

MODEL:
NANO-SE-i1

EPIC SBC supports AMD® 28nm low power on-board SoC with
VGA/HDMI/LVDS, Dual PCIe GbE, USB 3.0, Dual PCIe Mini,
SATA 6Gb/s, mSATA, COM and Audio, iRIS-1010 and RoHS

User Manual

Revision

Date	Version	Changes
23 January, 2015	1.00	Initial release

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Table of Contents

1 INTRODUCTION.....	1
1.1 INTRODUCTION.....	2
1.2 MODEL VARIATIONS	2
1.3 FEATURES.....	3
1.4 CONNECTORS	4
1.5 DIMENSIONS.....	5
1.6 DATA FLOW	6
1.7 TECHNICAL SPECIFICATIONS	7
2 UNPACKING	10
2.1 ANTI-STATIC PRECAUTIONS	11
2.2 UNPACKING PRECAUTIONS.....	11
2.3 PACKING LIST.....	12
2.4 OPTIONAL ITEMS	13
3 CONNECTORS	14
3.1 PERIPHERAL INTERFACE CONNECTORS.....	15
3.1.1 NANO-SE-i1 Layout.....	15
3.1.2 Peripheral Interface Connectors	15
3.1.3 External Interface Panel Connectors.....	17
3.2 INTERNAL PERIPHERAL CONNECTORS	17
3.2.1 12V DC-IN Power Connector	17
3.2.2 Audio Connector	18
3.2.3 Battery Connector.....	19
3.2.4 Brightness button connector	20
3.2.5 Chassis Intrusion Connector.....	21
3.2.6 DDR3 SO-DIMM Slot.....	22
3.2.7 Digital I/O Connector	22
3.2.8 Front Panel Connector	23
3.2.9 IPMI LED Connector.....	24
3.2.10 iRIS-1010 module slot.....	25

NANO-SE-i1

3.2.11 Keyboard and Mouse Connector.....	26
3.2.12 LAN LED Connectors	27
3.2.13 LVDS Backlight Inverter Connector	27
3.2.14 LVDS LCD Connector	28
3.2.15 LVDS LED connector.....	29
3.2.16 PCIe Mini Card Slot	30
3.2.17 Power Button Connector.....	31
3.2.18 Reset Button Connector	32
3.2.19 RS-232 Serial Port Connector	32
3.2.20 RS-422/485 Serial Port Connector	33
3.2.21 SATA 6Gb/s Drive Connector	34
3.2.22 SATA Power Connector.....	35
3.2.23 SMBUS Connector.....	36
3.2.24 SPDIF Connector.....	37
3.2.25 SPI Flash Connector (BIOS)	38
3.2.26 SPI Flash Connector (EC).....	39
3.2.27 System Fan Connector	39
3.2.28 TPM Connector.....	40
3.2.29 USB Connector	41
3.3 EXTERNAL PERIPHERAL INTERFACE CONNECTOR PANEL	42
3.3.1 HDMI Connector	43
3.3.2 LAN Connectors.....	43
3.3.3 USB Connectors.....	44
3.3.4 VGA Connector	45
4 INSTALLATION	47
4.1 ANTI-STATIC PRECAUTIONS	48
4.2 INSTALLATION CONSIDERATIONS.....	48
4.3 SO-DIMM INSTALLATION	50
4.4 SYSTEM CONFIGURATION.....	51
4.4.1 AT/ATX Mode Select Switch.....	51
4.4.1 Clear CMOS Button.....	52
4.4.2 LVDS Panel Resolution Selection	52
4.4.3 LVDS Voltage Selection.....	54
4.5 INTERNAL PERIPHERAL DEVICE CONNECTIONS.....	55

4.5.1 Audio Kit Installation.....	55
4.5.2 SATA Drive Connection	56
4.5.3 Single RS-232 Cable	57
4.6 EXTERNAL PERIPHERAL INTERFACE CONNECTION	58
4.6.1 HDMI Display Device Connection	59
4.6.2 LAN Connection.....	59
4.6.3 USB Connection.....	60
4.6.4 VGA Monitor Connection	61
4.7 HEAT SINK ENCLOSURE.....	62
5 BIOS.....	64
5.1 INTRODUCTION.....	65
5.1.1 Starting Setup.....	65
5.1.2 Using Setup	65
5.1.3 Getting Help.....	66
5.1.4 Unable to Reboot after Configuration Changes	66
5.1.5 BIOS Menu Bar.....	66
5.2 MAIN.....	67
5.3 ADVANCED	68
5.3.1 ACPI Settings	69
5.3.2 Trusted Computing	70
5.3.3 RTC Wake Settings	71
5.3.4 CPU Configuration.....	72
5.3.5 IDE Configuration	73
5.3.6 USB Configuration.....	74
5.3.7 F81866 Super IO Configuration	75
5.3.7.1 Serial Port n Configuration	76
5.3.8 F81866 H/W Monitor.....	81
5.3.8.1 Smart Fan Mode Configuration	82
5.3.9 Serial Port Console Redirection	84
5.3.9.1 Console Redirection Settings	85
5.4 CHIPSET	87
5.4.1 South Bridge Configuration.....	88
5.4.2 North Bridge Configuration.....	89
5.5 BOOT.....	90

NANO-SE-i1

5.6 SECURITY	92
5.7 EXIT	92
5.8 SERVER MGMT	94
5.8.1.1 System Event Log	95
5.8.1.2 BMC network configuration	96
A BIOS MENU OPTIONS	97
B TERMINOLOGY	100
C WATCHDOG TIMER	105
D HAZARDOUS MATERIALS DISCLOSURE	108
D.1 HAZARDOUS MATERIAL DISCLOSURE TABLE FOR IPB PRODUCTS CERTIFIED AS ROHS COMPLIANT UNDER 2002/95/EC WITHOUT MERCURY	109

List of Figures

Figure 1-1: NANO-SE-i1	2
Figure 1-2: Connectors	4
Figure 1-3: Dimensions (mm)	5
Figure 1-4: Data Flow Diagram	6
Figure 3-1: Connector and Jumper Locations.....	15
Figure 3-2: 12V DC-IN Power Connector Location.....	18
Figure 3-3: Audio Connector Location	19
Figure 3-4: Battery Connector Location.....	20
Figure 3-5: Brightness Button Connector Location.....	20
Figure 3-6: Chassis Intrusion Connector Location	21
Figure 3-7: DDR3 SO-DIMM Slot Location.....	22
Figure 3-8: Digital I/O Connector Location	23
Figure 3-9: Front Panel Connector Location	24
Figure 3-10: IPMI LED Connector Location	24
Figure 3-11: iRIS-1010 Module Slot Location	25
Figure 3-12: Keyboard and Mouse Location.....	26
Figure 3-13: LAN LED Connectors Location	27
Figure 3-14: Backlight Inverter Connector Location.....	28
Figure 3-15: LVDS Connector Location.....	29
Figure 3-16: LVDS LED Connector Location	30
Figure 3-17: PCIe Mini Card Slot Location.....	31
Figure 3-18: Power Button Connector Location.....	31
Figure 3-19: Reset Button Connector Location.....	32
Figure 3-20: RS-232 Serial Port Connector Location.....	33
Figure 3-21: RS-422/485 Connector Location	34
Figure 3-22: SATA 6Gb/s Drive Connector Location	35
Figure 3-23: SATA Power Connector Location	36
Figure 3-24: SMBUS Connectors Location	37
Figure 3-25: SPDIF Connector Location.....	37
Figure 3-26: SPI Flash Connector Location.....	38
Figure 3-27: SPI Flash Connector Location.....	39

NANO-SE-i1

Figure 3-28: System Fan Connector Locations	40
Figure 3-29: TPM Connector Location	41
Figure 3-30: USB Connector Locations	42
Figure 3-31: External Peripheral Interface Connector	43
Figure 3-32: LAN Connector	44
Figure 3-33: VGA Connector	46
Figure 4-1: SO-DIMM Installation	50
Figure 4-2: AT/ATX Mode Select Switch Location	51
Figure 4-3: Clear CMOS Button Location	52
Figure 4-4: LVDS Panel Resolution Selection Switch Location	54
Figure 4-5: LVDS Voltage Selection Jumper Location	55
Figure 4-6: Audio Kit Cable Connection	56
Figure 4-7: SATA Drive Cable Connection	57
Figure 4-8: Single RS-232 Cable Installation	58
Figure 4-9: HDMI Connection	59
Figure 4-10: LAN Connection	60
Figure 4-11: USB Connector	61
Figure 4-12: VGA Connector	62
Figure 4-13: Heat Sink Retention Screws	63

List of Tables

Table 1-1: NANO-SE-i1 Model Variations	3
Table 1-2: Technical Specifications	9
Table 3-1: Peripheral Interface Connectors	17
Table 3-2: Rear Panel Connectors	17
Table 3-3: 12V DC-IN Power Connector Pinouts	18
Table 3-4: Audio Connector Pinouts	19
Table 3-5: Battery Connector Pinouts	20
Table 3-6: Brightness Button Connector Pinouts	21
Table 3-7: Chassis Intrusion Connector Pinouts	22
Table 3-8: Digital I/O Connector Pinouts	23
Table 3-9: Front Panel Connector Pinouts	24
Table 3-10: IPMI LED Connector Pinouts	25
Table 3-11: Keyboard and Mouse Connector Pinouts	27
Table 3-12: LAN LED Connectors Pinouts	27
Table 3-13: Backlight Inverter Connector Pinouts	28
Table 3-14: LVDS Connector Pinouts	29
Table 3-15: LVDS LED Connector Pinouts	30
Table 3-16: Power Button Connector Pinouts	31
Table 3-17: Reset Button Connector Pinouts	32
Table 3-18: RS-232 Serial Port Connector Pinouts	33
Table 3-19: RS-422/485 Connector Pinouts	34
Table 3-20: DB-9 RS-422/485 Pinouts	34
Table 3-21: SATA Power Connector Pinouts	36
Table 3-22: SMBUS Connectors Pinouts	37
Table 3-23: SPDIF Connector Pinouts	38
Table 3-24: SPI Flash Connector (BIOS) Pinouts	39
Table 3-25: SPI Flash Connector (EC) Pinouts	39
Table 3-26: System Fan Connector Pinouts	40
Table 3-27: TPM Connector Pinouts	41
Table 3-28: USB Connector Pinouts	42
Table 3-29: HDMI Connector Pinouts	43

NANO-SE-i1

Table 3-30: LAN Pinouts	44
Table 3-31: Connector LEDs.....	44
Table 3-32: USB 2.0 Port Pinouts (USB2).....	45
Table 3-33: USB 3.0 Port Pinouts (USB1).....	45
Table 3-34: VGA Connector Pinouts.....	46
Table 4-1: AT/ATX Mode Select Switch Settings.....	51
Table 4-2: Clear CMOS Button Settings	52
Table 4-3: LVDS Panel Resolution Selection.....	53
Table 4-4: LVDS Voltage Selection Jumper Settings.....	54
Table 5-1: BIOS Navigation Keys	66

List of BIOS Menus

BIOS Menu 1: Main	67
BIOS Menu 2: Advanced	69
BIOS Menu 3: ACPI Configuration	69
BIOS Menu 4: Trusted Computing	70
BIOS Menu 5: RTC Wake Settings	71
BIOS Menu 6: CPU Configuration	72
BIOS Menu 7: IDE Configuration	73
BIOS Menu 8: USB Configuration	74
BIOS Menu 9: Super IO Configuration.....	75
BIOS Menu 10: Serial Port n Configuration Menu	76
BIOS Menu 11: Hardware Health Configuration	81
BIOS Menu 12: Smart FAN Configuration	83
BIOS Menu 13: Serial Port Console Redirection	84
BIOS Menu 14: Console Redirection Settings.....	85
BIOS Menu 15: Chipset	87
BIOS Menu 16: South Bridge Configuration	88
BIOS Menu 17: North Bridge Configuration	89
BIOS Menu 18: Boot	90
BIOS Menu 19: Security	92
BIOS Menu 20: Exit.....	93
BIOS Menu 21: IDE Configuration	94
BIOS Menu 22: PCH Azalia Configuration Menu	95
BIOS Menu 23: PCH Azalia Configuration Menu	96

Chapter

1

Introduction

1.1 Introduction



Figure 1-1: NANO-SE-i1

The NANO-SE-i1 EPIC SBC motherboard is an AMD® G-Series SoC processor platform. It supports one 204-pin up to 1866 MHz single-channel DDR3/DDR3L SO-DIMM up to 8.0 GB.

The NANO-SE-i1 supports dual display via VGA, HDMI and an internal LVDS connector. Expansion and I/O include two USB 3.0 connectors on the rear panel, four USB 2.0 connectors by pin header, two USB 2.0 connectors on the rear panel and two SATA 6Gb/s connectors. Serial device connectivity is provided by five internal RS-232 connectors and one internal RS-422/485 connector. Two RJ-45 Ethernet connectors provide the system with smooth connections to an external LAN.

1.2 Model Variations

The model variations of the NANO-SE-i1 Series are listed below.

Model No.	SoC
NANO-SE-i1-4241-R10	AMD® 28nm quad core GX-424CC 2.4GHz (25W)
NANO-SE-i1-4121-R10	AMD® 28nm quad core GX-412HC 1.2GHz (7W)
NANO-SE-i1-2121-R10	AMD® 28nm dual core GX-212JC 1.2GHz (6W)
NANO-SE-i1-4111-R10	AMD® 28nm quad core GX-411GA 1.0GHz (15W)
NANO-SE-i1-2091-R10	AMD® 28nm dual core GX-209HA 1.0GHz (9W)

NANO-SE-i1

Model No.	SoC
-----------	-----

Table 1-1: NANO-SE-i1 Model Variations

1.3 Features

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

- EPIC SBC supports AMD® Embedded G-Series “Steppe Eagle” SoC
- Dual independent display support
- 1.35V DDR3L up to 1866MHz SDRAM supports (system max. 8GB)
- HD Audio supported by S/PDIF
- Support IPMI 2.0 with iRIS-1010 module
- COM, USB 3.0, SATA 6Gb/s PCIe Mini, mSATA and Audio supported
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

1.4 Connectors

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

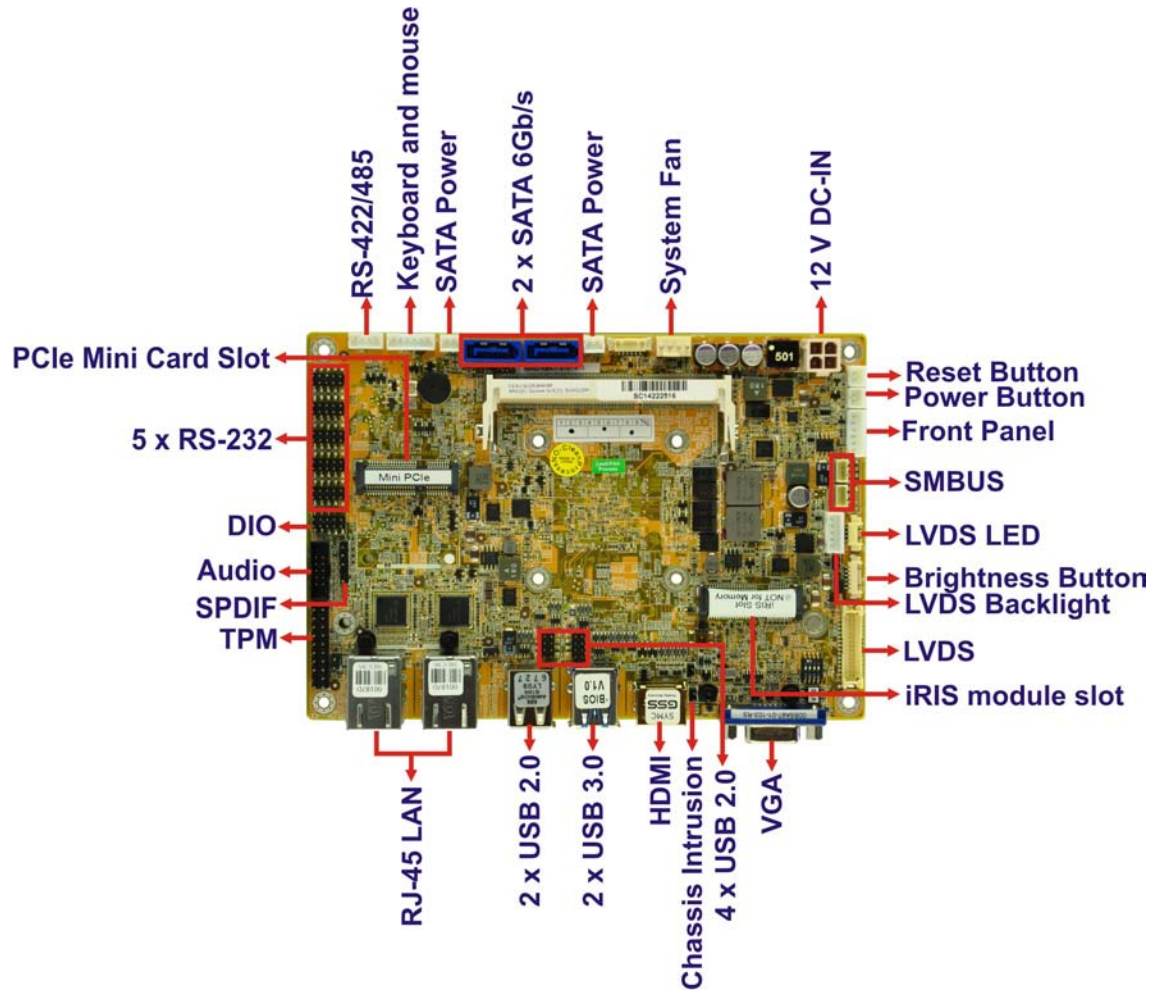


Figure 1-2: Connectors

NANO-SE-i1

1.5 Dimensions

The dimensions of the board are listed below:

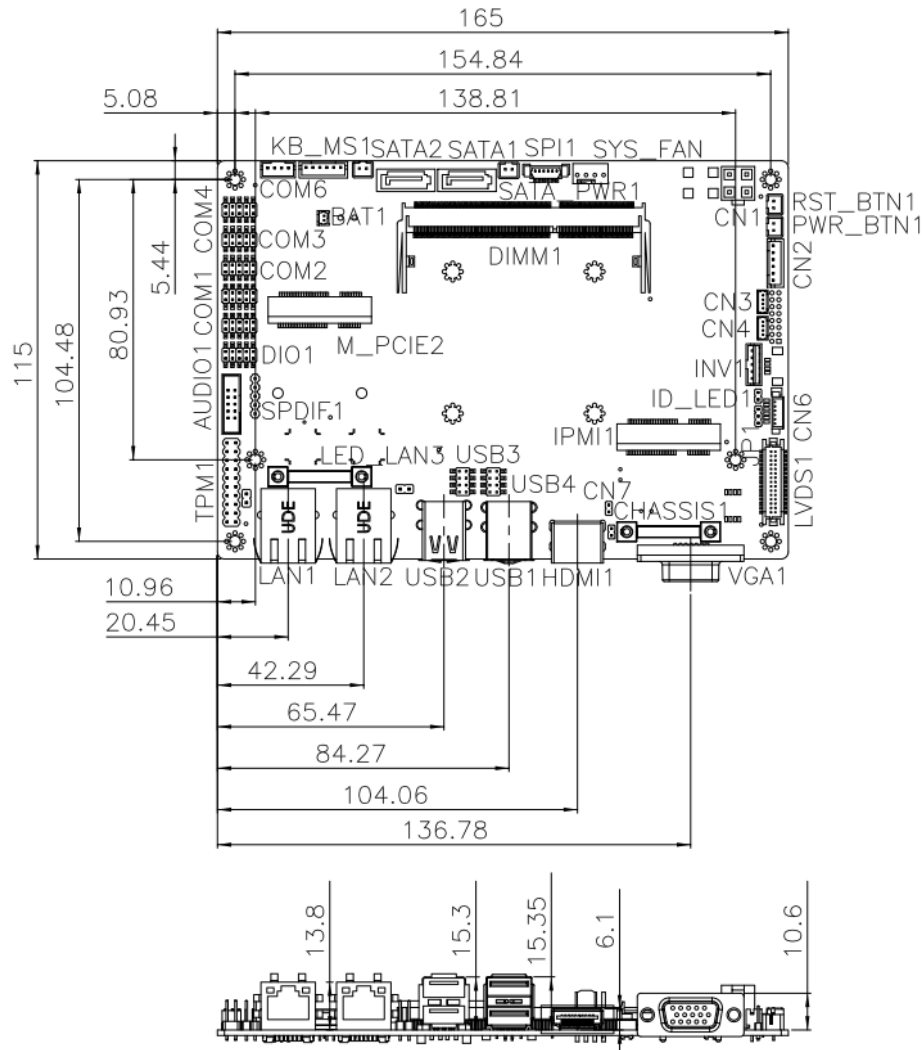


Figure 1-3: Dimensions (mm)

1.6 Data Flow

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

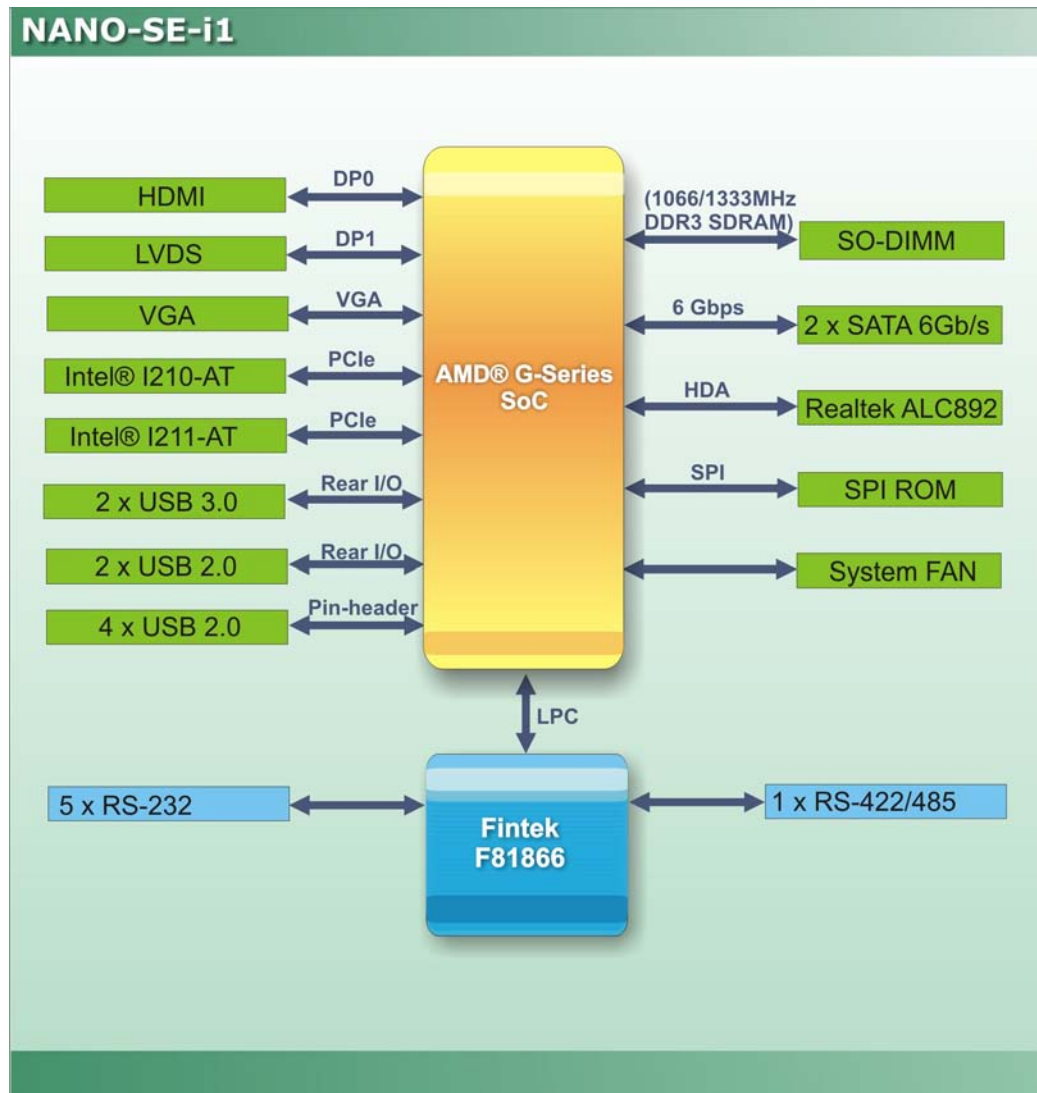


Figure 1-4: Data Flow Diagram

NANO-SE-i1

1.7 Technical Specifications

NANO-SE-i1 technical specifications are listed below.

Specification	NANO-SE-i1
SoC	<p>GX-424CC on-board Soc (2.4GHz, quad-core,2MB cache, TDP=25W)</p> <p>GX-412HC on-board Soc (1.2GHz, quad-core,2MB cache, TDP=7W) (by request)</p> <p>GX-212JC on-board Soc (1.2GHz, dual-core,1MB cache, TDP=6W) (by request)</p> <p>GX-411GA on-board Soc (1.0GHz, quad-core,2MB cache, TDP=15W) (by request)</p> <p>GX-209HA on-board Soc (1.0GHz, dual-core,1MB cache, TDP=9W) (by request)</p>
Memory	One 204-pin up to 1866MHz single-channel DDR3/DDR3L SDRAM supported (system max. 8GB)
BIOS	UEFI BIOS
Ethernet	<p>LAN1: Intel® I210-AT PCIe controller with NCSI support</p> <p>LAN2: Intel® I211-AT PCIe controller</p>
Graphics	<p>GPU frequency 497MHz for GX-424CC</p> <p>GPU frequency 300MHz for GX-412HC</p> <p>GPU frequency 300MHz for GX-212JC</p> <p>GPU frequency 300MHz for GX-411GA</p> <p>GPU frequency 225MHz for GX-209HA</p> <p>Support DX11.1, OpenGL 4.1 and OpenCL1.2</p> <p>UVD4.2 decode for H.264, MPEG2/4, VC1, MVC</p> <p>VCE 2.0 encode for H.264, VCE</p>

Specification	NANO-SE-i1
Display Output	VGA (up to 2048x1536@60Hz) HDMI (up to 3840x2160@60Hz) 18/24-bit dual-channel LVDS by CH7511B DP to LVDS converter (up to 1920x1200@60Hz)
Super IO	Fintek F81866
I/O Interface	1 x 6-pin wafer for PS/2 KB/MS 2 x SATA 6G/s with 5V SATA power connector 2 x USB 3.0 (on rear I/O) 6 x USB 2.0 (2 on rear I/O, 4 by pin header) 1 x RS-422/485 (pin header) 5 x RS-232 (5 by pin header)
iRIS Remote Management Module	1 x iRIS-1010 slot
TPM	1 x TPM connector (2x10 pin)
SMBus	1 x 4-pin (1x4) wafer
I2C	1 x 4-pin (1x4) wafer
Audio	Realtek ALC892 HD Audio codec 1 x S/PDIF by 4-pin (1x4) header for digital audio 1 x Analog audio by 10-pin (2x5) header
Front Panel	1 x 6-pin (1x6) wafer for power LED & HDD LED 1 x 2-pin (1x2) wafer for power button 1 x 2-pin (1x2) wafer for power reset
LAN LED	2 x 2-pin headers for LAN1 Link LED, LAN2 Link LED
Expansion	1 x Full-size PCIe Mini card slot (supports mSATA co-lay SATA port 2)
Watchdog Timer	Software programmable supports 1~255 sec. system reset
Digital I/O	8-bit digital I/O (4-bit input, 4-bit output)

NANO-SE-i1

Specification	NANO-SE-i1
Fan Connector	1 x 4-pin system fan connector
Power Supply	12V only DC input 1 x Internal 4-pin (2x2) power connector Support AT/ATX mode
Power Consumption	+12V@ 2.57A (AMD GX-424CC 2.4GHz CPU with 1600MHz 8GB DDR3 memory)
Operating Temperature	-10°C ~ 60°C
Storage Temperature	-20°C ~ 85°C
Humidity	5% ~ 95% (non-condensing)
Dimensions	115mm x 165mm
Weight GW/NW	850g / 350g

Table 1-2: Technical Specifications

Chapter

2

Unpacking

NANO-SE-i1

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-SE-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-SE-i1 was purchased from or contact an IEI sales representative directly by sending an email to sales@iei.com.tw.

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





Quantity	Item and Part Number	Image
1	NANO-SE-i1 motherboard	
1	Audio cable (P/N: 32007-002600-200-RS)	
2	SATA with 5V output cable kit (P/N: 32801-000201-300-RS)	
2	RS-232 cable (P/N: 32205-002700-100-RS)	
1	Power cable (P/N: 32100-087100-RS)	
1	Utility CD	

NANO-SE-i1

1	One Key Recovery CD	
1	Quick Installation Guide	

2.4 Optional Items

The following are optional components which may be separately purchased:

Item and Part Number	Image
Dual-port USB cable without bracket (P/N: 32000-070301-RS)	
RS-422/485 cable, 200mm (P/N: 32205-003800-300-RS)	
PS/2 KB/MS cable (P/N: 32000-023800-RS)	
20-Pin Infineon TPM module, software management tool, firmware V3.17 (P/N: TPM-IN01-R11)	

Chapter

3

Connectors

NANO-SE-i1

3.1 Peripheral Interface Connectors

This chapter details all the jumpers and connectors.

3.1.1 NANO-SE-i1 Layout

The figures below show all the connectors and jumpers.

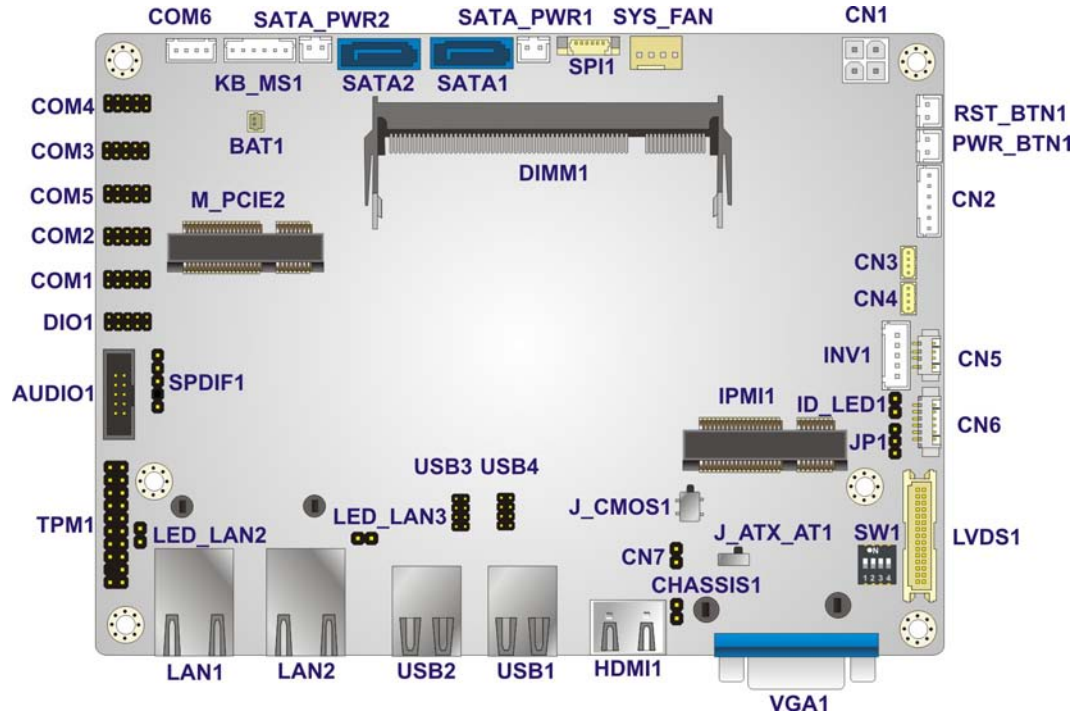


Figure 3-1: Connector and Jumper Locations

3.1.2 Peripheral Interface Connectors

The table below lists all the connectors on the board.

Connector	Type	Label
12V DC-IN power connector	4-pin Molex	CN1
Audio connector	10-pin box header	AUDIO1
Battery connector	2-pin wafer	BAT1
Brightness button connector	6-pin wafer	CN6

Chassis intrusion connector	2-pin header	CHASSIS1
DDR3 SO-DIMM slot	DDR3 SO-DIMM slot	DIMM1
Digital I/O connector	10-pin header	DIO1
Front panel connector	6-pin wafer	CN2
IPMI LED connector	2-pin header	ID_LED1
iRIS-1010 module slot	iRIS-1010 module slot	IPMI1
Keyboard and mouse connector	6-pin wafer	KB_MS1
LAN LED connectors	2-pin header	LED_LAN2, LED_LAN3
LVDS backlight inverter connector	5-pin wafer	INV1
LVDS LCD connector	30-pin crimp	LVDS1
LVDS LED connector	4-pin wafer	CN5
PCIe mini card slot	PCIe Mini card slot	M_PCIE2
Power button connector	2-pin wafer	PWR_BTN1
Reset button connector	2-pin wafer	RST_BTN1
RS-232 serial port connectors	10-pin header	COM1, COM2, COM3, COM4, COM5
RS-422/485 serial port connector	4-pin wafer	COM6
SATA 6Gb/s drive connectors	7-pin SATA connector	SATA1, SATA2
SATA power connectors	2-pin wafer	SATA_PWR1, SATA_PWR2
SMBUS connectors	4-pin wafer	CN3, CN4
SPDIF connector	5-pin header	SPDIF1
SPI flash connector (BIOS)	6-pin wafer	SPI1
SPI flash connector (EC)	2-pin header	CN7

NANO-SE-i1

System fan connector	4-pin wafer	SYS_FAN
TPM connector	20-pin connector	TPM1
USB 2.0 connectors	8-pin header	USB3, USB4

Table 3-1: Peripheral Interface Connectors

3.1.3 External Interface Panel Connectors

The table below lists the connectors on the external I/O panel.

Connector	Type	Label
HDMI connector	HDMI Type A port	HDMI1
LAN connectors	RJ-45	LAN1, LAN2
USB 3.0 connectors	USB 3.0	USB1
USB 2.0 connectors	USB 2.0	USB2
VGA connector	15-pin female	VGA1

Table 3-2: Rear Panel Connectors

3.2 Internal Peripheral Connectors

The section describes all of the connectors on the NANO-SE-i1.

3.2.1 12V DC-IN Power Connector

CN Label:	CN1
CN Type:	4-pin Molex, P=4.20 mm
CN Location:	See Figure 3-2
CN Pinouts:	See Table 3-3

The connector supports the 12V power supply.

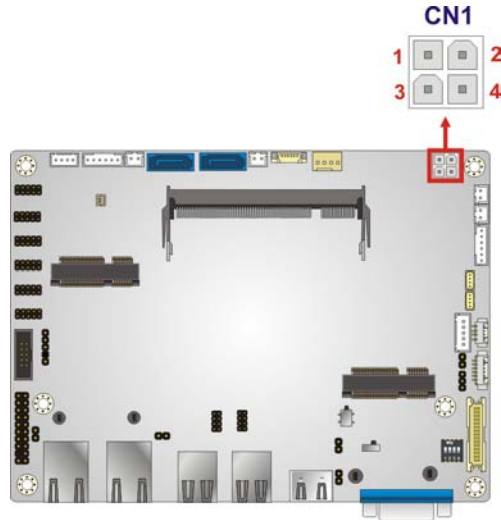


Figure 3-2: 12V DC-IN Power Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	GND
3	12V-IN	4	12V-IN

Table 3-3: 12V DC-IN Power Connector Pinouts

3.2.2 Audio Connector

- CN Label: **AUDIO1**
- CN Type: 10-pin box header, P=2.00 mm
- CN Location: See **Figure 3-3**
- CN Pinouts: See **Table 3-4**

The 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.

NANO-SE-i1

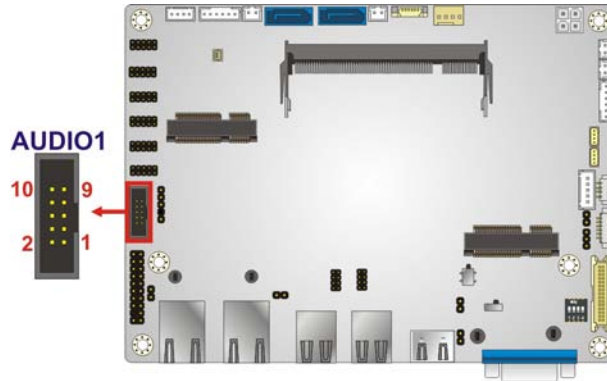


Figure 3-3: Audio Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LINEOUT1R	2	LINE1R
3	GND	4	GND
5	LINEOUT1L	6	LINE1L
7	GND	8	GND
9	FMIC1R	10	FMIC1L

Table 3-4: Audio Connector Pinouts

3.2.3 Battery Connector

- CN Label: **BAT1**
- CN Type: 2-pin wafer, P=1.25 mm
- CN Location: See **Figure 3-4**
- CN Pinouts: See **Table 3-5**

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

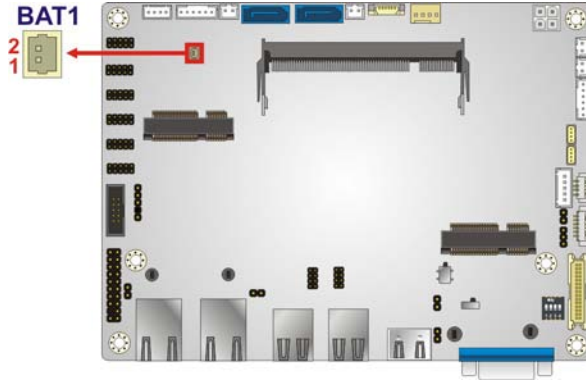


Figure 3-4: Battery Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VBATT	2	GND

Table 3-5: Battery Connector Pinouts

3.2.4 Brightness button connector

- CN Label: **CN6**
- CN Type: 6-pin wafer, P=1.25 mm
- CN Location: See **Figure 3-5**
- CN Pinouts: See **Table 3-6**

The brightness button connector is connected to the brightness button.

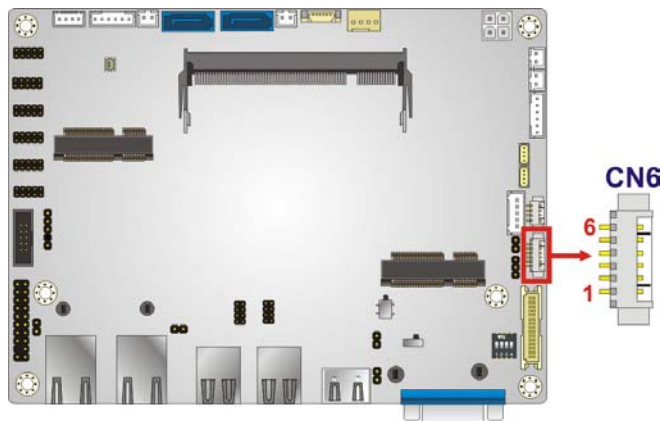


Figure 3-5: Brightness Button Connector Location

NANO-SE-i1

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	PWRON	2	GND
3	BLUP	4	GND
5	BLDN	6	GND

Table 3-6: Brightness Button Connector Pinouts

3.2.5 Chassis Intrusion Connector

- CN Label: CHASSIS1
- CN Type: 2-pin header, P=2.00 mm
- CN Location: See **Figure 3-6**
- CN Pinouts: See **Table 3-7**

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

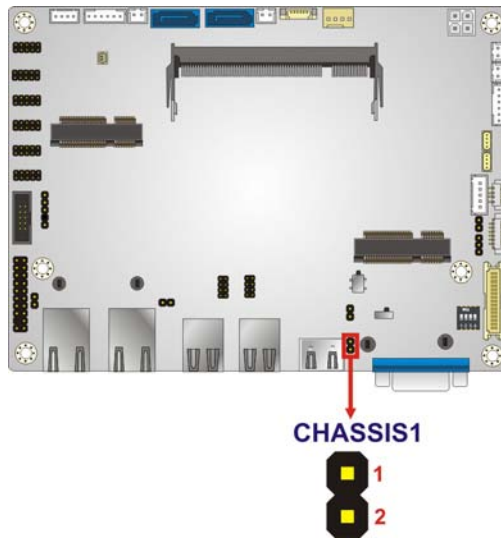


Figure 3-6: Chassis Intrusion Connector Location

Pin	Description
1	+V3.3A_EC
2	CHASSIE_EC

Table 3-7: Chassis Intrusion Connector Pinouts

3.2.6 DDR3 SO-DIMM Slot

- CN Label: DIMM1
- CN Type: DDR3 SO-DIMM slot
- CN Location: See **Figure 3-7**

The DDR3 SO-DIMM slot is for DDR3 SO-DIMM memory module.

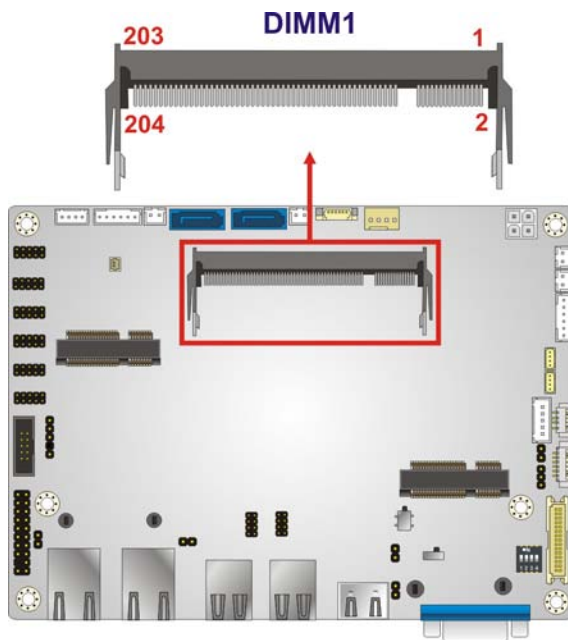


Figure 3-7: DDR3 SO-DIMM Slot Location

3.2.7 Digital I/O Connector

- CN Label: DIO1
- CN Type: 10-pin header, P=2.00 mm
- CN Location: See **Figure 3-8**

NANO-SE-i1

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

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.

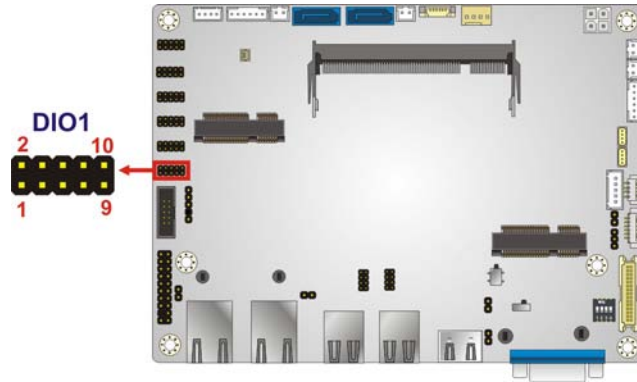


Figure 3-8: Digital I/O Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+5V
3	DOUT3	4	DOUT2
5	DOUT1	6	DOUT0
7	DIN3	8	DIN2
9	DIN1	10	DIN0

Table 3-8: Digital I/O Connector Pinouts

3.2.8 Front Panel Connector

CN Label: CN2

CN Type: 6-pin wafer, P=2.00 mm

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

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

The front panel connector connects to the indicator LEDs on the system front panel.

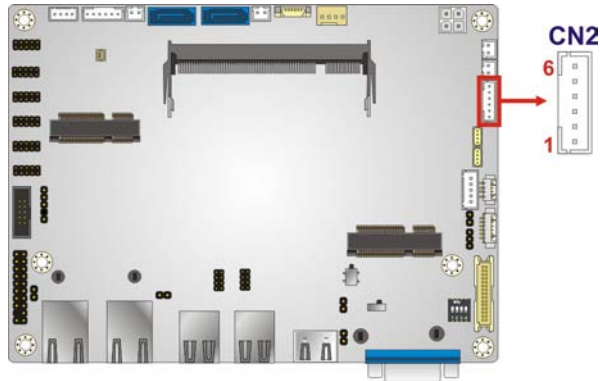


Figure 3-9: Front Panel Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	GND
3	PWR_LED+	4	PWR_LED-
5	HDD_LED+	6	HDD_LED-

Table 3-9: Front Panel Connector Pinouts

3.2.9 IPMI LED Connector

- CN Label: ID_LED1
- CN Type: 2-pin header, P=2.00 mm
- CN Location: See **Figure 3-10**
- CN Pinouts: See **Table 3-10**

The IPMI LED connector is used to connect to the IPMI LED indicator on the chassis.

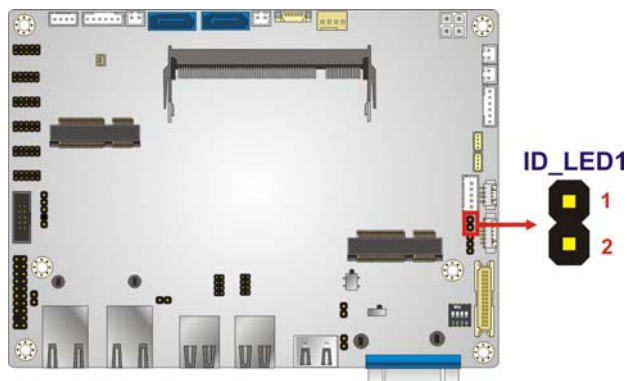


Figure 3-10: IPMI LED Connector Location

NANO-SE-i1

Pin	Description
1	ID_LED+
2	ID_LED-

Table 3-10: IPMI LED Connector Pinouts

3.2.10 iRIS-1010 module slot

- CN Label: IPMI1
- CN Type: IPMI 2.0 slot, P=0.80 mm
- CN Location: See **Figure 3-11**

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

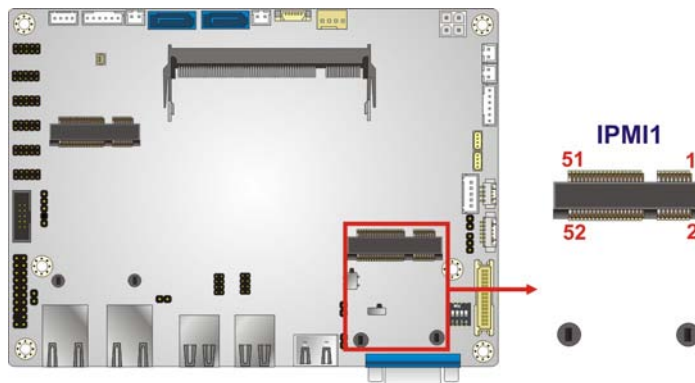


Figure 3-11: iRIS-1010 Module Slot Location



WARNING:

The iRIS-1010 module slot is designed to install the IEI iRIS-1010 IPMI 2.0 module. **DO NOT** install other modules into the iRIS-1010 module slot. Doing so may cause damage to the NANO-SE-i1.

3.2.11 Keyboard and Mouse Connector

- CN Label: KB_MS1
- CN Type: 6-pin wafer, P=2.00 mm
- CN Location: See **Figure 3-12**
- CN Pinouts: See **Table 3-11**

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

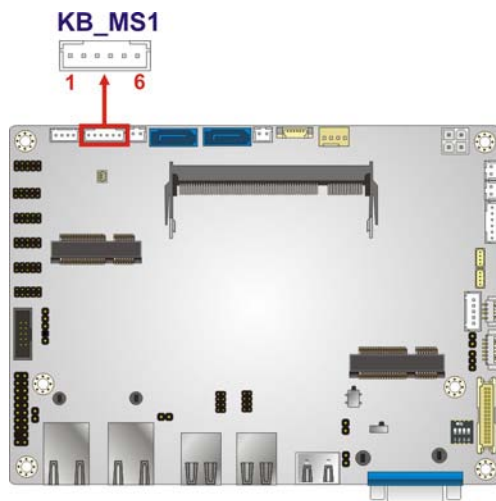


Figure 3-12: Keyboard and Mouse Location

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

NANO-SE-i1

Pin	Description
5	Keyboard Clock
6	GND

Table 3-11: Keyboard and Mouse Connector Pinouts

3.2.12 LAN LED Connectors

CN Label: LED_LAN2, LED_LAN3

CN Type: 2-pin header, P=2.54 mm

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

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

The LAN LED connectors connect to the LAN link LEDs on the system.

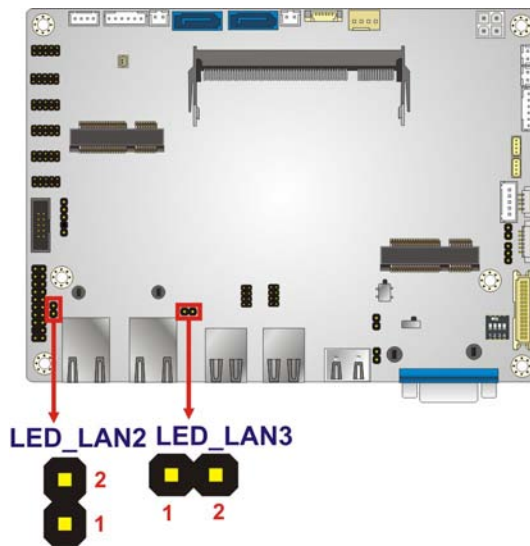


Figure 3-13: LAN LED Connectors Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	+3.3V	2	LAN_LED_LINK#_ACT

Table 3-12: LAN LED Connectors Pinouts

3.2.13 LVDS Backlight Inverter Connector

CN Label: INV1

CN Type: 5-pin wafer, P=2.00 mm

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

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

The backlight inverter connector provides power to an LCD panel.

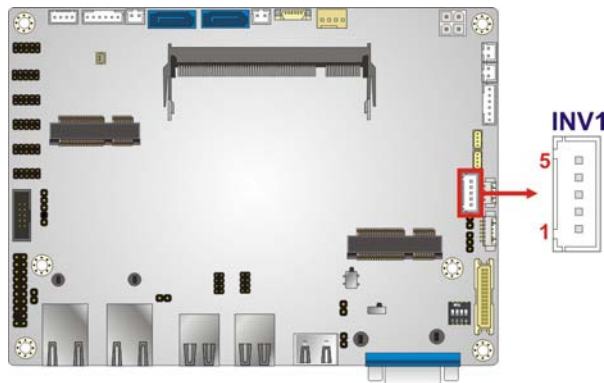


Figure 3-14: Backlight Inverter Connector Location

Pin	Description
1	BRIGHTNESS2
2	GND
3	12V
4	GND
5	ENABKL2

Table 3-13: Backlight Inverter Connector Pinouts

3.2.14 LVDS LCD Connector

CN Label: LVDS 1

CN Type: 30-pin crimp, P=1.25 mm

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

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

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

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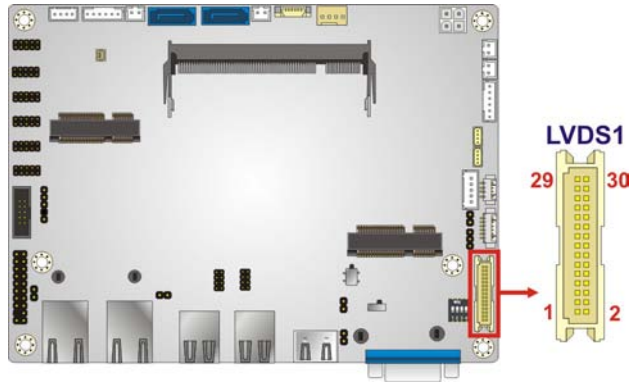


Figure 3-15: LVDS Connector Location

Pin	Description	Pin	Description
1	GND	2	GND
3	A0P_L	4	A0M_L
5	A1P_L	6	A1M_L
7	A2P_L	8	A2M_L
9	CLK1P_L	10	CLK1M_L
11	A3P_L	12	A3M_L
13	GND	14	GND
15	A4P_L	16	A4M_L
17	A5P_L	18	A5M_L
19	A6P_L	20	A6M_L
21	CLK2P_L	22	CLK2M_L
23	A7P_L	24	A7M_L
25	GND	26	GND
27	VCC	28	VCC
29	VCC	30	VCC

Table 3-14: LVDS Connector Pinouts

3.2.15 LVDS LED connector

- CN Label: CN5
- CN Type: 4-pin wafer, P=1.25 mm
- CN Location: See **Figure 3-16**
- CN Pinouts: See **Table 3-15**

The backlight inverter connector provides power to an LCD panel.

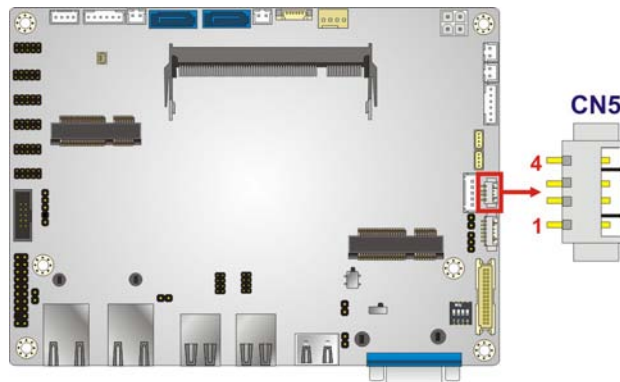


Figure 3-16: LVDS LED Connector Location

Pin	Description
1	VCC33
2	OLED
3	VCC33
4	GLED

Table 3-15: LVDS LED Connector Pinouts

3.2.16 PCIe Mini Card Slot

- CN Label: M_PCIE2
- CN Type: PCIe Mini card slot, P=0.80 mm
- CN Location: See **Figure 3-17**

The PCIe Mini card slot is for installing a PCIe Mini expansion card.

NANO-SE-i1

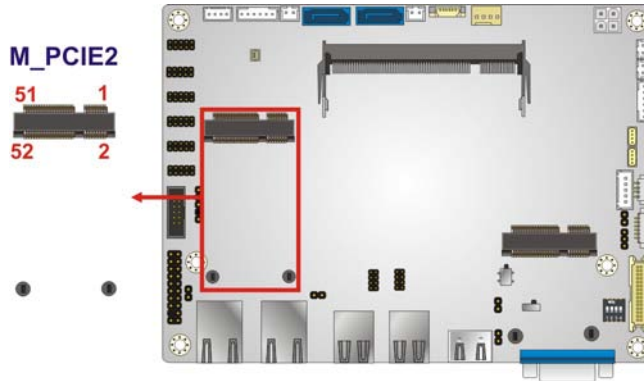


Figure 3-17: PCIe Mini Card Slot Location

3.2.17 Power Button Connector

- CN Label: PWR_BTN1
- CN Type: 2-pin wafer, P=2.00 mm
- CN Location: See **Figure 3-18**
- CN Pinouts: See **Table 3-16**

The power button connector is connected to a power switch on the system chassis to enable users to turn the system on and off.

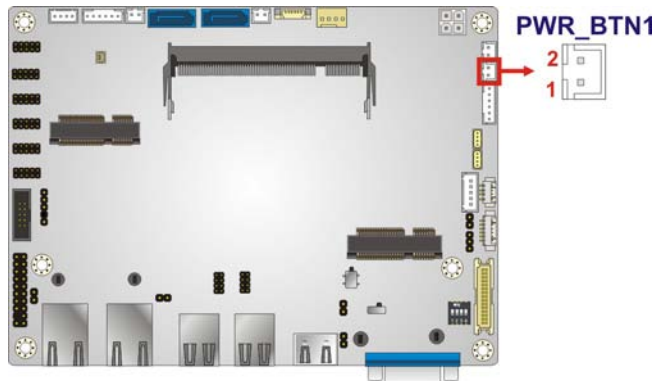


Figure 3-18: Power Button Connector Location

Pin	Description
1	PWRBTSW#
2	GND

Table 3-16: Power Button Connector Pinouts

3.2.18 Reset Button Connector

- CN Label: RST_BTN1
- CN Type: 2-pin wafer, P=2.00 mm
- CN Location: See **Figure 3-19**
- CN Pinouts: See **Table 3-17**

The reset button connector is connected to a reset switch on the system chassis to enable users to reboot the system when the system is turned on.

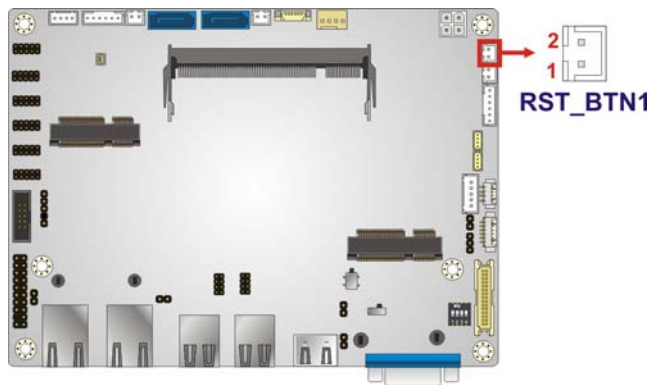


Figure 3-19: Reset Button Connector Location

Pin	Description
1	PM_SYSRST#
2	GND

Table 3-17: Reset Button Connector Pinouts

3.2.19 RS-232 Serial Port Connector

- CN Label: COM1, COM2, COM3, COM4, COM5
- CN Type: 10-pin header, P=2.00 mm
- CN Location: See **Figure 3-20**
- CN Pinouts: See **Table 3-18**

The serial connector provides RS-232 connection.

NANO-SE-i1

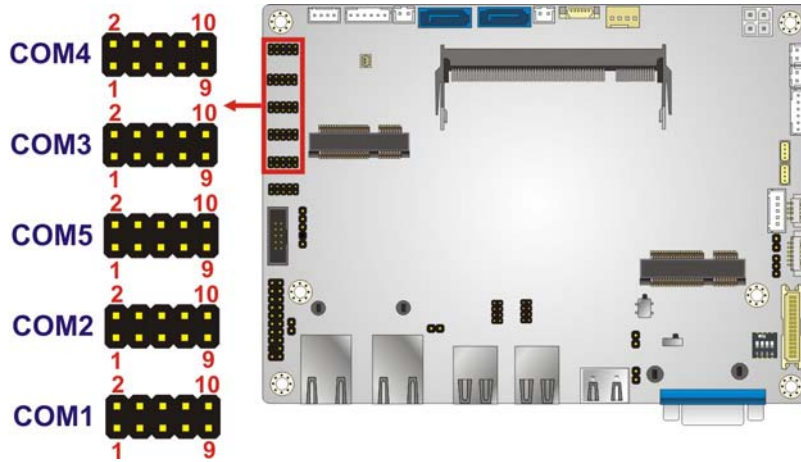


Figure 3-20: RS-232 Serial Port Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	NDCD	2	NDSR
3	NRX	4	NRTS
5	NTX	6	NCTS
7	NDTR	8	NRI
9	GND	10	GND

Table 3-18: RS-232 Serial Port Connector Pinouts

3.2.2.0 RS-422/485 Serial Port Connector

- CN Label: COM6
- CN Type: 4-pin wafer, P=2.00 mm
- CN Location: See **Figure 3-21**
- CN Pinouts: See **Table 3-19**

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

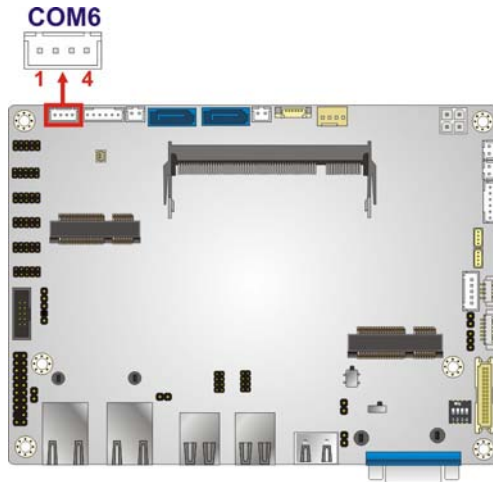


Figure 3-21: RS-422/485 Connector Location

Pin	Description	Pin	Description
1	RXD485#	2	RXD485+
3	TXD485+	4	TXD485#

Table 3-19: RS-422/485 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 3-20: DB-9 RS-422/485 Pinouts

3.2.21 SATA 6Gb/s Drive Connector

- CN Label: **SATA1, SATA2**
- CN Type: 7-pin SATA connector, P=1.70 mm
- CN Location: See **Figure 3-22**

NANO-SE-i1

The SATA 6Gb/s drive connector is connected to a SATA 6Gb/s drive. The SATA 6Gb/s drive transfers data at speeds as high as 6Gb/s.

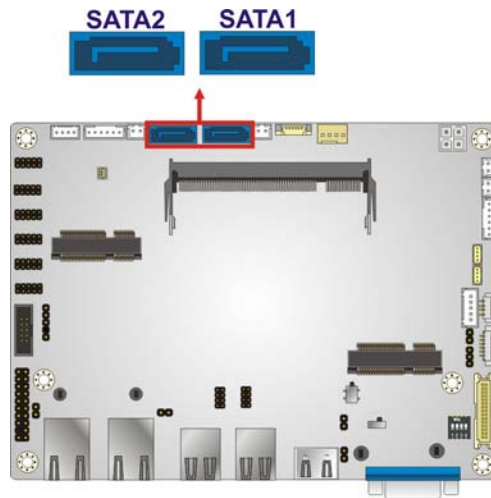


Figure 3-22: SATA 6Gb/s Drive Connector Location

3.2.22 SATA Power Connector

CN Label:	SATA_PWR1, SATA_PWR2
CN Type:	2-pin wafer, P=2.00 mm
CN Location:	See Figure 3-23
CN Pinouts:	See Table 3-21

The SATA power connector provides +5V power output to the SATA connector.

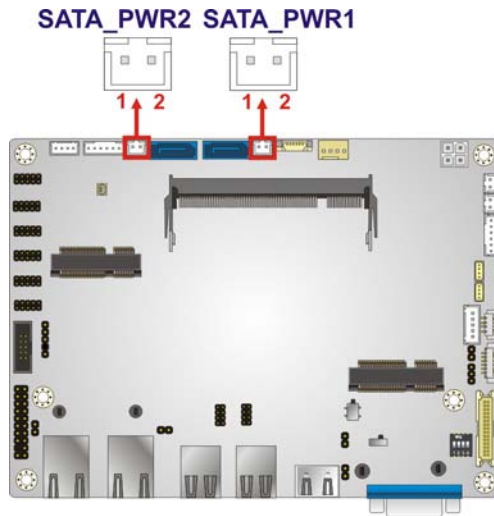


Figure 3-23: SATA Power Connector Location

PIN NO.	DESCRIPTION
1	+5V
2	GND

Table 3-21: SATA Power Connector Pinouts

3.2.23 SMBUS Connector

- CN Label: CN3, CN4
- CN Type: 4-pin wafer, P=1.25 mm
- CN Location: See **Figure 3-24**
- CN Pinouts: See **Table 3-22**

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

NANO-SE-i1

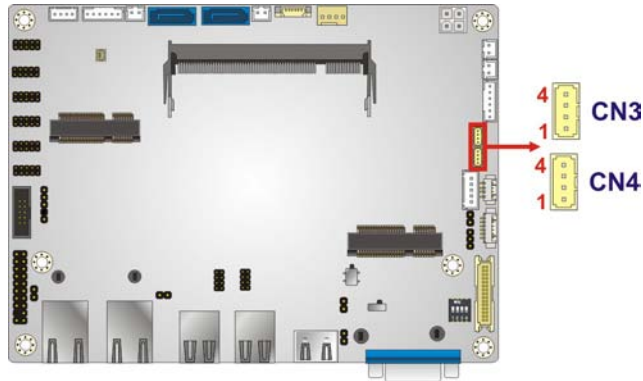


Figure 3-24: SMBUS Connectors Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	SMBDATA
3	SMBCLK	4	+5V

Table 3-22: SMBUS Connectors Pinouts

3.2.24 SPDIF Connector

- CN Label: SPDIF1
- CN Type: 5-pin header, P=2.54 mm
- CN Location: See **Figure 3-25**
- CN Pinouts: See **Table 3-23**

Use the SPDIF connector to connect digital audio devices to the system.

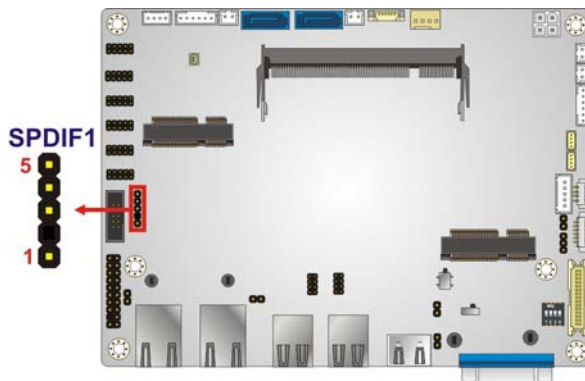


Figure 3-25: SPDIF Connector Location

PIN	DESCRIPTION
1	+5V
2	NC
3	SPDIF OUT
4	GND
5	SPDIF IN

Table 3-23: SPDIF Connector Pinouts

3.2.25 SPI Flash Connector (BIOS)

- CN Label: SPII
- CN Type: 6-pin wafer, P=1.25 mm
- CN Location: See **Figure 3-26**
- CN Pinouts: See **Table 3-24**

The SPI Flash connector is used to flash the BIOS.

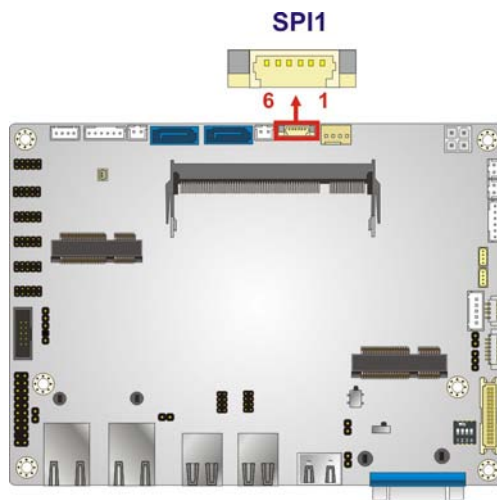


Figure 3-26: SPI Flash Connector Location

Pin	Description
1	SPI_POWER
2	SPI_CS#
3	SPI_DATAIN

NANO-SE-i1

Pin	Description
4	SPI_CLK
5	SPI_DATAOUT
6	GND

Table 3-24: SPI Flash Connector (BIOS) Pinouts

3.2.26 SPI Flash Connector (EC)

CN Label: CN7
 CN Type: 2-pin header, P=2.00 mm
 CN Location: See **Figure 3-27**
 CN Pinouts: See **Table 3-25**

The SPI Flash connector is used to flash the Embedded Controller.

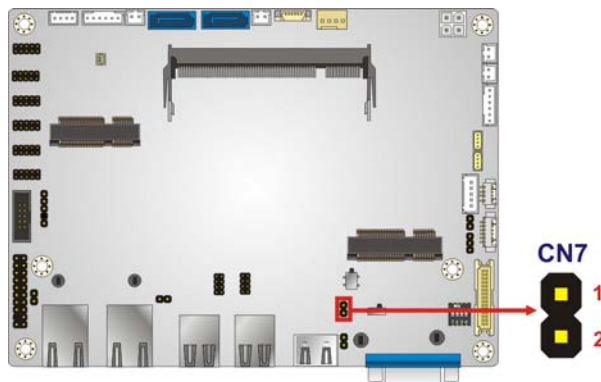


Figure 3-27: SPI Flash Connector Location

Pin	Description	Pin	Description
1	SMCLK1_EC	2	SMDAT1_EC

Table 3-25: SPI Flash Connector (EC) Pinouts

3.2.27 System Fan Connector

CN Label: SYS_FAN
 CN Type: 4-pin wafer, P=2.54 mm
 CN Location: See **Figure 3-28**

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

The fan connector attaches to a system cooling fan.

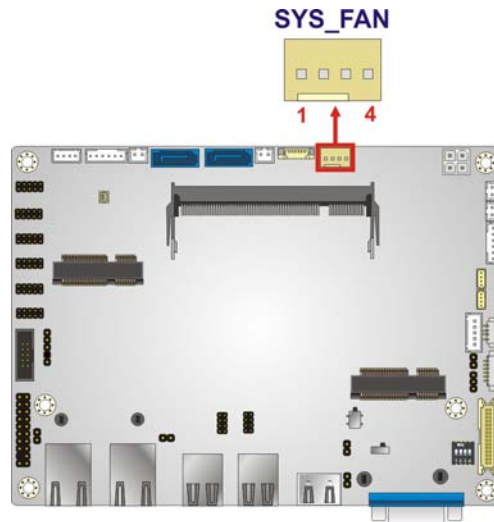


Figure 3-28: System Fan Connector Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GND	2	+ 12V
3	FANIN	4	FANOUT

Table 3-26: System Fan Connector Pinouts

3.2.28 TPM Connector

CN Label: TPM1

CN Type: 20-pin connector, P=2.54 mm

CN Location: See **Figure 3-29**

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

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

NANO-SE-i1

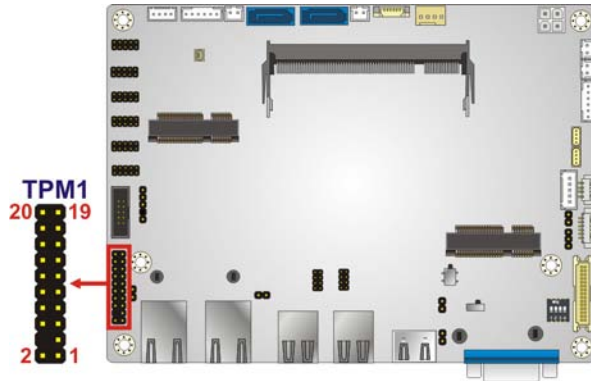


Figure 3-29: TPM Connector Location

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	LPC_CLK1	2	GND
3	LFRAME#	4	NC
5	LPC_RST#	6	+5V
7	LAD3	8	LAD2
9	+3.3V	10	LAD1
11	LAD0	12	GND
13	SCLK0	14	SDATA0
15	+3.3V_DUAL	16	SERIRQ
17	GND	18	LPC_CLKRUN#
19	LPCPD#	20	LDRO#0

Table 3-27: TPM Connector Pinouts

3.2.29 USB Connector

- CN Label: **USB3, USB4**
- CN Type: 8-pin header, P=2.00 mm
- CN Location: See **Figure 3-30**
- CN Pinouts: See **Table 3-28**

The USB connector provides two USB 2.0 ports by dual-port USB cable.

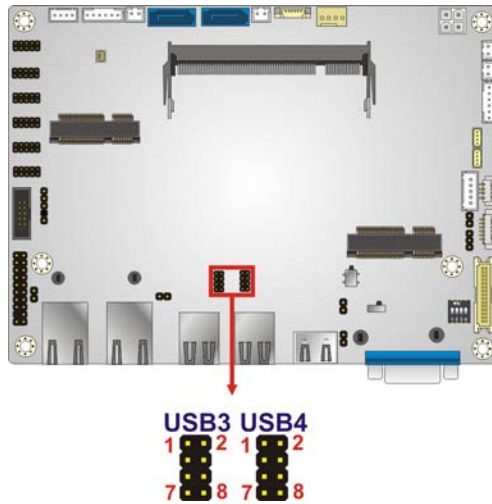


Figure 3-30: USB Connector Locations

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	2	GND
3	USB_DATA-	4	USB_DATA+
5	USB_DATA+	6	USB_DATA-
7	GND	8	VCC

Table 3-28: USB Connector Pinouts

3.3 External Peripheral Interface Connector Panel

Figure 3-31 shows the NANO-SE-i1 external peripheral interface connector (EPIC) panel. The EPIC panel consists of the following:

- 1 x HDMI connector
- 2 x RJ-45 LAN connectors
- 2 x USB 3.0 connectors
- 2 x USB 2.0 connectors
- 1 x VGA connector

NANO-SE-i1

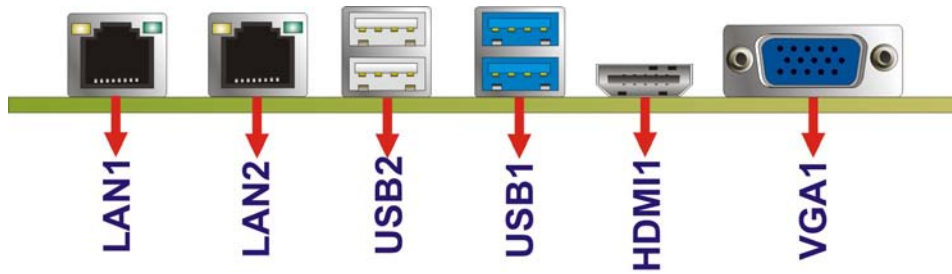


Figure 3-31: External Peripheral Interface Connector

3.3.1 HDMI Connector

- CN Label: **HDMI1**
- CN Type: HDMI type A connector
- CN Location: See **Figure 3-31**
- CN Pinouts: See **Table 3-29**

The HDMI (High-Definition Multimedia Interface) connector connects to digital audio or video sources.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	HDMI_TMDS_C_DATA2	2	GND
3	HDMI_TMDS_C_DATA2#	4	HDMI_TMDS_C_DATA1
5	GND	6	HDMI_TMDS_C_DATA1#
7	HDMI_TMDS_C_DATA0	8	GND
9	HDMI_TMDS_C_DATA0#	10	HDMI_TMDS_C_CLK
11	GND	12	HDMI_TMDS_C_CLK#
13	NC	14	NC
15	HDMI_DDC_SCLK	16	HDMI_DDC_SDATA
17	GND	18	+5V_HDMI
19	HDMI_HPD		

Table 3-29: HDMI Connector Pinouts

3.3.2 LAN Connectors

- CN Label: LAN1, LAN2

- CN Type: RJ-45
- CN Location: See **Figure 3-31**
- CN Pinouts: See **Figure 3-32** and **Table 3-30**

The LAN connector connects to a local network.

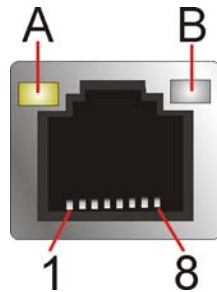


Figure 3-32: LAN Connector

Pin	Description	Pin	Description
1	MDI0+	2	MDI0-
3	MDI1+	4	MDI1-
5	MDI2+	6	MDI2-
7	MDI3+	8	MDI3-

Table 3-30: LAN Pinouts

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 3-31: Connector LEDs

3.3.3 USB Connectors

- CN Label: USB2, USB1
- CN Type: USB 2.0 ports, USB 3.0 ports
- CN Location: See **Figure 3-31**
- CN Pinouts: See **Table 3-32** and **Table 3-33**

The NANO-SE-i1 has two external USB 2.0 ports and two external USB 3.0 ports.

NANO-SE-i1

The pinouts of USB 2.0 connectors are shown below.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	POWER	2	DATA0_N
3	DATA0_P	4	GND
5	POWER	6	DATA1_N
7	DATA1_P	8	GND

Table 3-32: USB 2.0 Port Pinouts (USB2)

The pinouts of USB 3.0 connectors are shown below.

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	USB_3P0_VCC1	2	USB2P8_DM0_L
3	USB2P8_DP0_L	4	GND
5	USB3P0_RXDNO_C	6	USB3P0_RXDP0_C
7	GND	8	USB3P0_TXDNO_C
9	USB3P0_TXDP0_C	10	USB_3P0_VCC2
11	USB2P9_DM1_L	12	USB2P9_DP1_L
13	GND	14	USB3P0_RXDN1_C
15	USB3P0_RXDP1_C	16	GND
17	USB3P0_TXDN1_C	18	USB3P0_TXDP1_C

Table 3-33: USB 3.0 Port Pinouts (USB1)

3.3.4 VGA Connector

- CN Label: VGA1
- CN Type: 15-pin Female
- CN Location: See **Figure 3-31**
- CN Pinouts: See **Table 3-34**

The VGA connector connects to a monitor that accepts a standard VGA input.

PIN	DESCRIPTION	PIN	DESCRIPTION
1	RED	2	GREEN

PIN	DESCRIPTION	PIN	DESCRIPTION
3	BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	CRT_VCC	10	GND
11	NC	12	5VDDCDA
13	VGA_HSYNC	14	VGA_VSYNC
15	5VDDCLK		

Table 3-34: VGA Connector Pinouts

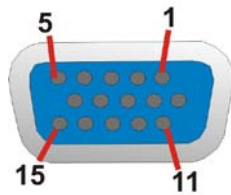


Figure 3-33: VGA Connector

Chapter

4

Installation

4.1 Anti-static Precautions



WARNING:

Failure to take ESD precautions during the installation of the NANO-SE-i1 may result in permanent damage to the NANO-SE-i1 and severe injury to the user.

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

- **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-SE-i1, place it on an anti-static pad. This reduces the possibility of ESD damaging the NANO-SE-i1.
- **Only handle the edges of the PCB:** When handling the PCB, hold the PCB by the edges.

4.2 Installation Considerations



NOTE:

The following installation notices and installation considerations should be read and understood before installation. All installation notices must be strictly adhered to. Failing to adhere to these precautions may lead to severe damage and injury to the person performing the installation.

NANO-SE-i1



WARNING:

The installation instructions described in this manual should be carefully followed in order to prevent damage to the NANO-SE-i1, NANO-SE-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 NANO-SE-i1 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 the NANO-SE-i1 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 to the NANO-SE-i1 off:
 - When working with the NANO-SE-i1, make sure that it is disconnected from all power supplies and that no electricity is being fed into the system.

Before and during the installation of the NANO-SE-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 SO-DIMM Installation



WARNING:

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

To install an SO-DIMM, please follow the steps below and refer to Figure 4-1.

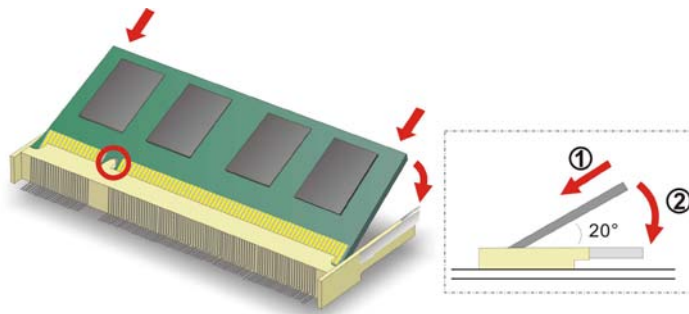


Figure 4-1: SO-DIMM Installation

- Step 1:** **Locate the SO-DIMM socket.** Place the board on an anti-static mat.
- 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 20° angle. (See Figure 4-1)
- Step 4:** **Seat the SO-DIMM.** Gently push downwards and the arms clip into place. (See Figure 4-1)

NANO-SE-i1

4.4 System Configuration

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

4.4.1 AT/ATX Mode Select Switch

CN Label:	J_ATX_AT1
CN Type:	switch
CN Location:	See Figure 4-2
CN Settings:	See Table 4-1

The AT/ATX mode select switch specifies the systems power mode as AT or ATX. AT/ATX mode select switch settings are shown in **Table 4-1**.

Setting	Description	
Short A-B	AT Mode	
Short B-C	ATX Mode	Default

Table 4-1: AT/ATX Mode Select Switch Settings

The location of the AT/ATX mode select switch is shown in **Figure 4-2** below.

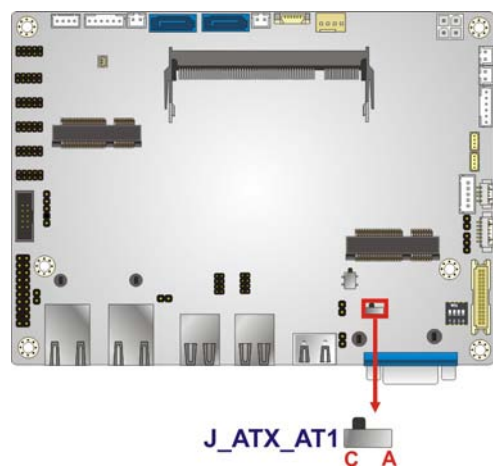


Figure 4-2: AT/ATX Mode Select Switch Location

4.4.1 Clear CMOS Button

CN Label:	J_CMOS1
CN Type:	button
CN Location:	See Figure 4-3
CN Settings:	See Table 4-2

If the NANO-SE-i1 fails to boot due to improper BIOS settings, use the button to clear the CMOS data and reset the system BIOS information.

The clear CMOS button settings are shown in **Table 4-2**.

Setting	Description	
Open	Normal Operation	Default
Push	Clear CMOS Setup	

Table 4-2: Clear CMOS Button Settings

The location of the clear CMOS button is shown in **Figure 4-3**.

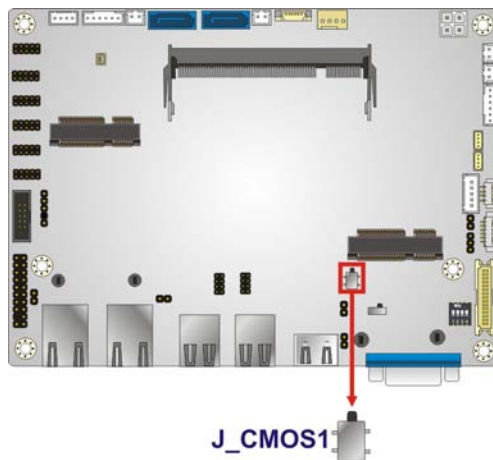


Figure 4-3: Clear CMOS Button Location

4.4.2 LVDS Panel Resolution Selection

Jumper Label:	SW1
Jumper Type:	DIP switch

NANO-SE-i1

Jumper Settings: See **Table 4-3**

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

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

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

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

Table 4-3: LVDS Panel Resolution Selection

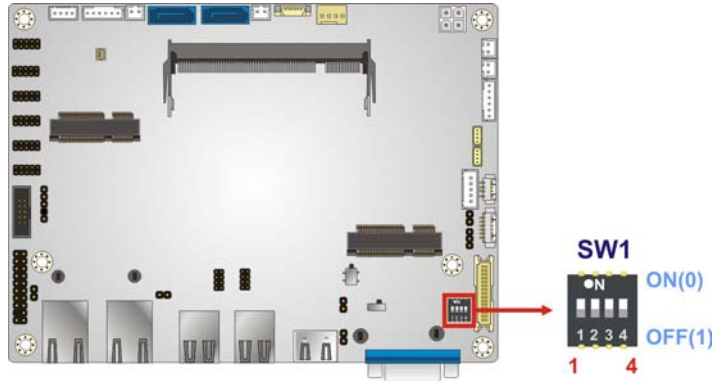


Figure 4-4: LVDS Panel Resolution Selection Switch Location

4.4.3 LVDS Voltage Selection



WARNING:

Permanent damage to the screen and NANO-SE-i1 may occur if the wrong voltage is selected with this jumper. Please refer to the user guide that came with the monitor to select the correct voltage.

- Jumper Label: **JP1**
- Jumper Type: 3-pin header
- Jumper Settings: See **Table 4-4**
- Jumper Location: See **Figure 4-5**

The LVDS voltage selection jumper allows setting the voltage provided to the monitor connected to the LVDS connector.

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

Table 4-4: LVDS Voltage Selection Jumper Settings

NANO-SE-i1

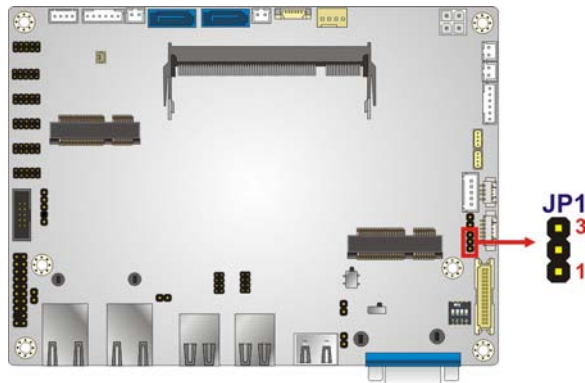


Figure 4-5: LVDS Voltage Selection Jumper Location

4.5 Internal Peripheral Device Connections

This section outlines the installation of peripheral devices to the on-board connectors

4.5.1 Audio Kit Installation

The Audio Kit that came with the NANO-SE-i1 connects to the audio connector on the NANO-SE-i1. The audio kit consists of three audio jacks. Mic-in connects to a microphone. Line-in provides a stereo line-level input to connect to the output of an audio device. Line-out, a stereo line-level output, connects to two amplified 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 4-6**.

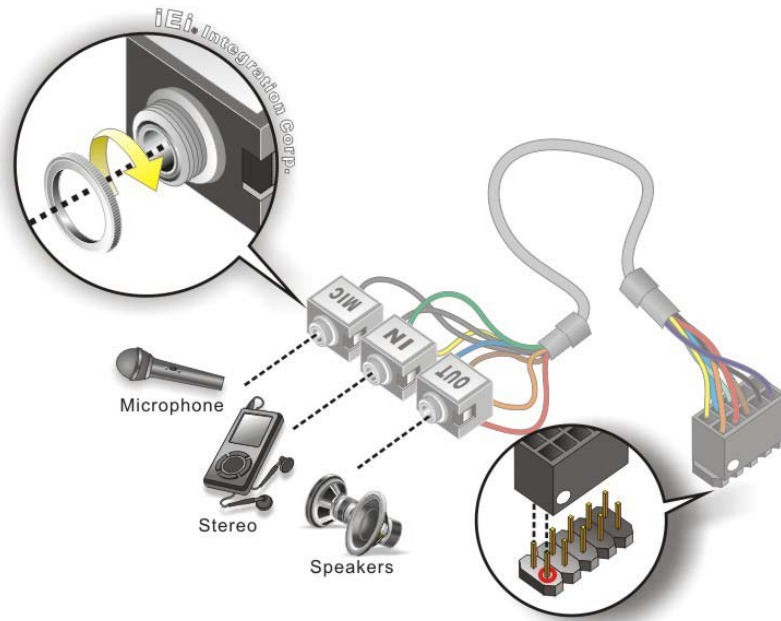


Figure 4-6: Audio Kit Cable Connection

Step 3: Connect the audio devices. Connect speakers to the line-out audio jack. Connect the output of an audio device to the line-in audio jack. Connect a microphone to the mic-in audio jack.

4.5.2 SATA Drive Connection

The NANO-SE-i1 is shipped with a SATA drive cable. 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 4-7**.

NANO-SE-i1

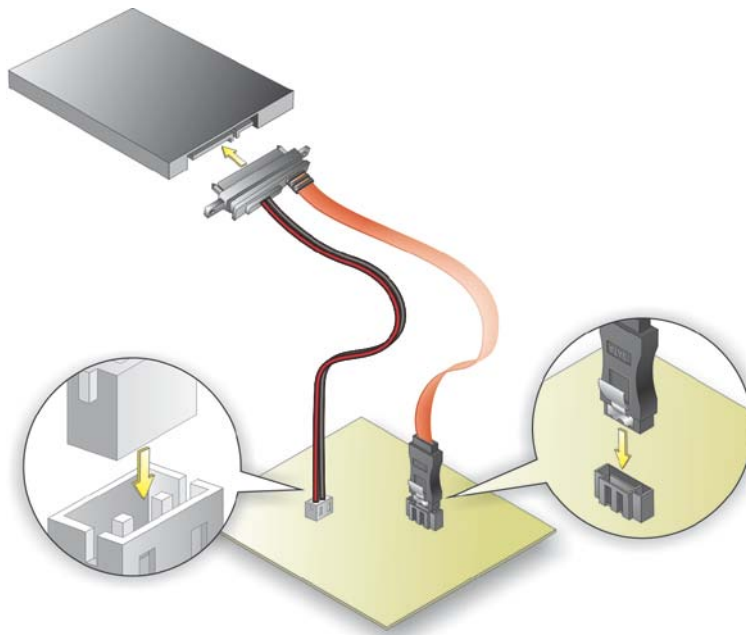


Figure 4-7: SATA Drive Cable Connection

- 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 4-7**.
- Step 4:** To remove the SATA cable from the SATA connector, press the clip on the connector at the end of the cable.

4.5.3 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 location of the RS-232 connector is shown in **Chapter 3**.
- Step 2:** **Insert the cable connector.** Insert the connector into the serial port box header. See **Figure 4-8**. A key on the front of the cable connectors ensures the connector can only be installed in one direction.

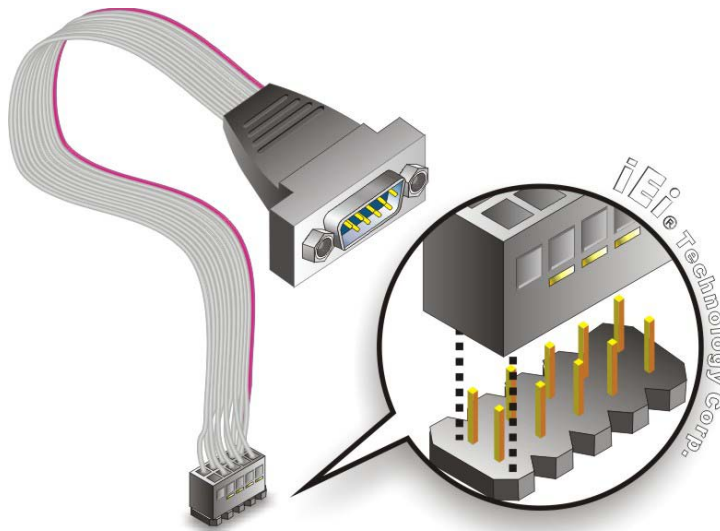


Figure 4-8: Single RS-232 Cable Installation

- 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.

4.6 External Peripheral Interface Connection

The following external peripheral devices can be connected to the external peripheral interface connectors.

- HDMI devices
- RJ-45 LAN cable
- USB devices
- VGA monitors

To install these devices, connect the corresponding cable connector from the actual device to the corresponding NANO-SE-i1 external peripheral interface connector making sure the pins are properly aligned.

NANO-SE-i1

4.6.1 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-SE-i1, follow the steps below.

Step 1: **Locate the HDMI connector.** The location is 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.

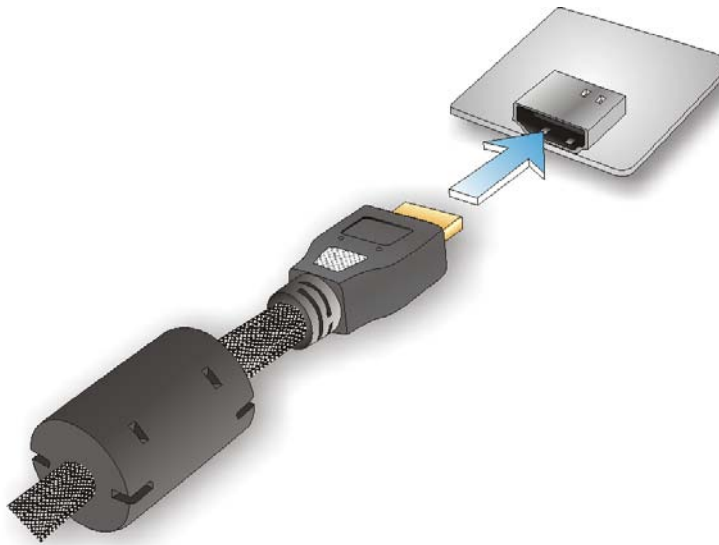


Figure 4-9: HDMI Connection

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.

4.6.2 LAN Connection

There are two external RJ-45 LAN connectors on the external peripheral interface panel. The RJ-45 connector enables 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 connector.** The location of the LAN connector is shown in

Chapter 3.

Step 2: **Align the connector.** Align the RJ-45 connector on the LAN cable with the RJ-45 connectors on the NANO-SE-i1. See **Figure 4-10**.

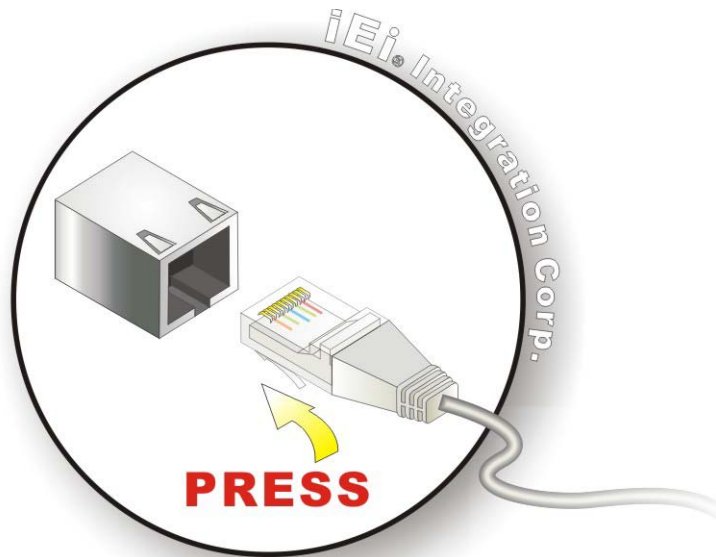


Figure 4-10: LAN Connection

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.

4.6.3 USB Connection

The external USB Series "A" receptacle connectors provide easier and quicker access to external USB devices. Follow the steps below to connect USB devices to the NANO-SE-i1.

Step 1: **Locate the USB Series "A" receptacle connectors.** The locations of the USB Series "A" receptacle connectors are shown in **Chapter 3**.

Step 2: **Insert a USB Series "A" plug.** Insert the USB Series "A" plug of a device into the USB Series "A" receptacle on the external peripheral interface. See **Figure 4-11**.

NANO-SE-i1

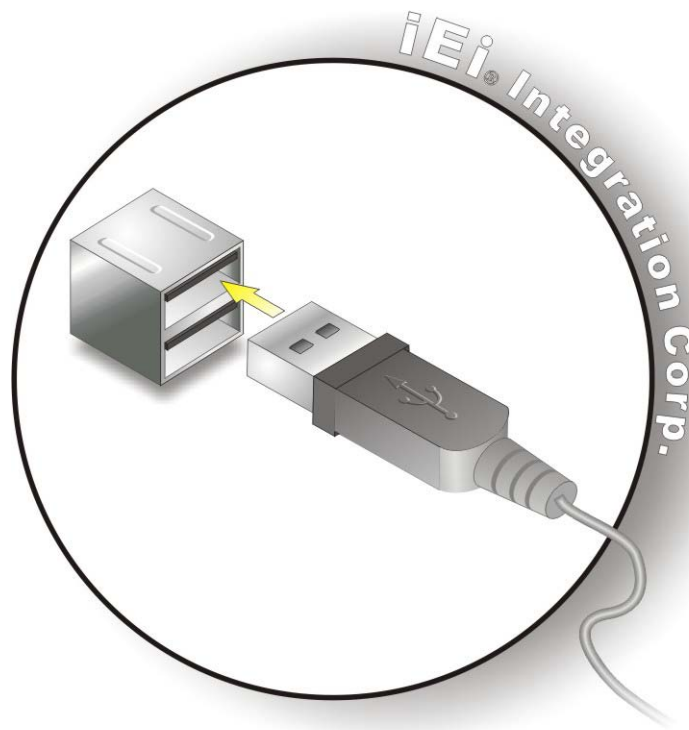


Figure 4-11: USB Connector

4.6.4 VGA Monitor Connection

The NANO-SE-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-SE-i1, please follow the instructions below.

- Step 5:** **Locate the female DB-15 connector.** The location of the female DB-15 connector is shown in **Chapter 3**.
- Step 6:** **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 7:** **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-SE-i1. See **Figure 4-12**.

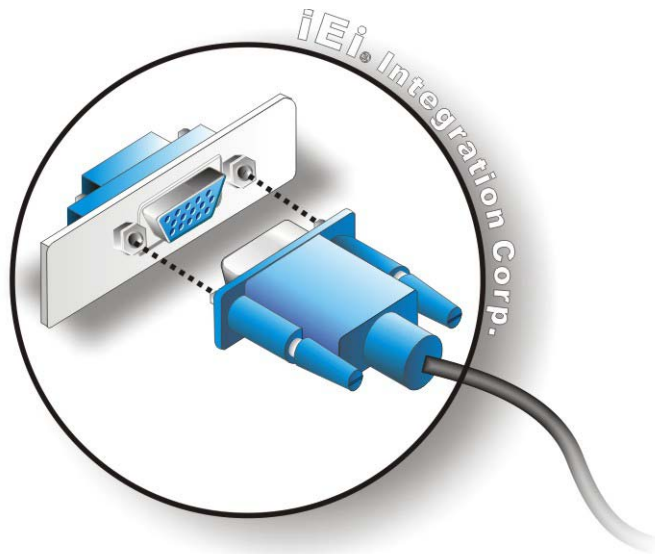


Figure 4-12: VGA Connector

Step 8: 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.

4.7 Heat Sink Enclosure



WARNING:

Never run the NANO-SE-i1 without the heat sink secured to the board. The heat sink ensures the system remains cool and does not need addition heat sinks to cool the system.

When the NANO-SE-i1 is shipped it is secured to a heat sink with eight retention screws. If the NANO-SE-i1 must be removed from the heat sink, the eight retention screws must be removed.

NANO-SE-i1

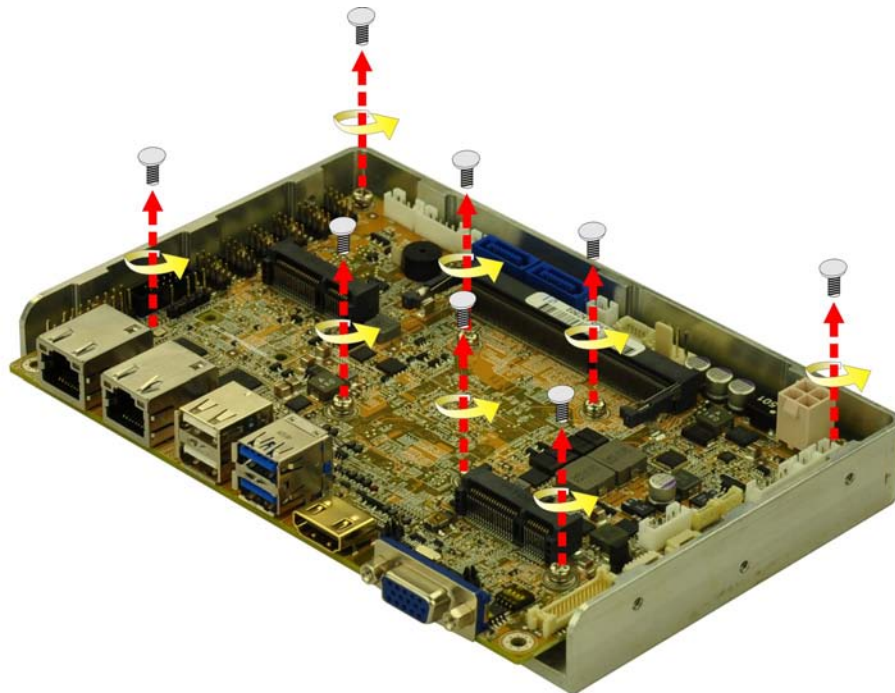


Figure 4-13: Heat Sink Retention Screws

Chapter

5

BIOS

NANO-SE-i1

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 **DELETE** or **F2** key as soon as the system is turned on or
2. Press the **DELETE** or **F2** key when the “**Press Del to enter SETUP**” message appears on the screen.

If the message disappears before the **DELETE** 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.

Key	Function
Up arrow	Move to the item above
Down arrow	Move to the item below
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	Move to the next page
Page down	Move to the previous page
Esc	Main Menu – Quit and do 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
F9	Load optimized defaults
F10	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 is made, CMOS defaults. Use the jumper described in Chapter 3.

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

NANO-SE-i1

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.

```

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
Main  Advanced  Chipset  Boot  Security  Save & Exit  Server Mgmt
-----
BIOS Information
BIOS Vendor                American Megatrends
Core Version               4.6.5.4
Compliancy                 UEFI 2.3.1; PI 1.2
Project Version            SADOAR10.rom
Build Date and Time        10/30/2014 15:36:23

iWDD Vendor                iEi
iWDD Version               SADOER10.bin

IPMI Module                N/A
Chassis Open               Opened

System Date                [Fri 01/16/2015]
System Time                [19:43:27]

Access Level                Administrator

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

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

Version 2.16.1240. Copyright (C) 2013 American Megatrends, Inc.
  
```

BIOS Menu 1: Main

➔ BIOS Information

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 Vendor:** Installed BIOS vendor
- **Core Version:** Current BIOS version
- **Compliancy:** Current compliant version
- **Project Version:** the board version
- **Build Date and Time:** Date the current BIOS version was made

- iWDD Vendor
 - The **iWDD Vendor** displays the installed iWDD vendor. The fields in **iWDD Vendor** cannot be changed.

- iWDD Version
 - The **iWDD Version** displays the current iWDD version. The fields in **iWDD Version** cannot be changed.

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.

NANO-SE-i1

```

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
Main  Advanced  Chipset  Boot  Security  Save & Exit  Server Mgmt
-----
> ACPI Settings
> Trusted Computing
> RTC Wake Settings
> CPU Configuration
> IDE Configuration
> USB Configuration
> F81866 Super IO Configuration
> F81866 H/M Monitor
> Serial Port Console Redirection

System ACPI Parameters.

-----
<->: Select Screen
↑ ↓: Select Item
EnterSelect
F1  General Help
F2  Previous Values
F3  Optimized Defaults
F4  Save
ESC Exit

Version 2.16.1240. Copyright (C) 2013 American Megatrends, Inc.
  
```

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.

```

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
-----
Advanced
-----
ACPI Settings
ACPI Sleep State          [S3 only(Suspend to...)]

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

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```

BIOS Menu 3: ACPI Configuration

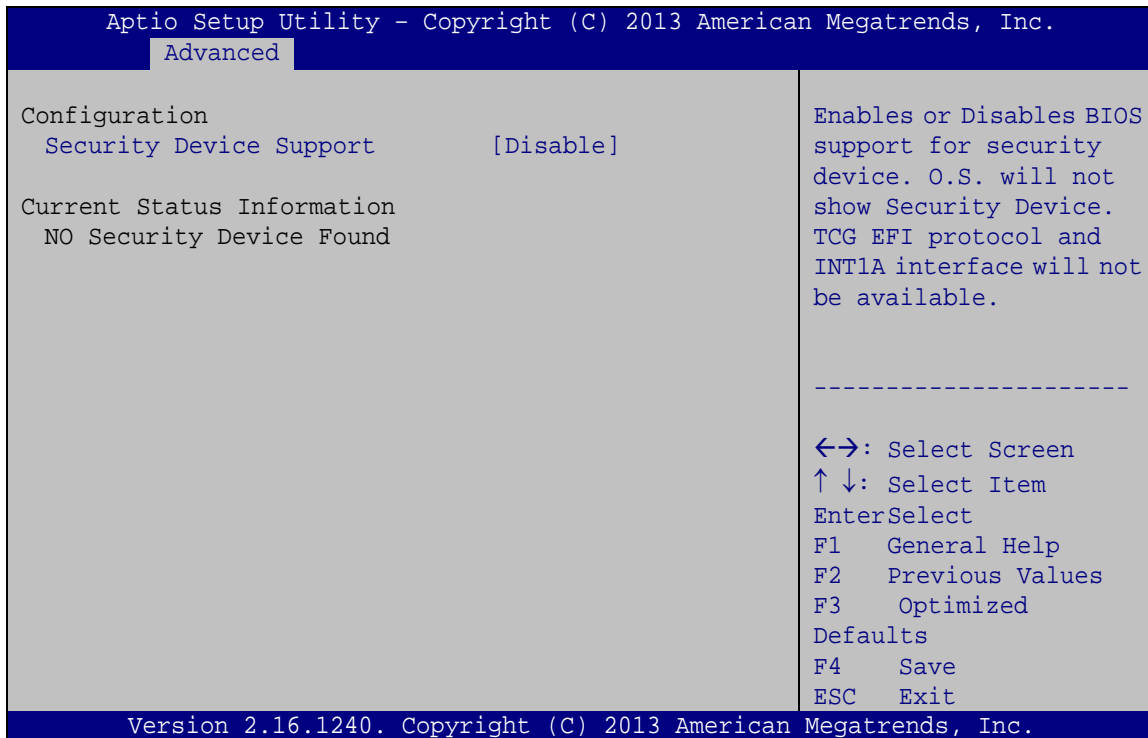
➔ ACPI Sleep State [S3 only (Suspend to RAM)]

The fields in **ACPI Sleep State** option cannot be changed.

- ➔ **Suspend Disabled** Disable the suspend function.
- ➔ **S3 only (Suspend to RAM)** **DEFAULT** 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 Trusted Computing

Use the **Trusted Computing** menu (**BIOS Menu 4**) to configure settings related to the Trusted Computing Group (TCG) Trusted Platform Module (TPM).



BIOS Menu 4: Trusted Computing

- ➔ **Security Device Support [Disable]**

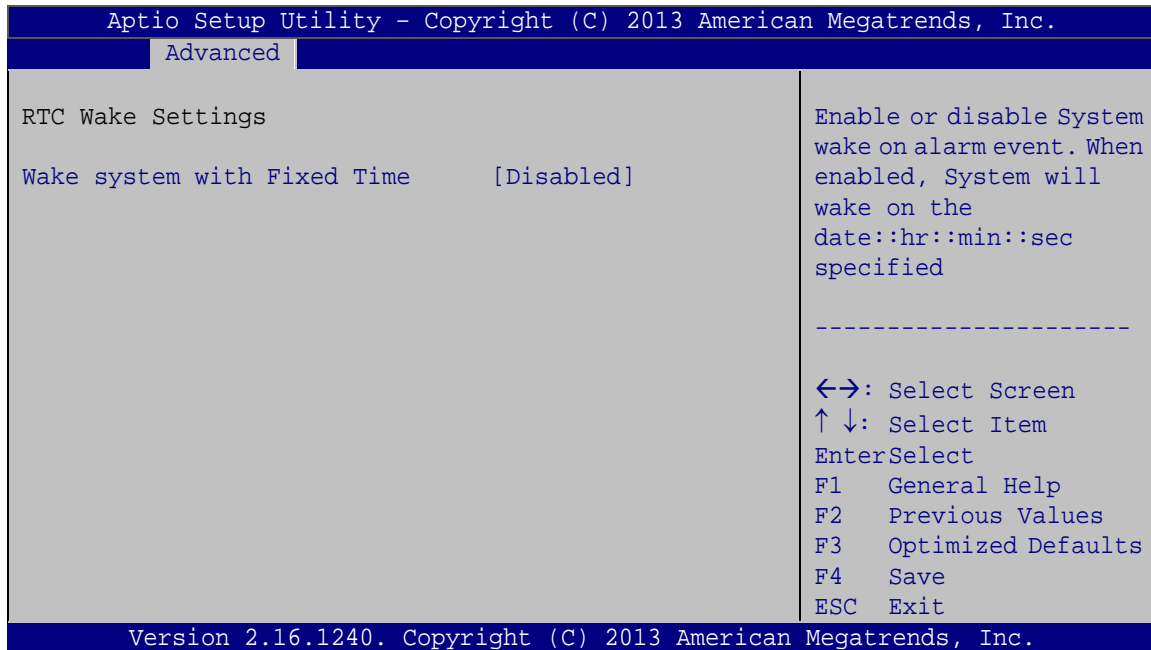
Use the **Security Device Support** option to configure support for the security device.

- ➔ **Disable** **DEFAULT** Security device support is disabled.
- ➔ **Enable** Security device support is enabled.

NANO-SE-i1

5.3.3 RTC Wake Settings

The **RTC Wake Settings** menu (**BIOS Menu 5**) configures RTC wake event.



BIOS Menu 5: 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 date

Wake up hour

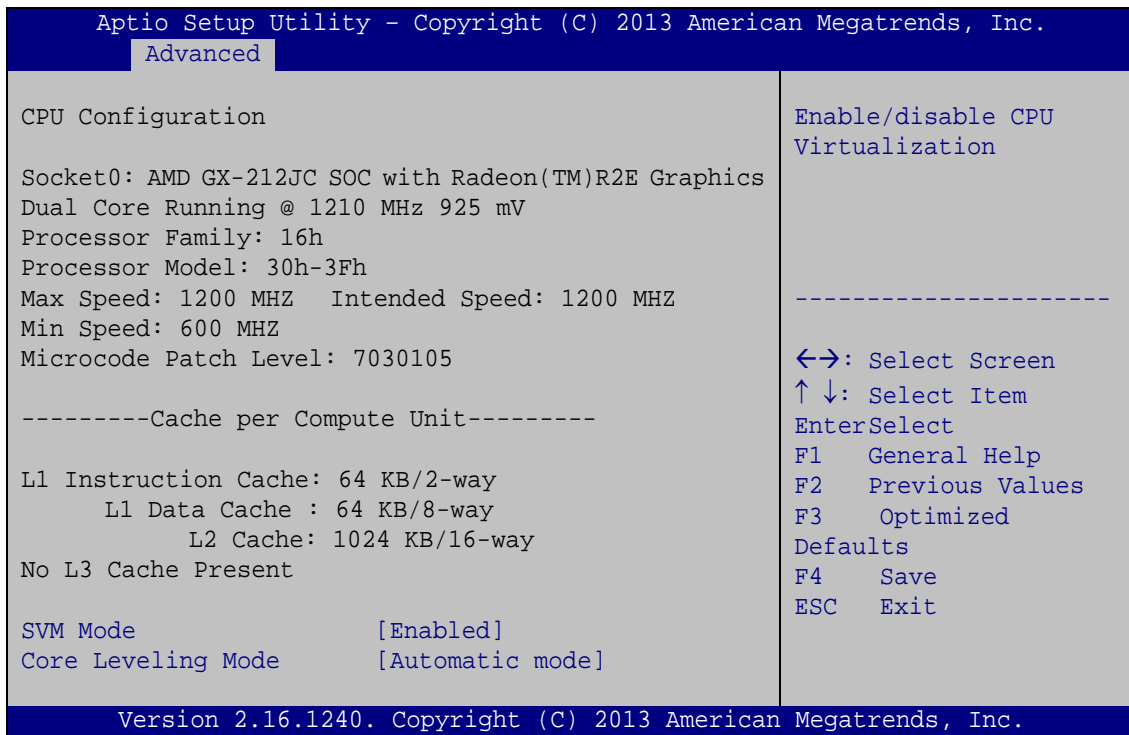
Wake up minute

Wake up second

After setting the alarm, the computer turns itself on from a suspend state when the alarm goes off.

5.3.4 CPU Configuration

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



BIOS Menu 6: CPU Configuration

→ SVM Mode [Enabled]

Use the **SVM Mode** option to enable or disable the CPU virtualization function.

- **Disabled** Disables the CPU virtualization function
- **Enabled** **DEFAULT** Enables the CPU virtualization function

NANO-SE-i1

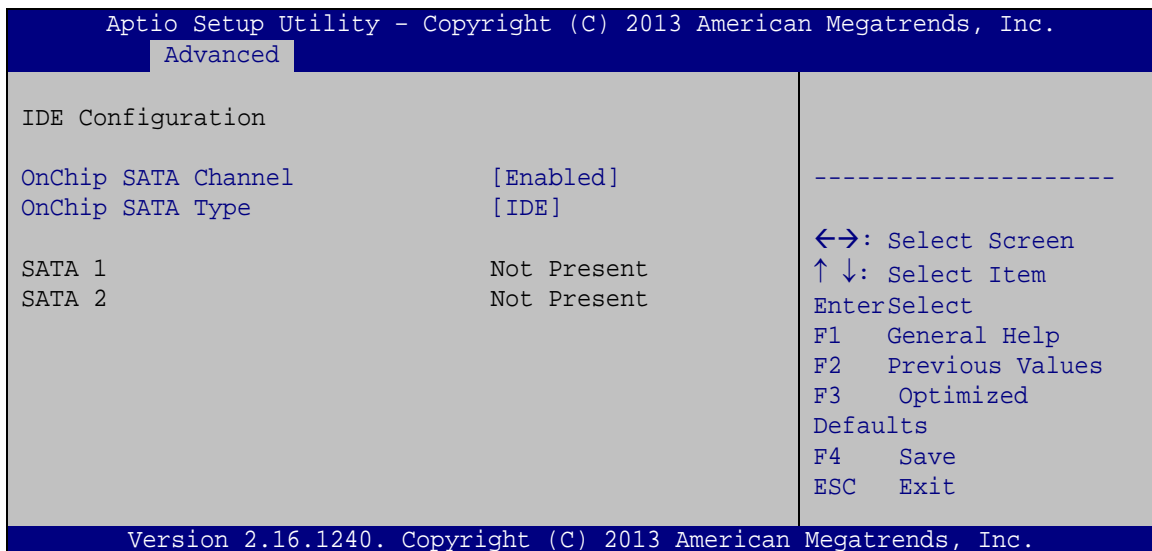
→ Core Leveling Mode [Automatic mode]

Use the **Core Leveling Mode** option to configure the number of the active processor cores.

- **Automatic mode** **DEFAULT** Active the processor cores by automatic mode
- **Three cores per processor** Active three of the processor cores
- **Two cores per processor** Active two of the processor cores
- **One core per processor** Active one of the processor cores

5.3.5 IDE Configuration

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



BIOS Menu 7: IDE Configuration

→ OnChip SATA Channel [Enabled]

Use the **OnChip SATA Channel** option to configure Onchip SATA channel.

- ➔ **Disabled** Disables Onchip SATA channel.
- ➔ **Enabled** **DEFAULT** Enables Onchip SATA channel.

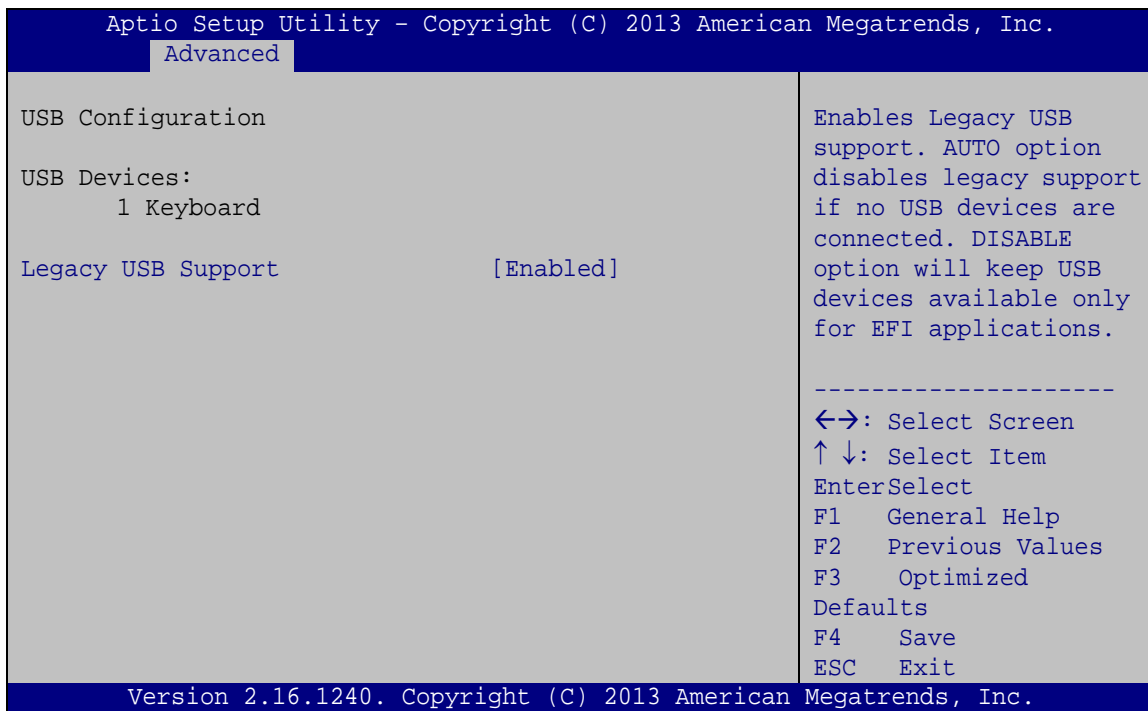
➔ OnChip SATA Type [IDE]

Use the **OnChip SATA Type** option to configure Onchip SATA type.

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

5.3.6 USB Configuration

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



BIOS Menu 8: USB Configuration

➔ USB Devices

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

NANO-SE-i1

➔ 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

5.3.7 F81866 Super IO Configuration

Use the **F81866 Super IO Configuration** menu (**BIOS Menu 9**) to set or change the configurations for the serial ports.

```

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
  Advanced
F81216 Super IO Configuration
Super IO Chip                Fintek F81866
> Serial Port 1 Configuration
> Serial Port 2 Configuration
> Serial Port 3 Configuration
> Serial Port 4 Configuration
> Serial Port 5 Configuration
> Serial Port 6 Configuration

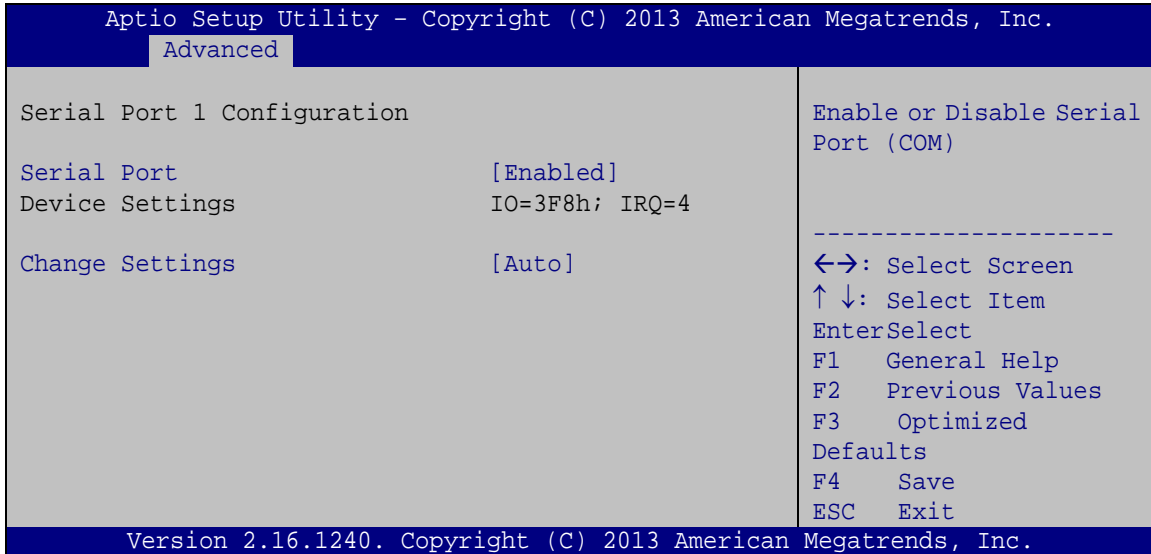
Set Parameters of Serial
Port 1 (COMA)
-----
<->: Select Screen
↑ ↓: Select Item
Enter>Select
F1  General Help
F2  Previous Values
F3  Optimized
Defaults
F4  Save
ESC Exit

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```

BIOS Menu 9: Super IO Configuration

5.3.7.1 Serial Port n Configuration

Use the **Serial Port n Configuration** menu (**BIOS Menu 10**) to configure the serial port n.



BIOS Menu 10: Serial Port n Configuration Menu

5.3.7.1.1 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

NANO-SE-i1

- ➔ **IO=3F8h; IRQ=3, 4,5,6,7,10,11,12** Serial Port I/O port address is 3F8h and the interrupt address is IRQ3,4,5,6,7,10,11,12
- ➔ **IO=2F8h; IRQ=3, 4,5,6,7,10,11,12** Serial Port I/O port address is 2F8h and the interrupt address is IRQ3,4,5,6,7,10,11,12
- ➔ **IO=3E8h; IRQ=3, 4,5,6,7,10,11,12** Serial Port I/O port address is 3E8h and the interrupt address is IRQ3,4,5,6,7,10,11,12
- ➔ **IO=2E8h; IRQ=3, 4,5,6,7,10,11,12** Serial Port I/O port address is 2E8h and the interrupt address is IRQ3,4,5,6,7,10,11,12

5.3.7.1.2 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, 4,5,6,7,10,11,12** Serial Port I/O port address is 3F8h and the interrupt address is IRQ3,4,5,6,7,10,11,12
- ➔ **IO=2E8h; IRQ=3, 4,5,6,7,10,11,12** Serial Port I/O port address is 2E8h and the interrupt address is IRQ3,4,5,6,7,10,11,12
- ➔ **IO=3E8h; IRQ=3, 4,5,6,7,10,11,12** Serial Port I/O port address is 3E8h and the interrupt address is IRQ3,4,5,6,7,10,11,12

- ➔ **IO=2E8h; IRQ=3, 4,5,6,7,10,11,12** Serial Port I/O port address is 2E8h and the interrupt address is IRQ3,4,5,6,7,10,11,12

5.3.7.1.3 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=10** Serial Port I/O port address is 3E8h and the interrupt address is IRQ10
- ➔ **IO=3E8h; IRQ=3, 4,5,6,7,10,11,12** Serial Port I/O port address is 3E8h and the interrupt address is IRQ3,4,5,6,7,10,11,12
- ➔ **IO=2E8h; IRQ=3, 4,5,6,7,10,11,12** Serial Port I/O port address is 2E8h and the interrupt address is IRQ3,4,5,6,7,10,11,12
- ➔ **IO=2D0h; IRQ=3, 4,5,6,7,10,11,12** Serial Port I/O port address is 2D0h and the interrupt address is IRQ3,4,5,6,7,10,11,12
- ➔ **IO=2D8h; IRQ=3, 4,5,6,7,10,11,12** Serial Port I/O port address is 2D8h and the interrupt address is IRQ3,4,5,6,7,10,11,12

NANO-SE-i1

5.3.7.1.4 Serial Port 4 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=2E8h; IRQ=10** Serial Port I/O port address is 2E8h and the interrupt address is IRQ10
- **IO=3E8h; IRQ=3, 4,5,6,7,10,11,12** Serial Port I/O port address is 3E8h and the interrupt address is IRQ3,4,5,6,7,10,11,12
- **IO=2E8h; IRQ=3, 4,5,6,7,10,11,12** Serial Port I/O port address is 2E8h and the interrupt address is IRQ3,4,5,6,7,10,11,12
- **IO=2D0h; IRQ=3, 4,5,6,7,10,11,12** Serial Port I/O port address is 2D0h and the interrupt address is IRQ3,4,5,6,7,10,11,12
- **IO=2D8h; IRQ=3, 4,5,6,7,10,11,12** Serial Port I/O port address is 2D8h and the interrupt address is IRQ3,4,5,6,7,10,11,12

5.3.7.1.5 Serial Port 5 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=2D0h; IRQ=10 | | Serial Port I/O port address is 2D0h and the interrupt address is IRQ10 |
| → | IO=3E8h; IRQ=3,
4,5,6,7,10,11,12 | | Serial Port I/O port address is 3E8h and the interrupt address is IRQ3,4,5,6,7,10,11,12 |
| → | IO=2E8h; IRQ=3,
4,5,6,7,10,11,12 | | Serial Port I/O port address is 2E8h and the interrupt address is IRQ3,4,5,6,7,10,11,12 |
| → | IO=2D0h; IRQ=3,
4,5,6,7,10,11,12 | | Serial Port I/O port address is 2D0h and the interrupt address is IRQ3,4,5,6,7,10,11,12 |
| → | IO=2D8h; IRQ=3,
4,5,6,7,10,11,12 | | Serial Port I/O port address is 2D8h and the interrupt address is IRQ3,4,5,6,7,10,11,12 |

5.3.7.1.6 Serial Port 6 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.

NANO-SE-i1

→	Auto	DEFAULT	The serial port IO port address and interrupt address are automatically detected.
→	IO=2D8h; IRQ=10		Serial Port I/O port address is 2D8h and the interrupt address is IRQ10
→	IO=3E8h; IRQ=3, 4,5,6,7,10,11,12		Serial Port I/O port address is 3E8h and the interrupt address is IRQ3,4,5,6,7,10,11,12
→	IO=2E8h; IRQ=3, 4,5,6,7,10,11,12		Serial Port I/O port address is 2E8h and the interrupt address is IRQ3,4,5,6,7,10,11,12
→	IO=2D0h; IRQ=3, 4,5,6,7,10,11,12		Serial Port I/O port address is 2D0h and the interrupt address is IRQ3,4,5,6,7,10,11,12
→	IO=2D8h; IRQ=3, 4,5,6,7,10,11,12		Serial Port I/O port address is 2D8h and the interrupt address is IRQ3,4,5,6,7,10,11,12

5.3.8 F81866 H/W Monitor

The **F8186 H/W Monitor** menu (**BIOS Menu 11**) shows the operating temperature, fan speeds and system voltages.

```

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
Advanced
PC Health Status
Smart Fan Function [Enabled]
> Smart Fan Mode Configuration
CPU Temperature      :+62 C
SYS Temperature     :+29 C
SYS_FAN Speed       :N/A
Enable or Disable Smart Fan
-----
<->: Select Screen
↑ ↓: Select Item
Enter>Select
F1  General Help
F2  Previous Values
F3  Optimized
Defaults
F4  Save
ESC Exit
Version 2.16.1240. Copyright (C) 2013 American Megatrends, Inc.
  
```

BIOS Menu 11: Hardware Health Configuration

→ PC Health Status

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

- System Temperatures:
 - CPU Temperature
 - SYS Temperature
- Fans Speeds:
 - SYS FAN Speed

→ Smart Fan Function [Enabled]

Use the **Smart Fan Function** option to enable or disable the smart fan function.

- **Disabled** Disables the smart fan function.
- **Enabled** **DEFAULT** Enables the smart fan function.

5.3.8.1 Smart Fan Mode Configuration

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

NANO-SE-i1

```

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
  Advanced
Smart Fan Mode Configuration
SYS_FAN Smart Fan Control      [Auto Duty-Cycle Mode]
SYS Temperature 1              60
SYS Temperature 2              50
SYS Temperature 3              40
SYS Temperature 4              30

Smart Fan Mode Select
-----
<->: Select Screen
↑ ↓: Select Item
EnterSelect
+ - Change Opt.
F1  General Help
F2  Previous Values
F3  Optimized Defaults
F4  Save & Exit
ESC Exit

Version 2.16.1240. Copyright (C) 2013 American Megatrends, Inc.

```

BIOS Menu 12: Smart FAN Configuration

→ SYS_FAN Smart Fan Control [Auto Duty-Cycle Mode]

Use the **SYS_FAN Smart Fan Control** option to configure the System Smart Fan.

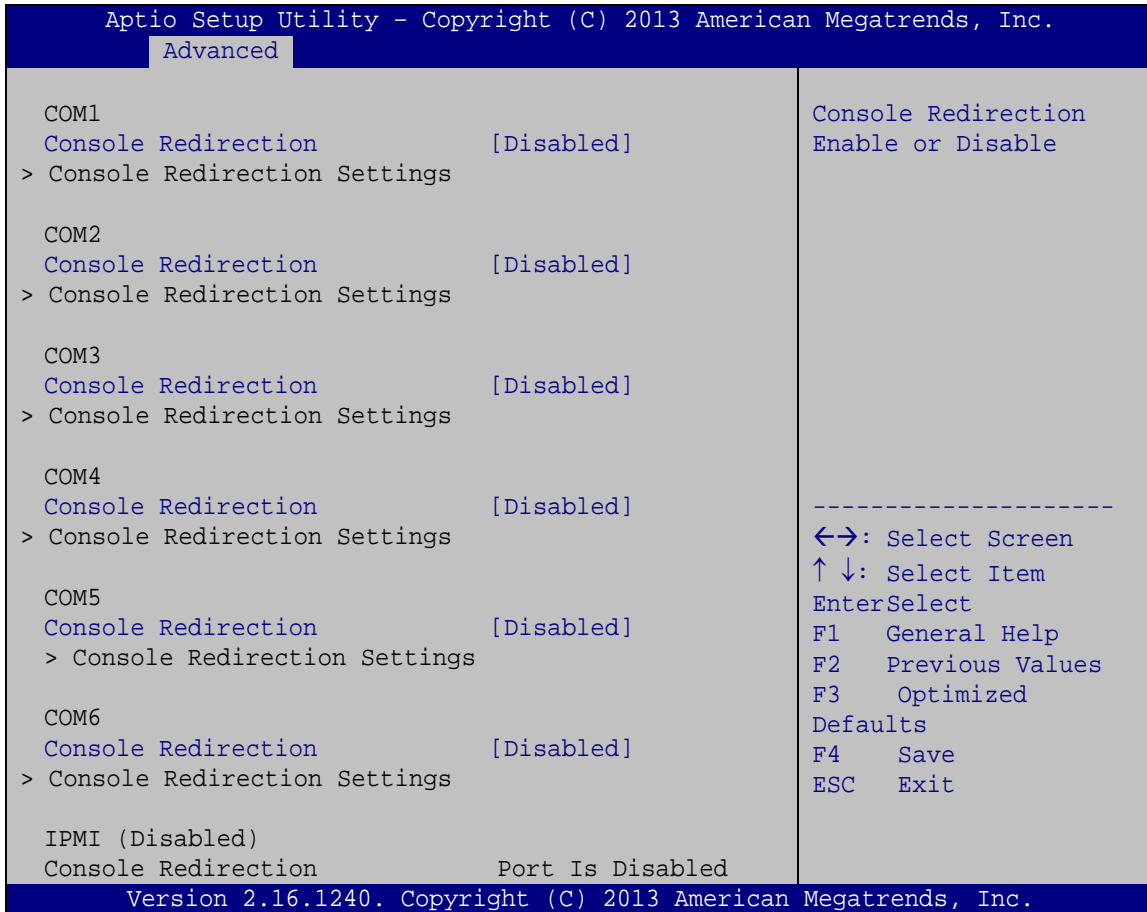
- **Manual Duty Mode** The fan spins at the speed set in Manual by Duty Cycle settings
- **Auto Duty-Cycle Mode** **DEFAULT** The fan adjusts its speed using Auto by Duty-Cycle settings

→ SYS Temperature n

Use the + or – key to change the fan **SYS Temperature n** value. Enter a decimal number between 1 and 100.

5.3.9 Serial Port Console Redirection

The **Serial Port Console Redirection** menu (**BIOS Menu 13**) 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 13: Serial Port Console Redirection

➔ Console Redirection [Disabled]

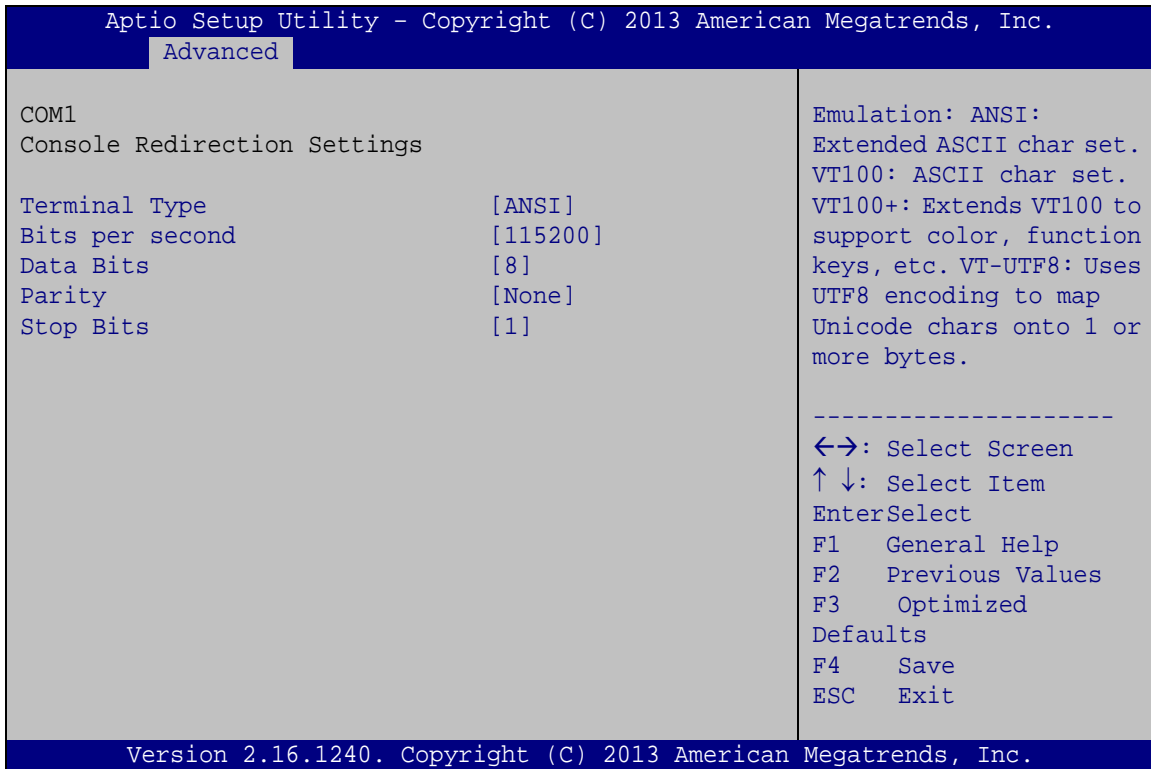
Use **Console Redirection** option to enable or disable the console redirection function.

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

NANO-SE-i1

5.3.9.1 Console Redirection Settings

The **Console Redirection Settings** menu (**BIOS Menu 14**) allows the console redirection options to be configured. The option is active when Console Redirection option is enabled.



BIOS Menu 14: Console Redirection Settings

➔ 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. |

NANO-SE-i1

→ 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.

5.4 Chipset

Use the **Chipset** menu (**BIOS Menu 15**) to access the South Bridge and North Bridge configuration menus.



WARNING!

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

```

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
Main   Advanced  Chipset  Boot   Security  Save & Exit  Server Mgmt
-----
> South Bridge
> North Bridge

South Bridge Parameters

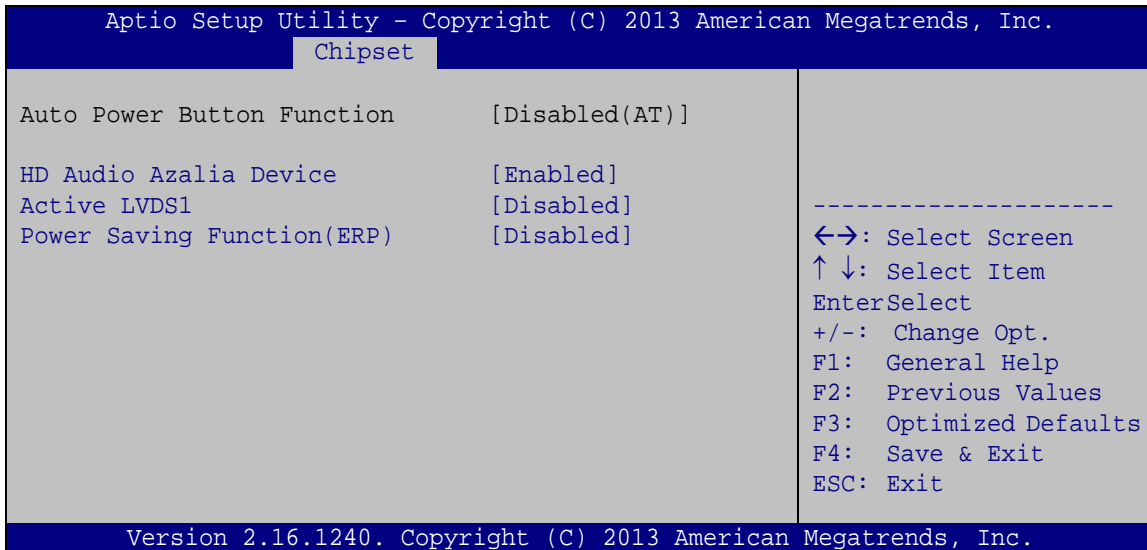
-----
<->: Select Screen
↑ ↓: Select Item
Enter>Select
F1   General Help
F2   Previous Values
F3   Optimized
Defaults
F4   Save
ESC  Exit

Version 2.16.1240. Copyright (C) 2013 American Megatrends, Inc.
    
```

BIOS Menu 15: Chipset

5.4.1 South Bridge Configuration

Use the **South Bridge Configuration** menu (**BIOS Menu 16**) to configure the South Bridge chipset.



BIOS Menu 16: South Bridge Configuration

➔ HD Audio Azalia Device [Enabled]

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

- ➔ **Auto** The onboard High Definition Audio controller will be enabled if present, disabled otherwise.
- ➔ **Disabled** The onboard High Definition Audio controller is disabled
- ➔ **Enabled** **DEFAULT** The onboard High Definition Audio controller is detected automatically and enabled

➔ Active LVDS1 [Disabled]

Use the **Active LVDS1** BIOS option to enable or disable LVDS.

- ➔ **Disabled** **DEFAULT** LVDS is disabled
- ➔ **Enabled** LVDS is enabled

NANO-SE-i1

➔ Power Saving Function (ERP) [Disabled]

Use the **Power Saving Function (ERP)** BIOS option to enable or disable the power saving function.

- ➔ **Disabled** **DEFAULT** Power saving function is disabled.
- ➔ **Enabled** Power saving function is enabled. It will reduce power consumption when the system is off.

5.4.2 North Bridge Configuration

Use the **North Bridge** menu (**BIOS Menu 17**) to view the memory information.

```

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
Chipset
-----
North Bridge Configuration

Memory Information
Memory Clock:1333 MHZ
Total Memory:2048 MB (DDR3)
Dimm1: size = 2048MB, speed = 1600MHZ

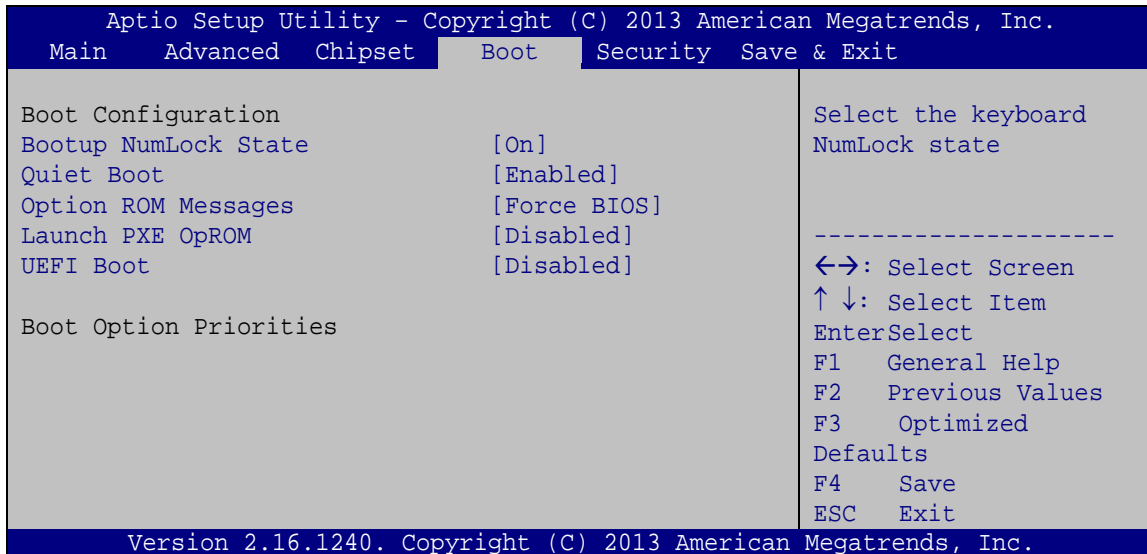
-----
<->: Select Screen
↑ ↓: Select Item
EnterSelect
+ - Change Opt.
F1 General Help
F2 Previous Values
F3 Optimized Defaults
F4 Save & Exit
ESC Exit

Version 2.16.1240. Copyright (C) 2013 American Megatrends, Inc.
    
```

BIOS Menu 17: North Bridge Configuration

5.5 Boot

Use the **Boot** menu (**BIOS Menu 17**) to configure system boot options.



BIOS Menu 18: 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.

NANO-SE-i1

→ 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** option to enable or disable to boot from the UEFI devices.

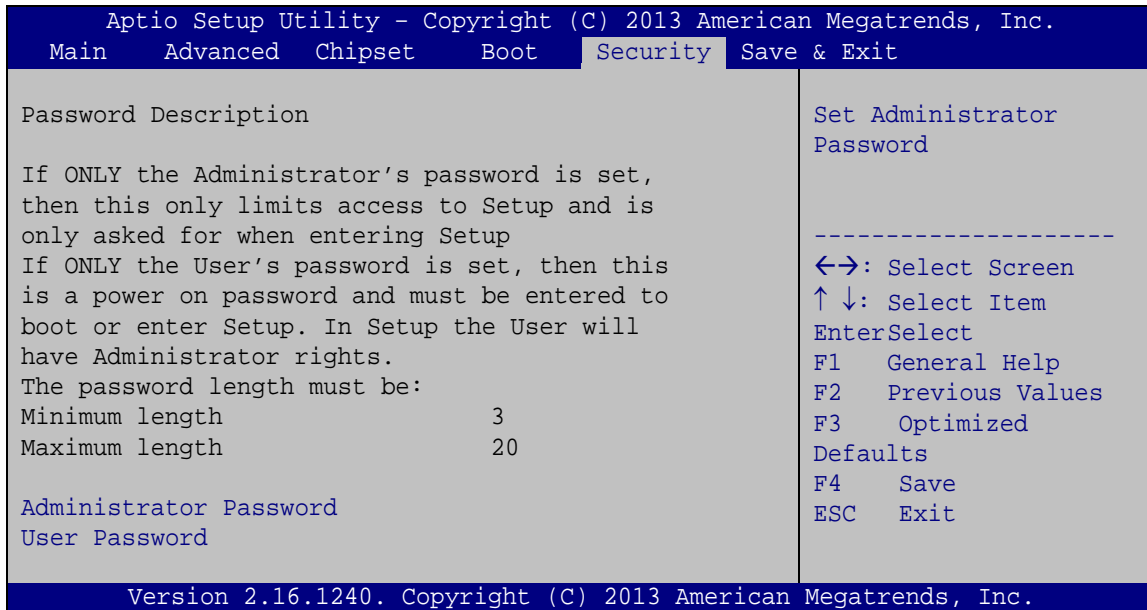
- **Auto** If the first boot HDD is GPT then enable UEFI boot options, otherwise disable,
- **Enabled** Boot from UEFI devices is enabled.
- **Disabled** **DEFAULT** Boot from UEFI devices is disabled.

→ Boot Option Priority

Use the **Boot Option Priority** function to set the system boot sequence from the available devices. The drive sequence also depends on the boot sequence in the individual device section.

5.6 Security

Use the **Security** menu (**BIOS Menu 19**) to set system and user passwords.



BIOS Menu 19: Security

➔ Administrator Password

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

➔ User Password

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

5.7 Exit

Use the **Exit** menu (**BIOS Menu 20**) to load default BIOS values, optimal failsafe values and to save configuration changes.

NANO-SE-i1

```

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
Main   Advanced  Chipset  Boot   Security  Save & Exit
-----
Save Changes and Reset
Discard Changes and Reset

Restore Defaults
Save as User Defaults
Restore User Defaults

-----
<->: Select Screen
↑ ↓: Select Item
EnterSelect
F1   General Help
F2   Previous Values
F3   Optimized
Defaults
F4   Save
ESC  Exit

Version 2.16.1240. Copyright (C) 2013 American Megatrends, Inc.

```

BIOS Menu 20: Exit

→ Save Changes and Reset

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

→ Discard Changes and Reset

Use the **Discard Changes and Reset** option to reset 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.

5.8 Server Mgmt

Use the **Server Mgmt** menu (**BIOS Menu 21**) to access the server management menus.

```
Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.
Server Mgmt
BMC Self Test Status          FAILED
> System Event Log
> BMC network configuration

Press <Enter> to change
the SEL event log
configuration.

-----

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

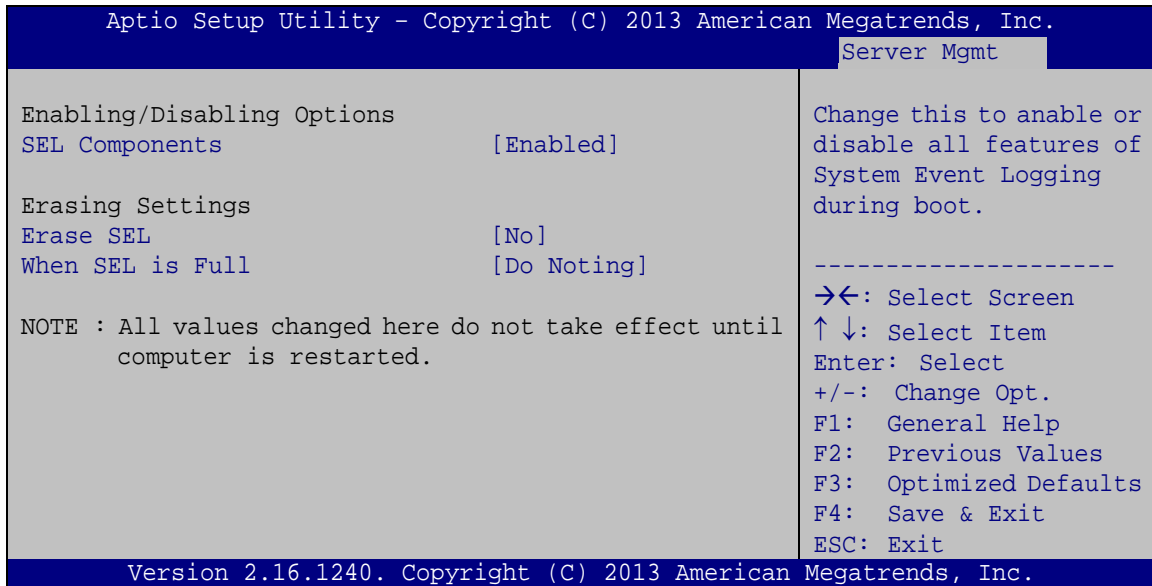
Version 2.16.1240. Copyright (C) 2013 American Megatrends, Inc.
```

BIOS Menu 21: IDE Configuration

NANO-SE-i1

5.8.1.1 System Event Log

Use the **System Event Log** menu (**BIOS Menu 22**) to configure the event log.



BIOS Menu 22: PCH Azalia Configuration Menu

→ SEL Components [Enabled]

Use the **SEL Components** option to enable or disable all features of system event logging during boot.

→ **Disabled** Disables all features of system event logging during boot.

→ **Enabled** **DEFAULT** Enables all features of system event logging during boot.

→ Erase SEL [No]

Use **Erase SEL** option to select options for erasing SEL. The following options are available:

- No **Default**
- Yes, On next reset
- Yes, On every reset

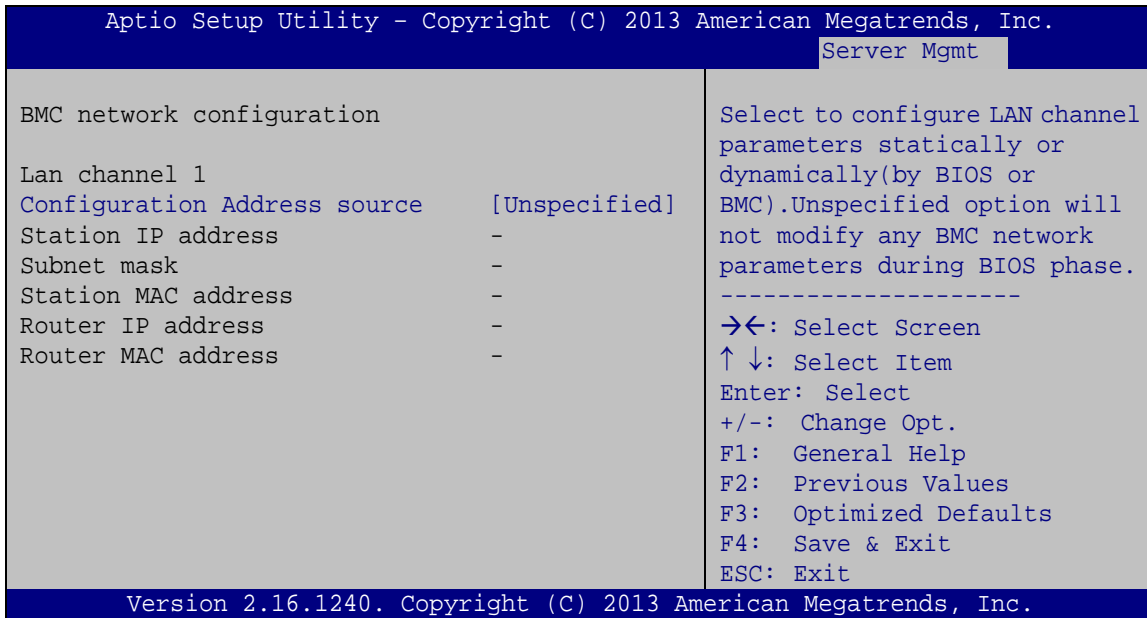
➔ When SEL is Full [Do Nothing]

Use **When SEL is FULL** option to select options for reactions to a full SEL. The following options are available:

- Do Nothing **Default**
- Erase Immediately

5.8.1.2 BMC network configuration

Use the **BMC network configuration** menu (**BIOS Menu 23**) to configure BMC network parameters.



BIOS Menu 23: PCH Azalia Configuration Menu

➔ Configuration Address source [Unspecified]

Use **Configuration Address source** option to configure LAN channel parameters. The following options are available:

- Unspecified **Default**
- Static
- Dynamic-Obtained by BMC
- Dynamic-Loaded by BIOS
- Dynamic-BMC running Other Protocol

Appendix

A

BIOS Menu Options

- ➔ BIOS Information67
- ➔ iWDD Vendor68
- ➔ iWDD Version68
- ➔ System Date [xx/xx/xx]68
- ➔ System Time [xx:xx:xx]68
- ➔ ACPI Sleep State [S3 only (Suspend to RAM)]69
- ➔ Security Device Support [Disable]70
- ➔ Wake system with Fixed Time [Disabled].....71
- ➔ SVM Mode [Enabled]72
- ➔ Core Leveling Mode [Automatic mode]73
- ➔ OnChip SATA Channel [Enabled].....73
- ➔ OnChip SATA Type [IDE]74
- ➔ USB Devices74
- ➔ Legacy USB Support [Enabled].....75
- ➔ Serial Port [Enabled].....76
- ➔ Change Settings [Auto]76
- ➔ Serial Port [Enabled].....77
- ➔ Change Settings [Auto]77
- ➔ Serial Port [Enabled].....78
- ➔ Change Settings [Auto]78
- ➔ Serial Port [Enabled].....79
- ➔ Change Settings [Auto]79
- ➔ Serial Port [Enabled].....79
- ➔ Change Settings [Auto]80
- ➔ Serial Port [Enabled].....80
- ➔ Change Settings [Auto]80
- ➔ PC Health Status82
- ➔ Smart Fan Function [Enabled].....82
- ➔ SYS_FAN Smart Fan Control [Auto Duty-Cycle Mode].....83
- ➔ SYS Temperature n83
- ➔ Console Redirection [Disabled].....84
- ➔ Terminal Type [ANSI].....85
- ➔ Bits per second [115200].....86
- ➔ Data Bits [8]86

NANO-SE-i1

→ Parity [None].....	86
→ Stop Bits [1].....	87
→ HD Audio Azalia Device [Enabled].....	88
→ Active LVDS1 [Disabled].....	88
→ Power Saving Function (ERP) [Disabled].....	89
→ Bootup NumLock State [On].....	90
→ Quiet Boot [Enabled].....	91
→ Option ROM Messages [Force BIOS].....	91
→ Launch PXE OpROM [Disabled].....	91
→ UEFI Boot [Disabled].....	91
→ Boot Option Priority.....	91
→ Administrator Password.....	92
→ User Password.....	92
→ Save Changes and Reset.....	93
→ Discard Changes and Reset.....	93
→ Restore Defaults.....	93
→ Save as User Defaults.....	93
→ Restore User Defaults.....	93
→ SEL Components [Enabled].....	95
→ Erase SEL [No].....	95
→ When SEL is Full [Do Nothing].....	96
→ Configuration Address source [Unspecified].....	96

Appendix

B

Terminology

NANO-SE-i1

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.
APM	The Advanced Power Management (APM) application program interface (API) enables the inclusion of power management in the BIOS.
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.
CMOS	Complimentary metal-oxide-conductor is a type of integrated circuit used in chips like static RAM and microprocessors.
COM	COM is used to refer to serial ports. Serial ports offer serial communication to expansion devices. The serial port on a personal

	computer is usually a male DE-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.
EHCI	The Enhanced Host Controller Interface (EHCI) specification is a register-level interface description for USB 2.0 Host Controllers.
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
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.
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.
MAC	The Media Access Control (MAC) protocol enables several terminals or network nodes to communicate in a LAN, or other multipoint networks.

NANO-SE-i1

PCIe	PCI Express (PCIe) is a communications bus that uses dual data lines for full-duplex (two-way) serial (point-to-point) communications between the SBC components and/or expansion cards and the SBC chipsets. Each line has a 2.5 Gbps data transmission rate and a 250 MBps sustained data transfer rate.
POST	The Power-on Self Test (POST) is the pre-boot actions the system performs when the system is turned-on.
QVGA	Quarter Video Graphics Array (QVGA) refers to a display with a resolution of 320 x 240 pixels.
RAM	Random Access Memory (RAM) is a form of storage used in computer. RAM is volatile memory, so it loses its 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. The SATA bus has transfer speeds up to 1.5 Gbps and the SATA 3Gb/s bus has data transfer speeds of up to 3.0 Gbps.
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, while

USB 2.0 supports 480Mbps data transfer rates.

VGA

The Video Graphics Array (VGA) is a graphics display system developed by IBM.

Appendix

C

Watchdog Timer

**NOTE:**

The following discussion applies to DOS environment. IEI support is contacted or the IEI website visited for specific drivers for more sophisticated operating systems, e.g., Windows and Linux.

The Watchdog Timer is provided to ensure that standalone systems can always recover from catastrophic conditions that cause the CPU to crash. This condition may have occurred by external EMI or a software bug. When the CPU stops working correctly, Watchdog Timer either performs a hardware reset (cold boot) or a Non-Maskable Interrupt (NMI) to bring the system back to a known state.

A BIOS function call (INT 15H) is used to control the Watchdog Timer:

INT 15H:

AH – 6FH Sub-function:	
AL – 2:	Sets the Watchdog Timer's period.
BL:	Time-out value (Its unit-second is dependent on the item "Watchdog Timer unit select" in CMOS setup).

Table C-1: AH-6FH Sub-function

Call sub-function 2 to set the time-out period of Watchdog Timer first. If the time-out value is not zero, the Watchdog Timer starts counting down. While the timer value reaches zero, the system resets. To ensure that this reset condition does not occur, calling sub-function 2 must periodically refresh the Watchdog Timer. However, the Watchdog timer is disabled if the time-out value is set to zero.

A tolerance of at least 10% must be maintained to avoid unknown routines within the operating system (DOS), such as disk I/O that can be very time-consuming.

**NOTE:**

When exiting a program it is necessary to disable the Watchdog Timer, otherwise the system resets.

Example program:

```
; INITIAL TIMER PERIOD COUNTER
```

```
;
```

```
W_LOOP:
```

```
    MOV    AX, 6F02H    ;setting the time-out value
```

```
    MOV    BL, 30H      ;time-out value is 48 seconds
```

```
    INT    15H
```

```
;
```

```
; ADD THE APPLICATION PROGRAM HERE
```

```
;
```

```
    CMP    EXIT_AP, 1    ;is the application over?
```

```
    JNE    W_LOOP        ;No, restart the application
```

```
    MOV    AX, 6F02H    ;disable Watchdog Timer
```

```
    MOV    BL, 0        ;
```

```
    INT    15H
```

```
;
```

```
; EXIT ;
```

Appendix

D

Hazardous Materials Disclosure

NANO-SE-i1

D.1 Hazardous Material 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

NANO-SE-i1

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	○	○	○	○	○	○
显示	○	○	○	○	○	○
印刷电路板	○	○	○	○	○	○
金属螺帽	○	○	○	○	○	○
电缆组装	○	○	○	○	○	○
风扇组装	○	○	○	○	○	○
电力供应组装	○	○	○	○	○	○
电池	○	○	○	○	○	○
<p>○: 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。</p> <p>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。</p>						