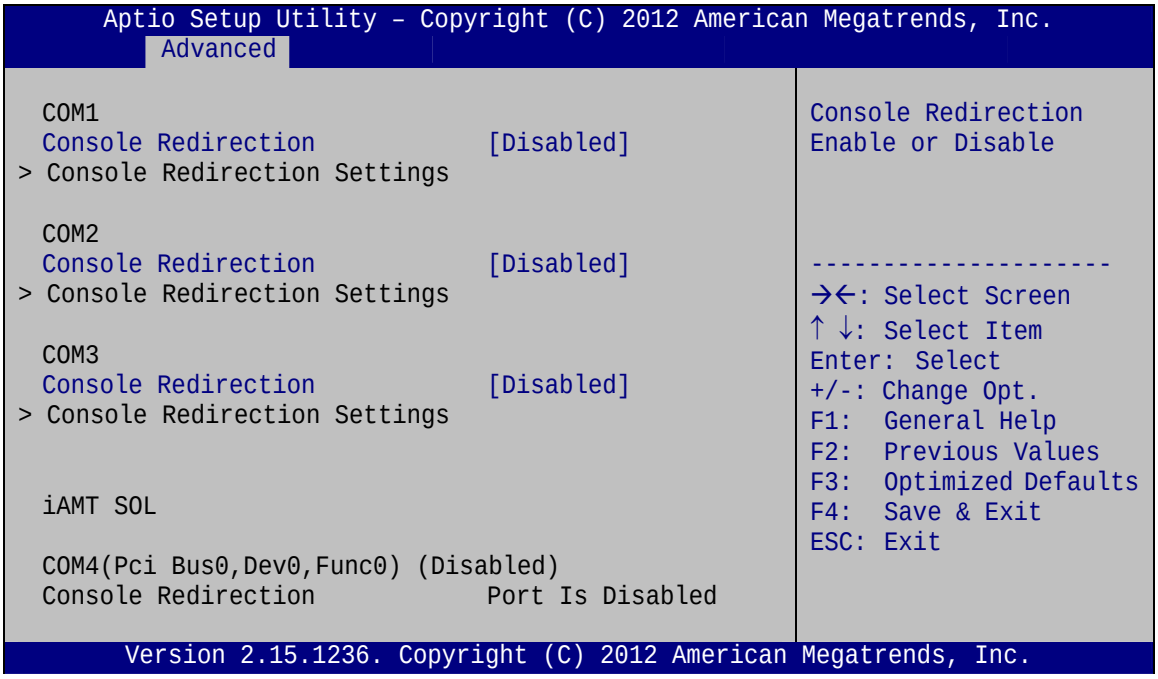
➔ **Change Settings [Auto]**

Use the **Change Settings** option to change the serial port IO port address and interrupt address.

➔ **Auto**	**DEFAULT**	The serial port IO port address and interrupt address are automatically detected.
➔ **IO=3E8h; IRQ=11**		Serial Port I/O port address is 3E8h and the interrupt address is IRQ11
➔ **IO=3E8h; IRQ=10, 11**		Serial Port I/O port address is 3E8h and the interrupt address is IRQ10, 11
➔ **IO=2E8h; IRQ=10, 11**		Serial Port I/O port address is 2E8h and the interrupt address is IRQ10, 11
➔ **IO=2D0h; IRQ=10, 11**		Serial Port I/O port address is 2D0h and the interrupt address is IRQ10, 11
➔ **IO=2D8h; IRQ=10, 11**		Serial Port I/O port address is 2D8h and the interrupt address is IRQ10, 11

5.3.11 Serial Port Console Redirection

The **Serial Port Console Redirection** menu (**BIOS Menu 15**) allows the console redirection options to be configured. Console redirection allows users to maintain a system remotely by re-directing keyboard input and text output through the serial port.



BIOS Menu 15: Serial Port Console Redirection

➔ **Console Redirection [Disabled]**

Use **Console Redirection** option to enable or disable the console redirection function.

➔	**Disabled**	**DEFAULT**	Disabled the console redirection function
➔	**Enabled**		Enabled the console redirection function

NOTE:

The following five options appear when the **Console Redirection** option is enabled.

➔ **Terminal Type [ANSI]**

Use the **Terminal Type** option to specify the remote terminal type.

➔ **VT100**		The target terminal type is VT100
➔ **VT100+**		The target terminal type is VT100+
➔ **VT-UTF8**		The target terminal type is VT-UTF8
➔ **ANSI**	**DEFAULT**	The target terminal type is ANSI

➔ **Bits per second [115200]**

Use the **Bits per second** option to specify the serial port transmission speed. The speed must match the other side. Long or noisy lines may require lower speeds.

➔ **9600**		Sets the serial port transmission speed at 9600.
➔ **19200**		Sets the serial port transmission speed at 19200.
➔ **38400**		Sets the serial port transmission speed at 38400.
➔ **57600**		Sets the serial port transmission speed at 57600.
➔ **115200**	**DEFAULT**	Sets the serial port transmission speed at 115200.

➔ **Data Bits [8]**

Use the **Data Bits** option to specify the number of data bits.

➔ **7**		Sets the data bits at 7.
➔ **8**	**DEFAULT**	Sets the data bits at 8.

➔ **Parity [None]**

Use the **Parity** option to specify the parity bit that can be sent with the data bits for detecting the transmission errors.

➔ **None**	**DEFAULT**	No parity bit is sent with the data bits.

➔ **Even**		The parity bit is 0 if the number of ones in the data bits is even.
➔ **Odd**		The parity bit is 0 if the number of ones in the data bits is odd.
➔ **Mark**		The parity bit is always 1. This option does not provide error detection.
➔ **Space**		The parity bit is always 0. This option does not provide error detection.

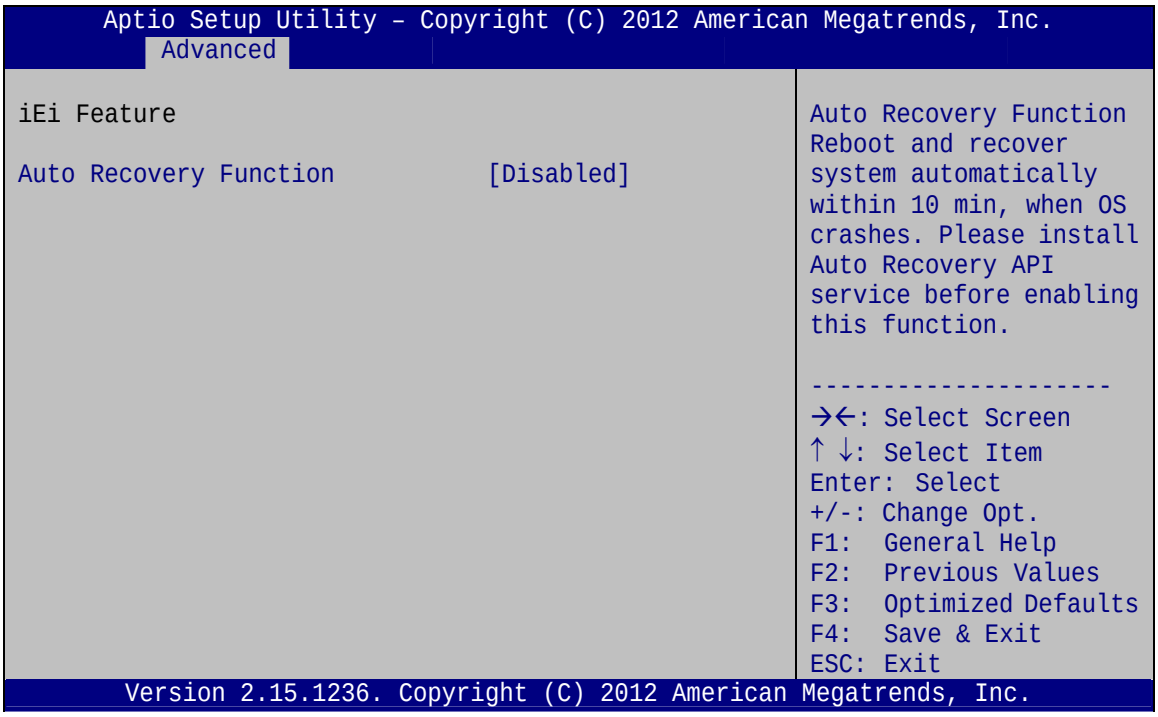
➔ **Stop Bits [1]**

Use the **Stop Bits** option to specify the number of stop bits used to indicate the end of a serial data packet. Communication with slow devices may require more than 1 stop bit.

➔ **1**	**DEFAULT**	Sets the number of stop bits at 1.
➔ **2**		Sets the number of stop bits at 2.

5.3.12 iEi Feature

Use the **iEi Feature** menu (**BIOS Menu 16**) to configure One Key Recovery function.



BIOS Menu 16: iEi Feature

➔ **Auto Recovery Function [Disabled]**

Use the **Auto Recovery Function** BIOS option to enable or disable the auto recovery function of the IEI One Key Recovery.

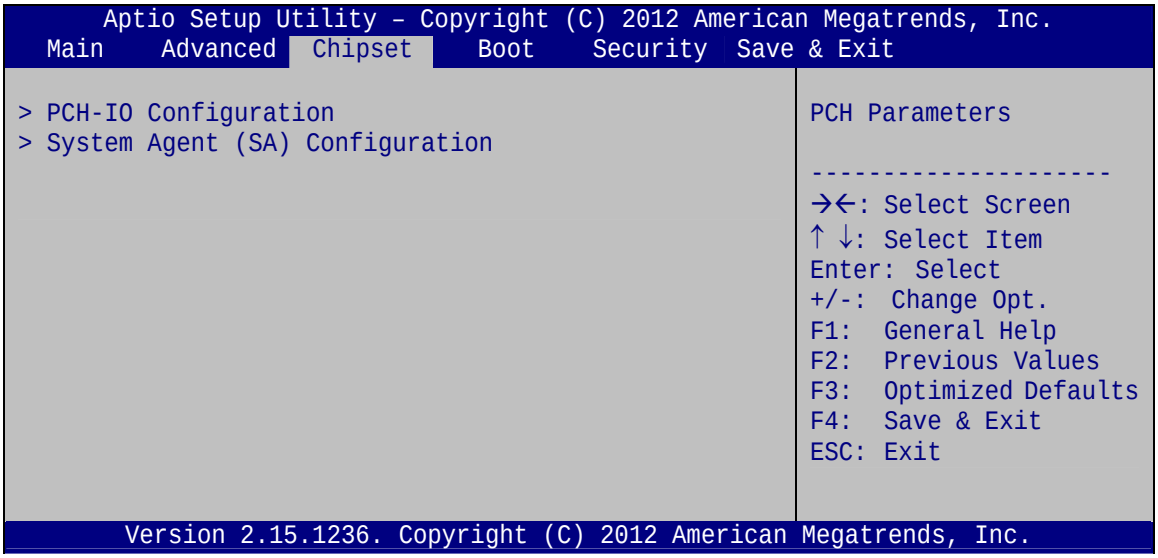
➔	**Disabled**	**DEFAULT**	Auto recovery function disabled
➔	**Enabled**		Auto recovery function enabled

5.4 Chipset

Use the **Chipset** menu (**BIOS Menu 17**) to access the PCH IO and System Agent (SA) configuration menus.

WARNING!

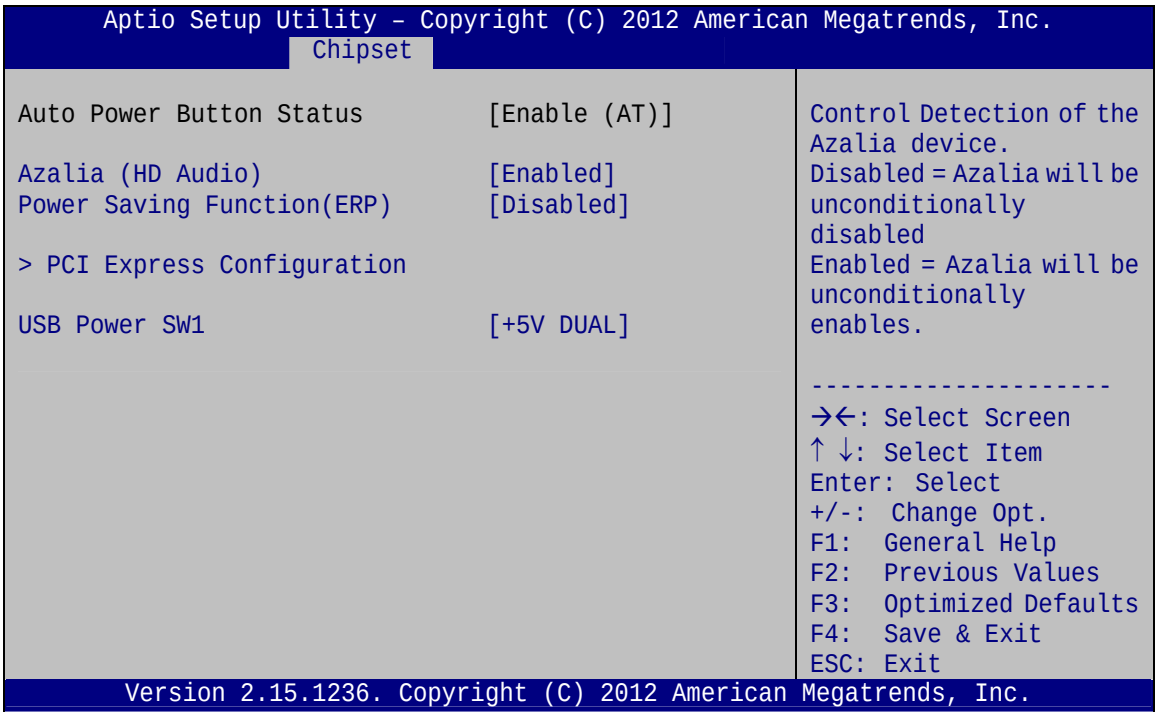
Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.



BIOS Menu 17: Chipset

5.4.1 PCH-IO Configuration

Use the **PCH-IO Configuration** menu (**BIOS Menu 18**) to configure the PCH parameters.



BIOS Menu 18: PCH-IO Configuration

➔ **Azalia (HD Audio) [Enabled]**

Use the **Azalia (HD Audio)** option to enable or disable the High Definition Audio controller.

➔ **Disabled**		The onboard High Definition Audio controller is disabled
➔ **Enabled**	**DEFAULT**	The onboard High Definition Audio controller automatically detected and enabled

➔ **Power Saving Function [Disabled]**

Use the **Power Saving Function** option to enable or disable power saving function.

➔ **Disabled**	**DEFAULT**	Power saving function is disabled
➔ **Enabled**		Enable to reduce power consumption in system off state.

➔ **USB Power SW1 [+5V DUAL]**

Use the **USB Power SW1** BIOS option to configure the power of USB port by software.

➔	**+5V**		Sets to +5V
➔	**+5V DUAL**	**DEFAULT**	Sets to +5V DUAL

5.4.1.1 PCI Express Configuration

Use the **PCI Express Configuration** menu (**BIOS Menu 19**) to select the support type of the PCI Express or PCIe Mini slots.

```
Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
                    Chipset
PCI Express Configuration                    Select PCI Express port
                                             speed.
M-SATA1 PCIE Port
PCIe Speed                      [Auto]
Detect Non-Compliance Device    [Disabled]   ----------------------
                                             →←: Select Screen
                                             ↑ ↓: Select Item
                                             Enter: Select
                                             +/-: Change Opt.
                                             F1: General Help
                                             F2: Previous Values
                                             F3: Optimized Defaults
                                             F4: Save & Exit
                                             ESC: Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.
```

BIOS Menu 19: PCI Express Configuration

➔ **PCIe Speed [Auto]**

Use PCIe Speed option to select the speed type of the PCI Express or PCIe Mini slots. The following options are available:

- Auto **Default**
- Gen1
- Gen2

➔ **Detect Non-Compliance Device [Disabled]**

Use the **Detect Non-Compliance Device** option to enable or disable the "detect no-compliance PCIe device" function.

➔ **Disabled**	**DEFAULT**	Detect no-compliance PCIe device function is disabled
➔ **Enabled**		Detect no-compliance PCIe device function is enabled. If will take more time at POST if it is enabled.

5.4.2 System Agent (SA) Configuration

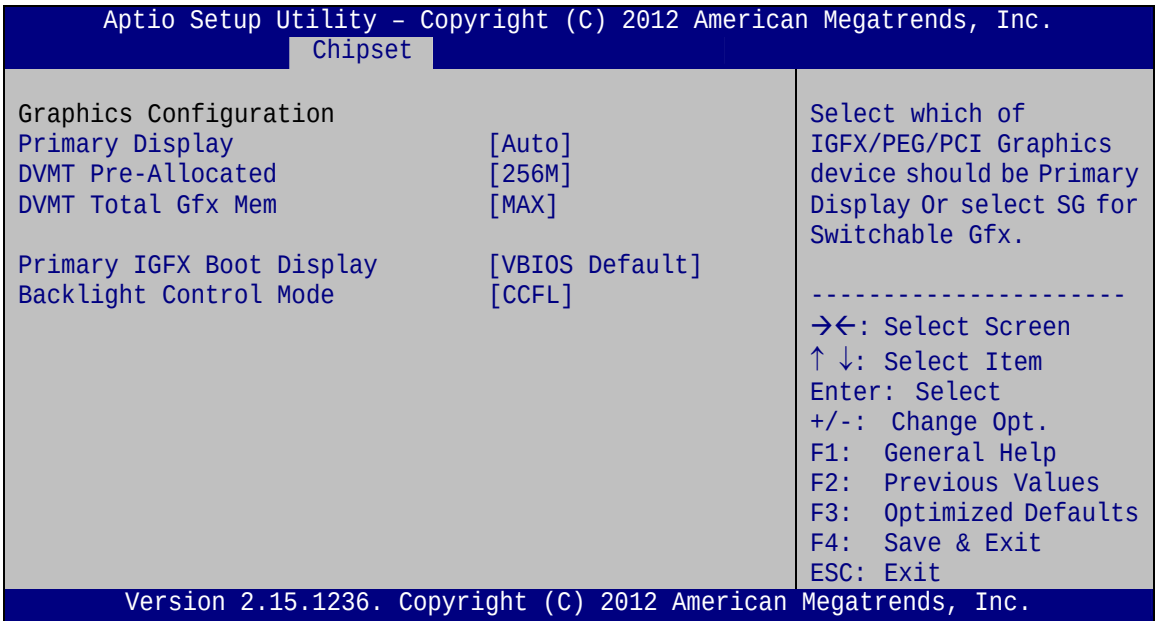
Use the **System Agent (SA) Configuration** menu (**BIOS Menu 20**) to configure the System Agent (SA) parameters.

```
Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
                    Chipset
VT-d Capability                 Unsupported     Config Graphics
> Graphics Configuration                        Settings.
> Memory Configuration
                                                ---------------------
                                                →←: Select Screen
                                                ↑ ↓: Select Item
                                                Enter:  Select
                                                +/-:  Change Opt.
                                                F1:   General Help
                                                F2:   Previous Values
                                                F3:   Optimized Defaults
                                                F4:   Save & Exit
                                                ESC:  Exit
Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.
```

BIOS Menu 20: System Agent (SA) Configuration

5.4.2.1 Graphics Configuration

Use the **Graphics Configuration** (**BIOS Menu 21**) menu to configure the video device connected to the system.



BIOS Menu 21: Graphics Configuration

➔ **Primary Display [Auto]**

Use the **Primary Display** option to select the primary graphics controller the system uses. The following options are available:

- Auto **Default**
- IGFX
- PCIE

➔ **DVMT Pre-Allocated [256M]**

Use the **DVMT Pre-Allocated** option to set the amount of system memory allocated to the integrated graphics processor when the system boots. The system memory allocated can then only be used as graphics memory, and is no longer available to applications or the operating system. Configuration options are listed below:

- 32M
- 64M
- 128M
- 256M **Default**
- 512M

➔ **DVMT Total Gfx Mem [MAX]**

Use the **DVMT Total Gfx Mem** option to select DVMT5.0 total graphic memory size used by the internal graphic device. The following options are available:

- 128M
- 256M
- MAX **Default**

➔ **Primary IGFX Boot Display [VBIOS Default]**

Use the **Primary IGFX Boot Display** option to select the display device used by the system when it boots. Configuration options are listed below.

- VBIOS Default **DEFAULT**
- CRT
- LVDS
- HDMI 1
- HDMI 2

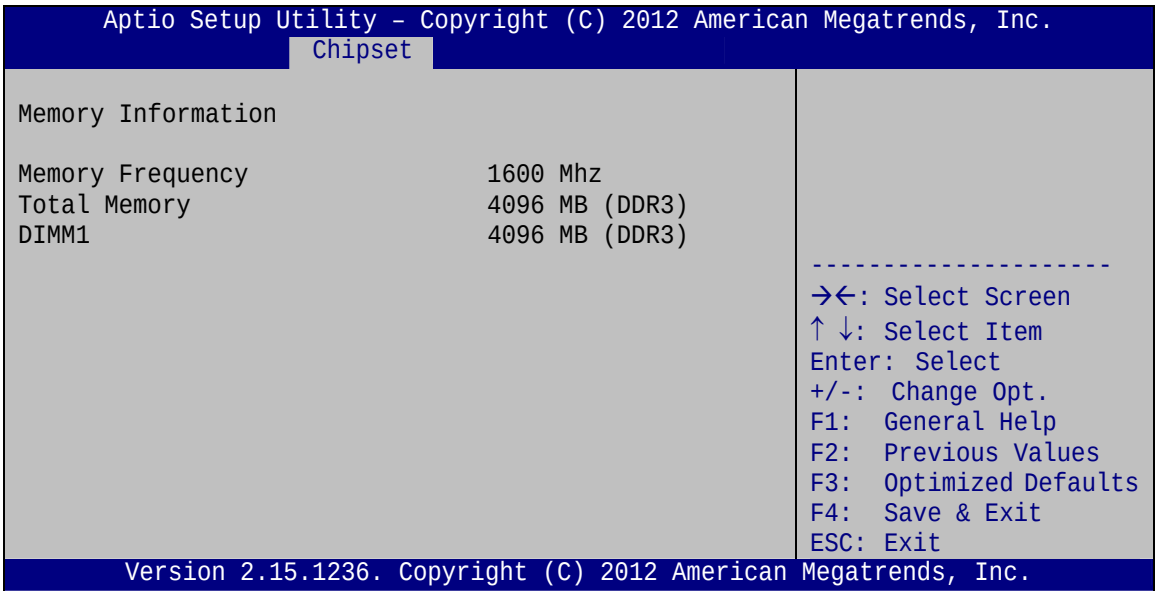
➔ **Backlight Control Mode [CCFL]**

Use the **Backlight Control** option to select the backlight control mode.

➔	**LED**		The LVDS backlight is brighter at high voltage level.
➔	**CCFL**	**DEFAULT**	The LVDS backlight is brighter at low voltage level.

5.4.2.2 Memory Configuration

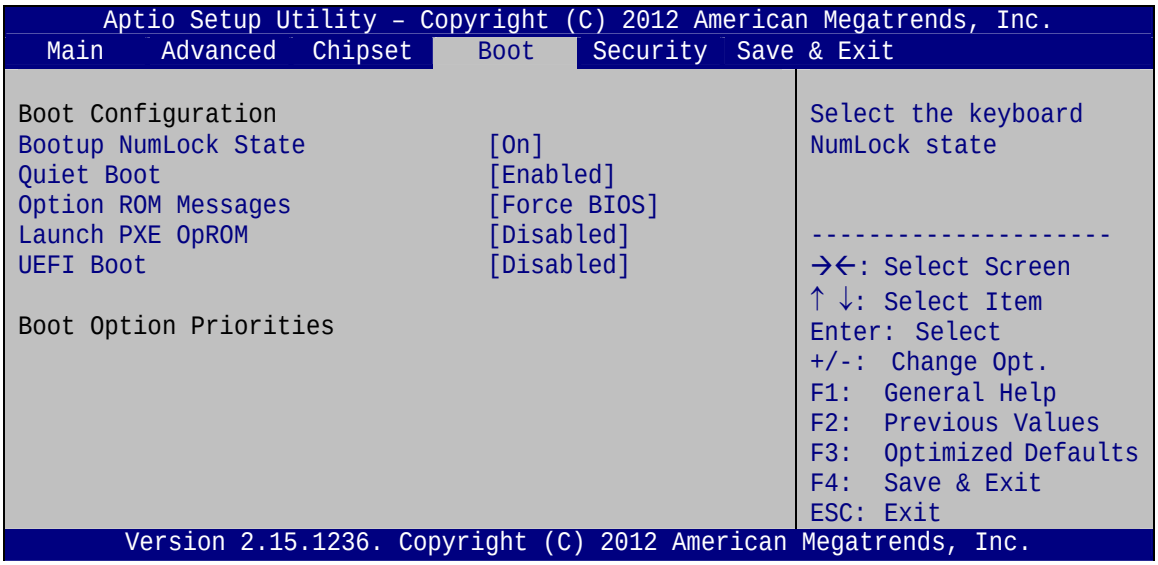
Use the **Memory Configuration** submenu (**BIOS Menu 22**) to view memory information.



BIOS Menu 22: Memory Configuration

5.5 Boot

Use the **Boot menu** (**BIOS Menu 23**) to configure system boot options.



BIOS Menu 23: Boot

➔ **Bootup NumLock State [On]**

Use the **Bootup NumLock State** BIOS option to specify if the number lock setting must be modified during boot up.

➔ **On**	**DEFAULT**	Allows the Number Lock on the keyboard to be enabled automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard is lit.
➔ **Off**		Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.

➔ **Quiet Boot [Enabled]**

Use the **Quiet Boot** BIOS option to select the screen display when the system boots.

➔ **Disabled**		Normal POST messages displayed
➔ **Enabled**	**DEFAULT**	OEM Logo displayed instead of POST messages

➔ **Option ROM Messages [Force BIOS]**

Use the **Option ROM Messages** option to set the Option ROM display mode.

➔ **Force BIOS**	**DEFAULT**	Sets display mode to force BIOS.
➔ **Keep Current**		Sets display mode to current.

➔ **Launch PXE OpROM [Disabled]**

Use the **Launch PXE OpROM** option to enable or disable boot option for legacy network devices.

➔ **Disabled**	**DEFAULT**	Ignore all PXE Option ROMs
➔ **Enabled**		Load PXE Option ROMs.

➔ **UEFI Boot [Disabled]**

Use the **UEFI Boot** BIOS option to allow the system to boot from the UEFI devices.

➔	**Disabled**	**DEFAULT**	Disables to boot from the UEFI devices.
➔	**Enabled**		Enables to boot from the UEFI devices.

5.6 Security

Use the **Security** menu (**BIOS Menu 24**) to set system and user passwords.

```
      Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
  Main    Advanced   Chipset    Boot    Security   Save & Exit

Password Description                              Set Setup Administrator
                                                  Password
If ONLY the Administrator's password is set,
then this only limits access to Setup and is      ---------------------
only asked for when entering Setup.
If ONLY the User's password is set, then this
is a power on password and must be entered to     →←: Select Screen
boot or enter Setup. In Setup the User will       ↑ ↓: Select Item
have Administrator rights.                        Enter: Select
The password length must be                       +/-: Change Opt.
in the following range:                           F1: General Help
Minimum length                    3               F2: Previous Values
Maximum length                    20              F3: Optimized Defaults
                                                  F4: Save & Exit
Administrator Password                            ESC: Exit
User Password

      Version 2.15.1236. Copyright (C) 2012 American Megatrends, Inc.
```

BIOS Menu 24: Security

➔ **Administrator Password**

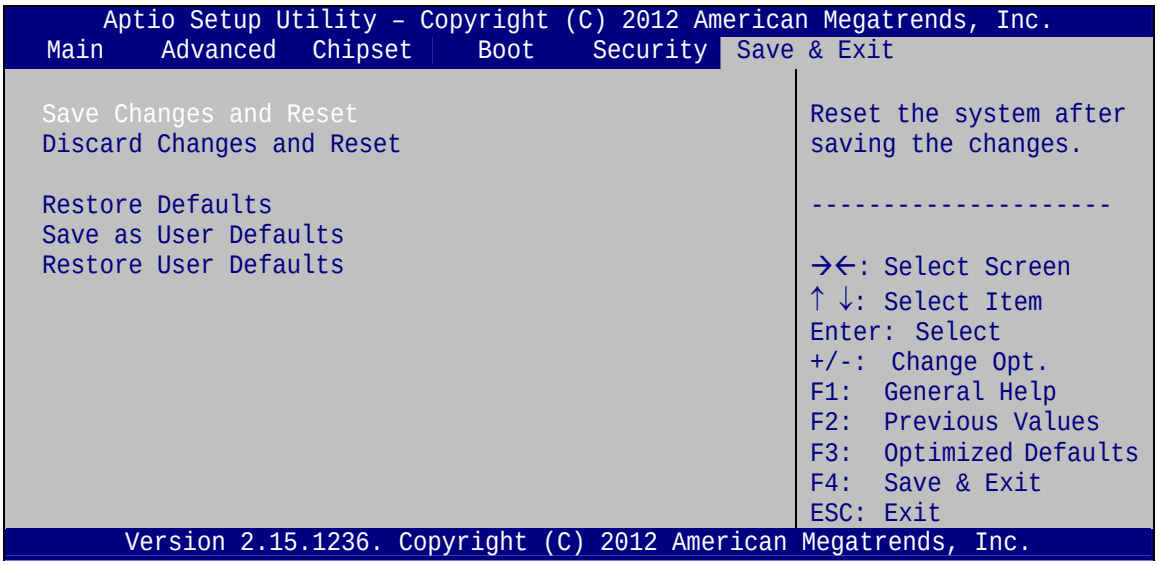
Use the **Administrator Password** to set or change an administrator password.

➔ **User Password**

Use the **User Password** to set or change a user password.

5.7 Save & Exit

Use the **Save & Exit** menu (**BIOS Menu 25**) to load default BIOS values, optimal failsafe values and to save configuration changes.



BIOS Menu 25: Save & Exit

➔ **Save Changes and Reset**

Use the **Save Changes and Reset** option to save the changes made to the BIOS options and reset the system.

➔ **Discard Changes and Reset**

Use the **Discard Changes and Reset** option to exit the system without saving the changes made to the BIOS configuration setup program.

➔ **Restore Defaults**

Use the **Restore Defaults** option to load the optimal default values for each of the parameters on the Setup menus. **F3 key can be used for this operation.**

➔ **Save as User Defaults**

Use the **Save as User Defaults** option to save the changes done so far as user defaults.

➔ **Restore User Defaults**

Use the **Restore User Defaults** option to restore the user defaults to all the setup options.

Chapter

6

Software Drivers

6.1 Available Software Drivers

NOTE:

The content of the CD may vary throughout the life cycle of the product and is subject to change without prior notice. Visit the IEI website or contact technical support for the latest updates.

The following drivers can be installed on the system:

- Chipset
- Graphics
- LAN
- USB 3.0
- Audio
- Intel® AMT

Installation instructions are given below.

6.2 Starting the Driver Program

To access the driver installation programs, please do the following.

Step 1: Insert the CD that came with the system into a CD drive connected to the system.

NOTE:

If the installation program doesn't start automatically:
Click "Start->Computer->CD Drive->autorun.exe"

Step 2: The driver main menu appears (**Figure 6-1**).

Figure 6-1: Start Up Screen

Step 3: Click NANO-QM871.

Step 4: The list of drivers in **Figure 6-2** appears.

Figure 6-2: Drivers

6.3 Chipset Driver Installation

To install the chipset driver, please do the following.

Step 1: Access the driver list. (See **Section 6.2**)

Step 2: Click "**1-Chipset**".

Step 3: Locate the setup file and double click on it.

Step 4: The **Welcome Screen** in **Figure 6-3** appears. Click **Next** to continue.

Figure 6-3: Chipset Driver Welcome Screen

Step 5: The license agreement in **Figure 6-4** appears.

Step 6: Read the **License Agreement**.

Step 7: Click **Yes** to continue.

Figure 6-4: Chipset Driver License Agreement

Step 8: The **Read Me** file in **Figure 6-5** appears.

Step 9: Click **Next** to continue.

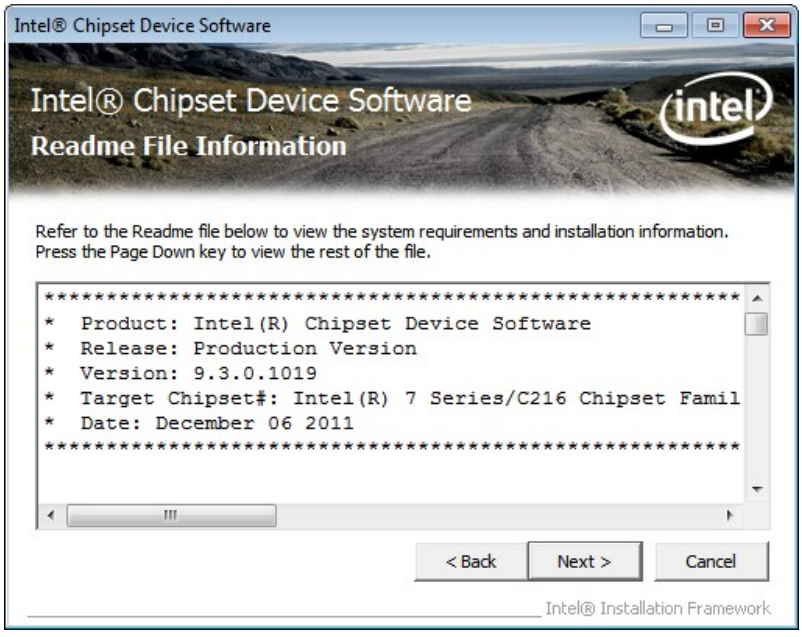


Figure 6-5: Chipset Driver Read Me File

Step 10: **Setup Operations** are performed as shown in **Figure 6-6**.

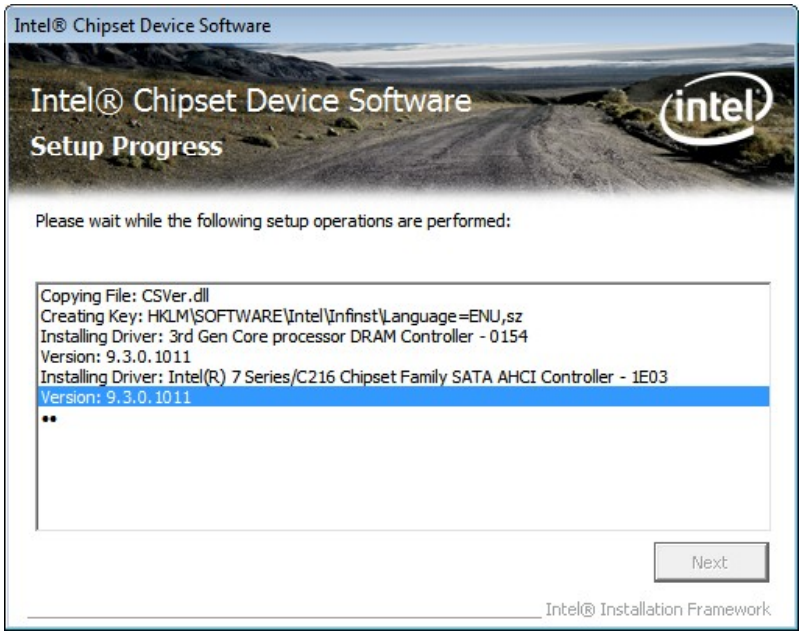


Figure 6-6: Chipset Driver Setup Operations

Step 11: Once the **Setup Operations** are complete, click **Next** to continue.

Step 12: The **Finish** screen in **Figure 6-7** appears.

Step 13: Select "**Yes, I want to restart the computer now**" and click the **Finish** icon.

See **Figure 6-7**.

Figure 6-7: Chipset Driver Installation Finish Screen

6.4 Graphics Driver Installation

To install the graphics driver, please do the following.

Step 1: Access the driver list. (See **Section 6.2**)

Step 2: Click "**2-Graphics**" and select the folder which corresponds to the operating system.

Step 3: Double click the setup file.

Step 4: The **Welcome Screen** in **Figure 6-8** appears. Click **Next** to continue.

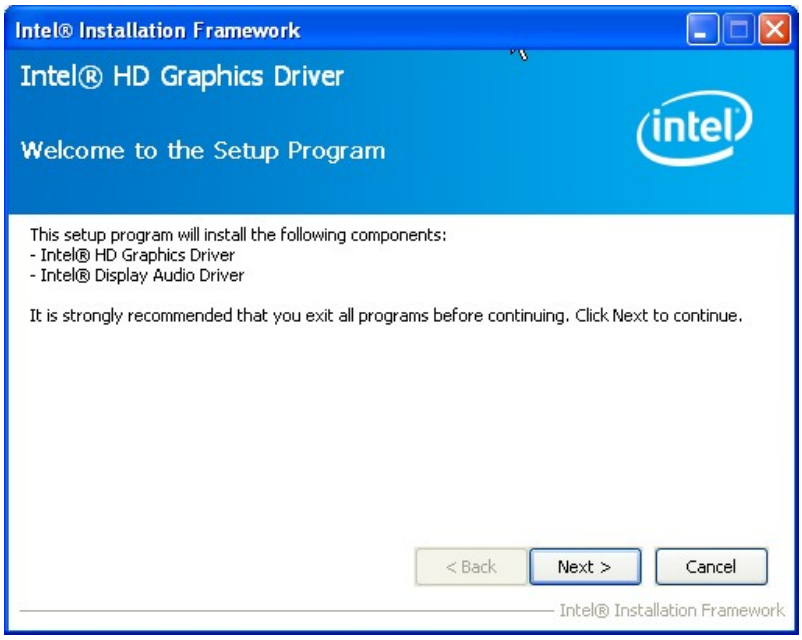


Figure 6-8: Graphics Driver Welcome Screen

Step 5: The license agreement in **Figure 6-9** appears. Read the **License Agreement**.

Step 6: Click **Yes** to continue.

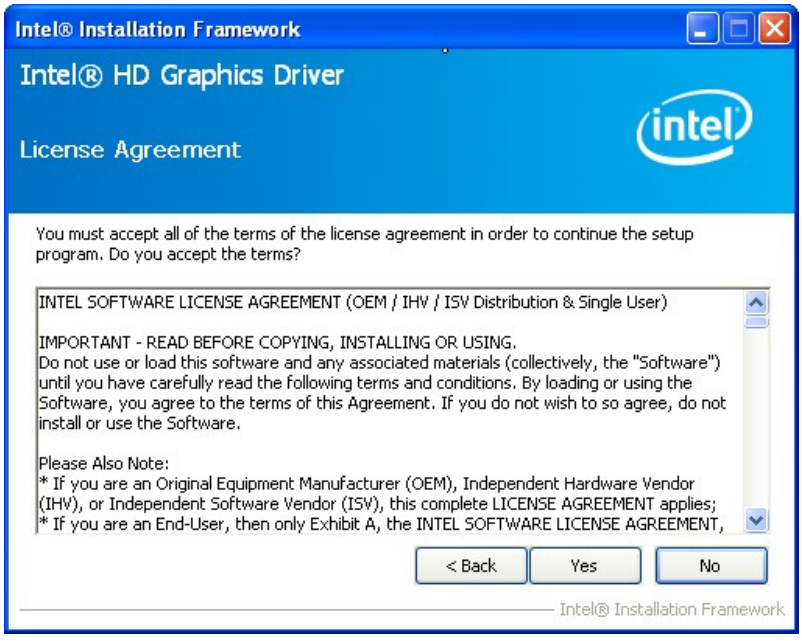


Figure 6-9: Graphics Driver License Agreement

Step 7: The Read Me file in **Figure 6-10** appears.

Step 8: Click **Next** to continue.

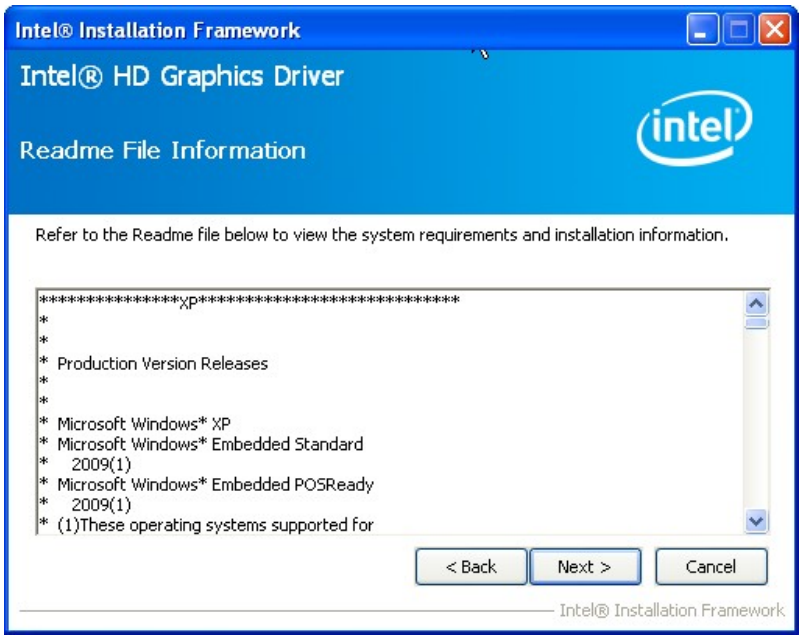


Figure 6-10: Graphics Driver Read Me File

Step 9: **Setup Operations** are performed as shown in **Figure 6-11**.

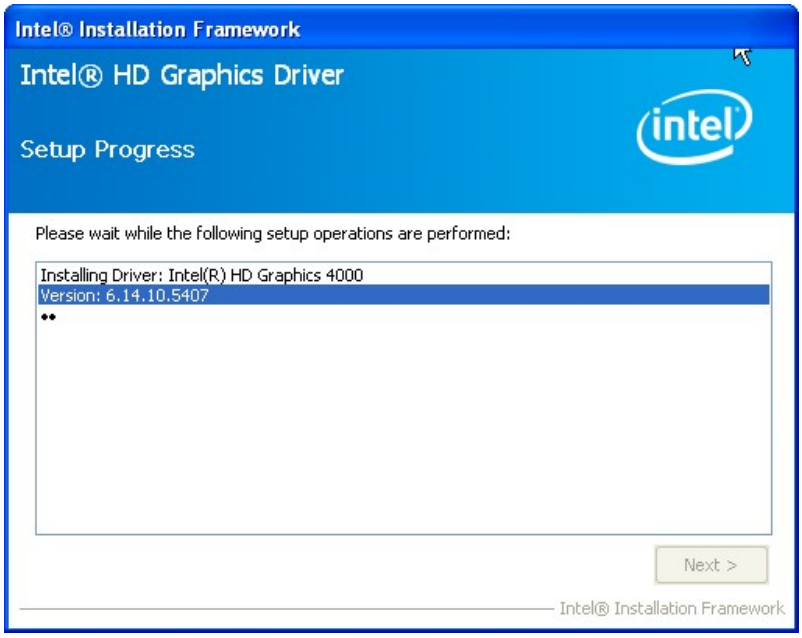


Figure 6-11: Graphics Driver Setup Operations

Step 10: Once the **Setup Operations** are complete, click the **Next** icon to continue.

Step 11: The **Finish** screen appears.

Step 12: Select "**Yes, I want to restart the computer now**" and click the **Finish** icon. See **Figure 6-12**.

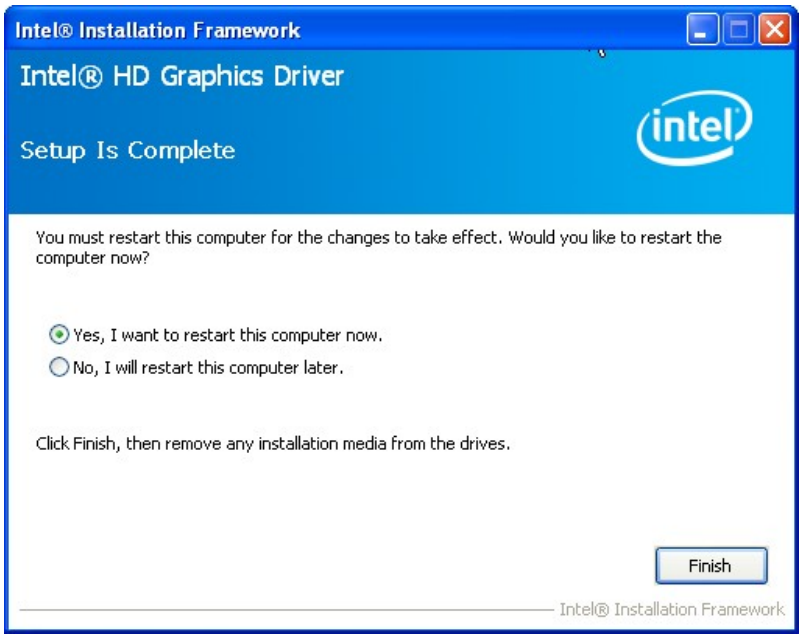


Figure 6-12: Graphics Driver Installation Finish Screen

6.5 LAN Driver Installation

To install the LAN driver, please do the following.

Step 1: Right-click the Computer button from the start menu and select **Properties** (**Figure 6-13**).

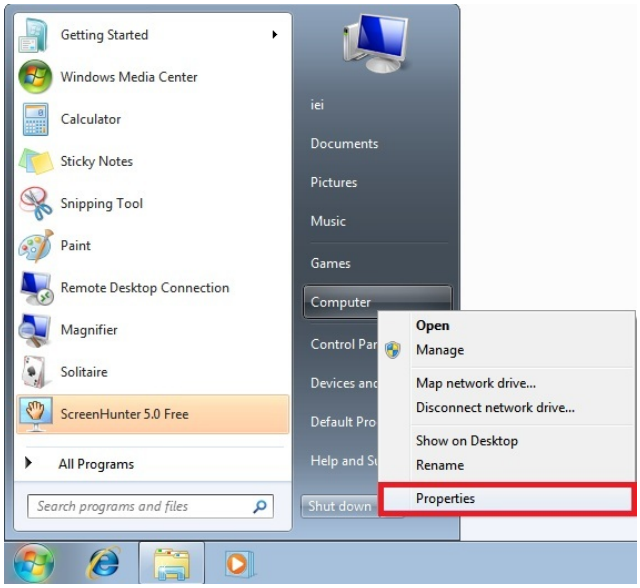


Figure 6-13: Windows Control Panel

Step 2: The system control panel window in **Figure 6-14** appears.

Step 3: Click the Device Manager link (**Figure 6-14**).

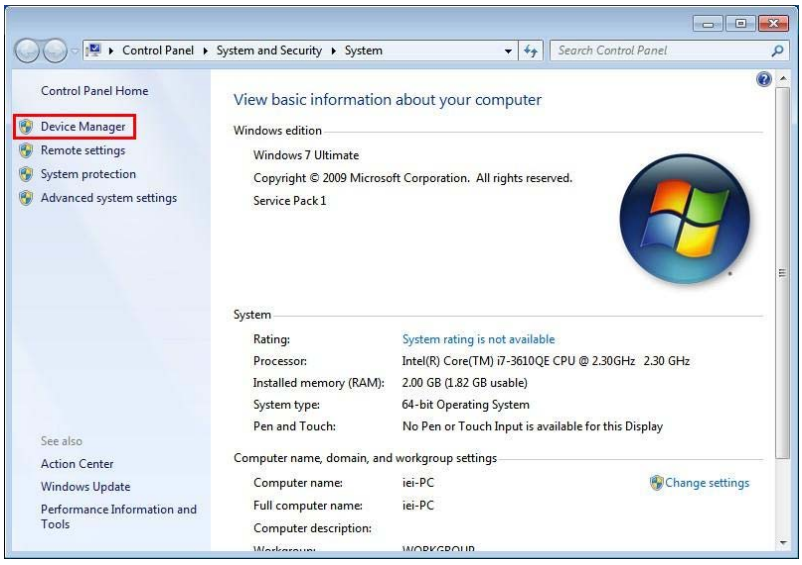


Figure 6-14: System Control Panel

Step 4: A list of system hardware devices appears (**Figure 6-15**).

Step 5: Right-click the Ethernet Controller that has question marks next to it (this means Windows does not recognize the device).

Step 6: Select **Update Driver Software**.

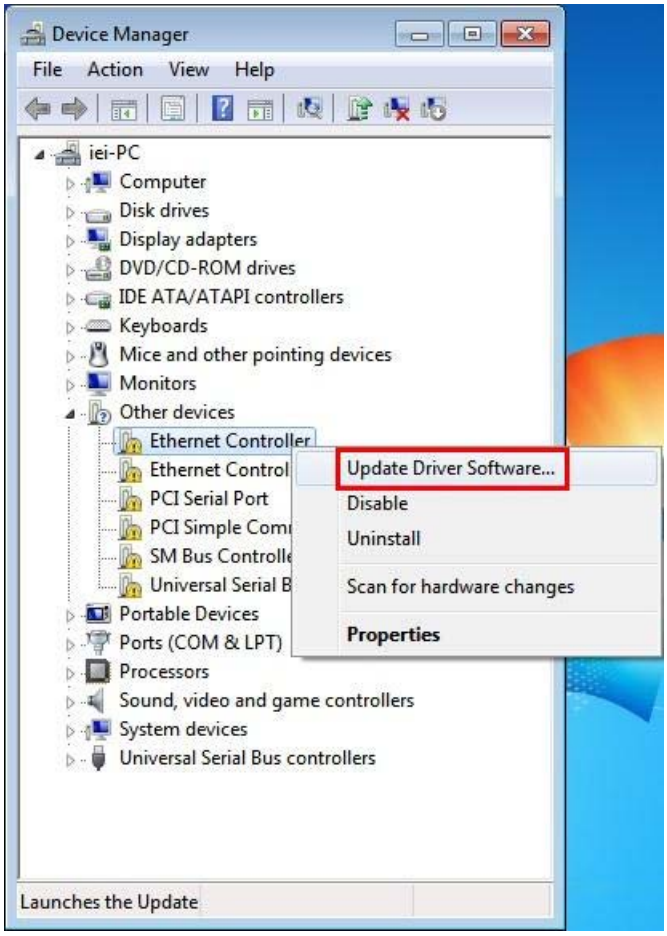


Figure 6-15: Device Manager List

Step 7: The Update Driver Software Window appears (**Figure 6-16**).

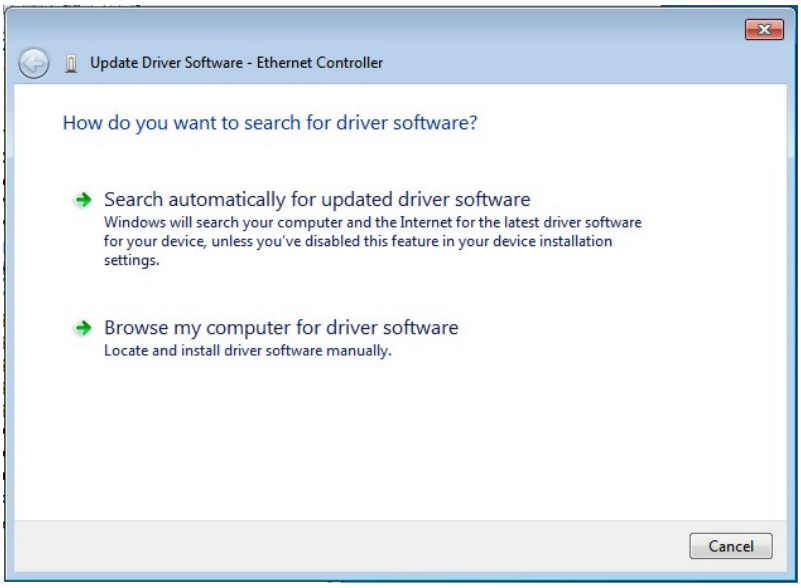


Figure 6-16: Update Driver Software Window

Step 8: Select "Browse my computer for driver software" and click **NEXT** to continue.

Step 9: Click Browse to select "**X:\3-LAN**" directory in the **Locate File** window, where "**X:\"** is the system CD drive. (**Figure 6-17**).

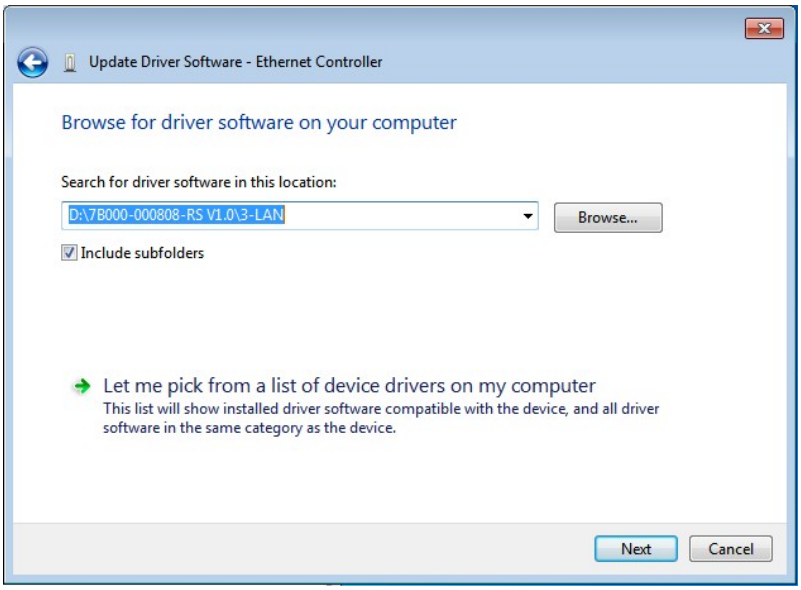


Figure 6-17: Locate Driver Files

Step 10: Click **NEXT** to continue.

Step 11: Driver Installation is performed as shown in **Figure 6-18**.

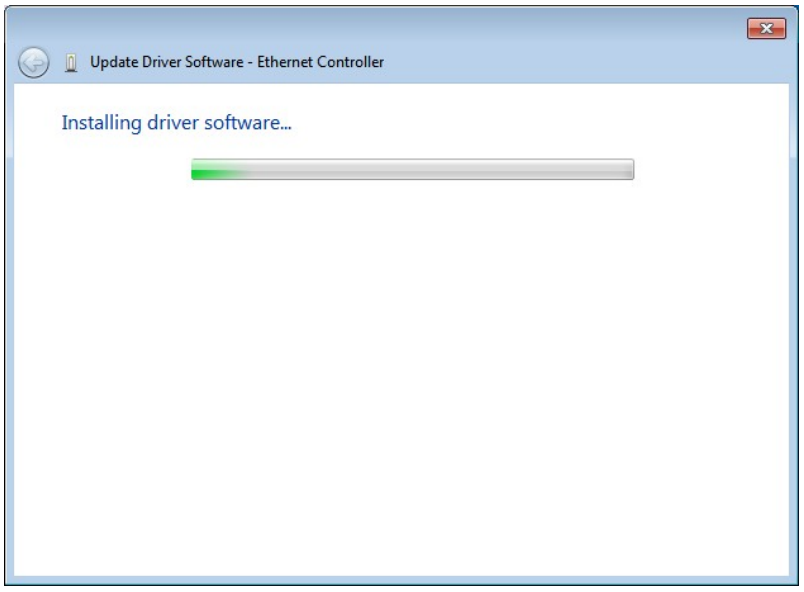


Figure 6-18: LAN Driver Installation

Step 12: The **Finish** screen in **Figure 6-19** appears. Click **Close** to exit.

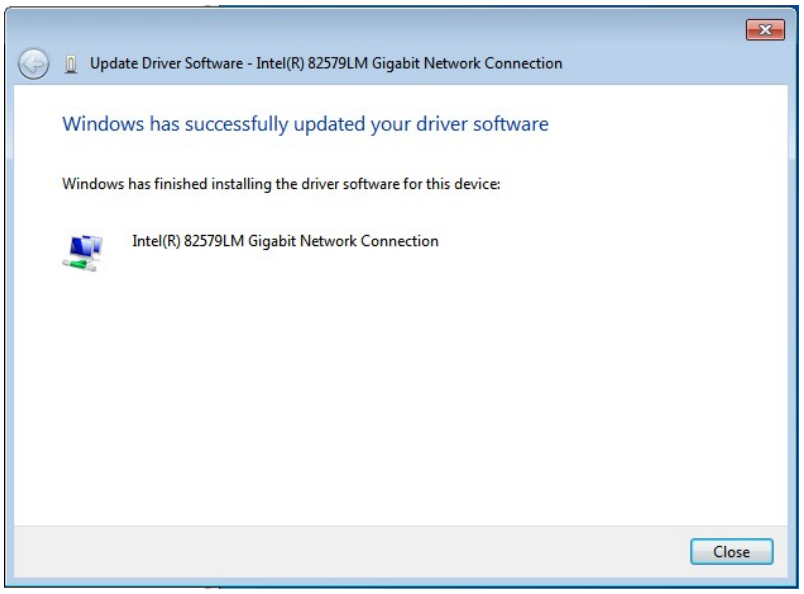


Figure 6-19: LAN Driver Installation Complete

6.6 USB 3.0 Driver Installation

WARNING:

Do not run this driver's installer (Setup.exe) from a USB storage device (ie. external USB hard drive or USB thumb drive). For proper installation, please copy driver files to a local hard drive folder and run from there.

To install the USB 3.0 driver, please follow the steps below.

Step 1: Access the driver list. (See **Section 6.2**)

Step 2: Click "**4-USB 3.0**".

Step 3: Locate the setup file and double click on it.

Step 4: The **Welcome Screen** in **Figure 6-20** appears.

Step 5: Click **Next** to continue.

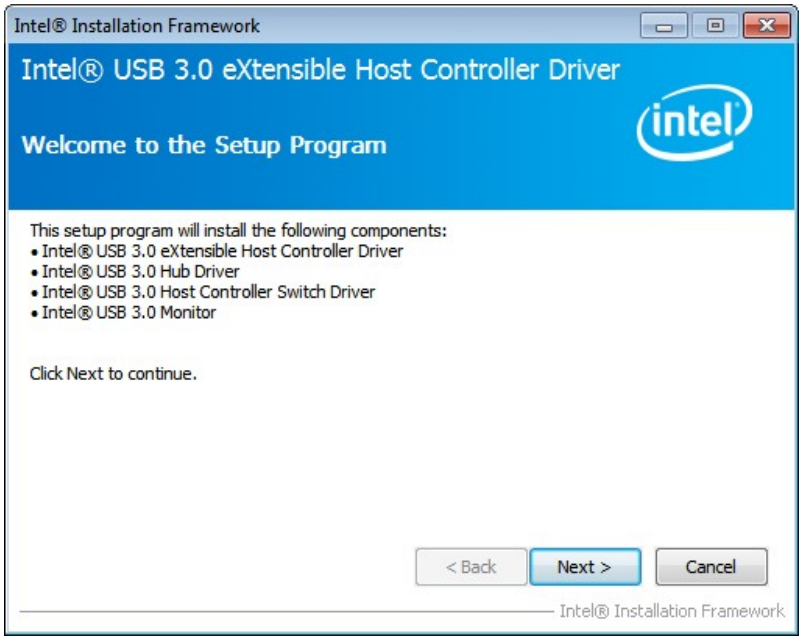


Figure 6-20: USB 3.0 Driver Welcome Screen

Step 6: The license agreement in **Figure 6-21** appears.

Step 7: Read the **License Agreement**.

Step 8: Click **Yes** to continue.

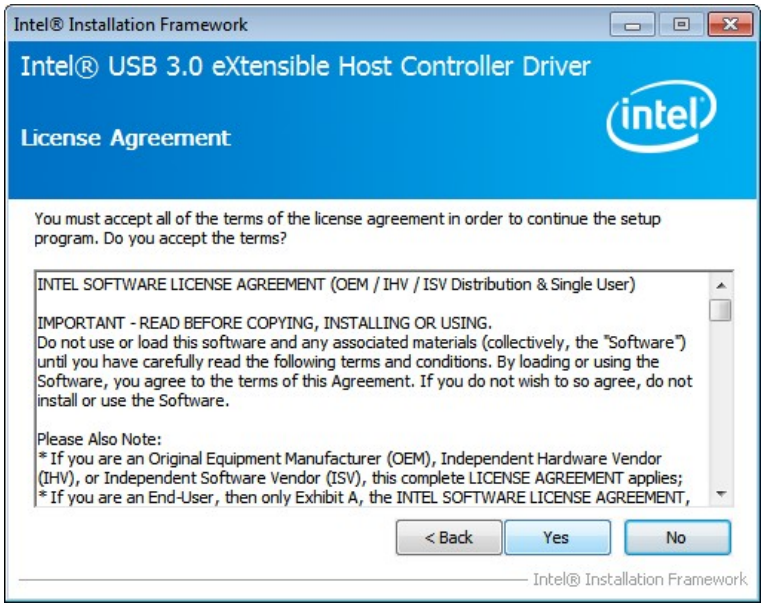


Figure 6-21: USB 3.0 Driver License Agreement

Step 9: The **Read Me** file in **Figure 6-22** appears.

Step 10: Click **Next** to continue.

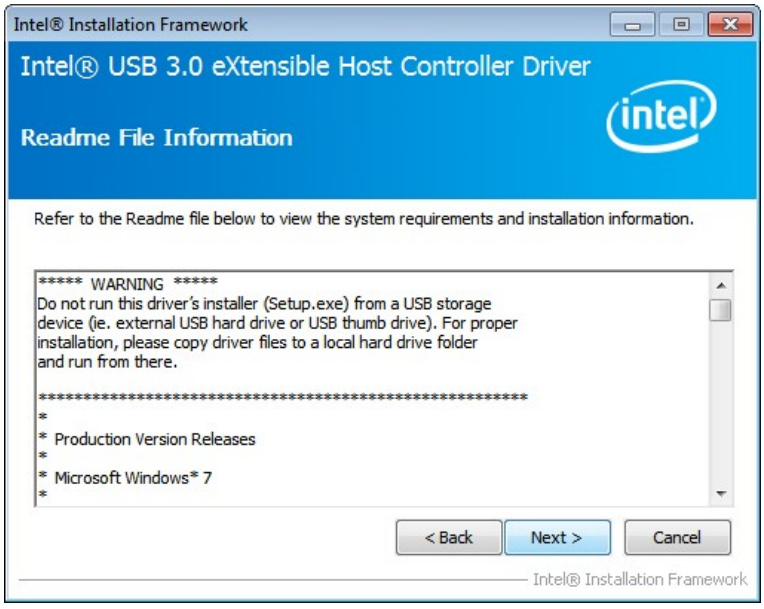


Figure 6-22: USB 3.0 Driver Read Me File

Step 11: **Setup Operations** are performed as shown in **Figure 6-23**.

Step 12: Once the **Setup Operations** are complete, click **Next** to continue.

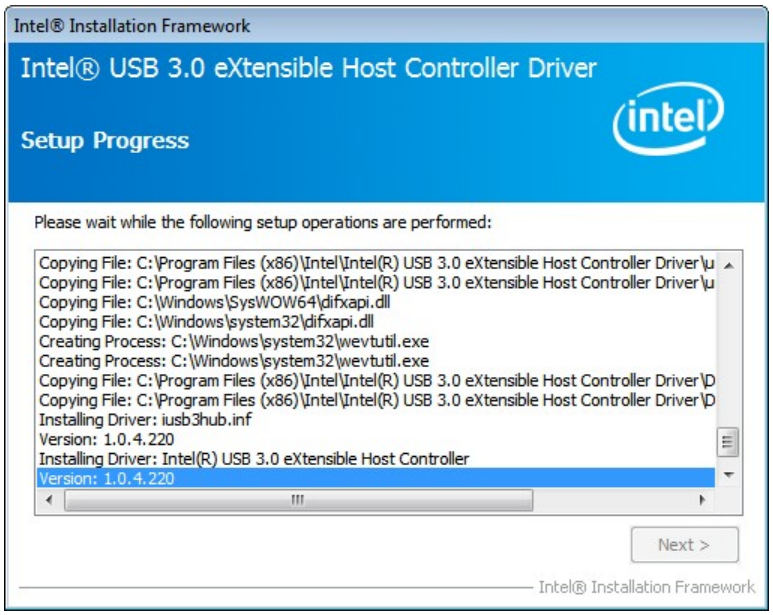


Figure 6-23: USB 3.0 Driver Setup Operations

Step 13: The **Finish** screen in **Figure 6-24** appears.

Step 14: Select "**Yes, I want to restart this computer now**" and click **Finish**.

Figure 6-24: USB 3.0 Driver Installation Finish Screen

6.7 Audio Driver Installation

To install the Audio driver, please do the following.

Step 1: Access the driver list. (See **Section 6.2**)

Step 2: Click "**5-Audio**" and select the folder which corresponds to the operating system.

Step 3: Double click the setup file.

Step 4: The **InstallShield Wizard** is prepared to guide the user through the rest of the process

Step 5: Once initialized, the **InstallShield Wizard** welcome screen appears (**Figure 6-25**).

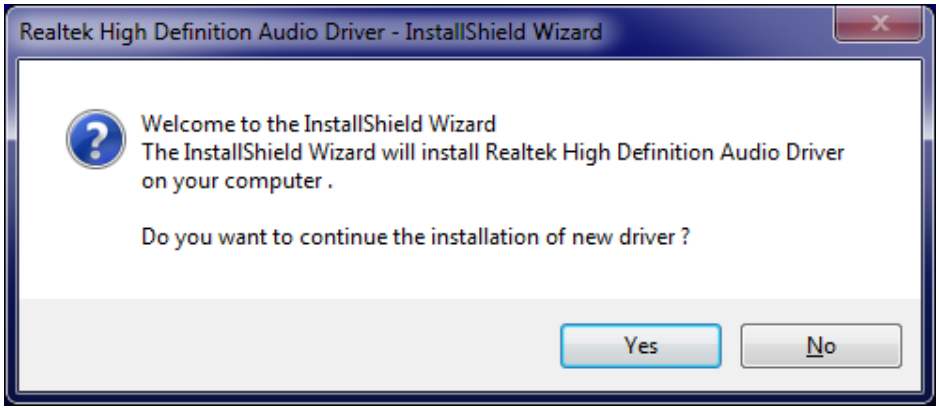


Figure 6-25: Audio Driver Welcome Screen

Step 6: Click **Yes** to continue.

Step 7: The program begins to install. See **Figure 6-26**.

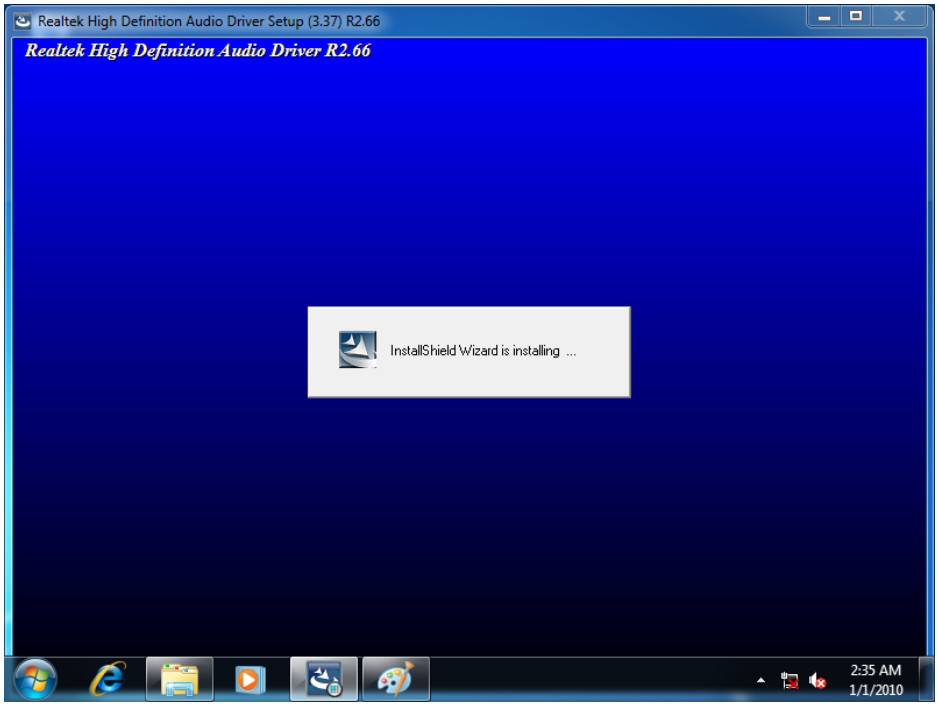


Figure 6-26: Audio Driver Installation

Step 8: When the driver installation is complete, the screen in **Figure 6-27** appears.

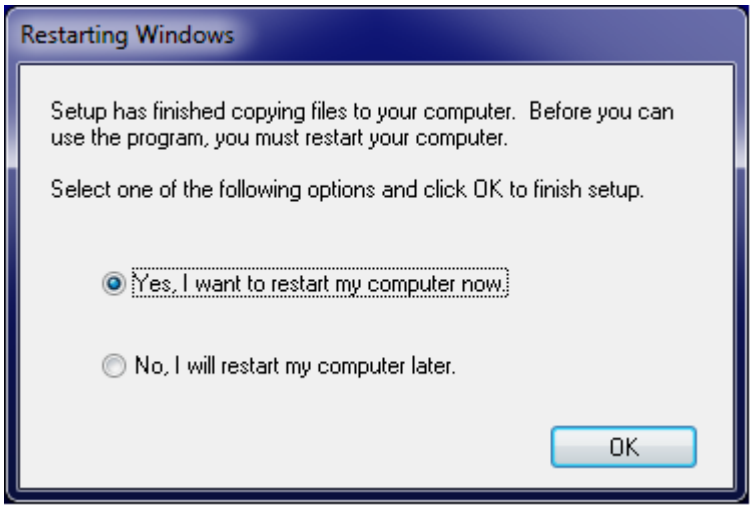


Figure 6-27: Audio Driver Installation Complete

Step 9: Select "**Yes, I want to restart my computer now**" and click **Finish**.

Step 10: The system reboots.

6.8 Intel® AMT Driver Installation

To install these Intel® AMT components, please do the following.

Step 1: Access the driver list. (See **Section 6.2**)

Step 2: Click "**7-iAMT Driver & Utility**".

Step 3: Locate the setup file and double click it.

Step 4: When the setup files are completely extracted the **Welcome Screen** in **Figure 6-28** appears.

Step 5: Click **Next** to continue.

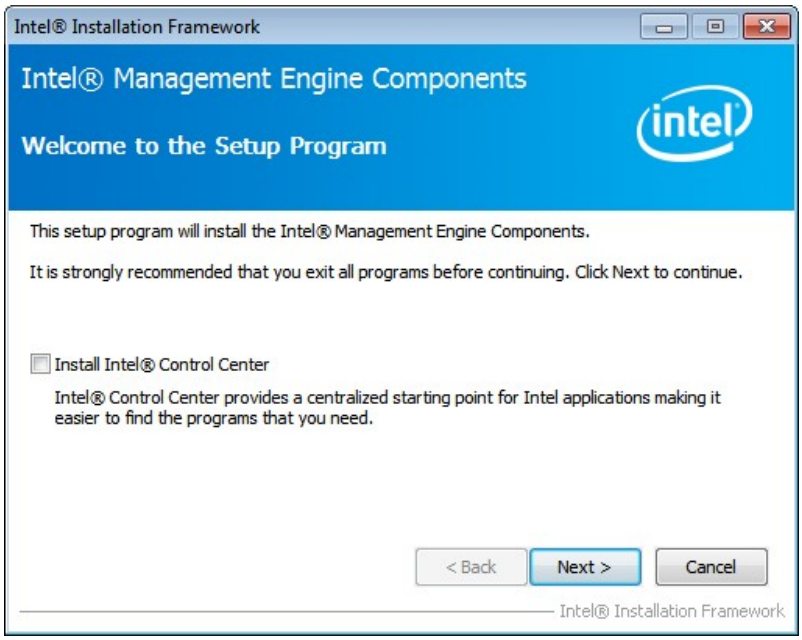


Figure 6-28: Intel® ME Driver Welcome Screen

Step 6: The license agreement in **Figure 6-29** appears.

Step 7: Read the **License Agreement**.

Step 8: Click **Yes** to continue.

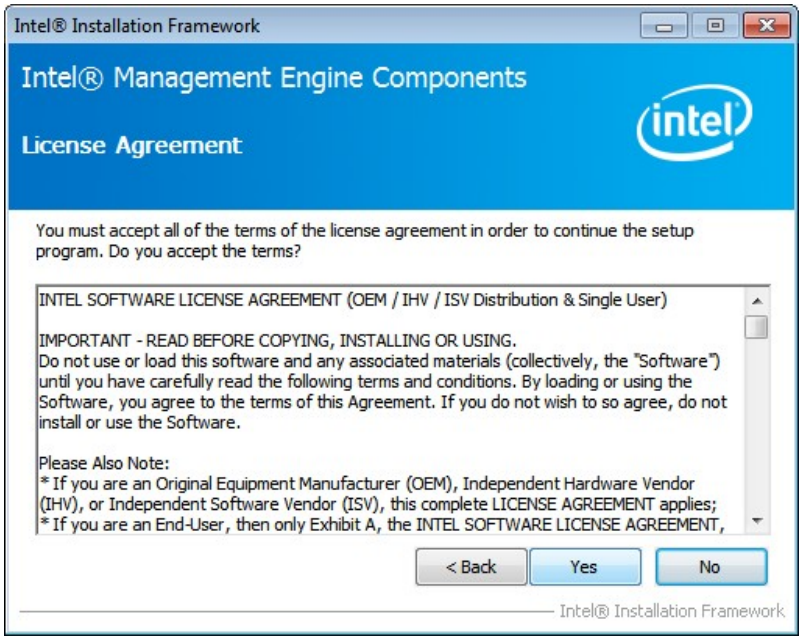


Figure 6-29: Intel® ME Driver License Agreement

Step 9: **Setup Operations** are performed as shown in **Figure 6-30**.

Step 10: Once the **Setup Operations** are complete, click **Next** to continue.

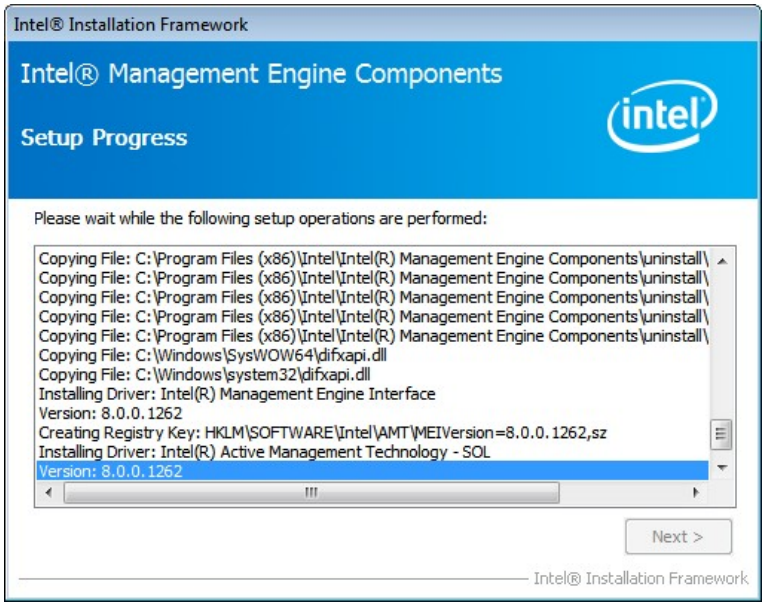


Figure 6-30: Intel® ME Driver Setup Operations

Step 11: The **Finish** screen in **Figure 6-31** appears.

Step 12: Select "**Yes, I want to restart this computer now**" and click **Finish**.

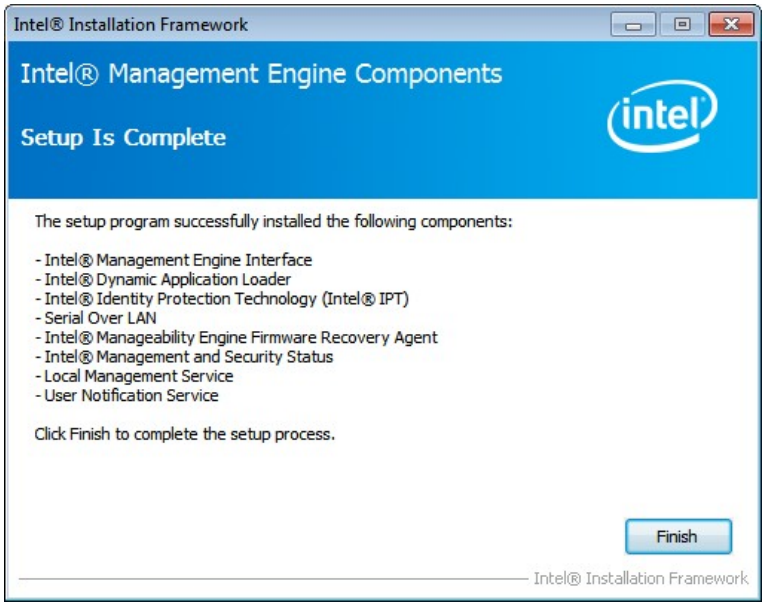


Figure 6-31: Intel® ME Driver Installation Finish Screen

Appendix

A

BIOS Options

Below is a list of BIOS configuration options in the BIOS chapter.

Appendix

B

Terminology

AC '97	Audio Codec 97 (AC'97) refers to a codec standard developed by Intel® in 1997.
ACPI	Advanced Configuration and Power Interface (ACPI) is an OS-directed configuration, power management, and thermal management interface.
AHCI	Advanced Host Controller Interface (AHCI) is a SATA Host controller register-level interface.
ATA	The Advanced Technology Attachment (ATA) interface connects storage devices including hard disks and CD-ROM drives to a computer.
ARMD	An ATAPI Removable Media Device (ARMD) is any ATAPI device that supports removable media, besides CD and DVD drives.
ASKIR	Amplitude Shift Keyed Infrared (ASKIR) is a form of modulation that represents a digital signal by varying the amplitude ("volume") of the signal. A low amplitude signal represents a binary 0, while a high amplitude signal represents a binary 1.
BIOS	The Basic Input/Output System (BIOS) is firmware that is first run when the computer is turned on and can be configured by the end user
CODEC	The Compressor-Decompressor (CODEC) encodes and decodes digital audio data on the system.
CompactFlash®	CompactFlash® is a solid-state storage device. CompactFlash® devices use flash memory in a standard size enclosure. Type II is thicker than Type I, but a Type II slot can support both types.
CMOS	Complimentary metal-oxide-conductor is an integrated circuit used in chips like static RAM and microprocessors.
COM	COM refers to serial ports. Serial ports offer serial communication to expansion devices. The serial port on a personal computer is usually a male DB-9 connector.
DAC	The Digital-to-Analog Converter (DAC) converts digital signals to analog signals.
DDR	Double Data Rate refers to a data bus transferring data on both the rising and falling edges of the clock signal.

DMA	Direct Memory Access (DMA) enables some peripheral devices to bypass the system processor and communicate directly with the system memory.
DIMM	Dual Inline Memory Modules are a type of RAM that offer a 64-bit data bus and have separate electrical contacts on each side of the module.
DIO	The digital inputs and digital outputs are general control signals that control the on/off circuit of external devices or TTL devices. Data can be read or written to the selected address to enable the DIO functions.
EHCI	The Enhanced Host Controller Interface (EHCI) specification is a register-level interface description for USB 2.0 Host Controllers.
EIDE	Enhanced IDE (EIDE) is a newer IDE interface standard that has data transfer rates between 4.0 MBps and 16.6 MBps.
EIST	Enhanced Intel® SpeedStep Technology (EIST) allows users to modify the power consumption levels and processor performance through application software. The application software changes the bus-to-core frequency ratio and the processor core voltage.
FSB	The Front Side Bus (FSB) is the bi-directional communication channel between the processor and the Northbridge chipset.
GbE	Gigabit Ethernet (GbE) is an Ethernet version that transfers data at 1.0 Gbps and complies with the IEEE 802.3-2005 standard.
GPIO	General purpose input
HDD	Hard disk drive (HDD) is a type of magnetic, non-volatile computer storage device that stores digitally encoded data.
ICH	The Input/Ouput Controll Hub (ICH) is an Intel® Southbridge chipset.
IrDA	Infrared Data Association (IrDA) specify infrared data transmission protocols used to enable electronic devices to wirelessly communicate with each other.
L1 Cache	The Level 1 Cache (L1 Cache) is a small memory cache built into the system processor.
L2 Cache	The Level 2 Cache (L2 Cache) is an external processor memory cache.

LCD	Liquid crystal display (LCD) is a flat, low-power display device that consists of two polarizing plates with a liquid crystal panel in between.
LVDS	Low-voltage differential signaling (LVDS) is a dual-wire, high-speed differential electrical signaling system commonly used to connect LCD displays to a computer.
POST	The Power-on Self Test (POST) is the pre-boot actions the system performs when the system is turned-on.
RAM	Random Access Memory (RAM) is volatile memory that loses data when power is lost. RAM has very fast data transfer rates compared to other storage like hard drives.
SATA	Serial ATA (SATA) is a serial communications bus designed for data transfers between storage devices and the computer chipsets.
S.M.A.R.T	Self Monitoring Analysis and Reporting Technology (S.M.A.R.T) refers to automatic status checking technology implemented on hard disk drives.
UART	Universal Asynchronous Receiver-transmitter (UART) is responsible for asynchronous communications on the system and manages the system's serial communication (COM) ports.
UHCI	The Universal Host Controller Interface (UHCI) specification is a register-level interface description for USB 1.1 Host Controllers.
USB	The Universal Serial Bus (USB) is an external bus standard for interfacing devices. USB 1.1 supports 12Mbps data transfer rates and USB 2.0 supports 480Mbps data transfer rates.
VGA	The Video Graphics Array (VGA) is a graphics display system developed by IBM.

Appendix

C

Digital I/O Interface

C.1 Introduction

The DIO connector on the NANO-QM871-i1 is interfaced to GPIO ports on the Super I/O chipset. The DIO has both 4-bit digital inputs and 4-bit digital outputs. The digital inputs and digital outputs are generally control signals that control the on/off circuit of external devices or TTL devices. Data can be read or written to the selected address to enable the DIO functions.

NOTE:

For further information, please refer to the datasheet for the Super I/O chipset.

C.2 DIO Connector Pinouts

The following table describes how the DIO connector pins are connected to the Super I/O GPIO port 1.

Pin	Description	Super I/O Pin	Super I/O Pin Description
1	Ground	N/A	N/A
2	VCC	N/A	N/A
3	Output 3	GP27	General purpose I/O port 2 bit 7.
4	Output 2	GP26	General purpose I/O port 2 bit 6.
5	Output 1	GP25	General purpose I/O port 2 bit 5.
6	Output 0	GP24	General purpose I/O port 2 bit 4.
7	Input 3	GP23	General purpose I/O port 2 bit 3.
8	Input 2	GP22	General purpose I/O port 2 bit 2
9	Input 1	GP21	General purpose I/O port 2 bit 1
10	Input 0	GP20	General purpose I/O port 2 bit 0

Table C-1: Digital I/O Connector Pinouts

C.3 Assembly Language Samples

C.3.1 Enable the DIO Input Function

The BIOS interrupt call INT 15H controls the digital I/O. An assembly program to enable digital I/O input functions is listed below.

MOV	**AX, 6F08H**	Sets the digital port as input
INT	**15H**	Initiates the INT 15H BIOS call

C.3.2 Enable the DIO Output Function

The BIOS interrupt call INT 15H controls the digital I/O. An assembly program to enable digital I/O output functions is listed below.

MOV	**AX, 6F09H**	Sets the digital port as output
MOV	**BL, 09H**	
INT	**15H**	Initiates the INT 15H BIOS call

Appendix

D

Hazardous Materials Disclosure

D.1 Hazardous Materials Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC Without Mercury

The details provided in this appendix are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated “Environmentally Friendly Use Period” (EFUP). This is an estimate of the number of years that these substances would “not leak out or undergo abrupt change.” This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to the table on the next page.

Part Name	Toxic or Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Housing	O	O	O	O	O	O
Display	O	O	O	O	O	O
Printed Circuit Board	O	O	O	O	O	O
Metal Fasteners	O	O	O	O	O	O
Cable Assembly	O	O	O	O	O	O
Fan Assembly	O	O	O	O	O	O
Power Supply Assemblies	O	O	O	O	O	O
Battery	O	O	O	O	O	O

O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in SJ/T11363-2006

X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006

此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有"环境友好使用期限"的标签，此期限是估算这些物质"不会有泄漏或突变"的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

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)
壳体	O	O	O	O	O	O
显示	O	O	O	O	O	O
印刷电路板	O	O	O	O	O	O
金属螺帽	O	O	O	O	O	O
电缆组装	O	O	O	O	O	O
风扇组装	O	O	O	O	O	O
电力供应组装	O	O	O	O	O	O
电池	O	O	O	O	O	O
O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 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/T11363-2006 标准规定的限量要求。						