

Neousys Technology Inc.

POC-960GC Series

User Manual

Revision 1.0

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Contact Information

To contact Neousys Technology, please visit our [official website](#).

Declaration of Conformity

FCC

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

CE

The product(s) described in this manual complies with all applicable European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

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Safety Precautions

- Read these instructions carefully before you install, operate, or transport the system.
- Install the system or DIN rail associated with, at a sturdy location
- Install the power socket outlet near the system where it is easily accessible
- Secure each system module(s) using its retaining screws
- Place power cords and other connection cables away from foot traffic. Do not place items over power cords and make sure they do not rest against data cables
- Shutdown, disconnect all cables from the system and ground yourself before touching internal modules
- Ensure that the correct power range is being used before powering the device
- Should a module fail, arrange for a replacement as soon as possible to minimize down-time
- By means of a power cord connected to a socket-outlet with earthing connection
- This product is intended to be supplied by an UL Listed Power Adapter or DC power source with mating connector, rated 8V DC, 15A - 35V DC, 3.7A, Tma 70 degree C and 2000m altitude during operation. If further assistance is required, please contact Neousys Technology
- If the system is not going to be used for a long time, disconnect it from mains (power socket) to avoid transient over-voltage
- The unit is to be connected only to PoE networks without routing to the outside plant.

Mesures de sécurité

- Lire attentivement ces directives avant d'installer, d'utiliser ou de transporter le système
- Installer le système ou la barrette DIN qui lui est associée, à un endroit solide
- Installer la prise de courant près du système et pour qu'elle soit facilement accessible
- Fixer chaque module du système à l'aide de ses vis de fixation
- Éloigner de la circulation piétonne les cordons d'alimentation et autres câbles de connexion. Ne jamais placer d'objets sur les cordons d'alimentation et s'assurer qu'ils ne reposent pas contre les câbles de données
- Avant de toucher les modules internes, arrêter, débrancher tous les câbles du système et raccordez-vous à la terre
- S'assurer que la bonne plage de puissance est utilisée avant d'alimenter l'appareil
- Prévoir un remplacement dès que possible en cas de défaillance d'un module, afin de minimiser les temps d'arrêt
- Au moyen d'un cordon d'alimentation branché à une prise de courant avec mise à la terre (MALT)
- Ce produit est destiné à être fourni par un adaptateur d'alimentation Listé UL ou une source d'alimentation DC avec connecteur d'accouplement, classé 8V DC, 15A - 35V DC, 3,7A, Tma 70 degrés C et 2000m d'altitude pendant le fonctionnement. Si une assistance supplémentaire est nécessaire, veuillez contacter Neousys Technology
- Si le système ne sera pas être utilisé pendant une période prolongée, le débrancher du réseau (prise de courant) pour éviter une surtension transitoire
- L'unité doit être connectée uniquement à des réseaux PoE sans routage vers l'installation extérieure.

Service and Maintenance

- ONLY qualified personnel should service the system
- Shutdown the system, disconnect the power cord and all other connections before servicing the system
- When replacing/ installing additional components (expansion card, memory module, etc.), insert them as gently as possible while assuring proper connector engagement

Entretien et reparation

- La réparation du système ne peut être effectuée que par du personnel qualifié
- Avant de réparer le système, arrêter le système, débrancher le cordon d'alimentation et toutes les autres connexions
- Lors du remplacement ou de l'installation de composants supplémentaires (carte d'extension, module de mémoire, etc.), les insérer le plus doucement possible tout en s'assurant que les connecteurs sont bien engagés jusqu'au bout

Hot Surface Warning

 <i>HOT SURFACE. DO NOT TOUCH.</i> "ATTENTION: Surface chaude. Ne pas toucher."	WARNING! Components/ parts inside the equipment may be hot to touch! Please wait one-half hour after switching off before handling parts.
---	--

Surface chaude

AVERTISSEMENT : SURFACE CHAUDE. NE PAS TOUCHER.

Les composants et pièces à l'intérieur de l'équipement peuvent être chauds au toucher. Après l'arrêt, attendre au moins 30 minutes pour que le système refroidisse avant d'effectuer l'entretien.

- Respecter les règles de sécurité et d'entretien mentionnées au début du guide d'utilisation!

Battery Warning

Caution!



- Batteries are at risk of exploding if incorrectly installed
- Do not attempt to recharge, force open, or heat the battery
- Replace the battery only with the same or equivalent type recommended by the manufacturer

Avertissement concernant les piles

- Les piles risquent d'exploser si elles sont mal installées.
- Ne jamais essayer de recharger, d'ouvrir de force ou de chauffer les piles.
- Remplacer les piles uniquement avec le même type ou l' équivalent recommandé par le fabricant.

ESD Precautions

- Handle add-on module, motherboard by their retention screws or the module's frame/ heat sink. Avoid touching the PCB circuit board or add-on module connector pins
- Use a grounded wrist strap and an anti-static work pad to discharge static electricity when installing or maintaining the system
- Avoid dust, debris, carpets, plastic, vinyl and styrofoam in your work area.
- Do not remove any module or component from its anti-static bag before installation

Précautions nécessaires de décharge électrostatique (ESD)

- Tenir le module complémentaire et la carte mère par leurs vis de rétention ou le châssis/dissipateur de chaleur du module. Éviter de toucher la carte de circuit imprimé ou les broches du connecteur du module complémentaire
- Afin de décharger l'électricité statique, utiliser une dragonne mise à la terre et un tapis de travail antistatique lors de l'installation ou de l'entretien du système
- Éviter la poussière, les débris, les tapis, le plastique, le vinyle et la mousse de polystyrène dans votre zone de travail.
- Ne retirer aucun module ou composant de son sac antistatique avant l'installation

Restricted Access Location

The controller is intended for installation only in certain environments where both of the following conditions apply:

- Access can only be gained by QUALIFIED SERVICE PERSONNEL who have been instructed on the reasons for restrictions applied to the location and any precautions that shall be taken
- Access is through the use of a TOOL, lock and key, or other means of security, and is controlled by the authority responsible for the location

Lieu d'accès restreint

Le contrôleur doit être installé uniquement dans les environnements où les deux conditions suivantes sont présentes:

- Le lieu ne peut être accédé que par du PERSONNEL TECHNIQUE QUALIFIÉ informé des raisons des restrictions appliquées à l'emplacement et des précautions à prendre
- L'accès est contrôlé par l'autorité responsable de l'emplacement et se fait au moyen d'un OUTIL, d'une serrure et d'une clé ou d'autres moyens de sécurité

About This Manual

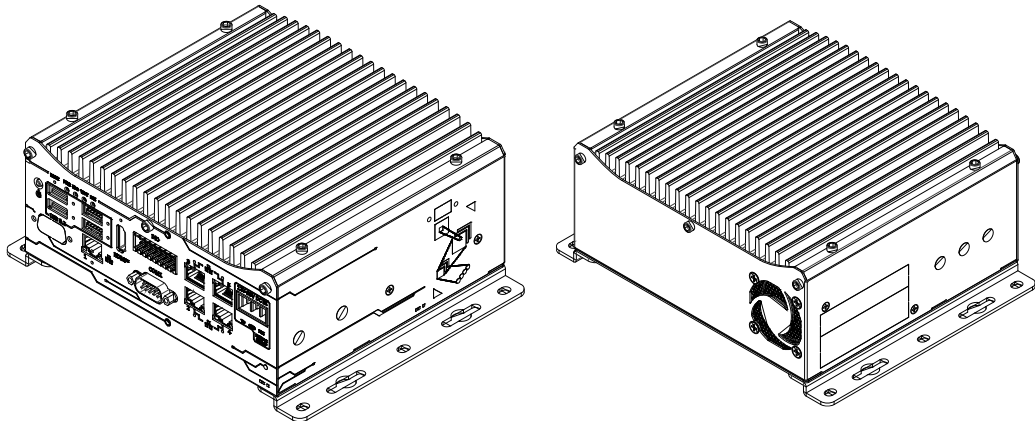
This manual introduces and demonstrates installation procedures of Neosys POC-960GC series systems.

Revision History

Version	Date	Description
1.0	Aug. 2026	Initial release

1 Introduction

The POC-960GC is the first ultra-compact x86-based GPU computer designed to bring powerful AI inference capabilities to space-constrained industrial environments. Powered by the AMD® Ryzen™ PRO 8640U processor, the system supports an NVIDIA® low-profile GPU up to 70W, enabling efficient GPU acceleration in compact edge deployments.



Featuring the AMD® Ryzen™ PRO 8640U processor with integrated AI acceleration, the POC-960GC provides hybrid computing capability for real-time inference workloads. With support for DDR5-5600 memory and M.2 NVMe storage, the system ensures fast data access and improved responsiveness for demanding applications. It also offers rich connectivity, including four Gigabit Ethernet ports with optional PoE+ and four USB 3.2 Gen 2 ports with screw-lock for camera connectivity, along with one 2.5GbE port for high-speed data transmission, and dual mini-PCIe slots for wireless or modular expansion.

With support for an NVIDIA® low-profile GPU up to 70W, the POC-960GC delivers powerful computing capability by combining CPU and GPU resources. The CPU efficiently handles data processing tasks such as sensor data processing, device coordination, and system control, while the GPU accelerates parallel workloads including image processing, deep learning inference, and AI inference. This balanced architecture enables high-performance computing in a compact form factor, making the POC-960GC an ideal platform for applications such as robotics, machine vision, smart city infrastructure, and interactive edge AI systems.

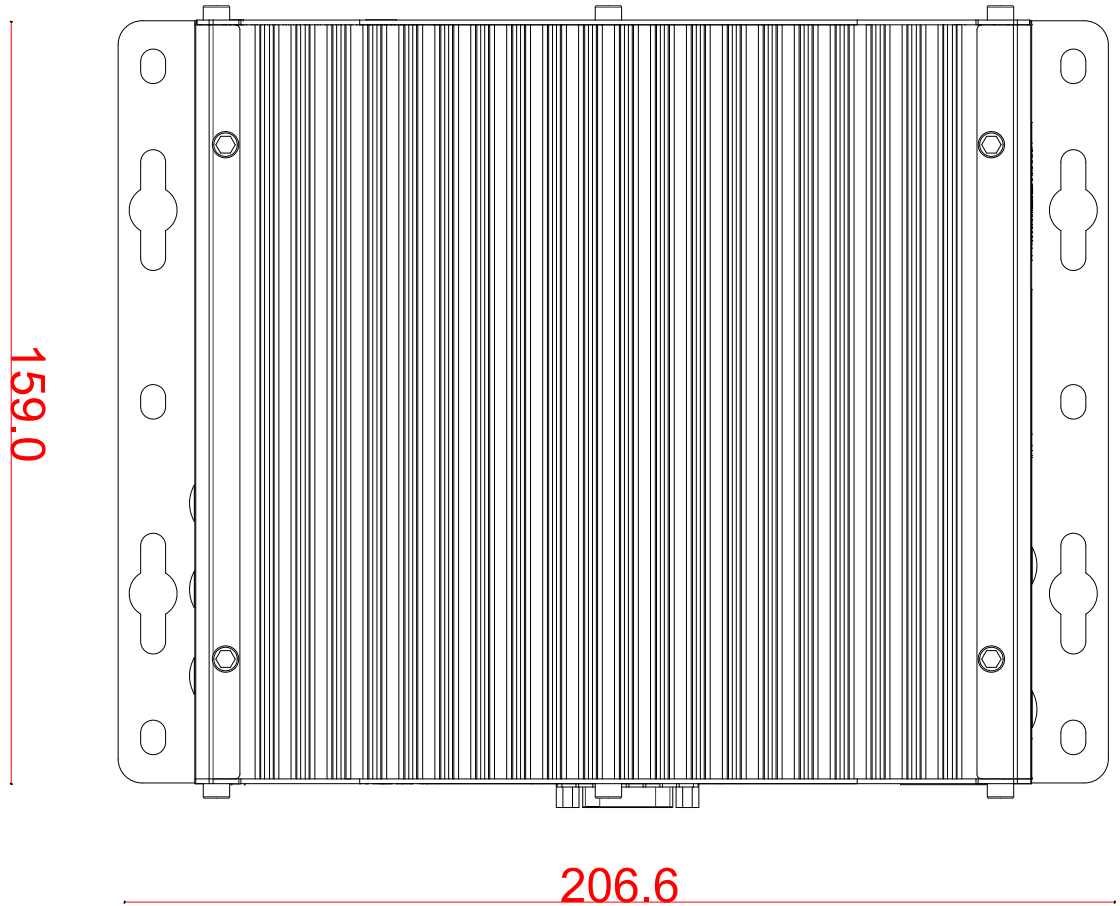
1.1 Specification of POC-960GC

System Core	
Processor	AMD® Ryzen™ PRO 8640U CPU (6C/ 12T, 3.5/ 4.9 GHz, 15W-30W TDP)
Graphics	AMD® Radeon RDNA3 Graphics
Memory	Up to 32GB DDR5-5600 SDRAM (one SODIMM socket)
TPM	Supports dTPM 2.0
Panel I/O Interface	
Ethernet	1x 2.5Gb Ethernet port by Intel® I226-V with WOL (port 1) 4x Gb Ethernet ports by Intel® I350-AM4 (ports 2 - 5)
PoE+	Optional IEEE 802.3at PoE+ on port # 2-5, total 100W power budget (maximum)
Native Video Port	1x HDMI™ 2.0b, supporting 3840 x 2160 @ 60Hz
Serial Port	1x software-programmable RS-232/422/485 ports (COM1)
USB	4x USB 3.2 Gen2x1 (10 Gbps) ports in type-A connectors with screw-lock
Isolated DIO	4-CH isolated DI and 4-CH isolated DO
Storage Interface	
M.2 M key	1x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD
Expandable I/O	
Mini-PCIe	2x full-size mini PCI Express socket with internal micro SIM socket
PCIe Slot	1x low-profile PCIe x16 slot @ Gen4, 8-lanes PCIe signals for installing an NVIDIA® graphics card up to 70W TDP
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 12 to 35V DC input with remote control or optional ignition power control
Mechanical	
Dimension	175mm (W) x 159mm (D) x 77mm (H)
Weight	1.8 kg
Mounting	Wall-mount (standard)
Environmental	

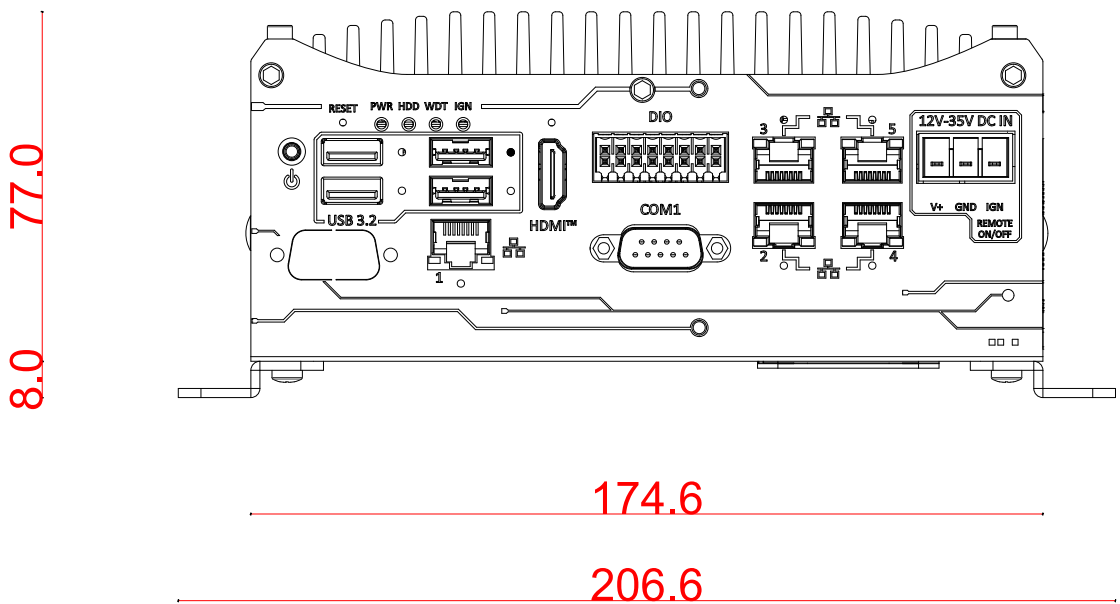
Operating Temperature	-25°C to 60°C (15W TDP, without fan) -25°C to 45°C (30W TDP, without fan) -25°C to 60°C (30W TDP, with fan)
Storage Temperature	-40°C to 85°C
Humidity	10% to 90%, non-condensing
Vibration	MIL-STD-810H, Method 514.8, Category 4
Shock	MIL-STD-810H, Method 516.8, Procedure I
EMC	CE/FCC Class A, according to EN 55032 & EN 55035

1.2 Dimension

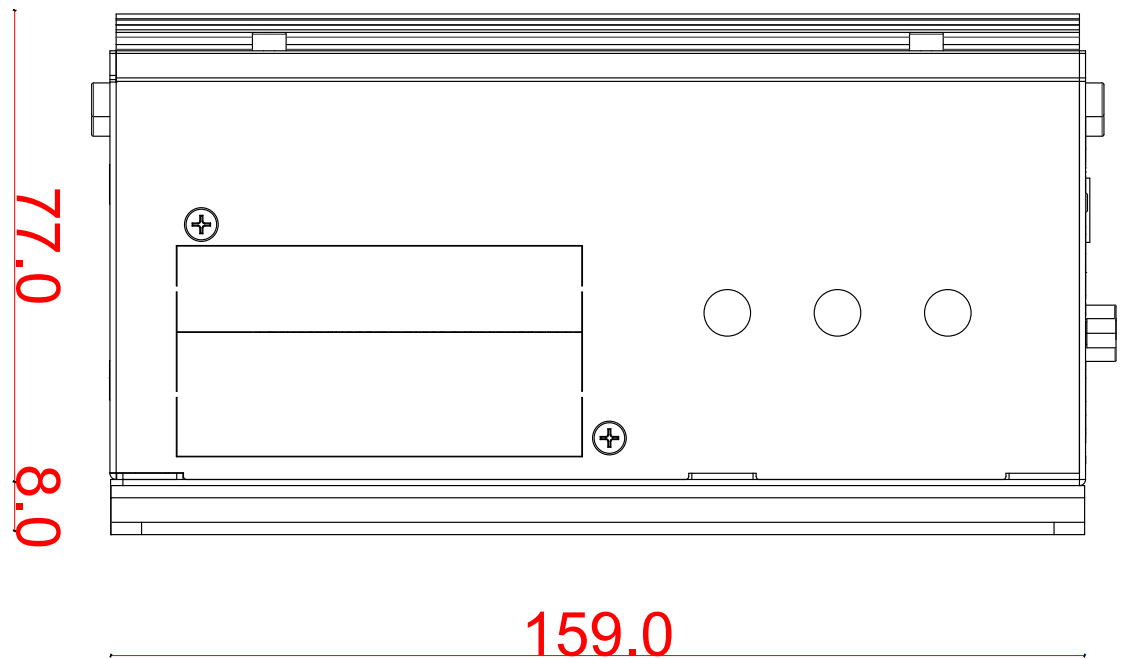
1.2.1 Superior View



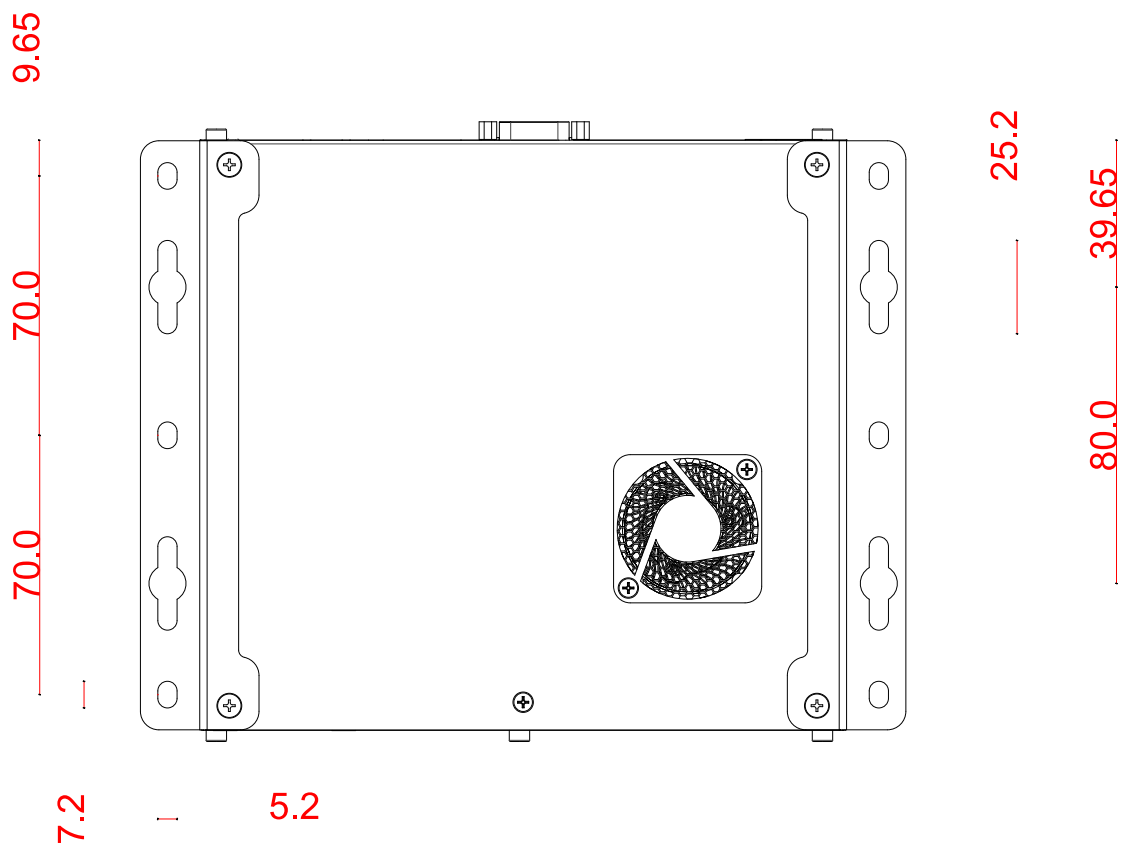
1.2.2 Front Panel View



1.2.3 Graphics Card IO Panel View



1.2.4 Bottom View



2 System Overview

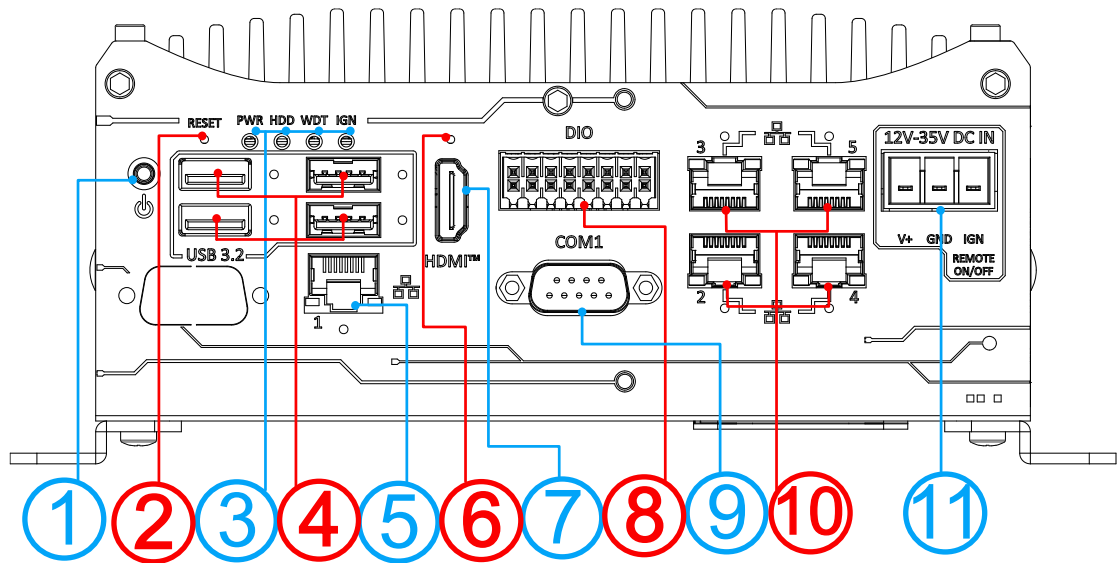
Upon receiving and unpacking your POC-960GC series, please check immediately if the package contains all the items listed in the following table. If any item(s) are missing or damaged, please contact your local dealer or Neosys Technology.

2.1 Unpacking the System

Item	Description	Qty
1	POC-960GC ultra-compact fanless computer (Please verify additionally purchased accessories such as memory module, M.2 SSD, GPU, etc.)	1
2	3-pin pluggable terminal block	2
3	16-pin DIO terminal block	1
4	DIN-Rail Mount Clip	1
5	Screw package	1
6	High temperature warning label*	1

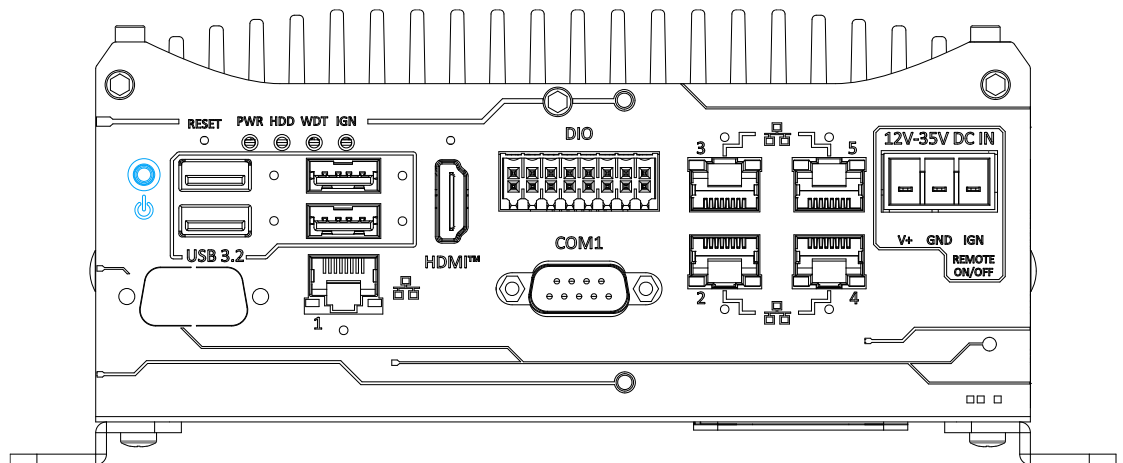
* A high-temperature warning sticker is provided for users to place on surfaces that may become hot during operation.

2.2 POC-960GC Series Front Panel



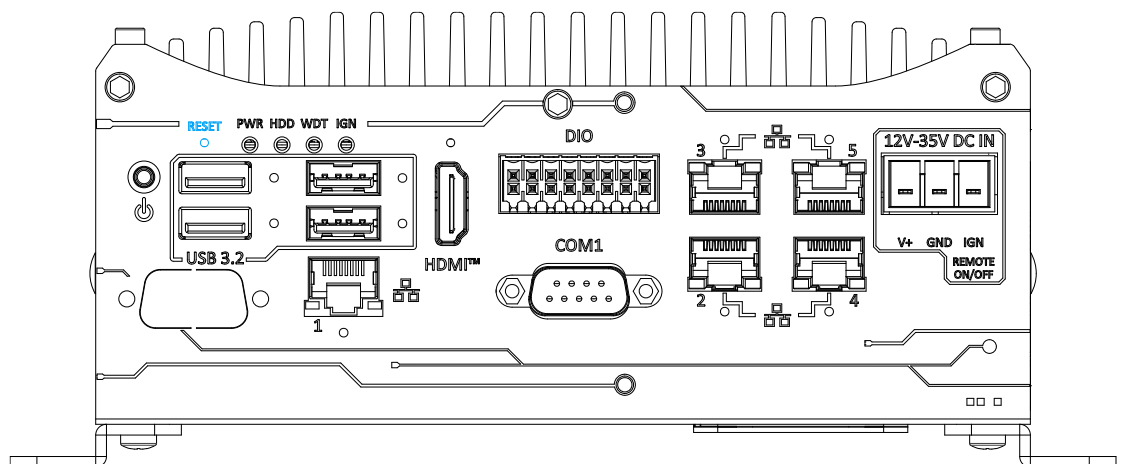
No.	Item	Description
1	Power button	Use this button to turn on or shutdown the system.
2	Reset button	Use this button to manually reset the system.
3	System status LED	Four system LEDs, Power (PWR), Hard Disk Drive (HDD), Watchdog Timer (WDT) and Ignition control (IGN).
4	USB 3.2 Gen 2x1 port	The USB 3.2 Gen2x1 ports support up to 10Gbit/s data transfer bandwidth and are backward compatible with USB 2.0/ 1.1/ 1.0.
5	2.5Gb Ethernet port	2.5Gb Ethernet ports by Intel I226-V.
6	CMOS reset button	The clear CMOS button is used for manually resetting the CMOS to load the default BIOS.
7	HDMI™ port	The HDMI™ 2.0b ports are high-resolution graphics/ data port supporting up to 3840 x 2160 @ 60Hz.
8	Digital input/ output	4 channel isolated digital input 4 channel isolated digital output
9	COM 1 port	Software programmable RS-232/ 422/ 485 port.
10	GbE ports with optional PoE	The Ethernet port offers up to 1Gb/s transfer bandwidth and are PoE+ capable, supplying both data and electric power to PoE certified devices.
11	3-pin terminal block (DC/ ignition input/ remote on off)	Compatible with DC power input from 12V - 35V. Allows for external switch extension when the system is placed inside a cabinet.

2.2.1 Power Button



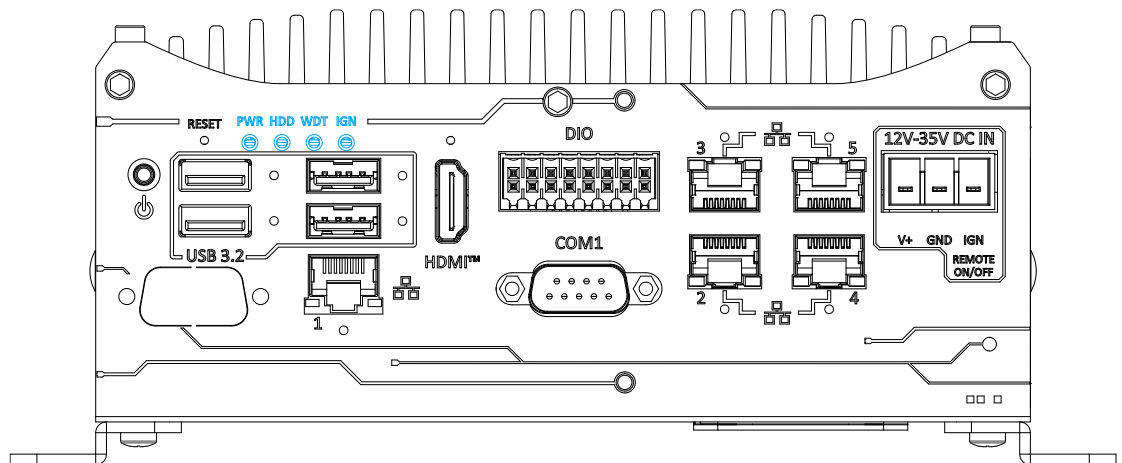
The power button is a non-latched switch for ATX mode on/off operation. Press to turn on the system, PWR LED should light up and to turn off, you can either issue a shutdown command in the OS, or just press the power button. In case of system halts, you can press and hold the power button for 5 seconds to force-shutdown the system. Please note that there is a 5 seconds interval between two on/off operations (i.e. once turning off the system, you will need to wait for 5 seconds to initiate another power-on operation).

2.2.2 Reset Button



The reset button is used to manually reset the system in case of system halt or malfunction. To avoid unexpected reset, the button is purposely placed behind the panel. To reset, please use a pin-like object (eg. tip of a pen) to access the reset button.

2.2.3 System Status LED

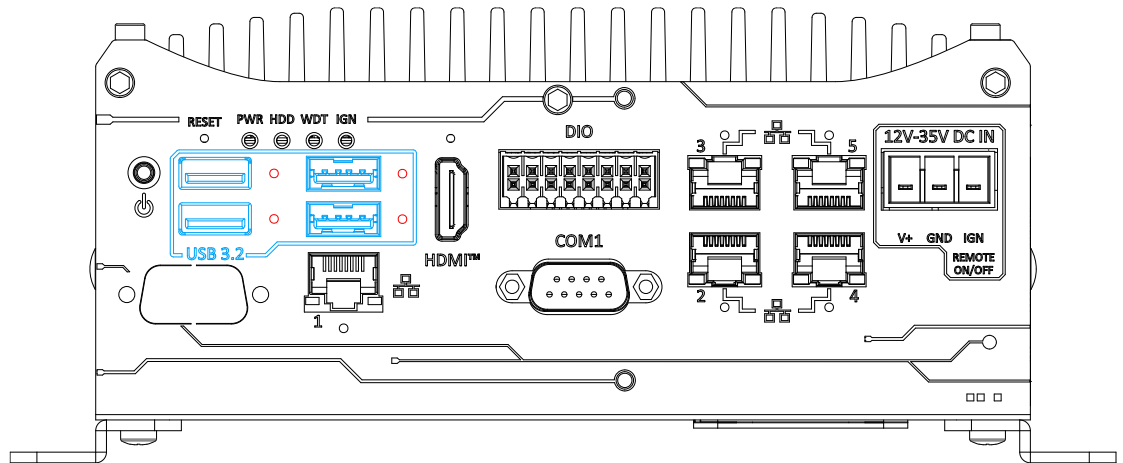


There are three LED indicators on the front panel: HDD, WDT and IGN. The descriptions of these three LEDs are listed in the following table.

Indicator	Color	Description
PWR	Green	Power indicator, lit when system is on.
HDD	Red	Hard drive indicator, flashing when HDD is active
WDT	Yellow	Watchdog timer indicator, flashing when watchdog timer has started
IGN*	Yellow	If ignition option is applied, this LED is used to indicate ignition signal status (lit when IGN signal is applied).

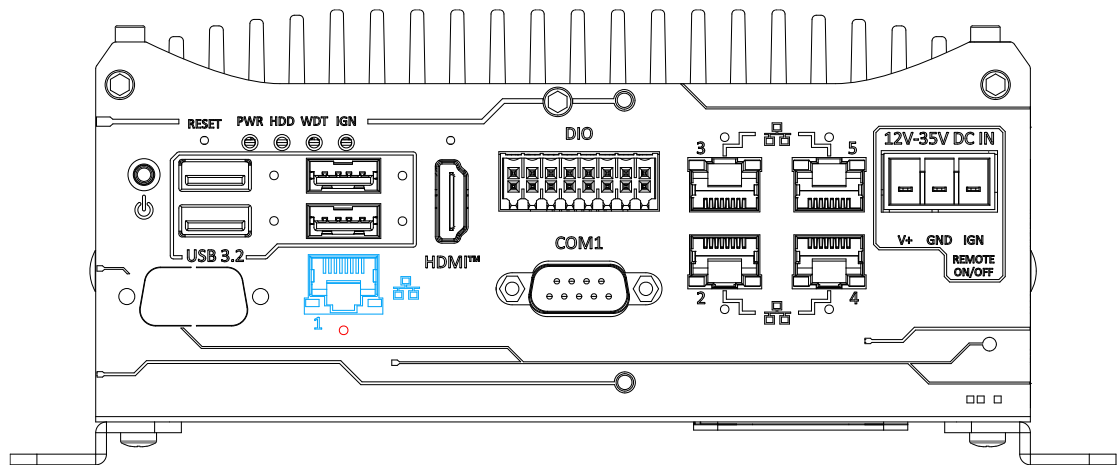
*Please contact your sales representative to confirm if your system comes with ignition power control.

2.2.4 USB3.2 Gen2 Port



The system offers four USB 3.2 Gen2x1 (SuperSpeed USB) ports on its front panel. They are implemented by native xHCI (eXtensible Host Controller Interface) controller and are backward compatible with USB 2.0, USB 1.1 and USB 1.0 devices. UEFI USB support is also provided so you can use USB keyboard/mouse in UEFI shell environment. Indicated in **red** are screw-lock holes for each USB port.

2.2.5 2.5Gb Ethernet Port



The system offers one 2.5GbE port with a panel screw fix hole for a firm connection (indicated in **red**). It is implemented using Intel® I226-V controller that supports Wake-on-LAN and is also compatible with [Intel® AMT \(Active Management Technology\)](#) to support advanced features such as remote SOL desktop and remote on/ off control.

Please refer to the table below for LED connection statuses.

Active/Link LED (Right)

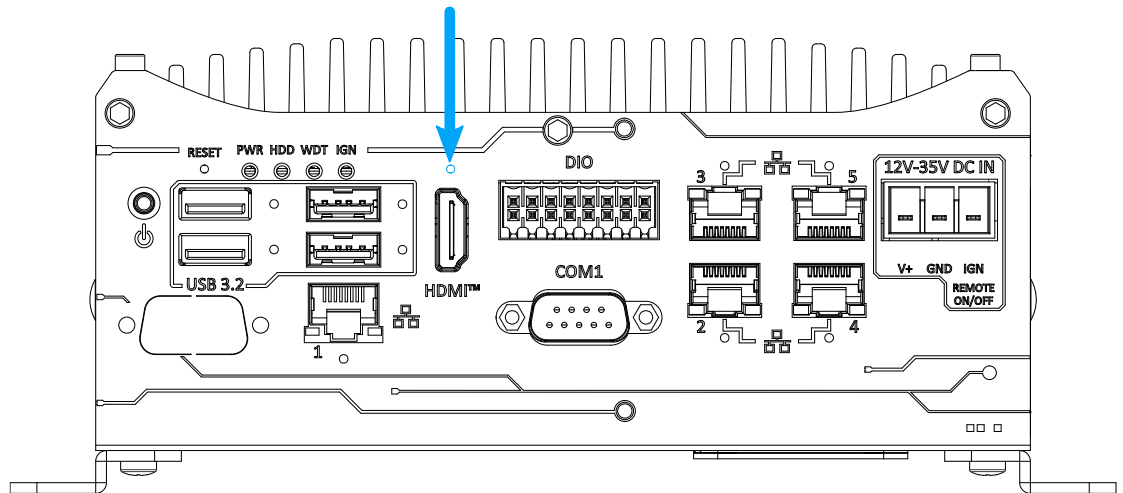
LED Color	Status	Description
Orange	Off	Ethernet port is disconnected
	On	Ethernet port is connected and no data transmission
	Flashing	Ethernet port is connected and data is transmitting/receiving

Speed LED (Left)

LED Color	Status	Description
Green or Orange	Off	10 Mbps
	Green	100 Mbps
	Orange	1000/ 2500 Mbps

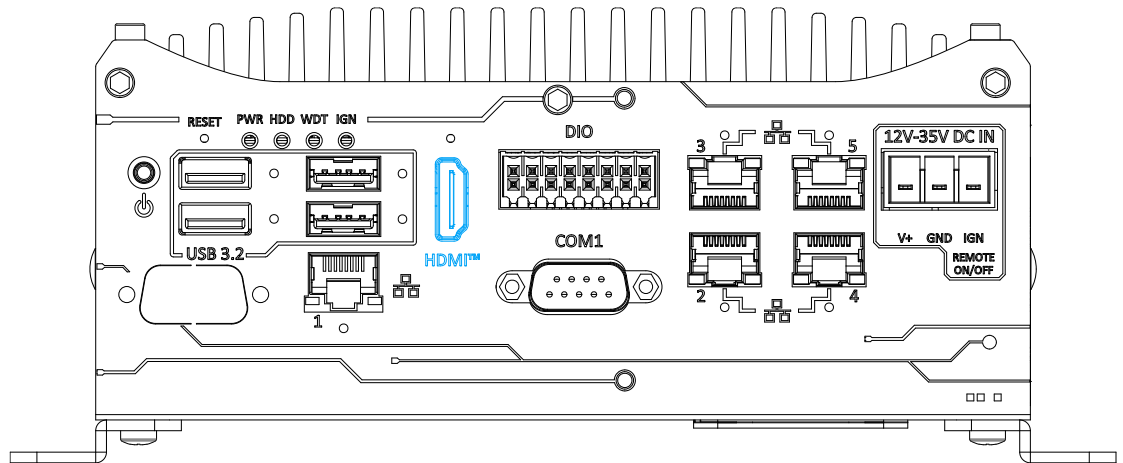
To utilize the Ethernet port in Windows, you need to install corresponding drivers for the Intel® I226-V controller.

2.2.6 Clear CMOS Button



Indicated by the **blue arrow**, the CMOS Reset button is used to manually reset the motherboard BIOS in case of system halt or malfunction. To avoid unexpected operation, it is purposely placed behind the panel. To reset, please use the tip of a pen, press and hold for at least 5 seconds to reset the BIOS

2.2.7 HDMI™ Port

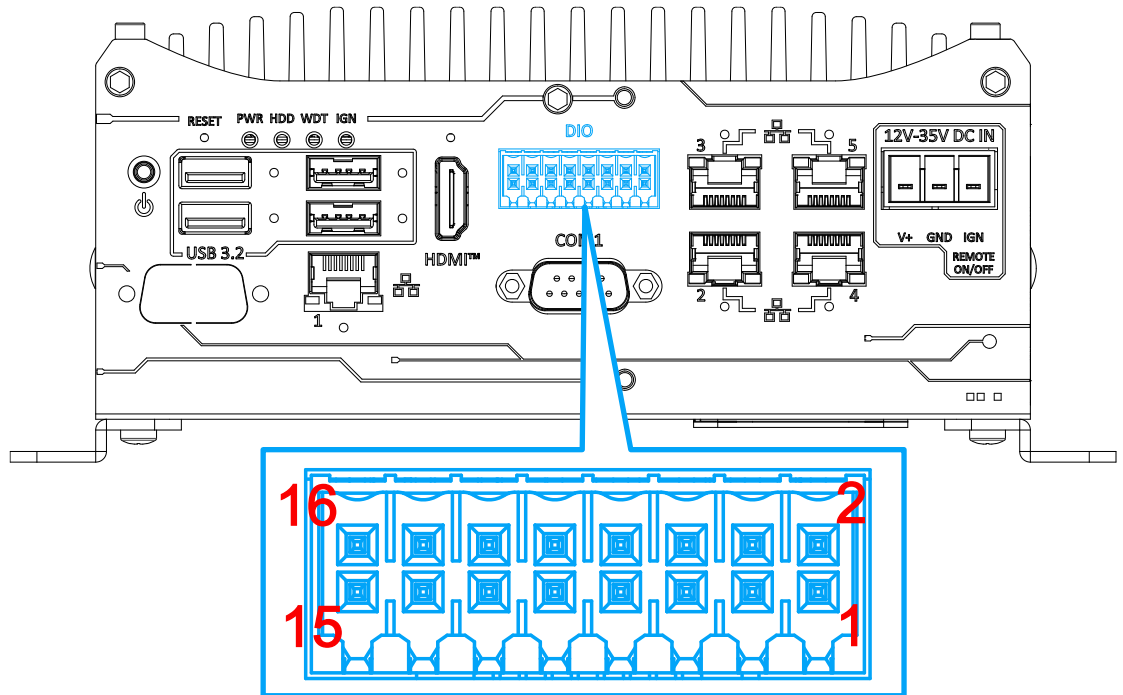


The High-Definition Multimedia Interface (HDMI) port provides uncompressed high-quality digital video and audio transmission between the system and a multimedia display device on a single cable. You can connect to other digital inputs by using a HDMI-to-DVI or HDMI-to-DP cable. Please refer to section [OS Support and Driver Installation](#) for details.



HDMI-to-DP

2.2.8 Digital Input/ Output



The system provides 4x isolated digital input channels and 4x isolated digital output channels. The DIO functions support polling mode I/O access and DI change-of-state interrupt. Please refer to [Watchdog Timer & Isolated DIO](#) for information on wiring and programming the isolated DIO channels.

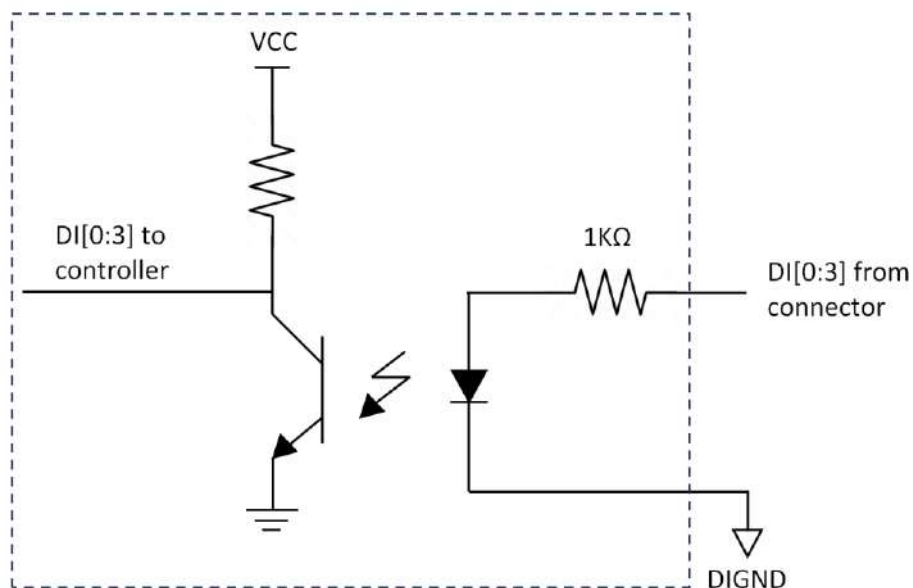
Pin#	Pin Definition	Pin#	Pin Definition
1	ISO_DI0_CN	9	ISO_DO0_CN
2	IGND0	10	EOGND
3	ISO_DI1_CN	11	ISO_DO1_CN
4	IGND1	12	EOGND
5	ISO_DI2_CN	13	ISO_DO2_CN
6	IGND2	14	EOGND
7	ISO_DI3_CN	15	ISO_DO3_CN
8	IGND3	16	VDD

*When using DO0 ~ DO3, DOGND is the ground should be used.

Wiring for Digital Input

The digital input function is implemented using a photo-coupler with an internally series-connected 1k Ω resistor. You need to provide a voltage to specify the logic high/low state. The input voltage for logic high is 5~24V, and the input voltage for logic low is 0~1.5V.

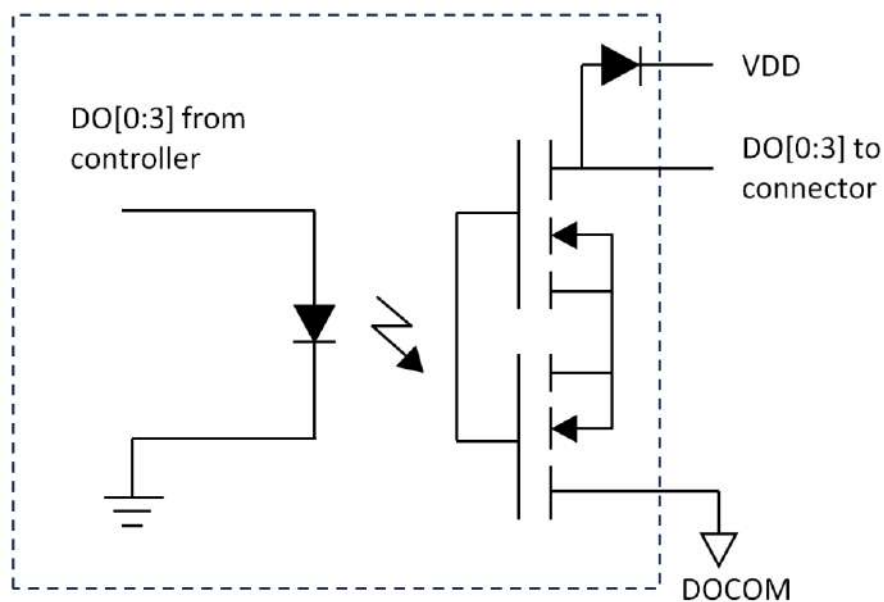
Channel	4
Type	Sink mode
Interface	Unipolar Photocoupler
Isolation Voltage	2500Vrms
Rated Input Voltage	0V-24V
Logic High Voltage	5V-24V
Logic Low Voltage	0V-1.5V
Operation Mode	Polling
Response Time (Rise)	3us
Response Time (Fall)	3us



Wiring for Digital Output

The digital output function is implemented using PhotoMOS. The DO channels are configured as NO (normally-open) configuration. When you turn on the system, all DO channels have a deterministic state of logic 0 (circuit disconnected from GND return). When logic 1 is specified, MOSFET is activated and GND return path is established. The digital output function on the system supports sinking current connection. The following diagrams are the suggested wiring for DO:

Channel	4
Type	Sink mode
Interface	Bidirectional PhotoMOS
Isolation Voltage	1500V AC
Operation Voltage	0V-24V
Driving Current	250mA
Operation Mode	Polling
Response Time (Turn on)	660us ~ 2ms
Response Time (Turn off)	90us ~ 210us



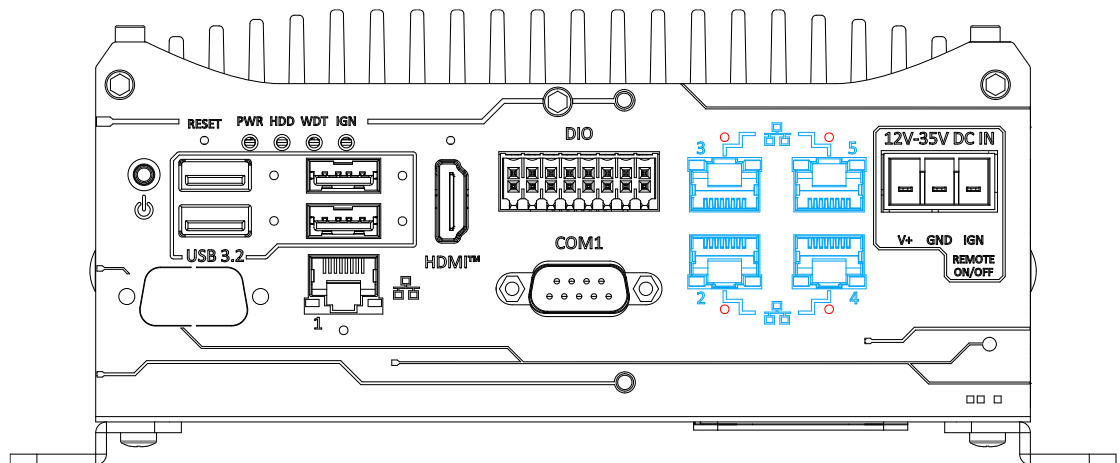
The rear panel of the device features the following components and labels:

- Top Row:** RESET, PWR, HDD, WDT, IGN buttons; DIO header; 12V-35V DC IN power input.
- Left Side:** USB 3.2 ports; a large rectangular cutout; a power button.
- Center:** HDMI™ port; COM1 port (highlighted in blue); a 5-pin header labeled 1.
- Right Side:** Two 5-pin headers labeled 2, 3, 4, and 5; a 5-pin header labeled 1; a 5-pin header labeled 2; a 5-pin header labeled 3; a 5-pin header labeled 4; a 5-pin header labeled 5; a 5-pin header labeled 1; a 5-pin header labeled 2; a 5-pin header labeled 3; a 5-pin header labeled 4; a 5-pin header labeled 5.
- Bottom Right:** V+, GND, IGN, REMOTE ON/OFF terminals.

A diagram of a 16-pin D-sub connector. The pins are arranged in two rows of eight. The top row is numbered 1 through 8 from left to right. The bottom row is numbered 9 through 16 from left to right. The connector has a D-shaped shield on the left side.

31

2.2.10 1Gb Ethernet Port (Optional PoE+)



The system offers GbE PoE+ ports using Intel® I350-AM4 controller. When plugged in and connected via the Ethernet cable, the LEDs on the RJ45 connector indicate connection status and speed. Indicated in **red** are screw-lock holes for each USB port.

The optional Power over Ethernet (PoE+) capability supply both power and data on a standard CAT-5/ CAT-6 Ethernet cable. Acting as a PSE (Power Sourcing Equipment), compliant with IEEE 802.3at, each port delivers up to 25W to a Powered Device (PD), with a total of 100W maximum power budget. PoE automatically detects and determine if the connected device is PoE PD or not before supplying power, making it compatible with standard Ethernet devices as well.

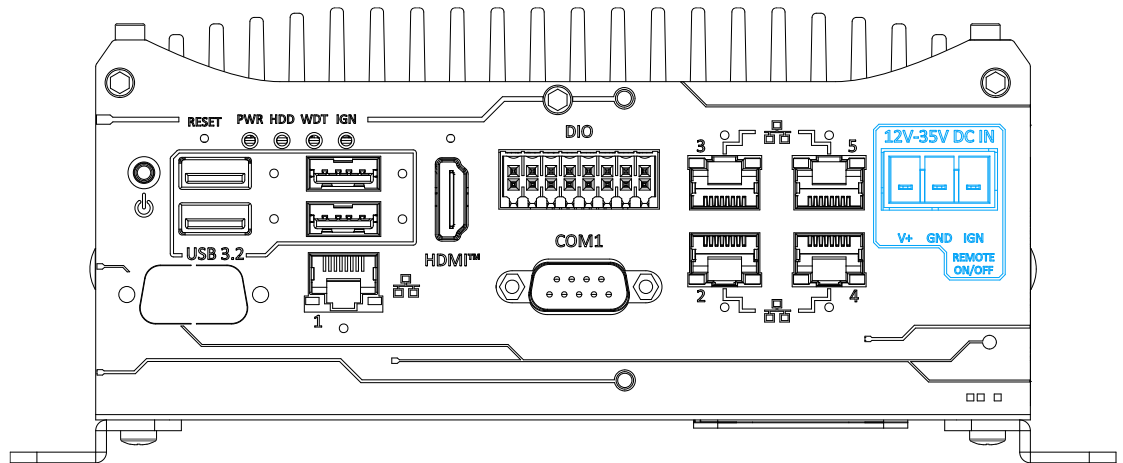
Active/Link LED (Right)

LED Color	Status	Description
Yellow	Off	Ethernet port is disconnected
	On	Ethernet port is connected and no data transmission
	Flashing	Ethernet port is connected and data is transmitting/receiving

Speed LED (Left)

LED Color	Status	Description
Off, Green or Orange	Off	10 Mbps
	Green	100 Mbps
	Orange	1000 Mbps

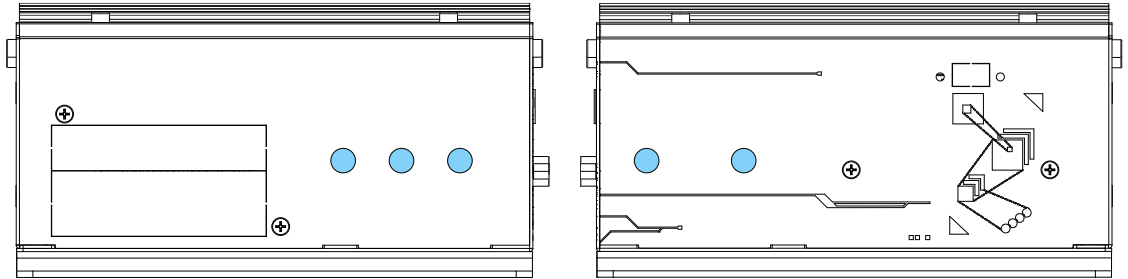
2.2.11 3-Pin Terminal Block (Remote On/ Off)



The system accepts a wide range of DC power input from 12 to 35V via a 3-pin pluggable terminal block, which is fit for field usage where DC power is usually provided. The screw clamping mechanism on the terminal block offers connection reliability when wiring DC power.

The “Remote On/ Off” connection allows for external switch extension. It is useful when the system is placed in a cabinet or a not easily accessed location. You may connect an external remote with an external status LED indicator (15mA) by connecting to V+ and GND.

2.3 SMA Antenna Opening

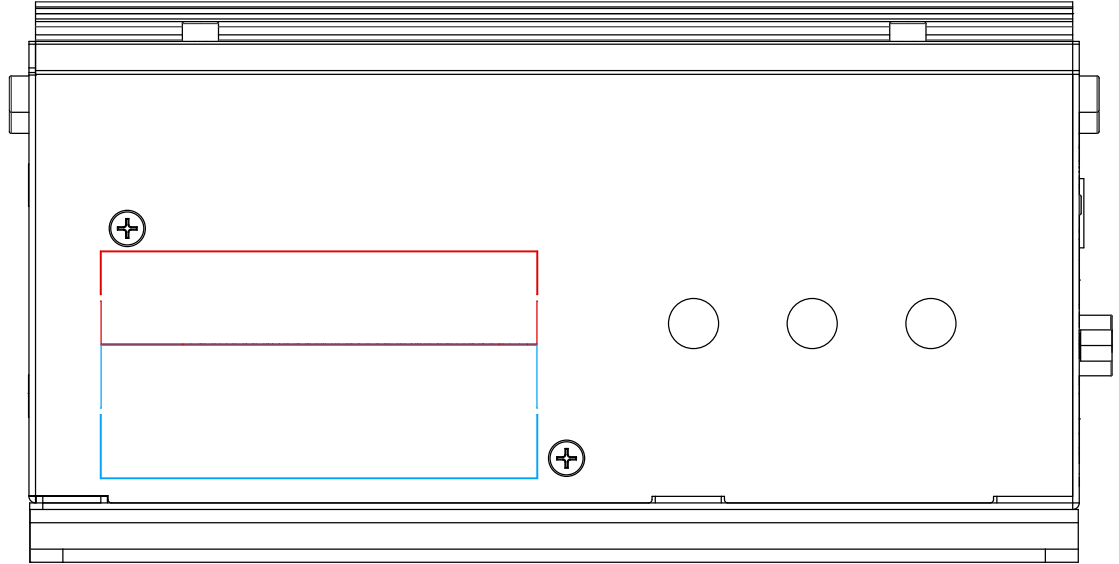


The system offers SMA antenna openings reserved for SMA antenna installations.

Users can take advantage of these openings when installing mini-PCIe module for wireless communication reception such as 5G, 4G, GPS or WiFi.

2.4 Reserved Port Opening Panel

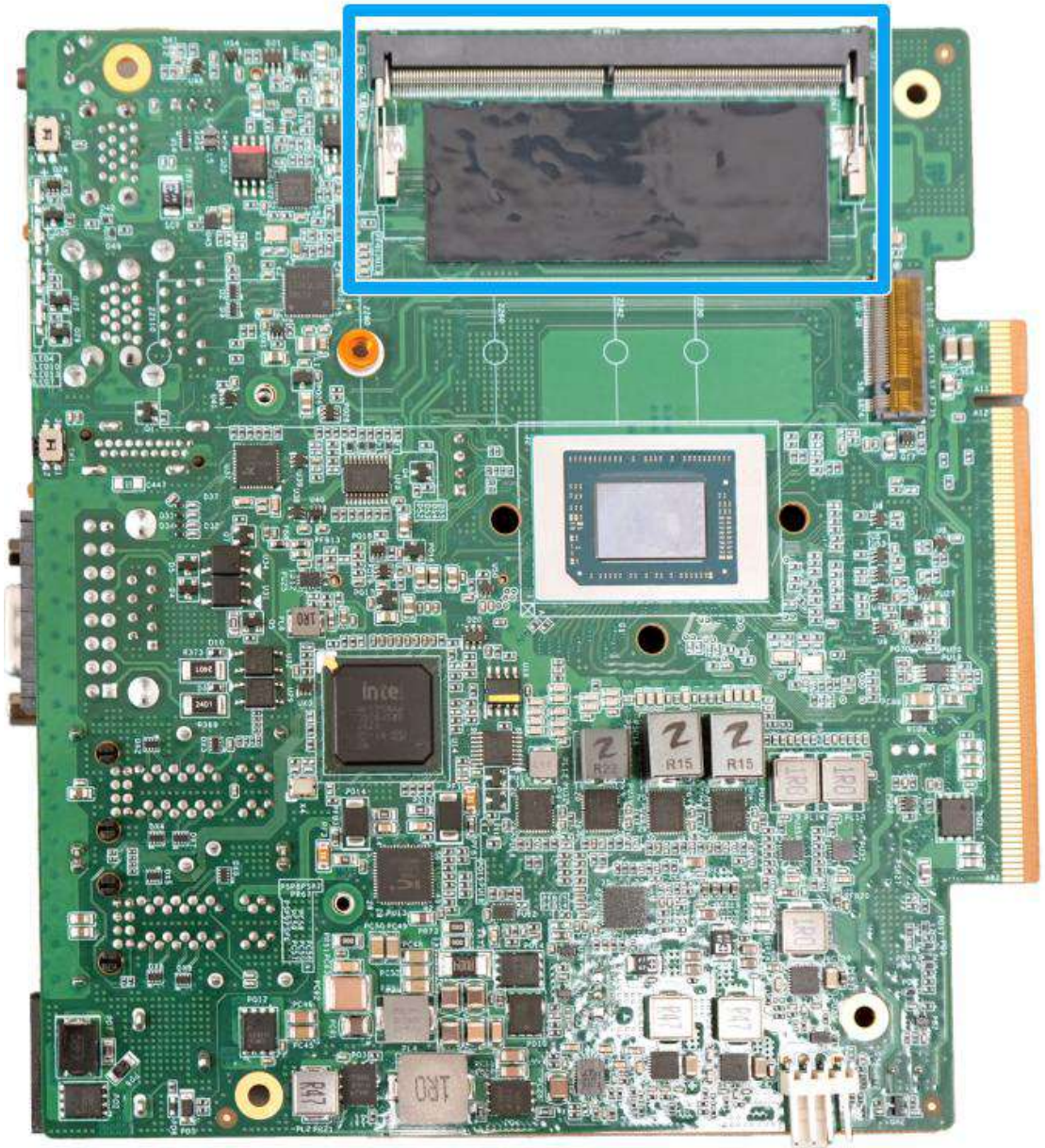
The reserved port opening panel has reserved openings for half-height PCIe card (**in red**), and half-height NVIDIA® graphics card up to 70W (**in blue**). The system may only accommodate one PCI-e add-on card at a time.



2.5 POC-960GC Series Internal I/O

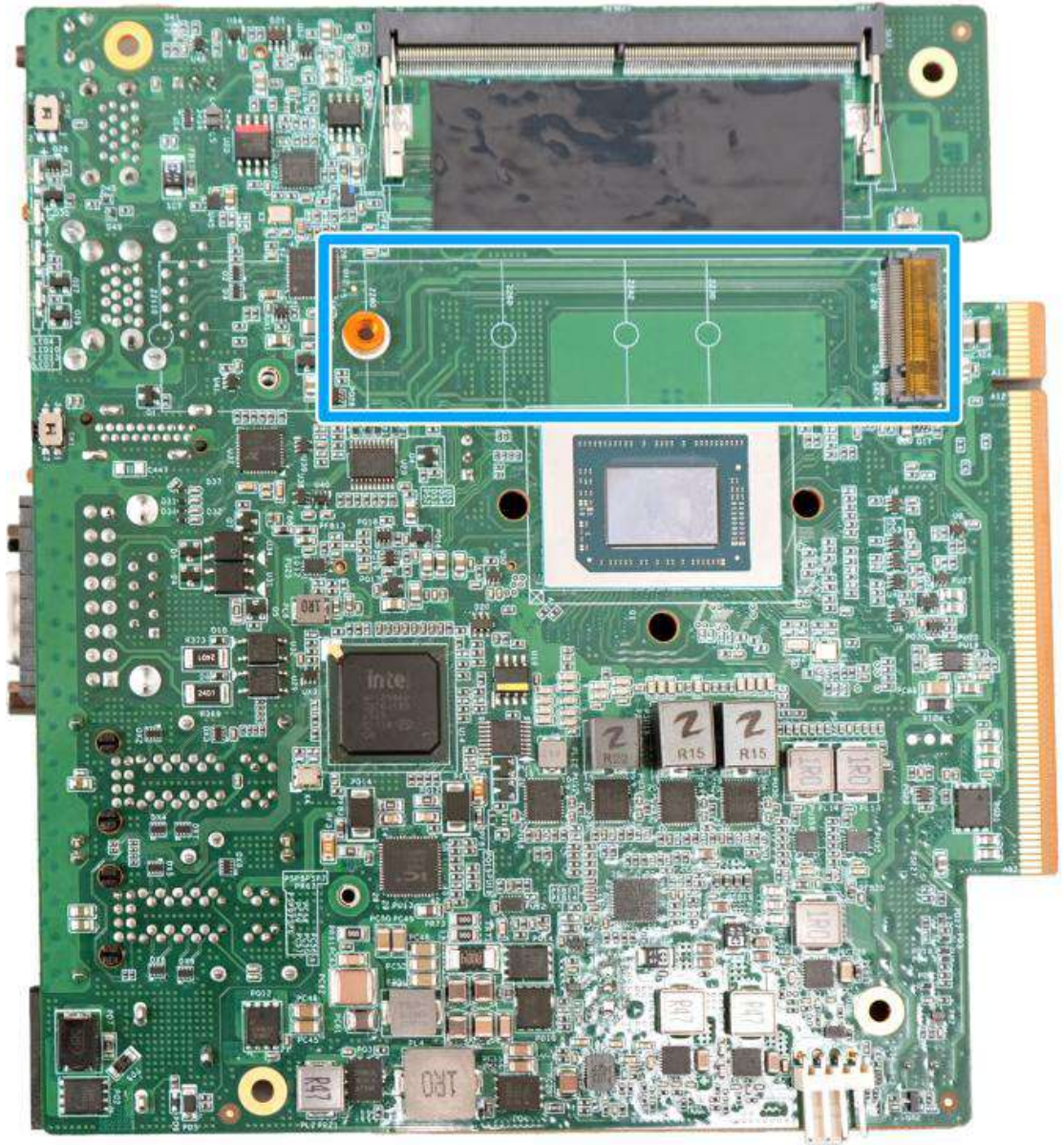
The system's internal I/O connectors consist of a SO-DIMM socket, M.2 2280 M key slot, and mini-PCIe port for application-oriented expansion purposes.

2.5.1 SO-DIMM Memory Socket



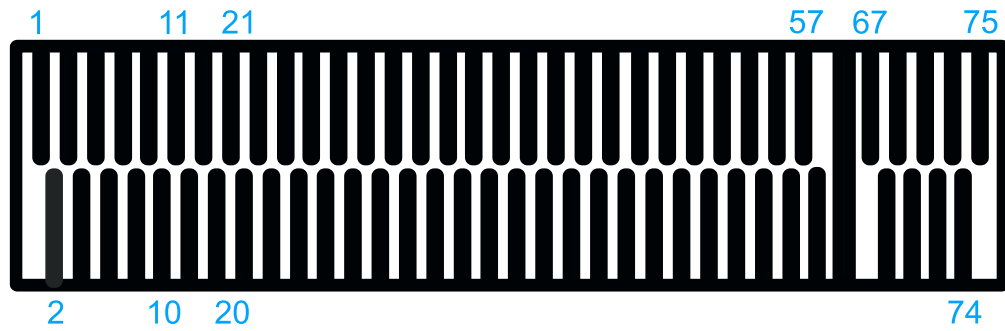
The system has an internal SO-DIMM slot supporting a single DDR5-5600 memory module up to 32GB in capacity.

2.5.2 M.2 2280 M Key



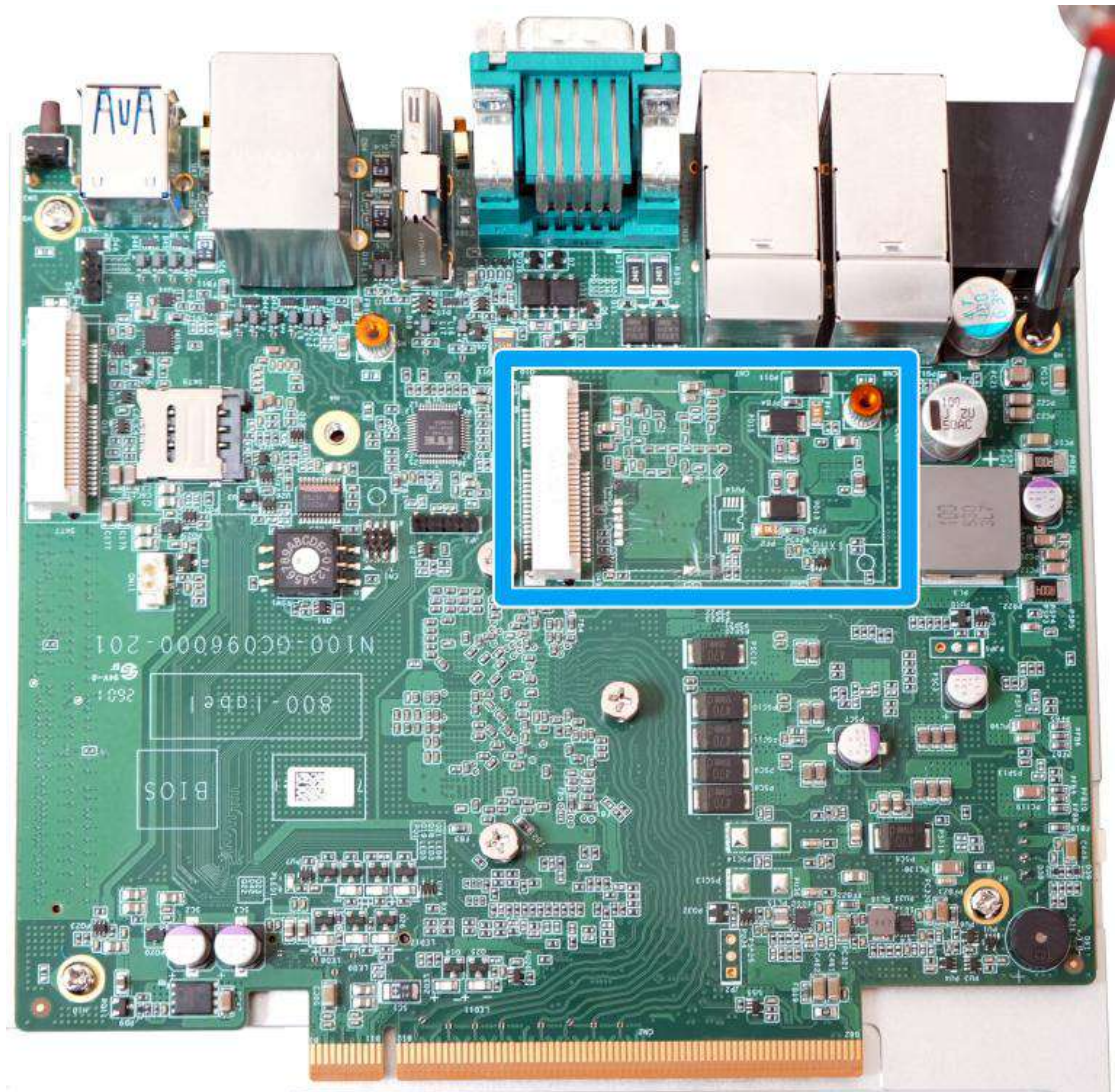
The system has a Gen3 x4 PCIe M.2 2280 slot for you to install an NVMe SSD. The M.2 NVMe SSD offers significantly better system performances when compared to a 2.5" SSD.

M.2 2280 M Key Pin Definition



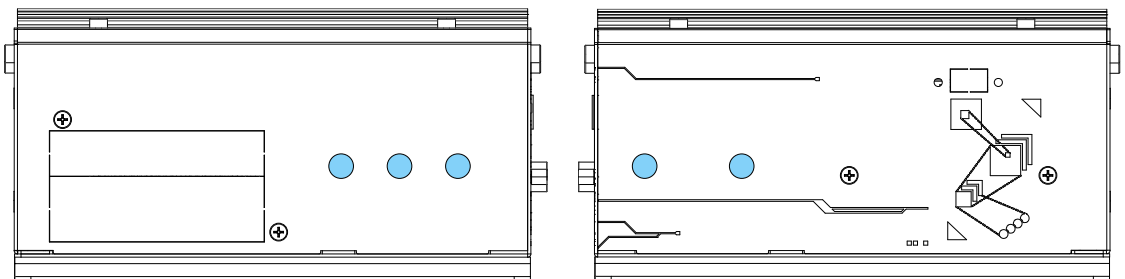
Pin #	Signal	Pin #	Signal
1	GND	2	+3V3
3	GND	4	+3V3
5	PERN3	6	-
7	PERP3	8	-
9	GND	10	DAS/DSS N
11	PETN3	12	+3V3
13	PETP3	14	+3V3
15	GND	16	+3V3
17	PERN2	18	+3V3
19	PERP2	20	-
21	GND	22	-
23	PETN2	24	-
25	PETP2	26	-
27	GND	28	-
29	PERN1	30	-
31	PERP1	32	-
33	GND	34	-
35	PETN1	36	-
37	PETP1	38	-
39	GND	40	-
41	PERn0	42	-
43	PERp0	44	-
45	GND	46	-
47	PETn0	48	-
49	PETp0	50	PERST N
51	GND	52	-
53	REFCLKN	54	-
55	REFCLKP	56	-
57	GND	58	-
Mechanical Key			
67	-	68	SUSCLK
69	PEDET	70	+3V3
71	GND	72	+3V3
73	GND	74	+3V3
75	GND		

2.5.3 mini-PCle Slot w/o SIM Slot

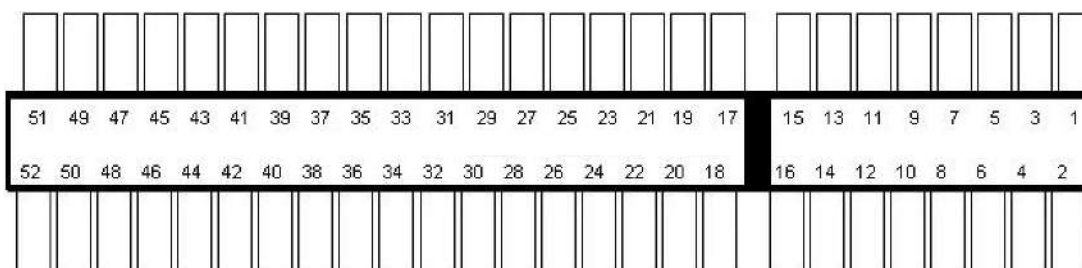


The system is equipped with a full size mini-PCle slot (in blue) that accepts off-the-shelf mini-PCle modules. You can add additional features to your system such as WiFi, GPS, etc.

For wireless communication, multiple SMA antenna apertures can be located on both sides.



mini-PCle Pin Definition



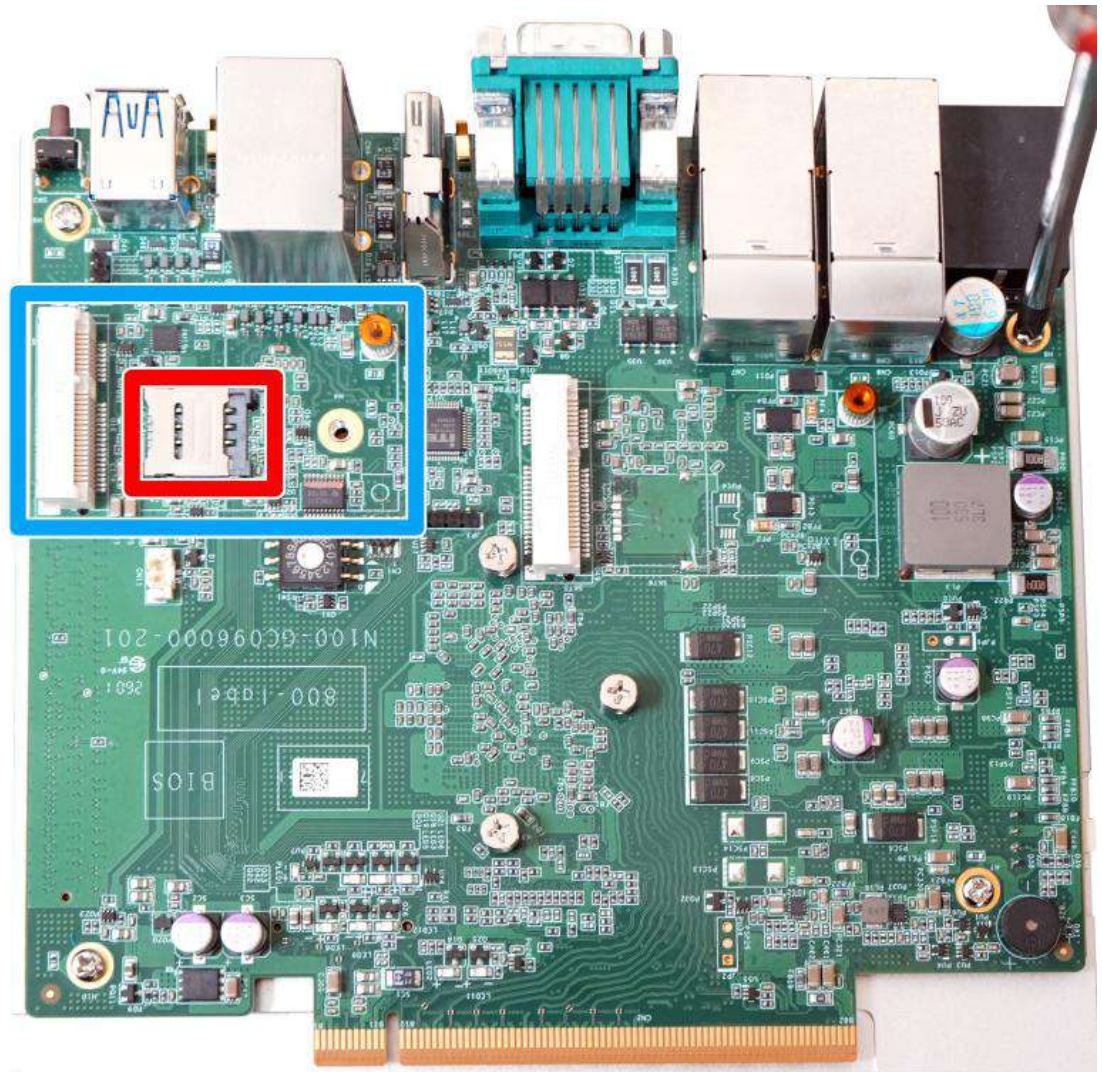
Pin #	Signal	Pin #	Signal
1	WAKE#	2	+3.3V
3	-	4	GND
5	-	6	+1.5V
7	CLKREQ#	8	-
9	GND	10	-
11	REFCLK-	12	-
13	REFCLK+	14	-
15	GND	16	-
Mechanical Key			
17	-	18	GND
19	-	20	-
21	GND	22	PERST#
23	PERn0	24	+3.3V
25	PERp0	26	GND
27	GND	28	+1.5V
29	GND	30	SMB CLK
31	PETn0	32	SMB DATA
33	PETp0	34	GND
35	GND	36	USB_D-
37	GND	38	USB_D+
39	+3.3V	40	GND
41	+3.3V	42	-
43	GND	44	-
45	Reserved	46	-
47	Reserved	48	+1.5V
49	Reserved	50	GND
51	Reserved	52	+3.3V



WARNING

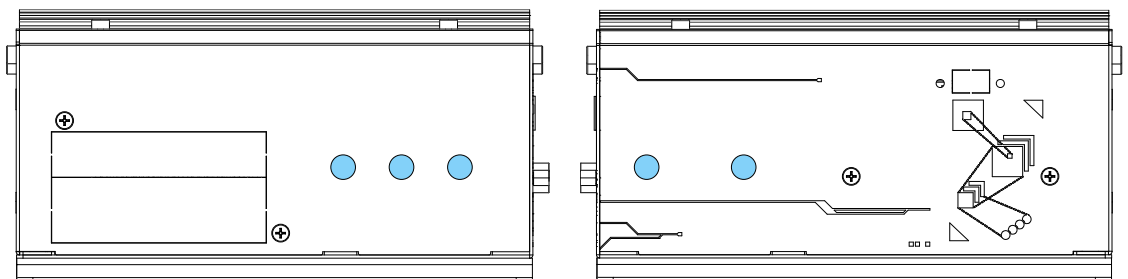
Some off-the-shelf mini-PCle 4G modules are not compliant to standard mini-PCle interface. They use 1.8V I/O signals instead of standard 3.3V I/O and may have signal conflict. Please consult with Neousys for compatibility when in doubt!

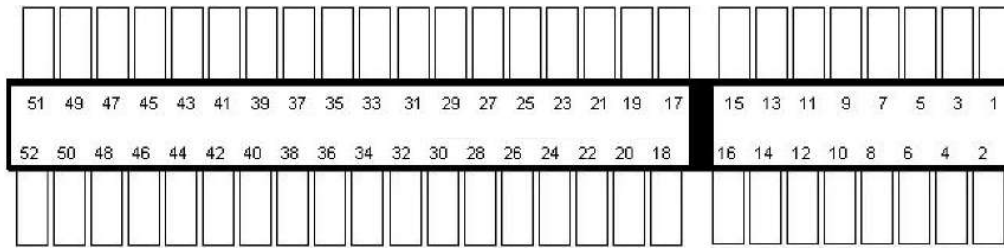
2.5.4 mini-PCle Slot and SIM



There is a full-size USB2.0 signal only mini-PCle socket (indicated in **blue**) for better compatibility with off-the-shelf mini-PCle wireless modules. For customers who want to install a mini-PCle wireless module, please take advantage of the mini-PCle socket, SIM card slot (indicated in **red**) and the antenna openings on the panels.

For wireless communication, multiple SMA antenna apertures can be located on both sides.



mini-PCle socket definition


Pin #	Signal	Pin #	Signal
1	WAKE#	2	+3.3Vaux
3	-	4	GND
5	-	6	+1.5V
7	CLKREQ#	8	UIM_PWR
9	GND	10	UIM_DATA
11	REFCLK-	12	UIM_CLK
13	REFCLK+	14	UIM_RST
15	GND	16	UIM_VPP
Mechanical Key			
17	Reserved* (UIM C8)	18	GND
19	Reserved* (UIM C4)	20	W_DISABLE#
21	GND	22	PERST#
23	PERn0	24	+3.3V
25	PERp0	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PETn0	32	SMB_DATA
33	PETp0	34	GND
35	GND	36	USB_D-
37	GND	38	USB_D+
39	+3.3V	40	GND
41	+3.3V	42	-
43	GND	44	-
45	Reserved	46	-
47	Reserved	48	+1.5V
49	Reserved	50	GND
51	Reserved	52	+3.3V

NOTE

Some off-the-shelf mini-PCle 5G/ 4G modules are not compliant to standard mini-PCle interface. They use 1.8V I/O signals instead of standard 3.3V I/O and may cause signal conflict. Please consult with Neousys for compatibility when in doubt! Installing an incompatible 4G module may damage the system or the module itself may be damaged.

2.5.5 Ignition Rotary Switch



The ignition power control switch features multiple modes for pre and post ignition settings. Please refer to the section [Ignition Power Control](#) for details.

The system features a “System Always On” mode when the rotary switch is set to “1”, please refer to this [section](#).

3 System Installation

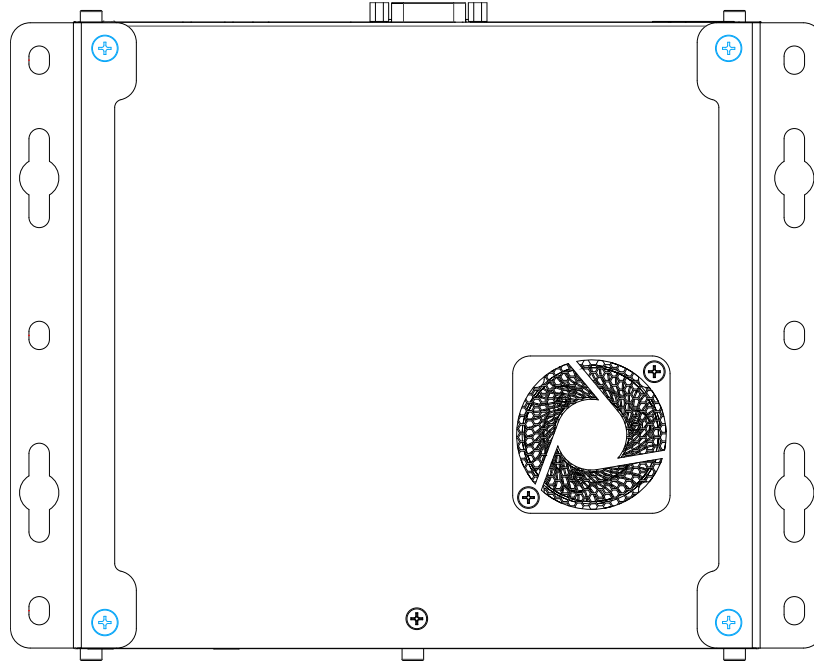
Before disassembling the system enclosure and installing components and modules, please make sure you have done the following:

- It is recommended that only qualified service personnel should install and service this product to avoid injury or damage to the system.
- Please observe ESD procedures at all times to avoid damaging the equipment.
- Before disassembling your system, please make sure the system has powered off, all cables and antennas (power, video, data, etc.) are disconnected.
- Place the system on a flat and sturdy surface (remove from mounts or out of server cabinets) before proceeding with the installation/ replacement procedure.

3.1 Disassembling the System Enclosure

To install necessary components such as memory module, M.2 modules or MezIO® module, you need to disassemble the POC-960GC system enclosure:

1. To disassemble the system, remove the **screws** holding the brackets.



2. Remove the **screws** holding the bottom panel.



3. Remove the **screws** on the I/O panel.

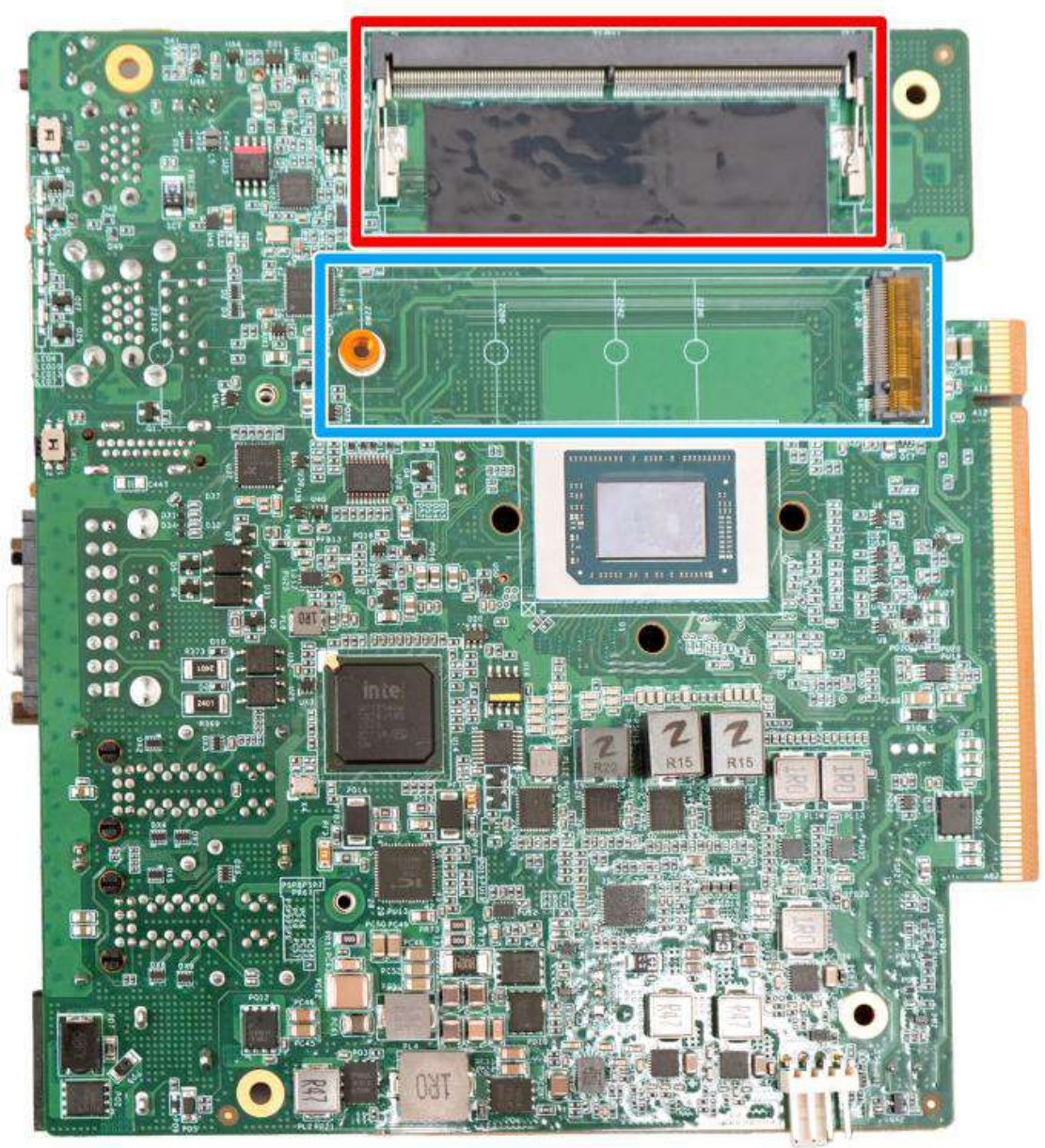


4. Gently lift and separate the bottom panel from the system to access PCIe expansion slots.



3.2 Installing Internal Components

3.2.1 M.2 NVMe SSD/ SO-DIMM Installation



The **M.2 NVMe SSD** and **SO-DIMM memory** slots can be found on the heatsink side of the POC-960GC series motherboard. Please follow the procedures below for installation.

1. [Disassemble the system enclosure.](#)

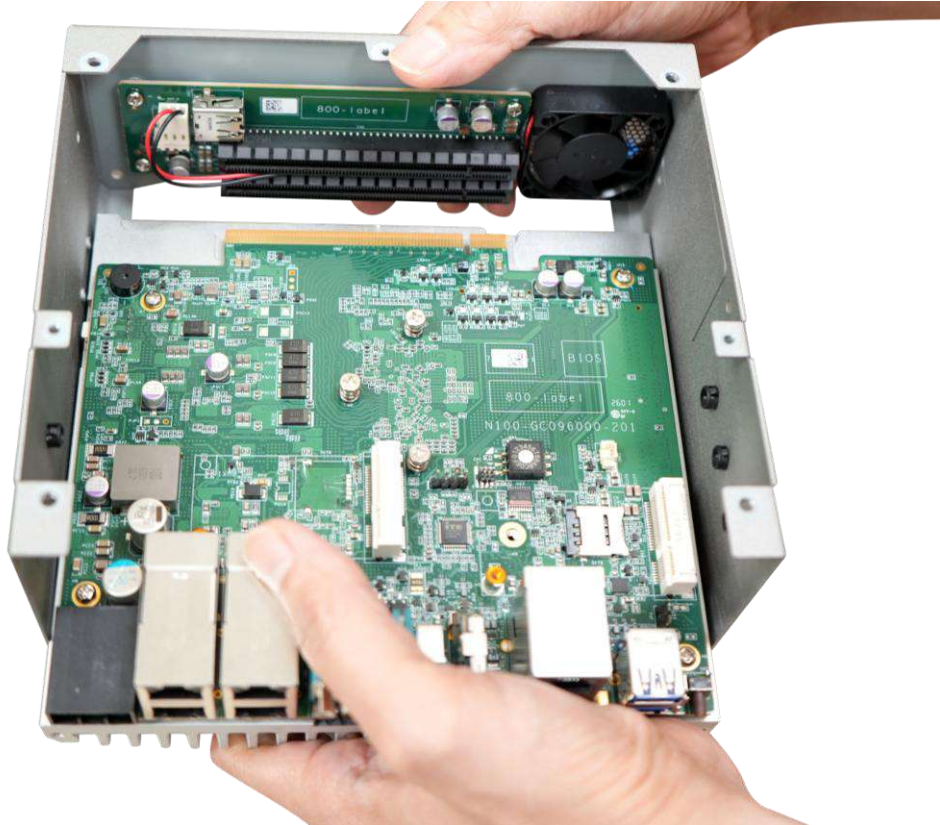
2. Remove the **screws** on the rear panel.



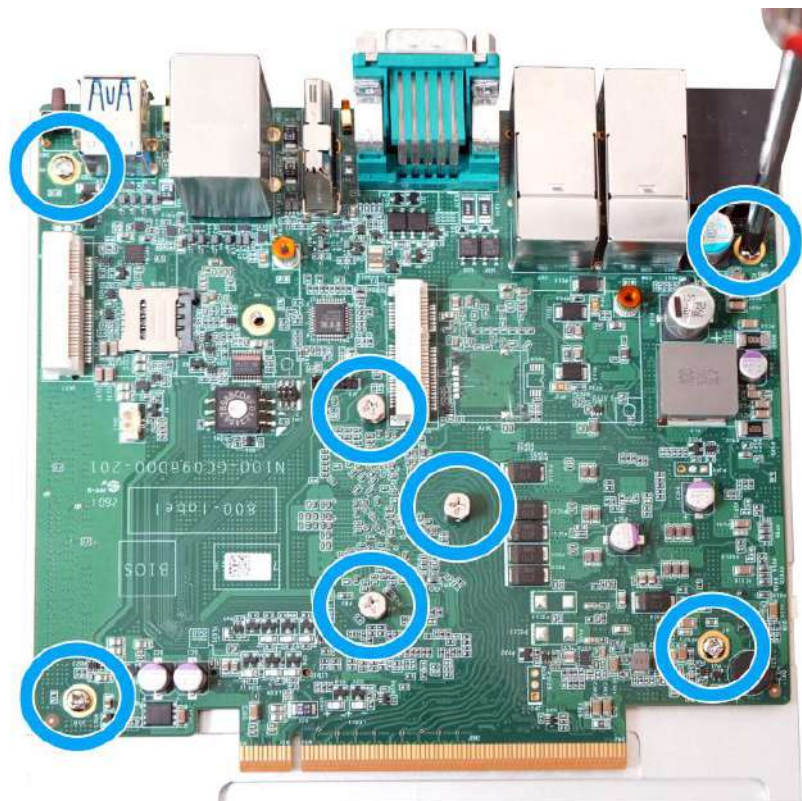
3. Remove the screws on the heatsink.



4. Separate the heatsink from the system rear panel.



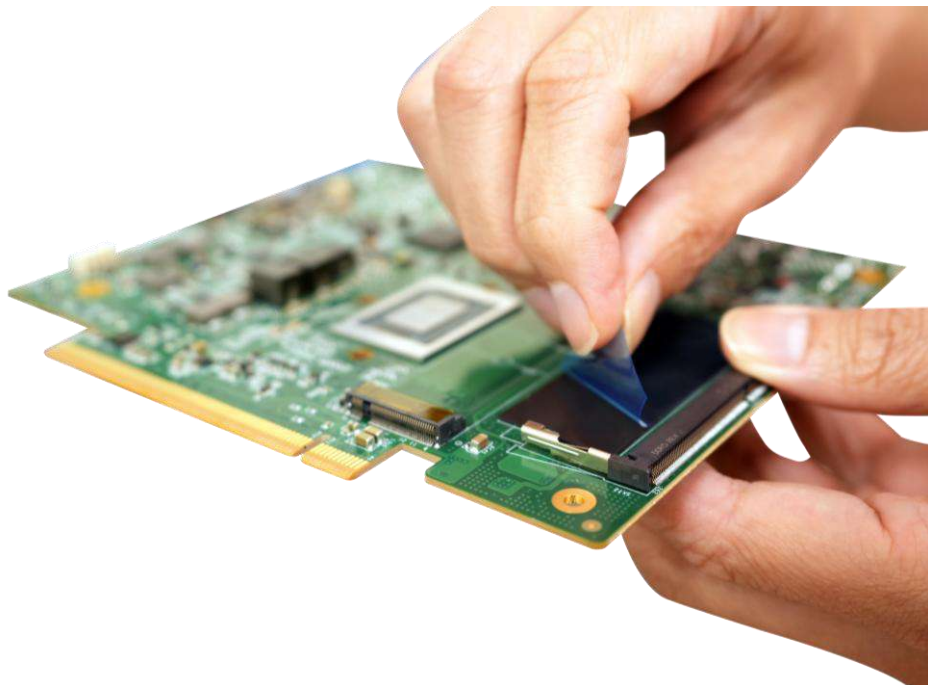
5. Remove the screws on the motherboard.



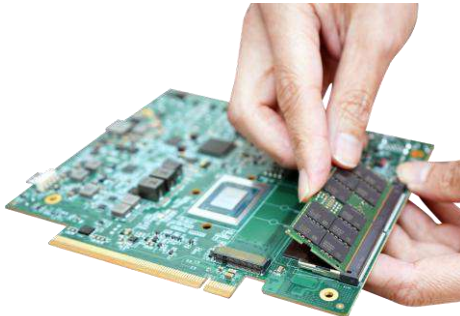
6. Gently lift and separate the motherboard from the heatsink.



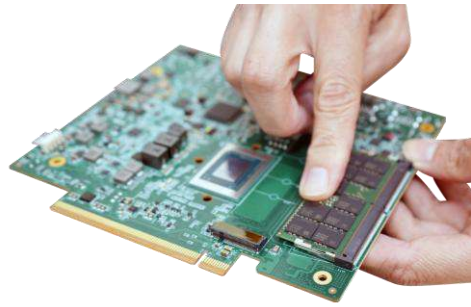
7. Turn the motherboard upside down, locate the DRAM slot, and remove the DRAM thermalpad protection film.



8. Insert the DRAM module at a 45 degree angle, and press downward to secure it into the slot.

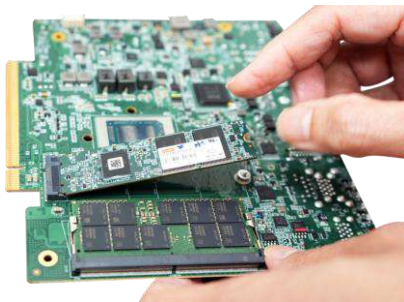


Insert at 45 degrees



Press to secure

9. Insert the M.2 NVMe SSD at a 45 degree angle, press down, and secure with a P-head screw.

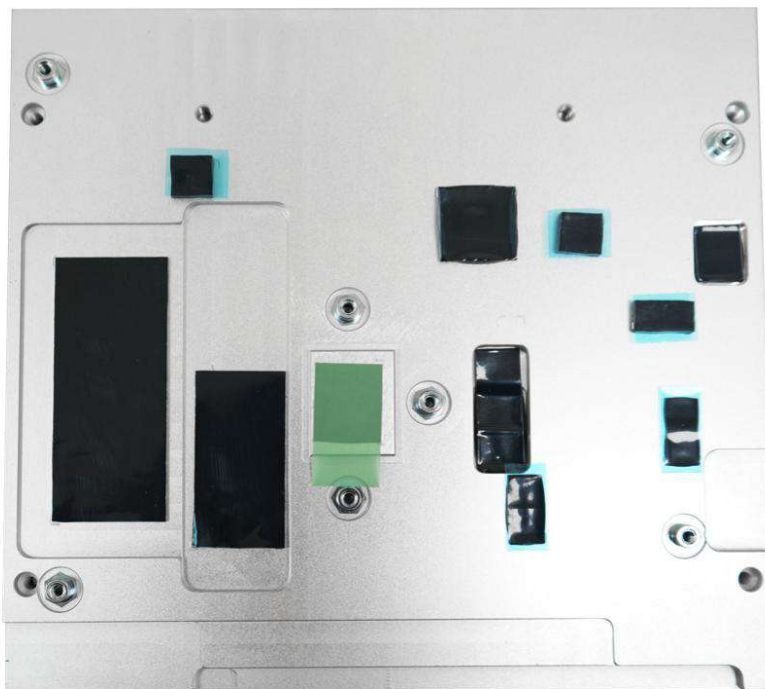


Insert at 45 degrees



Secure with a P-head screw

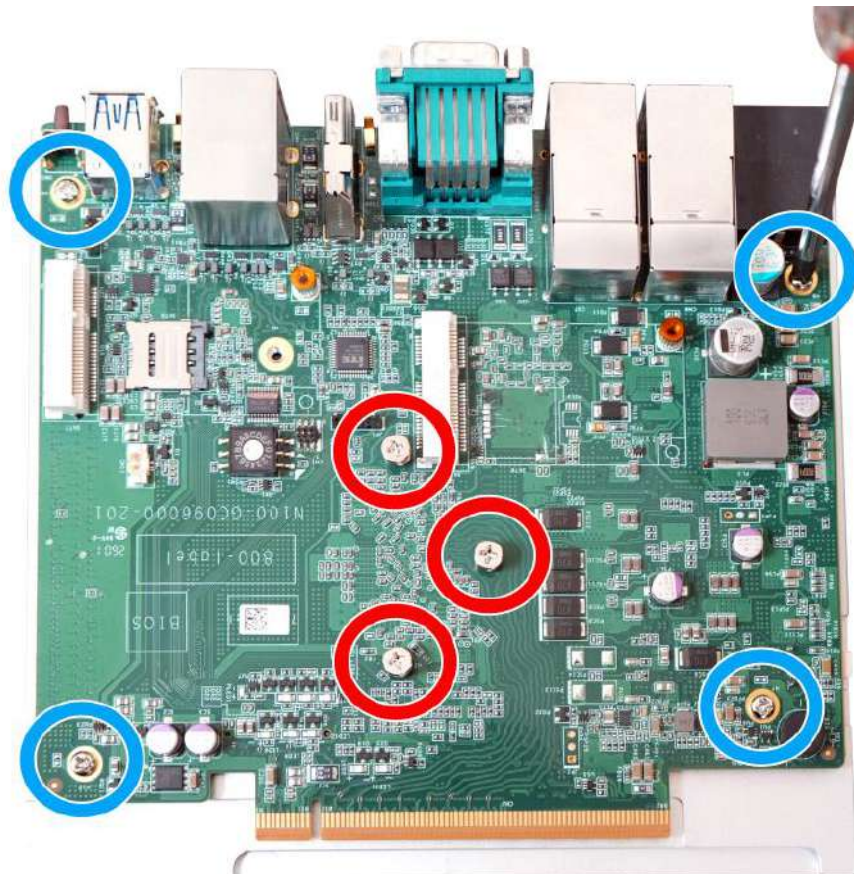
10. Remove the thermal pad protection films on the heatsink (if the protection film is still attached to the thermal pad).



11. Turn the motherboard right side-up, lower it onto the heatsink.



12. Secure the motherboard by fastening the indicated **blue screws**. Note the **screws in red** are spring-loaded.



13. Reinstall the rear panel and the heastink, make sure the **motherboard gold fingers** are properly inserted into the **PCIe slot**.



Matching the PCIe slot

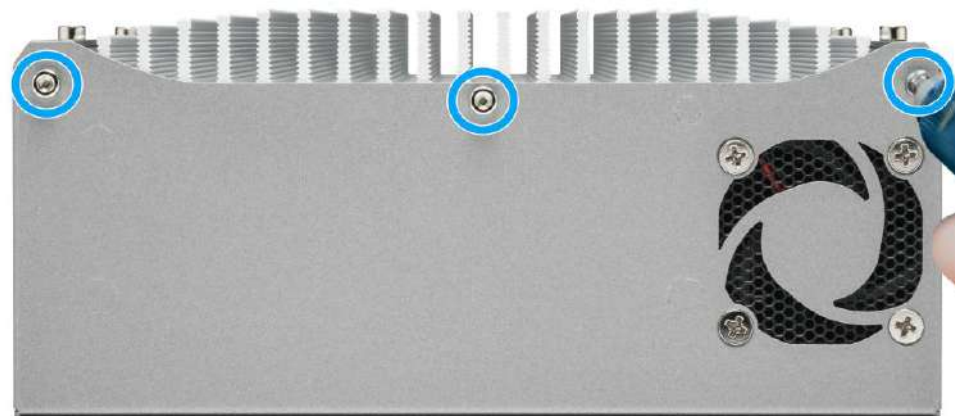


Properly insert into the PCIe slot

14. Secure the **screws** on the heatsink.

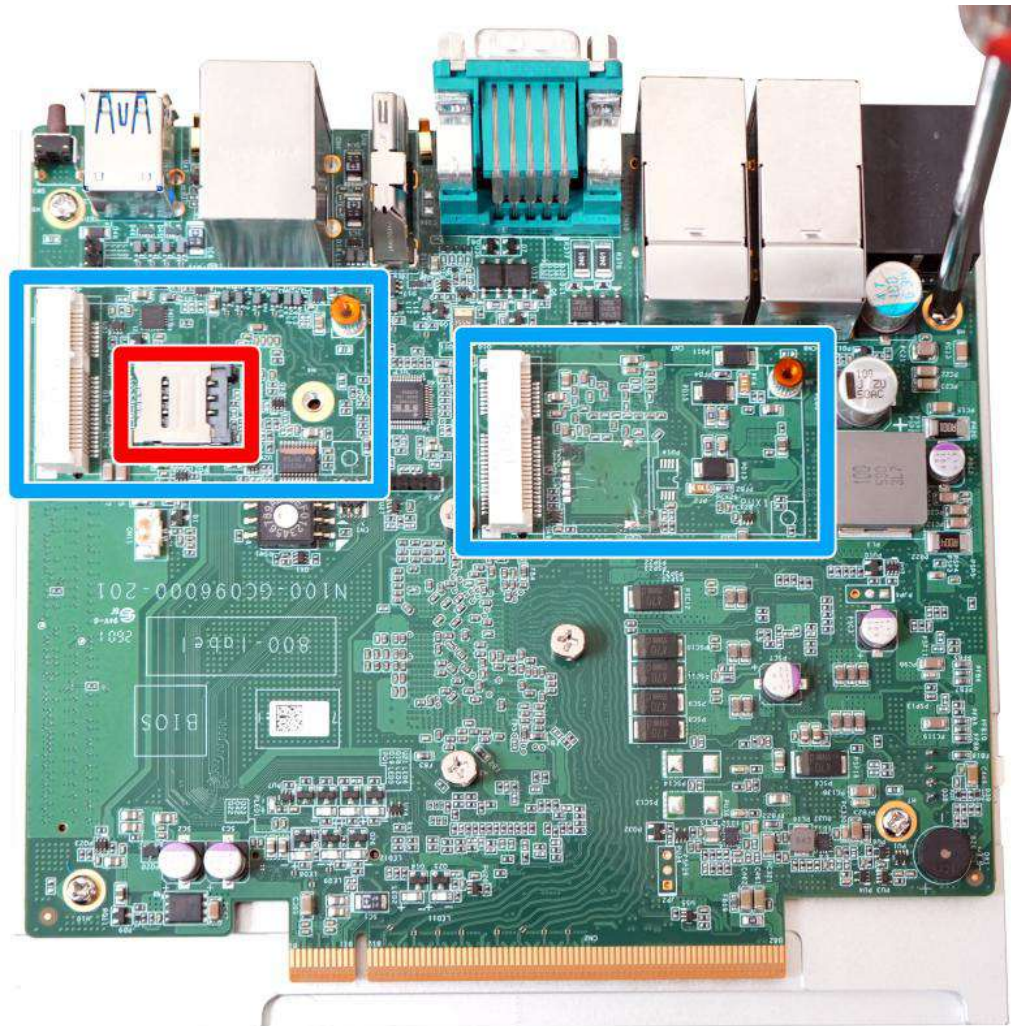


15. Secure the **screws** on the rear panel.



16. [Reinstall the system enclosure.](#)

3.2.2 mini-PCle Module Installation



The system has **mini-PCle slots** coupled with **Micro-SIM socket** for installing 5G/4G module. For installation, please refer to the following instructions.

1. Please refer to the section "[Disassembling the System Enclosure](#)".
2. If you are installing a module with 5G/4G function, please install the SIM card first. To do so, release the SIM holder by pushing the slot in the direction indicated.



3. Flip open the holder to place the SIM card into the slot.

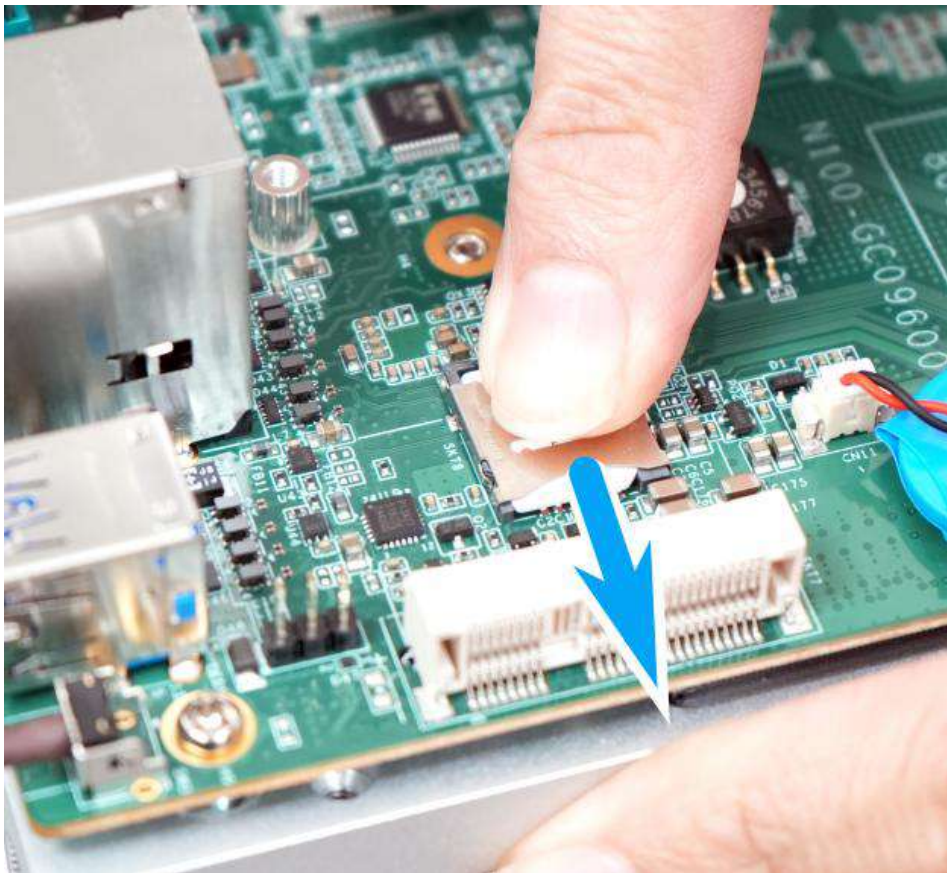


Flip open the holder



Place SIM in socket

4. Flip the holder back onto the SIM card and push in the direction shown to lock-in the SIM card into the slot.



5. Insert the mini-PCIe module on a 45-degree angle into the mini-PCIe slot and secure the module with a P-head screw.



Insert on 45-degree angle

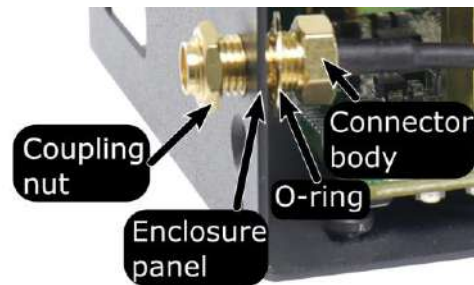


Secure the module

6. Clip on the IPEX-to-SMA cable to the module and secure the antenna to the front or rear panel. Please refer to the module's manual for clip-on connection.



Clip on IPEX-to-SMA cable



Secure antenna to panel

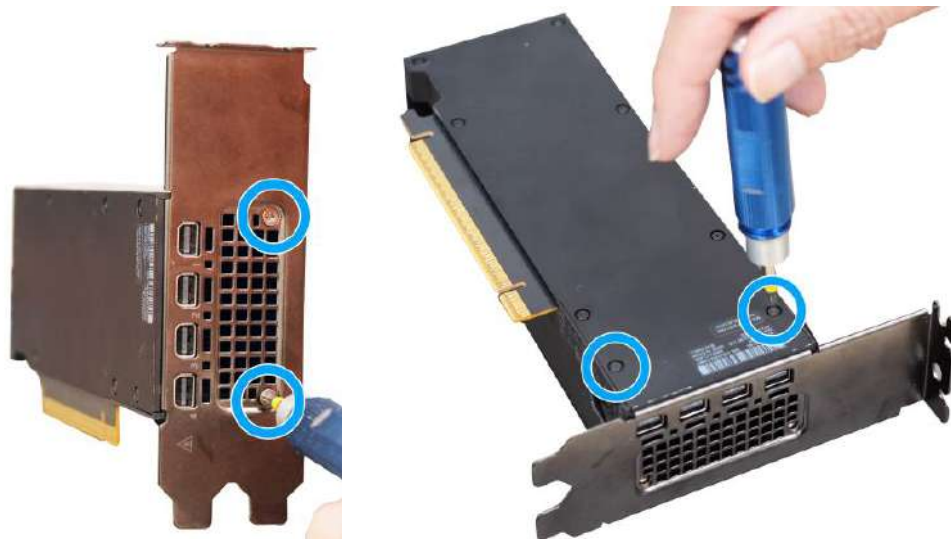
7. [Reinstall the system enclosure](#) and panel when done.
8. If you need to install other components, please refer to respective sections.

3.2.3 NVIDIA® GPU Installation (Optional)



The system has one PCIe x16 slot @ Gen4, 8-lanes PCIe signals for installing a low-profile NVIDIA® graphics card up to 70W TDP. The NVIDIA® RTX 2000 Pro will be used for demonstration purposes. Please refer to the following procedure:

1. Remove the original GPU bracket by removing the **screws** indicated.



2. Gently wiggle and separate the original bracket.



3. Insert the low-profile bracket.



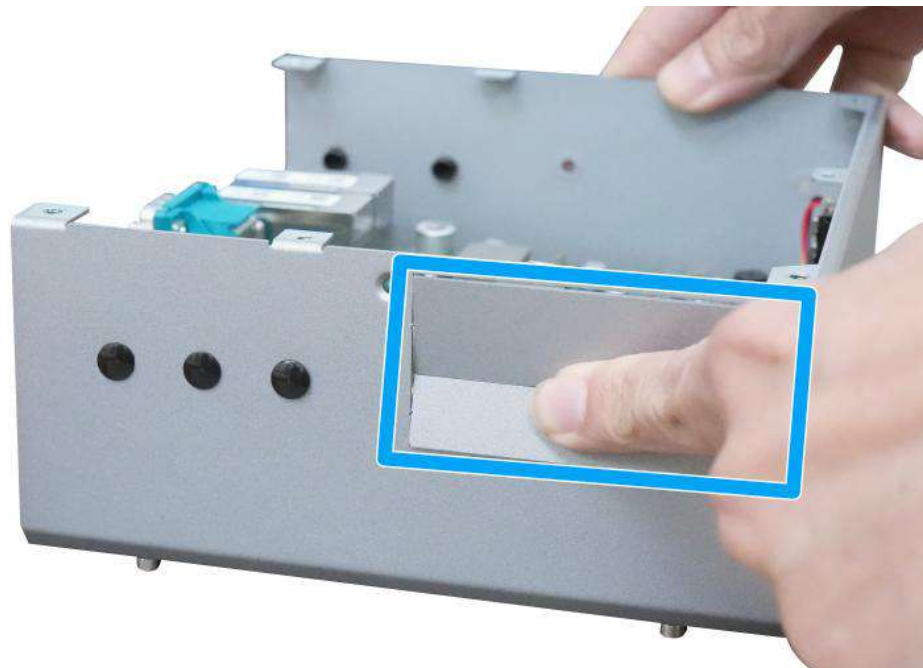
4. Secure the low-profile bracket **screws**.



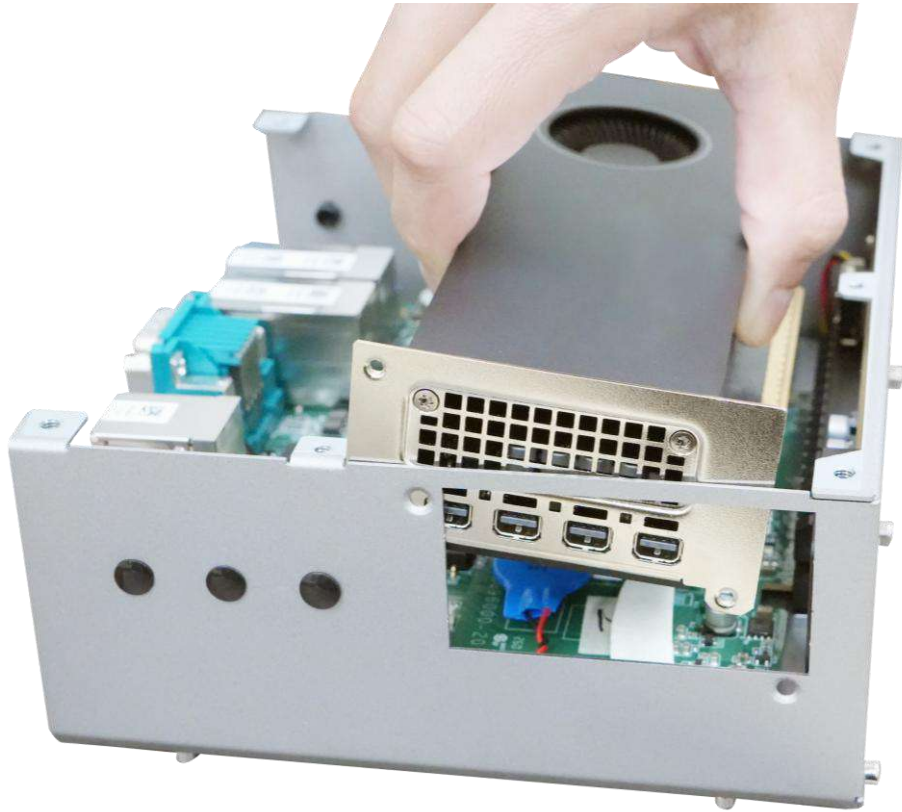
5. Secure the rear bracket to the GPU.



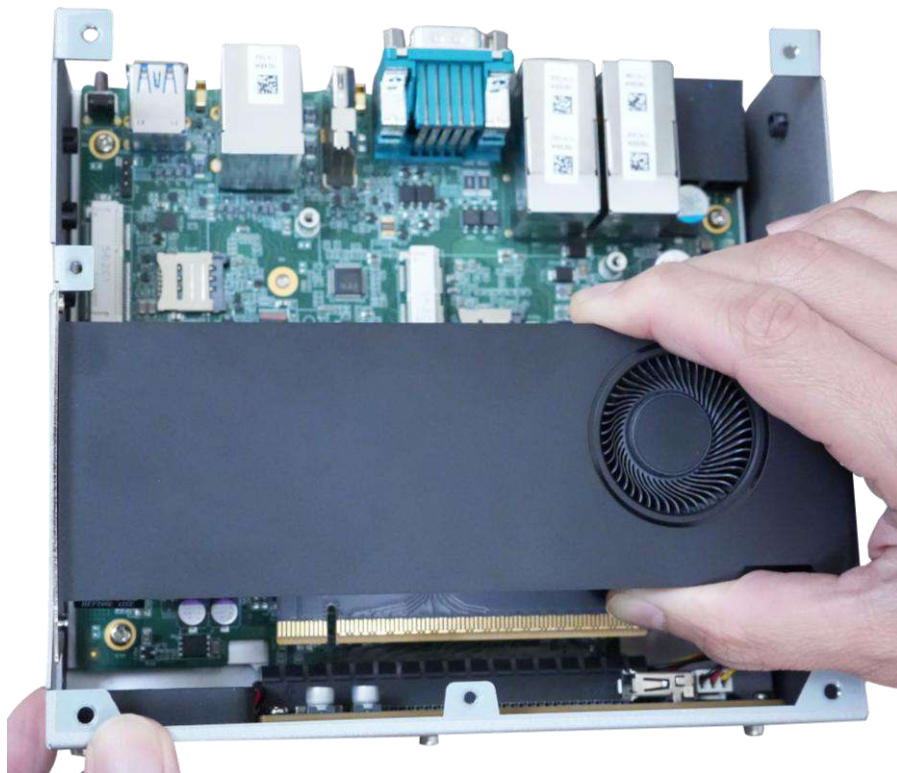
6. Please refer to the section "[Disassembling the System Enclosure](#)".
7. Remove the punch-out panels.



8. Lower GPU into the enclosure.



9. Insert the gold fingers of the GPU into the PCIe slot.



10. Secure the screws (front and rear) to secure the GPU in place.



11. Once the GPU has been secured, please refer to the section "[Installing the System Enclosure](#)" to complete the GPU installation.

3.3 Installing the System Enclosure

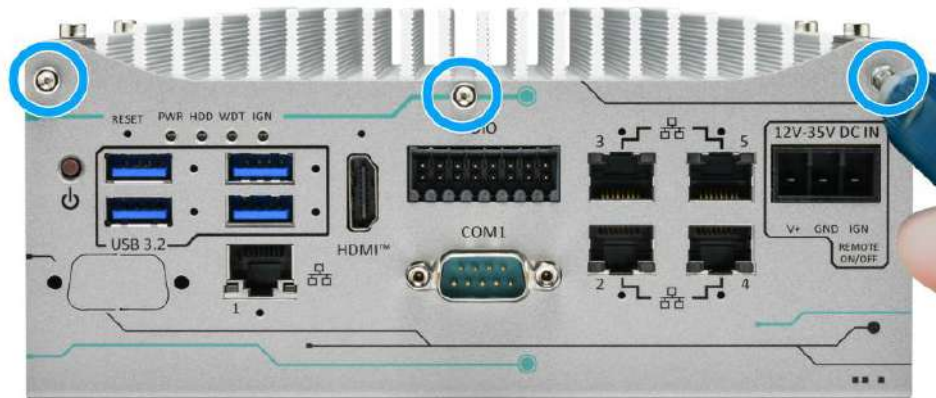
1. To reinstall the system enclosure, place the bottom panel onto the system.



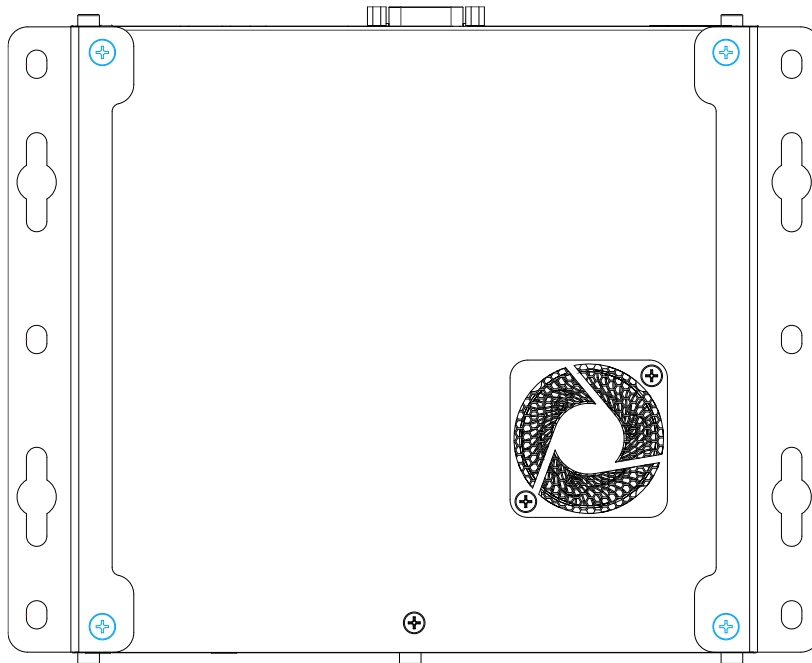
2. Secure with the **screws** indicated at the bottom panel.



3. Secure the **screws** on the IO panel.



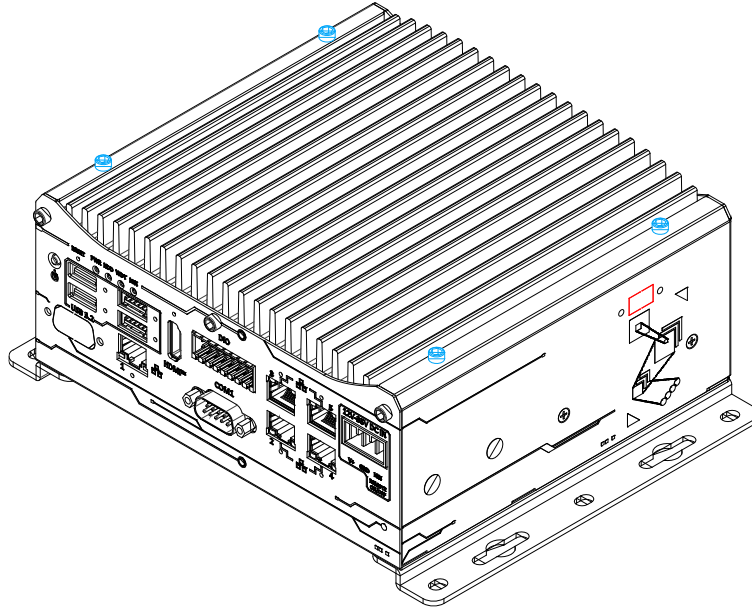
4. Install the brackets onto the bottom of the system by securing the **screws** indicated.



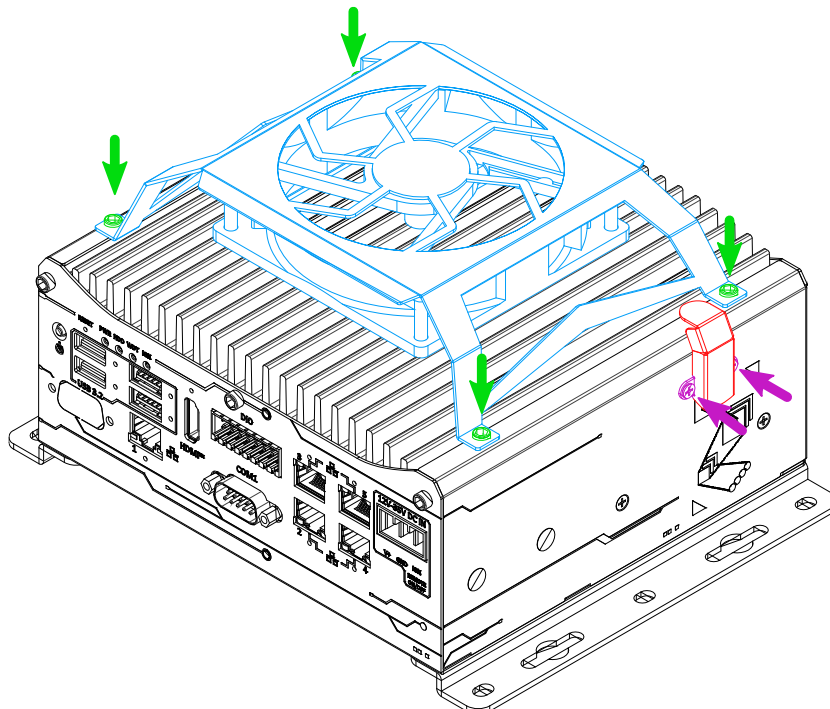
3.4 Fan Kit Installation (Optional)

There is an optional fan kit for the system. To install, please refer to the following instructions:

1. Remove the **screws** indicated on the heatsink, and remove the **punch-out panel** on the side of the enclosure.



2. Please note the orientation of the fan kit, make sure the fan's power cable is close to the punch-out opening. Lower the fan kit onto the heatsink, secure it with the **screws** indicated. Insert the fan's power cable into the punch-out opening, place **cable cover** over it, and secure it with the **screws** indicated.



3.5 Powering On the System

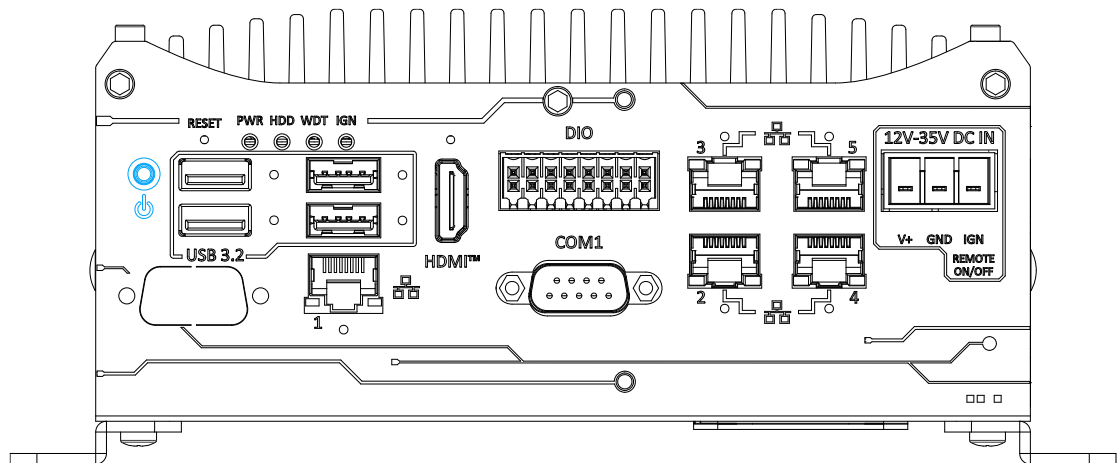
There are various methods to power on the system

- Pressing the power button
- Via an external non-latched switch
- Sending a LAN packet via Ethernet (Wake-on-LAN)
- System always on (Ignition rotary switch set to Mode 1)
- Powering on via [ignition signal input](#) (if ignition function purchased with system)

We will describe the processes and actions involved for the first four methods in this section and the ignition signal input method will be described in section 3.7.

3.5.1 Powering On Using the Power Button

This is the simplest way to turn on your system. The power button on the front panel is a non-latched switch and behaves as the ATX-mode on/off control. With DC power connected, pushing the power button will turn on the system and the PWR LED indicator will light up. Pushing the button when system is on will turn off the system. If your operating system supports ATX power mode (i.e. Microsoft Windows or Linux), pushing the power button while the system is in operation will result in a pre-defined system behavior, such as shutdown or hibernation.



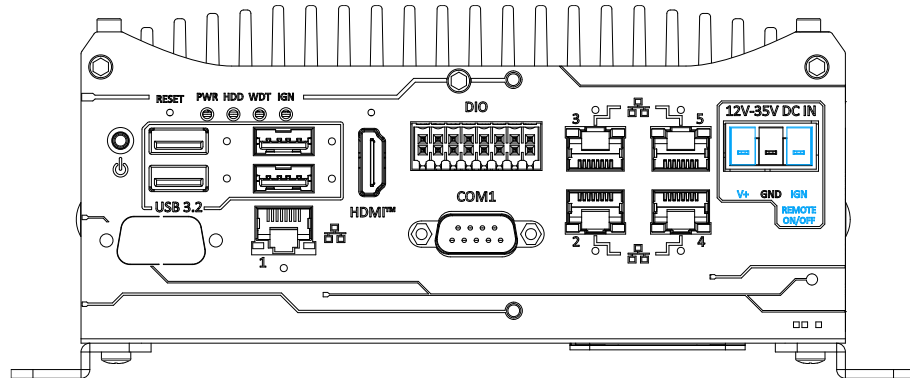
3.5.2 Powering On Using An External Non-Latched Switch

For an application which places the system inside a cabinet, it's useful to control powering on/off the system using an external switch. The system provides an on-board connector for connecting a latched/ non-latched switch and behaving either AT-mode or ATX-mode power on/off control.

When using the ATX-mode on/ off control, you need a non-latch switch. The external non-latched switch acts exactly the same as the power button on the front panel.

Please follow the steps below to install an external non-latch switch.

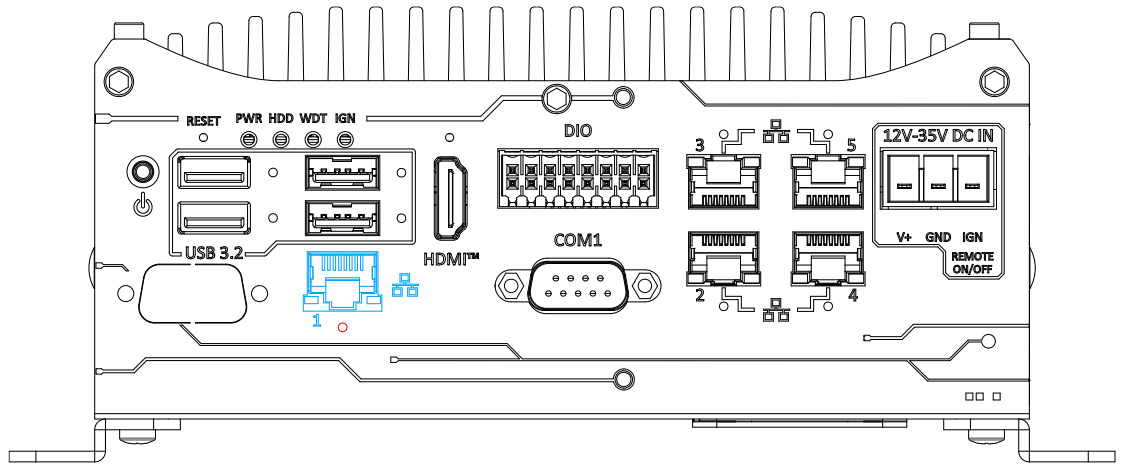
1. Acquire a non-latched switch with 3-pin plug, and connect it to **IGN/Remote on/off** and **V+** pins on the 3-pin power connector.
2. Press the power button on the non-latched switch to short the **IGN/Remote on/off** and **V+** pins. Hold for at least one second and release the button.



3. When the system is powered on, you may press and hold the power button (for at least one second) on the non-latched switch to turn off the system, or to execute a pre-defined action.

3.5.3 Powering On Using Wake-on-LAN

Wake-on-LAN (WOL) is a mechanism to wake up a computer system from a S4/ S5 state via issuing a magic packet. The system's Wake-on-LAN compatible port is shown below.

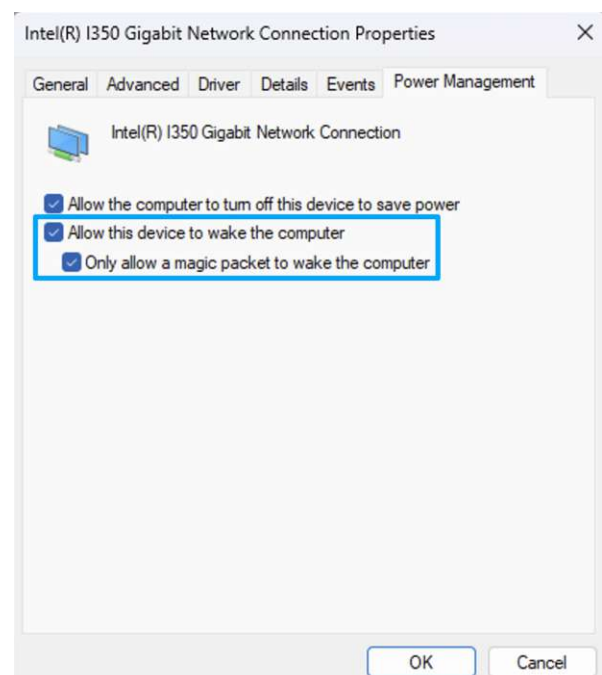


NOTE

Please make sure the Intel chipset and Ethernet driver has been properly installed prior to setting up WOL function.

To enable WOL function, please set up WOL settings in the BIOS and in the operating system by follow the steps described below.

1. When the system boots up, press F2 to enter BIOS setup utility.
2. Go to the **[Power]>[Wake On LAN]** and set it to **[Enabled]**.
3. Press F10 to “**Save changes and exit BIOS**” and allow the system boot into the operating system.
4. Once booted into the Windows system, press “**Windows key + E**”, right-click on “**Network>Properties>Change adapter settings**”. Locate and double-click on the adapter Intel® I350 Gigabit Network Connection, click on **Configure**.
5. Click on the **Power Management**



tab and check the following options. Click on OK when done.

Magic Packet

The magic packet is a broadcast frame containing anywhere within its payload 6 bytes of all 255 (FF FF FF FF FF FF in hexadecimal), followed by sixteen repetitions of the target computer's 48-bit MAC address.

For example, NIC's 48-bit MAC Address is 78h D0h 04h 0Ah 0Bh 0Ch

DESTINATION SOURCE MISC

FF FF FF FF FF FF

78 D0 04 0A 0B 0C 78 D0 04 0A 0B 0C

78 D0 04 0A 0B 0C 78 D0 04 0A 0B 0C

78 D0 04 0A 0B 0C 78 D0 04 0A 0B 0C

78 D0 04 0A 0B 0C 78 D0 04 0A 0B 0C

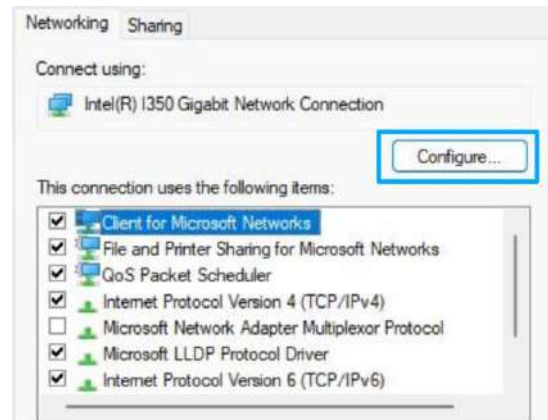
78 D0 04 0A 0B 0C 78 D0 04 0A 0B 0C

78 D0 04 0A 0B 0C 78 D0 04 0A 0B 0C

78 D0 04 0A 0B 0C 78 D0 04 0A 0B 0C

78 D0 04 0A 0B 0C 78 D0 04 0A 0B 0C

MISC CRC



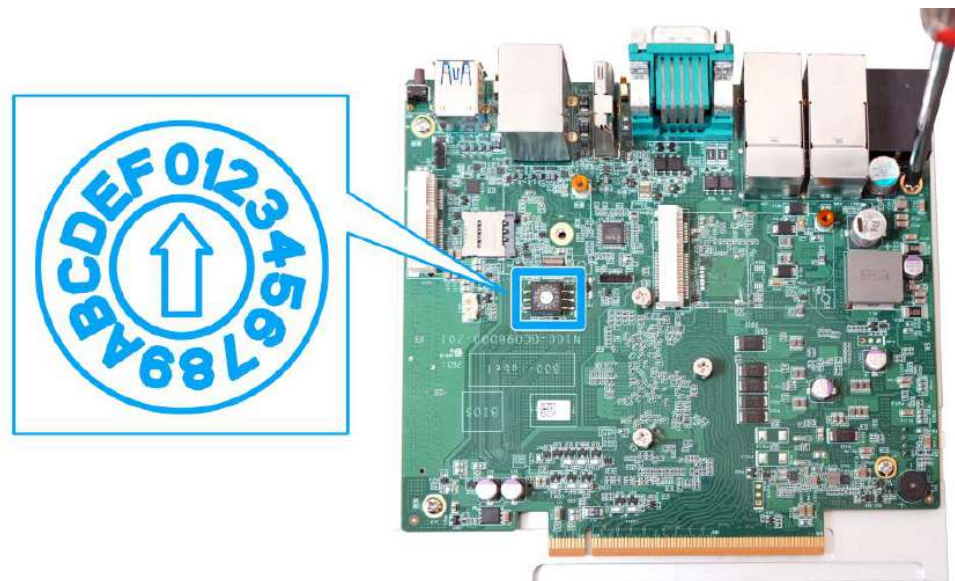
There are some free tools available on Internet that can be used to send a magic packet. Please refer to the following link to understand more about [Magic Packet](#).

3.5.4 System Always On

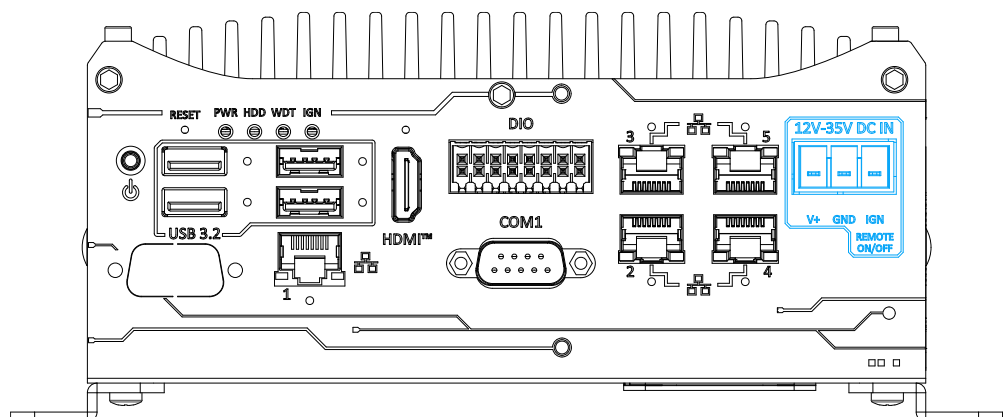
The system has an “Always On” feature to ensure when deployed in hard to access locations, such as in a cabinet, roadside, etc., should the system power off due to an unforeseen reason, it will detect the power off status and automatically trigger the power on mechanism to ensure the system is always operational, provided there is power supplied to the system.

To enable to the system Always On function, please refer to the following instruction:

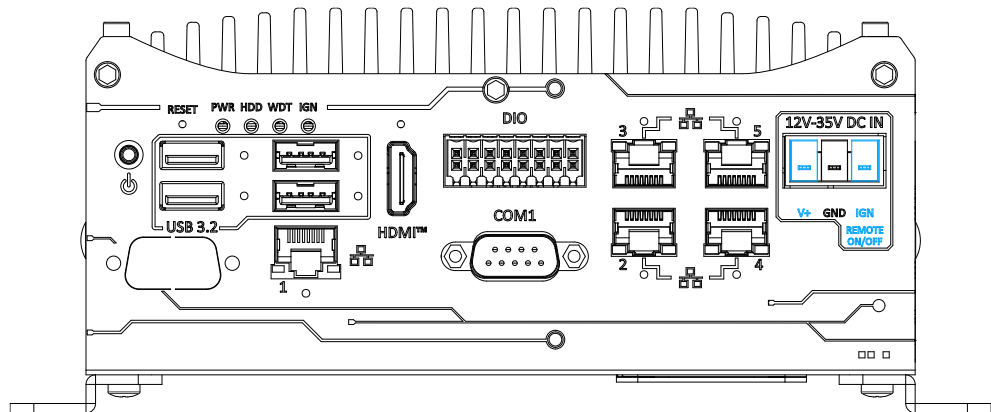
1. Please set the ignition rotary switch to the 1 position.



2. Locate the 3-pin terminal connector on the system.



3. Simply short the V+ pin and the IGN/ Remote on/off pin, and power-on the system to activate the Always On function.



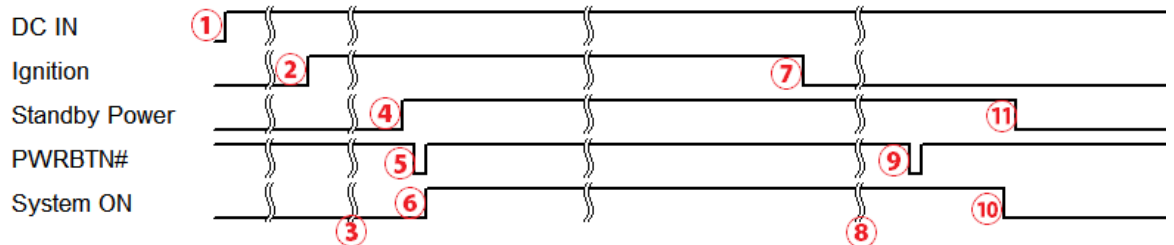
4. Once the pins are shorted, when the system is in shutdown state (S5), the system will detect this status and automatically reboot in 5 seconds.

3.6 Ignition Power Control (Optional)

The ignition power control module for in-vehicle applications is an MCU-based implementation that monitors the ignition signal and reacts to turn on/off the system according to predefined on/off delay. Its built-in algorithm supports other features such as ultra-low power standby, battery-low protection, system hard-off, etc. In this section, we'll illustrate the principle of ignition power control and operation modes.

3.6.1 Principles of Ignition Power Control

The basic concept of ignition power control module is to control the timing correlation between ignition signal and system power status. A typical timing correlation is described in following diagram.



1. When DC power is supplied to the system, MCU starts to periodically detect ignition signal. Note that only MCU is working at this moment and the overall power consumption is less than 2 mW.
2. Ignition signal is active (both 12VDC and 24VDC ignition signals are accepted).
3. MCU starts to count a pre-defined power-on delay.
4. Once power-on delay expired, MCU turns on necessary standby power for the system (3.3VSB & 5VSB).
5. A PWRBTN# pulse is then issued to turn on the system (equivalent to one pressing the power button on the front panel).
6. The system is booting and becomes operational.
7. After a period of time, the ignition signal becomes inactive.
8. MCU starts to count a pre-defined power-off delay.
9. Once power-off delay expired, another PWRBTN# pulse is issued to perform a soft-off for the system (ex. a normal shutdown process for Windows system).
10. The system is completely shut down.
11. As MCU detects system is off, it turns off the standby power for the system, and operates in low power mode again (< 2mW power consumption).

3.6.2 Additional Features of Ignition Power Control

In addition to the typical timing correlation, the ignition power control module offers additional features to provide additional reliability for in-vehicle applications.

- **Low battery detection**

The ignition power control module continuously monitors the voltage of DC input when the system is operational. If input voltage is less than 11V (for 12VDC input) or less than 22V (for 24VDC input) over a 60-second duration, it will shut down the system automatically.

- **Guarded power-on/ power-off delay duration**

If ignition signal goes inactive during the power-on delay duration, the ignition power control module will cancel the power-on delay process and go back to idle status. Likewise, if ignition signal goes active during the power-off delay duration, the ignition power control module will cancel the power-off delay process and keep the system running.

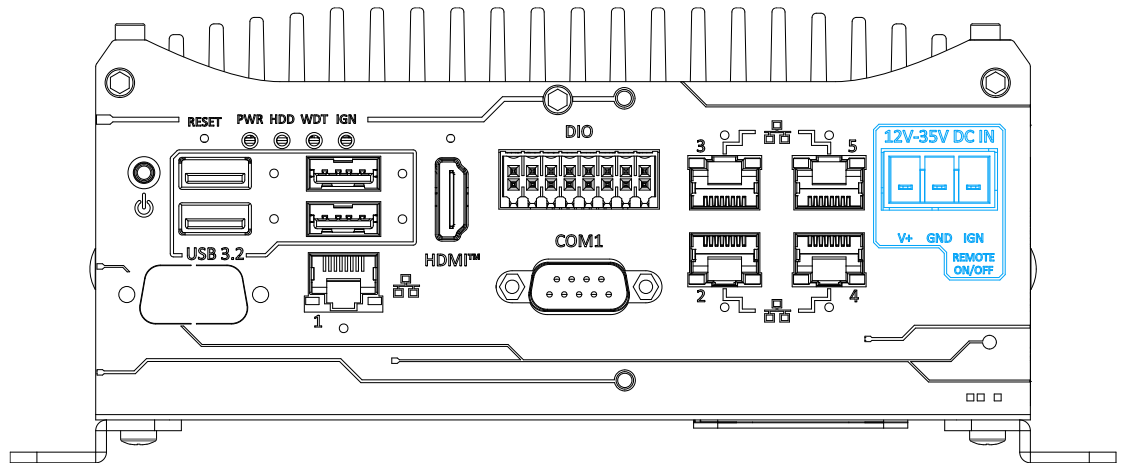
- **System hard-off**

In some cases, system may fail to shutdown via a soft-off operation due to system/ application halts. The ignition power control module offers a mechanism called “hard-off” to handle this unexpected condition. By detecting the system status, it can determine whether the system is shutting down normally. If not, the ignition power control module will force cut-off the system power 10 minutes after the power-off delay duration.

- **Smart off-delay**

The ignition power control module offers two modes (mode 13 & mode 14) which have very long power-off delay duration for applications require additional off-line time to process after the vehicle has stopped. In these two modes, the ignition power control module will automatically detect the system status during the power-off delay duration. If the system has shutdown (by the application software) prior to power-off delay expiring, it will cut off the system power immediately to prevent further battery consumption.

3.6.3 Wiring Ignition Signal



To have ignition power control for in-vehicle usage, you need to supply IGN signal to the system. The IGN input is located on the 3-pin pluggable terminal block (shared with DC power input). Below is the typical wiring configuration for in-vehicle applications.

1. Connect car Battery+ line (12V for sedan, 24V for bus/truck) to V+.
2. Connect car Battery-/ GND line to GND.
3. Connect ACC line to IGN.



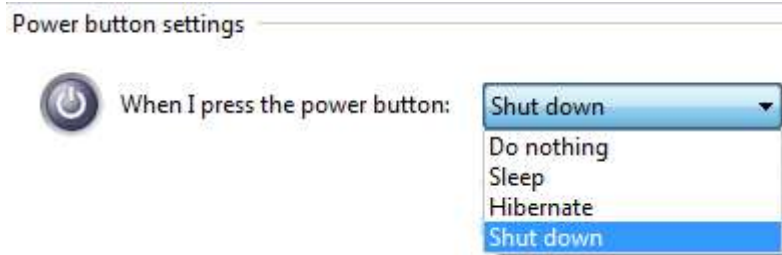
WARNING

Please make sure your DC power source and IGN signal share the same ground.

IGN input accepts 12-35V DC. Supply a voltage higher than 35V DC may damage the system.

3.6.4 Configure your Windows system

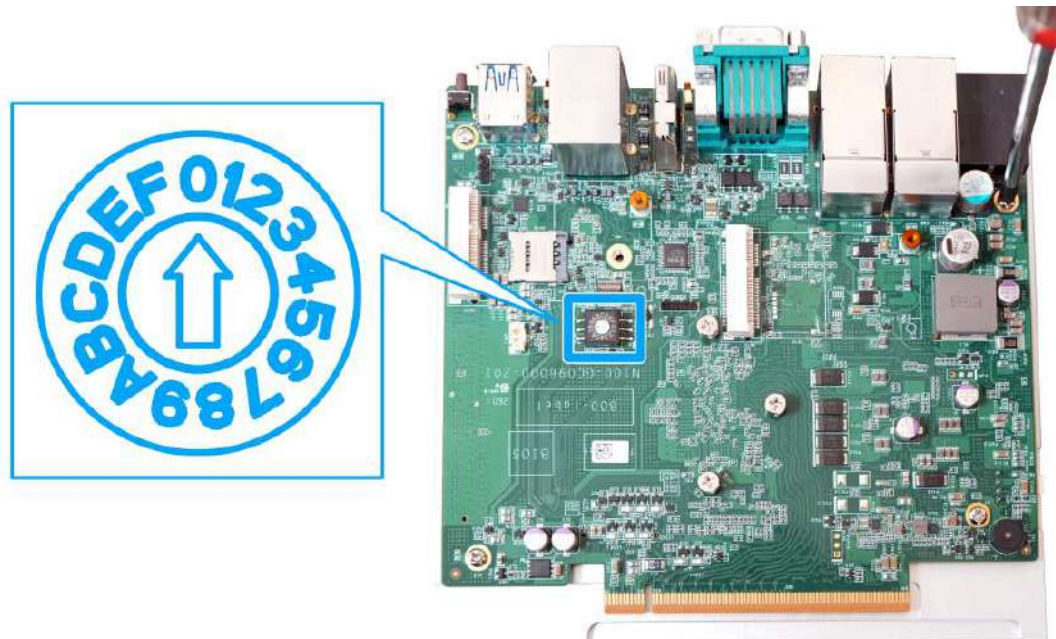
When applying ignition power control to your system, please make sure you've configured your Windows system to initiate a shutdown process when pressing the power button. By default, Windows 10 goes to sleep (S3) mode when power button is pressed. As sleep (S3) is not a complete shutdown behavior, the ignition control function does not recognize the finish of a normal shut down process and thus users will encounter a system hard-off (power cut-off after 10 minutes). Please configure "When I press the power button" to "Shut down" in your Windows system settings.



3.6.5 Operation Modes of Ignition Power Control

You can use the rotary switch to configure the operation mode. The system offers 16 (0~15) operation modes with different power-on/power-off delay configurations.

The ignition control rotary switch can be located on the motherboard. Please refer to the “Disassembling the enclosure” section on how to remove the bottom panel and gaining access to the rotary switch.



- **Mode 0**

Mode 0 is the ATX mode without power-on and power-off delay. User can only use the power button on the front panel to turn on or turn off the system.

Mode	Power-on Delay	Power-off Delay	Hard-off Timeout
0	N/A	N/A	N/A

- **Mode 1**

Mode 1 is AT mode without power-on and power-off delay. The system automatically turns on when DC power is applied. A retry mechanism is designed to repeat the power-on cycle if the system fails to boot up.

Mode	Power-on Delay	Power-off Delay	Hard-off Timeout
1	N/A	N/A	N/A

- **Mode 2**

Mode 2 is designed to have a very minor power on/ off delay of 160ms for applications that requires the system to start up almost at the same as the rest of the equipment it is working in collaboration with.

Mode	Power-on Delay	Power-off Delay	Hard-off Timeout
2	160ms	160ms	10 minutes

- **Mode 3 ~ Mode 12**

Mode 3 ~ Mode 12 have various power-on delay and power-off delay. Each mode supports a hard-off timeout of 10 minutes.

Mode	Power-on Delay	Power-off Delay	Hard-off Timeout
3	10 seconds	10 seconds	10 minutes
4	10 seconds	1 minute	10 minutes
5	10 seconds	5 minutes	10 minutes
6	30 seconds	1 minute	10 minutes
7	30 seconds	5 minutes	10 minutes
8	30 seconds	10 minutes	10 minutes
9	3 minutes	1 minute	10 minutes
10 (A)	3 minutes	10 minutes	10 minutes
11 (B)	3 minutes	30 minutes	10 minutes
12 (C)	10 minutes	30 minutes	10 minutes

- **Mode 13 (D) / Mode 14 (E)**

Mode 13 and Mode 14 are ignition power control modes with very long power-off delay. Both modes support the feature of “smart off-delay”, which automatically detect system status during power-off delay duration and cut off system power if system is off in prior to power-off delay expired.

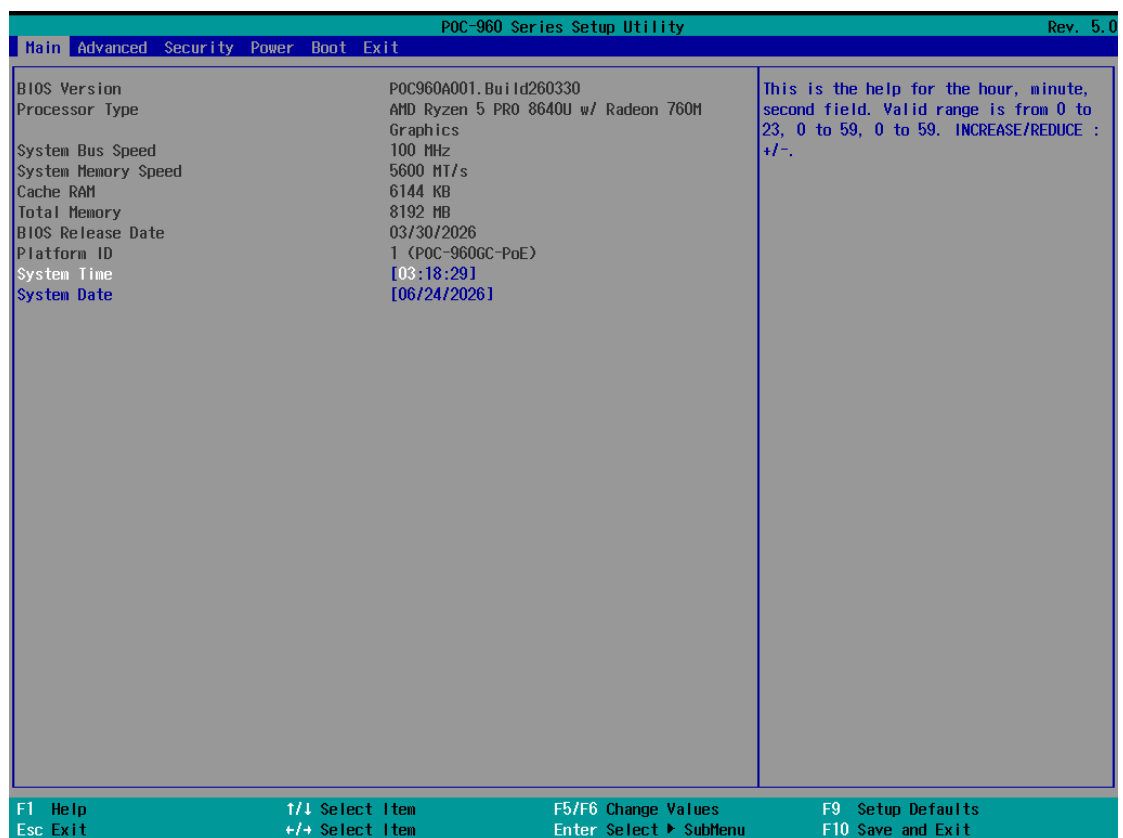
Mode	Power-on Delay	Power-off Delay	Hard-off Timeout
13 (D)	30 seconds	2 hours	10 minutes
14 (E)	3 minutes	2 hours	10 minutes

- **Mode 15 (F)**

Reserved

4 BIOS Settings

The system is shipped with factory-default BIOS settings optimized for best performance and compatibility. In this section, we'll illustrate some BIOS settings you may need to set or change prior to operating system installation. Please always make sure you understand the effect of change before you proceed with any changes. If you are unsure of the function you are changing, it is recommended to change one setting at a time to see its effect(s).

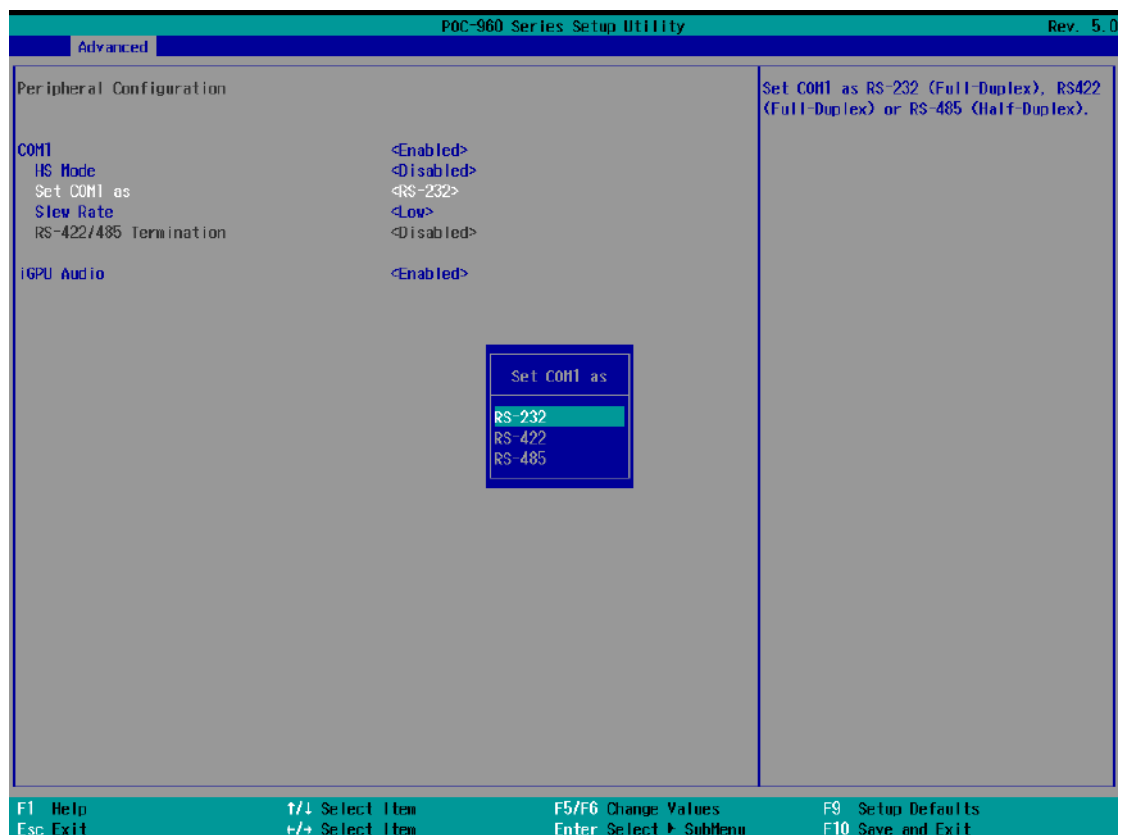


NOTE

Not all BIOS settings will be discussed in this section. If there is a particular BIOS setting you are after but is not discussed in this section, please contact Neousys Technical Support staff.

4.1 COM1 Port Configuration

The system's [COM1 port](#) supports RS-232 (full-duplex), RS-422 (full-duplex) and RS-485 (half-duplex) mode. You can set the COM1 operating mode via BIOS settings. Another option in BIOS called “*Slew Rate*” defines how sharp the rising/falling edge is for the output signal of COM1. For long-distance RS-422/485 transmission, you may set the “*Slew Rate*” option as “High” to improve signal quality. For RS-422/485 communication, the “*RS-422/485 Termination*” option determines whether to enable/disable internal termination of RS-422/485 transceiver according to your wiring configuration (e.g. with or without external termination).



To set COM1 operating mode:

1. Press **F2** when the system boots up to enter the BIOS setup utility.
2. Go to **[Advanced] → [Peripheral Configuration]**.
3. Set the **[Set COM1 Mode as]** option to the desired mode.
4. Once set, press **F10** to save setting and exit.

4.1.1 COM Port High Speed Mode

The high speed mode of each COM port effectively allows for the port's baud rate generator to operate at 8x the speed with an effective baud rate of 921,600 bps (115,200 x 8). Please refer to the following instructions on how to enable the high speed mode for your COM port (COM1 used as an example).

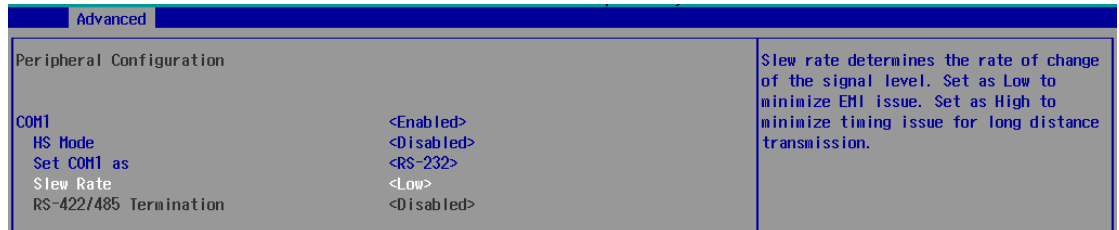


To set COM port high speed mode:

1. Press **F2** when the system boots up to enter the BIOS setup utility.
2. Go to **[Advanced] > [Peripheral Configuration]**.
3. Enable or set the **[Set COM1 Mode as]** option to the desired mode.
4. Highlight **[HS Mode]** and press ENTER to bring up options, highlight **[Enable]** and press ENTER.
5. Once set, press **F10** to save setting and exit.

4.1.2 COM Port Slew Rate

Another option in BIOS called “*Slew Rate*” defines how sharp the rising/falling edge is for the output signal of COM1. For long-distance RS-422/ 485 transmission, you may set the “*Slew Rate*” option as “High” to improve signal quality. For RS-422/485 communication, the “*RS-422/ 485 Termination*” option determines whether to enable/disable internal termination of RS-422/ 485 transceiver according to your wiring configuration (e.g. with or without external termination).



To set COM port Slew rate:

1. Press **F2** when the system boots up to enter the BIOS setup utility.
2. Go to **[Advanced]** → **[Peripheral Configuration]**.
3. Select and highlight the COM port > **[Slew Rate]**.
4. Set it to the desired mode **[Low]** or **[High]** and press Enter.
5. Once set, press **F10** to save setting and exit.

4.2 TPM Availability

Trusted Platform Module (TPM) is a hardware-based cryptoprocessor to secure hardware by integrating cryptographic keys into devices. The system is designed with on-board TPM 2.0 module. As TPM 2.0 requires 64-bit Windows 11 with UEFI boot mode, it is enabled in BIOS by default.

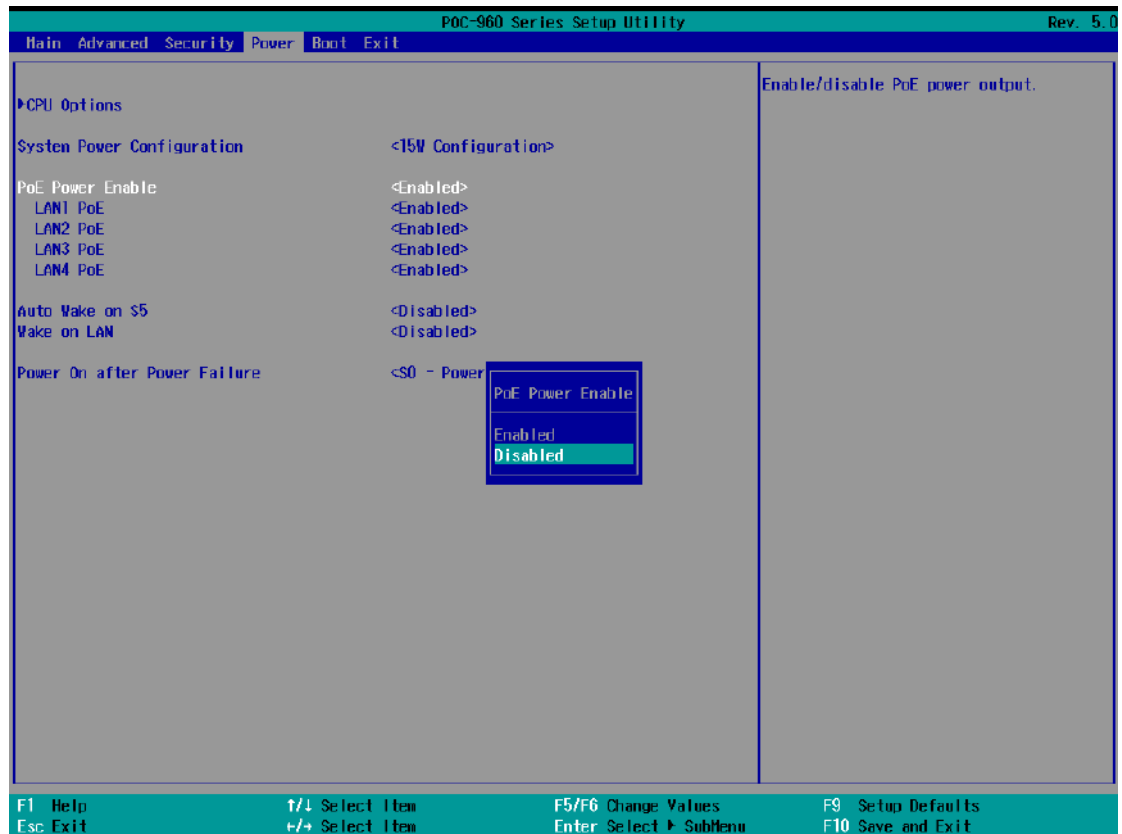


To enable TPM availability:

1. When system boots up, press F2 to enter BIOS setup utility.
2. Go to **[Security] > [TPM Availability]**, press ENTER to bring up Options, Available/ Hidden.
3. Highlight your selection, press Enter and press F10 to "Exit Saving Changes".

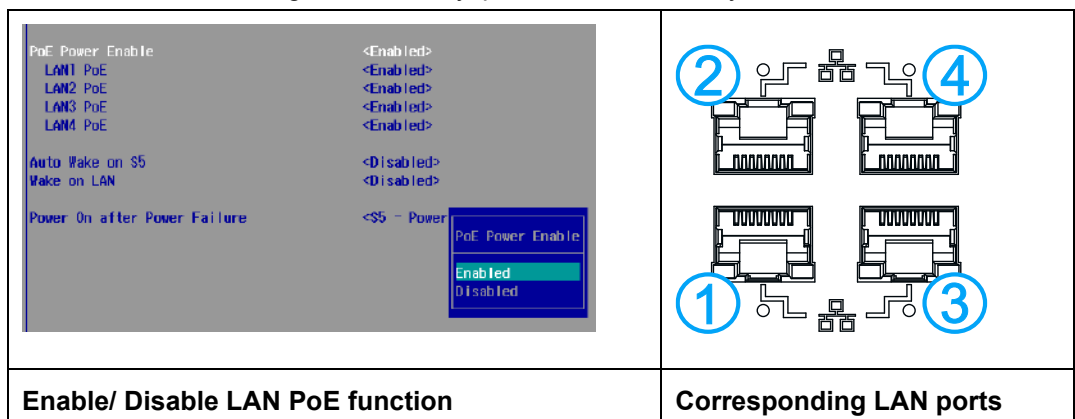
4.3 Power over Ethernet (Optional)

The Power over Ethernet (PoE) functionality is available on following ports, and it allows for the transmission of data and power delivery while utilizing a single Cat5 and higher grade Ethernet cable.



To enable/disable “PoE Power Enable” option:

1. Press **F2** when the system boots up to enter the BIOS setup utility.
2. Go to **[Power]**.
3. You may enable/disable the **[PoE Power Enable]** option.
4. When Enabled, you may set each LAN port's PoE function by selecting Enabled/ Disabled using the arrow key, press Enter to make your selection.



5. Once set, press F10 to save setting and exit.

4.4 Wake-on-LAN

Wake-on-LAN (WOL) is a mechanism which allows you to turn on your system via Ethernet connection. To utilize Wake-on-LAN function, you have to enable this option first in BIOS settings. Please refer to Powering on via Wake-on-LAN function.

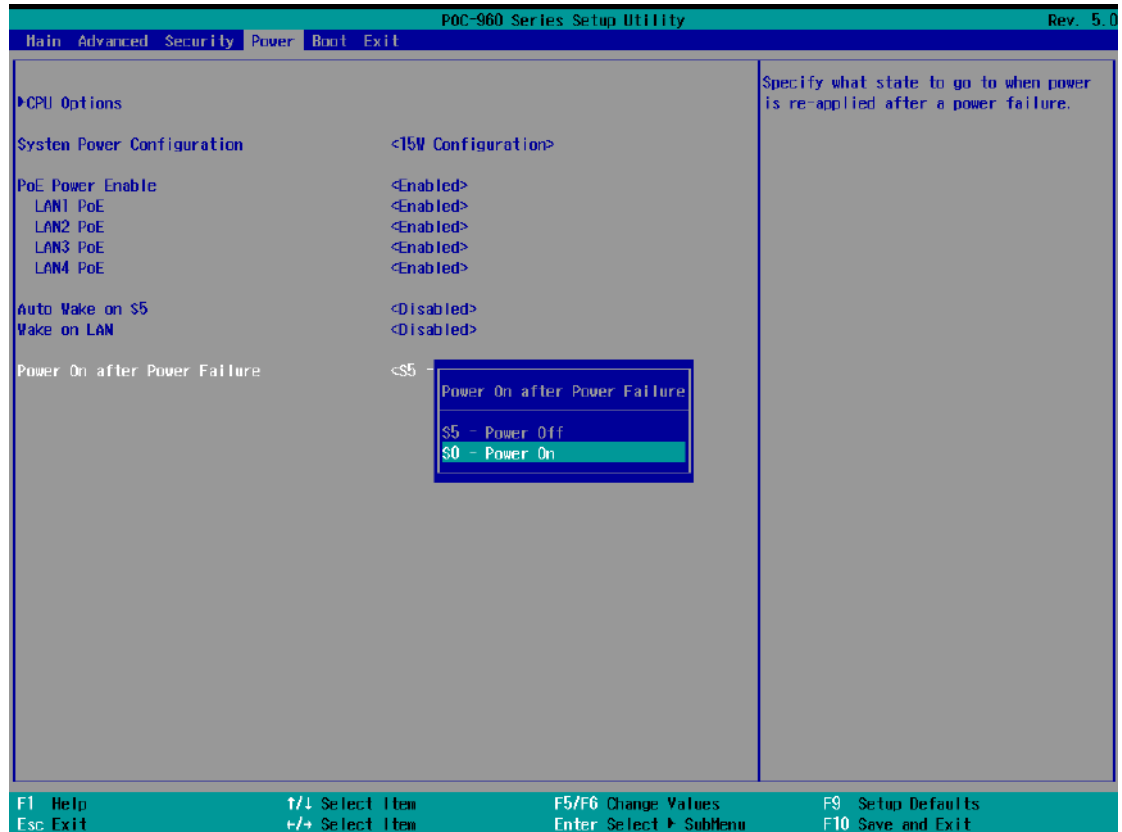


To enable/disable “Wake on LAN” option:

1. Press **F2** when the system boots up to enter the BIOS setup utility.
2. Go to **[Power]**.
3. You may enable/disable the **[Wake on LAN]** option.
4. Once set, press **F10** to save setting and exit.

4.5 Power On after Power Failure

This option defines the system's behavior when DC power is supplied.



Value	Description
S0 – Power On	System is powered on when DC power is supplied.
S5 – Power Off	System is kept in off state when DC power is supplied.

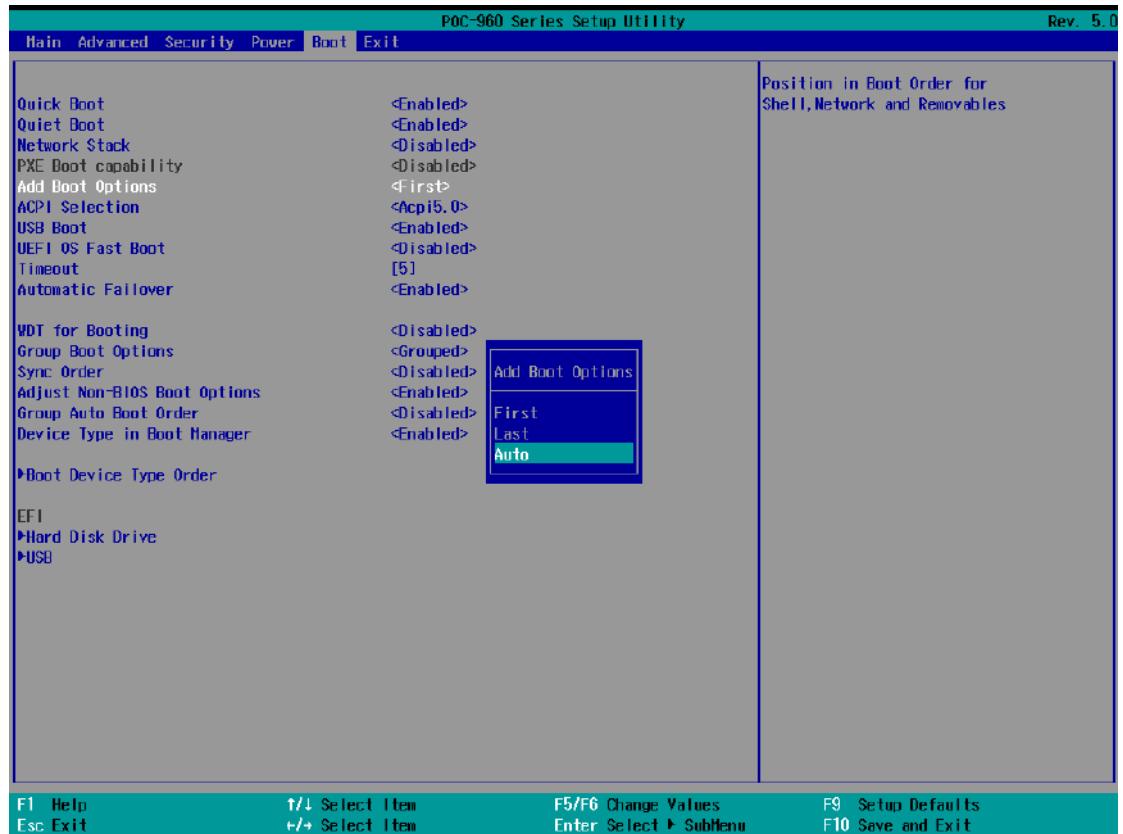
When you want to use the AT-mode remote on/off control function, you have to set this option to “S0 – Power On”. Please refer to ["Powering On Using An External Latch"](#) for instructions of using AT-mode remote on/off control function.

To set “Power On after Power Failure” option:

1. Press **F2** when the system boots up to enter the BIOS setup utility.
2. Go to **[Power]**.
3. Set the **[Power On after Power Failure]** option to the desired setting.
4. Once set, press **F10** to save setting and exit.

4.6 Position New Boot Device

The “Add Boot Options” allow you to determine whether a newly added device (eg. USB flash disk) is to boot as the first device to boot or the last in the boot sequence.

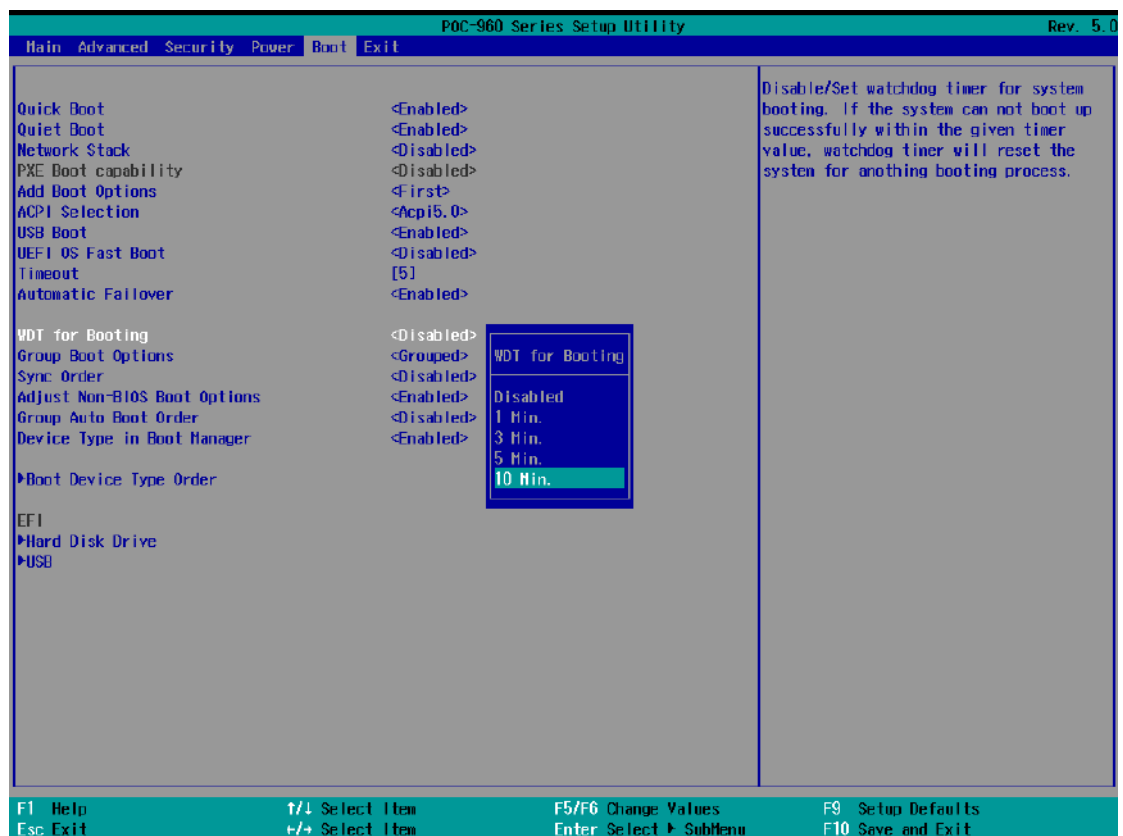


To set the newly-installed boot device as the first or last boot device:

1. Press **F2** when the system boots up to enter the BIOS setup utility.
2. Go to **[Boot] > [Add Boot Options]** menu.
3. Select **[First]** or **[Last]** for your newly-added boot device and press Enter.
4. Once set, press **F10** to save setting and exit.

4.7 Watchdog Timer

The watchdog timer secures the boot process by means of a timer. Once the timer expires, a reset command is issued to initiate another booting process. There are two options in BIOS menu, “*Automatically after POST*” and “*Manually after Entering OS*”. When “*Automatically after POST*” is selected, the BIOS automatically stops the watchdog timer after POST (Power-On Self Test) OK. When “*Manually after Entering OS*” is selected, the user must stop the watchdog timer once booted into the OS. This guarantees the system can always boot into the OS, otherwise another booting process will be initiated. For information about programming watchdog timer, please refer to [Appendix A Using WDT & DIO](#).



To set the watchdog timer for boot in BIOS:

1. Press **F2** when the system boots up to enter the BIOS setup utility.
2. Go to **[Boot]** menu.
3. Disable or select timeout value for **[WDT for Booting]** option.
4. Once you set a timeout value, the **[WDT Stop Option]** option appears. You can select either “*Automatically after POST*” or “*Manually after Entering OS*”.
5. Once set, press **F10** to save setting and exit.

5 OS Support and Driver Installation

5.1 Operating System Compatibility

POC-960GC series only provide driver support for the following operating systems. The following list contains the operating systems which have been tested in Neosys Technology Inc.

- Microsoft Windows 11 LTSC 24H2
- Ubuntu 24.04.4 LTS or other distribution with kernel version ≥ 6.17 *



NOTE

**For distributions, graphics driver may not be completely implemented in its kernel. You may encounter restrictions when using these features, such as multiple independent displays. For optimum operation, it is the users' responsibility to manually check for new drivers and upgrades!*

Neosys may remove or update operating system compatibility without prior notice. Please contact us if your operating system of choice is not on the list.

5.2 Driver Installation

The system drivers are available online, please click on this [Link](#) to download the drivers.

5.3 Driver for Watchdog Timer and DIO

Neosys provides a driver package which contain function APIs for Watchdog Timer control function. You should install the driver package (WDT_DIO_Setup.exe) in prior to use these functions. Please download the latest version of WDT_DIO_Setup.exe to ensure compatibility.

Please refer to this [Link](#) to download WDT_DIO.

Appendix A Using WDT & DIO

The watchdog timer (WDT) function ensures reliable system operation. The WDT is a hardware mechanism to reset the system if the watchdog timer is expired. Users can start the WDT and keeping resetting the timer to make sure the system or program is running. Otherwise, the system shall be reset.

In this section, we'll illustrate how to use the function library provided by Neosys to program the WDT functions. Currently, WDT driver library supports Windows 10 x64 and WOW64 platform. For other OS support, please contact Neosys Technology for further information.

Installing WDT_DIO Library

The WDT_DIO function library is delivered in the form of a setup package named **WDT_DIO_Setup.exe**. In prior to program WDT, you should execute the setup program and install the WDT library. Please use the following WDT_DIO_Setup packages according to your operating systems and application.

- For Windows 64-bit OS with 64-bit application (x64 mode), please install WDT_DIO_Setup_v2.4.1.0(x64).exe or later versions.



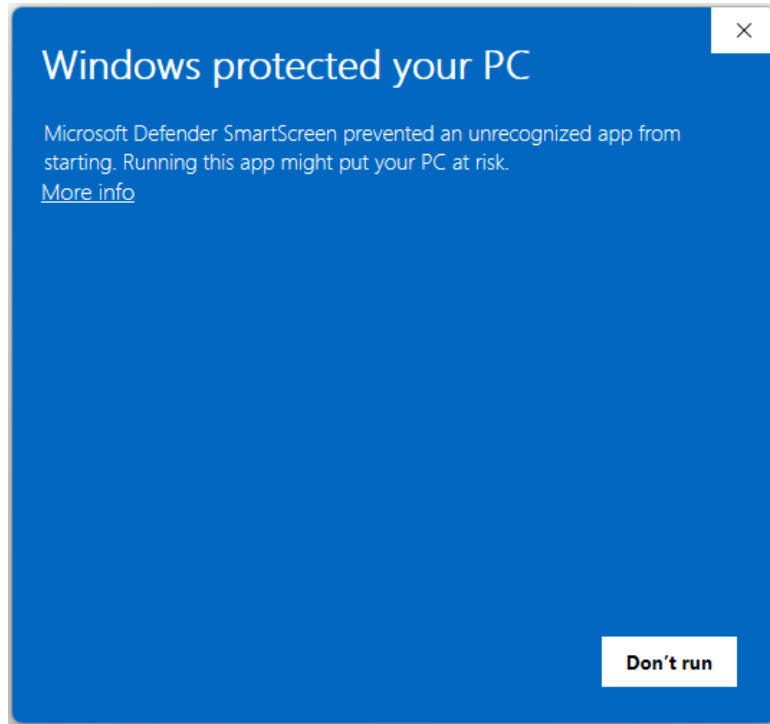
NOTE

Please download from Neosys website and install the latest WDT_DIO_Setup.exe file.

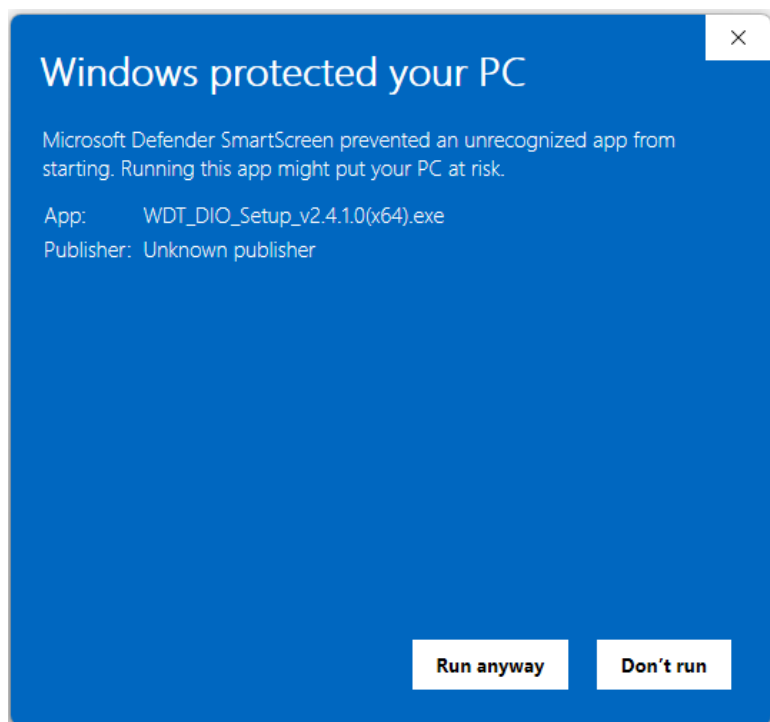
WDT and DIO Library Installation

To setup WDT & DIO Library, please follow instructions below.

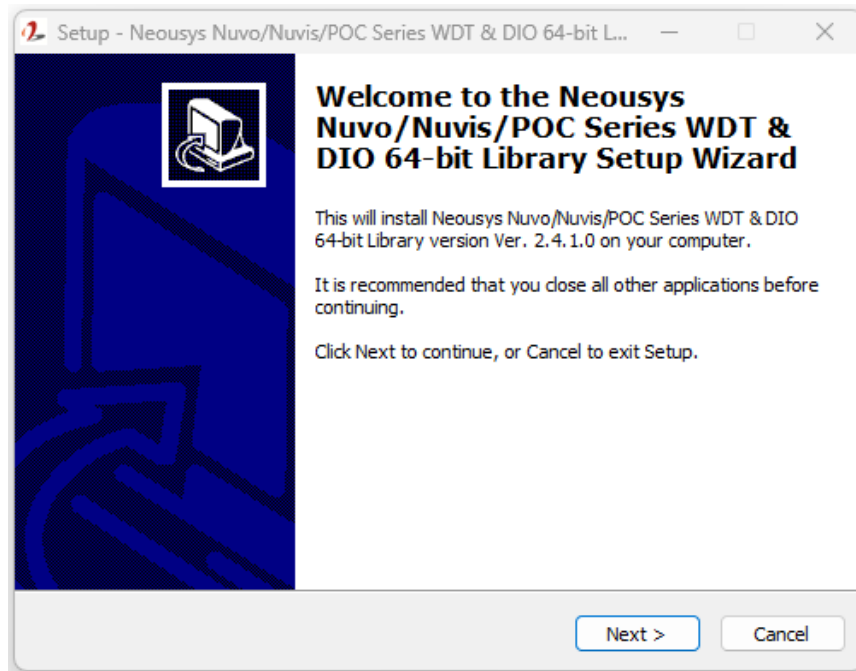
1. Execute **WDT_DIO_Setup.2.4.1.0.exe** (or later) and the following dialog may appear. If so, click on "More Info".



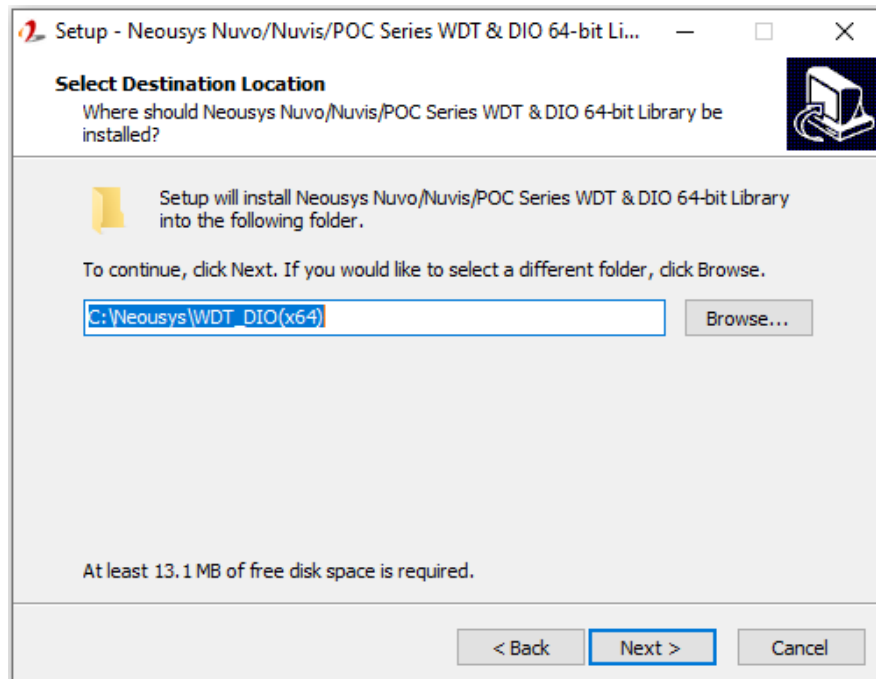
2. Click on "Run anyway" for installation, and click on "Yes" to proceed.



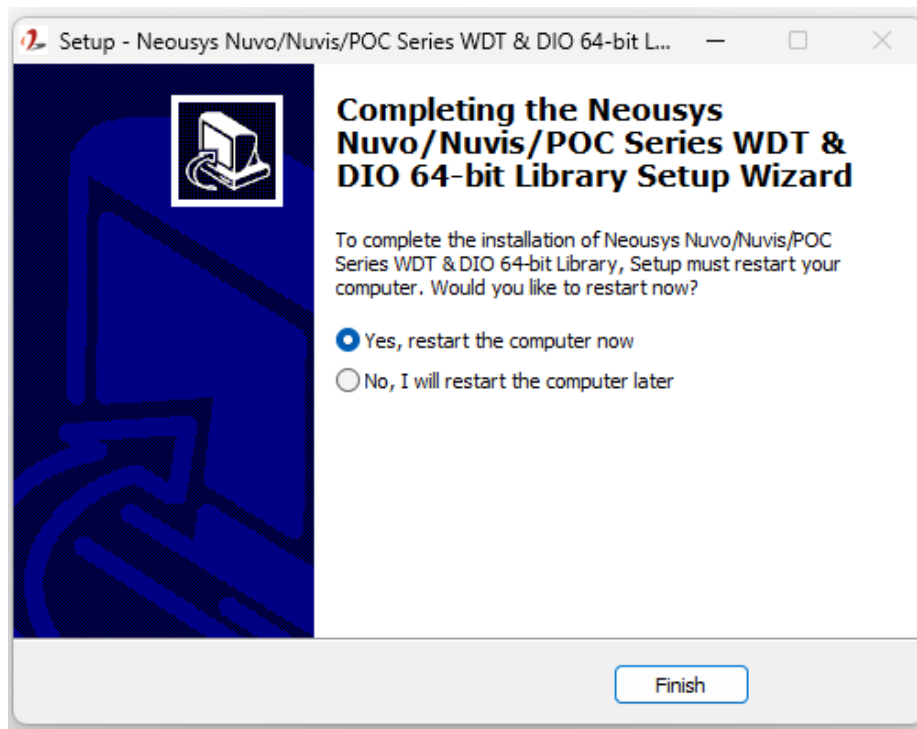
3. Click on Next to begin installation.



4. Specify the directory you would like to install to, and Click "Next >". The default directory is `C:\Neosys\WDT_DIO(x64)`.



5. Once the installation has finished, a dialog will appear to prompt you to reboot the system. The WDT & DIO library will take effect after the system has rebooted.



6. When programming your WDT or DIO program, the related files are located in

Header File:	\Include
Library File:	\Lib
Function Reference:	\Manual
Sample Code:	\Sample\WDT_Demo (Demo for Watchdog Timer) \Sample\DIO_Demo (Demo for isolated DIO Control) \Sample\COS_Demo (Demo for change-of-state DI)

WDT Function Reference

InitWDT

Syntax	BOOL InitWDT(void);
Description:	Initialize the WDT function. You should always invoke InitWDT() before set or start watchdog timer.
Parameter	None
Return Value	TRUE: Successfully initialized FALSE: Failed to initialize
Usage	BOOL bRet = InitWDT()

SetWDT

Syntax	BOOL SetWDT(WORD tick, BYTE unit);
Description	Set timeout value and unit for watchdog timer. When InitWDT() is invoked, a default timeout value of 255 seconds is assigned.
Parameter	<i>tick</i> WORD value (1 ~ 65535) to indicate timeout ticks. <i>unit</i> BYTE value (0 or 1) to indicate unit of timeout ticks. 0 : unit is minute 1: unit is second
Return Value	If value of unit is correct (0 or 1), this function returns TRUE, otherwise FALSE.
Usage	WORD tick=255; BYTE unit=1; //unit is second. BOOL bRet = SetWDT(tick, unit); //timeout value is 255 seconds

StartWDT

Syntax	BOOL StartWDT(void);
Description	Starts WDT countdown. Once started, the WDT LED indicator will begin blinking. If ResetWDT() or StopWDT is not invoked before WDT countdowns to 0, the WDT expires and the system resets.
Parameter	None
Return Value	If the timeout value is given in correct format (WDT started), this function returns TRUE, otherwise FALSE
Usage	BOOL bRet = StartWDT()

ResetWDT

Syntax	BOOL ResetWDT(void);
Description	Reset the timeout value to the value given by SetWDT().If ResetWDT() or StopWDT is not invoked before WDT countdowns to 0, the WDT expires and the system resets.
Parameter	None
Return Value	Always returns TRUE
Usage	BOOL bRet = ResetWDT()

StopWDT

Syntax	BOOL StopWDT(void);
Description	Stops the countdown of WDT. When WDT has stopped, the WDT LED indicator stops blinking.
Parameter	None
Return Value	Always returns TRUE
Usage	BOOL bRet = StopWDT()

Appendix B PoE On/ Off Control (Optional)

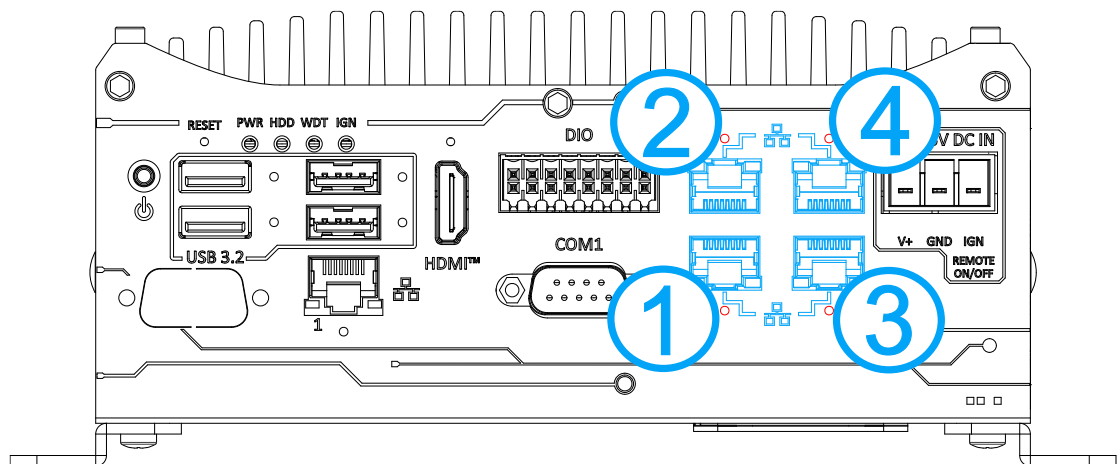
The system offers two 802.3at PoE+ ports with a unique feature to allow users manually turn on or off the power supply of each PoE port. This can be function can be useful in power device (PD) fault-recovery or power reset.

The function APIs are encapsulated in Neosys WDT_DIO driver package. Please follow the instructions in [Appendix A Watchdog Timer & Isolated DIO](#) to install the driver package prior to programming PoE on/off control function

PoE On/ Off Control Function Reference

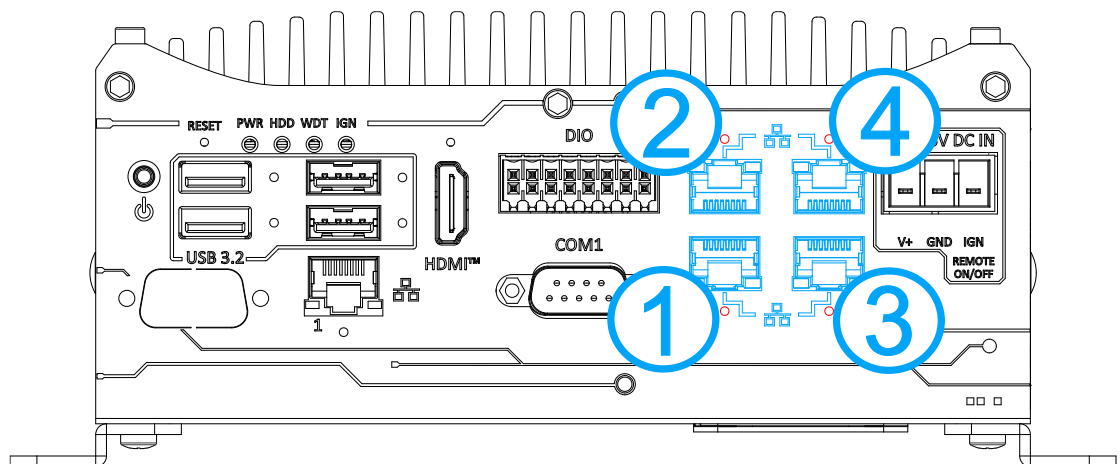
GetStatusPoEPort

Syntax	BYTE GetStatusPoEPort (Byte port);
Description	Get current on/off status of designated PoE port.
Parameter	<i>port</i> BYTE value specifies the index of PoE port. Please refer to the following illustration, <i>port</i> should be a value of 1 - 4.
Return Value	BYTE value indicating PoE on/off status 0 if port is disabled (off) 1 if port is enabled (on)
Usage	BYTE bEnabled = GetStatusPoEPort (1); //Get on/off status of PoE Port#1



EnablePoEPort

Syntax	BOOL EnablePoEPort (BYTE port);
Description	Turn on PoE power of designated PoE port.
Parameter	<i>port</i> BYTE value specifies the index of PoE port. Please refer to the following illustration, <i>port</i> should be a value of 1 - 4
Return Value	TRUE if enabled success FALSE if fail to enable.
Usage	BOOL bRet = EnablePoEPort (1); //Turn on PoE Port#1



DisablePoEPort

Syntax	BOOL DisablePoEPort (BYTE port);
Description	Turn off PoE power of designated PoE port
Parameter	<i>port</i> BYTE value specifies the index of PoE port. Please refer to the following illustration, <i>port</i> should be a value of 1 - 4
Return Value	TRUE if disabled success FALSE if fail to disable
Usage	BOOL bRet = DisablePoEPort (1); //Turn off PoE Port#1

