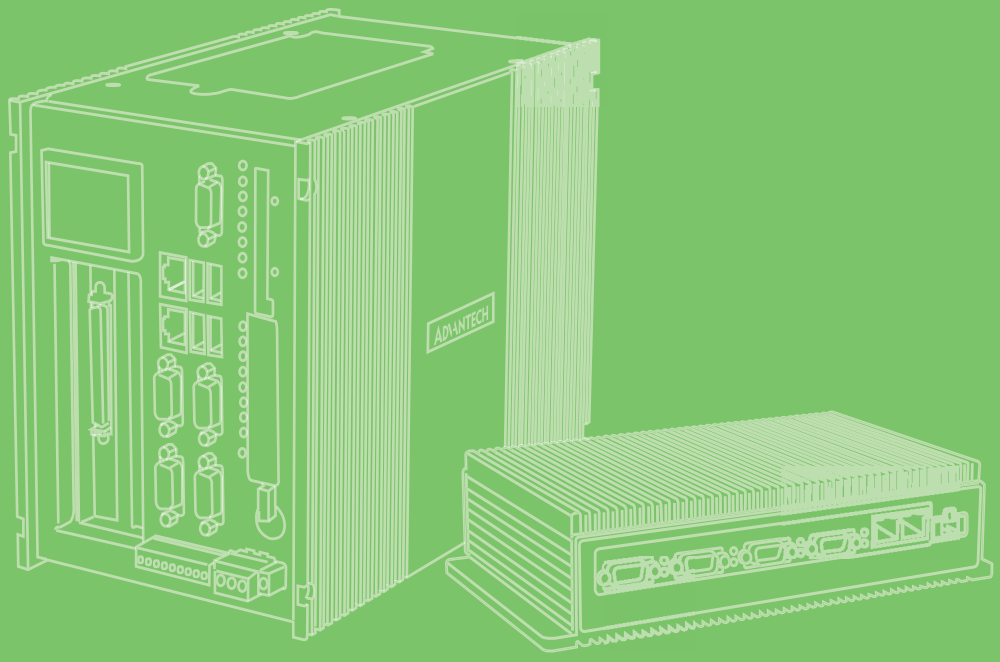
User Manual



UNO-420

工業用網關

Intel® Atom™ PoE Powered Device Sensing Gateway with 3 x COM, 2 x LAN(1 x PoE), 8 x GPIO, HDMI, USB3.0

ADVANTECH

Enabling an Intelligent Planet

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Acknowledgements

Support

For more information on this and other Advantech products, please visit our websites at: http://www.advantech.com

For technical support and service, please visit our support website at:

http://support.advantech.com/

UNO-420, UNO-420-E0A, UNO-420-E1A, UNO-420-E2A, UNO-420-E3A,
UNO-421-E0A, UNO-421-E0A, UNO-421-E1A, UNO-421-E2A, UNO-421-E3A,
UNO420E0A1901-T, UNO420E0A1902-T, UNO420E0A1903-T, UNO420E0A2001-T,
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UNO421E0A2102-T, UNO421E0A2103-T, UNO420E0A2201-T, UNO420E0A2202-T,
UNO420E0A2203-T, UNO421E0A2201-T, UNO421E0A2202-T, UNO421E0A2203-T

Part No. 2003042000 Edition 1
Printed in China June 2019

Product Warranty (2 years)

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandize authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Declaration of Conformity

CE

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from Advantech. Please contact your local supplier for ordering information.

FCC Class A

Note: 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 his own expense.

警告使用者

這是甲類測試產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Technical Support and Assistance

1. Visit the Advantech web site at www.advantech.com/support where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
   - Product name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

Safety Precaution - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage.

- To avoid electrical shock, always disconnect the power from your PC chassis before you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
- Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated into the equipment.
    - The equipment has been exposed to moisture.
    - The equipment does not work well, or you cannot get it to work according to the user's manual.
    - The equipment has been dropped and damaged.
    - The equipment has obvious signs of breakage.
15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -40°C (-40° F) OR ABOVE 80°C (180°F) for UNO-420.
16. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER, DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.
17. ATTENTION: Danger d'explosion si la batterie est mal REMPLACE. REMPLACER UNIQUEMENT PAR LE MEME TYPE OU EQUIVALENT RECOMMANDÉ PAR LE FABRICANT, jeter les piles usagées SELON LES INSTRUCTIONS DU FABRICANT.
18. The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70 dB (A).

DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

安全指示

1. 請仔細閱讀此安全操作說明。
2. 請妥善保存此用戶手冊供日後參考。
3. 用濕抹布清洗設備前，請確認拔除電源線。請勿使用液體或去污噴霧劑清洗設備。
4. 對於使用電源線的設備，設備周圍必須有容易接觸到的電源插座。
5. 請勿在潮濕環境中試用設備。
6. 請在安裝前確保設備放置在可靠的平面上，意外摔落可能會導致設備損壞。
7. 設備機殼的開孔適用於空氣對，從而防止設備過熱。請勿覆蓋開孔。
8. 當您連接設備到電源插座前，請確認電源插座的電壓符合要求。
9. 請將電源線佈置在人們不易絆倒的位置，請勿在電源線上覆蓋任何雜物。
10. 請注意設備上所有的警告標示。
11. 如果長時間不使用設備，請拔除與電源插座的連結，避免設備被超標的電壓波動損壞。
12. 請勿讓任何液體流入通風口，以免引起火灾或短路。
13. 請勿自行打開設備。為了確保您的安全，請透過經認證的工程師來打開設備。
14. 如遇下列情況，請由專業人員維修：
    - 電源線或插頭損壞；
    - 設備內部有液體流入；
    - 設備曾暴露在過度潮濕環境中使用；
    - 設備無法正常工作，或您無法透過用戶手冊來正常工作；
    - 設備摔落或損壞；
    - 設備有明顯外觀損；
15. 請勿將設備放置在超出建議溫度範圍的環境，即不要低於 -40° C （-40° F）或高於 80° C （180° F），否則可能會造成設備損壞。
16. 注意：若電池更換不正確，將有爆炸危險。因此，只可以使用製造商推薦的同一種或者同等型號的電池進行替換。請按照製造商的指示處理舊電池。
17. 根據 IEC 704 - 1:1982 規定，操作員所在位置音量不可高於 70 分貝。
18. 限制區域：請勿將設備安裝於限制區域使用。
19. 免責聲明：請安全訓示符合 IEC 704 - 1 要求。研華公司對其內容之準確性不承擔任何法律責任。

Contents

Chapter 1

Overview

This chapter provides an overview of UNO-420 specifications. Sections include:

- Introduction
- Safety precautions
- Accessories

1.1 Introduction

The UNO-420 is an embedded Hardware Ready Platform that can shorten your development time and offers a wide array of networking interfaces to fulfill the extensive needs of different projects. UNO-420 includes Intel's latest Atom technology and provides rich interfaces including up to 3 x COM port, 2 x LAN port (one with Power Over Ethernet (PoE) technology), and 8 x GPIO.

The UNO-420 can operate in wide temperatures (from -20 to 60°C). The UNO-420 uses Intel Atom CPUs and built-in onboard 2G DDR3L RAM for heavy programs.

UNO-420 provides great expansion including 1 x Full-size mPCIe and 1 x Half-size mPCIe support. With these expansions UNO-420 has great expandability for Wi-Fi, 3G/LTE, GPS.

With multiple OS and driver support, such as Ubuntu,Win10 2019 LTSC, users can integrate applications easily in an application ready platform that can provide versatile functions to fulfill diverse requirements.

1.2 Safety Precautions

The following sections tell how to make each connection. In most cases, you will simply need to connect a standard cable.

Warning! *Always disconnect the power cord from your chassis whenever you are working on it. Do not connect while the power is on. A sudden rush of power can damage sensitive electronic components. Only experienced electronics personnel should open the chassis.*

Warning! *Toujours à la terre pour éliminer toute charge d'électricité statique avant toucher UNO-420. Appareils électroniques modernes sont très sensibles à charges d'électricité statique. Utilisez un bracelet antistatique à tout moment. Placez tous composants électroniques sur une surface antistatique ou dans un statique-sac blindé.*

Caution! *Always ground yourself to remove any static electric charge before touching UNO-420. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag.*

Caution! *Toujours débrancher le cordon d'alimentation de votre boîtier lorsque vous êtes travailler. Ne branchez pas lorsque l'appareil est allumé. Un afflux soudain de puissance peut endommager les composants électroniques sensibles. Seulement connu personnel de l'électronique devraient ouvrir le châssis.*

1.3 Accessories

Please refer below for the accessory list:

- 2-pin connector (PWR): 1652002205
- 3-pin connector (COM): 1652000295
- 8-pin (2*4) connector (8 x GPIO): 1652007590-01
- User Manual
- China RoHs
- Warranty Card
- Din-rail kit (Optional) : 1960018849T000

If anything is missing or damaged, contact your distributor or sales representative immediately.

- System Hardware Specification
  - CPU: Intel Atom Single Core E3815 1.46GHz
  - Memory: 2G DDR3L-1066 MHz
  - Graphic Engine: Intel HD Graphic
  - Storage: Built-in 32GB eMMC, 1 x M.2 (up to 512GB)
  - Ethernet:
    * Chipset: Realtek_RTL8119I-CG X 2
    * 1 x Ethernet (RJ45) with PoE IEEE 802.3at (Type 2) PD;
      1 x Ethernet giga LAN
  - Serial: 2 x DB9 selectable mode for RS-232/422/485,(Terminal block); 1 x RS-485 (Terminal block)
  - GPIO Multi-function I/O: 8 channel, independently programmable, DAC, ADC. 12 bit
  - 1 x USB3.0
  - Display:1 x HDMI, support 1920 x 1080 @60Hz 24bpp
  - Expansion: 1 x Full-size mPCIe slot; 1 x Half-size mPCIe slot
- Operating Temperature:-20 to 60 °C
- Storage Temperature: -40 ~ 80 °C (-40 ~ 180 °F)
- Relative Humidity: 10 ~ 95% RH @ 40°C, non-condensing
- Power Requirements: 10-30Vdc or PoE-In IEEE 802.3at Compliant (Type 2) PD
- Power Consumption: 12 W (Typical), 20 W (Max)
- Software OS: Ubuntu Linux, Windows 10 2019 LTSC

Applicable Models:
UNO-420, UNO-420-E0A, UNO-420-E1A, UNO-420-E2A, UNO-420-E3A,
UNO-421-E0A, UNO-421-E0A, UNO-421-E1A, UNO-421-E2A,
UNO-421-E3A, UNO420E0A1901-T, UNO420E0A1902-T,
UNO420E0A1903-T, UNO420E0A2001-T, UNO420E0A2002-T,
UNO420E0A2003-T, UNO421E0A1901-T, UNO421E0A1902-T,
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UNO421E0A2103-T, UNO420E0A2201-T, UNO420E0A2202-T,
UNO420E0A2203-T, UNO421E0A2201-T, UNO421E0A2202-T,
UNO421E0A2203-T

Chapter 2

Hardware Functionality

This chapter shows how to setup the UNO-420's hardware functions, including connecting peripherals, setting switches and indicators.

Sections include:

- Introduction
- UNO-420 Interface
- LAN: Ethernet Connector
- Serial Connector
- GPIO Connector
- Power Connector
- USB Connector
- RTC Battery Specification
- Power Button/ Power Management
- Reset Button
- PCI Express Mini Card Socket

2.1 Introduction

The following figures show the connectors on UNO-420. The following sections give you information about each peripheral.

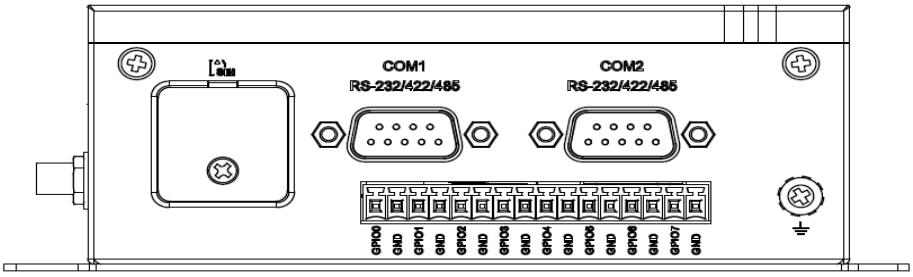


Figure 2.1 Left side view of UNO-420

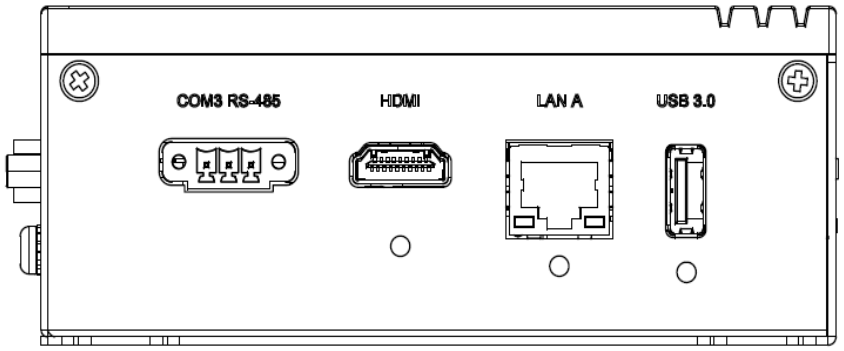


Figure 2.2 Bottom view of UNO-420

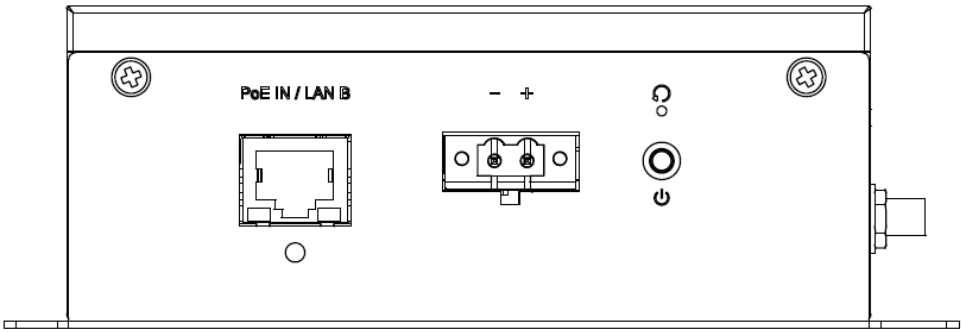


Figure 2.3 Right side view of UNO-420

2.2 UNO-420 Interface

The UNO-420 PoE Powered Device Sensing Gateway with 3 x COM, 2 x LAN (1 x PoE), 8 x Programmable GPIO, HDMI, USB3.0.

2.2.1 LAN: Ethernet Connector

UNO-420 is equipped with two Gigabit LAN controller. For the UNO-420, the controller chip used is an Realtek RTL8119E Ethernet controller that is fully compliant with IEEE 802.3u 10/100/1000 Base-T. The Ethernet port is a standard RJ-45 jack, and there is one support PoE-IN IEEE 802.3at. LED indicators are on the front to show its Link (Green LED) and Active (Green LED) status.

2.2.2 COM Port Interface (COM1, COM2, COM3)

COM1 (RS-232/422/485) DB9, 50~115.2kbps

COM2 (RS-232/422/485) DB9, 50~115.2kbps

COM3 (RS-485) Terminal block, 50~115.2kbps

2.2.3 GPIO Connector

GPIO0 to the GPIO7 pins are 0-5 V input/output and digital/analog configurable pins.

Note! *The GPIO port is powered by analog devices' AD5593R.*

Each pin has a 100K OHM series resistor between the connector and the AD5593R.

Caution! *This port is ESD-sensitive. An insulated GPIO connector that prevents direct ESD exposure to the I/O pins is recommended.*

2.2.4 Power Connector

UNO-420 comes with a Phoenix connector 10~30Vdc or RJ-45 PoE-In IEEE 802.3at Compliant (Type 2) PD (42.4~57.0 V) external power input and features reversed wiring protection. Therefore, it will not cause any damage to the system by reversed wiring of ground line and power line.

2.2.5 USB Connector

The USB interface supports Plug and Play, which enables you to connect or disconnect a device whenever you want, without turning off the computer. The UNO-420 provides one USB 3.0 connector.

2.2.6 RTC Battery Specification

The UNO-420 has an RTC Battery to ensure the setting in BIOS and system clock can be kept, even with power disconnected for a short time.

- **Type:** BR2032
- **Output Voltage:** 3 V_{DC}

2.2.7 Power Button/Power Management

Press the “PWR” button to power on or power off the UNO-420(ATX type). The UNO-420 supports the ACPI (Advanced Configuration and Power Interface). Besides power on/off, it support multiple suspend modes, such as Power on Suspend (S1), Suspend to RAM (S3), Suspend to Disk (S4). In S3 and S4 suspend mode, the power consumption can be less than 2W which meet criteria of Energy Star.

2.2.8 Reset Button

Press the “Reset” button to activate the hardware reset function.

2.2.9 PCI Express Mini Card Socket

The UNO-420 supports one full size and one half size socket for PCI Express mini cards.The (MINI1) interface is mainly targeted at supporting multiple wireless modules.

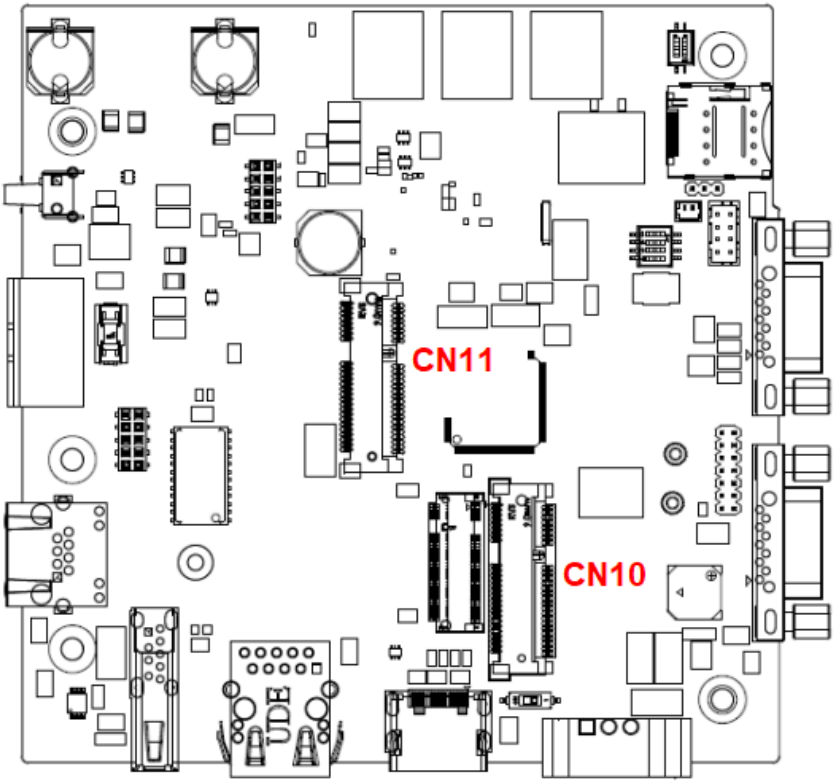


Figure 2.4 The UNO-420 supports 1x full size mPCIe slot (CN11), and 1x half size mPCIe slot (CN10)

Chapter 3

Initial Setup

This chapter introduces how to initialize the UNO-420.

Sections include:

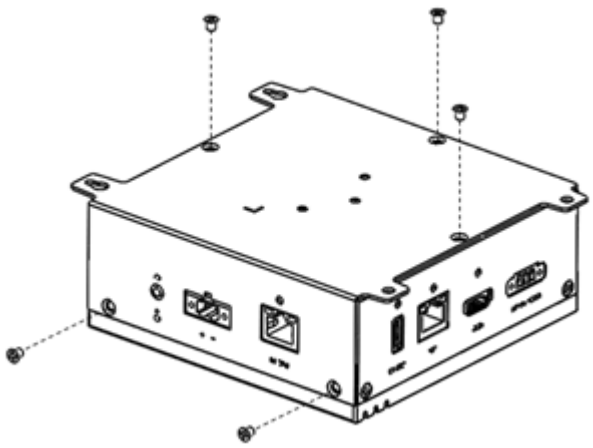
- Connecting Power
- Installing Wireless LAN Card and Antenna
- Assembling Din-rail / Wall mounting
- Reassign COM Port Number

3.1 Connecting Power

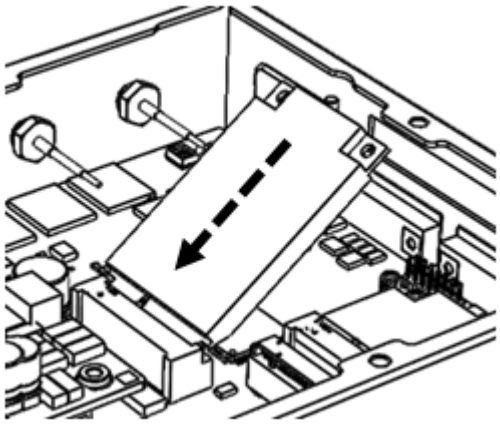
This product is intended to be supplied by a Listed Power Adapter or DC power source, rated at 10-30Vdc, 2A and Tma 60 degree C, if you need further assistance, please contact Advantech for further information.

3.2 Installing a Wireless LAN Card and Antenna

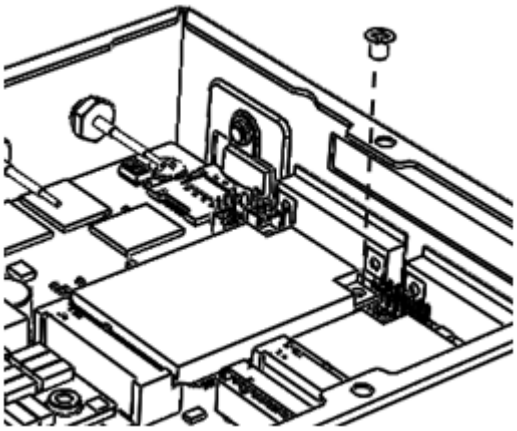
1. Loosen screws x 5.



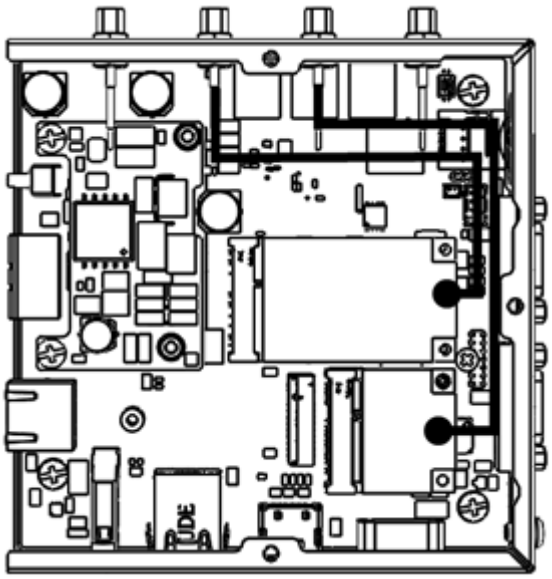
2. Insert wireless module into mPCIe slot.



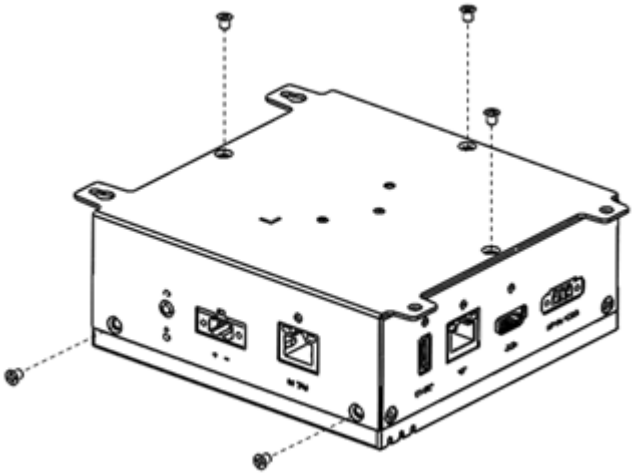
3. Fasten 2 x screws



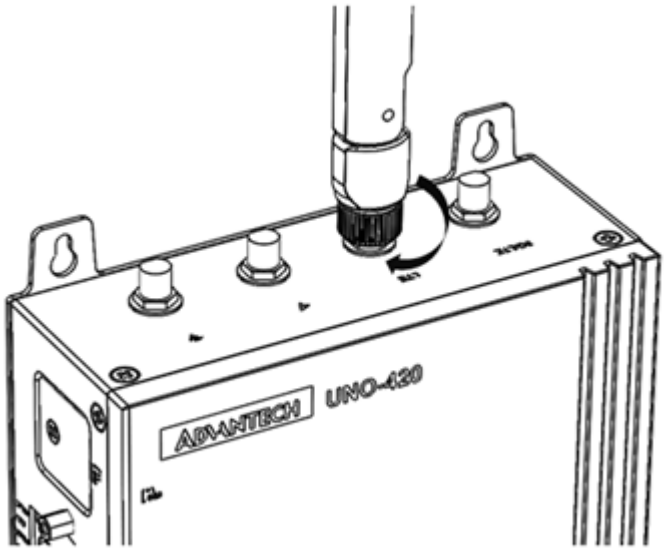
4. Assemble SMA socket to correspond SMA slot, then plug SMA cable onto wireless module.



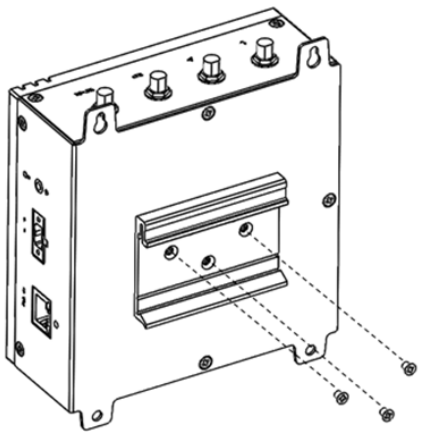
5. Fasten 5 x screws

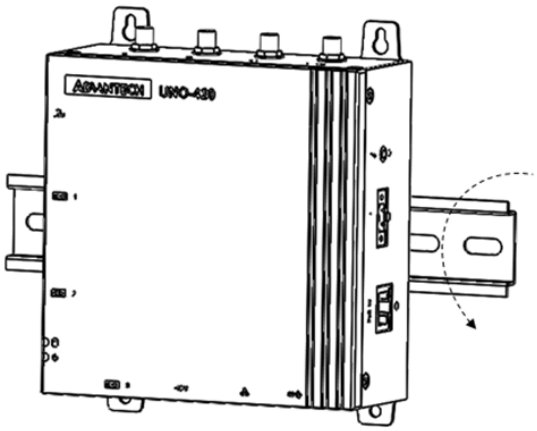


6. Assemble antenna.

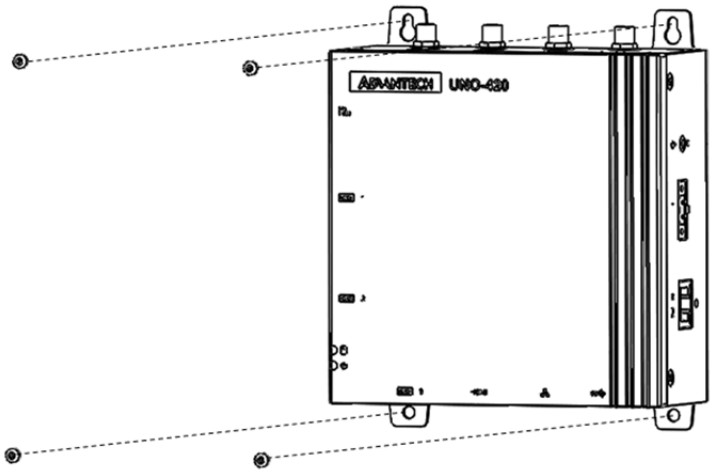


3.3 Mounting type: Din-rail



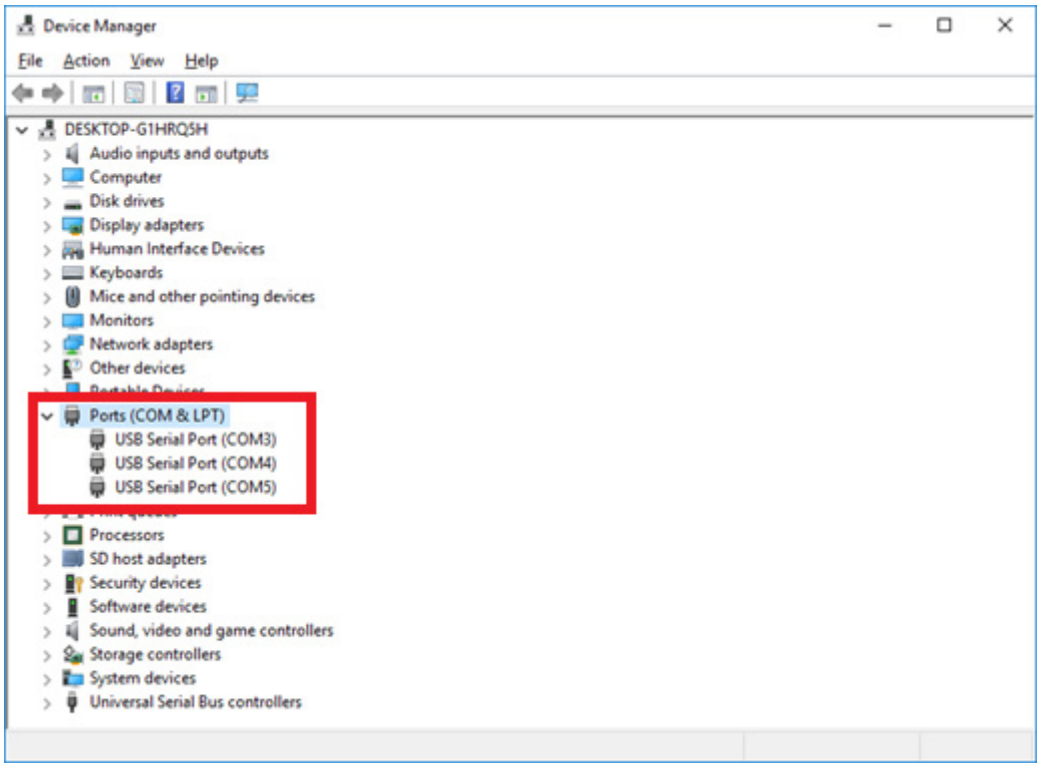


3.4 Mounting type: Wall-mount

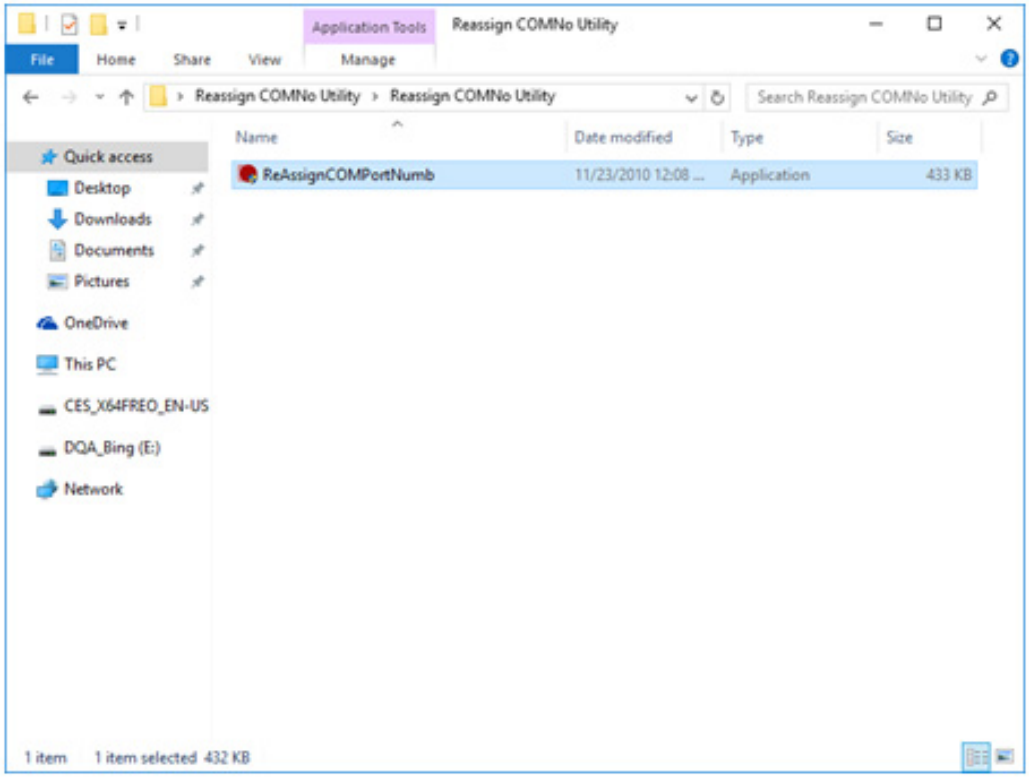


3.5 Reassign COM Port Number

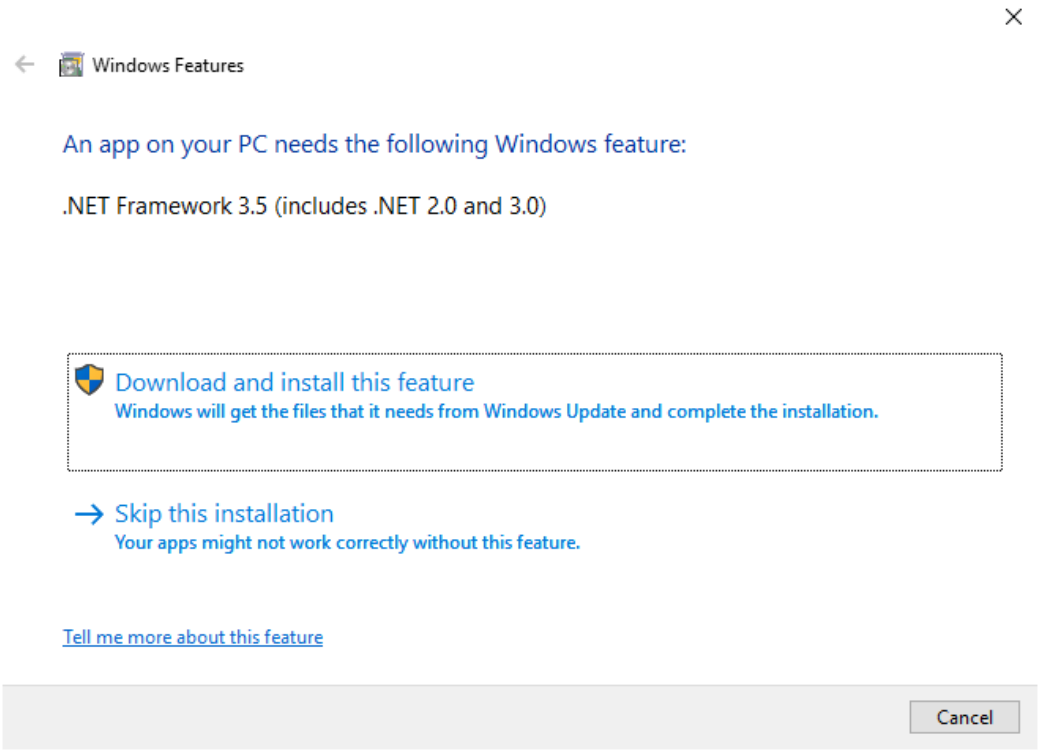
1. Use "Reassign COMNo Utility" to modify COM Port sequence.



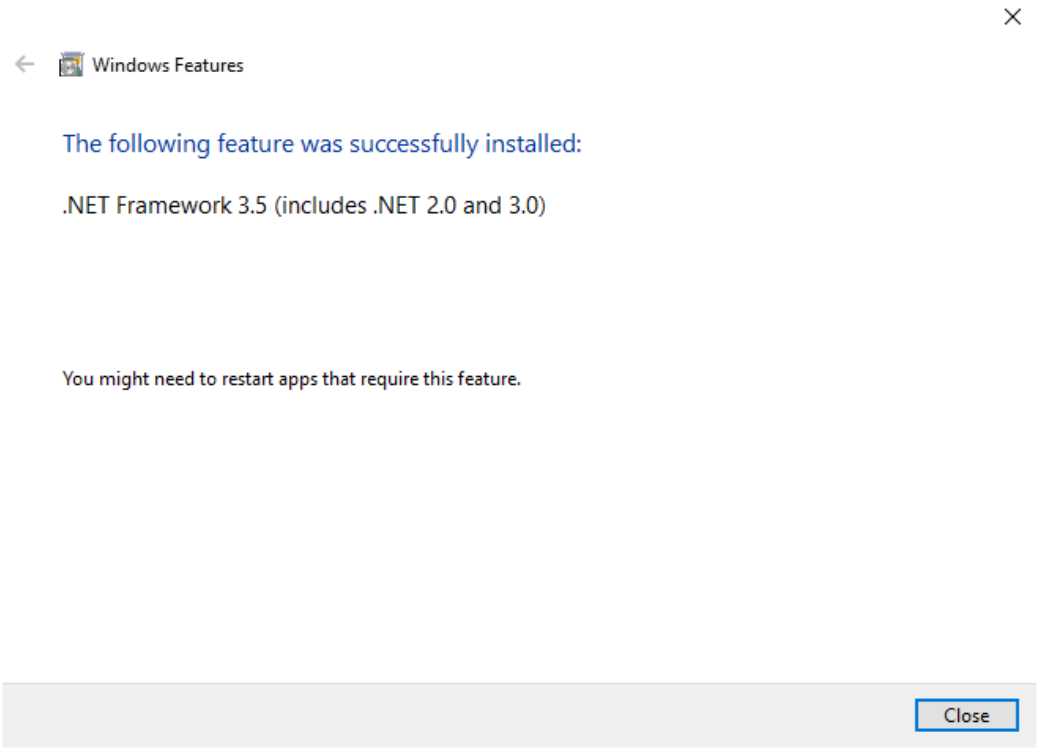
2. Run ReAssignCOMPortNumb.exe



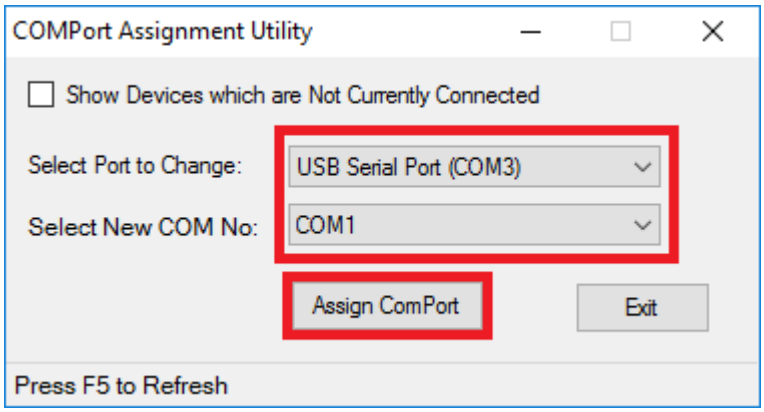
3. Download and install Net Framework v3.5 while connected to the network.

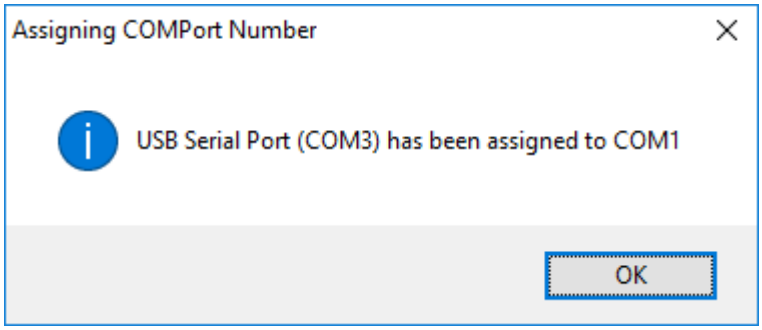


4. Wail until feature successfully installed.

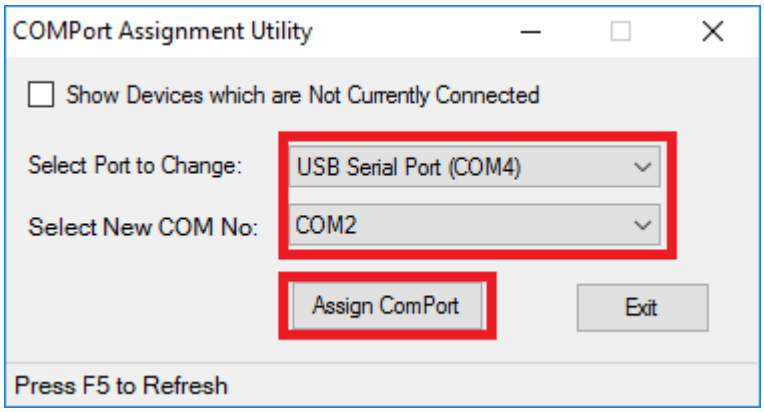


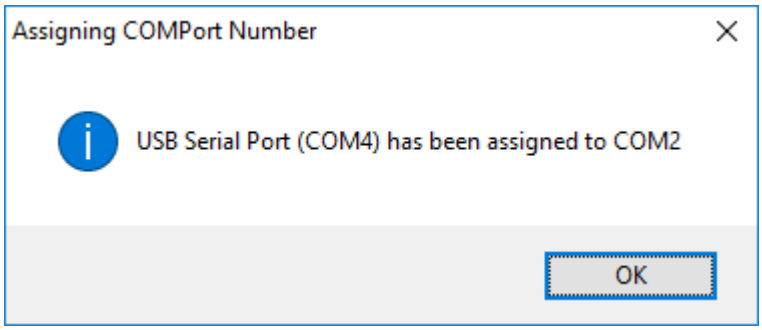
5. Modify COM3 to COM1



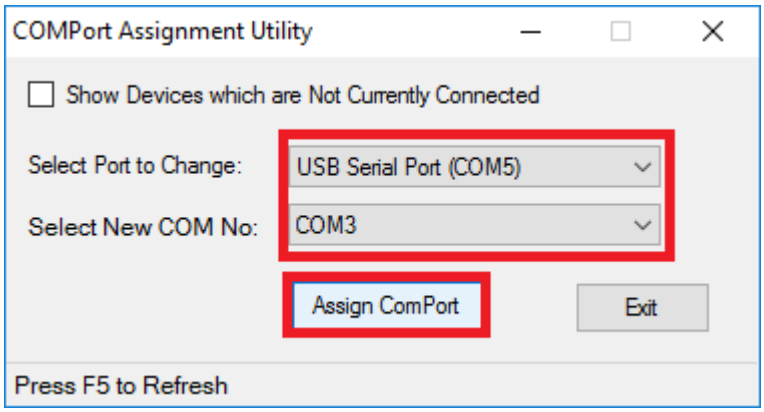


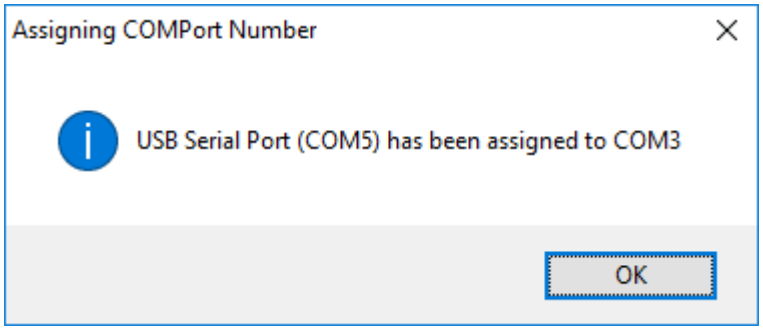
6. Modify COM4 to COM2



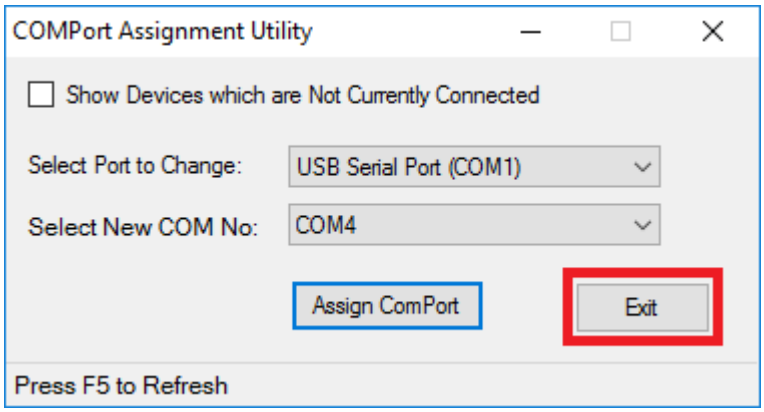


7. Modify COM5 to COM3

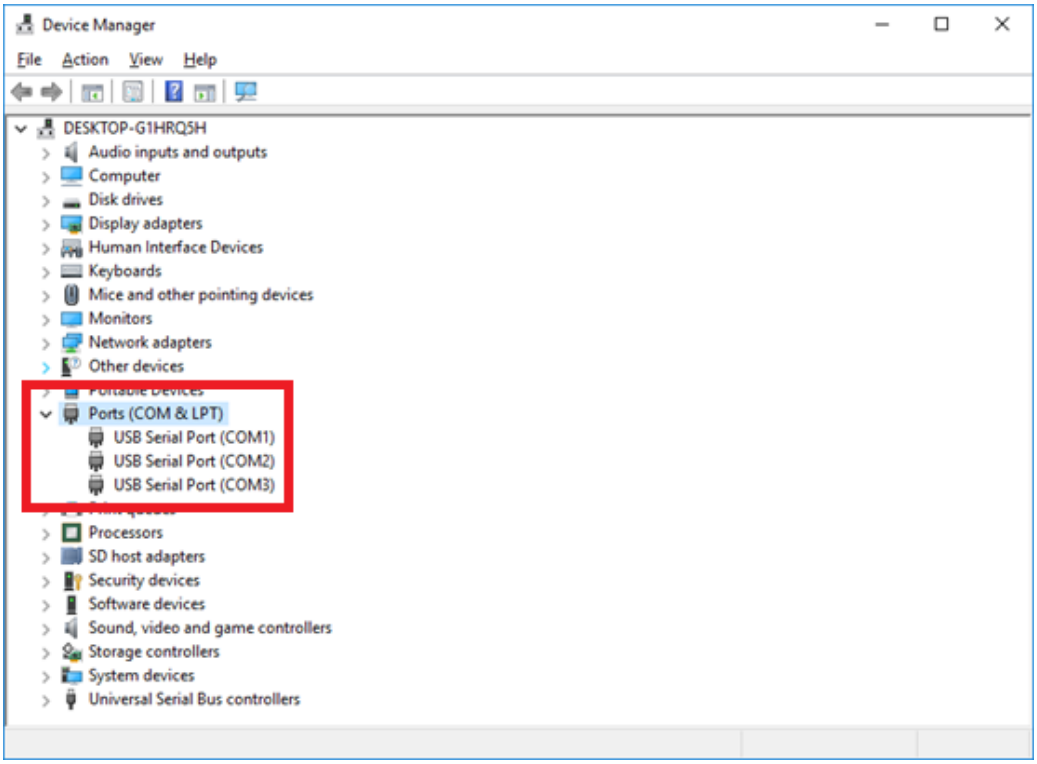




8. Click on "Exit" once finish setting



9. Go to Device Manager and check if COM port sequence been modified successfully



10. Reboot system.

3.6 AMI BIOS Setup

1. Introduction

With the AMI BIOS Setup program, you can modify BIOS settings and control the special features of your computer. The Setup program uses a number of menus for making changes and turning special features on or off. This chapter describes the basic navigation of the UNO-420 setup screens.

2. Entering Setup

Press the "Del" or "Esc." key during the Power On Self Test (POST) process to enter the BIOS setup screen, otherwise the system will continue the POST process.

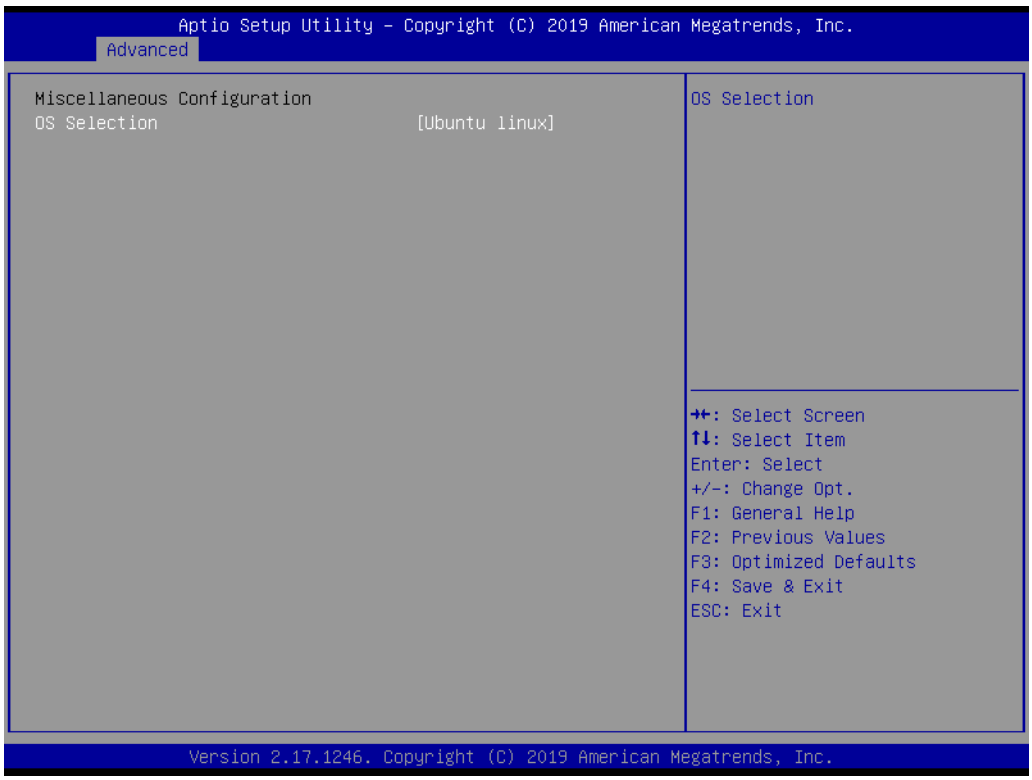
3. Main Setup

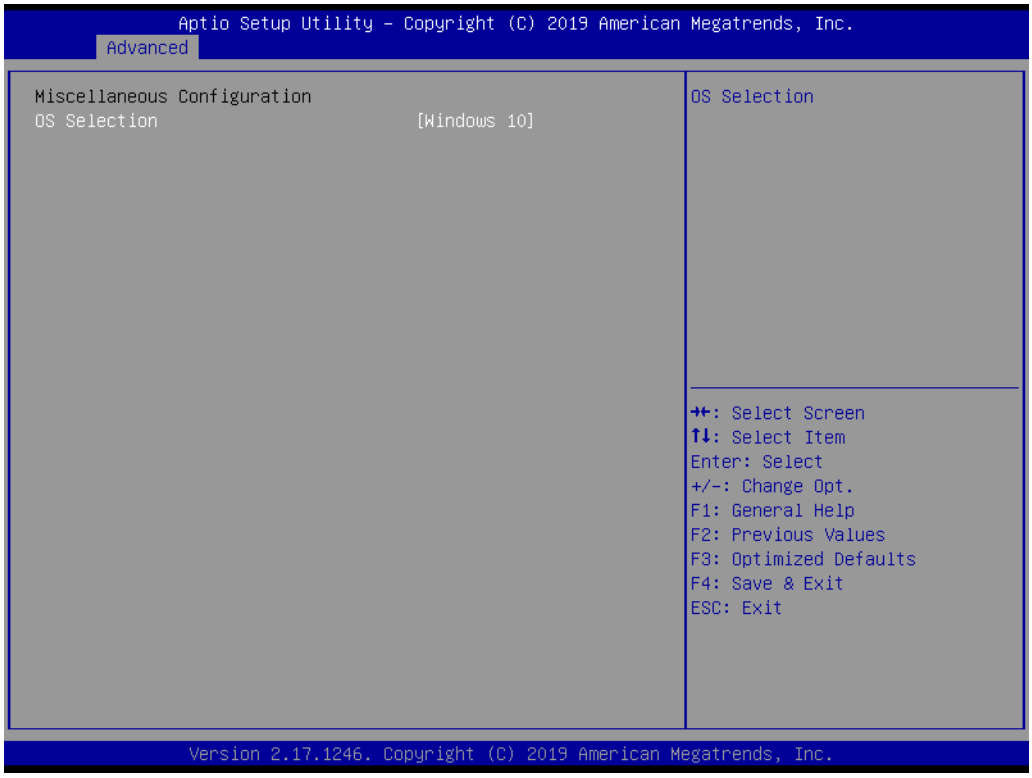
When you first enter the BIOS Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. There are two Main Setup options. They are described in this section. The Main BIOS Setup screen is shown below.

4. Miscellaneous Configuration

– OS Selection

This item allows the user to set the OS mode: "Ubuntu linux" or "Windows 10" Once selection done, click on "Esc" then click on "Save & Exit" to save the setting.

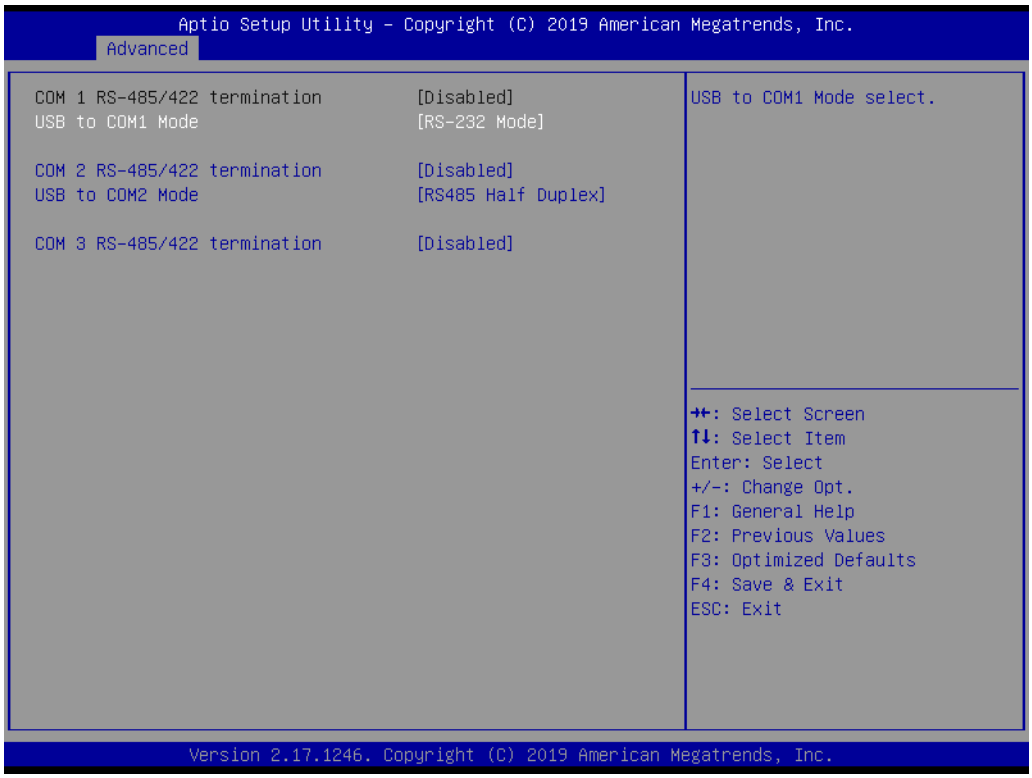




5. Super IO Configuration

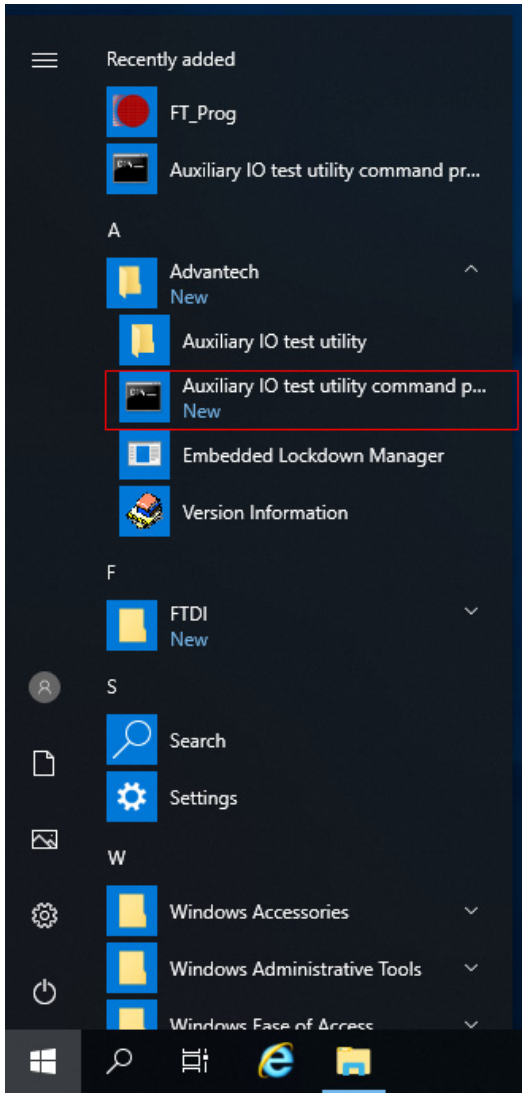
UNO-420 supports 2xRS-232/422/485 & 1-RS-485.

- Serial Port Configuration
  - Serial Port Termination
    This item allows users to enable or disable for "Serial Port".
  - Device Mode
    This item allows users to set the mode to RS-422/485. The default setting is "RS232".

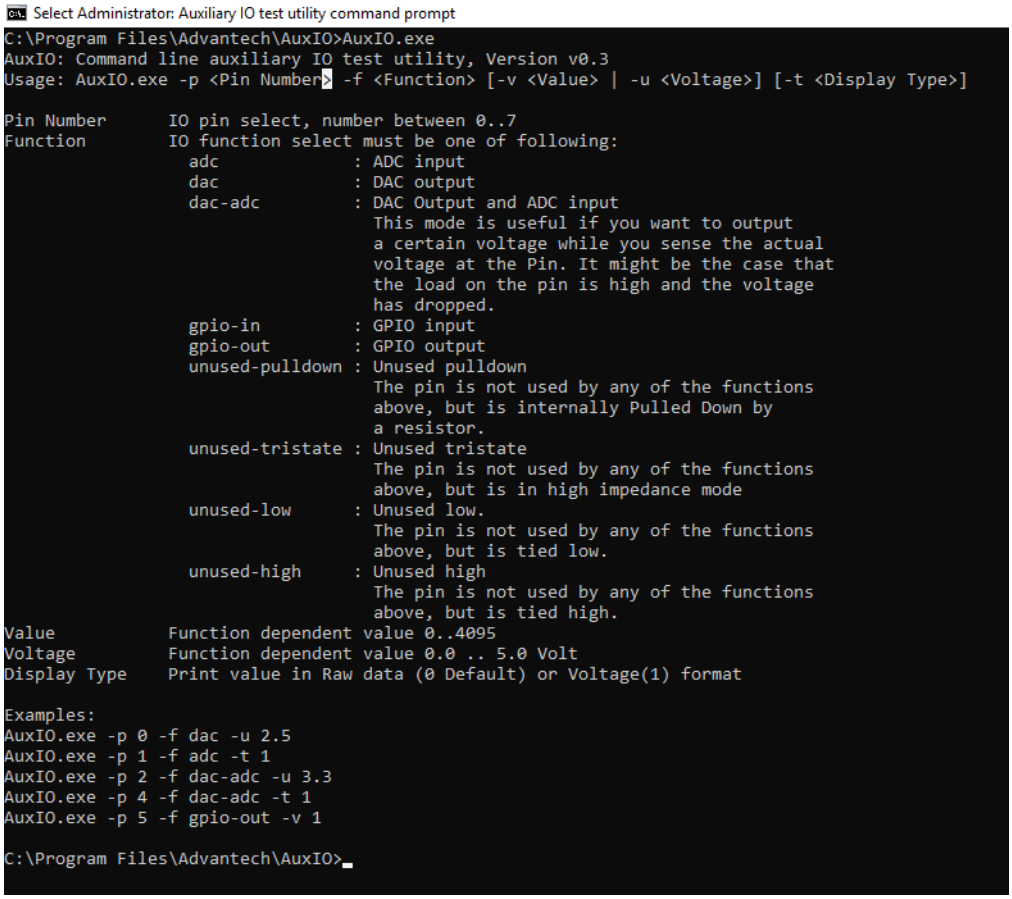


3.7 GPIO Programming Guide

1. Click on start up icon on Windows, go Advantech folder then select "Auxiliary IO test utility command selection"



2. Type in command "AuxIO.exe". It will show information of command type, definition and examples.



Appendix A

System Settings and Pin Assignments

A.1 System I/O Address and Interrupt Assignment

Table A.1: Interrupt Assignments	
Interrupt No.	**Interrupt Source**
NMI	**Parity Error Detected**
IRQ0	System timer
IRQ1	Standard 101/102-Key or Microsoft Natural PS/2Keyboard
IRQ2	Interrupt from controller 2 (cascade)
IRQ3	Communications Port (COM2)
IRQ4	Communications Port (COM1)
IRQ6	Available
IRQ8	System CMOS/Real-time clock
IRQ9	Microsoft ACPI-Compliant System
IRQ12	PS/2 Compatible Mouse
IRQ13	Numeric data processor
IRQ14	Reserved
IRQ15	Reserved

A.2 Board Connectors and Jumpers

There are several connectors and jumpers on the UNO-420 board. The following sections tell you how to configure the UNO-420 hardware setting.

Figure A.1 shows the locations of UNO-420's connectors and jumpers.

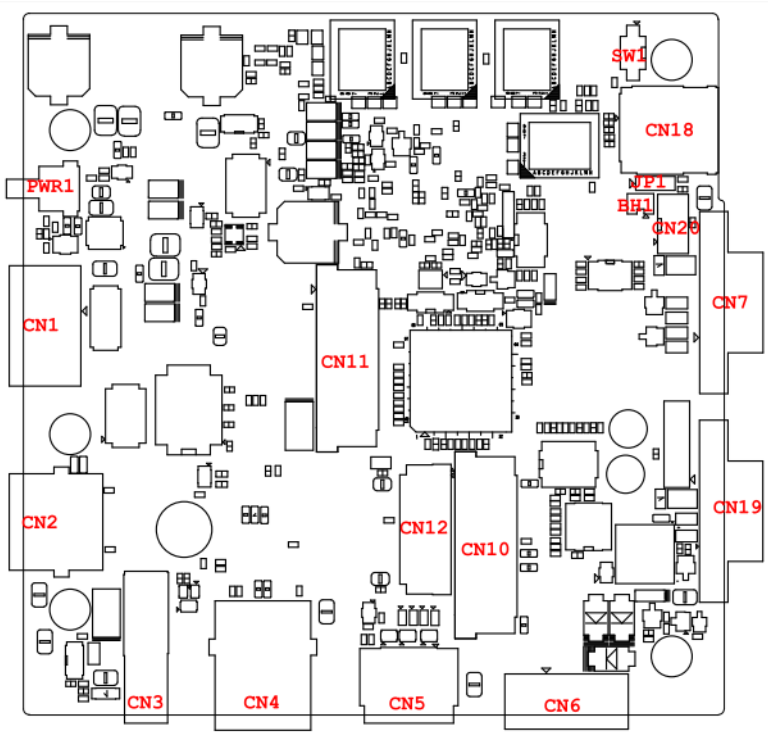


Figure A.1 Connector & Jumper Locations for UNO-420 (front)

Table A.2: Connectors and Jumpers on MB	
Label	**Function**
BN1	RTC battery connector
CN1	Power in connector
CN2	RJ45 connect (POE)
CN3	USB3.0
CN4	RJ45 connector
CN5	HDMI connector
CN6	COM3 connector
CN7	COM1 connector
CN10	Half mPCIe socket
CN11	Full mPCIe socket
CN12	M.2 card socket
CN18	SIM cand connector
CN19	COM2 connector
SW1	AT/ATX Mode
SW2	COM1/COM2 Hi / Low Resistor setting
SW3	COM3 Termination Resistor setting
JP1	Clear CMOS switch
PWR1	Power button
RST1	Reset button

A.3 Power Connector (PWR)

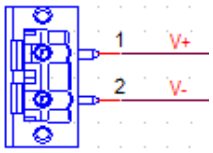


Table A.3: Power connector pin assignments		
Pin	**Signal**	**Description**
1	Power IN V+	10 ~ 30V_{DC}
2	Power IN V- (GND)	

A.4 HDMI Display Connector

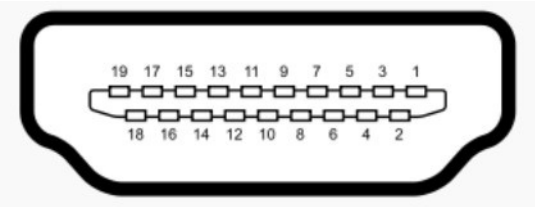


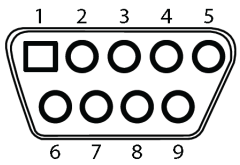
Table A.4: HDMI Display Connector

Pin	Signal	Pin	Signal
1	TMDS Data2+	2	TMDS Data2 Shield
3	TMDS Data2-	4	TMDS Data1+
5	TMDS Data1 Shield	6	TMDS Data1-
7	TMDS Data0+	8	TMDS Data0 Shield
9	TMDS Data0-	10	TMDS Clock+
11	TMDS Clock Shield	12	TMDS Clock-
13	CEC	14	Reserved
15	SCL	16	SDA
17	DDC/CEC/HEC Ground	18	+5 V Power (max 50 mA)
19	Hot Plug Detect		

A.5 COM1/COM2 RS232/422/485 connector

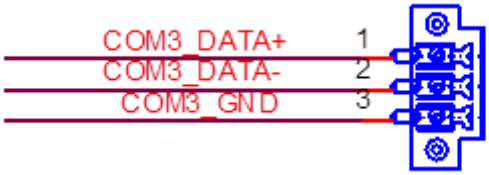
D-SUB Conn. 9P 90D(M) DIP

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



A.6 COM3 RS-485 connector

Pin 1	COM3_DATA+
Pin 2	COM3_DATA-
Pin 3	COM3_GND



A.7 Mini PCIE slot (MINIPCIE)

Supports PCI1.1, PCI1.2 Power Definition

Pin	Signal	Description	Pin	Signal	Description
52	+3.3Vaux / +3.3V	PCI1.1 was +3.3V, PCI1.2 was +3.3Vaux	51	Reserved	NC
50	GND		49	Reserved	NC
48	+1.5V		47	Reserved	NC
46	NC	NC	45	Reserved	NC
44	NC	NC	43	PIN43_MPCIE_PWRSEL	The pin to select the Pin 2, 52 power output for +3.3Vaux or +3.3V (PCI1.1 was Reserved and PIC1.2 was GND
42	NC	NC	41	+3.3Vaux	
40	GND		39	+3.3Vaux	
38	USB_D+	USB serial data interface compliant to the USB 2.0 specification	37	GND	
36	USB_D-		35	GND	
34	GND		33	PETp0	PCI Express differential transmit pair
32	SMB_DATA	SMBus data signal compliant to the SMBus 2.0 specification	31	PETn0	
30	SMB_CLK		29	GND	
28	+1.5V		27	GND	
26	GND		25	PERp0	PCI Express differential receive pair
24	+3.3Vaux		23	PERn0	
22	PERST#	Functional reset to the card	21	GND	
20	W_DISABLE#	Active low signal. This signal is used by the system to disable radio operation on add-in cards that implement radio frequency applications. When implemented, this signal requires a pull-up resistor on the card.	19	Reserved	NC
18	GND		17	Reserved	NC
	Key	Key		Key	Key
16	NC	NC	15	GND	
14	NC	NC	13	REFCLK+	

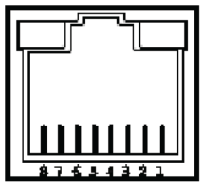
12	NC	NC	11	REFCLK-	
10	NC	NC	9	GND	
8	NC	NC	7	CLKREQ#	Reference clock request signal
6	1.5V		5	NC	NC
4	GND		3	NC	NC
2	+3.3Vaux / +3.3V	PCI1.1 was +3.3V , PCI1.2 was +3.3Vaux	1	WAKE#	Open Drain active Low signal. This signal is used to request that the system return from a sleep/suspended state to service a function initiated wake event.

* +3.3Vaux was suspend Power , power out to device +3.3V/1.1A
* +3.3V was core power
* +1.5V was core power, power out to device +1.5V/0.5A

A.8 LAN RJ45 connector

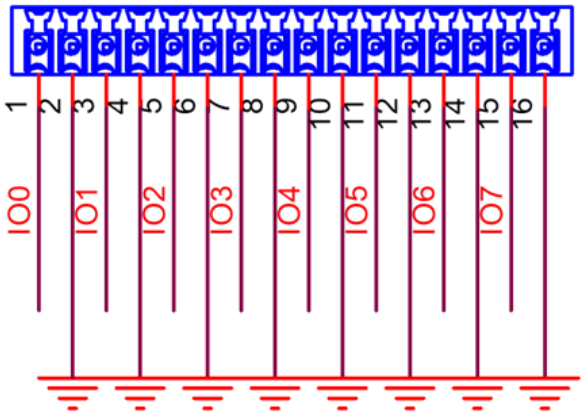
RJ45 Pin	Signal	Description
1	MDI0+	■ In BASE-T: Media Dependent Interface[0]: ■ 1000BASE-T: In MDI configuration, MDI[0]+/- corresponds to BI_DA+/- and in MDI-X configuration MDI[0]+/- corresponds to BI_DB+/-. ■ 10BASE-T and 100BASE-TX: In MDI configuration, MDI[0]+/- is used for the transmit pair and in MDIX configuration MDI[0]+/- is used for the receive pair.
2	MDI0-	
3	MDI1+	■ In BASE-T: Media Dependent Interface[1]: ■ 1000BASE-T: In MDI configuration, MDI[1]+/- corresponds to BI_DB+ and in MDI-X configuration MDI[1]+/- corresponds to BI_DA+/-. ■ 10BASE-T and 100BASE-TX: In MDI configuration, MDI[1]+/- is used for the receive pair and in MDI-X configuration MDI[1]+/- is used for the transmit pair.
6	MDI1-	
4	MDI2+	■ In BASE-T: Media Dependent Interface[3:2]: ■ 1000BASE-T: In MDI and in MDI-X configuration, MDI[2]+/- corresponds to BI_DC+/- and MDI[3]+/- corresponds to BI_DD+/-. ■ 100BASE-TX: Unused. ■ 10BASE-T: Unused.
5	MDI2-	
7	MDI3+	
8	MDI3-	

	Right LED		Left LED
10Link	**100Link**	**1000 Link**	**Active**
Off	Orange	Green	Green



A.9 GPIO Connector

Table A.5: GPIO-port pin definition details	
Pin	**Signal**
1	GPIO0
2	GND
3	GPIO1
4	GND
5	GPIO2
6	GND
7	GPIO3
8	GND
9	GPIO4
10	GND
11	GPIO5
12	GND
13	GPIO6
14	GND
15	GPIO7
16	GND



Note! *GPIO0 to the GPIO7 pins are 0-5 V input/output and digital/analog configurable pins.*

The GPIO port is powered by analog devices' AD5593R.

Each pin has a 100K OHM series resistor between the connector and the AD5593R.

Caution! *This port is ESD-sensitive. An insulated GPIO connector that prevents direct ESD exposure to the I/O pins is recommended.*

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Please verify specifications before quoting. This guide is intended for reference purposes only.

All product specifications are subject to change without notice.