

User Manual

iEPF-9500S-EW7



Version	Date	Description	Page
1.00	2026/09	Initial release	

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

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

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"

ASRock Industrial Website: <https://www.ASRockInd.com>

Important Safety Instructions

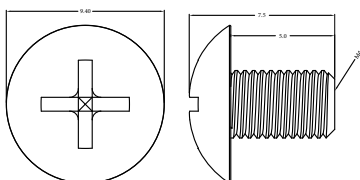
For user safety, please read and follow all instructions, Warnings, Cautions, and Notes marked in this manual and on the associated device before handling/operating the device, to avoid injury or damage.

1. Read these safety instructions carefully.
2. Retain this user manual for future reference.
3. Read the Specifications section of this manual for detailed information on the recommended operating environment.
4. Disconnect the equipment from all AC outlets before cleaning. Use only a damp cloth for cleaning. Do not use liquid or sprayed detergent.
5. Place the equipment on a reliable surface during installation. Dropping or letting the equipment fall may cause damage.
6. Do not leave the equipment in an environment with a storage temperature of below -40 °C (-40 °F) or above 85 °C (185 °F) as this may cause damage. The equipment should be stored in a controlled environment.
7. Ensure that the voltage of the power source is correct before connecting the equipment to a power outlet.
8. Position the power cord away from high-traffic areas. Do not place anything over the power cord.
9. If the equipment is not used for a long time, disconnect the equipment from the power source to avoid damage from transient over-voltage.
10. All cautions and warnings on the equipment should be noted.
11. To avoid electrical shock and/or damage to the device:
 - Keep the device away from water or liquid sources.
 - Keep the device away from high heat or humidity.
 - Keep device properly ventilated (do not block or cover ventilation openings).
 - Always use designated voltage and power source settings.
 - Always install and operate the device near an easily accessible electrical outlet.
 - Secure the power cord (do not place any object on/over the power cord).
 - Only install/attach and operate the device on stable surfaces and/or designated mountings.
 - The power cord must be connected to a socket or outlet with a ground connection.
12. If one of the following occurs, have the equipment checked by service personnel:
 - The power cord or plug is damaged.
 - Liquid has penetrated into the equipment.
 - The equipment has been exposed to moisture.
 - The equipment is malfunctioning or does not operate according to the user manual.
 - The equipment has been dropped and damaged.
 - The equipment shows obvious signs of breakage.

13. Never attempt to repair the device, which should only be serviced by qualified technical personnel using suitable tools.
14. Any unverified component may cause unexpected damage. To ensure correct installation, always use the components (e.g., screws) provided in the accessory box.
15. This equipment is not suitable for use in locations where children are likely to be present.
16. The equipment should only be installed in a restricted access area.
17. Restricted Access Location:

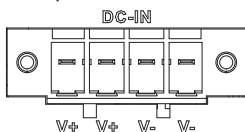
The device must be installed only in a server room or computer room where:

- Access can only be gained by service persons or by users who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken.
- Access is through the use of a tool or lock and key, or other means of security, and is controlled by the authority responsible for the location.
- Leave enough clearance (25 inches in the front and 30 inches in the back of the rack) to allow the front door to be opened completely and to allow for sufficient airflow.
- This product is intended for installation only in a Restricted Access Location.
- This product is not suitable for use with visual display devices in the workplace according to §2 of "the German Ordinance for Work with Visual Display Units.
- Desk Mount: M4x5mm Screws (for securing the mounting brackets to the chassis)



18. The equipment is intended to be supplied by the external power source (UL listed/ IEC 60950-1/ IEC 62368-1 approved) whose output complies with ES1/SELV. To reduce potential safety issues, only the AC adapter provided with the product, a replacement AC adapter provided by ASRock Industrial or an agency, or an AC adapter purchased as an accessory from ASRock Industrial or an agency should be used with the product.
19. This power supply (RSP-1000-24) is intended to be supplied based on a UL-certified and suitable for use at an operating/storage temperature of -20 °C (-4 °F)~ 60 °C (140 °F)/ -40 °C (-40 °F)~85 °C (185 °F), and the current output is rated 24Vdc 41.66A. If you need further assistance, contact ASRock Industrial for additional information.
20. The ambient temperature of the iEPF-9500S-EW7: 55 °C (131°F) max.

21. The terminal block is suitable for V+V-, with 2 units each (16~18AWG), totaling 4 units. The torque value is 0.69Nm. Please ensure the use of copper conductors only. Kindly note that installation must be carried out by a professional.



22. This product has passed the CE test for environmental specifications when shielded cable are used for external wiring. Shielded interface cables must be used in order to comply with the emission limits.

Replaceable Batteries

CAUTION

RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

ATTENTION

RISQUE D'EXPLOSION SI LA PILE EST REMPLACÉE PAR UNE D'UN TYPE INCORRECT. ÉLIMINEZ LES PILES USAGÉES CONFORMÉMENT AUX INSTRUCTIONS.



CAUTION (or Warning)

Hot surface.

Do not touch.

ATTENTION (ou Avertissement)

Surface chaude.

Ne pas touche.

BURN HAZARD

Hot surface! Do not touch! Touching this surface could result in bodily injury. To reduce risk, allow the surface to cool before touching.

CAUTION

The equipment is equipped with a battery-powered real-time clock circuit. There is a risk of explosion if a battery is incorrectly replaced. Replace only with the same or equivalent type as designated by the manufacturer. Discard all used batteries according to the manufacturer's instructions.

LITHIUM-METAL BATTERY WARNING

Danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type designated by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

WARNING

All interconnection to the EUT is intended for indoor locations, and as a result, the PoE network interconnected to the EUT is considered ES1/SELV, designed exclusively for connection to the PoE network without routing to the outside plant.

WARNING

Input voltage rated Main DC 9~36V, 30~30.5A; AUX DC 9~36V, 30~18A.

Packing: The unit should be carried with both hands and handled with care.

Maintenance: Use only approved products or a dry applicator to clean and maintain the surfaces.



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Contact Information

If you need to contact ASRock Industrial or want to know more about ASRock Industrial, you're welcome to visit ASRock Industrial's website at <https://www.ASRockInd.com>; or you may contact your dealer for further information.

ASRock Industrial Incorporation

Email: Info_ipc@asrockind.com

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Chapter 1 Introduction

Thank you for purchasing iEPF-9500S-EW7, a reliable barebone system produced under ASRock Industrial's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock Industrial's commitment to quality and endurance.



Because the hardware specifications might be updated, the content of this documentation will be subject to change without notice. In case any modifications of this documentation occur, the updated version will be available on ASRock Industrial's website without further notice. If you require technical support related to this product, please visit our website for specific information about the model you are using.
ASRock Industrial's Website: <https://www.ASRockInd.com>



The illustrations shown in this manual are examples only. The actual system may differ depending on the product model you purchased.

1.1 Key Features

iEPF-9500S-EW7

- Intel® Core™ Processors (Series 2) with R680E Chipset
- 4 x 288-pin DDR5 U-DIMM up to 192GB (48GB per DIMM)
- 1 x PCIe x16 (PCIe Gen5) or 2 x PCIe x8 (PCIe Gen5), 1 x PCIe x 4 (PCIe Gen4), 4 x PCIe x 1 (Gen4)
- 2 x M.2 Key M, 2 x M.2 Key B, 1 x M.2 Key E
- 6 x USB 3.2 Gen2x1
- 4 x COM, 4 x SATA3, 8 x DI, 8 x DO
- 3 x Intel® 2.5G LAN (LAN1 supports vPro)
- 1 x Displayport, 1 x HDMI 2.0b, 1 x VGA
- Powerful Edge AI acceleration enabled by the most flexible mechanical, thermal, and power design, with support for 75mm x 360 mm x 194 mm (W x D x H) max. for one 600W graphic card and 58mm x 360 mm x 194 mm (W x D x H) max. for dual 600W graphic card
- Optional Kit: 10BASE-T1S function card, 8DIO card (w/ Isolation Protection), 4COM card (w/ Isolation Protection), OOB function card

1.2 Package List

iEPF-9500S-EW7

No.	Accessories	PN	Q'ty	Picture	Description
1	Rubber Foot	13G09P005000AI	4		Protect the device from damage while moving it.
2	#6-32 x 8 Screw for rubber foot	NA	4		To fix the rubber foot.
3	Desk Mount	13G02P1040B0AI	2		To attach the device to any horizontal surface.
4	M4x8 Screw for desk mount	NA	4		To fix the desk mount to chassis.
5	Terminal Block 1x4P ST 7.62m	12G082001040AI	2		For power supply.
6	Terminal Block 2X10P PH 3.5m	12G082000203AI	2		For Digital Input and Digital Output.
7	M.2 Heatsink	13G070640000AI	2		To dissipate heat from the M.2 module.
8	M3x2.5 Screw	13G02P072010AK	5		To fix M.2.
9	Memory DIMM Bracket	13G03P003000AI	2		To fix memory.
10	4x4 EPE Bag	15G06M150000AI	1		For QIG.
11	QIG	15G06M148000AI	1		Quick Installation Guide



1. If any items are missing or appear damaged, contact your authorized dealer.
2. Based on different configuration, package list may be different.

Note:

Please refer to the following for more information about the adapters:

648W PSU

- Input voltage: 90-264V AC / 127-370V DC
- Input frequency: 47-63 Hz (± 1 Hz)
- Rating output current: 27A
- Rating output voltage: 24.0 V $\pm 1\%$

1000W PSU

- Input voltage: 90-264V AC / 127-370V DC
- Input frequency: 47-63 Hz (± 1 Hz)
- Rating output current: 40A
- Rating output voltage: 24.0 V $\pm 1\%$



*External power source ratings: 648W PSU: 24V DC, 27A; Operating Temperature 70°C;
1000W PSU: 24V DC, 40A; Operating Temperature 60°C.*



WARNING! Use **ONLY** approved NRTL LISTED ITE power supply with electrical ratings.

1.3 Order Information

Model Name	PN	Description
iEPF-9500S-EW7	90PXGEX0-H0000000	Intel® Core™ Processors (Series 2) with R680E chipset, W/O CPU, RAM, SSD, ADAPTER

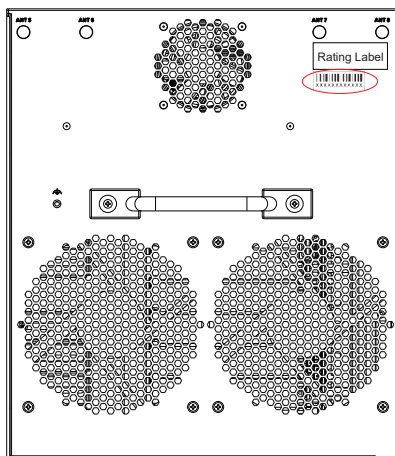
1.4 Optional Items

Model Name	PN	Description
ACPWR CORD EU+KR; L=1.8M (品頭)	14G110001800AK	立訊 /L72AC007-SD-R
AC POWER CORD CN L:1.8M (品頭)	14G110001300AK	I-SHENG/Y646B301912180Q
US PWR CORD, L:1.5M BLACK (品頭)	14G110001100AK	立訊 /L72AC001-SD-R
PSU 648W 24V W/ PFC	04G180004400AI	MEANWELL/HRP-600-24
PSU 1000W 24V W/ PFC	04G180010000AI	MEANWELL/HSP-1000-24

1.5 Serial Number Label

The serial number is printed below or above the bar code and can be found on the rear side of the chassis.

1.5.1 Serial Number Label Location



1.5.2 Serial Number Label Illustration



1.6 Specifications

iEPF-9500S-EW7

Processor System	CPU	Intel® Core™ Processors (Series 2)
	Chipset	Intel® R680E
	Socket	LGA 1700
Memory	Technology	Dual Channel DDR5 5600MHz (ECC memory supported by R680E + Selected CPU)
	Capacity	192 GB (48GB per DIMM)
	Socket	4 x 288-pin U-DIMM
Graphics	Controller	Intel® UHD Graphics
	DisplayPort	DisplayPort 1.4a , DP++ Max resolution up to 4096x2160@60Hz
	HDMI	HDMI 2.0b Max resolution up to 4096x2160@60Hz
	VGA	Max resolution up to 1920x1200@60Hz
Expansion Slot	PCIe	1 x PCIe Gen5 x16 (single x16 or dual x8) 1 x PCIe Gen5 x8 (shared with dual x8) 1 x PCIe Gen4 x4 4 x PCIe Gen4 x1
	RF & Antenna	8 x SMA connector hole reserved
	M.2	1 x M.2 (Key E, 2230) with CNVI/PCIe Gen3 x1 and USB 2.0 for Wi-Fi/BT module 1 x M.2 (Key B1, 2280/3042/3052) with PCIe Gen3 x1/ USB3.2 Gen1x1 and USB 2.0 for 4G/5G 1 x M.2 (Key B2, 3042/3052) with PCIe Gen3 x1/ USB3.2 Gen1x1 and USB 2.0 for 4G/5G
	SIM Socket	2 x Nano SIM Card slot (2 connected to M.2 Key B)
Audio	Interface	Realtek ALC897, High Definition Audio
Ethernet	Controller/Speed	3 x Intel® i226IT (LAN 1 x vPro Support)
	Controller	3 x RJ-45
Storage	M.2	1 x M.2 (Key M1, 2242/2260/2280/22110/25110) with Gen4 x4 for NVMe SSD 1 x M.2 (Key M2, 2242/2260/2280) with Gen4 x4 for NVMe SSD
	SATA	4 x SATA3 (6Gb/s), support RAID 0/1/5/10 4 x 2.5" HDD/SSD Tray (Default 1 piece)

Front I/O	DisplayPort	1
	HDMI	1
	VGA	1
	Ethernet	3 x Intel 2.5G LAN
	USB	6 x USB 3.2 Gen2x1
	Audio	1 x Mic-in, 1 x Line-out
	COM	2 x RS232, 2 x RS232/422/485
	DIO	8 DIs/8DOs
Watchdog Timer	Output	From Super I/O to drag RESETCON#
	Interval	256 Segments, 0, 1, 2, ...255sec
Power Requirements	Input PWR	9V~36V DC
Environment	Operating Temperature	45W CPU w/dual 600W GPU: - 40 °C ~ 55 °C (-40 °F ~ 131°F) 65W CPU w/dual 600W GPU: - 40 °C ~ 50 °C (-40 °F ~ 122 °F)
	Storage Temperature	-40°C~85°C (-40°F~185°F)
	Humidity	~95% @ 40°C (non-condensing)
	Shock	MIL-STD-810H, Method 516.8, Procedure I
	Vibration	MIL-STD-810H, Method 514.8
	ESD	Contact +/-4kV, Air +/-8kV
	EMC	EN61000-6-4/-2, CE & FCC Class A
	Safety	LVD
Mechanical	Construction	Aluminum heatsink + Metal chassis
	Mounting	Desk Mount
	Dimensions	288mm (W) x 450.3mm (D) x 250mm (H) (11.34" x 17.73" x 9.84")
	Net Weight	13kg
Others	OS Support	Windows 11 & Windows 10 & Linux
	TPM	TPM 2.0
	Real-Time Enablement	TSN, TCC support under YOCTO

1.7 CPU Support List

iEPF-9500S-EW7

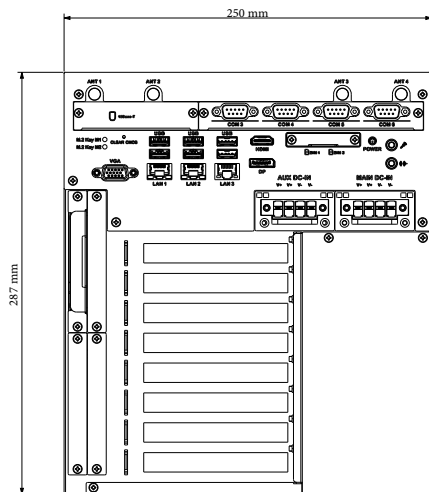
The Performance of CPUs over 80W will be limited due to power design.

Socket	Family	Number	Core	Frequency	Cache	Power	Since BIOS
1700	Core 9	273PE(A0)	Bartlett Lake-S	2.3GHz	36MB	65W	P1.20
1700	Core 9	273PQE(A0)	Bartlett Lake-S	3.4GHz	36MB	125W	P1.20
1700	Core 9	273PTE(A0)	Bartlett Lake-S	1.4GHz	36MB	45W	P1.20
1700	Core 7	253PE(A0)	Bartlett Lake-S	2.5GHz	33MB	65W	P1.20
1700	Core 7	253PQE(A0)	Bartlett Lake-S	3.5GHz	33MB	125W	P1.20
1700	Core 7	253PTE(A0)	Bartlett Lake-S	1.8GHz	33MB	45W	P1.20
1700	Core 7	251E(B0)	Bartlett Lake-S	2.1GHz	36MB	65W	P1.20
1700	Core 7	251TE(B0)	Bartlett Lake-S	1.4GHz	36MB	45W	P1.20
1700	Core 5	223PE(A0)	Bartlett Lake-S	2.9GHz	24MB	65W	P1.20
1700	Core 5	223PQE(A0)	Bartlett Lake-S	4.0GHz	24MB	125W	P1.20
1700	Core 5	223PTE(A0)	Bartlett Lake-S	2.3GHz	24MB	45W	P1.20
1700	Core 5	213PE(A0)	Bartlett Lake-S	2.7GHz	24MB	65W	P1.20
1700	Core 5	221E(C0)	Bartlett Lake-S	2.7GHz	24MB	65W	P1.20
1700	Core 5	221TE(C0)	Bartlett Lake-S	1.8GHz	24MB	45W	P1.20
1700	Core 5	211E(B0)	Bartlett Lake-S	2.7GHz	20MB	65W	P1.20
1700	Core 5	211TE(C0)	Bartlett Lake-S	1.7GHz	20MB	45W	P1.20
1700	Core 3	201E(H0)	Bartlett Lake-S	3.6GHz	12MB	60W	P1.20
1700	Core 3	201TE(H0)	Bartlett Lake-S	2.9GHz	12MB	45W	P1.20

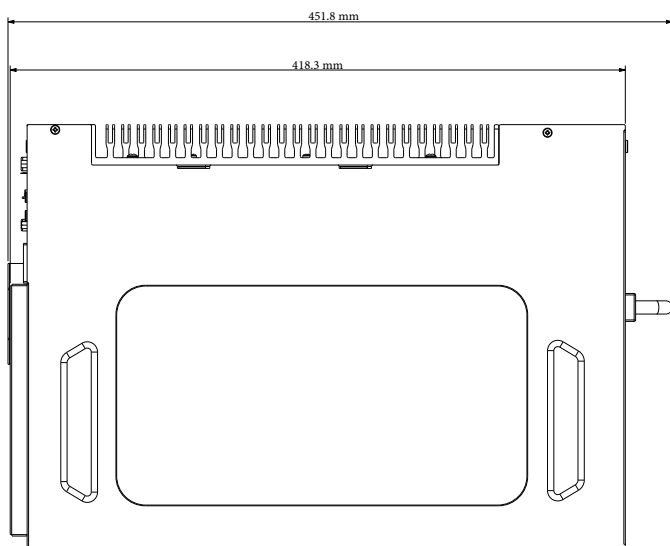
1.8 Dimensions and Size

iEPF-9500S-EW7

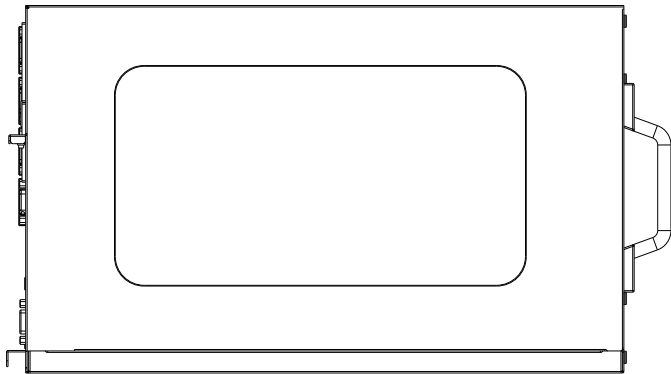
Front View



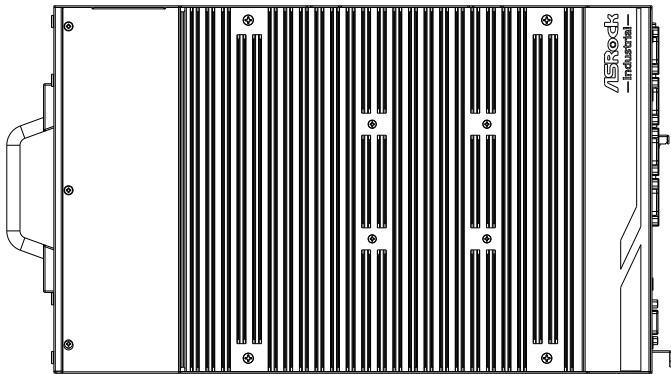
Top View



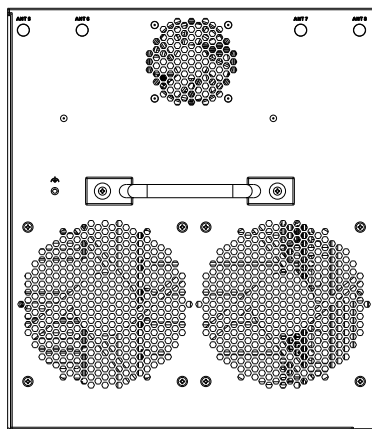
Right-Side View



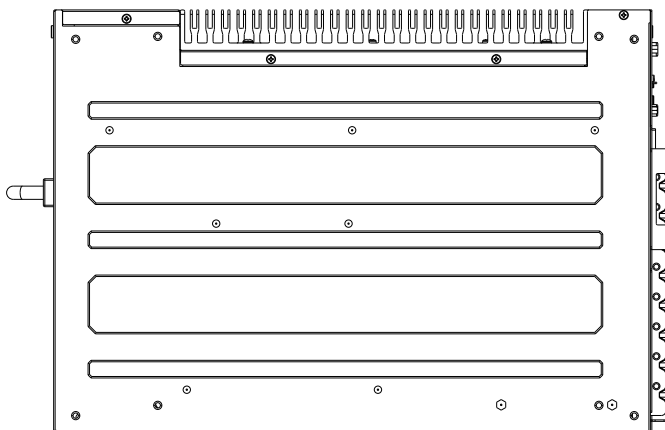
Left-Side View



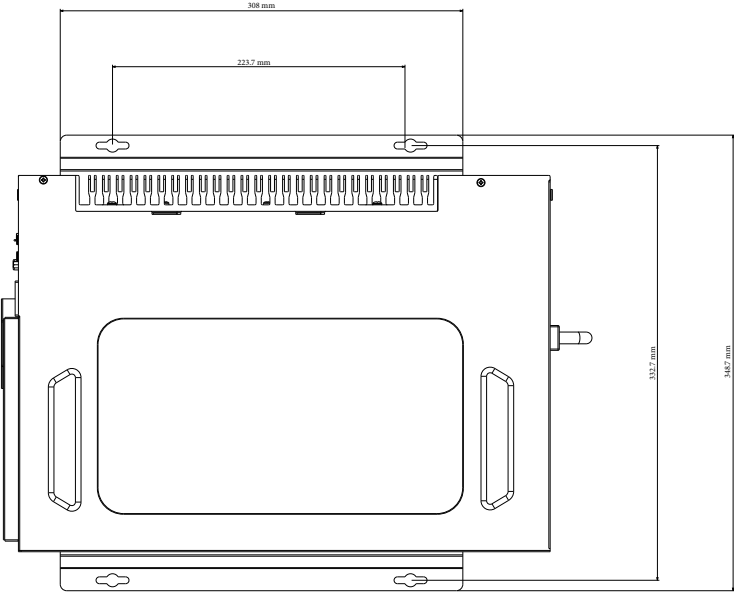
Rear-Side View



Bottom View

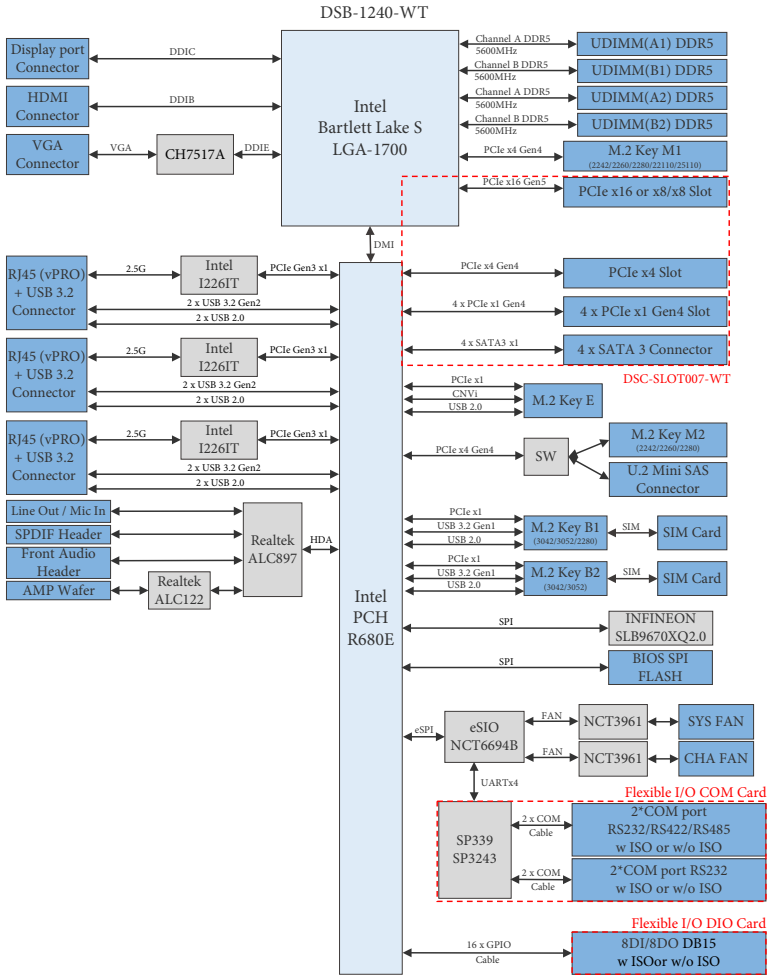


Desk Mounting Bracket



1.9 Block Diagram

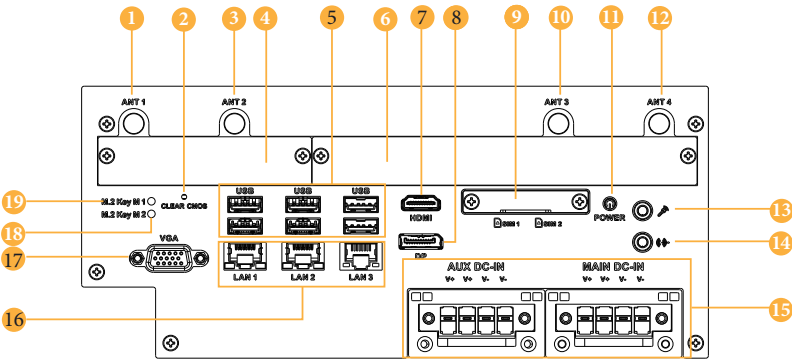
iEPF-9500S-EW7



Chapter 2 Product Overview

This chapter provides diagrams that display the location of important components of the system.

2.1 System Front Panel



No.	Item	Description
1, 3, 10, 12,	Antenna Port 1~4	Connect the antenna cable to these connectors.
2	Clear CMOS Button	Use this button to manually reset the system. Press and hold the reset switch for a few seconds to reboot the system without shutting it off.
4	8DIO function Port, T1S function Port, AIOOB function Port or None	This position can be populated with the 8DIO function card or T1S function card or AIOOB function card, or the cover panel.
5	USB 3.2 Gen2x1 Ports	This system provides four USB 3.2 Gen2 ports on the I/O panel.
6	4COM function Port or None	This position can be populated with the 4COM function card, or the cover panel.
7	HDMI	For high-definition video and audio connections.
8	DisplayPort	DisplayPort supports channel dual mode and up to 4096x2160 resolution at 60 Hz.
9	SIM card slot	To install SIM card.
11	Power Switch	Press the power switch button to toggle the system power-on and power-off modes. The power button is a non-latched push button with a blue LED indicator. The system is turned on when the button is depressed, and the power LED lights up. If the system hangs, depress the button for 5 seconds to turn off the system completely. To remove power from the system completely, disconnect the power cord from the system.

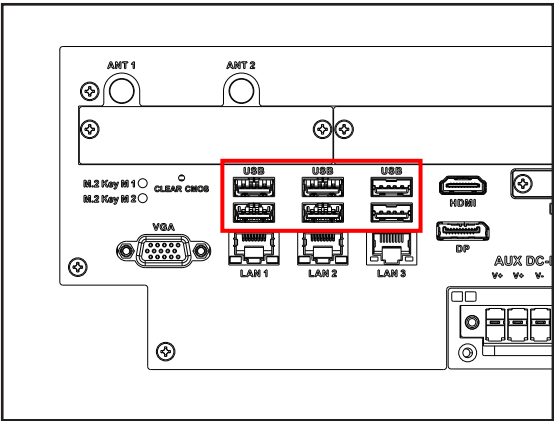
No.	Item	Description
13, 14	Audio Mic-in & Line-out	The Mic-in audio connector on the I/O panel supports 5.1 channel HD audio and fully complies with Intel® High Definition Audio (Azalia) specifications. Connect stereo speakers to the Mic-out connector for better sound quality.
15	DC Power Input (DC-IN)	Insert a power cable to this connector for power supply.
16	LAN RJ-45 Port	There are two types of LEDs on the LAN port. Please refer to the "Ethernet Ports LED" section.
17	VGA Port	Use VGA cable to connect the system to your monitor.
18, 19	M.2 Slot (Key M1 and M2) Status LED	If M.2 slot (M1/M2) is populated with M.2 module and working, it will show a blinking green.

- The PoE ports on the system are only be linked to the PoE networks in the indoor environment. They would be not connected the networks in the outdoor space.

2.1.1 System Front Panel I/O Functions

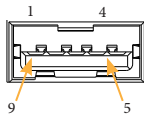
USB 3.2 Gen2 Ports

- (1) [No. 5 : 6 x USB3.2Gen2x1 Ports](#)
- (2) System front panel location



- (3) Icon / Pin definition:

USB 3.2 Gen2x1

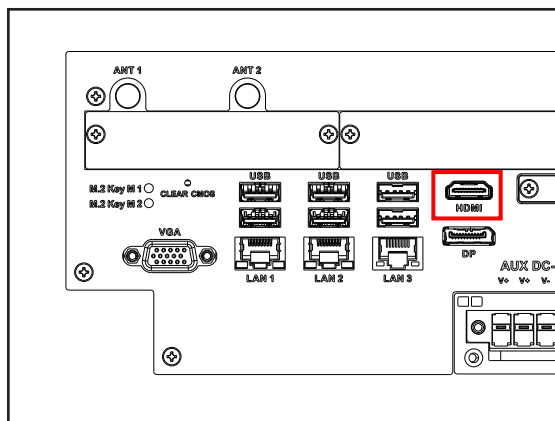


Pin	Signal	Pin	Signal
1	+5V_USB_PWR	6	SSRX+
2	USB_D-	7	GND
3	USB_D+	8	SSTX-
4	GND	9	SSTX+
5	SSRX		

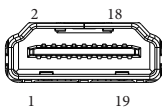
HDMI2.0b Port

(1) [No. 6 : HDMI2.0b Port](#)

(2) System front panel location



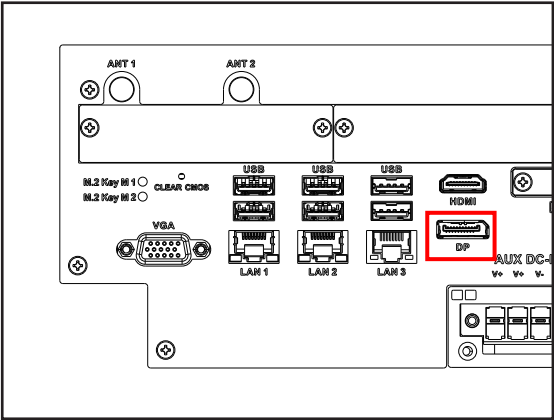
(3) Icon / Pin definition:



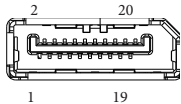
Pin	Signal	Pin	Signal
1	TMDS Data2+	11	TMDS Clock Shield
2	TMDS Data2 Shield	12	TMDS Clock-
3	TMDS Data2-	13	NA
4	TMDS Data1+	14	Reserved
5	TMDS Data1 Shield	15	DDC Clock
6	TMDS Data1-	16	DDC Data
7	TMDS Data0+	17	DDC
8	TMDS Data0 Shield	18	+5V Power
9	TMDS Data0-	19	Hot Plug Detect
10	TMDS Clock+	20	

Display Ports 1.4a

- (1) [No. 7 : Display Port](#)
- (2) System front panel location



- (3) Icon / Pin definition:

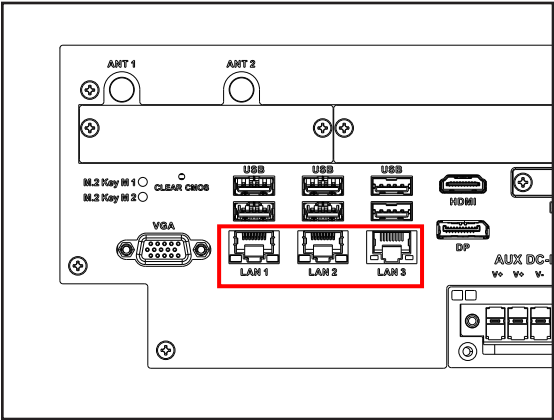


Pin	Signal	Pin	Signal
1	ML_Lane 0(p)	11	GND
2	GND	12	ML_Lane 3(n)
3	ML_Lane 0(n)	13	GND
4	ML_Lane 1(p)	14	GND
5	GND	15	AUX_CH(p)
6	ML_Lane 1(n)	16	GND
7	ML_Lane 2(p)	17	AUX_CH(n)
8	GND	18	Hot Plug
9	ML_Lane 2(n)	19	DP_PWR Return
10	ML_Lane 3(p)	20	DP_PWR

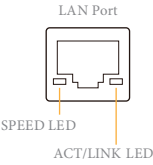
Ethernet Ports LED

(1) [No. 16 : LAN RJ-45 Port \(LAN1, supports vPro\);](#)
[LAN RJ-45 Port \(LAN2~LAN3\)](#)

(2) System front panel location



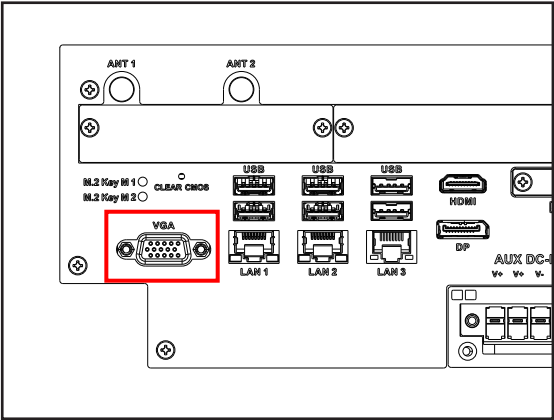
(3) Icon / Pin definition:



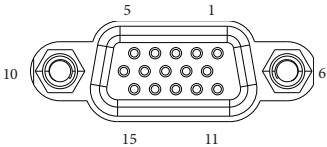
Port	LED Type	LED Color	10Mbps	100Mbps	1000Mbps	2500Mbps
LAN1~ LAN3	ACT/LINK LED	Yellow	Twinkling Yellow	Twinkling Yellow	Twinkling Yellow	Twinkling Yellow
	SPEED LED	Green/ Orange	Off	Off	Solid Orange	Solid Green

VGA Port

- (1) [No. 17 : VGA Port](#)
- (2) System front panel location

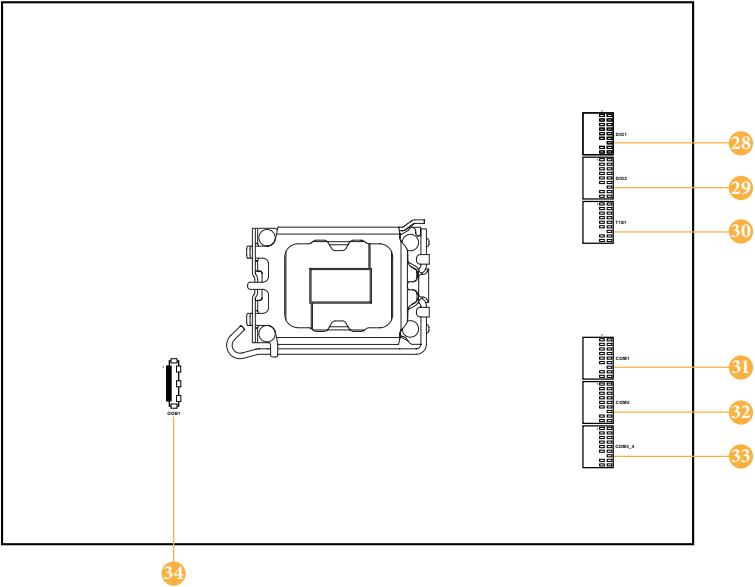


- (3) Icon / Pin definition:

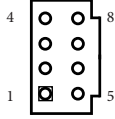


Pin	Signal	Pin	Signal
1	+5V	9	N/A
2	DATA-	10	GND
3	DATA+	11	N/A
4	GND	12	SDA
5	GND	13	HSync
6	RED_RTN	14	VSync
7	GREEN_RTN	15	SCL
8	BLUE_RTN		

Bottom Side



1 : DC Input Connector (DC_IN1)



Pin	Signal Name	Pin	Signal Name
1	V-	5	V-
2	V-	6	V-
3	+DC-IN	7	+DC-IN
4	+DC-IN	8	+DC-IN

2 : M.2 Key-B Socket (M2_B1)

Pin	Signal Name	Pin	Signal Name
1	NA	2	+3.3V
3	GND	4	+3.3V
5	GND	6	Full_Card_Power_Off#
7	USB_D+	8	W_DISABLE
9	USB_D-	10	WWAN_LED#
11	GND		
21	NA	20	NA
23	NA	22	NA
25	NA	24	NA
27	GND	26	NA
29	USB3_RX-	28	NA
31	USB3_RX+	30	UIM_RESET
33	GND	32	UIM_CLK
35	USB3_TX-	34	UIM_DATA
37	USB3_TX+	36	UIM_PWR
39	GND	38	NA
41	PERn0	40	NA
43	PERp0	42	NA
45	GND	44	NA
47	PETn0	46	NA
49	PETp0	48	NA
51	GND	50	PERST#
53	PEFCLKn	52	CLKREQ#
55	PEFCLKp	54	WAKE#
57	GND	56	NA
59	NA	58	NA
61	NA	60	NA
63	NA	62	NA
65	NA	64	NA
67	NA	66	NA
69	NA	68	NA
71	GND	70	+3.3V
73	GND	72	+3.3V
75	NA	74	+3.3V

3 : M.2 Key-M Socket (M2_M1)

Pin	Signal Name	Pin	Signal Name
1	GND	2	+3.3V
3	GND	4	+3.3V
5	PERn3	6	NA
7	PERp3	8	NA
9	GND	10	SATA_LED
11	PETn3	12	+3.3V
13	PETp3	14	+3.3V
15	GND	16	+3.3V
17	PERn2	18	+3.3V
19	PERp2	20	NA
21	GND	22	NA
23	PETn2	24	NA
25	PETp2	26	NA
27	GND	28	NA
29	PERn1	30	NA
31	PERp1	32	NA
33	GND	34	NA
35	PETn1	36	NA
37	PETp1	38	NA
39	GND	40	SMB_CLK
41	PERn0/SATA-B+	42	SMB_DATA
43	PERp0/SATA-B-	44	NA
45	GND	46	NA
47	PETn0/SATA-A-	48	NA
49	PETp0/SATA-A+	50	PERST#
51	GND	52	CLKREQ#
53	PEFCLKn	54	WAKE#
55	PEFCLKp	56	NA
57	GND	58	NA
67	NA	68	NA
69	PEDET	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	GND		

9 : PCIE1

Pin	Signal Name	Pin	Signal Name
A1	GND	B1	NA
A2	NA	B2	NA
A3	NA	B3	+3VSB
A4	GND	B4	GND
A5	PSON#	B5	SMBUS_CLK
A6	SYS_FANOUT2	B6	SMBUS_DATA
A7	SYS_FANIN2	B7	GND
A8	FTI2	B8	+3V
A9	+3V	B9	MODE_2

A10	+3V	B10	+3VSB
A11	NA	B11	WAKE#
A12	GND	B12	NA
A13	X1_1_PCIE_ CLK14	B13	GND
A14	X1_1_PCIE_ CLK14#	B14	SATA_TXP4
A15	GND	B15	SATA_ TXN4
A16	SATA_TXP6	B16	GND
A17	SATA_ TXN6	B17	NA
A18	GND	B18	GND
A19	NA	B19	SATA_RXP4
A20	GND	B20	SATA_ RXN4
A21	SATA_RXP6	B21	GND
A22	SATA_ RXN6	B22	GND
A23	GND	B23	SATA_TXP5
A24	GND	B24	SATA_ TXN5
A25	SATA_TXP7	B25	GND
A26	SATA_ TXN7	B26	GND
A27	GND	B27	SATA_RXP5
A28	GND	B28	SATA_ RXN5
A29	SATA_RXP7	B29	GND
A30	SATA_ RXN7	B30	NA
A31	GND	B21	NA
A32	SLOTX1_1_ RST_N	B32	GND
A33	SLOTX1_2_ RST_N	B33	PCIE25_ TXP
A34	GND	B34	PCIE25_ TXN
A35	PCIE25_ RXP	B35	GND
A36	PCIE25_ RXN	B36	GND
A37	GND	B37	X1_1_ CLKREQ14#
A38	GND	B38	X1_2_ CLKREQ15#
A39	X1_2_ PCIE_ CLK15	B39	GND
A40	X1_2_ PCIE_ CLK15#	B40	GND
A41	GND	B41	PCIE26_ TXP
A42	GND	B42	PCIE26_ TXN

A43	PCIE26_ RXP	B43	GND
A44	PCIE26_ RXN	B44	GND
A45	GND	B45	SLOTX1_3_ RST_N
A46	GND	B46	SLOTX1_4_ RST_N
A47	X1_3_PCIE_ CLK16	B47	GND
A48	X1_3_PCIE_ CLK16#	B48	NA
A49	GND	B49	GND
A50	NA	B50	PCIE27_ TXP
A51	GND	B51	PCIE27_ TXN
A52	PCIE27_ RXP	B52	GND
A53	PCIE27_ RXN	B53	GND
A54	GND	B54	X1_3_ CLKREQ16#
A55	GND	B55	X1_4_ CLKREQ17#
A56	X1_4_PCIE_ CLK17	B56	GND
A57	X1_4_PCIE_ CLK17#	B57	GND
A58	GND	B58	PCIE28_ TXP
A59	GND	B59	PCIE28_ TXN
A60	PCIE28_ RXP	B60	GND
A61	PCIE28_ RXN	B61	GND
A62	GND	B62	SLOTX4_1_ RST_N
A63	GND	B63	X4_ CLKREQ13#
A64	X4_PCIE_ CLK13	B64	GND
A65	X4_PCIE_ CLK13#	B65	GND
A66	GND	B66	PCIE21_ TXP
A67	GND	B67	PCIE21_ TXN
A68	PCIE21_ RXP	B68	GND
A69	PCIE21_ RXN	B69	GND
A70	GND	B70	PCIE22_ TXP
A71	GND	B71	PCIE22_ TXN
A72	PCIE22_ RXP	B72	GND

A73	PCIE22_ RXN	B73	GND
A74	GND	B74	PCIE23_ TXP
A75	GND	B75	PCIE23_ TXN
A76	PCIE23_ RXP	B76	GND
A77	PCIE23_ RXN	B77	GND
A78	GND	B78	PCIE24_ TXP
A79	GND	B79	PCIE24_ TXN
A80	PCIE24_ RXP	B80	GND
A81	PCIE24_ RXN	B81	NA
A82	GND	B82	NA

5 : PCIE2

Pin	Signal Name	Pin	Signal Name
A1	GND	B1	+3V
A2	+3V	B2	+3V
A3	+3V	B3	+3V
A4	X16_ CLKREQ#_ R	B4	GND
A5	X8_PCIE_ CLK1	B5	SMBUS_CLK
A6	X8_PCIE_ CLK1#	B6	SMBUS_ DATA
A7	X8_RST_N	B7	GND
A8	X16_RST_N	B8	+3V
A9	+3V	B9	+3VSB
A10	+3V	B10	+3VSB
A11	BUF_PLT_ RST#	B11	WAKE#
A12	GND	B12	NA
A13	X16_PCIE_ CLK0	B13	GND
A14	X16_PCIE_ CLK0#	B14	HSOP0
A15	GND	B15	HSOP0
A16	HSIP0	B16	GND
A17	HSIN0	B17	NA
A18	GND	B18	GND
A19	NA	B19	HSOP1
A20	GND	B20	HSOP1
A21	HSIP1	B21	GND
A22	HSIN1	B22	GND
A23	GND	B23	HSOP2
A24	GND	B24	HSOP2
A25	HSIP2	B25	GND
A26	HSIN2	B26	GND

A27	GND	B27	HSOP3
A28	GND	B28	HSOP3
A29	HSIP3	B29	GND
A30	HSIN3	B30	CFG_X8
A31	GND	B31	NA
A32	NA	B32	GND
A33	NA	B33	HSOP4
A34	GND	B34	HSOP4
A35	HSIP4	B35	GND
A36	HSIN4	B36	GND
A37	GND	B37	HSOP5
A38	GND	B38	HSOP5
A39	HSIP5	B39	GND
A40	HSIN5	B40	GND
A41	GND	B41	HSOP6
A42	GND	B42	HSOP6
A43	HSIP6	B43	GND
A44	HSIN6	B44	GND
A45	GND	B45	HSOP7
A46	GND	B46	HSOP7
A47	HSIP7	B47	GND
A48	HSIN7	B48	X8_ CLKREQ1#
A49	GND	B49	GND
A50	NA	B50	HSOP8
A51	GND	B51	HSOP8
A52	HSIP8	B52	GND
A53	HSIN8	B53	GND
A54	GND	B54	HSOP9
A55	GND	B55	HSOP9
A56	HSIP9	B56	GND
A57	HSIN9	B57	GND
A58	GND	B58	HSOP10
A59	GND	B59	HSOP10
A60	HSIP10	B60	GND
A61	HSIN10	B61	GND
A62	GND	B62	HSOP11
A63	GND	B63	HSOP11
A64	HSIP11	B64	GND
A65	HSIN11	B65	GND
A66	GND	B66	HSOP12
A67	GND	B67	HSOP12
A68	HSIP12	B68	GND
A69	HSIN12	B69	GND
A70	GND	B70	HSOP13
A71	GND	B71	HSOP13
A72	HSIP13	B72	GND
A73	HSIN13	B73	GND
A74	GND	B74	HSOP14
A75	GND	B75	HSOP14
A76	HSIP14	B76	GND
A77	HSIN14	B77	GND
A78	GND	B78	HSOP15
A79	GND	B79	HSOP15
A80	HSIP15	B80	GND
A81	HSIN15	B81	NA
A82	GND	B82	NA

6 : M.2 Key-E Socket (M2_E1)

Pin	Signal Name	Pin	Signal Name
1	GND	2	+3.3V
3	USB_D+	4	+3.3V
5	USB_D-	6	NA
7	GND	8	NA
9	CNV_WR_D1-	10	CNV_RF_RESET
11	CNV_WR_D1+	12	NA
13	GND	14	MODEM_CLKREQ
15	CNV_WR_D0-	16	NA
17	CNV_WR_D0+	18	GND
19	GND	20	NA
21	CNV_WR_CLK-	22	CNV_BRI_RSP
23	CNV_WR_CLK+		
		32	CNV_BGI_DT
33	GND	34	CNV_RGI_RSP
35	PETp	36	CNV_BRI_DT
37	PETn	38	NA
39	GND	40	NA
41	PERp	42	NA
43	PERn	44	NA
45	GND	46	NA
47	PEFCLKp	48	NA
49	PEFCLKn	50	SUSCLK
51	GND	52	PERST0#
53	CLKREQ#	54	W_DISABLE1#
55	WAKE#	56	W_DISABLE2#
57	GND	58	SMB_DATA
59	CNV_WT_D1-	60	SMB_CLK
61	CNV_WT_D1+	62	NA
63	GND	64	CLKIN_XTAL_LCP
65	CNV_WT_D0-	66	NA
67	CNV_WT_D0+	68	NA
69	GND	70	NA
71	CNV_WT_CLK-	72	+3.3V
73	CNV_WT_CLK+	74	+3.3V
75	GND		

7 : Top : D-Sub Port (VGA1)

Bottom Right : KEYM1/2 ACT# LED
(LED_KEYM1_2)

Bottom Left : Clear CMOS BTN
(CLRMOSE2)

8 : Top : RJ45 LAN Port (LAN1)

Middle : USB 3.2 Gen2 Port (USB3_2)

Bottom : USB 3.2 Gen2 Port (USB_1)

9 : Top : RJ45 LAN Port (LAN2)

Middle : USB 3.2 Gen2 Port (USB3_4)

Bottom : USB 3.2 Gen2 Port
(USB3_3)

10 : Top : RJ45 LAN Port (LAN3)

Middle : USB 3.2 Gen2 Port (USB3_6)

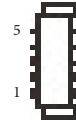
Bottom : USB 3.2 Gen2 Port (USB3_5)

11 : Top : DisplayPort (DP1)

Bottom : HDMI Port (HDMI1)

Middle : USB

12 : MCU_CON1

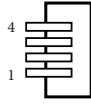


Pin	Signal Name
1	+MCU_VDD
2	ICE_DATA
3	ICE_CLK
4	MCU_RESET#
5	GND

13 : SIM1

14 : SIM2

15 : 3W Audio AMP Output Wafer
(SPEAKER1)



Pin	Signal Name
1	OUTLN
2	OUTLP
3	OUTRP
4	OUTRN

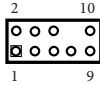
16 : Power Button (PWRBTN1)

17 : Audio Jacks

Top : Green - Line out

Bottom : Blue - Line in

18 : Front Panel Audio Header
(HD_AUDIO1)



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

This is an interface for front panel audio cable that allows convenient connection and control of audio devices.

19 : M.2 Key-M Socket (M2_M2)

Pin	Signal Name	Pin	Signal Name
1	GND	2	+3.3V
3	GND	4	+3.3V
5	PERn3	6	NA
7	PERp3	8	NA
9	GND	10	SATA_LED
11	PETn3	12	+3.3V
13	PETp3	14	+3.3V
15	GND	16	+3.3V
17	PERn2	18	+3.3V
19	PERp2	20	NA
21	GND	22	NA
23	PETn2	24	NA
25	PETp2	26	NA

27	GND	28	NA
29	PERn1	30	NA
31	PERp1	32	NA
33	GND	34	NA
35	PETn1	36	NA
37	PETp1	38	NA
39	GND	40	SMB_CLK
41	PERn0/ SATA-B+	42	SMB_DATA
43	PERp0/ SATA-B-	44	NA
45	GND	46	NA
47	PETn0/ SATA-A-	48	NA
49	PETp0/ SATA-A+	50	PERST#
51	GND	52	CLKREQ#
53	PEFCLKn	54	WAKE#
55	PEFCLKp	56	NA
57	GND	58	NA
67	NA	68	NA
69	PEDET	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	GND		

20 : ESPI Header (ESPI1)

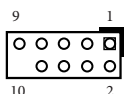


Pin	Signal Name
1	GND
2	C_ESPI_CLK
3	GND
4	C_ESPI_CS#
5	DEBUG_RESET
6	GND
7	+3V
8	GND
9	SMB_CLK_MAIN
10	SMB_DATA_MAIN
11	C_ESPI_IO0
12	C_ESPI_IO1
13	C_ESPI_IO2
14	C_ESPI_IO3
15	GND
16	+3VSB
17	NA
18	NA
19	C_ESPI_ALERT#
20	GND

21 : Battery (BAT1)

Middle/Bottom : USB 3.2 Gen2 Ports
(USB_7_8)

22 : System Panel Header (PANEL1)



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

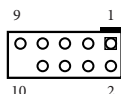
Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED keeps blinking when the system is in S1 sleep state. The LED is off when the system is in S3/S4 sleep state or powered off (S5).

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.

23 : MUL_SEL1



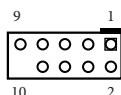
Pin	Signal Name	Pin	Signal Name
1	AT_ATX_MODE	2	CASEOPEN#
3	GND	4	GND
5	GND	6	NA
7	RTCRST2#	8	NA
9	RTCRST#	10	

MUL_SEL1_13 : SIO AT Mode

MUL_SEL1_24 : Case open

MUL_SEL1_79 : Clear CMOS2

24 : SMBUS_BATC_CLRMOS1

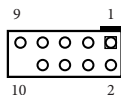


Pin	Signal Name	Pin	Signal Name
1	GPIO	2	+BAT_CH_R
3	SMBUS_CLK	4	+BAT_CH
5	SMBUS_DATA	6	RTCRST#
7	GND	8	GND
9	NA	10	

SMBUS_BATC_CLRMOS1_24: BAT charge

SMBUS_BATC_CLRMOS1_68: Clear CMOS

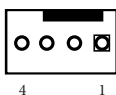
25 : SDP1_DACC1



Pin	Signal Name	Pin	Signal Name
1	LAN2_SDP0	2	LAN1_SDP0
3	LAN2_JTAG_TDI	4	LAN1_JTAG_TDI
5	LAN2_JTAG_TMS	6	LAN1_JTAG_TMS
7	GND	8	GND
9	GP_0.7 (DACC)	10	

26 : Chassis FAN Connector (+12V)

(CHA_FAN2)



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.

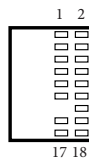
27 : M.2 Key-B Socket (M2_B1)

Pin	Signal Name	Pin	Signal Name
1	NA	2	+3.3V
3	GND	4	+3.3V
5	GND	6	Full_Card_Power_Off#
7	USB_D+	8	W_DISABLE
9	USB_D-	10	WWAN_LED#
11	GND		
21	NA	20	NA
23	NA	22	NA
25	NA	24	NA
27	GND	26	NA
29	USB3_RX-	28	NA
31	USB3_RX+	30	UIM_RESET
33	GND	32	UIM_CLK
35	USB3_TX-	34	UIM_DATA
37	USB3_TX+	36	UIM_PWR

39	GND	38	NA
41	PERn0	40	NA
43	PERp0	42	NA
45	GND	44	NA
47	PETn0	46	NA
49	PETp0	48	NA
51	GND	50	PERST#
53	PEFCLKn	52	CLKREQ#
55	PEFCLKp	54	WAKE#
57	GND	56	NA
59	NA	58	NA
61	NA	60	NA
63	NA	62	NA
65	NA	64	NA
67	NA	66	NA
69	NA	68	NA
71	GND	70	+3.3V
73	GND	72	+3.3V
75	NA	74	+3.3V

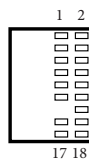
Backside

28 : Digital Input/Output (DIO1)



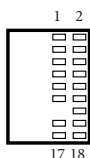
Pin	Signal Name	Pin	Signal Name
1	GPP_F1	2	GND
3	GPP_F2	4	GPP_B20
5	GPP_F7	6	GPP_E2
7	GPP_F16	8	GPP_E4
9	GPP_F17	10	GPP_I0
11	GPP_F18	12	GPP_I10
13		14	GPP_H23
15	GPP_F22	16	GPP_KO
17	GPP_F23	18	GPP_K1

29 : Digital Input/Output (DIO2)



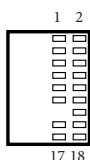
Pin	Signal Name	Pin	Signal Name
1	NA	2	MCU_SPI0_ MOSI
3	NA	4	MCU_SPI0_ MISO
5	NA	6	MCU_SPI0_ CLK
7	NA	8	MCU_SPI0_ SS
9	NA	10	DIO_ DETECT_ MCU
11	NA	12	DIO_EN_ MCU
13		14	NA
15	GND	16	NA
17	+3V	18	+3VA

30 : T1S1



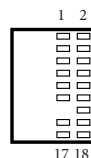
Pin	Signal Name	Pin	Signal Name
1	+3VSB	2	GSPI3_ CLK_+3V
3	+3VSB	4	GSPI3_ MOSI_+3V
5	+1.8VSB	6	GSPI3_ MISO_+3V
7	NA	8	GSPI3_ CS0_+3V
9	NA	10	BUF_PLT_ RST#
11	NA	12	T1S_0_RST_ N
13		14	T1S_0_INT_ N
15	NA	16	NA
17	GND	18	NA

31 : COM Port Header (COM1)



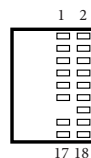
Pin	Signal Name	Pin	Signal Name
1	+5V	2	RS422_FIX_1
3	+5V	4	TERM_1
5	+5V	6	MODE1_1
7	+3V	8	MODE0_1
9	RTS#A	10	SLEW_1
11	DSR#A	12	RI#A
13		14	CTS#A
15	TXDA	16	DTR#A
17	DCD#A	18	RXDA

32 : COM Port Header (COM2)



Pin	Signal Name	Pin	Signal Name
1	RTS#B	2	RS422_FIX_2
3	GND	4	SLEW_2
5	COM_SEL1	6	MODE0_2
7	COM_SEL2	8	MODE1_1
9	COM_SEL3	10	TERM_2
11	DSR#B	12	RI#B
13		14	CTS#B
15	TXDB	16	DTR#B
17	DCD#B	18	RXDB

33 : COM Port Header (COM3_4)



Pin	Signal Name	Pin	Signal Name
1	RXDC	2	COM_RST#
3	DSR#C	4	RXDD
5	CTS#C	6	DSR#D
7	DCD#C	8	CTS#D
9	RI#C	10	DCD#D
11	RTS#C	12	RI#D
13		14	RTS#D
15	DTR#C	16	DTR#D
17	TXDC	18	TXDD

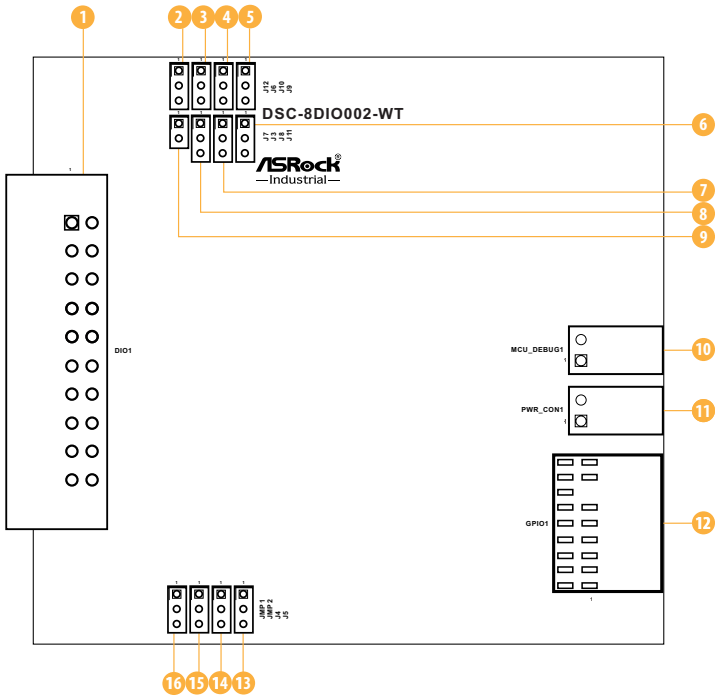
34 : OOB1



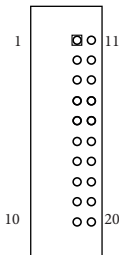
Pin	Signal Name
1	+5VSB
2	OOB_RXDB
3	TXDB_ISO
4	SLP_S3#
5	SLP_S4#
6	RESETCON#
7	SIO_PSIN#
8	CPU0_OOB_SPI_SEL
9	SIO_SDA
10	SIO_SCL
11	OOB_MOSI
12	OOB_CS#
13	OOB_SCLK
14	OOB_MISO
15	CASEOPEN#
16	RTCST#
17	GND
18	MPU_RESET
19	BOOT_SOURCE
20	P-7
21	P+7
22	BUF_PLT_RST#
23	PCIE7_TXP_C
24	PCIE7_TXN_C
25	PCIE7_RXP
26	PCIE7_RXN
27	OOB_DETECT
28	OOB_PCIE_CLK10
29	OOB_PCIE_CLK10#
30	GND

2.3 Other Boards

2.3.1 DSC-8DIO002-WT Layout and I/O Connectors (Optional)



1 : DIO1

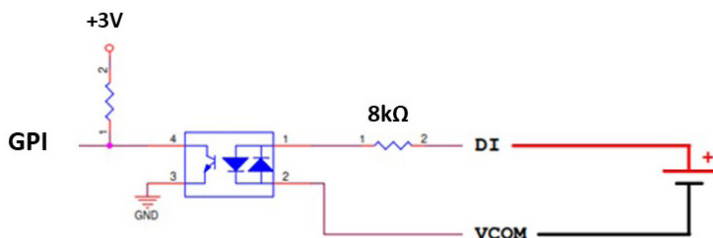


Pin	Signal Name	Pin	Signal Name
1	ISO_IN1	11	ISO_OUT1
2	ISO_IN2	12	ISO_OUT2
3	ISO_IN3	13	ISO_OUT3
4	ISO_IN4	14	ISO_OUT4
5	ISO_IN5	15	ISO_OUT5
6	ISO_IN6	16	ISO_OUT6
7	ISO_IN7	17	ISO_OUT7
8	ISO_IN8	18	ISO_OUT8
9	VCOM	19	GND_ISO_DIO
10	GND_ISO_DIO	20	+24V_ISO

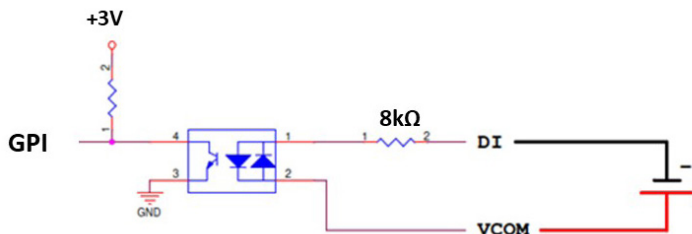
Digital Input:

Channels	8
Type	Wet Contact
Sink/Source (NPN/PNP)	Sink/Source
High Voltage Level	+10.5 ~ +36 VDC Max.
Low Voltage Level	+0 ~ +3 VDC Max.
Input Impedance	8 k Ω
Isolation Protection	2KV

- DI Sink topology



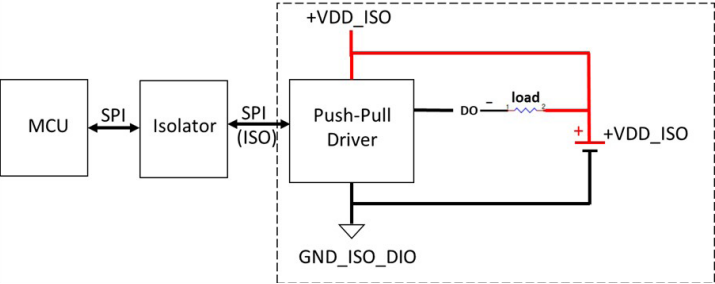
- DI Source topology



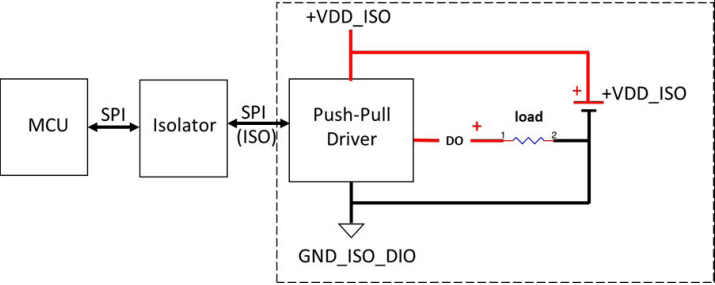
Digital Output:

Channels	8
Type	Wet Contact
Sink/Source (NPN/PNP)	Sink/Source
Load Voltage	+10.5 ~ +36 VDC Max.
Max. Load Current, Source (PNP)@25 °C	800mA/per channel, 6.4 Amps total
6.4 Amps total	400mA/per channel, 3.2 Amps total
Max. Load Current, Sink (NPN)@25 °C	400mA/per channel,
Overload Protection	1.5 A
Short-circuit Protection	Yes
Isolation Protection	2KV

• DO Sink topology (NPN)



• DO Source topology (PNP)



2 : J12 Header (J12)



Pin	Signal Name
1	+5V_ISO
2	CRC
3	GND_ISO

3 : J6 Header (J6) (Jumper default 1-2)



Pin	Signal Name
1	+5V_ISO
2	CMND
3	GND_ISO

4 : J10 Header (J10)



Pin	Signal Name
1	+5V_ISO
2	OL
3	GND_ISO

5 : J9 Header (J9) (Jumper default 1-2)



Pin	Signal Name
1	+5V_ISO
2	SRIAL
3	GND_ISO

6 : J11 Header (J11)



Pin	Signal Name
1	+5V_ISO
2	WDEN
3	GND_ISO

7 : J8 Header (J8) (Jumper default 2-3)



Pin	Signal Name
1	+5V_ISO
2	CNFG
3	GND_ISO

8 : J3 Header (J3)



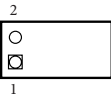
Pin	Signal Name
1	+5V_ISO
2	CRC
3	GND_ISO

9 : J7 Header (J7) (Jumper default 1-2)



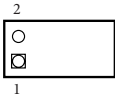
Pin	Signal Name
1	+5V_ISO
2	FLTR

10 : MCU_DEBUG1



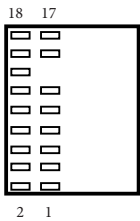
Pin	Signal Name
1	ICE_DAT
2	ICE_CLK

11 : PWR_CON1



Pin	Signal Name
1	+3V
2	+3VA

10 : GPIO Header (GPIO1)



Pin	Signal Name	Pin	Signal Name
1	ICE_DAT	2	GPP_B15
3	ICE_CLK	4	GPP_E1
5	GPP_A14	6	GPP_E2
7	GPP_A15	8	GPP_E13
9	MCU_SPI0_SS	10	GPP_D3
11	MCU_SPI0_CLK	12	GPP_E3
13	NIC	14	GPP_E7
15	MCU_SPI0_MISO	16	GPP_E16
17	MCU_SPI0_MOSI	18	GND

13 : J5 Header (J5)



Pin	Signal Name
1	+5V_ISO
2	EN
3	GND_ISO

14 : J4 Header (J4)



Pin	Signal Name
1	+5V_ISO
2	PUSHPL
3	GND_ISO

15 : JMP2 Header (JMP2)



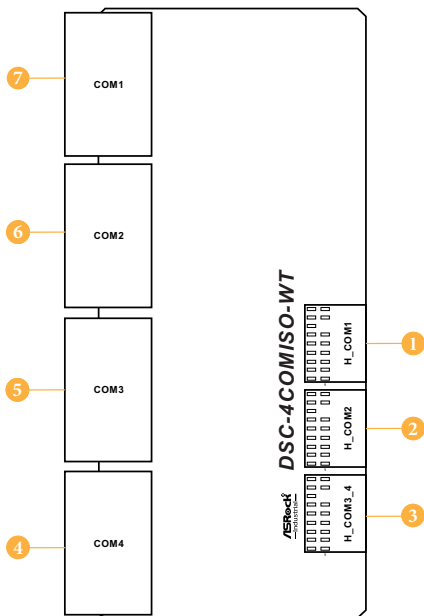
Pin	Signal Name
1	+5V_ISO
2	WDFLT
3	GND_ISO

16 : JMP1 Header (JMP1)



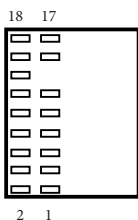
Pin	Signal Name
1	+5V_ISO
2	CERR
3	GND_ISO

2.3.2 DSC-4COMISO-WT Layout and I/O Connectors (Optional)



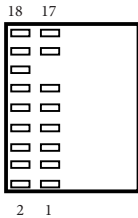
COM1~COM4 Isolation Protection: 1.5KV

1 : H_COM1



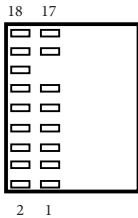
Pin	Signal Name	Pin	Signal Name
1	DCD#1	2	RXD1
3	TXD1	4	DTR#1
5	DSR#1	6	CTS#1
7	RTS#1	8	RI#1
9	+3V	10	SLEW1
11	NA	12	MODE0_1
13	NIC	14	MODE1_1
15	NA	16	MODE2_1
17	NA	18	NA

2 : H_COM2



Pin	Signal Name	Pin	Signal Name
1	DCD#2	2	RXD2
3	TXD2	4	DTR#2
5	DSR#2	6	CTS#2
7	COMDIO_SEL3	8	RI#2
9	COMDIO_SEL2	10	MODE2_1
11	COMDIO_SEL1	12	MODE1_2
13	NIC	14	MODE0_2
15	GND	16	SLEW2
17	RTS#2	18	NA

3 : H_COM3_4



Pin	Signal Name	Pin	Signal Name
1	TXD3	2	TXD4
3	DTR#3	4	DTR#4
5	RTS#3	6	RTS#4
7	RI#3	8	RI#4
9	DCD#3	10	DCD#4
11	CTS#3	12	CTS#4
13	NIC	14	DSR#4
15	DSR#3	16	RXD4
17	RXD3	18	DELAY_PWR_CTRL

4 : Isolation only RS232 COM Port (COM4)

Pin	Signal Name
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

5 : Isolation only RS232 COM Port (COM3)

Pin	RS232
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

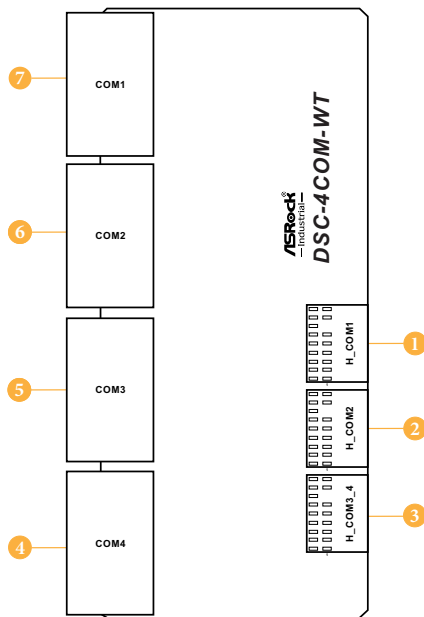
6 : Isolation 3 in 1 COM Port (COM2)

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	RI	NA	NA

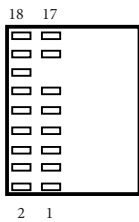
7 : Isolation 3 in 1 COM Port (COM1)

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	RI	NA	NA

2.3.3 DSC-4COM-WT Layout and I/O Connectors (Optional)

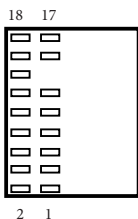


1 : H_COM1



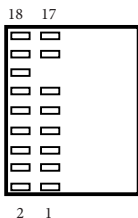
Pin	Signal Name	Pin	Signal Name
1	DCD#1	2	RXD1
3	TXD1	4	DTR#1
5	DSR#1	6	CTS#1
7	RTS#1	8	RI#1
9	NA	10	SLEW1
11	+5V	12	MODE0_1
13	NIC	14	MODE1_1
15	+5V	16	MODE2_1
17	+5V	18	NA

2 : H_COM2



Pin	Signal Name	Pin	Signal Name
1	DCD#2	2	RXD2
3	TXD2	4	DTR#2
5	DSR#2	6	CTS#2
7	COMDIO_SEL3	8	RI#2
9	COMDIO_SEL2	10	MODE2_2
11	COMDIO_SEL1	12	MODE1_2
13	NIC	14	MODE0_2
15	GND	16	SLEW2
17	RTS#2	18	NA

3 : H_COM3_4



Pin	Signal Name	Pin	Signal Name
1	TXD3	2	TXD4
3	DTR#3	4	DTR#4
5	RTS#3	6	RTS#4
7	RI#3	8	RI#4
9	DCD#3	10	DCD#4
11	CTS#3	12	CTS#4
13	NIC	14	DSR#4
15	DSR#3	16	RXD4
17	RXD3	18	DELAY_PWR_CTRL

4 : Isolation only RS232 COM Port (COM4)

Pin	Signal Name
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

5 : Isolation only RS232 COM Port (COM3)

Pin	RS232
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

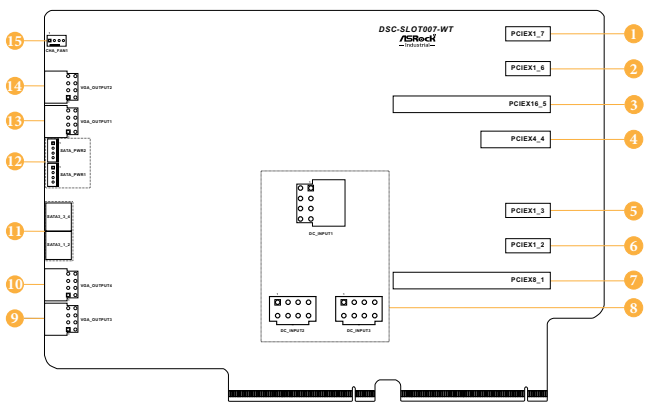
6 : Isolation 3 in 1 COM Port (COM2)

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	RI	NA	NA

7 : Isolation 3 in 1 COM Port (COM1)

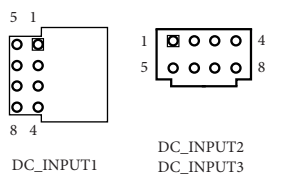
Pin	RS232	RS422	RS485
1	DCD	TX-	RTX-
2	RXD	TX+	RTX+
3	TXD	RX+	NA
4	DTR	RX-	NA
5	GND	GND	GND
6	DSR	NA	NA
7	RTS	NA	NA
8	CTS	NA	NA
9	RI	NA	NA

2.3.4 DSC-SLOT007-WT Layout and I/O Connectors



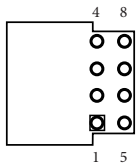
☆ **Card Support Note:**
- VGA Loading Peak<300W (with DC-IN +9V~+36V) ;Support VGA TDP<225W
- VGA Loading Peak<350W (with DC-IN +12V~+36V) ;Support VGA TDP<350W
- VGA Loading Peak<600W (with DC-IN +24V~+36V) ;Support VGA TDP<600W

- 1 : PCIEX1_7 (PCIe x1 slot)
- 2 : PCIEX1_6 (PCIe x1 slot)
- 3 : PCIEX16_5 (PCIe x16 slot)
- 4 : PCIEX4_4 (PCIe x4 slot)
- 5 : PCIEX1_3 (PCIe x1 slot)
- 6 : PCIEX1_2 (PCIe x1 slot)
- 7 : PCIEX8_1 (PCIe x8 slot)
- 8 : DC IN Connectors (DC_INPUT1~3)



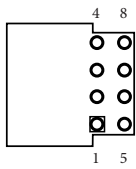
Pin	Signal Name	Pin	Signal Name
1	V-	5	V+
2	V-	6	V+
3	V-	7	V+
4	V-	8	V+

9 : VGA OUTPUT Connector (VGA OUTPUT3)



Pin	Signal Name	Pin	Signal Name
1	+12V	2	GND
3	+12V	4	GND
5	+12V	6	GND
7	GND	8	GND

10 : VGA OUTPUT Connector (VGA OUTPUT4)



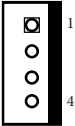
Pin	Signal Name	Pin	Signal Name
1	+12V	2	GND
3	+12V	4	GND
5	+12V	6	GND
7	GND	8	GND

11 : SATA3 Connectors (SATA3_1_2, SATA3_3_4)



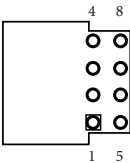
Pin	RS232
1	GND
2	SATA-A+
3	SATA-A-
4	GND
5	SATA-B-
6	SATA-B+
7	GND

12 : SATA Power Output Connectors (SATA_PWR1, SATA_PWR2)



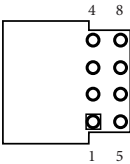
Pin	RS232
1	+5V
2	GND
3	GND
4	+12V

13 : VGA OUTPUT Connector (VGA OUTPUT1)



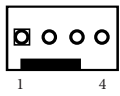
Pin	Signal Name	Pin	Signal Name
1	+12V	2	GND
3	+12V	4	GND
5	+12V	6	GND
7	GND	8	GND

14 : VGA OUTPUT Connector (VGA OUTPUT2)



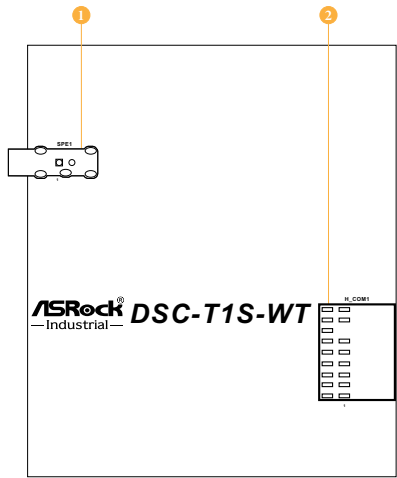
Pin	Signal Name	Pin	Signal Name
1	+12V	2	GND
3	+12V	4	GND
5	+12V	6	GND
7	GND	8	GND

15 : Chassis FAN Connector (+12V) (CHA_FAN1)



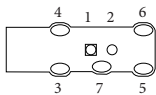
Pin	RS232
1	GND
2	+12V
3	CHA_FAN_SPEED
4	FAN_SPEED_CONTROL

2.3.5 DSC-T1S-WT Layout and I/O Connectors (Optional)



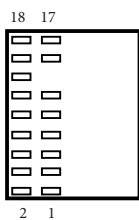
1 : SPE1

* Support DC+12V~+DC+36V Input



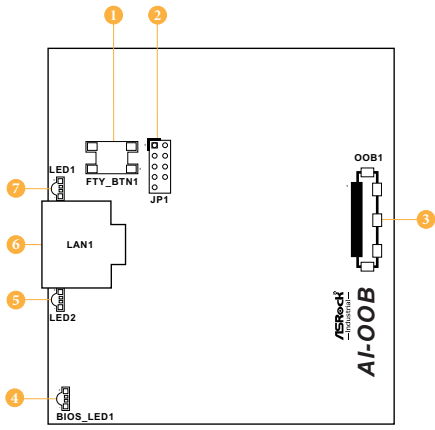
Pin	Signal Name
1	T1S_0_DP
2	T1S_0_DN
3	GND
4	GND
5	GND
6	GND
7	GND

2 : H_COM1



Pin	Signal Name	Pin	Signal Name
1	GND	2	GND
3	NA	4	NA
5	NA	6	T1S_0_INT_N
7	NA	8	T1S_0_RST_N
9	NA	10	BUF_PLT_RST#
11	+1.8VSB	12	GSPI3_CS0#
13	NIC	14	GSPI3_MISO
15	+3VSB	16	GSPI3_MOSI
17	+3VSB	18	GSPI3_CLK

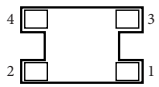
2.3.6 AI-OOB Layout and I/O Connectors (Optional)



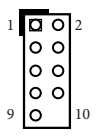
Specification

Input Interface/Power	• +3VSB • RJ45 (MDI) • PCIe x1 • SPI
Output Interface/Power	• Remote Power Control • UART • I2C • SPI • GPIO

1 : FTY_BTN1



2 : JP1



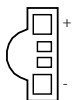
- 1-3: M2-OOB1 SPI power level is +1.8V (Default)
- 3-5: M2-OOB1 SPI power level is +3.3V
- 2-4: MPU boot from SPI mode (Default)
- 4-6: MPU boot from USB mode
- 7-8: Factory Reset

3 : OOB1



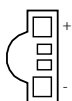
Pin	Signal Name
1	+3VSB
2	+3VSB
3	PWROK
4	RESETCON#
5	PWRBTN#
6	SPI_MUX_SEL
7	SPI_MISO
8	SPI_CLK
9	SPI_CS#
10	SPI_MOSI
11	CASEOPEN#
12	CLRCMOS#
13	FW_DETECT
14	HEARTBEAT
15	MPU_RESET
16	BOOT_SOURCE
17	I2C_SDA
18	I2C_SCL
19	UART_RX
20	UART_TX
21	USB_D-
22	USB_D+
23	PCIE_CLKP
24	PCIE_CLKN
25	PCIE_TXP
26	PCIE_TXN
27	PCIE_RXP
28	PCIE_RXN
29	PLT_RST#
30	GND

4 : BIOS_LED1



Status	Description
Blue	BIOS Backup
Red	BIOS Recovery

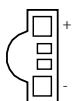
5 : LED2



RJ45 - Speed LED

6 : RJ45 1G LAN Port (LAN1)

7 : LED1



RJ45 - Activity/Link LED

Chapter 3 Hardware Installation and Maintenance

This chapter helps you disassemble the system and install components.

Before You Begin

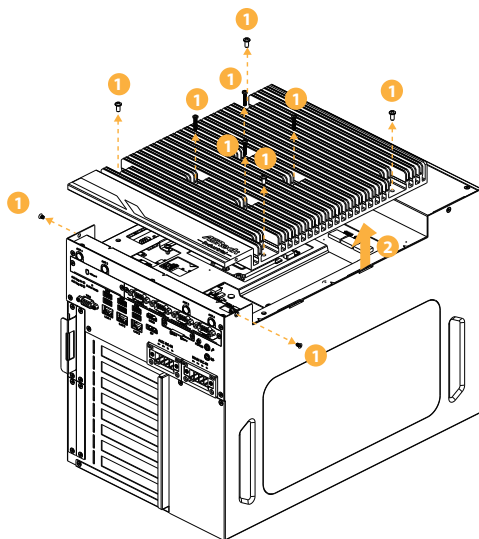
Before you work with the system, pay close attention to the “Important Safety Instructions” at the beginning of this manual.

1. Make sure the system is powered off.
Power down the system if it is still running.
 - (1) Press the Power button to shut down the system. The Power LED turns from solid green to dark.
 - (2) Disconnect the power cord first from the AC outlet and then from the system. The power LED turns off.
2. Ensure you have a clean and stable working environment. Avoid dust and dirt because contaminants may cause malfunctions.
3. Ground yourself properly before touching any system component. A discharge of static electricity may damage components. Wear a grounded wrist strap if available.

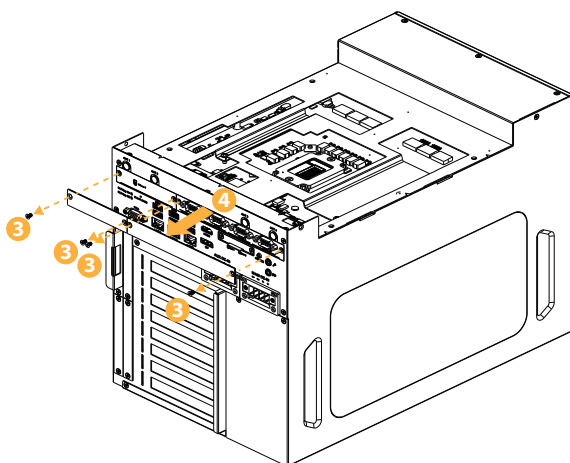
Screw Driver Recommended Torque Value	
Items secured to Chassis	Value (Kgf-cm)
Chassis & Top Case/Heatsink	3.0 + / - 0.5
Rubber Foot	3.0 + / - 0.5
Desk Mount	3.0 + / - 0.5
2.5" Tray and 2.5" Device	3.0 + / - 0.5
CPU Socket	3.0 + / - 0.5
Items secured to PCBA	Value (Kgf-cm)
Device : M.2 Module	2.0 + / - 0.5
Phoenix DC in	2.0 + / - 0.5
CPU Socket	3.0 + / - 0.5

3.1 How to Disassemble the System

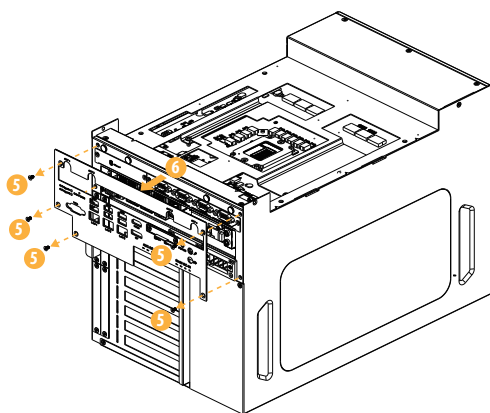
1. Remove all screws securing the heatsink.
2. Remove the heatsink.



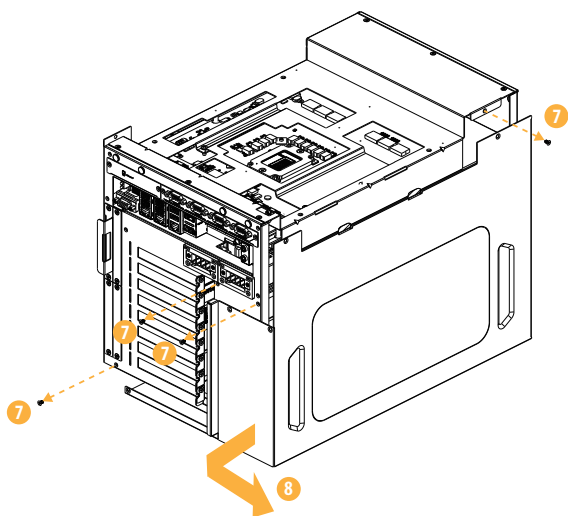
3. Remove the screws securing the expansion module cover.
4. Remove the expansion module cover.



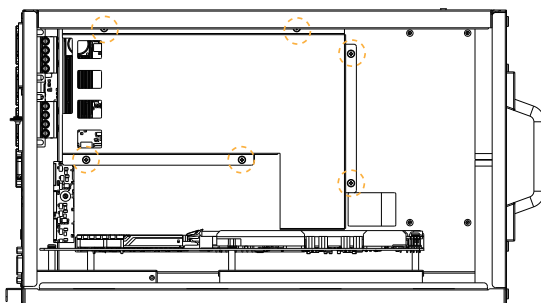
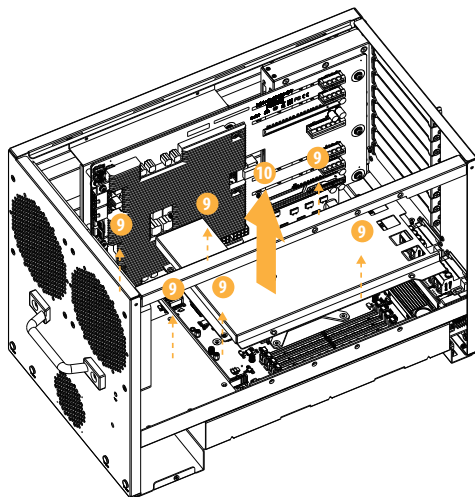
5. Remove the screws securing the I/O panel.
6. Remove the I/O panel.



7. Remove the screws securing the side cover.
8. Remove the side cover.



9. Remove the screws securing the partition cover.
10. Remove the partition cover.

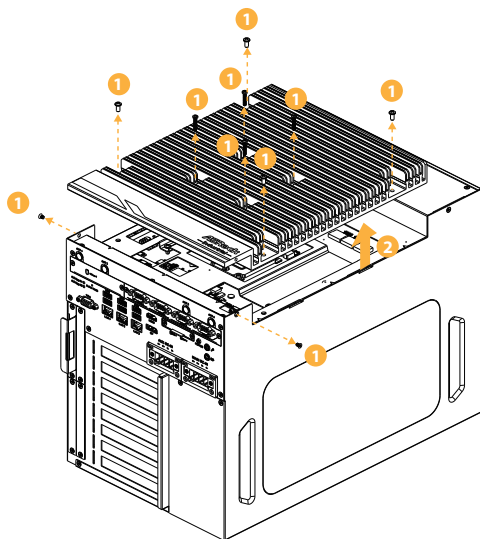


3.2 How to Install the CPU

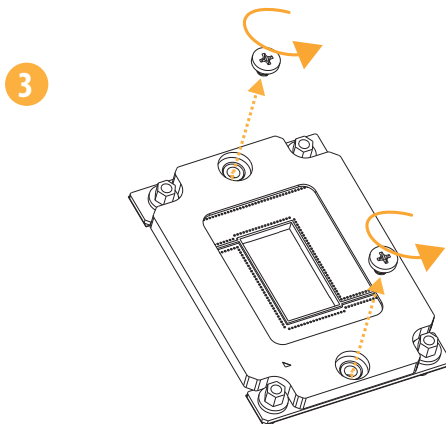


1. Before you insert the 1700-Pin CPU into the socket, please check if the CPU surface is unclean, or if there are any **bent pins** in the socket. Do not force to insert the CPU into the socket if any of the situations above is found. Otherwise, the CPU will be seriously damaged.
2. Unplug all power cables before installing the CPU.

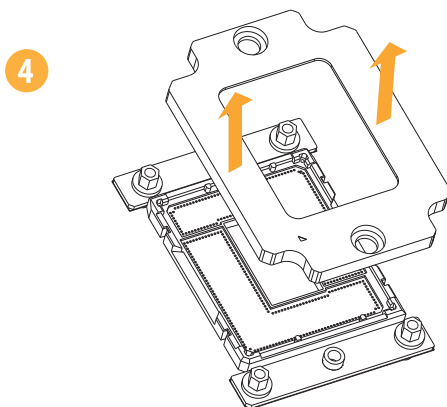
1. Remove all screws securing the heatsink.
2. Remove the heatsink.



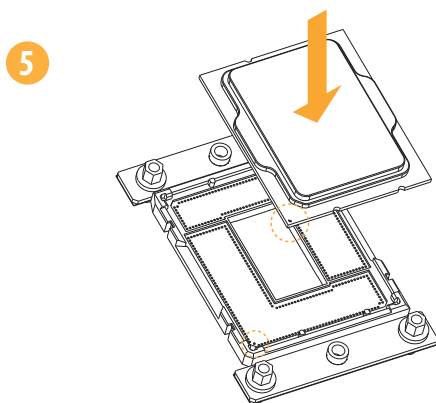
3. Remove the two screws.



4. Lift the socket.

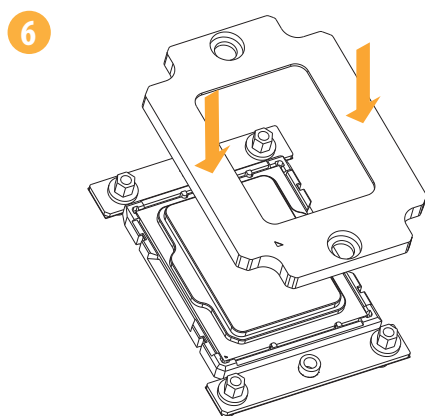


5. Align the triangle marks on both CPU and socket (marked in the below illustration), and install the CPU onto the socket.

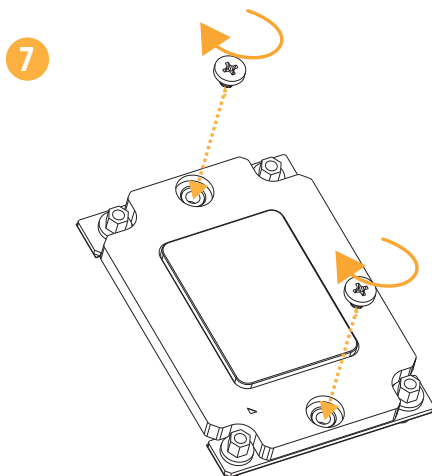


The CPU can only fit in one way. CPU misalignment will damage the motherboard.

6. Put back the socket.

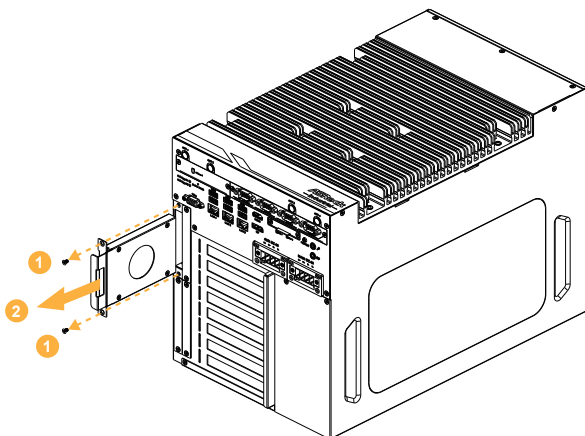


7. Tighten the screws to secure the CPU.

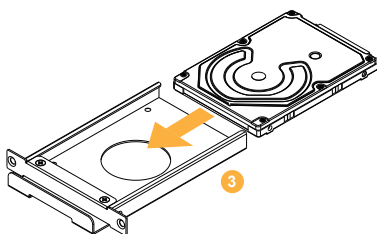


3.3 How to Install the Hard Disk Drive

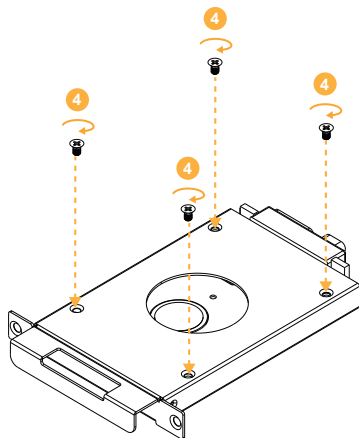
1. Remove the screws securing the HDD tray.
2. Remove the HDD tray.



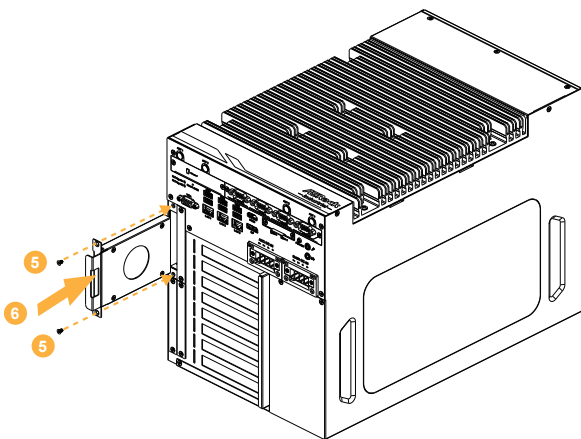
3. Place a 2.5" HDD into the tray with the printed circuit board side facing down. Carefully align the mounting holes in the hard drive and the tray.



- Secure the hard drive using four M.3 screws.



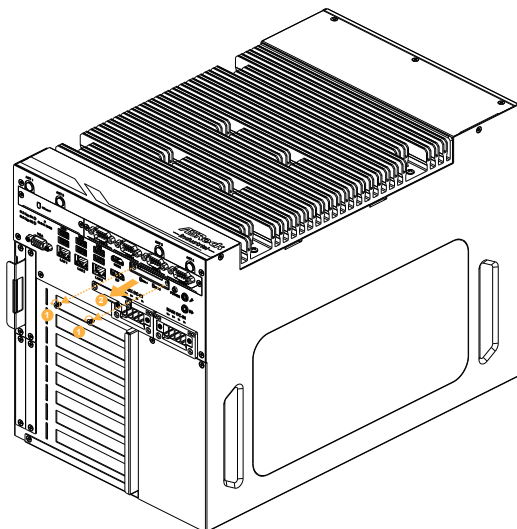
- Slide the drive tray into the HDD bay until the drive is fully seated.
- Secure the HDD tray with two #6-32 screws.



3.4 How to Install the SIM Card

Installing a SIM Card into a SIM Card Slot

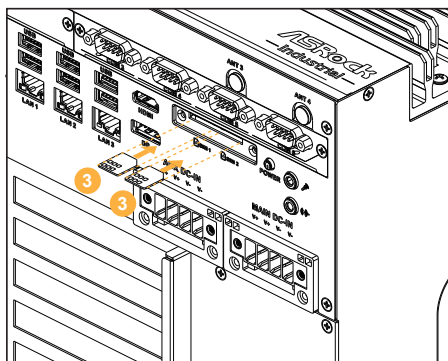
1. Remove the screws securing the SIM card slot cover.
2. Remove the SIM card slot cover.



3. Insert a SIM card to the SIM card slot.

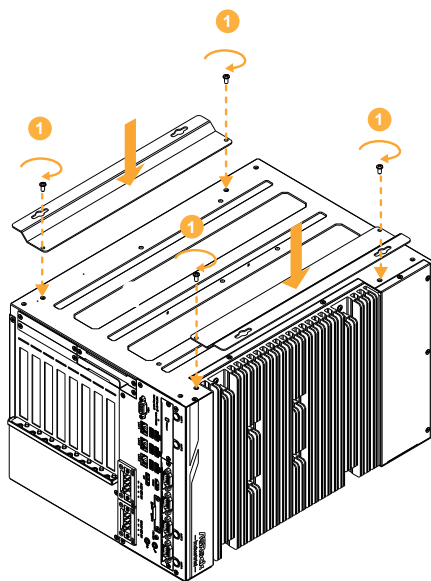
SIM1 (Left Slot): When inserting the SIM Card to the left slot, make sure the notch on the SIM card is oriented with the gold contacts face up.

SIM2 (Right Slot): When inserting the SIM Card to the right slot, make sure the notch on the SIM card is oriented with the gold contacts face up.

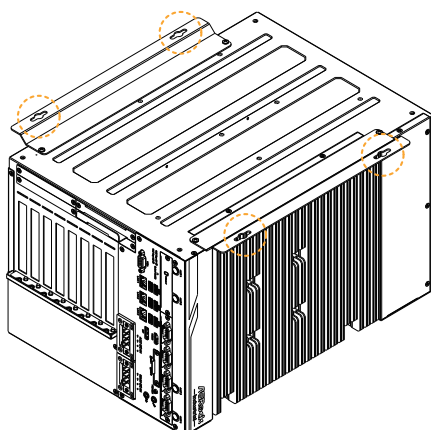


3.5 How to Install the Desk Mount Bracket

1. Attach the two desk mount brackets to the iEPF-9500S-EW7. Then secure them with four screws.

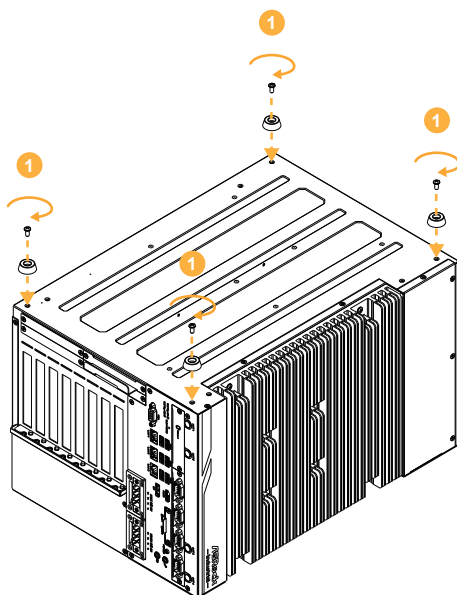


2. You can then attach the iEPF-9500S-EW7 to any horizontal surface with the rest of the four screws.

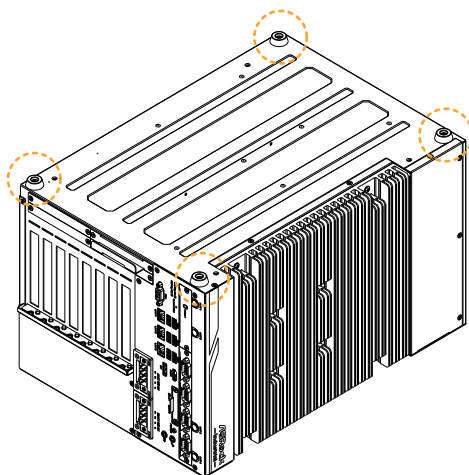


3.6 How to Install the Rubber Foot

1. Attach four rubber foots to the iEPF-9500S-EW7. Then secure them with four screws.



2. Place the iEPF-9500S-EW7 to any horizontal surface.



3.7 How to Install the Memory Module

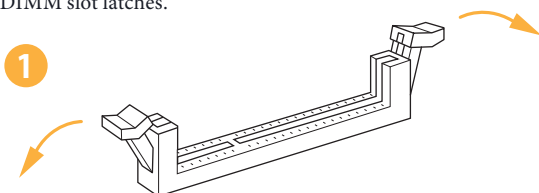


For dual channel configuration, you always need to install identical (the same brand, speed, size and chip-type) DDR5 U-DIMM pairs.

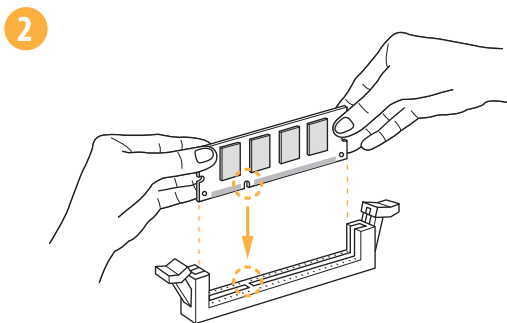


The U-DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.

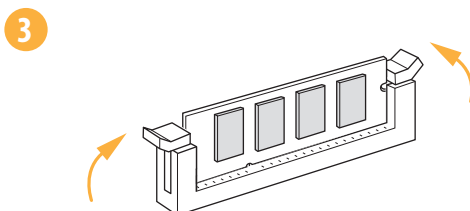
1. Open the DIMM slot latches.



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



3. The latches snap back into place.



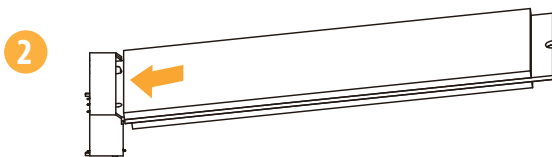
3.8 How to Install the M.2 SSD with Heatsink

Installing the M.2 SSD

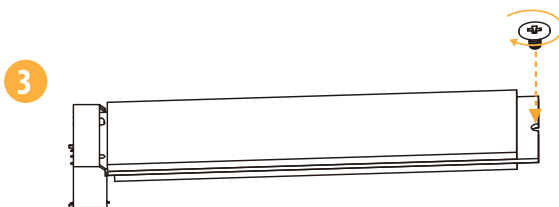
1. Locate the M.2 slot on the motherboard.



2. Carefully insert the M.2 SSD into the slot at a 30-degree angle.



3. Tighten the screw to secure the M.2 SSD to the motherboard.



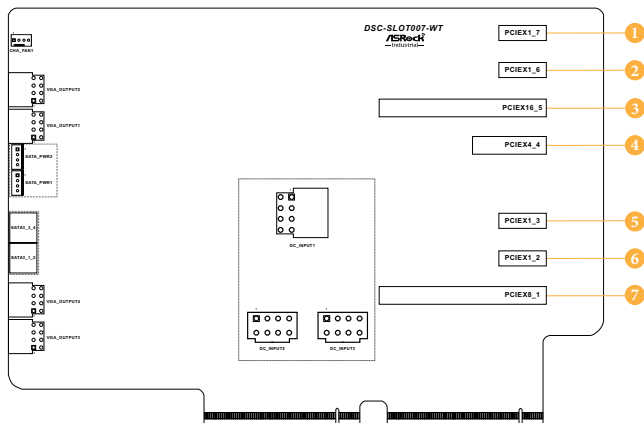
3.9 How to Install the Riser Card

There are four PCI Express slots on the board.



Before installing an expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and ensure necessary hardware settings for the card before you start the installation.

1. PCIe slots:



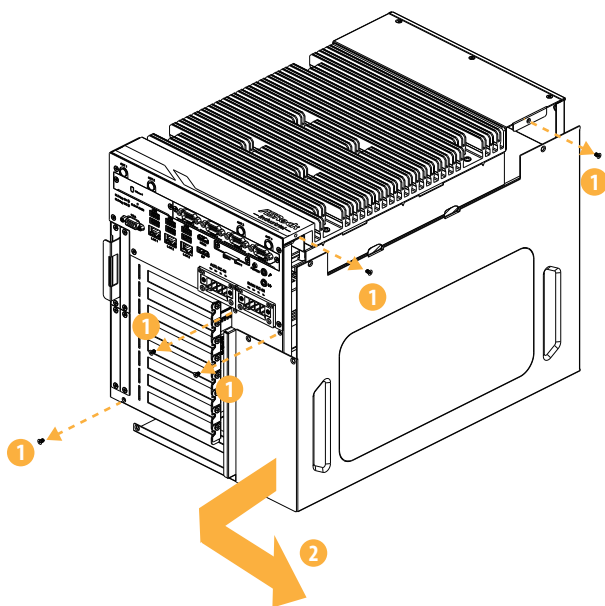
No.	Description
1	PCIe Gen4 x1 slot is used for PCIe x1 lane width cards.
2	PCIe Gen4 x1 slot is used for PCIe x1 lane width cards.
3	PCIe Gen5 x16 slot is used for PCIe x16 lane width cards.
4	PCIe Gen4 x4 slot is used for PCIe x4 lane width cards.
5	PCIe Gen4 x1 slot is used for PCIe x1 lane width cards.
6	PCIe Gen4 x1 slot is used for PCIe x1 lane width cards.
7	PCIe Gen5 x8 slot is used for PCIe x8 lane width cards.

2. With the default card holder assembled in the system for enhanced reliability, the dimensions of the expansion card is limited to 360 x 144 x 75 mm (for one GPU card); 360 x 144 x 58 mm (for dual GPU cards).

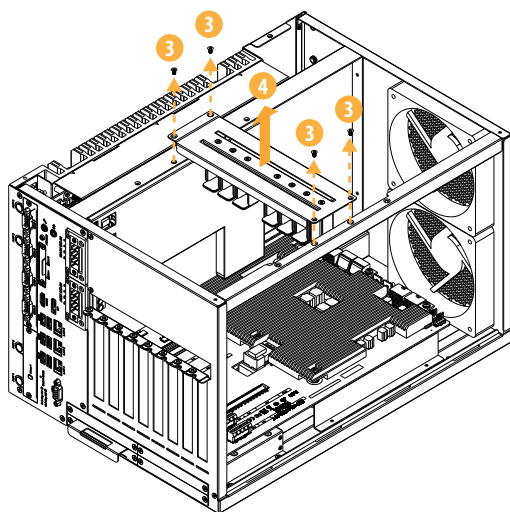
If the card holder is removed, the dimensions of the expansion card are limited to 360 x 194 x 75 mm (for one GPU card); 360 x 194 x 58 mm (for dual GPU cards).

3.10 How to Install the PCIe Card

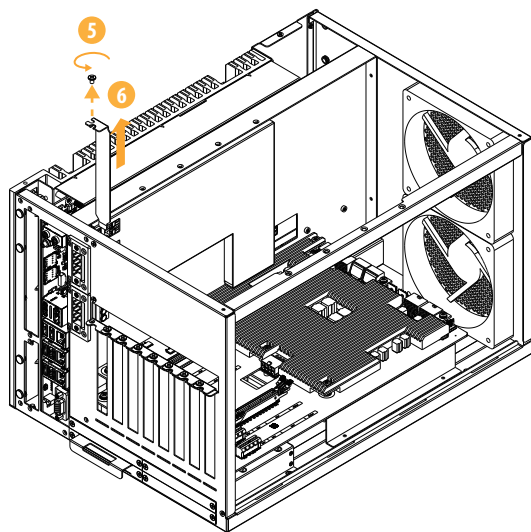
1. Remove the screws securing the side cover.
2. Remove the side cover.



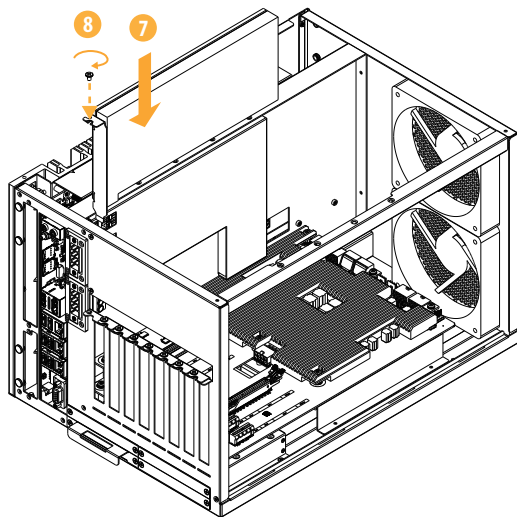
3. Remove the screws securing the card holder.
4. Remove the card holder.



5. Remove the screw securing the PCIe slot cover.
6. Remove the PCIe slot cover.



7. Install the PCIe card.
8. Secure the PCIe card with the screw.



3.11 How to Install the WiFi Module (M.2 Key E Socket (2230))

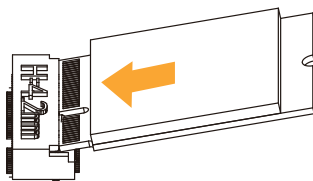
1. Locate the WiFi Module slot on the motherboard.

1



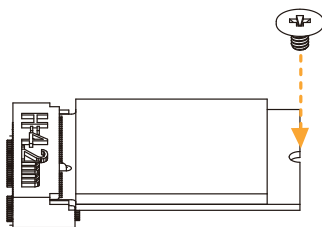
2. Carefully insert the WiFi Module into the slot at a 30-degree angle.

2



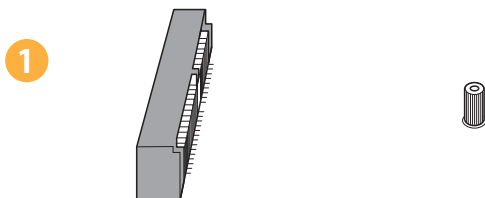
3. Tighten the screw to secure the WiFi Module to the motherboard.

3

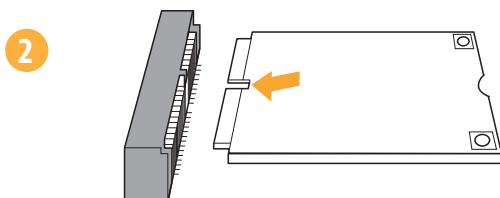


3.12 How to Install the 4G/5G module (M.2 Key B1 2280/3042/3052; M.2 Key B2 3042/3052)

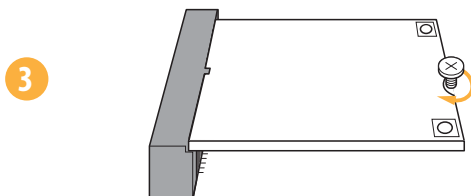
1. Locate the 4G / 5G module slot on the motherboard.



2. Carefully insert the 4G / 5G module into the slot at a 30-degree angle.



3. Secure the 4G / 5G module with one screw.



When using the 4G/5G module, please install the 5G heatsink (sold separately) and ensure operation with a DC voltage of 9~24V in an ambient temperature below 50°C.

3.13 How to Install the WiFi/4G/5G Antennas and Cables

3.13.1 Antennas

1. Prepare the WiFi or 4G/5G antennas.



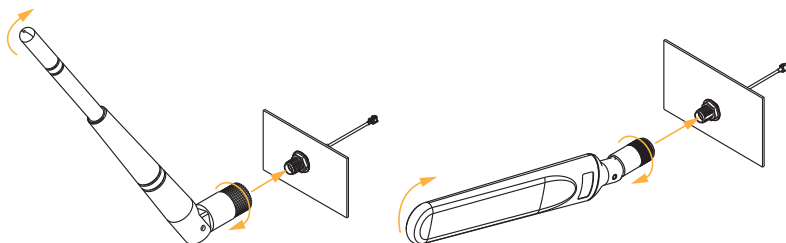
WiFi antennas



4G/5G antennas

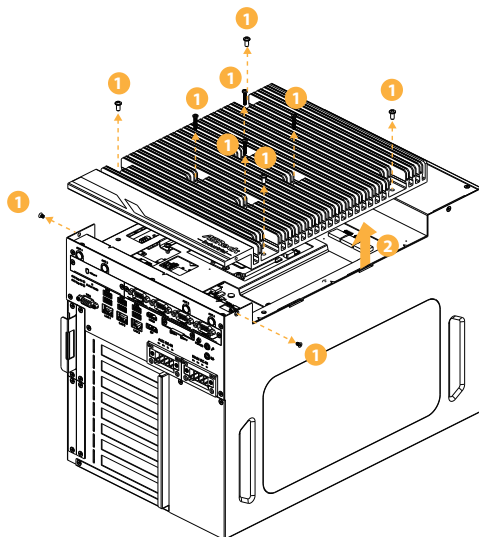
2. Connect the WiFi or 4G/5G antennas to the antenna connectors. Then turn the antennas clockwise until they are properly tightened.

You may need to adjust the direction of the antennas for a stronger signal.

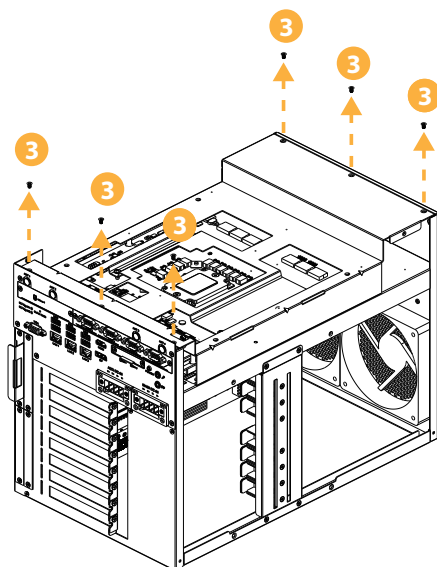


3.13.2 How to Assemble SMA Cables

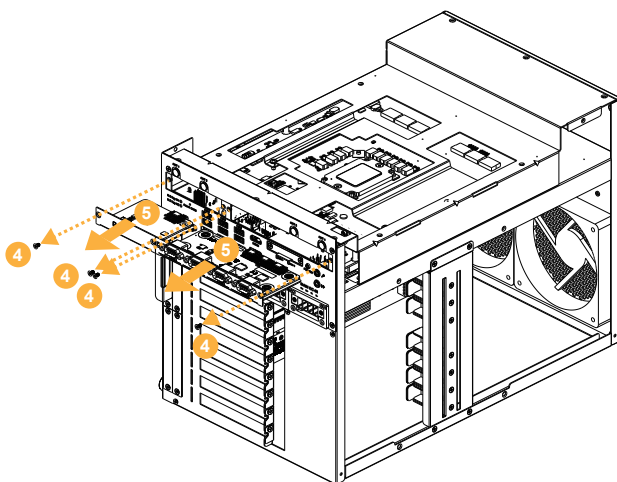
1. Remove all screws securing the heatsink.
2. Remove the heatsink.



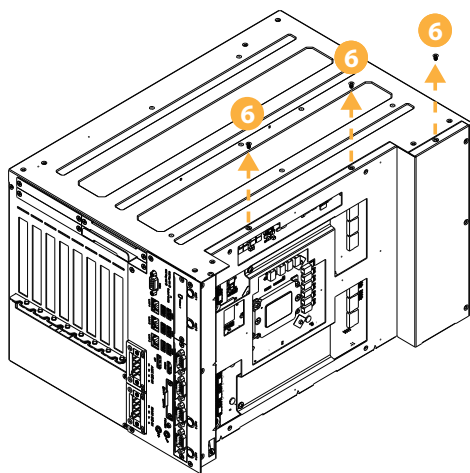
3. Remove the screws securing the sink tray.



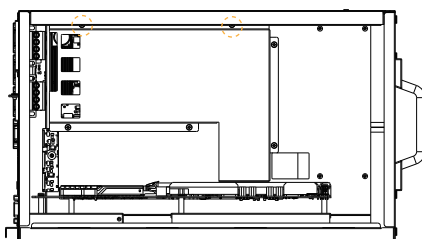
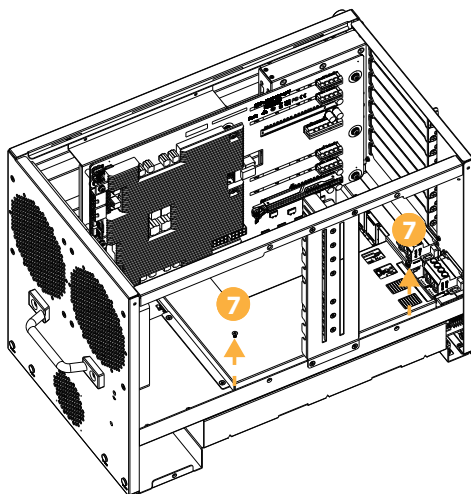
4. Remove the screws securing the optional expansion module cover.
5. Remove the optional expansion module cover.



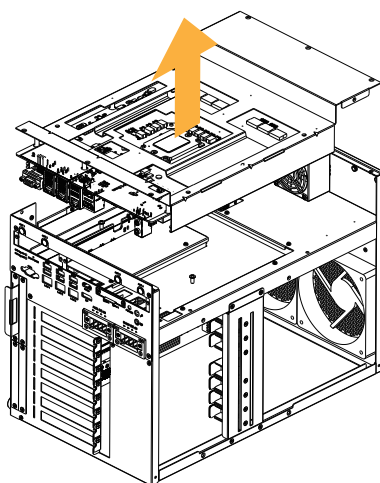
6. Remove the screws securing the side of the sink tray.



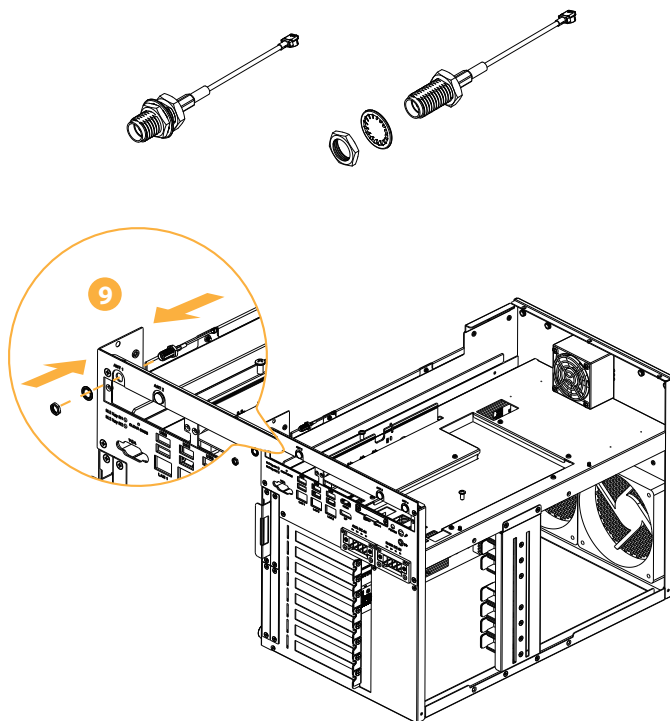
7. Remove the screws securing the inner side of the sink tray at the indicated locations.



8. Lift up and remove the sink tray.

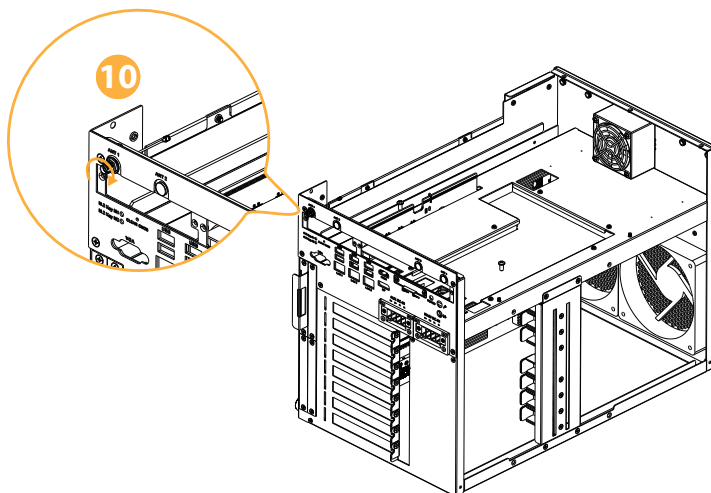


9. Insert the antenna cable through the antenna connector hole on the chassis, and then secure it with the washer and nut as shown in the following illustration.



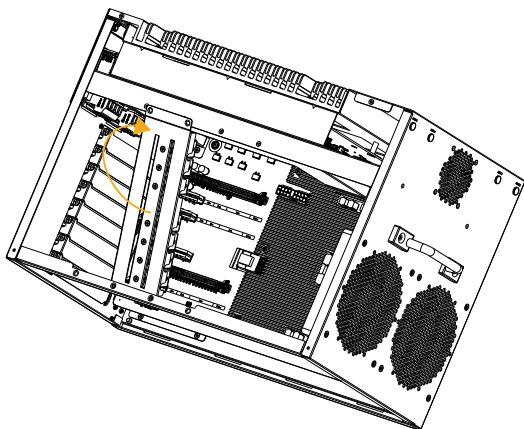
When installing the SMA cable, ensure that the flat surface of the cable and the antenna hole are properly aligned.

10. Turn the nut clockwise to tighten it.

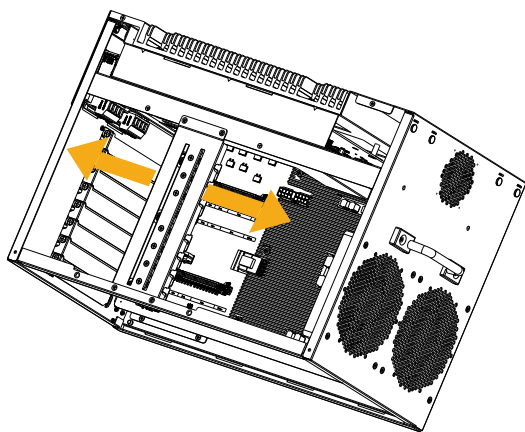


3.14 How to Assemble Card Holder

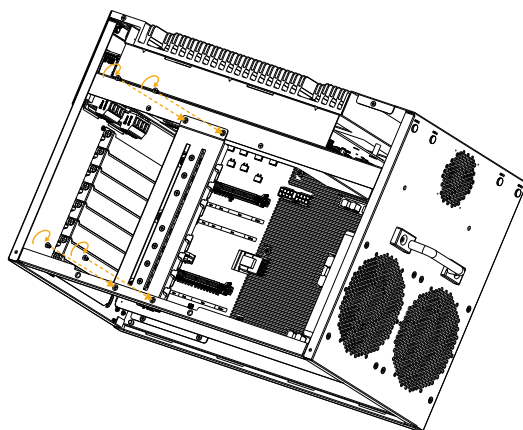
1. Install the card holder to the right-side chassis at a 30-degree angle.



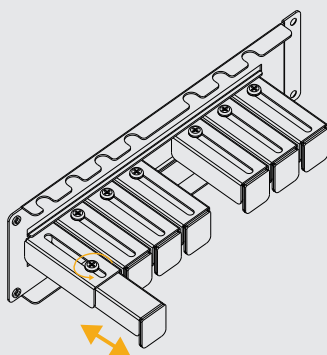
2. Choose either the left, the middle or the right of the chassis according to your expansion card to secure the card holder .



3. Secure the card holder using four #6-32 countersunk head screws.



Loosen the screw to adjust the holder length according to the PCIe card size.



Chapter 4 UEFI Setup Utility

4.1 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 and 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, malfunction 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.

4.1.1 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.

4.1.2 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.

4.1.3 Navigation Keys

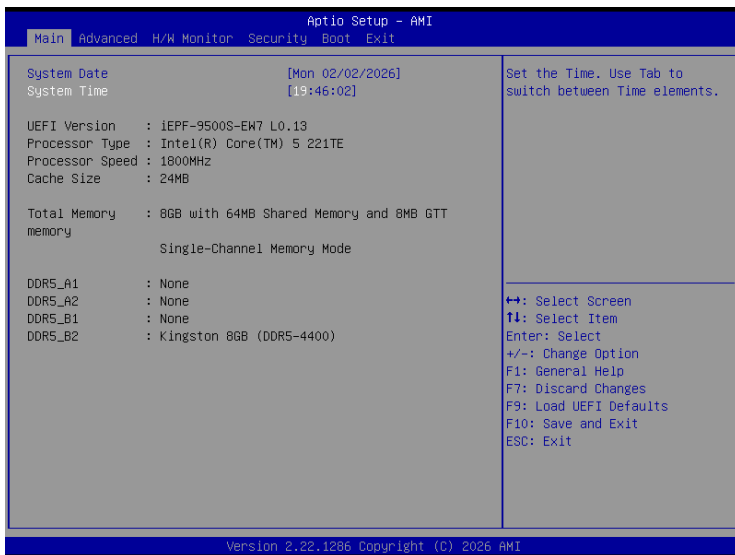
Use <←> key or <→> key to choose among the selections on the menu bar, and use <↑> key or <↓> key to move the cursor up or down to select items, then press <Enter> to get into the sub screen. You can also use the mouse to click your required item.

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

4.2 Main Screen

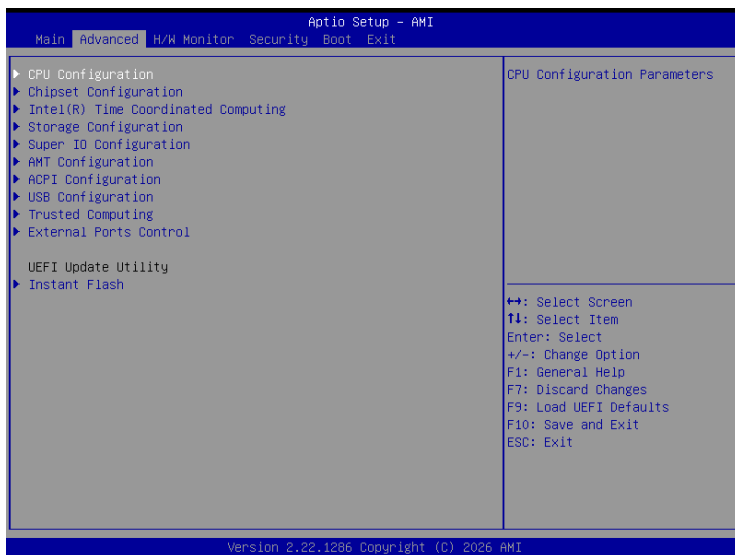
When you enter the UEFI SETUP UTILITY, the main screen will appear and display the system overview.



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.

4.3 Advanced Screen

In this section, you may set the configurations for the following items: CPU Configuration, Chipset Configuration, Intel(R) Time Coordinated Computing, Storage Configuration, Super IO Configuration, AMT Configuration, ACPI Configuration, USB Configuration, Trusted Computing, and External Ports Control.

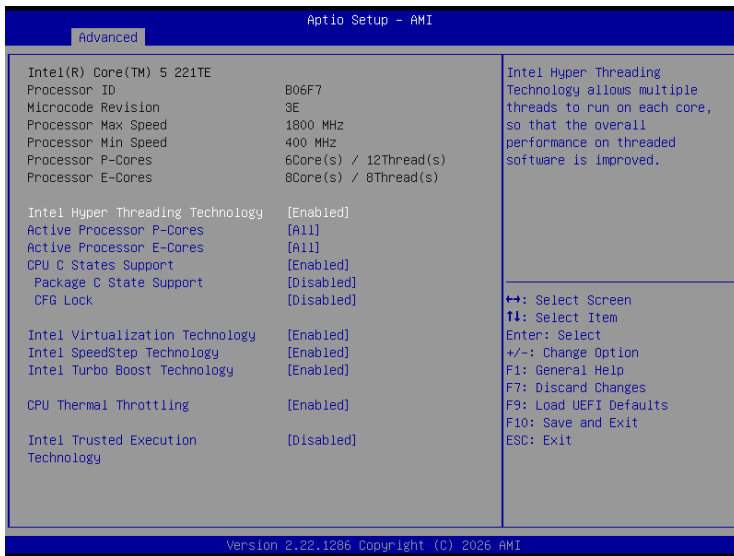


Setting wrong values in this section may cause the system to malfunction.

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.

4.3.1 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.

Active Processor P-Cores

Select the number of cores to enable in each processor package.

Active Processor E-Cores

Select the number of cores to enable in each processor package. 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

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

Package C State Support

Allows you to enable CPU, PCIe, Memory, Graphics C State Support for power saving.

Configuration options: [Auto] [Enabled] [Disabled]

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 is Intel's new power saving technology. Processors can switch between multiple frequencies and voltage points to enable power saving. The default value is [Enabled].

Configuration options: [Enabled] and [Disabled].

If you install Windows® OS 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.

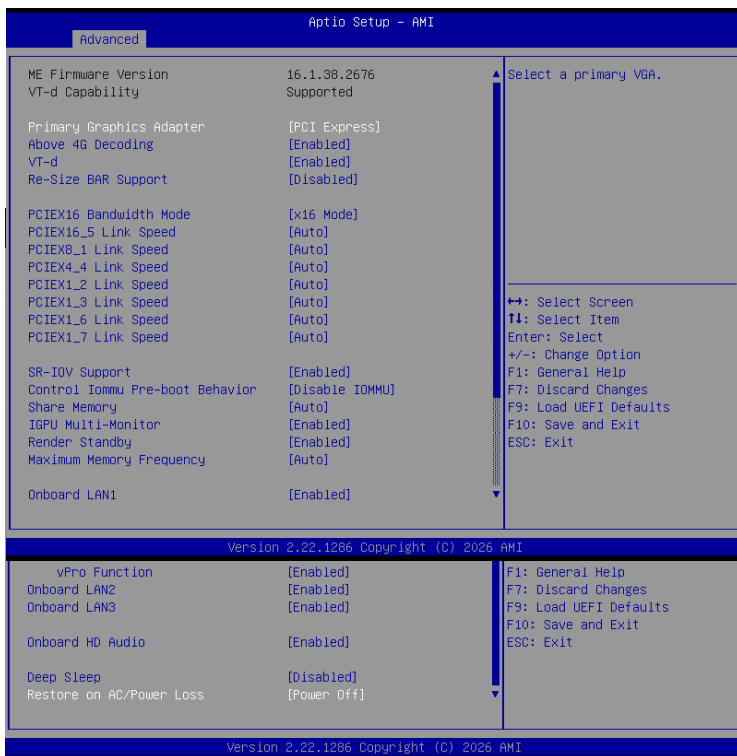
CPU Thermal Throttling

You may select [Enabled] to enable CPU internal thermal control mechanism to keep the CPU from overheating.

Intel Trusted Execution Technology

The item enables utilization of additional hardware capabilities provided by Intel (R) Trusted Execution Technology. Changes require a full power cycle to take effect.

4.3.2 Chipset Configuration



Primary Graphics Adapter

Select a primary VGA.

Above 4G Decoding

Enable or disable 64bit capable Devices to be decoded in Above 4G Address Space (only if the system supports 64 bit PCI decoding).

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.

PCIEX16 Bandwidth Mode

Configure the PCIe x16 slot bandwidth mode.

PCIEX16_5 Link Sped

Configure the PCIe x16 slot 5 link speed.

PCIEX8_1 Link Sped

Configure the PCIe x8 slot 1 link speed.

PCIEX4_4 Link Sped

Configure the PCIe x4 slot 4 link speed.

PCIEX1_2 Link Sped

Configure the PCIe x1 slot 2 link speed.

PCIEX1_3 Link Sped

Configure the PCIe x1 slot 3 link speed.

PCIEX1_6 Link Sped

Configure the PCIe x1 slot 6 link speed.

PCIEX1_7 Link Sped

Configure the PCIe x1 slot 7 link speed.

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]

Control Iommu Pre-boot Behavior

Control IOMMU behavior during pre-boot.

Share Memory

Configure the size of memory that is allocated to the integrated graphics processor when the system boots up.

IGPU Multi-Monitor

This allows you to enable or disable IGPU Multi-Monitor. The default value is [Disabled].

Render Standby

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

Maximum Memory Frequency

The maximum operating frequency of the memory controller, adjustable within the BIOS settings.

Onboard LAN1

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

vPro Function

Enable/Disable vPro SMLink of LAN port. Select Enabled if you would like to utilize LAN port with vPro. Select Disabled if you would like to utilize LAN port as DHCP Server. Please turn off the computer and unplug the power cord from the power supply after the setting has been changed.

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 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]

Deep Sleep

Enable or disable Deep Sleep mode. When enabled, the system enters a lower power state during S5 (soft-off). Configuration options: [Enabled] [Disabled].

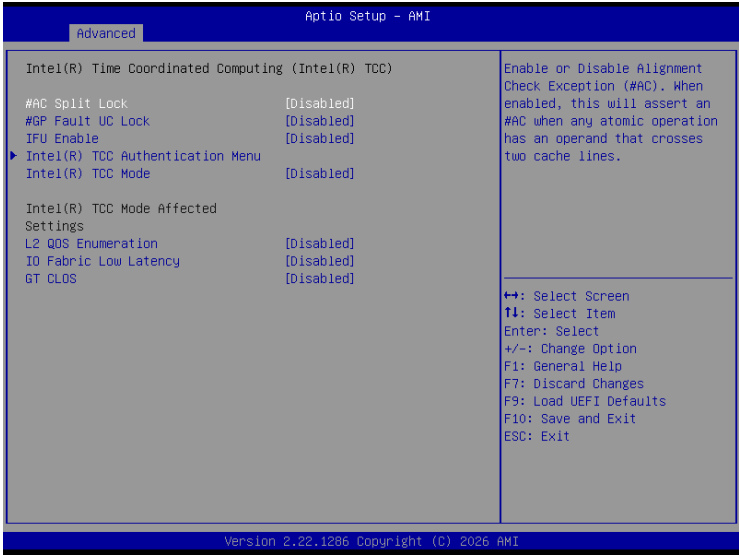
Restor on AC/Power Loss

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.

4.3.3 Intel(R) Time Coordinated Computing



#AC Split Lock

Enable or Disable Alignment Check Exception (#AC). When enabled, this will assert an #AC when any atomic operation has an operand that crisses two cache lines.

#GP Fault UC Lock

Enable or Disable GP Fault Exception (GP#). When enabled, this will assert an GP# when encountering a Lock to un-cacheable memory before the bus is locked.

IFU Enable

Enable or Disable Instruction Fetch Unit(IFU). When enabled, Instructions will be prefetch to the cache.

Inte(R) TCC Authentication Menu

Press Enter to configure Intel(R) TCC Authentication Menu options.



Intel(R) TCC Mode

Enable or Disable Intel(R) TCC Mode. When enabled, this will modify system settings to improve real-time performance. The full list of settings and their current state are displayed below when Intel(R) TCC mode is enabled.

L2 QOS Enumeration

Enable or Disable L2 QOS Enumerate. When Enable CPUID Enumeration for L2 QOS gets enabled.

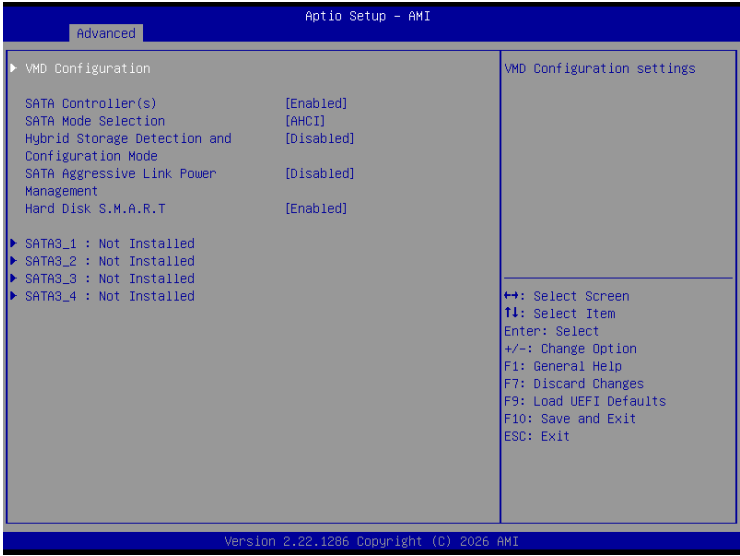
IO Fabric Low Latency

Enable or Disable IO Fabric Low Latency. This will turn off some power management in the PCH IO fabrics. This option provides the most aggressive IO Fabric performance setting. S3 state is NOT supported.

GT CLOS

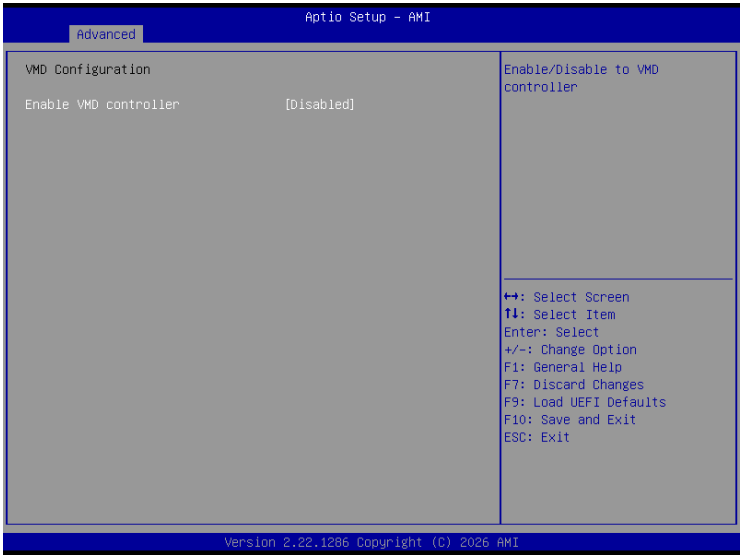
Enable or Disable Graphics Technology(GT) Class of Service. Enable will reduce Gfx LLC allocation to minimize impact of Gfx workload on LLC.

4.3.4 Storage Configuration



VMD Configuration

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



Enable VMD controller

Control IOMMU behavior during pre-boot.

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]



AHCI (Advanced Host Controller Interface) supports NCQ and other new features that will improve SATA disk performance.

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.

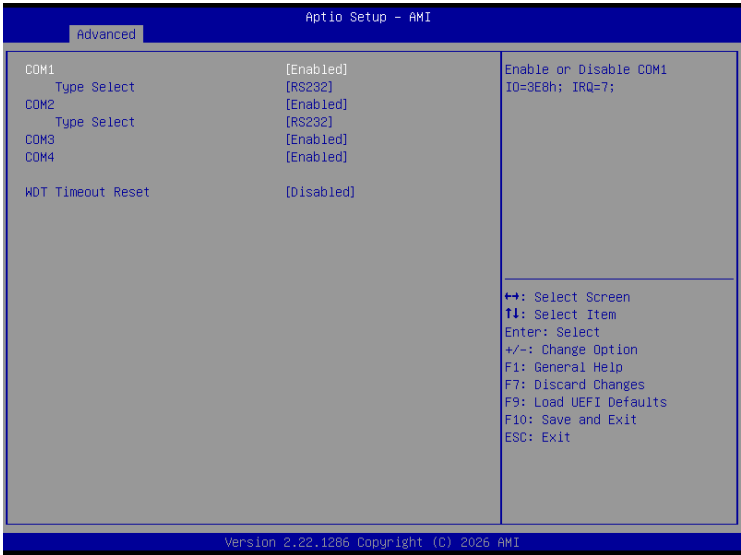
Configuration options: [Enabled] [Disabled]

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]

4.3.5 Super IO Configuration



COM1

Use this to set parameters of COM1.

Type Select

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

COM2

Use this to set parameters of COM2.

Type Select

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

COM3

Use this to set parameters of COM3.

COM4

Use this to set parameters of COM4.

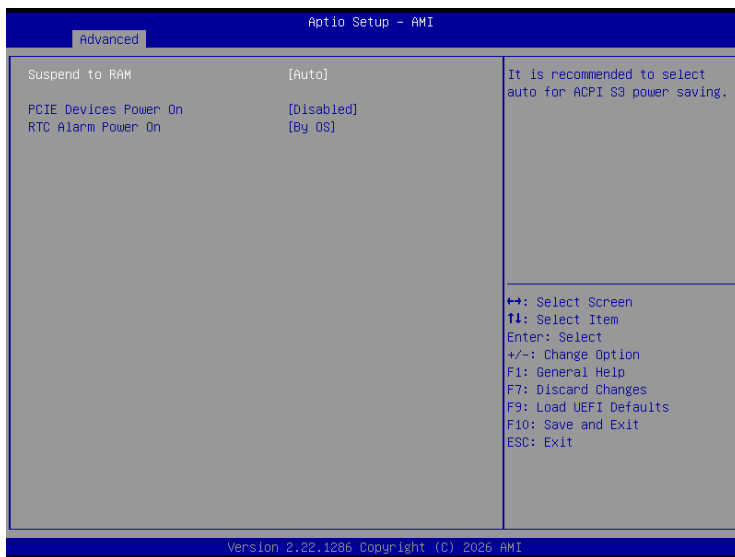
Type Select

Use this to select COM5 port type: [RS232], [RS422] or [RS485].

WDT Timeout Reset

Use this to set the Watch Dog Timer.

4.3.6 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

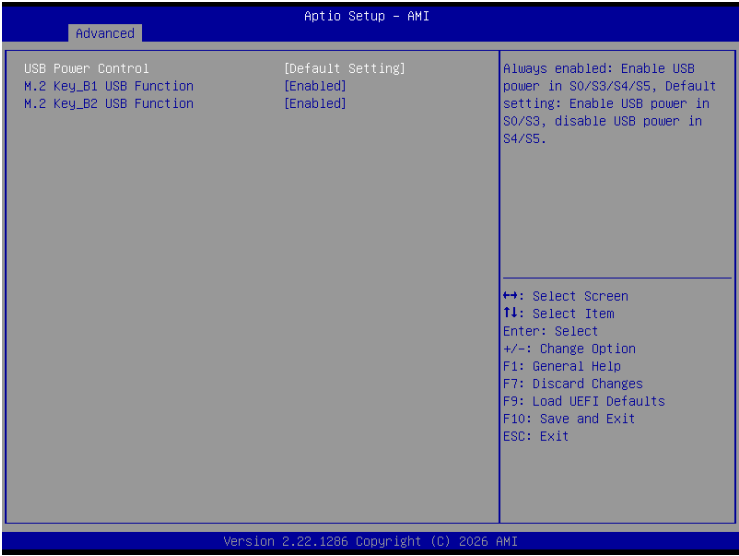
Use this item to enable or disable PCIE devices to turn on the system from the power-soff mode.

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]

4.3.7 USB Configuration



USB Power Control

Use this option to control USB power.

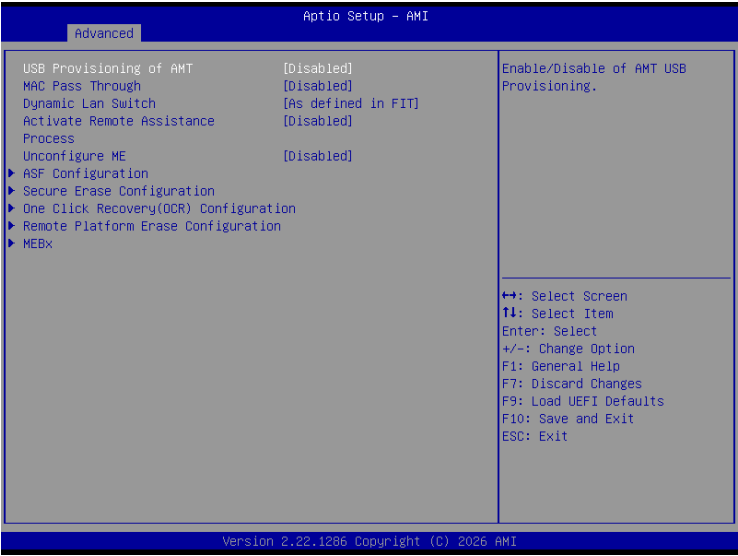
M.2 Key_B1 USB Function

Use this option to enable or disable M.2 Key_B1 USB Function.

M.2 Key_B2 USB Function

Use this option to enable or disable M.2 Key_B2 USB Function.

4.3.8 AMT Configuration



USB Provisioning of AMT

Enable/Disable of AMT USB Provisioning.

MAC Pass Through

Enable/Disable MAC Pass Through function.

Dynamic Lan Switch

Allow switching AMT support from Integrated LAN to Discrete LAN.

Activate Remote Assistance Process

Trigger CIRA boot.

Unconfigure ME

Unconfigure ME with resetting MEBx password to default on next boot.

ASF Configuration

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.

Remote Platform Erase Configuration

Remote Platform Erase configuration menu.

MEBx

This Formset contains forms for configuring MEBx.

Advanced

Aptio Setup - AMI

Intel(R) ME Password

MEBx Login

↔: Select Screen

↑↓: Select Item

Enter: Select

+/-: Change Option

F1: General Help

F7: Discard Changes

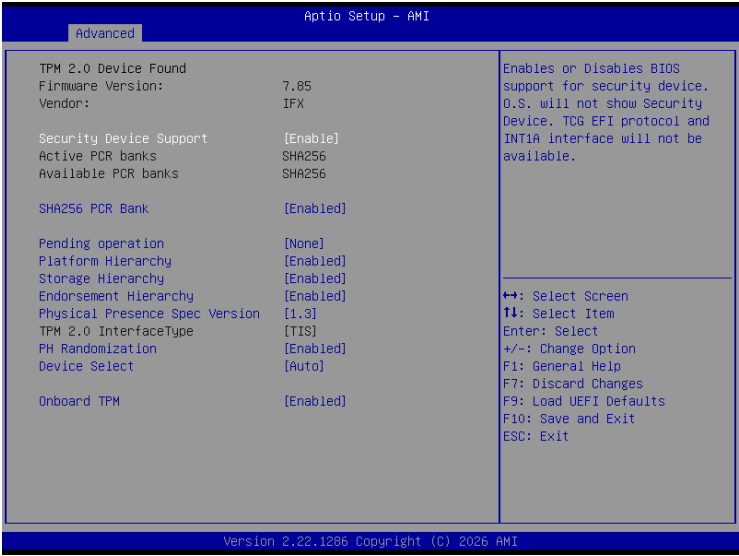
F9: Load UEFI Defaults

F10: Save and Exit

ESC: Exit

Version 2.22.1286 Copyright (C) 2026 AMI

4.3.9 Trusted Computing



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]

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.

PH Randomization

The item enables or disables Platform Hierarchy randomization.

Device Select

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

[TPM 1.2] restricts support to TPM 1.2 devices.

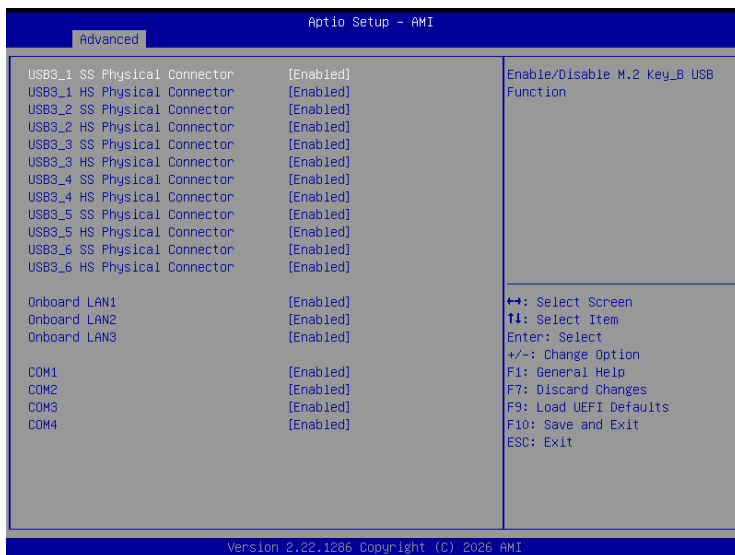
[TPM 2.0] restricts support to TPM 2.0 devices.

[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.

4.3.10 External Ports Control



USB3_1 SS Physical Connector

Use this to enable or disable the USB 3.0 Super-speed function of physical connector 1.

USB3_1 HS Physical Connector

Use this to enable or disable the USB 2.0 High-speed function of physical connector 1.

USB3_2 SS Physical Connector

Use this to enable or disable the USB 3.0 Super-speed function of physical connector 2.

USB3_2 HS Physical Connector

Use this to enable or disable the USB 2.0 High-speed function of physical connector 2.

USB3_3 SS Physical Connector

Use this to enable or disable the USB 3.0 Super-speed function of physical connector 3.

USB3_3 HS Physical Connector

Use this to enable or disable the USB 2.0 High-speed function of physical connector 3.

USB3_4 SS Physical Connector

Use this to enable or disable the USB 3.0 Super-speed function of physical connector 4.

USB3_4 HS Physical Connector

Use this to enable or disable the USB 2.0 High-speed function of physical connector 4.

USB3_5 SS Physical Connector

Use this to enable or disable the USB 3.0 Super-speed function of physical connector 5.

USB3_5 HS Physical Connector

Use this to enable or disable the USB 2.0 High-speed function of physical connector 5.

USB3_6 SS Physical Connector

Use this to enable or disable the USB 3.0 Super-speed function of physical connector 6.

USB3_6 HS Physical Connector

Use this to enable or disable the USB 2.0 High-speed function of physical connector 6.

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.

COM1

Use this to set parameters of COM1.

COM2

Use this to set parameters of COM2.

COM3

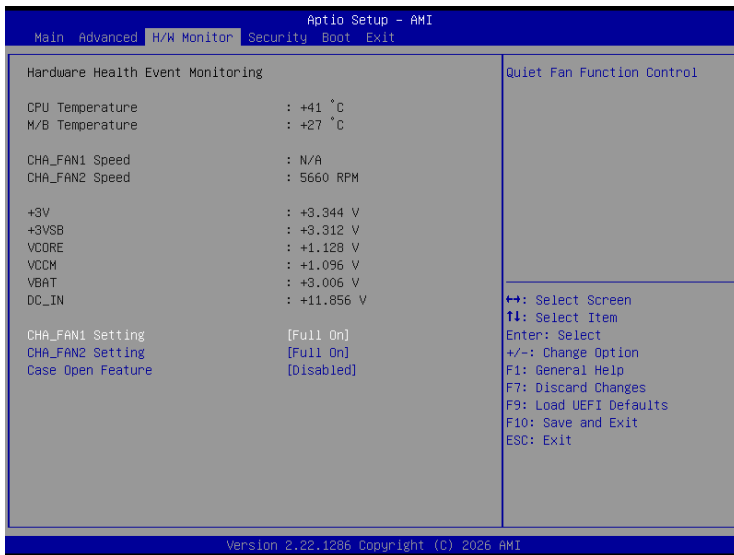
Use this to set parameters of COM3.

COM4

Use this to set parameters of COM4.

4.4 Hardware Health Event Monitoring Screen

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



CHA_FAN1 Setting

Select a fan mode for Chassis Fan 1, or choose Customize to set 5 CPU temperatures and assign a respective fan speed for each temperature.

CHA_FAN2 Setting

Select a fan mode for Chassis Fan 2, or choose Customize to set 5 CPU temperatures and assign a respective fan speed for each temperature.

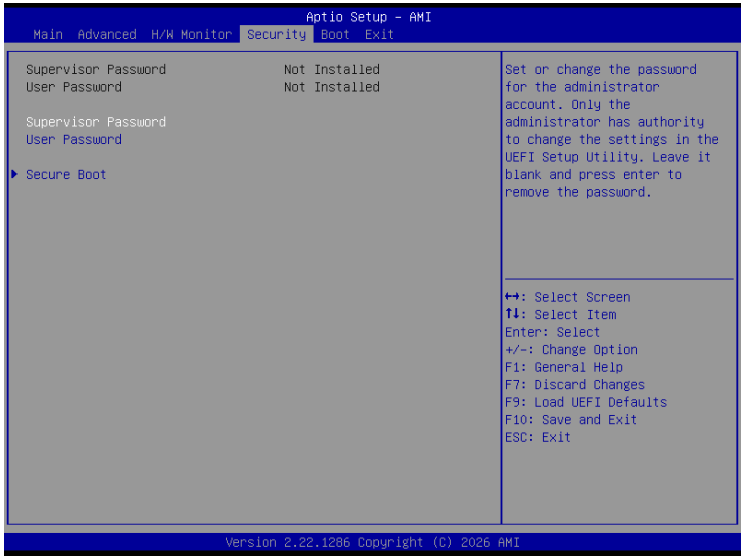
Case Open Feature

Enable or disable Case Open Feature to detect whether the chassis cover has been removed.

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.

4.5 Security Screen



Supervisor Password

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

User Password

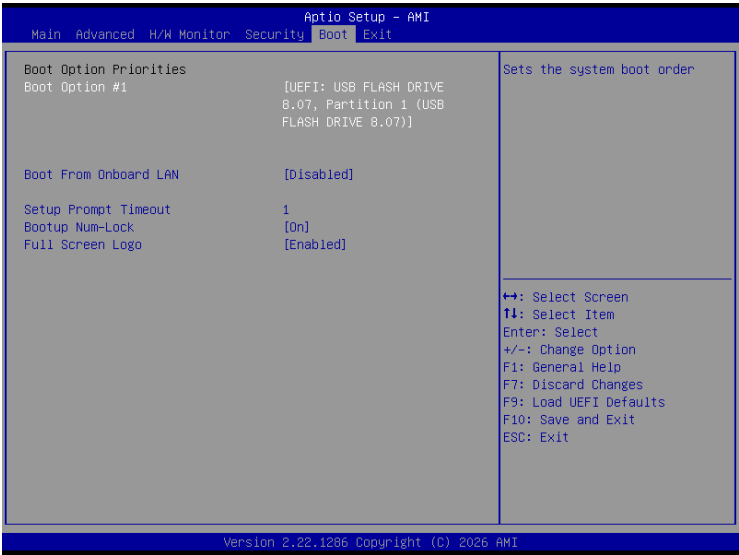
Set or change the password for the user account. Users are unable to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

Secure Boot

Enable to support Windows Secure Boot.

4.6 Boot Screen

In this section, it will display 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. 65535(0xFFFF) means indefinite waiting.

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.

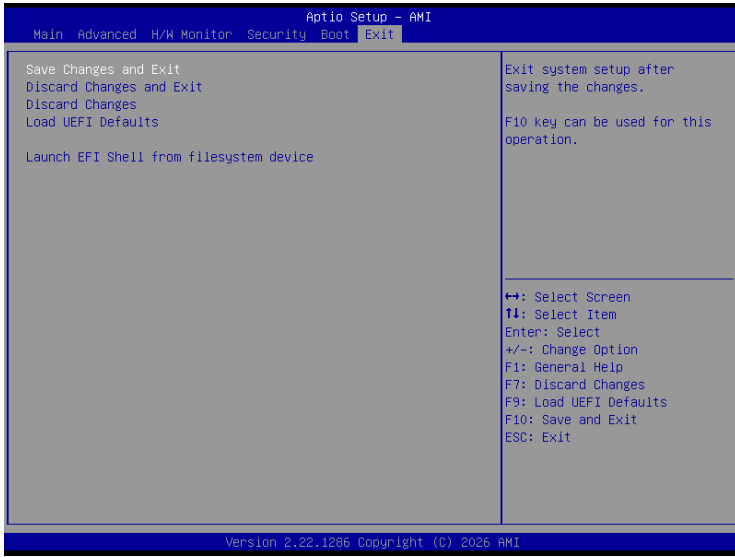
Configuration options: [On] [Off]

Full Screen Logo

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

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

4.7 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.

Chapter 5 Appendix

Appendix 1 Power Consumption

The power consumption (W)= voltage (V) x current (A)

The system's full loading means it is populated with such as DRAM, M.2 Module, and so on.

The following information is for reference only. Actual power consumption will vary with different attached devices and operating system.

iEPF-9500S-EW7

CPU (Run with PL2: 124W)	System's Full Loading	Total Power Consumption	Recommended Power Supply
45W	1354W	1478W	1600W
65W	1354W	1478W	1600W

Appendix 2 Link to the API Library

If you need the link to the API library, feel free to contact us at IPC_TSD@asrockind.com

Appendix 3 How to Install Power Supply

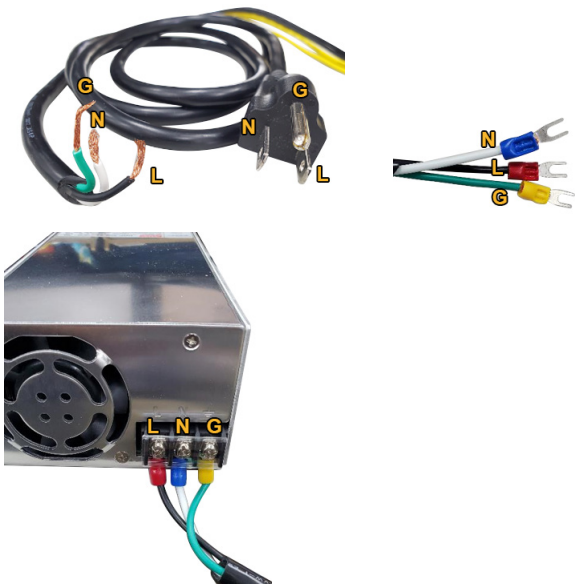
The V+ and V- pins provide DC power input and the chassis ground pin allows connection of the chassis to ground for better EMC compatibility. The DC power input for the iEPF-9500S-EW7 supports a voltage input range from 9V to 36V DC.

Pin	Definition	Pin	Definition
1	V+	3	V-
2	V+	4	V-

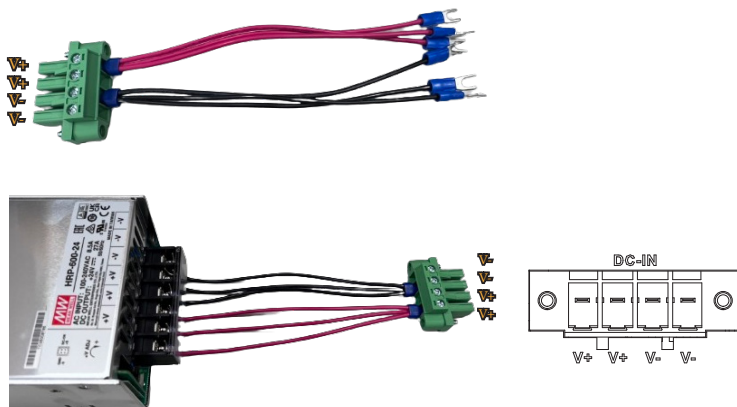
Appendix 3.1 648W Power Supply (MEANWELL HRP-600-24)



→ AC Power Side:



→ DC Power Side:



Appendix 3.2 1000W Power Supply (MEANWELL HSP-1000-24)



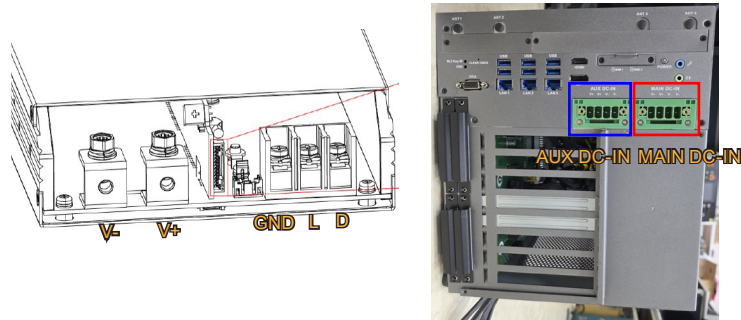
System Power Installation Standard Operating Procedure (SOP)

Wiring Configuration Principles

Condition	Wiring Method	Notes
Single PSU	Two sets of cables must be connected separately to MAIN DC-IN and AUX DC-IN	Ensure that both input terminals receive power.
Dual PSU	One PSU connects to MAIN DC-IN, and the other PSU connects to AUX DC-IN.	AUX DC-IN provides power for the second GPU. Ensure sufficient power capacity.

PSU Wiring Instructions

- **Verify Power Specification**
 1. Ensure that the PSU output voltage meets the system requirements (for example, 24 VDC).
 2. Check the PSU terminal labels: V+, V-, L, and N.
 3. Check the system terminals: MAIN DC-IN and AUX DC-IN.



- **Wiring Process**

1. Use cables rated for the required current capacity. AWG12 or larger is recommended.
2. Connect PSU V+ to system V+ and PSU V- to system V-.
3. For a single PSU configuration, split the cables into two sets and connect them to both MAIN and AUX.



4. For a dual PSU configuration, connect PSU1 to MAIN and PSU2 to AUX.



5. Ensure that all terminals are tightened securely.
6. Check cable insulation to prevent short circuits.

- **Safety Precautions**

1. Do not perform wiring while the power is on.
2. Ensure that all PSU modules and system chassis are properly grounded.
3. Disconnect the AC mains before maintenance or PSU replacement.