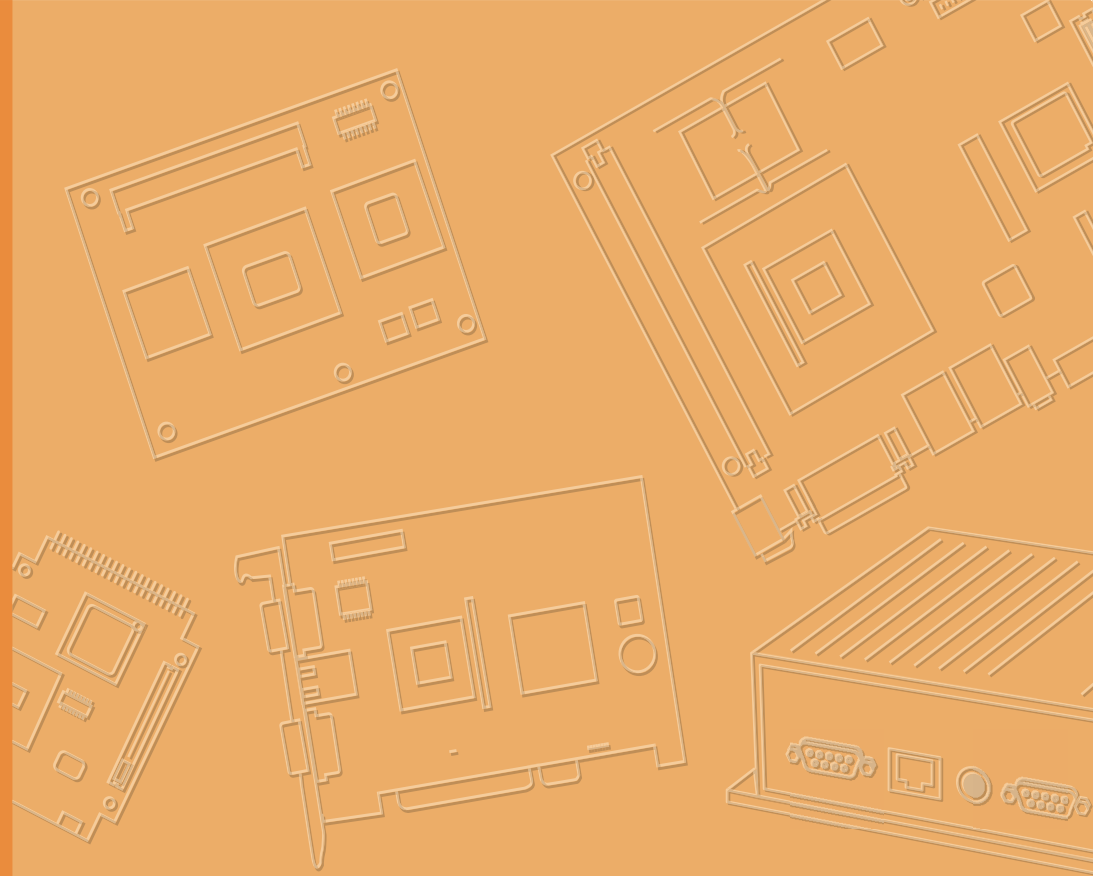


**User Manual**



# **UTC-320**

**Ubiquitous Touch Computer  
with 21.5" TFT LCD and Intel®  
Processor**

**ADVANTECH**

*Enabling an Intelligent Planet*

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For technical support and customer service, visit our support website at <http://support.advantech.com>

This manual is for UTC-320.

# Declaration of Conformity

## FCC Class A

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, users are encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit that differs from the one to which the receiver is connected.
- Consult your dealer or an experienced radio/TV technician for assistance.

**Warning!** *Any changes or modifications to the equipment that are not expressly approved by the relevant standards authority may void your authority to operate the equipment.*



---

## Packing List

Before setting up the product, please ensure that the following items were included:

- 1 x UTC-320
- Accessories for UTC-320
  - 1 x Warranty card
  - 1 x Power adapter
  - 1 x SATA cable
  - 1 x Packet of screws

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

## Technical Support and Assistance

1. Visit the Advantech website at <http://support.advantech.com> to obtain the latest product information.
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 calling:
  - 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 Instructions

1. Read these safety instructions carefully.
2. Retain this user manual for future reference.
3. Disconnect the equipment from all power outlets before cleaning. Use only a damp cloth for cleaning. Do not use liquid or spray detergents.
4. For pluggable equipment, the power outlet socket must be located near the equipment and easily accessible.
5. Protect the equipment from humidity.
6. Place the equipment on a reliable surface during installation. Dropping 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. Ensure that the voltage of the power source is correct before connecting the equipment to a power outlet.
9. Position the power cord away from high-traffic areas. 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 from transient overvoltage.
12. Never pour liquid into an opening in the device. 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 occurs, have 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 the equipment in an environment with a storage temperature of below -20 °C (-4 °F) or above 60 °C (140 °F) as this may damage the components. The equipment should be kept in a controlled environment.
16. **CAUTION:** Batteries are at risk of exploding if incorrectly replaced. Replace only with the same or equivalent type, as recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.
17. In accordance with IEC 704-1:1982, the sound pressure level at the operator's position does not exceed 70 dB (A).

**DISCLAIMER:** These instructions are provided according to IEC 704-1 specifications. Advantech disclaims all responsibility for the accuracy of any statements contained herein.



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# Chapter 1

## General Information

This chapter provides general information about UTC-320.

- Introduction
- General Specifications
- LCD Specifications
- Dimensions

# 1.1 Introduction

UTC-320 is a multi-purpose all-in-one computing system equipped with a wide format, touch-based LCD panel. The system can be easily integrated with key peripherals and display systems for diverse self-service and interactive signage applications. Moreover, with the provision of a removable frame, UTC-320 can also be wall or panel mounted for control applications.

## 1.2 General Specifications

### 1.2.1 General

- **Dimensions (L x H x D):** 520.2 x 316.1 x 45.9 mm/20.4 x 12.44 x 1.8 in
- **Weight:** 6.5 kg/14.3 lb
- **Power adaptor:** AC/DC (standard) 12 V, 84 W  
Input voltage: 100 ~ 240 V<sub>AC</sub>  
Output voltage: 12 V @ 7 A
- **Disk drive housing:** Supports 1 x 2.5" SATA HDD
- **Front panel:** IP65 rating for protection from water and dust

### 1.2.2 Standard PC Functions

- **CPU:** Intel® Core™ i5-6300U/i5-4300U with 3 MB L3 cache/Pentium® N4200/Celeron® J1900 with 2 MB L2 cache
- **BIOS:** AMI 16 MB Flash BIOS via SPI
- **System chipset:** Intel® Core™ i5-6300/Core™ i5-4300U/Pentium® N4200/Celeron® J1900
- **System memory:**
  - 1 x 204-pin SODIMM DDR3L 1333 MHz up to 8 GB (UTC-320D/E)
  - 1 x 260-pin SODIMM DDR4 2133 MHz up to 16 GB (UTC-320F)
  - 1 x 204-pin SODIMM DDR3L 1866 MHz up to 8 GB (UTC-320G)
- **Serial ports:** 1 x RS-232 COM, 1 x RS-232/422/485
- **USB ports:**
  - Supports up to 5 x USB 2.0/1X USB 3.0 (UTC-320D)
  - Supports up to 2 x USB 2.0/4 x USB 3.0 (UTC-320E/F/G)
- **Mini PCI-E bus expansion slot:** Supports 1 x mini PCI-E device such as a wireless LAN card (UTC-320D/E/F)
- **M.2 2230 bus expansion slot:** Supports 1 x M.2 2230 device such as a wireless LAN card (UTC-320G)
- **Watchdog timer:** Single-chip 255-level interval timer, setup via software
- **Power management:** Full ACPI (Advanced Configuration and Power Interface) 2.0 Supports S0, S1, S3, S4, S5

### 1.2.3 Audio Function

- **Audio:** High-definition (HD) audio, 2 x (1 W) speakers
- Optional - Audio output function

## 1.2.4 LAN Function

- **Chipset:**
  - LAN1 Intel® I218LM, LAN2 Intel® WGI211AT (UTC-320E)
  - LAN1 Intel® I219LM, LAN2 Intel® WGI211AT (UTC-320F)
  - LAN1 Intel® WGI211AT, LAN2 Intel® WGI211AT (UTC-320D/G)
- **Speed:** 1000 Mbps
- **Interface:** 2 x RJ45
- **Wake-on-LAN:** Supports Wake-on-LAN with ATX power control, also supports LAN teaming (in fault tolerance)

## 1.2.5 Touchscreen (Optional)

Type	5-wire analog resistive (resistive flat glass)/Projected capacitive touch (PCAP flat glass)
Light Transmission	80%
Controller	USB interface
Durability (touches in a lifetime)	36 million

## 1.2.6 Environment

- **Operating temperature:** 0 ~ 40 °C (32 ~ 104 °F)
- **Storage temperature:** -20 ~ 60° C (-4 ~ 140 °F)
- **Relative humidity:** 10 ~ 90% @ 40 °C (non-condensing)
- **Shock:** 10 G peak acceleration (11 ms duration)
- **Certification:**  
EMC: CE, FCC, BSMI, VCCI  
Safety: UL 60950, CB, CCC, BSMI
- **Vibration:** 5 ~ 500 Hz 0.5 Grms random vibration
- **VESA support:** 100 x 100 mm (3.93 x 3.93 in) with 8 x M4 screws; supports landscape and portrait modes .

**Caution!** Use suitable mounting apparatus to avoid personal injury.



**Note!** Follow the instructions provided in the user manual to install UTC-320.





### 1.3 LCD Specifications

- **Display type:** 21.5" TFT LCD
- **Max. resolution:** 1920 x 1080
- **Colors:** 16.7 M
- **Pixel pitch (H x V):** 248.25 x 248.25 um
- **View angle:** 178°/178°
- **Luminance:** 250 cd/m<sup>2</sup>

**Note!** *The UTC-320 color LCD is high quality and reliable. However, it may contain a few defective pixels that do not always illuminate. With current technology, it is impossible to completely eliminate defective pixels. Advantech is actively working to improve this technology.*



### 1.4 Optional Modules

- **Memory:** 1 x 204-pin SODIMM DDR3L 1333 MHz up to 8 GB (UTC-320D/E/G), 1 x 260-pin SODIMM DDR4 2133 MHz up to 16 GB (UTC-320F)
- **HDD:** 2.5" SATA HDD
- **Operating system:** Windows Embedded Standard 7/8.1/10, Embedded Linux 3.0, Android 4.4.4/6.6, Linux uBuntu 16.04/18.04
- **Touchscreen:** Analog resistive (PCAP optional)
- **Power cord:** 1702002600 (US) 1702002605 (Europe)
- **Wireless LAN module:**

Part Number	Description
1750008953-01(UTC-320D/E/F)	Metal antenna D.B 2.4+5G WLAN MHF1/113 BLK L350
EWM-W163M201E (UTC-320G)	802.11 a/b/g/n/ac,QCA6174A,2T2R,w/BT4.1,M.2
1750008954-01 (UTC-320G)	Metal antenna D.B 2.4+5G WLAN MHF4/113 BLK L350

# 1.5 Dimensions

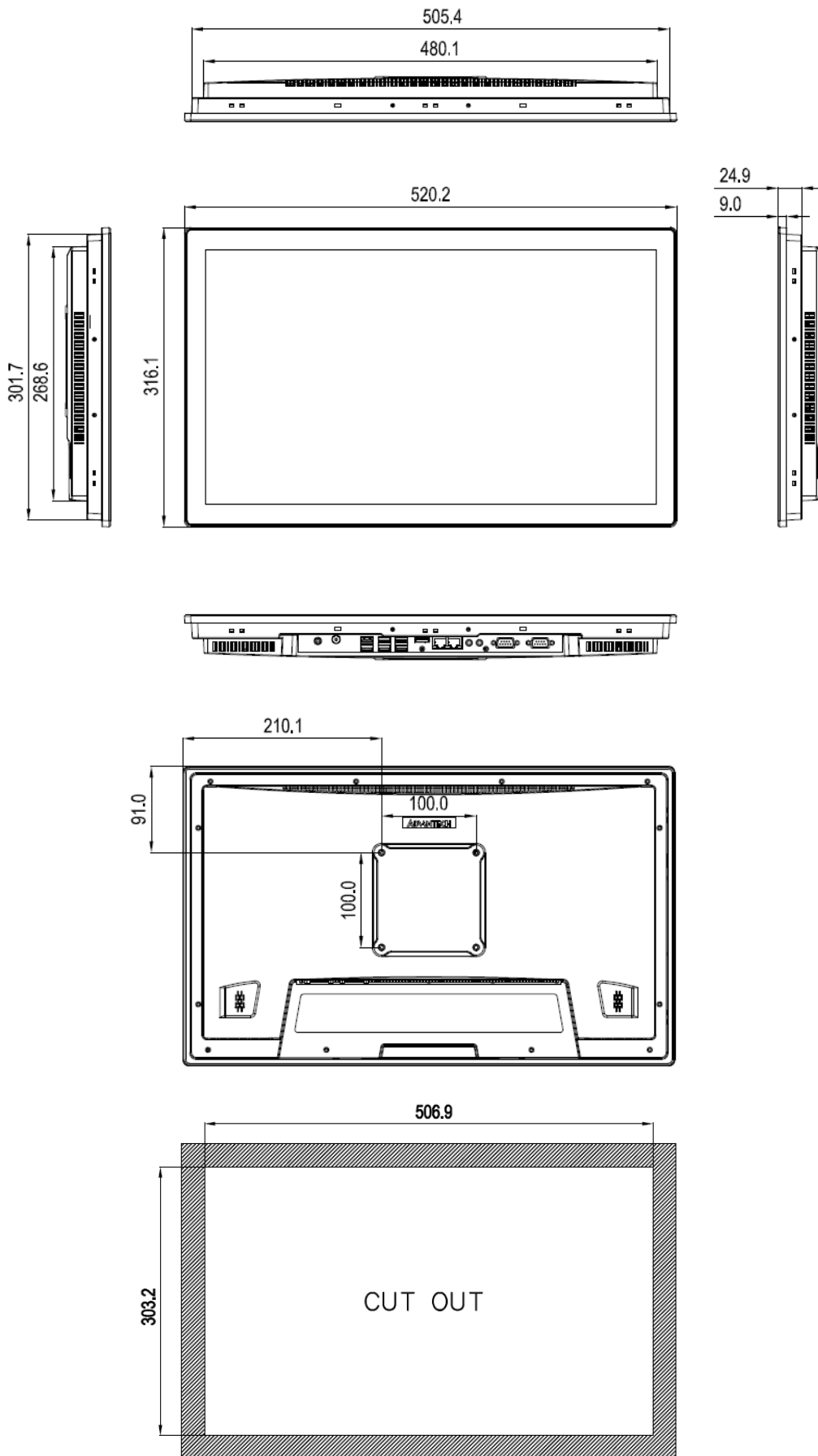


Figure 1.1 UTC-320 System Dimensions



# Chapter 2

## System Setup

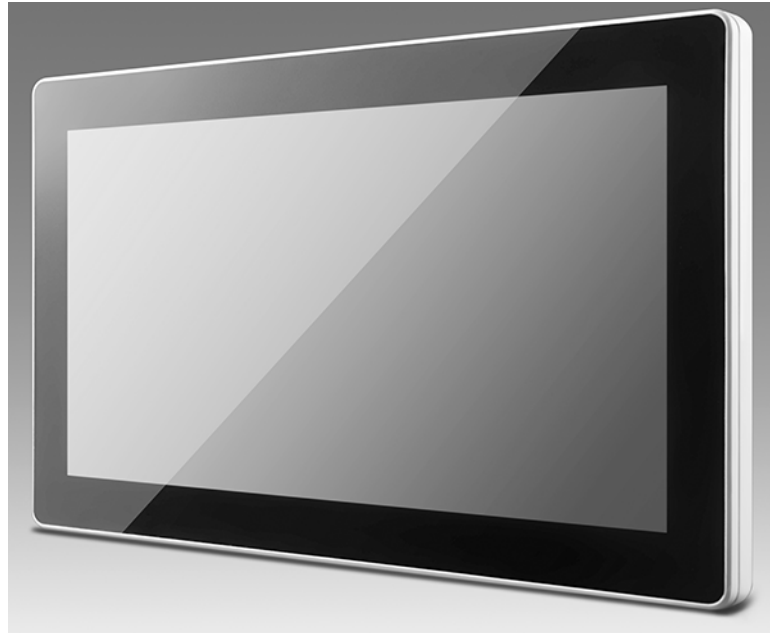
This chapter explains the initial setup of UTC-320.

- Quick Tour
- Installation Procedures
- BIOS Setup
- Software Installation
- Driver Installation

## 2.1 Quick Tour

Before setting up UTC-320, take a moment to familiarize yourself with the locations and purposes of the controls, drives, connectors, and ports (as shown in the figures below).

When UTC-320 is placed upright on a desk top, the front panel should appear as shown in Figure 2.1.



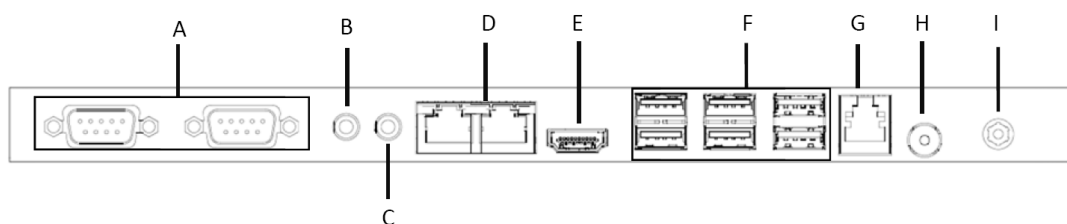
**Figure 2.1 UTC-320 Front View**

Located at the rear of UTC-320 is an I/O section that includes serial ports, Ethernet ports, USB ports, HDMI ports, Line-Out/Mic-In, RJ11, DC-In, and a power button. The rear view of UTC-320 is shown in Figure 2.2.



**Figure 2.2 UTC-320 Rear View**





- |                        |  |
|------------------------|--|
| A. COM port            | B. Line-Out                                      |
| C. Mic-In              | D. 2 x Gigabit LAN                               |
| E. HDMI/VGA (optional) | F. 4 x USB 3.0, 2 x USB 2.0 (Core™ and Pentium®) |
|                        | 5 x USB 2.0, 1 x USB 3.0 (Celeron®)              |
| G. RJ11 (optional)     | H. Power button                                  |
| I. DC-In               |  |

## 2.2 Installation Procedures

### 2.2.1 Connecting the Power Cord

UTC-320 can be powered by a DC electrical outlet. Hold only the plug ends when handling power cords. Figure 2.3 shows how to connect the male plug of the power cord to the DC inlet of UTC-320.

### 2.2.2 Connecting a Keyboard or Mouse

Before you start the computer, please connect keyboard port on the I/O section of the UTC-320.

### 2.2.3 Switching on the Power Supply

When you look at the rear side of the UTC-320, you will see the power switch as shown in Figure 2.3.



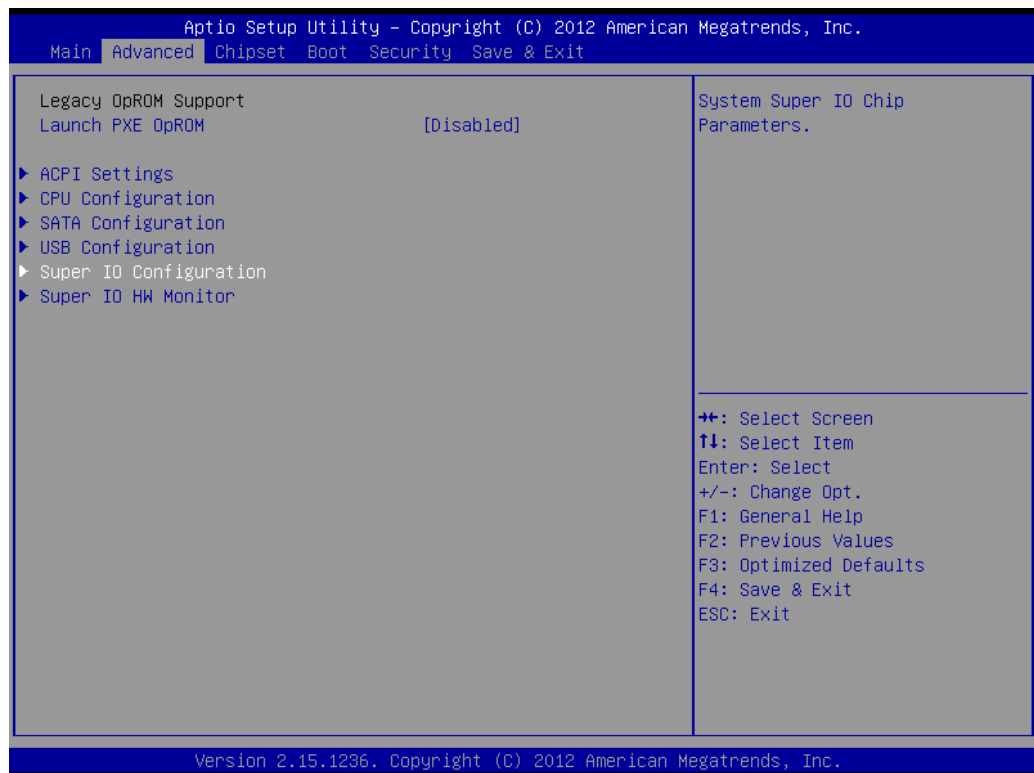
Figure 2.3 Power Cord to DC Input

## 2.3 BIOS Setup

The UTC-320 system is likely to have been setup and configured by your dealer prior to delivery. However, users may still find it necessary to use the UTC-320 BIOS setup program to adjust the system configuration data, such as the current date/time or hard drive type. The setup program is stored in read-only memory (ROM) and can be accessed when powering on or rebooting the system. Simply pressing the “Del” key immediately after system bootup.

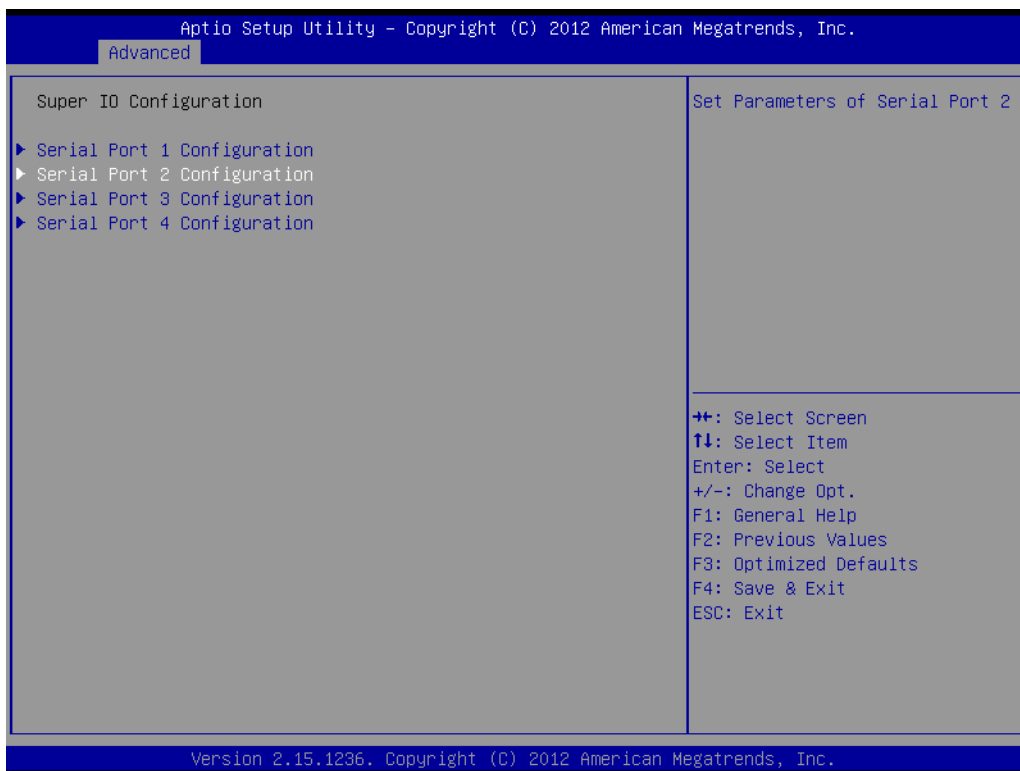
The settings specified in the BIOS are recorded in a special area of memory called CMOS RAM. This memory is backed up by a battery to ensure the data is retained following a system reset/power on. Upon bootup, the system reads the settings stored in CMOS RAM and compares them to the results of the equipment check conducted during the power on self-test (POST). If a discrepancy is identified, an error message will be displayed on screen, and users will be prompted to run the setup program.

### COM2 RS-232/422/485 Selection

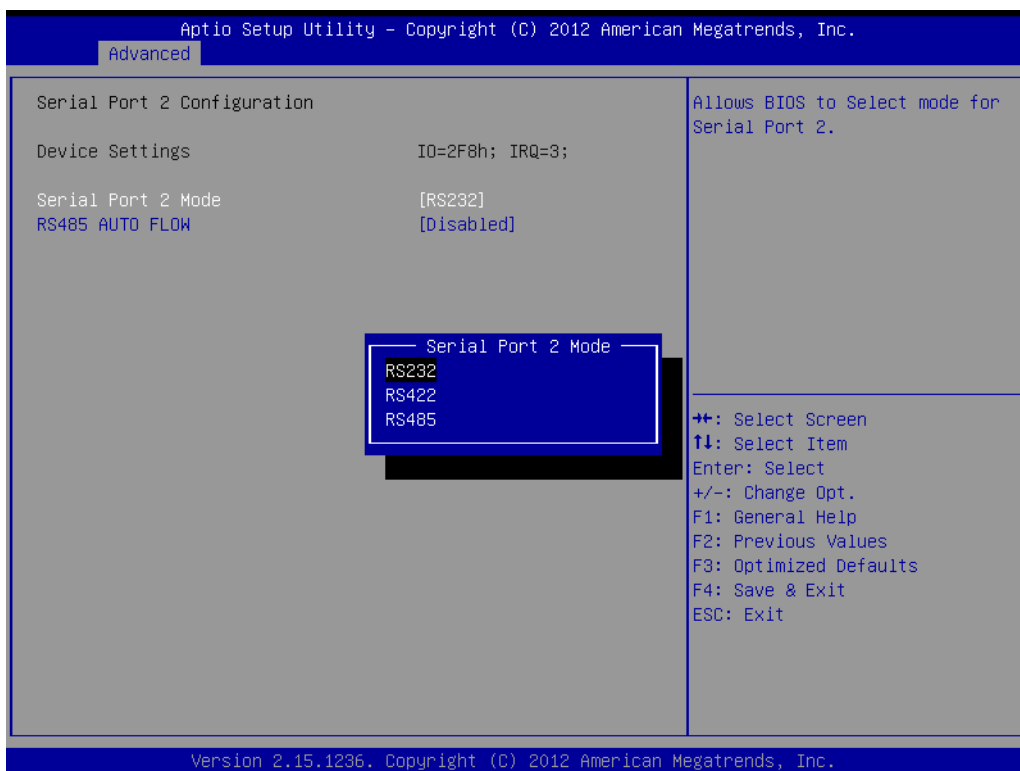


Enter the BIOS setup utility → Advanced → Super IO Configuration

## Select "Serial Port 2 Configuration"



## Configure the Serial Port 2 mode [RS-232/422/485]



---

## 2.4 Software Installation

Recent releases of operating systems (OS) from major vendors include setup programs that load automatically and guide users through hard disk preparation and operating system installation. The guidelines below will help you determine the steps necessary to install an OS on the UTC-320 hard drive.

**Note!** *Some distributors and system integrators may have pre-installed software on UTC-320 prior to shipment.*



An HDD must be installed to enable software installation. Software can be loaded on to the UTC-320 system using any of the four following methods:

### 2.4.1 Method 1: Ethernet

Download software to the HDD via the Ethernet port.

### 2.4.2 Method 2: External USB CD-ROM

If required, insert the OS installation or setup disk into the disk drive until the release button pops out.

The UTC-320 BIOS utility supports system boot-up from the CD-ROM drive. The system installation CD-ROM can be inserted into the CD-ROM drive.

Power on or reset the system by pressing “Ctrl+Alt+Del” simultaneously. The system will automatically load the OS from the disk or CD-ROM.

A setup program or installation wizard should automatically pop up. Follow the onscreen messages provided. The setup program guides users through HDD preparation and OS installation.

If the system displays a command line prompt, such as A:\>, users must partition and format the hard drive before manually copying the OS files to the hard drive. Refer to the OS user manual for instructions on partitioning and formatting a hard drive.

## 2.5 Driver Installation

After installing the system software, users can configure the Ethernet, chipset, graphics, audio, USB 3.0, and touchscreen functions.

All drivers are available for download from the Advantech website [www.advantech.com](http://www.advantech.com)

**Note!** *The UTC-320 drivers and utilities are subject to change without notice.*



*If in doubt, check the Advantech website or contact our application engineers for the latest information regarding drivers and utilities.*

# Chapter 3

## Hardware Installation and Upgrades

This chapter explains how to install the system hardware.

- Overview
- HDD Installation
- mSATA Installation
- WLAN Installation

## 3.1 Introduction

The UTC-320 is a PC-based computer that is housed in a plastic enclosure. To install an HDD, DRAM, or mini SATA card, simply remove the rear cover. Similarly, any maintenance or hardware upgrades can be easily completed after removing the rear cover.

**Warning!** Do not remove the rear cover until you have verified that no power is flowing within UTC-320. The power source must be switched off and the power cord unplugged when servicing UTC-320.



## 3.2 HDD Installation

UTC-320 features an internal controller that is compatible with one 2.5" SATA HDD. This controller offers faster data transfers and supports SATA HDDs that exceed 150 MB. Follow the instructions below for installation.

1. Detach and remove the rear cover.
2. Install an HDD in the metal bracket and tighten the affixing screws (see Figure 3.1).
3. The HDD cable (SATA 7P + 1 x 5P-2.5/SATA(15+7)P) is located next to the metal bracket. Connect the HDD cable to the motherboard (SATA1/SATA Power) and the SATA HDD.
4. Replace the rear cover and tighten the affixing screws.

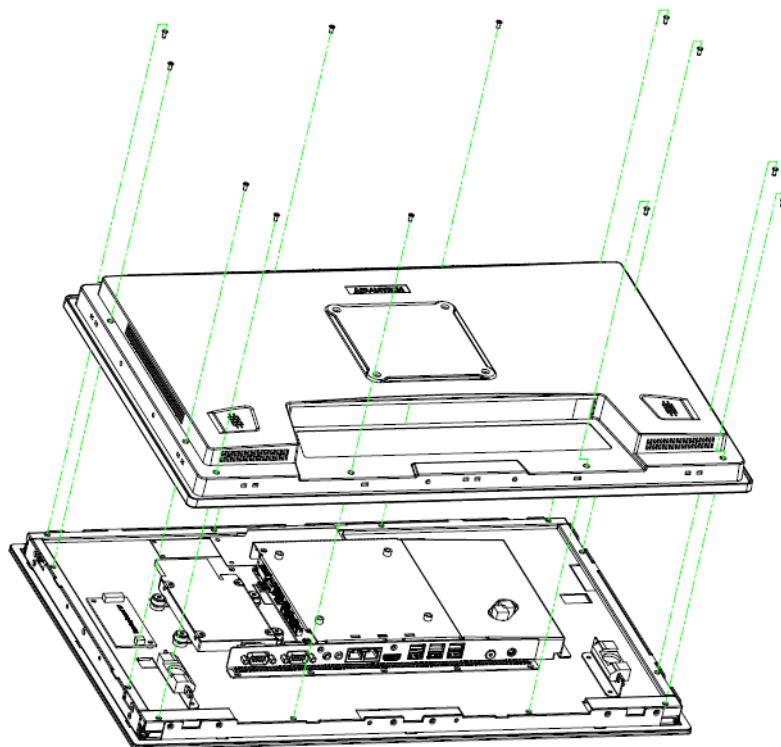


Figure 3.1 Installing Primary 2.5" HDD

### 3.3 mSATA Installation

1. Remove the 12 screws on the rear cover.
2. Remove the 6 screws on the reinforced board.
3. Insert an mSATA card into the mSATA slot
4. Replace and tighten the screws on the reinforced board.
5. Replace and secure the rear cover.

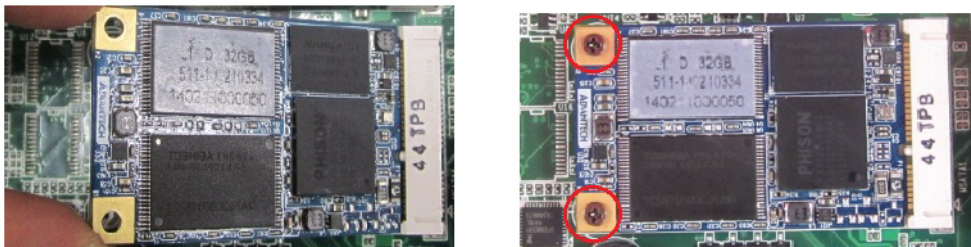
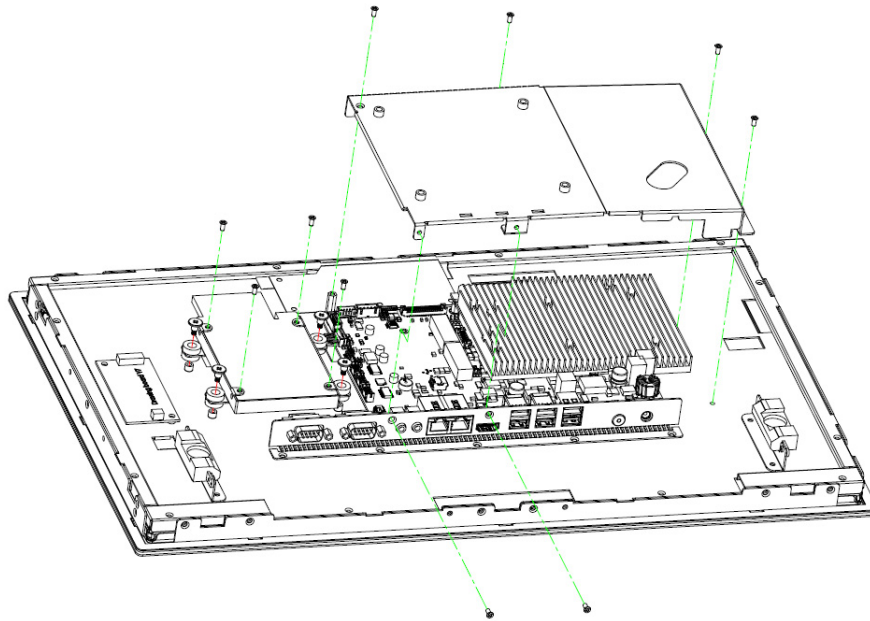
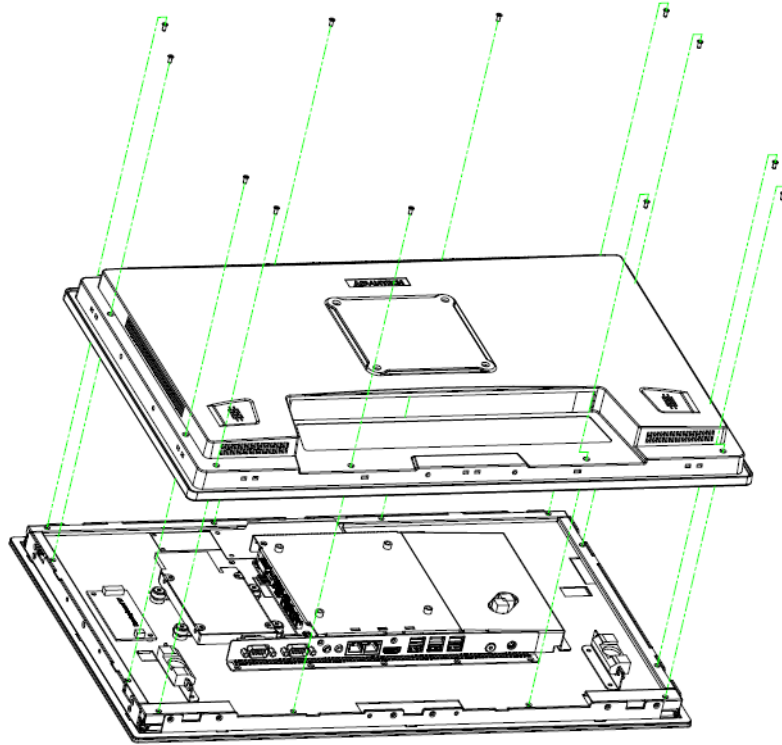


Figure 3.2 Installing an mSATA Card

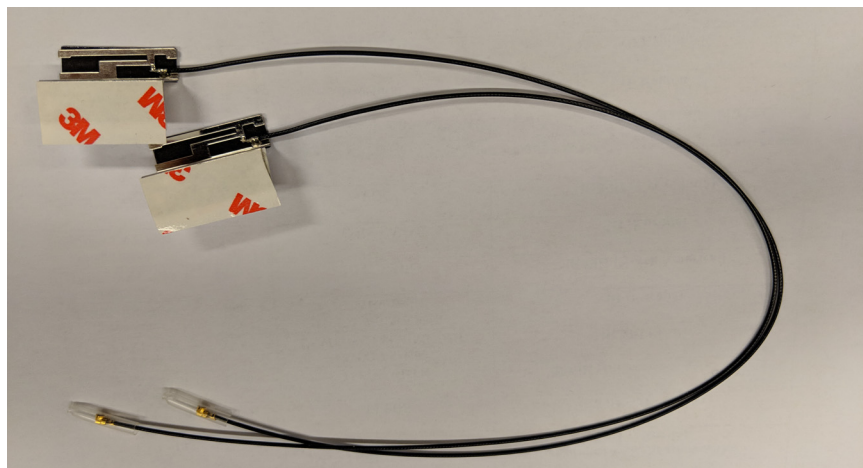
## 3.4 WLAN Installation

Two locations are reserved for attaching an external antenna, one is by the I/O port and the other is on the rear cover. Users can choose the antenna location according to their requirements.

1. Remove the 12 screws from the rear cover.



2. Remove the 6 screws on the reinforced board.

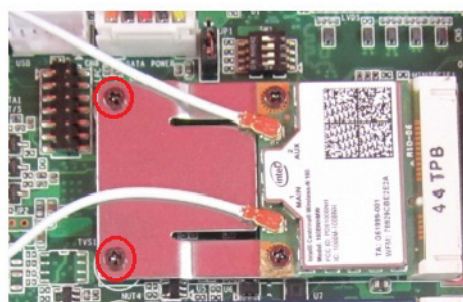
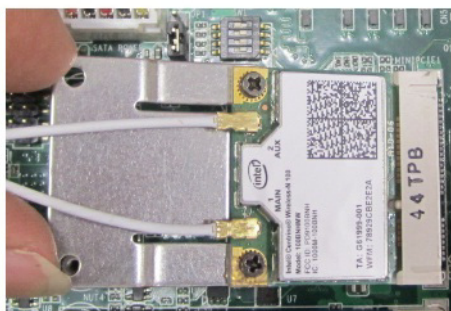




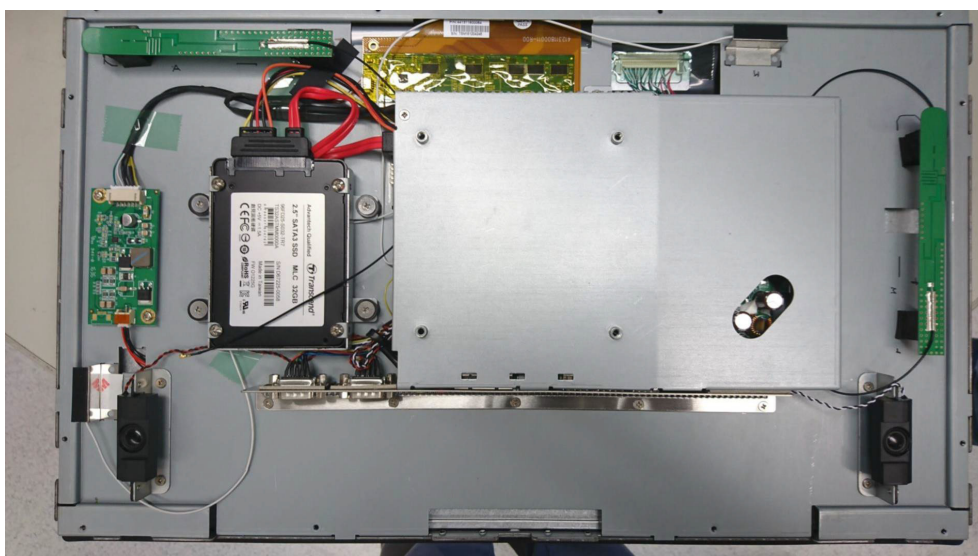
3. Connect a coaxial cable (Advantech part number: 1750008953-01 for UTC-320D/E/F, 1750008954-01 for UTC-320G) to ANT1 on the WLAN card.



4. Install the WLAN card on underside of the motherboard.



5. The wireless antenna cable should be routed as shown below.





# Chapter 4

## Jumper and Connector Settings

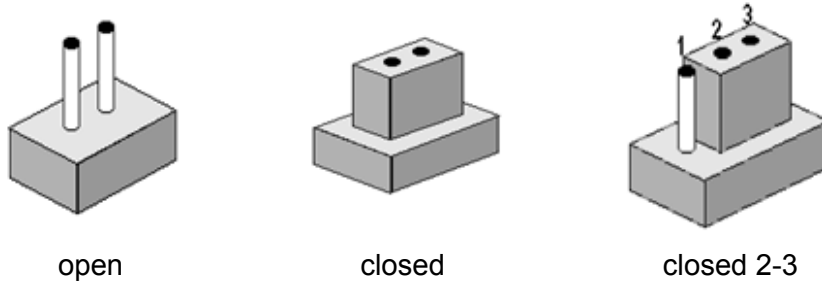
This chapter provides details for setting jumpers and connecting peripherals, switches, and indicators.

- Jumpers and Connectors
- Jumper and Connector Functions
- Jumper and Connector Locations

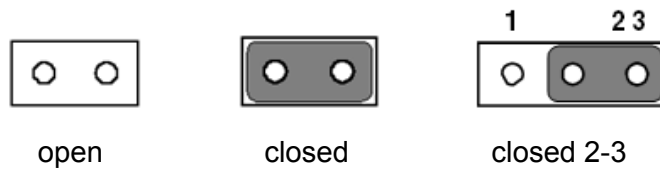
## 4.1 Jumpers and Connectors

### 4.1.1 Jumper Configuration

Users can configure UTC-320 according to their application needs by setting jumpers. A jumper is the simplest type of electrical switch and consists of two metal pins and a small metal clip (typically protected by a plastic cover) that slides over the pins to connect them. To close a jumper, connect the pins with the clip. To open a jumper, simply remove the clip. Some jumpers have three pins, labeled 1, 2, and 3. For this type of jumper, connect either Pins 1 and 2, or Pins 2 and 3.



The jumper settings are schematically depicted below.



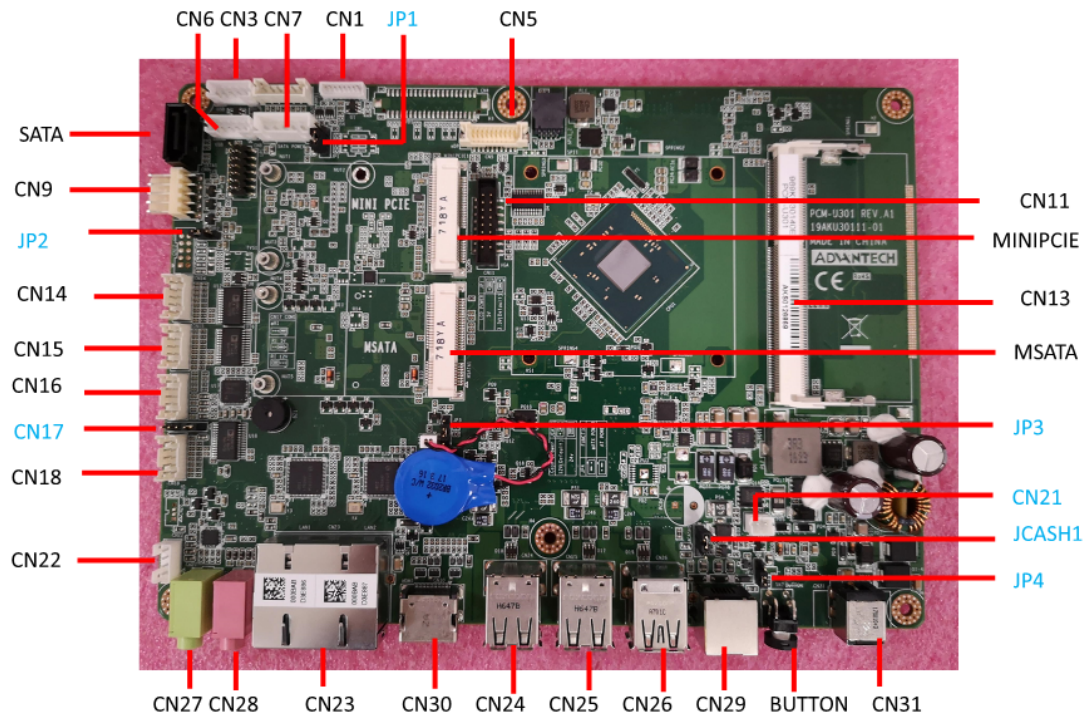
A pair of needle-nose pliers may be helpful when working with jumpers. For advice regarding the optimum hardware configuration for specific applications, contact your local distributor or sales representative.

## 4.1.2 Jumper and Connector Functions

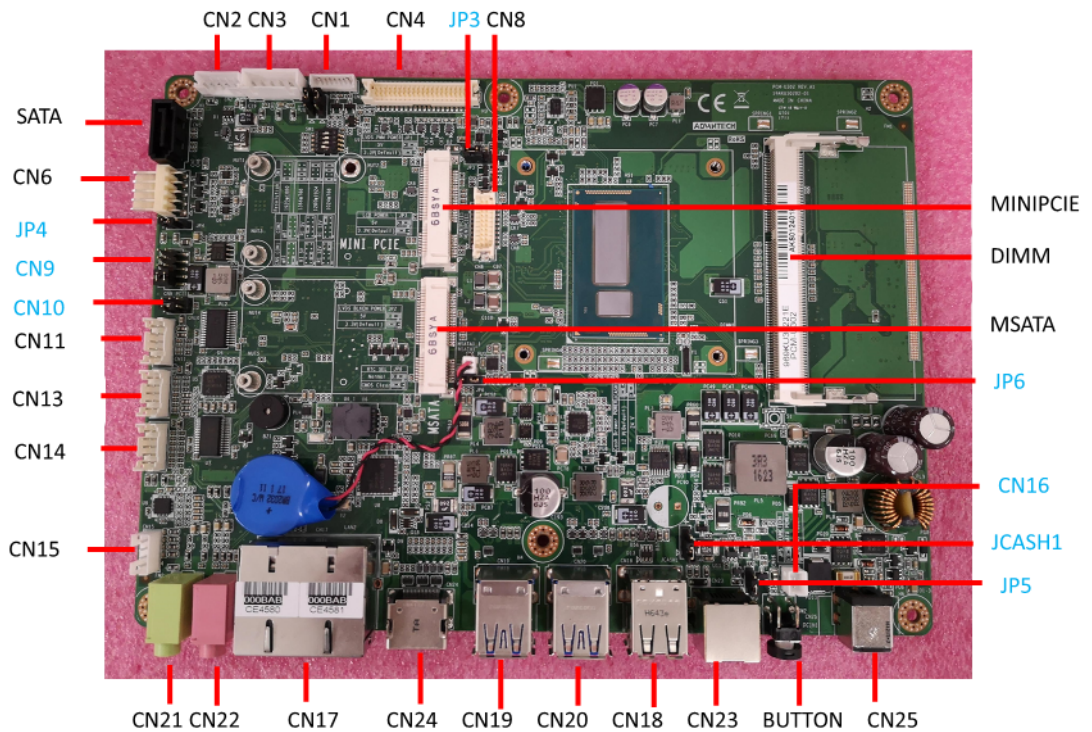
Table 4.1: Jumper and Connector Functions	
CN1(DE), CN2(FG)	Backlight
CN3	Internal USB
CN4(DEFG)	LVDS
CN5(D), CN8(EFG)	Edp
CN11(DF), CN10(G)	VGA
SATA	SATA
CN7(D), CN3(EFG)	SATA power
CN8(D), CN5(G)	Internal USB
CN9(D), CN6(EG), CN26(F)	Touch
CN13(D), DIMM(EFG)	DDR3L/4 SODIMM
MINIPCIE1(DEF)	Mini PCIE
MSATA1(DEFG)	mSATA
CN14(D), CN10(F), CN7(G)	COM4
CN15(D), CN11(E), CN12(F), CN9(G)	COM3
CN16(D), CN13(E), CN14(F), CN11(G)	COM2
CN18(D), CN14(E), CN15(F), CN13(G)	COM1
CN21(D), CN16(EF), CN23(G)	Power-On switch
CN22(D), CN15(E), CN16(FG)	Speaker
M.2_1(G)	M.2(2230)
CN23(D), CN17(EFG)	LAN1/LAN2
CN24(D), CN19(EF), CN21(G)	External USB
CN25(D), CN20(EF), CN22(G)	External USB
CN26(D), CN18(EF), CN20(G)	External USB
CN27(D), CN21(E), CN22(F), CN25(G)	Line-Out
CN28(D), CN22(E), CN21(F), CN24(G)	Mic-In
CN30(D), CN24(EF), CN27(G)	HDMI
CN31(DG), CN25(EF)	DC-In
CN29(D), CN23(EF), CN26(G)	RJ11
BUTTON	Power button

### 4.1.3 Jumper and Connector Locations

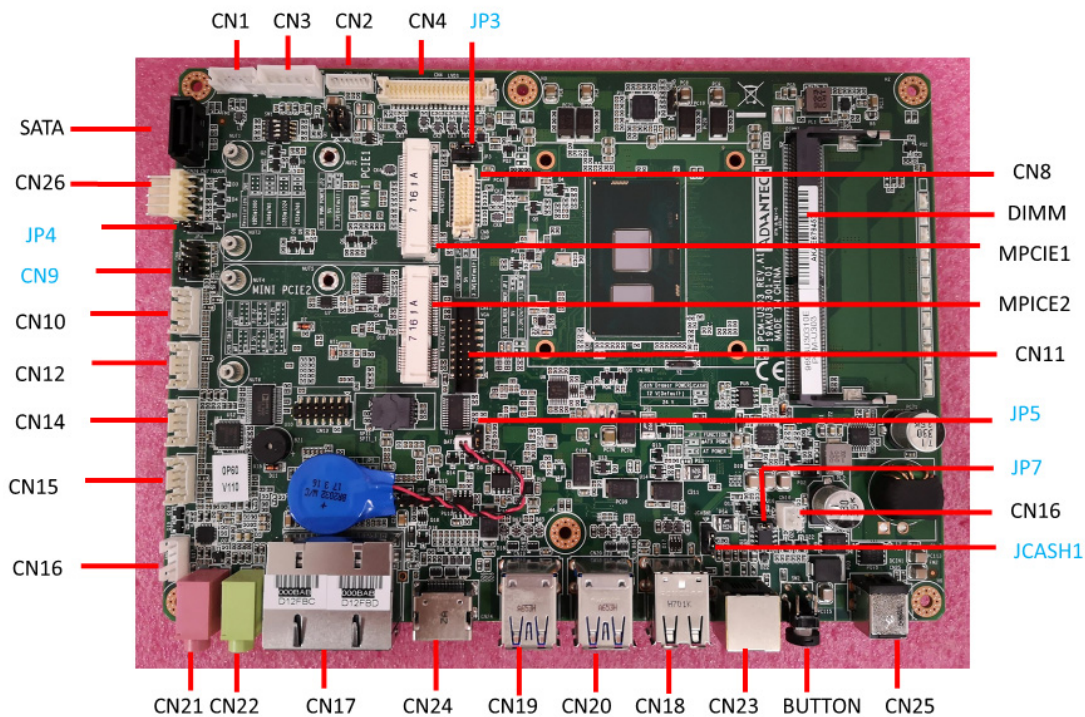
#### PCM-U301 (UTC-320D)



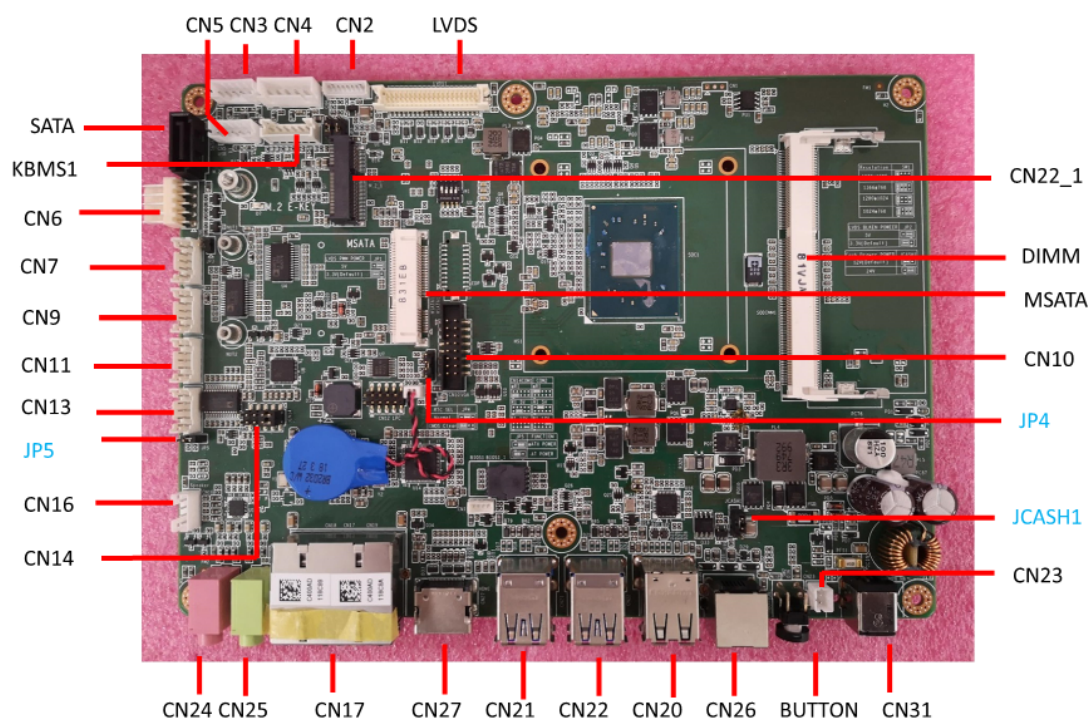
#### PCM-U302 (UTC-320E)



### PCM-U303 (UTC-320F)



### PCM-U304 (UTC-320G)



## 4.2 Jumpers

### 4.2.1 Jumper List

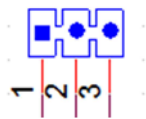
**Table 4.2: Jumper List**

JP1(D), JP3(EF)	LCD power
JP3(D), JP6(E), JP5(F), JP4(G)	Clear CMOS
JP4(D), JP5(EG), JP7(F)	AT/ATX power SEL
CN17(D), CN9(EF), CN14(G)	COM1,COM2 ring
JCASH1	Cash drawer power
CN10(E)	CSAFE power

### 4.2.2 Jumper Settings

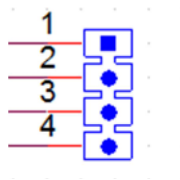
**Table 4.3: JP1(D), JP3(EF): LCD POWER**

Part Number	1653003100
Footprint	HD_3x1P_100_D
Description	Pin header 3 x 1P 2.54 mm 180D(M) DIP 205-1 x 3GS
<b>Setting</b>	<b>Function</b>
(1-2)	5 V
(2-3)*	3.3 V



**Table 4.4: JP3(D), JP6(E), JP5(F), JP4(G): Clear CMOS**

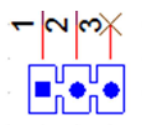
Part Number	1653004101
Footprint	HD_4x1P_79_D
Description	Pin header 4 x 1P 2.0 mm 180D(M) DIP 21N12050
<b>Setting</b>	<b>Function</b>
(2-3)*	Normal
(3-4)	Clear CMOS



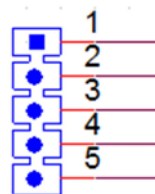


**Table 4.5: JP4(D), JP5(EG), JP7(F): AT/ATX Power SEL**

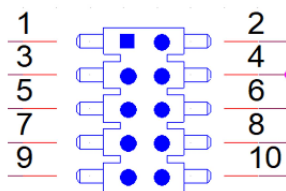
Part Number	1653003101
Footprint	HD_3x1P_79_D
Description	Pin header 3 x 1P 2.0 mm 180D(M) DIP square without Pb
<b>Setting</b>	<b>Function</b>
(1-2)	AT
(2-3)*	ATX

**Table 4.6: CN17(D): COM1 Ring**

Part Number	1653005101
Footprint	HD_5x1P_79_D
Description	Pin header 5 x 1P 2.0 mm 180D(M) DIP 1140-000-05SN
<b>Setting</b>	<b>Function</b>
(1-2)	Ring
(3-4)*	COM1 RI output 5 V
(4-5)*	COM1 RI output 12 V

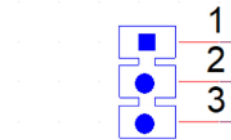
**Table 4.7: CN9(EF), CN14(G): COM1, COM2 Ring**

Part Number	1653005261
Footprint	HD_5x2P_79
Description	Pin header 5 x 2P 2.0 mm 180D(M) SMD 21N22050
<b>Setting</b>	<b>Function</b>
(1-3)	COM1 ring
(2-4)	COM2 ring
(3-5)*	COM1 RI output 5 V
(4-6)*	COM2 RI output 5 V
(7-9)*	COM1 RI output 12 V
(8-10)*	COM2 RI output 12 V



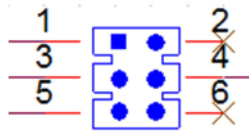
**Table 4.8: JCASH1: Cash Drawer Power SEL**

Part Number	1653003100
Footprint	HD_3x1P_100_D
Description	Pin header 3 x 1P 2.54 mm 180D(M) DIP 1130-000-03S
<b>Setting</b>	<b>Function</b>
(1-2)	12 V
(2-3)*	24 V



**Table 4.9: CN10: CSAFE Power**

Part Number	1653003201
Footprint	HD_3x2P_79_D
Description	Pin header 3 x 2P 2.0 mm 180D(M) DIP 21N22050
<b>Setting</b>	<b>Function</b>
(1-3) *	CSAFE output 5 V
(3-4)	CSAFE output 9 V
(3-5)	CSAFE output 12 V



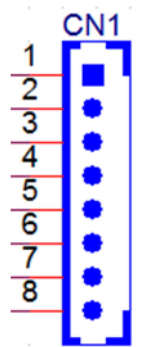
# Appendix **A**

I/O Pin Assignments

## A.1 Pin Assignments

**Table A.1: CN1(DE), CN2(FG): Backlight**

Part Number	1655004512-01
Footprint	WF_8P_49_BOX_D
Description	Wafer box 8P 1.25 mm 180D(M) DIP A1251WV0-8P
<b>Pin</b>	<b>Pin Name</b>
1	+12V_INVERTER
2	+12V_INVERTER
3	GND
4	GND
5	BKLT_EN
6	BRIGHT1
7	+12V_INVERTER
8	GND

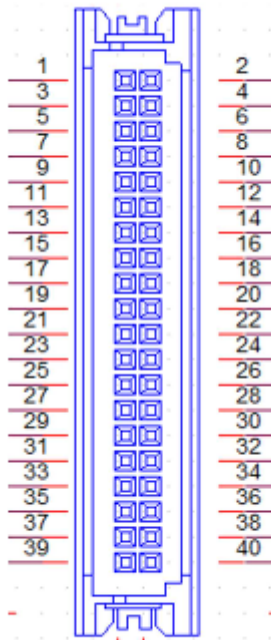


**Table A.2: CN3: Internal USB**

Part Number	1655000453
Footprint	WHL5V-2M-24W1140
Description	Wafer box 5P 2.0 mm 180D(M) DIP without Pb JIH VEI
<b>Pin</b>	<b>Pin Name</b>
1	+5V
2	D-
3	D+
4	GND
5	GND



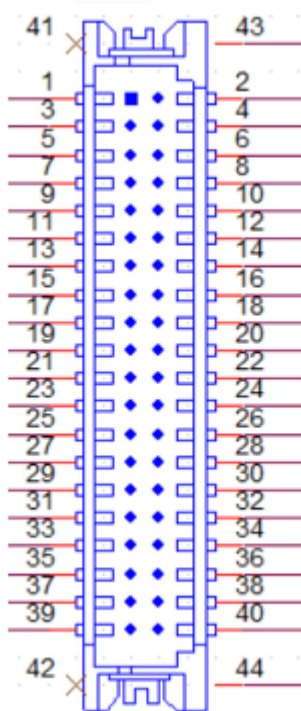
<b>Table A.3: CN4(DEFG): LVDS</b>	
Part Number	1653920200
Footprint	SPH20X2
Description	B/B connector 40P 1.25 mm 90D SMD DF13-40DP-1.25V(91)
<b>Pin</b>	<b>Pin Name</b>
1	+3.3V or +5V
2	+3.3V or +5V -
3	GND
4	GND
5	+3.3V or +5V
6	+3.3V or +5V
7	LVDS0_D0-
8	LVDS1_D0-
9	LVDS0_D0+
10	LVDS1_D0+
11	GND
12	GND-
13	LVDS0_D1-
14	LVDS1_D1-
15	LVDS0_D1+
16	LVDS1_D1+
17	GND
18	GND
19	LVDS0_D2-
20	LVDS1_D2-
21	LVDS0_D2+
22	LVDS1_D2+-
23	GND
24	GND
25	LVDS0_CLK-
26	LVDS1_CLK-
27	LVDS0_CLK+
28	LVDS1_CLK+
29	GND
30	GND
31	LVDS0_DDC_SC
32	LVDS0_DDC_SD
33	GND
34	GND
35	LVDS0_D3-
36	LVDS1_D3-
37	LVDS0_D3+
38	LVDS1_D3+
39	+3.3V or +5V
40	+3.3V or +5V



**Table A.4: CN4(G): LVDS**

Part Number	1653920200
Footprint	SPH20X2
Description	B/B connector 40P 1.25 mm 90D SMD DF13-40DP-1.25V(91)
<b>Pin</b>	<b>Pin Name</b>
1	+3.3V_LCD
2	+3.3V_LCD
3	+3.3V_LCD
4	+3.3V_LCD
5	GND
6	GND
7	LVDS0_D0-
8	LVDS1_D0-
9	LVDS0_D0+
10	LVDS1_D0+
11	GND
12	GND-
13	LVDS0_D1-
14	LVDS1_D1-
15	LVDS0_D1+
16	LVDS1_D1+
17	GND
18	GND
19	LVDS0_D2-
20	LVDS1_D2-
21	LVDS0_D2+
22	LVDS1_D2+-
23	GND
24	GND

Table A.4: CN4(G): LVDS	
25	LVDS0_CLK-
26	LVDS1_CLK-
27	LVDS0_CLK+
28	LVDS1_CLK+
29	GND
30	GND
31	LVDS0_D3-
32	LVDS1_D3-
33	LVDS0_D3+
34	LVDS1_D3+
35	LVDS0_DDC_SC
36	LVDS0_DDC_SD
37	+V5_LCD
38	+V5_LCD
39	+V5_LCD
40	+V5_LCD



**Table A.5: CN5(D), CN3(EF): eDP**

Part Number	1653006914-01
Footprint	WB10x2P-S1.25
Description	WTB 2 x 10P 1.25 mm 180 D(M) SMD W/P DF13E-20DP-1.25
<b>Pin</b>	<b>Pin Name</b>
1	GND
2	GND
3	TXN0
4	TXN3
5	TXP0
6	TXP3
7	GND
8	NC
9	TXN1
10	GND
11	TXP1
12	AUX-
13	GND
14	AUX+
15	TXN2
16	GND
17	TXP2
18	HPD
19	LCD_POWER
20	LCD_POWER

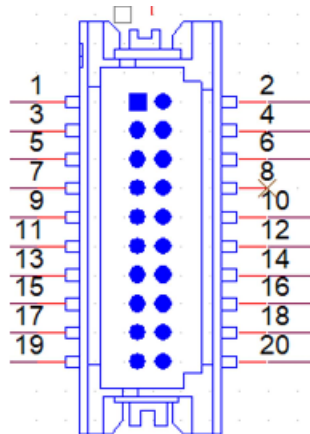
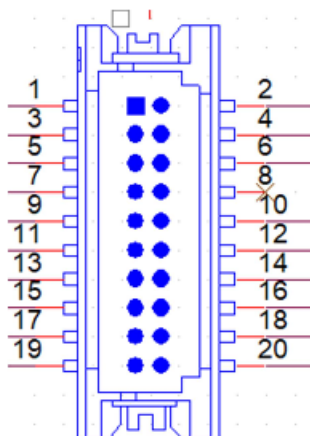


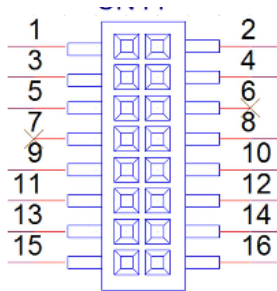


Table A.6: CN3(G): eDP	
Part Number	1653006914-01
Footprint	WB10x2P-S1.25
Description	WTB 2 x 10P 1.25 mm 180D(M) SMD W/P DF13E-20DP-1.25
Pin	Pin Name
1	+5V_LCD
2	+5V_LCD
3	TXN0
4	GND
5	TXP0
6	TXN3
7	GND
8	TXP3
9	TXN1
10	GND
11	TXP1
12	AUX-
13	GND
14	AUX+
15	TXN2
16	GND
17	TXP2
18	HPD
19	+V3.3_LCD
20	+V3.3_LCD

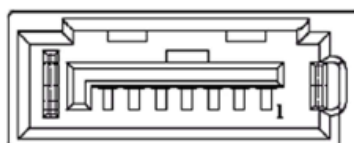


**Table A.7: CN11(DF), CN10(G): VGA**

Part Number	1653208260
Footprint	HD_8x2P_79_BOX
Description	Box header 8 x 2P 2.0 mm 180D(M) SMD 23N6850
<b>Pin</b>	<b>Pin Name</b>
1	VGA_R
2	+5V
3	VGA_G
4	GND
5	VGA_B
6	NC
7	NC
8	VGA_DDAT
9	GND
10	VGA_HS
11	GND
12	VGA_VS
13	GND
14	VGA_DCLK
15	GND
16	GND

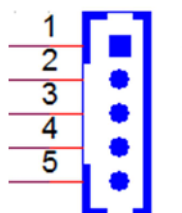
**Table A.8: SATA(DEFG): SATA**

Part Number	1654004659
Footprint	WF_5P_98_BOX_D
Description	Wafer box 5P 2.5 mm 180D(M) DIP 2503-WS-5
<b>Pin</b>	<b>Pin Name</b>
1	GND
2	TX+
3	TX-
4	GND
5	RX+
6	RX-
7	GND



**Table A.9: CN7(D), CN3(EFG): SATA Power**

Part Number	1659254005
Footprint	SATA_7P_WATM-07DBN4A3B8UW_D
Description	Serial ATA 7P 1.27 mm 180D(M) DIP WATM-07DBN4A3B8
<b>Pin</b>	<b>Pin Name</b>
1	+3.3V
2	GND
3	+5V
4	GND
5	+12V

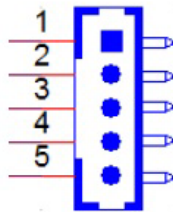
**Table A.10: CN8(D), CN5(G): Internal USB**

Part Number	1655000453
Footprint	WHL5V-2M-24W1140
Description	Wafer box 5P 2.0 mm 180D(M) DIP without Pb JIH VEI
<b>Pin</b>	<b>Pin Name</b>
1	+5V
2	D-
3	D+
4	GND
5	GND



**Table A.11: CN9(D), CN6(EG), CN26(F): Touch**

Part Number	1655005110
Footprint	WF_5P_100_RA_D
Description	Wafer 5P 2.54 mm 90D(M) DIP 2542-WR-5
<b>Pin</b>	<b>Pin Name</b>
1	Y+
2	Y-
3	SENSE
4	X+
5	X-

**Table A.12: CN13(DEG): DDR3L SODIMM**

Part Number	1651002087-11
Footprint	DDR3_204P_AS0A626-N2S6-7H
Description	DDR3 SODIMM H = 204P 5.2 mm STD SMD AS0A626-H2S6-7H

**Table A.13: DIMM(F): DDR4 SODIMM**

Part Number	1651002829-01
Footprint	SODIMM DDR4_260P_AS0A826-H2SB
Description	DDR4 SODIMM H = 260P 5.2 mm SMD AS0A826-H2SB-7H STD

**Table A.14: Mini PCIE1(DEF): Mini PCIE**

Part Number	1654002538
Footprint	FOX_AS0B226-S68K7F
Description	Mini PCIE 52P 6.8 mm 90D SMD AS0B226-S68Q-7H
<b>Pin</b>	<b>Pin Name</b>
1	MPCIE1_WAKE#
2	+3.3VSB
3	NC
4	GND
5	NC
6	NC
7	MPCIE_CLKREQ#
8	NC
9	GND
10	NC
11	CLK_MINI_PCIE-
12	NC

**Table A.14: Mini PCIE1(DEF): Mini PCIE**

13	CLK_MINI_PCI+
14	NC
15	GND
16	NC
17	NC
18	GND
19	NC
20	MPCIE1_DISABLE#
21	GND
22	PLTRST#
23	PCIE_RX-
24	+3.3VSB
25	PCIE_RX+
26	GND
27	GND
28	+1.5V
29	GND
30	SMB_CLK_MPCIE1
31	PCIE_TX-
32	SMB_DAT_MPCIE1
33	PCIE_TX+
34	GND
35	GND
36	USB_D-
37	GND
38	USB_D+
39	+3.3VSB
40	GND
41	+3.3VSB
42	NC
43	NC
44	NC
45	NC
45	NC
47	NC
48	NC
49	NC
50	GND
51	NC
52	+3.3VSB

**Table A.15: mSATA1(DEFG): mSATA**

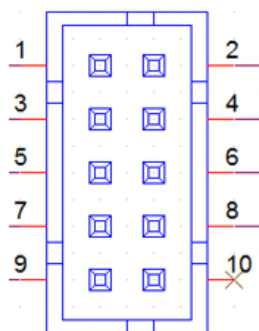
Part Number	1654002538
Footprint	FOX_AS0B226-S68K7F
Description	Mini PCIE 52P 6.8 mm 90D SMD AS0B226-S68Q-7H
<b>Pin</b>	<b>Pin Name</b>
1	NC
2	+3.3V
3	NC
4	NC
5	NC
6	NC
7	NC
8	NC
9	GND
10	NC
11	NC
12	NC
13	NC
14	NC
15	GND
16	NC
17	NC
18	GND
19	NC
20	NC
21	GND
22	NC
23	SATA1_RX+
24	+3.3V
25	SATA1_RX-
26	GND
27	GND
28	NC
29	GND
30	NC
31	SATA1_TX-
32	NC
33	SATA1_TX+
34	GND
35	GND
36	NC
37	GND
38	NC
39	+3.3V
40	GND
41	+3.3V
42	NC

**Table A.15: mSATA1(DEFG): mSATA**

43	NC
44	NC
45	NC
45	NC
47	NC
48	NC
49	NC
50	GND
51	+3.3V
52	+3.3V

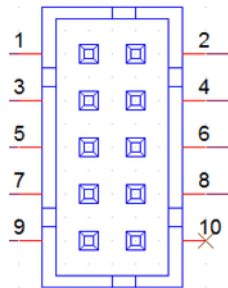
**Table A.16: CN14(D), CN10(F), CN7(G): COM4**

Part Number	1655000197
Footprint	WF_5x2P_79_BOX_D_P1R
Description	1655_WF_5 x 2P_79_Box _D_P1R_0. Normal
<b>Pin</b>	<b>Pin Name</b>
1	DCD
2	RXD
3	TXD
4	DTR#
5	GND
6	DSR#
7	RTS#
8	CTS#
9	RI#

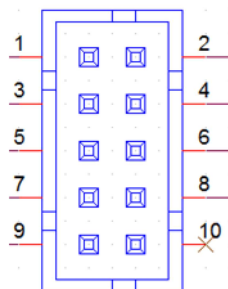


**Table A.17: CN15(D), CN12(F), CN11(G): COM3**

Part Number	1655000197
Footprint	WF_5x2P_79_BOX_D_P1R
Description	1655_WF_5 x 2P_79_Box_D_P1R_0.Normal
<b>Pin</b>	<b>Pin Name</b>
1	DCD
2	RXD
3	TXD
4	DTR#
5	GND
6	DSR#
7	RTS#
8	CTS#
9	RI#

**Table A.18: CN13(E): CSAFE**

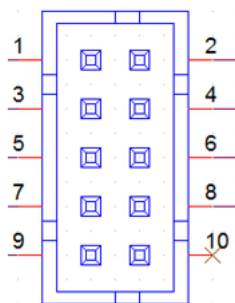
Part Number	1655000197
Footprint	WF_5x2P_79_BOX_D_P1R
Description	1655_WF_5 x 2P_79_Box_D_P1R_0.Normal
<b>Pin</b>	<b>Pin Name</b>
1	LINE_IN1_L
2	LINE_IN1_R
3	COM3_RX+
4	COM3_TX
5	V_CSAFE
6	COM3_CTS#
7	GND
8	GND
9	



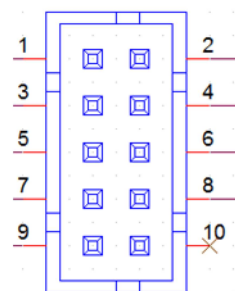


**Table A.19: CN16(D), CN13(E), CN14(F), CN11(G): COM2**

Part Number	1655000197
Footprint	WF_5x2P_79_BOX_D_P1R
Description	1655_WF_5 x 2P_79_Box_D_P1R_0.Normal
Pin	Pin Name
1	422/485 TX-
2	422/485 TX+
3	422 RX+
4	422 RX-
5	GND
6	DSR#
7	RTS#
8	CTS#
9	RI#

**Table A.20: CN18(D), CN14(E), CN15(F), CN13(G): COM1**

Part Number	1655000197
Footprint	WF_5x2P_79_BOX_D_P1R
Description	1655_WF_5 x 2P_79_Box_D_P1R_0.Normal
Pin	Pin Name
1	DCD
2	RXD
3	TXD
4	DTR#
5	GND
6	DSR#
7	RTS#
8	CTS#
9	RI#

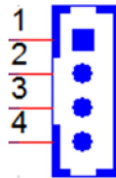


**Table A.21: CN21(D), CN16(EF), CN23(G): Power-On Switch**

Part Number	1655302020
Footprint	WF_2P_79_BOX_R1_D
Description	Wafer box 2P 2.0 mm 180D(M) DIP A2001WV2-2P
<b>Pin</b>	<b>Pin Name</b>
1	PSIN
2	GND

**Table A.22: CN22(D), CN15(E), CN16(FG): Speakers**

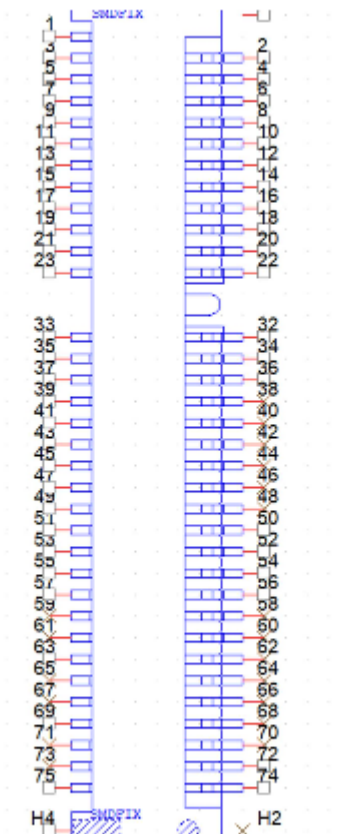
Part Number	1655304020
Footprint	WF_4P_79_BOX_R1_D
Description	Wafer box 4P 2.0 mm 180D(M) with lock A2001WV2-4P
<b>Pin</b>	<b>Pin Name</b>
1	AUD_OUTA-
2	AUD_OUTA+
3	AUD_OUTB+
4	AUD_OUTB-

**Table A.23: M.2 1(G): M.2 2230**

Part Number	1654012663-01
Footprint	NGFF_75P_APCI0163-P001A
Description	NGFF 75P 0.5 mm 90D(F) H = 8.5 mm SMD APCI0163-P001A
<b>Pin</b>	<b>Pin Name</b>
1,7,33,39,45,51	GND
18,57,63,69,75	GND
3	USB_D+
2,4,72,74	3.3V
5	USB_D-
35	PCIE_TX+
37	PCIE_TX-
41	PCIE_RX-
43	PCIE_RX+
47	CLK_100M+
49	CLK_100M-
55	PCIE_WAKE#

**Table A.23: M.2 1(G): M.2 2230**

9,11,13,15,17,19,21,23	NC
61,63,65,67,71,73	NC
6,8,10,12,14,16,20,22	NC
32,34,36,38,40,42,44	NC
46,48,58,60,62,64,66	NC
68,70	NC

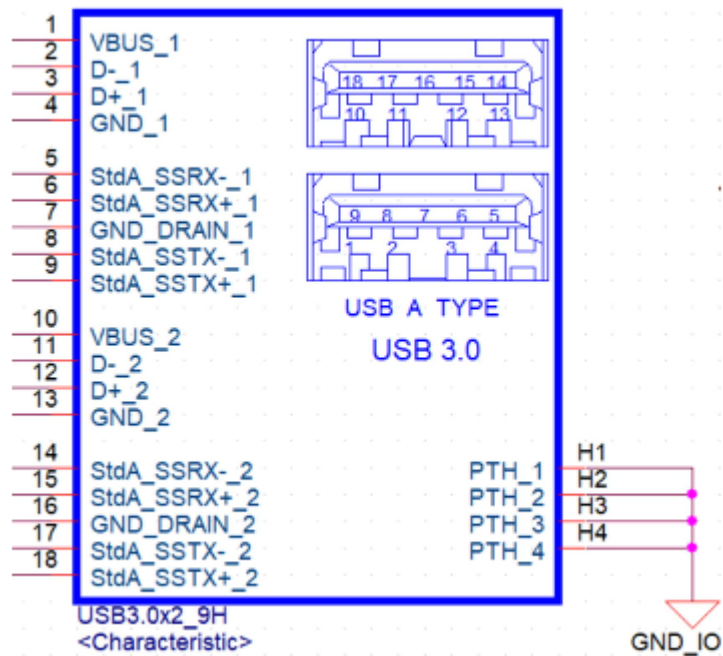


**Table A.24: CN23(D), CN17(EFG): LAN1/LAN2**

Part Number	1652003274
Footprint	RJ45_28P_RTB-19GB9J1A
Description	Phone jack RJ45 28P DIP RTB-19GB9J1A

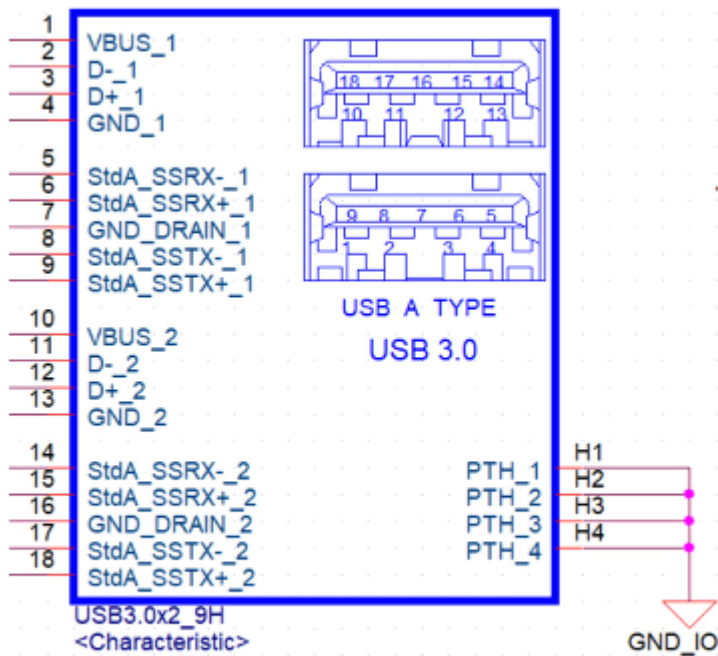
**Table A.25: CN19(EF), CN21(G): External USB**

Part Number	1654010969-01
Footprint	USB_9x2P_UEA1112C-8HS6-4F
Description	USB connector 18P 2.0 mm 90D(F) DIP UEA1112C
<b>Pin</b>	<b>Pin Name</b>
1	+5V
2	D-
3	D+
4	GND
5	RX_D-
6	RX_D+
7	GND
8	TX_D-
9	TX_D+
10	+5V
11	D-
12	D+
13	GND
14	RX_D-
15	RX_D+
16	GND
17	TX_D-
18	TX_D+



**Table A.26: CN20(EF), CN22(G): External USB**

Part Number	1654010969-01
Footprint	USB_9x2P_UEA1112C-8HS6-4F
Description	USB connector 18P 2.0 mm 90D(F) DIP UEA1112C
<b>Pin</b>	<b>Pin Name</b>
1	+5V
2	D-
3	D+
4	GND
5	RX_D-
6	RX_D+
7	GND
8	TX_D-
9	TX_D+
10	+5V
11	D-
12	D+
13	GND
14	RX_D-
15	RX_D+
16	GND
17	TX_D-
18	TX_D+



**Table A.27: CN24, CN25(D), CN18(EF), CN20(G): External USB**

Part Number	1654009513
Footprint	USB_8P_UB1112C-8FDE-4F
Description	USB connector 8P 2.0 mm 90D DIP UB1112C-8FDE-4F
<b>Pin</b>	<b>Pin Name</b>
1	+5VSB
2	D-
3	D+
4	GND
5	+5VSB
6	D-
7	D+
8	GND

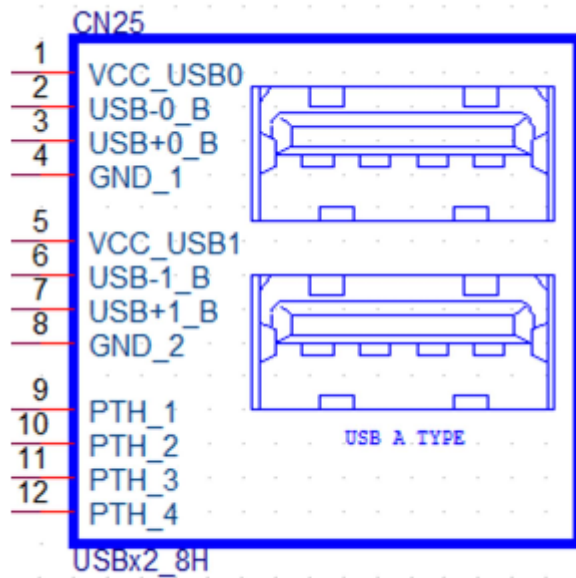
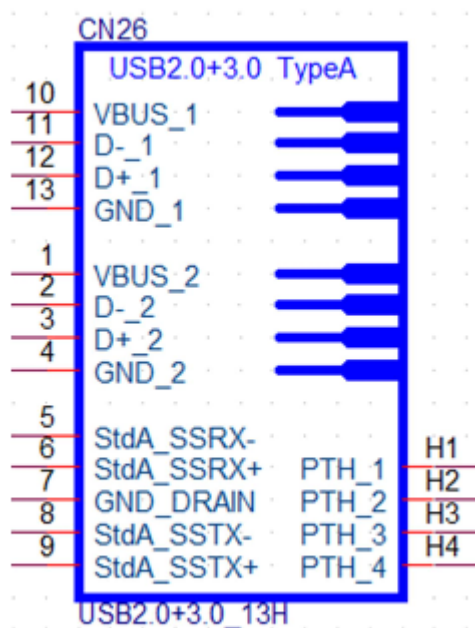
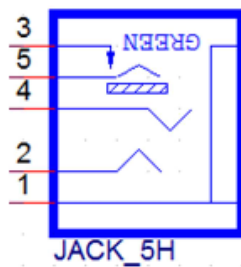


Table A.28: CN26(D): External USB	
Part Number	1654010199
Footprint	USB_13P_UEA1112C-UHS6-4F
Description	USB connector (2.0+3.0) 13P 90 D(F) DIP UEA1112C-UHS6-4
Pin	Pin Name
1	+5VSB
2	D0-
3	D0+
4	GND
5	RX_D-
6	RX_D+
7	GND
8	TX_D-
9	TX_D+
10	+5VSB
11	D1-
12	D1+
13	GND



**Table A.29: CN27(D), CN21(E), CN22(F), CN25(G): Line-Out**

Part Number	1652001586
Footprint	KUONYI_PJ-2508PC-5-L
Description	Phone jack 5P 3.5φ 90D(F) Azalia green DIP without Pb
<b>Pin</b>	<b>Pin Name</b>
1	GND
2	OUT_L
3	JD
4	OUT_R
5	GND



**Table A.30: CN28(D), CN22(E), CN21(F), CN24(G): Mic-In**

Part Number	1652001584
Footprint	KUONYI_PJ-2508PA-5-L
Description	Phone jack 5P 3.5φ 90 D(F) Azalia pink DIP without Pb
<b>Pin</b>	<b>Pin Name</b>
1	GND
2	MIC_L
3	JD
4	MIC_R
5	GND

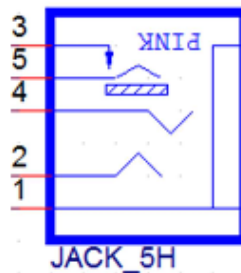
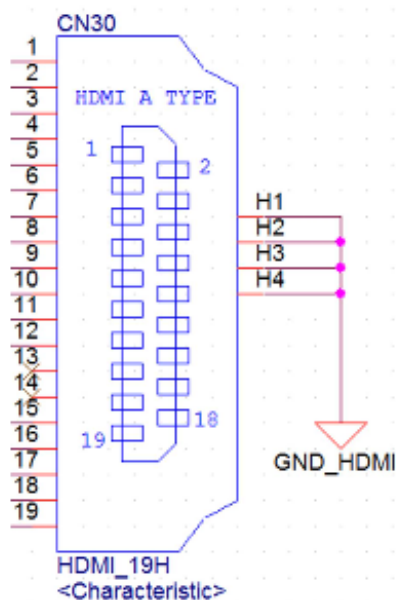


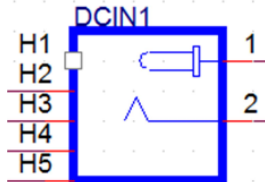


Table A.31: CN30(D), CN24(EF), CN27(G): HDMI	
Part Number	1654011175-01
Footprint	HDMI_19P_QJ51191-LFB4-7F
Description	HDMI connector 19P 0.5 mm 90D(F) SMD QJ51191-LFB4-7F
Pin	Pin Name
1	HDMI_TX0+
2	GND
3	HDMI_TX0-
4	HDMI_TX1+
5	GND
6	HDMI_TX1-
7	HDMI_TX2+
8	GND
9	HDMI_TX2-
10	HDMI_TX3+
11	GND
12	HDMI_TX3-
13	NC
14	NC
15	HDMI_CLK
16	HDMI_DAT
17	GND
18	+5V
19	HDMI_DET



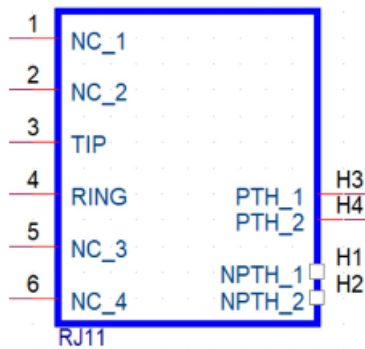
**Table A.32: CN31(DG), CN25(EF): DC-In**

Part Number	1652005624
Footprint	PJ_2P_2DC-G213B200
Description	DC power jack 2.5 mm 90D(M) DIP 2DC-G213B200
<b>Pin</b>	<b>Pin Name</b>
1	DC_IN
2	GND



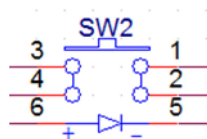
**Table A.33: CN29(D), CN23(EF), CN26(G): RJ11**

Part Number	1652005977-02
Footprint	S RJ11_6P_RJ1201-66N024R0
Description	Phone jack RJ11 6P 6C 90D(F) DIP 6u RJ1201-66N024
<b>Pin</b>	<b>Pin Name</b>
1	GND
2	Drawer_A
3	Drawer_state
4	Power
5	Drawer_B
6	GND



**Table A.34: Power Button**

Part Number	1600000055
Footprint	SW_6P_TC003-N11AABRGXX-RK_D
Description	Push SW DIP 6P with LED without Pb TC003-N11AABRGXX-RK
<b>Pin</b>	<b>Pin Name</b>
1	GND
2	GND
3	ATX_PWRBTN#
4	ATX_PWRBTN#
5	GND
6	+5V







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