

# USER'S MANUAL

## **GOT321W-502-PCT/FR**

All-in-One  
21.5" FHD Fanless  
10-Point P-CAP / Resistive Touch  
PANEL PC

**User's Manual**



[www.axiomtek.com](http://www.axiomtek.com)

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## **CAUTION**

Wrong type of batteries may cause explosion. It is recommended that users only replace with the same or equivalent type of batteries as suggested by the manufacturer once properly disposing of any used ones.

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## Safety Precautions

Before getting started, please read the following important safety precautions.

1. Be sure to ground yourself to prevent static charge when installing any internal components. Use a grounding wrist strap and place all electronic components in any static-shielded devices. Most electronic components are sensitive to static electrical charge.
2. Disconnect the power cord from the GOT321W-502-PCT/FR series prior to any installation. Be sure both the system and all external devices are turned off. Sudden surge of power could ruin sensitive components. Make sure the GOT321W-502-PCT/FR Series is properly grounded.
3. Do not open the system's back cover. If opening the cover for maintenance is a must, only a trained technician is allowed to do so. Integrated circuits on computer boards are sensitive to static electricity. To avoid damaging chips from electrostatic discharge, observe the following precautions:
  - Before handling a board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. This will help to discharge any static electricity on human body.
  - When handling boards and components, wear a grounding wrist strap available from most electronic component stores.

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# Section 1

## Introduction

This Section contains general information and detailed specifications of the GOT321W-502-PCT/FR, including the following subsections:

**Figure 1-1 Front panel of the GOT321W-502-PCT/FR**



- General Descriptions
- Specifications
- Dimensions and Outlines
- I/O Outlets
- Packing List

### 1.1 General Descriptions

The GOT321W-502-PCT/FR has adopted a 21.5" TFT FHD LCD with 250-nit brightness and supports LGA1151 Socket 6/7th generation Intel® Core™ i7/i5/i3/Celeron processor that can support Windows 7, Windows 7 Embedded, Windows 8, Windows 8 Embedded, Windows 10, Windows 10 IoT and variety applications.

This fanless platform was especially designed for operation in a harsh environment including steel refinery, oil pipe, ship, machine maker, and many more. With abilities as described below, the GOT321W-502-PCT/FR has been made an extremely robust and cost-effective solution.

- **Intel® Skylake/Kaby Lake H110 Platform**

Support LGA1151 Socket Intel® Core™ i7/i5/i3/Celeron processors. User can choose different processors for different applications. It also supports dual DDR4 SO-DIMM up to 32GB memory modules. There are rich I/O, such as dual power input, swappable 2.5" HDD, USB3.0 port, RS232/422/485, LAN ports, HDMI / VGA / Display port output. This platform is a power-efficient solution.

- **A Design for extended operating temperature range and ingress protection**

The GOT321W-502-PCT/FR can sustain extended operating temperature range between 0°C and +40°C by incorporating compact ID and fanless cooling system. Adopting an IP65 front bezel, it can also protect itself from liquid and dust. These designs have helped make the system a power-efficient solution.

- **Reliable and stable design**

The GOT321W-502-PCT/FR is a fanless cooling system, which makes it suitable for vibration environments, such as the industrial machinery markets. For high capacity storage requirement, GOT321W-502-PCT/FR can work under 1.0G (10 ~ 500Hz) in operation mode with a patent of anti-vibration design. The patent improves the system reliability and sustainability.

- **Multi- PCAP touch surface of 7H hardness (GOT321W-502-PCT)**

The GOT321W-502-PCT is design with a user friendly multi- PCAP touch. Users can operation it with direct touch. The surface hardness is up to 7H, good for applications of anti-scratch purpose.

- **21.5" Resistive Touch Screen (GOT321W-502-FR)**

The GOT321W-502-FR has adopted a 21.5" Resistive Touch Screen, allowing users to operate it with direct touch.

- **WLAN antenna supported (optional)**

The GOT321W-502-PCT/FR comes with two Mini Card slots as an add-on option to connect a wireless LAN card under 802.11 a/b/g/n protocols, or with other 3G/GPRS applications, etc. These slots also come with three optional fixed rotational WLAN/3G antennas for wireless network connection.

- **Other features**

The GOT321W-502-PCT/FR has design with removable HDD tray, let user more convenient to change it.



**NOTE:** GOT321W-502-PCT/FR has four kinds of video output, such as HDMI, VGA, DP and internal LCD panel. Due to chipset (H110) limitation, user only can configure two displays from BIOS CMOS setting or OS control panel. Please DO NOT connect three external graphic ports at the same time while booting on.



## 1.2 Specifications

### Main CPU Board

- **CPU**
  - Support LGA1151 Socket Intel® 6th/7th generation Core™ i family processor
  - Support Intel® Pentium® Processor G4xxxx series
- **System Chipset**
  - Intel® Skylake/Kaby Lake H110
- **System Memory**
  - 2 x 260-pin DDR4-2400 SO-DIMM socket
  - Maximum memory size up to 32GB
- **BIOS**
  - AMI UEFI BIOS

### I/O System

- **Standard I/O**
  - 2 x RS-232/422/485
  - 4 x USB 3.0
  - 2 x RJ-45
  - 1 x HDMI 1.4b
  - 1 x VGA
  - 1 x Display Port 1.2
  - 2 x Power input
  - 1 x AT/ATX switch
  - 1 x Remote power switch
  - 1 x Line Out
  - 1 x MIC in
  - 3 x OSD key
  - 1 x Power button
  - 1 x AT/ATX switch
- **Audio**
  - 2 x 3.5 Phone jack (Line out and MIC in)
  - 2 x speakers
- **Expansion**
  - 1 x Mini Card slot (half size for Wi-Fi)
  - 1 x Mini Card slot (full size for mSATA/3G)
- **Storage**
  - 1 x 2.5" SATA HDD
  - 1 x mSATA
- **Power connector**
  - 1 x 3-Pin Phoenix connector
  - 1 x Power DIN connector for Adapter

## System Specifications

- 21.5" TFT FHD LCD. (1920 x 1080)
- ten points project capacitive or 5-wire resistive touch
- A design of fanless heat dispensation
- IP65 aluminum front bezel
- Disk drive housing:
  - One 2.5" SATA drive
- Net weight
  - 8.4 Kgs
- Dimensions (of the main body)
  - 547.59 x 339.05 x 75.6 mm
- Operating temperatures
  - 0°C to 40°C
- Relative humidity
  - 20% to 90% @ 40°C, Non-condensing
- System power input
  - DC power input: 12V/19V/24V DC-in with Phoenix power connector
  - AC-DC Power (19V adapter)

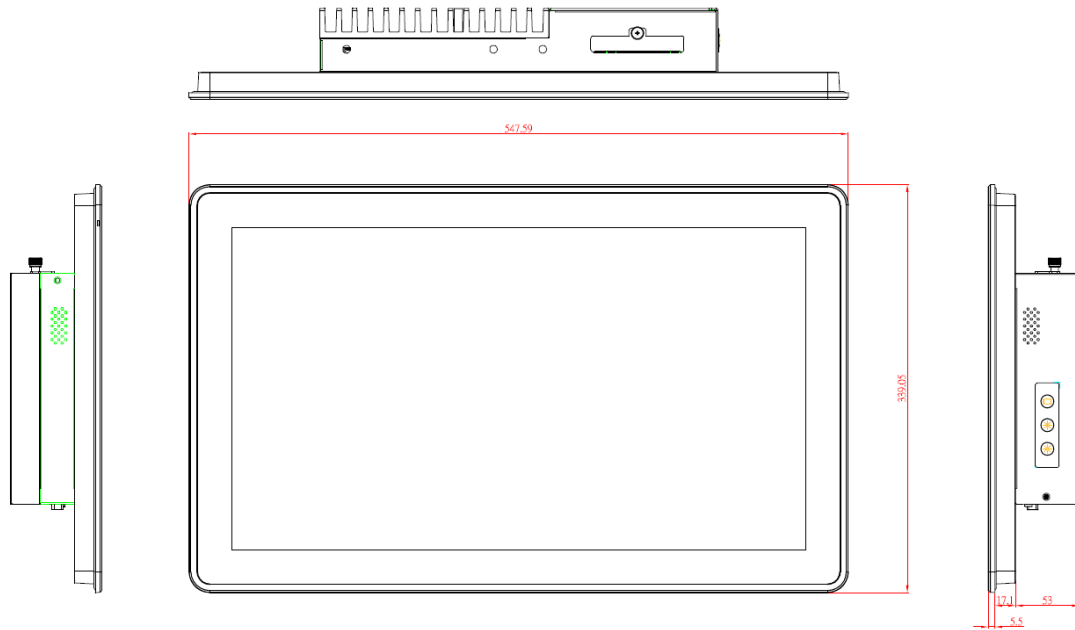


**NOTE:** *All specifications and images are subject to change without notice.  
The performance of the system might be adversely affected at an operating temperature above 40°C.  
It's highly recommend to use SSD or wide temperature HDD rather than common HDD.*

### 1.3 Dimensions and Outlines

Diagram 1-1 shows the dimensions and outlines of the front panel of the GOT321W-502-PCT/FR

**Diagram 1-1 Front dimensions and outline of the GOT321W-502-PCT/FR**



**Front dimensions: 547.59 x 339.05 x 75.6 mm**

Diagram 1-2 Back outline of the GOT321W-502-PCT/FR

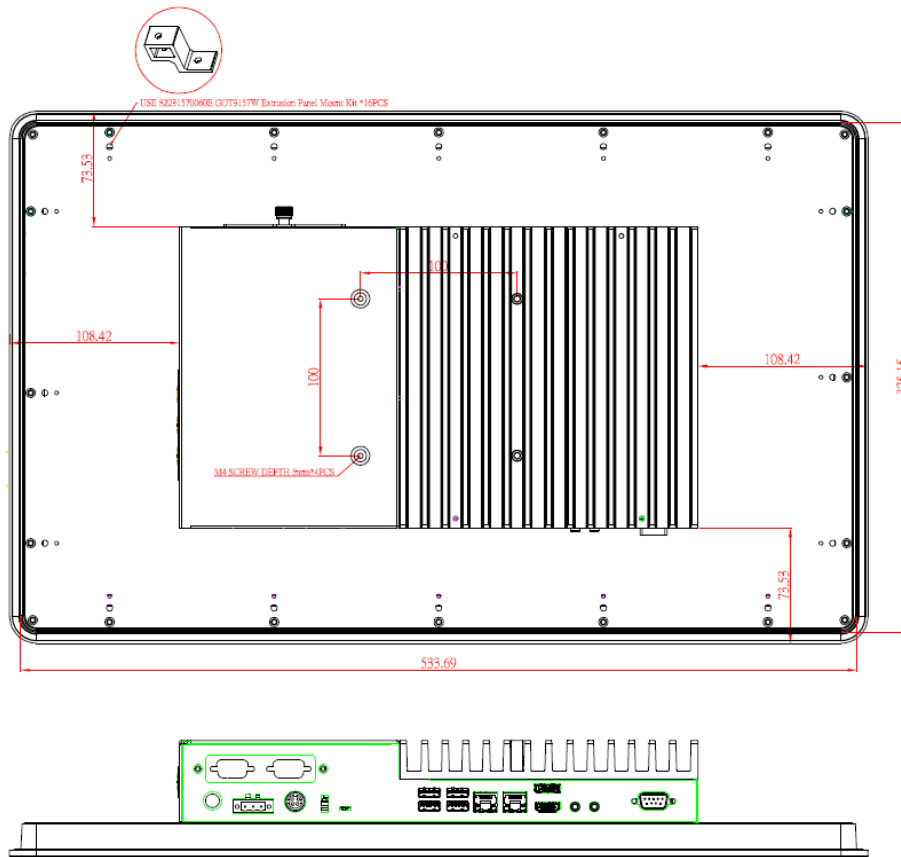


Diagram 1-3 Cutting-out dimensions of the GOT321W-502-PCT/FR

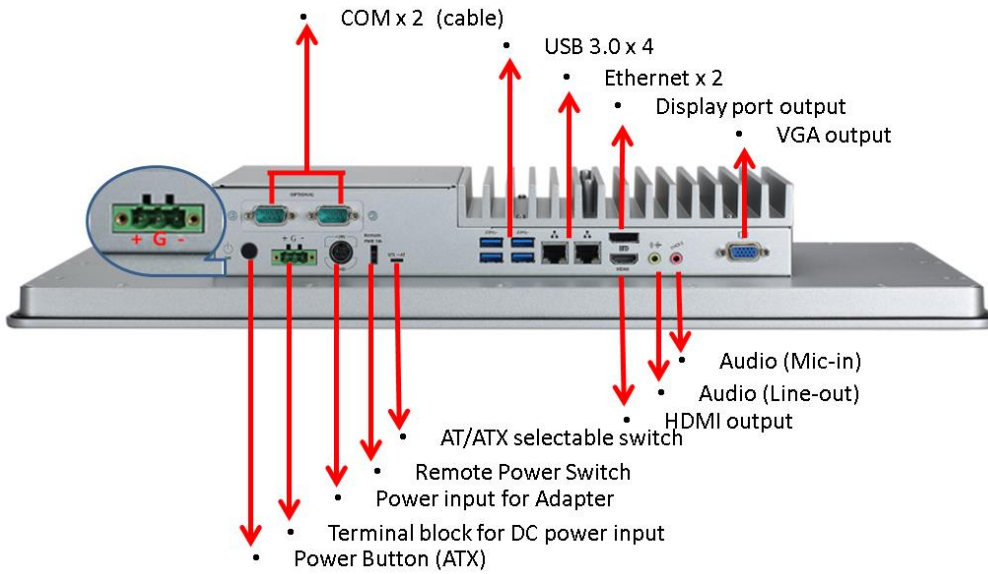


Cut out dimensions: 534.69 x 326.15 mm

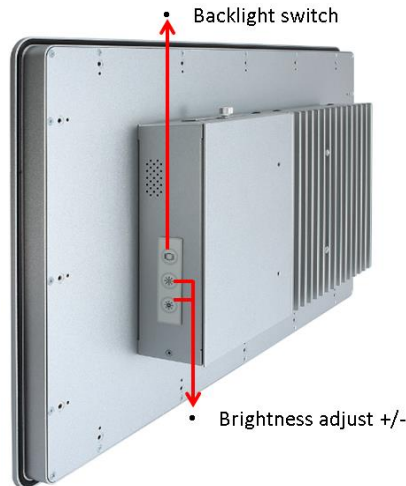
## 1.4 I/O Outlets

Please refer to Figures 1-2 and 1-3 for I/O locations of the GOT321W-502-PCT/FR.

**Figure 1-2 Bottom view of the GOT321W-502-PCT/FR**



**Figure 1-3 Side view of the GOT321W-502-PCT/FR**



**Figure 1-4 Back view of the GOT321W-502-PCT/FR**



## 1.5 Packing List

A complete bundled package should contain the following items:

- GOT321W-502-PCT/FR unit x 1
- Driver disc x1 (various OS versions and bundles available)
- Phoenix connector x 1 (DC power version only)
- Panel mount kit x 16
- Screws x 4 ( fix HDD under the HDD bracket)



**NOTE: Barebone system will include thermal paste.**

Please contact an Axiomtek distributor immediately if any of the above-mentioned items is missing.

## Section 2

# Hardware and Installation

The GOT321W-502-PCT/FR has provided rich I/O ports for users to meet different demands; for example, for example, in a case of flexible I/O. This Section is describing hardware installation, including the following subsections:

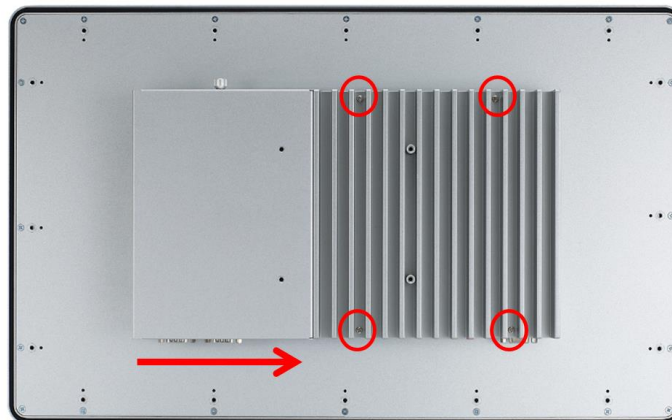
- Board Layout
- Jumper and Connector Setting
- Mounting Methods
- Hardware Installation
- Connecting the Power Input

### 2.1 Board Layout

Please follow the steps below to open the GOT321W-502-PCT/FR unit.

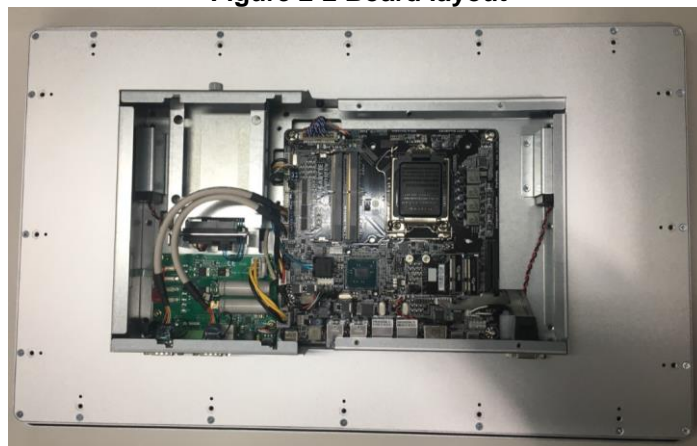
**Step 1** Unscrew 4 screws (see red circles in Figure 2-1) on the back cover.

Figure 2-1 Back cover



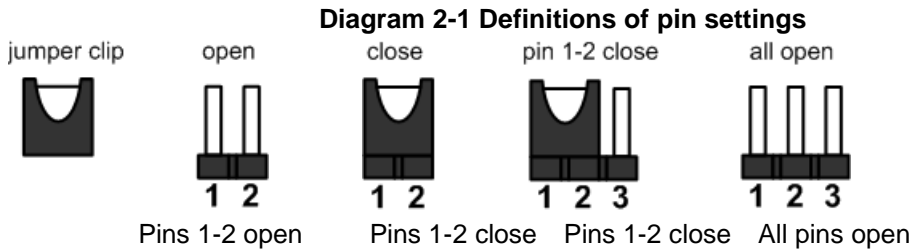
**Step 2** Remove the back cover.

Figure 2-2 Board layout



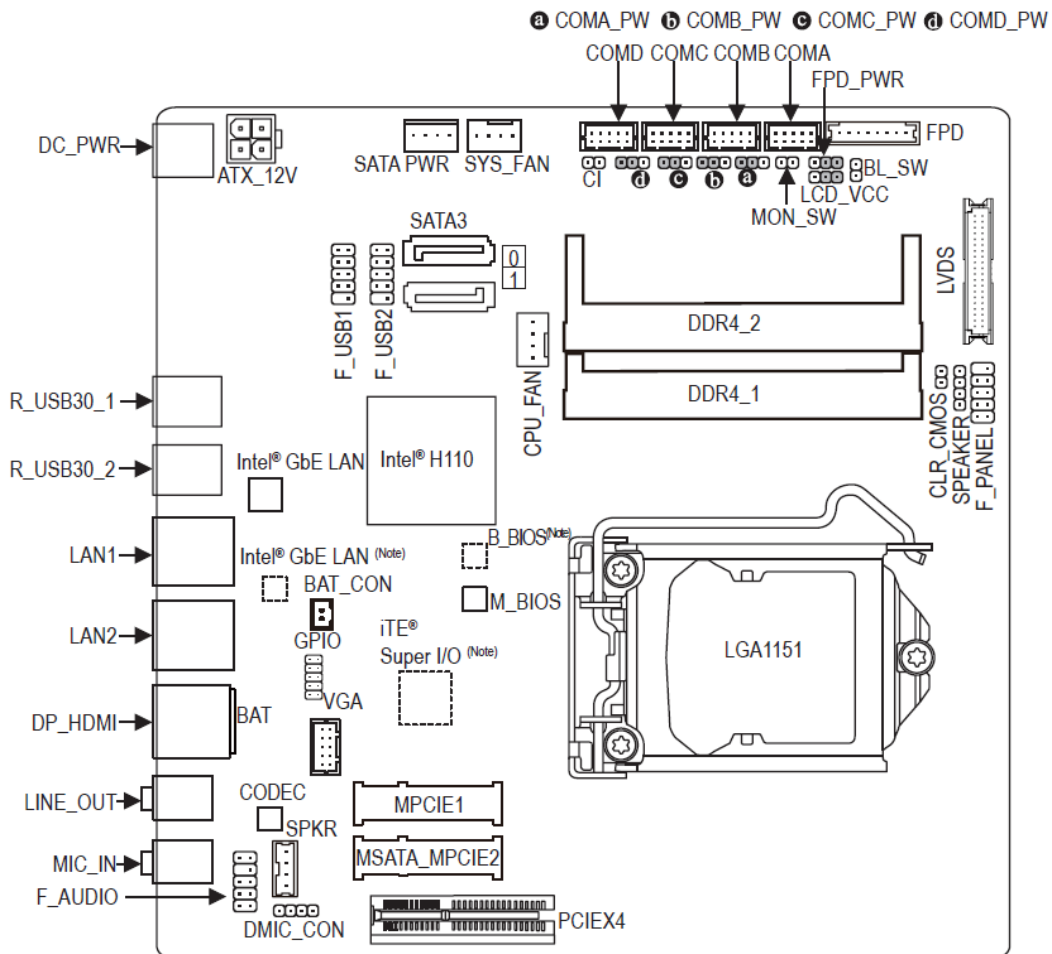
## 2.2 Jumper and Connector Settings

Jumper is a small component consisting of jumper clip and jumper pins. Install jumper clip on 2 jumper pins to close the pins. And remove jumper clip from 2 jumper pins to open the pins. Diagram 2-1 illustrates how to set up a jumper.



Before applying power to GOT321W-502-PCT/FR, please make sure all of the jumpers and connectors are in default position as Diagram 2-1.

**Diagram 2-2 Motherboard component position**

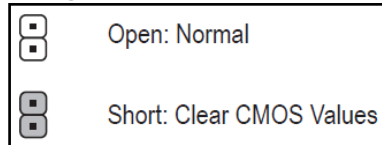




## 2.2.1 CLR\_CMOS (Clear CMOS Jumper)

Use this jumper to clear the BIOS configuration and reset the CMOS values to factory defaults. To clear the CMOS values, use a metal object like a screwdriver to touch the two pins for a few seconds. (see Diagram 2-3).

**Diagram 2-3 CMOS values**



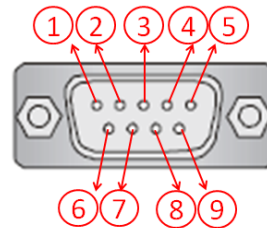
**NOTE:** Always turn off your computer and unplug the power cord from the power outlet before clearing the CMOS values. After system restart, go to BIOS Setup to load factory defaults (select Load Optimized Defaults) or manually configure the BIOS settings.

## 2.2.2 COM Port Connector

The pin assignment for RS-232/ 422/ 485 is listed in Table 2-1.

**Table 2-1 Pin assignment for RS-232/ 422/ 485**

Pin	RS-232	RS-422	RS-485
1	DCD	TX-	Data-
2	RXD	TX+	Data+
3	TXD	RX+	No use
4	DTR	RX-	No use
5	GND	GND	GND
6	DSR	No use	No use
7	RTS	No use	No use
8	CTS	No use	No use
9	RI	No use	No use



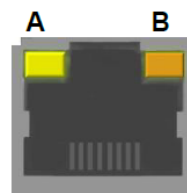
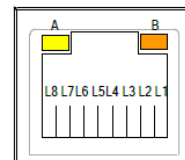
### 2.2.3 Ethernet Connector

There are two RJ-45 connectors, LAN1 and LAN2, inside the GOT321W-502-PCT/FR. Ethernet connection can be established by plugging one end of the Ethernet cable into this RJ-45 connector and the other end (phone jack) to a 1000/100/10-Base-T hub.

Please refer to Table 2-2 for detailed pin assignment for LAN1 and LAN2.

**Table 2-2 Pin assignment for LAN1/ LAN2**

Pin	Signal	Pin	Signal
L1	MDI0+	L5	MDI2-
L2	MDI0-	L6	MDI1-
L3	MDI1+	L7	MDI3+
L4	MDI2+	L8	MDI3-
A	Active LED (Yellow)		
B	100 LAN LED (Green) / 1000 LAN LED (Orange)		

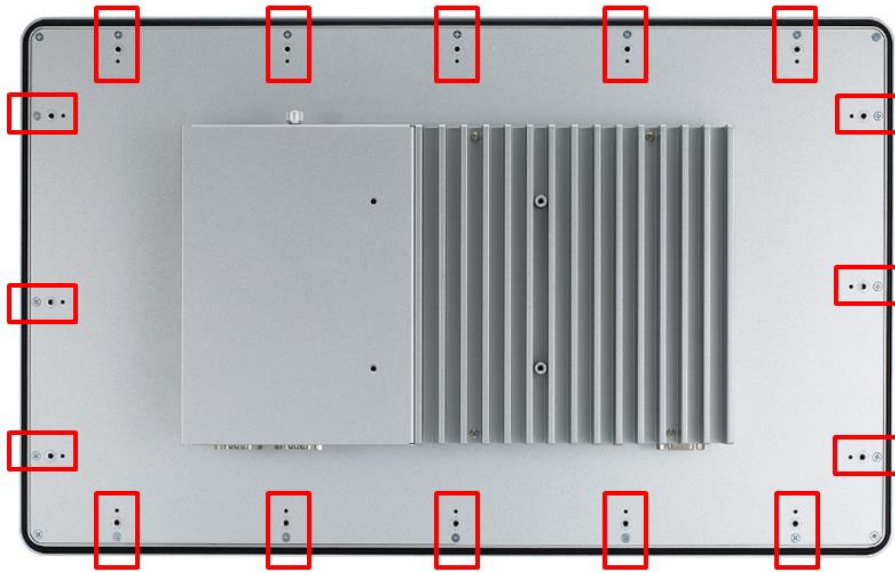


## 2.3 Mounting Methods

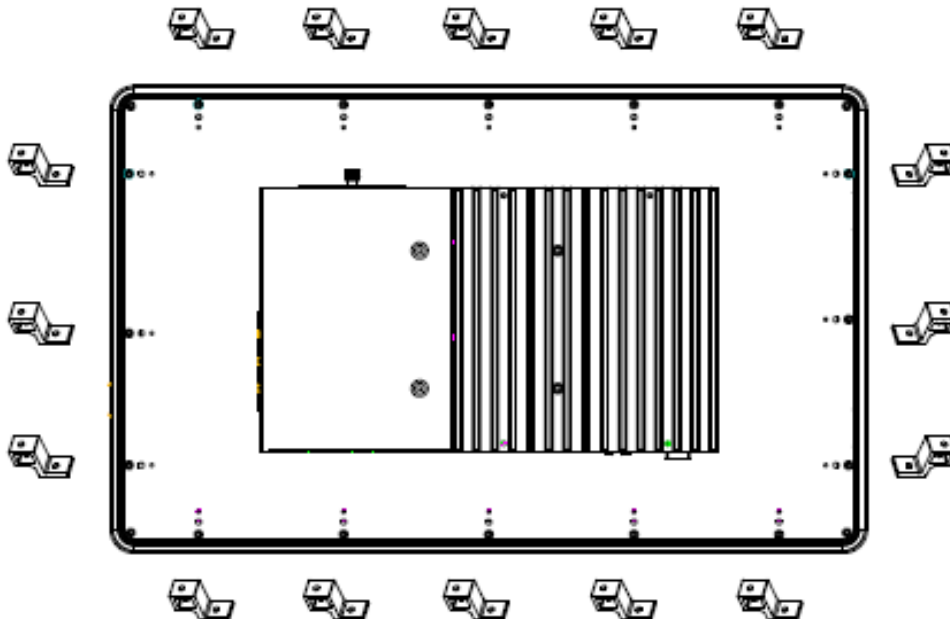
There are four ways to install the GOT321W-502-PCT/FR, namely: panel/ VESA/ wall/ desktop mount.

The GOT321W-502-PCT/FR is designed for panel mount application. To mount the GOT321W-502-PCT/FR, the standard set of mounting kit (16 pcs included in the system packaging) is needed. (see Figure 2-3, Diagram 2-4).

**Figure 2-3 Panel mount (back chassis)**

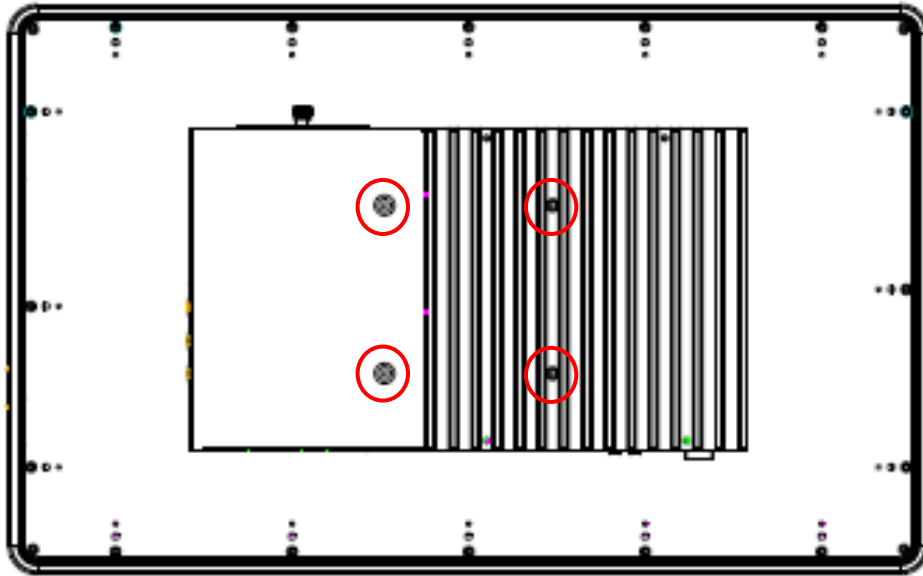


**Diagram 2-4 Panel mount kit**

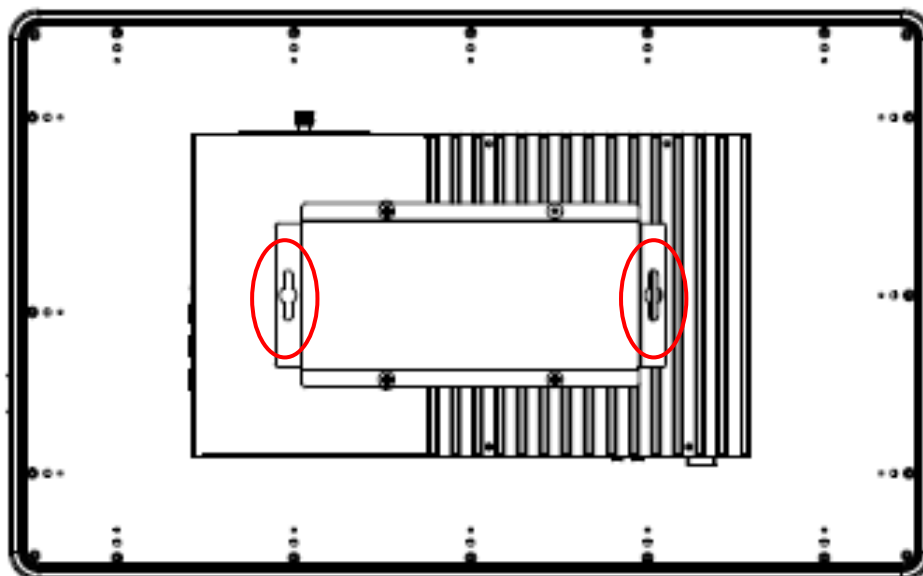


Alternatively, the GOT321W-502-PCT/FR can be installed by way of VESA mount which is in the dimensions of 100x100 mm. Simply fix four screws to fasten the kit from the back chassis, as shown in Diagram 2-5. Additionally, users can otherwise go for wall mount as an option, as shown in Diagram 2-6.

**Diagram 2-5 VESA / desktop mount (back chassis)**



**Diagram 2-6 Wall mount (back chassis)**



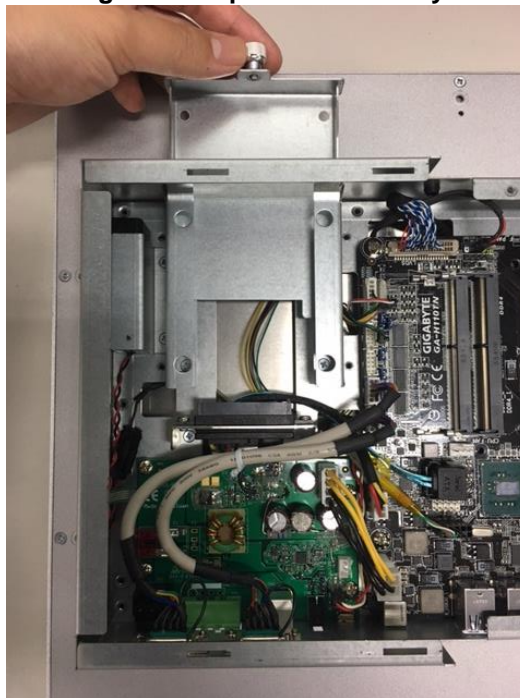
## 2.4 Hardware Installation

### 2.4.1 Installing a HDD

The GOT321W-502-PCT/FR provides a convenient hot-swappable Hard Disk Drive (HDD) bracket for users to install a 2.5" (support 7mm & 9.5mm) SATA HDD. Please follow the steps:

- Step 1** Refer to Section 2.1 to open the back cover.  
**Step 2** Unfastening the screw to slide open. (as shown in Figure 2-4).

Figure 2-4 Open the HDD tray



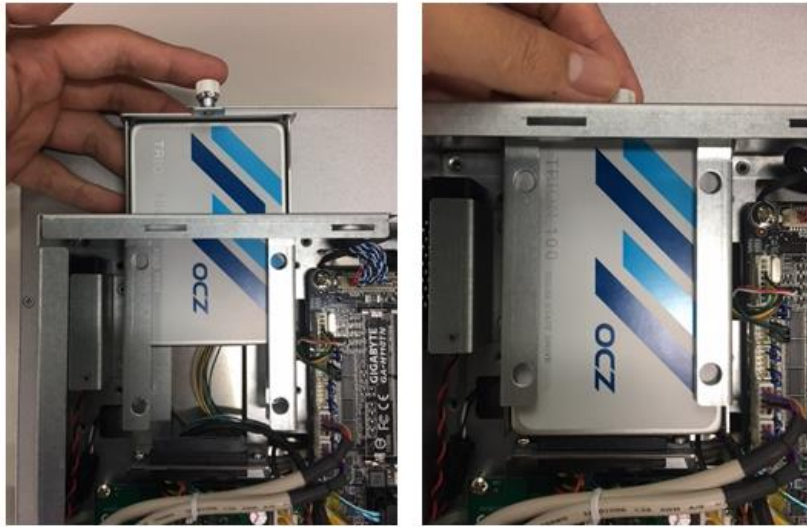
- Step 3** Take 2.5" HDD on the bracket and fasten the four screws in the other side. (see Figure 2-5 red circles).

Figure 2-5 Fasten the four screws



- Step 4** Plug two connectors – one for SATA and the other for Power - to complete the installation. Completing installation by fastening the screw. (see Figure 2-6).

**Figure 2-6** Connecting cables to connectors

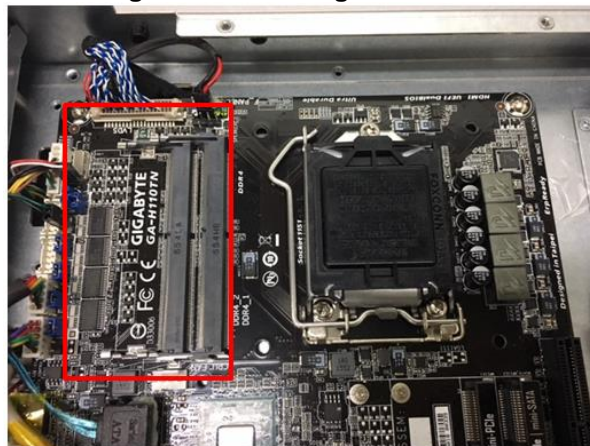


## 2.4.2 Installing a DRAM

The GOT321W-502-PCT/FR provides two DDR4 SO-DIMM socket that supports system memory up to 32GB. Please follow three steps below to install a memory module:

- Step 1** Refer to Section 2.1 to open the back cover.
- Step 2** Locate the DIMM socket (as shown in Figure 2-7) on mainboard

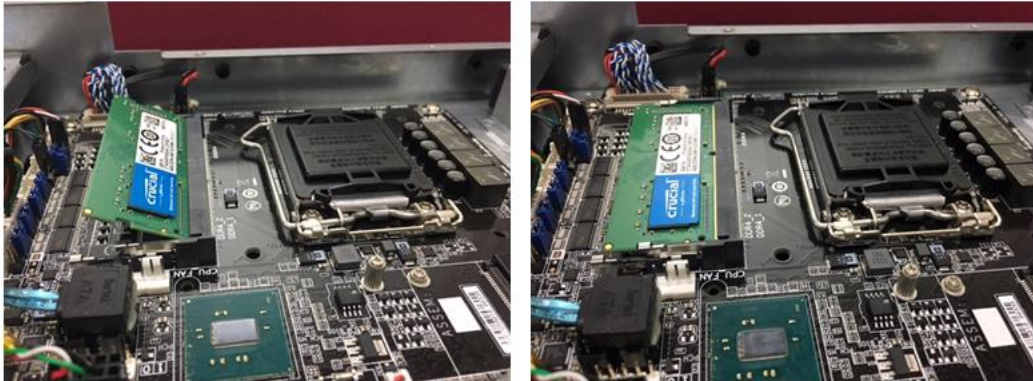
**Figure 2-7** Locating the DIMM socket





- Step 3** Insert a DRAM into the DIMM socket, and then push it down firmly until it is clipped with the socket (as shown in Figure 2-8).

**Figure 2-8** Inserting a DRAM into the DIMM

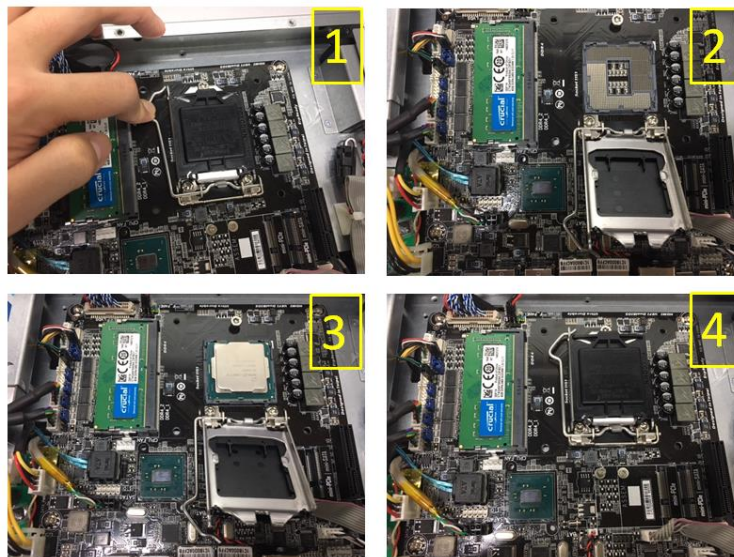


### 2.4.3 Installing a CPU

The CPU is socket type on main board that supports Intel 6/7<sup>th</sup> core i processor. Please follow four steps below to install a CPU.

- Step 1** move the iron bar.  
**Step 2** open the cover.  
**Step 3** put CPU in the socket.  
**Step 4** Rechunk the iron bar. (as shown in Figure 2-9).

**Figure 2-9** Installing the CPU



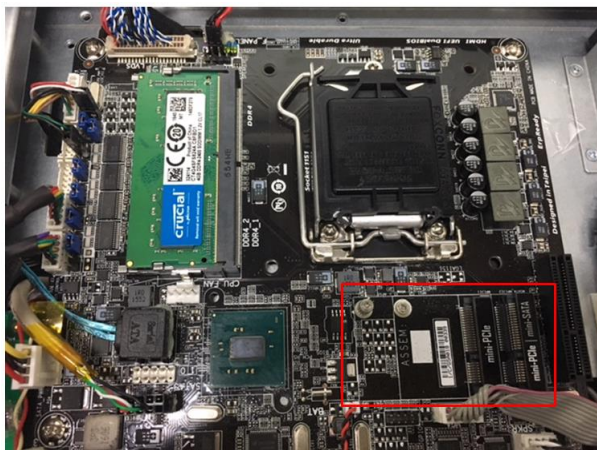
**NOTE:** If user took off the CPU protective cover, please put it back to protect the socket pin when the system need to RMA shipping.

## 2.4.4 Installing a Wireless LAN Card

The GOT321W-502-PCT/FR comes with two Mini card slots for users to install wireless LAN cards. Please refer to the following instructions and illustration for the installation of the wireless LAN card.

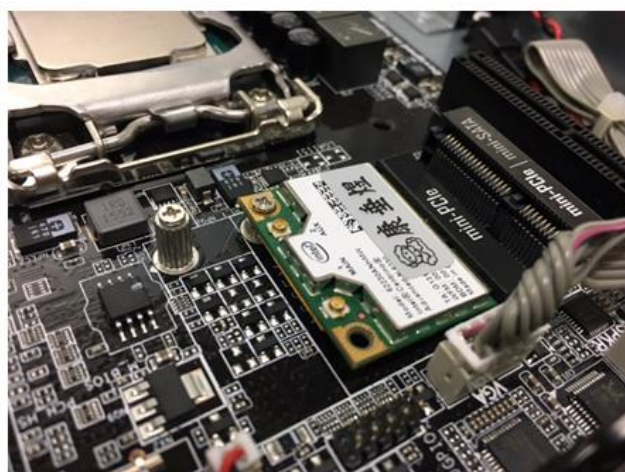
- Step 1** Refer to Section 2.1 to open the back cover; then locate the Mini card slot on the mainboard.

Figure 2-10 Mini Card slots 1 and 2



- Step 2** Insert the wireless LAN card and push it down firmly. Then screw tightly the card to the mainboard (see Figure 2-11).

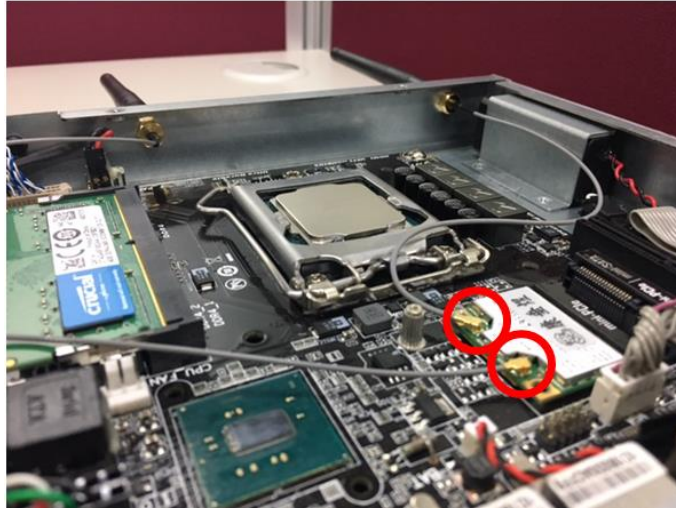
Figure 2-11 Inserting and securing a wireless LAN card





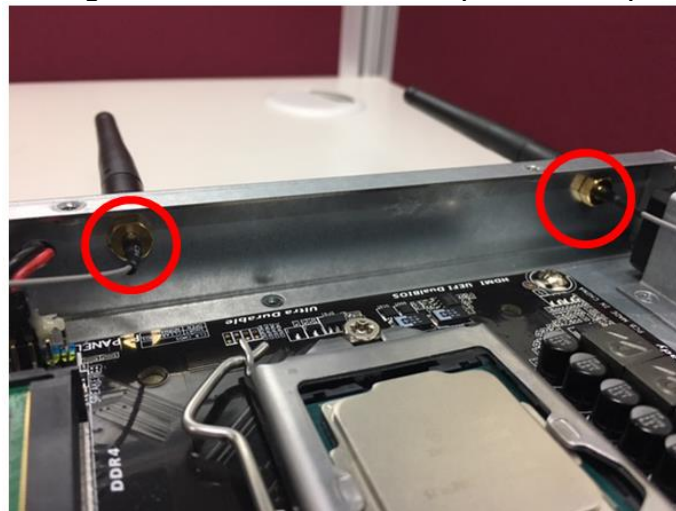
- Step 3** Locate the antenna cable and connect it to the wireless LAN card (see Figure 2-12).

**Figure 2-12** Connecting the antenna to the wireless LAN card

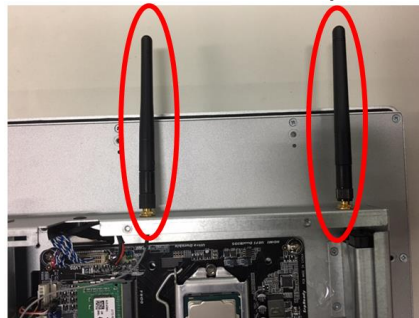


- Step 4** Remove the antenna plug from the top of back cover, and then install the antenna on the antenna connector (see Figures 2-13 and 2-14).

**Figure 2-13** The Antenna outlet (internal view)



**Figure 2-14** The Antenna outlet (external view)



**NOTE:** Please use an extended bracket when using a half-size Mini card.

## 2.5 Connecting the Power Input

The GOT321W-502-PCT/FR is equipped with a Phoenix type of power connector which adopts 12V/19~24V DC-in. Please follow the signs on the power connector to connect DC power source (see Figure 2-15).

**Figure 2-15 The power connector**



**NOTE:** The safety ground must be connected to ensure that the unit works appropriately.

## Section 3

# AMI BIOS Setup Utility

This Section provides users with detailed descriptions about how to set up basic system configurations through the AMI BIOS setup utility.

### 3.1 Navigation Keys

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the hot keys for the BIOS setup utility can be used at any time during the setup navigation process. These hot keys include <F1>, <F2>, <F3>, <F4>, <Enter>, <ESC>, arrow keys, and so on (as listed in Table 3-1).



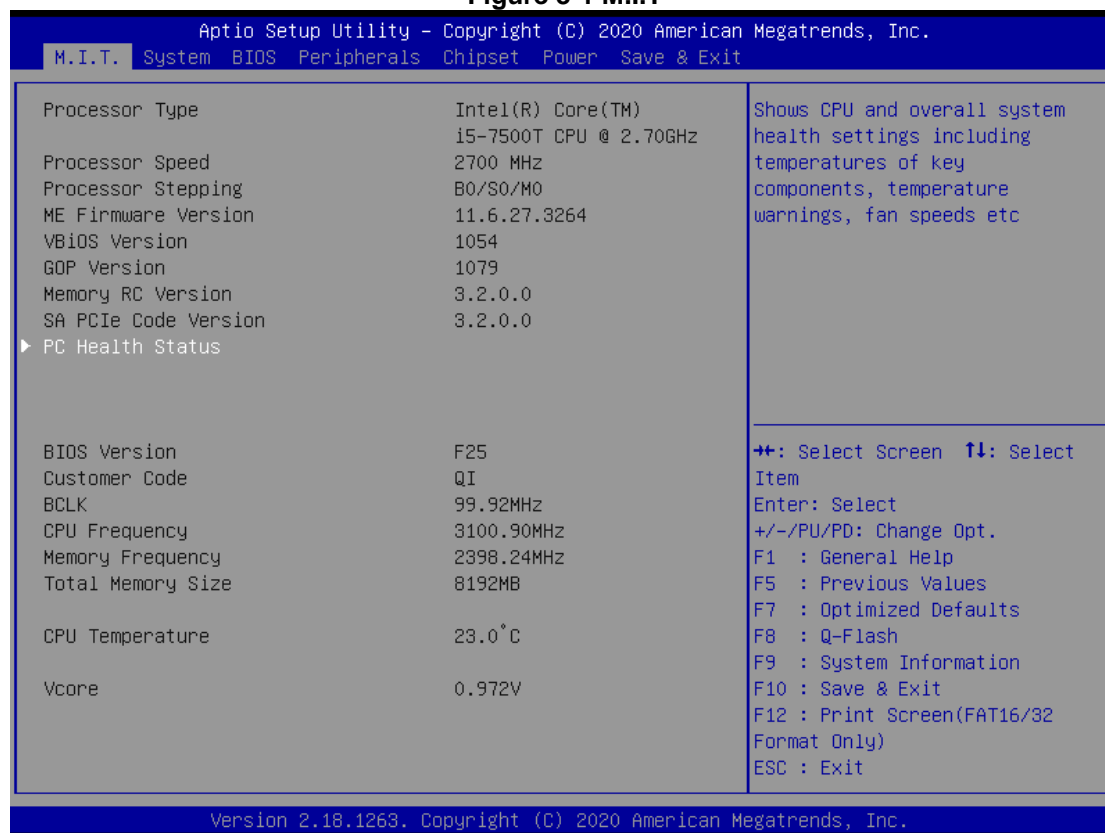
**NOTE:** *Some of navigation keys may differ from one screen to another.*

**Table 3-1 Descriptions of hot keys**

Hot Keys	Descriptions
<→> and <←> Left/Right	The <→> and <←> keys are used to select a setup screen.
<↑> and <↓> Up/Down	The <↑> and <↓> keys are used to select a setup screen or sub-screen.
<+> and <-> Plus/Minus	The <+> and <-> keys you are used to change the field value of a particular setup item.
<Tab>	The <Tab> key is used to select setup fields.
<F1>	The <F1> key is used to display the general help screen.
<F5>	The <F5> key is used to load previous values.
<F7>	The <F7> key is used to load optimized defaults.
<F8>	The <F8> key is used to update BIOS with Q-Flash tool.
<F9>	The <F9> key is used to show system information.
<F10>	The <F10> key is used to save any changes made then exit the setup.
<Esc>	The <Esc> key is used to discard any changes made then exit the setup. Press the <Esc> key to exit the setup without saving your changes.
<Enter>	The <Enter> key is used to display or change the setup option listed for a particular setup item. The <Enter> key is also used to display the setup sub- screens.

## 3.2 M.I.T

Figure 3-1 M.I.T

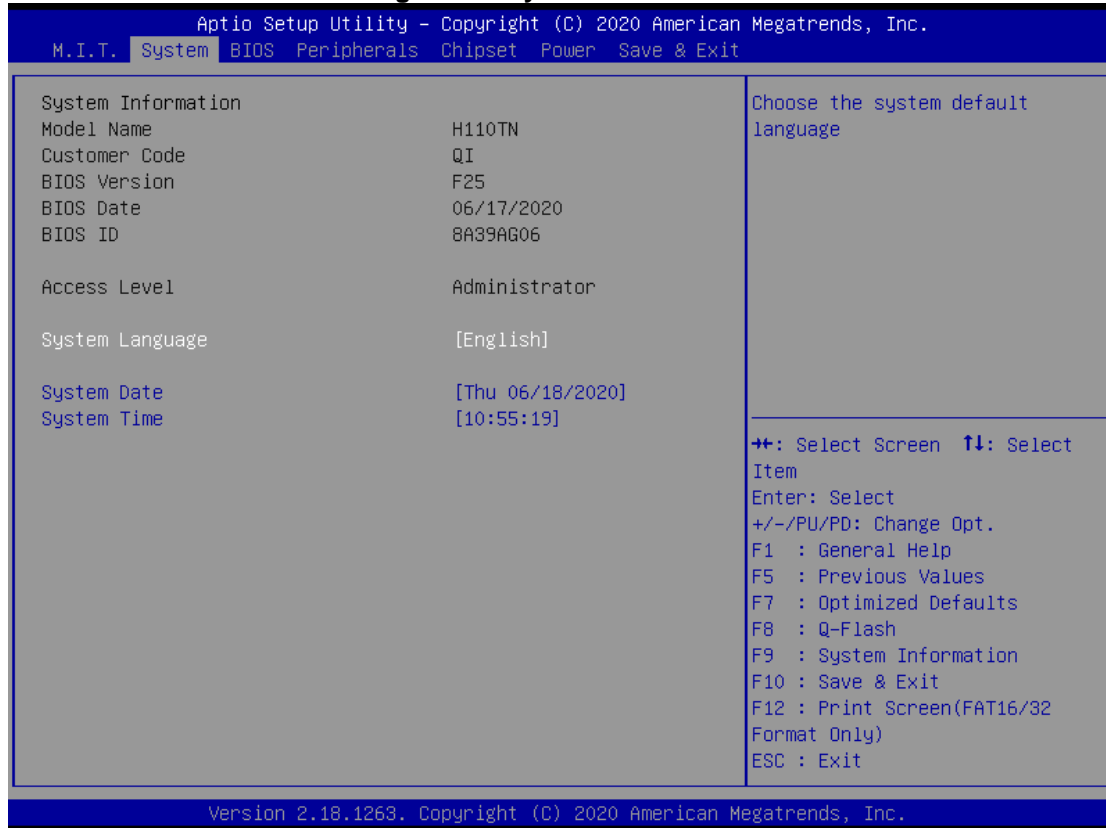


### M.I.T. Current Status

This screen provides information on CPU/memory frequencies/parameters.

### 3.3 System Information

**Figure 3-2 System Information**



This section provides information on your motherboard model and BIOS version. You can also select the default language used by the BIOS and manually set the system time.

#### **System Language**

Selects the default language used by the BIOS.

#### **System Date**

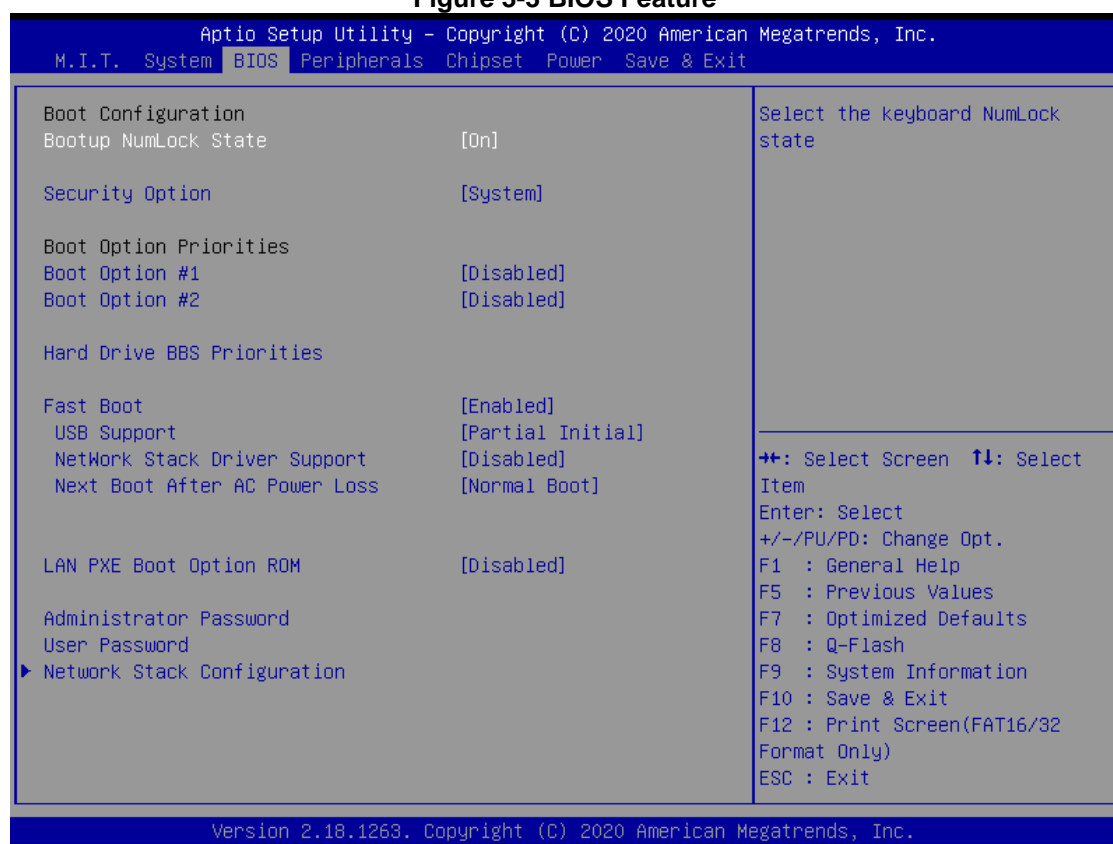
Sets the system date. The date format is week (read-only), month, date, and year. Use <Enter> to switch between the Month, Date, and Year fields and use the <Page Up> or <Page Down> key to set the desired value.

#### **System Time**

Sets the system time. The time format is hour, minute, and second. For example, 1 p.m. is 13:00:00. Use <Enter> to switch between the Hour, Minute, and Second fields and use the <Page Up> or <Page Down> key to set the desired value.

## 3.4 BIOS Feature

Figure 3-3 BIOS Feature



### Bootup NumLock State

Enables or disables Numlock feature on the numeric keypad of the keyboard after the POST. (Default: On)

### Security Option

Specifies whether a password is required every time the system boots, or only when you enter BIOS Setup.

After configuring this item, set the password(s) under the Administrator Password/User Password item.

Setup A password is only required for entering the BIOS Setup program.

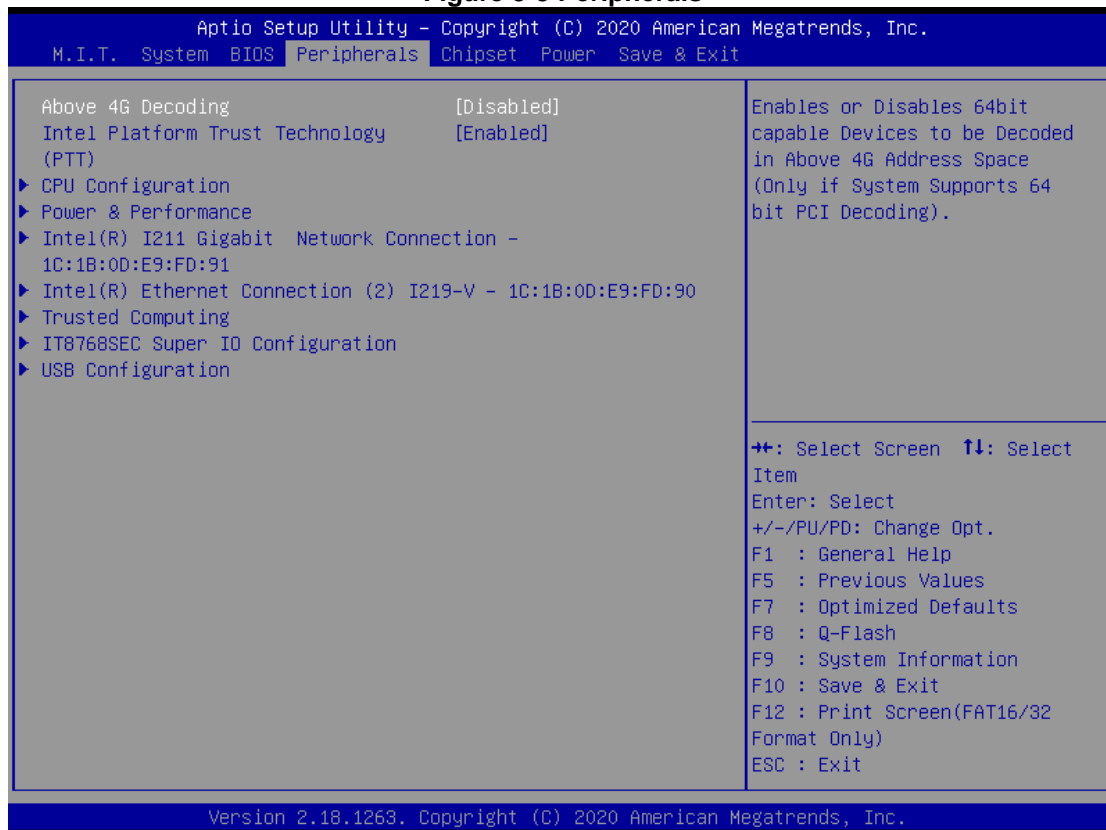
System A password is required for booting the system and for entering the BIOS Setup program. (Default)

### Network Stack Configuration

Network Stack setting Enabled that can set the UEFI PXE boot of IPv4/IPv6 separately

## 3.5 Peripherals

**Figure 3-3 Peripherals**



### Above 4G Decoding

Allow users to enable or disable more than 4GB of memory for 64-bit devices. When you want to use multiple graphics cards for virtual currency mining at the same time, please open this option.

### Intel Platform Trust Technology

This option allows you to choose whether to enable Intel® PTT technology



**NOTE:** PPT only support OS WIN10, if OS is WIN7 please set to Disabled.

### SW Guard Extensions (SGX)

This option allows you to choose whether to enable the Intel® Software Guard Extensions (Intel® SGX) function.



**NOTE:** SGX only support OS WIN10, if OS is WIN7 please set to Disabled.

### Trusted computing

This option allows you to choose whether to enable the TPM function.



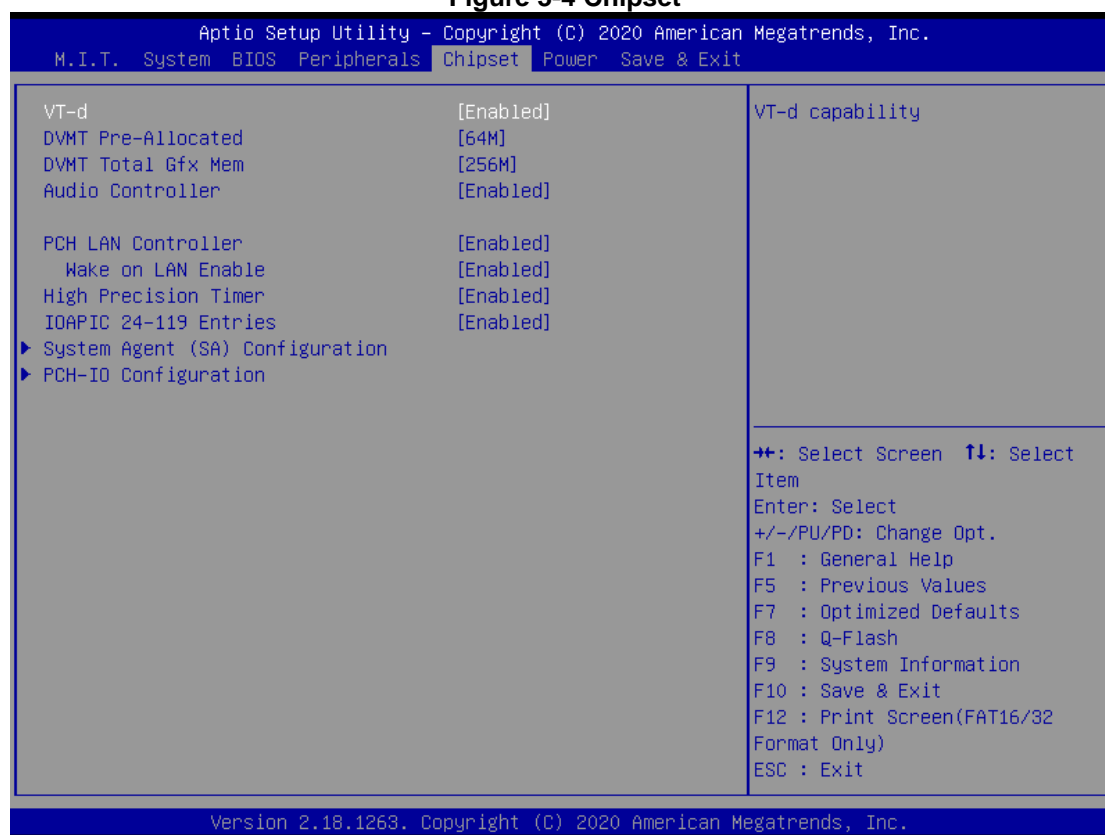
**NOTE:** Trusted computing only support OS WIN10, if OS is WIN7 please set to Disabled.



**NOTE:** NIC Configuration -> Link speed support, this item has no functionality.

## 3.6 Chipset

Figure 3-4 Chipset



### VT-d (Note)

Enables or disables Intel® Virtualization Technology for Directed I/O. (Default: Disabled)

### DVMT Pre-Allocated

It allows user to set the onboard graphics memory size. Options are: 32M~512M. (Default: 64M)

### DVMT Total Gfx Mem

It allows user to allocate the DVMT memory size of the onboard graphics. Options are: 128M, 256M, MAX. (Default: 256M)

### PCH LAN Controller (LAN2)

Enables or disables the onboard LAN function. (Default: Enabled)

If you wish to install a 3rd party add-in network card instead of using the onboard LAN, set this item to **Disabled**.

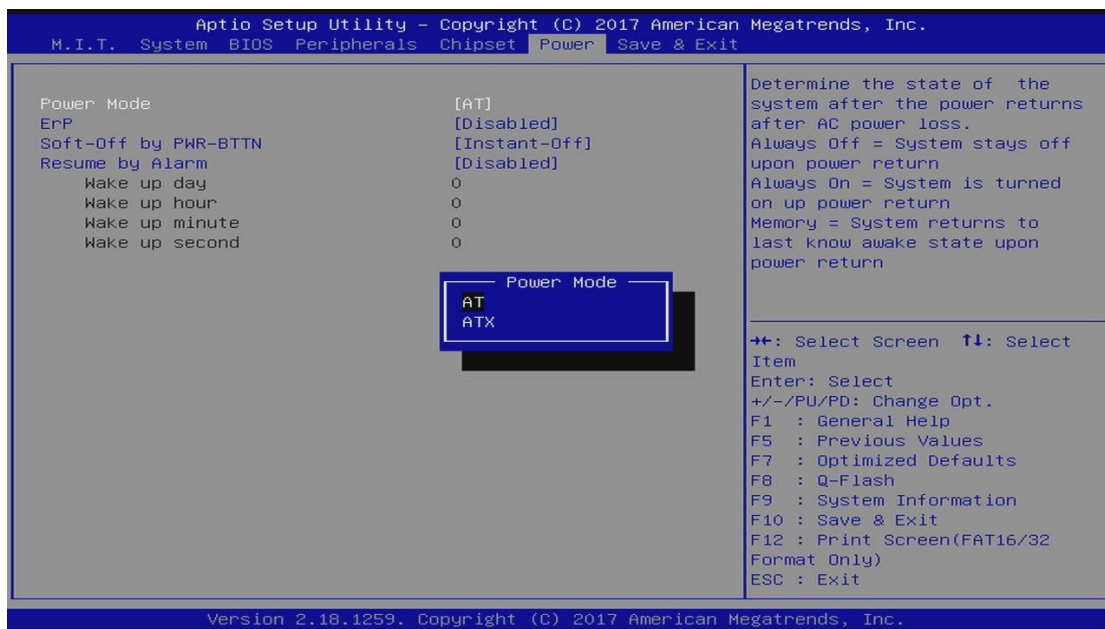
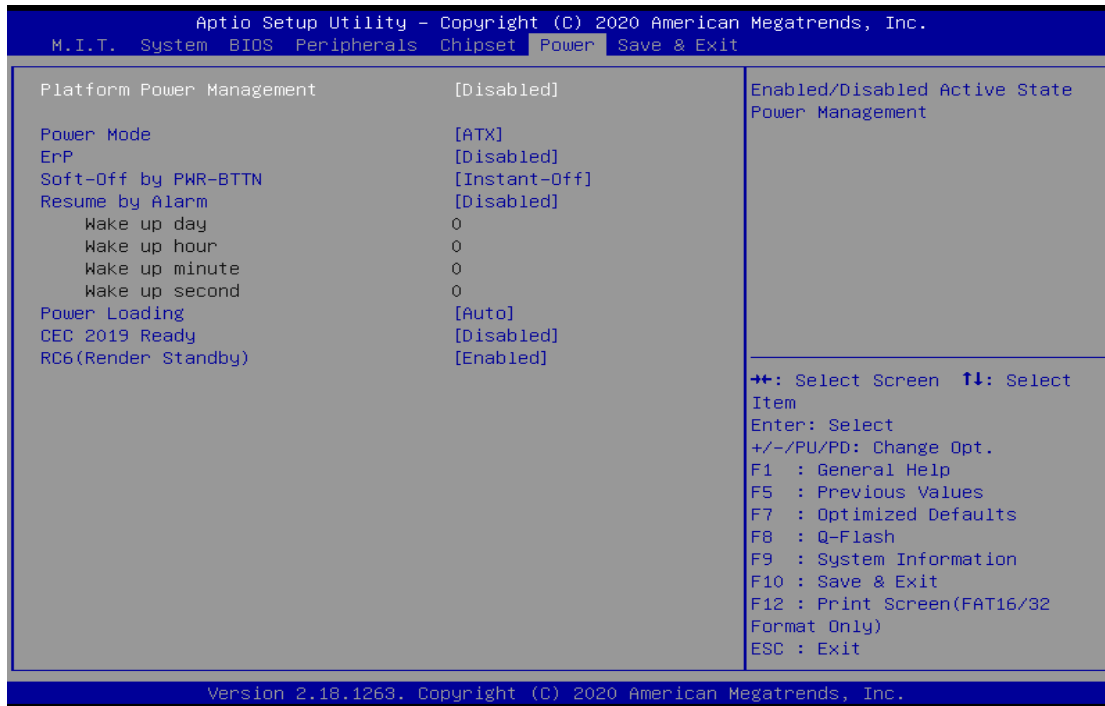
### Wake on LAN

Enables or disables the wake on LAN function. (Default: Enabled)



## 3.7 Power Management

Figure 3-5 Power Management



### Power Mode

AT/ATX power modes can both be used on the GOT321W-502 Panel PC. The selection is made through an AT/ATX switch on the I/O interface panel.

[AT] The system will automatically start when plug in power by one of switch and BIOS setting is AT mode condition.

[ATX] The system is manual operation start by power button.

### **ErP (Energy-related Product)**

If system **enables** the ErP function, it will shut down all of the standby power (USB / LAN / PCIe devices etc.) when it's turn off. Only the power button can turn on system. (**Default: Disabled**)

This function is for some countries or regions to compliant the energy regulations.



**NOTE: Using ErP function will influence I211 LAN of wake up Lan function.**

### **Soft-Off by PWR-BTTN**

Configures the way to turn off the computer in MS-DOS mode using the power button.

Instant-Off Press the power button and then the system will be turned off instantly. (Default)

Delay 4 Sec. Press and hold the power button for 4 seconds to turn off the system. If the power button is pressed for less than 4 seconds, the system will enter suspend mode.

### **Resume by Alarm**

Determines whether to power on the system at a desired time. (Default: Disabled)

If enabled, set the date and time as following:

Wake up day: Turn on the system at a specific time on each day or on a specific day in a month.

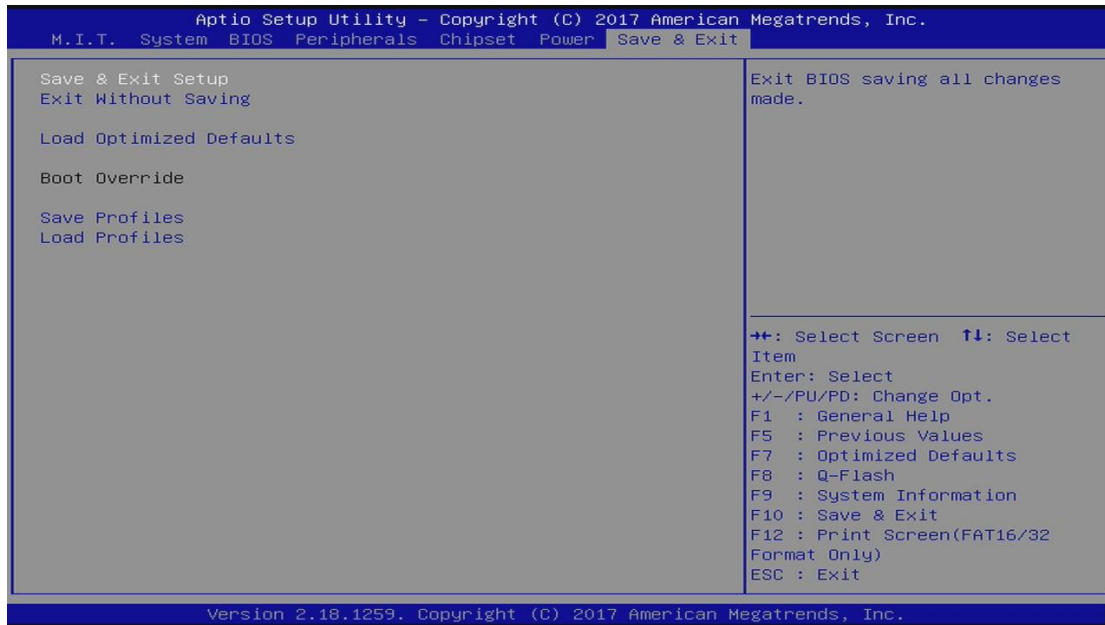
Wake up hour/minute/second: Set the time at which the system will be powered on automatically.



**NOTE: When using this function, avoid inadequate shutdown from the operating system or removal of the AC power, or the settings may not be effective.**

## 3.8 Save & Exit

Figure 3-6 Save & Exit



### Save & Exit Setup

Press <Enter> on this item and select **Yes**. This saves the changes to the CMOS and exits the BIOS Setup program. Select **No** or press <Esc> to return to the BIOS Setup Main Menu.

### Exit Without Saving

Press <Enter> on this item and select **Yes**. This exits the BIOS Setup without saving the changes made in BIOS Setup to the CMOS. Select **No** or press <Esc> to return to the BIOS Setup Main Menu.

### Load Optimized Defaults

Press <Enter> on this item and select **Yes** to load the optimal BIOS default settings. The BIOS defaults settings help the system to operate in optimum state. Always load the Optimized defaults after updating the BIOS or after clearing the CMOS values.

### Boot Override

Allows you to select a device to boot immediately. Press <Enter> on the device you select and select **Yes** to confirm. Your system will restart automatically and boot from that device.

### Save Profiles

This function allows you to save the current BIOS settings to a profile. You can create up to 8 profiles and save as Setup Profile 1~ Setup Profile 8. Press <Enter> to complete. Or you can select **Select File in HDD/FDD/USB** to save the profile to your storage device.

### Load Profiles

If your system becomes unstable and you have loaded the BIOS default settings, you can use this function to load the BIOS settings from a profile created before, without the hassles of reconfiguring the BIOS settings. First select the profile you wish to load and then press <Enter> to complete. You can select **Select File in HDD/FDD/USB** to input the profile previously created from your storage device or load the profile automatically created by the BIOS, such as reverting the BIOS settings to the last settings that worked properly (last known good record).

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# Section 4

## Driver and Installation

### 4.1 Operating System

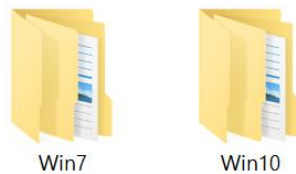
The GOT321W-502-PCT/FR supports Windows 7 / Windows 8.1 / WES7 / WE8S / Windows 10 / Windows 10 IoT Enterprise. To facilitate the installation of system driver, please carefully read the instructions in this Section before start installing.

#### 4.1.1 Installing System Drivers

Win 7 Insert Driver CD and select the “\Drivers”.

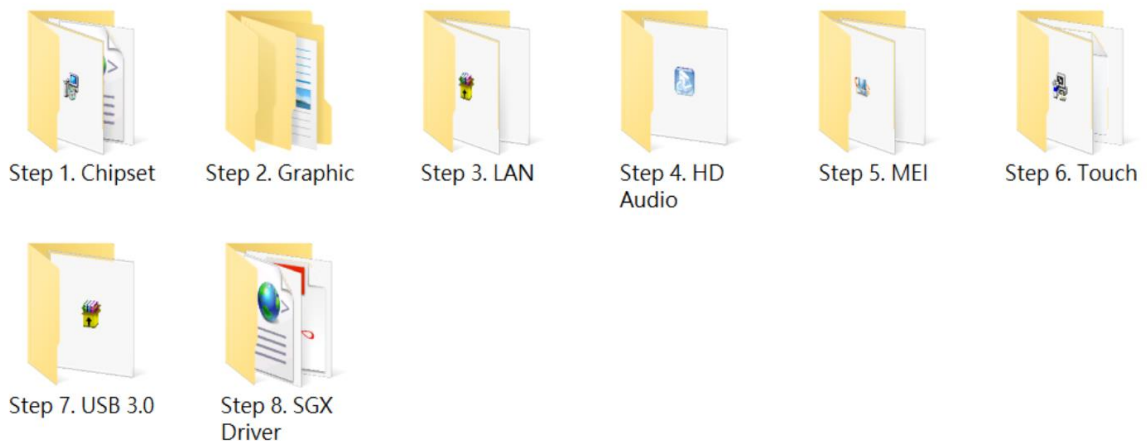
**Step 1** Under directory, there are more file folders as shown below.

Figure 4-1 Different folders of Win7 and Win10



**Step 2** Select all files and follow the installing procedure from Steps 1 to 8.

Figure 4-2 Folders of system drivers



**NOTE:** On Kaby Lake platform, both Windows 10 pro and Windows 10 IoT can support 64 bit.



**NOTE:** Due to the Intel didn't provide windows 32bit part of driver function (Graphic, SGX) that was recommended install windows 64bit OS.

## 4.2 Touch Screen

The GOT321W-502-PCT/FR uses the 5-wire analog resistive (flat front bezel type). There are the specification and driver installation which are listed below.

**Table 4-1 Touch screen specifications**

<b>Touch Screen</b>	10-points Projected Capacitive type
<b>Touch Screen Controller</b>	eGalax EXC3188 Touch Screen Controller IC
<b>Communications</b>	USB interface
<b>Resolution</b>	Depends on screen resolution (Sensor: 25 PPI)
<b>Power Input</b>	5V
<b>Power Consumption</b>	Active: 60mA / Idle Mode: 40mA

<b>Touch Screen</b>	5-wire Analog Resistive type
<b>Touch Screen Controller</b>	PenMount 6000 USB Touch Screen Controller IC
<b>Communications</b>	USB interface
<b>Resolution</b>	1024 x 1024
<b>Power Input</b>	5V
<b>Power Consumption</b>	Active: 24.6mA / Idle Mode: 13.4mA

# Appendix A

## Watchdog Timer

### About Watchdog Timer

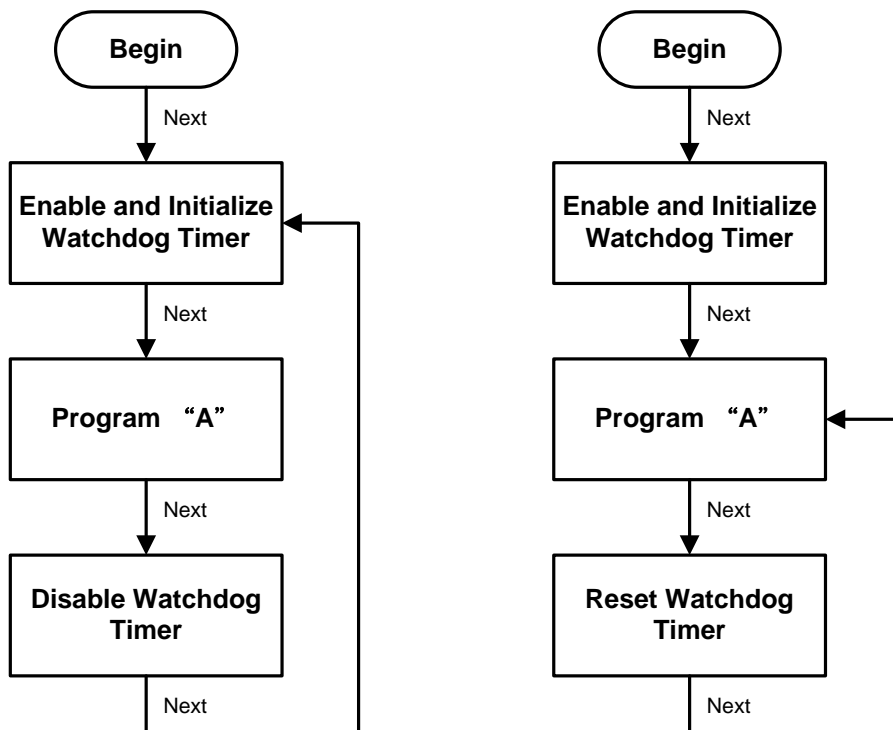
Software stability is major issue in most application. Some embedded systems are not watched by human for 24 hours. It is usually too slow to wait for someone to reboot when computer hangs. The systems need to be able to reset automatically when things go wrong. The watchdog timer gives us solution.

The watchdog timer is a counter that triggers a system reset when it counts down to zero from a preset value. The software starts counter with an initial value and must reset it periodically. If the counter ever reaches zero which means the software has crashed, the system will reboot.

### How to Use Watchdog Timer

The I/O port base addresses of watchdog timer are 2E (hex) and 2F (hex). The 2E (hex) and 2F (hex) are address and data port respectively.

Assume that program A is put in a loop that must execute at least once every 10ms. Initialize watchdog timer with a value bigger than 10ms. If the software has no problems; watchdog timer will never expire because software will always restart the counter before it reaches zero.



## WDT Sample Program

Setting Watch dog steps as below:

1. Select to Logical Device to 0x7
2. Register 0x72 defination
  - Bit 7 : WDT time out value select 1
    - 1 : Second
    - 0 : Minute
  - Bit 6 : WDT Output through KRST Enable
    - 1: Enable
    - 0: Disable
  - Bit 5 : WDT Time out Extra Select
    - 1: 64ms x WDT Timer out value (default = 3.5s)
    - 0 : Determined by WDT time out value select 1 (bit 7)
  - Bit 4 : WDT Output through PWRGD Enable
    - 1 : Enable
    - 0 : Disable
  - Bit 3:0 Interrupt Level Select for WDT
3. Register 0x73 : WDT Time-out Value 7-0
4. Register 0x74 : WDT Time out Value 15-8

e.g If you want to set 6 second timer

1. Enable ITE87xx decode
2. Select Logical device to 0x7
3. Set 0x72 = D0h to enable timer
4. Set 0x73 = 06h



## ITE 8620 Datasheet about Watch Dog register description

### 1. Watch Dog Timer Control Register (Index=71h,Default=00h)

Bit	Description
7	WDT is reset upon a CIR interrupt
6	WDT is reset upon a KBC(Mouse) interrupt
5	WDT is reset upon a KBC(Keyboard) interrupt
4	<b>Reserved</b>
3-2	<b>Reserved</b>
1	<b>Force Time-out</b> This bit is self-cleared.
0	<b>WDT Status</b> 1:WDT value is equal to 0. 0:WDT value is not equal to 0.

### 2. Watch Dog Timer Control Register (Index=72h,Default=001s0000b)

Bit	Description
7	WDT Time-out Value Select 1 1:Second 0:Minute
6	WDT Output through KRST (pulse) Enable 1:Enable 0:Disable
5	WDT Time-out Value Extra Select 1: 62.5ms x WDT Timer-out value (default = 3.5s) 0:Determined by WDT Timer-out value select 1 (bit 7 of this register)
4	WDT Output through PWRGD Enable 1:Enable 0:Disable
3-0	Interrupt Level Select for WDT

### 3. Watch Dog Timer Time-out Value (LSB) Register (Index=73h,Default=38h)

Bit	Description
7-0	WDT Time-out Value 7-0

### 4. Watch Dog Timer Time-out Value (MSB) Register (Index=74h,Default=00h)

Bit	Description
7-0	WDT Time-out Value 15-8

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# Appendix B

## CPU Performance Limitation

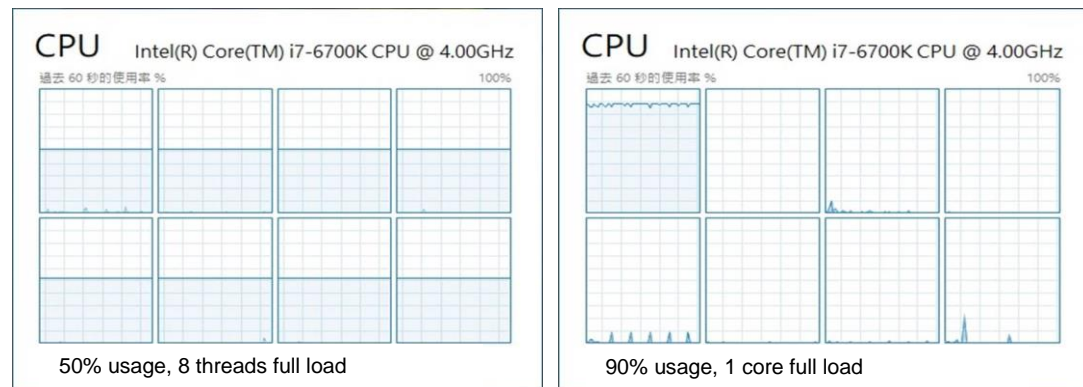
GOT321W-502W system is compatible with Intel 6<sup>th</sup> gen. (Skylake) and 7<sup>th</sup> gen. (Kaby Lake) processors. However, it will have CPU performance limited symptom at some point because of thermal design limitation.

The system support TDP 35W CPU (e.g. i5-7500T) which can execute full loading situation perfectly. For TDP i7-6700K, i7-7700, there is no issue while running base frequency but perform limited for full loading situation.

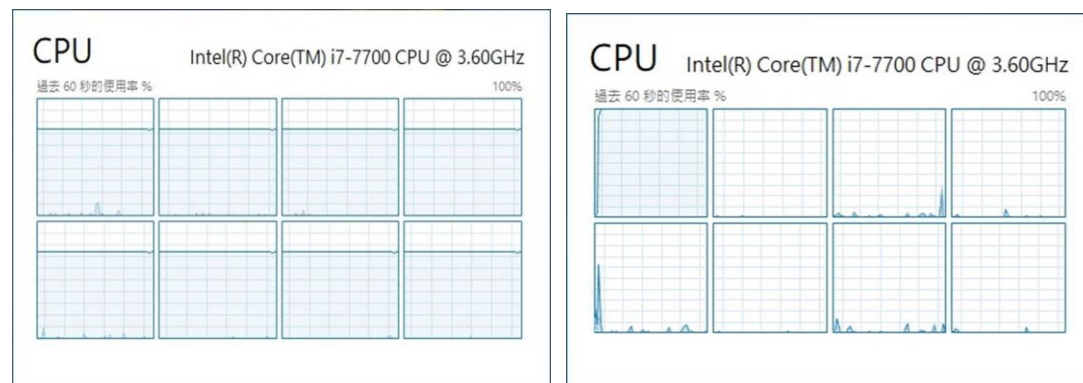
The reason is, power consumption is going to 65W or above while i7-6700K/7700 (TDP 91W/65W) running as full loading, the temperature increasing accordingly and over thermal design expectation which made CPU perform lower usage automatically.

Actual test data as following:

For i7-6700K (TDP 91W), the CPU is limited to 50% usage while all cores (8 threads) active as full loaded; and CPU is limited 90% while single CPU core active as full loaded.



For i7-7700 (TDP 65W), the CPU is limited to 75% usage while all cores (8 threads) active as full loaded; but non-limited while single CPU core active as full loaded.



For i5-7500T (TDP 35W), there is no limited no mater all cores/single core running in full loaded.

