ASRock Industrial

IMB-1239-WV
IMB-1240-WV
IMB-X1240-WV

User Manual

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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 BUTTOON 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.

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Chapter 1 Introduction

Thank you for purchasing ASRockInd ***IMB-1239-WV / IMB-1240-WV / IMB-X1240-WV*** 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/MB-1239-WV
https://www.asrockind.com/IMB-1240-WV
https://www.asrockind.com/IMB-X1240-WV

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-1239-WV / IMB-1240-WV / IMB-X1240-WV*** Motherboard (Mini-ITX (6.7-in x 6.7-in x 1.5-in, 17.0 cm x 17.0 cm x 2.5 cm)

	IMB-1239-WV	IMB-1240-WV / IMB-X1240-WV
Gift Package	1 x I/O Shield 1 x I/O Shield THIN 3 x SCREW M2*2, D=5 1 x SATA Power Cable 2 x COM Cable 2 x SATA Cable	1 x I/O Shield 1 x I/O Shield THIN 4 x SCREW M2*2, D=5 1 x SATA Power Cable 2 x COM Cable 2 x SATA Cable
Bulk Package	1 x I/O Shield 1 x I/O Shield THIN 3 x SCREW M2*2, D=5	1 x I/O Shield 1 x I/O Shield THIN 4 x SCREW M2*2, D=5

1.2 Specifications

- IMB-1239-WV

Form Factor	Dimensions (LxWxH)	Mini-ITX (6.7-in x 6.7-in x 1.5-in, 17.0 cm x 17.0 cm x 2.5 cm)
Processor System	CPU	Intel® Core™ Processor Series 2 (Bartlett Lake-S) and 14th/13th/12th Gen (Raptor Lake-S Refresh/Raptor Lake-S/Alder Lake-S) Core™ Processors, up to 65W
	Chipset	Intel® H610
	Socket	LGA1700
	BIOS	AMI SPI 256 Mbit
Memory	Technology	Dual Channel DDR5 4800/5600 MHz* *Actual memory frequency depends on the CPU types and DRAM modules, for more information refer to https://www.asrockind.com/en-gb/index.php?route=newsblog/faq&faq_id=90 technical FAQ *If motherboard ambient temperature is over 55°C, the memory thermal solution should be added to avoid thermal issue.
	Capacity	96 GB (48 GB per DIMM)
	Socket	2 x 262-pin SO-DIMM
Graphics	Controller	Intel® UHD Graphics
	HDMI	HDMI 2.0b Max resolution up to 4096x2160@60Hz
	DisplayPort	DisplayPort 1.4a, DP++ Max resolution up to 4096x2160@60Hz
	LVDS	Dual channel 24 bit up to 1920x1200@60Hz
	eDP	eDP1.4b Max resolution up to 4096x2160@60Hz
	MultiDisplay	Triple Display
Expansion Slot	PCIe	1 x PCIe x16 (Gen5)
	M.2	1 x M.2 (Key E, 2230) with PCIe x1, USB 2.0 and CNVio/CNVio2 for Wireless 1 x M.2 (Key B, 3042/3052) with PCIe x1, USB 3.2 Gen1, USB 2.0 and SIM for 4G/5G
	SIM Socket	1 x Socket connected to M.2 Key B
Audio	Interface	Realtek ALC897, High Definition Audio. Line-out, Mic-in
Ethernet	Controller/ Speed	LAN1: Intel® I226V with 10/100/1000/2500 Mbps LAN2: Intel® I219V with 10/100/1000 Mbps
	Controller	2 x RJ-45

Rear I/O	HDMI	2 x HDMI 2.0b
	DisplayPort	1 x DP 1.4a++
	Ethernet	1 x 2.5 Gigabit LAN 1 x 1 Gigabit LAN
	USB	2 x USB 3.2 (Gen2) 2 x USB 2.0
	Audio	2 (Mic-in, Line-out)
Internal Connector	USB	1 x USB 3.2 Gen1 (1 x USB 3.2 header) 3 x USB 2.0 (1 x 2.54 pitch header)
	COM	COM1, COM3 (RS-232/422/485)
	GPIO	4 x GPI, 4 x GPO
	LVDS	1
	eDP	1
	SATA PWR Output	1
	Speaker Header	1
Storage	M.2	1 x M.2 (Key M, 2242/2280) with PCIe Gen3 x4 for SSD
	SATA	2 x SATA3 (6Gb/s)
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	12~28V DC-In with 4-pin wafer PWR cable or DC Jack (Screw type)
	Power On	AT/ATX supported - AT : Directly PWR on as po wer input ready - ATX : Press button to PWR on after po wer input ready
Environment	Operating Temperature	-20°C ~ 70°C
	Storage Temperature	-40° C ~ 85° C
	Operating Humidity	5% ~ 90%
	Storage Humidity	5% ~ 90%

- IMB-1240-WV

Form Factor	Dimensions (LxWxH)	Mini-ITX (6.7-in x 6.7-in x 1.5-in, 17.0 cm x 17.0 cm x 2.5 cm
Processor System	CPU	Intel® Core™ Processor Series 2 (Bartlett Lake-S) and 14th/13th/12th Gen (Raptor Lake-S Refresh/Raptor Lake-S/Alder Lake-S) Core™ Processors, up to 65W
	Chipset	Intel® Q670
	Socket	LGA1700
	BIOS	AMI SPI 256 Mbit
Memory	Technology	Dual Channel DDR5 4800/5600 MHz* *Actual memory frequency depends on the CPU types and DRAM modules, for more information refer to https://www.asrockind.com/en-gb/index.php?route=newsblog/faq&faq_id=90 technical FAQ *If motherboard ambient temperature is over 55°C, the memory thermal solution should be added to avoid thermal issue.
	Capacity	96 GB (48 GB per DIMM)
	Socket	2 x 262-pin SO-DIMM
Graphics	Controller	Intel® UHD Graphics
	HDMI	HDMI 2.0b Max resolution up to 4096x2160@60Hz
	DisplayPort	DisplayPort 1.4a, DP++ Max resolution up to 4096x2160@60Hz
	LVDS	Dual channel 24 bit up to 1920x1200@60Hz
	eDP	eDP1.4b Max resolution up to 4096x2160@60Hz
	MultiDisplay	Quad Display
Expansion Slot	PCIe	1 x PCIe x16 (Gen5, Support riser card x8/x8)
	M.2	1 x M.2 (Key E, 2230) with PCIe x1, USB 2.0 and CNVio/CNVio2 for Wireless 1 x M.2 (Key B, 3042/3052) with PCIe x1, USB 3.2 Gen1, USB 2.0 and SIM for 4G/5G
	SIM Socket	1 x Socket connected to M.2 Key B
Audio	Interface	Realtek ALC897, High Definition Audio. Line-out, Mic-in

Ethernet	Controller/ Speed	LAN1: Intel® I226V with 10/100/1000/2500 Mbps LAN2: Intel® I219LM with 10/100/1000 Mbps, supports vPro
	Controller	2 x RJ-45
Rear I/O	HDMI	2 x HDMI 2.0b
	DisplayPort	1 x DP 1.4a++
	Ethernet	1 x 2.5 Gigabit LAN 1 x 1 Gigabit LAN
	USB	4 x USB 3.2 (Gen2)
	Audio	2 (Mic-in, Line-out)
Internal Connector	USB	2 x USB 3.2 Gen1 (1 x USB 3.2 header) 4 x USB 2.0 (2 x 2.54 pitch header)
	COM	COM1, COM3 (RS-232/422/485)
	GPIO	4 x GPI, 4 x GPO
	LVDS	1
	eDP	1
	SATA PWR Output	1
	Speaker Header	1
Storage	M.2	1 x M.2 (Key M, 2242/2280) with PCIe Gen4 x4 for SSD 1 x M.2 (KeyM, 2242) with PCIe Gen4 x4 and SATA3 for SSD* *Recommend using M2X4-SATA-4P module to support extra 4 SATA ports (supported by special BIOS)
	SATA	2 x SATA3 (6Gb/s)
	RAID	Intel® VMD RAID 0/1 **supported by identical interface (PCIe or SATA) PCIe interface: M.2 Key B + M.2 Key M1/2 or 2*M.2 Key M SATA interface: SATA port
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	12~28V DC-In with 4-pin wafer PWR cable or DC Jack (Screw type)
	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°C ~ 70°C
	Storage Temperature	-40° C ~ 85° C
	Operating Humidity	5% ~ 90%
	Storage Humidity	5% ~ 90%

- IMB-X1240-WV

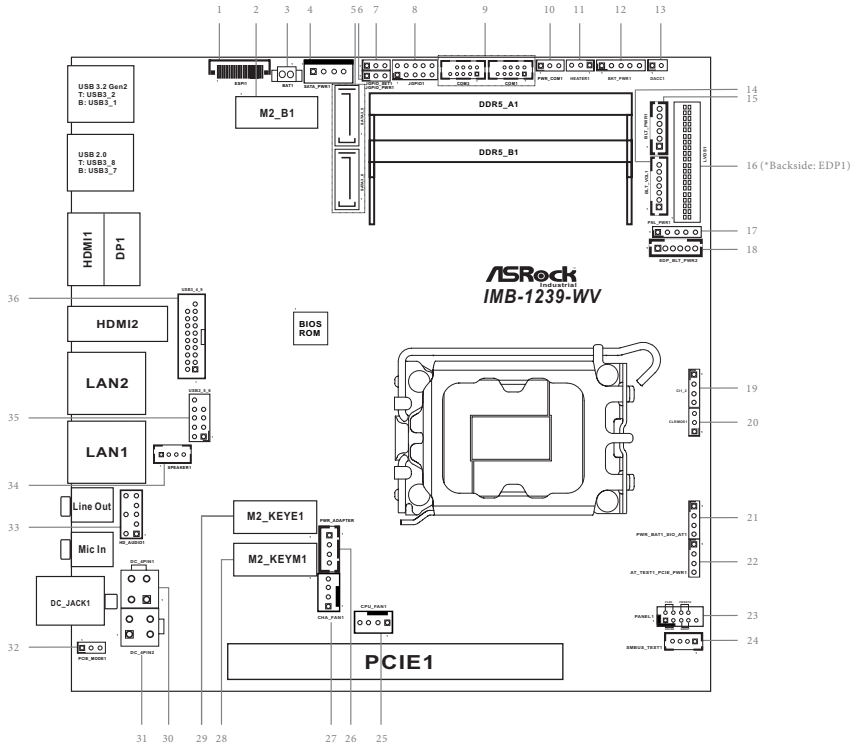
Form Factor	Dimensions (LxWxH)	Mini-ITX (6.7-in x 6.7-in x 1.5-in, 17.0 cm x 17.0 cm x 2.5 cm)
Processor System	CPU	Intel® Core™ Processor Series 2 (Bartlett Lake-S) and 14th/13th/12th Gen (Raptor Lake-S Refresh/Raptor Lake-S/Alder Lake-S) Core™ Processors, up to 65W
	Chipset	Intel® W680
	Socket	LGA1700
	BIOS	AMI SPI 256 Mbit
Memory	Technology	Dual Channel ECC/non-ECC DDR5 4800/5600 MHz* *Actual memory frequency depends on the CPU types and DRAM modules, for more information refer to https://www.asrockind.com/en-gb/index.php?route=newsblog/faq&faq_id=90 technical FAQ *If motherboard ambient temperature is over 55°C, the memory thermal solution should be added to avoid thermal issue.
	Capacity	96 GB (48 GB per DIMM)
	Socket	2 x 262-pin SO-DIMM
Graphics	Controller	Intel® UHD Graphics
	HDMI	HDMI 2.0b Max resolution up to 4096x2160@60Hz
	DisplayPort	DisplayPort 1.4a, DP++ Max resolution up to 4096x2160@60Hz
	LVDS	Dual channel 24 bit up to 1920x1200@60Hz
	eDP	eDP1.4b Max resolution up to 4096x2160@60Hz
	MultiDisplay	Quad Display
Expansion Slot	PCIe	1 x PCIe x16 (Gen5, support riser card x8/x8)
	M.2	1 x M.2 (Key E, 2230) with PCIe x1, USB 2.0 and CNVio/CNVio2 for Wireless 1 x M.2 (Key B, 3042/3052) with PCIe x1, USB 3.2 Gen1, USB 2.0 and SIM for 4G/5G
	SIM Socket	1 x Socket connected to M.2 Key B
Audio	Interface	Realtek ALC897, High Definition Audio. Line-out, Mic-in

Ethernet	Controller/ Speed	LAN1: Intel® I226V with 10/100/1000/2500 Mbps LAN2: Intel® I219LM with 10/100/1000 Mbps, supports vPro
	Controller	2 x RJ-45
Rear I/O	HDMI	2 x HDMI 2.0b
	DisplayPort	1 x DP 1.4a++
	Ethernet	1 x 2.5 Gigabit LAN 1 x 1 Gigabit LAN
	USB	4 x USB 3.2 (Gen2)
	Audio	2 (Mic-in, Line-out)
Internal Connector	USB	2 x USB 3.2 Gen1 (1 x USB 3.2 header) 4 x USB 2.0 (2 x 2.54 pitch header)
	COM	COM1, COM3 (RS-232/422/485)
	GPIO	4 x GPI, 4 x GPO
	LVDS	1
	eDP	1
	SATA PWR Output	1
	Speaker Header	1
Storage	M.2	1 x M.2 (Key M, 2242/2280) with PCIe Gen4 x4 for SSD 1 x M.2 (KeyM, 2242) with PCIe Gen4 x4 and SATA3 for SSD* *Recommend using M2X4-SATA-4P module to support extra 4 SATA ports (supported by special BIOS)
	SATA	2 x SATA3 (6Gb/s)
	RAID	Intel® VMD RAID 0/1 **supported by identical interface (PCIe or SATA) PCIe interface: M.2 Key B + M.2 Key M1/2 or 2*M.2 Key M SATA interface: SATA port
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	12~28V DC-In with 4-pin wafer PWR cable or DC Jack (Screw type)
	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°C ~ 70°C
	Storage Temperature	-40° C ~ 85° C
	Operating Humidity	5% ~ 90%
	Storage Humidity	5% ~ 90%

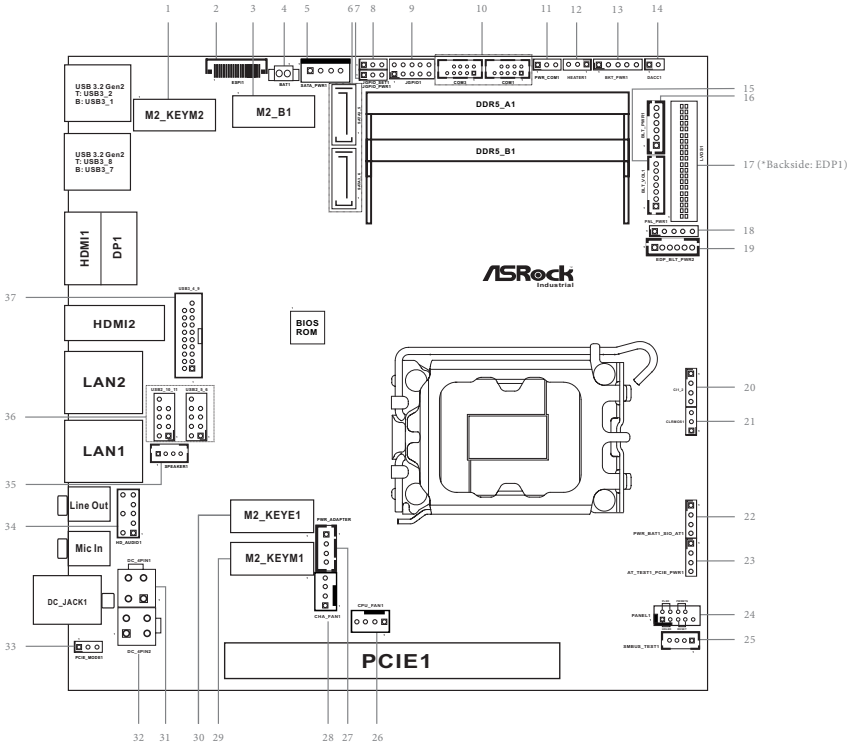
1.3 Motherboard Layout

- IMB-1239-WV



1 : ESPI Header (ESPI1)
2 : M.2 Key-B Socket (M2_B1)
3 : Battery Connector (BAT1)
4 : SATA Power Output Connector (SATA_PWR1)
5 : SATA3 Connectors (SATA3_5, SATA3_6)
6 : Digital Input/Output Power Select (JGPIO_PWR1)
7 : Digital Input/Output Default Value Setting (JGPIO_SET1)
8 : Digital Input/Output Pin Header (JGPIO1)
9 : COM Port Headers (COM1, COM3) (RS232/422/485)
10 : COM Port PWR Setting Jumpers PWR_COM1 (For COM Port1)
11 : HEATER1 Header (HEATER1)
12 : Backlight Power Select (LCD_BLT_VCC) (BKT_PWR1)
13 : DACC Jumper (DACC1)
14 : Backlight Volume Control (BLT_VOL1)
15 : Inverter Power Control Wafer (BLT_PWR1)
16 : LVDS Panel Connector (LVDS1) (eDP Connector (on the Backside of PCB))
17 : Panel Power Select (LCD_VCC) (PNL_PWR1)
18 : Inverter Power Control Wafer (EDP_BLT_PWR2)
19 : Chassis Intrusion Header (CI1_2)
20 : Clear CMOS Header (CLRMOS1)
21 : PWR_BAT1_SIO_AT1
22 : AT_TEST1_PCIE_PWR1
23 : System Panel Header (PANEL1)
24 : SMBUS_TEST1
25 : CPU FAN Connector (+12V) (CPU_FAN1)
26 : Power Adapter (PWR_ADAPTER)
27 : Chassis FAN Connector (+12V) (CHA_FAN1)
28 : M.2 Key-M Socket (M2_KEYM1)
29 : M.2 Key-E Socket (M2_KEYE1)
30 : 4-pin ATX PWR Connector (Black) (DC_4PIN1)
31 : EXTRA_PCIE_PWR_IN Connector (White) (DC_4PIN2)
32 : PCIE_PWR_MODE (PCIE_MODE1)
33 : Front Panel Audio Header (HD_AUDIO1)
34 : 3W Audio AMP Output Wafer (SPEAKER1)
35 : USB 2.0 Headers (USB2_5_6)
36 : USB 3.2 Gen1 Header (USB3_4_9)

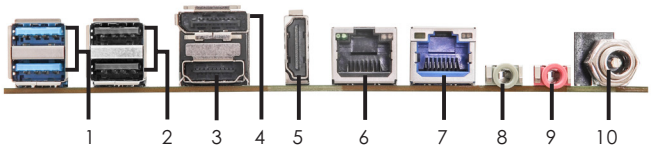
- IMB-1240-WV / IMB-X1240-WV



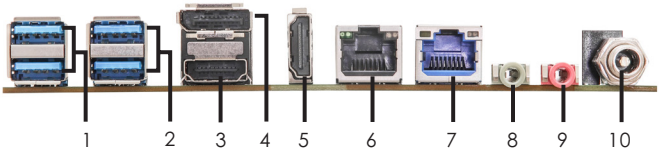
1 : M.2 Key-M Socket (M2_KEYM2)
2 : ESPI Header (ESPI1)
3 : M.2 Key-B Socket (M2_B1)
4 : Battery Connector (BAT1)
5 : SATA Power Output Connector (SATA_PWR1)
6 : SATA3 Connectors (SATA3_5, SATA3_6)
7 : Digital Input/Output Power Select (JGPIO_PWR1)
8 : Digital Input/Output Default Value Setting (JGPIO_SET1)
9 : Digital Input/Output Pin Header (JGPIO1)
10 : COM Port Headers (COM1, COM3) (RS232/422/485)
11 : COM Port PWR Setting Jumpers PWR_COM1 (For COM Port1)
12 : HEATER1 Header (HEATER1)
13 : Backlight Power Select (LCD_BLT_VCC) (BKT_PWR1)
14 : DACC Jumper (DACC1)
15 : Backlight Volume Control (BLT_VOL1)
16 : Inverter Power Control Wafer (BLT_PWR1)
17 : LVDS Panel Connector (LVDS1) (eDP Connector (on the Backside of PCB))
18 : Panel Power Select (LCD_VCC) (PNL_PWR1)
19 : Inverter Power Control Wafer (EDP_BLT_PWR2)
20 : Chassis Intrusion Header (CI1_2)
21 : Clear CMOS Header (CLRMOS1)
22 : PWR_BAT1_SIO_AT1
23 : AT_TEST1_PCIE_PWR1
24 : System Panel Header (PANEL1)
25 : SMBUS_TEST1
26 : CPU FAN Connector (+12V) (CPU_FAN1)
27 : Power Adapter (PWR_ADAPTER)
28 : Chassis FAN Connector (+12V) (CHA_FAN1)
29 : M.2 Key-M Socket (M2_KEYM1)
30 : M.2 Key-E Socket (M2_KEYE1)
31 : 4-pin ATX PWR Connector (Black) (DC_4PIN1)
32 : EXTRA_PCIE_PWR_IN Connector (White) (DC_4PIN2)
33 : PCIE_PWR_MODE (PCIE_MODE1)
34 : Front Panel Audio Header (HD_AUDIO1)
35 : 3W Audio AMP Output Wafer (SPEAKER1)
36 : USB 2.0 Headers (USB2_5_6, USB2_10_11)
37 : USB 3.2 Gen1 Header (USB3_4_9)

1.4 I/O Panel

- IMB-1239-WV



- IMB-1240-WV / IMB-X1240-WV



1 USB 3.2 Gen2 Ports (USB3_1_2)
Top: USB3_2
Bottom: USB3_1

2 IMB-1239-WV:
USB 2.0 Ports (USB3_7_8)
IMB-1240-WV / IMB-X1240-WV:
USB 3.2 Gen2 (USB3_7_8)
Top: USB3_8
Bottom: USB3_7

3 HDMI Port (HDMI1)

4 DisplayPort (DP1)

5 HDMI Port (HDMI2)

6 RJ45 LAN Port (LAN2)**

7 RJ45 LAN Port (LAN1)*

8 Audio Output: Green - Line Out

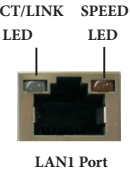
9 Audio Output: Pink - Mic In

10 DC JACK (DC_JACK1)

* There are two LED next to the LAN1 port. Please refer to the table below for the LAN1 port LED indications.

LAN1 Port LED Indications

Activity/Link LED		SPEED LED	
Status	Description	Status	Description
Off	No Link	Off	10Mbps connection
Blinking	Data Activity	Orange	100Mbps/1Gbps connection
On	Link	Green	2.5Gbps connection

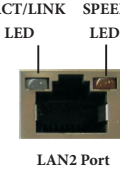


LAN1 Port

** There are two LED next to the LAN2 port. Please refer to the table below for the LAN2 port LED indications.

LAN2 Port LED Indications

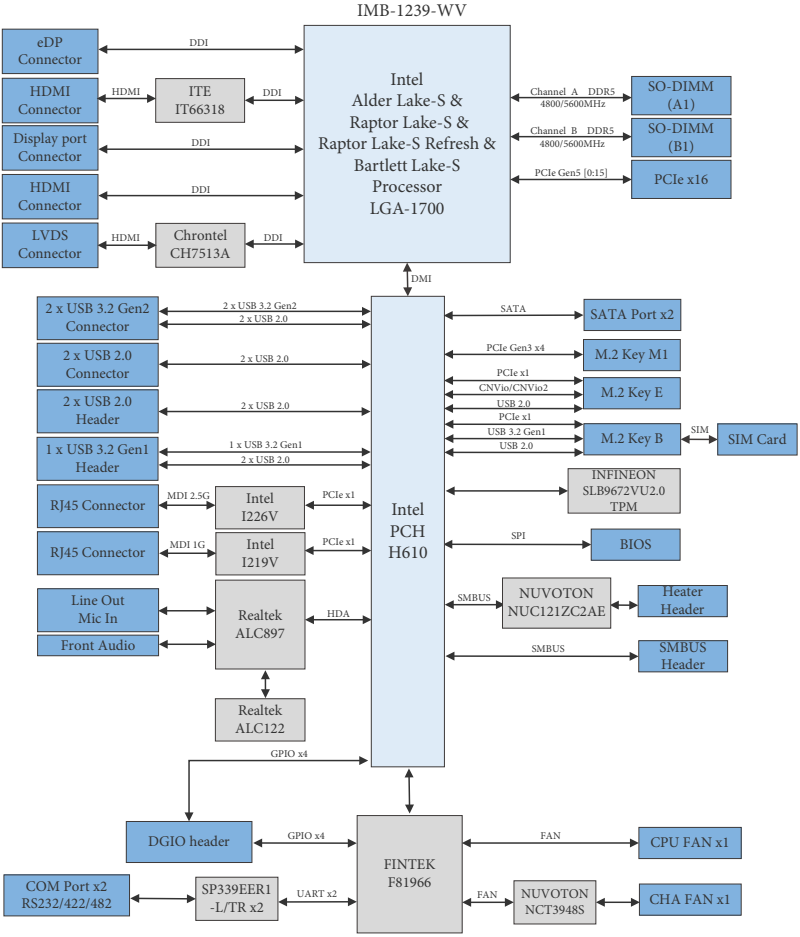
Activity/Link LED		SPEED LED	
Status	Description	Status	Description
Off	No Link	Off	10Mbps connection
Blinking	Data Activity	Orange	100Mbps connection
On	Link	Green	1Gbp connection



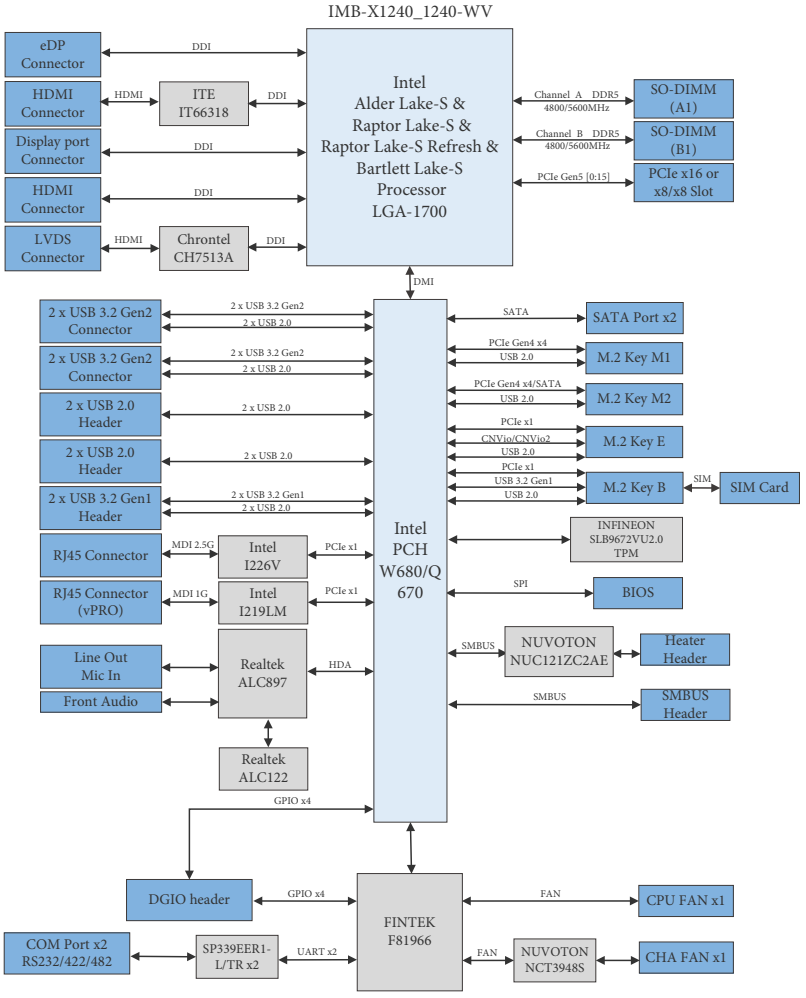
LAN2 Port

1.5 Block Diagram

- IMB-1239-WV



- IMB-1240-WV / IMB-X1240-WV



Chapter 2 Installation

This is a Mini-ITX (6.7-in x 6.7-in x 1.5-in, 17.0 cm x 17.0 cm x 2.5 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.)

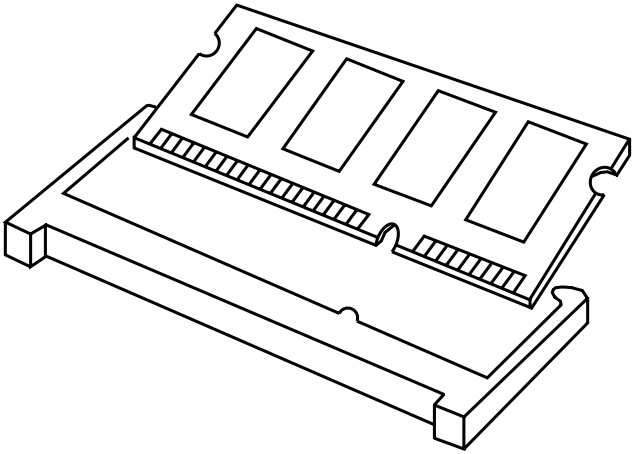
Before you install or remove any component, ensure that the power is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

2.3 Installation of Memory Modules

IMB-1239-WV / IMB-1240-WV provides two 262-pin DDR5 (Double Data Rate 5) SO-DIMM slots, and supports Dual Channel Memory Technology.

IMB-X1240-WV provides two 262-pin DDR5 (Double Data Rate 5) SO-DIMM slots, and supports Dual Channel ECC/non-ECC Memory Technology.

Step 1. Align a SO-DIMM on the slot such that the notch on the SO-DIMM matches the break on the slot.



1. *The SO-DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the SO-DIMM if you force the SO-DIMM into the slot at incorrect orientation.*
2. *Please do not intermix different voltage SO-DIMMs on this motherboard.*

Step 2. Firmly insert the SO-DIMM into the slot until the retaining clips at both ends fully snap back in place and the SO-DIMM is properly seated.

2.4 Expansion Slots

There are one PCI Express slot, three M.2 sockets and one SIM socket on ***IMB-1239-WV.*** There are one PCI Express slot, four M.2 sockets and one SIM socket on ***IMB-1240-WV / IMB-X1240-WV***.

PCIE slot: IMB-1239-WV:

PCIE1 (PCIE 5.0 x16 slot) is used for PCI Express x16 lane width cards.

IMB-1240-WV / IMB-X1240-WV:
PCIE1 (PCIE 5.0 x16 slot) is used for PCI Express x16 lane width cards (supports riser card x8/x8)

Due to power design of the motherboard, we recommend customer using the power adapter with suggested DC-input voltage shown in the table below for system stability.

PCIE Add-on card (Power consumption)	Suggested DC-input voltage
N/A	12V~28V
75W or lower	19V~28V
Higher than 75W*	24V~28V

* The VGA-PWR card *(Optional)* is required to support additional +12V input power for PCIE Add-on card.

M.2 sockets: IMB-1239-WV:

1 x M.2 (Key B, 3042/3052) with PCIe x1, USB 3.2 Gen1, USB 2.0 and SIM for 4G/5G
1 x M.2 (Key E, 2230) with PCIe x1, USB 2.0 and CNVio/CNVio2 for Wireless
1 x M.2 (Key M, 2242/2280) with PCIe Gen3 x4 for SSD

IMB-1240-WV / IMB-X1240-WV:
1 x M.2 (Key B, 3042/3052) with PCIe x1, USB 3.2 Gen1, USB 2.0 and SIM for 4G/5G
1 x M.2 (Key E, 2230) with PCIe x1, USB 2.0 and CNVio/CNVio2 for Wireless
1 x M.2 (Key M, 2242/2280) with PCIe Gen4 x4 for SSD
1 x M.2 (Key M, 2242) with PCIe Gen4 x4 and SATA3 for SSD*
*Recommend using M2X4-SATA-4P module to support extra 4 SATA ports (supported by special BIOS)

SIM Socket: 1x SIM socket connected to M.2 key B

M.2 Key-B Socket (M2_B1)

Pin	Signal Name	Signal Name	Pin
1	NA	+3.3V	2
3	GND	+3.3V	4
5	GND	FuLL_Card_ Power_off	6
7	USB_D+	W_DISABLE	8
9	USB_D-	NA	10
11	GND		
21	GND	NA	20
23	NA	NA	22
25	NA	NA	24
27	GND	NA	26
29	USB3_RX-	NA	28
31	USB3_RX+	UIM_RESET	30
33	GND	UIM_CLK	32
35	USB3_TX-	UIM_DATA	34
37	USB3_TX+	UIM_PWR	36
39	GND	NA	38
41	PERn0	NA	40
43	PERP0	NA	42
45	GND	NA	44
47	PETn0	NA	46
49	PETP0	NA	48
51	GND	PERST#	50
53	PEFCLKn	CLKREQ#	52
55	PEFCLKp	NA	54
57	GND	NA	56
59	NA	NA	58
61	NA	NA	60
63	NA	NA	62
65	NA	NA	64
67	NA	NA	66
69	NA	NA	68
71	GND	+3.3V	70
73	GND	+3.3V	72
75	NA	+3.3V	74

M.2 Key-E Socket (M2_KEYE1)

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	CNV_WGR_D1-	CNV_RF_RESET	10
11	CNV_WGR_D1+	NA	12
13	GND	MODEM_ CLKREQ	14
15	CNV_WGR_D0-	NA	16
17	CNV_WGR_D0+	GND	18
19	GND	NA	20
21	CNV_WGR_ CLK-	CNV_BRI_RSP	22
23	CNV_WGR_ CLK+		
33	GND	CNV_BGI_DT	32
35	PETp	CNV_RGI_RSP	34
37	PETn	CNV_BRI_DT	36
39	GND	NA	38
41	PERp	NA	40
43	PERn	NA	42
45	GND	NA	44
47	PEFCLKp	NA	46
49	PEFCLKn	NA	48
51	GND	SUSCLK	50
53	CLKREQ#	PERST0#	52
55	NA	W_DISABLE1#	54
57	GND	W_DISABLE2#	56
59	CNV_WT_D1-	SMB_DATA	58
61	CNV_WT_D1+	SMB_CLK	60
63	GND	NA	62
65	CNV_WT_D0-	NA	64
67	CNV_WT_D0+	NA	66
69	GND	NA	68
71	CNV_WT_CLK-	NA	70
73	CNV_WT_CLK+	+3.3V	72
75	GND	+3.3V	74

M.2 Key-M Socket (M2_KEYM1)
(only for IMB-1239)

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	NA	34
35	PETn1	NA	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		

M.2 Key-M Socket (M2_KEYM1)
(only for IMB-1240-WV / IMB-X1240-WV)

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	GND	32
33	GND	USB_D+	34
35	PETn1	USB_D-	36
37	PETp1	GND	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	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		

M.2 Key-M Socket (M2_KEYM2)
(only for IMB-1240-WV / IMB-X1240-WV)

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	GND	32
33	GND	USB_D+	34
35	PETn1	USB_D-	36
37	PETp1	GND	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	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 How to Use High Performance and High Power Consumption GPU Card

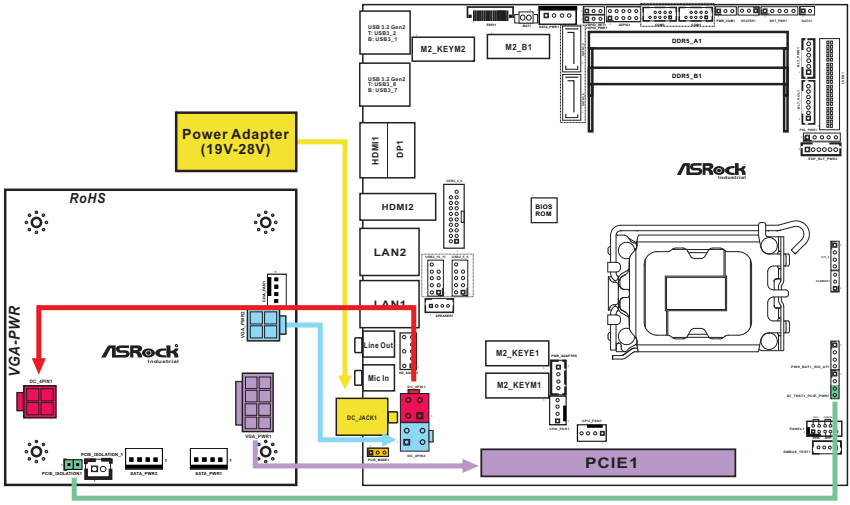
2.5.1 VGA-PWR Card

We suggest using ASRockInd VGA-PWR card to supply +12V input power for the PCIE add-on card under 300W.
Please refer to the following diagram for instructions on connecting the VGA-PWR card and the PCIE add-on card to the motherboard.

- Please set PCIE_PWR_MODE (PCIE_MODE1) at **HIGH_PWR_MODE** (short pin 2-3).

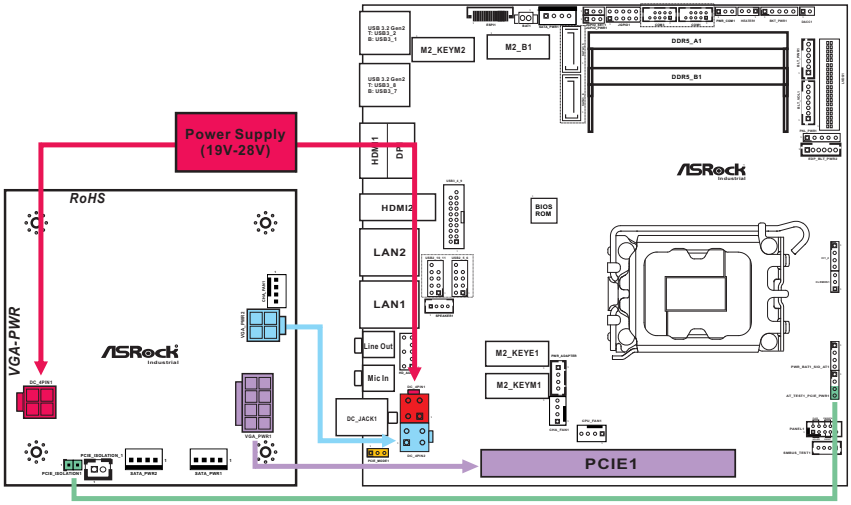
A. Supply power through DC-Jack with VGA-PWR card:

1	Connect Power Adapter to DC Jack (DC_JACK1).
2	Connect 4-pin ATX PWR Connector (Black) (DC_4PIN1) to 4-pin DC-IN Power Connector (DC_4PIN1).
3	Connect EXTRA_PCIE_PWR_IN Connector (White) (DC_4PIN2) to 4-pin VGA Power Connector (VGA_PWR2).
4	Connect PCIE_PWR1 to PS_ON# Header (PCIE_ISOLATION1).
5	Connect VGA Power Connector (VGA_PWR1) to PCIE add-on card auxiliary power connector.



B. Supply power through 4-pin ATX PWR Connector with VGA-PWR card:

1	Connect Power Supply to 4-pin ATX PWR Connector (Black) (DC_4PIN1) and 4-pin DC-IN Power Connector (DC_4PIN1).
2	Connect EXTRA_PCIE_PWR_IN Connector (White) (DC_4PIN2) to 4-pin VGA Power Connector (VGA_PWR2).
3	Connect PCIE_PWR1 to PS_ON# Header (PCIE_ISOLATION1).
4	Connect VGA Power Connector (VGA_PWR1) to PCIE add-on card auxiliary power connector.



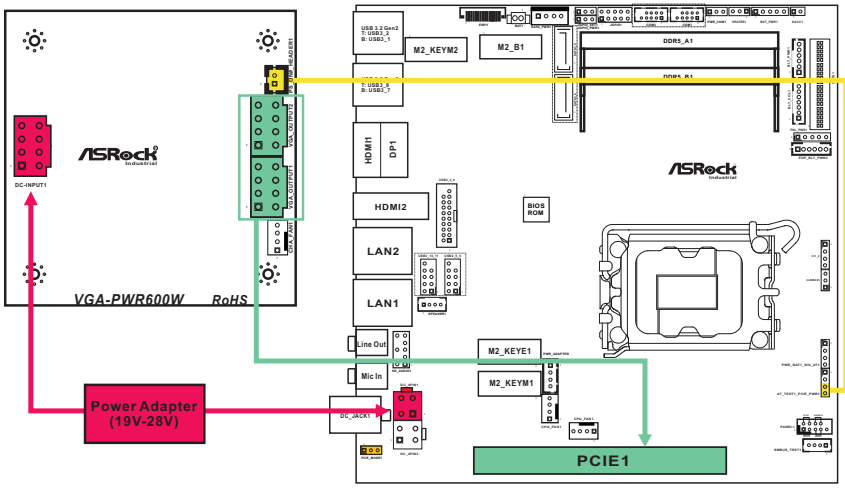
2.5.2 VGA-PWR600W Card

We suggest using ASRockInd VGA-PWR600W card to supply +12V input power for the PCIE add-on card under 600W.
Please refer to the following diagram for instructions on connecting the VGA-PWR600W card and the PCIE add-on card to the motherboard.

- Please set PCIE_PWR_MODE (PCIE_MODE1) at **Low_PWR_MODE** (short pin 1-2).

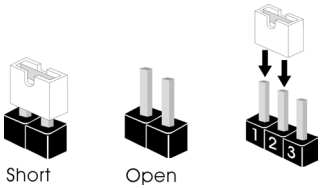
Supply power through 4-pin ATX PWR Connector with VGA-PWR600W card:

1	Connect Power Adapter to 4-pin DC-IN Power Connector (Black) (DC_4PIN1) and 8-pin DC-IN Power Connector (DC-INPUT1).
2	Connect PCIE_PWR1 to PS_ON# Header (PCIE_ISOLATION1).
3	Connect two VGA Power Connector (VGA_OUTPUT1 & VGA_OUTPUT2) to PCIE add-on card auxiliary power connector.



2.6 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.



Digital Input/Output Power Select (JGPIOPWR)
(3-pin JGPIO_PWR1)
(see p. 10, No. 6; p. 12, No. 7)

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

The maximum current JGPIO_PWR1 provides is 1A.

Digital Input/Output Default Value Setting
(3-pin JGPIO_SET1)
(see p. 10, No. 7; p. 12, No. 8)

Setting	Description
1-2	Pull-High (Default)
2-3	Pull-Low

The header is used for GPIO default value setting for either pull high or pull low. Pulling the header to a high/low value means the voltage is anchored to VCC/GND, in a stable, non-floating state.

COM Port Pin9 PWR Setting Jumper
(3-pin PWR_COM1 (For COM Port1))
(see p. 10, No. 10; p. 12, No. 11)

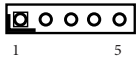
Setting	Description
1-2	+5V (Default)
2-3	+12V

The maximum current for per port is 1A, and the power supply is either 5V or 12V. Use the jumpers to set the power for COM port pin 9.

Backlight Power Select (LCD_BLT_VCC)

(5-pin BKT_PWR1)

(see p. 10, No. 12; p. 12, No. 13)



Setting	Description
1-2	LCD_BLT_VCC: +5V (Default)
2-3	LCD_BLT_VCC: +12V
4-5	LCD_BLT_VCC: DC-IN

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

DACC Jumper

(2-pin DACC1)

(see p. 10, No. 13; p. 12, No. 14)

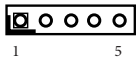
Setting	Description
Open	No ACC
Short	ACC (Default)

Auto clear CMOS when system boot improperly.

Panel Power Select

(5-pin PNL_PWR1)

(see p. 10, No. 17; p. 12, No. 18)



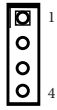
Setting	Description
1-2	+3V (Default)
2-3	+5V
4-5	+12V

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

Chassis Intrusion Headers

(4-pin CI1_2)

(see p. 10, No. 19; p. 12, No. 20)



Setting	Description
1-2	Open: Normal Short: Active Case Open
3-4	Open: Active Case Open (Default) Short: Normal

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.

Clear CMOS Header

(3-pin CLRMOS1)

(see p. 10, No. 20; p. 12, No. 21)

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

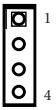
NOTE: CLRMOS1 allows you to clear the data in CMOS. To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord from the power supply. After waiting for 15 seconds, use a jumper cap to short pin2 and pin3 on CLRMOS1 for 5 seconds. However, please 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_BAT1_SIO_AT1

(4-pin PWR_BAT1_SIO_AT1)

(see p. 10, No. 21; p. 12, No. 22)



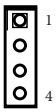
Setting	Description
1-2	PWR_BAT1: Open: Normal Short: Charge Battery*
3-4	SIO_AT1: Open: ATX Mode Short: AT Mode

*Only supported by chargeable battery.

AT_TEST1_PCIE_PWR1

(4-pin AT_TEST1_PCIE_PWR1)

(see p. 10, No. 22; p. 12, No. 23)



Setting	Description
1-2	AT_TEST1 (For Internal Test)
3-4	PCIE_PWR1 (For VGA Power Card Only): Pin3: PSON# Pin4: GND

PCIE_PWR_MODE

(3-pin PCIE_MODE1)

(see p. 10, No. 32; p. 12, No. 33)

Setting	Description
1-2	LOW_PWR_MODE (Default)
2-3	HIGH_PWR_MODE

* Only set to HIGH_PWR_Mode (pin 2-3) when using VGA-PWR CARD.

2.7 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!

ESPI Header

(20-pin ESPI1)

(see p. 10, No. 1; p. 12, No. 2)

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

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

Battery Connector

(BAT1)

(see p. 10, No. 3; p. 12, No. 4)

Pin	Signal Name
1	+BAT
2	GND

SATA Power Output Connector

(4-pin SATA_PWR1)

(see p. 10, No. 4; p. 12, No. 5)

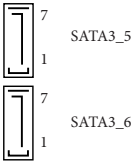
Pin	Signal Name
1	+5V
2	GND
3	GND
4	+12V

Please connect a SATA power cable to this connector.

SATA3 Connectors

(7-pin SATA3_5, SATA3_6)

(see p. 10, No. 5; p. 12, No. 6)



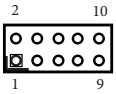
Pin	Signal Name
1	GND
2	SATA-A+
3	SATA-A-
4	GND
5	SATA-B-
6	SATA-B+
7	GND

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

Digital Input/Output Pin Header

(10-pin JGPIO1)

(see p. 10, No. 8; p. 12, No. 9)



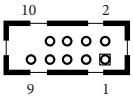
Pin	Signal Name	Signal Name	Pin
1	SIO_GP71	GPP_H23	2
3	SIO_GP72	GPP_I10	4
5	SIO_GP73	GPP_E5	6
7	SIO_GP74	GPP_E6	8
9	JGPIOPWR_R	GND	10

Parameter	Range
GPIO input Low Voltage	Max. 0.8V
GPIO input High Voltage	Min. 2.31V
GPIO output Low Voltage	Max. 0.4V
GPIO output High Voltage	Min. 2.85V
Note: Max. load per GPIO pin : 2mA JGPIO1 Pin 9 - JGPIOPWR_R, Current Max. 1A	

COM Port Headers (RS232/422/485)

(9-pin COM1, COM3)

(see p. 10, No. 9; p. 12, No. 10)



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

These are two 2.54mm-pitch COM port headers (COM1, COM3) which support RS232/422/485. The maximum current is 1A on COM1. The power supply of pin 9 is either 5V or 12V; use the COM Port Pin 9 PWR Setting Jumper to control it.

* This motherboard supports RS232/422/485 on COM1 and COM3 ports. Please refer to the table below for the pin definition. In addition, COM1 and COM3 ports (RS232/422/485) can be adjusted in BIOS setup utility > Advanced Screen > Super IO Configuration. You may refer to our user manual for details.

COM1, 3 Ports 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

Heater Header

(3-pin HEATER1)

(see p. 10, No. 11; p. 12, No. 12)

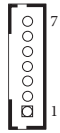
Pin	Signal Name
1	Heater_PWR (5V/1A)
2	GND
3	NTC (Negative Temperature Coefficient) thermistors

* The 10k Ohm NTC thermistors is suggested.
* Deep mode is not supported when the preheat function is enabled.

Backlight Volume Control

(7-pin BLT_VOL1)

(see p. 10, No. 14; p. 12, No. 15)

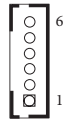


Pin	Signal Name
1	GPIO_VOL_UP
2	GPIO_VOL_DW
3	PWRDN
4	BLT_UP
5	BLT_DW
6	GND
7	GND

Inverter Power Control Wafer

(6-pin BLT_PWR1)

(see p. 10, No. 15; p. 12, No. 16)

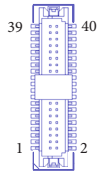


Pin	Signal Name
1	GND
2	GND
3	CON_LBKLT_CTL
4	CON_LBKLT_EN
5	LCD_BLT_VCC
6	LCD_BLT_VCC

LVDS Panel Connector

(40-pin LVDS1)

(see p. 10, No. 16; p. 12, No. 17)



Pin	Signal Name	Signal Name	Pin
1	LCD_VCC	LCD_VCC	2
3	+3.3V	N/A	4
5	N/A	LVDS_A_DATA0#	6
7	LVDS_A_DATA0	PD (Panel Detection)	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

* PD (Panel Detection): Connect this pin to LVDS Panel's Ground pin to detect Panel detection.

Pin	Signal Name
1	NA
2	GND
3	eDP_TX#3_CON
4	eDP_TX3_CON
5	GND
6	eDP_TX#2_CON
7	eDP_TX2_CON
8	GND
9	eDP_TX#1_CON
10	eDP_TX1_CON
11	GND
12	eDP_TX#0_CON
13	eDP_TX0_CON
14	GND
15	eDP_AUX_CON
16	eDP_AUX#_CON
17	GND
18	LCD_VCC
19	LCD_VCC
20	LCD_VCC
21	LCD_VCC
22	NA
23	GND
24	GND
25	GND
26	GND
27	eDP_HPD_CON
28	GND
29	GND
30	GND
31	GND
32	eDP_BKLTEN
33	eDP_BKLTCTL_R
34	SMB_DATA_MAIN
35	SMB_CLK_MAIN
36	LCD_BLT_VCC
37	LCD_BLT_VCC
38	LCD_BLT_VCC
39	LCD_BLT_VCC
40	NA

Inverter Power Control Wafer

(6-pin EDP_BLT_PWR2)

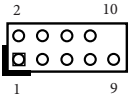
(see p. 10, No. 18; p. 12, No. 19)

Pin	Signal Name
1	GND
2	GND
3	eDP_LBKLT_CTL
4	eDP_LBKLT_EN
5	+12_FUSE
6	+12_FUSE

System Panel Header

(9-pin PANEL1)

(see p. 10, No. 23; p. 12, No. 24)



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

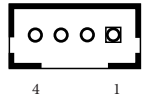
This header accommodates several system front panel functions.

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.

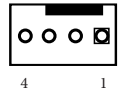
The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assign-ments are matched correctly.

SMBUS_TEST1
(4-pin SMBUS_TEST1)
(see p. 10, No. 24; p. 12, No. 25)



Pin	Signal Name
1	GPP_E7
2	SMB_CLK_MAIIN
3	SMB_DATA_MAIN
4	GND

CPU Fan Connector (+12V)
(4-pin CPU_FAN1)
(see p. 10, No. 25; p. 12, No. 26)



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

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

Power Adapter
(4-pin PWR_ADAPTER)
(see p. 10, No. 26; p. 12, No. 27)

Pin	Signal Name
1	GND
2	5VA_CONTROL
3	5VA
4	GND

Chassis FAN Connector (+12V)

(4-pin CHA_FAN1)

(see p. 10, No. 27; p. 12, No. 28)

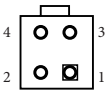
Pin	Signal Name
1	GND
2	+12V
3	CHA_FAN_SPEED
4	FAN_SPEED_CONTROL

The board offers three 4-pin chassis fan (Smart Fan) connectors which are 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.

4-pin ATX PWR Connector (Black)

(4-pin DC_4PIN1)

(see p. 10, No. 30; p. 12, No. 31)



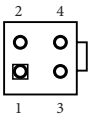
Pin	Signal Name	Signal Name	Pin
1	GND	GND	2
3	DC Input	DC Input	4

Please connect a DC +12V~+28V power supply to this connector.

EXTRA_PCIE_PWR_IN Connector (White)

(4-pin DC_4PIN2)

(see p. 10, No. 31; p. 12, No. 32)



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

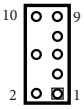
* Must use +12V from VGA-PWR CARD only.

** Do not connect to power supply.

Front Panel Audio Header

(8-pin HD_AUDIO1)

(see p. 10, No. 33; p. 12, No. 34)



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.

3W Audio AMP Output Wafer

(4-pin SPEAKER1)

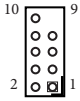
(see p. 10, No. 34; p. 12, No. 35)

Pin	Signal Name
1	OUTLN
2	OUTLP
3	OUTRP
4	OUTRN

USB 2.0 Header(s)

(9-pin USB2_5_6)

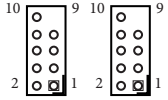
(see p. 10, No. 35)



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 USB2_5_6, USB2_10_11)

(see p. 12, No. 36)



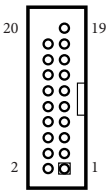
USB2_10_11 USB2_5_6

IMB-1239-WV provides one internal USB 2.0 header, while IMB-1240-WV / IMB-X1240-WV provides two internal USB 2.0 headers. The connector can support two USB 2.0 ports. The maximum current per port is 0.5A.

USB 3.2 Gen1 Connector(for IMB-1239-WV)

(19-pin USB3_4_9)

(see p. 10, No. 36; p. 12, No. 37)



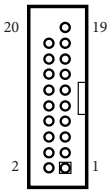
Pin	Signal Name	Signal Name	Pin
1	DUMMY	IntA_PA_D+	2
3	IntA_PB_D+	IntA_PA_D-	4
5	IntA_PB_D-	GND	6
7	GND	IntA_PA_ SSTX+	8
9	NA	IntA_PA_SSTX-	10
11	NA	GND	12
13	GND	IntA_PA_ SSRX+	14
15	NA	IntA_PA_SSRX-	16
17	NA	Vbus	18
19	Vbus		

There is one USB 3.2 Gen1 connector on IMB-1239-WV. This header can support one USB 3.2 Gen1 port and one USB 2.0 port, with maximum power current 0.9A per port.

USB 3.2 Gen1 Connector(for IMB-1240-WV / IMB-X1240-WV)

(19-pin USB3_4_9)

(see p. 10, No. 36; p. 12, No. 37)



Pin	Signal Name	Signal Name	Pin
1	DUMMY	IntA_PA_D+	2
3	IntA_PB_D+	IntA_PA_D-	4
5	IntA_PB_D-	GND	6
7	GND	IntA_PA_SSTX+	8
9	DUMMY	IntA_PA_SSTX-	10
11	DUMMY	GND	12
13	GND	IntA_PA_SSRX+	14
15	DUMMY	IntA_PA_SSRX-	16
17	DUMMY	Vbus	18
19	Vbus		

There is one USB 3.2 Gen1 connector on IMB-1240-WV / IMB-X1240-WV. This header can support two USB 3.2 Gen1 ports with maximum power current 0.9A per port.

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. The UEFI system works with a USB mouse and offers users a faster, sleeker experience.

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.

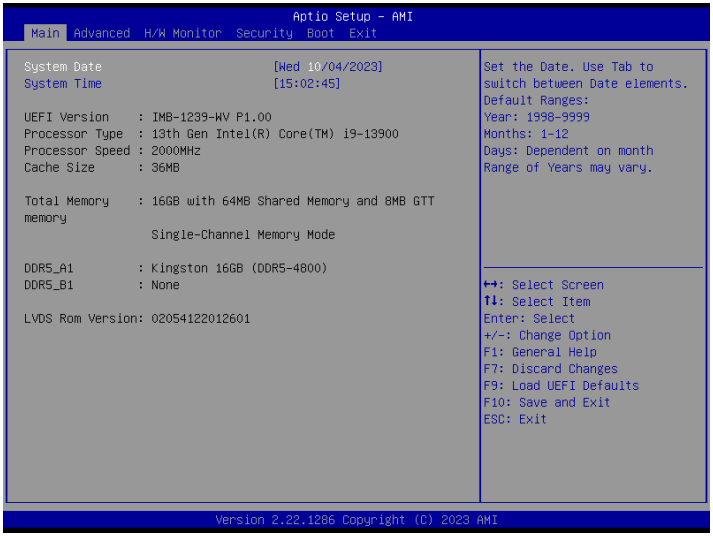
Please check the following table for the descriptions of each navigation key.

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

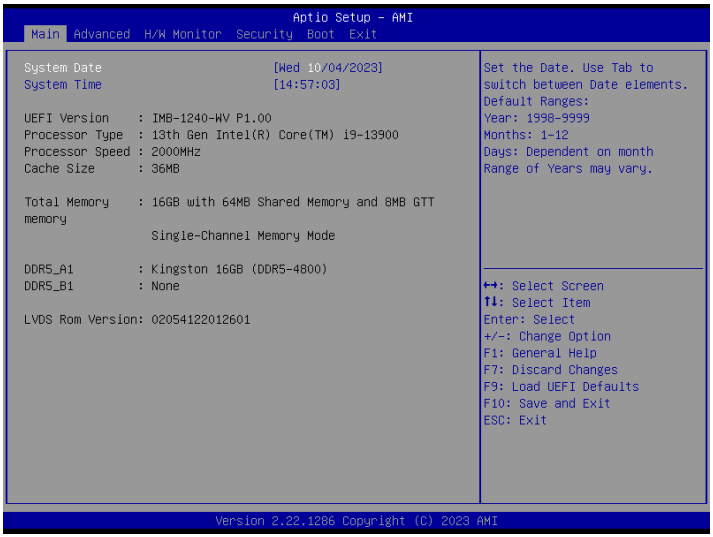
3.2 Main Screen

When you enter the UEFI Setup Utility, the Main screen will appear and display the system overview.

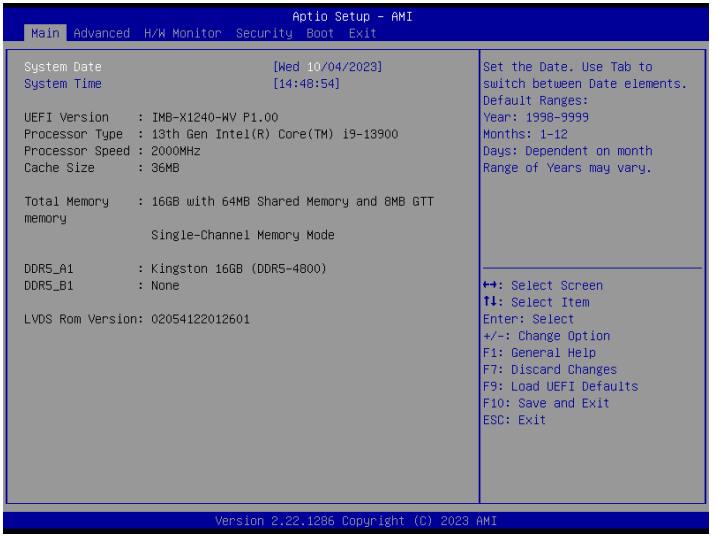
- IMB-1239-WV



- IMB-1240-WV



- IMB-X1240-WV

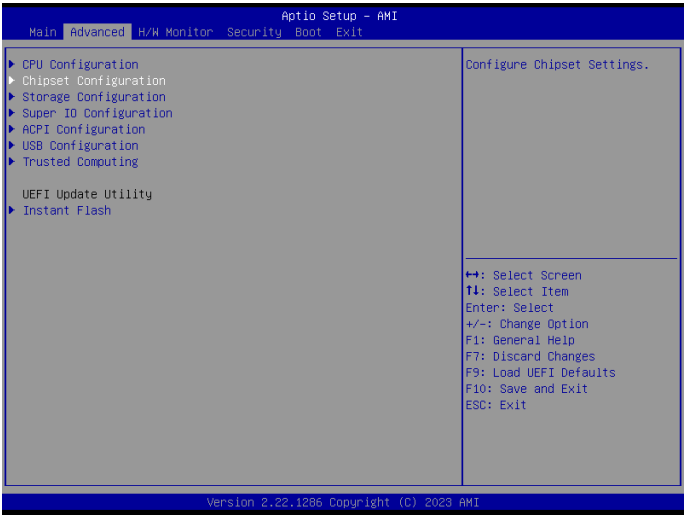


Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen. Options may also vary depending on the features of your motherboard.

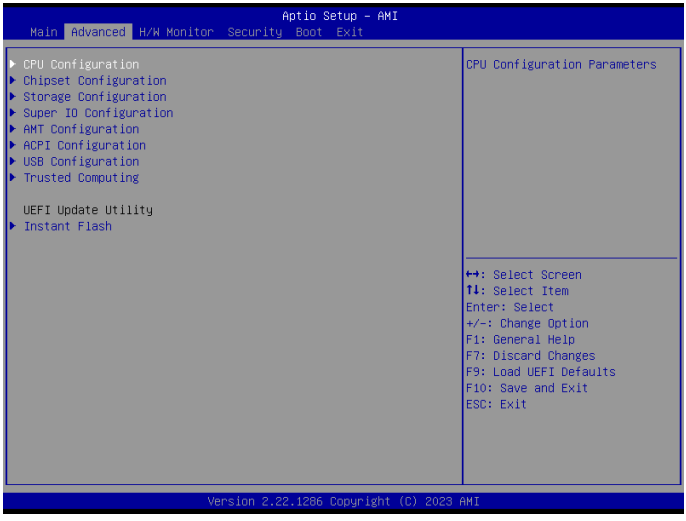
3.3 Advanced Screen

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

- IMB-1239-WV



- IMB-1240-WV / IMB-X1240-WV

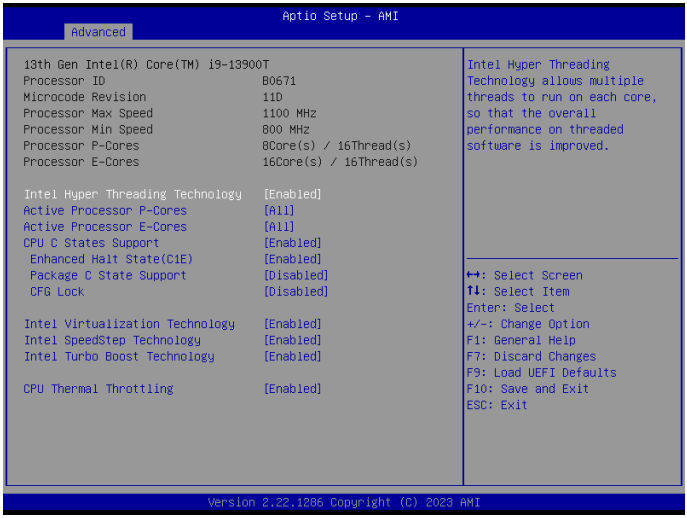


Setting wrong values in this section may cause the system to malfunction.

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



Intel Hyper Threading Technology

Intel Hyper Threading Technology allows multiple threads to run on each core, so that the overall performance on threaded software is improved.

Configuration options: [Enabled] [Disabled]

Active Processor P-Cores

This allows you to select the number of cores to enable in each processor package.

Active Processor E-Cores

This allows you to select the number of E-Cores to enable in each processor package. NOTE: Number of P-Cores and E-Cores are looked at together. When both are {0,0}, Pcode will enable all cores.

CPU C States Support

This allows you to enable CPU C States Support for power saving. It is recommended to keep C3, C6 and C7 all enabled for better power saving.

Configuration options: [Enabled] [Disabled]

Enhanced Halt State (C1E)

The option allows you to enable Enhanced Halt State (C1E) for lower power consumption.

Configuration options: [Enabled] [Disabled]

Package C State Support

The option allows you to enable CPU, PCIe, Memory, Graphics C State Support forpower saving.

CFG Lock

The option allows you to enable or disable the CFG Lock.

Configuration options: [Enabled] [Disabled]

Intel Virtualization Technology

Intel Virtualization Technology allows a platform to run multiple operating systems and applications in independent partitions, so that one computer system can function as multiple virtual systems.

Configuration options: [Enabled] [Disabled]

Intel SpeedStep Technology

Intel SpeedStep technology allows processors to switch between multiple frequencies and voltage points for better power saving and heat dissipation. CPU turbo ratio can be fixed when Intel SpeedStep Technology is set to [Disabled] and Intel Turbo Boost Technology is set to [Enabled].

Configuration options: [Enabled] [Disabled].

If you install Windows® 10 and want to enable this function, please set this item to [Enabled]. This item will be hidden if the current CPU does not support Intel SpeedStep technology.

Please note that enabling this function may reduce CPU voltage and lead to system stability or compatibility issues with some power supplies. Please set this item to [Disabled] if above issues occur.

Intel Turbo Boost Technology

Intel Turbo Boost Technology enables the processor to run above its base operating frequency when the operating system requests the highest performance state. The default value is [Enabled].

Configuration options: [Enabled] [Disabled]

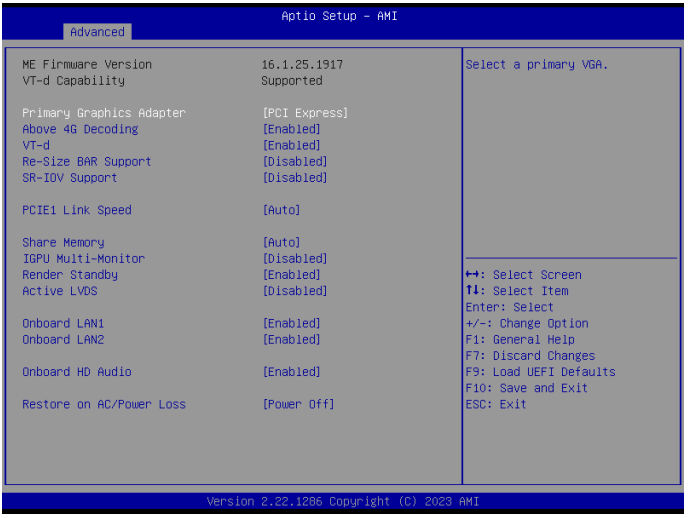
CPU Thermal Throttling

CPU Thermal Throttling allows you to enable CPU internal thermal control mechanisms to keep the CPU from overheating.

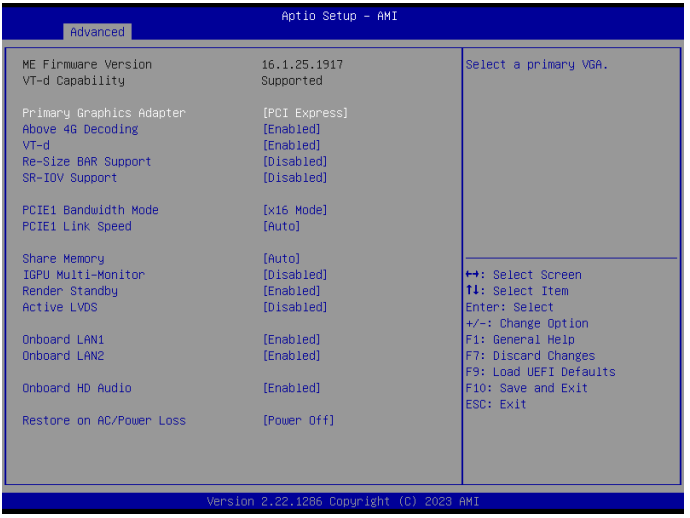
Configuration options: [Enabled] [Disabled]

3.3.2 Chipset Configuration

- IMB-1239-WV



- IMB-1240-WV / IMB-X1240-WV



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.)

Above 4G Decoding

The option allows you to enable or disable above 4G Memory Mapped IO decoding. This is disabled automatically when Aperture Size is set to 2048MB.

Configuration options: [Enabled] [Disabled]

VT-d

Intel® Virtualization Technology for Directed I/O helps your virtual machine monitor better utilize hardware by improving application compatibility and reliability, and providing additional levels of manageability, security, isolation, and I/O performance.

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]

PCIE1 Bandwidth Mode

Select PCIE1 Bandwidth. Select [x8 / x8 Mode] when using Riser card on PCIE1 slot.

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.)

Share Memory

Share memory allows you to configure the size of memory that is allocated to the integrat-

ed 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.

IGPU Multi-Monitor

Select [Disabled] to disable the integrated graphics when an external graphics card is installed. Select [Enabled] to keep the integrated graphics enabled at all times.

Configuration options: [Enabled] [Disabled]

Render Standby

Power down the render unit when the GPU is idle for lower power consumption.

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).

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 HD Audio

Onboard HD Audio allows you to enable or disable the onboard HD audio controller. Set disable it when a sound card is installed.

Configuration options: [Enabled] [Disabled]

Restore on AC/Power Loss

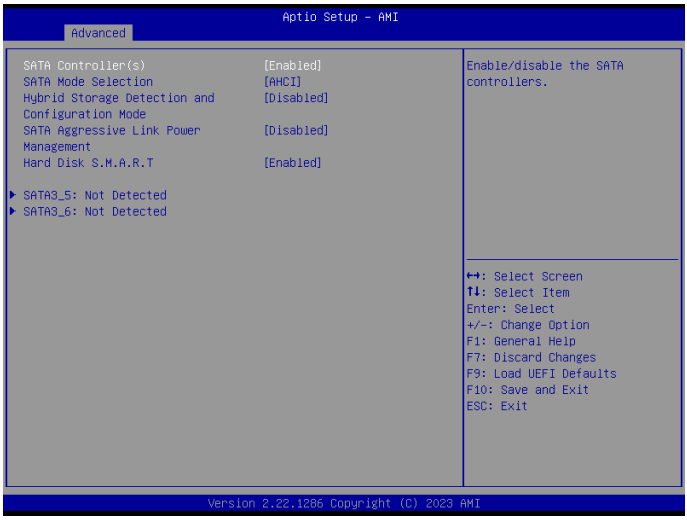
The option allows you to select the power state after a power failure.

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

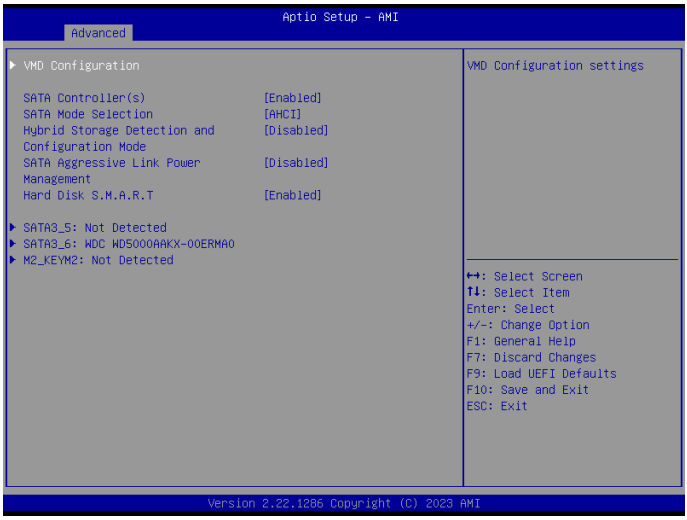
[Power On] sets the system to start to boot up when the power recovers.

3.3.3 Storage Configuration

- IMB-1239-WV



- IMB-1240-WV / IMB-X1240-WV



VMD Configuration

This item allows you to enable or disable the Intel VMD support function.

SATA Controller(s)

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

Configuration options: [Enabled] [Disabled]

SATA Mode Selection

AHCI supports new features that improve performance.

Configuration option: [AHCI]

Hybrid Storage Detection and Configuration Mode

The option allows you to select Hybrid Storage Detection and Configuration Mode.

Configuration options: [Dynamic Configuration for Hybrid Storage Enable] [Disabled]

SATA Aggressive Link Power Management

SATA Aggressive Link Power Management allows SATA devices to enter a low power state during periods of inactivity to save power. It is supported only by AHCI mode.

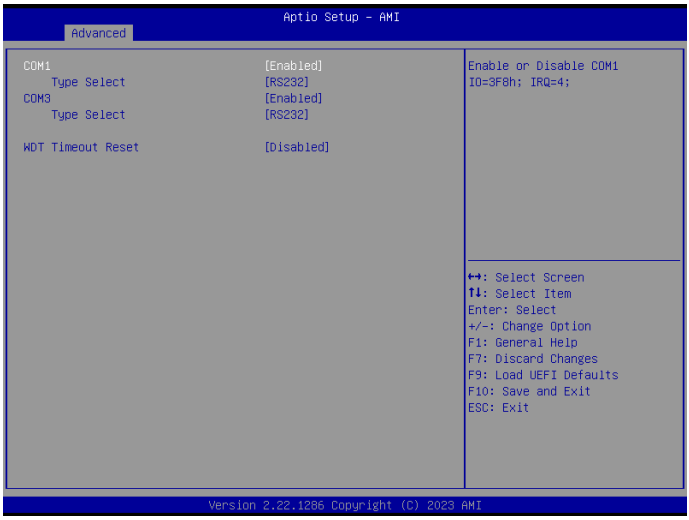
Configuration options: [Enabled] [Disabled]

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].

COM3 Configuration

Use this to set parameters of COM3.

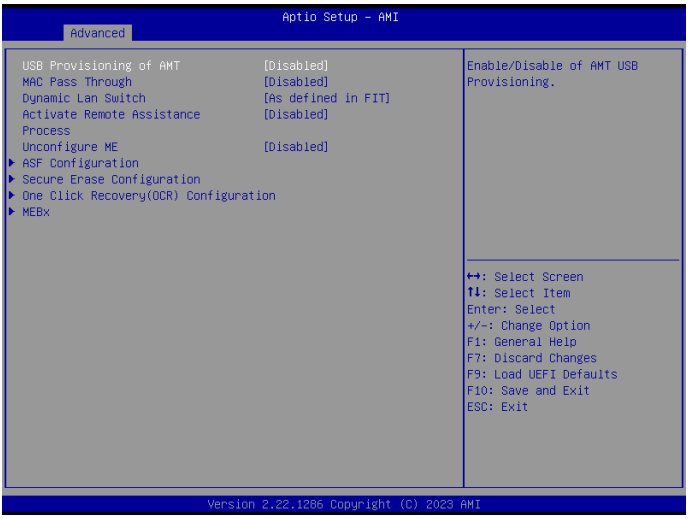
Type Select

Use this to select COM3 port type: [RS232], [RS422] or [RS485].

WDT Timeout Reset

Use this to set the Watch Dog Timer.

3.3.5 AMT Configuration



USB Provisioning of AMT

Use this to enable or disable AMT USB Provisioning. The default is [Disabled].

MAC Pass Through

The option enables or disables MAC Pass Through function.

Dynamic Lan Switch

The option allows switching AMT support from Integrated LAN to Discrete LAN.

Activate Remote Assistance Process

Trigger CIRA boot. The default is [Disabled].

Un-Configure ME

Un-Configure ME without password. The default is [Disabled].

ASF Configuration

The option allows you to configure Alert Standard Format parameters.

Secure Erase Configuration

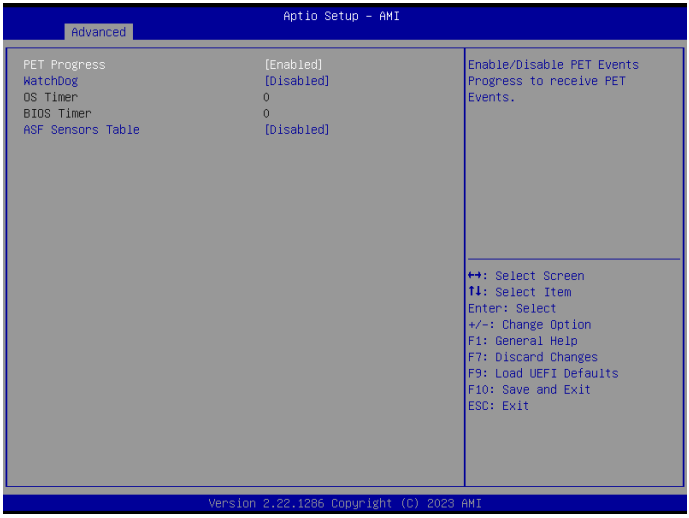
Secure Erase configuration menu.

One Click Recovery(OCR) Configuration

Configuration setting for One Click Recovery. This allows access for AMT to boot a recovery OS application

MEBx

This Formset contains forms for configuring MEBx.



PET Progress

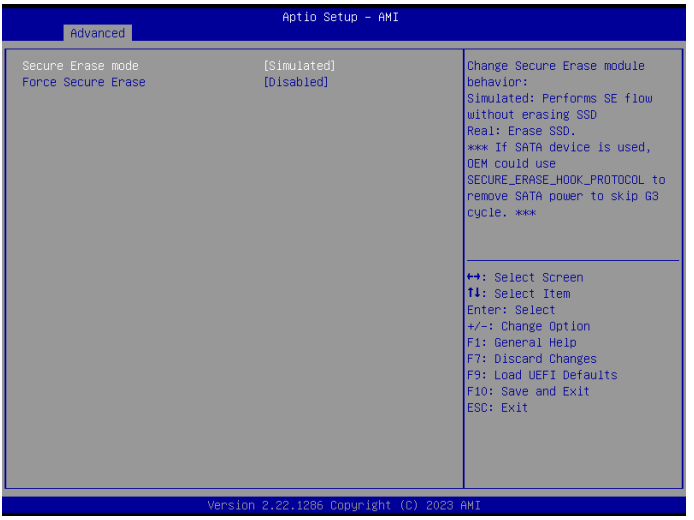
User can enable or disable PET Events progress to receive PET events or not. The default is [Enabled].

WatchDog

Use the item to enable or disable AMT WatchDog Timer. The default is [Disabled].

ASF Sensors Table

Use the item to enable or disable ASF Sensor Table. The default is [Disabled].



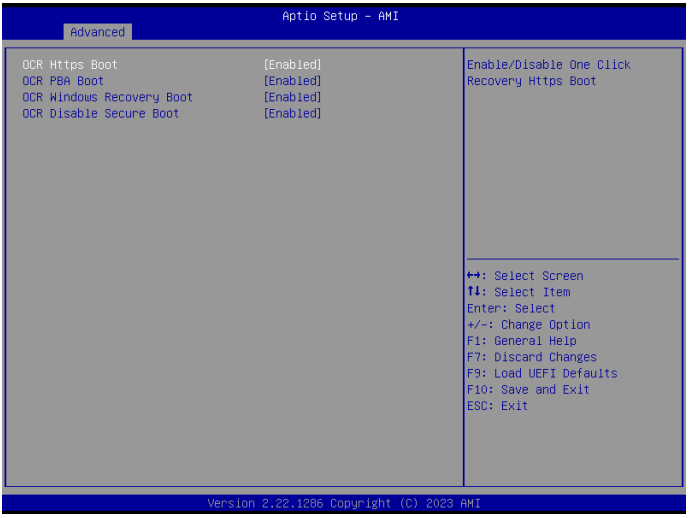
Secure Erase mode

Change Secure Erase module behavior: Simulated: Performs SE flow without erasing SSD.

Real: Erase SSD.

Force Secure Erase

Use this to enable or disable Force Secure Erase on next boot. The default is [Disabled].



OCR Https Boot

Use the item to enable or disable One Click Recovery Https Boot.

OCR PBA Boot

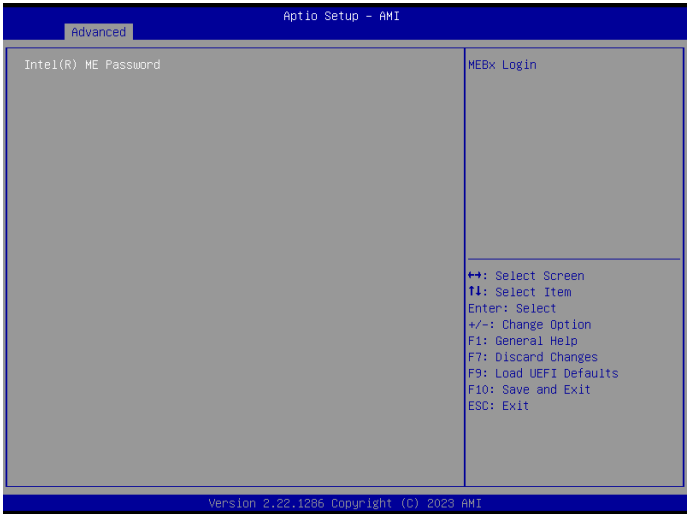
Use the item to enable or disable One Click Recovery PBA Boot.

OCR Windows Recovery Boot

Use the item to enable or disable One Click Recovery Windows Recovery Boot.

OCR Disable Secure Boot

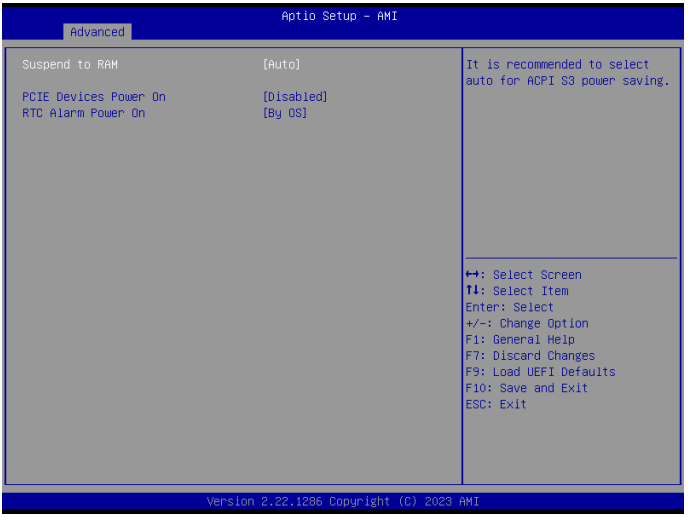
The item allows CSME to request SecureBoot to be disabled for One Click Recovery.



Intel(R) ME Password

MEBx Login.

3.3.6 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

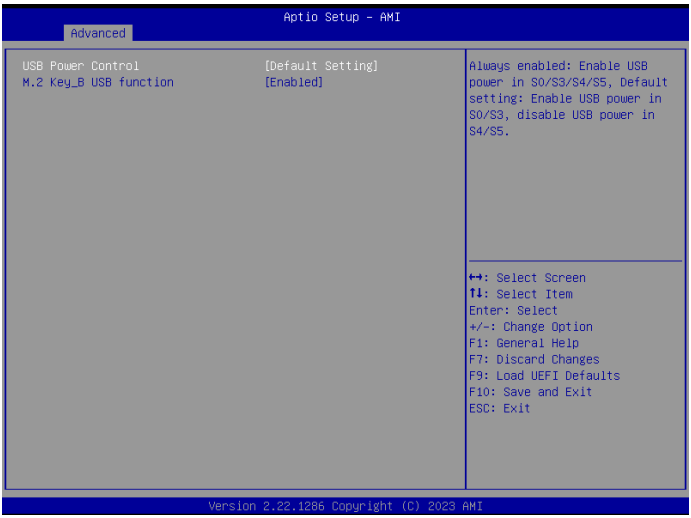
Use this item to enable or disable PCIE devices to turn on the system from the power-soft-off mode.

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]

3.3.7 USB Configuration



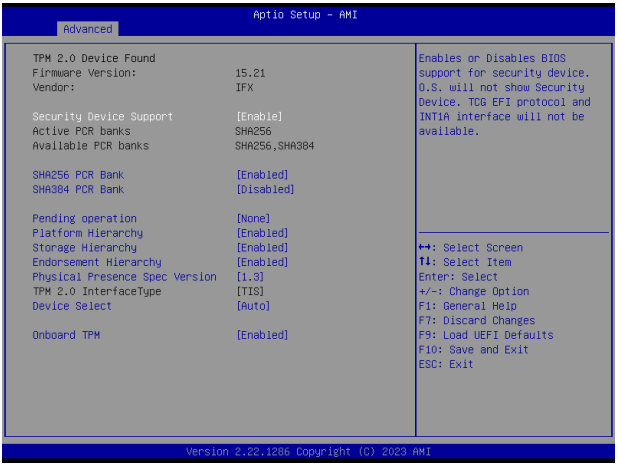
USB Power Control

Use this option to control USB power.

M.2 Key_B USB Function

The item enables or disables M.2 Key_B USB function.

3.3.8 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.

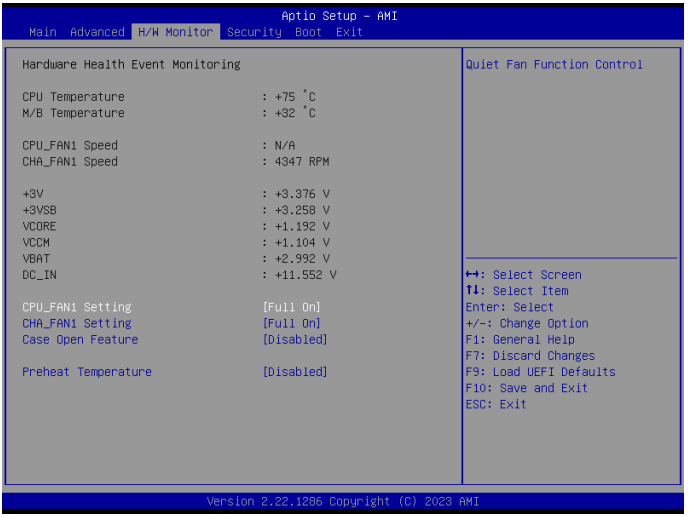
[Auto] supports both TPM 1.2 and TPM 2.0 devices with the default set to TPM 2.0 devices. If TPM 2.0 devices are not found, TPM 1.2 devices will be enumerated.

Onboard TPM

The option enables or disables 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]

Case Open Feature

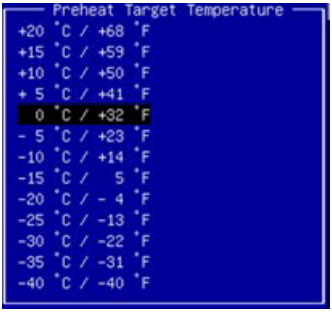
This item allows you to enable or disable case open detection feature. The default is value [Disabled].

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.

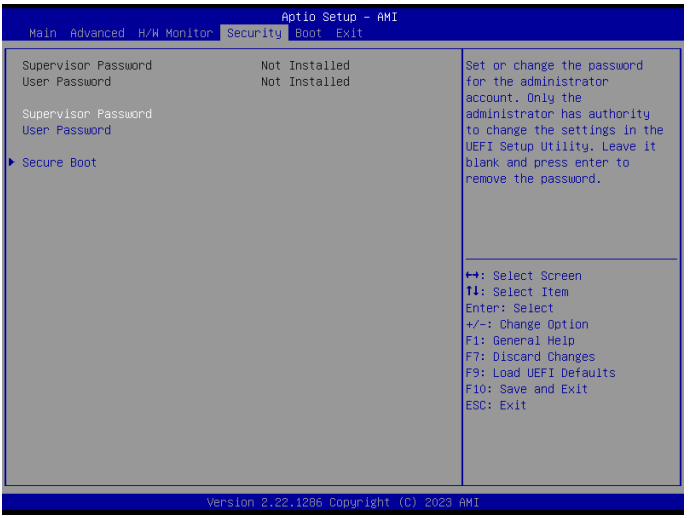
Preheat Temperature

Use the item to enable AT/ATX or disable Preheat Control. Refer to the following Preheat Target Temperature list.



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

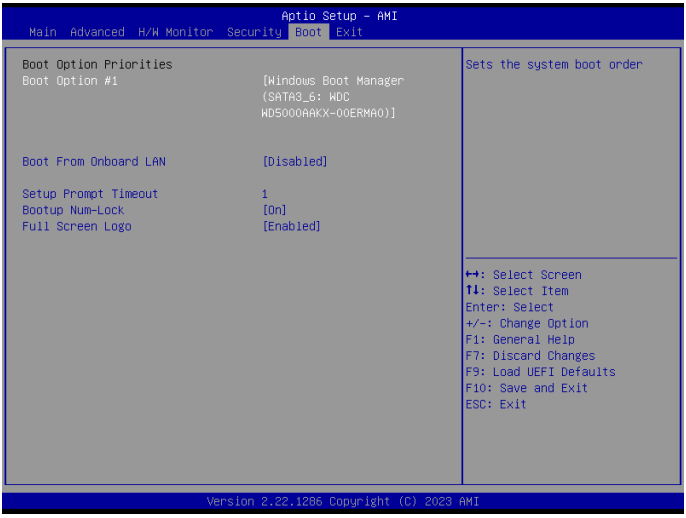
Set or change the password for the user account. Users are unable to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

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 configures 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.

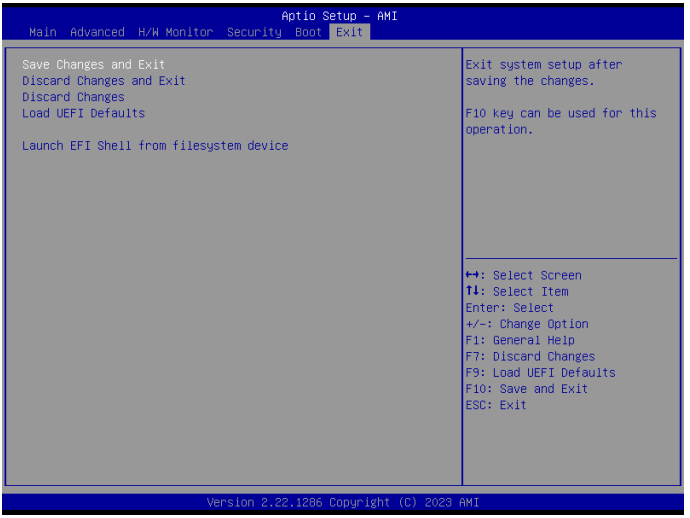
Configuration options: [On] [Off]

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.