Neousys Technology Inc.

MezIO® Module

Installation Guide

v1.4

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Safety Precautions

Read these instructions carefully before you install, operate, or transport the system.

- Install the system or DIN rail associated with, at a sturdy location
- Install the power socket outlet near the system where it is easily accessible
- Secure each system module(s) using its retaining screws
- Place power cords and other connection cables away from foot traffic. Do not place items over power cords and make sure they do not rest against data cables
- Shutdown, disconnect all cables from the system and ground yourself before touching internal modules
- Ensure that the correct power range is being used before powering the device
- Should a module fail, arrange for a replacement as soon as possible to minimize down-time
- 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 Guide

This guide introduces the MezIO® module and lists compatible systems. The guide also demonstrates how to disassemble the necessary system panel(s) for MezIO® module installation.

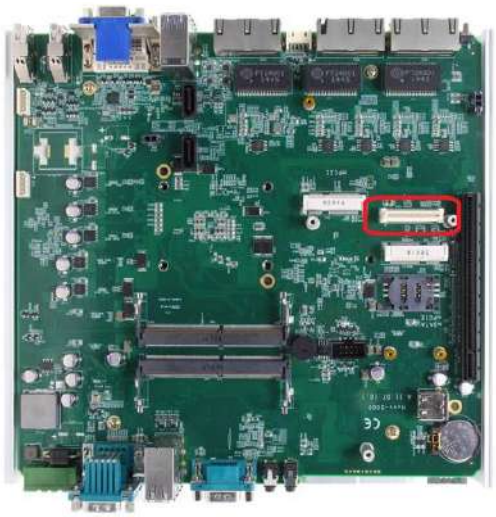
Revision History

Version	Date	Description
1.0	Jun. 2019	Initial release
1.1	Sep. 2021	Updated SCSI-68 PIN 4 pintout definition and MezIO® D230/ D220 Logic Low Voltage range
1.2	Jun. 2024	Updated “Board Side: RS232/ 422/ 485 Pin-out of SCSI 68”
1.3	Apr. 2025	Added MezIO-D330 Added POC-400/ POC-500/ POC-700 MezIO® module installation procedure
1.4	Jun. 2025	Added MezIO® V20/ V21

1 Introduction

1.1 Overview: MezIO® Interface

MezIO® is an innovative interface designed for integrating application-oriented I/O functions into an embedded system. It offers power rails, computer and control signals via a high-speed connector for the MezIO® module to leverage vital signals to implement comprehensive I/O functions.



Neousys has various systems that are compatible with and incorporates the MezIO® easy-to-install design to accommodate Neousys' MezIO® modules. For customers who want to customize their own MezIO® module, Neousys provides MezIO® design documents on an NDA basis. Please contact Neousys for further information.

1.2 MezIO® Module Compatibility Table

MezIO® Module	Port/ Interface	Compatible Systems
MezIO-C180-50	4x RS-232/ 422/ 485 4x RS-232	Nuvo-9000, Nuvo-7000, Nuvo-5000 POC-700-FT, POC-700, POC-500, POC-400, POC-300
MezIO-C181-50	4x RS-232/ 422/ 485 4x RS-422/ 485	
MezIO-D230-50	16-CH isolated DI 16-CH isolated DO	Nuvo-9000, Nuvo-7000, Nuvo-5000 POC-500, POC-300*
MezIO-D220-50	8-CH isolated DI 8-CH isolated DO	
MezIO-D330	16-CH isolated DI 16-CH isolated DO	Nuvo-9000, Nuvo-7000, Nuvo-5000, POC-700-FT, POC-700, POC-500, POC-400, POC-300
MezIO-G4	4-Port GbE MezIO® module supporting 9.5 kB jumbo frame	Nuvo-9000, Nuvo-7000, Nuvo-5000, POC-500
MezIO-G4P	4-port GbE with 802.3at PoE+, support 9.5kB jumbo frame	Nuvo-9000**, Nuvo-7000**, Nuvo-5000**
MezIO-R11	2.5” SATA HDD/ SSD	POC-700-FT, POC-700, POC-500, POC-400, POC-300
MezIO-R12	2.5” SATA HDD/ SSD 4-CH isolated DI 4-CH isolated DO	POC-700-FT, POC-700, POC-500, POC-400, POC-300
MezIO-U4-30	4-port USB3.1	POC-700-FT, POC-700, POC-400, POC-300
MezIO-U4-50	4-port USB3.1	Nuvo-9000, Nuvo-7000, Nuvo-5000 POC-500
MezIO-V20	16-mode ignition power control and 1x mini-PCIe socket (USB2.0 signal only) for in-vehicle usage	Nuvo-9000LP, Nuvo-7000LP, Nuvo-5000LP POC-700-FT, POC-700, POC-500
MezIO-V21	16-mode ignition power control and 1x mini-PCIe socket (USB2.0 + PCIe signal) for in-vehicle usage	Nuvo-9000LP, Nuvo-7000LP, Nuvo-5000LP, POC-700FT, POC-700, POC-500
MezIO-V20-EP	16-mode ignition power control	Nuvo-9000E/ P/ DE, Nuvo-7000E/ P/ DE, Nuvo-7160GC, Nuvo-7164GC, Nuvo-5000E/ P, Nuvo-5026E, Nuvo-5095GC

NOTE

** When using MezIO-D220-50 or MezIO-D230-50 on POC-300 series, the mini-PCIe socket on board can’t be used because of mechanical interference.*

***When using MezIO-G4P, please make sure your system has PoE function. Please contact your sales vendor if you are unsure.*

1.3 MezIO® Module Overview

Neousys offers MezIO® modules to expand I/O functions for various Neousys systems. With the addition of a MezIO® module into your Neousys controller, it offers extra RS-232/422/485 ports, isolated digital I/O or ignition power control. For future expandability and practicality, Neousys will continue to develop MezIO® modules with versatile features for your Neousys embedded products.

1.3.1 8-port RS-232/ 422/ 485

Model	Description
MezIO-C180-50	● 4 x RS-232 ports ● 4 x RS-232/422/485 ports
MezIO-C181-50	● 4 x RS-422/485 ports ● 4 x RS-232/422/485 ports
Cable-S68MD9M-50	● SCSI-68(M) to 8x DB-9(M) cable, 50 cm

1.3.2 16-mode Ignition Power Control

Model	Description
MezIO-V20	● 16-mode ignition power control for in-vehicle usage ● 1x mini-PCIe socket (USB2.0 signal only) with SIM socket
MezIO-V21	● 16-mode ignition power control for in-vehicle usage ● 1x mini-PCIe socket (USB2.0 + PCIe signal) with SIM socket
MezIO-V20-EP	● Ignition power control function for in-vehicle usage

1.3.3 32/16-CH Isolated Digital I/O

Model	Description
MezIO-D330	● 16-CH isolated DI ● 16-CH isolated DO
MezIO-D230-50	● 16-CH isolated DI ● 16-CH isolated DO
MezIO-D220-50	● 8-CH isolated DI ● 8-CH isolated DO
Cable-S68MM-100	● SCSI-68(M) to SCSI-68(M) cable, 100 cm
TB-10	● Terminal board with 68-pin SCSI-II female connector and 68-pole terminal block

1.3.4 SATA port for 2.5" HDD/SSD

Model	Description
MezIO-R11	● 1x 2.5” SATA HDD/SSD
MezIO-R12	● 1x 2.5” SATA HDD/SSD ● 4-CH isolated DI ● 4-CH isolated DO

1.3.5 4x PoE+ ports

Model	Description
MezIO-G4P	● 4x PoE+ ports, 4x GigE ports by 4x Intel® I210 controllers, supporting 9.5 kB jumbo frame

1.3.6 4x GigE ports

Model	Description
MezIO-G4	● 4x GigE ports by 4x Intel® I210 controllers, supporting 9.5 kB jumbo frame

1.3.7 4x USB 3.0 ports

Model	Description
MezIO-U4-30	4x USB3.0 ports (2 pair, 2 ports shared from 1x PCIe x1)
MezIO-U4-50	4x USB3.0 ports (each port shared from 1x PCIe x1)

2 MezIO® Module Specifications

2.1 MezIO® C180/ MezIO® C181

2.1.1 Specification of MezIO® C180

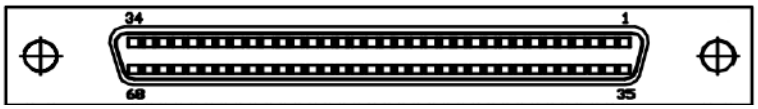
# of Port	4x RS-232/ 422/ 485 4x RS-232
Baud Rate	50 bps to 921600 bps
FIFO	256-byte TX and RX FIFOs
ESD Protection	15Kv
Interface Signals	RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND RS-422: TxD+, TxD-, RxD+, RxD-, GND RS-485: Data+, Data-, GND
Connector	68-pin SCSI-II female connector
OS Support	Windows 7/ 8/ 8.1/ 10 and Linux kernel 2.6.32 or later

2.1.2 Specification of MezIO® C181

# of Port	4x RS-232/ 422/ 485 4x RS-422/ 485
Baud Rate	50 bps to 921600 bps
FIFO	256-byte TX and RX FIFOs
ESD Protection	15Kv
Interface Signals	RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND RS-422: TxD+, TxD-, RxD+, RxD-, GND RS-485: Data+, Data-, GND
Connector	68-pin SCSI-II female connector
OS Support	Windows 7/ 8/ 8.1/ 10 and Linux kernel 2.6.32 or later

2.1.3 SCSI 68 Pin-out

Please refer to the following SCSI 68 pin-out for corresponding MezIO® board.



Signal	MezIO® C180	MezIO® C181
UART0	RS-232/422/485	RS-232/422/485
UART1	RS-232/422/485	RS-232/422/485
UART2	RS-232/422/485	RS-232/422/485
UART3	RS-232/422/485	RS-232/422/485
UART4	RS-232	RS-422/485
UART5	RS-232	RS-422/485
UART6	RS-232	RS-422/485
UART7	RS-232	RS-422/485

Board Side: RS232 Pin-out of SCSI 68											
Pin	**Signal**	**Pin**	**Signal**	**Pin**	**Signal**	**Pin**	**Signal**	**Pin**	**Signal**	**Pin**	**Signal**
1	RxDO	**13**	DCD2	**25**	TxD4	**37**	RI1	**49**	RI3	**61**	TxD7
2	CTS0	**14**	RTS2	**26**	GND	**38**	RTS1	**50**	CTS3	**62**	DSR7
3	RI0	**15**	RI2	**27**	TxD6	**39**	DCD1	**51**	RxD3	**63**	DTR7
4	RTS0	**16**	CTS2	**28**	DSR6	**40**	DTR1	**52**	RxD5	**64**	DCD7
5	DCD0	**17**	RxD2	**29**	DTR6	**41**	DSR1	**53**	CTS5	**65**	RTS7
6	DTR0	**18**	RxD4	**30**	DCD6	**42**	TxD1	**54**	RI5	**66**	RI7
7	DSR0	**19**	CTS4	**31**	RTS6	**43**	GND	**55**	RTS5	**67**	CTS7
8	TxD0	**20**	RI4	**32**	RI6	**44**	TxD3	**56**	DCD5	**68**	RxD7
9	GND	**21**	RTS4	**33**	CTS6	**45**	DSR3	**57**	DTR5		
10	TxD2	**22**	DCD4	**34**	RxD6	**46**	DTR3	**58**	DSR5		
11	DSR2	**23**	DTR4	**35**	RxD1	**47**	DCD3	**59**	TxD5		
12	DTR2	**24**	DSR4	**36**	CTS1	**48**	RTS3	**60**	GND		

Board Side: RS-422 Pin-out of SCSI 68											
Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	TXD0+	13	N/A	25	RXD4+	37	N/A	49	N/A	61	RXD7+
2	TXD0-	14	N/A	26	GND	38	N/A	50	TXD3-	62	N/A
3	N/A	15	N/A	27	RXD6+	39	N/A	51	TXD3+	63	RXD7-
4	N/A	16	TXD2-	28	N/A	40	RXD1-	52	TXD5+	64	N/A
5	N/A	17	TXD2+	29	RXD6-	41	N/A	53	TXD5-	65	N/A
6	RXD0-	18	TXD4+	30	N/A	42	RXD1+	54	N/A	66	N/A
7	N/A	19	TXD4-	31	N/A	43	GND	55	N/A	67	TXD7-
8	RXD0+	20	N/A	32	N/A	44	RXD3+	56	N/A	68	TXD7+
9	GND	21	N/A	33	TXD6-	45	N/A	57	RXD5-		
10	RXD2+	22	N/A	34	TXD6+	46	RXD3-	58	N/A		
11	N/A	23	RXD4-	35	TXD1+	47	N/A	59	RXD5+		
12	RXD2-	24	N/A	36	TXD1-	48	N/A	60	GND		

Board Side: RS-485 Pin-out of SCSI 68											
Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	TXD0+/RXD0+	13	N/A	25	N/A	37	N/A	49	N/A	61	N/A
2	TXD0-/RXD0-	14	N/A	26	GND	38	N/A	50	TXD3-/RXD3-	62	N/A
3	N/A	15	N/A	27	N/A	39	N/A	51	TXD3+/RXD3+	63	N/A
4	N/A	16	TXD2-/RXD2-	28	N/A	40	N/A	52	TXD5+/RXD5+	64	N/A
5	N/A	17	TXD2+/RXD2+	29	N/A	41	N/A	53	TXD5-/RXD5-	65	N/A
6	N/A	18	TXD4+/RXD4+	30	N/A	42	N/A	54	N/A	66	N/A
7	N/A	19	TXD4-/RXD4-	31	N/A	43	GND	55	N/A	67	TXD7-/RXD7-
8	N/A	20	N/A	32	N/A	44	N/A	56	N/A	68	TXD7+/RXD7+
9	GND	21	N/A	33	TXD6-/RXD6-	45	N/A	57	N/A		
10	N/A	22	N/A	34	TXD6+/RXD6+	46	N/A	58	N/A		
11	N/A	23	N/A	35	TXD1+/RXD1+	47	N/A	59	N/A		
12	N/A	24	N/A	36	TXD1-/RXD1-	48	N/A	60	GND		

2.1.4 Device Connector Pin-out

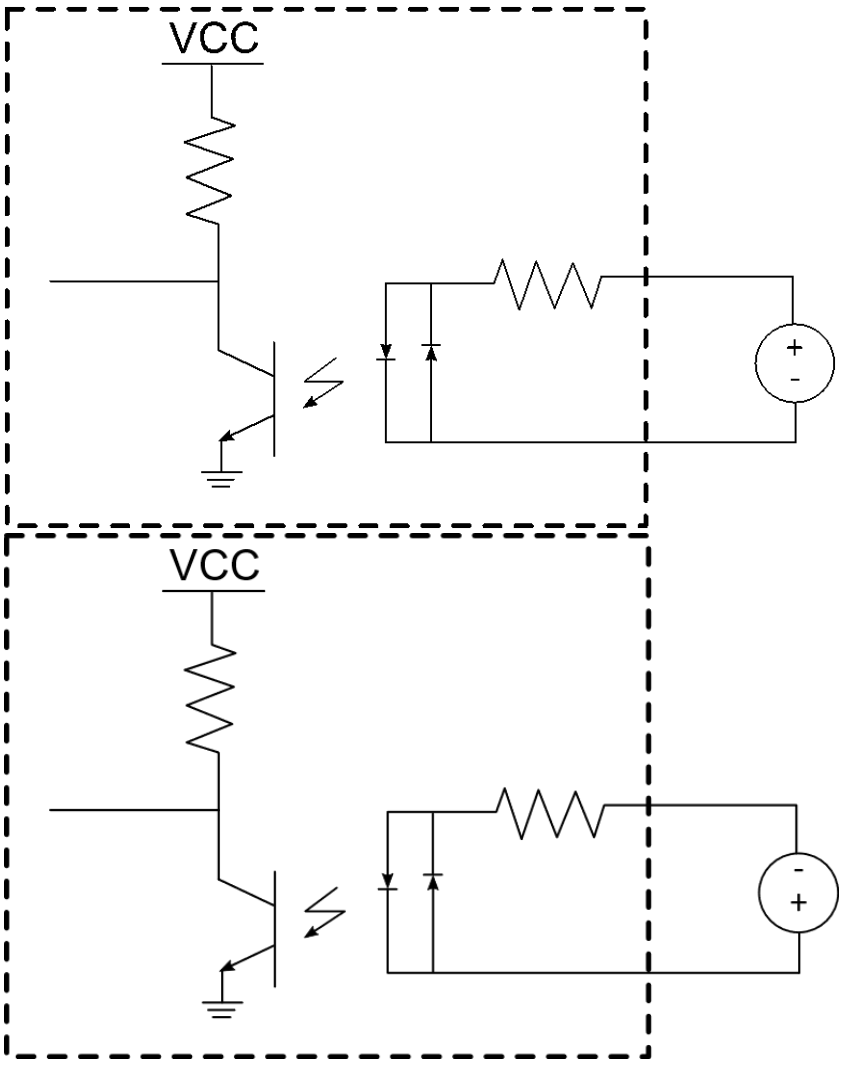
MezIO® C180 Pin-out of DB9 connector			
Pin	RS232	RS422	RS485
	COM1~COM8	COM1~4	COM1~COM4
1	DCD	N/A	N/A
2	RXD	422 TXD+	485 TXD+/RXD+
3	TXD	422 RXD+	N/A
4	DTR	422RXD-	N/A
5	GND	GND	GND
6	DSR	N/A	N/A
7	RTS	N/A	N/A
8	CTS	422 TXD-	485 TXD-/RXD-
9	N/A	N/A	N/A

MezIO® C181 Pin-out of DB9 connector				
Pin	RS232	RS422		RS485
	COM1~COM4	COM1~4	COM5~8	COM1~COM8
1	DCD	N/A	N/A	N/A
2	RXD	422 TXD+	422 RXD+	485 TXD+/RXD+
3	TXD	422 RXD+	422 TXD+	N/A
4	DTR	422 RXD-	422 TXD-	N/A
5	GND	GND	GND	GND
6	DSR	N/A	N/A	N/A
7	RTS	N/A	N/A	N/A
8	CTS	422 TXD-	422RXD-	485 TXD-/RXD-
9	N/A	N/A	N/A	N/A

2.2 MezIO® D330

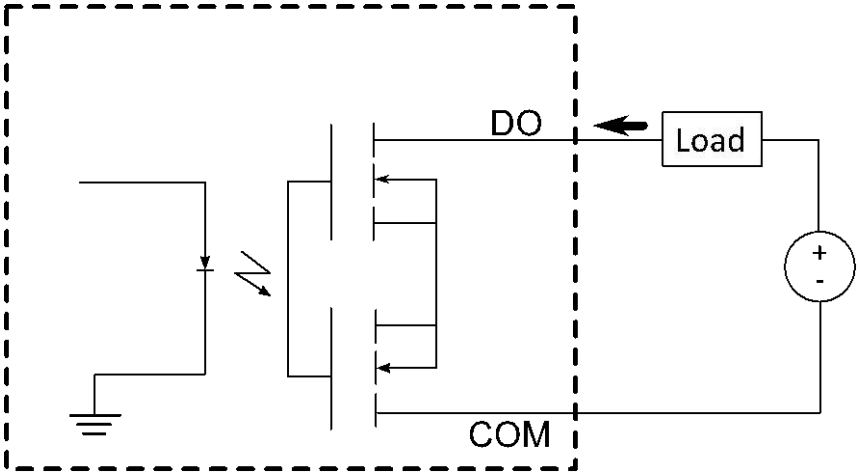
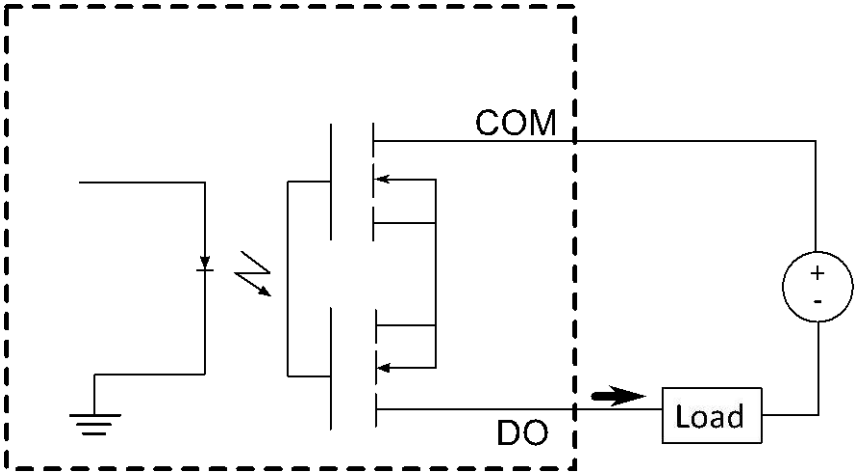
2.2.1 MezIO® D330 Isolated Digital Input Wiring

# of Channel	16
Wiring Type	Sink Type
Interface	Bidirectional Photocoupler
Isolation Voltage	2500 Vrms
Rated Input Voltage	0V to 24V
Logic High Voltage	3.3V to 24V
Logic Low Voltage	0V to 1.5V
Operation Mode	Polling
Response Time (Rising)	0.68ms
Response Time (Falling)	0.68ms



2.2.2 MezIO® D330 Isolated Digital Output Wiring

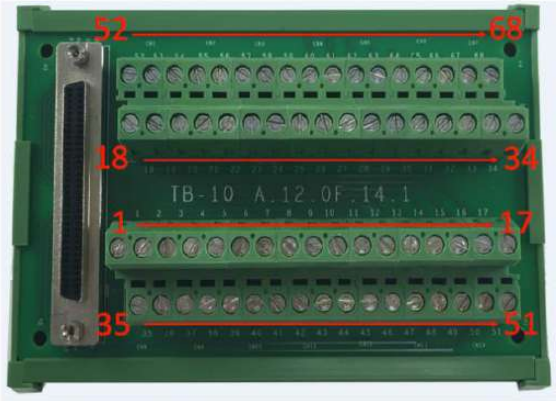
# of Channel	16
Wiring Type	Sink/ Source Type
Interface	Bidirectional PhotoMOS
Isolation Voltage	1500 Vrms
Operation Voltage	0V to 24V
Driving Current	250mA
Operation Mode	Polling
Response Time (Rising)	1.84 – 3.19ms
Response Time (Falling)	1.27 – 1.39ms

Type	Illustration
Sink	
Source	

2.2.3 MezIO® D330 Pin-out

Signal	N/A	DI0H	DI1H	DI2H	DI3H	DI4H	DI5H	DI6H	DI7H	DI8H	DI8L	DI10H	DI10L	DI12H	DI12L	DI14H	DI14L
Pin	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68
Pin	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
Signal	N/A	DI0L	DI1L	DI2L	DI3L	DI4L	DI5L	DI6L	DI7L	DI9H	DI9L	DI11H	DI11L	DI13H	DI13L	DI15H	DI15L
Signal	DO0	DO COM0	DO2	DO COM2	DO4	DO COM4	DO6	DO COM6	N/A	DO COM8	DO8	DO COM10	DO10	DO COM12	DO12	DO COM14	DO14
Pin	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Pin	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
Signal	DO1	DO COM1	DO3	DO COM3	DO5	DO COM5	DO7	DO COM7	N/A	DO COM9	DO9	DO COM11	DO11	DO COM13	DO13	DO COM15	DO15

***Note: Terminal board is an accessory provided by Neousys for implementing digital I/O function**



2.3 MezIO® D220/ MezIO® D230

2.3.1 Specification of MezIO® D230

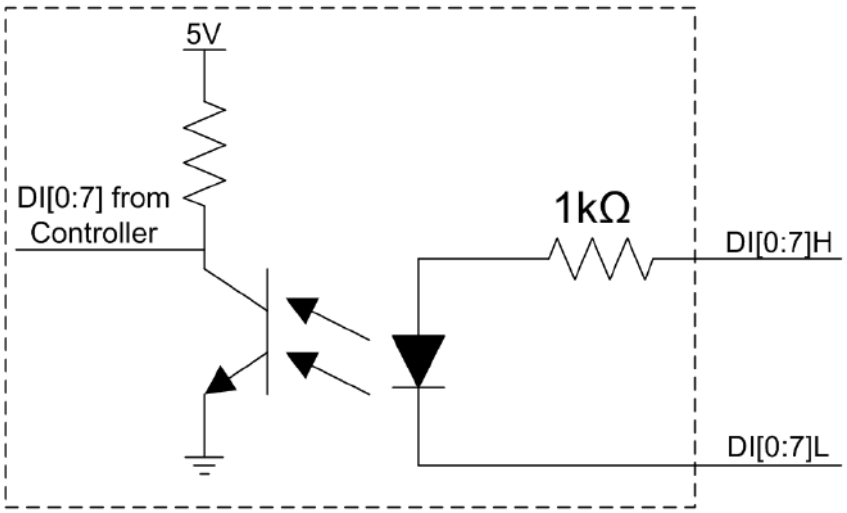
Isolated Digital Input	
# of Channel	16
Wiring Type	Sink/ Source Type (only for ch0 to ch7) Sink Type (only for ch8 to ch15)
Interface	Unipolar photo-coupler
Isolation Voltage	3750 Vrms
Rated Input Voltage	0 to 24V
Logic High Voltage	5 to 24V
Logic Low Voltage	0 to 1.5V
Operation Mode	Polling
Response Time	2.55ms
Isolated Digital Output	
# of Channel	16
Wiring Type	Sink Type
Interface	MOSFET, open drain
Isolation Voltage	3000 Vrms
Operation Voltage	0 to 24V
Driving Current	0.5A
Operation Mode	Polling
Response Time	2.55ms

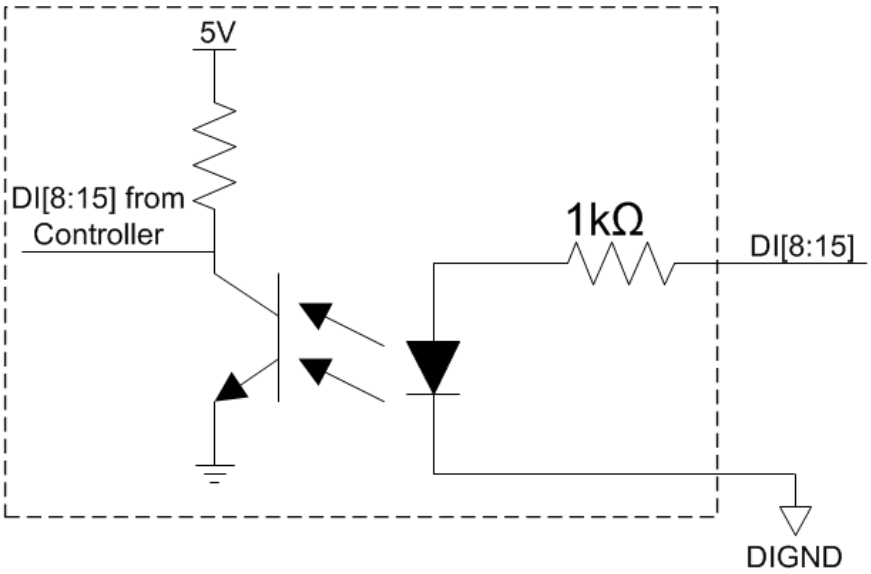
2.3.2 Specification of MezIO® D220

Isolated Digital Input	
# of Channel	8
Wiring Type	Sink/ Source Type
Interface	Unipolar photo-coupler
Isolation Voltage	3750 Vrms
Rated Input Voltage	24V
Logic High Voltage	5 to 24V
Logic Low Voltage	0 to 1.5V
Operation Mode	Polling
Response Time	2.55ms
Isolated Digital Output	
# of Channel	8
Wiring Type	Sink Type
Interface	MOSFET, open drain
Isolation Voltage	3750 Vrms
Operation Voltage	24V
Driving Current	0.5A
Operation Mode	Polling
Response Time	2.55ms

2.3.3 Wiring for Isolated DIO

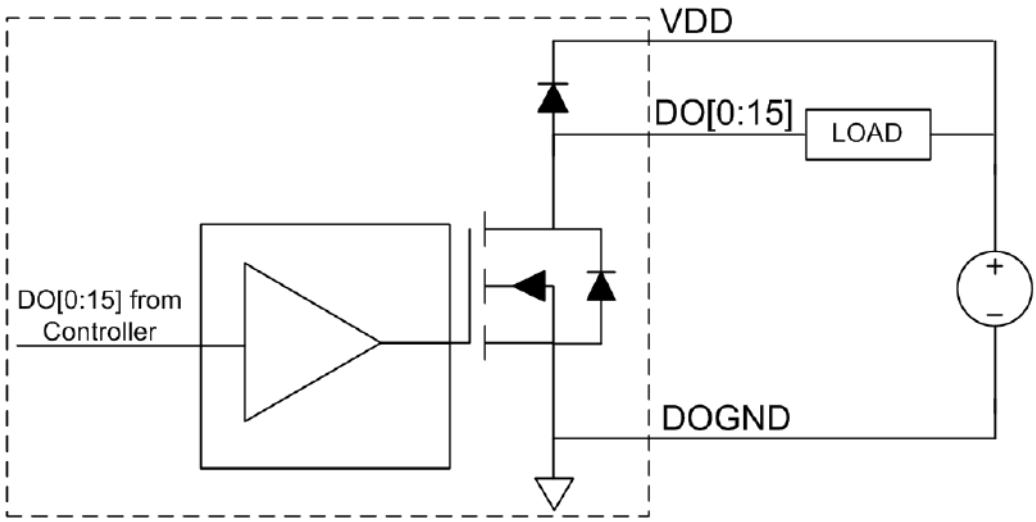
The digital input function of MezIO® D220/ D230 series is implemented using a photo-coupler with an internally series-connected 1kΩ resistor. You need to provide a voltage to specify the logic high/low state. The input voltage for logic high is 5~24V and the input voltage for logic low is 0~1.5V. In the MezIO® D220/ D230, these channels from 0 to 7 support sink/source type (NPN/PNP) which are individual wiring; channels from 8 to 15 only support sink type which share common DIGND.





The digital output function of the MezIO® D220/D230 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).

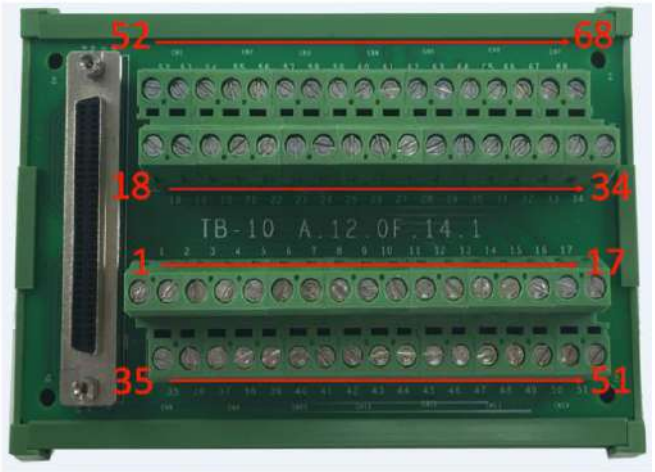
When logic 1 is specified, MOSFET is activated and GND return path is established. The digital output function on MezIO® D220/D230 series supports sinking current connection. It also implemented circuit protection, one diode is connected across DO channel and VDD to prevent voltage spike caused by inductive load and long wiring. The following diagram shows the allocated wiring for DO:



2.3.4 MezIO® D230 Pin-out

Signal	N/A	DI0H	DI1H	DI2H	DI3H	DI4H	DI5H	DI6H	DI7H	DI8	DIGND	DI10	DIGND	DI12	DIGND	DI14	DIGND
Pin	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**	**65**	**66**	**67**	**68**
Pin	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**
Signal	N/A	DI0L	DI1L	DI2L	DI3L	DI4L	DI5L	DI6L	DI7L	DI9	DIGND	DI11	DIGND	DI13	DIGND	DI15	DIGND
Signal	DO0	DOGND	DO2	DOGND	DO4	DOGND	DO6	DOGND	VDD	DOGND	DO8	DOGND	DO10	DOGND	DO12	DOGND	DO14
Pin	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**
Pin	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**	**51**
Signal	DO1	DOGND	DO3	DOGND	DO5	DOGND	DO7	DOGND	ISO5V	DOGND	DO9	DOGND	DO11	DOGND	DO13	DOGND	DO15

***Note: Terminal board is an accessory provided by Neousys for implementing digital I/O function**



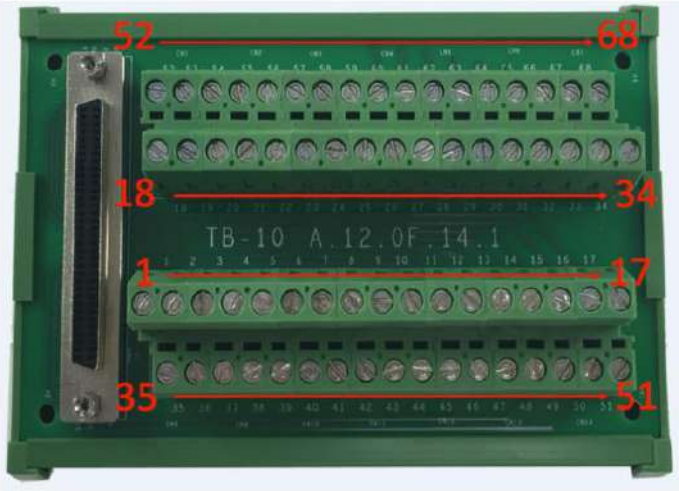
For details on software installation and using digital input/ output interface, please refer to this

section.

2.3.5 Pin-out of MezIO® D220

Signal	N/A	DI0H	DI1H	DI2H	DI3H	DI4H	DI5H	DI6H	DI7H	N/A	DIGND	N/A	DIGND	N/A	DIGND	N/A	DIGND
Pin	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**	**61**	**62**	**63**	**64**	**65**	**66**	**67**	**68**
Pin	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**
Signal	N/A	DI0L	DI1L	DI2L	DI3L	DI4L	DI5L	DI6L	DI7L	N/A	DIGND	N/A	DIGND	N/A	DIGND	N/A	DIGND
Signal	DO0	DOGND	DO2	DOGND	DO4	DOGND	DO6	DOGND	VDD	DOGND	N/A	DOGND	N/A	DOGND	N/A	DOGND	N/A
Pin	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**
Pin	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**	**51**
Signal	DO1	DOGND	DO3	DOGND	DO5	DOGND	DO7	DOGND	ISO5V	DOGND	N/A	DOGND	N/A	DOGND	N/A	DOGND	N/A

***Note: Terminal board is an accessory provided by Neousys for implementing digital I/O function**



For details on software installation and using digital input/ output interface, please refer to this section.

2.4 Using DIO

2.4.1 Installing WDT_DIO Library

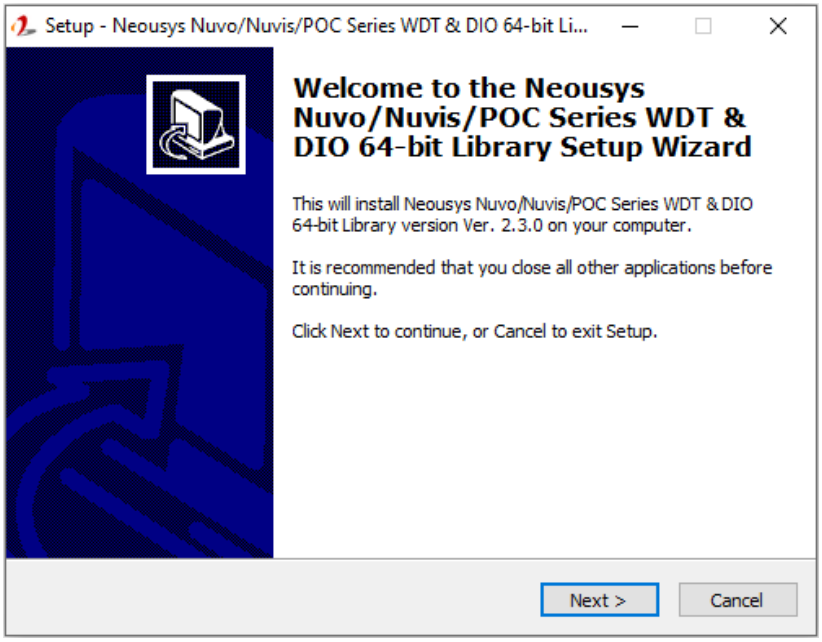
The WDT_DIO function library is delivered in the form of a setup package named **WDT_DIO_Setup.exe**. Prior to programming WDT, you should execute the setup program and install the WDT library. Please download the appropriate WDT_DIO_Setup packages on this page.

- For Windows 10 64-bit OS with 64-bit application (x64 mode).
- For Windows 10 64-bit OS with 32-bit application (WOW64 mode).

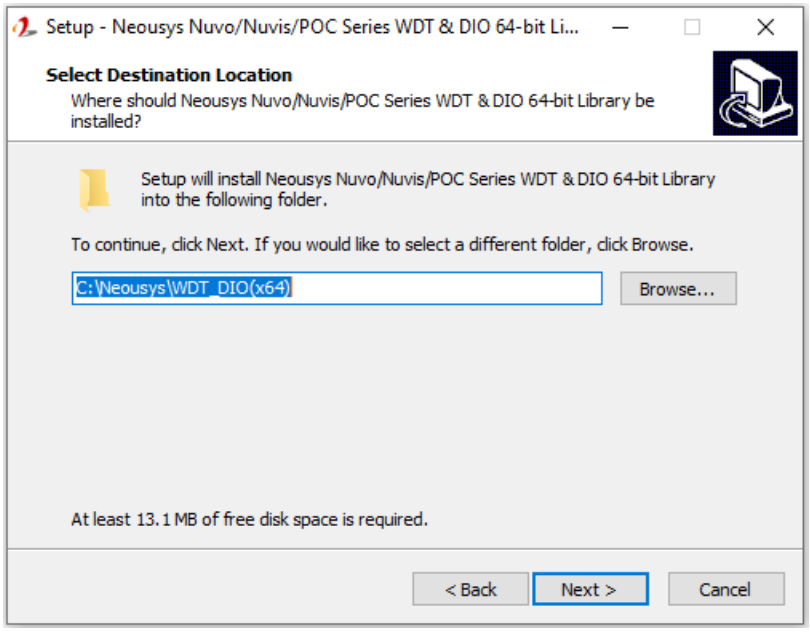
WDT and DIO Library Installation

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

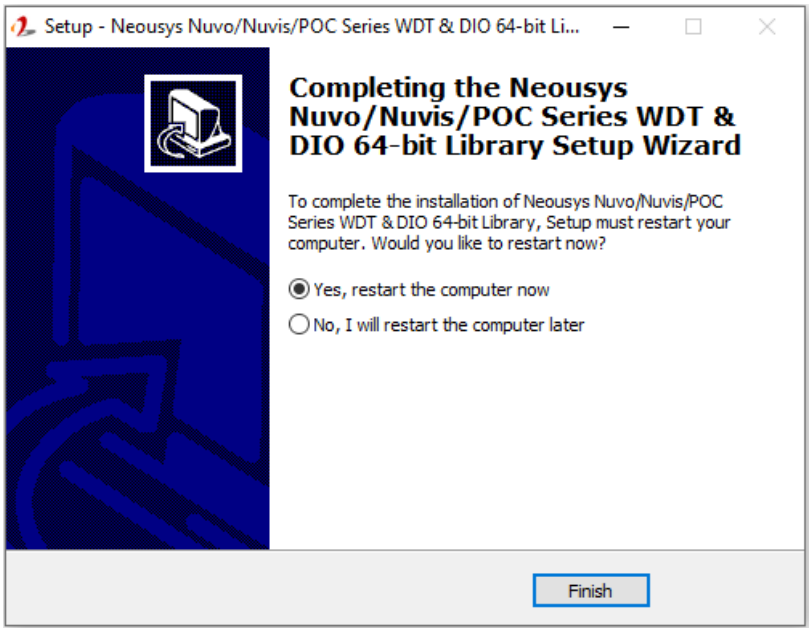
1. Execute **WDT_DIO_Setup.exe**. and the following dialog appears.



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 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\ DIO_Demo (Demo for Polling I/O)

2.4.2 Initiate Digital Input/ Output Functions

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	Returns TRUE if initialization successes, FALSE if initialization failed.
Usage	BOOL bRet = InitDIO ()

2.4.3 DI Functions

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. C*h* should be a value of 0 ~ 7 (MezIO-D220) or a value of 0 ~ 15 (MezIO-D330/ D230).
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 8 channels: MezIO-D220 16 channels: MezIO-D330/ D230
Parameter	None
Return Value	A WORD value 0~256 (MezIO-D220) or 0~65535 (MezIO-D330/ D230).
Usage	WORD DIPortValue = DIReadPort ();

2.4.4 DO Functions

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. C*h* should be a value of 0 ~ 7 (MezIO-D220) or a value of 0 ~ 15 (MezIO-D330/ D230). ***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 8 channels: MezIO-D220 16 channels: MezIO-D330/ D230
Parameter	***value*** WORD value specifies the status of the DO port. V*alue* should be a value of 0~256 (MezIO-D220) or 0~65535 (MezIO-D330/ D230).
Return Value	None
Usage	WORD DOPortValue=0XFF; //11111111b DOWritePort(DOPortValue); //write DO port as 11111111b

2.5 MezIO® V20/ V21

Nuvo/ POC series with MezIO® V20/ V21 implementation features ignition power control module for in-vehicle applications. It's an MCU-based implementation that monitors the ignition signal and reacts to turn on/off the system according to predefined on/off delay. Its built-in algorithm supports other features such as ultra-low standby power, battery-low protection, system hard-off, etc. In this section, we'll illustrate the principle of ignition power control and operation modes on Nuvo/ POC series with MezIO® V20/ V21.

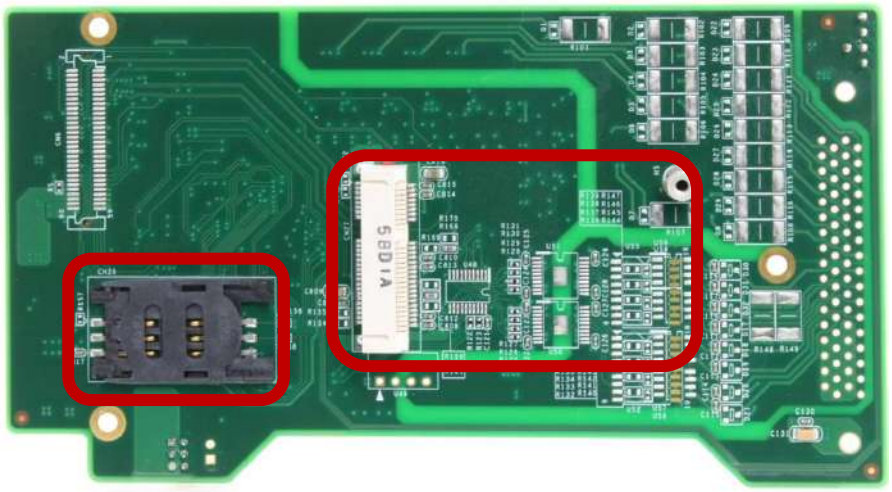
2.5.1 Specification of MezIO® V20

Ignition Control	Ignition power control with 15 predefined on/off delay modes
Expansion Bus	
Mini PCI-E	1x full-size mini PCI Express socket (USB2.0 signal only)

2.5.2 Specification of MezIO® V21

Ignition Control	Ignition power control with 15 predefined on/off delay modes
Expansion Bus	
Mini PCI-E	1x full-size mini PCI Express socket (USB2.0 + PCIe signals)

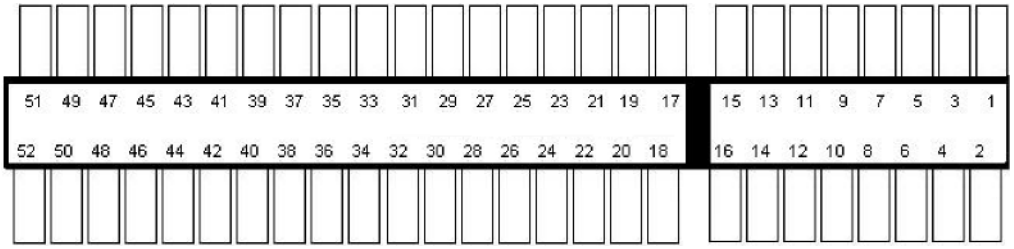
2.5.3 Internal I/O function



MezIO® V2x has one full-size mini-PCIe connector (providing USB 2.0 signal, and PCIe signal for MezIO® V21) and one SIM socket. It is designed for installing off-the-shelf LTE/ 3G/ 4G/ 5G NR/ GPRS/ GPS SIM card. Once installed, you may connect your system to the internet via your service provider's network.

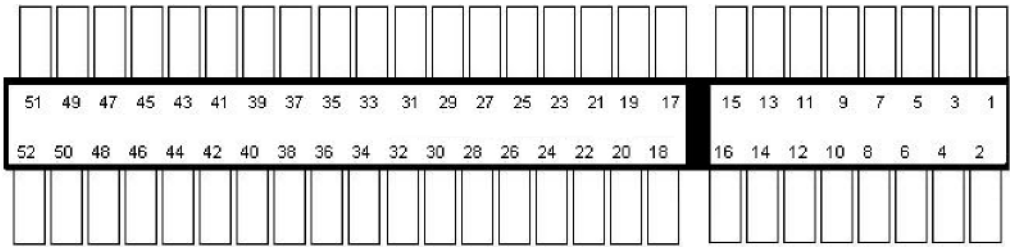
The following tables describe pin definitions of the mini PCIe socket on V2x cards

MezIO® V20 Pin Definition



Pin #	Signal (mPCIe)	Pin #	Signal (mPCIe)
1	WAKE#	2	+3.3Vaux
3	N/A	4	GND
5	N/A	6	+1.5V
7	N/A	8	UIM_PWR
9	GND	10	UIM_DATA
11	N/A	12	UIM_CLK
13	N/A	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	N/A
23	N/A	24	+3.3Vaux
25	N/A	26	GND
27	GND	28	+1.5V
29	GND	30	N/A
31	N/A	32	N/A
33	N/A	34	GND
35	GND	36	USB_D-
37	GND	38	USB_D+
39	+3.3Vaux	40	GND
41	+3.3Vaux	42	NA
43	GND	44	NA
45	Reserved	46	NA
47	Reserved	48	+1.5V
49	Reserved	50	GND
51	Reserved	52	+3.3Vaux

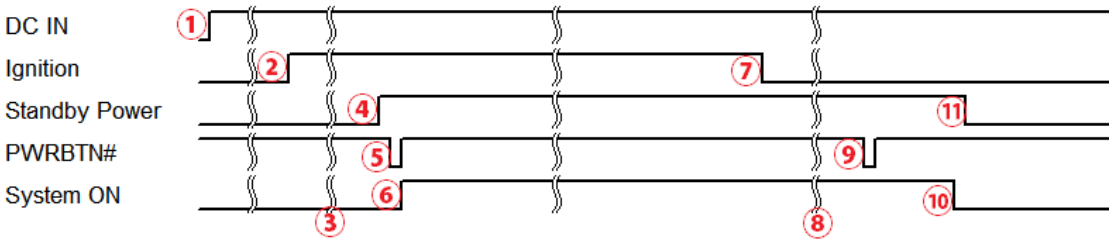
MezIO® V21 Pin Definition



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	NA
43	GND	44	NA
45	Reserved	46	NA
47	Reserved	48	+1.5V
49	Reserved	50	GND
51	Reserved	52	3.3V

2.5.4 Principle 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 shown in following diagram.



1. When DC input is supplied, 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 activated (both 12VDC and 24VDC ignition signals are accepted).
3. MCU starts to countdown according to a predefined power-on delay.
4. Once power-on delay expires, 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 pressing the power button on the front panel).
6. The system boots and runs.
7. After a period of time, the ignition signal is inactive.
8. MCU starts to countdown according to a predefined power-off delay.
9. Once power-off delay expires, another PWRBTN# pulse is issued to perform a soft-off for the system (equivalent to Windows shutdown process).
10. The system completely shuts down.
11. As MCU detects system is off, it turns off the standby power for the system, and then operates in low power mode again (< 2mW power consumption).

In addition to the typical timing correlation, the ignition power control module offers other features that make Neousys systems more reliable for in-vehicle applications.

1. **Low battery detection**

   The ignition power control module can continuously monitor the voltage of DC input while the system is running. If input voltage is less than 11V (for 12VDC input) or less than 18V (for 24VDC input) over a 60 second duration, it will shut down the system automatically.

2. **Power on/ off delay duration protection mechanism**

   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.

3. **System hard-shutdown**

   In some cases, system may fail to shutdown via a soft-shutdown command operation due to system/application halts. The ignition power control module on Neousys systems with MezIO® V20/ V21 offers a mechanism called “hard-shutdown” to handle this unexpected condition. By detecting the system status, it can determine whether the system has successfully shutdown after a “soft-shutdown” command has been issued. If not, the ignition power control module will cut off the system power 10 minutes after the power-off delay duration.

4. **Smart off-delay**

   The ignition power control module on Neousys systems offers two modes (mode 6 & mode 7) which have very long power-off delay duration for applications requiring off-line processing 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 shuts down (by the application software) before power-off delay expires, it will cut off the system power immediately to prevent further consumption of battery power.

2.5.5 Ignition Signal Wiring

To setup ignition power control for in-vehicle use, you need to supply IGN signal to Neousys system with MezIO® V20/ V21 installed. The IGN input is located on the back panel via a 3-pin pluggable terminal block (shared with DC power input). Here is a general wiring configuration for in-vehicle application deployment.

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

> WARNING
>
> *Please make sure your DC power source and IGN signal share a common ground.*
>
> *IGN input of Neousys systems accepts up to 35VDC or 48VDC.* ***DO NOT*** *supply a voltage higher than maximum rating as it may damage the system!*

2.5.6 Operation Modes of Ignition Power Control

Once you have installed the MezIO® V20/ V21 module with ignition power control, you can use the rotary switch on the rear panel to configure operation modes. Neousys systems with MezIO® V20/ V21 with ignition power control offers 15 operation modes with different power-on/ power-off delay configurations.

Ignition Mode Selection

- **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**

If Mode 1 is specified, the system automatically turns on the system when DC power is applied. A retry mechanism is designed to repeat the power-on cycle if the system fails to boot.

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

- **Mode 2**

Mode 2 is a special mode designed to support remote on/ off control. User can use an external switch to connect to the DC source and IGN input. When the switch is closed, IGN signal is asserted to initiate a power-on operation. When the switch is opened, IGN signal is de-asserted and system shutdown operation is initiated. Neither power-on delay nor power-off delay is supported in this mode.

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

- **Mode 3 ~ Mode 12**

Mode 3 ~ Mode 12 are ignition power control modes with various power-on 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	3 minutes	10 minutes	10 minutes
11	3 minutes	30 minutes	10 minutes
12	10 minutes	30 minutes	10 minutes

- **Mode 13 / Mode 14**

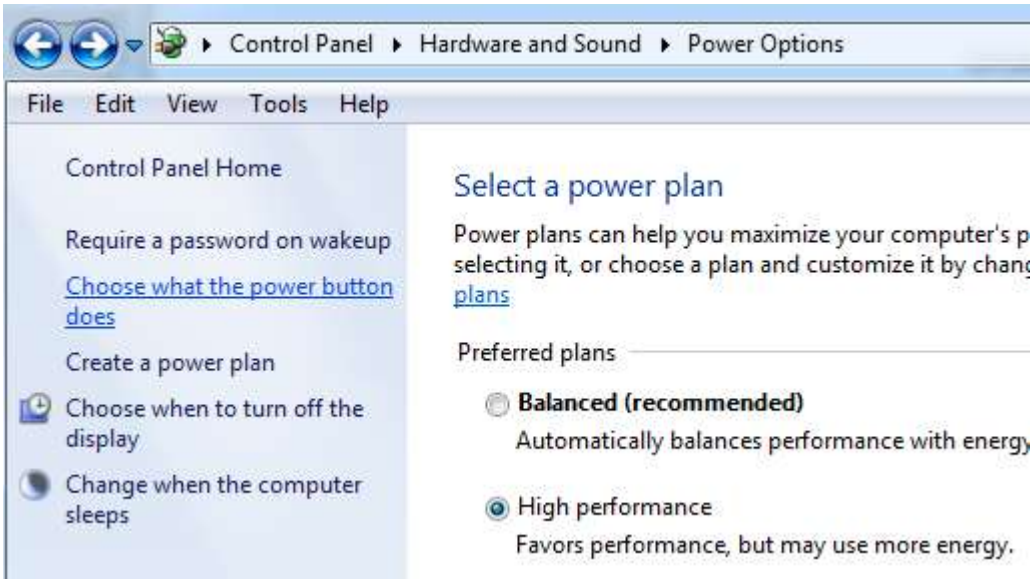
Mode 13 and Mode 14 are ignition power control modes with very long power-off delay. Both modes support the feature of “intelligent-off delay”, which automatically detects the system status during power-off delay duration and cut off system power if system has shutdown (soft-off), prior to power-off delay expires.

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

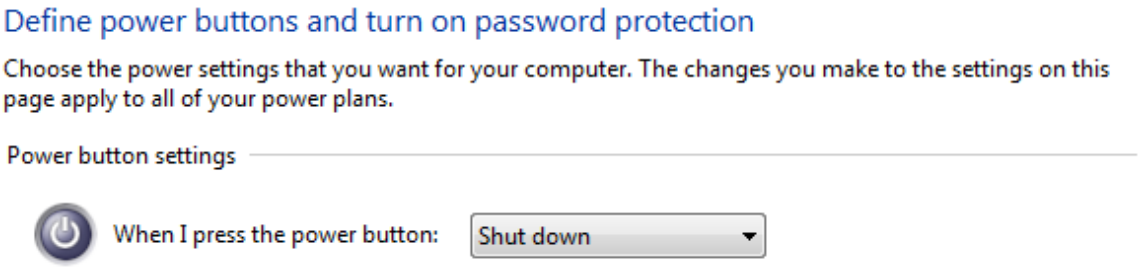
2.5.7 Configure Your Windows System

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 when a normal shutdown process has finished and thus users will encounter a system hard-off (power cut-off after 10 minutes).

Please configure the setting "When I press the power button" to "Shut down" in your Windows system by going to (Control Panel > Hardware and Sound > Power Options > Choose what the power button does).



In the next screen "Define power buttons and turn on password protection", you should see "When I press the power button" option. Please set it to "**Shut down**".



2.6 MezIO® R10 (POC-120MZ Only)

2.6.1 Specification of MezIO® R10 (Nuvo-5000LP Only)

Storage Interface	
SATA HDD	1x internal SATA port for 2.5” HDD/SSD
Expansion Bus	
Mini PCI-E	1x full-size mini-PCIe port with SIM socket (mini-PCIe and USB signals)

2.6.2 Internal I/O Functions

MezIO® R10 provides additional useful features via its board-to-board connector, such as SATA ports, mini-PCIe sockets, etc. In this section, we’ll illustrate these internal I/O functions.

1. SATA Port for Internal HDD/SSD

MezIO® R10 provides internal SATA ports to accommodate one 2.5” HDD/SSD.

2. Full-Size Mini-PCIe Connector (with SIM Socket)

MezIO® R10 provides 1 mini-PCIe socket that supports mini-PCIe and USB signals. This mini-PCIe socket is designed with SIM card support. With a SIM card installed, it's capable to connect your system to the Internet through your service provider's 3G/4G network. For WIFI/3G/4G network, Nuvo-5000 series provides multiple SMA antenna apertures on the front and back panel for multi-antenna configuration.

The following table describes the pin definition of mini-PCIe socket.

Pin	Signal	Pin #	Signal
1	WAKE#	2	+3.3Vaux
3	COEX1	4	GND
5	COEX2	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
17	Reserved* (UIM_C8)	18	GND
19	Reserved* (UIM_C4)	20	W_DISABLE#
21	GND	22	PERST#
23	PERn0	24	+3.3Vaux
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	+3.3Vaux	40	GND
41	+3.3Vaux	42	LED_WWAN#
43	GND	44	LED_WLAN#
45	Reserved	46	LED_WPAN#
47	Reserved	48	+1.5V
49	Reserved	50	GND
51	Reserved	52	+3.3Vaux

NOTE

Some off-the-shelf mini-PCIe 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 have signal conflict on certain pins. Please make sure your 4G module has the correct pin definition or consult Neousys for compatibility. Installing an incompatible 4G module may damage the system or the module itself.

2.7 MezIO® R11/ R12

2.7.1 Specification of MezIO® R11

Storage Interface	
SATA HDD	1x internal SATA port for 2.5” HDD/SSD

2.7.2 Specification of MezIO® R12

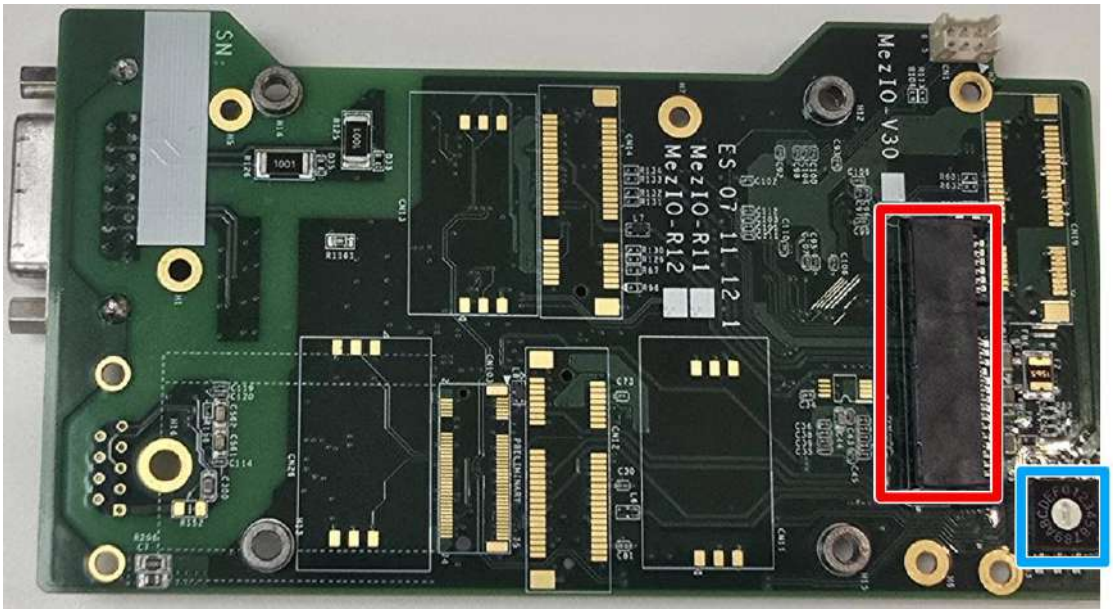
Storage Interface	
SATA HDD	1x internal SATA port for 2.5” HDD/SSD
Digital Input/ Output	
Mini PCI-E	1x full-size mini-PCIe port with SIM socket (mini-PCIe and USB signals)

2.7.3 Internal I/O Functions

MezIO® R11 provides SATA port expansion while MezIO® R12 offers SATA port expansion and a 4-channel digital input/ output connector.

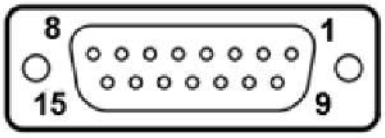
Ignition Switch and SATA Port for Internal HDD/SSD (R11/ R12)

MezIO® R11/ R12 feature a 2.5” SATA port (in **red**) and an ignition switch (in **blue**).



4-Channel Digital Input/ Output Connector (MezIO® R12)

The card 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.



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		

2.8 MezIO® G4P/ G4

2.8.1 Specification of MezIO® G4P

MezIO® G4P	
Gigabit Ethernet Port	4x GigE ports by 4x Intel® I210 controllers, supporting 9.5 kB jumbo frame
PoE Capability	Compliant with IEEE 802.3at-2009 (PoE+), each port delivers up to 25.5 W of power
Cable Requirement	CAT-5e or CAT-6 cable, 100 meters maximal

2.8.2 Specification of MezIO® G4

MezIO® G4	
Gigabit Ethernet Port	4x GigE ports by 4x Intel® I210 controllers, supporting 9.5 kB jumbo frame
Cable Requirement	CAT-5e or CAT-6 cable, 100 meters maximal

2.9 MezIO® U4-30/ 50

2.9.1 Specification of MezIO® U4-30

MezIO® U4-30	
USB Ports	4x USB 3.0 ports, compatible with USB 2.0/1.1/1.0
USB Controller	2 x Renesas μPD720202 Host Controllers
USB Connectors	4x USB 3.0 Type-A connectors
USB Per-Port Current Limit	900mA
Bandwidth	5 Gbps shared by two ports

2.9.2 Specification of MezIO® U4-50

MezIO® U4-50	
USB Ports	4x USB 3.0 ports, compatible with USB 2.0/1.1/1.0
USB Controller	4 x Renesas μPD720202 Host Controllers
USB Connectors	4x USB 3.0 Type-A connectors
USB Per-Port Current Limit	900mA
Bandwidth	5 Gbps per port

3 MezIO® Module Installation

Neousys MezIO® modules are designed easy-to-installation and offer application-oriented practicality and expandability for Neousys Nuvo and POC series systems. In this chapter, we will demonstrate how to disassemble the system and gain access to the MezIO® port for module installation. Before you start, 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.
- During the process, please observe all ESD procedures to avoid damaging the equipment.
- Before disassembling your system, please make sure the system has powered off with all cables and antennas (power, video, data, etc.) are disconnected.
- Place the system on a flat and sturdy surface (remove from mounts or out of server cabinets) before proceeding with the installation/ replacement procedure.

3.1 POC-120MZ MezIO® Installation/ Replacement

To access the MezIO® module/ interface in POC-120MZ, you need to disassemble the POC-120MZ system enclosure:

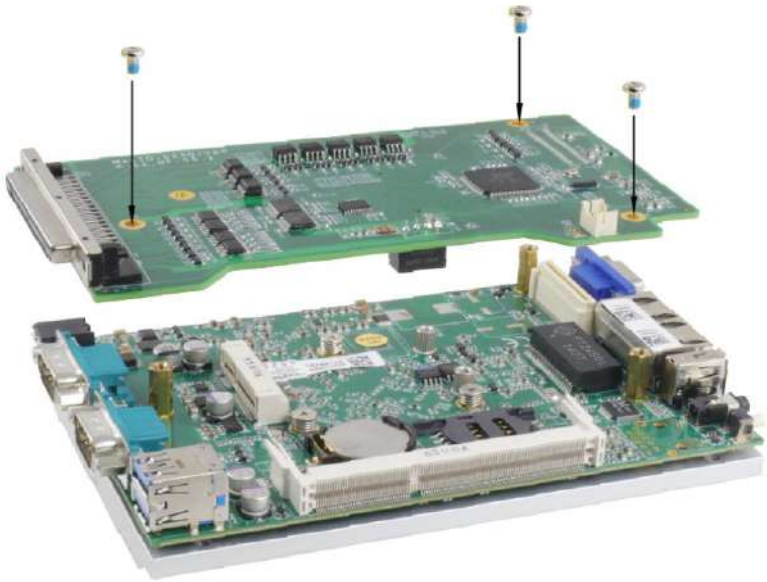
1. To disassemble POC-120MZ, locate and unfasten the four (4) indented hex bolts on the heat sink side.

2. Holding the enclosure with VGA port facing you, place both your thumbs on the heat sink and gently slide the panel and PCBA/ heat sink out of the enclosure.

3. Unfasten the thumb screw to separate the panel from the PCBA/ heat sink.

4. Once the panel has been removed, the MezIO® port and standoffs are exposed, you are ready to install the MezIO® module.

5. Once you have gain access to the PCBA, you may perform the following procedures:
   a) **To replace**, unfasten the three (3) screws securing the existing MezIO® module, gently lift the module to disengage the MezIO® connector.
   b) **To install**, match the MezIO® port and three (3) screw holes (indicated by black arrows) to the standoffs, gently lower the module onto the PCBA. The MezIO® port should engage if the three (3) standoffs and screw holes meet. Secure the module by fastening a screw on each standoff.



6. You may need to swap the I/O shield with the replacement I/O shield supplied if the replacement MezIO® is different to the one you had installed. To do so, unfasten the thumb screw, remove the existing I/O shield and replace it with the one supplied and secure by fastening the thumb screw.

7. To put the system back together, slide the PCBA/ heat sink back into the enclosure and fasten the four (4) indented hex bolts on the heat sink side.

3.2 POC-300 MezIO® Installation/ Replacement

To access the MezIO® module/ interface in POC-300, you need to disassemble the POC-300 system enclosure:

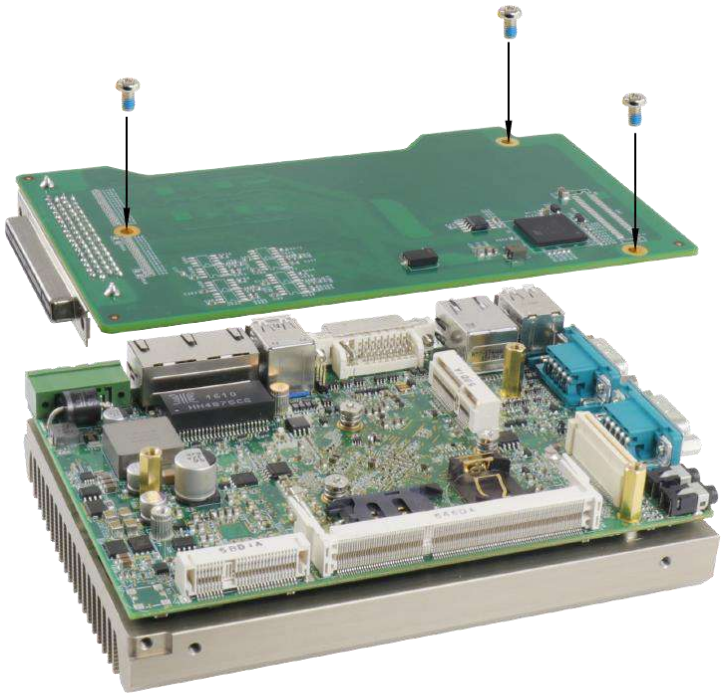
1. To disassemble POC-300, unfasten the three (3) screws shown in the illustration A and the two (2) screws shown in illustration B, below.

Illustration A

Illustration B

2. Gently slide the L-shaped enclosure open.

3. Once you have gain access to the PCBA, you may perform the following procedures:
   a) **To replace**, you need to unfasten the three (3) screws securing the existing MezIO® module, gently lift the module to disengage the MezIO® connector.
   b) **To install**, match the three (3) screw holes (indicated by black arrows) to the standoffs and the MezIO® port, gently lower the module onto the PCBA. The MezIO® port should engage if the three (3) standoffs and screw holes meet. Then using the three (3) screws supplied, secure the module by fastening a screw on each standoff.



4. If you are installing a new MezIO® module into your system, you'll need to remove the I/O shield opening for the connector.

5. Slide the L-shaped enclosure back in place. Make sure the screw hole on the hinge sits on the inside when reinstalling the enclosure.

6. Complete the procedure by fastening the five (5) screws used earlier.

3.3 POC-400 Series Disassembly Procedure

The POC-400 series disassemble procedure section will demonstrate how to remove the necessary enclosure panel(s) to gain access to the systems' PCBA for MezIO® module installation.

1. To disassemble POC-400, unfasten the screws shown in the following illustrations.

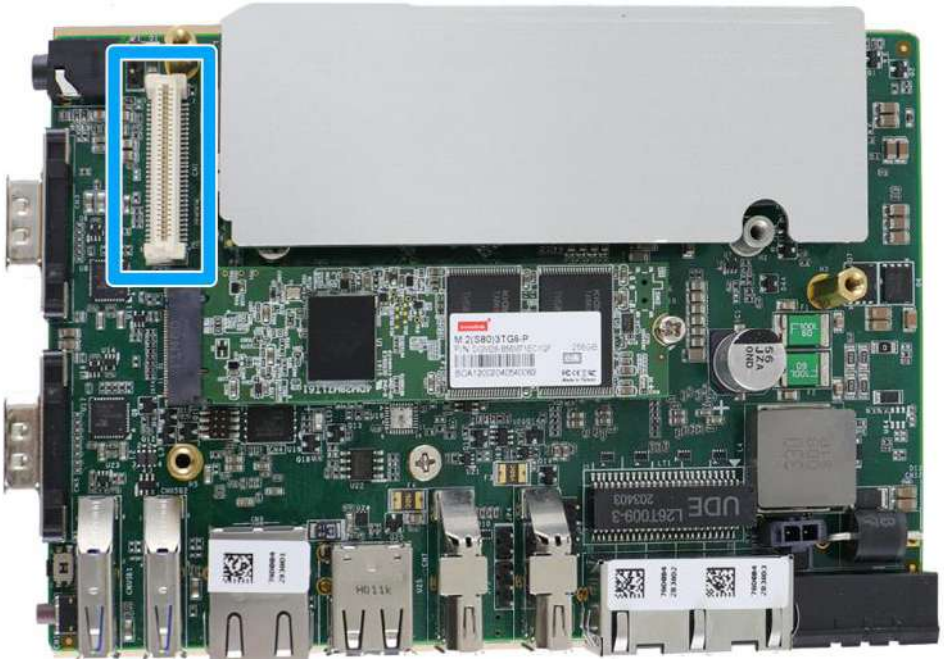
Front panel

Rear panel

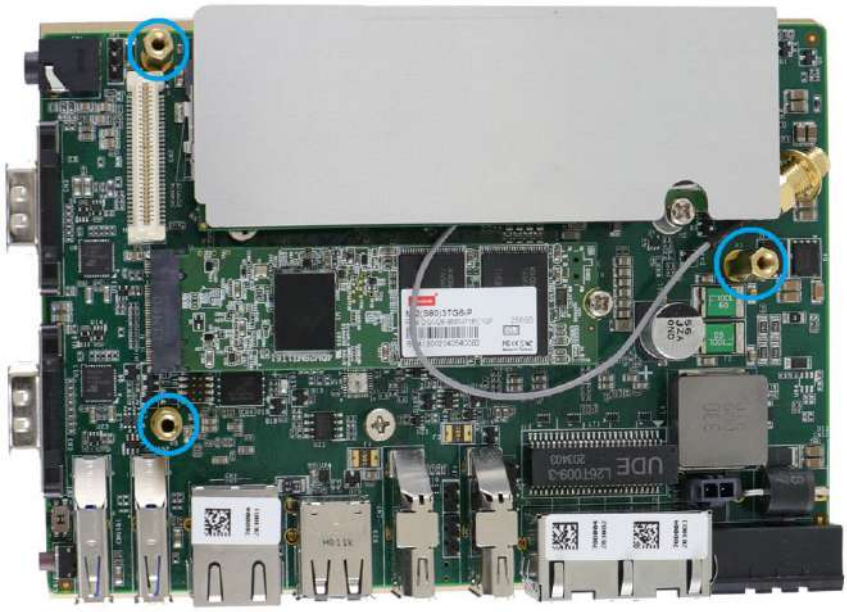
2. Unfasten the screws at the bottom of the enclosure.

3. Gently slide the enclosure open.

4. The MezIO® interface is indicated in **blue**.



5. The stand-off hex bolts are shipped with MezIO module. POC-400 comes with M3, P-head screws, we need to remove P-head screws and replace them with stand-off bolts (indicated in **blue**).

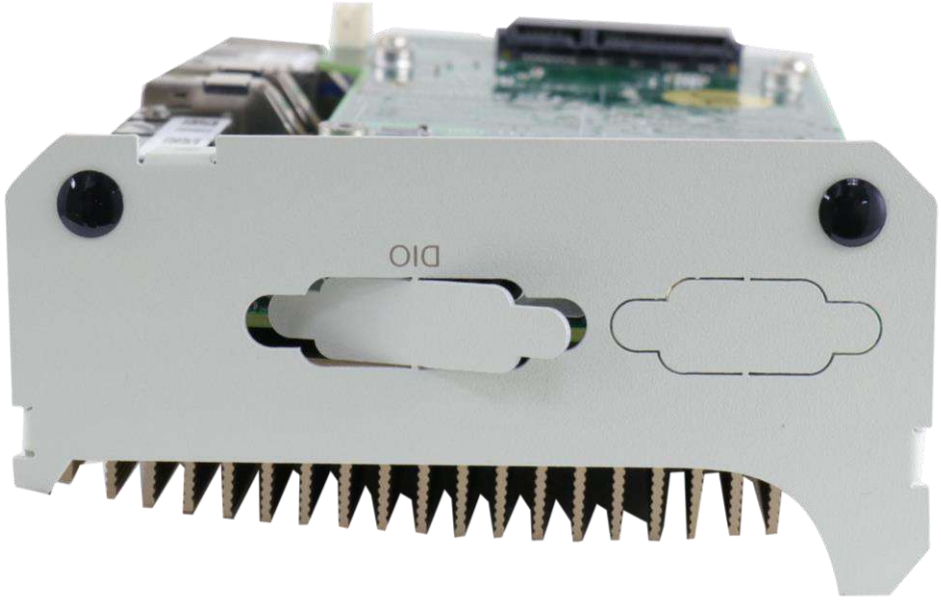


6. To install, match the three (3) screw holes to the standoffs and the MezIO® port, gently lower the module onto the PCBA. The MezIO® port should engage if the three (3) standoffs and screw holes meet. Then using the three (3) screws supplied, secure the module by fastening a screw on each standoff.

Lower the MezIO® module

Secure the MezIO® module

7. If you are installing a new MezIO® module into your system, you may need to remove the punch-out plate depending on your MezIO expansion needs.



8. When done installing the MezIO® module, reinstall the system enclosure by gently sliding the L-shaped enclosure back in place while making sure the screw hole on the hinge sits on the inside.

Place enclosure back in-place

Make sure hinge sits on the inside

9. Complete installing the system enclosure by fastening the screws indicated below.

Front panel

Rear panel

Bottom of the enclosure

3.4 POC-500 Series MezIO® Installation

> NOTE
>
> *When a MezIO-D230 or MezIO-D220 module is installed, the mini PCIe slot cannot be used due to mechanical interference.

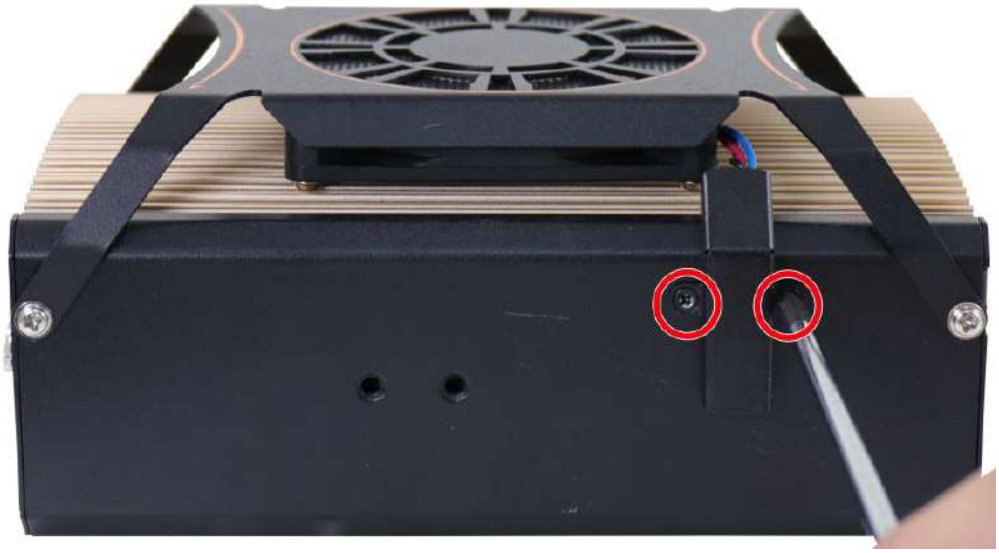
The POC-500 series disassemble procedure section will demonstrate how to remove the necessary enclosure panel(s) to gain access to the systems' PCBA for MezIO® module installation.

1. To remove disassemble the enclosure, remove the screws indicated in **red**.

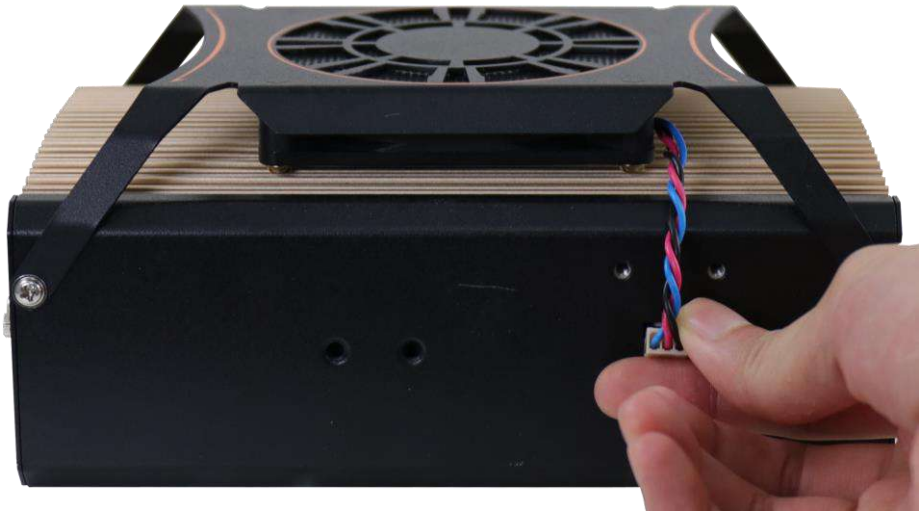
POC-515/ POC-516 systems

POC-545/ POC-546 systems

2. Remove the two (2) screws (indicated in red) and remove the power cable cover.

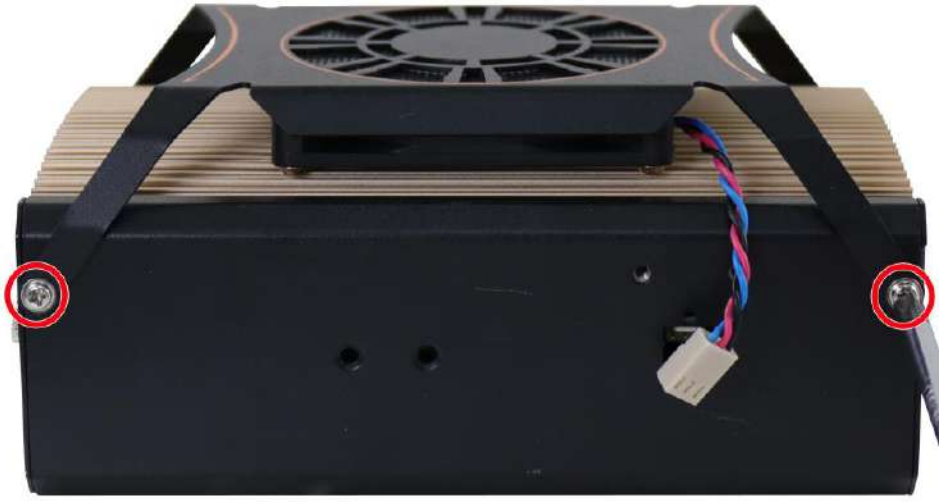


3. Unplug the 3-pin fan power connector.



4. Remove the two (2) screws (indicated in red). For POC-545/ 546 systems, please also separate the fan from the enclosure.

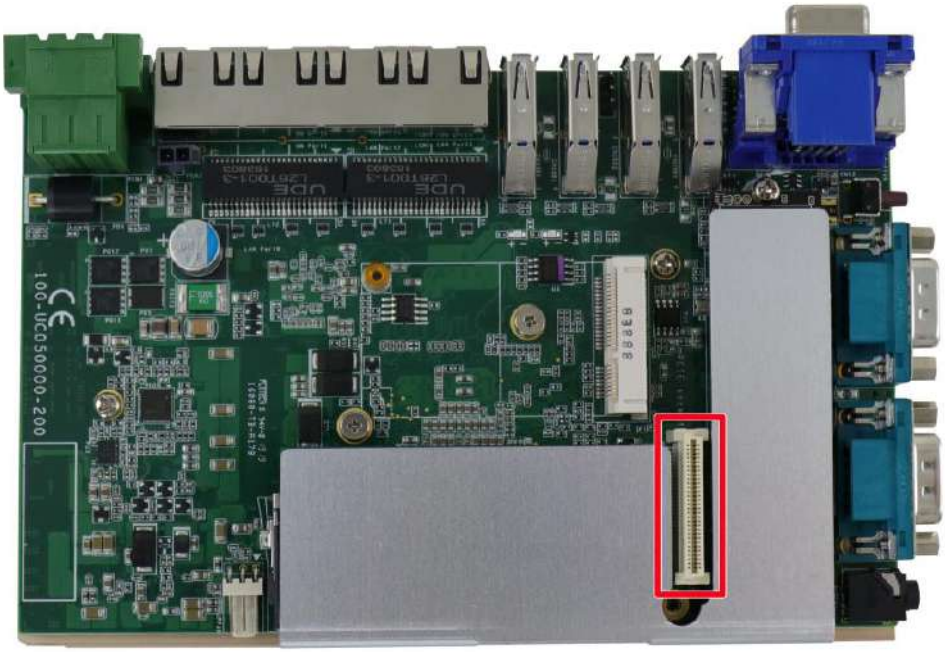
POC-515/ POC-516 systems



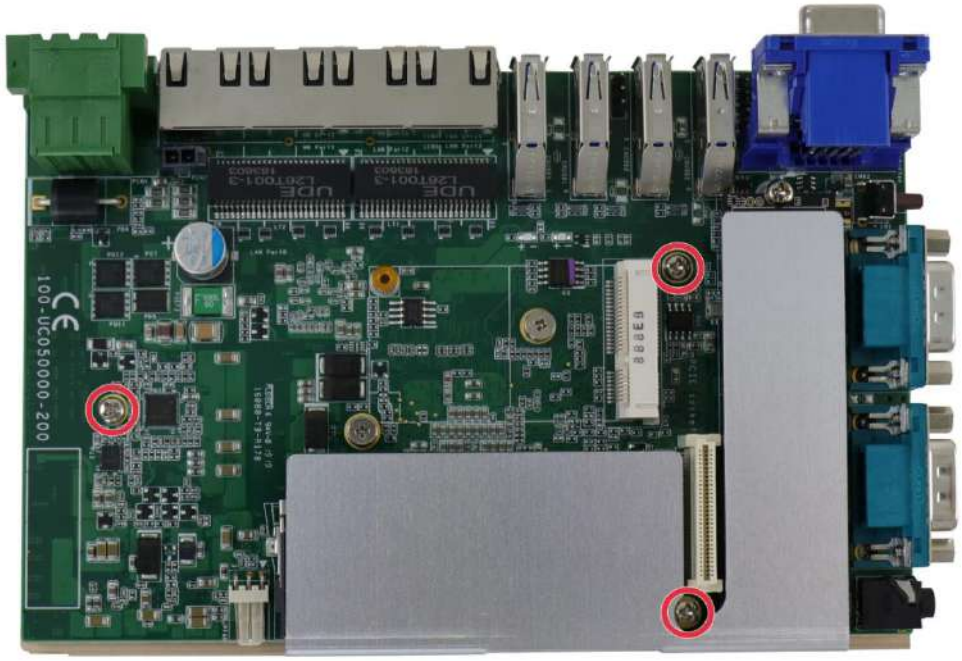
POC-545/ POC-546 systems

5. Turn the system upside down and place it on a flat sturdy surface. Unscrew the three (3) screws (indicated in red) and gently remove the L-shaped panel.

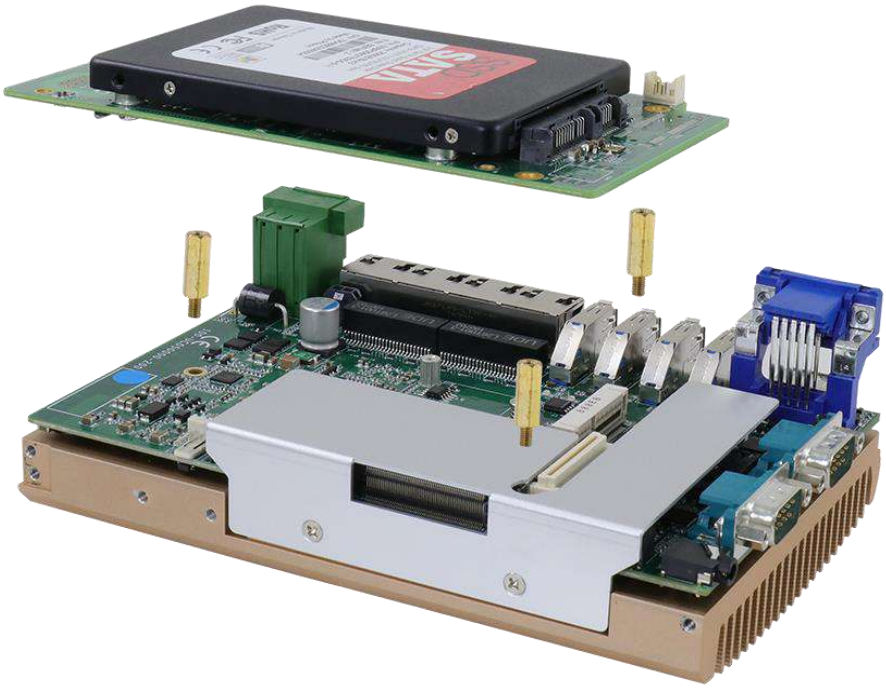
6. The MezIO® interface can be accessed, indicated in **red**.



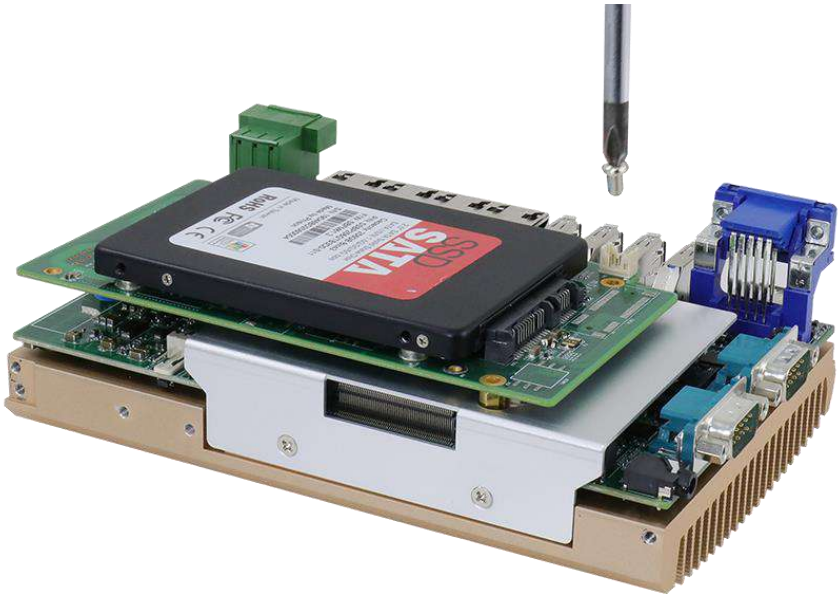
7. Remove the screws indicated in red and replace with stand-off hex bolt screws.



8. Secure the stand-off hex bolts that came with the MezIO® module onto the motherboard. Gently lower the module onto the motherboard. The MezIO® connector should engage the port if the three (3) standoffs and screw holes meet.



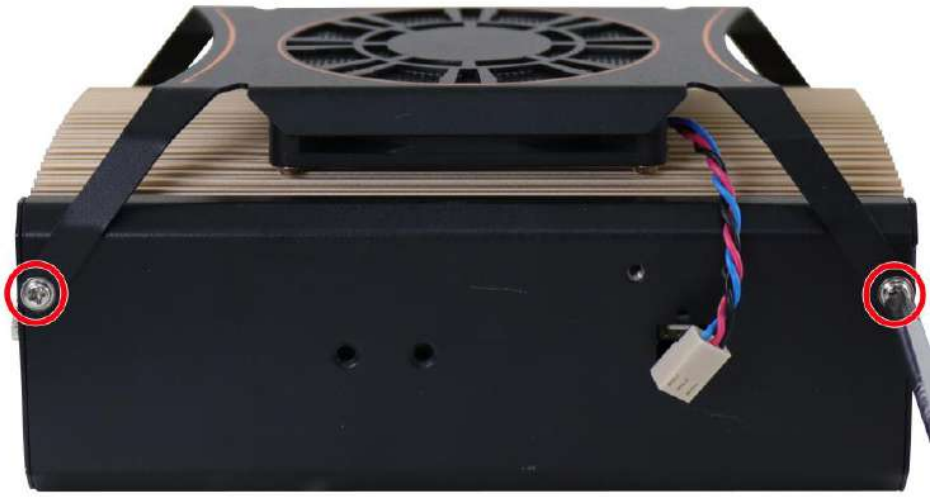
9. Then secure the MezIO® module to the hex bolts with three (3) P-head screws.



10. Once the MezIO® module is installed, reinstall the system by placing the L-shaped enclosure back into place and secure it with the screws indicated in **red**.

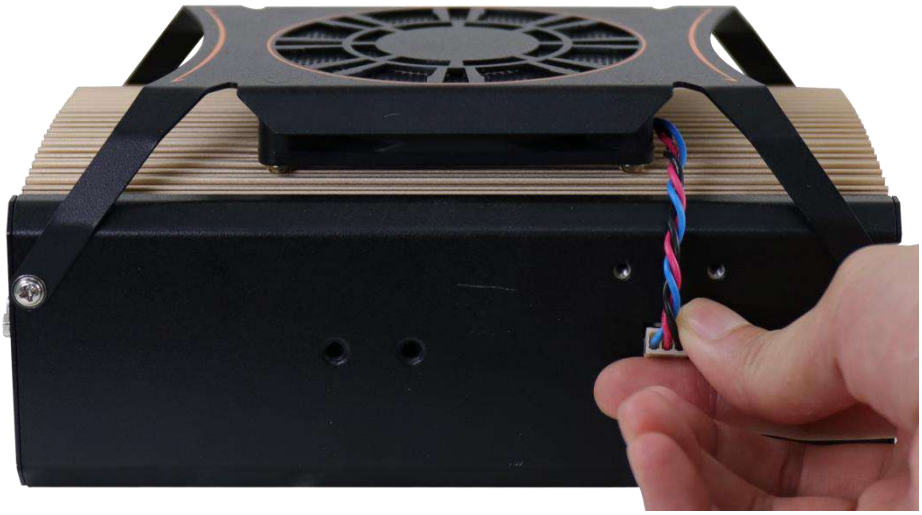
11. Secure the two (2) screws (indicated in red) to complete the enclosure assembly for POC-515/ 516 systems. For POC-545/ 546 systems, please secure the fan onto the enclosure.

POC-515/ POC-516 systems

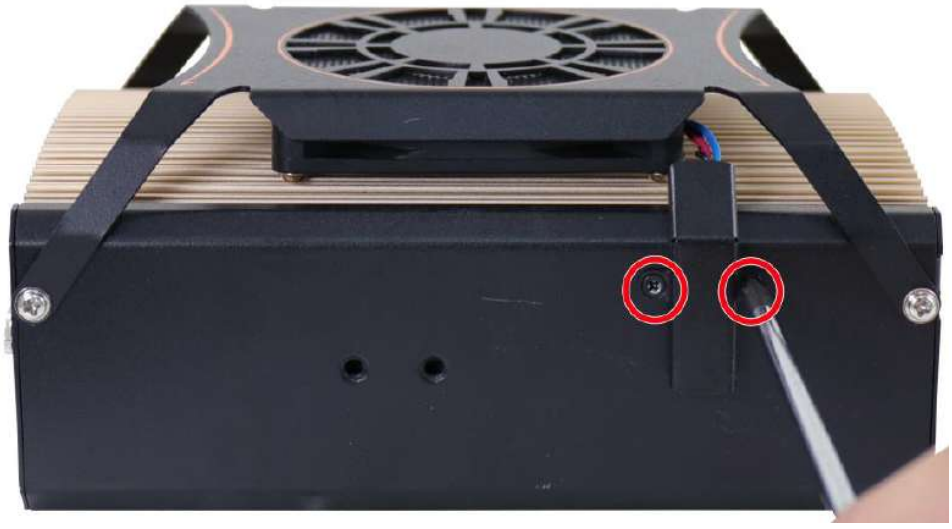


POC-545/ POC-546 systems

12. For POC-545/ 546, plug in the 3-pin fan power connector and secure the power cable cover with screws (indicated in red) to complete the enclosure assembly procedure.



Plug in the 3-pin fan power connector



Secure the power cable cover

3.5 POC-700 Series MezIO® Installation

The POC-700 series disassemble procedure section will demonstrate how to remove the necessary enclosure panel(s) to gain access to the systems' PCBA for MezIO® module installation.

1. To install the MezIO® module, remove the screws indicated on the front I/O panel.

POC-700

POC-700-FT

2. Remove the screws indicated at the bottom of the enclosure.

POC-700

POC-700-FT

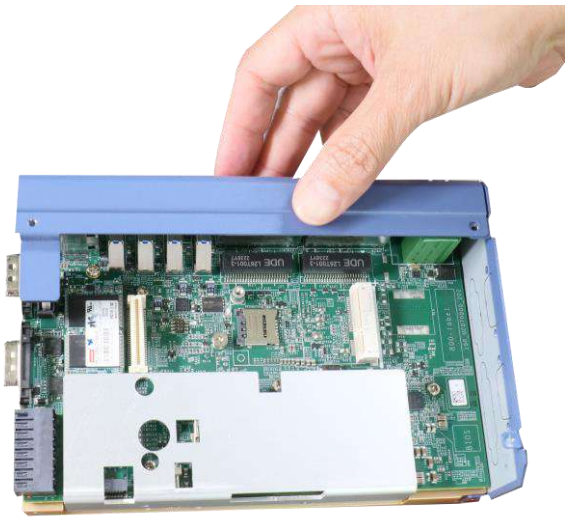
3. Remove the two (2) screws on the rear panel.

POC-700

POC-700-FT

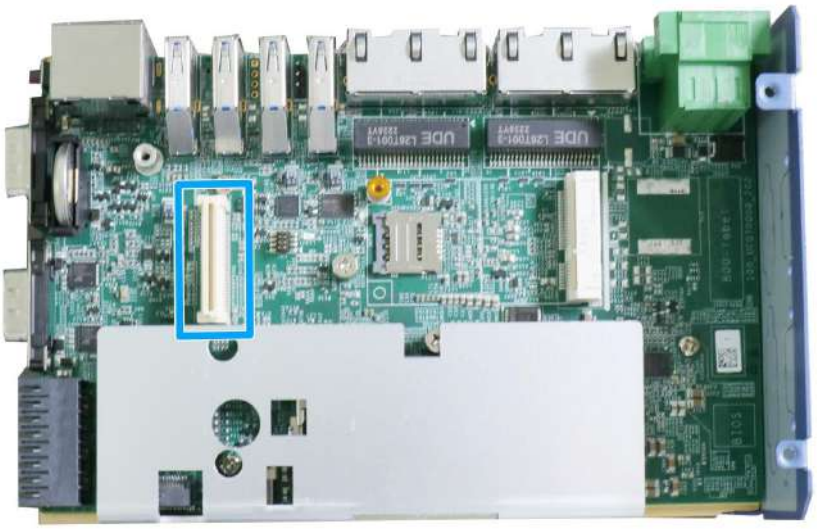
4. Separate the IO and bottom panel from the system

Remove front IO panel

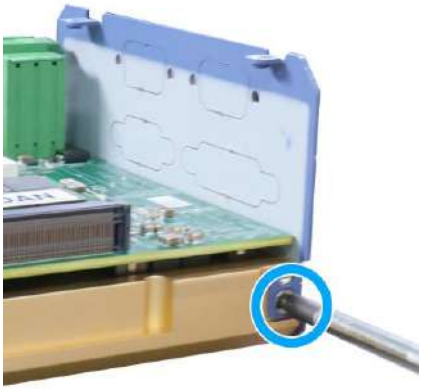


Remove bottom panel

5. The MezIO® interface can be accessed (indicated in blue).



6. Remove the reserved MezIO® connector punch-out panel by removing the screw indicated.



POC-700

POC-700-FT

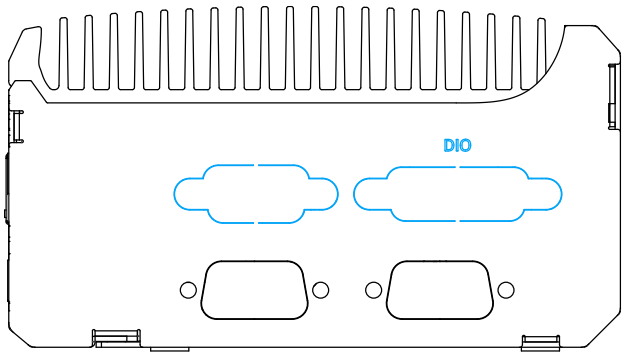
7. Remove the screws indicated and replace with stand-off hex bolt screws.

Hex bolt screw locations

You may remove the heatsink to install the hex bolt screws, but make sure you reinstall the heatsink before installing the MezIO® module.

Stand-off hex bolt screws

8. Gently lower the module onto the motherboard. Install the panel that came with the MezIO® module you ordered by securing the screw indicated.



Remove the corresponding punch out plates (may differ depending on your MezIO® module)

Secure the screw

9. Connector should engage the port if the three (3) standoffs and screw holes meet. Secure the module with three (3) P-head screws.

10. When you are done installing the MezIO® module, reinstall the system by installing the bottom/ rear enclosure panel.

POC-700

POC-700-FT

11. Install the front panel and securing it with three (3) screws.

POC-700

POC-700-FT

12. Secure the bottom and rear panel with screws.

POC-700 bottom panel screws

POC-700-FT bottom panel screws

POC-700 rear panel screws

POC-700-FT rear panel screws

3.6 Nuvo-5000 Series MezIO® Installation

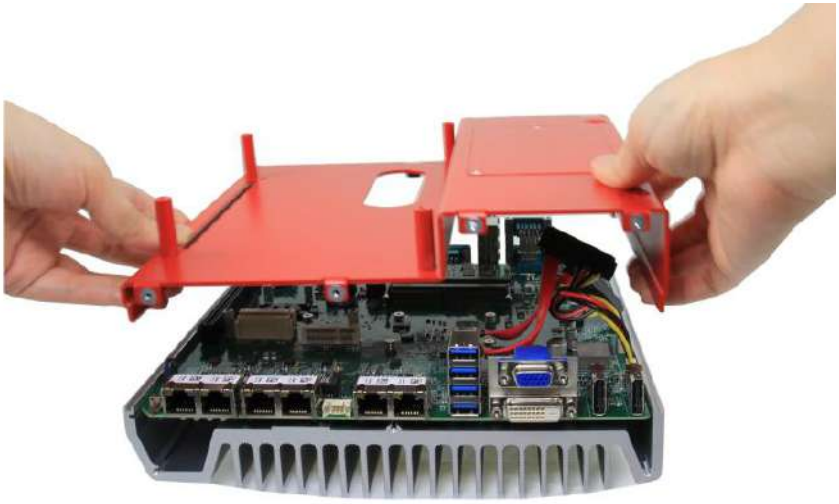
The Nuvo-5000 series disassemble procedure section will demonstrate how to remove the necessary enclosure panel(s) to gain access to Nuvo-5000E/P, Nuvo-5000LP and Nuvo-5095GC systems' PCBA. The MezIO® module installation section will be demonstrated in the following chapter.

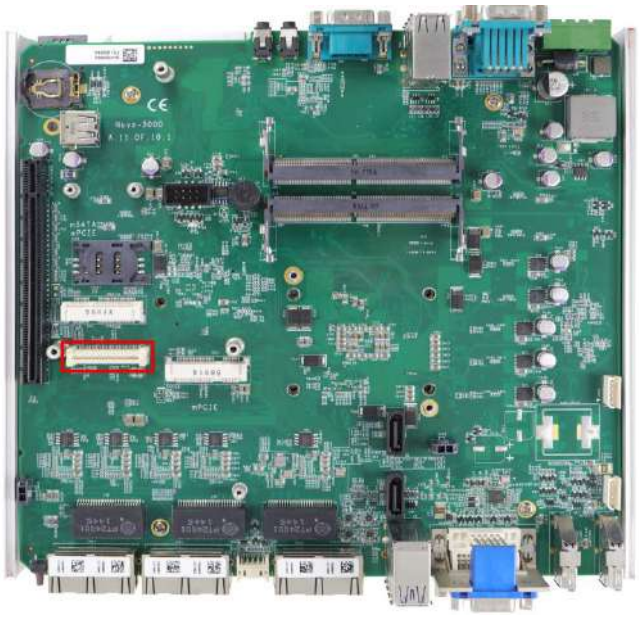
3.6.1 Nuvo-5000E/P Series

1. Place the Nuvo-5000E/P controller upside down on a flat and secured surface.
2. Unfasten four (4) M3 flat-head screws and detach the Cassette enclosure by gently lifting it off the system enclosure.

3. Unfasten seven (7) indented hex bolts each, on the front and read panel, remove both front and rear panel.

4. Gently lift and remove the bottom cover of Nuvo-5000E/P controller to expose the controller's PCBA and MezIO® port.



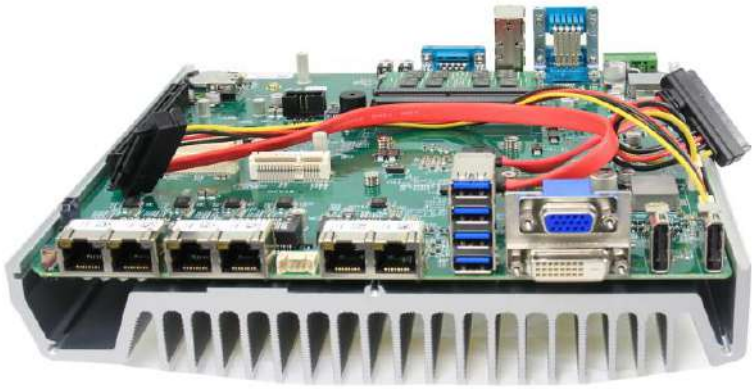


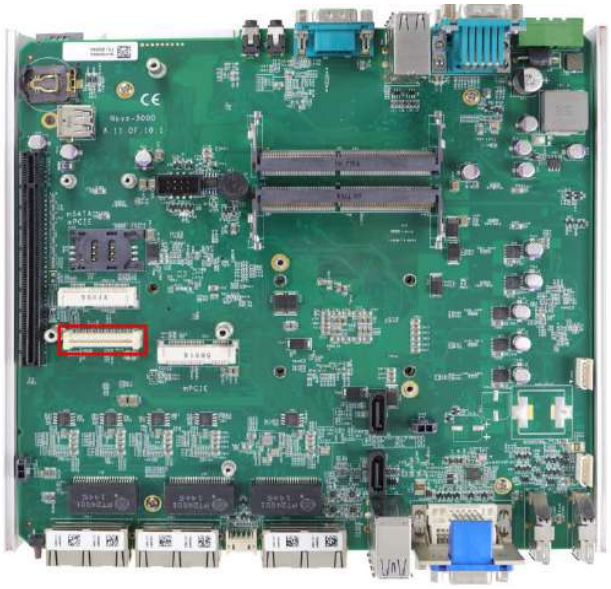
5. For Nuvo-5000 series MezIO® module installation procedure, please go here.

3.6.2 Nuvo-5000LP Series

1. Place the Nuvo-5000LP controller upside down on a flat and secured surface.
2. Unfasten six (6) indented hex bolts on the front and rear panel, remove both front and rear panel.

3. Remove the bottom cover of Nuvo-5000LP controller and the SATA cable attached to the hot-swappable HDD tray to expose the controller's PCBA and MezIO® port.





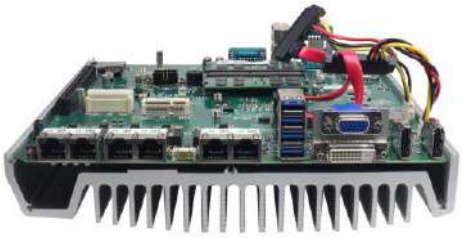
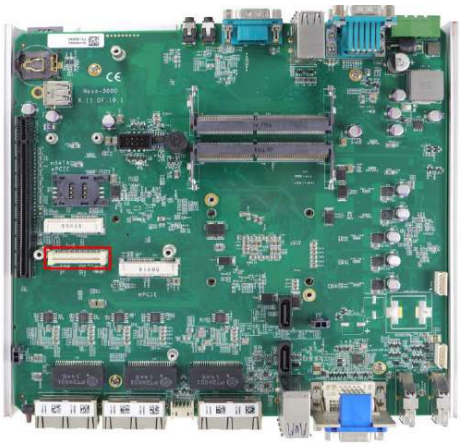
4. For installation of the MezIO® module, please go here.

3.6.3 Nuvo-5095GC Series

1. Place the Nuvo-5095GC controller upside down on a flat and secured surface.
2. Unfasten four (4) M3 flat-head screws and detach Cassette by gently lifting it off the system enclosure.

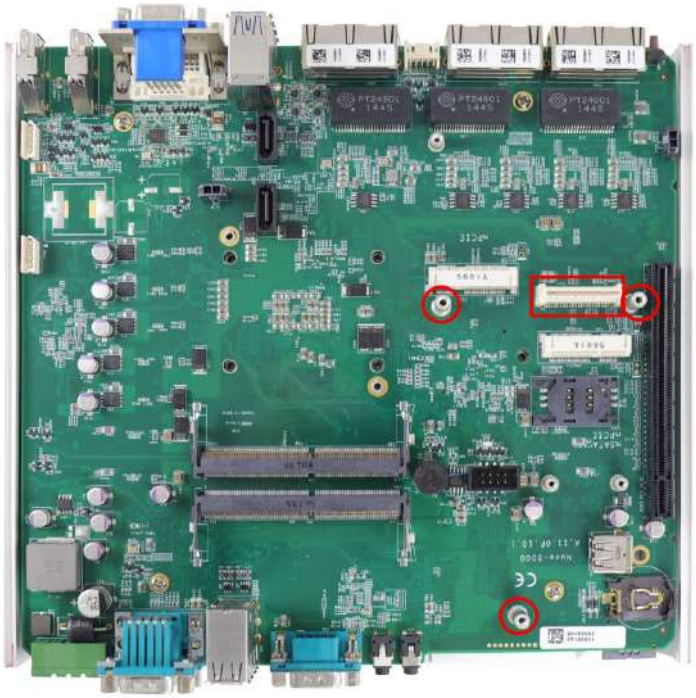

3. Unfasten seven(7) indented hex bolts on the front and rear panel, remove both front and rear panel.


4. Remove the bottom cover of Nuvo-5095GC controller to expose the PCBA and MezIO® port.

3.6.4 Nuvo-5000 Series MezIO® Module Installation

1. On the PCBA board, locate the MezIO® port and the three (3) standoffs.



2. **To install**, match the MezIO® port and three (3) screw holes (indicated by black arrows) to the standoffs, gently lower the module onto the PCBA/ heat sink component. The MezIO® port should engage if standoffs and screw holes meet. Then using the three (3) screws supplied, secure the module by fastening a screw on each standoff.

3. Once you have installed the MezIO® module**,** you can reinstall the removed panel(s) and enclosure(s) by referencing steps performed earlier to remove them!

4. Reinstall the enclosure when done.

3.7 Nuvo-7000 Series Disassembly Procedure

The Nuvo-7000 series disassemble procedure section will demonstrate how to remove the necessary enclosure panel(s) to gain access to Nuvo-7000E/ P/ DE/ LP and Nuvo-7160GC systems' PCBA.

3.7.1 Nuvo-7000E/ P/ DE/ LP

To access system's MezIO® interface, the system needs to be disassembled. To disassemble the system enclosure, you need to remove the Cassette module and screws on both I/O panels.

1. Turn the system upside-down and remove the four screws at the bottom of the Cassette module.

> **NOTE**
>
> *Not applicable to Nuvo-7000LP systems.*

2. Gently wiggle and separate the Cassette module from the system.

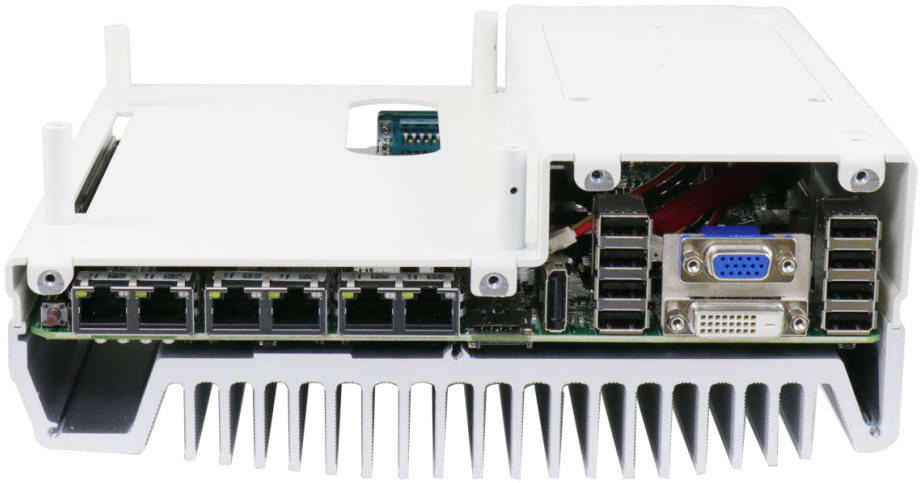
> **NOTE**
>
> *Not applicable to Nuvo-7000LP systems.*

3. On the front I/O panel, remove the hexa-screws indicated below.

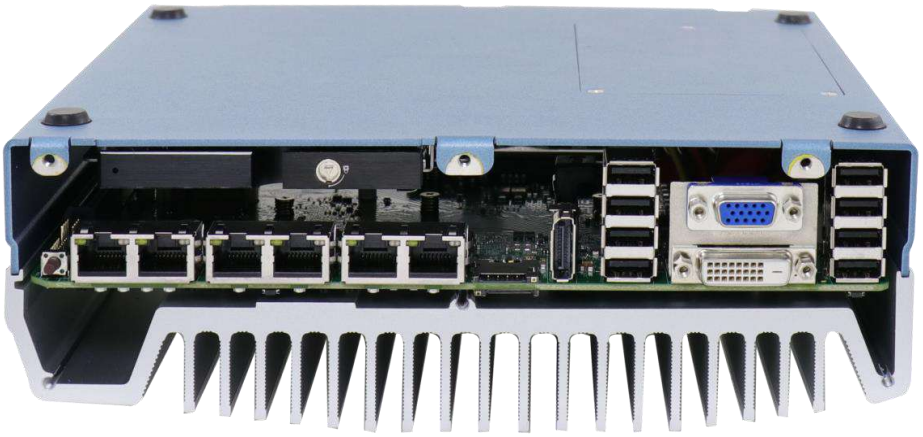
Nuvo-7000E/ P/ DE systems

Nuvo-7000LP systems

4. Remove the front I/O panel.



Nuvo-7000E/ P/ DE systems



Nuvo-7000LP systems

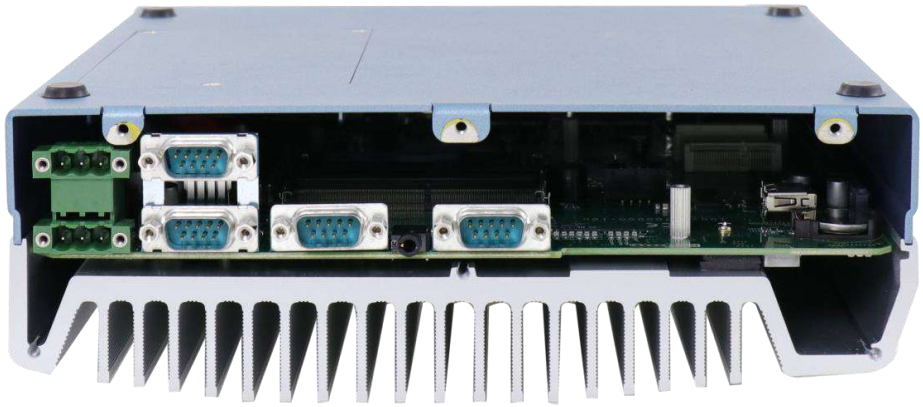
5. On the rear I/O panel, remove the hexa-screws indicated below.

Nuvo-7000E/ P/ DE systems

Nuvo-7000LP systems

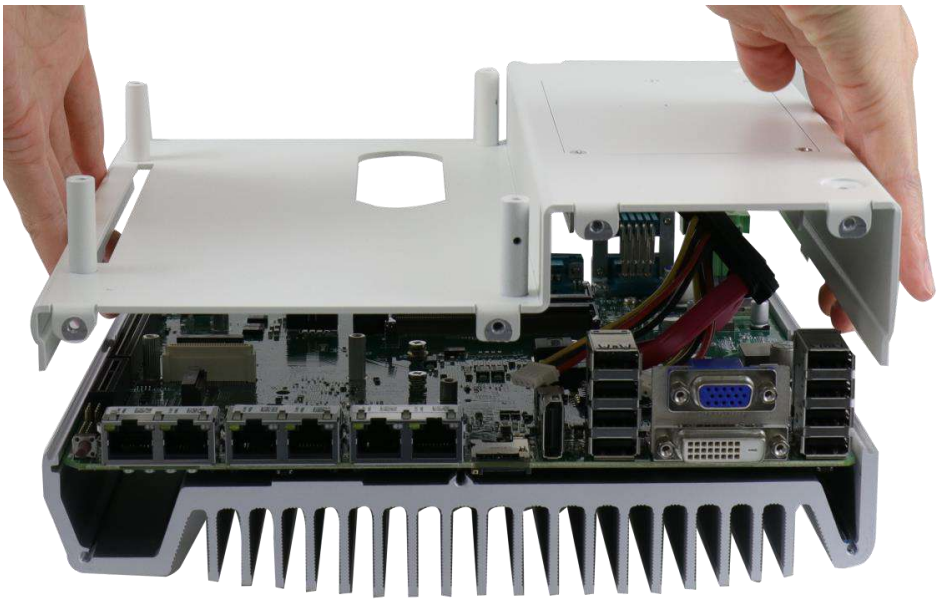
6. Remove the rear I/O panel.

Nuvo-7000E/ P/ DE systems

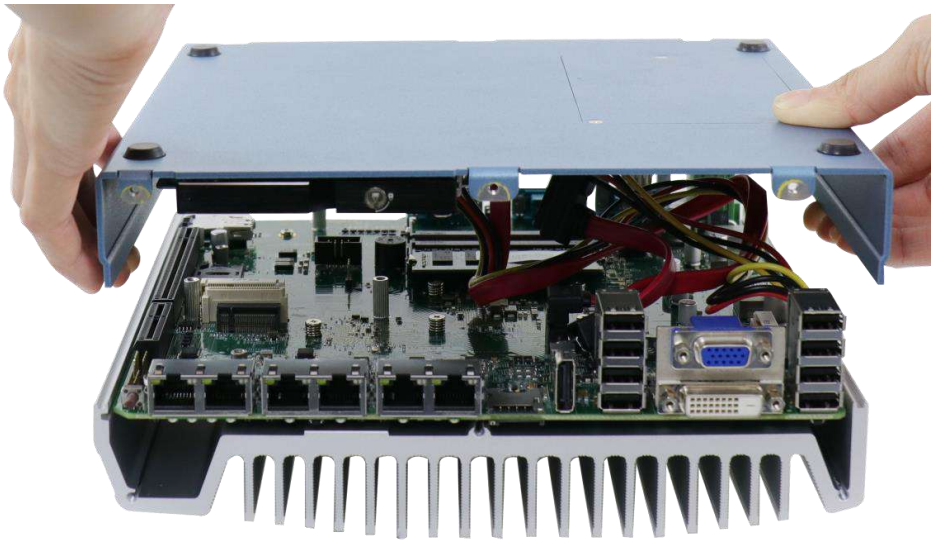


Nuvo-7000LP systems

7. Gently lift the system's bottom panel.



Nuvo-7000E/ P/ DE systems

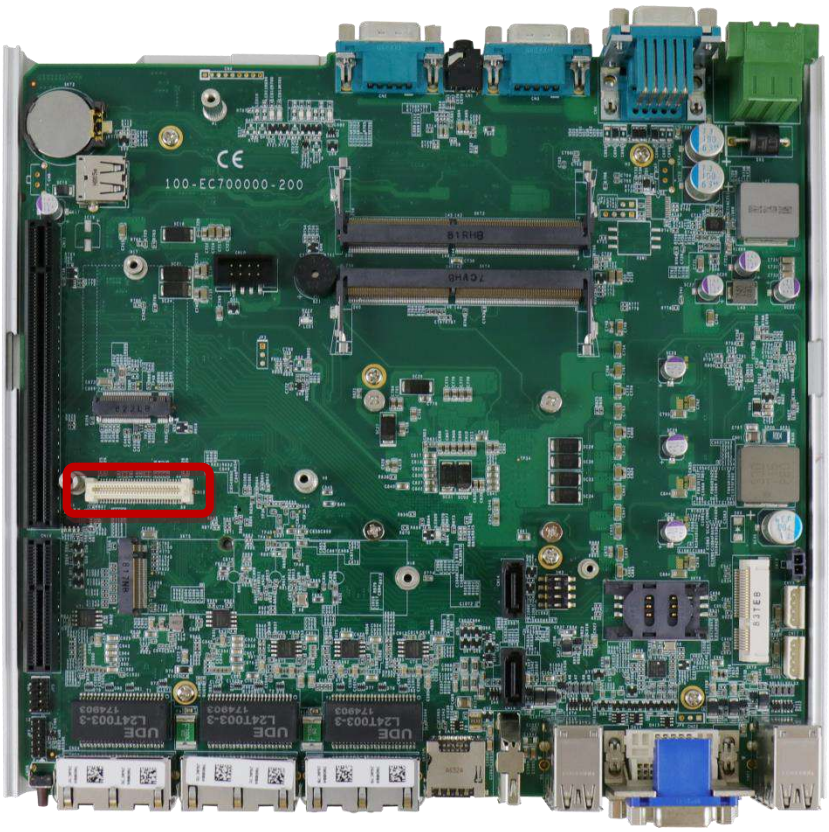


Nuvo-7000LP systems

NOTE

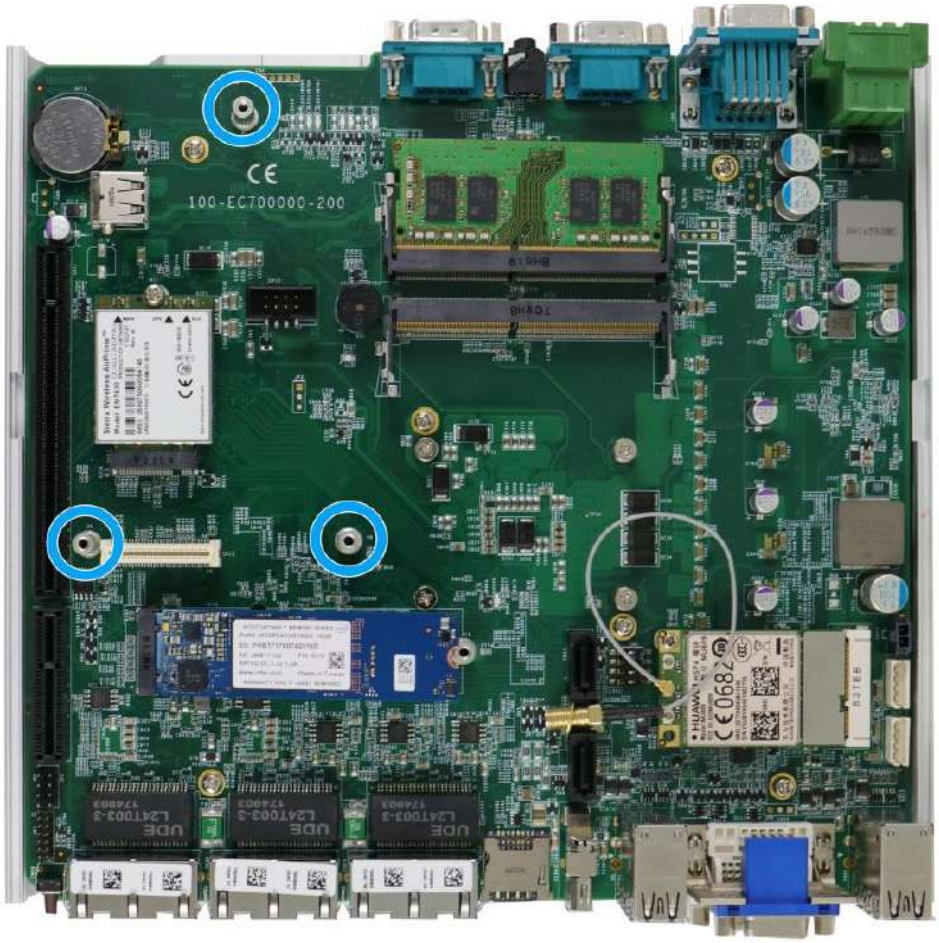
For Nuvo-7000LP systems, please disengage the 22-pin SATA cable connected to the 2.5" hot swappable tray before removing the bottom panel.

8. Once the bottom panel has been removed, you should have access to the system's MezIO® interfaces.

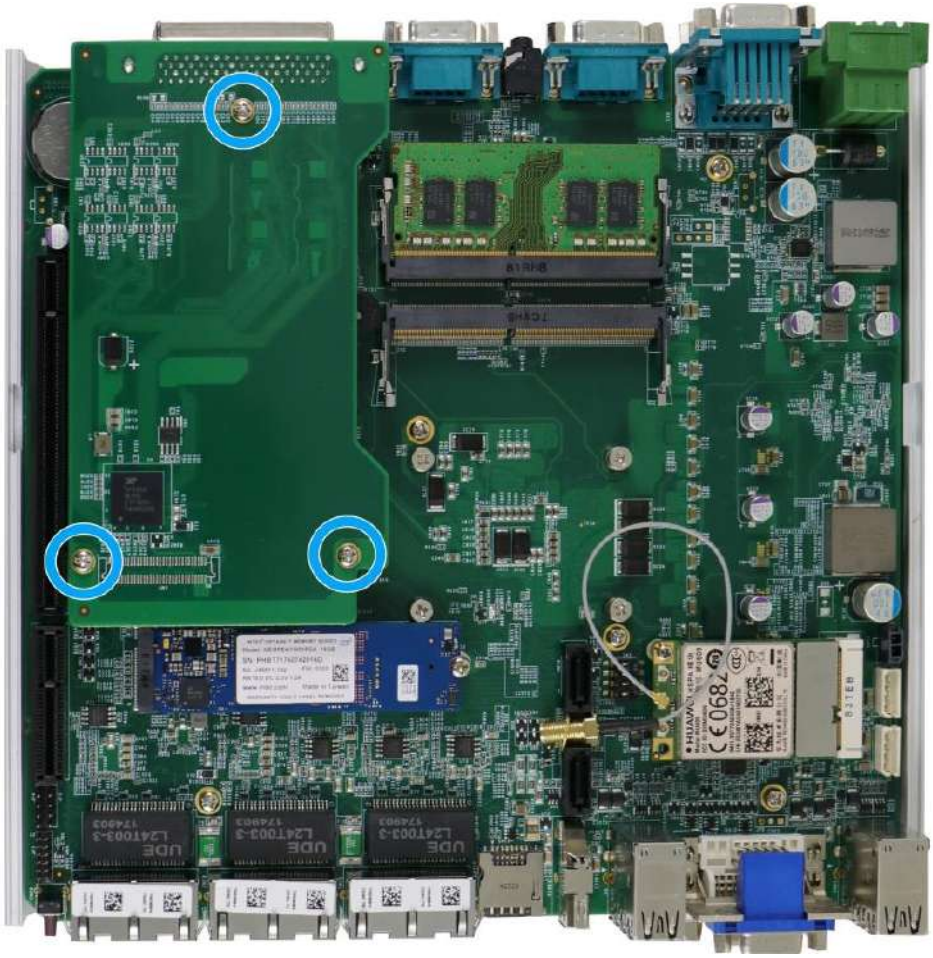


3.7.2 Nuvo-7000E/ P/ DE/ LP MezIO® Module Installation

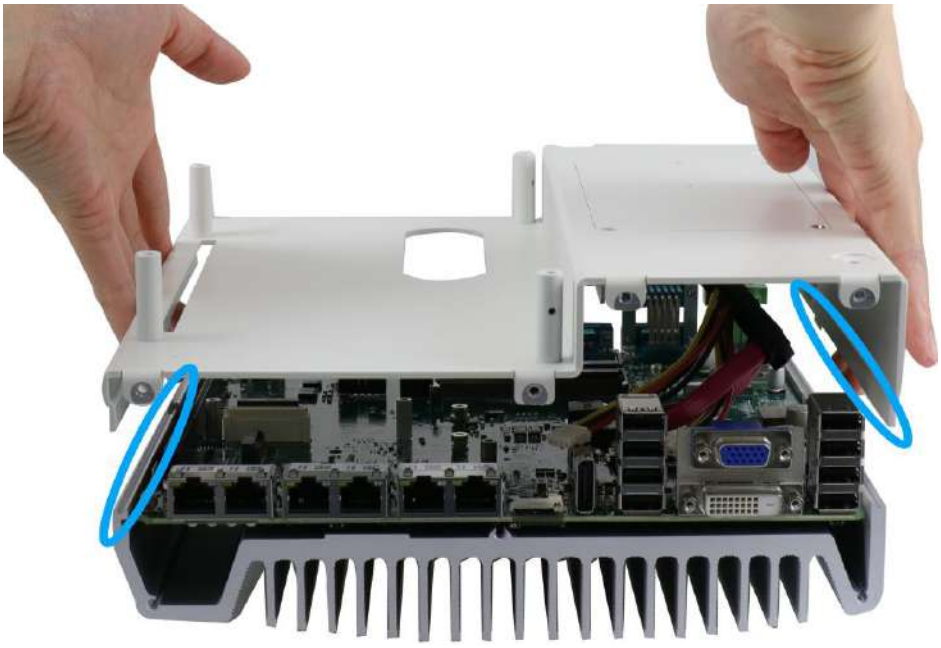
1. The MezIO® module is secured by the three stand-mounts indicated in the illustration below.

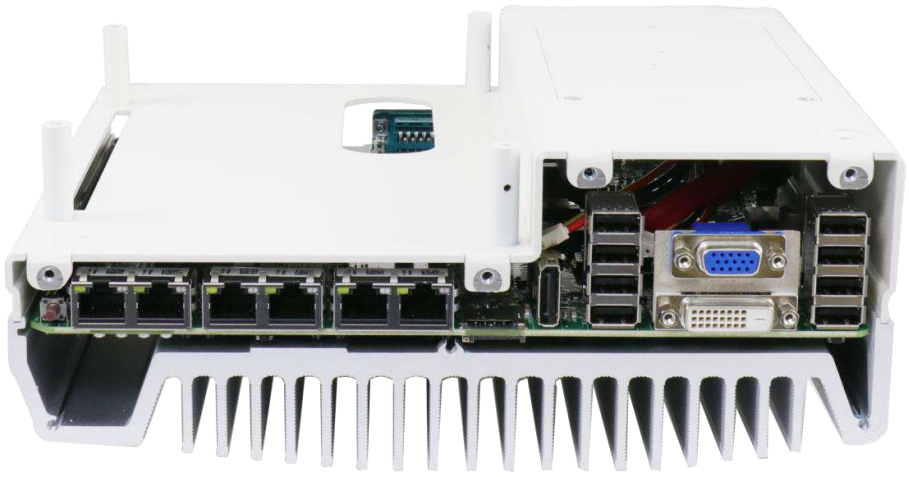


2. Gently lower the MezIO® module onto the three stand-mounts while matching the MezIO® interface. Secure the module using three screws supplied.

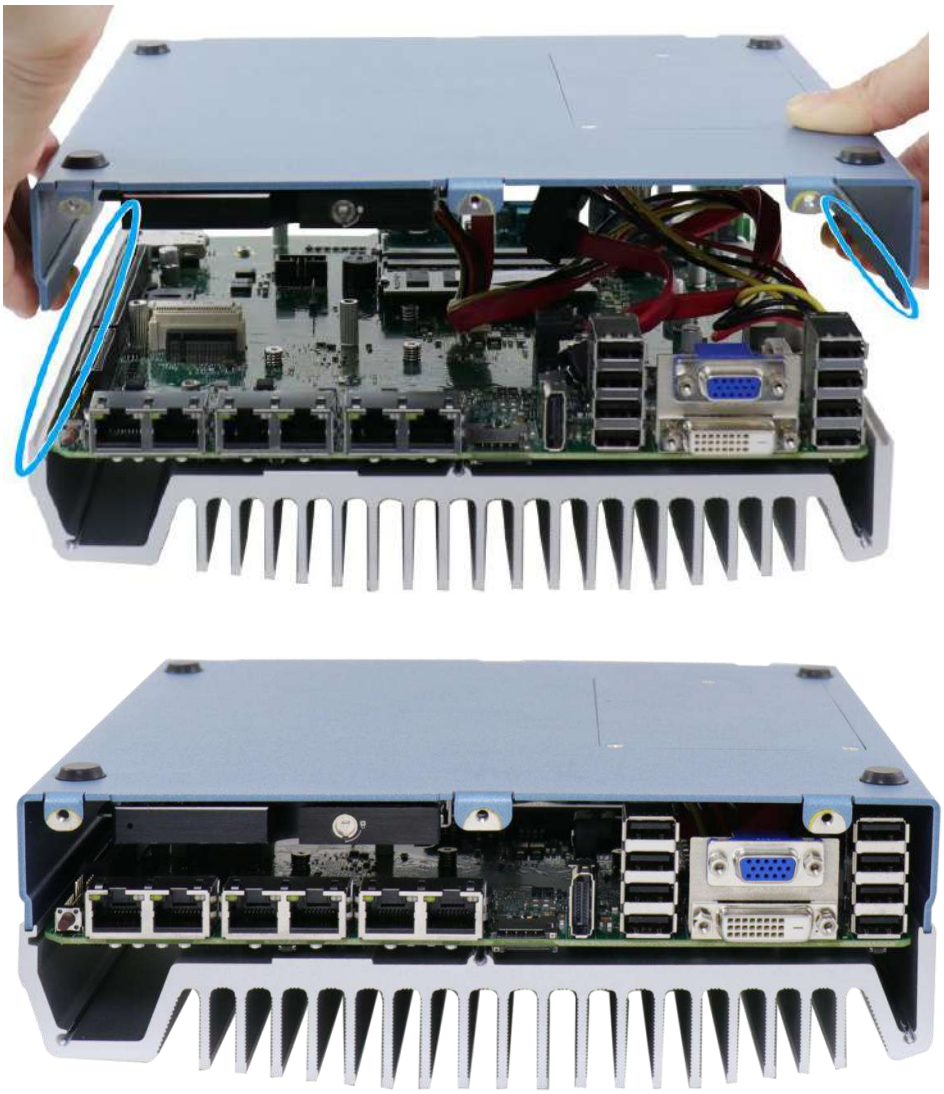


3. Reinstall the system enclosure and panel when done. To reinstall the system enclosure, place the bottom panel on top of the motherboard while making sure both sides are inserted into the heatsink (indicated in **blue**).





Nuvo-7000E/ P/ DE systems



Nuvo-7000LP systems

NOTE

For Nuvo-7000LP systems, please connect the 22-pin SATA cable connected to the 2.5” hot swappable tray before installing the bottom panel.

4. Install the front panel and secure screws indicated in **blue**.

Nuvo-7000E/ P/ DE systems

Nuvo-7000LP systems

5. Install the rear panel and secure screws indicated in **blue**.

Nuvo-7000E/ P/ DE systems

Nuvo-7000LP systems

6. Install the Cassette module and secure screws indicated in **blue**.

> **NOTE**
>
> *Not applicable to Nuvo-7000LP systems.*

3.8 Nuvo-7160GC Series Disassembly Procedure

To access system's MezIO® interface, the system needs to be disassembled. To disassemble the system enclosure, you need to remove the Cassette module and screws on both I/O panels.

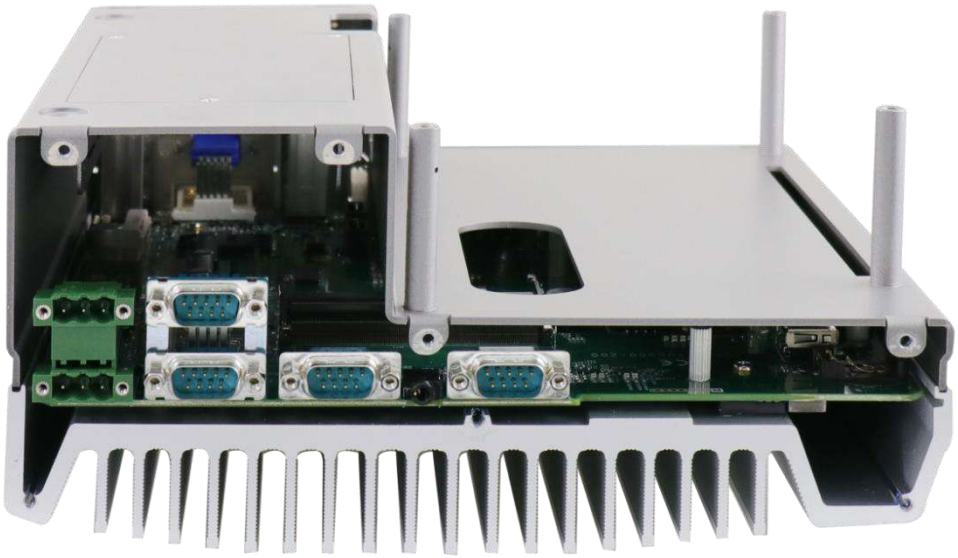
3.8.1 Nuvo-7160GC

1. Turn the system upside-down and remove the four screws at the bottom of the Cassette module.

2. Gently wiggle and separate the Cassette module from the system.

3. On the rear I/O panel, remove the hexa-screws indicated below.

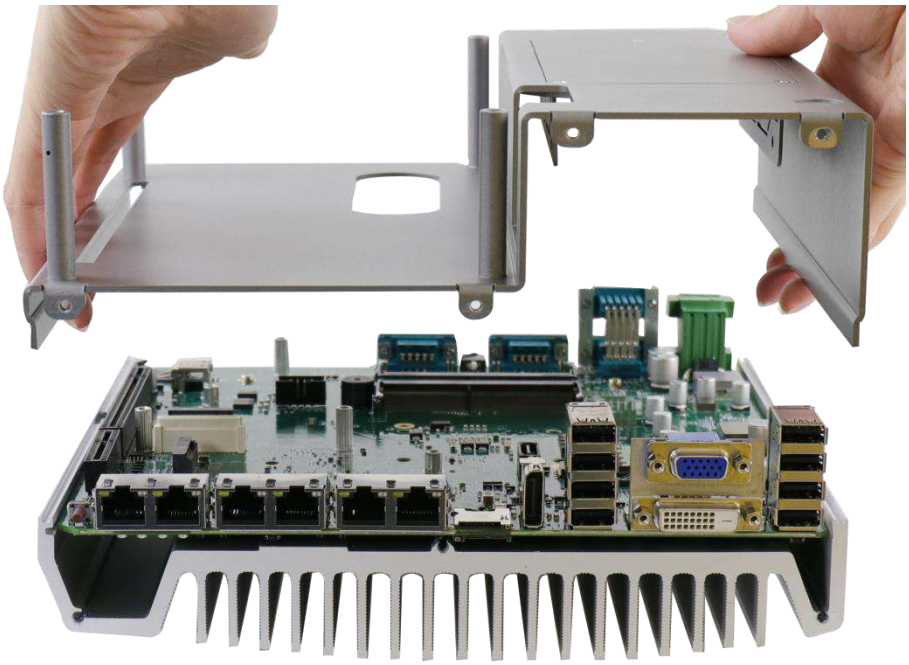
4. Remove the rear I/O panel.



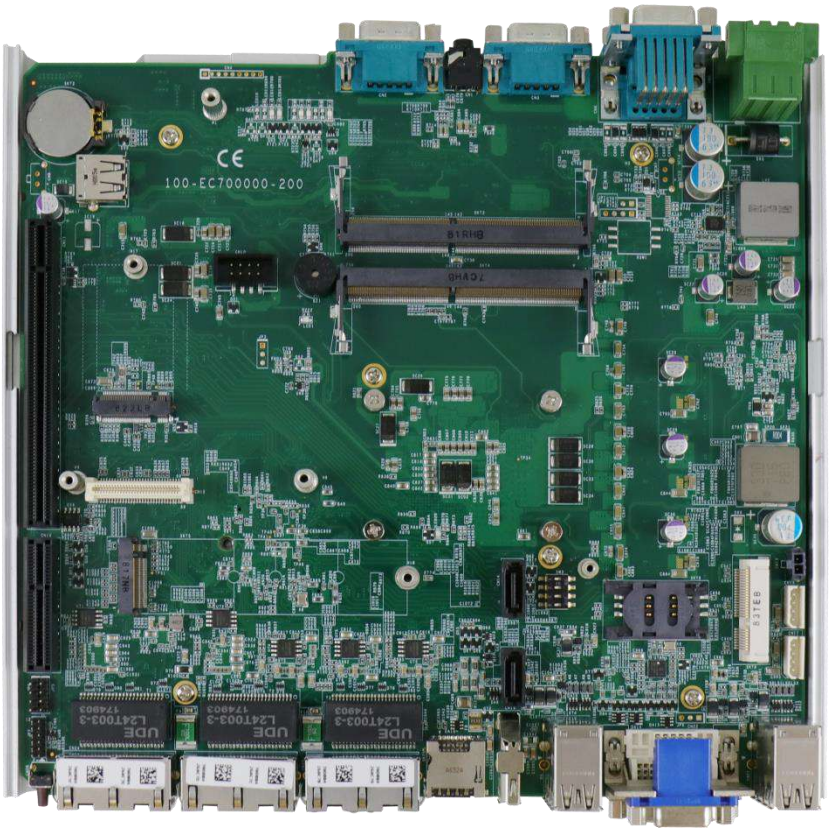
5. On the front I/O panel, remove the hexa-screws indicated below.

6. Remove the front I/O panel.

7. Gently lift the system's bottom panel.

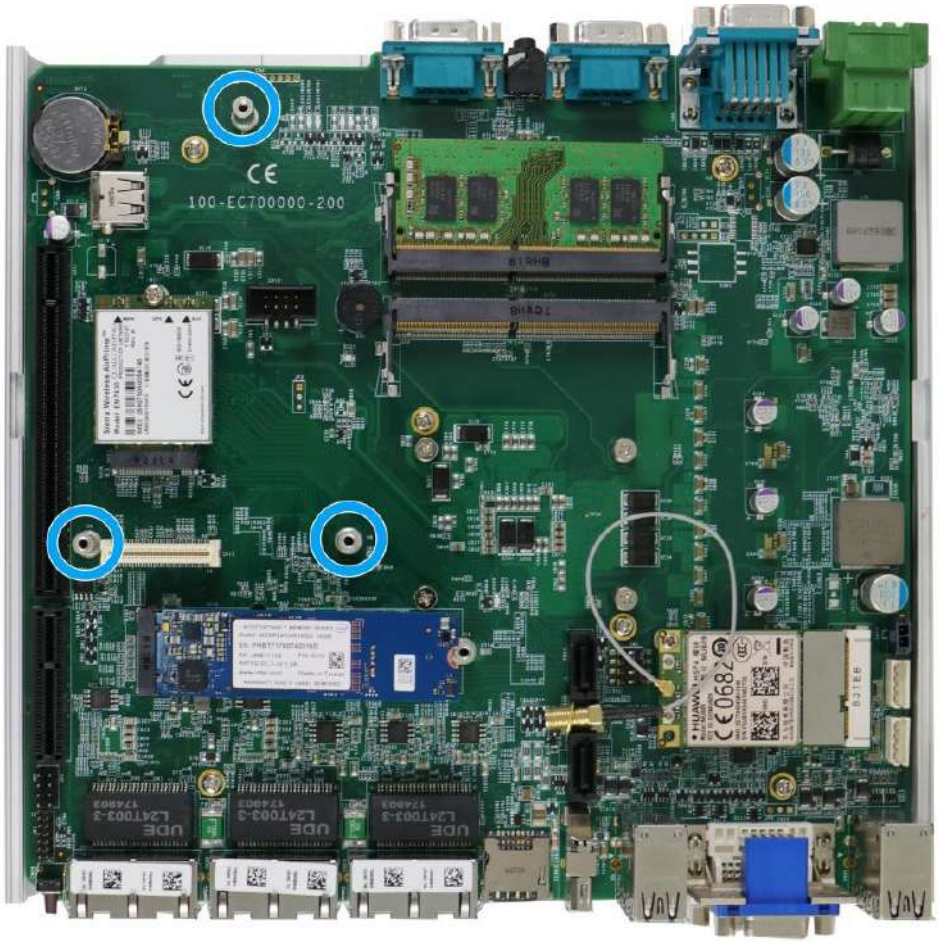


8. Once the bottom panel have been removed, you should have access to the system's internal I/O interfaces.

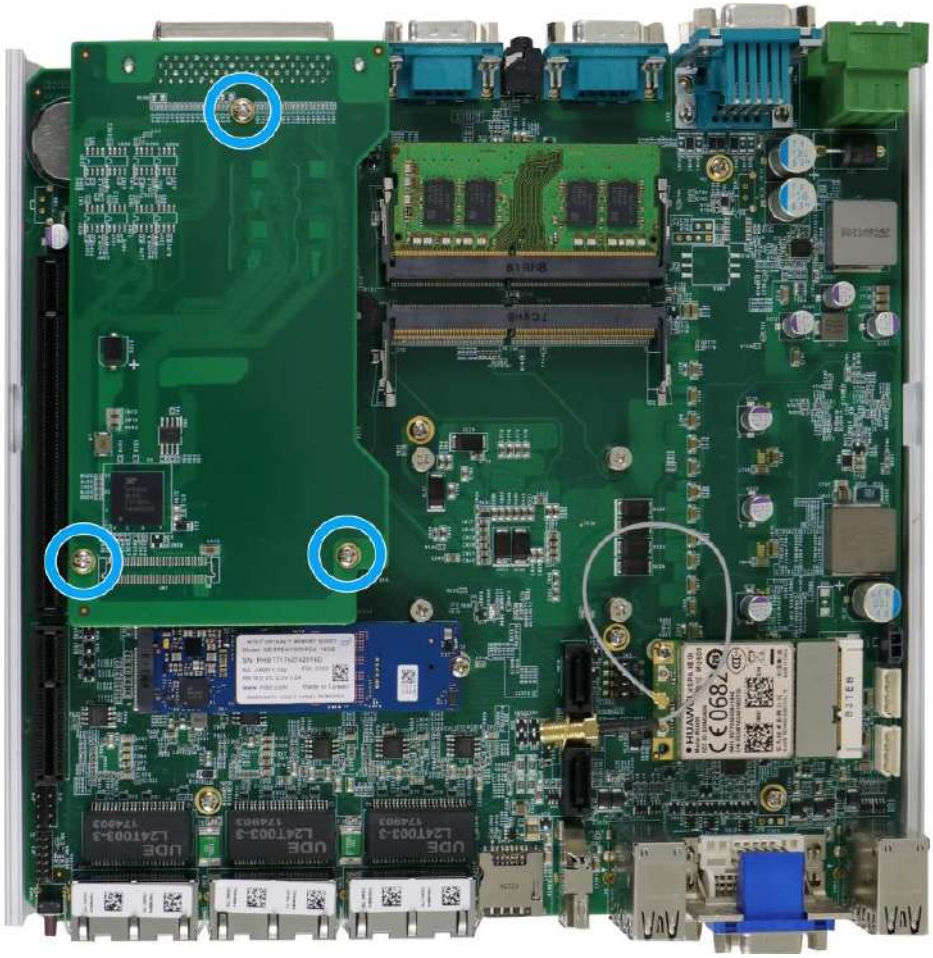


3.8.2 Nuvo-7160GC MezIO® Installation

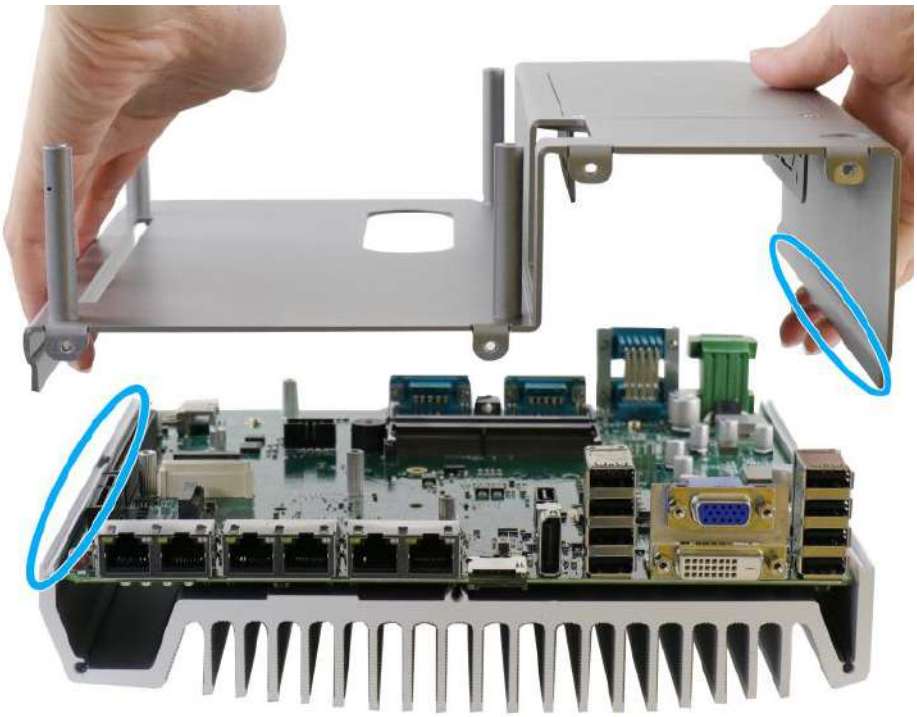
1. The MezIO® module is secured by the three stand-mounts indicated in the illustration below.



2. Gently lower the MezIO® module onto the three stand-mounts while matching the MezIO® interface. Secure the module using three screws supplied.



3. Reinstall the system enclosure and panel when done. To reinstall the system enclosure, the bottom panel on top of the motherboard while making sure both sides are inserted into the heatsink (indicated in **blue**).



4. Install front/ rear panel and secure screws indicated in **blue**.

Install front panel and secure screws

Install rear panel and secure screws

5. Gently lower the Cassette module onto the system enclosure, press firmly to ensure the PCIe slot is properly engaged.

6. Secure the screws indicated to complete the enclosure installation process.

3.9 Nuvo-9000 Series Disassembly Procedure

To access system's MezIO® interface, the system needs to be disassembled. Please refer to the following procedure for MezIO® module installation.

1. Turn the system upside-down and remove the four screws (indicated in **blue**) at the bottom of the Cassette module.

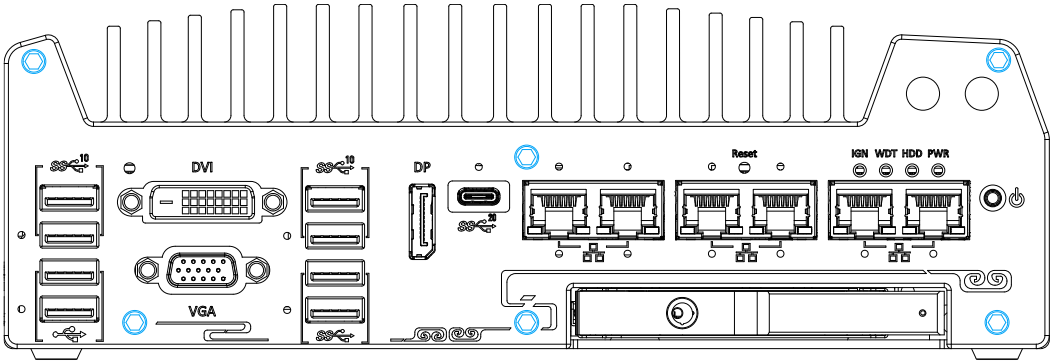
> **NOTE**
>
> *For Nuvo-9000E/ P/ DE series systems only.*

2. Gently wiggle and separate the Cassette module from the system.

> **NOTE**
>
> *For Nuvo-9000E/ P/ DE series systems only.*

3. On the front I/O panel, remove the hexa-screws indicated below.

Nuvo-9000E/ P/ DE systems



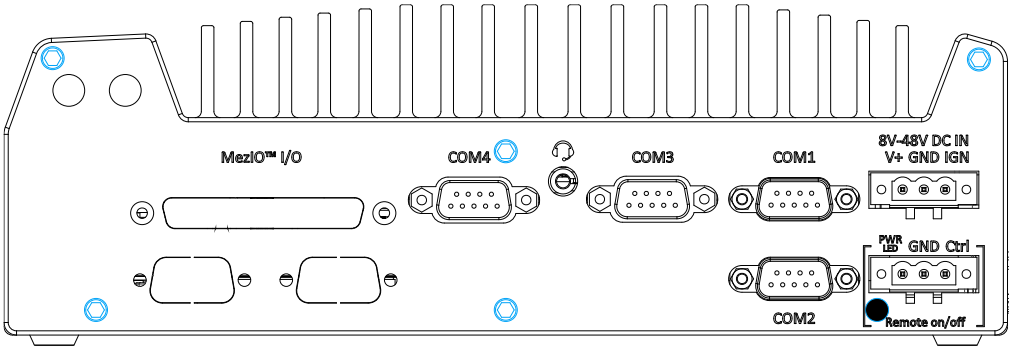
Nuvo-900LP systems

4. Remove the front I/O panel.

Nuvo-9000E/ P/ DE systems

5. On the rear I/O panel, remove the hexa-screws indicated below.

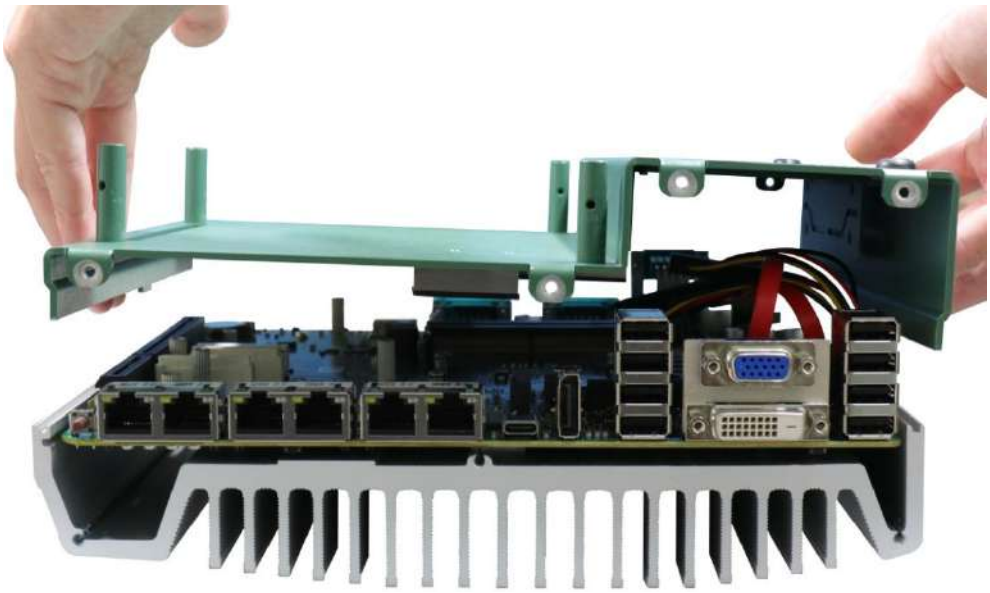
Nuvo-9000E/ P/ DE systems



Nuvo-9000LP systems

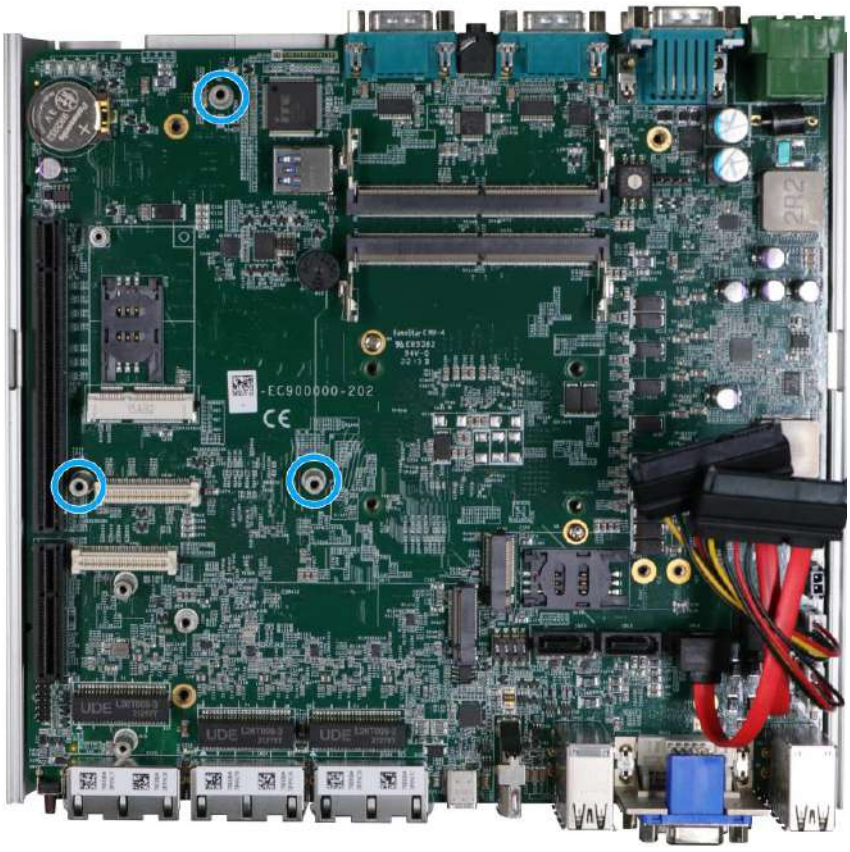
6. Remove the rear I/O panel.

7. Gently lift the system's bottom panel.

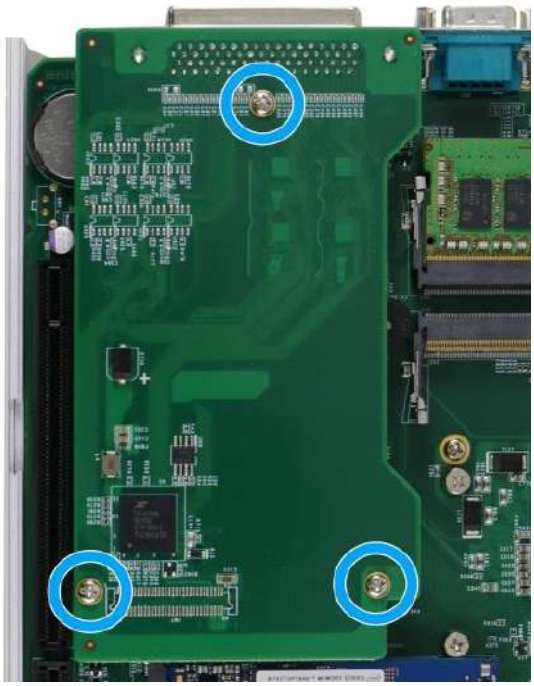


8. Once the bottom panel has been removed, you should have access to the system's MezIO® interface.

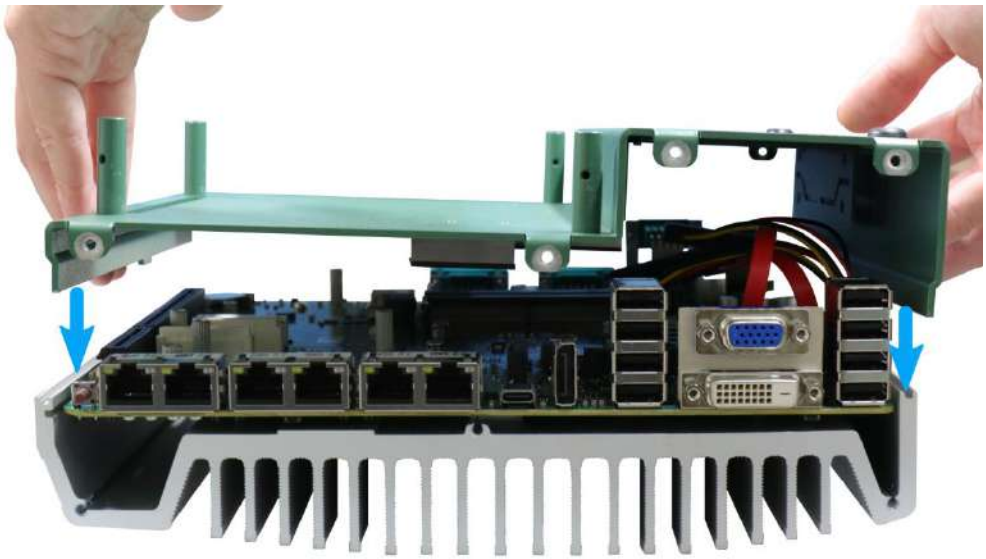
9. The MezIO® module is secured by the three stand-mounts indicated in the illustration below.



10. Gently lower the MezIO® module onto the three stand-mounts while matching the MezIO® interface. Secure the module using three screws supplied.

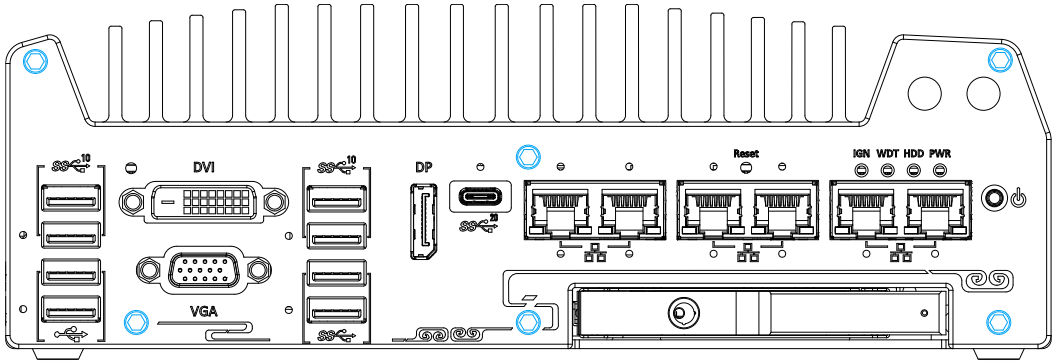


11. When you are done installing the MezIO® module, reinstall the system enclosure by placing the bottom panel on top of the motherboard while making sure both sides are inserted into the heatsink (indicated in blue).



12. Install the front panel and secure screws indicated in **blue**.

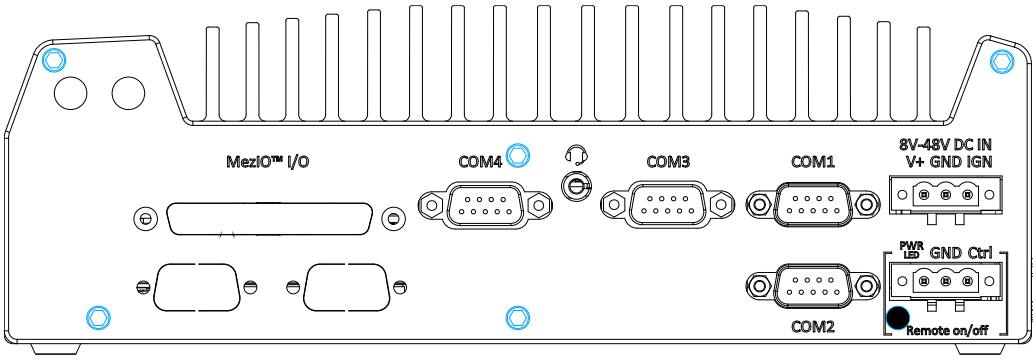
Nuvo-9000E/ P/ DE systems



Nuvo-900LP systems

13. Install the rear panel and secure screws indicated in **blue**.

Nuvo-9000E/ P/ DE systems



Nuvo-9000LP systems

14. Install the Cassette module and secure screws indicated in **blue** to complete the enclosure installation.

> **NOTE**
>
> *Not applicable to Nuvo-9000LP systems.*

Install the Cassette module

Secure the screws indicated

4 Driver Installation

Neousys MezIO® module provides application-oriented functionality to your Neousys rugged embedded system. Incorporating computer signals, power rails and control signals, the module can further be customized to suit your needs!

For the latest MezIO® drivers, please visit our Support > Downloads & Drivers > MezIO. You should see a list of MezIO® modules and corresponding drivers. You may click on Details and a window should appear with driver details. The window content should show compatible operating system(s), driver file size, when (date) it was released and a download button.

When downloading a driver, make sure you download the driver that is for your operating system and it matches the MezIO® module installed.

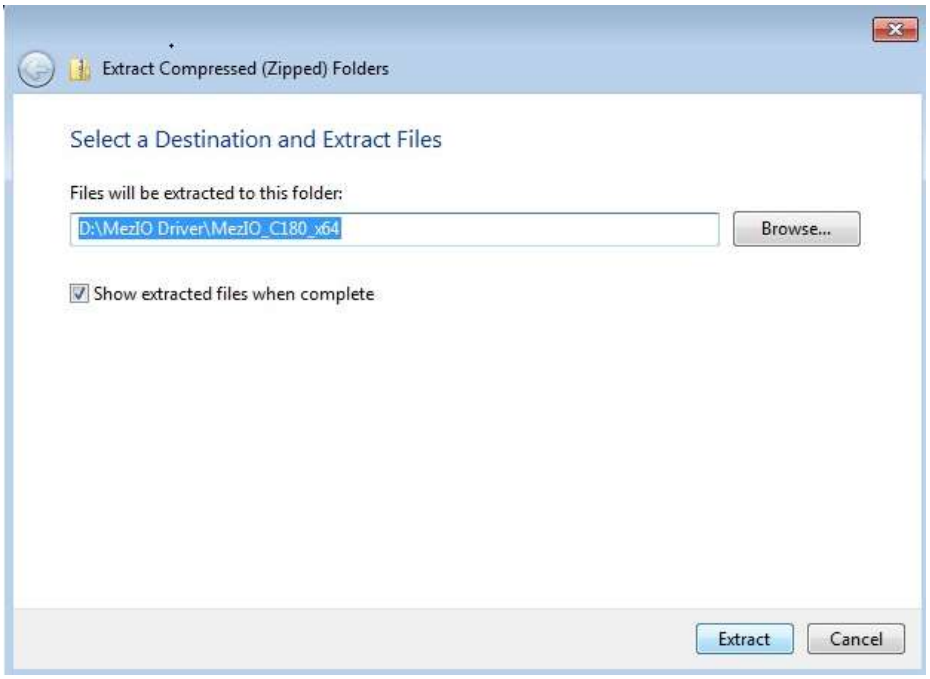
4.1 MezIO® C180/ C181 Driver Installation

The MezIO® C180/ C181 driver is delivered in a compressed package.

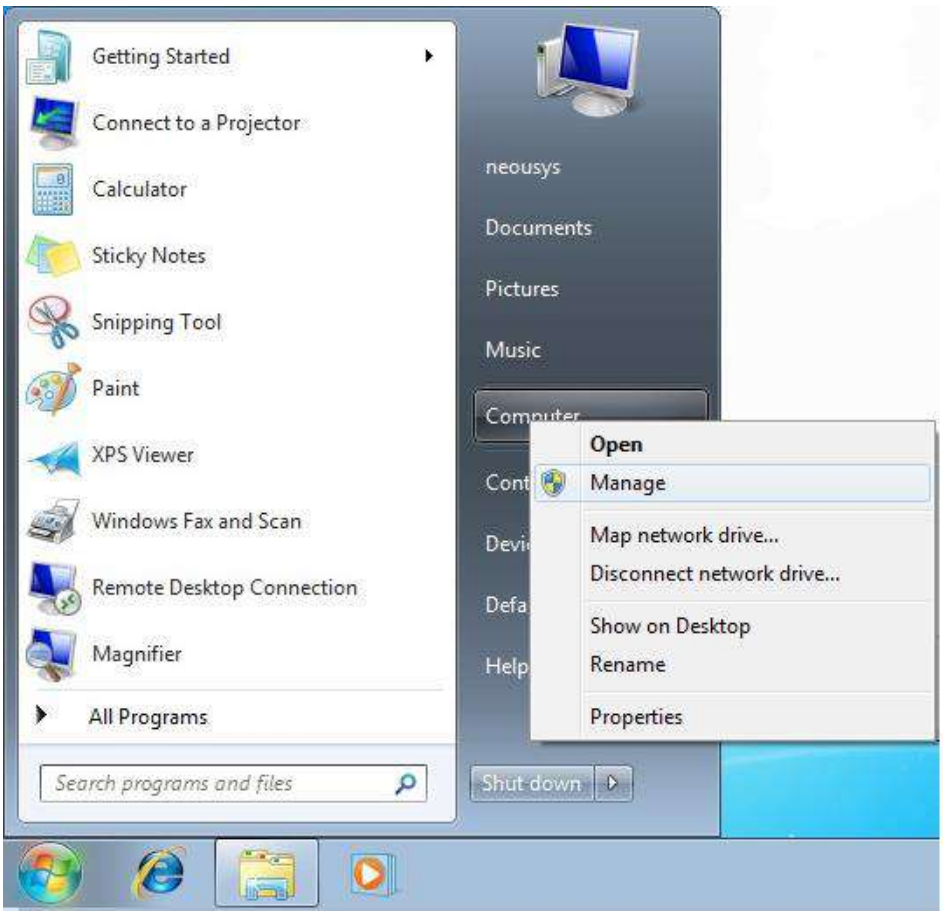
To install the driver, please refer to the following steps:

1. Choose your MezIO® driver version and click Download.
2. Go to the directory where the downloaded file is saved, right-click and choose to “Extract All”.

3. Select a directory you wish to save the files to by clicking on “Browse” then click on “Extract” at the bottom right corner.

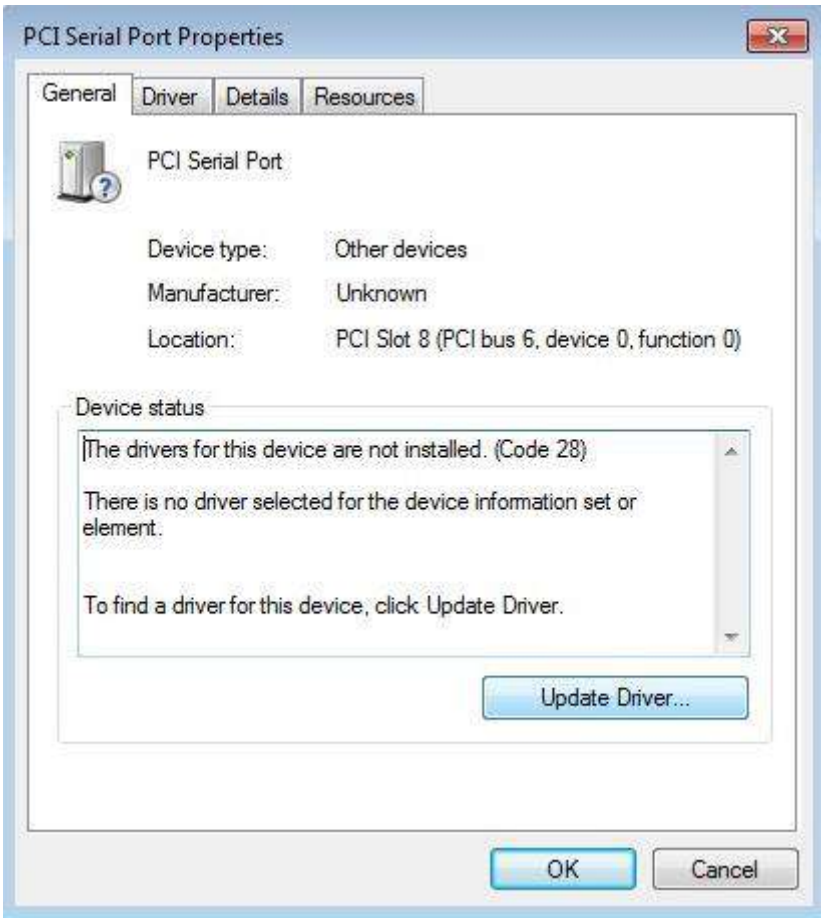


4. Once the files have been extracted to the desired folder, you may begin installing the driver by going to Start > right-click on My Computer > Manage.

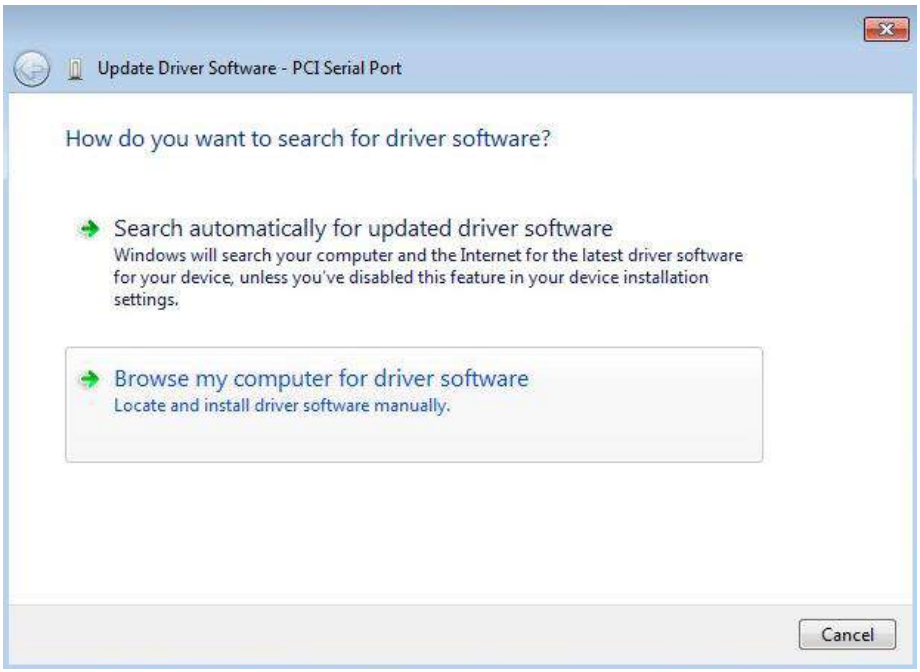


5. Click on device manager and you should see a device without driver (indicated by an exclamation mark).

6. Double click on it to bring up the device's properties and click on "Update Driver".

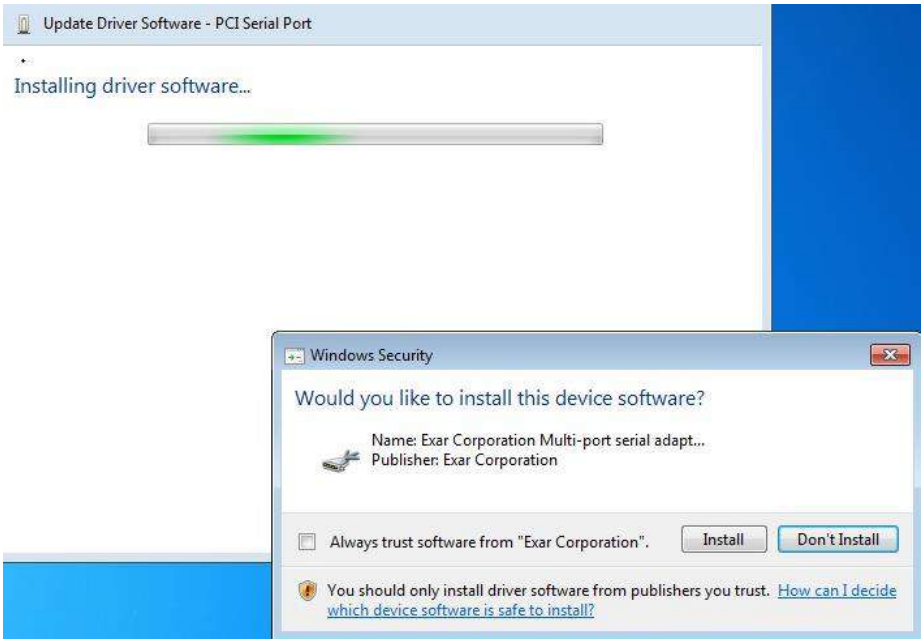


7. Select the option "Browse my computer for driver software".



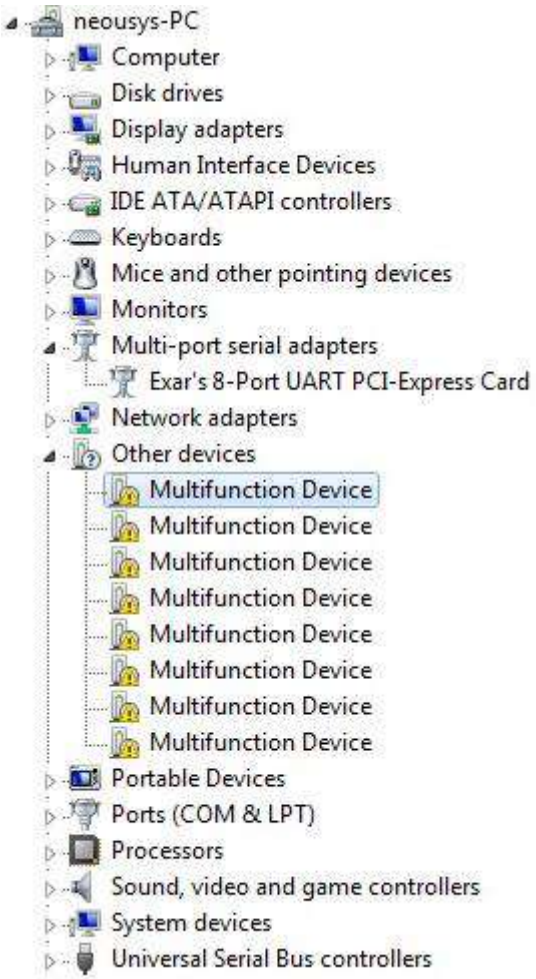
8. Click on “Browse” to point to the directory where the driver files were extracted to and click on Next.

9. A Windows Security prompt will appear. Click on Install to begin the installation process.

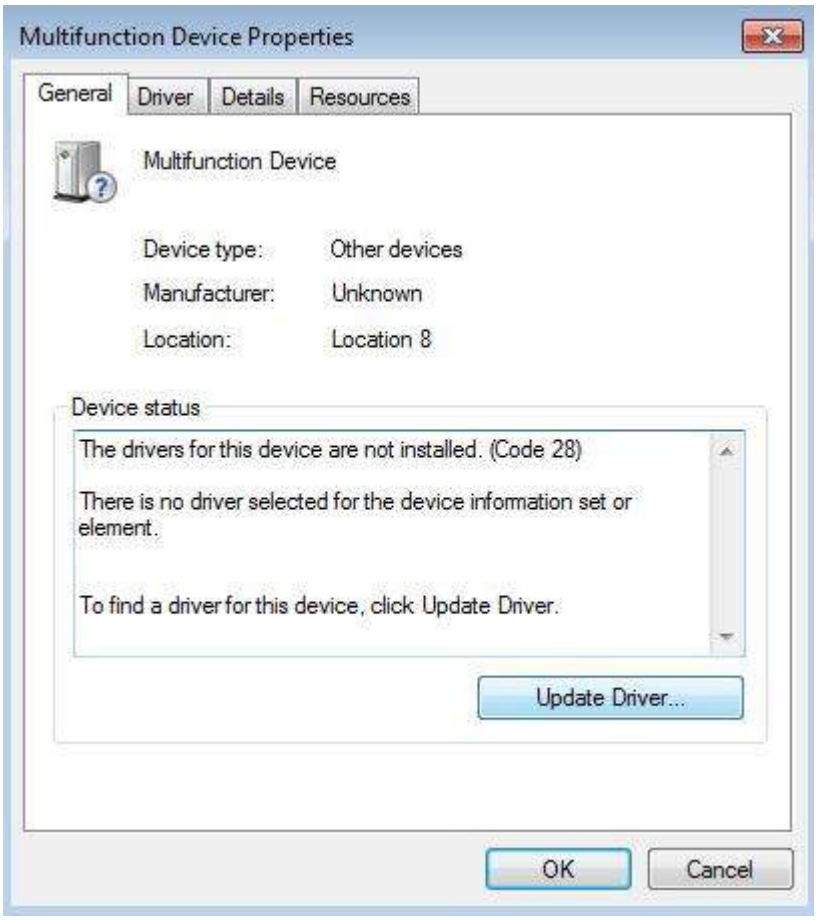


10. The installation process may take up to a few minutes. When completed, the following message should appear.

11. At this stage, you should see eight (8) other “Multifunction Device” without driver (indicated by exclamation mark).



12. Double click on one for device's properties and click on "Update Driver".

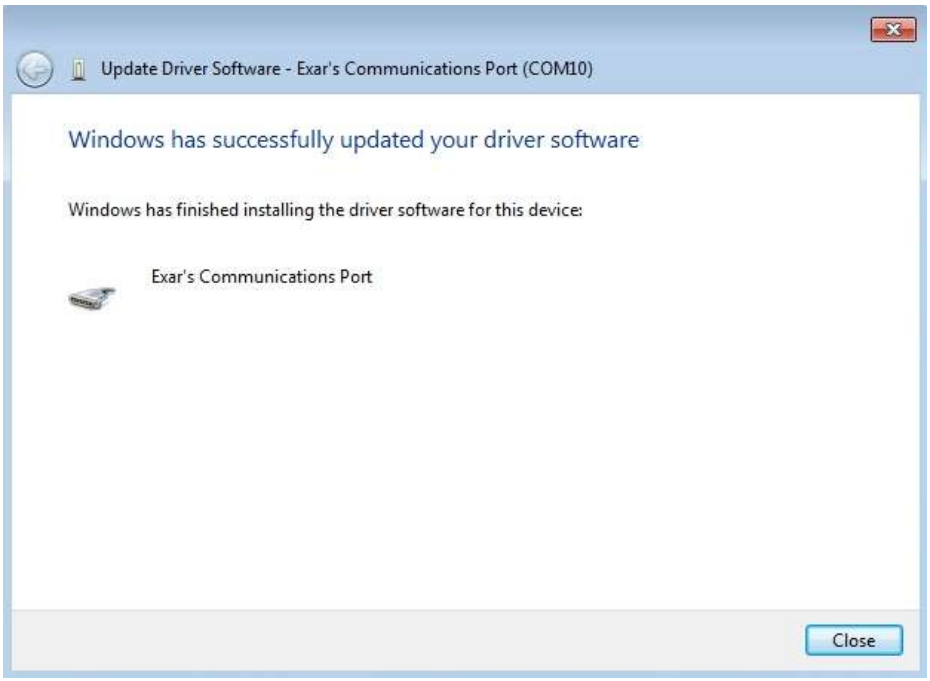


13. Select the option "Browse my computer for driver software".

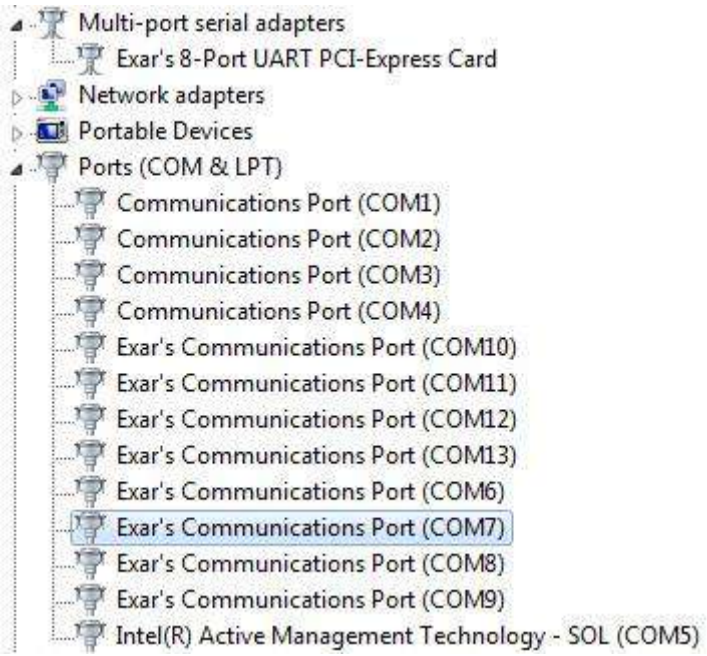
14. Click on “Browse” to point to the directory where the driver files were extracted to and click on Next.

15. A Windows Security prompt will appear. Click on Install to begin the installation process.

16. The installation process may take up to a few minutes. When completed, the following message should appear.



17. Repeat the “Update Driver” procedures (steps 11~16) for the other seven (7) Multifunction Devices until they are all installed.

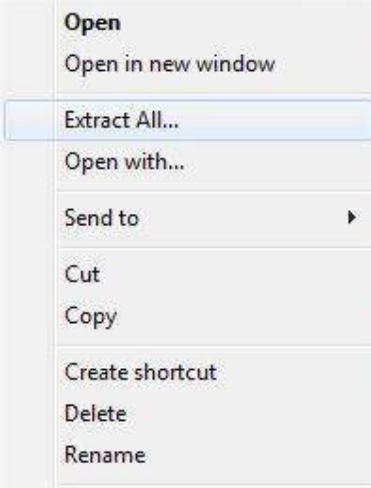


4.2 MezIO® D220/ D230/ D330 Driver Installation

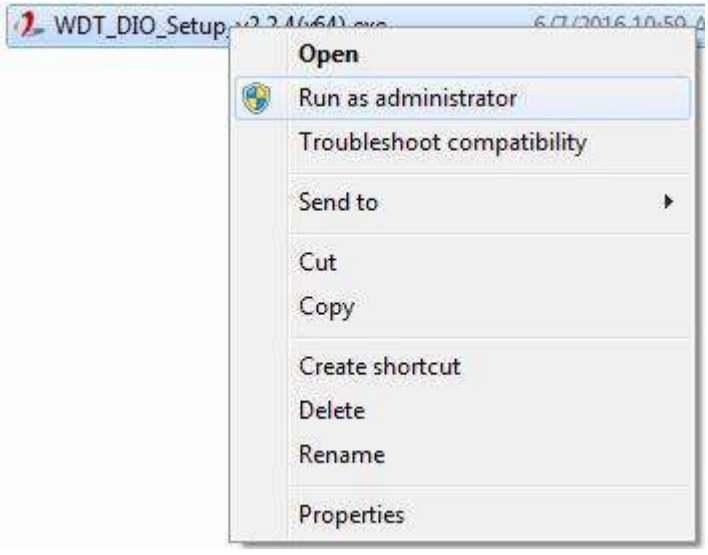
The MezIO® driver package is delivered in a compressed package. You must download the package and extract the file in order to install the driver. Remember the path you extracted to, go to the directory, locate the “auto-execute” (.exe) file and follow the instructions below.

To install the driver, please refer to the following steps:

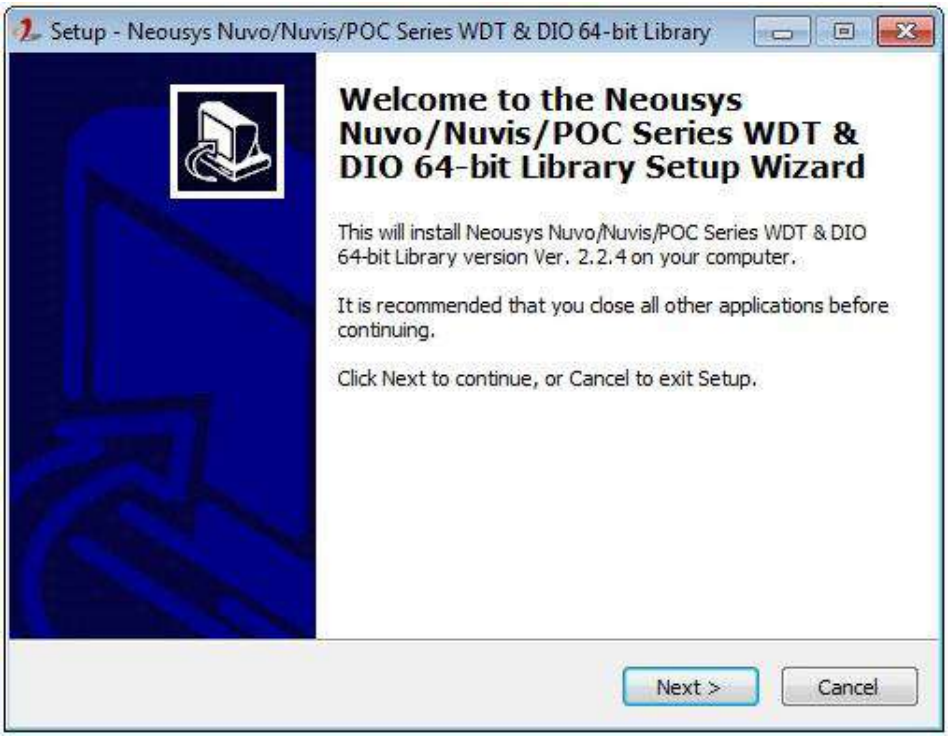
1. Choose the MezIO® driver version that matches your operating system and click Download.
2. Go to the directory where the downloaded file is saved, right-click and choose “Extract All” and remember the path where files are extracted to.



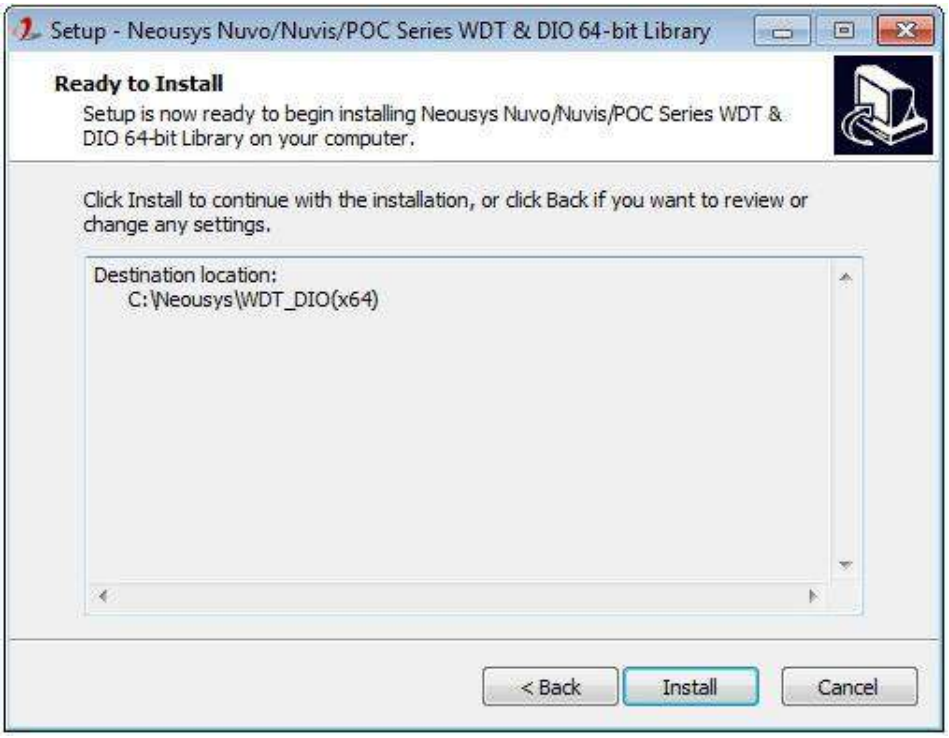
3. Locate the “auto-execute” (.exe) file that was extracted. Right-click on the “.exe” file, choose Run as administrator.



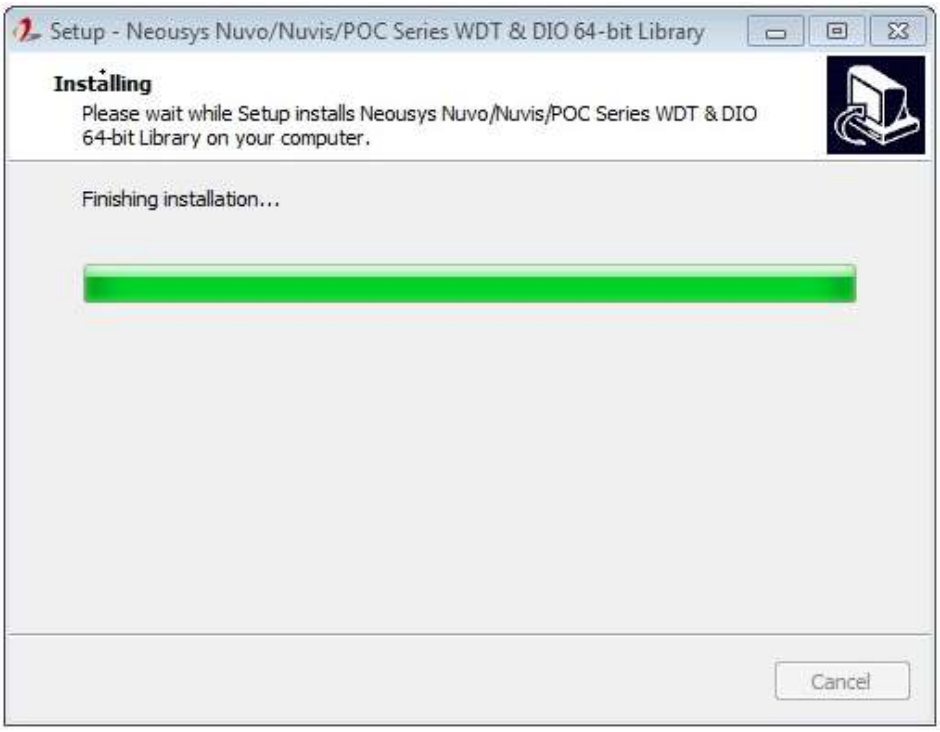
4. The installation screen will show and follow the instructions shown, click on “Next >” when ready.



5. Once setup has gathered system hardware information, it is ready to install. Click on “Install” to being.



6. Please be patient as the installation process may take up to a few minutes.



7. When completed, it will prompt you for an immediate system restart or you may choose to restart later. Make your selection and click on “Finish”. If you choose to restart immediately, please remember to save and close your work/ tasks before doing so. Failure to do so may result in permanent data loss!