

UNO-1252G

**Intel® Quark™ Palm-Size Din-Rail Automation Computer with
2 x LAN, 2 x mPCIe, 2 x COM,
8 x DI/O, 2 x USB, 1 x microSD,
1 x SIM**

ADVANTECH

Enabling an Intelligent Planet

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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 merchandise authorization) number from your dealer. This allows us to process your return more quickly.
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5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

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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.

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 -20° C (-4° F) OR ABOVE 60° C (140° F) for UNO-1252G. THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.**
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 REMPLACÉ. 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.

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Chapter 1

Overview

This chapter provides an overview of UNO-1252G specifications.

Sections include:

- Introduction
- Hardware specification
- Safety precautions

1.1 Introduction

The UNO-1252G is an embedded Application Ready Platform (ARP) that can shorten your development time and offers a wide array of networking interfaces to fulfill the extensive needs in different projects. UNO-1252G employs Intel's latest Quark technology and provides rich interfaces including up to 2 x isolated serial port, 2 x LAN, 2 x USB ports, 8 x isolated DI/O and 1 x iDoor I/O expansion. UNO-1252G supports wireless PCI Express Mini Card (mPCIe card) and Advantech latest iDoor technology for various Internet of Things (IoT) applications.

The UNO-1252G can operate in wide temperatures (from -20 to 60°C). The UNO-1252G also adopts Intel Quark CPUs with great power efficiency for gateway platforms.

The UNO-1252G provides multiple expansion including two mPCIe cards, one microSD and SIM card support. With these expansions the UNO-1252G has great expandability from Wi-Fi, 3G, I/O expansion and industrial fieldbus protocols by iDoor technology.

The UNO-1252G with Intel Quark CPUs supports Yocto Linux which is an open embedded OS system allowing users to integrate applications easily by taking the form of Board Support Package (BSP) layers for which a standard format has been developed. 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-1252G. 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 the product. 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 an anti-static 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:

- 3-pin phoenix connector for power wiring (Advantech P/N: 1652003206)
- 8-pin phoenix connector for Digital I/O wiring (Advantech P/N: 1652005896)
- Din-Rail Mounting kit (Advantech P/N: 1960018849T021)
- 3 x screws for Din-Rail kit (Advantech P/N: 1930000686)
- 2 x screws for mPCIe card (Advantech P/N: 1935020300)
- Warranty card

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

Chapter 2

Hardware Functionality

This chapter shows how to setup the UNO-1252G's hardware functions, including connecting peripherals, setting switches and indicators.

Sections include:

- Introduction
- Isolated RS-232/485 Interface
- Isolated RS-232 Interface
- Ethernet LAN Connector
- Power Connector
- USB Connector
- Isolated Digital Input/Output
- LED Indicators
- microSD card Slot
- SIM card Slot
- PCI Express Mini Card Socket
- iDoor Expansion I/O
- Antenna Mounting
- RTC Battery Specification
- Power Management
- Reset Button

2.1 Introduction

The following figures show the panel configuration on UNO-1252G. More information of each peripheral is included in the following sections.

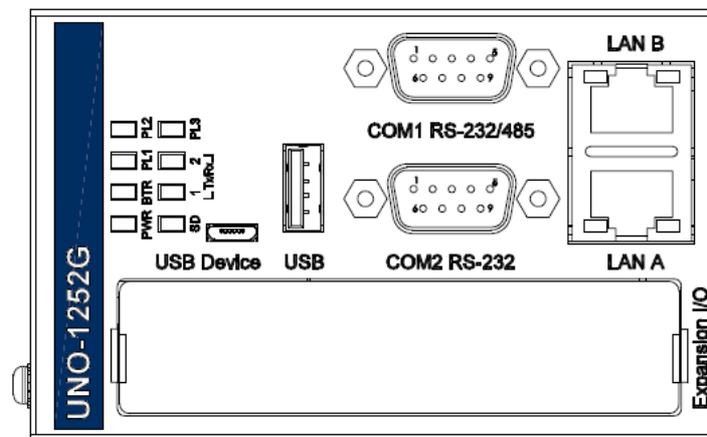


Figure 2.1 Front Panel of UNO-1252G

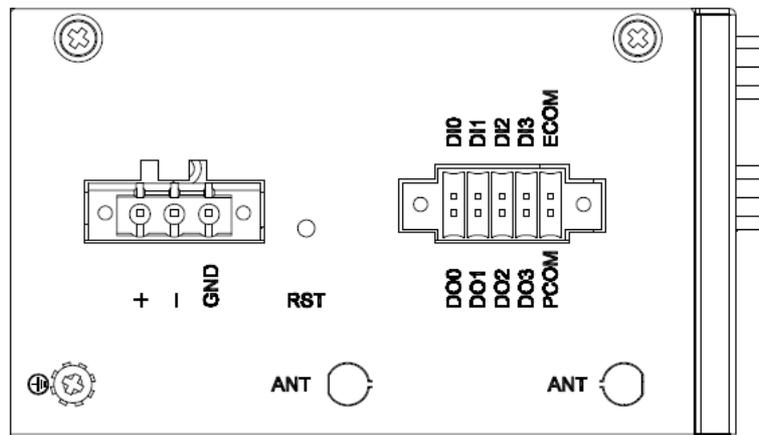


Figure 2.2 Top Panel of UNO-1252G

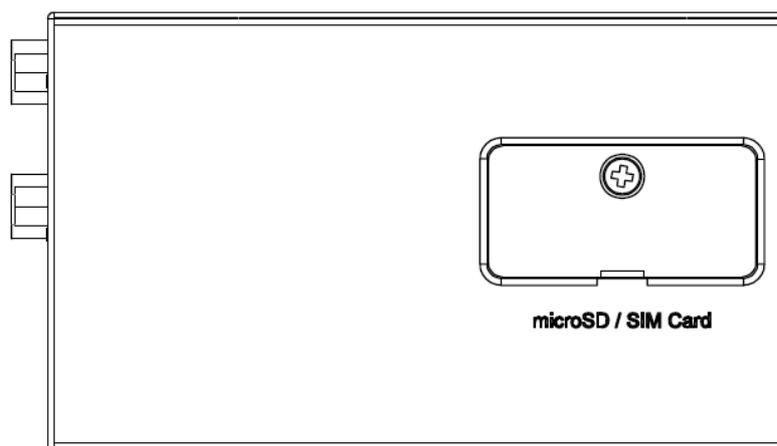


Figure 2.3 Bottom Panel of UNO-1252G

2.2 Isolated Serial Interface (COM1~COM2)

UNO-1252G offers standard isolated RS-232/485 (COM1), one isolated RS-232 (COM2) serial communication interface ports:

Isolation Protection 1,000 VDC

Overvoltage Protection 30 VDC

2.2.1 Isolated RS-232/485 Interface (COM1)

The UNO-1252G offers one isolated RS-232/485 serial communication interface ports as COM1. The default COM port mode is RS-485. User can switch either to RS-232 or RS-485 mode by setting the switch. The terminal resistance for long distance signal transmission in RS-485 mode is also set by the switch.

Refer to Appendix A.2 for their pin assignments and switch setting.

2.2.2 Isolated RS-232 Interface (COM2)

The UNO-1252G offers one standard isolated RS-232 serial communication interface ports as COM2. The COM2 is designed as console port for user's configuration. Refer to Appendix A.3 for their pin assignments.

2.3 Ethernet LAN Connector

The UNO-1252G is equipped with two 10/100MB LAN controllers. The controller employed Texas Instrument DP83848K Ethernet chipset that is fully compliant with IEEE 802.3u 10/100Base-T CSMA/CD standards. The Ethernet port provides a standard RJ-45 jack on board, and LED indicators on the front side to show its Link (Orange LED) and Active (Green LED) status.

2.4 Power Connector

The UNO-1252G comes with a Phoenix connector that carries 10~36 V_{DC} external power input, and features reversed wiring protection. Therefore, it will not cause any damage to the system by reversed wiring of ground line or power line. Refer to Appendix A.7

2.5 USB Connector

The UNO-1252G provides one USB2.0 host and one USB device connectors. The USB interface supports Plug and Play, which enables user to connect or disconnect a device without turning off the computer. The USB host port is EHCI Rev. 2.0 compliant also provides hot swapping for up to 127 external devices. Refer to Appendix A.5 for their pin assignment.

2.6 Digital Input/Output Interface

There are four digital inputs and four digital outputs configured from GPIO pins for most of on/off trigger and status reading.

Digital Input

- Input Channels 4
- Input Voltage (Wet Contact)
 - Logic 0: 0~3 VDC
 - Logic 1: 10~30 VDC
- Input Current
 - 10 VDC @ 2.67mA
 - 20 VDC @ 5.64mA
 - 30 VDC @ 8.91mA
- Isolation Protection 1,000 VDC
- Overvoltage Protection 30 VDC

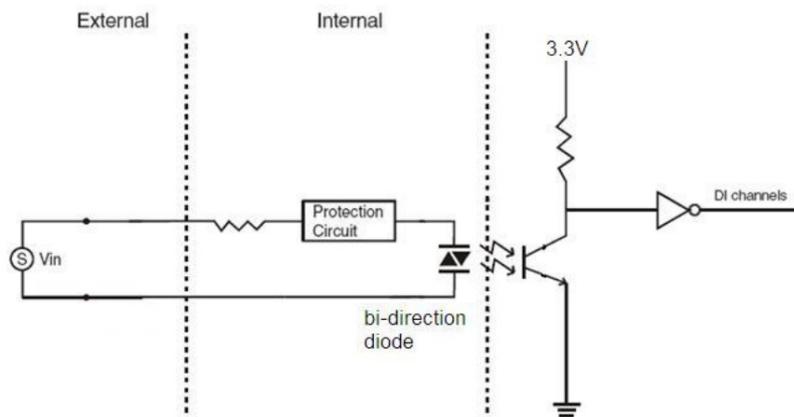


Figure 2.4 Wet Contact Connection

Digital Output

- Output Channels 4
- Output Voltage: 5~30 VDC
- Output Capability Sink: Max. 24 mA per channel
- Open Collector to 30 V

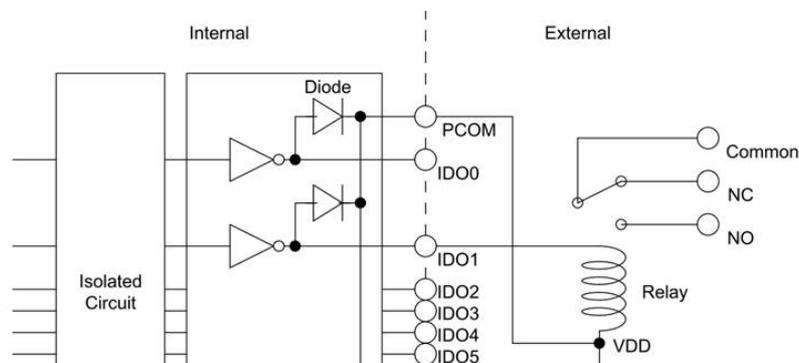


Figure 2.5 Wet Contact Connection

2.7 LED Indicators

There are eight LEDs indicating the status of the system power, RTC battery, SD card, LAN port transmit/receive and PL1~3 for user's configurations.

- **PWR:** Green light means normal, orange light means standby.
- **BTR:** Red means RTC battery being abnormal, please check the RTC battery.
- **Tx/Rx 1~2:** Flashing green means COM 1 and COM2 signals are being transmitted and received.
- **SD:** Flashing green means the microSD card is being writing and reading.
- **PL 1~3:** User can configure the LED indicators' behavior through GPIO control.

2.8 microSD card Slot

There is one microSD slot on board for standard microSD card storage. User can insert microSD card from the bottom panel shown in Figure 2.3.

2.9 SIM card Slot

There is one Mini-SIM card slot on board for standard Mini-SIM card (2FF) usage. User can insert standard Mini-SIM card from the bottom panel shown in Figure 2.3.

2.10 PCI Express Mini Card Socket

The UNO-1252G supports two full-size PCI Express Mini (mPCIe) card expansion, refer to Figure 2.5. The first interface (CN5) provides PCI Express (PCIe) signal, and the second interface (CN3) provides USB signal and connecting with SIM card slot. The mPCIe expansion are mainly targeted to support iDoor technology/module for diversified applications. Users can install iDoor module easily from the iDoor expansion I/O on the front panel shown in Figure 2.1.

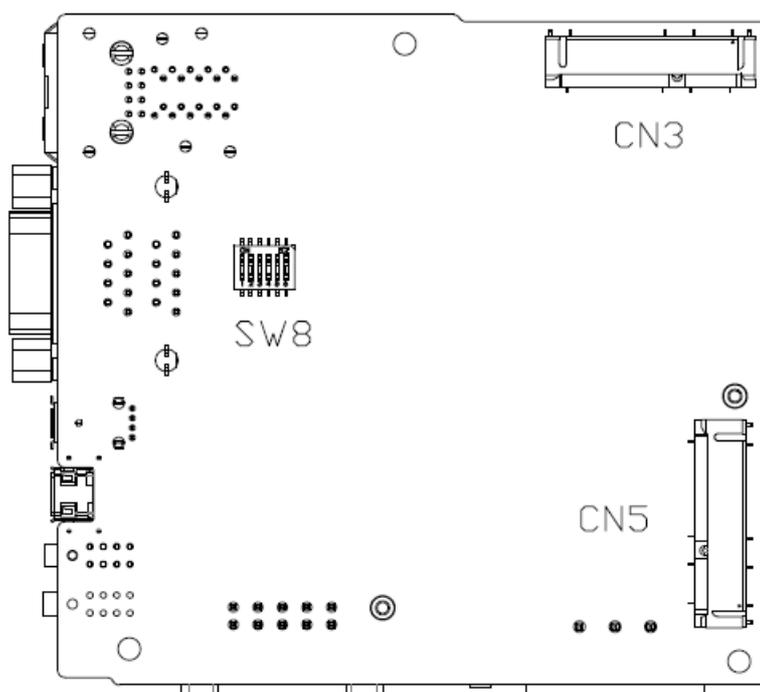


Figure 2.6 PCI Express Mini Card Socket on board

2.11 iDoor Expansion I/O

There is an iDoor Expansion I/O on the front panel shown in Figure 2.1 that allows user to install iDoor modules with extra I/O for specific applications. For more iDoor product information, please visit Advantech's website. <http://www.advantech.com>

2.12 Antenna Mounting

The UNO-1252G provides two antenna mounting holes with pre-cut cover that allows users to install antenna kit for Wi-Fi, GPRS/3G or other wireless functions. The two antenna mounting holes are on the top panel shown in Figure 2.2.

2.13 RTC Battery Specification

The RTC Battery is used to reserve the setting in BIOS and system clock when the power is disconnected for a short time.

- Type: BR2032 W/C
- Output Voltage: 3 VDC
- Location: On board

2.14 Power Management

The UNO-1252G supports AT-type for system booting up. The system will automatically boot up once the power is connected.

2.15 Reset Button

Press the "RST" button to activate the hardware reset function. The system reset button is on the top panel shown in Figure 2.2.

Chapter 3

Initial Setup

This chapter introduces how to initialize the UNO-1252G.

Sections include:

- Chassis Grounding
- Inserting a microSD/SIM card
- Installing a wireless module card and antenna
- Installing iDoor expansion I/O
- Din-rail kit assembly
- Connecting Power

3.1 Chassis Grounding

The UNO-1252G is designed with EMI protection and a stable grounding base. There is an easy-to-connect chassis grounding point to use. Note that the system ground and chassis ground are separate.

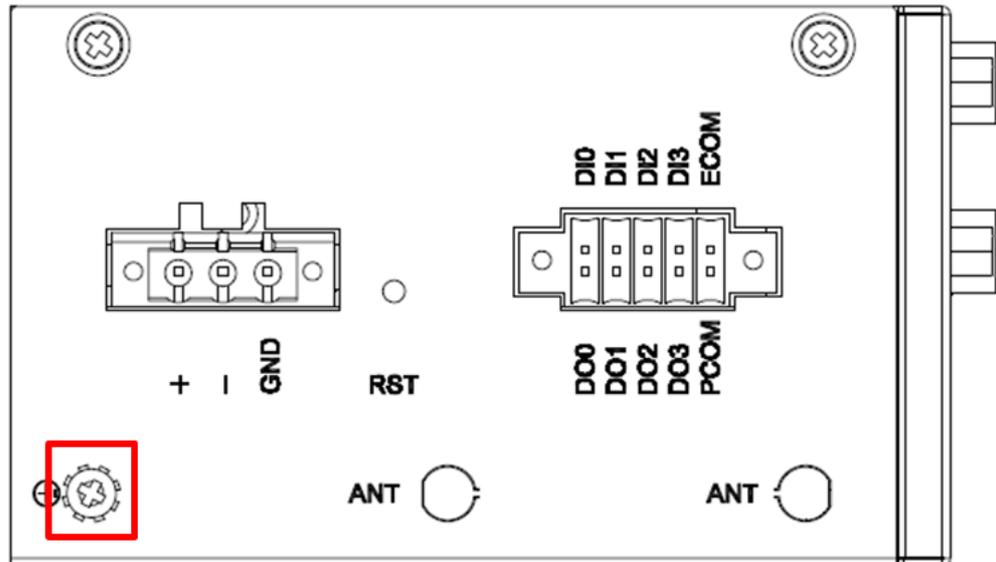


Figure 3.1 Chassis Grounding Connection

3.2 Inserting a SD card/SIM card

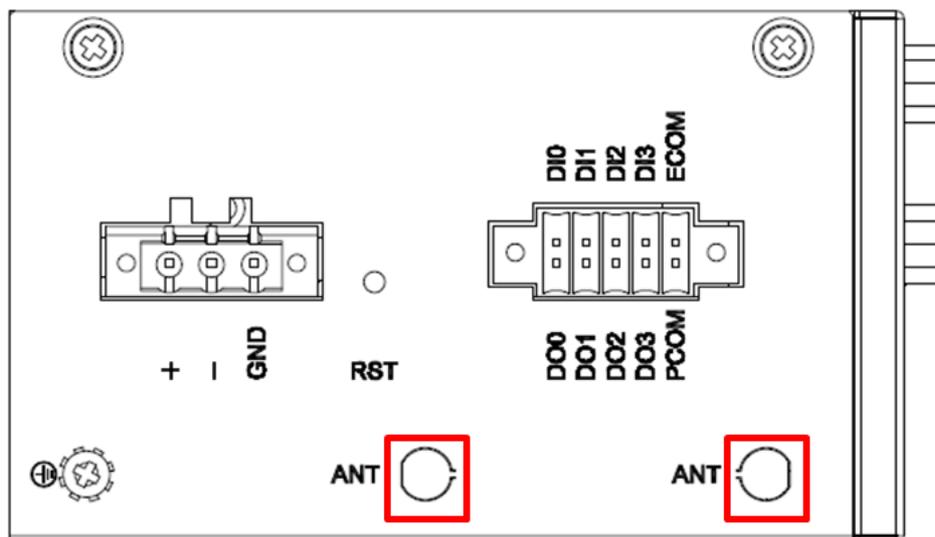
The UNO-1252G provides one microSD card slot and one Mini-SIM card slot. Users can insert the cards using the following steps.

1. Remove the power cord.
2. Unscrew the microSD/SIM card lid on the bottom panel.
3. Insert the microSD card or Mini-SIM card into the slots.
4. Screw the lid back.

3.3 Installing a Wireless module Card and Antenna (Optional)

For optional wireless module card and antenna, please contact Advantech for the following wireless solution kit.

- Top panel with pre-cut antenna holes



- The internal coaxial cable with standard SMA connector

For more information about internal coaxial cable, please contact with Advantech.



- Wireless module card (PCI Express Mini card)

The UNO-1252G supports two full-size mPCIe slots for wireless module card installation, please refer to Session 2.10. For more information about wireless module cards, contact Advantech.

■ Antenna

Select the necessary specification according to your application. For more information about antenna, please contact with Advantech.

Then follow the below steps for the installation:

1. Unscrew the chassis and open it.
2. Remove the pre-cut cover on antenna hole(s) on the top panel for antenna installation.
3. Install the internal coaxial cable(s) through the antenna hole(s).
4. Insert the wireless module card into the PCI Express mini card socket and screw it.
5. Connect the internal coaxial cable(s) with the wireless module card.
6. Screw back the chassis.
7. Assemble the antenna(s) on the SMA connector.

3.4 3.4 Installing iDoor expansion I/O

The UNO-1252G supports one iDoor expansion I/O on the front panel shown in Figure 2.1. For the iDoor installation, please refer to the documentary from iDoor product package.

3.5 Din-rail Kit Assembly

The UNO-1252G supports Din-rail mounting. The Din-rail kit and screws are included in the accessory bag. The assembly instruction is shown in Figure 3.2 below.

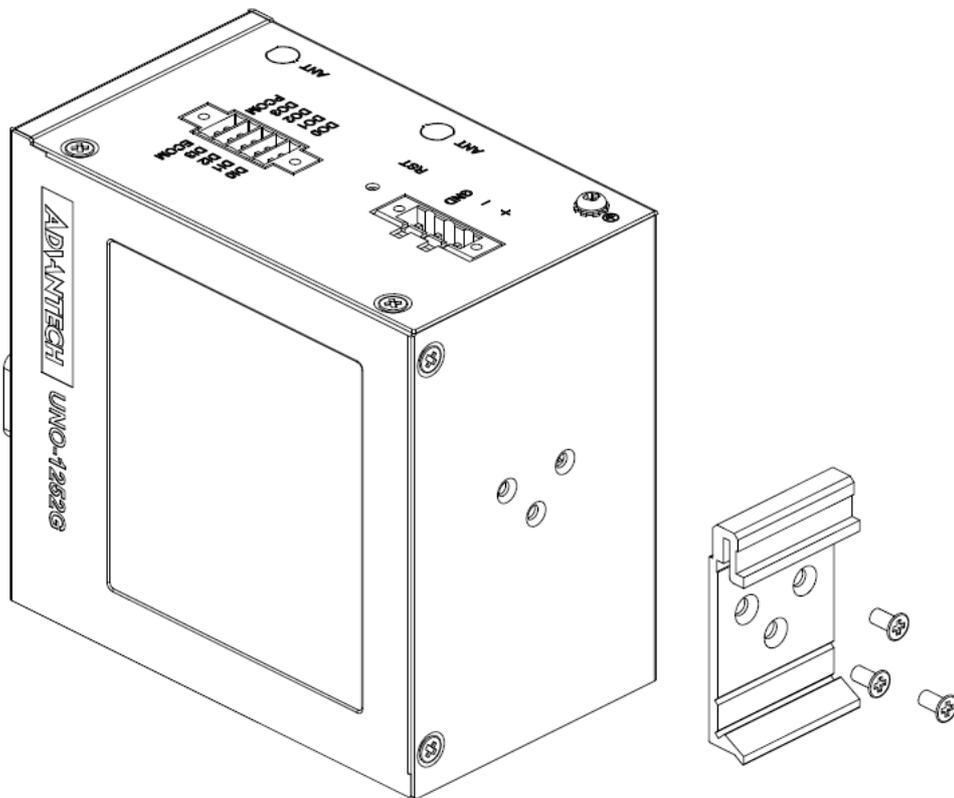
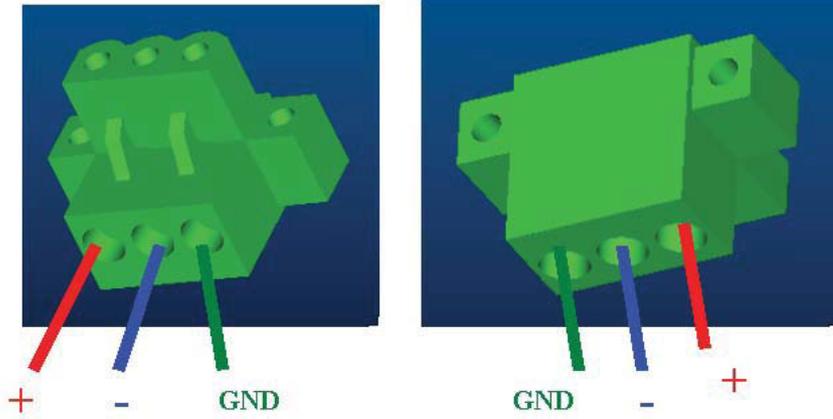


Figure 3.2 UNO-1252G with Din-rail mounting

3.6 Connecting Power

Connect the UNO-1252G to a 10~36 V_{DC} power source. The power source can either be from a listed power adapter or DC power source.



Chapter 4

Software Functionality

This chapter details the software operating on UNO-1252G.

Sections include:

- Setting Console Port
- Connection
- Assigning IP Addresses
- Digital Input and Output

4.1 Console Port Setting

The UNO-1252G can communicate with a host server (Windows or Linux) by using serial cables. Common serial communication programs such as HyperTerminal, Tera Term or PuTTY can be used in this case. The example as below describes the serial terminal setup using PuTTY on a Windows host:

1. Connect RS-232 console port (COM2) on the UNO-1252G to the host computer by using a serial cable.
2. Open PuTTY on the host computer, and select the settings as shown in Figure 4.1.

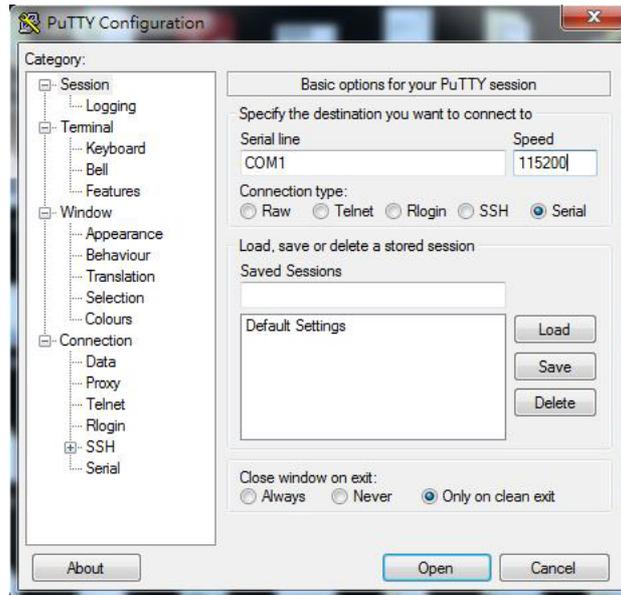


Figure 4.1 PuTTY Configuration

3. Power on UNO-1252G. Boot will take a while, after which the login screen appears. Log in with: root as shown in Figure 4.2.

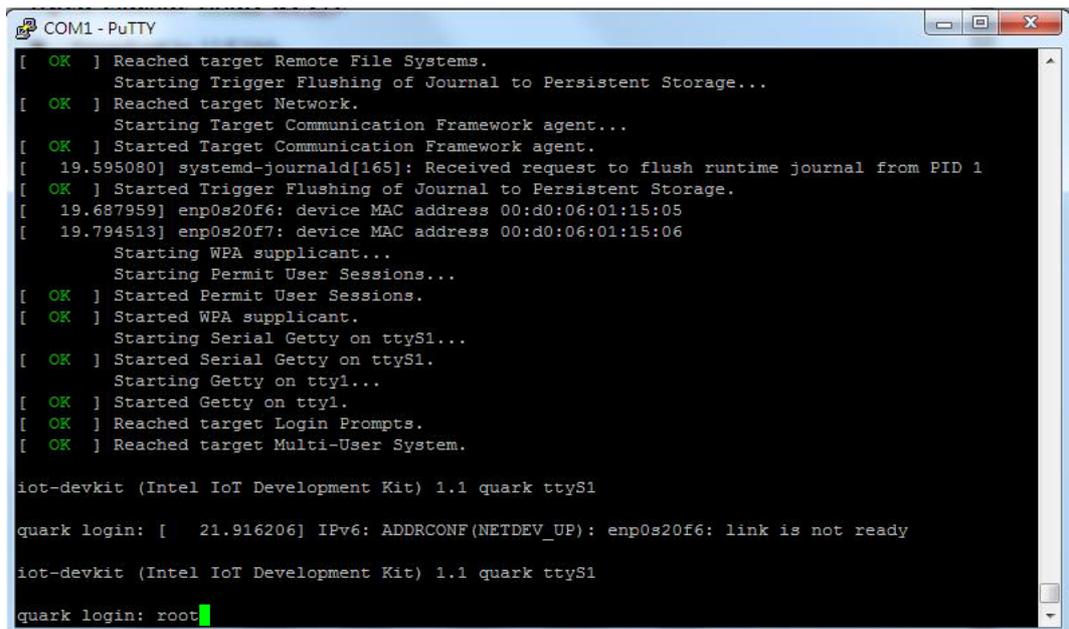


Figure 4.2 Log in to UNO-1252G

4.2 LAN A Connection

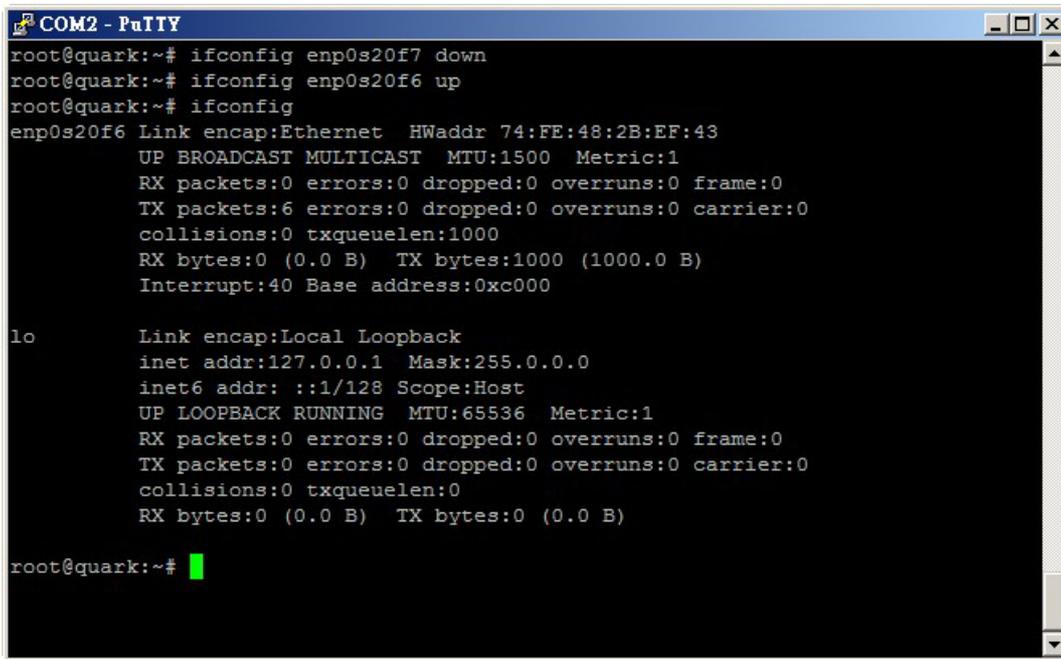
Make sure the DHCP service works in the connected LAN.

Remove network connection from both of the two LAN ports.

```
# ifconfig enp0s20f7 down
```

```
# ifconfig enp0s20f6 up
```

```
# ifconfig
```



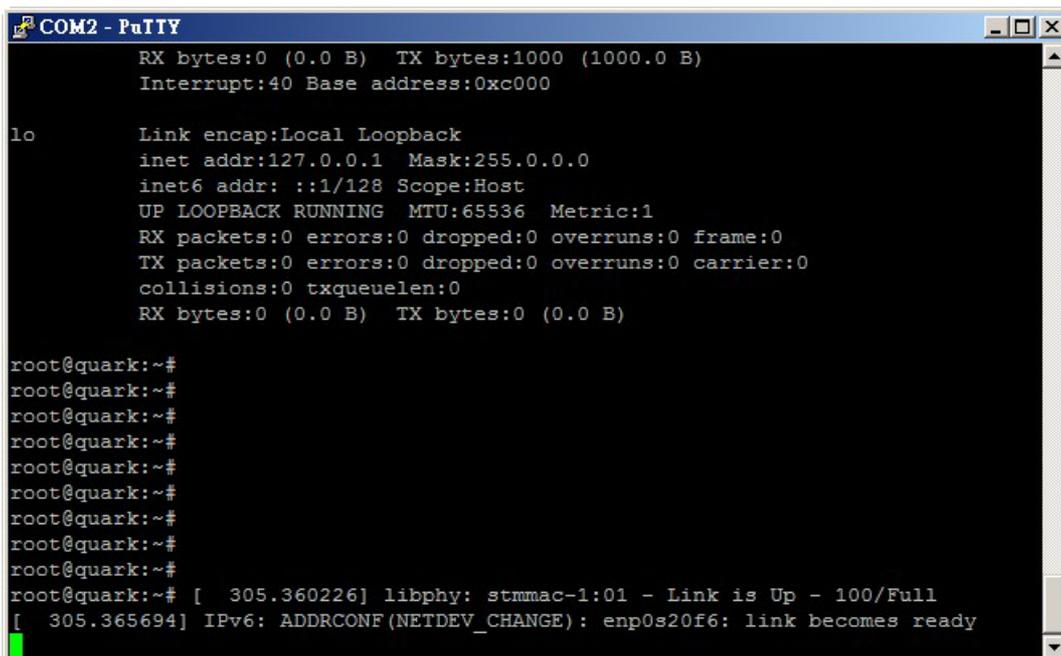
```
COM2 - PuTTY
root@quark:~# ifconfig enp0s20f7 down
root@quark:~# ifconfig enp0s20f6 up
root@quark:~# ifconfig
enp0s20f6 Link encap:Ethernet  HWaddr 74:FE:48:2B:EF:43
          UP BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:6 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:1000 (1000.0 B)
          Interrupt:40 Base address:0xc000

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

root@quark:~# █
```

Figure 4.3 Enable LAN A functionality

Plug the network cable into the LAN A port and wait for the " enp0s20f6: link becomes ready" showing up.



```
COM2 - PuTTY
          RX bytes:0 (0.0 B)  TX bytes:1000 (1000.0 B)
          Interrupt:40 Base address:0xc000

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

root@quark:~#
root@quark:~# [ 305.360226] libphy: stmmac-1:01 - Link is Up - 100/Full
[ 305.365694] IPv6: ADDRCONF(NETDEV_CHANGE): enp0s20f6: link becomes ready
█
```

Figure 4.4 LAN A connection status

Checking if there is an IP or not.

```
# ifconfig
```

```
COM2 - PuTTY
root@quark:~#
root@quark:~#
root@quark:~#
root@quark:~# ifconfig
enp0s20f6 Link encap:Ethernet HWaddr 74:FE:48:2B:EF:43
  inet addr:172.16.12.122 Bcast:172.16.13.255 Mask:255.255.254.0
  inet6 addr: fe80::76fe:48ff:fe2b:ef43/64 Scope:Link
  UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
  RX packets:1000 errors:0 dropped:110 overruns:0 frame:0
  TX packets:35 errors:0 dropped:0 overruns:0 carrier:0
  collisions:0 txqueuelen:1000
  RX bytes:101249 (98.8 KiB) TX bytes:4883 (4.7 KiB)
  Interrupt:40 Base address:0xc000

lo      Link encap:Local Loopback
  inet addr:127.0.0.1 Mask:255.0.0.0
  inet6 addr: ::1/128 Scope:Host
  UP LOOPBACK RUNNING MTU:65536 Metric:1
  RX packets:0 errors:0 dropped:0 overruns:0 frame:0
  TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
  collisions:0 txqueuelen:0
  RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)

root@quark:~# █
```

Figure 4.5 LAN A IP Address

4.3 LAN B Connection

Make sure the DHCP service works in the connected LAN.

Remove network connection from both of the two LAN ports.

```
# ifconfig enp0s20f6 down
```

```
# ifconfig enp0s20f7 up
```

```
# ifconfig
```

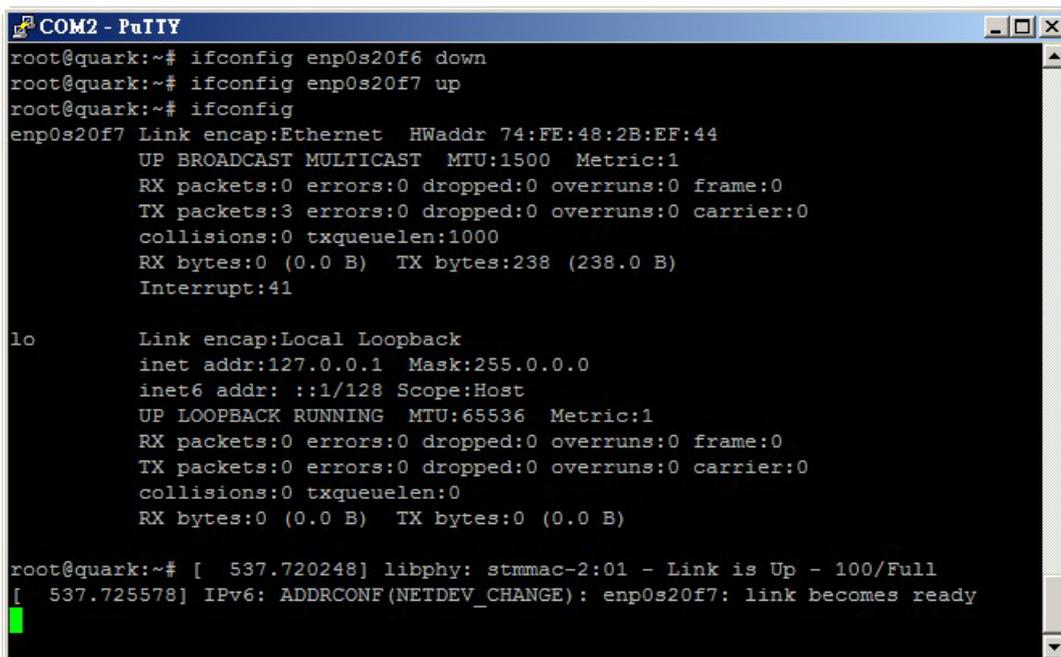
```
COM2 - PuTTY
root@quark:~# ifconfig enp0s20f6 down
root@quark:~# ifconfig enp0s20f7 up
root@quark:~# ifconfig
enp0s20f7 Link encap:Ethernet HWaddr 74:FE:48:2B:EF:44
  UP BROADCAST MULTICAST MTU:1500 Metric:1
  RX packets:0 errors:0 dropped:0 overruns:0 frame:0
  TX packets:3 errors:0 dropped:0 overruns:0 carrier:0
  collisions:0 txqueuelen:1000
  RX bytes:0 (0.0 B) TX bytes:238 (238.0 B)
  Interrupt:41

lo      Link encap:Local Loopback
  inet addr:127.0.0.1 Mask:255.0.0.0
  inet6 addr: ::1/128 Scope:Host
  UP LOOPBACK RUNNING MTU:65536 Metric:1
  RX packets:0 errors:0 dropped:0 overruns:0 frame:0
  TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
  collisions:0 txqueuelen:0
  RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)

root@quark:~# █
```

Figure 4.6 Enable LAN B functionality

Plug the network cable into the LAN B port and wait for the " enp0s20f7: link becomes ready" showing up.



```

COM2 - PuTTY
root@quark:~# ifconfig enp0s20f6 down
root@quark:~# ifconfig enp0s20f7 up
root@quark:~# ifconfig
enp0s20f7 Link encap:Ethernet HWaddr 74:FE:48:2B:EF:44
UP BROADCAST MULTICAST MTU:1500 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:3 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 (0.0 B) TX bytes:238 (238.0 B)
Interrupt:41

lo        Link encap:Local Loopback
inet addr:127.0.0.1 Mask:255.0.0.0
inet6 addr: ::1/128 Scope:Host
UP LOOPBACK RUNNING MTU:65536 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:0
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)

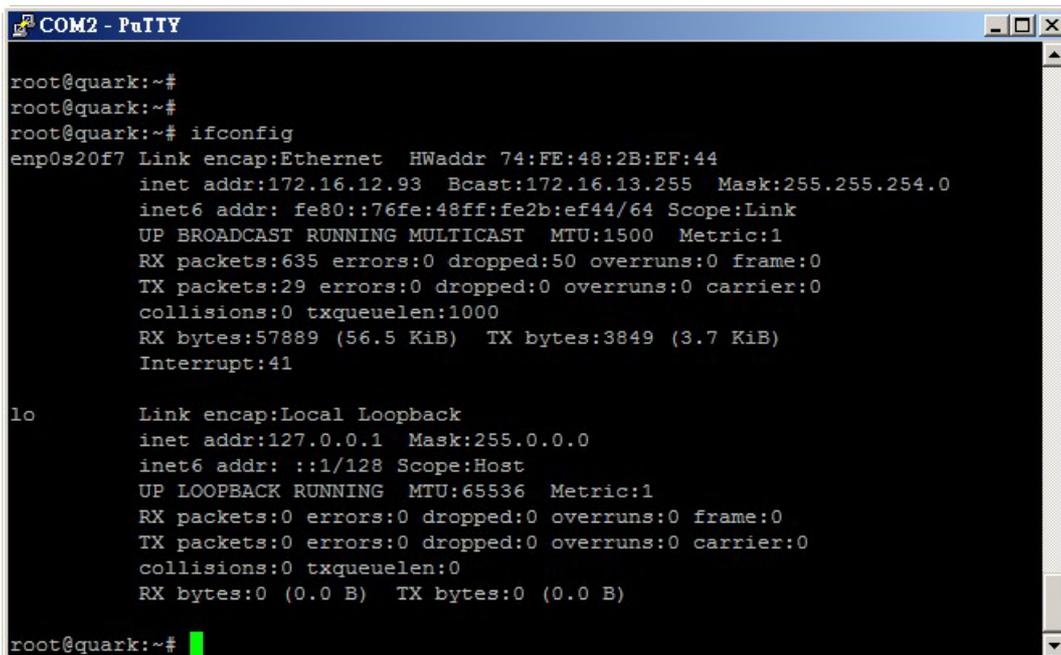
root@quark:~# [ 537.720248] libphy: stmmac-2:01 - Link is Up - 100/Full
[ 537.725578] IPv6: ADDRCONF(NETDEV_CHANGE): enp0s20f7: link becomes ready

```

Figure 4.7 LAN B connection status

Checking if there is an IP or not.

ifconfig



```

COM2 - PuTTY
root@quark:~#
root@quark:~#
root@quark:~# ifconfig
enp0s20f7 Link encap:Ethernet HWaddr 74:FE:48:2B:EF:44
inet addr:172.16.12.93 Bcast:172.16.13.255 Mask:255.255.254.0
inet6 addr: fe80::76fe:48ff:fe2b:ef44/64 Scope:Link
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:635 errors:0 dropped:50 overruns:0 frame:0
TX packets:29 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:57889 (56.5 KiB) TX bytes:3849 (3.7 KiB)
Interrupt:41

lo        Link encap:Local Loopback
inet addr:127.0.0.1 Mask:255.0.0.0
inet6 addr: ::1/128 Scope:Host
UP LOOPBACK RUNNING MTU:65536 Metric:1
RX packets:0 errors:0 dropped:0 overruns:0 frame:0
TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:0
RX bytes:0 (0.0 B) TX bytes:0 (0.0 B)

root@quark:~#

```

Figure 4.8 LAN B IP Address

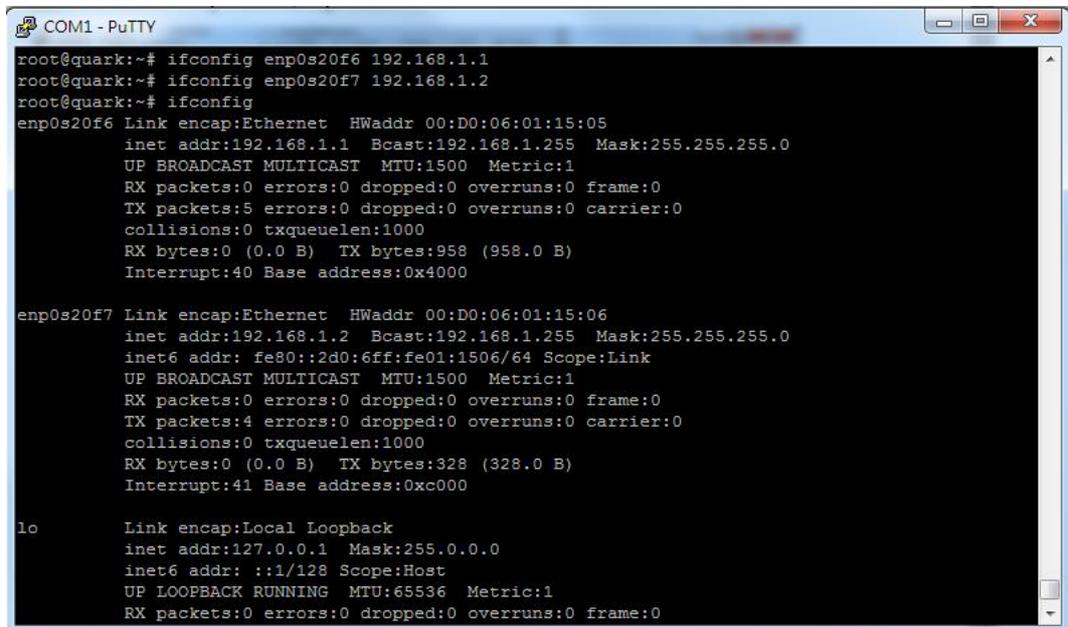
4.4 Assign IP Address for LAN Port

Manually Assign IP Address for LAN port with below command.

```
# ifconfig enp0s20f6 XXX.XX.X.X
```

```
# ifconfig enp0s20f7 XXX.XXX.X.X
```

XXX.XXX.X.X is the IP address which is wanted to be assigned.



```
COM1 - PuTTY
root@quark:~# ifconfig enp0s20f6 192.168.1.1
root@quark:~# ifconfig enp0s20f7 192.168.1.2
root@quark:~# ifconfig
enp0s20f6 Link encap:Ethernet  HWaddr 00:D0:06:01:15:05
  inet addr:192.168.1.1  Bcast:192.168.1.255  Mask:255.255.255.0
  UP BROADCAST MULTICAST  MTU:1500  Metric:1
  RX packets:0 errors:0 dropped:0 overruns:0 frame:0
  TX packets:5 errors:0 dropped:0 overruns:0 carrier:0
  collisions:0 txqueuelen:1000
  RX bytes:0 (0.0 B)  TX bytes:958 (958.0 B)
  Interrupt:40 Base address:0x4000

enp0s20f7 Link encap:Ethernet  HWaddr 00:D0:06:01:15:06
  inet addr:192.168.1.2  Bcast:192.168.1.255  Mask:255.255.255.0
  inet6 addr: fe80::2d0:6ff:fe01:1506/64 Scope:Link
  UP BROADCAST MULTICAST  MTU:1500  Metric:1
  RX packets:0 errors:0 dropped:0 overruns:0 frame:0
  TX packets:4 errors:0 dropped:0 overruns:0 carrier:0
  collisions:0 txqueuelen:1000
  RX bytes:0 (0.0 B)  TX bytes:328 (328.0 B)
  Interrupt:41 Base address:0xc000

lo
  Link encap:Local Loopback
  inet addr:127.0.0.1  Mask:255.0.0.0
  inet6 addr: ::1/128 Scope:Host
  UP LOOPBACK RUNNING  MTU:65536  Metric:1
  RX packets:0 errors:0 dropped:0 overruns:0 frame:0
```

Figure 4.9 Assigning an IP Address example

4.5 Digital Input & Output

4.5.1 Setting of Digital Output

Set signal to be Low

```
# echo 0 > /sys/class/gpio/*/value
```

Set signal to be High

```
# echo 1 > /sys/class/gpio/*/value
```

“*” could be filled in one of below gpio name:

```
gpio0 <--> D02
```

```
gpio1 <--> D03
```

```
gpio3 <--> PL2
```

```
gpio4 <--> PL3
```

```
gpio8 <--> PL1
```

```
gpio10 <--> D00
```

```
gpio12 <--> D01
```

4.5.2 Checking of Digital Input

Observe the value of digital input

```
# cat /sys/class/gpio/*/value
```

“*” could be filled in one of below gpio name:

```
gpio11 <--> DI0
```

```
gpio13 <--> DI1
```

```
gpio14 <--> DI2
```

```
gpio15 <--> DI3
```


Appendix **A**

System Settings and
Pin Assignments

A.1 Board Connectors and Switches

There are several connectors and jumpers on the UNO-1252G board. The following sections tell you how to configure the UNO-1252G hardware setting.

Figure A.1 shows the locations of UNO-1252G's connectors and switches.

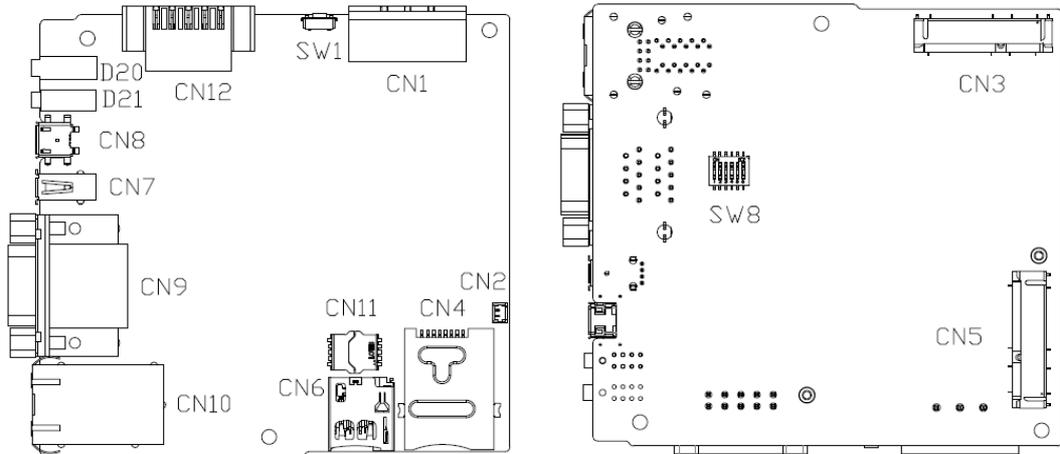


Figure A.1 Connector & Switch Locations (front)

Table A.1: Connectors and Jumpers

Label	Function
CN3	mPCIe slot with USB & SIM signal
CN5	mPCIe slot with PCIe signal
CN6	microSD card slot
CN4	SIM card slot for CN3
SW8	Switch for COM1 RS-232/485, terminal resistance for RS-485

A.2 Isolated RS-232/485 Serial Port (COM1)

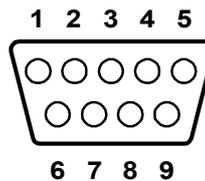


Table A.2: RS-232/485 Serial Port Pin Assignments

Pin	Pin Name	RS-485
1	DCD	Data-
2	RxD	Data+
3	TxD	NC
4	DTR	NC
5	GND	GND
6	DSR	NC
7	RTS	NC
8	CTS	NC
9	RI	NC

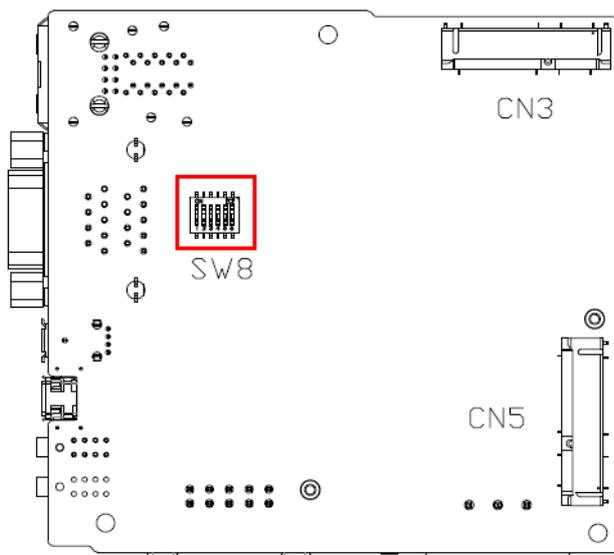


Table A.3: Jumper for COM1 RS-232/485 switch

Mode	RS-232	RS-485 with terminal resistance	RS-485 without terminal resistance
Switch (SW8) Setting			

The terminal resistance is recommended to be used for long distance signal transmission in RS-485 mode.

A.3 Isolated RS-232 Standard Serial Port (COM2)

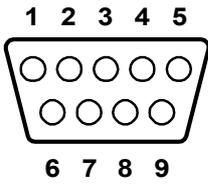


Table A.4: RS-232 Serial Port PIN Assignment

Pin	Pin Name
1	DCD
2	RxD
3	TxD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

A.4 USB Connector

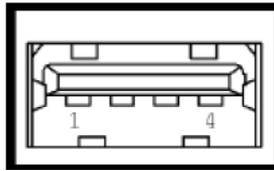


Table A.5: USB 2.0 Connector Pin Assignments

Pin	Signal Name	Cable Color
1	VCC	Red
2	DATA-	White
3	DATA+	Green
4	GND	Black

A.5 LAN Connector

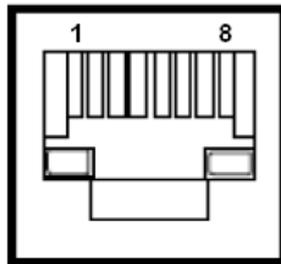


Table A.6: LAN Connector Pin Assignments

Pin	10/100Base-T Name
1	XMT+
2	XMT-
3	RCV+
4	NC
5	NC
6	RCV-
7	NC
8	NC

A.6 Isolated Digital I/O Connector

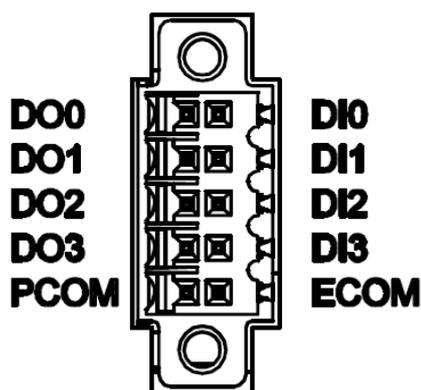


Table A.7: Isolated Digital I/O Connector

Description	PIN	PIN	Description
ECOM	PIN1	PIN2	PCOM
DI3	PIN3	PIN4	DO3
DI2	PIN5	PIN6	DO2
DI1	PIN7	PIN8	DO1
DI0	PIN9	PIN10	DO0

A.7 Power Connector (PWR)

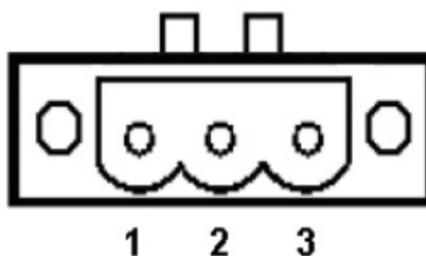


Table A.8: Power connector pin assignments

Pin	Description
1	10~36 V _{DC} Input 1
2	10~36 V _{DC} Input 2
3	Field Ground

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