ASRock Industrial

IMB-A1700

User Manual

Version 1.1

Updated September 24, 2026

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

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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"

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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.

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Chapter 1 Introduction

Thank you for purchasing ASRockInd ***IMB-A1700*** 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-A1700
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-A1700*** Motherboard (ATX (12-in x 9.6-in x 1.81-in, 30.5 cm x 24.4 cmx 4.61 cm))

Gift Package:
2 x SATA Data Cable
1 x I/O Shield
1 x SCREW M3*2.5

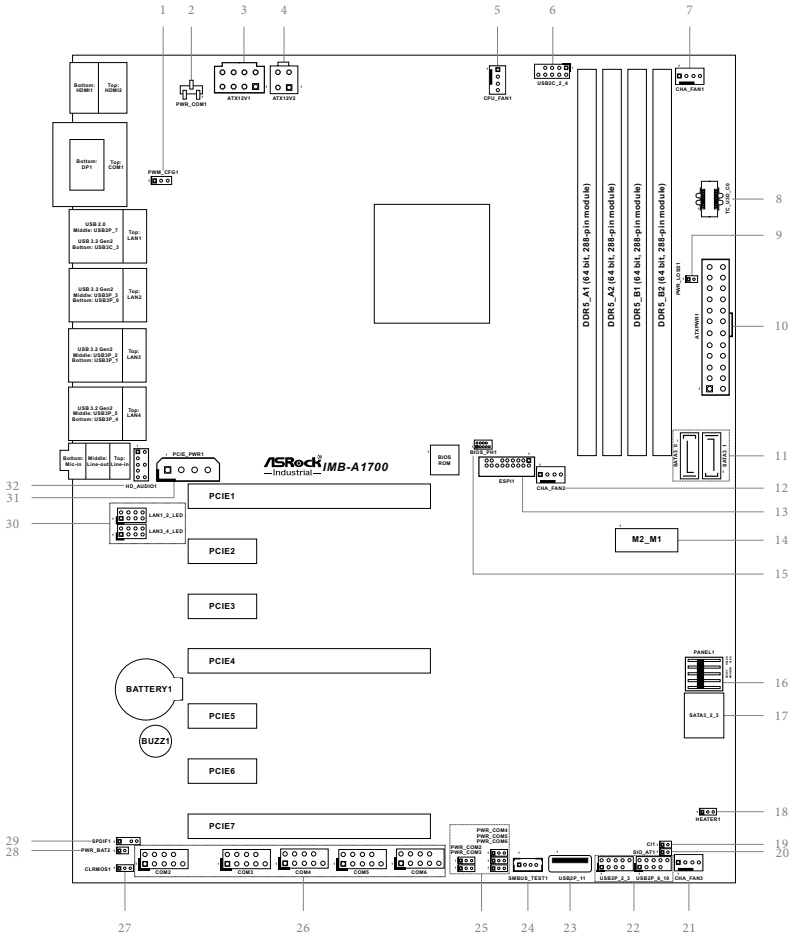
Bulk Package:
1 x I/O Shield
1 x SCREW M3*2.5

1.2 Specifications

Form Factor	Dimensions	ATX (12-in x 9.6-in x 1.81-in, 30.5 cm x 24.4 cmx 4.61 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 *ECC support may vary by CPU.
	Capacity	256 GB (64 GB per DIMM)
	Socket	4 x 288-pin Long-DIMM
Graphics	Controller	AMD RDNA™ 2 Architecture
	HDMI	HDMI 2.0b Max resolution up to 4096x2160@60Hz
	DisplayPort	DisplayPort 1.2, DP++ Max resolution up to 4096x2160@60Hz
	MultiDisplay	Quad Display (1 output from Type-C included)
Expansion Slot	PCIe	2 x PCIe Gen5 Slots (PCIE1/PCIE4: single at x16 (PCIE1); dual at x8 (PCIE1) / x8 (PCIE4)) (PCIE1: Support Riser cadr x8/x8) 1 x PCIe x4 (Gen4) 4 x PCIe x1 (Gen4)
Audio	Interface	Realtek® ALC897, High Definition Audio. Line-out, Mic-in, Line-in
Ethernet	Controller/ Speed	LAN1: Intel® I210AT with 10/100/1000 Mbps LAN2: Intel® I226V with 10/100/1000/2500 Mbps LAN3: Realtek® RTL8125BG with 10/100/1000/2500 Mbps LAN4: Realtek® RTL8125BG with 10/100/1000/2500 Mbps
	Controller	4 x RJ-45
Rear I/O	HDMI	2 x HDMI 2.0b
	DisplayPort	1 x DP 1.2++
	Ethernet	1 x 1 Gigabit LAN 3 x 2.5 Gigabit LAN
	USB	7 x USB 3.2 Gen2 1 x USB 2.0
	Audio	3 (Mic-in, Line-in, Line-out)
	COM	COM1 (RS-232/422/485)

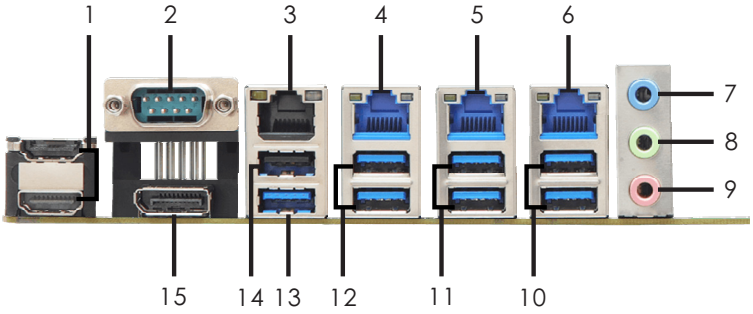
Internal Connector	USB	1 x USB 2.0 (Type-A vertical connector) 6 x USB 2.0 (3 x USB 2.0 header) 1 x USB 3.2 Gen2 (Type-C header, 5V/3A, supports DP 1.2 display output)
	COM	COM2 (RS-232/422/485) COM3, COM4, COM5, COM6 (RS-232)
Storage	M.2	1 x M.2 (Key M, 3042/2280/25110) with PCIe Gen4 x4 and USB 2.0 for SSD
	SATA	4 x SATA3 (6Gb/s)
	RAID	Support RAID 0/1/10
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



1 : PWM_CFG1 (for internal test)
2 : COM Port PWR Setting Jumper
PWR_COM1 (For COM Port1)
3 : 8-pin ATX 12V Power Connector (ATX12V1)
4 : 4-pin ATX 12V Power Connector (ATX12V2)
5 : CPU FAN Connector (+12V) (CPU_FAN1)
6 : USB 2.0 Header (USB2C_2_4)
7 : Chassis FAN Connectors (+12V) (CHA_FAN1)
8 : Front Panel Type-C USB 3.2 Gen2 Header (TC_U3D_C0)
9 : Power Loss Header (PWR_LOSS1)
10 : 24-pin ATX Power Input Connector (ATXPWR1)
11 : SATA3 Connectors (SATA3_0, SATA3_1)
12 : Chassis FAN Connectors (+12V) (CHA_FAN2)
13 : ESPI Header (ESPI1)
14 : M.2 Key-M Socket (M2_M1)
15 : BIOS_PH1
16 : System Panel Header (PANEL1)
17 : SATA3 Connector (SATA3_2_3)
18 : HEATER1 Header (HEATER1) (Preheat function)
19 : Chassis Intrusion Header (CI1)
20 : ATX/AT Mode Jumper (SIO_AT1)
21 : Chassis FAN Connectors (+12V) (CHA_FAN3)
22 : USB 2.0 Headers (USB2P_2_3, USB2P_6_10)
23 : USB 2.0 Type-A port (Veritcal) (USB2P_11)
24 : SMBUS_TEST125 : COM Port PWR Setting Jumpers
PWR_COM2 (For COM Port2)
PWR_COM3 (For COM Port3)
PWR_COM4 (For COM Port4)
PWR_COM5 (For COM Port5)
PWR_COM6 (For COM Port6)
26 : COM Port Headers
(COM2) (RS232/422/485)*
(COM3~6) (RS-232)
27 : Clear CMOS Header (CLRMOS1)
28 : PWR_BAT2
29 : SPDIF Header (SPDIF1)
30 : LAN LED Headers
LAN1_2_LED (For LAN1, LAN2 Ports)
LAN3_4_LED (For LAN3, LAN4 Ports)
31 : PCIe Power Connector (PCIE_PWR1)
32 : Front Panel Audio Header (HD_AUDIO1)

1.4 I/O Panel



1 HDMI Ports
Top: HDMI2
Bottom: HDMI1

2 COM Port (COM1) (RS232/422/485)*

3 RJ45 LAN Port (LAN1)**

4 RJ45 LAN Port (LAN2)***

5 RJ45 LAN Port (LAN3)***

6 RJ45 LAN Port (LAN4)***

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: USB3P_3
Bottom : USB3P_0

13 USB 3.2 Gen2 Port (USB3C_3)

14 USB 2.0 Port (USB2P_7)

15 DisplayPort (DP1)

* 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 port. Please refer to the table below for the LAN1 port LED indications.

LAN1 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

LAN1 Port

*** There are two LEDs next to the LAN2~4 ports. Please refer to the table below for the LAN2~4 ports LED indications.

LAN2~4 Ports LED Indications

ACT/LINK LED

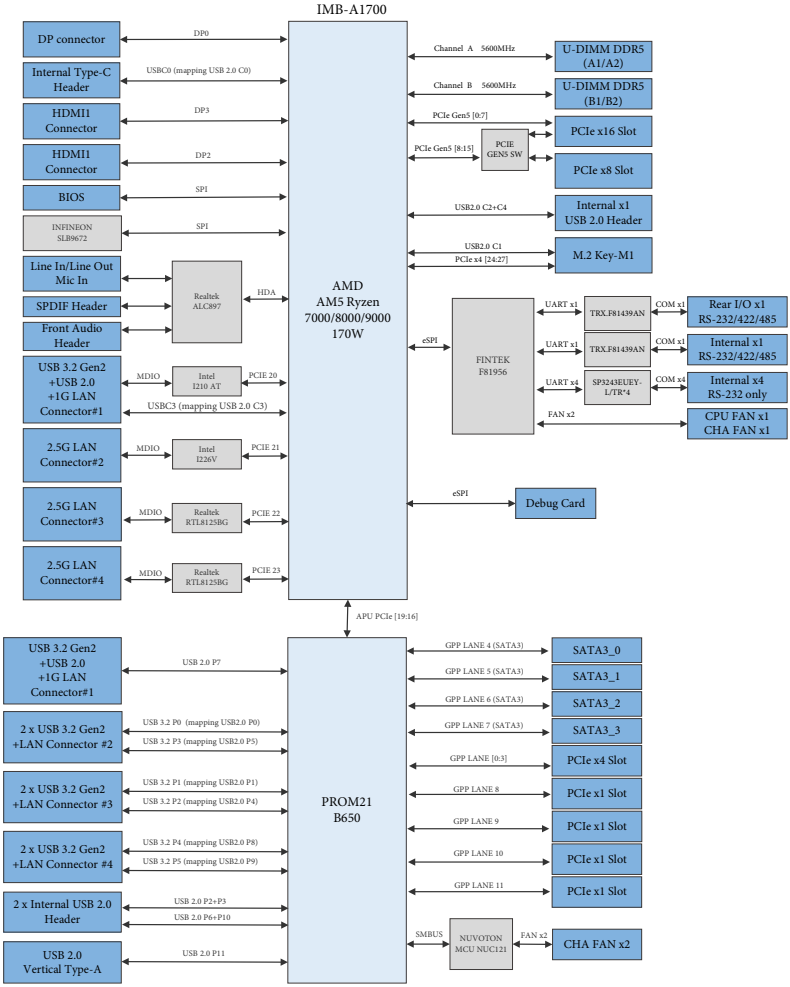
Status	Description
Off	No Link
Blinking	Data Activity
On	Link

SPEED LED

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

LAN2 Port
LAN3 Port
LAN4 Port

1.5 Block Diagram



Chapter 2 Installation

This is a ATX (12-in x 9.6-in x 1.81-in, 30.5 cm x 24.4 cmx 4.61 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-A1700 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.*

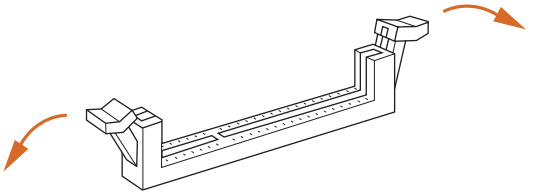
The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot in the incorrect orientation.

Recommended Memory Configuration:

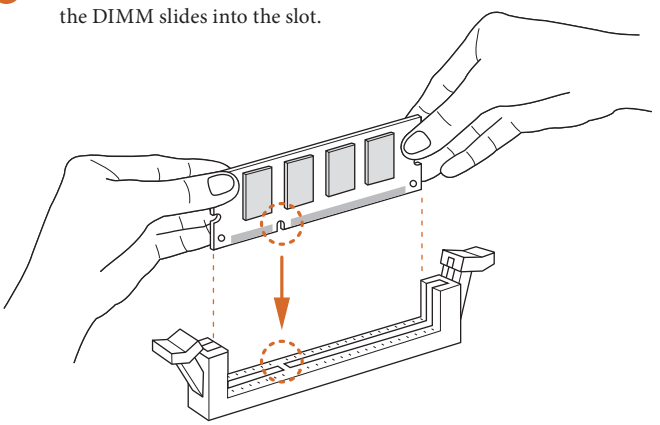
DIMM Card	A1	A2	B1	B2
1				V
2		V		V
4	V	V	V	V

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

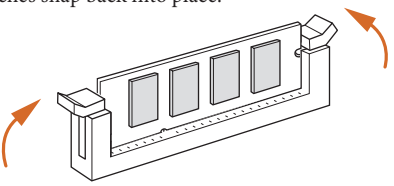
1 Open the DIMM slot latches.



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



3 The latches snap back into place.



2.4 Expansion Slots

There are seven PCI Express slots and one M.2 socket on this motherboard.

PCIE slots: PCIE1 (PCIe 5.0 x16 slot) supports x16 mode when used alone, or x8 mode when PCIE1 and PCIE4 are used simultaneously. It also supports an x8/x8 riser card.
PCIE2 (PCIe 4.0 x1 slot) is used for PCI Express x1 lane width cards.
PCIE3 (PCIe 4.0 x1 slot) is used for PCI Express x1 lane width cards.
PCIE4 (PCIe 5.0 x16 slot) supports x8 mode when PCIE1 and PCIE4 are used simultaneously.
PCIE5 (PCIe 4.0 x1 slot) is used for PCI Express x1 lane width cards.
PCIE6 (PCIe 4.0 x1 slot) is used for PCI Express x1 lane width cards.
PCIE7 (PCIe 4.0 x4 slot) is used for PCI Express x4 lane width cards.

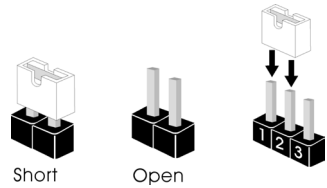
M.2 sockets: 1 x M.2 (Key M, 3042/2280/25110) with PCIe Gen4 x4 and USB 2.0 for SSD

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	SATA_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	NA	32
33	GND	USB_D+	34
35	PETn1	USB_D-	36
37	PETp1	NA	38
39	GND	SMB_CLK	40
41	PERn0	SMB_DATA	42
43	PERp0	NA	44
45	GND	NA	46
47	PETn0	NA	48
49	PETP0	PERST#	50
51	GND	CLKREQ#	52
53	PEFCLKn	NA	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		

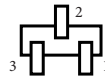
2.5 Jumpers Setup

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 PWR_COM1 (For COM Port1))
(see p. 4, No. 2)



PWR_COM1

Setting	Description
Open	+0V
1-2	+5V (Default)
2-3	+12V

(3-pin PWR_COM2 (For COM Port2),
PWR_COM3 (For COM Port3),
PWR_COM4 (For COM Port4),
PWR_COM5 (For COM Port5),
PWR_COM6 (For COM Port6))
(see p. 4, No. 25)

PWR_COM2~6

Power Loss Jumper

(2-pin PWR_LOSS1)
(see p. 4, No. 9)

Setting	Description
Open	No Power Loss (Default)
Short	Power Loss

Chassis Intrusion Header

(2-pin CI1)
(see p. 4, No. 19)

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. 20)

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.

Clear CMOS Header

(3-pin CLRMOS1)

(see p. 4, No. 27)

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.

PWR_BAT2

(2-pin PWR_BAT2)

(see p. 4, No. 28)

Setting	Description
Open	Normal (Default)
Short	Charge Battery*

* Only supported by chargeable battery.

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)

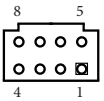
(see p. 4, No. 1)

Pin	Signal Name
1	GND
2	VCORE_SDA
3	VCORE_SCL

8-pin ATX 12V Power Connector

(8-pin ATX12V1)

(see p. 4, No. 3)



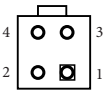
Pin	Signal Name	Signal Name	Pin
1	GND	ATX12V	5
2	GND	ATX12V	6
3	GND	ATX12V	7
4	GND	ATX12V	8

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)



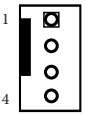
Pin	Signal Name	Signal Name	Pin
1	GND	GND	2
3	ATX12V	ATX12V	4

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

CPU Fan Connector (+12V)

(4-pin CPU_FAN1)

(see p. 4, No. 5)



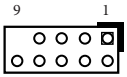
Pin	Signal Name
1	GND
2	+12V
3	CPU_FAN_SPEED
4	FAN_SPEED_CONTROL

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.

USB 2.0 Headers

(9-pin USB2C_2_4)

(see p. 4, No. 6)

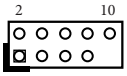


USB2C_2_4

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

(9-pin USB2P_2_3, USB2P_6_10)

(see p. 4, No. 22)



USB2P_2_3
USB2P_6_10

The board provides three internal 2.54mm pitch headers for six USB 2.0 ports. Each header supports two USB 2.0 ports. The maximum current per port is 0.5A.

Chassis Fan Connectors (+12V)

(4-pin CHA_FAN1)

(see p. 4, No. 7)

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

(4-pin CHA_FAN2)

(see p. 4, No. 12)

(4-pin CHA_FAN3)

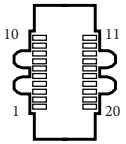
(see p. 4, No. 21)

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 motherboard, please connect it to pin 1-3. The maximum current is 1A.

Front Panel Type-C USB 3.2 Gen2 Header

(20-pin TC_U3D_C0)

(see p. 4, No. 8)



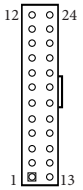
Pin	Signal Name	Signal Name	Pin
1	USB_PWR	USB_PWR	11
2	RE_USBC2_TX1P/DP3_TX2P	RE_USBC2_TX2P/DP3_TX1P	12
3	RE_USBC2_TX1N/DP3_TX2N	RE_USBC2_TX2N/DP3_TX1N	13
4	GND	GND	14
5	RE_USBC2_RX1P/DP3_TX0P	RE_USBC2_RX2P/DP3_TX3P	15
6	RE_USBC2_RX1N/DP3_TX0N	RE_USBC2_RX2N/DP3_TX3N	16
7	USB_PWR	GND	17
8	CC1	USB_D-	18
9	USBC2_SBU1	USB_D+	19
10	USBC2_SBU2	CC2	20

The board provides one USB 3.2 Gen2 Type-C header.

24-pin ATX Power Input Connector

(24-pin ATXPWR1)

(see p. 4, No. 10)



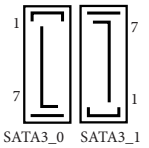
Pin	Signal Name	Signal Name	Pin
1	+3V	+3V	13
2	+3V	-12V	14
3	GND	GND	15
4	+5V	PSON#	16
5	GND	GND	17
6	+5V	GND	18
7	GND	GND	19
8	PWROK_PS	NA	20
9	ATX+5VSB	+5V	21
10	+12V	+5V	22
11	+12V	+5V	23
12	+3V	GND	24

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)

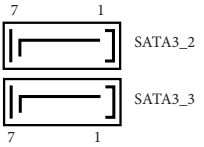
(see p. 4, No. 11)



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

(7-pin SATA3_2_3,
Top: SATA3_2,
Bottom: SATA3_3)

(see p. 4, No. 17)

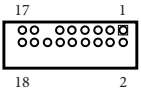


The Serial ATA3 (SATA3) connector supports SATA data cables for internal storage devices. The current SATA3 interface allow up to 6.0 Gb/s data transfer rate.

ESPI Header

(18-pin ESPI1)

(see p. 3, No. 13)



Pin	Signal Name	Signal Name	Pin
1	ESPI_CLK	GND	2
3	ESPI_CS#	SMB_CLK_ MAIN	4
5	ESPI_RST#	SMB_DATA_ MAIN	6
7	ESPI_IO3	ESPI_IO2	8
9	+3V	ESPI_IO1	10
11	ESPI_IO0	GND	12
13		NA	14
15	+3VSB	ESPI_ALERT#	16
17	GND	GND	18

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

BIOS_PH1

(10-pin BIOS_PH1)

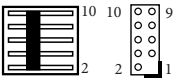
(see p. 4, No. 15)

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

System Panel Header

(9-pin PANEL1)

(see p. 4, No. 16)



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

Heater Header (Preheat function)

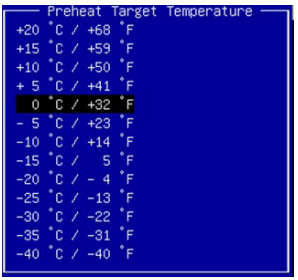
(3-pin HEATER1)

(see p. 4, No. 18)

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.

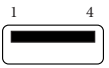
Refer to the following Preheat Targer Temperature list.



USB 2.0 Type-A port (Veritcal)

(4-pin USB2P_11)

(see p. 4, No. 23)



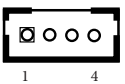
Pin	Signal Name
1	USB_PWR
2	USB_D-
3	USB_D+
4	GND

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

SMB_TEST1

(4-pin SMBUS_TEST1)

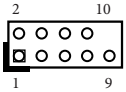
(see p. 4, No. 24)



Pin	Signal Name
1	SMB_W_GPIO_PROM21
2	SMB_CLK_MAIN
3	SMB_DATA_MAIN
4	GND

COM Port Headers

(9-pin COM2) (RS232/422/485)*
(9-pin COM3~6) (RS232)
(see p. 4, No. 26)



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

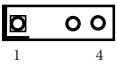
** This motherboard supports RS232/422/485 on COM2 port. Please refer to the table below for the pin definition. In addition, COM2 port (RS232/422/485) can be adjusted by Jumper Setting. You may refer to our user manual for details.*

COM2 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

SPDIF Header

(3-pin SPDIF1)
(see p. 4, No. 29)

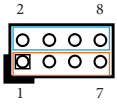


Pin	Signal Name
1	+5V
2	
3	SPDIF OUT
4	GND

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.

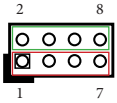
LAN LED Headers

(4-pin LAN1_2_LED (For LAN1, LAN2 Ports),
LAN3_4_LED (For LAN3, LAN4 Ports))
(see p. 4, No. 30)



LAN1_LED LAN2_LED

Pin	Signal Name	Signal Name	Pin
1	LAN1_ACT+	LAN2_ACT+	2
3	210_1_LED_ LNK#_ACT	226_2_LED_ LNK#_ACT	4
5	LAN1_100#_C	LAN2_1000#_C	6
7	LAN1_1000#_C	LAN2_2500#_C	8



LAN3_LED LAN4_LED

Pin	Signal Name	Signal Name	Pin
1	LAN3_ACT+	LAN4_ACT+	2
3	RTL8125BG_3_ ACT#	RTL8125BG_4_ ACT#	4
5	LAN3_100#_C	LAN4_1000#_C	6
7	LAN3_1000#_C	LAN4_2500#_C	8

PCIe Power Connector

(4-pin PCIE_PWR1)

(see p. 4, No. 31)

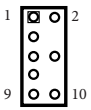
Pin	Signal Name
1	NA
2	GND
3	GND
4	+12V

The connector provides additional power for PCIe slot devices.

Front Panel Audio Header

(8-pin HD_AUDIO1)

(see p. 4, No. 32)



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.

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

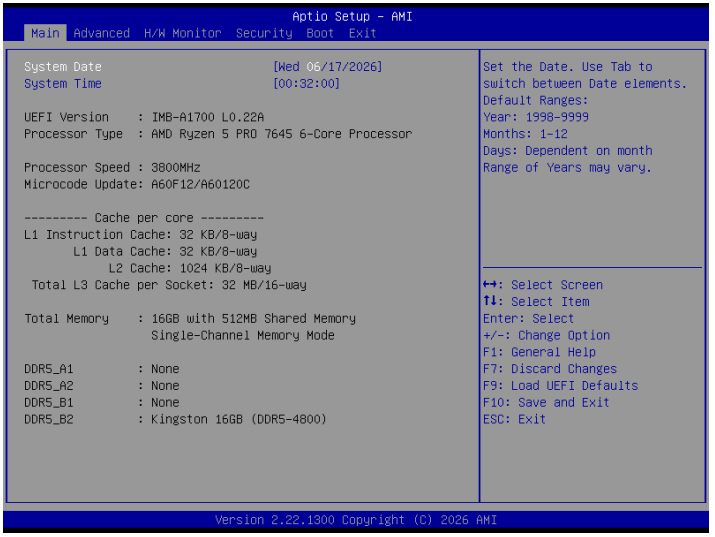
Use < ← > key or < → > key to choose among the selections on the menu bar, and use < ↑ > key or < ↓ > key to move the cursor up or down to select items, then press <Enter> to get into the sub screen. You can also use the mouse to click your required item.

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

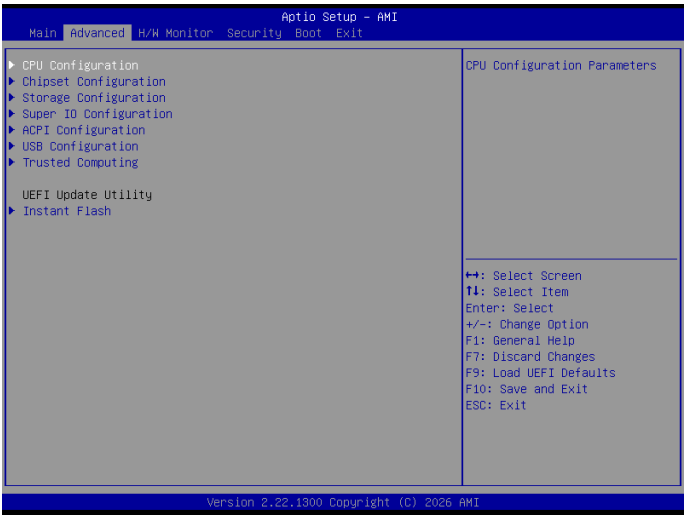
When you enter the UEFI SETUP UTILITY, the Main screen will appear and display the system overview.



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.

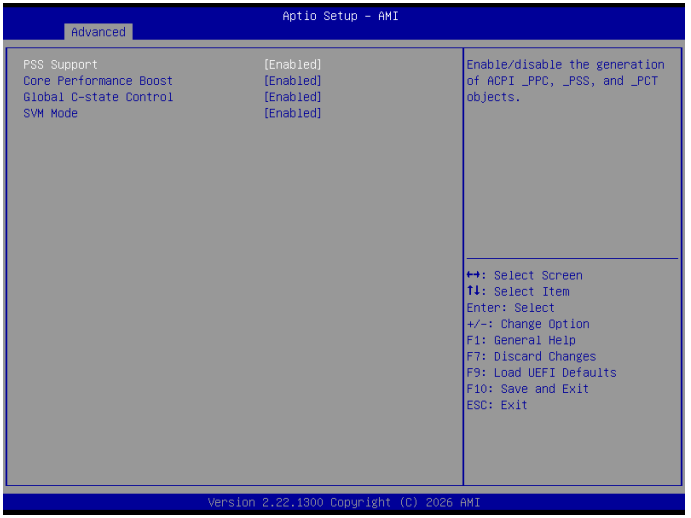


Setting wrong values in this section may cause the system to malfunction.

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].

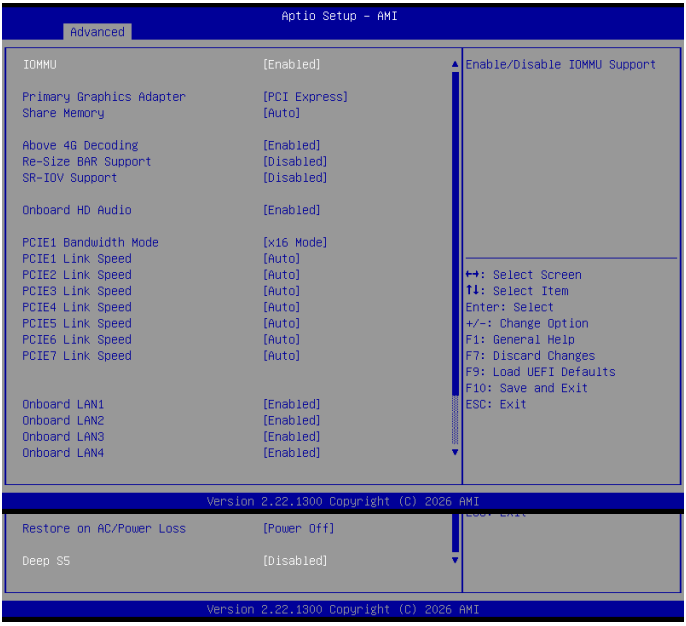
Global C-state Control

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]

PCIE1 Bandwidth Mode

Select the bandwidth mode for PCIE1.

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.)

PCIE4 Link Speed

The option allows you to configure PCIE4 Slot Link Speed. Auto mode is optimizing for overclocking.

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

PCIE5 Link Speed

The option allows you to configure PCIE5 Slot Link Speed. Auto mode is optimizing for overclocking.

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

PCIE6 Link Speed

The option allows you to configure PCIE6 Slot Link Speed. Auto mode is optimizing for overclocking.

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

PCIE7 Link Speed

The option allows you to configure PCIE7 Slot Link Speed. Auto mode is optimizing for overclocking.

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

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.

Restore on AC/Power Loss

Allows you to select the power state after a power failure.

[Power Off] sets the power to remain off when the power recovers.

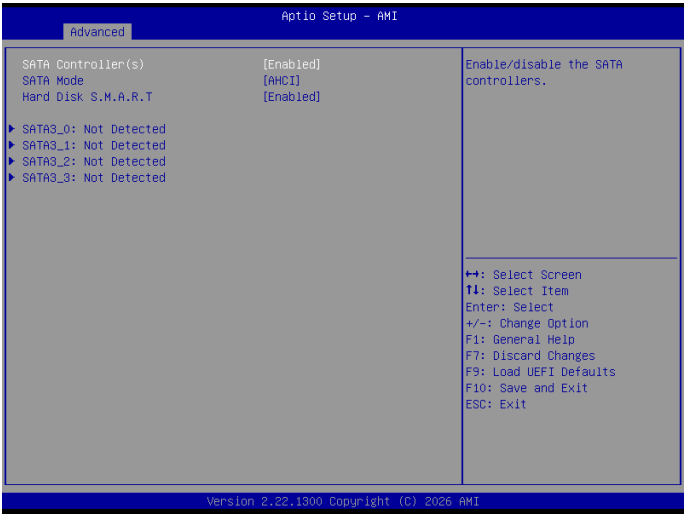
[Power On] sets the system to start to boot up when the power recovers.

Deep S5

Mobile platforms support Deep S5 in DC only and desktop platforms support Deep S5 in AC only. The default value is [Disabled].

Configuration options: [Auto] [Disabled]

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.

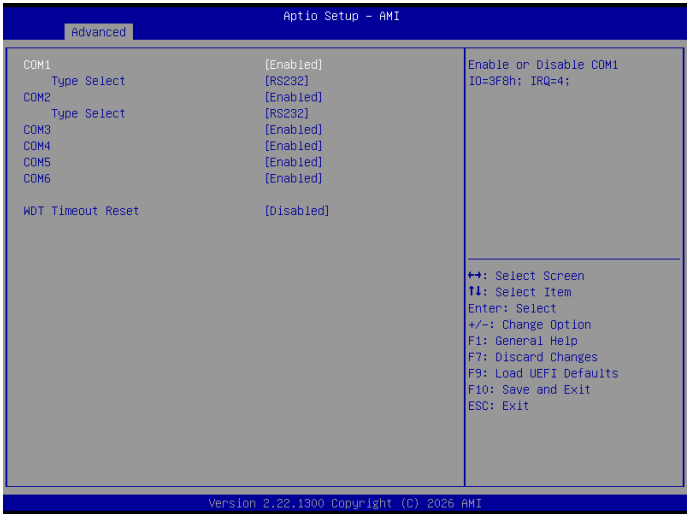
Configuration option: [AHCI]

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.

Type Select

Use this to select COM2 port type: [RS232], [RS422] or [RS485].

COM3 Configuration

Use this to set parameters of COM3.

COM4 Configuration

Use this to set parameters of COM4.

COM5 Configuration

Use this to set parameters of COM5.

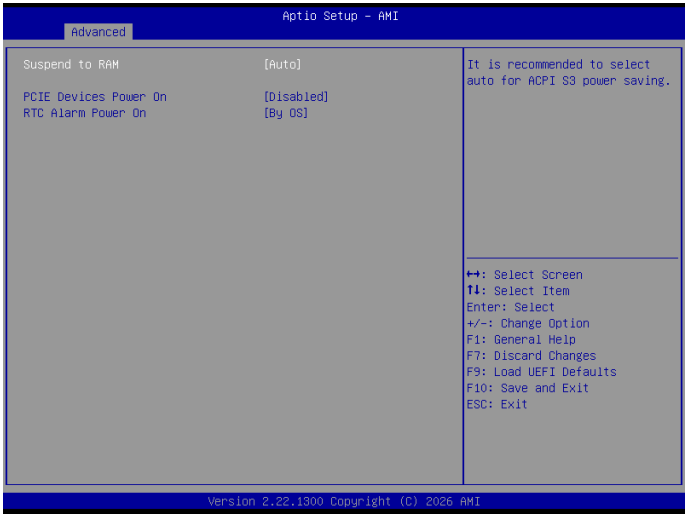
COM6 Configuration

Use this to set parameters of COM6.

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

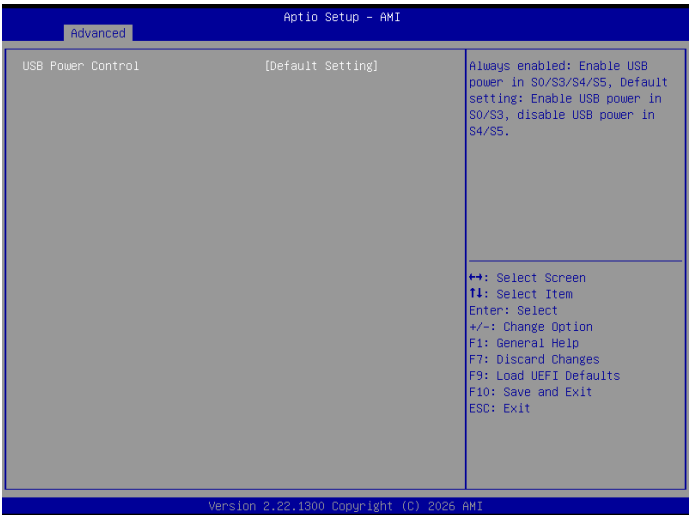
Use this item to enable or disable PCIE devices to turn on the system from the power-soft-off mode.

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]

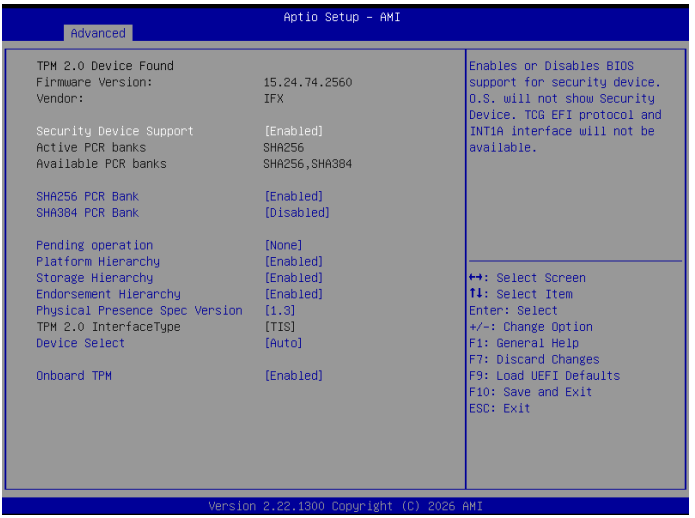
3.3.6 USB Configuration



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.

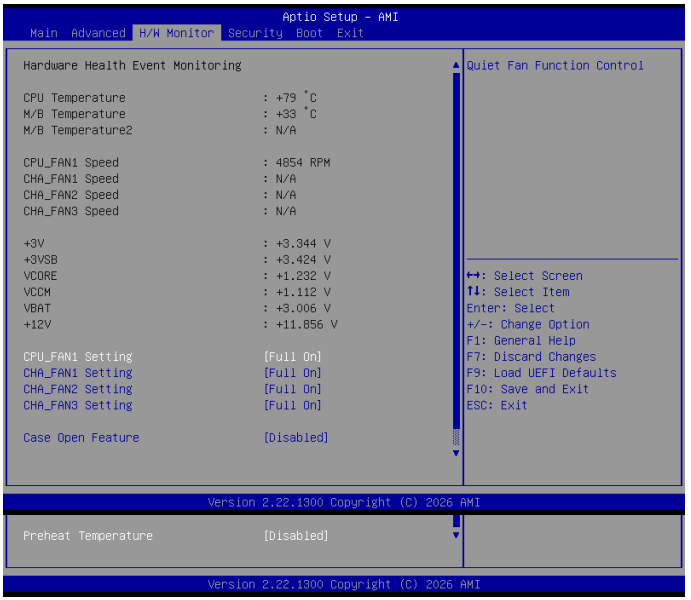
[Auto] supports both TPM 1.2 and TPM 2.0 devices with the default set to TPM 2.0 devices. If TPM 2.0 devices are not found, TPM 1.2 devices will be enumerated.

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].

Preheat Temperature

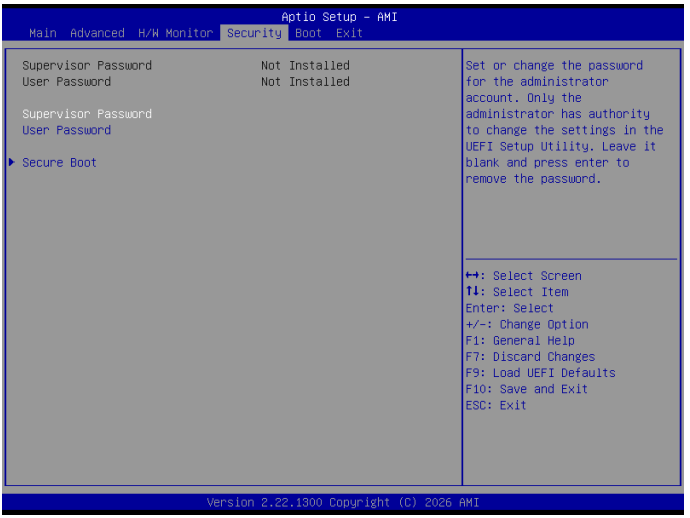
Use the item to enable AT/TX or disable Preheat Control.

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

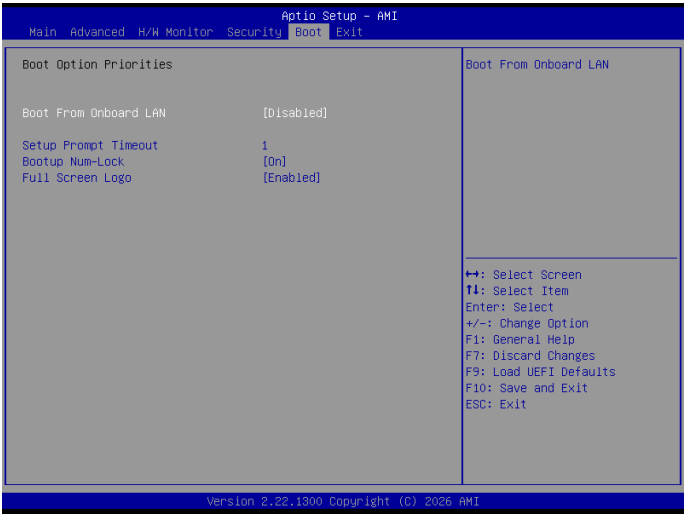
Set or change the password for the user account. Users are unable to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

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.

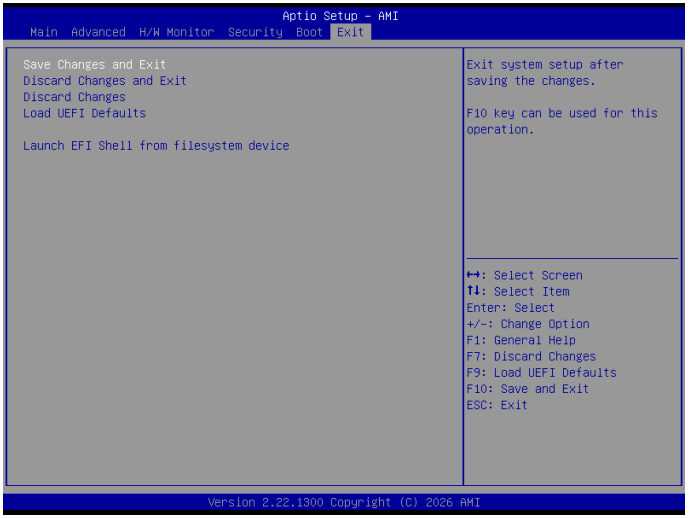
Configuration options: [On] [Off]

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.