ASRock Industrial

IMB-A1302

User Manual

Version 1.1

Updated August 31, 2026

Copyright©2026 ASRockInd INC. All rights reserved.

Version 1.1
Updated August 31, 2026
Copyright©2026 ASRockInd INC. All rights reserved.

Copyright Notice:

No part of this documentation may be reproduced, transcribed, transmitted, or translated in any language, in any form or by any means, except duplication of documentation by the purchaser for backup purpose, without written consent of ASRockInd Inc.

Products and corporate names appearing in this documentation may or may not be registered trademarks or copyrights of their respective companies, and are used only for identification or explanation and to the owners' benefit, without intent to infringe.

Disclaimer:

Specifications and information contained in this documentation are furnished for informational use only and subject to change without notice, and should not be constructed as a commitment by ASRockInd. ASRockInd assumes no responsibility for any errors or omissions that may appear in this documentation.

To the extent permitted by law, with respect to the contents of this documentation, ASRockInd does not provide warranty of any kind, either expressed or implied, including but not limited to the implied warranties or conditions of merchantability or fitness for a particular purpose. In no event shall ASRockInd, its directors, officers, employees, or agents be liable for any indirect, special, incidental, or consequential damages (including damages for loss of profits, loss of business, loss of data, interruption of business and the like), even if ASRockInd has been advised of the possibility of such damages arising from any defect or error in the documentation or product.

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

(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

The terms HDMI® and HDMI High-Definition Multimedia Interface, and the HDMI logo are trademarks or registered trademarks of HDMI Licensing LLC in the United States and other countries.

HIGH-DEFINITION MULTIMEDIA INTERFACE

WARNING

THIS PRODUCT CONTAINS A BUTTON BATTERY
If swallowed, a button battery can cause serious injury or death.
Please keep batteries out of sight or reach of children.

CALIFORNIA, USA ONLY

The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance.

"Perchlorate Material-special handling may apply, see www.dtsc.ca.gov/hazardouswaste/perchlorate"

AUSTRALIA ONLY

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage caused by our goods. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. If you require assistance please call ASRockInd Tel : +886-2-28965588 ext.123 (Standard International call charges apply)

CE

ASRockInd follows the green design concept to design and manufacture our products, and makes sure that each stage of the product life cycle of ASRockInd product is in line with global environmental regulations. In addition, ASRockInd disclose the relevant information based on regulation requirements.

DO NOT throw the motherboard in municipal waste. This product has been designed to enable proper reuse of parts and recycling. This symbol of the crossed out wheeled bin indicates that the product (electrical and electronic equipment) should not be placed in municipal waste. Check local regulations for disposal of electronic products.

Button Battery Safety Notice

⚠WARNING

- **INGESTION HAZARD:** This product contains a button cell or coin battery.
- **DEATH** or serious injury can occur if ingested.
- A swallowed button cell or coin battery can cause **Internal Chemical Burns** in as little as **2 hours**.
- **KEEP** new and used batteries **OUT OF REACH of CHILDREN**
- **Seek immediate medical attention** if a battery is suspected to be swallowed or inserted inside any part of the body.

- Remove and immediately recycle or dispose of used batteries according to local regulations and keep away from children. Do NOT dispose of batteries in household trash or incinerate.
- Even used batteries may cause severe injury or death.
- Call a local poison control center for treatment information.
- Battery type: CR2032
- Battery voltage: 3V
- Non-rechargeable batteries are not to be recharged.
- Do not force discharge, recharge, disassemble, heat above (manufacturer's specified temperature rating) or incinerate. Doing so may result in injury due to venting, leakage or explosion resulting in chemical burns.
- This product contains an irreplaceable battery.
- This icon indicates that a swallowed button battery can cause serious injury or death. Please keep batteries out of sight or reach of children.

Contents

Chapter 1 Introduction **1**

1.1 Package Contents 1

1.2 Specifications 2

1.3 Motherboard Layout 4

1.4 I/O Panel 7

1.5 Block Diagram 9

Chapter 2 Installation **10**

2.1 Screw Holes 10

2.2 Pre-installation Precautions 10

2.3 Installation of Memory Modules 11

2.4 Expansion Slots 13

2.5 Jumpers Setup 14

2.6 Onboard Headers and Connectors 16

Chapter 3 UEFI SETUP UTILITY **24**

3.1 Introduction 24

3.1.1 Entering BIOS Setup 24

3.1.2 UEFI Menu Bar 25

3.1.3 Navigation Keys 26

3.2 Main Screen 27

3.3 Advanced Screen 28

3.3.1 CPU Configuration 29

3.3.2 Chipset Configuration 30

3.3.3 Storage Configuration 33
3.3.4 Super IO Configuration 34
3.3.5 ACPI Configuration 35
3.3.6 USB Configuration 36
3.3.7 Trusted Computing 37
3.4 Hardware Health Event Monitoring Screen 39
3.5 Security Screen 41
3.6 Boot Screen 42
3.7 Exit Screen 43

Chapter 1 Introduction

Thank you for purchasing ASRockInd ***IMB-A1302*** motherboard, a reliable motherboard produced under ASRockInd's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRockInd's commitment to quality and endurance.

In this manual, chapter 1 and 2 contain introduction of the motherboard and step-by-step guide to the hardware installation. Chapter 3 contains the configuration guide to BIOS setup.

Because the motherboard specifications and the BIOS software might be updated, the content of this manual will be subject to change without notice. In case any modifications of this manual occur, the updated version will be available on ASRockInd website without further notice. You may find the latest CPU support lists on ASRockInd website as well.

ASRockInd website: https://www.asrockind.com/IMB-A1302

If you require technical support related to this motherboard, please visit our website for specific information about the model you are using.

https://www.asrockind.com/technical-support

1.1 Package Contents

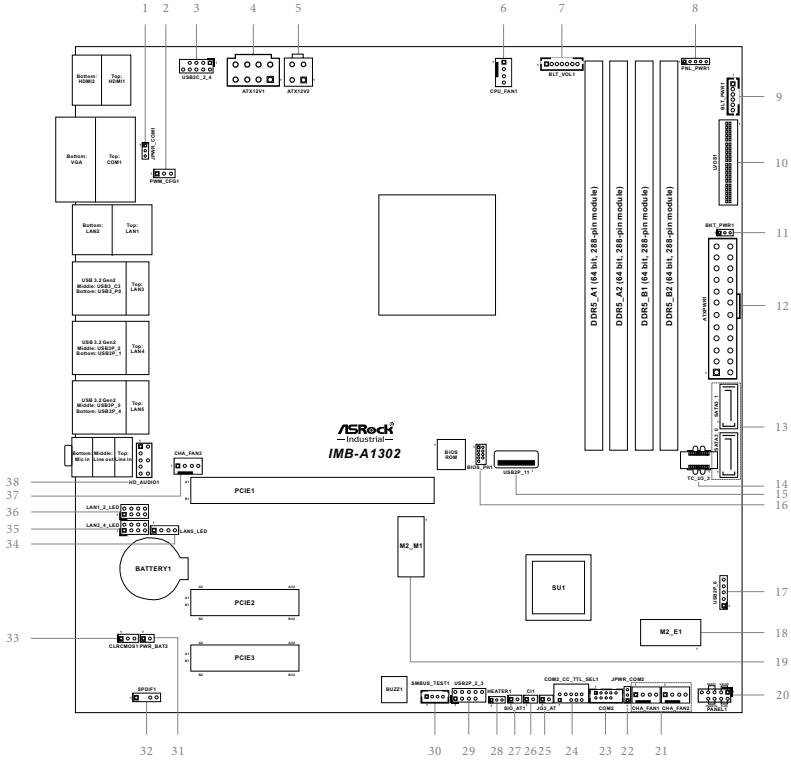
ASRockInd ***IMB-A1302*** Motherboard (Micro-ATX (9.6-in x 9.6-in x 1.58-in, 24.4 cm x 24.4 cm x 4.02 cm))

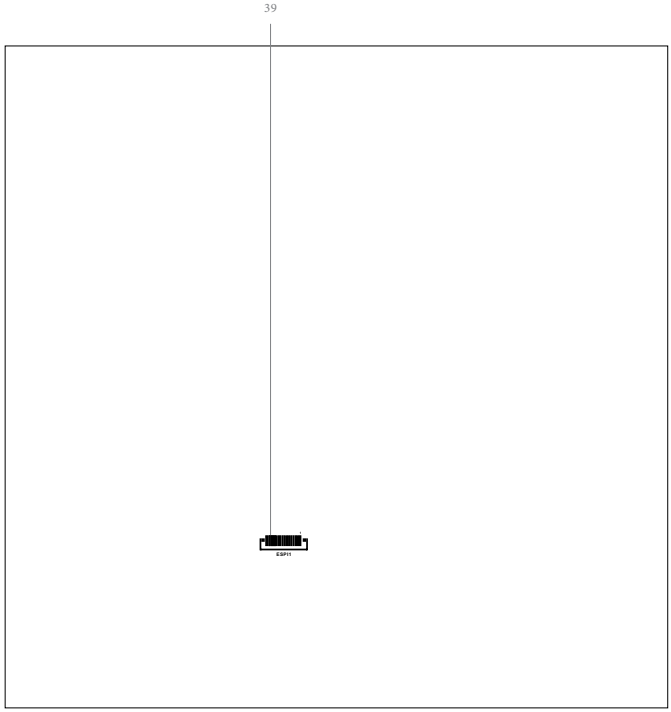
1.2 Specifications

Form Factor	Dimensions	Micro-ATX (9.6-in x 9.6-in x 1.58-in, 24.4 cm x 24.4 cm x 4.02 cm)
Processor System	CPU	Supports AMD EPYC™ 4005/4004 and AMD Ryzen™ 9000/8000/7000 Series Desktop Processors, up to 170W
	Chipset	AMD B650
	Socket	AM5
	BIOS	AMI SPI 256 Mbit
Memory	Technology	Dual Channel ECC/non-ECC DDR5 5600 MHz
	Capacity	256 GB (64 GB per DIMM)
	Socket	4 x 288-pin Long-DIMM
Graphics	Controller	AMD RDNA™ 2 Architecture
	HDMI	HDMI 2.0 Max resolution up to 4096x2160@60Hz
	VGA	Max resolution up to 1920x1080@60Hz
	LVDS	Dual channel 24 bit up to 1920x1200@60Hz (Connector shared with eDP) (BOM option)
	eDP	Max resolution up to 1920x1200@60Hz (Connector shared with LVDS) (BOM option)
	MultiDisplay	Quad Display
Expansion Slot	PCIe	1 x PCIe x16 (Gen5, Support riser card x8/x8) 2 x PCIe x4 (Gen4)
	M.2	1 x M.2 (Key E, 2230) with PCIe Gen4 x1 and USB 2.0 for Wireless
Audio	Interface	Realtek ALC897, High Definition Audio. Line-out, Mic-in, Line-in
Ethernet	Controller/ Speed	LAN1: Intel® I226V with 10/100/1000/2500 Mbps LAN2: Intel® I226V with 10/100/1000/2500 Mbps LAN3: Intel® I226V with 10/100/1000/2500 Mbps LAN4: Intel® I226V with 10/100/1000/2500 Mbps LAN5: Realtek RTL8111FP with 10/100/1000 Mbps
	Controller	5 x RJ-45
Rear I/O	HDMI	2 x HDMI 2.0
	VGA	1
	Ethernet	1 x 1 Gigabit LAN 4 x 2.5 Gigabit LAN
	USB	6 x USB 3.2 Gen2
	Audio	3 (Mic-in, Line-in, Line-out)
	COM	COM1 (RS-232/422/485)

Internal Connector	USB	1 x USB 3.2 Gen1 (Type-C Header) 6 x USB 2.0 (3 x 2.54 pitch header, 1 x USB 2.0 Type-A vertical connector)
	COM	COM2 (RS-232/TTL5V/ ccTALK)
	LVDS	1 (Optional, Connector with LVDS/eDP signal, switch by BIOS) *To use an eDP panel, set Active LVDS to [Enable] and Panel Type Selection to [eDP Bypass Mode] to enable output.
Storage	M.2	1 x M.2 (Key M, 2230/2280/3042) with PCIe Gen4 x4, SATA3 and USB 2.0 for SSD
	SATA	2 x SATA3 (6Gb/s) (1 x shared with Key M)
	RAID	Intel® SATA RAID 0/1
Security	TPM	TPM 2.0 onboard IC
Watchdog Timer	Output	From Super I/O to drag RESETCON#
	Interval	256 Segments, 0, 1, 2, ...255 Sec
Power Requirements	Input PWR	ATX PWR (24+8-pin)
	Power On	AT/ATX Supported -AT: Directly PWR on as power input ready -ATX: Press button to PWR on after power input ready
Environment	Operating Temperature	-20 ºC ~ 60 ºC
	Storage Temperature	-40 °C ~ 85 °C
	Operating Humidity	5% ~ 90%
	Storage Humidity	5% ~ 90%

1.3 Motherboard Layout

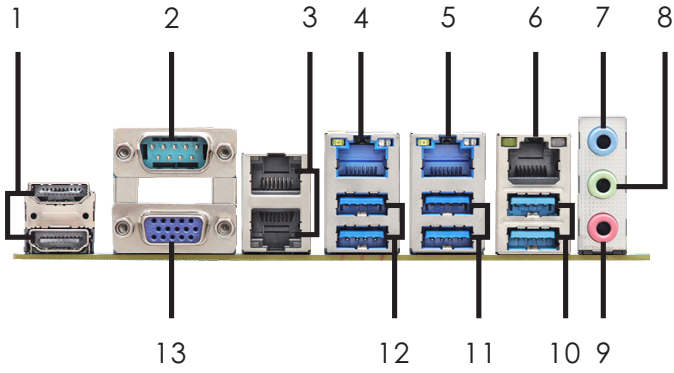



39
ESP11

1 : COM Port PWR Setting Jumper (JPWR_COM1 (For COM Port1))
2 : PWM_CFG1 (for internal test)
3 : USB 2.0 Header (USB2C_2_4)
4 : 8-pin ATX 12V Power Connector (ATX12V1)
5 : 4-pin ATX 12V Power Connector (ATX12V2)
6 : CPU FAN Connector (+12V) (CPU_FAN1)
7 : Backlight Volume Control (BLT_VOL1)
8 : Panel Power Select (LCD_VCC) (PNL_PWR1)
9 : Inverter Power Control Wafer (BLT_PWR1)
10 : LVDS Panel Connector (LVDS1)
11 : Backlight Power Select (LCD_BLT_VCC) (BKT_PWR1)
12 : 24-pin ATX Power Input Connector (ATXPWR1)
13 : SATA3 Connectors (SATA3_0, SATA3_1)
14 : Front Panel Type-C USB 3.2 Gen1 Header (TC_U3_3)
15 : USB 2.0 Type-A port (Veritcal) (USB2P_11)
16 : BIOS_PH1
17 : USB 2.0 Header (USB2P_6)
18 : M.2 Key-E Socket (M2_E1)
19 : M.2 Key-M Socket (M2_M1)
20 : System Panel Header (PANEL1)
21 : Chassis FAN Connectors (+12V) (CHA_FAN1, CHA_FAN2)
22 : COM Port PWR Setting Jumper (JPWR_COM2 (For COM Port2))
23 : COM Port Header (COM2) (RS-232)
24 : COM2_CC_TTL_SEL1
25 : JG3_AT1 (For internal test)
26 : Chassis Intrusion Header (CI1)
27 : ATX/AT Mode Jumper (SIO_AT1)
28 : HEATER1 Header (HEATER1) (Preheat function)
29 : USB 2.0 Header (USB2P_2_3)
30 : SMBUS_TEST1
31 : PWR_BAT2
32 : SPDIF Header (SPDIF1)
33 : Clear CMOS Header (CLRMOS1)
34 : LAN LED Header (LAN5_LED (For LAN5 Port))
35 : LAN LED Header (LAN3_4_LED (For LAN3, LAN4 Ports))
36 : LAN LED Header (LAN1_2_LED (For LAN1, LAN2 Ports))
37 : Chassis FAN Connector (+12V) (CHA_FAN3)
38 : Front Panel Audio Header (HD_AUDIO1)

<u>Back Side:</u>
39 : ESPI Header (ESPI1)

1.4 I/O Panel



1 HDMI Ports
Top: HDMI1
Bottom: HDMI
2 COM Port (COM1) (RS232/422/485)*
3 RJ45 LAN Ports
Top : LAN1**
Bottom : LAN2**
4 RJ45 LAN Port (LAN3)**
5 RJ45 LAN Port (LAN4)**
6 RJ45 LAN Port (LAN5)***
7 Audio Jack - Blue: Line-in
8 Audio Jack - Green: Line-out
9 Audio Jack - Pink: Mic-in
10 USB 3.2 Gen2 Ports
Top: USB3P_5
Bottom: USB3P_4
11 USB 3.2 Gen2 Ports
Top: USB3P_2
Bottom : USB3P_1
12 USB 3.2 Gen2 Ports
Top: USB3_C3
Bottom : USB3P_0
13 D-Sub Port (VGA1)

* This motherboard supports RS232/422/485 on COM1 port. Please refer to the table below for the pin definition. In addition, COM1 port (RS232/422/485) can be adjusted by Jumper Setting. You may refer to our user manual for details.

COM1 Port Pin Definition

Pin	RS232	RS422	RS485
1	DCD	TX-	RTX-
2	RXD	TX+	RTX+
3	TXD	RX+	NA
4	DTR	RX-	NA
5	GND	GND	GND
6	DSR	NA	NA
7	RTS	NA	NA
8	CTS	NA	NA
9	PWR	PWR	PWR

** There are two LEDs next to the LAN1~4 ports. Please refer to the table below for the LAN1~4 ports LED indications.

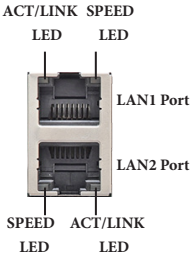
LAN1~4 Ports LED Indications

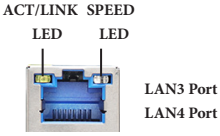
ACT/LINK LED

Status	Description
Off	No Link
Blinking	Data Activity
On	Link

SPEED LED

Status	Description
Off	10/100Mbps connection
Orange	1Gbs connection
Green	2.5Gbs connection





*** There are two LEDs next to the LAN5 port. Please refer to the table below for the LAN5 port LED indications.

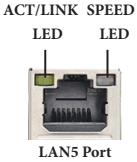
LAN5 Port LED Indications

ACT/LINK LED

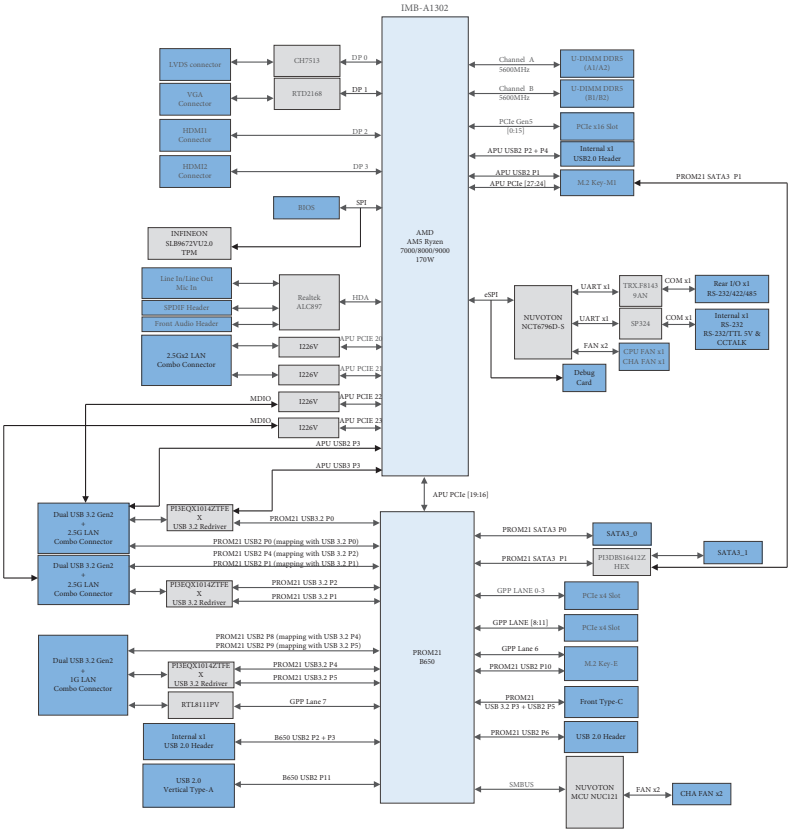
Status	Description
Off	No Link
Blinking	Data Activity
On	Link

SPEED LED

Status	Description
Off	10Mbps connection
Orange	100Mbps connection
Green	1000Mbps connection



1.5 Block Diagram



Chapter 2 Installation

This is a Micro-ATX (9.6-in x 9.6-in x 1.58-in, 24.4 cm x 24.4 cm x 4.02 cm) form factor motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries to you and damages to motherboard components.

ASRock Industrial has positioned the chipset on the rear of the PCB to optimize space and improve thermal dissipation when the chipset heatsink contacts the chassis via a thermal pad. Ensure the height of the chipset heatsink is considered during system integration.

2.1 Screw Holes

Place screws into the holes to secure the motherboard to the chassis.

Do not over-tighten the screws! Doing so may damage the motherboard.

2.2 Pre-installation Precautions

Take note of the following precautions before you install motherboard components or change any motherboard settings.

1. Unplug the power cord from the wall socket before touching any component.
2. To avoid damaging the motherboard components due to static electricity, NEVER place your motherboard directly on the carpet or the like. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle components.
3. Hold components by the edges and do not touch the ICs.
4. Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that comes with the component.
5. Heatsink (The thermal solution of whole system needs to be designed additionally.)

Before you install or remove any component, ensure that the power is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

2.3 Installation of Memory Modules

IMB-A1302 provides four 288-pin DDR5 (Double Data Rate 5) Long-DIMM slots, and supports dual-channel ECC/non-ECC DDR5 5600 MHz memory.

1. *Please make sure to disconnect the power supply before adding or removing LONG-DIMMs or the system components.*
2. *It is not allowed to install a DDR, DDR2, DDR3 or DDR4 memory module into a DDR5 slot; otherwise, this motherboard and DIMM may be damaged.*

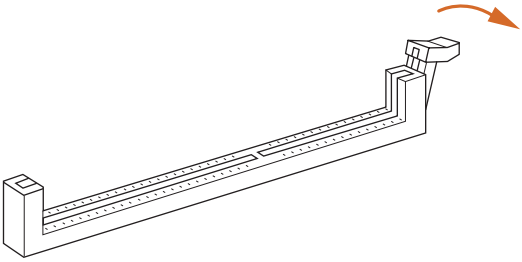
The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot in the incorrect orientation.

Recommended Memory Configuration:

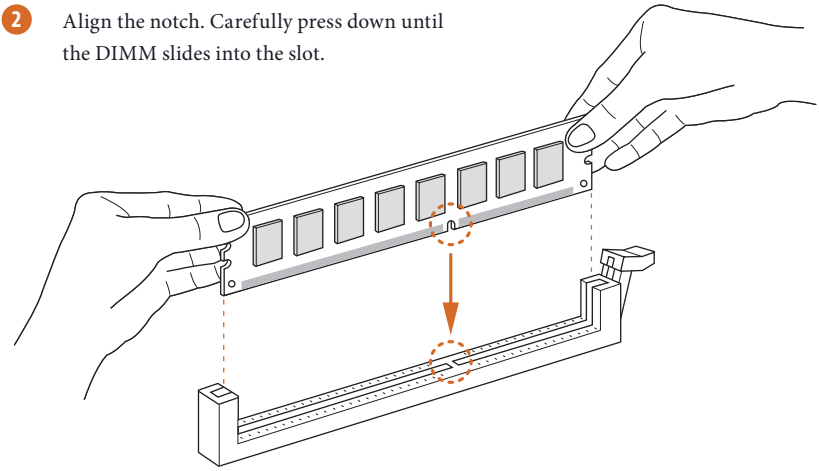
DIMM Card	A1	A2	B1	B2
1				V
2		V		V
4	V	V	V	V

* The symbol "V" indicates the slot is populated.

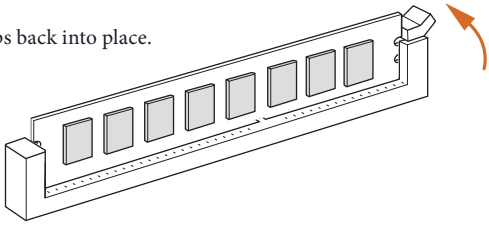
1. Open the DIMM slot latch.



2. Align the notch. Carefully press down until the DIMM slides into the slot.



3. The latche snaps back into place.



2.4 Expansion Slots

There are three PCI Express slots and two M.2 sockets on this motherboard.

PCIE slot: PCIE1 (PCIe 5.0 x16 slot) is used for PCI Express x16 lane width cards and suports a riser card in x8/x8 mode.
PCIE2 (PCIe 4.0 x4 slot) is used for PCI Express x4 lane width cards.
PCIE3 (PCIe 4.0 x4 slot) is used for PCI Express x4 lane width cards.

M.2 sockets: 1 x M.2 (Key E, 2230) with PCIe Gen4 x1 and USB 2.0 for Wireless
1 x M.2 (Key M, 2230/2280/3042) with PCIe Gen4 x4, SATA3 and USB 2.0 for SSD

M.2 Key-E Socket
(M2_E1)

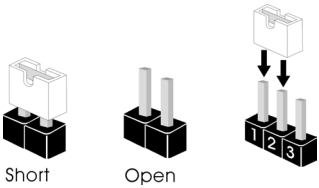
Pin	Signal Name	Signal Name	Pin
1	GND	+3.3V	2
3	USB_D+	+3.3V	4
5	USB_D-	NA	6
7	GND	NA	8
9	NA	NA	10
11	NA	NA	12
13	NA	NA	14
15	NA	NA	16
17	NA	GND	18
19	NA	NA	20
21	NA	NA	22
23	NA		
		NA	32
33	GND	NA	34
35	PETp	NA	36
37	PETn	NA	38
39	GND	NA	40
41	PERp	NA	42
43	PERn	NA	44
45	GND	NA	46
47	PEFCLKp	NA	48
49	PEFCLKn	NA	50
51	GND	PERST0#	52
53	CLKREQ#	BT_ON/OFF#	54
55	WAKE#	WLAN_ON/ OFF#	56
57	GND	SMB_DATA	58
59	NA	SMB_CLK	60
61	NA	NA	62
63	GND	NA	64
65	NA	NA	66
67	NA	NA	68
69	GND	NA	70
71	NA	+3.3V	72
73	NA	+3.3V	74
75	GND		

M.2 Key-M Socket
(M2_M1)

Pin	Signal Name	Signal Name	Pin
1	GND	+3.3V	2
3	GND	+3.3V	4
5	PERn3	NA	6
7	PERp3	NA	8
9	GND	M2M_LED	10
11	PETn3	+3.3V	12
13	PETp3	+3.3V	14
15	GND	+3.3V	16
17	PERn2	+3.3V	18
19	PERp2	NA	20
21	GND	NA	22
23	PETn2	NA	24
25	PETp2	NA	26
27	GND	NA	28
29	PERn1	NA	30
31	PERp1	GND	32
33	GND	USB_D+	34
35	PETn1	USB_D-	36
37	PETp1	NA	38
39	GND	SMB_CLK	40
41	PERn0/ SATA-B+	SMB_DATA	42
43	PERp0/ SATA-B-	NA	44
45	GND	NA	46
47	PETn0/ SATA-A-	NA	48
49	PETP0/ SATA-A+	PERST#	50
51	GND	CLKREQ#	52
53	PEFCLKn	WAKE#	54
55	PEFCLKp	NA	56
57	GND	NA	58
67	NA	NA	68
69	PEDET	+3.3V	70
71	GND	+3.3V	72
73	GND	+3.3V	74
75	GND		

2.5 Jumpers Setup

The illustration shows how jumpers are setup. When the jumper cap is placed on pins, the jumper is "Short." If no jumper cap is placed on pins, the jumper is "Open." The illustration shows a 3-pin jumper whose pin1 and pin2 are "Short" when jumper cap is placed on these 2 pins.



COM Port PWR Setting Jumpers

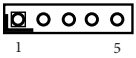
(3-pin JPWR_COM1 (For COM Port1))
(see p. 4, No. 1)

Setting	Description
1-2	+5V (Default)
2-3	+12V

(3-pin JPWR_COM2 (For COM Port2))
(see p. 4, No. 22)

Panel Power Select (LCD_VCC)

(5-pin PNL_PWR1)
(see p. 4, No. 8)



Setting	Description
1-2	LCD_VCC: +3V (Default)
2-3	LCD_VCC: +5V
4-5	LCD_VCC: +12V

Use this header to set up the VDD power of the LVDS connector.

Backlight Power Select (LCD_BLT_VCC)

(3-pin BKT_PWR1)
(see p. 4, No. 11)

Setting	Description
1-2	LCD_BLT_VCC : +5V (Default)
2-3	LCD_BLT_VCC : +12V

Use this header to set up the backlight power of the LVDS connector and the panel backlight power of BLT_PWM1.

JG3_AT1 (for internal test)

(2-pin JG3_AT1)

(see p. 4, No. 25)

Chassis Intrusion Header

(2-pin CI1)

(see p. 4, No. 26)

Setting	Description
Open	Normal (Default)
Short	Active Case Open

This motherboard supports CASE OPEN detection feature that detects if the chassis cover has been removed. This feature requires a chassis with chassis intrusion detection design.

ATX/AT Mode Jumper

(2-pin SIO_AT1)

(see p. 4, No. 27)

Setting	Description
Open	AT Mode
Short	ATX Mode (Default)

The header provides auto boot function when AC power on. If you need the function, open SIO_AT1 pin 1 and pin 2.

PWR_BAT2

(2-pin PWR_BAT2)

(see p. 4, No. 31)

Setting	Description
Open	Normal (Default)
Short	Charge Battery*

* Only supported by chargeable battery.

Clear CMOS Header

(3-pin CLRMOS1)

(see p. 4, No. 33)

Setting	Description
1-2	Clear CMOS
2-3	Normal (Default)

NOTE: CLRMOS1 allows you to clear the data in CMOS. To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord from the power supply. After waiting for 15 seconds, use a jumper cap to short pin2 and pin3 on CLRMOS1 for 5 seconds. However, please do not clear the CMOS right after you update the BIOS. If you need to clear the CMOS when you just finish updating the BIOS, you must boot up the system first, and then shut it down before you do the clear-CMOS action. Please be noted that the password, date, and time will be cleared only if the CMOS battery is removed.

2.6 Onboard Headers and Connectors

Onboard headers and connectors are NOT jumpers. Do NOT place jumper caps over these headers and connectors. Placing jumper caps over the headers and connectors will cause permanent damage to the motherboard!

PWM_CFG1 (for internal test)

(3-pin PWM_CFG1)

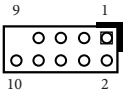
(see p. 4, No. 2)

Pin	Signal Name
1	GND
2	VCORE_SDA
3	VCORE_SCL

USB 2.0 Headers

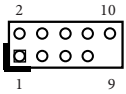
(9-pin USB2C_2_4)

(see p. 4, No. 3)



(9-pin USB2P_2_3)

(see p. 4, No. 29)



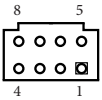
Pin	Signal Name	Signal Name	Pin
1	USB_PWR	USB_PWR	2
3	P-	P-	4
5	P+	P+	6
7	GND	GND	8
9		DUMMY	10

The board provides three internal 2.54mm pitch headers for five USB 2.0 ports. Two 9-pin headers support two USB 2.0 ports each, and one 5-pin header supports one USB 2.0 port. The maximum current per port is 0.5A.

8-pin ATX 12V Power Connector

(8-pin ATX12V1)

(see p. 4, No. 4)



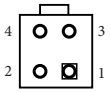
Pin	Signal Name	Signal Name	Pin
1	GND	ATX12V	5
2	GND	ATX12V	6
3	GND	ATX12V	7
4	GND	ATX12V	8

This motherboard provides one 8-pin ATX 12V power connectors. To use a 4-pin ATX power supply, please plug it along Pin 1 and Pin 5.

4-pin ATX 12V Power Connector

(4-pin ATX12V2)

(see p. 4, No. 5)



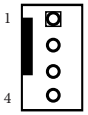
Pin	Signal Name	Signal Name	Pin
1	GND	GND	2
3	ATX12V	ATX12V	4

Please connect a DC +12V power supply to this connector.

CPU Fan Connector (+12V)

(4-pin CPU_FAN1)

(see p. 4, No. 6)



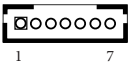
Pin	Signal Name
1	GND
2	+12V
3	CPU_FAN_SPEED
4	FAN_SPEED_CONTROL

The board offers one 4-pin CPU fan (Smart Fan) connector which is compatible with 3-pin CPU fan. If you connect a 3-pin CPU fan to the CPU fan connector on this motherboard, please connect it to pin 1-3. The maximum current is 1A.

Backlight Volume Control

(7-pin BLT_VOL1)

(see p. 4, No. 7)

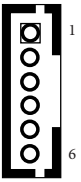


Pin	Signal Name
1	GPIO_VOL_UP
2	GPIO_VOL_DN
3	PWRDN
4	BLT_UP
5	BLT_DN
6	GND
7	GND

Inverter Power Control Wafer

(6-pin BLT_PWR1)

(see p. 4, No. 9)

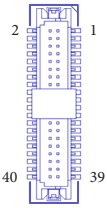


Pin	Signal Name
1	GND
2	GND
3	CON_LBKLT_CTL
4	CON_LBKLT_EN
5	LCD_BLT_VCC
6	LCD_BLT_VCC

LVDS Panel Connector

(40-pin LVDS1)

(see p. 4, No. 10)

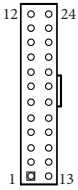


Pin	Signal Name	Signal Name	Pin
1	LCD_VCC	LCD_VCC	2
3	+3V	NA	4
5	NA	LVDS_A_DATA0#	6
7	LVDS_A_DATA0	GND	8
9	LVDS_A_DATA1#	LVDS_A_DATA1	10
11	GND	LVDS_A_DATA2#	12
13	LVDS_A_DATA2	GND	14
15	LVDS_A_DATA3#	LVDS_A_DATA3	16
17	GND	LVDS_A_CLK#	18
19	LVDS_A_CLK	GND	20
21	LVDS_B_DATA0#	LVDS_B_DATA0	22
23	GND	LVDS_B_DATA1#	24
25	LVDS_B_DATA1	GND	26
27	LVDS_B_DATA2#	LVDS_B_DATA2	28
29	DPLVDD_EN	LVDS_B_DATA3#	30
31	LVDS_B_DATA3	GND	32
33	LVDS_B_CLK#	LVDS_B_CLK	34
35	GND	CON_LBKLT_EN	36
37	CON_LBKLT_CTL	LCD_BLT_VCC	38
39	LCD_BLT_VCC	LCD_BLT_VCC	40

24-pin ATX Power Input Connector

(24-pin ATXPWR1)

(see p. 4, No. 12)



Pin	Signal Name	Signal Name	Pin
1	+3V	+3V	13
2	+3V	-12V	14
3	GND	GND	15
4	+5V	PSON#	16
5	GND	GND	17
6	+5V	GND	18
7	GND	GND	19
8	PWROK_PS	NA	20
9	ATX+5VSB	+5V	21
10	+12V	+5V	22
11	+12V	+5V	23
12	+3V	GND	24

This motherboard provides a 24-pin ATX power connector. To use a 20-pin ATX power supply, please plug it along Pin 1 and Pin 13.

SATA3 Connectors

(7-pin SATA3_0, SATA3_1)

(see p. 4, No. 13)

Pin	Signal Name
1	GND
2	SATA-A+
3	SATA-A-
4	GND
5	SATA-B-
6	SATA-B+
7	GND

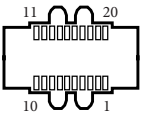
* The SATA3_1 port is shared with the M.2 Key M slot.

The Serial ATA3 (SATA3) connector supports SATA data cables for internal storage devices. The current SATA3 interface allow up to 6.0 Gb/s data transfer rate.

Front Panel Type-C USB 3.2 Gen1 Header

(20-pin TC_U3_3))

(see p. 4, No. 14)



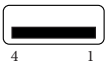
Pin	Signal Name	Signal Name	Pin
10	DUMMY	VBUS	11
9	DUMMY	F_TC_USB_SSTXP1	12
8	CC2	F_TC_USB_SSTXN1	13
7	VBUS	GND	14
6	F_TC_USB_SSRXN2	F_TC_USB_SSRXP1	15
5	F_TC_USB_SSRXP2	F_TC_USB_SSRXN1	16
4	GND	GND	17
3	F_TC_USB_SSTXN2	P-	18
2	F_TC_USB_SSTXP2	P+	19
1	VBUS	CC1	20

The board provides one USB 3.2 Gen1 Type-C header.

USB 2.0 Type-A port (Veritcal)

(4-pin USB2P_11)

(see p. 4, No. 15)



Pin	Signal Name
1	USB_PWR
2	USB_D-
3	USB_D+
4	GND

There is one USB 2.0 Type-A vertical connector on this motherboard. The maximum current supported is 0.5A.

BIOS_PH1

(10-pin BIOS_PH1)

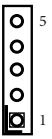
(see p. 4, No. 16)

Pin	Signal Name	Signal Name	Pin
1	F1_SPI_CS#	+1.8VSB_SPI_FLASH	2
3	F1_SPI_MISO	F1_SPI_DQ3	4
5	F1_SPI_DQ2	F1_SPI_CLK	6
7	RSMRST#	F1_SPI_MOSI	8
9	GND		10

USB 2.0 Header

(5-pin USB2P_6)

(see p. 4, No. 17)



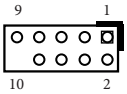
Pin	Signal Name
1	USB_PWR
2	P-
3	P+
4	GND
5	DUMMY

The board provides one internal 2.54mm pitch 5-pin header for one USB 2.0 port. The maximum current per port is 0.5A.

System Panel Header

(9-pin PANEL1)

(see p. 4, No. 20)



Pin	Signal Name	Signal Name	Pin
1	HDLED+	PLED+	2
3	HDLED-	PLED-	4
5	GND	PWRBTN#	6
7	RESET#	GND	8
9	+5VSB		10

This header accommodates several system front panel functions.

Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.

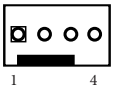
PWRBTN (Power Switch):
Connect to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch.
RESET (Reset Switch):
Connect to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.
PLED (System Power LED):
Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED keeps blinking when the sys-tem is in S1 sleep state. The LED is off when the system is in S3/S4 sleep state or powered off (S5).
HDLED (Hard Drive Activity LED):
Connect to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.

The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.

Chassis Fan Connectors (+12V)

(4-pin CHA_FAN1, CHA_FAN2)

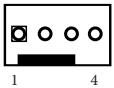
(see p. 4, No. 21)



Pin	Signal Name
1	GND
2	+12V
3	CHA_FAN_SPEED
4	FAN_SPEED_CONTROL

(4-pin CHA_FAN3)

(see p. 4, No. 37)

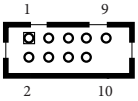


The board offers one 4-pin chassis fan (Smart Fan) connector which is compatible with 3-pin chassis fan. If you connect a 3-pin chassis fan to the chassis fan connector on this mother-board, please connect it to pin 1-3. The maximum current is 1A.

Internal COM Port Header (RS232)

(9-pin COM2)

(see p. 4, No. 23)

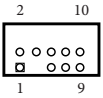


Pin	Signal Name	Signal Name	Pin
1	DDCD#	RRXD	2
3	TTXD	DDTR#	4
5	GND	DDSR#	6
7	RRTS#	CCTS#	8
9	PWR		10

COM2_CC_TTL_SEL1

(9-pin COM2_CC_TTL_SEL1)

(see p. 4, No. 24)



Pin	Signal Name	Signal Name	Pin
1	+5V	GND	2
3		NA	4
5	TTXD_2_TTL	RRXD_2_TTL	6
7	TTXD_2	RRXD_2	8
9	TTXD_2_RS232	RRXD_2_RS232	10

COM_CC_TTL_SEL1:79

MINI_JUMPER

COM_CC_TTL_SEL1:80

MINI_JUMPER

Open: CCTALK function

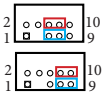
• Supported by CCTALK Card (optional).

https://www.asrockind.com/UART-CCTALK

5-7 + 6-8: TTL function

7-9 + 8-10: COM (RS232)

(Default)



Heater Header (Preheat function)

(3-pin HEATER1)

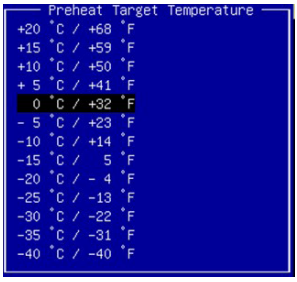
(see p. 4, No. 28)

Pin	Signal Name
1	Heater_PWR (5V/1A)
2	GND
3	NTC (Negative Temperature Coefficient) thermistors

* The 10k Ohm NTC thermistors is suggested.

* Deep mode is not supported when the preheat function is enabled.

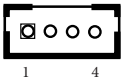
Refer to the following Preheat Targer Temperature list.



SMB_TEST1

(4-pin SMBUS_TEST1)

(see p. 4, No. 30)

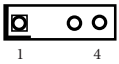


Pin	Signal Name
1	SMB_W_GPIO_PROM21
2	SMB_CLK_MAIN
3	SMB_DATA_MAIN
4	GND

SPDIF Header

(3-pin SPDIF1)

(see p. 4, No. 32)



Pin	Signal Name
1	+5V
2	
3	SPDIF OUT
4	GND

SPDIF header, providing SPDIF audio output to HDMI VGA card, allows the system to connect HDMI Digital TV/projector/LCD devices. Please connect the SPDIF connector of HDMI VGA card to this header.

LAN LED Headers

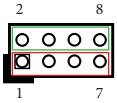
(4-pin LAN5_LED (For LAN5 Port))

(see p. 4, No. 34)

Pin	Signal Name
1	LAN5_ACT+
2	LAN5_LED_LNK#_ACT
3	LINK5_100#_C
4	LINK5_1000#_C

(4-pin LAN3_4_LED (For LAN3, LAN4 Ports)

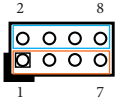
(see p. 4, No. 35)



LAN3_LED		LAN4_LED	
Pin	Signal Name	Signal Name	Pin
1	LAN3_ACT+	LAN4_ACT+	2
3	226_3_LED_ LNK#_ACT	226_4_LED_ LNK#_ACT	4
5	LAN3_1000#_C	LAN4_1000#_C	6
7	LAN3_2500#_C	LAN4_2500#_C	8

(4-pin LAN1_2_LED (For LAN1, LAN2 Ports)

(see p. 4, No. 36)

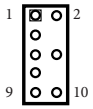


LAN1_LED		LAN2_LED	
Pin	Signal Name	Signal Name	Pin
1	LAN1_ACT+	LAN2_ACT+	2
3	226_1_LED_ LNK#_ACT	226_2_LED_ LNK#_ACT	4
5	LAN1_1000#_C	LAN2_1000#_C	6
7	LAN1_2500#_C	LAN2_2500#_C	8

Front Panel Audio Header

(8-pin HD_AUDIO1)

(see p. 4, No. 38)



Pin	Signal Name	Signal Name	Pin
1	MIC2_L	GND	2
3	MIC2_R		4
5	OUT2_R	MIC_RET	6
7	J_SENSE		8
9	OUT2_L	OUT_RET	10

This is line out/microphone interface for front panel audio cable that allows jack detection, convenient connection and control of audio devices.

Back Side:

ESPI Header

(20-pin ESPI1)

(see p. 5, No. 39)

Pin	Signal Name
1	GND
2	ESPI_CLK
3	GND
4	ESPI_CS#
5	ESPI_RESET#
6	GND
7	+3V
8	GND
9	SMB_SCL
10	SMB_SDA
11	ESPI_IO0
12	ESPI_IO1
13	ESPI_IO2
14	ESPI_IO3
15	GND
16	+3VSB
17	Internal Use
18	Internal use
19	ESPI_ALERT#
20	GND

The header is reserved for Port 80 code. display and debugging purposes.

Chapter 3 UEFI SETUP UTILITY

3.1 Introduction

ASRock Industrial UEFI (Unified Extensible Firmware Interface) is a BIOS utility which offers tweak-friendly options in an advanced viewing interface.

This BIOS utility can perform the Power-On Self-Test (POST) during system startup, record hardware parameters of the system, load operating system, and so on. The battery on the motherboard supplies the power needed to the CMOS when the system power is turned off, and the values configured in the UEFI utility are kept in the CMOS.

Please note that inadequate BIOS settings may cause system instability, mulfunction or boot failure. We strongly recommend that you do not alter the UEFI default configurations or change the settings only with the assistance of a trained service person.

If the system becomes unstable or fails to boot after you change the setting, try to clear the CMOS values and reset the board to default values. See your motherboard manual for instructions.

3.1.1 Entering BIOS Setup

You may run the UEFI SETUP UTILITY by pressing <F2> or <Delete> right after you power on the computer; otherwise, the Power-On-Self-Test (POST) will continue with its test routines. If you wish to enter the UEFI SETUP UTILITY after POST, restart the system by pressing <Ctl> + <Alt> + <Delete>, or by pressing the reset button on the system chassis. You may also restart by turning the system off and then back on.

This setup guide explains how to use the UEFI SETUP UTILITY to configure all the supported system. The screenshots in this manual are for reference only. UEFI Settings and options may vary owing to different BIOS release versions or CPU installed. Please refer to the actual BIOS version of the motherboard you purchased for detailed screens, settings and options.

3.1.2 UEFI Menu Bar

The top of the screen has a menu bar with the following selections:

Main	For setting system time/date information
Advanced	For advanced system configurations
H/W Monitor	Displays current hardware status
Security	For security settings
Boot	For configuring boot settings and boot priority
Exit	Exit the current screen or the UEFI Setup Utility

Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions for reference purpose only, and may vary from the latest BIOS and do not exactly match what you see on your screen.

3.1.3 Navigation Keys

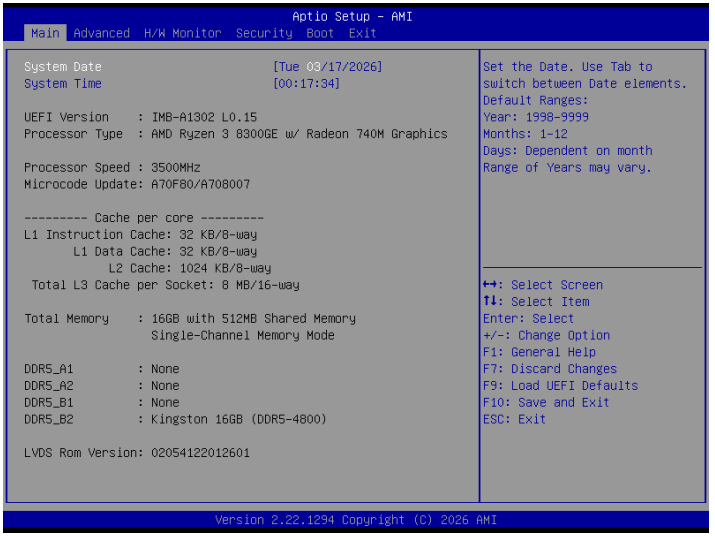
Use < ← > key or < → > key to choose among the selections on the menu bar, and use < ↑ > key or < ↓ > key to move the cursor up or down to select items, then press <Enter> to get into the sub screen. You can also use the mouse to click your required item.

Please check the following table for the descriptions of each navigation key.

Navigation Key(s)	Description
+ / -	To change option for the selected items
<Tab>	Switch to next function
<PGUP>	Go to the previous page
<PGDN>	Go to the next page
<HOME>	Go to the top of the screen
<END>	Go to the bottom of the screen
<F1>	To display the General Help Screen
<F7>	Discard changes and exit the SETUP UTILITY
<F9>	Load optimal default values for all the settings
<F10>	Save changes and exit the SETUP UTILITY
<F12>	Print screen
<ESC>	Jump to the Exit Screen or exit the current screen

3.2 Main Screen

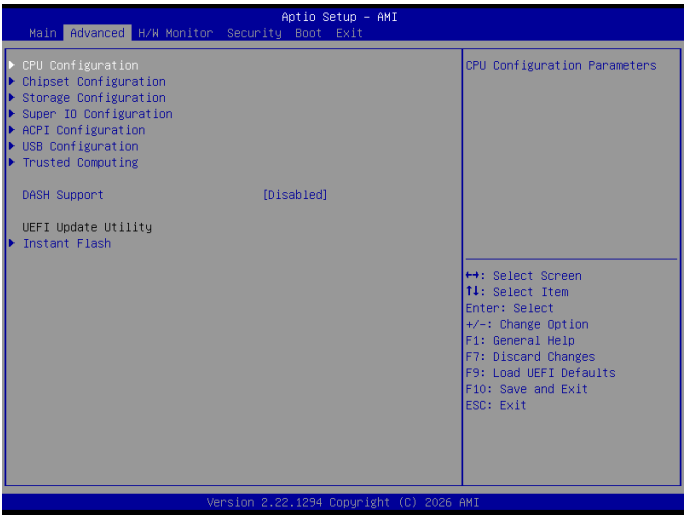
When you enter the UEFI SETUP UTILITY, the Main screen will appear and display the system overview.



Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen. Options may also vary depending on the features of your motherboard.

3.3 Advanced Screen

In this section, you may set the configurations for the following items: CPU Configuration, Chipset Configuration, Storage Configuration, Super IO Configuration, ACPI Configuration, USB Configuration, and Trusted Computing.

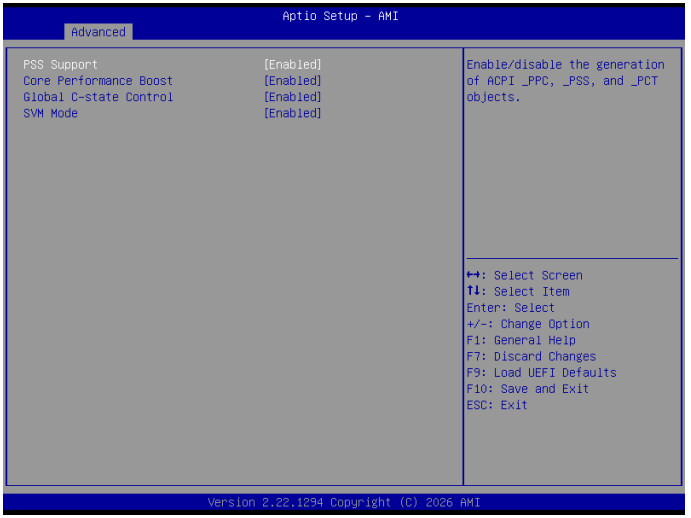


Setting wrong values in this section may cause the system to malfunction.

Instant Flash

Instant Flash is a UEFI flash utility embedded in Flash ROM. This convenient UEFI update tool allows you to update system UEFI without entering operating systems first like Windows®. Just launch this tool and save the new UEFI file to your USB flash drive, floppy disk or hard drive, and then you can update your UEFI in only a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system. If you execute Instant Flash utility, the utility will show the UEFI files and their respective information. Select the proper UEFI file to update your UEFI, and reboot your system after UEFI update process completes.

3.3.1 CPU Configuration



PSS Support

Enable/disable the generation of ACPI _PPC, _PSS, and _PCT objects.

Core Performance Boost

Core Performance Boost controls whether the processor transitions to a higher frequency than the processor's rated speed if the processor has available power and is within temperature specifications. The default value is [Enabled].

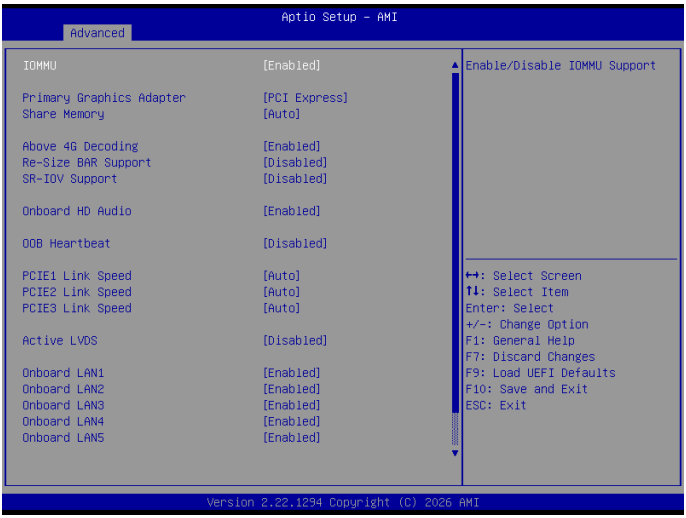
Global C-state Control

Enable/Disable Global C-state Control.

SVM Mode

When this is set to [Enabled], a VMM (Virtual Machine Architecture) can utilize the additional hardware capabilities provided by AMD-V. The default value is [Enabled]. Configuration options: [Enabled] and [Disabled].

3.3.2 Chipset Configuration



IOMMU

Enable/Disable IOMMU Support.

Primary Graphics Adapter

The option allows you to select a primary VGA.

Configuration options: [Onboard] [PCI Express] (Options vary when you have installed a graphics card on your motherboard.)

Share Memory

Share memory allows you to configure the size of memory that is allocated to the integrated graphics processor when the system boots up.

Configuration options: [Auto] [32M] [64M] [128M] [256M] [512M]
Options vary depending on the memory you use on your motherboard.

Above 4G Decoding

The option allows you to enable or disable above 4G Memory Mapped IO decoding.
Configuration options: [Enabled] [Disabled]

Re-Size BAR Support

If system has Resizable BAR capable PCIe Devices, this option enables or disables Resizable BAR Support.

SR-IOV Support

If system has SR-IOV capable PCIe Devices, this option Enables or Disables Single Root IO Virtualization Support.

Configuration options: [Enabled] [Disabled]

Onboard HD Audio

Onboard HD Audio allows you to enable or disable the onboard HD audio controller. Set this item to [Auto] to enable the onboard HD and automatically disable it when a sound card is installed.

Configuration options: [Enabled] [Disabled]

OOB Heartbeat

The OOB Heartbeat option is a specialized monitoring feature designed for industrial and

remote management environments.

How it works: When enabled, the system continuously sends a heartbeat signal.

Please pair with OOBM card for function enablement.

PCIE1 Link Speed

The option allows you to configure PCIE1 Slot Link Speed. Auto mode is optimizing for overclocking.

Configuration options: [Auto] [Gen1] [Gen2] [Gen3] [Gen4] [Gen5] (Options vary depending on your motherboard.)

PCIE2 Link Speed

The option allows you to configure PCIE2 Slot Link Speed. Auto mode is optimizing for overclocking.

Configuration options: [Auto] [Gen1] [Gen2] [Gen3] [Gen4] (Options vary depending on your motherboard.)

PCIE3 Link Speed

The option allows you to configure PCIE3 Slot Link Speed. Auto mode is optimizing for overclocking.

Configuration options: [Auto] [Gen1] [Gen2] [Gen3] [Gen4] (Options vary depending on your motherboard.)

Active LVDS

Use this option to enable or disable the LVDS. The default value is [Disabled]. Set the item to [Enabled]. Then press <F10> to save the setting and restart the system. Now the default value of Active LVDS is changed to ENABLED (F9 load default is also set to ENABLED).

Change the setting from [Enabled] to [Disabled], and then press <F10> to save the setting and restart the system. Likewise, the default value of Active LVDS is changed to DISABLED (F9 load default is also set to DISABLED).

*To use an eDP panel, set Active LVDS to [Enable] and Panel Type Selection to [eDP Bypass Mode] to enable output.

Onboard LAN1

This allows you to enable or disable the Onboard LAN1 feature.

Onboard LAN2

This allows you to enable or disable the Onboard LAN2 feature.

Onboard LAN3

This allows you to enable or disable the Onboard LAN3 feature.

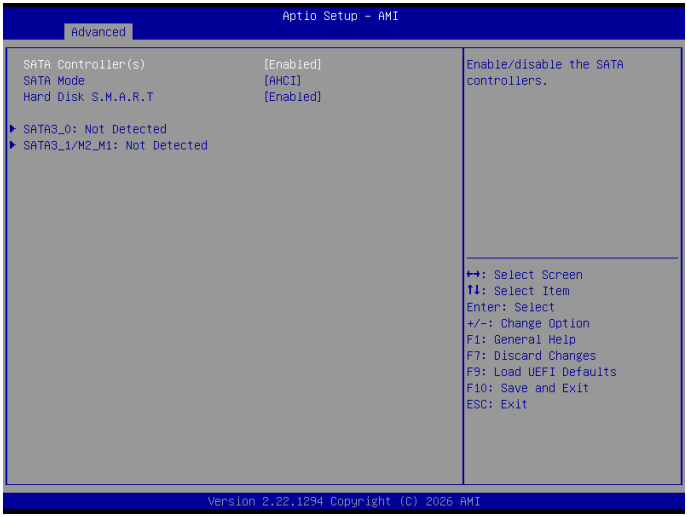
Onboard LAN4

This allows you to enable or disable the Onboard LAN4 feature.

Onboard LAN5

This allows you to enable or disable the Onboard LAN5 feature.

3.3.3 Storage Configuration



SATA Controller(s)

The option allows you to enable or disable the SATA controllers.

Configuration options: [Enabled] [Disabled]

SATA Mode

AHCI supports new features that improve performance.

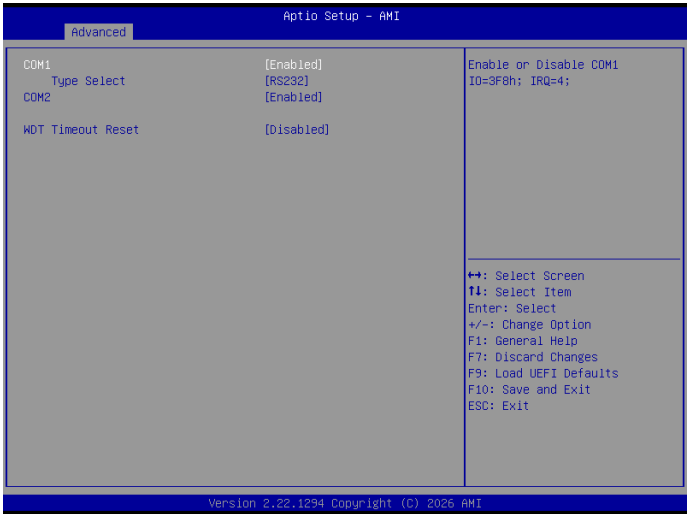
Configuration option: [AHCI]

Hard Disk S.M.A.R.T.

S.M.A.R.T stands for Self-Monitoring, Analysis, and Reporting Technology. It is a monitoring system for computer hard disk drives to detect and report on various indicators of reliability.

Configuration options: [Enabled] [Disabled]

3.3.4 Super IO Configuration



COM1 Configuration

Use this to set parameters of COM1.

Type Select

Use this to select COM1 port type: [RS232], [RS422] or [RS485].

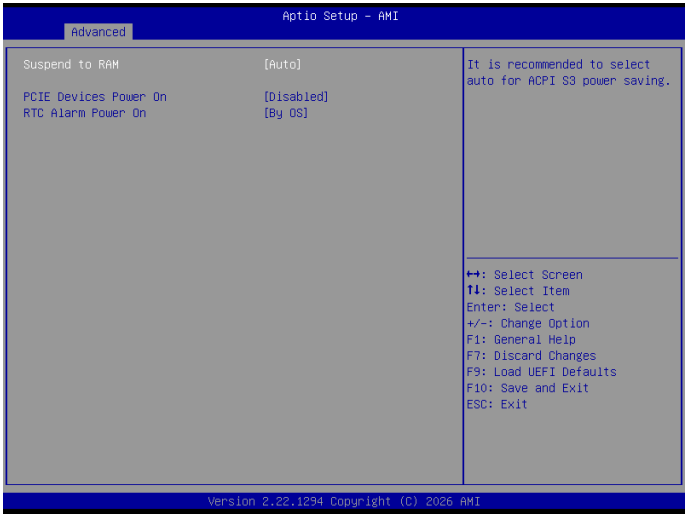
COM2 Configuration

Use this to set parameters of COM2.

WDT Timeout Reset

Use this to set the Watch Dog Timer.

3.3.5 ACPI Configuration



Suspend to RAM

Suspend to RAM allows you to select [Disabled] for ACPI suspend type S1. It is recommended to select [Auto] for ACPI S3 power saving.

Configuration options: [Auto] [Disabled]

PCIE Devices Power On

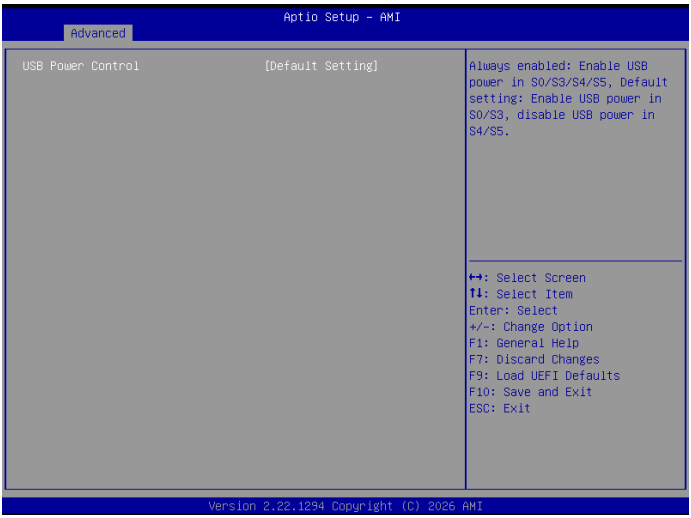
Use this item to enable or disable PCIE devices to turn on the system from the power-soft-off mode.

RTC Alarm Power On

RTC Alarm Power On allows the system to be waked up by the real time clock alarm. Set it to By OS to let it be handled by your operating system.

Configuration options: [Enabled] [Disabled] [By OS]

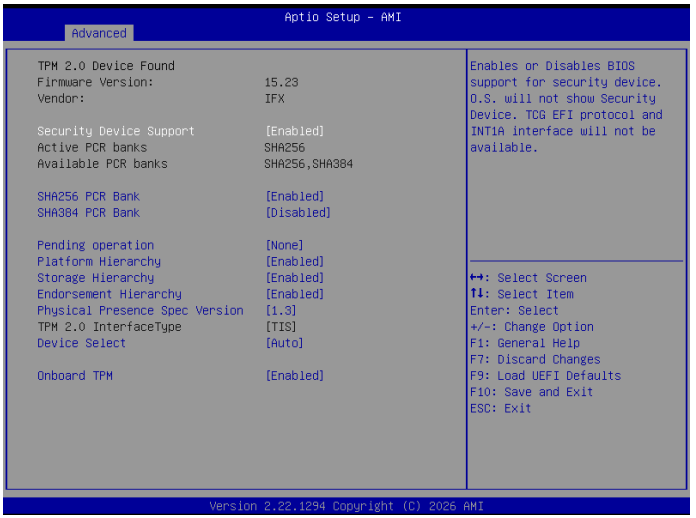
3.3.6 USB Configuration



USB Power Control

Use this option to control USB power.

3.3.7 Trusted Computing



NOTE: Options vary depending on the version of your connected TPM module.

Security Device Support

Security Device Support allows you to enable or disable BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

Configuration options: [Enabled] [Disabled]

Active PCR banks

This item displays active PCR Banks.

Available PCR Banks

This item displays available PCR Banks.

SHA256 PCR Bank

SHA256 PCR Bank allows you to enable or disable SHA256 PCR Bank.

Configuration options: [Enabled] [Disabled]

SHA384 PCR Bank

SHA384 PCR Bank allows you to enable or disable SHA384 PCR Bank.

Configuration options: [Enabled] [Disabled]

Pending Operation

Pending Operation allows you to schedule an Operation for the Security Device.

NOTE: Your computer will reboot during restart in order to change State of the Device.

Configuration options: [None] [TPM Clear]

Platform Hierarchy

This item allows you to enable or disable Platform Hierarchy.

Configuration options: [Enabled] [Disabled]

Storage Hierarchy

This item allows you to enable or disable Storage Hierarchy.

Configuration options: [Enabled] [Disabled]

Endorsement Hierarchy

This item allows you to enable or disable Endorsement Hierarchy.

Configuration options: [Enabled] [Disabled]

Physical Presence Spec Version

Select this item to tell OS to support PPI spec version 1.2 or 1.3. Please note that some HCK tests might not support version 1.3.

Configuration options: [1.2] [1.3]

TPM 2.0 InterfaceType

This item allows you to view the Communication Interface to TPM 2.0 Device: CRB or ITS.

Device Select

This item allows you to select the TPM device to be supported.

[TPM 1.2] restricts support to TPM 1.2 devices.

[TPM 2.0] restricts support to TPM 2.0 devices.

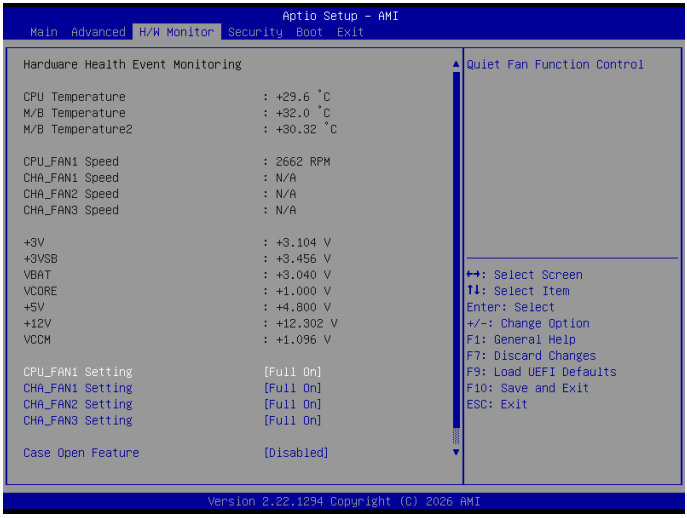
[Auto] supports both TPM 1.2 and TPM 2.0 devices with the default set to TPM 2.0 devices. If TPM 2.0 devices are not found, TPM 1.2 devices will be enumerated.

Onboard TPM

Enable/disable Intel PTT in ME. Disable this option to use discrete TPM Module.

3.4 Hardware Health Event Monitoring Screen

This section allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature, CPU fan speed, chassis fan speed, and the critical voltage.



NOTE: Options vary depending on the features of your motherboard.

CPU_Fan 1 Setting

This item allows you to select a fan mode for CPU Fan 1. The default value is [Full On].

Configuration options: [Full On] [Automatic Mode]

CHA_Fan 1 Setting

This allows you to set chassis fan 1's speed. The default value is [Full On].

Configuration options: [Full On] [Automatic Mode]

CHA_Fan 2 Setting

This allows you to set chassis fan 2's speed. The default value is [Full On].

Configuration options: [Full On] [Automatic Mode]

CHA_Fan 3 Setting

This allows you to set chassis fan 3's speed. The default value is [Full On].

Configuration options: [Full On] [Automatic Mode]

Case Open Feature

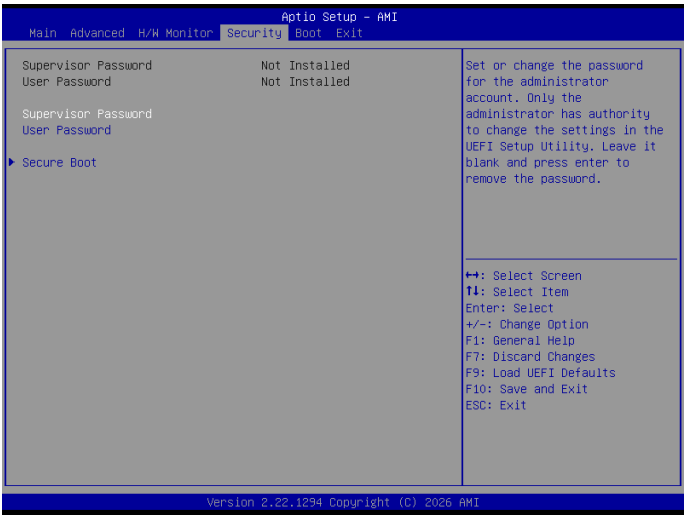
This allows you to enable or disable case open detection feature. The default is value [Disabled].

Clear Status

This option appears only when the case open has been detected. Use this option to keep or clear the record of previous chassis intrusion status.

3.5 Security Screen

In this section you may set or change the supervisor/user password for the system. You may also clear the user password.



Supervisor Password

Set or change the password for the administrator account. Only the administrator has the authority to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

User Password

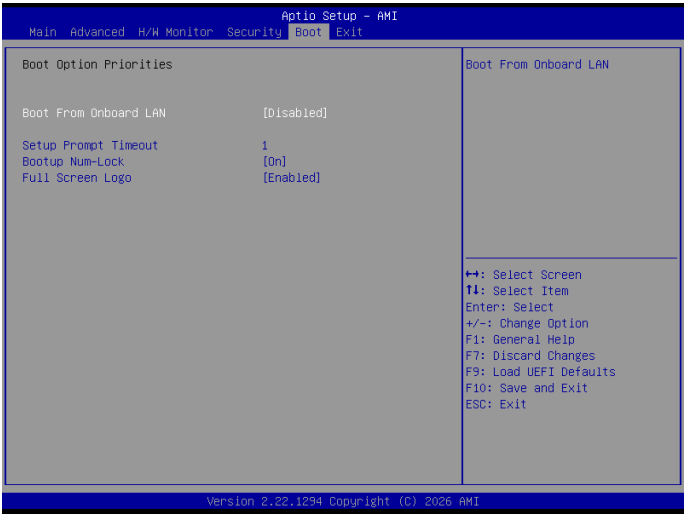
Set or change the password for the user account. Users are unable to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

Secure Boot

Press [Enter] to configure the Secure Boot Settings. The feature protects the system from unauthorized access and malwares during POST.

3.6 Boot Screen

This section displays the available devices on your system for you to configure the boot settings and the boot priority.



Boot From Onboard LAN

The item allows the system to be waked up by the onboard LAN.

Configuration options: [Enabled] [Disabled]

Setup Prompt Timeout

The item allows you to configure the number of seconds to wait for the UEFI setup utility.

Configuration options: [1] - [65535]

Bootup Num-Lock

The item allows you to select whether Num Lock should be turned on or off when the system boots up.

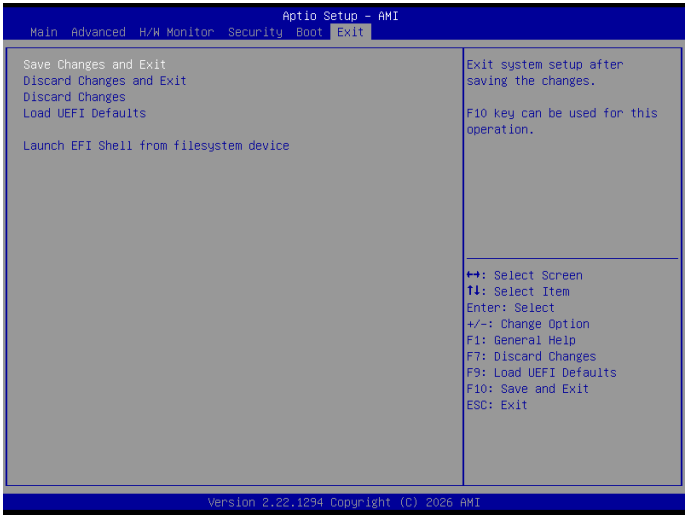
Configuration options: [On] [Off]

Full Screen Logo

[Enabled] Select this item to display the boot logo.

[Disabled] Select this item to show normal POST messages.

3.7 Exit Screen



Save Changes and Exit

When you select this option, the following message "Save configuration changes and exit setup?" will pop out. Select [Yes] to save the changes and exit the UEFI SETUP UTILITY.

Discard Changes and Exit

When you select this option, the following message "Discard changes and exit setup?" will pop out. Select [Yes] to exit the UEFI SETUP UTILITY without saving any changes.

Discard Changes

When you select this option, the following message "Discard changes?" will pop out. Select [Yes] to discard all the changes.

Load UEFI Defaults

The item allows you to load UEFI default values for all options. The F9 key can be used for this operation.

Launch EFI Shell from filesystem device

The item allows you to copy shellx64.efi to the root directory to launch EFI Shell.