IEI Integration Corp.

MODEL:

gKINO-V/R1000

Mini-ITX SBC supports AMD® Ryzen™ Embedded V1000/R1000 Series Onboard SoC, DDR4, Triple/Quadruple DP, Dual GbE, M.2, SATA 6Gb/s, USB 3.2 Gen 1, COM, TPM 2.0, HD Audio and RoHS

User Manual

Rev. 1.00 - September 1, 2020

RoHS Lead Free

Revision

Date	Version	Changes
September 1, 2020	1.00	Initial release

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Manual Conventions

WARNING

Warnings appear where overlooked details may cause damage to the equipment or result in personal injury. Warnings should be taken seriously.

CAUTION

Cautionary messages should be heeded to help reduce the chance of losing data or damaging the product.

NOTE

These messages inform the reader of essential but non-critical information. These messages should be read carefully as any directions or instructions contained therein can help avoid making mistakes.

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Introduction

1.1 Introduction

Figure 1-1: gKINO-V/R1000

The gKINO-V/R1000 series is a Mini-ITX form factor single bard computer. It has an on-board AMD® Ryzen™ Embedded V1000/R1000 series processor, and supports two 260-pin 2400 MHz dual-channel ECC DDR4 SO-DIMM slots with up to 64.0 GB of memory.

The gKINO-V/R1000 series supports up to four external DisplayPort connectors for quadruple 4K independent display. Expansion and I/O include one PCIe x16 slot (x8 mode) and one M.2 M-key slot for expansion; two USB 3.2 Gen 1 (5Gb/s) ports and two USB 2.0 ports on the rear panel, two USB 2.0 connectors by pin header and one SATA 6Gb/s connector. Serial device connectivity is provided by two external RS-232 connectors, four internal RS-232 connectors and two ccTalk connectors. Two RJ-45 GbE connectors provide the system with smooth connections to an external LAN.

1.2 Model Variations

The model variations of the gKINO-V/R1000 series are listed below.

Model No.	SoC	DisplayPort #
gKINO-V1605B	AMD® Ryzen™ Embedded V1605B	4
gKINO-V1202B	AMD® Ryzen™ Embedded V1202B	4
gKINO-R1606G	AMD® Ryzen™ Embedded R1606G	3
gKINO-R1505G	AMD® Ryzen™ Embedded R1505G	3

Table 1-1: Model Variations

1.3 Features

Some of the gKINO-V/R1000 motherboard features are listed below:

- Mini-ITX motherboard supports AMD® Ryzen™ Embedded V1000/R1000 series on-board SoC
- Quadruple/Triple independent display via DisplayPort
- Two 2400 MHz DDR4 SO-DIMM slots support up to 64 GB of memory
- One SATA 6Gb/s connector with 5 V and 12 V power output
- M.2 2242/2280 M-key modules (SATA or PCIe) supported
- One PCIe x16 (x8 mode) slot for expansions
- Two external USB 3.2 Gen 1 (5Gb/s) connectors
- Multiple RS-232 ports with ccTalk TTL support
- Chassis intrusion detect pin and ECC support in gaming applications
- TPM 2.0 hardware security function supported by TPM module

1.4 Connectors

The connectors on the gKINO-V/R1000 are shown in the figures below.

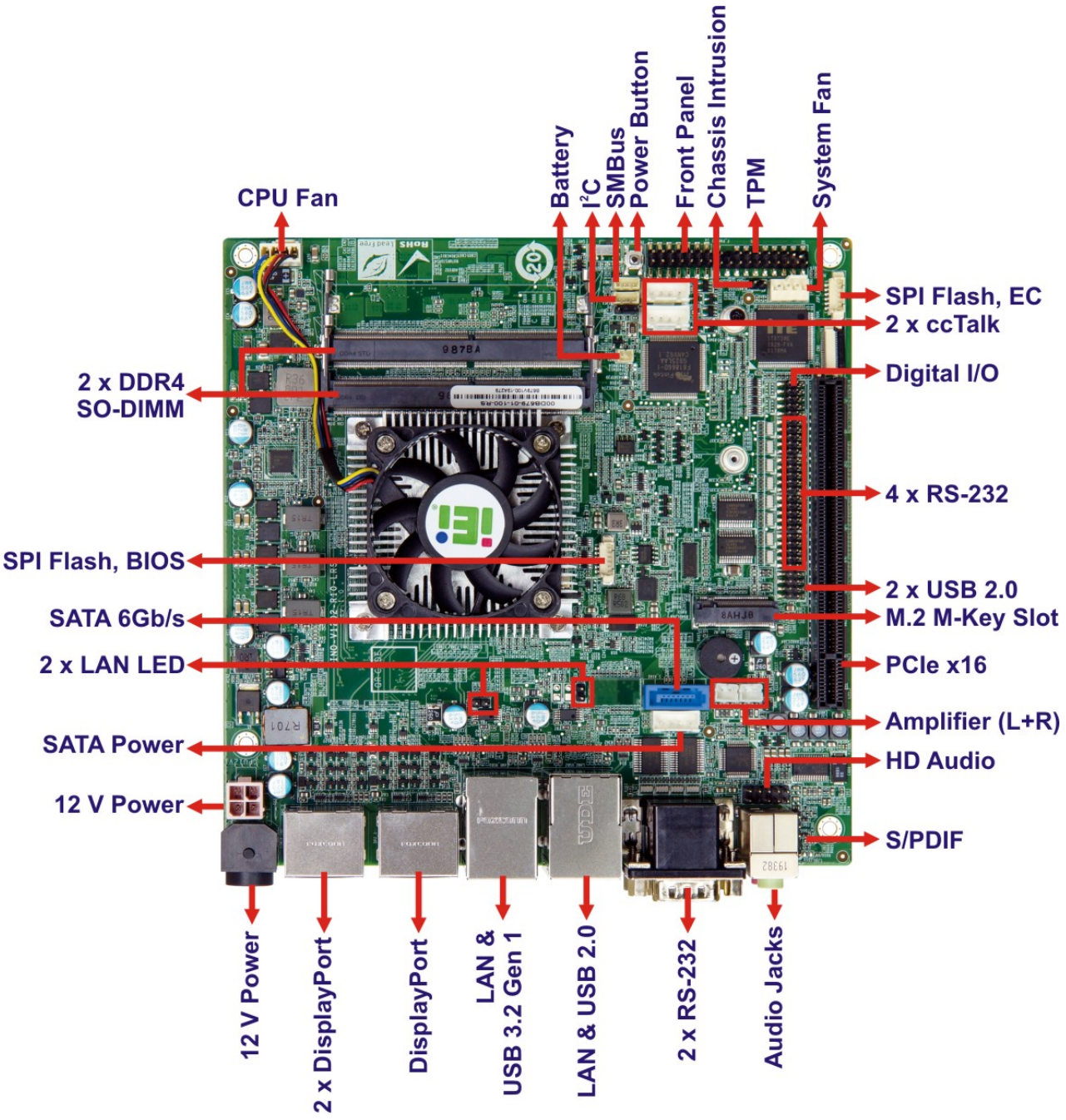


Figure 1-2: Connectors

1.5 Dimensions

The dimensions of the two models are listed below:

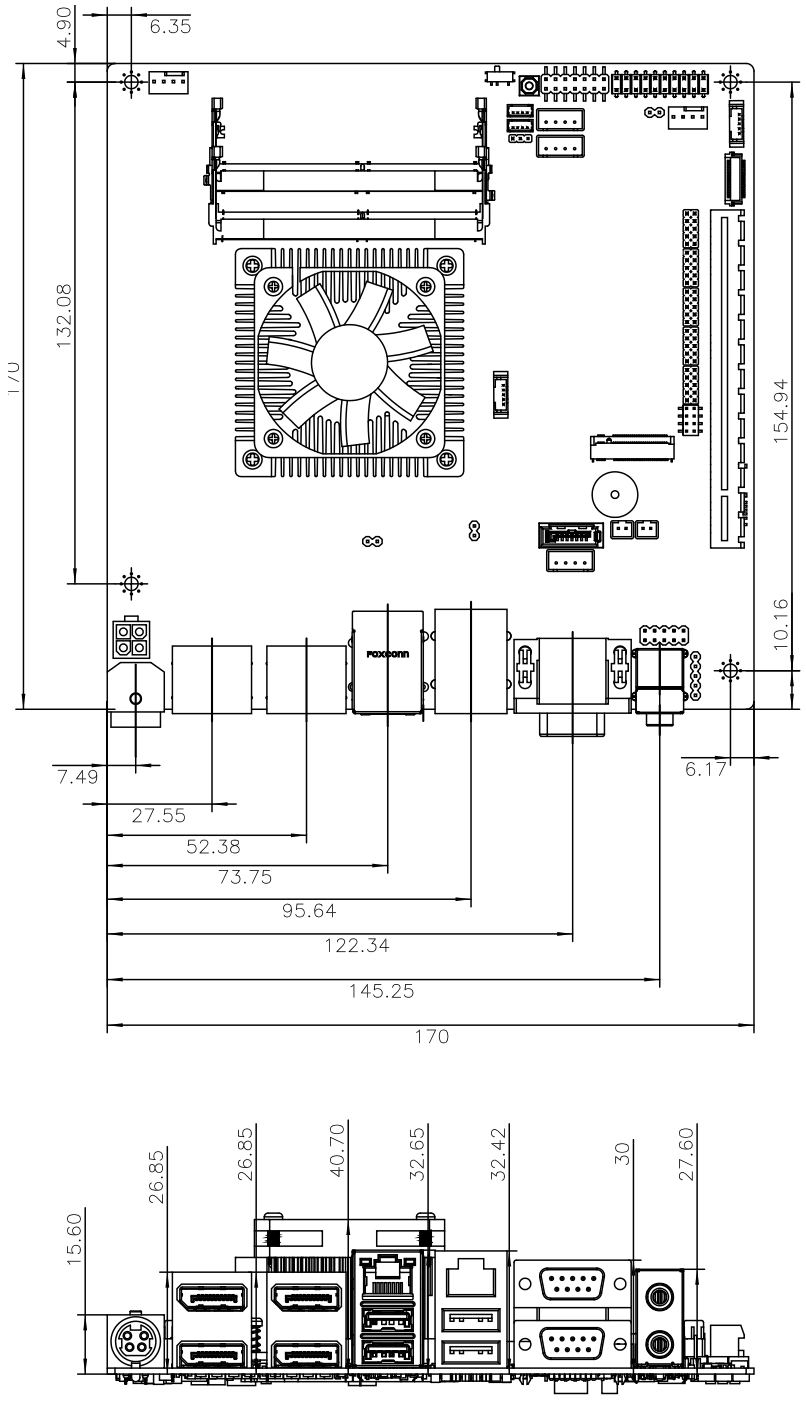


Figure 1-3: gKINO-V1000 Dimensions (mm)

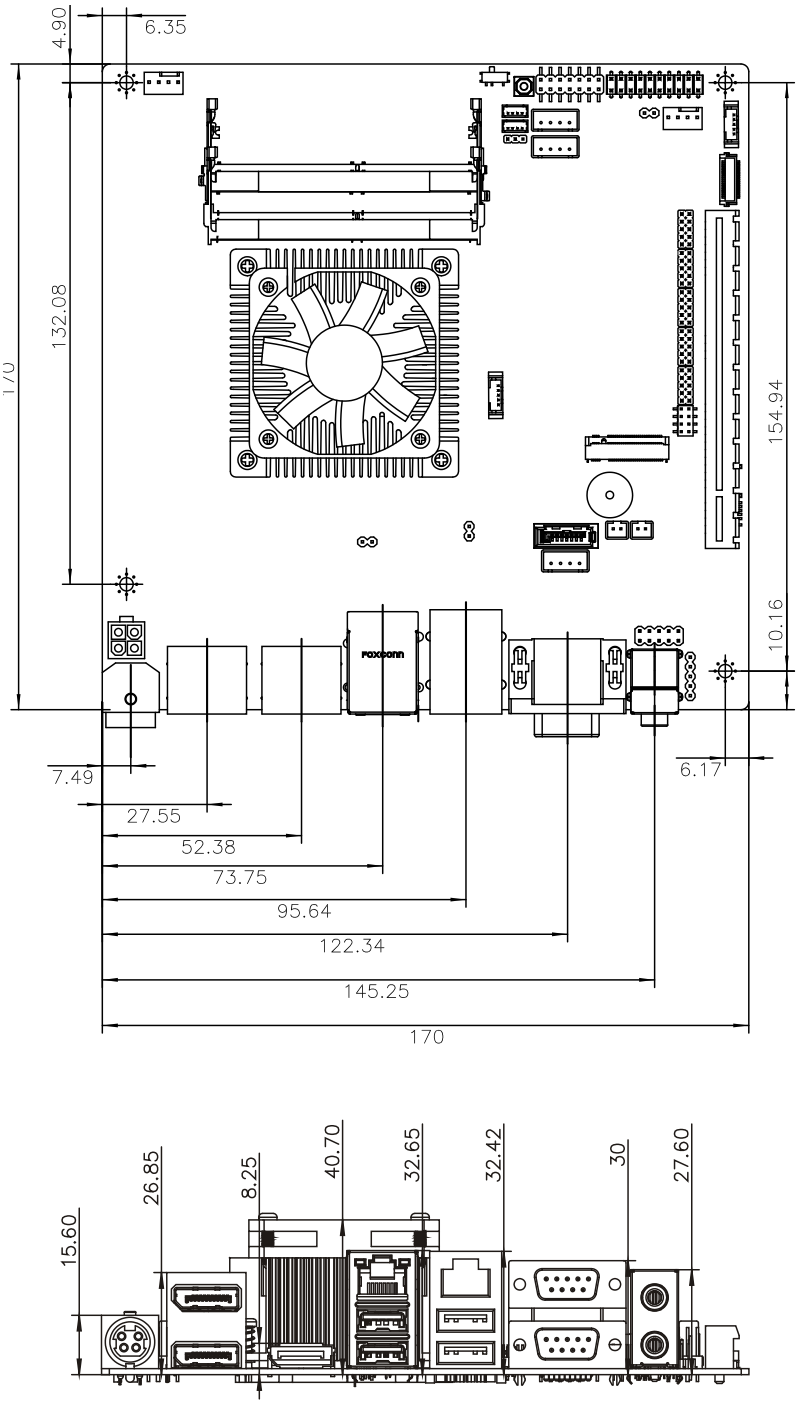


Figure 1-4: gKINO-R1000 Dimensions (mm)

1.6 Data Flow

Figure 1-5 shows the data flow between the system chipset, the CPU and other components installed on the motherboard.

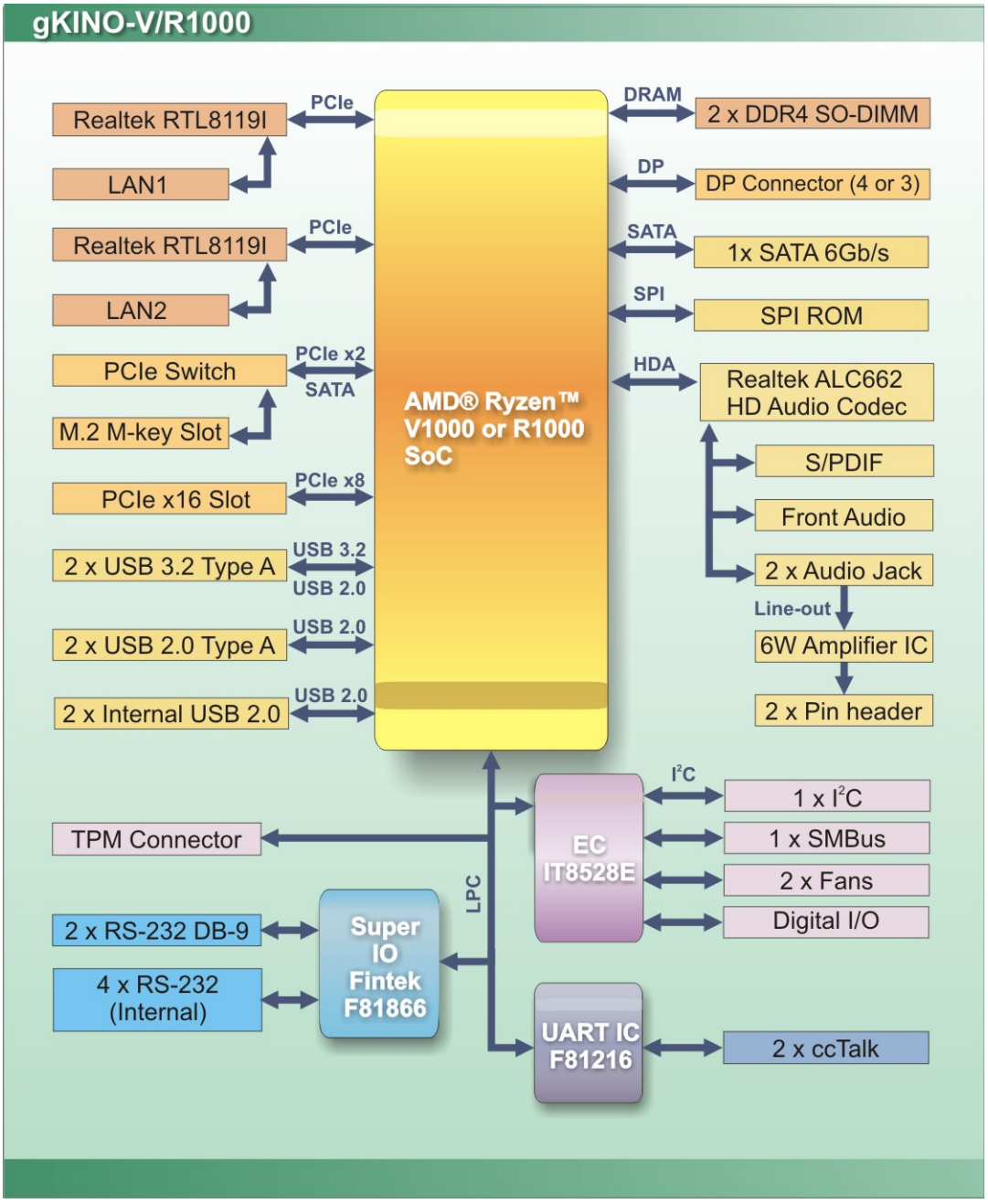


Figure 1-5: Data Flow Diagram

1.7 Technical Specifications

gKINO-V/R1000 technical specifications are listed below.

Specification	gKINO-V/R1000
Form Factor	Mini-ITX
SoC	AMD® Ryzen™ Embedded V1605B (quad core, 2 MB cache, 8 CU, 2.0 GHz / up to 3.6 GHz, 12 W – 25 W) AMD® Ryzen™ Embedded V1202B (dual core, 1 MB cache, 3 CU, 2.3 GHz / up to 3.2 GHz, 12 W – 25W) AMD® Ryzen™ Embedded R1606G (dual core, 1 MB cache, 3 CU, 2.6 GHz / up to 3.5 GHz, 12 W – 25W) AMD® Ryzen™ Embedded R1505G (dual core, 1 MB Cache, 3 CU, 2.4 GHz / up to 3.3GHz, 12 W – 25W)
BIOS	AMI UEFI BIOS
Memory	Two 260-pin 2400 MHz DDR4 SDRAM SO-DIMM slots with ECC support (system max. 64 GB)
Graphics	AMD Radeon™ VEGA series graphics AMD Radeon™ GPUs (Radeon™ HD 7000 series), support DX11, UVD3 H.264, VC-1, MPEG-2, DivX Direct X® 11, Open CL™ 1.1, OpenGL 4.2 (OpenGL 4.2 and future OpenGL 4.3 will be supported when the driver upgrade is available for AMD Gen 2 R processors)
Display Output	**gKINO-V1000**: 4 x DP (4K UHD, 3840x2160) **gKINO-R1000**: 3 x DP (4K UHD, 3840x2160)
Ethernet	Dual Realtek RTL8119I PCIe GbE controller
Digital I/O	8-bit digital I/O by 10-pin (2x5) header
Super IO	Fintek F81866
Audio	Realtek ALC662 HD audio codec
Watchdog Timer	Software programmable support 1~255 sec. system reset

Specification	gKINO-V/R1000
I/O Interface	
Audio Connector	1 x Digital output connector (S/PDIF) 2 x 6W audio amplifier connector (L+R) 2 x Audio jack (line-out and mic-in) 1 x Front audio connector by 10-pin (2x5) header
Ethernet	2 x RJ-45 GbE port
Serial Ports	2 x RS-232 by DB-9 on rear I/O 4 x RS-232 by 10-pin (2x5) header 2 x RS-232 (supports ccTalk, TTL) by 4-pin (1x4) wafer
USB Ports	2 x USB 3.2 Gen 1 (5Gb/s) on rear I/O 2 x USB 2.0 on rear I/O 2 x USB 2.0 by 8-pin (2x4) header
Front Panel	1 x Front panel connector by 14-pin (2x7) header for power LED, HDD LED, speaker, power button and reset button
LAN LED	2 x LAN link LED connector by 2-pin header
Fan	1 x CPU smart fan connector by 4-pin (1x4) wafer 1 x System smart fan connector by 4-pin (1x4) wafer
SMBus	1 x SMBus connector by 4-pin (1x4) wafer
I^2C	1 x I^2C connector by 4-pin (1x4) wafer
TPM	1 x TPM connector by 20-pin (2x10) header
Chassis Intrusion	1 x Chassis intrusion connector by 2-pin (1x2) header
Storage	1 x SATA 6Gb/s with 5 V /12 V SATA power connector
Expansion	1 x M.2 2242/2280 M-key slot (SATA + PCIe x2 signal) 1 x PCIe x16 slot (with PCIe 3.0 x8 signal)
Environmental and Power Specifications	
Power Supply	12 V DC input (AT/ATX support)
Power Connector	1 x External DC power jack (4-pin DIN) 1 x Internal power connector by 4-pin (2x2) connector

Specification	gKINO-V/R1000
Power Consumption	12 V @ 5.144 A (AMD Ryzen V1605B 2.0 GHz CPU with 32 GB 2666 MHz DDR4 memory) 12 V @ 5.146 A (AMD Ryzen R1606G 2.6 GHz CPU with 32 GB 2666 MHz DDR4 memory)
Temperature	Operating: 0°C ~ 60°C Storage: -10°C ~ 70°C
Humidity	5% ~ 95%, non-condensing
Safety	CE, FCC
Physical Specifications	
Dimensions	170 mm x 170 mm
Weight GW/NW	900 g / 400 g

Table 1-2: Technical Specifications

Chapter

2

Unpacking

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 gKINO-V/R1000 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 gKINO-V/R1000 was purchased from or contact an IEI sales representative directly by sending an email to sales@ieiworld.com.

The gKINO-V/R1000 is shipped with the following components:

Quantity	Item and Part Number	Image
1	gKINO-V/R1000 single board computer	
1	SATA cable	
1	I/O shielding for gKINO-V1000	
	I/O shielding for gKINO-R1000	
1	Quick Installation Guide	

2.4 Optional Items

The following are optional components which may be separately purchased:

Item and Part Number	Image
Dual USB cable (with bracket), 300mm, P=2.0 (**P/N**: CB-USB02A-RS)	
RS-232 cable, 300mm, P=2.0 (**P/N:** 19800-000300-100-RS)	
Infineon TPM module, 20-pin, firmware v5.5 (**P/N**: TPM-IN02-R20)	

Chapter

3

Connectors

3.1 Peripheral Interface Connectors

This chapter details all the jumpers and connectors.

3.1.1 gKINO-V/R1000 Layout

The figures below show all the connectors and jumpers.

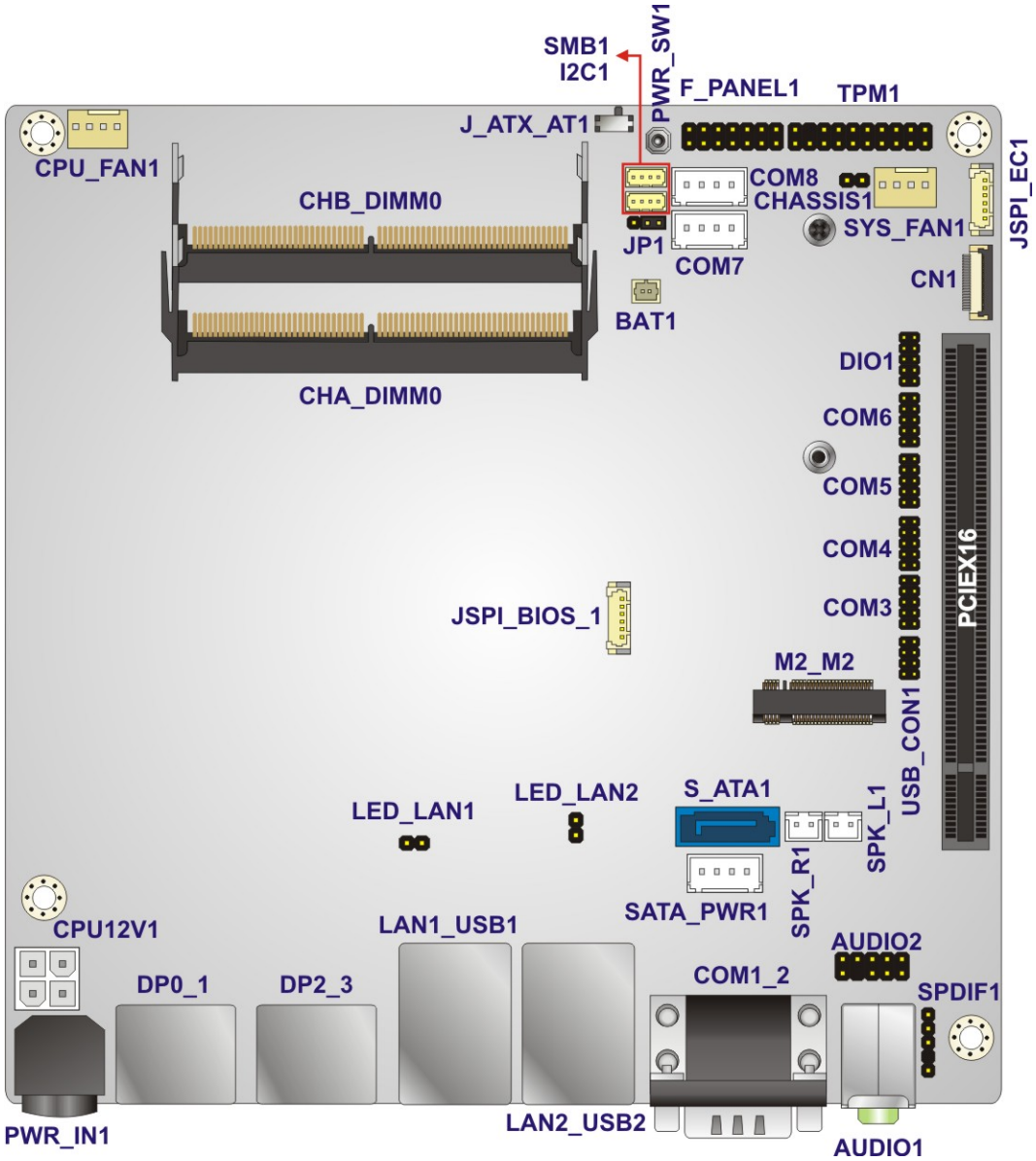


Figure 3-1: Connector and Jumper Locations

3.1.2 Peripheral Interface Connectors

The table below lists all the connectors on the board.

Connector	Type	Label
12 V DC-IN power connector	4-pin Molex	CPU12V1
Audio connector	10-pin header	AUDIO2
Audio amplifier connectors	2-pin wafer	SPK_L1, SPK_R1
Battery connector	2-pin wafer	BAT1
ccTalk connectors	4-pin wafer	COM7, COM8
Chassis intrusion connector	2-pin header	CHASSIS1
Digital I/O connector	10-pin header	DIO1
EC debug connector	20-pin FPC	CN1
Fan connector, CPU	4-pin wafer	CPU_FAN1
Fan connector, system	4-pin wafer	SYS_FAN1
Front panel connector	14-pin header	F_PANEL1
I^2C connector	4-pin wafer	I2C1
LAN LED connectors	2-pin header	LED_LAN1, LED_LAN2
M.2 slot	M.2 M-key slot	M2_M2
Memory slots	260-pin DDR4 SO-DIMM	CHA_DIMM0, CHB_DIMM0
PCIe x16 slot	PCIe x16 slot	PCIEX16
Power button	On-board power button	PWR_SW1
RS-232 serial port connectors	10-pin header	COM3, COM4, COM5, COM6
SATA 6Gb/s drive connector	7-pin SATA connector	S_ATA1
SATA power connector	4-pin wafer	SATA_PWR1
SMBus connector	4-pin wafer	SMB1
S/PDIF connector	5-pin header	SPDIF1
SPI flash connector, BIOS	6-pin wafer	JSPI_BIOS_1

SPI flash connector, EC	6-pin wafer	JSPI_EC1
TPM connector	20-pin header	TPM1
USB 2.0 connector	8-pin header	USB_CON1

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
Audio jacks	Audio jack	AUDIO1
DisplayPort connectors	DisplayPort	DP0_1, DP2_3
LAN and USB 3.2 Gen 1 combo connector	RJ-45 & USB 3.2 Type A combo	LAN1_USB1
LAN and USB 2.0 combo connector	RJ-45, USB 2.0 Type A combo	LAN2_USB2
Power jack (12 V DC-IN)	Power jack	POWER_IN1
RS-232 connectors	Dual DB-9 male	COM1_2

Table 3-2: Rear Panel Connectors

3.2 Internal Peripheral Connectors

The section describes all of the connectors on the gKINO-V/R1000.

3.2.1 12 V DC-IN Power Connector

CN Label: **CPU12V1**

CN Type: 4-pin Molex, p=4.2 mm

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

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

The connector supports the 12 V power supply.

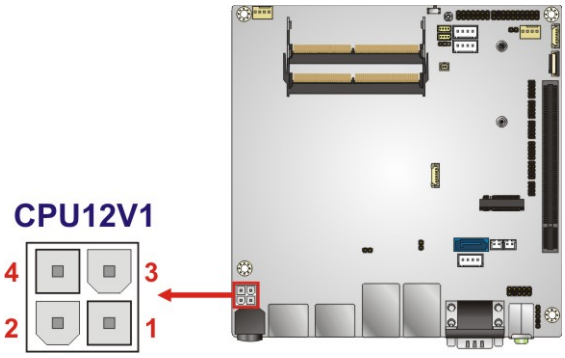


Figure 3-2: DC-IN Power Connector Location

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

Table 3-3: DC-IN Power Connector Pinouts

3.2.2 Audio Connector

CN Label:	**AUDIO2**
CN Type:	10-pin header, p=2.54 mm
CN Location:	See **Figure 3-3**
CN Pinouts:	See **Table 3-4**

The audio connector supporting High-Definition Audio is connected to external audio devices including speakers and microphones for the input and output of audio signals to and from the system.

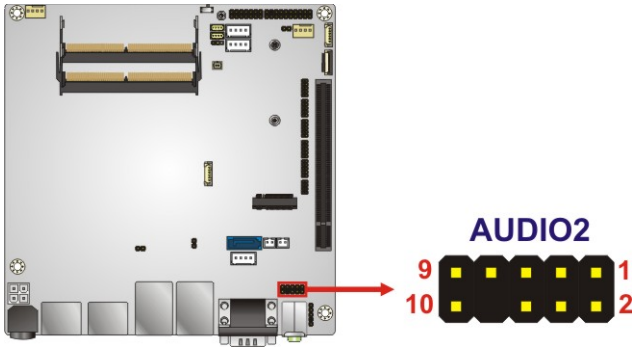


Figure 3-3: Audio Connector Location

Pin	Description	Pin	Description
1	LMIC2-L	2	GND
3	LMIC2-R	4	Pre-Sense#
5	LLINE2-R	6	MIC2-JD
7	FRONT-IO	8	N/C
9	LLINE2-L	10	LINE2-JD

Table 3-4: Audio Connector Pinouts

3.2.3 Audio Amplifier Connectors

CN Label: **SPK_L1, SPK_R1**

CN Type: 2-pin wafer, p=2.00 mm

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

CN Pinouts: See **Table 3-5** and **Table 3-6**

These connectors support 6 W Class-D audio amplifiers (L+R).

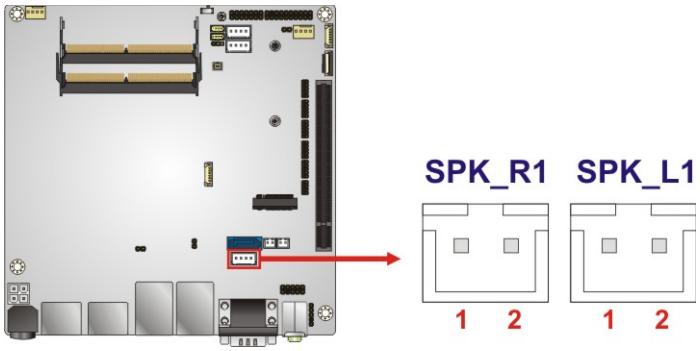


Figure 3-4: Audio Amplifier Connector Locations

Pin	Description
1	SPK_L+
2	SPK_L-

Table 3-5: Audio Amplifier Connector Pinouts (SPK_L1)

Pin	Description
1	SPK_R+
2	SPK_R-

Table 3-6: Audio Amplifier Connector Pinouts (SPK_R1)

3.2.4 Battery Connector

CAUTION:

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

Dispose of used batteries according to instructions and local regulations.

NOTE:

It is recommended to attach the RTC battery onto the system chassis in which the gKINO-V/R1000 is installed.

CN Label:	**BAT1**
CN Type:	2-pin wafer, p=1.25 mm
CN Location:	See **Figure 3-5**
CN Pinouts:	See **Table 3-7**

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.

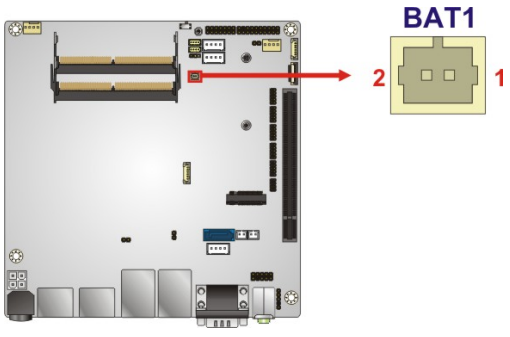


Figure 3-5: Battery Connector Location

Pin	Description
1	RTC Battery+
2	GND

Table 3-7: Battery Connector Pinouts

3.2.5 ccTalk Connectors

CN Label: **COM7, COM8**

CN Type: 4-pin wafer, p=2.5 mm

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

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

The connectors provide ccTalk connections.

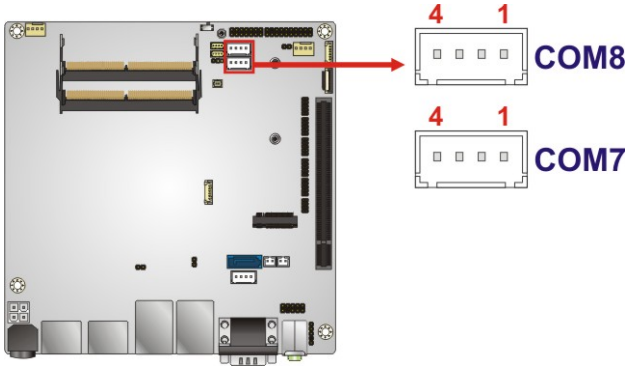


Figure 3-6: ccTalk Connector Locations

Pin	Description
1	+12V
2	N/C
3	GND
4	ccTalk DATA

Table 3-8: ccTalk Connector Pinouts

3.2.6 Chassis Intrusion Connector

CN Label:	**CHASSIS1**
CN Type:	2-pin header, p=2.54 mm
CN Location:	See **Figure 3-7**
CN Pinouts:	See **Table 3-9**

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

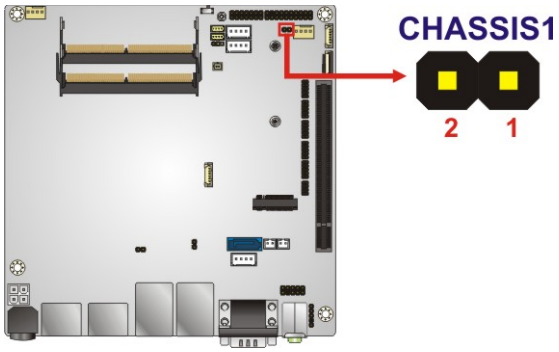


Figure 3-7: Chassis Intrusion Connector Location

Pin	Description
1	CHASSIS OPEN#
2	GND

Table 3-9: Chassis Intrusion Connector Pinouts

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**

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

The 8-bit digital I/O connector provides programmable input and output for external devices.

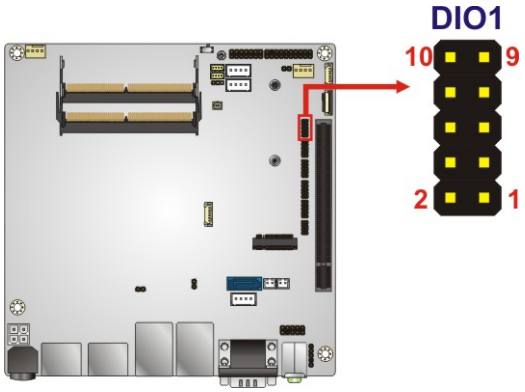


Figure 3-8: Digital I/O Connector Location

Pin	Description	Pin	Description
1	GND	2	VCC
3	Output 3	4	Output 2
5	Output 1	6	Output 0
7	Input 3	8	Input 2
9	Input 1	10	Input 0

Table 3-10: Digital I/O Connector Pinouts

3.2.8 EC Debug Connector

CN Label: **CN1**

CN Type: 20-pin FPC, p=0.5 mm

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

CN Pinouts: See **Table 3-11**

The EC debug connector is used for EC debug.

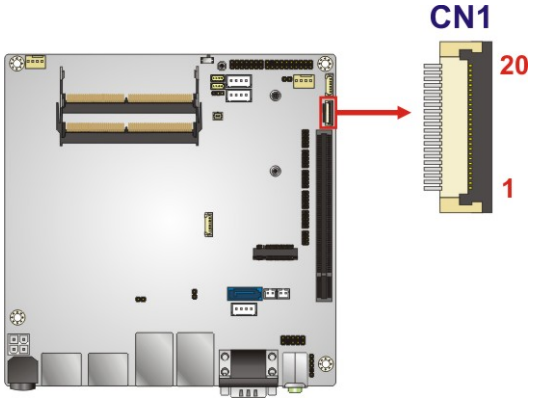


Figure 3-9: EC Debug Connector Location

Pin	Description	Pin	Description
1	KSI0	2	KSO0
3	KSO1	4	KSO2
5	KSO3	6	KSO4
7	KSO5	8	KSO6
9	KSO7	10	KSO8
11	KSO9	12	KSO10
13	KSO12	14	KSI1
15	KSO11	16	KSI2
17	KSI3	18	GND
19	GND	20	GND

Table 3-11: EC Debug Connector Pinouts

3.2.9 Fan Connectors

CN Label: **CPU_FAN1, SYS_FAN1**

CN Type: 4-pin wafer, p=2.54 mm

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

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

The fan connector attaches to a cooling fan.

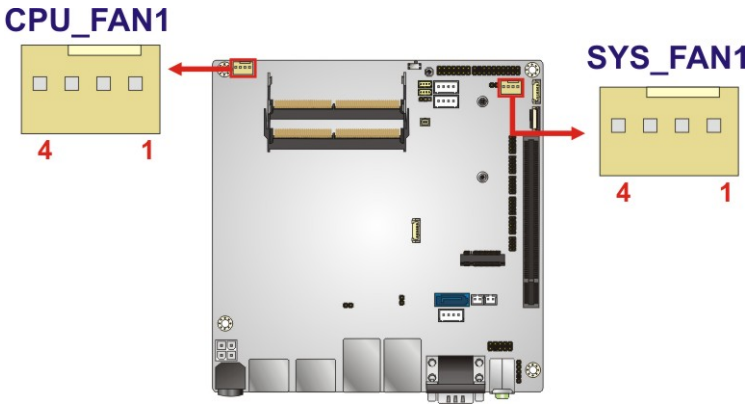


Figure 3-10: Fan Connector Locations

Pin	Description
1	GND
2	12V
3	FAN_IO
4	PWM

Table 3-12: Fan Connector Pinouts

3.2.10 Front Panel Connector

CN Label: **F_PANEL1**

CN Type: 14-pin header, p=2.54 mm

CN Location: See **Figure 3-11**

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

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

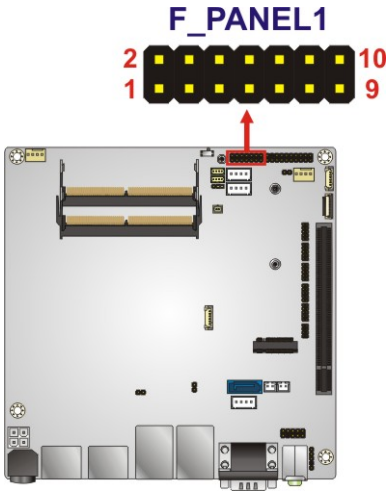


Figure 3-11: Front Panel Connector Location

FUNCTION	PIN	DESCRIPTION	FUNCTION	PIN	DESCRIPTION
Power LED	1	+5 V	Speaker	2	Beep_PWR
	3	N/C		4	N/C
	5	GND		6	N/C
Power Button	7	PWRBTN-		8	PC_Beep
	9	GND	Reset	10	N/C
HDD LED	11	+5 V		12	Reset-
	13	SATA_LED-		14	GND

Table 3-13: Front Panel Connector Pinouts

3.2.11 I²C Connector

CN Label: **I2C1**

CN Type: 4-pin wafer, p=1.25 mm

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

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

The I²C connector is used to connect I²C-bus devices to the mainboard.

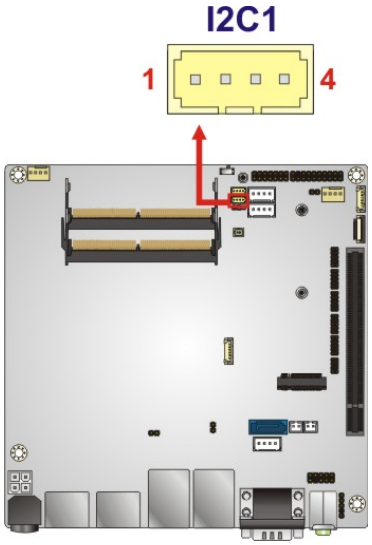


Figure 3-12: I²C Connector Location

Pin	Description
1	GND
2	I2C_DAT
3	I2C_CLK
4	+5V

Table 3-14: I²C Connector Pinouts

3.2.12 LAN LED Connectors

CN Label:	**LED_LAN1, LED_LAN2**
CN Type:	2-pin header, p=2.54 mm
CN Location:	See **Figure 3-13**
CN Pinouts:	See **Table 3-15**

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

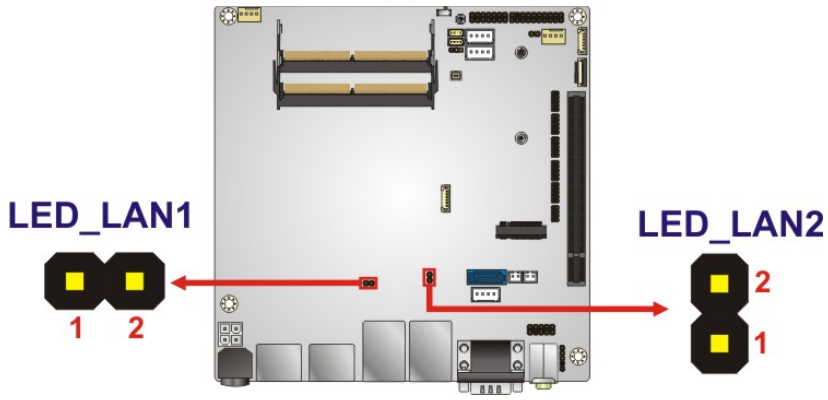


Figure 3-13: LAN LED Connector Locations

Pin	Description
1	+3.3V
2	LAN_LED_LNK#_ACT

Table 3-15: LAN LED Connector Pinouts

3.2.13 M.2 Slot

CN Label: **M2_M2**

CN Type: M.2 M-key slot

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

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

The M.2 slot is keyed in the M position. The M.2 slot supports SATA and PCIe 3.0 x2 signals.

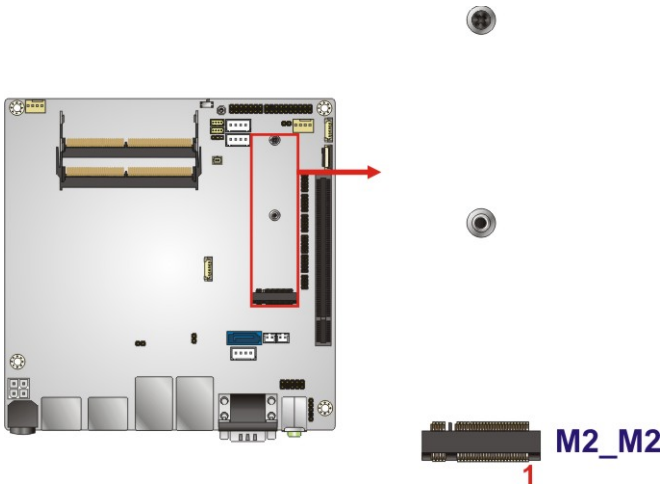


Figure 3-14: M.2 Slot Location

Pin	Description	Pin	Description
1	GND	2	+3.3V
3	GND	4	+3.3V
5	N/C	6	N/C
7	N/C	8	N/C
9	GND	10	DAS/DSS#
11	N/C	12	+3.3V
13	N/C	14	+3.3V
15	GND	16	+3.3V
17	N/C	18	+3.3V
19	N/C	20	N/C
21	GND	22	N/C

Pin	Description	Pin	Description
23	N/C	24	N/C
25	N/C	26	N/C
27	GND	28	N/C
29	PCIE_RXN1	30	N/C
31	PCIE_RXP1	32	N/C
33	GND	34	N/C
35	PCIE_TXN1	36	N/C
37	PCIE_TXP1	38	DEVSLP
39	GND	40	N/C
41	PCIE_RXN0	42	N/C
43	PCIE_RXP0	44	N/C
45	GND	46	N/C
47	PCIE_TXN0	48	N/C
49	PCIE_TXP0	50	PERST#
51	GND	52	CLKREQ#
53	REFCLKN	54	PEWAKE
55	REFCLKP	56	N/C
57	GND	58	N/C
59	Module Key	60	Module Key
61	Module Key	62	Module Key
63	Module Key	64	Module Key
65	Module Key	66	Module Key
67	N/C	68	SUSCLK
69	PEDET	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	GND		

Table 3-16: M.2 M-Key Slot Pinouts

3.2.14 PCIe x16 Slot

CN Label:	**PCIEX16**
CN Type:	PCIe x16 slot
CN Location:	See **Figure 3-15**

The PCIe x16 slot supports PCIe x8 expansion cards.

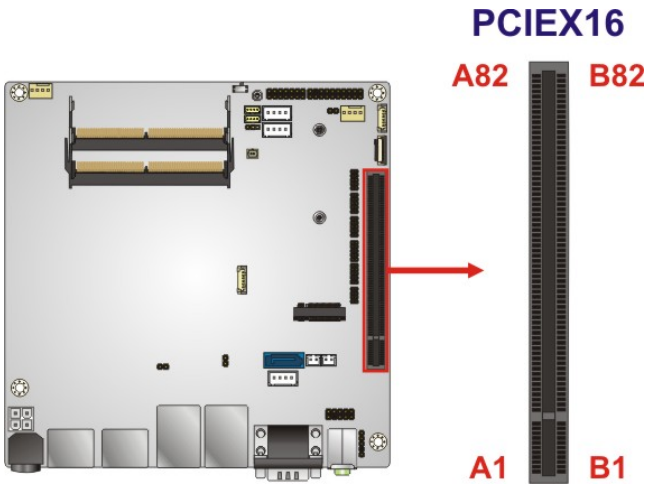


Figure 3-15: PCIe x16 Slot Location

3.2.15 RS-232 Serial Port Connectors (COM3 ~ COM6)

CN Label:	**COM3, COM4, COM5, COM6**
CN Type:	10-pin header, p=2.00 mm
CN Location:	See **Figure 3-16**
CN Pinouts:	See **Table 3-17**

The serial connectors provide RS-232 connections.

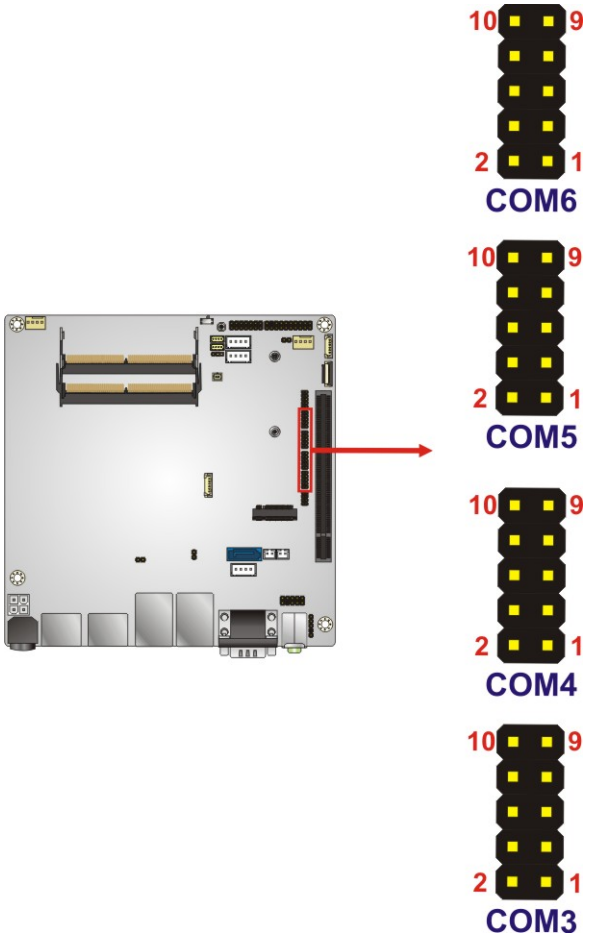


Figure 3-16: RS-232 Serial Port Connector Locations

Pin	Description	Pin	Description
1	DCD	2	DSR
3	RX	4	RTS
5	TX	6	CTS
7	DTR	8	RI
9	GND	10	GND

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

3.2.16 SATA 6Gb/s Drive Connector

CN Label:	**S_ATA1**
CN Type:	7-pin SATA connector
CN Location:	See **Figure 3-17**
CN Pinouts:	See **Table 3-18**

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.

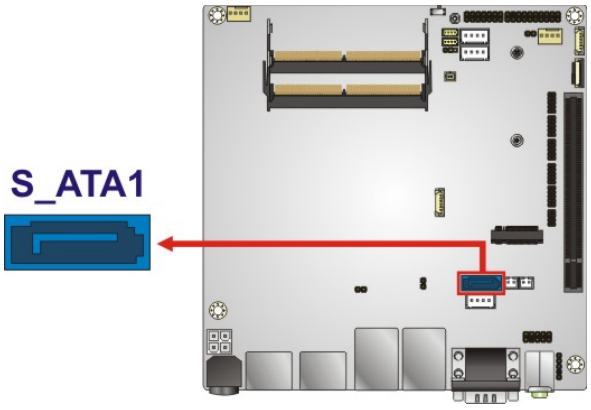


Figure 3-17: SATA 6Gb/s Drive Connector Location

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

Table 3-18: SATA Drive Connector Pinouts

3.2.17 SATA Power Connector

CN Label:	**SATA_PWR1**
CN Type:	4-pin wafer, p=2.5 mm
CN Location:	See **Figure 3-18**
CN Pinouts:	See **Table 3-19**

The SATA power connector provides +5 V and +12 V power output to the SATA connector.

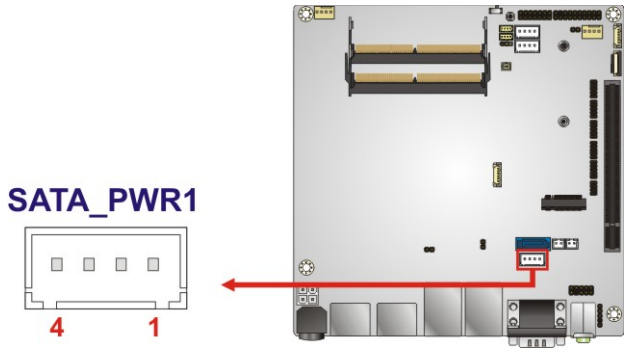


Figure 3-18: SATA Power Connector Location

Pin	Description
1	+12V
2	GND
3	GND
4	+5V

Table 3-19: SATA Power Connector Pinouts

3.2.18 SMBus Connector

CN Label:	**SMB1**
CN Type:	4-pin wafer, p=1.25 mm
CN Location:	See **Figure 3-19**
CN Pinouts:	See **Table 3-20**

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

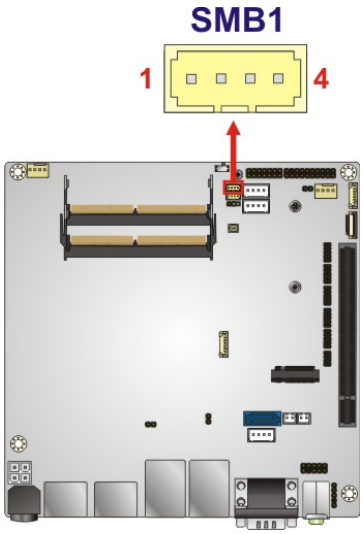


Figure 3-19: SMBus Connector Location

Pin	Description
1	GND
2	SMB_DATA
3	SMB_CLK
4	+5V

Table 3-20: SMBus Connector Pinouts

3.2.19 S/PDIF Connector

CN Label:	**SPDIF1**
CN Type:	5-pin header, p=2.54 mm
CN Location:	See **Figure 3-20**
CN Pinouts:	See **Table 3-21**

Use the S/PDIF connector to connect digital audio devices to the system.

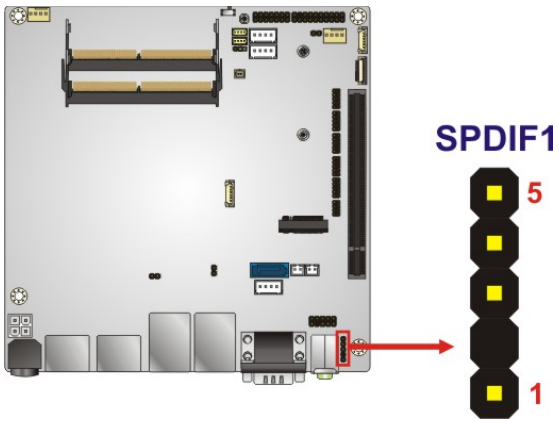


Figure 3-20: S/PDIF Connector Location

Pin	Description
1	+5V
2	N/C
3	SPDIF OUT
4	GND
5	SPDIF IN

Table 3-21: S/PDIF Connector Pinouts

3.2.20 SPI Flash Connector, BIOS

CN Label: **JSPI_BIOS_1**

CN Type: 6-pin wafer, p=1.25 mm

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

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

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

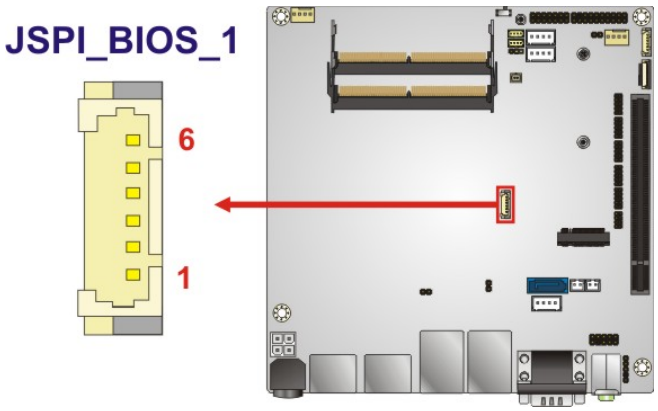


Figure 3-21: BIOS SPI Flash Connector Location

Pin	Description
1	+3.3V
2	SPI_CS#
3	SPI_SO
4	SPI_CLK
5	SPI_SI
6	GND

Table 3-22: BIOS SPI Flash Connector Pinouts

3.2.21 SPI Flash Connector, EC

CN Label:	**JSPI_EC1**
CN Type:	6-pin wafer, p=1.25 mm
CN Location:	See **Figure 3-22**
CN Pinouts:	See **Table 3-23**

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

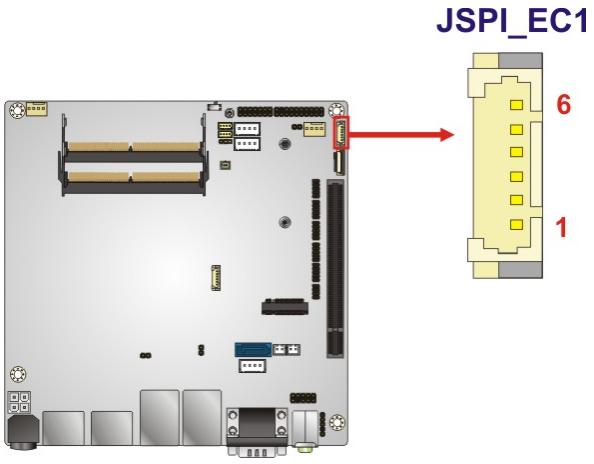


Figure 3-22: EC SPI Flash Connector Location

Pin	Description
1	+3.3V
2	SPI_CS#
3	SPI_SO
4	SPI_CLK
5	SPI_SI
6	GND

Table 3-23: EC SPI Flash Connector Pinouts

3.2.22 TPM Connector

CN Label:	**TPM1**
CN Type:	20-pin header, p=2.54 mm
CN Location:	See **Figure 3-23**
CN Pinouts:	See **Table 3-24**

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

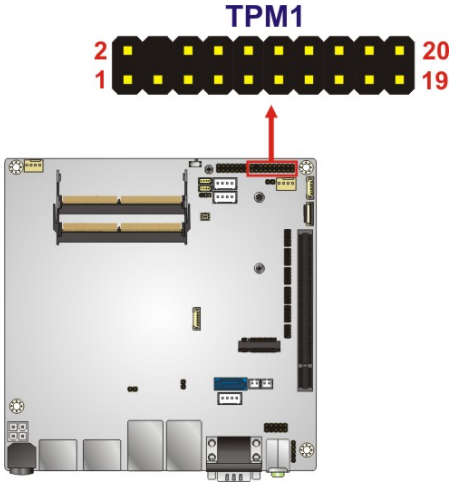


Figure 3-23: TPM Connector Location

Pin	Description	Pin	Description
1	LCLK	2	GND
3	LFRAME#	4	KEY
5	LRERST#	6	+5V
7	LAD3	8	LAD2
9	+3.3V	10	LAD1
11	LAD0	12	GND
13	SCL	14	SDA
15	SB3V	16	SERIRQ
17	GND	18	CLKRUN#
19	LPCPD#	20	LDRQ#

Table 3-24: TPM Connector Pinouts

3.2.23 USB 2.0 Connector

CN Label:	**USB_CON1**
CN Type:	8-pin header, p=2.00 mm
CN Location:	See **Figure 3-24**
CN Pinouts:	See **Table 3-25**

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

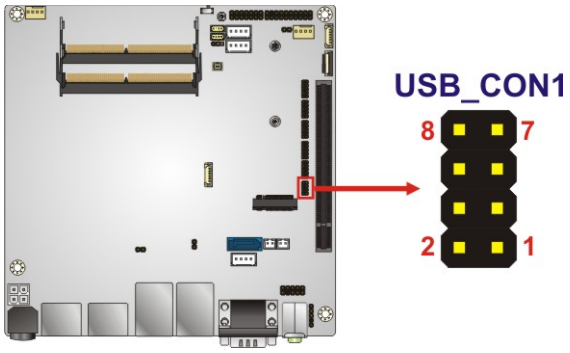


Figure 3-24: USB Connector Location

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

Table 3-25: USB Connector Pinouts

3.3 External Peripheral Interface Connector Panel

Figure 3-25 shows the gKINO-V/R1000 external peripheral interface connector (EPIC) panel. The EPIC panel consists of the following:

- 2 x Audio jack (AUDIO1)
- 1 x DC-in power jack (PWR_IN1)
- DisplayPort connectors (DP0_1, DP2_3)
- 1 x GbE and USB 3.2 Gen 1 combo connector (LAN1_USB1)
- 1 x GbE and USB 2.0 combo connector (LAN2_USB2)
- 2 x RS-232 connector (COM1_2)

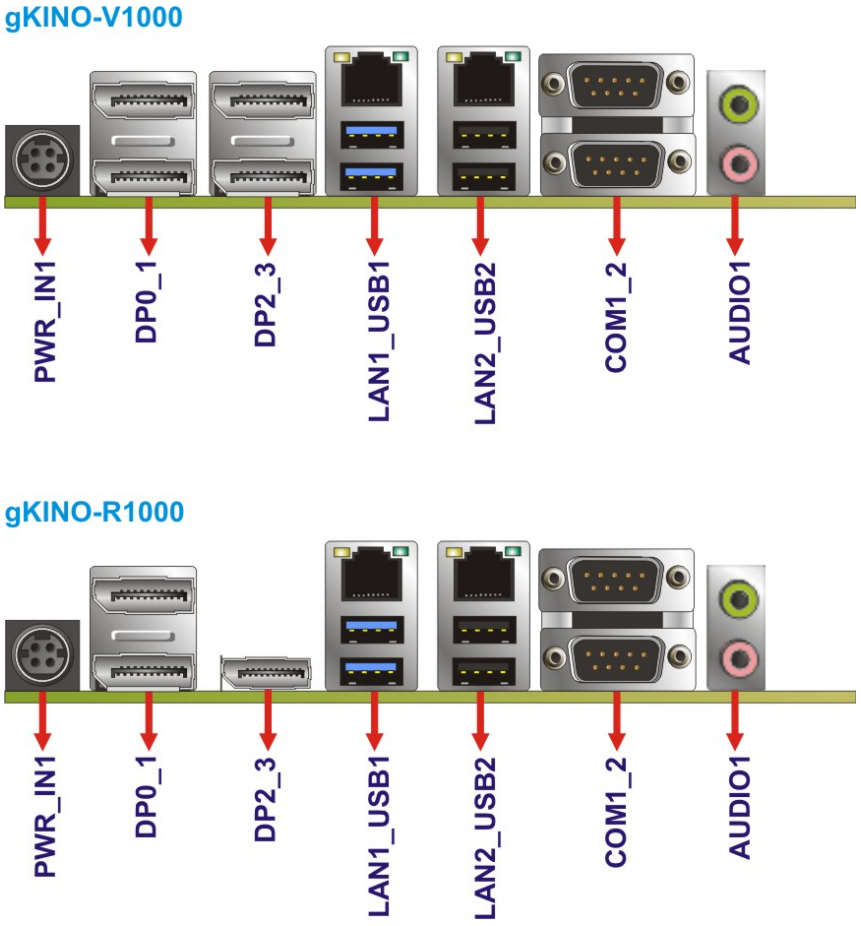


Figure 3-25: External Peripheral Interface Connectors

3.3.1 Audio Jacks

CN Label:	**AUDIO1**
CN Type:	Audio jack
CN Location:	See **Figure 3-25**

The audio jacks connect to external audio devices.

- **Line Out port (Lime):** Connects to a headphone or a speaker. With multi-channel configurations, this port can also connect to front speakers.
- **Microphone (Pink):** Connects a microphone.

Figure 3-26: Audio Connector

3.3.2 DisplayPort Connectors

CN Label: **DP0_1, DP2_3**

CN Type: DisplayPort connector

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

CN Pinouts: See **Table 3-26** and **Figure 3-27**

Each DisplayPort connector can connect to a DisplayPort device.

Pin	Description	Pin	Description
1	DATA_0P	11	GND
2	GND	12	DATA_3N
3	DATA_0N	13	CONFIG1
4	DATA_1P	14	CONFIG2
5	GND	15	AUX_P
6	DATA_1N	16	GND
7	DATA_2P	17	AUX_N
8	GND	18	DP HPD
9	DATA_2N	19	GND
10	DATA_3P	20	DP PWR

Table 3-26: DisplayPort Connector Pinouts

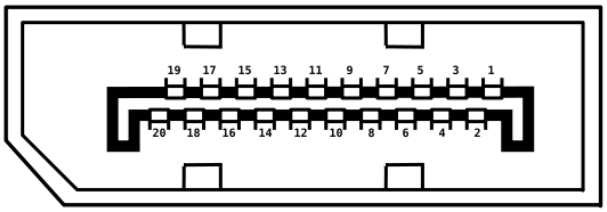


Figure 3-27: DisplayPort Connector Pinout Locations

3.3.3 LAN and USB 3.2 Gen 1 Combo Connector

CN Label: **LAN1_USB1, LAN2_USB2**

CN Type: RJ-45 and USB 3.2 Type A combo

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

CN Pinouts: See **Table 3-27** and **Table 3-29**

A 10/100/1000 Mb/s connection can be made to a Local Area Network.

Pin	Description	Pin	Description
1	MDIA0+	5	MDIA2-
2	MDIA0-	6	MDIA1-
3	MDIA1+	7	MDIA3+
4	MDIA2+	8	MDIA3-

Table 3-27: LAN1 Ethernet Connector Pinouts

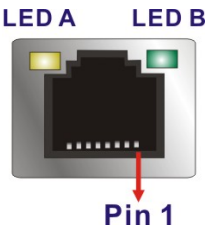


Figure 3-28: Ethernet Connector

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

Table 3-28: Connector LEDs

The USB 3.2 Gen 1 (5Gb/s) connector can be connected to a USB device.

Pin	Description	Pin	Description
1	VCC	10	VCC
2	USB_DATA-	11	USB_DATA-

Pin	Description	Pin	Description
3	USB_DATA+	12	USB_ DATA+
4	GND	13	GND
5	USB3_RX-	14	USB3_RX-
6	USB3_RX+	15	USB3_ RX+
7	GND	16	GND
8	USB3_TX-	17	USB3_TX-
9	USB3_TX+	18	USB3_TX+

Table 3-29: USB 3.2 Gen 1 Port Pinouts

3.3.4 LAN and USB 2.0 Combo Connector

CN Label: **LAN2_USB2**

CN Type: RJ-45 and USB 2.0 Type A combo

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

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

A 10/100/1000 Mb/s connection can be made to a Local Area Network.

Pin	Description	Pin	Description
1	MDIA0+	5	MDIA2-
2	MDIA0-	6	MDIA1-
3	MDIA1+	7	MDIA3+
4	MDIA2+	8	MDIA3-

Table 3-30: LAN1 Ethernet Connector Pinouts

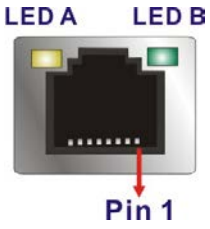


Figure 3-29: Ethernet Connector

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

Table 3-31: Connector LEDs

The USB 2.0 connector can be connected to a USB device.

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

Table 3-32: USB 2.0 Port Pinouts

3.3.5 Power Connector

CN Label: **POWER_IN1**

CN Type: 4-pin DIN

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

The power connector supports the 12V power adapter.

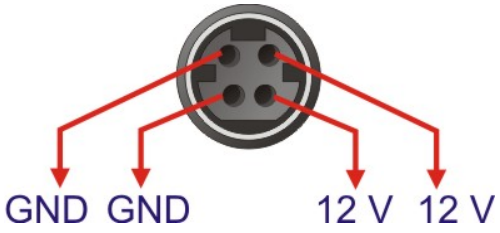


Figure 3-30: Power Connector

3.3.6 Serial Port Connectors (COM1, COM2)

CN Label: **COM1_2**

CN Type: DB-9 connectors

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

CN Pinouts: See **Table 3-33** and **Figure 3-31**

The serial port connects to a RS-232 serial communications device.

Pin	Description	Pin	Description
1	DCD	6	DSR
2	RX	7	RTS
3	TX	8	CTS
4	DTR	9	RI
5	GND		

Table 3-33: Serial Port Pinouts

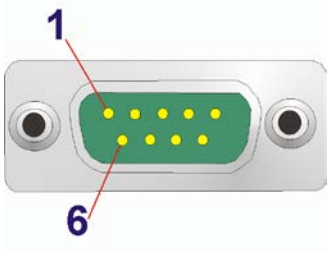


Figure 3-31: Serial Port Pinouts

Chapter

4

Installation

4.1 Anti-static Precautions

WARNING:

Failure to take ESD precautions during the installation of the gKINO-V/R1000 may result in permanent damage to the gKINO-V/R1000 and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the gKINO-V/R1000. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the gKINO-V/R1000, 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 gKINO-V/R1000, place it on an anti-static pad. This reduces the possibility of ESD damaging the gKINO-V/R1000.
- ***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.

WARNING:

The installation instructions described in this manual should be carefully followed in order to prevent damage to the 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 gKINO-V/R1000 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 gKINO-V/R1000 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 gKINO-V/R1000 off**:
  - When working with the gKINO-V/R1000, 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 gKINO-V/R1000 **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

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

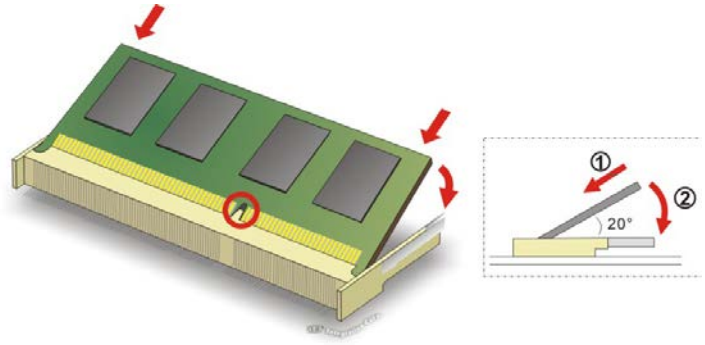


Figure 4-1: SO-DIMM Installation

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 20º angle. (See Figure 4-1)

Step 4: **Seat the SO-DIMM**. Gently push downwards and the arms clip into place. (See Figure 4-1)

CAUTION:

For dual channel configuration, always install two identical memory modules that feature the same capacity, timings, voltage, number of ranks and the same brand.

4.4 M.2 Module Installation

The M.2 slot is keyed in the M position and provides mounting screw position for 2280-size or 2242-sizze M.2 module. To install an M.2 module, follow the steps below.

Step 1: Locate the M.2 module slot. See **Chapter 3**.

Step 2: Remove the on-board retention screw **Figure 4-2**.

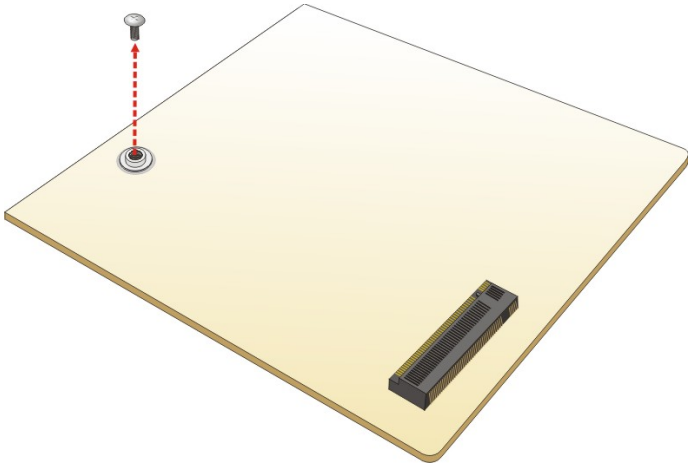


Figure 4-2: Removing the M.2 Module Retention Screw

Step 3: Line up the notch on the module with the notch on the slot. Slide the M.2 module into the socket at an angle of about 20º (**Figure 4-3**).

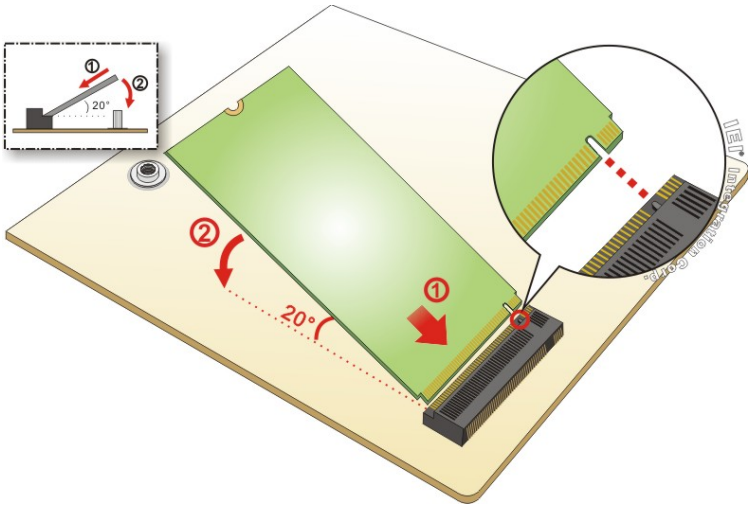


Figure 4-3: Inserting the M.2 Module into the Slot at an Angle

Step 4: Push the M.2 module down and secure it with the previously removed retention screw (**Figure 4-4**).

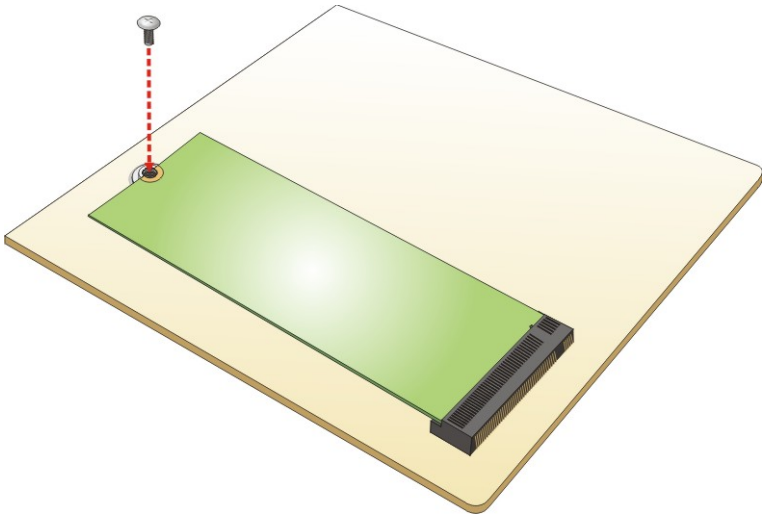


Figure 4-4: Securing the M.2 Module

4.5 System Configuration

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

4.5.1 AT/ATX Mode Select

The AT/ATX mode select switch (J_ATX_AT1) 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	ATX Mode (Default)
Short B-C	AT Mode

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

The location of the AT/ATX mode select switch is shown in **Figure 4-5** below.

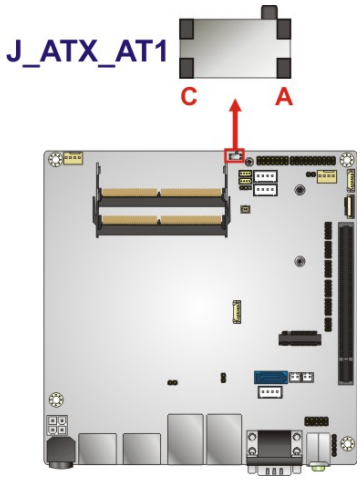


Figure 4-5: AT/ATX Mode Select Switch Location

4.5.2 Clear CMOS

To reset the BIOS, move the jumper to the "Clear BIOS" position for 3 seconds or more, then move back to the default position.

Setting	Description
1-2	Keep current BIOS setup
2-3	Clear BIOS

Table 4-2: Clear BIOS Jumper Settings

The location of the clear CMOS button (JP1) is shown in **Figure 4-6**

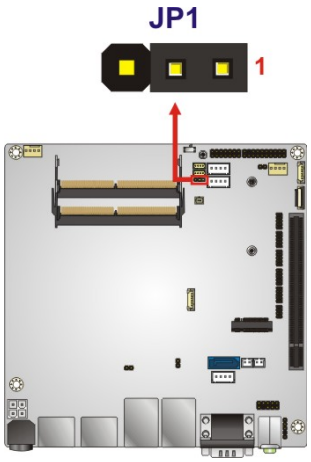


Figure 4-6: Clear CMOS Jumper Location

4.6 Chassis Installation

4.6.1 Airflow

WARNING:

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

The gKINO-V/R1000 must be installed in a chassis with ventilation holes on the sides allowing airflow to travel through the heat sink surface. In a system with an individual power supply unit, the cooling fan of a power supply can also help generate airflow through the board surface.

4.6.2 Motherboard Installation

To install the gKINO-V/R1000 motherboard into the chassis please refer to the reference material that came with the chassis.

4.7 SATA Drive Connection

The gKINO-V/R1000 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**.

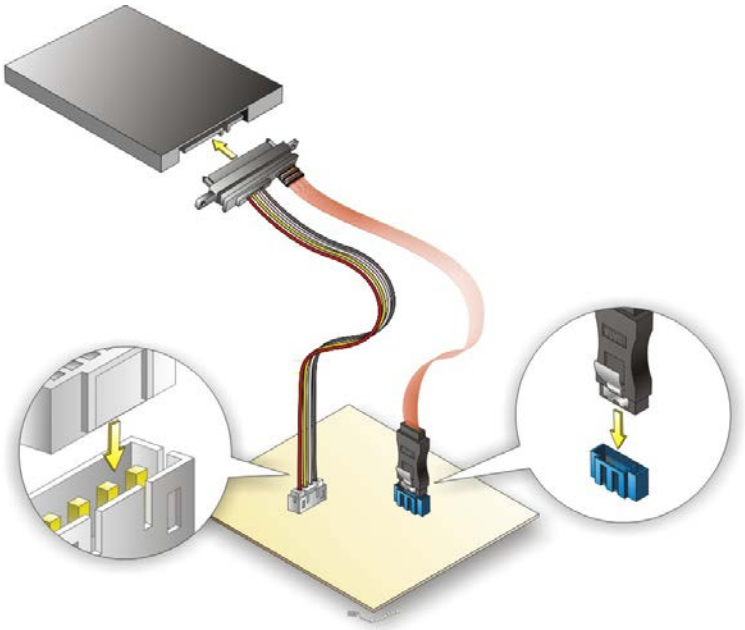


Figure 4-7: SATA Drive Cable Connection

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.

NOTE:

The connector locations in the diagram above are just for reference. For the exact locations, please see **Section 3.2.16**.

4.8 Available Drivers

All the drivers for the gKINO-V/R1000 are available on IEI Resource Download Center (https://download.ieiworld.com). Type gKINO-V/R1000 and press Enter to find all the relevant software, utilities, and documentation.

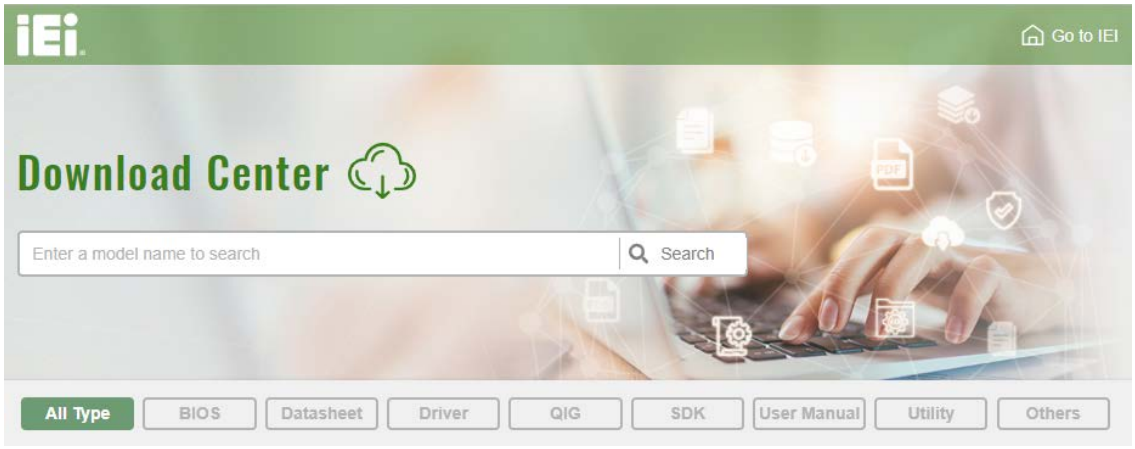
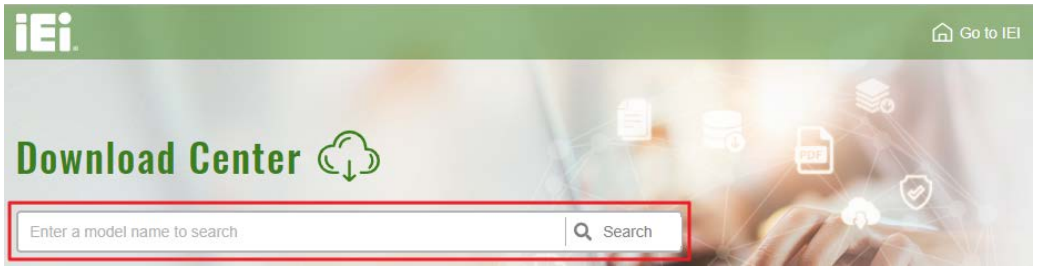


Figure 4-8: IEI Resource Download Center

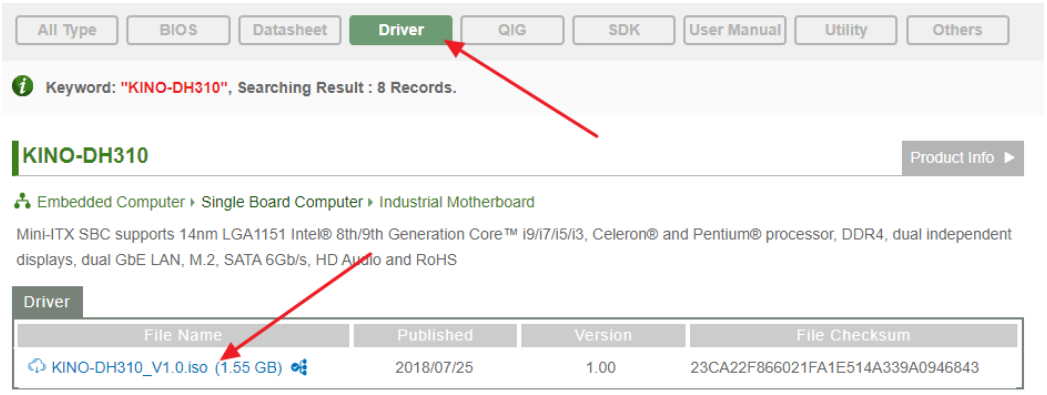
4.8.1 Driver Download

To download drivers from IEI Resource Download Center, follow the steps below.

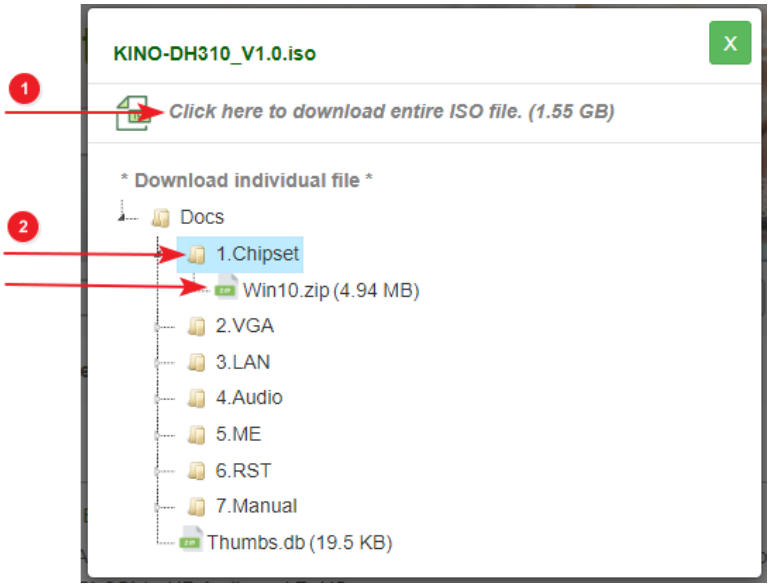
Step 1: Go to https://download.ieiworld.com. Type gKINO-V/R1000 and press Enter.



Step 2: All product-related software, utilities, and documentation will be listed. You can choose **Driver** to filter the result.



Step 3: Click the driver file name on the page and you will be prompted with the following window. You can download the entire ISO file (❶), or double click an individual item to find its driver file and click the file name to download (❷).



NOTE:

To install software from the downloaded ISO image file in Windows 10, double-click the ISO file to mount it as a virtual drive to view its content.

Chapter

5

BIOS

5.1 Introduction

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

NOTE:

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

5.1.1 Starting Setup

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

1. Press the **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 **Table 5-1**.

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

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

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 **Section 4.5.2**.

5.1.5 BIOS Menu Bar

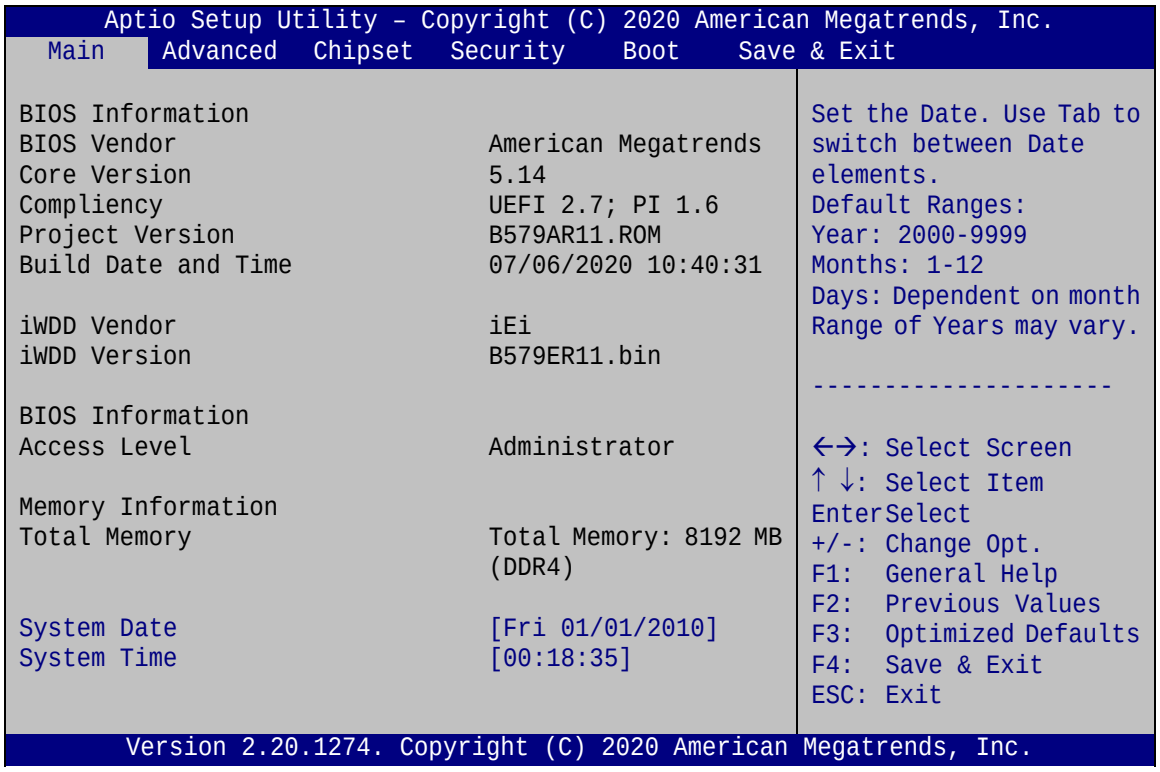
The **menu bar** on top of the BIOS screen has the following main items:

- Main – Changes the basic system configuration.
- Advanced – Changes the advanced system settings.
- Chipset – Changes the chipset settings.
- Security – Sets User and Supervisor Passwords.
- Boot – Changes the system boot configuration.
- Save & Exit – Selects exit options and loads default settings

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

5.2 Main

The **Main** BIOS menu (**BIOS Menu 1**) appears when the **BIOS Setup** program is entered. The **Main** menu gives an overview of the basic system information.



BIOS Menu 1: Main

➔ **System 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!

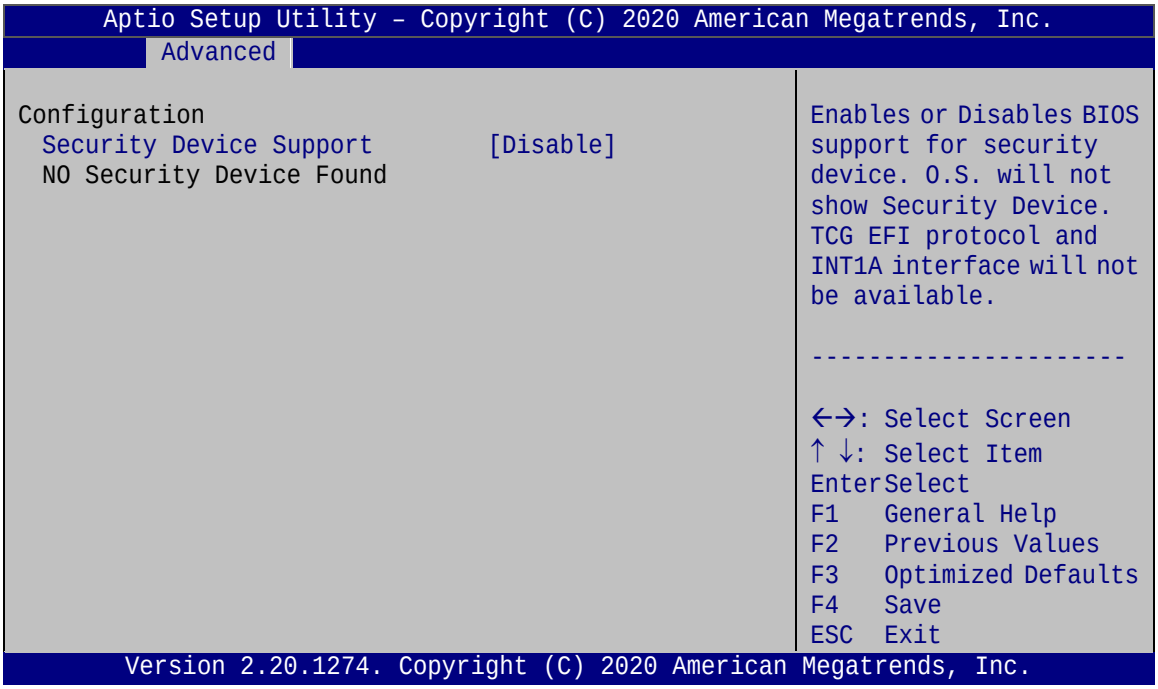
Setting the wrong values in the sections below may cause the system to malfunction. Make sure that the settings made are compatible with the hardware.

```
      Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc.
  Main    Advanced   Chipset   Security    Boot    Save & Exit

> Trusted Computing                                Trusted Computing
> ACPI Settings                                    Settings
> IDE Configuration
> F81866 Super IO Configuration
> F81216SEC Super IO Configuration
> iWDD H/W Monitor                                 ----------------------
> RTC Wake Settings                                ←→: Select Screen
> Power Saving Configuration                       ↑ ↓: Select Item
> Serial Port Console Redirection                  EnterSelect
> CPU Configuration                                F1   General Help
> USB Configuration                                F2   Previous Values
> NVMe Configuration                               F3   Optimized Defaults
                                                   F4   Save
> AMD CBS                                          ESC  Exit
> AMD PBS

      Version 2.20.1274. Copyright (C) 2020 American Megatrends, Inc.
```

BIOS Menu 2: Advanced

5.3.1 Trusted Computing

Use the **Trusted Computing** menu (**BIOS Menu 3**) to configure settings related to the Trusted Computing Group (TCG) Trusted Platform Module (TPM).



BIOS Menu 3: Trusted Computing

➔ **Security Device Support [Disable]**

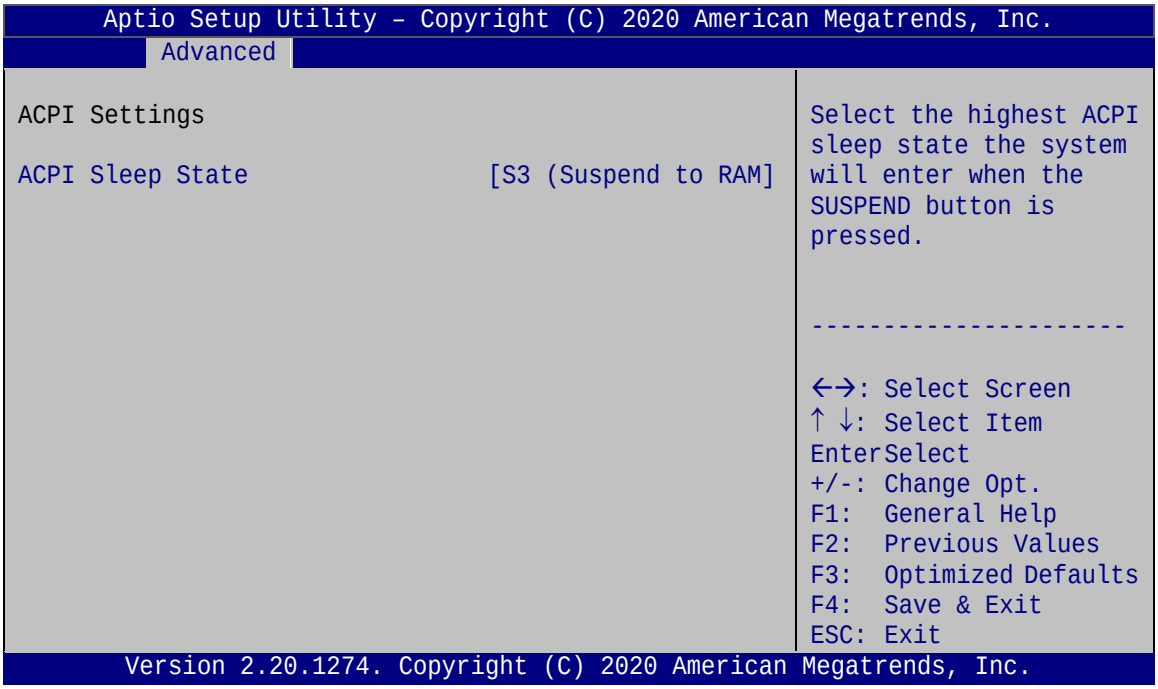
Use the **Security Device Support** option to configure support for the security device.

➔ **Disable** **DEFAULT** Security device support is disabled.

➔ **Enable** Security device support is enabled.

5.3.2 ACPI Settings

The **ACPI Settings** menu (**BIOS Menu 4**) configures the Advanced Configuration and Power Interface (ACPI) options.



BIOS Menu 4: ACPI Settings

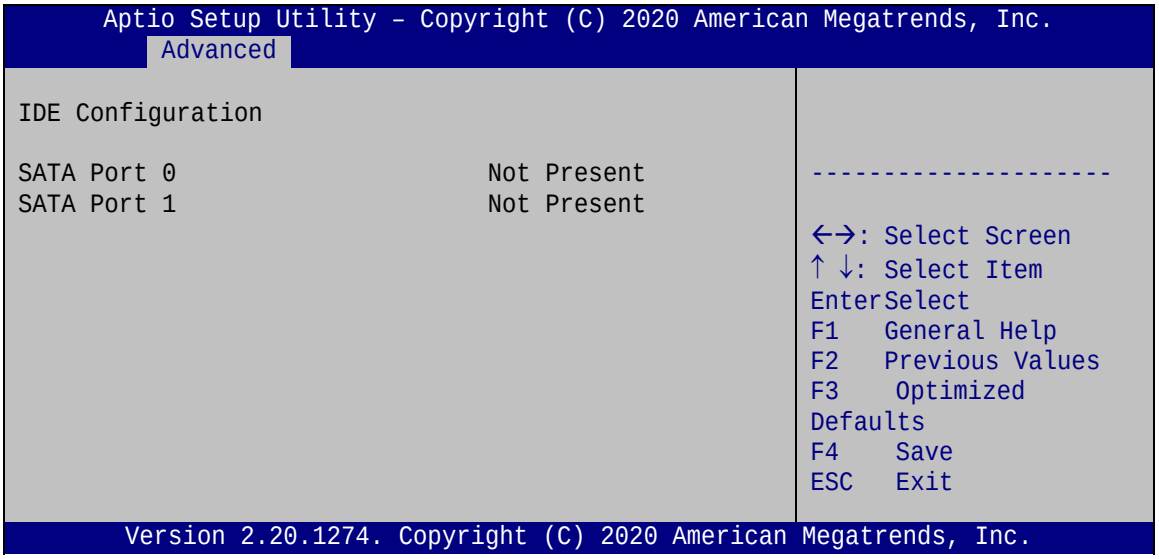
➔ **ACPI Sleep State [S3 (Suspend to RAM)]**

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

➔ **S3 (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.

5.3.3 IDE Configuration

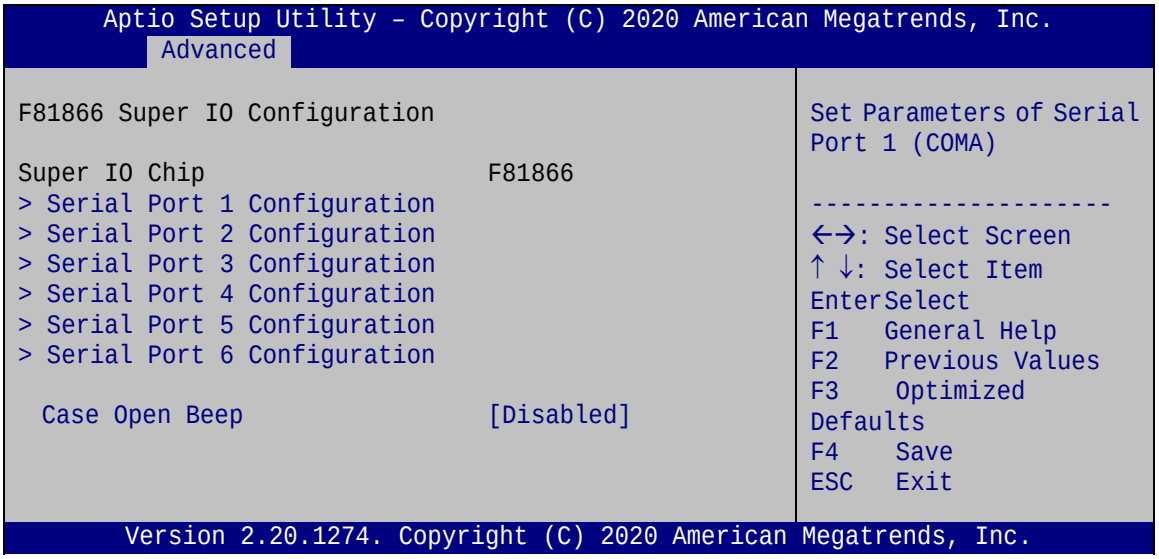
Use the **IDE Configuration** menu (**BIOS Menu 5**) to change and/or set the configuration of the SATA devices installed in the system.



BIOS Menu 5: IDE Configuration

5.3.4 F81866 Super IO Configuration

Use the **F81866 Super IO Configuration** menu (**BIOS Menu 6**) to set or change the configurations for the serial ports.



BIOS Menu 6: F81866 Super IO Configuration

➔ **Case Open Beep [Disabled]**

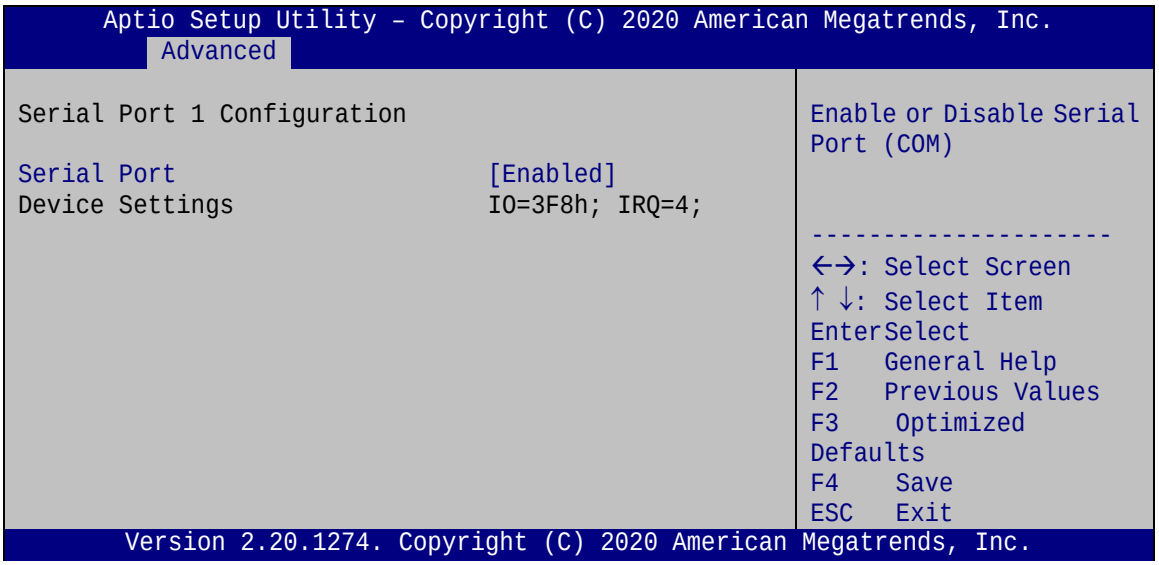
Use the **Case Open Beep** option to enable or disable the chassis intrusion detection function.

➔ **Disabled** **DEFAULT** Chassis intrusion detection function is disabled

➔ **Enabled** Chassis intrusion detection function is enabled

5.3.4.1 Serial Port n Configuration

Use the **Serial Port n Configuration** menu (**BIOS Menu 7**) to configure the serial port n.



BIOS Menu 7: Serial Port n 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

5.3.5 F81216 Sec. Super IO Configuration

Use the **F81216 Sec. Super IO Configuration** menu (**BIOS Menu 8**) to set or change the configurations for the serial ports.

```
Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc.
        Advanced
F81216SEC Super IO Configuration                  | Set Parameters of Serial
                                                  | Port 1 (COMG)
Super IO Chip                    F81216SEC        |
> Serial Port 1 Configuration                     | ---------------------
> Serial Port 2 Configuration                     | ←→: Select Screen
                                                  | ↑ ↓: Select Item
                                                  | EnterSelect
                                                  | F1   General Help
                                                  | F2   Previous Values
                                                  | F3    Optimized
                                                  | Defaults
                                                  | F4    Save
                                                  | ESC   Exit
Version 2.20.1274. Copyright (C) 2020 American Megatrends, Inc.
```

BIOS Menu 8: F81216 SEC Super IO Configuration

5.3.5.1 Serial Port n Configuration

Use the **Serial Port n Configuration** menu (**BIOS Menu 9**) to configure the serial port n.

```
Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc.
        Advanced
Serial Port 1 Configuration                       | Enable or Disable Serial
                                                  | Port (COM)
Serial Port                      [Enabled]        |
Device Settings                  IO=240h; IRQ=5;  |
                                                  | ---------------------
                                                  | ←→: Select Screen
                                                  | ↑ ↓: Select Item
                                                  | EnterSelect
                                                  | F1   General Help
                                                  | F2   Previous Values
                                                  | F3    Optimized
                                                  | Defaults
                                                  | F4    Save
                                                  | ESC   Exit
Version 2.20.1274. Copyright (C) 2020 American Megatrends, Inc.
```

BIOS Menu 9: Serial Port n 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

5.3.6 iWDD H/W Monitor

The **iWDD H/W Monitor** menu (**BIOS Menu 10**) contains the fan configuration submenus and displays operating temperature, fan speeds and system voltages.

```
Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc.
        Advanced
PC Health Status                                  Smart Fan Mode Select

CPU temperature                 :+53 °C
System temperature              :+35 °C

CPU_FAN1 Speed                  :3730 RPM
SYS_FAN1 Speed                  :N/A              ----------------------
                                                  ←→: Select Screen
CPU_CORE                        :+1.325 V         ↑ ↓: Select Item
+5V                             :+5.222 V         EnterSelect
+DDR                            :+1.196 V         + -   Change Opt.
+5VSB                           :+5.155 V         F1    General Help
+3.3V                           :+3.219 V         F2    Previous Values
+3.3VSB                         :+3.195 V         F3    Optimized Defaults
                                                  F4    Save & Exit
> Smart Fan Mode Configuration                    ESC   Exit
Version 2.20.1274. Copyright (C) 2020 American Megatrends, Inc.
```

BIOS Menu 10: iWDD H/W Monitor

➔ **PC Health Status**

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

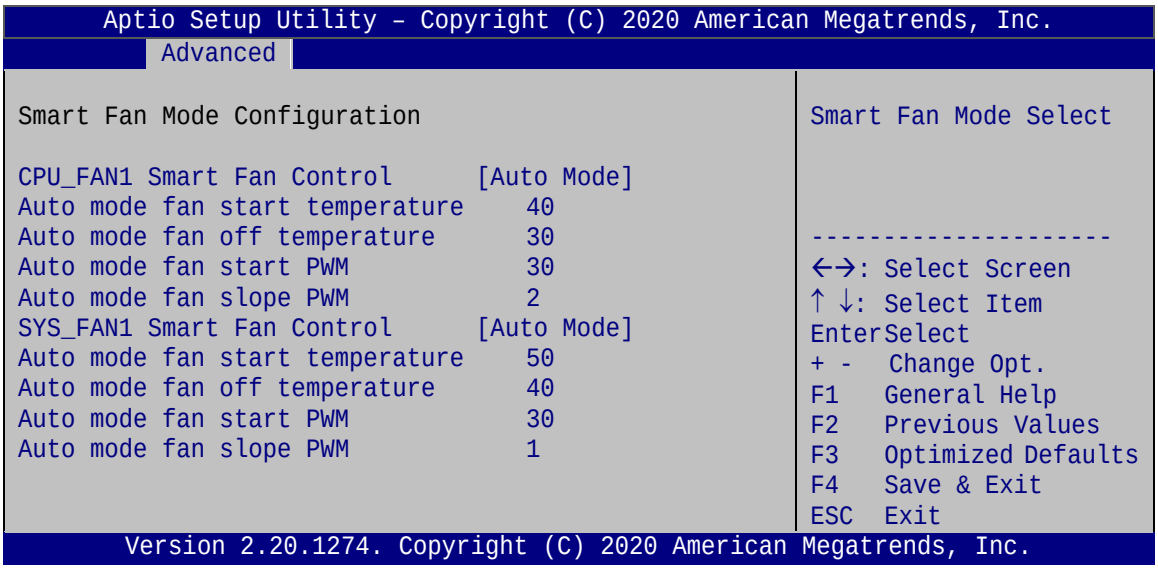
- System Temperatures:
  - CPU temperature
  - System temperature
- Fan Speed:

- CPU Fan Speed
- System Fan Speed

- Voltages
  - CPU_CORE
  - +5V
  - +DDR
  - +5VSB
  - +3.3V
  - +3.3VSB

5.3.6.1 Smart Fan Mode Configuration

Use the **Smart Fan Mode Configuration** submenu (**BIOS Menu 11**) to configure fan temperature and speed settings.



BIOS Menu 11: Smart Fan Mode Configuration

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

Use the **CPU_FAN1 Smart Fan Control** BIOS option to configure the CPU Smart Fan.

➔ **Manual Mode** The fan spins at the speed set in the Manual Mode option

➔ **Auto Mode** **DEFAULT** The fan adjusts its speed using these settings:

- Auto mode fan start temperature
- Auto mode fan off temperature
- Auto mode fan start PWM
- Auto mode fan slope PWM

➔ **Auto mode fan start temperature**

WARNING:

Setting this value too high may cause the fan to rotate at full speed only when the CPU is at a very high temperature and therefore cause the system to be damaged.

The **Auto mode fan start temperature** option can only be set if the **CPU_FAN1/SYS_FAN1 Smart Fan Control** option is set to **Auto Mode**. If the system temperature is between **Start Temperature** and **Off Temperature**, the fan speed change to be **Start PWM**. To set a value, select the **Auto mode fan start temperature** option and enter a decimal number between 1 and 100.

➔ **Auto mode fan off temperature**

WARNING:

Setting this value too high may cause the fan to speed up only when the CPU is at a very high temperature and therefore cause the system to be damaged.

The **Auto mode fan off temperature** option can only be set if the **CPU_FAN1/SYS_FAN1 Smart Fan control** option is set to **Auto Mode**. If the system temperature is lower than **Auto mode fan off temperature**, the fan speed change to be

lowest. To set a value, select the **Auto mode fan off temperature** option and enter a decimal number between 1 and 100.

➔ **Auto mode fan start PWM**

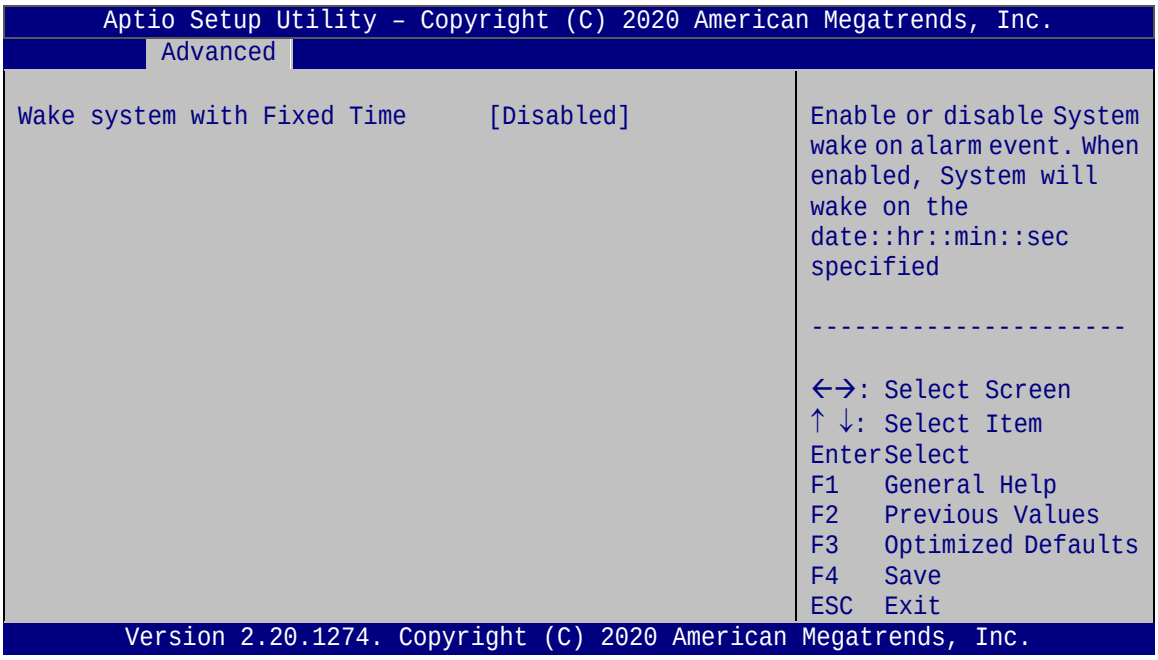
The **Auto mode fan start PWM** option can only be set if the **CPU_FAN1/SYS_FAN1 Smart Fan control** option is set to **Auto Mode**. Use the **Auto mode fan start PWM** option to set the PWM start value. To set a value, select the **Auto mode fan start PWM** option and enter a decimal number between 1 and 100.

➔ **Auto mode fan slope PWM**

The **Auto mode fan slope PWM** option can only be set if the **CPU_FAN1/SYS_FAN1 Smart Fan control** option is set to **Auto Mode**. Use the **Auto mode fan slope PWM** option to select the linear rate at which the PWM mode increases with respect to an increase in temperature. To set a value, select the **Auto mode fan slope PWM** option and enter a decimal number between 1 and 8.

5.3.7 RTC Wake Settings

The **RTC Wake Settings** menu (**BIOS Menu 12**) configures RTC wake event.



BIOS Menu 12: 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

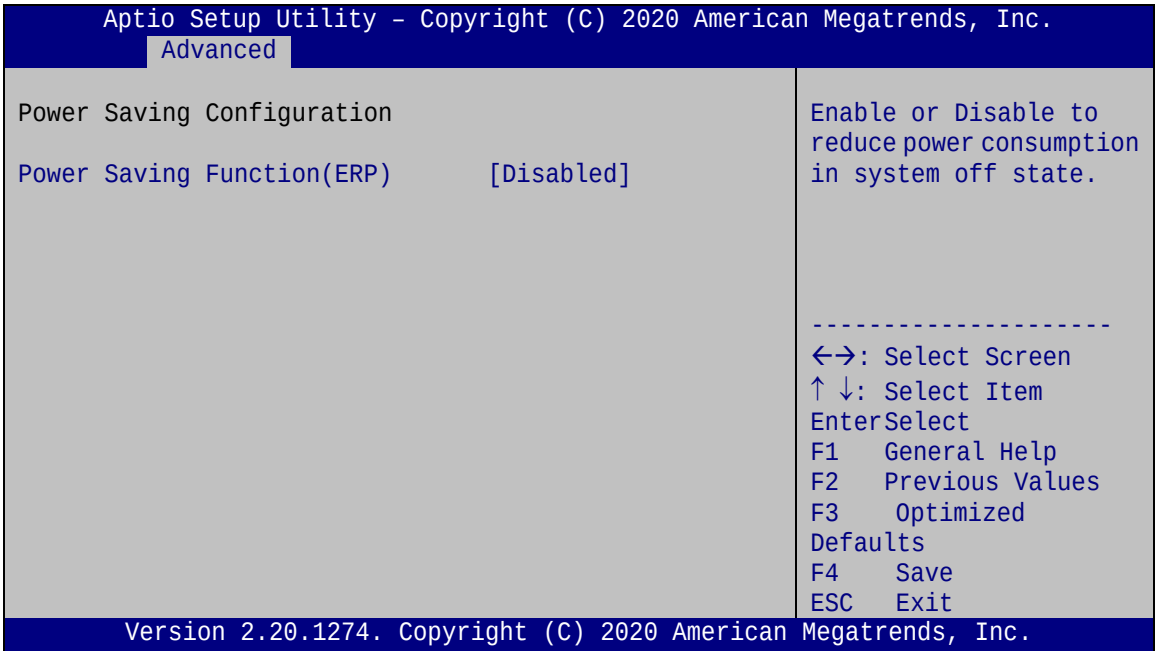
Wake up minute

Wake up second

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

5.3.8 Power Saving Configuration

Use the **Power Saving Configuration** menu (**BIOS Menu 13**) to configure power saving function and USB power.



BIOS Menu 13: Power Saving Configuration

➔ **Power Saving Function [Disabled]**

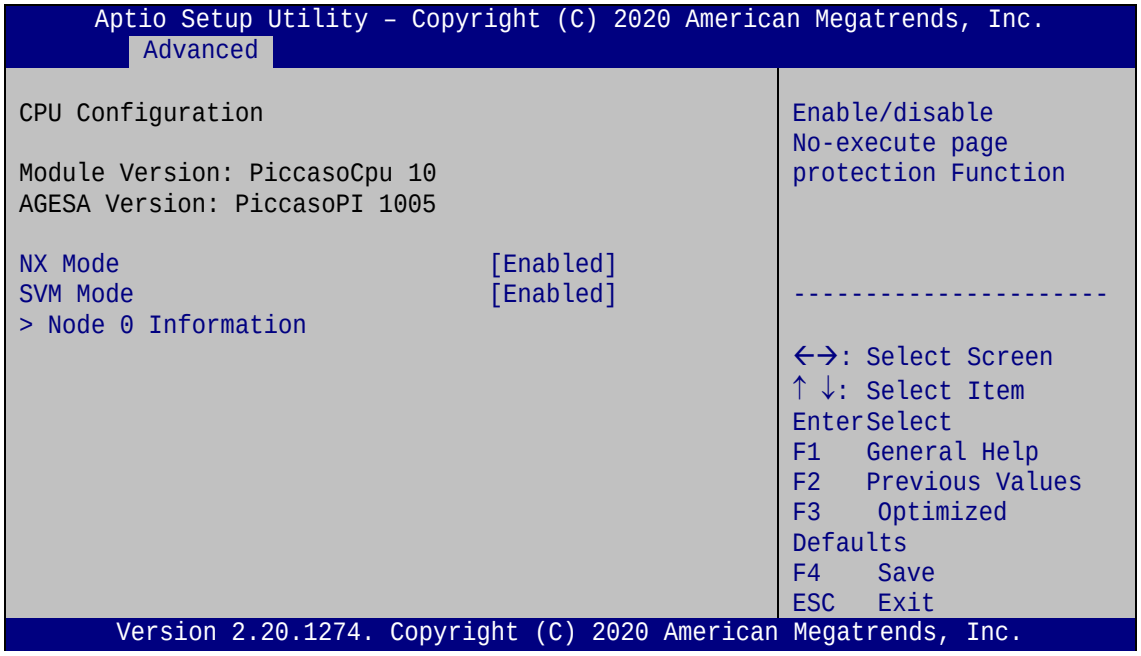
Use the **Power Saving Function** BIOS option to enable or disable the power saving function.

➔ **Disabled** **DEFAULT** Power saving function is disabled.

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

5.3.9 CPU Configuration

Use the **CPU Configuration** menu (**BIOS Menu 14**) to view detailed CPU specifications and configure the CPU.



BIOS Menu 14: CPU Configuration

➔ **NX Mode [Enabled]**

Use the **NX Mode** BIOS option to enable or disabled the No-execute (NX) page-protection function.

➔ **Disabled** Disable the No-execute (NX) page-protection function.

➔ **Enabled** **DEFAULT** Enable the No-execute (NX) page-protection function.

➔ **SVM Mode [Enabled]**

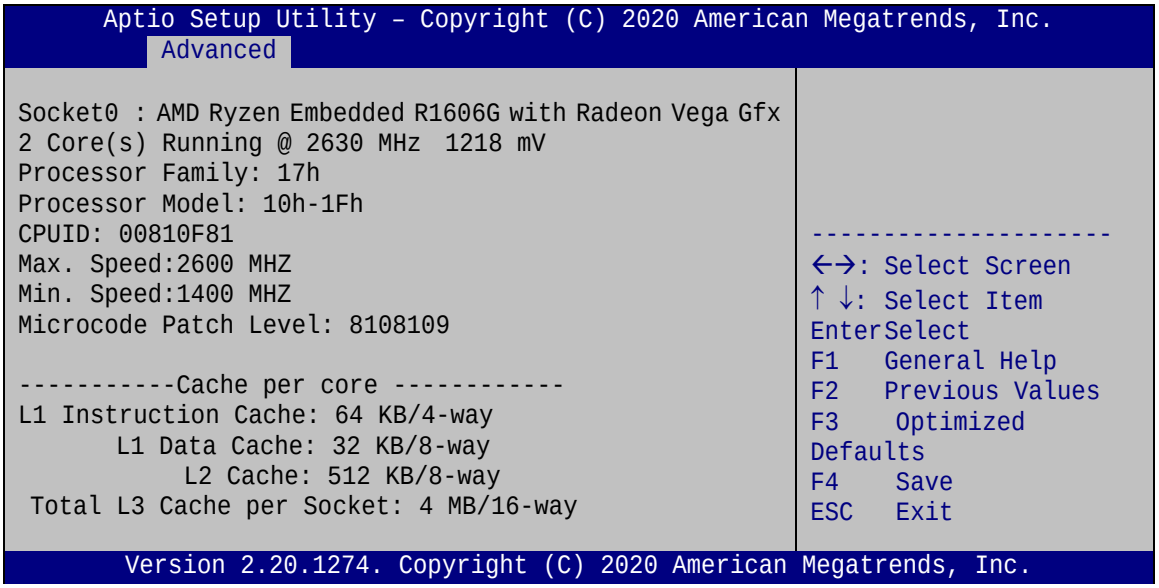
Use the **SVM Mode** BIOS option to enable or disabled the CPU virtualization function.

➔ **Disabled** Disable the CPU virtualization function.

➔ **Enabled** **DEFAULT** Enable the CPU virtualization function.

5.3.9.1 Node 0 Information

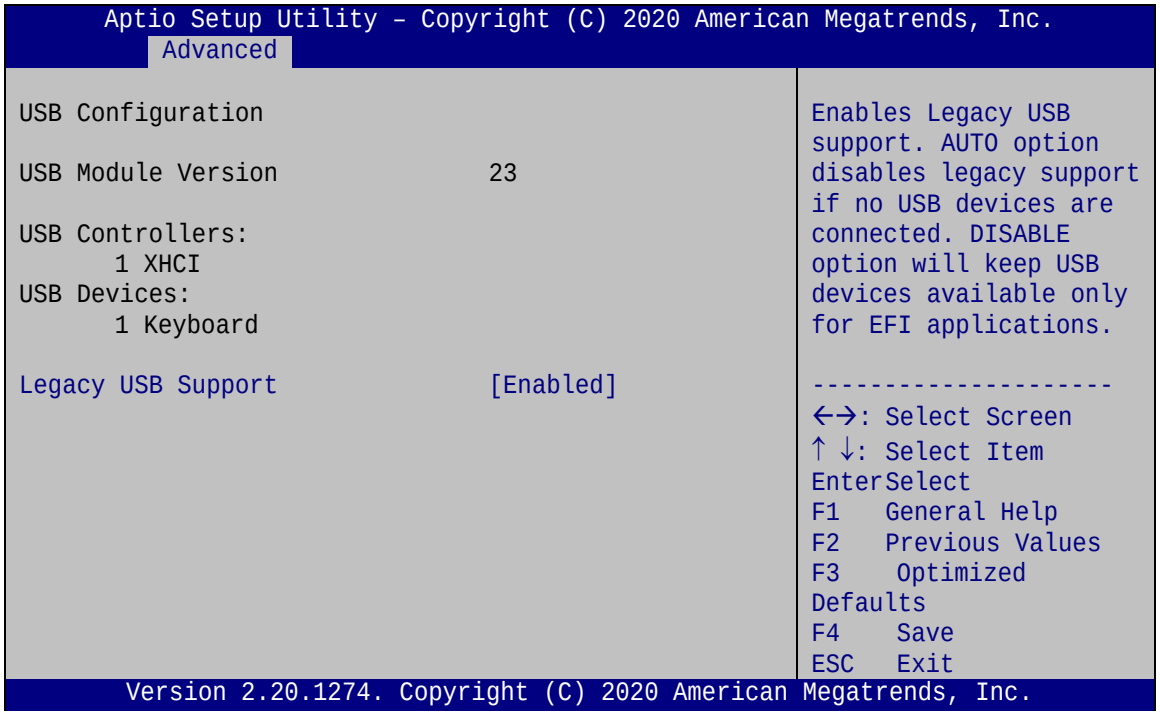
Use the **Node 0 Information** menu (**BIOS Menu 15**) to view memory information related to Node 0.



BIOS Menu 15: Node 0 Information

5.3.10 USB Configuration

Use the **USB Configuration** menu (**BIOS Menu 16**) to read USB configuration information and configure the USB settings.



BIOS Menu 16: USB Configuration

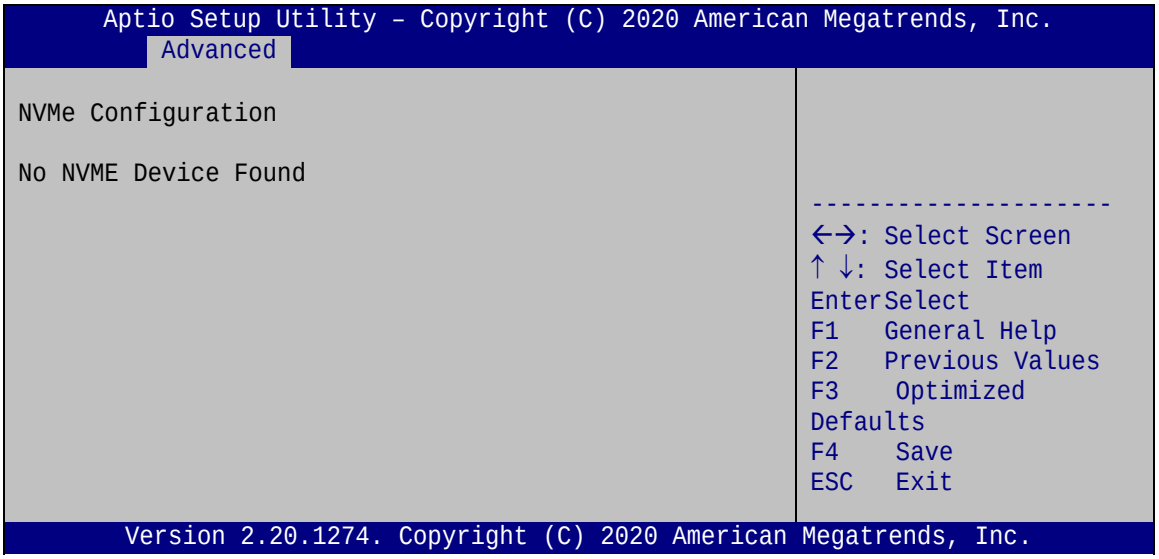
➔ **Legacy USB Support [Enabled]**

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

5.3.11 NVMe Configuration

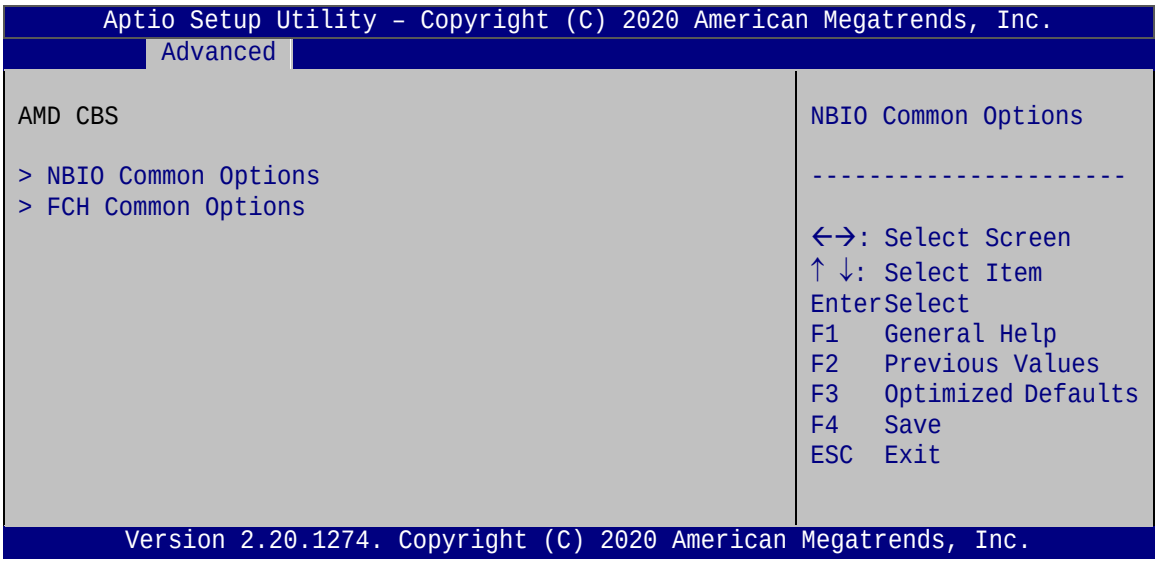
Use the **NVMe Configuration** menu (**BIOS Menu 17**) to change and/or set the configuration of the NVMe devices installed in the system.



BIOS Menu 17: NVMe Configuration

5.3.12 AMD CBS

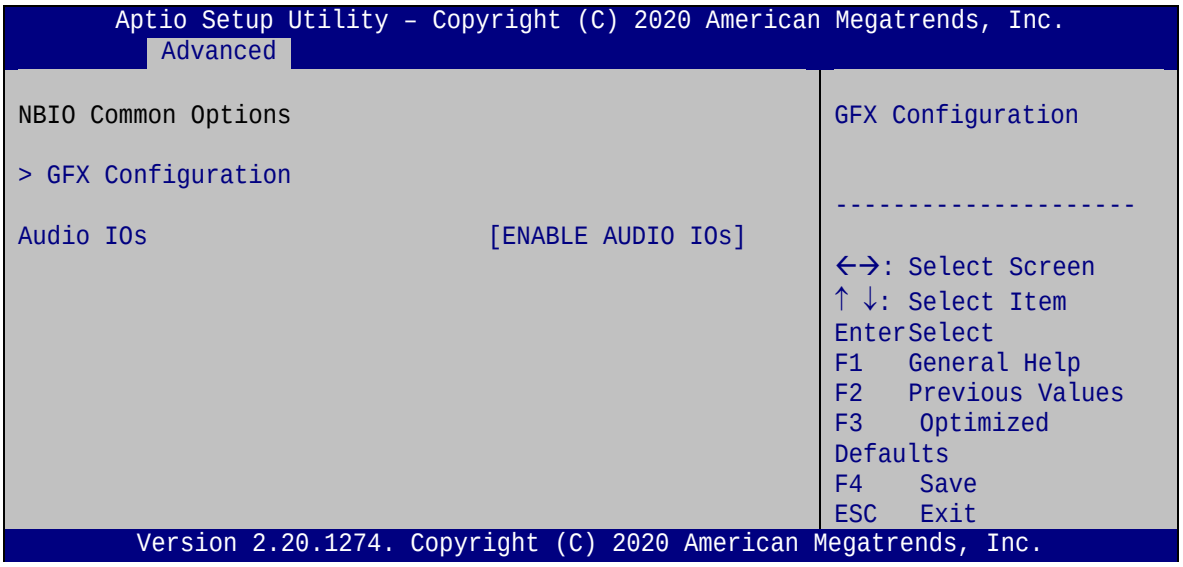
The **AMD CBS** menu (**BIOS Menu 18**) configures CPU-related information.



BIOS Menu 18: AMB CBS

5.3.12.1 NBIO Common Options

Use the **NBIO Common Options** menu (**BIOS Menu 19**) to configure the NB configuration.



BIOS Menu 19: NBIO Common Options

➔ **Audio IOs [ENABLE AUDIO IOs]**

Use the **Audio IOs** option to enable or disable the audio IO interfaces.

➔ **ENABLE AUDIO IOs**	**DEFAULT**	The audio IO interfaces are enabled
➔ **DISABLE AUDIO IOs**		The audio IO interfaces are disabled

5.3.12.1.1 GFX Configuration

Use the **GFX Configuration** menu (**BIOS Menu 20**) to configure the graphics controller.

```
Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc.
                    Chipset
GFX Configuration                          Enable Integrate
                                           Graphics Controller
Integrated Graphics Controller     [Auto]
NB Azalia                          [Enabled]

                                           ---------------------
                                           ←→: Select Screen
                                           ↑ ↓: Select Item
                                           EnterSelect
                                           F1   General Help
                                           F2   Previous Values
                                           F3    Optimized
                                           Defaults
                                           F4    Save
                                           ESC   Exit
Version 2.20.1274. Copyright (C) 2020 American Megatrends, Inc.
```

BIOS Menu 20: GFX Configuration

➔ **Integrated Graphics Controller [Auto]**

Use the **Integrated Graphics Controller** option to enable or disable the integrated graphics controller.

- ➔ **Disabled** The integrated graphics controller is disabled
- ➔ **Forces** Forces the use of the integrated graphics controller
- ➔ **Auto** **DEFAULT** The integrated graphics controller is detected automatically and enabled

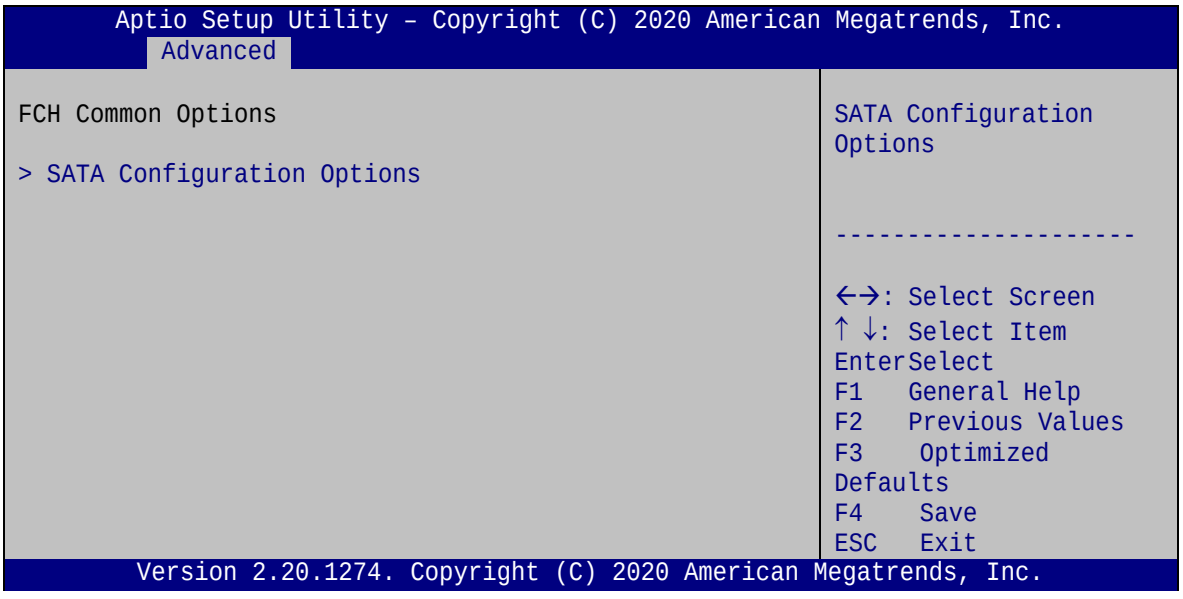
➔ **NB Azalia [Enabled]**

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

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

5.3.12.2 FCH Common Options

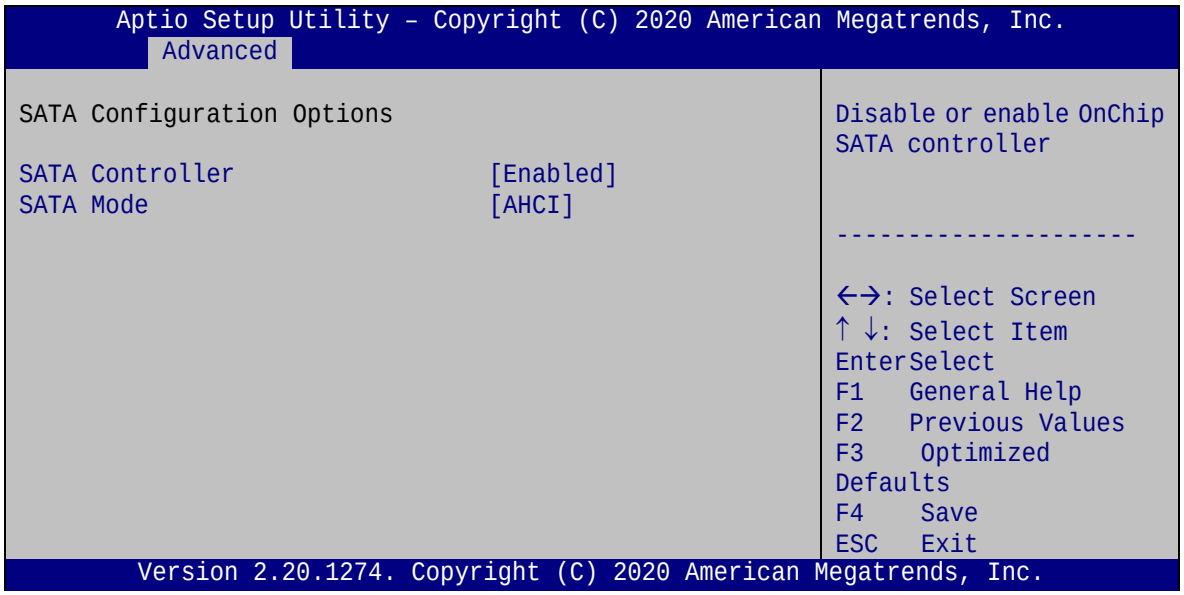
Use the **FCH Common Options** menu (**BIOS Menu 21**) to configure the FCH configuration.



BIOS Menu 21: FCH Common Options

5.3.12.2.1 SATA Configuration Options

Use the **SATA Configuration Options** menu (**BIOS Menu 22**) to configure Serial ATA.



BIOS Menu 22: SATA Configuration Options

➔ **SATA Controller [Enabled]**

Use the **SATA Controller** option to enable or disable the on-chip SATA controller.

➔ **Disabled** Disables the SATA controller.

➔ **Enabled** **DEFAULT** Enables the SATA controller.

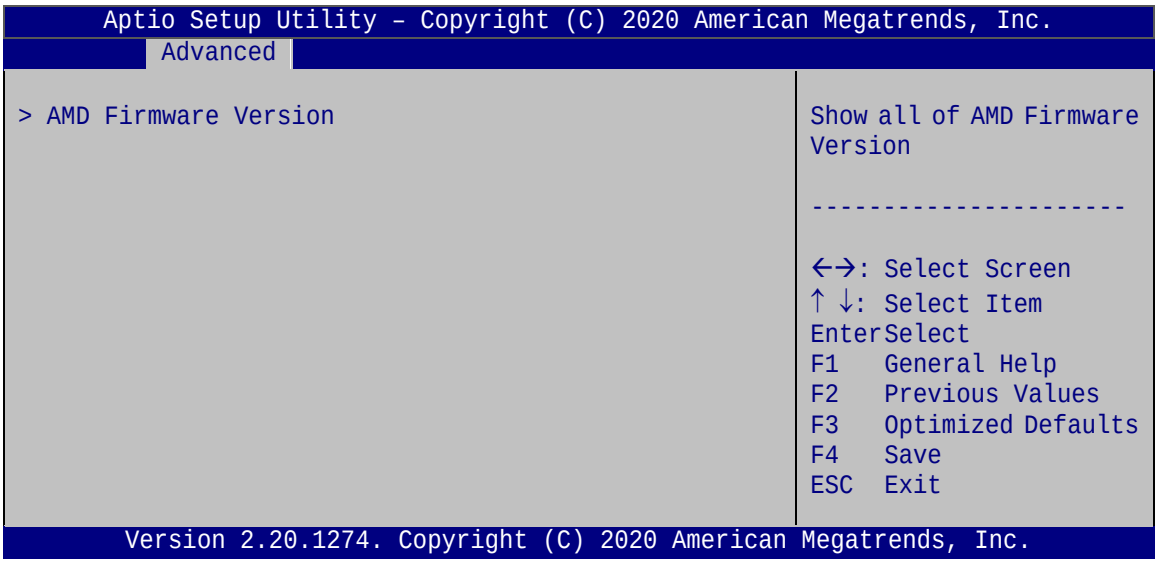
➔ **SATA Mode [AHCI]**

Use the **SATA Mode** option to configure SATA devices as AHCI devices.

➔ **AHCI** **DEFAULT** Configures SATA devices as AHCI device.

5.3.13 AMD PBS

The **AMD CBS** menu (**BIOS Menu 23**) configures CPU-related information.



BIOS Menu 23: AMB CBS

➔ **AMD Firmware Version**

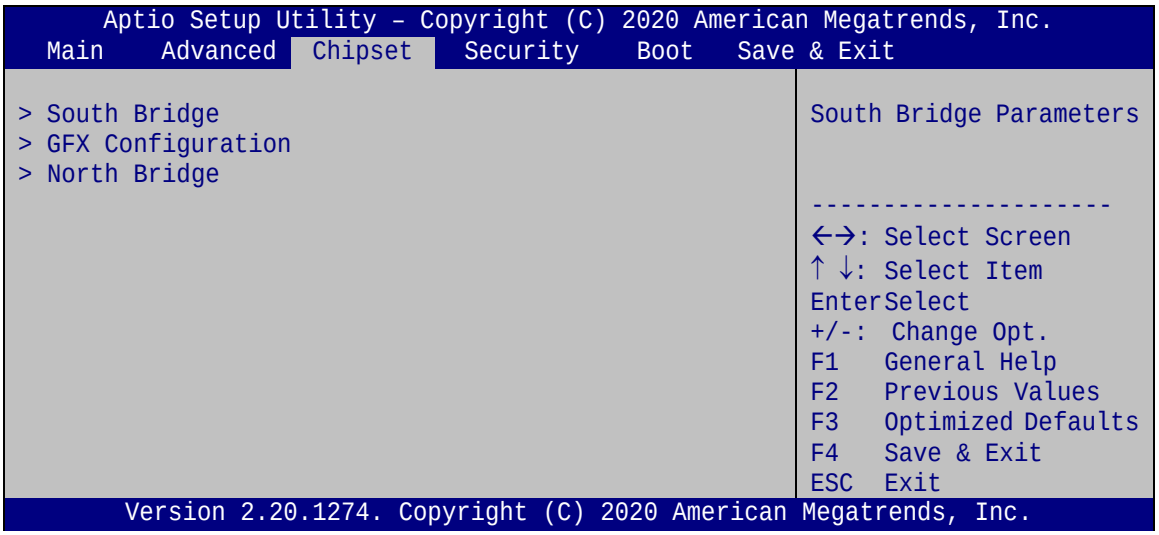
The **AMD Firmware Version** Information submenu lists a brief summary of the AMD firmware version information.

5.4 Chipset

Use the **Chipset** menu (**BIOS Menu 24**) to access the north bridge and south bridge configuration menus

WARNING!

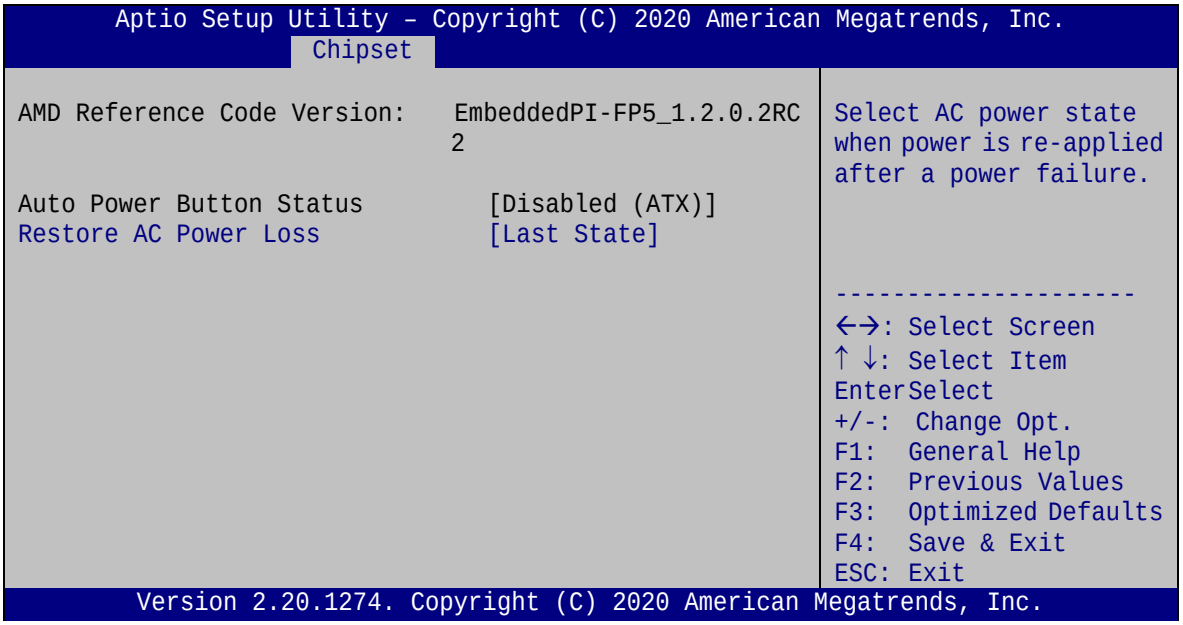
Setting the wrong values for the Chipset BIOS selections in the Chipset BIOS menu may cause the system to malfunction.



BIOS Menu 24: Chipset

5.4.1 South Bridge

Use the **South Bridge** menu (**BIOS Menu 25**) to configure the south bridge chipset.



BIOS Menu 25: South Bridge

➔ **Restore on AC Power Loss [Last State]**

Use the **Restore on AC Power Loss** BIOS option to specify what state the system returns to if there is a sudden loss of power to the system.

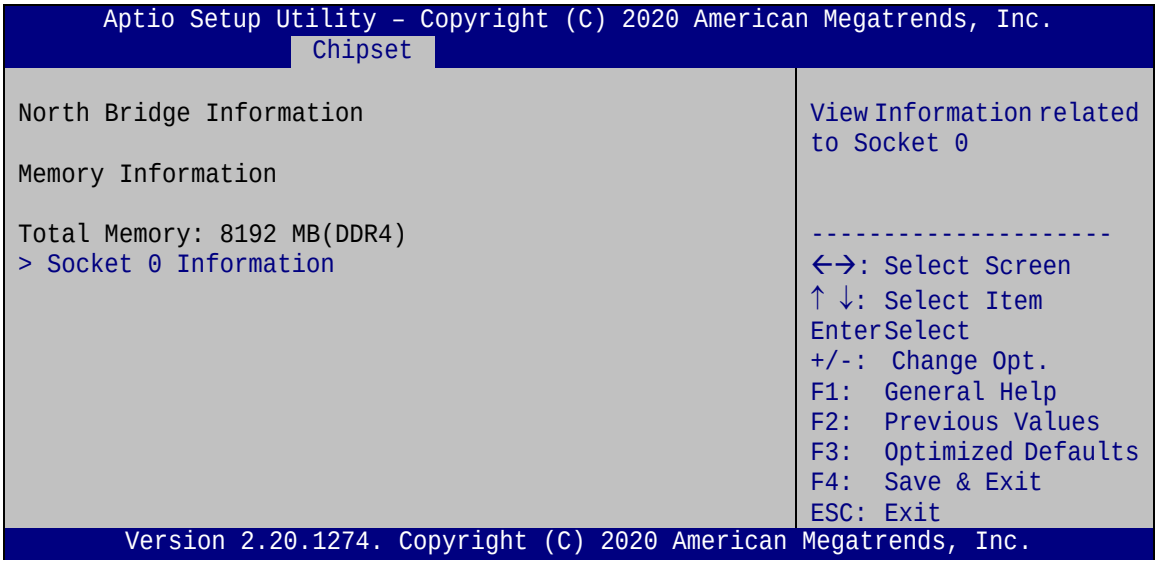
➔ **Power Off** The system remains turned off

➔ **Power On** The system turns on

➔ **Last State** **DEFAULT** The system returns to its previous state. If it was on, it turns itself on. If it was off, it remains off.

5.4.2 North Bridge

Use the **North Bridge** menu (**BIOS Menu 26**) to configure the memory settings.



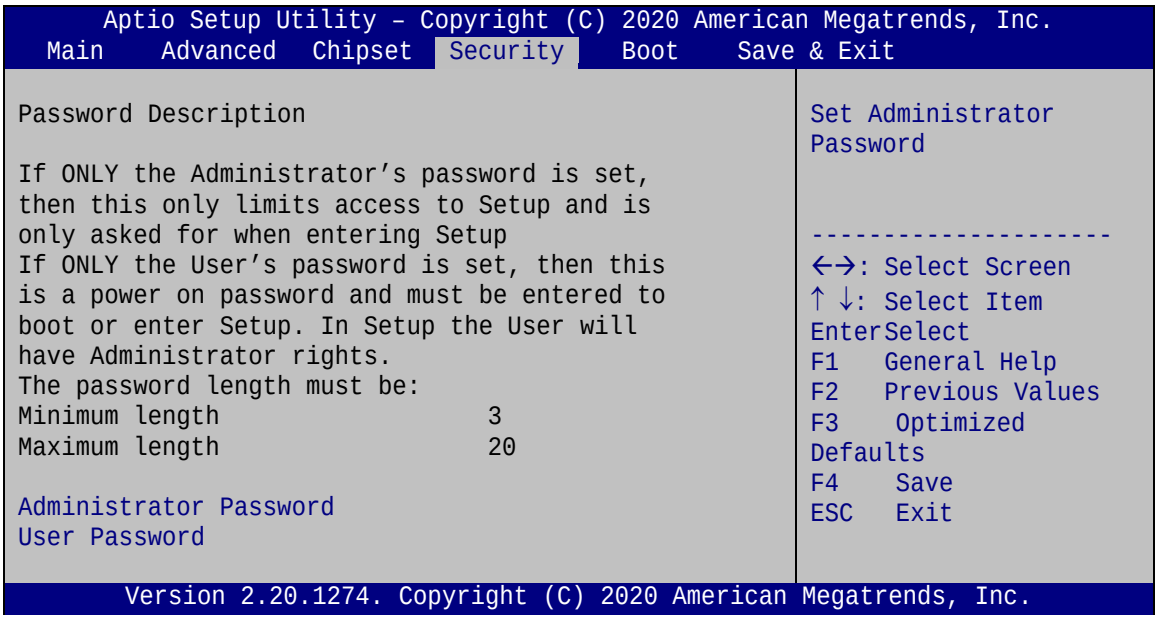
BIOS Menu 26: North Bridge

➔ **Socket 0 Information**

The **Socket 0 Information** submenu lists a brief summary of the on-board memory.

5.5 Security

Use the **Security** menu (**BIOS Menu 27**) to set system and user passwords.



BIOS Menu 27: Security

➔ **Administrator Password**

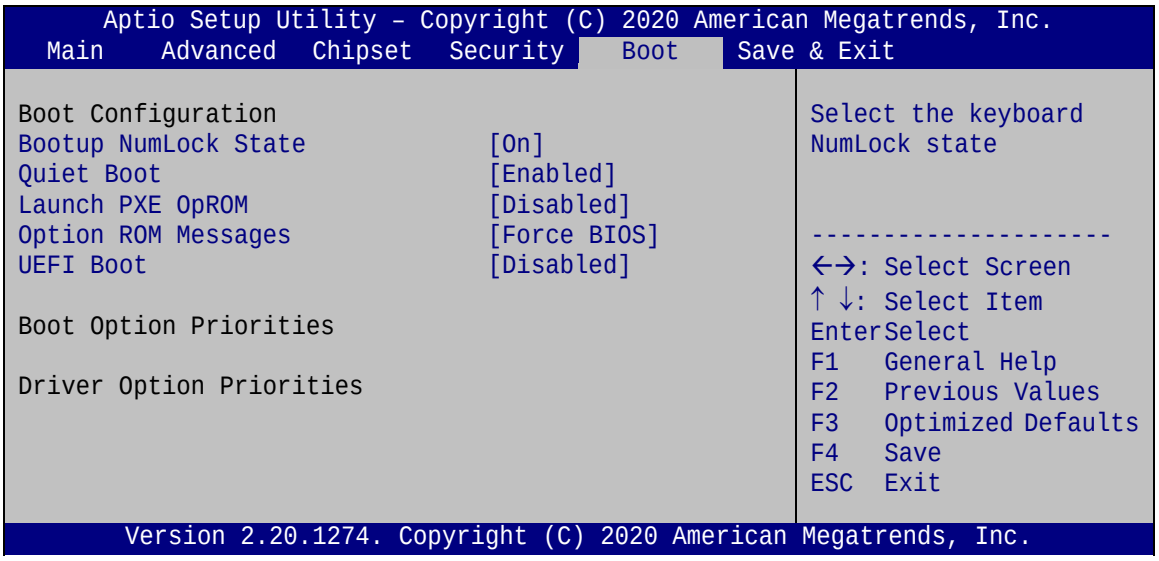
Use the **Administrator Password** to set or change a administrator password.

➔ **User Password**

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

5.6 Boot

Use the **Boot** menu (**BIOS Menu 28**) to configure system boot options.



BIOS Menu 28: Boot

➔ **Bootup NumLock State [On]**

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

➔ **On** **DEFAULT** Allows the Number Lock on the keyboard to be enabled automatically when the computer system boots up. This allows the immediate use of the 10-key numeric keypad located on the right side of the keyboard. To confirm this, the Number Lock LED light on the keyboard is lit.

➔ **Off** Does not enable the keyboard Number Lock automatically. To use the 10-keys on the keyboard, press the Number Lock key located on the upper left-hand corner of the 10-key pad. The Number Lock LED on the keyboard lights up when the Number Lock is engaged.

➔ **Quiet Boot [Enabled]**

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

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

➔ **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.

➔ **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.

➔ **UEFI Boot [Disabled]**

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

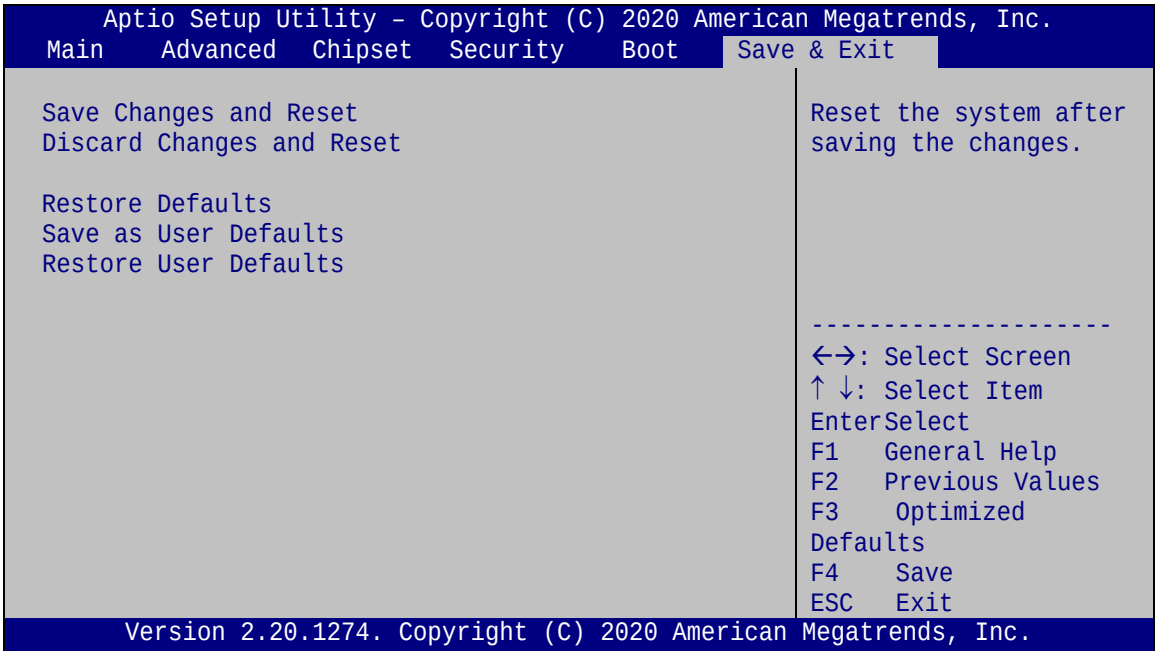
➔	**Enabled**		Boot from UEFI devices is enabled.
➔	**Disabled**	**DEFAULT**	Boot from UEFI devices is disabled.

➔ **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.

5.7 Save & Exit

Use the **Save & Exit** menu (**BIOS Menu 29**) to load default BIOS values, optimal failsafe values and to save configuration changes.



BIOS Menu 29: Save & Exit

➔ **Save Changes and Reset**

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

➔ **Discard Changes and Reset**

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

➔ **Restore Defaults**

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

➔ **Save as User Defaults**

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

➔ **Restore User Defaults**

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

Appendix

A

Regulatory Compliance

DECLARATION OF CONFORMITY

This equipment has been tested and found to comply with specifications for CE marking. If the user modifies and/or installs other devices in the equipment, the CE conformity declaration may no longer apply.

FCC WARNING

This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Appendix

B

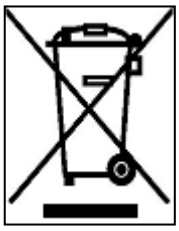
Product Disposal

CAUTION:

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

Dispose of used batteries according to instructions and local regulations.

- Outside the European Union–If you wish to dispose of used electrical and electronic products outside the European Union, please contact your local authority so as to comply with the correct disposal method.
- Within the European Union–The device that produces less waste and is easier to recycle is classified as electronic device in terms of the European Directive 2012/19/EU (WEEE), and must not be disposed of as domestic garbage.



EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords. When you need to dispose of your device, please follow the guidance of your local authority, or ask the shop where you purchased the product. The mark on electrical and electronic products only applies to the current European Union Member States.

Please follow the national guidelines for electrical and electronic product disposal.

Appendix

C

BIOS Menu Options

Appendix

D

Digital I/O Interface

The DIO connector on the gKINO-V/R1000 is interfaced to GPIO ports on the Super I/O chipset. The DIO has both 8-bit digital inputs and 8-bit digital outputs. The digital inputs and digital outputs are generally control signals that control the on/off circuit of external devices or TTL devices. Data can be read or written to the selected address to enable the DIO functions.

NOTE:

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

The BIOS interrupt call **INT 15H** controls the digital I/O.

INT 15H:

AH – 6FH	
Sub-function:	
AL – 8	:Set the digital port as INPUT
AL	:Digital I/O input value

Assembly Language Sample 1

```
MOV     AX, 6F08H       ;setting the digital port as input
INT     15H             ;
```

AL low byte = value

AH – 6FH	
Sub-function:	
AL – 9	:Set the digital port as OUTPUT
BL	:Digital I/O output value

Assembly Language Sample 2

```
MOV     AX, 6F09H       ;setting the digital port as output
MOV     BL, 09H                 ;digital value is 09H
INT     15H             ;
```

Digital Output is 1001b

Appendix

E

Watchdog Timer

NOTE:

The following discussion applies to DOS. Contact IEI support or visit the IEI website for drivers for other operating systems.

The Watchdog Timer is a hardware-based timer that attempts to restart the system when it stops working. The system may stop working because of external EMI or software bugs. The Watchdog Timer ensures that standalone systems like ATMs will automatically attempt to restart in the case of system problems.

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 E-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. When 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:

The Watchdog Timer is activated through software. The software application that activates the Watchdog Timer must also deactivate it when closed. If the Watchdog Timer is not deactivated, the system will automatically restart after the Timer has finished its countdown.

EXAMPLE PROGRAM:

```
; INITIAL TIMER PERIOD COUNTER

;
W_LOOP:
;

        MOV     AX, 6F02H       ;setting the time-out value
        MOV     BL, 30          ;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

F

Error Beep Code

F.1 PEI Beep Codes

Number of Beeps	Description
1	Memory not Installed
1	Memory was installed twice (InstallPeiMemory routine in PEI Core called twice)
2	Recovery started
3	DXEIPL was not found
3	DXE Core Firmware Volume was not found
4	Recovery failed
4	S3 Resume failed
7	Reset PPI is not available

F.2 DXE Beep Codes

Number of Beeps	Description
1	Invalid password
4	Some of the Architectural Protocols are not available
5	No Console Output Devices are found
5	No Console Input Devices are found
6	Flash update is failed
7	Reset protocol is not available
8	Platform PCI resource requirements cannot be met

NOTE:

If you have any question, please contact IEI for further assistance.

Appendix

G

Hazardous Materials Disclosure

G.1 RoHS II Directive (2015/863/EU)

The details provided in this appendix are to ensure that the product is compliant with the RoHS II Directive (2015/863/EU). The table below acknowledges the presences of small quantities of certain substances in the product, and is applicable to RoHS II Directive (2015/863/EU).

Please refer to the following table.

Part Name	Toxic or Hazardous Substances and Elements									
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybromminated Biphenyls (PBB)	Polybromminated Diphenyl Ethers (PBDE)	Bis(2-etnyhexyl) phthalate (DEHP)	Butyl benzyl phthalate (BBP)	Dibutyl phthalate (DBP)	Diisobutyl phthalate (DIBP)
Housing	O	O	O	O	O	O	O	O	O	O
Printed Circuit Board	O	O	O	O	O	O	O	O	O	O
Metal Fasteners	O	O	O	O	O	O	O	O	O	O
Cable Assembly	O	O	O	O	O	O	O	O	O	O
Fan Assembly	O	O	O	O	O	O	O	O	O	O
Power Supply Assemblies	O	O	O	O	O	O	O	O	O	O
Battery	O	O	O	O	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 Directive (EU) 2015/863.

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 Directive (EU) 2015/863.

G.2 China RoHS

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

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

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
壳体	O	O	O	O	O	O
印刷电路板	O	O	O	O	O	O
金属螺帽	O	O	O	O	O	O
电缆组装	O	O	O	O	O	O
风扇组装	O	O	O	O	O	O
电力供应组装	O	O	O	O	O	O
电池	O	O	O	O	O	O

O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11364-2014 與 GB/T26572-2011 标准规定的限量要求以下。

X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11364-2014 與 GB/T26572-2011 标准规定的限量要求。