Neousys Technology Inc.

POC-451VTC Series

User Manual

Revision 1.6

Table of Contents

Table of Contents **2**
Legal Information **5**
Contact Information **6**
Declaration of Conformity **6**
Copyright Notice **7**
Safety Precautions **8**
Service and Maintenance **9**
ESD Precautions **9**
About This Manual **10**

1 Introduction

1.1 Specification of POC-451VTC **12**
1.2 Dimension **14**
1.2.1 Superior View 14
1.2.2 Front Panel View 14
1.2.3 Bottom View 15
1.2.4 Dimensions with Wall Mount 15
1.2.5 Exploded View with Vertical Wall Mount 16

2 System Overview

2.1 Unpacking the System **17**
2.2 POC-451VTC Series Front Panel **18**
2.2.1 USB 3.1 Gen 1 Port 19
2.2.2 2.5G Ethernet Port 20
2.2.3 System Status LED 21
2.2.4 USB 2.0 Port 22
2.2.5 DisplayPort 23
2.2.6 CMOS Reset Button 24
2.2.7 IEEE 802.3at Power over Ethernet Port 25
2.2.8 3-Pin Terminal Block 26
2.3 POC-451 Series COM Port Panel **27**
2.3.1 Power Button 28
2.3.2 Reset Button 29
2.3.3 COM Port (COM1) 30
2.3.4 COM Ports (COM2/ COM3/ COM4) 31
2.3.5 3.5mm Microphone-in/ Speaker-out Jack 32
2.3.6 SMA Antenna Opening 32
2.4 POC-451VTC DIO Port Panel **33**
2.4.1 Digital Input/ Output 34
2.5 POC-451 Series Internal I/O **36**
2.5.1 SO-DIMM Memory Socket 36
2.5.2 M.2 2230 E Key Socket 37
2.5.3 M.2 2280 M Key 39
2.5.4 Mini-PCIe Slot on MezIO™ Card 41
2.5.5 M.2 B Key 2242/ 3042/ 3052 Slot on MezIO™ Card 43

3 System Installation

3.1 Disassembling the System Enclosure **46**
3.2 Installing Internal Components **51**
3.2.1 SO-DIMM Installation 51
3.2.2 M.2 2280 M Key Module Installation (on MezIO™ Card) 53
3.2.3 M.2 2280 M Key Module Installation (on Motherboard) 55
3.2.4 M.2 2230 E Key Module Installation (on MezIO™ Card) 57
3.2.5 M.2 2230 E Key Module Installation (on Motherboard) 60
3.2.6 M.2 B Key 2242/ 3042/ 3052 Module Installation 63

3.2.7 mini-PCIe Module Installation (USB 2.0 Signal Only) 67
3.3 Installing the System Enclosure 70
3.4 Vertical Wall Mount Installation 73
3.5 DIN Rail Installation (Optional) 74
3.6 Powering On the System 76
3.6.1 Powering On Using the Power Button 76
3.6.2 Powering On Using An External Non-Latched Switch 77
3.6.3 Powering On Using Wake-on-LAN 78
3.7 Ignition Power Control 81
3.7.1 Principles of Ignition Power Control 81
3.7.2 Additional Features of Ignition Power Control 82
3.7.3 Wiring Ignition Signal 83
3.7.4 Configure your Windows system 84
3.7.5 Operation Modes of Ignition Power Control 85
3.7.6 BIOS Ignition Power Control [Mode 15 (F)] 87

4 BIOS Settings

4.1 COM1 Port Configuration 92
4.2 COM2/ 3/ 4 Port Configuration 93
4.3 C-States 94
4.4 Power over Ethernet 95
4.5 Wake-on-LAN 95
4.6 Power On after Power Failure 96
4.7 Position New Boot Device 97
4.8 Watchdog Timer 98

5 OS Support and Driver Installation

5.1 Operating System Compatibility 99
5.2 Driver Installation 100
5.2.1 Install Drivers Automatically 100
5.2.2 Install Drivers Manually 101
5.3 Driver for Watchdog Timer and DIO 102

Appendix A Using WDT & DIO

WDT and DIO Library Installation 104
WDT Function Reference 106
InitWDT 106
SetWDT 106
StartWDT 107
ResetWDT 107
StopWDT 107
Using DIO Function 108
Wiring for DIO 108
DIO Pin Definition 109
DIO Function Reference 110
InitDIO 110
DIReadLine 110
DIReadPort 110
DOWriteLine 111
DOWritePort 111
DOWriteLineChecked 112
DOWritePortChecked 112
COS Function Reference 113
SetupDICOS 113
RegisterCallbackDICOS 114
StartDICOS 114
StopDICOS 115
DI COS Example 115

Appendix B PoE On/ Off Control

PoE On/ Off Control Function Reference 118
GetStatusPoEPort 118
EnablePoEPort 119
DisablePoEPort 120

Legal Information

All Neousys Technology Inc. products shall be subject to the latest Standard Warranty Policy

Neousys Technology Inc. may modify, update or upgrade the software, firmware or any accompanying user documentation without any prior notice. Neousys Technology Inc. will provide access to these new software, firmware or documentation releases from download sections of our website or through our service partners.

Before installing any software, applications or components provided by a third party, customer should ensure that they are compatible and interoperable with Neousys Technology Inc. product by checking in advance with Neousys Technology Inc. Customer is solely responsible for ensuring the compatibility and interoperability of the third party's products. Customer is further solely responsible for ensuring its systems, software, and data are adequately backed up as a precaution against possible failures, alternation, or loss.

For questions in regards to hardware/ software compatibility, customers should contact Neousys Technology Inc. sales representative or technical support.

To the extent permitted by applicable laws, Neousys Technology Inc. shall NOT be responsible for any interoperability or compatibility issues that may arise when (1) products, software, or options not certified and supported; (2) configurations not certified and supported are used; (3) parts intended for one system is installed in another system of different make or model.

Contact Information

Headquarters (Taipei, Taiwan)	**Neousys Technology Inc.** 15F, No.868-3, Zhongzheng Rd., Zhonghe Dist., New Taipei City, 23586, Taiwan Tel: +886-2-2223-6182 Fax: +886-2-2223-6183 Email, Website
Americas (Illinois, USA)	**Neousys Technology America Inc.** 3384 Commercial Avenue, Northbrook, IL 60062, USA Tel: +1-847-656-3298 Email, Website
China	**Neousys Technology (China) Ltd.** Room 612, Building 32, Guiping Road 680, Shanghai Tel: +86-2161155366 Email, 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.

Copyright Notice

All rights reserved. This publication may not be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language or computer language, in any form or by any means, electronic, mechanical, magnetic, optical, chemical, manual or otherwise, without the prior written consent of Neousys Technology, Inc.

Disclaimer

This manual is intended to be used as an informative guide only and is subject to change without prior notice. It does not represent commitment from Neousys Technology Inc. Neousys Technology Inc. shall not be liable for any direct, indirect, special, incidental, or consequential damages arising from the use of the product or documentation, nor for any infringement on third party rights.

Patents and Trademarks

Neousys, the Neousys logo, Expansion Cassette, MezIO™ are registered patents and trademarks of Neousys Technology, Inc.

Windows is a registered trademark of Microsoft Corporation.

Intel®, Core™ are registered trademarks of Intel Corporation

NVIDIA®, GeForce® are registered trademarks of NVIDIA Corporation

All other names, brands, products or services are trademarks or registered trademarks of their respective owners.

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 a Listed Power Adapter or DC power source, rated 8-35Vdc, 16A, Tma 70 degree C and 5000m 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

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

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

About This Manual

This manual introduces and demonstrates installation procedures for Neousys POC-451VTC system.

Revision History

Version	Date	Description
1.0	Dec. 2022	Initial release
1.1	Feb. 2023	Updated ignition control information (smart off-delay)
1.2	Apr. 2023	Updated COM port specifications (to reserved DB9 connectors)
1.3	Jun. 2023	Updated ignition control Mode 15 configuration
1.4	Jul. 2023	Updated CMOS reset button description
1.5	Nov. 2024	Updated specifications table
1.6	Oct. 2025	Updated Ethernet specifications and supported operating systems

1 Introduction

POC-451VTC is an ultra-compact in-vehicle computer with E-Mark certificate for in-vehicle applications, such as a mobile gateway, mobile surveillance and passenger information system. Leveraging the Intel® Elkhart Lake Atom® x6425E CPU, it delivers 1.8x the CPU and 2x the GPU performance improvement when compared to the previous generation, POC-351VTC.

POC-451VTC provides multiple M.2 and mPCIe slots to install 4G, WiFi5/6, and CAN bus for modern in-vehicle applications. It can therefore extend WiFi and broadband wireless communications as well as provide AI inference functionality inside a compact footprint. To cope with the high-performance modules, POC-451VTC has a dedicated conduction-cooled heat spreader to dissipate the heat generated by M.2/mPCIe modules to maintain optimal system performance in high-temperature environments.

Connectivity-wise, POC-451VTC offers three 2.5GBASE-T Ethernet ports with PoE+ capability for powering PoE PD devices, such as IP and GigE cameras. The ports are backward-compatible with 1000/100 Mbps Ethernet to work with most existing Ethernet devices. The system also provides isolated DIO for sensor/ actuator control and 8V-35V wide range DC input with ignition power control for in-vehicle deployment.

With a significant performance boost, 2.5G PoE+ ports, superior thermal reliability for communication and inference, POC-451VTC is an AI-capable, mobile gateway solution that opens the door to more possibilities for in-vehicle applications.

1.1 Specification of POC-451VTC

System Core	
Processor	Intel® Elkhart Lake Atom® x6425E quad-core 2.0GHz/3.0GHz 12W processor
Graphics	Integrated Intel® UHD Graphics
Memory	Up to 32 GB DDR4-3200 SDRAM by one SODIMM socket
TPM	Supports fTPM 2.0
Panel I/O Interface	
Ethernet	3x 2.5GBASE-T Ethernet ports by Intel® I226-IT/ I225-IT GbE controllers
PoE+	IEEE 802.3at PoE+ on port #2 and #3
USB 3.0	2x USB 3.2 Gen1 (5 Gbps) ports
USB 2.0	2x USB 2.0 ports
Video Port	2x DisplayPort connector, supporting 4096 x 2160 resolution @ 60Hz
Serial Port	1x software-programmable RS-232/422/485 ports (COM1) 3x 3-wire RS-232 ports (COM2/3/4) or 1x RS-422/485 port (COM2)
Audio	1x 3.5 mm jack for mic-in and speaker-out
Isolated DIO	4x isolated DI and 4x isolated DO
Storage Interface	
M.2 M key	2x M.2 2280 SATA interface
Internal Expansion Bus	
M.2 E key	1x M.2 2230 E key socket for WiFi module, Google Edge TPU
M.2 B key	1x M.2 2242/ 3052 B key socket for 4G/5G module with dual SIM support
Mini-PCIe	1x full-size mini-PCIe socket (USB2 signal only)
Expandable I/O	1x MezIO™ expansion port for Neousys MezIO™ modules
Power Supply	
DC Input	1x 3-pin pluggable terminal block for 8-35V DC input with built-in ignition power control (IGN/GND/V+)
Mechanical	
Dimension	153 mm (W) x 108 mm (D) x 72 mm (H)
Weight	1.4kg
Mounting	Vertical-type wall-mount (standard) DIN-rail mount (optional)
Environmental	

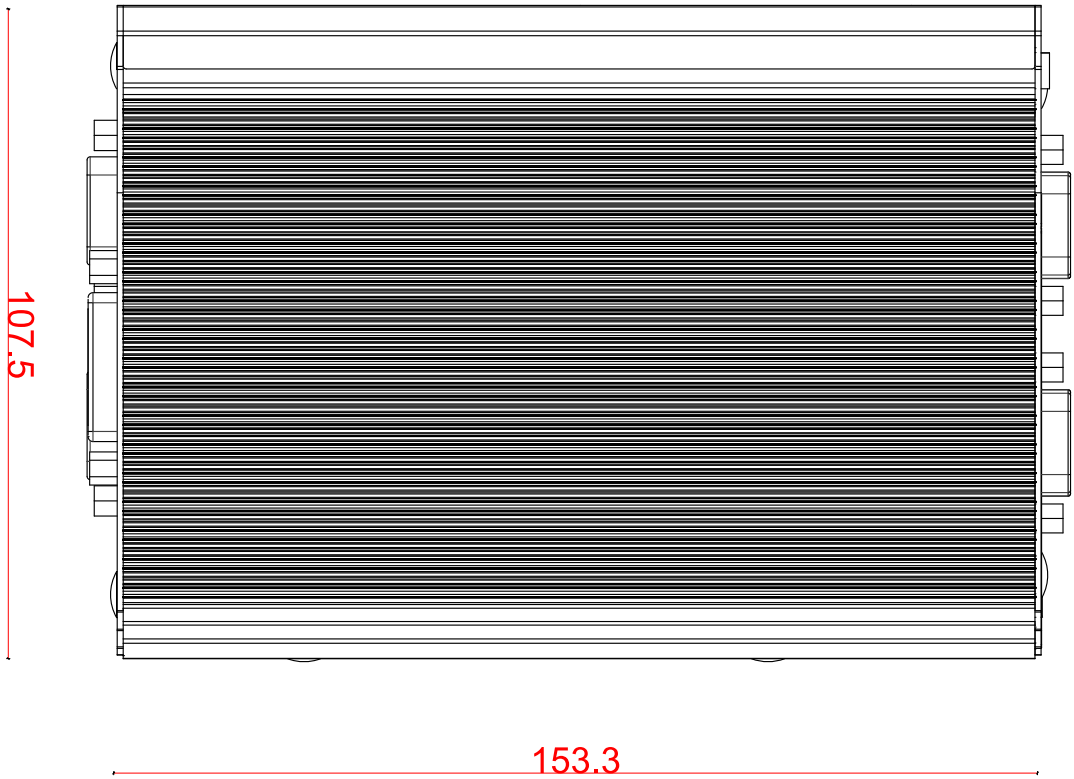
Operating Temperature	-25°C to 70°C */**
Storage Temperature	-40°C to 85°C
Humidity	10% to 90%, non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II
EMC	E-MARK CE/FCC Class A, according to EN 55032 & EN 55035

* For wide temperature conditions, a wide temperature/ industrial M.2 M key SATA SSD module is required.

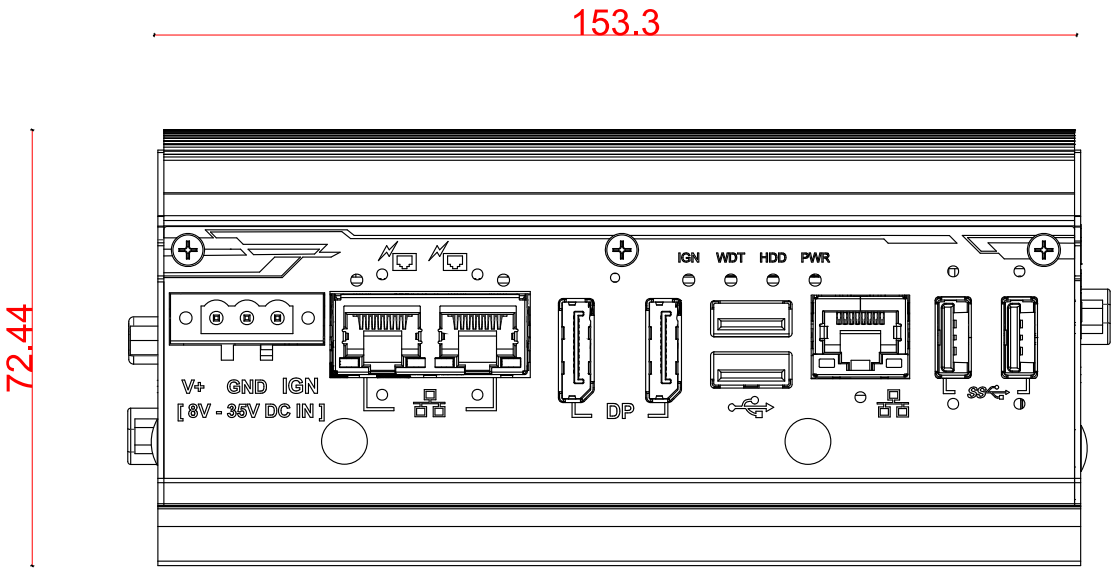
** With all modules installed and functions applied (both the mini-PCIe and M.2 modules are all installed), the operating temperature may be constrained by mini-PCIe and M.2 modules.

1.2 Dimension

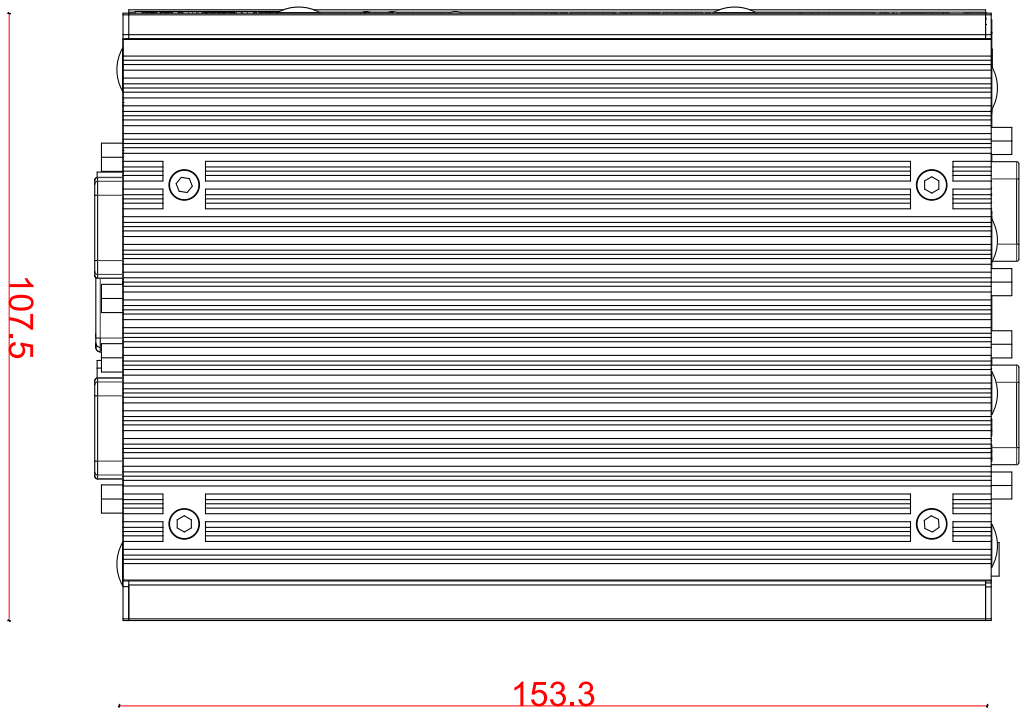
1.2.1 Superior View



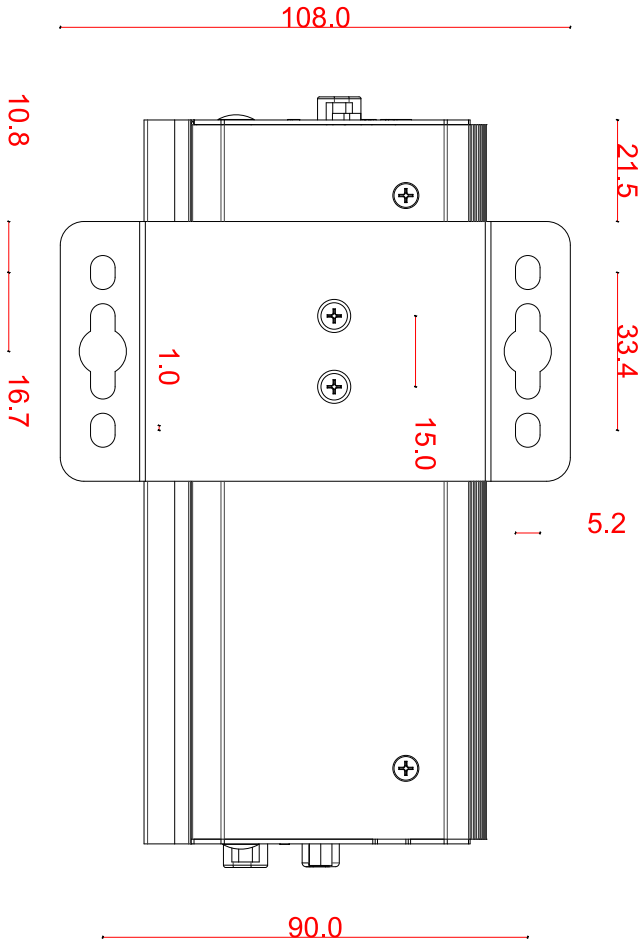
1.2.2 Front Panel View



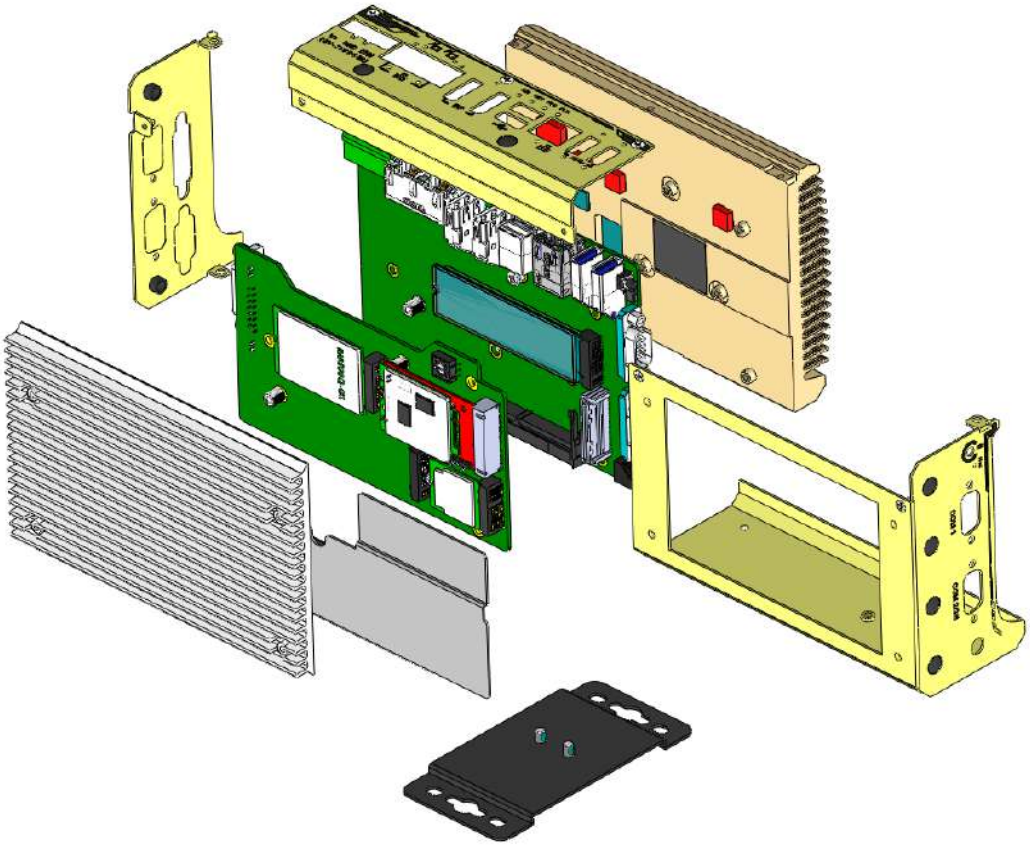
1.2.3 Bottom View



1.2.4 Dimensions with Wall Mount



1.2.5 Exploded View with Vertical Wall Mount



2 System Overview

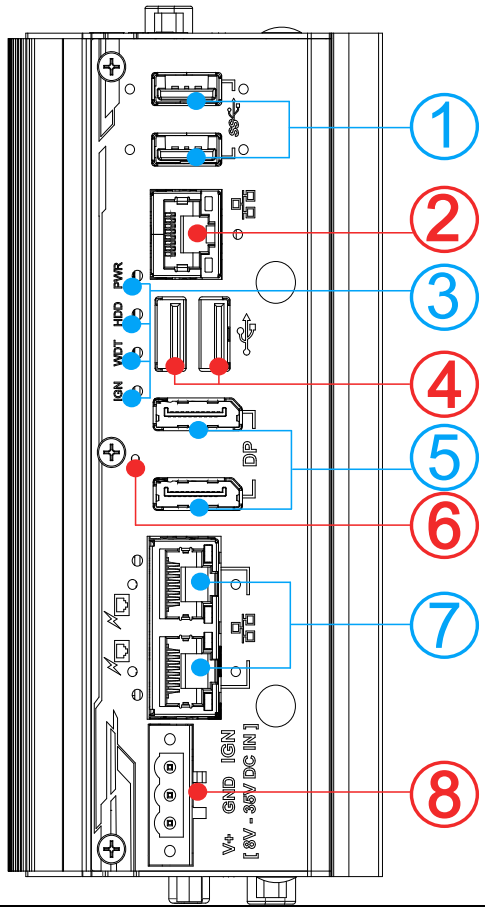
Upon receiving and unpacking your POC-451VTC system, please check immediately if the package contains all the items listed in the following table. If any item(s) are missing or damaged, please contact your local dealer or Neousys Technology.

2.1 Unpacking the System

Item	Description	Qty
1	POC-451VTC ultra-compact fanless computer (Please verify additionally purchased accessories such as memory module, M.2 SSD, etc.)	1
2	3-pin pluggable terminal block	1
3	Neousys Drivers & Utilities DVD	1
4	DIN-Rail Mount Clip	1
5	Screw package	1

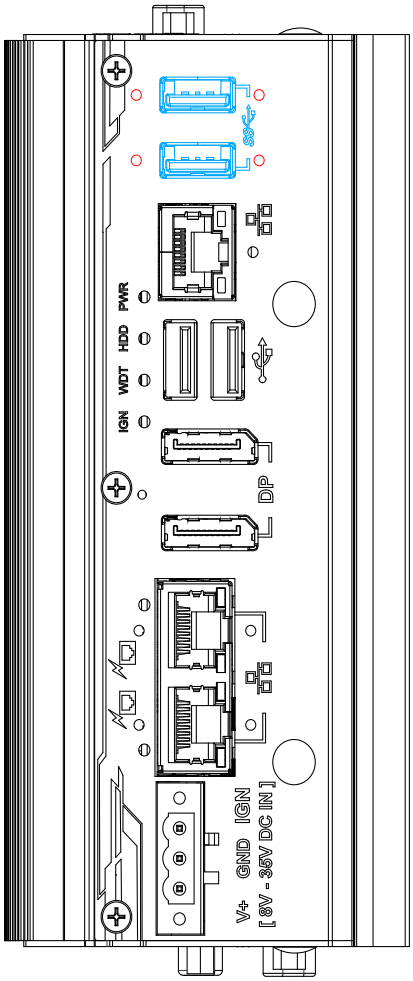
2.2 POC-451VTC Series Front Panel

The front panel of POC-451VTC systems feature rich I/O ports, it has three 2.5G Ethernet ports (two are PoE+ ports for POC-451VTC), two USB3.1 Gen1 ports, two USB2.0 ports, two DisplayPort ports for video output, CMOS reset button and 3-pin terminal block for DC input.



No.	Item	Description
1	USB 3.1 Gen 1 port	The USB 3.1 Gen1 ports support up to 5Gbit/s data transfer bandwidth and are backward compatible with USB 2.0/ 1.1/ 1.0.
2	2.5G Ethernet port	The Ethernet port offers up to 2.5Gb/s transfer bandwidth
3	System status LED	Four system LEDs, Power (PWR), Hard Disk Drive (HDD), Watchdog Timer (WDT) and Ignition control (IGN)
4	USB 2.0 port	The USB 2.0 ports offer up to 480Mbit/s bandwidth and are backward compatible with USB 1.1/ 1.0.
5	DisplayPort	The dual DisplayPort ports can support up to 4096 x 2160 @ 60Hz resolution each.
6	CMOS reset button	Use this button to manually reset the CMOS.
7	2.5G PoE+ port	2.5Gb/s Power over Ethernet (PoE) port can provide both data and electric power to devices.
8	3-pin terminal block (DC/ ignition input)	Compatible with DC power input from 8 to 35V, the terminal block can also be used for ignition signal input.

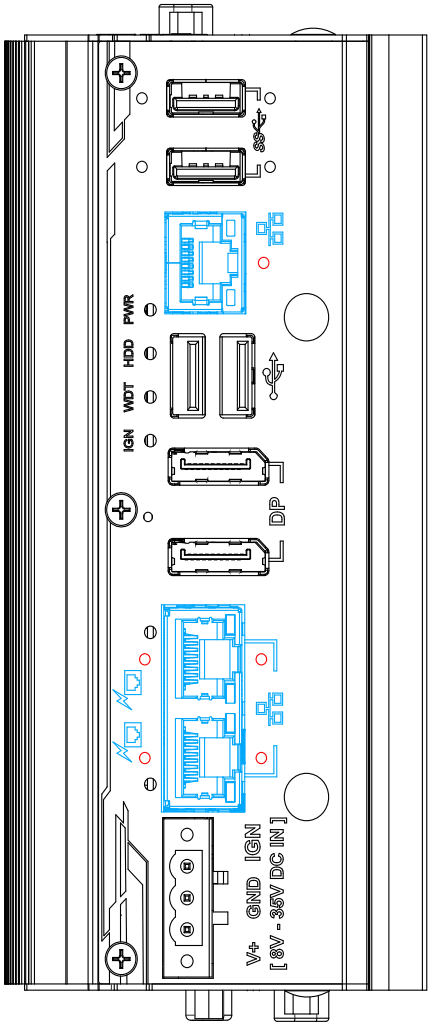
2.2.1 USB 3.1 Gen 1 Port



The system offers two USB 3.1 Gen1 (SuperSpeed USB) ports with screw-lock mechanism (indicated in **red**) 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.

xHCI driver is supported natively in Windows 10, therefore you do not need to install xHCI driver in prior to utilize USB function.

2.2.2 2.5G Ethernet Port



The system offers three 2.5Gb Ethernet ports. From top to bottom, they are port #1, #2 and #3, each come with screw-lock mechanism (indicated in **red**). When plugged in and connected via the Ethernet cable, the LEDs on the RJ45 connector indicate connection status and speed.

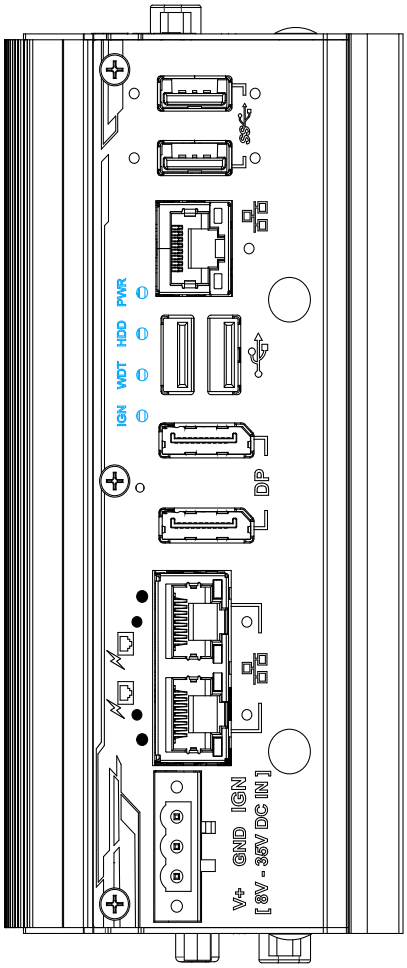
Active/Link LED (Right)

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
	Orange	2500 Mbps

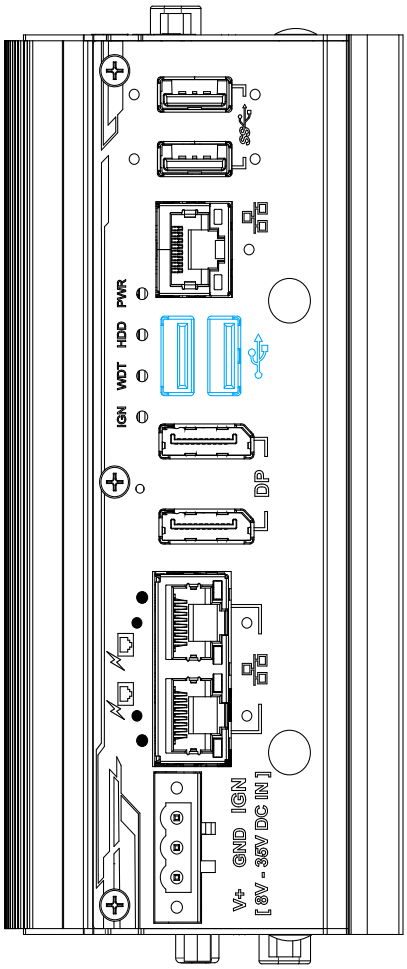
2.2.3 System Status LED



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

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

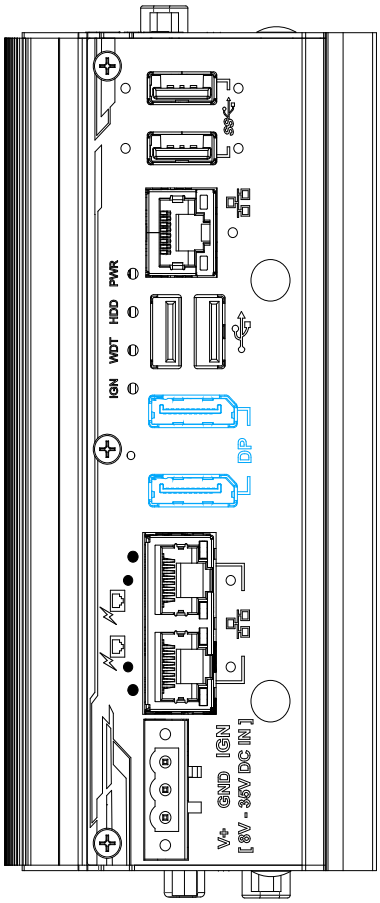
2.2.4 USB 2.0 Port



The USB2.0 ports are implemented via native xHCI (eXtensible Host Controller Interface) and are backward compatible with 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.

xHCI driver is supported natively in Windows 10, therefore you do not need to install xHCI driver to utilize USB functions.

2.2.5 DisplayPort



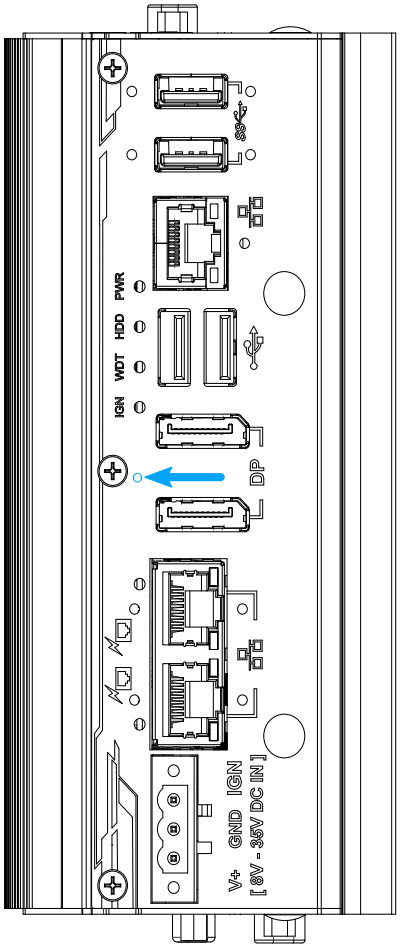
The system has two DisplayPort (DP) outputs which are digital display interfaces that mainly connect video source and carry audio to a display device. When connecting a DP, it can deliver up to 4K UHD (4096 x 2160 @ 60Hz) in resolution. The system is designed to support passive DP adapter/ cable. You can connect to other display devices using DP-to-HDMI cable or DP-to-DVI cable.

DP-to-HDMI

DP-to-DVI

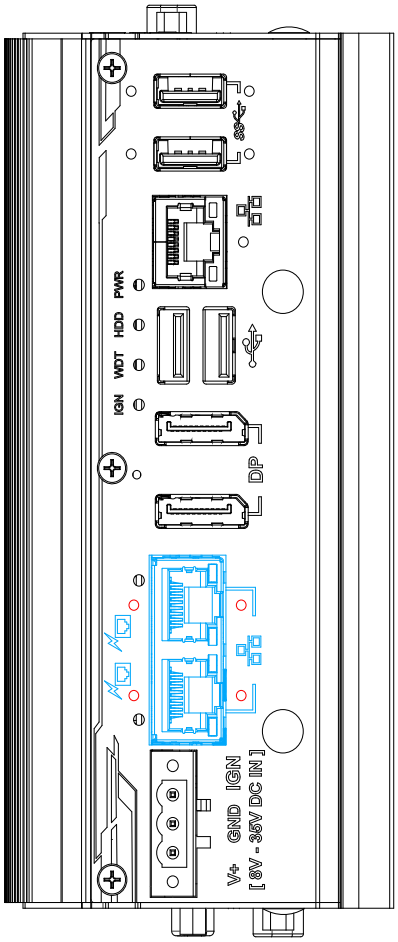
The system supports dual independent display outputs by connecting display devices DisplayPort connections. To support dual display outputs and achieve best DisplayPort output resolution in Windows, you need to install corresponding graphics drivers. Please refer to section OS Support and Driver Installation for details.

2.2.6 CMOS Reset 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 IEEE 802.3at Power over Ethernet Port



The Gigabit Power over Ethernet (PoE) port 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). 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.

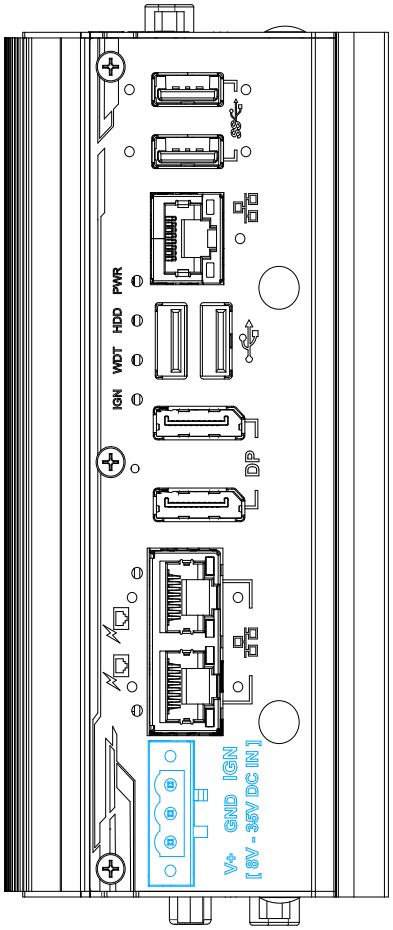
Active/Link LED (Right)

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
	Orange	2500 Mbps

2.2.8 3-Pin Terminal Block



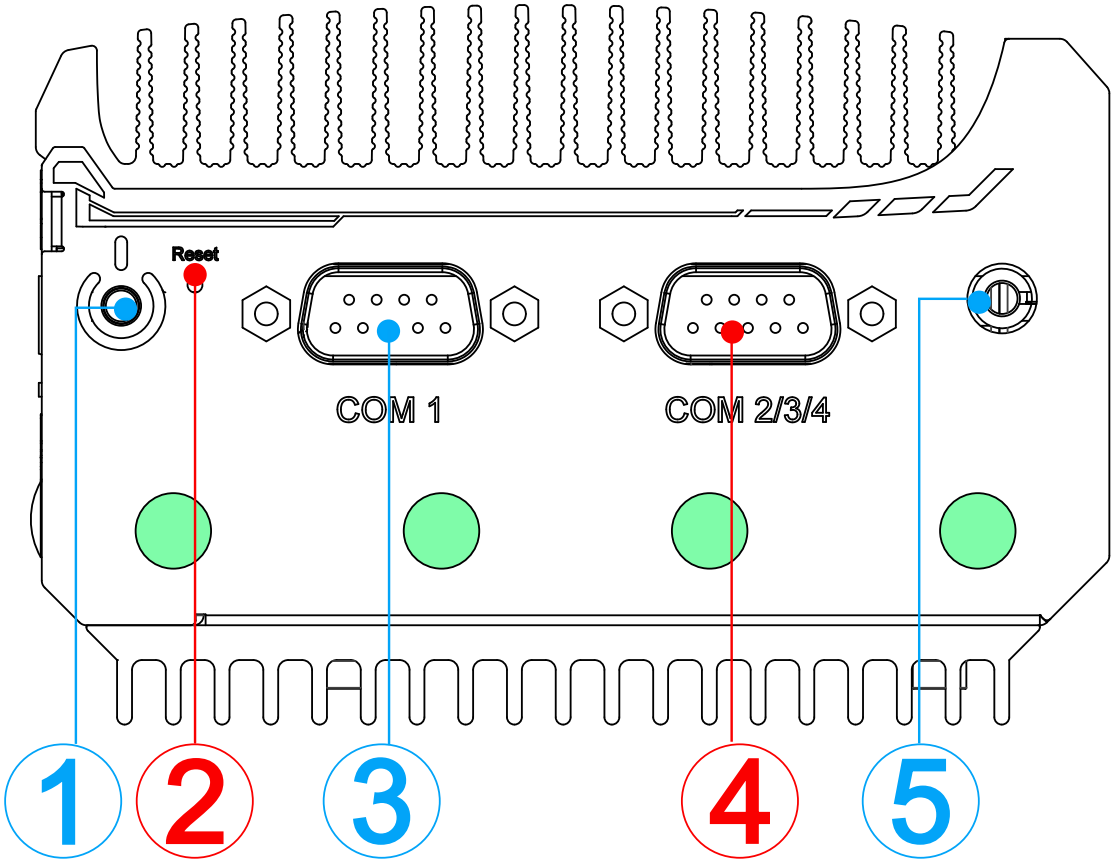
The system accepts a wide range of DC power input from 8 to 35V via a 3-pin pluggable terminal block, which is fit for field usage where DC power is usually provided. The screw clamping mechanism on the terminal block offers connection reliability when wiring DC power.

WARNING

Please make sure the voltage of DC power is correct before you connect it to the system. Supplying a voltage over 35V will damage the system.

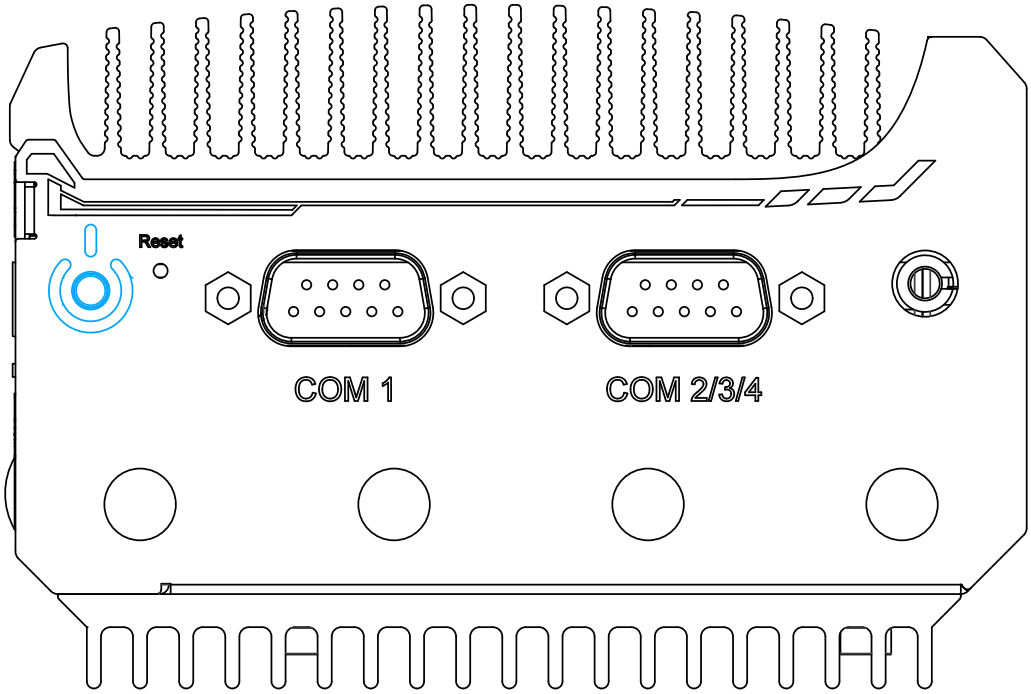
2.3 POC-451 Series COM Port Panel

The COM port panel of POC-451 series features additional I/O functions, such as a 3.5mm speaker-out/ microphone-in jack, COM ports and antenna holes for antenna installation.



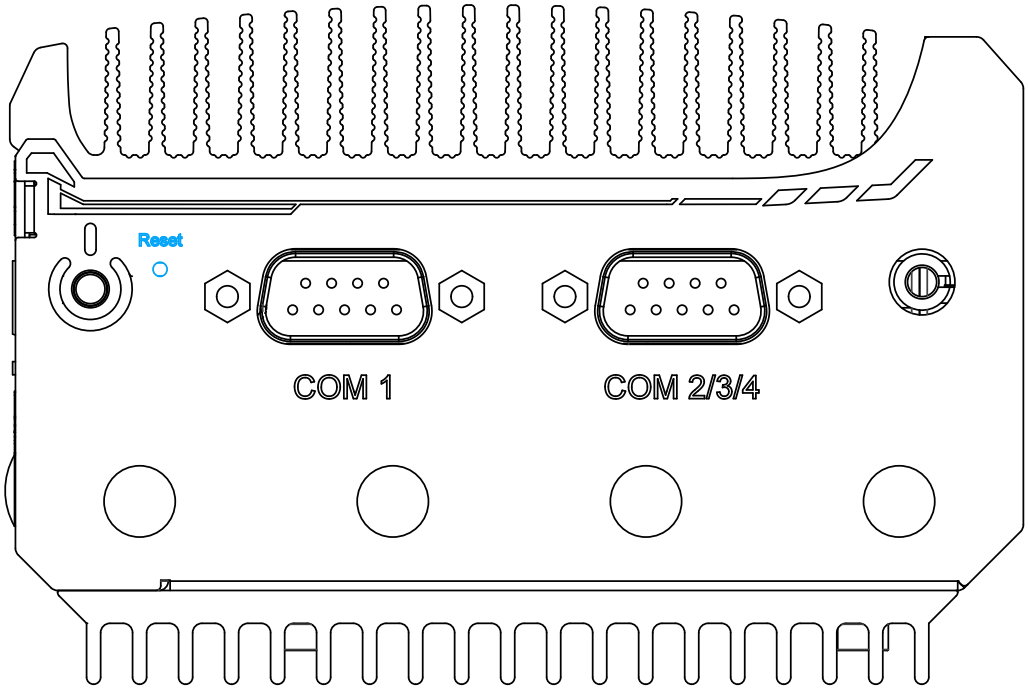
No.	Item	Description
1	Power button	Use this button to turn on or shutdown the system.
2	Reset button	Use this button to manually reset the system.
3	COM port 1	Software programmable RS-232/ 422/ 485 port
4	COM port 2/ 3/ 4	**Can be configured as:** **COM2**: single RS-422/ 485 port **COM2/ COM3/ COM4**: three 3-wire RS-232 ports
5	3.5mm microphone-in/ speaker-out jack	3.5mm jack for speaker-out or microphone-input.
		Opening reserved for SMA antenna installation

2.3.1 Power Button



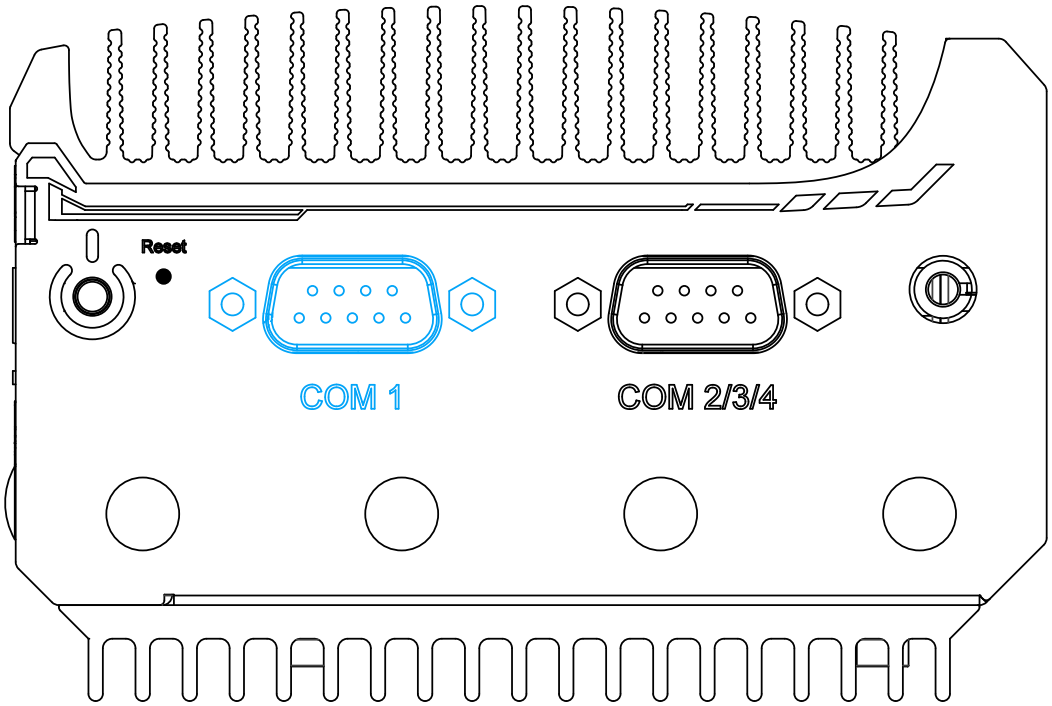
The power button is a non-latched switch for ATX mode on/off operation. Press to turn on the system, PWR LED should light up and to turn off, you can either issue a shutdown command in the OS, or just press the power button. In case of system halts, you can press and hold the power button for 5 seconds 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).

2.3.2 Reset Button

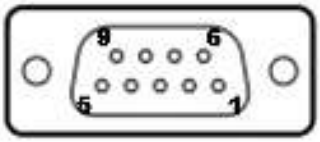


The reset button is used to manually reset the system in case of system halt or malfunction. To avoid unexpected reset, the button is purposely placed behind the panel. To reset, please use a pin-like object (eg. tip of a pen) to access the reset button.

2.3.3 COM Port (COM1)

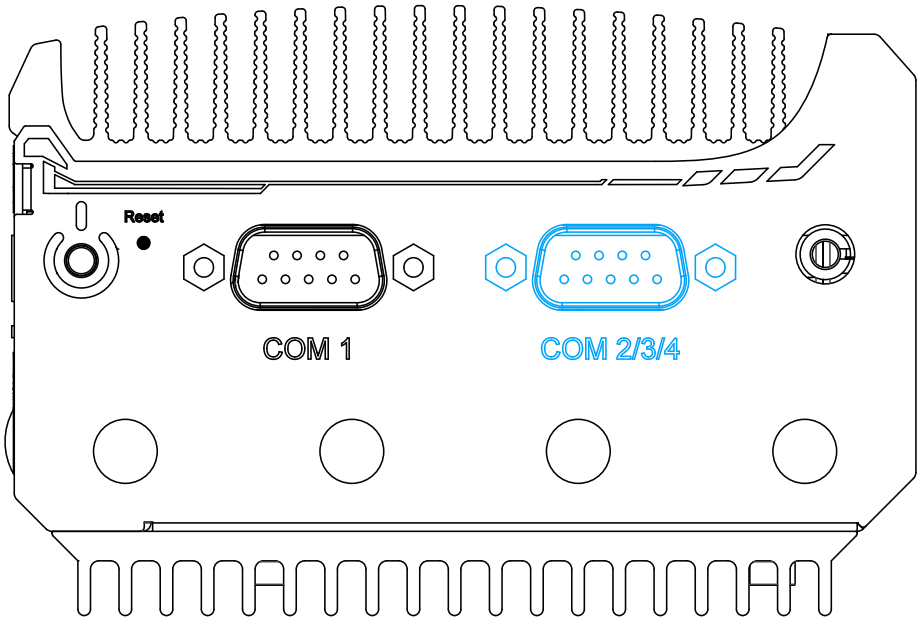


Implemented using industrial-grade ITE8786 Super IO chip (-40 to 85°C) and provide up to 921600 bps baud rate, COM1 is a software-configurable RS-232/422/485 port via 9-pin D-Sub male connector. The operation mode, slew rate and termination of COM1 can be set in BIOS setup utility. The following table describes the pin definition of COM ports.

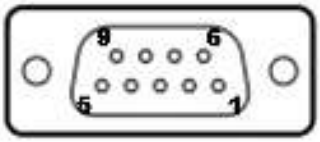


	COM1		
Pin#	**RS-232 Mode**	**RS-422 Mode**	**RS-485 Mode (Two-wire 485)**
1	DCD		
2	RX	422 TXD+	485 TXD+/RXD+
3	TX	422 RXD+	
4	DTR	422 RXD-	
5	GND	GND	GND
6	DSR		
7	RTS		
8	CTS	422 TXD-	485 TXD-/RXD-
9	RI		

2.3.4 COM Ports (COM2/ COM3/ COM4)



Implemented using industrial-grade ITE8786 Super IO chip (-40 to 85°C) and provide up to 921600 bps baud rate, the second D-Sub male connector (COM2/ 3/ 4) can be configured in BIOS as single RS-422/ 485 port (COM2) or three 3-wire RS-232 ports (COM2/COM3/COM4). Please refer to COM2/ 3/ 4 Port Configuration for configuring operation mode. An optional 1-to-3 Y-cable is available to connect three RS-232 devices.



COM2/ 3/ 4 Pin

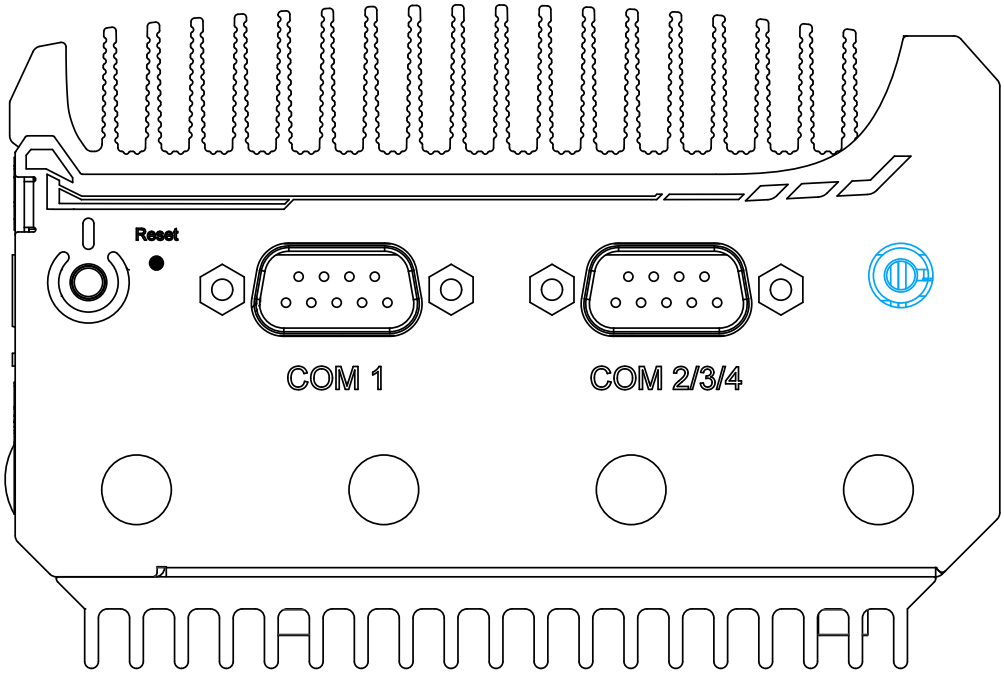
1-to-3 Y-cable

The following table describes the pin definition of the COM port

	3-port RS-232 COM2/ 3/ 4		
Pin#	**COM2**	**COM3**	**COM4**
1			
2	RX		
3	TX		
4		TX	
5	GND	GND	GND
6		RX	
7			TX
8			RX
9			

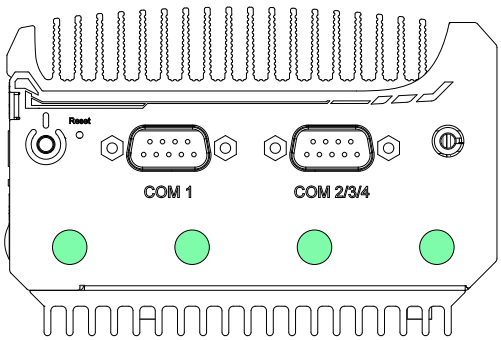
	Single port RS-422/ 485	
Pin#	RS-422	RS-485
1		
2	TxD+	TxD+/ RxD+
3	RxD+	
4	RxD-	
5	GND	GND
6		
7		
8	TxD-	TxD-/ RxD-
9		

2.3.5 3.5mm Microphone-in/ Speaker-out Jack

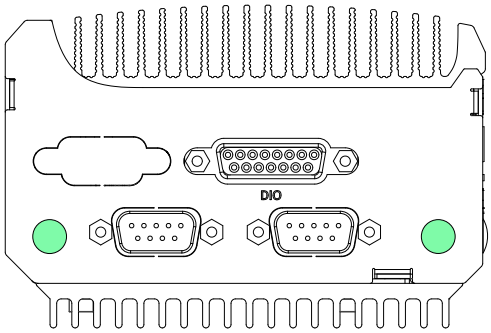


There is a single 3.5mm audio jack on the top panel. The port is used for microphone input as well as speaker output. To utilize the audio function in Windows, you need to install corresponding drivers. Please refer to the section, Driver Installation.

2.3.6 SMA Antenna Opening



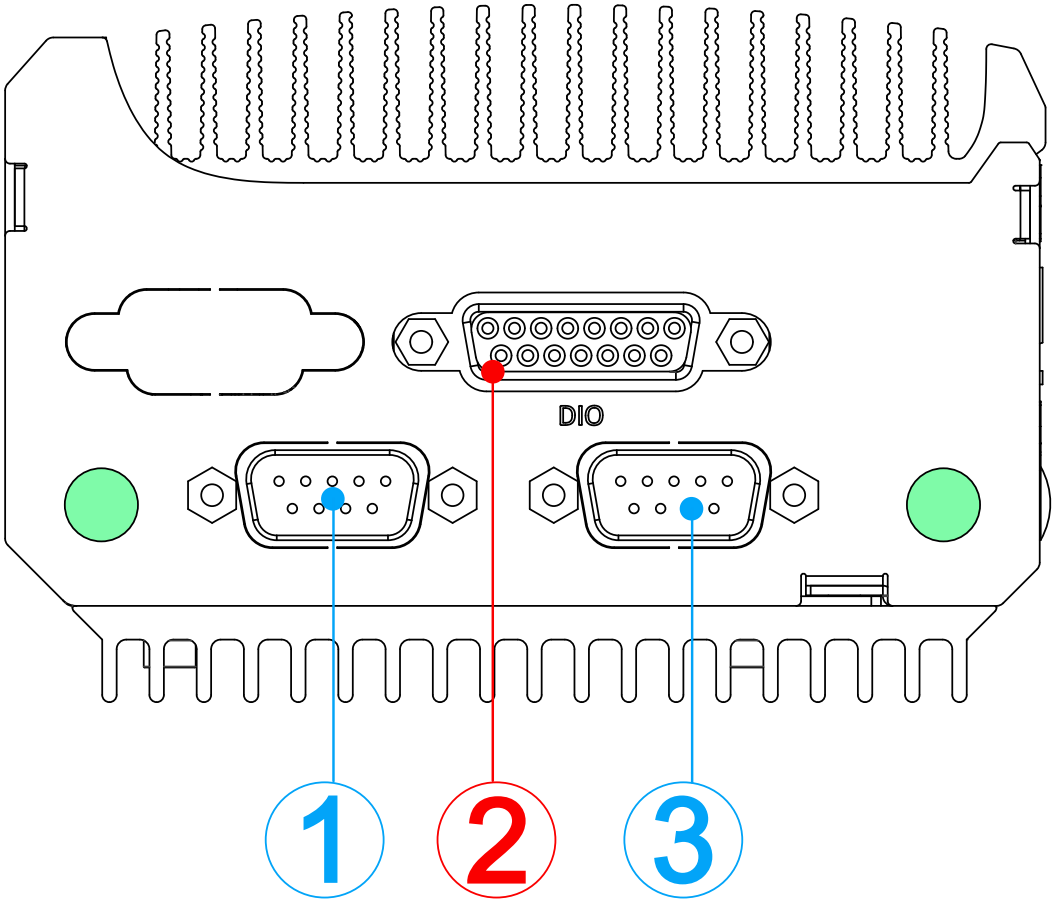
COM port side

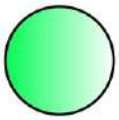


DIO port side

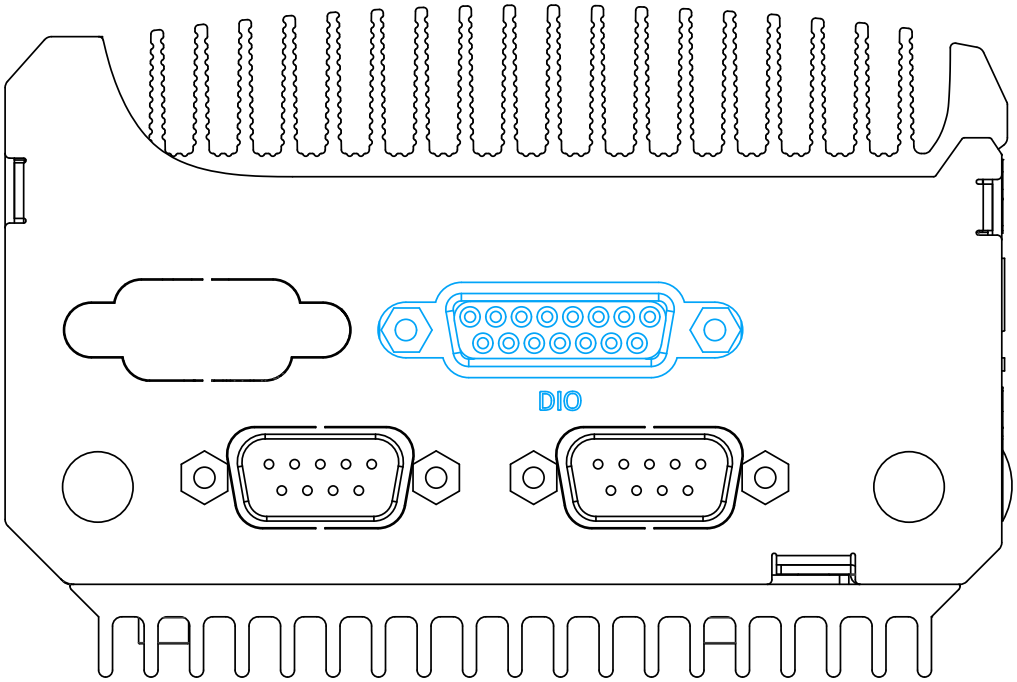
The system offers four SMA antenna openings reserved for SMA antenna installations. Users can take advantage of these four openings when installing M.2 E key module for wireless communication reception such as WiFi 5 or WiFi 6.

2.4 POC-451VTC DIO Port Panel



No.	Item	Description
1	DB9 connector	Reserved for CAN module installation
2	Isolated DIO port	Use this button to manually reset the system.
3	DB9 connector	Reserved for CAN module installation
		Opening reserved for SMA antenna installation

2.4.1 Digital Input/ Output

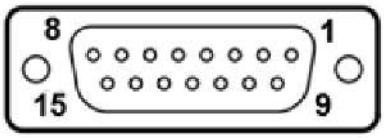


The system provides 4x isolated digital input channels and 4x isolated digital output channels. The DIO functions support polling mode I/O access and DI change-of-state interrupt. Please refer to Watchdog Timer & Isolated DIO for information on wiring and programming the isolated DIO channels.

Isolated DIO Specifications

Isolated Digital Input	
No. of Channel	4-CH Isolated Digital Input Channels
Logic Level	Logic High: 5 to 24V Logic Low: 0 to 1.5V
Isolated Voltage	2500 Vrms
Input Resistance	1kΩ
Operation Mode	Polling I/O, Change-of-State Interrupt
Isolated Digital Output	
No. of Channel	4-CH Isolated Digital Output Channels
Sink Current (per channel)	100 mA (sustained loading) 250 mA (peak loading)
Isolated Voltage	2500 Vrms
Operation Mode	Polling, Change-of-State Interrupt
Output Type	Power MOSFET + Analog Device iCoupler®
Operation Mode	Polling I/O and Change-of-State interrupt for DI

Pin Definition

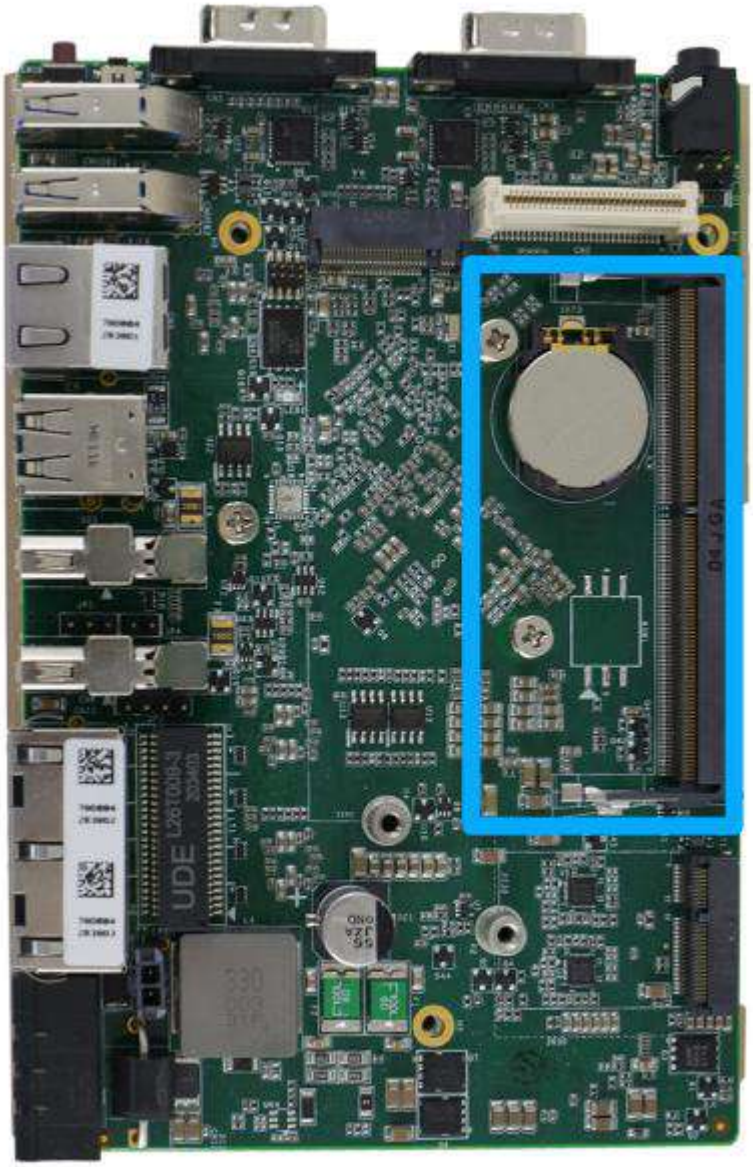


Pin#	Pin Definition	Pin#	Pin Definition
1	DI_0	9	DI_GND
2	DI_1	10	DI_2
3	DI_GND	11	DI_3
4	DO_GND	12	DO_GND
5	DO_0	13	DO_2
6	DO_1	14	DO_3
7	DO_GND	15	-
8	VDD		

2.5 POC-451 Series Internal I/O

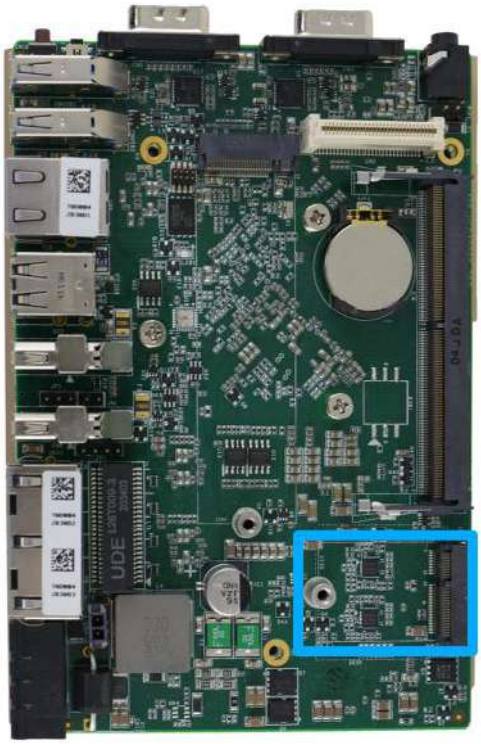
The system's internal I/O connectors consist of a SO-DIMM socket, M.2 2280 M key SATA interface port, M.2 E key port and a MezIO™ port for application-oriented expansion purposes.

2.5.1 SO-DIMM Memory Socket



The system has an internal SO-DIMM slot supporting a single DDR4-3200 memory module up to 32GB in capacity.

2.5.2 M.2 2230 E Key Socket

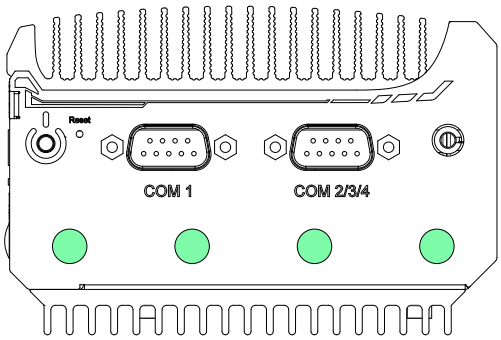


M.2 E key on motherboard

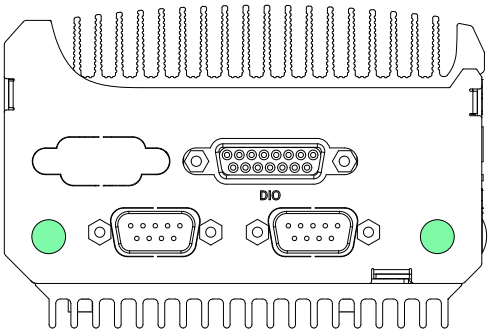
M.2 E key on MezIO™ card

The system has an M.2 2230 E key socket that offers PCIe Gen3 x1 and USB2.0 signal for WiFi module installation.

For SMA antenna installation, there are six dedicated openings located on both sides of the chassis, and two on the main IO input panel.

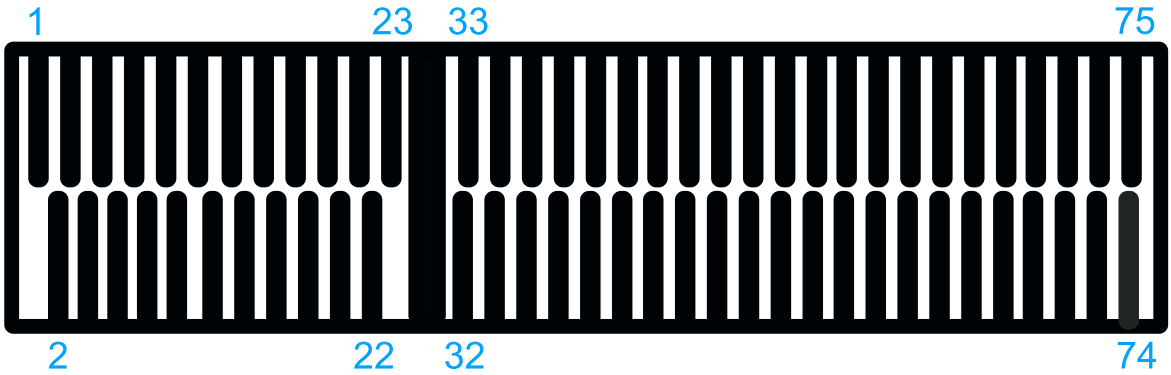


COM port side



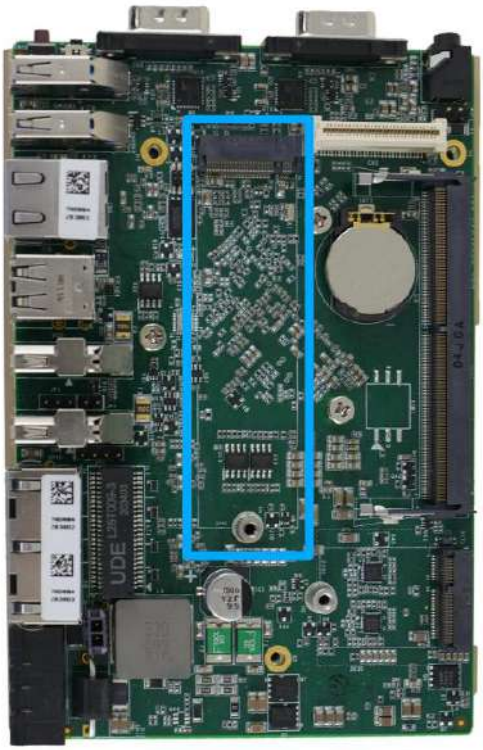
DIO port side

M.2 2230 E Key Pin Definition



Pin #	Signal	Pin #	Signal
1	GND	**2**	+3V3
3	USB_D+	**4**	+3V3
5	USB_D-	**6**	
7	GND	**8**	
9		**10**	-
11		12	
13		**14**	
15		**16**	
17		**18**	GND
19		**20**	
21	-	**22**	-
23	-		
Mechanical Key			
33	GND	**32**	
35	PETP0	**34**	
37	PETN0	**36**	
39	GND	**38**	
41	PER P0	**40**	
43	PER N0	**42**	
45	GND	**44**	
47	REFCLK_P0	**46**	
49	REFCLK_N0	**48**	
51	GND	**50**	
53	CLKREQ#	**52**	PERST#
55		**54**	
57	GND	**56**	W_DISABLE#
59		**58**	
61		**60**	
63	GND	**62**	
65		**64**	
67		**66**	
69	GND	**68**	
71		**70**	
73		**72**	+3V3
75	GND	**74**	+3V3

2.5.3 M.2 2280 M Key



M.2 M key 2280 on motherboard

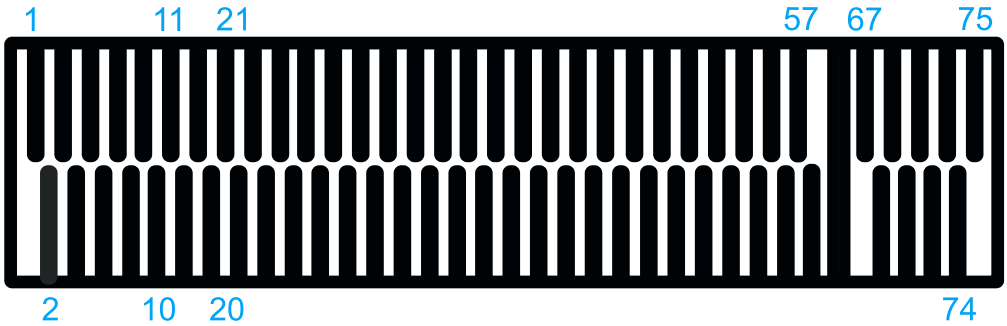
M.2 M key on MezIO™ card

The system has two M.2 2280 slot (SATA signal only) for you to install an M.2 SATA SSD for faster access over traditional hard disk drives.

NOTE

The M.2 slot is only compatible with SATA signal M.2 SSD only.

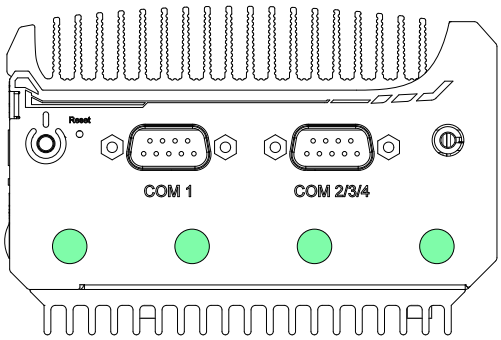
M.2 2280 M Key Pin Definition



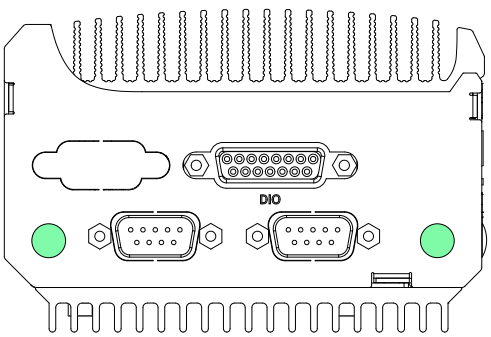
Pin #	Signal	Pin #	Signal
1	GND	2	+3V3
3	GND	4	+3V3
5		6	-
7		8	-
9	GND	10	DAS/DSS N
11		12	+3V3
13		14	+3V3
15	GND	16	+3V3
17		18	+3V3
19		20	-
21	GND	22	-
23		24	-
25		26	-
27	GND	28	-
29		30	-
31		32	-
33	GND	34	-
35		36	DEVSLP
37		38	-
39	GND	40	-
41	SATA-B+	42	-
43	SATA-B-	44	-
45	GND	46	-
47	SATA-A-	48	-
49	SATA-A+	50	PERST N
51	GND	52	-
53		54	-
55		56	-
57	GND	58	-
Mechanical Key			
67	-	68	SUSCLK
69	PEDET	70	+3V3
71	GND	72	+3V3
73	GND	74	+3V3
75	GND		

2.5.4 Mini-PCIe Slot on MezIO™ Card

The system provides a mini-PCIe socket (indicated in **blue**) for WiFi module installation. For WiFi wireless communication, multiple SMA antenna apertures can be located on the front and rear panel.

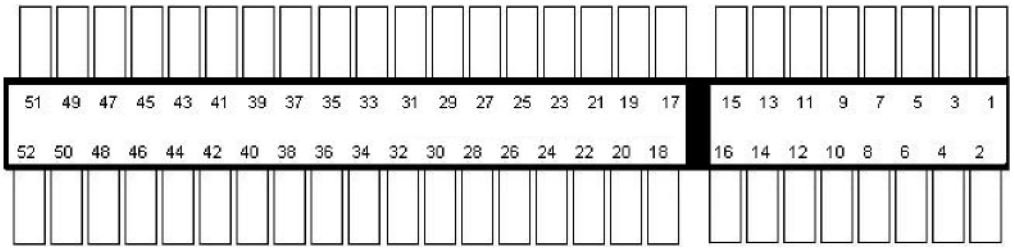


COM port side



DIO port side

mini-PCIe socket definition

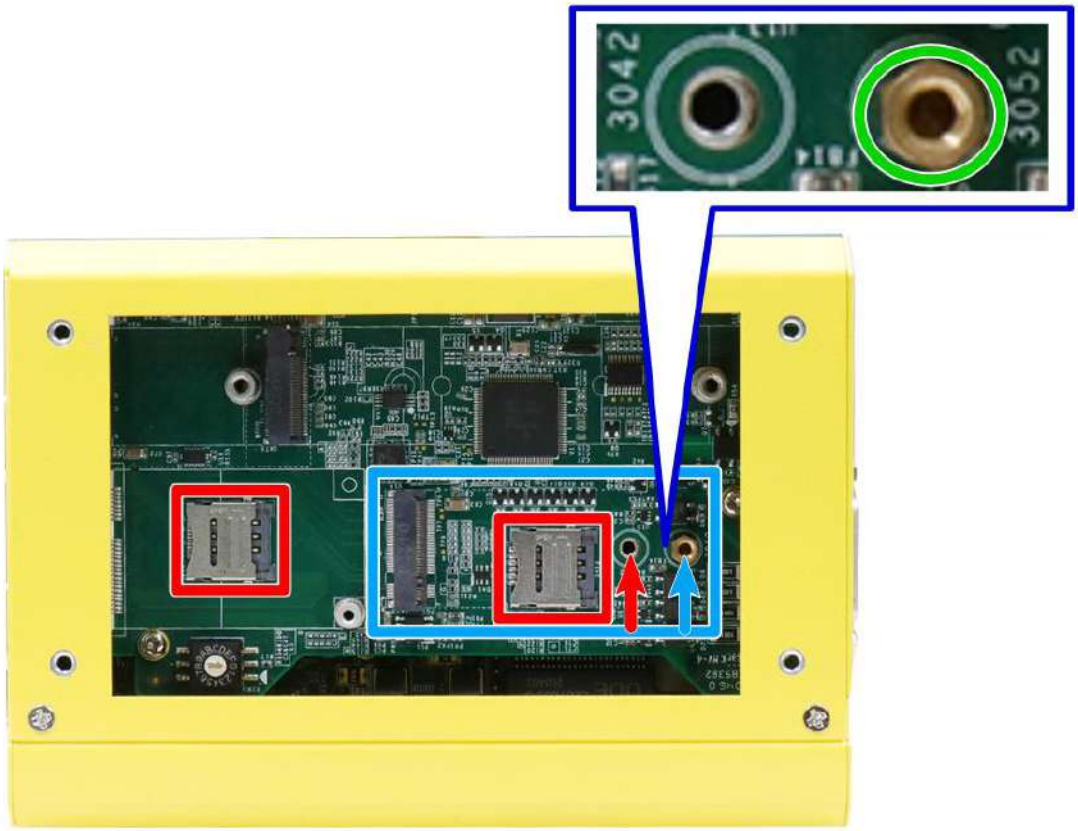


Pin	Signal (mPCIe)	Pin #	Signal (mPCIe)
1	WAKE#	2	+3.3Vaux
3	-	4	GND
5	-	6	+1.5V
7	CLKREQ#	8	UIM_PWR
9	GND	10	UIM_DATA
11	REFCLK-	12	UIM_CLK
13	REFCLK+	14	UIM_RESET
15	GND	16	UIM_VPP
Mechanical Key			
17	Reserved* (UIM_C8)	18	GND
19	Reserved* (UIM_C4)	20	W_DISABLE#
21	GND	22	PERST#
23	PERn0	24	3.3V
25	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

WARNING

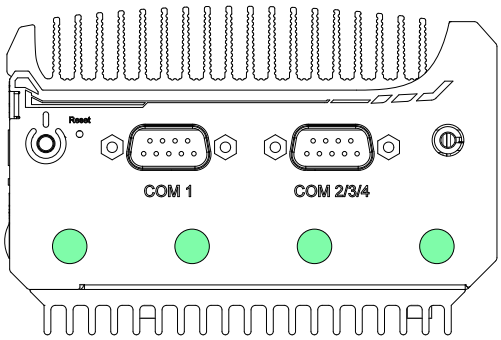
Some off-the-shelf mini-PCIe 5G/4G modules are not compliant to standard mini-PCIe interface. They use 1.8V I/O signals instead of standard 3.3V I/O and may cause signal conflict. Please consult with Neousys for compatibility when in doubt! Installing an incompatible 4G module may damage the system or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

2.5.5 M.2 B Key 2242/ 3042/ 3052 Slot on MezIO™ Card

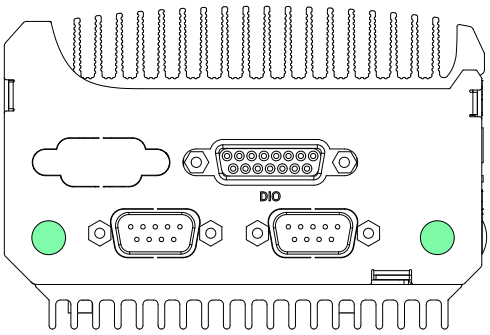


The system has an M.2 2242/ 3042/ 3052 slot (indicated in **blue rectangle**) with 5G/ 4G SIM slots (indicated in **red rectangle**). A copper standoff is provided for you to secure onto the motherboard into the **red arrow** location for an M.2 2242/ 3042 module, or into the **blue arrow** location for an M.2 3052 module. By installing a 5G or 4G M.2 module and SIM card, you can access the internet via the provider's network.

For wireless 5G/ 4G, SMA antenna apertures are located on front/ rear panels.

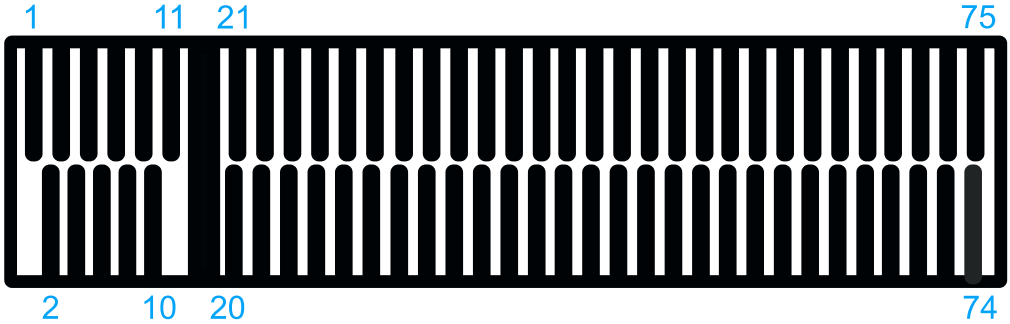


COM port side



DIO port side

M.2 (B Key) Slot Pin Definition



Pin #	Signal	Pin #	Signal
1	-	2	+3V3
3	GND	4	+3V3
5	GND	6	FULL_CARD_POWER_OFF_N
7	USB_D+	8	W_DISABLE_N
9	USB_D-	10	-
11	GND		
Mechanical Key			
21	-	20	-
23	-	22	-
25	-	24	-
27	GND	26	-
29	USB3.0-RX-	28	-
31	USB3.0-RX+	30	UIM1-RESET
33	GND	32	UIM1-CLK
35	USB3.0-TX-	34	UIM1-DATA
37	USB3.0-TX+	36	UIM1-PWR
39	GND	38	-
41	PERn0 / SATA-B+	40	UIM2-DET
43	PERp0 / SATA-B-	42	UIM2-DATA
45	GND	44	UIM2-CLK
47	PETn0 / SATA-A-	46	UIM2-RST
49	PETp0 / SATA-A+	48	UIM2-PWR
51	GND	50	PERST_N
53	REFCLKN	52	-
55	REFCLKP	54	-
57	GND	56	-
59	-	58	-
61	-	60	-
63	-	62	-
65	-	64	-
67	RESET_N	66	UIM1_DETECT
69	CONFIG_1	68	-
71	GND	70	+3V3
73	GND	72	+3V3
75	-	74	+3V3

3 System Installation

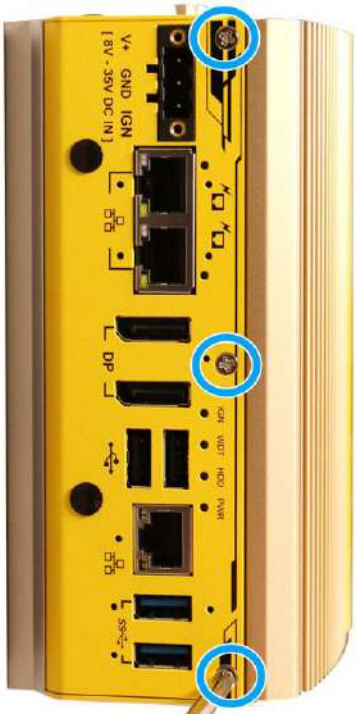
Before disassembling the system enclosure and installing components and modules, please make sure you have done the following:

- It is recommended that only qualified service personnel should install and service this product to avoid injury or damage to the system.
- Please observe all 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 antenna (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-451VTC system enclosure:

1. To disassemble the enclosure, unfasten the screws shown in the following illustrations.



Front panel

Bottom heatsink and rear panel

2. Gently lift the bottom heatsink and remove the screws indicated.

3. Unfasten the screws on the COM port panel.

4. Gently separate the enclosure.

Remove IO panel

Remove the COM port panel

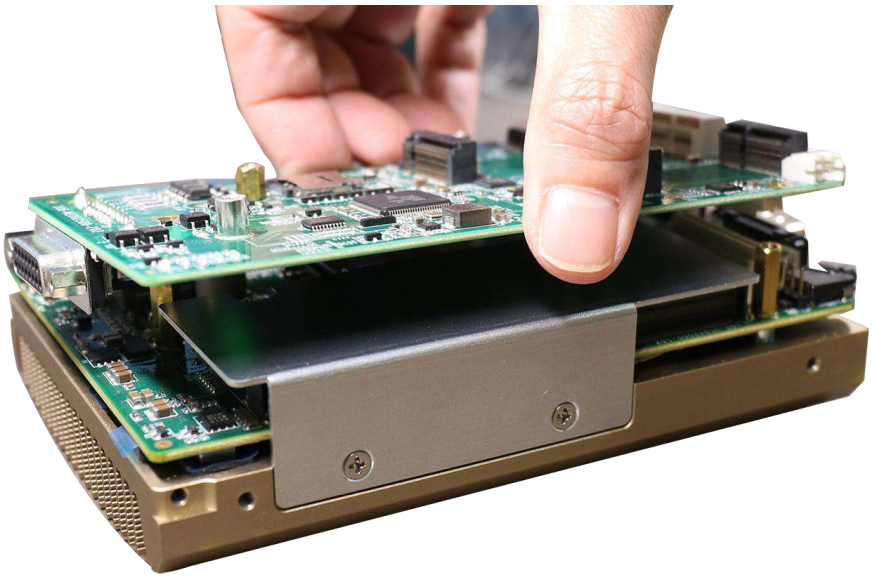
5. Remove the screw indicated and remove the DIO panel.

Remove the screw securing the DIO panel

Remove the DIO panel

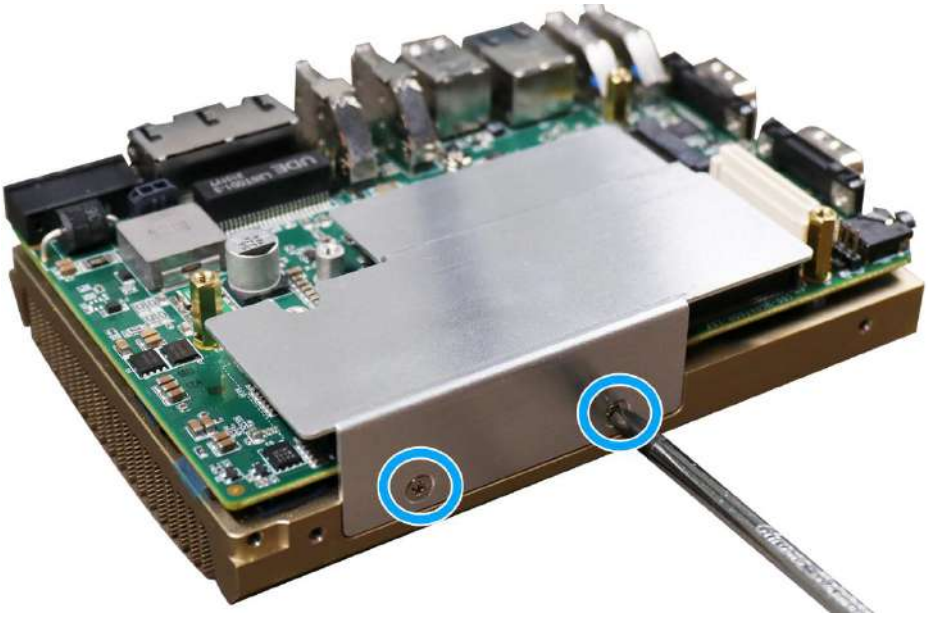
6. Remove the screws indicated to separate the MezIO™ module.

Remove screws securing the MezIO™ module



Gently wiggle the MezIO™ module to separate it from the connector

7. Remove the SO-DIMM/ M.2 module heatsink by unscrewing the screws indicated to gain access to the internal expansion slots on the motherboard.



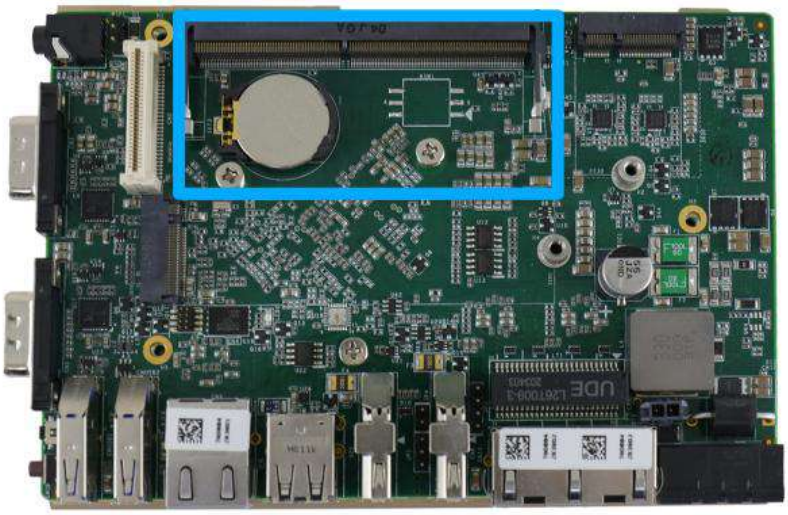
3.2 Installing Internal Components

3.2.1 SO-DIMM Installation

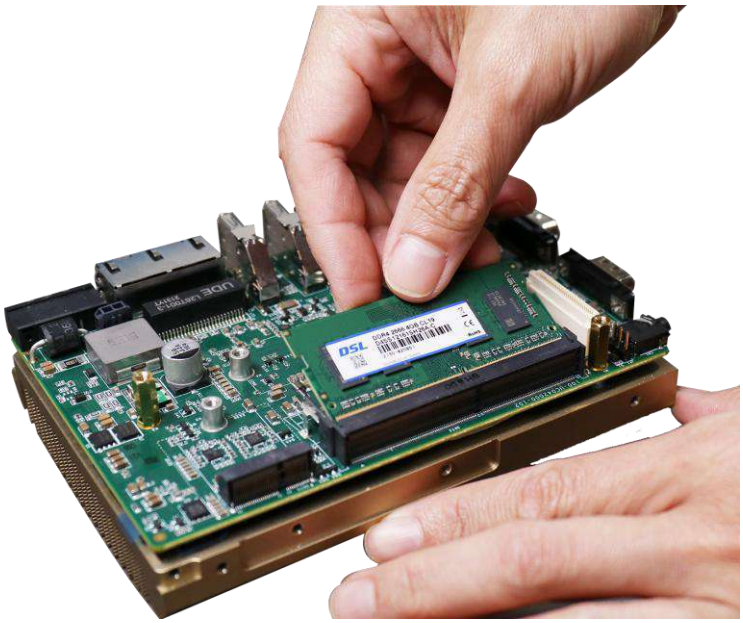
There is one SO-DIMM memory slot on the motherboard. Please follow the procedures below to install the memory module.

1. Disassemble the system enclosure

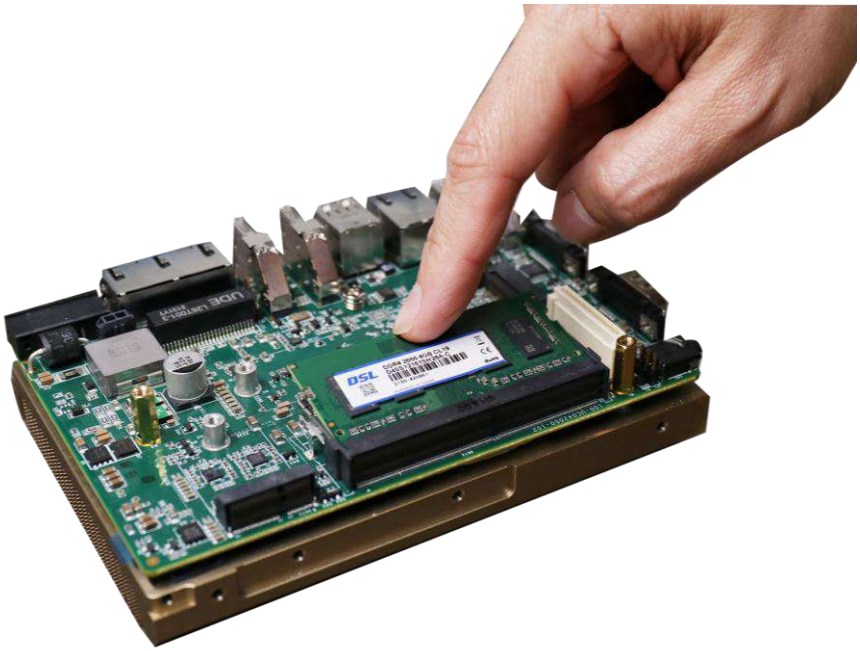
2. The SO-DIMM slot can be located once the enclosure and module heatsink have been removed.



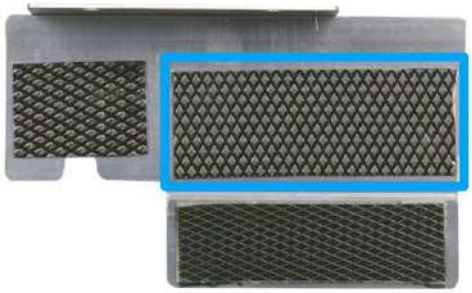
3. **To install**, insert the gold finger end of the SO-DIMM on a 45 degree angle into the slot..



4. Gently push the SO-DIMM down until it clips-in



5. Remove the memory thermal pad film protector and secure the module heatsink with the screws indicated.



Remove memory thermal pad cover **Secure the module heatsink**

6. Reinstall the system enclosure.

3.2.2 M.2 2280 M Key Module Installation (on MezIO™ Card)

There are two M.2 2280 M key module expansion slots in the system. One slot is on the motherboard and one on the MezIO™ card. To install the M.2 module on the MezIO™ card, you do not need to disassemble the enclosure completely. Please follow the procedures below for installation.

1. Remove the four screws indicated on the bottom heatsink.

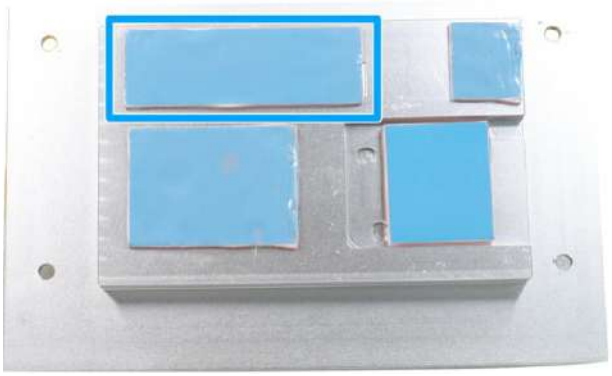
2. Gently lift the heatsink off to access the M.2 slot on the MezIO™ card.

3. Insert the M.2 module on a 45 degree angle, press the module down and secure with a screw.

Insert on a 45 degree angle

Secure with a screw

4. Remove the M.2 module's thermal pad protective film on the bottom heatsink.



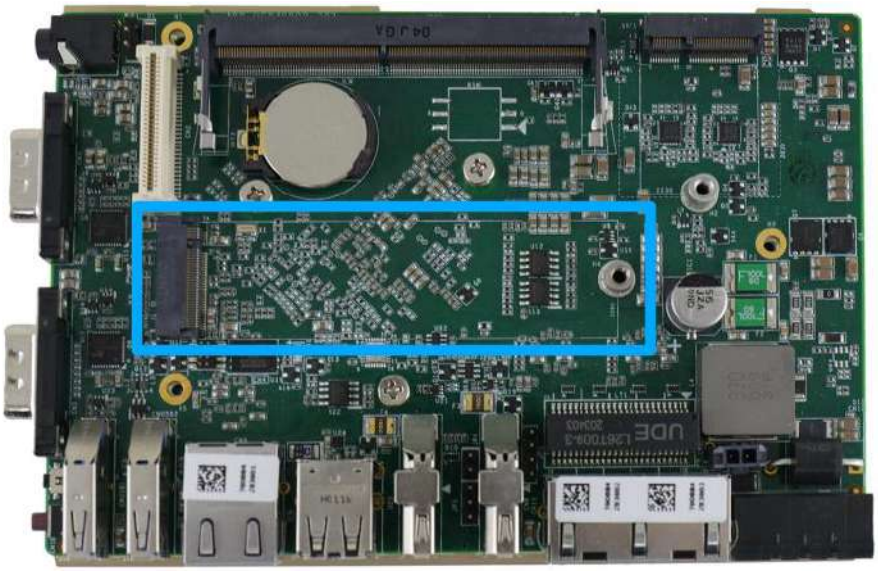
5. Place the bottom heatsink back onto the enclosure and secure the screws indicated to complete the installation.

3.2.3 M.2 2280 M Key Module Installation (on Motherboard)

There are two M.2 2280 M key module expansion slots in the system. One slot is on the motherboard and one on the MezIO™ card. To install the M.2 module on the motherboard, please follow the procedures below for installation.

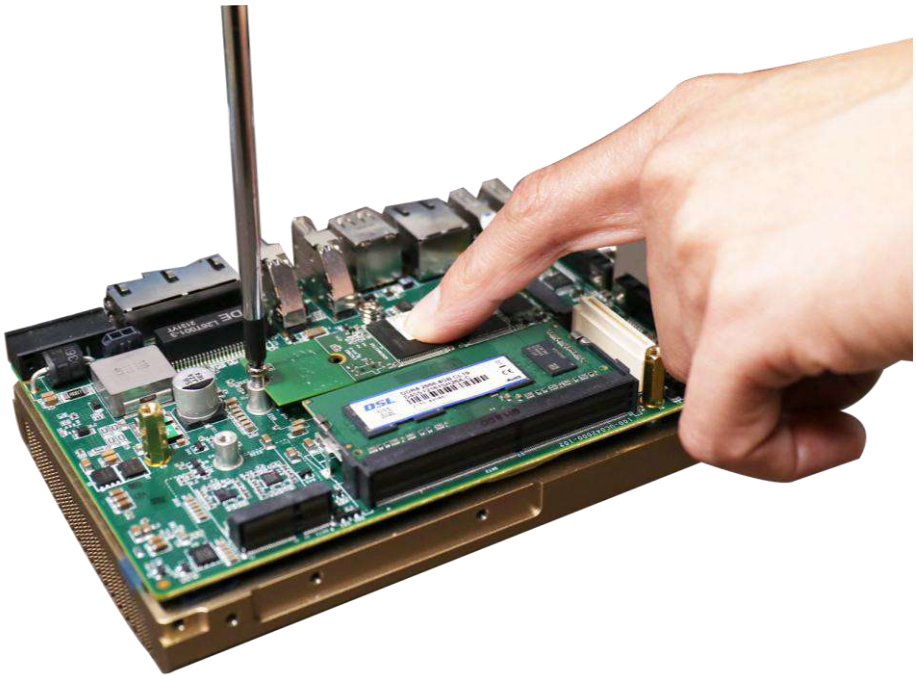
1. Disassemble the system enclosure.

2. The M.2 2280 M key expansion can be located once the enclosure has been removed.

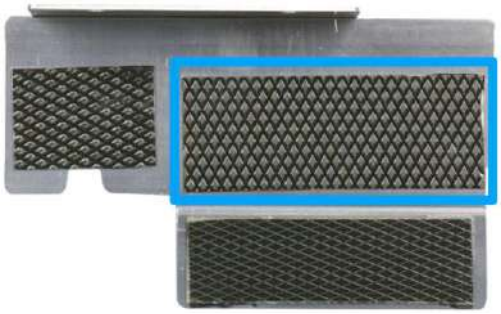


3. Insert the M.2 2280 module on a 45 degree angle.

4. Gently press the module down and secure with a screw.



5. Remove the M.2 thermal pad film protector and secure the module heatsink with the screws indicated.



Remove memory thermal pad cover

Secure the module heatsink

6. Reinstall the system enclosure.

3.2.4 M.2 2230 E Key Module Installation (on MezIO™ Card)

There are two M.2 E key expansion slots in the system for WiFi, Google TPU or Movidius VPU module installation. One slot is on the motherboard and one on the MezIO™ card. To install the M.2 E key module on MezIO™ card, please follow the procedures below for installation.

1. Remove the four screws indicated on the bottom heatsink.

2. Gently lift the bottom heatsink off to access the M.2 E key slot on the MezIO™ card.

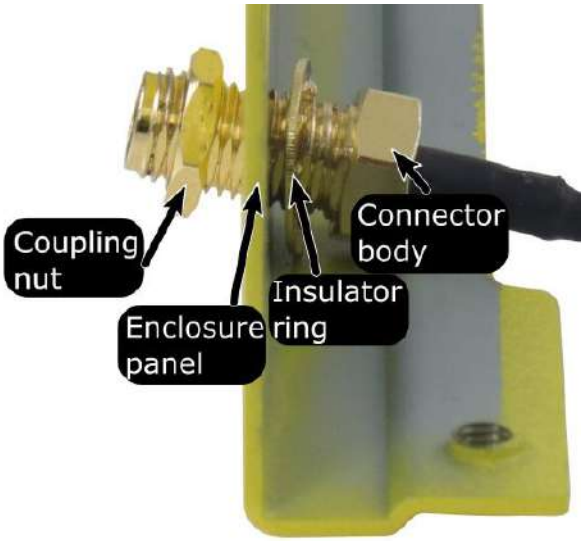
6. Insert the M.2 E key module on a 45 degree angle, press the module down and secure with a screw.

Insert on a 45 degree angle

Secure with a screw

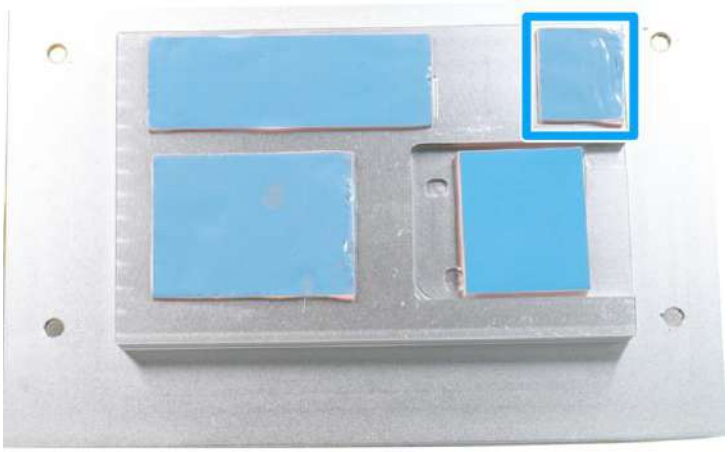
5. Remove the Antenna cover from the enclosure.

6. Please refer to the illustration below to secure the SMA antenna.



Secure antenna body on enclosure

7. Remove the M.2 E key module's thermal pad protective film on the bottom heatsink.



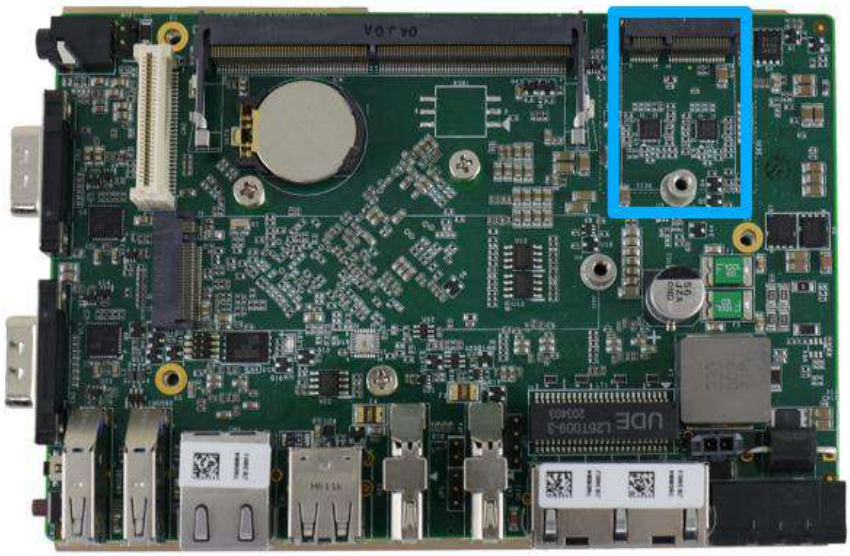
8. Place the bottom heatsink back onto the enclosure and secure the screws indicated to complete the installation.

3.2.5 M.2 2230 E Key Module Installation (on Motherboard)

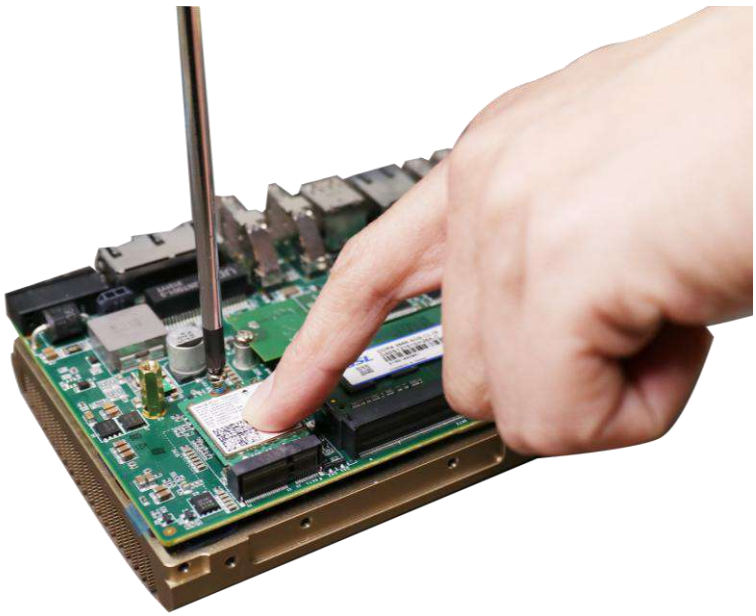
There are two M.2 E key expansion slots in the system for WiFi, Google TPU or Movidius VPU module installation. One slot is on the motherboard and one on the MezIO™ card. To install the M.2 E key module on the motherboard, please follow the procedures below for installation.

1. Disassemble the system enclosure.

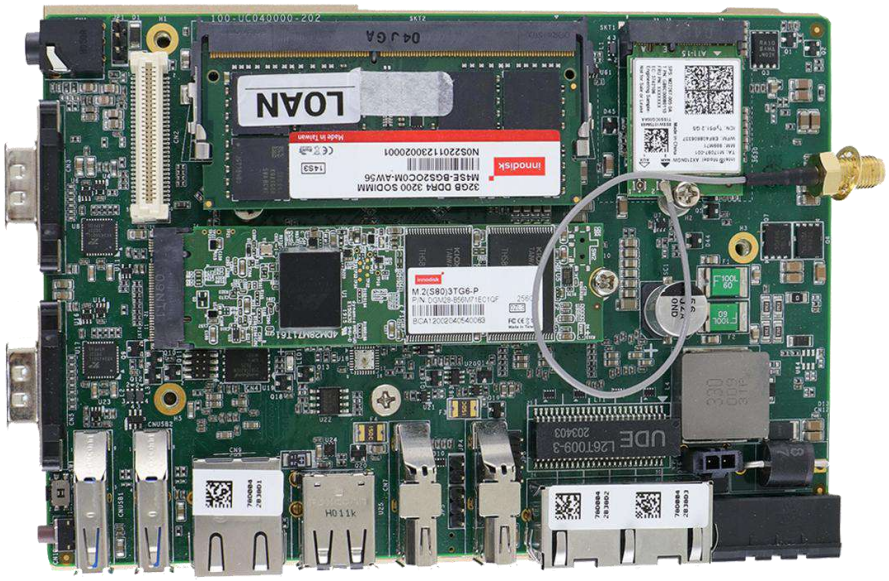
2. The M.2 E key slot can be located once the enclosure and the module heatsink has been removed.



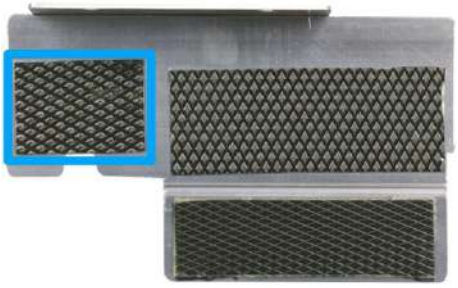
3. **To install**, insert M.2 E key module's gold finger on a 45 degree angle into the socket, gently press the module down and secure it with a screw.



4. If you are installing a WiFi module, you will need to install the module's antenna (please refer to the module's user manual on antenna cable connection).



7. Remove the M.2 E key thermal pad cover and secure the module heatsink with the screws indicated.

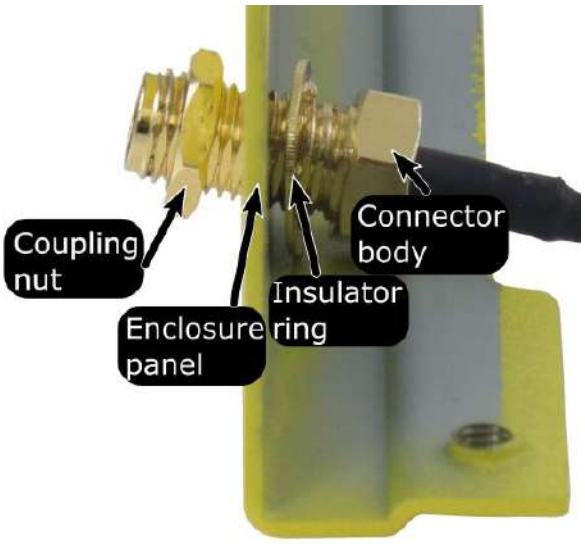


Remove M.2 E key thermal pad cover

Secure the module heatsink

8. Remove an antenna cover from the enclosure.

9. Please refer to the illustration below to secure the SMA antenna.



Secure antenna body on enclosure

Install the external antenna

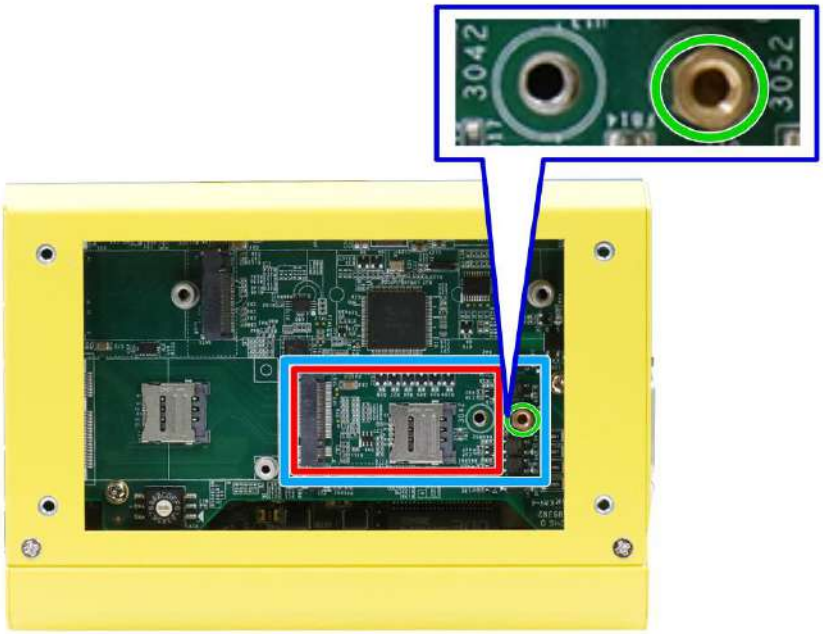
10. Reinstall the system enclosure and attach the external antenna to complete the installation.

3.2.6 M.2 B Key 2242/ 3042/ 3052 Module Installation

The system features a M.2 B key module slot for installing a 5G/ 4G module with dual micro-SIM (3FF) support. To install the module, please follow the procedures below for installation.

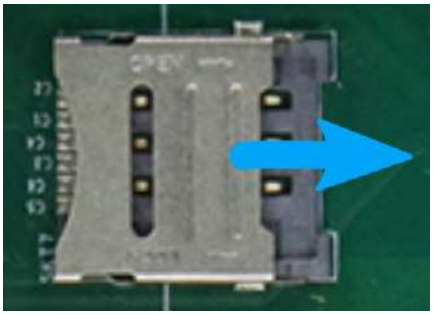
1. Remove the four screws indicated on the bottom heatsink.

2. Gently lift the bottom heatsink off to access the M.2 B key slot on the MezIO™ card. Note the **copper standoff** can be adjusted to suit **2242/ 3042** or **3052** modules



3. The slot supports dual micro-SIM (3FF) cards.

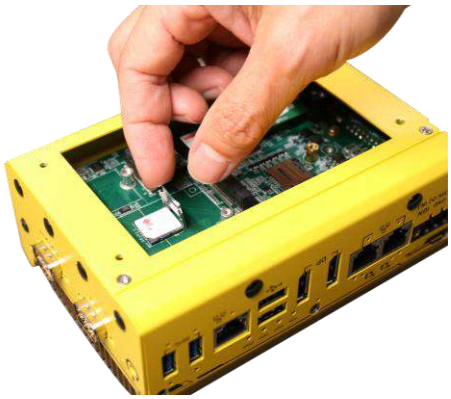
4. To install a SIM card, slide the SIM bracket towards the direction indicated, and lift the bracket.



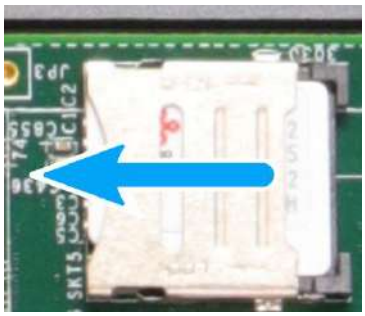
Slide bracket toward the direction indicated

Lift the SIM bracket

5. Insert the SIM card into the slot, close the bracket and slide to lock the SIM card in place.



Place SIM into slot and close the bracket



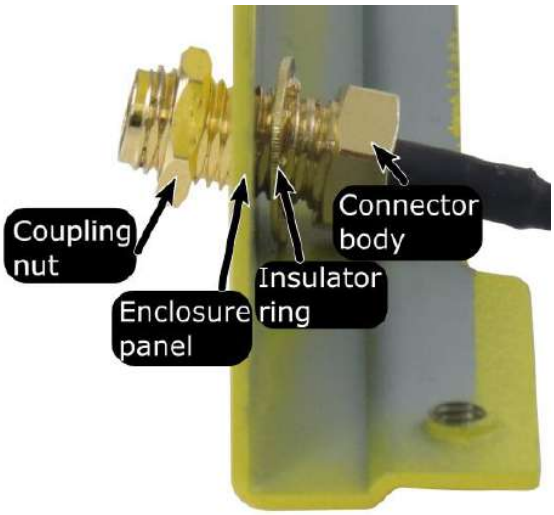
Slide to lock bracket

6. Insert the module on a 45 degree angle, gently press the module down and secure it with a screw.

Insert on a 45 degree angle

Secure with a screw

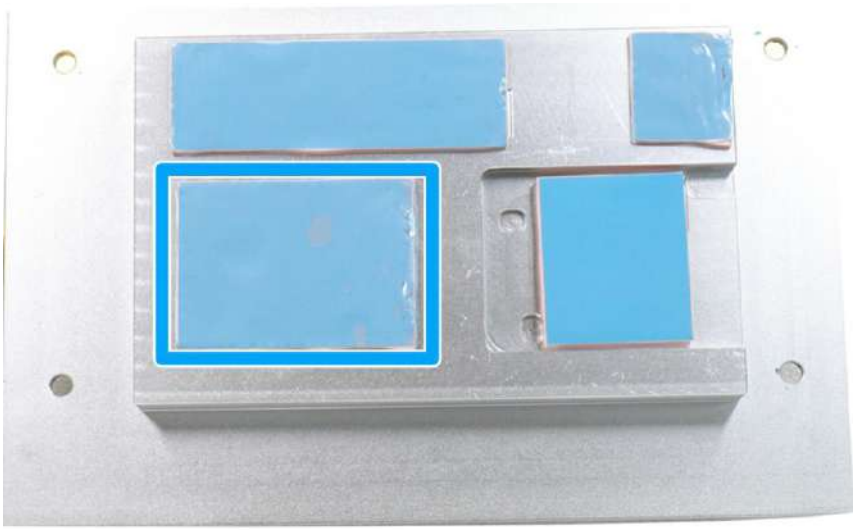
7. To install the module's antenna, please refer to the module's user manual on antenna cable connection.
8. Remove an antenna cover from the enclosure.
9. Please refer to the illustration below to secure the SMA antenna.



Secure antenna body on enclosure

Install the external antenna

10. Remove the M.2 B key module's thermal pad protective film on the bottom heatsink.



11. Place the bottom heatsink back onto the enclosure and secure the screws indicated to complete the installation.

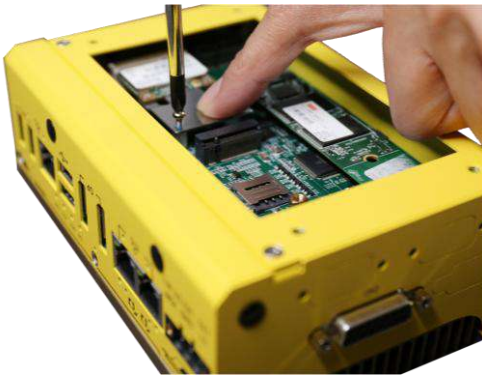
3.2.7 mini-PCIe Module Installation (USB 2.0 Signal Only)

The system has a mini-PCIe socket offering USB2.0 signal only for WiFi module installation. The mini-PCIe slot can be accessed by removing the heatsink. Please refer to the procedures below for installation.

1. Remove the four screws indicated on the bottom heatsink.

2. Gently lift the bottom heatsink to access the mini-PCIe slot.

3. Insert the module on a 45 degree angle, gently press the module down and secure with a screw.

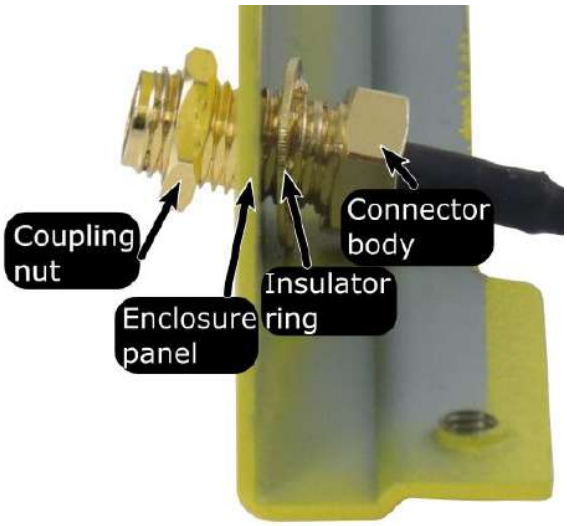


Insert on a 45 degree angle **Secure with a screw**

4. To install the module's antenna, please refer to the module's user manual on antenna cable connection.

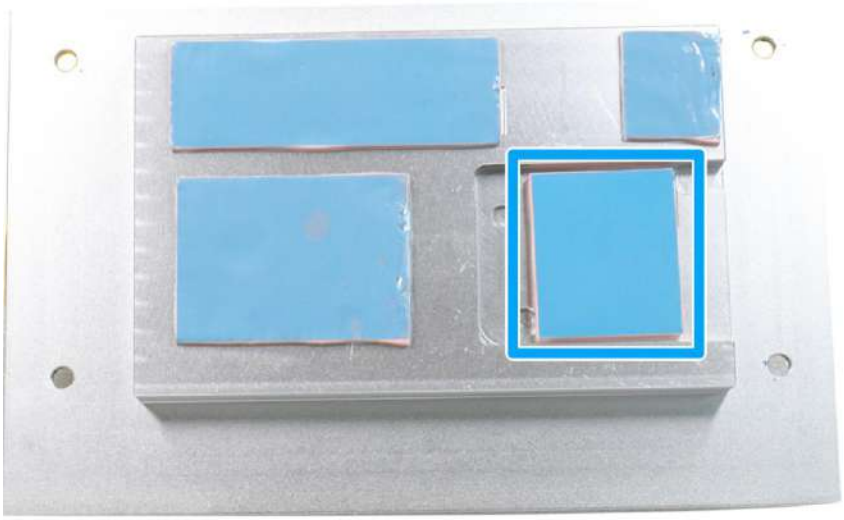
5. Remove an antenna cover from the enclosure.

6. Please refer to the illustration below to secure the SMA antenna.



Secure antenna body on enclosure **Install the external antenna**

12. Remove the mini-PCIe module's thermal pad protective film on the bottom heatsink.



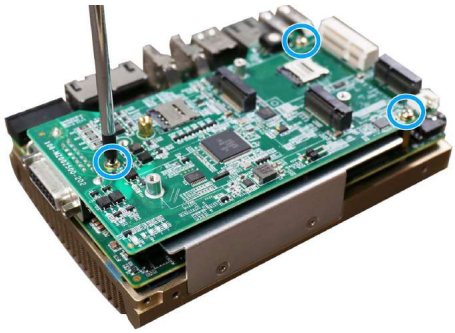
13. Place the bottom heatsink back onto the enclosure and secure the screws indicated to complete the installation.

3.3 Installing the System Enclosure

1. Before you assemble the system enclosure, please make sure you have installed the memory/ M.2/ M.2 E key module's heatsink.

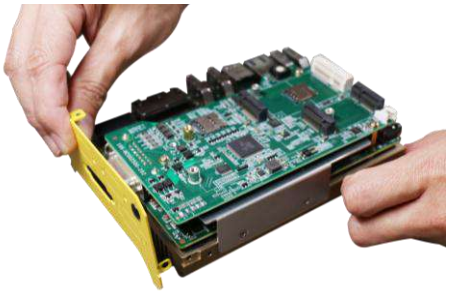
2. Also make sure the MezIO™ module has been installed.

Gently lower and match the MezIO™ connector



Secure the MezIO™ module with the screws indicated

3. Once the above items have been installed, you may begin to install the enclosure. To do so, please assemble the DIO panel onto the side and secure it with a flathead screw.



Assemble DIO panel

Secure with a flathead screw

4. Slide the L-shaped panel back into place.

5. Assemble the front IO panel and make sure the screw hinge is inserted underneath the L-shaped panel.

Assemble L-shaped panel

Screw hinge underneath L-shaped panel

6. Secure the screws indicated at the bottom and on the front panel.

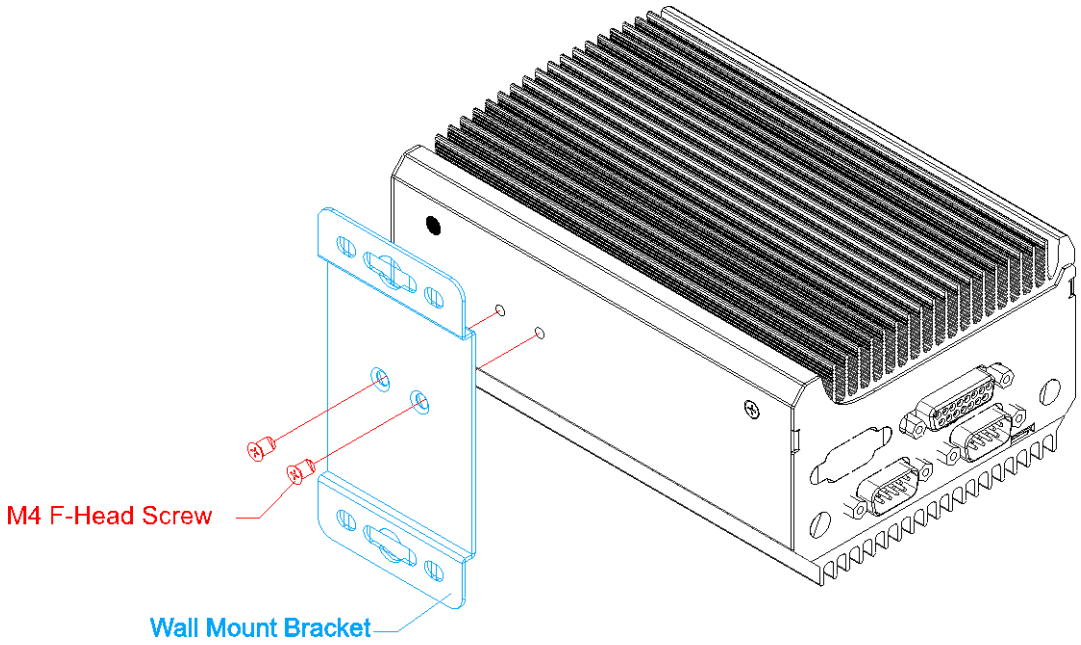
Screws at the bottom **Screws on front panel**

7. Secure the screws on the COM port panel, gently place the bottom heatsink back on to the enclosure, and secure the screws indicated.

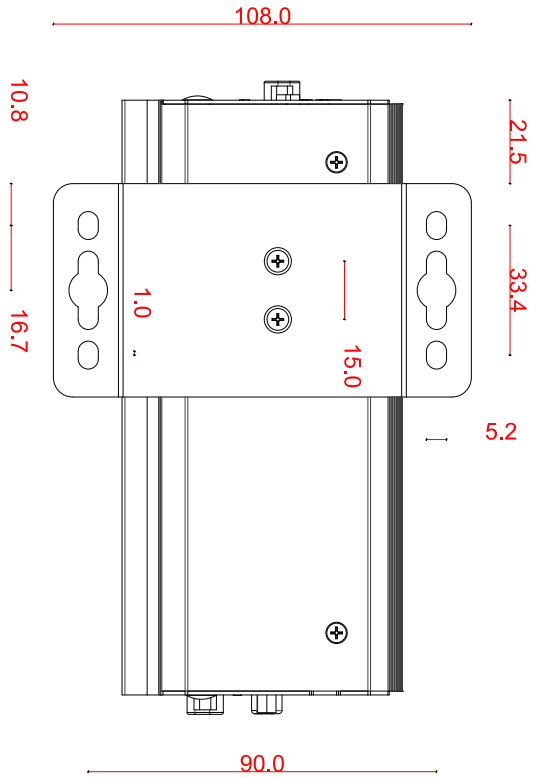
Screws on COM port panel **Screws on the bottom heatsink**

3.4 Vertical Wall Mount Installation

1. To install, secure the **wall mount bracket** to the rear side panel of the system enclosure using the **M4 screws** provided.



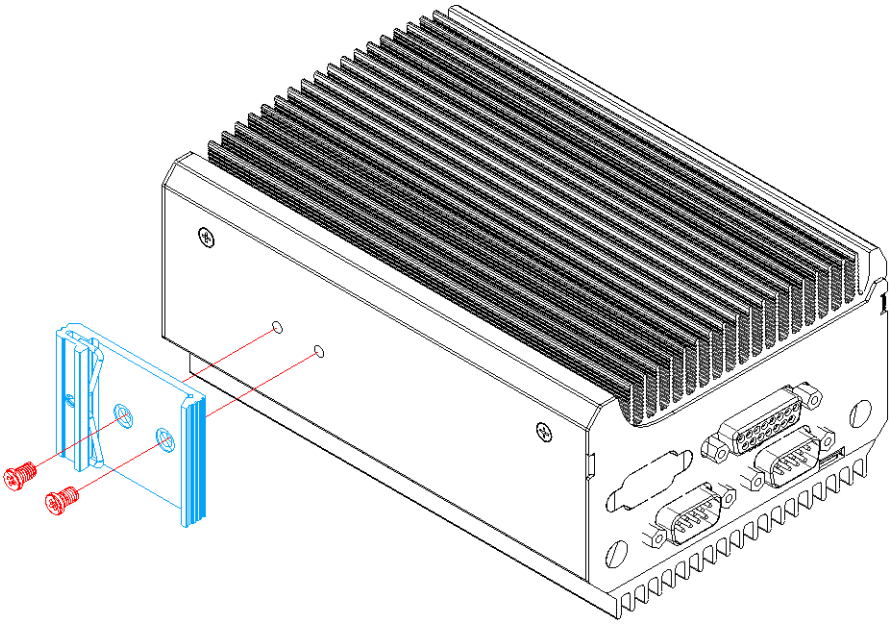
2. Dimension illustration of the installed vertical wall mount bracket for you reference.



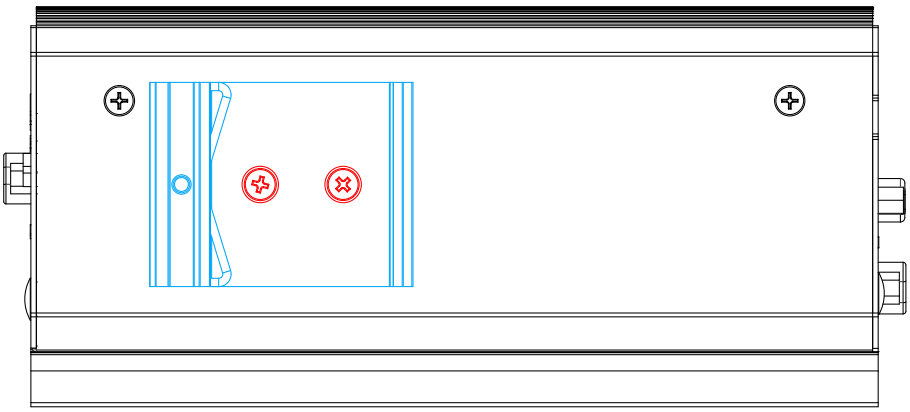
3.5 DIN Rail Installation (Optional)

The DIN rail is easy to install and it is a convenient way to position the system. The DIN rail has been proven to be most beneficial in the industrial environment where space is limited. The mount plate comes with two M4 screws. Please refer to the illustrations below to install the DIN clip/ rail.

1. To install, secure the **DIN rail clip** onto the rear of the system enclosure using the **M4 screws** provided.

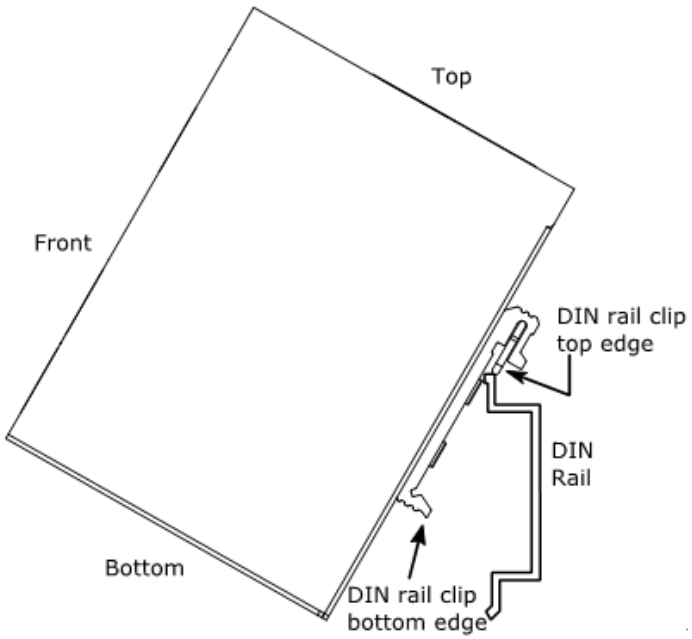


Secure clip with screws provided



Installed DIN-rail clip

2. To install the mount plate onto the DIN rail, you must come over the top of the DIN rail, tilting downwards, overlap the top clip edge of the mount plate onto the DIN rail first, then firmly press the bottom-front of the enclosure to clip the bottom edge of the mount plate.



3. Confirm the mount plate has indeed clipped onto the DIN rail for proper fit to complete the installation.

3.6 Powering On the System

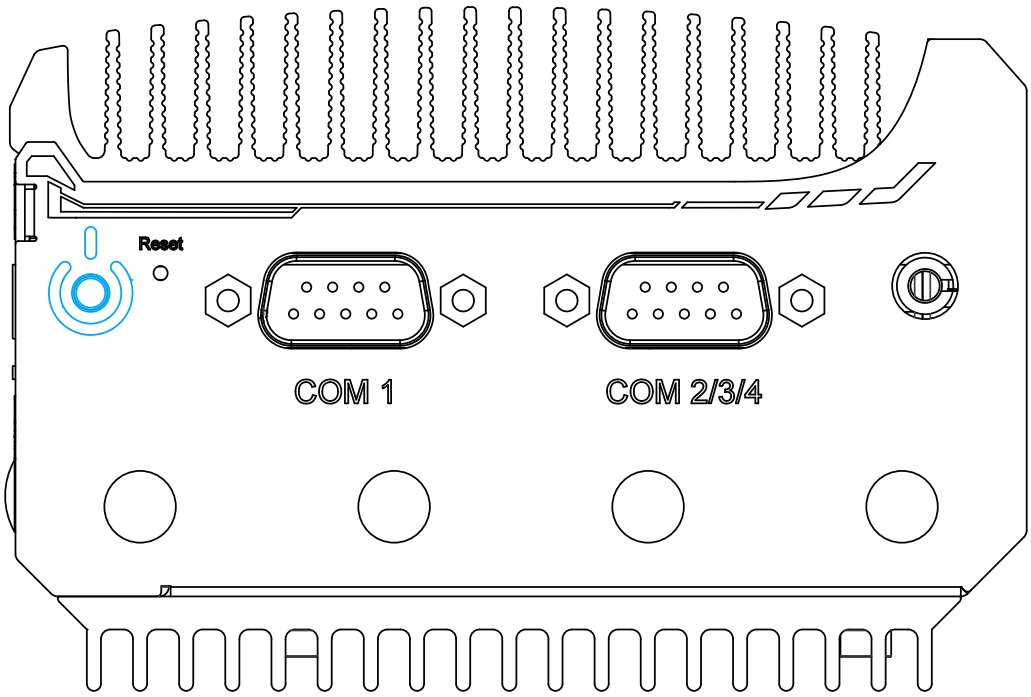
There are five methods to power on the system

- Pressing the power button
- Via an external non-latched switch
- Sending a LAN packet via Ethernet (Wake-on-LAN)
- Using the ignition signal input

We will describe the processes and actions involved for the first four methods in this section. For powering on the system via the ignition signal input method, please refer to Ignition Power Control.

3.6.1 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.

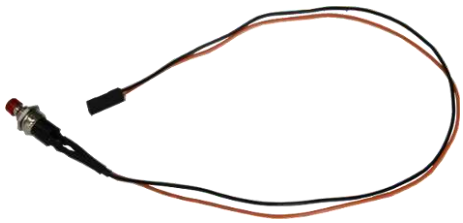


3.6.2 Powering On Using An External Non-Latched Switch

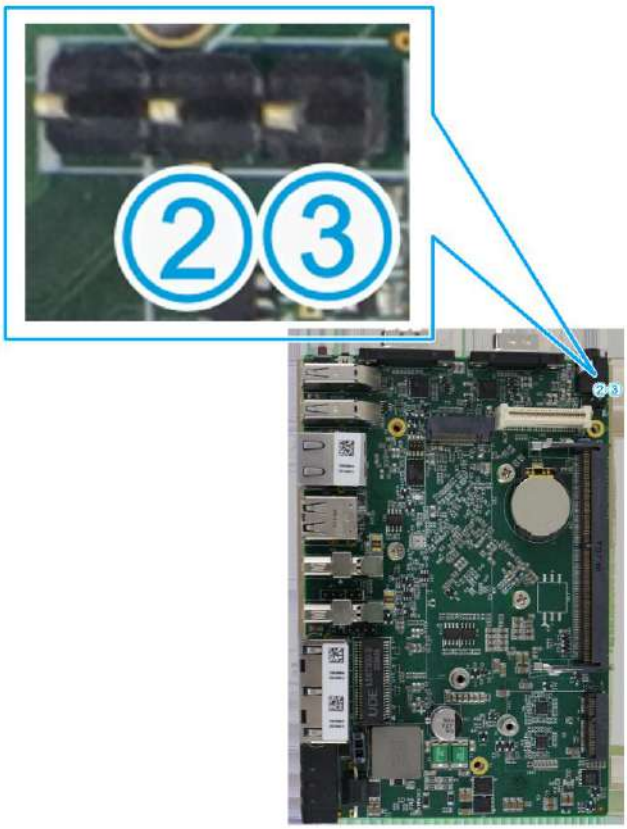
For an application which places the system inside a cabinet, it's useful to control powering on/off the system using an external switch. The system provides an on-board connector for connecting a latched/ non-latched switch and behaving either AT-mode or ATX-mode power on/off control.

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. Prepare a non-latched switch with a 2-pin, 2.0mm pitch connector

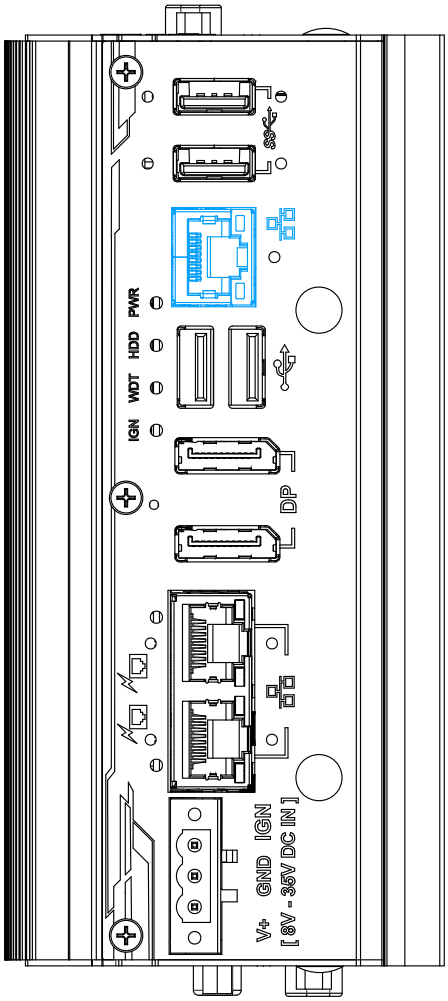


2. To access the pins on the motherboard, please refer to the section Disassembling the System Enclosure. Connect the non-latched switch to the **pin#2** and **pin#3** of the on-board 1x3 pins, 2.0mm pitch pin header (polarity is negligible). Press the button on the switch to turn on the system.



3.6.3 Powering On Using Wake-on-LAN

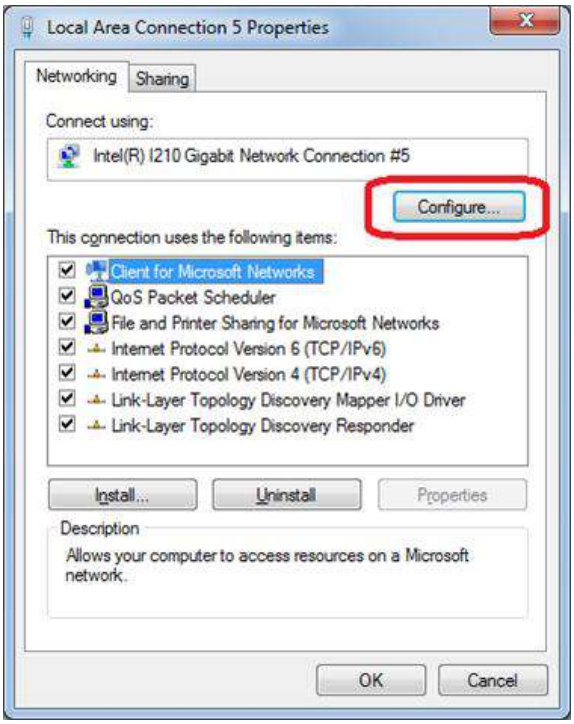
Wake-on-LAN (WOL) is a mechanism to wake up a computer system from a S3 (standby), S4 (Hibernate) or S5 (system off with standby power) state via issuing Subnet Directed Broadcasts (SDB) or a magic packet. The system implements the Wake-on-LAN function for the GbE port #1 shown below.



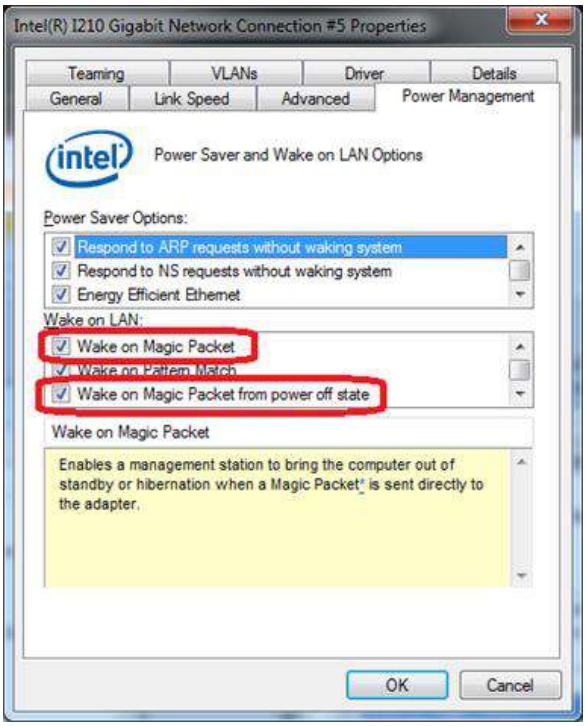
To enable WOL function and power on your system, please follow the steps below.

1. Press F2 when the system boots up to enter BIOS.
2. Enter the **[Power]** menu. And configure the **[Wake On LAN]** option as **[Enabled]**. Please refer to the Wake-on-LAN section.

3. In Windows systems, identify the Local Area Connection of the corresponding Gigabit Controller and click the **Configure** button.



4. Click the **Power Management** tag, and check the following two options accordingly



- **Wake on Magic Packet**

The system can wake from S3 or S4 state when receiving a 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.

http://en.wikipedia.org/wiki/Wake-on-LAN

- **Wake on Magic Packet from power off state**

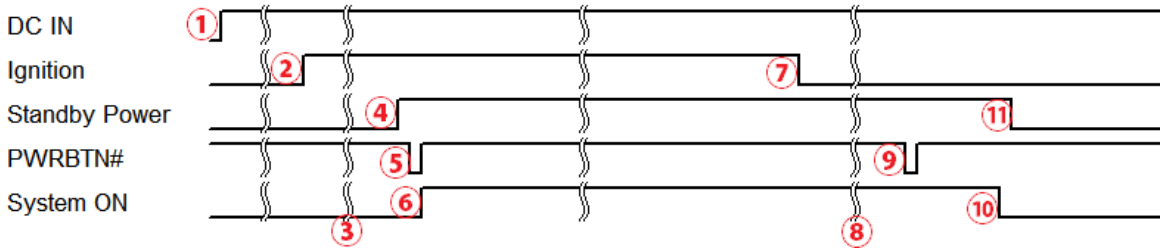
When checking this option, the system can wake from S5 (system off with standby power) state when receiving a magic packet.

3.7 Ignition Power Control

The ignition power control module for in-vehicle applications is a 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.

3.7.1 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).

3.7.2 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 9V (for 12VDC input) or less than 18V (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.

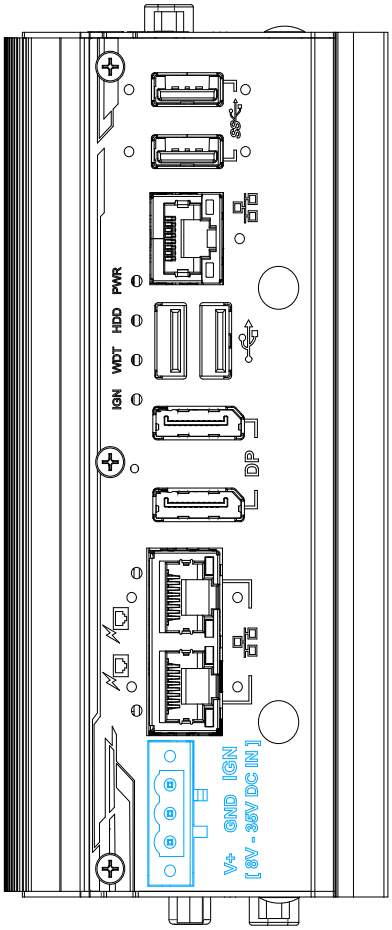
- **System hard-off**

  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.

3.7.3 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). For in-vehicle ignition control wiring, please do the following:

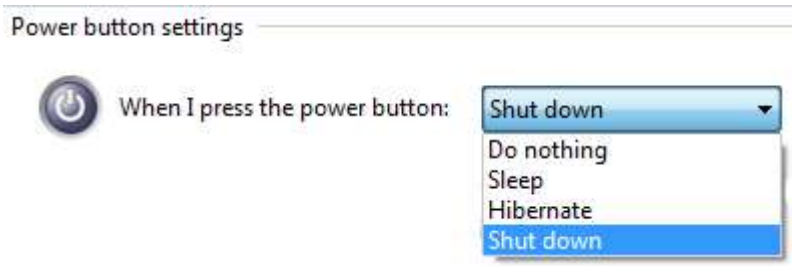
1. Connect car Battery+ line (12V for sedan, 24V for bus/truck) to V+.
2. Connect car Batter-/ GND line to GND.
3. Connect ACC line to IGN.

WARNING

Please make sure your DC power source and IGN signal share the same ground. IGN input accepts 8~35VDC. Supply a voltage higher than 35VDC may damage the system.

3.7.4 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 7/ 8/ 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.

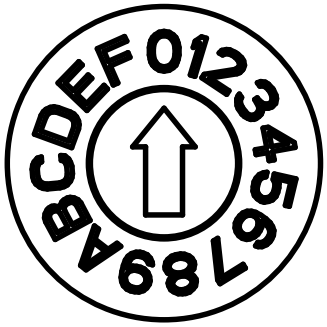


3.7.5 Operation Modes of Ignition Power Control

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 module is also BIOS-configurable. When rotary switch is set to mode 15 (0xF), the ignition power control is set to executed according to parameters configured in BIOS setup menu, which allows richer combination of power-on/ power-off delay and more detailed control parameters.

Remove bottom heatsink to locate ignition rotary switch



Ignition 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)**

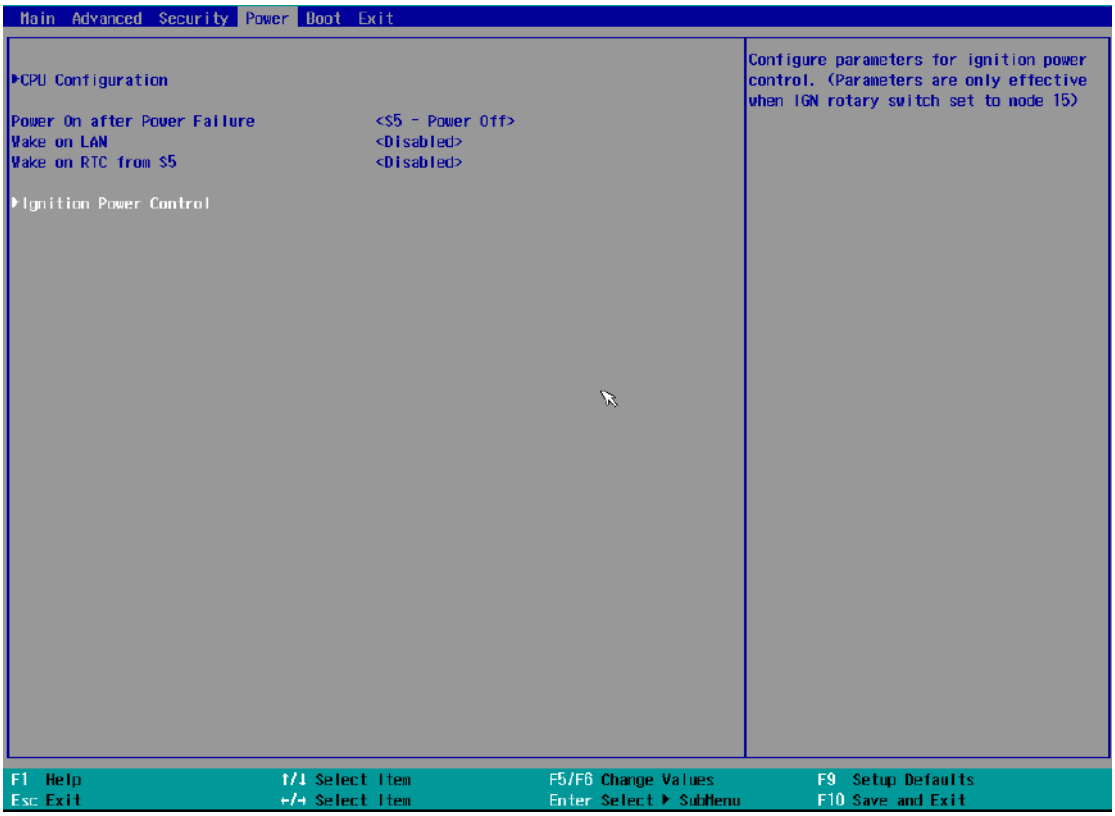
Mode 15 allows the user to configure the ignition control in the BIOS. Please refer to the following section for details.

3.7.6 BIOS Ignition Power Control [Mode 15 (F)]

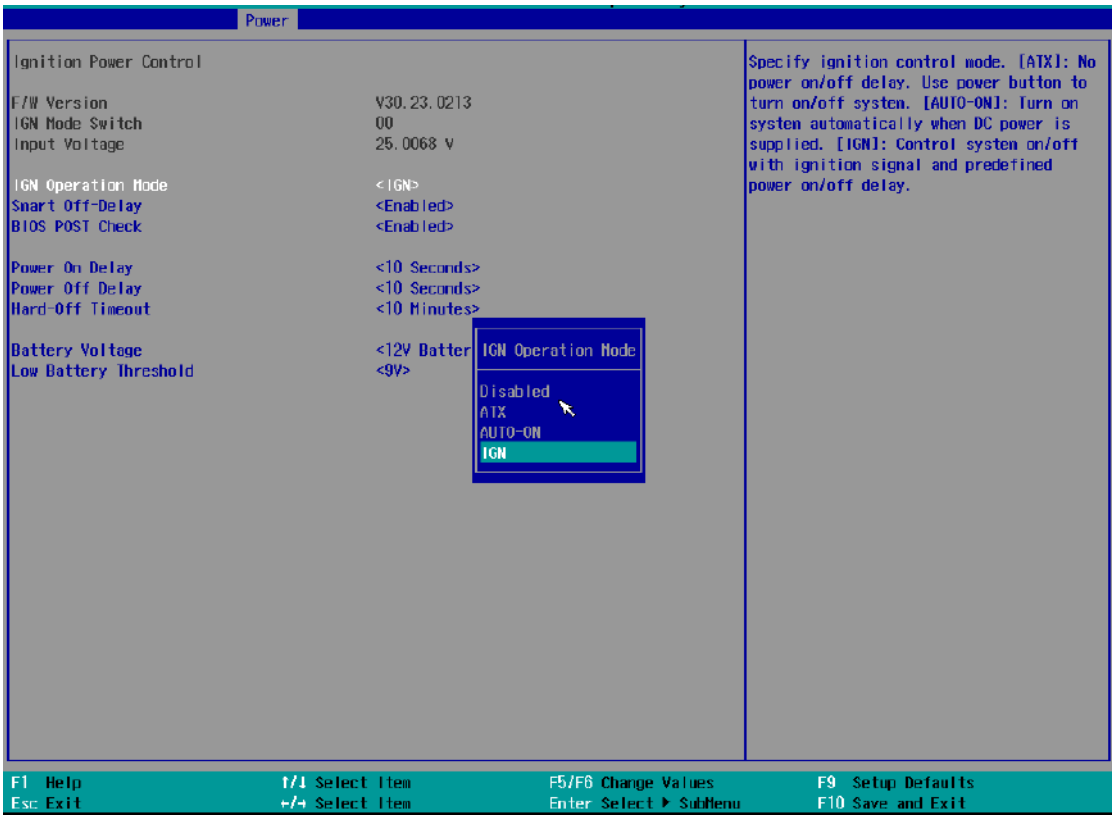
The Mode 15 for ignition control allows ignition control settings to be configured in the BIOS.

To set the ignition power control in the BIOS:

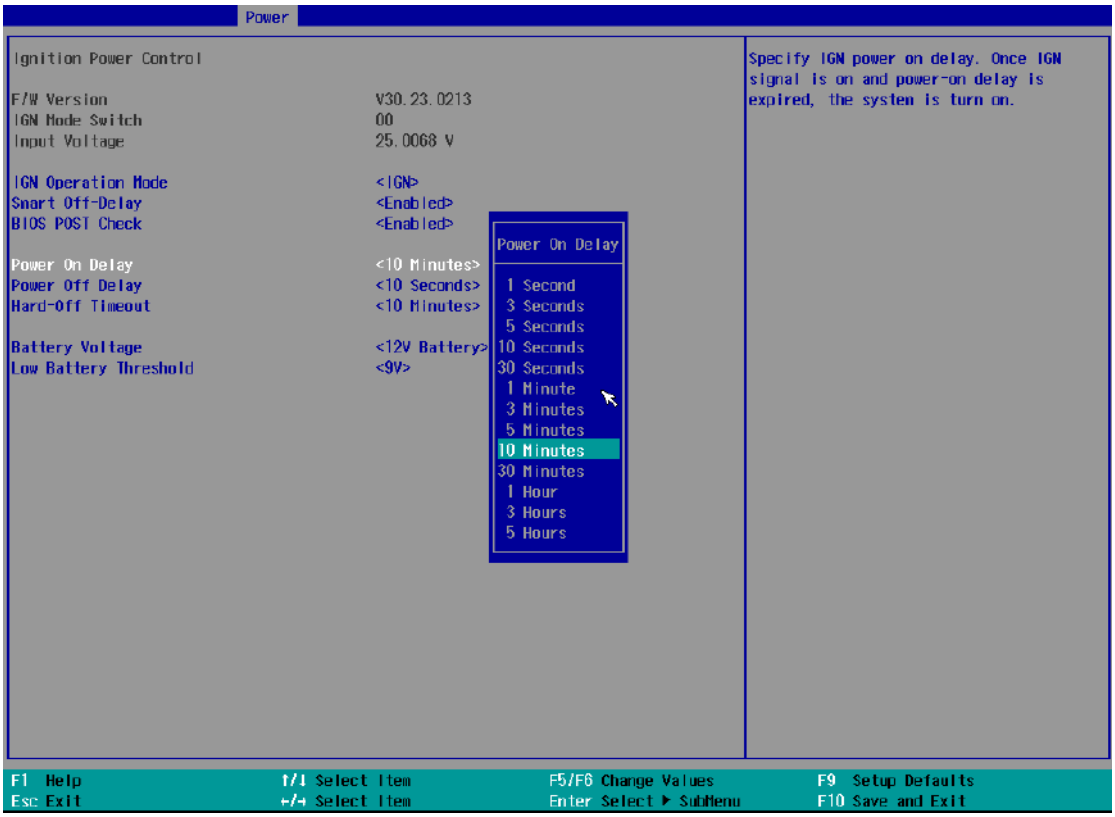
1. Press **F2** when the system boots up to enter the BIOS setup utility.
2. Go to **[Power] →[Ignition Power Control]** and press **ENTER.**



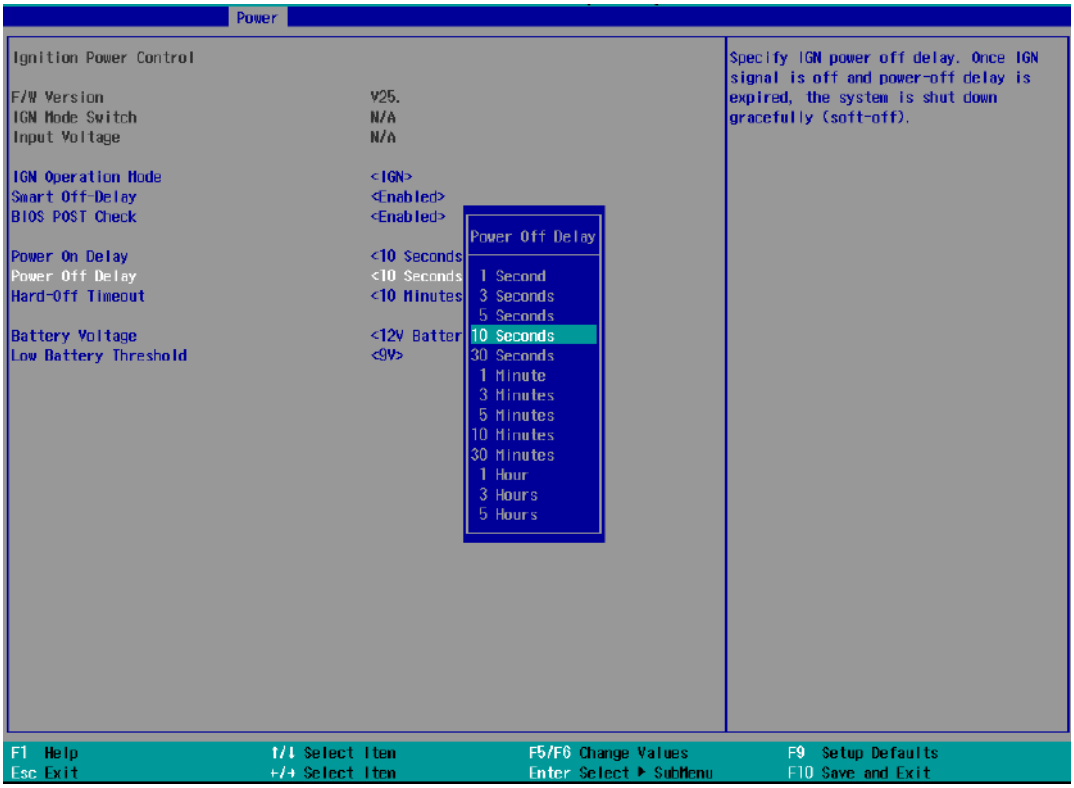
3. Set **IGN Operation Mode** to “IGN” and press ENTER.



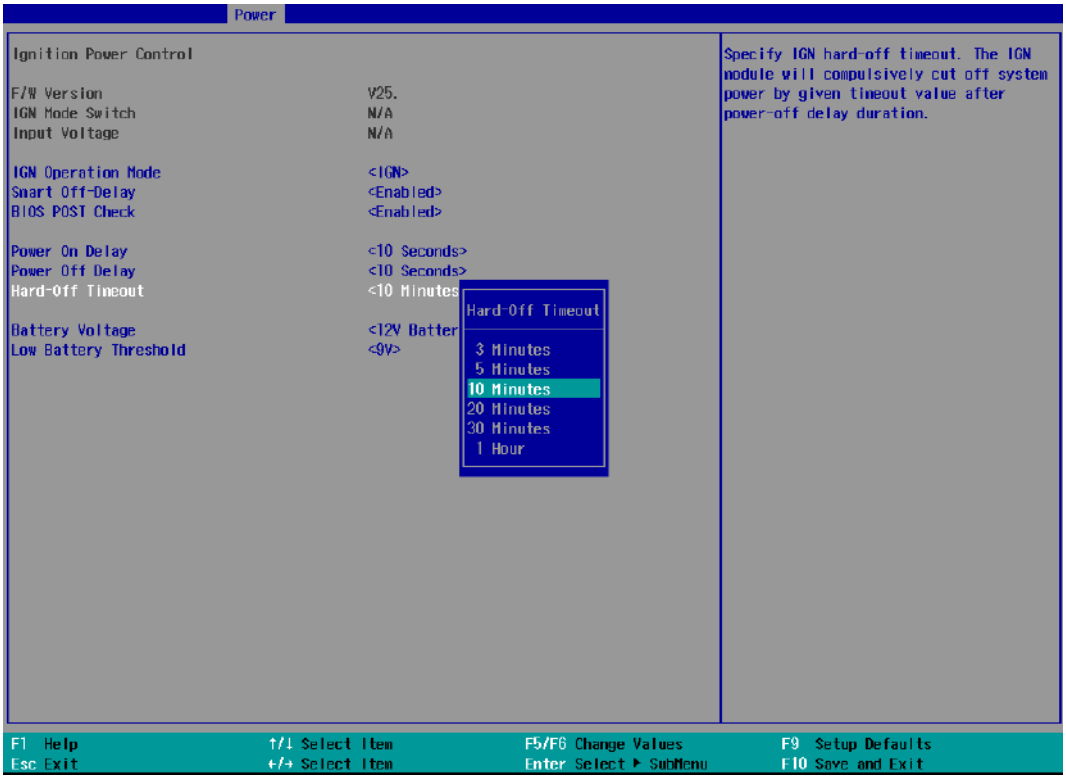
4. If you wish to set the power on delay time from when you start-up the vehicle, highlight and select “Power On Delay”, select the timing according to your needs and press Enter.



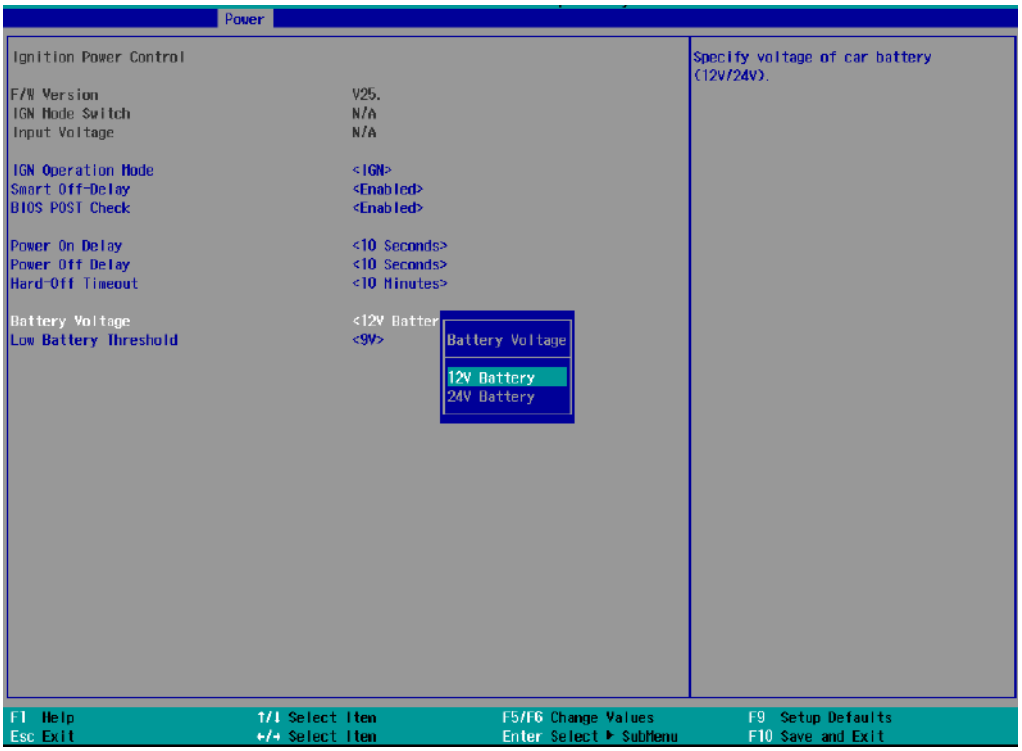
5. If you wish to set the power off delay time from when you turn off the vehicle, highlight and select “Power Off Delay”, select the timing according to your needs and press Enter.



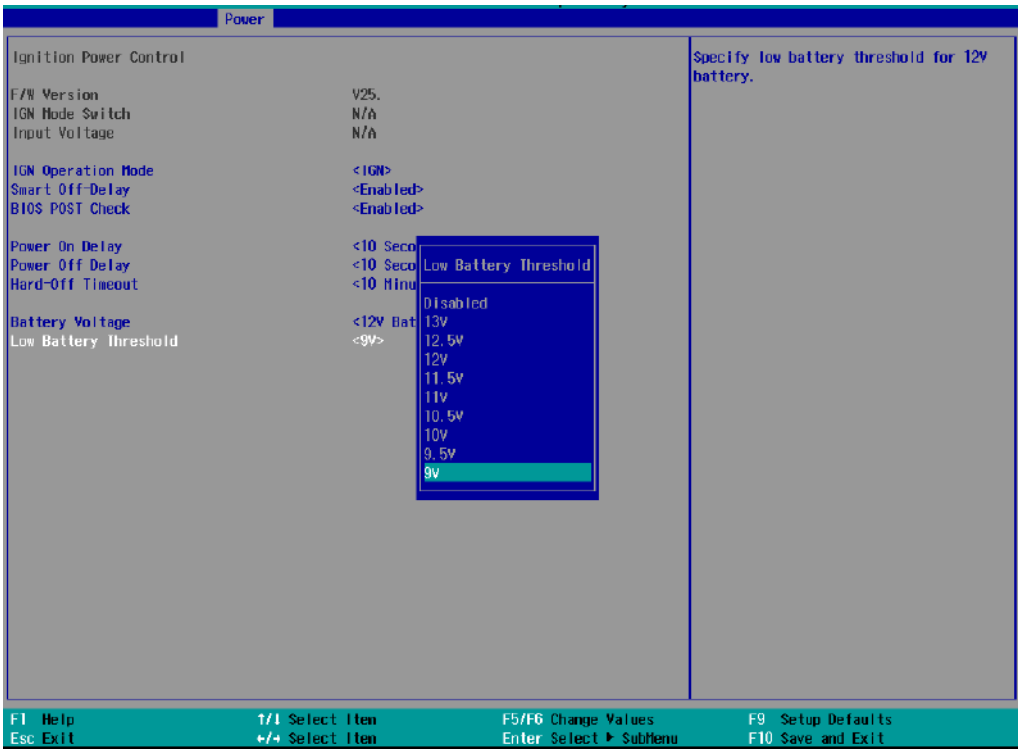
6. If you wish to set the hard power off timing, select “Hard-Off Timeout”, select the timing according to your needs and press Enter.



7. For Battery voltage setting, you may choose between 12V (for normal passenger vehicles) or 24V (for trucks). Highlight an option and press Enter.



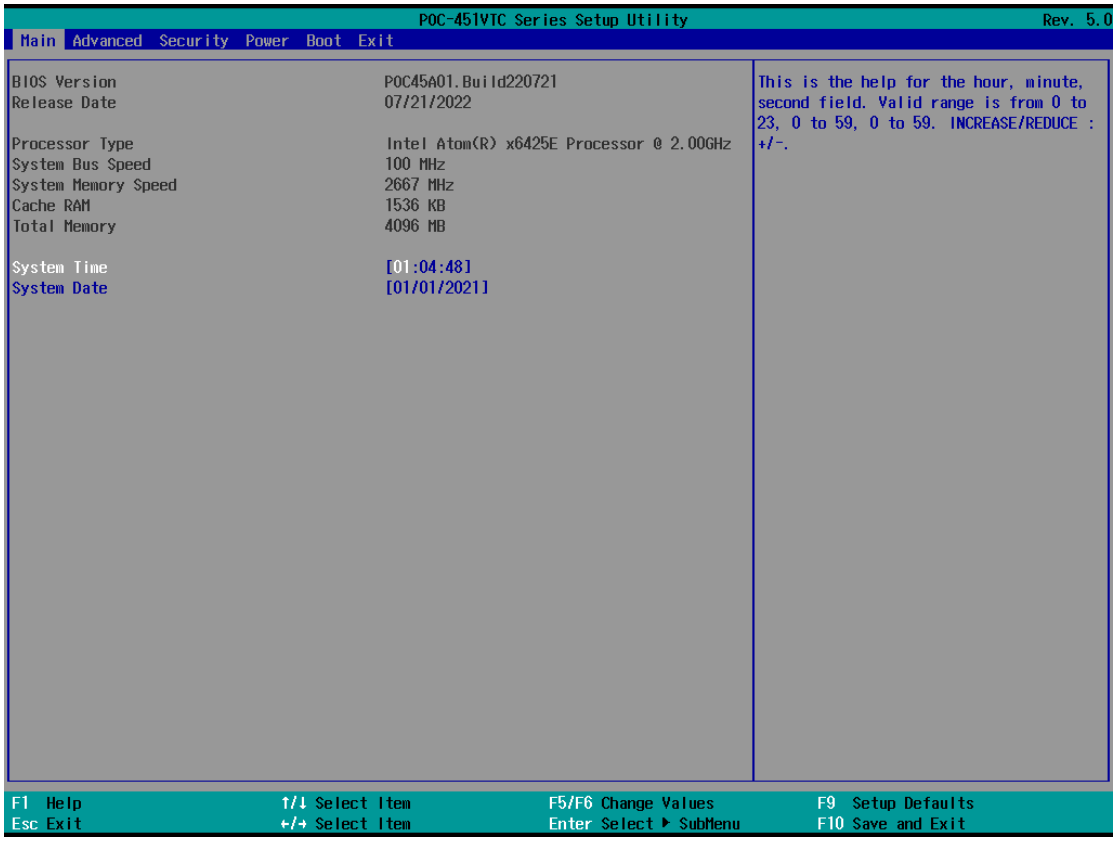
8. To set the low battery threshold, highlight “Low Battery Threshold”, select a setting, and press Enter.



When you are done configuring the BIOS ignition control settings, press F10 to save changes and exit the BIOS.

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).

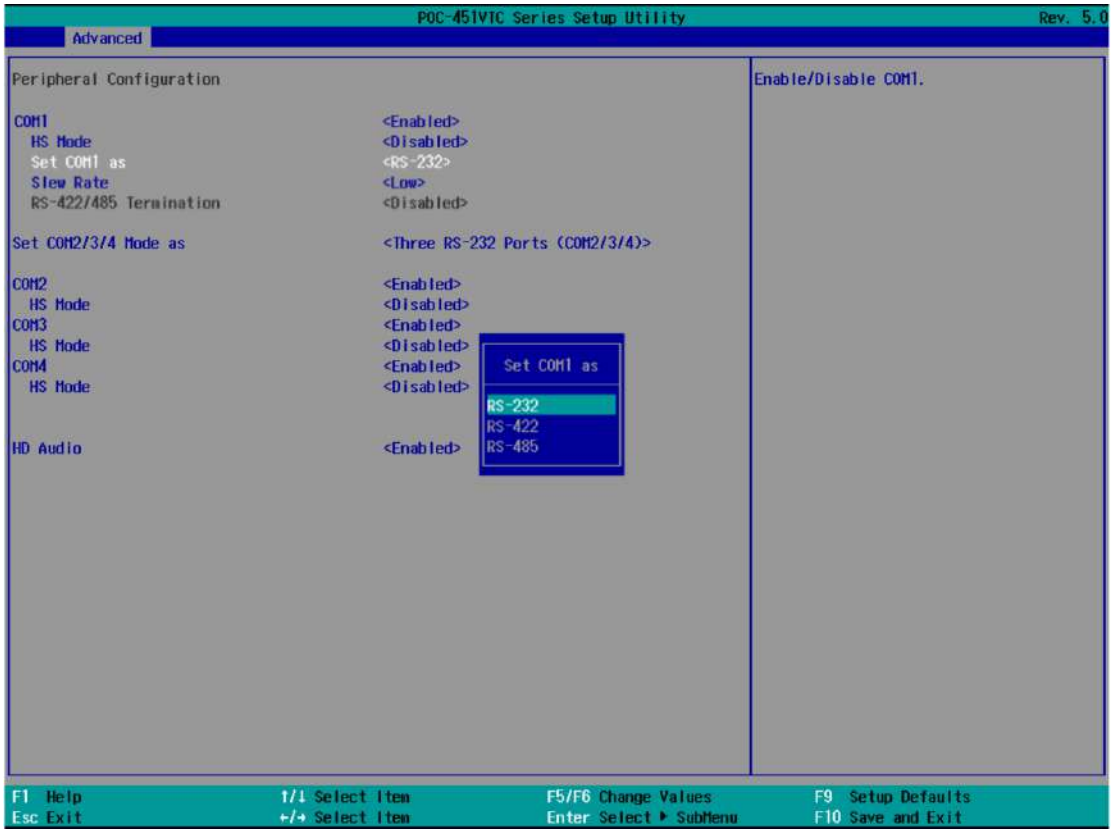


4.1 COM1 Port Configuration

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.

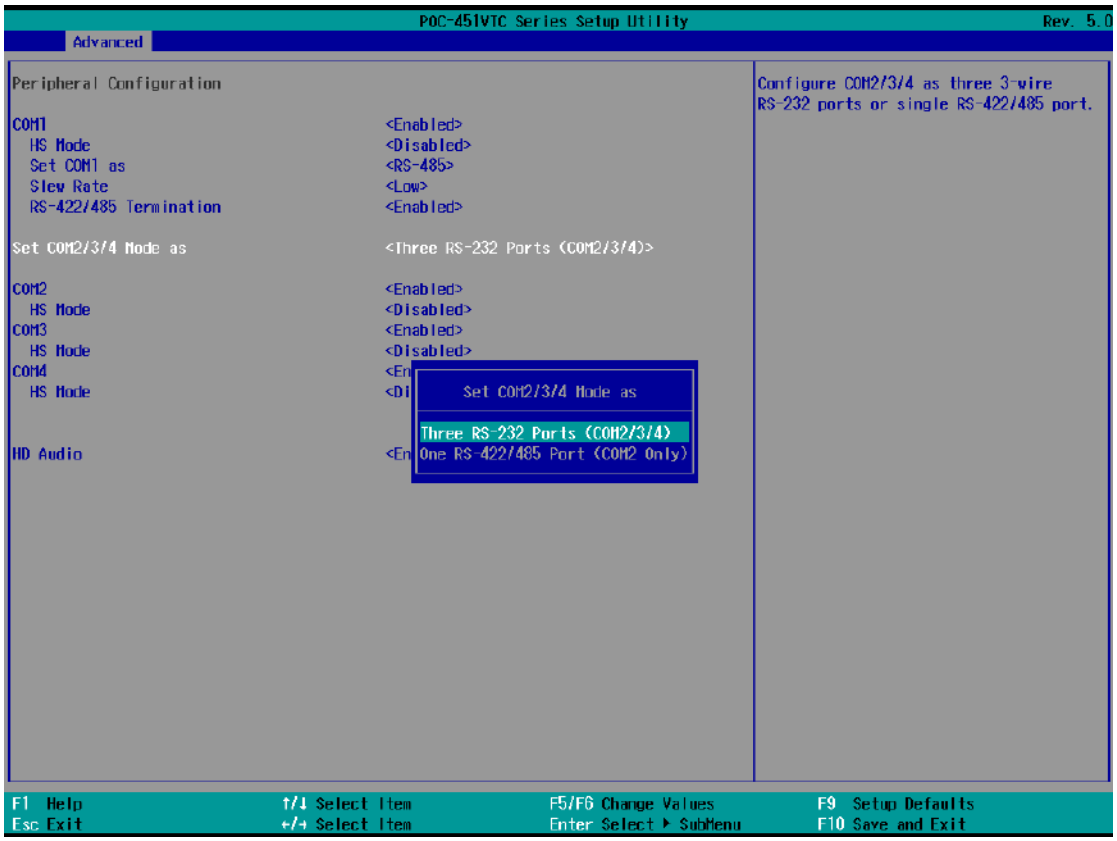


4.2 COM2/ 3/ 4 Port Configuration

The system's COM2/ 3/ 4 ports support RS-232 (full-duplex) while COM2 also supports RS-422 (full-duplex) and RS-485 (half-duplex) mode. The operating mode can be configured via the BIOS. Another option in BIOS called "*Slew Rate*" defines how sharp the rising/falling edge is for the output signal. 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 COM2/ 3/ 4 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 COM2/ 3/ 4 Mode as]** option to the desired mode.
4. Once set, press **F10** to save setting and exit.

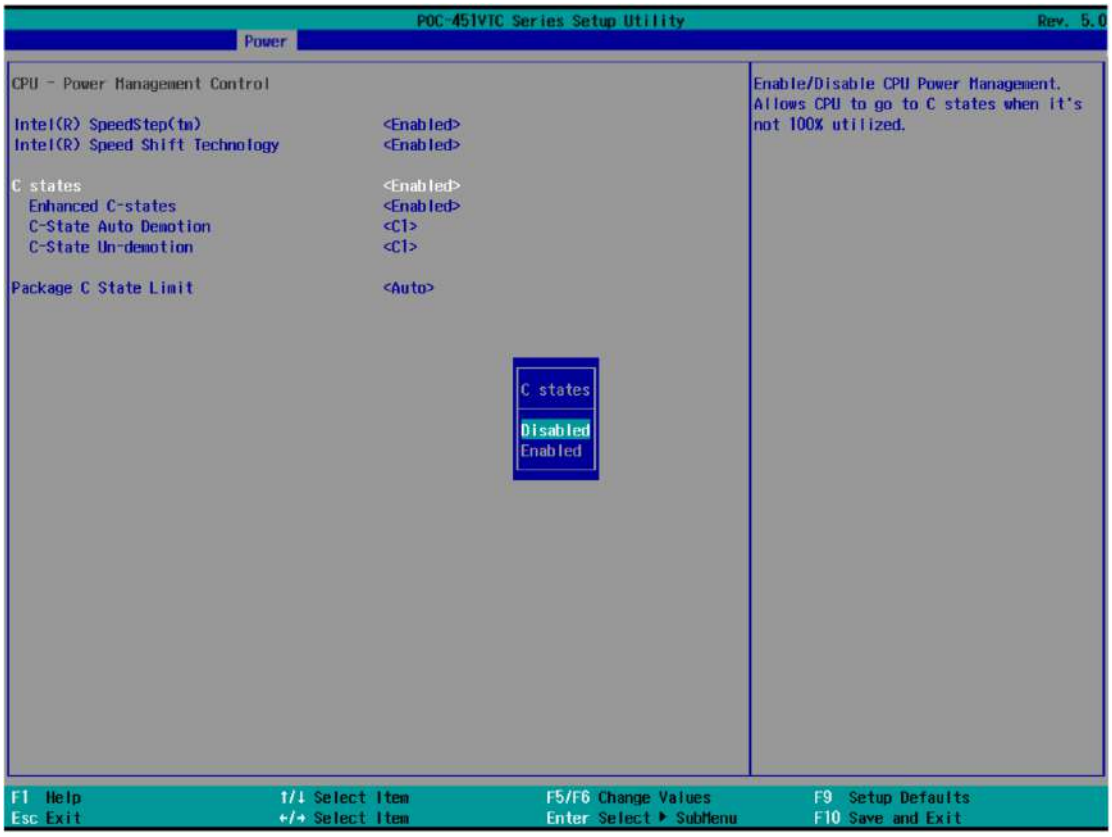


4.3 C-States

C-States is a power-saving technique implemented in modern Intel processors. It shuts down the clock signals and power for idle logic units inside the CPU to save the energy consumed. The trade-off, however, is a longer latency for CPU to wake up and be 100% operational. Depending on your application, you can configure these options to have higher performance (disable “C-States”) or lower power-consumption (enable “C-States”).

To set C-States and Enhanced C-States:

1. Press **F2** when the system boots up to enter the BIOS setup utility.
2. Go to **[Power]** → **[CPU Configuration]** →**[CPU Power Management]**
3. Enable/disable the **[C-States]** option according to your application.
4. Once set, press **F10** to save setting and exit.



4.4 Power over Ethernet

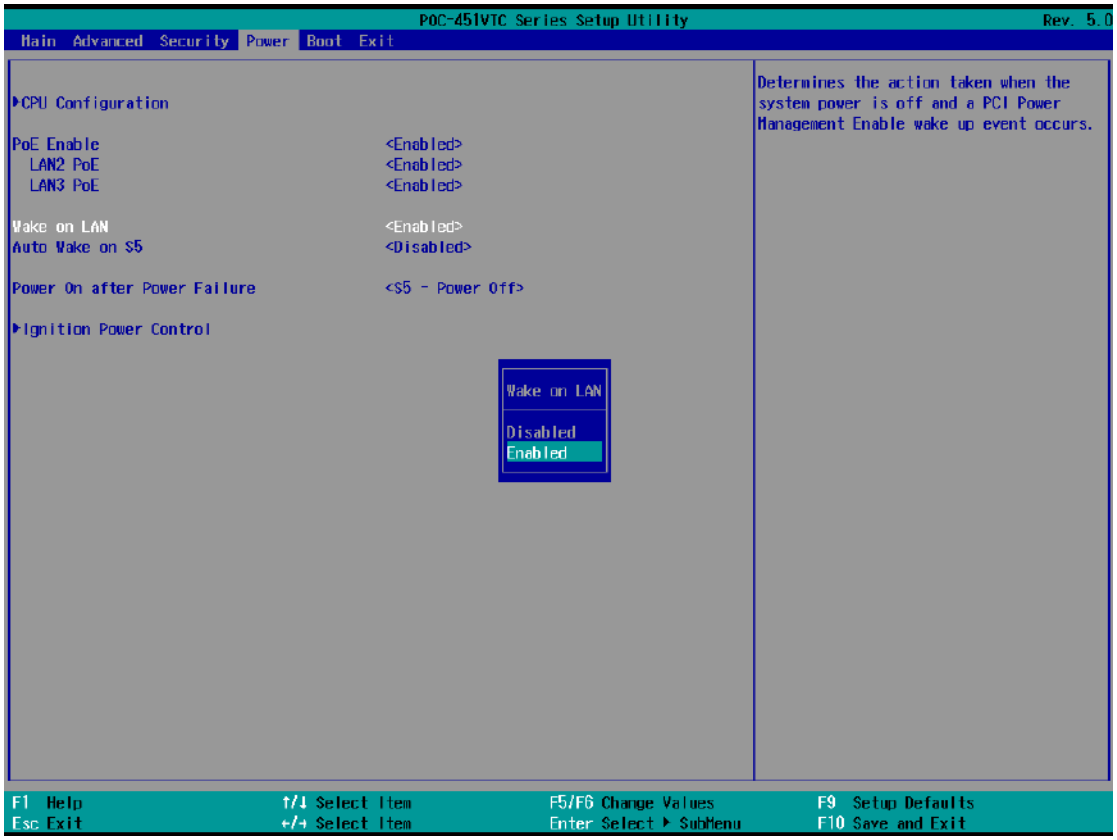
The Power over Ethernet (PoE) functionality is available on ports 1 and 2, and it allows for the transmission of data and power delivery while utilizing a single Cat5 and higher grade Ethernet cable.

4.5 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.



4.6 Power On after Power Failure

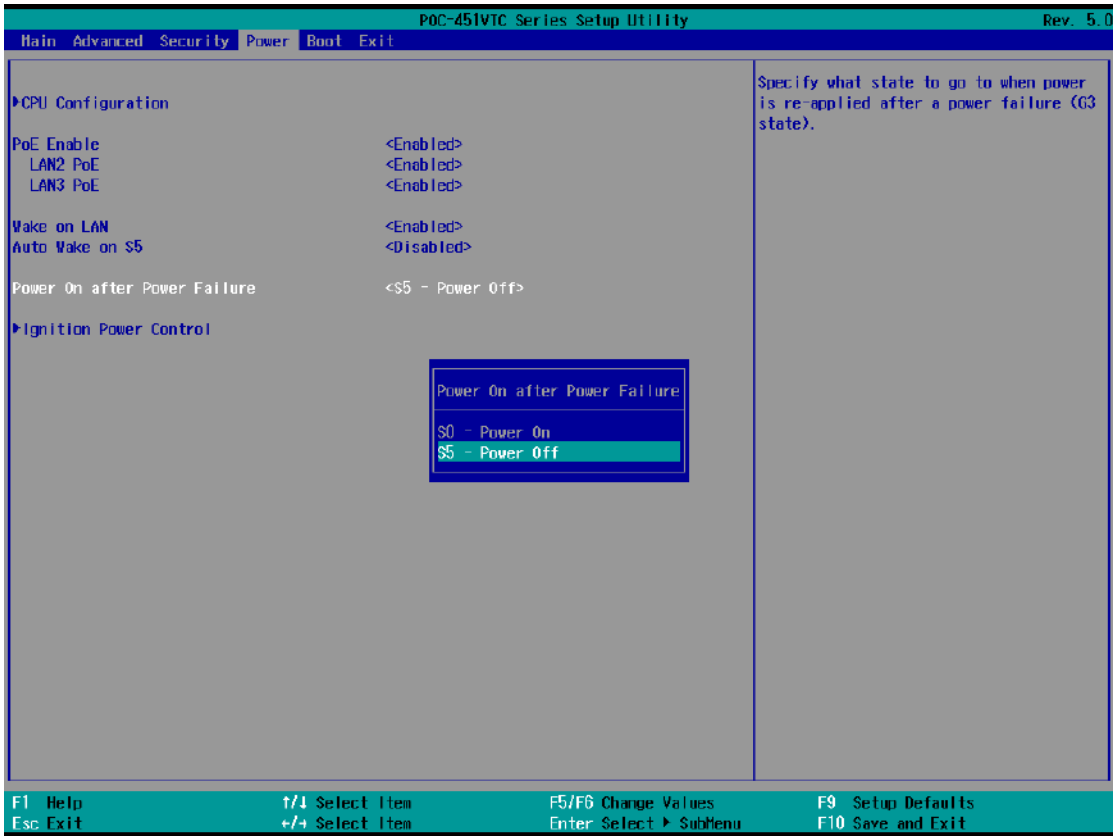
This option defines the system's behavior when DC power is supplied.

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 section 3.7.2 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.

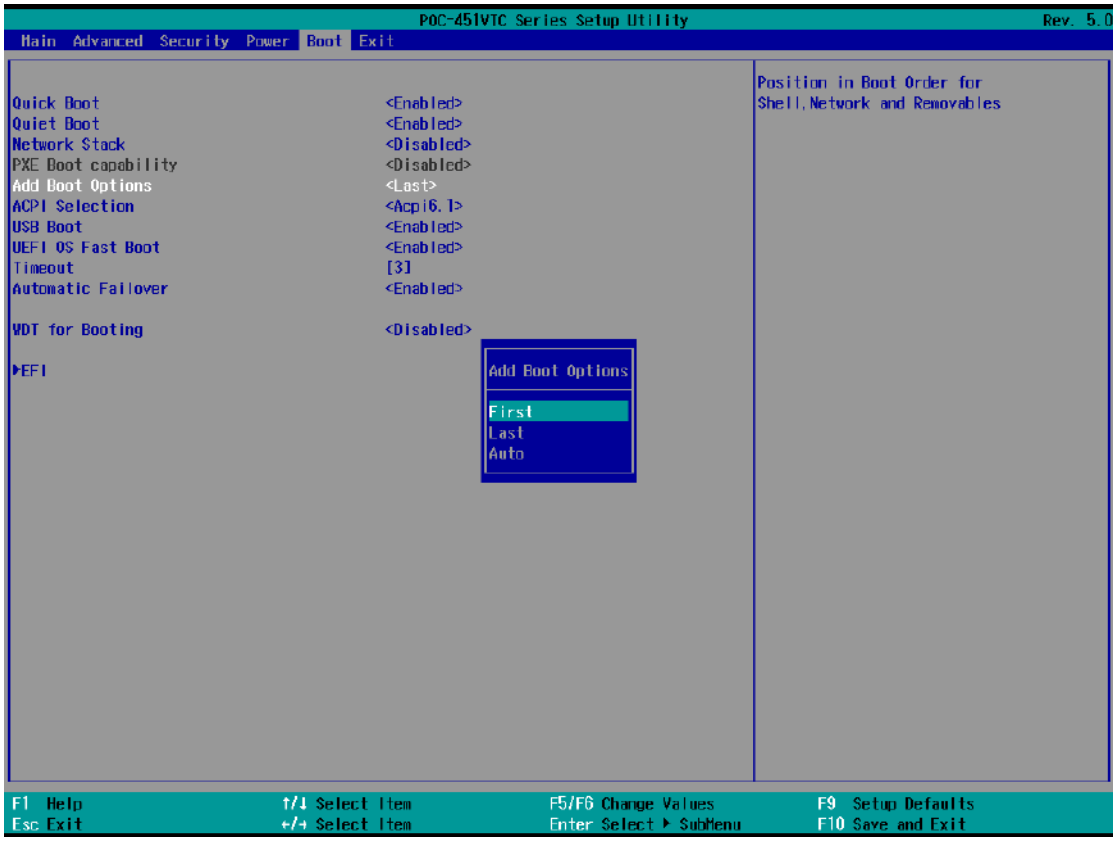


4.7 Position New Boot Device

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.

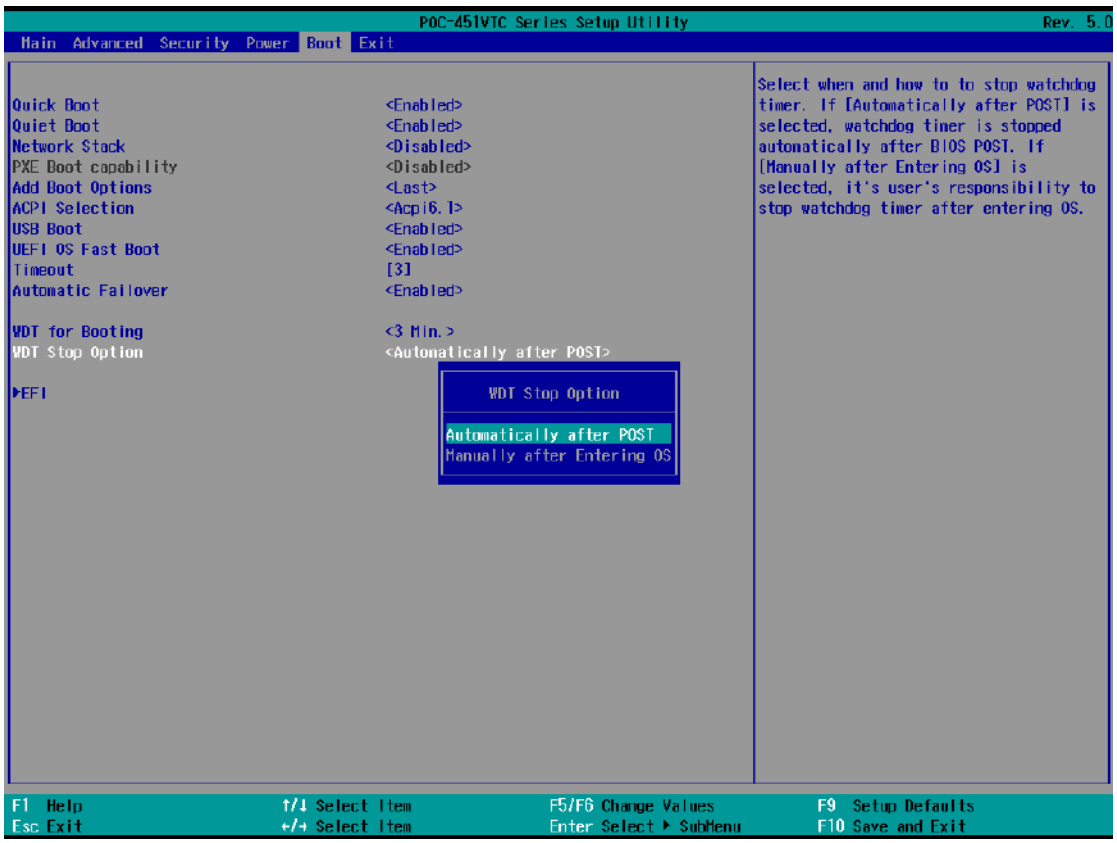


4.8 Watchdog Timer

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-451VTC series only provide driver support for the following operating systems. The following list contains the operating systems which have been tested in Neousys Technology Inc.

- Microsoft Windows 10 Enterprise LTSC 2019 64-bit
- Microsoft Windows 11 IoT Enterprise 22H2 64-bit
- Ubuntu 20.04.2 LTS** or other distribution with kernel ≥ 5.8 */** (POC-45VTC with I225-IT LAN)
- Ubuntu 20.04.5 LTS** or other distribution with kernel ≥ 5.15 */** (POC-45VTC with I226-IT LAN)

NOTE

**For Linux system, user may need to manually compile and install the driver for Intel graphics or I226-IT/ I225 controller if the driver is not embedded in kernel. You can visit Intel website for further information.*

***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!*

Neousys 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 comes with a “Drivers & Utilities” DVD that offers “one-click” driver installation process. It automatically detects your Windows operating system and installs all necessary drivers for you system with a single click.

Or alternatively, the drivers are available on our website, please click on this link to download the drivers.

5.2.1 Install Drivers Automatically

To install drivers automatically, please refer to the following procedures.

1. Insert the “Drivers & Utilities” DVD into a USB DVD-drive connect to your system. A setup utility launches and the following dialog appears.

2. Click on **“Automatic Driver Installation”** and the setup utility will automatically detect your Windows operating system and install all necessary drivers. The installation process takes about 6~8 minutes depending on your Windows version. Once driver installation is done, the setup utility reboots your Windows and you may begin using your system.

5.2.2 Install Drivers Manually

You can also manually install each driver for the system. Please note when installing drivers manually, you need to install the drivers in the following sequence mentioned below.

Windows 10 (x64)

The recommended driver installation sequence is

1. **Chipset driver** (x:\Driver_Pool\Chipset_ELK\Win_10_64\SetupChipset.exe)
2. **Graphics driver** (x:\Driver_Pool\Graphics_ELK\Win_10_64\igxpin.exe)
3. **Audio driver** (x:\Driver_Pool\Audio_ALC262\Win_ALL_64\Setup.exe)
4. **LAN driver** (x:\Driver_Pool\GbE_I210_I225_I350_X550\Win_10_64\APPS\PROSETDX\Winx64\DxSetup.exe)
5. **TXE driver** (x:\Driver_Pool\TXE_ELK\Win_10_64\SetupME.exe)

5.3 Driver for Watchdog Timer and DIO

Neousys provides a driver package which contains function APIs for WDT function and isolated DIO control function. You should install the driver package (WDT_DIO_Setup.exe) in prior to use these functions. Please note that you must install WDT_DIO_Setup_v2.3.1.4 or later versions.

NOTE

Please install WDT_DIO_Setup_v2.3.1.4 or later versions.

Windows 10 (x64)

Please execute the driver setup program in the following directory.

x:\ Driver_Pool\WDT_DIO\Win7_8_10_64\WDT_DIO_Setup_v2.3.1.4(x64).exe

Windows 10 (WOW64)

Please execute the driver setup program in the following directory.

x:\
Driver_Pool\WDT_DIO\Win7_8_10_WOW64\WDT_DIO_Setup_v2.3.1.4(wow64).exe

Appendix A Using WDT & DIO

The watchdog timer (WDT) function to ensure 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 Neousys to program the WDT functions. Currently, WDT driver library supports Windows 10 x64 and WOW64 platform. For other OS support, please contact Neousys Technology for further information.

Installing WDT_DIO Library

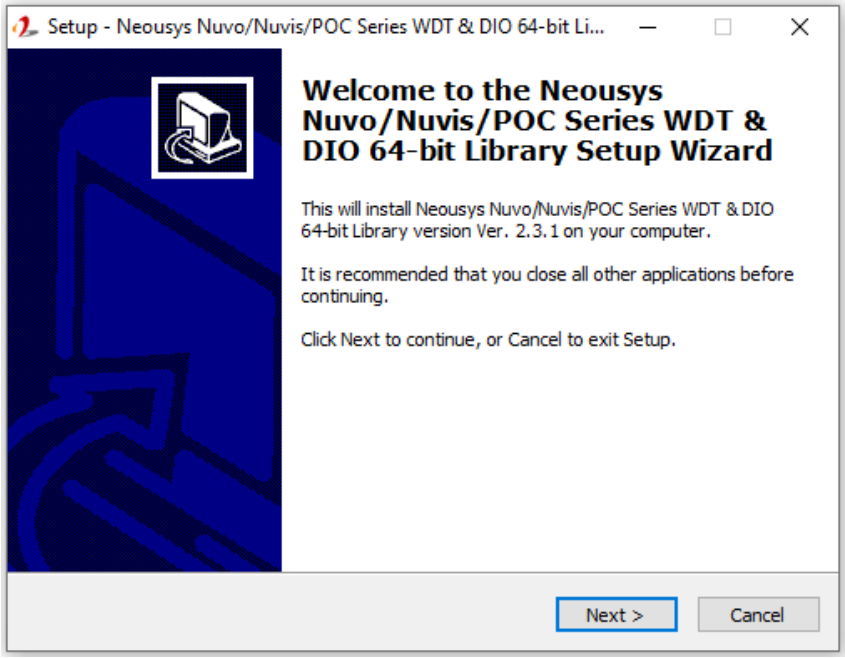
The WDT_DIO function library is delivered in the form of a setup package named **WDT_DIO_Setup.exe**. In prior to program WDT, you should execute the setup program and install the WDT library. Please use the following WDT_DIO_Setup packages according to your operating systems and application.

- For Windows 10 64-bit OS with 64-bit application (x64 mode), please install WDT_DIO_Setup_v2.3.1.4(x64).exe or later version.
- For Windows 10 64-bit OS with 32-bit application (WOW64 mode), please install WDT_DIO_Setup_v2.3.1.4(wow64).exe or later version.

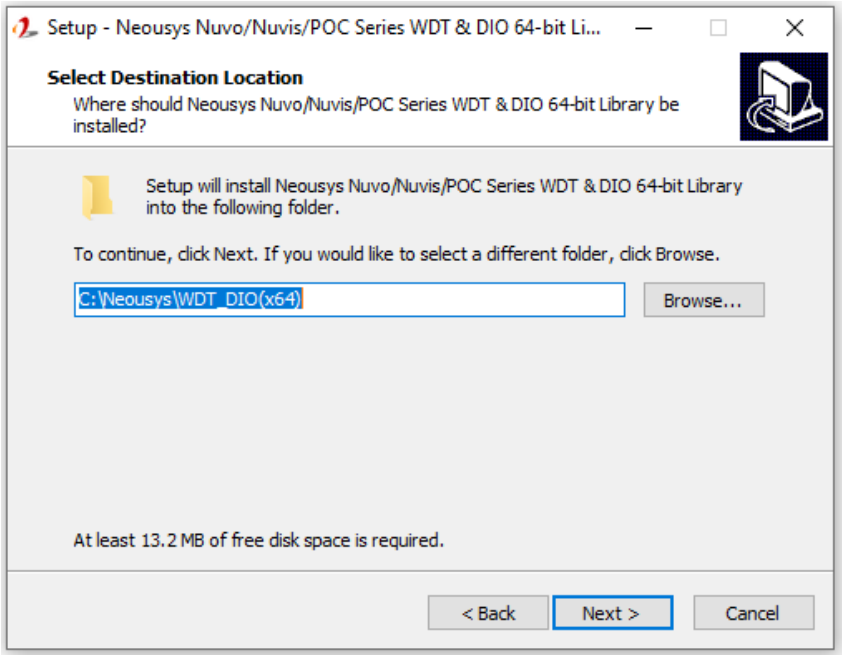
WDT and DIO Library Installation

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

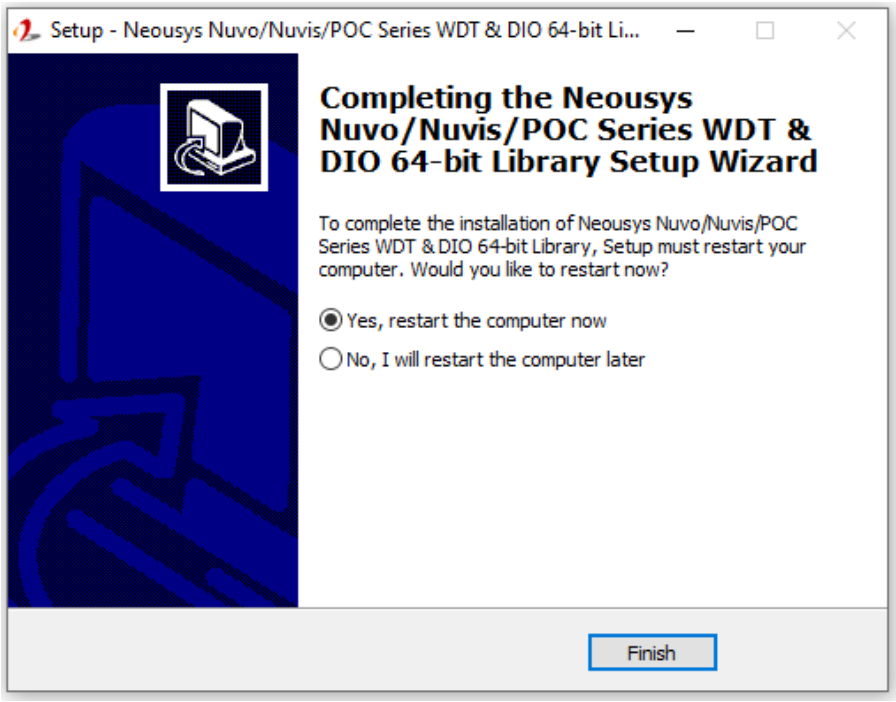
1. Execute **WDT_DIO_Setup.2.3.1.4.exe**. and the following dialog appears.



2. Click “Next >” and specify the directory of installing related files. The default directory is *C:\Neousys\WDT_DIO*.



3. 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.



4. 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	*tick* WORD value (1 ~ 65535) to indicate timeout ticks. *unit* 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()

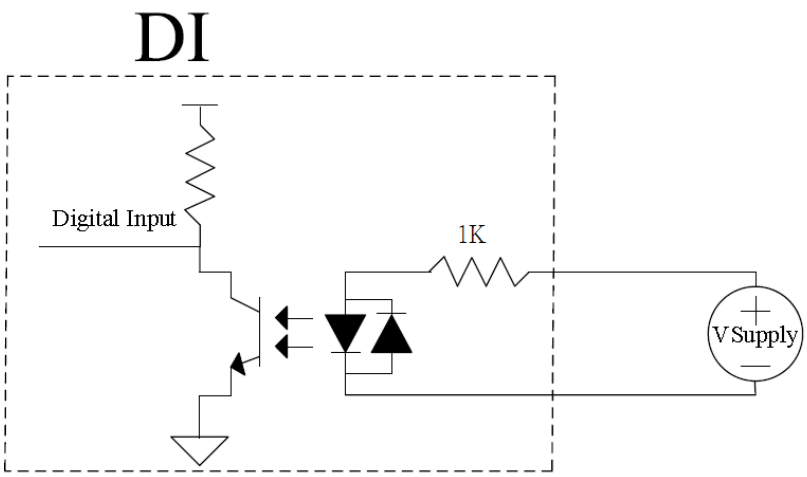
StopWDT

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()

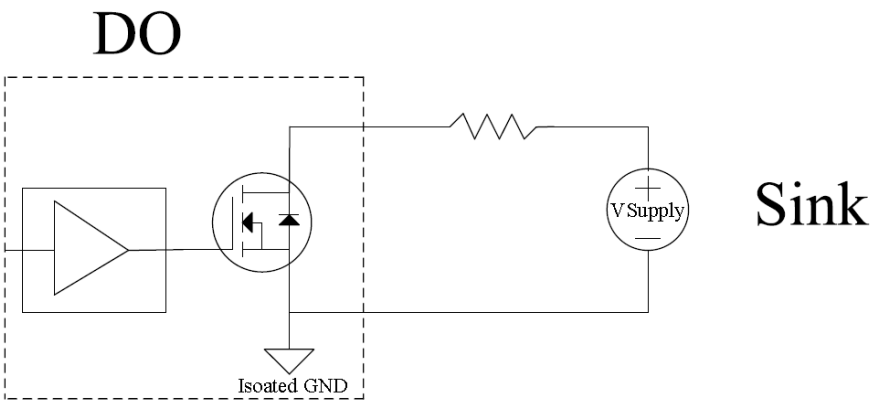
Using DIO Function

Wiring for DIO

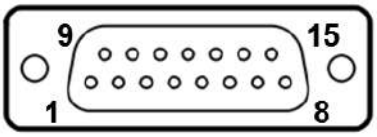
The digital input function of System series is implemented using a photo-coupler with an internally series-connected 1kΩ resistor. You need to provide a voltage to specify the logic high/low state. The input voltage for logic high is 5~24V, and the input voltage for logic low is 0~1.5V.



The digital output function of System series is implemented using Power MOSFET + Analog Device iCoupler® component. The DO channels are configured as NO (normally-open) configuration. When you turn on 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 System series supports sinking current connection. The following diagrams are the suggested wiring for DO:



DIO Pin Definition



Pin#	Pin Definition	Pin#	Pin Definition
1	DI_0	9	DI_GND
2	DI_1	10	DI_2
3	DI_GND	11	DI_3
4	DO_GND	12	DO_GND
5	DO_0	13	DO_2
6	DO_1	14	DO_3
7	DO_GND	15	-
8	VDD		

DIO Function Reference

InitDIO

Syntax	BOOL InitDIO(void);
Description:	Initialize the DIO function. You should always invoke InitDIO() before write/read any DIO port/channel.
Parameter	None
Return Value	**TRUE:** Successfully initialized **FALSE:** Failed to initialize
Usage	BOOL bRet = InitWDT()

DIReadLine

Syntax	BOOL DIReadLine(BYTE ch);
Description:	Read a single channel of isolated digital input.
Parameter	*ch* BYTE value specifies the DI channel to be read. *ch* should be a value of 0 ~ 3.
Return Value	The status (TRUE or FALSE) of the specified DI channel.

Usage	BYTE ch=3; //DI channel #3
	BOOL DIChValue = DIReadLine(ch); //read DI channel #3

DIReadPort

Syntax	WORD DIReadPort(void);
Description:	Read the entire isolated digital input port (4 channels).
Parameter	None
Return Value	The status (TRUE or FALSE) of the specified DI channel.
Usage	WORD DIPortValue = DIReadPort ();

DOWriteLine

Syntax	void DOWriteLine(BYTE ch, BOOL value);
Description:	Write a single channel of isolated digital output.
Parameter	*ch* BYTE value specifies the DO channel to be written. *ch* should be a value of 0 ~ 3. *value* BOOL value (TRUE or FALSE) specifies the status of DO channel.
Return Value	None

Usage	BYTE ch=3; //DI channel #3
	BOOL DOChValue=TRUE;
	DOWriteLine(ch, DOChValue); //write DO channel #3 as TRUE

DOWritePort

Syntax	void DOWritePort(WORD value);
Description:	Write the entire isolated digital output port (4 channels).
Parameter	*value* WORD value specifies the status of the DO port. *value* should be a value of 0~15.
Return Value	None
Usage	WORD DOPortValue=0x0C; //1100b DOWritePort(DOPortValue); //write DO port as 1100b

DOWriteLineChecked

Syntax	void DOWriteLineChecked(BYTE ch, BOOL value);
Description:	Write a single channel of isolated digital output and read-back the value of DO register. Note that this function is not returned until the DO register is checked and identical to the written value.
Parameter	*ch* BYTE value specifies the DO channel to be written. *ch* should be a value of 0 ~ 3. *value* BOOL value (TRUE or FALSE) specifies the status of DO channel.
Return Value	None

Usage	BYTE ch=3; //DI channel #3
	BOOL DOChValue=TRUE;
	DOWriteLineChecked(ch, DOChValue); //write DO channel #3 as TRUE

DOWritePortChecked

Syntax	void DOWritePortChecked(WORD value);
Description:	Write the entire isolated digital output port (8 channels) and check it has been done. Note that this function is not returned until the write value has been checked the same with the device registry.
Parameter	*value* WORD value specifies the status of the DO port. *value* should be a value of 0~15.
Return Value	None
Usage	WORD DOPortValue=0x0C; //1100b DOWritePortChecked(DOPortValue); //write DO port as 1100b

COS Function Reference

SetupDICOS

Syntax	BOOL SetupDICOS(COS_INT_SETUP *lpSetup, DWORD cbSetup);
Description	Setup Digital-Input(DI) Change-of-State(COS) interrupt parameters.
Parameter	***lpSetup* [in]** A pointer to a **COS_INT_SETUP** structure that contains the COS configuration information for the DI device. This data structure contains the following variables: ***portMask*** WORD value specifies the interrupt mask for corresponding channel(s). ***edgeMode*** WORD value specifies that interrupt is generated when level change (set to 0) or on rising/falling edge (set to 1) for the corresponding channel(s). ***edgeType*** WORD value specifies that interrupt is generated on rising edge (set to 0) or falling (set to 1) edge for corresponding channel(s). This value is neglected if *edgeMode* is set to 0 for the corresponding channel(s). ***cbSetup* [in]** The length of the structure, in bytes. The caller must set this member to size of (COS_INT_SETUP).
Return Value	**TRUE** if setup successes **FALSE** if setup failed

Usage	COS_INT_SETUP setup;
	memset(&setup, 0, sizeof(setup));
	setup.portMask = 0x0f; // enable ch.0~3
	setup.edgeMode = 0; // level
	setup.edgeType = 0x00; // Lo/Hi
	BOOL bRet = SetupDICOS(&setup, sizeof(setup));

RegisterCallbackDICOS

Syntax	BOOL RegisterCallbackDICOS(COS_INT_CALLBACK callback);
Description:	Registers a callback function, which is called when the DICOS interrupt occurred.
Parameter	***callback* [in]** Specifies the callback function. The prototype for this function is descripted as follow. void __stdcall callback_func(COS_INT_CALLBACK_ARG* arg);
Return Value	**TRUE** if setup successes, **FALSE** if setup failed.

Usage	void __stdcall callback_func(COS_INT_CALLBACK_ARG* arg)
	{
	printf("data=0x%02x, flag=0x%02x, seq=%02d\n", arg->portData, arg->intrFlag, arg->intrSeq);
	}
	BOOL bRet = RegisterCallbackDICOS(callback_func);

StartDICOS

Syntax	BOOL StartDICOS(void);
Description	Start DI Change-of-State interrupt
Parameter	None
Return Value	**TRUE** if start procedure successes **FALSE** if start procedure failed
Usage	BOOL bRet = StartDICOS();

StopDICOS

Syntax	BOOL StopDICOS(void);
Description	Stop DI Change-of-State interrupt
Parameter	None
Return Value	**TRUE** if stop procedure successes **FALSE** if stop procedure failed
Usage	BOOL bRet = StopDICOS();

DI COS Example

```
#include <stdio.h>
#include <stdlib.h>
#include <windows.h>
#include "WDT_DIO.h"

//Step 0,     define a Change-of-State Interrupt callback function
void __stdcall callback_function(COS_INT_CALLBACK_ARG* arg)
{
    printf("data=0x%02x, flag=0x%02x, seq=%02d\n",
    arg->portData, arg->intrFlag, arg->intrSeq);
}

int main(int argc, char* argv[])
{
  //Step 1, initialize DIO library by invoking InitDIO()
    if ( ! InitDIO() )
    {
        printf("InitDIO --> FAILED\n");
        return -1;
    }
    printf("InitDIO --> PASSED\n");

  //Step 2, setup Change-of-State Interrupt mask and level/edge mode
    COS_INT_SETUP    setup;
```

```
    memset(&setup, 0, sizeof(setup));

    setup.portMask = 0x0f;          // 00001111b, enable ch.0~3
    setup.edgeMode = 0x00;    // generate interrupt on level change
    setup.edgeType = 0x00;        // rising/falling edge, only effective when
edgeMode = 1

    if ( ! SetupDICOS(&setup, sizeof(setup)) )
    {
        printf("SetupDICOS --> FAILED\n");
        return -2;
    }
    printf("SetupDICOS --> PASSED\n");

//Step 3, register the callback function
    if ( ! RegisterCallbackDICOS(callback_function) )
    {
        printf("RegisterCallbackDICOS --> FAILED\n");
        return -3;
    }
    printf("RegisterCallbackDICOS --> PASSED\n");

//Step 4, start the DI Change-of-State Interrupt
    if ( ! StartDICOS() )
    {
        printf("StartDICOS --> FAILED\n");
        return -4;
    }
    printf("StartDICOS --> PASSED\n");

    printf("\npress any key to stop...\n");
    system("pause >nul");

//Step 5, stop the DI Change-of-State Interrupt operation
    if ( ! StopDICOS() )
    {
        printf("StopDICOS --> FAILED\n");
        return -5;
```

```
        }
        printf("StopDICOS --> PASSED\n");

        printf("\npress any key to exit...\n");
        system("pause >nul");
        return 0;

}
```

Appendix B PoE On/ Off Control

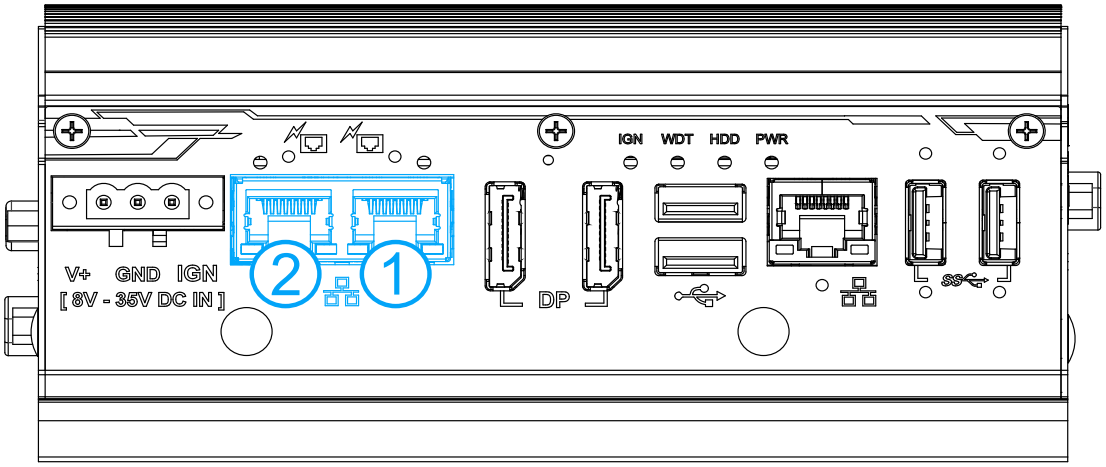
The POC-451VTC system offers two 802.3at PoE+ ports with a unique feature to allow users manually turn on or off the power supply of each PoE port. This can be function can be useful in power device (PD) fault-recovery or power reset.

The function APIs are encapsulated in Neousys 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

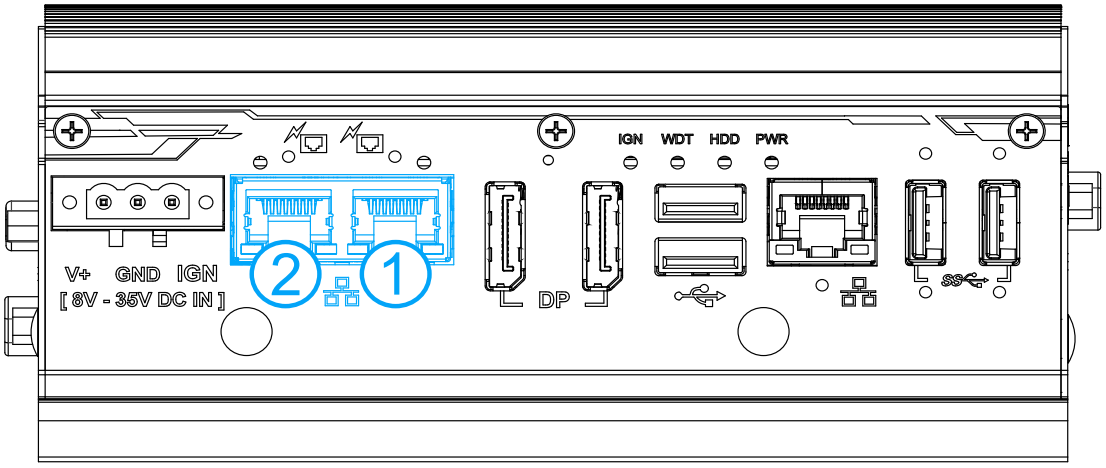
GetStatusPoEPort

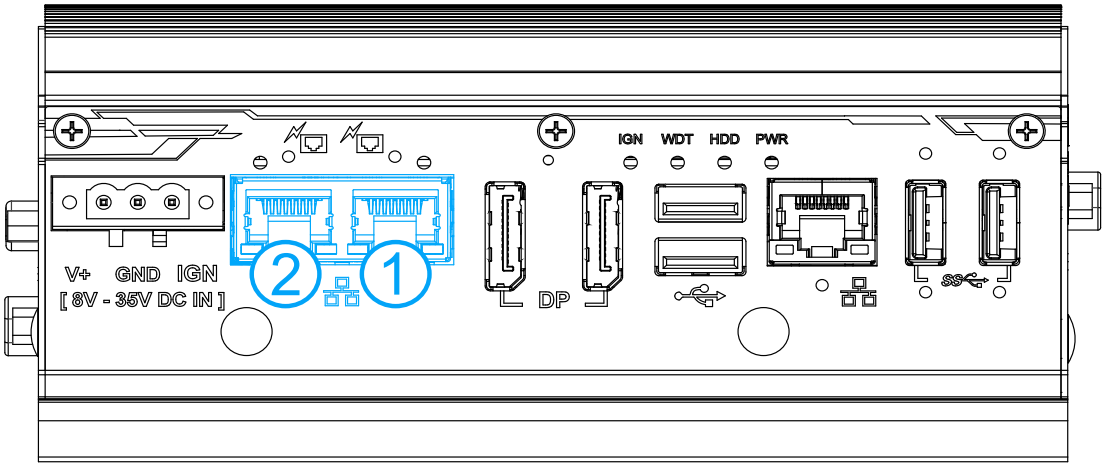
Syntax	`BYTE GetStatusPoEPort (Byte port);`
Description	Get current on/off status of designated PoE port.
Parameter	*port* BYTE value specifies the index of PoE port. Please refer to the following illustration, *port* should be a value of 1 ~ 2.
Return Value	BYTE value indicating PoE on/off status 0 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	*port* BYTE value specifies the index of PoE port. Please refer to the following illustration, *port* should be a value of 1 ~ 2
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	*port* BYTE value specifies the index of PoE port. Please refer to the following illustration, *port* should be a value of 1 ~ 2
Return Value	**TRUE** if disabled success **FALSE** if fail to disable
Usage	BOOL bRet = DisablePoEPort (1); //Turn off PoE Port#1