



User Manual

UNO-2362G

Automation Computers with
AMD[®] Dual Core T40E
Processors, 1 x GbE, 1 x mPCIe,
HDMI/DP

ADVANTECH

Enabling an Intelligent Planet

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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.

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1. Visit the Advantech web site at support.advantech.com/ 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:
 15. The power cord or plug is damaged.
 16. Liquid has penetrated into the equipment.
 17. The equipment has been exposed to moisture.
 18. The equipment does not work well, or you cannot get it to work according to the user's manual.
 19. The equipment has been dropped and damaged.
 20. The equipment has obvious signs of breakage.
21. **DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -10°C (-14° F) OR ABOVE 60° C (140° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.**
22. **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.
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.
23. 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-2362G's specifications.

Sections include:

- Introduction
- Hardware specification
- Safety precautions
- Chassis dimensions

1.1 Introduction

UNO-2362G is an embedded Application Ready Platform (ARP) that can shorten your development time and offers rich networking interfaces to fulfill extensive needs in different projects. UNO-2362G includes AMD's latest G-series technology and provides multiple interfaces including up to 2 serial ports, 1 x GbE LAN, 4 x USB ports. UNO-2362G supports two display types, DisplayPort and HDMI for various high resolution requirements.

UNO-2362G can operate in wide temperatures (from -10 to 60°C). UNO-2362G even adopts AMD G-series CPU with great computing power and built-in up to 2G DDR3 RAM for heavy programs.

UNO-2362G provides great expansion including 2 x Mini PCIe and SIM card support. With these expansions and iDoor technology the UNO-2362G has great expandability from Wi-Fi, 3G, I/O expansion and fieldbus card with iDoor technology.

With rich OS and driver support, such as Windows XP/7/8, WES7, and embedded Linux, users can integrate applications easily in an application ready platform that can provide a versatile functions to fulfill diverse requirements.

1.2 Hardware Specifications

1.2.1 General

- **Certification:** CE, UL, CCC, FCC, BSMI
- **Dimensions (W x D x H):** 190 x 107 x 47 mm (7.5" x 4.2" x 1.8")
- **Enclosure:** Aluminum
- **Mounting:** Stand, Wall, VESA (Optional)
- **Power Consumption:** 14W(Typical)/24W(Max)
- **Power Requirements:** 24V+-15% @1A, AT/ATX
- **Weight:** 1.0 kg
- **OS Support:** Windows XP/7/8, WES7, Linux Fedora
- **System Design** Fanless
- **Remote Management:** Built-in Advantech DiagAnywhere agent on WES7

1.3 System Hardware

- **CPU:** AMD® G-series T40E 1.0GHz dual core
- **Memory:** 2 GB DDR3 SDRAM built-in
- **Indicators:** LEDs for Power, battery, LAN (Active, Status) and HDD
- **Storage:**
 HDD: 1 x drive bay for SATA 2.5" HDD (Compatible with 9.5mm height HDD)
 mSATA: 1 x Full Size Mini PCIe
 CFast drive by iDoor Technology (Optional)
 Note: iDoor technology is only compatible with mSATA storage.
- **Display:** 1 x HDMI, 1 x DP (2 x independent displays)
- **Watchdog Timer:** NCT6776F, programmable 256 levels timer interval, from 1 to 255 sec
- **Mini PCIe Expansion:**
 2 x Full size Mini PCIe slots with 1 x SIM card (First slot (CN5) set as mSATA default)
- **iDoor Expansion Slot:** Yes

1.3.1 I/O Interfaces

- **Serial Ports** 1 x RS-232, 1 x RS-485 with DB9 connectors; automatic RS-485 data flow control
- **Serial Port Speed:** RS-232: 50 ~ 115.2 kbps
 RS-485: 50 ~ 115.2 kbps (Max.)
- **LAN:** 2 x 10/100/1000Base-T RJ-45 ports
 Supports 1 x GbE Daisy-Chain for Ethernet with auto-bypass protection enabled.
- **USB Ports:** 4 x USB ports

1.3.2 Environment

- **Humidity:** 95% @ 40°C (non-condensing)
- **Operating Temperature:** -10 ~ 60°C (14 ~ 140°F) @ 5 ~ 85% RH. (with air flow)
- **Safety Cert. Temperature:** -10 ~ 50°C (14 ~ 122°F)
- **Shock Protection:** IEC 60068-2-27
 mSATA: 50 G @ wall mount, half sine, 11 ms
 HDD: 20 G @ wall mount, half sine, 11 ms
- **Vibration Protection:** IEC 60068-2-64 (Random 1 Oct./min, 1hr/axis.)
 mSATA: 2 Grms @ 5 ~ 500 Hz,
 HDD: 0.75 Grms @ 5 ~ 500 Hz

1.4 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 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.



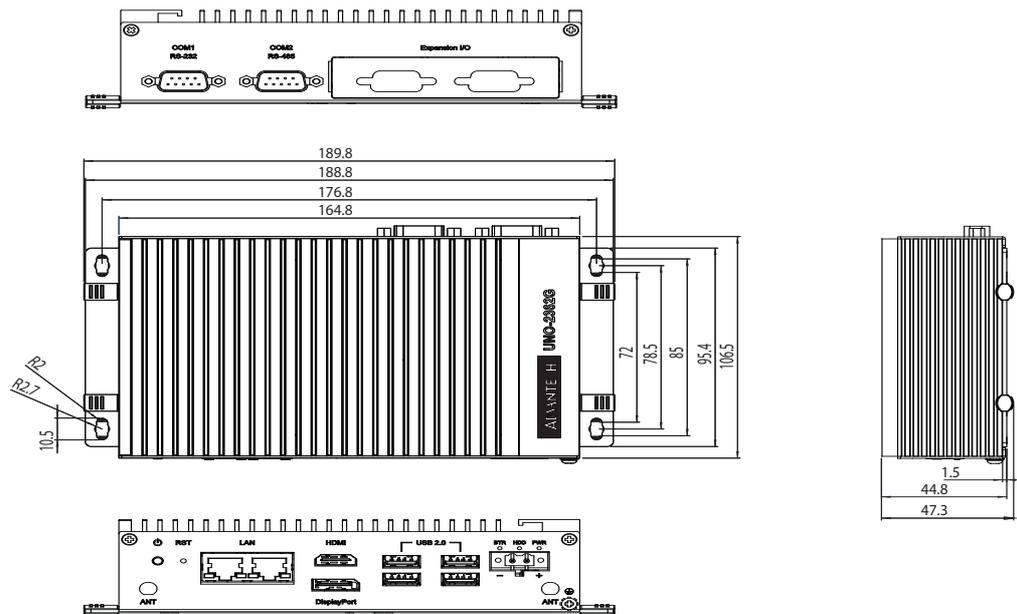
Caution! Always ground yourself to remove any static electric charge before touching UNO-2362G. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag.



Caution! Toujours à la terre pour éliminer toute charge d'électricité statique avant toucher UNO-2362G. 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.



1.5 Chassis Dimensions



1.6 Accessories

Please refer below for the accessory list:

- 2-pin connector for power wiring (Advantech P/N: 1652002205)
- SATA cable (power and signal) (Advantech P/N: 1700022118-01)
- 1 PCS jumper (Advantech P/N: 1653302122)
- 4 PCS screws for HDD (Advantech P/N:1930000687)
- 4 PCS screws for mPCIe slot (Advantech P/N:1935020300)
- 4 PCS screws for UNO Mounting (Advantech P/N:1935040620)
- Driver DVD
- 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-2362G's hardware functions, including connecting peripherals, setting switches and indicators.

Sections include:

- Introduction
- RS-232 Interface
- RS-485 Interface
- LAN / Ethernet Connector
- Power Connector
- USB Connector
- DP/HDMI Display Connector
- mPCIe Socket

2.1 Introduction

The following figures show the connectors on UNO-2362G. The following sections give you information about each peripheral.

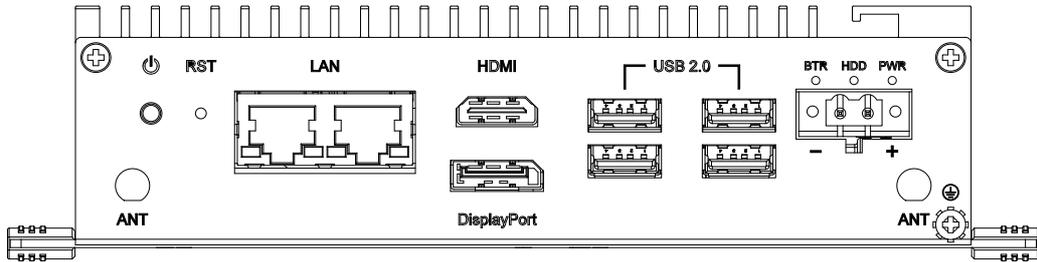


Figure 2.1 Front Panel of UNO-2362G

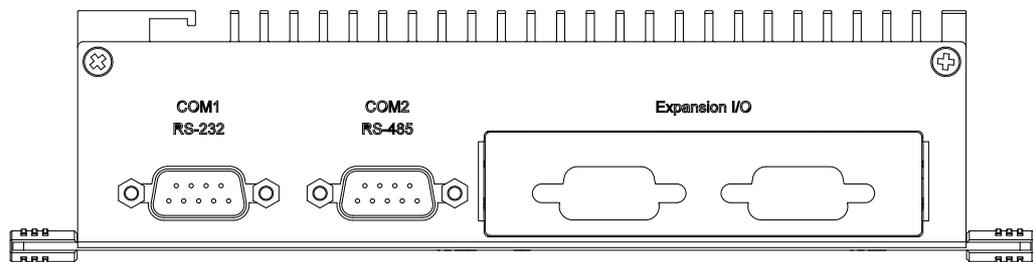


Figure 2.2 Rear Panel of UNO-2362G

2.2 UNO-2362G Interface (COM1~COM2)

UNO-2362G offers one standard RS-232 and one RS-485 (with cable) serial communication interface ports: COM1 ~ COM2.

The IRQ and I/O address range of COM1 to COM2 are listed below:

COM1: 3F8h, IRQ4

COM2: 2F8h, IRQ3

2.2.1 RS-232 Interface (COM 1)

The UNO-2362G offers one RS-232 serial communication interface ports: COM1. Please refer to Appendix A.3 for their pin assignments.

2.2.2 Automatic Data Flow Control Function for RS-485

In RS-485 mode, UNO-2362G automatically detects the direction of incoming data and switches its transmission direction accordingly. So no handshaking signal (e.g. RTS signal) is necessary. This lets you conveniently build an RS-485 network with just two wires. More importantly, application software previously written for half duplex RS-232 environments can be maintained without modification.

2.3 LAN: Ethernet Connector

UNO-2362G is equipped with one Gigabit LAN controller. The controller chip used is the Realtek 8111E Ethernet controller with Marvell 88E6172 Giga ethernet switch with daisy chain technology that is fully compliant with IEEE 802.3u 10/100Base-T CSMA/CD standards and IEEE 802.3ab specification for 1000Mbps Ethernet. The Ethernet port provides two standard RJ-45 jacks on board, and LED indicators on the front side to show its Link (100Mbps orange LED, 1000Mbps green LED) and Active (flashing green LED) status.

2.4 Power Connector

The UNO-2362G comes with a Phoenix connector that carries 24V_{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 and power line. Please refer to Appendix A.5

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. UNO-2362G provides four connectors of USB inter-faces, which gives complete Plug & Play and hot swapping for up to 127 external devices. Two of six connectors are compatible with USB3.0 device but only with USB2.0 speed. The USB interface complies with USB EHCI, Rev. 2.0 compliant. The USB interface can be disabled in the system BIOS setup. Please refer to Appendix A.6 for its pin assignments.

2.6 DisplayPort/HDMI Display Connector

The UNO-2362G provides a DisplayPort/HDMI controller for a high resolution interface. UNO-2362G supports up to full HD resolution for two independent display.

2.7 RTC Battery Specification

UNO-2362G has RTC Battery to ensure the setting in bios and system clock can be kept, even with power disconnected for a short time.

- **Type:** BR2032 (Using CR2032 is NOT recommended)
- **Output Voltage:** 3 V_{DC}
- **Location:** BH1, please refer to below figure

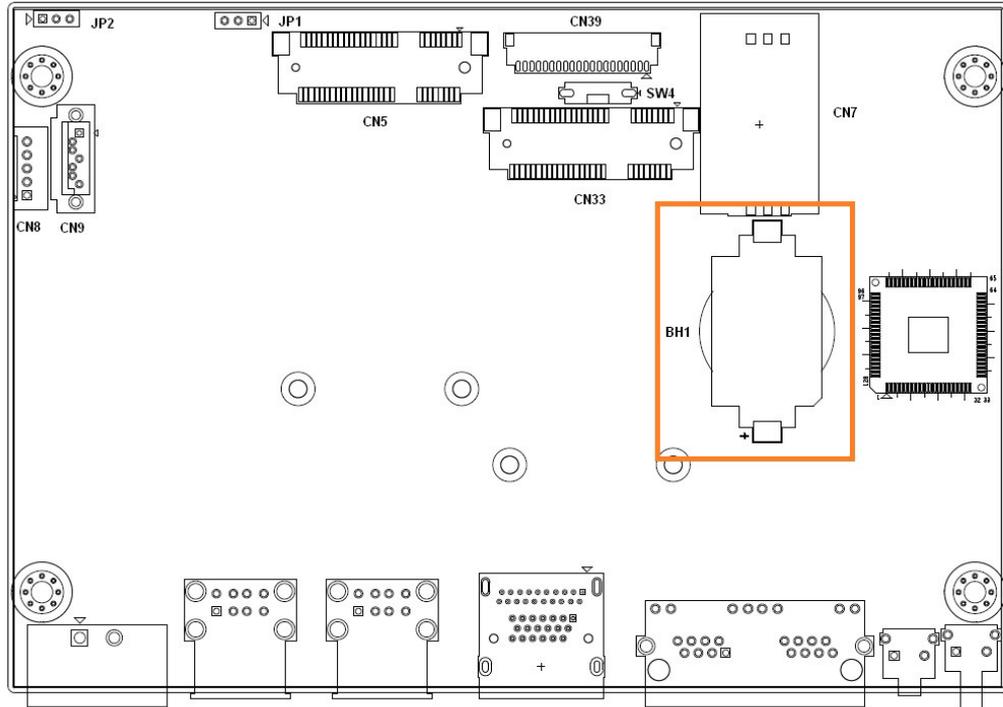


Figure 2.3 RTC Battery Location

2.8 Power Button/Power Management

Press the "PWR" button to power on or power off UNO-2362G (ATX type). UNO-2362G 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).

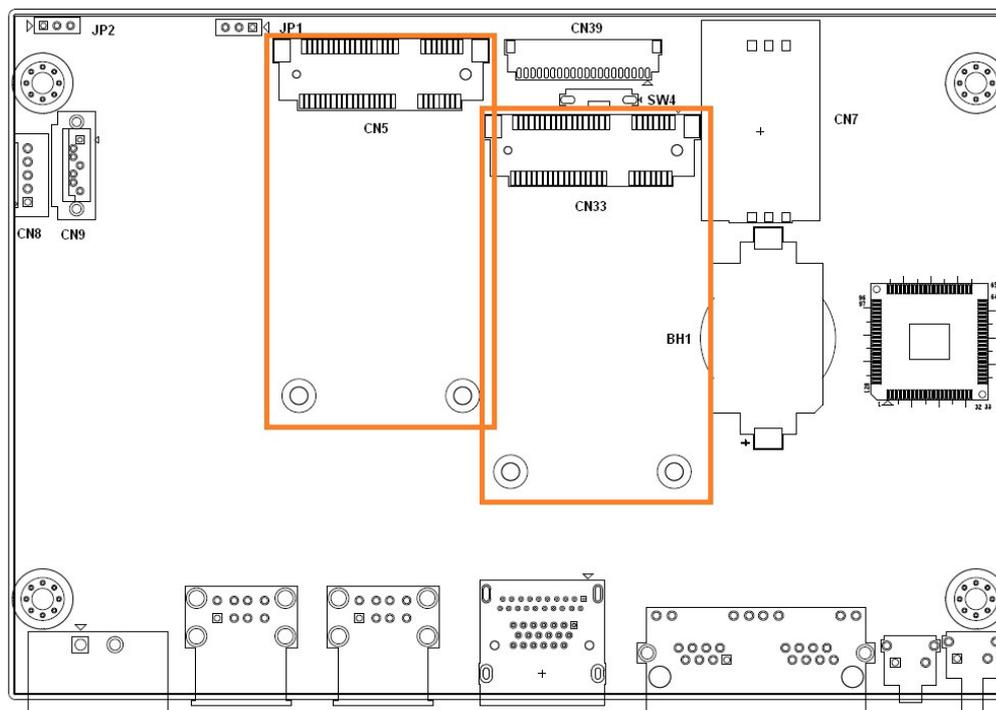
2.9 Reset Button

Press the "Reset" button to activate the hardware reset function.

2.10 PCI Express Mini Card Socket

The UNO-2362G supports two sockets for full size PCI Express mini cards. The first interface (CN5) is the default defined for mSATA storage. The second (CN33) interface is mainly target to support iDoor technology/module for diversified application such as isolated COM port, Profibus, WLAN GPRS, 3G, mRAM and so on. User can install the card easily by the optional kit, please refer to Chapter 3.5 for the details.

An additional SIM card slot is used for 3G application. Please note you still require 3G Mini-PCIe module installed to be able to use 3G functions.



Chapter 3

Initial Setup

This chapter introduces how to initialize the UNO-2362G.

Sections include:

- Inserting a mSATA
- Chassis Grounding
- Connecting Power
- Installing a Hard Disk
- Installing a wireless LAN card and Antenna
- BIOS Setup

3.1 Inserting a mSATA

1. Remove the power cord.
2. Unscrew the six screws in the bottom cover.
3. Plug a mSATA card with your OS and application program into the first mPCIe slot(CN5).
4. Screw the two screws on board to fix mSATA.
5. Screw back the bottom cover.

3.2 Chassis Grounding

UNO-2362G provides good EMI protection and a stable grounding base. There is an easy-to-connect chassis grounding point to use.

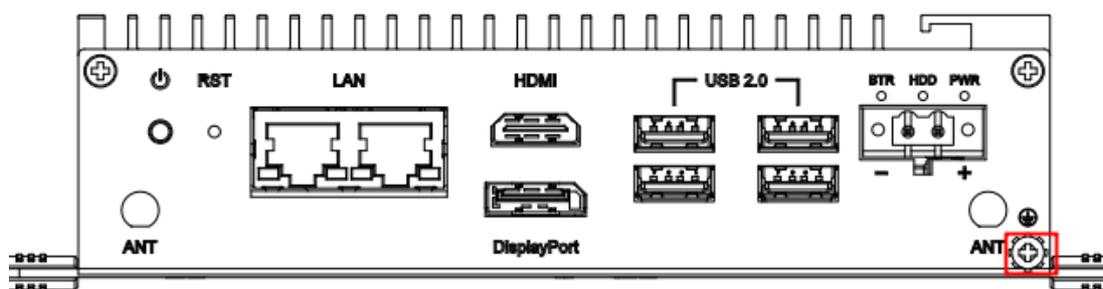


Figure 3.1 Chassis Grounding Connection

Please also note that system ground and chassis ground are separated in UNO-2362G.

3.3 Connecting Power

Connect the UNO-2362G to a 24 V_{DC} power source. The power source can either be from a power adapter or an in-house power source.

3.4 Installing a Hard Disk

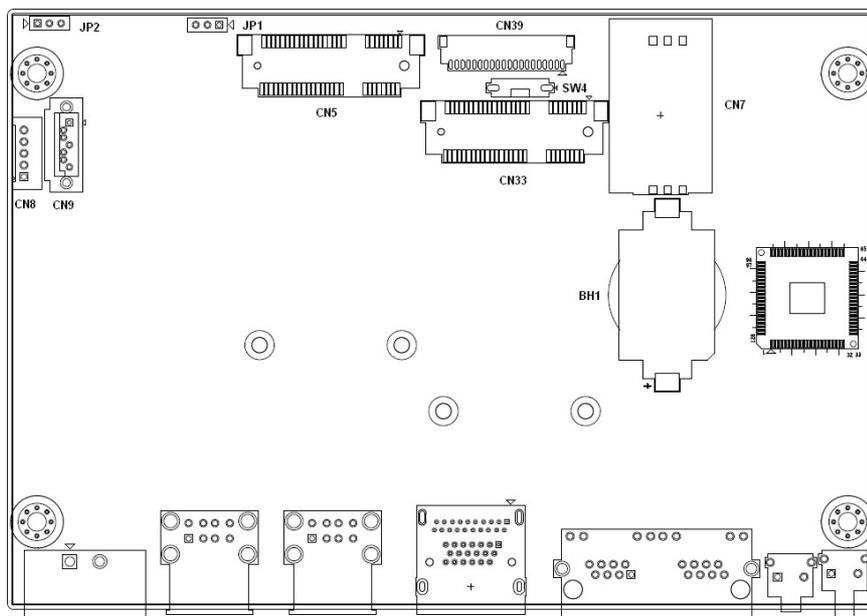
The procedure for installing a hard disk into the UNO-2362G is below. Please follow these steps carefully. Please note the system is not compatible with +12V HDD.

Please use an HDD with lower power input.

1. Remove the power cord.
2. Unscrew the four screws from the bottom cover.
3. Screw HDD to the bottom cover.



4. Connect the SATA signal cable to CN9 and SATA power cable to CN8. Then connect the other side of the cable to SATA hard disk.



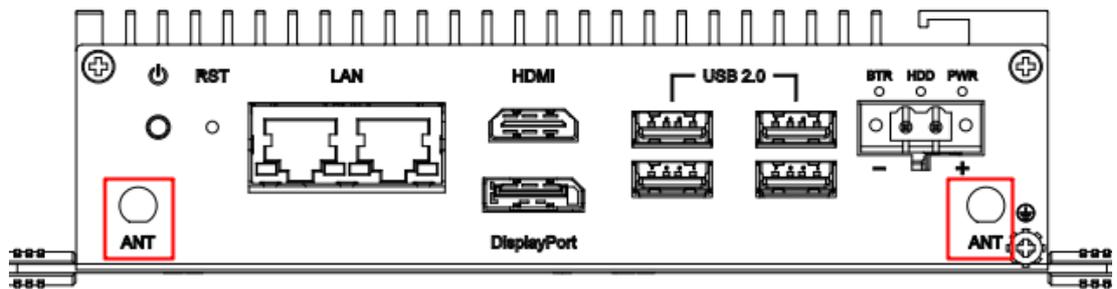


5. Screw back the bottom cover with four screws.

3.5 Installing a Wireless LAN Card and Antenna

Please contact Advantech to prepare the following optional kit:

Rear Panel for Antenna



- The internal cable: 1750006043 (15cm)



Wireless Module (PCI Express mini card)

- One of the suggested module is EWM-W151H01E which is a verified Wireless IEEE 802.11b/g/n module

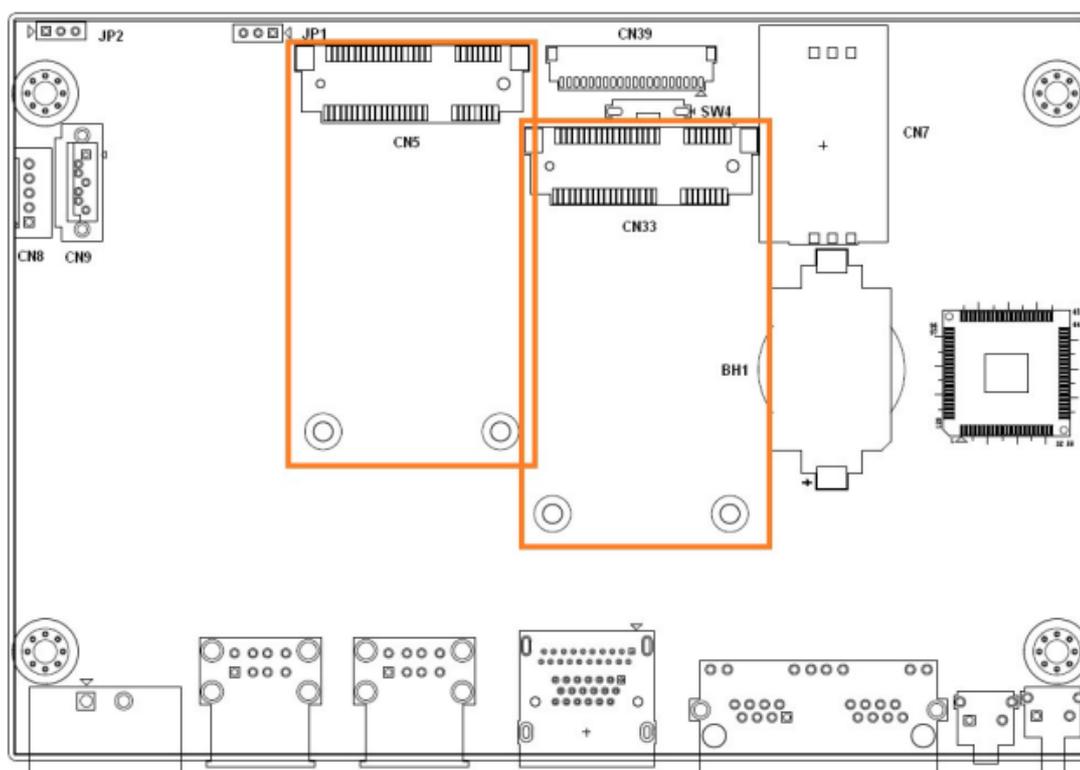
Antenna

- Please select the necessary specification according to your application.
- One of the suggested antenna is 1750002842.



Then follow the below steps for the installation:

1. Unscrew the bottom panel and open it.
2. Remove the hole(s) on the rear panel for antenna installation.
3. Install the internal cable 1750006043 (15cm) on the rear panel.
4. Plug the Wireless module with bracket kit (9656EWMG00E) onto the PCI Express mini card socket (CN33 only)



5. Connect the internal cable with the module.
6. Screw back the bottom panel.
7. Assemble the antenna on the SMA connector.

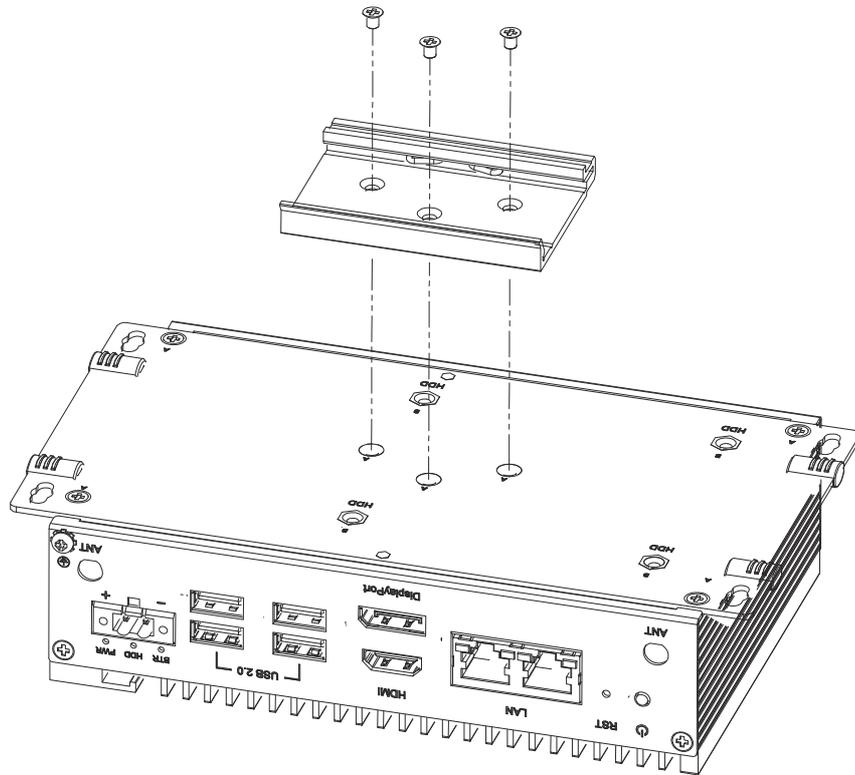
3.6 BIOS Setup

Press “F2” in the boot-up screen to enter the BIOS setup utility. Please follow the instruction on the screen to do the necessary settings.

Please note that you can try to “Restore Defaults” from the BIOS Setup manual if the UNO-2362G does not work properly.

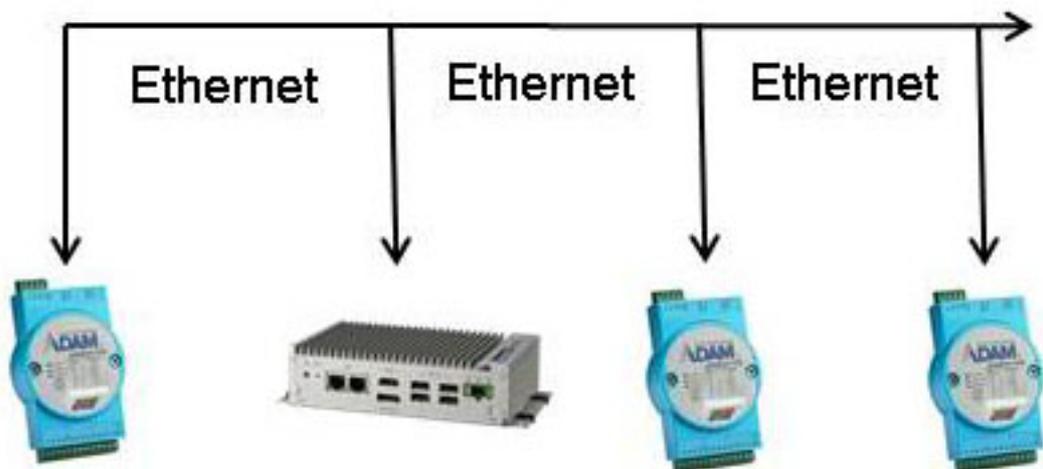
3.7 Din Rail Kit Assembly

The UNO-2362G supports Din-Rail mounting. Order the additional Din rail kit (Advantech P/N: UNO-DIN11-AE) and assemble using the instructions below.



3.8 Daisy Chain for Ethernet

The UNO-2362G series provides an alternative to spending the time and money needed to figure out the best way to hook up your Ethernet switches. Since each UNO-2362G unit has a built-in Ethernet switches, the solution is tailor-made for a daisy-chain type configuration.



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
IRQ 0	Interval timer
IRQ 1	Keyboard
IRQ 2	Interrupt from controller 2 (cascade)
IRQ 3	COM 2
IRQ 4	COM 1
IRQ 8	Real-time clock
IRQ 9	Microsoft ACPI-Compliant System
IRQ 16	LAN
IRQ 17	USB
IRQ 18	USB and graphics
IRQ 19	HD audio and SATA

A.2 Board Connectors and Jumpers

There are several connectors and jumpers on the UNO-2362G board. The following sections tell you how to configure the UNO-2362G hardware setting. Figure A.1 shows the locations of UNO-2362G's connectors and jumpers.

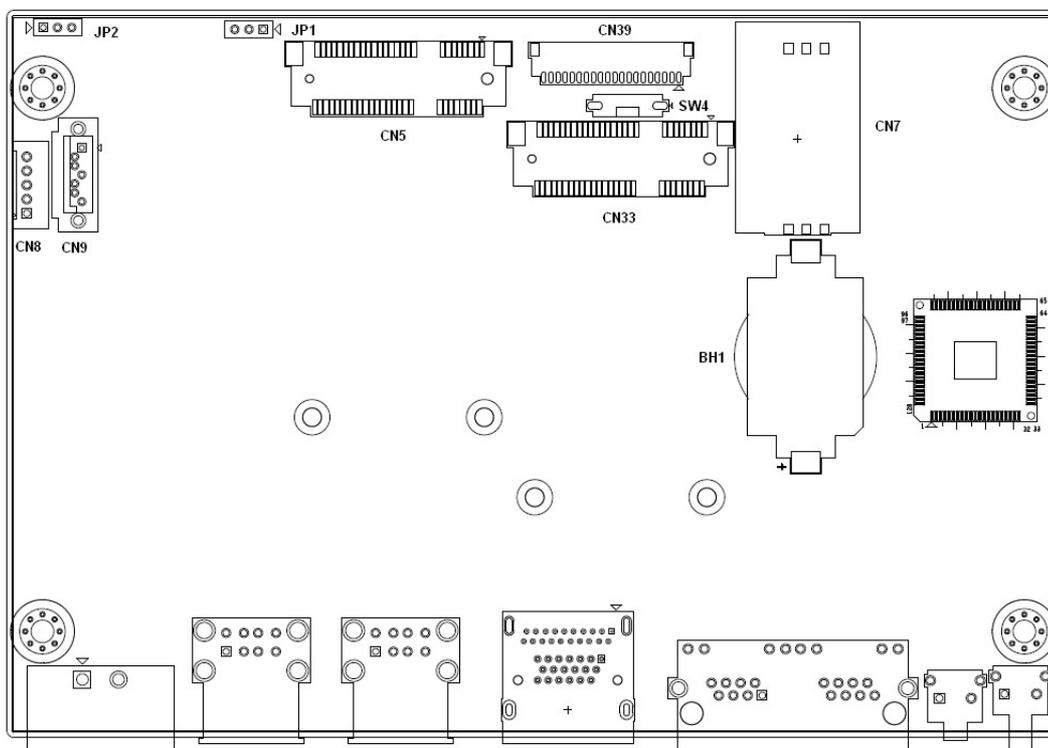


Figure A.1 Connector & Jumper Locations (front)

Table A.2: Connectors and Jumpers

Label	Function
CN5	mPCIe Slot (default mSATA)
CN33	mPCIe slot (support iDoor technology).
CN8	SATA power connector
CN9	SATA signal connector
BH1	Battery for RTC
CN39	Connector for RS-232 and RS-485
JP1	System power AT or ATX selection
CN7	SIM Card
JP2	Clear CMOS

A.3 RS-232 Standard Serial Port

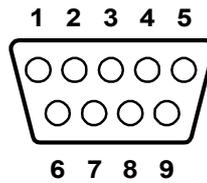


Table A.3: RS-232 Serial Port Pin Assignments

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

A.4 RS-485 Serial Port (COM2)

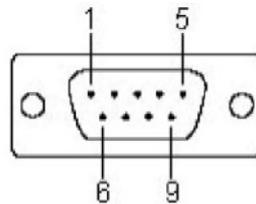


Table A.4: RS-485 Serial Port Pin Assignments

Pin	RS-485
1	Data-
2	Data+
3	NC
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

A.5 Power Connector (PWR)

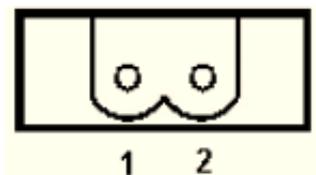


Table A.5: Power connector pin assignments

Pin	
1	V+ (24+-15%)
2	V-

A.6 USB Connector

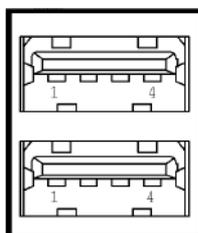


Table A.6: USB 2.0 Connector Pin Assignments

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

A.7 HDMI Display Connector

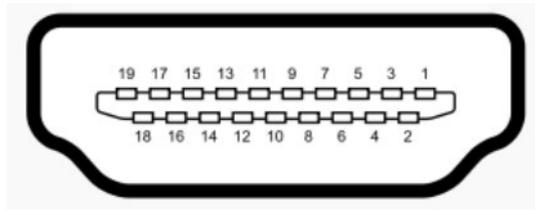


Table A.7: HDMI Display Connector

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.8 DisplayPort Display Connector

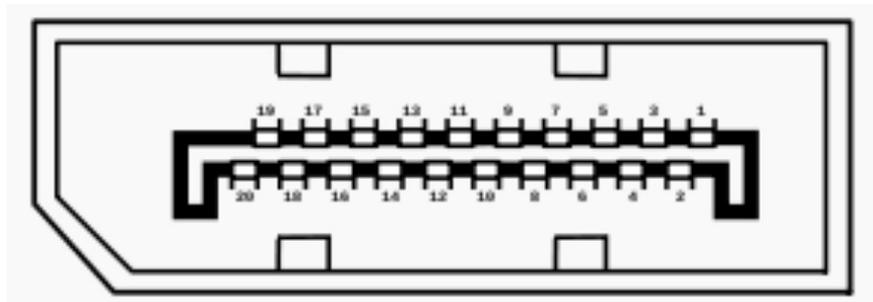


Table A.8: DisplayPort adaptor cable pin assignment

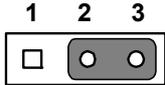
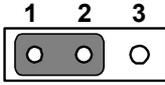
Pin	Signal Name
1	ML_Lane 0 (p)
2	GND
3	ML_Lane 0 (n)
4	ML_Lane 1 (p)
5	GND
6	ML_Lane 1 (n)
7	ML_Lane 2 (p)
8	GND
9	ML_Lane 2 (n)
10	ML_Lane 3 (p)
11	GND
12	ML_Lane 3 (n)
13	CONFIG1
14	CONFIG2
15	AUX CH (p)
16	GND
17	AUX CH (n)
18	Hot Plug
19	Return
20	DP_PWR

A.9 Clear CMOS (JP2)

This jumper is used to erase CMOS data and reset system BIOS information. Follow the procedures below to clear the CMOS.

1. Turn off the system.
2. Close jumper JP2 (2-3) to clear CMOS
3. Wait for 5 seconds.
4. Close jumper JP2 (1-2).
5. Turn on the system. The BIOS is reset to its default setting.

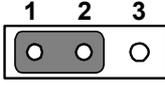
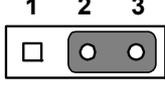
Table A.9: JP2 Clear CMOS

Configuration	Function
	Clear CMOS
	Normal (Default)

A.10 System Power AT or ATX Selection (JP1)

UNO-2362G can set AT or ATX power mode in the bios or hardware jumper setting.

Table A.10: AT/ATX Selection

Configuration	Function
	AT mode
	ATX mode (default)

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